START

TITLE: OFFICIAL GAZETTE OF THE UNITED STATES PATENT AND TRADEMARK OFFICE. PATENTS.

Reel No: 10 Patent No: 5,249,306-5,257,416

VOLUME: 1155 ISSUES: 1-4

DATE: OCTOBER 5-26, 1993

PUBLICATION NO: 10426.00

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Vol. 1155 Number 1

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

PATENTS

October 5, 1993



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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
October 5, 1993 Volume 1155 Number 1

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1153 O.G. 3, on Aug. 3, 1993.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1993, due to changes in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1154 O.G. 25, on Sept. 14, 1993.

International fees were changed, effective on May. 1, 1993, due to changes in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1992, and were announced in the *Official Gazette* at 1141 O.G. 68, on Aug. 25, 1992.

The schedule of PCT fees (in U.S. dollars), effective Oct., 1, 1993, is as follows:

International Applications (PCT Chapter I) fees:	
Transmittal fee:	200.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	620.00
—Corresponding prior U.S. national application filed	410.00
—Supplemental search fee, per additional invention	170.00
European Patent Office as ISA	1415.00
International fees	
Basic fee	530.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
For the first 10 national or regional offices designated	128.00
For each designation fee in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
Designation fee	128.00
Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	450.00
—Additional examination fee, per additional invention (payable only upon invitation	140.00
—USPTO was not ISA in PCT Chapter I	670.00
—Additional examination fee, per additional invention (payable only upon invitation	230.00

U.S. National Stage fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
All claims presented satisfied provisions of PCT Article 33(2) to (4)	45.00	90.00
All claims presented did not satisfy provisons of PCT Article 33(2) to (4)	320.00	640.00
USPTO was ISA but not IPEA	355.00	710.00
USPTO was neither ISA nor IPEA		
Filed without a search report from the European Patent Office or the Japanese Patent Office	475.00	950.00
Filed with a search report from the European Patent Office or the Japanese Patent Office	415.00	830.00
Other National Fees		
—For each independent claim in excess of 3	37.00	74.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	115.00	230.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Sept. 13. 1993

BRUCE A. LEHMAN,
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d) provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on October 2, 1990 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,959,875 through 4,961,231
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on September 30, 1986 for which maintenance fees due at 7 years and

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six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,612,991 through 4,614,045
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after December 12, 1980, but before August 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months and 7 years and six months and 11 years and six months are set forth in 37 CFR 1.20(e) - (g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 , in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9f) $465.00
By other than a small entity $930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9f) $935.00
By other than a small entity $1,870.00

(g) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity(§ 1.9(f)) $1,410.00
By other than a small entity $2,820.00

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(h), and (i), which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980

By a small entity (§ 1.9f) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been

(1) unavoidable $620.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED JULY 18, 1993 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,547	06/911,882	11/24/87
(4,528,944)	(06/624,698)	(7/16/85)
4,528,700	06/600,548	7/16/85
4,528,702	06/539,565	7/16/85
4,528,703	06/624,278	7/16/85
4,528,707	06/606,455	7/16/85
4,528,708	06/543,263	7/16/85
4,528,711	06/515,996	7/16/85
4,528,714	06/574,336	7/16/85
4,528,715	06/606,882	7/16/85
4,528,717	06/548,073	7/16/85
4,528,719	06/507,005	7/16/85
4,528,723	06/499,886	7/16/85
4,528,740	06/485,866	7/16/85
4,528,741	06/457,989	7/16/85
4,528,742	06/665,515	7/16/85
4,528,747	06/446,142	7/16/85
4,528,748	06/445,127	7/16/85
4,528,757	06/621,840	7/16/85
4,528,758	06/560,999	7/16/85
4,528,760	06/236,567	7/16/85
4,528,768	06/547,848	7/16/85
4,528,773	06/530,219	7/16/85
4,528,774	06/399,006	7/16/85
4,528,781	06/487,828	7/16/85
4,528,797	06/550,117	7/16/85
4,528,799	06/478,242	7/16/85
4,528,804	06/529,428	7/16/85
4,528,807	06/505,294	7/16/85
4,528,808	06/504,065	7/16/85
4,528,811	06/500,815	7/16/85
4,528,815	06/428,654	7/16/85
4,528,816	06/428,657	7/16/85
4,528,818	06/508,105	7/16/85
4,528,825	06/642,586	7/16/85
4,528,826	06/625,464	7/16/85
4,528,831	06/497,756	7/16/85
4,528,832	06/461,215	7/16/85
4,528,833	06/517,799	7/16/85
4,528,835	06/586,657	7/16/85
4,528,842	06/655,250	7/16/85
4,528,845	06/563,799	7/16/85
4,528,850	06/606,754	7/16/85
4,528,851	06/511,507	7/16/85
4,528,853	06/602,394	7/16/85
4,528,854	06/576,139	7/16/85
4,528,855	06/626,804	7/16/85
4,528,856	06/571,610	7/16/85
4,528,857	06/517,152	7/16/85
4,528,859	06/393,256	7/16/85
4,528,865	06/404,148	7/16/85
4,528,867	06/417,334	7/16/85
4,528,871	06/486,862	7/16/85
4,528,876	06/493,434	7/16/85
4,528,879	06/496,662	7/16/85
4,528,880	06/351,739	7/16/85
4,528,881	06/573,348	7/16/85
4,528,882	06/566,675	7/16/85
4,528,887	06/520,432	7/16/85
4,528,889	06/611,137	7/16/85
4,528,890	06/528,490	7/16/85
4,528,894	06/443,262	7/16/85
4,528,895	06/478,497	7/16/85
4,528,896	06/556,340	7/16/85
4,528,897	06/439,180	7/16/85
4,528,901	06/629,220	7/16/85
4,528,908	06/584,894	7/16/85
4,528,909	06/475,656	7/16/85
4,528,910	06/541,516	7/16/85
4,528,914	06/308,870	7/16/85
4,528,916	06/486,246	7/16/85
4,528,924	06/395,009	7/16/85
4,528,935	06/672,078	7/16/85
4,528,940	06/629,124	7/16/85

Patent Number	Serial Number	Issue Date
4,528,941	06/607,793	7/16/85
4,528,945	06/569,489	7/16/85
4,528,946	06/486,893	7/16/85
4,528,949	06/691,415	7/16/85
4,528,950	06/539,553	7/16/85
4,528,951	06/612,007	7/16/85
4,528,952	06/542,067	7/16/85
4,528,960	06/514,247	7/16/85
4,528,962	06/644,141	7/16/85
4,528,969	06/565,207	7/16/85
4,528,972	06/547,223	7/16/85
4,528,976	06/617,762	7/16/85
4,528,978	06/559,169	7/16/85
4,528,979	06/359,250	7/16/85
4,528,981	06/486,045	7/16/85
4,528,997	06/506,032	7/16/85
4,529,002	06/636,849	7/16/85
4,529,004	06/537,941	7/16/85
4,529,011	06/515,088	7/16/85
4,529,014	06/527,129	7/16/85
4,529,015	06/538,521	7/16/85
4,529,017	06/523,724	7/16/85
4,529,018	06/624,394	7/16/85
4,529,022	06/400,697	7/16/85
4,529,027	06/500,591	7/16/85
4,529,029	06/434,280	7/16/85
4,529,031	06/501,447	7/16/85
4,529,039	06/422,135	7/16/85
4,529,044	06/593,814	7/16/85
4,529,048	06/459,413	7/16/85
4,529,054	06/539,524	7/16/85
4,529,056	06/535,876	7/16/85
4,529,057	06/484,185	7/16/85
4,529,059	06/453,231	7/16/85
4,529,060	06/582,485	7/16/85
4,529,062	06/422,731	7/16/85
4,529,065	06/544,194	7/16/85
4,529,070	06/417,968	7/16/85
4,529,073	06/429,741	7/16/85
4,529,076	06/401,332	7/16/85
4,529,079	06/339,815	7/16/85
4,529,081	06/511,962	7/16/85
4,529,085	06/507,099	7/16/85
4,529,087	06/544,387	7/16/85
4,529,091	06/534,735	7/16/85
4,529,092	06/572,012	7/16/85
4,529,100	06/591,443	7/16/85
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4,529,161	06/514,597	7/16/85
4,529,166	06/645,783	7/16/85
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4,529,190	06/498,342	7/16/85
4,529,192	06/496,922	7/16/85
4,529,194	06/485,874	7/16/85
4,529,197	06/539,151	7/16/85
4,529,198	06/542,512	7/16/85
4,529,202	06/517,234	7/16/85
4,529,204	06/541,870	7/16/85
4,529,205	06/543,989	7/16/85
4,529,207	06/557,825	7/16/85
4,529,209	06/511,097	7/16/85
4,529,213	06/530,896	7/16/85
4,529,215	06/463,550	7/16/85
4,529,219	06/559,765	7/16/85
4,529,225	06/462,802	7/16/85
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4,529,377	06/470,486	7/16/85
4,529,381	06/523,001	7/16/85
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4,529,395	06/451,270	7/16/85
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4,529,406	06/514,709	7/16/85
4,529,408	06/460,337	7/16/85
4,529,414	06/576,172	7/16/85
4,529,415	06/618,425	7/16/85
4,529,419	06/605,844	7/16/85

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4,529,421	06/602,067	7/16/85
4,529,423	06/642,546	7/16/85
4,529,430	06/502,926	7/16/85
4,529,431	06/546,695	7/16/85
4,529,434	06/619,561	7/16/85
4,529,445	06/574,776	7/16/85
4,529,448	06/511,040	7/16/85
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4,848,720	07/130,536	7/18/89
4,848,727	07/143,355	7/18/89
4,848,730	07/213,148	7/18/89
4,848,731	07/190,996	7/18/89
4,848,736	07/176,168	7/18/89
4,848,739	07/151,505	7/18/89
4,848,742	07/180,185	7/18/89
4,848,745	06/870,477	7/18/89
4,848,752	07/109,168	7/18/89
4,848,753	07/141,497	7/18/89
4,848,757	07/148,001	7/18/89
4,848,758	07/210,658	7/18/89
4,848,760	07/151,628	7/18/89
4,848,763	06/927,157	7/18/89
4,848,767	07/222,416	7/18/89
4,848,768	07/281,274	7/18/89
4,848,775	07/203,014	7/18/89
4,848,781	07/180,991	7/18/89
4,848,784	07/053,967	7/18/89
4,848,785	07/171,907	7/18/89
4,848,787	07/211,342	7/18/89
4,848,792	07/277,473	7/18/89
4,848,800	07/149,487	7/18/89
4,848,808	07/248,098	7/18/89
4,848,812	07/179,320	7/18/89
4,848,813	07/112,750	7/18/89
4,848,815	07/225,886	7/18/89
4,848,818	07/145,045	7/18/89
4,848,819	07/236,849	7/18/89
4,848,822	07/166,837	7/18/89
4,848,824	07/157,539	7/18/89
4,848,827	07/180,627	7/18/89
4,848,828	07/026,765	7/18/89
4,848,833	07/185,556	7/18/89
4,848,834	07/301,195	7/18/89
4,848,841	07/215,970	7/18/89
4,848,842	07/232,791	7/18/89
4,848,843	07/229,874	7/18/89
4,848,844	07/076,643	7/18/89
4,848,847	06/921,750	7/18/89
4,848,849	07/310,313	7/18/89
4,848,855	07/073,124	7/18/89
4,848,857	07/100,903	7/18/89
4,848,861	07/206,393	7/18/89
4,848,866	07/291,406	7/18/89
4,848,868	07/068,539	7/18/89
4,848,886	07/118,612	7/18/89
4,848,887	07/116,625	7/18/89
4,848,889	06/927,307	7/18/89
4,848,891	07/286,180	7/18/89
4,848,892	07/159,127	7/18/89
4,848,903	07/111,407	7/18/89

Patent Number	Serial Number	Issue Date
4,848,916	07/147,890	7/18/89
4,848,923	07/102,111	7/18/89
4,848,925	07/160,325	7/18/89
4,848,929	06/672,692	7/18/89
4,848,932	07/227,752	7/18/89
4,848,936	06/804,230	7/18/89
4,848,941	07/203,154	7/18/89
4,848,950	07/249,016	7/18/89
4,848,955	07/127,907	7/18/89
4,848,956	07/016,940	7/18/89
4,848,958	07/254,103	7/18/89
4,848,959	07/198,978	7/18/89
4,848,962	07/131,914	7/18/89
4,848,967	07/140,691	7/18/89
4,848,971	07/265,941	7/18/89
4,848,976	07/014,045	7/18/89
4,848,978	07/086,497	7/18/89
4,848,979	07/009,483	7/18/89
4,848,987	07/232,734	7/18/89
4,849,001	07/094,879	7/18/89
4,849,010	06/929,119	7/18/89
4,849,045	07/190,330	7/18/89
4,849,057	07/213,526	7/18/89
4,849,060	07/124,515	7/18/89
4,849,061	07/083,048	7/18/89
4,849,062	07/212,576	7/18/89
4,849,063	07/251,766	7/18/89
4,849,074	07/264,615	7/18/89
4,849,082	06/825,407	7/18/89
4,849,085	07/041,888	7/18/89
4,849,088	07/167,408	7/18/89
4,849,089	07/313,169	7/18/89
4,849,090	07/192,438	7/18/89
4,849,094	07/163,965	7/18/89
4,849,106	07/071,972	7/18/89
4,849,112	07/131,612	7/18/89
4,849,116	07/054,545	7/18/89
4,849,124	07/070,865	7/18/89
4,849,130	07/176,253	7/18/89
4,849,131	07/106,741	7/18/89
4,849,140	07/083,261	7/18/89
4,849,154	06/783,591	7/18/89
4,849,158	07/152,530	7/18/89
4,849,159	07/030,983	7/18/89
4,849,162	06/670,732	7/18/89
4,849,179	07/049,431	7/18/89
4,849,184	07/169,464	7/18/89
4,849,185	06/923,165	7/18/89
4,849,194	07/262,201	7/18/89
4,849,214	07/011,610	7/18/89
4,849,232	07/168,639	7/18/89
4,849,234	06/948,380	7/18/89
4,849,240	07/180,982	7/18/89
4,849,241	07/147,364	7/18/89
4,849,245	07/157,648	7/18/89
4,849,247	07/133,493	7/18/89
4,849,254	07/160,453	7/18/89
4,849,262	07/092,363	7/18/89
4,849,270	07/063,677	7/18/89
4,849,272	06/730,442	7/18/89
4,849,279	07/159,535	7/18/89
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4,849,298	07/097,193	7/18/89
4,849,302	07/129,311	7/18/89
4,849,306	07/158,520	7/18/89
4,849,310	07/225,792	7/18/89
4,849,314	07/116,655	7/18/89
4,849,355	07/142,320	7/18/89
4,849,356	07/217,471	7/18/89
4,849,357	06/916,726	7/18/89
4,849,391	07/110,283	7/18/89
4,849,392	07/021,443	7/18/89
4,849,403	06/861,786	7/18/89
4,849,409	07/048,954	7/18/89
4,849,414	07/052,100	7/18/89
4,849,416	07/223,585	7/18/89
4,849,417	07/155,057	7/18/89
4,849,419	07/127,542	7/18/89
4,849,423	07/013,516	7/18/89
4,849,435	07/146,876	7/18/89
4,849,444	07/184,963	7/18/89
4,849,450	07/044,765	7/18/89
4,849,460	07/027,955	7/18/89
4,849,463	06/938,100	7/18/89
4,849,468	06/876,209	7/18/89
4,849,475	07/121,281	7/18/89
4,849,482	07/068,711	7/18/89
4,849,483	07/039,496	7/18/89
4,849,485	07/108,393	7/18/89
4,849,489	07/084,044	7/18/89
4,849,492	07/251,624	7/18/89
4,849,493	07/191,188	7/18/89
4,849,494	07/072,296	7/18/89
4,849,498	07/111,064	7/18/89
4,849,503	07/135,740	7/18/89
4,849,510	06/719,852	7/18/89
4,849,512	07/177,483	7/18/89
4,849,520	07/084,659	7/18/89
4,849,526	07/003,104	7/18/89
4,849,528	07/060,262	7/18/89
4,849,530	07/203,390	7/18/89
4,849,531	07/043,664	7/18/89
4,849,534	07/166,786	7/18/89
4,849,540	07/213,039	7/18/89
4,849,542	06/923,998	7/18/89
4,849,544	07/181,045	7/18/89
4,849,556	07/116,843	7/18/89
4,849,558	07/123,745	7/18/89
4,849,560	07/235,839	7/18/89
4,849,567	07/138,430	7/18/89
4,849,568	07/140,275	7/18/89
4,849,581	07/194,655	7/18/89
4,849,584	07/221,100	7/18/89
4,849,593	07/029,663	7/18/89
4,849,603	07/197,033	7/18/89
4,849,604	07/113,679	7/18/89
4,849,610	07/200,717	7/18/89
4,849,618	06/856,581	7/18/89
4,849,625	07/277,149	7/18/89
4,849,640	07/217,101	7/18/89
4,849,641	07/064,388	7/18/89
4,849,644	07/229,805	7/18/89
4,849,649	07/186,807	7/18/89
4,849,655	07/166,807	7/18/89
4,849,666	07/139,189	7/18/89
4,849,672	06/865,400	7/18/89
4,849,673	07/219,824	7/18/89
4,849,674	07/024,982	7/18/89
4,849,695	07/259,128	7/18/89
4,849,702	07/282,830	7/18/89
4,849,714	07/200,700	7/18/89
4,849,720	06/866,322	7/18/89
4,849,722	07/101,033	7/18/89
4,849,730	07/015,370	7/18/89
4,849,731	07/218,786	7/18/89
4,849,734	07/085,770	7/18/89
4,849,738	07/117,223	7/18/89
4,849,739	07/214,845	7/18/89
4,849,741	07/143,901	7/18/89
4,849,750	07/110,664	7/18/89
4,849,753	07/262,164	7/18/89
4,849,758	07/108,400	7/18/89
4,849,761	07/197,674	7/18/89
4,849,770	06/936,785	7/18/89
4,849,772	07/167,887	7/18/89
4,849,785	07/167,129	7/18/89
4,849,789	07/123,043	7/18/89
4,849,800	07/098,086	7/18/89
4,849,804	06/777,451	7/18/89
4,849,815	07/173,882	7/18/89
4,849,820	07/204,009	7/18/89
4,849,834	06/893,973	7/18/89
4,849,836	06/889,796	7/18/89
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4,849,855	07/145,681	7/18/89
4,849,862	07/157,909	7/18/89

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4,849,871	07/086,862	7/18/89
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4,849,887	07/090,981	7/18/89
4,849,894	07/110,717	7/18/89
4,849,896	07/038,147	7/18/89
4,849,903	07/073,541	7/18/89
4,849,917	07/030,447	7/18/89
4,849,924	06/744,581	7/18/89
4,849,926	07/177,840	7/18/89
4,849,928	07/008,280	7/18/89
4,849,930	07/018,896	7/18/89
4,849,951	06/544,651	7/18/89
4,849,967	07/162,973	7/18/89
4,849,983	07/135,143	7/18/89
4,849,992	06/818,249	7/18/89
4,849,994	06/894,304	7/18/89
4,849,998	07/201,986	7/18/89
4,849,999	07/091,003	7/18/89
4,850,002	07/092,805	7/18/89
4,850,008	07/162,204	7/18/89
4,850,013	07/201,746	7/18/89
4,850,015	07/113,052	7/18/89
4,850,020	07/117,594	7/18/89
4,850,021	07/090,978	7/18/89
4,850,023	06/945,341	7/18/89
4,850,031	07/144,424	7/18/89
4,850,034	07/112,071	7/18/89
4,850,042	07/038,098	7/18/89
4,850,048	07/094,141	7/18/89

Errata

In the list of patents which expired on March 21, 1993, due to failure to pay maintenance fees, in the O.G. of June 1, 1993, the following patent should not have appeared:

Patent Number	Serial Number	Issue Date	Filing Date
4,505,148	06/525,285	3/19/85	8/22/83

Errata

In the list of patents which expired on May 17, 1992, due to failure to pay maintenance fees, in the O.G. of July 21, 1992, the following patent should not have appeared:

Patent Number	Serial Number	Issue Date	Filing Date
4,744,484	06/883/306	5/17/88	7/08/86

Reissue Applications Filed

Notice under 37 CFR 1.11 (b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21 (b)).

4,995,151, Re. S.N. 08/025,350, Filed Feb. 26, 1993, Cl. 26/209R, APPARATUS AND MTEHOD FOR HYDROPATTERNING FABRIC, Jodie M. Siegel, et. al., Owner of Record: *International Paper Co. Purchase, N.Y.*, Attorney or Agent: Robert Schaffer, Ex. Gp.: 2407

5,016,038, Re. S.N. 08/059,600, Filed May 12, 1993, Cl. 354/418, STROBE CONTROL APPARATUS, Takeo Kobayashi, et. al., Owner of Record: *Asahi Kogaku Kogyo Kabushiki, Kaisha, Tokyo, Japan*, Attorney or Agent: Bruce H. Bernstein, Ex. Gp.: 2101

5,019,408, Re. S.N. 08/061,985, Filed May 14, 1993, Cl. 426/399, METHOD FOR THE ULTRAPASTEURIZATION OF LIQUID WHOLE EGG PRODUCTS, Kenneth R. Swartzel, et. al.,Owner of Record: *North Carolina State University, Raleigh, North Carolina*, Attorney or Agent: Kenneth D. Sibley, Ex. Gp.: 1302

5,086,910, Re. S.N. 08/098,867, Filed July 29, 1993, Cl. 198/572, ZONE CONTROLLED CONVEYANCE SYSTEM, Paul D. Terpstra, Owner of Record: *Giddings and Lewis, Inc., Fond Du Lac, Wis.*, Attorney or Agent: Donald Cayen, Ex. Gp.: 3101

Requests for Reexamination Filed

Notice under 37 CFR 1.11 (c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19 (a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,016,750, Reexam. No. 90/003,133, Requested July 20, 1993, Cl. 073/067.5, ULTRASONIC IMAGING METHOD AND APPARATUS, Phillip S. Green, Owner of Record: *SRI International, Menlo Park, Calif.*, Attorney or Agent: Richard Lange, SRI International, Menlo Park, Calif., Ex. Gp.: 2605, Requester: Acoustic Inaging Technologies Corp., Phoenix, Ariz.

4,204,966, Reexam. No. 90/003,139, Requested July 22, 1993, Cl. 210/455, LIQUID FILTER AND FILTER ELEMENT, Howard W. Morgan, Owner of Record: *Filter Specialists, Inc., Michigan City, Ind.*, Attorney or Agent: James D. Hall, Baker & Daniels, South Bend, Ind., Ex. Gp.: 1305, Requester: Dvorak & Traub, Chicago, Ill.

4,313,475, Reexam. No. 90/003,137, Requested July 23, 1993, Cl. 141/018, VOLTAGE BLOCK SYSTEM FOR ELECTROSTATIC COATING WITH CONDUCTIVE MATERIALS, Richard F. Wiggins, Owner of Record: *Nordson Corp., Westlake, Ohio*, Attorney or Agent: Thomas L. Kautz, Ruden, Barnett, McClosky & Smith, Ft. Lauderdale, Fl., Ex. Gp.: 2403, Requester: Owner

4,705,759, Reexam. No. 90/003,141, Requested July 26, 1993, Cl. 437/029, HIGH POWER MOSFET WITH LOW ON-RESISTANCE AND HIGH BREAKDOWN VOLTAGE, Alexander Lidow, et. al., Owner of Record: *International Rectifier Corp., Los Angeles, Calif.*, Attorney or Agent: Ostrolenk, Faber, Gerb & Soffen, New York, N.Y., Ex. Gp.: 1104, Requester: SRS-Thomson Microelectronics, Inc., Carrollton, Tex.

4,829,611, Reexam. No. 90/003,144, Requested July 26, 1993, Cl. 005/047, SOFA BED RECLINER, Robert Fireman, et. al., Owner of Record: *Robert Fireman, New York, N.Y. & Gary Shaffield, Sparta, Ind.*, Attorney or Agent: I.C. Waddey, Jr., Waddey & Patterson, Nashville, TEnn., Ex. Gp.: 3508, Requester: Owner

4,996,766, Reexam. No. 90/003,140, Requested July 22, 1993, Cl. 141/018, BI-LEVEL CARD EDGE CONNECTOR AND METHOD OF MAKING THE SAME, Heinz Piorunneck, et. al., Owner of Record: *Burndy Corp., Norwalk, Conn.*, Attorney or Agent: Mark F. Harrington, Perman & Green, Fairfield, Conn., Ex. Gp.: 2403, Requester: Owner

5,011,841, Reexam. No. 90/003,143, Requested July 26, 1993, Cl. 514/253, TREATMENT OF DEPRESSION, Karen Scappaticci, Owner of Record: *Pfizer, Inc., Groton, Conn.*, Attorney or Agent: Gregg C. Benson, Pfizer, Inc., Groton, Conn., Ex. Gp.: 1205, Requester: Owner

5,036,220, Reexam. No. 90/003,145, Requested July 29, 1993, Cl. 307/427, NONLINEAR OPTICAL RADIATION GENERATOR AND METHOD OF CONTROLLING REGIONS OF FERROELECTRIC POLARIZATION DOMAINS IN SOLID STATE BODIES, Robert L. Byer, et. al., Owner of Record: *Leland Stanford Jr University, Stanford, Calif.*, Attorney or Agent: C. Michael Zimmerman, Flehr, Hohbach, Test, Albritton & Herbert San Francisco, Calif., Ex. Gp.: 2501, Requester: DuPont de Nemours & Co., Wilmington, Del.

5,036,870, Reexam. No. 90/003,138, Requested July 23, 1993, Cl. 132/273, HAIR STYLING TOOL, Tomima L. Edmark, et. al., Owner of Record: *Tomima L. Edmark, Dallas, Tex.*, Attorney or Agent: Baker & Botts, Dallas, Tex., Ex. Gp.: 3303, Requester: Paul C. Hashim, Venable, Baetjer, Howard & Civiletti, Washington, D.C.

5,100,327, Reexam. No. 90/003,142, Requested July 26, 1993, Cl. 434/305, METHOD AND APPARATUS FOR TEACHING VEHICLE SAFETY, William C. Gladish, Owner of Record: *William C. Gladish, Beale A.F.B., Calif.*, Attorney or Agent: James M. Ritchey, Gerber, Ritchey & O'Banion, Carmichael, Calif., Ex. Gp.: 3302, Requester: Owner

Notice of Expiration of Trademark Registrations Due to Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED AUGUST 16, 1993
DUE TO FAILURE TO RENEW

Reg. No.	Serial Number	Reg. Date
89,082	71/064,269	11/12/1912
89,133	71/064,496	11/12/1912
298,763	71/327,237	11/08/1932
298,849	71/327,856	11/08/1932
298,869	71/328,995	11/08/1932
298,870	71/328/985	11/08/1932
298,872	71/328,838	11/08/1932
298,877	71/328,487	11/08/1932
444,736	71/516,203	11/11/1952
556,910	71/603,758	4/01/1952
566,476	71/547,799	11/11/1952
566,483	71/557,937	11/11/1952
566,485	71/562,747	11/11/1952
566,486	71/595,466	11/11/1952
566,488	71/571,553	11/11/1952
566,489	71/573,698	11/11/1952
566,493	71/575,744	11/11/1952
566,495	71/577,067	11/11/1952
566,510	71/588,583	11/11/1952
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566,523	71/594,851	11/11/1952
566,535	71/599,072	11/11/1952
566,536	71/599,132	11/11/1952
566,542	71/600,842	11/11/1952
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566,557	71/605,237	11/11/1952
566,564	71/606,891	11/11/1952
566,570	71/608,962	11/11/1952
566,573	71/609,218	11/11/1952
566,580	71/610,531	11/11/1952
566,581	71/610,680	11/11/1952
566,596	71/612,874	11/11/1952
566,597	71/613,059	11/11/1952
566,608	71/614,343	11/11/1952
566,611	71/614,952	11/11/1952
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566,614	71/615,174	11/11/1952
566,620	71/615,895	11/11/1952
566,636	71/617,121	11/11/1952
566,652	71/618,992	11/11/1952
566,666	71/619,644	11/11/1952
566,667	71/619,748	11/11/1952
566,669	71/619,940	11/11/1952
566,674	71/620,841	11/11/1952
566,682	71/621,202	11/11/1952
566,688	71/621,714	11/11/1952
566,690	71/621,862	11/11/1952
566,697	71/622,622	11/11/1952
566,705	71/623,053	11/11/1952
566,709	71/623,182	11/11/1952
566,710	71/623,239	11/11/1952
566,714	71/623,664	11/11/1952
566,716	71/623,853	11/11/1952
566,717	71/623,946	11/11/1952
566,719	71/624,139	11/11/1952
566,723	72/624,483	11/11/1952
566,724	71/624,820	11/11/1952
566,730	71/625,248	11/11/1952
566,731	71/625,378	11/11/1952
566,740	71/628,048	11/11/1952
566,741	71/628,137	11/11/1952
566,744	71/628,743	11/11/1952
566,747	71/594,278	11/11/1952
566,749	71/613,802	11/11/1952
566,750	71/535,892	11/11/1952
566,751	71/543,855	11/11/1952
566,759	71/586,178	11/11/1952
566,760	71/588,033	11/11/1952
566,761	71/590,310	11/11/1952
566,764	71/596,304	11/11/1952
566,765	71/598,532	11/11/1952
566,772	71/614,827	11/11/1952
566,777	71/619,399	11/11/1952
946,541	72/336,556	11/07/1972
946,543	72/383,838	11/07/1972
946,550	72/402,160	11/07/1972
946,552	72/374,469	11/07/1972
946,553	72/374,471	11/07/1972
946,555	72/381,898	11/07/1972
946,557	72/401,565	11/07/1972
946,558	72/405,231	11/07/1972
946,560	72/409,277	11/07/1972
946,563	72/397,755	11/07/1972
946,564	72/403,148	11/07/1972
946,566	72/382,502	11/07/1972
946,576	72/408,350	11/07/1972
946,577	72/345,623	11/07/1972
946,580	72/373,571	11/07/1972
946,583	72/383,524	11/07/1972
946,586	72/383,589	11/07/1972
946,589	72/383,592	11/07/1972
946,590	72/383,593	11/07/1972
946,601	72/388,611	11/07/1972
946,604	72/397,966	11/07/1972
946,605	72/399,753	11/07/1972
946,609	72/405,053	11/07/1972
946,614	72/407,324	11/07/1972
946,615	72/407,357	11/07/1972
946,616	72/407,544	11/07/1972
946,618	72/408,023	11/07/1972
946,619	72/408,135	11/07/1972
946,624	72/383,037	11/07/1972
946,625	72/397,241	11/07/1972
946,627	72/390,551	11/07/1972
946,628	72/391,685	11/07/1972
946,631	72/400,095	11/07/1972
946,633	72/388,515	11/07/1972
946,634	72/397,228	11/07/1972
946,637	72/418,230	11/07/1972
946,638	72/418,893	11/07/1972
946,642	72/418,462	11/07/1972
946,645	72/418,465	11/07/1972
946,649	72/405,537	11/07/1972
946,656	72/346,898	11/07/1972
946,662	72/373,158	11/07/1972
946,664	72/400,655	11/07/1972
946,666	72/403,421	11/07/1972
946,667	72/403,700	11/07/1972

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946,668	72/403,722	11/07/1972
946,669	72/403,725	11/07/1972
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946,671	72/403,959	11/07/1972
946,680	72/338,949	11/07/1972
946,681	72/365,366	11/07/1972
946,684	72/379,901	11/07/1972
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946,689	72/398,367	11/07/1972
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946,696	72/383,469	11/07/1972
946,697	72/385,136	11/07/1972
946,699	72/389,705	11/07/1972
946,700	72/392,719	11/07/1972
946,702	72/393,453	11/07/1972
946,705	72/393,607	11/07/1972
946,706	72/394,190	11/07/1972
946,729	72/342,444	11/07/1972
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946,740	72/379,209	11/07/1972
946,744	72/392,925	11/07/1972
946,746	72/399,009	11/07/1972
946,749	72/404,760	11/07/1972
946,750	72/405,186	11/07/1972
946,756	72/419,571	11/07/1972
946,758	72/347,484	11/07/1972
946,763	72/390,529	11/07/1972
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946,765	72/391,967	11/07/1972
946,767	72/392,240	11/07/1972
946,769	72/394,642	11/07/1972
946,771	72/399,302	11/07/1972
946,774	72/402,951	11/07/1972
946,776	72/397,172	11/07/1972
946,781	72/415,996	11/07/1972
946,784	72/391,223	11/07/1972
946,791	72/409,551	11/07/1972
946,792	72/409,906	11/07/1972
946,793	72/409,919	11/07/1972
946,795	72/360,910	11/07/1972
946,798	72/393,920	11/07/1972
946,801	72/385,151	11/07/1972
946,802	72/374,690	11/07/1972
946,803	72/383,047	11/07/1972
946,807	72/397,322	11/07/1972
946,812	72/382,015	11/07/1972
946,820	72/401,178	11/07/1972
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946,832	72/403,424	11/07/1972
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946,843	72/393,806	11/07/1972
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946,854	72/405,291	11/07/1972
946,857	72/403,622	11/07/1972
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946,864	72/406,203	11/07/1972
946,865	72/348,425	11/07/1972
946,866	72/381,220	11/07/1972
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946,872	72/399,953	11/07/1972
946,873	72/399,954	11/07/1972
946,874	72/400,242	11/07/1972
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946,880	72/400,549	11/07/1972
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946,893	72/401,492	11/07/1972
946,894	72/401,826	11/07/1972
946,895	72/401,839	11/07/1972
946,907	72/409,121	11/07/1972
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946,915	72/410,017	11/07/1972
946,916	72/410,107	11/07/1972
946,917	72/410,138	11/07/1972
946,923	72/404,459	11/07/1972
946,925	72/404,151	11/07/1972
946,926	72/408,014	11/07/1972
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946,937	72/413,656	11/07/1972
946,940	72/375,500	11/07/1972
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946,949	72/381,495	11/07/1972
946,952	72/385,457	11/07/1972
946,955	72/386,400	11/07/1972
946,956	72/388,500	11/07/1972
946,957	72/389,405	11/07/1972
946,959	72/395,511	11/07/1972
946,965	72/337,469	11/07/1972
946,967	72/341,720	11/07/1972
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946,999	72/394,677	11/07/1972
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947,001	72/410,520	11/07/1972
947,005	72/399,539	11/07/1972
947,006	72/400,401	11/07/1972
947,009	72/382,625	11/07/1972
947,012	72/415,142	11/07/1972
947,014	72/360,817	11/07/1972
947,024	72/390,711	11/07/1972
947,025	72/390,712	11/07/1972
947,029	72/395,893	11/07/1972
947,032	72/393,120	11/07/1972
947,034	72/392,436	11/07/1972
947,037	72/330,796	11/07/1972
947,043	72/372,623	11/07/1972
947,044	72/382,612	11/07/1972
947,046	72/398,998	11/07/1972
947,052	72/401,024	11/07/1972
947,053	72/402,335	11/07/1972

Errata

"All reference to Patent No. 5,204,448 to Ramaswamy Subramanian, of Maryland for `CHELATING AGENTS FOR ATTACHING METAL IONS TO PROTEINS´, appearing in the *Official Gazette* of April 20, 1993 should be deleted since no patent was granted."

"All reference to Patent No. D. 339,170 to Linda L. Pinkerton of Indiana for `COMBINED ADVERTISING BANNER AND HANGER´ appearing in the *Official Gazette* of Sept. 7, 1993 should be deleted since no patent was granted."

"All reference to Patent No. 5,242,105 to James O. Cheshire, et. al. of Wisconsin for `RIGID PAPERBOARD CONTAINER´ appearing in the *Official Gazette* of Sept. 7, 1993 should be deleted since no patent was granted."

"All reference to Patent No. 5,243,295 to Alan Ross of Florida for `NEAR-END COMMUNICATIONS LINE CHARACTERISTIC MEASURING SYSTEM WITH A VOLTAGE SENSITIVE NON-LINEAR DEVICE DISPOSED AT THE FAR END´ appearing in the *Official Gazette* of Sept. 7, 1993 should be deleted since no patent was granted."

RECLASSIFICATION ALERT REPORT
July 1993 — September 1993

This report is a summary of classification changes which became effective by issuance of Classification Orders from July through September 1993. Information includes:

o subclasses established or abolished (major changes)
o subclass title, indent, or position change
o changes to existing classes and subclass definitions (minor changes)

This Reclassification Alert Report may appear from time to time in the Official Gazette and is intended to provide an interim notice of classification changes pending publication of the Manual of Classification and revisions thereto.

The general public may purchase copies of Classification Orders or Classification Definitions by contacting the Editorial Division at 703-305-6101 or 703-305-5099. Payment can be made through a Deposit Account, or by check made payable to "Commissioner of Patents and Trademarks" and sent to:

Chief, Editorial Division
Office of Classification Support
U.S. Patent and Trademark Office
Crystal Mall 2, Room 309
Washington, D.C. 20231

September 7, 1993

WILLIAM S. LAWSON
Administrator for Search and Information Resources

CLASS	FIRST SUBCLASS	LAST SUBCLASS	ACTION	ORDER NUMBER
002			DEFN CHANGE	1450
002			DEFN CHANGE	1457
002	002.1		ABOLISH	1460
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002	006		ABOLISH	1460
002	006.1	006.8	ESTABLISH	1460
002	049		ABOLISH	1460
002	049.1	049.5	ESTABLISH	1460
002	078		ABOLISH	1460
002	078.1	078.4	ESTABLISH	1460
002	141		ABOLISH	1460
002	141.1	141.2	ESTABLISH	1460
002	152		ABOLISH	1460
002	152.1		ESTABLISH	1460
002	161		ABOLISH	1460
002	161.1	161.8	ESTABLISH	1460
002	171.01	171.04	ESTABLISH	1460
002	175		ABOLISH	1460
002	175.1	175.9	ESTABLISH	1460
002	177	180	ABOLISH	1460
002	185	201	ABOLISH	1460
002	195.1	195.8	ESTABLISH	1460
002	200.1	200.3	ESTABLISH	1460
002	209.1	209.2	ABOLISH	1460
002	209.11	209.14	ESTABLISH	1460
002	243		ABOLISH	1460
002	243.1		ESTABLISH	1460
002	900	920	ESTABLISH	1460
002	DIG06	DIG07	ABOLISH	1460
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012			DEFN CHANGE	1450
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016			DEFN CHANGE	1457
016			DEFN CHANGE	1460
019			DEFN CHANGE	1460
023			DEFN CHANGE	1451
024			DEFN CHANGE	1457

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029			DEFN CHANGE	1458
029			DEFN CHANGE	1459
029			DEFN CHANGE	1464
030			DEFN CHANGE	1464
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033			DEFN CHANGE	1464
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034			DEFN CHANGE	1451
036			DEFN CHANGE	1450
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040			DEFN CHANGE	1464
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044			DEFN CHANGE	1451
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054			DEFN CHANGE	1457
054			DEFN CHANGE	1460
054			ABOLISH	1451
055	001	143	ABOLISH	1451
055	145	208	ABOLISH	1451
055	221		ABOLISH	1451
055	281		ABOLISH	1451
055	316		ABOLISH	1451
055	350		ESTABLISH	1451
055	350.1		TITLE CHANGE	1451
055	367		TITLE CHANGE	1451
055	375		ABOLISH	1451
055	384		ABOLISH	1451
055	386	390	TITLE CHANGE	1451
055	430		TITLE CHANGE	1451
055	477		DEFN CHANGE	1460
057			DEFN CHANGE	1451
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073			ABOLISH	1468
073	729		ESTABLISH	1468
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074			DEFN CHANGE	1451
075			TITLE CHANGE	1451
075	406		TITLE CHANGE	1451
075	592		DEFN CHANGE	1457
081			DEFN CHANGE	1467
084			DEFN CHANGE	1451
092			DEFN CHANGE	1468
092			ESTABLISH	1451
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095	900	903	ESTABLISH	1451
096	001	220	DEFN CHANGE	1458
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119			DEFN CHANGE	1451
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119	029		ABOLISH	1457
119	029.5		ABOLISH	1457
119	082		ABOLISH	1457
119	096		ABOLISH	1457
119	097.1	097.3	ABOLISH	1457
119	098	112	ABOLISH	1457
119	114	146	ABOLISH	1457
119	147.1		ABOLISH	1457
119	148	155	ABOLISH	1457
119	156	160	POSITION CHANGE	1457
119	200	270	ESTABLISH	1457
119	700	866	ESTABLISH	1457
119	905	908	ESTABLISH	1457
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123			DEFN CHANGE	1451
124			DEFN CHANGE	1464
128			DEFN CHANGE	1451
128			DEFN CHANGE	1457
128			DEFN CHANGE	1460
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128	419	420	ABOLISH	1450
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128	421	424	ABOLISH	1450
128	783	804	ABOLISH	1450
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160			DEFN CHANGE	1450
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160			DEFN CHANGE	1464
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165			DEFN CHANGE	1452
165			DEFN CHANGE	1458
166			DEFN CHANGE	1451
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172			DEFN CHANGE	1452
174			DEFN CHANGE	1451
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194	322		TITLE CHANGE	1462
194	906		ESTABLISH	1462
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209			DEFN CHANGE	1457

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224			ABOLISH	1459
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228	002.1		ESTABLISH	1459
228	002.3		ABOLISH	1459
228	020		ESTABLISH	1459
228	020.1		ESTABLISH	1459
228	020.5		TITLE CHANGE	1459
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228	047		ESTABLISH	1459
228	047.1		ESTABLISH	1459
228	049.5	049.6	ABOLISH	1459
228	110		ESTABLISH	1459
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228	111.5		ABOLISH	1459
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228	114.5		ABOLISH	1459
228	122	124	ESTABLISH	1459
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228	123.1		ESTABLISH	1459
228	124.1		ESTABLISH	1459
228	124.5	124.7	TITLE CHANGE	1459
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228	179		ESTABLISH	1459
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228	180.2		ESTABLISH	1459
228	180.21	180.22	ESTABLISH	1459
228	180.5		ABOLISH	1459
228	233	243	ESTABLISH	1459
228	233.1	233.2	ESTABLISH	1459
228	234.1	234.3	ESTABLISH	1459
228	235.1	235.3	ABOLISH	1459
228	248		ESTABLISH	1459
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228	262.1	262.2	ESTABLISH	1459
228	262.21		ESTABLISH	1459
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228	262.6		ESTABLISH	1459
228	262.61		ESTABLISH	1459
228	262.7		ESTABLISH	1459
228	262.71	262.72	ESTABLISH	1459
228	262.8	262.9	ABOLISH	1459
228	263.11	263.19	ABOLISH	1459
228	263.21		TITLE CHANGE	1459
228	264		ESTABLISH	1463
229	928	940	ABOLISH	1463
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231			DEFN CHANGE	1452
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242			DEFN CHANGE	1457
244			DEFN CHANGE	1460
244			DEFN CHANGE	1452
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CLASS	FIRST SUBCLASS	LAST SUBCLASS	ACTION	ORDER NUMBER
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250			DEFN CHANGE	1465
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250	484.1		ABOLISH	1454
250	484.2	484.5	ESTABLISH	1454
250	580	591	ESTABLISH	1454
250	909		ESTABLISH	1454
252			DEFN CHANGE	1451
252			DEFN CHANGE	1465
252			DEFN CHANGE	1467
256			DEFN CHANGE	1457
257			DEFN CHANGE	1458
257			DEFN CHANGE	1467
260			DEFN CHANGE	1451
261			DEFN CHANGE	1451
264			DEFN CHANGE	1458
266			DEFN CHANGE	1451
267			DEFN CHANGE	1452
273			DEFN CHANGE	1460
273			DEFN CHANGE	1465
273	002	024	ABOLISH	1464
273	037	054	ABOLISH	1464
273	059		ABOLISH	1464
273	063	064	ABOLISH	1464
273	067		TITLE CHANGE	1464
273	068	071	ABOLISH	1464
273	082		ABOLISH	1464
280			DEFN CHANGE	1452
280			DEFN CHANGE	1457
280			DEFN CHANGE	1460
294			DEFN CHANGE	1457
294			DEFN CHANGE	1460
296			DEFN CHANGE	1452
296	146		ABOLISH	1462
296	146.1		ESTABLISH	1462
296	146.11	146.16	ESTABLISH	1462
296	146.2	146.9	ESTABLISH	1462
297			DEFN CHANGE	1450
297			DEFN CHANGE	1457
297			ABOLISH	1452
297	016		ESTABLISH	1452
297	016.1	016.2	ABOLISH	1452
297	180		ESTABLISH	1452
297	180.1		ESTABLISH	1452
297	180.11	180.16	ABOLISH	1452
297	184		ESTABLISH	1452
297	184.1		ESTABLISH	1452
297	184.11	184.17	ABOLISH	1452
297	195		ESTABLISH	1452
297	195.1		ESTABLISH	1452
297	195.11	195.13	ESTABLISH	1452
297	215.1		ABOLISH	1452
297	216		ESTABLISH	1452
297	216.1		ESTABLISH	1452
297	216.11	216.19	ESTABLISH	1452
297	216.2		ABOLISH	1452
297	219		ESTABLISH	1452
297	219.1		ESTABLISH	1452
297	219.11	219.12	ESTABLISH	1452
297	228.1		ESTABLISH	1452
297	228.11	228.13	ABOLISH	1452
297	230		ESTABLISH	1452
297	230.1		ESTABLISH	1452
297	230.11	230.14	ABOLISH	1452
297	231		ABOLISH	1452
297	250		ESTABLISH	1452
297	250.1		POSITION CHANGE	1452
297	251	256	ESTABLISH	1452
297	251.11	251.16	ESTABLISH	1452
297	256.1		ESTABLISH	1452
297	256.11	256.17	ABOLISH	1452
297	344	349	ESTABLISH	1452
297	344.1		ESTABLISH	1452
297	344.11	344.19	ESTABLISH	1452
297	344.2			

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CLASS	FIRST SUBCLASS	LAST SUBCLASS	ACTION	ORDER NUMBER
297	344.21	344.26	ESTABLISH	1452
297	354	355	DEFN CHANGE	1452
297	354.1		ESTABLISH	1452
297	354.11	354.13	ESTABLISH	1452
297	361		ABOLISH	1452
297	361.1		ESTABLISH	1452
297	362.11	362.14	ESTABLISH	1452
297	378	379	ABOLISH	1452
297	378.1		ESTABLISH	1452
297	378.11	378.14	ESTABLISH	1452
297	411	444	ABOLISH	1452
297	411.1	411.2	ESTABLISH	1452
297	411.21	411.29	ESTABLISH	1452
297	411.3		ESTABLISH	1452
297	411.31	411.39	ESTABLISH	1452
297	411.4		ESTABLISH	1452
297	411.41	411.46	ESTABLISH	1452
297	423.1		ESTABLISH	1452
297	423.11	423.19	ESTABLISH	1452
297	423.2		ESTABLISH	1452
297	423.21	423.29	ESTABLISH	1452
297	423.3		ESTABLISH	1452
297	423.31	423.39	ESTABLISH	1452
297	423.4		ESTABLISH	1452
297	423.41	423.46	ESTABLISH	1452
297	440.1		ESTABLISH	1452
297	440.11	440.19	ESTABLISH	1452
297	440.2		ESTABLISH	1452
297	440.21	440.24	ESTABLISH	1452
297	452	460	ABOLISH	1452
297	452.1		ESTABLISH	1452
297	452.11	452.19	ESTABLISH	1452
297	452.2		ESTABLISH	1452
297	452.21	452.29	ESTABLISH	1452
297	452.3		ESTABLISH	1452
297	452.31	452.39	ESTABLISH	1452
297	452.4		ESTABLISH	1452
297	452.41	452.49	ESTABLISH	1452
297	452.5		ESTABLISH	1452
297	452.51	452.59	ESTABLISH	1452
297	452.6		ESTABLISH	1452
297	452.61	452.65	ESTABLISH	1452
297	464	488	POSITION CHANGE	1452
297	DIG09		ABOLISH	1451
303			DEFN CHANGE	1450
307			DEFN CHANGE	1458
307			DEFN CHANGE	1451
310			DEFN CHANGE	1458
310			DEFN CHANGE	1459
310			DEFN CHANGE	1450
312			DEFN CHANGE	1451
312			DEFN CHANGE	1460
312			DEFN CHANGE	1450
313			DEFN CHANGE	1451
313			DEFN CHANGE	1465
313			DEFN CHANGE	1451
315			DEFN CHANGE	1465
315			DEFN CHANGE	1450
320			DEFN CHANGE	1450
322			DEFN CHANGE	1451
324			DEFN CHANGE	1458
324			DEFN CHANGE	1464
324			DEFN CHANGE	1450
328			DEFN CHANGE	1458
330			DEFN CHANGE	1450
331			DEFN CHANGE	1458
331			DEFN CHANGE	1458
333			DEFN CHANGE	1467
334			DEFN CHANGE	1458
335			DEFN CHANGE	1450
336			DEFN CHANGE	1458
336			DEFN CHANGE	1458
337			DEFN CHANGE	1467
337			DEFN CHANGE	1458
338			DEFN CHANGE	1453
340				

CLASS	FIRST SUBCLASS	LAST SUBCLASS	ACTION	ORDER NUMBER
340			DEFN CHANGE	1458
340			DEFN CHANGE	1464
340	700	814	ABOLISH	1465
341			DEFN CHANGE	1465
342			DEFN CHANGE	1465
343			DEFN CHANGE	1450
343			DEFN CHANGE	1458
345	001	215	ESTABLISH	1465
345	901	906	ESTABLISH	1465
346			DEFN CHANGE	1454
354			DEFN CHANGE	1454
355			DEFN CHANGE	1454
356			DEFN CHANGE	1451
356			DEFN CHANGE	1453
356			DEFN CHANGE	1454
358			DEFN CHANGE	1465
358	075	080	ABOLISH	1453
358	197		TITLE CHANGE	1453
358	213.11		TITLE CHANGE	1453
358	232		TITLE CHANGE	1453
358	261.4		TITLE CHANGE	1453
358	318		TITLE CHANGE	1453
358	323		TITLE CHANGE	1453
358	481		TITLE CHANGE	1453
358	500	540	ESTABLISH	1453
359			DEFN CHANGE	1450
359			DEFN CHANGE	1457
359			DEFN CHANGE	1465
361			DEFN CHANGE	1450
361			DEFN CHANGE	1451
361			DEFN CHANGE	1457
361	039		INDENT CHANGE	1458
361	049		INDENT CHANGE	1458
361	274	275	ABOLISH	1467
361	274.1	274.3	ESTABLISH	1467
361	275.1	275.4	ESTABLISH	1467
361	283		ABOLISH	1467
361	383.1	383.4	ESTABLISH	1467
361	298	299	ABOLISH	1467
361	298.1	298.5	ESTABLISH	1467
361	299.1	299.5	ESTABLISH	1467
361	301		ABOLISH	1467
361	301.1	301.5	ESTABLISH	1467
361	306		ABOLISH	1467
361	306.1	306.3	ESTABLISH	1467
361	308		ABOLISH	1467
361	308.1	308.3	ESTABLISH	1467
361	321		ABOLISH	1467
361	321.1	321.6	ESTABLISH	1467
361	331	432	ABOLISH	1458
361	600	837	ESTABLISH	1458
362			DEFN CHANGE	1450
362			DEFN CHANGE	1457
362			DEFN CHANGE	1460
363			DEFN CHANGE	1450
354			DEFN CHANGE	1450
364			DEFN CHANGE	1451
364	419		ABOLISH	1456
364	419.01	419.09	ESTABLISH	1456
364	419.1		ESTABLISH	1456
364	419.11	419.19	ESTABLISH	1456
364	419.2		ESTABLISH	1456
364	708		ABOLISH	1458
364	708.1		ESTABLISH	1458
365			DEFN CHANGE	1458
365			DEFN CHANGE	1465
365			DEFN CHANGE	1467
368			DEFN CHANGE	1465
369			DEFN CHANGE	1458
370			DEFN CHANGE	1465
371			DEFN CHANGE	1465
374			DEFN CHANGE	1468
377			DEFN CHANGE	1464
377			DEFN CHANGE	1465
378			DEFN CHANGE	1450
378			DEFN CHANGE	1465

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CLASS	FIRST SUBCLASS	LAST SUBCLASS	ACTION	ORDER NUMBER
379			DEFN CHANGE	1453
379			DEFN CHANGE	1458
381			DEFN CHANGE	1450
381			DEFN CHANGE	1455
381			DEFN CHANGE	1458
381			DEFN CHANGE	1467
381			DEFN CHANGE	1465
382			DEFN CHANGE	1450
383			DEFN CHANGE	1464
383			DEFN CHANGE	1450
385			DEFN CHANGE	1458
385			DEFN CHANGE	1465
385			DEFN CHANGE	1450
392			DEFN CHANGE	1457
392			DEFN CHANGE	1453
395			DEFN CHANGE	1458
395			DEFN CHANGE	1465
395			ESTABLISH	1455
395	002.1		ESTABLISH	1455
395	002.11	002.19	ESTABLISH	1455
395	002.2		ESTABLISH	1455
395	002.21	002.29	ESTABLISH	1455
395	002.3		ESTABLISH	1455
395	002.31	002.39	ESTABLISH	1455
395	002.4		ESTABLISH	1455
395	002.41	002.49	ESTABLISH	1455
395	002.5		ESTABLISH	1455
395	002.51	002.59	ESTABLISH	1455
395	002.6		ESTABLISH	1455
395	002.61	002.69	ESTABLISH	1455
395	002.7		ESTABLISH	1455
395	002.71	002.79	ESTABLISH	1455
395	002.8		ESTABLISH	1455
395	002.81	002.87	ESTABLISH	1455
395	099		TITLE CHANGE	1455
404			DEFN CHANGE	1464
405			DEFN CHANGE	1460
406			DEFN CHANGE	1451
406			DEFN CHANGE	1457
414	389		TITLE CHANGE	1462
414	509		TITLE CHANGE	1462
414	921		INDENT CHANGE	1462
414	935	941	ESTABLISH	1462
414	DIG01	DIG07	ABOLISH	1462
416			DEFN CHANGE	1452
417			DEFN CHANGE	1451
417			DEFN CHANGE	1452
418			DEFN CHANGE	1451
422			DEFN CHANGE	1451
423			DEFN CHANGE	1451
423	118		ABOLISH	1469
423	118.1		ESTABLISH	1469
423	206		ABOLISH	1469
423	206.1	206.2	ESTABLISH	1469
423	239		ABOLISH	1469
423	239.1	239.2	ESTABLISH	1469
423	321		ABOLISH	1469
423	321.1	321.2	ESTABLISH	1469
423	390		ABOLISH	1469
423	390.1		ESTABLISH	1469
423	394.2		ESTABLISH	1469
423	415		ABOLISH	1469
423	415.1	415.2	ESTABLISH	1469
423	418.2		ESTABLISH	1469
423	419		ABOLISH	1469
423	419.1		ESTABLISH	1469
423	420.2		ESTABLISH	1469
423	512		ABOLISH	1469
423	512.1		ESTABLISH	1469
423	519.2		ESTABLISH	1469
423	520		INDENT CHANGE	1469
423	541		ABOLISH	1469
423	541.1		ESTABLISH	1469
423	541.4		ESTABLISH	1469
423	567		ABOLISH	1469
423	567.1		ESTABLISH	1469
423	574		ABOLISH	1469

CLASS	FIRST SUBCLASS	LAST SUBCLASS	ACTION	ORDER NUMBER
423	574.1	574.2	ESTABLISH	1469
423	578		ABOLISH	1469
423	578.1	578.2	ESTABLISH	1469
423	578.4		ESTABLISH	1469
423	580		ABOLISH	1469
423	580.1	580.2	ESTABLISH	1469
424			DEFN CHANGE	1451
424			DEFN CHANGE	1461
425			DEFN CHANGE	1459
426			DEFN CHANGE	1451
426			DEFN CHANGE	1457
426			DEFN CHANGE	1461
426			DEFN CHANGE	1464
426			DEFN CHANGE	1469
428			DEFN CHANGE	1457
428			DEFN CHANGE	1458
428			DEFN CHANGE	1459
428			DEFN CHANGE	1460
428			DEFN CHANGE	1464
429			DEFN CHANGE	1450
430			DEFN CHANGE	1453
432			DEFN CHANGE	1450
432			DEFN CHANGE	1451
433			DEFN CHANGE	1460
434			DEFN CHANGE	1456
434			DEFN CHANGE	1457
434			DEFN CHANGE	1464
435			DEFN CHANGE	1451
435	091		ABOLISH	1466
435	091.1	091.2	ESTABLISH	1466
435	091.21		ESTABLISH	1466
435	091.3		ESTABLISH	1466
435	091.31	091.33	ESTABLISH	1466
435	091.4		ESTABLISH	1466
435	091.41	091.42	ESTABLISH	1466
435	091.5		ESTABLISH	1466
435	091.51	091.53	ESTABLISH	1466
435	254	258	ABOLISH	1461
435	254.1		ESTABLISH	1461
435	254.11		ESTABLISH	1461
435	254.2		ESTABLISH	1461
435	254.21	254.23	ESTABLISH	1461
435	254.3	254.9	ESTABLISH	1461
435	255.1	255.2	ESTABLISH	1461
435	255.21		ESTABLISH	1461
435	255.3	255.7	ESTABLISH	1461
435	256.1	256.8	ESTABLISH	1461
435	257.1	257.6	ESTABLISH	1461
435	258.1	258.4	ESTABLISH	1461
436			DEFN CHANGE	1451
436			DEFN CHANGE	1466
437			DEFN CHANGE	1459
439			DEFN CHANGE	1450
439			DEFN CHANGE	1458
441			DEFN CHANGE	1452
441			DEFN CHANGE	1460
445			DEFN CHANGE	1451
445			DEFN CHANGE	1458
445			DEFN CHANGE	1459
446			DEFN CHANGE	1464
450			DEFN CHANGE	1460
452			DEFN CHANGE	1450
452			DEFN CHANGE	1457
453			DEFN CHANGE	1464
454			DEFN CHANGE	1451
454			DEFN CHANGE	1452
455			DEFN CHANGE	1458
455			DEFN CHANGE	1465
455			DEFN CHANGE	1467
472			DEFN CHANGE	1457
472			DEFN CHANGE	1464
473	001	130	ESTABLISH	1464
482			DEFN CHANGE	1450
482			DEFN CHANGE	1457
482			DEFN CHANGE	1464
494			DEFN CHANGE	1451

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CLASS	FIRST SUBCLASS	LAST SUBCLASS	ACTION	ORDER NUMBER
501			DEFN CHANGE	1451
501			DEFN CHANGE	1467
502			DEFN CHANGE	1451
504			DEFN CHANGE	1461
528			DEFN CHANGE	1451
530			DEFN CHANGE	1451
530			DEFN CHANGE	1461
536			DEFN CHANGE	1466
585			DEFN CHANGE	1451
600			DEFN CHANGE	1450
604			DEFN CHANGE	1457
606			DEFN CHANGE	1450
606			DEFN CHANGE	1457
607	001	156	ESTABLISH	1450
607	900	902	ESTABLISH	1450
623			DEFN CHANGE	1457
800			DEFN CHANGE	1457
902			DEFN CHANGE	1465
935			DEFN CHANGE	1461
935			DEFN CHANGE	1466

Certificates of Correction for Week of Oct. 5, 1993

PP. 7,522	5,000,219	5,066,735	5,095,173	4,106,616	5,118,259	5,127,531	5,133,519
pp. 8,011	5,001,088	5,067,751	5,095,326	5,107,248	5,118,469	5,127,743	5,134,019
Re. 34,053	5,003,416	5,067,822	5,095,402	5,107,274	5,118,549	5,127,898	5,134,179
Re. 34,103	5,003,808	5,068,855	5,095,692	5,107,355	5,118,865	5,127,992	5,134,330
Re. 34,113	5,005,176	5,070,248	5,096,051	5,107,488	5,118,881	5,128,130	5,134,370
Des. 324,849	5,005,854	5,070,478	5,096,275	5,108,550	5,119,148	5,128,204	5,134,431
Des. 325,052	5,006,443	5,070,548	5,096,296	5,109,358	5,119,220	5,128,214	5,134,474
Des. 329,092	5,008,412	5,071,683	5,096,514	5,109,841	5,119,535	5,128,434	5,134,494
4,389,572	5,010,096	5,072,594	5,096,599	5,110,104	5,119,780	5,128,727	5,134,571
4,510,135	5,010,133	5,074,107	5,096,671	5,110,211	5,120,023	5,128,874	5,134,960
4,582,820	5,010,251	5,074,411	5,096,694	5,110,219	5,120,039	5,128,880	5,135,177
4,687,882	5,011,267	5,075,210	5,096,838	5,110,252	5,120,307	5,128,966	5,135,198
4,775,084	5,012,186	5,075,697	5,096,986	5,110,361	5,120,459	5,129,079	5,135,324
4,803,531	5,013,396	5,077,031	5,097,150	5,111,419	5,120,603	5,129,108	5,135,338
4,832,897	5,014,206	5,077,401	5,097,260	5,111,579	5,120,840	5,129,145	5,135,380
4,839,322	5,017,765	5,079,043	5,097,454	5,111,796	5,120,988	5,129,459	5,135,522
4,862,538	5,019,752	5,079,240	5,097,662	5,111,913	5,121,333	5,129,644	5,135,571
4,873,937	5,021,310	5,080,832	5,097,794	5,112,062	5,121,456	5,129,803	5,135,581
4,874,628	5,023,891	5,081,538	5,097,987	5,112,381	5,121,504	5,129,883	5,135,768
4,885,517	5,029,801	5,081,960	5,098,073	5,113,116	5,121,877	5,129,999	5,135,970
4,894,734	5,029,963	5,082,548	5,098,819	5,113,156	5,122,106	5,130,327	5,135,993
4,895,814	5,034,461	5,082,912	5,098,889	5,113,422	5,122,195	5,130,497	5,136,049
4,897,501	5,034,621	5,084,102	5,099,076	5,113,851	5,122,313	5,130,514	5,136,159
4,911,028	5,036,468	5,084,376	5,100,074	5,114,180	5,122,647	5,130,539	5,136,318
4,913,831	5,036,472	5,086,153	5,100,235	5,114,306	5,122,690	5,130,651	5,136,379
4,921,614	5,037,484	5,086,620	5,100,346	5,114,428	5,122,990	5,130,807	5,136,396
4,934,580	5,041,385	5,088,640	5,100,492	5,114,586	5,123,063	5,130,837	5,136,424
4,934,908	5,041,423	5,088,868	5,100,766	5,114,717	5,123,099	5,130,882	5,136,553
4,936,456	5,042,129	5,089,204	5,100,866	5,114,902	5,123,847	5,130,946	5,136,636
4,937,832	5,042,388	5,089,229	5,101,253	5,115,348	5,124,100	5,131,028	5,136,860
4,943,513	5,044,416	5,089,256	5,101,373	5,115,406	5,124,253	5,131,077	5,136,899
4,944,658	5,045,565	5,089,597	5,101,404	5,115,707	5,124,551	5,131,082	5,137,016
4,953,681	5,046,989	5,090,620	5,101,415	5,115,708	5,124,722	5,131,090	5,137,207
4,956,437	5,047,221	5,091,054	5,101,727	5,115,932	5,124,798	5,131,102	5,137,325
4,958,550	5,047,710	5,091,080	5,101,858	5,115,996	5,124,816	5,131,108	5,137,386
4,959,810	5,049,046	5,091,305	5,102,761	5,116,027	5,124,948	5,131,478	5,137,401
4,961,707	5,051,212	5,091,552	5,103,350	5,116,134	5,125,136	5,131,694	5,137,435
4,970,715	5,055,068	5,092,039	5,103,564	5,116,201	5,125,154	5,131,767	5,137,442
4,971,118	5,055,608	5,092,753	5,103,869	5,116,501	5,125,486	5,131,819	5,137,605
4,972,854	5,056,706	5,092,813	5,104,825	5,116,515	5,126,034	5,132,085	5,137,661
4,973,136	5,057,526	5,092,814	5,104,858	5,116,827	5,126,035	5,132,120	5,137,751
4,975,605	5,058,072	5,093,156	5,104,995	5,116,951	5,126,610	5,132,332	5,137,889
4,976,109	5,060,852	5,093,482	5,105,072	5,117,183	5,126,651	5,132,349	5,138,106
4,977,352	5,061,588	5,093,871	5,105,199	5,117,612	5,126,779	5,132,583	5,138,220
4,984,197	5,061,670	5,093,992	5,105,346	5,117,903	5,126,919	5,132,639	5,138,267
4,985,396	5,063,362	5,094,585	5,105,380	5,118,010	5,127,012	5,132,702	5,138,344
4,987,681	5,064,468	5,094,591	5,105,439	5,118,020	5,127,099	5,132,736	5,138,358
4,988,606	5,065,304	5,094,719	5,105,447	5,118,057	5,127,199	5,132,808	5,138,460
4,992,050	5,065,392	5,094,833	5,105,817	5,118,088	5,127,245	5,132,850	5,138,492
4,992,741	5,065,395	5,094,943	4,106,322	5,118,231	5,127,283	5,132,871	5,138,551
4,994,897	5,066,004	5,095,145	4,106,332	5,118,253	5,127,324	5,132,919	5,138,695

5,138,961	5,147,125	5,156,348	5,160,823
5,139,359	5,147,166	5,156,376	5,160,855
5,139,588	5,147,326	5,156,440	5,160,907
5,139,682	5,147,474	5,156,451	5,160,993
5,139,868	5,147,730	5,156,519	5,161,050
5,140,114	5,147,924	5,156,534	5,161,055
5,140,135	5,148,431	5,156,669	5,161,447
5,140,214	5,148,575	5,156,686	5,161,628
5,140,308	5,148,718	5,156,733	5,161,734
5,140,358	5,148,844	5,156,749	5,161,803
5,140,706	5,148,849	5,156,793	5,161,853
5,140,857	5,148,885	5,156,798	5,161,915
5,140,861	5,149,192	5,156,803	5,161,926
5,140,890	5,149,433	5,156,825	5,161,955
5,141,247	5,149,436	5,156,878	5,161,984
5,141,584	5,149,551	5,156,917	5,162,016
5,141,777	5,149,662	5,156,978	5,162,069
5,141,929	5,149,866	5,157,087	5,162,084
5,142,113	5,149,871	5,157,230	5,162,115
5,142,136	5,150,266	5,157,254	5,162,123
5,142,304	5,150,397	5,157,264	5,162,125
5,142,419	5,150,452	5,157,268	5,162,209
5,142,597	5,150,990	5,157,431	5,162,390
5,142,670	5,151,006	5,157,478	5,162,643
5,142,712	5,151,287	5,157,597	5,162,729
5,142,846	5,151,386	5,157,674	5,162,859
5,142,869	5,151,429	5,157,690	5,162,941
5,142,923	5,151,594	5,157,702	5,163,207
5,143,338	5,151,659	5,157,798	5,163,401
5,143,403	5,151,779	5,157,805	5,163,517
5,143,506	5,151,780	5,157,819	5,163,618
5,143,538	5,151,900	5,157,854	5,163,663
5,143,645	5,152,071	5,157,904	5,163,679
5,143,679	5,152,382	5,157,937	5,163,999
5,143,728	5,152,612	5,157,972	5,164,053
5,143,810	5,152,836	5,158,084	5,164,197
5,143,867	5,153,327	5,158,109	5,164,226
5,143,941	5,153,339	5,158,133	5,164,523
5,144,057	5,153,475	5,158,150	5,164,545
5,144,088	5,153,489	5,158,264	5,164,646
5,144,099	5,153,532	5,158,439	5,164,735
5,144,191	5,153,675	5,158,455	5,164,872
5,144,289	5,154,008	5,158,496	5,164,943
5,144,355	5,154,072	5,158,662	5,165,147
5,144,412	5,154,212	5,158,714	5,165,232
5,144,438	5,154,255	5,158,760	5,165,383
5,144,486	5,154,588	5,158,792	5,165,477
5,144,566	5,154,637	5,158,807	5,165,557
5,144,619	5,154,646	5,158,890	5,165,676
5,144,947	5,154,668	5,159,065	5,165,942
5,144,991	5,154,791	5,159,091	5,165,995
5,145,387	5,154,947	5,159,183	5,166,114
5,145,460	5,155,062	5,159,218	5,166,245
5,145,649	5,155,095	5,159,277	5,166,326
5,145,737	5,155,145	5,159,362	5,166,628
5,145,984	5,155,156	5,159,414	5,166,818
5,146,197	5,155,269	5,159,473	5,166,909
5,146,207	5,155,340	5,159,508	5,167,833
5,146,224	5,155,372	5,159,550	5,168,086
5,146,264	5,155,373	5,159,779	5,168,421
5,146,299	5,155,462	5,160,034	5,170,065
5,146,303	5,155,499	5,160,318	5,170,436
5,146,372	5,155,579	5,160,341	5,197,951
5,146,700	5,155,654	5,160,439	5,221,570
5,146,765	5,155,891	5,160,563	5,223,816
5,146,834	5,155,917	5,160,667	5,225,779
5,146,892	5,156,032	5,160,750	5,238,052
5,146,936	5,156,177	5,160,763	
5,147,038	5,156,233	5,160,782	

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Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

August 23-27, 1993

Date Issued	Type of Proceeding (1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods of Registration Cited by Examining Atty.	Recommended for Publication
8-23	OPP	77,251	Shopsmith, Inc. v. Deley	2(d)	Opposition Sustained (on the basis of opposer's "SHOPMATE" mark)	"SAW SMITH" [redial arm saws]; "SHOPMATE" [portable saws etc.]	"SAWMATE" [portable sawing machine for lumber]		No
8-24	EX	74/092,628	Lens Lab Paris Miki, Inc.	whether appt's. mark is registrable under Sec. 2(f)	Refusal Affirmed		"LENS LAB" [retail optical store services]		No
8-27	OPP	80,428	Guidry v. Cajun Restaurant Corp.	2(d); 2(c)	Opposition Sustained (on 2(c) ground only)	"MULATE'S" [restaurant & catering services]	"MULATE'S, THE WORLD'S MOST FAMOUS CAJUN RESTAURANT" [restaurant services]		No
8-27	EX	74/121,389	Kayser-Roth Corp.	whether reg'n. of appt's. mark is barred by the Amateur Sports Act; 2(d); 2(a)	Refusal Affirmed (on 2(d) ground only)		"OLYMPIC CHAMPION" [polo shirts, sweatshirts, running pants, socks, etc.]	"OLYMPIC" [regular and warmup uniforms used in connection with track & field games, etc.]; et.al.	Yes
8-27	EX	74/076,496	Midwest Tennis & Track Co.	whether reg'n. of appt's. mark is barred by the Amateur Sports Act; 2(a) (false suggestion of a connection)	Refusal Reversed		"OLYMPIAN GOLDE" [athletic track & field surfacing system, comprising a liquid, sprayable polyurethane]		Yes
8-27	OPP	84,932	Homes Illustrated of Colorado, Inc. et. al. v. Homes & Lands Publishing Corp.	2(d); whether opposers are properly joined as opposing parties; whether opposers' marks are merely descriptive and nondistictive	Opposition Dismissed	"HOMES ILLUSTRATED" [magazines]	"HOMES ILLUSTRATED" [real estate magazines]		No

(1) EX= EX PARTE APPEAL; OPP= OPPOSITION; C= CANCELLATION; CU= CONCURRENT USE; (R)= REQ. FOR RECONSIDERATION

Date Issued	Type of Proceeding (1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods of Registration Cited by Examining Atty.	Recommended for Publication
8-27	EX	74/115,593	Hostar Int'l. Inc.	2(d)	Refusal Reversed		"PROHOST" [service carts]	"PRO HOST" [table cloths, table covers, napkins]	No
8-27	EX	74/026,280	Sims Bark Co., Inc.	whether matter asserted is registrable on the Supp. Reg.	Refusal Reversed		"EVERGREEN" [chipped tree bark, manure, organic humus]		No

(1) EX= EX PARTE APPEAL; OPP= OPPOSITION; C= CANCELLATION; CU= CONCURRENT USE; (R)= REQ. FOR RECONSIDERATION

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SPECIAL BOXES FOR MAIL

Special PTO mail department numbers should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded directly to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special departments. If any documents other than the specified type identified for each department are addressed to that department, they will be significantly delayed in reaching the appropriate were for which they are intended.

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Washington, D.C. 20231

Box 3	Mail for the Office of Personnel from NFC
Box 4	Mail for the Assistant Commissioner for External Affairs and the Office of Legislation and International Affairs.
Box 5	"No Fee" mail related to trademarks.
Box 6	Mail for the Office of Procurement
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
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Box 14	Mail directed to the APS Contracts Office.
Box 15	Mail for the Advisory Commission on Patent Law Reform.
Box 16	Deposit Account Replenishment Checks
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
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Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or material related to the Disclosure Document Program.
Box EEO	Mail for the Office of Equal Employment Programs.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62)
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Box Issue Fee	All communications following the receipt of a PTOL-85. "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box ITU	All intent to use documents, excluding the initial application and amendments to allege use.
Box M. Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee-Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box OED	Mail for the Office of Enrollment and Discipline
Box PATENT APPLICATION	New patent application and associated papers and fees.
Box TRADEMARK APPLICATION	New trademark application and associated papers and application fees.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries

The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information in various formats from the U.S. Patent and Trademark Office. Many PTDLs have on file all full-text patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PDTLs have both the patent and trademark sections of the *Official Gazette of the U. S. Patent and Trademark Office*. The full-text utility and design patents are distributed numerically on 16 mm microfilm, and plant patents on color microfiche. Patent and trademark search systems on CD-ROM (Compact Disc-Read Only) format are available at all PTDLs to increase utilization of and enhance access to the information found in patents and trademarks. It is through the CD-ROM systems that prelminary patent and trademark searches can be conducted through the numerically arranged collections.

All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
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	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage: Z. J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	Sunnyvale Patent Clearinghouse	(408) 730-7290
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	Boston Public Library	(617) 536-5400 Ext. 265
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	Detroit Public Library	(313) 833-1450
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Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
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New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 932-2895
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	Buffalo and Erie County Public Library	(716) 858-7101
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	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Salem: Oregon State Library	(503) 378-4239
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	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
	Clemson University Libraries	(803) 656-3024
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library,Vanderbilt University	(615) 322-2775
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	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
		(214) 670-1468
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext.2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 367-1104
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West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

PATENT EXAMINING CORPS

BRUCE LEHMAN, Commissioner
STEPHEN G. KUNIN, Acting Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone Number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100 — EDWARD E. KUBASIEWICZ, Director	308-0661	9/26/92
ORGANIC CHEMISTRY, GROUP 1200 — JOHN F. TERAPANE, JR., Director	308-1235	10/22/92
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300 —RICHARD V. FISHER, Director	308-0651	8/21/92
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 1500 — J. O. THOMAS, Director	308-2351	8/21/92
BIOTECHNOLOGY, GROUP 1800 — BARRY S. RICHMAN, Director	308-0196	5/27/92
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100 — D. G. KELLY, Director	308-1782	3/03/92
SPECIAL LAWS ADMINISTRATION, GROUP 2200 — ROBERT E. GARRETT, Director	308-0511	2/15/92
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300 — GERALD GOLDBERG, Director	305-9600	5/22/91
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400 — CARLTON CROYLE, Director	308-0771	10/30/91
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500 — JOSEPH J. ROLLA, Director	308-0956	6/24/92
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600 — BOBBY R. GRAY, Director	305-4700	2/08/92
DESIGN, GROUP 2900 — ROBERT E. GARRETT, Director	308-0511	5/05/91
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100 — F. R. SCHMIDT, Director	308-1113	8/01/92
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200 — N. GODICI, Director	308-1148	9/08/92
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300 — J. J. LOVE, Director	308-0858	9/29/92
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400 — JOHN KITTLE, Director	308-0861	8/11/92
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500 — A.L. SMITH, Director	308-1021	8/28/92

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during Sept. 1993 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151

Patents ..... Numbers 3,978,525 to 3,983,579 inclusive
Plant Patents ..... 3,949 to 3,952

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TRADEMARK OPERATION

Bruce Lehman, Commissioner
Robert M. Anderson, Acting Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of September 1, 1993

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308-9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/19/93	8/18/93
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308-9104 Scientific Equipment. Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/17/93	6/28/93
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308-9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/19/93	6/03/93
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308-9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/14/93	7/19/93
Law Office 7—David Shallant, Managing Attorney, (703) 308-9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/10/93	6/21/93
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308-9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/27/93	6/21/93
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308-9109 Lubricants, Industrial Equipment, Materials & Musical Instruments-Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	4/13/93	7/09/93
Law Office 10—Jean Logan, Managing Attorney, (703) 308-9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Covering-Int. Classes 22, 23, 24, 25, 26, 27 Services-Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/24/93	7/16/93
Law Office-11—Thomas Howell, Managing Attorney, (703) 308-9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	4/23/93	5/14/93
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308-9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/24/93	8/17/93
Law Office 13—Craig Morris, Managing Attorney, (703) 308-9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/12/93	7/29/93
Law Office 14—Ron Williams, Managing Attorney, (703) 308-9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/14/93	7/27/93
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308-9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/24/93	5/17/93
** Collective Marks—Class 200		
** Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308-9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308-9500		
Affidavits Under Sections 8 & 15 (All Classes)	5/13/92	—0—
Renewals (All Classes)	12/29/92	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

1. ** Assigned to each law office
2. Applicants with inquiries concerning the status of their applications and a touch tone telephone should call (703) 305-8747 from 6:30 A.M. to Midnight Est, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure.*
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

STATUTORY INVENTION REGISTRATIONS

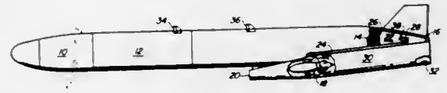
PUBLISHED OCTOBER 5, 1993

A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

H1234
SOLID PROPELLANT AIR-TURBOROCKET

Gary R. Burgner, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 6, 1985, Ser. No. 736,459
Int. Cl.[5] F02K *5/00*
U.S. Cl. 60—246 **1 Claim**

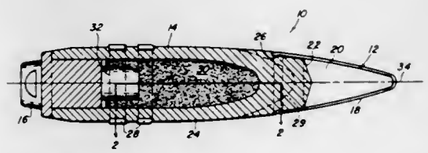


1. A solid propellant propulsion engine for propelling an aircraft/missile through the atmosphere, comprising:
a tubular housing having an air inlet and an exhaust nozzle outlet;
pressure vessel means, external to said housing, for containing and for partial combustion of a solid propellant loaded in said pressure vessel means to create a fluid fuel supply in the form of a hot, combustible mixture of expanding gases;
a turbine inlet manifold circumferentially and internally mounted between said inlet and said outlet of said housing;
conducting means coupling said pressure vessel means to said turbine inlet manifold for passing said expanding gases in said pressure vessel means to said turbine inlet manifold;
compressor means, axially mounted in said housing between said inlet and said outlet, said compressor means including a central shaft having a plurality of compressor blades extending radially outward in a single plane therefrom, for compressing air entering said housing inlet;
turbine means for driving said compressor means, said turbine means including a shroud ring having an inner and an outer surface, wherein said inner surface is attached to distal ends of said compressor blades, said turbine means further including turbine blades attached to and extending radially outward from said outer surface of said shroud ring into said turbine inlet manifold to be driven by said expanding gases;
a turbine exhaust plennum for collecting said expanding gases after said gases have passed from said pressure vessel means, through said conducting means, through said turbine inlet manifold, and through said turbine means, said turbine exhaust plennum terminating in a plurality of injector ports through which said collected gases are directed;
a plurality of compressor stator vanes, axially fixed between said compressor means shaft and said turbine exhaust plennum, for slowing down and redirecting said compressed air;
diffuser means, mounted in said housing between said turbine means and said exhaust nozzle outlet, for forcibly mixing and diffusing said compressed air with said expanding gases; and
combustor means, mounted in said housing between said diffuser means and said exhaust nozzle outlet, for containing and further combusting said mixture of compressed air and expanding gases.

H1235
ARMOR-PIERCING PROJECTILE

Michael C. Canaday, King George, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 18, 1986, Ser. No. 887,411
Int. Cl.[5] F42B *12/44, 12/04, 12/24*
U.S. Cl. 102—334 **10 Claims**

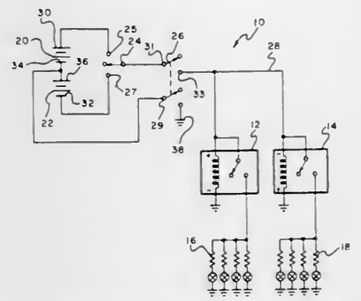


1. An armor-piercing projectile, said projectile comprising:
ballistic nose means of dome-like shape,
explosive and fragmentable body means of thimble-like configuration connected to the trailing and enlarged end of the nose means,
high-energy explosive means disposed in the interior of the body means, and
base-plug fuse means connected to the trailing end of the body means for closing off the open end of the interior and for timely detonating the high-energy explosive means upon the projectile impacting a target,
the body means being made up of a relatively hard and dense material having a predetermined density of at least eleven grams per cubic centimeter so as to enhance both the ballistic coefficient and penetration characteristics of the projectile during its use.

H1236
POLARITY SENSITIVE GRENADE FIRING SYSTEM

Paul G. Schabdach, Churchville; Irving F. Barditch, Baltimore, and Scott H. Elwood, Edgewood, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 28, 1993, Ser. No. 53,573
Int. Cl.[5] F23Q *7/02;* **F41C** *11/02*
U.S. Cl. 102—217 **4 Claims**



1. A polarity sensitive grenade firing system for firing independent grenade salvos, comprising:
(a) first and second grenade salvos;
(b) a positively polarized relay connected to said first salvo

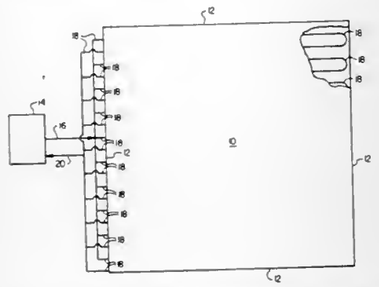
VOL 1155 ISS 1 OCT 5 1993 UMI

and being wired thereto so that said first salvo can be fired only when said positive relay is energized;
(c) a negatively polarized relay connected to said second salvo and being wired thereto so that said second salvo can be fired only when said negative relay is energized;
(d) a power supply capable of providing said system with a positive voltage source or a negative voltage source;
(e) switch means for selecting between said positive and negative voltage sources, and
(f) a single control wire connected between said switch means and said relays for carrying power from said power supply to said salvos.

H1237
METHOD FOR STABILIZING AN AREA OF THE EARTH'S SURFACE

Frank E. Lowther, 2928 Clear Springs, Plano, Tex. 75075, and Douglas J. Ruckel, 11611 Snowline Cir., Anchorage, Ak. 99516

Filed Nov. 2, 1992, Ser. No. 970,217
Int. Cl.[5] F25D *23/12*; F28D *1/00*
U.S. Cl. 165—45 9 Claims

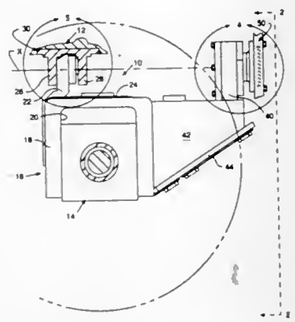


1. A method for producing a stabilized area on the surface of the earth by consolidating and strengthening said stabilized area by:
(a) positioning a plurality of heat transfer tubes beneath the surface of said stabilized area; and
(b) flowing a coolant through said tubes to maintain said stabilized area in a frozen condition.

H1238
SUSPENSION FOR AN OSCILLATING AXLE

Michael R. Duncan, Yorkville, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Mar. 8, 1993, Ser. No. 28,706
Int. Cl.[5] B60G *1/00*
U.S. Cl. 280—688 1 Claim

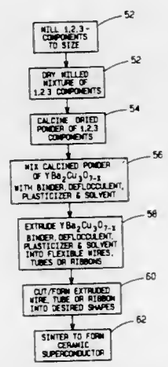


1. In a vehicle having a frame and an axle mounted to the frame for transverse oscillation with respect thereto, an axle suspension comprising:
an axle frame assembly having a first mounting flange extending upwardly therefrom in generally vertical alignment with the axle and a second mounting flange extending forwardly and upwardly with respect to the axle;
a first means for mounting the axle frame assembly to the vehicle frame, said first mounting means being engaged with the first mounting flange and being sufficient for accommodating the majority of the radially directed loads that are transferred between the axle and the vehicle frame; and
a second means for mounting the axle frame assembly to the vehicle frame, said second mounting means being engaged with the second mounting flange and being sufficient for accommodating the majority of the thrust loads that are transferred between the axle and the vehicle frame.

H1239
EXTRUSION OF METAL OXIDE SUPERCONDUCTING WIRE, TUBE OR RIBBON

Joseph T. Dusek, Lombard, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 23, 1990, Ser. No. 571,400
Int. Cl.[5] C04B *35/64*
U.S. Cl. 264—63 4 Claims

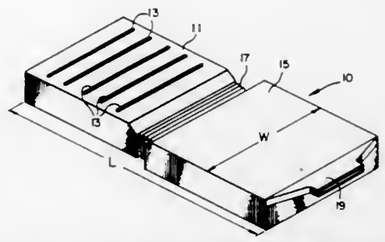


1. A method for producing an elongated wire, tube or ribbon of a superconducting ceramic comprising the steps of:
producing a cohesive material composed of particles of $YBa_2Cu_3O_{7-x}$, said particles having a generally uniform size with particles in the range of submicron to on the order of 40 microns, 1–8 wt. % of a deflocculent, 3–10 wt. % of an anhydrous plasticizer, 10–30 wt. % of a solvent, and 2–15 wt. % of a binder, said plasticizer and binder being soluble in the solvent;
extruding said cohesive material through a wire-, tube- or ribbon-forming die to produce an elongated wire, tube or ribbon having a green stage density in the range of 45–58% theoretical density;
extruding an outer sheath of a ceramic insulating material about the elongated wire, tube or ribbon as the wire, tube or ribbon is extruded;
heating the wire, tube or ribbon in the green stage to volatilize the solvent and remove the plasticizer and binder at temperatures below approximately 240°–350° C.;
sintering the $YBa_2Cu_3O_{7-x}$ at temperatures in the order of 900°–960° C., wherein said sintering is carried out in the presence of oxygen; and
annealing the sintered $YBa_2Cu_3O_{7-x}$ in the presence of oxygen at a temperature in the range of 400°–500° C.

H1240
LOW PROFILE CHEMICAL BIOLOGICAL AIR FILTER

Albert N. Tardiff, Jr., Gaithersburg, Md., and Corey M. Grove, Red Lion, Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 12, 1993, Ser. No. 45,158
Int. Cl.[5] B01D *24/00*, *50/00*
U.S. Cl. 55—323 9 Claims



1. A low profile chemical biological air filter device, comprising:
a frame having a first end for attachment to a mask and having an upwardly facing surface defining an inlet for said filter, said frame having a length sufficient to space first and second filter means from said inlet to said attachment first end and a width sufficient to enclose said two filter means, said frame having a thickness no greater than that necessary to contain only one of said two filter means to thereby minimize the thickness of said frame by placing said two filter means side by side;
said first and second filter means including a HEPA filter for removing particulate material from the air and a charcoal filter bed for secondary filtering of said air, said HEPA filter being supported in said frame at said inlet,
said frame having connector means for defining an air flow path from said inlet through said HEPA filter through said charcoal filter bed to said attachment first end, said frame further having a height defined by the thickness of only one of said filter means, wherein said HEPA filter and said charcoal filter bed sequentially filter air entering said inlet.

H1241
UNIVERSAL GUM BASE CONCENTRATE

Steven P. Synosky, 56 Brandywine Rise, Green Brook, N.J. 08812; Dinah Diaz, 55 Sagamore Ave., Edison, N.J. 08820, and Scott Hartman, 12 School La., Roosevelt, N.J. 08555

Filed Nov. 18, 1991, Ser. No. 793,799
Int. Cl.[5] A23G *3/30*
U.S. Cl. 426—3 35 Claims

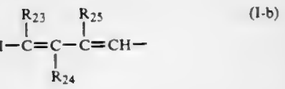
1. A universal gum base concentrate consisting essentially of:
about 15 to about 25 weight percent of a synthetic elastomer;
about 40 to about 70 weight percent of a synthetic elastomer plasticizer;
about 10 to about 25 weight percent wax;
about 1 to about 12 weight percent softener;
0 to about 3 weight percent filler; and
0 to about 0.10 weight percent antioxidant.

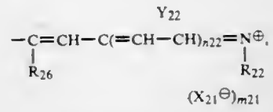
H1242
SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Tomonobu Moriya, and Kazuhiro Yoshida, both of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Feb. 26, 1991, Ser. No. 660,862
Claims priority, application Japan, Mar. 3, 1990, 2-52235
Int. Cl.[5] G03C *1/005*
U.S. Cl. 430—588 5 Claims

1. A silver halide photographic light-sensitive material comprising a support having thereon a silver halide emulsion layer, wherein said silver halide emulsion layer contains:
(i) at least one sensitizing dye of the Formula (I-b):

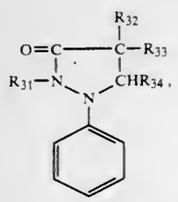

(I-b)



wherein Y_{21} and Y_{22} each independently is a group of nonmetallic atoms forming a 5- or 6-member nitrogen-containing heterocycle; R_{21} and R_{22} each independently is a substituted or unsubstituted alkyl group, an aryl group or an aralkyl group; R_{23}, R_{24}, R_{25} and R_{26} each independently is a hydrogen atom, a substituted or unsubstituted alkyl group, an alkoxy group, a phenyl group, a benzyl group or



wherein W_1 and W_2 each independently is a substituted or unsubstituted (C_1–C_{18})-alkyl group, or an aryl group and W_1 and W_2 may combine with each other to form a 5- or 6-membered ring; X_{21} is an anion; and m21, n21 and n22 each independently is 0 or 1; and
(ii) at least one compound of the Formula (II):


(II)

wherein R_{31} is a hydrogen atom or an acetyl group; and R_{32}, R_{33} and R_{34} each independently is a hydrogen atom or a substituted or unsubstituted alkyl group.

H1243
SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Satoru Shimba; Keisuke Tobita; Kenji Michine, and Katuya Yabuuchi, all of Hino, Japan, assignors to Konica Corporation, Hino, Japan

Filed Mar. 9, 1992, Ser. No. 848,381
Claims priority, application Japan, Mar. 12, 1991, 3-46756
Int. Cl.[5] G03C *1/08*
U.S. Cl. 430—508 9 Claims

1. A silver halide photographic light-sensitive material comprising;
a support having provided thereon a red-sensitive silver halide emulsion layer, a green-sensitive silver halide emulsion layer, and a blue-sensitive silver halide emulsion layer, in which of the light-sensitive silver halide emulsion layers, said blue-sensitive silver halide emulsion layer is located furthest from said support, said blue-sensitive silver halide emulsion layer having provided on a side

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thereof furthest from said support, a non-light-sensitive layer, wherein

a parallel transmission density $D\lambda_{555nm}$ of said blue-sensitive silver halide emulsion layer and said non-light-sensitive layer is equal to or less than 1.05,

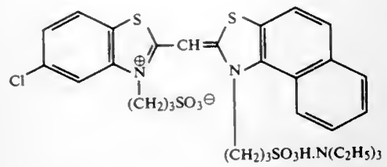
a spectral sensitivity distribution $S_B(\lambda)$ of said blue-sensitive silver halide emulsion layer satisfies the following conditions:

(a) a wavelength $\lambda_B max$, at which $S_B(\lambda)$ is maximized is within the range of 415 nm $\leqq \lambda_B max \leqq$ 470 nm, and

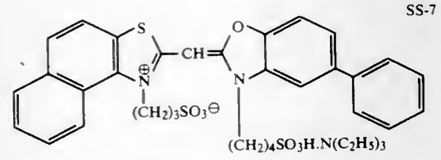
(b) $S_{B480nm} \leqq 0.35\ S_B(\lambda_B max)$, and

wherein said blue-sensitive silver halide emulsion layer contains a sensitizing dye of either Formula SS-4 or SS-7

SS-4



SS-7



H1244

DEVICE FOR ABSORBING RESONANCES IN LARGE CIRCULAR CAVITIES

Gary E. Evans, Hanover, Md., assignor to United States of America, Washington, D.C.

Filed Oct. 30, 1992, Ser. No. 968,921

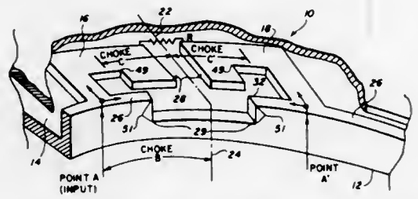
Int. Cl.[5] H01P *1/16*

U.S. Cl. 333—251 **13 Claims**

1. A device for absorbing resonances in a large circular microwave cavity comprising:

a resonance absorber having a gap between a first arm and a second arm located in the balun area of said microwave cavity, and

a load resistor connected across said gap between said first arm and said second arm of said resonance absorber thereby electrically terminating the voltage across said



gap generated by the interruption of current caused by said gap.

H1245

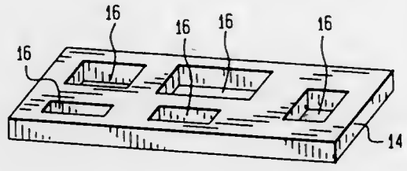
HIGH-G SUPPORT FRAME ASSEMBLY

Donald R. Griswold, Scottsdale, and Robert J. Lamp, Chandler, both of Ariz., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 5, 1992, Ser. No. 972,048

Int. Cl.[5] H05K *7/02*

U.S. Cl. 361—419 **5 Claims**



1. A support frame for a printed wiring board having a electronic components exposed to a gunfire environment exceeding accelerations of 30,000 times the force of gravity which comprises:

a skeletal frame having component pockets located therein which correspond to the locations of said electronic components disposed on said printed wiring board;

means for operatively attaching said printed wiring board to said skeletal frame;

potting means for filling said component pockets and for providing customized component support need; and

cover means for containing said potting means and providing additional support for said components.

REISSUES

OCTOBER 5, 1993

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,395

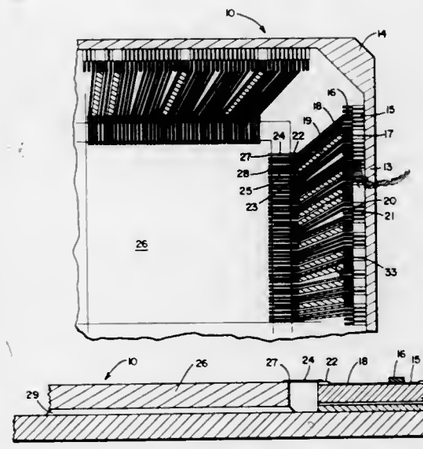
METHOD OF MAKING A CHIP CARRIER WITH TERMINATING RESISTIVE ELEMENTS

Eugene F. Neumann; Melvin C. August, both of Chippewa Falls; James N. Kruchowski, Eau Claire; Stephen Nelson, and Richard R. Steitz, both of Chippewa Falls, all of Wis., assignors to Cray Research, Inc., Eagan, Minn.

Original No. 4,949,453, dated Aug. 21, 1990, Ser. No. 366,604, Jun. 15, 1989. Application for reissue Dec. 11, 1991, Ser. No. 804,958

Int. Cl.[5] H01C *17/06*

U.S. Cl. 29—620 **6 Claims**



1. A method of fabricating an integrated circuit chip carrier, comprising the steps of:

a) providing a first substrate having a location defined for receiving the integrated circuit;

b) [metallizing a portion] *depositing a metal layer on at least two surfaces* of said first substrate such that a voltage bus *with a large surface area* is created;

c) defining at least one conductive signal path on said first substrate; and

d) depositing at least one resistive element on said first substrate such that said resistive element is connected between said conductive signal path and said voltage bus.

5. [The method of claim 1, further comprising the step of] *A method of fabricating an integrated circuit chip carrier, comprising the steps of:*

(a) providing a first substrate having a location defined for receiving the integrated circuit;

(b) metallizing a portion of said first substrate such that a voltage bus is created;

(c) defining at least one conductive signal path on said first substrate;

(d) depositing at least one resistive element on said first substrate such that said resistive element is connected between said conductive signal path and said voltage bus; and

(e) adding at least one uncommitted resistive element connected to said voltage bus on said first substrate, thereby providing a spare resistive element.

Re. 34,396

SAFETY INTERLOCK SWITCHING DEVICE FOR PROTECTING EQUIPMENT

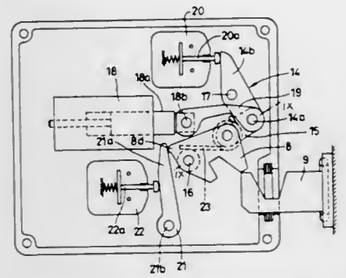
Jakob Wollenhaupt, Cologne, Fed. Rep. of Germany, assignor to Helmut Letzel, Cologne, Fed. Rep. of Germany

Original No. 4,659,884, dated Apr. 21, 1987, Ser. No. 766,817, Aug. 16, 1985. Application for reissue May 29, 1990, Ser. No. 531,916

Claims priority, application European Pat. Off., Aug. 16, 1984, 84109757

Int. Cl.[5] H01H *3/00, 9/20;* **B04B** *7/06*

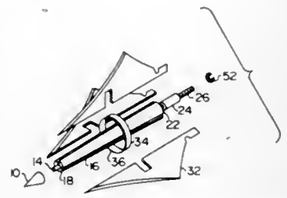
U.S. Cl. 200—50 R **19 Claims**



1. Safety [interlock switching device] *lock* for [protecting] *preventing access to hazardous* equipment, in particular [in] current conducting equipment, [wherein] *provided with* a [given protection] *protective* device [(5),] normally closed during [dangerous operation] *a hazardous operating* condition and opened during [non-dangerous] *a non-hazardous* operating condition, [the switching device] *said lock comprising: a housing*[,] *adapted to be mounted on said equipment and provided with an insertion opening;* a toggle lever [(14,15) provided] *including first and second elongate members pivotably connected to each other and cooperating* with a pivotable locking lever [(8)], *said elongate members being pivotably connected to said housing and to said locking lever, respectively, for movement* [pivotable] between [two] *first and second* dead center positions *,said locking lever being provided with first locking means and being pivotably mounted on said housing in a position accessible through said insertion opening;* an actuating element [(9) stationarily] *provided with second locking means and adapted to be* mounted on said [protection] *protective* device, *for movement therewith into and out of said insertion opening to cooperate with* said locking lever; cooperating with said actuating element,] switch means [connected to and] cooperating with *and responsive to the movement of* said toggle lever[,]*;said first and second locking means* [said actuating element and said locking lever being provided with locking means] cooperating with each other so that in [one] *said first* dead center position [of the toggle lever (14,15) the locking lever (8) and the actuating element (9)] *they* interlock [with each other] and [the] *said hazardous*[dangerous] operating condition may be switched on by said switch means and in the [other] *second* dead center position [the dangerous] *they are released and said hazardous* operating condition is switched off by said switch means [thus releasing the actuating element (9) and the protection device (5) therewith, said toggle lever and said switch means being disposed in said housing which is closed and is not accessible from the outside, said housing being provided with an insertion opening for inserting the actuating element (9) into said housing].

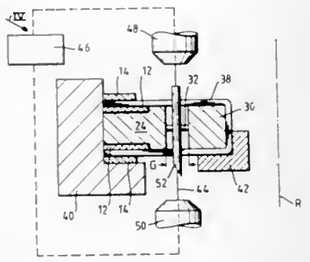
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Re. 34,397
ARROW RINGED BROADHEAD
Nicholas J. DelMonte, 270 N. Ogden St., Buffalo, N.Y. 14206, and Louis M. Fioretti, 143 Meadowlawn Rd., Cheektowaga, N.Y. 14225
Original No. 5,044,640, dated Sep. 3, 1991, Ser. No. 683,321, Apr. 10, 1991. Application for reissue Dec. 20, 1991, Ser. No. 814,413
Int. Cl.[5] F42B *6/08*
U.S. Cl. 273—422 13 Claims



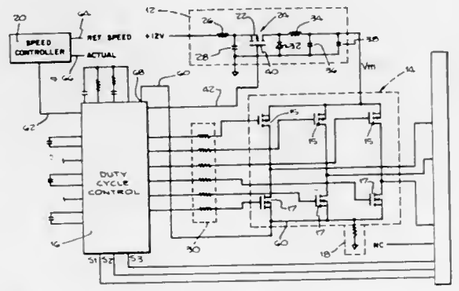
2. An arrow broadhead tip comprising in combination the following components: a shaft, a conical tip, a plurality of triangular blades, and a ring blade, said triangular blades each having a substantially right triangular configuration with a hypotenuse side, a second longest side having a cutting edge and a shortest side, said shaft having a plurality of blade grooves which traverse the length of said shaft, said hypotenuse sides of said blades removably fitted into said grooves, said hypotenuse sides having rectangular voids that extend upwardly from said shaft to any point before or below said cutting edges of said second longest side, said ring blade encircling said shaft and tightly fitted into said rectangular voids at a circumferential portion, said ring blade having at a forward edge a sharpened portion, said conical tip fitted onto said shaft at a front or forwardmost portion of said shaft.

Re. 34,398
APPARATUS FOR AND METHOD OF MANUFACTURING BRUSH SEALS
Stuart A. Bridges, Alveston, England, assignor to Rolls-Royce plc, London, England
Original No. 4,934,759, dated Jun. 19, 1990, Ser. No. 330,203, Mar. 29, 1989. Application for reissue Jun. 10, 1992, Ser. No. 897,453
Claims priority, application United Kingdom, Apr. 5, 1988, 8807919
Int. Cl.[5] B25B *1/20*
U.S. Cl. 300—11 16 Claims



7. An apparatus for manufacturing a brush seal including a pair of sideplates having a plurality of filaments of bristle material sandwiched therebetween and projecting therefrom, the apparatus comprising:
support means for supporting at least one pair of sideplates with the filaments projecting radially therefrom; and
a travelling wire electro discharge machining apparatus having a machining wire extending through the filaments for cutting the filaments; and
moving means for moving at least one of the support means and machining wire relative to the other for cutting the filaments.

Re. 34,399
WINCHESTER DISK DRIVE MOTOR CIRCUITRY
Bipin V. Gami, Northridge, and Ericson Dunstan, Port Hueneme, both of Calif., assignors to Micropolis Corporation, Los Angeles, Calif.
Original No. 4,839,754, dated Jun. 13, 1989, Ser. No. 19,543, Feb. 26, 1987. Application for reissue Jul. 24, 1992, Ser. No. 920,143
Int. Cl.[5] G11B *15/46, 19/28*
U.S. Cl. 360—73.01 20 Claims

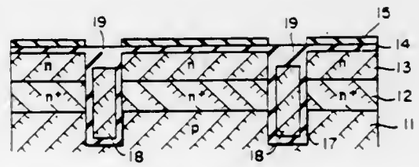


20. A Winchester-type hard disk drive digital storage unit comprising:
a hard disk drive assembly including a plurality of hard disks and associated magnetic heads;
a brushless D.C. motor having a stator and a rotor coupled to said disks for rotating said disks;
a power supply having a predetermined output voltage and a limited output current for providing power to said disk drive unit;
a switching type regulator connected to said power supply for supplying power to said brushless D.C. motor;
means for operating said switching type regulator at a frequency in excess of 80 [hertz] *kilohertz*; and
the input to said switching regulator from said power supply constituting circuit means including a series connected coil and a shunt capacitor, for supplying power from said capacitor to said switching regulator when said switching regulator is switched to its conducting state;
whereby the maximum possible power is supplied to said motor during start-up, consistent with the maximum current limitations of said power supply; and heat dissipation requirements for said unit are minimized.

Re. 34,400
METHOD FOR FABRICATING ISOLATION REGION IN SEMICONDUCTOR DEVICES
Hiroshi Goto, Yokohama, and Akira Tabata, Zama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Original No. 4,509,249, dated Apr. 9, 1985, Ser. No. 535,342, Sep. 23, 1983. Continuation of Ser. No. 78,752, Jul. 28, 1987, abandoned. Application for reissue Sep. 14, 1990, Ser. No. 582,000
Claims priority, application Japan, Sep. 29, 1982, 57-171977
Int. Cl.[5] H01L *21/302, 21/76*
U.S. Cl. 437—67 9 Claims

19. A method for producing and filling an isolation groove in a semiconductor substrate, the substrate having a major surface and successive, doped and insulating layers formed in superposed relationship on the major surface for forming semiconductor devices therein and defining an upper surface of the substrate

substantially parallel to the major surface of said substrate, the isolation groove having substantially parallel interior sidewalls, spaced apart and defining the width of the groove and extending, transversely to the upper surface, through the superposed insulating and doped layers and into the substrate and defining the depth of the groove and an interior bottom wall within the substrate, the depth of the groove being greater than the width thereof, comprising:
(a) forming a mask layer on the upper surface of the semiconductor substrate, the mask layer having a window extending therethrough and exposing a portion of the upper surface of the semiconductor substrate at which an isolation groove is to be formed;
(b) etching the successive, doped and insulating layers and the semiconductor substrate in the respective portions thereof, as exposed in succession through the mask layer during the etching, thereby to form the isolation groove;
(c) thermally oxidizing the sidewalls and the bottom wall of the groove to form a first insulating layer as a coating on each of the sidewalls and the bottom wall;



(e) etching the deposited polysilicon semiconductor material through the window in the mask for removing a portion of the deposited polysilicon semiconductor material from within the groove such that the resulting, exposed upper surface thereof is substantially at the aforesaid, defined depth location;
(f) depositing insulating material on the substrate by a sputtering method or a chemicol vapor deposition method, thereby both to fill the groove with a second insulating layer extending from said resulting, exposed upper surface of the deposited polycrystalline semiconductor material and thus from the aforesaid depth location and up to the major surface of the substrate, and also to bury the groove and the second insulating layer with further said insuloting material; and
(g) etching said further insulating material while employing the mask layer as an etching stopper thereby to remove a portion of the further insulation material of said second insulating layer sufficient to expose the mask layer, thereby forming a common, flat upper surface of the second insulating layer and the exposed upper surface of the substrate.

Re. 34,401
ANIMATED BALLOONS
Joseph E. Dudley, Shawnee, Kans., assignor to Hallmark Cards, Incorporated, Kansas City, Mo.
Original No. 4,778,431, dated Oct. 18, 1988, Ser. No. 931,366, Nov. 14, 1986. Application for reissue Oct. 17, 1990, Ser. No. 599,317
Int. Cl.[5] A63H *27/10*
U.S. Cl. 446—221 16 Claims



13. In combination:
first and second balloons comprising substantially gas impermeable envelopes, said first balloon being filled with a lighter than air gas at about atmospheric pressure;
a first reversibly collapsible spring-like member having one end attached to said first balloon and having the other end attached to said second balloon; and
at least one second reversible collapsible spring-like member attached to said second balloon,
said second reversibly collapsible spring-like member having an effective weight sufficient to exert on said first balloon an effective weight sufficient to cause said first balloon to float at an equilibrium position and said spring-like member having a resiliency sufficient to effect a reciprocating motion of said second collapsible spring-like member upon the displacement of said first balloon from its equilibrium position.

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PLANT PATENTS

GRANTED OCTOBER 5, 1993

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,402

ROSE PLANT JACLIANG

William A. Warriner, Tustin, Calif., assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Nov. 21, 1991, Ser. No. 795,959
Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of rose plant of the miniature rose class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its distinctive small, dark green glossy foliage, its moderate pleasing fragrance, its ease of propagation from softwood cuttings and its unique plum colored flowers.

8,403

Patent Not Issued For This Number

8,404

HYBRID TEA ROSE PLANT NAMED RUIZESAC

Gijsbert de Ruiter, Hazerswoude, Netherlands, assignor to De Ruiter's Nieuwe Rozen B.V., Hazerswoude, Netherlands

Filed Dec. 2, 1991, Ser. No. 802,001
Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea rose class, substantially as shown and described.

8,405

Patent Not Issued For This Number

8,406

NEW GUINEA IMPATIENS NAMED BSR-181 BRIGHT SCARLET

Scott C. Trees, Arroyo Grande, Calif., assignor to George J. Ball, Inc., West Chicago, Ill.

Filed Jul. 10, 1992, Ser. No. 911,538
Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—87.6 **1 Claim**

1. A new and distinct cultivar of New Guinea Impatiens named BSR-181 Bright Scarlet, substantially as herein shown and described, which:

(a) exhibits attractive very large bright scarlet blossoms which commonly measure approximately 7.5 cm. in diameter and approximately b 7.25 cm. in length,
(b) exhibits a strong basal branching character, and
(c) exhibits a compact upright mounded growth habit.

8,407

IMPATIENS PLANT 'CELEBRATION CHERRY STAR'

Mario A. Guillen, Cartago, Costa Rica, assignor to Ball Seed Co., West Chicago, Ill.

Filed Jan. 23, 1992, Ser. No. 824,776
Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—87.6 **1 Claim**

1. A new and distinct Impatiens plant named Celebration Cherry Star, as illustrated and described.

8,408

IMPATIENS PLANT NAMED TONGA

Ludwig Kientzler, Gensingen, Fed. Rep. of Germany, assignor to Paul Ecke Ranch, Inc., Encinitas, Calif.

Filed Apr. 23, 1992, Ser. No. 872,419
Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—87.6 **1 Claim**

1. A new and distinct cultivar of Impatiens plant named Tonga, as illustrated and described.

8,409

NEW GUINEA IMPATIENS NAMED BSR-152 DARK PINK

Scott C. Trees, Arroyo Grande, Calif., assignor to George J. Ball, Inc., West Chicago, Ill.

Filed Jul. 10, 1992, Ser. No. 911,539
Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—87.6 **1 Claim**

1. A new and distinct cultivar of New Guinea Impatiens named BSR-152 Dark Pink, substantially as herein shown and described, which:

(a) exhibits attractive very large dark pink blossoms which commonly measure approximately 6.25 cm. in diameter and approximately 5.5 cm. in length,
(b) exhibits a strong basal branching character, and
(c) exhibits a compact upright mounded growth habit.

8,410

NEW GUINEA IMPATIENS NAMED BSR-203 PURE WHITE

Mario Guillen, Cartago, Costa Rica, assignor to George J. Ball, Inc., West Chicago, Ill.

Filed Jul. 23, 1992, Ser. No. 917,274
Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—87.6 **1 Claim**

1. A new and distinct cultivar of New Guinea Impatiens named BSR-203 Pure White, substantially as herein shown and described, which:

(a) exhibits attractive pure white blossoms which commonly measure approximately 6.0 cm. in diameter and approximately 5.75 cm. in length,
(b) exhibits a strong basal branching character, and
(c) exhibits a compact mounded growth habit.

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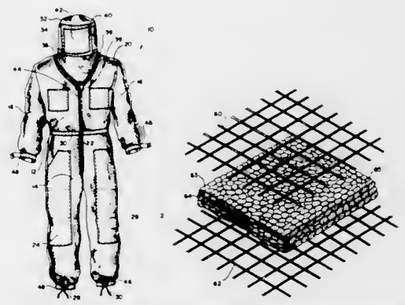
GENERAL AND MECHANICAL

5,249,306
SELF-DEFENSE PRACTICE ASSEMBLY
Mark Morris, Boston, Mass., assignor to Al Potash, Thousand Oaks, Calif.
Filed Aug. 27, 1990, Ser. No. 572,648
Int. Cl.[5] A41D *13/00*
U.S. Cl. 2—2 **8 Claims**



5. A self-defense practice assembly for protecting the groin area, comprising:
a) a curved padded shell adapted to conform to the groin area,
b) said shell having a front extension adapted to cover and protect the pubic bone of the wearer,
c) said shell having a testicle-receiving recess in a lower portion thereof; and,
d) said shell having a rear portion adapted to cover and protect the buttocks area of a wearer and to transmit shocks directed to said lower portion directly into the lower portion of the buttocks for absorption thereof, and
e) wherein said rear portion includes a protrusion adapted to underlie the buttocks so that shocks to the shell are directed into and absorbed by the buttocks.

5,249,307
VENTILATED BEEKEEPER'S SUIT
Philip G. Lemoine, 801 Little Farms Ave., Metairie, La. 70506
Continuation-in-part of Ser. No. 232,674, Aug. 16, 1988, Pat. No. 4,985,933. This application Aug. 7, 1990, Ser. No. 567,618
The portion of the term of this patent subsequent to Jan. 22, 2008, has been disclaimed.
Int. Cl.[5] A42B *3/00*; A41D *13/00*
U.S. Cl. 2—84 **7 Claims**



7. A ventilated beekeeper's suit for covering at least an upper torso of the user, the suit comprising:
an upper torso portion being formed from a substantially uniform flexible multi-layered material having a uniform thickness and comprising a first outside net layer having a pore count in the range of 0.2–1 centimeters per opening;
a second net layer having a pore count in the range of 0.2–1 centimeters per opening;
an intermediate layer of flexible porous cellular plastic material having a pore count in the range of approximately 7–30 pores per linear inch, wherein the outside layer, the inside layer and the intermediate layer define a multi-layered composite material for protecting a beekeeper from stings, while allowing air ventilation between exterior of the suit and skin of the wearer, said intermediate layer serving as a continuous protective barrier against bee stings, said suit further comprising a lower body portion and a hood portion, and
wherein said hood portion is provided with a facial mask screen having an interior surface and an exterior surface, and wherein said exterior surface is of a lighter color than the interior surface.

5,249,308
AFTER-SHOWER HAT
Ruby L. Blume, deceased, late of Phoenix, Ariz. by Edward H. Blume, Jr., heir , assignor to Edward H. Blume, Jr., Phoenix, Ariz.
Filed Nov. 16, 1992, Ser. No. 977,150
Int. Cl.[5] A42B *1/00*
U.S. Cl. 2—174 **4 Claims**



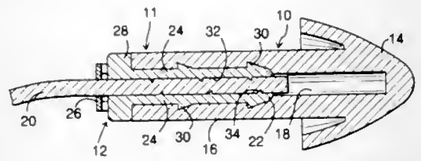
1. An improved after-shower hat to be worn on the head of a user for the purpose of drying the user's hair, comprising:
a cap of absorptive material having a closed region for confining the hair of said user, and said cap having an edge defining an opening, and being formed from a sheet of said absorptive material folded on itself and sewn at first and second seams;
first and second stiffening members secured to opposite sides of said cap along said first and second seams and extending from proximate said opening into said closed region; and
resilient means coupled to said edge proximate said opening so as to provide a snug fit on the users head, said after-shower hat extending outward from the user's head when said first and second stiffening members are positioned at the front and back respectively of the user's head.

5,249,309
EAR DEFENDER
Göran Berg, Tyringe, and Niclas Lundblad, Ängelholm, both of Sweden, assignors to Bilsom AB, Billesholm, Sweden
Filed Sep. 17, 1992, Ser. No. 946,388
Int. Cl.[5] A42B *1/06*
U.S. Cl. 2—209 **15 Claims**

1. An ear defender which comprises two ear plugs (**11**) each of which is connected to a respective end of a cord (**20**) and

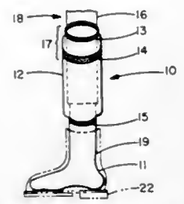
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includes a plug-part (**10**) which is provided with a recess (**18**) for accommodating a cord locking sleeve which coacts with said plug-part, characterized in that the locking sleeve (**12**) has a rear end and comprises two identical sleeve-parts (**24**) which are joined or held together at the rear end of the locking sleeve (**12**) by at least one hinge or web part (**26**) formed integrally



with the locking sleeve, wherein a length of the respective end of the cord extends into a channel (**32**) in the sleeve through an opening provided adjacent said hinge part and wherein said respective end of the cord is secured in the channel (**32**), by pressing the sleeve parts into firm engagement with said cord end within the recess (**18**).

5,249,310
INSECT DETECTOR SOCK
Mark J. Forte, 180 Gritteytown Rd., Waterbury, Conn. 06704
Filed Jun. 12, 1992, Ser. No. 897,758
Int. Cl.[5] A43B *17/00*; A41D *17/02*
U.S. Cl. 2—239 **7 Claims**



1. An insect detector article of clothing for being worn on a foot and a leg portion of a person doing insect infestation inspections, comprising:

a sock member (**11**, **21**) dimensioned for receiving the person's foot therein;

legging means (**12**, **23**) having a tubular configuration and being affixed (**15**) at a bottom portion to said sock member and having an open top portion dimensioned for receiving therein the leg portion of the person, and being formed of a clingy material for enabling insects to cling thereto, and being of a light color for facilitating the person doing the insect inspections with relative ease to visually detect insects clinging on said legging means; and

a barrier member (**14**, **24**) circumferentially affixed about a top portion (**17**) of said legging means and having adhesive material on an exposed surface portion.

5,249,311
FLUID PRESSURE DEVICE FOR OPENING CLOGGED PIPES
J. David Rau, P.O. Box 9451, Baltimore, Md. 21228
Filed Jul. 15, 1992, Ser. No. 913,317
Int. Cl.[5] E03D *9/00*
U.S. Cl. 4—255.05 **15 Claims**

1. A fluid pressure device for opening clogged pipes, comprising:

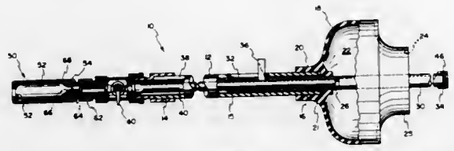
a) a handle having a top end and a plunger end disposed distant from said top end;

b) a plunger disposed at said plunger end of said handle;

c) a fluid conduit disposed in said handle;

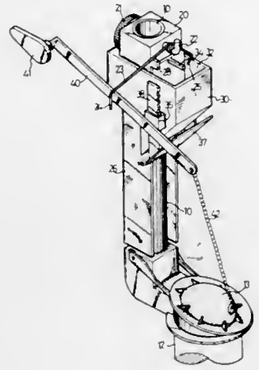
d) a slidable fluid conduit tube slidably and fluidly connected to said fluid conduit and movably relative to said plunger;

e) a slide handle attached to said slidable fluid conduit tube or moving said slidable fluid conduit tube; and



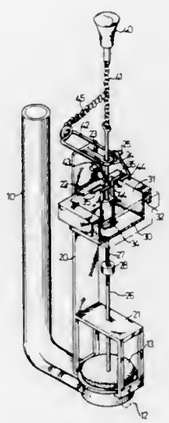
f) a fluid pressure chamber fluidly connected to said fluid conduit for supplying a pressurized fluid to said fluid conduit and to said slidable fluid conduit tube.

5,249,312
CONTROL DEVICE FOR A WATER TANK
Fong-Chyi Chang, 72, Ming Lie Street, Taichung, Taiwan
Filed Feb. 3, 1992, Ser. No. 829,705
Int. Cl.[5] E03D *1/14*
U.S. Cl. 4—325 **4 Claims**



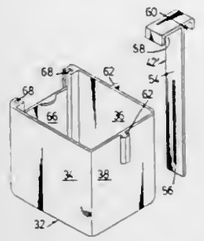
1. A control device for a water tank comprising a tube vertically disposed in said water tank and having an upper end, an outlet pipe including an upper end communicated with said water tank, a valve disposed on said upper end of said outlet pipe for opening and closing said outlet pipe, said device comprising, a block fixed on said upper end of said tube, a stop provided on said block, a hanger laterally extended from said block, a pawl having a middle portion rotatably supported on said hanger and including a first leg having a hook formed thereon and a second leg; a float slidably engaged on said tube and movable upward to a point where it contacts said stop and downward along said tube for engaging with said valve, a pusher disposed below said float and moving in concert with said float in order to close said valve when said float moves downward, said float including two side surfaces each having a casing formed thereon, said pusher including two third legs extended upward for slidable engagement with said casings so as to couple said pusher to said float, each of said casings including an interior having a protrusion formed therein, each of said third legs of said pusher including a plurality of depression formed therein for engagement with said protrusion of said casing so that said protrusion can be engaged with a selected one of said depressions such that said pusher can be adjusted upward and downward relative to said float, a catch laterally extended from said float, a lever having a middle portion pivotally supported in an upper portion of said water tank and including a knob formed in a first end thereof and including a second end which is movable upward and downward when said knob is depressed and released, said second leg of said pawl being disposed above said lever and arranged such that said pawl can be caused to rotate about said hanger by said lever, said hook of said pawl being caused to move to a position located below said catch of said float when said second leg of said pawl is elevated, said knob being reachable from outside of said water tank, said valve being coupled to said second end of said lever so that said valve can be pulled open when said second end of said lever moves upward and so that water contained within said water tank can be discharged via said outlet pipe, whereby, with enough water in said tank to force said float into contact with said stop, when said knob is depressed said valve will unseat and become buoyant in said water and said water will begin to discharge out through said outlet pipe, when said knob is held upwardly said catch of said float is caught by said hook of said pawl when said float begins to move downward with the water level and said valve will reseat after almost all of the water in said tank has drained out, when said knob is released after being depressed to unseat said valve, said catch of said float will not be caught by said hook of said pawl and said float and said pusher will move downwardly along said tube in order to force said valve downwardly to close said outlet pipe before all of the water contained within said water tank is fully discharged.

5,249,313
CONTROL DEVICE FOR A PULL TYPE FLUSH TANK
Fong-Chyi Chang, 72, Ming Lie Street, Taichung, Taiwan
Filed Feb. 3, 1992, Ser. No. 834,851
Int. Cl.[5] E03D *1/14*
U.S. Cl. 4—325 **10 Claims**



1. A control device for a water tank comprising an outlet pipe disposed in said water tank and including an upper end communicated with said water tank, a valve disposed on said upper end of said outlet pipe for opening and closing said outlet pipe, said device comprising, a knob disposed on an upper portion of said water tank and reachable from outside of said water tank, a rod including a lower end fixed to said value and an upper end coupled to said knob so that said valve can be pulled open by said knob and so that water contained within said water tank may flow out via said outlet pipe, a stop disposed on said rod, a frame disposed in said water tank and disposed above said outlet pipe and including a flange and an upper end having an axle disposed thereon, said rod extending upward beyond said upper end of said frame, a pawl having a middle portion rotatably supported on said axle and including a hook formed on a first end thereof and including a second end coupled to said knob so that said pawl will rotate about said axle when said knob is pulled; a float slidably engaged on said rod and movable upward to a point where it contacts said flange and downward along said rod to a point where it contacts said stop, a catch laterally extended from said float; said hook of said pawl being caused to move to a position located below said catch of said float when said second end of said pawl is elevated; whereby, with enough water in said tank to force said float into contact with said flange, when said knob is pulled said valve will unseat and become buoyant in said water and said water will begin to discharge out through said outlet pipe, when said knob is held upwardly said catch of said float is caught by said hook of said pawl when said float begins to move downward with the water level and said valve will reseat after almost all of the water in said tank has drained out, when said knob is released after being pulled to unseat said valve, said catch of said float will not be caught by said hook of said pawl and said float will move downwardly along said rod to engage with said stop and force said valve downwardly to close said outlet pipe before all of the water contained within said water tank is fully discharged.

5,249,314
WATER CLOSET VOLUME REDUCER
H. Dermot Sweeny, 142 Stoneybrook Dr., Kitchener, Ontario, Canada N2H 4L7 ; Harry G. Knipe, 32 Gay Crescent, Kitchener, Ontario, Canada N2A 2C3 , and John E. Plumridge, 95 Cambridge Street, #1401, Cambridge, Ontario, Canada N1R 3S2
Filed Mar. 24, 1992, Ser. No. 856,694
Int. Cl.[5] E03D *1/00*
U.S. Cl. 4—415 **7 Claims**



1. A device for reducing the volume of water flushed from a water closet comprising: a rectilinear container having surrounding side and bottom walls for holding a volume of water; at least one elongated suspension member for suspending said container within the water closet, said suspension member having a hook section at an upper end thereof and a vertically elongated slot in the lower end; a vertically elongated T-shaped tab on said side wall, said slot being slidably engageable with said tab; and means for adjusting the volume of said container, said adjusting means comprising said side wall being divided into fixed and sliding portions, the sliding portion being vertically slidable relative to the fixed portion.

5,249,315
TUB GUARD AND EXTENSION
Sandra K. Moylan, 9 Aghworth Ave., North Oxford, Mass. 01537
Filed Jul. 12, 1991, Ser. No. 729,494
Int. Cl.[5] A47K *3/14*
U.S. Cl. 4—559 **4 Claims**

1. Apparatus for preventing a toddler or infant from entering a bathtub, said bathtub having an entry side, a back side and two end sides, with enclosure walls at the back side and both end sides, the bathtub having a lip wall at the entry side, said apparatus comprising:

a rectangular shaped netting like material with folded over edges fixedly secured, to form tube like tunnels along the top and bottom edges, and a vertical fold fixedly secured, at the center to also form a tube like tunnel, a portion of

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the material being cut out at the top and bottom of the center portion;

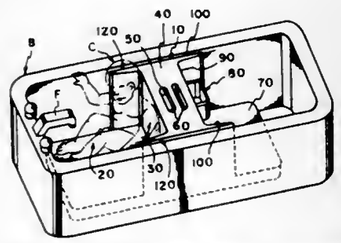
a frame of tubular members including two top and two bottom horizontal members and one vertical member, slideably positioned within the tunnels in the netting like material to keep the material stretched across the entry side of the bathtub the top and bottom horizontal members each having a free end and a fixed end;



two tubular "T" fittings sized and shaped to joint the fixed ends of the horizontal members and the vertical member together to form an H positioned on it side; and

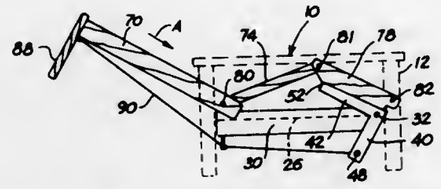
a support means, said support means being two horseshoe shaped spring loaded clamps wherein the clamps are secured to the bathtub entry side lip wall by suction cups and said clamps are shaped to provide connecting posts sized to allow the free ends of the top and bottom horizontal members to be frictionally secured to said clamps.

5,249,316
BATHTUB DIVIDER
William A. Macchiavello, 5560 Rivendell Pl., Frederick, Md. 21701
Filed Mar. 10, 1993, Ser. No. 24,344
Int. Cl.[5] A47K *3/024*
U.S. Cl. 4—559 **12 Claims**



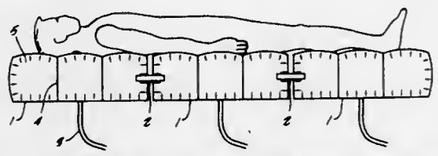
1. An integral, one piece bathtub divider comprising:
a seat portion having a backrest portion;
a back portion;
a divider portion being formed between said seat portion and said back portion;
said divider portion having a container formed thereon;
said container being formed on a back surface of said divider portion;
said backrest portion having two front wings formed thereon;
said back surface of said divider portion having two back wings formed thereon;
one of said front wings being formed on a left side of said backrest portion;
another of said front wings being formed on a right side of said backrest portion;
one of said back wings being formed on a right side of said back surface of said divider portion;
another of said back wings being formed on a left side of said back surface of said divider portion; and
integral, inset suction cups being formed on a bottom surface of said bathtub divider, whereby said bathtub divider allows a parent to bathe a child or infant in the least amount of water possible.

5,249,317
INVERTED-L MECHANISM FOR FACILITATING THE FOLDING OF A CONVERTIBLE SOFA-BED
Mark E. Farlow, 5318 E. 7th St., Tucson, Ariz. 85711
Filed Feb. 4, 1993, Ser. No. 13,428
Int. Cl.[5] A47C *17/17*
U.S. Cl. 5—37.1 **6 Claims**



1. A convertible sofa-bed adaptable for alternative use in a sofa or a bed configuration, comprising:
(a) a support frame having a horizontal supporting surface;
(b) a three-panel deck including a rear panel hingedly connected to said support frame, a middle panel hingedly connected to the rear panel along a first deck break-line, and a front panel hingedly connected to the middle panel along a second deck break-line, wherein said deck rests on said supporting surface and is capable of being folded along the deck break-lines between panels;
(c) a substantially L-shaped mechanism connected to said support frame by a pivotal attachment, said mechanism having a vertical arm disposed downward and a horizontal arm disposed under said rear panel, such that the rotation of the mechanism about said pivotal attachment to the support frame causes said horizontal arm to push said rear panel upward, thereby initiating the folding of the deck along said first deck break-line; and
(d) means for effecting the rotation of said substantially L-shaped mechanism about said pivotal attachment to the support frame.

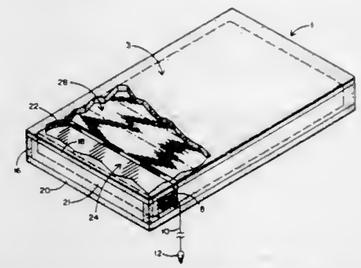
5,249,318
AIR SUPPORT CUSHION
Gerald H. Loadsman, 13122 St. Thomas Dr., Santa Ana, Calif. 92705
Continuation of Ser. No. 198,142, May 24, 1988, abandoned. This application Jun. 5, 1992, Ser. No. 895,570
Int. Cl.[5] A47C *27/10, 7/04*
U.S. Cl. 5—453 **10 Claims**



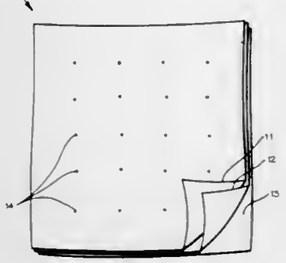
1. A lightweight and portable support alliance comprising:
a) at least one cushion having a top surface, a bottom surface and at least one side surface attached continuously along the periphery of both the top and bottom surface to form an impermeable seal, the cushion having at least one internal segment formed by at least one internal diaphragm, which internal diaphragm provides a flexible support to prevent cushion deformation caused by inflation and which also allows the cushion to be collapsed to a substantially flat configuration when deflated, the internal diaphragm attached by attachment means to the internal sides of the top surface, bottom surface and at two different points on the side surfaces of the cushion, wherein the attachment means consists essentially of internal stitching such that the top surface and edges thereof are free of external seams and obstructions to eliminate sources for ulcers or the like on the user's body, at least one internal diaphragm having at least one opening through which the gaseous mixture can freely pass and in which liquids also can freely pass to facilitate cleaning of the support apparatus;
b) at least the top surface of the cushion being formed from a material bearing microscopic apertures, wherein the apertures are less than about 10.0 microns and greater than about 4 Angstroms, allowing substantial permeability to the gaseous mixture and rendering the material substantially impermeable to solids and liquids to provide an ulcer-free air flow microenvironment for the user while simultaneously eliminating the need for a separate gaseous mixture outlet or exhaust port, wherein also at least the top surface of each cushion is formed of a single contiguous sheet of the material bearing microscopic apertures, which sheet is attached by attachment means so as to be integral with the cushion side walls and which joins one or more cushions without intervening gaps or spaces between cushions which could cause ulcers or the like on the user's body or liquids or solids to penetrate there between;
c) a means for gaseous mixture inlet penetrating either one of the side surfaces or the bottom surface of the cushion, the inlet means being sealed around its periphery at the point of cushion penetration; and
d) a means, sealably connected to the gaseous mixture inlet means, for generating a pressurized flow of a gaseous mixture to the cushion, having the capacity to produce from about 30 liters to about 3,000 liters per minute of the gaseous mixture to the cushion at a pressure of from about 0.3 centimeters to about 40 centimeters of water thereby inflating the cushion to form a flexible, ulcer free support for at least a portion of the body of the user without the need for an ancillary external support structure, wherein said pressurized flow means comprises:
1. a motor;
2. a blower attachment connected to the motor; and
3. a valve, sealably connected to the inlet means provided for the cushion.

5,249,319
LOW AIR LOSS, PRESSURE RELIEVING MATTRESS SYSTEM
Leonard C. Higgs, Hesperia, Calif., assignor to Mellen Air Manufacturing, Inc., Long Beach, Calif.
Filed Sep. 9, 1992, Ser. No. 942,747
Int. Cl.[5] A47C *27/08*
U.S. Cl. 5—453 **18 Claims**

1. An inflatable mattress system comprising:
a mattress;
a hollow compartment at the interior of said mattress;
an inflatable air plenum located within said hollow compartment, said air plenum including a plurality of air chambers adapted to be filled with air to enable said plenum to provide support for an individual laying on the mattress and each of said air chambers having means by which to permit air to leak out of said plenum; and
a blower located within said hollow compartment and coupled to said air plenum to exhaust air for inflating said plenum at the same time that air is leaked from said plenum.



5,249,320
MOISTURE-MANAGING BED PAD AND BED SHEET
Herbert L. Moretz, 20205 Lola Cir., Davidson, N.C. 28036, and Daniel L. Brier, 33 Anglefish Cay Dr., Key Largo, Fla. 33037
Continuation-in-part of Ser. No. 3,263, Jan. 12, 1993, Pat. No. 4,800,738, which is a continuation-in-part of Ser. No. 991,761, Dec. 17, 1992, which is a continuation-in-part of Ser. No. 945,677, Sep. 16, 1992, which is a continuation-in-part of Ser. No. 842,224, Feb. 26, 1992, Pat. No. 5,210,882, which is a continuation-in-part of Ser. No. 791,066, Nov. 12, 1991, Pat. No. 5,217,782. This application Feb. 26, 1993, Ser. No. 23,006
Int. Cl.[5] A61F *13/15*
U.S. Cl. 5—484 **22 Claims**



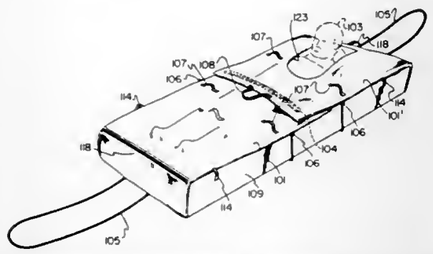
1. A moisture-managing bed pad for being positioned between a patient and a supporting surface, comprising:
(a) a moisture transport top fabric layer for residing in patient contact and for wicking moisture away from the body of the patient;
(b) a moisture dispersal intermediate fabric layer residing adjacent said top fabric layer for receiving and dispersing moisture from said top fabric layer, and for providing a reservoir for moisture wicked inwardly from said top fabric layer;
(c) a liquid impermeable, vapor permeable bottom fabric layer residing adjacent to said intermediate fabric layer for providing a leak-proof barrier, said barrier permitting dissipation of moisture in vapor form; and
(d) attachment means for attaching said top, intermediate, and bottom fabric layers to form a unitary structure, wherein said attachment means comprises spot welds joining at least two of said top, intermediate, and bottom fabric layers, said spot welds spaced apart as predetermined intervals throughout the surface area of said bed pad, and including a concentrated weld bead of completely fused fibers with a peripheral area of partially

fused fibers to reduce stress on edge areas of the spot welds.

5,249,321
EVACUATION OR RESCUE DEVICE FOR A NON-AMBULATORY PERSON

Jorg W. Graf, R.R. #2, Sharbot Lake, Ontario, Canada K0H 2P0

Filed Feb. 11, 1991, Ser. No. 654,101
Claims priority, application Canada, Aug. 28, 1990, 2024126
Int. Cl.[5] A61G *1/00, 7/08*
U.S. Cl. 5—494 **48 Claims**

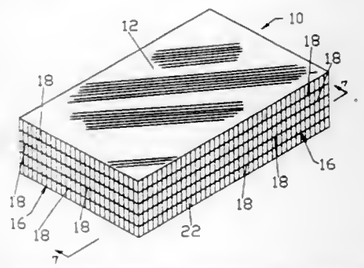


1. An evacuation device for a non-ambulatory person lying on a mattress on a bed, comprising:
covering means deployable over said person's head for covering said person;
handle means, including a cord, attached to said covering means;
enclosing means attached to said covering means; and
securement means, engaging said enclosing means, for securely enclosing said person between said covering means and said securement and for guiding and facilitating said cord to move past a corner of said mattress when said cord is pulled.

5,249,322
FITTED MATTRESS COVER AND METHOD OF MAKING SAME

Michael E. Seago, Louisville, Ky., assignor to Louisville Bedding Co., Inc., Louisville, Ky.

Continuation of Ser. No. 763,913, Sep. 23, 1991, abandoned, which is a continuation of Ser. No. 600,812, Oct. 22, 1990, Pat. No. 5,056,441, which is a division of Ser. No. 482,515, Feb. 21, 1990, Pat. No. 4,985,953. This application Aug. 24, 1992, Ser. No. 933,577
The portion of the term of this patent subsequent to Jan. 22, 2008, has been disclaimed.
Int. Cl.[5] A47G *9/00;* **D05B** *11/00*
U.S. Cl. 5—499 **42 Claims**

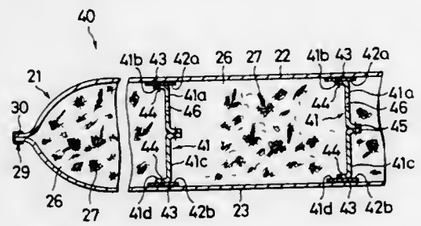


34. A fitted mattress cover for securely fitting mattresses of various sizes within a predetermined range, said mattress cover comprising:
a top panel of material for covering a substantial portion of a mattress top surface; and
a skirt depending from said top panel and extending in a downward direction therefrom for covering a substantial portion of each mattress side and end surface and yieldably gripping the mattress to minimize shifting of the top panel relative to the mattress top surface, said skirt comprising a layer of material incorporating therein a plurality of rows of elongated elastic cords extending in a longitudinal direction of the skirt, perpendicular to said downward direction, for allowing the skirt to elastically stretch in the longitudinal direction of the skirt.

5,249,323
METHOD OF FABRIC-TO-FABRIC BONDING AND SEAMLESS QUILT FORMED THEREBY

Hiromichi Kikuchi; Yoshinori Hideshima, both of Yokohama, and Keisuke Tanji, Fukushima, all of Japan, assignors to Asami Corporation, Yokohama, Japan

Filed Jul. 14, 1992, Ser. No. 913,145
Claims priority, application Japan, Aug. 9, 1991, 3-225169
Int. Cl.[5] A47G *9/00;* **B32B** *7/08*
U.S. Cl. 5—502 **2 Claims**

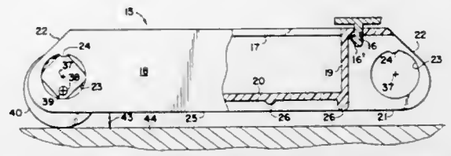


2. A seamless quilt comprising:
(a) a quilt body of a hollow, generally rectangular configuration including a top sheet and a bottom sheet held in bonded relation to each other along their peripheral edges;
(b) a plurality of arrays of partition walls of a fabric material and a predetermined dimension being oriented in a lattice posture such that said partition walls extend throughout the entire length and width of the quilt body to thereby dispose a multiplicity of compartments in the quilt body, each of said partition walls being made up of two separate, upper and lower, segments provided respectively with opposite binding ends and adjacent free ends, each of said binding ends having a reinforcing strip of a fabric material made equal in length to but larger in width than said binding end and united together by a stitching line laid to run substantially centrally of said reinforcing strip, said reinforcing strip having been treated on its one side with an adhesive coating, one of said reinforcing strip on said upper segment being attached on the coated side onto an inner surface of the top sheet and the other on said lower segment onto an inner surface of the bottom sheet and thereafter subjected to press finishing with heat, said two segments of said partition wall being subsequently sewn together at the free ends; and
(c) a mass of padding loaded in each of said compartments.

5,249,324
ADJUSTABLE WHEEL ASSEMBLY FOR POOL VACUUMS

Angelo J. Giammanco, and John W. Dulin, both of Palatka, Fla., assignors to A. J. Giammanco & Associates, Inc., Palatka, Fla.

Filed Jul. 31, 1992, Ser. No. 922,247
Int. Cl.[5] E04H *3/20*
U.S. Cl. 15—1.7 **20 Claims**

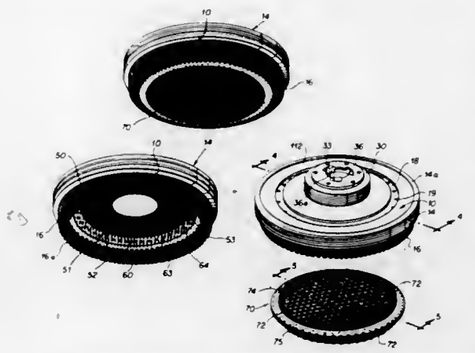


1. An adjustable height assembly for pool vacuum apparatus having a body and a plurality of wheels carried by the body for supporting the bottom surface of the body a selected distance above a bottom surface of a pool, said assembly comprising wheel mounting means for mounting each said wheel to said body, said mounting means including an axle having opposite end portions for carrying said wheel therebetween and movable axle mounting means for supporting said axle, selective locking means for mounting said axle mounting means to said body in a manner to selectively inhibit rotary movement of said axle mounting means from a selected position, said axle mounting means includes a pair of spaced axle mounts, each said axle mount being rotatable about a first axis and having a passageway therethrough having a centerline parallel to and spaced away from said first axis for carrying a respective said end portion of said axle for adjusting the position of a wheel with respect to the body by the rotation of a pair of said axle mounts.

5,249,325
BRUSH AND BONNET CARPET CLEANING ASSEMBLY

Joseph M. Wilen, Atlanta, Ga., assignor to Wilen Manufacturing Co., Inc., Atlanta, Ga.

Continuation of Ser. No. 823,022, Jan. 15, 1992, abandoned, and a continuation of Ser. No. 600,009, Oct. 18, 1990, abandoned. This application Dec. 23, 1992, Ser. No. 995,954
Int. Cl.[5] A47L *11/162, 11/34*
U.S. Cl. 15—4 **8 Claims**



1. A brush and bonnet carpet cleaning assembly comprising:
(a) a circular brush block having a central axis of rotation, an upper surface, a lower surface and a peripheral portion;
(b) a plurality of brushes carried by said brush block, said brushes being spaced from said axis and being secured by their proximal end portions to the peripheral portion of said brush block, said brushes extending around said axis, said brushes protruding from the peripheral portion of said brush block in an axial direction away from said brush block and terminating in distal ends which are in a common radial plane and are spaced from said brush block, said brushes and block defining a bonnet receiving cavity circumscribed by said brushes;
(c) drive means fixed to said lower surface of said brush block for rotating with said brush block about said axis as the peripheral portion of said brush block moves with said brushes in an orbital path around said axis when said brush block is rotated, said drive means having a lower bonnet engaging surface;
(d) a reversible compressible bonnet having a peripheral portion, an inner portion, and opposite surfaces for selectively being positioned so that one surface is selectively disposed for forming a bottom surface for engaging the carpet and the other surface forms an upper surface in contact with said lower bonnet engaging surface of said drive means, said bonnet being rotatable by said drive means when said block is rotated, said bonnet being confined by said brushes wholly within said receiving cavity, said bonnet being formed of flexible compressible hydrophilic material and having tufts of hydrophilic yarns along said surfaces of said bonnet, said bonnet, when received within said bonnet receiving cavity having said upper surface of said bonnet in contact with said bonnet engaging surface, said bonnet being of sufficient thickness that when said bonnet is within said recess and said bonnet engaging surface engages said upper surface of said bonnet, said bonnet extends away from said lower surface of said brush block by a distance greater than the length of that portion of said brushes which protrude from said brush block and so that the lower surface of said bonnet is in a plane below said common radial plane for supporting said brushes with their distal ends spaced away from the carpet sufficiently for the ends of said brushes to be free of said carpet until said brush block is tilted; and
(e) holding elements protruding from said block for engaging the tufts of either surface of said opposite surfaces of said bonnet which forms said upper surface of said bonnet for causing said bonnet to be held within said bonnet receiving cavity when said block is lifted away from the carpet and to be rotated about said axis when said block and said brushes are rotated.

5,249,326
APPARATUS AND METHOD FOR WASHING EXTERIOR BUILDING SURFACES

James E. Jefferies, 6573 Bayou Glen, Houston, Tex. 77057; Jesse H. Jefferies, 614 Winter Oaks, and Brad A. Bucher, 14415 Twister Oak, both of Houston, Tex. 77079

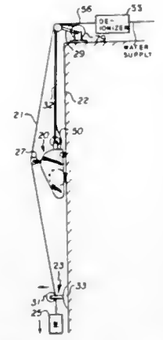
Continuation-in-part of Ser. No. 334,895, Apr. 5, 1989, abandoned. This application Jun. 5, 1990, Ser. No. 534,097
Int. Cl.[5] A47L *1/00*
U.S. Cl. 15—50.1 **12 Claims**

1. A system for washing windows and other exterior surfaces of a building, comprising:
a washing unit having wheels on one side for rolling engagement on the exterior surface of a building and containing a drive motor operatively connected to a power supply, water spray means connected to a water supply for spraying water onto the building surface, and brush means operatively connected to said motor to be rotatably driven thereby for scrubbing the building surface;
deionizing means connected between the water supply source and said washing unit for delivering substantially deionized water to the water spray means;
at least one suspension line connected to said washing unit for suspending said washing unit in vertically movable relation to the building surface to be washed;
raising and lowering means operatively connected to said suspension line for raising and lowering said washing unit relative to the building surface to be washed;

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a restraining cable extending above and below said washing unit and passing slidably over an outer surface thereof to maintain said washing unit firmly engaged against the building surface to be washed in horizontally biased vertically movable relation, said restraining cable connected at its upper end to the building to be washed;

lower pulley means releasably secured closely adjacent the exterior surface of the building to be washed at a position



below said washing unit for receiving the lower end of said restraining cable; and

a free weight attached to the lower end of said retaining cable below said lower pulley means to apply sufficient tension in said restraining cable to exert pressure against said washing unit to bias said washing unit against the building surface to be washed in vertically movable relation.

5,249,327

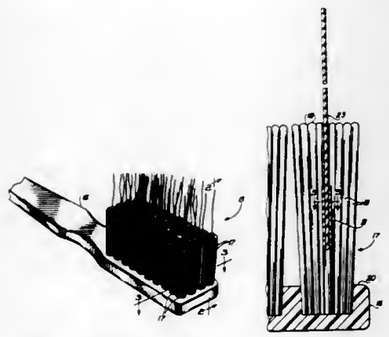
STRING AND RIBBON FLOSS HOLDER FOR BRUSHES

Ally O. Hing, Superior, Ariz., assignor to Marilyn O. Hing, Tucson, Ariz.

Filed Aug. 26, 1992, Ser. No. 935,570

Int. Cl.[5] A46B *9/06*

U.S. Cl. 15—104.94 **3 Claims**



1. A hand held brush comprising:

a handle section and a brush section,

said brush section includes a flat surface having a plurality of spaced tufts extending outwardly of said flat surface in a common direction,

each of said tufts comprising a plurality of bristles substantially of the same length gathered at one end and secured at said one end to said flat surface,

a plurality of elongated elements extending outwardly of the other end of of said tufts in said common direction for cleaning purposes, and

each of said elements being mounted in a holder,

said holder comprising a hollow resilient tube mounted within and extending outwardly of said tufts a distance less than the length of said bristles.

5,249,328

VACUUM CLEANER BEATER BRUSH STRUCTURE

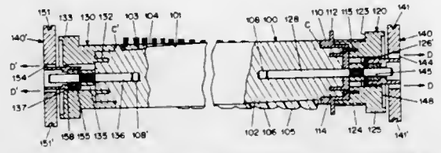
Gug J. Sbin, Kyungsangnam, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Aug. 27, 1991, Ser. No. 750,417

Claims priority, application Rep. of Korea, Aug. 31, 1990, 13721/1990

Int. Cl.[5] A47L *5/30*

U.S. Cl. 15—182 **3 Claims**



1. A vacuum cleaner beater brush structure comprising:

a) a beater brush roller, the beater brush roller comprising:

1) a center portion and first and second end portions wherein the end portions are reduced in diameter;

2) a brush strip having a plurality of brush bundles, the brush strip provided on the center portion of said beater brush roller;

3) a beater strip having a plurality of rigid projections, the beater strip provided on said center portion of the beater brush roller; and

4) a pair of axle holes on each end portion of the beater brush roller;

b) a sprocket coupled to the second end portion of the beater brush roller, the sprocket comprising:

1) a support flange having a belt retainer flange, the support flange comprising:

a cylindrical recess for receiving a second end portion of the beater brush roller, an axial opening disposed opposite the cylindrical recess of the support flange and co-axial with the axle hole of the beater brush roller, and a pair of bolt openings positioned adjacent to the axial opening;

2) a gear pulley integrally molded with a first axle and coupled with the support flange, the gear pulley comprising:

a first cylindrical recess for receiving the support flange, a second cylindrical recess disposed opposite to the first cylindrical recess and having a pair of wedge-type snap projections positioned within the second cylindrical recess, an annular reduced-diameter step portion disposed around the first cylindrical recess and on an outer surface of the gear pulley wherein the annular step portion and the belt retainer flange couple to form a belt retainer portion for receiving a timing belt, a plurality of brushes and beater bars disposed on an outer surface of the gear pulley, and a ring-type anti-dust rib surrounding the second cylindrical recess and extending outwardly therefrom;

c) a support end molded integrally with a second axle and coupled to the first end portion of the beater brush roller, the support end comprising:

1) a third cylindrical recess for receiving the first end portion of said beater brush roller;

2) a fourth cylindrical recess disposed opposite to the third cylindrical recess and having a pair of wedge-type snap projections positioned within the fourth cylindrical recess;

3) a ring-type anti-dust rib surrounding the fourth cylindrical recess and extending outwardly therefrom; and

d) a first bearing mount disposed opposite the second cylindrical recess and a second bearing mount disposed opposite the fourth cylindrical recess, each bearing mount comprising:

1) a cylindrical bearing housing having a washer and a oil-filled bearing wherein the washer prevents oil leakage;

2) a pair of wedge-type snap projections disposed on an outer circumferential surface of the cylindrical bearing housing;

3) an axial opening disposed throughout the cylindrical bearing housing for receiving the axle;

4) a plurality of ventilation openings disposed adjacent to the cylindrical housing for exhausting dust in the oil-filled bearing and for cooling the oil-filled bearing; and

5) a supporter having a top end and a bottom end for supporting the cylindrical bearing housing in a centered manner, the supporter having grooves disposed on the top end and the bottom end wherein the grooves are capable of engagement with a supporting frame of a vacuum cleaner head;

wherein the gear pulley being integrally molded with the first axle and the support end being integrally molded with the second axle are accurately engaged onto the beater brush roller and the first and second bearing mounts for efficiently and quietly rotating the beater brush roller during operation of the vacuum beater brush structure.

5,249,329

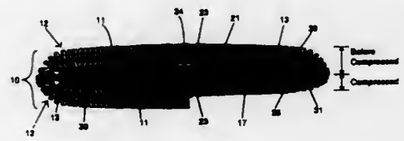
SELF-CENTERING BUFFER PAD ASSEMBLY

Tracy Arnold, Hillsboro, Mo., assignor to S. M. Arnold, Inc., St. Louis, Mo.

Filed Mar. 9, 1992, Ser. No. 848,314

Int. Cl.[5] B24D *13/14*

U.S. Cl. 15—230 **2 Claims**



1. A buffer assembly comprising

a pair of circular buffing pads each having a manually bendable buffer pad base with a center bore, both said pad bases being covered with either a hook type or a loop type of interlocking sheet material, the opposite side bearing tufted buffering material, in combination with

a substantially rigid tapered support disk having a central integral hub portion projecting symmetrically from both sides of said disk, said hub portion having at its center a threaded bushing, said disk having an outer diameter less than the diameter of said pad base,

the surface portions of both sides of said disk outward of said hub portion being adherently covered with the other of said types of interlocking sheet material, whereby on mounting said pair of buffing pads on opposite sides of said disk, both will interlock with the covering on said disk but their outer edges will not interlock with each other,

said hub projecting beyond the thickness of said sheet material on said disk a distance at least twice as great as the thickness of said buffer pad bas and less than the compressible thickness of said buffer pad,

whereby on manually bending a buffer pad back along a diameter thereof, said center bore of said buffer pad base may be located against said hub portion and guided by said hub portion into alignment with said disk without contacting so great a portion of their said interlockiing materials as to make centering location difficult.

5,249,330

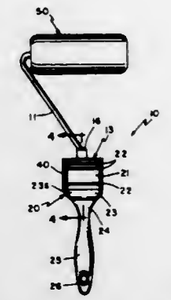
PAINT ROLLER APPLICATORS

Robert I. Janssen, 1160 Sibley Hwy., Mendota Heights, Minn. 55118

Continuation of Ser. No. 706,368, May 28, 1991, abandoned. This application Jun. 1, 1992, Ser. No. 891,927

Int. Cl.[5] A46B *5/02;* **A47K** *7/02;* **A47L** *1/00*

U.S. Cl. 15—230.11 **10 Claims**



1. A paint roller applicator for teaching a person to use a paint roller to paint surfaces usually painted with a brush by having the paint roller applicator with a handle shaped like a handle on a paint brush, comprising:

a paint roller frame, said frame having a first end and a second end;

a cylindrical paint roller rotatably attached on its longitudinal axis to said first end of said paint roller frame to permit a user to roll paint on a surface;

a paint brush handle having a hand-grasping potion attached to a base, said base substantially wider than said hand-grasping portion for greater hand leverage;

a socket housing having a length substantially the same as the width of said paint brush handle base, said socket housing resting on said paint brush handle base;

a ferrule surrounding said paint brush handle base and said socket housing securely holding said socket housing onto said base; and

a generally centrally located opening extending into said socket housing for insertion of the second end of said paint roller frame, said second end having swaged members for forming interlocking nonrotatable engagement with said socket housing opening to hold said paint roller frame secure to said paint brush handle to permit a user to move the paint roller over a surface by holding the hand-grasping portion of the paint brush handle.

5,249,331

VACUUM CLEANER FLOOR NOZZLE HAVING AN AUXILIARY AGITATOR

Tomomi Mitani, Yokaichi; Hiroshi Nishimura; Hiroshi Hayakawa, both of Gamo; Hiroshi Mori, Yokaichi; Tomonori Katoh, Yokaichi; Hideo Okubo, Yokaichi; Hidenori Kitamura, Gamo; Haruhisa Miyake, Kanzaki, and Kiyokazu Uno, Echi, all of Japan, assignors to Matsushita Elecric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 8, 1991, Ser. No. 789,335

Claims priority, application Japan, Nov. 9, 1990, 2-305144; Nov. 9, 1990, 2-305145; Nov. 9, 1990, 2-305146

Int. Cl.[5] A47L *9/04*

U.S. Cl. 15—363 **24 Claims**

1. A vacuum cleaner floor nozzle for use in cleaning a floor surface, comprising:

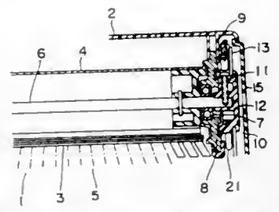
a main nozzle body having opposing ends and an end wall at one of said opposing ends;

a main agitator rotatably mounted in said main nozzle body at one side of said end wall and being adapted to be driv-

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ingly rotated by a driving source to scrape dust from the floor surface;

an auxiliary agitator for scraping from the floor surface at a corner of a room, said auxiliary agitator including a rotary body rotatably mounted at an opposite side of said end wall relative to said main agitator and having a periphery, and a stirring member projecting radially from said periphery of said rotary body, said rotary body being operably fixed for rotation with said main agitator about a rotational axis; and

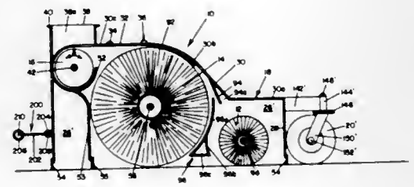


a protecting cover mounted at an opposite side of said auxiliary agitator relative to said end wall such that a gap is formed between said protecting cover and said end wall, said auxiliary protecting cover having confirmation holes formed therethrough which define a means for confirming that said gap between said protecting cover and said auxiliary agitator is free of dust.

5,249,332
PAVEMENT SWEEPER

Kenneth R. Wilkerson, Irvington, Ill., assignor to Commercial Sweeper Systems, Inc., Irvington, Ill.

Filed Oct. 31, 1991, Ser. No. 785,480
Int. Cl.[5] E01F *1/04*
U.S. Cl. 15—384 **20 Claims**



1. An apparatus for sweeping of debris from pavement surfaces; said apparatus comprising:

a) a rigid housing;

b) a first roller broom and a second roller broom and means for rotatably mounting said first roller broom and said second roller broom transversely within said housing spacedly and parallel in relation to each other, said first roller broom being disposed forwardly of said second roller broom, each of said roller brooms being elongated and having right and left ends relative to a position of an operator of said apparatus and extending between the operator right and operator left ends;

c) means for causing said first roller broom to rotate clockwise, as viewed from the operator right end thereof, and means for causing said second roller broom to rotate counterclockwise as viewed from the operator right end thereof;

d) debris outlet means connected to a vacuum source for removal of debris from inside of said housing to the exterior thereof;

e) means for focusing movement of debris within said housing toward said debris outlet means, said means for focusing movement of debris being disposed within said housing substantially beneath said debris outlet means;

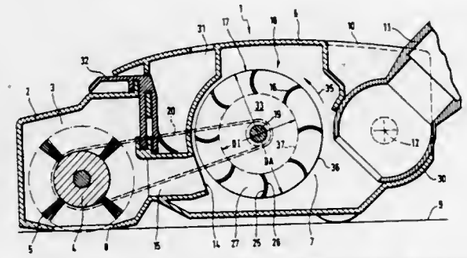
f) a plurality of support wheels rotatably attached to said housing; and

g) means for connecting said apparatus to a prime mover to thereby permit propulsion of said apparatus along the surface being swept and transport of said apparatus when non-operational.

5,249,333
VACUUM CLEANING TOOL

Peter Wörwag, Romanshorn, Switzerland, assignor to Firma Fedag, Romanshorn, Switzerland

Filed Feb. 19, 1992, Ser. No. 839,325
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1991, 4105336
Int. Cl.[5] A47L *5/30*
U.S. Cl. 15—387 **7 Claims**



1. In a vacuum cleaning tool for a vacuum cleaner, including a housing having an intake opening, outlet means, and a turbine chamber, with a brush roller being disposed in said intake opening and being rotatably driven by an air turbine that is disposed in said turbine chamber and is itself rotatably driven by an intake air flow received from a feed channel that communicates with said intake opening, the improvement wherein:

said air turbine has at least one ring-like blade arrangement that has an open central inner space that is free of blades, whereby between blades of said at least one blade arrangement axially delimited flow paths are formed; and

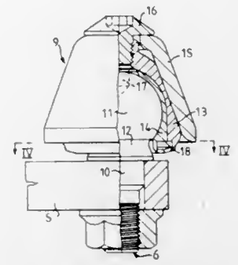
said feed channel has a mouth portion for directing said intake air flow onto said at least one blade arrangement essentially radially relative to an axis of rotation of said air turbine, whereby said flow paths between said blades radially guide said intake air flow into said open central inner space and radially discharge said intake air flow out of said open central inner space to said outlet means of said housing.

5,249,334
HINGE FOR MOTOR VEHICLES

Arne Hörberg, and Rolf Svensson, both of Olofström, Sweden, assignors to AB Volvo, Gothenburg, Sweden

PCT No. PCT/SE90/00329, § 371 Date Oct. 28, 1991, § 102(e) Date Oct. 28, 1991, PCT Pub. No. WO90/14485, PCT Pub. Date Nov. 29, 1990
PCT Filed May 16, 1990, Ser. No. 768,896
Claims priority, application Sweden, May 16, 1989, 8901740
Int. Cl.[5] F16C *11/06*; E05D *7/00*
U.S. Cl. 16—224 **4 Claims**

1. In a hinge for a door or hatch of a motor vehicle, said hinge comprising two hinge halves (**1**, **2**), one (**1**) of which is provided with a pivot pin (**6**) and the other (**2**) of which is provided with a bearing portion (**9**) pivotally mounted on the pivot pin (**6**), said pivot pin (**6**) having a spherical end portion (**11**), onto which the bearing portion (**9**) fits with a complementary shaped cavity, and a narrower neck portion (**12**), a lock means (**18**) being arranged to cooperate with the neck portion (**12**) of the pivot pin (**6**) and the bearing portion (**9**) to lock said hinge halves (**1**, **2**) against relative movement in the axial direction of the pivot pin (**6**); the improvement wherein the bearing portion (**9**) comprises a bearing sleeve (**13**) journalled on the pivot pin (**6**) and including said complementary shaped cavity therein, a bearing housing (**15**), an inside surface of which fits over an outside surface of the bearing sleeve (**13**), and a fastener means (**16**) detachably fastening the bearing sleeve (**13**) to the bearing housing (**15**), the inside surface of the bearing housing (**15**) and the outside surface of the bearing sleeve (**13**) being formed as complementary truncated conical surfaces, there being a bearing shell (**14**) between the pivot pin (**6**) and

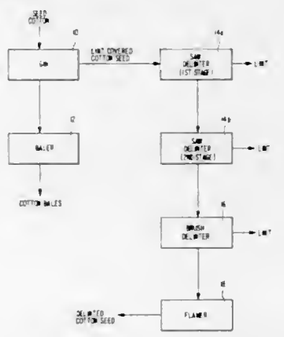


the bearing sleeve (**13**), an inside surface of the bearing shell (**14**) being spherical and having a portion extending past a portion of the bearing pin (**6**) of greatest diameter, an outside surface of the bearing shell (**14**) being spherical down to a portion of the pivot pin (**6**) of greatest diameter and from there is cylindrical in the direction towards the neck portion (**12**) of the pivot pin (**6**), and the inside surface of the bearing sleeve (**13**) being made to correspond to the outside surface of the bearing shell (**14**).

5,249,335
METHOD OF DELINTING COTTON SEED

Clyde Jones, Scott, Miss., assignor to Delta and Pine Land Company, Scott, Miss.

Continuation-in-part of Ser. No. 676,761, Apr. 24, 1991, abandoned, which is a continuation of Ser. No. 530,842, May 30, 1990, abandoned. This application Apr. 15, 1992, Ser. No. 869,133
Int. Cl.[5] D04B *1/04*
U.S. Cl. 19—40 **2 Claims**



1. A method of delinting cotton seed while maintaining a high germination rate thereof comprising the steps of:

passing the cotton seed through a saw delinting step in which the seed is subjected to a saw delinting process to remove a portion of the lint therefrom;

said portion of the lint removed from the cotton seed by said saw delinter comprising from about 40% to about 65% thereof;

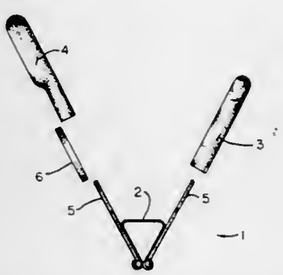
thereafter passing the partially delinted seed through a brush delinting step in which the seed is subjected to a brush delinting process to remove substantially all but about 3% or less of the remaining lint from the seed;

and passing the seed from said brush delinter through a flamer to remove substantially all of said 3% of said lint.

5,249,336
PLASTIC COVERED BINDER CLIP

Joseph T. Miller, Mehlville, Mo., assignor to Mocap, Inc., St. Louis, Mo.

Filed Oct. 5, 1992, Ser. No. 957,016
Int. Cl.[5] B42F *1/02*
U.S. Cl. 24—67.5 **9 Claims**

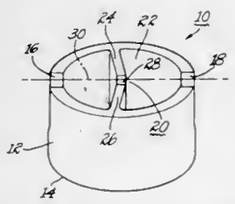


1. A binder clip comprising a clamping element for securing items, a pair of opposed gripping means, said gripping means being biased into a clamping condition for securing items within said clamping element, said gripping means when compressed open may have items inserted into said clamping element, but when released into closure providing for the clamping element to secure any items, sleeves sized to fit over at least one of said opposed gripping means, said sleeves being formed of soft, pliable material, said sleeves including at least one aperture at each of their proximal ends for individually inserting over said opposed gripping means, and the interior of at least one of said sleeves having a magnetic component located therein, to provide for adherence of the binder clip to a magnetically susceptible surface.

5,249,337
RELEASABLE FILAMENT CLAMP

Andrew L. Cross, 17774 Ravenna Rd., Mantua, Ohio 44255, and Thomas Luby, 186 N. Revere Rd., Akron, Ohio 44333

Filed Jun. 8, 1992, Ser. No. 895,273
Int. Cl.[5] A44B *17/00*
U.S. Cl. 24—129 R **11 Claims**



1. A clamp device to releasably secure a length of filament in place which consists essentially of:

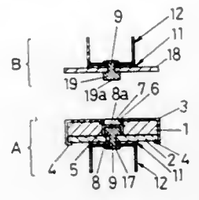
(a) a single-piece hollow body member molded with organic polymer,

(b) integral retention means molded in said body member to include at least one pair of cooperating spaced-apart rib elements projecting inwardly from opposing inner wall portions to form an inscribed angle if further extended to intersect and which terminate in shoulder portions for retention of the filament therebetween by frictional engagement,

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(c) complementary opposed slot openings provided in said body member enabling passage of the filament therethrough which are aligned along an axis intersecting the inscribed angle formed with said retention means, and
(d) said integral retention means cooperating with said complementary opposed slot openings so that both engagement and release of the filament length takes place with a single snap-action.

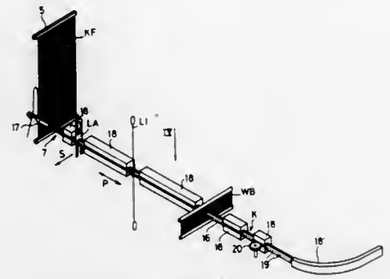
5,249,338
MAGNETIC LOCK DEVICE
Yoshihiro Aoki, Tokyo, Japan, assignor to Application Art Laboratories Co., Ltd., Tokyo, Japan
Filed Dec. 23, 1991, Ser. No. 811,931
Claims priority, application Japan, Dec. 28, 1990, 2-417579
Int. Cl.[5] A44B *21/00*
U.S. Cl. 24—303 **18 Claims**



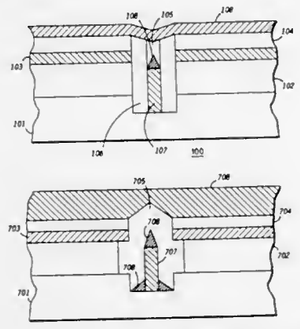
1. A magnetic lock device, comprising:
a first element, comprising a permanent magnet having a center bore traversing said permanent magnet, said permanent magnet having a first side for providing one polarity and a second side opposite to said first side for providing the opposite polarity, a first ferromagnetic plate rigidly attached to said first side of said permanent magnet, and a non-ferromagnetic enclosure enclosure the permanent magnet and said first ferromagnetic plate, said nonferromagnetic enclosure having a center bore aligned with said center bore of said permanent magnet;
a second element, comprising a second ferromagnetic plate, for detachable engagement with said first element;
a rod of ferromagnetic material extending from said second ferromagnetic plate for magnetically disengageably engaging said first ferromagnetic plate in said center bore of said permanent magnet; and
means for enhancing the magnetism provided by said permanent magnet at the point where said rod of ferromagnetic material engages with said first ferromagnetic plate in said center bore by increasing the cross-sectional area of a magnetic path, said means comprising an additional ferromagnetic plate attached to one of said first and said second ferromagnetic plates; and
attachment means for attaching said first and second elements to articles to be locked together.

5,249,339
APPARATUS FOR DRAWING IN WARP THREADS
Hans Wilhelm, Chur, and Raymond Schelling, Sargans, both of Switzerland, assignors to Zellweger Uster AG, Uster, Switzerland
PCT No. PCT/CH90/00283, § 371 Date Oct. 11, 1991, § 102(e) Date Oct. 11, 1991, PCT Pub. No. WO91/10003, PCT Pub. Date Jul. 11, 1991
PCT Filed Dec. 6, 1990, Ser. No. 741,531
Claims priority, application Switzerland, Dec. 22, 1989, 4598/89-8
Int. Cl.[5] D03J *1/14*
U.S. Cl. 28—204 **15 Claims**

1. Apparatus for drawing-in warp threads into weaving machine harness elements,(LA, LI, WB), comprising
oscillatable drawing-in means including a flexible gripper band (16) and a clamping gripper (17) carried by said flexible gripper band, and
stationary guide channel means (18) for receiving said oscillatable drawing-in means, said guide channel means (18) including in the area of weaving machine harness elements (LA, LI, WB) a plurality of segments with gaps therebetween and wherein harness elements are movable through said gaps in a direction (S) generally transverse to the length of said guide channel means, said guide channel means comprising means (24, 26) for supporting the clamping gripper (17) and a slot-like opening (25) through which the warp thread being drawn in may extend out of the guide channel means.



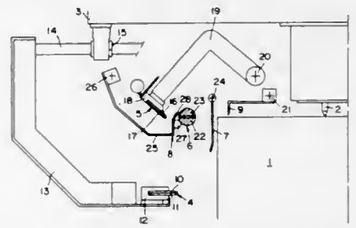
5,249,340
FIELD EMISSION DEVICE EMPLOYING A SELECTIVE ELECTRODE DEPOSITION METHOD
Robert C. Kane, Woodstock, Ill., and Scott K. Ageno, Scottsdale, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jun. 24, 1991, Ser. No. 720,113
Int. Cl.[5] B23B *5/28*; H01L *21/302*
U.S. Cl. 29—25.02 **9 Claims**



1. A method of forming a field emission device including the steps of:
providing a supporting substrate having a major surface;
depositing a first insulator layer on the major surface of the supporting substrate;
depositing a first conductive layer on the first insulator layer;
providing a second insulator layer on the first conductive layer;
providing a selectively patterned etch mask on the second insulator layer;
performing a directed or anisotropic etch on areas not masked by the selectively patterned etch mask to remove part of each of the first insulator layer, the first conductive layer, and the second insulator layer to define a cavity therethrough to the supporting substrate;

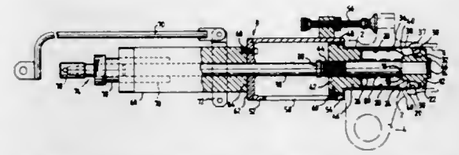
removing the remaining selectively patterned etch mask;
substantially conformally depositing a third insulator layer onto any exposed surfaces of each of the supporting substrate, the first insulator layer, the first conductive layer, and the second insulator layer;
performing a directed or anisotropic etch of the third insulator layer to remove the third insulator layer covering the supporting substrate within the cavity;
selectively depositing a second layer of conductive material on the exposed major surface of the supporting substrate within the cavity so as to form a first substantially cylindrical column within the cavity; and
performing a substantially normal deposition of a third layer of conductive material on the second layer of conductive material in the cavity to provide a substantially conically shaped layer of material disposed on the first substantially cylindrical column, such that a field emission device structure is realized including an electron emitter, a gate extraction electrode, and an anode.

5,249,341
WIRE-REMOVING MACHINE
Kurt Gronau, Euskirchen, Fed. Rep. of Germany, assignor to B+G-Fordertechnik GmbH, Fed. Rep. of Germany
PCT No. PCT/DE90/00292, § 371 Date Nov. 26, 1991, § 102(e) Date Nov. 26, 1991, PCT Pub. No. WO90/15756, PCT Pub. Date Dec. 27, 1990
PCT Filed Apr. 19, 1990, Ser. No. 776,365
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1989, 3919222
Int. Cl.[5] B65B *69/00*
U.S. Cl. 29—33 R **9 Claims**



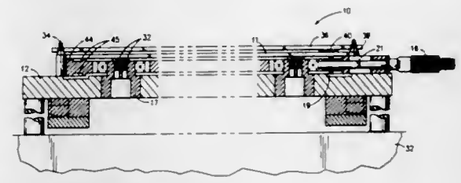
1. Wire-removing machine for bales comprising a positioning device for the bales, a cutting device for severing vertical tying wires tensioned around the bales, in a region of at least one vertical bale side face, a gripper device by means of which short ends of the tying wires after being severed are lifted from a bale and pivoted upwards about an upper bale edge, a winding device which grasps all lifted-off short ends of tying wires in a lifted-off portion by means of a common fork-shaped longitudinally displaceable winding spindle and winds the wires to form reels, a press-down device for pressing tying wires against the winding spindle, and a guide device for wire ends which consists of a row of guide fingers arranged in a comb-like manner, characterized in that the guide device is an individual unit separate and stationary from the press-down device and is arranged at a distance from the winding spindle directly in front of an upper bale edge, about which short ends of tying wires are pivoted upward by the gripper device, so that, after short ends of severed tying wires have been lifted off and after the winding spindle (22) has been moved into its operating position, the guide fingers (7) are located in a region directly between the winding spindle (22) and an upper edge of the bale (1), and during a winding operation long ends of the typing wires run through and between the guide fingers (7).

5,249,342
EXTRACTOR
John A. Smith, 7 South Road, Templefields, Harlow Essex CM20 2AP, Great Britain
Filed Jan. 24, 1992, Ser. No. 825,606
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—252 **10 Claims**



1. A device for extracting a bushing, sleeve or liner from a housing, said device comprising a shaft, a collet mounted on the shaft and having a plurality of resilient legs extending axially of the shaft, said legs being movable between a retracted position and an expanded position, and a cam on the shaft, said shaft and collet having an outer diameter less than the inner bore of the bushing, sleeve or liner when said legs are in said retracted position, means being provided for moving said cam relative to said collet legs to expand said legs outwardly to a predetermined, maximum outer diameter wherein the ends of said legs abut a flange on the cam to limit expansion, and engagement means on said legs for engaging an axial end wall of the bushing when said legs are in the expanded position, means to withdraw the device from the housing with said legs in the expanded position, with said engagement means engaging said axial end wall of the bushing, sleeve or liner to withdraw the bushing, sleeve or liner from the housing with the collet.

5,249,343
APPARATUS FOR ALIGNMENT OF WORKPIECES
John A. Grosso, Staatsburg, N.Y.; Reena G. Malangone, Charlotte, N.C.; John J. Masten, Jr., Poughkeepsie, N.Y.; Richard M. Schroedl, Wappingers Falls, N.Y.; Robert Stokrocki, Poughkeepsie, N.Y., and Donald G. Will, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 23, 1991, Ser. No. 749,033
Int. Cl.[5] B25B *27/14, 11/00*
U.S. Cl. 29—281.4 **4 Claims**



1. An apparatus including
a base plate having a bearing surface,
a further plate relatively movable over said bearing surface of said base plate and in contact therewith,
means for holding a workpiece in a predetermined location on said further plate and
means for immobilizing said further plate on said base plate at least two tapered pins, each having an axis concentric with a tapered portion of each said tapered pin, and arranged for movement only along said axis, and
a means for urging said tapered pins in a direction along said axis such that said tapered portion is displaced from a plane including said surface.

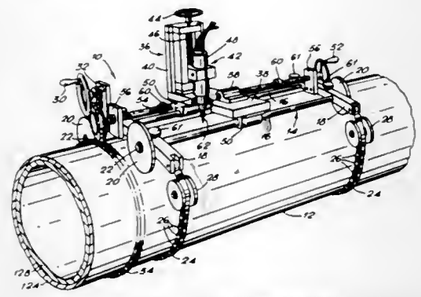
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5,249,344

METHOD OF AND APPARATUS FOR CUTTING A PIPE

Brian E. McGuire, Oldham, United Kingdom, assignor to British Gas PLC, London, England

Division of Ser. No. 606,920, Oct. 31, 1990, Pat. No. 5,159,756.
This application Jun. 22, 1992, Ser. No. 901,673
Claims priority, application United Kingdom, Nov. 7, 1989, 8925104
Int. Cl.[5] F16L *41/08*
U.S. Cl. 29—401.1 4 Claims



1. A method of cutting out and removing a portion of an outer layer of a host pipe having an outer layer of material and an inner lining, comprising the steps of:

mounting a chassis on said host pipe, said chassis carrying a cutting tool slidably mounted along the chassis in a longitudinal direction of said host pipe;

cutting through said outer layer by moving said cutting tool relative to said chassis in a direction radially inward toward a center of said host pipe;

moving said chassis circumferentially along an external surface of said pipe with said cutting tool penetrating through said outer layer to produce a cut extending partially around said host pipe in a circumferential direction;

sliding said cutting tool along said chassis in the longitudinal direction of said host pipe to produce a first longitudinal cut;

moving said chassis circumferentially back along the external surface of the host pipe to produce a second circumferential cut;

sliding said cutting tool back along said chassis to produce a second longitudinal cut; and

removing a portion of said outer layer which is bounded by said first circumferential cut, said first longitudinal cut, said second circumferential cut, and said second longitudinal cut.

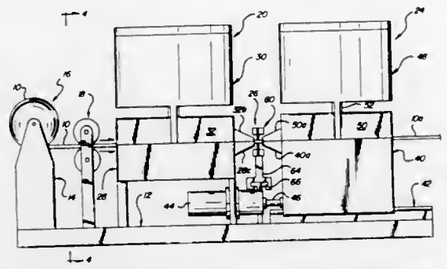
5,249,345

METHOD FOR CUTTING ELONGATED TUBE STOCK

Milan Virsik, Adrian, and Henry McCarbery, Palmyra, both of Mich., assignors to Brazeway, Inc., Adrian, Mich.

Filed Feb. 10, 1992, Ser. No. 833,051
Int. Cl.[5] B26D *3/02*; B23D *21/00*
U.S. Cl. 29—413 13 Claims

1. A method of severing an elongated tube comprising the steps of forming a first transverse kerf in one side of the tube, forming a second transverse kerf, lying in a common transverse plane with said first kerf, in an opposite side of the tube, and exerting a relatively pulling force on the tube sections on opposite sides of the transverse plane to tear apart the remaining tube material at the plane and severe the tube, characterized in that each kerf has a depth slightly less than the thickness of the wall of the tube, and the kerfs are formed in a broaching operation comprising a first cut in which a generally V-shaped narrow angle kerf is formed and a second cut in which the kerf



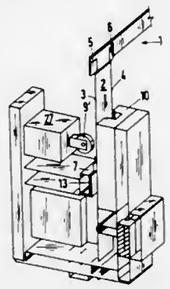
is widened to provide a wide generally V-shaped wide angle cut.

5,249,346

PROCESS AND APPARATUS FOR FIXING HOLDING CLIPS TO A BAND

Wolfgang Kohler, Westring 55, D-6108 Weiterstadt, Fed. Rep. of Germany

Filed Nov. 7, 1991, Ser. No. 790,409
Int. Cl.[5] B23P *11/02*
U.S. Cl. 29—449 23 Claims



1. A process for attaching a clip to a longitudinally extending band having width while said band is moving in a longitudinal direction, said clip having holding elements forming recesses at its ends, which process comprises:

providing a clip application position adjacent to a first surface of said band, in which position said ends of said clip are substantially aligned with lateral edges of said band;

providing adjacent to a second surface of said band and on the opposite side of said band from said clip application position a die having a longitudinally extending groove therein;

placing said clip in said clip application position and then in rapid succession:

in response to said placing of said clip, deforming said band transversely relative to said longitudinal direction by forcing that portion of said band adjacent to said clip into said groove in said backing plate, said band being deformed in an amount sufficient to cause the spacing between said lateral edges of said band to become less than said band width and also less than the spacing between said recesses formed by said holding elements of said clip;

causing said lateral edges of said band to move into position in said recesses formed by said holding elements of said clip;

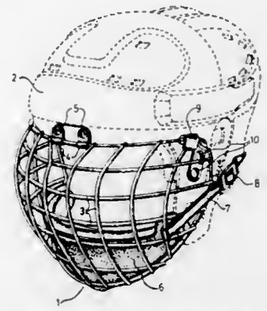
generating a release signal; and in response to said signal releasing said deformation such that said lateral edges of said band substantially resume their original spacing and said band thereby comes into frictional engagement with said clip through said recesses and is thereafter retained on said band as said moves past said clip application position.

5,249,347

FACE MASK FOR SPORTS GEAR

Franz W. Martinitz, Orangeville, Canada, assignor to Canstar Sports Group Inc., Ville Mont-Royal, Canada

Filed Jan. 30, 1992, Ser. No. 828,172
Int. Cl.[5] B23P *19/04*; A42B *3/20*
U.S. Cl. 29—460 3 Claims



1. A method of manufacturing a face mask for sports gear, comprising the steps of:

forming a grid of generally horizontal wires overlaid by generally vertical wires;

then shaping said grid into a mask shape;

then welding said wires to each other where they intersect;

then heat treating and quenching said grid to increase hardness;

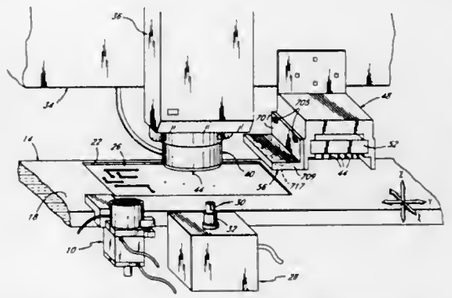
then dipping said grid to coat it with an epoxy coating and allowing said coating to cure; where said wire is a steel with carbon content in the range of AISI grade C-1018 steel to C-1038 steel.

5,249,348

PRESSURE FOOT INSERT CHANGER

Hendley W. Hall, San Pedro, Calif., assignor to Excellon Automation, Torrance, Calif.

Filed May 17, 1991, Ser. No. 702,089
Int. Cl.[5] B23Q *3/155*
U.S. Cl. 483—18 14 Claims



1. A drilling machine for rapidly and efficiently drilling holes in one or more printed circuit boards mounted thereon, comprising:

a drilling machine controller for electronically controlling a printed circuit board drilling operation;

a worktable mounted on said drilling machine and having said printed circuit boards mounted thereon, said worktable further being movable in a horizontal plane so that said circuit boards may be accurately and precisely moved in proper position so that said holes may be accurately drilled in said boards in predefined locations;

a spindle assembly mounted on said drilling machine above said worktable and above said printed circuit boards, said spindle assembly comprising:

a spindle having a drill tool mounted in the bottom thereof for drilling a hole in a circuit board;

means for moving said spindle in a vertical Z-axis and controlled by said controller so that said spindle may be moved downward toward said printed circuit boards during a drilling stroke to drill a hole therein using said drill tool; and

a pressure foot for pressing down upon said circuit boards to hold said boards securely down to prevent movement thereof and to prevent burrs arising around said holes during said drilling stroke;

a drill tool transfer device mounted on said drilling machine adapted to pass through said pressure foot and grip said drill tool in said spindle and to remove said drill tool from said spindle and for placing a second drill tool in said spindle;

a removable pressure foot insert releasably retained in said pressure foot and having a drill hole through which said drill tool passes during said drill stroke wherein said drill hole is too small to permit passage of said drill tool transfer device therethrough, said insert being removable to allow said drill tool transfer device to enter through the pressure foot to allow access of the member to said drill tool so that said drill tool may be removed from said spindle;

means for releasably retaining said insert in said pressure foot so that said insert may be quickly and automatically removed therefrom and subsequently replaced therein thereby saving substantial time in a drilling operation;

an insert changer mounted on said machine for automatically removing and replacing said pressure foot insert from said pressure foot;

movement means for alternately bringing said changer and said insert into contact and moving said changer and said insert apart; and

means on said insert changer for releasably retaining said pressure foot insert on said insert changer when said changer is brought into contact with said insert so that when said insert changer and said pressure foot are moved apart, said insert is retained on said changer so that a drill tool change may be effected in said spindle.

5,249,349

PARTS MOUNTING DEVICE

Masaji Kuinose; Kazutaka Ikeda; Yutaka Yajima, and Hideaki Takemoto, all of Osaka, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Jan. 3, 1992, Ser. No. 816,573
Claims priority, application Japan, Jan. 24, 1991, 3-119421; Sep. 11, 1991, 3-313484
Int. Cl.[5] H05K *3/30*
U.S. Cl. 29—721 19 Claims

1. A parts mounting device comprising:

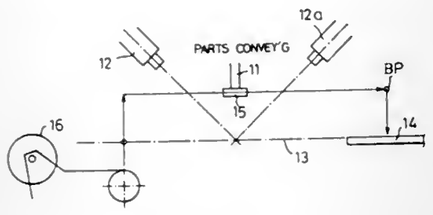
a displaceable base;

a parts-conveying head, mounted on the displaceable base, for picking up a mounting part from a mounting parts supply means and conveying said mounting part to a predetermined mounting position on a board having mounting lands to which the mounting part is to be mounted;

recognition means, mounted on the displaceable base, for recognizing said mounting part and said mounting lands located in a focus plane, the parts-conveying head providing a standard reference position for the recognition within the focus plane; and

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means for discriminating a positional relationship between the mounting part and the mounting lands and for aligning



the position of the mounting part relative to the mounting lands.

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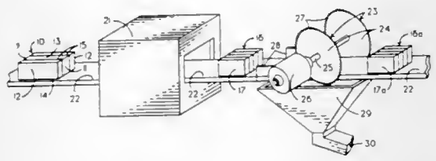
TRIMMED RECOMPRESSED HAY BALES AND FORMATION PROCESS THEREFOR

I. Dean Callahan, P.O. Box 205, Royal City, Wash. 99357

Continuation-in-part of Ser. No. 845,208, Mar. 3, 1992, abandoned. This application Jan. 19, 1993, Ser. No. 5,783

Int. Cl.[5] **B27B** *1/00*

U.S. Cl. 29—426.2 **6 Claims**



1. In a hay bale structure formed by recompressing a Western field bale of hay, originally having a length of approximately forty-eight inches, between opposed ends, said bale structure having plural parallel spaced ties encircling the top, bottom and ends spacedly inwardly adjacent the vertical sides and being recompressed in a direction between its ends to a dimension of between fourteen and twenty-two inches, the invention comprising:

trimming at least one original vertical side of the recompressed bale to create a planar vertical side surface substantially parallel with the original surfaces and having a fresher appearing color, a smoother surface and a density higher than that of the original untrimmed surface and substantially the same as the internal portion of the bale.

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Patent Not Issued For This Number

5,249,352

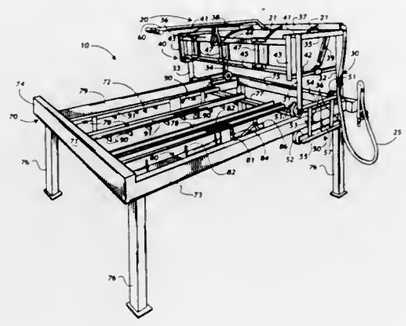
MACHINE AND METHOD FOR BUILDING PALLETS

John B. Landers, Rte. 7, Box 82-B, Sylacauga, Ala. 35150

Continuation-in-part of Ser. No. 764,240, Sep. 23, 1991, abandoned. This application Sep. 29, 1992, Ser. No. 953,643

Int. Cl.[5] **B27M** *3/00*; **B27F** *7/09*

U.S. Cl. 29—432 **22 Claims**



16. A method of assembling pallets comprising:

placing a plurality of pallet stringer boards into adjustable slots of a pallet assembly bed;

causing one or more jig assemblies of said pallet assembly bed to extend in an upward direction for transverse alignment and positioning of said plurality of stringer boards onto said pallet assembly bed;

using said jig assemblies and an abuttment flange to position and align a plurality of top side pallet deckboards perpendicularly over said stringer boards;

engaging an operator handle to move a gantry assembly, which is operably attached to said pallet assembly bed, into position over a first deckboard;

using said operator handle to vertically move a deckboard securing carriage assembly, which is operatively attached to said gantry assembly, so as to bring said deckboard securing carriage into contact with said first deckboard;

securing said first deckboard to said stringer boards by discharging one or more securing means into said first deckboard;

moving said deckboard securing carriage to a next deckboard and repeating said securing operation for as many deckboards as are required for the top side of said pallet;

inverting a partially completed pallet on said pallet assembly bed;

placing and aligning a plurality of bottom side deckboards over the bottom side of said stringer boards;

repeating the deckboard securing operation for each of the bottom side deckboards thereby forming a finished product; and,

removing the finished pallet from said pallet assembly bed.

5,249,353

METHOD FOR PRODUCING A SEALING PROFILE

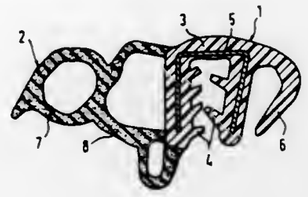
Jürgen Kraaz, Lindau/Bodensee, Fed. Rep. of Germany, assignor to Metzeler Automotive Profiles GmbH, Lindau/Bodensee, Fed. Rep. of Germany

Filed Aug. 28, 1991, Ser. No. 751,160

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1990, 4027191

Int. Cl.[5] **E06B** *7/16*

U.S. Cl. 29—446 **3 Claims**



1. A method for producing a sealing profile, which comprises:

integrally coextruding a profile with a clamping region of a compact elastomer having a U-shaped slit metal insert and a sealing region of sponge rubber;

defining longitudinal regions on said profile to be bent around small radii;

prestretching the defined longitudinal regions in an axial direction prior to bending, causing permanent stretching of the metal insert only for the bent regions and prestressing the sealing region of the sponge rubber; and

subsequently bending the prestretched longitudinal regions around the small radii without creasing.

5,249,354

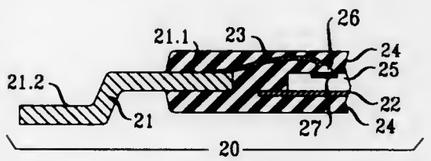
METHOD OF MAKING ELECTRONIC COMPONENT PACKAGES

Russell M. Richman, Chatham, N.J., assignor to American Telephone & Telegraph Co., New York, N.Y.

Continuation-in-part of Ser. No. 765,285, Sep. 25, 1991, abandoned. This application Apr. 24, 1992, Ser. No. 874,460

Int. Cl.[5] **H01R** *43/00*

U.S. Cl. 29—827 **27 Claims**



1. A method of making a multiplicity of electronic component packages, each of the packages comprising

(1) providing a selected metallic mounting pad having a prescribed thickness and having auxiliary regions that are bonded to respective auxiliary support fingers, and

(2) providing a first plurality of conductive fingers, each of the conductive fingers having a thickness at an internal end portion thereof, the prescribed thickness of the mounting pad being less than the thickness of the internal end portion of any of the conductive fingers, the method including the steps of:

(a) mechanically thinning an initial metallic sheet having an initial thickness that is more than the prescribed thickness whereby a metallic pad sheet is formed having the prescribed thickness, and having an area that is sufficient for dividing the sheet into a number of the mounting pads equal to at least the multiplicity; followed by

(b) dividing the sheet into a second plurality of mounting pads or mounting pad regions, the second plurality being equal to or greater than the multiplicity; followed by

(c) selecting one of the second plurality of the mounting pads for mounting pad regions, to provide a selected mounting pad; and followed by

(d) bonding the auxiliary support fingers, respectively, to the auxiliary regions of the selected mounting pad.

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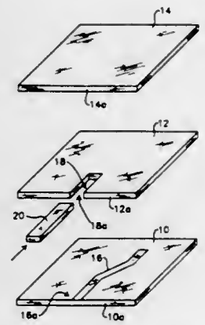
METHOD OF FABRICATING A MULTILAYER ELECTRICAL CIRCUIT STRUCTURE

David J. Miehls, Placentia; Felipe J. Martin, Trabuco Canyon; Ramona G. Pond, Downey, and Paul S. Fleischner, Long Beach, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 31, 1991, Ser. No. 785,859

Int. Cl.[5] **H05K** *3/36*

U.S. Cl. 29—830 **10 Claims**



1. A method of fabricating a multilayer electrical circuit structure, comprising the steps of:

(a) providing first and second sheets having circuit areas;

(b) forming an electrically conductive stripline on the first sheet, a portion of the stripline extending adjacent to an edge of the circuit area of the first sheet;

(c) forming a cavity in the second sheet, the cavity opening at an edge of the circuit area of the second sheet;

(d) adhering the first and second sheets together with said edges thereof aligned and the cavity aligned with and facing said portion of the stripline;

(e) inserting a portion of an electrically conductive pin into the cavity; and

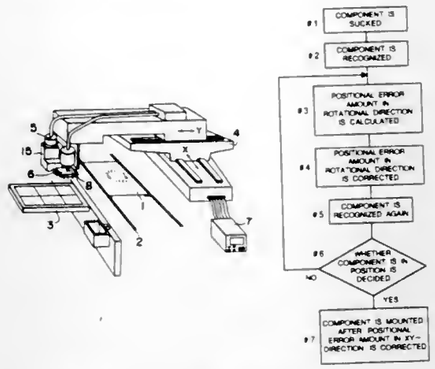
(f) ohmically adhering said portion of the conductive pin to said portion of the stripline.

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5,249,356
METHOD AND APPARATUS FOR MOUNTING ELECTRONIC COMPONENT

Osamu Okuda; Wataru Hirai; Shiro Oji, all of Osaka, and Minoru Yamamoto, Hyogo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 19, 1992, Ser. No. 853,993
Claims priority, application Japan, Mar. 20, 1991, 3-056606
Int. Cl.[5] H05K *3/30*; **B23P** *19/00*
U.S. Cl. 29—833 **7 Claims**



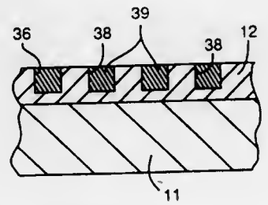
1. An electronic component mounting method comprising:
a first step of causing a suction device to suction an electronic component;
a second step of using a camera, which is movable with the suction device responsive to the movement of a robot arm, to obtain an image of the electronic component suctioned by the suction device;
a third step of determining a positional error of the electronic component in a rotational direction based on the image obtained in said second step;
a fourth step of rotating the suction device to correct the positional error of the electronic component determined in said third step;
a fifth step of repeating said second through fourth steps to correct any remaining positional error of the electronic component after said fourth step;
a sixth step of mounting the electronic component to a printed circuit board after correcting the positional error of the electronic component in said first through fifth steps.

3. An electronic component mounting apparatus comprising:
a table for holding a printed circuit board and for conveying the printed circuit board to a mounting position;
a supply section containing an electronic component;
an X-Y robot, operatively associated with said table and said supply section, having an arm member movable in X and Y directions which extend in a same horizontal plane;
a suctioning device, fixed to said arm member of said X-Y robot, having a suction nozzle and first drive means for vertically moving said suction nozzle to suction the electronic component contained in said supply section and second drive means for rotating said suction nozzle in a rotational direction about a rotational axis of said second drive means;
a recognizing camera, fixed to said arm member of said X-Y robot, for obtaining an image of the electronic component suctioned by said suction nozzle of said suctioning device;
a controller means, operatively coupled to said X-Y robot and said suctioning device and said recognizing camera, for initially determining a positional error of the electronic component in the rotational direction using an image obtained by said recognizing camera, for driving said second drive means of said suctioning device to correct the positional error of the electronic component in the rotational direction, for determining if a remaining positional error of the electronic component in the rotational direction is present using an image obtained by said recognizing camera after driving said second drive means, for again driving said second drive means to correct the remaining positional error of the electronic component in the rotational direction, and for causing the X-Y robot to move the electronic component suctioned by said suction nozzle to mount the electronic component on the printed circuit board.

5,249,357
METHOD OF FABRICATING A ROCKET ENGINE COMBUSTION CHAMBER

Richard R. Holmes, Guntersville; Timothy N. McKechnie, Huntsville; Christopher A. Power, Guntersville; Ronald L. Daniel, Jr., Huntsville, all of Ala., and Robert M. Saxelby, Santa Susana, Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 27, 1993, Ser. No. 9,908
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—890.01 **8 Claims**



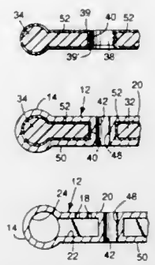
1. A process for forming a combustion chamber for a liquid rocket engine, comprising
a. providing a hollow metal jacket having an inner surface on which a liner is to be formed,
b. projecting a stream of heated gas to impinge on the inner surface of the jacket,
c. injecting an alloy in particle form into the gas stream to be carried into impact with the inner surface of the jacket, said particles being heated sufficiently in said gas stream that said particles flatten and adhere to previously deposited particles on the inner surface of the jacket to form a first layer, said injecting being continued until the first layer has a thickness of 0.6 to 1.5 cm,
d. cutting cooling slots in said first layer,
e. filling the cooling slots with a filler material,
f. repeating steps b. and c. for a time sufficient to form a second layer adhered to the first layer and having a thickness of 0.05 to 0.15 cm, and
g. removing the filler material from the slots to leave the slots open.

5,249,358
JET IMPINGMENT PLATE AND METHOD OF MAKING

Lew A. Tousignant, St. Paul, Minn.; Timothy L. Hoopman, River Falls, Wis., and Kenneth C. Thompson, Stillwater, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 28, 1992, Ser. No. 875,129
Int. Cl.[5] C25D *1/08*
U.S. Cl. 29—890.03 **23 Claims**

1. A method of making a unitary jet impingement plate to be connected with a heat transfer fluid source, the jet impingement plate including a body portion with an internal passage therein and having a jet impingement orifice passing through a plate of the body portion for providing a fluid connection between the internal passage and external of the body portion and for directing a heat transfer fluid jet therefrom, said method comprising the steps of:
(a) forming a sacrificial core with a body forming portion;
(b) placing the sacrificial core within a controlled environment comprising at least one of an ambient solution and gas from which forming material can be deposited onto the sacrificial core and depositing forming material about the sacrificial core from the controlled environment for at least partially surrounding and forming a shell about the sacrificial core, said deposition step thereby integrally creating the body portion of the unitary jet impingement plate;

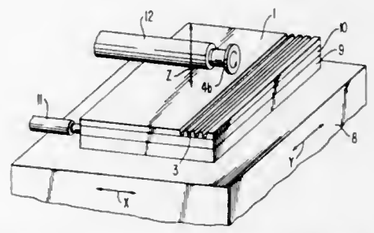


(c) providing an access opening through the shell of the unitary jet impingement plate so as to provide access to the sacrificial core from outside the shell;
(d) removing the sacrificial core from within the unitary jet impingement plate through the access opening, thereby leaving the internal passage within the body portion of the unitary jet impingement plate; and
(e) providing a jet impingement orifice through a plate of the body portion that was formed during said deposition step for directing heat transfer fluid from the jet impingement plate.

5,249,359
PROCESS FOR MANUFACTURING FINELY STRUCTURED BODIES SUCH AS HEAT EXCHANGERS

Klaus Schubert, Karlsruhe; Wilhelm Bier, Eggenstein-Leopoldshafen; Gerd Linder, Karlsruhe; Peter Schmid, Munich; Peter Bichler, Schondorf; Winfried Brunner, Unterhaching, and Wolfgang Simon, Munich, all of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe and Messerschmidt-Bölkow-Blohm, Müchen, both of Fed. Rep. of Germany

Division of Ser. No. 708,818, May 31, 1991, Pat. No. 5,152,060, which is a continuation of Ser. No. 306,030, Jan. 19, 1988, abandoned. This application Mar. 19, 1992, Ser. No. 854,065
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1987, 3709278
Int. Cl.[5] B23D *15/00*
U.S. Cl. 29—890.039 **-2 Claims**



1. A method of producing a finely structured body which is useful as a heat exchanger, a mechanical fine filter or an optical grating, which is comprised of a plurality of stacked, cut sections of foil at least one of which is provided with grooves in a selected groove direction on at least one surface thereof, and which has a plurality of closely juxtaposed, channel-like perforations with high shape accuracy, true dimensions and high surface quality, the method comprising:
a. providing a vacuum clamping means comprised of a ground, sintered metal plate which is connected to a vacuum source and which is positioned on a work table which is movable in two mutually perpendicular directions X and Y;
b. positioning a machinable foil on the ground, sintered metal plate and clamping the machinable foil thereto by applying an effective amount of vacuum;
c. cutting a plurality of parallel grooves into the surface of the machinable foil by means of at least one shaping diamond positioned on a cutting spindle and adjustable in a direction Z, each groove of the plurality of grooves having a groove length, a groove width, and a cross-sectional shape that is constant over the groove length and freely selectable;
d. cutting the grooved machinable foil into cut sections having selected lengths and widths; and
e. stacking the cut sections,
wherein the plurality of grooves have a form precision such that, for groove length of more than 1000 μm, the groove width has an accuracy of about +1 μm for land widths which euqal or exceed about 15 μm.

5,249,360
METHOD OF RECONDITIONING VALVES

Alvin J. Matthews, Pittsburgh, Wade A. Kunis, East Pittsburgh, both of Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Continuation of Ser. No. 736,992, Jul. 29, 1991, abandoned. This application Jan. 19, 1993, Ser. No. 3,941
Int. Cl.[5] B23P *6/00*
U.S. Cl. 29—890.121 **11 Claims**

1. A fluid pressure operated valve reclaiming process for an inlet valve removed from a valve body that will enable such inlet valve to be reused for its intended purpose within such valve body without loss of either efficiency or durability, said valve reclaiming process comprising the steps of:
(a) placing said inlet valve as removed from said valve body into a preselected cleaning solution;
(b) soaking said inlet valve in said preselected cleaning solution for a period of time which is at least sufficient to loosen substantially all extraneous foreign material from all exposed surfaces of said inlet valve;
(c) removing all said extraneous foreign material from said external surfaces of said inlet valve loosened in step (b);
(d) removing a male member portion from a female member portion of said inlet valve thereby exposing a spring, a spring seat and a valve stem contained within a cavity formed in each of said male member portion and said female member portion of said inlet valve;
(e) removing said spring, said spring seat and said valve stem exposed in step (d) from said cavity;
(f) cleaning said spring seat and said valve stem to remove any extraneous foreign material adhered thereto;
(g) reaming said cavity formed in said male member portion of said inlet valve;
(h) cleaning said male member portion of said inlet valve with said preselected cleaning solution to remove all material adhered thereto by said reaming of said cavity in step (g);
(i) removing said preselected cleaning solution applied in step (h) from said male member portion;
(j) cleaning a valve seat contained within said cavity of said male member portion of said inlet valve;
(k) cleaning said cavity formed in said female member portion of said inlet valve with said preselected cleaning solution;

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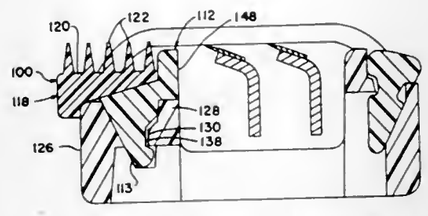
(l) removing said preselected cleaning solution applied in step (k) from said female member portion;
(m) relapping said valve stem cleaned in step (f) to said valve seat cleaned in step (j) with a lapping compound to ensure a good sealing surface;
(n) removing said lapping compound used in step (m) from said valve stem and said valve seat;
(o) reassembling said inlet valve; and
(p) reassembling said inlet valve into said valve body.

5,249,361

GUARD FOR RAZOR BLADE ASSEMBLY

Domenic V. Apprille, Jr., Arlington, Mass.; Gary R. Miller, Henley-on-Thames, United Kingdom; Frank E. Brown, Maidenhead, United Kingdom, and John B. Taylor, Reading, United Kingdom, assignors to The Gillette Company, Boston, Mass.

Filed May 13, 1992, Ser. No. 882,032
Int. Cl.[5] B26B *21/14, 19/42, 21/00*
U.S. Cl. 30—77 **20 Claims**



1. An elongated guard member for assembly into a razor blade body structure having a wall extending parallel with the blade and disposed forward of the blade, said guard member comprising a unitary molded member being formed of a bottom base portion of rigid plastic material providing a surface extending downwardly for juxtaposition adjacent the wall of the body structure along the length of the guard and an upper portion of elastomeric material having a plurality of protrusions projecting upwardly therefrom for contacting the surface onto which the blade is applied; and

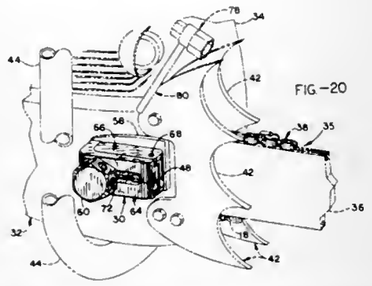
latch means disposed on said base portion for engagement with said body structure to retain said guard member so positioned in the blade body structure.

5,249,362

QUICK RELEASE DEVICE FOR CHAIN SAWS

Alfred F. Harding, P.O. Box 7, Orleans, Calif. 95556

Continuation-in-part of Ser. No. 678,022, Apr. 1, 1991, which is a continuation-in-part of Ser. No. 612,247, Nov. 13, 1990. This application May 21, 1992, Ser. No. 886,729
Int. Cl.[5] B27B *17/02*
U.S. Cl. 30—383 **24 Claims**



1. A quick release device for attachment of a cutting assembly of a chain saw comprised of a chain saw bar and a cutting chain to a motor assembly of the chain saw and allowing an operator to rapidly detach the cutting assembly from the motor assembly of the chain saw, the chain saw having a motor housing and a plurality of studs wherein the studs engage both the bar and an outer side plate forming part of the motor assembly; said quick release device comprising:

a) a clamping member having a pair of jaws which are movable relative to one another for simultaneously releasably engaging each of the studs and thereby clamping the bar and chain of the cutting assembly and the outer side plate to the motor assembly of the chain saw and thereby eliminating the necessity of nuts to hold the side plate and cutting assembly to the motor assembly; and

b) a manually movable mechanism on said clamping member for rapidly tightening one of said jaws against the side plate wherein said quick release device does not otherwise interact with the side plate or the cutting assembly except to clamp the cutting assembly and side plate on the studs to the motor assembly, said manually movable mechanism also being adapted to release the clamping action provided by said clamping member to enable removal of the side plate and cutting assembly;
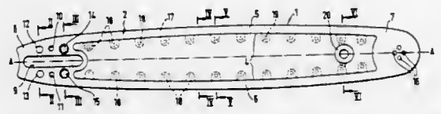
wherein said clamping member comprises an upper jaw and a lower jaw, hinge means connecting said upper and lower jaws for allowing the upper jaw to move relative to the lower jaw so that at least one of the jaws can be moved relative to the other to an open jaw position and a closed jaw position.

5,249,363

GUIDE BAR HAVING A LAMELLAR ASSEMBLY AND METHOD OF MAKING THE SAME

David Mitrega, Winnenden; Walter Sattelmaier, Ludwigsburg; Klaus Wieninger; Norbert Apfel, both of Waiblingen; Roland Schierling, Affalterbach, and Bernd Andress, Erdmannhausen, all of Fed. Rep. of Germany, assignors to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed Jun. 5, 1992, Ser. No. 894,639
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1991, 4118664
Int. Cl.[5] B23D *57/02*
U.S. Cl. 30—387 **32 Claims**



1. A guide bar for guiding the saw chain of a chain saw, the guide bar comprising:

two mutually adjacent elongated parallel side parts defining respective side frames having a predetermined length and being spaced from each other at a predetermined spacing to conjointly define an outer peripheral guide groove for guiding the saw chain on the guide bar;

each of said side frames having an inner periphery defining an opening and each of said frames having upper and lower continuous legs extending longitudinally over most of the length o said guide bar;

the two upper legs of said side frames conjointly defining an upper segment of said guide groove over most of said length and the two lower legs of said side frames conjointly defining a lower segment of said guide groove over most of said length;

each of said legs having an inner edge defining an portion of said inner periphery;

a plurality of projections formed on the inner edges of each one of said side frames to define a plurality of spaces for holding said side frames at said spacing and for rigidly joining said side frames to each other to define a composite frame of the guide bar;

each of said frames having respective side surfaces;

said projections being a plurality of tongues formed as a single piece with the leg corresponding thereto and being connected to the spacer of the corresponding leg;

said tongue being configured to extend toward a longitudinal center plane extending perpendicularly to the side surfaces of said frames;

said spacers of said one side frame being welded to the spacer of other one of said side frames;

each of said side frames being made of a material having a high resistance to bending; and,

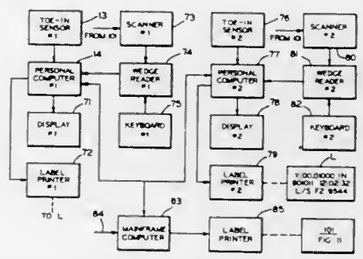
a substance having a specific low weight and said substance filling out said composite frame.

5,249,364

FRONT AXLE TOE-IN INSPECTION PROCESS AND APPARATUS

Craig A. Bishop, Fort Wayne, Ind., assignor to Dana Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 529,135, May 25, 1990, Pat. No. 5,084,979. This application Oct. 9, 1991, Ser. No. 773,244
Int. Cl.[5] G01B *7/315*
U.S. Cl. 33—193 **20 Claims**



1. An apparatus for inspecting the toe-in setting of a pair of axle spindles mounted on a vehicle front axle assembly comprising:

means for engaging a pair of axle spindles mounted on a vehicle front axle;

a position sensor mounted on said means for engaging and responsive to an actual position of the pair of axle spindles for generating a sensor signal representing an actual toe-in value;

reader means responsive to indicia on the axle for generating an axle identification signal representing a configuration of the axle; and

data processing means connected to said position sensor for reading said sensor signal and connected to said reader means for reading said axle identification signal, said data processing means storing a plurality of axle identifiers and associated desired toe-in values, said data processing means comparing said axle identification signal with said plurality of axle identifiers and, upon detecting a match, comparing said sensor signal with the associated desired toe-in value for generating one of a "good" axle signal and a "bad" axle signal.

5,249,365

TELESCOPING LEVEL

John Santiago, 7 Sipley Rd., Blairstown, N.J. 07825

Filed Dec. 24, 1992, Ser. No. 996,622
Int. Cl.[5] G01C *9/28*
U.S. Cl. 33—374 **8 Claims**

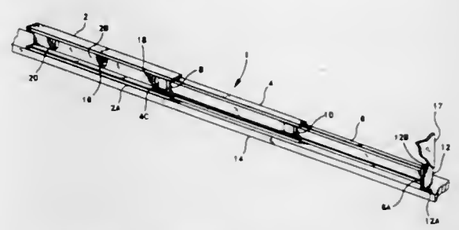
1. A telescoping level, comprising:

a plurality of consecutive level components including a first component and a last component;

each of the components except the last component arranged to receive an immediately consecutive component in inwardly and outwardly telescoping fashion;

locking means carried by each of the components except the first component, including the component carrying the locking means having a pair of edges in parallel spaced relation and having inwardly extending ends, each of said carrying component edges having a through hole with said through holes being in aligned relation, a sleeve captured between the pair of carrying component edges near the inwardly extending ends thereof, a first plunger disposed within the sleeve at one end thereof and having a pin tip, and a second plunger disposed within the sleeve at the opposite end thereof and having a pin tip, a spring disposed between the plungers for biasing said plungers whereupon the pin tip of the first plunger extends through the through hole in one of the carrying component edges, and the pin tip of the second plunger extends through the through hole in the other of said carrying component edges; and

each of the components except the last component including means cooperating with the locking means carried by the



immediately consecutive components received thereby for locking said received immediately consecutive components in an inwardly telescoped position, and including means cooperating with said locking means for locking said received immediately consecutive components in an outwardly telescoped position, wherein the component arranged to receive the immediately consecutive component has a pair of edges in parallel spaced relation, and each of said pair of receiving component edges is in outwardly spaced relation with a corresponding edge of a component carrying the locking means, each of said pair of receiving component edges carries a plurality of pairs of detents, each of said detents in said pairs of detents is in aligned relation with the other of said detents and said pairs of detents longitudinally spaced along said pairs of receiving component edges, and the pin tips of the first and second spring biased plungers engage corresponding pairs of detents when the received immediately consecutive component is inwardly telescoped and outwardly telescoped to lock said received immediately consecutive component in said inwardly and outwardly telescoped positions, respectively.

5,249,366

DIMENSION MEASURING INSTRUMENT

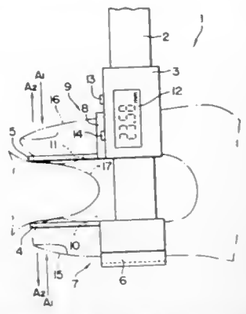
Seigo Takahashi, and Kouji Sasaki, both of Kawasaki, Japan, assignors to Mitutoyo Corporation, Tokyo, Japan

Filed Apr. 27, 1992, Ser. No. 874,613
Claims priority, application Japan, Apr. 26, 1991, 3-038991[U]
Int. Cl.[5] G01B *5/14*
U.S. Cl. 33—811 **8 Claims**

1. A dimension measuring instrument, comprising: a first member and a second member supported for relative movement, measuring means cooperable with said first and second members for measuring relative displacement therebetween and for providing an operator perceptible indication of the relative displacement, first and second jaws each provided on

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a respective one of said members and each engagable on a side thereof remote from the other by a finger, each of said jaws



having a hole therethrough so that a cushion of a finger engaging the jaw projects through the hole therein toward the other of said jaws.

5,249,367

NAIL DRYING APPARATUS AND METHOD THEREFOR

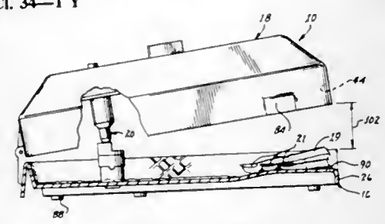
Michael D. Nafziger, Scottsdale, and Roger L. Davis, Tempe, both of Ariz., assignors to Ultraset Limited Partnership, Scottsdale, Ariz.

Continuation-in-part of Ser. No. 235,349, Aug. 23, 1988, abandoned, and a continuation-in-part of Ser. No. 394,200, Aug. 15, 1989, Pat. No. 5,130,551, which is a continuation-in-part of Ser. No. 235,349, Aug. 23, 1988, abandoned. This application Mar. 9, 1992, Ser. No. 848,538

The portion of the term of this patent subsequent to Jul. 14, 2009, has been disclaimed.

Int. Cl.[5] F26B *3/28*

U.S. Cl. 34—1 Y **7 Claims**



1. A nail drying apparatus comprising:

a housing having ultraviolet radiation resistant lower and upper portions;

an ultraviolet light source disposed within the housing;

means for adjusting the positioning of the ultraviolet light source with respect to a person's nails; and

nail positioning means located in the lower portion for positioning a person's nails relative to said ultraviolet light source.

5,249,368

APPARATUS AND METHOD FOR ISOLATED REMEDIATION OF CONTAMINATED SOIL

William Bertino, 5 Oakdale Dr., Millville, N.J. 08332; Frank Pace, 248 W. Wheat Rd., Vineland, N.J. 08360, and Gilbert Marshall, 559 Evansburg Rd., Collegeville, Pa. 19426

Filed Dec. 23, 1991, Ser. No. 812,399

Int. Cl.[5] F26B *5/04*

U.S. Cl. 34—15 **14 Claims**

14. A method for treating earth containing volatile and semivolatile contaminants, the method comprising:

(a) providing an integral unit comprising

(i) a sealed chamber comprising an interior surface, a bottom wall, a top wall, a first side wall, two adjacent side walls adjacent to the first side wall, an end wall opposite the first side wall, and a vertical plane through a central axis aligned normal to the first side wall,

(ii) first means to allow opening the first side wall to fully expose the chamber and close the first side wall to seal the chamber, and

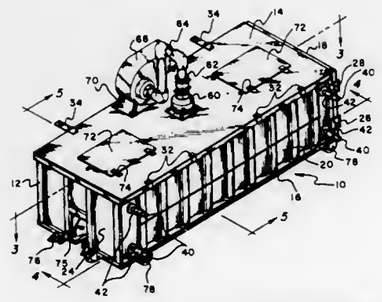
(iii) second means to allow opening the top wall to expose a sufficient opening to the chamber to allow charging the contaminated earth to the chamber, close the top wall, and seal the chamber,

(iv) a plurality of lengths of first perforated tubing positioned and held in the chamber proximate the interior surface of the chamber,

(v) first conduit connecting in flow communication the first perforated tubing through openings in the chamber to the atmosphere,

(vi) valve means to control flow through the first conduit,

(vii) at least one length of second perforated tubing aligned normal to the first side wall proximate to the vertical plane in the chamber,



(viii) means to hold the second perforated tubing in position,

(ix) vacuum means to draw a vacuum and pull vapors from the second perforated tubing, and

(x) second conduit connecting through an opening in the chamber the second perforated tubing in flow communication to the vacuum means.

(b) opening the second means to open the top wall to fully expose the chamber,

(c) charging the chamber with the contaminated earth,

(d) closing the second means to close the top wall to seal the chamber,

(e) drawing a vacuum and pulling vapors from the second perforated tubing with the vacuum means until a chosen quantity of contaminants have been removed,

(f) opening the first means to open the first side wall to fully expose the chamber,

(g) tilting the container to cause the earth to flow out of the container through the open side wall, and

(h) closing the first means to close the first side wall and seal the chamber.

5,249,369

METHOD AND APPARATUS FOR DRYING THE INTERIOR SURFACES OF HOLLOW ARTICLES SUCH AS AIR REBREATHING OR RESUSCITATOR BAGS

Mark Mallet, 51 Shady Lane Crescent, Thornhill, Ontario, Canada L3T 3W6

Filed Feb. 19, 1992, Ser. No. 836,962

Int. Cl.[5] F26B *7/00*

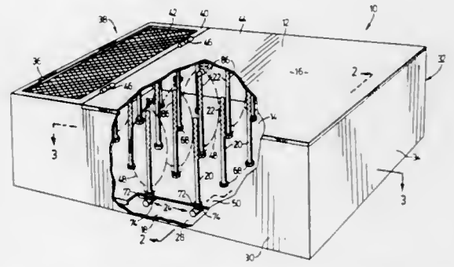
U.S. Cl. 34—21 **9 Claims**

1. In a method for the removal of liquid adhering to the inner surface of a nonporous article that includes a normally collapsed chamber inflatable through a reduced passageway leading thereinto,

the step of orienting the article so as to dispose the passageway lowermost,

the step of generating a stream of suitable gas for introduction into the chamber through the passageway sufficiently pressurized so that upon release and expansion into the chamber the chamber will be inflated so as to expose the inner surface thereof for impingement of the expanded gaseous stream thereupon,

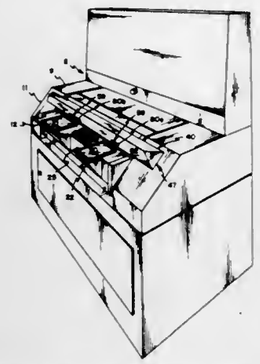
the step of directing the generated gaseous stream upwardly through the passageway while confining same to one portion thereof and introducing same for release and expansion into the chamber to inflate same, and



the step of withdrawing the expanded gaseous stream downwardly through the other portion of the passageway for discharge into a region at a lower pressure and at a rate which sufficiently maintains inflation of the chamber,

whereby under inflation and exposure of the inner surface of the chamber to impingement of the expanded gaseous stream, the adhering liquid is impelled to coalesce and descend under gravity as well as taken up by entrainment and evaporation in the gaseous stream for discharge downwardly through the other portion of the passageway.

is in proximity with said contact surface by directing a flow of air across the said contact surface; and



(b) exhausting a flow of air from said drying means so as to evaporate moisture from said contact surface.

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VAPOR DRIER

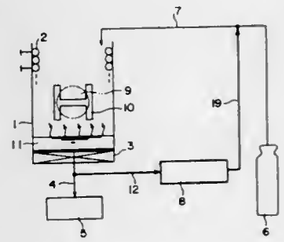
Yoshio Saito, Ohme; Masaru Umeda, Tokyo; Kohei Ninomiya, and Masao Kikuchi, both of Ichihara, all of Japan, assignors to Kabushiki-kaisha Hitachi Seisakusho, Tokyo, Japan

Filed Oct. 18, 1991, Ser. No. 779,026

Claims priority, application Japan, Oct. 19, 1990, 2-282820

Int. Cl.[5] F26B *21/06*

U.S. Cl. 34—78 **7 Claims**



1. A vapor drier for drying an object to be processed by filling a processing chamber with vapor of volatile processing liquid and exposing said object to said vapor; said vapor drier comprising:

a circulating/dehydrating/refining means for refining said volatile processing liquid stored in said processing chamber and circulating refined fluid into said processing chamber, said circulating/dehydrating/refining means having at least an evaporating section to evaporate said volatile processing liquid stored in said processing chamber, a dehydrating section to remove water from said vapor generated in said evaporating section with a dehydrating/separating membrane, and a refining section to remove particles and dissolved metals from said dehydrated vapor by the contact of said dehydrated vapor with the condensed liquid thereof.

5,249,370

METHOD AND APPARATUS FOR FINGERPRINT IMAGE PROCESSING

Bruce N. Stanger, Norwood; Michael J. Miles, Victoria, and Glenn M. Fishbine, Eden Prairie, all of Minn., assignors to Digital Biometrics, Inc., Minnetonka, Minn.

Continuation of Ser. No. 614,390, Nov. 15, 1990, abandoned. This application Jul. 28, 1992, Ser. No. 921,458

Int. Cl.[5] F26B *3/00*

U.S. Cl. 34—22 **15 Claims**

9. A method of preparing for fingerprint image processing, comprising the steps of:

(a) providing a fingerprint image processing apparatus comprising a means for imaging having a contact surface adapted to receive a finger thereon, and a drying means mounted on said imaging means in proximity with said contact surface, said drying means adapted for removing moisture from said contact surface or from a finger which

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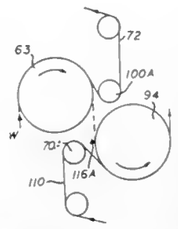
APPARATUS FOR DRYING A WEB

Gregory L. Wedel, Beloit, Wis., assignor to Beloit Technologies, Inc., Wilmington, Del.

Continuation of Ser. No. 167,672, Feb. 11, 1988, which is a continuation-in-part of Ser. No. 14,569, Feb. 13, 1987, Pat. No. 4,934,067. This application Apr. 9, 1992, Ser. No. 867,722

Int. Cl.[5] F26B *13/08*

U.S. Cl. 34—117 3 Claims



1. A dryer apparatus for drying alternate sides of a web of paper, said apparatus comprising:

a single tier dryer section including:

a single tier of drying cylinders for drying one side of the web, said one side coming into direct surface contact with said drying cylinders;

a plurality of vacuum rolls, each roll of said plurality of vacuum rolls being lesser in diameter than, said in close proximity to, and disposed between and below adjacent drying cylinders of said single tier of drying cylinders, said plurality of vacuum rolls being connected to a source of partial vacuum;

a further single tier dryer section including:

2 a further single tier of drying cylinders for drying an opposite side of the web, said opposite side coming into direct surface contact with said drying cylinders of said further single tier;

a further plurality of vacuum rolls, each roll of said further plurality of vacuum rolls being lesser in diameter than, and in close proximity to, and disposed between and above adjacent drying cylinders of said further single tier of drying cylinders, said further plurality of vacuum rolls being connected to a source of partial vacuum; and

means for transferring the web in an open draw between said single tier and said further single tier dryer sections.

5,249,373

WEB THREADING SYSTEM

Allan W. Rogne, Two Rivers, and Dennis M. Theyerl, Whitelaw, both of Wis., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Continuation of Ser. No. 647,224, Jan. 29, 1991, abandoned. This application Sep. 3, 1992, Ser. No. 939,574

Int. Cl.[5] F26B *13/10*

U.S. Cl. 34—120 12 Claims

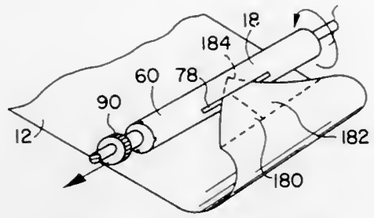
5. Process for threading a web through a dryer comprising the steps of:

a. inserting a web into a slot of a lock up threading are supported on each end to parallel dryer chains about said dryer guide rails;

b. rotating said lock up threading bar;

c. engaging a spring lock up means from an unlocked to a locked position;

d. running said lock up threading bar between said chains with said web through said dryer;



e. stopping said lock up threading bar with said web; and,

f. unwinding said web from said lock up threading bar.

5,249,374

APPARATUS FOR CONTINUOUSLY DRYING AND SHRINKING LENGTHS OF TEXTILE MATERIAL

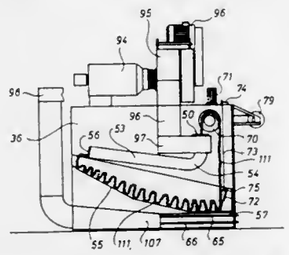
Erik Henningsen, Vaerløse; Jeppe Stigsen, Frederiksberg, and Helge Christensen, Hillerod, all of Denmark, assignors to Vald. Henriksen A/S, Soborg, Denmark

Filed Jan. 17, 1992, Ser. No. 822,613

Claims priority, application Denmark, Jan. 21, 1991, 0096/91

Int. Cl.[5] F26B *13/00*

U.S. Cl. 34—213 3 Claims



1. An apparatus for continuously drying and shrinking lengths of textile material, said apparatus comprising a plurality of chambers, in which the textile material is sucked through an inlet by means of drying air and carried along a treatment path to an outlet, and an air feeding device feeding heated drying air to the inlet of the chamber, the textile material being advanced to said inlet by means of a rotating winch, wherein the chambers comprise a plurality of substantially identical chambers (**21** to **44**) arranged in parallel and interconnected in series wherein the inlet of each chamber (**21** to **44**) comprises a substantially vertically downward extending nozzle (**51**) placed below the associated winch (**70**) and fed with drying air in form of downward jets along the circumference, and a channel (**53**) with an inlet opening (**52**) placed immediately below the nozzle (**51**) and continuing through a curve into an upwardly inclining portion, in which the loosely flapping textile material is advanced by means of the drying air while striking against the walls of the channel (**53**), and wherein each chamber (**21** to **44**) comprises a chute (**55**) inclining obliquely downwards from a level immediately below the outlet of the channel (**53**) towards the bottom (**57**) of the chamber in a direction backwards again towards an area substantially vertically below the nozzle (**51**) in the inlet (**50**) of the succeeding chamber (**21** to **44**), and whereby all the chambers form a treatment path for the textile material (**111**), and where said chambers are interconnected in such a manner that the textile material is carried in sequence from the outlet of one chamber to the inlet (**50**) of the succeeding chamber, and wherein said chambers (**21** to **44**) are arranged in succeeding, mutually separated groups (**21** to **27**, **28** to **35**, **36** to **43**, and **44**), each group including at least one chamber, and wherein each group comprises an air feeding device feeding heated drying air substantially to all the inlets (**50**) of the chambers of each group, said air feeding device receiving air from all the chambers of the succeeding group.

5,249,375

BOOT FOR SAILING OR FOR WINTER SPORTS

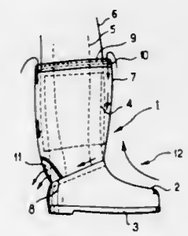
Patrick Tabarly, Le Bono, France, assignor to Bottles le Chameau S.A., Pont d'Ouilly, France

Filed Apr. 10, 1992, Ser. No. 866,755

Claims priority, application France, Apr. 12, 1991, 91 04477

Int. Cl.[5] A43B *3/02*

U.S. Cl. 36—1.5 8 Claims



1. A boot made of rubber or similar material for use by a person in sailing or for winter sports, said boot having a foot portion and an upper, with the latter extending upwardly from the ankle region of the boot and being adapted to receive the calf region of the wearer's leg and being further adapted to fit into a waterproof or oilskin trouser leg worn by the person, and said boot including a cuff of a waterproof flexible material positioned exteriorly of said upper and secured to said boot around said ankle region thereof, said cuff when at full length extending upwardly from said ankle region to a region just beyond the uppermost edge of said upper and being provided with means enabling said cuff to be gathered together above said upper of said boot and against said waterproof or oilskin trouser leg at the outside of the latter when said upper of said boot is slid inside said trouser leg, and said cuff at the join thereof with said boot including a drain outlet located rearwardly of said ankle region.

5,249,376

SHOE HEEL WITH ROLLERS

Michael Capria, 700 W. Waters Ave., Tampa, Fla. 33604

Filed Nov. 16, 1992, Ser. No. 977,001

Int. Cl.[5] A43B *23/00*

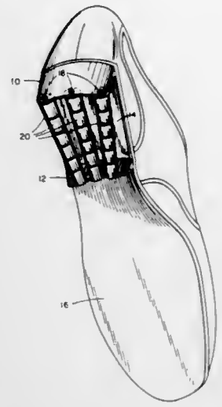
U.S. Cl. 36—115 2 Claims

1. A shoe heel device in combination with a shoe comprising:

a housing fastened to an undersurface rearward heel portion of the shoe;

a plurality of rollers on axles secured inside said housing wherein a longitudinal axis of said axles substantially aligns to converge on a mutual reference point located about a forward undersurface of the shoe

wherein said rollers are substantially wheel shaped structures and said axles are mounted substantially adjacent to each other such that a distance between the axles approximates closer toward a forefoot region of the shoe than in a rearfoot region of the shoe.



5,249,377

SKI BOOT HAVING TENSIONING MEANS IN THE FOREFOOT REGION

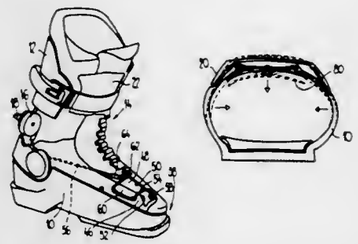
Klaus Walkhoff, Kreuzlingen, Switzerland, assignor to Raichle Sportschuh AG, Kreuzlingen, Switzerland

Continuation of Ser. No. 648,056, Jan. 30, 1991, abandoned. This application Feb. 10, 1993, Ser. No. 15,887

Claims priority, application Switzerland, Jan. 30, 1990, 00297/90

Int. Cl.[5] A43B *5/04*

U.S. Cl. 36—119 11 Claims



1. A ski boot, comprising:

a boot shell provided with a flexible part overlapping a forefoot region and having an opening extending in the longitudinal direction of the boot over an instep region, longitudinal edges of the opening being spaced a distance from one another;

tensioning means for changing a width of the opening to adapt to a foot of a wearer, the tensioning means being connected to the longitudinal edges of the opening in the region of the boot shell part overlapping the forefoot region to change the width of the opening only in the forefoot region;

a front shaft part, covering the boot shell in the forefoot region and a shinbone region, and connected to the boot shell by an articulating joint in a manner such that the front shaft part is capable of being lifted off from the boot shell at a section covering the shinbone region for permitting entry into the ski boot;

a non-articulating rear shaft part rigidly connected to the

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boot shell, such that the front shaft part is releasably connectable to one of the boot shell and the rear shaft part;

a tensioning device, arranged on the rear shaft part, and connected to the tensioning means for tightening only the tensioning means; and

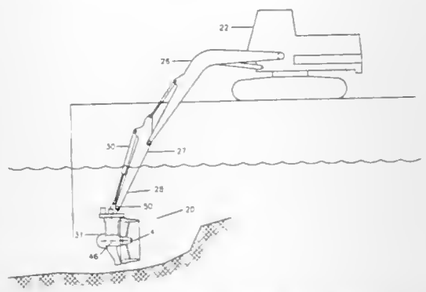
a closing arrangement, arranged outside of the forefoot region and functioning independently from the tensioning means and tensioning device, for connecting the front shaft part to one of the boot shell and the rear shaft part in the shinbone region.

5,249,378

HYDRAULIC THRUST PRODUCING IMPLEMENT

James A. Frame, Box 5647, Fort McMurray, Alberta, T9H 3G6, Canada

Filed Sep. 17, 1992, Ser. No. 946,951
Int. Cl.[5] E03F *3/88*
U.S. Cl. 37—342 13 Claims



1. A submersible thrust producing implement for use in combination with an excavator, the excavator being of the type having a boom and a stick with an attachment end on the stick for attaching the implement, which boom and stick can be extended and retracted to selectively submerge the attachment end to a predetermined location in a body of water, and having a hydraulic power system for actuating the boom, the stick, and the implement, the implement comprising:

(a) a housing;

(b) a propeller mounted on the housing for rotation about a first axis;

(c) means for driving the propeller to produce a current of water away from the housing sufficient to produce a predetermined thrusting force;

(d) a first rotating means for selectively rotating the housing about a second axis perpendicular to the first axis to control the direction of the thrusting force in a first plane; and

(e) a second rotating means for selectively rotating the housing about a third axis perpendicular to both the first axis and the second axis to control the direction of the thrusting force in a second plane.

5,249,379

MOUNTING STRUCTURE FOR THE LINEAR ACTUATORS OF A TRENCHING APPARATUS

John L. Baker, and Dannie R. Teel, both of Lubbock, Tex., assignors to Eagle-Picher Industries, Inc., Cincinnati, Ohio

Filed Sep. 15, 1992, Ser. No. 945,100
Int. Cl.[5] E02F *5/06*
U.S. Cl. 37—357 10 Claims

1. An apparatus for digging a trench, comprising:

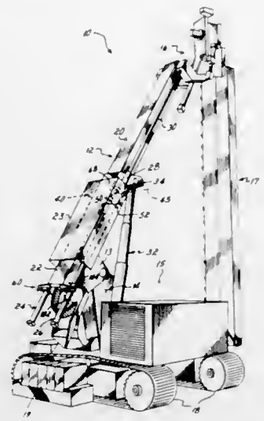
a support base movable along a trench line;

a digger arm for digging a trench along said trench line;

a manipulator head pivotally mounted to said digger arm;

a boom assembly including an inner boom slidable within an outer boom, said outer boom being pivotally mounted to said support base and said inner boom being connected to said manipulator head;

at least one linear actuator operative to move said inner boom in and out of said outer boom, said linear actuator having an actuator housing and an actuator rod connected to said inner boom; and



pivot means for mounting said actuator housing of said linear actuator to said outer boom of said boom assembly to permit movement of said linear actuator about at least two mutually perpendicular axes.

5,249,380

IDENTIFICATION TAG HOLDER FOR GAS CYLINDER

Jacob Fast, 6850 NW. 12th Ave., Ft. Lauderdale, Fla. 33309

Filed Aug. 28, 1991, Ser. No. 751,068
Int. Cl.[5] G09F *3/10*
U.S. Cl. 40—299 8 Claims



6. A combination comprising a gas cylinder and an identification tag holder engaged with a screw-thread on a connection part of the gas cylinder, the tag holder comprising an elongate member of sheet material divided into at least two thread-engagement portions by a pair of transverse fold lines, an information supporting surface defined between the pair of fold lines, the tag holder being folded along the fold lines whereby the thread-engagement portions are superimposed on each other and the information surface is located transversely of the thread engagement portions, and a generally circular cut-out in each of the thread engagement portions, the cut-outs being in register with each other and frictionally engaged around said screw-thread.

5,249,381

VEHICLE EMERGENCY SIGN

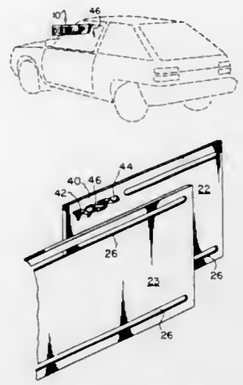
Raffy Panossian, P.O. Box 2054, Cambridge, Ontario, Canada N3C 2V6

Filed May 20, 1992, Ser. No. 885,444
Int. Cl.[5] G09F *21/04*
U.S. Cl. 40—591 5 Claims

1. An extendable sign for mounting on a vertically movable side window of a motor vehicle comprising in combination at least:

a plurality of interconnected panels of substantially rigid material slidably extendable linearly from a first closed position to a second extended position;

attachment means interconnecting in the panels for allowing the panels to slide relative to one another, the attachment means comprising one or more barbed projections on one panel with a slot in an associated panel; and



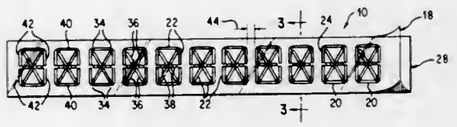
a bracket means secured to a first panel for mounting the sign on a vertically moveable side window of a motor vehicle to project when extended substantially horizontally from a side of the vehicle.

5,249,382

PATTERNED INDICIA FORMING SYSTEM AND METHOD

Patrick B. Moynihan, 1205 Halls Chance La., Belcamp, Md. 21017

Filed Jul. 26, 1991, Ser. No. 736,611
Int. Cl.[5] G09F *3/04*
U.S. Cl. 40—630 10 Claims



1. A patterned indicia forming system, comprising:

(a) a flexible carrier layer;

(b) means for forming indicia having a plurality of sets of indicia elements, each of said indicia elements defining a linearly directed line element having a frontal surface releasably secured to said flexible carrier layer; and,

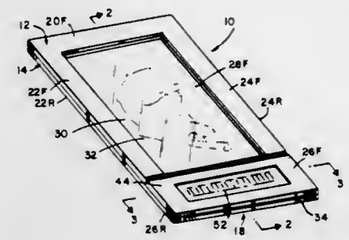
(c) a flexible backing layer releasably secured to a rear surface of each of said indicia elements, said flexible backing layer being removable from said rear surface of said indicia elements for attachment of said indicia elements to a base surface, each of said sets of said indicia elements defining a plurality of separable indicia elements forming a substantially rectangularly contoured envelope, being formed by at least four of said indicia elements, said indicia elements being individually removable from said flexible carrier layer, each of said sets of indicia elements being linearly aligned with a next adjacent set of indicia elements for linearly aligning said patterned indicia on said base surface, said rear surface of said indicia elements includes an adhesive coating for attachment to said base surface, each of said sets of said indicia elements including a further set of diagonally positioned indicia elements mounted to said flexible carrier layer within said rectangularly contoured envelope.

5,249,383

CARD DISPLAY HOLDER AND PROTECTOR

Leo McCusker, 16 Cote Cir., Raymond, N.H. 03077, and Javier Collao, 166 Greenwood Rd., Andover, Mass. 01810

Filed Nov. 26, 1991, Ser. No. 798,581
Int. Cl.[5] G09F *3/18*
U.S. Cl. 40—642 13 Claims



1. A plastic display device for holding and protecting a card or card-like display item said display device comprising:

a rectangular member having front and rear surfaces and top and bottom surfaces; said rectangular member having a frame structure comprising a top wall, side walls and a bottom wall;

a first transparent panel section extending about the front surface of the frame structure;

a second transparent panel section extending about the rear surface of the frame structure;

said frame structure and front and rear panel sections forming a chamber means of sufficient size for receiving a care or card-like display item;

groove means horizontally disposed along the front section below the chamber and a corresponding groove means disposed along the base section whereby the base sections can be detached to provide removal of a card display item from the chamber means;

a rectangular slot means having front, rear and side surface walls and a width at least equal to the width of the chamber means and extending from the bottom surface of the rectangular member to a connecting means;

said connecting means comprising a first rib member extending inwardly along the rear surface of said slot means and forming the lower surface of said chamber means, and a mating second rib member extending inwardly along the front surface of said slot means and below said first rib member;

said rectangular member being sufficiently flexible whereby said connecting means can be sufficiently moved apart whereby a card of card-like display item can be inserted through the slot means and connecting means into the chamber means.

5,249,384

APPARATUS AND METHOD FOR DISPLAYING AN ADVERTISEMENT OR MESSAGE INSIDE A GOLF CUP

Richard W. Dark, Jr., Bridgeton, Mo., assignor to Ad-In-The-Hole International, St. Louis, Mo.

Filed Mar. 31, 1992, Ser. No. 861,313
Int. Cl.[5] A63B *57/00;* G09F *3/00*
U.S. Cl. 40—642 24 Claims

1. An apparatus for displaying an advertisement or message inside a golf cup, the apparats comprising:

means for displaying a marking for an advertisement or message;

means for supporting the displaying means, the supporting

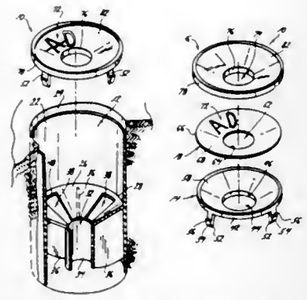
VOL 1155 ISS 1 OCT 5 1993 UMI

means being adapted to be selectively inserted and removed from a golf cup interior;

means for covering the displaying means supported on the supporting means, the covering means being attached to the supporting means;

the supporting means is a circular bottom disk insertable into and removable from a golf cup interior;

the covering means is a circular top disk releasably attachable to the bottom disk with the displaying means therebetween;



the bottom disk has a peripheral edge and a center hole and a support surface extending therebetween, the support surface supporting the displaying means on top of the support surface; and

the top disk has a peripheral edge with a peripheral flange surrounding the edge, and a center hole with a center flange surrounding the center hole, the peripheral flange is engagable around the peripheral edge of the bottom disk and the center flange is engagable inside the center hole of the bottom disk to releasably attach the top disk to the bottom disk.

5,249,385

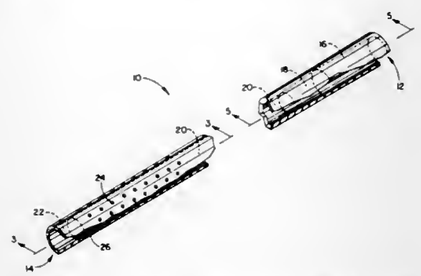
SHOTGUN BARREL

Hans J. Vang, 340 Old Mill Rd., Santa Barbara, Calif. 93110, and Carl D. Calos, 1700 E. College Ave., Lompoc, Calif. 93436

Filed Mar. 24, 1992, Ser. No. 856,512

Int. Cl.[5] F41A *21/40, 21/28, 21/18*

U.S. Cl. 42—79 **19 Claims**



1. A shotgun barrel having a chamber end and a muzzle end, comprising:

(a) a cartridge chamber, said cartridge chamber positioned adjacent to said chamber end, said cartridge chamber having a bore of substantially uniform diameter;

(b) a tapered and elongated forcing cone, said forcing cone positioned between said cartridge chamber and said muzzle end, said forcing cone having a bore, said forcing cone having a length, said forcing cone bore having a diameter, the length of said forcing cone being greater than its bore diameter, the bore diameter of said forcing cone toward said muzzle end being of reduced diameter with respect to the bore diameter of said cartridge chamber;

(c) a barrel section, said barrel section positioned between said forcing cone and said muzzle end, said barrel section having a bore of substantially uniform diameter, said barrel section bore having an inner surface;

(d) a muzzle section, said muzzle section positioned between said barrel section and said muzzle end, said muzzle section having a bore, said muzzle section bore having a diameter, the bore diameter of said muzzle section being of reduced diameter with respect to the bore diameter of said barrel section; and

(e) a plurality of vents, said vents positioned in said barrel section near said muzzle section, the inner surface of said barrel section being roughened in proximity to said vents.

5,249,386

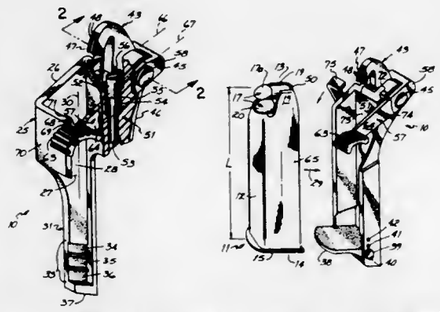
CARTRIDGE CLIP RELOADER

Robert D. Switzer, 2200 N. Ft. Thomas Ave., Ft. Thomas, Ky. 41075

Filed Aug. 26, 1992, Ser. No. 935,547

Int. Cl.[5] F41A *9/83*

U.S. Cl. 42—87 **33 Claims**



1. A reloader for a cartridge clip, said cartridge clip having an open end and a closed end, said reloader comprising

a sleeve adapted to receive a cartridge clip in seated relation during reloading, said sleeve being open at its top end,

a handle connected to said sleeve, said cartridge clip being adapted to lay on said handle when said cartridge clip is engaged in operational relation with said reloader, a user of said reloader manually gripping in one hand both said cartridge clip and said handle to aid in maintaining operational assembly of said cartridge clip with said reloader during use,

a plunger connected with said reloader, said plunger being manually depressible to depress a top cartridge already seated in said cartridge clip to accommodate receiving another cartridge as a successor top cartridge in said cartridge clip when said cartridge clip is operationally engaged with said reloader, and

an operator arm connected with said plunger for reciprocating said plunger, said operator arm being manually depressible by a user's thumb on one of a user's hands to depress said plunger while manually gripping said cartridge clip and said handle by the fingers and palm with that same one of the user's hands when said cartridge clip is in operational relation with said reloader, said operator arm being manually depressible by said user's thumb in the same operational direction as said top cartridge is depressed within said cartridge clip, thereby leaving the other of the user's hands free to reload cartridges in said cartridge clip.

5,249,387

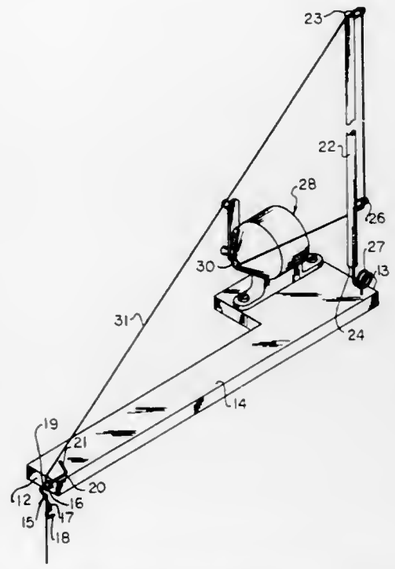
ICE FISHING APPARATUS

Edward W. Slocum, 7725 Grove Rd., and Daniel L. Slocum, 17 Green St., both of Franklinville, N.Y. 14737

Filed Nov. 30, 1992, Ser. No. 982,850

Int. Cl.[5] A01K *97/12*

U.S. Cl. 43—16 **4 Claims**



1. An ice fishing apparatus, comprising,

a base plate, the base plate having a base plate first end and a base plate second end spaced at opposed end portions of the base plate, with a base plate top surface extending coextensively between the base plate first end and the base plate second end, the base plate first end and the base plate second end each oriented at a predetermined oblique angle relative to the top surface, and

a hook member, the hook member having a hook member axle, the hook member axle pivotally mounted adjacent the base plate first end to pivotally mount the hook member relative to the base plate first end, and

a lift rod, the lift rod including a lift rod first end and a lift rod second end, the lift rod second end including spring means mounted to the lift rod second end and to the base plate top surface adjacent the base plate second end to bias the lift rod orthogonally relative to the top surface in a second position from the first position that is oriented parallel relative to the top surface, and

a fishing reel mounted to the base plate, the fishing reel having fishing line directed therefrom extending along the lift rod and mounted to the hook member,

wherein the hook member includes a hook member first leg, including a first leg first end, with the first leg first end including a U-shaped hook to receive the fishing line therethrough, and a first leg second end, the first leg second end including a second leg orthogonally mounted to the first leg, and the second leg including an axle orthogonally directed therethrough, and a third leg orthogonally mounted to the second leg spaced from the first leg, and the third leg including a fourth leg orthogonally mounted to the third leg for mounting over the lift rod to secure the lift rod in the first position, wherein a fish strike rotates the hook member releasing the lift from the first position.

5,249,388

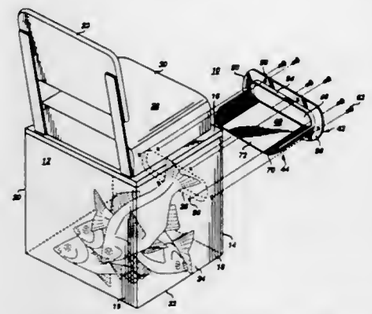
ONE PIECE FISH SLOT INSERT

Cleo G. Crabtree, Lebanon, Mo., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Apr. 30, 1992, Ser. No. 876,036

Int. Cl.[5] A01K *97/04*

U.S. Cl. 43—55 **14 Claims**



1. A combination fish receiving and storing assembly, the combination comprising:

a storage container having an interior chamber configured to retain a sufficient amount of fluid for preserving fish and an upper surface configured as a lid, said lid providing access to said interior chamber;

said storage container having at least one receiving slot for accepting the fish, said slot being in fluid communication with said interior chamber of said container;

an insert having a mouth portion with a flange, said flange having a front side and a rear side, said flange defining an aperture of said mouth portion;

a tongue projecting from said rear side of said flange and into said storage container, said tongue having a raised central platform; and

means for securing said insert onto said container and into said at least one slot.

5,249,389

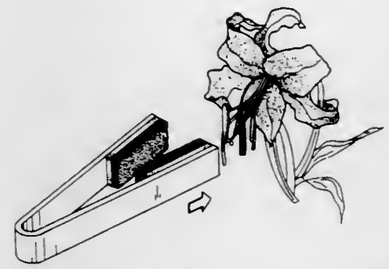
TOOL FOR REMOVING POLLEN FROM LILIES

Joseph S. Gallo, 937 East St., Walpole, Mass. 02081

Filed Jun. 10, 1992, Ser. No. 896,234

Int. Cl.[5] A01G *7/00;* **A01H** *1/02*

U.S. Cl. 47—1.41 **8 Claims**



1. A tool for removing the pollen-covered anthers of a lily, said tool comprising:

a body in the shape of a tweezers, said tweezers having two arms each having a free end extending in a longitudinal direction and said body being made of a material and said arms and body being configured so that said arms may be squeezed together in a transverse direction to bring the free ends of the tweezers arms together, and

anther-contacting members adhered to the free end of each

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of said tweezers arms, said anther-contacting members comprising a multi-layer composite member adhered to each of said free ends of said tweezers arms,

wherein said multi-layer composite members each include a foam layer supporting an outer bristle layer, said bristle layer containing a multiplicity of closely spaced bristles extending inwardly so that bristles from one layer contact bristles of the opposing composite member when said tweezers arms are squeezed together, and

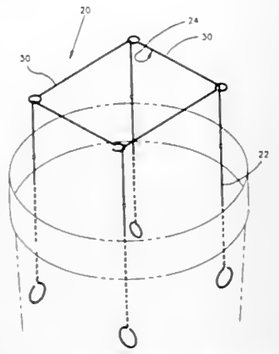
wherein said foam layer and bristle layers together provide sufficient softness and sufficient ability to grip the anthers to permit said anthers to be removed successfully in most instances without removal of the filaments supporting the anthers.

5,249,390

PLANT SUPPORT TRELLIS APPARATUS

Ankur Purohit, Darien, and James Kotora, Jr., La Grange Park, both of Ill., assignors to Anshal, Inc., Darien, Ill.

Filed Aug. 9, 1991, Ser. No. 743,172
Int. Cl.[5] A01G *17/06*
U.S. Cl. 47—45 **3 Claims**



1. Trellis apparatus for containing plant foliage, comprising the combination of

a plurality of separate substantially identical rigid L-shaped wire pieces, each a circular cross-section of the order of ⅛-¼ inch OD;

each wire piece having short and long generally straight portions meeting across a generally right angle bend, defining thereby a single plane;

each straight portion, from an interior location spaced from the bend, being curved over approximately a complete circle to direct the free end of the wire at a sharp angle transverse to the wire at the interior location and to position it in adjacent closely spaced proximity thereto, for defining a substantially closed loop and for the making the free wire end interiorly inaccesible for safety reasons;

the free end of the wire on the short portion being spaced slightly from the wire at the interior location for defining a gap just wider than the wire cross-section, to allow the short portion loop of one piece to be fitted over and be interlocked with the long portion of another piece at or near its bend, to laterally secure the pieces together;

the free end of the wire on the long portion being closely adjacent the wire at the interior location for defining a minimal gap;

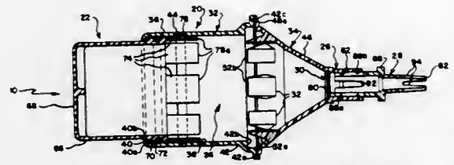
whereby the free end of each long portion may be inserted directly into the plant dirt at different circumferential orientations radially adjacent the plant to a depth that provides stable support thereof and that orients the short portion substantially horizontal and laterally adjacent the plant foliage, and the short portion loops of the separate pieces can be interlocked onto the adjacent piece to form with the interlocked short portions a closed three-dimensional containment ring surrounding the plant at a desired height above the dirt.

5,249,391

TREE INJECTION DEVICE

James A. Rodgers, Orchard Park, N.Y., assignor to Omala Inc., Cheektowaga, N.Y.

Filed Aug. 19, 1991, Ser. No. 746,930
Int. Cl.[5] A01G *29/00*
U.S. Cl. 47—57.5 **17 Claims**



1. In a plant injection device of the type having a pair of telescopically associated, relatively inner and outer container sections cooperating to define a liquid and gas receiving interior space whose volume is varied by relative axial movement of said sections between extended and contracted positions for expelling said liquid therefrom through a liquid discharge tube carried by said liquid therefrom through a liquid discharge tube carried by said outer section, the improvement comprising in combination;

said outer section includes an open end portion for mounting said inner section and an opposite end portion for mounting said discharge tube, said open end portion including a side wall having an inner bearing surface, a first open end through which said inner section extends and a second open end connected to said opposite end portion and defining a latch surface extending outwardly from said bearing surface and facing away from said first open end;

said inner section includes a side wall supported for sliding movement by and in liquid sealed engagement with said side wall of said open end portion, a closed end and an open end said open end of said inner section having a resiliently deformable latch means arranged for sliding engagement with said bearing surface during movement of said sections from said extended position towards said contracted position, said latch means being resiliently deformed by said bearing surface during said movement to create a bias for moving said latch means outwardly beyond said bearing surface for snap fit engagement with said latch surface upon movement of said sections into said contracted position for preventing return thereof to said extended position; and

a frangible seal fixed transversely with said outer section and dividing said outer section into separate volumes for receiving said liquid and gas and a chemically dissimilar material intended to be mixed with said liquid prior to discharge of said liquid through said discharge tube, and said inner section carries piercing means for creating at least one opening in said seal to place said volumes in flow communication upon movement of said sections from said extended position into said contracted position.

5,249,392

APPARATUS FOR OPENING AND CLOSING A CHAMBER DOOR

John C. Houston, and Arthur T. Nagare, both of Erie, Pa., assignors to American Sterilizer Company, Erie, Pa.

Filed Apr. 1, 1992, Ser. No. 861,731
Int. Cl.[5] E05F *11/00*
U.S. Cl. 49—360 **8 Claims**

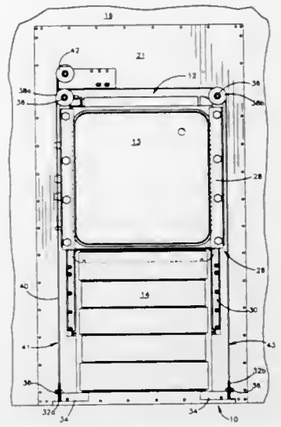
1. An apparatus for moving a door of a chamber between open and closed positions relative to a chamber opening comprising:

mounting means suspended from said chamber, said mounting means slidably attaching said door to said chamber;

a flexible member adapted to movably support said door thereon and having a first end and a second end;

a first means for applying force to said first end of said flexible member which is effective for vertically lowering said door into said open position and vertically raising to said closed position, said first force applying means being attached to said chamber;

a second means for applying a force to said second end of said flexible member;



at least one first support means for receiving said flexible member thereon, said first support means being attached to said door; and

at least one second support means for receiving said flexible member thereon, said second support means being attached to said chamber such that said flexible member extends between said first and said second support means to supportingly engage said door along its periphery such that said door is suspended on said flexible member whereby said flexible member does not cross in front of the opening plane of the door during opening.

5,249,393

BRAKE DRUM MICRO-FINISHING APPARATUS

Norman R. Judge, Dewitt, and Edward E. Judge, Lansing, both of Mich., assignors to Industrial Metal Products, Corp., Lansing, Mich.

Filed Jan. 21, 1992, Ser. No. 823,137
Int. Cl.[5] B24B *21/16, 29/02*
U.S. Cl. 51—141 **34 Claims**

1. An apparatus for micro-finishing an inside cylindrical brake drum braking surface, said braking surface defining a central longitudinal axis, said apparatus comprising:

a shoe having an engagement surface, said engagement surface having a semi-cylindrical shape substantially corresponding to a portion of said braking surface;

a supply of micro-finishing film, said film having an abrasive surface formed on at least one side thereof;

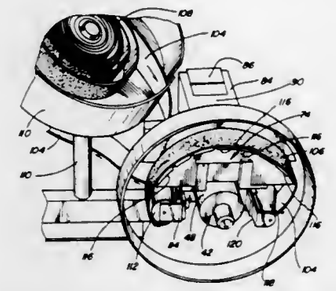
means for routing said film over said shoe engagement surface with said abrasive surface being positioned opposite and facing away from said engagement surface;

mounting means for mounting said brake drum to said apparatus about an axis of rotation,

locating means for coaxially positioning said axis of rotation and said braking surface longitudinal axis;

means for rotating said brake drum about said axis of rotation;

means for urging said abrasive surface into surface-to-surface contact with said braking surface during rotation of said brake drum; and



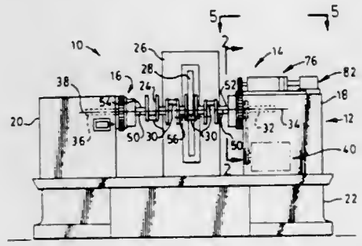
oscillation means for axially oscillating said shoe and said film across said braking surface in a direction along an axis substantially parallel to said braking surface longitudinal axis and to said axis of rotation while said brake drum is rotated.

5,249,394

CHUCK INDEXING METHOD

Roger D. Griswold, Sparland, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Division of Ser. No. 840,377, Feb. 24, 1992, Pat. No. 5,189,846.
This application Oct. 19, 1992, Ser. No. 962,558
Int. Cl.[5] B24B *1/00*
U.S. Cl. 51—281 C **6 Claims**



1. A method for indexing one of a plurality of crankshaft bearing journals to one of a plurality of predetermined locations relative to a rotatable abrasive wheel of a grinder, comprising the steps of:

rotating a drive shaft carrying a pot chuck supported crank shaft on the grinder to a predetermined null position, said pot chuck clampingly engaging said crankshaft and maintaining said crankshaft from rotation relative to said pot chuck;

engaging a second latch and maintaining the drive shaft at the null position;

moving an indexing motor pinion gear to a position at which the indexing motor pinion gear is in driving engagement with a gear connected to the pot chuck;

releasing a first latch from rotation restraining engagement with the gear and freeing the pot chuck to rotate about a chuck spindle connected axially offset relative to the drive shaft;

actuating the indexing motor and rotating together the pot chuck and supported crank shaft to a desired bearing journal position relative to the abrasive wheel;

engaging the first latch with the gear and maintaining the

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pot chuck and supported crank shaft from rotation relative to the drive shaft;

moving the indexing motor pinion gear to a position spaced from engagement with the gear;

disengaging the second latch and freeing the drive shaft for rotation.

5,249,395

METHOD OF POLISHING DENTAL INSTRUMENT

Masahiro Yoshida, Hidaka, Japan, assignor to Hoya Corporation, Tokyo, Japan

Filed Apr. 24, 1992, Ser. No. 873,216

Claims priority, application Japan, Apr. 30, 1991, 3-124593

Int. Cl.[5] B24B *31/02, 1/00*

U.S. Cl. 51—316 **13 Claims**



1. A method of polishing a dental instrument, selected from the group consisting of an artificial dental crown, a dental implant and a dental bracket, comprising the steps of:

placing, into a container, the dental instrument, spherical ceramics whose grain size is 30~400 μm, an abrasive whose grain size is at most equal to 20 μm and a liquid, said dental instrument being made of a ceramic material, and having fine irregular portions along a surface thereof; and

moving said container thereby polishing said dental instrument.

5,249,396

EXTENSIBLE AND CONTRACTIBLE MAST

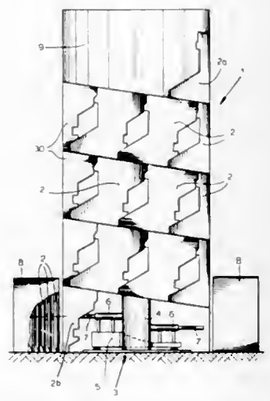
Konrad Zuse, Im Haselgrund 21, D-6418 Hünfeld, Fed. Rep. of Germany

Filed Jul. 2, 1991, Ser. No. 724,975

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1990, 4024574

Int. Cl.[5] E04H *12/18*

U.S. Cl. 52—108 **17 Claims**



1. An extensible and contractible mast, comprising:

a multiplicity of rigid helix shell segments adapted to be arrayed in succession along successive turns of a helix and so that each of a multiplicity of segments has preceding and succeeding segments and is disposed between segments of overlying and underlying turns, said segments being provided with locking formations engageable with preceding and succeeding segments and with segments of overlying and underlying turns to form an extendable tubular mast structure, each of a plurality of turns of the helix being constituted from a multiplicity of said segments;

at least one magazine containing a plurality of said segments;

a lifting unit for raising said mast structure; and

means for removing said helix shell segments in succession from said magazine, supplying said shell segments to said lifting unit and inserting said in succession into a helical turn of said structure with elevation thereof, and for returning said shell segments to said magazine to provide an initial shell segment, subsequently added shell segments and a last-added shell segment, whereby said initial shell segment forms an upper terminal member of said mast, said subsequently added shell segments form said turns and said last-added shell segment forms a lower base terminal member of said mast, each of said segments being formed unitarily with upper and lower edge formations bracible against segments thereabove and therebelow respectively and provided with form-locking means interengaging with the segments thereabove and therebelow.

5,249,397

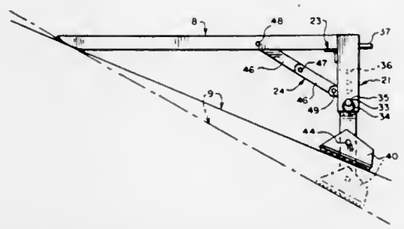
KNOCKDOWN ROOF PLATFORM FOR USE ON AN INCLINED ROOF

Gary J. Monaco, 4 Winding Branch Rd., Hawthorn Woods, Ill. 60047

Filed Jan. 16, 1992, Ser. No. 821,967

Int. Cl.[5] E04D *15/07*

U.S. Cl. 52—126.1 **7 Claims**



1. A knockdown roof platform of a generally L-shape when viewed at either side for use on an inclined roof comprising a table structure having an upper flat table top, the table structure having a hollowed area on its underside, struts formed integral inside said hollowed area on an underside of said upper flat table top, an upright leg structure having two legs, said upright leg structure being positioned only at one end of said table structure having an upper flat table surface positioned in a common plane with said upper flat table top when said leg structure is in an upright position, hinge means connecting said table structure and said upright leg structure in assembly together, hinge means positioned beneath the table structure on an inner side of said leg structure beneath an upper most surface of the leg structure, the upper most surface of the leg structure being co-planar with said upper flat table top when said leg structure is positioned in right angular relation to the flat table top, collapsible locking bracket means further securing said table structure and said upright leg structure in assembly, said collapsible locking bracket means being adjustable to secure said table structure and said upright leg structure in right angular relation when in the upright position and thereby positioning said upper flat table top co-planar with said upper flat table top on said table structure, said collapsible locking bracket being releasable enabling said table structure and said upright leg structure to be pivoted on said hinge means thus moving and collapsing said table structure and said upright leg structure out of right angular relation relative to one another and into a storage position where the table structure and said upright leg structure extend almost in parallel relation.

5,249,398

CESSPOOL

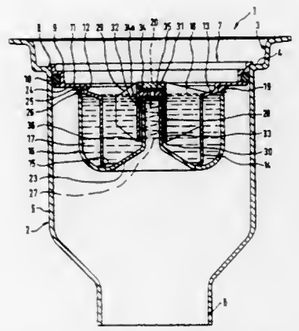
Bengt SpÅnberg, Sjöbo, Sweden, assignor to AB Sjobo Bruk, Sjöbo, Sweden

Filed Nov. 14, 1991, Ser. No. 792,000

Claims priority, application Sweden, Nov. 19, 1990, 9003668

Int. Cl.[5] E03F *7/04, 11/00*

U.S. Cl. 52—169.5 **9 Claims**



1. Cesspool, including an upwardly open cup (**16**) and an inlet member (**7**) protruding thereinto from above in such a way that water (**17**) flowing through said inlet member (**7**) and through said cup (**16**) can pass into a drainage system to which the cesspool (**1**) is connected and whereby water (**17**) in said cup (**16**) forms a first odor lock between the drainage system and the inlet member (**7**), said cup (**16**) being movably mounted relative to a seat (**19**) and cooperating with at least one power generating means (**20**) for bringing said cup (**16**) into close odor sealing engagement with said seat (**19**) such that said cup (**16**) and seat (**19**) with each other define a second odor lock if the force applied by said water (**17**) to said cup (**16**) falls below a given value, said power generating means (**20**) being mounted such that it with a successively decreasing load thereon, resulting from a successively decreasing force applied by said water (**17**) to said cup (**16**), presses said cup (**16**) against said seat (**19**) with a successively increasing pressure, means mounting said cup (**16**) for movement relative to said seat (**19**) so that waste water rising in said drainage system can move said cup (**16**) towards said seat (**19**) and bring it to close engagement with said seat (**19**) or, if said cup (**16**) already engages said seat (**19**), can increase its engagement pressure against the seat (**19**) to prevent the waste water from flowing from the drainage system into said cup (**16**), said cup (**16**) having a cambered bottom (**23**) against which waste water rising from below said cup may press to urge said cup upwardly toward said seat (**19**).

5,249,399

LEAD-BASE PAINT PAINTED WOODWORK CONTROL ARRANGEMENT

Alan P. Aulson, 201 Pond St., Georgetown, Mass. 01833

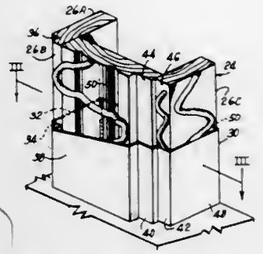
Filed Apr. 29, 1991, Ser. No. 692,934

Int. Cl.[5] E06B *1/04*

U.S. Cl. 52—211 **5 Claims**

1. A formed metal arrangement for covering up and eliminating lead problems associated with lead-base paint painted interior wood trim surfaces without disturbing those lead-base paint painted trim surfaces, by an enclosure means adaptable over said interior painted trim surfaces;

said enclosure means comprising a shaped sheet metal component having dimensions large enough to cover the painted trim and fit over the trim inside a house or appartment, completely encapsulating said wood trim preventing lead from escaping; and



wherein said sheet metal component is comprised of aluminum sheet metal of 20-gauge thickness.

5,249,400

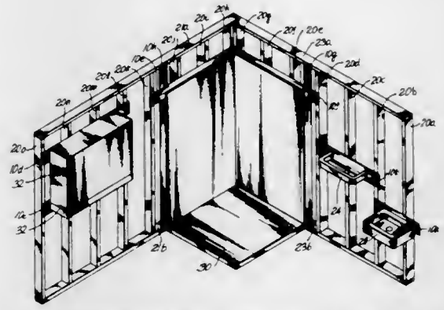
METAL CONSTRUCTION BLOCKING

Arthur R. Turner, Terranora, Australia, assignor to Saf-T Corporation, Pasadena, Calif.

Continuation of Ser. No. 602,703, Oct. 24, 1990, abandoned. This application Feb. 18, 1992, Ser. No. 839,034

Int. Cl.[5] E04B *2/72;* **E04C** *2/32*

U.S. Cl. 52—364 **18 Claims**



1. A combination of a metal construction blocking in a wall construction, the wall construction having a plurality of spaced apart timber wall studs, top and bottom plates above and below the wall studs, a wall board affixed to the studs to span the space between the studs, a fixture, and a metal construction blocking comprising an elongated metal piece having a pair of parallel marginally folded and generally U-shaped edges having sufficient strength to prevent the blocking from bending, and longitudinally extending corrugations between the folded outer edges, the blocking comprising a longitudinally corrugated body of single metal wall thickness between the marginally folded outer edges, wherein the corrugations have alternating substantially flat outer faces extending generally in a pair of common flat planes lying on opposite sides of the metal piece and defining a narrow profile thickness of the metal piece, the metal piece being bent in an alternating corrugated pattern in which the flat outer faces of the corrugations are integrally connected by alternating short intervening sections extending between the planes on opposite sides of the metal piece and thereby defining the narrow profile thickness of the corrugated metal piece, wherein the flat outer faces of the corrugations are substantially wider than the width of the short intervening sections and the flat outer faces are substantially wider than the thickness of the corrugated metal piece, wherein the short intervening sections are bent at obtuse angles

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with respect to the flat outer faces of the metal piece so the flat outer faces on one side of the metal piece are each spaced apart longitudinally and non-overlapping with respect to the adjoining flat outer faces on the opposite side of the metal piece, and wherein the marginally folded U-shaped edges of the metal piece both generally lie within the common planes defining the thickness of the metal piece, the corrugated metal piece providing a spacer to maintain the wall board in a flush relation to the blocking and being sufficiently thick to allow metal self-tapping screws to pass through the blocking to hold the fixture in place on the wall board, the screws being fastened to unsupport portions of the metal blocking between an adjacent pair of wall studs.

5,249,401

SEALING DEVICE FOR CONCRETE JOINTS AND PROCESS FOR THE INTRODUCING OF A SEALING MEDIUM INTO SEALING DEVICES

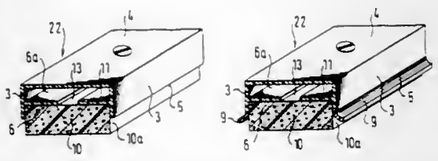
René P. Schmid, Grundstrasse 2, CH-8165 Oberweningen, Switzerland

Filed Sep. 5, 1990, Ser. No. 578,830

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1989, 8910744[U]

Int. Cl.[5] E04F *21/165*

U.S. Cl. 52—503 38 Claims



1. A sealing device for sealing a joint disposed between two concrete sections, comprising:

a body including passage means to provide a flow path;

said body being a profile fabricated from an impermeable material;

said profile having an upper portion, and first and second side portions depending downwardly from opposite sides of said upper portion, said profile having an opening opposite said upper portion;

first and second free longitudinal lower edges of said first and second side portions, respectively, being transversely spaced apart to provide said profile opening;

securement means for mounting said profile in an area of the joint with said first and second free longitudinal lower edges being disposed adjacent to a concrete surface of one of the concrete sections to provide a hood arrangement;

said passage means including a flow channel disposed within said profile; and

said flow channel being filled with foam means for conducting a sealing medium therethrough, said foam means having open passage pores therein;

whereby a sealing medium passes through said open passage pores of said foam means in said flow channel, and then emerges from said profile from beneath said first and second free longitudinal lower edges of said first and second side portions, respectively.

5,249,402

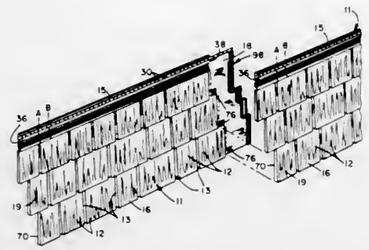
DECORATIVE WALL COVERING

Dallas M. Crick, 1000 SW. 66th Ave., Pembroke Pines, Fla. 33023; James G. Perkins, Waterways Spinnaker Bay, 21085 NE. 34th Ave., Suite 405, Miami, Fla. 33180, and Douglas F. Hudson, Jr., 820 Belle Meade Island Dr., Miami, Fla. 33138

Filed Apr. 9, 1991, Ser. No. 682,672

Int. Cl.[5] E04D *1/00*

U.S. Cl. 52—533 32 Claims



1. A wall covering for mounting on a support surface comprising

a plurality of panels each having a body portion formed with simulated building elements, said panels each having right-side and left-side marginal edge regions,

said panels being mountable on said support surface in a plurality of horizontal courses with side marginal edge regions of adjacent panels in overlapping relation,

said overlapping side marginal edge regions defining engageable sealing means therebetween, and

said overlapping side marginal edge region of each panel having integrally formed locking hooks depending from an underside thereof for engaging an underside surface of an underlying side marginal edge region of the adjacent panel for positively securing the overlapping side marginal edge regions together and for maintaining said side marginal edge region sealing means in engaged relation.

5,249,403

WINDOW FRAME CONNECTOR

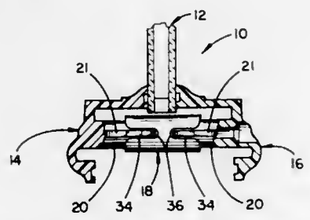
Albert J. Neilly, Holland, and K. William Kennedy, Lowell, both of Mich., assignors to ODL, Incorporated, Zeeland, Mich.

Division of Ser. No. 582,483, Sep. 14, 1990, Pat. No. 5,133,168.

This application Apr. 2, 1992, Ser. No. 862,301

Int. Cl.[5] E04C *3/00*

U.S. Cl. 52—585 3 Claims



1. A window frame connector for releasably aligning and intersecuring two window frame halves for transportation, each of the frame halves including a boss supported by a pair of opposite ribs, said window frame connector comprising a generally tubular body having a pair of opposite ends for receiving the bosses, said body defining a pair of diametrically opposed longitudinally slots extending into said body from each of said ends for receiving the boss ribs, said slots from said opposite ends being longitudinally aligned, each of said ends including an interior edge which is chamfered to ease installation of said connector onto one of the bosses, each of said slots including a mouth wider than the remainder of said slot to facilitate reception of the boss ribs into said slots.

5,249,404

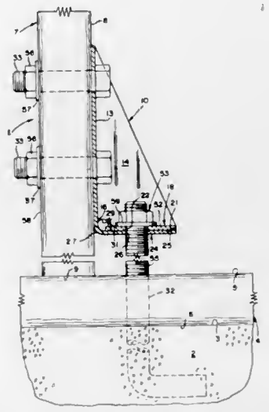
HOLDOWN CONNECTION

William F. Leek, Anaheim, and Alfred D. Commins, Danville, both of Calif., assignors to Simpson Strong-Tie Company, Inc., San Leandro, Calif.

Filed May 11, 1992, Ser. No. 881,437

Int. Cl.[5] E04B *1/38*

U.S. Cl. 52—702 7 Claims



1. A holdown connection comprising:

a. anchoring means having an upper planar surface;

b. a transfer means having an upper planar surface and a lower planar surface in registration with said upper planar surface of said anchoring means;

c. a wood stud member having a planar side face and a lower end in registration with said upper planar surface of said transfer means;

d. a single element holdown connector formed from a single metal sheet member of a selected uniform thickness and formed by bending along substantially straight bend lines including:

(1) an elongated back member in registration with said planar side face of said wood stud member;

(2) a side member integrally connected to said elongated back member along a rigid corner bend line having a lower end and forming a generally 90° angle with said elongated back member;

(3) a held seat member having a generally straight held edge and having generally planar upper and lower surfaces and formed with a first anchor bolt opening and integrally connected to said side member along a bend line and forming a generally 90° angle with said side member;

(4) a holding seat member having a generally planar upper surface in registration with said lower surface of said held seat member and formed with a second anchor bolt opening in registration with said first anchor bolt opening integrally connected to said single element holdown connector along a rigid bend line and forming a generally 90° angle with said back member; and

(5) a bending slot having an upper end formed in said back member and said side member along said lower end of said rigid corner bend line having a length no greater than 2.5 times said thickness of said single side, single element holdown connector as measured from said upper surface of said holding seat member to said upper end of said bending slot;

e. an anchor bolt dimensioned for close registration with said first and second anchor bolt openings and extending therethrough into said anchoring means a selected distance;

f. said generally straight held edge of said held seat member is in close engagement with a substantial portion of the length of said rigid bend line;

g. fastener means joining said back member to said wood stud member; and

h. holding means releasably connected to said anchor bolt and positioned in registration with said generally planar upper surface of said held seat member.

5,249,405

DRYWALL SUPPORT

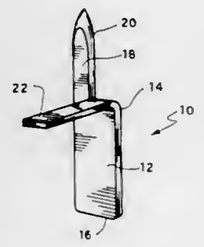
George Miller, R.D. #1, Bennett Rd., Pine City, N.Y. 14871

Continuation of Ser. No. 813,779, Dec. 27, 1991, abandoned.

This application Jan. 11, 1993, Ser. No. 2,671

Int. Cl.[5] E04B *1/38*

U.S. Cl. 52—712 2 Claims



1. A panel support device to provide temporary support of panels during installation, said panel support device comprising:

a rigid structure having a substantially vertical lower element which includes a top and bottom end, said bottom end adapted to be struck with a hammer, and said top end having as an integral part a substantially vertical extension coplanar with said vertical lower element and having an uppermost end formed as a piercing end, and

a single substantially horizontal rectangularly configured supporting tongue disposed at a right angle to said substantially vertical lower element and formed as an integral part of said top end of said substantially vertical lower element, adjacent to and abutting said substantially vertical extension, whereby

said piercing end may be driven a predetermined distance into a beam of a building structure so as to maintain said supporting tongue spaced apart from the beam, a panel then being inserted into the space between the beam and said supporting tongue and being supported therebetween, whereafter the panel is secured to the beam, and then the panel support device is removed.

5,249,406

BOX CLOSING APPARATUS

Dan Kalmanides, 620 Grassy Hill Rd., Orange, Conn. 06477

Filed Dec. 7, 1992, Ser. No. 986,550

Int. Cl.[5] B65B *7/26, 51/00*

U.S. Cl. 53—377.5 14 Claims

1. Apparatus for closing a box and latching it closed, which box has a cover joined along one edge to a body portion by a hinge with each of the cover and body portion having a flange projecting outward in a plane from edges opposite from said hinge with one of said flanges having a projection adapted to be received in a well in the other of said flanges and to be locked therein by cooperating locking means on said projection and said well when said cover is folded over onto said body portion and said flanges are pressed together;

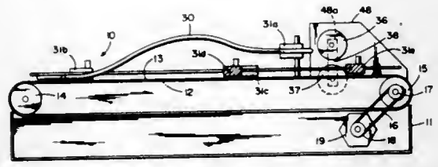
VOL 1155 ISS 1 OC 5 1993 UMI

a movable, generally horizontal, surface for supporting one of said boxes and moving it in a direction along a predetermined path from a first point to beyond a second point on said path;

motor means connected for moving said generally horizontal surface along said path;

means for holding a said box aligned on said generally horizontally surface with said hinge longitudinally parallel with the direction of said path;

means for swinging said cover of a said box that is on said generally horizontal surface with said cover in open position relative to said body portion over and down toward said box body portion and bringing said flanges close together with said projection on said one flange at but not in said well in said other flange when said box is moved by said generally horizontally surface to said second point;



a pair of rollers spaced apart at said second point on said path, mounted in edge to edge relation to rotate about parallel axes that are at right angles to the direction of said path and located at a side of said path for the flanges of a said box moving along said path to pass into and through a bite between said rollers; and

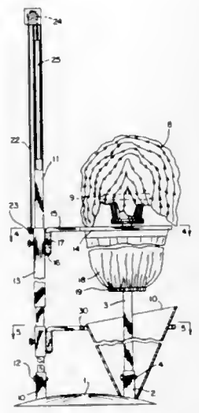
the spacing between said rollers being such that when a said box is moved by said generally horizontal surface past said second point said flanges are pressed close enough together by said rollers for said projection on said one flange to be pressed far enough into said well on said other flange for said locking means to lock said projection in said well, thereby locking said cover in closed position on said said box body portion.

5,249,407

APPARATUS FOR PACKAGING POTTED PLANTS

Matthew A. Stuck, 1549 Brighton Beach Rd., Menasha, Wis. 54952

Filed Sep. 23, 1992, Ser. No. 949,897
Int. Cl.[5] B65B *67/00*
U.S. Cl. 53—399 **18 Claims**



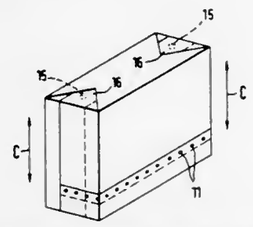
1. A method of packaging plants, comprising the steps of disposing a tapered tubular protective sleeve around a vertical column, positioning an open-ended flexible tubular bag having an open upper end and an open lower end with a smaller cross sectional area than the upper end in general axial alignment with said column, with the upper end of the bag located adjacent the upper end of the column, mounting a pot containing a plant with foliage on the upper end of the column, moving the bag upwardly around the pot and around the plant the lower end of the bag radially expanding as the bag is moved upwardly around the pot and contracting to continue the foliage and terminating the upward movement of the bag when the lower end of the bag is adjacent an upper rim of the pot, drawing the sleeve upwardly around the bag until the lower end of the sleeve is disposed radially outward of said pot, and drawing the bag upwardly out of the sleeve to thereby confine the foliage within said sleeve.

5,249,408

PROCESS OF AND APPARATUS FOR PACKAGING A STACK OF FLAT OBJECTS

Aloys Winnemöller, Rheine; Heinrich Frommeyer, Hagen a.T.W., and Werner Wieneke, Lengerich, all of Fed. Rep. of Germany, assignors to Windmöller & Hölscher, Lengerich-/Westf., Fed. Rep. of Germany

Filed Feb. 7, 1992, Ser. No. 832,592
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1991, 4103745
Int. Cl.[5] B65B *11/12, 27/08, 63/02*
U.S. Cl. 53—439 **3 Claims**



1. An apparatus for packaging a stack of flat bags comprising:

parallel grids and/or plates for compressing the stack of flat bags,

means for advancing the stack of flat bags between said parallel grids and/or plates including a loop, covering the stack on three side faces and held in front of a receiving end of the grids and/or plates, entrained by said stack of flat bags as it is advanced,

elements for consecutively folding in protruding end portions of the web section onto a fourth side face of the stack,

folding plates, provided in at least one pair, which are adapted to fold in one side portion of each protruding end portion of the web section about one edge of the stack, said folding plates being subsequently movable apart to pull out folded corner portions beyond edges of the stack, and

means for folding the folded corner portions.

5,249,409

METHOD AND APPARATUS FOR MANUFACTURE OF WICKETED BAGS WITH AN ENCAPSULATED ARTICLE AND THE BAGS FORMED THEREBY

Harold A. Jensen, Brockton, Mass., assignor to MHB Industries Corp., Somerville, Mass.

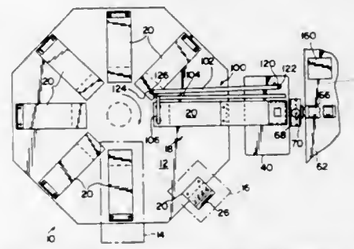
Filed Jun. 2, 1992, Ser. No. 892,203
Int. Cl.[5] B65B *43/26*
U.S. Cl. 53—459 **26 Claims**

26. An apparatus for transferring a bag in a wicket of bags from a platform to a plate the bags joined to a common header,

the wicket having a top bag characterized by a side which faces upwardly which comprises:

a platform to support the wicket of bags;

means to transfer the top bag of the wicket across and over the header from the platform while keeping the wicket on



the platform to a support plate while reversing the side of the bag which faces upwardly without separating the transferred bag from the wicket;

means to fill the bag at the support plate; and

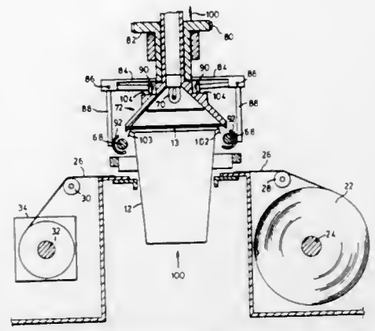
mean to remove the bag from the support plate without disengaging the bag from the wicket.

5,249,410

DEVICE FOR HEAT SHRINKING FILM ONTO AN OPEN-TOPPED CONTAINER

William J. Bakker, R.R. #1, Orangeville, Ontario L9W 2Y8, and N. A. Williams, 42, Addison Crescent, Don Mills, Ontario, M3B 1K8, both of Canada

Filed Apr. 27, 1992, Ser. No. 873,844
Int. Cl.[5] B65B *53/02*
U.S. Cl. 53—557 **23 Claims**



1. A device for heat shrinking a cover onto an open-topped container, said device comprising: a housing having an opening to receive said container said housing having,

a strip of heat shrinkable thin film located above said opening;

a cutting means positioned close to said thin film for cutting said thin film upon said thin film being urged onto said cutting means by said container;

a hood for holding a cut piece of said film in place across said open top of said container, wherein said cut piece includes a portion extending from under said hood downwardly around an upper outer rim of said container;

a first radiant energy source for directing energy toward said downwardly extending portion of said cut piece of film;

a second radiant energy source for directing energy towards said portion of said film extending across said open top of said container;

a switch means for intermittently energizing said first radiant energy source and

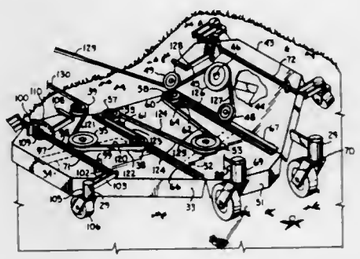
a timer means for de-energizing said first radiant energy source after a predetermined time and for energizing said second radiant energy source; wherein said thin film is at least partially opaque to said radiant energy and upon being exposed to said first radiant energy source said thin film heats up and shrinks onto said rim of said open topped container and upon being exposed to said second radiant energy source the cut portion of the film is shrunk across the top of the container to form a spill resistant cover.

5,249,411

SINGLE DRIVE BELT MOWER WITH FLEXIBLE HOUSING

Kenneth A. Hake, Tipton, Kans., assignor to Kent Manufacturing, Inc., Tipton, Kans.

Filed Nov. 23, 1992, Ser. No. 979,903
Int. Cl.[5] A01D *35/00*
U.S. Cl. 56—11.6 **10 Claims**



1. In a mowing apparatus having at least a first mower section and a second mower section pivotally connected to one another and a motor means for driving both of said mower sections, the improvement comprising:

a) an endless drive belt drivingly engaging said motor means with said mower sections to drive same;

b) said mower sections being joined by hinge means having a hinge axis thereby enabling said mowers to pivot relative to one another; and

c) pulley means positioning a transfer run of said belt substantially parallel to and in such close proximity to said hinge axis that a relatively constant tension is maintained in said belt when said mower sections pivot relative to one another.

5,249,412

MECHANICAL FRUIT PICKER WITH DELIVERY SYSTEM

Bob Morgan, P.O. Box 23, Grantsville, W. Va. 26147

Filed Apr. 2, 1992, Ser. No. 864,900
Int. Cl.[5] A01D *46/00, 46/22, 46/24*
U.S. Cl. 56—334 **1 Claim**

1. A mechanically operated fruit picker that gathers fruit by means of jaws and a delivery system, take-down method, comprising:

a housing, tubular shaped with two ends, a top and bottom, with both ends open to serve as a fruit conduit and attachment means,

a means to remove fruit, a pair of jaws, an inside and outside jaw, arched shaped, both jaws with hinge pins, mounted on the top perimeter of the housing so as to let the inside smaller jaw pass through the outside jaw in close proximity,

a means to actuate jaws, a control rod with two ends, a top and bottom end, the said top end looped at 90° fitted around one side of the jaws, that activates through a bracket mounted vertically on the side of the housing directly under the side of a jaw pivot,

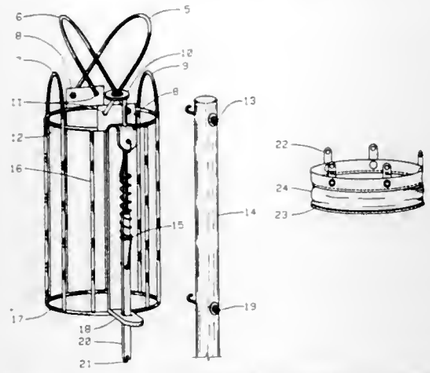
a means to energize, a spring threaded around the rod and

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attached to the top of the bracket, and at a point near the bottom of the control rod,

a support means, a pole mounted vertically to the housing,

a means to operate a cord attached to the bottom of the control rod to pull open jaws, to release closes them,



a delivery system, a tubular flexible cloth sleeve of undefined length equipped with snaps to attach to bottom perimeter of the housing,

a take-down method by means of a shallow cap with snap fastener attached to the bottom perimeter of the housing.

5,249,413

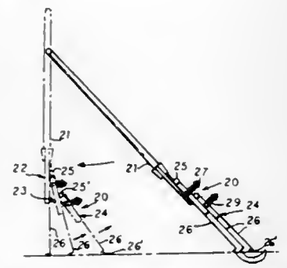
RAKE APPARATUS

John T. McDonough, Jr., 1429 S. 14th St., Fargo, N. Dak. 58103

Filed Jan. 21, 1992, Ser. No. 823,190

Int. Cl.[5] A01D *7/06*

U.S. Cl. 56—400.16 **2 Claims**



1. A rake device comprising an elongated handle, a plurality of rake heads each having a plurality of resilient elongated rake tines mounted in the heads in a row at their one ends and having laterally bent other ends, one of said rake heads being fixed to the handle, at least a second rake head pivotally mounted to the first rake head and a third rake head pivotally mounted to the second rake head, spring means urging said rake heads into parallelism with one another, stop means on the spring means limiting the pivotal movement of the rake heads with respect to one another.

5,249,414

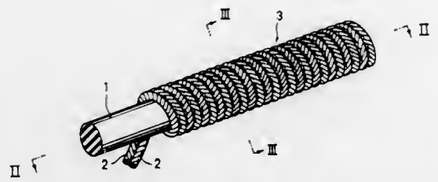
YARN FOR USE IN SET UP

Kenji Iwata, and Katsumi Asano, both of Wakayama, Japan, assignors to Nissinbo Industries, Inc., Tokyo and Shima Seiki Mfg., Ltd., Wakayama, both of Japan

Continuation of Ser. No. 549,943, Jul. 9, 1990, abandoned. This application Dec. 12, 1991, Ser. No. 806,793

Int. Cl.[5] D02G *3/36, 3/02*

U.S. Cl. 57—225 **8 Claims**



1. A yarn for use in setup comprising:

a pair of twisted composite yarn strands, each of said composite yarn strands including

an elastic yarn, and

a pair of twisted fiber bundles wrapped in parallel around said elastic yarn in a single layer, a first one of said pair of twisted fiber bundles being pre-twisted in a S-direction, and a second one of said pair of twisted fiber bundles being pre-twisted in an opposing Z-direction, thereby forming said composite yarn which composite yarn is resistant to twisting and whose fiber bundles remain in close contact with said elastic yarn.

5,249,415

LINK CHAIN, IN PARTICULAR A FLYER CHAIN.

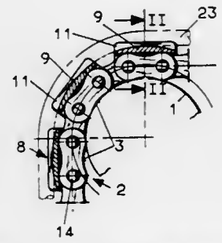
Ludger Frenker-Hackfort, Kirchen-Heckersdorf, Fed. Rep. of Germany, assignor to Rexnord Kette GmbH & Co. KG, Betzdorf, Fed. Rep. of Germany

Filed Apr. 4, 1991, Ser. No. 680,343

Claims priority, application Fed. Rep. of Germany, May 31, 1990, 9006153[U]

Int. Cl.[5] F16G *13/08*

U.S. Cl. 59—78.1 **3 Claims**



1. A flyer chain, guidable over a roller and comprising:

plate-like chain links, each having outer link plates and intermediate link plates, the chain links being joined together by means of link pins, each of said chain links having an outer surface remote from the roller, and said outer surface having a width; and

a plurality of non-metallic covers provided so that each cover of said plurality of covers extends over the entire width of the outer surface of one of the chain links, so as to form protective surfaces for the links, said covers being U-shaped and having flanges overlapping the outer link plates of the chain links.

5,249,416

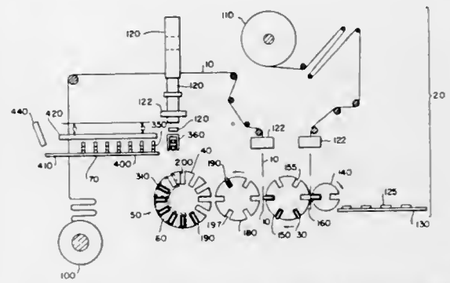
CIGARETTE PACKAGING MACHINE AND APPARATUS

John M. Adams, Mechanicsville, Va.; Angel Amendola, Millersville, Md.; Frederick M. Della Crosse, White Plains, N.Y.; Robert Gallino, Englewood Cliffs, N.J.; Jeffrey M. S. Haskins, Hanover; David Moir, Annapolis, both of Md.; Xuan M. Pham, Richmond, Va.; Kenneth B. Shepard, Chesterfield, Va., and Ronald R. Stewart, Gloucester,, Va., assignors to Philip Morris Products Inc., Richmond, Va.

Continuation of Ser. No. 700,759, May 15, 1991, abandoned. This application Jan. 11, 1993, Ser. No. 3,846

Int. Cl.[5] B65B *19/22, 51/32*

U.S. Cl. 53—463 **10 Claims**



1. A method for manufacturing cigarette packs using a cigarette packing machine that comprises processing apparatus for forming cigarette packs using packaging stock, said stock comprising a pre-applied adhesive, comprising the steps of:

feeding the stock into the processing apparatus of the cigarette packing machine;

feeding a plurality of cigarettes into the processing apparatus of the cigarette packing machine;

forming a plurality of stock-wrapped bundles of cigarettes, wherein each of said stock wrapped bundles comprise cigarettes which are wrapped with the packaging stock;

activating the pre-applied adhesive of each of the stock-wrapped bundles by causing each of the stock-wrapped bundles to be sequentially contacted with a plurality of activation surfaces;

setting the adhesive by causing a portion of the stock-wrapped bundles to contact a cooling element, said cooling element comprises a plurality of contact buttons.

5,249,417

METHOD AND APPARATUS TO INSTALL AND REMOVE HEAVY COMPONENTS

Paul W. Duesler, Manchester, and Frank B. Manning, Vernon, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 25, 1991, Ser. No. 766,610

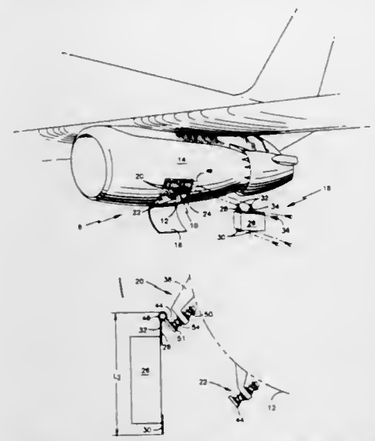
Int. Cl.[5] F02C *7/20;* **F02G** *3/00*

U.S. Cl. 60—39.02 **20 Claims**

1. A method for relative motion of an aircraft engine component and an aircraft engine between an installed and uninstalled condition, wherein provision is made for means to couple the aircraft engine component and the aircraft engine at a first location, the coupling means permitting relative rotation of the aircraft engine component with respect to the aircraft engine about an axis of rotation and permitting relative translational motion between the aircraft engine component and the aircraft engine about the axis of rotation, and wherein provision is made for a fastener means adapted to secure the aircraft engine component to the aircraft engine, comprising the step of:

maneuvering the aircraft engine component and aircraft engine between a coupled position at which the aircraft engine component engages the aircraft engine at the coupling means and an uncoupled position at which the aircraft engine component is not engaged with the aircraft engine;

moving the aircraft engine component relative to the aircraft



engine about the axis of rotation while the aircraft engine component and the aircraft engine are engaged; and

relative manipulation of the fastener means between an engaged and disengaged position at a second location.

5,249,418

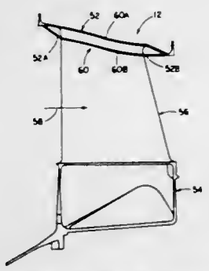
GAS TURBINE ENGINE POLYGONAL STRUCTURAL FRAME WITH AXIALLY CURVED PANELS

Martin T. Finn, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Sep. 16, 1991, Ser. No. 760,533

Int. Cl.[5] F02C *7/20;* **F02G** *3/00*

U.S. Cl. 60—39.31 **4 Claims**



1. A structural frame for use in a gas turbine engine, comprising:

(a) an annular outer shell;

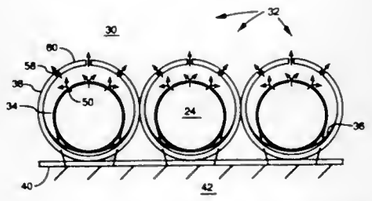
(b) an annular inner central hub concentric with said outer shell about a common axis; and

(c) a plurality of circumferentially-spaced struts extending between and connected to said outer shell and said central hub;

(d) said annular outer shell including a plurality of panels having an axially curved configuration in a plane defined by a radial line and said common axis, said axially curved panels being connected with one another at circumferentially facing ends of each of said panels to form a polygonal shape, wherein said axially curved panels increase buckling resistance capability of said annular outer shell relative to an otherwise similar annular outer shell including axially flat panels.

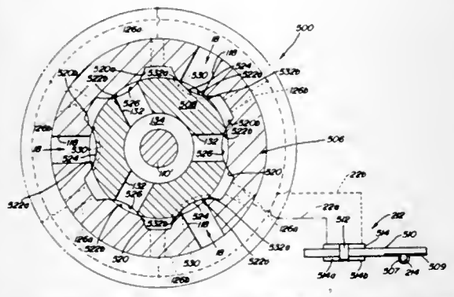
VOL 1155 ISS 1 OCT 5 1993 UMI

5,249,419
NOZZLE LINER FOR GAS TURBINE ENGINES
Kevin Landhuis, Rockford, Ill., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Oct. 7, 1992, Ser. No. 957,923
Int. Cl.[5] F02K 3/10
U.S. Cl. 60—261 3 Claims



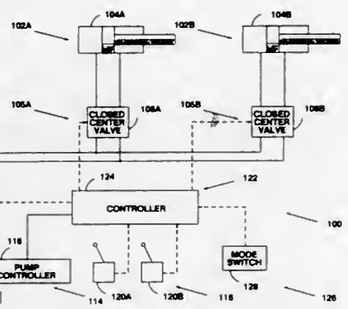
1. An improved liner, said improved liner comprising:
a plurality of inner tubes, said inner tubes having a plurality of leg supports and a plurality of impingement air cooling holes on a top surface of said inner tubes;
a plurality of seals, said seals having a plurality of leg support openings therein, said seals being fixedly attached to the leg supports of said inner tubes to prevent air flow past said leg supports, said seals being in contact with a bottom of said inner tubes;
a plurality of outer tubes, said outer tubes having a plurality of film cooling holes in a top surface and a plurality of leg openings in a bottom thereof, said leg supports of said inner tube loosely fitting within said leg openings of said outer tube; and
at least one base plate, said base plate having a plurality of leg openings therein, said leg supports of said inner tubes being fixedly attached into said leg openings of said base plate.

5,249,420
CONTROL VALVE FOR BOOTSTRAP HYDRAULIC SYSTEMS
Edwards H. Phillips, Troy, Mich., assignor to Techco Corporation, Troy, Mich.
Continuation-in-part of Ser. No. 774,055, Oct. 7, 1991, which is a continuation-in-part of Ser. No. 743,243, Aug. 9, 1991, which is a continuation-in-part of Ser. No. 698,601, May 10, 1991. This application Jan. 24, 1992, Ser. No. 826,901
Int. Cl.[5] F16D 31/02
U.S. Cl. 60—392 20 Claims



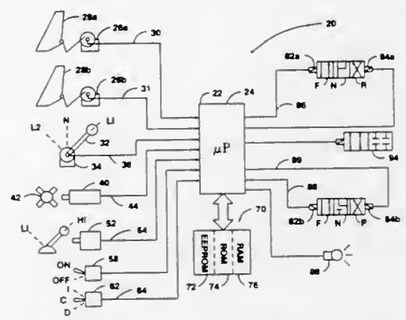
1. A method of providing tactile feedback for a power steering system in response to rotational inputs applied to a steering wheel, said method comprising the steps of:
providing a source of hydraulic fluid;
providing means for receiving said rotational inputs, said receiving means including a closed-center control valve assembly having a valve spool and a valve sleeve that are rotatable and resiliently coupled with respect to each other from a centered position in response to said rotational inputs, said sleeve having at least one inlet port;
supplying said hydraulic fluid to said at least one inlet port of said closed-center control valve assembly;
providing fluid communication between first and second output ports of said closed-center control valve assembly and first and second ports of a power output transducer, respectively;
controlling a different output pressure applied to said first and second ports of said power output transducer and a differential output fluid flow therebetween in response to said rotational inputs, said differential output pressure defining a load pressure;
providing leakage flow path between said first and second putput ports adjacent each said at least one inlet port of said closed-center control valve assembly;
communicating a leakage flow in said flow path between said first and second output ports when said control valve is in a center position; and
generating said tactile feedback as a function of both of said differential output pressure and said differential output fluid flow passing through said control valve assembly.

5,249,421
HYDRAULIC CONTROL APPARATUS WITH MODE SELECTION
Stephen V. Lunzman, Chillicothe, Ill., assignor to Caterpillar Inc., Peoria, Ill.
Filed Jan. 13, 1992, Ser. No. 819,914
Int. Cl.[5] F16D 31/02
U.S. Cl. 60—422 5 Claims



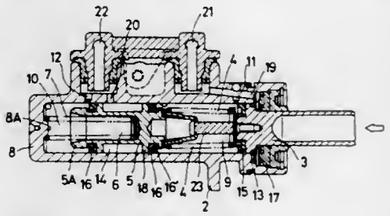
1. An apparatus for controllably actuating at least two hydraulic actuators, comprising:
means for providing pressurized hydraulic fluid to said hydraulic actuators, said providing means including respective closed center spool valves;
a variable flow pump connected to said pressurized hydraulic providing means;
means for receiving a pump flow command signal and responsively controlling an output of said variable flow pump;
means for producing a plurality of operating signals corresponding to respective hydraulic actuators;
means for producing a mode signal, said mode signal having one of a set of values, said set including at least a first value;
means for sensing the pump pressure and responsively producing a pump pressure signal;
controller means for receiving said pump pressure signal, said operating signals and said mode signal;
said controller means producing said pump flow command signal, said pump flow command signal being a function of said pump pressure signal and said operating signals when said mode signal has said first value, said flow command signal being a function of said operating signals if said mode signal is other than said first value;
wherein said operating signal producing means includes a plurality of operator control levers corresponding to respective hydraulic actuators;
and wherein said controlling means includes means for determining individual pump flows corresponding to each of said control valves as a function of said plurality of operating signals and said pump pressure signal.

5,249,422
APPARATUS FOR CALIBRATING THE SPEED OF HYDROSTATICALLY DRIVEN TRACTION MOTORS
Vernon R. Smith, and Alan L. Stahl, both of Peoria, Ill., assignors to Caterpillar Inc., Peoria, Ill.
Filed Dec. 20, 1991, Ser. No. 811,367
Int. Cl.[5] F16D 31/02
U.S. Cl. 60—426 28 Claims



1. A drive system for a work vehicle, comprising:
an engine;
first and second pumps driven by the engine and being responsive respectively to first and second control signals to provide pressurized fluid in proportion thereto;
first and second fluid powered motors;
first and second closed loop hydraulic circuits interconnecting the first and second pumps to the first and second motors respectively and being adapted to communicate pressurized fluid from the pumps to the motors for driving the motors;
first and second ground engaging drive means connected to and powered by the first and second motors respectively;
a manually operable control element being movable between first and second limits for indicating a desired speed for the fluidly driven motors;
sensor means for sensing the position of the control element and responsively producing a desired motor speed signal;
memory device adapted to store data which relates the desired motor speed signal to the first and second control signals in a preselected manner;
processor means for receiving the desired speed signal, responsively retrieving at least a portion of the data from the memory device, and producing the first and second signals in response to the retrieved data and the desired speed signal;
adjusting means for receiving at least one of the control signals, permitting controllable adjustment of the control signal and producing an adjusted control signal so as to vary the speed of a respective motor; and
overwriting means for receiving the adjusted control signal and overwriting a portion of the stored data in response to the adjusted control signal.

5,249,423
MASTER CYLINDER
Kaoru Nakamura, Anjo, and Haruo Arakawa, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Mar. 10, 1992, Ser. No. 848,938
Claims priority, application Japan, Mar. 30, 1991, 3-028396[U]
Int. Cl.[5] B60T 11/20
U.S. Cl. 60—562 5 Claims



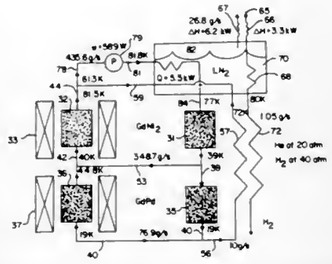
1. A master cylinder comprising:
a cylinder having a bottom;
a first piston slidably disposed in the cylinder;
a second piston slidably disposed in the cylinder;
a first pressure chamber formed between the first piston and the second piston;
a second pressure chamber formed between the second piston and the bottom of the cylinder;
a first return spring provided in the first pressure chamber;
a second return spring provided in the second pressure chamber
a hollow portion in the second piston for receiving at least a portion of the second return spring, said hollow portion having an open end and an oppositely positioned bottom end, said hollow portion including a cylindrical portion that merges into a yoke portion, said yoke portion narrowing in diameter in a direction from the cylindrical portion toward the bottom end of the hollow portion, one end of said second return spring being received in the yoke portion adjacent the bottom end of the hollow portion so that the second return spring is positioned coaxially with respect to the second piston; and
a tapered portion provided on the open end of the hollow portion.

5,249,424
ACTIVE MAGNETIC REGENERATOR METHOD AND APPARATUS
Anthony J. DeGregoria; Carl B. Zimm, both of Madison; Dennis J. Janda, McFarland; Richard A. Lubasz, Deerfield, and Alexander G. Jastrab, Oconomowoc; Joseph W. Johnson, Madison; Evan M. Ludeman, Austin, Tex., assignors to Astronautics Corporation of America, Milwaukee, Wis.
Filed Jun. 5, 1992, Ser. No. 894,777
Int. Cl.[5] F25B 21/00
U.S. Cl. 62—3.1 53 Claims

1. Active magnetic regenerator apparatus comprising:
(a) a porous regenerator bed of material that exhibits the magnetocaloric effect, the bed having a higher temperature hot side and a lower temperature cold side;
(b) heat transfer fluid which can pass through the bed between the hot and cold sides to effect heat transfer with the material of the bed;
(c) a magnet producing a magnetic field;
(d) means for causing the magnetic field of the magnet to be applied alternately to the bed and removed from the bed;
(e) transfer means for providing a path for the fluid to and from the regenerator bed and for driving a first volume of the fluid through the bed from the hot side to the cold side when the magnetic field is removed from the bed and for driving a second volume of the same fluid through the bed

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from the cold side to the hot side when the magnetic field is applied to the bed, wherein the first volume is greater than the second volume, and for providing a path from the



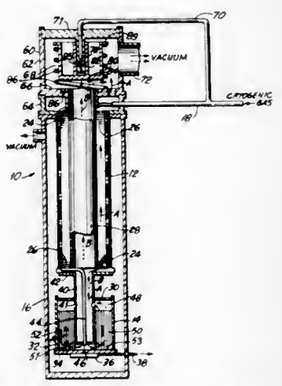
cold side to the hot side for diverting a portion of the first volume of fluid so that it flows back to the hot side of the bed without passing through the bed from the cold side to the hot side.

5,249,425

VENTING CONTROL SYSTEM FOR CRYOSTATS

Ralph C. Longsworth, Allentown, Pa., assignor to APD Cryogenics Inc., Allentown, Pa.

Filed Jul. 1, 1992, Ser. No. 906,401
Int. Cl.[5] F25B *19/02, 9/00, 19/00*
U.S. Cl. 62—6 **7 Claims**



1. In combination, a heat exchanger having means for receiving a cryogen gas under pressure,

a reservoir connected to receive and store liquid cryogen received from a gas/liquid discharge of said heat exchanger,

a conduit connected to said reservoir for providing a direct venting path from said reservoir to a source of reduced gas pressure, and

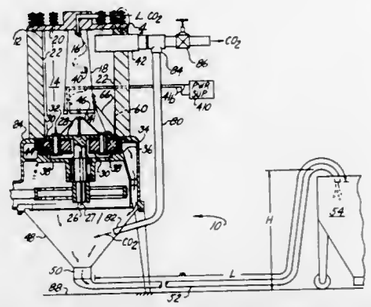
a self-activating valve means for blocking the venting of said reservoir through said conduit in response to the pressure of gas received by said heat exchanger.

5,249,426

APPARATUS FOR MAKING AND DELIVERING SUBLIMABLE PELLETS

Philip Spivak, Toluca Lake; Alan E. Opel, Monrovia; Scott M. Stratford, Alta Loma, and Oleg Zadorozhny, North Hollywood, all of Calif., assignors to Alpheus Cleaning Technologies Corp., Rancho Cucamonga, Calif.

Filed Jun. 2, 1992, Ser. No. 893,195
Int. Cl.[5] B29C *43/52*
U.S. Cl. 62—35 **19 Claims**



19. Apparatus for producing sublimable pellets, comprising:

(a) housing means at least partly defining a snow chamber;

(b) snow generating means at least partly within the snow chamber, including nozzle means for feeding a pressurized, cooled liquid, whereby a portion of the liquid solidifies as snow in the snow chamber;

(c) pelletizer means for forming the pellets from the snow, the pelletizer means at least partly defining the bottom of the snow chamber and having a rotating carrier member;

(d) a first scraper member rotatably supported by the carrier member for scraping snow from the snow chamber, the snow falling into the pelletizer means;

(e) a collector for receiving the pellets from the pelletizer means, the collector feeding a material conduit;

(f) means for sealingly connecting the collector to the pelletizer means;

(g) means for collecting pressurized gas from the snow chamber; and

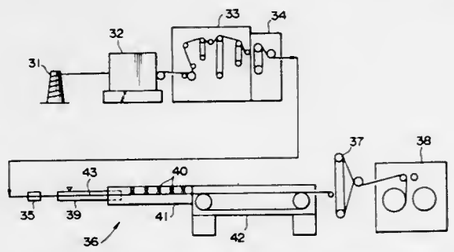
(h) a feed passage for delivering the collected gas to the collector.

5,249,427

METHOD AND DEVICE FOR COOLING COATED WIRE

Yoshio Ikegami; Tadashi Kouge; Shiro Kishi; Toshiaki Akita, and Naoyuki Tashiro, all of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jul. 20, 1992, Ser. No. 914,597
Int. Cl.[5] F25D *13/06*
U.S. Cl. 62—63 **2 Claims**



1. In a method for cooling a coated wire including: preparing a water storage tank disposed between an extruder for coating a core wire with an insulating material and for feeding said coated wire forwardly and a winder for winding said coated wire; and passing said coated wire before being wound through still water in said water storage tank thereby rapidly cooling said coated wire, the improvement comprising:

preparing trough members disposed between said water storage tank and said extruder along the advance direction of said coated wire in such a manner as to cover said coated wire from the underside; and

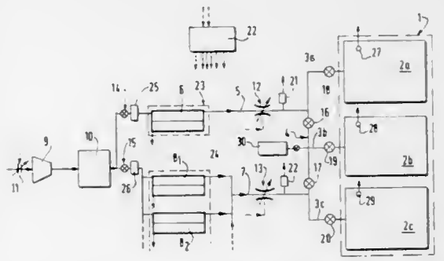
cooling said coated wire by water which is discharged to said trough members and is made to flow therein, and then passing said coated wire through said water storage tank.

5,249,428

METHOD AND APPARATUS FOR ESTABLISHING A CONTROLLED ATMOSPHERE IN THE COMPARTMENTS OF A VESSEL FOR CONSERVING FRESH VEGETABLES

Christian Barbe, Fontenay-Aux-Roses, and Frédéric Fillet, Issy-Les-Moulineaux, both of France, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation Des Procedes Georges Claude, Paris, France

Filed Jun. 22, 1992, Ser. No. 901,889
Claims priority, application France, Jun. 28, 1991, 91 08060
Int. Cl.[5] F24F *3/16*
U.S. Cl. 62—78 **15 Claims**



1. A method of conserving fresh edible products in a storing housing comprising at least two storing compartments, comprising the steps of:

a) providing a non-cryogenic air separation device comprising at least first and second separators each having an air inlet and an oxygen-depleted gas outlet, said first separator operable to supply at its said outlet a gas having a first content of oxygen and at least said second separator operable in a first mode to supply at its said outlet a gas having a second content of oxygen higher than said first content;

b) loading the first compartment with fresh products;

c) connecting the loaded first compartment to the outlet of the second separator operated in said first mode;

d) loading the second compartment with fresh products;

e) disconnecting the loaded first compartment from the outlet of the second separator and connecting said loaded first compartment to the outlet of the first separator and connecting the loaded second compartment to the outlet of the second separator operated in said first mode; and

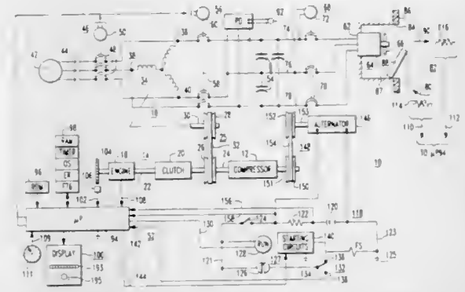
f) after a predetermined period of time, supplying the first and second loaded compartments with a gas supplied by the air separation device and having substantially the first content of oxygen.

5,249,429

METHODS OF OPERATING A REFRIGERATION SYSTEM

Jay L. Hanson, Bloomington, Minn., assignor to Thermo King Corporation, Minneapolis, Minn.

Filed Feb. 8, 1993, Ser. No. 15,964
Int. Cl.[5] F25B *27/00*
U.S. Cl. 62—86 **32 Claims**



1. A method of interlocking the selection and operation of an internal combustion engine and an electric drive motor which are arranged to selectively and alternatively function as a prime mover for a refrigerant compressor in a refrigeration system, to prevent energization of the electric motor while the engine is operative, comprising the steps of:

monitoring engine oil pressure,

detecting the selection of the drive motor as the prime mover,

determining if the engine oil pressure is zero in response to said detecting step finding selection of the drive motor as the prime mover,

preventing energization of the drive motor, when de-energized, and de-energizing the drive motor, when energized, in response to the determining step finding the engine oil pressure is not zero,

initiating a predetermined timing period in response to the determining step finding the engine oil pressure is not zero,

repeating periodically the step of determining if the engine oil pressure is zero,

and providing an indication of a fault when the repeated determining step consistently finds the engine oil pressure is not zero over the predetermined timing period.

5,249,430

METHOD OF AND MEANS FOR CONTROLLING THE CONDITION OF AIR IN AN ENCLOSURE

Gad Assaf, Rehovot, and Uriyel Fisher, Haifa, both of Israel, assignors to Geophysical Engineering Company, Seattle, Wash.

Continuation of Ser. No. 692,173, Apr. 26, 1991, abandoned, which is a continuation of Ser. No. 316,915, Feb. 28, 1989, Pat. No. 5,020,333, which is a continuation-in-part of Ser. No. 479,009, Mar. 25, 1983, Pat. No. 4,819,447, which is a continuation-in-part of Ser. No. 377,368, May 12, 1982, abandoned. This application Dec. 16, 1992, Ser. No. 993,443
Int. Cl.[5] F25D *23/00*
U.S. Cl. 62—94 **16 Claims**

1. Apparatus for conditioning air in an enclosure comprising:

a) a direct contact air/brine heat exchanger;

b) means for exchanging air in the enclosure with said direct contact heat exchanger;

c) a reservoir of concentrated brine;

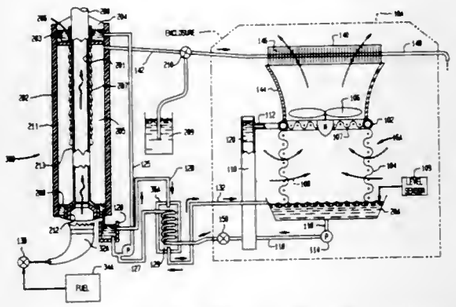
d) means including a pump for establishing a first brine loop in which brine of said reservoir is exchanged with said direct contact heat exchanger for condensing water vapor

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in the enclosure onto the exchanged brine to form dilute brine that flows into said reservoir;

e) means including said pump for establishing a second brine loop including said reservoir;

f) brine concentrator means for evaporating water from brine in said second loop to produce concentrated brine



that is supplied to said reservoir, said brine concentrator means including means for producing a thin film of brine in the second loop, and means for heating the brine and said thin film for evaporating water therefrom; and

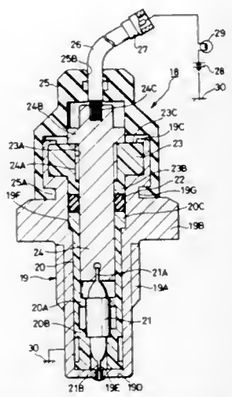
g) a restriction in said second loop for establishing a mass flow rate in the second loop that is smaller than the mass flow rate in the first loop.

5,249,431

RESIDUAL COOLANT SENSOR FOR AIR CONDITIONING SYSTEM

Masaru Kuribara, and Kazumitsu Kobayasbi, both of Isesaki, Japan, assignors to Japan Electronic Control Systems Co., Ltd., Gunma, Japan

PCT No. PCT/JP91/00855, § 371 Date Feb. 5, 1992, § 102(e) Date Feb. 5, 1992
PCT Filed Jun. 26, 1991, Ser. No. 834,281
Int. Cl.[5] F25B *49/02*
U.S. Cl. 62—129 **2 Claims**



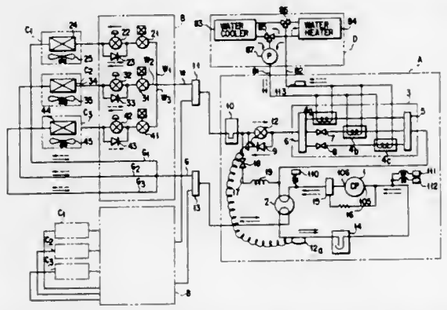
1. An air conditioning system, comprising: a piping system for circulating a coolant, said piping system being provided with, successively along the course thereof and in the direction of circulation of said coolant, a compressor, a heat radiator, a coolant storage tank, an expansion valve and a heat absorber; and a residual coolant sensor provided in a liquid phase region of said piping between said heat radiator and said heat absorber to detect the amount of residual coolant in a flow passage in said liquid phase region, said residual coolant sensor including a housing of a metallic material fixed in a coolant flow passage in said liquid phase region, an electrode provided in an electrically insulated state within said housing through a first insulating holder member and arranged to be applied with a voltage from outside and a self-heated temperature-sensitive resistor element located in a fore end portion of said housing in an electrically insulated state through a second insulating holder member and having one end thereof connected to said electrode and the other end to said housing to detect the temperature of said coolant through said housing and said second insulating holder member.

5,249,432

AIR CONDITIONING APPARATUS IN WHICH ONE OUTDOOR UNIT IS CONNECTED TO ONE OR A PLURALITY OF INDOOR UNITS

Yasunori Ichikawa, Fuji, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 28, 1992, Ser. No. 826,611
Claims priority, application Japan, Feb. 20, 1991, 3-26431
Int. Cl.[5] F25B *41/00*
U.S. Cl. 62—197 **6 Claims**



1. An air conditioning apparatus in which one outdoor unit is connected to one or a plurality of indoor units, comprising:

a compressor, provided to said outdoor unit, for taking in, compressing, and discharging a refrigerant;

a water heat exchanger unit, provided to said outdoor unit, for exchanging heat of the refrigerant flowing therein for heat of water supplied thereto;

a water supply unit for supplying water to said water heat exchanger unit;

a thermostatic expansion valve, provided to said outdoor unit and having a heat-sensitive portion for sensing a temperature of the refrigerant flowing in said compressor, for maintaining at a predetermined value a super-heat degree of the refrigerant in said water heat exchanger unit by changing an opening degree thereof in accordance with the temperature sensed by said heat-sensitive portion;

one or a plurality of air heat exchangers, provided to said one or plurality of indoor units, for exchanging heat of the refrigerant flowing therein for heat of indoor air;

means for flowing the refrigerant discharged from said compressor to said one or plurality of air heat exchangers, flowing the refrigerant passing through said one or plurality of air heat exchangers to said water heat exchanger unit via said expansion valve, and returning the refrigerant passing through said water heat exchanger unit to said compressor, thereby executing a heating operation mode;

a bypass for supplying part of the refrigerant passing through said one or plurality of air heat exchangers to a suction side of said compressor;

a two-way valve provided to said bypass;

detecting means for detecting a temperature of water after heat-exchanged by said water heat exchanger unit; and

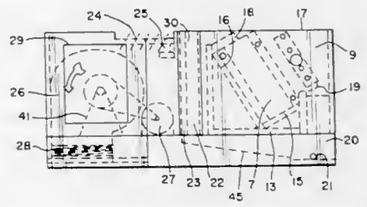
control means for opening said two-way valve when the temperature detected by said detecting means is not less than a preset value in the heating operation mode.

5,249,433

METHOD AND APPARATUS FOR PROVIDING REFRIGERATED AIR

Edward R. Hardison, Niagara Falls, Canada, and Randolph S. Coo, Grand Island, N.Y., assignors to Niagara Blower Company, Buffalo, N.Y.

Filed Mar. 12, 1992, Ser. No. 850,098
Int. Cl.[5] F25D *21/10*
U.S. Cl. 62—282 **61 Claims**



1. An apparatus for providing refrigerated process air, comprising:

(a) an air refrigerator, comprising an inclined evaporator coil over which high face velocity process air passes in a direction having a downward velocity component;

(b) means situated upstream of said evaporator coil for periodically spraying a liquid defrosting solution onto said evaporator coil to absorb frost which accumulates thereon;

(c) means situated downstream of said evaporator coil for collecting said liquid defrosting solution;

(d) demisting means for eliminating entrained liquid defrosting solution from the process air;

(e) a housing surrounding said air refrigerator, said spraying means and said demisting means;

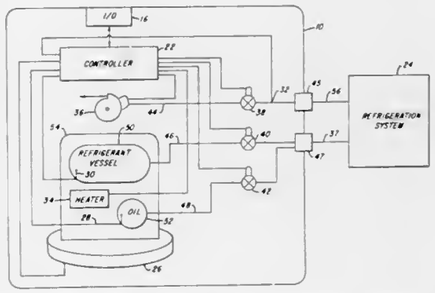
whereby the high face velocity process air may be refrigerated continuously in an essentially frost-free manner.

5,249,434

SYSTEM AND METHOD FOR AUTOMATIC CHARGING OF REFRIGERATION SYSTEMS

Anthony W. Abraham, Arlington, Tex., assignor to Wynn's Climate Systems, Inc., Fort Worth, Tex.

Filed Jul. 6, 1992, Ser. No. 908,396
Int. Cl.[5] F25B *45/00*
U.S. Cl. 62—292 **8 Claims**



1. A refrigeration system servicing apparatus comprises:

a digital controller;

a vacuum source;

an outlet valve responsive to the digital controller for actuation to connect the vacuum source to a refrigeration system;

a pressure sensor for providing pressure readings to the digital controller from a refrigeration system;

means responsive to user selection for initiating a vacuum mode for undergoing servicing by first determining from the pressure sensor that the refrigeration system is not substantially pressurized over ambient pressure and by setting a time out period;

means for opening the outlet valve for an offset period;

timer means responsive to expiration of the offset period for closing the outlet valve and determining if a substantial vacuum has been established in the refrigeration system;

means responsive to establishment of a substantial vacuum for determining if the refrigeration system retains the substantial vacuum for a first hold period;

means responsive to expiration of the first hold period and retention of the substantial vacuum by the refrigeration system for opening the outlet valve;

means responsive to expiration of the time out period for closing the outlet valve and for determining if the refrigeration system retains a substantial vacuum for a second hold period;

means for recharging a refrigeration system after completion of the vacuum mode; and

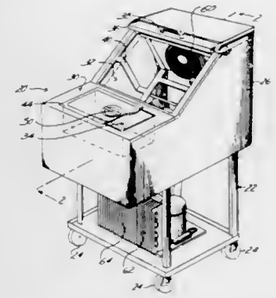
means responsive to failure to establish or hold a substantial vacuum for signalling an error condition to an operator.

5,249,435

REFRIGERATION FOR FOOD SERVICE

Jeff Lever, Lexington, and Andy Burrows, Columbia, both of S.C., assignors to Food Service Supplies, Inc., Columbia, S.C.

Filed Apr. 14, 1992, Ser. No. 868,731
Int. Cl.[5] F25D *17/06*; A47F *3/04*
U.S. Cl. 62—419 **15 Claims**



1. An apparatus for storing food items, said apparatus comprising:

a housing having an interior and at least one opening;

means for providing chilled air to said interior;

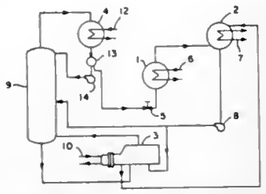
means carried by said housing for holding a supply of said food items so that said chilled air circulates through said holding means, said holding means located near said opening; and

at least one lid carried by said housing for covering said at least one opening, each lid dimensioned and positioned to cover one of said at least one openings,

one of said at least one lid having a first open position, a second open position and closed position.

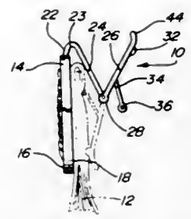
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5,249,436
SIMPLIFIED, LOW COST ABSORPTION HEAT PUMP
Klaus H. Hemsath, Toledo, Ohio, assignor to Indugas, Inc., Toledo, Ohio
Filed Apr. 9, 1992, Ser. No. 865,953
Int. Cl.[5] F25B *15/00*
U.S. Cl. 62—476 **109 Claims**



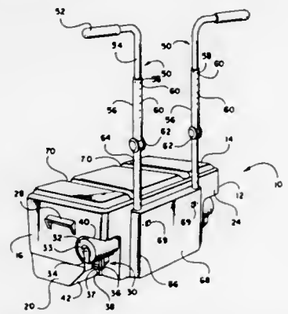
1. An absorption heat pump using a working medium of at least two substances, one substance having a low boiling temperature and the other a higher boiling temperature, said heat pump comprising:
a.) a pressure vessel containing said working medium and having at least first and second compartments;
b.) heat transfer means for controlling the temperature of said compartments to cause an absorption heat cycle of boiling, condensing, evaporating and absorbing to occur, said boiling and absorbing steps occurring sequentially in said first compartment and said condensing and evaporating steps occurring sequentially in said second compartment;
c.) means for periodically withdrawing one of said substances from one of said compartments and transferring same to the other one of said compartments; and
d.) means providing generally unrestricted, open fluid communication between said first and second compartments whereby said pressure in said first and second compartments are virtually the same.

5,249,437
DEVICE FOR HOLDING PAPER CURRENCY, CREDIT CARDS AND THE LIKE
Walter W. Cole, Jr., 7151 Deerlake Ct., Clarkston, Mich. 48346
Filed Jul. 31, 1992, Ser. No. 923,851
Int. Cl.[5] A44C *25/00*
U.S. Cl. 63—2 **18 Claims**



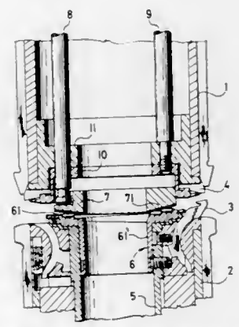
1. A device for holding articles such as paper currency and credit cards, comprising:
a base member;
a spring member extending outwardly and away from said base member;
clamping means pivotally connected to said spring member for engaging and disengaging the articles, said clamping means having an open position for disengaging the articles and a closed position for engaging the articles and holding the articles between said clamping means and said base member;
said clamping means comprising a clamping member having first and second ends, said first end pivotally connected to said spring member and said second end engaging the articles in said closed position; and
a locking arm connected to said clamping member at a point between said first and second ends and extending inwardly at an angle beyond said first end toward said base member while in said closed position.

5,249,438
MOBILE COOLER WITH RETRACTABLE WHEELS AND HANDLES
Michael A. Rhaney, Atlanta, Ga., and Randall Bartlett, Opelika, Ala., assignors to Systemwide Product, Scottdale, Ga.
Filed Aug. 20, 1992, Ser. No. 932,643
Int. Cl.[5] F25D *3/08*
U.S. Cl. 62—457.7 **11 Claims**



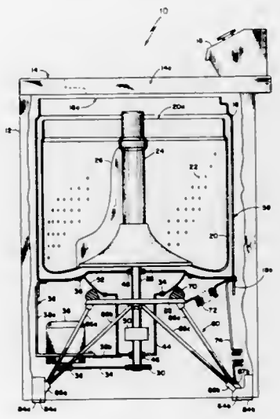
1. A portable cooler, comprising:
a cooler compartment having a lid, bottom, sides, front and back;
a recess in each corner of the lower end of the sides sized to receive a wheel;
a first arm extending outward from each recess each arm having an aperture located at the distal end capable of receiving a pin;
a pair of essentially parallel apertures disposed vertically in the back;
a pair of wheel assemblies one disposed within each recess each assembly comprising
a wheel,
an axle disposed axially through the center of the wheel,
a bracket connected to each end of the axle so as to permit free rotation about the wheel axis,
a second arm extending from the bracket having an aperture at the distal end,
a first hinge means comprising a first pin capable of pivotably connecting the first arm to the second arm by passing through the apertures; and
a handle assembly for maneuvering the cooler over terrain comprising a pair of support members, each support member comprising
a handle,
an upper section comprising a first tube telescopingly engaged with a second tube, the handle being attached to the first tube,
a lower section comprising a third tube sized to fit slidingly within the vertically disposed back aperture, and
a second hinge means for pivotably connecting the second tube with the third tube.

5,249,439
TAKE-OFF DEVICE HAVING RADIAL GROOVES FOR CIRCULAR KNITTING MACHINES
Milan Fučík, Kojetica na Moravě; Miroslav Chromý, Rokytnice n/Rok, and Jirí Pohorilský, Třebíč, all of Czechoslovakia, assignors to Uniplet a.s., Třebíč, Czechoslovakia
Filed May 2, 1991, Ser. No. 694,794
Claims priority, application Czechoslovakia, May 22, 1990, 2485-90
Int. Cl.[5] D04B *15/88*
U.S. Cl. 66—153 **5 Claims**



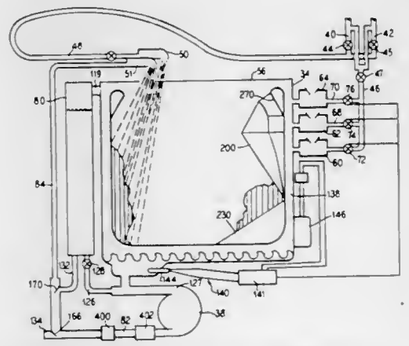
1. In a take-off device for circular knitting machines having a plurality of needles for manufacturing hosiery comprising two discs coacting so as to lead knitwork therebetween, of which one of said discs is stationary and is provided with a helical surface to engage the knitwork being forced thereonto by the other disc which is rotatable, the improvement wherein the rotatable disc (7, 7') has a number of radial grooves (71, 71') on at least a portion of its surface facing the stationary disc (6) to guide the knitwork in a wale direction of the knit hosiery.

5,249,440
WASHING MACHINE
Robin C. Hossfield, Medway; Ronald A. Goyette, Ashby, both of Mass., and George M. Reilly, Manchester, N.H., assignors to Raytheon Company, Lexington, Mass.
Filed Jun. 2, 1992, Ser. No. 889,928
Int. Cl.[5] D06F *37/24*
U.S. Cl. 68—23.3 **20 Claims**



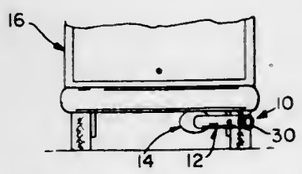
1. A washing machine comprising:
a cabinet;
a tub assembly disposed in said cabinet, said tub assembly comprising a drain tub and a spin tub disposed in said drain tub and adapted for processing a wash load;
suspension means for supporting said tub assembly and for permitting said tube assembly to pivot; and
a plurality of supporting feet adapted for contacting a floor surface to support said washing machine, said feet being rotatably coupled to said suspension means.

5,249,441
SLIT VALVE FOR AUTOMATIC WASHER
Jim J. Pastryk, Weesaw Township; Sheryl L. Farrington, Lincoln Township, both of Berrien County; John W. Euler, and Devinder Singh, both of St. Joseph, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Jan. 2, 1992, Ser. No. 816,167
Int. Cl.[5] D06F *23/04*
U.S. Cl. 68—23.4 **11 Claims**



1. A washing machine comprising the following:
a wash tub;
a wash basket disposed in said wash tub, said wash basket including a peripheral wall and being adapted to receive wash fluid;
a plurality of perforations formed in said peripheral wall of said wash basket;
a sheet-like elastomeric member sized to seal said plurality of perforations;
a plurality of apertures formed in said elastomeric member which are normally closed, yet which open upon a sufficient fluid pressure being applied to one side of said elastomeric member, to permit passage of a fluid therethrough.

5,249,442
EXHAUST PIPE LOCK FOR INTERNAL COMBUSTION ENGINES AND THE LIKE
Barrington Wright, 44 Metropolitan Oval, #4-A, Parkchester, N.Y. 10462
Filed Dec. 2, 1991, Ser. No. 801,277
Int. Cl.[5] B60R *25/00*
U.S. Cl. 70—164 **2 Claims**



1. A lock for an exhaust pipe in an exhaust system of an

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internal combustion engine in a motor vehicle, which comprises:

a) a plug to be inserted within a distal end of the exhaust pipe, so as to seal the distal end of the exhaust pipe and thereby prevent the operation of the internal combustion engine; and

b) means for retaining said plug within the distal end of the exhaust pipe and to prevent the unauthorized removal of said plug from the distal end of the exhaust pipe, wherein said plug includes:

i) a hollow cylindrical sleeve sized to fit within the distal end of the exhaust pipe;

ii) a disc-shaped plate to cap a first end of said sleeve; and

iii) a resilient stopper to fit over a second end of said sleeve so that when said sleeve is inserted within the distal end of the exhaust pipe, said stopper will seal the distal end of the exhaust pipe and prevent the exhausted gases from exiting therefrom, and wherein said retaining means includes:

i) the exhaust pipe having a transverse aperture at a predetermined distance from the distal end thereof;

ii) said sleeve of said plug having two aligned transverse keyed apertures at a predetermined distance from said stopper, so that when said sleeve is inserted within the distal end of the exhaust pipe, the two aligned transverse apertures will line up with the transverse aperture in the exhaust pipe; and

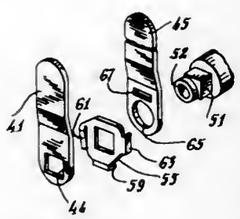
iii) a keyed lock cylinder insertable through the transverse aperture in the exhaust pipe and the two aligned transverse keyed apertures in said sleeve, so that when said lock cylinder is operated it will retain said sleeve therein.

5,249,443

FRONT-INSTALLED DUAL CAM LOCK WITH PIVOTING CAMS

Victor R. Anderson, Trumbull, Conn., assignor to Loctec Corporation, Newton, Conn.

Filed Sep. 8, 1992, Ser. No. 941,911
Int. Cl.[5] E05B *9/08*
U.S. Cl. 70—370 **14 Claims**



1. A pre-assembled lock adapted for front-mounting through an opening in a panel, said lock including

a face plate, a barrel extending transversely therefrom, and a shaft extending from said barrel,

a first cam fixedly mounted on said shaft,

a second cam pivotally mounted on said shaft, said second cam being substantially parallel to said first cam,

and locking means for locking said second cam against pivoting relative to said first cam after said second cam has been pivoted a predetermined distance about said shaft to its operating position.

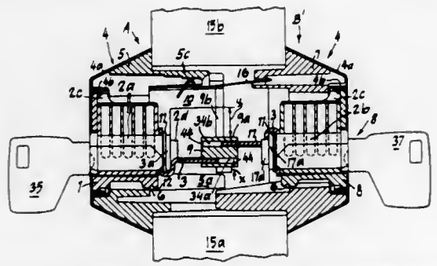
whereby said lock with said cams can be pressed through a panel opening and said cams thereafter be readily placed in operating positions fixed relative to each other.

5,249,444

DOOR ASSEMBLY INCLUDING SWIVEL LATCH

Imre J. Dancs, Greendale, Wis., assignor to Master Lock Company, Milwaukee, Wis.

Filed May 2, 1991, Ser. No. 695,491
Int. Cl.[5] E05B *17/04*
U.S. Cl. 70—380 **1 Claim**



1. A key-operated door lock assembly comprising an outer lock portion including a cylinder housing in turn including a lock cylinder which cylinder is rotatable about a longitudinal axis, an inner lock portion and a latch having upper and lower edges and a swivel with a round swivel base therein, the improvement comprising

a) a first configured tailpiece on the lock cylinder, a second tailpiece on the inner lock portion with both tailpieces rotatable about said longitudinal axis;

b) a circular opening in the latch a selected distance from the lower edge of the latch for receiving said swivel base;

c) said swivel base having an upper hemisphere and a lower hemisphere therein;

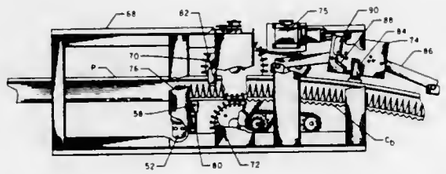
d) a complementary configured tailpiece receiving passageway in each hemisphere each of which passageways does not communicate with the other passageway, one of which receiving passageways has an open first end and a frangible closed second end portion to discourage placing a tailpiece in the second end portion but permitting a tailpiece already in a passageway to exit the second end upon breaking such end portion.

5,249,445

MACHINE AND METHOD FOR FORMING ARCHED ROOF VERTICAL WALL SELF SUPPORTING METAL BUILDINGS

Frederick Morello, Johnston, Pa., assignor to M.I.C. Industries, Inc., Reston, Va.

Filed Apr. 22, 1992, Ser. No. 872,005
Int. Cl.[5] B21D *13/04, 53/00*
U.S. Cl. 72—9 **11 Claims**



1. A machine for automatically and controllably forming sheet metal into panels for metal buildings having combined walls and roof panels, at least a portion of which are arched or curved; the machine comprising;

a) roll forming means for roll forming sheet metal material into a desired panel profile having a central bottom portion between upturned lateral edge portions;

b) shear means adjacent the roll forming means for shearing the roll formed panel;

c) crimping means for continuously crimping by bending small folds in the bottom portion of formed sheared panel lengths fed through the crimping means to provide a curvature of the formed panels, the depth of the folds establishing the curvature;

d) panel curvature measuring means for measuring the curvature of bottom crimped formed panels, and;

e) automatic digital control means for controlling the crimping means to vary the control the extent of curvature of the formed panels, by varying the depth of the folds the automatic digital control means being at least partially responsive to the measuring means and a control input setting of desired curvature.

5,249,446

PROCESS FOR MAKING AN ALUMINUM ALLOY FINSTOCK LUBRICATED BY A WATER-MICROEMULSIFIABLE COMPOSITION

Girma Biresaw, Lower Burrell, and Dianne A. Zadnik, New Kensington, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Jul. 19, 1991, Ser. No. 732,754
Int. Cl.[5] B21D *22/00, 28/00;* **B21B** *45/02*
U.S. Cl. 72—42 **19 Claims**

1. A process for making aluminum alloy heat exchanger fins comprising the steps of:

(a) applying a water-microemulsifiable lubricant composition dissolved in a liquid hydrocarbon solvent onto an aluminum alloy finstock having a thickness of less than about 250 microns, said liquid hydrocarbon solvent being selected from the group consisting of hexane, pentane, cyclohexane, toluene and heptane, said lubricant composition consisting essentially of a water-insoluble oil, a surfactant selected from the group consisting of a water-soluble sulfate, a water-soluble sulfonate, a water-soluble sulfosuccinate and an alkali metal, amine or ammonium salt of said sulfate, sulfonate or sulfosuccinate, and a cosurfactant, thereby to form finstock coated with a film of the lubricant composition, said lubricant composition being capable of forming a microemulsion when combined with water; and

(b) shaping said finstock into aluminum alloy heat exchanger fins by passing said finstock through a forming die, said film lubricating an interface between said finstock and said forming die.

5,249,447

PROCESS FOR PREPARATION OF THICKNESS-REDUCED DEEP-DRAW-FORMED CAN

Masanori Aizawa, Yokohama; Tetsuo Miyazawa, Ayase; Katsuhiro Imazu; Seishichi Kobayashi, both of Yokohama, and Hiroshi Ueno, Yokosuka, all of Japan, assignors to Toyo Seikan Kaisha Ltd., Tokyo, Japan

PCT No. PCT/JP90/00190, § 371 Date Dec. 12, 1990, § 102(e) Date Dec. 12, 1990, PCT Pub. No. WO90/09269, PCT Pub. Date Aug. 23, 1990
Continuation of Ser. No. 582,854, Dec. 12, 1990, abandoned.
This PCT application Feb. 16, 1990, Ser. No. 22,859
Claims priority, application Japan, Feb. 16, 1989, 1-35005
Int. Cl.[5] B21C *27/02*
U.S. Cl. 72—46 **4 Claims**

1. A process for the preparation of a thickness-reduced deep-draw-formed can, which comprises the steps of

laminating a crystalline thermoplastic resin film on a metal plate,

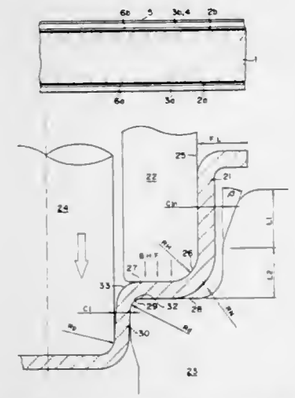
heating the laminated metal plate at a temperature T_1 higher than the glass transition point (Tg) of the termoplastic resin, and lower than the heat crystallization temperature of the thermoplastic resin.

draw-forming the laminated metal plate at said temperature T_1, at a draw ratio of from 1.2 to 1.9 to form a shallow-draw-formed cup, said draw ration being defined by the following formula:

draw-ratio = diameter of blank/diameter of shallow-draw-formed can.

reheating the obtained preliminarily drawn cup at a temperature T_2 higher than the glass transition temperature (Tg) of the termosplastic resin, and lower than the heat crystallization temperature of the thermoplastic resin,

holding the reheated shallow-draw-formed cup by an annular holding member and a redrawing die arranged coaxi-



ally with the annular holding member and a redrawing punch, said redrawing die having a working corner, the working corner having a radius of curvature from 1 to 2.9 times the thickness t_B of the metal plate, and

relatively moving the redrawing die and the redrawing punch to redraw the shallow-draw-formed cup into a deep-draw-formed cup having a diameter smaller than the diameter of the shallow-draw-formed cup at said temperature T_2 so that the entire side wall of the cup is bent and pulled substantially vertically to the axial direction by the working corner of the redrawing die at a bend-pulling speed of at least 1 m/min. and the thickness reduction ratio of the side wall of the can is 5 to 45%.

5,249,448

REDRAW CARRIAGE FOR CRANK AND SLIDE PRESS

Russell J. Fedor, Tampa, and Marc D. Sullivan, Brooksville, both of Fla., assignors to Ball Corporation, Muncie, Ind.

Filed Jul. 9, 1992, Ser. No. 910,928
Int. Cl.[5] B21D *24/04*
U.S. Cl. 72—349 **7 Claims**

1. Redraw carriage apparatus for use in a can-making machine that includes a frame having a pair of spaced-apart frame members, a redraw die being disposed around a longitudinal axis in a plane intermediate of said frame members, a body maker ram having both a first end proximal to said redraw die and a second end that is attached to a ram carriage distal from said redraw die, a redraw punch being attached to said body maker ram proximal to said first end thereof and being reciprocable along said longitudinal axis with said redraw punch entering into and withdrawing from said redraw die, which redraw carriage apparatus comprises:

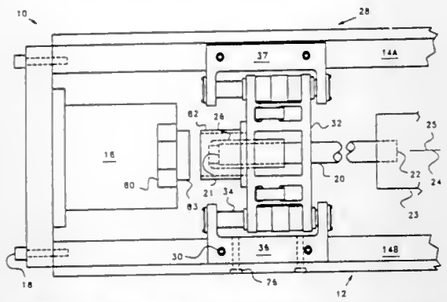
a first guide rod being disposed intermediate of said redraw die and said ram carriage, being disposed parallel to said longitudinal axis, and being attached to one of said frame members;

a second guide rod being disposed parallel to said first guide rod and being attached to said frame;

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a redraw carriage being disposed around said longitudinal axis, and being slidably mounted to said guide rods;

means, comprising means for forcing one of said guide rods transversely with respect to said one frame member, for



aligning said one guide rod with respect to said one frame member; and

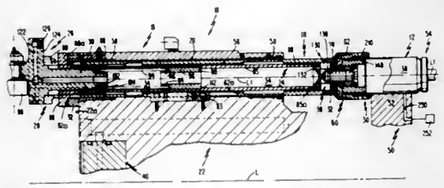
means, comprising said redraw carriage being slidably mounted to said guide rods, for aligning the other of said guide rods with respect to said one frame member.

5,249,449

CAN NECKING APPARATUS WITH SPINDLE CONTAINING PRESSURIZING GAS RESERVOIR

Harry W. Lee; Charles T. Payne, Jr.; Field I. Robertson, all of Chesterfield County, and Robert K. Thai, Richmond, all of Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed Apr. 23, 1992, Ser. No. 872,484
Int. Cl.[5] B21D *41/04*
U.S. Cl. 72—352 **35 Claims**



1. A method of necking an open end of a metal container, comprising the steps of:

(a) inserting a pilot die into the container through said open end to be necked;

(b) contacting an exterior surface of said open end with a necking die to thereby produce a necked-in open end; and

(c) pressurizing the interior of the metal container by admitting fluid into it during step (b) from a reservoir located in the pilot die and containing pressurized fluid, wherein the dimensional volume of said reservoir is at least about equal or greater than the volume of the metal container.

5,249,450

PROBEHEAD FOR ULTRASONIC FORGING

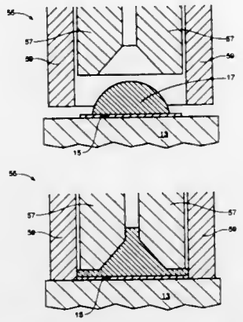
Alan G. Wood; David R. Hembree, both of Boise; Warren M. Farnworth, Nampa, and Larry D. Cromar, Boise, all of Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Jun. 15, 1992, Ser. No. 898,625
Int. Cl.[5] B21J *13/02*
U.S. Cl. 72—359 **16 Claims**

1. A head for use in ultrasonic forging comprising:

a) a central portion, the central portion having a work contacting surface with a recess and an outer periphery;

b) a sleeve surrounding the outer periphery juxtaposed to the work contacting surface;



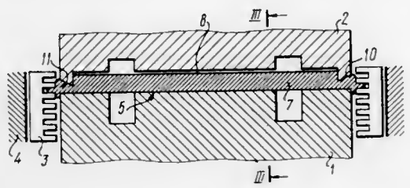
c) the sleeve being mounted to the central portion in such a manner as to attenuate vibrational energy being transferred from the central portion to a workpiece.

5,249,451

METHOD AND ARRANGEMENT FOR DIE FORGING ELONGATED WORKPIECES BY MULTISTATION PRESS TOOL

Viktor A. Aranovsky, ulitsa Nikitina, 62, kv.66, and Gennady F. Zaitsev, ulitsa Bolshevistskaya, 175/6, kv.105., both of, Novosibirsk, U.S.S.R.

Filed Mar. 20, 1992, Ser. No. 853,982
Claims priority, application U.S.S.R., Mar. 23, 1990, 4820381
Int. Cl.[5] B21J *13/10*
U.S. Cl. 72—361 **12 Claims**



1. A method of die forging elongated workpieces in a multistation press comprising:

placing a substantially straight workpiece on a parting plane surface of a die,

applying a pinch onto the workpiece to press and extrude metal at opposite ends of the workpiece simultaneously,

receiving a middle portion of said workpiece in a cavity provided in said punch, when the punch is applied onto the workpiece, so that when the ends of the workpiece are pressed, the remainder of the workpiece will be maintained in a substantially straight condition on said parting place surface,

positioning grips at the opposite ends of the workpiece to receive the the metal extruded therefrom upon application of said punch to form a bonded connection therewith, and

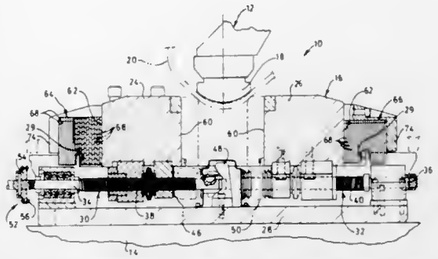
removing the workpiece from the parting plane surface of the die for placement at a subsequent station of the press by displacing said grips.

5,249,452

ADJUSTABLE MASTER BRAKE DIE

John B. Baldwin, Warrenville, and David R. Draper, Montgomery, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Feb. 17, 1993, Ser. No. 18,671
Int. Cl.[5] B21D *5/02*
U.S. Cl. 72—389 **7 Claims**



1. An adjustable master brake die for bending plate material into different angular shapes, the adjustable master brake die has a base having a plurality of stop surfaces, a pair of spaced apart die shoes mounted on the base forming an opening of a preselected width, the improvement comprising:

positioning means for reciprocably moving the die shoes to various preselected positions;

first and second shim packages each having a plurality of shims, each shim package being positioned adjacent a respective die shoe and moveable therewith; and;

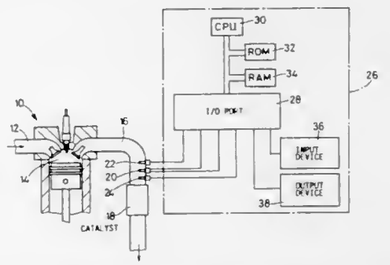
selection means for controllably preselecting a number of the shims from each shim package in response to the preselected positions of the respective die shoe and controllably moving the preselected number of shims from each package each into an operable position between a respective stop surface and a respective die shoe at the various preselected positions of the die shoe.

5,249,453

METHOD OF COMPENSATING OUTPUT OF A/F RATIO SENSOR

Jun Usami, Aichi, and Motohiro Nishiwaki, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Dec. 2, 1991, Ser. No. 801,380
Claims priority, application Japan, Nov. 30, 1990, 2-337836
Int. Cl.[5] G01N *31/00*
U.S. Cl. 73—23.32 **6 Claims**



1. A method of compensating an output of a sensor adapted to determine and air/fuel ratio of an air-fuel mixture, depending upon an oxygen concentration of an exhaust gas produced as a result of combustion of the air-fuel mixture, said sensor including a sensing element which has at least one electrochemical cell each having an oxygen-conductive solid electrolyte body and at least one pair of electrodes, said method comprising the steps of:

detecting a temperature Tc of said sensing element; and

adjusting the output y_0 of said sensor according to the following formulas (1—1) and (1-2), to obtain a compensated output y_t of said sensor:

$$y_t = K_A \quad (1—1)$$

$$K_A = (Tco/Tc)^A \quad (1\text{-}2)$$

wherein

Tco: reference temperature of said sensing element, and

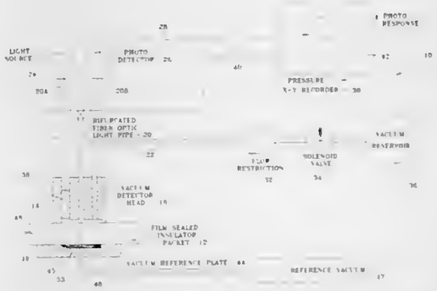
A: temperature variation index measured at said sensing element.

5,249,454

INSTRUMENT FOR MEASUREMENT OF VACUUM IN SEALED THIN WALL PACKETS

Thomas G. Kollie, 117 Oklahoma Ave., Oak Ridge, Tenn. 37830; Louis H. Thacker, 3727 Frostwood Rd., Knoxville, Tenn. 37921, and H. Alan Fine, 949 Wishbone Cir., Lexington, Ky. 40502

Filed Jan. 27, 1992, Ser. No. 826,799
Int. Cl.[5] G01M *3/02, 3/38*
U.S. Cl. 73—49.3 **18 Claims**



1. An instrument for the measurement of vacuum within a sealed packet, said packet having a first deformable wall and a second oppositely disposed deformable wall, said instrument comprising:

a detector head for positioning against said first deformable wall of said packet;

vacuum means connected to said detector head to apply a controlled vacuum from a first vacuum source to said first deformable wall;

light means to direct a beam of light against said first deformable wall;

light detection means to receive light from said light means reflected from said first deformable wall and to provide a signal related to said reflected light;

means to monitor said controlled vacuum as said controlled vacuum is applied to said first deformable wall and provide a signal related to a value of said controlled vacuum;

plate means for uniformly supporting said packet on said second deformable wall, said plate means provided with a porous member;

further vacuum means connected to said porous member of said plate means for applying a reference vacuum to said second deformable wall of said packet, said reference vacuum being at least equal to said controlled vacuum applied to said deformable wall; and

means for relate said signals from said light detection means and said vacuum monitoring means to provide said measurement of vacuum within said packet.

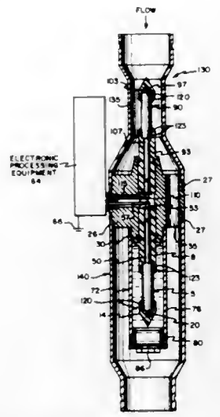
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5,249,455

B S & W MEASURING MEANS AND METHOD

Percy T. Cox, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 23, 1991, Ser. No. 811,633
Int. Cl.[5] G01N *27/22*
U.S. Cl. 73—61.44 21 Claims



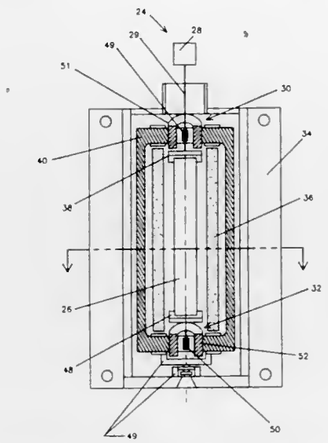
1. A BS&W meter comprising:
test cell means for having a petroleum stream flowing through it including:
an outer shell of conductive material,
sensor probe means located within the outer shell for cooperating with the outer shell to form a sensor capacitor with the flowing petroleum stream as the dielectric, and
a reference capacitor, located within the outer shell, which has pure oil as the dielectric; and
processing means including:
comparator means electrically connected tot he sensor capacitor and to a reference probe means for comparing the capacitance of the sensor capacitor with the capacitance of the reference capacitor and providing a signal corresponding thereto, and
output means connected to the comparator means for providing an output corresponding to the water cut of the petroleum stream in accordance with the signal from the comparator means, and
in which the comparator means includes:
first oscillator means for providing a signal having a frequency within a desired range of frequencies, and
capacitor means connected to the sensor capacitor and to the reference capacitor so as to form a bridge network for providing an output in accordance with the capacitance difference between the sensor capacitor and the reference capacitor, and
in which the capacitor means includes:
a fixed capacitor connecting one of the capacitor in the test cell means to the first oscillator means,
a variable capacitor connecting the other capacitor in the test cell means to the connection of the fixed capacitor and the first oscillator means,
means connected to both capacitors in the test cell for providing a common ground connection for both capacitors in the test cell means, and
conductive means connected to the connection of the fixed capacitor to a capacitor in the test cell means and to another connection of the variable capacitor to the other capacitor in the test cell means for providing the voltage across those two connections as the signal corresponding to the capacitance difference between the sensor capacitor and the reference capacitor.

5,249,456

ASSEMBLY SUITABLE FOR DETERMINING A COEFFICIENT OF MOISTURE EXPANSION OF A WORKPIECE

James F. Gilmore, Rochester, and Carl A. Lloyd, Bloomfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 26, 1992, Ser. No. 904,747
Int. Cl.[5] G01G *21/23;* G01N *25/00*
U.S. Cl. 73—73 5 Claims



1. An assembly suitable for determining a coefficient of moisture expansion of a single, identified workpiece, comprising:
(1) a chamber for maintaining said workpiece in a known environment;
(2) a first linear variable differential transformer containing a coil and a central core;
(3) a second linear variable differential transformer containing a coil and a central core;
(4) a weighing means; and
(5) means for positioning said workpiece in the chamber comprising means for connecting one end of said workpiece through the core of the first.linear variable differential transformer to said weighing means and an opposite end of said workpiece to the core of the second linear variable differential transformer, such that a moisture-induced length change value ΔL of said workpiece may be determined by utilizing said first and second linear variable differential transformers; and such that a chamber-induced change in moisture content value ΔM of said workpiece may be determined by utilizing said weighing means.

5,249,457

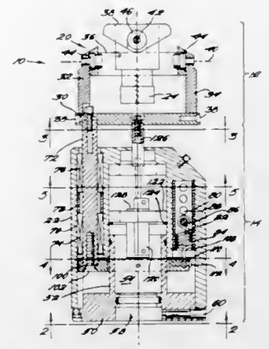
ROBOTIC END EFFECTOR

Richard L. Minichan, 23 Pineview Dr., Warrenville, S.C. 29851

Filed Sep. 5, 1991, Ser. No. 755,422
Int. Cl.[5] G01B *5/28*
U.S. Cl. 73—105 13 Claims

1. An apparatus for holding a probe against a surface, said apparatus comprising:
a housing;
means for holding said probe normal to said surface, said means including a gimbal, having;
a first pair of pivot arms having a first axis therethrough,
a second pair of pivot arms having a second axis therethrough, said second axis perpendicular to said first axis, said second pair of pivot arms perpendicular to said first pair of pivot arms, and

a face rotatably mounted to said second pair of pivot arms, said first pair of pivot arms supporting said second pair of pivot arms so that said face can rotate about said first and said second axes;
means within said housing for urging said gimbal against said



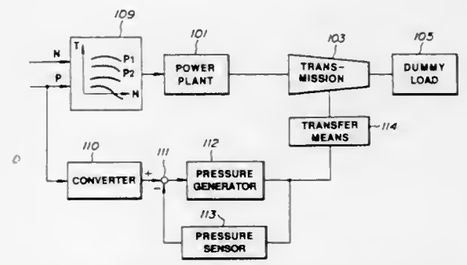
surface, said urging means operationally connected to said gimbal and having a travel distance; and
means for maintaining said urging means approximately in the midpoint of said travel distance so that, as said apparatus is moved over said surface, said gimbal can respond by rotating to irregularities in said surface.

5,249,458

SYSTEM FOR SIMULATING POWER PLANT OF AUTOMOTIVE VEHICLE UTILIZING ELECTRICALLY POWERED HIGH INERTIA POWER PLANT

Kaoru Sano, and Fumio Mizushina, both of Shizuoka, Japan, assignors to Kabushiki Kaisha Meidensha, Japan

Division of Ser. No. 618,952, Nov. 28, 1990, Pat. No. 5,144,834.
This application Mar. 20, 1992, Ser. No. 854,699
Claims priority, application Japan, Nov. 30, 1989, 1-310882; Nov. 30, 1989, 1-310887; Nov. 30, 1989, 1-310888
Int. Cl.[5] G01M *15/00*
U.S. Cl. 73—117 15 Claims



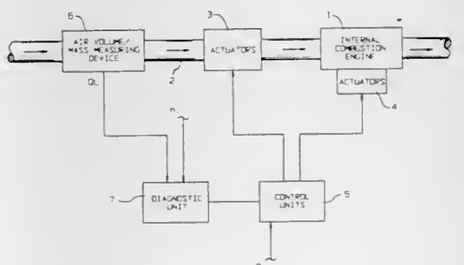
1. A bench testing apparatus for testing an automotive engine associated vehicular component which has a controlled operational state depending upon preselected control parameters, comprising:
a low inertia engine simulating power plant generating a driving torque simulating engine output, said power plant being cooperated with said associated vehicular component to be tested for supplying said driving torque, said power plant comprising a relatively low inertia means for achieving a low inertia which is equivalent to an inertia of an automotive engine;
an engine characteristics generator for receiving predetermined engine operation parameter simulated data and for deriving a control signal for commanding an output torque of said power plant according to a predetermined engine output torque variation characteristic which is set in terms of said engine operation parameter simulted data; and
means for generating at least one of said control parameters for controlling said associated vehicular component, said control parameter being associated with a simulated engine operating condition.

5,249,459

DIAGNOSTIC PROCESS FOR CHECKING ACTUATORS FOR THE CONTROL OF INTERNAL COMBUSTION ENGINES

Rüdiger Becker, Murr, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE90/00960, § 371 Date Oct. 7, 1991, § 102(e) Date Oct. 7, 1991, PCT Pub. No. WO91/13246, PCT Pub. Date Sep. 5, 1991
PCT Filed Dec. 13, 1990, Ser. No. 768,413
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1990, 4005973
Int. Cl.[5] G01M *15/00*
U.S. Cl. 73—118.1 19 Claims



1. A process for the diagnosis of actuators of an internal combustion engine, said process for diagnosing occurring while the operating sequences of the internal combustion engine are being regulated, said process comprising the steps of:
triggering said actuators for the control or regulation of the internal combustion engine during normal operation of the internal combustion engine, said triggering varying at least one of a suction pipe geometry and an inlet/outlet valve of the internal combustion engine;
recording changes in operational data values of the internal combustion engine during said triggering, said operational data relating to at least one of revolutions per minute, intake air volume flow rate and intake air mass flow rate of the internal combustion engine;
comparing the recorded values with stored set values; and
diagnosing said actuators with the results of the comparison.

5,249,460

METHOD AND APPARATUS FOR MEASURING IRREGULAR TREAD WEAR

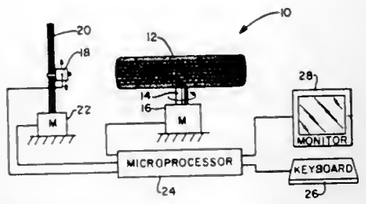
Arthur J. Dory, Akron; Stephen M. Vossberg, Uniontown, and John G. Lightner, III, Hartville, all of Ohio, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Dec. 16, 1991, Ser. No. 807,691
Int. Cl.[5] B60C *11/00;* G01M *17/02*
U.S. Cl. 73—146 18 Claims

1. Apparatus for measuring and analyzing the tread wear of a pneumatic tire, comprising:
first means for receiving and rotating a tire about the axis of rotation of the tire;
second means adjacent the tire for scanning a field of view including a tread surface of the tire and obtaining data from said field of view; and
control means interconnected between said first and second

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means for controlling said rotation of the tire and said scanning of said field of view and analyzing said data, said control means measuring and analyzing the tread wear from said data, and wherein said control means controls said first means to index the tire about said axis a set



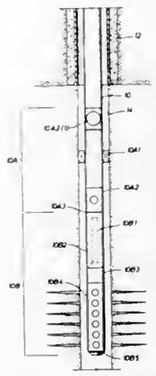
amount between scans of said field of view by said second means, controls said second means to scan said field of view at a fixed rate, and acquires said data from said second means and generates a matrix of data corresponding to discrete points within said field of view.

5,249,461

METHOD FOR TESTING PERFORATING AND TESTING AN OPEN WELLBORE

Gaylon D. Ponder; Bryan W. McDonald, both of Roswell, N. Mex., and Robert A. Parrott, Houston, Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Jan. 24, 1992, Ser. No. 824,979
Int. Cl.[5] E21B *43/11, 43/12, 47/10, 49/08*
U.S. Cl. 73—155 **15 Claims**



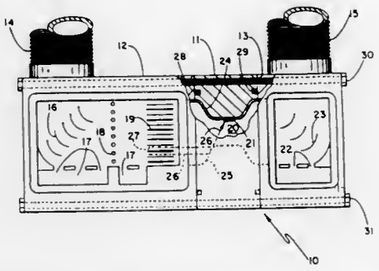
1. A method of performing a drill stem test in an open borehole, an external surface of said open borehole having a skin damage, comprising the steps of:
measuring a parameter of a well fluid flowing from said external surface of said open borehole in the presence of said skin damage;
bypassing or reducing said skin damage on said external surface of said open borehole, a further well fluid flowing from the external surface; and
re-measuring said parameter of the further well fluid flowing from the external surface of the open borehole.

5,249,462

SAFE CHANNEL DESIGN FOR FLOW SENSOR CHIP MICROBRIDGES

Ulrich Bonne, Hopkins, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 9, 1991, Ser. No. 727,415
Int. Cl.[5] G01F *1/68*
U.S. Cl. 73—204.21 **13 Claims**



1. A compact microanenmometer-based flow meter for a gaseous fluid of interest comprising:
inlet and outlet means for connecting the flow meter into a distribution system for the gaseous fluid of interest;
generally hollow meter body means connected between the inlet and outlet accesses and describing an internal flow path;
a substantially full flowing measuring channel characterized by a segment of constricted diameter connected between the inlet and outlet means and being within the meter body through which the fluid flows wherein the constricted diameter segment has an inlet side and an outlet side, the inlet side joined by a gradual segment entry transition to the inlet means and said outlet side joined to said outlet means directly or indirectly;
a microanemometer flow sensor associated with the flow meter and disposed in the constricted diameter segment on one wall thereon, so as to be directly exposed to the main fluid flow stream through said constricted segment;
wherein the constricted diameter segment entry transition is further characterized by an inner wall deflection control means provided on the inlet side on the wall substantially opposite the microanemometer to discourage the reflection of particles which may be carried by the gaseous fluid of interest toward the microanemometer;
a particulate trapping system including a plurality of sequentially encountered particulate trap means disposed in the fluid path between the inlet means to said flow meter and the microanemometer means; and
at least a first laminarizing means also disposed in the stream between the inlet means and the micronemometer sensor.

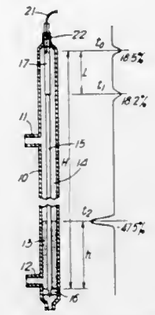
5,249,463

MEASUREMENT OF LIQUID LEVEL

Jolyon P. Willson, Andover, and Paul N. Richards, Chineham, both of England, assignors to Schlumberger Industries Limited, Farnsborough, England

Filed Sep. 21, 1992, Ser. No. 947,846
Claims priority, application United Kingdom, Sep. 26, 1991, 9120511
Int. Cl.[5] G01F *23/28*
U.S. Cl. 73—290 R **6 Claims**

1. A liquid level measurement device having upper and lower ends and comprising inner and outer probe conductors separated by a dielectric gap which is filled by a liquid up to a level to be measured and above that level by a gas or vapor, a coaxial feeder for applying R.F. pulses to the upper end of said probe for reflection at the surface of said liquid, said probe having a first discontinuity near its upper end for producing a first reference reflected pulse in response to each R.F. pulse and a second discontinuity below said first discontinuity but in said gas or vapor and above the normal maximum level of said liquid for producing a second reference reflected pulse in response to each R.F. pulse, and circuitry coupled to said



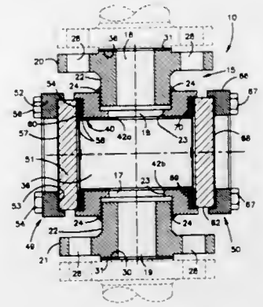
probe for determining from the time differences between the reference reflected pulses and the pulse reflected from the surface of said liquid the distance between the surface of said liquid and said first discontinuity.

5,249,464

SIGHT FLOW APPARATUS WITH CARTRIDGE

David E. Brown, Brunswick, and David E. Purcel, Elyria, both of Ohio, assignors to Clark-Reliance Corporation, Strongsville, Ohio

Filed Aug. 19, 1991, Ser. No. 747,263
Int. Cl.[5] G01F *23/02*
U.S. Cl. 73—323 **34 Claims**



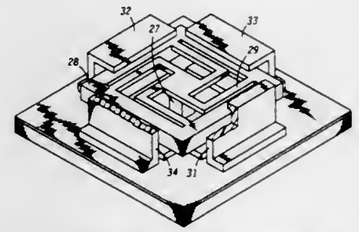
30. A sight window device, comprising:
a body having a cavity with a fluid inlet to and a fluid outlet from the cavity, said body having a pair of inspection orifices which allow visual inspection of the fluid flow through the cavity in said body,
a removable hollow cartridge located within the cavity in said body, said removable cartridge having a pair of inspection openings generally aligned with the inspection orifices in said body, and a second inlet and a second outlet generally aligned with said fluid inlet and fluid outlet of said body,
a pair of window assemblies removably mounted to said body and covering said orifices, each of said window assemblies including (i) an alignment means having a portion which cooperates with a portion of said cartridge for maintaining the cartridge in a predetermined orientation relative to the body, (ii) a transparent window, (iii) means for sealing each window to said body, and (iv) means for removably mounting each of said windows to said body, each of said windows allowing visual inspection of fluid flow through the cavity in said body, and each of said windows being removable for allowing access to said cavity to insert and remove said cartridge.

5,249,465

ACCELEROMETER UTILIZING AN ANNULAR MASS

Paul T. Beonett, Phoenix, and William C. Dunn, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 11, 1990, Ser. No. 626,133
Int. Cl.[5] G01P *15/13*
U.S. Cl. 73—510 **7 Claims**



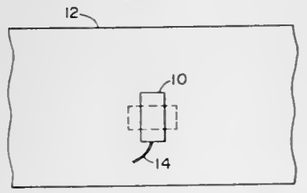
1. An accelerometer utilizing an annular mass, comprising:
a silicon substrate;
at least one supporting pedestal mounted on the silicon substrate;
a mass configured in the shape of an annulus positioned so as to surround the pedestal;
a plurality of electrode pairs mounted on the silicon substrate such that one member of each electrode pair is above the annular mass and another member of the electrode pair is below the annular mass, the electrode pairs being located around the periphery of the annular mass such that the annular mass may be positioned by electrostatic forces from the electrode pairs;
a plurality of electrostatic control means, each electrically coupled to the annular mass and a predetermined electrode pair, for applying an electrostatic force to restore the mass to a neutral position by applying an electrostatic restoring voltage to the electrode pair; and
at least one supporting spring which mechanically centers and electrically couples the supporting pedestal to the annular mass but which does not significantly modify the effect of the electrostatic forces.

5,249,466

ULTRASONIC TRANSDUCER FOR DETERMINING IF ANISOTROPIC STRUCTURES ARE PRESENT IN METAL

Martin P. Jones, Pittsburgh, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Division of Ser. No. 576,852, Sep. 4, 1990, Pat. No. 5,176,033.
This application Mar. 30, 1992, Ser. No. 860,333
Int. Cl.[5] G01N *29/24*
U.S. Cl. 73—633 **5 Claims**



1. A system for detecting if anisotropic structures are present inside an as-formed metal object, said system including:
(a) a single transducer unit for determining the presence of anisotropic structures in the interior of said metal object,

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said transducer unit having a base for connection to a first side of said metal object, said base being rotatable in relation to said metal object; and

(b) an ultrasonic pulser/receiver electrically connected to said transducer unit for energizing said transducer unit to form shear waves and measuring the time of flight of said shear waves through said metal object from said first side of said metal object to a second side opposite said first side and then back again to said first side of said metal object.

5,249,467

PRESSURE DETECTING APPARATUS

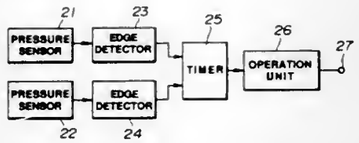
Mitsuru Takashima, Tokyo, Japan, assignor to Sony Corporation, Japan

Filed Aug. 13, 1991, Ser. No. 744,267

Claims priority, application Japan, Aug. 20, 1990, 2-217227; Mar. 18, 1991, 3-077264

Int. Cl.[5] G01L *11/00*

U.S. Cl. 73—702 **9 Claims**



1. A pressure detecting apparatus, comprising;

a first pressure detecting means including:

a pressure sensor having a vibrating element forming a pressure sensing surface, which is secured to a housing at the periphery thereof; and

a pressure transmission member including an abutment portion having an abutment surface on a first side which is in contact with a source of pressure to be detected and a transmission portion projecting from the substantial center of a second side of the abutment portion;

said transmission portion having a tip end surface with an area which is smaller than that of the pressure sensing surface of said pressure sensor, said transmission portion being secured to the substantial center of the pressure sensing surface of the said pressure sensor at the tip end surface thereof; the area of the abutment surface of said abutment portion being larger than that of the tip end surface of said transmission portion whereby said transmission member being adapted to transmit the pressure applied upon the abutment surface of said abutment portion to the pressure sensing surface of said pressure sensor via the tip end surface of said transmission portion.

5,249,468

PRESSURE SENSOR FOR DETECTING THE PRESSURE IN THE COMBUSTION CHAMBER OF INTERNAL COMBUSTION ENGINES

Walter Benedikt, Kornwestheim; Manfred Vogel, Ditzingen; Werner Herden, Gerlingen; Johann Konrad, Tamm; Wolfgang Schmidt, Vaihingen/Enz; Josef Tosch, Schwieberdingen; Matthias Kuesell, Korntal-Münchingen, and Frank Stanglmeier, Möglingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE91/00523, § 371 Date Mar. 3, 1992, § 102(e) Date Mar. 3, 1992, PCT Pub. No. WO92/01912, PCT Pub. Date Feb. 6, 1992

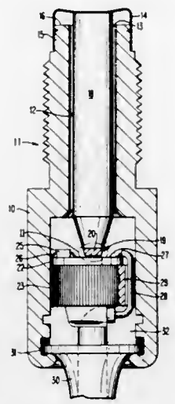
PCT Filed Jun. 27, 1991, Ser. No. 838,240

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1990, 4022781; Feb. 7, 1991, 4103704

Int. Cl.[5] G01L *7/08, 9/06*

U.S. Cl. 73—706 **15 Claims**

1. A pressure sensor for detecting pressure in a combustion chamber of internal combustion engines, comprising a housing; a sensor element arranged in said housing and composed of a piezoresistive material; a diaphragm; and a punch arranged between said diaphragm and said sensor element and introducing a pressure to be determined onto said sensor element; said punch having an end facing said sensor element, at least said end of said punch being composed of relatively soft material.



5,249,469

PRESSURE GAUGE

Staffan Jonsson, Sollentuna, Sweden, and Ray Olsson, Hammarlund, Finland, assignors to Jonsson & Billquist Development AB, Stockholm, Sweden

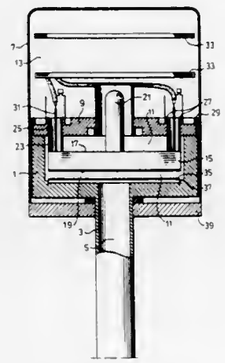
PCT No. PCT/SE89/00270, § 371 Date Jan. 17, 1991, § 102(e) Date Jan. 17, 1991, PCT Pub. No. WO89/11640, PCT Pub. Date Nov. 30, 1989

PCT Filed May 17, 1989, Ser. No. 634,196

Claims priority, application Sweden, May 17, 1989, 8801848

Int. Cl.[5] G01L *9/12*

U.S. Cl. 73—724 **20 Claims**



1. A pressure gauge comprising:

a hollow volume having a surrounding wall;

a pressure sensor means having a substantially flat shape, said pressure sensor means comprising a substantially non-flexible supporting plate and a flexible diaphragm attached to said supporting plate, in order to define a closed space between said supporting plate and said diaphragm, said closed space containing a reference pressure, the bending or deflecting of said diaphragm being sensed by means of electrodes located on said diaphragm and/or said supporting plate, said electrodes having connecting leads;

wherein said pressure sensor means further is located in said hollow volume, which is connected to the pressure to be measured in such a way that a fluid connection is present between said volume at its surfaces, whereby both the exterior surface of said diaphragm and the exterior surface of said supporting plate are influenced by the same pressure;

said pressure sensor means is attached to a wall of said hollow volume only by means of at least one tube, the sectional area of which is small in relation to the area of the large surfaces of the supporting plate and of said diaphragm of said pressure sensor means; and

said connecting leads to the sensing electrodes of the pressure sensor means pass inside said tube or tubes.

5,249,470

ROTOR BLADE TRACKING DEVICES

Maxwell R. Hadley, Lyndhurst, and Ian C. Cheeseman, Tarant Keynstone, both of England, assignors to Stewart Hughes Limited, Hamshire, England

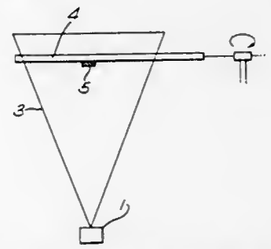
PCT No. PCT/GB89/00035, § 371 Date Sep. 13, 1990, § 102(e) Date Sep. 13, 1990, PCT Pub. No. WO89/06623, PCT Pub. Date Jul. 27, 1989

PCT Filed Jan. 13, 1989, Ser. No. 543,758

Claims priority, application United Kingdom, Jan. 13, 1988, 8800688; Aug. 9, 1988, 8818830; Aug. 15, 1988, 8819368

Int. Cl.[5] G01D *7/00*

U.S. Cl. 73—655 **21 Claims**



1. An apparatus for tracking a rotating blade to determine parameters associated with rotation of said blade, said apparatus comprising

(a) a detector having at least two sensing means, each of said sensing means having a respective substantially planar fan-shaped field of view, said at least two sensing means being oriented such that the respective fields of view are divergent with respect to each other;

(b) defining means mountable on said blade for defining a point at a known location on said blade; and

(c) means for illuminating the point defined by the defining means;

(d) timing means for timing the passage of said blade between said fields of view and providing data related thereto, and calculating means for calculating from said timing data parameters associated with rotation of said blade;

(e) wherein said detector is adapted to sense the point defined by said defining means on said blade as said point passes through each of said fields of view.

5,249,471

SEALING STRUCTURE FOR TESTING VESSEL

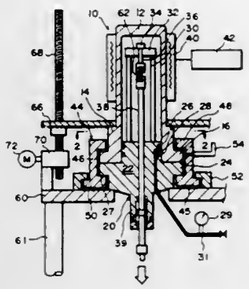
Minoru Kizaki; Masao Ohmi, both of Ibaraki; Masaaki Yokoi, Yokosuka, and Sbouji Yoshikawa, Tokyo, all of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Feb. 4, 1992, Ser. No. 831,061

Claims priority, application Japan, Feb. 8, 1991, 3-17378

Int. Cl.[5] G01N *3/08*

U.S. Cl. 73—826 **1 Claim**



1. A sealing structure for a testing vessel, comprising:

a fixed lid member secured to a base and having an upwardly projecting insertion portion and a supporting portion;

a cylindrical container detachably mountable on said lid member in an up-and-down direction, said container having a lower open end portion to which said insertion portion can be mated and which can be supported by said supporting portion and on which a plurality of first radially outwardly extending locking portions and first notches are alternately formed along a circumference thereof;

a clutch member which is attached to said base and rotatingly guided in a circumferential direction by a guide member and on which a plurality of second radially inwardly extending locking portions and second notches are alternately formed within the same angular range as that of said first locking portions and first notches; and

an elevator means for lowering and lifting said container to mount and dismount the latter with respect to said lid member;

wherein when said first and second locking portions are aligned with said second and first notches by rotating said clutch member, said container can be mounted on or dismounted from said lid member by lowering or lifting said container by means of said elevator means, and said container is non-detachably attached to said lid member when said first locking portions are engaged by said second locking portions.

5,249,472

WIRE TENSION METER

Maurice H. Brown, 9366 N. Milan Way, Citrus Springs, Fla. 32630

Filed Dec. 23, 1991, Ser. No. 813,141

Int. Cl.[5] G01L *5/06*

U.S. Cl. 73—862.472 **2 Claims**

1. A tension measuring device for accurately measuring the tension applied to a fine wire, being uncoiled from a spool of wire, said device including:

a hollow housing having front and rear walls,

a shaft journalled in said front and rear walls and extending outwardly of said housing beyond said front wall,

an arm rotatable mounted on said shaft,

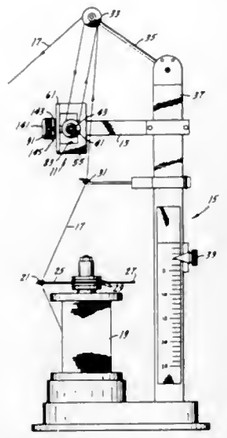
said arm extending outwardly of said housing on one side thereof,

a pulley rotatably on said arm,

a first scale located on the front face of said front wall,

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a first pointer affixed to said arm and movable across said first scale as said arm rotates on said shaft,
a first torsion spring biasing said arm to rotate against the tension force exerted against said uncoiling wire,
a second torsion spring biasing said arm against rotation caused by the weight of said arm,



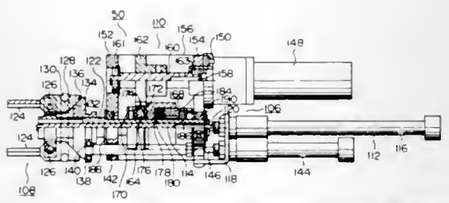
a second scale on the front face of said front wall,
a knob having a second pointer which pointer moves across said second scale upon rotation of said knob, and
means connecting said knob and said first torsion spring to adjust the biasing force exerted by said first torsion spring against said arm.

5,249,473

AUTOMATICALLY ADJUSTING ACTUATOR UNIT

Yukio Kawabata, Tokyo, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 21, 1991, Ser. No. 731,730
Claims priority, application Japan, Jun. 27, 1990, 2-169010
Int. Cl.[5] G01N *35/00;* **B65J** *15/00*
U.S. Cl. 73—865.9 **2 Claims**



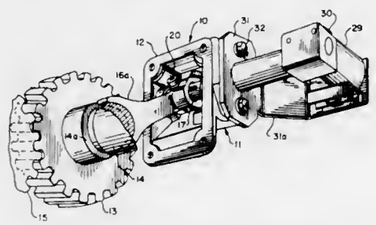
1. An automatically adjusting actuator unit for adjusting pushbutton controls and rotary controls on product equipment that is transported on a conveyor positioned adjacent to said unit, said unit comprising:
a base member mounted on an X-Y biaxial servo mechanism and movable both in X- and Y-axial directions, and
an actuator section mounted on said base member and movable in a Z-axial direction relative to said base member and including a pusher means for selectively pushing individual ones of said push button controls of said product and a chuck means for selectively chucking individual ones of said rotary controls of said product equipment, and a rotation control means for rotating said chuck means, wherein said pusher means includes a push rod movable in a Z-axial direction, and said chuck means includes a hollow main shaft coaxially arranged on an outer surface of said push rod and having a tip portion, a plurality of chuck pawls attached at said tip portion of said main shaft in opposed relationship to each other so as to be swingable relative to said main shaft, and an opening degree changing means including a slider slidable in said X-axial direction and formed with a tapered surface at a front portion thereof for pressing against tapered surfaces formed on rear portions of said chuck pawls, whereby said chuck pawls are closeable to grip selectively individual ones of said rotary controls.

5,249,474

POWER TAKEOFF AND ELECTROMECHANICAL SHIFTER THEREFOR

Ted W. Gregory, Libertyville, Ill., assignor to Arens Controls, Inc., Evanston, Ill.

Filed Mar. 2, 1992, Ser. No. 844,237
Int. Cl.[5] B60K *17/28*
U.S. Cl. 74—15.66 **12 Claims**



7. An electromechanical shifter for shifting an axially-movable pinion gear into and out of meshing engagement with a rotating drive gear of a PTO assembly, comprising a shock shaft having telescoping first and second sections mounted for axial movement with respect to said PTO assembly; arm means carried by said second section for moving said pinion gear towards meshing engagement with said drive gear when said second section is urged axially in one direction; electrically-powered actuator means coupled to said first section for progressively shifting said first section axially in said one direction when said actuator means is energized; and compression spring means operatively interposed between said first and second sections for storing energy by compressing when said pinion gear is shifted axially into clashing non-meshing contact with said rotating drive gear and for quickly releasing said stored energy to move said pinion gear into meshing engagement with said drive gear when a condition of alignment for such meshing engagement occurs; said actuator means including a reversible electric motor and circuit therefor for shifting said pinion gear into and out of meshing engagement with said drive gear and for storing energy in the form of progressively increasing current levels when said pinion gear and drive gear are in clashing contact.

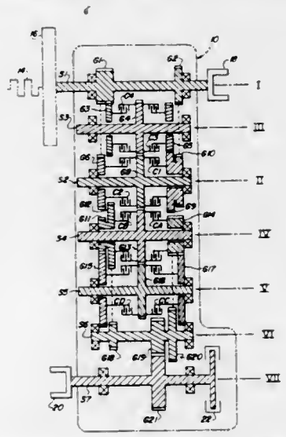
5,249,475

EIGHT- TO SIXTEEN-SPEED POWERSHIFT TRANSMISSION

John P. McAskill, Coffeyville, Kans., assignor to Deere & Company, Moline, Ill.

Filed Aug. 31, 1992, Ser. No. 938,926
Int. Cl.[5] F16H *3/08*
U.S. Cl. 74—331 **10 Claims**

1. A transmission comprising:
a. a housing;
b. a first shaft rotatably mounted in said housing and having a plurality of gears fixed for rotation therewith;
c. a second shaft rotatably mounted in said housing and having at least one gear fixed for rotation therewith, at least one gear rotatably mounted thereabout and at least one clutch for fixing said rotatable gear for rotation with said second shaft;
d. a third shaft rotatably mounted in said housing and having at least one gear fixed for rotation therewith, at least one gear rotatably mounted thereabout and at least one clutch for fixing said rotatable gear for rotation with said third shaft, at least one of said gears on said third shaft meshing with said gears on said first shaft and at least one of said gears on said third shaft meshing with said gears on said second shaft, and said third shaft, its fixed gear and at least one clutch, being substantially identical to said second shaft and its fixed gear and at least one clutch;
e. a fourth shaft rotatably mounted in said housing and having at least one gear fixed for rotation therewith, at least one gear rotatably mounted thereabout and at least one clutch for fixing said rotatable gear for rotation with said fourth shaft, at least one of said gears on said fourth shaft meshing with said gears on said second shaft, and



said fourth shaft, its fixed gear and at least one clutch, being substantially identical to said second shaft and its fixed gear and at least one clutch;
f. a fifth shaft rotatably mounted in said housing and having at least one gear fixed for rotation therewith, at least one gear rotatably mounted thereabout and at least one clutch for fixing said rotatable gear for rotation with said second shaft, at least some of said gears on said fifth shaft meshing with said gears on said fourth shaft, and said fifth shaft, its fixed gear and at least one clutch, being substantially identical to said second shaft and its fixed gear and at least one clutch;
g. an intermediate shaft rotatably mounted in said housing and having a plurality of gears fixed for rotation therewith, at least some of said gears on said intermediate shaft meshing with said gears on said fourth shaft;
h. an output shaft having a gear fixed for rotation therewith and meshing with a gear on said intermediate shaft.

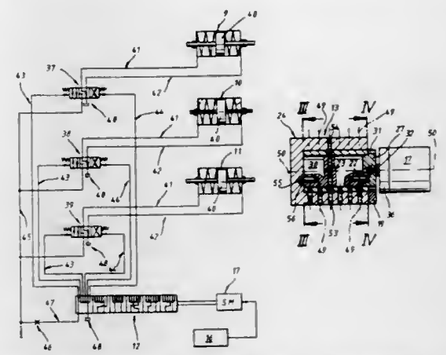
5,249,476

AUTOMATIC SELECTOR DEVICE FOR MULTI-GEAR CHANGE-SPEED GEARBOX

Wolfgang Zaiser, Steinheim, and Gerhard Wagner, Remseck, both of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed May 21, 1992, Ser. No. 886,246
Claims priority, application Fed. Rep. of Germany, May 30, 1991, 4117737
Int. Cl.[5] F16H *59/04, 59/08;* **F16D** *71/04;* **F16K** *51/00*
U.S. Cl. 74—335 **11 Claims**

1. An automatic selector device of a multi-gear change-speed gearbox, the selector device having a multi-way valve arranged to activate selector actuators each used for a gear, the multi-way valve being arranged to be driven into several valve positions each associated with one gear by a valve actuator operatively activated by an electronic control unit, valve positions of one of the selector actuators being exclusively associated with an appropriate gear and causing a selection action while other selector actuators remain in a rest position, wherein a stop moves relative to the valve housing along a path of motion of an opposing stop fixedly attached to the



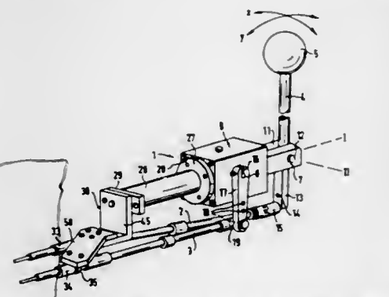
valve and can be fixed relative to the valve housing with respect to the valve positions to be blocked by a manually actuatable selector actuator, wherein the opposing stop is arranged to move with a valve element of the multi-way valve, the valve element taking up in each of the gears an associated valve position relative to a valve housing, whereby relative freedom of movement between the stop and the opposing stop correspond to a selected gear range.

5,249,477

DEVICE FOR TRANSMITTING A CONTROL MOTION OR SHIFTING MOTION, IN PARTICULAR FOR SHIFTING GEARS IN AN AUTOMOTIVE-VEHICLE TRANSMISSION

Wilhelm M. T. Wardenier, Wehrheim, Fed. Rep. of Germany, assignor to RCS Remote Control Systems GmbH, Bad Homburg, Fed. Rep. of Germany

Filed Mar. 22, 1991, Ser. No. 674,529
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1991, 4101010
Int. Cl.[5] G05G *9/02;* **B60K** *20/04;* **F16C** *1/12*
U.S. Cl. 74—473 R **24 Claims**



13. A device for transferring a shifting motion for shifting gears in an automotive vehicle transmission comprising:
a lever for input of the shifting motion, the lever being pivotal about a first axis in a first plane and about a second axis in a second plane, the planes being perpendicular to one another;

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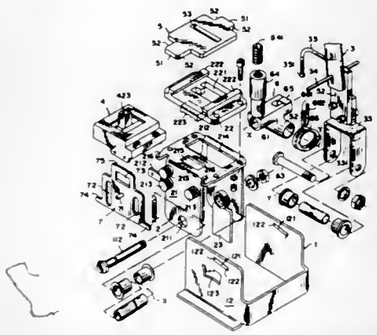
an angular revolving train having a constant ratio and connected to the lever, the train including an output and an input shaft perpendicular to one another;
a sealed housing, the train extending out from the housing;
a drive means kinematically coupled to the output shaft in a positive interengaging relationship;
a first and second output member movable substantially parallel to the first axis, the first output member being directly connected to the lever by means of a joint and only transferring a pivotal motion of the lever about the second axis, the second output member being kinematically coupled to the lever by the train and only transferring a pivotal motion of the lever about the first axis; and
a transmitting means connecting the second output member to the output shaft.

5,249,478

SHIFT SYSTEM HAVING A MANUAL SPEED SELECTING MECHANISM FOR A VEHICULAR AUTOMATIC TRANSMISSION

Shuzo Moroto, Nagoya; Masashi Hattori, and Shigekazu Ohara, both of Anjo, all of Japan, assignors to Aisin Aw Co., Ltd., Japan

Filed Jun. 30, 1992, Ser. No. 906,851
Int. Cl.[5] F16H *57/06*
U.S. Cl. 74—475 **8 Claims**



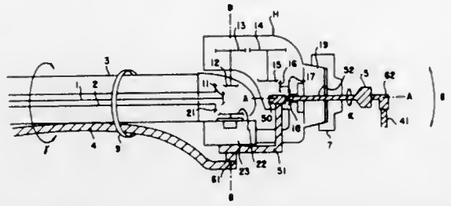
1. A shifter with a manual speed selecting mechanism for an automatic transmission mounted in a vehicle body, comprising:
a stationary member mounted on the vehicle body;
a rocking retainer pivotally supported by said stationary member for pivoting motion about a first axis;
a shift lever for rotation about said first axis and about a second axis, said second axis being perpendicular to said first axis, with rotation about said second axis bringing said shift lever into and out of engagement with said rocking retainer;
switch means for detecting the angular position of said shift lever relative to said stationary member;
a lock plate supported on said rocking retainer for bringing said rocking retainer into and out of engagement with said stationary member responsive to the rotation of said shift lever about said second axis.

5,249,479

WRIST MECHANISM FOR AN INDUSTRIAL ROBOT

Nobutoshi Torii, Hachioji; Hitoshi Mizuno, and Kyozi Iwasaki, both of Yamanashi, all of Japan, assignors to Fanuc Ltd., Yamanashi, Japan

PCT No. PCT/JP89/01084, § 371 Date Jun. 7, 1990, § 102(e) Date Jun. 7, 1990, PCT Pub. No. WO90/04499, PCT Pub. Date Mar. 5, 1990
Continuation of Ser. No. 476,491, Jun. 7, 1990, abandoned. This PCT application Oct. 23, 1989, Ser. No. 841,208
Claims priority, application Japan, Oct. 24, 1988, 63-266222
Int. Cl.[5] B25J *17/02*
U.S. Cl. 74—479 R **5 Claims**



1. A wrist mechanism for an industrial robot, comprising:
a first pipe extended from a first universal pipe coupling in relation to a front α-axis among three axes of motion of a wrist, on a first center axis (A—A) of a turning motion through a center of an α-axis reduction gear, said first universal pipe coupling located on said first center axis (A—A);
a second universal pipe coupling provided in relation to a β-axis on a second center axis (B—B) of motion, said second universal pipe coupling located on said second center axis;
a second pipe having one end connected to said first universal pipe coupling and the other end connected to said second universal pipe coupling;
a hose extended along a support arm in relative to a third γ-axis driven by a first and a second drive shaft means, said hose extending from a rear end to a front end of said support arm, and connected through said second universal pipe coupling to said second pipe; and
a connecting hose connected to an extremity of said first pipe;
wherein said first pipe, said second pipe, and said second center axis are disposed near the front end of said support arm.

5,249,480

TWO HANDLED CONTROLLER FOR A LOCOMOTIVE

Kevin E. Harmon, Erie; John B. Bendig, Waterford, and Dennis Mahoney, Erie, all of Pa., assignors to General Electric Company, Erie, Pa.

Continuation-in-part of Ser. No. 629,775, Dec. 18, 1990, Pat. No. 5,134,895. This application Nov. 6, 1991, Ser. No. 788,665
Int. Cl.[5] G05G *11/00*
U.S. Cl. 74—483 R **19 Claims**

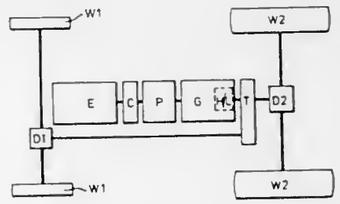
19. A two handle controller for a locomotive comprising:
first controller means comprising a plurality of throttle cams mounted to a first shaft for actuating speed control contacts upon rotation of the first shaft, the speed control contacts controlling propulsion power for the locomotive;
second controller means comprising a plurality of braking cams mounted to a second shaft for actuating braking control contacts upon rotation of the second shaft, the braking control contacts controlling braking power for the locomotive;
first actuating means comprising a first handle operatively connected to the first and second shafts for selectively and alternatively rotating one of the first and second shafts, thereby controlling the propulsion power and the braking power for the locomotive;
a plurality of reverser control cams rotatably mounted onto the second shaft for actuating reverser control contacts upon being rotated on the second shaft, the reverse control contacts controlling the direction in which the locomotive travels; and
second actuating means comprising a second control handle operatively connected to the reverser control cams for rotating the reverser control cams, thereby controlling the direction in which the locomotive travels.

5,249,481

PLANETARY GEAR UNITS

Jean-Jacques Lasoen, Villepreux, France, assignor to Massey-Ferguson Services N.V., Netherlands Antilles

PCT No. PCT/EP91/01487, § 371 Date Apr. 1, 1992, § 102(e) Date Apr. 1, 1992, PCT Pub. No. WO92/03672, PCT Pub. Date Mar. 5, 1992
PCT Filed Aug. 7, 1991, Ser. No. 842,377
Claims priority, application United Kingdom, Aug. 15, 1990, 9017920
Int. Cl.[5] F16H *3/02*
U.S. Cl. 74—745 **16 Claims**



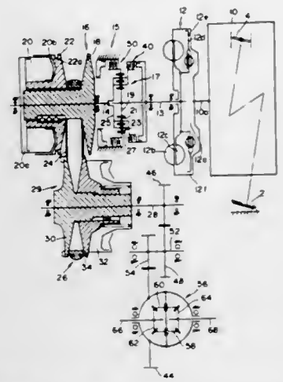
1. A gear unit providing a plurality of operative ratios and having a plurality of fluid pressure operated ratio engaging clutches (C1, C2), the gear unit being characterised by the inclusion of:
a plurality of fluid pressure operated clutch actuators (26, 29 : 33, 36) one for each fluid pressure operated clutch,
a plurality of two-position flow reversing valves (50, 51), one valve for each fluid pressure operated actuator,
the valves being hydraulically connected in series with at least one actuator (33, 36) connected downstream of the last valve (51) in the series connection and at least one actuator (26, 29) connected between each valve of the series, and
valve control means (50a-54) for controlling the operating sequence of the valves so that by changing the operative condition of one valve at a time the operative ratio of the gear unit can be changed to the next adjacent ratio provided by the unit in a progressive manner throughout the entire ratio range of the unit.

5,249,482

RATIO CONTROL FOR CONTINUOUSLY VARIABLE TRANSMISSION

Hirofumi Okahara, Isehara, and Yutaka Suzuki, Atsugi, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 3, 1992, Ser. No. 829,471
Claims priority, application Japan, Feb. 1, 1991, 3-33574
Int. Cl.[5] F16H *61/00*
U.S. Cl. 74—866 **9 Claims**



1. A system for a ratio control of a continuously variable transmission comprising:
a shift actuator having a predetermined position and moveable away from said predetermined position;
means for conditioning the continuously variable transmission in a predetermined reduction ratio in response to said shift actuator held at said predetermined position;
means for governing which position said shift actuator is to take versus operating parameters in accordance with a predetermined shift pattern predetermined for various combinations of said operating parameters;
means for interrogating whether said shift actuator takes said predetermined position; and
means overriding said governing means at least when said shift actuator takes said predetermined position for holding said shift actuator at said predetermined position when one of said operating parameters fails to satisfy a predetermined relationship with a predetermined value, but putting said actuator in motion away from said predetermined position when said one of said operating parameters has satisfied said predetermined relationship with said predetermined value.

5,249,483

SELECT SHOCK REDUCING DEVICE OF AUTOMOTIVE AUTOMATIC TRANSMISSION

Naonori Iizuka, Shizuoka, Japan, assignor to JATCO Corporation, Fuji, Japan

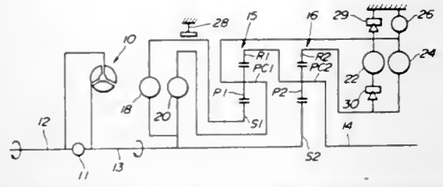
Filed Oct. 30, 1992, Ser. No. 969,072
Claims priority, application Japan, Nov. 1, 1991, 3-315526
Int. Cl.[5] F16H *61/06*
U.S. Cl. 74—866 **8 Claims**

1. A select shock reducing device of an automotive automatic transmission comprising:
first means for detecting the selection of a drive range from a neutral range;
second means for detecting the starting of engaging movement of a hydraulically operated friction element for the drive range;

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third means for controlling a hydraulic pressure applied to said friction element;

fourth means for causing said third means to raise said hydraulic pressure to a higher level from the time when said range selection is carried out to the time when said second means detects said starting of engaging movement and lower said hydraulic pressure to a lower level after the detection by said second means; and



fifth means for producing an instruction signal when a predetermined time passes after the drive range detection by said first means; and

sixth means for causing said third means to lower said hydraulic pressure to said lower level upon issuance of said instruction signal irrespective of any detection by said second means.

5,249,484

APPARATUS FOR CONTROLLING SHIFTING OF VEHICLE AUTOMATIC TRANSMISSION BASED ON ENGINE INTAKE AIR QUANTITY

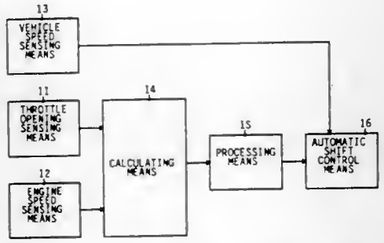
Hiroki Matsuoka, Susono, and Norihisa Nakagawa, Numazu, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed May 29, 1992, Ser. No. 890,704

Claims priority, application Japan, Jun. 3, 1991, 3-131284

Int. Cl.[5] F16H *61/02*

U.S. Cl. 74—866 **17 Claims**



1. A shift control apparatus for an automatic transmission of a motor vehicle having an internal combustion engine, comprising:

throttle opening sensing means for detecting an opening of a throttle valve which regulates an intake air quantity supplied to the engine;

engine speed sensing means for detecting a speed of the engine;

vehicle speed sensing means for detecting a running speed of the vehicle;

calculating means for calculating said intake air quantity for a steady running of the vehicle, based on the detected opening of said throttle valve and the detected speed of the engine;

processing means for processing the calculated intake air quantity to compensate said calculated intake air quantity for a first-order time lag and obtain an estimated intake air quantity; and

automatic shift control means for automatically selecting an optimum operating position of the automatic transmission, based on said estimated intake air quantity and the detected running speed of the vehicle, according to a predetermined shift control pattern.

5,249,485

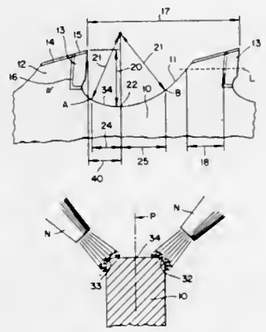
BANDSAW BLADE AND METHOD OF MANUFACTURING SAME

Robert C. Hayden, Sr., Branford, Conn., assignor to Sandvik AB, Sandviken, Sweden

Filed Dec. 31, 1991, Ser. No. 814,791

Int. Cl.[5] B23D *65/00*

U.S. Cl. 76—112 **6 Claims**



4. A method of making a bandsaw blade comprising the steps of:

providing a steel band having a plurality of steel portions spaced longitudinally apart by curved gullets, each gullet including a bottom having transversely spaced corners;

brazing carbide tips onto front face of said steel portions such that:

said steel portions and carbide tips form teeth having a pitch defined by a longitudinal distance between topmost points of successive carbide tips,

each gullet has a depth defined by a distance from said topmost point of a carbide tip trailing such gullet to a deepest point of such gullet, and said deepest point is spaced longitudinally from said topmost point of said trailing carbide tip by a longitudinal distance equal to at least 15% of said pitch;

said deepest point lies on a curved section of a bottom of said gullet defined by a radius of curvature which is larger than said depth, and

said curved section of said gullet bottom extends longitudinally forwardly and rearwardly of said deepest point by longitudinally forward and rearward distances, respectively, each of which being equal to at least 10% of said pitch; and

shot-peening said corners of said gullet bottom prior to said brazing step to hammer said corners into a smoothly rounded shape and pre-stress the gullet bottom in compression for enhancing the fatigue resistance of the blade.

5,249,486

TORQUE WRENCH

Ian C. Thompson, Morpeth, and David Campbell, Ashington, both of England, assignors to Hedley Purvis Limited, Northumberland, England

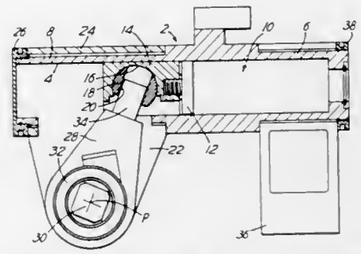
Filed Feb. 2, 1993, Ser. No. 16,801

Claims priority, application United Kingdom, Feb. 10, 1992, 92027762

Int. Cl.[5] B25B *13/46*

U.S. Cl. 81—57.39 **6 Claims**

1. A hydraulic torque wrench comprising a body member, a hydraulic piston-cylinder assembly having a piston linearly reciprocal within the body member along a line of action, a shuttle member secured to the piston to undergo guided linear reciprocal movement with the piston within the body member, and a housing in which are contained a drive member pivotal by said piston-cylinder assembly about an axis radially spaced from the line of action of the piston, said drive member including a neck portion radially remote from said pivot axis, holding means carried by the drive member to be rotatable co-axially with said drive member, and a ratchet connection between the drive member and the holding means, the shuttle member defining therein a cylindrical bore having a central longitudi-



nal axis extending parallel with the pivot axis of the drive member, the wrench further comprising a cylindrical drive pin located within said bore in the shuttle member to be rotatable therein about said central longitudinal axis, the drive pin defining therein a transverse bore slidably received within which is the neck portion of the drive member, the arrangement being such that, on linear movement of the piston and attached shuttle member, the drive member is pivoted about the pivot axis with the neck portion of the drive member undergoing guided sliding movement in the bore of the drive pin, and the drive pin pivoting about the central longitudinal axis of the bore in the shuttle member.

5,249,487

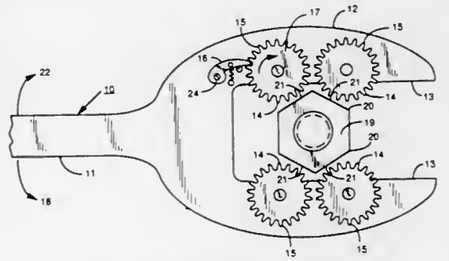
OPEN-END RATCHET WRENCH

Samuel L. Armfield, IV, 605 Daisy Dr., Mars, Pa. 16046

Filed Nov. 5, 1992, Ser. No. 972,368

Int. Cl.[5] B25B *13/00*

U.S. Cl. 81—58 **12 Claims**



1. An open-end ratchet wrench having a pair of open-ended jaws with spaced confronting jaw faces and a support for said jaws, the improvement comprising: each jaw including a plurality of freely rotatable gears with circumferential gear teeth, portions of the gear teeth of each jaw constituting the confronting faces of the jaws, and ratchet means adapted to prevent rotation of at least one of said gears in one direction.

5,249,488

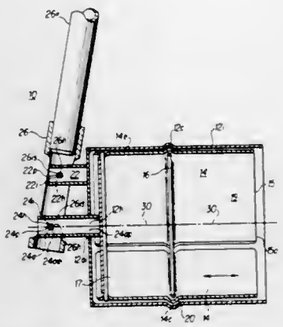
OIL FILTER REMOVER

Alfonso Aguilar, 904 Bolivia, El Paso, Tex. 79903

Filed Jan. 22, 1993, Ser. No. 7,900

Int. Cl.[5] B25B *13/32*

U.S. Cl. 81—90.2 **2 Claims**



1. A lever actuated oil filter remover, comprising:

at least two generally identical coaxial about an axis arcuate shell-like coupling elements having fore and aft ends, the exterior surface of each arcuate shell-like coupling element combining and protruding to define a ring like circumferentially arcuate protruding camming surface;

one ring spring coupling each arcuate shell-like coupling element to each adjacent arcuate shell-like coupling element to cause the interior surfaces of the arcuate shell-like coupling elements to form a generally circular cylinder having a generally circular cylindrical shaped interior surface, the interior surface formed by the arcuate shaped elements coupling surfaces being of diameter incrementally greater than but about equal to the diameter of an oil filter and said cylinder having an open fore end defined by the fore ends of the arcuate elements;

a generally axially symmetric spider arm coupled to the aft ends of each arcuate shell-like coupling element to leave the cylinder open at the fore end wherein the aft exterior surface of the spider arm defines an axial spider post;

a generally axially symmetric circular cylindrical casing of interior diameter slightly greater than the exterior surface of the cylinder formed by the arcuate elements surrounding and enclosing the coaxial arcuate shell-like elements and the spider arm wherein the casing has fore and aft ends and is disposed around the spider arm and identical coaxial arcuate shell-like coupling elements coupled to the spider arm, the fore end of the casing is open, and the interior surface of the casing defines a circumferential camming surface aligned to be capable of mating with exterior circumferential camming surfaces defined by the exterior surface of the arcuate elements, the aft end exterior surface of the casing defines an away from axis near circumference lever post generally parallel to the axis, the interior surface of the lever post defines lever arm coupling means, the casing aft end further comprises an aft end surface which has an axial interior surface defining an axial casing post hole perpendicular to the axis through which is coupled the spider post;

the spider arm comprises the axial post axially disposed about the axis and an element coupling arm coupled from the axial post to each arcuate element to move the elements fore and aft as a function of axial post fore and aft movement, The spider arm has an aft end surface which defines lever coupling means;

a lever arm having outer and inner ends, the inner end including coupling means coupling the inner end to the end of the spider arm post, and coupling means rotatably

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coupling the adjacent part of the lever arm to the casing post,

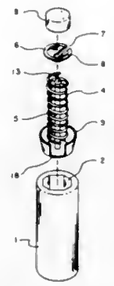
wherein moving the element cam into the casing cam increases the diameter of the cylinder formed by the elements and moving the element cam out of the casing cain decreases the interior diameter of the cylinder formed by the elements to the exterior diameter of an oil filter.

5,249,489

NUT EJECTING SOCKET INSERT

Alan S. Weisman, 720 Spring St., Richmond, Calif. 94804-4125

Filed Sep. 4, 1992, Ser. No. 940,497
Int. Cl.[5] B25B *13/02*
U.S. Cl. 81—124.1 **11 Claims**



1. A nut ejecting insert for use with a socket comprising;

a base disk having a bottom face and a top face insertable into a socket well:

a flexible stem permanently attached to said top face of said base disk at one end and having a top stem-end;

a top disk having a stem face and a nut face centrally affixed to said stem-end;

a magnet permanently affixed to said top face of said top disk, and;

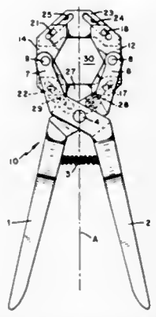
a compression spring concentric with said stem abutting said top face of said base disk on one end, and said stem face of said top disk at the other end.

5,249,490

ADJUSTABLE HEXAGONAL WRENCH

George W. Kennel, 13 Garretson Rd., White Plains, N.Y. 10604

Filed Aug. 17, 1992, Ser. No. 930,808
Int. Cl.[5] B25B *7/04*
U.S. Cl. 81—405 **5 Claims**



1. A wrench adjustable to define a hexagonal space of variable size comprising,

a pair of pivotally connected handle members having actuating arms on the ends thereof movable toward each other,

an actuating pin on each actuating arm fixed to at least one lateral jaw member to move said jaw member toward a central position, each lateral jaw member having two contact surfaces conforming to two faces of a hexagonal fastener element,

an upper and a lower drive pin fixed to each lateral jaw member,

upper and lower jaw members each having a pair of cam slots therein arranged at an angle to each other,

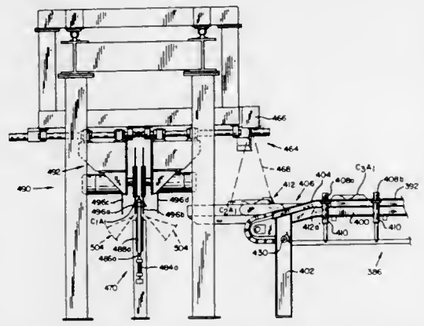
said upper drive pins slidable in said cam slots of said upper jaw member and said lower drive pins slidable in said cam slots of said lower jaw member to drive said upper and lower jaw members toward a central position as said lateral jaw members are driven toward a central position by said actuating pins to define said central hexagonal space upon handle actuation.

5,249,491

SAWMILL METHOD AND APPARATUS WITH MOVABLE SCANNING MEANS

Mark L. Carter, Springfield, Oreg., assignor to Aaron U. Jones, Eugene, Oreg.

Continuation-in-part of Ser. No. 710,525, Jun. 3, 1991, abandoned, which is a continuation of Ser. No. 541,092, Jun. 20, 1990, Pat. No. 5,088,363, which is a continuation of Ser. No. 89,489, Aug. 21, 1987, abandoned. This application Apr. 10, 1992, Ser. No. 867,051
Int. Cl.[5] B27B *5/04*
U.S. Cl. 83—13 **15 Claims**



1. A method of measuring and sawing wood members comprising flitches characterized by waney edges, said method comprising:

conveying flitches successively forwardly to a first station and then to a second station, and

scanning a flitch with an optical scanner at said first station simultaneously with sawing an already scanned flitch at said second station,

said scanning and sawing step including transporting said optical scanner and a saw conjointly across the path of said conveyed flitches to accomplish the simultaneous scanning sawing.

5,249,492

VERTICAL TRIM PRESS AND STACKING APPARATUS AND METHOD OF TRIMMING AND STACKING ARTICLES

Gaylord W. Brown, Beaverton; James H. Kundinger, Midland, and William F. Kent, Beaverton, all of Mich., assignors to John Brown Inc., West Warwick, R.I.

Filed Feb. 15, 1991, Ser. No. 656,211
Int. Cl.[5] B26D *7/32*
U.S. Cl. 83—23 **22 Claims**

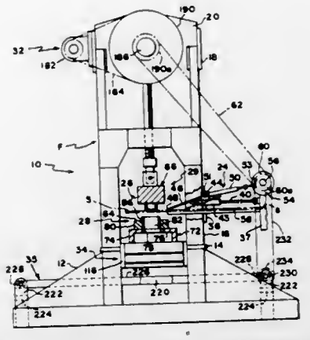
1. A method of trimming and stacking articles which have been formed in a thermoplastic sheet from the sheet comprising the steps of:

horizontally indexing a thermoplastic sheet in a horizontal path of travel to successively present successive articles in said sheet at a trim station;

trimming the articles at said trim station from said sheet and allowing the severed articles to vertically free fall under the force of gravity;

interrupting the vertical path of travel of said severed articles at a predetermined level and accumulating a predetermined number of said severed articles in a vertical stack at a stacking station; and

releasing the stack for vertical free fall while concurrently interrupting the path of travel of severed articles at a higher predetermined level to accumulate additional severed articles in a successive partial stack at said higher predetermined level.

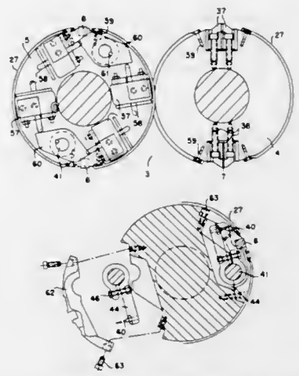


5,249,493

DEVICE FOR EXTRACTING SAMPLES FROM A FOLDER

Richard E. Breton, Rochester, N.H., assignor to Heidelberg-Harris GmbH, Heidelberg, Fed. Rep. of Germany

Filed Jan. 21, 1992, Ser. No. 823,673
Int. Cl.[5] B26D *1/40*; **B65H** *35/08*
U.S. Cl. 83—154 **1 Claim**



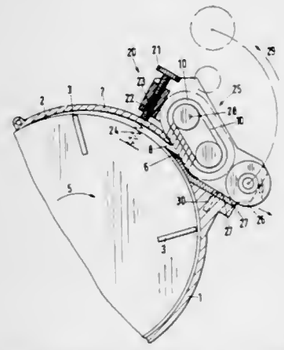
1. Device for extracting samples from a folder, comprising a cutting cylinder pair including a blade cylinder and a grooved cylinder, said blade cylinder having at least one cutting blade mounted on the periphery thereof, said grooved cylinder having at least one groove bar corresponding to said at least one cutting blade, a respective holding device for each of said at least one groove bar, means for conveying signatures emerging from a nip between said blade cylinder and said grooved cylinder to a conveyor unit assigned to said cutting cylinder pair, and means for remotely controlling said at least one holding device, each of said at least one holding device comprises a plurality of impaling pins spaced from one another in axial direction of said grooved cylinder and displaceable between a first position within said grooved cylinder and a second position beyond the outer cylindrical surface of the grooved cylinder, said remotely controlling means including electromagnetically actuatable control means for controlling the displacement of each of said plurality of impaling pins between said first and second positions thereof, at least one control shaft mounted in said grooved cylinder, each of said plurality of impaling pins being pivotally carried by one of said at least one control shaft, and wherein said electromagnetically actuatable control means comprises a pair of solenoids for each of said at least one holding device and having respective armatures, one of said armatures actuatable for said impaling pins to said first position thereof, and the other of said armatures actuatable for extending the impaling pins beyond the outer cylindrical surface of said grooved cylinder to said second position thereof.

5,249,494

CUTTING MACHINE FOR SLICE-CUTTING, STRIP-CUTTING OR DICE-CUTTING

Wolfgang Borvitz, Braunschweig, Fed. Rep. of Germany, assignor to Herbort Maschinenbau GmbH, Braunschweig, Fed. Rep. of Germany

Filed Jan. 10, 1992, Ser. No. 819,124
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1991, 9100346[U]
Int. Cl.[5] B26D *3/24*
U.S. Cl. 83—302 **11 Claims**



1. A cutting machine for tuberiform vegetables and root crops, comprising:

a casing having an inner wall;

a rotor mounted for rotation in said casing, said rotor carrying material to be cut along with it in the direction of rotation of said rotor and at the same time pressing said material against the inner wall of the casing;

a flap pivotally mounted on said casing and partially defining the wall of the casing, said flap having a free end adjustable radially inwardly or outwardly;

a slice-cutting cutter mounted on said casing and having a cutting edge located adjacent the free end of said flap and defining therewith a cutting gap which defines the thickness of the cut;

adjusting means operatively engaging said flap for radially adjusting the position thereof so as to adjustably vary the thickness of the cut;

a strip cutter mounted on a driven cutting belt and provided with a plurality of spaced, transversely directed cutters adapted to engage the cut material downstream of said gap for cutting the material into strips; and

a dice cutter mounted downstream of said strip cutter for cutting said strips transversely into dice;

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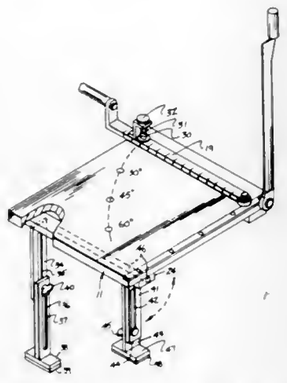
wherein said strip cutter and said dice cutter are mounted on a common component bearer fixed exchangeably on said casing so as to form a compact cutting unit;
wherein said flap adjusting means is mounted on said component bearer;
wherein said slice-cutting cutter is mounted on said component bearer;
wherein the component bearer forming the cutting unit is mounted pivotally on said casing; and
wherein said driven cutting belt is driven around upper and lower pulleys, a pivot axis of the component bearer being coaxial with the axis of the upper pulley.

5,249,495

SHINGLE CUTTER APPARATUS

Ronald D. Renk, 809 Meadowlark Cove, Lafayette, Colo. 80026

Filed Aug. 24, 1992, Ser. No. 933,768
Int. Cl.[5] B26D *5/10*
U.S. Cl. 83—468.3 **2 Claims**



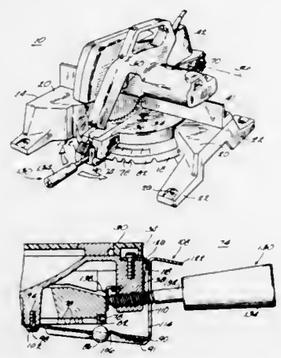
1. A shingle cutter apparatus, comprising,
a rigid base plate, wherein the base plate includes a planar top surface spaced from a planar bottom surface, and
the base plate having a first end wall spaced from a second end wall, and
a first side wall extending orthogonally between the first end wall and the second end wall, and
a top surface recess coextensively directed along the first side wall orthogonally oriented between the first end wall and the second end wall, and
a metallic anvil blade fixedly mounted within the recess, and
an abutment wall coextensive with the second end wall orthogonally oriented relative to the first side wall projecting above the planar top surface, with a graduated fence plate coextensively oriented along the abutment wall coextensively therewith, and
a cutter blade, with the cutter blade including a pivot axle orthogonally directed into the first side wall below the abutment wall, the cutter blade having a predetermined length, the anvil blade having a length equal to said predetermined length, and
a handle mounted to the cutter blade spaced from the pivot axle, and
a rear leg plate mounted to the plate bottom surface in adjacency to the second end wall, and
a forward leg plate parallel to the rear leg plate mounted to the planar bottom surface in adjacency to the first end wall, and
the fence plate includes a fence plate pivot axle orthogonally directed into the planar top surface in adjacency to the anvil blade, and the fence plate having a fence plate handle extending above and longitudinally of the fence plate for manual manipulation of the fence plate, and the base plate having a first lock bore, a second lock bore, a third lock bore, and a fourth lock bore, each spaced a predetermined radial spacing relative to the fence plate pivot axle in a semi-annular array extending from the abutment wall, and lock means cooperative with the first lock bore, the second lock bore, the third lock bore, and the fourth lock bore selectively for permitting selective orientation of the fence plate in a first position, a second position, a third position, and a fourth position, wherein the lock means in registration with the first lock bore, the second lock bore, the third lock bore, and the fourth lock bore respectively, and
the lock means includes a support flange fixedly mounted to the fence plate extending above the fence plate, and a lock rod slidably directed through the support flange and orthogonally directed through the fence plate, with the lock rod including a lock rod head positioned above the support flange, and a lock rod spring positioned below the support flange, and a capture flange fixedly mounted to the lock rod below the support flange, with a lock rod spring captured between the support flange and the capture plate to bias the lock rod through the fence plate into selective registration within one of said first lock bore, second lock bore, third lock bore, or fourth lock bore selectively, and
the forward leg plate includes a pivot axle rod directed therethrough, and a first leg plate pivotally mounted to the pivot axle rod, and a third plate pivotally mounted to the pivot axle rod, with the first leg plate including a first leg plate slot, the third leg plate including a third leg plate slot, and a second leg plate having a second leg plate slot pivotally mounted to the first leg plate, with a first lock fastener directed through the first leg plate slot and the second leg plate slot to selectively orient the first leg plate relative to the second leg plate, and a fourth leg plate having a fourth leg plate slot pivotally mounted to the third leg plate, with a second lock fastener directed through the third leg plate slot and the fourth leg plate slot to selectively adjust positioning of the third leg plate relative to the fourth leg plate.

5,249,496

INDEXING DETENT OVERRIDE MECHANISM

Charles A. Hirsch, Brown Deer, and Jeffrey S. Holly, Menomonee Falls, both of Wis., assignors to Milwaukee Electric Tool Corporation, Brookfield, Wis.

Filed Aug. 13, 1992, Ser. No. 930,150
Int. Cl.[5] B27B *5/24*
U.S. Cl. 83—471.3 **5 Claims**



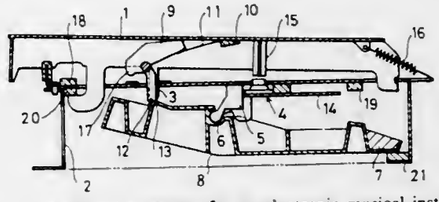
1. A motorized miter saw comprising:
a base having a turntable mounted thereon for rotation about a vertical axis;
a cutting unit having a mounting means for securing said cutting unit on said turntable for movement to non-cutting and cutting positions relative to said turntable;
an indexing means for releasably securing said turntable in predetermined positions of angular adjustment including a detent receiving recess on said base at each predetermined position, a detent alignable by rotation of said turntable with any one of said recesses and a detent biasing means constantly biasing said detent into a detent engaged position in the specific recess with which it is aligned;
a detent override means selectively positionable to allow movement of said detent from a detent engaged position in said recess to a detent withdrawal position and free said turntable for micro-angular adjustment relative to any predetermined position;
a latch means for releasably securing said override means in said detent withdrawal position thereby preventing said indexing means from engaging said recess during micro-angular adjustment about said recess; and
a locking means for releasably securing said turntable in any selected position of micro-angular adjustment.

5,249,497

KEYBORAD APPARATUS FOR ELECTRONIC MUSICAL INSTRUMENT

Shinji Niitsuma, Hamamatsu, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamastu, Japan

Filed Apr. 13, 1992, Ser. No. 867,338
Claims priority, application Japan, Apr. 24, 1991, 3-028854[U]
Int. Cl.[5] G10C *3/12, 3/18*
U.S. Cl. 84—247 **13 Claims**



1. A keyboard apparatus for an electronic musical instrument, said apparatus comprising a jack which is movable and rotatable by a force to be transmitted from a key, and a hammer which is rotatable by a force to be transmitted from said movable and rotatable jack,
wherein said jack is rotatably engaged by a fulcrum which is provided in said key, said jack being urged to its original position by a resilient means for urging said jack towards its original position, and
wherein said key has a return load applying portion which abuts said hammer after said hammer has been rotated by said jack and returns to its original position.

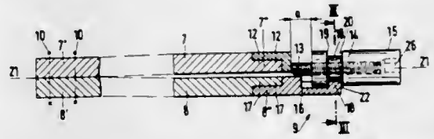
5,249,498

NECK ROD MEMBER FOR STRINGED INSTRUMENTS

Hans-Peter Wilfer, Erlangen, and Walter Zeitler, Röslau, both of Fed. Rep. of Germany, assignors to Warwick Bass Guitars Inh. Hanspeter Wilfer, Eggolsheim, Fed. Rep. of Germany

Filed Jul. 10, 1992, Ser. No. 911,653
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1991, 4123319
Int. Cl.[5] G10D *3/00*
U.S. Cl. 84—293 **7 Claims**

1. A neck rod member adapted for mounting in a neck of a stringed instrument, the neck rod member comprising first and second oblong rod portions extending parallel relative to each other in an axial direction and mounted one on top of the other, the first and second rod portions each having first and second ends, the first ends of the first and second rod portions being fixedly connected to each other, the second ends being movable relative to each other in axial direction, adjustment means being mounted on the second ends of the first and second rod portions for effectively shortening the length of one of the rod portions relative to the other of the rod portions, such that corresponding bending forces are exerted on the neck of the instrument in a direction perpendicular to the axial direction,



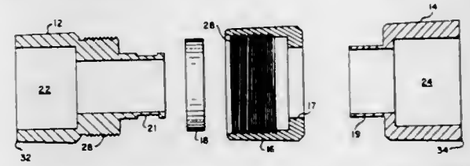
the adjustment means comprising a threaded shaft extending essentially in axial direction attached to the second end of the first rod portion and an adjusting nut threadedly engaging the threaded shaft, and a follower member attached to the second end of the second rod portion, the follower member being in driving engagement with the adjusting nut in axial direction of the neck rod member.

5,249,499

ADJUSTABLE TUNING BARREL

Bradley Goldstein, 110 Longwood Ave., Brookline, Mass. 02146, and Martin Goldstein, 87-10 204th St., Apt. A-28, Hollis, N.Y. 11423

Filed Mar. 18, 1991, Ser. No. 670,707
Int. Cl.[5] G10D *9/00*
U.S. Cl. 84—386 **16 Claims**



1. An adjustable tuning barrel for use with a woodwind instrument including a mouthpiece and an instrument body, said tuning barrel comprising:
an adjusting ring, freely rotatable about its axis of symmetry, said ring including:
first flange means; and
first thread means disposed on an inner surface of said adjusting ring;
a fixed element fixable with respect to the body of said woodwind instrument, said fixed element including:
second flange means, cooperative with said first flange means, for retaining said adjusting ring in rotatably contacting relationship with said fixed element; and
first mating means for attaching said tuning barrel to said body of said woodwind instrument; and
an extending element freely rotatable about its axis of symmetry, said extending element including:
second thread means disposed on an outer surface of said extending element for threadably engaging said first thread means of said adjusting ring so as to cause said extending element to move coaxially toward or away from said instrument body in response to rotation of said adjusting ring;
second mating means for attaching said tuning barrel to the mouthpiece of a woodwind instrument; and
a rotation impeder for resisting and permitting rotational and coaxial movement of said extending element with respect to said fixed element, being disposed between and in contact with an inner surface of said fixed element and an outer surface of said extending element.

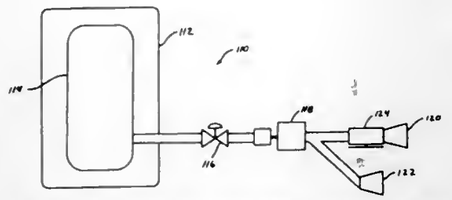
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5,249,500

RAPID AREA CLEARANCE OF EXPLOSIVES

Abdo A. Husseiny, and Zeinab A. Sabri, both of LaPlace, La., assignors to Technology International Incorporated, LaPlace, La.

Division of Ser. No. 877,198, May 1, 1992, which is a division of Ser. No. 586,150, Sep. 21, 1990, Pat. No. 5,140,891. This applicatioo Feb. 1, 1993, Ser. No. 11,788
Int. Cl.[5] F42D 5/04; F42B 33/00
U.S. Cl. 89—1.11 4 Claims



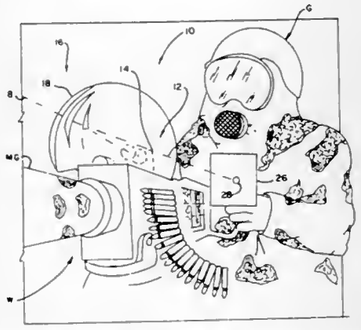
1. A method of neutralizing unexploded ordnance and clearing explosive-infested areas comprising the steps of;
spraying the explosive-infested area with liquefied methane to super-cool the unexploded ordnance and reduce an output voltage of a detonator of the unexploded ordnance to render the unexploded ordnance inert;
igniting the liquefied methane;
deflagrating the unexploded ordnance at a temperature less than that required for detonation; and
removing the unexploded ordnance from the explosive-infested area.

5,249,501

VISUALIZATION DEVICE FOR NEAR-IR LASER DESIGNATOR

Gary Waldman, and John R. Wootton, both of County of St. Louis, Mo., assignors to Electronics & Space Corp., St. Louis, Mo.

Filed Apr. 1, 1992, Ser. No. 861,624
Int. Cl.[5] F41G 3/00
U.S. Cl. 89—41.06 35 Claims



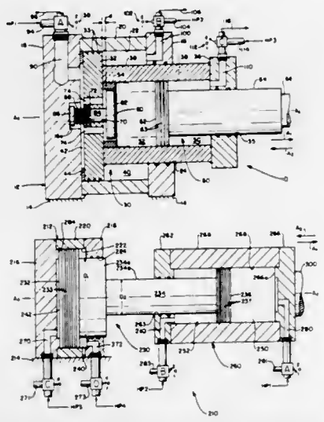
1. Apparatus for use in a weapons system by a gunner to designate a target comprising:
means for projecting a beam of light at the target, the beam projecting means being movable by the gunner;
window means interposed between the beam projecting means and the target, said window means passing a portion of the light beam therethrough and reflecting a portion of the light beam, the amount of the light beam passing through the window means being substantially greater than the portion reflected; and,
sensing means upon which the reflected portion of the beam impinges, the reflected beam producing a spot of light where it strikes the sensing means, said spot of light being observable as a virtual image of the target by the gunner who, in turn, can maintain the projected beam of light on the target by moving the light projecting means as the target moves and following the corresponding movement of the virtual image.

5,249,502

DOUBLE ACTION, DUAL SPEED AND FORCE HYDRAULIC ACTUATORS

Mijo Radocaj, 1912 Amherst Rd., NE., Massillon, Ohio 44646

Filed Jan. 13, 1992, Ser. No. 819,843
Int. Cl.[5] F01B 7/20; F15B 11/00, 13/00
U.S. Cl. 91—173 15 Claims



1. A hydraulic fluid pressure operated actuator for supplying a fast forward output stroke followed by an increased pressure force of the output comprises in combination:
a housing which defines a cylinder bore and pressure chamber;
a first assembly having a piston carried coaxially for motion within the housing bore, said piston defining forward and rearward pressure chambers and exhibiting the reciprocal motion dependent upon a selective hydraulic fluid pressurization of the pressure chambers, said assembly having a shaft extending from the housing which itself defines a coaxial bore and pressure chamber;
a second assembly having a piston carried coaxially for motion within the shaft bore of the first assembly, said piston defining forward and rearward pressure chambers and exhibiting reciprocal motion dependent upon a selective hydraulic fluid pressurization of the pressure chambers, said piston having a shaft extending outwardly from the assembly;
a check valve mounting coaxially to the piston of the first assembly and adapted for passing the hydraulic fluid pressure from the rearward pressure chamber of the first assembly to the rearward pressure chamber of the second assembly, said check valve being biased in an open position to pass hydraulic fluid pressure for a fast forward output stroke and which closes to block hydraulic fluid pressure for a high force output; and
means to supply, exhaust, and control hydraulic fluid pressure to and from the forward pressure chambers of the first and second assemblies and from the rearward pressure chamber of the first assembly such that the piston of the second assembly is moved fast forwardly when the check valve is open and hydraulic fluid pressure is applied to the rearward pressure chambers of the first and second assemblies and upon a completion of the fast forward stroke, the piston of the first assembly is caused to move by releasing hydraulic fluid in the forward chamber of the first assembly to provide a high force output upon closure of the check valve.

6. A hydraulic fluid pressure operated actuator for supplying an initial fast output stroke to cause rapid elongation of the actuator from a retracted position sequentially followed by an additional output stroke to cause further elongation of the actuator to an extended position and to provide an increased high pressure force output, said actuator having a fixed end and a moveable end, the actuator comprising:
a large diameter cylinder having an axial bore therein of relatively short axial length;
a large diameter piston carried coaxially within the bore of the large diameter cylinder and defining axially inwardly and outwardly positioned pressure chambers and being capable of a relatively short axial distance of reciprocal travel dependent upon a selective pressurization of the pressure chambers;
a smaller diameter cylinder having an axial bore therein of substantially greater axial length than the bore of the large diameter cylinder;
the axial bores of both the large diameter cylinder and the smaller diameter cylinder being in axial alignment with each other;
a smaller diameter piston carried coaxially within the bore of the smaller diameter cylinder and defining axially inwardly and outwardly positioned pressure chambers, said piston being capable of a substantially greater axial distance of reciprocal travel than the large piston, dependent upon a selective pressurization of the pressure chambers within the smaller diameter piston;
a connecting piston rod having one of its ends fixedly attached to the large diameter piston and its other end fixedly attached to the smaller diameter piston, said piston rod being in axial alignment with both cylinders so that any axial movement of either piston will also cause the other piston to move the same axial distance;
means sequentially pressurizing first the axially outwardly positioned chamber of the smaller diameter cylinder to cause fast relative movement between the smaller diameter cylinder and the smaller diameter piston therein to effect rapid axial elongation of the actuator; and
means thereafter pressurizing the axially outwardly positioned chamber of the large diameter cylinder to cause relative movement between the large diameter cylinder and the large diameter piston therein to effect further elongation of the actuator and produce a high pressure output force at the moveable end of the actuator while simultaneously maintaining pressure in the axially outwardly positioned chamber of the smaller diameter cylinder to restrict relative movement between the smaller diameter cylinder and the smaller diameter piston therein.

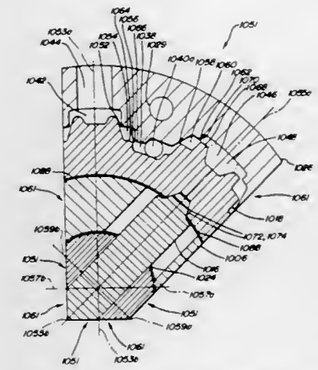
5,249,503

VARIABLE RATIO REACTION VALVE

Edward H. Phillips, Middletown, Calif., assignor to William J. Weinstock, Birgmingham, Micb.

Continuation-in-part of Ser. No. 461,541, Jan. 5, 1990, abandoned. This application Feb. 23, 1990, Ser. No. 485,637
Int. Cl.[5] F15B 9/10
U.S. Cl. 91—375 A 21 Claims

1. An apparatus for generating a hydraulic fluid pressure from an input torque, the ratio of said hydraulic fluid pressure to input torque being variable, said apparatus comprising:
an input shaft operable to receive said input torque;
a first valve member coupled to said input shaft;
a second valve member being in fluid communication with said first valve member via a hydraulic interface, said second valve member being coupled to a reference member, said hydraulic interface having primary and second sets of input and return orifices, said primary and secondary sets of input and return orifices being selectively utilized to define effective reaction areas as a function of said input torque, said primary and secondary sets of input and return orifices being located at selected radii;
said selected radii locating said primary sets of input and return orifices are first and second radii, respectively, wherein said first radii are smaller in value than said second radii;
said selected radii locating said secondary sets of input and return orifices are third and fourth radii, respectively,



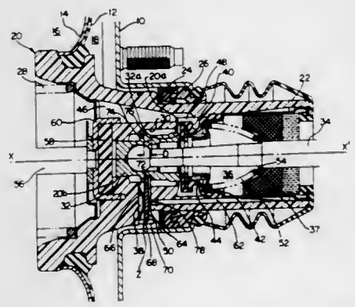
wherein said third radii are smaller in value than said fourth radii;
the difference between said second radii and said first radii is greater than the difference between said fourth radii and said third radii;
means for inducing hydraulic fluid to flow through said hydraulic interface; and
means for coupling hydraulic fluid in direct communication with said hydraulic interface to a hydraulic load.

5,249,504

PNEUMATIC BOOSTER

Jean-Pierre Gautier; Ulysse Verbo, both of Aulnay-Sous-Bois, and Miguel Perez, Argenteuil, all of France, assignors to Bendix Europe Services Techniques, Drancy, France

Filed May 4, 1992, Ser. No. 878,279
Claims priority, application France, May 14, 1991, 91 05842
Int. Cl.[5] F15B 9/10
U.S. Cl. 91—376 R 9 Claims



1. A pneumatic brake-booster, comprising a casing inside which is situated a piston comprising a rear tubular part which supports a skirt and which with a diaphragm defines a front chamber under low pressure and a rear chamber connected selectively to one of said front chamber and atmosphere by first valve means actuated by a control rod adapted to bear, by means of a plunger sliding in a bore of said piston, against one

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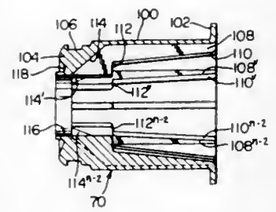
face of a reaction disk adjacent a push rod, said first valve means comprising a first valve closure member cooperating with a first valve seat at said plunger and with a second valve seat at said piston, a stop member for said plunger disposed in a radial space in said piston and having an inner end region extending into said bore of the piston and forming a stop surface cooperating by axial abutment with a first shoulder on said plunger, wherein said stop member is urged permanently rearwardly by resilient means in order to urge second valve means in a closing direction, said second valve means comprising a second valve closure member cooperating with a third valve seat at said piston.

5,249,505

POPPET RETAINER FOR CONTROL VALVE

Wayne A. Hewitt, LaPorte, Ind., assignor to Allied-Signal Inc., Morristown, N.J.

Filed May 18, 1992, Ser. No. 885,710
Int. Cl.[5] F15B 7/10
U.S. Cl. 91—376 R **6 Claims**



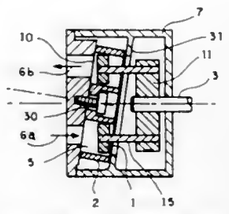
1. In a brake booster having a control valve located in a bore throughwhich air is communicated to a chamber to create a pressure differential across a movable wall, said control valve having a return spring located between a retainer and an input member for urging a plunger toward a poppet member, said retainer being characterized by a cylindrical body having passageways formed by a series of axial slots that extend from a first end to an annual wall, said axial slots directly communicating substantially turbulent free air to said poppet member for distribution to said chamber when an input force moves said plunger away from said poppet member.

5,249,506

ROTARY PISTON MACHINES WITH A WEAR-RESISTANT DRIVING MECHANISM

Wolfhart Willimczik, 1406 63rd St. W., Brandenton, Fla. 34200

Continuation-in-part of Ser. No. 493,901, Mar. 15, 1990, abandoned. This application Feb. 7, 1992, Ser. No. 832,381
Int. Cl.[5] F01B 3/00
U.S. Cl. 91—499 **19 Claims**



1. A rotary piston machine having at least one bearingless piston connecting member and incorporating a relative stroke motion within a rotating system, said rotary piston machine comprising:

a) a cylinder drum including at least one cylinder, said at least one cylinder having an interior cylinder wall and a cross-sectional area bounded by said interior cylinder wall;

b) a piston rotor being of unitary construction and including at least one piston connected to a piston connecting member, said at least one piston having a cross-section substantially equivalent to said cross-sectional area of said at least one cylinder,

whereby the relative stroke motion is created by a sweep of said piston along said interior cylinder wall, the relative stroke motion having a length equal to the sweep of said at least one piston, the sweep of said at least one piston further occurs along a figure axis which exists along an axis of symmetry of said at least one cylinder and intersects a center of said at least one piston, thus said figure axis is also equivalent to the length of the relative stroke motion;

c) said piston rotor and said cylinder drum each rotate on separate axes of rotation being fixed relative to one another such that said at least one piston engages with said at least one cylinder to form a piston and cylinders pair, whereby said at least one piston and said at least one cylinder revolve in a same direction and at a same rate about separate orbits to produce a periodic change in distance between any two fixed points, one of the fixed points being associated with said at least one piston and the other of the fixed points being associated with said at least one cylinder, the periodic change in distance is equivalent to the length of the relative stroke motion; and

d) a casing for containing said cylinder drum and said piston rotor such that the axis of rotation of said cylinder drum is not aligned with the axis of rotation of said piston rotor and each of the axes of rotation remain constant relative to each other, whereby a revolution of the piston and cylinder pair results in an oscillating motion of said at least one piston within said at least one cylinder along the figure axis filling said at least one cylinder through an inlet port during an induction stage of the relative stroke motion and discharging said at least one cylinder through an outlet port during a compression stage of the relative stroke motion.

5,249,507

SWASH-PLATE PLUNGER TYPE HYDRAULIC APPARATUS

Eiichiro Kawahara, Tokorozawa, and Takashi Nakamura, Utsunomiya, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 28, 1992, Ser. No. 827,069
Claims priority, application Japan, Jan. 28, 1991, 3-026938
Int. Cl.[5] F01B 13/04
U.S. Cl. 92—57 **3 Claims**

1. A swash-plate plunger type hydraulic apparatus, comprising:

a cylinder block rotatably mounted for rotation about an axis;

a plurality of plungers slidably fitted into said cylinder block in such an arrangement as to annularly surround said rotational axis;

a swash-plate having a surface which confronts one end of each of said plungers;

a plurality of shoe members facing said swash-plate surface and swingably linked with said end of said plungers, respectively; and

a retainer plate for retaining said shoe members in sliding contact with said swash-plate surface;

each of said shoe members integrally including a neck swingably lined with said one of each of said plungers and a slidable abutment in sliding contact with said swash-plate surface, and

said retainer plate including a plurality of insertion holes each for receiving said neck and adapted to press said slidable abutment against said swash-plate surface with

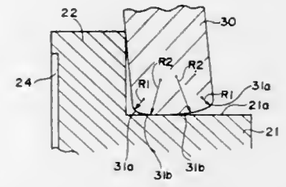
said neck of each of said shoe members inserted into one of said insertion holes, wherein

each of said insertion holes has an inner surface with a portion which abuts against an outer periphery of said neck at an imaginary center platen of said portion in the axial direction of said insertion hole which is substantially coincident with a center around which each of said shoe members swings relatively to each of said plungers, and

a spot facing is provided at the lower portion of each of said insertion holes to adjust the thickness across which the outer periphery of said neck abuts against each of said insertion holes in such a manner that an imaginary center plane of the portion of each of said insertion holes which is in contact with the outer periphery of said neck coincides with the center around which each of said shoe members swings.

3. A swash-plate plunger type hydraulic pump or motor having a rotatably mounted cylinder block, a plurality of plungers slidably fitted into said cylinder block, a swash-plate having a surface facing the cylinder block,

a plurality of shoe members positioned between the swash-



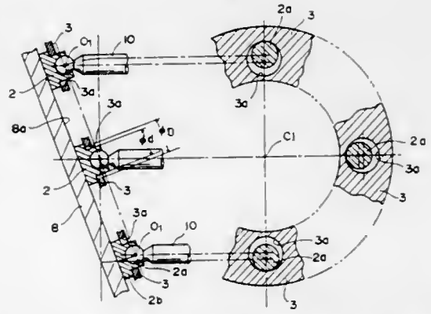


plate surface and the cylinder block, each shoe member having a neck swingably linked with an end of a said plunger, extending from the cylinder block and a portion in sliding contact with the swash-plate surface, a retainer plate for retaining said shoe members in sliding contact with said swashplate surface, said retainer plate including a plurality of insertion holes for receiving a said neck of each of said plungers, the improvement comprising:

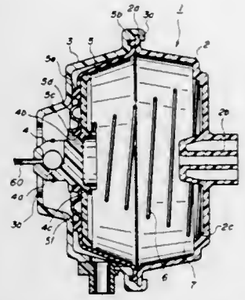
each of said insertion holes having a portion that abuts the outer periphery of said neck at an imaginary center plane, in the axial direction thereof, which is substantially coincident with a center around which each of said shoe members swings relatively to each of said plungers, wherein a groove is provided at another portion of each of said insertion holes closer to the swash-plate for reducing the thickness across which the inner periphery of said insertion hole abuts against each said neck in such a manner that said imaginary center plane of the first said portion of each of said insertion holes which is in contact with the outer periphery of said neck substantially coincides with the center around which each of said shoe members swings.

5,249,508

ACTUATOR OF DIAPHRAGM TYPE

Jiro Hasegawa; Ikuo Nakamura, and Tadashi Hishinuma, all of Yokohama, Japan, assignors to Jidosha Denki Kogyo Kabushiki Kaisha, Yokohama, Japan

Filed Feb. 25, 1992, Ser. No. 841,330
Claims priority, application Japan, Mar. 22, 1991, 3-017519[U]; Mar. 22, 1991, 3-017527[U]
Int. Cl.[5] F16J 3/02
U.S. Cl. 92—93 **1 Claim**



1. An actuator of a diaphragm type for controlling a device mounted on an automotive vehicle, comprising:

an actuator casing having first and second cup-shaped casing halves engaged with each other, the second casing half having an opening through a center part thereof;

a diaphragm disposed between said first and second casing halves of said actuator casing and forming a negative pressure chamber together with said first casing half of said actuator casing, said diaphragm having a plate fitting portion in a center part thereof, said plate fitting portion having a center aperture therethrough and a annular rib surrounding the center aperture;

a diaphragm plate disposed in the actuator casing and secured to said plate fitting portion of said diaphragm, said diaphragm plate having a projecting portion with a cable connecting member projecting through the opening in said second casing half of said actuator casing;

a conical spring disposed between said diaphragm plate and said first casing half of said actuator casing, said conical spring urging said diaphragm plate and said plate fitting portion toward said second casing half of said actuator casing; and

said diaphragm further having an annular expansive portion having a semicircularly curved section extending toward said second casing half and located adjacent to the plate fitting portion and spaced from said diaphragm plate to form an air space with said diaphragm plate.

5,249,509

DEVICE TO VARY STRENGTH OF A BREWED BEVERAGE

Philip H. Englisb, 0109 Ptarmingon Ct., Avon, Colo. 81620

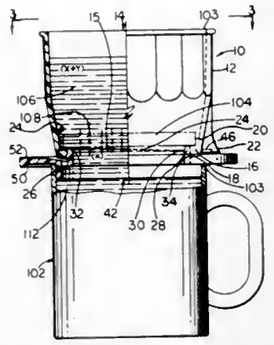
Filed Nov. 7, 1991, Ser. No. 789,031
Int. Cl.[5] A47J 31/02
U.S. Cl. 99—285 **10 Claims**

1. A brewing device for preparing a cup or other portion of a beverage, especially coffee, to a desired strength using a portion of hot water and a disk-shaped, prepackaged filter containing a beverage precursor, the improvement comprising:

a brewing vessel having openings at top and bottom, a ring surrounding said bottom opening to support said prepackaged filter within said vessel, and a longitudinal slit on the

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interior side of the vessel through a portion of said interior ring;



a base having upper and lower surfaces and a central aperture surrounded by an integrally formed flange rising vertically from said upper surface; and,

means for rotatably mounting said vessel atop said base.

5,249,510

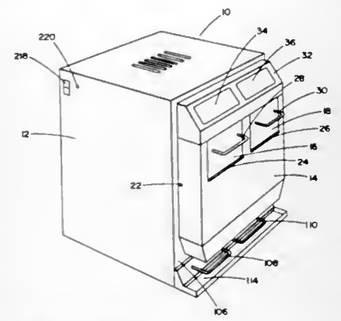
SELF VENTING AUTOMATIC FOOD FRYING AND DISPENSING APPARATUS

Alexander T. Rozak, #1, 722 - 5A Street N.W., Calgary, Alberta, Canada T2N 1R4 , and Gary G. Calderwood, 2008 - 31 Avenue S.W., Calgary, Alberta, Canada T2T 1T2

Filed Feb. 25, 1991, Ser. No. 660,018

Int. Cl.[5] A47J *37/12*

U.S. Cl. 99—336 **16 Claims**



1. Self venting automatic food frying and dispensing apparatus adapted for use in an enclosed space without connection to an outside exhaust system, said apparatus comprising:

a cabinet adapted to be supported at a suitable working height and having a predetermined number of panels, at least one of said panels being configured to allow access to the interior of said cabinet;

a container positioned within said cabinet for holding a supply of cooking oil;

means for heating said container;

means for supporting food products positioned within said cabinet;

means for automatically loading food products into said means for supporting food products;

means for holding said means for supporting food products in a load position suspended above said cooking oil while said food products are being loaded therein;

means for an operator to select a length of time for the product to be cooked;

means integral with said means for holding for automatically moving said means for holding, and hence, said means for supporting food products, from said load position into the supply of cooking oil to a cook position, maintaining said cook position and moving said means for supporting to a discharge position;

blower means positioned within said cabinet for circulating air through the self venting automatic food frying and dispensing apparatus along a predetermined path and exiting at a predetermined location;

an air filter means positioned in said predetermined path, and;

a sealing means positioned within said cabinet coupling said filter means to said cabinet whereby an airtight seal results.

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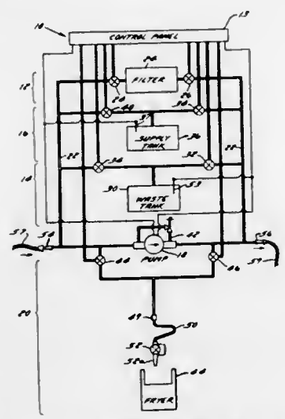
BULK COOKING OIL DISTRIBUTION AND WASTE REMOVAL SYSTEM

Eldridge J. Shumate, 1273 Parkway Gardens Ct., Unit #107, and Enoch E. Olsen, 1277 Parkway Gardens Ct., Unit #122, both of, Louisville, Ky. 40217

Filed Feb. 9, 1993, Ser. No. 15,367

Int. Cl.[5] A47J *37/12*

U.S. Cl. 99—408 **15 Claims**



1. A bulk cooking oil system having various stations connected by piping for movement of oil along preselected pipe paths comprising:

(a) a filter station including

(i) means for filtering cooking oil from said fryer station and

(ii) filter valve means for opening and closing pipe lines leading to and away from said filter station;

(b) a waste station including

(i) means for storing used oil and

(ii) waste valve means for opening and closing a pipe line leading to and away from said waste station;

(c) a supply station including

(i) means for storing oil to be used at said fryer station for cooking food products and

(ii) supply valve means for opening and closing a pipe line leading to and away from said supply station;

(d) a fryer station including

(i) a fryer for receiving and heating cooking oil to cook food products,

(ii) fryer valve means for opening and closing a pipe line leading to and from said fryer station, and

(iii) means for metering oil to said fryer in predetermined amounts;

(e) control means for selectively operating said filtering, waste supply and fryer valve means and for selecting a pipe path between a predetermined pair of said stations;

(f) pump means for moving oil along said selected pipe path.

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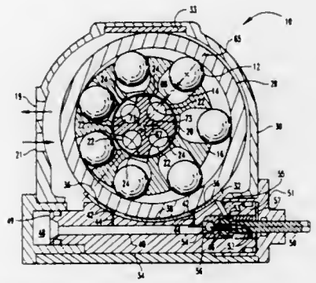
HYDROSTATIC PUMP AND MOTOR

Howard W. Christenson, 128 West 73rd St., Indianapolis, Ind. 46260

Filed Mar. 20, 1992, Ser. No. 885,722

Int. Cl.[5] F01B *13/06;* **F04B** *1/06, 1/04*

U.S. Cl. 91—491 **14 Claims**



1. A hydraulic pump/motor, comprising:

a housing;

a pintle mounted within said housing, said pintle including a plurality of inlet fluid passageways and a plurality of exit fluid passageways, said plurality of inlet fluid passageways receiving working fluid supplied to the pump/motor and said plurality of exit fluid passageways exhausting working fluid from the pump/motor;

a rotor rotatably mounted on said pintle, said rotor including a plurality of outwardly facing radially disposed cylinders having a corresponding plurality of longitudinal axes extending therethrough, said longitudinal axes defining a thrust load plane of said rotor;

means for fluidly coupling said plurality of cylinders with the plurality of inlet fluid passageways and the plurality of exit fluid passageways of said pintle;

a plurality of spherical balls corresponding to the plurality of cylinders in said rotor, each of said plurality of spherical balls being reciprocatably disposed within a corresponding one of said plurality of cylinders, said spherical balls sealing working fluid within said cylinders and developing radial thrust loads in the thrust load plane of said rotor;

a free outer bearing race eccentrically disposed about said rotor and pintle, said bearing race being located by the radial thrust loads and rotating at a near synchronous speed with said rotor to reduce rolling and sliding of said spherical balls relative to said free outer bearing race;

means for hydrostatically supporting said free outer bearing race in said housing, said hydrostatic supporting means including a rotatably adjustable servo piston having first hydrostatic recesses for hydrostatically supporting said bearing race, said bearing race being free to rotate on the first hydrostatic recesses, and said servo piston translating within said housing to adjust the eccentricity of said bearing race to said rotor and pintle and said servo piston rotating within said housing to align said bearing race with the thrust load plane of said rotor; and

wherein said spherical balls reciprocate within said cylinders as said rotor rotates eccentrically relative to said outer bearing race so that working fluid is communicated between said cylinders and the inlet and exit fluid passageways of said pintle.

5,249,513

APPARATUS FOR PRODUCING FINE-TEXTURED SOYBEAN CURD AS PLACED IN CONTAINERS

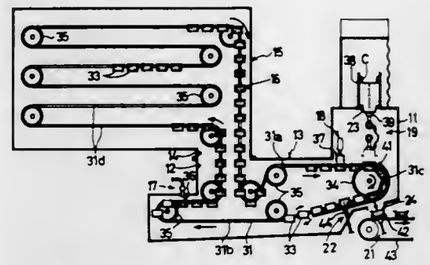
Michio Ueda, Tokushima, Japan, assignor to Shikoku Kakoki Co., Ltd., Tokushima, Japan

Filed Nov. 16, 1992, Ser. No. 975,338

Claims priority, application Japan, Nov. 18, 1991, 3-302117

Int. Cl.[5] A23C *3/02;* **A23J** *1/00;* **A23L** *1/20*

U.S. Cl. 99—453 **7 Claims**



1. An apparatus for producing fine-textured soybean curd as placed in containers, the apparatus comprising:

means for filling a mixture of soybean milk and a coagulant into coagulating buckets,

means for heating the mixture to coagulate the mixture into soybean curd,

covering means for placing an inverted container over each of the buckets to cover an upper-end opening of the bucket without dewatering the soybean curd within the bucket,

means for inverting the bucket and the container as placed over the bucket, and

means for withdrawing the soybean curd as accommodated in the container from the bucket by moving down the inverted container.

5,249,514

APPARATUS FOR PRODUCING PUMPABLE FOODSTUFFS, IN PARTICULAR PROCESSED CHEESE

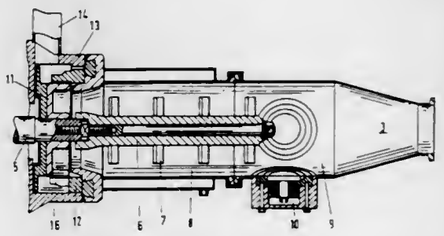
Friedrich Otto, Hameln, and Albert Dubielzyk, Hessisch Oldendorf, both of Fed. Rep. of Germany, assignors to A. Stephan und Soehne GmbH & Co., Hameln, Fed. Rep. of Germany

Division of Ser. No. 835,339, Feb. 14, 1992. This application Feb. 9, 1993, Ser. No. 15,360

Claims priority, applicatioo Fed. Rep. of Germany, Feb. 15, 1991, 4104686

Int. Cl.[5] A23C *19/00;* **A23P** *1/00*

U.S. Cl. 99—454 **15 Claims**



1. An apparatus for producing a pumpable foodstuff comprising:

a) a treatment unit for comminuting and mixing a foodstuff;

b) a mixing and melting unit for mixing and melting foodstuff from the treatment unit and having

1) a mixing chamber within a housing;

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2) a mixing and feeding shaft extending into the mixing chamber, the mixing and feeding shaft being operatively connected to a drive unit outside the mixing chamber;
3) a foodstuff intake provided adjacent to the mixing chamber housing, approximately axially in line with the mixing and feeding shaft; and
4) steam injectors opening into or upstream of the mixing chamber in a direction approximately perpendicular to the axis of the mixing and feeding shaft;

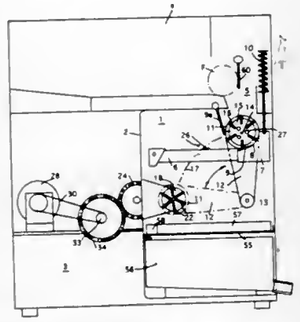
c) an emulsifying unit adjacent to the mixing and melting unit for emulsifying the foodstuff from the mixing and melting unit and having
1) an emulsifying chamber within a housing;
2) a set of homogenizing and emulsifying tools; and
3) a processed foodstuff outlet conduit leading out from the emulsifying chamber.

5,249,515

APPARATUS FOR EXTRACTING FRUIT JUICE FROM CITRUS FRUITS

Marco Bachmann, Restelbergstrasse 53, 8044 Zürich, Switzerland

PCT No. PCT/CH91/00256, § 371 Date Jul. 31, 1992, § 102(e) Date Jul. 31, 1992, PCT Pub. No. WO92/10108, PCT Pub. Date Jun. 25, 1992
PCT Filed Dec. 10, 1991, Ser. No. 916,147
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1990, 4040087
Int. Cl.[5] A23N *1/00*
U.S. Cl. 99—504 **7 Claims**



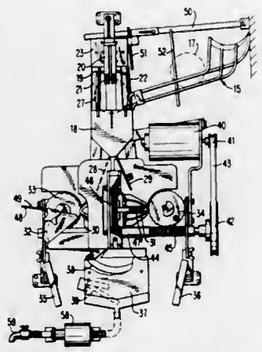
1. An apparatus for extracting juice from citrus fruit having rinds, said apparatus comprising:
a supply container for a plurality of said citrus fruit, said supply container including a discharge opening for individual citrus fruit;
a housing which defines a processing station located to receive said individual citrus fruit discharged from said supply container, said housing including therein
a knife means including a knife blade having first and second ends, said first end of said knife blade being pivotally mounted in said housing and said second and including support members which are located centrally below said discharge opening of said supply container to support individual citrus fruit thereon,
a rotatable rasping element having opposite first and second rasping heads, and
first and second gripping means for gripping opposite sides of an individual citrus fruit and moving it so as to be cut and rasped, said first and second pivot arms which are movable along and including first and second pivot arms which are movable along and about a common axis and first and second clamping jaws connected to said first and second pivot arms, said first and second pivot arms being movable along and about said axis to cause said first and second clamping jaws to move together to grip an individual citrus fruit located on said support members in a first operating position of said clamping jaws, to cause said clamping jaws to move said citrus fruit past said knife blade at an acute angel so as to cut said citrus fruit into first and second fruit halves, to move said first and second clamping jaws apart and separate said first and second fruit halves, to move said first and second clamping jaws and said first and second fruit halves in line with said opposite first and second rasping head, and to move said first and second clamping jaws towards one another to move said first and second fruit halves into respective contact with said first and second rasping heads in a second operating position of said clamping jaws to achieve simultaneous extraction of juice therefrom, thereby leaving first and second treated fruit halves located within said first and second clamping jaws.

5,249,516

MACHINE FOR THE PREPARATION OF FRUIT JUICES

Angel F. Pastor, Barcelona, Spain, assignor to Zumatu, S. A., Bergara, Spain

Filed Sep. 11, 1992, Ser. No. 943,911
Int. Cl.[5] A23N *1/00, 1/02*
U.S. Cl. 99—504 **8 Claims**



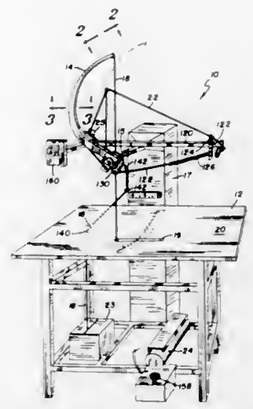
1. A machine for extracting juice from fruit, including:
a storage section including racks for containing fruit with said fruit arranged in a plurality of serial lines,
an elevator operative to remove a leading one of said fruits in at least one of said serial lines of said storage section, and to transport said fruit to an upper section of said machine;
a transfer mechanism at said upper section of said machine operative to assemble fruit transported by said elevator into a serial line;
a release mechanism for releasing a single fruit sequentially from said transfer mechanism, and, for feeding that single fruit to a cutting mechanism;
said cutting mechanism including a vertically arranged cutter blade on which said individual fruit is deposited, and a pusher mechanism operative to push said individual fruit downwardly relative to said blade to sever said fruit into halves;
a juice extracting mechanism operative to receive said fruit halves and extract juice from said respective halves, said machine being operated in timed sequence to produce a succession of juice extractions from successive halves of successive fruits.

5,249,517

LINE BUNDLING APPARATUS

Burl A. Massman, Villard, Minn. 56385

Continuation-in-part of Ser. No. 902,086, Jun. 22, 1992, abandoned. This application Nov. 20, 1992, Ser. No. 980,612
Int. Cl.[5] B65B *57/16, 57/08*
U.S. Cl. 100—4 **19 Claims**



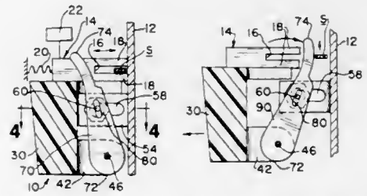
1. In an apparatus for wrapping nursery stock of the type in which a line is carried from a source in a predetermined path from a highest position downward and around said nursery stock to a lowest position with an oscillating arcuate needle, the improvement comprising:
(a) tensioner means for holding the line between the source and the needle with a predetermined force; said tensioner means having adjusting means for adjusting said predetermined force; and
(b) dancer arm means for providing line tension by pulling the line away from a is direct path between the tensioner means and the needle against the predetermined holding force as the needle wraps the line around the nursery stock; said dancer arm means having adjusting means for adjusting the line tension.

5,249,518

STRIPPING MECHANISM FOR STRAPPING MACHINE

Jack S. Abrams, Arlington Heights, Ill., assignor to Signode Corporation, Glenview, Ill.

Filed Oct. 2, 1992, Ser. No. 956,071
Int. Cl.[5] B65B *13/06*
U.S. Cl. 100—26 **6 Claims**



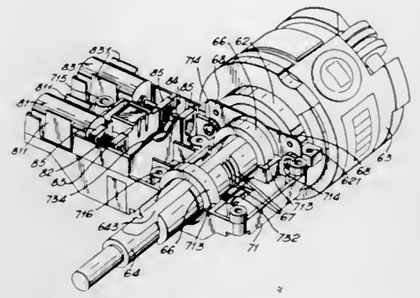
1. In a strapping machine comprising a fixed wall and a movable chute, the chute having a generally U-shaped cross-section defining a bight and two generally parallel flanges with a space between the flanges to accommodate a strap being fed along the chute, the chute being movable toward and away from a closed position wherein the flanges bear against the fixed wall, the chute being biased toward the closed position, a mechanism for stripping the strap from the chute as the chute is moved from the closed position, the mechanism comprising a pin mounted in fixed relation to the fixed wall, a bracket mounted to the chute, the chute having two sections defining a gap straddled by the bracket, which connects the sections, and a lever mounted pivotally on the bracket so as to extend through the gap, the lever having an elongate slot, through which the pin extends, the lever being pivotable on the bracket toward and away from an inoperative position wherein the lever does not interfere with a strap in the space between the flanges of the chute, the lever being arranged to pivot toward the inoperative position as the chute is moved toward the closed position, the lever being arranged to pivot away from the inoperative position and to strip a strap from the space between the flanges of the chute as the chute is moved away from the closed position.

5,249,519

POSTAGE METER

Hugh McChesney, Hertfordshire, England, assignor to Pitney Bowes plc, Harlow, England

Continuation of Ser. No. 762,715, Sep. 19, 1991, abandoned. This application Mar. 17, 1993, Ser. No. 32,718
Claims priority, application United Kingdom, Sep. 21, 1990, 9020634
Int. Cl.[5] B41J *1/32*
U.S. Cl. 101—99 **5 Claims**



1. An improved postage meter having
a meter housing,
a rotatable print drum with a drive shaft extending rearwardly from the print drum, said draft shaft being rotatively supported at two axial locations in said meter housing, said drive shaft having a axially extending slot and having a plurality of racks slidably mounted and parallel aligned in said slot for altering the position of respective digit wheels,
wherein the improvement comprises:
gearbox assembly means for selectively repositioning said respective racks, said gearbox assembly means having a gear housing having an elongated upper portion and lower portion, said drive shaft being rotatively mounted in said meter housing at a position along said drive shaft, said drive shaft to extend transversely through said gear housing between said elongated upper portions and lower portion;
said gearbox assembly means having drive assembly means for selectively repositioning said respective racks, said drive assembly being mounted within said housing of said gearbox assembly means,
said drive assembly means comprises:
a plurality of cross-over gears rotatively mounted in said gear housing along a common axis at a transversing angle to drive shaft such that in a single radial position of said drive shaft respective one's of said gears are in meshed engagement with a respective one's of said racks for causing said respective one of said racks to axially displace in said slot upon rotation of said respective gear.

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said drive shaft having a plurality of radial grooves axially positioned in cooperative slip aligned to said cross-over gears such that rotation of said drive shaft is not obstructed by said cross-over gears,

drive means for selectively and individually rotating said respective cross-over gears wherein said drive means includes a plurality of motors fixably mounted in said gear housing, said gear means for communicating said motor's output to a respective one of said cross-over gears, said gear means being rotatively mounted in said gear housing.

5,249,520

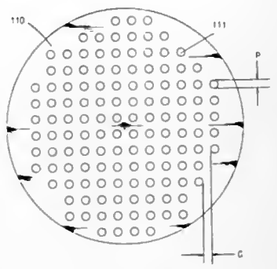
MASK SHOCK ABSORBER PAD

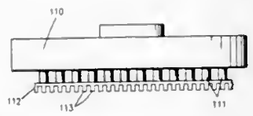
Gerald S. Andris, Poughkeepsie, and John P. Gauci, Putnam Valley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 7, 1991, Ser. No. 712,259

Int. Cl.[5] B32B *31/16*

U.S. Cl. 101—126 **15 Claims**





1. An apparatus for absorbing shock caused by separation of a perforated sheet from a surface after screening a viscous material through said perforated sheet, said perforated sheet being supported by said surface at locations separated by a characteristic distance approximating a maximum uninterrupted feature size to be produced by said perforated sheet, including

a pad having a plurality of protuberant features thereon wherein a transverse dimension of at least one said protuberant feature is greater than said characteristic distance and wherein a minimum separation between each of said protuberant features is equal to or exceeds a distance determined from a nominal viscosity of said viscous material.

5,249,521

DEVICE FOR CHANGING OVER TO SINGLE-SIDE PRINTING OR PERFECTING ON SHEET-FED ROTARY PRINTING MACHINES

Ingo Kobler, Anhausen, Fed. Rep. of Germany, assignor to MAN Roland Druckmaschinen AG, Fed. Rep. of Germany

Filed Sep. 28, 1992, Ser. No. 952,293

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1991, 4132250

Int. Cl.[5] B41F *21/00, 13/12*

U.S. Cl. 101—230 **7 Claims**

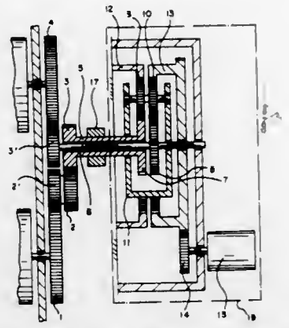
1. A device for changing between one-side printing and perfecting printing in sheet-fed rotary printing machines having a frame and in which the printing units are connected to a main drive by a closed train of wheels, comprising in combination:

a turning drum and a printing cylinder;

a turning drum spur wheel and a printing cylinder spur wheel, the turning drum spur wheel and the printing cylinder spur wheel lying in one plane and having the same width;

first and second intermediate spur wheels, the first and second spur wheels being in the form of a double wheel, the first spur wheel engaging the printing cylinder spur wheel;

third and fourth intermediate spur wheels, the third and



fourth spur wheels being arranged coaxially, the third spur wheel engaging the second spur wheel and being fixed on a hollow shaft, the fourth spur wheel engaging the turning drum spur wheel and being fixed to a solid shaft coaxial with and disposed within the hollow shaft, the first and fourth spur wheels having a smaller radius than the second and third spur wheels, and the first, second, third and fourth spur wheels having the same number of teeth; and

control means coupled to the output side of the solid shaft and the hollow shaft for selectively driving the solid and hollow shafts in unison or differentially with respect to one another.

5,249,522

DEVICE FOR ADJUSTING THE CIRCUMFERENTIAL REGISTER AT ROTARY PRINTING MACHINES

Hans-Jürgen Kusch, Neckargemünd, and Edgar Grundke, Mannheim, both of Fed. Rep. of Germany, assignors to Heidelberger Druckmachinen Aktiengesellschaft, Heidelberg, Fed. Rep. of Germany

Filed Oct. 26, 1992, Ser. No. 966,292

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1991, 9113505[U]

Int. Cl.[5] B41F *13/14;* **F41L** *35/06*

U.S. Cl. 101—248 **20 Claims**

1. Apparatus for adjusting circumferential register of a rotary printing machine, the rotary printing machine comprising: a frame; a cylinder being rotatably mounted, about a longitudinal axis thereof, on the frame, the longitudinal axis defining a longitudinal direction of the cylinder; gearwheel means, being rotatably mounted on the frame, for transferring a driving force to the cylinder, the gearwheel means having at least one radius, the gearwheel means and the cylinder being relatively positionable with respect to one another; means for adjusting the relative position of the gearwheel means and the cylinder with respect to one another; said apparatus comprising:

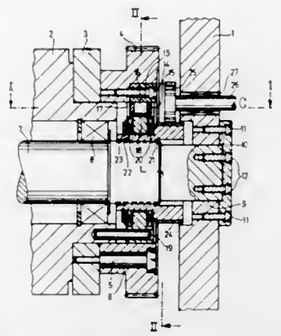
extension means for extending from and being connected to the gearwheel means;

said extension means having a generally cylindrical shape, the generally cylindrical shape of said extension means having a round cross-sectional shape and a central axis through a center of the round cross-sectional shape, the central axis being disposed along a radius of said gearwheel means;

disc means;

means for rotatably mounting said disc means on the frame;

said disc means comprising a groove for accommodating said extension means, said extension means being engageable with at least one surface of said groove for relative displacement with respect to the at least one surface of said groove;



rod means, extending between said disc means and the cylinder, for guiding longitudinal displacement of said disc means with respect to said cylinder;

said disc means comprising means for accommodating a portion of said rod means such that said disc means is longitudinally displaceable along said rod means; and

said groove being oriented obliquely with respect to the longitudinal axis of the cylinder and being configured for adjusting circumferential register of the rotary printing machine in response to the longitudinal displacement of said disc means.

5,249,523

INKING MECHANISM FOR A PRINTING MACHINE

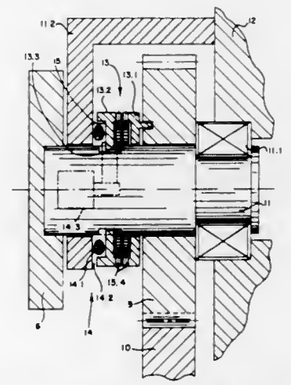
Stephan Kanzler, Rodgau, and Willi Herbert, Offenbach am Main, both of Fed. Rep. of Germany, assignors to MAN Roland Druckmaschinen AG, Fed. Rep. of Germany

Filed Dec. 7, 1992, Ser. No. 986,588

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1991, 4140048

Int. Cl.[5] B41F *31/00*

U.S. Cl. 101—350 **10 Claims**



1. An inking mechanism for a rotary offset printing machine in which ink is taken from an ink reservoir in metered quantities and distributed by inking rollers to form an ink film which is adapted to be applied to a printing plate mounted on a plate cylinder, at least one of said inking rollers being a distributing roller mounted for rotational and axial reciprocating displacement, characterized by a distributing drive for rotating said distributing roller and reciprocating the distributing roller axially periodically in timed relation to operation of the printing machine, said drive including a releasable shift coupling operable for interrupting axial movement of said distributing roller upon printing stoppage while said printing machine continues to operate.

5,249,524

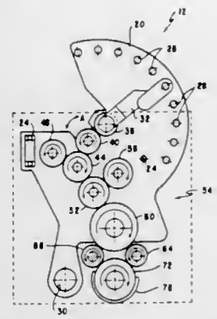
CONTAINER BODY INKING APPARATUS

Edwin C. Morris, deceased, late of Golden, Colo. by Carol J. Morris, legal representative , assignor to Ball Corporation, Muncie, Ind.

Filed Jun. 3, 1992, Ser. No. 892,891

Int. Cl.[5] B41F *31/34, 35/04*

U.S. Cl. 101—352 **19 Claims**



1. An apparatus for applying an ink to a printing plate attached to a rotatable cylinder, wherein said ink on said printing plate is transferable to a container body, comprising:

first and second laterally displaced support plates;

first, second, third, and fourth rollers each having a rotational axis substantially parallel to a rotational axis of said cylinder, a roller body, and roller shaft and each being rotatably interconnected with said first and second support plates, said first roller body being interconnected with said second roller body, said third and fourth roller bodies each engaging said second roller body, said third and fourth roller bodies each engaging said cylinder and said printing plate, said third and fourth roller shafts each being rotatably interconnected with said first and second support plates by first and second bracket assemblies, respectively, to allow pivoting of each of said third and fourth rollers about a reference axis;

a roller body area having a width coinciding with a maximum lateral extent of said first, second, third, and fourth roller bodies, said roller body area including each of said first, second, third, and fourth roller bodies and projecting outwardly therefrom;

means for applying said ink to at least a portion of said first roller body;

means for rotating at least one of said first, second, third, and fourth rollers, wherein at least a portion of said ink applied to said first roller body is transferred to said printing plate; and

means for adjusting a position of each of said third and fourth roller bodies relative to said printing plate, said entire means for adjusting being positioned externally of said roller body area and comprising means for pivoting each of said third and fourth rollers about said reference axis.

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SPARK-DISCHARGE LITHOGRAPHY PLATES CONTAINING IMAGE-SUPPORT PIGMENTS

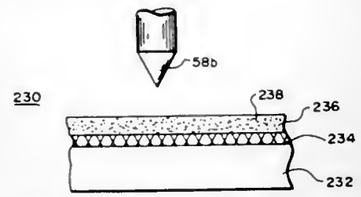
Thomas E. Lewis, E. Hampstead, N.H., and Michael T. Nowak, Gardner, Mass., assignors to Presstek, Inc.

Continuation-in-part of Ser. No. 661,526, Feb. 25, 1991, Pat. No. 5,165,345, which is a continuation-in-part of Ser. No. 442,317, Nov. 28, 1989, Pat. No. 5,109,771, which is a continuation of Ser. No. 234,475, Aug. 19, 1988, Pat. No. 4,911,075. This application Jun. 5, 1992, Ser. No. 894,027

The portion of the term of this patent subsequent to May 5, 2009, has been disclaimed.

Int. Cl.[5] B41C *1/10*; B41N *1/00*

U.S. Cl. 101—453 **27 Claims**



1. A lithographic plate that is transformable so as to change the affinity of said plate for ink, said plate being a layered structure including an ink-receptive substrate, a conductive layer and an ink-repellent coating, said coating containing a dispersion of particles consisting essentially of at least one conditionally conductive oxide compound that includes at least one octahedrally coordinated metal species, at least a fraction of such metal species containing at least one valence electron.

5,249,526

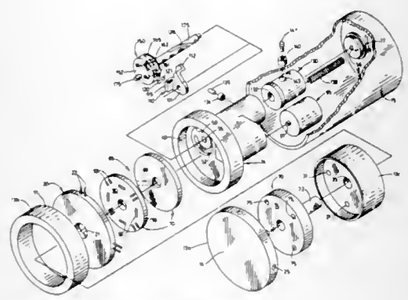
SAFE AND ARM DEVICE

George E. Cooksey, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 12, 1992, Ser. No. 975,034

Int. Cl.[5] F42C *15/40, 15/24, 15/34*

U.S. Cl. 102—255 **8 Claims**



1. In a safe and arm device having:
a body;
a rotor mounted on said body for pivotal movement through a predetermined arming angle from a safe position to an armed position; and
a shaft pivotally mounted on said body and having a predetermined number of pivotal oscillations when said rotor is to pivot from said safe position to said armed position,
the improvement comprising:
an axle mounted on said body for pivotal movement and extended parallel to said shaft;
a setback weight mounted on said body for movement along said axle by an inertial force acting on said weight when said rotor is to pivot from said safe position to said armed position;
means connecting said weight and said axle for driving said axle through a predetermined actuating angle as said weight moves a predetermined distance along said axle;
means connecting said axle and said rotor for driving said rotor from said axle through said arming angle as said axle pivots through said actuating angle;
a pair of escapement elements disposed between said shaft and said axle in spaced relation therealong;
means for mounting said escapement elements on said body for movement toward and from said shaft and said axle;
first cam means for urging said escapement elements in a reciprocating motion between said shaft and said axle at each of said oscillations, said first cam means being mounted on said shaft for pivotal oscillation therewith and engaging said escapement elements oppositely of said axle; and
second cam means for alternately retaining said axle to each of said escapement elements and releasing said axle from each of said escapement elements at each of said oscillations in an escapement action such that said axle moves through said actuating angle in successive, predetermined pivotal movements motivated by said inertial force as said second cam means is released at each of said oscillations, said second cam means being mounted on said axle in engagement with said escapement elements oppositely of said shaft and moving pivotally with said shaft through said actuating angle.

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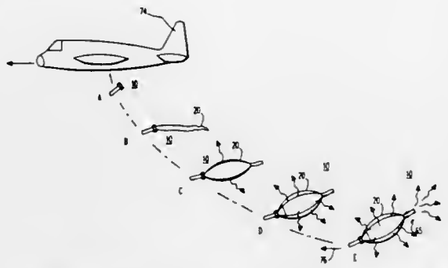
HIGH SPEED, INFLATING BAG INFRARED COUNTERMEASURE

Richard G. Schwind, Los Gatos, Calif., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 1, 1992, Ser. No. 907,084

Int. Cl.[5] F42B *12/70*; F41J *2/00*

U.S. Cl. 102—354 **12 Claims**



1. Infrared (IR) decoy apparatus for launching into the atmosphere, comprising:
a) an aerodynamic shell;
b) gas generator means contained within said shell;
c) a thin film, high temperature bag stored within and deployable from said shell;
d) means for initiating said gas generator means after a launch of said decoy, to deploy and inflate said bag with hot gas containing particulates;
e) said bag being substantially transparent to the wavelength of IR radiation produced by said hot gas with particulates, within said bag; and
f) said bag being connected to said shell so as to continually receive said gas during operation, said bag including exit means for allowing said gas to escape from the interior of said bag.

5,249,528

FIREWORKS SUPPORT KIT

Jervis R. Lee, 1038 Church Well Rd., Hattiesburg, Miss. 39401

Filed Nov. 24, 1992, Ser. No. 981,092

Int. Cl.[5] F42B *4/04*

U.S. Cl. 102—361 **3 Claims**



1. A fireworks support kit, comprising,
a first support structure, having a first rigid tubular housing, having a first housing first end and a first housing second end, the first housing first end including a resilient cushion cup fixedly mounted to the first housing first end, and the first housing second end including a second rigid tubular housing telescopingly received therethrough coaxially aligned with the first tubular housing, the second tubular housing having a second housing second end and a second housing first end, with the second housing second end including a rigid metallic first tubular member secured thereto, and
a spring member interposed between the first tubular member and the resilient cushion cup, with a mounting plate directed through the cushion cup, the first tubular housing, and an ejector rod coaxially directed through the first tubular housing and extending into the second tubular housing, with the ejector rod spaced from the second tubular housing second end in a first position, and projecting beyond the second tubular housing second end in a second position, and the second tubular housing having a plurality of parallel slots directed through the second tubular housing in adjacency to the second tubular housing first end, with a lock pin directed through the slots, the first tubular housing, and the ejector rod for rigid alignment of the ejector rod within the second tubular housing.

5,249,529

SELF-NULLING HYBRED MAGLEV SUSPENSION

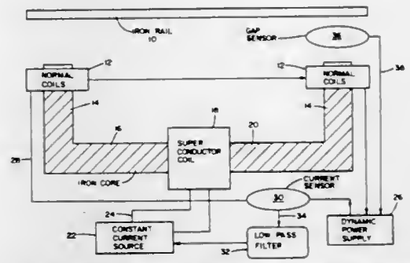
Richard J. Herbermann, Huntington, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Dec. 16, 1992, Ser. No. 991,448

Int. Cl.[5] B60L *13/00*

U.S. Cl. 104—281 **4 Claims**

1. An electromagnetic elevation system for MAGLEV vehicles comprising:
a plurality of electromagnetic coils mounted onto a core;
a dynamic power supply connected to the coils for providing them with current;
means for sensing a gap between an iron rail and the core;
means for connecting signals from the sensing means to a control input of the power supply for varying current output therefrom as a function of changes in the gap;
at least one superconducting coil mounted to the core;
a source connected to the superconducting coil;
means connected to an output of the dynamic supply for sensing its output current level; and



a low pass filter connected at its input to an output of the current level sensing means, and at its output to a control input of the source.

5,249,530

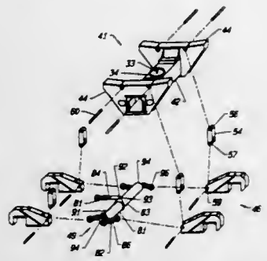
FORCED STEERING RAILROAD TRUCK SYSTEM WITH CENTRAL TRANSVERSE PIVOTED SHAFT

Paul S. Wike, Los Gatos, Calif., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 26, 1992, Ser. No. 888,732

Int. Cl.[5] B61F *5/44, 5/26*

U.S. Cl. 105—168 **27 Claims**



1. In a truck arrangement for supporting a railroad car longitudinally on a track by at least two trucks separated by a center distance L, each of which has at least two wheel sets with a separation distance W and the wheels of each wheel set having a separation distance S; the combination comprising:
I) a frame having both a lateral arm providing means for rotatably securing said truck to the body of said railroad car and longitudinal end arms rigidly attached to said lateral arm and extending generally orthogonal thereto;
II) means for suspending said wheel sets from said frame and allowing movement of said wheel sets relative to said frame longitudinally, rotationally in a horizontal plane, and vertically, located between said frame and the location for said wheel sets; and
III) means connecting said body of said railroad car to said means for suspending, for controlling said wheel set movement to correspond to the movement of said car body relative to said frame and to align said wheel sets with said track in response to the angular relationship of said car body to said track, said means for connecting comprising:
a) a rotatable member mounted for rotation relative to said frame, said rotatable member comprising:
i) a shaft rotatably mounted to said frame;
ii) first means for attachment to said shaft at an attachment location medial to ends of said shaft at a dis-

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tance, d, from the center of rotation of said truck and at a first distance, h, from the axis of rotation of said shaft; and

iii) second means for attachment to said shaft at an attachment location proximal to said ends of said shaft at a second distance, e, from said axis of rotation of said member;

b) means for linking coupled between said car body and said rotatable member for rotating the member in response to said angular relationship; and

c) means for moving said wheel sets longitudinally relative to said frame, coupled between said member and said means for suspending;

said first distance h, said second distance e, and said medial distance d, being chosen to satisfy the relationship e/h=WS/2Ld.

5,249,531

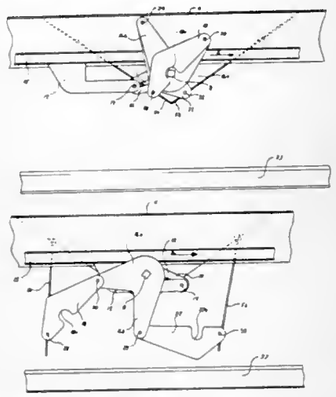
RAILRAOD HOPPER CAR DOOR ACTUATING MECHANISM

Fred J. Taylor, 8204 N. Dilcrest Cir., Florence, Ky. 41042

Continuation of Ser. No. 407,412, Sep. 14, 1989, abandoned. This application Nov. 25, 1991, Ser. No. 796,681

Int. Cl.[5] B61D *7/00*

U.S. Cl. 105—290 **17 Claims**



1. A hopper car comprising:

a car body having an underside;

at least one row of discharge chutes located along the underside of said body and aligned along the longitudinal axis of said hopper car;

a plurality of rotatable doors for closing said discharge chutes;

shifting means, shiftable in a linear direction along the longitudinal axis of said hopper car, for shifting said doors between a first position fully closing said discharge chutes and a second position fully opening said discharge chutes, said shifting means consisting of a slidable actuating beam attached to the underside of said body, an extension downwardly depending from said actuating beam and corresponding to each discharge chute, and a drive pin rigidly affixed to said extension;

a single activating means, operative in a linear direction, connected to said shifting means for shifting said doors from said first position to said second position; and

a plurality of driving systems, with each system only operative upon the doors of a single discharge chute, each driving system consisting of at least one first drive lever having a slot for slidably receiving said drive pin, a single rotatable drive shaft rigidly affixed to said at least one first drive lever, at least one second drive lever rigidly affixed to said drive shaft, and at least one third drive lever rotatably affixed at one end of said at least one second drive lever and rotatably affixed at other end to one of said doors, for coupling said shifting means to said one of said doors.

5,249,532

WAGON ALLOWING BOGIES FOR RAILROAD TRANSPORT TO BE RECOVERED OR UNLOADED

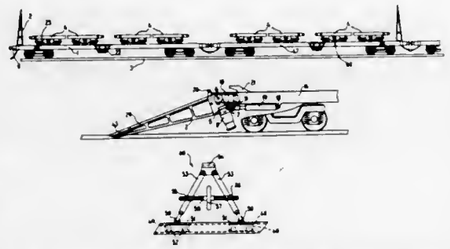
Pierre Perrot, 6, rue Gambetta, 27320 Nonancourt, France

Filed Jun. 9, 1992, Ser. No. 895,857

Claims priority, application France, Jun. 10, 1991, 91 06979

Int. Cl.[5] B61D *47/00*

U.S. Cl. 105—355 **29 Claims**



1. A wagon for transporting rail bogies, said wagon comprising:

an end ramp affixed to an end buffer of said wagon and articulated about a horizontal transverse axis at an end of said wagon;

a pair of rails provided on said end ramp for loading and unloading bogies onto and from said wagon;

means for moving said end ramp between a substantially vertical position for travel and an inclined position for loading and unloading bogies and for moving said buffer between operative and inoperative positions;

devices on said wagon for securing bogies on said wagon during travel; and

means on said end ramp and said wagon for moving bogies along said end ramp and said wagon.

5,249,533

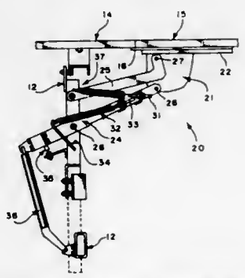
SEWING MACHINE TABLE

Edgar F. Moore, III, Greensboro, N.C., assignor to Barudan America, Inc., Walton Hills, Ohio

Filed Jul. 18, 1991, Ser. No. 732,167

Int. Cl.[5] A47B *1/04*

U.S. Cl. 108—69 **12 Claims**



1. A table comprising: a frame, a first table top section, said first top section rigidly joined to said frame, a second table top section, said second top section movably joined to said frame whereby said second top section is movable from a first position in contiguous horizontal alignment with said first top section to a second lower position vertically spaced from said first top section, means to move said second top section, said moving means comprising a pair of pivot arms, said pivot arms positioned one over the other to provide a top and and a bottom arm, said top and said bottom arms pivotally attached in substantial vertical alignment to said frame, a crank member, said pivot arms rotatable joined to said crank member, said crank member attached to said second top section, a first longitudinal resilient member, said first resilient member having one end attached to said top arm proximate said pivotal attachment and having the other end attached to said bottom arm proximate said crank member, a second longitudinal resilient member, said second resilient member attached at one end to said frame proximate said bottom arm attachment to said frame and at the other end to said bottom arm proximate said first resilient member whereby said second resilient member will alternatively apply upward or downward force to said second top section depending upon the vertical position of said second top section.

5,249,534

PROTECTIVE COVER

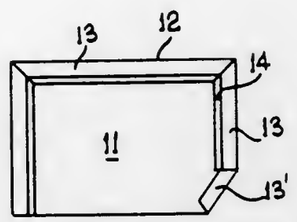
Michael Sacks, Manchester, England, assignor to Dowty Armourshield Limited, Manchester, England

Filed Jan. 9, 1992, Ser. No. 818,378

Claims priority, application United Kingdom, Jan. 11, 1991, 9100663

Int. Cl.[5] E05G *1/00*

U.S. Cl. 109—24 **10 Claims**



1. A cover for use with a container comprising one or more layers of high tensile strength, high stretch resistance flexible material which are capable of resisting penetration by bomb blast and fragmentation and which are adapted so that the cover can expand and absorb the blast from an explosion within the container, said cover comprising a plurality of separate panels of said material which are shaped to overly respective side walls and the top of the container and are connected together with fasteners which progressively peel apart under load from the blast to allow controlled expansion of the cover in the event of an explosion.

5,249,535

LOW NO_x BURNER

Landy Chung, 5144 Cliff Dr., Ashtabula, Ohio 44004

Continuation of Ser. No. 856,234, Mar. 25, 1992, abandoned. This application Dec. 21, 1992, Ser. No. 995,942

Int. Cl.[5] F23D *1/02*

U.S. Cl. 110—264 **26 Claims**

1. A burner nozzle for combusting pulverized coal, comprising:

a) structure defining an annular passage extending from a source of pulverized coal carried by an air stream to an outlet, said outlet communicating with a combustion region for said pulverized coal;

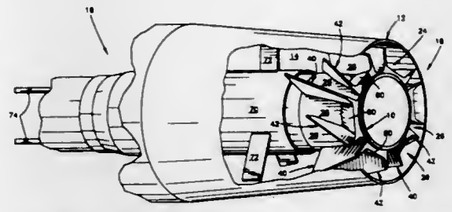
b) said annular passage defined between an inner cylindrical member and an outer housing member, surrounding said inner cylindrical member;

c) means, near said outlet, for dividing said pulverized coal stream into fuel rich and fuel lean streams, including:

i) a plurality of first blade members, generally radially directed, and circumferentially spaced about said inner cylindrical member;

ii) second blade members spaced circumferentially about an inner cylindrical member and in an alternating relationship with said first blade members;

iii) said first blade members defining a first angle with respect to an imaginary plane extending through a center line of said inner cylindrical member;



iv) said second blade members defining a second angle with respect to an imaginary reference plane extending through said centerline that is greater than said first blade angle, such that a channel diverging in cross-section is defined between a first blade member and an adjacent second blade member and a channel converging in cross-section is defined between said second blade member and a next adjacent first blade member.

5,249,536

EMBROIDERY SEWING MACHINE

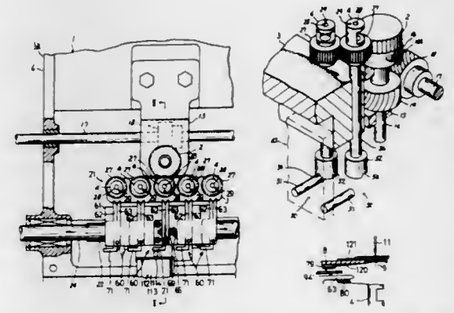
Osamu Hattori, Kakamigahara, and Masaru Eriguchi, Ichinomiya, both of Japan, assignors to Kabushikikaisha Barudan, Aichi, Japan

Filed Apr. 9, 1992, Ser. No. 865,840

Claims priority, application Japan, Jun. 17, 1991, 3-171697

Int. Cl.[5] D05B *57/30, 65/02;* **D05C** *7/00*

U.S. Cl. 112—98 **4 Claims**

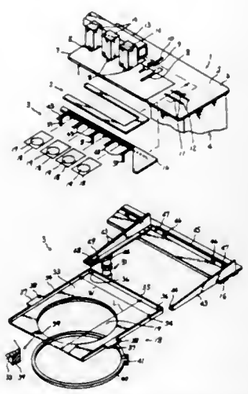


1. An embroidery sewing machine comprising a throat plate formed with a needle hole, a rotatable looper disposed under said needle hole for paying out a thread, said looper being movable up and down between an upper position close to the throat plate and a lower position apart from the throat plate, and a stitching needle adapted to move up and down through said needle hole, wherein said embroidery sewing machine further comprises a thread holding means provided adjacent said needle hole and said looper, defining a space therebetween, and adapted to hold and release said thread, said holding means supporting said thread in a space between said needle hole and said holding means, and a thread drawing member adapted to move to and from said thread holding means through said space between said needle hole and looper to

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bring said thread to said thread holding means where said thread is cut between said needle hole and said thread holding means.

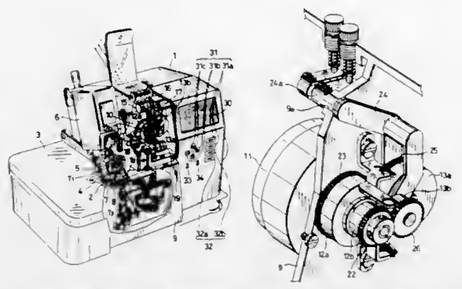
5,249,537
EMBROIDERY FRAME
Hisato Sakakibara, Inazawa, Japan, assignor to Kabushikikaisha Barudan, Aichi, Japan
Filed Jul. 6, 1992, Ser. No. 908,456
Claims priority, application Japan, Nov. 6, 1991, 3-318452
Int. Cl.[5] D05C *7/00, 9/04*
U.S. Cl. 112—103 **6 Claims**



1. An embroidery frame for an embroidery machine comprising:
a driving frame having an arm which moves in a horizontal plane along an upper surface of a bed;
driving means for moving said driving frame horizontally;
a cloth-spreading frame connected to said driving frame, projecting horizontally therefrom, having an embroidery hole over which cloth is disposed;
an upstanding leg connected to said arm of said driving frame; and,
a support frame having an upper surface below said cloth spreading frame for supporting a free end of said upstanding leg for movement with movement of said cloth-spreading frame.

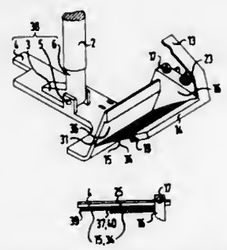
5,249,538
SEWING APPARATUS EQUIPPED WITH AN AUTOMATIC THREAD SUPPLY DEVICE
Minoru Nakano, and Toru Yamazaki, both of Osaka, Japan, assignors to Pegasus Sewing Machine Mfg., Co., Ltd., Japan
Filed Apr. 23, 1991, Ser. No. 689,509
Claims priority, application Japan, Apr. 24, 1990, 2-109353
Int. Cl.[5] D05B *19/00, 47/04*
U.S. Cl. 112—121.11 **12 Claims**

1. A sewing apparatus comprising:
a sewing mechanism having a sewing section including a needle and a looper driven in accordance with a rotation of a main shaft;
an automatic thread supply device for forcibly carrying a needle thread and at least one looper thread to the sewing section;
key input means for setting lengths per stitch of the needle thread and the at least one looper thread which are to be supplied by said automatic thread supply device to the sewing section;
memory means for storing a plurality of stitch patterns in correspondence with combinations of the lengths of the threads to be supplied per stitch;
selecting means for selecting one of the stitch patterns corresponding to the combinations of the lengths of the threads set by said key input means; and
display means for displaying in graphics the stitch pattern selected by said selecting means, wherein said display



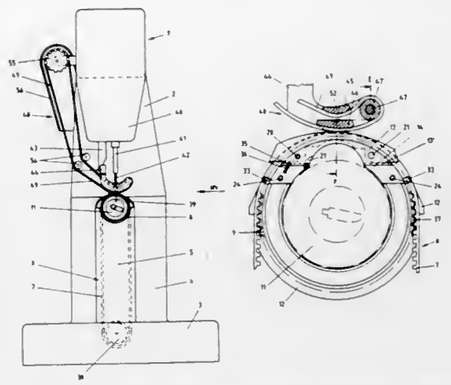
means displays the selected stitch pattern corresponding to the combination of the lengths of threads which said automatic thread supply device supplies to said sewing section.

5,249,539
TAPE FEED-IN DEVICE ON A PRESSER FOOT ASSEMBLED ON A SEWING MACHINE
Bohumil Hyca, Stuttgart, Fed. Rep. of Germany, assignor to Union Special GmbH, Stuttgart, Fed. Rep. of Germany
Filed May 21, 1992, Ser. No. 886,747
Claims priority, application Fed. Rep. of Germany, May 28, 1991, 4117359
Int. Cl.[5] D05B *35/10, 29/06*
U.S. Cl. 112—121.27 **11 Claims**



1. A tape feeder in combination with a presser foot, the presser foot having a presser foot sole, for laterally aligning prepositioned tapes of different widths, in which several resilient guide elements are positioned by a support connected between the presser foot sole and one end of the guide elements in a tape in-feed region of the presser foot sole, the guide elements being arranged adjacent to each other and aligned in a tape feed direction, whereby the guide elements receive and laterally align the prepositioned tapes of different widths.

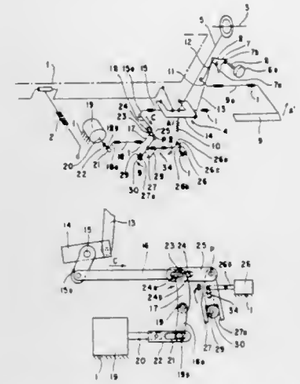
5,249,540
SEWING-MATERIAL TRANSPORT DEVICE FOR SINGLE-NEEDLE OR MULTI-NEEDLE SEWING MACHINE
Reinhard Sielemann, Bielefeld, Fed. Rep. of Germany, assignor to Durkopp Adler Aktiengesellschaft, Fed. Rep. of Germany
Filed Jul. 24, 1991, Ser. No. 735,389
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1990, 9011178[U]
Int. Cl.[5] D05B *27/12, 75/00*
U.S. Cl. 112—304 **27 Claims**



1. A single-needle or multi-needle sewing machine comprising:
a frame;
at least one upper material pressing means;
at least one lower material feeder located for engagement with said upper material pressing means, such that the upper material pressing means assures steady contact between a sewing material and the at least one lower material feeder;
a throat plate attached firmly to the frame of the sewing machine; and
at least one needle which is moveable upward and downward and pierces into the sewing material through the throat plate and adjacent the material feeder and pressing means; wherein:
the lower material feeder is mounted for feeding movement in the frame such that a side thereof facing the upper material pressing means extends beyond an upper portion of the throat plate adjacent to a region where the sewing needle punctures the sewing material; and
within the throat plate there is provided a tongue and a spring for urging the tongue upward by spring force from the throat plate so that the tongue presses against a resting surface attached to the upper material pressing means, so as to reduce fluttering of the sewing material as the needle is pulled upward and out of the sewing material.

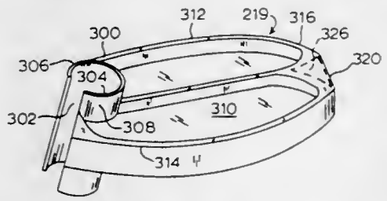
5,249,541
FEED REGULATOR OF A SEWING MACHINE
Shuichi Sato, and Yosbibaru Kobayashi, both of Tochigi, Japan, assignors to The Singer Company N.V., Curacao, Netherlands
Filed Jan. 21, 1992, Ser. No. 823,098
Claims priority, application Japan, Feb. 26, 1991, 3-053791
Int. Cl.[5] D05B *27/22*
U.S. Cl. 112—316 **3 Claims**

1. A feed regulator of a sewing machine including a first driving means for swingably driving a feed regulating table by way of a link mechanism and a feed dog for switching a direction of feed of said machine, the first driving means and the table being supported on a frame of the machine, said regulator comprising:
a feed regulating shaft mounted in the table for turnably supporting the table on the frame;
a first crank secured to said feed regulating shaft;
a second crank which is rotatably driven by the first driving means;
a link for said feed regulating shaft which is interposed between said second crank and said first crank to transmit rotation of the second crank to the first crank;
a link member having a slit with first and second opposite side surfaces;
a third crank connected between said second crank and said



link member; said third crank having a projection for engaging said first or second opposite side surfaces of said slit;
second driving means supported on the machine frame;
an eccentric cam turnable by the second driving means; and
a fourth crank having a middle portion turnably supported on the machine frame, the fourth crank having one end which is forked, the forked end being engaged by said cam, the fourth crank having another end connected to said link member, the third crank being turned to swing said feed regulating shaft via the link member, the link and the first crank.

5,249,542
CAMBERED AIRFOIL, AND CRAFT COMPRISING SAME
Ronald D. Latham, Rte. 3, Box 184-A, Apex, N.C. 27502
Filed Jun. 3, 1992, Ser. No. 892,790
Int. Cl.[5] B63H *9/08*
U.S. Cl. 114—103 **20 Claims**



1. A self-cambering double panel airfoil for wind-driven propulsion, including panels defining airfoil wind-engaging surfaces, said self-cambering airfoil comprising:
(i) a generally vertically positionable mast;
(ii) a camber inducer member secured to the mast for rotational movement about the axis of the mast, and extending rearwardly from the mast to a trailing portion having a batten realignment cavity therein bounded by facing,

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arcuate, forwardly converging wall surfaces forming at their forward extremity an innermost V-shaped slot in which the elements of the V intersect at one end of each element and in which an extremity of a flexible batten element is reposable, said batten element abutting only one or the other of the other ends of each element of the V, said facing, arcuate, forwardly converging wall surfaces permitting flexural recambering displacement of the flexible batten element when the camber inducer member repositions from a first camber position thereof to a second camber position thereof;

(iii) an elongate flexible batten element positioned at a leading edge thereof in the batten realignment cavity of the chamber inducer member and extending rearwardly therefrom to a trailing edge; and

(iv) a skin covering comprising two main panels each extending rearwardly from the mast to a trailing edge and joined to one another at the respective trailing edges to form a trailing portion of the skin covering, the main panels being of a size and shape defining an enclosure containing the batten element, with the trailing edge of the batten element being in interior abutting contact with the skin covering at the trailing portion thereof and in a state of compression within the enclosure defined by the skin covering such that in the first camber position of the camber inducer member, the batten element interiorly abuts, distends and imparts a camber profile to a first one of the two main panels, and in the second camber position of the camber inducer member, the batten element interiorly abuts, distends, and imparts a camber profile to a second one of the two main panels.

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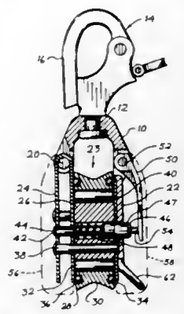
SNATCH BLOCK

Goran Rutgerson, Ekebacken, Sweden; Peter O. Harken, Pewaukee, and Kenneth E. Lange, Brookfield, both of Wis., assignors to Harken, Inc., Pewaukee, Wis.

Filed Aug. 20, 1992, Ser. No. 933,343

Int. Cl.[5] B63H *9/04*

U.S. Cl. 114—108 **3 Claims**



1. An improved snatch block comprising a sheave assembly having an inner race and a rotatable outer race, first and second sideplates extending along the sides of the sheave assembly, and a head extending between the sideplates to enable attachment of the block to the support, wherein the improvement comprises means for securing the inner race of the sheave assembly to the first sideplate, means for hingedly connecting the first sideplate near the head to allow pivotal movement thereof toward and away from the second sideplate, lock means carried by the inner race for releasable locking with the second sideplate, said lock means comprising an aperture in the second sideplate, and a plunger slidably mounted in said inner race and engageable with said aperture, said plunger being spring loaded toward said second sideplate, and a manually operated member on the second side plate for pushing said plunger toward the first sideplate for releasing the lock means.

5,249,544

SYSTEM OF INTERDEPENDENT STOPPERS FOR WINDWARD SHEETING TRAVELER CARS

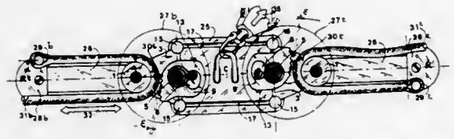
Guy H. Lacan, 19, rue des Champs Fleuris, 78600 Le Mesnil Le Roi, France

Filed Jun. 10, 1992, Ser. No. 896,693

Claims priority, application France, Jun. 11, 1991, 9107053; Jul. 4, 1991, 9108359

Int. Cl.[5] B63B *21/24*

U.S. Cl. 114—204 **21 Claims**



1. A system of two interdependent stoppers to control two opposite tackles which, in sailboats, are adapted to position a traveler car along a trackway, said system comprising:

two stoppers, each controlling one of said two tackles and comprising at least one pulley around which a fall common to said stopper and said tackle passes, said pulley being carried by a frame pivoting on a trunnion, said trunnion being fixedly attached to a part of the boat called support in the aftergoing, and

a cleat having a rest position in relation to said support, said pivoting frame being able to take two noticeable angular positions:

a first angular position, in which said pulley is sufficiently far from said cleat to let said fall freely pass around said pulley: it is the free running position, and

a second angular position in which said fall passing around said pulley is in contact with said cleat, initiating a cleat engaging position which will be confirmed by the force exerted by sole said traveler car as soon as said fall is released: it is the cleating position, shifting from one position to another being controlled by the angle formed by a manually tensioned part of said fall with said support, said system further comprising connecting means adapted to establish a one to one angular correspondence between the two said stoppers.

5,249,545

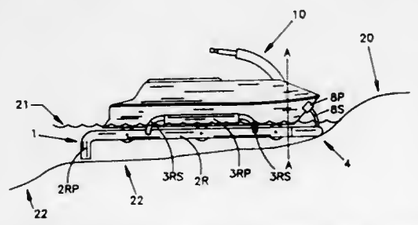
PERSONAL WATERCRAFT CRADLE AND METHOD OF USE

Jon V. Gettman, R.R. 2-S96, Fremont, Nebr. 68025

Filed Jun. 12, 1992, Ser. No. 897,491

Int. Cl.[5] B63D *35/40*

U.S. Cl. 114—259 **18 Claims**



1. A cradle system for cradling personal watercraft comprising hollow side pipes which converge to an interconnection point at a front aspect of said cradle system so as to form a "V" shape as said cradle system is viewed from a position perpendicularly thereabove while said cradle system rests on an essentially horizontal underlying surface, said hollow side pipes being open at their non-interconnected ends distal to said interconnection point; between which hollow side pipes are rotatably attached roller systems, said roller systems essentially filling the distance between said hollow side pipes at their points of attachment thereto; from which hollow side pipes project, generally upward, side and front supports with side and front support pads present thereon; such that during use a personal watercraft is functionally cradled in the cradle system with support at the bottom thereof being provided entirely by said roller systems and with support thereof at the lower body of the personal watercraft being provided by said side and front support pads, with no support being provided to said personal watercraft by direct contact with said hollow side pipes, which cradle system further comprises downward projections at the non-interconnected open ends of the hollow side pipes, said downward projections providing continuous access to inner space within said hollow side pipes.

5,249,546

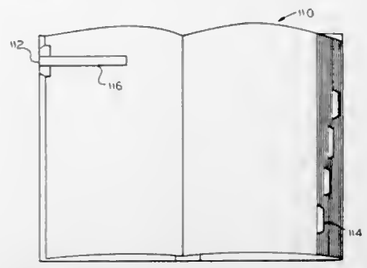
BOOKMARK

Joseph F. Pennelle, 3434 N. Nagel Ave., Chicago, Ill. 60634

Continuation-in-part of Ser. No. 571,321, Aug. 22, 1990, Pat. No. 5,140,934. This application May 22, 1992, Ser. No. 887,097

Int. Cl.[5] B42D *9/00;* **B42F** *21/06*

U.S. Cl. 116—234 **8 Claims**



1. A publisher's convenience item comprising a die cut generally T-shaped finger member made of a plastic paper substitute for attachment to a volume of pages; said generally T-shaped finger member having a cross member and a stem; said cross member of said T-shaped finger member having an adhesive on at least a part thereof for enabling the cross member of said finger member to be affixed to a page with said stem of said T-shaped finger member being non-affixed; wherein said cross member of said T-shaped finger member has two sections parallel to said cross member; one of said sections at a top of said cross member having said adhesive for attachment to said page; the other of said sections at the bottom of said cross member having no adhesive; said bottom section projection from one edge of said page when the top section is adhesively secured adjacent said edge of said page to form an index tab; and said stem of said T-shaped finger member, when folded over said projecting bottom section forming said index tab, defining a bookmark placeable between the pages of said volume of pages.

5,249,547

MANUALLY OPERATED SIZING MACHINE

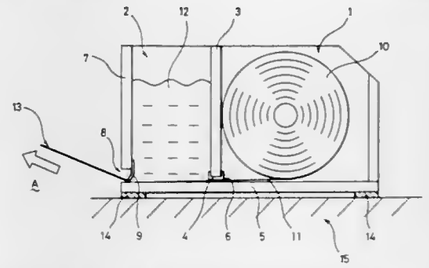
Toshinari Takada, Ako; Masatoshi Wakabayashi, Aioi; Arata Koroyasu, Tatsuno, and Yasuaki Matsui, Kakogawa, all of Japan, assignors to Kyukutosanki Co., Ltd., Tatsuno, Japan

Continuation of Ser. No. 676,408, Mar. 28, 1991, abandoned. This application Dec. 18, 1992, Ser. No. 993,899

Claims priority, application Japan, Mar. 29, 1990, 2-33435; May 2, 1990, 2-47278

Int. Cl.[5] B05C *3/02*

U.S. Cl. 118—415 **3 Claims**



1. A manually operated sizing machine comprising:

a bottom plate having two sides and first and second ends;

a pair of side plates affixed to said bottom plate at said sides thereof, respectively;

an end plate affixed to said side plates at said first end of said bottom plate having a space forming a pullout port between said end plate and said bottom plate;

a size cutter means positioned in said pullout port for setting an amount of size to be applied to sheet material;

a cushion material having elasticity and restoring capability provided at said pullout port between said bottom plate and a tip of said size cutter means, said cushion material for preventing size from flowing out of said pullout port, said size cutter means being provided with one of a sawtooth shaped tip and a waveform shaped tip, each having a height and a pitch which sets the amount of size to be adhered to sheet material;

a separation wall affixed to said side plates intermediate ends thereof forming therebetween a size container at said first end of said bottom plate and a sheet roll unit at said second end, said separation wall having a clearance between a bottom thereof and the bottom plate; and

means in said sheet roll unit for rotatably supporting a roll of sheet material therein such that sheet material supported thereon and passing through said clearance of said separation wall and through said pullout port will be coated with size contained in said size container.

5,249,548

SHELLFISH DEPURATION SYSTEM

John L. Dupuy, Germantown, Md., assignor to Chi & Associates, Inc., Arlington, Va.

Filed Mar. 23, 1992, Ser. No. 855,778

Int. Cl.[5] A01K *63/04*

U.S. Cl. 119—243 **17 Claims**

1. A tank for the depuration of shellfish, comprising:

an elongated open vessel for retaining sea water;

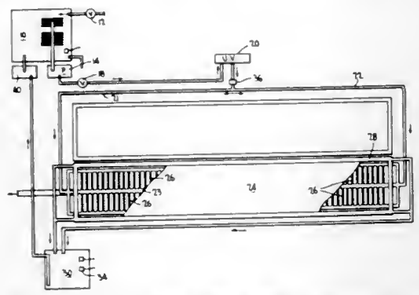
a manifold extending the length of the bottom of said vessel substantially along the longitudinal center axis from one end of the vessel to the other and including a connection at each end thereof for the injection of sea water;

a plurality of fill pipes extending from said manifold toward each side of said vessel and each fill pipe including a pattern of holes for the emission of sea water therefrom forming an up-welling pattern to provide a desired turbulence within said vessel; and

a trough extending around the upper periphery of said vessel

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for recovering sea water spilling over the upper walls of said vessel, the injection of sea water through said holes



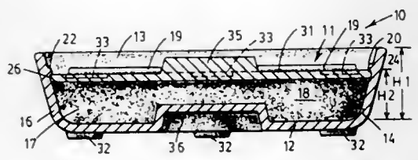
and the recovery of sea water in said troughs preventing dead spots within the sea water in said vessel.

5,249,549

DISPOSABLE PET LITTER CONTAINER

Joseph J. Rockaitis, III, 3213 N. Queen Anne Rd., Woodstock, Ill. 60098

Filed Jan. 3, 1992, Ser. No. 816,212
Int. Cl.[5] A01K *29/00*
U.S. Cl. 119—165 **18 Claims**



1. A disposable pet litter container comprising:
a tray molded of a water-absorbent paper material that does not lose appreciable structural strength upon absorption of limited quantities of water, that paper material constituting a paper pulp containing at least five percent (5%) of a non-water-absorbent additive;
the tray having a bottom wall of given size and configuration formed integrally with side wall means enclosing the bottom and sides of a litter chamber, the side wall means including at least one sidewall extending upwardly for a predetermined height H1 around the outer edge of the bottom wall;
lid retainer means, molded into the side wall means at a given height H2 above the bottom wall of the tray, with H1>H2, defining the upper limit of the litter chamber;
a reusable lid having a size and configuration corresponding to the size and configuration of the bottom wall of the tray, which lid interfits with the lid retainer means to seal the top of the litter chamber;
and complementary, interfitting support means on the lid and the tray adapting the lid to service as a base for the tray by removal of the lid from the lid retaining means and placement of the tray on the lid.

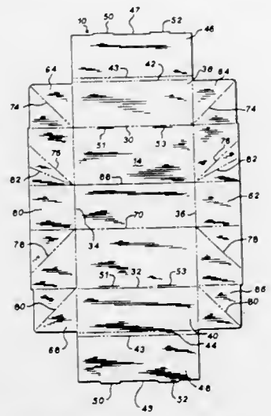
5,249,550

DISPOSABLE LITTER BOX

Lisa C. Hines, and Charles B. Hines, both of 10940 Meadowglen La., Houston, Tex. 77042

Filed Sep. 14, 1992, Ser. No. 944,608
Int. Cl.[5] A01K *1/015, 29/00;* B65D *5/00*
U.S. Cl. 119—168 **16 Claims**

1. A disposable litter box defined by a foldable, closed container including a supply of litter, the container adapted to be unfolded in to a unitary litter box having a continuous outer perimeter wall of even height for defining an open-topped litter box, the box comprising:
a. a flat, base made of a semi-rigid, non-stretchable, single-ply material;
b. a plurality of primary fold lines on the base for folding the base into an assembled, open-topped box configuration having a closed bottom and upstanding side and end walls defining a continuous outer wall of even height;
c. a plurality of secondary fold lines on the base for folding the assembled, open-topped box configuration, the secondary fold lines positioned such that when the base is folded along said secondary fold lines the base is biased into a closed container configuration and when unfolded along said secondary fold lines the base is biased into the open-topped box configuration, said secondary fold lines comprising double fold lines wherein the double fold lines produce an over-center type hinged closure mechanism holding the box in either the closed container configuration of the open-topped configuration; and



d. visual identification elements on the base for positioning the secondary fold lines relative to one another to properly fold the base into the closed container configuration.

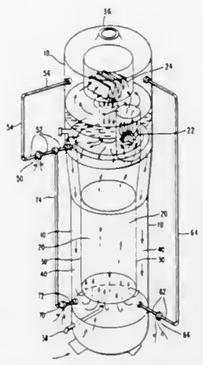
5,249,551

STEAM GENERATION SYSTEM MASS AND FEEDWATER CONTROL SYSTEM

William J. Kirkpatrick, 43 Cannon Run Rd., Newark, Del. 19702

Continuation-in-part of Ser. No. 682,390, Apr. 9, 1991, abandoned. This application Mar. 6, 1992, Ser. No. 847,697
Int. Cl.[5] F22G *5/12*
U.S. Cl. 122—487 **8 Claims**

1. A steam generation system comprising,
a. a pressure vessel having a zone in which heated fluid can enter for the separation of steam from liquid, said vessel zone having a steam outlet through which pressurized steam can flow and a liquid outlet through which recirculated liquid can flow,
b. a riser means for delivering heated fluid to said vessel zone,
c. downcomer means for directing recirculated liquid from said vessel zone and feedliquid to an inlet of the riser means,
d. heating means for transferring heat to within the riser means for heating the liquid in the riser means, and
e. feedliquid means for determining a value representing the liquid mass in the vessel zone, downcomer means and riser means and for delivering feedliquid to flow into said



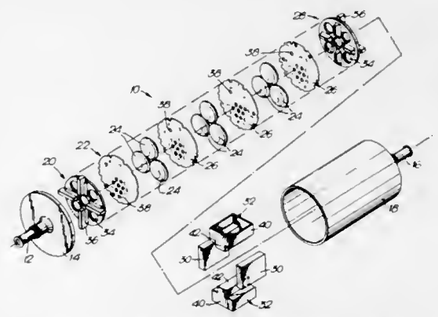
downcomer means at a flow rate at least partially in response to said value.

5,249,552

FUEL COMBUSTION EFFICIENCY

Douglas M. Brooks, Harringworth, Nr. Corby, Great Britain, assignor to Wribro Ltd., Douglas, Isle of Man

PCT No. PCT/GB90/00803, § 371 Date Jan. 23, 1992, § 102(e) Date Jan. 23, 1992, PCT Pub. No. WO90/14516, PCT Pub. Date Nov. 29, 1990
PCT Filed May 23, 1990, Ser. No. 828,908
Claims priority, application United Kingdom, May 26, 1989, 8912592
Int. Cl.[5] F02B *75/12;* F02M *27/00*
U.S. Cl. 123—1 **6 Claims**



1. An apparatus, for improving the efficiency of fuel combustion, comprising a magnet and fuel additive located within close combination within a container through which fuel flows such that at least the fuel additive is in contact with the fuel, the fuel additive consisting of, apart from impurities, 60 to 80% wt tin, 15 to 30% wt antimony, 2 to 7% wt lead and 3 to 12% wt mercury.

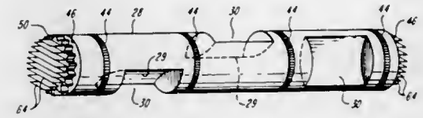
5,249,553

ROTARY VALVE SHAFT INDENT SYSTEM

James J. Guiod, 46 Main St., Dover, Mass. 02030

Filed Apr. 30, 1991, Ser. No. 693,390
Int. Cl.[5] F01L *7/00*
U.S. Cl. 123—41.4 **16 Claims**

1. A rotary valve shaft indent system for use in internal combustion engines comprising
an intake manifold;
an exhaust manifold;
at least one combustion chamber having a piston and an ignition point;
a cylinder head;
a hollow intake shaft having at least one intake indent element disposed thereon;
a hollow exhaust shaft having at least one exhaust indent element disposed thereon;
means for lubricating the intake and exhaust shafts; and
cooling fins disposed at least at one end of each shaft, said fins extending outwardly along the shaft's longitudinal axis for cooling the intake and exhaust shafts by drawing ambient air through the center of the hollow shafts;
wherein



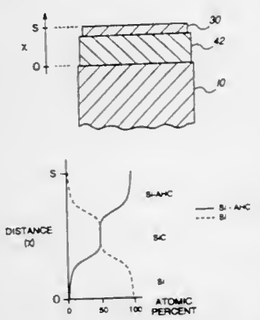
the intake and exhaust shafts are rotatably mounted within the cylinder head between the combustion chamber and the intake and exhaust manifolds by at least one bearing positioned at each end of the intake and exhaust shafts;
whereby
upon rotation of the intake shaft, the intake indent element allows for intermittent connection of the intake manifold to the combustion chamber, and the unrestricted flow of an air/fuel mixture into the combustion chamber; and
upon rotation of the exhaust shaft, the exhaust indent element allows for intermittent connection of the combustion chamber to the exhaust manifold, and the unrestricted and direct flow of exhaust from the combustion chamber.

5,249,554

POWERTRAIN COMPONENT WITH ADHERENT FILM HAVING A GRADED COMPOSITION

Michael A. Tamor, Toledo, Ohio; Pierre A. Willermet, Livonia, Mich.; William C. Vassell, Bloomfield, Mich., and Arup K. Gangopadhyay, Novi, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 8, 1993, Ser. No. 2,490
Int. Cl.[5] F01L *1/14, 3/00*
U.S. Cl. 123—90.51 **17 Claims**



2. A powertrain component such as, but not limited to a valve lifer, in an internal combustion engine, the component comprising:
a coating system including a film and an interlayer formed on a wear surface of the component;
the film being selected from a first group comprising at least

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one of amorphous hydrogenated carbon, silicon-doped amorphous hydrogenated carbon, boron-doped amorphous hydrogenated carbon, nitrogen-doped amorphous hydrogenated carbon, boron nitride-doped amorphous hydrogenated carbon, or metal-doped amorphous hydrogenated carbon, the film imparting characteristics of low frictions and wear resistance to the component;

the interlayer being formed between the film and the component, the interlayer being selected from a second group comprising at least one of silicon, silicon carbide, silicon nitride, and boron nitride, the interlayer accommodating stresses engendered by formation of the film, and providing mechanical support to the film and chemical compatibility between the film and the substrate, thereby improving adherence of the film to the substrate,

the component being selected from at least one of a ceramic and a metal including one or more of aluminum, an aluminum-silicon alloy, an aluminum-copper-silicon alloy, magnesium, a magnesium alloy, aluminum nitride, titanium, a titanium-aluminum alloy, and an aluminum alloy.

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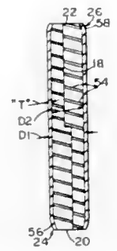
VALVE GUIDE INSERT

James A. Kammeraad, Holland; Dwain L. Kamphuis, West Olive, and Robert T. Ritt, Holland, all of Mich., assignors to K-Line Industries, Inc., Holland, Mich.

Filed Apr. 14, 1992, Ser. No. 869,418

Int. Cl.[5] F01L *3/08*

U.S. Cl. 123—188.009 **19 Claims**



1. A valve guide insert for lining and relining a valve guide of an internal combustion engine, the engine including a valve having a valve stem which is to reciprocate in the bore of the valve guide, comprising:

a thin-walled, generally cylindrically shaped, metallic tube having ends and a section intermediate the ends, said intermediate section having an outer diameter substantially equal to or slightly greater than the inner diameter of the valve guide bore within which said insert is to be installed so that said insert, when positioned within said bore, will be retained by a press fit, said intermediate section of the insert having an inner diameter about equal to or slightly greater than the diameter of the valve stem which is to reciprocate therein, the inner and outer diameters of said intermediate section defining the approximate desired wall thickness of said insert when installation is complete; and

at least one of said ends having a reduced inner diameter and a reduced outer diameter relative to said intermediate section, said at least one end providing a tapered insertion section adapted to lead said insert into the valve guide bore, said tapered insertion section having a wall thickness substantially equal to or slightly greater than the wall thickness of said intermediate section such that said tapered insertion section will not be prone to crush during installation of said insert into the bore, whereby said insert can be installed in a valve guide bore having a nonchamfered opening.

5,249,556

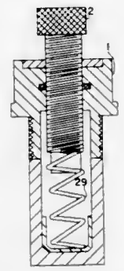
ADJUSTABLE LUBRICATING SYSTEM

William J. Emmitt, P.O. Box 31, Delphi, Ind. 46923

Filed Mar. 8, 1991, Ser. No. 666,697

Int. Cl.[5] F01M *1/16*

U.S. Cl. 123—196 S **18 Claims**



1. An adjustable lubricating system for an internal combustion engine comprising an oil pump connected to said engine with a pressure relief valve connected thereto, said pressure relief valve being connected to a plurality of engine oil passages adjacent the pump outlet through which pressurized oil flows to lubricate various engine parts depending upon the positioning of the plunger of said valve, said pressure relief valve having a valve bore and a plunger therein, said valve bore having internal threads adjacent its exterior end, a pressure relief valve cap having a bore extending therethrough, said bore having threads therein, an adjusting screw positioned in said bore, said screw having a threaded shank engaging the threads of said cap bore and being threadedly movable therein, said cap having threads thereon externally thereof, said external threads engaging said internal threads of said valve bore of said pressure relief valve thereby connecting said pressure relief valve cap to said pressure relief valve of said oil pump of said engine, an oil seal secured to said cap adjacent to said bore threads, said seal engaging said screw, a pressure relief spring positioned in said valve bore between said cap and said pressure relief valve plunger, said screw engaging said spring of said pressure relief valve, said pressure relief spring engaging said plunger, said plunger being movable against said spring to open and block a plurality of engine part lubrication oil passages and a bypass oil passage in response to the outlet pressure of said pump, whereby the distribution of oil to the engine parts being lubricated is determined by adjusting the position of said screw in said cap bore.

5,249,557

FUEL INJECTION SYSTEM FOR TWO CYCLE ENGINE

Masahiko Katoh, and Masanori Takahashi, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

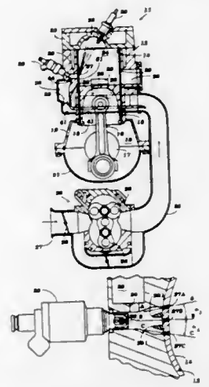
Filed Feb. 5, 1992, Ser. No. 831,786

Claims priority, application Japan, Feb. 18, 1991, 3-44017; Feb. 25, 1991, 3-53412; Feb. 25, 1991, 3-53413; Feb. 28, 1991, 3-58046; Mar. 26, 1991, 3-86227

Int. Cl.[5] F01L *11/00;* **F02B** *33/04*

U.S. Cl. 123—305 **100 Claims**

1. A fuel injection system for an internal combustion engine having a variable volume combustion chamber defined by a pair of relatively moveable components, a nozzle port extending through one of said components and opened and closed only by the relative movement of said components, a conduit having a cross section flow area substantially greater than said nozzle port formed at least in part by said one component and extending to said nozzle port from externally of said combustion chamber, means for delivering a pressurized gas to said conduit at least during a portion of the time when said nozzle port is opened, and a fuel injector for injecting fuel into said conduit.



5,249,558

IDLE SPEED CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

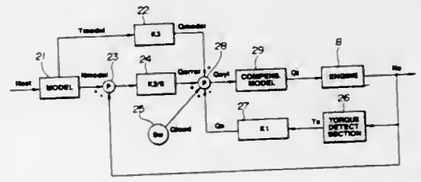
Masamichi Imamura, Gumma, Japan, assignor to Japan Electronic Control Systems Co., Ltd., Isezaki, Japan

Filed Dec. 9, 1991, Ser. No. 802,636

Claims priority, application Japan, Dec. 17, 1990, 2-402803

Int. Cl.[5] F02D *41/08*

U.S. Cl. 123—339 **12 Claims**



1. An idle speed control system for an internal combustion engine, comprising:

an auxiliary air control valve operatively disposed in an auxiliary air passage which is communicated at its downstream end with an intake air passageway downstream of a throttle valve; and

means for controlling an amount of air flowing through said auxiliary air passage to control an idle speed of the engine under an idle operating condition, said air amount controlling means including

means for producing a model torque of a power output shaft of the engine in time series, in accordance with a target idle speed by using a model,

means for detecting a torque of the power output shaft, and

means for controlling an opening degree of said auxiliary air control valve in accordance with a first difference between said model torque and said detected torque so as to control the air flowing amount in the auxiliary air passage.

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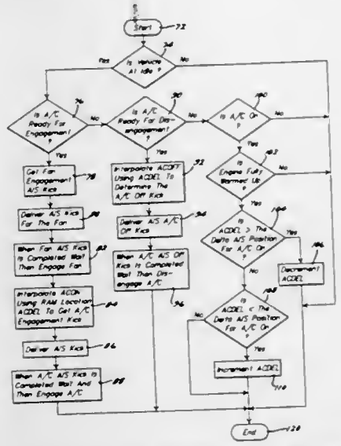
METHOD FOR IDLE SPEED COMPENSATION DUE TO AIR CONDITIONER OPERATION

Gregory T. Weber, Commerce Township, Oakland County; Richard K. Moote, Ann Arbor; Terry R. Gutermuth, St. Clair Shores, and James R. Tamm, Ann Arbor, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 24, 1992, Ser. No. 996,468

Int. Cl.[5] F02M *3/00*

U.S. Cl. 123—339 **10 Claims**



1. In a vehicle having an internal combustion engine with a fuel actuating means; an automatic idle speed air bypass control means (AIS means) having a valve means for varying auxiliary air flow by a discrete amount (AIS kick); and a known position of the valve means (AIS position); working in conjunction with an engine control unit (ECU) having an erasable memory, and adaptive memory capability; an air conditioner and a fan; a means for determining ambient temperature; a method for controlling engine idle speed due to a changing load resulting o from operation of the air conditioner, the method comprising the steps of:

deriving an initial AIS kick to compensate for an air conditioner load;

storing a value representing initial AIS kick in a memory location in the ECU;

checking whether an engine is operating at idle;

ending said method, if said engine is not operating at idle;

checking the operating status of an air conditioner, if said engine is operating at idle;

deriving an AIS kick for engaging a fan from a set of values stored in a memory location in the ECU, moving an AIS means to a new AIS position by said value for AIS kick for engaging a fan, turning said fan on, deriving an AIS kick for engaging said air conditioner from a set of values stored in a memory location in the ECU, moving said AIS means to a new AIS position by said value of AIS kick for engaging said air conditioner, and turning said air conditioner on, if said air conditioner is ready for engagement;

deriving an AIS kick for disengaging said air conditioner from a set of values stored in a memory location in the ECU, moving said AIS means to a new AIS position by said value of AIS kick for disengaging said air conditioner, and disengaging said air conditioner, if said air conditioner is ready for disengagement;

checking if said engine is warmed up, if said air conditioner is already engaged;

ending said method, if said engine is not warmed up; and

updating said value representing said initial AIS kick stored in said memory location in the ECU and ending said method, if said engine is warmed up.

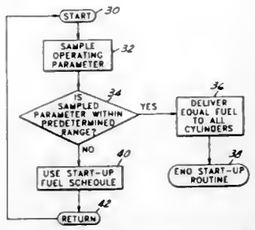
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5,249,560

METHOD AND SYSTEM FOR OPERATING AUTOMOTIVE INTERNAL COMBUSTION ENGINE DURING START-UP

David J. Gian, Northville, and Gerald T. Klarr, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 13, 1991, Ser. No. 806,506
Int. Cl.[5] F02D *41/06*
U.S. Cl. 123—443 **2 Claims**



1. A method for operating a multicylinder automotive internal combustion engine having individual cylinder fuel injectors and an exhaust treatment catalyst, comprising the steps of:

sampling at least one operating parameter of the engine;

comparing the sampled parameter to a predetermined range for such parameter; and

in the event that the sampled parameter falls outside of said predetermined range, operating some of the engine's cylinders according to a base fuel schedule, providing an air/fuel ratio of approximately 13/1, while reducing the time-averaged amount of fuel provided to the remaining cylinders to an amount giving an air/fuel ratio of approximately 16/1, such that said remaining cylinders will be operated at an air/fuel ratio which is lean of stoichiometric, but not so lean that misfire results, while periodically re-sampling said operating parameter; and

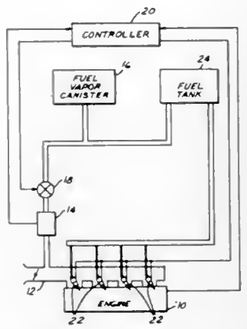
operating all cylinders of the engine according to the same fuel schedule when said engine has been operated sufficiently that the sampled operating parameter falls within said predetermined range.

5,249,561

HYDROCARBON VAPOR SENSOR SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Robert H. Thompson, Redford, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 16, 1991, Ser. No. 760,535
Int. Cl.[5] F02M *25/08*
U.S. Cl. 123—520 **7 Claims**



1. A system for controlling the flow of fuel to an air-breathing internal combustion engine having a fuel vapor storage apparatus, said system comprising:

vapor flow means for determining the actual mass flow rate of fuel vapor transported from the storage apparatus into the air intake of the engine;

main fuel means for supplying fuel to the engine in addition to said fuel vapor; and

fuel controller means, operatively connected with said main fuel supply means and said vapor flow means, for:

measuring a plurality of engine operating parameters, including the actual air/fuel ratio at which the engine is operating;

calculating a desired air/fuel ratio; and

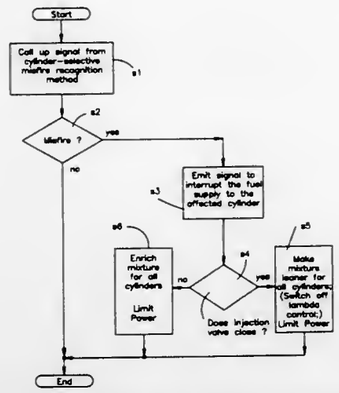
operating the main fuel means to deliver an amount of fuel required to achieve the desired air/fuel ratio, based upon the determined mass flow of fuel vapor from the vapor storage apparatus and upon the actual air/fuel ratio.

5,249,562

METHOD FOR PROTECTING A CATALYTIC CONVERTER

Martin Klenk, Backnang; Winfried Moser, Ludwigsburg, and Anton Kantschar, Eberdingen-Hochdorf, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE91/00031, § 371 Date Jul. 6, 1992, § 102(e) Date Jul. 6, 1992, PCT Pub. No. WO91/11601, PCT Pub. Date Aug. 8, 1991
PCT Filed Jan. 17, 1991, Ser. No. 854,628
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1990, 4002207
Int. Cl.[5] F02D *41/14, 41/22*
U.S. Cl. 123—679 **3 Claims**



1. A method for protecting a catalytic converter from overheating, the method comprising the steps of:

determining whether misfires are occurring in a cylinder;

supplying a signal for interrupting the metering of fuel to the affected cylinder if misfires are occurring in said cylinder; and,

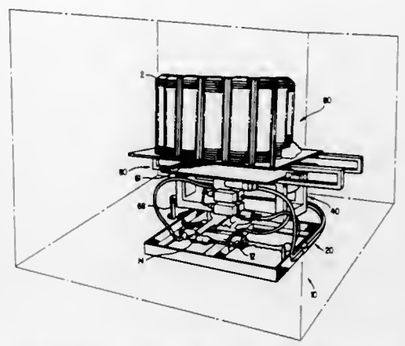
if the metering of fuel is interrupted, then switching from a lambda control of the mixture composition over to an open-loop control, said open-loop being configured to achieve a lean mixture for those cylinders which are still operating.

5,249,563

APPARATUS FOR PROPELLING ONE OR TWO CLAY TARGETS

Stuart W. Patenaude, 16 Colby Hill Rd., Henniker, N.H. 05042

Filed Aug. 5, 1991, Ser. No. 740,456
Int. Cl.[5] F41J *9/18*
U.S. Cl. 124—8 **10 Claims**



1. In an improved clay target throwing machine having a means for holding and for delivering a first clay target to a position for subsequent setting, means for setting said first target into a position for launching, means for launching by a single cocked fling-arm said first target into a target area, means for selecting constant and random first trajectories of said launched first target into said target area and means for switchably providing power, upon occurrence of a signal, to said means for holding and delivering of said first target and cocking said fling-arm said improvement comprising:

means for selectively delivering, by lowering, two targets substantially simultaneously, said first target to a first target set position and a second target to a second target set position; and

means for substantially simultaneously setting, by said single fling arm moving into said cocked position, said first and said second, when said two target delivery is selected, targets into a first and second launch position and holding each said first and said second targets in said first and second launch position prior to launching of both said targets, said both launch positions being defined such that said single fling-arm contacts substantially congruent tangents of each said targets and both said targets in contact at a common tangent of each said target edge, said congruent and common tangents being substantially orthogonal each to the other, said both launch positions thus relative to each other so as to reduce target breakage and relative to said fling-arm for proper launching of said first target into said first target trajectory and simultaneously launching said second target into a second target trajectory.

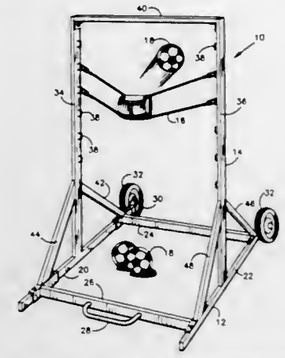
5,249,564

SOCCER BALL PROJECTING APPARATUS

John E. Peachey, 25954 State Rd. 19, Arcadia, Ind. 46030

Filed Jan. 8, 1992, Ser. No. 818,107
Int. Cl.[5] F41B *3/02*
U.S. Cl. 124—17 **6 Claims**

1. An apparatus for projecting a ball comprising a generally horizontal base, a frame extending upwardly from the base including a pair of spaced apart members, each said member having a plurality of vertically spaced attachment locations, and a sling including a pouch for receiving a ball to be projected and a set of elongated elastomeric members attached to a selected set of the attachment locations for supporting the pouch in the frame, the pouch comprising a flaccid conformable sheet bounded by a rectangular perimeter, with the elongated elastomeric members being connected to corners of the rectangular perimeter, the conformable sheet having an inner surface including means for frictionally engaging the ball sufficiently to impart a spin on the ball upon the ball's projection therefrom, and handle means fixed to the sheet perimeter at a plurality of points for imparting a ball-projecting pull on sling



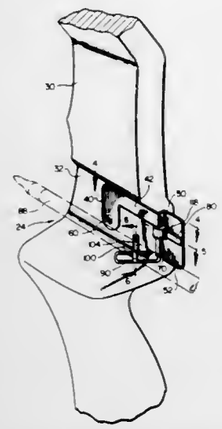
side defining members, each said side defining member having ends attached at two points on a single side of the rectangular perimeter and wherein each said side defining member comprises an elastic strap having an unstretched length less than the distance measured along the sheet perimeter between the points of attachment of the side defining member to the sheet perimeter.

5,249,565

CAM-CONTROLLED, SWINGER ARROW REST

Charles A. Saunders, Columbus, and Benedict M. Paczosa, Duncan, both of Nebr., assignors to Saunders Archery Company, Columbus, Nebr.

Filed Jun. 8, 1992, Ser. No. 895,280
Int. Cl.[5] F41B *5/22*
U.S. Cl. 124—44.5 **17 Claims**



1. A cam-controlled arrow rest comprising a mounting plate for securement to a side wall of a bow window, said plate being disposed to extend in a plane generally paralleling the window side wall,

mounting means for securing said plate in selectable attitudes at a side wall of the bow window,

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an arrow rest and arrow-shaft-engaging side bar structure including a generally horizontal arm and a vertical leg fastened thereto and extending generally upward therefrom,

means for adjustably positioning said vertical leg along said horizontal arm,

a shaft connected to and projecting upwardly of said horizontal arm at an end thereof proximate a rearward edge of the said wall of the bow window,

said mounting plate being formed with a bushing-like tubular wall defining a sleeve extending vertically and in a plane generally paralleling a plane defined by the side wall of the bow window,

said shaft of said arrow rest being pivotally journaled in said tubular sleeve for pivotally arcuate movement therewithin,

cam means and means for locking said cam means on said shaft for displacement therewith,

said cam means being responsive to pressure applied by an arrow against said leg of said arrow rest and through said horizontal arm to said shaft to overcome bias forces acting on said cam and to move arcuately with said shaft.

5,249,566

SAW

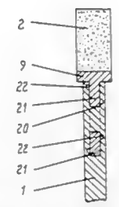
Wlodzimierz Sawluk, Hamburg, Fed. Rep. of Germany, assignor to Firma Ernst Winter & Sohn (GmbH & Co.), Hamburg, Fed. Rep. of Germany

Filed Aug. 28, 1989, Ser. No. 400,467

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1988, 3829160; Sep. 10, 1988, 3830819

Int. Cl.[5] B24D *5/08*

U.S. Cl. 125—15 **5 Claims**



1. A saw, comprising a saw blade having an edge; and a diamond-containing coating carried on said edge of said saw blade, said saw blade being composed of a synthetic plastic reinforced with a fiber material composed of a plurality of fibers selected from the group consisting of carbon fibers and graphite fibers with a volume fraction of 30–70%, said fiber material being formed by a plurality of mats, said mats of said fiber material in said saw blade being arranged in a single layer.

5,249,567

MODULAR FIREPLACE ASSEMBLY

Kenneth R. Maitland; Terry G. Schoeff, both of Huntington, and Philip D. Morgan, Noblesville, all of Ind., assignors to Majco Building Specialities, L.P., Huntington, Ind.

Filed May 21, 1991, Ser. No. 703,485

Int. Cl.[5] F24B *1/181, 1/19*

U.S. Cl. 126—519 **8 Claims**

1. An assembly for constructing a plurality of different types of self-supporting fireplaces without the use of a frame, comprising:

a first front surround assembly including a pair of first opposing vertical supports and a pair of first opposing horizontal supports extending between said first opposing vertical supports, said first front surround assembly including first means for supporting a first transparent door assembly;

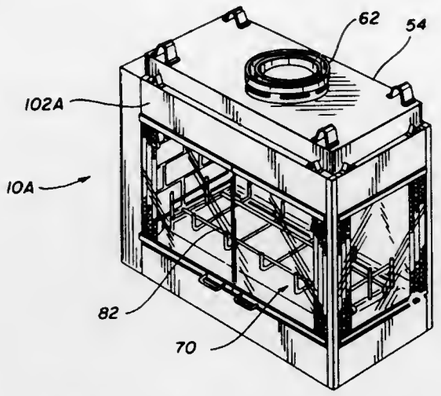
a second front surround assembly including a pair of second opposing vertical supports and a pair of second opposing horizontal supports extending between said second opposing vertical supports, said second front wall assembly including means for supporting a second transparent door assembly;

a hearth pan including mounting means for mounting said hearth pan to either of said first and second front surround assemblies;

a plurality of first side wall assemblies, each side wall assembly including a combustion casing, an outer casing, a space defined between said combusion casing and outer casing, and mounting means for mounting said first side wall assembly to at least one of the pair of first opposing vertical supports of said first front surround assembly;

a plurality of second side wall assemblies, each second side wall assembly including a top surround end, a bottom surround end, and mounting means for mounting said second side wall assembly to at least one of the pair of second opposing vertical supports of said second front surround assembly such that said top surround end is substantially parallel to said bottom surround end, said second side wall assembly including means for supporting a transparent panel;

a base pan assembly including means for securing said base pan assembly in spaced relation to said hearth pan;



a first rear surround assembly including a pair of opposing vertical supports and a pair of opposing horizontal supports extending between and coupled to said opposing vertical supports, said first rear surround assembly including means for supporting a transparent glass door assembly and means for securing said first rear surround assembly to at least one of said first and second side wall assemblies;

a second rear wall assembly including mounting means for securing said second rear wall assembly to at least one of said first and second side wall assemblies; and

a top wall assembly securable to said first and second front surround assemblies and to said first rear surround and second rear wall assemblies, wherein

said first front surround assembly, a pair of said first side wall assemblies, said first rear surround assembly, said hearth pan, said base pan assembly and said top wall assembly can be assembled to form a see-through fireplace, and wherein

said second front surround assembly, at least one second side wall assembly, said second rear wall assembly, said hearth pan, said base pan assembly and said top wall assembly can be assembled to form a fireplace of a type different from said see-through fireplace.

5,249,568

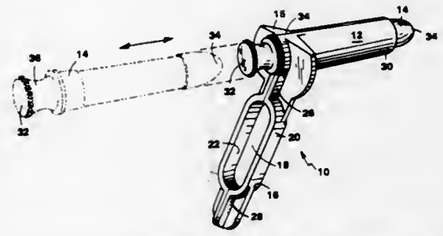
BODY CAVITY INTRODUCER

Paul e Brefka, Southboro, Mass.; Norman Sohn, Englewood, N.J., and Evan H. Sohn, New York, N.Y., assignors to Logix, Inc., Denville, N.J.

Filed Jun. 28, 1991, Ser. No. 724,526

Int. Cl.[5] A61B *1/00*

U.S. Cl. 128—3 **7 Claims**



1. Apparatus comprising a generally bullet-shaped obturator and an introducer device for receiving said generally bullet-shaped obturator and for facilitating the insertion of an examination instrument into an orifice or body cavity of a person, said introducer device comprising,

first and second hingeably connected half-sections interconnected by a hinge,

each of said half-sections comprising

a handle,

a flange connected to said handle,

a nose portion extending continuously from said flange and separating said handle from said hinge, and

a connector for securing said half-sections together to form a cylindrical, hollow nose portion sized to receive and hold said obturator,

said generally cylindrical, hollow nose portion being large enough in diameter to receive said examination instrument when said obturator is removed.

5,249,569

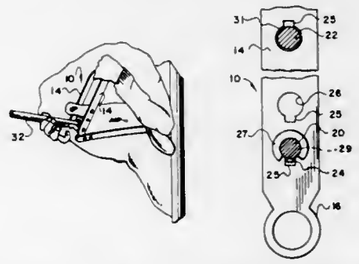
PHARYNGO-LARYNGEAL COMPOUND SPECULUM

W. H. Wohler, 1202 N. Bell, San Angelo, Tex. 76903

Filed Jul. 12, 1991, Ser. No. 729,038

Int. Cl.[5] A61D *1/00*

U.S. Cl. 128—19 **1 Claim**



1. In a pharyngo-laryngeal compound speculum for animals having

a. an inverted U-shaped mouth speculum including

i. a bight,

ii. two legs each extending to a distal end away from the bight,

iii. a pole strap ring on each distal end,

iv. a pole strap attached to the pole stop rings, and

b. spaced-apart transverse structures extending between the legs, designated as

i. a fulcrum which is near the distal ends and

ii. a bolster between the distal bar and the bight;

wherein the improvement comprises in combination with the above:

c. a cylindrical speculum guide attached to the mouth speculum between the fulcrum and bolster, and

d. a cylindrical speculum extending through the guide,

e. said guide forming a means for permitting the cylindrical speculum to be moved in a dorsoventral plane,

f. said transverse structures in the form of cross bars, and

g. said cylindrical speculum guide form of a ring attached to one of the cross bars having an axis which is pivoted to the legs for limited rocking about the axis of the cross bar.

5,249,570

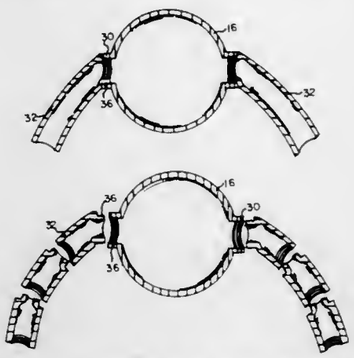
EQUINE/CANINE HEMOGLOBIN-OXYGEN TRAINING MASK

Frederick L. Cox, 19396 Gunn Hwy., Odessa, Fla. 33556

Filed Oct. 28, 1991, Ser. No. 783,318

Int. Cl.[5] A62B *18/02;* **A61M** *16/00;* **F16K** *11/00;* **G05D** *11/02*

U.S. Cl. 128—206.28 **3 Claims**



1. A breathing mask for use on an animal having a muzzle, said mask comprising:

a truncated conical shaped mask body, said body having:

a) an outer circumference;

b) a large open end having a perimeter;

c) a small closed end;

d) a length and an average diameter;

e) means for creating a clearance between said closed end and an animal's muzzle comprising said length being greater than said diameter;

f) foam padding within the perimeter of said open end, said padding being a thick, closed cell, elastomeric material secured within the perimeter of said open end;

g) two air ports in said mask body;

h) fastening means attached to said outer circumference for securing said mask to an animal; and

i) means for selectively increasing or decreasing the amount of oxygen-depleted air breathed by an animal wearing said mask comprising a pair of tubes attached to said ports, said means for selectively increasing or decreasing the amount of inhaled oxygen-depleted air comprising means to selectively change the length of said tubes from a long tube which increases the amount of rebreathed oxygen-depleted air inhaled to a shorter tube which decreases the amount of rebreathed oxygen-depleted air inhaled.

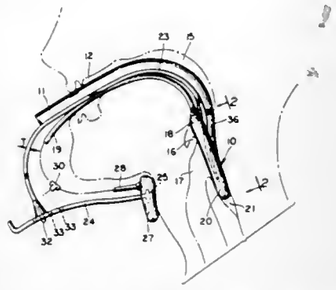
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5,249,571

LARYNGEAL CLAMP AIRWAY

Archibald I. J. Brain, St. Andrews, Abney Court Drive, Bourne End, Bucks SL8 5DL, United Kingdom

Filed Apr. 29, 1992, Ser. No. 875,457
Int. Cl.[5] A61M *25/00*
U.S. Cl. 128—207.14 28 Claims



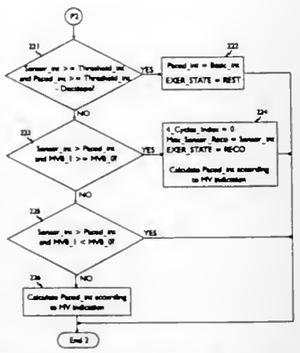
1. An artificial airway device to facilitate a patient's lung ventilation comprising an airway tube connected at one end thereof to a laryngeal mask, said mask having seal means about the circumference thereof for sealingly engaging the laryngeal inlet of a patient, said seal means being a flexible annular formation surrounding a hollow interior space or lumen of the mask into which the airway opens, and clamp means for biasing said seal means into sealing engagement with the laryngeal opening, said clamp means having a relatively stiff compliant member with an inner end and an outer end, said inner end being connected to said laryngeal mask and defining an inner jaw of the clamp means, said outer end defining an outer jaw, wherein said laryngeal mask is in sealing engagement with the patient's laryngeal inlet, the compliant member extends externally from the patient's mouth and the outer jaw engages the anterior surface of the patient's neck.

5,249,572

METHOD AND APPARATUS FOR CONTROLLING THE PACING RATE OF A METABOLIC DEMAND PACEMAKER

Jean-Luc Bonnet, Paris, France, assignor to ELA Medical, Montrouge, France

Filed Dec. 23, 1991, Ser. No. 813,905
Claims priority, application France, Dec. 27, 1990, 90 16292
Int. Cl.[5] A61N *1/365*
U.S. Cl. 607—20 33 Claims



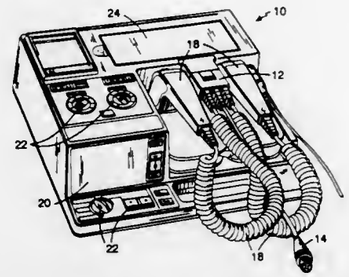
1. A method of controlling a pacemaker comprising
sensing a patient's breathing cycles, minute ventilation corresponding to the metabolic demand of the patient, and cardiac electrical activity corresponding to successive cardiac cycles;
calculating a cardiac pacing rate once a number of cardiac cycles for a number of cardiac cycles comprised between two and ten cycles as a function of the measured minute ventilation
calculating a first average of the minute ventilations measured over the eight last breathing cycles;
calculating a second average of the minute ventilations measured over the previous eight last breathing cycles;
comparing the first average to the second average;
determining that an effort phase is present when the first average is greater than the second average and that a recovery phase is present when the first average is less than the second average; and
applying a pacing rate as a first function of the calculated cardiac rate in response to a determined effort phase and as a second function of the calculated cardiac rate in response to a determined recovery phase.

5,249,573

DEFIBRILLATION DISCHARGE CIRCUIT TEST

Randall W. Fincke, Winchester, and Michael L. Lopin, Newton, both of Mass., assignors to ZMD Corporation, Wilmington, Del.

Filed Feb. 21, 1992, Ser. No. 839,954
Int. Cl.[5] A61N *1/00*
U.S. Cl. 607—6 24 Claims



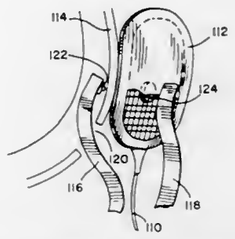
1. A method for discharging a defibrillation energy pulse discharge circuit to analyze defibrillation pulses generated by the discharge circuit to test that the pulses are acceptable, the discharge circuit comprising an electrical capacitor for storing defibrillation pulse energy before the pulse is discharged and an electrical inductor in series with the capacitor and having a characteristic inductance for shaping the discharge pulses and a characteristic resistance, the method comprising the following steps, each performed by electronic circuitry:
discharging a defibrillation pulse generated by the discharge circuit into a short circuit,
detecting one or more parameters representative of the shape of the defibrillation pulse as the pulse is discharged,
comparing the detected parameters to predetermined values characteristic of the shape of an acceptable pulse, and
based on the comparing step, providing an output indicative of whether the pulse is acceptable.

5,249,574

IMPLANTATION OF LEADS

Mary E. Bush, Fremont, and Eric S. Fain, Menlo Park, both of Calif., assignors to Ventritex, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 641,500, Jan. 15, 1991, Pat. No. 5,127,421. This application Dec. 23, 1991, Ser. No. 812,427
The portion of the term of this patent subsequent to Jul. 7, 2009, has been disclaimed.
Int. Cl.[5] A61N *1/05*
U.S. Cl. 607—9 16 Claims



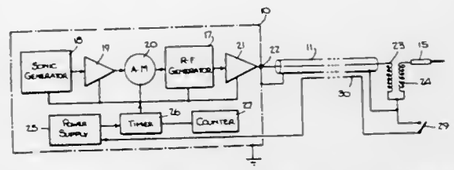
1. A method of implanting in the body an implantable member, which comprises:
inserting a first of a pair of pivotally attached jaws of an attachment tool through a hole in a tissue membrane while placing the other of said pivotally attached jaws outside of the tissue membrane in a position of registry with the first of said jaws, said jaws carrying an attachment member which is attached to said implantable member and is adapted for securance to the tissue membrane; and bringing said jaws together in pressing relation, with the tissue membrane and the attachment member positioned between said jaws, to cause attachment of said attachment member to the tissue membrane for securance of said implantable member thereto; and disconnecting said jaws from the attachment member and said implantable member.

5,249,575

CORONA DISCHARGE BEAM THERMOTHERAPY SYSTEM

Alfonso Di Mino, and Andre Di Mino, both of Woodcliff Lake, N.J., assignors to ADM Tronics Unlimited, Inc., Northvale, N.J.

Filed Oct. 21, 1991, Ser. No. 779,841
Int. Cl.[5] A61N *1/02*
U.S. Cl. 607—150 9 Claims



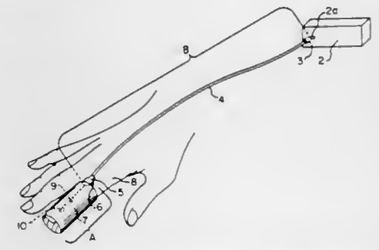
1. A corona discharge beam thermotherapy system adapted to project the beam onto the skin surface of a living body overlying a problem region in a body site, the beam serving to relieve pain, said system comprising:
(a) an energy-generating unit in which a radio-frequency carrier having a predetermined radio frequency is modulated by an audio-frequency signal having a predetermined audio frequency to produce at an output terminal periodic bursts of radio-frequency energy whose repetition rate corresponds to the frequency of the signal; and
(b) a portable applicator gun having a barrel provided with an open mouth in which are housed both a tank circuit connected by a relatively long shielded cable extending from the gun to the output terminal of the unit and a discharge electrode, one end of which is coupled to the tank circuit, the other end of the electrode terminating in a tip adjacent the mouth of the barrel and spaced from said skin surface, from which tip is projected said beam which impinges on the skin surface, whereby an operator holding the gun is free to bring the gun into operative relation with any body site on the living body.

5,249,576

UNIVERSAL PULSE OXIMETER PROBE

Daniel S. Goldberger, Boulder; Timothy A. Turley, Highlands Ranch, and Kirk L. Weimer, Englewood, all of Colo., assignors to BOC Health Care, Inc., Liberty Corner, N.J.

Filed Oct. 24, 1991, Ser. No. 781,891
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—632 49 Claims



1. A sensor apparatus for measuring a physiological characteristic of a subject for a measurement system that has a connector for electrically connecting to a sensor to exchange signals therebetween, comprising:
housing means including:
means for removably attaching said sensor to said subject,
means, having a first plurality of electrical conductors, for generating electrical signals indicative of said measured physiological charactertistic of said subject,
housing connector means connected to said first plurality of electrical conductors;
means for interconnecting said housing means to said measurement system connector, including:
system connector means, releasably attachable to said measurement system a connector, for exchanging electrical signals therebetween,
cable connector means, releasably attachable to said housing connector means, for exchanging electrical signals therebetween,
means, connected to said system connector means and said cable connector means, for transmitting said generated electrical signals from said cable connector means to said system connector means, including means for programmably interconnecting said first plurality of electrical conductors to said measurement system connector.

5,249,577

ULTRASONOTOMOGRAPHY

Ryuuichi Shinomura, Higashimatsuyama; Hiroshi Kanda, Tokorozawa, and Koji Tanabe, Kashiwa, all of Japan, assignors to Hitachi Medical Corporation, Japan

Filed May 28, 1992, Ser. No. 889,236
Claims priority, application Japan, May 28, 1991, 3-123318
Int. Cl.[5] A61B *8/06*
U.S. Cl. 128—660.05 24 Claims

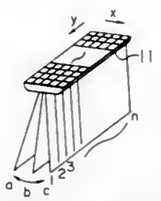
1. An ultrasonotomographic method for measuring and displaying tomogram signals of an object to be examined and Doppler signals of a blood flow by using an ultrasonic probe having, on a transmission/reception plane of an ultrasonic

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beam, a plurality of ultrasonic transducers arrayed in a first axis direction of a scan direction of the ultrasonic beam and a plurality of ultrasonic transducers arrayed in a second direction orthogonal to the first axis direction, comprising the steps of:

(a) changing the aperture of transmission and/or reception of the ultrasonic beam in said second axis direction;

(b) obtaining tomogram signals and Doppler signals by effecting transmission/reception of the ultrasonic beam plural times in an angular direction substantially perpendicular to said second axis direction;



(c) obtaining a plurality of Doppler signals by effecting transmission/reception of the ultrasonic beam plural times in angular directions making a plurality of different angles to said second axis direction in an elevation plane;

(d) performing each of the steps (a) to (c) by sequentially scanning the ultrasonic beam in said first axis direction; and

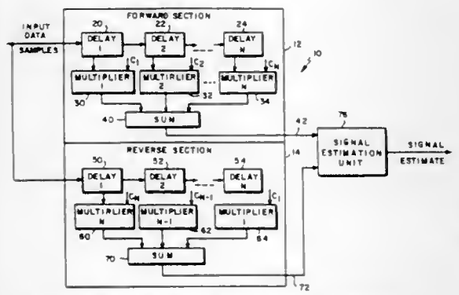
(e) displaying said tomogram of said object to be examined and said plurality of Doppler signals in superimposed fashion.

5,249,578

ULTRASOUND IMAGING SYSTEM USING FINITE IMPULSE RESPONSE DIGITAL CLUTTER FILTER WITH FORWARD AND REVERSE COEFFICIENTS

Sydney M. Karp, Reading, Mass., and Raymond A. Beaudin, Windham, N.H., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 15, 1992, Ser. No. 945,313
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—661.01 10 Claims



1. A medical ultrasound imaging system comprising:

means for transmitting ultrasound energy into a target region of a patient;

means for receiving ultrasound energy that was transmitted into the target region of the patient and providing a received signal;

means for converting said received signal to a group of input data samples;

a finite impulse response digital clutter filter for removing low frequency clutter from the input data samples, comprising

multiplier means for multiplying said group of input data samples by a set of coefficients in a first order to provide first intermediate results and for multiplying said group of input data samples by said set of coefficients in a second order that is the reverse of said first order to provide second intermediate results, and

summing means for summing said first intermediate results to provide a first output sample and for summing said second intermediate results to provide a second output sample, said multiplier means and said summing means processing multiple groups of input samples to provide multiple first and second output samples; means responsive to said multiple first and second output samples for estimating velocities in said target region; and

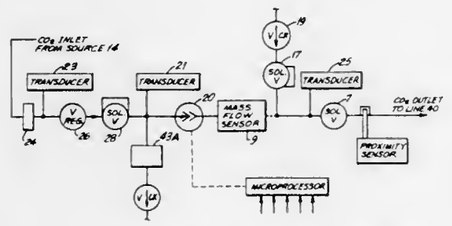
means for displaying the velocities in said target region.

5,249,579

CONTRAST MEDIA INJECTOR

Eamonn Hobbs, Queensbury, N.Y.; Irvin F. Hawkins, Gainesville, Fla.; Arthur L. Zimmet, Centerport, and John Goodman, Huntington, both of N.Y., assignors to E-Z-EM, Inc., Westbury, N.Y.

Continuation-in-part of Ser. No. 491,071, Mar. 9, 1990, abandoned. This application Dec. 20, 1990, Ser. No. 629,180
Int. Cl.[5] A61B *8/14*
U.S. Cl. 128—662.02 27 Claims



1. Apparatus for delivering gas into an animal's cardio-vascular system to enable the gas to function as an angiographic contrast medium comprising:

a source of the desired gas,

a catheter adapted to be coupled into the animal's cardiovascular system,

injection control means responsive to the cardiac cycle to provide a first control signal during systole and a second control signal during diastole,

valve means connecting said source to said catheter,

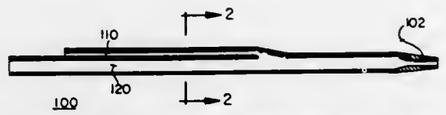
said valve means being responsive to said control signals to provide said gas at a first rate during systole and a second rate during diastole.

5,249,580

METHOD FOR ULTRASOUND IMAGING

James M. Griffith, P.O. Box 15337, Newport Beach, Calif. 92659

Division of Ser. No. 773,037, Oct. 8, 1991, Pat. No. 5,201,315. This application Jan. 29, 1993, Ser. No. 11,335
Int. Cl.[5] A61B *8/12*
U.S. Cl. 128—662.06 4 Claims



1. A method for ultrasonically imaging a region of a subject comprising the steps of:

(a) providing an ultrasound probe, a guide wire, and an ultrasound imaging sheath, wherein the sheath comprises an elongate flexible member having a lumen in its distal length, the outside of the distal length being sized for passage into the region of the subject while the diameter of the lumen is sized to accept either the wire or the probe, wherein the lumen splits into a dual lumen at a point proximally disposed from said distal length of the imaging sheath, the dual lumen comprising a wire lumen sized to slidingly accept a guide wire, and a probe lumen is sized to slidingly accept a probe;

(b) positioning the distal end of the ultrasound probe within the dual lumen portion of the sheath while keeping the probe end at a point proximal of the single lumen portion of the sheath;

(c) advancing the guide wire through the subject until the distal tip of the wire is distal of the region of the subject to be imaged;

(d) advancing the sheath until the single lumen portion has passed through the region to be imaged;

(e) withdrawing the wire from the single lumen portion of the sheath while holding the sheath stationary within the subject, and leaving the distal tip of the wire within the dual lumen portion of sheath;

(f) advancing the ultrasound probe tip into the single lumen portion of the sheath while holding the sheath stationary within the subject; and

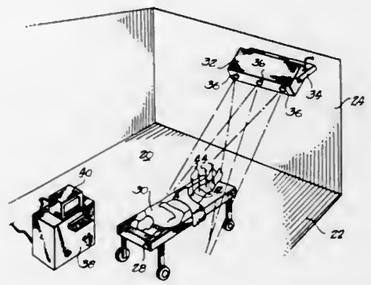
(g) activating the probe to obtain ultrasound images by passing sound waves through the sheath's single lumen wall.

5,249,581

PRECISION BONE ALIGNMENT

Mark T. Horbal, 2 S. Iroquois Ct. West, Warrenville, Ill. 60555, and Christopher Nowacki, 1552 Chickamauga La., Long Grove, Ill. 60047

Filed Jul. 15, 1991, Ser. No. 731,146
Int. Cl.[5] A61B *5/11*
U.S. Cl. 128—664 17 Claims



1. Apparatus for precision bone alignment comprising a plurality of orthopaedic markers having means adapted for direct and fixed securement respectively to a plurality of bone portions to be aligned, each of said markers including a radiation emitting device thereon, radiation reception sensor means for detecting radiation emitted from said radiation emitting devices, means interconnected with said radiation emitting devices for sequentially causing said radiation emitting devices to emit radiation for a limited time, said devices otherwise not emitting radiation, said radiation reception sensor means outputing signals corresponding to positions of said radiation emitting devices, computer means connected to said sensor means for receiving said signals, and a monitor connected to said computer means for providing a visual display corresponding to the positions of said radiation emitting devices.

5,249,582

ORIENTED BIOPSY NEEDLE ASSEMBLY

Alan N. Taylor, Rockford, Mich., assignor to Hart Enterprises, Wyoming, Mich.

Filed Aug. 30, 1991, Ser. No. 753,180
Int. Cl.[5] A61B *10/00*
U.S. Cl. 128—754 7 Claims



1. An oriented biopsy needle assembly comprising:

a cannula hub assembly including a cannula hub having a proximal end and a distal end and a cannula extending distally from said cannula hub and having a sharpened distal end, said cannula hub having a longitudinal coaxial bore therethrough axially aligned with and extending to said cannula and further including a leg extending proximally from the proximal end of said cannula, said leg of said cannula hub assembly having a rail thereon;

a sampling stylet having a sharpened distal end and a biopsy sample receiving notch adjacent the distal end and being telescopically received within said cannula hub and cannula and extendible from said distal end of said cannula;

a stylet hub assembly having a proximal end, a stylet hub at said proximal end, a shoulder portion at a distal end of said hub, and a stem portion extending distally from said shoulder portion and terminating at a distal tip member, said stylet hub, said shoulder portion, said stem portion, and said distal tip member being fixedly attached to said sampling stylet, said distal tip member of said stylet hub assembly having a slot extending longitudinally between a pair of distal guide teeth and a pair of proximal brace projections for mated slidable engagement with said rail when coaxially aligned thereto and only when said distal tip member is oriented so that said cannula and said sampling stylet sharpened distal ends are oppositely directed, said rail and said slot serving as a first means for angularly orienting said stylet and cannula, such that said sharpened distal ends of said cannula and of said sampling stylet are oppositely directed;

second means on said stylet hub assembly and said cannula hub assembly for removably latching said stylet hub distal tip member with said leg such as to orientate said stylet hub in a proximately retracted spaced relationship to said cannula hub when latched and to permit proximal withdrawal of said sampling stylet from said cannula so that multiple biopsies may be obtained with one insertion of said cannula when said cannula hub is unlatched from said stylet hub.

5,249,583

ELECTRONIC BIOPSY INSTRUMENT WITH WIPERLESS POSITION SENSORS

Mark Mallaby, Bloomington, Ind., assignor to Vance Products Incorporated, Spencer, Ind.

Continuation of Ser. No. 649,447, Feb. 1, 1991, abandoned. This application Nov. 9, 1992, Ser. No. 973,533
Int. Cl.[5] A61B *10/00*
U.S. Cl. 128—754 14 Claims

1. An electronic biopsy instrument, comprising:

a cannula;

a stylet slidably mounted in said cannula;

electromechanical actuator means for producing sequential linear motion of said stylet and cannula, said actuator means including means for extending said stylet and thereafter extending said cannula, and means for producing reciprocating motion of said stylet and cannula;

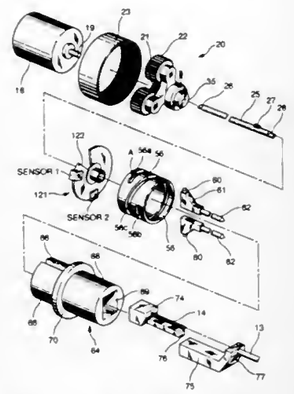
VOL 1155 ISS 1 OCT 5 1993 UMI

position sensing means for sensing the position of said cannula;

electronic control means connected to said position sensing means for controlling said actuator means, said control means including means responsive to said position sensing means for stopping the motion of said stylet and cannula when said cannula reaches a predefined extended position whereby said cannula and stylet are both extended, when said cannula reaches a predefined retracted position whereby said cannula is retracted and said stylet is extended, and when said stylet reaches a predefined retracted position whereby said cannula and said stylet are both retracted; and

switch means for actuating said electronic control means;

wherein said position sensing means includes first means for detecting when said cannula reaches said predefined extended position and when said stylet reaches said predefined retracted position, and second means for detecting when said cannula reaches said predefined retracted position, said first and second means for detecting comprising first and second wiperless sensors, respectively.



5,249,584

SYRINGE FOR HEMATOCRIT AND OXYGEN SATURATION BLOOD ANALYZER

Maurice N. Karkar, 26842 Calle Maria, Mission Viejo, Calif. 92692, and James C. Velnosky, 6014 Amethyst Ave., Alta Loma, Calif. 91701

Division of Ser. No. 526,184, May 18, 1990, Pat. No. 5,066,859. This application Nov. 7, 1991, Ser. No. 789,088

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—765 **10 Claims**



1. A syringe comprising:

an elongate, tubular member having a proximal end, a distal end, and a hollow lumen extending longitudinally therethrough;

a needle disposed on said proximal end of said tubular member, said needle being in fluid communication with said lumen;

a flange formed on the distal end of said tubular member;

a piston insertable through said flange into the distal end of said tubular member, said piston being reciprocally movable within said lumen; and

a single optical window member having inner and outer surfaces, said window member being insert into said tubular member in a manner wherein said inner surface defines a portion of the lumen, and constructed of a material which provides a substantially transparent, repeatable optical light path from the exterior of the tubular member to the lumen.

5,249,585

URETHRAL INSERTED APPLICATOR FOR PROSTATE HYPERTHERMIA

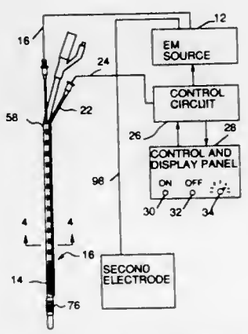
Paul F. Turner; Theron N. Schaefermeyer, both of North Salt Lake, and Amer M. Tumeh, Salt Lake City, all of Utah, assignors to BSD Medical Corporation, Salt Lake City, Utah

Continuation-in-part of Ser. No. 225,307, Jul. 28, 1988, Pat. No. 4,967,765. This application Nov. 5, 1990, Ser. No. 609,373

The portion of the term of this patent subsequent to Nov. 6, 2007, has been disclaimed.

Int. Cl.[5] A61N *5/02*

U.S. Cl. 607—99 **20 Claims**



1. An electromagnetic capacitive coupling applicator apparatus for treatment of benign prostatic hyperplasia comprising:

catheter means for insertion into the urethra;

applicator means carried by the catheter means, said applicator means including an applicator and a connector means for connecting the applicator to a source of electromagnetic energy, said applicator forming a first electrode adapted to interact with second electrode means placed with respect to the applicator so as to be capacitively coupled thereto so that heating current supplied by the source of electromagnetic energy sufficient to elevate the temperature of tissue surrounding the applicator to a preselected temperature and for maintaining the preselected temperature during treatment will flow between the applicator and second electrode means during treatment;

positioning means for positioning and maintaining the positioning of the catheter means in the urethra so that the applicator means carried by the catheter means is and remains positioned adjacent the prostate tissue to be treated for as long as desired by the user; and

temperature sensor supporting means attached to the catheter means for supporting a temperature sensing means in operative association with the applicator of the applicator means for measuring the temperature of the tissue surrounding the applicator.

5,249,586

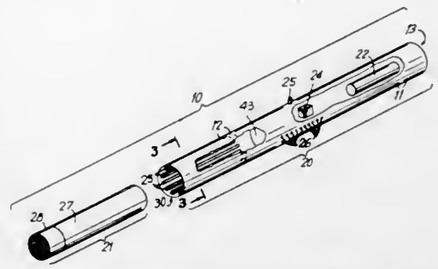
ELECTRICAL SMOKING

Constance H. Morgan, Midlothian, and Walter A. Nichols, Richmond, both of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Continuation of Ser. No. 666,926, Mar. 11, 1991, abandoned. This application Feb. 2, 1993, Ser. No. 12,799

Int. Cl.[5] A24F *1/00*

U.S. Cl. 131—194 **37 Claims**



1. An electrical smoking article for delivering to a smoker an inhalable tobacco flavor substance, said article comprising:

a plurality of electrical heating means disposed in a cavity;

a source of electrical energy for powering said plurality of electrical heating means;

control means for applying said electrical energy to said electrical heating means to heat, at any one of a predetermined number of times, at least one but fewer than all of said plurality of electrical heating means; and

a removable portion of tobacco flavor medium received in said cavity in proximity to said plurality of electrical heating means; whereby:

when any one of said plurality of electrical heating means is activated, a respective fraction of said removable portion of tobacco flavor medium in contact with said one of said heating means is heated, delivering a predetermined quantity of tobacco flavor substance to said smoker.

5,249,587

GEAR TRANSMISSION FOR PRINTER DIE IN CIGARETTE MAKING MACHINE

Marshall C. Luckado, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Jan. 21, 1992, Ser. No. 823,698

Int. Cl.[5] A24C *5/38, 5/60*

U.S. Cl. 131—284 **14 Claims**

1. An apparatus for selectively changing the rotation characteristic of a printer die gear with respect to a power input gear, said apparatus being in a gear box of a printer of a cigarette making machine, said apparatus comprising:

a gear arm pivotable mounted about an axis of rotation of said input gear, and a first pivot means to pivot said gear arm with respect to said input gear,

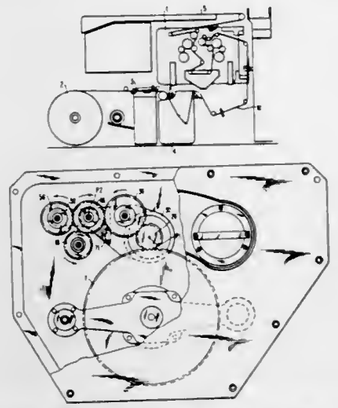
a first idler gear supported on said gear arm, said first idler gear being meshed with said input gear,

a pivot arm pivotable connected to said gear arm, and a second pivot means to pivot said pivot arm with respect to said gear arm,

a second idler gear supported on said pivot arm, said second idler gear being meshed with said first idler gear,

a third idler gear supported on said pivot arm, said third idler gear being meshed with said second idler gear,

whereby said gear arm pivots with respect to said input gear and said pivot arm pivots with respect to said gear arm



such that either said second idler gear or said third idler gear meshes with said printer die gear.

5,249,588

SMOKING ARTICLES

Ian C. Brown, Winchester; David J. Dittrich, and Richard T. Fiebelkorn, both of Southampton, all of England, assignors to British-American Tobacco Company Limited, London, England

Continuation of Ser. No. 497,866, Mar. 22, 1990, abandoned. This application Nov. 21, 1991, Ser. No. 799,673

Claims priority, application United Kingdom, Mar. 31, 1989, 8907255

Int. Cl.[5] A24B *9/00, 3/18*

U.S. Cl. 131—291 **10 Claims**

1. A smoking article comprising a tobacco rod, which rod comprises cut expanded tobacco and a paper wrapper circumscribing said tobacco, a major portion at least of said tobacco having a loading level of humectant of 4% to 15% by weight of said tobacco, the packing density of said tobacco rod not exceeding 210 mg/cc, and wherein, when said article is smoked under standard machine smoking conditions, the particulate matter delivery on a water, nicotine and humectant free basis to nicotine delivery ration is not more than 6 to 1.

5,249,589

METHOD FOR SETTING A HAIR TWIST

Melanie Moore, 243 W. 76th St., New York, N.Y. 10023

Filed Oct. 26, 1992, Ser. No. 966,332

Int. Cl.[5] A45D *7/00*

U.S. Cl. 132—210 **4 Claims**

1. A method for setting a hair twist on a head having hair on its top and a neck at its bottom, comprising the steps of:

pulling a full handful of hair back at the nape of said neck;

holding of said hair in one hand;

making a large twist going up against the back of the head;

making a plurality of twists against the head and moving it upward toward the top of the head and into a roll having an edge;

pinching the top of the roll so the roll will not loosen up;

bringing all remaining hair under the roll;

pushing said remaining hair under the roll;

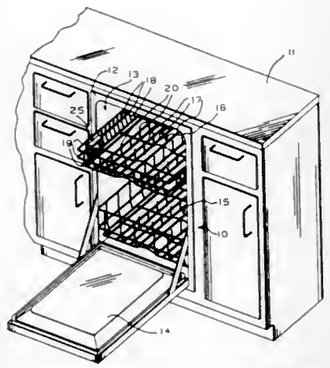
keeping pressure on the roll so that it does not loosen;

placing a hair comb, having wide teeth at one end and a top part at the other, into the edge of the roll, at its teeth, at a 90 degree angle to the head;

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turning the top part of the comb down toward the head; and finally
pushing the comb into the roll.

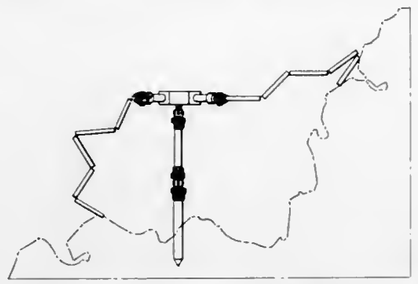
5,249,590
ARTICLE RETAINING MECHANISM
Dwight W. Jacobus, Louisville; Joseph D. Tobbe, Taylorsville; Lawrence R. Collins, Louisville; James R. Cochrane, Louisville, and Glen Miller, Louisville, all of Ky., assignors to General Electric Company, Louisville, Ky.
Filed Aug. 18, 1992, Ser. No. 931,352
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—135 **20 Claims**



20. An mechanism for releasably securing items in an automatic dishwasher rack, comprising:
a support member formed with a pair of spaced apart, stiffly resilient arms joined together at one end to form a pocket to receive a part of the rack, one of said arms including a protrusion extending toward the other arm to overlap the part of a rack received in said pocket;
said support member including an elongated channel having a generally non-circular cross-sectional shape with an enlarged base portion and a reduced width edge portion,;
a spring member having a pair of generally cylindrical wound spring portions, an elongated portion extending between and positioned laterally outside said cylindrical portions, and a pair of spaced apart transverse tabs;
said spring member being positioned within said channel with said wound spring portions of said spring member in said base portion of said channel and said elongated portion of said spring member in said reduced width edge portion of said channel;
each of said wound spring portions including a transversely extending tab; and
a generally U-shaped contact member having a pair of spaced apart arms with a bight portion therebetween, the distal end portions of said arms being received in said channel and including recesses receiving said spring tabs.

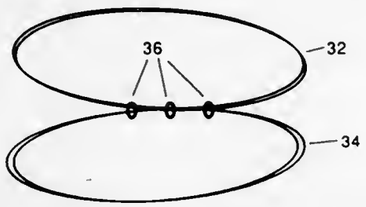
5,249,591
FOLDABLE CAMOUFLAGE ASSEMBLY
Zvi Gamadi, 22 Benyamin Boulevard, Netanya, Israel
Filed Jun. 14, 1991, Ser. No. 715,803
Claims priority, application Israel, Jun. 15, 1990, 94739
Int. Cl.[5] E04H *15/28*
U.S. Cl. 135—98 **3 Claims**

1. A foldable camouflage assembly which comprises a central telescopic pole composed of a plurality of sections which fit into each other, securing means being provided to telescopically secure said sections together, said pole having an upper free end and a lower free end, at the upper free end of said pole there being provided a joint like member from which extend a plurality of foldable arms, made of pivotally connected arm sections, a first of said foldable arms comprising first arm sections with first fastening means for fixing the first arm sections to said joint like member in any of a plurality of angles with respect to one another, a second of said foldable arms comprising second arm sections with second fastening means for fixing the second arm sections to said first arm sections in



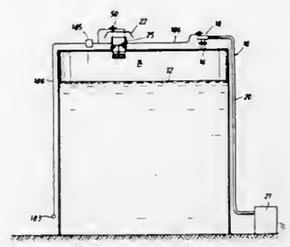
any of a plurality of angles with respect to one another, said first and second fastening means being operable independently of one another such that the assembly can be fixed in any of a plurality of shapes with the first arm sections fixed with respect to one another at a certain angle or angles and with the second arm sections fixed with respect to one another at said certain angle or angles or at a different angle or angles.

5,249,592
SELF-ERECTING TENT
Catherine P. Springer, 7 Lewis St., Apt. 1, Somerville, Mass. 02143, and Edward L. Springer, 3811 Birch Ave., Madison, Wis. 53711
Filed Dec. 10, 1991, Ser. No. 805,267
Int. Cl.[5] E04H *15/40*
U.S. Cl. 135—104 **2 Claims**



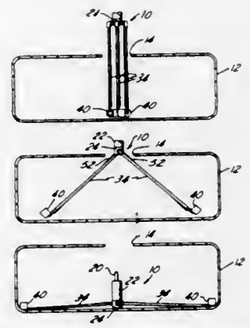
1. A collapsible and portable self-erecting structure comprising;
a frame comprising a pair of oval bands of resilient spring material, one of the oval bands being slightly smaller in circumference than the other;
a plurality of spring connectors joining together a portion of each of the oval bans, the spring connectors connected to resiliently bias the oval bans apart at an acute angle; and
a covering of flexible sheet material arranged on the frame to provide shelter, such that the structure may be collapsed by nesting the two oval bands together one inside the other and then twisting the bands into a triply looped configuration;
the spring connectors being formed of flat spring steel stock coiled around the two bands with each end of the spring connector welded to a one of the oval bands so as to provide the spring bias between the bands.

5,249,593
FLUID PRESSURE RELIEF SYSTEM FOR PRESSURE VESSELS
Thomas F. Higgins, Houston, and Michael D. McNeely, Katy, both of Tex., assignors to Keystone International Holdings Corp.
Division of Ser. No. 906,559, Jun. 29, 1992. This application Jan. 11, 1993, Ser. No. 2,805
Int. Cl.[5] F16K *17/10*
U.S. Cl. 137—12 **29 Claims**



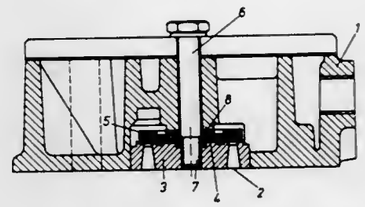
26. A method of providing a fluid pressure relief system for a pressure vessel comprising the following steps:
providing a relatively small diameter vent and a separate relatively large diameter emergency vent for said pressure vessel;
mounting a first safety relief valve including a pilot control valve on said pressure vessel for said small diameter vent for movement to an open position at a first predetermined pressure in said pressure vessel;
mounting a second safety relief valve including a pilot control valve on said pressure vessel for said large diameter emergency vent for opening of said second relief valve under control of said pilot control valve at a second predetermined pressure above said first predetermined pressure; and
providing means for full opening of said second safety relief valve independently of said pilot control valve at a third predetermined pressure within said pressure vessel above said second predetermined pressure under possible emergency conditions.

5,249,594
IN-TANK FUEL SUPPLY SYSTEM AND METHOD OF INSTALLATION
Thomas L. Kizer, Farmington Hills, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Division of Ser. No. 956,946, Oct. 5, 1992. This application Jan. 7, 1993, Ser. No. 1,691
Int. Cl.[5] F17D *1/14;* **F16K** *31/18*
U.S. Cl. 137—15 **4 Claims**



1. A method of installing an in-tank fuel supply system in a fuel tank through a small installation hole comprising the steps of:
providing an in-tank fuel supply system having a fuel manifold and a plurality of elongated suction pipes that are pivotally connected to the fuel manifold by elbows and spring biased to a generally horizontal position with respect to the fuel manifold,
pivoting the plurality of suction pipes downwardly into adjacent vertical positions against the biases of the springs,
holding the suction pipes in the adjacent vertical positions while inserting the suction pipes into a small installation hole in the top of a fuel tank, and
releasing the suction pipes after insertion so that the suction pipes swing outwardly and upwardly under the biases of the springs to horizontal position in the fuel tank while drawing the fuel manifold into the fuel tank.

5,249,595
VALVE, IN PARTICULAR FOR A PISTON-TYPE COMPRESSOR
Günter Fink, Schongau, Fed. Rep. of Germany, assignor to Hoerbiger Ventilwerke Aktiengesellschaft, Vienna, Austria
Filed Aug. 7, 1991, Ser. No. 741,567
Int. Cl.[5] F16K *15/08*
U.S. Cl. 137—454.4 **11 Claims**



1. A valve which is adapted to be tightly clamped by a clamping screw against a seating surface of a housing of a piston-type compressor, said valve comprising:
a unitary valve body that defines throughflow channels;
an arrestor spaced from said valve body;
one of said valve body and said arrestor defining a threaded bore hole therein;
a closure piece for controlling said throughflow channels positioned between said arrestor and said valve body;
a spring means urging the closure piece against said valve body;
a spacer located between the valve body and the arrestor;
a sleeve positioned within the spacer and clamped at opposite ends to said valve body and said arrestor to secure said arrestor to said valve body and said closure piece and spring means therebetween, said sleeve providing a through hole therethrough, and
a clamping screw which non-engagingly extends through said through hole in said sleeve and is threadingly engaged with said threaded bore hole.

5,249,596
RESIDENTIAL HEATING AND AIR CONDITIONING BAROMETRIC BYPASS DAMPER
Harrison T. Hickenlooper, III, Palatka, and Ivy G. Moses, Jacksonville, both of Fla., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Mar. 6, 1992, Ser. No. 846,847
Int. Cl.[5] F16K *15/03*
U.S. Cl. 137—334 **10 Claims**

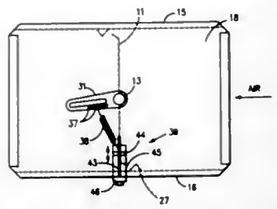
1. In a forced air system having a conditioning means to thermally condition air and a plurality of zones with modulating damper means for maintaining a desired temperature in

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each zone, a barometric bypass damper for bypassing conditioned air therethrough from a supply of the conditioning means to a return of the conditioning means in response to the modulation of the modulating damper means, comprising:

a duct having two pairs of opposed walls defining an air flow path between an upstream supply line and a downstream return line of said conditioning means;

a damper blade mounted on a shaft transversely between a first pair of said opposed walls for rotational movement about an axis coincident with said shaft, whereby said shaft is located away from the middle distance between a



second pair of said opposed walls wherein said damper blade includes first and second portions of unequal surface areas that extend in opposite directions from said shaft; and

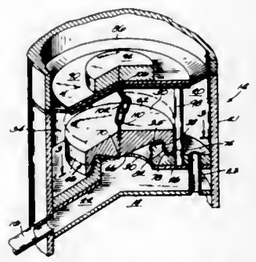
first and second end portions connected to and obtusely angled from an edge of said first and second portions of said damper blade wherein said first end portion is connected to said unequal surface area of smaller area and is angled toward the downstream return line and said second end portion is connected to said unequal surface area of larger area and is angled toward the upstream supply line.

5,249,597

DIGESTOR TANK HAVING A PRESSURE RELIEF VALVE

John Thomas, Brookfield, Wis., assignor to Envirex Inc., Waukesha, Wis.

Filed Oct. 8, 1992, Ser. No. 958,658
Int. Cl.[5] F16K *17/194*
U.S. Cl. 137—493 **21 Claims**



1. A pressure relief valve for providing fluid flow through the valve if the pressure on one side of the valve exceeds the pressure on the other side of the valve by a specified amount, the pressure relief valve comprising:

a first valve member including an annular valve seat having an upwardly extending inclined valve seat surface;

a cantable movable valve member including a body portion having a periphery including a downwardly extending inclined valve surface adapted to engage the upwardly extending inclined valve seat surface in sealing relation, one of the upwardly inclined valve surface and the downwardly extending inclined valve surface being a curved generally spherical surface so that the valve surfaces seal against one another in the event the movable valve member is canted relative to the first valve member, and the movable valve member being movable away from the upwardly extending inclined valve seat surface when the pressure on one side of the valve exceeds the pressure on the other side of the valve by selected a selected amount; and

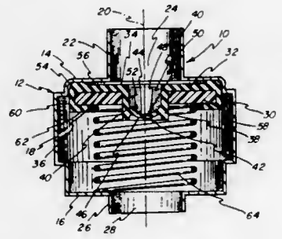
means for causing movement of the movable valve member away from the valve seat when the pressure on the other side of the valve exceeds the pressure on the one side of the valve by a selected amount.

5,249,598

BI-DIRECTIONAL VENT AND OVERPRESSURE RELIEF VALVE

William J. Schmidt, Xenia, Ohio, assignor to Vernay Laboratories, Inc., Yellow Springs, Ohio

Filed Aug. 3, 1992, Ser. No. 923,572
Int. Cl.[5] F16K *17/196*
U.S. Cl. 137—493.1 **18 Claims**



1. A bi-direction valve comprising:

a housing including means defining first and second apertures;

a contact surface surrounding said first aperture;

a regulator element positioned adjacent to said first aperture and including an engaging surface;

means defining a regulator aperture through said regulator element;

a regulator vent element extending across said regulator aperture for preventing fluid flow through said regulator element;

resilient biasing means biasing said engaging surface into contact with said contact surface; and

wherein said regulator element forms a seal preventing fluid flow between said first and second apertures, said vent element being movable from a normally closed position to a first open position permitting fluid flow in a first direction from said first to said second aperture through said regulator element in response to a first pressure differential between said first and second apertures and said vent element being movable from said normally closed position to a second open position permitting fluid flow in a second direction opposite to said first direction in response to a second pressure differential between said first and second apertures.

5,249,599

FLUID FLOW REGULATOR

Joel E. Haynes, 18316 Oxnard St., Tarzana, Calif. 91356, and James W. Maxwell, 1254 Reilly La., Clarkston, Ga. 30021

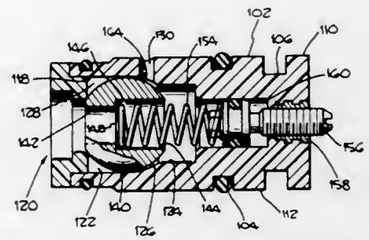
Continuation-in-part of Ser. No. 463,946, Jan. 8, 1990, abandoned, which is a continuation of Ser. No. 323,210, Mar. 13, 1989, abandoned, which is a continuation of Ser. No. 139,959, Jan. 31, 1987, abandoned. This application Sep. 10, 1990, Ser. No. 578,433
Int. Cl.[5] G05D *7/01*
U.S. Cl. 137—501 **25 Claims**

1. A fluid flow regulator for the delivery of a fluid downstream to the regulator at a controlled rate relative to the upstream fluid pressure, the regulator comprising:

a. a housing having an inlet into the housing for receiving the fluid from upstream of the regulator, a main chamber communicating with the inlet and an outlet communicating with the main chamber for delivering the fluid downstream of the regulator;

b. a spherical moveable member received within the main chamber adjacent to and partially covering the outlet and having a diameter slightly less than the diameter of the main chamber;

c. pressure dividing means for dividing the fluid to opposite sides of the moveable member, the pressure dividing means including pressure drop means for dropping the pressure of the fluid at the inlet to a lower pressure in the



main chamber, the pressure drop means providing unequal pressure on the opposite sides of the moveable member to create a higher pressure side of the moveable member communicating with the outlet;

d. bias means in the housing and extending into the main chamber in contact with the moveable member for biasing the moveable member against higher pressure force on the moveable member, the moveable member being moveable in response to changes in the upstream pressure which causes changes in the pressure drop through the pressure drop means to change the resulting forces on the movable member, the movable member moving in response to the changes in the resulting forces to change the blockage of the outlet.

5,249,600

VALVE SEAT FOR USE WITH PUMPS FOR HANDLING ABRASIVE FLUIDS

George H. Blume, 107 Morning Cloud Cove, Austin, Tex. 78734

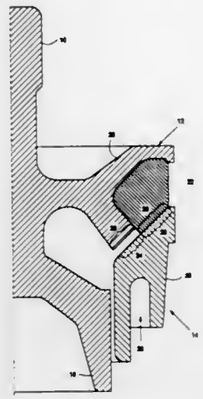
Filed Dec. 31, 1991, Ser. No. 815,176
Int. Cl.[5] F16K *15/06*
U.S. Cl. 137—516.29 **6 Claims**

1. An improved valve system for use in pumps for handling abrasive fluids, comprising:

a valve body, said valve body comprising a portion having a sloped surface for engaging a complementary sloped surface of a valve seat, said sloped portion of said valve body including a first portion comprising metal and a second portion comprising an elastomer insert;

a valve seat having a sloped surface for engaging the sloped surface of said valve body, said valve seat comprising a generally cylindrical body; and

means for increasing deflection of a portion of said valve seat at the point of contact of said metal portion of said sloped portion of said valve body with said sloped portion of said valve seat to reduce the impact stress at said point of impact of said metal portion of said sloped surface of said valve body with said sloped surface of said valve seat, said means for increasing deflection comprising an annular groove in a portion of said cylindrical body, said annular groove being defined by first and second vertical side-



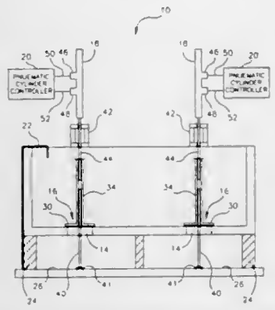
walls and an arched portion extending between said first and second sidewalls.

5,249,601

FLUSHING SYSTEM FOR HOG HOUSES

Billy S. Thomas, 1096 Thomas McGeehee Rd., Sanford, N.C. 27330

Filed Nov. 19, 1992, Ser. No. 979,063
Int. Cl.[5] A01K *31/00*
U.S. Cl. 137—624.14 **20 Claims**



1. A waste removal flushing system for cleaning a floor of an animal pen comprising:

(a) a tank for containing a volume of water, the tank having a top, a bottom, and side walls;

(b) a water output opening located in the bottom of the tank;

(c) a seating surface located on the bottom of the tank and surrounding the border edge of the water output opening;

(d) a valve including a valve head having a diameter which is larger than the diameter of the water output opening such that an outer section of the valve head extends beyond the border edge of the water output opening, the valve positionable to a closed position where the outer section of the valve head seats against the seating surface surrounding the border edge so as to block water in the tank from passing through the water output opening, and the valve positionable to an open position where the valve is positioned away from the bottom of the tank so that water located along the bottom of the tank passes through the water output opening and flows along the floor of the animal pen;

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(e) a valve actuator for moving the valve between the closed and open positions; and

(f) a controller for controlling the valve actuator so as to provide selective positioning of the valve between the closed and open positions at selected time intervals.

5,249,602

ARRANGEMENT FOR FLOW CONTROL OF GASEOUS AND LIQUID MEDIA, PARTICULARLY AIR

László23, Berze Nagy János út Sándor, Gyöngyös, Hungary, and Zoltán Szalay, 48, Arnyas utca, Törökbálint, Hungary 2045

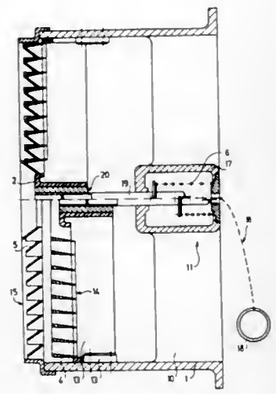
PCT No. PCT/HU90/00043, § 371 Date Dec. 23, 1991, § 102(e) Date Dec. 23, 1991, PCT Pub. No. WO91/00480, PCT Pub. Date Jan. 10, 1991

PCT Filed Jun. 29, 1990, Ser. No. 778,891

Claims priority, application Hungary, Jul. 4, 1989, 3362/89; Jul. 4, 1989, 3364/89

Int. Cl.[5] F24F *13/062*

U.S. Cl. 137—625.35 **8 Claims**



1. Arrangement for controlling the flow of gaseous and liquid media, particularly air, comprising of a housing, a number of movable closing members shutting off in closed position the internal cross-sectional area of said housing and an actuating mechanism connected to said movable closing members, characterized by comprising fixed closing members (**5**) coacting with movable closing members (**4**), said closing members constituting a stationary grid (**15**) containing concentric rings, further said movable closing members (**4**) are designed to form concentric rings constituting together a movable grid (**14**) displaceable in axial direction, wherein said ring-shaped closing members (**4, 5**) both of the stationary grid (**15**) and the movable grid (**14**) in a position forced to lean against each other fit to each other so as to shut off the passage of flow of the medium, further the movable grid (**14**) is connected to an actuating mechanism (**11**) effective in axial direction.

5,249,603

PROPORTIONAL ELECTRO-HYDRAULIC PRESSURE CONTROL DEVICE

J. Otto Byers, Jr., Kalamazoo, Mich., assignor to Caterpillar Inc., Peoria, Ill.

Filed May 19, 1992, Ser. No. 885,994

Int. Cl.[5] F15B *13/044*

U.S. Cl. 137—625.65 **14 Claims**

1. A proportional electrohydraulic pressure control device having a longitudinal axis, comprising:

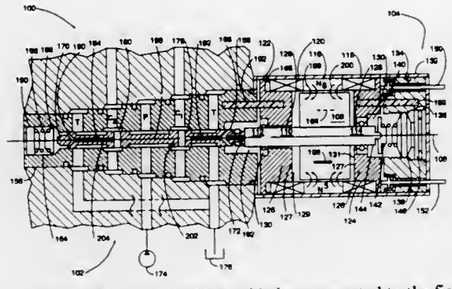
an armature bounded by a pair of ends, a shaft having first and second ends extending axially from the ends of said armature, said armature being rectilinearly translatable along the longitudinal axis;

a substantially tubular permanent magnet having radial magnetization and being disposed coaxially around said armature, said permanent magnet providing first and second oppositely directed magnetic flux paths;

an electromagnetic coil being disposed coaxially about said armature and adjacent to said permanent magnet;

a current source being connected to said electromagnetic coil and adapted to energize said electromagnetic coil, said energized coil producing an electromagnetic flux path which causes said armature to move;

a valve body having a fluid supply port, a fluid exhaust port, first and second fluid control ports, and a central bore being axially aligned with the longitudinal axis and a linearly shiftable spool having first and second ends, said central bore defining first and second chambers at opposite ends of said central bore, said first and second control ports defining an annulus being communicable with said central bore, said spool being disposed in said central bore



with the first end of said spool being connected to the first end of said shaft;

a first adjustable spring having a retainer and an adjusting assembly, the second end of said shaft being engageable with the first spring retainer and the first adjusting assembly being adapted to adjust said first adjustable spring to position said spool to a first neutral position that causes a minimum fluid pressure at the first control port, the first permanent magnetic flux path producing a predetermined force counter to the first adjustable spring force for biasing said spool at the first neutral position; and

a second adjustable spring having a retainer and an adjusting assembly, the second end of said spool being engageable with the second spring retainer and the second adjusting assembly being adapted to adjust said second adjustable spring to position said spool to a second neutral position that causes a minimum fluid pressure at the second control port, the second permanent magnetic flux path producing a predetermined force counter to the second adjustable spring force for biasing said spool at the second neutral position.

5,249,604

TUBE PLUG FOR PLUGGING A TUBE

Robert F. Keating, Penn Township, Westmoreland County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 13, 1991, Ser. No. 699,416

Int. Cl.[5] F16L *55/12*

U.S. Cl. 138—89 **12 Claims**

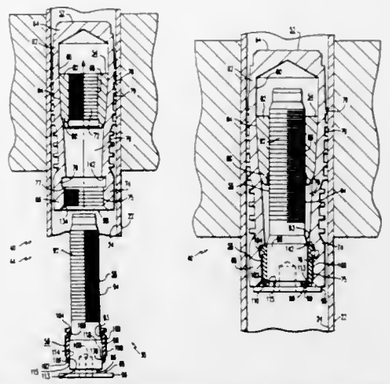
1. A tube plug for plugging a tube, comprising:

a shell having a closed end, an open end, and an outer wall defining a chamber in said shell and having inside diameter threads positioned near said open end;

a bolt member disposed in said open end of said shell;

a least one of said shell and said bolt member having a recess therein which faces the other of said shell and said bolt member; and

means for locking said shell and said bolt member together, said locking means having a deformable tab portion therein, said tab portion having an undercut including a first surface and a second surface positioned between an end of said tab portion and the remainder of said means for locking, at least one of said shell and said bolt member having means for forcing said first surface of said undercut to bend toward said second surface of said undercut, so



that when said bolt member is installed within said shell, said means for forcing on one of said shell and said bolt member forces said first surface of said undercut to bend toward said second surface of said undercut, said tab portion being engageable with the recess and plastically deformable to reduce said undercut by movement of said tab portion into said recess for securing said shell, said bolt member, and said means for locking together for preventing fluid flow through said tube.

5,249,605

HEDDLE FRAME WITH VIBRATION DAMPER ELEMENT

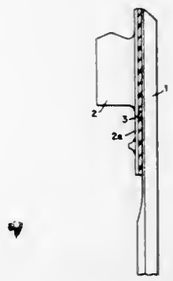
Martin Graf, Horgenberg, Switzerland, assignor to Grob & Co. Aktiengesellschaft, Horgen, Switzerland

PCT No. PCT/CH90/00125, § 371 Date Jan. 10, 1992, § 102(e) Date Jan. 10, 1992, PCT Pub. No. WO91/17291, PCT Pub. Date Nov. 14, 1991

PCT Filed May 10, 1990, Ser. No. 793,348

Int. Cl.[5] D03C *9/06*

U.S. Cl. 139—91 **8 Claims**



1. A heddle frame including spaced side supports and frame staves extending between the side supports, the frame staves having hollow portions, said frame comprising a projecting member carried by and extending laterally from a vibration damper element attached to a surface of a mutually adjacent side support and received within a hollow portion of a frame stave, said vibration damper element positioned between and along at least the entire length of the mutually adjacent surfaces of the projecting member and the side support to space said member from said support.

5,249,606

ISOLATING A YARN END OF A BROKEN WARP THREAD FROM THE WARP IN A WEAVING MACHINE

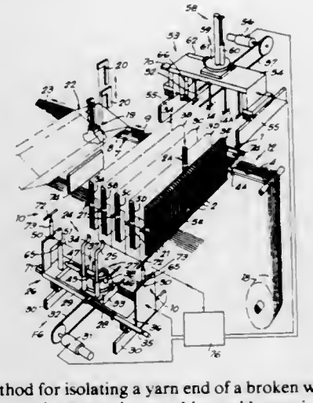
Bernard Vancayzeele, Ieper, and Dirk Gryson, Dikkebus-Ieper, both of Belgium, assignors to Picanol N.V., naamloze vennootschap, Belgium

Filed Apr. 6, 1992, Ser. No. 863,775

Claims priority, application Belgium, Apr. 9, 1991, 09100323

Int. Cl.[5] D03J *1/14;* **D03D** *51/20*

U.S. Cl. 139—351 **13 Claims**



1. A method for isolating a yarn end of a broken warp thread from the warp in a weaving machine, said weaving machine including a warp stop motion including drop wires hanging on the warp threads, comprising the steps of:

putting the yarn end of the broken warp thread in a predetermined position at a location of the warp stop motion so as to prevent removal of a broken warp thread which has become crossed with other threads; and

subsequently removing the yarn end from the warp at a position outside the warp stop motion,

wherein the step of putting the yarn end in a predetermined position comprises the steps of applying a clamping means for clamping the warp thread at a first position outside the warp stop motion; bringing a part of the yarn end of the broken warp thread away from a surface of the warp at the location of the warp stop motion; picking up said part of the yarn end by means of a carrying element; and moving the carrying element for carrying the yarn end.

5,249,607

SYSTEM FOR TRANSFERRING ARTICLES

Hans K. Larsen, Aestorp, Sweden, assignor to Nestec S.A., Vevey, Switzerland

Filed Nov. 18, 1991, Ser. No. 794,738

Claims priority, application European Pat. Off., Dec. 17, 1990, 90124437.6

Int. Cl.[5] B65B *1/06*

U.S. Cl. 141—1 **12 Claims**

1. An article transfer apparatus comprising:

an endless conveyor having an upper run for transporting emptying bowls having an open top in an upright position and a lower run for transporting the bowls in an inverted position;

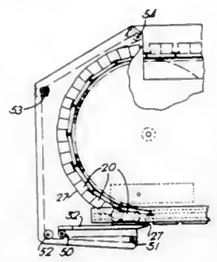
means for intermittently advancing the endless conveyor;

a belt positioned to cover open tops of the bowls transported from an upright position on the upper conveyor run to and

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in an inverted position on the lower conveyor run for retaining contents of the bowls therein;

means for intermittently advancing the belt in synchrony with the endless conveyor;



means for retracting the belt from the bowls at a position on the lower conveyor run to uncover an inverted bowl to release the contents from the bowl; and

means positioned for receiving the contents released from the uncovered bowls.

5,249,608

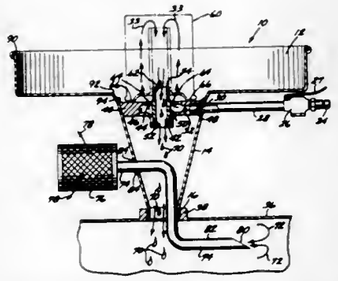
PROCESS AND FLUSHING DEVICE FOR REMOVING OIL FROM WASTE OIL FILTERS

Tung V. Hua, Alhambra, Calif., assignor to Lee W. Tower, Rancho Palos Verdes, Calif., a part interest

Filed Dec. 6, 1991, Ser. No. 804,873

Int. Cl.[5] B65B *3/12*

U.S. Cl. 141—1 **14 Claims**



1. An apparatus for removing oil from waste oil filters having oil filter inlets and an oil filter outlet comprising:

inlet adapting means for coupling said apparatus to said oil filter inlets of an oil filter;

outlet adapted means for coupling said apparatus to said oil filter outlet of an oil filter;

means coupled to said inlet adapting means for directing pressurized gas into said oil filter inlets; and

means coupled to said outlet adapting means for collecting oil discharged from said oil filter outlet.

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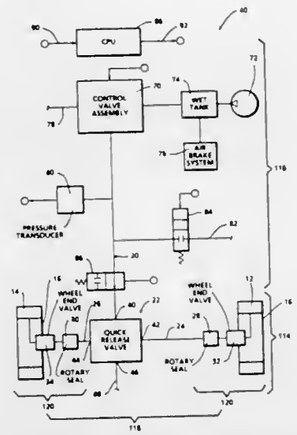
DEFLATION CONTROL SYSTEM AND METHOD

James M. Walker; L. Michael Ruzicka, and James Beverly, all of Kalamazoo, Mich., assignors to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 518,278, May 3, 1990, abandoned, which is a continuation of Ser. No. 321,691, Apr. 10, 1989, abandoned, which is a divisiom of Ser. No. 223,303, Jul. 25, 1988, abandoned. This application Dec. 14, 1990, Ser. No. 629,043

Int. Cl.[5] B60C *23/00*

U.S. Cl. 141—4 **3 Claims**



1. A method for simultaneously controlling the inflation pressure of a plurality of fluidly separable inflatable tires, said method comprising the steps of:

a. providing a central tire inflation system including an operator's control device **(102)** for selection of one of a plurality of selectable desired inflation pressures, a connection to a source of pressurized fluid, an exhaust means, a selectively pressurized and exhausted conduit, said conduit pressurized by said source to a single positive pressure greater than any of said selectable desired inflation pressures or to a single positive pressure lower than any of said selectable desired inflation pressures, tire valves **(32, 34)** at each of said tires, said tire valves automatically responsive to pressurization of said conduit to simultaneously connect the interior pressure chambers of all of said tires of said conduit pressurized to said single positive pressure lower than any of said selectable desired inflation pressures, to connect the interior pressure chambers of all of said tires to said conduit pressurized to said single positive pressure greater than any of said selectable desired inflation pressures or to seal said interior pressure chambers, a pressure transducer remote from the inflatable tires and a central processing unit **(88)** for receiving input signals from said pressure transducer and said control device and for processing same in accordance with predetermined logic rules to issue command output signals to control the pressurization of said conduit;

b. sensing the selected desired inflation pressure of the inflatable tires;

c. exposing the pressure transducer to a fluid pressure substantially equal to the inflation pressure of one of said tires to measure and store an initial inflation pressure value;

d. comparing the initial inflation pressure value to the desired pressure value;

e. if said initial inflation pressure value exceeds said desired pressure value,

(i) calculating a target pressure value having a value less than said desired pressure value;

(ii) then causing in sequence the interior pressure chambers of all of said inflatable tires to be connected to the conduit pressurized to said single positive pressure lower than any of said selectable desired inflation pressures and then exposing the pressure transducer to a fluid pressure equal to the inflation pressure of one of said tires to measure an updated pressure value until the updated measured inflation pressure value is substantially equal to said target pressure value, and

(iii) then causing the interiors of all of said tires to be connected to said conduit pressurized to said single positive pressure greater than any of said selectable desired inflation pressures until the measured inflation pressure value substantially equals said selected desired pressure value.

5,249,610

SINGLE-USE INJECTOR NOZZLE FOR STRAW FILLING MACHINE, IN PARTICULAR FOR ARTIFICIAL INSEMINATION OF ANIMALS AND STORAGE OF BIOLOGICAL PRODUCTS

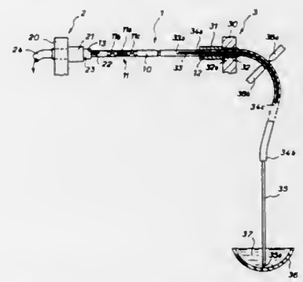
Robert Cassou, 18700 Aubigny S/ Nere; Maurice Cassou, and Bertrand Cassou, both of 10 rue Georges Clémenceau, 61300 l'Aigle, all of France

Filed Aug. 7, 1992, Ser. No. 925,865

Claims priority, application France, Aug. 7, 1991, 91 10032

Int. Cl.[5] B65B *43/42;* **B67C** *3/00*

U.S. Cl. 141—130 **13 Claims**



1. Single-use injector nozzle/ for machines for filling with biological products tubes usually called straws in the form of tubular sections of polymer material provided internally near one end with a composite stopper comprising between two porous plugs a volume of powder which gelifies when coming in contact with an aqueous liquid, wherein the filling being effected by gripping the straws between two nozzles fitted with seals bearing on the ends of the straw, namely a suction nozzle connected to a vacuum source and bearing on the end of the straw near the composite stopper wherein said injector nozzle fitted with a flexible tube which dips into a flask containing the biological product, said injector nozzle comprising a rigid needle adapted to be inserted into said straw and crimped axially into a body which has two external reference surfaces for respectively centering and longitudinally positioning said nozzle relative to a nozzle support, said flexible tube being made from an elastomer having a Shore hardness between 41 and 47 and a reversible elongation capacity of at least 250%, having an inside diameter of the same order of magnitude of the outside diameter of said needle and a nominal outside diameter at least twice said inside diameter, a right cross-section at the end into which said needle is inserted to a length of at least five times said needle outside diameter forming a seal bearing surface for the end of said straw remote from said composite stopper, and said flexible tube being gripped, at least when said nozzle is mounted on said machine, over a distance equal to at least five times its nominal outside diameter starting from the right cross-section at said end in a tubular hoop of rigid material whose inside diameter is matched to the nominal outside diameter of the tube with sufficient clamping force to hold and seal said needle, said hoop comprising said two reference surfaces.

5,249,611

POUR SPOUT

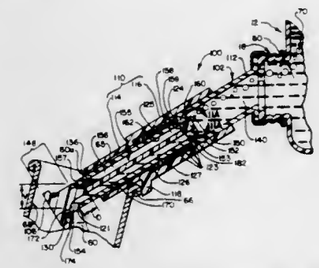
Verl Law, Emmett, Id., assignor to Vemco, Inc., Emett, Id.

Continuation-in-part of Ser. No. 361,590, May 30, 1989, Pat. No. 5,076,333, which is a continuation-in-part of Ser. No. 27,014, Mar. 16, 1987, Pat. No. 4,834,151. This application May 23, 1991, Ser. No. 704,429

The portion of the term of this patent subsequent to May 30, 2006, has been disclaimed.

Int. Cl.[5] B65C *3/00;* **B65B** *39/04*

U.S. Cl. 141—198 **50 Claims**



1. A pour spout for permitting transfer of a fluid from a container of the fluid to a receiving vessel, the pour spout comprising:

(a) a fluid conduit opening at one end thereof into the container of fluid, said fluid conduit being provided at a location remote from the container with a fluid discharge opening through which fluid from the container is transferred into the receiving vessel;

(b) closure means for precluding any transfer of the fluid through said discharge opening into the receiving vessel until said fluid discharge opening is inside the receiving vessel; and

(c) venting means for admitting air into the interior space within said fluid conduit and the container during transfer of the fluid from the container, air flow into said interior space through said venting means becoming terminated when the receiving vessel becomes filled with the fluid, said venting means comprising:

(i) an air vent passageway communicating between said interior space and the exterior of said fluid conduit at a location that is inside the receiving vessel when said closure means ceases to preclude the transfer of fluid from said fluid conduit; and

(ii) a capillary section located in said air vent passageway, said capillary section having a cross-sectional area less than that of said air vent passageway.

5,249,612

APPARATUS AND METHODS FOR CONTROLLING FLUID DISPENSING

Richard G. Parks, and Gordon W. Whitaker, both of Scottsdale, Ariz., assignors to BTI, Inc., Tempe, Ariz.

Filed Jul. 24, 1992, Ser. No. 919,708

Int. Cl.[5] B67D *5/01*

U.S. Cl. 141—219 **20 Claims**

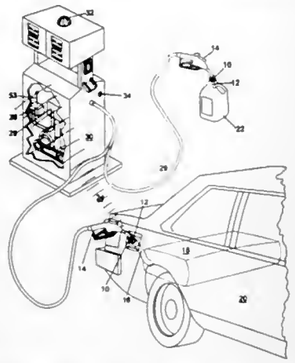
1. An apparatus for controlling the flow of fluid through an outlet comprising:

(a) means for manually controlling the flow of fluid through an outlet;

(b) sensing means adapted for placement adjacent to the outlet for detecting the presence of a fluid-containing receptacle closer than a predetermined distance from the sensing means, without requiring the physical contact

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between the receptacle and either the sensing means or the outlet, and for sensing the response of material forming the fluid-containing portion of the receptacle to a field;



(c) signalling means coupled to the sensing means for altering the state of a signal when the sensing means both detects said receptacle and measures a predetermined response of the receptacle to the field; and

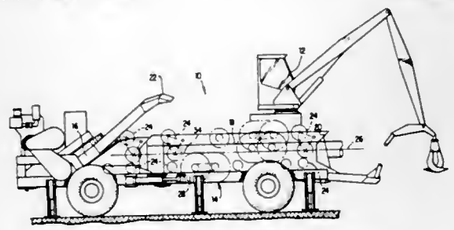
(d) means for applying the signal controlled by the signalling means to override the manual-control means when the signal is in at least one predetermined state.

5,249,613

DEBARKING/DELIMBING APPARATUS

Ken Ridler, 705 Confederation Ct., Thunder Bay, Canada P7E 3N2

Filed Sep. 4, 1992, Ser. No. 940,842
Int. Cl.[5] B27L *1/00*
U.S. Cl. 144—208 J **21 Claims**



1. A debarking/delimbing apparatus comprising:

a tree feed line through which trees are passed;

a lower flail drum disposed below the feed line, said lower flail drum having a series of flails extending radially outward from an axis of said lower flail drum towards said feed line, said axis of said lower flail drum being disposed in a fixed location relative to said feed line;

an upper flail drum disposed above said feed line, said upper flail drum having a series of flails extending radially outward from an axis of said flail drum, said upper flail drum being movable towards and away from said feed line to accommodate different size trees;

said flails extending from said upper and lower flail drums being long enough to reach to the center line of trees progressing along said feed line; and

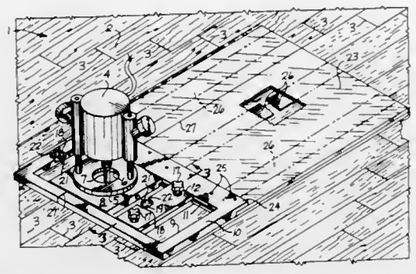
said upper and lower flail drums being oriented diagonally relative to said feed line at an angle greater than 0° and less than 90° relative to said feed line and said upper and lower flail drums being oriented at opposing angles, so that said axes of said upper and lower flail drums are transverse to one another, said upper and lower flail drums being fixed in position relative to said feed line during operation of said apparatus.

5,249,614

LAID FLOORING END JOINTER

Michael B. Osborn, 13821 54th Ave. North, Edmonds, Wash. 98026

Filed Jun. 19, 1992, Ser. No. 901,352
Int. Cl.[5] B27C *5/10*
U.S. Cl. 144—371 **11 Claims**



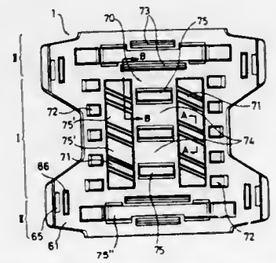
1. A flooring board end jointer comprising a plunge router, supporting means for said router including a slide, guide means including ways for guiding movement of said slide transversely of a laid flooring board, adjustable stop means including a stop bar bridging between said ways for limiting the stroke of said slide along said ways, auxiliary stop means engageable by said slide and adjustable to alter the limiting position of movement of said slide relative to said stop bar without changing the position of said stop bar relative to said ways, and positioning means for positioning said guide means relative to said flooring to hold said guide means in proper position for guiding movement of said slide transversely of a laid flooring board for enabling said router to joint the end of such laid flooring board.

5,249,615

TWO ZONE TREAD PATTERN

Toshimi Suzuki, 355-43 Onwadashinden, Yachiyo-shi Chiba-ken, Japan

Continuation of Ser. No. 335,668, Mar. 27, 1989, abandoned.
This application Aug. 28, 1991, Ser. No. 754,187
Int. Cl.[5] B60C *11/04*
U.S. Cl. 152—209 B **9 Claims**



1. A tire tread when on a circumference of a vehicle wheel comprising a plurality of tread members defining a primary road contact surface and a plurality of cavities recessed from said road contact surface for receiving and expelling snow, dirt or sand;

said tire tread having a first zone and a second zone at either side of said first zone with transverse recessed gaps separating said second zones from said first zone;

said first zone comprising a central anti-skid zone and at least two driving rows disposed axially outward, on opposite sides of said anti-skid zone;

said anti-skid zone comprising a circumferentially-extending hollow, said hollow being divided into said plurality of

cavities (74) by first transverse tread members (75) interpositioned therein, each of said cavities having a circumferential width larger than one of said first transverse tread members;

said driving row providing a driving function on normal paved roads and having a plurality of driving tread members (75') and a plurality of ridges (71) interposed between said driving tread members, each of said ridges extending transversely and having an end protruding radially beyond said driving tread members; and

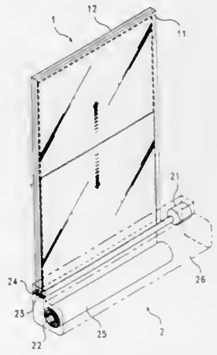
said second zone having at least one second transverse tread member (75'') and at least one elongated resilient lug (73) associated with each second transverse tread member, each elongated resilient lug being in close proximity to, parallel to and narrower in the circumferential direction than the associated second transverse tread member, said elongated lug protruding radially beyond the associated second transverse tread member so as to bend over an edge of the associated second transverse tread member and to wedge between the associated second tread member and a road surface upon braking or starting.

5,249,616

DOUBLE-LAYER WINDOW WITH SHADE ROLLER UNIT FOR REGULATING THE LIGHT

Chou Yen, Fl. 4, No. 107, Shiow-Feng St., Chung Ho City, Taipei Hsien, Taiwan

Filed Sep. 30, 1992, Ser. No. 954,735
Int. Cl.[5] E06B *3/32*
U.S. Cl. 160—98 **2 Claims**



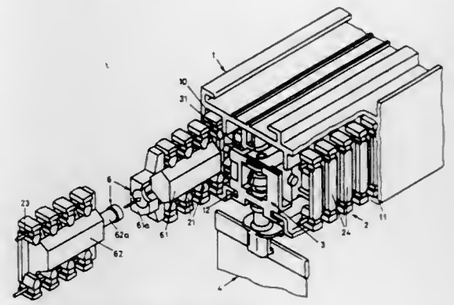
1. A double-layer window comprising a window panel consisting of a transparent front panel attached to a transparent rear panel with a narrow space defined therebetween, said window panel having an elongated bottom opening communicating with said narrow space; and a shade roller unit attached to said window panel at a lower end thereof and protected by a dust guard, said shade roller unit comprising two shade guide-rolls rotated by a reversible motor to deliver a shade body from a shade roller into said narrow space through said elongated bottom opening in blocking up said window or moving said shade body out of said window permitting it to be automatically taken up by said shade roller, said shade body being inserted through a gap between said shade guide-rolls and having a front end formed into an end flange disposed above said shade guide-rolls and a rear end fastened to said shade roller disposed below said shade guide-rolls.

5,249,617

LOUVER CURTAIN

Heinz Dürig, Ostermundigen, Switzerland, assignor to K. Bratschi, Silent Gliss, Muri, Switzerland

Filed Sep. 18, 1992, Ser. No. 947,715
Claims priority, application Switzerland, Jan. 24, 1991, 205/91
Int. Cl.[5] E06B *9/36*
U.S. Cl. 160—168.1 **10 Claims**



1. A louver curtain comprising:

a plurality of curtain louvers;

a curtain rail;

a plurality of sliding elements each connected to one of said curtain louvers, and adapted to be slidably guided in said curtain rail;

said sliding elements further comprising a toothed wheel and a horizontal worm, said toothed wheel rotatably engaged with said horizontal worm; and

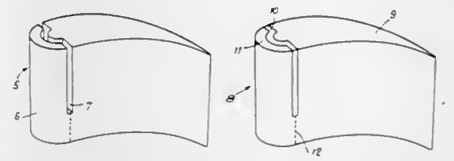
a driving element adapted to be guided in said curtain rail comprising a sprocket chain further comprising a bridged string chain including a plurality of bridges operatively connected by strings, said sprocket chain having teeth, wherein each tooth of said sprocket chain is secured to one end of one of said bridges of said string chain, said teeth of said sprocket chain mating and engaging with said toothed wheel of said sliding elements; wherein movement of said driving element causes the displacing of said sliding elements and the rotation of said worm, thereby displacing and swivelling said curtain louvers.

5,249,618

METHOD OF MAKING A COMPLEX CERAMIC CORE FOR USE IN METAL CASTING PROCESS

Nadine Burkarth, Courbevoie, and Christian Marty, Boulogne Billancourt, both of France, assignors to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation "S.N.E.C.M.A.", Paris, France

Filed Jan. 29, 1992, Ser. No. 827,607
Claims priority, application France, Jan. 30, 1991, 91 01022
Int. Cl.[5] B22C *9/10*
U.S. Cl. 164—24 **1 Claim**



1. A method of making a complex ceramic core for use in a metal casting process, the core having at least one recess which extends into the interior of said core and the core being in-

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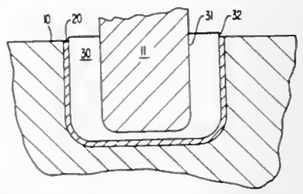
tended for use in the manufacture of a hollow component having internal cavities and partitions, such as a blade for a turboshaft engine, by the known casting process termed the lost wax process, said method comprising the steps of successively injecting at least two compounds, one of which compounds is degradable without harming the other of said compounds, in a superimposed manner in at least one suitable mold to make a solid body wherein said other of said at least two compounds forms said core and said degradable one of said compounds fills said at least one recess of said core, the first of said injection steps creating a blank formed of one of said at least two compounds, and each successive injection step forming a layer of the injected compound covering, at least partly, the outer surface of the blank obtained in the preceding injection step, and treating said solid body to remove said degradable compound therefrom and thereby obtain said complex core, wherein a single mold is used for said successive injection steps, and wherein in each of said injection steps, except the last, a suitable insert is introduced into said mold to obtain the desired molding cavity.

5,249,619

BRAKE ELEMENT AND A PREPARATION PROCESS THEREFOR

Leslie A. Meacock, II, Emmaus, and Donald E. McVicker, Allentown, both of Pa., assignors to Mack Trucks, Inc., Allentown, Pa.

Filed Oct. 30, 1991, Ser. No. 785,311
Int. Cl.[5] B22C *3/00*; B22D *27/00*
U.S. Cl. 164—58.1 7 Claims



1. A process for producing a cast iron brake element having an uninterrupted, unitary structure wherein the process comprises:

(a) coating a molding surface of a brake element casting mold with a nodularizing agent;

(b) pouring molten iron onto said coated molding surface; and

(c) casting said molten iron in said mold;

wherein the nodularizing agent in (a) is present in an amount sufficient to form a ductile iron surface from an initial amount of iron poured in (b), but wherein the iron poured subsequent to the initial amount forms a grey iron surface, so as to provide a cast iron brake element having an uninterrupted, unitary structure, the brake element further including a support surface comprising ductile iron and a friction braking surface comprising grey iron, wherein the coating step in (a) comprises applying to the molding surface a nodularizing agent having a thickness in the range of from about 10% to about 100% of thickness of said ductile iron.

5,249,620

PROCESS FOR PRODUCING COMPOSITE MATERIALS WITH A METAL MATRIX WITH A CONTROLLED CONTENT OF REINFORCER AGENT

Renato Guerriero, and Ilario Tangerini, both of Mestre, Italy, assignors to Nuovo Samim S.p.A., Milan, Italy

Continuation of Ser. No. 728,020, Jul. 8, 1991, abandoned, which is a continuation of Ser. No. 129,627, Oct. 31, 1989, abandoned.
This application Mar. 30, 1992, Ser. No. 863,497
Claims priority, application Italy, Nov. 11, 1988, 2589 A/88
Int. Cl.[5] B22D *19/14, 19/16, 23/00*
U.S. Cl. 164—97 6 Claims

1. Process for producing a composite material from a metal matrix and a SiC or SiC and Al_2O_3 reinforcer agent wherein said composite material has a content of 10% to 50% by volume reinforcer agent wherein said content is lower than the minimum compaction value of said reinforcer agent comprising the steps of:

(1) mixing the reinforcing agent consisting of non-metal powders with a diluent agent of metal fibres, ceramic fibres, ceramic whiskers or metal powders said diluent agent having a different degree of compaction then said reinforcing agent;

(2) charging the reinforcer material to a casting mould;

(3) infiltrating into the same mould the metal matrix in a molten state; and

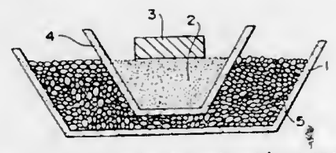
(4) allowing the metal matrix to then cool until it solidifies.

5,249,621

METHOD OF FORMING METAL MATRIX COMPOSITE BODIES BY A SPONTANEOUS INFILTRATION PROCESS, AND PRODUCTS PRODUCED THEREFROM

Michael K. Aghajanian, Bel Air; Gregory E. Hannon, North East, both of Md.; Russell Guy Smith, Wilmington, Del.; John P. Biel, Jr., Elkton, Md.; John T. Burke, Hockessin, Del.; Christopher R. Kennedy, Newark, Del.; Michael A. Rocazella, Newark, Del.; Kurt J. Becker, Newark, Del., and Thomas J. Henderson, Bear, Del., assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 521,043, May 9, 1990, abandoned, which is a continuation-in-part of Ser. No. 484,753, Feb. 23, 1990, abandoned, which is a continuation-in-part of Ser. No. 432,661, Nov. 7, 1989, abandoned, which is a continuation-in-part of Ser. No. 416,327, Oct. 6, 1989, abandoned, which is a continuation-in-part of Ser. No. 349,590, May 9, 1989, abandoned, which is a continuation-in-part of Ser. No. 269,311, Nov. 10, 1988, abandoned. This application Apr. 6, 1992, Ser. No. 863,894
The portion of the term of this patent subsequent to May 21, 2008, has been disclaimed.
Int. Cl.[5] B22D *19/14*
U.S. Cl. 164—97 14 Claims



1. A method for producing a metal matrix composite comprising:

providing a substantially non-reactive filler;

providing at least one infiltration enhancer precursor;

providing a matrix metal;

providing an infiltrating atmosphere;

heating said matrix metal to render it molten; and

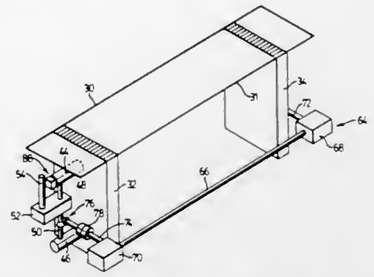
spontaneously infiltrating at least a portion of said substantially non-reactive filler with said molten matrix metal, wherein said at least one infiltration enhancer precursor reacts to form infiltration enhancer in at least a portion of said substantially non-reactive filler and when said matrix metal comprises aluminum and said infiltrating atmosphere comprises a nitrogen-containing atmosphere said infiltration enhancer precursor comprises materials other than magnesium.

5,249,622

RETROFITTED WIDTH ADJUSTING MECHANISM FOR CONTINUOUS CASTING

Frank J. Dalimonte, Caledonia, Canada, assignor to Stelco Inc., Ontario, Canada

Filed Apr. 13, 1992, Ser. No. 867,503
Int. Cl.[5] B22D *11/10, 11/00*
U.S. Cl. 164—491 12 Claims



1. A continuous casting apparatus for molten metal, the apparatus including two adjacent continuous casters, each caster having:

a) two spaced-apart side walls,

b) two spaced-apart, movable end walls adapted to be clamped between said side walls,

c) means for causing the side walls selectively 1) to exert compressive inward pressure on the end walls to clamp said end walls in position or 2) to relieve such compressive pressure in order to allow the position of the end walls to be adjusted,

d) mechanical means at each end of the caster for moving the respective end wall toward and away from the other end wall, while simultaneously adjusting the angulation of the moving end wall, at least one said mechanical means including a rotatable input shaft adapted to be rotated by a detachable and removable device, said apparatus being arranged such that the two casters are adjacently positioned end-to-end with their side walls generally aligned, the apparatus further including tundish means above the casters with metal delivery means capable of delivering molten metal into both casters simultaneously, whereby the tundish means covers and restricts access to the space separating the adjacent ends of the casters and to the mechanical means lying between the casters, said at least one mechanical means for each caster being at the end of the caster not covered by the tundish means,

and further comprising, for each caster:

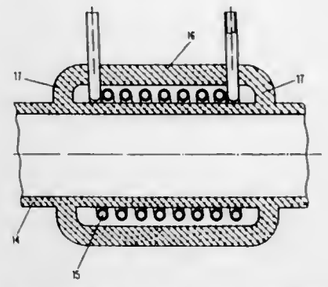
a mechanical linkage interconnecting the mechanical means at either end of the caster, whereby working of the mechanical means not covered by the tundish means, in order to adjust the position of its respective end wall, causes similar working of the mechanical means covered by the tundish means, thus causing simultaneous adjustment of the position of the other end wall.

5,249,623

RUBBER HEAT EXCHANGER

Fritz Müller, deceased, late of Berneustadt, and by Jörg D. F. Müller, heir, Stentenbergstr. 31, 5275 Berneustadt, Fed. Rep. of Germany

Division of Ser. No. 210,651, Jun. 23, 1988, Pat. No. 4,944,343.
This application Jul. 27, 1990, Ser. No. 558,887
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1987, 3728895; Sep. 1, 1987, 3729112; Sep. 8, 1987, 3730060; Sep. 15, 1987, 3730913; Dec. 5, 1987, 3741281
Int. Cl.[5] F28D *7/10*
U.S. Cl. 165—156 3 Claims



1. In an apparatus for heating a first liquid that is to be supplied via a first line, with a second line being provided in which flows a second heated liquid, the improvement wherein said apparatus is in the form of a heat exchanger, with said second line being in the form of a hose made of rubber, said hose having an outer surface about which said first line is disposed in the form of a helically wound tube coil, and with a sleeve being provided that surrounds said tube coil, said sleeve being spaced from said outer surface of said hose to form an annular space therebetween, and having radially inwardly extending end walls at both ends for closing off said annular space in an axial direction of said sleeve, with said annular space extending continuously between said end walls, said end walls being connected with said hose, said tube coil being arranged in said annular space, wherein said sleeve of the heat exchanger and said hose consist of rubber, with said end walls being securely connected with said hose of rubber by vulcanization.

5,249,624

LOAD-FOLLOWING VAPORIZER APPARATUS AND METHOD

Eric G. Pow; Nicholas J. Fletcher, both of Vancouver, and Wolfgang Schlosser, Burnaby, all of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Nov. 17, 1992, Ser. No. 977,621
Int. Cl.[5] F22B *27/16*
U.S. Cl. 165—110 10 Claims

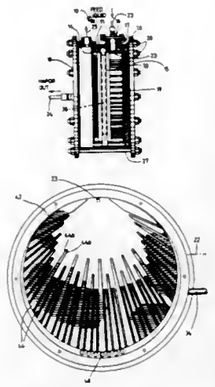
8. A method of vaporizing an inlet liquid reactant stream to produce an outlet vapor reactant stream, said method comprising:

(A) directing said inlet liquid reactant stream through a nozzle having an outlet to produce an atomized liquid reactant dispersion;

(B) directing said atomized liquid reactant dispersion toward a plurality of evaporative heat transfer structures, said structures spaced from and generally radiating from said nozzle outlet, each of said structures having two principal surfaces oriented such that the extension of each of said surfaces intersects said nozzle outlet,

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(C) supplying heat to said structures sufficient to vaporize said inlet liquid reactant stream;



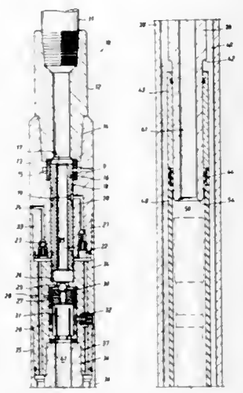
whereby said atomized liquid reactant dispersion is vaporized upon contacting said surfaces to produce a vaporized reactant stream.

5,249,625

SOFT SET OVERSHOT FISHING TOOL

Uvon Skipper, 7409 S. Rice Ave., Bellaire, Tex. 77401, and James W. Ward, HCR9 Box 207, Mena, Ark. 11953

Filed May 8, 1992, Ser. No. 836,869
Int. Cl.[5] E21B *31/18*
U.S. Cl. 166—98 **19 Claims**



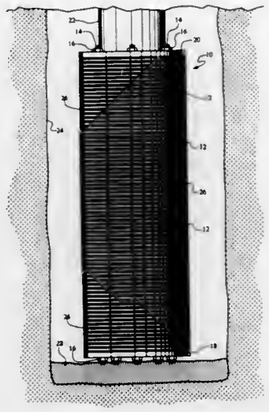
1. A soft set overshot comprising:
(a) an elongate outer mandrel to encircle around a fish;
(b) an elongate inner sleeve within said outer mandrel and having an axial passage to fit around and over the end of the fish wherein said inner sleeve fits within said outer mandrel to position said sleeve around and about the fish;
(c) means fixedly securing the lower end of said sleeve in said outer mandrel;
(d) means acting on said inner sleeve to expand said inner sleeve radially inwardly to grip and hold a fish in said sleeve wherein said acting means controllably releases to enable release of the fish from said sleeve; and
(e) elongate inner mandrel concentric within said outer mandrel to join to an upper end of said sleeve to position said inner sleeve prior to expansion.

5,249,626

BOTTOM HOLE WELL STRAINER

Lynn Gibbins, 212 E. Fordyce St., England, Ark. 72046

Filed Jun. 11, 1992, Ser. No. 897,097
Int. Cl.[5] E21B *43/08*
U.S. Cl. 166—235 **20 Claims**



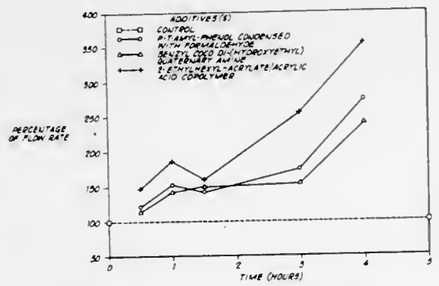
1. A well strainer for extracting fluids from a well and filtering solid particles from the fluids during extraction comprising:
a cylindrical stack of annular filter segments joined together in superimposed relation along a common longitudinal axis by a plurality of threaded rods with locking means at each end of said rods,
each of said filter segments having a plurality of adjustable spacing means for providing at least two selectable filter spacings between adjacent filter segments,
each of said adjustable spacing means including an arcuate, elongate slot for receiving one of said threaded rods, sloped contact means for contacting an adjacent filter segment and defining the filter spacing therebetween, and locator means for indicating the selected one of at least two selectable filter spacings.

5,249,627

METHOD FOR STIMULATING METHANE PRODUCTION FROM COAL SEAMS

Weldon M. Harms, and Edith Scott, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Mar. 13, 1992, Ser. No. 850,729
Int. Cl.[5] E21B *43/12, 43/267*
U.S. Cl. 166—308 **14 Claims**



1. A method of treating a water-containing coal seam penetrated by a wellbore to enhance dewatering and facilitate gas production comprising:

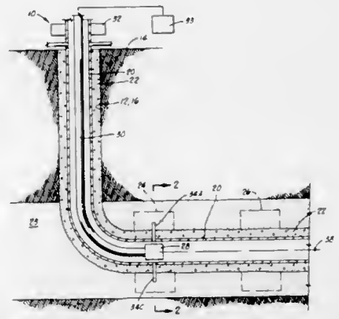
introducing a treating fluid through a wellbore into contact with a subterranean coal seam, said treating fluid including an effective amount of an additive comprising at least one member selected from the group consisting of benzyl coco di-(hydroxyethyl) quaternary amine, p-T-amylphenol condensed with formaldehyde and a copolymer comprising from about 80 to about 100% C_{t-30} alkylmethacrylate monomers and from about 0 to about 20% hydrophilic monomers, and
pumping water from said coal seam through said wellbore whereby production of gas is initiated, said flow rate of water from said formation being at a rate in excess of the flow produced under substantially similar pumping conditions in the absence of treatment of said coal with said additive.

5,249,628

HORIZONTAL WELL COMPLETIONS

Jim B. Surjaatmadja, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Sep. 29, 1992, Ser. No. 953,671
Int. Cl.[5] E21B *43/00*
U.S. Cl. 166—308 **32 Claims**



1. A method of fracturing a subsurface formation of a well having a well casing cemented in a borehole intersecting said subsurface formation, comprising:
(a) providing an opening through said casing communicating an interior of said casing with said subsurface formation;
(b) providing at least a first slip joint in said casing;
(c) communicating a fracturing fluid through said opening to said subsurface formation;
(d) applying pressure to said fracturing fluid and through said opening to said subsurface formation;
(e) initiating a fracture in said subsurface formation adjacent said opening;
(f) during step (e), allowing said casing to move with said subsurface formation by means of said first slip joint; and
(g) thereby preventing destruction of a bond between said casing and cement surrounding said casing during step (e).

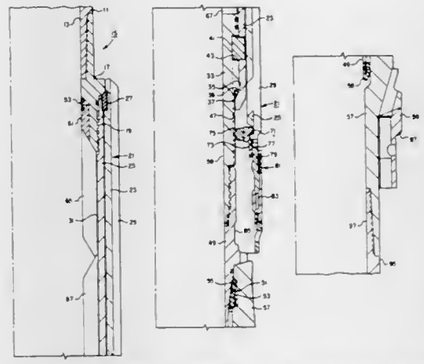
5,249,629

FULL BORE CASING HANGER RUNNING TOOL

Charles E. Jennings, Houston, Tex., assignor to ABB Vetco Gray Inc., Houston, Tex.

Filed Sep. 28, 1992, Ser. No. 951,595
Int. Cl.[5] E21B *33/00*
U.S. Cl. 166—348 **22 Claims**

1. In a subsea well having a wellhead housing located at a sea floor, a running tool for running and landing in the wellhead housing on a string of running casing a casing hanger secured to a string of well casing, and for positioning a casing hanger seal between the casing hanger and wellhead housing, the running casing and well casing being of the same inner diameter, the running tool comprising in combination:
running tool connection means for connecting the running tool to the running casing;
a tubular body having an exterior and a lower end, the body having an unobstructed bore therethrough that has an inner diameter at least equal to the inner diameter of the running casing and well casing so as to allow a cement plug to be pumped downward through the running casing, body and well casing during cementing of the well casing;
casing hanger connection means on the lower end of the body for connecting the body to the casing hanger during



running in and for releasing the body from the casing hanger after the well casing has been cemented;
a seal sleeve carried by the body on the exterior of the body;
seal connection means on the seal sleeve for releasably connecting the casing hanger seal to the seal sleeve; and
positioning means for carrying the seal sleeve and casing hanger seal in an upper position relative to the body during running in and cementing, and for moving the seal sleeve and casing hanger seal downward to a lower position after cementing, positioning the casing hanger seal between the casing hanger and wellhead housing, the seal connection means releasing the casing hanger seal from the seal sleeve after the seal sleeve is in the lower position.

5,249,630

PERFORATING TYPE LOCKOUT TOOL

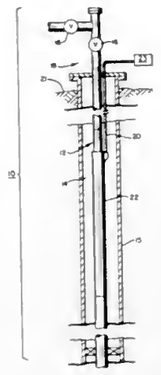
Michael W. Meaders, Lewisville, and Rennie L. Dickson, Carrollton, both of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Jan. 21, 1992, Ser. No. 823,283
Int. Cl.[5] E21B *34/06*
U.S. Cl. 166—373 **20 Claims**

20. A method for permanently locking open a surface controlled, tubing retrievable safety valve having a longitudinal bore and for simultaneously establishing fluid communication between the valve bore and a surface controller, the method comprising the steps of:
a. introducing a tubing string including a tubing retrievable safety valve into a well bore;
b. introducing a lockout tool through the tubing string into the longitudinal bore of the safety valve, the lockout tool comprising locator means adapted to releasably engage the safety valve;
c. releasing a first retaining means within the lockout tool, thereby causing the locator means in the lockout tool to engage a profile in the safety valve;
d. shifting an operating sleeve in the safety valve to a position where it prevents closure of a valve closure means within the safety valve;
e. releasing a second retaining means within the lockout tool,

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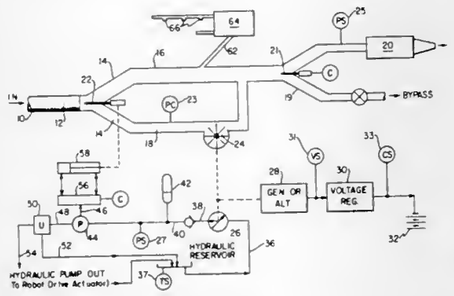
thereby causing punch means within the lockout tool to perforate a piston in the safety valve at a point adjacent an annulus in the safety valve that is in fluid communication with the surface controller, to create a protrusion on the piston that locks the operating sleeve and valve closure



member in the open position, and to establish fluid communication between the surface controller and the well bore; and

f. causing the locator means of the lockout tool to disengage from the profile in the safety valve, permitting withdrawal of the lockout tool from the tubing string.

5,249,631
WATER POWERED MOBILE ROBOT
Bran Ferren, 615 Fireplace Rd., East Hampton, N.Y. 11937
Filed May 24, 1989, Ser. No. 356,442
Int. Cl.[5] A62C *27/00*
U.S. Cl. 169—52 **8 Claims**



1. A mobile robot comprising:

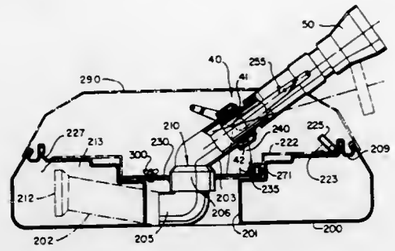
a fluid conduit,

means connected to said fluid conduit for generating electric power in response to fluid flow through said conduit, said generating means located on board said mobile robot,

means responsive to said power generating means for operating said mobile robot and

means on board said mobile robot for producing hydraulic pressure of an hydraulic fluid, said hydraulic fluid operating on board hydraulic actuators.

5,249,632
REMOTE NOZZLE UNIT
Fred Sparling, St. John's, and Wilfred Maloney, Gander, both of Canada, assignors to Helitactics Ltd., St. John's, Canada
Filed Sep. 26, 1990, Ser. No. 589,202
Int. Cl.[5] A62C *31/28*
U.S. Cl. 169—52 **13 Claims**



1. A portable fire fighting monitor comprising:

a base member of low wide configuration being an essentially hollow structure of generally circular configuration having upper and lower surfaces joined by a peripheral wall, and means to permit filling and emptying of at least a major part of said hollow structure with fluid to impart stability to said base member;

fluid input conduit means in said base member;

a vertical axis swivel action coupling centrally mounted on said base, said coupling having a fixed lower part and an upper part that is rotatable about said axis, said coupling being operatively connected at its lower part to said fluid input conduit means and being operatively connected at its upper part to a fluid output conduits means;

a ball and socket coupling operatively connected to said fluid output conduit means;

a monitor nozzle operatively connected to an outer end of said ball and socket coupling;

means to elevate and depress said nozzle relative to said base member on said ball and socket coupling;

means to rotate said nozzle and said ball and socket coupling relative to said base member on said swivel action coupling about the vertical axis of said swivel action coupling, said means to rotate comprising a support member mounted for rotation about said vertical axis, above and parallel to said upper surface, and operatively connected to said swivel action coupling said base including a circumferential track adjacent an outer edge of said upper surface thereof and said plate including drive means in engagement with said track.

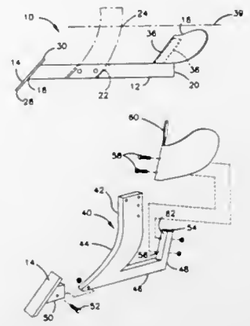
5,249,633
FIELD BREAKING IMPLEMENT
Robert R. Biesemeyer, 3000 S. Hancock Hill Rd., Rocheport, Mo. 65279
Filed May 18, 1992, Ser. No. 884,203
Int. Cl.[5] A01B *49/02*
U.S. Cl. 172—196 **17 Claims**

1. A field breaking implement, comprising:

a support member elongated in a direction of travel, said support member having front and rear ends;

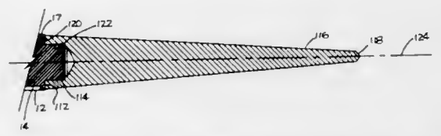
a chisel mounted on said front end of said support member, said chisel being adapted to break soil as said chisel moves through the soil at a distance below the surface of the soil; and

a plow member mounted in proximity to said rear end of said support member, and therefore behind, in said direction of travel, said chisel, said plow member moving through the



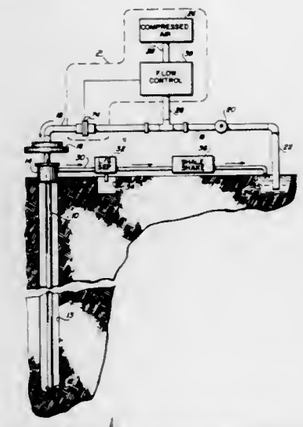
soil at a distance below the surface of the soil, said plow member being when in use.

5,249,634
IMPACT BORER FOR EMBEDDING LINES, ANCHORING CABLES, AND SINKING WELLS
John C. Bueter, Fort Wayne; Randall T. Fields, Monroeville; Martin D. Chandler; Frederick W. Neuls, both of Roanoke, and Harry P. Laffkas, Fort Wayne, all of Ind., assignors to Industrial Engineering, Inc., Fort Wayne, Ind.
Division of Ser. No. 625,080, Dec. 10, 1990, Pat. No. 5,109,932.
This application Mar. 23, 1992, Ser. No. 855,788
Int. Cl.[5] E21B *7/06*
U.S. Cl. 173—91 **12 Claims**



1. An impact bore comprising a shell, an air drive disposed within said shell, a ram for reciprocation within said shell, and a manifold joined to said shell, said manifold being molded of VHMW polyethylene material, said manifold defining an inlet passage delivering air to said air drive, and an outlet passage exhausting air from said air drive, and a third passage, said third passage being interconnected with one of said inlet and outlet passages within said manifold to define two interconnected passages, said air drive having a longitudinal bore extending through said shell, said shell and said bore having opposite ends, an anvil secured to one of said shell ends and closing one of said bore ends, said ram being positioned within said bore and being reciprocally slidable therein against and away from said anvil, a director secured to said shell at said other of said shell ends closing said bore at said other bore end, said ram and director dividing said bore into front, rear and ram chambers, said director isolating said front and rear chambers in alternation upon reciprocation of said ram, said inlet passage communicating with said ram chamber and said outlet passage communicating with said rear chamber, said ram having a tubular bore therein, said ram bore having opposite ends and being closed at one of said opposite ends adjacent said anvil, said director including said manifold, an inlet tube and a guide, said guide being positioned within said ram bore, said inlet tube extending from said manifold into said ram bore through an opening at said other ram end, said guide being stationary with respect to said shell, said ram being reciprocably slideable in relation to both said guide and said shell, said inlet tube having a distal end, said inlet tube being connected to said guide adjacent said distal end, said inlet tube being pivotably movable about a pivot axis adjacent to said distal end to allow said guide to align itself with said ram upon reciprocation and to accommodate misalignment of said inlet tube and guide.

5,249,635
METHOD OF AERATING DRILLING FLUID
Charles W. King, Tunis, Tunisia, and Bruce W. Caddy, Lafayette, La., assignors to Marathon Oil Company, Finlay, Ohio
Filed May 1, 1992, Ser. No. 876,949
Int. Cl.[5] E21B *21/08, 47/00, 47/06*
U.S. Cl. 175—48 **12 Claims**



1. A method of aerating drilling fluid used in the drilling of a wellbore in order to maintain a predetermined hydrostatic pressure in the wellbore, comprising the steps of:

pumping drilling fluid into a drill pipe;

injecting aerating gas into the drilling fluid;

monitoring the flow of drilling fluid; and

controlling the flow of the aerating gas in accordance with the flow of the drilling fluid as determined by the monitoring step;

whereby the ratio of the amount of aerating gas injected into the drilling fluid to the amount of drilling fluid pumped into the drill pipe is substantially constant.

5,249,636
PERSONAL MOBILITY VEHICLE
Thomas E. Kruse, and John C. Traxler, both of Sarasota, Fla., assignors to Sunstate Mobility Corporation, Sarasota, Fla.
Filed Apr. 28, 1992, Ser. No. 875,737
Int. Cl.[5] B62D *61/00*
U.S. Cl. 180—21 **9 Claims**

1. A self-propelled personal mobility vehicle for transporting a person comprising:

a generally flat frame supported generally horizontally above the ground by a rear wheel steerable about a generally upright axis and two spaced front wheels;

said rear wheel positioned along a central longitudinal axis of and rearwardly of said frame;

first drive means operably connected to said rear wheel for propelling said vehicle;

second drive means operably connected between said frame and said rear wheel for controlledly rotationally positioning said rear wheel about said upright axis;

a seat connected to and upwardly extending from said frame;

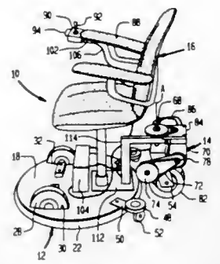
control means including a hand-actuated lever supported on said seat for selectively controlling the rotational speed of said first drive means and the rotational steering position-

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ing of said rear wheel by selective activation of said second drive means;

a stored source of electronic power mounted on said frame and operably connected between said control means and said first and second drive means;

said frame having a cushioning ring connected around and radially extending from a perimeter of said frame;



means connected to said frame for supporting and permitting said ring to freely rotate about a common central upright axis of said frame and said ring;

said front wheels being spaced apart along a common transverse axis and positioned within the perimeter of said frame.

5,249,637

HYBRID VEHICLE

Roland Heidl, Lenting, and Franz Hasler, Wettstetten, both of Fed. Rep. of Germany, assignors to Audi AG, Ingolstadt, Fed. Rep. of Germany

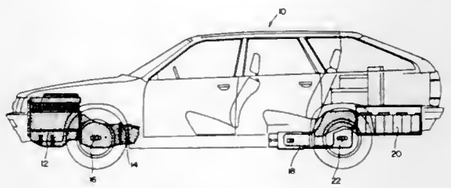
PCT No. PCT/EP90/02059, § 371 Date May 29, 1992, § 102(e) Date May 29, 1992, PCT Pub. No. WO91/08123, PCT Pub. Date Jun. 13, 1991

PCT Filed Nov. 30, 1990, Ser. No. 852,213

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1989, 3940172

Int. Cl.[5] B60K *1/00*

U.S. Cl. 180—65.2 **3 Claims**



1. A vehicle comprising:

a first axle for propelling the vehicle;

a second axle for propelling the vehicle;

an internal combustion engine for selectively driving the first axle;

an electric propulsion motor for selectively driving the second axle when the internal combustion engine is not driving the first axle;

a battery supply for powering the electric propulsion motor;

at least one auxiliary power unit;

an electric unit capable of acting as a motor and a generator, the electric unit acting as a motor for driving the at least one auxiliary power unit when the second axle is driven by the electric propulsion motor and acting as a generator powered by the internal combustion engine for recharging the battery supply when the first axle is driven by the internal combustion motor; and

a single pulley mechanically connecting the electric unit to the auxiliary power unit.

5,249,638

MOTOR ASSISTED STEERING APPARATUS FOR VEHICLE

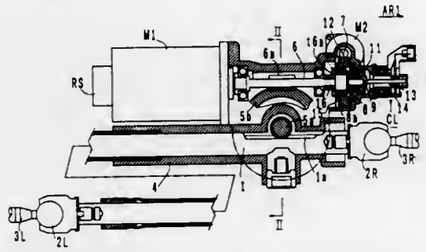
Tsukasa Watanabe, Toyota; Fumio Kojima, Nagoya, and Mizuho Sugiyama, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of Japan

Filed Sep. 3, 1992, Ser. No. 940,328

Claims priority, application Japan, Sep. 11, 1991, 3-230682

Int. Cl.[5] B62D *5/30*

U.S. Cl. 180—79.1 **7 Claims**



1. A motor assisted steering apparatus for vehicle comprising

a steering shaft supported on a vehicle so as to be freely and rectilinearly movable in a lateral direction and engaged with wheels being steered;

a drive shaft;

main electric drive means for driving the drive shaft;

drive transmitting means interposed between the drive shaft and the steering shaft and including a worm and a worm wheel which are engaged with each other for transmitting a drive from the main electric drive means to the steering shaft as an axial movement thereof;

auxiliary electric drive means for driving the steering shaft;

and clutch means interposed between the auxiliary electric drive means and the drive transmitting mechanism for achieving an engagement and disengagement between said auxiliary electric drive means and said drive transmitting mechanism.

5,249,639

STEERING CONTROL ARRANGEMENT

Jerry D. Marr, Metamora; Howard A. Marsden, Pekin, and Noel J. Rytter, Peoria, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Jul. 24, 1992, Ser. No. 915,733

Int. Cl.[5] B62D *5/30;* **F16B** *9/09*

U.S. Cl. 180—133 **10 Claims**

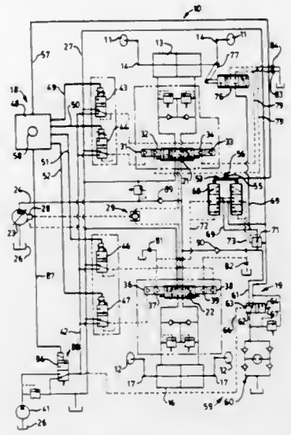
1. A steering control arrangement (**10**) for a vehicle having first and second pairs of steerable wheels (**11,12**) and first and second hydraulic actuators (**13,16**) individually operatively connected to the first and second pairs of steerable wheels (**11,12**) comprising:

a hydraulic pump (**23**);

first and second steering control valves (**21,22**) connected to the hydraulic pump (**23**) and individually fluidly connected to the first and second hydraulic actuators (**13,16**);

primary steering control means (**18**) for controlling the position of the first and second steering control valves (**21,22**) to effect steering movement of the first and second pairs of steerable wheels (**11,12**); and

back-up steering control means (**59**) for automatically hydraulically powering the first pair of steerable wheels (**11**) to a straight-ahead condition and for controlling the position of the second steering control valve (**22**) upon a failure of the primary steering control means (**18**).



5,249,640

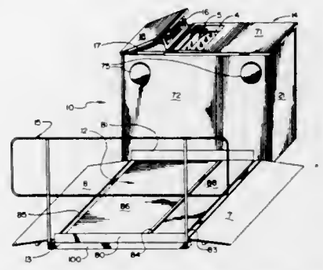
ROCKING PLATFORM FOR WHEEL CHAIR

Clinton E. Grove, R.R. 2, Elbow Lake, Minn. 56531

Filed Jul. 9, 1992, Ser. No. 911,568

Int. Cl.[5] B62B *9/22*

U.S. Cl. 180—166 **15 Claims**



1. An apparatus for supporting a wheel chair for rocking comprising:

a support platform with at least one wheel-securing opening for holding at least one wheel of said wheel chair;

a filler platform adapted to fit removably in the wheel-securing opening substantially in the plane of said support platform; and

means for moving the support platform and filler platform relative to each other so that the support platform moves between a rocking position with the filler platform moved from the wheel-securing opening and at least one wheel held in the wheel securing opening and a loading position in which the filler platform fits in the wheel-securing opening and supports said at least one wheel.

5,249,641

ANTI-SKID CONTROL SYSTEM FOR A REAR DRIVE VEHICLE

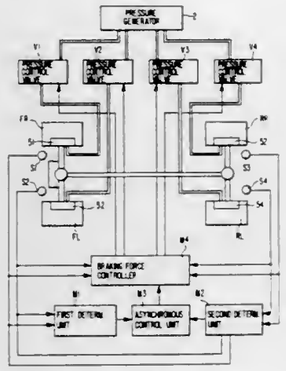
Yasunori Sakata, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Aug. 7, 1992, Ser. No. 925,633

Claims priority, application Japan, Aug. 10, 1991, 3-224613

Int. Cl.[5] B60K *28/16;* **B60T** *8/58*

U.S. Cl. 180—197 **4 Claims**



1. An anti-skid control system for controlling a braking force applied to road wheels of an automotive vehicle for driving right and left road wheels at a rear side of said vehicle, comprising:

wheel brake cylinders operatively connected to right and left road wheels, respectively, at front and rear sides of said vehicle for applying braking force thereto;

a hydraulic pressure generator for supplying a hydraulic braking pressure to each of said wheel brake cylinders;

actuating means disposed in each hydraulic circuit communicating said hydraulic pressure generator with each of said wheel brake cylinders for individually controlling the hydraulic braking pressure in each of said wheel brake cylinders;

wheel speed detecting means for detecting a front wheel speed of each of said front road wheels and a rear wheel speed representative of wheel speeds of said rear road wheels, and providing output signals corresponding to said front wheel speed and rear wheel speed;

braking force control means for controlling said actuating means in response to said output signal of said wheel speed detecting means to control the braking force applied to said road wheels;

first determination means for determining if at least one of said front road wheels is on a road surface of a coefficient of friction lower than a predetermined value and determining if the front wheel speed of one of said front road wheels has reached to a peak wheel speed;

second determination means for determining if a difference between said front wheel speed and said rear wheel speed is less than a predetermined speed; and

asynchronous control means for prohibiting said braking force control means from synchronously controlling the braking force applied to said front road wheels, when said first determination means determines that at least one of said front road wheels is on a road surface of the coefficient of friction lower than the predetermined value and that the wheel speed of one of said front road wheels has reached to the peak wheel speed, and said second determination means determines that a difference between said front wheel speed and said rear wheel speed is less than the predetermined speed.

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5,249,642

LIFTING APPARATUS

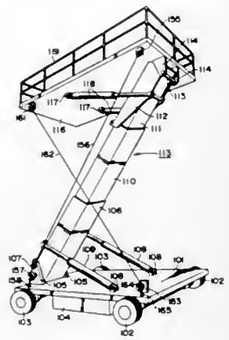
Mitsuhiro Kishi, Tochigi, Japan, assignor to Japanic Corporation, Tochigi, Japan

Filed Mar. 6, 1992, Ser. No. 847,954

Claims priority, application Japan, Mar. 22, 1991, 3-081287; Aug. 13, 1991, 3-228336

Int. Cl.[5] B66F *11/00*

U.S. Cl. 182—2 **19 Claims**



1. A lifting apparatus comprising a movable chassis, a platform disposed over the chassis, an elongated telescopic boom body extending between the chassis and the platform, said telescopic boom body comprising a plurality of boom sections which are telescopable into and out of the telescopic boom body in the longitudinal direction thereof, inclining means interposed between the chassis and the telescopic boom body for raising the telescopic boom body so that it is inclined with respect to the chassis, extension means housed within the telescopic boom body for telescoping the boom body to elongate and contract the same, wherein the platform, the telescopic boom body and the chassis are arranged to form a Z-shape when viewed from the side thereof and the telescopic boom body is telescopically moved and inclined relative to the chassis so as to move the platform vertically relative to the chassis while the platform is kept horizontal relative to the chassis, characterized in that: the lifting apparatus further comprises a slave-operated detecting mechanism including first and second winding drums, a first extension wire which has an end fixed to one lower surface of the platform and another end wound around the first winding drum, and a second extension wire which has an end fixed to another lower surface of the platform and another end wound around the second winding drum.

5,249,643

VEHICULAR SELF-PROPELLED AERIAL WORK PLATFORM AND TELESCOPING PARALLELOGRAM BOOM THEREFOR

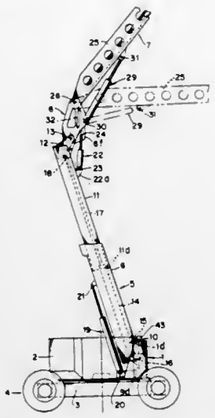
Robert D. Backer, Rouzerville, and Donald C. Hade, Jr., Waynesboro, both of Pa., assignors to Kidde Industries, Inc., Iselin, N.J.

Filed Apr. 3, 1992, Ser. No. 863,035

Int. Cl.[5] B66F *11/04*

U.S. Cl. 182—2 **30 Claims**

1. A vehicular aerial work platform comprising, a vehicle chassis, turntable means mounted on said vehicle chassis for rotation, support frame means mounted on said turntable means, a riser frame assembly, a telescopic boom having inner and outer ends, a telescopic cylinder assembly extending interior of said telescopic boom and having inner and outer ends, said inner and outer ends of said telescopic boom and said telescopic cylinder, respectively, pivotally connected to said support frame means and said riser frame assembly forming a telescopic parallelogram mechanism, work platform means connected to said riser frame assembly, and a lift cylinder connected between said turntable means and said telescopic



boom for raising and lowering the telescopic boom in a vertical plane.

5,249,644

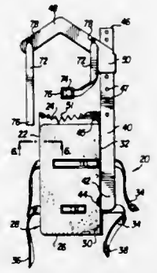
HOOK-TYPE TREE CLIMBING STAND

Joseph A. Amacker, 1212 Main St., Delhi, La. 71232

Filed Jan. 8, 1992, Ser. No. 818,262

Int. Cl.[5] A63B *9/00*

U.S. Cl. 182—134 **12 Claims**



1. Apparatus for engaging a generally vertical member for supporting a user above the ground, comprising:

a platform having one end thereof adapted for engaging the vertical member, the platform further including a foot receiving means;

a support arm supported along a longitudinal edge of said platform extending beyond the platform toward the vertical member;

a bow-shaped clamping portion secured on one end to the support arm and movable with respect to said platform to accommodate vertical members of various cross-sections, the other end of the clamping portion forming an opening with the platform for receiving the vertical member therebetween, the clamping portion having a concave side cooperating with the engagement end of the platform to secure the apparatus to the vertical member;

a safety strap being removably affixed to the clamping portion at opposite ends thereof for securing the clamping portion to the vertical member in a tightened embracing relationship after the apparatus has been mounted at a desired elevation above the ground.

5,249,645

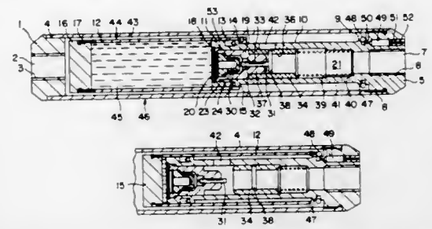
PRESSURE FLUID ACTUATED LUBRICATOR

Henry W. Wiklund, Bäckvägen 1, Arbra, Sweden

Filed Sep. 8, 1992, Ser. No. 941,540

Int. Cl.[5] F16N *11/10, 13/16*

U.S. Cl. 184—29 **6 Claims**



1. A pressure fluid actuated lubricator comprising a housing (**46**) having at least one pressure fluid channel (**43, 42, 21**) leading from an inlet opening (**2**) to an outlet opening (**7**) in said housing, a reservoir (**44**) for a lubricant (**45**) and a discharge device (**19**) for said lubricant provided in said housing, said discharge device communicating both with said reservoir and with a portion (**21**) of said channel which portion connects with said outlet opening,

characterized therein that an end part (**5**) of said housing (**46**) is provided with a substantially cylindrical first portion (**10**) terminating in a second, substantially cylindrical portion (**11**), said portions extending into said housing and said first cylindrical portion having a smaller diameter than said second cylindrical portion, an opening (**42**) being provided in a side of said first cylindrical portion to communicate with said channel portion (**21**) connecting with said outlet opening, said reservoir (**44**) being shaped as a cylindrical reservoir (**12**) which is closed at one end and which with an opposite, open end is passed over said second cylindrical portion which functions as a stationary piston along which said cylindrical reservoir is movable in a longitudinal direction, and a sealing member (**13**) provided between said cylindrical second portion and said cylindrical reservoir, wherein said pressure fluid passes between an inner wall of the open end of the cylindrical reservoir and said smaller diameter first cylindrical portion, through said opening defined in said first cylindrical portion and through said channel portion connecting with said outlet opening when said cylindrical reservoir is moved relative to said second cylindrical portion.

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ADJUSTING DEVICE FOR A BRAKE WITH RESETTING MEANS

Rudolf Thiel, Frankfurt am Main, Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

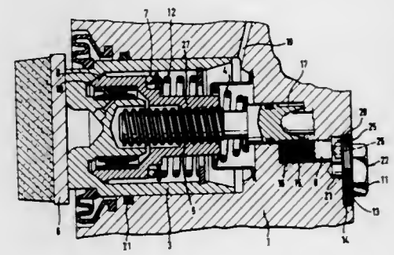
Continuation of Ser. No. 705,822, May 28, 1991, abandoned. This application Jul. 23, 1992, Ser. No. 919,079

Claims priority, application Fed. Rep. of Germany, May 26, 1990, 4017065

Int. Cl.[5] F16D *65/56*

U.S. Cl. 188—71.9 **6 Claims**

1. A disc brake having a brake housing formed with a cylinder bore, an actuator piston slidably mounted in said cylinder bore adapted to be axially advanced in an actuation direction with hydraulic pressure to actuate said brake, a self adjusting mechanism including a nut received within said piston; frictional engagement surfaces on said nut and said piston engaged upon axial advance of said nut towards said piston in said actuation direction; a threaded spindle extending within said nut and said piston and mounted to be axially movable therein in said actuation direction; a non locking threaded connection between said nut and said threaded spindle; a first spring carried by said piston and engaging said nut, urging said nut in the direction of movement of said piston during brake actuation and causing threaded advance of said nut on said non locking threaded connection with said spindle to be brought into engagement with said piston, said friction engagement surfaces engaged to lock said nut against further rotation; a second spring engaging said threaded spindle so as to resiliently restrain axial movement thereof in said actuation direction; said non locking threaded connection having a predetermined clearance allowing slight advancing movement of said engaged piston and nut on said threaded spindle, said piston separating from said nut upon axial displacement during actuation in excess of said clearance, with said nut thereby axially advanced on said threaded spindle by said first spring while said threaded spindle is held by said second spring; a mechanical actuator for axially advancing said threaded spindle to actuate said piston by axial advance of said nut; a releasable stop mechanism operable when engaged to prevent rotation of said threaded spindle to allow said spindle to axially advance of



said nut and piston by said mechanical actuator but when released to allow free rotation of said threaded spindle; said threaded spindle mounted to be freely rotatable about a spindle axis extending in said direction of movement of said piston, said spindle freely rotatable whenever released by said stop mechanism, said stop mechanism including an element mounted in said housing for rotation about an axis extending parallel to said spindle axis; said element engaged with said spindle so as to be rotated with rotation of said spindle, a releasable lock for selectively locking said element against rotation, a tool engagement feature for enabling selective rotation of said element upon release of said releasable lock, whereby release of said threaded spindle by release of said element of the stop mechanism allows said nut to be retracted thereof by axial pushing retraction of said piston inducing said free rotation of said threaded spindle, said tool engagement feature enabling rotation of said element to assist rotation of said spindle and retracting of said piston and nut.

5,249,647

DISK BRAKE WITH RETURN SPRING

Kinzo Kobayashi, Kanagawa, and Shinichi Nakayama, Yamanashi, both of Japan, assignors to Tokico Ltd., Kanagawa, Japan

Filed Jun. 18, 1992, Ser. No. 900,721

Claims priority, application Japan, Jun. 20, 1991, 3-046680[U]; Jul. 19, 1991, 3-056598[U]; Oct. 18, 1991, 3-085180[U]

Int. Cl.[5] F16D *55/224*

U.S. Cl. 188—72.3 **11 Claims**

1. A disk brake of a vehicle having a rotary disk, said disk brake comprising:

a carrier secured to a non-rotating part of the vehicle;

a pair of friction pads supported by said carrier at respective positions which face toward each other on opposite sides of the disk;

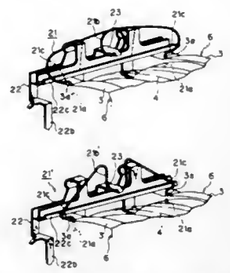
a pair of pad guides attached to said carrier, said pad guides slidably guiding said friction pads, respectively;

a caliper supported by said carrier and extending across said

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disk, said caliper actuatable to press said pair of friction pads against said disk;

a linear return spring located between said caliper and one of said pad guides and having two end portions retained by said pair of friction pads, respectively, said linear return spring biasing said friction pads away from said disk, said



linear return spring having only one loop between said two end portions, and portions of said spring crossing one another at an outer end of the loop most remote from the disk in the radially outward direction thereof; and

an arresting member extending from said one of said pad guides to an inner end of said loop, closest to the disk, and retaining the spring at said inner end of the loop thereof.

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WEDGE TYPE DISC BRAKE

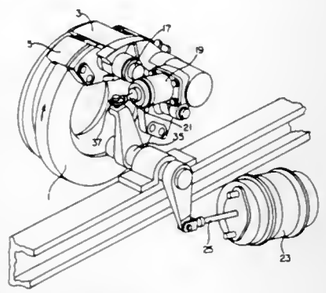
Philippe Bejot, Paris, and Edgard Fabbro, Le Vesinet, both of France, assignors to Bendix Europe Services Techniques, Drancy, France

Continuation of Ser. No. 821,878, Jan. 17, 1992, abandoned, which is a continuation of Ser. No. 640,191, Jan. 11, 1991, abandoned. This application Oct. 28, 1992, Ser. No. 967,918

Claims priority, application France, Jan. 31, 1990, 90 01119

Int. Cl.[5] F16D *55/2265*

U.S. Cl. 188—72.7 **1 Claim**



1. A disc-brake comprising:

a clevis;

only one column secured on the clevis;

a caliper sliding on said column along a first direction, said caliper receiving, during a braking operation, a driving force generated by friction of a brake pad on a disc and applied along a second direction substantially perpendicular to said first direction, said driving force causing a flexion of said column;

a wedge slidingly supported by the caliper and moveable along said second direction, a movement of said wedge along said second direction resulting in a braking operation; and

force generating means for moving said wedge by the application of a braking force on said wedge, wherein said braking force is generated between said clevis and said wedge, is substantially parallel to said driving force, and opposes the flexion caused by said driving force on said column.

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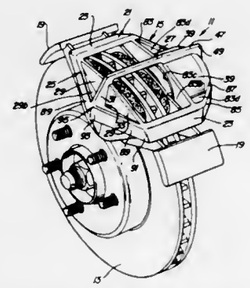
DISC BRAKE CALIPER OF CONTINUOUS HOOP TYPE

J. Bruce Emmons, 1711 W. Hamlin Rd., Rochester, Mich. 48309

Filed Jun. 3, 1991, Ser. No. 709,338

Int. Cl.[5] F16D *55/00*

U.S. Cl. 188—73.47 **1 Claim**



1. A disc brake caliper of the type for use in combination with a rotor engageable by brake pads which receive a certain braking load, said disc brake caliper comprising:

a pair of identical bridge members which are spaced a certain distance apart;

a first diamond shaped flat plate acting in compression and connected to said pair of identical bridge members;

a first pair of identical tension members being mutually connected at a respective first end thereof and each of said first pair of identical tension members further having a respective second end thereof which is connected to a unique one of said pair of identical bridge members;

triangular shear web member means connected to each of said first pair of identical tension members and to said first diamond shaped flat plate for increasing the uniformity at which the braking load is applied to said brake pads;

socket means for receiving a cylinder;

a central bridge member having a first end connected to said socket means and a second end forming a rib which is connected to said first pair of identical tension members and which extends below said first pair of identical tension members effective to support said first diamond shaped flat plate;

a second pair of identical tension members, each having a first respective end thereof which is connected to a unique one of said pair of identical bridge members and a second respective end connected to said socket means, said second pair of identical tension members cooperating with said pair of identical bridge members and with said first pair of identical tension members to form a continuous hoop surrounding the periphery of said disc brake caliper; and

a second diamond shaped flat plate acting in compression and connected to said second pair of identical tension members, said second diamond shaped flat plate cooperating with said first diamond shaped flat plate to maintain a spacing between said pair of identical bridge members.

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MOTORCYCLE FRONT WHEEL DISC BRAKE ARRANGEMENT

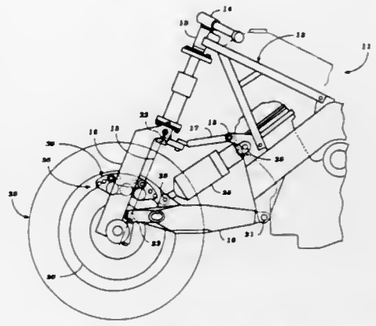
Toyoji Tanaka, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Nov. 1, 1991, Ser. No. 786,537

Claims priority, application Japan, Nov. 30, 1990, 2-340846

Int. Cl.[5] B62L *1/02*

U.S. Cl. 188—344 **7 Claims**



1. A front wheel suspension and brake assembly for a motorcycle having a frame, a front wheel, a generally vertically extending axle carrier lying on one side of said front wheel and supported for steering movement about a steering axis offset from said axle carrier, said axle carrier rotatably journaling said front wheel about a rotational axis, a brake rotor fixed for rotation with said front wheel and journaled by said axle carrier for rotation about said rotational axis, a brake caliper carried by said axle carrier and disposed substantially centrally thereon in side view, and braking means operated by said brake caliper for braking the rotation of said brake rotor comprising a first piston aligned with said axle carrier, a second piston disposed forwardly of said axle carrier and a third piston disposed rearwardly of said axle carrier, one of said second and third pistons lying on said steering axis.

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PNEUMATIC BRAKE BOOSTER WITH IMPROVED RESPONSE TIME

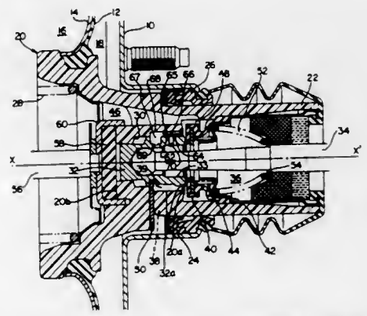
Jean-Pierre Gautier; Ulysse Verbo, both of Aulnay-Sous-Bois, and Miguel Perez, Argenteuil, all of France, assignors to Bendix Europe Services Techniques, Drancy, France

Filed May 4, 1992, Ser. No. 878,269

Claims priority, application France, May 14, 1991, 91 05845

Int. Cl.[5] B60T *13/56*

U.S. Cl. 188—357 **4 Claims**



1. A pneumatic-brake-booster, comprising a casing inside which is situated a piston comprising a rear tubular part which supports a skirt and which with the aid of a diaphragm defines a front chamber connected permanently to a vacuum source and a rear chamber connected selectively to one of said front chamber and atmosphere by first valve means actuated by a control rod adapted to bear, by means of a plunger against one face of a reaction disk adjacent a push rod, said first valve means comprising a valve closure member cooperating with a first valve seat at said plunger and with a second valve seat at said piston, the rear chamber connected to the atmosphere via an annular space defined between said first and second valve seats when the plunger is displaced into the piston, characterized in that the plunger has at least one radial passage being, at rest and during normal braking, closed sealingly by a piston portion of the piston and being, during heavy braking uncovered by the piston portion to bring the rear chamber into communication with the atmosphere, the radial passage and piston portion forming second valve means separate from the first valve means and which is selectively operational during heavy braking.

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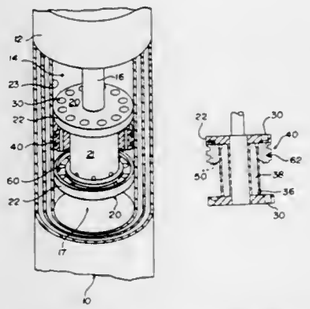
TWO STAGE DAMPING SHOCK ABSORBER

Noel E. Leitzman, and Robert J. Selzer, both of Fort Wayne, Ind., assignors to Navistar International Transportation Corp., Chicago, Ill.

Filed Jun. 19, 1992, Ser. No. 901,452

Int. Cl.[5] F16F *9/34*

U.S. Cl. 188—282 **18 Claims**



1. A two stage shock absorber comprising a shock absorber casing, a rod slidably disposed in said casing and having a piston assembly thereon, said piston providing a low resistance fluid pathway therethrough and further incorporating blocking means slidably disposed in and frictionally engaging said casing and having a range of motion relative to said piston and operatively associated with said piston to close said low resistance fluid pathway when said blocking means is at extremes of said range of motion; said blocking means having a high resistance pathway therein which provides the sole fluid path past said piston assembly when said low resistance pathway is blocked by said blocking means.

5,249,653

HAND LUGGAGE WITH INTELLIGENT OPENING FEATURE

William L. King, Denver, Colo., assignor to Samsonite Corporation, Denver, Colo.

Continuation of Ser. No. 854,505, Mar. 19, 1992, abandoned. This application Sep. 15, 1992, Ser. No. 946,047

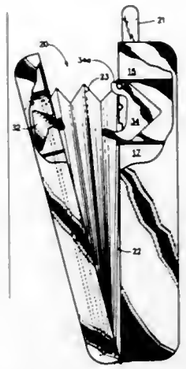
Int. Cl.[5] A45C *3/02, 13/00*

U.S. Cl. 190—109 **12 Claims**

1. A case comprising a base shell, a lid shell hinged along a bottom side to the base shell, a handle at an upper side of said case, a divider panel positioned between the base shell and the lid shell which is hinged near said bottom side of the base shell inside the case, and means for holding the divider panel in an

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open or a closed position relative to the lid shell, the lid shell has a height dimension, the divider panel extending only part of said height dimension from the hinged side of the lid shell



toward the upper edge of the case, at least one closeable pocket is positioned on the inside of at least one of the shells between the upper edge of the divider panel and the upper side of the case.

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SURFACE RAIL FOR COMPOSITE CONTINUOUS RAIL

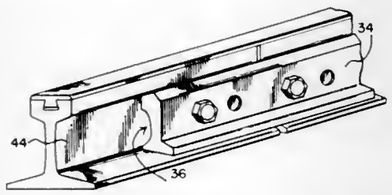
Donald D. Bruning, 7137 Carter Trail, Boulder, Colo. 80301

Continuation-in-part of Ser. No. 760,658, Sep. 16, 1991, Pat. No. 5,154,346, which is a division of Ser. No. 569,104, Aug. 17, 1990, Pat. No. 5,120,910. This application Jun. 5, 1992, Ser. No. 894,385

The portion of the term of this patent subsequent to Jun. 9, 2009, has been disclaimed.

Int. Cl.[5] B60M *1/34*

U.S. Cl. 191—22 DM **14 Claims**



1. A surface rail for mounting on a support rail to form a composite rail with a continuous operative surface, wherein the composite rail has a plurality of the support rails connected end-to-end with an expansion joint between each support rail, and each of the support rails has a head with a predetermined cross-sectional shape, said surface rail comprising:

a running rail having a length independent of the length of the support rails and having an upper surface for providing the operative surface of the composite rail and for spanning the expansion joints;

said running rail having an undersurface shaped to slideably engage the predetermined shape of the head of the support rails so that said running rail slides relative to the support rails as the support rails or said running rail expand or contract.

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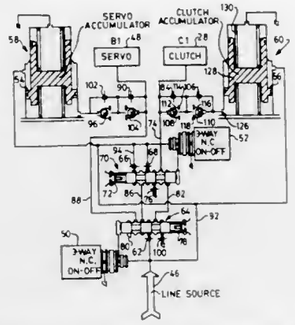
CONTROL AND ACTUATION SYSTEM FOR HYDRAULICALLY ACTUATED CLUTCH AND BRAKE

Dennis W. Person, Canton, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 31, 1992, Ser. No. 937,264

Int. Cl.[5] F16D *67/04*

U.S. Cl. 192—17 A **14 Claims**



1. A system for controlling engagement and release of hydraulically operated friction elements, comprising:

a source of fluid pressure (**46**);

a low pressure exhaust;

first and second friction elements (**28, 48**);

a first shuttle valve (**64**) having control lands on a valve spool moveable between first and second states, at which valve ports connected to the fluid pressure source, second friction element, a second shuttle valve (**70**) and exhaust are opened and closed, wherein

the first shuttle valve when in its first state opens a connection between the pressure source and the first friction element through said second shuttle valve, and opens a connection between the second friction element and the exhaust;

the first shuttle valve when in its second state opens a connection between the pressure source and second friction element through the second shuttle valve and opens the first friction element to exhaust;

the second shuttle valve (**70**) having control lands on a valve spool moveable between first and second states, at which valve ports connected to the fluid pressure source, first friction element, first shuttle valve and an exhaust port are opened and closed, wherein

the second shuttle when in its first state opens a connection between the pressure source and the second friction element through the first shuttle valve, and opens a connection between the first friction element and said exhaust port; and the second shuttle valve when in its second state opens a connection between the pressure source and the second friction element through the first shuttle valve, and opens the first friction element to one of exhaust and the pressure source depending on the state of the first shuttle valve.

5,249,656

CLUTCH

Ken Yanagisawa, c/o, Kabushiki Kaisha Mechnaic Sekkei Jimusho, 5175-1, Ooaza Toyoshina, Toyoshina-machi, Minamiazumi-gun, Nagano-ken, Japan

Continuation of Ser. No. 745,330, Aug. 15, 1991, abandoned. This application Jun. 17, 1992, Ser. No. 899,934

Int. Cl.[5] F16D *67/04, 13/30*

U.S. Cl. 192—18 A **19 Claims**

1. A variable torque transmitting cone type clutch, comprising:

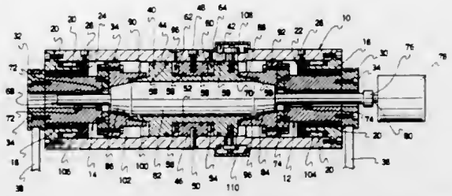
a clutch housing;

a rotary shaft;

a rotor coaxial to said rotary shaft;

a clutch member affixed to said rotor, said clutch member reversibly switching said rotor from an engaged state to a free state with respect to said rotary shaft;

biasing means for biasing said clutch member so as to cause said rotor to be in the engaged state, said biasing means being elastically provided between said clutch housing and said rotor; and



a movable body being movable in the axial direction of said rotary shaft, said movable body pressing said clutch member against the biasing force of said biasing means so as to cause said rotor to be in the free state when said movable body is moved by driving means,

whereby movement of the movable body into contact with the clutch member causes an instantaneous change from the engaged state to the free state.

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MOTOR-OPERATED ACTUATOR

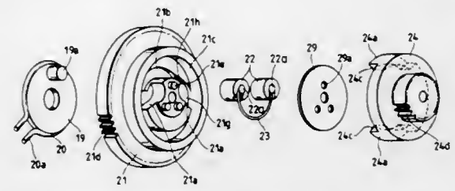
Sotsuo Miyoshi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 4, 1992, Ser. No. 878,424

Claims priority, application Japan, May 14, 1991, 3-107910

Int. Cl.[5] F16D *21/04*

U.S. Cl. 192—20 **11 Claims**



1. A motor-operated actuator comprising:

a clutch mechanism, provided between a drive member operating in association with a motor shaft of a motor and a driven member operating in association with an output shaft, for transmitting a driving torque of said drive member to said driven member, the transmission of said torque being suspended when said motor is stopped.

said clutch mechanism including a pair of clutch rollers coupled to each other through a return spring;

said drive member including a clutch input gear having roller guide walls in a form of sector for receiving one of said clutch rollers;

said driven member including a clutch output gear having transmission protrusion to be engaged with said clutch input gear by said clutch mechanism;

said clutch input gear and said clutch output gear being rotatably mounted about a common shaft;

wherein said clutch rollers are set in slide recesses formed inside said clutch input gear, and are held by a clutch holding plate.

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TRANSMISSION CONTROLLER

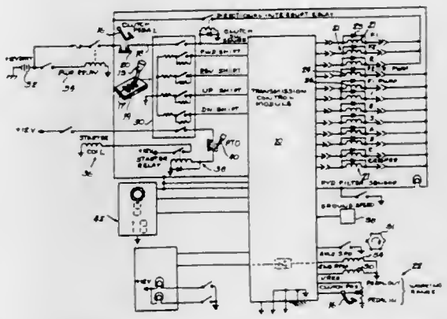
Victor D. Goeckner, Auburn, and Ronald W. Steffen, Springfield, both of Ill., assignors to DICKEY-john Corporation, Auburn, Ill.

Continuation of Ser. No. 470,753, Jan. 26, 1990, which is a continuation-in-part of Ser. No. 446,307, Dec. 5, 1989, abandoned. This application Jan. 17, 1992, Ser. No. 822,078

The portion of the term of this patent subsequent to Jan. 21, 2009, has been disclaimed.

Int. Cl.[5] F16D *43/20*

U.S. Cl. 192—0.032 **8 Claims**



1. A transmission controller for use with a vehicle having a transmission including a plurality of gears, a solenoid valve operated clutch, and a solenoid valve for operating said solenoid valve-operated clutch, said controller comprising: current generating means for generating a controlled current flow for operating said solenoid valve; current monitoring means for producing a current signal corresponding to the current flow to said solenoid valve; vehicle monitoring means for producing a predetermined threshold signal corresponding to a point at which said clutch begins to carry a predetermined amount of torque; memory means for retaining information corresponding to said current signal; and correlating means responsive to said threshold signal for causing said memory means to retain calibration information corresponding to the current signal produced when said threshold signal occurs, such that said retained calibration information corresponds to the current flow to said solenoid valve when said clutch begins to carry said predetermined amount of torque.

5,249,659

VISCOUS-FLUID DISC DAMPER

Hirotaka Fukushima, Neyagawa, Japan, assignor to Daikin Clutch Corporation, Osaka, Japan

Filed Sep. 24, 1991, Ser. No. 764,855

Claims priority, application Japan, Oct. 29, 1990, 2-293322

Int. Cl.[5] F16D *3/14, 47/02*

U.S. Cl. 192—70.17 **42 Claims**

1. A viscous-fluid disc damper comprising:

a drive plate defining a containing space;

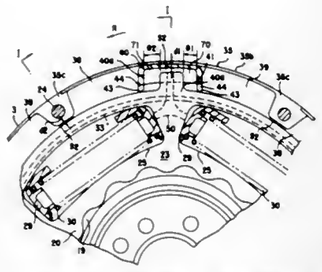
a driven plate coaxially disposed within said containing space; and

a damping mechanism, disposed between said plates, employing a viscous fluid medium for absorbing torsional torque, wherein said damping mechanism, in response to operational angular movement of said drive plate and said driven plate relative to each other, produces viscous resistance variable in dependency on said operational angular movement, independently of a relative positional angle of said drive and said driven plates to each other;

said damping mechanism comprises a first viscous-damping means which generates low viscous resistance in response

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to small-angle operational angular movement, and a second viscous-damping means which generates a high vis-



cous resistance in response to large-angle operational angular movement, independently of said positional angle.

5,249,660

CLUTCH DISC FOR A MOTOR VEHICLE FRICTION CLUTCH

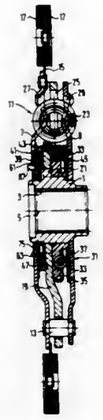
Reinhard Feldhaus, Ebenhausen; Matthias Fischer, Eltingshausen, and Harald Jeppe, Schweinfurt, all of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Mar. 5, 1992, Ser. No. 846,677

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1991, 4107125

Int. Cl.[5] F16D *13/64, 3/14, 3/66*

U.S. Cl. 192—106.2 **15 Claims**



1. A clutch disc for a motor vehicle friction clutch, comprising:

a hub (1) which defines a rotational axis (5);

a torsional oscillation damper (11) having an input part (7, 9), and an output part (19) rotatable around the rotational axis (5) relative to the input part (7, 9) and connected with the hub (1) in torque-transmitting manner, a first one of said parts being provided with a first disc part (19), a second one of said parts being provided with two second discs (7, 9) arranged axially on both sides of the first disc part (19), and being rigidly connected together, and a plurality of springs (23) coupling the input part (7, 9) rotationally elastically with the output part (19), the springs (23) being mounted in windows (25) of the first disc part (19) and engaging in windows (27, 29) of the second disc parts (7, 9);

a friction device (41, 43, 45) having a friction ring (41) mounted axially between the first (19) and one (7) of the second disc parts (7, 9), said friction ring (41) bearing by means of a friction surface (47) on the first disc part (19) and having, engaging axially into openings (61) of the one (7) of the two second disc parts (7, 9) lugs (39) which drive the friction ring (41) solid in rotation but axially movably on said one (7) of the two second disc parts (7, 9), and having a disc spring (43) tensioning the friction ring (41) axially resiliently against the first disc part (19);

clutch friction lining (17) held on the input part (7, 9);

wherein the friction ring (4) and the lugs (39) are formed integrally as a plastic molding; and

wherein the disc spring (43) has an annularly closed spring body (49) and is mounted axially between said one (7) of the two second disc parts (7, 9) and the friction ring (41), and has, protruding approximately radially from the annularly closed spring body (49) thereof, flexible tongues (51) which with their ends centrally engage the friction ring (41), while the spring body engages (49) with its edge radially facing away from the flexible tongues (51) said one (7) of the two disc parts (7, 9), and wherein each lug (39) of the friction ring (41) extends through a space between a pair of adjacent flexible tongues (51) in peripheral direction.

5,249,661

SYNCHRONIZER RING

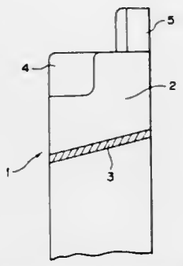
Osamu Kawamura, Shimotsuga, and Shigeo Murata, Sagamihara, both of Japan, assignors to Nippon Piston Ring Co., Ltd. and Nissan Motor Co., Ltd., both of Japan

Filed Jun. 19, 1992, Ser. No. 901,173

Claims priority, application Japan, Jun. 21, 1991, 3-150504

Int. Cl.[5] F16D *23/04*

U.S. Cl. 192—107 M **15 Claims**



1. A synchronizer ring for synchronous operation with and separating from an object member, comprising:

a ring body having a sliding surface for slidable contact with the object member;

a flame-coated film formed on the sliding surface, said flame-coated film comprising one of molybdenum and molybdenum alloy, and a ceramic material present in an amount of 5–30% by weight.

5,249,662

PARTS FEEDING APPARATUS

Hironobu Nakano, Hyogo; Atsushi Hagihara, Kasai; Syozo Kawashima, Ono, and Kuniyoshi Nakashima, Kasai, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Continuation of Ser. No. 504,225, Apr. 4, 1990, abandoned. This application Aug. 10, 1992, Ser. No. 926,363

Claims priority, application Japan, Apr. 5, 1989, 1-86549; Apr. 20, 1989, 1-100760

Int. Cl.[5] B65G *37/00*

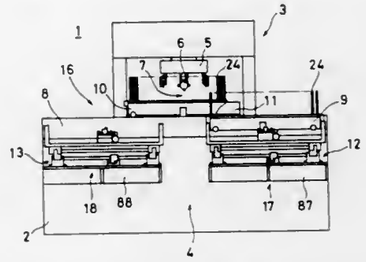
U.S. Cl. 198—346.1 **11 Claims**

1. A parts feeding apparatus, comprising:

a plurality of parts feeding tables each of said parts feeding tables holding a plurality of parts cassettes, each of said parts feeding tables including positioning means for positioning a parts cassette, and engagement means for engaging clamp means;

clamp means disposed on each of said plurality of parts cassettes for individually attaching and detaching respective parts cassettes from the parts feeding table through manual operation of said clamp means;

a table positioning unit movable along a table transfer path for loading at least one parts feeding table, said table



positioning unit positioning said parts feeding table wherein an arbitrary parts cassette loaded thereon is brought to a predetermined position within a working area;

a standby area arranged in parallel with said working area; and

a table transport unit provided in connection to said standby area for unloading the parts feeding table from said table positioning unit and for loading the parts feeding table in said standby area to said table positioning unit.

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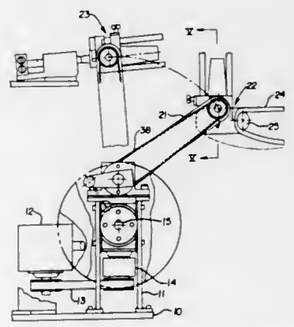
APPARATUS TO LOAD WORKPIECES

Gary W. McCoy, Evans City; John Zwigart, New Brighton, and Mark R. Tweedy, Valencia, all of Pa., assignors to Carl Strutz and Company, Inc., Mars, Pa.

Filed Oct. 4, 1991, Ser. No. 771,638

Int. Cl.[5] B65G *25/00*

U.S. Cl. 198—468.2 **18 Claims**



1. Apparatus to load workpieces on a carrier for a decorator, said apparatus including the combination of:

means for conveying a workpiece to a transfer site;

gripper means including a displaceable gripper movable relative to a stationary gripper for supporting a workpiece at said transfer site, said gripper means includes a gripper block, a pivot rod supported by said gripper block, a bell crank attached to said pivot rod and responsive to movement by an actuating lever to pivot said pivot rod, and means for connecting said displaceable gripper to said pivot rod;

a swing arm supporting said gripper means at one end thereof for movement between said workpiece transfer site and a workpiece loading position;

means including said actuating lever moveable with said swing arm for moving the displaceable gripper into a workpiece gripping position with the stationary gripper at said transfer site and for moving the displaceable gripper into a workpiece release position with said stationary gripper at said workpiece loading position;

means joined to the end of said swing arm opposite said gripper means for reciprocating said swing arm between a workpiece receiving position and a workpiece discharge position; and

means connected between said means for moving and said means for reciprocating for synchronizing by a timed relation the operation of said means for reciprocating and said means for moving.

5,249,664

SCRAPER UNITS FOR SCRAPER-CHAIN ASSEMBLIES

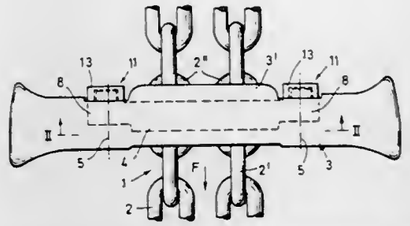
Bernd Steinkuhl, Lunen, Fed. Rep. of Germany, assignor to Westfalia Becorit Industrietechnik, GmbH, Fed. Rep. of Germany

Filed May 8, 1992, Ser. No. 880,889

Claims priority, application Fed. Rep. of Germany, May 15, 1991, 4115810

Int. Cl.[5] B65G *19/24*

U.S. Cl. 198—731 **14 Claims**



1. In a scraper-unit for a scraper-chain assembly, said unit comprising a scraper and a clamping strap which are connected together with one or more screw-threaded connectors engaged in bores to fasten the unit to one or more horizontal links of at least one elongate oval link chain, the strap forming a bed for supporting the horizontal link with the bores extending generally parallel to the longitudinal direction of the chain; the improvement comprising a pivot joint pivotably connecting the scraper and the clamping strap and serving to create a clamping force on the one or more horizontal chain links and directed transversally to the chains as the or each screw-threaded connectors is tightened and fastened.

5,249,665

BAKERY PAN CONVEYOR

Richard M. Silzer, Chesterfield, and William M. Hasse, St. Charles, both of Mo., assignors to Continental Baking Company, St. Louis, Mo.

Filed Sep. 18, 1992, Ser. No. 947,762

Int. Cl.[5] B65G *47/84*

U.S. Cl. 198—803.01 **11 Claims**

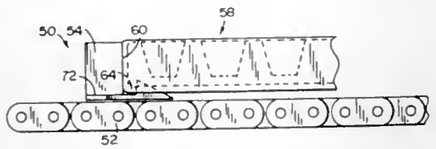
1. A bakery pan conveyor for conveying a bakery pan of the type having a peripheral sidewall, said conveyor comprising:

an endless conveyor member defining an upper flight for supporting a bakery pan;

at least one elongated flight lug extending transversely of said upper flight for engaging the bakery pan and moving the pan with said upper flight; and

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pan engagement means secured to upper flight at said flight lug for engaging and retaining the bakery pan in a positive fashion adjacent said flight lug, said pan engagement



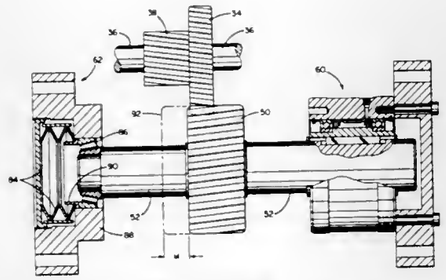
means defining a hook forming a gap with said flight lug and which is positioned to receive a sidewall of the bakery pan.

5,249,666

LOAD COMPENSATOR FOR GEARED HOLDBACK DEVICES

John R. Gorski, Foxpoint, and R. William Hankes, West Allis, both of Wis., assignors to The Falk Corporation, Milwaukee, Wis.

Filed Apr. 3, 1992, Ser. No. 862,938
Int. Cl.[5] B65G *23/00*; F16D *67/00*
U.S. Cl. 198—832.2 **25 Claims**



25. A conveyor system, comprising:

an endless conveyer belt of extensive length trained about belt drive pulleys at spaced intervals along the belt;

a speed reducer gearbox connected to drive each belt drive Pulley and adapted to prevent uncontrolled reverse movement of the belt due to load on the belt when input power is discontinued, each gearbox comprising;

an input gear adapted for connection with a source of input power for rotating the input gear in one direction during power transmission;

a helical second gear in driven relationship with the input gear for transmitting power to a belt drive pulley;

a helical control gear in mesh with the second gear and normally rotatable with the helical second gear in idling relationship when the input gear rotates in said one direction during power transmission;

a unidirectional holdback device connected with the control gear including one member rot a with the control gear and one member held against rotation, together with one-way power transmission means cooperating with the rotatable and stationary members to allow idling rotation of the control gear during power transmission through the gearbox and activated by reverse rotation of the control gear to prevent reverse rotation of the control gear and the helical second gear by a load transmitted to the control gear by the pulley when input power to the gearbox is discontinued; and

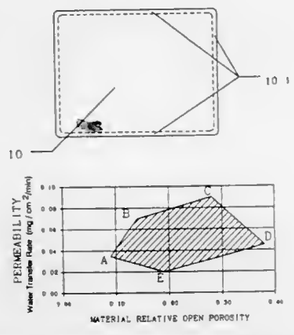
means yieldably mounting the control gear for limited axial movement relative to the rotatable holdback member to allow limited reverse rotation of the helical second gear when the holdback device is activated, thereby to permit limited movement of the belt adequate to assure activation of the holdback device in each gearbox so that the load on the belt is shared by each holdback device.

5,249,667

APPARATUS FOR MAINTAINING OPTIMUM ARTIST'S PIGMENT MEDIA CHARACTERISTICS AND METHOD OF MAKING SAME

David C. Hill, Attleboro, and Richard A. Hildebrandt, Chappaquiddick Island, both of Mass., assignors to MLC Technologies, Inc., Attleboro, Mass.

Filed Oct. 5, 1990, Ser. No. 593,113
Int. Cl.[5] B05C *17/00*
U.S. Cl. 206—1.8 **17 Claims**



10. An artist's palette comprising a generally thin, essentially entirely flat plate solely of a substrate of porous material and a coating deposited on the substrate, the combined coating and substrate having water permeability versus relative open porosity within the pentagonal area defined by points A, approximately 0.035 permeability, 0.09 open porosity; B, approximately 0.07 permeability, 0.14 open porosity; C, approximately 0.09 permeability, 0.28 open porosity; D, approximately 0.045 permeability, 0.38 open porosity; E, approximately 0.02 permeability, 0.19 open porosity of FIG. **12**.

5,249,668

METHOD AND APPARATUS FOR TRANSPORTING AND DISPLAYING NECKTIES

Frank Fenton, Edison, N.J.; Jeffrey Spiegel, New York, N.Y.; Thomas Shea, Norwalk, Conn., and Lawrence Stuart, Morristown, N.J., assignors to Randa Corporation, New York, N.Y.

Filed Jul. 14, 1992, Ser. No. 912,984
Int. Cl.[5] B65D *85/62*
U.S. Cl. 206—45.14 **8 Claims**

1. An apparatus for protecting a plurality of vertically hanging slender articles of clothing, comprising:

a rigid, upright standing containment means, having a square cross-section and an interior divided into a plurality of regular, equally spaced compartments by vertically extending segregating means;

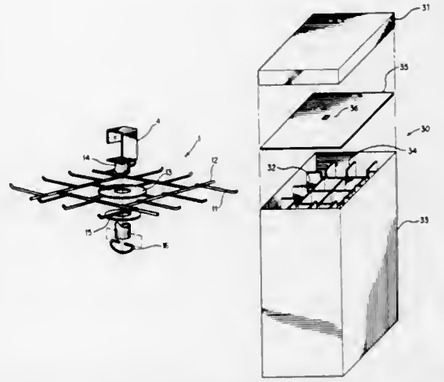
the top-most edge of said segregating means being provided with a central region less than the total width of said containment means, and having a recess so as to form a square, horizontal plane, extending in all directions to the interior edge of the surrounding segregating means;

a closing means adapted to seal the top of said containment means;

a unitary, horizontally disposed and planar slender article supporting means having a vertical center, adapted for location within said containment means;

said supporting means having a means for demountable attachment to a horizontally extending bar or rod, the demountable attachment means being rotatably fastened to said vertical center of said supporting means;

said supporting means having a plurality of outwardly extending means, adapted for supporting the slender articles, the number of slender article supporting means corresponding to the number of equally spaced compartments; and



said slender article supporting means having a length, when measured from said vertical center, which is less than one-half of the width of said containment means;

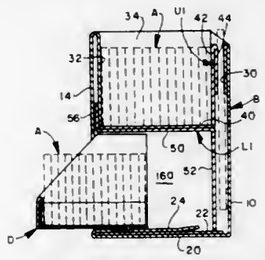
whereby said supporting means is horizontally positionable within said recess of said central region, such that slender articles carried upon said slender article supporting means are located within said compartments, and the entire containment means and supporting means can be sealed by said closing means.

5,249,669

DISPLAY CONTAINER

Michael Resnick, 9830 Huber La., Niles, Ill. 60648, and Harold E. Cravens, 6521 Winston Dr., Woodridge, Ill. 60517

Filed Dec. 24, 1992, Ser. No. 996,625
Int. Cl.[5] B65D *5/38*
U.S. Cl. 206—45.15 **19 Claims**



1. A display container for holding, displaying, and dispensing articles, said container including a plurality of components each being formed from a unitary sheet of foldable paperboard, and comprising:

(a) a generally rectilinear, vertically disposed, tubular body member open at the top, closed at the bottom, and having an uninterrupted horizontal bottom wall, three uninterrupted, vertical side walls, and one vertical side wall having a drawer receiving opening therein;

(b) said container having a shelf that extends between said body front, rear, and side walls and divides the interior of said body into separate upper and lower compartments above and below said shelf;

(c) a drawer member positioned for sliding movement into and out of said lower body compartment;

(d) said body and drawer members having interlocking means engageable with each other to prevent the accidental removal of said drawer member from said body member.

8. A display container for holding, displaying, and dispensing articles, said container including a plurality of components each being formed from a unitary sheet of foldable paperboard, and comprising:

(a) a generally rectilinear, vertically disposed, tubular body member open at the top, closed at the bottom, and having an uninterrupted horizontal bottom wall, uninterrupted vertical rear and side walls, and a vertical front wall having a drawer receiving opening in a lower portion thereof;

(b) certain of said body member vertical walls each including inner and outer panels;

(c) a pair of upper and lower insert members positioned within said body member and having horizontal panels disposed in face-to-face relationship and cooperating with each other to form a shelf extending between said body member vertical walls to divide the interior of said body member into separate upper and lower compartments located above and below said shelf;

(d) said insert members having vertical panels sandwiched between certain of said body member vertical wall inner and outer panels to maintain said insert members in predetermined fixed positions within said body member;

(e) a drawer member positioned for sliding movement into and out of said body member lower compartment.

14. A display container for holding, displaying, and dispensing articles, said container including a plurality of components each being formed from a unitary sheet of foldable paperboard, and comprising:

(a) a generally rectilinear, vertically disposed, tubular body member open at the top, closed at the bottom, and having an uninterrupted horizontal bottom wall, uninterrupted vertical rear and side walls, and a vertical front wall having a drawer receiving opening in a lower portion thereof;

(b) certain of said body member vertical walls each including inner and outer panels;

(c) at least one insert member positioned within said body member and having a horizontal panel forming a shelf extending between said body member vertical walls to divide the interior of said body member into separate upper and lower compartments located above and below said shelf;

(d) said insert member having at least one vertical panel sandwiched between certain of said body member vertical wall inner and outer panels to maintain said insert member in a predetermined fixed position within said body member;

(e) a drawer member positioned for sliding movement into and out of said body member lower compartment.

5,249,670

AWARD RECOGNITION PACKAGE

Doris M. Simon, Owatonna, Minn., assignor to Jostens, Inc., Minneapolis, Minn.

Filed Mar. 11, 1992, Ser. No. 850,097
Int. Cl.[5] B65D *25/00*
U.S. Cl. 206—45.31 **4 Claims**

1. An award recognition package having a top side and a bottom side and four sides, comprising:

an originally flat blank of relatively stiff foldable sheet stock having a back surface and a front surface, the sheet stock cut so as to define a generally rectangular base section having first, second, third and fourth sides, and

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first, second, third and fourth flaps each extending respectively from a side of the base section;

the back surface of the base section defining the bottom side of the package;

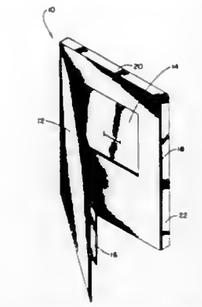
the first flap folded up and over the front surface of the base section to define a first fold and a second fold, the first fold being positioned at the intersection of the base section and the first flap, the second fold being positioned a predetermined distance away on the first flap, the portion of sheet stock between the first and second folds forming a first side of the package;

the remaining portion of the first flap which does not fall between the first and second folds having a window cut-out;

the second flap folded up and over the back surface of the first flap to define a third fold and a fourth fold, the third fold being positioned at the intersection of the base section and second flap, the fourth fold being positioned a predetermined distance away on the second flap, the portion of sheet stock between the third and fourth folds forming a second side of the package, the second flap including a tab section which is slidably received by the window cut-out of the first flap;

the remaining portion of the second flap which does not fall between the third and fourth folds having an award display area;

the third flap folded up and over the back surface of the second flap to define a fifth fold and a sixth fold, the fifth



fold being positioned at the intersection of the base section and the third flap, the sixth fold being positioned a predetermined distance away on the third flap, the portion of sheet stock between the fifth and sixth folds forming a third side of the package;

the remaining portion of the third flap which does not fall between the fifth and sixth folds having a window cut-out sized and positioned to display the award display area on the second flap;

the fourth flap folded up and over the back surface of the third flap to define a seventh fold and an eight fold, the seventh fold being positioned at the intersection of the base section and the fourth flap, the eighth fold being positioned a predetermined distance away on the fourth flap, the portion of sheet stock between the seventh and eighth folds forming a fourth side of the package, and

the remaining back surface portion of the fourth flap which does not fall between the seventh and eighth folds forming a top side of the package.

3. An award recognition package having back, bottom, right, top, left and front sides, comprising;

an originally flat blank of relatively stiff foldable sheet stock having a back surface and a front surface, the sheet stock cut so as to define a generally rectangular base section having top, bottom, left and right sides, and

top, bottom, left and right flaps each extending respectively from a side of the base section;

the back surface of the base section defining a back side of the package;

the top flap folded up and over the front surface of the base section to define a first fold and a second fold, the first fold being positioned at the intersection of the base section and the top flap, the second fold being positioned a predetermined distance away on the top flap, the portion of sheet stock between the first and second folds forming a top side of the package;

the remaining portion of the top flap which does not fall between the first and second folds having a window cut-out;

the bottom flap folded up and over the back surface of the top flap to define a third fold and a fourth fold, the third fold being positioned at the intersection of the base section and the bottom flap, the fourth fold being positioned a predetermined distance away on the bottom flap, the portion of sheet stock between the third and fourth folds forming a bottom side of the package, the bottom flap including a tab section which is slidably received by the window cut-out of the top flap;

the remaining portion of the bottom flap which does not fall between the third and fourth folds having an award display area;

the right side flap folded up and over the back surface of the bottom flap to define a fifth fold and a sixth fold, the fifth fold being positioned at the intersection of the base section and the right side flap, the sixth fold being positioned a predetermined distance away on the right side flap, the portion of sheet stock between the fifth and sixth folds forming a right side of the package;

the remaining portion of the right side flap which does not fall between the fifth and sixth folds having a window cut-out sized and positioned to display the award display area of the bottom flap;

the left side flap folded up and over the back surface of the right flap to define a seventh fold and an eighth fold, the seventh fold being positioned at the intersection of the base section and the left side flap, the eighth fold being positioned a predetermined distance away on the left side flap, the portion of sheet stock between the seventh and eighth folds forming a left side of the package, and

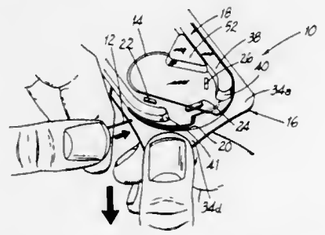
the remaining back surface portion of the left side flap which does not fall between the seventh and eighth folds forming a front side of the package.

5,249,671

PACKAGE AND METHOD OF LOADING FOR RESILIENT SURGICAL SUTURES

Hans-Jurgen F. Sinn, Fairfield, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Feb. 7, 1992, Ser. No. 832,376
Int. Cl.[5] A61B *17/06*
U.S. Cl. 206—63.6 **12 Claims**



1. A package retaining at least one resilient surgical suture comprising:

a base member having an annular recessed portion formed therein and a circumjacent flexible flange portion extending outward from said annular recessed portion; and

an annular cover member mounted adjacent said annular recessed portion to form a peripheral retaining channel in said annular recessed portion for accommodating said at least one resilient surgical suture, wherein said flexible flange portion is configured and dimensioned to cooperate with said annular cover member to permit loading of said resilient suture into said package by progressively bending said flexible flange portion to gradually expose areas of said peripheral retaining channel in which said resilient suture is permitted to expand radially outward, said resilient suture residing within said peripheral retaining channel following the progressive bending of said flange and subsequent radial expansion of said suture.

11. A method of loading a resilient surgical suture into a retainer package including a base member having an annular recessed portion formed therein and a circumjacent flexible flange portion extending outward from said annular recessed portion, an annular ,cover member mounted adjacent said annular recessed portion to form a peripheral retaining channel in said annular recessed portion of said base member, said method comprising the steps of:

bending said circumjacent flexible flange portion progressively away from said cover member so as to gradually expose areas of said peripheral retaining channel;

directing said surgical suture into exposed areas of said peripheral retaining channel; and

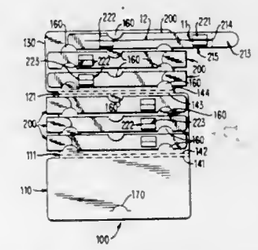
causing said circumjacent flexible flange portion to return to its original condition so as to seal said peripheral retaining channel, whereby said resilient surgical suture is permitted to expand radially outward in said peripheral retaining channel.

5,249,672

MULTIPLE SUTURE RETAINER

David L. Brown, Wallingford; Stanley J. Malinowski, Guilford, and Hans-Jurgen F. Sinn, Fairfield, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Feb. 11, 1992, Ser. No. 834,695
Int. Cl.[5] B65D *85/24;* **A61B** *17/06*
U.S. Cl. 206—63.3 **17 Claims**



1. A suture package which comprises:

a) a plurality of foldably connected panel members including two insert holding panels and one cover panel, said insert holding panels having means to releasably hold at least two suture holding inserts in substantially parallel relationship; and,

b) at least one suture holding insert mountable to one of said two insert holding panels and adapted to be engaged by said releasably holding means and to be removable therefrom, the suture holding insert having means to releasably hold at least one suture, wherein the suture package when folded, includes an access opening at each of two opposite ends, the suture holding inserts mounted to one of said holding panels being slidably removable through a respective one of said openings, and the suture holding inserts mounted to the other of said insert holding panels being slidably removable through the other of said openings.

11. A suture package which comprises:

a) a plurality of foldably connected panel members including at least one insert holding panel member having means to releasably hold at least one suture holding insert; and,

b) at least one suture holding insert mountable to said insert holding panel member and adapted to be engaged by said releasably holding means and to be removable therefrom, the suture holding insert having means to releasably hold at least one suture, wherein said suture holding insert is slidably removable from said insert holding panel when said panel members are folded, wherein said suture is in combination with a needle and said at least one insert is an elongated strip having a fold-over end portion for covering the needle of the needle-suture combination.

12. A suture package which comprises:

a) a plurality of foldably connected panel members including at least one insert holding panel member having means to releasably hold at least one suture holding insert; and,

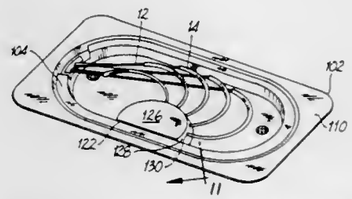
b) at least one suture holding insert mountable to said insert holding panel member and adapted to be engaged by said releasably holding means and to be removable therefrom, the suture holding insert having means to releasably hold at least one suture, wherein said suture holding insert is slidably removable from said insert holding panel when said panel members are folded and wherein said means to releasably hold the suture comprises a pair of foam pads fixedly attached to the suture holding insert at spaced apart locations, each foam pad having means to releasably engage the suture.

5,249,673

PACKAGE AND METHOD OF LOADING FOR RESILIENT SURGICAL SUTURES

Hans-Jurgen F. Sinn, Fairfield, Conn., assignor to United States Surgical corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 832,376, Feb. 7, 1992. This application Mar. 25, 1992, Ser. No. 856,248
Int. Cl.[5] A61L *17/02*
U.S. Cl. 206—63.3 **14 Claims**



1. A package for retaining at least one armed surgical suture comprising:

housing means having suture retention means provided therein; and

a needle securement area integrally formed with said housing means and defining at least in part an upstanding wall section having at least one porthole extending completely therethrough dimensioned and configured to circumscribe the periphery of a surgical needle received therein.

5,249,674

MATCHBOOK-LIKE PERSONAL DENTAL AND NAIL HYGIENE APPARATUS AND METHOD

Eric J. Lepie, 2717 N. Magnolia, Tucson, Ariz. 85712

Continuation of Ser. No. 617,150, Nov. 23, 1990, Pat. No. 5,119,941. This application Mar. 6, 1992, Ser. No. 846,880
Int. Cl.[5] A24F *27/00;* **B65D** *73/00*
U.S. Cl. 206—102 **10 Claims**

6. A method of producing a personal hygiene apparatus, said method comprising the steps of:

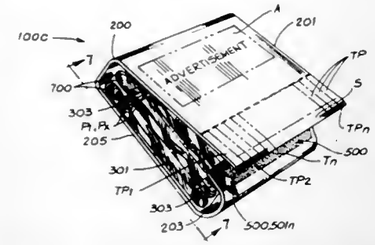
providing a folded matchbook-like structure;

forming perforated lines on corner members of a closure flap

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portion of said structure for facilitating said corner members being broken-off;

attaching a plurality of individually packaged dental floss members to said structure; and



coating said corner members with a moisture resistant substance for forming a substantially rigid, moisture-proof and durable pointed means for removing food particles from a user's teeth.

5,249,675

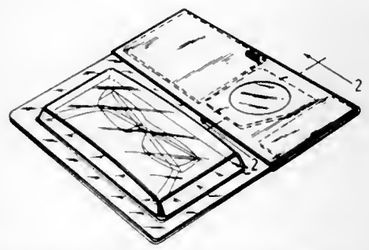
PACKAGING FOR EYEWEAR

Kurt Strauss, and Helmut Strauss, both of 213 S. Van Brunt St., Englewood, N.J. 07631

Continuation of Ser. No. 839,961, Feb. 21, 1992, abandoned. This application Nov. 30, 1992, Ser. No. 985,341

Int. Cl.[5] **A45C** *11/04*

U.S. Cl. 206—216 **5 Claims**



1. Packaging for an eyewear article, comprising:

an eyewear article having a pair of lenses with diopter power;

an enclosure portion enclosing said eyewear article for eventual sale;

a tag portion affixed to said enclosure portion; and,

an additional lens being in addition to said pair of lenses of said eyewear article, said additional lens being contained within said tag portion with said additional lens being accessible to a prospective consumer for use to test the diopter power of the eyewear article without requiring the prospective consumer to open said enclosure portion for retrieval of said eyewear article contained therein, said additional lens with said tag portion having an optic power which is equal to the diopter power of the pair of lenses of said eyewear article.

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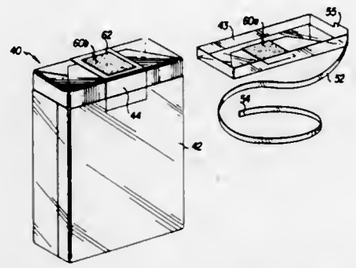
FLAVOR BURST STRUCTURE AND METHOD OF MAKING THE SAME

Charles R. Ashcraft, and Milly M. L. Wong, both of Winston-Salem, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Continuation of Ser. No. 696,700, May 7, 1991, abandoned. This application Mar. 22, 1993, Ser. No. 35,537

Int. Cl.[5] **A24F** *15/08;* **B65D** *85/10*

U.S. Cl. 206—264 **14 Claims**



1. A flavor releasing article comprising a cigarette package containing a plurality of cigarettes, said package having an inner wrap and an overwrap, a flavor burst film disposed between said inner wrap and said overwrap, said inner wrap having a top, said flavor burst film comprising a flavor carrier layer having opposite surfaces and being composed of a polymeric material having a polymeric matrix, a flavorant blended with said polymeric material such that said flavorant is contained in the polymeric matrix and is capable of being released from the opposite surfaces of the flavor carrier layer, first and second barrier layers disposed on a respective one of the opposite surfaces of the flavor carrier layer for retaining the flavorant in the flavor carrier layer, said first barrier layer being affixed to the top of said inner wrap and said second barrier layer being affixed to a portion of said overwrap overlying the top of asid inner wrap, a tear tape formed independently of and separate from said flavor burst film for detaching said overwrap portion from the top of the inner wrap, said second barrier layer being separable from the flavor carrier layer such that when said overwrap portion is detached from the top of the inner wrap by said tear tape, said second barrier layer, said overwrap portion and said tear tape separate from the flavor carrier layer and said first barrier layer and said flavor carrier layer remain attached to the top of the inner wrap whereby only one of the surfaces of the flavor carrier layer is exposed and the flavorant is released therefrom.

5,249,677

COMPACT DISC CASE

Jin-kyu Lim, Room 9 1503, Sampung Apartment, Sucho-dong, Sucho-ku, Seoul, Rep. of Korea

Filed Jul. 30, 1992, Ser. No. 922,151

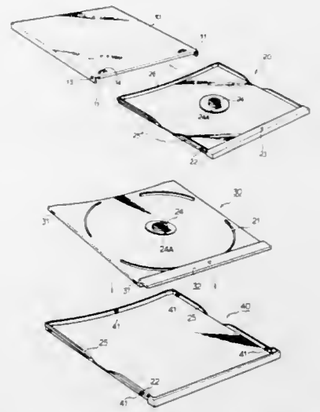
Int. Cl.[5] **B65D** *85/57*

U.S. Cl. 206—310 **4 Claims**

1. A compact disc case comprising:

a generally rectangular upper case having a substantially planar top wall, a rear wall extending downwardly from said top wall, a pair of parallel side walls extending downwardly from said top wall and connected to said rear wall, each said side wall including a rail groove, said top wall further comprising a pair of downwardly directing protrusions on projections thereof remote from said rear wall and in proximity to the respective side walls;

a lower case having a substantially planar bottom wall, a pair of opposed parallel side walls extending upwardly from said bottom wall, said side walls of said lower case each having elongated rails projecting outwardly therefrom and slidably engaged in the respective rail grooves of said upper case, such that said lower case is slidable in a plane relative to said upper case with the respective top and bottom walls of said upper and lower cases being substantially parallel, said lower case further comprising a rear wall projecting upwardly from said bottom wall and connecting said side walls, said rear wall of said lower case being disposed intermediate said rear wall of said upper case and said protrusions of said upper case, such that said protrusions of said upper case engage said rear wall of said lower case to prevent complete slidable separation of said upper and lower cases; and



a fixing component disposed substantially centrally on said bottom wall of said lower case and projecting upwardly therefrom toward said top wall of said upper case, said fixing component including a substantially cylindrical side wall and a concave top wall, a plurality of substantially parallel slits extending across the concave top wall and said cylindrical side wall, such that sectors of said fixing component defined by said parallel slits are elastically deformable for retaining a compact disc thereon, at least selected sectors of said cylindrical side wall of said fixing component including protuberances for detachably holding a compact disc on said fixing component.

5,249,678

REUSABLE PACKAGING SYSTEM FOR HOUSEHOLD APPLIANCES

Alfredo Traina, Porcia, Italy, assignor to Zanussi Elettrodomestici S.P.A., Italy

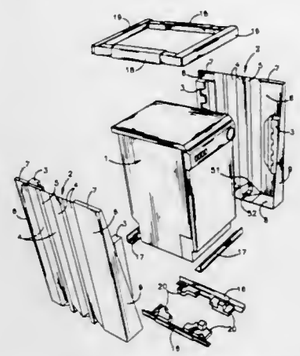
Filed May 26, 1992, Ser. No. 888,986

Claims priority, application Italy, Jun. 13, 1991, 91 A 000034

Int. Cl.[5] **B65D** *85/00*

U.S. Cl. 206—320 **8 Claims**

1. A reusable packaging system for an object being substantially parallelepipedal in shape, characterized in that the packaging system comprises a pair of single-piece side members (2) having a given width, and made of rigid plastic material and adapted to be applied on respective sides of an object (1), each one of said side members comprising at respective end portions thereof spaced apart corner pieces (6); and an upper inward protrusion (7) and a lower inward protrusion (8) interconnected through a transverse flange (9) provided on each corner piece, said packaging system further comprising two pairs of lower cross members (16, 17) arranged to form a lower frame interposable between a base of an associated object, the flange (9) of each of the corner pieces, and the lower protrusion (8) of each of the corner pieces (6) of both side members; and two pairs of upper cross members (18, 19) arranged to form an upper frame interposable between a top of an associated object, the flange (9) of each of the corner pieces, and the upper protrusion (7) of each of the corner pieces (6) of both side members; a pair of the lower cross members (16) forming said lower frame and a pair of the upper cross members (18) forming said upper frame substantially spanning the width of said



side members (2), and the other pairs of cross members (17, 19) forming each one of said frames spanning the space between said corner pieces (6) of each side member (2) and not spanning the width of said side members.

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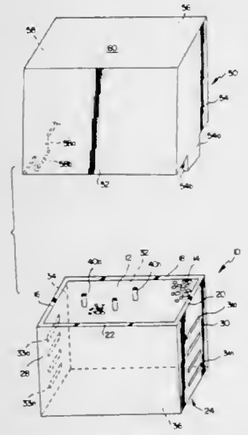
MEDICAL NEEDLE DISPOSAL PACKAGE

Steven C. Dondlinger, 5513 Knoll Dr., Edina, Minn. 55436

Filed May 6, 1992, Ser. No. 878,298

Int. Cl.[5] **A61L** *2/16;* **B65F** *1/00;* **B65D** *85/24*

U.S. Cl. 206—366 **1 Claim**



1. A medical apparatus disposable package comprising:

a. a lower member;

b. said lower member including a soft cellular material for acceptance of medical apparatus surrounded by hard sides and a hard bottom;

c. said lower member including an adhesive substance on a portion of its outer surface with a protective peel-away member thereover;

d. said lower member having a plurality of opposing latch members on at least two opposing sides, each of said plurality of opposing latch members on each opposing side being vertically spaced with respect to each other, each member of which aligns with a corresponding rect-

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angular hole in said peel-away protective member, whereby said adhesive material allows said lower member to be adhesively attached to a surgical tray or other surface, thereby allowing one-handed disposal of used medical apparatus;

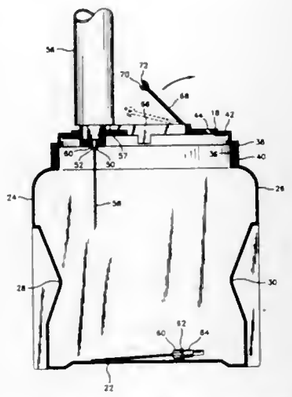
e. an upper member including upper member hard sides, a hard top, side extensions and opposing locking tab members configured to engage said opposing latch members to seal contents of said lower member between said upper and lower members, the particular opposing latch members engaged being a function of the height of said medical apparatus being disposed.

5,249,680

ROTARY CONTAINER TOP WITH NEEDLE REMOVER SLOT

Richard A. Shillington, Leucadia, Calif., assignor to Med-Safe Systems, Inc., Carlsbad, Calif.

Filed Sep. 17, 1992, Ser. No. 946,938
Int. Cl.[5] B65D *83/10, 51/24*
U.S. Cl. 206—366 **20 Claims**



1. A needle removal closure assembly for a disposable container comprising:

a disposable container having a circular opening defined by a circular rim;

a circular closure rotatably mounted on said circular rim within said circular opening;

means constraining said closure to rotate in a single direction of rotation; and

needle removal slot means in said circular closure offset from the rotary axis thereof and oriented in a direction for gripping a needle hub inserted therein and moved in said direction of rotation of said circular closure for unthreading of a needle.

5,249,681

CARTON DISPENSER SYSTEM

Charles A. Miller, Williamsburg, Ohio, assignor to The C. W. Zumbiel Co., Cincinnati, Ohio

Filed Jan. 13, 1992, Ser. No. 820,100
Int. Cl.[5] B65D *75/58*
U.S. Cl. 206—427 **24 Claims**

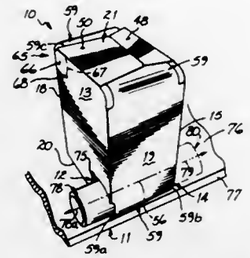
1. 1. A package comprising

a series of containers, each container of said series being of the same size and shape as every other container of said series, the longitudinal axis of each container being oriented generally parallel to the longitudinal axis of every other container in said series, and

a carton within which said series of containers is positioned, said carton comprising

opposed generally parallel first and second side walls, the container axes of said container series being oriented generally normal to said first and second side walls, and

an outlet port defined in each of said first and second side walls, both said outlet ports being oriented on a single longitudinal axis oriented generally normal to said first and second side walls, and each of said outlet ports being sized to allow egress of each container in said container series out of either one of said first and second side walls,



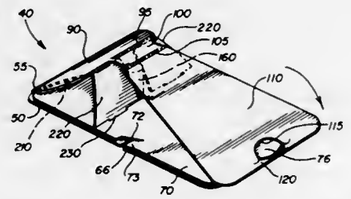
thereby allowing each container whose longitudinal axis is oriented co-axially with the longitudinal axis of both said outlet ports to be pushed out of said carton through said outlet port in said first side wall by pushing on said container through said outlet port in said second side wall, and alternatively allowing each container to be pushed out of said carton through said outlet port in said second side wall by pushing on said container through said outlet port in said first side wall, as desired by the carton user.

5,249,682

PACKAGE FOR MESH ONLAY AND ATTACHED MESH PLUG

Deborah M. Transue, Bridgewater, N.J., assignor to Ethicon, Inc., Somerville, N.J.

Continuation-in-part of Ser. No. 833,275, Feb. 10, 1992. This application Jun. 12, 1992, Ser. No. 898,055
Int. Cl.[5] B65D *75/00*
U.S. Cl. 206—438 **11 Claims**



1. A folder package for holding a mesh onlay and mesh plug assembly, comprising:

a central floor panel for receiving the mesh onlay and mesh plug assembly, said panel having a pair of opposed major sides and a pair of opposed minor sides;

a first end panel having a pair of opposed minor sides and a pair of opposed major sides foldably connected along a first minor side to one minor side of the central panel for retaining the mesh onlay in a substantially flat position on the central panel;

at least one reinforcing panel foldably connected to the other minor side of the first end panel for providing structural strength to the package, wherein the reinforcing panel comprises a first member panel foldably connected to the first end panel and a second member panel foldably connected to the first member panel;

a second end panel foldably attached to the other minor side of the central panel;

a connecting panel foldably connected to the central floor panel along the opposite minor side of the floor panel and also foldably connected to the second end panel wherein the second end panel is foldably attached to the connecting panel;

locking means for locking the first end panel to the central floor panel wherein the locking means for locking the first end panel to the central floor panel comprises a pair of opposed slits located along the major sides of the central floor panel and, a mating pair of tabs located in the first end panel;

locking means for locking the second end panel to the central floor panel; and

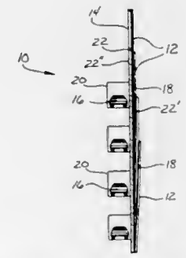
locking means for locking each reinforcing panel to the first end panel.

5,249,683

MOUNTING DEVICE FOR DISPLAYING PACKAGED THREE DIMENSIONAL ARTICLES AND ARTICLE DISPLAY FORMED THEREWITH

Larry H. Baucom, Mint Hill, N.C., assignor to L & S Design, Inc., Mint Hill, N.C.

Filed May 21, 1992, Ser. No. 886,764
Int. Cl.[5] B65D *73/00*
U.S. Cl. 206—462 **2 Claims**



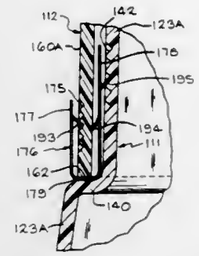
1. A display of a plurality of three-dimensional articles comprising, in combination, a plurality of packages each having one of the articles supported on a planar card from which the article protrudes outwardly from at least one face of the card, and a mounting device comprising an opaque mounting board having a rearward mounting side and a forward display side, the mounting board being formed with a plurality of openings generally conformed to the packaged shape of the articles displayed, the openings being in an array compatible with the size and shape of the packages, each package being received and supported by the mounting board in a disposition wherein the one face of each package's supporting card is in generally face-abutting relation to the rearward mounting side of the mounting board and the package's article extends forwardly through a respective one of the openings to be substantially fully visible at the forward display side of the mounting board with the package's supporting card being substantially masked by the mounting board so that substantially only the articles are visibly displayed at the forward display side of the mounting board, and the mounting board being disposed in an upright orientation wherein each package's article is gravitationally maintained within its respective opening in the mounting board without requiring any additional retaining structure.

5,249,684

FLUID CONTAINER

Robert A. Sterett, Jackson, Mich., assignor to Aeroquip Corporation, Maumee, Ohio

Continuation-in-part of Ser. No. 780,112, Oct. 21, 1991, Pat. No. 5,197,601. This application Sep. 18, 1992, Ser. No. 947,766
Int. Cl.[5] B65D *21/02*
U.S. Cl. 206—503 **18 Claims**



1. A container comprising:

(a) a tank for containing liquids having a generally rectangular cross-sectional configuration including a bottom, a top, and side panels, at least one of said side panels having an exterior surface with serrations formed therein;

(b) a bottom member having an upstanding wall extending around and engaged to said side panels, said wall having an exterior surface with serrations formed therein, an interior surface and an edge extending between said exterior and interior surfaces; and

(c) a clip having a first leg engaged to said bottom member wall exterior surface, a wing member on said first leg extending inwardly into engagement with said wall serrations, a second leg positioned between said wall interior surface and said side panels exterior surface, a wing member on said second leg extending inwardly into engagement with said side panels serrations, and means connecting said first leg to said second leg.

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REUSABLE AND RECYCLABLE PACKAGING FOR SHOCK AND STATIC SENSITIVE OBJECTS

Thomas Stephens, Los Gatos, Calif., assignor to Roberts, Stephens, Van Amburg, Packaging Inc., Soquel, Calif.

Continuation of Ser. No. 771,135, Oct. 3, 1991, Pat. No. 5,131,543. This application Jul. 17, 1992, Ser. No. 916,194
The portion of the term of this patent subsequent to Jul. 21, 2009, has been disclaimed.
Int. Cl.[5] B65D *85/30*
U.S. Cl. 206—523 **3 Claims**

1. A package for static and shock sensitive objects, comprising:

a box made of static dissipative material, the box having a bottom, a top and two pairs of parallel opposite sides having respective upper, central and lower portions;

a shock absorbing pad structure adapted to fit against the respective central portions of said sides, the pad structure being made of a solid plastic foam, the pad structure having a static dissipative surface;

fastening means for detachably attaching said pad structure against the respective central portions of said sides; shock absorbing bottom pad means adapted to fit and to sit inside of said box atop its bottom;

a bag made of static dissipative material and adapted to fit within said box above said shock absorbing bottom pad means and to substantially line said box; and

a sensitive objects holding structure which includes:

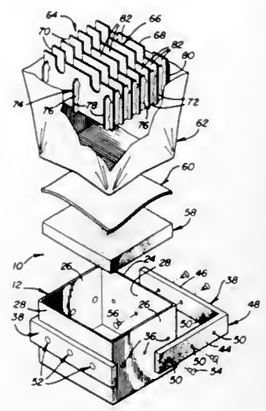
a first plurality of static dissipative parallel walls having opposite ends; and

a second plurality of static dissipative parallel walls hav-

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ing opposite ends, the walls of the second plurality being perpendicular to the walls of the first plurality, the first and second pluralities of walls being releasably interlockable with one another in such a manner as to define a plurality of cavities, each cavity being adapted



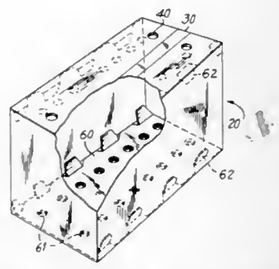
to closely hold one of said sensitive objects, the sensitive objects holding structure being of a size to fit within said bag and, when said bag is positioned within said box of a size such that the respective opposite ends of said walls are closely adjacent the interiors of the sides of the box.

5,249,686

SHIPPING CASE AND INSERT FOR AUTOMATED BOX BLANK HANDLING SYSTEM

Donald L. Brookman, Richmond; Everett C. Grollimund; Gary E. Grollimund, both of Midlothian, and Steven F. Spiers, Richmond, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Dec. 12, 1991, Ser. No. 806,691
Int. Cl.[5] B65B *43/00*
U.S. Cl. 206—555 **4 Claims**



1. In combination, a shipping case and shipping case insert for restraining a stack of box blanks, in said shipping case, said combination comprising:

a shipping case having sidewalls, lower flaps and a plurality of apertures arranged in rows and columns in said lower flaps; and

a shipping case insert comprising:

a) a substantially rigid rectangular panel having a pair of side edges and a plurality of holes arranged in rows and columns therein;

b) a plurality of long tabs projecting from said side edges of said rectangular panel, said long tabs being bendable out of the plane of said rectangular panel to positions substantially perpendicular to said rectangular panel, said long tabs for engaging said stack of box blanks; and

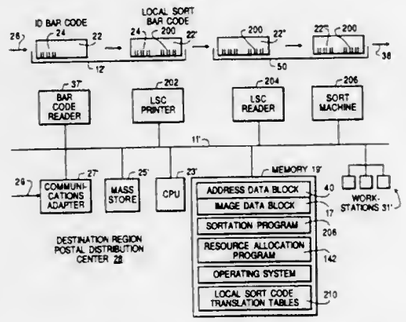
c) a plurality of short tabs projecting from said side edges of said rectangular panel interposed between said long tabs, said short tabs contacting said sidewalls of said shipping case when said shipping case insert is inserted in said shipping case, so that said plurality of holes arranged in rows and columns in said rectangular panel are in alignment with said plurality of apertures arranged in rows and columns in said lower flaps.

5,249,687

BARCODE TRANSLATION FOR DEFERRED OPTICAL CHARACTER RECOGNITION MAIL PROCESSING

Walter S. Rosenbaum, Bethesda, Md.; Barr T. Carris, McLean, Va., and Anker Ankerstjerne, Copenhagen, Denmark, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 19, 1991, Ser. No. 690,175
Int. Cl.[5] B07C *5/02*
U.S. Cl. 209—3.3 **21 Claims**



1. In a system for deferred processing of a mail piece having a destination address block whose image is character recognized to produce destination address data which is associated with an identification number encoded as an indicium onto the mail piece, the destination address data being transmitted to a mail piece distribution station which employs a first sorting device to sort to a second sorting device using a local sort code, a method for encoding the mail piece for automatic sorting to the destination location, comprising the steps of:

storing local sort code translation tables in a computer memory coupled to said first sorting device;

storing said destination address data in said computer memory;

identifying said mail piece at said distribution station by reading said indicium thereon;

accessing said destination address data using said identification number represented by said indicium;

converting said destination address data into a local sort code using said translation tables;

printing said local sort code onto said mail piece;

reading said printed local sort code in a second sorter and sorting the mail piece to the destination location.

8. In a system for deferred processing of a mail piece having a destination address block whose image is character recognized to produce destination address data which is associated with an identification number encoded as an indicium onto the mail piece, the destination address data being transmitted over a network to a mail piece distribution station which employs a first sorting device to sort to a second sorting device using a local sort code, apparatus for encoding the mail piece for automatic sorting to the destination location, comprising:

a computer memory coupled to said first sorting device, for storing local sort code translation tables;

said computer memory coupled to said network, for storing said destination address data;

reading means coupled to said computer memory, for identifying said mail piece at said distribution station by reading said indicium thereon;

a data processor coupled to said memory and said reading means, for accessing said destination address data using said identification number represented by said indicium;

said data processor converting said destination address data into a local sort code using said translation tables;

printing means coupled to said data processor, for printing said local sort code onto said mail piece;

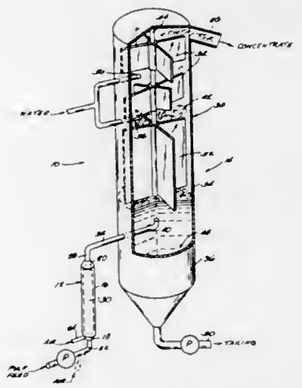
said second sorter reading said printed local sort code on said mail piece and sorting said mail piece to the destination location.

5,249,688

FROTH FLOTATION APPARATUS

Jiann-Yang Hwang, Houghton, Mich., assignor to Board of Control of Michigan Technological University, Houghton, Mich.

Division of Ser. No. 491,724, Mar. 12, 1990, Pat. No. 5,096,572. This application Sep. 23, 1991, Ser. No. 868,085
Int. Cl.[5] B03D *1/14, 1/24*
U.S. Cl. 209—170 **10 Claims**



1. An apparatus for concentrating by froth floatation hydrophobic particles in an aqueous pulp containing a mixture of hydrophobic and hydrophilic particles, said apparatus comprising

a gas bubble-particle contact unit including

a container comprising a generally vertical column having an inlet end and an outlet end,

mixing means disposed in said container, said mixing means comprising static diffuser means which defines a large number of circuitous flow passages through which the gas and pulp flow enroute to the outlet portion of said container, for breaking a gas into fine bubbles by shearing;

means for introducing the aqueous pulp into the inlet end of said container for flow through said mixing means toward the outlet end of said container, and

means for introducing a substantially inert gas into the inlet end of said container for combination with said aqueous pulp and subsequent concurrent flow therewith through said mixing means toward the outlet of said container under conditions which cause the gas to be sheared into fine bubbles and the resulting fine bubbles to be simultaneously turbulently intermixed with the aqueous pulp to collide with and become attached to the hydrophobic particles to produce an aqueous mixture containing gas bubbles carrying hydrophobic particles; and

a phase separation unit physically separated from said contact unit and including

a vessel for receiving the mixture from the outlet end of said container, said vessel including an upper portion and a lower portion and being adapted to permit the particle-carrying bubbles in the mixture to rise toward the upper portion of said vessel;

means for transferring the mixture from said contact unit into said vessel;

means for discharging a concentrate fraction containing primarily hydrophobic particles in the aqueous pulp from the upper portion of said vessel; and

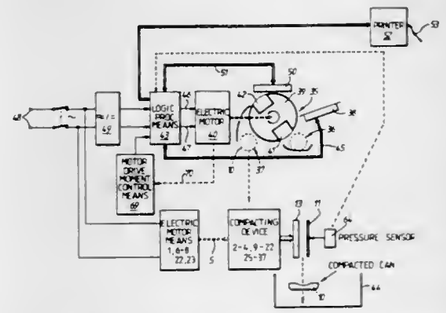
means for discharging a tailing fraction containing primarily hydrophilic particles in the aqueous pulp from the lower portion of said vessel.

5,249,689

HANDLING AND COMPACTING OF EMPTY BEVERAGE CANS

Halvor Wergeland, Asker; Tore Planke, Nykirke, both of Norway, and Tommy Wincent, Upplands Väsby, Sweden, assignors to Tomra Systems A/S, Asker, Norway

Division of Ser. No. 699,175, May 13, 1991, abandoned. This application Aug. 10, 1992, Ser. No. 927,826
Int. Cl.[5] B07C *5/00;* B30B *9/00*
U.S. Cl. 209—546 **19 Claims**



1. A device for identification and separation of beverage cans, comprising:

(a) a can input,

(b) a first can output,

(c) a second can output,

(d) means at said can input for sensing the type or types of material of said can,

(e) electric motor means,

(f) a rotary can supporting means having its axis of rotation horizontal and capable of turning in at least one direction through 360° by means of said electric motor means,

(g) said rotary can supporting means having cradle means for receiving a can at said input and retaining said can therein until delivered at the first or second can output,

(h) logic processing means capable of controlling the direction of rotation of said motor means based on an output signal from said sensing means to transfer said can either to said first can output or to said second can output,

(i) said first can output being below said can input for returning cans being of a type not to be accepted,

(j) said second can output being located approximately 180° relative to said can input and above an operation site for compacting of said can for subsequent processing thereof,

(k) can measuring means located above a path of the can from said can input to said second can output, said can measuring means capable of delivering a signal to said logic processing means for determining type and size of the can and for outputting from said processing means a signal being indicative of the can refund value, and

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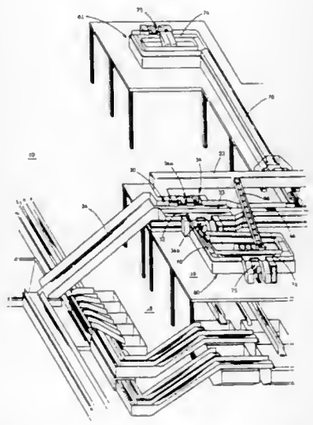
(l) wherein said can measuring means comprises a set of cam members capable of riding on part of the can surface as it passes said cam members to detect the diameter of said can with reference to the bottom of the cradle means holding the can.

5,249,690

APPARATUS AND METHOD FOR SORTING COMMINGLED WASTE MATERIALS FOR RECYCLING

Gill R. Patterson, 31801 National Park Dr., Laguna Niguel, Calif. 92677

Filed Oct. 15, 1991, Ser. No. 763,308
Int. Cl.[5] B07C 7/00
U.S. Cl. 209—630 12 Claims



3. Apparatus for selectively sorting recyclable waste materials comprising:

a primary closed-loop conveyor unit having a primary sorting conveyor and a primary return conveyor, whereby waste materials are recirculated within said primary closed-loop conveyor unit for selective sorting;

a plurality of primary sorting stations positioned along said primary sorting conveyor for selectively sorting designated waste materials;

a plurality of secondary closed-loop conveyor units having at least one secondary sorting conveyor and at least one secondary return conveyor, whereby waste materials are recirculated within said secondary closed-loop conveyor units for selective sorting;

at least one secondary sorting station positioned along said secondary sorting conveyor for selectively sorting designated waste materials transferred from said primary sorting conveyor;

means for receiving designated sorted waste materials from said primary and secondary sorting station;

means for transferring the designated sorted waste materials from said primary and secondary sorting stations to said receiving means;

said primary and secondary stations being defined by waste-transfer inlet means;

wherein said waste-transfer inlet means includes a plurality of sorting chutes, each of said sorting chutes being arranged to receive designated waste materials; and wherein

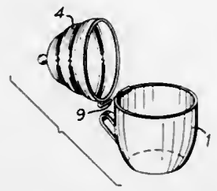
at least one secondary closed-loop conveyor unit includes an auxiliary closed-loop conveyor unit.

5,249,691

MINIATURE GLASS HAVING A SWIZZLE STICK WITH AN ATTACHMENT CAPABILITY TO A DRINKING VESSEL

Shulamit Mizrahi, P.O. Box 4220, New York, N.Y. 10185-0036

Filed Sep. 3, 1991, Ser. No. 754,046
Claims priority, application Israel, Apr. 7, 1991, 097785
Int. Cl.[5] A47G 19/22, 19/30, 21/00, 21/12
U.S. Cl. 215—100 R 2 Claims



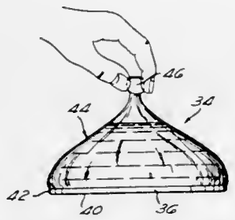
1. An attachment adapted to be connected to a rim of a drinking vessel comprising: a swizzle stick having a catch hook at one end for grasping the top edge of the vessel, a miniature vessel attached at the other end of the stick having a closure and a hinge for fastening the closure to a top opening of the miniature vessel, a socket means located intermediate said catch hook and said miniature vessel for holding a toothpick.

5,249,692

VAPOR SEAL

Roger Gunderson, 33191 Paseo Mono, San Juan Capistrano, Calif. 92675

Filed Aug. 10, 1992, Ser. No. 925,447
Int. Cl.[5] B65D 88/34
U.S. Cl. 220—216 3 Claims



1. A vapor seal for use in a container defining a continuous, arcuate inner surface, for preventing the surface of an air curable liquid within the container from being exposed to air to eliminate skinning thereon when the container is stored, comprising:

a support member defining an upper surface, a lower liquid contacting surface and a peripheral edge; and

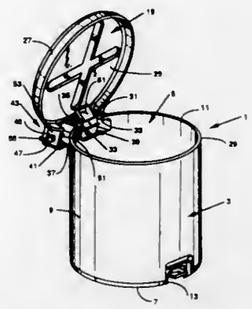
a flexible, fluid-filled sealing bag attached to and extending completely across the upper surface of said support member, said sealing bag being sized and configured to press downwardly upon said support member, to extend radially beyond said peripheral edge of said support member and be abutted and sealed against said inner surface of said container when said lower surface of said support member is floated upon the surface of the air curable liquid, said sealing bag includes a handle member formed thereon for inserting the vapor seal into and removing the vapor seal from within the container, said sealing bag being removed from abutting contact with said inner surface when said handle member is grasped and pulled upwardly.

5,249,693

PLASTIC WASTE CAN FOR OILY WASTE

John G. Gillispie, and Donald J. Mitchell, both of Wellsburg, W. Va., assignors to Eagle Manufacturing Company, Wellsburg, W. Va.

Filed Sep. 24, 1992, Ser. No. 950,815
Int. Cl.[5] B65D 43/26
U.S. Cl. 220—263 12 Claims



1. A plastic waste can for the collection of flammable waste and having a self-closing cover comprising:

a body portion formed as a receptacle having an open top, a bottom wall and an upstanding side wall terminating at an upper rim, said bottom wall having two spaced inwardly directed walls and a base therein forming a channel transverse said body portion;

a first hinge pin support on said body portion extending outwardly from said side wall, said first hinge pin support having a lower wall through which a lift bar aperture is formed, a second hinge pin support on said cover extending outwardly from said downwardly depending skirt complementary with and fitting over said first hinge pin support of said body portion;

means for pivotal securement of a foot pedal in said channel between said spaced inwardly directed walls;

a cover closing said open top of said receptacle, said cover having a substantially flat member with a downwardly depending skirt about the periphery thereof;

a foot pedal having front and rear portions disposed in said channel attached to said pivotal securement means, with said front portion depressible by a foot of a user and said rear portion extending beyond the upstanding side wall of said receptacle; and,

a vertically extending lift bar extending through the lift bar aperture formed in the lower wall of said first hinge pin support, having a lower end pivotally secured to said rear portion of said foot pedal, said lift bar having a sealing flange thereabout which contacts the lower wall of said first hinge pin support to seal said lift bar aperture when said cover is closed on said receptacle, with said lift bar arranged such that upon depressing of the front portion of said foot pedal, said lift bar will be raised to contact and open said cover.

5,249,694

TEAR STRIP CONTAINER

James L. Nelson, Temple City, Calif., assignor to Highland Plastics, Inc., Pasadena, Calif.

Continuation-in-part of Ser. No. 718,395, Jun. 20, 1991, abandoned. This application Jan. 13, 1992, Ser. No. 820,114
Int. Cl.[5] B65D 17/40
U.S. Cl. 220—276 8 Claims

1. A tamper evident container for storing food products comprising;

a concave circular container having an open end;

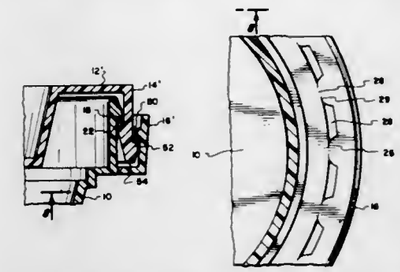
a lid having a peripheral flange fitting over the open end of said container;

said container having a peripheral ridge around a lip on the open end of said container for securing said lid;

a removable flanged strip formed around an outside upper edge of said container;

said removable flanged strip covering a substantial portion of said flange on said lid when said lid is mounted on said container;

said removable flanged strip comprising, an L-shaped flange forming an upward oriented annulus for receiving and substantially covering said peripheral flange on said lid, said L-shaped flange being joined to said container by a plurality of easily ruptured links defined by a plurality of



slots so that said flanged strip may easily be completely removed from said container;

pry preventing means for preventing an edge of said lid being pried up prior to removal of at least a section of said removable flanged strip;

said pry preventing means comprising a shoulder extending outwardly from said peripheral flange on said lid; and a ridge extending inwardly from an upwardly directed wall of said flanged strip, said shoulder forming an interference fit with said ridge when said lid is mounted on said container so that an edge of said lid flange is concealed to prevent prying;

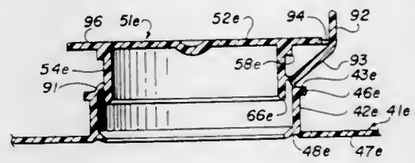
whereby said removable flanged strip substantially prevents removal of said lid without evidence of tampering.

5,249,695

SPOUT FITMENT CLOSURE PLUG

Daniel Luch, Los Gatos, and Brian M. Adams, Newark, both of Calif., assignors to Portola Packaging, Inc., San Jose, Calif.

Continuation of Ser. No. 664,658, Mar. 5, 1991, abandoned. This application Feb. 3, 1993, Ser. No. 13,258
Int. Cl.[5] B65D 47/10, 17/40
U.S. Cl. 220—276 5 Claims

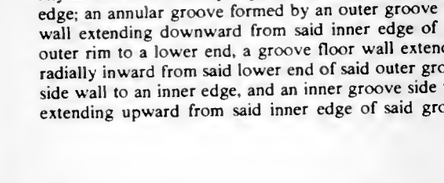


1. In combination, a fitment and a closure therefor, said fitment comprising a spout having an interior and an exterior formed with internal first engagement means, attachment means for attaching said fitment vicinal an aperture in a container, said closure having a top, a skirt having an interior and an exterior, said skirt depending from said top, formed with external second engagement means engageable with said first engagement means, and breakable means interconnecting a

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portion of said fitment and said skirt, said breakable means being positioned so that said closure cannot be moved relative to said fitment without breaking said breakable means, and said breakable means comprises a tamper-evident tear band interconnecting said spout and the exterior of said skirt and a tear tab connected to said tear band, whereby by pulling said tear tab said tear band is removed and said closure may be separated from said fitment, said skirt in initial condition being partially inserted with said spout.

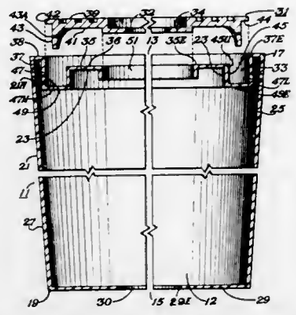
5,249,696
MANUAL RELIEF GAS VENT
Billy W. Bryant, Hixson, Tenn., and Robert E. McCarthy, Fallston, Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.
Filed Aug. 7, 1992, Ser. No. 926,990
Int. Cl.[5] B65D *51/16*
U.S. Cl. 220—367 **9 Claims**



1. An improved drum lid for a ventable drum comprising
a lid adapted for attachment to the drum having an upper side and a lower side;
a depression in the upper side of the lid forming a reservoir and having a bottom surface, said depression formed unitarily in the lid; and
a valve mounted on the bottom surface of the reservoir and extending through the bottom surface of the reservoir,
a valve stem housing extending through the lid and having a valve outlet on the upper portion of the housing which opens into the reservoir in the lid;
fastening means to secure the valve stem housing to the lid;
seal means positioned around the valve stem housing to provide a liquid tight seal between the valve stem housing and the lid; and
a valve stem in the valve stem housing to control the flow of fluid through the valve stem housing and out the valve outlet.

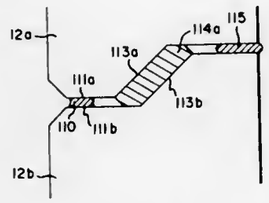
5,249,697
METER PIT
Robert M. McKinnon, P.O. Box 648, Bedford, Tex. 76021-0648
Filed May 19, 1992, Ser. No. 885,193
Int. Cl.[5] B65D *25/24*
U.S. Cl. 220—484 **9 Claims**

1. An apparatus for containing a meter comprising:
a container having a side wall extending 360 degrees around a central axis and having top and bottom edges at top and bottom ends respectively forming a chamber,
a bottom central opening formed at said bottom end for receiving a meter for location in said chamber,
an upper wall extending inward 360 degrees from said top edge of said side wall with an upper central opening formed therethrough,
said upper wall having an annular outer rim extending radially inward from said top edge of said side wall to an inner edge; an annular groove formed by an outer groove side wall extending downward from said inner edge of said outer rim to a lower end, a groove floor wall extending radially inward from said lower end of said outer groove side wall to an inner edge, and an inner groove side wall extending upward from said inner edge of said groove floor wall to an upper end; and an annular inner rim located at a level below that of said annular outer rim relative to said bottom end and extending radially inward from said upper end of said inner groove side wall to said upper central opening,



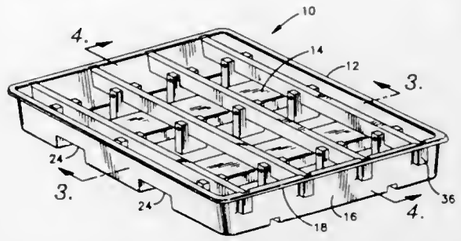
said upper wall being employed to support a cover holder of the type having a circular outer edge and a bottom surface with extension means projecting downward from the bottom surface for insertion into said annular groove of said upper wall.

5,249,698
ABOVE GROUND HAZARDOUS LIQUID STORAGE APPARATUS
Philip Cruver, 8309 Ridge St., McLean, Va. 22101; Mark Cruver, 6083 Talavera Ct., Alexandria, Va. 22310, and Reginald L. Olson, P.O. Box 60432, Las Vegas, Nev. 89160
Continuation-in-part of Ser. No. 892,909, Jun. 3, 1992, which is a continuation of Ser. No. 670,671, Mar. 18, 1991, abandoned, which is a continuation of Ser. No. 590,705, Sep. 28, 1990, Pat. No. 5,033,638. This application Nov. 18, 1992, Ser. No. 976,918
Int. Cl.[5] B65D *88/76*
U.S. Cl. 220—565 **28 Claims**



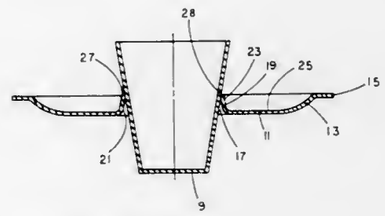
1. A vault construction for the storage of hazardous or polluting liquids, said vault construction comprising:
an inner cylindrical steel tank for storing liquids and including an outer tank wall;
a multiple part concrete outer casing in which said inner cylindrical tank is housed and including an inner surface, said outer casing exhibiting a plurality of ribs extending inwardly from the inner surface of the casing defining a plurality of spaces between the inner wall of the casing and the outer tank wall;
a highly fire resistant sealed joint between adjacent parts of said outer casing;
a plurality of spacers located in said joint between adjacent parts of said outer casing.

5,249,699
HAZARDOUS MATERIAL CONTAINER
G. Lee Williams, Leawood, Kans., assignor to Regal Plastics Co., Kansas City, Mo.
Filed Jul. 22, 1991, Ser. No. 733,330
Int. Cl.[5] B65D *19/00*
U.S. Cl. 220—571 **18 Claims**



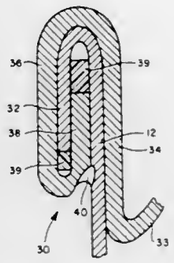
1. A device for containing hazardous materials, comprising;
a tray having a bottom and at least one side wall extending about the periphery of said bottom and extending upwardly to an upper periphery, said bottom including at least two fork channels adapted to receive the forks of a forklift whereby said tray may be lifted by the forklift, and said tray including means for supporting a pallet within said tray, said means having an upper face which is vertically lower than said upper periphery, and said means comprising at least a pair of support bars, each located within the extent of, and extending between spaced locations along, said upper periphery, said support bars having an upper face which is vertically lower than said upper periphery, and a plurality of support columns associated with each of said support bars, said support columns having a lower end resting upon said bottom of said tray and an upper end connected to said associated support bar.

5,249,700
INTERFITTING PLATE AND CUP
Dan Dumke, Rte. 2, Box 118, Markesan, Wis. 53946
Filed Aug. 25, 1992, Ser. No. 934,331
Int. Cl.[5] B61D *1/36*
U.S. Cl. 220—574 **2 Claims**



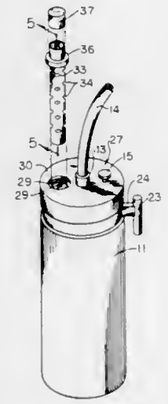
1. A food plate comprising:
a. a generally flat central section having top and bottom surfaces lying in respective flat planes and defining a hole therethrough, the bottom surface being free of any portion of the plate depending therefrom;
b. a peripheral wall around the central section; and
c. a lip upstanding joined to the central section top surface and surrounding the hole, the lip terminating in a free edge that defines a plane that is non-intersecting with the plane of the central section top surface, the lip free edge defining an opening with a size and shape that enables a portion of a cup with a frusto-conical wall to pass through the opening with the lip free edge contacting the cup wall to retain the cup in the opening and prevent the cup from passing completely through the opening,
so that the plate is suitable as a food plate and can support the cup by the lip free edge.

5,249,701
AEROSOL CONTAINER WITH PRESSURE RELEASE STRUCTURE
Ralph C. Daehn, Wayne, Ill., assignor to Ray J. Van Thyne, Prospect Heights and Christian F. Kinkel & Materials Engineering, Inc., Wayne, both of Ill.
Filed May 15, 1992, Ser. No. 884,735
Int. Cl.[5] B65D *8/27*
U.S. Cl. 220—612 **16 Claims**



1. An aerosol container comprising a tubular side wall, a first end wall at one end of said side wall for receiving a dispensing valve, said second end wall including a portion overlying the outside of said side wall, the joint between said side wall and said second end wall being a double seam, and a plurality of interrupted welds between said second end wall and the adjacent end of said side wall.

5,249,702
BEVERAGE CONTAINER AND SUPPORT BRACKET THEREFORE
Kathy R. Topp, and W. Lawrence Topp, both of 8806 LaPrada Ct., Elk Grove, Calif. 95624
Filed Jan. 24, 1992, Ser. No. 825,494
Int. Cl.[5] A47G *19/22;* **B65D** *51/18;* **A61K** *9/22;* **A47K** *1/08*
U.S. Cl. 220—705 **2 Claims**



1. A beverage container apparatus, comprising,
a cylindrical container, the cylindrical container including a container lid securable to an upper distal end of the cylindrical container, the cylindrical container arranged for

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reception of a drinking fluid therewithin, with the lid including a conduit receiving boss fixedly mounted to the lid and a drinking conduit received through the boss for reception within the fluid,

and

the container defined about a container axis,

and

a mounting cylinder rod fixedly secured to the container adjacent said upper distal end of the container orthogonally oriented relative to the axis, with the rod fixedly and orthogonally mounted to a mounting cylinder, the mounting cylinder extending below the rod,

and

a first plate, the first plate including a second plate connected to the first plate in an orthogonal relationship extending forwardly of the first plate, and a third plate extending downwardly from the second plate arranged parallel to the first plate, wherein the third plate includes a mounting cylinder boss fixedly secured to the third plate extending forwardly thereof,

and

a mounting cylinder receiving bore directed coextensively through the mounting cylinder boss, wherein the mounting cylinder receiving bore is arranged for reception of the mounting cylinder therewith, and

the lid includes a lid bore directed therethrough, the lid bore including a bore flange arranged about the lid bore in an encircling peripheral relationship, with the lid including a top surface and the flange positioned below the top surface, and at least one nutrient cylinder, the nutrient cylinder including a sleeve selectively and slidably receiving the nutrient cylinder therewithin, and the nutrient cylinder including a magnetic collar mounted to the nutrient cylinder adjacent an upper distal end of the nutrient cylinder, wherein the magnetic collar includes a ferrous cap selectively secured to said upper distal end of the nutrient cylinder adhered to the magnetic collar, and the nutrient cylinder including a nutrient fluid saturated sponge contained within the nutrient cylinder, the nutrient cylinder including a matrix of apertures directed therethrough, and the nutrient cylinder arranged for projection through the lid bore, with the magnetic collar arranged for mounting upon the bore flange.

5,249,703

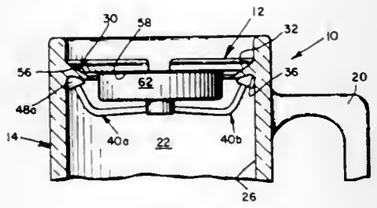
TRAVEL MUG

Morry Karp, 2189 Summitridge Dr., Beverly Hills, Calif. 90210

Filed Mar. 26, 1993, Ser. No. 37,917

Int. Cl.[5] B65D *41/06, 41/26*

U.S. Cl. 220—719 **4 Claims**



1. A travel mug comprising in combination:

a. a container having a base and continuous side wall to form an internal chamber;

b. a handle attached to the exterior of said side wall;

c. a relatively thin annular lip extending from the interior of said side wall, said lip having an underside, a concave annular cavity on said underside, and an upper side;

d. two diametrically opposed gaps in said annular lip located approximately 90 degrees from a point on the annular lip nearest to said handle;

e. a lid member having an annulus, said lid annulus having a horizontal top surface, an outer edge, and a lower surface portion extending inwardly from said edge;

f. a well in said lid member surrounded by said annulus, said well having inner and outer vertical surfaces and inner and outer horizontal surfaces forming an opening in said top surface of said annulus;

g. first and second notches in said annulus' outer edge;

h. first and second retaining arms fastened to said well's outer horizontal surface;

i. a vertical dividing wall spanning the diameter of said well, thereby creating two half-cylindrical wells; and

j. means in said well for permitting fluid flow between said half-cylindrical wells, whereby said retaining arms are passed through said gaps in said lip and are adapted to bear against said concave annular cavity for thereby sealing said internal chamber and for allowing fluid within to escape said container only through said gaps.

5,249,704

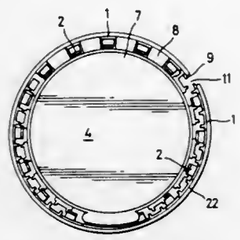
SEALING CAP

Klaus Boetzkes, Heissstrasse 6, D 8940 Memmingen, Fed. Rep. of Germany

Filed Sep. 11, 1992, Ser. No. 944,186

Int. Cl.[5] B65D *41/32*

U.S. Cl. 220—724 **6 Claims**



1. A plastic sealing cap for a valve of a container with an opening having a collar and a valve sealing plate, the cap being of the type which indicates being opened or tampered with, the cap comprising:

a cylindrical guide;

a cover plate having a periphery defined by a major part and a minor part, the minor part of the periphery of said cover plate having broad webs which are connected to said cylindrical guide so that they cannot be torn off, wherein a junction between said major and minor parts is delimited by a slit having a single connecting seam formed in the cylindrical guide, the seam being disposed between said major and minor parts in such a manner that a torn-off portion of said cylindrical guide remains unconnected on one side to a part of said cylindrical guide which in not torn off;

locking elements disposed on an inner side of said cylindrical guide, which, in use, engage resiliently under the collar, the locking elements being covered from above by the valve sealing plate and being covered on sides by said cylindrical guide;

narrow radially aligned webs disposed around the major part of the periphery of said cover plate, which webs frangibly connect said cover plate and said cylindrical guide and delimit windows in the cover plate.

5,249,705

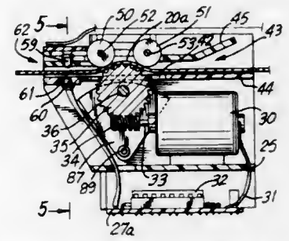
COUPON DISPENSER

Lawrence B. Gates, Vernon, N.J., assignor to Paul A. Wiebel, McAfee, N.J.

Filed Aug. 12, 1992, Ser. No. 929,697

Int. Cl.[5] G07F *11/36*

U.S. Cl. 221—6 **13 Claims**



1. A push button activated coupon dispenser comprising:

a housing having an internal cavity adapted to store a roll of coupons to be dispensed, and a coupon ejection slit through which the coupons are ejected from the housing;

a battery power source within the housing, an electric motor within the housing having a rotatable output shaft, an operable control button mounted on the exterior of the housing and electrically connected to the power source and the motor so that activation of the button operates the motor;

a coupon advancing means within the housing cavity comprising; motor gear means fixed to the motor shaft, a rotatably mounted gear shaft, a drive gear fixed to said gear shaft and in mesh with said motor gear means, at least one high-friction roller fixed to the gear shaft, two freely rotatable rollers, a guide means to guide the coupons to the ejection slit including two parallel plates having an opening therebetween, said parallel plates adapted to guide coupons therebetween, the high friction roller being normally positioned on one side of a coupon and protruding into the opening, and the freely rotatable rollers being normally positioned on the opposite side of a coupon, wherein rotation of the high friction roller advances a coupon through the parallel plates to the ejection slit.

5,249,706

REFRIGERATED LIQUID DISPENSER HAVING A SHUT-OFF VALVE

John Szabo, 556 Edge Lane, Pickering, Ontario, Canada L1W 3A1

Continuation-in-part of Ser. No. 247,624, Sep. 22, 1988, abandoned. This application Aug. 3, 1990, Ser. No. 562,665

Int. Cl.[5] B67D *5/08, 5/62;* **B65D** *37/00*

U.S. Cl. 222—20 **6 Claims**

1. A dispenser for dispensing liquids in predetermined accurately measured dosages and comprising:

a chamber defining a storage compartment for receiving a liquid container;

and said chamber having a partition wall defining a pump and valve compartment;

an insulated door for said chamber giving access to said pump and valve compartment and to said storage compartment;

thermal insulation means in said storage compartment whereby to provide said chamber insulted on all sides;

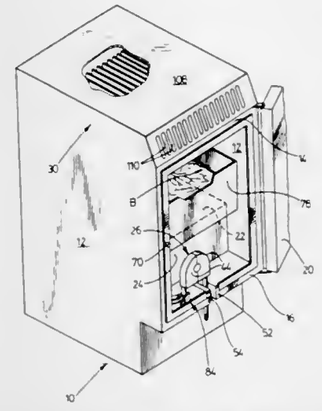
heat exchanger means connected with said chamber and adapted to transfer heat from within said chamber, said storage adapted to receive said liquid container, said container having a flexible tube connected to a lower portion thereof, for flow of said liquid from said container;

peristaltic pump means in said pump and valve compartment of said chamber and rotatably operable to pump said liquid along said flexible tube;

pump housing means enclosing said pump and having releasable structure to permit introduction of and removal of said tube;

shut-off valve means at an exit point of said chamber and downstream of said pump means, said valve means comprising a housing having first and second openings and a recess between said first and second openings, a boss rotatably received in said recess and having a slot therethrough, said slot being alignable with said first and second openings in one rotative position of said boss and being rotatable from said one rotative position to another rotative position wherein said slot is misaligned with said first and second openings, said flexible tube having an end distal from said container and inserted through said first and second openings and said slot, whereby when said boss is in said one rotative position, fluid flow is permitted through said flexible tube, and when said boss is in said another rotative position fluid flow through said tube is precluded;

power-operated means located exteriorly of said chamber for operating said shut-off valve means;



motor means located exteriorly of said chamber for driving said pump means and having a motor shaft adapted for rotating at the speed of said motor means;

a revolution counter coupled to said motor shaft and connected to a counter logic circuit whereby to count each revolution of said motor means, whereby to obtain a precise count of the revolutions of said motor means, said counter logic circuit being adapted to generate a count signal when a predetermined count of said revolutions of said motor means is reached, and,

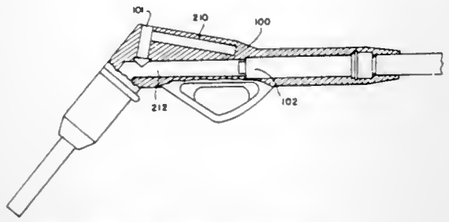
manual control means mounted on the exterior of said chamber and connected to said shut-off valve and to said motor means, and connected to said counter logic circuit, whereby upon operation of said manual control means, said boss is moved to said one rotative position and said motor shaft is operated for a predetermined count of said counter logic circuit, thereby driving said pump means within said pump and valve compartment a prescribed number of revolutions and said counter logic circuit automatically stopping said motor shaft when said predetermined count is reached and said boss is concurrently moved to said another rotative position whereby, in turn, to maximize the accuracy of the rotation of said pump means and thus the accuracy of the dosage of liquid delivered thereby.

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5,249,707
DISPENSING NOZZLE HAVING A FUEL FLOW INDICATOR

W. Dwain Simpson, Wilton, and James H. Pyle, Weston, both of Conn., assignors to Saber Equipment Corp., Stratford, Conn.

Filed Jun. 9, 1992, Ser. No. 895,790
Int. Cl.[5] B67D *5/38*; G01F *15/00*; G01P *13/00*
U.S. Cl. 222—40 6 Claims

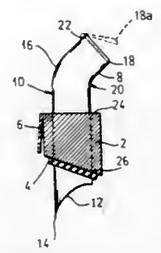


1. A fuel dispensing nozzle comprising
a release valve;
a main fuel flow channel;
a chamber adjacent to said main fuel flow channel and having a window therein;
an elongated rotatable member mounted transversely within said chamber, said rotatable member being entirely visible through said window; and
means for diverting fuel flow from said main fuel flow channel to the chamber and for causing said diverted fuel flow to move said rotatable member, said means for diverting being installed to divert fuel after said fuel has passed said relapse valve.

5,249,708
CONTAINER PUNCTURE SPOUT

Thomas Magness, 722 Sharon Ave., Collingdale, Pa. 19023

Filed Sep. 21, 1992, Ser. No. 947,545
Int. Cl.[5] B67B *7/24*
U.S. Cl. 222—83 1 Claim

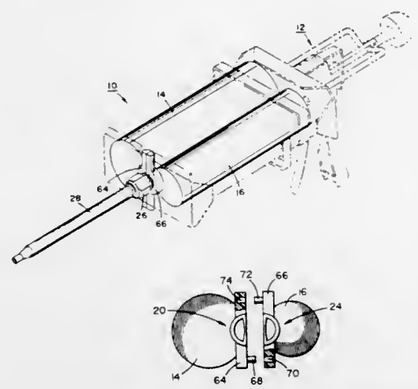


1. An improved puncture spout for ridgeseal gable containers, said ridgeseal gable containers having two angular tops, the improvement of said puncture spout comprises a tubular member and a collar surrounding said tubular member, said tubular member having two ends, the first of said ends is arcuately truncated to form two edges and a container top penetrating point, said two edges being sharp so as to cleanly cut one of said two angular gable container tops, the second end of said tubular member being formed into an obtuse angle in relationship to the axis of said tubular member to form a pouring spout, said pouring spout having a sealing member mounted thereon, said collar having a first upper edge, a second lower edge, a third rear edge and a fourth front edge, said first upper edge being perpendicular to the axis of said tubular member inserted therein, said second lower edge of said collar is angled to generally conform to an angular top of the gable container said third rear edge of said collar having a wedge shaped slot to interlock with said gable container ridgeseal; said second lower edge of said collar having a low compression modulus closed celled foam gasket affixed thereto located on said tubular member adjacent to said second lower collar edge, said gasket sealing against said angular top of said gable container and said collar when said sharp arcuate edges and point are inserted into said container and said rear edge wedge slot of said collar interlocks onto said ridgeseal of said container the improved puncture spout permitting the pouring of said container's contents.

5,249,709
CARTRIDGE SYSTEM FOR DISPENSING PREDETERMINED RATIOS OF SEMI-LIQUID MATERIALS

George J. Duckworth, Guilford, and Richard W. Clemens, Somers, both of Conn., assignors to Plas-Pak Industries, Inc., Norwich, Conn.

Continuation-in-part of Ser. No. 422,235, Oct. 16, 1989, abandoned. This application May 6, 1992, Ser. No. 879,832
Int. Cl.[5] B67D *5/42*
U.S. Cl. 222—137 25 Claims

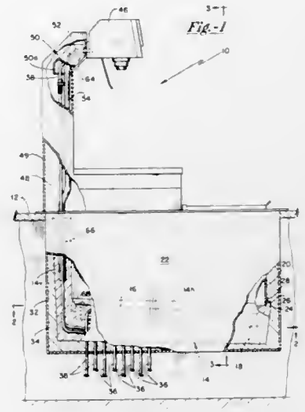


1. A cartridge system for use in simultaneously dispensing a predetermined ratio of semi-liquid materials, comprising:
(a) two cylindrical cartridges having selected cross-sectional areas in proportion to said predetermined ratio, each said cartridge having a first, open, filling end and a second, closed, dispensing end with an outlet nozzle formed therein;
(b) each said cartridge having a seal slidingly dispose din the bore thereof to cause a semi-liquid material to be dispensed from said outlet nozzle when force is applied to said seal;
(c) attachment means, formed integrally with said cylindrical cartridges, to rigidly snap together said two cartridges;
(d) said attachment means including two pairs of face-to-face opposing mating surfaces oppositely extending outwardly axially from a common central axis of said two cartridges, orthogonal to a plane on which the longitudinal axes of said cartridges lie; and
(e) opposing pairs of snap together fittings formed in the distal ends of said mating surfaces to rigidly snap together said two cartridges.

5,249,710
BEVERAGE DISPENSER HAVING COLD PLATE WITH EVAPORATIVE COOLING

David A. Hassell, Anoka, Minn., and Craig A. Swanson, San Antonio, Tex., assignors to IMI Cornelius Inc., Anoka, Minn.

Filed Jul. 2, 1992, Ser. No. 908,096
Int. Cl.[5] B67D *5/62*
U.S. Cl. 222—146.6 8 Claims



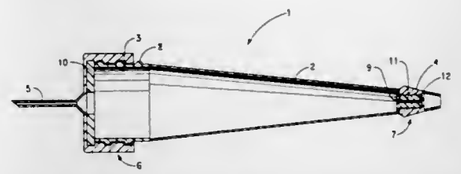
1. An ice cooled beverage dispenser comprising:
an L-shaped cold plate having a bottom horizontal portion and a vertical portion, the cold plate held within an ice retaining bin, and the cold plate having a plurality of beverage fluid lines extending there through, the beverage lines extending in a generally serpentine fashion through the bottom portion of the cold plate and extending generally vertically through the vertical cold plate portion, and the beverage fluid lines extending from the cold plate vertical portion and fluidly connected to a carbonated water manifold, the manifold for retaining a volume of carbonated water therein and fluidly connected to one or more beverage dispensing valves, and a heat tube, the heat tube being a sealed container for holding an evaporative heat transfer fluid and having a bottom liquid containing end for holding a volume of the transfer fluid, and an evaporative cooling chamber end in fluid communication with the bottom end, and the bottom end extending generally vertically within the cold plate vertical portion and in heat exchange thermal contact with a portion thereof and extending upwardly therefrom to the cooling chamber end, the cooling chamber end lying in heat exchange physical contact with the carbonated water distribution manifold, wherein the heat tube provides for evaporative cooling of the carbonated water held in the manifold through repeated evaporative cooling in the cooling chamber and recondensation in the heat tube bottom end of the evaporative heat transfer fluid.

5,249,711
DISPOSABLE DISPENSING PIPETTE

William C. Filbert, Jr., Wilmington, Del., assignor to Du Pont Canada Inc., Mississauga, Canada

Filed Oct. 1, 1992, Ser. No. 955,557
Int. Cl.[5] B67D *5/58*
U.S. Cl. 222—189 8 Claims

1. Apparatus for dispensing blood or blood components from a stoppered vial containing such components, comprising in combination:
(a) a flexible elongated hollow cone that tapers from an inlet end to a dispensing end, each of said ends having external threads;
(b) a unitary cap in threaded engagement with the external threads of the inlet end of the cone, said unitary cap having an internal gasket forming an effective seal between the end of the hollow cone and the interior of the unitary cap, said unitary cap having a tubular piercing bayonet extending outwardly from said cap with dimensions suitable for penetration of a stopper on a stoppered vial without coring;

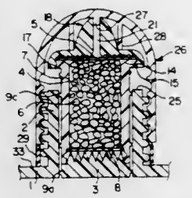


(c) said dispensing end terminating in a tip with a fluid channel for the dispensing of droplets of liquid from said tip, said dispensing end having a threaded cap in threaded engagement with the external threads on the dispensing end of the cone, said external threads being effective in permitting controlled pressure equalization between the interior of the hollow cone and the atmosphere on removal of said cap.

5,249,712
PACKAGING FOR ALTERING THE COMPOSITION OF A LIQUID

Jean-Pierre Lontrade; Henri Chibret, both of Clermont Ferrand, and Gérard Schwadrohn, Nice, all of France, assignors to Transphyto S.A., Clermont Ferrand, France

PCT No. PCT/FR89/00559, § 371 Date Apr. 29, 1991, § 102(e) Date Apr. 29, 1991, PCT Pub. No. WO90/04547, PCT Pub. Date May 3, 1990
PCT Filed Oct. 26, 1989, Ser. No. 678,280
Claims priority, application France, Oct. 28, 1988, 88 14211
Int. Cl.[5] B67D *5/58*
U.S. Cl. 222—189 9 Claims



1. A package in the form of a container (**1**) for storing and dispensing a liquid to be purified, the container (**1**) defining an interior for containing the liquid, the container comprising:
a neck (**2**) communicating with the interior of the container at a junction between the neck and the interior;
a lock-chamber (**4**) received within the neck, the lock chamber (**4**) having opposed inlet and outlet ends and treating material therein for treating the liquid to be purified as the liquid passes therethrough upon being dispensed from the container;
a plug (**3**) fixed to the lock chamber (**4**) and being moveable therewith between a storage position and a dispsening position;
means (**9***a*) engageable between the plug (**3**) and neck (**3**) for blocking liquid in the interior of the container (**1**) from contacting the treating material when the plug is in the storage position and for allowing contact between the

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liquid and treating material when the plug (3) is in position during which liquid is dispensed; and

means (8) associated with the lock chamber (4) for preventing the treating material from flowing from the lock chamber (4) into the interior of the container (1) when the plug (3) is in the dispensing position.

5,249,713

PUMP VALVE ASSEMBLY

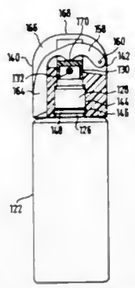
Uwe Reich, Hagen, and Peter Runte, Unna-Hemmerde, both of Fed. Rep. of Germany, assignors to Perfect-Valois Ventil GmbH, Dortmund-Wickede, Fed. Rep. of Germany

Filed Aug. 15, 1991, Ser. No. 745,515

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1990, 9011901

Int. Cl.[5] B65D *83/14*

U.S. Cl. 222—321 7 Claims



1. A pump assembly removably mounted to a liquid receptacle having a pump-type spray assembly secured thereto, which spray assembly contains an outlet opening which lies behind a passage opening for the liquid, said spray assembly comprising a protective cap having an elliptical cross section with narrow and main sides detachably secured to an upper portion of said receptacle and including therein a slidably supported actuating and dispensing head, said cap and dispensing head defining aligned outlet openings for the liquid, a pump actuating lever having a downwardly angled free lever end and a spray head engaging portion, means pivotally connecting the lever to said cap on the side of said cap opposite to the location of the free lever end of said pump actuating lever, which lever is positioned to engage said actuating and dispensing head upon pivotal movement thereof, said cap further defining an opening through which said lever extends, which opening corresponds in side view to an essentially oval aperture defined by an aperture rim that is cut in the form of an arc into a narrow side and the two main sides of the protective cap which is designed to prevent the lever from rotating while permitting pivotal movement thereof to actuate said dispensing head to spray liquid.

5,249,714

POUR SPOUT WITH IMPROVED VALVE STRUCTURE

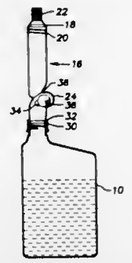
Richard D. Merhar, 551 Morewood Pkwy., Rocky River, Ohio 44116

Filed Oct. 2, 1992, Ser. No. 955,463

Int. Cl.[5] B65D *5/72*

U.S. Cl. 222—500 4 Claims

1. A pour spout adapted to dispense oil or other liquid from a container comprising a tubular body having an inlet portion and an outlet portion, the inlet and outlet portions having a generally common longitudinal axis, a valve seat disposed within said body between said inlet and outlet portions, a heavy valve ball in the body adapted to selectively close the valve seat to prevent flow of liquid from the inlet portion to the outlet portion, means in the inlet portion retaining the ball in a zone adjacent the valve seat, a ball run-off area in the inlet portion eccentric to said axis adapted to receive the ball at a location sufficiently displaced from the seat to allow flow of liquid through the body from the inlet portion to the outlet portion, the valve seat lying in a plane forming an oblique angle with respect to said axis, the orientation of the plane of the valve seat being such that the area of the seat adjacent the run-off area is downstream with reference to the direction of flow through the body relative to the area of the seat remote from the run-off area, the body being constructed and arranged



in combination with said valve ball such that when the body is disposed with its outlet portion lower than its inlet portion and the ball run-off area in a non-pour position above the axis, the valve ball closes the valve seat and with the ball run-off area in a pour position below the axis, the valve ball is readily received in the ball run-off area to open the valve seat without a significant tendency to stick on the valve seat due to surface tension forces of the liquid being dispensed.

5,249,715

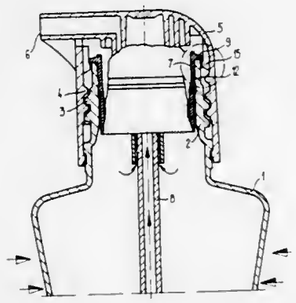
DISPENSING CONTAINER WITH AN OPTIONALLY REMOVABLE INSERT IN THE NECK OF THE CONTAINER

Viktor Tobler, Oberdurnten, Switzerland, assignor to Supermatic Kunststoff AG, Uster, Switzerland

Filed Oct. 14, 1992, Ser. No. 960,697

Int. Cl.[5] B05B *11/04;* B65D *47/28;* B67D *5/00*

U.S. Cl. 222—519 8 Claims



1. A dispensing device for free-flowing preparations, which comprises:

a container for receiving a free-flowing medium for the purpose of being discharged from the container, the container having an opening and a neck with a cylindrical inner wall;

a cylindrical insert fitted into the container neck;

a closure member for engaging an outer portion of the container neck and at least partially closing said opening of said container;

interengaging groove-and-bead connection members formed in the cylindrical insert and the cylindrical wall of the container neck for forming a catch for limiting axial mobility of said insert and said container neck relative to each other wherein, for allowing said container to be reused, the closure member engages an outside portion of the container neck and a cam is located on an inside portion of the closure member, said cam projecting radially inwardly toward the container neck and wherein, upon axial movement of the closure member in an opening direction, said cam bears against a rim portion of an end portion of said insert which projects radially outward beyond the radial dimension of the container neck and which, upon further axial movement of the closure member in the opening direction, permits the insert to be pulled out from the container neck due to overcoming the ability of the catch to limit said axial mobility of said insert and said container neck relative to each other.

5,249,716

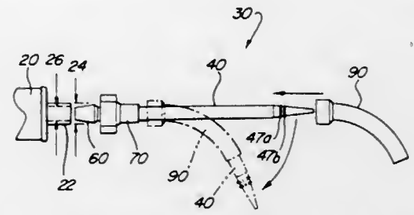
CAULKING NOZZLE ASSEMBLY

Paul O'Sullivan, 28021 Camino Santo Domingo, San Juan Capistrano, Calif. 92675

Filed Apr. 12, 1993, Ser. No. 46,099

Int. Cl.[5] B67D *5/72*

U.S. Cl. 282—568 14 Claims



1. A caulking nozzle assembly for dispensing a caulking material from a canister of caulking material having a spout dispenser, the caulking nozzle assembly comprising:

a caulk-dispensing tube with an attaching end and a dispensing end, the dispensing tube includes a ferrule formed on the attaching end;

an angle guide tube curved in shape and sized to fit closely around said dispensing tube, said dispensing tube being less rigid than the guide tube and substantially flexing to assume the guide tube's shape when inserted therein; and

attaching means for connection to the spout, the attaching means closely fitting around said dispensing tube between said ferrule and said angle guide tube, said ferrule prevents the attaching means from sliding off said dispensing tube in the direction of said dispensing tube's attaching end;

whereby said attaching means can be removably attached to the spout of said caulk canister to said dispensing tube, said dispensing tube being subjectively shaped by the operator by positioning said angle guide tube to directionally dispense, from said dispensing end, said caulking material discharged from said caulking canister and received into said dispensing tube's attaching end.

5,249,717

ROTARY NOZZLE

Hisao Inubushi, Kanagawa; Motoo Amano, and Masashi Matsuura, both of Tokyo, all of Japan, assignors to Nippon Rotary Nozzle Co., Ltd., Kanagawa, Japan

Filed Jun. 5, 1992, Ser. No. 894,071

Claims priority, application Japan, Jun. 11, 1991, 3-139243

Int. Cl.[5] B22D *41/26*

U.S. Cl. 222—598 9 Claims

1. A rotary nozzle assembly for controlling rate of pour of molten metal through a discharge outlet in a bottom wall of a vessel, said rotary nozzle assembly comprising:

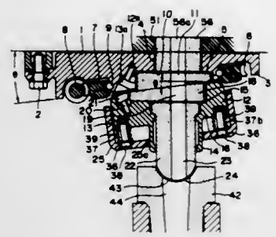
a base plate fixedly attachable to the bottom wall of a vessel containing molten metal, said base plate having an opening aligned with the discharge outlet in the bottom wall of the vessel,

a fixed plate brick secured to said base plate and having a sliding surface inclined at an angle of 7.5° with respect to the horizontal, said fixed plate brick having a base communicating with said opening in said base plate,

a sliding plate brick having a sliding surface in sliding contact with the sliding surface of the fixed plate brick, said sliding surface of said sliding plate brick having the same angle of inclination as the sliding surface of the fixed plate brick, said sliding plate brick having a bore therethrough,

a collector nozzle fixed relative to said sliding plate brick and having a nozzle bore aligned with said bore in the sliding plate brick, said collector nozzle including an end portion of spherical shape supported for rocking movement,

a frame arranged below said support means,



support means supporting said sliding plate brick and said collector nozzle for common movement,

drive means on said base plate for driving said frame in rotation,

means supporting said support means from said frame for common rotation therewith and for vertical displacement relative thereto,

a plurality of spring means between said frame and said support means to urge the sliding surface of the sliding plate brick against the sliding surface of the fixed plate brick,

means pivotably connecting said frame relative to said base plate for movement between an operative position in which said sliding surface of the sliding plate brick is in sliding contact with the sliding surface of the fixed plate brick and an inoperative dropped position in which said sliding surfaces are exposed.

5,249,718

AUTOMATIC PUMP-TYPE SPRAY DISPENSER

Kenneth J. Muderlak, Sborewood, Wis., assignor to Technical Concepts, Elk Grove Village, Ill.

Filed Mar. 16, 1992, Ser. No. 852,080

Int. Cl.[5] G04C *23/00*

U.S. Cl. 222—642 20 Claims

1. A fluid dispenser comprising:

container means for containing a fluid to be dispensed, said container means including a pump having a depressible head associated with said pump for dispensing said fluid form said container when said head is depressed with sufficient force;

housing means for supporting said container means;

cam means, rotatably affixed to said housing means, for rotating around a central axis, said cam means including an outer surface having a first surface portion constructed such that the radius of said cam means outer surface generally increases as said cam means is rotated about said central axis in a first direction, said cam means outer surface further having a second surface portion constructed such that the radius of said cam means outer

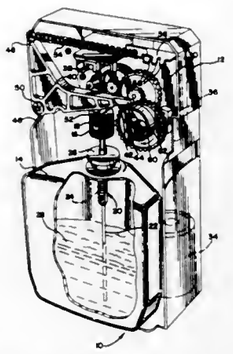
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surface generally decreases as said cam means is rotated about said central axis in said first direction;

means for rotating said cam means;

actuator means for depressing said depressible head upon contact with said depressible head, said actuator means having a first portion disposed adjacent said cam means, and a second portion movably connected to said housing means such that said first portion contacts and slides upon said cam means outer surface; and

spring means for providing a force on said actuator means



such that said first portion of said actuator means is biased to maintain contact with said cam means outer surface during at least a part of the rotation of said cam means, and such that said actuator means provides a spring force to said depressible head,

said cam means outer surface controlling said spring force on said depressible head during the partial rotation of said cam means when said actuator means remains in contact with said second surface portion of said cam means outer surface and said actuator means depresses said depressible head with a controlled amount of force.

5,249,719

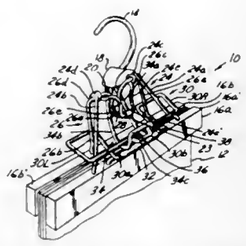
ADJUSTABLE CLAMPING GARMENT HANGER

Myron Hulyk, 20037 Edmunton, St. Clair Shores, Mich. 48080

Continuation-in-part of Ser. No. 929,583, Aug. 17, 1992, abandoned. This application Apr. 15, 1993, Ser. No. 47,785

Int. Cl.[5] A47G *25/48*

U.S. Cl. 223—96 **9 Claims**



1. A clamping garment hanger, comprising:

a first jaw;

a second jaw pivotally connected with said first jaw;

a hanger connected with said first and second jaws;

a primary clamping system for clamping said first jaw with respect to said second jaw, said primary clamping system comprising:

a first leg member connected with said first jaw;

a second leg member connected with said second jaw, said second leg member being pivotally connected with said first leg member; and

lever means for pinchably engaging with respect to said first and second leg members so as to clamp said first jaw with respect to said second jaw and for providing lockage of clamping of said first jaw with respect to said second jaw when garments placed between said first and second jaws have a thickness that is less than a first predetermined thickness; and

a secondary clamping system for adjustably clamping said first jaw with respect to said second jaw in association with said primary clamping system, said secondary clamping system comprising:

a collar, comprising:

a left loop;

a right loop spaced from said left loop;

a foot bridging said left loop and said right loop; and

a tongue bridging said left loop and said right loop, said tongue and said foot being vertically mutually spaced;

wherein said collar freely floats with respect to said first and second leg members; and further wherein a first half of said first and second legs are located inside said left loop and a second half of said first and second legs are located inside said right loop; and

a fork, comprising:

a pair of mutually spaced arms, each arm of said pair of arms having a near end and a distal end, each said near end being connected with said lever means, and

a yoke formed between each said distal end;

wherein said yoke is dimensioned to receive said tongue therewithin;

wherein said collar engages abuttably with respect to said second legs and said yoke so as to adjustably supply clamping force to said first and second leg members when garments placed between said first and second jaws have a thickness that exceeds a second predetermined thickness.

5,249,720

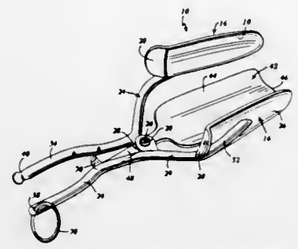
TOOL FOR FACILITATING APPLICATION OF ELASTIC STOCKINGS

Allen A. White, R.F.D. 2, Box 9, Peabody, Kans. 66866

Filed May 1, 1992, Ser. No. 876,769

Int. Cl.[5] A47G *25/90*

U.S. Cl. 223—112 **17 Claims**



1. A tool for use in application of a stocking to an individual's leg, said tool comprising:

a pair of side rails for receiving a stocking and causing stretching thereof, said side rails being mounted for lateral pivoting movement between a first position in which the side rials have been moved toward each other to facilitate placement of the stocking over said side rails and a second position in which the side rails have been moved laterally outward to cause stretching of the stocking;

a pair of handles coupled to the side rails and manipulable for effecting said lateral pivoting movement of the side rails, wherein movement of said handles toward each other causes movement of the side rails toward the second position with the side rails moved laterally outward; and

a tongue providing an upper surface for contacting a portion of the individuals leg during the application of the stocking thereto, said tongue being mounted for lateral pivoting movement relative to said side rails and handles when the side rails are in said first position, said tongue including an extension which is engageable by the handles to cause centering of the tongue between the side rails when the side rails are move laterally outwardly to the second position.

5,249,721

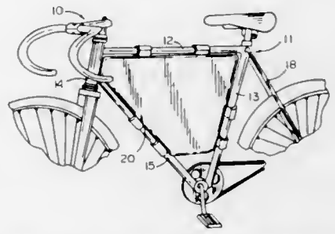
INTERFRAME ARTICLE CARRIER

William P. Brooks, 450 Adams, SE., Grand Rapids, Mich. 49507

Filed Dec. 12, 1991, Ser. No. 807,031

Int. Cl.[5] B62J *7/00*

U.S. Cl. 224—35 **15 Claims**



1. An article carrier for a bicycle having a frame including a generally horizontal cross tube, a generally vertical seat tube, a generally vertical fork tube and a diagonal tube extending between the fork tube and the seat tube, said article carrier including:

a base, said base including wall extending form a back and defining a perimeter of said base, said perimeter of said base conforming to the shape of the frame, at lest one of said walls including another wall section and an inner wall section, said outer and inner wall sections joined by an integral intermediate section, wherein the inner wall section from a smaller peripheral dimension than the outer wall section, whereby the portion of said base defined by the inner wall section is received in the frame and said intermediate section abuts with the frame when said base is mounted on the bicycle to positively position said base on the frame; and

a cover, said cover having substantially the same shape as said base, said cover enclosing the interior of said base when said cover is assembled to said base.

5,249,722

EASY ACCESS BOW HOLDER

Dennis L. Horn, 3422 Valley Rd., Marysville, Pa. 17053

Filed Apr. 9, 1992, Ser. No. 866,203

Int. Cl.[5] B60R *9/00*

U.S. Cl. 224—42.45 R **14 Claims**

1. A swingable mounting rack assembly for attachment to a vertical panel of a vehicle, and configured for holding a firearm and an archery bow, comprising:

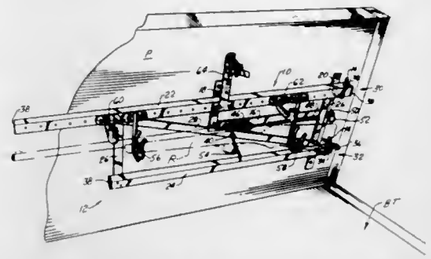
a. first, fixed bracket means secured to a vehicle's vertical panel;

b. second, swingable bracket means having plural pairs of separate and distinct holder means for holding a firearm and an archery bow, said second, swingable bracket means further including means for selectively mounting each of said pairs of holder means on said swingable bracket means, in one of a plurality of positions therealong;

c. hinge means for mounting said second bracket means onto said first, fixed bracket means in swinging gate fashion, said second bracket means being rotatable through a generally horizontal arc of about ninety degrees, from a closed position generally against and parallel with said first, fixed bracket means, to an open position at approximately a right angle with respect to said first, fixed bracket means;

d. interengaging, cooperating latch means mounted on said first and second bracket means for locking said second, swingable bracket in said closed position;

e. said plural pairs of separate and distinct holder means



being mounted on said second bracket means for readily, removably attaching an archery bow to one of said pairs of holder means, and for readily, removably attaching a firearm to another of said pairs of holder means, said second swingable bracket means further including stabilizer spring loaded clip assembly means expandable in a horizontal direction from a normally closed position for engaging a stabilizer of a conventional bow so as to hold the stabilizer in a vertical position when a bow is placed in said holder means, thus to further assure secure holding of a bow on said second, swingable bracket means.

5,249,723

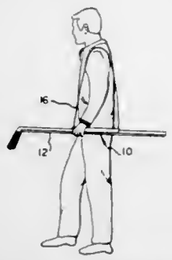
CARRIER FOR SHAFTED EQUIPMENT

Joseph F. M. Lamadelein, 2379 Blackstone Cr., Ottawa, Ontario, Canada K1B 4H3

Filed Oct. 18, 1991, Ser. No. 779,275

Int. Cl.[5] A45F *3/14*

U.S. Cl. 224—257 **14 Claims**



1. A carrier adapted to retain a plurality of elongate shaft members, comprising a plurality of connected adjacent substantially U-shaped elongated channels of resilient material, said elongated channels being adapted to extend along and receive the elongated shaft members, each channel having a substantially flat bottom, a first elongate sidewall and a second elongate sidewall, said first and second sidewalls being connected to said bottom wherein:

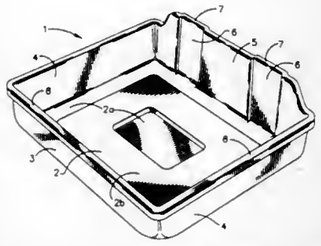
(i) the first elongate sidewall is angled inwardly toward the second elongate sidewall so that an included angle between the first elongate sidewall and the bottom is less than 90°;

(ii) the first elongate sidewall includes a top edge having at

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least one narrow lip section facing inwardly into the channel toward said second side wall;
(iii) the second elongate sidewall is substantially perpendicular to the bottom; and
(iv) the second elongate sidewall includes a top edge having a plurality of relatively short discontinuous relatively narrow lip section extending inwardly into the channel toward said first sidewall; and
(v) attachment means at each end of said flat bottom for receiving a carrier strap.

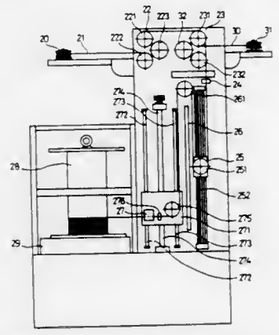
5,249,724
UNDERSEAT STORAGE CONTAINER
Howard T. Green, 5900 Fairham Rd., Hamilton, Ohio 45011
Filed Feb. 4, 1992, Ser. No. 830,735
Int. Cl.[5] B60R *7/00*
U.S. Cl. 224—275 **3 Claims**



1. An underseat storage container for use in a vehicle having a rear seat secured to a vehicle floor such that a space having a height is defined therebetween, said storage container comprising: a bottom having a periphery; a front wall; a rear wall having means for stiffening the rear wall; and a pair of sidewalls being integrally connected to said bottom such that said walls form a continuous wall extending about the periphery of the bottom, said bottom and said continuous wall form a storage space adapted for receiving sundry articles therein, each of said walls having a top edge turned in overlapping relation to said walls and forming a continuous turned top edge extending about said continuous wall, wherein the turned edge on said rear wall further defines a pair of grasping handles formed therein to aid the user in placing and removing the container from within the space, said front wall and said pair of sidewalls having a first height and said rear wall having a second height greater than said first height wherein said front wall and said pair of sidewalls are sized such that said container complimentally fits into said space and is adapted to slide upon the floor of said vehicle beneath said seat such that said container is adapted to be located within said space, said second height of said rear wall being greater than the height of said space such that said rear wall is adapted to contact said seat and limit the sliding of the container into said space.

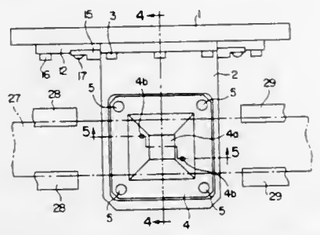
5,249,725
APPARATUS FOR RE-USING WIRES USED ONCE FOR MASH SEAM WELDING
Minoru Nakatsu, Mie, Japan, assignor to N.P.W. Technical Laboratory Co., Mie, Japan
Filed Jul. 17, 1992, Ser. No. 914,523
Claims priority, application Japan, Jul. 30, 1991, 3-212660
Int. Cl.[5] B23K *11/06*
U.S. Cl. 228—5.5 **14 Claims**

1. An apparatus for re-using a copper wire having been used once for mash seam welding in a mash seam welder for mash seam welding a lap formed by overlapped opposite side edges of a metal blank between upper and lower roller electrodes, said apparatus for taking up the copper wire having been squeezed to have a substantially flat sectional profile and used once for mash seam welding, as taken-up wire and feeding said taken-up wire as rewound wire to said mash seam welder to be used again for welding between said upper and lower roller electrodes, said apparatus comprising:
a wire shape detection unit provided between a taken-up wire feed roller, for feeding said taken-up wire, and a taken-up wire take-up drum, for taking up said taken-up wire from said taken-up feed roller, said wire shape detection unit detecting the characteristics of said rewound wire rewound from said take-up drum and providing a command to stop the transport of said metal blank from



said mash seam welder upon detection of a defect in said rewound wire characteristics; and
a wire braking unit provided between said wire shape detection unit and a feed-out roller for delivering said rewound wire to said mash seam welder, said wire braking unit including a clutch unit for braking said rewound wire in a direction opposite to a feed direction of said rewound wire and rotating only in said feed direction of said rewound wire.

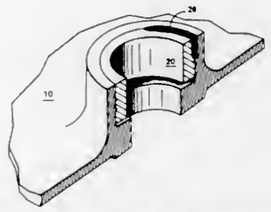
5,249,726
TAPE CLAMPING MECHANISM
Koji Sato, Fussa, Japan, assignor to Kabushiki Kaisha Shinkawa, Tokyo, Japan
Filed Jul. 15, 1992, Ser. No. 913,867
Claims priority, application Japan, Jul. 15, 1991, 3-198198
Int. Cl.[5] H01L *21/603;* **B23K** *37/04*
U.S. Cl. 228—6.2 **3 Claims**



1. A tape clamping mechanism for tape bonding machines in which a tape is held by means of an upper clamper and a lower clamper, comprising:
an upper clamper arm movable up and down;
an upper clamper plate mounted on said upper clamper arm via screws;
an upper clamper mounted on said upper clamper plate via screws, said upper clamper being provided with a bonding window at the center and a pair of positioning holes;
a lower clamper arm movable up and down beneath said upper clamper arm;

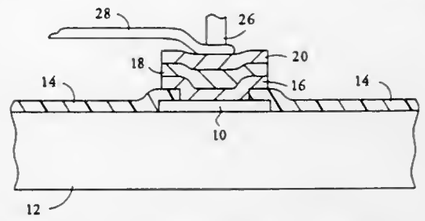
a lower clamper plate mounted on said lower clamper arm by screws;
a lower clamper mounted on said lower clamper plate via screws, said lower clamper being provided with a bonding window at the center and a pair of positioning holes, and said positioning holes of said lower clamper being positionally aligned with said positioning hole of said upper clamper by means of positioning pins inserted into said positioning holes of said upper and lower clampers.

5,249,727
WELD PENETRATION DEPTH INSPECTION
Jack G. Eberle, and Richard B. Ringler, both of Palm Beach Gardens, Fla., assignors to United Technologies Corporation, Hartford, Conn.
Filed Dec. 21, 1992, Ser. No. 994,373
Int. Cl.[5] B23K *15/00*
U.S. Cl. 228—104 **12 Claims**



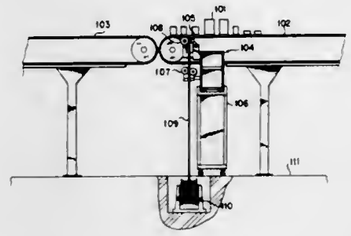
1. A method for inspecting a repair-welded structure wherein a repair insert is welded into a damaged hole, the improvement comprising:
a. forming a first inspection groove on the insert at a distance equal to the minimum permissible penetration of the weld;
b. forming a second inspection groove on the insert at a distance equal to the maximum permissible penetration of the weld; and
c. non-destructively inspecting the repaired structure to determine whether the weld has penetrated beyond the first inspection groove but not as far as the second inspection groove.

5,249,728
BUMPLESS BONDING PROCESS HAVING MULTILAYER METALLIZATION
Ken Lam, Colorado Springs, Colo., assignor to Atmel Corporation, San Jose, Calif.
Filed Mar. 10, 1993, Ser. No. 29,148
Int. Cl.[5] H01L *21/607*
U.S. Cl. 228—111 **17 Claims**



1. A method for electrically connecting an integrated circuit and a bond lead comprising,
providing an integrated circuit,
forming a conductive input/output pad on the integrated circuit,
forming a conductive inner layer on the input/output pad for joining the input/output pad to a noble metal,
forming a noble metal layer on the inner layer,
aligning a lead end of a bond lead to the input/output pad, including contacting the lead end to the noble metal layer, and
ultrasonically bonding the lead end to the noble metal layer, including applying a force to the lead end to vibrate the lead end.

5,249,729
METHOD FOR FORMING HOOK ENGAGING PART IN THERMAL PART OF MATERIAL FOR VERTICAL SUSPENSION TYPE SURFACE TREATMENT
Jingo Kuwana, Toyama, and Katsuyuki Nagata, Uozu, both of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan
Filed Dec. 30, 1992, Ser. No. 998,588
Claims priority, application Japan, Dec. 30, 1991, 3-360381
Int. Cl.[5] B23K *31/00*
U.S. Cl. 228—125 **12 Claims**



1. A method for forming on a material subjected to vertical suspension type surface treatment such a hook engaging part as to be engaged with a nipping device of a carrier bar serving to convey said materials successively to a series of surface-treating baths, which comprises: forming a protuberant hook engaging part by welding on the surface of a terminal part of said material while said material is in transit to a framing station.

5,249,730
PROCESS FOR THE MANUFACTURE OF ZIRCONIUM BASED TUBES FORMED FROM LAYERS OF VARYING COMPOSITION
Yvon Millet, Beaucouze, and Jean Van Wittenberghe, Chalon/-Saône, both of France, assignors to Compagnie Europeenne du Zirconium Cezus, Courbevoie, France
Filed Mar. 4, 1993, Ser. No. 26,036
Claims priority, application France, Mar. 4, 1992, 92 02799
Int. Cl.[5] B23K *20/22, 31/02*
U.S. Cl. 228—131 **4 Claims**

1. A process for the manufacture of zirconium based tubes formed from layers of varying composition wherein a tubular blank is prepared which is intended to form the outer layer of the tube or casing and a tubular blank is formed, or core block, of smaller diameter, which may be coated on the inside thereof with a plating, said block being obtained by machining a bar in the state of a small hollow drawn bar, characterised in that the casing is obtained by rolling-soldering of a plate of metal; after being fitted onto the block, the ends of the assembly are then soldered, and then subjected by heating to a treatment whereby they are placed in solution in beta phase, soaked in water and drawn.

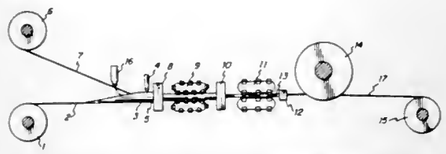
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5,249,731

PROCESS FOR PRODUCING ALUMINUM COATED METALLIC MATERIAL

Gerhard Ziemek, Langenhagen, Fed. Rep. of Germany, assignor to Kabelmetal Electro GmbH, Fed. Rep. of Germany

Filed Jun. 1, 1992, Ser. No. 891,832
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1991, 4118004
Int. Cl.[5] B23K *31/02*
U.S. Cl. 228—148 16 Claims



1. A process for producing an aluminum coated metallic material comprising the steps of:

a) providing an elongated metallic material having an outside diameter;

b) providing an aluminum band concurrently with said elongated metallic material;

c) forming said band into an open seam tube around said elongated metallic material, said open seam tube having a significantly larger inside diameter than the outside diameter of said elongated metallic material so as to form an annular gap between the inside diameter of said open seam tube and the outside diameter of said elongated metallic material;

d) maintaining a substantially oxygen free gas atmosphere in said annular gap between said elongated metallic material and said open seam tube;

e) welding said open seam tube so as to form a closed seam tube having a first diameter;

f) performing a first reducing step, wherein the first diameter of said closed seam tube is reduced by at least 20% to a second diameter;

g) performing a second reducing step, wherein the second diameter of said closed seam tube is reduced so as to bring said closed seam tube into contact with said elongated metallic material to form an aluminum coated metallic material; and

h) performing a third reducing step, wherein a cross-section of said aluminum coated metallic material is reduced by at least 10%.

5,249,732

METHOD OF BONDING SEMICONDUCTOR CHIPS TO A SUBSTRATE

Michael E. Thomas, Milpitas, Calif., assignor to National Semiconductor Corp., Santa Clara, Calif.

Filed Feb. 9, 1993, Ser. No. 15,473
Int. Cl.[5] H01L *21/60, 21/50*
U.S. Cl. 228—179.1 15 Claims

11. A method for bonding a pad on a semiconductor chip to a corresponding pad on a carrier comprising the steps of:

1) forming at least one aluminum bond pad on a semiconductor chip;

2) forming a protective layer over the surface of the semiconductor chip and said at least one bond pad;

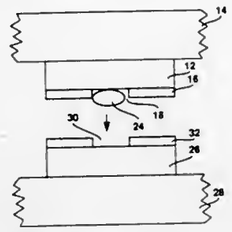
3) forming a window in the protective layer for each aluminum pad exposing said aluminum;

4) providing a bond wire comprising a low melting temperature aluminum alloy material;

5) forming a wire bond ball attached to a pad on the chip by bonding one end of the bond wire to the pad on the chip;

6) breaking the bond wire off at the bond;

7) forming a bead on the chip pad by heating the ball to a temperature slightly above the melting point of the bond wire material for a predetermined period of time; and



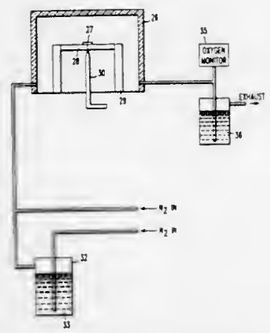
8) placing the melted bead into contact with a corresponding pad on the carrier.

5,249,733

SOLDER SELF-ALIGNMENT METHODS

Michael F. Brady, Morrisville, and Rajan D. Deshmukh, Yardley, both of Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 16, 1992, Ser. No. 915,492
Int. Cl.[5] B23K *1/00, 35/38*
U.S. Cl. 228—180.22 15 Claims



1. A method for aligning a member with, and bonding the member to, a substrate, comprising the steps of:

defining a first metal bonding pad on the member and a second metal bonding pad on the substrate, the first and second bonding pads being at predetermined corresponding locations;

coating at least one of the metal bonding pads with solder;

approximately registering the first bonding pad in close proximity to the second bonding pad;

melting the solder to cause the solder to gather and to make contact simultaneously with the first and second bonding pads;

using solder self-alignment to permit the surface tension of the molten solder to align the member with the substrate;

and cooling to harden the solder and to bond together the first and second bonding pads; wherein the invention comprises the step of:

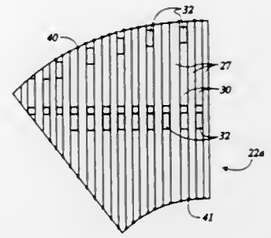
exposing the solder and the bonding pads to an atmosphere rich in gaseous formic acid during at least the melting step.

5,249,734

ROTOR DISC FOR A REFINER AND METHOD OF FORMATION THEREOF

Milton Pilao, Sao Paulo, Brazil, assignor to Atlanta Import Export Corp., Atlanta, Ga.

Continuation of Ser. No. 443,509, Nov. 30, 1989, abandoned, which is a division of Ser. No. 318,563, Mar. 3, 1989, abandoned.
This application Mar. 12, 1991, Ser. No. 668,702
The portion of the term of this patent subsequent to Jan. 12, 2010, has been disclaimed.
Int. Cl.[5] B23K *31/02*
U.S. Cl. 228—182 2 Claims



1. A method of manufacturing a blade sector, comprising the steps of:

aligning a plurality of blades spaced apart by spacers between adjacent blades, thereby defining an inner arcuate circumferential surface and an outer arcuate circumferential surface; and

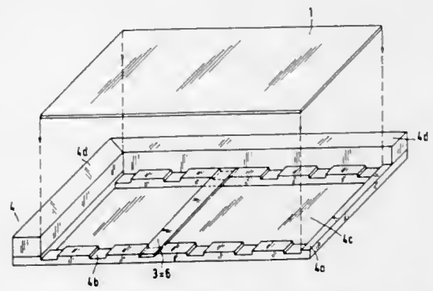
applying a continuous circumferential cord of welding material along one of said inner circumferential surface and said outer circumferential surface thereby joining said blades and spacers to each other.

5,249,735

CHANNEL PLATE ASSEMBLY WITH PARALLEL PLATES, PROCESS AND FIXTURE FOR MANUFACTURING THE SAME, AND PLATE APPARATUS PROVIDED WITH THE SAME

Ulrich Sander, Friedrichsdorf; Helmut Zeh, Altenstadt, and Rudolf Wilhelm, Kelsterbach, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 599,310, Oct. 17, 1990, Pat. No. 5,161,611. This application Aug. 6, 1992, Ser. No. 926,842
Claims priority, application Fed. Rep. of Germany, Oct. 17, 1989, 3934583
Int. Cl.[5] B23K *31/02*
U.S. Cl. 228—183 3 Claims



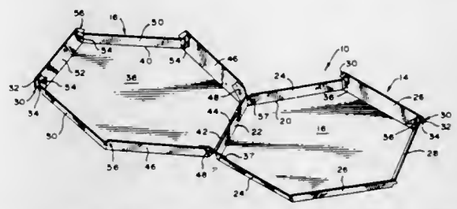
1. A process of manufacturing a channel plate assembly including a plurality of parallel plates confining passages for a first fluid medium each continuously defined on all sides in direction of flow and interconnected by a plurality of spacers spaced apart in the direction of flow, the process comprising the steps of fixing the spacers in a fixture and joining to a first plate; and subsequently joining the spacers to another plate in a fixture on a side which faces away from said first plate.

5,249,736

FOOD CARTON WITH COVER

Larry Eisman, Downingtown, Pa., assignor to Dopaco, Inc., Downingtown, Pa.

Continuation-in-part of Ser. No. 833,114, Feb. 10, 1992, Pat. No. 5,188,284. This application Apr. 10, 1992, Ser. No. 866,508
Int. Cl.[5] B65D *5/28*
U.S. Cl. 229—110 13 Claims



1. A carton comprising a tray and a cover, a hinge joining said cover to said tray for selective pivotal movement of said cover between an open position remote from said tray and closed position overlying and closing said tray; said tray and said cover each including a base panel with peripherally positioned generally planar walls joined to and projecting from the base panel, said walls of each of said tray and said cover defining a generally circular configuration and having adjacent joined ends defining corners at peripherally spaced points about the corresponding base panel, at least a majority of said corners defining obtuse angles, said peripheral walls of each of said tray and said cover including an inner wall, the inner walls of said tray and cover having upper edges joined along the length thereof and defining said hinge joining said tray and said cover, and a locking lug extending generally coplanar from one end of one of said walls at each of said adjacent joined ends at each defined corner other than at said inner walls, each said lug at a respective one of said adjacent joined ends intersecting and extending beyond a second one of said walls at a respective one of said adjacent joined ends, the lugs on said cover being oriented to cross and releasably interlock with the lugs on said tray in said closed position of said cover.

5,249,737

METHOD FOR DISPENSING MOISTURE-SENSITIVE UNIT DOSE PACKAGES

Barbara L. Fritz, Burnsville; Elizabeth J. Gladfelter, Falcon Heights, and Tina O. Outlaw, Inver Grove Heights, all of Minn., assignors to Ecolab Inc., St. Paul, Minn.

Filed Sep. 9, 1991, Ser. No. 756,458
Int. Cl.[5] B65D *5/76*
U.S. Cl. 229—122.1 5 Claims

1. A method of dispensing and storing moisture-sensitive packages from a filled container, comprising the steps of:

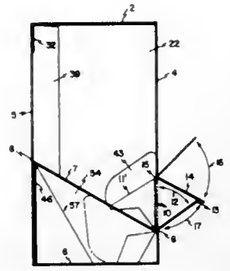
(a) urging at least some of the packages toward a substantially covered exit aperture which is formed within the container by supporting said packages upon an inclined ramp which is spaced above a bottom surface of the container and which has a lower portion proximate said aperture;

(b) pivoting a wall which is formed integrally with the ramp, the wall substantially completely obstructing the aperture in a first position and permitting access through the aperture to the packages within the container when the wall is pivoted to a second position;

(c) lifting a cover so as to permit access through the aperture into the container, wherein the cover is formed integrally

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with a surface of the container which contains the aperture, the cover being capable of substantially obstructing the aperture; and



(d) releasing the cover so as to substantially cover the aperture automatically subsequent to removal of one of said packages from the container through the aperture.

5,249,738

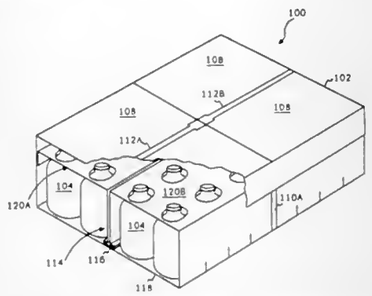
DETACHABLE MULTI-UNIT PACKAGE

Elmer D. Werth, Arvada, Colo., assignor to Container Systems, Inc., Arvada, Colo.

Continuation-in-part of Ser. No. 538,834, Jun. 15, 1990, abandoned, which is a continuation-in-part of Ser. No. 510,173, Apr. 17, 1990, abandoned. This application Dec. 18, 1990, Ser. No. 629,251

Int. Cl.[5] B65D *5/54*

U.S. Cl. 229—235 **20 Claims**



1. A package for holding a plurality of containers as a single unit, comprising:

a wrapper having a leading and trailing edge portion, a first and second package side, a package top and bottom, and a wrap-around dimension extending from said trailing edge portion around said sides, top, and bottom;

means for securing at least a part of said trailing edge portion to another portion of said wrapper;

a divider formed of a portion of said wrapper, said divider being located between at least a first and second container of the plurality of containers, and oriented in a direction generally perpendicular to said wrap-around dimension, and wherein said divider comprises a first side piece and a second side piece in proximity thereto;

a foldover flap extending substantially the length of said divider between said first and second side pieces;

a perforation in said foldover flap;

a first tear strip on said first side and a second tear strip on said second side, said first and second tear strips oriented in a direction generally along said wrap-around dimension;

a first cut in said package top extending substantially between a top end of said first tear strip and a top end of said second tear strip;

a second cut in said package bottom extending substantially between a bottom end of said first tear strip and a bottom end of said second tear strip.

5,249,739

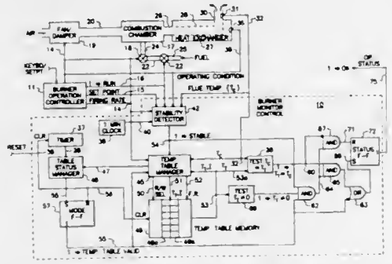
APPARATUS AND METHOD FOR MONITORING THE OPERATING CONDITION OF A BURNER SYSTEM

James I. Bartels, St. Croix County, Wis.; Anil K. Gowda, Hennepin County, Minn.; Timothy F. McCarthy, Hennepin County, Minn., and Donald W. Moore, Dakota County, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 3, 1992, Ser. No. 863,601

Int. Cl.[5] F23N *11/00*

U.S. Cl. 236—15 BR **19 Claims**



1. Apparatus for signaling operating status for a burner system including a controller receiving a set point signal encoding a set point value for burner system operation and issuing a firing rate signal encoding a firing rate having a value dependent on the set point signal, a combustion chamber, a modulating fuel valve controlling flow rate of fuel to the combustion chamber responsive to the firing rate signal, a heat exchanger, and an exhaust flue in flow communication with the combustion chamber and through which pass combustion gasses from the combustion chamber, comprising:

a) a temperature sensor mounted within the exhaust flue and providing a flue temperature signal encoding the temperature of combustion gasses within the exhaust flue;

b) timer means for providing a first timing signal defining the beginning and end points of a plurality of first time intervals;

c) stability detector means receiving the firing rate signal and the first timing signal, for providing a stability signal having a first state responsive to a change of less than a predetermined amount in the firing rate between the beginning and end points of a first time interval and a second state otherwise;

d) a temperature table memory recording a plurality of flue temperature values each recorded in association with a specified firing rate value, and providing a memory output signal encoding the flue temperature value recorded in association with a firing rate value responsive to a read request signal encoding that firing rate value;

e) table manager means receiving the firing rate signal, and supplying to the temperature table memory a read request signal encoding the firing rate encoded in the received firing rate signal, for causing the temperature table memory to issue a memory output signal encoding the entry associated with the firing rate encoded in the read request signal;

f) temperature comparison means receiving the flue temperature signal from the temperature sensor and the memory output signal from the temperature table memory, for forming the difference between the temperatures encoded in the flue temperature signal and the memory-output signal, and for supplying a comparison signal having a first state responsive to the difference between the temperatures being more than a predetermined amount and a second state otherwise; and

g) operation analysis means receiving the stability signal and the comparison signal, for responsive to the first state of the stability signal and the first state of the comparison signal, providing an operating status signal having a first state, and an operating status signal having a second state otherwise.

5,249,740

METHOD FOR REGULATING THE CONDITIONING OF A GAS AND GAS CONDITIONING DEVICE

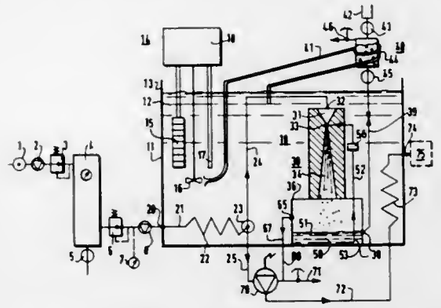
Jean Marie Serra Tosio, 70, chemin de l'Eglise, 38240-Meylan, and Yves Chave, 18 allée des Myosotis, 38610-Gieres, both of France, assignors to Assoc. de Gestion de L'ecole Francaise de Papeterie et D'Imprimerie; Jean Marie Serra-Tosio and Yves Chave, all of France

Filed Nov. 25, 1991, Ser. No. 797,786

Claims priority, application France, Nov. 27, 1990, 90 15134

Int. Cl.[5] B01F *3/02;* **F02M** *23/14*

U.S. Cl. 236—44 A **16 Claims**



1. A device for conditioning a gaseous flow, comprising a thermostatted enclosure (**11**) for receiving a heat transfer liquid (**12**) that is immersed in the enclosure, an inlet means (**21, 22**) of gas at a programmed temperature which is connected to a source (**1**) of gas, a gas humidifier (**30**) for brining a conditioning liquid (**50**) into contact with the gas, a conditioned gas outlet tubing (**67, 72, 73, 74, 80**) connected to an outlet orifice of the humidifier to a volume (**75**) to be conditioned, the device including

a humidifier means (**30**) having a Venturi pipe for producing a partial vacuum by a Venturi effect that is connected to a vaporizing chamber (**36**) containing a conditioning liquid at a constant level (**51**), said Venturi pipe further including a converging region (**31**) connected to thermostatted inlet tubing (**24**), a neck (**33**) and a diverging region (**34**) emptying into the vaporizing chamber further including supply tubing (**52**) connecting the conditioning liquid (**50**) in the vaporizing chamber to the neck (**33**) of the Venturi means and an outlet orifice (**65**) disposed above the liquid level in the vaporizing chamber (**36**), said vaporization chamber (**36**) has a means (**40**) for supplying liquid to a constant level (**51**), formed by an expansion vessel (**42**), a first valve (**43**) allowing a slight leakage, a thermostatted liquid reservoir (**44**) and a controlled second valve (**45**), said means (**40**) disposed outside or inside the enclosure (**11**) being connected via a tubing (**39**) which traverses the enclosure (**11**) and is connected to an orifice (**38**) emerging in the vaporization chamber (**36**) having a constant level (**51**).

5,249,741

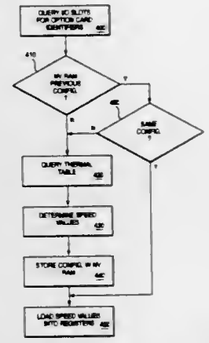
AUTOMATIC FAN SPEED CONTROL

William R. Bistline; William C. Johnson, and James M. Peterson, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 4, 1992, Ser. No. 878,115

Int. Cl.[5] H02H *3/18*

U.S. Cl. 236—49.3 **27 Claims**



1. A method of cooling a computer having a plurality of components and at least one variable rate a fan cooling unit comprising the steps of:

a) obtaining a predetermined cooling requirement for at least one of said components; and

b) varying the rate of at least one of said cooling units based on the obtained cooling requirements.

5,249,742

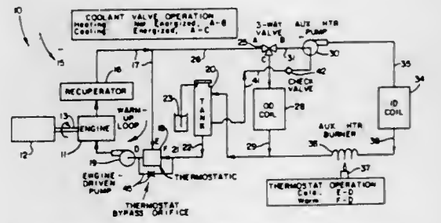
COOLANT CIRCULATION SYSTEM FOR ENGINE HEAT PUMP

William G. Atterbury, West Worthington; Douglas E. Boyd, Dublin; Jan B. Yates, Reynoldsburg, all of Obio, and Lee R. Van Dixborn, Ambato, Ecuador, assignors to Gas Research Institute, Chicago, Ill.

Filed Jul. 24, 1992, Ser. No. 919,037

Int. Cl.[5] G05D *23/00*

U.S. Cl. 237—2 B **10 Claims**



1. A heat engine driven heat pump system comprising:

a) a refrigeration cycle heat pump compressor driven by a heat engine means;

b) a coolant fluid circulation subsystem including a recuperator means in fluid connection with the heat engine to receive a coolant fluid flowed from the engine;

c) a thermostatic coolant fluid control means in fluid connection with the recuperator means to receive through a first inlet and control the coolant fluid flow in response to the temperature of the coolant fluid;

d) a first pump means driven by the engine in fluid connection with the thermostatic fluid control means to convey coolant fluid to the engine and complete a first loop circuit, operable by the control of the thermostatic means to

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warm or cool the engine more rapidly when the subsystem operation will benefit therefrom;

e) a coolant fluid reservoir means in fluid connection with a second inlet of the thermostatic control means to supply coolant fluid to the engine means as required to warm or cool the engine means by modulation of coolant fluid flow through the thermostatic control means;

f) a switching valve means in connection with the recuperator means to receive coolant fluid and in connection with

A) a first heat exchanger in heat exchange relation to an ambient heat source or sink, or with a

B) a second heat exchanger in heat exchange relation to a heating or cooling load,

to selectively switch the coolant fluid flow to the first heat exchanger in the cooling mode of operation or to the second heat exchanger in the heating mode of operation;

g) a first conduit means connecting the first heat exchanger and the reservoir means to return coolant fluid to the reservoir means in the cooling mode of operation;

h) a second pump means in the connection between switching valve means and the second heat exchanger means to supply coolant fluid through the second heat exchanger means to an auxiliary heating means, with a second conduit means connecting the auxiliary means to the reservoir means to flow auxiliary heated coolant fluid to the subsystem in the heating mode of operation; and

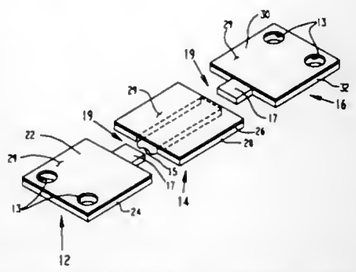
i) a third conduit means connecting the reservoir means to the second pump means through a check valve means to supply coolant fluid to the subsystem during the heating mode of operation by selective operation of the second pump means and the auxiliary heating means.

5,249,743

MULTIPLE SECTION SPECIAL TRACKWORK FASTENER

Charles J. Leingang, and Robert F. Gildenston, both of Erie, Pa., assignors to Lord Corporation, Erie, Pa.

Filed Apr. 23, 1992, Ser. No. 872,465
Int. Cl.[5] E01B *9/38*
U.S. Cl. 238—283 20 Claims



17. An elastomeric assembly adapted for use with a top plate for attaching a railroad rail to a support structure, comprising:

(a) a first end portion for supporting said top plate, said first end portion including a first elastomer section and at least one bore formed therethrough, said first end portion having a load receiving surface and a load reacting surface opposing said load receiving surface, one of said load reacting surface of said first portion and said load receiving surface of said first portion formed for contacting said top plate;

(b) a second end portion for supporting said top plate, including a second elastomer section and at least one bore formed therethrough, said second end portion including a load receiving surface and a load reacting surface opposing said load receiving surface, one of said load reacting surface of said second end portion and said load receiving surface of said second end portion formed for contacting said top plate, said second end portion being movable relative to said first end portion in a direction which is generally transverse to said railroad rail;

(c) at least one of said first and said second end portions including means for restraining movement of said first and second end portions relative to said top plate; and

(d) at least two securing elements formed to be received by said at least one bore in each of said first and second end portions;

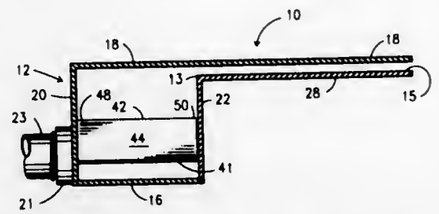
whereby said top plate is substantially fully supported.

5,249,744

APPARATUS FOR CREATING WATERFALL FOR SWIMMING POOLS

Douglas Ruthenberg, 10453 Tillery Rd., Spring Hill, Fla. 34608

Filed Aug. 3, 1992, Ser. No. 924,203
Int. Cl.[5] B05B *1/36, 17/08*
U.S. Cl. 239—23 8 Claims



1. An apparatus for changing a columnar flow of incoming water from a water inlet pipe into a shallow stream of water having a predetermined breadth greater than the breadth of said inlet pipe so that a waterfall effect is created, comprising:

an inlet box including a top wall, a bottom wall, a front wall, a back wall, and a pair of side walls;

said inlet box having a first opening formed in a predetermined wall thereof so that water from said inlet pipe may enter said inlet box;

said inlet box having a second opening formed in a predetermined wall thereof so that water may exit therefrom;

an outlet box having a top wall, a bottom wall, a pair of side walls, a first open end and a second open end;

said outlet box first open end being connected to said second opening of said inlet box;

said inlet box having a depth greater than said outlet box;

a spreader member positioned in said inlet box for suppressing turbulence of said incoming water and for spreading said columnar flow of water into said predetermined breadth;

said spreader member being positioned substantially centrally of said inlet box and in closely spaced relation to said bottom wall thereof;

said spreader member splitting said incoming water into two streams of laterally flowing water that flow, initially, in opposite directions;

said spreader member having an imperforate top wall and a pair of imperforate sidewalls that depend from opposite edges of said top wall, said spreader member extending between said front and rear walls of said inlet box, and said sidewalls of said spreader member having lowermost edges spaced upwardly of said bottom wall of said inlet box by a predetermined distance;

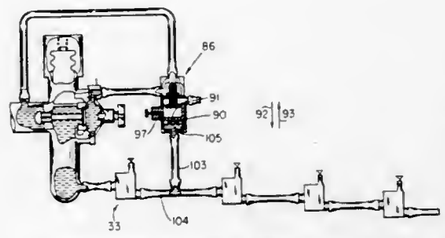
whereby said two streams of laterally flowing water collide with one another after reflecting off said sidewalls of said inlet box, said collision suppressing said turbulence.

5,249,745

FLUID DISTRIBUTION SYSTEM

Giacomo Bertolotti, P.O. Box 2247, Lynchburg, Va. 24501

Filed Sep. 19, 1991, Ser. No. 762,354
Int. Cl.[5] B05B *1/08*
U.S. Cl. 239—76 10 Claims



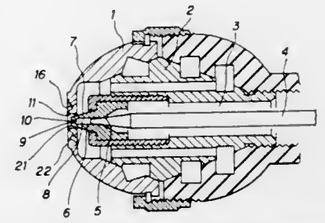
1. A system for distributing irrigating fluid comprising a header, at least one irrigating line in fluid communication with said header, at least one emitter valve coupled to said header and said at least one irrigating line, at least one elastic tube in fluid communication with said at least one emitter valve, said at least one elastic tube providing a reservoir for the irrigating fluid and a means for discharging the irrigating fluid through said at least one emitter valve, an irrigating fluid conduit, a pulser for selectively coupling said conduit to said header, and a pilot valve in pressure communication with said reservoir of said at least one elastic tube and said pulser, exclusive of the irrigating fluid, to enable said pulser to establish fluid communication between said header and said conduit in response to said at least one elastic tube fluid.

5,249,746

LOW PRESSURE PAINT ATOMIZER-AIR SPRAY GUN

Masaru Kaneko; Nobuyoshi Morita, and Hajime Iwata, all of Yokohama, Japan, assignors to Iwata Air Compressor Mfg. Co., Ltd., Tokyo, Japan

Filed May 13, 1991, Ser. No. 698,772
Claims priority, application Japan, May 11, 1990, 2-122126
Int. Cl.[5] B05B *1/28*
U.S. Cl. 239—296 4 Claims



1. A low pressure atomizer-air spray gun comprising:

a nozzle having a frusto-conically profiled tip and a cylindrical through bore therethrough and a V-shaped groove extending across said tip at the end of said through bore to form an oblong opening for ejecting paint in a flattened oblong crosssectional pattern corresponding to the shape of said opening and having a diverging tendency toward the ends of the major axis of the oblong opening; and

an air cap around said nozzle and having a front central through bore therein within which said nozzle tip is positioned and defining with the outer peripheral surface of said nozzle a substantially circular annular air outlet for ejecting air under pressure in a substantially circular annular pattern around the ejected paint for intersecting and atomizing paint at and near the ends of the oblong crosssectional pattern of the ejected paint;

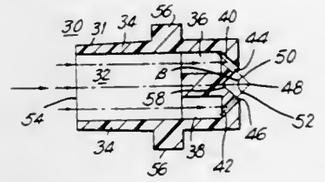
whereby when paint is ejected through said oblong opening under a pressure of from 1 to 6 kgf/cm^2 said ejected paint can be well atomized by compressed air ejected through said air cap at a pressure of from 0.5 to 2 kgf/cm^2.

5,249,747

SPRAYABLE DISPENSING SYSTEM FOR VISCOUS VEGETABLE OILS AND APPARATUS THEREFOR

Wayne H. Hanson, La Quinton, Calif., and Robert Smith, Ballwin, Mo., assignors to Par-Way Group, Costa Mesa, Calif.

Continuation-in-part of Ser. No. 553,786, Jul. 12, 1990, Pat. No. 5,088,649. This application Feb. 6, 1992, Ser. No. 832,013 The portion of the term of this patent subsequent to Feb. 18, 2009, has been disclaimed.
Int. Cl.[5] B05B *1/26*
U.S. Cl. 239—373 50 Claims



27. A self contained, closed pressurized container for the delivery of a pressurized fluid comprising:

a delivery passageway for the transfer of pressurized fluid from said container;

a nozzle assembly having an inlet end and an outlet end;

said nozzle assembly inlet interconnected with said outlet of said delivery passageway;

said nozzle assembly having a mechanical break up chamber at said nozzle assembly inlet for receipt of fluid from said delivery passageway;

a first and second passageway located in said nozzle assembly to split the fluid from said mechanical break up chamber into two streams;

each said first and second passageway having a cross sectional area less than one half the cross sectional of the mechanical break up chamber so that the velocity of said fluid increases in the first and second passageway from its velocity in said mechanical break up chamber;

a first and second discharge means in fluid communication with said first and second passageway, said first discharge means having a first discharge axis to dispense the fluid from said nozzle assembly and said second discharge means having a second discharge axis to dispense fluid from said nozzle assembly;

said first and second discharge means including a first and second discharge outlet to separately direct the fluid flow from the first and second passageways beyond the nozzle assembly prior to the intersection of fluid flowing along the first and second discharge axis;

said first discharge axis and said second discharge axis intersecting at a collision point exterior to said nozzle assembly so that when said fluid is delivered from said reservoir and discharged to the atmosphere the fluid exiting from said first discharge means collides with the fluid exiting from said second discharge means to break the fluid into small droplets to form a wide angle mist for application to a surface.

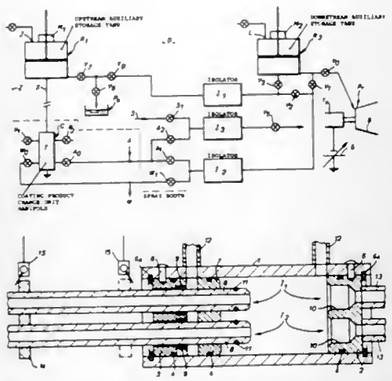
VOL 1155 ISS 1 OCT 5 1993 UMI

5,249,748

ELECTROSTATIC SPRAYING INSTALLATION FOR CONDUCTIVE LIQUID COATING PRODUCT

Adrien Lacchia, Saint Martin le Vinoux; Pierre Chabert, Crolles; Roger Tholome, Corenc, and Thierry Viguier, Meylan, all of France, assignors to Sames S.A., Meylan, France

Filed Nov. 18, 1991, Ser. No. 793,130
Claims priority, application France, Nov. 20, 1990, 90 14446
Int. Cl.[5] B05B 5/08, 15/02, 5/16
U.S. Cl. 239—690 15 Claims



1. Electrostatic spraying installation for spraying a conductive liquid coating product, said installation being operable in cooperation with waste recovery means and said installation comprising a circuit for distributing fluids including said conductive coating product, at least one coating product sprayer fed by said circuit and connected to a high voltage supply, at least one insulated auxiliary coating product storage tank adapted to be raised to a high voltage, at least one rinsing product supply and at least one compressed air supply, said circuit comprising an upstream circuit part, a downstream circuit part connected to said sprayer and to said at least one auxiliary coating product storage tank, and at least one isolator having an upstream side connected to said upstream circuit part and a downstream side connected to said downstream circuit part, said isolator having a part which is movable to place said isolator in an isolating state for electrically isolating said upstream circuit part from said downstream circuit part, and said installation further comprising first valve means connected to said upstream side of said at least one isolator and second valve means connected to said downstream side of said at least one isolator, one of said valve means being connected for selectively delivering a rinsing product from said at least one rinsing product supply and compressed air from said at least one compressed air supply to said at least one isolator, and the other of said valve means being connected for selectively placing said at least one isolator in communication with the waste recovery means before said isolator is placed in the isolating state.

5,249,749

SELF-CLEANING GARBAGE DISPOSAL

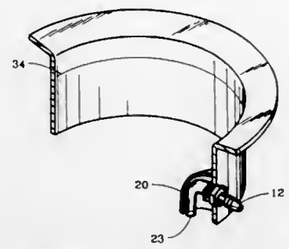
Frederick E. Krebsbach, 6195 NW. 55th La., Tamarac, Fla. 33319

Filed Jun. 29, 1992, Ser. No. 905,918
Int. Cl.[5] B02C 23/40
U.S. Cl. 241—46.016 9 Claims

1. In a garbage disposal connected to to a sink, a dishwasher drain, a water source, an electrical power source, garbage disposal blades and a sewage drain, said garbage disposal having self-cleaning means, the improvement comprising said self-cleaning means including:

water inlet means connected to said water source for allowing water to flow into said garbage disposal, said water inlet means further being connected to control means, said control means controlling the flow of water from said water source into said garbage disposal;

channel means for directing the flow of water out of said water inlet means, said channel means being substantially circular; and



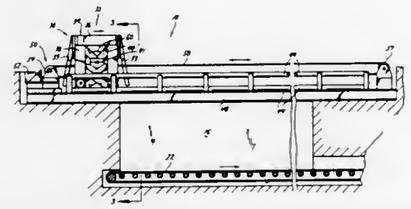
spray means, connected to said channel means, and surrounding the outer rim of said disposal, for injecting water from said channel means into said garbage disposal, said spray means comprising a plurality of jet orifices attached about said channel.

5,249,750

TRAVERSING ROLL BREAKER APPARATUS

Theodore F. Gundlach, Belleville, Ill.; James D. Fraser, Salt Lake City, Utah; Patrick W. Ryan, and Randall S. Shinn, both of Gillette, Wyo., assignors to T.J. Gundlach Machine Company, Belleville, Ill.

Filed Mar. 13, 1991, Ser. No. 668,893
Int. Cl.[5] B02C 13/09
U.S. Cl. 241—69 12 Claims



1. A traversing breaker roll crushing apparatus for reducing lumps of material on a grid disposed over a material-receiving area, the apparatus comprising:

(a) carriage means including a pair of carriage sections and a frame extending between and fixedly connecting the carriage sections together,

(b) track means guiding the carriage means across the grid,

(c) roll means including shaft means having opposed ends interconnected by motor housing means and operatively mounted in non-rotatable relation to the carriage means and an outer cylindrical casing mounted in rotatable relation to the shaft means,

(d) drive means for the roll means including motor means inside the housing means for rotating the outer casing relative to the housing means,

(e) striker means circumferentially arranged on the roll means for reducing lumps of material as the roll rotates and the carriage means moves across the grid, and

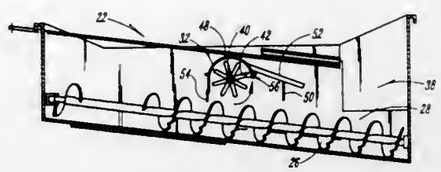
(f) drive means for moving the carriage means across the grid.

5,249,751

COMBINATION AUGER CONVEYOR AND FLAIL MEANS

Dorland H. Schuler, Griswold, Iowa, assignor to Schuler Manufacturing & Equipment Co., Inc., Griswold, Iowa

Filed Sep. 21, 1992, Ser. No. 947,840
Int. Cl.[5] B02C 9/02
U.S. Cl. 241—222 11 Claims



1. A conveying system for forage-type materials comprising:

an elongated conveying trough having a curved bottom, substantially straight sidewalls, an inlet at one end and a discharge opening at another end;

an auger mounted in said trough for conveying forage-type materials toward said discharge opening;

a flailing means for chopping forage materials, into sizes suitable for conveyance by said auger, said flailing means being located above said auger between said inlet and said discharge opening to permit said flailing means to engage forage materials extending above said auger and moving through said trough, said engagement taking place away from the ends of the trough; and

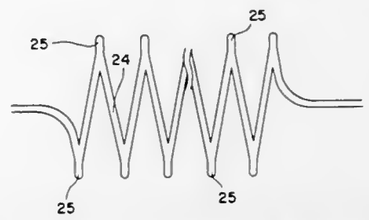
a source of power connected to said auger and said flailing means to rotate same.

5,249,752

COMBS FOR APPLICATION TO SUCTION NOZZLES FOR SEIZING THE END OF YARNS WOUND IN PACKAGES

Luigi Colli; Luciano Bertoli, both of Pordenone, and Omar Pajer, Roveredo In Piano, all of Italy, assignors to Savio S.p.A., Pordenone, Italy

Continuation of Ser. No. 873,659, Apr. 23, 1992, abandoned, which is a continuation of Ser. No. 523,487, May 15, 1990, abandoned. This application Aug. 31, 1992, Ser. No. 938,493
Claims priority, application Italy, May 16, 1989, 20524 A/89
Int. Cl.[5] B65H 69/04
U.S. Cl. 242—35.06 E 6 Claims



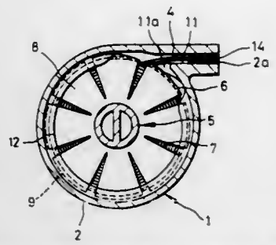
1. An angular comb for application to suction nozzles for seizing the ends of yarns wound in the form of conical or cylindrical packages having a yarn catcher made from a separate plate fixed to an edge or lip of the suction nozzle thereby defining a fixed side, wherein one long side of said plate is toothed thereby defining a toothed side, the lead-in between the teeth is in the form of a narrow V and the inner recess of the V-shaped lead-in is in the form of a notch having flat non-convergent faces and a curvilinear interconnecting surface to thereby provide a substantially "U" shaped inner recess which will remain free from debris and provide for efficient capture without tearing the yarn.

5,249,753

PHOTOGRAPHIC FILM CASSETTE

Koichi Takahashi, and Kiichiro Kitagawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 5, 1991, Ser. No. 755,191
Claims priority, application Japan, Sep. 6, 1990, 2-238000; Jan. 31, 1991, 3-31662
Int. Cl.[5] G03B 17/26
U.S. Cl. 242—71.1 27 Claims



1. A photographic film cassette including a cassette shell, a spool rotatably contained in said cassette shell, and photographic film wound about said spool, a film leader portion of said film advancing outside said cassette shell, from a film chamber within said cassette shell, through a film passageway formed in said cassette by rotating said spool in a direction of unwinding said photographic film, said cassette comprising:

a flange provided at each end of said spool;

an arcuate lip formed on an inside wall of at least one of said flanges, said lip extending toward said photographic film so as to engage with lateral edges of an outermost convolution of said photographic film in order to prevent said photographic film from loosening;

a guide projection formed in said film chamber proximate said film passageway, said guide projection being engaged with at least one of said flanges so as to deform portions of said flange which are proximate said film passage way in an outward direction away from said film;

a round ridge formed in said film chamber and extending along a circumference of said film chamber so as to engage with portions of said flange which are remote from said film passageway and prevent deformation of portions of said flange which are remote from said film passageway;

said flanges having a plurality of slits formed therein so as to divide at least a circumferential portion of said flanges into a plurality of sections so as to increase the elastic deformability of said flanges so that said flanges may be easily urged in an outward direction so as to release said engagement of said outermost convolution of said photographic film with said arcuate lip.

5,249,754

METHOD OF AND ARRANGEMENT FOR GRIPPING STARTING PORTION OF COILED FILM

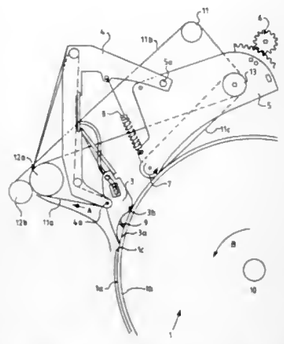
Traugott Liermann, Unterhaching; Franz Nadler, Dietersheim, and Jürgen Risser, Neufahrn, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Apr. 27, 1992, Ser. No. 874,607
Claims priority, application Fed. Rep. of Germany, May 28, 1991, 4117386
Int. Cl.[5] B21C 47/18
U.S. Cl. 242—55 12 Claims

1. A method of lifting and grasping a starting portion of a

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film located in a coil, comprising the steps of driving a coil by a friction wheel abutting against an outer surface of the coil with an end edge of a starting portion of the coil located loosely and directly on the outer surface; placing a separating wedge under a prestress on the outer surface of the coil, and lifting the starting portion of the film from the outer surface of



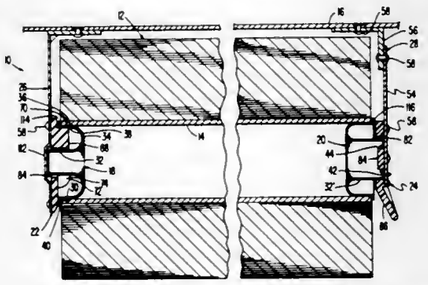
the coil by an edge of the separating wedge; and before the lifting, first turning the coil against a latter uncoiling direction and after a recognition of a position of the end edge of the starting portion of the film turning the coil in the uncoiling direction, said recognition of the position of the end edge of the film being performed by a mechanical sensor having a sensing tip.

5,249,755

BRAKE-TYPE SHEET MATERIAL-DISPENSING ROLL SUPPORT

Paul W. Jespersen, Salt Lake City, Utah, assignor to Georgia-Pacific Corporation, Atlanta, Ga.

Filed Feb. 27, 1992, Ser. No. 842,611
Int. Cl.[5] B65H *16/06*
U.S. Cl. 242—55.2 **21 Claims**



1. Apparatus for dispensing flexible sheet material wound on a hollow core having a substantially horizontally disposed axis, said apparatus comprising:

an end cap attached at each end of said core including an axially disposed spindle portion and an annular base connected to said spindle portion by a radially extending web, said annular base having an outwardly facing surface for mounting the adjacent end of said core and an inwardly facing surface concentrically spaced from said spindle;

a pair of oppositely spaced end supports, each engaging a respective one of said end caps to provide vertical support thereto; and

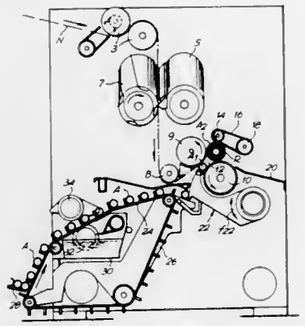
at least one of said end supports having a body only the upwardly facing portion of which defines a bearing surface in gravity-induced frictional engagement with the adjacent portion of said inwardly facing surface of said end cap.

5,249,756

APPARATUS FOR CHANGING THE FREQUENCY OF MOTION OF A PUSHER

Guglielmo Biagiotti, Capannori, Italy, assignor to Fabio Perini S.p.A., Lucca, Italy

Filed Apr. 23, 1991, Ser. No. 689,629
Claims priority, application Italy, Apr. 27, 1990, 9373 A/90
Int. Cl.[5] B65H *19/26, 19/30*
U.S. Cl. 242—56 R **14 Claims**



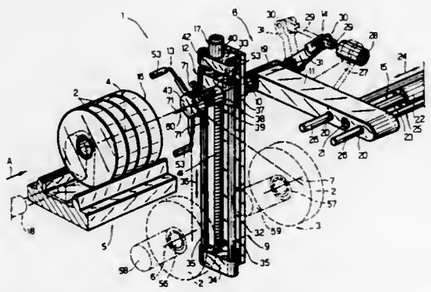
1. An apparatus for changing the frequency of motion of a core-pushing device for a rewinder in relation to the feeding speed of the web material (N) to be wound, comprising means (55) for the actuation of the pusher (22), which are kinematically connected to the driven shaft (53) of an epicyclic gear train (49) which includes two driving shafts and a driven shaft, a first driving shaft of said gear train being kinematically connected,to a member (7) rotating at a speed proportional to the feeding speed of the web material (N) , and the second driving shaft of said gear train being kinematically connected to a correction motor means (65).

5,249,757

METHOD AND DEVICE FOR CHANGING ROLLS IN A MACHINE UTILIZING STRIP MATERIAL

Fiorenzo Draghetti, Medicina; Silvano Boriani, and Igino Conti, both of Bologna, all of Italy, assignors to G.D. S.p.A., Bologna, Italy

Filed Dec. 18, 1991, Ser. No. 808,900
Claims priority, application Italy, Dec. 24, 1990, 3788 A/90
Int. Cl.[5] B65H *19/12*
U.S. Cl. 242—58.6 **10 Claims**



1. A method of changing rolls of strip material on a machine having a roll supply-holding station in which a plurality of individual rolls of strip material which are subsequently to be

used by the machine are serially disposed in coaxial alignment along a first axis and having at least two roll-uncoiling stations at which respective individual rolls are uncoiled of strip material about respective second axes,

said method comprising:

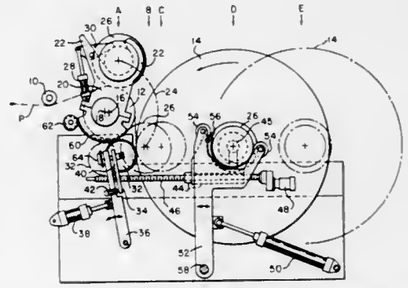
successively transferring said rolls individually from said roll supply-holding station to respective ones of said roll-uncoiling stations along respective rectilinear trajectories, using a guide, including rotating said guide about said first axis to provide each respective rectilinear trajectory.

5,249,758

APPARATUS FOR THE CONTINUOUS WINDING OF A WEB OF SHEET-LIKE MATERIAL, IN PARTICULAR A PAPER WEB

Gernot Müller, Kusterdingen, and Werner Schmid, Pliezhausen, both of Fed. Rep. of Germany, assignors to Sulzer-Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany

PCT No. PCT/DE89/00303, § 371 Date Sep. 9, 1991, § 102(e) Date Sep. 9, 1991, PCT Pub. No. WO90/00511, PCT Pub. Date Jan. 25, 1990
PCT Filed May 12, 1989, Ser. No. 635,617
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1988, 8808823[U]
Int. Cl.[5] B65H *18/10, 18/16*
U.S. Cl. 242—65 **9 Claims**



1. An apparatus for forming a continuous winding of a web from a source onto a roll core comprising:

a roll core support, the support being movable from a loading position, wherein a roll core is loaded onto the support to a supporting position, wherein the roll core is located on the support during winding of the web onto the roll core, to a discharge position, wherein the roll core is discharged from the roll core support when fully wound;

a rotating guiding drum for directing the web from the web source to the roll core when the roll core is positioned on the roll core support in the supporting position;

a first drive for rotating the guiding drum at a predetermined time;

a movable pressing roll biased against a side of the web opposite a side that faces the roll core so that the web forms a winding on the roll core substantially free of air bubbles in the winding;

a sensor, interconnected with the pressing roll, the sensor detecting an increase in a size of the winding and the sensor generating a signal in response to the increase in size;

a second drive for moving the roll core support in response to the signal to change the position of the roll core relative to the pressing roll;

a third drive for rotating the roll core on the support at a predetermined time;

a roll core carrying arm constructed and arranged so that a roll core located in the carrying arm rotates in conjunction with and in response to the rotation of the guiding drum, the carrying arm including a pivot proximate and substantially parallel to an axis of rotation of the guiding drum, the arm moving on the pivot between a carrying position remote from the roll core support to an unloading position wherein the roll core is transferred onto the roll core support in the loading position at a predetermined time; and

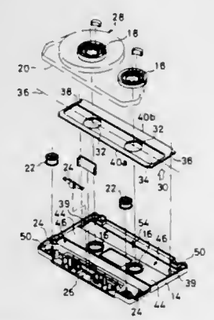
a fourth drive that moves the carrying arm from the carrying position to the unloading position, wherein the guiding drum is at all times positioned out of contact with the winding on the roll core when the roll core is located on the roll core support in the supporting position.

5,249,759

TAPE CASSETTE CASING HAVING BIASING ELEMENT FOR IMPROVED TRAVELING AND TAKE-UP OF MAGNETIC TAPE

Masatoshi Okamura, and Takashi Namioka, both of Saku, Japan, assignors to TDK Corporation, Japan

Continuation of Ser. No. 573,495, Aug. 27, 1990, abandoned. This application Feb. 18, 1992, Ser. No. 837,818
Claims priority, application Japan, Aug. 28, 1989, 1-99065
Int. Cl.[5] G11B *23/087*
U.S. Cl. 242—199 **5 Claims**



1. A tape cassette comprising:

a casing formed with a pair of hub holes, a center of said hub holes being aligned along a center axis of said casing, said center axis dividing said casing into a front portion and a rear portion, such that an end of said front portion opposing said center axis includes a magnetic head receiving recess. Said casing also including upper and lower inner surfaces,

a pair of hubs rotatably arranged on said hub holes of said casing, respectively,

a magnetic tape arranged between said hubs and reversibly wound on said hubs such that take-up positions for said magnetic tape on said hubs are located in said rear portion of said casing;

each of said hubs forming a tape winding in cooperation with the portion of said magnetic tape wound thereon; and

a spring element interposed between each of said upper and lower inner surfaces of said casing and said tape windings, said spring elements being structured and arranged to provided a restoring force to said hubs when said magnetic tape is biased toward said upper or said lower surface due to an irregular taking-up motion;

said spring elements each being formed with a pair or apertures aligned with said hub holes and a projection projecting toward the respective inner surface of said casing, said projection having a substantially strip-like shape and extending in a longitudinal direction of said spring element;

said casing being formed on each of said upper and lower inner surfaces thereof with a land of a width larger than the diameter of said hub hole in a manner to face said projection of said spring element;

said casing being also formed on each of said upper and

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lower inner surfaces thereof with a pair of recesses in a manner to interpose said land therebetween;

said spring element having a front end edge and a rear end edge extending in the longitudinal direction thereof;

said end edges of said spring element being arranged so as to overhang said recesses of said casing, respectively, the distance from said front end edge to said center axis being smaller than the distance from said rear end edge to said center axis, such that when said tape windings are in an axially neutral position, said end edges are prevented from contacting said upper and lower inner surfaces, and when said tape windings are biased toward one of said upper or lower inner surfaces, at least initially, only said rear end edges of a corresponding one of said spring elements abuts against said one of said upper or lower inner surfaces in proximity to said take-up positions.

5,249,760

FISHING REEL WITH FEED SHAFT AND TRANSMISSION MEMBER

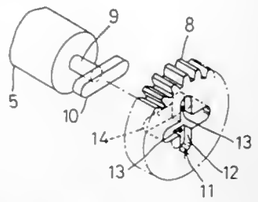
Shinichi Morimoto, Sakai, Japan, assignor to Shimano, Inc., Osaka, Japan

Continuation of Ser. No. 652,675, Feb. 8, 1991, abandoned. This application Nov. 30, 1992, Ser. No. 983,266

Claims priority, application Japao, Feb. 23, 1990, 2-18032[U]

Int. Cl.[5] A01K *89/015*

U.S. Cl. 242—279 **4 Claims**



1. A fishing reel, comprising:

a reel body (**1**) having an interior side plate (**1A**);

a feed shaft (**5**) for axially reciprocating a level wind mechanism (**4**), said feed shaft being rotatably supported by said side plate, said feed shaft having a diameter; and

torque transmitting structure for transmitting torque to said feed shaft, said torque transmitting structure comprising:

a torque transmitting gear (**8**) which is coaxial with said feed shaft, said torque transmitting gear having a first face that faces toward said side plate and a second face that faces away from said side plate, said fishing reel being arranged such that the distance between said first face and said side plate is no greater than a gap width (l);

a joint shaft (**9**) extending from an end surface of said feed shaft facing said gear, said joint shaft being coaxial with said feed shaft, said joint shaft having a diameter, the diameter of said joint shaft being less than the diameter of said feed shaft;

an engaging head (**10**) projecting from an end of said joint shaft, said engaging head being in the shape of a bar with a substantially square cross-section, said engaging head having a thin rectangular engaging face which is perpendicular to the axis of said feed shaft and which faces said end surface of said feed shaft, said engaging face having two elongated edges, and said engaging head having two thin rectangular torque transmitting faces extending from said elongated edges of said engaging face, said torque transmitting faces being parallel to each other;

a radially extending slot (**14**) for allowing said engaging head to move through said gear, said slot being located at the center of said gear; and

a retaining means (**11**) which is matable with said engaging head, said retaining means being angularly displaced with respect to said slot, said retaining means being located on said second face of said torque transmitting gear, said retaining means having a bottom engaging wall (**13**) for engaging said engaging face of said engaging head, said retaining means also having side surfaces (**12**) for contacting and transmitting torque to said torque transmitting faces, said side surfaces being perpendicular to said bottom engaging wall, said side surfaces (**12**) having an axial width (L) in a direction parallel to the axis of said feed shaft, said axial width (L) being greater than said gap width (l).

5,249,761

SETTING DEVICE FOR A CONTROL SURFACE

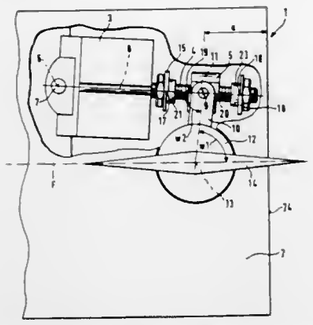
Werner Schroppel, Wendelstein, Fed. Rep. of Germany, assignor to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Sep. 25, 1992, Ser. No. 951,155

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1991, 4135557

Int. Cl.[5] F42B *10/62*

U.S. Cl. 244—3.21 **6 Claims**



1. A setting device for a control surface for an airborne body, said device comprising a spindle having a longitudinal axis; a drive motor for driving said spindle; a follower nut arranged on said spindle so as to be secured against rotation and being movable between two end stops, said follower nut actuating a lever for pivoting a shaft of the control surface about a setting axis; means for mounting said drive motor and said spindle for pivotable movement about a pendulum axis which extends normally to the longitudinal axis of the spindle, said lever which is operatively connected with the shaft of the control surface being articulated to a follower axis of the follower nut, said pendulum axis, follower axis and the setting axis being arranged to extend in parallel with each other, in a middle position of the follower nut between said end stops there being defined an acute angle between a line of flight of said airborne body and the lever which bears against the follower nut, the longitudinal axis of the spindle being inclined relative to the line of flight of said airborne body in the middle position of the follower nut between said end stops, and in the middle position of the follower nut an angle subtended between the longitudinal axis of the spindle and the lever being closer to 90° than the acute angle.

5,249,762

STRAKES FOR LANDING SPEED REDUCTION

Andrew Skow, Rolling Hills Estates, Calif., assignor to Eidetics Internation, Inc., Torrance, Calif.

Filed Aug. 21, 1990, Ser. No. 570,342

Int. Cl.[5] B64C *1/26, 7/00, 23/06*

U.S. Cl. 244—199 **12 Claims**

1. An apparatus attached to an aircraft that has a fuselage, a pair or wings extending from the fuselage and a pair of nacelles interposed between the fuselage and the wings, comprising:

a pair of strakes each rigidly attached to an engine nacelle



forward and above the wing, said strakes having an area aspect ratio such that vortices are created along the wing roots on the aircraft to increase the lift of the wings when the aircraft is flying at an angle of attack.

5,249,763

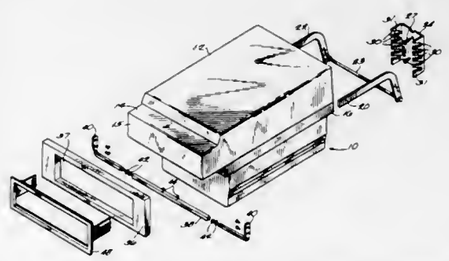
MOUNTING SYSTEM FOR LOW PROFILE WATER DISTILLER

Thomas J. Weber, Oak Creek; William R. McCormick, Kenosha, both of Wis., and Dale L. Garrison, Antioch, Ill., assignors to Emerson Electric Co., Racine, Wis.

Filed Sep. 16, 1992, Ser. No. 945,517

Int. Cl.[5] E12B *9/00*

U.S. Cl. 248—27.1 **11 Claims**



1. An adjustable mounting system for mounting an article in a space comprising front and rear walls comprising:

a support arm received in telescoping relationship in a channel located on said article and having a horizontal member affixed to the distal end thereof,

said article comprising forward and rear ends and a horizontal channel oriented in a front to rear direction adapted to telescopingly receive said arm,

a rear mounting bracket having means for receiving and supporting said horizontal member, said bracket and said means being provided with means to adjust the vertical displacement of said support arm,

a forward bracket adapted to adjustably support the forward end of said article on the forward wall of said space, said forward wall having an opening for access to the front of said article.

5,249,764

COIL-END SUPPORTING APPARATUS AND A ROTARY-MACHINERY STATOR EQUIPPED WITH SAME

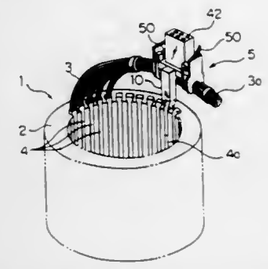
Eiji Narumi, Gunma, Japan, assignor to Sawafuji Electric Co., Ltd., Tokyo, Japan

Filed Apr. 25, 1991, Ser. No. 691,073

Claims priority, application Japan, Apr. 28, 1990, 2-111321; Feb. 15, 1991, 3-012716[U]

Int. Cl.[5] F16L *3/00*

U.S. Cl. 248—68.1 **3 Claims**



1. A coil-end supporting apparatus, comprising: a plate-shaped support having a first end and a second end; a first locking portion extending downwardly from said first end of said plate-shaped support and a second locking portion extending downwardly from said second end of said plate-shaped support, each of said first locking portion and said second locking portion having a skirt defining a recess for holding coil ends, said skirt providing a surface without varnish injecting holes; a terminal mount provided on an upper surface of said plate-shaped support; fasteners including a first fastener and a second fastener, said first fastener being positioned on a first substantially flat surface between said terminal mount and said first end of said plate-shaped support and extending over said skirt of said first locking portion, said second fastener being positioned on a second substantially flat surface between said terminal mount and said second end of said plate-shaped support, and extending downwardly over said skirt of said second locking portion for urging portions of each of said skirts toward each other to maintain said coil within said locking portion; an insert including an end insertable into a slot of a stator core, said insert extending downwardly on an edge side of a middle part of said plate-shaped support, said insert extending substantially perpendicularly with respect to a surface of said plate-shaped support, said first and second locking portions, said plate-shaped support and said insert being formed integral to provide a coupler formed of a single piece.

5,249,765

PICTURE HANGING APPARATUS

Emmett E. Garcia, 410 W. Orango Pl., Tucson, Ariz. 85737

Filed Oct. 8, 1991, Ser. No. 773,358

Int. Cl.[5] A47G *1/16*

U.S. Cl. 248—475.1 **2 Claims**

1. In combination, a picture hanging system and a picture frame comprising:

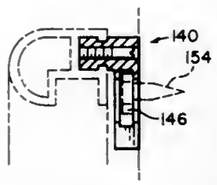
a picture frame having a top segment, a bottom segment and two side segments, said top segment having a front surface, a planar, vertically-oriented rear surface and a planar, horizontally-oriented bottom surface;

a first member adapted for attachment to the rear surface of the top segment of the picture frame, said first member being a flat plate that, when attached to the picture frame, forms a vertically-oriented planar surface parallel to and adjacent the rear surface of the top segment of the picture frame, said first member having a vertically extending slot that has vertically extending sidewalls;

a second member having an aperture through which a fas-

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tener may partially pass to thereby secure the second member to a vertical foundation, said second member also having a head portion and a body portion wherein the second member has a "T"-shaped horizontal cross-section with the head portion forming one portion of the "T" and the body portion forming a perpendicular second portion of the "T" and wherein when the first and second members are joined, the body portion of the second member fits within the slot of the first member and the head portion of the second member is located below and forwardly



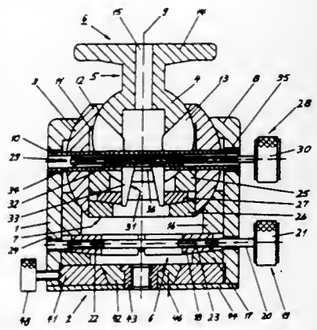
of the rear surface of the top segment of the picture frame; and

wherein the body portion of the second member includes at least two flat sides and a flat top surface and wherein the slot in the first member is sized and shaped so that when the first and second members are joined, the two flat sides of the body portion contact along their length the flat sidewalls of the slot and the flat top surface of the body portion contacts a flat, horizontally-oriented surface that forms the top of the slot.

5,249,766
TRIPOD HEAD

Philippe Vogt, Frohalpstrasse 65, 8038 Zurich, Switzerland

Division of Ser. No. 376,116, Jul. 6, 1989, Pat. No. 5,072,907.
This application Dec. 17, 1991, Ser. No. 808,576
Claims priority, application Switzerland, Jul. 6, 1988, 2565/88
The portion of the term of this patent subsequent to Dec. 17, 2008, has been disclaimed.
Int. Cl.[5] F16M *11/00*
U.S. Cl. 248—181 **16 Claims**



1. A tripod head for supporting an optical instrument, comprising:

a housing means;

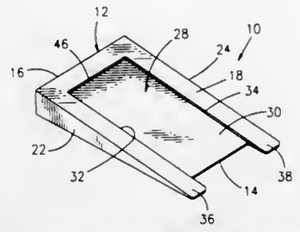
an oblate joint body located within the housing means, the joint body having a major axis, and being rotatable within the housing means around an axis which is transverse to the major axis; and

clamping means in the housing means for applying a clamping force to the joint body to secure the joint body in position.

5,249,767
TABLE LEVELING WEDGE

Floyd E. Melien, 8417 Pacific St., Omaha, Nebr. 68114

Filed Oct. 5, 1992, Ser. No. 956,278
Int. Cl.[5] A47F *5/14*
U.S. Cl. 248—188.2 **11 Claims**



1. A table leveling wedge for eliminating wobble from tables, with and without glides, on uneven surfaces, said wedge comprising,

a solid block of material having forward and rearward ends, a bottom surface, a top surface inclined upwardly and rearwardly relative to said bottom surface and a rear surface connected to and extended between said bottom and top surfaces adjacent the rearward ends thereof,

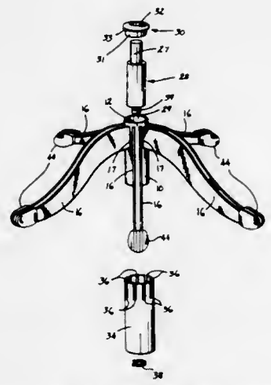
said top surface having a cavity formed therein and extended from the forward end of the block to an extent adjacent to said rearward end, said cavity being defined by an inclined support surface having a front edge and a pair of longitudinally extended and transversely spaced apart abutment surfaces adapted to confine a table glide therebetween,

said top surface extending forwardly of said front edge of said support surface to define a pair of feet for receiving a table glide therebetween and generally centering said wedge relative to a glide to be supported on said wedge.

5,249,768
CHAIR BASE

Thomas M. Edwards, Wyoming, and Robert A. Nagelkirk, Zeeland, both of Mich., assignors to Herman Miller, Inc., Zeeland, Mich.

Continuation-in-part of Ser. No. 205,308, Jun. 10, 1988, abandoned. This application Aug. 11, 1989, Ser. No. 392,721
Int. Cl.[5] F16M *11/00*
U.S. Cl. 248—188.7 **8 Claims**



1. A method of making a chair base having a seat mounting means and multiple legs secured thereto and radiating therefrom, said method comprising the steps of:

forming a plurality of straps, each strap having a quarter sine wave shape in a single plane;

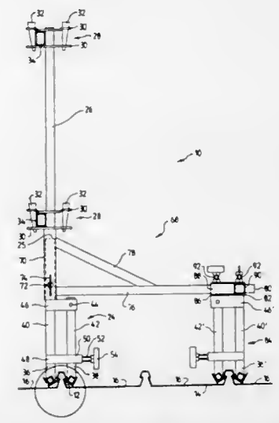
securing pairs of said straps to the seat mounting means in vertical parallel configuration and open at top and bottom portions thereof; and

coating at least a portion of said straps and said seat mounting means with a coating of sufficient thickness to conceal surface imperfections therein and to provide an aesthetic finish.

5,249,769
CLAMP FOR BUILDING STRUCTURES

Cornelius J. Griek, 6 Mervyn Road, Belgrave South, Victoria, 3160, and Anthony K. Mitchinson, 27 Wandena Crescent, Mooroolbark, Victoria, 3138, both of Australia

PCT No. PCT/AU89/00155, § 371 Date Oct. 10, 1990, § 102(e) Date Oct. 10, 1990, PCT Pub. No. WO89/09863, PCT Pub. Date Oct. 19, 1989
PCT Filed Apr. 7, 1989, Ser. No. 582,863
Claims priority, application Australia, Apr. 8, 1988, PI7644/88; May 2, 1988, PI8009/88; Jun. 27, 1988, PI8995/88; Feb. 15, 1989, PJ2749/89
Int. Cl.[5] F16B *1/00*
U.S. Cl. 248—225.31 **22 Claims**

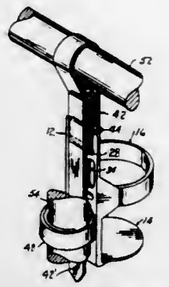


1. A support for a structure adapted to be carried by a deck of a building during or after completion of fabrication of the building, such structure comprising a plurality of the supports, the support comprising a support element which is clampable to the deck and to which the structure may be mounted and bracing means for the support element which is clampable to the deck at a position remote from the support element, each of the support element and bracing means being clampable to the deck by respective clamping means comprising a pair of clamping jaws relatively movable towards each other by a clamping mechanism, each pair of clamping jaws comprising opposed longitudinally extensive feet respectively relatively movable with the jaws and adapted to engage along the length of each foot a respective side of a raised profile of the deck, at least one of the feet of each clamping means defining at least one projecting portion which projects towards the other jaw of said clamping means and which is capable of engaging a recess or undercut in the raised profile of the deck or in a fitting secured over the deck profile so that operation of the clamping mechanism causes the clamping jaws to securely clamp the support element and bracing means to the deck and hold the support element against displacement.

5,249,770
BEVERAGE CONTAINER HOLDER

Connie S. Loutban, P.O. Box 1862, Enid, Okla. 73702

Continuation-in-part of Ser. No. 583,748, Sep. 17, 1990, Pat. No. 5,042,770. This application Aug. 16, 1991, Ser. No. 746,457
Int. Cl.[5] A47K *1/08*
U.S. Cl. 248—311.2 **1 Claim**



1. A holder connected to a vertically extending structure and a horizontally extending structure for holding a beverage receptacle, comprising:

a body having a front and a back;

arms means connected to the body and extending a distance from the front of the body, a receptacle opening being formed through the arm means for receiving the beverage receptacle, the beverage receptacle being disposed through the receptacle opening in the arm means;

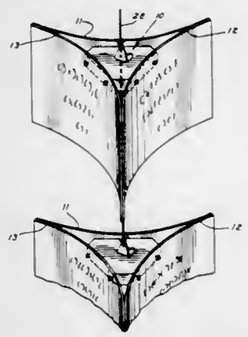
a strap constructed of a flexible material and being bendable without breaking or becoming set-in a bent position being connected to the body, the strap being removably connected to the support for removably connecting the body to the support whereby the body is supported on the support, the strap extending from the holder and being connected to the horizontally extending structure; and

a second strap connected to the holder and extending a distance from the holder, the second strap being secured about the vertically extending structure with the body being disposed adjacent the vertically extending structure.

5,249,771
FOLDABLE SUSPENDED SIGN HANGER

Stuart C. W. Wear, 5636 Rebecca Ln., Minnetonka, Minn. 55343

Filed Jun. 4, 1992, Ser. No. 894,284
Int. Cl.[5] G09F *7/22*
U.S. Cl. 248—317 **2 Claims**



2. A die cut suspended poster hanger, comprising

a central wall having a plurality of co-planar side walls projecting outwardly thereabout,

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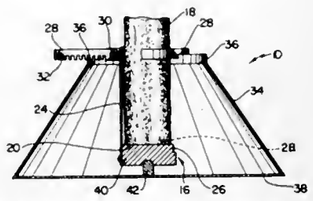
said side walls having inner edges forming in effect a perimeter about said central wall,
a slot in each of said inner edges,
a tongue projecting from each side wall disposable into a respective slot,
said side walls being foldable,
adjacent side walls having spaced apart ends,
intermediate portions of said central wall extending between said spaced ends,
said intermediate portions having creased inner edges,
said intermediate portions having outer edges in alignment with outer edges of said side walls,
said intermediate portions being creased at right angles to their respective inner edges forming angled end portions adjacent corresponding ends of said side walls,
said angled end portions being cut free of their respective adjacent side wall ends,
said side walls having poster hanging tabs projecting therethrough adjacent their respective inner edges, said tabs having enlarged base portions disposed on an inner side of said side walls, and
suspension means secured to said central wall to suspend said hanger,
whereby by causing said side walls to become erect, said intermediate portions can be folded inwardly and the angled end portions thereof overlie adjacent end portions of said side walls, said side walls can be folded to have their tongues disposed into their respective slots securing between the folded portions of said side walls said overlying angled end portions and said bases of said tabs.

5,249,772

STAND FOR CHRISTMAS TREE

Frank E. Montie, Jr., and Frank C. Montie, both of 682 Hatchery Rd., North Kingstown, R.I. 02852

Filed Dec. 23, 1991, Ser. No. 812,159
Int. Cl.[5] A47G *33/12*
U.S. Cl. 248—523 **7 Claims**



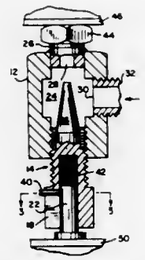
1. A stand for a Christmas tree, said Christmas tree including a trunk portion which terminates in a lower end, said trunk portion being substantially free of side branches, said stand comprising a base portion having an upper rim, and an inner portion, said inner portion being adapted for receiving said trunk portion therein and including means for securing said inner portion to said trunk portion, said base portion being adapted for releasably receiving said inner portion and said trunk portion therein and for supporting said tree in a substantially upright disposition on a supporting surface, said stand further comprising centering means for orienting the lower end of said trunk portion in a substantially centered position relative to said base portion as said inner portion and said trunk portion are assembled in said base portion and for retaining the lower end of said trunk portion in said centered position, said centering means comprising a first centering member on said inner portion, and a second centering member on said base portion, said first and second centering members being releasably receivable in mating interfitting engagement for centering said trunk portion relative to said base portion when said trunk portion is received in said inner portion, said first centering member being pivotable relative to said second centering member with said first and second centering members received in mating interfitting engagement for adjusting the angular position of said inner portion and said trunk portion relative to a vertical axis, and means for securing said inner portion to said base portion so that said inner portion and said trunk portion are angularly adjustable relative to said vertical axis, said securing means comprising a plurality of arms connecting said inner portion to said upper rim.

5,249,773

FLUID FLOW REGULATING VALVE

Todd R. Feld, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.

Filed Nov. 12, 1992, Ser. No. 976,135
Int. Cl.[5] F16K *1/04, 31/04*
U.S. Cl. 251—129.11 **2 Claims**



1. A fluid flow valve comprising:
(a) a housing having an inlet and an outlet for flowing fluid and a threaded aperture disposed opposite the outlet along a longitudinal axis;
(b) an externally threaded stem threadably mounted in the threaded aperture and having an inboard end and a longitudinal bore extending from its outboard end through a portion of its length;
(c) a tapered plug formed on the inboard end of the stem and pointing toward the outlet such that it opens and closes the outlet as the stem moves along the longitudinal axis;
(d) a longitudinally oriented compression spring having an inner end slidably within the longitudinal bore of the stem and an outer end;
(e) a platform having a fixed longitudinal position in respect to the housing and abutting the outer end of the spring;
(f) reversible means independent of the spring for rotating the stem in relation to the aperture, whereby the plug advances toward or retreats from the outlet.

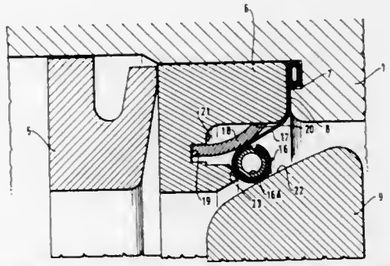
5,249,774

VALVE HAVING A METAL SEAL, IN PARTICULAR A BUTTERFLY VALVE

Jean-Luc Mazel, Saint Foy Les Lyon, and Gilbert Monnet, Oullins, both of France, assignors to Alsthom Velan, La Courneuve, France

Filed Jan. 13, 1993, Ser. No. 4,083
Claims priority, application France, Jan. 15, 1992, 92 00353
Int. Cl.[5] F16K *1/22*
U.S. Cl. 251—306 **9 Claims**

1. A valve having a metal seal and comprising:
a valve body pierced by an orifice having an axis, said body including a thrust ring surrounding said orifice;
a dynamic sealing ring bearing against said thrust ring via a resiliently bendable element, with an outside wall of said sealing ring being constituted by a contact metal;
a closure member to close said orifice; and
a mechanism for displacing said closure member between an open position allowing a fluid to pass through said orifice and a closed position in which a bearing surface of said closure member bears against a contact zone of said dynamic sealing ring causing said contact zone to be displaced, said displacements being accompanied by deformation of said sealing ring, and being selected to generate thrust forces that are sufficient to enable sealing to be established between said bearing surface and said contact zone, an amplitude of reversible displacement of said contact zone being related to the elastic deformation capabilities of said contact metal and being limited by the fact that said metal must be selected so that its contact with said bearing surface effectively achieves said sealing;



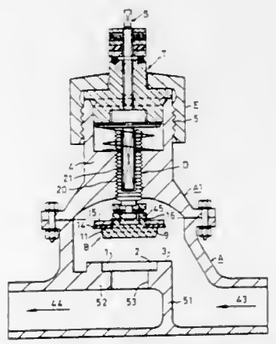
wherein said elastically bendable element intermediate between the dynamic sealing ring and the thrust ring is a support piece in the form of a ring surrounding said orifice and having two edges bearing against said thrust ring, said dynamic sealing ring bearing against said support piece along a line intermediate between said two edges whereby the bending of an axial plane section line of said support piece increases said reversible displacement amplitude of the contact zone of the dynamic sealing ring.

5,249,775

CLOSURE

Seyed H. Tabatabai, 19 Robinson Court, St. Mary's Path, Islington, London N1 2RU,, United Kingdom

PCT No. PCT/GB90/01297, § 371 Date Feb. 14, 1992, § 102(e) Date Feb. 14, 1992, PCT Pub. No. WO91/02914, PCT Pub. Date Mar. 7, 1991
PCT Filed Aug. 16, 1990, Ser. No. 835,936
Claims priority, application United Kingdom, Aug. 16, 1989, 8918741.3
Int. Cl.[5] F16K *1/36*
U.S. Cl. 251—330 **18 Claims**



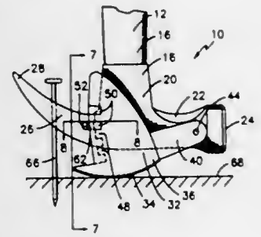
1. A closure for a gas or liquid system, capable of use as a stop valve component over a wide range of pressures in the system and as an antileakage seal, and comprising an outlet for the gas or liquid, and a closure element locatable to seat and seal within and around the said outlet, in which:
the outlet comprises a shoulder recess formed in a sealing surface, the recess having a base defining an opening and the said base and sealing surface being parallel and at accurately predetermined spacing from one another, and
the closure element comprises (a) a rigid disc-like member of accurately predetermined thickness having parallel inner and outer faces and adapted to lie within the recess with the outer face exactly coplanar with the said sealing surface and the inner face abutting said base and (b) a flat sheet like deformable seal, and means holding the deformable seal in a fixed relation to the disc-like member so that it lies against the seal outer face of the disc-like member and has an annular portion extending beyond the disc-like member, said annular portion not being subject to mechanical clamping but sealing against the sealing surface under the pressure in the system when the disc-like member is in the recess.

5,249,776

ADJUSTABLE LEVERAGE CLAW HAMMER

Ray W. Johnson, P.O. Box 13293, Wichita, Kans. 67213

Filed Sep. 14, 1992, Ser. No. 944,226
Int. Cl.[5] B66F *15/00*
U.S. Cl. 254—26 E **20 Claims**



1. A claw hammer comprising:
a hammer head having a first end and a second end;
a cap assembly mounted on top of said hammer head, said cap assembly having a pair of side plates disposed adjacent opposite sides of said hammer head, said side plates having an exterior surface for striking stakes, boards and the like and an interior surface having a plurality of detent teeth and grooves therein and adjacent the opposite sides of said hammer head, a portion of the exterior surface of said side plates covering the detent teeth and grooves; and
lock means mounted on said hammer head for releasable engagement in a selected groove in the interior surface of said side plates, whereby when adjusting said cap assembly on said lock means the claw hammer has adjustable leverage when removing nails of different lengths from a work piece, the exterior surface of said side plates protecting the detent teeth, the grooves and said lock means from dirt, foreign material and the like from receipt therein.

5,249,777

PORTABLE WINCH

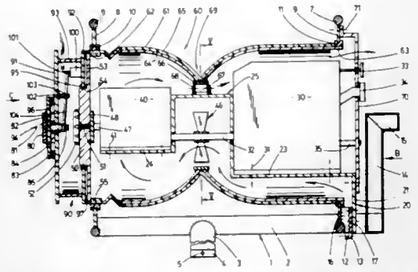
Ken-Y. H. Herving, Ornveien 1, N-8500 Narvik, Norway

PCT No. PCT/NO90/00065, § 371 Date Oct. 17, 1991, § 102(e) Date Oct. 17, 1991, PCT Pub. No. WO90/12751, PCT Pub. Date Nov. 1, 1990
PCT Filed Apr. 17, 1990, Ser. No. 768,238
Claims priority, application Norway, Apr. 17, 1989, 891559
Int. Cl.[5] B66D *1/14, 1/26*
U.S. Cl. 254—289 **6 Claims**

1. A portable light-weight winch comprising:
a frame;
a main drum supported by said frame; and
a motor for rotating said drum via a transmission;
wherein each end portion of the drum extends into and is rotatably supported by respective annular bearing portions of said frame,

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another end portion of the frame extending into the main drum from one end thereof substantially parallel to the longitudinal axis of the main drum for supporting the



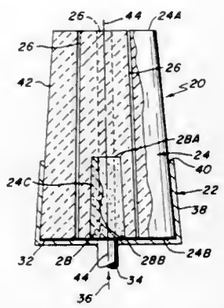
motor and the transmission which are within the main drum, an output shaft of the transmission being detachable connected to the main drum at the other end thereof.

5,249,778

GAS STIR PLUG DEVICE WITH VISUAL WEAR INDICATOR

Wolfgang Steichert, Kresfeld, and Dieter Vahlhaus, Muhlheim an der Ruhr, both of Fed. Rep. of Germany, assignors to Dolomitwerke GmbH, Wulfrath, Fed. Rep. of Germany

Filed Apr. 14, 1992, Ser. No. 868,598
Int. Cl.[5] B22D *1/00*
U.S. Cl. 266—99 **12 Claims**



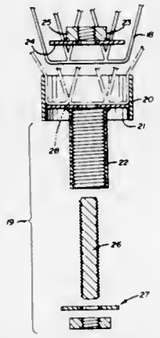
1. A device for introducing gas into a mass of molten metal comprising a plug of a generally frusto-conical shape which is worn away during use, said plug comprising;
(a) a central longitudinal axis;
(b) a top end;
(c) a bottom end;
(d) a shell;
(e) an outer core located within said shell and comprised of a first refractory material extending between said bottom end and said top end, said outer core being a one-piece member having a recess of a predetermined height centered on said longitudinal axis located adjacent said bottom end so that a top portion of said one-piece member is disposed directly over said recess.
(f) a passageway extending between said bottom end and said top end of said outer core through which said gas is passed from said bottom end to said top end to exit therefrom; and
(g) a central core having an upper end and a lower end and being located within said recess and below said top portion of said one-piece member of said outer core, said central core being a one-piece member of a height equal to the predetermined height of said recess to completely fill said recess and comprised of a generally porous second refractory material, said central core being arranged to be exposed when said plug has worn away to a predetermined point, whereupon said gas from said passageway commences flowing through said central core and provides a visual indication that said plug should be replaced.

5,249,779

MODIFIED MANIFOLD ASSEMBLY FOR DIRECTIONAL GAS DISTRIBUTION DEVICE

Michael D. LaBate, II, 110 N. Market St., East Palestine, Ohio 44413

Filed Jul. 10, 1992, Ser. No. 911,725
Int. Cl.[5] C21C *5/48*
U.S. Cl. 266—224 **4 Claims**



1. A manifold assembly for a pocket block that is used to introduce gas into a mass of molten metal and a vessel having a refractory lining, said pocket block formed of a cast refractory material, said manifold assembly comprising a support sleeve, an apertured partition secured within said support sleeve, a gas supply fitting extending from said sleeve, a filament positioning and mounting fitting adjacent said gas supply fitting, means for securing said filament positioning and mounting fitting in spaced relation to said apertured partition, a synthetic resin filament net held between said filament positioning and mounting fitting and said apertured partition, said synthetic resin filament net extending upwardly embedded within said cast refractory material of said pocket block.

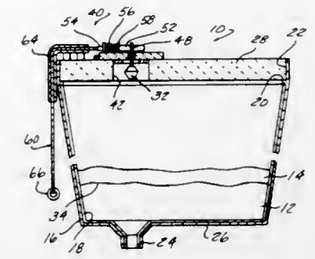
5,249,780

SLAG CONTROL SHAPE RELEASE APPARATUS FOR MOLTEN METAL VESSELS

Gary L. Forte, Plymouth; James P. McGuire, Taylor, and Wayne Miller, Gibraltar, all of Mich., assignors to AJF, Inc., Plymouth, Mich.

Filed Jun. 12, 1992, Ser. No. 898,014
Int. Cl.[5] B22D *41/14*
U.S. Cl. 266—230 **16 Claims**

1. A slag control shape release apparatus for a molten metal receptacle having an open top, side and bottom walls, an interior cavity containing a layer of slag covering a layer of molten metal, a discharge nozzle formed i the bottom wall, a cover removably closing the open top end of the receptacle, the cover having an aperture extending therethrough and a slag control shape insertable into the receptacle, the apparatus comprising:
means, mounted on the cover, for releasably mounting the slag control shape with respect to the cover; and
means, connected to the mounting means, for actuating the mounting means to release the slag control shape from the mounting means and to allow the free descent of the slag control shape into the molten metal receptacle, the actuating means being operable form a location remote from the cover mounted on the molten metal receptacle.

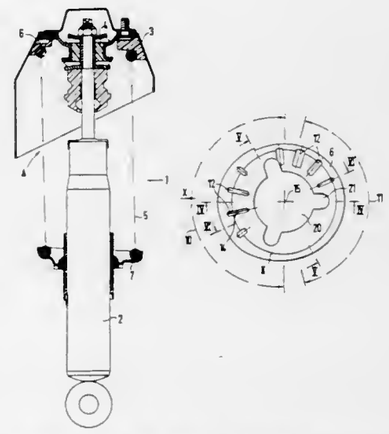


5,249,781

SUPPORT FOR A COIL SPRING

Hans-Jürgen Wöhler, Stuttgart, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Feb. 11, 1992, Ser. No. 833,669
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1991, 4104859
Int. Cl.[5] B60G *15/02*
U.S. Cl. 267—33 **12 Claims**



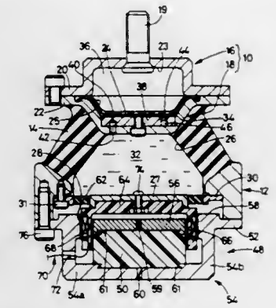
1. A support for a coil spring of a spring strut of a motor vehicle which is cardanically disposed on a vehicle body, comprising:
an upper elastic spring pocket on a side of the vehicle body for supporting a top end of the coil spring, and
a lower spring pocket stationarily held on the spring strut for supporting a bottom end of the coil spring,
wherein the upper elastic spring pocket has several variable size recesses in its area facing a vehicle body wall which contributes to different elastic characteristics in the axial operating direction of the coil spring over the surface of the upper elastic spring picket, whereby bulging of the coil spring during compression and rebounding of the coil spring in use are limited.

5,249,782

ELASTIC MOUNT AND METHOD OF MANUFACTURING THE ELASTIC MOUNT

Akiyoshi Ide, Inuyama; Katsuhiro Goto, Komaki; Yutaka Ishioka, Nagoya; Yoshiki Funahashi, Iwakura; Rentaro Kato; Tetsu Matsui, both of Kasugai; Ryouji Kanda, Komaki; Atsushi Muramatsu, Komaki, and Keiichi Ishiba, Komaki, all of Japan, assignors to Tokai Rubber Industries, Ltd., Japan

Filed Dec. 3, 1992, Ser. No. 985,108
Int. Cl.[5] F16M *1/00*
U.S. Cl. 267—140.14 **10 Claims**



1. A fluid-filled elastic mount comprising:
first and second supports which are spaced apart from each other;
an elastic body which is interposed between said first and second supports for elastically connecting the first and second supports and which partially defines a fluid chamber filled with a non-compressible fluid;
an oscillating plate which partially defines said fluid chamber and which is displaceable to change a pressure of the fluid in said fluid chamber;
a permanent magnet disposed on one of opposite sides of said oscillating plate remote from said fluid chamber, said permanent magnet being made of a plastic magnetic material including a magnetic material and a plastic material as a binder for said magnetic material;
first and second yoke members which are connected to respective opposite magnetic pole faces of said permanent magnet and which cooperate with said permanent magnet to define a closed magnetic circuit, said first and second yoke members defining therebetween an annular gap in said magnetic circuit; and
an annular moving coil received in said annular gap and fixed to said oscillating plate, said moving coil being displaced in said annular gap in an axial direction thereof, to oscillate said oscillating plate upon energization of said moving coil.

5,249,783

VIBRATION ABSORBING DAMPER

Lawrence P. Davis, Phoenix, Ariz., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 30, 1991, Ser. No. 648,500
Int. Cl.[5] F16F *9/10*
U.S. Cl. 267—217 **8 Claims**

1. A vibration absorbing damper, comprising:
an outer cylindrical housing comprised of a substantially rigid material of uniform radius and having a predetermined axial stiffness,
damping member means disposed within said outer cylindrical housing, for dissipating vibratory and shock forces applied to said damper,
an inner cylindrical member disposed coaxially within said outer cylindrical housing and having a first end proximal

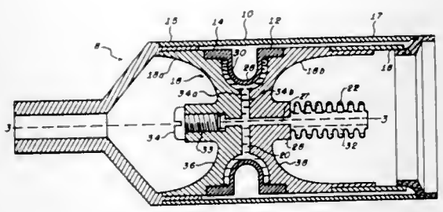
VOL 1155 ISS 1 OCT 5 1993 UMI

to a first end of said outer housing and a second end proximal to said damping member means,

said outer cylindrical housing and said inner cylindrical member being fixedly coupled at the respective first ends thereof, said damping member means flexibly coupled to a second end of said inner cylindrical member and fixedly coupled to said second end of said outer cylindrical housing, whereat axial deflection of said outer cylindrical housing is linearly coupled to a corresponding axial deflection of said damping member means,

said damping member means further comprising a proximal element affixed to said second end of said outer cylindrical housing and a distal element affixed to said second end of said inner cylindrical member, said proximal and distal elements defining a deformable recess comprising fluid chamber means,

said damping member means further comprising first and second facing planar surfaces forming a first portion of said fluid chamber means, said proximal element defining an arcuate surface opposing said first planar surface and said distal element defining an arcuate surface opposing said second planar surface, whereat said proximal and distal elements are so constructed and adapted as to be



substantially volumetrically rigid, and further defining an annular arcuate fluid passage communicating with said first portion of said fluid chamber means,

said fluid chamber means further comprising an annular arcuate nonelastomeric structure conforming to said annular arcuate fluid passage means for resiliently coupling said proximal and distal elements of said damping chamber means and for enclosing said annular fluid passage therebetween, said structure being axially deformable and substantially radially rigid,

a resilient auxiliary fluid reservoir disposed within said inner cylindrical member and proximal to an arcuate surface of one of said elements of said fluid chamber means, for storing and replenishing fluid to said fluid chamber means,

a tubular member interposed between said arcuate surface of said one of said elements of said damping member means and said auxiliary fluid reservoir, defining a central fluid flow-restricting orifice and communicating with said auxiliary fluid reservoir and said fluid chamber means, and

fluid means enclosed within said fluid chamber means, said tubular member, and said auxiliary fluid reservoir for axially deforming said fluid chamber means and dissipating vibratory forces and shock forces applied to said damper by frictional passage through said orifice.

5,249,784

VIBRATION ISOLATING SUPPORT DEVICE

Kazutomo Murakami, Yokohama; Keiichiro Mizuno, Tokyo; Kazuyoshi Iida, Iruma, and Toshihiro Miyazaki, Yokohama, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

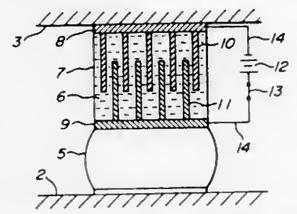
Filed May 23, 1990, Ser. No. 527,505

Claims priority, application Japan, Jun. 1, 1989, 1-137389

Int. Cl.[5] F16F *13/00*

U.S. Cl. 267—219 **7 Claims**

1. A vibration isolating device, comprising; a base, a plurality of support members placed on said base in parallel with each other, each support member comprising a two series layer of an electroviscous body and an elastomeric body, a cradle supported by said support members, said support members provided with means for applying voltage to each electroviscous body, respectively, and wherein said electroviscous body



contains spaced upper and lower substrates, plural upper and lower electrode plates vertically arranged from said upper and lower substrates, respectively, and said electroviscous body under a no voltage condition has a spring constant smaller than that of said elastomeric body.

5,249,785

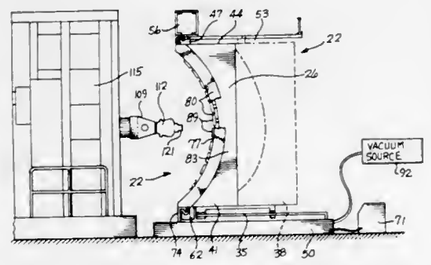
RECONFIGURABLE HOLDING FIXTURE

Paul E. Nelson, Tacoma, Wash., and Hugh R. Schlosstein, Renton, Wash.

Filed Apr. 20, 1992, Ser. No. 871,321

Int. Cl.[5] B25B *11/00*

U.S. Cl. 269—21 **8 Claims**



1. A reconfigurable workpiece holding apparatus comprising: an array of structures for holding workpieces, said array of structures comprises one or more sets of interleaved contoured headers with predetermined spacing between each said contoured header in each said set, each said header having a contoured front surface to correspond to a predetermined contoured workpiece shape, a top edge coupled to a travel guide, and a bottom edge coupled to a lateral slide mounted to the base of said apparatus;

means for laterally displacing each said contoured header along said lateral slide and said travel guide between an inactive stored position and an active working position, said lateral displacing means comprising movable positioning means to which said contoured headers may be temporarily connected and moving means to move said positioning means and said headers connected thereto between said inactive stored position and said active working position;

means for locking said contoured headers in said active working position, and in said inactive stored position; and

locating means associated with said contoured headers for locating a said workpiece in a desired position relative to said contoured headers, said locating means comprising one or more locating pins.

5,249,786

PIPE RESTRAINT SYSTEM

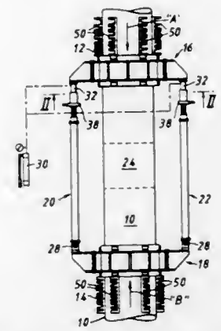
Jack Ross, Edinburgh, United Kingdom, assignor to British Gas plc, London, England

Filed Mar. 19, 1992, Ser. No. 853,629

Claims priority, application United Kingdom, Mar. 19, 1991, 9105817

Int. Cl.[5] B25B *1/20*

U.S. Cl. 269—43 **4 Claims**



1. A pipe restraint system comprising two clamp assemblies and two yokes anchored at spaced locations along a pipe and struts engageable at their ends with the yokes, each clamp assembly including at least two thrust members distributed around said pipe and chains by which said thrust members are tightenable against the pipe, said thrust members linked by a strap or other flexible elongate member to locate the members before they are tightened against the pipe by said chains, and each strut including a hydraulic cylinder applying a force to said struts in a direction opposite to the direction of axial thrust the would be generated in the pipe if a flow of gas in the pipe was stopped off, thereby relieving the pipe of load that would be generated by the axial thrust.

5,249,787

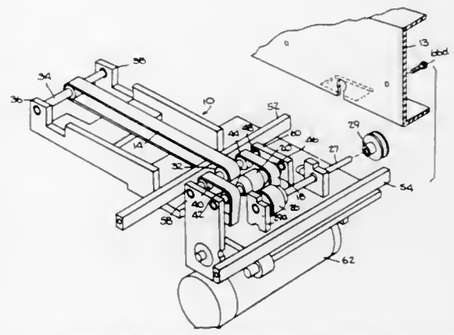
MODULAR DOCUMENT FEEDER DEVICE

Edward M. Ifkovits, New Fairfield, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Jun. 1, 1992, Ser. No. 891,104

Int. Cl.[5] B65H *5/02*

U.S. Cl. 271—6 **5 Claims**



1. A modular feeding apparatus for a document feeding machine, comprising:

a. a paper feeding module having a pair of support railings; and

b. a modular drive unit having

(i) a first shaft journaled in a pair of side frames;

(ii) a conveying belt mounted on said shaft for conveying documents from an upstream position to a downstream position, the upper reach of said belt defining a feed path;

(iii) a cross bar extending between and removably secured to said pair of support railings;

(iv) a drive unit support plate secured to said cross bar; and

(v) a motor for driving said conveying belt secured to said support plate, whereby when said cross bar is detached from said pair of support railings, said drive unit support plate, said motor and one end of said conveying belt drop below said feed path to facilitate repair of said modular drive unit.

5,249,788

SHEET STACK PRE-FEEDER

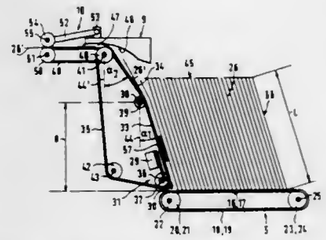
Maximilian Helmstädter, Villingen, Fed. Rep. of Germany, assignor to Mathias Bäuerle GmbH, Georgen, Fed. Rep. of Germany

Filed Aug. 21, 1992, Ser. No. 933,998

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1991, 9110473

Int. Cl.[5] B65H *5/00*

U.S. Cl. 271—10 **20 Claims**



1. Device for feeding a stack of sheets, the device comprising:

a stack support including a stack support surface, said stack support surface including a first end and a second end;

guide wall means extending from said stack support surface and for containing the stack of sheets with a edge of each of the sheets being in contact with said stack support surface;

guide means positioned in said stack support surface and for moving the stack of sheets in contact with said stack support surface from said first end to said second end of said stack support surface, said guide means moving the sheets in a direction substantially perpendicular to the edge of each of the sheets and to a plane of each of said sheets;

sheet feed means positioned at said second end of said stack support surface and for individually removing a single sheet from the stack of sheets, said sheet feed means including a feed conveyer having a side substantially parallel to the single sheet and in contact with a side of the single sheet, said feed conveyer traveling around a decollating deflecting roller, said decollating deflecting roller being positioned adjacent said second end of said stack support surface, said feed conveyer also travelling around a drive roller, said drive roller being positioned at a spaced distance away from the stack and downstream of said removing of the single sheet, also said side of said conveyor travelling around an articulating roller positioned adjacent to an upper third section of the sheets of the stack, said side of said conveyer including a decollating section between said decollating deflecting roller and said articulating roller, said side of said feed conveyer also including a feed section between said drive roller and said

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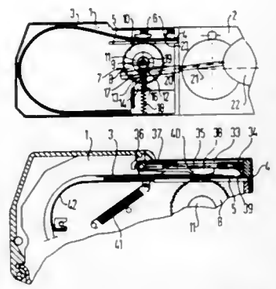
articulating roller, said sheet feed means also including an intermittent drive means for moving said feed conveyer with pulse-like acceleration steps.

5,249,789

SHEET FILM MAGAZINE FOR A FILM CHANGER

Erik Bjoerk, Syndbyberg; Ola Wiklund, Jaerfaella, and Johan Egerstroem, Nacka, all of Sweden, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 774,625, Oct. 10, 1991, abandoned.
This application Jan. 13, 1993, Ser. No. 3,678
Claims priority, application Sweden, Oct. 22, 1990, 9003370
Int. Cl.[5] B65H *3/06*
U.S. Cl. 271—115 **15 Claims**



1. A sheet film magazine for a film changer, comprising:
a conveyor means for conveying individual film sheets from a film stack to a receiving portion of the film changer;
the conveyor means having at least one conveyor wheel attached to a shaft parallel to a plane of the film sheets and driver means for rotating the conveyor wheel in a conveying direction of the film sheets during conveying and for rotating the conveyor wheel in an opposite direction after a film sheet has been conveyed;
the conveyor means having spacing means for varying a spacing between a film sheet and the conveyor wheel such that the conveyor wheel, when conveying a film sheet from the sheet film magazine to the receiving portion, presses against a surface of the film sheet; and
separating means for separating the conveyor wheel from the surface of the film sheet quickly when the conveyor wheel begins reverse rotation in the opposite direction.

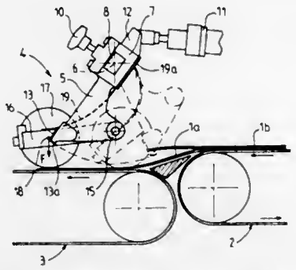
5,249,790

APPARATUS FOR SEPARATING THIN FLAT ARTICLES

Thierry Brame, La-Ferte-Saint-Aubin, and Christian Galateau, Jouy-le-Potier, both of France, assignors to Komori-Chambon, Orleans-La-Source, France

Filed Apr. 14, 1992, Ser. No. 868,454
Claims priority, application France, Apr. 18, 1991, 91 04807
Int. Cl.[5] B65H *29/68*
U.S. Cl. 271—182 **17 Claims**

1. An apparatus for separating thin, flat articles, successively displaced in a continuous line, on at least one conveyor for creating downstream of the apparatus, groups of articles separated from each other by intervals in the line of articles, the apparatus further comprising:
a rotatable lever on said conveyor for hooking the articles;
said lever being rotatable relative to said conveyor about a first axis between an inactive position and an active position;
said lever including a claw for holding the flat articles and at least one connecting rod extending longitudinally downstream of the apparatus;
said connecting rod being mounted to and rotatable relative to aid rotatable lever about a second axis displaced with respect to said first axis;
said connecting rod including mounted thereto at a downstream part thereof at least one wheel extending longitudinally downstream and spring biased for pressing the flat articles located on said conveyor and under said connecting rod onto said conveyor; and



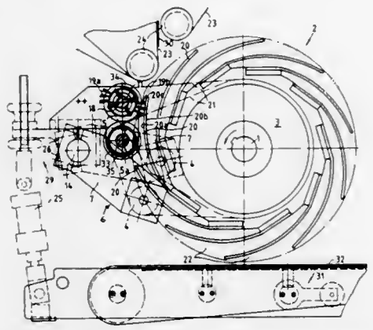
spring means connecting said connecting rod and said lever for elastically urging and spring biasing said wheel against said articles in the direction of the movement of said conveyor downstream of said apparatus.

5,249,791

ARRANGEMENT FOR BRAKING PRINTED PRODUCTS IN A FAN DELIVERY OF A FOLDER

Roger R. Belanger, Dover, N.H.; Gilles L. Fecteau, Saco, Me., and Richard B. Mack, Heidelberg, Fed. Rep. of Germany, assignors to Heidelberg Harris GmbH, Heidelberg, Fed. Rep. of Germany

Filed Jun. 18, 1992, Ser. No. 900,837
Int. Cl.[5] B65H *29/68*
U.S. Cl. 271—182 **11 Claims**



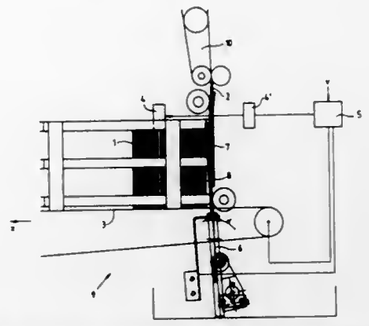
1. In a fan delivery unit of a folder having a plurality of fan discs arranged next to one another on a motor shaft, the fan discs being formed with a plurality of fan blades defining fan pockets therebetween, a device for braking printed products, comprising, a driven brake shaft disposed parallel to the motor shaft, a plurality of brake rollers mounted on said brake shaft and corresponding in number to the number of the fan discs, and means for driving said brake shaft via the motor shaft selectively in one of two rotational directions, said brake rollers having means cooperating with leading edges of the fan blades for brakingly engaging and delaying travel of a printed product introduced into the respective fan pockets.

5,249,792

METHOD AND DEVICE FOR THE CONTINUOUS FORMATION OF A STACK OF FOLDED PRODUCTS STANDING ON EDGE

Kevin F. Albert, Barrington, N.H., assignor to Heidelberg Harris, Inc., Heidelberg, Fed. Rep. of Germany

Filed Jul. 23, 1992, Ser. No. 919,366
Int. Cl.[5] B65H *29/34*
U.S. Cl. 271—189 **4 Claims**



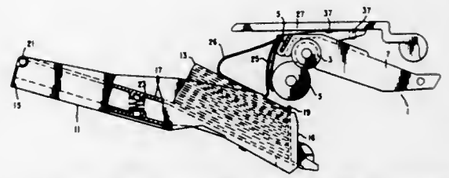
1. A device for the continuous formation of a stack of folded products standing on edge, comprising:
means for feeding folded products in a stream to a stack of folded products standing on edge;
a conveyor belt on which the stack is moved forward at a speed being synchronized with the feeding of the folded products to the stack;
at least one separating device for contacting the folded products;
a sensor for monitoring the stream of folded products and supplying output signals; and
a logic unit connected to said sensor for recognizing an interruption in the stream of folded products from the output signals of said sensor, said logic unit being connected to said conveyor belt and to said at least one separating device for activating said at least one separating device upon the occurrence of an interruption in the stream and for stopping said conveyor belt for the duration of the interruption.

5,249,793

GUIDING DEVICE FOR STACKING SHEETS OF PAPER

Gert Scheufler, Winnenden, Fed. Rep. of Germany, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 25, 1991, Ser. No. 796,965
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1990, 4039813
Int. Cl.[5] B65H *31/26*
U.S. Cl. 271—220 **11 Claims**



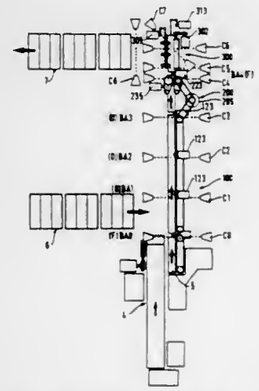
1. A guiding device for aligning sheets of paper (13) being stacked on a stacking tray (11) backwardly inclined relative to a sheet feeding direction to which the sheets are fed by a feeding mechanism (3, 5) which releases the sheets at a point higher than the bottom (17) of the stacking tray (11), said guiding device comprising a deflectable fender (26) which extends from above into the path of an incoming sheet (13) and is contracted and deflected by said sheet, said fender (26) being arranged such that due to its weight the upper side of the sheet (13) in contact therewith is subjected to a load, said guiding device characterized in that said fender (26) consists of a flexible web (28) that forms a tear-drop loop that is compressively flattened when deflected forwardly by a sheet feeding into the tray (11) and that is re-expanded by the sheet sliding backwardly under gravity in the tray (11).

5,249,794

FEED DEVICE FOR A SORTING MACHINE FOR SORTING FLAT OBJECTS SUCH AS POSTAL ITEMS

Christian Plent, Bourg les Valence; Christian Laumond, Chabeuil; Bernard Constant, Beaumont les Valence; Michel Divoux, Bourg de Peage, and Pierre Campagnolle, Beaumont les Valence, all of France, assignors to Compagnie Generale d'Automatisme CGA-HBS, Bretigny sur Orge, France

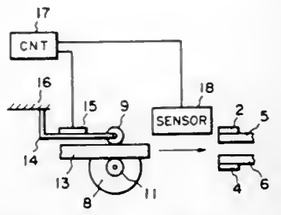
Filed Jun. 19, 1992, Ser. No. 901,185
Claims priority, application France, Jun. 21, 1991, 91 07658
Int. Cl.[5] B65H *5/02*
U.S. Cl. 271—225 **14 Claims**



1. A feed device for feeding a sorting machine for sorting flat objects and including at least one input feeder for the objects and pockets to which the objects are fed vertically for transport and discharge into output containers, the feed device allowing the objects to be conveyed one by one from the input feeder towards a vertical pocket and comprising a conveyor module substantially perpendicular to the path of the pockets and associated with a vertically downwards transfer device for transferring the objects into the pockets, wherein:
the conveyor module comprises at least two stop gates spaced by a distance greater than the maximum length of the objects;
an accelerator module is located between the conveyor module and the vertical downwards transfer device and comprises a downstream stop gate;
the vertical downwards transfer device is formed by an injecting module; and
these modules being provided with continuously operating positive entrainment devices and the stop gates being retractable and controlling the movements of the objects in response to detectors located in the path of the objects.

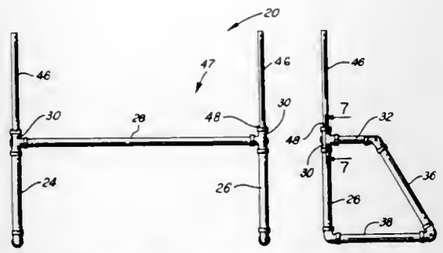
VOL 1155 ISS 1 OC 5 1993 UMI

5,249,795
SHEET FEEDING APPARATUS
Yoshifumi Nishimoto, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 759,902, Mar. 6, 1991, abandoned. This application Dec. 10, 1992, Ser. No. 989,948
Claims priority, application Japan, Mar. 7, 1990, 2-56013
Int. Cl.[5] B65H *7/02*
U.S. Cl. 271—265 **26 Claims**



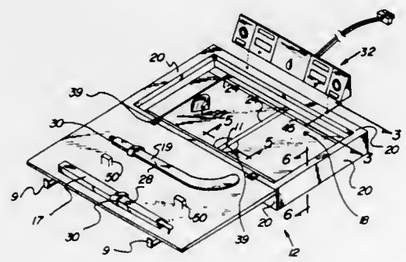
1. A sheet feeding control device adapted to be used with a printer, for feeding a sheet by a vibration wave, said device comprising:
(a) detecting means for contacting the sheet and for detecting a feeding state of the sheet; and
(b) adjusting means for adjusting a contacting force between the sheet and said detecting means;
said adjusting means being adapted to adjust the contacting force between a first level before the sheet if contacted with said detecting means in a second level after the sheet has been contacted with said detecting means, the second level of the contacting force being greater than the first level.

5,249,796
CONVERTIBLE SPORTS GOAL APPARATUS
Paul Silvi, 2642 Beacon Hill Apt. 311, Auburn Hills, Mich. 48236
Filed Aug. 16, 1991, Ser. No. 746,433
Int. Cl.[5] A63B *67/00*
U.S. Cl. 273—55 D **9 Claims**



1. A convertible game apparatus comprising:
first and second elongated vertically extending columns, said columns being parallel to each other and spaced from each other by a predetermined distance, an elongated horizontally extending cross member having its ends attached to a respective upper end of said first and second columns, an area being defined laterally between said first and second columns and vertically below said cross member to define a goal opening;
each said first and second columns having an elongated member telescopically received therein and slidable therein to selectively extend vertically above said cross member and above said opening, said elongated members when extending above said cross member define a target laterally therebetween and vertically above said cross member;
a side structure attached to and extending rearwardly from said first and second columns, said side structure being comprised of a top side member attached to a back side member; and
net means extending over said side structure and spanning said predetermined distance, said side structure and said net means in combination with said opening defines an object receiving and retaining goal.

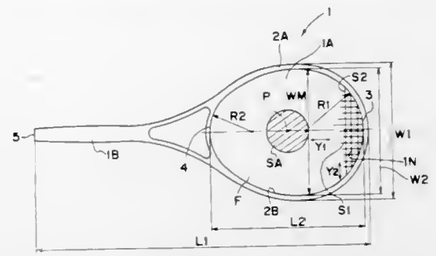
5,249,797
HOCKEY TRAINING APPARATUS
Wilfred P. Dowhy, 146 Pilgrim Avenue, Winnipeg, Manitoba R2M 0L6, Canada
Filed Feb. 26, 1993, Ser. No. 23,634
Int. Cl.[5] A63B *69/00, 59/12*
U.S. Cl. 273—57.2 **11 Claims**



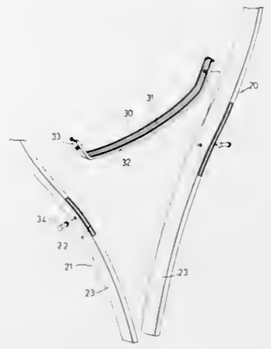
1. A new and improved hockey training aid and game apparatus, comprising:
a portable housing which includes a base unit and a cover connected to said base unit, wherein said base unit includes a floor and four side walls connected to said floor, wherein said floor contains indicia representing a hockey rink, and wherein said cover includes means for retaining a collapsible stick,
a collapsible stick retained by said stick retaining means in a collapsed condition when said hockey training aid and game apparatus is transported, said stick being capable of being assembled into a functional hockey stick when said hockey training aid and game apparatus is used,
a puck,
a first sensor assembly means for monitoring accurate puck handling, and
a scoring and control assembly means for scoring puck handling, which includes a first counter assembly means, connected to said first sensor assembly means, for counting monitored instances of accurate puck handling sensed by said first sensor assembly means, and a timer means for shutting off said first counter assembly means after a predetermined time expires.

5,249,798
TENNIS RACKET FRAME
Kenichi Miyamoto, Akashi, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan
Filed Jul. 8, 1992, Ser. No. 910,523
Claims priority, application Japan, Jul. 9, 1991, 3-168333
Int. Cl.[5] A63B *49/02*
U.S. Cl. 273—73 C **4 Claims**

1. A tennis racket which comprises a main frame portion having an oval shape which is defined by a top portion, side portions, and a yoke portion; a grip portion contiguous with the yoke portion, and a netting stretched in the oval main frame by main strings and cross strings to form a ball striking face with a sweet area provided therein, wherein the ratio of the rigidity in the main string direction to the rigidity in the ball striking direction, and the ratio of the rigidity in the cross string direction to the rigidity in the ball striking direction, are each set to be larger than 1.00 and smaller than 2.00, and the rigidity ratio of the frame within the ball striking face comprising the ratio of the rigidity in the main string direction to the rigidity in the cross string direction of said strings is set to be smaller than 1.00.

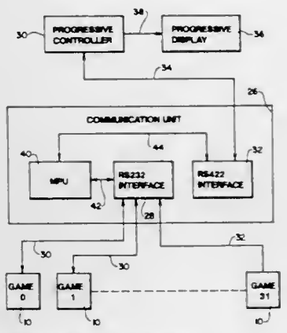


5,249,799
RACKET INCLUDING A METAL REINFORCED THROAT SECTION
Chen-Chung Chang, No. 912, Chung-Shan Rd., Shen-Kang Hsiang, Taichung Hsien, Taiwan
Filed Jul. 24, 1992, Ser. No. 918,094
Int. Cl.[5] A63B *49/06, 49/12*
U.S. Cl. 273—73 G **4 Claims**



1. A racket, comprising:
a metal frame having a looped section, a throat section and a handle section, said metal frame having two curved portions extending in said throat section and converging to a point where said throat section connects to said handle section;
a metal throat piece bridging and fastened to said curved portions above said point and having a central strip and two reinforcing longitudinal side flanges formed along opposing edges of said central strip to form a substantially U-shaped cross-section, said metal throat piece further having two curved ends bending to abut adjacent portions of said curved portions where said metal throat piece is attached; and
a covering layer formed by injecting a plastic composite material around said metal frame and said metal throat piece to form a contiguous layer thereabout.

5,249,800
PROGRESSIVE GAMING CONTROL AND COMMUNICATION SYSTEM
Douglas N. Hilgendorf, Gurnee, and Phillip E. Pajak, Western Springs, both of Ill., assignors to Bally Gaming International, Inc., Las Vegas, Nev.
Continuation of Ser. No. 482,147, Feb. 20, 1990, abandoned. This application Nov. 12, 1992, Ser. No. 975,144
Int. Cl.[5] A63F *9/22;* **A63B** *71/00*
U.S. Cl. 273—138 A **36 Claims**



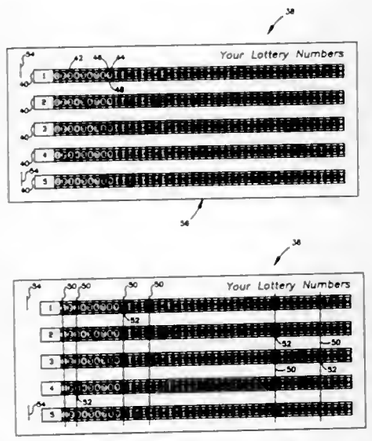
1. A progressive system comprising:
a plurality of gaming machines;
a progressive controller;
a communication unit operative connected for bi-directional communication with said progressive controller and directly connected for bi-directional communication with each of said gaming machines utilizing a plurality of communication lines such that each of said gaming machines is connected to said communication unit in parallel, and which includes control means having a computer and a data memory for storing an accumulation of coin-in information from more than one of said gaming machines; for transmitting said accumulation of coin-in information and jackpot hit data from said gaming machines to said progressive controller; for transmitting jackpot value data from said progressive controller to said gaming machines and for broadcasting simultaneously a plurality of jackpot display values to each of said gaming machines over each of said communication lines.

5,249,801
LOTTERY GAME PLAYER ASSISTANCE METHOD
Clay B. Jarvis, Colonial Heights, Va., assignor to C&J Concepts Incorporated, Colonial Heights, Va.
Filed Jun. 9, 1992, Ser. No. 895,637
Int. Cl.[5] A63F *3/06*
U.S. Cl. 273—148 R **5 Claims**

1. A method for assisting a player to identify winning lottery numbers accurately and quickly comprising the following steps:
selecting a multiple set of numbers, one set for each of a plurality of lottery games, with each set representing a different game;
obtaining a playing card having all of the lottery numbers printed thereon in numerical sequence in a single line to define either a horizontal row or a vertical column, said playing card having repetitive rows or columns defining an array of spaces each representing a separate number of said line of lottery numbers with each row or column representing a different game;
entering said selected numbers of each set onto said playing card by making a mark in the vicinity of said space of a number corresponding to said selected numbers in a single row or column for each set;

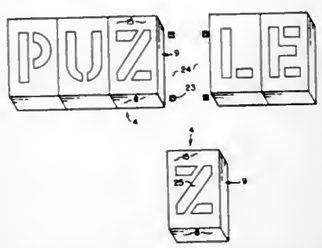
VOL 1155 ISS 1 OCT 5 1993 UMI

obtaining the set of winning lottery numbers;
drawing a line on said playing card for each winning lottery number which line generally connects all the corresponding spaces for winning lottery numbers in each column or row; and



determining the number of intersections between the drawn line and said spaces that were marked with said selected number.

5,249,802
BOXES FOR STORAGE FORMING A WALL PUZZLE
Anthony J. McCarthy, 36 Carver St., New Britain, Conn. 06053
Filed Feb. 23, 1990, Ser. No. 484,053
Int. Cl.[5] A63F *9/08;* **B65D** *85/00*
U.S. Cl. 273—157 R **7 Claims**



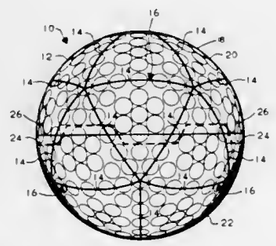
4. A wall puzzle comprising: a plurality of receptacles, each receptacle having a top portion and a cooperatively interfitting bottom portion in a spaced-apart relation; said top portion having a flat, inner surface, a flat, outer surface and four upright sides defining a downwardly opening recess; said bottom portion having a flat, inner surface, a flat, outer surface and four upright sides defining an upwardly opening recess whereby said sides of said bottom portion cooperatively fit within said sides of said top portion keeping said bottom portion and said top portion in a spaced-apart relation and defining a hollow space of predetermined height, length and width for storing pieces of an unassembled puzzle therein; said top portion further having on the outer surface, means for attaching said receptacle on a wall and said bottom portion further having a portion of a graphic representation or pictorial subject as a decorative display on the outer surface facing outward from said wall; each receptacle displaying a different portion of the graphic representation or pictorial subject on the decorative display surface of said bottom portion; whereby said plurality of receptacles are positioned on the wall in a spaced-apart relationship to complete said graphic representation or pictorial subject.

5,249,803
GOLF TRAINING CLUB
Bernard Giffin, 219 N. Collett St., Lima, Ohio 45805
Filed Jun. 24, 1992, Ser. No. 903,395
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—193 A **13 Claims**



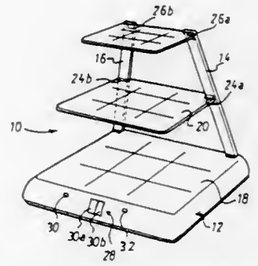
1. A golf training club comprising:
a) a shaft having a grip end and a head end;
b) a weight disposed at said head end;
c) a rigid link nonintegrally attaching said weight to said head end of said shaft; and
d) said rigid link includes only one link.

5,249,804
GOLF BALL DIMPLE PATTERN
Richard R. Sanchez, Peoria, Ariz., assignor to Karsten Manufacturing Corporation, Phoenix, Ariz.
Filed Sep. 11, 1992, Ser. No. 944,081
Int. Cl.[5] A63B *37/14*
U.S. Cl. 273—232 **14 Claims**



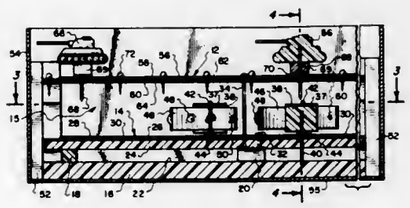
1. A golf ball comprising:
an outer spherical surface with dimples formed therein, said dimples being arranged in a geodesic pattern defined by a plurality of imaginary grid lines which divide said outer spherical surface into an icosahedron having twenty triangular regions;
each of said triangular regions being defined by three of said grid lines which form a spherical equilateral triangle having three sides of equal length and three medians of equal length; and
said dimples being arranged so that each of said sides radially intersects at least seven dimples and each of said medians radially intersects at least six dimples.

5,249,805
BOARD GAME APPARATUS
Ambroz U. Neil, 27 Holmville Road, Higher Bebington, Wirral, Merseyside L63 2PU, and Dwain A. Neil, 17 Sorrel Close, Huntington, Chester CH3 6SB, both of Great Britain
PCT No. PCT/GB89/00228, § 371 Date Oct. 31, 1990, § 102(e) Date Oct. 31, 1990, PCT Pub. No. WO89/07966, PCT Pub. Date Sep. 8, 1989
PCT Filed Mar. 6, 1989, Ser. No. 571,637
Claims priority, application United Kingdom, Mar. 4, 1988, 8805226
Int. Cl.[5] A63F *3/00, 9/24*
U.S. Cl. 273—237 **8 Claims**



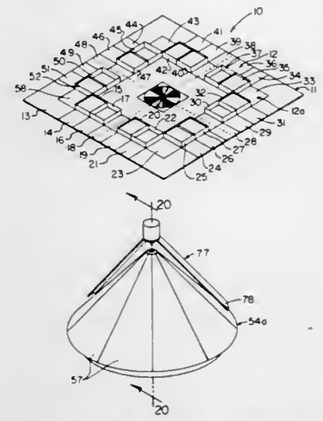
1. A board game apparatus comprising at least one playing surface divided into a plurality of sections, each section having a unique locational identity, and means for temporarily marking any of said sections, characterized by a means for generating a reference identification corresponding to any of said sections which identifies that section in a manner which is functionally distinct from the location of that section itself;
wherein the reference identification generating means is housed in a base unit of the apparatus which supports said at least one playing surface;
the reference identification generating means includes at least one display panel on said base unit which provides a visual identification of any section to be identified by said reference identification generating means;
said base carries at least one push button for initiating selection of a section by said reference identification generating means; and
comprising a plurality of playing surfaces disposed as tiered levels in a vertical array.

5,249,806
MINEFIELD GAME
Albert Nathanson, 152 Conifer Cir., Agoura Hills, Calif. 91301
Filed Sep. 8, 1992, Ser. No. 941,881
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—238 **7 Claims**



1. A game comprising:
a game board assembly formed of a lower gameboard and an upper gameboard, said upper game board being spaced from said lower game board forming an open playing area therebetween;
a first playing member being locatable at any one of a multitude of first playing piece locations on said lower game board within said open playing area, said first playing member including means for annunciating;
a second playing member being locatable at any one of a multitude of second playing piece locations on said upper game board, said upper game board being opaque, penetration means connected to said second playing member, said penetration means to penetrate said upper game board and extend within said open playing area, said penetration means to contact said first playing member upon said second playing member being in vertical alignment with said first playing member, said contact to cause activation of said means for annunciating; and
said means for annunciating comprising a small explosive charge.

5,249,807
PERCEPTION GAME APPARATUS
Mark S. Peterson, 1700 N. Tully Rd., #A-116, Turlock, Calif. 95380
Filed Nov. 24, 1992, Ser. No. 981,107
Int. Cl.[5] A63F *3/00, 5/04*
U.S. Cl. 273—242 **1 Claim**



1. A perception game apparatus, comprising,
a game board, the game board having an outer periphery, with an outer path of outer path spaces directed continuously about the game board adjacent the outer periphery, and
an inner path of spaces positioned coextensively with the outer path of spaces adjacent to the outer path of spaces, and
the outer spaces having a start space, wherein each of the outer path of spaces to exclude the start space are blank, with each of the outer path of spaces positioned in adjacency relative to one of the inner path of spaces, and
the inner path of spaces to include a plurality of spin spaces in cooperation with a spinner assembly, and
the game board having a central board space, with the spinner assembly mounted on the central board space, the spinner assembly including a conical shaped support having a first apex forming the top of said support and a larger circular shaped base forming the bottom of said support with the first apex having a first apex recess of a conical configuration, a conical shaped spinner board having a second apex with the second apex having a second apex recess of a conical configuration, said conical spinner

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board including an array of pie shaped segment indicia of various digital enumerations and of a plurality of colors mounted on the outer surface of said conical shaped spinner board, and a V-shaped pointer member including cylindrical handle mounted at the apex of the V-shaped pointer member, the V-shaped pointer member being shaped to correspond to said conical shaped spinner board and said pointer member including a projection mounted on its apex and shaped to be received within the second recess wherein the V-shaped pointer member lies parallel to the surface of the conical shaped spinner board, the conical shaped spinner board being shaped to correspond to the surface of said conical support and said conical shaped spinner board having a projection from said second apex recess received within the first recess wherein the surface of said conical shaped spinner board concentrically covers and lies parallel to the surface of said conical shaped support permitting free rotation simultaneously of the conical shaped spinner board relative to conical shaped base support and free rotation of the V-shaped pointer member relative to the conical shaped spinner board, wherein a player of a plurality of players preselects selectively a predetermined number, an even or odd number to be directed by the spinner assembly, and a predetermined coloration,

the inner path includes a plurality of containers, with each of the containers including a single deck of cards of a plurality of decks of cards, wherein landing upon an outer space of said outer path of spaces in adjacency to one of said containers directs a player to predict a card selected from said container, and

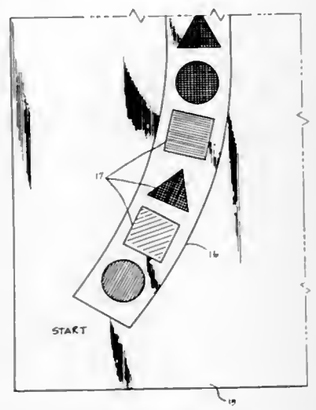
said decks of cards include a first deck of coloration cards, a deck of shape cards, a deck of temperature cards, a deck of pet cards, a deck of pie cards, a deck of number cards, a deck of animal cards, and a deck eye cards.

5,249,808

BOARD GAME APPARATUS

Ruth L. Battè, Pataskala, Ohio, assignor to James B. Tarpoff, Pataskala, Ohio

Filed Nov. 7, 1991, Ser. No. 790,191
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—249 **17 Claims**



1. A board game apparatus comprising

a game board having a playing surface with an elongated pathway formed on said surface and over which playing pieces are advanced from a starting point to an end point in the course of playing of the game, said pathway including a plurality of playing spaces distributed in serial relationship between said starting and end points over which playing pieces are incrementally advanced, each of said playing spaces defined by at least two discrete indicia that are each selected from a respective one of at least two indicia series, each of said indicia series including a plurality of diverse indicia with the indicia in each series being distinguishable from all indicia in each of the other series,

a playing piece for each player participating in a game with each piece identifiable with a respective player, each playing piece movable along said pathway to a particular playing space for recording the player's progress, and

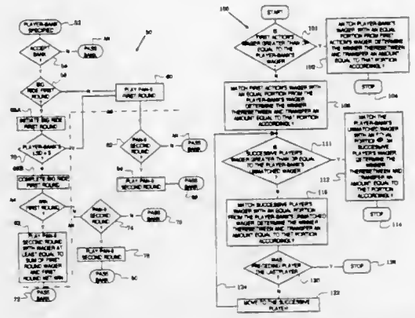
indicia selection means operable by a player for effecting random selection of a playing space to which the player is to advance his playing piece, said indicia selection means operable to identify the selected playing space by an indicia from each of said indicia series and including a separate and independently operable indicia selector device for each indicia series to identify the selected playing space by an indicia from each of said indicia series.

5,249,809

METHOD OF PLAYING A WAGERING GAME

Fred Wolf, 10418 Lubao Ave., Chatsworth, Calif. 91311

Continuation-in-part of Ser. No. 988,724, Dec. 10, 1992, Pat. No. 5,226,661. This application Feb. 23, 1993, Ser. No. 21,469
Int. Cl.[5] A63F *1/00*
U.S. Cl. 273—274 **20 Claims**



15. A method of apportioning wagers between a plurality of game players arranged in successive order, the method comprising the steps of:

specifying a first one of said players;

specifying a second one of said players;

providing, from each of said game players, a wager;

initiating a balance equal to the first player's wager;

establishing a bet equal to the lesser of said balance and the second player's wager or equal to either of them if they are identical;

determining a game winner or a tie between said first and second players;

transferring an amount equal to said bet from said second player to said first player if said first player is said winner and from said first player to said second player if said second player is said winner and transferring nothing if said tie is determined;

modifying said balance by adding said bet to it if said first player is said winner and subtracting said bet from it if said second player is said winner; and

repeating the combination of said establishing, determining, transferring and modifying steps with a different one of said players, excluding said first player, replacing, in successive order, said second player in each repetition,

until the first occurs of (1) said transferring step has been completed between said first player and all other players and (2) said balance equals zero;

wherein said game winner between said first player and another of said players is determined by the steps of;

a) setting a numerical goal;

b) dealing each of said first player and said another player a plurality of symbols, each of said symbols representing a numerical value;

c) adding the numerical value of the symbols of each player to find, for that player, the least significant digit of the sum; and

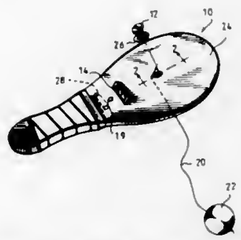
d) deeming the game winner to be the player whose least significant digit is closest to said goal without exceeding it and deeming a tie if the players have the same least significant digit.

5,249,810

COUNTING PADDLE TOY

Henry Cazalet, 14 Elmhurst Dr., Old Westbury, N.Y. 11568

Filed Nov. 5, 1992, Ser. No. 972,307
Int. Cl.[5] A63B *67/20*
U.S. Cl. 273—330 **11 Claims**



1. An electronic counting paddle toy, comprising:

a) a rigid paddle comprising a first side and a second side which is identical to and separate from said first side and contained in its hollow middle is a plurality of sound conducting posts;

b) an elastic removably mounted tether;

c) a resilient ball;

d) an electronic counter that works off the sound created when the ball hits the paddle;

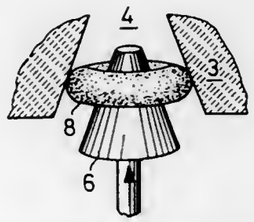
e) a display, wherein said tether elastically connects said paddle and said ball and wherein each impact of said ball with said paddle sounds and is counted and wherein said count is shown on said display, and means for detecting the impact of said ball with said paddle thereby causing said counter to index upward.

5,249,811

REFRACTORY JOINT PACKING FOR AN ANNULAR GAP IN A METALLURGICAL VESSEL

Raimund Brückner, Engenhahn-Niedernhausen; Hans Rothfuss, Taunusstein, and Manfred Berndt, Krefeld, all of Fed. Rep. of Germany, assignors to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

Filed Aug. 13, 1991, Ser. No. 744,378
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1990, 4025956
Int. Cl.[5] F16J *15/10, 15/14;* **C21C** *5/48*
U.S. Cl. 277—1 **13 Claims**



11. A method of joining a shaped element to an opening in a refractory lining of a metallurgical vessel, the shaped element and the refractory lining about the opening forming an annular space therebetween, said method comprising:

providing a joint packing to be packed into the annular space, the joint packing comprising an annular, deformable, prefabricated packing adapted to the annular space, and the joint packing including a sleeve adapted to the annular space and a packing material packed in said sleeve;

fixing the joint packing in position with one of the opening of the refractory lining and the shaped element;

assembling the shaped element with the opening of the refractory lining;

forming a separate layer between the packing material and the opening of the refractor lining during use of the shaped element in the metallurgical vessel; and

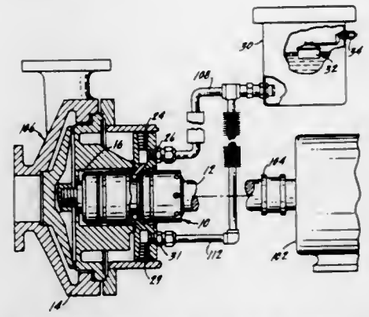
removing the packing material from the refractory lining after use of the shaped element.

5,249,812

BARRIER SEAL SYSTEMS

Douglas J. Volden, Park Ridge; Richard Hosanna, Morton Grove, and James P. Netzel, Skokie, all of Ill., assignors to John Crane Inc., Morton Grove, Ill.

Filed Mar. 12, 1990, Ser. No. 491,980
Int. Cl.[5] F16J *15/32*
U.S. Cl. 277—15 **4 Claims**



1. A seal system for sealing the annular space between a housing and a rotating shaft extending through a bore in the housing, the housing containing a high pressure fluid, the seal system comprising:

a gland plate connectable to the housing;

an outboard mechanical end face seal having a first portion connected to the gland plate and a second portion connectable for rotation with the shaft;

an inboard mechanical end face seal at least a portion of which is mounted in the annular space, the seal having a mating ring and a primary ring, one of which is mounted for rotation with the shaft and the other of which is fixedly connected to the gland plate, the mating and primary rings having opposed, radial seal faces on one side thereof and back faces on the other side thereof;

a retainer at least partially enclosing the primary ring to fix its radial position while allowing axial movement of the primary ring, and a secondary seal disposed between the retainer and the primary ring;

the seal and back faces of the primary ring, the retainer and the secondary seal being arranged such that the primary ring is double balanced, the inboard seal being positioned axially of the outboard seal to define a buffer chamber;

means carried by said inboard seal for pumping a fluid from said buffer chamber towards the inboard high pressure side of the inboard seal in opposition to fluid leakage from said high pressure side; and

a buffer fluid reservoir located externally of said housing at

a greater elevation than the buffer chamber and in fluid communication with the buffer chamber so to supply buffer fluid thereto under gravity feed.

5,249,813

SEALING RING STRUCTURE

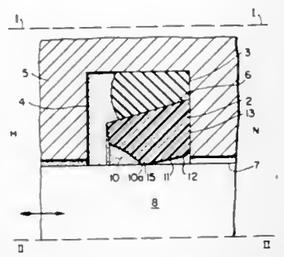
Paolo Botto, Lainate, Italy, assignor to Dixon Resine S.p.A., Milan, Italy

Filed Feb. 14, 1992, Ser. No. 835,512

Claims priority, application European Pat. Off., Jul. 5, 1991, 91830301.7

Int. Cl.[5] F16J *15/16*

U.S. Cl. 277—165 **3 Claims**



1. A sealing ring structure for effecting a fluid seal between a stationary member having an annular groove and a cylindrical member having a longitudinal axis movable relative to said groove, a sealing ring disposed in said groove, an outer annular stressing member disposed in said groove radially outwardly of said sealing ring and biasing said sealing ring into engagement with said cylindrical member, said sealing ring having an end surface facing a low pressure side of said groove and an outer surface in contact with said stressing member, said end surface and said outer surface intersecting to form an edge in circular line contact with said low pressure side of said groove with said end surface being inclined toward a high pressure side of said groove with respect to a line perpendicular to the axis of the movable member and said outer surface being inclined with respect to a line parallel to the axis of the movable member whereby upon application of pressure to a high pressure side of said sealing ring, the sealing ring will pivot about said edge to bring said end surface into full engagement with said low pressure side of said groove; and wherein said sealing ring has an inner surface having first and second portions angled in opposite directions relative to a line parallel to said axis of said movable member and which meet at an edge disposed in substantially line contact with said cylindrical movable member with said line contact being the only contact of said sealing ring with said cylindrical movable member upon application of pressure to said high pressure side of said sealing ring.

5,249,814

MULTI-PLY SEALING RINGS AND METHODS FOR MANUFACTURING SAME

Horace P. Halling, Laurel, Md., assignor to EG&G Pressure Science, Inc., Beltsville, Md.

Continuation of Ser. No. 830,334, Jan. 31, 1992, abandoned. This application Jan. 14, 1993, Ser. No. 4,660

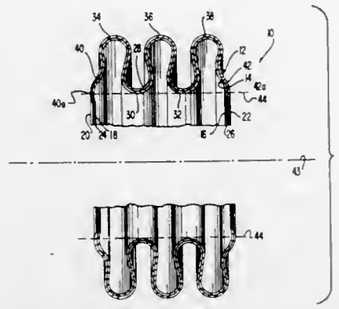
Int. Cl.[5] F16J *15/00;* **B23K** *1/20*

U.S. Cl. 277—206 R **15 Claims**

1. A sealing ring comprising:

first and second annular members nested together and being in intimate surface contact at an interface therebetween, each annular member having first and second opposite free ends, the first free ends of the first and second annular members forming a first annular seam, the second free ends of the first and second annular members forming a second annular seam; and

first and second continuous annular weld lines formed respectively on the first and second annular seams, the first and second annular members being formed to include a sealing profile in which the first and second continuous



annular weld lines are located at opposite axial ends of the sealing ring, and are disposed respectively in one of a plurality of radially oriented legs.

5,249,815

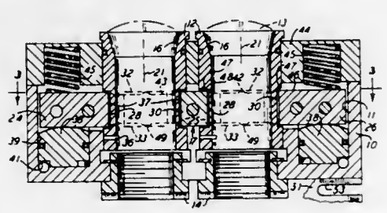
COLLET CLAMPING MECHANISM

Richard F. Beere, Waterford, Wis., assignor to Beere Tool Company, Inc., Racine, Wis.

Filed Apr. 13, 1992, Ser. No. 867,487

Int. Cl.[5] B23B *31/30*

U.S. Cl. 279—4.04 **16 Claims**



1. In a collet clamping mechanism for clamping a collet, a collet of the type having a tapered clamp surface, a sleeve having a longitudinal axis and an elongated opening along said axis for receiving said collet and having a tapered surface positionable into contact with said collet clamp surface, said sleeve having shoulders with surfaces respectively facing in each respective direction parallel to said longitudinal axis and with said shoulders being disposed in pairs facing each other and located in respective positions around said sleeve, a base member having an opening therein, said sleeve with said collet disposed within said base member opening and leaving a space between said sleeve and said base member to define an actuator space, and said collet being connected to said base member to restrict movement of said collet relative to said base member and along said longitudinal axis, the improvement comprising an actuator disposed within said base member actuator space and being engageable with said pairs of shoulders and being smaller than said actuator space for actuating movement through said actuator space in both directions of said longitudinal axis, said actuator being constructed of four parts, and a first two of said four parts two spaced-apart walls and the other two of said four parts being planar shaped and connected to the first said two parts and spanning said spaced-apart walls for presenting a complete enclosure for said sleeve, said actuator being arranged to have different ones of said four parts engageable with different ones of said shoulders for forcefully and uniformly pressing on said shoulders of said sleeve, and force-applying means operatively connected with said actuator for the clamping movement of said actuator.

5,249,816

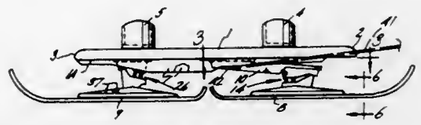
SKI BOARD

Michael J. Southworth, Mesa, Ariz., assignor to Power Sport Research Corp., Mesa, Ariz.

Filed Nov. 20, 1992, Ser. No. 979,768

Int. Cl.[5] A63C *17/18*

U.S. Cl. 280—14.2 **6 Claims**



1. A ski board having,

an elongate platform including a pair of longitudinally spaced foot holders for reception of the user's feet,

a steerable front ski and a steerable rear ski offset below said platform,

a cantilever attached to the underside of said platform and disposed in a fore and aft inclined relationship to the platform, said cantilever having an elongage linear configuration, said cantilever including a base portion at a rearward end thereof, said base portion being attached to the underside of the platform at a center portion thereof midway between said foot holders,

a first coupling assembly carried by the forward end of said cantilever including a front bracket attached to the front ski, a universal connection between said bracket and the forward end of said cantilever, first resilient means offset from said connection and urging said bracket and the front ski toward a predetermined relationship with said cantilever about said universal connection, lateral displacement of said first resilient means imparting movement to said front ski,

a second coupling assembly carried at a rearward location on the underside of said platform and including a rear bracket attached to the rear ski, a rear universal connection, second resilient means offset from said rear connection and urging said bracket and said rear ski toward a predetermined relationship with the platform, lateral displacement of said second resilient means imparting movement to said rear ski, and

a bridle attached to the cantilever proximate said base portion for receiving a tow rope.

5,249,817

MOTOR VEHICLE FRONT STEERABLE AXIS WITH TORSION BAR STABILIZER

Hubert Brühl, Waldstetten, Fed. Rep. of Germany, assignor to Mercedes-Benz AG, Fed. Rep. of Germany

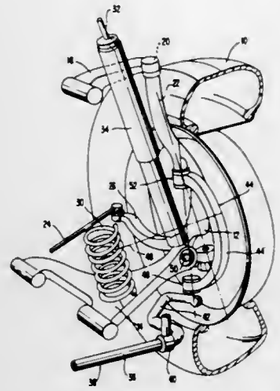
Continuation of Ser. No. 696,707, May 7, 1991, abandoned. This application Oct. 1, 1992, Ser. No. 955,240

Claims priority, application Fed. Rep. of Germany, May 29, 1990, 4017210

Int. Cl.[5] B62D *1/00*

U.S. Cl. 280—94 **3 Claims**

1. A steerable motor-vehicle front axle, comprising a wheel carrier guided by upper and lower transverse links, a torsion-bar stabilizer with a torsion bar operatively arranged at a vehicle superstructure side and having an offset piece at each end, a connecting arm operatively connected with each wheel of the front axle between the stabilizer and the wheel carrier and having a lower end to which is secured, via means for providing an articulated torsional rubber bearing connection, an associated one of the offset pieces such that a steering restoring torque changes proportionally to a change in steering angle, and an upper end of the connecting arm operatively connected with the wheel carrier and with means for providing an articulated torsional rubber bearing connection in the steering axis of the associated wheel on the wheel carrier, wherein the connecting arm is arranged to be swivelled about the steering axis via the wheel carrier, in the same direction as the wheel carrier, counter to a flexible restoring support situated in the connection of the torsion-bar stabilizer to the connecting arm.



5,249,818

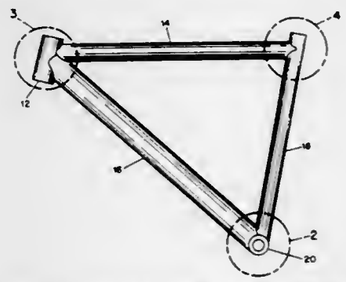
METHOD OF MAKING FRAMES FROM TUBULAR MEMBERS AND FRAMES MADE BY THE METHOD

Tod Patterson, Westport, Conn., assignor to Cannondale Corporation, Georgetown, Conn.

Filed Jul. 26, 1991, Ser. No. 736,092

Int. Cl.[5] B62K *19/28, 19/22*

U.S. Cl. 280—281.1 **19 Claims**



1. A method of making a frame that includes first and second tubular members joined at a predetermined angle to each other solely by a bonded joint between a surface along a portion of a wall of the first member and at least a portion of an edge of the second member characterized by the steps of forming a slot in the wall of the first member at a position in register with a part of the edge of the second member at the joint so as to establish a predetermined position of the second member axially and rotationally relative to the first member, generating a cutting beam, providing relative movement between the cutting beam and the second member such that the cutting beam traverses a predetermined path over the wall of the second member such as to cut the edge to a shape such that it conforms to and abuts the wall portion of the first member and thereby establishes and maintains the predetermined angle between the members and also to form an integral tab along a part of the edge of the second member shaped and located to be received in close-fitting relation in the slot in the first member, fitting the second member to the first member with the tab of the second member received in the slot of the first member and the edge of the second member seated firmly against the wall

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surface of the first member, and forming a bond between the first and second members at the joint extending substantially coextensively with the abutting edge portion of the second member and the wall surface of the first member.

5,249,819

SKI HAVING A HOLLOW BODY OF UNIFORM WIDTH

Bernhard Mayr, Hard, Austria, assignor to Head Sportgerate Gesellschaft m.b.H. & Co., OHG, Kennelbach, Austria

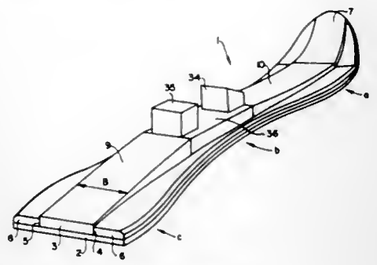
PCT No. PCT/AT89/00086, § 371 Date Jul. 19, 1990, § 102(e) Date Jul. 19, 1990, PCT Pub. No. WO90/03205, PCT Pub. Date Apr. 5, 1990

Continuation of Ser. No. 474,795, Jul. 19, 1990, abandoned. This PCT application Sep. 21, 1989, Ser. No. 803,693

Claims priority, application Austria, Sep. 23, 1988, A 2362/88

Int. Cl.[5] A63C *5/04, 5/14, 5/07*

U.S. Cl. 280—602 **7 Claims**



1. A ski having a length comprising:

an elongated, substantially hollow ski body, said body having a length equivalent to said ski length and a constant width over said body length, said body having a top, bottom and lateral sides defining a rectangular cross section; and

a running surface secured directly to the bottom of the ski body along said body length, said running surface having a width varying over said body length, said running surface width, at a minimum, being no less than said body width, wherein said body top is adapted to receive ski binding parts.

5,249,820

FRONT SOLE HOLDING DEVICE

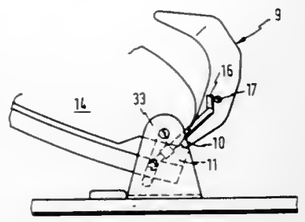
Simon Burger, and Norbert Eugler, both of Karlsfeld, Fed. Rep. of Germany, assignors to silvretta-sherpas Sportartikel GmbH & Co. KG, Rothschwaige, Fed. Rep. of Germany

Filed Mar. 8, 1991, Ser. No. 666,239

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1990, 4007667

Int. Cl.[5] A63C *9/00*

U.S. Cl. 280—614 **6 Claims**



1. Front sole holding device which can be used optionally for cross-country skiing and downhill skiing and can be used in combination with a ski boot which comprises a sole overlapping the ski boot in the front toe area, wherein the ski boot is connected only with the front sole holding device for cross-country skiing, a support bearing holding the ski boot in said front sole holding device at a distance from the surface of the ski, said front sole holding device swivelable around an axis extending transversely relative to the longitudinal direction of the ski and in which the ski boot is being detachably pressed against the front sole holding device by a rear sole holding device for downhill skiing, wherein the support bearing absorbs upwardly directed forces at the overlapping sole, the improvement comprising that said support bearing includes a portion thereof arranged to support the ski boot from the underneath the ski boot for cross-country skiing, said ski boot being placeable on the support bearing from above the support bearing; said support bearing including a clamping device and a supporting member; said supporting member connected with the ski having an element about which said clamping device is swivelable; said clamping device being arranged to act from above an edge of the overlapping sole of the ski boot for clamping the ski boot on the support bearing; and

wherein the clamping device is constructed as a two-armed tightener lever which is supported so as to be swivelable by means of tension bars, said tension bars supporting said tightening lever on either side so as to be fixed with respect to the ski, said clamping device comprising a pressure piece at one free end, which pressure piece presses on the upper sole edge in the cross-country skiing position, wherein the point of support of the pressure piece on the sole is located outside the plane of the tension bars at the side remote of the ski boot; and wherein the tightener lever carries a sole hold-down device at its other free end located opposite the pressure piece, which sole hold-down device is designed to accommodate boot sole thickeners and cooperates with the sole edge in the downhill skiing position, and wherein the tightener lever can be locked in the downhill skiing position by means of a locking device so as not to be able to swivel upward.

5,249,821

TRAILER CAPABLE OF BEING DISMANTLED TO READILY STORABLE CONDITION

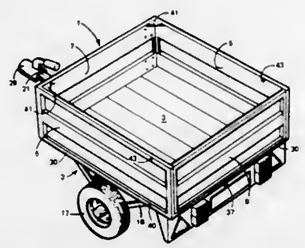
David T. Ricketts, and David S. Webb, Clwyd, botb of Wales, assignors to John Raymond Evans, United Kingdom

Filed Jan. 23, 1992, Ser. No. 824,301

Claims priority, application United Kingdom, Jan. 26, 1991, 9101740

Int. Cl.[5] B62D *63/06*

U.S. Cl. 280—638 **7 Claims**



1. A trailer comprising an open top box member and a support assembly, the support assembly comprising a rectangular support member with an underside and a generally planar upper surface, at least two wheels being rotatably mounted on the underside of the rectangular support member, the open top box member being attachable to the support member to place the trailer in condition for use, the open top box member being detachable from the support member, and the detached support assembly being locatable within the open top box member, the support member having an area and support assembly, having a height, the area and the height being such that the support member at least substantially closes the open top of the box member when the support assembly is located in the box member, to thus form a box-like structure which can be stored resting on any desired face.

5,249,822

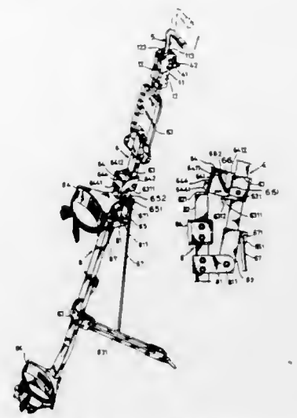
TELESCOPIC AND FOLDING FRAME ASSEMBLY FOR A GOLF CART

Ching-Chang Wu, No. 35-1, Jib Hsin Street, Tu Cheng Hsiang, Taipei Hsien, Taiwan

Filed Dec. 15, 1992, Ser. No. 991,210

Int. Cl.[5] B62B *1/04*

U.S. Cl. 280—646 **1 Claim**



1. A telescopic and folding frame assembly for a golf cart comprising:

an elongated frame bar having a front end connected to a telescopic drag bar mounting structure, a middle part coupled with a scoreboard, and a rear end coupled with a connecting plate, said telescopic drag bar mounting structure comprising:

a drag bar having a handhold on a top end for holding by hand,

a mounting device for securing said drag bar to said elongated frame bar, including two opposite mounting shells connected together by means of a plurality of fastening elements, said two opposite mounting shells each having a unitary pin extending from an inner wall surface at a lower position thereof, a circular guide post extending inwardly from the inner wall surface at a middle position thereof, a notch on a topmost edge, a transversely curved and raised strip on the inner wall surface near the top most edge, a rectangular hole transversely piercing the its inner wall surface, and a plurality of radial and convex strips on the inner wall surface,

a swinging block made of resilient plastic material through a shape molding process and having a key hole extending vertically through the length, a plurality of concave strips radially arranged on a portion of opposing sides of said swinging block, a groove extending through said swinging block and intersecting said strips, a guide post hole horizontally passing through a lower position of said swinging block beneath said concave strips, and a pivot hole horizontally passing through said swinging block above said guide post hole and adjacent said strips,

a positioning member secured to a bottom end of said drag bar by means of rivet joint and having a conical bottom end inserted in a top of said frame bar and a rectangular flange for preventing said drag bag from moving away from said mounting device, and

an adjusting device including a screw rod inserted through said rectangular hole of said two opposite mounting shells and said pivot hole of said swinging block, and connected with a swivel knob, said adjusting device permitting said mounting device to squeeze said swinging block for retaining said drag bar in position;

a frame member having two spaced golf bag cradles for carrying a golf bag with clubs, a bracket to hold two ground supporting wheels by two side beams, a hinge means spaced from a front connecting rod thereof pivotably connected to the connecting plate on said elongated frame bar, and a pair of links pivotably interconnecting the side beams at mid portions thereof and the connecting plate on said elongated frame bar; and wherein said connecting plate of said elongated frame bar is pivotably connected between two side walls on said hinge means, having two bottom projections pivotably connected to either link; said elongated frame bar has a stop plate connected thereto to a stop a locking plate from pivoting forward for permitting said locking plate to be retained at a locked position; said locking plate is pivotably mounted on said elongated frame bar and retained by a spring means, having a back opening on a back wall thereof and a guide slope on a top wall thereof for guiding said front connecting rod of said frame member into or out of a lock hole defined inside said locking plate for permitting said front connecting rod of said frame member to be retained by said locking plate in said locked position or released from said locking plate, the back opening on said locking plate allowing said locking plate to be turned backwards from said locked position to an unlocked position for permitting said front connecting rod of said frame member to be inserted into said lock hole of said locking plate or released therefrom; the folding frame assembly is folded up into collapsed, non-operative condition by pivoting said locking plate backwards on said elongated frame bar from said front connecting rod of said frame member for permitting said front connecting rod of said frame member to be disconnected from said locking plate, and then pivoting said connecting plate of said elongated frame bar backwards on said hinge means through 180° angle for permitting said links and said side beams and said elongated frame bar to be respectively collapsed and closely attached to the frame member; the folding frame assembly is extended out from a collapsed, non-operative condition into an operative condition and locked in place by pivoting said elongated frame bar on said hinge means in the reverse direction and permitting said front connecting rod of said frame member to be guided by said guide slope into said lock hole of said locking plate.

5,249,823

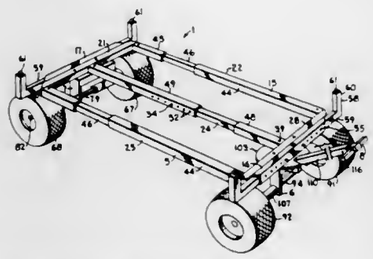
SIZE VARIABLE CART

Stephen T. McCoy, Missouri City, and Jack G. Clark, Jr., Houston, both of Tex., assignors to E.B.S. Equipment Services, Inc., Houston, Tex.

Filed Oct. 9, 1992, Ser. No. 958,740

Int. Cl.[5] B62B *3/02*

U.S. Cl. 280—656 **18 Claims**



1. A size variable cart comprising:

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(a) a bed for carrying a load, said bed comprising a front lateral member and a rear lateral member; and a pair of longitudinally extending members connected at opposite ends thereof to respective ones of said lateral members; said front and rear lateral members and said longitudinally extending members cooperating to provide a generally planar surface for carrying a load; each of said longitudinally extending members including means for telescoping the ends of said member relative to each other to adjust the length of the respective member and thus adjust the length of said generally planar surface for adapting said cart to loads of various lengths;

(b) wheel means for supporting and allowing movement of said bed, said wheel means being attached to said bed and including two pairs of wheels, with each of said wheels positioned below said generally planar surface; and

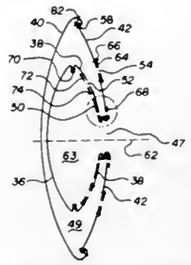
(c) a pair of lateral side arms connected to one of said lateral members and extending outwardly on opposite sides of said bed; at least one of said side arms including adjustment means for allowing selective adjustment thereof in length relative to said bed to adjust the width of said generally planar surface for adapting said cart to loads of various widths, each of said pair of wheels being connected to a respective one of said front and rear lateral members with a predetermined lateral spacing between the wheels in each pair, said lateral spacing remaining constant as said width of said generally planar surface is varied, whereby said bed is adjustable in length and width proportions while providing a generally planar load carrying surface in any proportion.

5,249,824

AIR BAG STRUCTURE AND METHOD OF FORMING

Timothy A. Swann, and Bruce R. Hill, both of Mesa, Ariz., assignors to TRW Inc., Lyndhurst, Ohio

Filed Nov. 19, 1991, Ser. No. 794,998
Int. Cl.[5] B60R *21/24*
U.S. Cl. 280—729 **21 Claims**



1. A vehicle air bag structure comprising:

outer and inner bags, each formed of flexible material;

said outer bag having an internal fluid cavity and being expansible to a predetermined three dimensional configuration when fluid is directed into said sternal fluid cavity, a predetermined portion of said outer bag defining an occupant impact area when said outer bag is expanded to its predetermined three dimensional configuration;

said inner bag being located in the internal cavity of said outer bag and being expansible to a predetermined configuration within said internal cavity when fluid is directed into said inner bag;

said inner bag and said outer bag having respective mouth portions which are connected with each other and aid air bag structure having a mouth formed at least partially by said respective mouth portions, said mouth defining (i) a fluid inlet opening which enables fluid from an external source to be directed into said inner bag and (ii) fastening structure which enables said air bag structure to be fastened to a vehicle air bag assembly, said air bag structure having a central axis which extends through said fluid inlet opening and which is surrounded by said mouth; wherein said occupant impact area is located on a side of the outer bag opposite said mouth;

said inner bag having venting structure for directing fluid from inside said inner bag into said internal fluid cavity of said outer bag, said venting structure directing fluid out of said inner bag only in directions which are outward from said central axis and away from the occupant impact area;

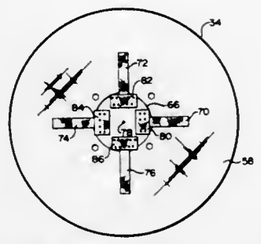
said inner bag being substantially fluid impervious except for said venting structure.

5,249,825

AIR BAG WITH RELEASABLE TETHERS

John E. Gordon, Vandalia, and Robert E. Huffman, Tipp City, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 13, 1992, Ser. No. 911,654
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—743 **12 Claims**



1. In a vehicle air bag assembly mounted on a vehicle structure and having an inflator for inflating an air bag from a folded condition, adjacent said structure, to a fully deployed condition, located rearwardly of the structure, an air bag comprising

a fabric body,

a gas inlet in the body surrounding the inflator for receiving pressure gas therefrom to inflate the air bag,

a crown on the body located opposite the gas inlet and having a center,

a plurality of tethers each having an outer end secured to the crown and an inner end,

friction clamping engagement means for releasably attaching the inner ends of the tethers to vehicle structure adjacent the gas inlet for release therefrom when pressure gas has exerted a predetermined release force on the crown during inflation, thus delaying deployment of a portion of the air bag until after deployment of the remainder of the air bag, while enabling eventual full deployment of the entire air bag.

5,249,826

INERTIAL MASS SAFETY SYSTEM ACTIVATION FOR PERSONAL VEHICLES

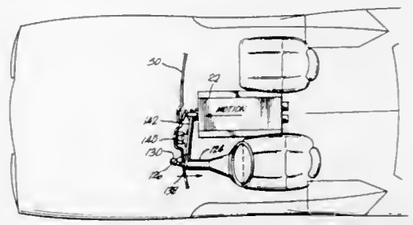
Lon Bell, Pasadena, Calif., assignor to Amerigon, Inc., Burbank, Calif.

Filed Oct. 3, 1991, Ser. No. 771,469
Int. Cl.[5] B62D *1/11*
U.S. Cl. 280—777 **8 Claims**

1. A safety system activation and energy supply device for personal vehicles, the device responsive to crash accelerations imparted on the vehicle and comprising:

a means for mounting one or more vehicle system components having high mass as a common movable structure, said mounting means movable, under crash acceleration, in at least one axis from a constrained first position through a range of motion to a displaced second position, the mounting means acquiring kinetic energy through said acceleration;

means for constraining the mounting means in the first position; and



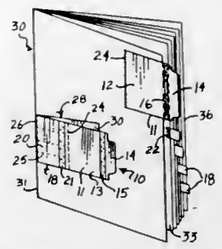
means responsive to the motion of the mounting means for converting motion and kinetic energy of the mounting means to secondary motion in the safety system.

5,249,827

PUBLICATION REFERENCE-AID SYSTEM APPARATUS THEREFOR

Craig W. Olson, P.O. Box 302, Fontana on Geneva Lake, Wis. 53125

Continuation-in-part of Ser. No. 628,425, Dec. 14, 1990, abandoned, which is a continuation-in-part of Ser. No. 504,912, Mar. 30, 1990, Pat. No. 5,056,824, which is a continuation-in-part of Ser. No. 388,319, Jul. 31, 1989, Pat. No. 5,011,189, which is a continuation-in-part of Ser. No. 147,366, Jan. 25, 1988, abandoned, which is a continuation-in-part of Ser. No. 940,422, Dec. 11, 1986, abandoned. This application Apr. 13, 1992, Ser. No. 874,555
Iot. Cl.[5] B42D *15/00*
U.S. Cl. 283—36 **20 Claims**



1. A document/publication cover substrate means having at least one separably removable reference-aid marker apparatus, said document/publication cover substrate means comprising:

at least one multi-faced substrate means comprising at least one multi-face substrate means having at least one interior face surface adapted to cover and/or envelope substrate material in union means therewith;

said multi-face substrate means comprising at least one marker member means and at least one removably protective multi-face substrate means releasable therefrom;

each of said at least one marker member means on at least one face thereof comprising at least one attaching means area with at least one adhesive layer means attached/applied thereto and covered by at least one removably protective multi-face substrate means;

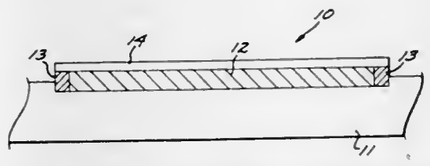
said at least one face being adheringly releasably engaged to said at least one removably protective multi-face substrate means and further being generally parallel thereto, said at least one adhesive layer means further comprising at least one exposing surface layer means and said at least one removably protective multi-face substrate means being in generally face-to-face temporary contact relationship to each other permitting release and at least one mounting of said at least one marker member means to a border margin and/or surface of at least one publication vessel means.

5,249,828

PRINTED PRODUCT AND METHOD OF MANUFACTURE

Herbert R. Axelrod, One T.F.H. Plz., Neptune, N.J. 07753

Filed Sep. 18, 1991, Ser. No. 762,394
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—61 **1 Claim**



1. A s anew article of manufacture, a printed product comprising:

(a) a substrate including

a first photographic print area and

a second area having a preselected surface finish

(b) a border printed on said substrate between said first and second areas;

(c) a photographic print completely occupying said first area; and

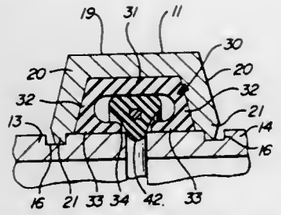
(d) a transparent film, having a surface finish contrasting with said preselected surface finish of said substrate, said film overlying only said print and a registry with said border.

5,249,829

PIPE COUPLING GASKET INSERT

Thomas R. Hendrickson, Orion, Mich., assignor to Quikcoup, Inc., Houghton, Mich.

Filed Jul. 6, 1992, Ser. No. 908,339
Int. Cl.[5] F16L *17/035*
U.S. Cl. 285—112 **14 Claims**



1. In a pipe coupling for coupling together the adjacent ends of a pair of axially aligned pipes whose adjacent ends are slightly spaced apart to form a gap therebetween, with the pipe coupling formed of a substantially circular casing which is C-shaped in cross-section to provide a continuous, annular radially inwardly opening channel within the casing, with the channel defined by an annular base and a pair of spaced apart, annular, radially inwardly directed legs whose free annular inner end portions encircle and enclose the adjacent end portions of the aligned pipes; and with an annular, resilient gasket positioned within the casing channel and said gasket being generally channel shaped in cross-section to form an annular base portion arranged adjacent the casing base and inwardly directed leg portions adjacent their respective casing legs and terminating in free edges which are spaced apart, for encircling and sealing against adjacent end portions of the aligned pipes

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for sealing and coupling the pipes together, said gasket base and legs defining a channel, the improvement comprising:

a rubber-like, resilient, ring-shaped insert loosely fitted within the gasket channel such that at least one gap is formed between said insert and gasket when the joint is in its clamped, functional position, and said insert enabling manual insertion and removal of the insert from the gasket channel for selective use with the gasket;

with the insert having an outer, peripheral base surface arranged against the gasket base, and having an inner, narrowed, continuous annular rim portion extending radially inwardly between the free ends of the gasket legs, depression means on said insert ring between said insert base and rim, said depression means enabling said insert to be compressed by pressurized fluid in said at least one gap within said gasket channel, in a use position; and

said rim portion fitting across the gap between the pipe ends and encircling and engaging both of the adjacent pipe ends for resiliently sealing them together.

5,249,830

DEVICE FOR LOCKING TWO COAXIAL TUBES

Lionel Calmettes, Romorantin-Lanthenay, and Pascal Detable, Villedieu, both of, assignors to Etablissements Caillau, Issy-Les-Moulineaux, France

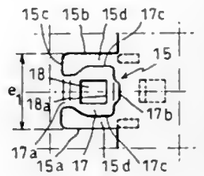
PCT No. PCT/FR91/00066, § 371 Date Sep. 26, 1991, § 102(e) Date Jun. 26, 1991, PCT Pub. No. WO91/11650, PCT Pub. Date Aug. 8, 1991

PCT Filed Feb. 1, 1991, Ser. No. 768,430

Claims priority, application France, Feb. 2, 1990, 90 01260

Int. Cl.[5] F16L *33/20*

U.S. Cl. 285—319 **11 Claims**



1. A coupling device for providing a separable connection between and end of a first tubular member and an end of a corresponding second tubular member, said coupling device comprising:

a) a tubular assembly mounted on the end of the first tubular member, said assembly including a circumferential wall extending longitudinally from the first tubular member, the wall having a longitudinal groove formed at an outer end of the wall;

b) at least one boss located on an outer surface of the second tubular member and projecting radially therefrom.

c) a locking tab member affixed to said tubular assembly and extending longitudinally from the first tubular member such that said locking tab member is located adjacent the groove on the outer surface of the circumferential wall, said locking tab member being elastically flexible in the radial direction and including an aperture for receiving each boss on the outer surface of the second tubular member, whereby the second tubular member may be inserted into said tubular assembly when the boss on the second tubular member is aligned in the groove such that said locking tab member will, upon insertion of the second tubular member into the tubular assembly, extend radially outward until the boss is received by the aperture in said locking tab member to separably lock the second tubular member to the first tubular member.

5,249,831

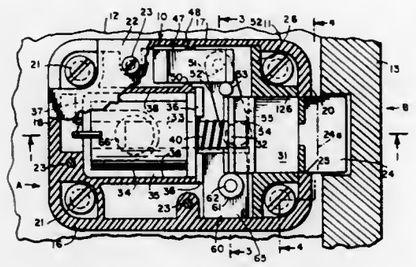
SECURITY LOCK FOR SAFES AND THE LIKE HAVING INERTIAL OPERATED COUNTERWEIGHT

Anthony C. Maniaci, Highland, Calif., assignor to American Security Products Co., Fontana, Calif.

Filed Dec. 2, 1991, Ser. No. 801,341

Int. Cl.[5] E05B *63/14*

U.S. Cl. 292—144 **5 Claims**



1. A lock suitable for use on safes comprising:

a bolt moveable between locking and unlocking positions, said bolt having a shoulder;

drive means for moving said bolt to its unlocking position;

spring means for urging said bolt to its locking position;

a counterweight; and

linkage means interconnecting said counterweight and said bolt in a manner to oppose inertial forces tending to move said bolt to said unlocking position from said locking position, said linkage means comprising:

a lever,

means pivotally connecting one end of said lever to said counterweight,

means on said lever adjacent its opposite end adapted to engage said shoulder, and

means pivotally supporting said lever intermediate its ends.

5,249,832

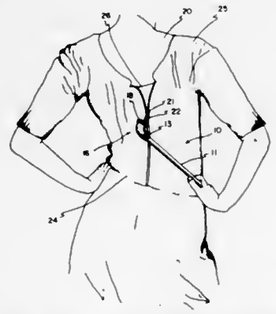
MAGNETIZED OPENER/CLOSER FOR ZIPPERS

Georgia B. Leonardz, 107 Armstrong Dr., Jacksonville, N.C. 28540

Continuation-in-part of Ser. No. 772,550, Oct. 7, 1991, abandoned. This application Jun. 1, 1992, Ser. No. 891,809

Int. Cl.[5] A44B *19/00*

U.S. Cl. 294—3.6 **7 Claims**



1. A magnetized slide fastener manipulating means comprising; an elongated, relatively light weight handle; a weighted head portion mounted on one end of said handle; a disk shaped magnet mounted on said head portion; and a hook-light means outwardly projecting from the center of said magnet whereby when said magnetized slide fastener manipulating means is being manipulated from an over the shoulder position, the weighted head will have a pendulum effect to aid in connection with the tab of the slide fastener so that the same can be pulled upon in a closing maneuver, and when it is manipulated from behind the waist and is connected to the closed slide fastener, the opening maneuver can be more readily accomplished due to the gravitational pull on the weighted head.

5,249,833

ON-VEHICLE DISPLAY DEVICE

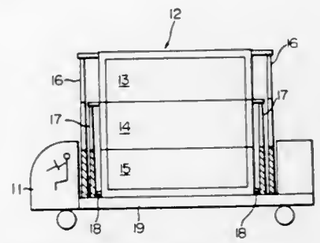
Takashi Kobayashi, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 17, 1992, Ser. No. 914,518

Claims priority, application Japan, Aug. 9, 1991, 3-200885

Int. Cl.[5] G09F *21/04*

U.S. Cl. 296—21 **3 Claims**



1. An on-vehicle display device comprising:

an upper screen mounted on a multistage extension hydraulic unit for vertical movement;

an intermediate screen mounted on a diagonal extension hydraulic unit for diagonal upward and downward movement so as to be moveable between an upper and lower position, said intermediate screen being disposed below said upper screen when said intermediate screen is in said upper position; and

a lower screen mounted on a horizontal extension hydraulic unit for horizontal movement, said lower screen being disposed below said intermediate screen when said intermediate screen is in said upper position.

5,249,834

APPARATUS FOR CONNECTING A POLYMERIC COMPOSITE PICKUP TRUCK CARGO BOX TO A METALLIC VEHICLE FRAME

Roger E. Johnson, Utica; Thomas C. Jensen, Clarkson, and Edward C. Van Rossen, Roseville, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 21, 1992, Ser. No. 947,616

Int. Cl.[5] D62D *23/00*

U.S. Cl. 296—35.1 **9 Claims**

1. An apparatus for connecting a polymeric composite pickup truck cargo box to a vehicle's metallic frame comprising:

said polymeric composite pickup truck cargo box having an opening and a top surface and a bottom surface;

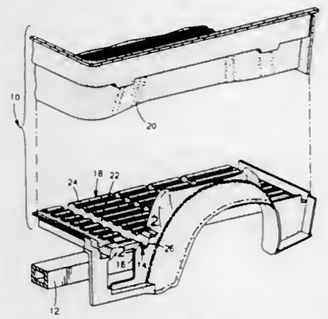
said vehicle's metallic frame having an opening;

a tapping plate separating said polymeric composite pickup truck cargo box from said vehicle's metallic frame and having a base member and a pilot member having an opening extending through said base member and said pilot member;

said pilot member integral with and extending away from said base member and extending through said opening of said polymeric composite pickup truck cargo box beyond said bottom surface of said polymeric composite pickup truck cargo box and contacting said vehicle's metallic frame;

said base member extending over and substantially parallel with said top surface of said polymeric composite pickup truck cargo box;

a means for connecting said tapping plate to said polymeric composite pickup truck cargo box; and



a self-tapping fastener extending through said vehicle's metallic frame and threading into said tapping plate for connecting said polymeric composite pickup truck cargo box to said vehicle's metallic frame through said tapping plate.

5,249,835

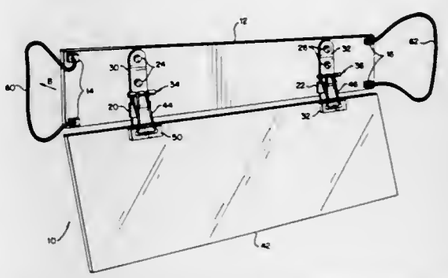
SUN VISOR ACCESSORY

Clesson T. Emoto, 812 Kealahou St., Honolulu, Hi. 96825

Filed Aug. 13, 1992, Ser. No. 930,086

Int. Cl.[5] B60J *3/02*

U.S. Cl. 296—97.6 **25 Claims**



1. An accessory for a sun visor having a windshield side and a passenger side, comprising:

a backing having a front surface with a lower edge and a rear surface with a lower edge;

wherein said front surface is substantially flat and substantially free of projections;

attachment means for attaching said backing to said windshield side of said sun visor mounted on said backing at a location other than said front surface, whereby substantially all of said front surfaces of said backing remains substantially free of projections; and

a glare shield movably mounted on said backing to move between an up and stored position and a down and operational position;

wherein said backing has a substantially triangular cross section defined by a front member defining said front surface, a rear member defining said rear surface, and a base member defining a base surface disposed between said lower edge of said front surface and a lower edge of said rear surface.

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5,249,836

REAR AIR DEFLECTOR FOR MOTOR VEHICLES

John M. Stanesic, Johnston, and Michael G. Harrison, Urbandale, both of Iowa, assignors to DFM Corporation, Urbandale, Iowa

Continuation-in-part of Ser. No. 744,230, Aug. 13, 1991. This application Jul. 13, 1992, Ser. No. 912,325
Int. Cl.[5] B60J 1/20
U.S. Cl. 296—180.1 23 Claims



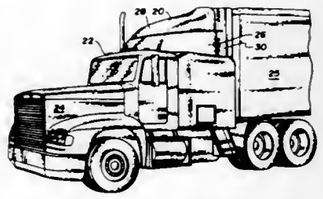
1. A rear air deflector for vehicles such as automobiles, vans, and trucks having a roof, a rear window, and a window frame extending around the window, the deflector comprising:
an elongated shield having opposite terminal ends, opposite upper and lower edges, and opposite forward and rearward surfaces;
the shield having a reverse curve profile adjacent each end such that the forward surface of the shield adjacent each end is substantially parallel to the window frame so as to provide mating engagement between the forward surface of shield adjacent the shield ends and the window frame; and
fastening means extending through the shield and into the window frame for securing the ends of the shield directly to the vehicle without use of mounting brackets on the ends of the shield.

5,249,837

ADJUSTABLE HEIGHT FAIRING WITH TRANSLATABLE UPPER FAIRING MEMBER

Noel Luttrell, Angola, Ind., assignor to Fab-Glas Industries, Inc., Angola, Ind.

Filed Sep. 14, 1992, Ser. No. 944,844
Int. Cl.[5] B62D 35/00
U.S. Cl. 296—180.3 17 Claims



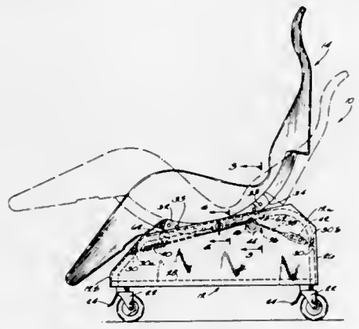
1. A nestable fairing usable with a roof of a vehicle, the fairing comprising:
a lower fairing member mountable to the roof of the vehicle;
an upper fairing member being translatably movable relative to and selectively affixable to the lower fairing member between a lowered nested position and a raised operative position;
fastening means for fastening the upper fairing member to the lower fairing member in either the lowered nested position or in the raised operative position; and
the lower fairing having support means for providing support upon which the upper fairing member may be rest so that the fastening means may affix the upper fairing member to the lower fairing member in the raised operative position.

5,249,838

SEATING DEVICE HAVING CURVED BOTTOM TILTING ON ROLLER AND SECURED BY REEVED CABLE

Judith I. Kulpa, 2938 N. 61th St., Milwaukee, Wis. 53210; Michael F. Conmy, 19480 Timberline Dr., Waukesha, Wis. 53186; Todd Fillingham, 2014 E. Webster Pl., Milwaukee, Wis. 53211, and Mary K. Sydow, 810 N. Washington St., New Ulm, Minn. 56073

Filed Sep. 21, 1990, Ser. No. 586,625
Int. Cl.[5] A47C 1/02, 1/06, 1/12; A61G 7/00
U.S. Cl. 297—328 8 Claims



1. An adaptive seating device comprising:
support means;
a seat portion for accommodating a person and detachably mounted on and tiltably positionable on said support means,
said seat portion having a curved surface on its underside;
rotatable means mounted on said support means and engaged with said curved surface on said seat portion to support said seat portion and to enable said seat portion to be tiltably moved to any one of a plurality of tilt positions relative to said support means;
means for biasing said curved surface into engagement with said rotatable means so as to secure said seat portion to said support means; and
locking means to releasably maintain said seat portion in a selected tilt position;
wherein said biasing means comprises a pulley rotatably mounted on said seat portion, a flexible cable reeved around said pulley, first means for connecting one end of said cable to said support means, and second means, including spring means, for connecting the other end of said cable to said support means.

5,249,839

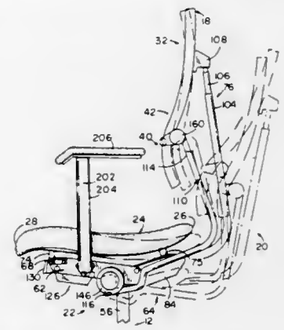
SPLIT BACK CHAIR

Frederick S. Faiks, Greenville; Carl V. Forslund, III, Grand Rapids; Robert M. Scheper, Grand Rapids, and Craig M. Anderson, Kentwood, all of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Filed Nov. 12, 1991, Ser. No. 790,348
Int. Cl.[5] A47C 3/00
U.S. Cl. 297—301 38 Claims

1. A chair, comprising:
a base;
a seat operably connected with said base;
a control operably connected with said base and disposed generally underneath said seat;

a back operably connected with said control and having a lumbar portion positioned to contact at least a portion of a lower back area of a seated adult user, and having a thoracic portion thereof positioned to contact at least a portion of an upper back area of the user;
a first support having an upper portion connected with said thoracic portion and having a lower portion pivotally mounted in said control so that said first support pivots about a generally transverse axis and said thoracic portion rotates rearward with respect to said seat; and



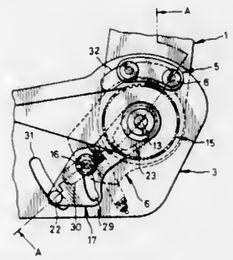
a second support having an upper portion connected with said lumbar portion and having a lower portion pivotally mounted in said control so that said second support pivots about a generally transverse axis and said lumbar portion rotates rearward with respect to said seat, said thoracic and lumbar portions rotating independently of each other so that said lumbar and thoracic portions independently follow the lower and upper areas, respectively, of the back of the user to achieve a natural, free-floating chair back motion and to provide generally continuous, sympathetic back support.

5,249,840

SEAT APPARATUS FOR VEHICLES

Naoaki Hoshihara, Nagoya, and Yasuhisa Inaba, Handa, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed May 26, 1992, Ser. No. 888,136
Claims priority, application Japan, May 30, 1991, 3-153725
Int. Cl.[5] B60N 2/02
U.S. Cl. 297—378.12 4 Claims



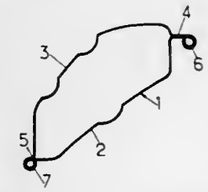
1. A seat apparatus for an automotive vehicle, comprising:
an upper gear fixed to a side member of a seat-back frame equipped with a retractor;
a lower gear engaging with said upper gear and having a notch;
a pair of lower arms embracing said upper gear and said lower gear and having respective first oblong holes that are in registration, second oblong holes that are in registration and third oblong holes that are in registration;
a shaft having a coaxial shaft portion on which said pair of lower arms is supported and an eccentric shaft portion on which said upper gear is supported;
a release arm supported on the coaxial shaft portion and having a cam slot and a distal end to which a first pin is fixed, said first pin being inserted into the first oblong holes of said pair of lower arms;
a second pin passed through the cam slot of said release arm and the second oblong holes of said pair of lower arms, said second pin being capable of freely entering and exiting the notch of said lower gear; and
a third pin fixed to said upper gear and received in the third oblong hole of said lower arm.

5,249,841

FRAMES FOR THE BACKS OF SEATS AND THE LIKE AND TO THEIR MANUFACTURE METHODS AND DEVICES

Bernard Chales, Flers, France, assignor to Bertrand Faure Automobile "BFA", Massy, France

Filed Dec. 18, 1991, Ser. No. 809,145
Claims priority, application France, Dec. 27, 1990, 90 16346
Int. Cl.[5] A47C 7/02
U.S. Cl. 297—452.18 7 Claims



1. A rigid frame serving as a framework for a car seat component, the frame being constituted by a shell itself being made up by assembling together two half-shells (2, 3) of stamped sheet metal along their juxtaposed edge flanges (4, 5) which extend respectively along an inside perimeter and an outside perimeter of each of the half-shells, the frame being characterized in that the juxtaposed flanges of the half-shells are rolled up into tubes of closed circular section (6, 7), at least over the major portion of their length.

5,249,842

COLLECTOR CART

Charles W. Doering, Clarksville, Ind., and James D. Scobee, Louisville, Ky., assignors to Brinly-Hardy Co., Ltd., Louisville, Ky.

Filed Jul. 15, 1991, Ser. No. 730,054
Int. Cl.[5] A01D 90/10
U.S. Cl. 298—6 21 Claims

21. A collector cart for towing by pulling means including:
a body having a bottom wall, side walls, a front wall, and an open rear end;
pull connecting means extending forwardly of said body for connecting to the pulling means;
wheel means supporting said pull connecting means;
body mounting means for mounting said body for pivotal movement relative to said wheel means and said pull connecting means;
a canopy including: a frame; and a cover mounted on said frame;
frame pivotal mounting means for mounting said frame on top of said body solely for pivotal movement of said canopy between a closed position and a dumping position, said frame pivotal mounting means being disposed adjacent the front of each of said frame and said body;

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said frame including closing means for closing said open rear end of said body when said canopy is in its closed position when mounted on top of said body;

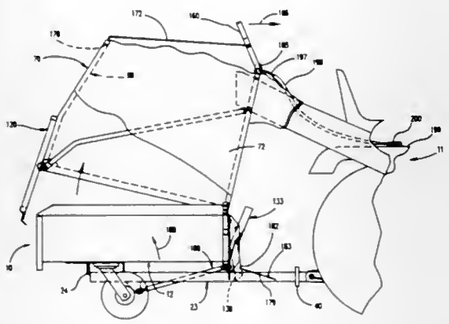
said cover of said canopy having receiving means for receiving debris into the interior of said cover of said canopy and the interior of said body when said canopy is in its closed position when mounted on top of said body in which an enclosed chamber is formed between said canopy and said body except for said receiving means;

locking means for locking said frame to said body and to retain said canopy in its closed position;

first pivotally mounted means for causing release of said locking means to unlock said frame from said body;

second pivotally mounted means for causing pivoting of said body relative to said wheel means after said first pivotally mounted means has been effective to release said locking means, said second pivotally mounted means being separate from said first pivotally mounted means;

mounting means for pivotally mounting said second pivotally mounted means on said body;



said second pivotally mounted means including releasably engaging means for releasably engaging said pull connecting means to prevent pivoting of said body relative to said wheel means until said second pivotally mounted means is actuated;

said pull connecting means including body support means for supporting said body, without engaging said second pivotally mounted means, when said releasably engaging means of said second pivotally mounted means releasably engages said pull connecting means and after said releasably engaging means of said second pivotally mounted means is releasably disengaged from said pull connecting means;

causing means cooperating with said frame for causing pivoting of said frame about said frame pivotal mounting means relative to said body in response to pivoting of said body relative to said wheel means by said second pivotally mounted means;

and each of said first pivotally mounted means and said second pivotally mounted means being accessible from the front of said collector cart and being movable separately.

5,249,843

NO-BOUNCE TAILGATE ASSEMBLY

LeRoy G. Hagenbuch, 4602 N. Rosemead, Peoria, Ill. 61604; Richard Keller, R.R. 1, Box 47, Deer Creek, Ill. 61733, and Jon Wren, R.R. 2, Manito, Ill. 61546

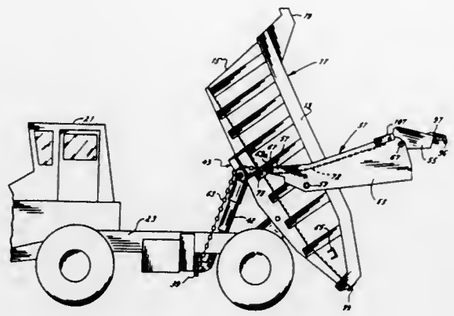
Continuation of Ser. No. 798,016, Nov. 20, 1991, Pat. No. 5,174,632, which is a continuation of Ser. No. 544,041, Jun. 26, 1990, abandoned, which is a continuation of Ser. No. 309,025, Feb. 6, 1989, abandoned, which is a continuation of Ser. No. 71,816, Jul. 10, 1987, abandoned. This application Oct. 1, 1992, Ser. No. 955,318

Claims priority, application Australia, Jul. 24, 1986, 60592/86; Canada, Jul. 24, 1986, 514603

The portion of the term of this patent subsequent to Dec. 29, 2009, has been disclaimed.

Int. Cl.[5] B60P *1/267*

U.S. Cl. 298—23 DF **20 Claims**



1. An apparatus for securing and locking a tailgate assembly with a dump body, the dump body having a bottom sheet, two side sheets, and a front sheet for carrying a load and pivotally mounted on a truck frame for rotation about a first axis between load and dump positions, the apparatus comprising:

a tailgate assembly pivotally mounted to the dump body and comprising two opposing and parallel rigid side panels having first and second ends, the first ends are pivotally mounted to the side sheets of the dump body for rotation about a second axis of rotation, a rigid back panel spanning the distance between the second ends of the side panels and forming a rear wall of the dump body is pivotally mounted to pivots on each of the second ends of the side panels for rotation about a third axis that passes through each of the pivots;

lifting means for rotating the dump body between lowered and raised positions;

the back panel having locking means movable between a first position preventing rotation of the back panel about the third axis of rotation and a second position permitting rotation of the back panel about the third axis; and

compound action means for linking the frame to the side panels and the side panels to the back panel and for responding to the rotation of the dump body toward the raised position by first moving the locking means from the first position to the second position, and then rotating the side and back panels against the force of gravity about the second and third axes of rotation, respectively.

5,249,844

BOREHOLE MINING PROCESS FOR RECOVERY FOR PETROLEUM FROM UNCONSOLIDATED HEAVY OIL FORMATIONS

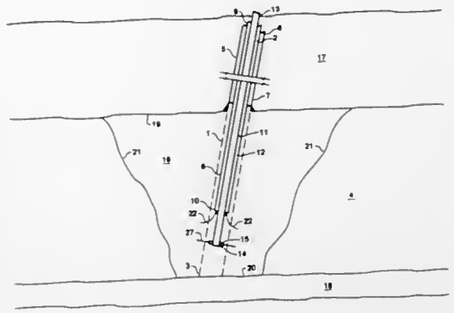
James M. Gronseth, Calgary, Canada, assignor to Exxon Production Company, Houston, Tex.

Filed Sep. 19, 1991, Ser. No. 762,283

Claims priority, application Canada, Sep. 21, 1990, 2025996

Int. Cl.[5] E21C *25/60, 45/00*

U.S. Cl. 299—17 **17 Claims**



1. A process comprising:

a) drilling a well borehole into an unconsolidated heavy oil reservoir formed from sand particles aggregated by heavy oil, said borehole having an upper end and a lower end;

b) positioning a casing in said borehole, said casing having an upper end positioned adjacent to the upper end of the borehole and a lower end which is spaced apart from the lower end of the borehole;

c) positioning a first tubing string in said casing, said first tubing string having an upper end positioned adjacent to the upper end of the borehole and a lower end positioned between the lower end of the casing and the lower end of the borehole;

d) positioning a second tubing string in said first tubing string, an annulus being formed between the first tubing string and the second tubing string, said second tubing string having an upper end positioned adjacent to the upper end of the borehole, a lower end positioned between the lower end of the first tubing string and the lower end of the borehole, and at least one nozzle positioned on the lower end of the second tubing string, said nozzle being oriented for fluid emission generally radially outwardly from the second tubing string;

e) flowing fluid generally downwardly through the second tubing string, outwardly through the at least one nozzle and into the unconsolidated heavy oil reservoir;

f) eroding a cavity in the heavy oil reservoir by flow of said fluid, the cavity having a ceiling at an upper end, a floor at a lower end, and walls connecting the ceiling and floor; and forming a slurry of said fluid, heavy oil and particles from the reservoir by collapsing the ceiling and walls of the cavity; and

g) flowing the slurry the annulus between the first tubing string and the second tubing string to the upper end of the borehole for recovery of the heavy oil.

5,249,845

WHEEL COVER, IN PARTICULAR FOR AN AUTOMOBILE VEHICLE

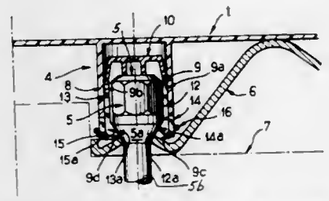
Dominique Dubost, La Celle Saint Cloud, France, assignor to Attax, Chatou, France

Filed Jan. 29, 1992, Ser. No. 827,426

Claims priority, application France, Jan. 29, 1991, 91 00970

Int. Cl.[5] B60B *7/06*

U.S. Cl. 301—37.37 **4 Claims**



1. Wheel cover, in particular for a wheel of an automobile vehicle, said wheel cover comprising:

a front side and a rear side; and

attachment means provided on said rear side for attaching to fixing elements that fix said wheel on a hub of said vehicle, each of said fixing elements having a head with a first abutment surface;

each attachment means comprising:

a first sleeve connected to said rear side of said wheel cover; and

a second sleeve coaxial with said first sleeve and axially movable in said fist sleeve;

said second sleeve comprising:

an end portion;

a second abutment surface on said end portion; and

elastically deformable branches;

an attaching portion extending inwardly of said second sleeve, being provided on each branch adjacent to an end of said branch;

said second sleeve being movable in said first sleeve, by engagement of said head of said fixing element with said second abutment surface, between (1) a mounting and dismounting position of said wheel cover relative to said wheel, in which position said branches of said second sleeve extend out of said first sleeve, and (2) an attachment position in which (1) said branches of said second sleeve extend around said head of a respective fixing element inside said first sleeve and (2) each of said attaching portions of said branches cooperates with said first abutment surface of said head of said respective fixing element for attaching said wheel cover to said wheel;

retractable means being provided for locking said second sleeve relative to said first sleeve in said mounting and dismounting or attaching positions.

5,249,846

WHEEL RIM MADE OF COMPOSITE MATERIALS FOR CYCLES AND THE LIKE

Pierre A. Martin, Quartier Les Roches, Loriol, France 26270 ; Christian Pascaud, 8, rue Jules Ferry, Le Pouzin, France 07250 , and Jean-Marie Riffard, 7, Les Charmilles, Livron, France 26250

Filed Feb. 4, 1992, Ser. No. 830,913

Claims priority, application France, Feb. 4, 1991, 91 01412

Int. Cl.[5] B60B *5/00, 21/00*

U.S. Cl. 301—64.7 **7 Claims**

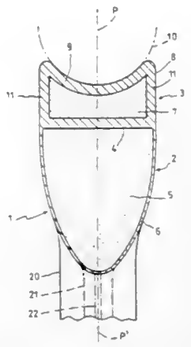
1. A wheel rim for cycles and the like comprising:

a first box structure constituted by a first core formed of cellular material and a rigid first envelope formed of composite textiles of impregnated and polymerized synthetic fibers which houses and is bonded to said first core,

VOL 1155 ISS 1 OC 5 1993 UMI

said first box structure defining an outer radial peripheral rim section adapted to mountably receive a tire; and

a second box structure constituted by a second core formed of cellular material and a rigid second envelope formed of a composite textile of impregnated and polymerized synthetic fibers which surrounds and is bonded to said second core, said second envelope being integrally formed with said first envelope and including a common wall portion with said first envelope, said second box structure being located radially inward of said first box structure and defining a rim body section.



5,249,847

ECCENTRIC WHEEL OF A BICYCLE

Edmond Lee, P.O. Box 63-151, Taichung, Taiwan

Filed Aug. 7, 1992, Ser. No. 927,449

Int. Cl.[5] B60B *27/00*

U.S. Cl. 301—105.1 12 Claims



1. An eccentric wheel of a bicycle comprising a wheel body, a pair of tracks disposed in said wheel body and arranged in parallel with each other and each including at least one hole formed therein, a block slidably engaged between said tracks for supporting a wheel axle of said bicycle, a pair of pins slidably engaged in said block and extendible outwards of said block for engagement with said holes of said tracks, and means biased between said pins for biasing said pins outwards to engage with said holes.

5,249,848

METHOD OF AND SYSTEM FOR CONTROLLING BRAKES

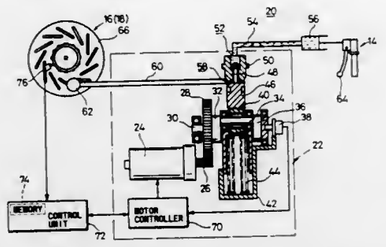
Takushi Matsuto; Atsuo Ota, and Osamu Suzuki, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 16, 1992, Ser. No. 945,382

Claims priority, application Japan, Sep. 17, 1991, 3-236537; Sep. 20, 1991, 3-241980

Int. Cl.[5] B60T *8/32*

U.S. Cl. 303—100 12 Claims



1. A method of controlling brakes, comprising steps of:

detecting the position of an expander piston constituting an antilocking modulator;

detecting the torque of a rotative drive source for driving said expander piston;

computing a braking force for each of said brakes from said detected position of said expander piston and said detected torque of said rotative drive source at said detected position;

estimating friction coefficients of a road surface from said computed braking force; and

carrying out the optimum braking by estimating a target slip ratio from said estimated friction coefficients.

5,249,849

ANTI-SKID CONTROL SYSTEM FOR A PART TIME FOUR-WHEEL DRIVE VEHICLE

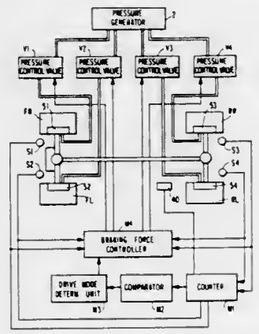
Yasunori Sakata, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Aug. 7, 1992, Ser. No. 925,634

Claims priority, application Japan, Aug. 10, 1991, 3-225167

Int. Cl.[5] B60T *8/58*

U.S. Cl. 303—100 7 Claims



1. An anti-skid control system for controlling a braking force applied to road wheels of an automotive vehicle for selectively providing a four-wheel drive mode and two-wheel drive mode, comprising:

wheel brake cylinders operatively connected to right and left road wheels, respectively, at front and rear sides of said vehicle for applying a braking force thereto;

a hydraulic pressure generator for supplying a hydraulic braking pressure to each of said wheel brake cylinders;

actuating means disposed in each hydraulic circuit communicating said hydraulic pressure generator with each of said wheel brake cylinders for individually controlling the hydraulic braking pressure in each of said wheel brake cylinders;

wheel speed detecting means for detecting a wheel speed of each of said road wheels;

braking force control means for controlling said actuating means in response to an output signal of said wheel speed detecting means to control the braking force applied to said road wheels;

deceleration detecting means for detecting a deceleration of said vehicle;

count means for counting the number of repetitions of decrease of the wheel speed of each road wheel down to below a predetermined standard speed and recovery of the wheel speed up to and over the predetermined speed;

comparing means for comparing the value counted for each road wheel during a predetermined period of time in said count means with a predetermined value; and

drive mode determination means for determining that said vehicle is in the four-wheel drive mode when it is determined that the value counted for each road wheel is equal to or greater than the predetermined value respectively and the deceleration detected by said deceleration detecting means does not reach a predetermined deceleration, the braking force control executed by said braking force control means being selected in accordance with the result of said drive mode determination means.

5,249,850

CONTROL OF ABS THRESHOLD WITHOUT ACCOMPANYING REDUCTION OF BRAKE PRESSURE

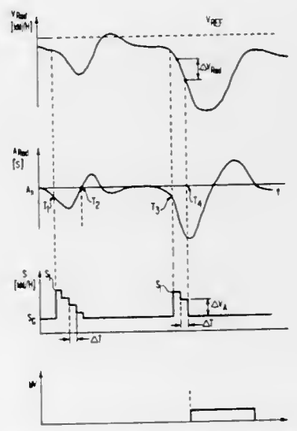
Wolfgang Kampfmann, Moselkern; Dieter Voges, Koblenz, and Volker Braschel, Neuwied, all of Fed. Rep. of Germany, assignors to Lucas Industries public limited company, Solihull, England

Filed Sep. 30, 1991, Ser. No. 791,735

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1990, 4032506

Int. Cl.[5] B60T *8/32, 8/78*

U.S. Cl. 303—103 1 Claim



1. In a method of controlling brake pressure in an anti-lock vehicle brake system wherein

the slip of a braked wheel is measured,

said measured slip is compared with a predetermined threshold value, and

the brake pressure is reduced if, according to said comparison, the measured slip exceeds the threshold value, the invention comprising the steps of

(1) measuring for each of a sequence of consecutive time intervals a rotational retardation of said braked wheel,

(2) comparing said measured rotational retardation of the braked wheel with a maximum physically possible braked deceleration of the vehicle,

(3) abruptly increasing said threshold value from a basic threshold value (S_G) to a higher momentary threshold value (S_1) when the measured rotational retardation of the braked wheel is greater than that maximum physically possible braked deceleration of the vehicle and then lowering the increased threshold from said higher momentary threshold value (S_1) according to a predetermined function of time but without at this stage reducing the brake pressure,

(4) measuring, at any moment during said lowering of the increased threshold value, change in speed (ΔV_{Rad}) of the braked wheel over a predetermined time interval (ΔT),

(5) determining a difference (ΔV_A) between said increased threshold value and said basic threshold value (S_G),

(6) comparing said measured change in wheel speed (ΔV_{Rad}) with said determined difference (ΔV_A) between said increased threshold value and said basic threshold value (S_G), and

(7) lowering said increased threshold value to the basic threshold value (S_G) when said comparison of the change in speed (ΔV_{Rad}) with the difference (ΔV_A) between said increased threshold value and said basic threshold value (S_G) reveals that said change in speed (ΔV_{Rad}) is greater than said difference between said increased threshold value and the basic threshold value (S_G).

5,249,851

METHOD AND SYSTEM FOR NON-LOCKING AND NON-SKIDDING BRAKING/TRACTION OF A VEHICLE WHEEL

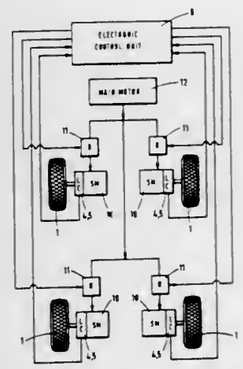
Oddvard Johnsen, Eikesvingen 8, 3400 Lier, Norway

Continuation of Ser. No. 582,937, Oct. 9, 1990, Pat. No. 5,195,808. This application Sep. 21, 1992, Ser. No. 947,837

Claims priority, application Norway, Apr. 7, 1988, 881513; Feb. 16, 1989, 890663; Apr. 7, 1989, 8900029

Int. Cl.[5] B60T *8/52;* B60K *31/04*

U.S. Cl. 303—104 7 Claims



1. A method for achieving optimum braking of a vehicle wheel having an axle and a ground surface interface, comprising measuring continuously forces acting on the wheel axle, including a road normal force F_{norm} perpendicular to a ground surface on which the wheel travels and a road parallel force

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F_{par} parallel to said surface, by means of at least one force measuring device,

wherein braking power is controlled by means of an electronic control unit in accordance with results of running calculations based upon the force measurements, said force measuring devices being connected to said control unit, and

an approximate braking ratio F_{par}/F_{norm} as well as a variation thereof are determined continuously in the control unit from the measured force values during a braking procedure where braking power is increased or decreased in a continuous manner on the basis of said approximate braking ratio F_{par}/F_{norm} and the variation thereof, to obtain a maximum instantaneous braking ratio, said maximum instantaneous braking ratio being substantially equal to an instantaneous friction coefficient μ for the instant ground surface interface of said wheel.

5,249,852

ANTI-LOCKING CONTROL SYSTEM

Claus Beyer, Schwieberdingen; Peter Dominke, Bietigheim-Bissingen, and Eberhard Sonntag, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

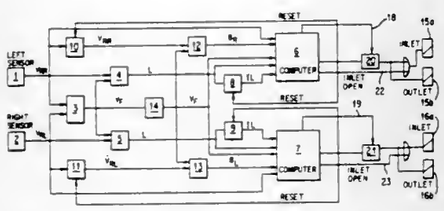
PCT No. PCT/EP89/01377, § 371 Date Jun. 14, 1991, § 102(e) Date Jun. 14, 1991, PCT Pub. No. WO90/06869, PCT Pub. Date Jun. 28, 1990

PCT Filed Nov. 16, 1989, Ser. No. 691,015

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1988, 3841977

Int. Cl.[5] **B60T** *8/00*

U.S. Cl. 303—108 **14 Claims**



1. Antilock brake system for a vehicle having wheels, said system comprising

valve means including an outlet valve for regulating brake pressure at at least one wheel in control cycles, each cycle being characterized by a sum ABZ of pressure reduction times,

means for (**1, 2**) for determining speed V_R of said at least one wheel,

means (**10, 11**) for differentiating the speed V_R to produce a deceleration V_R of said at least one wheel,

means (**3**) for determining the vehicle speed V_F,

means (**14**) for determining the vehicle deceleration V_F from the vehicle speed V_F,

means (**4, 5**) for determining the wheel slip L of said at least one wheel from the wheel speed V_R of said at least one wheel and the vehicle speed V_F,

means (**8, 9**) for integrating the slip L to produce an integral IL for said at least one wheel,

means (**12, 13**) for determining the relative wheel acceleration $B=V_R-V_F$ for said at least one wheel,

means (**6, 7**) for forming an instability criterion $K=aB+bL+cIL+dV_F$, where a, b, c, and d are constants,

means (**6, 7**) for comparing K to an instability limit IS and, when $K>IS$, producing a first pressure reduction pulse of a duration dependent upon the sum ABZ of reduction times in the preceding cycle, resetting the means (**8, 9**) for integrating the slip, and resetting the means (**10, 11**) for differentiating the wheel speed, said pulse acting on said valve means to reduce brake pressure at said at least one wheel, whereupon said valve means are controlled so that the brake pressure remains constant.

5,249,853

HYDRAULIC ANTI-LOCK BRAKE SYSTEM

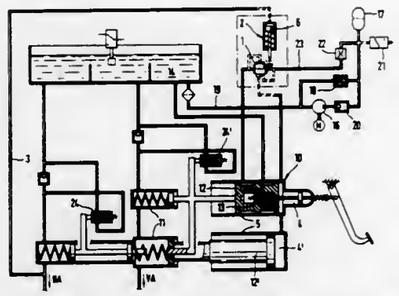
Hans-Dieter Reinartz, Frankfurt am Main, and Helmut Steffes, Hattersheim, both of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 14, 1992, Ser. No. 868,610

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1991, 4112822; Feb. 14, 1992, 4284416

Int. Cl.[5] **B60T** *13/14, 15/36, 8/32*

U.S. Cl. 303—114.1 **14 Claims**



1. An antilock hydraulic brake system having a pedal for actution, comprising a power booster having a pressure chamber, a braking pressure generator actuated by said power booster, wheel brakes of a front axle and a rear axle connected to said braking pressure generator by bake circuits, an auxiliary pressure source comprising a pump and an accumulator, said braking pressure generator including a housing arrangement, an auxiliary pressure line connecting said auxiliary pressure source and said braking pressure generator; at least one booster piston sealingly guided in said housing arrangement and having an end surface defining a hydraulic pressure chamber, a braking pressure control valve controlling auxiliary pressure in said pressure chamber in dependence on said pedal actuation, an unpressurized reservoir, said pressure control valve including means communicating said pressure chamber with said unpressurized supply reservoir, a pressure-reducing valve interposed between said auxiliary pressure source and said braking pressure control valve and including means sensing the pressure in said pressure chamber of said hydraulic power booster as well as that in said auxiliary pressure line, a first adjusting member and actuating means actuating said pressure-reducing valve by said first adjusting member, including an hydraulic connection between a first brake circuit and said first adjusting member causing said first adjusting member to perform a pressure reduction in said pressure chamber of said hydraulic power booster in dependence on wheel braking pressure in said first brake circuit.

5,249,854

BRAKING CIRCUIT PROVIDED WITH ANTILOCKING APPARATUS

Shinji Yamada, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 686,477, Apr. 17, 1991, abandoned. This application Dec. 15, 1992, Ser. No. 997,154

Claims priority, application Japan, Apr. 25, 1990, 2-111075

Int. Cl.[5] **B60T** *13/14*

U.S. Cl. 303—115.4 **7 Claims**

1. An anti-lock braking apparatus for use in a vehicle, comprising:

means for braking said vehicle;

a master cylinder for providing an operating liquid at a braking pressure to said braking means;

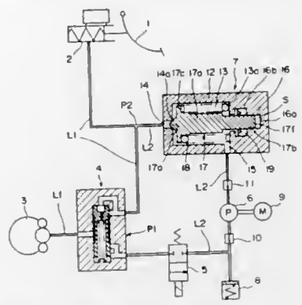
main flow passage means for coupling said master cylinder to said braking means to direct said operating liquid to said braking means, said main flow passage means comprising a first portion coupled to said master cylinder and a second portion coupled to said braking means;

means, coupled to said braking means and said master cylinder between said first and second portions of said main flow passage means, for regulating said braking pressure of said operating liquid being provided to said braking means;

reflux passage means, for directing said operating liquid from said regulating means to said first portion of said main flow passage means, said reflux passage means comprising a first section coupled to said first portion of said main flow passage means and a second section coupled to said regulating means, said second section comprising means for pumping said operating liquid through said reflux passage means to reflux said operating liquid;

pressure absorbing means, coupled to said pressure regulating means and said main flow passage means between said first and second sections of said reflux passage means, for absorbing a reflux pressure of said operating liquid being refluxed through said reflux passage means, said pressure absorbing means comprising:

a first chamber having a liquid receiving portion for receiving said operating liquid being refluxed, said liquid



receiving portion having a variable volume, a first opening for communicating with said first section of said reflux passage means and a second opening for communicating with said second section of said reflux passage means, said first and second openings communicating with each other through said first chamber;

first valve member means, slidably disposed inside said first chamber, having a first end for optionally covering said first opening to prevent said first chamber from communicating with said first section of said reflux passage and to prevent said first opening from communicating with said second opening and a second end opposing said first end, said first and second ends having first and second cross sections, respectively, said first cross section being smaller than said second cross section;

means for applying a predetermined force to said second end of said first valve member means to cause said first valve member means to cover said first opening, said braking pressure being applied to said first end of said first valve member means in a direction opposing said predetermined force, said predetermined force being larger than said braking pressure to prevent said braking pressure from sliding said first valve member means in said direction opposing said predetermined force; and

means for receiving a portion of said first valve member means to enable said first valve member means to slide in said direction opposing said predetermined force when said reflux pressure of said operating liquid received in said first chamber increases to a predetermined amount, said first valve member means uncovering said first opening and increasing said volume of said liquid receiving portion when said first valve member means slides in said direction opposing said predetermined force.

5,249,855

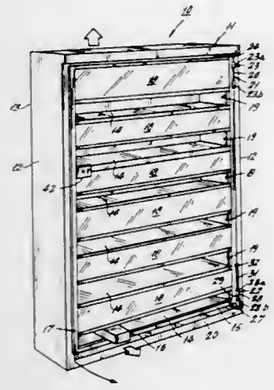
SLIDE/SWING SECURITY DOOR

Robert Franklin, Lake Hopatcong, and John La Rocca, Fairfield, both of N.J., assignors to Trans World Marketing, East Rutherford, N.J.

Filed Sep. 16, 1991, Ser. No. 760,596

Int. Cl.[5] **A47F** *3/00*

U.S. Cl. 312—138.1 **9 Claims**



1. A cabinet comprising:

a) a frame having a vertical rear wall, vertical side walls extending forward from opposite edges of said rear wall and defining an open-front and at least one shelf extending between the side walls for receiving a product;

b) a door for closing the open-front of the frame, the door including at least first and second members extending horizontally across the door, the first and second members defining an open space therebetween; and

c) means for mounting the door to the frame such that the door is both vertically movable with respect to the frame and pivotable about a vertical axis towards and away from the frame, the door being vertically movable from a position in which the open space is aligned with the shelf to enable access to the product and a position in which the open space is not aligned with the shelf so that the product is inaccessible.

5,249,856

KITCHEN CORNER CUPBOARD

Horst Dreier, Haar, Fed. Rep. of Germany, assignor to Dreier Kuechen und Einrichtungszentrum GmbH & Co. KG, Haar bei Muenchen, Fed. Rep. of Germany

Filed Mar. 20, 1991, Ser. No. 672,263

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1990, 4009150; May 4, 1990, 4014375

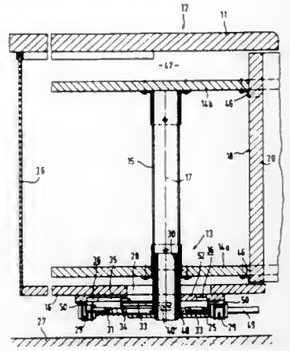
Int. Cl.[5] **A47B** *97/00*

U.S. Cl. 312—238 **17 Claims**

16. Method for opening and closing a kitchen corner cupboard including a housing (**12**) having an upper cover plate (**11**), side walls (**21, 22**), a rear wall (**26**), a base, and a carousel (**13**) mounted in the housing, the carousel having a vertical rotation shaft (**15**) onto which are mounted at least one horizontal carrier plate (**14***a*, **14***b*), a front element (**19, 20**) having first and second, angularly inclined front panels (**19, 20**) having

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a vertical edges (**23**, **24**), the rotation shaft (**15**) being located at a substantial distance behind an intersecting line of imaginary extensions of angularly inclined front panel boards (**41**, **42**) of the housing, the method comprising the steps of providing a translation body having means rotatably mounting the rotation shaft to the translation body, providing means mounting the translation body to the base and permitting relative movement between the base and the translation body, moving the translation body and therewith the carousel and the front element (**18**) firstly along a diagonal (**37**) rearwardly until the vertical edges (**23**, **24**) of the front panels (**19**, **20**) are sufficiently spaced from the side walls (**21**, **22**) of the housing (**12**) to permit free rotation of the carousel, thereafter rotating the carousel (**13**) in one direction (**2**) or the other (**3**), until one of the vertical edges (**23**, **24**) has come very close to the rear wall (**26**) and the other vertical edge (**24**, **23**) has significantly passed a position nearest to one of the side walls (**21** or **22**), thereafter again moving the



translation body and therewith the carousel towards the front until the at least one carrier plate (**14***a*, **14***b*) is close to its foremost position, whereafter, when the carousel (**13**) is further rotated, the vertical edges (**23**, **24**) pass along the rear wall (**26**) at a short distance therefrom, when the vertical edge (**23** or **24**) located in the front in the rotation direction has come close to a position (**5** or **4**) closest to a side wall (**22**, **21**) of the housing, once again moving the translation body and therewith the carousel rearwardly, whereafter, upon further rotation the vertical edges (**23**, **24**) are rotated into a front opening (**45**) of the housing (**12**) until the imaginary intersection line of the front panel boards (**41**, **42**) of the housing determined with respect to the front element (**18**) in its closed position is located on the diagonal (**37**); and, to pull the front element (**18**) forwardly, moving the carousel (**13**) forwardly along the diagonal (**37**) until the front panels (**19**, **20**) of the front element (**18**) adjoin the front panel boards (**41**, **42**) of the housing.

5,249,857

BUILT-UP FURNITURE UNIT

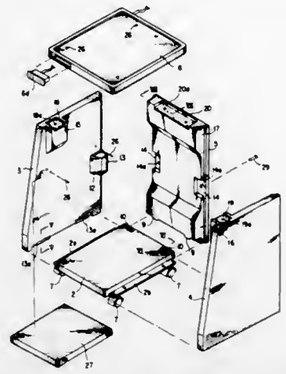
Hideo Suzuki, Tokyo, Japan, assignor to Kyoraku Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 604,273, Oct. 29, 1990, abandoned. This application Sep. 24, 1991, Ser. No. 765,414
Claims priority, application Japan, Oct. 30, 1989, 1-279972
Int. Cl.[5] A47B *47/00*
U.S. Cl. 312—263 **4 Claims**

1. A built-up furniture unit comprising:

a plurality of housing panels including first and second panels to be connected substantially perpendicular to each other thereby orienting a lengthwise plane of said first panel substantially in a direction parallel to a thickness of said second panel, at least one of said first and second panels being made of a thermoplastic resin in a hollow double wall construction, at least one of said first and second panels being formed with a recess at a plane mating with the other panel, said first panel having at least one first opening extending in a lengthwise direction of said first panel and said second panel having at least one second opening extending in a thickness direction of said second panel and being aligned with said first opening;

a reinforcement member disposed within said recess and oriented substantially in parallel relationship with said other panel, said reinforcement member having at least



one third opening placed in alignment with said aligned first and second openings of said first and second panels; and

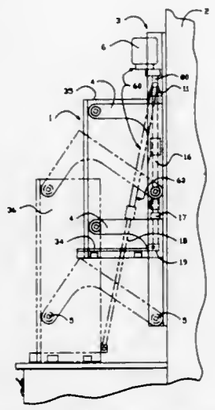
at least one threaded fastener extending through said first, second and third openings and establishing threaded engagement and a fixed connection between said first and second panels via said reinforcement member.

5,249,858

MOTOR DRIVEN MOVABLE CABINET

Marjorie A. Nusser, 141 Seminary Dr., Apt. 1, Mill Valley, Calif. 94941

Filed May 4, 1992, Ser. No. 878,053
Int. Cl.[5] A47B *88/00*
U.S. Cl. 312—319.6 **8 Claims**



1. A motor driven movable cabinet capable of being lowered over a counter space in its extended position and lifted against a wall in its retracted position, comprising:

a cabinet enclosure having a top wall, a bottom wall, and two vertical side walls connected thereto;

at least four swing arms of equal length, each having a first end and a second end, wherein said first end of at least two of said swing arms is pivotally attached to each of said vertical side walls;

a vertical cabinet wall frame including two vertical side rails for pivotally supporting said second ends of said at least four swing arms connected to the cabinet enclosure;

a vertical motor affixed to said wall frame above said cabinet enclosure, having a vertical motor shaft facing downward;

a variable length drive shaft assembly comprising a tube drive shaft and a threaded screw drive rod screwably connected thereto; wherein said tube drive shaft is connected to said vertical motor by means of a universal joint, and

wherein, said threaded screw drive rod is hingedly attached to said bottom wall of the cabinet enclosure;

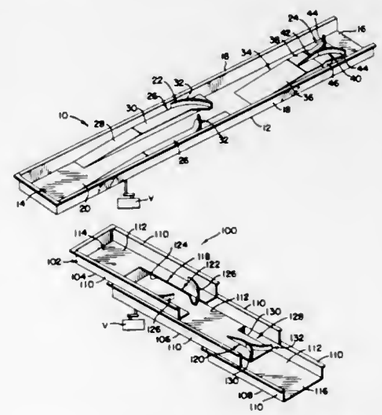
whereby the rotation of said motor causes the arcuate lifting of the cabinet enclosure and drive shaft assembly in one direction by shortening said variable length drive shaft assembly and the arcuate lowering of the cabinet enclosure and drive shaft assembly in the opposite direction by lengthening said variable length drive shaft assembly.

5,249,859

VIBRATORY BLENDER/CONVEYOR

Robert A. Krynock, Indiana, Pa., assignor to FMC Corporation, Chicago, Ill.

Filed Oct. 8, 1992, Ser. No. 958,375
Int. Cl.[5] B01F *11/00*
U.S. Cl. 366—109 **6 Claims**



1. A device for blending and conveying materials comprising:

an elongated trough having an inlet end, a discharge end and two spaced apart side walls;

means for vibrating the trough;

first blending means connected to the trough between the inlet end and the discharge end for blending the materials;

the first blending means comprising a first lift means located adjacent one of the side walls for elevating a first proportion of materials and a second lift means located adjacent the other side wall for elevating a second proportion of materials; and

first and second diverter means connected to the first and second lift means, respectively, for folding the first and second proportions of materials over onto a third proportion of materials being conveyed along the trough between the first and second lift means;

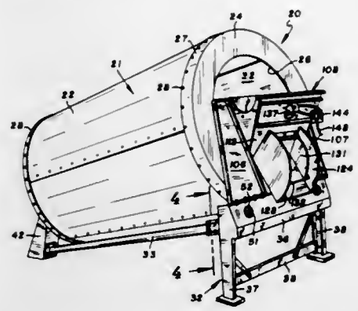
wherein the first and second lift means each comprise at least one ramp connected to a generally horizontal platform.

5,249,860

MATERIAL MIXER

Eldon F. Buschbom, Minnetonka, and Kenneth G. Connaughty, Rushford, both of Minn., assignors to J-Star Industries, Inc., Fort Atkinson, Wis.

Filed Jan. 15, 1992, Ser. No. 821,405
Int. Cl.[5] B01F *15/02, 9/02*
U.S. Cl. 366—135 **34 Claims**



1. An apparatus for mixing materials comprising: a cylindrical drum having a mixing chamber with a longitudinal axis, an inlet end having an opening open to the mixing chamber, and a closed end for holding materials, hopper means located adjacent the inlet end of the drum for directing materials through the opening into the mixing chamber, a frame for supporting the hopper means, means including planetary gear drive means supporting the drum for rotation on said frame about the longitudinal axis thereof and inclining the drum and the axis downwardly from the inlet end thereof, trough means having an open top located in said mixing chamber, auger means located in said trough means operable to move materials along said trough means toward the inlet end of the drum, drive means mounted on the hopper means for rotating the auger means, said planetary gear drive means having a shaft connected to the auger means and a rotatable member connected to the drum whereby the drive means rotates the auger means and operates the planetary gear drive means to rotate the drum, means mounting the planetary gear drive means on the frame adjacent the closed end of the drum, bar means mounted on the trough means located above and extended generally parallel to the auger means to provide substantially even distribution of materials moving into the trough means and restrict the amount of materials that move into the trough means during rotation of the drum, and means located below the hopper means to allow materials discharged by the auger means from the trough means to selectively flow back into the mixing chamber or flow out of the drum to a selected location.

5,249,861

APPARATUS FOR COOLING, WASHING, DRAINING, AND BLENDING LIQUID SUSPENDED MATERIALS

Meredith C. Thomson, Watertown, Wis., assignor to Kusel Equipment Co., Watertown, Wis.

Filed Jul. 18, 1991, Ser. No. 732,145
Int. Cl.[5] B01F *15/02*
U.S. Cl. 366—194 **14 Claims**

1. An apparatus for applying a cooling and washing liquid to a suspension of material that includes discrete particles of a friable material, for draining said liquid, and for blending an additive liquid into said friable material when drained to prepare a blended material comprising:

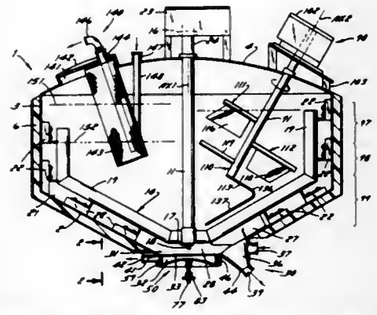
a vessel (**1**) having a bottom wall (**2**), a lower aperture (**28**) in said bottom wall (**2**), side walls (**3**) and a top wall (**4**);

a sweep means (**10**) mounted in said vessel (**1**) for rotation about a principal axis (AX1) to agitate said liquid and said suspension of material or said blended material therein in

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said vessel (1) and to clean said bottom wall (2) and said side walls (3); and

a manifold means (30) in surrounding relation to said lower aperture (28) in the bottom wall (2) of said vessel (1) having upper and lower chambers (31, 32), the upper chamber (31) being in communication with said vessel (1) through said lower aperture (28), a foraminous means (33) mounted between said upper and lower chambers (31, 32) sized to prevent passage of said discrete particles there-



through during operation, a first opening means (36) communicating with the upper chamber (21) and including a material port (37) for admitting said suspension of material or liquid to and a material discharge port (39) for exhausting blended material from said upper chamber (31) without passing through said foraminous means (33), and a second opening means (41) in fluid communication with the lower chamber (32) for draining liquid from said vessel (1) though said foraminous means (33).

5,249,862

DYNAMIC MIXER

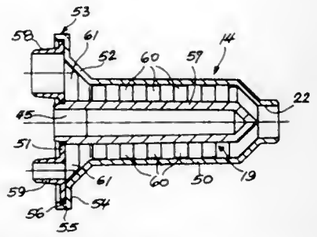
Wolf D. Herold, Seefeld; Gerd Brandhorst, Munich, and Guenter Rehfeld, Diessen, all of Fed. Rep. of Germany, assignors to THERA Patent GmbH & Co.KG Gesellschaft fur industrielle Schutzrechte, Seefeld, Fed. Rep. of Germany

Filed Dec. 23, 1991, Ser. No. 811,438

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1990, 9017323[U]

Int. Cl.[5] B01F *7/00*

U.S. Cl. 366—312 **4 Claims**



1. A dynamic mixer comprising:

a housing including a substantially cylindrical chamber portion defining a longitudinal axis and having front and rear ends,

a sealing member for closing the rear end of said chamber portion, said sealing member having an interior surface, a central bore, and rearwardly projecting pipe means adapted for direct introduction into outlet openings of supply means containing components to be mixed,

a discharge opening provided at the front end of said chamber portion for discharging a mixture formed from said components, and

a mixer element disposed within said chamber portion and supported by said central bore for rotation about said longitudinal axis, said mixer element including wiper means for wiping the interior surface of said sealing member when said mixer element rotates, said wiper means having leading cutting edges for cutting up strands of said components as they enter said housing.

5,249,863

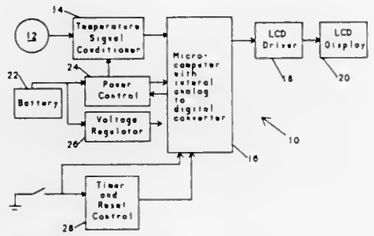
TEMPERATURE AVERAGING DATA LOGGER

Winthrop K. Brown, Bellaire, Tex., assignor to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 835,875, Feb. 14, 1992, abandoned. This application Dec. 21, 1992, Ser. No. 994,236

Int. Cl.[5] G01K *3/04, 1/02*

U.S. Cl. 374—102 **1 Claim**



1. A data logger comprising:

temperature sensing means for sensing a temperature;

amplifier means responsive to said temperature sensing means for generating an output proportional to the sensed temperature;

timer means for periodically activating the temperature sensing means;

means for averaging the output from said amplifier means;

means for resetting said averaging means in response to said timer means;

means for manually resetting said averaging means;

display means responsive to said averaging means for displaying the averaged output representing average sensed temperature;

means for displaying on said display means the time period between each resetting of said averaging means;

battery power supply means; and

means in said power supply means for monitoring battery condition and for causing said condition to be displayed on said display means.

5,249,864

SYSTEM FOR CHARACTERIZING TEMPERATURE OF FLUIDS

John E. Fagan, and Ronnie B. Beason, both of Norman, Okla., assignors to Gas Research Institute, Chicago, Ill.

Filed Oct. 23, 1992, Ser. No. 965,838

Int. Cl.[5] G01K *1/14, 7/22, 13/02*

U.S. Cl. 374—110 **8 Claims**

1. An apparatus for estimating a temperature of a fluid having a flow in an overall direction, the apparatus comprising:

a facing having a front surface and a rear surface, the front surface of the facing disposable adjacent the fluid;

a first temperature sensor embedded in the facing in a first sensor position wherein the first temperature sensor is substantially flush with the front surface of the facing;

a second temperature sensor embedded in the facing in a second sensor position which is aligned horizontally a first distance directly behind the first sensor position;

a third temperature sensor embedded in the facing in a third

sensor position which is aligned horizontally a second distance directly behind the second sensor position, said second distance being equal to said first distance, and wherein the first temperature sensor, the second temperature sensor, and the third temperature sensor are located in a substantially linear horizontal alignment within the facing and in a perpendicular direction with respect to the overall direction of the flow of fluid;

signal detecting/converting means connected to each temperature sensor for detecting signals from the temperature sensors and converting the signals into data; and

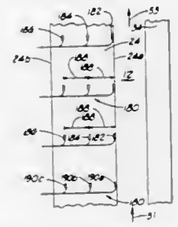
temperature outputting means for receiving the data and for outputting an estimated fluid temperature reading calculated from the data.

6. A method for estimating a temperature of a fluid having a flow in an overall direction, the method comprising the steps of:

providing a test cell the test cell having disposed therein:

a facing having a front surface and a rear surface,

a first temperature sensor positioned in the facing in a first



sensor position wherein the first temperature sensor is substantially flush with the front surface of the facing,

a second temperature sensor positioned in the facing in a second sensor position which is aligned horizontally a first distance directly behind the first sensor position, and

a third temperature sensor positioned in the facing in a third sensor position which is aligned horizontally a second distance directly behind the second sensor position, said second distance being equal to said first distance, and wherein the first temperature sensor, the second temperature sensor, and the third temperature sensor are located in a substantially linear horizontal alignment within the facing and in a perpendicular direction with respect to the overall direction of the flow of fluid;

passing the fluid by the front surface of the facing;

detecting a signal from each temperature sensor and converting the signals into data; and

receiving the data and calculating an estimated fluid temperature reading therefrom.

5,249,865

INTERFEROMETRIC TEMPERATURE MEASUREMENT SYSTEM AND METHOD

Ajit P. Paranjpe, Dallas; Steven A. Henck, Plano, and Walter M. Duncan, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 27, 1992, Ser. No. 874,658

Int. Cl.[5] G01J *5/58;* **G01K** *11/00*

U.S. Cl. 374—161 **6 Claims**

1. An interferometric temperature measurement system for measuring the temperature of a sample, said system comprising:

a laser source which sends a beam of electromagnetic radiation towards said sample;

a first detector which measures the intensity of a reflected beam of electromagnetic radiation reflected off of said sample;

said first detector being positioned on the axis of the reflected beam of electromagnetic radiation;

said electromagnetic radiation from said laser source having both S and P components, said S and P components being orthogonal to each other;

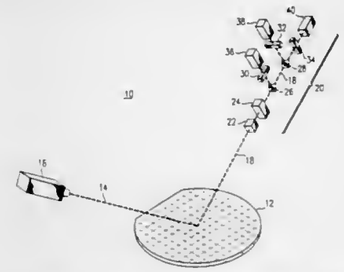
second and third detectors located off the axis of the reflected beam which measure the intensity of the S and P components respectively of the reflected beam of electromagnetic;

a first polarizer, positioned on the axis of the reflected beam of electromagnetic radiation between the sample and the first detector which causes the S and P components of the electromagnetic radiation along orthogonal directions to interfere with each other prior to detection by said first detector;

a second polarizer, positioned on the axis of said reflected beam of electromagnetic radiation between the first polarizer and the sample, which causes the intensities of the S and P components of the radiation to be equal at a predetermined temperature;

first and second beam between the first and second polarizers splitters, positioned on the axis of the reflected beam, which divert a portion of the reflected radiation toward said second and third detectors respectively;

third and fourth polarizers, located off the axis of the reflected beam of electromagnetic radiation and in the path of said diverted portion of radiation from said first and second beam splitters respectively, such that only the S



component of the diverted electromagnetic radiation will be received by said second detector and only the P component of said diverted electromagnetic radiation will be received by said third detector;

circuitry which receives signals from said first, second, and third detectors and which determines the temperature of said sample.

5. A method for determining the temperature of a sample comprising the steps of:

polarizing electromagnetic radiation from a laser source reflected off of the sample such that S and P orthogonal components of electromagnetic radiation from said laser source interfere with each other;

polarizing the reflected radiation from said laser source such that the S and P components are generally equivalent at a predetermined temperature;

measuring the intensity of the interfered radiation, on the axis of the reflected radiation;

measuring the intensity of the S component of the polarized reflected radiation having generally equivalent S and P components at a predetermined temperature, off the axis of the reflected radiation;

measuring the intensity of the P component of the polarized reflected radiation having generally equivalent S and P components at a predetermined temperature, off the axis of the reflected radiation; and

determining the temperature from the three measured intensities.

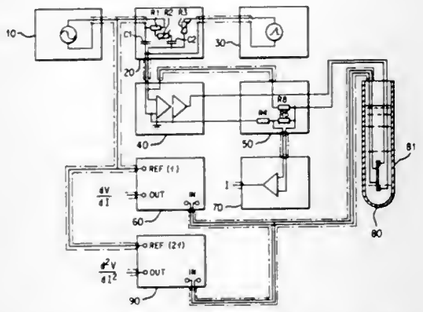
VOL 1155 ISS 1 OCT 5 1993 UMI

5,249,866

THERMAL PROPERTIES MEASUREMENT USING A SUPERCONDUCTOR SENSOR

William P. Dube, Denver; Loren F. Goodrich, Boulder, and John M. Moreland, Louisville, all of Colo., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed May 29, 1992, Ser. No. 890,086
Int. Cl.[5] G01K 7/14
U.S. Cl. 374—176 10 Claims



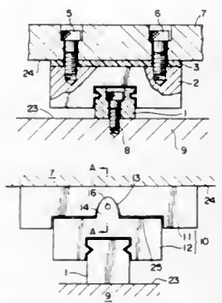
1. A method of thermal environment sensing comprising:
a) supplying current to a sample from a current supply;
b) ramping the current until a set value of a first derivative dV/dI is achieved;
c) placing the current supply in a feedback mode to maintain the first derivative constant;
d) monitoring any changes in a parameter which is indicative of the non-linearity of the relationship between the voltage and the current, which indicate changes in the thermal environment of the sample.

5,249,867

LINEAR MOTION GUIDE UNIT ASSEMBLY HAVING A MISALIGNMENT ABSORBING MECHANISM

Hirotaka Iida, Shizuoka, Japan, assignor to Nippon Thompson Co., Ltd., Japan

Filed May 8, 1992, Ser. No. 880,437
Claims priority, application Japan, May 10, 1991, 3-42372[U]
Int. Cl.[5] F16C 29/06, 23/00
U.S. Cl. 384—45 14 Claims



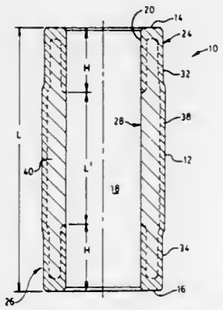
1. A linear motion guide unit assembly comprising:
a linear motion guide unit including a rail, a slider slidably mounted on said rail and having a generally U-shaped cross section and a plurality of rolling members interposed between said rail and said slider;
a first member having a first mounting surface to which said rail is fixedly attached;
a second member having a second mounting surface to which said slider is fixedly attached;
means interposed at at least one interface of interfaces between said first mounting surface and said rail and between said second mounting surface and said slider, for absorbing a misalignment between said first and second mounting surfaces in a direction transverse to a longitudinal direction of said rail when assembled, said misalignment absorbing means including a deformable elastic plate; and
at least two fixing means spaced apart from each other in a direction transverse to a longitudinal axis of said assembly for fixing two elements sandwiching said misalignment absorbing means.

5,249,868

TRACK BUSHING

Kenneth R. Watts, Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Jan. 27, 1993, Ser. No. 9,699
Int. Cl.[5] F16C 33/12; B62D 55/205; C21D 1/04
U.S. Cl. 384—276 6 Claims



1. In a track bushing for track of a work vehicle, the bushing having an outer peripheral surface and an inner peripheral surfaces, first and second end portions and a center portion, and a bore opening on each end, the improvement comprising:
the outer peripheral surface having a Rockwell C hardness in the range of about 57 to about 62;
the inner peripheral surface having a Rockwell C hardness on the first and second end portions in the range of about 57 to about 62 and a Rockwell C hardness on the inner center portion in the range of about 15 to about 50.

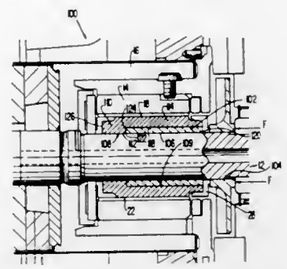
5,249,869

PRELOADED ASSEMBLY WITH THERMAL COMPENSATION

William J. Mabe, Thornton, Colo., assignor to Sundstrand Corporation, Rockford, Ill.

Filed May 21, 1991, Ser. No. 703,760
Int. Cl.[5] F16C 17/22
U.S. Cl. 384—278 13 Claims

1. A preloaded assembly comprising:
a stationary bushing having an interior surface forming an annulus;
a shaft having a first thermal coefficient of expansion with the shaft being mounted for rotation within the annulus of the stationary bushing;
a first sleeve which contacts the shaft along a first portion of an outside surface of the shaft with the first sleeve having a second thermal coefficient of expansion;
a second sleeve having a third thermal coefficient of expansion, an outer surface engaging the annulus of the stationary bushing, a first axial section of the second sleeve contacting a second portion of the outside surface of the shaft adjacent the first portion, and a second axial section of the second sleeve contacting an outside surface of the first sleeve; and wherein:
the second coefficient of thermal expansion is greater than



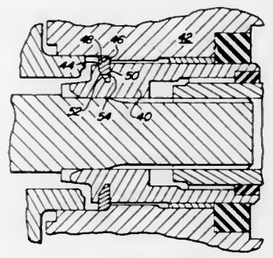
the third thermal coefficient of expansion, and the shaft and sleeves rotate without slippage in unison in response to torque when an axial preload is applied to the shaft and the sleeves within a predetermined range.

5,249,870

NON-REVERSIBLE THRUST WASHER

Ralph Westervelt, Pekin, Ill., and Corwin L. Klages, Cedar Falls, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jul. 13, 1992, Ser. No. 912,370
Int. Cl.[5] F16C 17/04
U.S. Cl. 384—420 3 Claims



1. A thrust transferring system comprising:
a) a first part having an asymmetrical groove formed therein;
b) a second part rotating relative to said first part having a curved shoulder formed thereon adjacent to said groove; and
c) a thrust washer positioned in said groove and abutting said shoulder for transferring thrust from said first part to said second part, said thrust washer being provided with a curved part corresponding to and abutting against said curved shoulder and an asymmetrical part corresponding to the asymmetry of said groove such that said thrust washer can be positioned in said groove only in one direction.

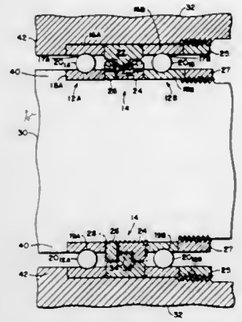
5,249,871

HIGH FORCE BALL BEARINGS

Richard R. LaTorre, Punta Gorda, Fla., and George C. Cusiter, late of Camarillo, Calif. by Nancy Cusiter, executrix , assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 599,932, Oct. 19, 1990, abandoned.
This application Jan. 15, 1993, Ser. No. 5,918
Int. Cl.[5] F16C 19/52
U.S. Cl. 384—551 18 Claims

1. A ball bearing assembly comprising:
(a) a ring assembly having:
(i) an inner ring;
(ii) an outer ring; and
(iii) a plurality of balls between the inner ring and the outer ring; and
(b) a spacer assembly having:



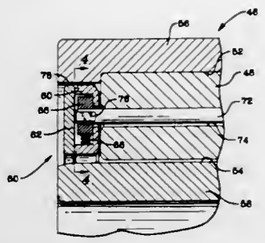
(i) a first spacer ring having a groove therein, said first spacer contiguous with a first of the rings of the ring assembly; and
(ii) a second spacer ring having a tongue disposed in the groove, said second spacer ring contiguous with a second of the rings of the ring assembly.

5,249,872

SPRING LOADED BEARING RETAINER

Jerry P. Rhodes, Paris, France, and John C. Bigler, Glen Gardner, N.J., assignors to The Torrington Company, Torrington, Conn.

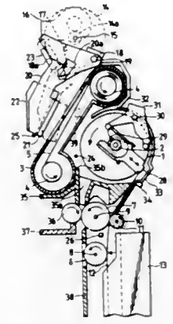
Filed Oct. 30, 1992, Ser. No. 969,684
Int. Cl.[5] F16C 33/46
U.S. Cl. 384—574 18 Claims



1. A rolling element bearing assembly comprising:
an inner bearing race;
an outer bearing race coaxial with the inner bearing race;
apertured rolling elements within an annulus between the inner and outer bearing races;
a bearing retainer having retaining pins, the retaining pins being received within apertures of the rolling elements; and
biasing means within the bearing retainer for biasing the retaining pins radially to move the rolling elements toward one of the inner and outer bearing races to extend a zone of contact between the rolling elements and said one bearing race.

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5,249,873
METHOD AND APPARATUS FOR THERMAL TRANSFER RECORDING AND INK PAPER CASSETTE THEREFOR
Seiji Okunomiya, Katsuta, and Masashi Yoshida, Nakaminato, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jun. 30, 1992, Ser. No. 906,422
Claims priority, application Japan, Jul. 5, 1991, 3-164803
Int. Cl.[5] B41J *2/32*
U.S. Cl. 400—120 8 Claims



1. A thermal transfer recording method for recording on a recording paper using ink paper contained in an ink paper cassette, said ink paper having ink layers, and said ink paper cassette further containing an ink paper feeding bobbin with the ink paper wound therearound, and a take-up bobbin for taking up the ink paper fed from the feed bobbin, a recording paper, a platen roller, and a thermal head, said recording paper and said ink paper fed from said feed bobbin being disposed in a superimposed manner on said platen roller and urged toward the platen roller from the ink paper side and heated by said thermal head, thereby allowing ink to be transferred from the ink paper to the recording paper in accordance with information provided to the thermal head, said method comprising the steps of:

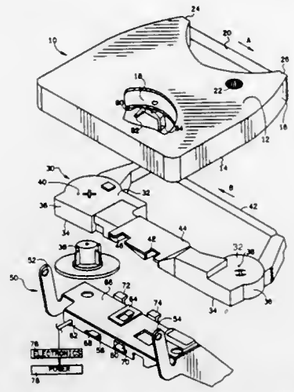
discriminating whether the ink paper cassette is of a first ink paper cassette type containing a first ink paper having only ink layers, or of a second ink paper cassette type containing a second ink paper having both a receiving layer and ink layers;

selecting a first recording paper having a receiving layer if the discriminated ink paper cassette is of the first ink paper cassette type, or selecting a second recording paper not having a receiving layer if the ink paper cassette is of the second ink paper cassette type; and

transferring ink to the selected recording paper from the ink paper contained in said discriminated ink paper cassette.

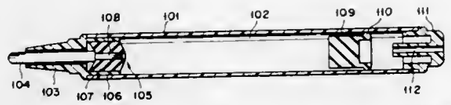
5,249,874
RIBBON CARTRIDGE
Robert W. Daggs, Simi Valley, Calif., assignor to General Ribbon Corporation, Chatsworth, Calif.
Continuation of Ser. No. 775,338, Oct. 11, 1991, Pat. No. 5,122,002, which is a continuation of Ser. No. 546,326, Jun. 29, 1990, Pat. No. 5,069,563. This application Apr. 9, 1992, Ser. No. 865,495
Int. Cl.[5] B45J *35/28*
U.S. Cl. 400—208 12 Claims

1. A ribbon cartridge for mounting on a device, said cartridge comprising a top, a bottom, a side and a ribbon chamber disposed between said top and said bottom, said cartridge further including a ribbon outlet extending from said chamber, a ribbon inlet extending into said chamber, and a tab oriented downwardly and below said ribbon chamber, said tab being



positionable relative to said cartridge for actuating a power switch in a device in which said cartridge may be mounted.

5,249,875
MARKER WITH PUMP AND FOLLOWER
Jiro Hori, 61-2, Ooazakamihiroya, Tsurugashima-machi, Iruma-gun, Saitama-ken, and Katsumi Hori, Saitama, both of Japan, assignors to Jiro Hori, Saitama, Japan
Filed Sep. 10, 1991, Ser. No. 757,316
Claims priority, application Japan, Sep. 11, 1990, 2-241013; May 8, 1991, 3-102852; May 8, 1991, 3-102853
Int. Cl.[5] B43K *5/06, 8/04, 5/18, 7/10*
U.S. Cl. 401—148 4 Claims



1. A marker for applying ink to a certain portion on a surface to be coated, said marker comprising:

a cylindrical ink reservoir formed within a body;

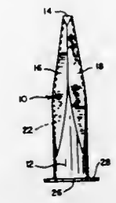
a slide plug slidable within said body, said slide plug being maintained in a liquid tightness with an inner periphery of said body, partitioning ink in said ink reservoir from air, and sliding in said body according to consumption, expansion, and contraction of the ink, said slide plug being formed of an elastic material and having a redetermined sliding resistance based on friction with an inside wall of said ink reservoir;

a pen element slidably mounted at a front end of said body so as to slide back and forth in accordance with writing pressure; and

pump means mounted in said body for pressurizing the ink in said ink reservoir formed within said body when said pen element slides in accordance with writing pressure,

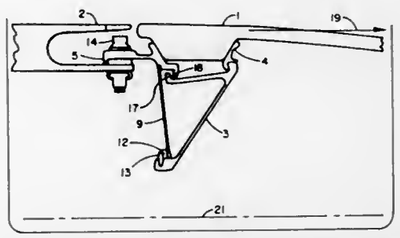
wherein the pen element slides back in accordance with writing pressure, and the ink in the ink reservoir is pressed by the pump means, whereby the sliding plug slides to determine and control the pressure applied to the ink in the ink reservoir and the ink in the ink reservoir is supplied to the pen element.

5,249,876
CAULKING NOZZLE
Harold M. Hattman, 104 Nyetimber Pkwy., Coraopolis, Pa. 15108
Continuation of Ser. No. 621,326, Dec. 3, 1990, abandoned. This application Nov. 13, 1991, Ser. No. 791,463
Int. Cl.[5] B65D *25/40, 25/42, 25/48*
U.S. Cl. 401—261 6 Claims



1. A nozzle for the distribution of filler material in a corner formed by the intersection of two generally perpendicular surfaces comprising barrell means having a tapered end, said barrel means having a cross-section area which continuously decreases toward said tapered end, said tapered end formed from three beveled surfaces, and central bore means extending longitudinally through the extent of said barrel means, said central bore means forming a supply opening and a tip opening, said tip opening provided at the intersection of said three beveled surfaces at said tapered end, said tip opening being provided at an angle of approximately 45° to a first of said three beveled surfaces and extending to the intersection of the other two of said three beveled surfaces, said other two beveled surfaces sized and positioned to fit within a corner formed by the intersection of said two generally perpendicular surfaces, said first of said three beveled surfaces adapted to smooth the flow of filler material from said nozzle.

5,249,877
APPARATUS FOR ATTACHING A CERAMIC OR OTHER NON-METALLIC CIRCULAR COMPONENT
Donald M. Corsmeier, Cincinnati, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Feb. 28, 1992, Ser. No. 843,670
Int. Cl.[5] F16B *1/02*
U.S. Cl. 403—24 10 Claims



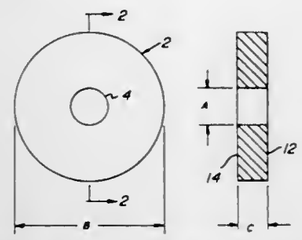
1. Apparatus for coupling a first non-machinable annular member to a second annular member comprising:

(a) first and second annular clamping elements coupled together by an annular clamp ring;

(b) an annular preloaded spring element retained within said clamp ring for spring biasing said annular clamping elements toward each other to cause said first and second annular clamping elements to grip said first non-machinable annular member; and

(c) wherein said annular pre-loaded spring element is configured in the form of a washer having a large centrally positioned hole therein, an outside diameter portion of said washer contacting an outside diameter portion of said clamp ring and an inside diameter portion of said washer contacting an inside diameter portion of said clamp ring.

5,249,878
SHEAR PUCK
Mitchell H. Frumkin, 7 Nancy St., Kendall Park, N.J. 08824
Filed Dec. 16, 1992, Ser. No. 991,110
Int. Cl.[5] F16B *43/00*
U.S. Cl. 403—291 9 Claims



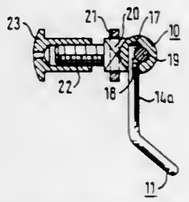
1. A shear puck for connecting abutting beams comprising:

(a) a composite material;

(b) a cylindrical section having planer sides;

(c) a hole through the center of said puck and wherein said composite material is fiber-glass.

5,249,879
QUICK RELEASE FOR A BICYCLE
Reinhold Zoor, Eichenau, Fed. Rep. of Germany, assignor to K.W. Hochschorner GmbH, Martinsried, Fed. Rep. of Germany
Filed Apr. 13, 1992, Ser. No. 866,641
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1991, 9104431[U]
Int. Cl.[5] B62K *3/00*
U.S. Cl. 403—374 10 Claims



1. A quick release for a bicycle comprising:

an eccentric cam having a bearing bore;

a shaft on which said eccentric cam is rotatably mounted;

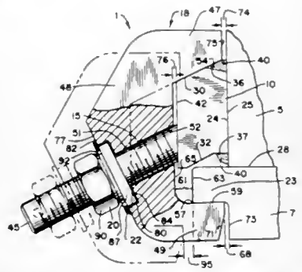
a hand lever engaged with said shaft; and

a component fitted to said shaft which, with the aid of the eccentric cam, can be moved, by rotation of said hand lever in one direction, into a clamped position and, by rotation of said hand lever in an opposite direction, can be released from the clamped position;

wherein the hand lever is constructed as a lever arm made from a flexurally rigid material, said lever arm being substantially U-shaped, free ends of U-legs of the substantially U-shaped lever arm being, in each case, located in a lever arm fixing bore in the eccentric cam and having a channel which engages around the shaft to fix the lever arm in the eccentric cam.

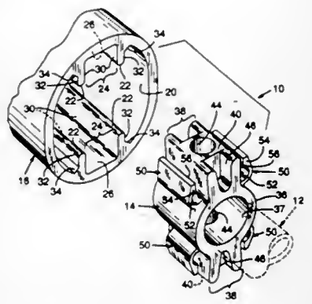
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5,249,880
PRESS DIE CLAMP
Dennis H. Vaders, Elkin, N.C., assignor to Masonite Corporation, Chicago, Ill.
Filed May 8, 1992, Ser. No. 880,703
Int. Cl.[5] F16B *1/00, 4/00*
U.S. Cl. 403—374 24 Claims



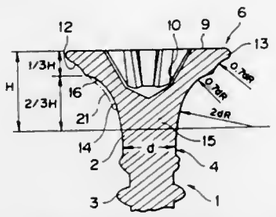
24. In a clamping system for holding a first component to a lip of a second component, the components having surfaces that extend due to heat expansion, the improvement comprising:
(a) a first member adapted to be fixed to the first component, said first member having an inclined surface,
(b) means for clamping the first componen, to the second component, said means having a first sloped surface adapted to frictionally engage said inclined surface and a second surface adapted to frictionally engage the lip of the second component while in spaced relation to the extending surfaces thereof.

5,249,881
TELESCOPING ARM APPARATUS
George K. Austin, Jr., Newberg, and J. Rick Halbirt, Hubbard, both of Oreg., assignors to A-Dec, Inc., Newberg, Oreg.
Filed Mar. 20, 1992, Ser. No. 855,200
Int. Cl.[5] F16B *7/10*
U.S. Cl. 403—378 17 Claims



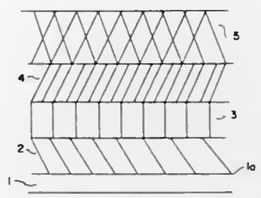
1. A telescoping arm comprising:
a sleeve defining an interior bore;
a rod having an axis and slidable within the sleeve; and
a bushing attached to the rod and slidably received within the bore, the bushing having
a block having external dimensions at least slightly smaller than the sleeve bore such that it is slidably received therein, the block having a surface portion configured to directly contact the sleeve bore in any direction perpendicular to the rod axis in response to a lateral force on the block from any lateral direction to prevent substantial movement in all lateral directions between the bushing and the sleeve and to guide the rod within a controlled sliding path within the bore, the block including an outwardly protruding portion extending to a first radius from the axis of the rod, and the sleeve including an inwardly protruding portion spaced apart from the axis of the rod by a second radius less than the first radius, such that the outwardly protruding portion interferes with the inwardly protruding portion to prevent unlimited rotation of the bushing about the rod axis within the sleeve, the bushing also having
a first flexible spring portion comprising a cantilever arm extending away from the block, the first spring portion having a first toe portion biased with a biasing force in a first direction about the axis against a first portion of the sleeve, and a second flexible spring portion comprising a cantilever arm extending away from the block, the second spring portion having a second toe portion biased with a biasing force in second direction about the axis opposite the firs direction against a second portion of the sleeve of resisting movement between the sleeve and the rod, each spring portion further having an elongated neck portion extending between the block and the toe portion such that the biasing forces flex the neck portions and laterally displace the toe portions in opposite direction.

5,249,882
SELF-TAPPING SCREW
Eiichi Nagoshi, Chigasaki; Osami Iwasaki, and Tetuya Akashi, both of Hatano, all of Japan, assignors to Topura Co., Ltd., Osaka, Japan
Filed Apr. 29, 1992, Ser. No. 875,437
Claims priority, application Japan, May 29, 1991, 3-152283
The portion of the term of this patent subsequent to Apr. 20, 2010, has been disclaimed.
Int. Cl.[5] F16B *25/00, 35/06*
U.S. Cl. 411—399 3 Claims



1. A screw comprising a screw shaft part, a drill part with a sharp end at an extreme end of the screw shaft part and a head part arranged at a rear end of said screw shaft part having an inverse truncated cone shape with an outer circumference of a curved concave surface and an upper surface with an engaging groove in which a screw driver tool is adapted to be installed, said head part including a large diameter part extending from an outer circumferential edge of the upper surface to a lower end and a small diameter part concentrically and integrally connected to the lower end of the large diameter part and extending to said screw shaft part, an outer circumference of said small diameter part constituting a second seat surface forming a part of the curved concave surface and having a large curvature at a terminal end near said large diameter part and a gentle curvature with a diameter gradually decreasing toward said screw shaft part, an outer circumference of said large diameter part constituting a first seat surface forming a part of the curved concave surface and having a diameter gradually decreasing toward the terminal end of said second seat surface with a curvature approximately equal to that near the terminal end of said second seat surface so as to form two-stage curved concave surfaces and an annular projecting edge at a connection part between said first seat surface and second seat surface.

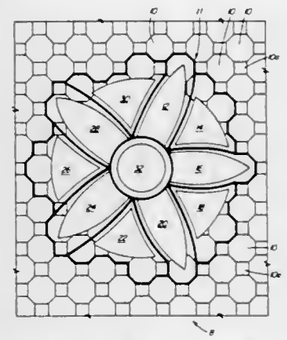
5,249,883
METAL PLATE/ASPHALT PAVEMENT
Ronald D. Watson; Dennis P. Foley; Reginald Frizzell; Dale Sieben, and Ludovit Zanzotto, all of Calgary, Canada, assignors to Husky Oil Operations Ltd., Calgary, Canada
Filed Mar. 26, 1992, Ser. No. 845,137
Int. Cl.[5] E01C *5/22*
U.S. Cl. 404—31 9 Claims



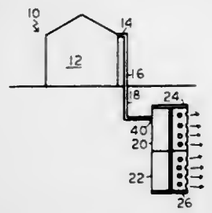
1. A combination of a metal plate and a four-layer paving system, said four layer paving system consisting of:
(a) a first layer which is applied to the top surface of said metal plate, said first layer having sufficient tack to adhere to said metal plate and comprising a first elastomer-modified asphalt composition consisting of from 6 to 25 weight percent first elastomer and 94 to 75 weight percent first asphalt, wherein said first elastomer-modified asphalt composition is:
(i) prepared with first asphalt having a penetration value of from 15 to 800 dmm,
(ii) applied in the form of a first emulsion, in an amount sufficient to provide from 400 g to 1800 g of said first elastomer-modified asphalt composition per square meter,
(b) a second layer consisting of aggregate particles having a maximum size of 15 mm, said second layer being applied over said first layer in an amount of from 5 to 15 kg per square meter,
(c) a third layer which is applied over said second layer, said third layer comprising a second elastomer-modified asphalt composition consisting of from 3 to 20 weight percent second elastomer and 97 to 80 weight percent second asphalt, wherein said second elastomer-modified composition is:
(i) prepared with second asphalt having a penetration value of from 15 to 800 dmm,
(ii) applied in the form of a second emulsion, in an amount sufficient to provide from 100 g to 1200 g of said second elastomer-modified composition per square meter, and
(d) a fourth layer consisting of asphalt pavement, said fourth layer having a minimum thickness of from 10 mm.

5,249,884
CUSTOM DESIGN INTERLOCKING IN A STANDARD MATRIX
Alfred Widmer, 506 Glenway Avenue, Winnipeg, Manitoba, Canada R2G 1H4
Filed Sep. 6, 1991, Ser. No. 755,666
Int. Cl.[5] E01C *5/00*
U.S. Cl. 404—42 4 Claims

1. In a covering for a floor, wall, or the like, said covering consisting of a matrix of standard shaped elements from which covering a plurality of adjacent elements has been removed to form an irregularly shaped open area having an interior peripheral border, an insert for placement in said open area, said insert comprising;
a first section comprising an ornamental form having an irregular exterior peripheral border and being set within said irregularly shaped open area and spaced from the interior peripheral border;
a second section set within said open area surrounding said exterior peripheral border of said first section, said second section having a first edge adapted to abut conformingly against the irregular exterior peripheral border of said ornamental form and a second edge adapted to abut conformingly against the interior periphery of said open area, said second section comprising a plurality of separable segments similar in appearance to the standard elements of the covering, some of said separable segments being adapted to abut conformingly against the irregular exterior peripheral border of the ornamental form, some of said segments being adapted to abut conformingly against the interior periphery of the open area,
whereby the preformed insert may be placed directly into the open area without the need for cutting of the existing elements of the floor covering, and nevertheless give the appearance of an irregularly shaped ornamental form being placed into the floor.



5,249,885
METHOD OR USE OF COMPOSITE DRYWELL
Thomas Florence, Centerville, Mass., assignor to Owl 1990 Trust, Hyannis, Mass.
Divisiion of Ser. No. 619,115, Nov. 28, 1990, Pat. No. 5,086,594, which is a continuation-in-part of Ser. No. 407,361, Sep. 14, 1989, Pat. No. 4,982,533, which is a continuation-in-part of Ser. No. 394,635, Aug. 16, 1989, Pat. No. 4,983,069. This application Feb. 10, 1992, Ser. No. 833,367
The portion of the term of this patent subsequent to Feb. 11, 2009, has been disclaimed.
Int. Cl.[5] E02B *13/00*
U.S. Cl. 405—44 17 Claims



1. A method for the accumulation and control-flow of water from a water source, which method comprises:
a) providing a composite drywell having a side wall, the drywell adapted to receive water therein, the drywell comprising a plurality of sections which makes up the side wall, at least one of which sections contains a plurality of distribution ports therein, for the distribution of water from the drywell, and which drywell includes a top cover;
b) interlocking together the side edges of the adjacent sections of the drywell, to form the side wall of the composite drywell; and

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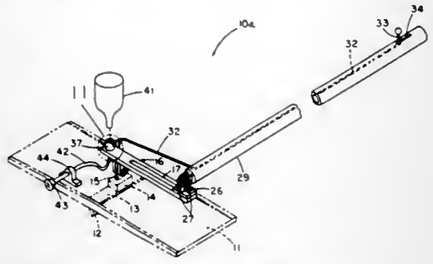
c) selecting at least one of the particular sections, to form the composite drywell, to provide the desired direction, level and distribution flow of the water from the distribution ports of the composite drywell.

5,249,886

GROOVING APPARATUS

Francisco C. Huerta, Jr., 5816 Larcom La., Stockton, Calif. 95210

Filed Feb. 14, 1992, Ser. No. 835,539
Int. Cl.[5] E01C *23/02*
U.S. Cl. 404—89 **4 Claims**



1. A grooving apparatus, comprising,
a float plate, the float plate including a float plate bottom surface, with the float plate bottom surface including a grooving rib medially bisecting the bottom surface extending downwardly therefrom, and
a support boss mounted medially of a top surface of the float plate, with the support boss including a support flange orthogonally oriented relative to the support boss and to the top surface of the float plate, and
a support plate, the support plate including a support plate top wall spaced from and parallel a support plate bottom wall, and
a support plate first end spaced from a support plate second end, and
an elongate enclosed slot directed through the support plate orthogonally oriented relative to the support plate bottom wall and the support plate top wall, and
a plurality of spaced, parallel support flange receiving plates fixedly and orthogonally mounted to the support plate bottom wall adjacent the support plate second end, the receiving plates defining a receiving plate spacing therebetween, with the support flange positioned within the receiving plate spacing, and
an axle orthogonally directed through the receiving plates and the support flange for pivotally mounting the support plate relative to the float plate, and
a handle, the handle including a bifurcated lower distal end, the bifurcated lower distal end fixedly mounted to a slide plate, and the slide plate adjustably mounted relative to the elongated enclosed slot.

5,249,887

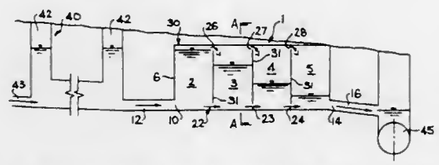
APPARATUS FOR CONTROL OF LIQUIDS

Donald I. Phillips, Hawthorn, Australia, assignor to Swinburne Limited, Australia

Filed Oct. 23, 1991, Ser. No. 781,810
Claims priority, application Australia, Oct. 1, 1991, 84863/91
Int. Cl.[5] E02B *11/00*
U.S. Cl. 405—36 **18 Claims**

1. Apparatus for controlling the rate of liquid discharge from a site comprising at least three liquid retention cells each having a bottom, said cells being arranged in series with respect to the flow path of the liquid through the apparatus, the liquid retention cells being arranged in at least one group which comprises at least three of said cells disposed adjacent one another, an inlet for receiving liquid previously existing at the site and for delivering liquid to an upstream cell of the apparatus and an outlet for discharging liquid from a downstream cell of the apparatus to a discharge line, and transfer orifices which provide liquid communication between adjacent cells in the group, the flow controlling structural dimension of said orifices remaining fixed during all operative states of said apparatus, the or each transfer orifice being located at the bottom of the cells and being configured so as to control the rate of liquid flow between adjacent cells and create a condition whereby there is a dissipation of energy of the liquid between each cell.

17. A method of controlling the rate of stormwater discharge from a site to a stormwater drain of predetermined capacity, said site being capable of producing a stormwater drain-off rate in excess of said predetermined capacity, said method including the steps of:
(a) causing the stormwater to flow to a flow control apparatus having at least first, second and third cells arranged in series with transfer orifices to provide liquid communication between adjacent cells;



(b) dissipating energy in said first cell as the stormwater passes therethrough;
(c) dissipating energy in the orifice connecting the first cell to the second cell, the flow controlling structural dimensions of the orifice connecting the first and second cells remaining fixed during all operative steps of the method;
(d) dissipating energy in the second cell as the stormwater passes therethrough;
(e) dissipating energy in the orifice connecting the second cell to the third cell, the flow controlling structural dimensions of the orifice connecting the second and third cells remaining fixed during all operative steps of the method;
(f) dissipating energy in the third cell; and
(g) discharging the stormwater from the third cell to said drain at a rate which does not exceed said predetermined capacity.

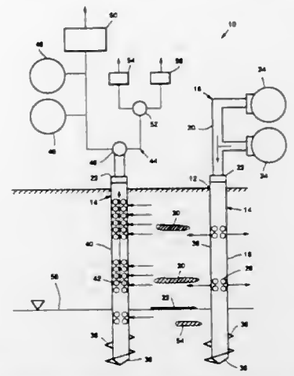
5,249,888

ENHANCED GRADIENT SOIL AND GROUNDWATER REMEDIATION METHOD

Kathryn E. Braithwaite, Capistrano Beach, and John F. Dablow, III, Huntington Beach, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 20, 1991, Ser. No. 811,752
Int. Cl.[5] E02D *3/11*; B09B *3/00*
U.S. Cl. 405—128 **4 Claims**

1. An enhanced method for decontaminating a contaminated volume of soil, the method comprising the steps of:
a) inserting at least one injection probe into said soil such that a portion of said injection probe is located approximately within said contaminated volume of said soil;
b) inserting at least one extraction probe into said soil such that a portion of said extraction probe is located approximately within said contaminated volume of soil and spaced apart from said injection probe, wherein said injection probe and said extraction probe comprise elongated hollow tubes with apertures formed to allow the flow of fluids in a substantially horizontal direction, said apertures located within said contaminated volume of soil;
c) concurrently injecting a pressurized fluid into said injection probe with a relatively high injection pressure substantially within the range 20–120 inches of mercury and applying a vacuum to said extraction probe with a relatively high vacuum substantially within the range of 5–30 inches of mercury;
d) removing said pressurized fluid and said contaminating substance from said extraction probe, whereby said pressurized fluid and said contaminating substance within said



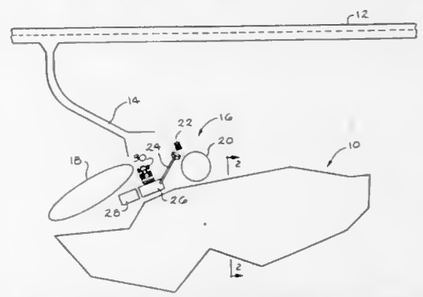
contaminated volume of soil are rapidly and forcibly drawn through said contaminated volume of soil in said substantially horizontal direction from said injection probe toward said extraction probe; and
e) removing said injection probe and said extraction probe from said decontaminated soil.

5,249,889

SOIL-LESS METHOD FOR THE RECLAMATION OF DISTURBED AREAS

Philip E. Sierzega, Okemos, Mich., assignor to Great Lakes/Enviroland, Inc., DeWitt, Mich.

Filed Apr. 27, 1992, Ser. No. 874,523
Int. Cl.[5] B09B *3/00*
U.S. Cl. 405—128 **10 Claims**



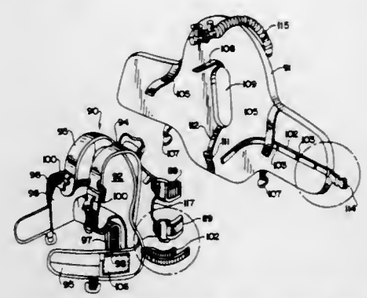
1. A method for reclaiming a disturbed land area by filling in the disturbed area with a fill mixture, which comprises:
(a) providing a mixer means and a residue material comprised of at least one of the group of a plant ash material, a coal ash material and a concrete waste material wherein the residue material is introduced into the mixer means so that the residue material is thoroughly ground and pulverized;
(b) mixing a lime sludge from municipal water treatment comprising calcium carbonate, magnesium carbonate and magnesium hydroxide with the residue material to render the residue material resistant to leaching and to thereby form the fill mixture; and
(c) filling the mixture into the disturbed land area.

5,249,890

MODULAR BACKPACK ASSEMBLY AND BUOYANCY COMPENSATOR

Neil R. Bergstrom, La Mesa, Calif., assignor to Soniform, Inc., El Cajon, Calif.

Filed Jan. 31, 1992, Ser. No. 829,738
The portion of the term of this patent subsequent to Sep. 10, 2008, has been disclaimed.
Int. Cl.[5] B63C *11/02*
U.S. Cl. 405—186 **12 Claims**



1. A buoyancy compensator assembly comprising a backpack assembly and a separately formed inflatable air cell which is removably attached to the backpack assembly, the backpack assembly including:
a) means for supporting a tank of compressed gas;
b) a cummerbund adapted to surround the waist of a wearer;
c) a shoulder harness comprising a pair of shoulder straps adapted to extend over the shoulders of a wearer; and
d) means for connecting the shoulder straps to the cummerbund, the backpack assembly and the air cell including means for removably attaching the air cell to the backpack assembly whereby the backpack assembly can be used with or without the air cell for supporting a tank of compressed gas on a wearer, the air cell including a back portion and a pair of side portions, the back portion being provided with an opening through which the tank-supporting means of the backpack assembly extends when the air cell is attached to the backpack assembly, the air cell including a lower portion which extends below the side portions of the air cell and is adapted to overlie the lower back and a portion of the buttocks of a wearer.

5,249,891

GUIDELINE SYSTEM FOR UNDERWATER OBSERVATION CAMERA SYSTEMS

William W. Pecue, II, Baton Rouge, La., assignor to Texaco Inc., White Plains, N.Y.

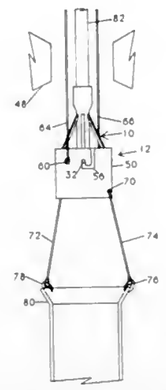
Filed Apr. 30, 1992, Ser. No. 876,844
Int. Cl.[5] E21B *7/12*
U.S. Cl. 405—191 **2 Claims**

1. An apparatus for guiding lines from the surface to a fixed subsea object comprising:
a running tool depending from the lower end of a pipe string and having first and second cylindrical members;
said first cylindrical member having drill pipe connection means on a first end thereof;
a second cylindrical member having a larger diameter and positioned coaxially with respect to said first cylindrical member;
means at the second end of said first cylindrical member and like end of said second cylindrical member fixedly securing said cylindrical members together;
brace members connected between said first and second cylindrical members forming a generally upwardly directed inwardly tapering, conical configuration assuring the coaxial assembly of said first and second cylindrical members;

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a guideline holder having first means for attachment to a fixed subsea object and second means for attachment to guidelines depending from the surface; and



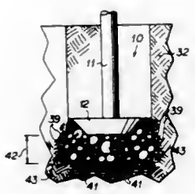
outwardly directed stud means on said second cylindrical member adapted to engage said guideline holder to detachably assembly said running tool and said guideline holder together.

5,249,892

SHORT AGGREGATE PIERS AND METHOD AND APPARATUS FOR PRODUCING SAME

Nathaniel S. Fox, 4635 Riveredge Cove, Lithonia, Ga. 30058, and Evert C. Lawton, 7955 SW. 198 Terrace, Miami, Fla. 33189

Filed Mar. 20, 1991, Ser. No. 672,701
Int. Cl.[5] E02D *3/12, 5/46*
U.S. Cl. 405—233 11 Claims



1. A method for producing short aggregate piers in situ in the ground comprising the steps of:

(a) forming a cavity in the ground so that the ground soil forms the bottom and side walls defining the cavity;

(b) compacting soil in the vicinity of a bottom portion of the cavity to prestress and densify the soil in the vicinity of the bottom;

(c) adding a layer of loose aggregate to the cavity so that the aggregates contact portions of the lateral surrounding soil of the side walls defining the cavity and also form an upper surface;

(d) inserting a tamping tool into the cavity so that the tamping tool engages said upper surface;

(e) reciprocating said tamping tool for successively engaging said upper surface for compacting the layer of aggregate to reduce the height of the layer and force some of the aggregate laterally into the side walls defining the cavity for laterally enlarging the cavity in the vicinity of the layer and for prestressing and densifying the laterally surrounding soil;

(f) removing the tamping tool from the cavity; and

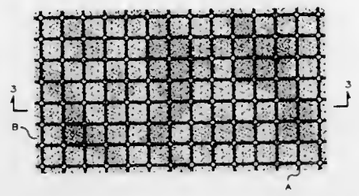
(g) repeating steps (c), (d), (e), and (f) until the cavity is filled substantially completely with compacted aggregate.

5,249,893

EROSION CONTROL MAT

Gerald A. Romanek; Roger E. Moon, both of Greenville; Mark L. Marienfield, Greer, and Sukhdev S. Guram, Greenville, all of S.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 13, 1989, Ser. No. 338,784
Int. Cl.[5] E02D *3/12*
U.S. Cl. 405—258 17 Claims



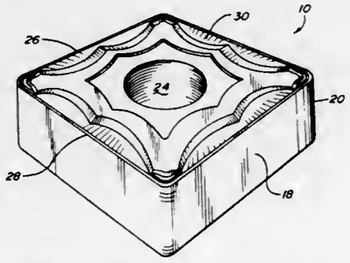
1. A process for controlling erosion of a soil surface which comprises applying to said soil surface an erosion control mat formed of (a) a scrim having a grid sufficiently sized to provide (1) uniform reinforcing and (2) plant penetration through the grid and bonded to said scrim (b) a uniform, non-crosslapped, unconsolidated lightweight web weighing in the range of from about 2½ ounces per square yard to about ½ ounce per square yard wherein the lightweight web will allow ready penetration of plants, light, and water thereby providing erosion control to said soil surface.

5,249,894

HIGH SHEER, ULTRA LIGHT DUTY INSERT

Thomas J. Bernadic, Madison Heights; Brendan L. Brockett, Dearborn Heights, and Robert Racklyeft, Lincoln Park, all of Mich., assignors to GTE Valenite Corporation, Troy, Mich.

Filed Dec. 7, 1992, Ser. No. 986,203
Int. Cl.[5] B23B *27/22*; B23C *5/20*
U.S. Cl. 407—114 10 Claims



1. A high sheer, ultra light duty polygonal lay down indexable cutting insert to machine ductile material at moderate to high cutting speeds at low ranges of feed and depths of cut, comprising:

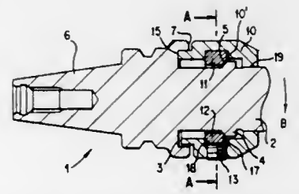
a top surface and a bottom surface substantially parallel to each other and separated by a sidewall running substantially unbroken therebetween to define a body; said side wall comprised of flank portions which extend from corner to corner of the insert; at least one of said corners defining a nose portion of the insert; a cutting edge defined by the intersection of said top or bottom surface with said sidewall; a first descending land surface rearward of said cutting edge, said first ascending land surface being of uniform width and extending about the entire perimeter of said insert body; a second descending land surface rearward of said first descending land surface extending along said flanks of said insert only; said second ascending land surface oriented at an angle greater than said first descending land surface; at least one arcuate shaped flank ascending land surface rearward of said second descending land surface along each flank of the insert; each said arcuate ascending incident land surface extending from the nose portion adjacent said first descending land surface to the midpoint of the flank of the insert spaced apart from said first descending land surface; a first ascending land surface rearward of said descending land surface at the nose portions of the insert; a neutral land surface rearward said first ascending land surface; and a second ascending land surface at said nose portion rearward of said neutral land surface extending to said top surface; a scalloped shaped island and a centrally located aperture extending through said body; said aperture surrounded by a recessed pad area.

5,249,895

TOOL HOLDING FIXTURE

Kurt Blaser, Zuchwil, Switzerland, assignor to Planetron AG, Switzerland

PCT No. PCT/CH91/00090, § 371 Date Apr. 21, 1992, § 102(e) Date Apr. 21, 1992, PCT Pub. No. WO92/03242, PCT Pub. Date Mar. 5, 1992
PCT Filed Apr. 17, 1991, Ser. No. 849,013
Claims priority, application Switzerland, Aug. 21, 1990, 2706/90.2
Int. Cl.[5] B23B *51/00*
U.S. Cl. 408—156 8 Claims



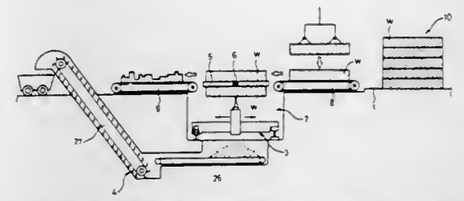
1. A device for setting the true running of a tool holding fixture, comprising: a rotationally symmetrical holding body (1) and a shaft (2) forming one piece, said one piece having an axially directed first annular groove (3) concentric with the shaft (2) in a transition area between said holding body (1) and said shaft (2), said shaft (2) having an annular collar (4) with a flank (5) inclined in a direction toward said first groove (3), a rotatable clamping ring (10) encompassing said collar (4) and engaging said first annular groove (3) being seated on said shaft (2), said clamping ring (10) having a second annular groove (10') in which a plurality of wedge-shaped sliding blocks (11, 12) are seated and are radially and axially movable but secured against canting within said second groove (10'), said sliding blocks (11, 12) supported on said inclined flank (5) of said collar (4), and a pressure screw (13) threadedly engaged within said clamping ring (10).

5,249,896

APPARATUS FOR MANUFACTURING LOST FOAM PATTERN FOR USE IN FULL-MOLD CASTING

Takaoki Namba, and Teruo Kamada, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 872,441, Apr. 23, 1992, Pat. No. 5,197,527.
This application Oct. 30, 1992, Ser. No. 969,767
Claims priority, application Japan, Apr. 23, 1991, 3-119510; Jul. 3, 1991, 3-189366
Int. Cl.[5] B23C *3/00*
U.S. Cl. 409—191 7 Claims



1. An apparatus for machining a foam block into an expendable lost foam pattern for use in full-mold casting, comprising:

mount means for supporting and orienting a foam block;

a pit defining a cavity below said positioning means; and

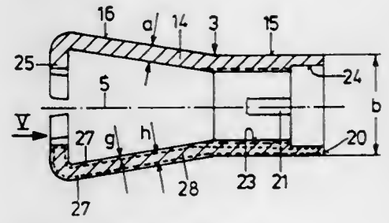
cutting means disposed in said cavity, for cutting, from below, the foam block supported and oriented by said mount means, said cutting means having three degrees of freedom with respect to said mount means.

5,249,897

EXPANDING PLUG

Anton Gerhard, Nürnberg, Fed. Rep. of Germany, assignor to "Toge-Dubel" A. Gerhard GmbH, Nuremberg, Fed. Rep. of Germany

Filed Jan. 13, 1993, Ser. No. 3,655
Claims priority, application Fed. Rep. of Germany, Jan. 14, 1992, 4200785
Int. Cl.[5] F16B *13/06*
U.S. Cl. 411—50 12 Claims



1. An expanding plug comprising:

an expanding sleeve (1) which is provided at least over a part of its length with at least one slot (4, 29), and which has a central longitudinal axis (5) and a rim (8) at a first end and a plug-in end (6) at a second end;

an expanding screw (2) which has a head (12) at a first end and an external thread (11) at a second end and which is arranged in the expanding sleeve (1) concentrically to said central longitudinal axis (5) and which is supported with said head (12) on said rim (8) of the expanding sleeve (1); and

an expanding cone (3) which is arranged in the plug-in end (6) of the expanding sleeve (1), and which is provided with an internal thread (23) for taking up said external thread (11) of the expanding screw (2) and with an expanding section (16) for expanding the plug-in end (6) of the expanding sleeve (1) when being pulled into the expanding

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sleeve (1) by means of the expanding screw (2) and which expanding cone (3) consists of bent steel sheet and comprises edge surfaces (18, 19) limiting a joint gap (17), which edge surfaces (18, 19) extend in the direction of the central longitudinal axis (5) and bear against each other in a peripheral direction of the cone,

wherein the expanding cone (3) is provided with hardened surface regions (27) extending over its entire surface and with an unhardened basic region (28) between the surface regions (27).

5,249,898

COMPOSITE ANCHOR INCORPORATING A WATER-CURING POLYMER COMPOSITION

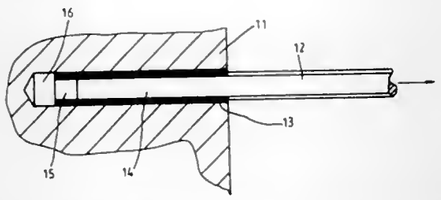
Horst Stepanski, Leverkusen; Günter Arend, Dormagen, and Bernard Jansen, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 14, 1992, Ser. No. 868,384

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1991, 4112531

Int. Cl.[5] F16B *39/00, 39/02;* **E21D** *20/00*

U.S. Cl. 411—82 **9 Claims**



1. A composite anchor comprising a rod sheathed in a material which has been impregnated with a moisture-curing polyurethane resin.

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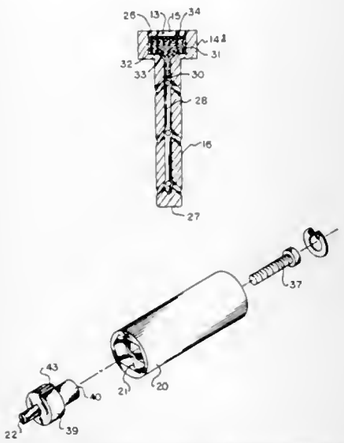
HEAD BOLT AND DRIVER THEREFORE

Robert L. Wilson, 407 First Ave., Burnham, Pa. 17009

Filed Oct. 28, 1992, Ser. No. 967,868

Int. Cl.[5] B25B *13/48;* **F16B** *23/00*

U.S. Cl. 411—82 **4 Claims**



1. A fastener and socket tool for use in high tension head bolt application arrangements, comprising,

a fastener including a shank, wherein said shank is defined about an elongate axis terminating in a threaded portion at one end and a torque receiving head means at the other end, and

said head means including a first torquing head, including a pressure surface proximate said other end, and a second torquing head cavity recessed within said first head remote from said pressure surface, wherein said second torquing head cavity is of a reduced perimeter diameter relative to said first head, and

a socket tool, and

said socket tool comprises a body portion defined by a cylindrical external configuration including a first recess for reception of said first torquing head and including a projection positioned within said first recess for positioning within said second torquing head, and a second recess axially displaced from said first recess and projection for reception of a torque application tool wherein said first recess, said projection, and said second recess are coaxially aligned with respect to one another, and

the socket tool includes a socket tool web medially of the socket tool, and the socket tool includes a socket tool axis, and the web includes a web bore, and a threaded adjuster bolt, the threaded adjuster bolt rotatably mounted within the web bore coaxially aligned within the socket axis, and the adjuster bolt includes an adjuster bolt head and an adjuster bolt head cavity mounted within the adjuster bolt head, and a lock ring mounted between the bolt head and the second recess, and the first recess including a piston cavity coaxially aligned within the socket tool between the first recess and the second recess with the piston cavity having a projection piston slidably mounted therewithin, the projection piston includes the projection mounted on a first side of said piston, and a second side of said piston including a piston socket, the piston socket receiving the adjuster bolt therewithin spaced from the bolt head, and the piston cavity having a key way slot, and projection piston including a piston rib mounted to a periphery of the piston to maintain alignment of the piston and the projection relative to the first recess, whereupon rotation of the adjuster bolt effects reciprocation of the projection piston within the piston cavity.

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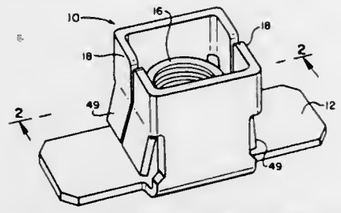
THREADED FASTENER FOR MOUNTING WITHIN AN OPENING IN A PANEL

Richard K. Mitts, Fullerton, Calif., assignor to California Industrial Products, Inc., Santa Fe Springs, Calif.

Filed Sep. 18, 1992, Ser. No. 946,650

Int. Cl.[5] F16B *19/00, 37/04*

U.S. Cl. 411—182 **5 Claims**



1. A fastener formed from a single flat metal sheet for receipt within an opening in a panel, comprising:

a centrally located generally rectangular pressure plate for being positioned against the panel;

internally threaded hollow sleeve means integral with the pressure plate and extending away from a major surface of said pressure plate;

first and second generally T-shaped side wall members consisting of a center plate and unitary cross bar, each side wall member having an end of its center plate integrally attached with the pressure plate at respective opposite sides of the pressure plate; and

portions of each cross bar forming spring members for clampingly engaging the panel adjacent the panel opening when the side wall members and hollow sleeve are received within the opening.

5,249,901

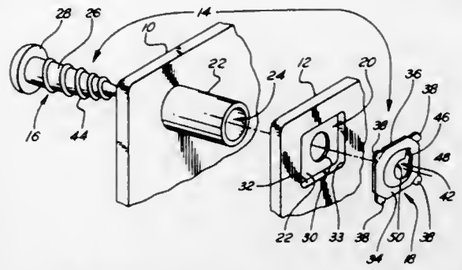
SPRING SEATED FASTENER

Richard B. Moore, 636 Wellington Creseot, Mount Clemens, Mich. 48043

Filed Sep. 29, 1992, Ser. No. 954,534

Int. Cl.[5] F16B *37/04, 37/16*

U.S. Cl. 411—182 **14 Claims**



1. A retainer nut for receipt in a recess of a part and engagement with a threaded shank comprising:

a generally plate shaped body;

a plurality of somewhat flexible tabs integral with and extending from said body, said tabs having a generally semicircular edge;

a hole through a central portion of said body;

a displaced portion of said body around the periphery of said hole providing a threaded portion to receive a complementarily threaded shank of a fastener; and

said body being constructed, arranged and dimensioned to be received in a complementary recess having portions forming an interference fit with said edges of said tabs to facilitate firm engagement and retention of said nut within said recess when forced into said recess.

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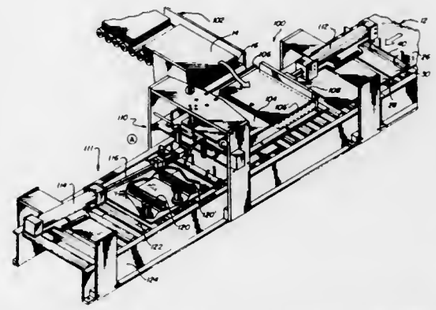
LOOSE-LEAF BINDER ASSEMBLY PROCESS AND APPARATUS

Casimir J. Stankiewicz, Easthampton, Mass., assignor to The Holson Burnes Company, North Smithfield, R.I.

Filed Jun. 25, 1992, Ser. No. 903,917

Int. Cl.[5] B42B *5/08*

U.S. Cl. 412—7 **14 Claims**



1. A process for forming a loose-leaf book by assembling a stack of pages into a snap-ring binder, wherein each page has a plurality of holes which are aligned with holes in the other pages in the stack and the binder has a plurality of ring elements each, when open, having an upstanding ring segment configured such that its projection along a line of insertion is smaller than the holes in the pages, the process comprising:

advancing a binder on a line of movement toward an assembly station;

positioning the binder with open ring elements at the assembly station;

linearly advancing a stack o pages to a position which intersects with but is above the line of movement of the binder;

positioning the stack of pages over the binder such that its upstanding ring segments are aligned with the holes in the stack of pages at said assembly station;

raising the binder thereby inserting its upstanding ring segments into the holes;

closing the ring elements; and

withdrawing the binder with the stack of pages from the assembly station.

5,249,903

ROUND BALE HANDLING EQUIPMENT

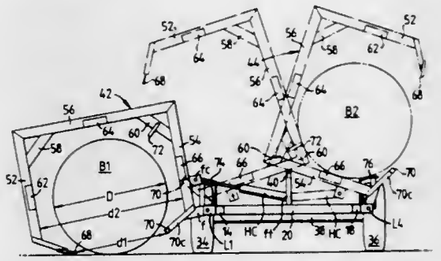
Peter J. Green, and Vincent P. Green, both of Lutterworth, England, assignors to Four-Gee Design Limited, Leicestershire, England

Continuation of Ser. No. 375,206, Jun. 30, 1989, abandoned. This application Feb. 26, 1991, Ser. No. 660,259

Claims priority, application United Kingdom, Jul. 2, 1988, 8815773

Int. Cl.[5] B60P *1/00*

U.S. Cl. 414—24.5 **10 Claims**



1. Apparatus for collecting grassland bales comprising:

an open-ended cradle structure in which a plurality of bales can be lifted from a lowered position in which the bales are in contact with the ground to a raised stowed position and transported,

said cradle structure comprising a cage which has lifting surfaces, said lifting surfaces having a length sufficient to simultaneously lift a plurality of bales, said lifting surfaces lifting the bales out of contact with the ground and defining a mouth of said cradle structure, said mouth being the space between said lifting surfaces which is substantially constant while lifting the bales out of contact with the ground and less than the diameter of the bales, said mouth facilitating the disposition of said cradle structure about the bales while the bales are in ground contact,

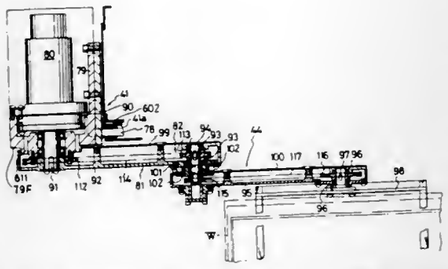
said cradle structure further comprising support surfaces, said support surfaces having a length sufficient to simultaneously support a plurality of bales, said support surfaces supporting bales transferred from said lifting surfaces when said cradle structure is raised into the stowed position, and

means for moving said cradle structure between the lowered position and the stowed position, a first of said plurality of bales entering said cradle structure through an open end thereof while said cradle structure is in the lowered position and a second of said plurality of bales entering said

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cradle structure through the open end thereof while the first of said plurality of bales remains within said cradle structure.

5,249,904
STOCK HANDLING APPARATUS
Yuji Wakita, and Hideaki Haruna, both of Himeji, Japan, assignors to Tsubakimoto Chain Co., Osaka, Japan
Continuation-in-part of Ser. No. 565,661, Aug. 10, 1990, abandoned, which is a division of Ser. No. 265,839, Nov. 1, 1988, Pat. No. 4,964,776. This application Jan. 15, 1992, Ser. No. 821,891
Claims priority, application Japan, Dec. 1, 1987, 62-301516; Dec. 28, 1987, 62-197418; Apr. 20, 1988, 63-52122
Int. Cl.[5] B65G *1/04*
U.S. Cl. 414—282 **5 Claims**

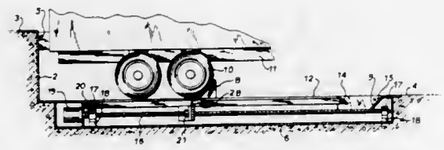


1. An apparatus for transferring articles with respect to vertically spaced storage shelves and including a travelling drive section for movement along front of said shelves, said travelling drive section including a hand unit movable with the travelling drive section along the front of said shelves, said hand unit including an arm mechanism and an operating mechanism for operating the arm mechanism, the arm mechanism comprising a drive arm, motor means connected to one end of the drive arm for pivoting same, an intermediate shaft rotatably supported at the other end of said drive arm, a follower arm connected to said intermediate shaft for pivoting thereby, a follower shaft rotatably supported at a free end of the follower arm and an article holding member fixed on the follower shaft, said operating mechanism being adapted to convert rotation of said motor means into horizontal movement of said follower shaft, said arms being box-like, said operating mechanism being accommodated in said box-like arms,

means for suctioning air from said arm mechanism in a direction form said free end of said follower arm through said follower arm and drive arm;

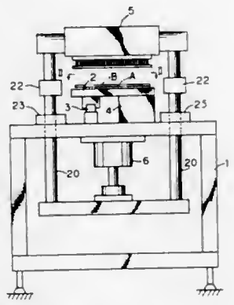
case means enclosing said motor means, said air suctioning means comprising a suction bower, conduit means connecting said blower to said case means of said motor means for drawing air from case means, first hole means communicating said case means and the interior of said drive arm at said one end thereof for drawing air from said hollow drive arm, further hole means communicating between the hollow drive arm at the other end thereof and the adjacent end of the hollow follower arm for drawing air from the follower arm, such that said air suctioning means draws air and entrained particles form said follower arm through said drive arm, and through said case means of said motor means to said blower.

5,249,905
AUTOMATIC WHEEL CHOCKING APPARATUS HAVING AN IMPROVED DRIVE MECHANISM
Robert J. Warner, Mukwonago, and Lester W. Paul, Port Washington, both of Wis., assignors to Kelley Company, Inc., Milwaukee, Wis.
Filed Jul. 22, 1992, Ser. No. 918,680
Int. Cl.[5] B65G *67/02*
U.S. Cl. 414—401 **14 Claims**



1. An automatic wheel chocking apparatus, comprising a generally horizontal supporting surface having a pocket therein, a wheel chock mounted on said supporting surface for movement from a storage position where said wheel chock is located within said pocket and beneath the level of said supporting surface to an operative position where said wheel chock is located within said pocket and beneath the level of said supporting surface to an operative position where said wheel chock is located above said supporting position and is disposed to engage a wheel of a vehicle, drive means for moving said wheel chock between the storage and operative positions and comprising a rotatable lead screw, a nut engaged with said lead screw, means for rotating said screw to thereby move said nut axially on said screw, and link means having a first end pivotally connected to said nut and having a second end pivotally connected to said wheel chock, wherein rotation of said screw in one direction moves said wheel chock from the storage position to the operative position and rotation of the lead screw in the opposite direction moves said wheel chock from the operative position to the storage position.

5,249,906
PRESS MACHINE FOR CHIP TYPE ELECTRONIC COMPONENTS
Tadahiro Nakagawa; Shizuma Tazuke; Satoshi Omuro; Kiyoshi Yoshida; Nobuaki Kashiwagi; Takashi Kimoto; Naoyuki Mori; Hidemasa Iwami; Shigeo Hayashi; Nohuyuki Hayashi, and Toru Matsumura, all of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan
Filed Mar. 9, 1992, Ser. No. 848,244
Claims priority, application Japan, Nov. 8, 1991, 3-321332; Nov. 8, 1991, 3-321333; Dec. 3, 1991, 3-347939
Int. Cl.[5] B65G *65/00*
U.S. Cl. 414—417 **9 Claims**



1. A press machine for chip type electronic components for performing at least one of the following operations: inserting chip type electronic components into receiving holes of a holding plate, transferring chip type electronic components from a holding plate to receiving holes of another holding plate, and pressing out chip type electronic components from receiving holes of a holding plate, said press machine comprising:

a table for horizontally supporting a holding plate in a set position;

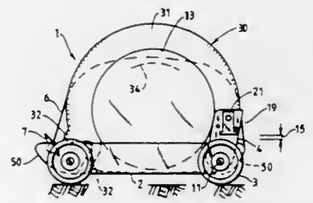
a pin head mounting member arranged above said table and supported to be rotatable about a horizontal axis;

vertical means for vertically moving said pin head mounting member;

at least one pin head having a plurality of press pins corresponding to the receiving holes of said holding plate, said at lest one pin head being detachably mounted on an outer periphery of said pin head mounting member; and

locking means for preventing the rotation of said pin head mounting member to lock said at least one pin head mounted on said pin head mounting member in a downwardly directed position, wherein said press pins extend in a downwardly directed horizontal state to face said holding plate.

5,249,907
DOLLY SERVING AS A TRAVELING AID FOR A DEFECTIVE WHEEL OF A MOTOR VEHICLE
Peter-Randolf Poten, Marmagen; Karl Steffens, Dahlem, and Gunther Gebhardt, Stadtkyll, all of Fed. Rep. of Germany, assignors to DIEHL GmbH & Co., Nuremberg, Fed. Rep. of Germany
Filed May 21, 1992, Ser. No. 886,768
Claims priority, application Fed. Rep. of Germany, May 21, 1991, 4116479
Int. Cl.[5] B60B *30/10*
U.S. Cl. 414—430 **2 Claims**



1. In a dolly serving as a traveling aid for a defective wheel of a motor vehicle, said dolly including a well equipped with rollers for receiving and laterally positioning the defective wheel, a ramp plate for the driving thereonto of the defective wheel and a front stop member for the wheel, the improvement comprising: said stop member being formed by said well and having a W-shaped contour in the configuration of a wheel rim, a straight connecting web formed by two bulges adjacent thereto, and a clamping band on said dolly longitudinally extending over the wheel and including a clamping device for selectively releasing and tensioning said band.

5,249,908
MOVABLE PALLET ASSEMBLY WITH A SWIVEL FRONT WHEEL MECHANISM
Chin-Chin Tsai, No. 89-1, Lane 679, Wu Kuang Road, Kuang Ming Ts'un, Wu Jih Hsiang, Taichung Hsien, Taiwan
Filed Nov. 27, 1991, Ser. No. 799,217
Int. Cl.[5] B62B *1/00*
U.S. Cl. 414—446 **4 Claims**

1. A moveable pallet assembly having a swivel front wheel mechanism comprising:

a first pallet and a second pallet, each said first and second pallet comprising a pair of parallel hollow long bars having a rectangular cross section, and a plurality of transversely disposed hollow short bars having a rectangular cross section, said first pallet having a pair of supporting legs which contact a ground surface when in a lowered position;

C-shaped clamping means for separably joining said first and second pallets together;

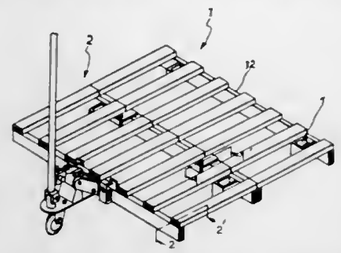
a front wheel mount means comprising a mounting plate and a swivel wheel, said mounting plate having a hole therein and a tubular element attached thereto;

a cylindrical connection means rotatably secured within said hole in said mounting plate, said cylindrical connection means having a groove in a bottom portion thereof;

an elongated pull stick pivotally attached to said cylindrical connection means, said elongated pull stick having a C-shaped fixture unit welded to a lower end thereof;

clip means for rotatably securing said cylindrical connection means within said hole in said mounting plate;

a double-wing fixture means attached to said front wheel mount means, including bolt and nut means joining said



double-wing fixture to said tubular element of said mounting plate;

a pair of C-shaped clamps for detachably attaching said double-wing fixture means to one of said parallel long bars of said second pallet;

a slidable push block having a pair of parallel lugs disposed thereon and a through-hole therein, said parallel lugs having first bolt means therebetween and fixed thereto by first nut means; said through-hole having second bolt means therethrough and second nut means for coupling said slidable push block to said double-wing fixture means;

a connecting rod pivotally attached at one end to said C-shaped fixture unit, and having a second end with hook means for engagement with said first bolt means;

whereby when said hook means is engaged with said first bolt means and said pull stick is pivoted downwardly, said first and second pallets are raised to an elevated position wherein said pair of supporting legs are elevated above the ground surface.

5,249,909
TOWING AND WRECKER TRUCK
Don Roberts, 720 Pine St., Auburndale, Fla. 33823, and Steve Gerstner, 159 Bahia Ct., Winter Haven, Fla. 33880
Continuation of Ser. No. 539,547, Jun. 18, 1990, abandoned. This application Jan. 14, 1992, Ser. No. 820,495
Int. Cl.[5] B60P *1/04*
U.S. Cl. 414—476 **15 Claims**

1. A wheeled vehicle having a sliding deck for receiving and carrying a load such as another vehicle, comprising:

a vehicle frame;

a pair of spaced rails supported by the frame, the rails defining an elongated vertical channel;

a deck having an upper load support surface and a beam fixed to the underside of the deck, the beam having an elongated vertical web slidably fitted in the vertical channel; and wherein

the beam includes spaced upper and lower flanges, the vertical dimension of each rail being such as to extend adjacent

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to and in sliding engagement with both the upper and lower beam flanges.

13. A wheeled vehicle having a sliding and tilting deck for receiving and carrying a load such as another vehicle, comprising:

a wheeled vehicle cab;

a pair of rear wheels spaced from the cab and a rear axle supported by the rear wheels;

a frame supported by the axle and extending rearwardly from the cab;

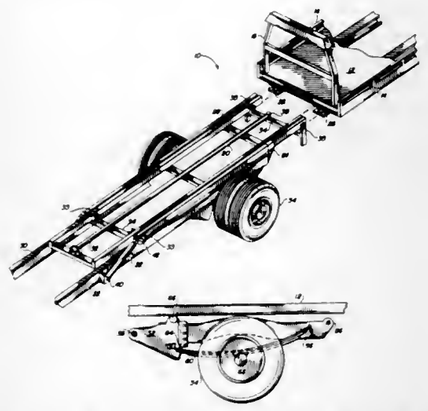
a sub-frame supported by the frame;

means for tilting the sub-frame relative to the frame in a rearward direction with respect to the cab;

a pair of elongated spaced rails fixed to and extending along the sub-frame in a direction generally transverse to the rear axle, each rail having a generally horizontal bearing surface and a vertical surface;

a deck having an upper load support surface;

beam means including a beam fixed under the deck for sliding engagement with both of the rails, the beam including



a generally horizontal flange supported in low friction contact upon the horizontal bearing surfaces of both rails, the beam further including a generally vertical web extending in sliding relationship with the vertical surface of both rails;

elongated springs supported at a respective intermediate point by the rear axle, each spring having first and second ends;

a pair of movable spring lowering plates supported by the frame at each rear wheel at a point spaced from the axle, and attached to one end of the corresponding spring;

a pair of lowering members, each removably attached at one end to a corresponding spring lowering plate and extending over the axle and attached with the second end of the corresponding spring; and wherein

movement of the spring lowering plates relative to the rear axle effectuates a raising or lowering of the second end of the springs, thereby permitting a loading angle reduction when the deck is angularly displaced with respect to the rear axle.

5,249,910

VEHICLE MOUNTED SELF-LOADING AND CARRYING APPARATUS

Ronald J. Ball, 5416 Miguel Rd., Bonita, Calif. 91902

Filed May 18, 1992, Ser. No. 884,917

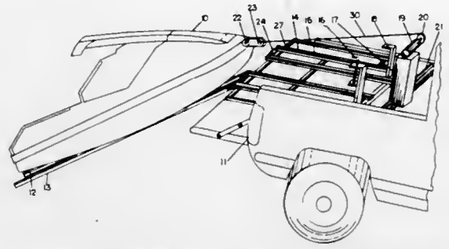
Int. Cl.[5] B65G *67/02*

U.S. Cl. 414—538 **1 Claim**

1. An apparatus for loading and transporting a jet-ski on a pick-up truck, said jet-ski having a bow portion including a towing fixture attached thereto, said apparatus comprising:

a generally rectangular horizontal frame structure mounted in the interior portion of a bed of said pick-up truck, said frame structure constructed from a material selected from the group including aluminum and steel, said frame structure comprising a plurality of horizontal longitudinal beams, a plurality of transverse beams attached to said longitudinal beams, and a plurality of longitudinal jet-ski supporting channels supported by said transverse beams;

said frame structure further comprising two transverse rods extending between said longitudinal beams at a forward end of said frame structure, and at least one vertical attaching structure mounted at said forward end of said frame structure, said vertical attaching structure including vertical attachment pins for releasable engagement with said towing fixture for securing said jet-ski on said frame structure during transportation of said jet-ski;



a plurality of vertical support posts extending from a bottom portion of the frame to the bed of the pick-up truck for elevating the frame structure above the bed of the pick-up truck;

a plurality of auxiliary inclined jet-ski supporting channels removably connected to rear end portions of the longitudinal jet-ski supporting channels, and extending downwardly from the pick-up truck bed to the ground;

a material having a low coefficient of friction covering a top surface of each of said plurality of longitudinal and inclined jet-ski supporting channels;

an electrically powered winch having a cable for attachment to said towing fixture for pulling said jet-ski upwardly along said jet-ski supporting channels during said loading;

a vertical winch support transversely slidably attached to said two transverse rods for supporting said winch; and

means for stowing said auxiliary inclined jet-ski supporting channels beneath the horizontal frame structure during transportation of said jet-ski.

5,249,911

TRUCK TOWING BOOM

Martin A. Marola, Goshen, Conn., assignor to Tru-Hitch, Incorporated, Torrington, Conn.

Continuation-in-part of Ser. No. 670,248, Mar. 15, 1991, Pat. No. 5,163,803. This application May 22, 1992, Ser. No. 887,301

The portion of the term of this patent subsequent to Nov. 17, 2009, has been disclaimed.

Int. Cl.[5] B60P *3/12*

U.S. Cl. 414—563 **35 Claims**

18. A boom assembly for towing a vehicle having a frame and a front wheel portion, said boom assembly comprising:

main frame means comprising a beam structure and an upright structure extending generally perpendicular thereto;

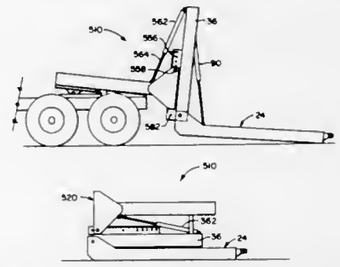
attachment means mounted to said main frame means for attaching said main frame means to a fifth wheel;

lift leg means comprising at least one leg, an offset structure extending from said leg and pivot means for mounting said leg in offset relationship at a lower portion of said upright structure;

first securement means for engaging the underside of the front wheel portion of the vehicle to said lift leg means, said first securement means comprising a catch which is selectively positionable at a plurality of fixed positions relative to the lift leg means;

second securement means for securing a portion of the vehicle frame which is longitudinally spaced from said front wheel portion to said lift leg means; and

hydraulic means connecting said main frame means and said



lift leg means for pivoting said leg means at a first retracted position above the ground when the attachment means is mounted to a fifth wheel, a second extended position wherein said leg means rests on the ground when the attachment means is mounted to the fifth wheel, and a third extended position having an angle greater than the second position which forces the leg means to an elevated position above the ground when the attachment means is mounted to the fifth wheel and the vehicle is secured to the first and second securement means of said leg means.

5,249,912

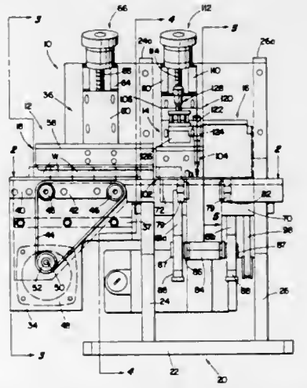
INSPECTION APPARATUS

Philip R. Warga, III, North Canton, Ohio, assignor to Rohrer Incorporated, Broadman, Ohio

Filed Dec. 4, 1992, Ser. No. 984,945

Int. Cl.[5] B65H *51/00*

U.S. Cl. 414—746.3 **13 Claims**



1. Apparatus for conveying cylindrical workpieces past an inspection station comprising:

a work support carrying a first upwardly facing planar support surface for supporting the cylindrical workpieces;

V-block means mounted above the work support with adjacent downwardly facing guide surfaces angularly related to each other and the planar support surface, the guide surfaces and the planar support surface being spaced to engage the cylindrical workpieces axially along their exterior cylindrical surfaces and define a linear path;

an endless belt positioned below the V-block means and having a flat upper run which defines the first upwardly facing planar support surface; and,

power and guide means for driving the endless belt to cause the upper run to move in a direction angularly related to the linear path to impart motion to the workpieces to cause them to rotate about their longitudinal axis and translate along the linear path.

5,249,913

SHEET TRANSPORTING DEVICE

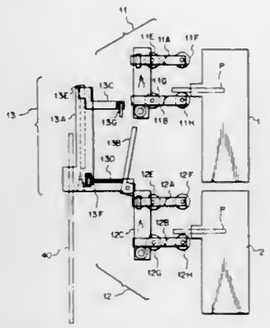
Takahiro Hosoya, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 26, 1992, Ser. No. 887,497

Claims priority, application Japan, May 24, 1991, 3-149522

Int. Cl.[5] B65G *13/06*

U.S. Cl. 414—789.6 **3 Claims**



1. A sheet transporting device comprising:

a plurality of pay-out means for paying out sheets;

a plurality of pick-up means each being associated with respective one of said plurality of pay-out means;

collection means for sequentially collecting sheets picked up by said plurality of pick-up means by gravity;

transfer means for receiving the sheets collected by said collection means collectively; and

transport means for transporting the sheets received by said transfer means to the outside of said sheet transporting device.

5,249,914

FOOD TRANSPORT FIXTURE AND METHOD

Robert L. Cahlander, Red Wing; David W. Carroll, Cannon Falls; Gregory A. Lawrence, Red Wing, all of Minn., and John O. Reinertsen, Glen Ellyn, Ill., assignors to Restaurant Technology, Inc., Oak Brook, Ill.

Continuation of Ser. No. 519,520, May 4, 1990, abandoned. This application Apr. 6, 1992, Ser. No. 863,631

Int. Cl.[5] B65G *57/03;* **A47J** *37/06*

U.S. Cl. 414—793.4 **36 Claims**

1. A fixture for transferring food objects comprising:

first object surrounding means having at least one aperture for horizontally surrounding at least one food object;

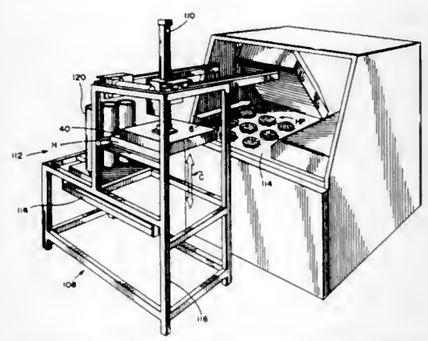
selectively moveable first object support means for supporting the food object beneath the aperture of said first object surrounding means in a support position and moveable relative to the first object surrounding means to a retracted position where said first object support means is withdrawn from beneath the aperture of said first object surrounding means whereby the food object is discharged from the fixture;

first supporting moving means for selectively moving said first object support means from the retracted position to

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the support position under said first object surrounding means when said first object surrounding means horizontally surrounds the food object to allow the surrounded object to be released from the fixture when said supporting means is withdrawn from under the aperture of said surrounding means and to allow the object to be retained in the fixture when said support means is moved to the support position under said first object surrounding means;

second object surrounding means for horizontally surrounding a plurality of food objects and having at least one



aperture corresponding to the aperture of said first object surrounding means;

second object support means selectively moveable relative to said second object surrounding means for performing a second transfer permitting the fixture to selectively retain and discharge the food items horizontally surrounded by the second object surrounding means in cooperation with said second object support means; and

grippable means for allowing said fixture to be robotically gripped for transporting said fixture between a first and a second food processing location.

5,249,915

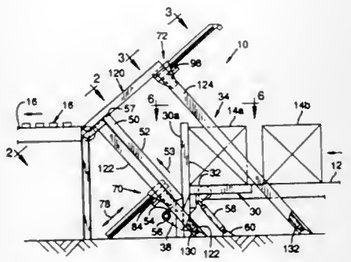
DUAL INDEPENDENT HOIST BREAKDOWN STATION

Edward W. Ritola, LaCenter, Wash., assignor to U.S. Natural Resources, Inc., Vancouver, Wash.

Filed Feb. 13, 1992, Ser. No. 836,069

Int. Cl.[5] B65G *59/02*

U.S. Cl. 414—796.7 **9 Claims**



1. A breakdown apparatus comprising:

ramp structure defining a load transport path;

a tilting frame defining a load receiving space and capable of pivoting motion only about a fixed pivot point whereby a load in said receiving space is pivoted against said ramp structure said pivoting motion further placing a load into a start transport space of said transport path; and

a lifting hoist with load engaging forks movable into and out of said load transport path and movable along said load transport path to accept a load from said tilting frame at said start transport space and to advance a load along said transport path to a fixed discharge point.

5,249,916

CAM ASSEMBLY AND FEEDER MECHANISM FOR USE IN A PACKAGING MACHINE

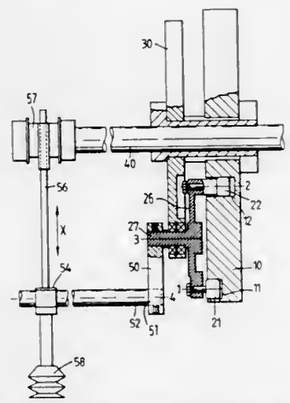
Pascal Portrait, Nuret le Ferron, and Michel Lamamy, Les Boers, both of France, assignors to The Mead Corporation, Dayton, Ohio

Filed May 8, 1992, Ser. No. 887,549

Claims priority, application United Kingdom, Jan. 29, 1992, 9108774

Int. Cl.[5] B65G *59/00*

U.S. Cl. 414—798.9 **4 Claims**



1. A cam assembly for incorporation in an article feeder mechanism which assembly comprises a cam plate having formed therein a first continuous cam track and a second relatively shallower cam track, cam track follower means including a first follower for movement within said first continuous track and a second follower for movement within the first and second cam tracks, and drive means for moving said cam track followers with respect to said cam tracks, said cam track follower means being mounted to an article pick-up means, said first cam track including portions engaged sequentially by said first follower, and said second cam track including portions engaged sequentially by said second follower, whereby said article pick-up means is caused to move to an outwardly extended position and to an inwardly retracted position respectively, relative to a central axis of said cam plate and said cam assembly is characterized in that said first and second cam track followers are joined by means of a cam arm to which a second arm is joined in fixed relationship with said cam arm, said second arm carries a shaft rotatably connected to said article pick-up means, and a rotational axis of said shaft is displaced a greater distance from a central axis of said cam arm than wither central axis of said first and second followers whereby said article pick-up means is caused to move through both a like-rotational and a counter-rotational path with regard to the direction of rotation of said drive means.

5,249,917

PALLETIZER

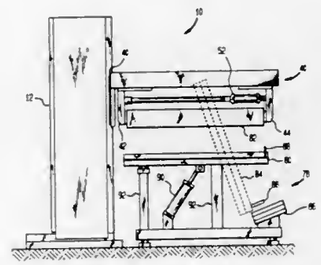
Irving H. Neumann, Somerville, N.J.; Timothy E. Goszka, Easton, Pa., and Kolbjorn Roste, Oslo, Norway, assignors to Butler Automatic, Inc., Mountainside, N.J.

Filed Apr. 18, 1991, Ser. No. 687,118

Claims priority, application Norway, Apr. 18, 1990, 901738

Int. Cl.[5] B65G *1/18*

U.S. Cl. 414—799 **23 Claims**



1. An apparatus comprising:

a frame;

a slide system mounted to the frame, the slide system comprising:

a slide conveyor; and

a slide support connected to the slide conveyor; and

at least two clamp assemblies connected to the slide support with each clamp assembly comprising:

a pair of opposing clamping surfaces comprising one clamping surface and an opposing clamping surface, with the one clamping surface and the opposing clamping surface facing each other; and

a compression means to move at least one of the clamping surfaces toward the opposing clamping surface.

5,249,918

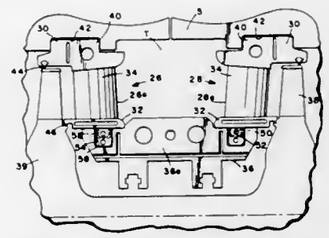
APPARATUS AND METHODS FOR MINIMIZING OR ELIMINATING SOLID PARTICLE EROSION IN DOUBLE-FLOW STEAM TURBINES

Victor J. Knorowski, Rexford, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 31, 1991, Ser. No. 814,887

Int. Cl.[5] F01D *5/14*

U.S. Cl. 415—108 **7 Claims**



1. In a double-flow steam turbine having an axis, first-stage rotors spaced axially one from the other, a reheat tub disposed between said first-stage rotors and including first and second arcuate diaphragms axially spaced one from the other and disposed about said turbine axis, each said diaphragm having an outer ring portion, an inner ring portion and a plurality of nozzles circumferentially spaced one from the other about said axis and between said ring portions whereby the nozzles of said axially spaced diaphragms define steam paths in generally axially opposite directions relative to one another, said nozzles having trailing edges spaced a predetermined axial distance from said rotors, an inner ring portion disposed about said axis and extending axially between said inner ring portions of said axially spaced diaphragms, and stationary parts of said turbine carrying axially spaced mounting means for said first and second diaphragms, respectively; the improvement wherein said first and second diaphragms comprise discrete diaphragm segments with each segment including said outer ring portion, said inner ring portion and said nozzles therebetween, said inner ring portion comprising a discrete arcuate inner ring segment, means for establishing a spacing between the trailing edges of the nozzles of said segments greater than said predetermined axial distance to substantially avoid solid particle erosion damage of such trailing edges while maintaining the axial distance between said rotors constant, said means including material added to said diaphragm segments on the sides thereof in axial registration with said rotors and cooperable with said stationary mounting means to space the nozzles of the diaphragm segments said greater distance from the rotors and means cooperable between each of said diaphragm segments and said inner segment for securing said diaphragm segments and said inner segment one to the other whereby said diaphragm segments and said inner segment are secured to one another within said turbine.

5,249,919

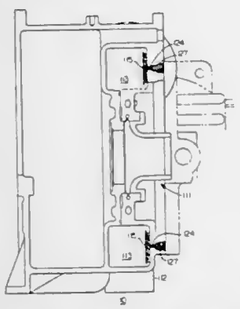
METHOD OF MOUNTING SILENCER IN CENTRIFUGAL COMPRESSOR COLLECTOR

Vishnu Sishtla, Cicero, and James Byrne, Liverpool, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 22, 1992, Ser. No. 995,063

Int. Cl.[5] F04D *29/66*

U.S. Cl. 415—119 **5 Claims**



1. An improved centrifugal compressor of the type that includes a housing which defines an annular discharge chamber which receives a centrifugally driven refrigerant gas that has passed through a diffuser where gas kinetic energy has been converted to pressure; a plurality of sound absorbing elements positioned within said discharge chamber for absorbing sound energy from the compressed refrigerant gas in said discharge chamber; and retaining means for holding the sound absorbing elements in fixed positions within said discharge chamber; and the improvement wherein said retaining means comprise a plurality of threaded fastening members which each penetrate through an associated passage in a wall of said housing, with a distal end received into a corresponding threaded receptacle on a respective one of said sound absorbing elements, and a head at a proximal end thereof; a plurality of threaded plug members fitting in said passages above the heads of the threaded fastening members; and seal members carried on said plug members and compressed against walls of said passages by said plug members to seal the passages against leakage from said discharge chamber of the compressed refrigerant gas.

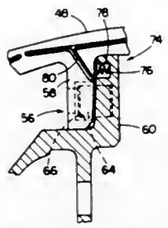
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5,249,920

TURBINE NOZZLE SEAL ARRANGEMENT

Andrew Shepherd; Richard W. Albrecht, both of Fairfield, and Robert J. Corsmeier, Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Jul. 9, 1992, Ser. No. 911,237
Int. Cl.[5] F01D 25/24
U.S. Cl. 415—134 5 Claims



1. In a gas turbine engine having a longitudinal central axis, an annular casing disposed about said central axis and having an annular stationary support structure, an annular combustor for generating pressurized combustion gases, a high pressure turbine disposed rearwardly of said combustor for receiving the pressurized combustion gases and extracting energy from the gases, and an annular turbine nozzle having at least one stage disposed in said annular casing between said combustor and said high pressure turbine, said annular nozzle stage including a plurality of nozzle segments arranged in an end-to-end circumferential relationship about said central axis, each nozzle segment having a pair of inner and outer bands spaced from one another in radial relation to said central axis and defining a flow path for pressurized combustion gases from said combustor to said high pressure turbine, each nozzle segment also having at least one airfoil extending in radial relation to said central axis and mounted between said inner and outer bands across said flow path for the pressurized combustion gases, a nozzle seal arrangement for impeding leakage of high pressure cooling air past said nozzle inner bands into the flow path to the outside thereof, said nozzle seal arrangement comprising:

(a) an annular nozzle support flange attached to and extending along said stationary support structure adjacent to said nozzle;

(b) a band flange attached to and extending along said inner band of each nozzle segment and disposed adjacent to said support flange;

(c) a continuous flexible seal member extending circumferentially about said central axis; and

(d) an annular recess defined in a forward face of said nozzle support flange and extending circumferentially about said central axis, said recess receiving and seating said seal member at an aft side thereof.

5,249,921

COMPRESSOR OUTLET GUIDE VANE SUPPORT

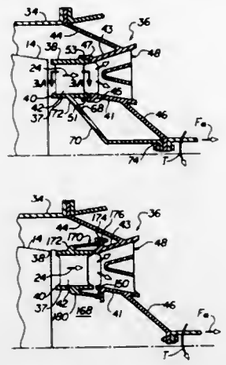
Henry B. Stueber, Cincinnati, and Eric E. Baehre, West Chester, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Dec. 23, 1991, Ser. No. 812,381
Int. Cl.[5] F01D 9/04
U.S. Cl. 415—138 9 Claims

4. A gas turbine engine compressor discharge apparatus comprising:

a compressor outlet guide vane outlet guide vane assembly having inner and outer annular outlet guide vane walls with radially extending outlet guide vanes mounted therebetween,

said outlet guide vanes having a relatively thick section and a relatively thin trailing edge, and at least one annular outlet guide vane support member that supports one of the outlet guide vane annular walls along



an axially extending portion circumscribing the thick sections of the outlet guide vanes.

5,249,922

APPARATUS OF STATIONARY BLADE FOR AXIAL FLOW TURBINE, AND AXIAL FLOW TURBINE

Takeshi Sato, and Yoshiaki Yamazaki, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 16, 1991, Ser. No. 760,497
Claims priority, application Japan, Sep. 17, 1990, 2-244051
Int. Cl.[5] F01D 1/02
U.S. Cl. 415—191 10 Claims



2. An apparatus of a stationary blade for an axial flow turbine comprising:

a turbine casing having a diverging flow channel for flow of an elastic fluid, and

the stationary blade being fixed at the diverging flow channel and curved in a plane perpendicular to an axial direction of the axial flow turbine, and

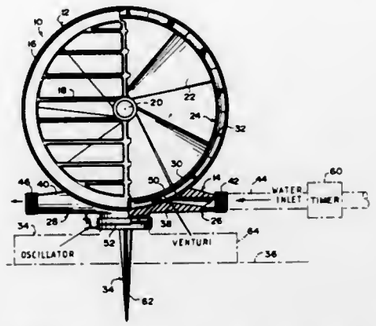
wherein a tangential lean angle of said stationary blade at a portion of a leading edge of said stationary blade is substantially equal to a tangential lean angle of said stationary blade at a corresponding portion of a trailing edge of the stationary blade to said portion of the leading edge with respect to a flow direction of the elastic fluid.

5,249,923

WATER ACTUATED OUTDOOR FAN

James S. Negus, 3404 NE. 49th Ave., Portland, Oreg. 97213

Filed Mar. 26, 1992, Ser. No. 857,651
Int. Cl.[5] F01D 9/00
U.S. Cl. 415—202 12 Claims



1. A water actuated outdoor fan which comprises:

means for creating a current of air, a housing, a pair of grilles mounted on opposite sides of said housing, a shaft which revolves between said pair of grilles, a plurality of radiating blades mounted on said shaft, so that when said shaft revolves between said pair of grilles said radiating blades will move the air past said pair of grilles, a water turbines located within said housing around said radiating blades, said water turbine includes a wheel connected about the distal ends of said radiating blades and a plurality of vanes arrayed about circumference of said wheel, so that the reaction of water with said vanes will revolve said wheel which will also revolve said radiating vanes because said vanes, said wheel, and said radiating vanes are coplanar are coplaner and their central shafts are colinear and they are free of pulleys and belts, means for conveying water to said water turbine and containing a venturi tube to increase water pressure, means for conveying water away from said water turbine and being colinear with said means for conveying water to said water turbine and being disposed on bottom of said housing.

5,249,924

RAM AIR TURBINE

Roger D. Brum, Irvine, Calif., assignor to Southwest Aerospace Corporation, Tustin, Calif.

Filed Feb. 21, 1992, Ser. No. 839,923
Int. Cl.[5] F01D 7/02
U.S. Cl. 416—48 9 Claims

1. A ram air turbine comprising:

a rotatable housing;

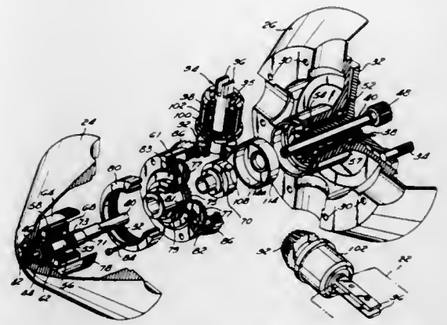
a main turbine output shaft disposed within said housing and having a first end rigidly connected thereto;

a plurality of variable pitch turbine blades extending outwardly from and cooperatively engaged to said housing such that rotation of said turbine blades causes simultaneous rotation of said housing and said shaft;

a DC motor disposed within said housing for establishing a preset reference rotational speed for said shaft, said DC motor having a stationary internal winding disposed about said output shaft and outer rotating magnet elements disposed about said internal winding; and

a gear reduction unit cooperatively engaged between said turbine blades and said DC motor for adjusting the pitch of said turbine blades in response to a difference in the rotational speed of said shaft and the preset reference rotational speed, said gear reduction unit comprising a harmonic drive having a ring gear, a flexible spline disposed within said ring gear, a flexible spline disposed within said ring gear, and a wave generator disposed within said flexible spline;

said magnet elements being interfaced to said wave generator in a manner wherein the rotation of said magnet elements at a speed differing from the rotational speed of said shaft causes said wave generator to elastically deflect said



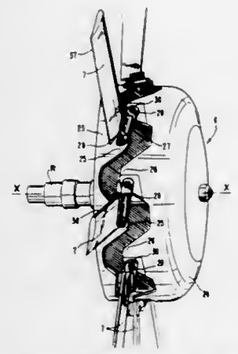
flexible spline, thereby causing the rotation of said ring gear in a manner operable to rotate each of the turbine blades towards a non-rotating position when the rotational speed of said shaft exceeds the rotational speed of said magnet elements and toward a rotating position when the rotational speed of said shaft is less than the rotational speed of said magnet elements.

5,249,925

VARIABLE-PITCH MULTI-BLADE ROTOR, IN PARTICULAR FOR THE REAR ANTI-TORQUE SYSTEM OF A ROTATING WING AIRCRAFT

Bruno Guimbal, Les Milles, and Jean-Pierre Jalaguier, Vitrolles, both of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Nov. 6, 1992, Ser. No. 972,640
Claims priority, application France, Dec. 2, 1991, 91 14893
Int. Cl.[5] B64C 11/06
U.S. Cl. 416—134 A 12 Claims



1. A variable-pitch multi-blade rotor particularly intended for use as an anti-torque rear rotor of a rotating wing aircraft, the rotor being of the type comprising:

a central shaft rotated about a central axis;

a hub constrained to rotate with the central shaft about said central axis;

blades distributed around said central axis and each connected to said central shaft by a twistable element;

a pitch control disk for said blades, said disk being con-

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strained to rotate with said central shaft but being free to slide axially relative thereto; and

means for controlling the sliding of said pitch control disk along said central shaft;

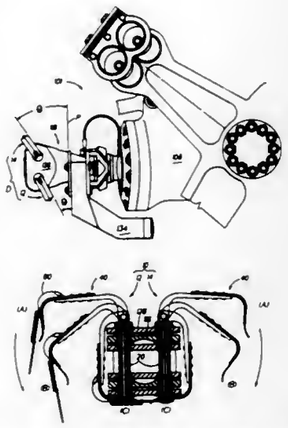
wherein the root of each blade is secured to a transverse thrust and pitch control lever forming a yoke having one end hinged to said hub and having another end hinged to said pitch control disk.

5,249,926

BLADE RETENTION PIN SYSTEM FOR A HELICOPTER BLADE FOLDING SYSTEM

Frank P. D'Anna, Seymour, and Kevin A. White, Shelton, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 8, 1993, Ser. No. 14,896
Int. Cl.[5] B64C *11/28*
U.S. Cl. 416—143 **10 Claims**



1. In Combination with a helicopter main rotor assembly configured for manual blade folding operations, the main rotor assembly including a main rotor hub assembly having a plurality of rotor hub arms, each rotor hub arm having a spindle assembly mechanically and functionally interconnected therewith, a blade retention pin system for operatively installing a main rotor blade having a blade cuff secured in combination therewith in secured combination with the spindle assembly of the corresponding rotor hub arm, said blade retention pin system being readily reconfigurable to facilitate manual folding of the main rotor blade, comprising:

a second pin assembly including

a retainer pin, and

a handle subassembly pivotably mounted in combination with said retainer pin, said handle subassembly being pivotable from an unlocked position to a locked position and vice versa, said handle subassembly having means secured in combination therewith for mechanically engaging said retainer pin with said handle subassembly in the locked position; and

a first pin assembly including

a retainer pin,

a handle subassembly pivotably mounted in combination with said retainer pin, said handle subassembly being pivotable from an unlocked position to a locked position and vice versa, said handle subassembly having means secured in combination therewith for mechanically engaging said retainer pin with said handle subassembly in the locked position, and

a safety pin subassembly secured in combination with said handle subassembly, said safety pin subassembly including means for mechanically engaging said retainer pins of said first and second pin assemblies with said handle subassemblies thereof in the locked position;

wherein said retainer pins of said first and second pin assemblies are insertable in aligned apertures of the spindle assembly and the blade cuff, the handle assemblies of said first and second pin assemblies are pivotable from the unlocked position to the locked position to cause said mechanical engaging means thereof to mechanically engage said respective retainer pins and lock said respective retainer pins in position, and said mechanical engaging means of said safety pin subassembly is mechanically engageable with said retainer pins of said first and second pin assemblies to operatively install the main rotor blade in secured combination with the corresponding rotor hub arm;

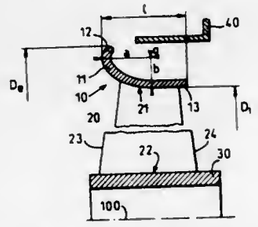
and further wherein said mechanical engaging means of said safety pin subassembly is mechanically disengageable from said retainer pins of said first and second pin assemblies, said handle subassembly of one of said first and second pin assemblies is pivotable from the locked position to the unlocked position to disengage said mechanical engaging means from said respective retainer pin, and said one pin assembly is removable from the aligned apertures of the spindle assembly and the blade cuff to reconfigure said blade retention pin system for manual folding of the main rotor blade, said other of said first and second pin assemblies remaining locked in position to function as a rotational axis for manual folding of the main rotor blade.

5,249,927

PROFILED ANNULAR HOOP FOR A FAN HELIX AND ITS APPLICATION TO VEHICLE MOTORIZED FANS

Jean-Claude Vera, Valentigney, France, assignor to ECIA, France

Filed Nov. 6, 1992, Ser. No. 972,901
Claims priority, application France, Nov. 7, 1991, 91 13754
Int. Cl.[5] F04D *29/08*
U.S. Cl. 416—189 **11 Claims**



1. Profiled annular hoop for a fan helix blade tip exhibiting a curved inlet collar whose convexity is directed towards the axis (**100**), characterised in that this collar (**11**) has a given axial length (*l*) and a meridian section (**110**) shaped approximately as a quarter ellipse whose eccentricity is of the order of 1.5 and whose major half-axis (*a*) lies between approximately one third and one half of this given axial length (*l*).

5,249,928

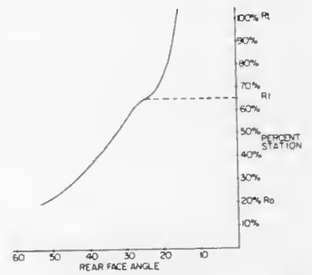
FIXED PITCH PROPELLER

William J. Schulz, 152 Dibble Hill, West Cornwall, Conn. 06796

Filed Sep. 19, 1991, Ser. No. 762,508
Int. Cl.[5] B63H *1/26*
U.S. Cl. 416—223 R **4 Claims**

1. A fixed pitch propeller having a blade with a root end adapted for attachment to a rotatable hub assembly, said blade having an inboard portion connected to said root end and extending radially outwardly to a first blade station said inboard portion having an air-foil shape and being twisted such

that the blade angle varies from said root end to said first blade station according to the relationship tangent $\beta = {}^{m}_{R}$ where m is a first constant and R represents the radial station of the blade relative to the blade axis of rotation, said blade having an outboard portion connected to said inboard portion at said first



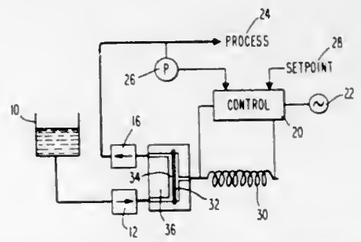
blade station, said outboard blade portion having a blade angle that varies from said first station to the blade tip (Rt) according to the relationship tangent $\gamma = {}^{n}_{R}$ where n is a second constant and R represents the radial station from R1 to Rt, said first constant m being greater than said second constant n.

5,249,929

LIQUID CHROMATOGRAPHIC PUMP

Theodore E. Miller, Jr., and Charles M. Davis, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 393,431, Aug. 11, 1989, abandoned. This application Aug. 13, 1990, Ser. No. 566,931
Int. Cl.[5] F04B *19/24*
U.S. Cl. 417—207 **14 Claims**



1. A pump for liquids capable of generating high pressure and controlled flow rate comprising:

a chamber having a first valve means and a second valve means, said chamber and valve means being adapted to repetitively expel pressurized liquid from the chamber through the second valve means responsive to heating the liquid and to repetitively refill the chamber with liquid through the first valve means;

means for repetitively heating liquid within said chamber to intermittently expel pressurized liquid therefrom upon opening of the second valve means;

means to measure the pressure and flow rate of the liquid; and

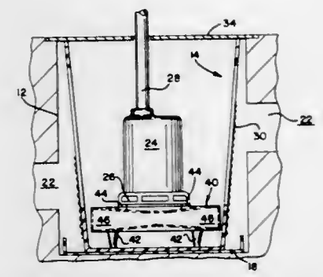
controller means to control the amount of heating of said liquid in relation to the measured pressure and flow rate of the liquid in order to provide a controllable flow rate of liquid from the pump.

5,249,930

SUMP PUMP STRAINER AND PLATFORM ASSEMBLY

John J. Pacquesi, 2017 Second St., Highland Park, Ill. 60035

Continuation-in-part of Ser. No. 871,138, Apr. 20, 1992. This application Oct. 13, 1992, Ser. No. 960,244
Int. Cl.[5] F04B *23/00*
U.S. Cl. 417—313 **4 Claims**



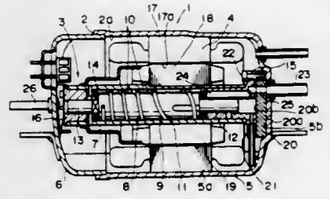
1. A sump pump strainer assembly adapted to be positioned in a sump pit comprising a basket disposed in a sump pit for receiving drain water from drain tiles, a sump pump disposed within said basket having an inlet and an outlet, a discharge pipe leading from said outlet to evacuate water from said sump pit, a pump platform disposed in the bottom of said sump pit and including raised supports for said sump pump, said platform having an inwardly sloping upper wall beneath said pump and defining a central opening for receiving debris entering said basket and directing it away from the inlet of said pump, said platform also including a lower outwardly sloping wall for directing the debris received thereby away from the central opening in the upper wall thereof.

5,249,931

AXIAL FLOW FLUID COMPRESSOR WITH OLDRAM COUPLING

Takayoshi Fujiwara, Kawasaki; Hisanori Honma; Yoshinori Sone, both of Yokohama, and Takuya Hirayama, Fujisawa, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 632,127, Dec. 20, 1990, abandoned. This application Jun. 25, 1992, Ser. No. 904,900
Claims priority, application Japan, Dec. 26, 1989, 1-337524; Apr. 13, 1990, 2-96304; Apr. 13, 1990, 2-98432; Apr. 13, 1990, 2-98437
Int. Cl.[5] F04B *35/04;* **F04C** *18/344, 39/02;* **F16D** *3/04*
U.S. Cl. 417—356 **21 Claims**



1. An axial flow fluid compressor comprising:

a casing;

a cylinder situated within the casing and having axial end portions, one of the end portions serving as a suction-side end portion and the other serving as a discharge-side end portion;

a rotating body having on its outer peripheral surface a spiral groove formed with a gradually decreasing pitch, the rotating body being situated eccentrically within the cylinder;

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a spiral blade fitted in said spiral groove and wound around said rotating body, the spiral blade having an outer peripheral surface put in contact with an inner peripheral surface put in contact with an inner peripheral surface of the cylinder, and the spiral blade forming a plurality of working chambers within the cylinder, which chambers have volumes gradually decreasing from the suction side towards the discharge side;

a drive motor for rotating the cylinder and the rotating body relative to each other, the drive motor including a cylindrical stator fixed on the casing and a rotor mounted on the cylinder and situated inside the stator coaxially, with a motor air gap provided therebetween; and

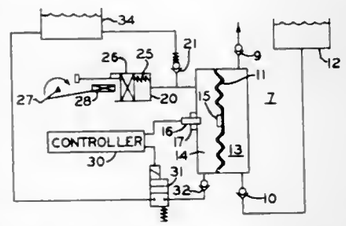
a bearing member engaged with one of the end portions and means for fixing the bearing member on an inner wall of the casing by a fixing member so as to determine a direction of axes of the rotor and the cylinder, said fixing member being a screw-type for finely adjusting a posture of said bearing member in accordance with the screw condition so as to keep said motor air gap at a predetermined value.

5,249,932

APPARATUS FOR CONTROLLING DIAPHRAGM EXTENSION IN A DIAPHRAGM METERING PUMP

Erik Van Bork, 609 Cheese Factory Rd., Honeoye Falls, N.Y. 14472

Filed Oct. 7, 1991, Ser. No. 771,477
Int. Cl.[5] F04B *9/08*
U.S. Cl. 417—386 **20 Claims**



1. An apparatus for inhibiting over extension of a diaphragm of a metering pump comprising:

a diaphragm position, sensor for detecting when a diaphragm is being over extended during an intake stroke of said metering pump;

a reservoir of intermediate pressurizing fluid;

valve means connecting said intermediate pressurizing fluid to one side of a diaphragm chamber of said metering pump, said valve means supplying in response to a control signal replenishment pressurizing fluid to said diaphragm chamber;

control circuit means connected to said diaphragm position sensor for determining when, said diaphragm deflection exceeds a maximum safe displacement during an intake stroke of said pump, said control circuit means supplying said control signal to said valve means for enabling flow of said replenishment pressurizing fluid; and,

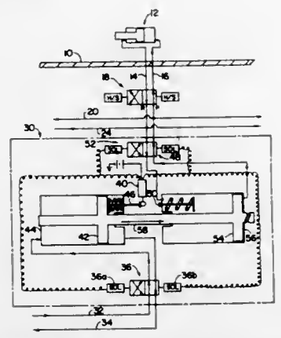
means for inhibiting reverse flow of said replenishment pressurizing fluid through said valve means.

5,249,933

SUBMARINE EXTERNAL HYDRAULIC FLUID - ISOLATED SYSTEM

Paul E. Moody, Barrington, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 1, 1992, Ser. No. 955,208
Int. Cl.[5] F04B *17/00;* **B63G** *8/00*
U.S. Cl. 417—404 **7 Claims**



1. In combination with a submarine having a pressure hull and having hydraulic components external to the pressure hull that require operation in a seawater environment and having at least one internal hydraulic system with pressure and return lines connecting a source of hydraulic pressure to various hydraulically operated devices inside the vessel, said combination comprising:

a hydraulically operable two-way power piston/cylinder inside said pressure hull;

a first valve coupling said two-way power piston/cylinder to the pressure and return lines of the one hydraulic system inside said pressure hull;

a slave piston/cylinder mechanically connected to said two-way power piston/cylinder inside said pressure hull;

secondary hydraulic pressure and return lines outside said pressure hull;

a second valve coupling said slave piston/cylinder to said secondary hydraulic pressure and return lines outside said pressure hull; and

means coupling said first and second valves so that said power piston is moved sequentially in one and an opposite direction to pressurize said secondary hydraulic pressure line from one side or the other side of said slave piston and thereby maintain a predetermined pressure in said secondary hydraulic pressure line.

5,249,934

AIR CYCLE MACHINE WITH HEAT ISOLATION HAVING BACK-TO-BACK TURBINE AND COMPRESSOR ROTORS

Brent J. Merritt, Westfield, Mass., and Paul J. Dziorny, Manchester, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jan. 10, 1992, Ser. No. 819,412
Int. Cl.[5] F04B *17/00*
U.S. Cl. 417—406 **13 Claims**

1. An air cycle machine for conditioning air for supply to an enclosure, said air cycle machine comprising:

shaft means supported for rotation about a longitudinally extending axis;

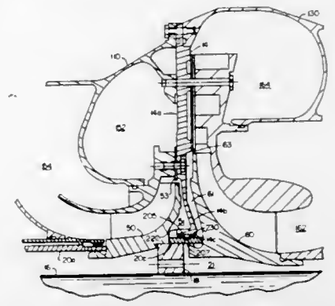
a compressor wheel mounted to said shaft means for rotation therewith for compressing air delivered thereto;

a turbine wheel mounted to said shaft means for expanding compressed air from said compressor wheel thereby extracting energy to drive said shaft means in rotation about the axis, said turbine wheel and said compressor wheel disposed in back-to-back relationship;

a turbine inlet duct circumscribing said turbine wheel for directing a flow of relatively cooler air into said turbine wheel to be expanded in said turbine wheel;

a compressor outlet duct circumscribing said compressor wheel for discharging a flow of relatively warmer air passing out of said compressor wheel;

said turbine wheel and said turbine inlet duct defining a turbine circuit and said compressor wheel and said compressor outlet defining a compressor circuit;



means for thermally isolating said turbine circuit from said compressor circuit for retarding heat transfer from the relatively warmer air traversing said compressor circuit to the relatively cooler air traversing said turbine circuit;

said thermally isolating means including a thermally insulating plate extending radially substantially the extent of said turbine circuit and said compressor circuit; and

said shaft means including a shaft sleeve supporting said turbine wheel and said compressor wheel being fabricated from material having a lower heat conductivity than the material of said turbine wheel and said compressor wheel.

5,249,935

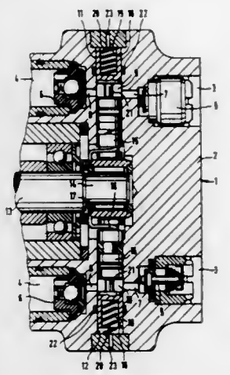
PISTON PUMP

Jochen Burgdorf, Offenbach-Rumpenheim, Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

PCT No. PCT/EP91/01277, § 371 Date May 4, 1992, § 102(e) Date May 4, 1992, PCT Pub. No. WO92/04216, PCT Pub. Date Mar. 19, 1992
PCT Filed Jul. 9, 1991, Ser. No. 855,637
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1990, 4027848
Int. Cl.[5] F04B *21/00*
U.S. Cl. 417—415 **10 Claims**

1. A piston pump comprising a pump housing, at least one working chamber defined in said pump housing, an inlet valve controlling inlet fluid flow into said working chamber and an outlet valve controlling outlet fluid flow from said working chamber, a working piston mounted in said housing to have one face defining in part said working chamber, said working piston cyclically movable in one direction to increase the volume of said working chamber and draw fluid into said working chamber through said inlet valve and in the other direction to force a displaced volume of fluid out of said working chamber through said outlet valve, drive means driving said piston to perform said cyclical movements, a charging piston mounted in an axial bore in said pump housing, one face defining in part said working chamber, said charging piston movable outwardly to a retracted end position forced against a stop by a first predetermined minimum pressure level generated in said working chamber as said working piston moves completely in said other direction to displace fluid from said working chamber;

positioning means holding said charging piston in said retracted end position against said stop as long as the pressure in said working chamber is above a second predetermined minimum pressure substantially below said first predetermined minimum pressure level, and means moving said charging piston from said retracted end position towards said working piston whenever the pressure in said working chamber declines below said second predetermined minimium pressure level as said working piston moves in said one direction.



5,249,936

DOWNHOLD RECIPROCATING PUMP WITH AUTOMATICALLY TRIPPABLE TRAVELLING VALVE FOR PREVENTION OF GAS LOCK

Kenneth R. McConnell, 8532 - 67 Avenue, Edmonton, Alberta, Canada T6E 0M8 , and Douglas A. Jensen, 9017 - 60 Street, Edmonton, Alberta, Canada T6C 3L8

Continuation-in-part of Ser. No. 529,497, May 29, 1990, Pat. No. 5,117,861. This application Jun. 1, 1992, Ser. No. 891,579
Int. Cl.[5] F04B *7/00*
U.S. Cl. 417—444 **12 Claims**



1. A down-hole reciprocating pump for use in a well, said pump comprising a tubular barrel, a tubular piston sealably and slidably received in the barrel and adapted to be reciprocated therein by a rod string, the piston forming a longitudinal bore and having an internal travelling check valve for controlling the movement of fluid through the bore, the barrel forming a longitudinal bore and having an internal standing check valve

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at its lower end for controlling entry of fluid into its bore, characterized in that:

the travelling check valve is positioned at the lower end of the piston and comprises a tubular one-piece barrel having a longitudinal bore containing a hollow cylindrical cage forming an internal chamber having a bottom inlet and top outlet, a tubular seat member forming a longitudinal bore, and a valve member positioned in the cage and adapted to seal against the seat member to close the valve, the length of the cage chamber being sufficient to allow the valve member to be displaced upwardly off the valve seat to open a flow passage extending through the check valve;

the valve member has centrally located upper and lower stems extending axially from its upper and lower ends;

the seat member and cage each carry centrally apertured guide means for receiving and guiding the stems to centralize the valve member;

the lower stem extends below the guide means of the seat member when the travelling valve is closed; and

the barrel carries stationary trip means, adjacent to but above the standing check valve and aligned with the lower guide stem, for contacting and stopping downward travel of the lower stem at about the bottom of the piston stroke to thereby temporarily open the travelling check valve by unseating its valve member.

5,249,937

PERISTALTIC PUMP WITH THREE LOCKINGLY SEALED MODULES

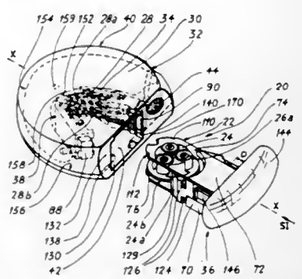
Christophe Aubert, Fontainemelon, Switzerland, assignor to SMH Management Services AG, Biel, Switzerland

Filed Jun. 10, 1992, Ser. No. 896,581

Claims priority, application France, Jun. 12, 1991, 91 07358

Int. Cl.[5] F04B *43/12*

U.S. Cl. 417—475 **17 Claims**



1. A peristaltic pump permitting the administration of a liquid substance and formed from at least three modules, said pump comprising:

pumping means comprising a rotor having at least one stage with at least one presser roller, said roller having an operating position for locally compressing at least one tube coupling a reservoir to the output of the pump, said reservoir being for storing said liquid substance, said compression being effected against at least one support piece, said pumping means forming part of a first module and said support piece forming part of a second module, and said first and second modules being provided with first assembly means for forming set of said two modules and defining an optimum distance between each presser roller and the support piece;

motor means for operating said pumping means; and,

a third module having an outwardly opening cavity;

said second module being designed to be housed within said cavity of the third module, the first module being designed to be at least partially introduced into said cavity through an intermediate position in which the first module and the second module are assembled by the first assembly means to form said set of two modules, and said set of two modules being designed to be displaced from said intermediate insertion position up to a final insertion position in which it is assembled with the third module by second assembly means so as to seal said first module.

5,249,938

PERISTALTIC PUMP

Richard C. Hall, Abingdon, United Kingdom, assignor to Bellhouse Technology Limited, Abingdon, United Kingdom

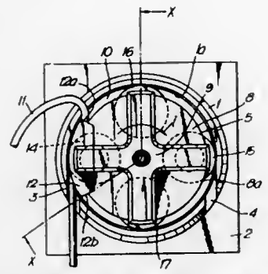
PCT No. PCT/GB90/00873, § 371 Date Jan. 10, 1992, § 102(e) Date Jan. 10, 1992, PCT Pub. No. WO90/15248, PCT Pub. Date Dec. 13, 1990

PCT Filed Jun. 5, 1990, Ser. No. 777,565

Claims priority, application United Kingdom, Jun. 6, 1989, 8912946

Int. Cl.[5] F04B *43/12*

U.S. Cl. 417—477 **16 Claims**



1. A head for a peristaltic roller pump, the head comprising an occluder ring having a pair of substantially tangential slots opening at an axial end of the ring to enable a flexible pipe to enter, lie around the inner wall surface of, and exit from, the ring; and a rotor concentrically and rotatably mounted within the occluder ring, the rotor having a circumferential array of guide and drive rollers respectively for locating the pipe axially within the ring and for squeezing the pipe against the inner wall surface of the occluder ring, the rotor also having a cover plate radially inwardly spaced from the inner wall surface of the occluder ring to provide a part annular gap of sufficient width for loading and unloading of the pipe into and out of the ring, the gap being substantially closed at at least one end by a radially outwardly projecting first dog on the rotor, a said guide roller immediately trailing said dog in its direction of rotation and the arrangement being such that the pipe can be loaded into the ring by placing a bight of the pipe in one of the slots and rotating the rotor so that the dog overrides the pipe and pushes it axially through the gap into the ring where the trailing guide roller immediately captures the pipe.

5,249,939

VALVED DISCHARGE MECHANISM OF A REFRIGERANT COMPRESSOR

Hareo Takahashi, Takasaki, Japan, assignor to Sanden Corporation, Gunma, Japan

Continuation of Ser. No. 639,189, Jan. 9, 1991, Pat. No. 5,118,266. This application Apr. 6, 1992, Ser. No. 864,419

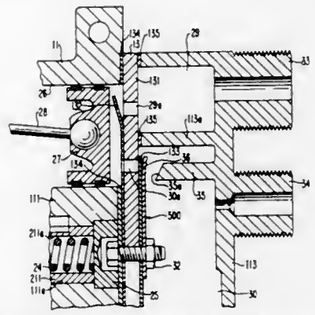
Claims priority, application Japan, Jan. 9, 1990, 2-955

Int. Cl.[5] F04B *21/02*

U.S. Cl. 417—569 **8 Claims**

1. In a refrigerant compressor including a compressor housing defining at least one chamber in which successive strokes of sucking, compressing, and discharging a refrigerant gas is repeatedly performed, means for linking said at least one chamber to an outside chamber, and means for regulating a flow of said refrigerant gas from said chamber to the outside chamber, said linking means including a conduit communicating said at least one chamber with the outside chamber said regulating means including a plate member made of elastic material which

is provided at one end opening of said conduit which opens to the outside chamber, and means for limiting the bending movement of said plate member in the direction in which said refrigerant gas leaves from said one end opening of said conduit, said plate member bending to block and open said one end opening of said conduit, said plate member having a predetermined value of elastic modulus which allows said plate member to keep blocking said one end opening of said conduit until a



pressure in said at least one chamber reaches a predetermined value, the improvement comprising:

said regulating means including means for increasing the value of the elastic modulus of said plate member after said plate member bends a predetermined amount, said predetermined amount of bending being a small fraction of the total amount of bending required for said plate member to achieve a fully open position.

5,249,940

SCROLL COMPRESSOR HAVING A MAGNET PRESSING THE MOVING SCROLL MEMBER AXIALLY

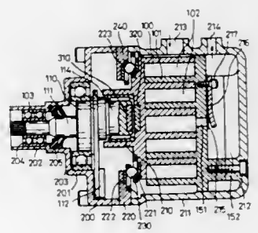
Mikio Matsuda, Okazaki; Kazuhide Uchida, Nishio; Mitsuo Inagaki, Okazaki, and Yasuhiro Oki, Toyota, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Apr. 24, 1992, Ser. No. 873,186

Claims priority, application Japan, Apr. 26, 1991, 3-96988

Int. Cl.[5] F04C *18/04*

U.S. Cl. 418—55.5 **14 Claims**



1. A scroll compressor, comprising:

a housing with inlet and outlet ports,

a stationary scroll member including a spiral body formed on an end plate thereof and fixed inside the housing,

a moving scroll member including a spiral body formed on an end plate thereof and assembled so as to be in mesh with but centrally offset from said stationary scroll member,

a front housing integrally mounted and covering an opening of said housing,

a shaft rotatably supported in said front housing, having a crank centrally offset by a predetermined amount with respect to the center thereof and imparting a revolving movement to said moving scroll member,

a detent mechanism allowing only revolving of said moving scroll member and inhibiting a rotation of said moving scroll member,

thrust bearing members restricting a displacement of said moving scroll member in a direction away from said stationary scroll member, and

magnetic means for pressing said moving scroll member axially against said thrust bearing members by a magnetic force and without contact.

5,249,941

SCROLL TYPE FLUID MACHINE HAVING INTERMITTENT OIL FEED TO WORKING CHAMBER

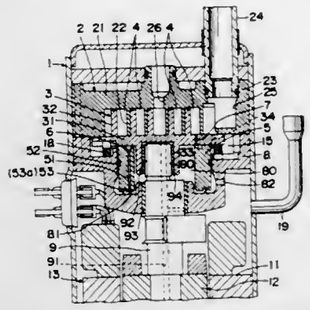
Yoshitaka Shibamoto, Sakai, Japan, assignor to Daikin Industries, Ltd., Osaka, Japan

Filed Jun. 12, 1992, Ser. No. 897,384

Claims priority, application Japan, Jun. 13, 1991, 3-141935; Oct. 1, 1991, 3-253629

Int. Cl.[5] F01C *1/04, 21/04*

U.S. Cl. 418—55.5 **12 Claims**



1. A scroll type fluid machine, comprising: a sealed casing; a first scroll disposed within said sealed casing, said first scroll having a first end plate, and a first spiral ridge provided on a front side of said first end plate; a second scroll disposed within said sealed casing, said second scroll having a second end plate, and a second spiral ridge provided on a front face of said second end plate; said first and second spiral ridges being interleaved with each other; said second end plate having a back face supported by a support member secured to said sealed casing, said support member having an oil sump provided therein; working chambers formed between said first and second spiral ridges, said working chambers varying from a low-pressure range on a peripheral side to a high-pressure range on a center side as volumes of said working chambers are decreased due to revolution of said second scroll relative to said first scroll;

a back side chamber formed between said back face of said second end plate and said support member;

a cylinder member disposed within said back side chamber such that said back face of said second end plate makes sliding contact with an end face of said cylinder member; a center side chamber formed inside said cylinder member within said back side chamber;

an oil feed chamber provided on said end face of said cylinder member so as to open to said back face of said second end plate;

an oil passage provided in said cylinder member for intro-

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ducing oil from said oil sump into said oil feed chamber; and

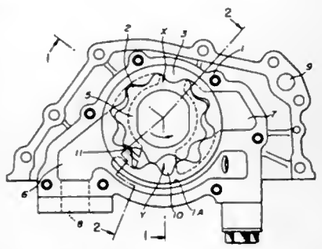
communicating means provided in said second end plate, said communicating means being in intermittent flow communication with said oil feed chamber, such that intermittent flow communication is provided from said oil feed chamber to said working chamber through said communicating means as said second scroll revolves.

5,249,942

OIL PUMP

Akira Torii, and Shioji Morita, both of Kanagawa, Japan, assignors to Atsugi Unisia Corporation, Japan

Filed Feb. 24, 1992, Ser. No. 840,191
Claims priority, application Japan, Feb. 28, 1991, 3-010127[U]
Int. Cl.[5] F04C *2/10*
U.S. Cl. 418—171 **4 Claims**



I. An oil pump comprising:

a pump casing;

a rotatable shaft disposed through said pump casing;

an inner rotor mounted on said rotatable shaft, said inner rotor having outwardly projecting first tooth portions around a circumference thereof;

an outer rotor, said outer rotor being ring shaped and rotatably and eccentrically disposed in relation to said inner rotor and having inwardly projecting second tooth portions formed around an inner circumference thereof for engaging with said first tooth portions of said inner rotor at one side thereof so as to be rotated by said inner rotor;

an intake chamber facing said inner and outer rotors between an area in which the respective first and second tooth portions assume a maximally engaged position to an area just before the respective first and second tooth portions assume a minimally engaged position;

a discharge chamber, facing said inner and outer rotors at a side opposing that of said intake chamber; and

a sealing rib, positioned substantially along a circumference defined by a path generated by movement of an innermost surface of said inwardly projecting second tooth portions for a predetermined distance so as to contact touching ends of said first and second tooth portions at said position just before said first and second tooth portions assume a minimally engaged position and preventing oil in a space defined between said first and second tooth portions from escaping.

5,249,943

SCROLL TYPE COMPRESSOR HAVING RECESSED BUFFER MEANS IN A SPIRAL WRAP FLAT FACE

Kazuhiro Kuroki; Tetsuhiko Fukanuma; Tetsuo Yoshida, and Tatsushi Mori, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Jun. 22, 1992, Ser. No. 901,997
Claims priority, application Japan, Jun. 27, 1991, 3-49461[U]
Int. Cl.[5] F04C *18/04*
U.S. Cl. 418—55.2 **5 Claims**

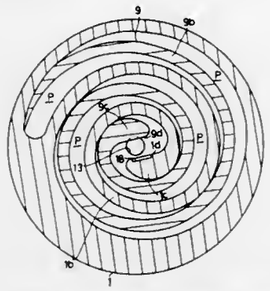
1. A scroll type compressor comprising:

a fixed scroll including a fixed end plate and a fixed spiral element bounded by radially inner and outer walls joined to said fixed end plate perpendicularly thereto and extending longitudinally along a spiral path terminating in an inner radially widened fixed tip portion, said fixed tip portion on said inner wall having a flat face;

an orbiting scroll including an orbiting end plate and an orbiting spiral element joined to said orbiting end plate perpendicularly thereto and extending longitudinally along a spiral path terminating in an inner radially widened orbiting tip portion, said orbiting tip portion having a radially inner wall with an orbiting flat face disposed to face said fixed tip flat face;

said orbiting scroll being mounted for orbital revolving movement relative to said fixed scroll with said fixed and orbiting spiral elements interleaved such that said flat faces of said fixed and orbiting tip portions periodically approach each other during revolution of said orbiting scroll;

at least one airtight compression chamber formed between said fixed scroll and said orbiting scroll;



a discharge port formed in said fixed end plate for discharging fluid from said compression chamber, said discharge port being located in said fixed end plate where said port is covered completely by said orbiting tip portion of said orbiting scroll during the end of the compression cycle when said flat faces of said fixed and orbiting tip portions are in close proximity to each other;

drive means for revolving said orbiting scroll relative to said fixed scroll for reducing the volume of said compression chamber to compress the fluid in said compression chamber; and

buffer means in the form of a recess in at least one of said flat faces of said fixed and orbiting tip portions for forming an airtight cavity which is isolated from said discharge port during the end of the compression cycle;

said airtight cavity providing a space for preventing over compression of the compressed fluid which is trapped between said flat faces of adjacent fixed and orbiting tip portions.

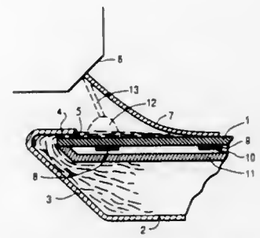
5,249,944

DEVICE TO COLLECT MOLTEN PLASTIC STRANDS WITH A DEVICE TO DISPLAY THE UNDISTURBED PASSAGE OF THE PLASTIC STRANDS

Klaus-Rudiger Zinke, Sulzbach; Jurgen Keilert, Kleinwallstadt, and Frank Glockner, Aschaffenburg, all of Fed. Rep. of Germany, assignors to Automatik-Maschinenbau GmbH, Grossostheim, Fed. Rep. of Germany

Filed May 27, 1992, Ser. No. 888,607
Claims priority, application Fed. Rep. of Germany, May 31, 1991, 4117941
Int. Cl.[5] B29C *47/88, 47/92*
U.S. Cl. 425—71 **4 Claims**

1. An apparatus for collecting and conveying plastic strands (7) issuing from nozzles (6) onto an upper side of a discharge plate (1), said discharge plate having an underside opposite the upper side onto which the plastic strands impact, said upper side being contacted by cooling water, while the underside is free of water, and a device for indicating accumulation of plastic strands on the discharge plate or undisturbed passage of the strands over the discharge plate, said device including a



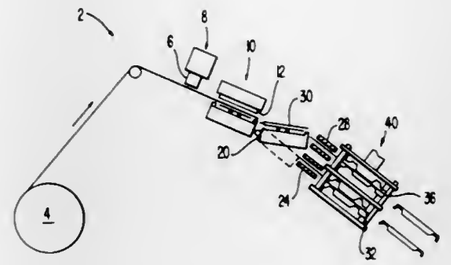
measuring resistor (8) attached to said underside of the discharge plate for responding to the temperature of the adjacent portion of the discharge plate, and a threshold value switch (15) connected to said resistor for providing a signal when the temperature of said resistor exceeds a specified value.

5,249,946

PLATE FORMING DIE SET

Ronald P. Marx, Appleton, Wis., assignor to James River Corporation of Virginia, Richmond, Va.

Continuation of Ser. No. 666,618, Mar. 8, 1991, abandoned. This application May 11, 1992, Ser. No. 884,302
Int. Cl.[5] B29C *43/04*
U.S. Cl. 425—142 **6 Claims**

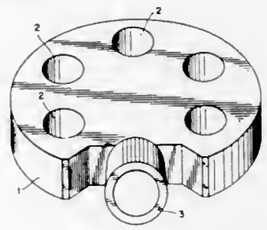


5,249,945

APPARATUS FOR COVERING AT LEAST TWO CORES WITH THE SAME JACKETING MATERIAL

Raymond Bourdon, Monein, France, assignor to Elf Atochem S.A., Puteaux, France

Filed Mar. 6, 1992, Ser. No. 846,908
Claims priority, application France, Mar. 8, 1991, 91 02836
Int. Cl.[5] B29C *47/28*
U.S. Cl. 425—114 **15 Claims**



1. Apparatus for jacketing at least two cores with the same jacketing material comprising a plate having at least two cavities extending completely therethrough, at least two tools supported in respective cavities, said tools including means for accommodating the passage of cores therethrough, a main channel disposed in said plate and adapted for connection to an extruder for receiving therefrom a flow of jacketing material, at least two sub-channels disposed in said plate and extending from said main channel to respective tools for conducting jacketing material from said main channel to said tools for application to cores passing through said tools, a hollow junction tube attached to said plate and having an inner end extending into said plate such that a hollow interior of said junction tube coincides with said main channel, said junction tube having an outer end, coupling means disposed on said outer end for making connection with an extruder.

1. An apparatus for receiving a paper web and press forming blanks into three-dimensionally shaped products comprising:

(a) a cyclically operating blanking means for cutting the paper web into a single paper blank per blanking cycle at a rate of at least 80 blanking cycles per minute;

(b) a cyclically operating forming means for receiving a plurality of said single blanks from said blanking means during a first portion of each forming cycle and for simultaneously press forming said plurality of said single blanks into a plurality of products having the desired shape during a second portion of each forming cycle, said forming means including a stacked die set having a plurality of forming die cavities arranged one above another in a manner causing all of the die cavities to open and close together in a direction which is oblique to a vertical plane, and each of said forming die cavities being constructed to receive only a single blank; and

(c) guide means for cyclically transferring a single paperboard blank from said blanking means into each of said die cavities during said first portion of each forming cycle, said guide means including a plurality of stationary guide means, each of which is disposed in alignment with a respective one of said die cavities for receiving and transferring a single paper blank into the respective die cavity aligned therewith during each forming cycle, and a movable guide means for receiving each paper blank from the blanking means and for successively moving and transferring said paper blank into each of said stationary guide means; wherein said movable guide means has an inlet end positioned in proximity to an outfeed side of said blanking means and an outlet end which is successively movable into proximity with an infeed side of each of said stationary guide means during each forming cycle.

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5,249,947

INJECTION MOLDING MACHINE HAVING AN AUTOMATIC MOLD CHANGER

Yoshiharu Inaba, Kawasaki; Susumu Ito, Oshino; Takayuki Taira, Hachioji; Kikuo Watanabe; Akira Kouketsu, both of Oshino; Kenji Haga, Saginami; Kazunari Tokuda, Hachioji; Hitoshi Minegishi, Hachioji; Toshio Matsukura, Hachioji; Kaoru Maeda, and Hiroshi Yonekubo, both of Kamiina, all of Japan, assignors to Fanuc Ltd, Yamanashi, Japan

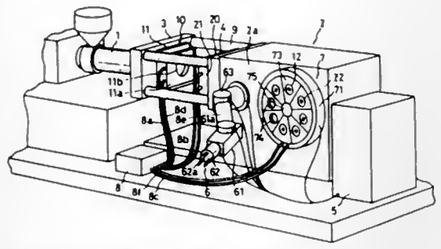
PCT No. PCT/JP91/00377, § 371 Date Jan. 17, 1992, § 102(e) Date Jan. 17, 1992, PCT Pub. No. WO91/14560, PCT Pub. Date Oct. 3, 1991

PCT Filed Mar. 22, 1991, Ser. No. 773,941

Claims priority, application Japan, Mar. 22, 1990, 2-72977; Jul. 31, 1990, 2-201396; Jul. 31, 1990, 2-201397; Jul. 31, 1990, 2-201398; Jul. 31, 1990, 2-201399; Aug. 31, 1990, 2-227938; Sep. 7, 1990, 2-235732; Sep. 27, 1990, 2-255242; Sep. 27, 1990, 2-255243; Sep. 28, 1990, 2-257527

Int. Cl.[5] B29C *45/80*

U.S. Cl. 425—150 37 Claims



1. An injection molding machine comprising:

mold clamping means including a stationary platen removably fitted with a first mold half, and a movable platen removably fitted with a second mold half, the first and second mold halves being used to form a mold;

a plurality of mold elements constituting at least a part of the mold;

mold storage means for storing said mold elements in a reciprocally deliverably manner;

mold changing means for delivering a selected one of said mold elements from said mold storage means, transporting the mold element thus delivered to said mold clamping means, for removing the mold element attached to said mold clamping means from said mold clamping means, and for transporting the mold element thus removed to said mold storage means to store the element in said mold storage means, said mold changing means being disposed between said mold clamping means and said mold storage means and including a multi-joint robot having an arm composed of plural links and a chuck rotatably supported by the arm; and

control means for controlling the operations of said mold changing means and said mold clamping means.

5,249,948

APPARATUS FOR THE CONTINUOUS EXTRUSION OF SOLID ARTICLES

Evan E. Koslow, Weston, Conn., assignor to Koslow Technologies Corporation, Bridgeport, Conn.

Continuation-in-part of Ser. No. 682,182, Apr. 8, 1991, Pat. No. 5,189,092. This application Oct. 17, 1991, Ser. No. 778,266

Int. Cl.[5] B29C *47/86*

U.S. Cl. 425—376.1 6 Claims

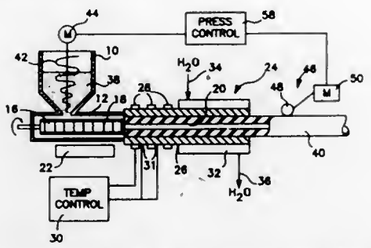
1. Apparatus capable of the continuous extrusion manufacture of a solid composite porous article from a substantially uniform particulate mixture of a quantity of particles of a binder material and a quantity of particles of a primary material, said primary material having a substantially higher softening temperature than a softening temperature of said binder material, which comprises:

an extruder barrel housing an extrusion screw, said extruder barrel having a feed inlet and feed outlet;

an elongated, smooth extrusion die attached to the feed outlet of the extruder barrel, said die defining a cavity having an inlet end, an extrusion end, and a substantially uniform cross-section, which cross-section is not substantially smaller than the cross-section of an inside diameter of the extruder barrel;

means for forcibly injecting said particulate mixture into the inlet end of said die cavity;

means in said die adjacent to the inlet end thereof for heating said particulate mixture within said die cavity to a temperature substantially above the softening temperature of said binder material but less than the softening temperature of said primary material;



means external of said die cavity for continuously providing controlled pressure of between about 5 to about 400 psi to said heated particulate mixture within the die cavity during extrusion of the particulate mixture; and

means in said die adjacent the extrusion end thereof for rapidly cooling said particulate mixture within the die cavity to below the softening temperature of the binder material to form a monolithic solid composite material whereby said substantially uniform particulate mixture is deformed, consolidated into a desired form and solidified in the extrusion die and is extruded from said die cavity as a solid composite porous article.

5,249,949

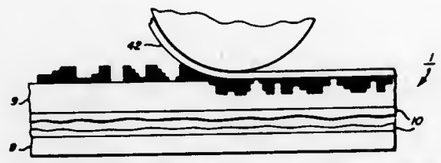
APPARATUS FOR TEXTURIZING TONER IMAGE BEARING RECEIVING SHEETS

Muhammad Aslam, Rochester; Thomas J. Farnand, Webster, and Ernest J. Tamary, Brighton, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 405,175, Sep. 11, 1989, Pat. No. 5,023,038. This application Apr. 22, 1991, Ser. No. 688,761

Int. Cl.[5] B29C *59/04*; B28B *11/08*

U.S. Cl. 425—385 12 Claims



1. Apparatus for treating a receiving sheet, which sheet is made up of a thermoplastic layer on a paper support, and which thermoplastic layer carries a multicolor toner image, to impart a texture to said thermoplastic layer and said image, said apparatus comprising:

means for heating said thermoplastic layer to at least its glass transition temperature,

first and second pressure members, said first member being hard and smooth, and said second member being hard and having a textured surface,

means for feeding said sheet between said pressure members with the thermoplastic layer contacting said first member, and

means for applying sufficient pressure between said pressure members to impart a texture defined by said surface of said second member to said image and thermoplastic layer.

5,249,950

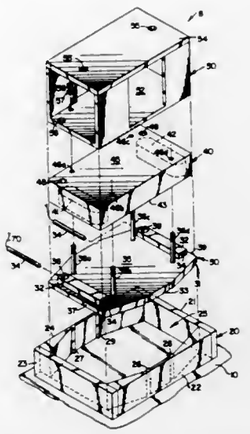
HEATED STRIPPER SHOE ASSEMBLY

Michael E. Woolford, Lake Elmo, assignor to Block Systems Inc., North St. Paul, Minn.

Filed Jan. 30, 1992, Ser. No. 828,031

Int. Cl.[5] B28B *13/06*

U.S. Cl. 425—412 18 Claims



1. A heated stripper shoe assembly comprising means for forming structural features on composite masonry blocks, said forming means comprising:

(a) a stripper shoe plate having a top side and a bottom side, said stripper shoe plate bottom side comprising at least one indentation;

(b) means for applying heat to selected areas of the plate, said heating applying means comprising a heating element affixed to the top side of said plate, and

(c) means for fastening said heating element to said stripper shoe plate top side, said fastening means positioned on said stripper shoe plate top side adjacent the indentation in said plate bottom side, said heating element positioned within said fastening means.

5,249,951

INJECTION MOLDING MACHINE HAVING TILTABLE MOUNTING PLATES

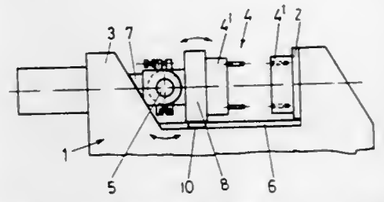
Heinz Leonhartsberger, Schwertberg; Helmut Naderbirn, Perg; Werner Kappelmüller, Schwertberg, and Otto Urbanek, Linz, all of Austria, assignors to Engel Maschinenbau Gesellschaft m.b.H., Schwertberg, Austria

Filed Oct. 25, 1991, Ser. No. 782,572

Int. Cl.[5] B29C *45/64*

U.S. Cl. 425—589 9 Claims

1. An injection molding machine comprising a machine frame, a stationary and a movable mold mounting plate, a cylinder plate carrying a closing mechanism for exerting a closing force during a closing phase and for resisting an expansion force during an injection phase of the molding machine, wherein the cylinder plate against which the movable mold mounting plate is supported and the stationary mold mounting plate are connected without bars exclusively by way of the machine frame so that the closing force which occurs during the closing phase and the expansion force which occurs during the injection phase as between the cylinder plate and the mold mounting plate are passed only by way of the machine frame, means for mounting at least one of said mold mounting plates tiltably about a horizontal axis, and a guide between the movable mold mounting plate and the machine frame, the guide including a guide rail mounted to the machine frame and at least one slide shoe carried on the movable mold mounting plate and slidable on the guide rail, and further including in the guide at least one spring permitting resilient tilting movement of the movable mold mounting plate.



5,249,952

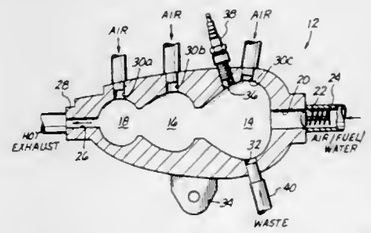
EXHAUST FUME ENERGY SOURCE AND WASTE COMBUSTION APPARATUS

Bill West, Laguna Niguel, and Thomas Trulis, San Juan Capistrano, both of Calif., assignors to Cosmos Ventures, Inc., San Juan Capistrano, Calif.

Filed Apr. 24, 1992, Ser. No. 874,245

Int. Cl.[5] F23C *6/04*, *3/00*

U.S. Cl. 431—5 5 Claims



1. A method for selectively producing energy, controlling pollution and processing waste a variety of waste products comprising incompletely combusted waste gases from other combustion sources and combustible solid waste, said method comprising the steps of:

providing said variety of waste products to multiple chambers in a combustion device;

providing an oxidizing agent to each of said multiple chambers within said device;

initiating an explosive combustion within a first chamber within said device;

propagating said explosive combustion from said first chamber to said other chambers within said device to produce energy, said serially communicated combustion chambers being of decreasing size, beginning with a largest combustion chamber as an input chamber and ending with a smallest combustion chamber as an output chamber; and

ejecting hot, combusted exhaust gases which are multiply combusted within said device,

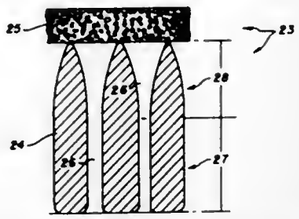
whereby pollution of said waste products is controlled, energy is produced, and said variety of waste products are processed.

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5,249,953
GAS DISTRIBUTING AND INFRARED RADIATING BLOCK ASSEMBLY

Reinhold C. Roth, Newport, R.I., assignor to Hercules Canada, Inc.; 285550 British Columbia Ltd. and 285562 British Columbia Ltd., Canada

Continuation of Ser. No. 625,752, Dec. 10, 1990, abandoned, which is a continuation of Ser. No. 538,376, Jun. 14, 1990, abandoned. This application Nov. 4, 1992, Ser. No. 971,673
Claims priority, application Canada, Jun. 16, 1989, 603136
Int. Cl.[5] F23D *14/16*
U.S. Cl. 431—7 **32 Claims**



1. A method for producing infrared radiation, which comprises the steps of:

(a) forcing a pressurized mixture of combustion gas and air through a multitude distinct channels in a first block of material, each channel is perpendicular to the radiation surface and consists of two sections, the first section having a cross-sectional area smaller than that of the second section such that the velocity of the mixture through said first section is greater than the velocity of the flame propagation in the mixture, the cross-sectional area of the second section being a varying one commencing with that of the first then expanding in bowl-shaped fashion until the section at least substantially makes contact with a second block of material, consisting of a multitude of spaces connected together, into which the mixture is forced to flow, and which combined with said first block forms a burner block assembly;

(b) allowing said mixture to expand and form a turbulent mixture in said second section of said first block and in said spaces of said second block;

(c) allowing said turbulent mixture to ignite and burn in said second block of material thereby heating the top surface of said second block to a very high incandescence temperature causing it to produce very efficient infrared radiation.

5,249,954
INTEGRATED IMAGING SENSOR/NEURAL NETWORK CONTROLLER FOR COMBUSTION SYSTEMS

Mark G. Allen, Boston, Mass.; Charles T. Butler, Reston, Va.; Stephen A. Johnson, Andover, Mass.; Edmund Y. Lo, Westford, Mass., and Farla M. Russo, Brookline, Mass., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

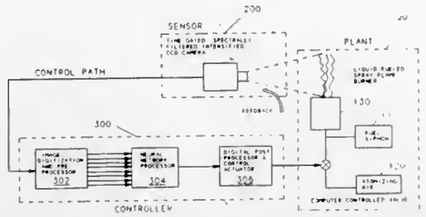
Filed Jul. 7, 1992, Ser. No. 909,911
Int. Cl.[5] F23H *5/26*
U.S. Cl. 431—14 **25 Claims**

1. A combustion control system for regulating the delivery of fuel and air to a combustor comprising:

a. a gated, freeze-frame, intensified charged coupled device imaging camera directed at the flame of the combustor and capable of determining the quantity and location of particular radicals generated by the combustion process said quantity and location of particular radicals being indicative of flame quality;

b. a neural network for receiving said quantity and location information from said imaging camera and for recognizing spatial and qualitative patterns of said information wherein said patterns are indicative of flame quality and for producing a neural network output signal representative of flame quality;

c. a controller for receiving said neural network output signal and producing a control output signal tending to improve flame quality; and

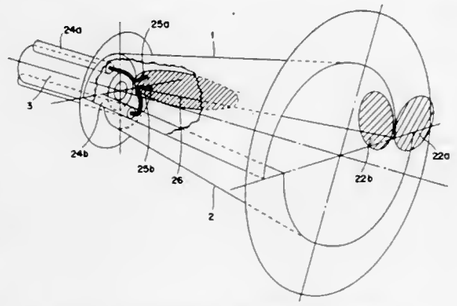


d. a control element for controlling fuel air ratio in response to said control output signal whereby fuel air ratio is controlled to optimize flame quality in said combustor for varying loads on said combustor.

5,249,955
BURNER AND IGNITOR ARRANGEMENT

Emil Kuhn, Baden; Hans P. Knöpfel, Besenbüren; Hans Peter, Urdorf, and Claude Pelet, Lonay, all of Switzerland, assignors to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Jun. 23, 1992, Ser. No. 902,735
Claims priority, application Switzerland, Jul. 3, 1991, 1967/91
Int. Cl.[5] F23D *17/00, 11/40;* F23R *3/02*
U.S. Cl. 431—265 **5 Claims**



1. A burner for combustion of a fuel comprising:

at least two hollow conical partial bodies positioned one upon the other in the flow direction to form a hollow conical space, the longitudinal axes of symmetry of said partial bodies extending radially offset relative to one another to form tangential air inlet slots with opposite flow directions for producing a tangential combustion air flow;

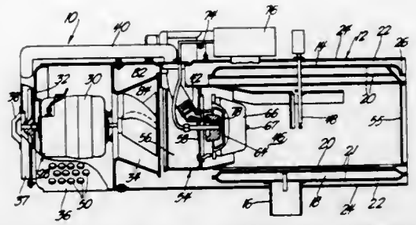
at least one nozzle for injecting a fuel being placed in the hollow conical space formed by the conical partial bodies; and

electrode ends of ignition electrodes are placed in the hollow conical space at a location with low combustion air flow velocity adjacent to a tangential inlet slot along an inner edge of the inlet slot.

5,249,956
MULTIFUEL HEATER

William H. Chu, Lake Orion, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 4, 1992, Ser. No. 988,059
Int. Cl.[5] F23D *3/40*
U.S. Cl. 431—326 **1 Claim**

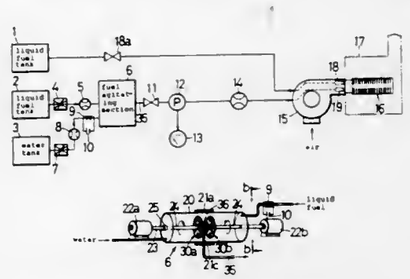


1. In a multi-fuel heater connected to a source of fuel for use as a heater including a heat exchanger housing with a blower assembly mounted on one end of the heat exchanger housing the blower assembly being positioned to force pressurized combustion air to the exhaust outlet and ventilating air to be heated through the heat exchanger housing; a burner assembly mounted within the heat exchanger housing the burner assembly having an apertured plate mounted across the casing and in the path of the combustion air, a burner cup located on the side of the apertured plate opposite the blower assembly to intercept combustion air after it passes through the apertured plate, a porous fuel vaporizer attached to a mounting means anchored to the apertured plate the fuel vaporizer being located between the apertured plate and the burner cup, an burner cup attached to the mounting means coaxially with the fuel vaporizer and located between the fuel vaporizer and the burner cup, and a wick, the wick having one end in contact with the fuel vaporizer so as to receive fuel from the vaporizer, the other end of the wick being located in an igniter pocket near a igniter, the improvement comprising: providing a plurality of apertures in the vaporizer shield, and the burner cup, the apertures being about 0.07 to 0.09 inch in diameter so as to allow dust and debris to exit the vaporizer shield into the larger burner cup without being permanently deposited on the fuel vaporizer's porus surface.

5,249,957
EMULSION PRODUCING APPARATUS AND ITS COMBUSTION SYSTEM

Kiichi Hirata, 44-2, Tomioka-nishi 7-chome, Kanazawa-ku, Yokohama-shi, Kanagawa, Japan

Filed Feb. 3, 1992, Ser. No. 828,804
Claims priority, application Japan, Jun. 14, 1990, 2-154136
Int. Cl.[5] F23C *11/00*
U.S. Cl. 431—354 **7 Claims**



1. An emulsion producing apparatus comprising:

a liquid fuel tank (**64**) for storing liquid fuel;

a water tank (**58**) for storing water;

an agitating chamber (**50**) to which said liquid fuel and said water from said liquid fuel tank (**64**) and said water tank (**58**) are supplied;

an agitating blade (**51**) arranged inside said agitating chamber (**50**) for agitatedly mixing said liquid fuel and water;

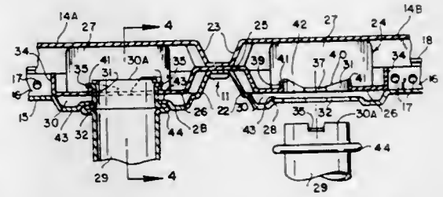
a plurality of movable permanent magnets (**65***a*, **65***b*) arranged on said agitating blade (**51**); and

an agitating blade driving motor (**53**) for driving said agitating blade (**51**) to produce pulsed eddy currents resulting in an ionized emulsion.

5,249,958
TWO-SECTION BURNER

Donald E. Freber, Glendale, Mo., assignor to Marquette Tool & Die Company, St. Louis, Mo.

Filed Nov. 16, 1992, Ser. No. 977,078
Int. Cl.[5] F23D *14/62*
U.S. Cl. 431—354 **10 Claims**



1. A burner having a combustion chamber enclosed by a bottom pan and a cover therefor, and an aperture for the admission of a gas fuel to the chamber, the improvement comprising:

a) a wall forming the bottom surface of the bottom pan and said wall having a recessed portion formed therein having an aperture for the admission of a gas fuel;

b) a baffle secured in the combustion chamber between the wall forming the bottom pan and the cover, said baffle having a base directed over the gas admission aperture and covering said recessed portion and said aperture therein, said base having an aperture therein registering with said recessed portion aperture;

c) a gas fuel admitting tube having an open end received in said registering apertures and a flange formed thereon spaced from and adjacent said open end in position to engage against the recessed portion; and

d) retaining means formed on said base and on said open end of the gas admitting tube, said retaining means being in position to engage each other upon insertion of the tube open end into said registering apertures for retaining said tube in position to admit fuel to the chamber, said retaining means further being effective upon tube rotation manipulation while inserted in said registered apertures to draw said tube flange into sealing contact with said recessed portion.

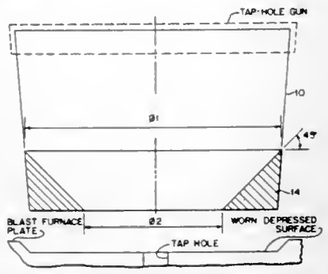
VOL 1155 ISS 1 OCT 5 1993

5,249,959

DEVICE FOR THE RAPID REPAIR OF A BLAST-FURNACE PLATE

Jacques Menuge, Verlincthun, France, assignor to Terres Refractaires du Boulonnais, Nesles, France

PCT No. PCT/FR91/00470, § 371 Date Dec. 26, 1991, § 102(e) Date Dec. 26, 1991, PCT Pub. No. WO92/01071, PCT Pub. Date Jan. 23, 1992
PCT Filed Jun. 12, 1991, Ser. No. 781,137
Claims priority, application France, Jul. 5, 1990, 90 08557
Int. Cl.[5] F27D *1/16*
U.S. Cl. 432—76 3 Claims



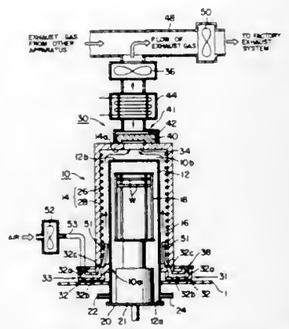
1. A device for repairing a worn depressed surface around a tap hole opening in a blast furnace plate, comprising:
- a preformed frusto-conical member made of refractory material;
- a ferrule formed of frangible material for enclosing the refractory member; and
- means for fastening the ferrule to the nose of a tap-hole gun;
- impact driving by the gun against the depressed surface causing destruction of the ferrule and adhering deformation of the refractory member to fill the worn depressed surface of the plate around the tap hole.

5,249,960

FORCED COOLING APPARATUS FOR HEAT TREATMENT APPARATUS

Osamu Monoe, Sagamihara, Japan, assignor to Tokyo Electron Sagami Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 10, 1992, Ser. No. 898,596
Claims priority, application Japan, Jun. 14, 1991, 3-169443
Int. Cl.[5] F27D *15/02*
U.S. Cl. 432—77 10 Claims



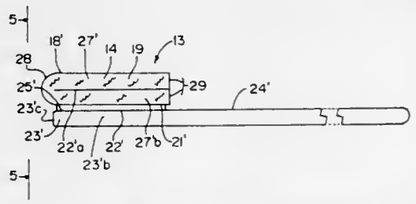
8. In a forced cooling apparatus for a heat treatment apparatus comprising a heat treatment furnace having a process tube with one end open at an furnace opening and another end closed at an furnace top portion; and a heater portion which covers said process tube, and wherein cooling of said heat treatment furnace is performed by forced cooling by flowing air into a gap formed between said heater portion and said process tube and which extends to said furnace top portion, said forced cooling apparatus for the heat treatment apparatus; comprising:
- a plural number of air intake openings provided at said furnace opening portion for flowing air from an open end of said process tube and into said gap;
- a nozzle inserted into said air intake opening;
- an air supply means connected to said air intake opening,
- an exhaust opening provided at said furnace top portion for flowing air which has flowed into said gap, from the vicinity of a middle portion on a side of a closed end of said process tube to outside said heater portion;
- an exhaust means connected to said exhaust opening; and
- a shutter means for closing said exhaust opening.

5,249,961

PORTABLE PET TEETH-CLEANING ABRASIVE INSTRUMENT

Richard W. Hoagland, Lake Trail East, Morristown, N.J. 07960

Continuation-in-part of Ser. No. 951,887, Sep. 28, 1992. This application Dec. 14, 1992, Ser. No. 989,692
Int. Cl.[5] A61D *5/00*; A46B *9/04*; A47K *7/02*; A47L *13/46*
U.S. Cl. 433—1 19 Claims



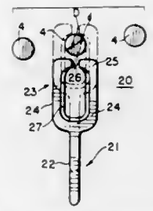
1. A portable handle-mounted pet teeth-cleaning device comprising in combination: a teeth surface-cleaning means for rubbing against teeth surfaces to clean debris from surfaces of teeth of a pet; said teeth surface-cleaning means including a teeth-cleaning pad structure; a handle means for mounting thereof the teeth surface-cleaning means and for grasping thereof with fingers of a person cleaning a pet's teeth and for maneuvering the teeth surface-cleaning means against a pet's teeth during cleaning of debris from a pet's teeth, the handle means having an elongated distal end with a substantially flattened face adapted to mount permanently the teeth-cleaning pad structure thereagainst; pad mounting means securing said teeth-cleaning pad structure onto said substantially flattened face; said teeth-cleaning pad structure including a substantially flexible flattened elongated pad having opposite first and second end-portions and an intermediate portion therebetween and the flexible flattened elongated pad having opposite first and second faces extending between said opposite first and second end-portions, and there being a thickness between said first and second faces forming opposite side third and fourth faces respectively one thereof at each of said first and second opposite end-portions, each of said opposite side third and fourth faces having substantially said thickness, said opposite first face having a substantially durably hardened exterior face that is substantially resistent to significant abrasion when rubbing against a pet's tooth surfaces to remove debris from the tooth surfaces of a pet, at least one of said end portions being downwardly bent sufficiently to form at least one convoluted convex outer side face positioned above said flattened face and one turned-under portion positioned partially beneath said intermediate portion, said at least one turned-under portion having a lower-most face, each said lower-most face being permanently mounted by said pad mounting means onto said substantially flattened face of said elongated distal end, said elongated distal end having a circumscribing side face circumscribing said substantially flattened face, said at least one convoluted convex outer side face being positioned sufficiently laterally as to be positioned beyond said circumscribing side face a predetermined distance sufficient that said at least one convoluted convex outer side face may be abrasively rubbed against tooth surfaces devoid of contacting gum and tooth surfaces with said circumscribing side face.

5,249,962

METHOD AND DEVICE FOR CLEANING THE SURFACES OF ABUTMENT MEMBERS OF DENTAL IMPLANTS ESPECIALLY THE LINGUAL SURFACES

Jay Ascher, 422 E. Waukena Ave., Oceanside, N.Y. 11572

Filed Nov. 20, 1991, Ser. No. 796,034
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—141 19 Claims



1. A dental cleaning device comprising a support member including a relatively rigid handle and an operative portion on and extending from said handle, said operative portion being constituted and shaped for penetrating between spaced adjacent abutment members of dental implants and including a deviated portion to confront a lingual surface of one of said abutment members when the operative portion is inserted between said abutment members, and cleaning means having a flexibility greater than that of said support member and operatively associated with said operative portion to engage said one abutment member over at least said lingual surface thereof to clean the same, said operative portion comprising a holder made of relatively rigid plastic material, said holder being in the form of an elongated loop of flat band-like configuration having a flat inner surface, said holder having a gap therein through which an abutment can pass by flexible deformation of said holder, said cleaning means comprising a lining of cleaning material covering said flat inner surface of said holder to face inwards in said loop and be braced by said holder for cleaning the surface of said abutment.

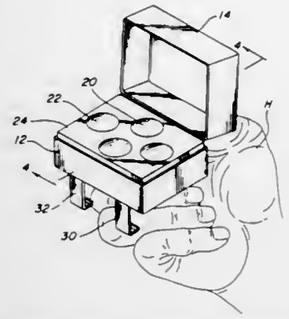
5,249,963

FLIP LID DISPENSER

Tamsen P. McGarrigle, 268 E. Main St., Moorestown, N.J. 08057

Filed Jan. 27, 1992, Ser. No. 826,410
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—163 3 Claims

1. A dispenser for containing and presenting a light-curable composition for delivery in a dental operatory, comprising:
- a container having a receptacle portion for receiving a light-curable composition and having a lid portion hinged thereto for pivotal motion about an axis between open and closed positions;
- ring means on said receptacle portion for receiving a user's finger and thereby mounting, said container thereto;
- said ring means being located adjacent to and having an axis substantially parallel to said pivot axis of said lid, so that when the container is mounted on the finger, the lid axis extends lengthwise of and alongside said finger; and
- means providing on said lid a handle extending transverse to said lid pivot axis above said ring means for engagement by the user's thumb to open and close the lid;



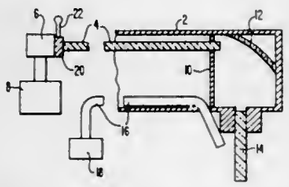
whereby the other of the user's fingers are available for other functions while the container is mounted in its composition delivery position.

5,249,964

METHOD FOR CUTTING METAL BODIES IN THE MOUTH

Guy Levy, Tustin, Calif., assignor to Endo Technic Corporation International, San Clemente, Calif.

Division of Ser. No. 709,244, Jun. 3, 1991, which is a continuation-in-part of Ser. No. 299,472, Jan. 18, 1989, Pat. No. 5,020,995, Ser. No. 335,245, Apr. 10, 1989, abandoned, and Ser. No. 351,203, May 15, 1989, Pat. No. 5,194,005. This application Feb. 25, 1992, Ser. No. 840,556
Claims priority, application France, Dec. 21, 1988, 88 17549
Int. Cl.[5] A61C *5/00*
U.S. Cl. 433—215 12 Claims



1. A method for cutting metal bodies in the mouth of a patient, comprising: generating laser radiation having a wavelength which is suitable for cutting the metal and which is absorbed at a low level by water; producing successive pulses of the radiation with an energy level, pulse duration and repetition rate selected to cut the metal without causing harmful side effects; concentrating the radiation pulses on the metal to a spot sufficiently small to cause cutting of the metal; and, simultaneously with said step of concentrating, directing a cooling fluid containing water onto the spot.

5,249,965

ELECTRONIC WORD SELECTION MACHINE

Peter N. Yianilos, Princeton, N.J., assignor to Franklin Electronic Publishers, Inc., Mt. Holly, N.J.

Filed Aug. 6, 1992, Ser. No. 926,050
Int. Cl.[5] A63F *9/00*
U.S. Cl. 434—177 9 Claims

1. In a word selection machine having a predetermined set of words in memory and having matching means for matching an input partial word against said set of words to provide a sug-

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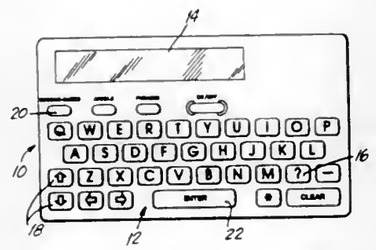
VOL 1155 ISS 1 OCT 5 1993 UMI

gested word, the improvement in providing alternate suggested words comprising:

keyboard means to provide a user selected input word,

a display screen to display said user selected input word,

a predetermined function key on said keyboard,



first search means responsive to a selected input word of Y letters and a first actuation of said function key to provide on said display screen a first list of Y letter long words from said set of words in memory,

each member of said first list of words differing from said input word by one letter.

5,249,966

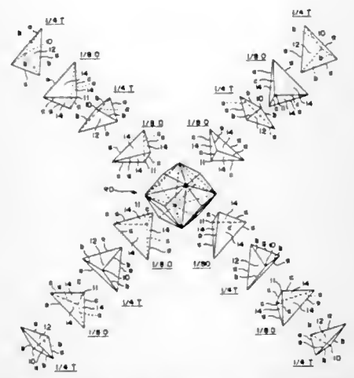
GEOMETRIC BUILDING BLOCK SYSTEM EMPLOYING SIXTEEN BLOCKS, EIGHT EACH OF ONLY TWO TETRAHEDRAL SHAPES, FOR CONSTRUCTING A REGULAR RHOMBIC DODECAHEDRON

John A. Hiigli, 164 W. 83rd St., #1-R, New York, N.Y. 10024

Continuation-in-part of Ser. No. 798,540, Nov. 26, 1991, abandoned. This application Nov. 16, 1992, Ser. No. 977,263

Int. Cl.[5] **G09B** *5/00*

U.S. Cl. 434—211 **18 Claims**



10. A geometric block system for constructing a regular rhombic dodecahedron having twelve identical rhombic-shaped faces, said system including at least sixteen blocks, said sixteen blocks consisting solely of:

eight identical first blocks and

eight identical second blocks;

each of said eight identical first blocks being one quarter of a regular tetrahedron;

said regular tetrahedron having six equal edges each of length "a" and having four identical equilateral triangular faces each having three sides each of length "a";

each of said eight identical first blocks having an apex at a point corresponding with the center of gravity of said regular tetrahedron;

each of said eight identical first blocks having four faces consisting of first, second, third and fourth triangular faces;

said first triangular face being an equilateral triangular face having three edges each f length "a";

said second, third and fourth triangular faces each being an isosceles triangular face having one edge of length "a" and two edges of length "b";

said length "b" being equal to $a\sqrt{6}/4$;

each of said eight identical first blocks having a volume of one cubic unit;

each of said eight identical second blocks being one eight of a regular octahedron;

said regular octahedron having eight equal edges each of length "a" and having eight identical equilateral triangular faces each having three sides each of length "a";

each of said eight identical second blocks having an apex at a point corresponding with the center of gravity of said regular octahedron;

each of said eight identical second blocks having four faces consisting of fifth, sixth, seventh and eighth triangular faces;

said fifth triangular faces being in equilateral triangular face having three edges each of length "a";

said sixth, seventh and eighth triangular faces each being an isosceles triangular face having one edge of length "a" and two edges of length "c";

said length "c" being equal to $a/\sqrt{2}$;

each of said eight identical second blocks having a volume of two cubic units;

said sixteen blocks enabling said regular rhombic dodecahedron to be assembled by initially placing in face-to-face relationship the sixth, seventh and eighth isosceles triangular faces of all of the eight identical second blocks with their edges of length "c" being aligned and with all of their apexes being adjacent one to another; and by subsequently placing in face-to-face relationship respective first equilateral triangular faces of said eight identical first blocks with respective fifth equilateral triangular faces of respective ones of said eight identical second blocks with the edges of length "a" of said first equilateral triangular faces being aligned with the edges of length "a" of said fifth equilateral triangular faces,

whereby a regular rhombic dodecahedron having twenty four units of cubic volume and having twelve identical rhombic-shaped faces can be constructed, in which each of said identical rhombic-shaped faces has four edges each of length "b" equal to $a\sqrt{6}/4$.

5,249,967

SPORTS TECHNIQUE VIDEO TRAINING DEVICE

George P. O'Leary, 2611 NW. Westover Rd., Portland, Oreg. 97210, and Stephen G. Owen, Portland, Oreg., assignors to George P. O'Leary, Portland, Oreg.

Filed Jul. 12, 1991, Ser. No. 729,466

Int. Cl.[5] **A63B** *69/00*

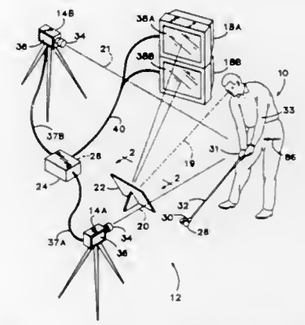
U.S. Cl. 434—247 **15 Claims**

1. A sports training device for enabling a student to recreate the dynamic technique of a master comprising:

(a) video camera means for transmitting a live image of the dynamic technique of the student in a selected sports situation;

(b) visual monitor means for viewing by the student; and

(c) a video overlay generator for providing a static image representing the dynamic technique of the master in said selected sports situation including overlay means for electronically combining said live image and said static image



for simultaneous superimposed display on said visual monitor means.

5,249,968

CPR MANIKIN (PISTON)

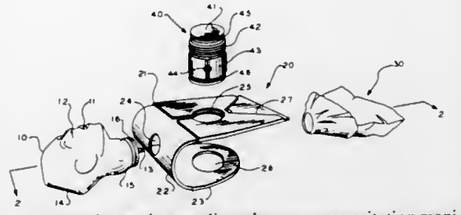
Richard Brault, and Dianne Croteau, both of Toronto, Canada, assignors to Actar, Inc., Toronto, Canada

Filed Nov. 21, 1991, Ser. No. 795,389

Claims priority, application Canada, Apr. 17, 1991, 2040710

Int. Cl.[5] **G09B** *23/28*

U.S. Cl. 434—265 **5 Claims**



1. A piston for use in a cardio-pulmonary resuscitation manikin comprising a tube having a length from a top end to a bottom end approximating the depth of a chest cavity including;

an upper wall portion having corrugated folds made of a material sufficiently elastic to permit the corrugated folds to be folded completely and repeatedly and to exert a restorative force approximating the resistance of a human chest to compression so that the top end of the tube, under a sufficient force of compression, may be moved from a first position toward the bottom end of the tube to a second position and elastically flex back to restore the top end of the first position upon removal of the force of compression,

a lower wall portion having walls sufficiently rigid to resist longitudinal displacement under a force of compression used in C.P.R. heart massage techniques, said lower wall having at least one opening to permit air to escape from and return to the interior of the tube during compression and restoration of the upper wall portion,

the top end being closed and the bottom end being open, and

four equidistantly spaced vertical reinforcing ribs in the lower wall and at least two ventilation ports located in said reinforcing ribs.

5,249,969

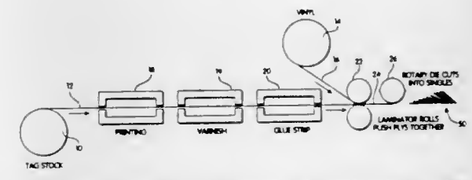
LUMINESCENT DISPLAY DEVICE AND METHOD OF MAKING THE SAME

Peter A. Confalone, Jr., Franklin, and Ronald W. Dart, Wayland, both of Mass., assignors to Procorp, Inc., Framingham, Mass.

Filed May 22, 1991, Ser. No. 703,905

Int. Cl.[5] **B43L** *1/12*

U.S. Cl. 434—410 **4 Claims**



1. A continuous method for making a display device of the type having first and second sheets which upon application of pressure are urged into intimate contact at the points of applied pressure to form a semi-permanent luminescent image along said points and wherein said sheets are readily separable for effecting erasure of the image formed thereof, the method comprising the steps of:

providing a continuous strip of paperboard sheet, wherein one side of the sheet has at least one portion with a sealed surface for improved varnish adherence;

feeding the paperboard strip past a varnish station where a varnish coating is applied to the sealed surface to form a first contact surface;

feeding the paperboard strip past an adhesive station where adhesive means is applied to a second portion on the one side of the sheet;

providing a continuous strip of a pliable vinyl type plastic sheet containing a luminescent dye, which forms a second contact surface;

feeding both the paperboard strip and vinyl strip through a combining station wherein the first and second contact surfaces are aligned and disposed adjacent to one another and a portion of the vinyl sheet is permanently joined by the adhesive means to the second portion of the paperboard sheet; and

feeding the joined strips to a cutting station which separates the joined strips into a plurality of individual display devices.

5,249,970

MULTIPLE POSITION ELECTRICAL SWIVEL PLUG APPARATUS

Michael P. Jennings, R.F.D. #1, Box 20, South Ryegate, Vt. 05069

Continuatioo-in-part of Ser. No. 795,727, Nov. 21, 1991, abandoned. This application Nov. 3, 1992, Ser. No. 970,838

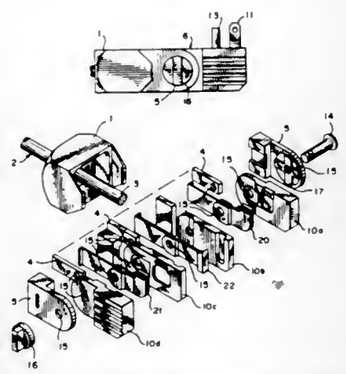
Int. Cl.[5] **H01R** *39/64*

U.S. Cl. 439—31 **5 Claims**

1. A multiple position electrical swivel plug apparatus comprising, a bifurcated housing having a pair of spaced arms, an electrical cord, said bifurcated housing being integrally mounted on an end of said electrical cord, said cord having a conductor terminating in a plurality of transversely spaced blades positioned in the space between the arms of the bifurcated housing, a plug assembly, said plug assembly having a nose portion inserted in the space between the arms of said bifurcated housing, said nose portion having a plurality of spaced fingers, said blades being inserted into the spaces between said fingers to thereby be in electrical contact with the conductors of said plug assembly, a transverse bolt extending through aligned apertures in the blades, bifurcated arms, fingers and plug assembly contacts to thereby pivotally connect

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the plug assembly to the bifurcated housing, and a locking cap connected to said bolt, whereby the plug assembly can be



pivoted to a desired angle relative to said bifurcated housing and locked thereat.

5,249,971

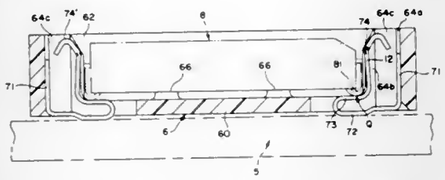
IC PACKAGE CONNECTOR

Vincent Lai, and J. J. Hsu, 930 W. Maude Ave., both of Sunnyvale, Calif. 94086, assignors to Foxconn International, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 754,080, Sep. 13, 1991, abandoned. This application Feb. 2, 1993, Ser. No. 12,615

Int. Cl.[5] H01R *9/09*

U.S. Cl. 439—70 **2 Claims**



1. A connector for connecting an IC package having a plurality of pins to a printed circuit board (PCB), comprising;

a base;

a wall perpendicular to and surrounding said base to form a recess for accommodating the IC package, an inner side of said wall having a plurality of slots formed thereon and lined up side by side therealong;

a plurality of terminals, each of which is fitted within one of said slots, for electrically connecting the pins of the IC package to the printed circuit board;

characterized in that:

each of said slots has a substantially I-shaped cross section including a securing groove, a contact groove adjacent to said recess, and a narrower intermediate groove interconnecting said securing groove and said contact groove;

each of said terminals is formed by bending a conducting strip into substantially four portions including: a securing portion to be inserted into said securing groove of said slot to secure said terminal therein; a mounting portion, positioned at a bottom of said slot, to be directly attached to the PCB by using a surface mounting technique; a first contact portion positioned over said mounting portion and contacting the respective pin of the IC package at a lower point; and a second contact portion extending generally upwards from said first contact portion with a slight inclination towards said recess and contacting the pin of the IC package at an upper point for conducting contact with the pin and exerting a downward and inward pressing directed force upon the pin so as to retain the IC package within the connector.

5,249,972

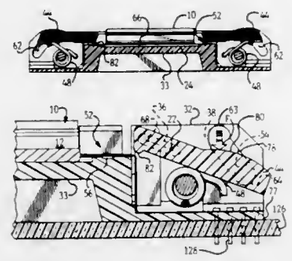
ELECTRICAL SOCKET

Kevin E. Walker, Harrisburg, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Dec. 22, 1992, Ser. No. 995,244

Int. Cl.[5] H01R *23/72*

U.S. Cl. 439—72 **9 Claims**



1. An electrical socket, comprising:

a base having a generally central reception area which can receive an electronic device having electrical leads extending to a peripheral region of said reception area;

multiple pressure members being fixed with respect to the base in a manner permitting movement between open and closed positions, each of the pressure members having a pressure applying portion which is disposed in the peripheral region when the pressure member is in the closed position and is disposed outwardly of the peripheral region when the pressure member is in the open position;

a circuit carrying member having conductive traces extending to within said peripheral region;

springs engaging said pressure members when in said closed position in a manner biasing said pressure applying portions toward said traces, whereby the electrical leads can extend under said pressure applying portions and be urged by biasing forces against said traces;

wherein said pressure members are guided for both translational movement and pivoting movement with respect to said base and are movable against the bias of said springs such that said pivoting movement relieves said biasing forces from said electrical leads and said translational movement withdraws said pressure applying portions to an area beyond said peripheral region.

5,249,973

CARD TYPE JUNCTION BOX

Yoshinori Fujita, and Takuya Inoue, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Mie, Japan

Filed Jul. 7, 1992, Ser. No. 909,676

Claims priority, application Japan, Jul. 31, 1991, 3-191736

Int. Cl.[5] H01R *9/09*

U.S. Cl. 439—76 **4 Claims**

1. A card-type electrical junction box comprising:

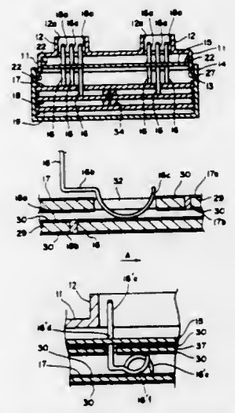
a) a housing having a box-like shape defining a top face, a bottom face, opposing lateral side faces and front and rear side faces, said housing including a plurality of insertion openings formed in said front face;

b) a plurality of connector receivers projecting outwardly from one of said top face and said bottom face of said housing;

c) a plurality of pressure contact terminals mounted to said housing in parallel relationship with each other, each pressure contact terminal having a first end and an opposite, second end, said first end extending into a corresponding connector receiver, and said second end extending within said housing and having a curved circuit contact portion;

d) guide means formed within said housing at spaced apart intervals in correspondence with said insertion openings; and

e) a plurality of circuit cards respectively inserted through said insertion openings and being removably disposed within said housing by said guide means in stacked arrangement, each circuit card including a circuit portion;



f) wherein said plurality of circuit cards includes at least an upper circuit card and a lower circuit card, said second ends of certain of said pressure contact terminals contacting said circuit portion of said upper circuit card, said upper circuit card including at least one terminal passing hole formed therethrough in a position corresponding to a selected one of said pressure contact terminals, such that said curved contact portion of the selected pressure contact terminal passes through said terminal passing hole in said upper circuit card and contacts said circuit portion of said lower circuit card.

5,249,974

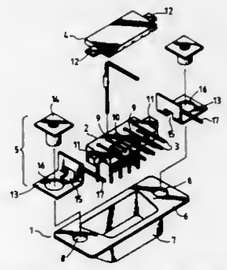
MULTI-CONTACT CONNECTOR

Elson Wang, Hsin Chu, Taiwan, assignor to Pan-International Industrial Corp., Taipei, Taiwan

Filed Sep. 15, 1992, Ser. No. 945,243

Int. Cl.[5] H01R *13/648, 9/09*

U.S. Cl. 439—79 **3 Claims**



1. A connector comprising a casing having two round holes on a flat top wall thereof adjacent to two opposite ends of the top wall, an insulative base plate mounted on the flat top wall of said casing to hold a plurality of crimp terminals, a cover board covered on said insulative base plate to hold said crimp terminals in place, and two fastening devices to fasten said cover board and said insulative base plate to the flat top wall of said casing, wherein said insulative base plate comprises a plurality of terminal holes through which said crimp terminals are respectively inserted, a plurality of elongated grooves on a top surface thereof respectively extended from each terminal hole to an edge of said top surface to guide out each crimp terminal, and two horizontal projections on two opposite ends thereof; said cover board comprises two unitary, horizontal projections on two opposite ends thereof each respectively overlapping a horizontal projection of said insulative base plate; said fastening devices each is consisted of an angle plate and a rivet, the angle plate of each fastening device having an opening on a bend thereof sleeved on either two overlapped projections to hold down said cover board and said insulative base plate on the flat top wall of said casing, a hole adjacent to one end thereof aligned with either round hole on the flat top wall of said casing, and a unitary plug rod projected from an edge of the angle plate for inserting into a respective hole on a printed circuit board to which the connector is to be connected, the rivet of each fastening device comprising a cylindrical portion and a flat top portion connected thereto, with the cylindrical portion being inserted through the hole on the angle plate of the respective fastening device and each round hole on the flat top wall of said casing with the flat top portion being hammered down to firmly secure the respective angle plate to said casing.

5,249,975

STAMPED AND FORMED SEALED PIN

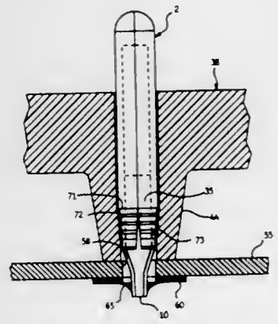
Kurt P. Baderschneider, Dreieich; Friedrich J. A. Kourimsky, Bensheim, and Harald M. Lutsch, Dietzenbach, all of Fed. Rep. of Germany, assignors to The Whitaker Corporation, Wilmington, Del.

Filed Dec. 1, 1992, Ser. No. 984,131

Claims priority, application United Kingdom, Dec. 20, 1991, 9127052

Int. Cl.[5] H01R *13/00*

U.S. Cl. 439—83 **7 Claims**



1. An electrical connector having at least one pin positioned in an insulated housing, said pin including a mating contact portion extending from one side of said housing and a printed circuit board contact portion extending from another side thereof said connector being characterized in that:

said pin is stamped and formed to include an elongate hollow cylindrical section forming said mating contact portion, said hollow section having an elonqate seam formed by said forming, said hollow section further comprising a cylindrical bead positioned within said cylindrical section having the ability to melt to fill said axial seam.

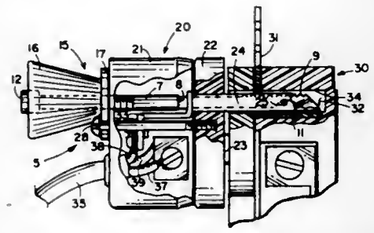
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5,249,976

ELECTRICAL PLUG HAVING LOCKING MEANS

Roger D. Brock, 30800 Driftwood La., Spanish Fort, Ala. 36527

Filed Nov. 2, 1992, Ser. No. 969,378
Int. Cl.[5] H01R *13/20*
U.S. Cl. 439—102 7 Claims



1. An electrical line cord plug having means for temporary locking of said plug in an electrical outlet, said outlet having a ground pin socket, comprising:

a) a plug body;

b) a U-shaped grounding pin extending from a front surface of said plug body, said grounding pin having opposing walls;

c) a rise pin disposed across said opposing walls;

d) a locking device including a locking bar having a distal end extending from a rear surface of and through said plug body, and within said opposing walls of said grounding pin;

e) said distal end of said locking device having a ramp portion positioned over said rise pin, wherein movement of said locking device rearwardly causes said ramp portion and said distal end to ride up said rise pin above said opposing walls of said U-shaped grounding pin to thereby produce locking contact with interior surfaces of said ground pin socket;

f) said distal end of said locking device is formed of flat, flexible material, and a proximal end thereof is a threaded rod; and

g) a threaded know disposed on said threaded rod whereby rotating said know causes said locking device to move in a selected direction.

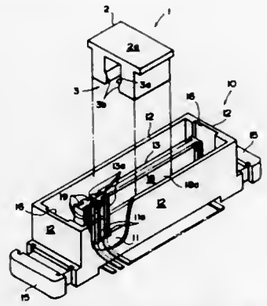
5,249,977

ELECTRICAL CONNECTOR ASSEMBLY FOR POSITIONING ON A CIRCUIT BOARD BY A SUCTION APPLYING TOOL

Mitsuho Tanaka; Masakazu Koiso, both of Tokyo; Koichi Asai, Aichi; Mitsuo Morishita, Aichi, and Kazuhiko Yokomae, Aichi, all of Japan, assignors to KEL Corporation, Tokyo, Japan

Filed Jul. 15, 1992, Ser. No. 914,778
Claims priority, application Japan, Jul. 15, 1991, 3-063052[U]
Int. Cl.[5] H01R *13/44*
U.S. Cl. 439—135 3 Claims

1. An electrical connector assembly of the surface mount type for carrying into position on a circuit board by a conventional, suction applying tool comprising an insulating housing having a lower, circuit board engaging face and an upper, mating face, side walls upstanding from the circuit board engaging face and defining an elongate mating cavity opening to the mating face and being greater in length than a corresponding dimension of a mouth of a suction nozzle of the tool, means defining a surface engageable in covering relation with the nozzle mouth for adherence thereto by suction and having a length less than the length of the cavity opening and resilient means depending from the adherable surface into the cavity and resiliently engaging the side walls for releasably attaching the adherable surface means to the connector to extend across



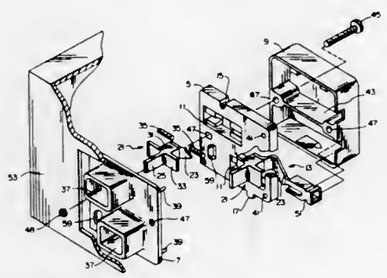
the mating face thereof with portions of the cavity opening to the mating face on each side of the adherable surface means.

5,249,978

HIGH POWER CONNECTOR

Dennis J. Gazda, Binghamton; Richard L. Stark, Auburn, and Louis R. Strnatka, Binghamton, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 15, 1992, Ser. No. 914,811
Int. Cl.[5] H01R *13/629*
U.S. Cl. 439—246 15 Claims



1. A connector comprising:

a housing including a connector body defining a recess portion having a central aperture extending therethrough, a nose plate having a shroud, said nose plate defining an opening surrounded by said shroud, said shroud extending away from said housing, and a cover plate, said cover plate and nose plate secured to opposite sides of said connector body, with said aperture in said connector body and said nose plate opening aligned with one another, said nose plate covering a portion of said recess and thus creating a cavity in said housing;

a terminal having a base and a stab portion extending from said base, said base slidably mounted in said cavity, with said stab portion extending through said opening; and

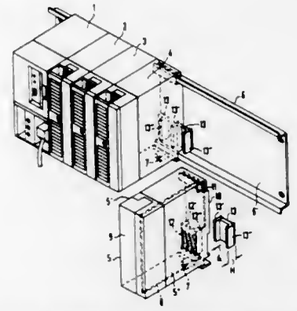
spring means for biasing said stab portion to a central position in said opening.

5,249,979

SELF-MOUNTING BUS

Günther Deinhardt, Amberg, and Reinhard Schirbl, Schwandorf, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 31, 1992, Ser. No. 923,286
Claims priority, application European Pat. Off., Aug. 8, 1991, 91113357.7
Int. Cl.[5] H01R *4/50*
U.S. Cl. 439—341 14 Claims



1. An electrical installation comprising a plurality of modules and a carrier adapted to accommodate said plurality of modules, each of said plurality of modules

having an essentially box-shaped encapsulation comprising two sidewalls and one rear wall, and

having a bus module comprising a fixed pair of contact elements and a removable pair of contact elements,

said fixed pair of contact elements being oriented from said rear wall towards said carrier and being located between said two sidewalls at a distance from a first of said two sidewalls,

said removable pair of contact elements complementing said first pair of contact elements, being directed from said carrier toward said rear wall, and extending beyond a second of said two sidewalls by said distance when said module is mounted,

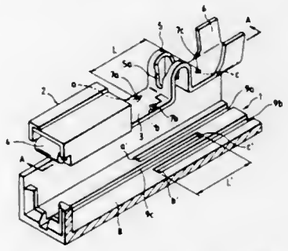
whereby when the electrical installation is assembled, adjacent modules are forcibly connected to each other in an electrically conductive manner via one of said bus modules.

5,249,980

SOLDERLESS CONNECTOR

Yuji Hatagishi, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Continuation of Ser. No. 584,837, Sep. 19, 1990, abandoned. This application Aug. 15, 1991, Ser. No. 746,178
Claims priority, application Japan, Oct. 30, 1989, 1-125608
Int. Cl.[5] H01R *4/24*
U.S. Cl. 439—398 15 Claims



1. A solderless connector comprising a connector housing an an insulation displacement terminal which is formed by bending a base plate so that said insulation displacement terminal comprises an inverted U-shaped wire insulation displacement part having a slot, an electrical contact at the forward end of said base plate, and a wire clamping part at the rearward end of said base plate, said insulation displacement terminal adaptable to reside in said connector housing, wherein

said insulation displacement terminal comprises first engaging means formed on said base plate and located before and after said wire insulation displacement part, and

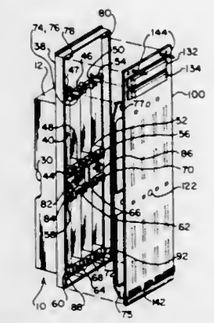
said connector housing comprises second engaging means formed in the bottom thereof and being in interlocking engagement with said first engaging means for preventing longitudinal deformation of said wire insulation displacement part relative to said connector housing due to a biasing force of said inverted U-shaped insulation displacement part exerted when a wire is being inserted into said insulation displacement part.

5,249,981

MULTIPLE CONNECTOR INTERFACE ASSEMBLY

Scott T. Abell, Longmont; William J. Benker, Denver, and Bernard A. Johnson, Thornton, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Mar. 18, 1992, Ser. No. 853,508
Int. Cl.[5] H01R *13/62*
U.S. Cl. 439—540 15 Claims



1. An apparatus for providing an interface between a plurality of cable connectors and an electronic device having at least one device connector, said apparatus comprising:

a connector alignment plate, having a plurality of apertures formed therein for receiving said plurality of cable connectors;

means affixed to said connector alignment plate for interconnecting said plurality of cable connectors to said at least one device connector, comprising:

printed circuit board means affixed to the rear of said connector alignment plate,

a plurality of first connectors directly affixed to a first side of said printed circuit board means, each of said first connectors being located adjacent a corresponding one of said plurality of apertures in said connector alignment means,

at least one second connector directly affixed to a reverse side of said printed circuit board means for engaging said at least one device connector, said at least one second connector being operatively connected to said plurality of first connectors through said printed circuit board; and

connector alignment means formed on said connector alignment plate for aligning said plurality of cable connectors with said plurality of connector means.

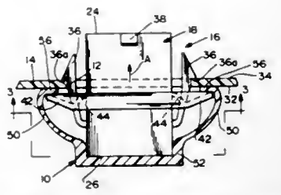
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5,249,982

PANEL MOUNTED ELECTRICAL CONNECTOR WITH IMPROVED SEALING SYSTEM

Gordoo W. Funck, Naperville; Craig R. Pierce, Elburn; Raymood A. Silbernagel, Naperville, and Edward S. Sommer, Addison, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Dec. 29, 1992, Ser. No. 998,111
Int. Cl.[5] H01R *13/52, 13/74*
U.S. Cl. 439—556 10 Claims



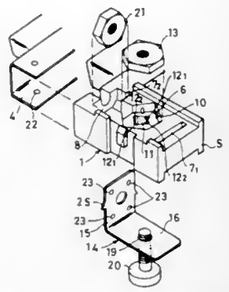
1. In a panel mounted, sealed electrical connector assembly for mounting in an aperture in a panel, said assembly including a connector housing having a front mating end adapted to be inserted through the aperture from a first surface to at least a second surface of the panel in order to mate with a complementary electrical component, complementary interengaging locking means between the housing and the panel to mount the housing in the aperture, and a sealing boot engaging the housing rearwardly of said first surface and extending toward and engaging the panel to surround and environmentally protect the aperture, wherein the improvement comprises resilient flange means surrounding a substantial portion of the periphery of the housing and adapted to be biased against the first surface of the panel, and the sealing boot includes a forward portion adapted to be received between the flange means of the housing and the first surface of the panel surrounding the aperture whereby the flange means resiliently biases the forward portion against the first surface and provides an environmental seal about the aperture.

5,249,983

ELECTRICAL CONNECTOR FOR PRINTED WIRING BOARD

Yuji Hirai, Tokyo, Japan, assignor to Honda Tsushin Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 14, 1992, Ser. No. 868,187
Claims priority, application Japan, Feb. 27, 1992, 4-9345[U]
Int. Cl.[5] H01R *13/73*
U.S. Cl. 439—573 5 Claims



1. An electrical connector for a printed wiring board, comprising:

a connector main body having a pair of mounting portions provided on both sides of the fitting portion which fits into a mating connector;

a pair of slit-like apertures which are disposed, in parallel, on both sides of each recess,

wherein said nut-placing recess has at a bottom portion thereof a bolt-inserting aperture, and

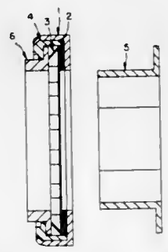
wherein said bolt-inserting aperture has at least a pair of grooves which are oppositely provided on an internal surface of said bolt-inserting aperture parallel to the axis thereof.

5,249,984

FILTER ADAPTER FOR PANEL MOUNTED CONNECTORS

Gino Antonini, Pelham, and David I. Weinstein, Yorktown Hts., both of N.Y., assignors to Kings Electronics Co., Inc., Tuckahoe, N.Y.

Filed Dec. 29, 1992, Ser. No. 998,011
Int. Cl.[5] H01R *13/66*
U.S. Cl. 439—620 6 Claims



1. An adapter for filtering signals between an electrical connector and a panel mounted receiving connector of an external device, and providing DC isolation therebetween, said adapter comprising;

a conductive front filter housing having a first surface, adapted to contact a chassis of said external device, and a second surface,

a filtering device adapted to contact said second surface of said conductive front filter housing over substantially all of said second surface,

a conductive rear portion adapted to press against a side of said filtering device remote from said front filter housing,

a grounding washer for electrically connecting said adapter to said electrical connector,

each of said front filter housing, filtering device, rear portion, and grounding washer having a matching opening therein through which said electrical connector can pass;

a non-conductive rear filter housing, for supporting said front filter housing and said grounding washer, and sandwiching therebetween said conductive rear portion and said filter device whereby said front filter housing is electrically isolated from said grounding washer, and

an isolating washer adapted to surround a portion of said electrical connector that passes through said opening.

5,249,985

FUSE HOLDER ADAPTER

Kenneth Obenauer, Massapequa, N.Y., assignor to New York Telephone Company, New York, N.Y.

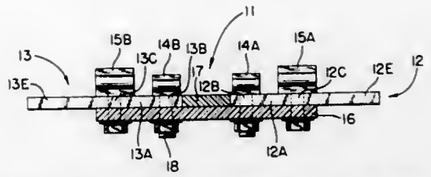
Filed Oct. 16, 1991, Ser. No. 778,323
Int. Cl.[5] H01R *33/95*
U.S. Cl. 439—621 17 Claims

1. A multiple fuse adapter for use with first and second predetermined fuse clips spaced at a first predetermined distance from one another, the multiple fuse adapter comprising:

first and second metallic plates;

an insulator plate;

said metallic plates being mounted on said insulator plate such that the metallic plates lie in a plane, separated by a distance sufficient that one edge portion of each metallic plate is engageable with one of said predetermined fuse clips and that the metallic plates are electrically isolated from each other, with a further portion of the edge of one metallic plate facing a further portion of the edge of the other metallic plate, said further edge portions forming a pair of opposing edge portions;



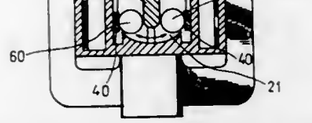
a plurality of fuse clip pairs, respective clips of said fuse clip pairs being each affixed to respective ones of the metallic plates such that the clips of at least one of the fuse clip pairs are spaced from each other at a distance different from that separating the clips of another such fuse clip pairs, said fuse clip pairs constituting a plurality of fuse holders.

5,249,986

SAFETY PLUG

Chung-Yin Lu, No. 4, Alley 1, Lane 1483, Chung-Hwa St., Chu-Pei City, Hsin Chu Hsien, Taiwan

Filed Feb. 9, 1993, Ser. No. 15,234
Int. Cl.[5] H01R *13/68*
U.S. Cl. 439—622 1 Claim



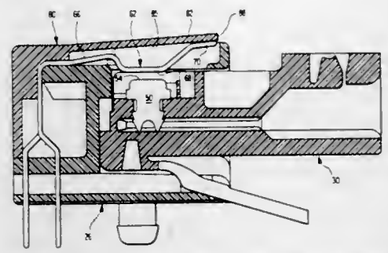
1. A safety plug comprising a housing, an internal block received inside said housing, two blades bilaterally fastened to said internal block at the front, two terminals fastened inside said internal block and bilaterally spaced from said blades, a hot wire and a neutral wire respectively connected to said terminals, two fuse tubes inserted in a fuse tube chamber on said internal block and forced by a cap on said housing to respectively and electrically connect said terminals to said blades, wherein said fuse tube chamber has a bottom smoothly curved inwards for permitting said fuse tubes to move away from said terminals and said blades toward each other in electrically and automatically disconnecting said blades from said hot and neutral wires once they are inserted before closing of said cap or after said cap was opened; said cap is made with a L-shaped section comprised of horizontal wall covered on an opening on said housing and a vertical wall inserted in a recessed hole on said internal block, said horizontal wall having a hook hooked on a front fender of said internal block for positioning, said vertical wall having a projecting rod moved to squeeze said fuse tubes outwards in electrically and respectively connecting said blades to said terminals as said cap was fastened into place and said horizontal wall covered over the opening on said housing.

5,249,987

CAP FOR MODULAR JACK

Ralph Kristiansen, Roanoke, Va., assignor to Virginia Patent Development Corporation, Roanoke, Va.

Filed Mar. 31, 1992, Ser. No. 857,601
Int. Cl.[5] H01R *23/02*
U.S. Cl. 439—676 32 Claims



1. A telephone-type modular jack of the type that connects a telephone-type modular plug with a printed circuit board; said jack comprising:

a housing having a front portion, a rear portion, an upper outer wall, an opening formed in said front portion of said housing for receiving the telephone-type modular plug having a cord terminated by a plurality of side-by-side, substantially planar contact terminals, said contact terminals including a substantially flat, elongated upper edge surface;

a plurality of electrical conductors arranged in a side-by-side, spaced apart fashion in said housing, each of said conductors including an end portion extending normally from said rear portion for insertion through a corresponding hole formed in the printed circuit board, a spring contact portion extending into said opening from said rear portion of said housing towards said front portion of said housing and including a substantially linear lower portion, and an intermediate portion formed between said end portion and said spring contact portion;

said upper edge surface of said contact terminals of said telephone-type modular plug engaging said linear lower portion of said spring contact portions of said conductors causing said spring contact portions of said conductors to be pivoted upwardly about a fulcrum point upon insertion of said telephone-type modular plug into said opening of said telephone-type modular jack; and

means for limiting the upward movement of said spring contact portions of said conductors, said means comprising a separable cap member having a main body portion overlying said intermediate portion of said conductors and cover means extending forwardly from said main body portion over said spring contact portions of said conductors for covering same.

5,249,988

CONNECTOR AND CONTACT THEREIN HAVING ENHANCED RETENTION AND HIGH FLEXIBILITY

Sidney Lu, Taipei, Taiwan, assignor to Foxconn International, Inc., Sunnyvale, Calif.

Filed Jun. 4, 1992, Ser. No. 893,385
Int. Cl.[5] H01R *13/42*
U.S. Cl. 439—751 14 Claims

1. An electrical connector for use with a circuit module, comprising:

an insulative elongated housing having a module-receiving recess extending longitudinally therein;

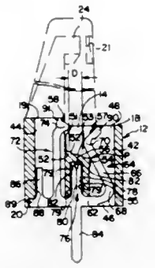
a plurality of cavities transversely disposed along the recess; and

a contact in each cavity comprising at least a contact beam for establishing electrical contact with at least one side of the circuit module; the improvement including:

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at least a retention section of the contact providing an two-stage engagement with the housing said contact comprising a retention section having at least one post with at least one barb thereon, and the housing further comprising a protrusion portion thereof whereby a two-stage engagement is provided with the housing, so that a minor interference fit occurs between the retention section of the contact and the housing during a first stage insertion process for easy insertion of the contact, and an enhanced



interference fit is obtained between the retention section of the contact and the housing during a second stage insertion process by means of said protrusion portion forcing said post to deflect outward and laterally against an opposite inner surface of the housing wherein the post is sandwiched between said protrusion portion and said inner surface of the housing and wherein said enhanced interference fit lasts continuously for permanently and strongly fixedly retaining the contact within the cavity.

5,249,989

TERMINAL SCREW ASSEMBLY

Gottfried Alsch, Vienna, Austria, assignor to Hubert L. Naimer, Ascona, Switzerland

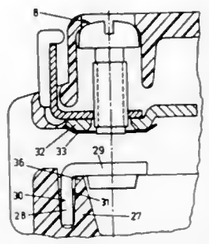
PCT No. PCT/AT91/00062, § 371 Date Dec. 16, 1991, § 102(e) Date Dec. 16, 1991, PCT Pub. No. WO91/17588, PCT Pub. Date Nov. 14, 1991

PCT Filed May 2, 1991, Ser. No. 778,943

Claims priority, application Austria, May 2, 1990, 996/90

Int. Cl.[5] H01R *4/34, 4/38*

U.S. Cl. 439—812 **20 Claims**



1. A terminal screw assembly for the electrical connection of cables or wires comprising:

a housing;

a clamping screw in said housing having a head and a shank, the shank including a first threaded portion of a first diameter and a second portion of a second diameter less than said first diameter, said second portion located axially between said first portion and said head;

a first clamping plate in said housing having a first bore for receiving said first portion of said clamping screw in screw-connectable relationship, said first clamping plate being non-rotatable and non-displaceable in an axial direction of said clamping screw

a second clamping plate in said housing having a second bore for threadably receiving said first portion of said clamping screw; said second clamping plate being non-rotatable but guidable in said housing in said axial direction of said clamping screw;

wherein said second portion of said shank has an axial length which is at least equal to a thickness of said first clamping plate, and whereupon tightening said clamping screw, said first threaded portion passes through said first bore and threadably engages said second bore, thereby causing said second plate to move toward said first plate so that a cable or cable terminal may be clamped between said first and second clamping plates.

5,249,990

METHOD AND APPARATUS FOR THE PROPULSION OF WATER VEHICLES

Günther Laukien, Silberstreifen, 7512 Rheinstetten-Forchheim, Fed. Rep. of Germany

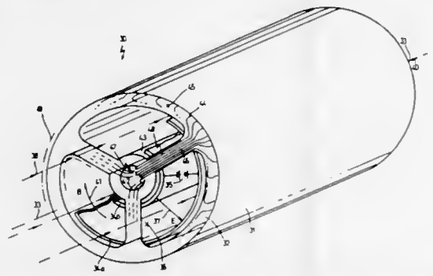
PCT No. PCT/DE90/00558, § 371 Date Mar. 26, 1991, § 102(e) Date Mar. 26, 1991, PCT Pub. No. WO91/01915, PCT Pub. Date Feb. 21, 1991

PCT Filed Jul. 24, 1990, Ser. No. 663,924

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1989, 3924996

Int. Cl.[5] B60L *11/02*

U.S. Cl. 440—6 **29 Claims**



2. The method of claim 1, wherein said step of generating said electric field (E) comprises the steps of generating said electric field lines to intersect said longitudinal axis.

5,249,991

MANUALLY OPERATED PROPULSION DEVICE FOR A CANOE

William J. Schinkel, P.O. Box 723, Fredric, Wis. 54837

Filed Oct. 5, 1992, Ser. No. 956,333

Int. Cl.[5] B63H *16/20*

U.S. Cl. 440—27 **14 Claims**

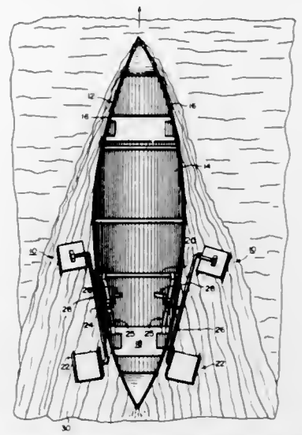
1. A manually operated propulsion device for a canoe having a hull with a pair of gunwales, a seat extending directly under the gunwales for a person to operate said device and a thwart spaced away from the seat, extending directly under the gunwales, said device being two propelling mechanisms in which each of said propelling mechanism comprises:

a) a drive shaft;

b) means for rotatively securing said drive shaft between the seat and the thwart of the canoe, so that said drive shaft will extend transversely over one of the gunwales of the canoe; said securing means including a bracket to transversely extend and engage with the seat and the thwart adjacent the gunwale of the canoe; and a drive shaft bearing on said bracket to receive said drive shaft, so that said drive shaft can rotate within said drive shaft bearing;

c) a paddle assembly transversely connected to an outer end of said drive shaft; and

d) means for manually rotating an inner end of said drive shaft by the person sitting on the seat in the canoe, so that



said paddle assembly will contact water thereabout to propel and steer the canoe through the water.

5,249,992

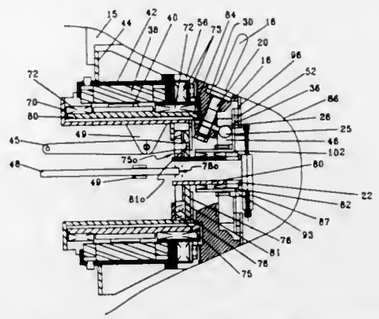
MARINE PROPULSION UNIT WITH CONTROLLED CYCLIC AND COLLECTIVE BLADE PITCH

William E. Schneider, Annapolis, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 30, 1992, Ser. No. 998,293

Int. Cl.[5] B63H *3/00*

U.S. Cl. 440—50 **15 Claims**



1. A marine propulsion unit for securing exteriorly to a marine hull comprising:

a ring shaped prime mover having a central axis of rotation;

a hub operatively mounted for rotation with the prime mover about the central axis;

a plurality of propulsion blades radially extending from said hub, each of said blades being capable of pivotal movement about a blade axis, whereby the pitch angle thereof is adjustable to provide pitch, yaw and fore/aft motion to said hull;

means for collectively and cyclically controlling the pitch of the blades to provide said pitch, yaw and fore/aft motion to said hull, wherein said controlling means comprises:

a first plate supported for rotation about a first axis;

a second plate rotatively coupled with said first plate for relative rotational movement about the first axis with respect to said first plate;

means for linking rotational motion from said hub to said first plate and for permitting radial movement of said inner drive plate with respect to said hub;

linkage means for connecting each of said blades with said second plate, whereupon all of said blades pivot about the blade axes when said second plate pivots with respect to said first plate;

means operatively coupled with said first and second plates for controlling the degree and direction of angular offset of said first plate with respect to said second plate to collectively control the fore/aft motion;

first plate supporting means for rotatably supporting said first plate;

means operatively coupled to said first plate supporting means for permitting said first plate supporting means and thus said first plate and said second plate to radially offset with respect to the central axis in which said hub rotates; and

means for controlling the degree and direction of said radial offset of said first drive plate supporting means to provide said pitch and yaw motion.

5,249,993

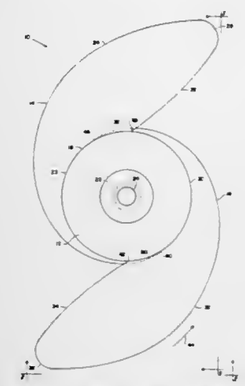
WEED RESISTANT BOAT PROPELLER

Roland V. R. Martin, 511 E. Del Monte Ave., Clewiston, Fla. 33440

Filed Jul. 19, 1991, Ser. No. 733,084

Int. Cl.[5] B63H *1/28*

U.S. Cl. 440—73 **8 Claims**



1. A weed resistant boat propeller comprising:

generally circular hub having a circumferential surface, said hub being adapted for mounting to and being rotatably driven by a boat motor; and

a plurality of blades mounted to a circumferential surface of said hub and extending therefrom in a spiral configuration, each said blade including a curved leading edge that has an arc $dy/dx<1$ for the entire length of said leading edge, each blade further including a trailing edge, a root portion extending at least 180 degrees along said circumferential surface of said hub between said leading and trailing edges and a tip portion at the distal end of said blade between said leading and trailing edges.

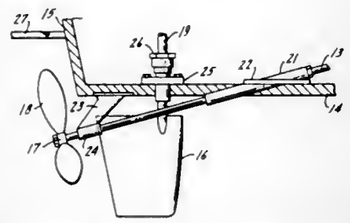
VOL 1155 ISS 1 OC 5 1993 UMI

5,249,994

SURFACE-DRIVE BOAT PROPULSION SYSTEM

Anthony W. Finkl, 445 E. Royal Flamingo Dr., Sarasota, Fla. 34236

Continuation of Ser. No. 826,714, Jan. 28, 1992, abandoned. This application Mar. 19, 1993, Ser. No. 33,986
Int. Cl.[5] B63H 5/06
U.S. Cl. 440—79 2 Claims



1. An improved surface-drive propulsion system for an inboard motor boat, the boat including a hull-transom junction where the hull is connected to the transom,

a motor, the motor being disposed aft of a mid-section, the mid-section being disposed between the stern and the bow of the boat;

a transmission, the transmission disposed between the motor and the stern;

a propeller shaft, the propeller shaft being straight in configuration and providing a non-jointed connection between the transmission and a propeller, the propeller shaft passing through the bottom of the hull ahead of the transom, a first end of the propeller shaft being connected to the transmission, the second end of the propeller shaft being connected to the propeller;

the bottom of the hull being devoid of any tunnels or grooves for accommodating the propeller shaft, the propeller shaft passing through a shaft log, the shaft log passing through a packing gland, the shaft log and packing gland being disposed at the hull where the propeller shaft passes through the hull;

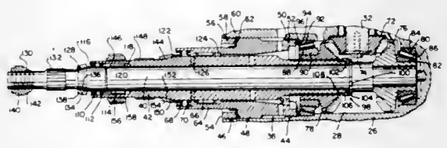
the propeller and the second end of the propeller shaft being disposed aft of the transom, at least a portion of the propeller being disposed above the hull-transom junction and at least a portion of the propeller operating above the running surface of the water during planing operation of the boat.

5,249,995

MARINE DRIVE HAVING TWO COUNTER-ROTATING SURFACING PROPELLERS AND DUAL PROPELLER SHAFT ASSEMBLY

Gary L. Meisenburg; Edward C. Eick; Charles M. Mixon; Phillip D. Magee, all of Stillwater, Okla., and Robert B. Weronke, Oshkosh, Wis., assignors to Brunswick Corporation, Skokie, Ill.

Filed May 27, 1992, Ser. No. 889,530
Int. Cl.[5] B63H 5/10
U.S. Cl. 440—81 21 Claims



1. A marine drive comprising:

a housing having a horizontal bore and an intersecting vertical bore therein;

a first inner propeller shaft;

a second hollow outer propeller shaft positioned over said first propeller shaft to form a dual propeller shaft assembly,

said dual propeller shaft assembly positioned in said horizontal bore,

said first propeller shaft counter-rotating with respect to said second propeller shaft;

a vertical driveshaft positioned in said vertical bore;

a pinion driving gear mounted on the lower end of said vertical driveshaft;

a fore driven gear on said first inner propeller shaft and engaged by said pinion gear to drivingly rotate said first propeller shaft in a first rotational direction;

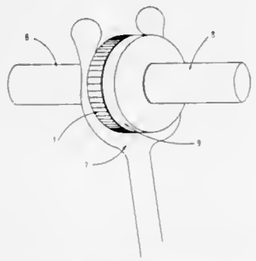
an aft driven gear on said second propeller shaft and engaged by said pinion gear to drivingly rotate said second propeller shaft in a second rotational direction, said second propeller shaft extending axially through said aft driven gear, said aft driven gear being axially slidable along said second propeller shaft, said fore and aft driven gears being axially spaced by a gap therebetween.

5,249,996

OAR STOP SOUND DAMPENER

Dennis B. Brown, 343 W. 400 North, Logan, Utah 84321

Filed Jun. 22, 1992, Ser. No. 902,686
Int. Cl.[5] B63H 16/06
U.S. Cl. 440—104 22 Claims



1. An oar stop sound dampener, which comprises:

a disk composed of a flexible, solid, closed-cell foam and having in its center an aperture shaped to accommodate the shaft of an oar wherein the outer diameter of said disk is the same as that of the oar stop with which it is to be used and the diameter of the aperture is the same as, or slightly smaller than, that of the shaft of the oar on which the oar stop sound dampener is to be placed; and

a cover layer of plastic laminate cut to the same dimensions as, and adhesively attached to, at least one of the flat surfaces of the disk.

5,249,997

COMPOSITE MULTISECTION BUOYANT STRUCTURE

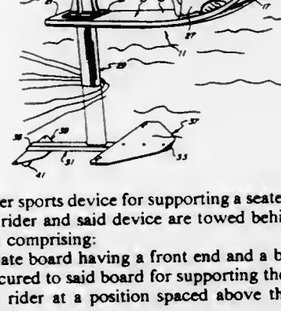
Donald A. Nance, Los Altos, Calif., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 27, 1992, Ser. No. 858,462
Int. Cl.[5] B63B 22/00, 3/06
U.S. Cl. 441—1 15 Claims

1. A composite, multisection positively buoyant structure, comprising:

a) a plurality of individual segments each including an outer wall, an inner wall spaced from said outer wall, and tapered side walls joining said outer and inner walls to define a central core;

b) at least said outer and inner walls each including at least first and second opposed face members separated by a filler material;



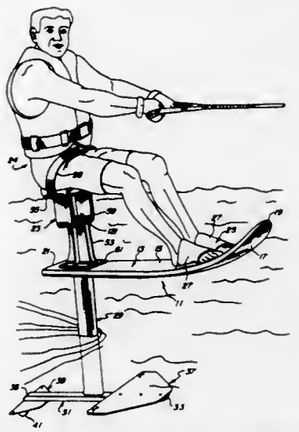
c) means bonding said tapered side walls of said individual segments together in a predetermined geometric pattern to form said buoyant structure.

5,249,998

WATER SPORTS DEVICE

Robert C. Woolley, 27941 Matterhorn, Lake Arrowhead, Calif. 92352, and Michael J. Murphy, 33124 Case St., Elsinore, Calif. 92330

Continuation of Ser. No. 496,790, Mar. 21, 1990, Pat. No. 5,100,354. This application Oct. 16, 1991, Ser. No. 778,395
The portion of the term of this patent subsequent to Mar. 31, 2009, has been disclaimed.
Int. Cl.[5] B63B 35/81
U.S. Cl. 441—65 14 Claims



1. A water sports device for supporting a seated human rider while said rider and said device are towed behind a powered watercraft, comprising:

an elongate board having a front end and a back end;

a seat secured to said board for supporting the buttocks of a seated rider at a position spaced above the back of the board;

an elongate arm extending downward from said board;

a fixed planing blade secured to said arm, said planing blade having a leading edge, wherein said planing blade is spaced from and generally parallel to said board and has an angle of attack with respect to the surface of the water when towed behind a watercraft; and

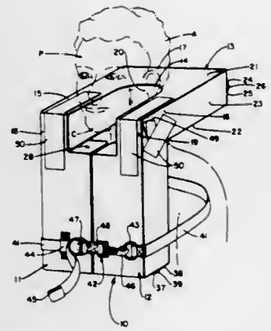
a holder spaced toward the front end of said board from said seat for securing at least one foot of said rider over said board, wherein said holder is positioned forward of said leading edge of said planing blade to facilitate said rider using said at least one foot to change the angle of attack of said planing blade by using said board as a lever.

5,249,999

LIFE JACKET

Ralph E. Steger, Ashland, Ohio, assignor to Kent Sporting Goods Co., Inc., New London, Ohio

Filed Feb. 3, 1992, Ser. No. 829,714
Int. Cl.[5] B63C 9/08
U.S. Cl. 441—118 22 Claims



1. A life jacket, comprising:

first and second elongated panels;

a yoke member connecting said first and second panels, said yoke member forming a generally U-shaped collar and extending fixedly orthogonally from first ends of said panels;

a chin platform defined upon said first ends of said panels at an open end of said collar, said collar defining a receptacle receiving, encompassing, and protecting a portion of a person's head when such person's chin is received upon said chin platform; and

means for releasably securing said first and second panels together.

5,250,000

PLAY KIT WITH DETACHABLE PLAY SURFACE

Stephen J. Boutin, and Sally L. Boutin, both of 441 Winter St., Hanover, Mass. 02339

Filed Apr. 7, 1992, Ser. No. 864,629
Int. Cl.[5] A63H 33/04, 33/06, 33/08; A63F 3/00
U.S. Cl. 446—75 15 Claims

1. A play kit, comprising:

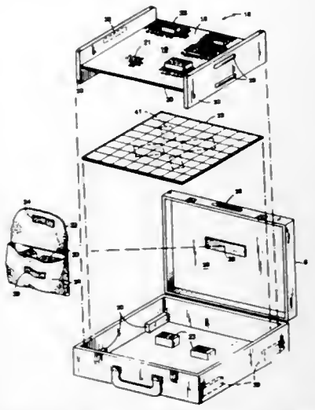
a carrying case defining a storage volume sized to enclose therewithin and allow removal therefrom a play tray and a play sheet, said carrying case comprising a bottom surface and a pedestal means for supporting said play tray within said carrying case at a position spaced from said bottom surface of said carrying case,

said play tray including a rigid planar supporting member having a substantially planar first under surface and a substantially planar second, upper surface, said first, under surface, in use, adapted to bear against a foreign surface to support said tray, and said second, upper surface defining a mating surface with a dematerable attachment means for dematerable attachment of said play sheet upon said second, upper surface,

said supporting member being at least partially bordered by opposing vertical extension members extending below a plane of said first, under surface of said supporting member, said opposing vertical extension members being sized to limit sliding motion of said supporting member in a direction in the plane of said first, under surface, and

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said play sheet including first and second surfaces, said first surface adaptable for use as a game or toy and said second surface being substantially planar and including demateable attachment means corresponding to the attachment means on the second surface of said supporting member for demateable attachment of said play sheet with said play tray.



5,250,001

TOY CONSTRUCTION KIT

Arni Hansen, Tungugöta 1, FO-100 Thorshavn, Faroe Islands,

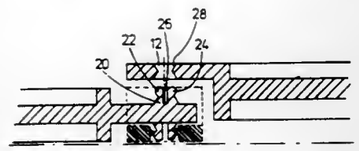
PCT No. PCT/DK90/00251, § 371 Date Apr. 3, 1992, § 102(e) Date Apr. 3, 1992, PCT Pub. No. WO91/04775, PCT Pub. Date Apr. 18, 1991

PCT Filed Oct. 3, 1990, Ser. No. 844,652

Claims priority, applicatioo Denmark, Oct. 3, 1989, 4847/89

Int. Cl.[5] A63H *33/12, 33/08;* **E04B** *1/10;* **F16C** *11/06*

U.S. Cl. 446—104 **8 Claims**



1. A toy construction kit comprising elongated, joinable stave elements, wherein the elements include staves of plastic material, the staves having two ends, each of which are provided with snaplock-like coupling means adapted for rotatable coupling of joined staves, which snaplock-like coupling means are provided on plate portions which are outwardly projecting from stave ends with a reduced thickness relative to a thickness of the staves, wherein a plate portion is provided with identical integral locking pins adjacent an outward end of said plate portion, said plate portion being situated in a median plane of the stave element, such that one pin extends upwardly and one pin extends downwardly, wherein a further plate portion is provided with a locking hole adjacent an outward end of a further plate portion, said further plate portion on said other end of said stave being displaced from the median plane of the stave element, and wherein the thickness and location of the plate portions are adapted in such manner that two endwise joined stave elements will generally be planar with one another upon attachment to one pin and will allow a third stave element to be attached to the other of said pins with said third stave element being planar to said other stave elements.

5,250,002

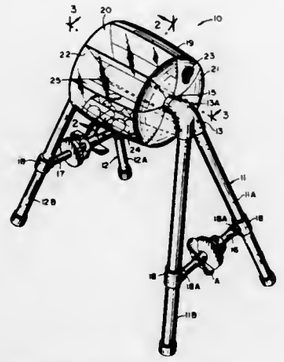
INFLATABLE PLAY GYM

Benjamin Kinberg, 425 Riverside Dr., Apt. 5A, New York, N.Y. 10025

Filed Jul. 5, 1991, Ser. No. 726,345

Int. Cl.[5] A63H *33/00*

U.S. Cl. 446—220 **12 Claims**



1. An inflatable play gym comprising:
a pair of spaced apart end supports;
a cross bar interconnected between said pair of end supports;
an inflatable chamber connected to said cross bar and rotatable therewith between said pair of end supports, said inflatable chamber having a plurality of circumstantially spaced vanes disposed therein; and
at least one plaything disposed within said inflatable chamber, said at least one plaything being loosely retained within said inflatable chamber, whereby said at least one plaything is freely movable within said inflatable chamber and is adapted to be captured and released by said plurality of vanes as said inflatable chamber is rotated between said pair of end supports.

5,250,003

DOLL WITH INGESTION SYSTEM

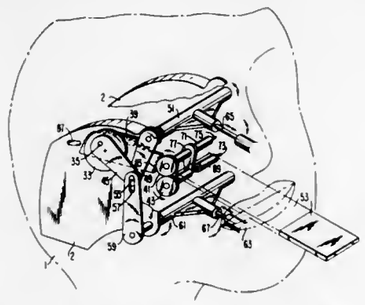
Jose M. R. Ferre, Alicante, Spain, assignor to Creatividad Y Diseoo S.A., Granada, Spain

Continuation-in-part of Ser. No. 708,676, May 31, 1991, abandoned. This application Mar. 16, 1992, Ser. No. 851,808

Claims priority, application Spain, May 7, 1991, 9101371

Int. Cl.[5] A63H *3/28, 3/24*

U.S. Cl. 446—301 **20 Claims**



1. A toy doll having a head, limbs and body, and a mouth with upper and lower lips, comprising: a cookie "eating" mechanism, a storage area for cookies fed to the doll including a passageway leading from the mouth to said storage area; a pair of cookie rollers for advancing a cookie into the doll's mouth, and an electrically driven motor including a drive train for rotating the cookie rollers intermittently so that said cookie is drawn into the mouth in an intermittent step by step manner, rather than in a single continuous movement, and for discharging said cookie into said passageway, whereby said cookie is stored until retrieved for further use.

5,250,004

DEVICE FOR WITHDRAWING BLOOD FROM SLAUGHTER ANIMALS

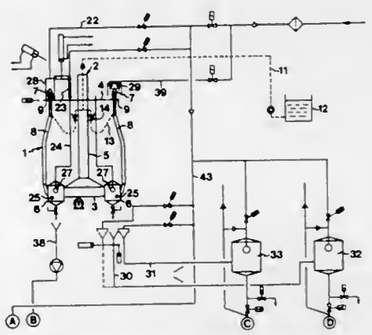
John A. Sjöberg, Smygehamn, Sweden, assignor to Anitec-John Sjoberg AB, Malmo, Sweden

PCT No. PCT/SE89/00284, § 371 Date Nov. 22, 1991, § 102(e) Date Nov. 22, 1991, PCT Pub. No. WO90/14013, PCT Pub. Date Nov. 29, 1990

PCT Filed May 22, 1989, Ser. No. 776,406

Int. Cl.[5] A22B *5/04*

U.S. Cl. 452—65 **11 Claims**



1. Device for withdrawing blood from slaughter animals transported on a conveyor serially past a sticking station, said device having a carousel (1) disposed at said sticking station and including a body (2), a lower frame member (3) and an upper frame member (4), said frame members being synchronously rotatable on a vertical shaft (5) of said body, a number of collecting vessels (6) mounted on the lower frame member around said vertical shaft, a number of hollow knives (7) corresponding to the number of collecting vessels and suspendible around said vertical shaft each in a holder (9) on said upper frame member, and a hose (8) extending between each hollow knife and the associated collecting vessel for conducting blood from the hollow knife to the collecting vessel, characterised in that the carousel (1) is rotatable in such steps that the holders (9) are displaced between a number of stopping positions around said vertical shaft, the distance between said stopping positions being equal to the distance between said holders; and that a sensor (10) is fixedly mounted on said body (2) opposite one of said stopping positions and adapted to sense the displacement of a hollow knife (7) in a holder located in this stopping position, in order upon such displacement to initiate rotation of the carousel one step.

5,250,005

METHOD AND APPARATUS FOR CUTTING AND CLEANSING OF ROUND FISH

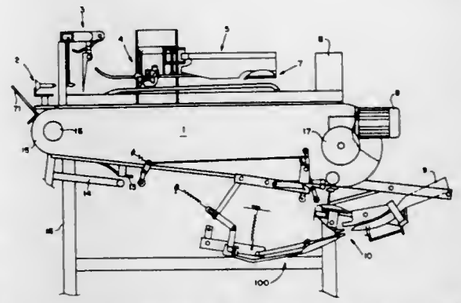
Asgeir Matthiasson, Kopavogur, and Sigurdur Kristinsson, Reykjavik, both of Iceland, assignors to Jonatan H.F., Reykjavik, Iceland

Filed Feb. 7, 1992, Ser. No. 831,309

Claims priority, application Iceland, Feb. 8, 1991, 3674; Dec. 18, 1991, 3793

Int. Cl.[5] A22C *25/14*

U.S. Cl. 452—108 **15 Claims**



1. A method for automatically cleaning fish such as cod, said method comprising gripping the fish and subsequently cutting it open, first transversely behind the head from the belly of the fish and subsequently in its longitudinal direction along the belly, and finally removing the entrails,
characterized in that the fish is gripped in its eye sockets with its belly upwards and being held rotatably substantially about an axis extending therethrough, that the fish is displaced parallel to its axis and is moved with its back supported towards a chin lifting means, which presses the head of the fish backwards, and past a throat cutting means for cutting the fish transversely, that the fish is then turned and moved further head foremost and belly upwards and further round along a curved descending path, that the fish is thereby bent backwards and moved into engagement with a belly distending means which during continued forward movement of the fish passes into the fish along the inside of the belly, and with a knife which in immediate connection to the belly distending means cuts open the belly longitudinally, that the fish is then moved further hanging down freely with the cut open belly facing forwards, and that the entrails are then pulled out by pulling the fish over an entrails scraping means.

5,250,006

TENDERIZER

Daniel S. Paulus, 1120 chaussée de Ninove, 1080 Bruxelles, Belgium

Filed Sep. 10, 1992, Ser. No. 942,890

Claims priority, application Belgium, Sep. 10, 1991, 09100840; Sep. 10, 1991, 09200717

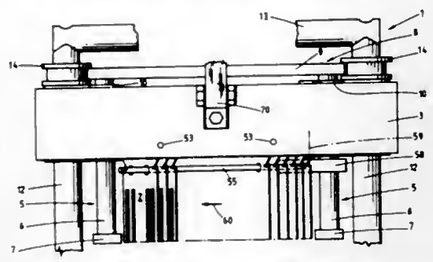
Int. Cl.[5] A22C *9/00*

U.S. Cl. 452—141 **2 Claims**

1. A tenderizer, especially for butchers' meat, comprising:
a tray to receive a piece of meat to be tenderized,
a movable device having support means for a grid which is intended to immobilize and hold the piece of meat on the tray during the tenderizing operations, and
tenderizing knives intended to interact with the abovementioned skid and mounted on a movable support,
wherein the knives are mounted on the aforementioned movable support by the intermediary of an auxiliary support, the latter being articulated to the aforementioned movable support about a shaft carried by this latter support and whose axis is

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parallel to the direction of movement of said movable support, so as to allow disengagement of the knives from the movable



support by pivoting about said axis, means being provided for temporarily immobilizing the auxiliary support with respect to the movable support.

5,250,007

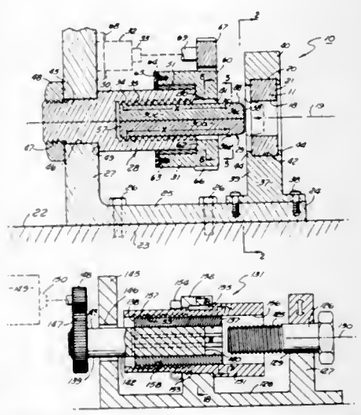
METHOD AND APPARATUS FOR FORMING THREADS WITH VARIABLE PITCH

William P. Green, 3570 E. Lombardy Rd., Pasadena, Calif. 91107

Continuation-in-part of Ser. No. 783,429, Oct. 28, 1991, abandoned. This application Sep. 9, 1992, Ser. No. 942,634

Int. Cl.[5] B21D *53/24*

U.S. Cl. 470—11 **61 Claims**



1. Apparatus for forming a thread of varying pitch on a work piece, comprising:

an assembly including a plurality of threading elements having thread forming portions on said elements for engaging the work piece at different locations; and

means for moving said work piece and said assembly of threading elements relative to one another, both rotatively about an axis and at the same time axially, to form the thread;

said means being constructed to vary the rate of relative axial advancement between said work piece and each of said elements per degree of relative rotary movement therebetween, and to shift said elements axially relative to one another, during the rotary and axial movement, to give the thread said varying pitch.

5,250,008

APPARATUS FOR MAKING AND CONVEYING ELONGATED HEADED WIRE WORKPIECES

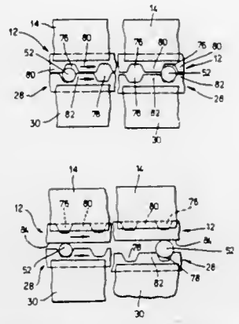
Gerhard Lange, Reutlingen, Fed. Rep. of Germany, assignor to WAFIOS Maschinenfabrik GmbH & Co., Fed. Rep. of Germany

Continuation of Ser. No. 535,060, Jun. 8, 1990, abandoned. This application Jan. 16, 1992, Ser. No. 821,174

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1989, 3922530

Int. Cl.[5] B21G *3/32*

U.S. Cl. 470—177 **12 Claims**



1. An apparatus for making headed elongated fasteners such as nails from elongated workpieces such as wire pieces, comprising at least two workpiece stations including a station having means for deforming an end of each said workpiece so as to form a fastener head, a guided conveyor belt assembly to which each workpiece may be clamped by its circumferential surface, wherein said conveyor belt assembly comprises two facing conveyor belts each having a back, which belts are guided in such a manner between the stations that they remain in immovable contact with the workpieces being transported; wherein at least one of the two conveyor belts is toothed having gaps between teeth, in which toothed belt each gap between two teeth may receive only one single workpiece; and wherein each said toothed conveyor belt is arranged with the teeth thereof facing in the same direction so as to engage the workpiece between a tooth gap of one belt and the back of the facing belt.

5,250,009

BELT TENSIONER AND METHOD OF MAKING THE SAME

John N. Sidwell, and Linn E. Corbin, both of Springfield, Mo., assignors to Dayco Products, Inc., Dayton, Ohio

Continuation of Ser. No. 914,719, Jul. 16, 1992, abandoned, which is a division of Ser. No. 751,357, Aug. 27, 1991, Pat. No. 5,149,306, which is a division of Ser. No. 576,299, Aug. 31, 1990, Pat. No. 5,057,059, which is a division of Ser. No. 450,656, Dec. 13, 1989, Pat. No. 4,971,589. This application Dec. 11, 1992, Ser. No. 988,981

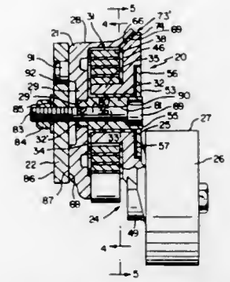
The portion of the term of this patent subsequent to Nov. 20, 2007, has been disclaimed.

Int. Cl.[5] F16H *7/08*

U.S. Cl. 474—135 **20 Claims**

1. In a tensioner for a power transmission belt that is adapted to be operated in an endless path, said tensioner comprising a support means for being fixed relative to said belt, a belt engaging means carried by said support means and being movable relative thereto, a torsion spring means operatively associated with said support means and said belt engaging means for urging said belt engaging means relative to said support means and against said belt with a force to tension said belt, said support means comprising a shaft means having a longitudinal

axis, said belt engaging means comprising an arm rotatably mounted on said shaft means, and a bushing means disposed between said torsion spring means and said arm to facilitate rotational movement therebetween, the improvement wherein said arm has a bearing surface angled relative to said axis and wherein said support means has a bearing surface angled rela-



tive to said axis and facing said bearing surface of said arm, said bushing means having a portion thereof disposed between said bearing surfaces and in engagement therewith to facilitate movement therebetween and to tend to prevent cocking of said arm on said shaft means when said belt engaging means is tensioning said belt.

5,250,010

V-RIBBED BELT

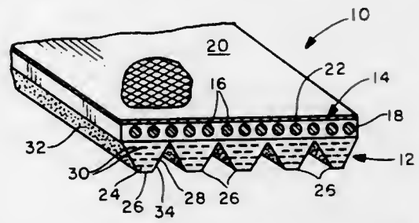
Kyoichi Mishima, Higashimachi; Takashi Hamada, Kakogawa, and Masayoshi Nakajima, Minami, all of Japan, assignors to Mitsuboshi Belting Ltd., Nagata, Japan

Filed Jan. 29, 1991, Ser. No. 647,148

Claims priority, application Japan, Jan. 29, 1990, 2-23334

Int. Cl.[5] F16G *5/08*

U.S. Cl. 474—263 **20 Claims**



1. A V-ribbed belt having a length and a lateral extent, said V-ribbed belt comprising:

a tension layer;

a compression layer having longitudinally extending, laterally spaced, V-shaped ribs having grooves defined therebetween; and

a plurality of tensile cords extending lengthwise of the V-ribbed belt between the tension layer and the compression layer,

said compression layer defined at least partially by acrylonitrile-butadiene copolymer rubber having at least an 80% hydrogen addition rate,

there being a plurality of substantially laterally oriented fibers in the acrylonitrile-butadiene copolymer rubber in the compression layer,

said fibers comprising untwisted filament yarns,

said plurality of fibers being treated with one of resorcin-formalin-nitrile rubber latex and resorcin-formalin-hydrogenated nitrile latex having at least an 80% hydrogen addition rate.

5,250,011

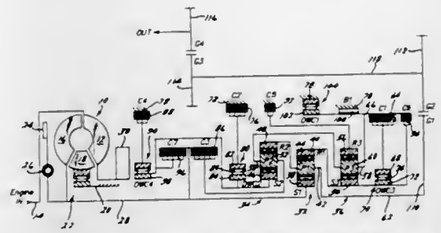
MULTIPLE SPEED SYNCHRONOUS AUTOMATIC TRANSMISSION FOR MOTOR VEHICLES

Stanley L. Pierce, Northville, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed May 4, 1992, Ser. No. 878,353

Int. Cl.[5] F16H *57/10, 1/32*

U.S. Cl. 475—276 **13 Claims**



1. A multiple speed ratio automatic transmission for an automative vehicle having a power source for driving a load, comprising:

input means for driveably connecting the power source and a planetary gear system;

output means for driveably connecting the planetary gear system and the load;

a planetary gear system comprising first, second and third planetary gear units, each gear unit having a sun gear, a ring gear, planet pinions meshing with the sun gear and ring gear, and a carrier rotatably supporting the planet pinions, the output means being connected driveably to the ring gear of the second gear unit and to the carrier of the first gear unit, the carrier of the second gear unit being connected driveably to the carrier of the third gear unit, the ring gear of the first gear unit being connected driveably to the sun gear of the third gear unit;

first brake means for holding and releasing the sun gear and carrier of the third gear unit:

first clutch means for driveably connecting and disconnecting the sun gear and carrier of the third gear unit;

second brake means for braking and releasing the ring gear of the third gear unit;

second clutch means for driveably connecting and disconnecting the input means and the carrier of the second gear unit;

third brake means for braking and releasing the sun gear of the second gear unit; and

third clutch means for driveably connecting and disconnecting the sun gear of the second gear unit and the input means.

5,250,012

RUNNING SURFACE FOR TREADMILL WITH TRAMPOLINE-LIKE SURFACE

Jeffrey O. Meredith, Houston, Tex., assignor to Morris Glenn Whitcomb, Jr., Baytown, Tex., Trustee

Filed Feb. 19, 1991, Ser. No. 657,439

Int. Cl.[5] A63B *22/02*

U.S. Cl. 482—54 **13 Claims**

1. A treadmill with an improved trampoline-like surface, comprising:

(a) an endless belt with generally parallel lateral edges, the upper surface of which is adapted to form an exercising surface;

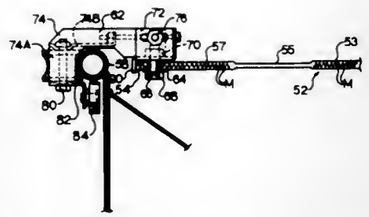
(b) end-supporting members;

(c) support means for supporting the endless belt for travel between the end-supporting members;

(d) the support means including means spaced from the lateral edges of the belt for supporting the belt as it moves

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between the endsupporting members, there being no spring means between the belt and support means; and



(e) the belt being formed of a material which includes means for imparting a lateral resiliency across at least a portion of the width of the belt to impart a trampoline-like sensation to a subject walking or running on the belt.

5,250,013

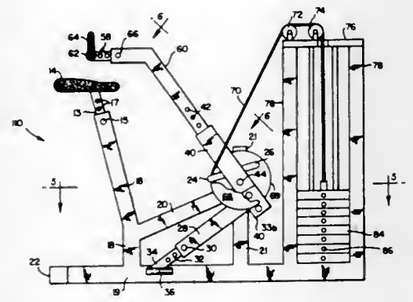
EXERCISE MACHINE

John Brangi, 73 Hillside Ave., New Haven, Conn. 06512

Continuation-in-part of Ser. No. 825,028, Jan. 24, 1992, Pat. No. 5,184,991. This application Jan. 8, 1993, Ser. No. 2,468

Int. Cl.[5] A63B *21/06*

U.S. Cl. 482—98 **21 Claims**



1. An exercise device comprising:

a frame having a seat mounted thereon;

a pair of handlebars extending upwardly from and pivotally attached to said frame at a point forward of said seat, each of said handlebars being individually moveable back and forth by the arms of a user of said device;

a foot pedal mounted to and extending rearwardly from each of said handlebars, each foot pedal being individually moveable down and up by the legs of a user of said device;

a pair of weight support frames, each of which having at least one vertically extending elongated member rigidly connected thereto, each of said frames having a plurality of weights slidably mounted upon said elongated member;

a linkage means between each of said handlebars and selected weights within a corresponding one of said weight support frames, said linkage means permitting said selected weights to be raised and lowered by respective back and forth movement of said handlebars;

whereby said user seated on said seat may exercise his individual arms and/or legs against resistance of raising and lowering said selected weights by respective movement of the individual handlebars in a back and forth direction and individual foot pedals in a down and up direction.

5,250,014

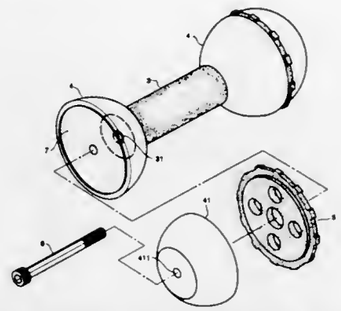
WEIGHT ADJUSTABLE DUMBBELL

Ching-Yi Chang, 64, Lane 110, Sec. 1, Chang Mei Ro, Changhua, Taiwan

Filed Oct. 6, 1992, Ser. No. 957,229

Int. Cl.[5] A63B *13/00*

U.S. Cl. 482—106 **2 Claims**



1. A weight adjustable dumbbell including two spherical shells joined by a short bar, each spherical shell comprising two equal semi-spherical shells connected together by a respective lock screw bolt to hold a respective counter weight and a circular cushion plate is received and connected between the two equal semi-spherical shells of either spherical shell to hold the respective counter weight, the circular cushion plate having a center hole through which the respective lock screw bolt inserts, a plurality of projections spaced around a peripheral edge thereof at equal interval respectively extended out of the respective spherical shell for positioning the respective spherical shell on the ground and protecting it against impact, and two annular grooves on two opposite sides around the border into which the peripheral edge of either semi-spherical shell of the respective spherical shell fits respectively.

5,250,015

HYDRAULIC EXERCISE APPARATUS HAVING A MAIN CYLINDER AND A DISPLACEMENT CYLINDER

John C. Thornton, 134 Bukulla Street, Wacol, Queensland, 4076, Australia

PCT No. PCT/AU91/00109, § 371 Date Sep. 21, 1992, § 102(e) Date Sep. 21, 1992, PCT Pub. No. WO91/14482, PCT Pub. Date Oct. 3, 1991

PCT Filed Mar. 22, 1991, Ser. No. 927,431

Claims priority, application Australia, Mar. 22, 1990, PJ9242; Jun. 27, 1990, PK0868

Int. Cl.[5] A63B *21/008*

U.S. Cl. 482—112 **14 Claims**

1. Exercising apparatus including:

an elongate frame;

a longitudinal hydraulic main cylinder housed in or forming part of said frame, one end of said main cylinder being fixedly mounted relative to a mounting end of said frame;

sealing means at the other end of said main cylinder through which a plunger rod is sealably slidable axially of said main cylinder;

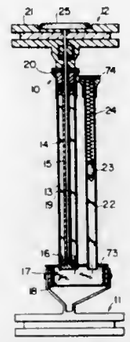
handle means associated with that end of said plunger rod which is external of said main cylinder;

a main piston at the end of said plunger rod within said main cylinder and mounted in sealably slidable manner to define two opposite sides of said main cylinder;

adjustable aperture means interconnecting said two sides of said main cylinder for adjustably varying the permitted flow of hydraulic liquid from one to the other of said opposite sides upon movement of said plunger rod and said main piston;

a displacement cylinder mounted on said frame and having one of its ends in liquid communication with said main cylinder at one of said two opposite sides thereof, and

a closure piston mounted in sealably slidable manner in the other end of said displacement cylinder and movable in



response to movement of said main piston and said plunger rod to maintain a liquid-filled condition of said main cylinder regardless of the positions occupied by said main piston and said plunger rod.

5,250,016

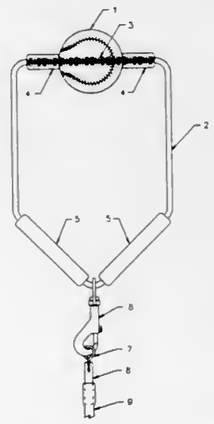
BASEBALL THROWING DEVICE FOR MUSCLE DEVELOPMENT, REHABILITATION AND TRAINING

David W. Higgins, 931 Prichard La., West Chester, Pa. 19382

Filed Jul. 30, 1992, Ser. No. 921,580

Int. Cl.[5] A63B *21/02*

U.S. Cl. 482—121 **6 Claims**



1. A baseball throwing practice device which may be used to develop or rehabilitate the muscles associated with throwing, said practice device comprising:

a harness means adapted for securing said device to a stationary object;

an elastic cord resistance means having a first end securable to said harness means and a second end, said first and second ends including attachment means; and

an operating means consisting essentially of: a baseball or softball having a hollow tubular rod non-rotatably positioned through a center axis thereof,

a rigid frame member formed in a substantially closed loop configuration, being large enough to pass a user hand therethrough, said frame member having at least one linear section which is positioned through said hollow rod, so as to allow said rod, along with said ball to rotate freely on said frame during use, said operating means being attached to said second end of said elastic cord means at a position which is substantially opposite said linear section of said rigid frame member while said ball means is grasped by a user and pulled against said resistance.

5,250,017

AUTOMATIC TOOL CHANGER FOR A MACHINING APPARATUS

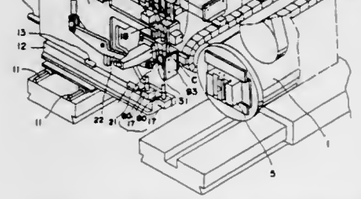
Kiyoko Ariyoshi, Yamaguchi, Japan, assignor to Kabushikikaisha Otec and Kabushikikaisha Ariyoshi Kikoshudan, Japan

Filed Nov. 22, 1991, Ser. No. 796,001

Claims priority, application Japan, Nov. 30, 1990, 2-336829

Int. Cl.[5] B23Q *3/155, 3/157*

U.S. Cl. 483—18 **5 Claims**



1. An automatic tool changer for use in a machining apparatus having a rotatable spindle having a front end surface, to detachably hold a tool, comprising:

a plurality of adapters each comprising a body with front and rear surfaces, means to hold a tool to be changed on the front surface, two parallel, longitudinal dovetail-like projections extending from its rear surface, and two longitudinal guide through holes in said body;

a tool holder cubic fixed to a front end surface of the rotatable spindle, said tool holder cubic having two parallel, longitudinal dovetail-like slots to detachably and slidably mated with said dovetail-like projections of each adapter;

a bifurcated carrier plate having an upper tool-feeding arm and a lower tool-withdrawing arm, each arm having support rods extending therefrom, holding means associated with the support rods extending from the upper tool-feeding arm to detachably hold an adapter, and sliding means associated with the support rods extending from the upper tool-feeding arm to cause an adapter to slide onto said tool holder cubic; and

transport means including tool storage, operatively associated with said bifurcated carrier plate to transport a tool from the tool storage to said bifurcated carrier plate,

wherein one tool is removed from said tool holder cubic simultaneously with another tool being mounted to said tool holder cubic by said bifurcated carrier plate.

VOL 1155 ISS 1 OCT 5 1993 UMI

5,250,018

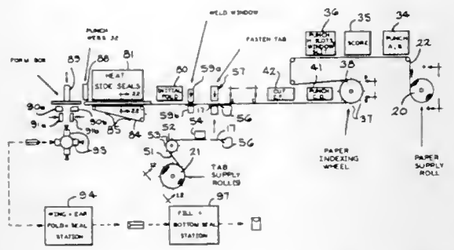
METHOD OF MAKING RECTANGULAR PAPERBOARD PACKAGE

Yun H. Chung, Toledo, and Dennis E. Chung, Sylvania, both of Ohio, assignors to Chung Packaging Company, Perrysburg, Ohio

Continuation of Ser. No. 882,741, May 7, 1992, abandoned, which is a continuation of Ser. No. 639,835, Nov. 21, 1990, abandoned, which is a continuation-in-part of Ser. No. 326,380, Mar. 21, 1989, Pat. No. 5,011,722, which is a continuation-in-part of Ser. No. 195,367, May 13, 1988, Pat. No. 4,813,545, which is a continuation of Ser. No. 887,562, Jul. 17, 1986, abandoned. This application Nov. 18, 1992, Ser. No. 978,037

Int. Cl.[5] B31B *3/16, 3/25, 3/46, 3/64*

U.S. Cl. 493—59 16 Claims



1. A method of forming a paperboard package comprising the steps of:

(a) providing a longitudinally extending sheet of laminated paperboard material including a paper layer having a thermoplastic layer applied to at least one surface thereof;

(b) scoring the sheet to form a predetermined pattern of fold lines defining a series of longitudinally connected individual blanks for forming separate paperboard packages;

(c) heating the thermoplastic layer of at least the endmost blank along first and second transversely spaced and longitudinally extending side seal areas while the blank remains connected to the sheet;

(d) severing the endmost blank from the sheet while the first and second side seal areas remain heated; and

(e) folding the severed blank into an open ended rectangular configuration wherein portions of the heated first side seal area are urged into sealing engagement with one another and wherein portions of the second side seal area are urged into sealing engagement with one another.

5,250,019

APPARATUS FOR STEREOTACTIC RADIOSURGERY

Patton H. McGinley, Stone Mountain, Ga., assignor to Emory University, Atlanta, Ga.

Continuation of Ser. No. 532,057, Jun. 1, 1990, abandoned. This application Dec. 14, 1992, Ser. No. 990,557

Int. Cl.[5] A61N *5/00*

U.S. Cl. 600—1 3 Claims

1. An apparatus for rotating a patient during stereotactic radiosurgery adapted for use with a source of radiation that is stationary, comprising:

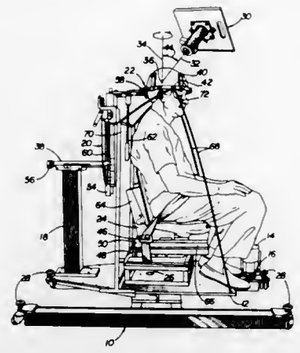
(a) a frame;

(b) a platform connected to said frame for rotating 360° about a vertical rotational axis;

(c) means for rotating said platform about the vertical rotational axis;

(d) a patient receiving means connected to said platform; and

(e) means connected to the said platform and adapted for the stereotactic positioning of a patient's head with respect to the vertical rotational axis to permit intersection of the radiation from the source with the vertical rotational axis at the location of a target site in the head that is the subject of the radiosurgery, the positioning means comprising a horizontal bar having stereotactic locational indicia, a vertical bar having stereotactic locational indicia and



means for holding a patient's head, each bar being adjustably attachable to said means for holding a patient's head.

5,250,020

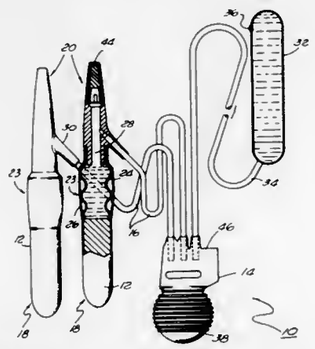
UNITARY INFLATABLE PENILE PROSTHESIS

Robert Bley, Goleta, Calif., assignor to Mentor Corporation, Santa Barbara, Calif.

Filed Sep. 12, 1991, Ser. No. 758,738

Int. Cl.[5] A61F *2/26*

U.S. Cl. 600—40 23 Claims



1. An inflatable penile prosthesis which can be implanted into a pelvic cavity, scrotum and penis of a patient, comprising:

at least one inflatable cylinder;

a flexible reservoir adapted to supply fluid to said cylinder;

a pump constructed to transfer fluid from said reservoir to said cylinder;

first connecting means connecting said pump and said reservoir;

second connecting means connecting said pump and said inflatable cylinder;

a fluid within said cylinder, said pump and said reservoir, said fluid having a volume that allows said reservoir to be inserted into the pelvic cavity of the patient while said pump and said cylinder are attached to said reservoir,

a port disposed in said inflatable cylinder, wherein said port allows fluid to be injected therein cylinder to increase said fluid volume of said penile prosthesis to an operating volume,

wherein said cylinder, said reservoir, said pump and said first and second connecting means are provided interconnected.

5,250,021

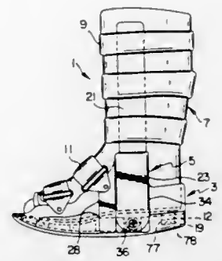
FOOT AND ANKLE BRACE

Shin-Ju D. Chang, P.O. Box 1383, South Pasadena, Calif. 91301

Filed Feb. 10, 1992, Ser. No. 832,913

Int. Cl.[5] A61F *5/00*

U.S. Cl. 602—27 17 Claims



1. An ankle brace comprising:

a shoe base for releasable attachment to the foot of a patient, said shoe base including a bottom, lateral sides each having an inner surface and an outer surface, a sole support, a toe end, and a heel end;

removable elongated leg support means for rigid attachment to said shoe base and adapted to be attached to the leg of a patient above the patient's ankle; and

attachment means for attaching said leg support means to said shoe base, said attachment means including first securing means for securing said leg support means to the outer surface of one lateral side of said shoe base, and second securing means for securing said leg support means against rotation and against twisting of said leg support means relative to said shoe base; wherein:

said first securing means comprises a fastener passing, perpendicular to said outer surface, through a first aperture in said leg support means and fixed to said shoe base; and

said second securing means comprising cooperating vertical wall means on said leg support means and on said one lateral side of said shoe base, said cooperative vertical wall means engaging one another to thereby resist any rotation about said fastener of said leg support means relative to said lateral side of said shoe base.

5,250,022

IONTOTHERAPEUTIC DEVICES, RESERVOIR ELECTRODE DEVICES THEREFORE, PROCESS AND UNIT DOSE

Yie W. Chien, North Brunswick, N.J., and Ajay K. Banga, Rochester, N.Y., assignors to Rutgers, The State University of New Jersey, New Brunswick, N.J.

Filed Sep. 25, 1990, Ser. No. 587,406

Int. Cl.[5] A61N *1/30*

U.S. Cl. 604—20 21 Claims

1. A pharmaceutical reservoir electrode for use in iontotherapeutic delivery of a pharmaceutical which is ionized and is contained therein, comprising:

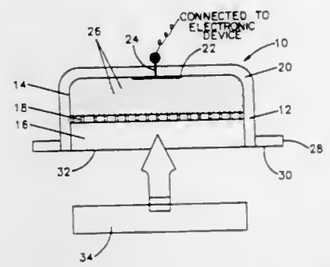
a) a housing for said electrode;

b) a first chamber which contains an electrolytic solution to permit said iontotherapeutic delivery to take place and having present therein ion exchange granules which inhibit increased ionic content through ion generation in the electrode in the first chamber as the iontotherapeutic process takes place;

c) an electrical terminus to contact electrically the electrolytic solution contained in said first chamber;

d) a second chamber for receiving a unit dose of said ionized pharmaceutical, and

e) a permselective membrane separating said first and second chambers, said membrane characterized by having pores



with sufficiently low permeability to inhibit substantial passage of said ionized pharmaceutical present in said second chamber into said first chamber, said permselective membrane being substantially free of ion exchange sites.

5,250,023

TRANSDERMAL ADMINISTRATION METHOD OF PROTEIN OR PEPTIDE DRUG AND ITS ADMINISTRATION DEVICE THEREOF

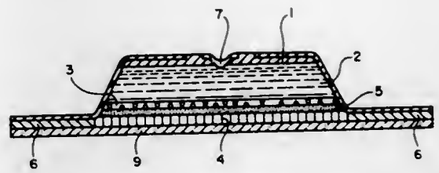
Hai Bang Lee, and Bung Chul Shin, both of Taejeon, Rep. of Korea, assignors to Korean Research Institute on Chemical Technology, Tae Jeon, Rep. of Korea

Filed Oct. 29, 1990, Ser. No. 604,498

Claims priority, application Rep. of Korea, Oct. 27, 1989, 89-15519; May 22, 1990, 90-7357

Int. Cl.[5] A61N *1/30*

U.S. Cl. 604—20 19 Claims



1. An integration-type transdermal administration device of a patch-type which may be attached to the skin comprising the following:

A) solvent reservoir (2) for ionizing solvent and polyelectrolyte, injected from the outside through a solvent inlet (7),

B) drug reservoir (3) comprising drug immersed water-swellable polymer located opposite from the solvent inlet such that the solvent reservoir (2) is interposed between the drug reservoir and the inlet, with a lower portion support (5) made of non-woven fabric, including plural skin needles (4) vertically dispersed in a fixed state on said support and said support (5) is interposed between the drug reservoir and the skin needles,

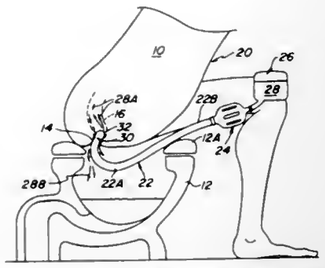
C) stacking-structural adhesive layer(6) formed around the supporter of the drug reservoir.

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5,250,024
SYSTEM FOR INTRODUCING A THERAPEUTIC AGENT INTO THE RECTUM

Kenneth Kensey, Chester Springs, Pa., assignor to Kensey Nash Corporation, Exton, Pa.

Filed Aug. 24, 1992, Ser. No. 934,378
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—275 **8 Claims**

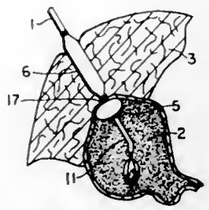


1. An integrated device for administering a liquid into the bowel of a person through the person's anus, said device comprising introducer means, reservoir means, and manually actuatable pump means coupled to said reservoir means, said reservoir means holding said liquid therein, said introducer means comprising a relatively rigid generally J-shaped hollow conduit having a curved distal end section and an elongated generally linear proximal section, said curved distal end section terminating at a free end portion in the form of a tip configured for ready passage into said anus, said elongated generally linear proximal section having a proximal end and being sufficiently long that when said person is in a seated orientation said proximal end may be located between said person's legs adjacent the thighs with said tip being located adjacent said anus, whereupon said person can readily insert said tip into said anus by manually manipulating said proximal section, said free end portion having at least one aperture therein, said pump means and said reservoir means being mounted on and supported by said proximal section, said pump means being arranged to be operated by said person to pump said liquid from said reservoir means through said conduit and out said aperture into the bowel of said person.

5,250,025
PERCUTANEOUS ACCESS CATHETER AND METHOD OF USE

Stephen A. Sosnowski, Oceanside; John H. Parrish, La Jolla, and Alan J. Schempp, San Clemente, all of Calif., assignors to Intramed Laboratories, San Diego, Calif.

Continuation-in-part of Ser. No. 567,929, Aug. 15, 1990, abandoned. This application Jan. 10, 1992, Ser. No. 819,452
Int. Cl.[5] A61M *31/00, 29/00*
U.S. Cl. 604—51 **2 Claims**



1. A method for accessing an internal body cavity or organ, the method comprising the following steps:

Step A: forming an access tract to the internal body cavity or organ and forming an ostomic opening into the internal body cavity or organ for accessing the internal body cavity or organ by means of a percutaneous access catheter; then

Step B: passing the percutaneous access catheter through the access tract and penetrating the internal body cavity or organ through the ostomic opening such that a distal port of the percutaneous access catheter opens onto the internal body cavity or organ for providing access thereto; then

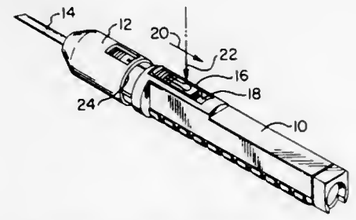
Step C: inflating a toroidal elastic balloon encircling the distal port of the percutaneous access catheter for restricting the removal of the distal port form the ostomic opening of the internal body cavity or organ; and

Step D: inflating an inflatable nondistensible sleeve encircling a hollow shaft of the percutaneous access catheter for simultaneously controlling hemorrhage from the access tract and anchoring the hollow shaft within the access tract.

5,250,026
ADJUSTABLE PRECISION TRANSPONDER INJECTOR

Paul Ehrlich, Loveland; Larry J. Dixon, Lakewood, and Robert C. Stewart, Littleton, all of Colo., assignors to Destron/IDI, Inc., Boulder, Colo.

Filed May 27, 1992, Ser. No. 889,535
Int. Cl.[5] A61D *7/00*
U.S. Cl. 604—60 **10 Claims**



1. Implant injector for injecting an implant subcutaneously in an animal to a predetermined distance from the injection entry point into the animal, said injector comprising:

a cannula for holding the implant and having a distal end;

a handle for holding said cannula for subcataneous insertion into the animal;

a nose means being adjustably mounted on the front of said handle and said cannula extending through said nose means, said nose means for stopping the subcutaneous insertion of said cannula at a predetermined insertion depth and being adjustably mounted in position on said handle relative to the distal end of the cannula to control the insertion depth;

a plunger inside said handle and extending into said cannula and a spring for loading a force on the plunger for moving the plunger in said cannula;

an operator controlled plunger release mechanism inside said handle for releasing said spring loaded plunger to move through said cannula and expel the implant after insertion of said cannula to the predetermined insertion depth;

said plunger release mechanism having a detent for restraining said plunger against the spring load force on said plunger;

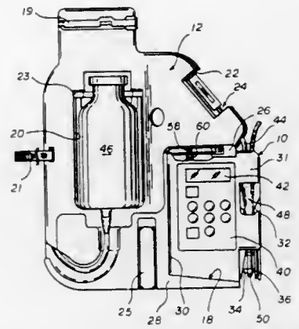
a plunger release button in said release mechanism operated with a motion in the same direction as the insertion motion of said cannula into the animal for releasing said plunger from said detent; and

a safety ring for enabling said plunger release button.

5,250,027
PERISTALTIC INFUSION DEVICE WITH BACKPACK SENSOR

Thomas G. Lewis, Fairview Heights, Ill.; Denis Y. Yerlikaya, Des Peres, and Eugene F. Schrader, St. Louis, both of Mo., assignors to Sherwood Medical Company, St. Louis, Mo.

Filed Oct. 8, 1991, Ser. No. 774,014
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—65 **8 Claims**



1. A medical fluid delivery system for the delivery of a medical fluid to a patient at a controlled rate; said system comprising:

a fluid delivery set including a reservoir means for containing fluid, a support structure for supporting said reservoir means, and a tube means forming a fluid flow pathway therethrough which is in fluid flow connection with said reservoir means;

a pump means for moving fluid through said fluid flow pathway and including a control means for adjustably controlling operation of said pump means; and

sensor means for determining the position of said pump means relative to said fluid delivery set, said sensor means including a sensing member and a sensed member, one of said sensing member and said sensed member being formed as part of said pump means and the other being formed as part of said support structure;

whereby, said control means adjusts operation of said pump means in accordance with the position of said pump means relative to said fluid delivery set as determined by said sensor means to ensure movement of fluid through said fluid flow pathway at said controlled rate.

5,250,028
INTRAVENOUS SYSTEM FOR DELIVERING A BENEFICIAL AGENT USING PERMEABILITY ENHANCERS

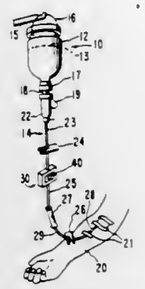
Felix Theeuwes, and Su I. Yum, both of Los Altos, Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 311,905, Feb. 15, 1989, Pat. No. 4,985,016. This application Aug. 9, 1991, Ser. No. 741,477
The portion of the term of this patent subsequent to Jan. 15, 2008, has been disclaimed.
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—85 **34 Claims**

1. An agent formulator for use in a parenteral fluid delivery system, the formulator comprising:

(a) a chamber having a fluid inlet means connectable to a reservoir of a parenterally acceptable fluid and a fluid outlet means to maintain a continuous flow of the parenteral fluid therethrough, the chamber having a wall, at least a portion of the wall being comprised of a material that is impermeable to a beneficial agent to be delivered into the parenteral fluid flowing through the chamber, the wall portion having an interior surface and an exterior surface which is accessible from the exterior of the formulator; and

(b) a transdermal type agent delivery device attached to the exterior surface of the wall portion, the delivery device comprising a reservoir containing the beneficial agent and a reservoir containing an agent which renders the wall portion permeable to the beneficial agent, the device being releasably attached to the exterior surface of the wall portion;

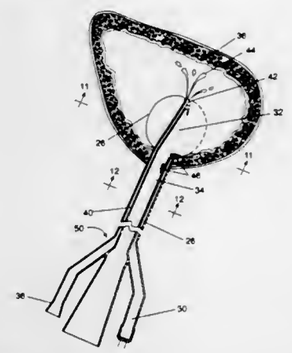


wherein in operation, the permeability enhancing agent is delivered to the wall portion and renders the wall portion permeable to the beneficial agent, but impermeable to convective flow of the parenteral fluid therethrough, the fluid flowing through the chamber contacts the interior surface of the wall portion, causing the beneficial agent to be delivered from the device through the permeable wall portion and into the flowing fluid.

5,250,029
ZERO-RESIDUAL ZERO-TIP BALLOON CATHETER

Edward Lin, 556 Roxbury Dr. NW., Massillon, Ohio 44646-3281, and Wallace Lin, 926 Mesa Oak Ct., Sunnyvale, Calif. 94086-8224

Continuation of Ser. No. 788,588, Nov. 6, 1991, abandoned. This application Oct. 26, 1992, Ser. No. 966,617
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—96 **26 Claims**



1. A catheter, comprising:

a multi-lumen elongate structure having a main longitudinal lumen therein, a distal tapered end for insertion into a body cavity and a proximal end;

to said distal end or thereabouts of the elongate structure is attached at least one partially-circumscribing inflatable balloon having for inflation and deflation a passageway which connects and opens into said balloon and which terminates with a closable orifice or tubular duct at or near the proximal end;

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at least one unobstructed opening near said distal end which opening extends through said structure to connect with said main lumen and allows passage of fluid between said main lumen and said body cavity, said opening being only partially circumscribed while being totally unenveloped by said inflatable balloon as further described below;

said inflatable balloon is made of highly elastic material and is attached at or near said distal end of said elongate structure with its distal boundary as close as appropriate to the tip of said tapered end such that upon normal inflation, the balloon expands not just partially circumscribingly around said tip but also distally to and away from the tip, which tip then becomes flush or recessed relative to the distal surface of the inflated balloon and in the distal portion of said elongate structure where the space leading to said opening is unobstructed and uncircumscribed by the inflated balloon, a gully leading to said opening is formed to facilitate drainage and to prevent negative pressure injury;

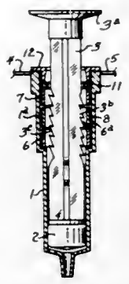
said inflatable balloon is attached at or near said distal end of said elongate structure such that upon inflation, it spans and envelopes an area extending from the tip region of the distal end of said elongate structure to terminate at a region that is peripheral to said unobstructed opening; and said terminating region, when measured from the distal end, is at a certain measured distance that is greater than that corresponding measurement and distance for the distal boundary of said opening, but less than or equal to that corresponding measurement and distance for the proximal boundary of said opening.

5,250,030

HYPODERMIC SYRINGE WITH A BLOCKABLE PISTON CAPABLE OF PREVENTING ITS RECHARGE AND REUSE

César G. Corsich, 1462 Juan A. Garcia St., Del Viso, Buenos Aires Province, Argentina

Filed Oct. 29, 1991, Ser. No. 784,560
Claims priority, application Argentina, Oct. 3, 1991, 320846
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 19 Claims



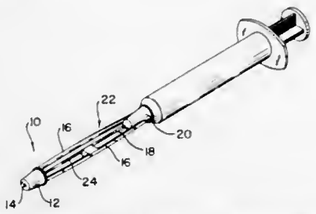
1. A hypodermic syringe with a blockage piston capable of preventing its recharge and reuse, comprising, in combination: a cylindrical tubular body; a piston means including a piston located within the cylindrical tubular body and having a right-angled piston rod section associated therewith, said piston means being movable axially of the tubular body in one direction to retract the piston for drawing a substance into said tubular body; said right-angled piston rod section including a pair of intersecting opposed wings, the longitudinal outward edges of one of said pair of intersecting opposed wings having intermediate sections which include tooth shaped portions, with each tooth shaped portion defining opposed indentation slopes thereof with said intermediate sections located within the tubular body; a blocking means positioned within said cylindrical tubular body and engageable with said tooth shaped portions of said longitudinal outward edges of said intermediate section of said piston rod section, said blocking means constituted by at least one member placed in abutment against rotation with respect to said tubular body and cooperating with said tooth shaped portions of the piston rod for permitting the advancement of the piston rod axially outwardly of said tubular body, and, after a 90° turn of the piston rod, axial inward movement of said piston rod into said tubular body; and locking means including a first member slidably mounted on and operatively associated with said pair of opposed wings of said piston rod to be rotated thereby through said 90° turn of said piston rod to a locking position to prevent further rotation of said piston rod relative to said tubular body.

5,250,031

LOCKING NEEDLE COVER

Lee D. Kaplan, Washington, D.C., and Richard Hitzelberg, Catlett, Va., assignors to The George Washington University, Washington, D.C.

Filed Dec. 14, 1992, Ser. No. 990,153
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 18 Claims



1. A cover for the tip of a needle for a medical device, the needle having a shaft extending down from the tip to a base, said cover comprising:

means for covering the needle tip, said means for covering having an opening through which the needle tip and the needle shaft can axially extend to expose the needle tip from a top surface of the means for covering;

means for suspending said means for covering and permitting said means for covering to retract toward the needle base to expose the needle tip for use and to extend to cover the needle tip after the use, said means for suspending being operatively connected between said means for covering and at least one of the needle base and the medical device;

means for locking the needle tip in a storage position, said means for locking being disposed inside said means for covering and spaced from said top surface, said means for locking and said storage position being laterally offset from said opening, wherein the needle tip can transfer to the storage position laterally without withdrawal from the means for covering.

5,250,032

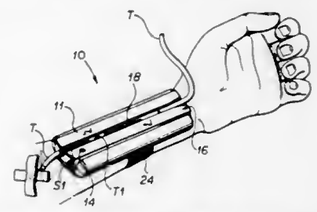
HEATER FOR IN VIVO BLOOD INFUSION

Phillip R. Carter, Jr., Decatur, and Byron L. Boylston, Powder Springs, both of Ga., assignors to SpectraLogic, Inc., Atlanta, Ga.

Filed Dec. 13, 1991, Ser. No. 806,368
Int. Cl.[5] A61F *7/12*
U.S. Cl. 604—113 3 Claims

1. A heater for blood, plasma and other intravenous solution infusion comprising a housing configured to be attached snugly onto the arm of a patient for the intravenous solution to exit said housing near to the point at which the intravenous solution enters the patient's body, said housing having an elongated channel sized to receive and releasibly hold in intimate contact therewith an elongated portion of a plastic intravenous tube, said channel being straddled by two elongated chambers in which batteries are mounted; electrical heating means mounted to said housing adjacent said channel and

electrically coupled with said batteries for applying heat to the elongated portion of a plastic intravenous tube held in said channel and to intravenous solutions flowing therethrough; and control means for controlling power supplied by said batteries to said heater means in response to changes in temperature of intravenous solutions flowing through the elongated tube portion wherein said control means comprises means for applying continual d.c. power to said heating means at temperatures below a selected value, and means for applying pulse modulated d.c. power to said heater means at temperatures above said selected value.

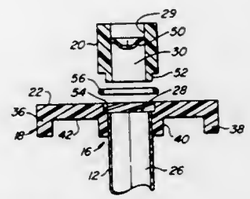


5,250,033

PEEL-AWAY INTRODUCER SHEATH HAVING PROXIMAL FITTING

Michael A. Evans, Palo Alto; Raymond S. Figueroa, Jr., and Colin J. Nichols, both of Fremont, all of Calif., assignors to Interventional Thermodynamics, Inc., Mountain View, Calif.

Filed Oct. 28, 1992, Ser. No. 967,602
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—160 16 Claims



1. A peel-away sheath comprising:

a sheath tube having a distal end, a proximal end, and a lumen therethrough, wherein said sheath is weakened along opposed axial lines to facilitate splitting into two halves;

a splittable handle attached to the proximal end of the sheath tube and having a circular aperture aligned with the tube lumen, said handle being weakened at locations aligned with the weakened axial lines in the sheath tube so that the handle may be split and drawn apart to split the sheath tube along said axial lines; and

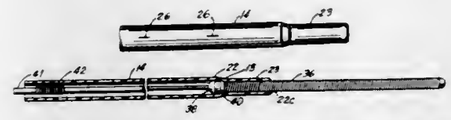
a transition element removably attached to the splittable handle so that the element can be reattached after removal and having a circular axial passage aligned with the aperture in the handle and the lumen in the sheath, wherein the transition element is released from the handle when the handle is split apart.

5,250,034

PRESSURE RESPONSIVE VALVE CATHETER

William M. Appling, Hartford; Famonn Hobbs, Queensbury; Daniel K. Recinella, Hadley; Arthur L. Zimmet, Centerport, all of N.Y., and Joseph J. Bookstein, LaJolla, Calif., assignors to E-Z-EM, Inc., Westbury, N.Y.

Continuation-in-part of Ser. No. 583,466, Sep. 17, 1990, abandoned. This application Aug. 7, 1991, Ser. No. 741,124
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—164 23 Claims



1. A catheter for introducing material into the vascular system comprising:

an elongated catheter body having a single ply unitary sidewall defining a catheter lumen, said sidewall comprised of solely one material, said catheter body having a proximal portion with means through which material is introduced into the catheter lumen and a distal portion;

said catheter including an end hole formed at the end of the distal portion, said end hole being shaped and dimensioned to receive a guidewire therethrough; and

a plurality of longitudinally displaced normally closed pressure responsive exits formed in the sidewall of the distal portion of said catheter body, said pressure responsive exits defining an exit zone, said pressure responsive exits permitting material to exit from said catheter lumen in response to an internal fluid pressure over a first predetermined amount while preventing material from entering into said catheter lumen at an external pressure less than and up to a second predetermined amount, and a reduced diameter region on the catheter body distal to said exit zone creating a seat;

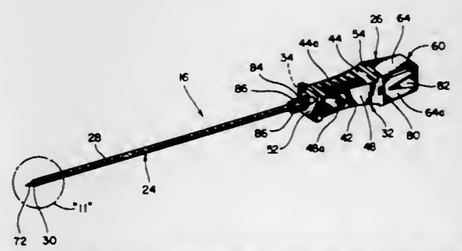
a removable occluding wire having an occluding region shaped and sized to engage said seat so as to permit selective opening and occluding of said end hole whereby fluid flow through the catheter pressure responsive exits may be directed.

5,250,035

CANNULA AND STYLET SYSTEM

Gary N. Smith, Libertyville, and Donald H. Patrick, Gurnee, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Apr. 20, 1992, Ser. No. 871,559
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—164 2 Claims



2. A needle system for introducing a spinal catheter into the subarachnoid space surrounding a spinal cord with a minimal loss of cerebrospinal fluid, said system comprising, a non-pointed but beveled cannula having a hub provided at one end thereof, a bore extending through said hub in axial alignment

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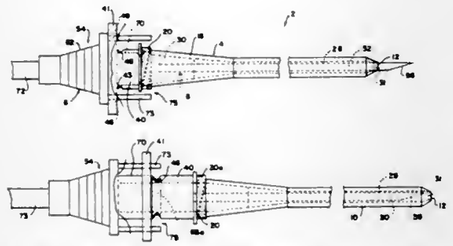
with a bore of said cannula, an elongated stylet having a cone-shaped pointed end and a handle at its opposite end, which stylet is insertable into said cannula through said hub, the relative lengths of said cannula and said stylet being such that, when said stylet handle abuts against said cannula hub upon full assembly thereof, said cone-shaped pointed end of said stylet projects beyond the end of said non-pointed but beveled cannula whereby, when said fully assembled cannula and stylet are inserted into a previously formed elongated puncture in a patient's back, said cone-shaped pointed end of said stylet and said beveled end of said cannula pierce the dura just enough to form a minimal opening into the subarachnoid space within the dura, whereupon removal of said stylet from said cannula permits introduction of a spinal catheter through said cannula and into said subarachnoid space with a minimal loss of cerebrospinal fluid therefrom wherein said stylet is formed of stainless steel, said handle is formed of plastic, said hub is formed of glass-clear plastic and is provided with one or more viewing-window depressions.

5,250,036

INTRAVENOUS CATHETER PLACEMENT SYSTEM

Mohammad Farivar, 307 Hammond St., Chestnut Hill, Mass. 02167

Filed Nov. 24, 1992, Ser. No. 980,673
Int. Cl.[5] A61M *5/18*
U.S. Cl. 604—164 **20 Claims**



1. A self-blunting intravenous catheter insertion system comprising in combination:

an insertion device/guard assembly and an intravenous catheter removably mountable on said insertion device/-guard assembly;

said insertion device/guard assembly comprising in combination an insertion device comprising:

(i) a housing,

(ii) a first attachment fitting and

(iii) a needle having a shaft, a puncture tip and a blunt end;

said first attachment fitting including (a) circumferentially spaced first walls extending outwardly from said housing about an axis, said walls terminating at outer edges and together defining a socket having an open end, and (b) a neck portion located centrally of and substantially wholly within said socket, said neck extending outwardly from said housing along an axis and fixedly holding said blunt end of said needle such that said needle shaft extends beyond said open end of said socket along said axis; and

a guard member comprising:

(i) a first sleeve portion, and

(ii) a second attachment fitting,

said first sleeve portion (a) being sized for close, sliding telescopic engagement with said needle shaft, (b) being slightly shorter than the portion of said needle shaft extending axially from said neck portion and (c) having a blunt distal end and a proximal end; and

said second fitting including (a) a first end and a second end, said first end being attached to said proximal end of said first sleeve portion, (b) a flange extending radially outwardly from said second end of said second fitting, said flange defining slots slidably receiving said first walls therethrough and being axially movable along said first walls between a first position wherein said flange is located substantially adjacent to said housing and a second position wherein said flange is located substantially adjacent to said outer edges of said first walls, the axial distance between said first position and said second position being greater than the difference in length between said first sleeve and the portion of said needle shaft extending outwardly from said neck portion, and (c) second walls extending between said first and second ends of said second fitting, said second walls defining a first open-ended cavity, said second walls being sized to fit at least partially within said socket and said first open-ended cavity being sized to receive said neck portion in close, sliding telescopic engagement therewith when said flange is located in said first position; and

said catheter comprising:

(i) a second sleeve having a third end and a fourth end, said second sleeve being sized to telescopically receive said first sleeve in a close, sliding relationship therewith, and being longer than said first sleeve but shorter than the portion of said needle shaft extending outwardly from said neck portion, and

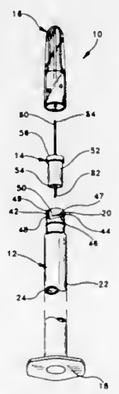
(ii) a third fitting attached to said fourth end of said second sleeve, said third fitting including third walls defining a second open-ended cavity adapted to receive said second walls of said second fitting in a close, sliding relationship therewith at least partially within said socket when said catheter is telescopically mounted on said insertion device/guard assembly and said flange is located in said first position.

5,250,037

SYRINGE HAVING NEEDLE ISOLATION FEATURES

Ralf V. Bitdinger, La Cote Herbeys, France, assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Dec. 18, 1992, Ser. No. 992,958
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—192 **19 Claims**



1. A hypodermic syringe having a syringe barrel with opposed proximal and distal ends and a fluid-receiving chamber therebetween, a passage extending through said distal end for communication with said chamber, and a pierceable barrier for blocking fluid flow through said passage, a needle cannula mounted to said distal end of said syringe barrel and being selectively movable in a proximal direction for piercing said barrier, a needle shield mounted to said syringe barrel for covering said needle cannula, said syringe including an activation assembly comprising:

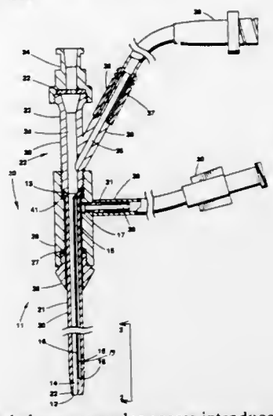
first and second cooperating cam means disposed respectively on said syringe barrel and said needle shield, said cam means being responsive to unidirectional rotation of said needle shield relative to said syringe barrel for initially moving said needle shield and said needle cannula in said proximal direction sufficiently for piercing said barrier and for subsequently moving said needle shield in a distal direction for separating said needle shield from said syringe barrel.

5,250,038

MULTIPLE LUMEN VASCULAR ACCESS INTRODUCER SHEATH

Richard J. Melker, Gainesville, Fla., and Frank J. Fischer, Jr., Bloomington, Ind., assignors to Cook Incorporated, Bloomington, Ind.

Filed Oct. 9, 1992, Ser. No. 959,289
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—264 **20 Claims**



1. A multiple lumen vascular access introducer sheath comprising:

a tubular member of an inelastic, semi-rigid plastic material and having a distal end, a proximal end, a main lumen extending longitudinally therethrough and opening at said distal and proximal ends, and a secondary lumen non-coaxially positioned adjacent to and separated from said main lumen for maximizing a cross-sectional dimension of said main lumen, said main lumen having a cross-sectional area sized for passage of a catheter therethrough, said secondary lumen having a cross-sectional area sized significantly less than said cross-sectional area of said maim lumen for passage of a predetermined dose of a fluid therethrough and positioned with respect to said main lumen and shaped.

5,250,039

Patent Not Issued For This Number

5,250,040

FERRULE AND ENTERAL TUBE INCORPORATING A FERRULE

Stephen K. Parks, Redwood City; Udi Fishman, San Jose; Christine Decaria, Los Altos, and Harry Park, San Jose, all of Calif., assignors to Medical Innovations Corporation, Milpitas, Calif.

Division of Ser. No. 632,776, Dec. 21, 1990, which is a continuation-in-part of Ser. No. 453,308, Dec. 21, 1989, abandoned. This application Jan. 28, 1993, Ser. No. 10,908
Int. Cl.[5] A61M *25/00, 5/32;* **F16L** *25/00;* **B65D** *55/00*
U.S. Cl. 604—283 **14 Claims**

14. A feeding device comprising:

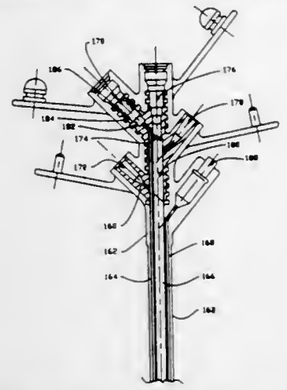
an elongated tube formed from a flexible material;

an inlet end portion formed from the flexible material; and integrally connected the elongated tube and defining a plurality of respective inlet portion openings;

a ferrule disposed within said inlet end portion, said ferrule including,

a first inner wall defining a first main conduit,

a second inner wall defining a second main conduit.



a plurality of respective first inlets, each corresponding to a respective inlet port opening, and each for providing fluid communication between a respective inlet port opening and the first main conduit, and

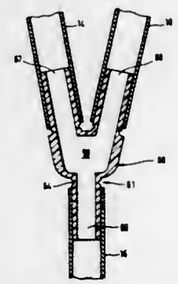
a plurality of respective second inlets, each corresponding to a respective inlet port opening, and each for providing fluid communication between a respective inlet port opening and the second main conduit.

5,250,041

TUBING ADMINISTRATION SET FOR USE IN PERITONEAL DIALYSIS

Thomas I. Folden, Alamo, Calif., and Arnold Gross, Freisen, Fed. Rep. of Germany, assignors to Fresenius USA, Inc., Walnut Creek, Calif.

Filed Jan. 16, 1992, Ser. No. 821,090
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—284 **3 Claims**



1. A peritoneal dialysis tubing administration set for use in administering fluid from a fluid container into a patient's peritoneal cavity through a peritoneal catheter and for discharging the spent fluid from the peritoneal cavity into a waste container, comprising: a tube connector; a fluid supply tube which at one end is in flow communication with the fluid container and at the other end with the tube connector; a fluid delivery tube which at one end is in fluid communication with the peritoneal catheter and at the other end with the tube connector, the fluid delivery tube including two segments; a waste

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discharge tube which is in flow communication at one end with the tube connector and at the other end with the waste container whereby there is fluid communication among all three of the tubes through the tube connector; clamps which could be used to occlude these tubes including a fluid delivery tube clamp, a fluid supply tube clamp and a discharge tube clamp; and a breakable tubing coupling having a first end inserted into one of said segments and a second end inserted into the other of said segments, said ends being able to be separated by breaking the tubing coupling, wherein the first end of the tubing coupling is a hollow cylinder in flow communication with said one of said segments and the second end of the tubing coupling is also a hollow cylinder in flow communication with said other of said segments, and the two hollow cylinders are in fluid communication with one another, where the hollow cylinders have an outside diameter greater than the inside diameter of the tube with which they are in flow communication, and where the hollow cylinders can be inserted into the tube to establish a water-tight connection, and wherein one of the hollow cylinders is circumferentially scored so that it could be broken to separate said segments.

5,250,042

OSTOMY BAG WITH FILTER COMBINATION

Anil M. Torgalkar, E. Windsor, and Frank S. Castellana, Princeton, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Feb. 20, 1990, Ser. No. 482,138
Int. Cl.[5] A61F *5/44*
U.S. Cl. 604—333 **7 Claims**



1. A bag for receiving waste discharge from the human body comprising:

front and rear walls formed of polymeric material, said walls having edges sealed together, said rear wall having a stomal aperture; a filter attached to one of the walls over a gas venting opening in the wall through which filtered gases exit the bag; and

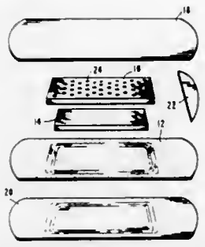
an intervening membrane located between the front and rear walls of the bag disposed between said stomal opening and said filter, said intervening membrane including a thermoplastic film sealable to said walls, said film being secured to at least one surface of a liquid impermeable, gas permeable sheet of microporous polytetrafluoroethylene having pore sizes from 1 to 6 microns, said intervening membrane having a gas flow rate of at least 100 cubic centimeters per centimeter squared per minute at at least 6 centimeters of water pressure.

5,250,043

CONTINENT OSTOMATE BANDAGE

Frank S. Castellana, 227 Stuart Rd. East, Princeton, N.J. 08540, and Keith T. Ferguson, 231 Katherine St., Scotch Plains, N.J. 07076

Filed Aug. 16, 1989, Ser. No. 394,703
Int. Cl.[5] A61F *5/44*
U.S. Cl. 604—336 **4 Claims**



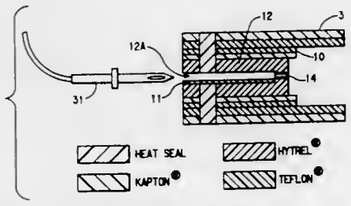
1. A continent ostomate bandage comprising a flexible, hydrocolloid, adhesive layer having a plastic or non-woven fabric layer attached to one side thereof, a superabsorbent pad, smaller in area than said adhesive layer, attached to said adhesive layer on a side thereof opposite from said plastic or non-woven fabric layer, a porous cover pad larger in area than said superabsorbent pad but smaller than said adhesive layer, said porous cover pad overlaying said superabsorbent pad, a portion of said adhesive layer forming an adhesive border around said superabsorbent pad and cover pad and being adapted to adhere the bandage to the skin of said wearer, and a plastic cover overlaying said porous cover pad and attached to said border portion of said adhesive layer, said superabsorbent pad and said porous cover pad together having a predetermined thickness, said plastic cover comprising a molded cavity having a predetermined depth equal to or greater than said thickness and shaped to receive said pads.

5,250,044

BLOOD CRYOPRESERVATION CONTAINER

Joseph D. Irr, Newark, and John D. Walker, New Castle, both of Del., assignors to Du Pont Merck Pharmaceutical Company, Wilmington, Del.

Filed Feb. 6, 1990, Ser. No. 475,604
Int. Cl.[5] A61B *19/00*; A61M *5/32*
U.S. Cl. 604—403 **11 Claims**



1. A container for the cryopreservation of mammalian cells comprising a body formed of at least one thermoplastic film material and including an inside, a filling port positioned in the container body and a transfusion port sealed to the container body, the improvement comprising a transfusion port tab insert, said insert including a puncturable seal and comprising

(a) at least one thermoplastic film strip bondable on one side thereof to the inside of the body of the container and bondable on the other side to the puncturable seal, the strip including edges which are sealed together to encompass the puncturable seal;

(b) at least one strip of puncturable material forming a puncturable seal including a channel for receiving a spike for transfusion of the contents of the container, the puncturable seal including a spike insertion point, puncturable by a spike when the spike is inserted in the channel and wherein the puncturable seal is one strip of polyester elastomer film folded over on itself;

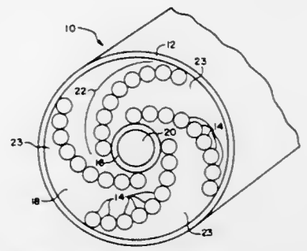
(c) at least one film of material positioned within the channel of the puncturable seal, said film being non-bondable to the puncturable material to thereby prevent the puncturable material from bonding to itself and closing the channel in the puncturable seal; said transfusion port tab insert being sealed at the end distal from the container body to thereby seal the insert and channel and thereby prevent contamination of the container or leakage of any mammalian cells stored within the container.

5,250,045

OPTICAL FIBER CATHETER WITH SPACED OPTICAL FIBER

Thomas K. Bohley, Colorado Springs, Colo., assignor to The Spectranetics Corporation, Colorado Springs, Colo.

Filed Jun. 11, 1991, Ser. No. 713,457
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—7 **13 Claims**



1. A fiber optic catheter comprising:

an outer cylindrical wall;

an inner cylindrical wall within and separated from said outer wall, said inner cylindrical wall defining an inner lumen therewithin; and

a plurality of spaced groups of optical fibers disposed between said inner wall and said outer wall, each group of optical fibers comprising a plurality of optical fibers, each having a cross-sectional area, a sum of the cross-sectional areas of all of said optical fibers at a distal end of said catheter being substantially less than a cross-sectional area of said catheter between said outer wall and said inner wall at said distal end, said fibers of each spaced group being arranged at said distal end to sweep an area at the extreme distal end of said catheter over an entire radial length from said inner wall to said outer wall when said catheter is rotated about said inner lumen.

5,250,046

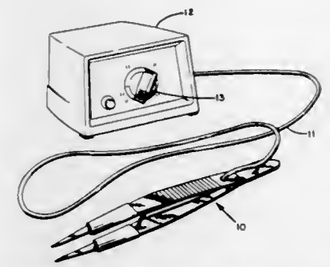
HEATED FORCEPS

Curtis O. Lee, 3416 Riverwoods Dr., Rockford, Mich. 49341

Filed Mar. 26, 1992, Ser. No. 858,098
Int. Cl.[5] A61B *17/50*
U.S. Cl. 606—29 **3 Claims**

1. A method of handling laboratory samples during the process of embedding said samples in a heat-liquefiable matrix that is normally solid at room temperature, comprising:

continuously applying heat to at least the tips of forceps to maintain the temperature thereof in excess of the liquefying temperature of said matrix; and



handling said samples with said forceps to transfer the same to embedding molds containing said matrix.

5,250,047

BIPOLAR LAPAROSCOPIC INSTRUMENT WITH REPLACEABLE ELECTRODE TIP ASSEMBLY

Mark A. Rydell, Golden Valley, Minn., assignor to Everest Medical Corporation, Minneapolis, Minn.

Filed Oct. 21, 1991, Ser. No. 780,045
Int. Cl.[5] A61B *17/39*
U.S. Cl. 606—48 **4 Claims**



1. An electrosurgical instrument for use in endoscopic procedures, comprising:

(a) an elongated, rigid tube having a proximal end, a distal end and a lumen extending therebetween;

(b) a handle affixed to the proximal end of the tube;

(c) a stem member disposed within the lumen of the tube and having a proximal end, a distal end and an outer dimension corresponding to the inside dimension of said lumen whereby the stem member can slide longitudinally within the lumen, said stem member having first and second electrical contact pads and first and second radial bores,;

(d) means disposed in the handle coupled to the stem member for imparting longitudinal reciprocal movement to the stem member;

(e) a replaceable electrode assembly releasably secured to the distal end of the stem member and extending distally from the distal end of the tube, wherein the assembly includes:

(i) an insulating support member having at least a portion thereof dimensioned to closely fit within the distal end of the lumen of the tube; and

(ii) a pair of bipolar electrodes extending outwardly from the support member, said electrodes having electrical terminals which are L-shaped wire segments whereby a portion of each segment engages one electrical contact pad of the stem member and a portion of each segment resides within one radial bore of the stem member; and

(f) means for coupling an electrosurgical generator to the electrode assembly.

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5,250,048

STABILIZING ELEMENT FOR OSTEOSYNTHESIS OF BONE FRAGMENTS, ESPECIALLY FOR THE FIXATION OF BONE FRACTURES

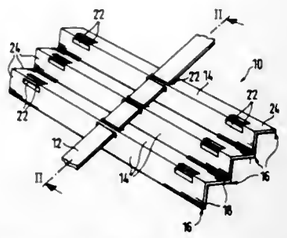
Ferdinand Gundolf, A46330 Kufstein, Austria

Filed Jan. 27, 1992, Ser. No. 826,074

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1991, 4102462

Int. Cl.[5] A01F *5/04*

U.S. Cl. 606—69 **16 Claims**



1. A stabilizing element for osteosynthesis of bone fragments, especially for the fixation of bone fractures, said stabilizing element comprising:

at least one tension means; and

an elongated member for at least partly covering the bone in the vicinity of the site to be treated, said elongated member having a wavy cross-section across a width of the elongated member and sharp-edged projections in the vicinity of the bone-engaging lines of contact whereby said projections would face the bone when the stabilizing element is in use, said elongated member being adapted to bear against the bone by an application of force from said at least one tension means along at least two lines of contact which extend approximately in a longitudinal direction of the stabilizing element, said longitudinal direction being substantially perpendicular to said width.

5,250,049

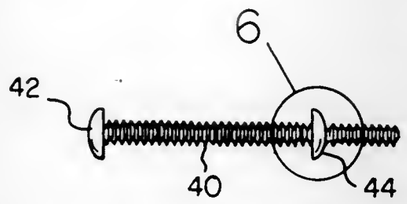
BONE AND TISSUE CONNECTORS

Roger H. Michael, 3428 Uniontown Rd., Uniontown, Md. 21157

Filed Jan. 10, 1992, Ser. No. 819,175

Int. Cl.[5] A61B *17/56;* **F16B** *21/00*

U.S. Cl. 606—72 **3 Claims**



1. A new and improved orthopedic fixation device comprising a connector adapted to hold pieces of bone or other body tissue together during a healing phase, said connector having a body portion and means for attaching said body portion to said bone pieces or other body tissue, said connector being of a material having substantially the same modulus of elasticity as said bone or other tissue wherein said material is selected from the group consisting of polyethylene, polysulfone, collagen, or polymer-carbon,

wherein said body portion comprises a flexible rod having a round cross-section, a first head portion fixed integrally at one end thereof opposite a free end of said rod, a series of circumferentially extending stop means disposed axially along said rod, and a second movable head portion having an aperture therein for receiving said free end of said rod, and locking means positioned inside of said aperture of said second movable head portion for engaging said stop means as said second head portion is moved axially along said rod in the direction of said first head portion.

5,250,050

APPARATUS FOR KNEE PROSTHESIS

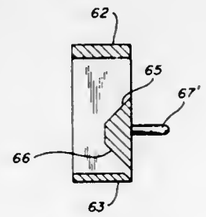
Matthew P. Poggie, Union City, N.J.; Peter S. Walker, Northwood, England, and Frederick C. Ewald, Weston, Mass., assignors to Pfizer Hospital Products Group, Inc., New York, N.Y.

Division of Ser. No. 645,388, Jan. 24, 1991, Pat. No. 5,116,338, which is a division of Ser. No. 151,734, Feb. 3, 1988, Pat. No. 5,002,547. This application Apr. 30, 1992, Ser. No. 876,642

Claims priority, application United Kingdom, Feb. 7, 1987, 8702789

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—79 **1 Claim**



1. A modular cutting guide for guiding a saw blade to make cuts required for a femoral component of a total knee prosthesis, comprising a substantially rectangular frame having a top wall and a bottom wall, each of said walls being defined by substantially parallel planar outer and inner surfaces wherein each outer surface provides a flat cutting plane and the inner surfaces define an open window within which is located an intermediate solid block having an angled top surface and an angled bottom surface, each of said angled surfaces providing a guide for making a chamfer cut, said angled bottom surface being spaced apart from the bottom inner surface of said block defining said window a first distance greater than the thickness of the saw blade and said angled top surface being spaced apart from the top inner surface of said block, defining said window, a distance greater than said first distance to provide a surgeon with a clear view of the surfaces being cut.

5,250,051

ACETABULAR CUP POSITIONER WITH SLAPHAMMER MECHANISM FOR THE REMOVAL OF THE SIGHTING GUIDE

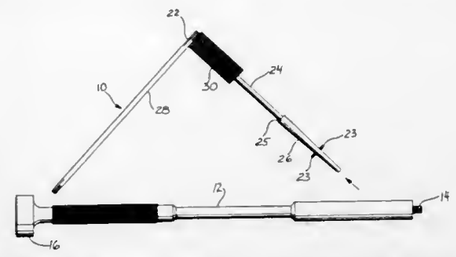
John P. Maryan, Anderson, Ind., assignor to Zimmer, Inc., Warsaw, Ind.

Filed Feb. 8, 1993, Ser. No. 14,610

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—91 **5 Claims**

1. A sighting guide for an acetabular cup positioner, said sighting guide including a connection means configured for frictionally connecting the sighting guide to the cup positioner, sighting means connected to said connection means for providing alignment indication and disengaging means carried by said sighting guide for disengaging the connection means to remove the sighting guide from the cup positioner, said disengaging means being abruptly shiftable from a first position adjacent said connection means to a second position adjacent said sighting means.



5,250,052

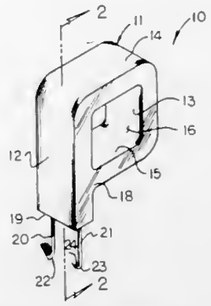
SUTURE REMOVAL TOOL

John A. St. Cyr, 10405 45 Ave. N. Apt 216, Plymouth, Minn. 55442

Filed Nov. 9, 1992, Ser. No. 973,649

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—138 **5 Claims**



1. A suture removal tool, comprising,

a support housing, the support housing including a front wall spaced from a rear wall, a top wall and a bottom wall, and a first side wall spaced from and parallel a second side wall, and

a handle opening directed through the support housing, and with the handle opening directed orthogonally to the first side wall and the second side wall through-extending the support housing, with the support housing arranged in surrounding relationship relative to the handle opening, and

the front wall including a front wall end wall spaced below and parallel the bottom wall, and

the front wall end wall having a first rod and a second rod fixedly and orthogonally mounted to the front wall end wall, with the first rod arranged parallel relative to the first side wall, the second rod oriented parallel to the second side wall, the first rod having a first hook, the second rod having a second hook.

5,250,053

SUTURE SHUTTLE DEVICE

Stephen J. Snyder, Encino, Calif., assignor to Linvatec Corporation, Largo, Fla.

Filed May 29, 1992, Ser. No. 890,215

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—145 **4 Claims**



1. A suture passing device comprising:

a flexible, elongated, wire-like member having a predetermined length, said flexible wire-like member formed of a plurality of braided wires or fibers;

a flexible eyelet member secured to said flexible wire-like member intermediate the ends of said wire-like member;

a cover over said wire-like member of each side of said eyelet, said cover formed of a material having a flexible exterior surface.

5,250,054

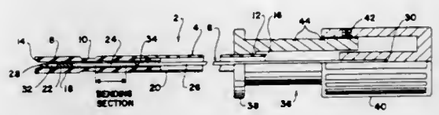
INTRACORPOREAL KNOT TYING APPARATUS AND METHOD

Lehmann K. Li, Wellesley, Mass., assignor to Li Medical Technologies, Inc., Milford, Conn.

Filed May 1, 1992, Ser. No. 877,462

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—148 **16 Claims**



1. A suture manipulating device comprising an outer sheath and an inner rod,

said outer sheath comprising a straight, rigid distal portion having a first distal tip, a flexible intermediate portion, and a straight, rigid proximal portion, said flexible intermediate portion of said sheath being formed so that the longitudinal axis of said distal portion of said sheath is normally aligned with the longitudinal axis of said proximal portion of said sheath, and said flexible intermediate portion of said sheath being capable of being elastically deformed so that the longitudinal axis of said distal portion of said sheath can be moved out of alignment with the longitudinal axis of said proximal portion of said sheath;

said inner rod comprising a straight, rigid distal portion having a second distal tip, a bending intermediate portion and a straight, rigid proximal portion, said bending intermediate portion being formed so that the longitudinal axis of said distal portion of said inner rod normally resides at an acute angle relative to the longitudinal axis of said proximal portion of said rod, and said bending intermedi-

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ate portion being formed so that it is capable of being elastically deformed so that the longitudinal axis of said distal portion of said rod can be brought into alignment with the longitudinal axis of said proximal portion of said rod;

said inner rod further comprising a crochet-type hook disposed adjacent said second distal tip of said inner rod;

said outer sheath and said inner rod being formed so that the length of said distal portion of said outer sheath is approximately the same as the length of said distal portion of said inner rod, and the length of said flexible intermediate portion of said outer sheath is approximately the same as the length of said bending intermediate portion of said inner rod, and said outer sheath and said inner rod also being formed so that said inner rod can make a close sliding fit within the interior of said outer sheath;

said inner rod being positioned within said outer sheath, and said outer sheath and said inner rod being movable relative to one another so as to be able to assume:

(1) a first position where said second distal tip of said inner rod is withdrawn slightly relative to said first distal tip of said outer sheath, and said bending intermediate portion of said inner rod is positioned within and constrained by the straight proximal portion of said outer sheath, whereby said inner rod and said outer sheath will both be substantially straight and in longitudinal alignment with one another;

(2) a second position wherein said distal portion of said inner rod and said bending intermediate portion of said inner rod both project out of said distal portion of said outer sheath, and so that the longitudinal axis of said distal portion of said inner rod is disposed at an acute angle to both the longitudinal axis of said proximal portion of said inner rod and to the longitudinal axis of said outer sheath; and

(3) a third position wherein said second distal tip of said inner rod is nearly aligned with said first distal tip of said outer sheath and so that said bending intermediate portion of said inner rod is generally aligned with said flexible intermediate portion of said outer sheath, so that the longitudinal axis of said distal portion of said inner rod will be aligned with the longitudinal axis of said distal portion of said outer sheath, the longitudinal axis of said proximal portion of said inner rod will be aligned with the longitudinal axis of the proximal portion of said outer sheath, and the longitudinal axis of said distal portion of said inner rod will be disposed at an acute angle to the longitudinal axis of said proximal portion of said inner rod.

5,250,055

METHOD AND APPARATUS FOR TYING SUTURE TO BONE

Robert R. Moore, Hayward, Calif., and Arnold K. Cohn, Glenview, Ill., assignors to Orthopedic Systems Inc., Hayward, Calif.

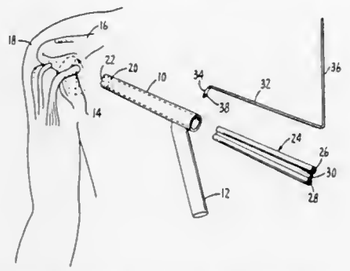
Filed Jun. 8, 1992, Ser. No. 895,604
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—148 **5 Claims**

1. Apparatus for attaching a suture to bone under soft tissue comprising in combination:

a cannula having an inner bore,

a drill guide telescopically received in the cannula and having at least two generally parallel bores, and

a suture pusher comprising a tool having a straight section telescopically received in one of the bores of the drill guide, a laterally extending handle on one end and on the other end a suture holding section movable in response to manipulation of the handle to push a suture loop through



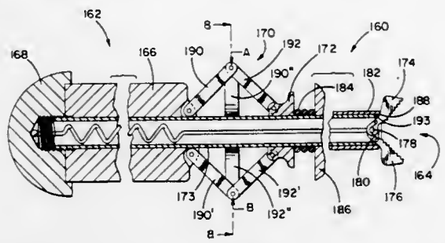
soft bone material between two parallel holes in bone aligned with two of the bores in the drill guide.

5,250,056

FORCEPS-TYPE SURGICAL INSTRUMENT

Harrith M. Hasson, 2043 N. Sedgwick, Chicago, Ill. 60614

Continuation-in-part of Ser. No. 830,681, Feb. 4, 1992. This application May 7, 1992, Ser. No. 879,604
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—151 **24 Claims**



1. A surgical instrument comprising:

a body;

first and second cooperating jaws mounted on the body and movable relative to each other selectively between open and closed positions;

first means on the body for normally urging said jaws from said open position toward said closed position with a first predetermined force and operable other than by relatively rotating any two threadably connected parts of said surgical instrument;

means to be engaged by an operator to move the jaws from the closed position into the open position; and

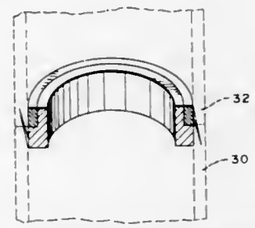
second means on the body for urging said jaws toward the closed position with a second predetermined force that is greater than said first predetermined force and operable other than by relatively rotating any two threadably connected parts of said surgical instrument.

5,250,057

ANASTOMOTIC DEVICE

Fusen H. Chen, 12 Vernon La., Thompson, Conn. 06277

Continuation-in-part of Ser. No. 735,950, Jul. 25, 1991, Pat. No. 5,123,908, which is a continuation-in-part of Ser. No. 629,608, Dec. 18, 1990, Pat. No. 5,089,008, which is a continuation-in-part of Ser. No. 472,209, Jan. 26, 1990, Pat. No. 4,997,439, which is a continuation-in-part of Ser. No. 303,326, Jan. 26, 1989, Pat. No. 4,930,502. This application Jun. 22, 1992, Ser. No. 902,210
The portion of the term of this patent subsequent to Jun. 23, 2009, has been disclaimed.
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—153 **6 Claims**



1. Means for joining tubular elements, especially an anastomotic device for the intestinal tract, comprising:

first and second annular members;

said first member (**10**) having a diminished wall thickness portion (**12**) that is dimensioned to be telescopically received, in frictional retention, within the second (**20**) of said members;

said diminished wall thickness portion (**12**) extending axially from one end of said first member (**10**);

the outer walls of said members in such telescopic assembly presenting a generally continuous outer wall (**16**, **24**) of generally uniform diameter; and

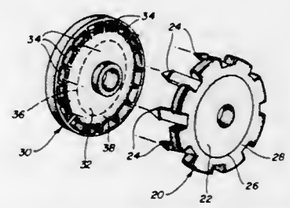
pin means integral with and extending from said outer wall of said assembly of annular members adapted to retain said tubular elements in a non-everted or overlapped, joined relationship.

5,250,058

ABSORBABLE ANASTOMOSIC FASTENER MEANS

Michael B. Miller; Mark S. Zeiner, both of Cincinnati, Ohio, and James A. Transue, Bridgewater, N.J., assignors to Ethicon, Inc., Somerville, N.J.

Continuation-in-part of Ser. No. 642,496, Jan. 17, 1991. This application Jun. 3, 1991, Ser. No. 709,860
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—154 **14 Claims**



1. A compression anastomosis device comprising:

a piercing ring containing a plurality of piercing flanges;

a receiving ring containing a plurality of receiving slots corresponding to said flanges; and

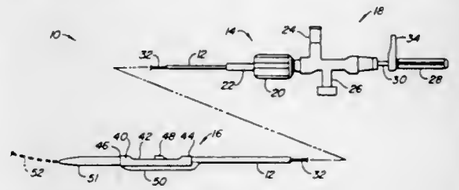
spring means placed between said piercing and receiving rings to exert a spring force on one of said piercing and receiving rings.

5,250,059

ATHERECTOMY CATHETER HAVING FLEXIBLE NOSE CONE

Bernard H. Andreas, Fremont; Brian A. Glynn, Sunnyvale; Michael A. Evans, Palo Alto, and Brian E. Farley, Los Altos, all of Calif., assignors to Devices for Vascular Intervention, Inc., Redwood City, Calif.

Filed Jan. 22, 1992, Ser. No. 823,905
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—159 **48 Claims**



1. An atherectomy catheter comprising:

a flexible tube having a proximal end, a distal end, and a lumen extending therebetween;

a housing having a proximal end, a distal end, a hollow interior, and a side aperture which can receive atheroma therethrough;

means in the housing for severing the atheroma and translating the severed atheroma in a distal direction; and

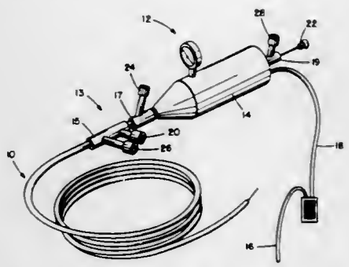
a flexible nose cone having a proximal end attached to the distal end of the housing, a distal end opposite the proximal end, and a hollow interior between said proximal and distal ends which is aligned with the hollow interior of the housing, said flexible nose cone including (a) a polymeric wall defining a non-tapered tubular region from the proximal end of the nose cone to a transition point in a middle portion of the nose cone, and a conically tapered region extending distally from the transition point to the distal end of the nose cone, and (b) a spring coil embedded within and extending over a major portion of the polymeric wall from said proximal end of the nose cone to a point in said tapered region distally of said transition point.

5,250,060

ANGIOPLASTY APPARATUS

Paul L. Carbo, 91 Village St., Northford, Conn. 06472, and John F. Setaro, 87 Kent Ct., Meriden, Conn. 06450

Filed Jun. 26, 1992, Ser. No. 904,552
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—159 **9 Claims**



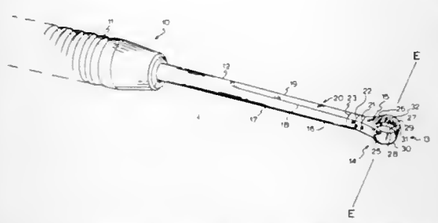
1. An angioplasty apparatus for removing deposits of atheromatic plaque from the interior walls of blood vessels comprising:

an elongated flexible catheter having an outer end adapted to be inserted into a blood vessel to the location of a plague deposit section of the vessel including;

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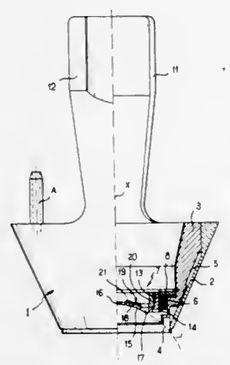
a hollow wire within the catheter extending the length thereof and providing a first channel;
an inflatable distal balloon secured to the outer end of the guide wire and adapted to be inflated by fluid passing through the first channel;
tube means surrounding the guide wire and extending the length of the catheter and having a second channel extending a substantial length thereof;
a drive cable surrounding the tube means;
a section of the drive cable being radially expandable;
the outer surface of said drive cable section being roughened to form a milling surface;
said second channel terminating at the said drive cable section whereby the section may be radially expandable by fluid passing through said second channel;
sheath means surrounding the drive cable and extending the length of the catheter and having a third channel extending a substantial length thereof;
an inflatable proximal balloon surrounding said sheath means at the outer end thereof connected to the third channel and adapted to be inflated by fluid passing therethrough;
means connected to the drive cable to cause rotation thereof whereby the expanded section will mill the atheromatic plague on the interior blood vessel wall producing free particles of plague;
the space between the sheath means and drive cable providing a fourth channel to withdraw the free plague particles, and
means to selectively supply fluid pressure to said first, second and third channels to inflate the distal balloon, expand the cable section and inflate the proximal balloon respectively.

5,250,061
RING CURRETTE
Gary K. Michelson, 438 Sherman Canal, Venice, Calif. 90291
Continuation of Ser. No. 241,463, Sep. 8, 1988, abandoned. This application Jul. 9, 1990, Ser. No. 550,122
Int. Cl.[5] A61B *17/56*
U.S. Cl. 606—160 **3 Claims**



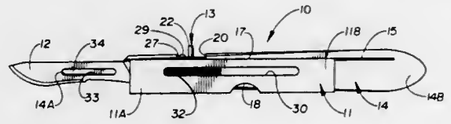
1. A ring curette comprising a straight shaft having a first end and a second end, a handle attached to said first end and a scraping tip attached at said second end, said scraping tip in the shape of a ring, said handle being large enough so as to permit grasping of the handle by two hands, said shaft having flattened top and bottom portions in planes parallel to the plane of the ring proximate the connection of the scraping tip to the second end of said shaft, said ring extending above the planes of said flattened portions of said shaft, the circumference of said ring being sharpened, said ring having a depressed portion proximate the connection of the scraping tip to said second end of said shaft, an edge of said depressed portion being in the plane of a flattened portion of said shaft and in which said ring has an interior opening forming side walls, said opening having a central portion which is smaller in diameter than the inside diameter of said ring at either the top or bottom of said ring, the inside walls of said ring sloping towards the center of said opening.

5,250,062
INSTRUMENT FOR SURGICALLY CORRECTING ASTIGMATISM
Khalil Hanna, 9 rue du Temple, 75007 Paris, France
Filed Dec. 19, 1991, Ser. No. 810,040
Claims priority, application France, Dec. 20, 1990, 90 16011
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—166 **5 Claims**



1. An instrument for surgery of the cornea to correct astigmatism, the instrument comprising a template and a tubular outer support forming a shell around a predetermined axis of the instrument including a circularly symmetrical annular base portion about the axis defining a substantially spherical annular surface for contacting the cornea, said support including a resiliently deformable cylindrical inside wall deformable in the radial direction for receiving a tubular top section of said template, said template having a substantially spherical bottom surface including a central orifice and at least one pair of arcuate slots disposed symmetrically about the central orifice.

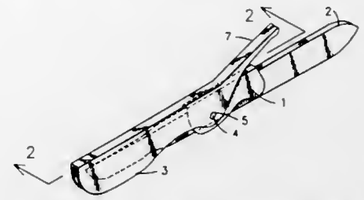
5,250,063
SURGICAL SCALPEL WITH RETRACTABLE GUARD
Michael R. Abidin, and Steven P. Lehmbeck, both of Baltimore, Md., assignors to Leonard Bloom, Towson, Md., a part interest
Filed Jan. 24, 1992, Ser. No. 825,556
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—167 **29 Claims**



1. A surgical scalpel, comprised of:
the scalpel including a body having a rear portion and a forward portion;
a surgical cutting blade;
a surgical cutting blade attachment projection for receiving the surgical cutting blade thereon, the cutting blade attachment projection being integrally formed on the forward portion of the body of the scalpel and extending forwardly therefrom, so that the cutting blade thereon extends forwardly therefrom;
a cutting blade guard carried by the body of the scalpel for selective longitudinal sliding movement of the guard on the body between an extended position, wherein the guard extends over the cutting blade, thereby selectively covering the cutting blade and protecting the user thereof, and

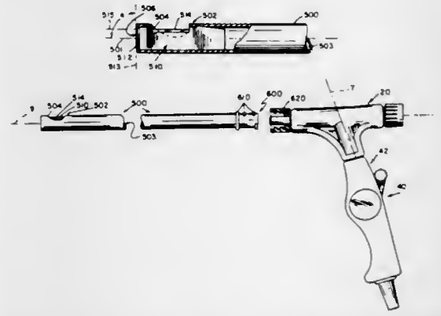
a retracted position, wherein the guard is rearward of the cutting blade, thereby selectively exposing the cutting blade and permitting the use thereof; and
a resiliently-biased detent means formed between the body of the scalpel and the blade guard for removably securing the blade guard in the respective extended and retracted positions thereof wherein the resilient-biased means includes:
the cutting blade guard having at least one pair of locking detents formed therein, one of the locking detents of said pair being formed in a forward portion of the cutting blade guard, and the other of the locking detents of said pair being formed in a rearward portion of the cutting blade guard; and
a resiliently-biased means carried by the body of the scalpel for selectively mating with one of the respective locking detents of the pair of locking detents formed in the blade guard when the blade guard is disposed in the respective extended and retracted positions thereof, whereby the mating of the locking means with the one of the locking detents formed in the forward portion of the blade guard removably secures the blade guard in the respective retracted position thereof, and further whereby the mating of the locking means with the one of the locking detents formed in the rearward portion of the blade guard removably secures the blade guard in the respective extended position thereof.

5,250,064
SHIELD FOR SURGICAL SCALPEL BLADES
Aaron Schneider, St. Petersburg, Fla., assignor to Biological Tissue Reserve, Inc., St. Petersburg, Fla.
Filed Oct. 7, 1992, Ser. No. 957,221
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—167 **3 Claims**



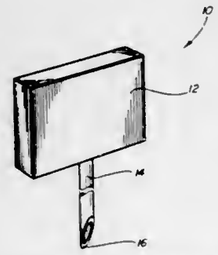
1. A guarding device, adapted to be fitted onto a scalpel having a handle and a sharp blade extending from said handle, said device comprising:
(a) a clip which is adapted to fit tightly over and to at least partially embrace the handle of a scalpel when said scalpel is inserted into said clip;
(b) a shield adapted to fit over at least a portion of said clip, said shield having a first end adapted to extend beyond said blade, a main body portion adapted to cover said blade and a second end which extends upward at an angle to said main body portion;
(c) a pivoting means positioned below the point where said second end of said shield angles upward from said main body portion, said pivoting means being capable of pivoting said first end of said shield on said clip from a first position by pressure applied on said second end upward to a second position, so that when a scalpel is positioned with its handle in said clip, the blade of said scalpel will be exposed when said shield is in said second position, and said blade will be protected when said shield is put in said first position.

5,250,065
DISPOSABLE LAVAGE TIP ASSEMBLY
Thomas P. Clement, and David P. Weber, both of Bloomington, Ind., assignors to Mectra Labs, Inc., Bloomfield, Ind.
Continuation of Ser. No. 602,359, Oct. 22, 1990, abandoned, which is a contiouation-in-part of Ser. No. 580,945, Sep. 11, 1990. This application Sep. 14, 1992, Ser. No. 944,737
Int. Cl.[5] A61B *17/32, 17/22;* A61M *17/20*
U.S. Cl. 606—172 **17 Claims**



1. A surgical device comprising a longitudinally extending cannula formed to define an interior channel having a longitudinal axis,
a knife positioned within the interior channel of the cannula, the knife being formed to have a first cutting edge extending at an angle relative to the longitudinal axis of said cannula, and
wherein the knife has a second cutting edge extending substantially parallel to the longitudinal axis of cannula, the cannula being formed to define a notch that at least partially exposes the second cutting edge of the knife.

5,250,066
PLASTIC POINTED ARTICLES AND METHOD FOR THEIR PREPARATION
James M. Lambert, Centerville, Ohio, assignor to Becton Dickinson and Company, Franklin Lakes, N.J.
Filed Mar. 19, 1990, Ser. No. 495,670
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—181 **5 Claims**



1. A lancet comprising a body portion and a needle portion tapering to a point, said body and needle portions being unitary and molded of a shear-thinned thermoplastic polymer selected from the group consisting of a liquid crystalline polymer and modified acrylic polymer.

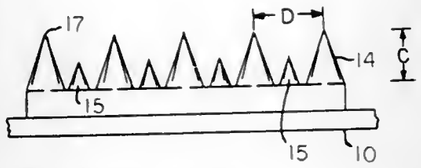
VOL 1155 ISS 1 OC 5 1993 UMI

5,250,067

BODY TREATMENT PAD HAVING A MULTIPLE NUMBER OF SHARPENED SKIN-PENTRATION PROTUBERANCES

Ala Gelfer; Arkadiy Gelfer, both of 600 S. Curson #326, Los Angeles, Calif. 90036, and Stan Gelfer, 1022 N. Vista St. #5, Los Angeles, Calif. 90046

Filed Nov. 30, 1992, Ser. No. 984,228
Int. Cl.[5] A61B *17/34*
U.S. Cl. 606—189 18 Claims



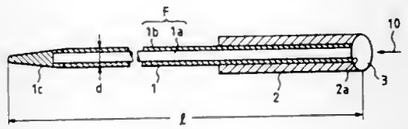
1. An acupuncture treatment pad comprising a flexible backing sheet; a plurality of similarly-constructed rigid blocks affixed to one face of said sheet at evenly spaced points thereabout; each block having a large multiplicity of closely spaced conical protuberances extending away from said flexible sheet; said protuberances comprising a first set of relatively long rigid protuberances, and a second set of relatively short rigid protuberances; said relatively long protuberances being arranged in a square pattern that comprises a plurality of evenly spaced rows, the protuberance spacing in each row being the same as the spacing between rows; each relatively short protuberance being located equidistant from four of the relatively long protuberances on two imaginary diagonal lines connecting diagonally related protuberances in adjacent rows; each rigid block being independently affixed to said flexible sheet so that the blocks can conform to a person's body contours, with each of the relatively long protuberances in a given block being engaged with the person's skin.

5,250,068

OPTICAL TRANSMISSION TYPE ACUPUNCTURE NEEDLE

Emuko Ideguchi, Shinjyuku, and Shuji Yamada, Koube, both of Japan, assignors to Yakuouji Shinkiyu Chiryouin, Japan

Continuation of Ser. No. 800,097, Nov. 29, 1991, abandoned. This application Jan. 29, 1993, Ser. No. 11,095
Claims priority, application Japan, Nov. 30, 1990, 2-330516
Int. Cl.[5] H04C *00/00*
U.S. Cl. 606—189 13 Claims



1. An optical transmission type acupuncture needle comprising:

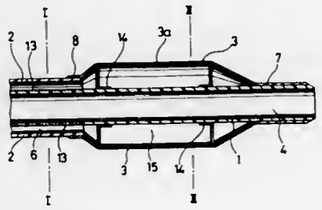
an elongated needle body having a needle point at one end portion thereof configured to be stuck into a diseased part in a patient's body and a needle holder provided at another end portion of the needle body opposite to the needle point, said needle body being formed between the end portions of the elongated needle body at least partly of an optical transmission member configured such that light travelling through the optical transmission member is repetitively full reflected at an outer peripheral boundary surface of the needle body so as to converge into the needle point.

5,250,069

CATHETER EQUIPPED WITH EXPANSIBLE MEMBER AND PRODUCTION METHOD THEREOF

Masakiyo Nobuyoshi, Kitakyusyu; Yoshiaki Sugiyama, and Kyuuta Sagae, both of Fuji, all of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 809,219, Dec. 16, 1991, abandoned, which is a continuation of Ser. No. 432,775, Oct. 26, 1989, abandoned. This application May 26, 1992, Ser. No. 890,290
Claims priority, application Japan, Feb. 27, 1987, 62-46195; Mar. 3, 1987, 62-47977; Nov. 5, 1987, 62-279698; Nov. 5, 1987, 62-279699; Jan. 15, 1988, 63-7231
Int. Cl.[5] A61M *29/04*
U.S. Cl. 606—192 28 Claims



16. A catheter equipped with an expansible member, comprising:

an inner tube having a first lumen, said inner tube having an open tip at an end portion thereof;

an outer tube disposed coaxially with said inner tube, said outer tube having a tip portion at a position recessed by a predetermined distance from the tip of said inner tube, and forming a second lumen between said outer tube and an outer surface of said inner tube;

a contractible or foldable expansible member having a tip portion connected to said inner tube and a proximal portion connected to said outer tube, said expansible member communicating with said second lumen near said proximal portion of said expansible member and surrounding said inner tube over a given length of said inner tube, and said expansible member being made of a material selected from the group consisting of polyolefin, polyvinyl chloride, polyamide elastomer and polyester;

a first opening communicating with said first lumen, said first opening being disposed at a proximal end portion of said inner tube;

a second opening communicating with said second lumen, said second opening being disposed at a proximal end portion of said outer tube, and

a rigidity imparting member disposed in or on only said inner tube, said rigidity imparting member extending in the axial direction of said inner tube.

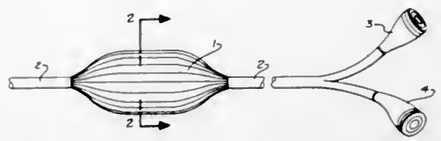
5,250,070

LESS TRAUMATIC ANGIOPLASTY BALLOON FOR ARTERIAL DILATATION

Juan C. Parodi, Blanco Encalada, 1543 Buenos Aires, Argentina

Filed May 28, 1991, Ser. No. 705,698
Int. Cl.[5] A61M *29/02*
U.S. Cl. 606—194 6 Claims

1. A less traumatic angioplasty balloon for arterial dilatation of the type inflatable by means of respective lumens existing in a catheter used for the introduction of the balloon, the catheter and balloon defining a longitudinal axis, characterized in that the balloon has a unitary construction and the surface of the fully inflated balloon that contacts the endothelium of the vessel being treated is an irregular surface defining a plurality



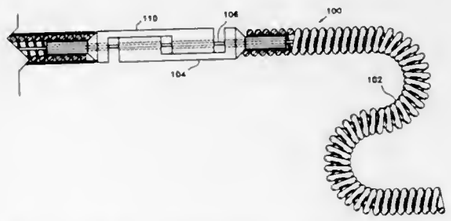
of elongate grooves and projecting parts interspersed therebetween.

5,250,071

DETACHABLE EMBOLIC COIL ASSEMBLY USING INTERLOCKING CLASPS AND METHOD OF USE

Thomas J. Palermo, San Jose, Calif., assignor to Target Therapeutics, Inc., Fremont, Calif.

Filed Sep. 22, 1992, Ser. No. 949,094
Int. Cl.[5] A61M *29/00*
U.S. Cl. 606—198 21 Claims



10. A combination pusher assembly-coil assembly for use in occluding a selected vascular site within a vessel comprising:

(a) a coil having, on at least one end, an interlocking shaped clasp means having an axis and an axial passageway generally colinear with the coil, the axial passageway and the interlocking shaped clasp means to interlock with a similar shaped clasp means by passing a control wire through the axial passageway and to uncouple from said similar shaped clasp means by axially withdrawing the control wire from the similar clasp means;

(b) a pusher assembly comprising a tubular pusher sheath having a proximal end and a distal end and adapted to fit within a catheter sheath and having a continuous passageway therethrough for passage of a control wire from the distal end of the pusher sheath to the proximal end of the pusher sheath, and an interlocking shaped clasp means located at the distal end of the pusher sheath and said shaped clasp means connected to the distal end of the pusher assembly; and

(c) a control wire suitable for passage through the pusher passageway and the coil axial passageway.

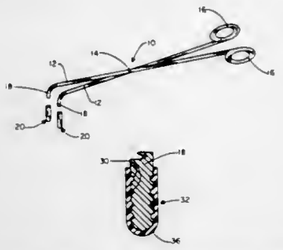
5,250,072

SURGICAL CLAMP JAW COVER

Krishna M. Jain, 8405 Plover, Kalamazoo, Mich. 49002

Filed Dec. 10, 1990, Ser. No. 624,981
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—205 20 Claims

1. A surgical clamp jaw cover for a medical clamp having a clamp jaw and serrations on the clamp jaw, said cover comprising a tubular body and said tubular body having an inner surface, said inner surface having projections thereon, whereby when the cover is received on the clamp jaw, the projections will engage the serrations to restrict movement of



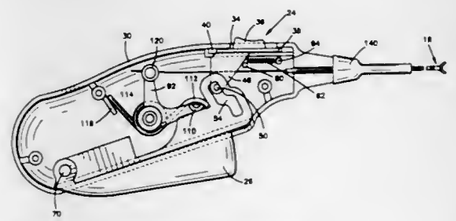
the cover relative to the clamp jaw for retaining said cover on the clamp jaw.

5,250,073

TORQUEABLE AND FORMABLE BIOPSY FORCEPS

Robert J. Cottone, Jr., Fort Lauderdale, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Jun. 10, 1992, Ser. No. 896,621
Int. Cl.[5] A61B *10/00*
U.S. Cl. 606—206 15 Claims



1. A biopsy forceps device comprising:

a handle;

an elongated flexible hollow-body portion having a lumen extending therethrough, and having a proximal end and a distal end;

a forceps assembly coupled to the distal end of said body portion, and including a pair of forceps;

control wire means having proximal and distal ends, and extending through the lumen is said body portion and coupled at its distal end to a said forceps assembly;

control wire displacing means carried by said handle and secured to the proximal end of said control wire means and movable between first and second positions for respectively moving said control wire means between a forceps open position and a forceps closed position;

said control wire means including an elongated metal rod having at least three portions including a proximal portion having a proximal end secured to said wire displacing means, a distal portion having a distal end secured to said forceps assembly and an intermediate portion located intermediate said proximal and said distal portions;

said proximal portion being of greater length than either said intermediate or distal portions;

said proximal portion being of greater diameter than said intermediate portion and wherein said intermediate portion has a diameter greater than that of said distal portion;

first and second tapered portions each having a taper which tapers inwardly in the distal direction; and

said first tapered portion being intermediate said distal portion and said intermediate portion, and said second tapered portion being intermediate said intermediate portion and said proximal portion.

VOL 1155 ISS 1 OC 5 1993 UMI

5,250,074

SURGICAL INSTRUMENT ASSEMBLY AND ASSOCIATED TECHNIQUE

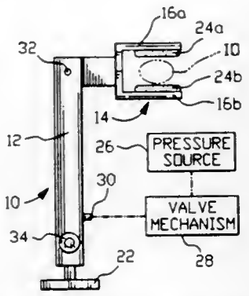
Peter J. Wilk, 185 West End Ave., New York, N.Y. 10023, and Jonathan Tiefenbrun, 62 Country Rd., Mamaroneck, N.Y. 10543

Filed Jul. 14, 1992, Ser. No. 914,160

The portion of the term of this patent subsequent to Aug. 17, 2010, has been disclaimed.

Int. Cl.[5] A61B *17/28*

U.S. Cl. 606—207 16 Claims



1. A surgical instrument assembly comprising:

an elongate member provided at a distal end with a clamping member having a pair of opposed jaws each including an elongate substantially linear clamping arm extending parallel to a longitudinal axis of said elongate member; and

actuator means mounted to said elongate member and operatively connected to said jaws for alternately opening and closing said jaws so that the arms of said jaws move alternately away and towards one another in a direction perpendicular to said axis.

5,250,075

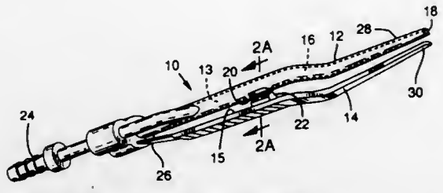
BAYONET SUCKER FORCEPS

Behnam Badie, 11140 Rose Ave. #202, Los Angeles, Calif. 90034

Filed Sep. 2, 1992, Ser. No. 939,949

Int. Cl.[5] A61B *17/32*

U.S. Cl. 606—207 15 Claims



1. A surgical sucker forceps comprising:

first and second elongated members each having a first end and a rearward portion and an inward facing side, each elongated member having a distal tip at the first end thereof;

means for movably interconnecting the first member to the second member so that the tips are juxtaposed for movement between spaced apart and clamping positions;

a channel extending within the first member from a suction orifice at the tip of the first member to a suction adapter;

means defining a bypass port in a sidewall of the first member for admitting ambient air to the channel, the bypass port positioned on the inward facing side of the first member between the suction orifice and the suction adapter; and

a suction control plug on the inward facing side of the second member juxtaposed to the bypass port for selectably obstructing the bypass port to reduce the ambient air admitted to the channel to control suction through the suction orifice when the tips of the elongated members are in the clamping position.

5,250,076

USE OF MONOCARBOXYLIC-ACID POLYOXYALKYLESTER SULFONATES AS LOW-FOAM TEXTILE CONDITIONING AGENT

Ansgar Behler, Bottrop; Bernd Fabry, Korschenbroich; Bernd Wahle, Kaarst, and Hildegard von Delden, Hilden, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

PCT No. PCT/EP90/00012, § 371 Date Jul. 11, 1991, § 102(e) Date Jul. 11, 1991, PCT Pub. No. WO90/08181, PCT Pub. Date Jul. 26, 1990

PCT Filed Jan. 4, 1990, Ser. No. 721,585

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1989, 3900699

Int. Cl.[5] D06L *3/00*

U.S. Cl. 8—111 14 Claims

1. An aqueous alkaline bleaching composition for textile fabrics or yarns, said bleaching composition comprising per liter from 10 to 100 ml of 35% by weight hydrogen peroxide, from 5 to 20 g of bases, from 5 to 50 of stabilizers, from 0.1 to 1.0 g of magnesium salts, from 0.5 to 10 g of sequestering agents, and from 0.3 to 30 g, based on active substance, of alkali, ammonium, or amine salts of carboxylic acid polyoxyalkyl ester sulfonic acids prepared by reaction of monounsaturated monocarboxylic acid polyoxyalkyl esters corresponding to the following general formula:

$$C_mH_{2m-1}-\overset{O}{\overset{\|}{C}}-(OC_nH_{2n})_x-OR,$$

in which R is a C_{1-22} alkyl radical or a C_{3-22} alkenyl radical, m is a number of 10 to 21, n is independently selected for each OC_nH_{2n} group from the number 2 and the number 3, and x is a number from 1 to 20, with sulfur trioxide and subsequent reaction of the sulfonated monocarboxylic acid polyoxyalkyl esters obtained with aqueous alkalis.

5,250,077

SILK FIBER HAVING GOOD ABRASION RESISTANCE AND GOOD LIGHT RESISTANCE AND METHODS FOR THE PREPARATION THEREOF

Toshikazu Fuse, Nagahama; Atsushi Yamamoto, Hikone, and Junji Sano, Amagasaki, all of Japan, assignors to Kanebo Co., Ltd., Tokyo, Japan

Division of Ser. No. 186,846, Apr. 27, 1988, Pat. No. 4,929,248. This application May 1, 1990, Ser. No. 517,180

Claims priority, application Japan, Apr. 28, 1987, 62-103199; Feb. 19, 1988, 63-35126

The portion of the term of this patent subsequent to May 29, 2007, has been disclaimed.

Int. Cl.[5] D06M *11/00, 13/00, 15/00*

U.S. Cl. 8—128.1 3 Claims



1. A method of preparing a silk fiber crosslinked with an epoxy compound having at least two epoxy groups said process comprising the steps of:

(1) applying to a silk fiber an aqueous processing liquid containing a water-soluble epoxy compound having at least two epoxy groups and a catalyst selected from a sodium or potassium salt of sulfuric acid, hydrochloric acid, nitric acid, thiocyanic acid or thiosulfuric acid; a sodium or potassium salt of tartaric acid or citric acid; ethylenediamine, diethylenetriamine, triethylenetetramine, dimethylaminopropylamine, m-phenylenediamine, 2,4,6-tris(dimethylaminomethyl)phenol, 2-methylimidazole, dimethylaniline and magnesium chloride; and thereafter

(2) allowing the fiber to stand at 10° C. to 40° C. while preventing transpiration of the water, wherein the aqueous solution of the catalyst alone without the epoxy compound has a pH of less than 11 and the processing liquid containing the water-soluble epoxy compound and the catalyst has a pH of at least 9 up to a pH of 12, wherein the solubility of the silk fiber so prepared is at most 30% by weight when the silk fiber is soaked in an aqueous 5 wt. % sodium hydroxide solution at a temperature of 65° C. for 60 minutes, and dyeing depth, K/S, at 520 nm with 9% owf. of a red reactive dye, Color Index Reactive Red 63 at the temperature of 60° C. for 60 minutes is at most 7.

5,250,078

PROCESS FOR DYEING HYDROPHOBIC TEXTILE MATERIAL WITH DISPERSE DYES FROM SUPERCRITICAL CO_2: REDUCING THE PRESSURE IN STAGES

Wolfgang Saus, Grevenbroich; Dierk Knittel, Krefeld; Eckhard Schollmeyer, Kempen, and Hans-Jürgen Buschmann, Krefeld, all of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 12, 1992, Ser. No. 881,588

Claims priority, application Switzerland, May 17, 1991, 1475/91

Int. Cl.[5] D06P *1/90, 3/54, 5/20*

U.S. Cl. 8—475 20 Claims

1. A process for dyeing a hydrophobic textile material with a disperse dye which comprises heating the textile material and the disperse dye in supercritical carbon dioxide under a pressure of 73 to 400 bar to a temperature in the range from 80° to 300° C., and subsequently lowering the pressure and the temperature to below the critical pressure and the critical temperature, in which process the pressure reduction is carried out in a number of steps.

5,250,079

PROCESS FOR THE TREATMENT OF POLYAMIDE OR LEATHER SUBSTRATES WITH SULPHO GROUP-CONTAINING AROMATIC COMPOUNDS, COMPOSITIONS CONTAINING SUCH COMPOUNDS AND THEIR PRODUCTION

Hans-Peter Baumann, Ettingen, Switzerland, assignor to Sandoz Ltd., Basle, Switzerland

Continuation of Ser. No. 652,812, Feb. 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 572,520, Aug. 23, 1990, Pat. No. 5,207,802. This application Aug. 7, 1992, Ser. No. 926,878

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1989, 3928170; Feb. 10, 1990, 4004101; Aug. 20, 1990, 4026255

Int. Cl.[5] C14C *3/20;* C07C *309/36;* D06M *101/02;* D06P *3/04*

U.S. Cl. 8—557 35 Claims

1. A process for the treatment of fibrous material made of synthetic polyamide or leather which comprises carrying out said treatment from an aqueous medium in the presence of an application assistant which is a composition (P) comprising a mixture of

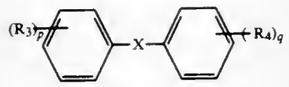
(a) a sulphonation product of a compound of formula

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in which
R_1 signifies C_{1-4}-alkyl and
R_2 signifies hydrogen or C_{1-4}-alkyl,
or a mixture of compounds of formula (I) and
(b) a sulphonation product of a compound of formula

(II)



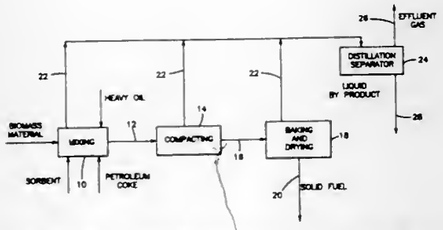
in which
each of R_3 and R_4, independently, signifies C_{1-4}-alkyl, X signifies oxygen, sulphur or the direct bond and
each of p and q, independently, signifies 0, 1 or 2, or a mixture of compounds of formula (II)
wherein (a) and (b) have a degree of sulphonation of, on average, 0.8 to 1.2 sulpho groups per molecule of compounds of formulae (I) and II and are optionally at least partially in salt form.

5,250,080

PROCESS FOR MANUFACTURING A SOLID FUEL

Ramsay Michelena; Maria M. Pérez, both of Caracus; Alejandro Requena, El Cementerio, and George Pinto, Caracas, all of Venezuela, assignors to Corpoven, S.A., Caracas, Venezuela

Filed Oct. 13, 1992, Ser. No. 959,545
Int. Cl.[5] C10L *5/16*
U.S. Cl. 44—575 **17 Claims**



1. A process for manufacturing a solid fuel, comprising the steps of:
mixing a biomass, a heavy hydrocarbon having an API gravity at 60° C. of between about 8 to 12 and a sulfur sorbent to form a hydrocarbon-biomass slurry, said biomass being characterized by a particle size and particle size distribution of about 50% between about 250–2000 μm and about 50% less than about 250 μm;
compacting said slurry to form a solid fuel agglomerate; and
backing said agglomerate to form a solid fuel briquette having a maximum resistance to compression of at least about 22 kg/cm^2.

5,250,081

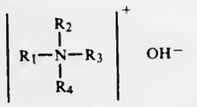
SMOKE REDUCING ADDITIVE FOR TWO-CYCLE ENGINE LUBRICANT-FUEL MIXTURE COMPRISING THE HOFMANN DECOMPOSITION PRODUCTS OF A QUATERNARY AMMONIUM HYDROXIDE

Jacob J. Habeeb, Westfield, N.J., and Christopher J. May, Sarnia, Canada, assignors to Exxon Research & Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 634,836, Dec. 27, 1990, abandoned. This application Aug. 6, 1991, Ser. No. 926,472
Int. Cl.[5] C10L *1/22*
U.S. Cl. 44—422 **9 Claims**

1. A process for reducing smoke emitted from a two-cycle engine which comprises:
(1) mixing a distillate fuel with from about 1 to about 3 vol. % of a lubricating oil basestock to produce a fuel-oil mixture
(2) heating a quaternary ammonium hydroxide having the general formula:

(I)



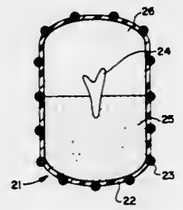
wherein R_1 is a hydrocarbon radical or a hydroxy terminated radical having from 1 to 24 carbon atoms, R_2 is a hydrocarbon radical having from 1 to 24 carbon atoms, and R_3 and R_4 are hydrocarbon radicals having from 4 to 24 carbon atoms, wherein R_1, R_2, R_3, or R_4 optionally contains a nitrogen atom, an oxygen atom, a sulfur atom or mixtures thereof, or a mixture of quaternary ammonium hydroxide having the general formula (I) to a temperature sufficient to decompose said quarternary ammonium hydroxide to the Hofmann decomposition products thereof,
(3) adding to the fuel-oil mixture from about 0.1 to about 5 wt. % based on weight of lubricant in the fuel-oil mixture of an additive comprising the Hofmann decomposition products of the quarternary ammonium hydroxide, and
(4) operating the two-cycle engine with the additive containing fuel-oil mixture.

5,250,082

ENCAPSULATED STRUCTURE FOR PLANT INITIATE MATERIAL

Whei-Lan Teng; Yann-Jiun Liu; Chiao-Po Lin, and Tai-Sen Soong, all of Taipei, Taiwan, assignors to Development Center for Biotechnology, Taipei, Taiwan

Continuation-in-part of Ser. No. 678,057, Jan. 4, 1991, abandoned. This application Sep. 17, 1992, Ser. No. 946,095
Int. Cl.[5] A01C *1/06*; A01H *4/00*
U.S. Cl. 47—57.6 **11 Claims**



1. An encapsulated structure of plant initiate material comprising:
a non-toxic waterproof membrane coating;
a hydro-gel encapsulated plant initiate material covered in said waterproof membrane coating; and
water swellable polymeric material particles partly embedded in said waterproof membrane coating such that said particles do not penetrate through the membrane coating.

5,250,083

PROCESS FOR PRODUCTION DESULFURIZED OF SYNTHESIS GAS

James K. Wolfenbarger, Torrance, Calif., and Mitri S. Najjar, Wappingers Falls, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Apr. 30, 1992, Ser. No. 875,950
Int. Cl.[5] C10J *3/46*
U.S. Cl. 48—197 R **10 Claims**

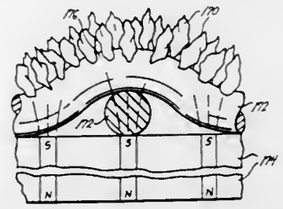
1. A process for the partial oxidation of a sulfur- and silicate-containing carbonaceous fuel to produce a synthesis gas with reduced sulfur content which comprises partially oxidizing said fuel at a temperature in the range of 1900°–2600° F. in the presence of a temperature moderator, an oxygen-containing gas and a sulfur capture additive which comprises a calcium-containing compound portion selected from the group consisting of calcium oxides, calcium carbonates, calcium hydroxide, calcium acetate, and mixtures thereof, wherein said calcium-containing compound portion is present in a concentration of 0.5–10.0 weight percent based on the weight of said carbonaceous fuel, a sodium-containing compound portion selected from the group consisting of sodium oxides, sodium carbonates, organic sodium-containing compounds, sodium silicates, sodium aluminum silicates and mixtures thereof, wherein said sodium-containing compound portion is present in a concentration of 0.1–4.0 weight percent based on the weight of said carbonaceous fuel, and a fluoride-containing compound portion sodium fluoride, potassium fluoride, calcium fluoride, and mixtures thereof, wherein said fluoride-containing compound portion is present in a concentration of 0.05–3.0 weight percent based on the weight of said carbonaceous fuel, to sulfur content and a molten slag which comprises a sulfur-containing sodium-calcium-fluoride silicate phase and a sodium-calcium sulfide phase.

5,250,084

ABRASIVE TOOLS AND PROCESS OF MANUFACTURE

Peter V. Lansell, and Ralph D. Collins, both of Melbourne, Australia, assignors to C Four Pty. Ltd., Preston, Australia

Filed Jul. 28, 1992, Ser. No. 920,940
Int. Cl.[5] B24D *3/00*
U.S. Cl. 51—293 **16 Claims**



1. A process for retaining abrasive particles to a substrate having an electrically conductive surface including:
coating the abrasive particles with an electrically conductive magnetic material;
controllably impressing a magnetic field through the electrically conductive surface of the substrate so that lines of magnetic flux extend therefrom
applying the abrasive particles coated with electrically conductive magnetic material to the electrically conductive surface of the substrate so that the abrasive particles are retained by the lines of magnetic flux extending from the electrically conductive surface; and
electroplating the electrically conductive surface of the substrate and the abrasive particles coated with electrically conductive magnetic material until sufficient plating material is deposited to retain the abrasive particles coated with electrically conductive magnetic material to the substrate in the orientation as established by the lines of magnetic flux.

5,250,085

FLEXIBLE BONDED ABRASIVE ARTICLES, METHODS OF PRODUCTION AND USE

Scott M. Mevissen, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 15, 1993, Ser. No. 4,947
Int. Cl.[5] C09K *3/14*
U.S. Cl. 51—298 **15 Claims**

1. A bonded abrasive article comprising a plurality of abrasive particles dispersed and adhered within a cured polyurethane resin, at least a portion of said abrasive particles adhered within said cured polyurethane resin by a silane coupling agent.

5,250,086

MULTI-LAYER METAL COATED DIAMOND ABRASIVES FOR SINTERED METAL BONDED TOOLS

Roger McEachron, Worthington; Edward J. Connors, Westerville, and David E. Slutz, Columbus, all of Ohio, assignors to General Electric Company, Worthington, Ohio

Filed Mar. 25, 1992, Ser. No. 857,132
Int. Cl.[5] B24D *3/02*
U.S. Cl. 51—309 **24 Claims**

1. An abrasive particle suitable for use in a sintered metal bonded abrasive tool comprising a diamond abrasive having a multi-layer coating consisting essentially of one homogeneous carbide forming metal primary layer deposited by chemical vapor deposition, or packed salt deposition and a non-carbide forming metal secondary layer deposited by electroless or electrolytic deposition.

5,250,087

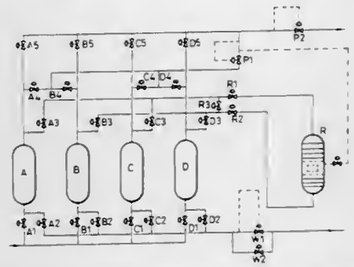
Patent Not Issued For This Number

5,250,088

GAS SEPARATION PROCESS

Toshio Yamaguchi, and Yasushi Kobayashi, both of Chiba, Japan, assignors to Toyo Engineering Corporation, Tokyo, Japan

Filed May 5, 1992, Ser. No. 878,569
Claims priority, application Japan, May 13, 1991, 3-135359
Int. Cl.[5] B01D *53/04*
U.S. Cl. 95—98 **4 Claims**



1. A process for separating gaseous impurities from a gaseous mixture by using at least three adsorption columns containing adsorbents and a holding column of the feed-in/feed-out sequence retaining type having a capacity insufficient to hold a purged gas in its entirety, said process including repeating alternate, cyclic adsorption and desorption steps with said at least three adsorption columns and comprising the following steps:
a) feeding the gaseous mixture into a first adsorption column through an inlet thereof, discharging the purified gas through an outlet of the first adsorption column, and terminating the feeding and discharging before the adsor-

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bent in the first adsorption column becomes spent and the purity of the purified gas falls below a target level;

b) communicating an outlet of another adsorption column, whose adsorbent has been regenerated, with the outlet of the first adsorption column already subjected to step a, so that both adsorption columns equalize in pressure, and then eliminating the communication;

c) communicating the outlet of the first adsorption column, which has been subjected to step b, with a first end of the holding column, which contains a gas received as a result of communication of a second end of the holding column with at least one outlet of other adsorption columns having been subjected to steps a and b, so that the gas inside the first adsorption column is allowed to enter the holding column and, during the entrance of the gas from the first adsorption column into the holding column, maintaining the second end of the holding column in communication with an outlet of a second adsorption column already subjected to steps a, b and c and also to the below-described step d, so that the second adsorption column is purged with gas forced out of the holding column by the gas flow into the holding column and, until the breakthrough of at least one gaseous impurity adsorbed on the adsorbent bed of the first adsorption column begins to occur in the gas flow from the first adsorption column, the gas in the first adsorption column being allowed to enter the second adsorption column through the outlet thereof, either by way of the holding column or directly, to purge the second adsorption column;

d) closing a purge valve of the second adsorption column so that the second adsorption column and the first adsorption column communicate with each other and equalize in pressure, and then eliminating the communication;

e) closing the outlet of the first adsorption column already subjected to step c or d and depressurizing the first adsorption column to a lowest pressure by a purge valve provided on the side of the inlet of the first adsorption column so that the at least one gaseous impurity adsorbed on the adsorbent bed of the first adsorption column is desorbed and eliminated;

f) communicating an outlet of a third adsorption column, which has been subjected to steps a and b, with the first end of the holding column so that the gas inside the third adsorption column is allowed to enter the holding column until the breakthrough of at least one gaseous impurity adsorbed on the adsorbent bed of the third adsorption column begins to occur in the gas flow from the third adsorption column, said gas entering the holding column optionally containing a portion of the purified gas and, during the entrance of the gas from the first adsorption column into the holding column, maintaining the second end of the holding column in communication with the outlet of the first adsorption column already subjected to step e, whereby the first adsorption column is purged with gas forced out of the holding column by the gas flow into the holding column, the gas flow into the holding column optionally containing a portion of the purified gas and, until the breakthrough of the at least one gaseous impurity adsorbed on the adsorbent bed of the third adsorption column begins to occur in the gas, the gas in the third adsorption column being allowed to enter the first adsorption column by way of the holding column or directly, to purge the first adsorption column;

g) closing the purge valve of the first adsorption column, so that the first adsorption column and the third adsorption column communicate with each other and equalize in pressure, and then eliminating the communication;

h) communicating the outlet of at least one other adsorption column, which has been subjected to step a or steps a and b, with the outlet of the first adsorption column, which has been subjected to step f or g, while closing both an inlet of said at least one other adsorption column and the inlet of the first adsorption column, so that the gas inside said at least one other adsorption column is allowed to enter the first adsorption column, said gas entering the first adsorption column optionally containing a portion of the purified gas, to subject said at least one other adsorption column and the first adsorption column to at least one pressure equalizing operation, and then eliminating the communication; and

i) causing a gas of the same quality as the purified gas to flow into the first adsorption column, which has been subjected to step h, through the outlet thereof, while closing the inlet thereof, so that the pressure of the first adsorption column equalizes with that of the gas of the same quality as the purified gas, and then closing the outlet of the first adsorption column.

5,250,089

PROCESS FOR REMOVING HYDROGEN SULFIDE FROM HYDROCARBON GASES USING A COGELLED HYDRATED ZINC OXIDE-HYDRATED SILICA SORBENT

Gary A. Delzer, and Dennis R. Kidd, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 665,831, Mar. 7, 1991, Pat. No. 5,130,288.
This application May 12, 1992, Ser. No. 864,097
Int. Cl.[5] B01D *53/02*
U.S. Cl. 95—136 **5 Claims**

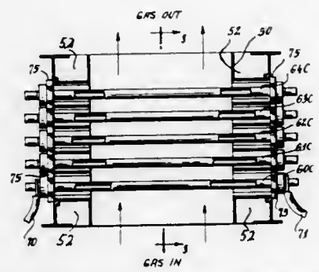
1. A process for removing hydrogen sulfide from a hydrogen sulfide contaminated light hydrocarbon gas stream wherein said light hydrocarbon gas comprises a compound selected from the group consisting of methane, ethane, and natural gas, said process comprises the step of contacting said hydrogen sulfide contaminated light hydrocarbon gas stream at a temperature in the range of from about 150° C. to about 600° C. with a sorbent composition comprising a co-gelled mixture comprising hydrated zinc oxide and hydrated silica, having been prepared by mixing said hydrated zinc oxide and said hydrated silica followed by adding to the thus formed mixture a suitable base, to thereby remove hydrogen sulfide from said hydrogen sulfide contaminated light hydrocarbon gas stream.

5,250,090

SEPARATION DEVICES

Christian L. Vandervort, Falmouth, and Paul G. LaHaye, Kennebunk, both of Me., assignors to HPS Merrimack, Inc., Portland, Me.

Filed Jun. 1, 1992, Ser. No. 890,804
Int. Cl.[5] B01D *46/04*
U.S. Cl. 95—272 **19 Claims**



1. A slag screen for removing slag from an slag-bearing stream of gas comprising

a multiplicity of rods having collecting surfaces made from material which is tolerant to the high temperature and other ambient conditions to which they will be exposed, said rods

being arrayed so as to form an impact separator having tortuous paths for the passage of a slag-bearing stream of gas therethrough whereby slag entrained in said gas impinges upon and sticks to said collecting surfaces of the rods, and

being adapted for their collection surfaces to be heated to temperatures sufficient to cause slag accumulated on said collecting surfaces of said rods to loose its adhesion thereto and to separate therefrom,

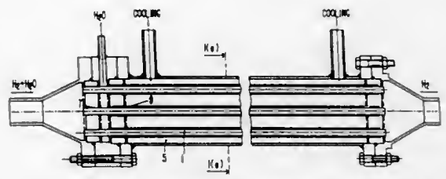
and energy means for heating said collection surfaces of said rods to temperatures sufficient to cause slag accumulated on said collecting surfaces to loose its adhesion thereto and to separate therefrom.

5,250,091

APPARATUS FOR SEPARATING A GAS-WATER VAPOR MIXTURE

Harald Nigsch, Weingarten, and Friedhelm Wiederspohn, Mettmann, both of Fed. Rep. of Germany, assignors to Dornier GmbH, Fed. Rep. of Germany

Filed Mar. 5, 1992, Ser. No. 846,340
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1991, 4106895
Int. Cl.[5] B01D *19/00, 71/02*
U.S. Cl. 55—269 **8 Claims**



1. Apparatus for separation of a mixture of water vapor and a gas, which operates effectively in a weightless environment, comprising:

a cooling liquid space for circulation of a cooling liquid therein;

at least one duct through which said mixture can flow, said duct being arranged within said cooling liquid space and having an interior surface formed by a hydrophilic fine - pored membrane;

an inlet, connected to said duct, for providing the mixture of water vapor and gas to said duct;

at least one separation water space arranged in said cooling liquid space adjacent to said at least one duct, whereby water vapor condensed in said at least one duct can permeate through said membrane into said separation water space; and

a separation water outlet, connected to said separation water space, for receiving water from said separation water space.

5,250,092

EXHAUST APPARATUS FOR EPITAXIAL GROWTH SYSTEM

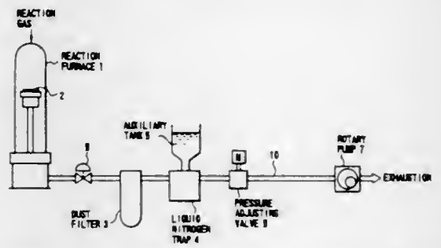
Tomoiku Nakano, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jul. 30, 1992, Ser. No. 922,687
Claims priority, application Japan, Aug. 22, 1991, 3-066644
Int. Cl.[5] B01D *53/04*
U.S. Cl. 96—136 **5 Claims**

1. An exhaust apparatus for an epitaxial growth system, comprising:

an exhaust pipe for performing exhaustion of a reaction furnace in which a reaction gas is supplied to grow a thin film on a semiconductor wafer;

a dust filter, arranged in said exhaust pipe, for trapping reaction products which have not been used for growing the thin film on said semiconductor wafer; and



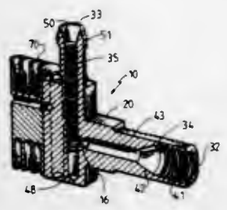
a liquid nitrogen trap arranged in said exhaust pipe in series with said dust filter.

5,250,093

WATER MANAGEMENT DEVICE FOR GAS CHROMATOGRAPHY SAMPLE CONCENTRATION

Kenneth K. Jiang, and Bernie B. Bernard, both of College Station, Tex., assignors to O. I. Corporation, College Station, Tex.

Filed Mar. 9, 1992, Ser. No. 848,395
Int. Cl.[5] B01D *15/08*
U.S. Cl. 96—102 **7 Claims**



1. An apparatus for removing water vapor from the analyte slug in a sample concentration system for gas chromatography, comprising:

a. a body positioned in the flow path between a trap and gas chromatograph;

b. a passage extending through said body, said passage having a first section and a second section intersecting the first section, the first section having an outlet communicating with the second section, the outlet substantially tangential to the second section and having a smaller diameter than the second section;

c. at least a portion of the second section of said passage having a non-smooth surface; and

d. a reservoir adjoining the second section of the passage for drainage of water vapor therein.

5,250,094

CERAMIC FILTER CONSTRUCTION AND METHOD

H. Young Chung, Bloomington; Keh B. Dema, Burnsville, and Marty A. Barris, Lakeville, all of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Mar. 16, 1992, Ser. No. 851,327
Int. Cl.[5] B01D *27/06*
U.S. Cl. 55—523 **13 Claims**

11. A filter element comprising:

(a) an extension of pleated fiber filter media comprising by weight of total fiber material present:

(i) 50–98% ceramic fiber material;

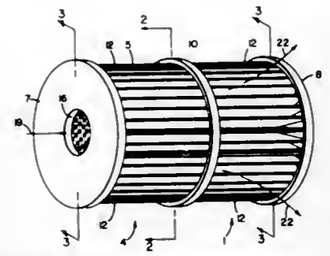
(ii) 10–50% glass fiber material; and,

(iii) 2–50% metallic fiber material;

(b) said ceramic fiber material, said glass fiber material and said metallic fiber material being mixed together in said

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pleated fiber media such that individual fibers of said ceramic fiber material, said glass fiber material and said



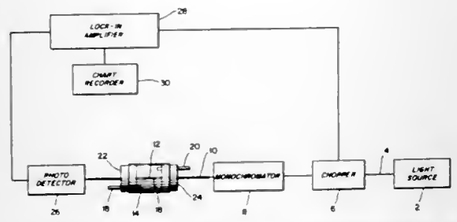
metallic fiber material are dispersed throughout said fiber media.

5,250,095

METHOD FOR MAKING POROUS GLASS OPTICAL FIBER SENSOR

George Sigel, Jr., Oldwick; Mahmoud Shahriari, East Brunswick, and Quan Zhou, Piscataway, all of N.J., assignors to Rutgers University, New Brunswick, N.J.

Filed Aug. 16, 1988, Ser. No. 232,760
Int. Cl.[5] C03C *15/00*
U.S. Cl. 65—2 **15 Claims**



1. A method for producing an optical fiber sensor, the method comprising the steps of:
first, constructing a glass optical fiber from a phase separable glass;
second, heating the glass optical fiber to induce phase separation;
third, leaching at least some of the glass phase from a portion of the fiber to form a segment having an interconnected porosity;
fourth, locating the glass optical fiber to receive light from means for communicating the light through the optical fiber and through the segment having an interconnected porosity and to convey the light to means for sensing change in the light caused by a substance permeating the interconnected porosity to permeate an optical fiber sensor; and
wherein said method is devoid of a step of removing the porosity from the optical fiber.

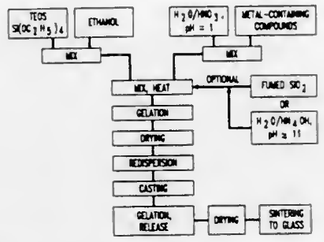
5,250,096

SOL-GEL METHOD OF MAKING MULTICOMPONENT GLASS

Allan J. Bruce, Westfield, and Eliezer M. Rabinovich, Berkeley Heights, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 7, 1992, Ser. No. 864,989
Int. Cl.[5] C03B *37/01*
U.S. Cl. 65—3.11 **15 Claims**

1. Method of making an article that comprises a quantity of high silica glass, the method comprising
a) forming silica-containing particles by a process that comprises forming and hydrolyzing a first sol that comprises alcohol and a silicon-containing alkoxide;
b) forming a silica-containing second sol by a process that comprises dispersing said particles in an aqueous liquid;
c) gelling the second sol to form a silica-containing second gel, and drying the second gel such that a porous material results; and
d) heat treating said porous material such that the quantity of silica-containing glass is produced from the porous material;



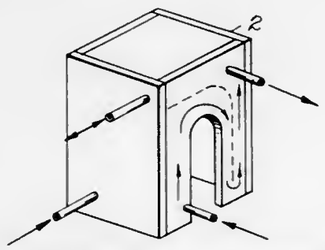
CHARACTERIZED IN THAT
step a) comprises forming the first sol such that it further comprises one or more elements selected from Li, Na, K, Rb, Cs, Ti and Zr, and optionally additionally comprises Al, the amount of the element or elements and of the optional Al in the first sol selected such that the resulting high silica glass comprises 85–99 mole % SiO_2, 1–12 mole % oxide of said element or elements, 0–6 mole % Al oxide, and optionally at most 2.5 mole % of oxide of elements other than Si, Li, Na, K, Rb, Cs, Ti, Zr and Al.

5,250,097

METHOD FOR PRODUCING GLASS SOOT DEPOSIT

Tatsuhiko Saitoh, and Toshio Danzuka, both of Yokohama, Japan, assignors to Sumitomo Electric Industries Ltd., Osaka, Japan

Filed Jun. 5, 1992, Ser. No. 894,426
Claims priority, application Japan, Jun. 5, 1991, 3-134223
Int. Cl.[5] C03B *37/018*
U.S. Cl. 65—3.12 **4 Claims**



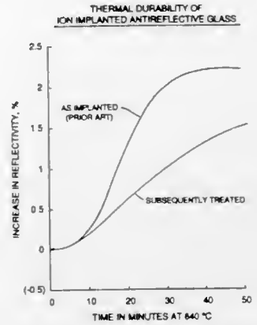
1. A method for producing a glass soot deposit, comprising the steps of:
blowing a gaseous glass-forming raw material together with a fuel gas from a combustion burner in a closed muffle;
hydrolyzing said glass-forming raw material in a flame to generate glass soot; and
depositing said glass soot on a tip end or a peripheral surface of a starting member which is rotated to form a glass soot deposit, wherein a lowest surface temperature of said muffle is maintained at 50° C. or higher and an average surface temperature of said muffle is maintained in a range between 50° C. and 150° C.

5,250,098

THERMALLY DURABLE ANTI-REFLECTIVE GLASS

Dennis R. Platts, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 27, 1992, Ser. No. 919,319
Int. Cl.[5] C03C *21/00*
U.S. Cl. 65—30.1 **13 Claims**



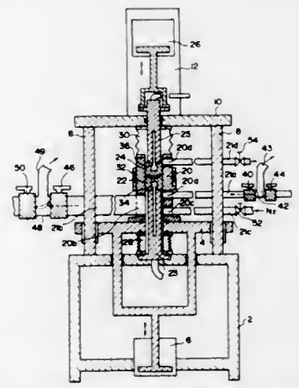
1. A process for preparing thermally durable anti-reflective glass, comprising the steps of:
A) injecting element ions into a surface region of a glass sheet by ion implantation; and
B) treating the surface of the glass sheet with a compound selected from the group consisting of acids and acid salts, to remove excess alkali from the surface of the glass sheet.

5,250,099

GLASS MOLDING PROCESS AND MOLDING APPARATUS FOR THE SAME

Hiroyuki Kubo; Takeshi Nomura; Hiroe Tanaka, all of Tokyo; Nobukazu Yogo, Yokohama, and Bunryo Sato, Hachioji, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 29, 1991, Ser. No. 677,424
Claims priority, application Japan, Mar. 29, 1990, 2-78896; Nov. 9, 1990, 2-302695; Mar. 28, 1991, 3-087264
Int. Cl.[5] C03B *23/00*
U.S. Cl. 65—102 **10 Claims**



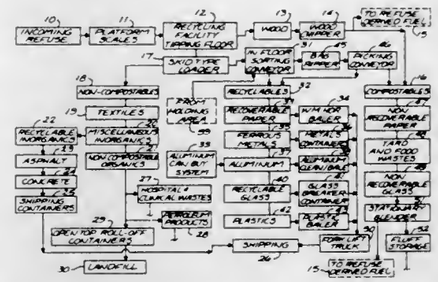
1. A glass molding process for manufacturing a glass preform into a glass molded product, comprising the steps of:
preparing a mold for pressing the glass preform, wherein the mold comprises an upper mold member and a lower mold member each having a cavity surface for forming the glass molded product, and a frame mold member which is movable against the upper and lower mold member and incorporates a heating means;
introducing the glass preform, wherein the upper mold member is raised and the glass preform is placed on the cavity surface of the lower mold member;
heating and pressing the glass preform, wherein the frame mold member is moved so as to produce a proximal relationship between the heating means and the glass preform, thereby heating the glass preform to a temperature at which the glass preform is softened, and the glass preform is pressed by lowering the upper mold member to shape the glass molded product;
separating the glass molded product from the heating means by raising the upper mold member and moving the frame mold to allow the taking out of the glass molded product.

5,250,100

SOLID WASTE RECOVERY SYSTEM

Donnie L. Armbristor, Claremore, Okla., assignor to World Life Resource, Inc., Tulsa, Okla.

Filed Feb. 6, 1989, Ser. No. 306,094
Int. Cl.[5] C05F *9/04, 17/00*
U.S. Cl. 71—9 **17 Claims**



1. A combined physical and chemical process for recycling of solid waste into recoverable resources comprising the steps, in sequence, of:
separating said solid waste into non-compostable, recyclable, and compostable items,
said step of separating said solid waste including removing any large wood items present and sending them to a wood chipper and mixing said wood chips with other compostables for conversion into compost,
separating and removing recoverable cardboard and paper items from said solid waste,
blending non-recoverable cardboard and paper items with said compostable material for grinding into fine particles for processing into compost,
blending said mixture of compostable items, wood chips, and non-recoverable paper and cardboard items and grinding the blend into fine particles of compostable material,
placing said fine particles into transport containers and sending them to a compost pad configured such that water or residue from composting material will run off into a holding pond and having a protective covering to prevent seeping or leaching of liquid residue into the earth or water supply,
dumping said fine particles from said transport containers onto a compost pad in windows,
mixing said fine particles of compostable material with bacteria, chemicals or other organic matter operable to initiate composting by initiating the decaying process of said fine particles of compostable material and of the organic substances contained therein,
curing said decayed compost material by
pumping water onto said compost windrows,
manipulating and blending said windrows of fine particle material until consistent in texture,

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subjecting samples of said blended materials to a carbon:nitrogen ratio test, and

if the ratio is determined to be an unsatisfactory percentage, adding additional chemicals to said blended materials to obtain a predetermined proper ratio,

checking and recording the temperature of said blended materials,

checking and recording the moisture of said blended materials and adjusting the moisture if required, p1 after said blended materials have been determined to have the predetermined carbon:nitrogen ratio, temperature, moisture, and chemical or bacterial content, manipulating said blended materials again and allowing them to cure,

after curing, sifting and grading said cured compost material,

returning the coarser composted materials unsuitable for use as compost to said compost pad for re-composting, and

weighing, bagging, and sealing said sifted compost material for resale to appropriate markets suitable for use as compost or fertilizer.

5,250,101

PROCESS FOR THE PRODUCTION OF FINE POWDER

Toshio Hidaka; Takamasa Kawakami, and Satoru Makinose, all of Tsukuba, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Apr. 2, 1992, Ser. No. 862,218

Claims priority, application Japan, Apr. 8, 1991, 3-103165; Jul. 23, 1991, 3-206406; Jul. 23, 1991, 3-206409; Dec. 9, 1991, 3-324523; Dec. 9, 1991, 3-324524; Dec. 9, 1991, 3-324525; Dec. 9, 1991, 3-324538

Int. Cl.[5] B22F *9/24*

U.S. Cl. 75—362 **9 Claims**



1. A process for the production of a fine powder having a primary particle diameter of not more than 0.5 μm, an average secondary aggregate particle diameter of not more than 10 μm and a secondary aggregate particle specific surface area of 2 to 250 m^2/g, which comprises heating an organic acid metal salt in the presence of a sufficient amount of palladium to lower the thermal decomposition temperature thereof at a temperature elevation rate of 0.5° to 20° C./minute and thermally decomposing the organic acid metal salt in the presence of the palladium at a temperature range of not higher than 400° C.

5,250,102

PROCESS FOR THER MICROBIAL OXIDATION OF SULPHIDIC WASTES

Lienel J. Barnes, Ashford, and Andrew B. Suttie, Matlock Darley Dale, both of England, assignors to Shell Research Limited, London, United Kingdom

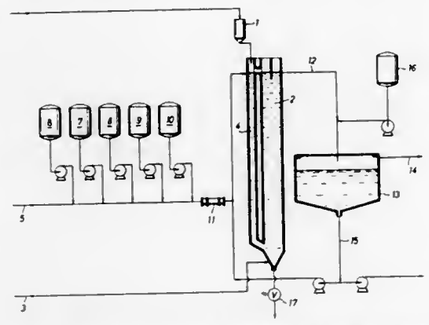
Filed Sep. 10, 1992, Ser. No. 942,918

Claims priority, application United Kingdom, Sep. 16, 1991, 9119772

Int. Cl.[5] C22B *11/04*

U.S. Cl. 75—710 **11 Claims**

1. A process for treating sulphidic material containing one or more heavy metals which comprises aerobic microbial oxidation of the sulphidic material with or without prior chemical oxidation in an aqueous suspension at a pH above 4 using a sulphur oxidizing micro-organism, thereby converting said



sulphidic material into soluble sulphate, at a pH sufficient to maintain most of the heavy metals present in an insoluble form.

5,250,103

AUTOMATIC MOLTEN METAL SUPPLYING DEVICE AND METHOD FOR SUPPLYING THE MOLTEN METAL

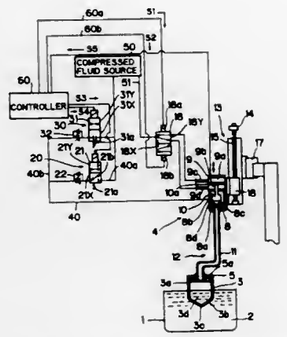
Noriyoshi Yamauchi, and Hitoshi Ishida, both of Fuchu, Japan, assignors to Ryobi Ltd., Hiroshima, Japan

Filed Feb. 27, 1992, Ser. No. 842,926

Claims priority, application Japan, Mar. 4, 1991, 3-062715

Int. Cl.[5] B22D *39/02*

U.S. Cl. 75—584 **14 Claims**



1. An automatic molten metal supplying device for automatically supplying a small volume of a molten metal in a holding furnace to an intended casing port, the small volume being in a range of from 5 to several hundred grams, the device comprising:

a ladle providing a molten metal accumulation space and having a lower portion formed with a molten metal intake/discharge port through which the molten metal is introduced into the accumulation space and the molten metal is poured into the casting port, the ladle having an upper portion;

opening/closing means connected to the upper portion of the ladle for selectively communicating the accumulation space with an atmosphere;

molten metal pressurizing mechanism connected to the opening/closing means for supplying pressurized fluid having a first pressure level higher than an atmosphere pressure into the accumulation space through the opening/closing means during casing for promoting discharge of the molten metal from the ladle; and

residual molten metal removing mechanism connected to the

opening/closing means for supplying pressurized fluid having a second pressure level higher than the first pressure level into the accumulation space through the opening/closing means after completion of the casting for removing residual molten metal suspended from the intake/discharge port in icicle form.

5,250,104

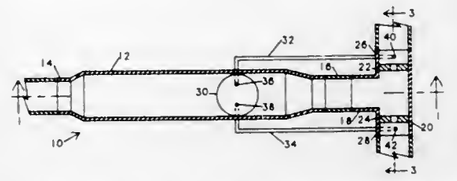
METHOD AND APPARATUS FOR CONTROLLING PHASE SPLITTING AT PIPE JUNCTIONS

Eric L. Berger, Bakersfield, Calif.; James R. Stoy, Missouri City, Tex.; Mark T. Rubel, and James L. G. Schrodt, both of Houston, Tex., assignors to Texco Inc., White Plains, N.Y.

Filed Oct. 16, 1992, Ser. No. 961,977

Int. Cl.[5] B01D *19/00*

U.S. Cl. 95—254 **8 Claims**



1. A method to assure equal steam quality in both outlet arms of a pipe junction, comprising the steps of:

providing a separator for separating the vapor and liquid phases upstream of a pipe junction with a vapor outlet of said separator connected to an inlet of the pipe junction and at least one conduit connecting a liquid outlet of said separator to each respective outlet arm of said pipe junction;

providing flow constriction means in each outlet arm of said pipe junction;

flowing wet steam into said separator wherein the vapor phase will travel substantially through to the pipe junction and the liquid phase will separate and fall under gravity into the bottom of said separator where it will flow through the liquid outlet and said at least one conduit to a point on each outlet arm of said pipe junction downstream of the flow constrictions due to the differential pressure created by the vapor phase as it flows past the flow constrictions such that the liquid flow rate in each outlet arm of said pipe junction resulting in nearly equal steam quality in each junction outlet.

2. An apparatus for assuring equal quality of wet steam in outlet arms of a pipe junction comprising:

separator means having an inlet connected to a steam flow pipe and a vapor outlet connected to an inlet of said pipe junction, said separator means facilitating separation of the wet steam into its liquid and vapor phases;

a liquid outlet in said separator means;

at least one by pass conduit connected between said liquid outlet and each outlet arm of said pipe junction; and

flow constriction means in each outlet arm of said pipe junction whereby said liquid and vapor phases are effectively separated before encountering said pipe junction and then recombined upon exiting the respective outlet arms of the pipe junction.

5,250,105

SELECTIVE PROCESS FOR PRINTING CIRCUIT BOARD MANUFACTURING

José M. G. Gomes, Loures, and Ana P. T. L. Rodrigues, Almada, both of Portugal, assignors to Eid-Empresa de Iovestigacao e Desenvolvimento de Electrónica S.A., Portugal

Filed Feb. 8, 1991, Ser. No. 653,342

Int. Cl.[5] B05D *3/10*; B01J *23/58*

U.S. Cl. 106—1.11 **4 Claims**

1. A catalyst for coating a non-metallic substrate with an electroless or electrolytic metal composition comprising a colloidal oxide of a Group VIII noble metal formed by hydrolysis of a Group VIII noble metal salt, in combination with:

(a) A lower molecular weight organic acid;

(b) A Group IA or Group IIA metal salt of a lower molecular weight organic acid or a halogen acid based on fluorine, chlorine or bromine; and optionally

(c) a non-ionic or anionic surfactant, nicotinic acid, coumarine, adenine, guanidine or hydrogen peroxide.

5,250,106

PROCESS FOR WATER-REPELLENT IMPREGNATION OF MASONRY

Michael Roth, Burghausen, Fed. Rep. of Germany, and Rosalia Bernbacher, Braunau am Inn, Austria, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Jun. 1, 1992, Ser. No. 891,144

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1991, 4119562

Int. Cl.[5] C09K *3/18*

U.S. Cl. 106—2 **12 Claims**

1. A process for imparting water repellency to masonry materials which comprises treating masonry materials which have been rendered alkaline, with a highly dispersed, water-diluted impregnating composition comprising (A1) an organosiloxane or (A2) an organosiloxane containing alkoxy groups or mixtures of (A1) and (A2) and (B) a water soluble organic or inorganic acid salt of an organopolysiloxane, which in addition to other organosiloxane units contains siloxane units which have monovalent SiC-bonded radicals containing basic nitrogen in amounts of at least 0.5% by weight of basic nitrogen, based on the weight of the organopolysiloxane.

5,250,107

WATER-FAST INK COMPOSITION AND METHOD FOR MAKING THE SAME

Steven J. Bares, Corvallis, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 31, 1991, Ser. No. 738,708

Int. Cl.[5] C09D *11/02*; C09B *45/38, 31/02*; C07C *245/00*

U.S. Cl. 106—20 R **20 Claims**

1. A method for manufacturing a water-fast ink composition comprising the steps of:

obtaining supply of a chemical dye comprising at least one functional group having at least one extractable hydrogen atom thereon; and

combining said chemical dye with an ammonium zirconium polymer salt in order to form a mixture, said chemical dye and said ammonium zirconium polymer salt in said mixture binding together to produce a cross-linked dye complex upon dehydration thereof.

5,250,108

COLOR DEVELOPER COMPOSITION, PROCESS FOR PREPARING AQUEOUS DISPERSION THEREOF AND PRESSURE SENSITIVE MANIFOLD SHEET USING THEREOF

Masato Tanaka, Nishinomiya; Tomoharu Shiozaki, Amagasaki; Shigeru Oda, and Toranosuke Saito, both of Ibaraki, all of Japan, assignors to Kanzaki Paper Manufacturing Co. Ltd., Tokyo and Sanko Kaihatsu Kagaku Kenkyusho, Osaka, both of Japan

Filed Apr. 1, 1991, Ser. No. 679,690

Claims priority, application Japan, Mar. 30, 1990, 2-86684; Jul. 31, 1990, 2-204677; Dec. 27, 1990, 2-408342

Int. Cl.[5] C09D *11/00*

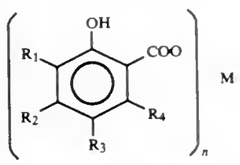
U.S. Cl. 106—21 A **9 Claims**

1. A color developer composition characterized in that the composition contains a color developer comprising as its main component a nucleus-substituted salicylic acid salt represented by the formula (1) given below, and at least one amide com-

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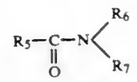
pound selected from the group consisting of the compounds represented by the formula (2) and formula (3) given below

Formula (1)



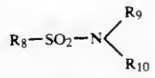
wherein R_1, R_2, R_3 and R_4 are each a hydrogen atom, halogen atom, alkyl having 1 to 15 carbon atoms, cycloalkyl, phenyl, nucleussubstituted phenyl, aralkyl or nucleus-substituted aralkyl, two of R_1, R_2, R_3 and R_4 adjacent to each other may be combined to form a ring, n is an integer of at least 1, and M is a polyvalent metal atom,

Formula (2)



wherein R_5 is alkyl having 1 to 17 carbon atoms or alkenyl having 2 to 17 carbon atoms, R_6 and R_7 are each alkyl having 1 to 8 carbon atoms or cyclohexyl,

Formula (3)



wherein R_8 is lower alkyl, or substituted or unsubstituted aryl, R_9 and R_{10} are each a hydrogen atom, substituted or unsubstituted alkyl having 1 to 12 carbon atoms, or cycloalkyl, and R_9 and R_{10} may form a morpholine ring or piperidine ring such that the compound of the formula (3) is N,N-dibutyltoluenesulfonamide, N,N-dioctylbenzenesulfonamide, N,N-dioctylmethanesulfonamide, N-oxtylxylenesulfonamide or N-(toluenesulfonyl)morpholine.

5,250,109

DERIVATIVES OF POLYOXYALKYLENEAMINES AS COSOLVENTS FOR AQUEOUS INK JET INKS

Dominic M. Chan, Wilmington, Del.; Howard Matrick, Highlands, N.J., and Glenn M. Russo, Mullica Hill, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 22, 1992, Ser. No. 994,841

Int. Cl.[5] C09D *11/02*

U.S. Cl. 106—22 H **18 Claims**

1. An aqueous ink jet ink composition comprising:

(a) an aqueous carrier medium;

(b) a colorant selected from the group consisting of a pigment dispersion and a dye; and

(c) a cosolvent having a solubility in water of at least 4.5% at 25° C., and which is selected from the group consisting of:

(1) Monocarboxamide, monosulfonamide, monourea and monothiourea derivatives of polyoxyalkylene monoamines having the following structure:

$$R—Y—NR'CHXCH_2(OCHXCH_2)_nOR''$$

wherein
R=—H or an alkyl group of 1–4 carbons;
R′=—H, an alkyl group of 1–3 carbons, or an alkyl group of 1–4 carbons containing one hydroxyl group;
X=—H or $—CH_3$ independently;
n=1–200;
R″=an alkyl group of 1–4 carbons; and
Y is a divalent connecting group of atoms selected from the group consisting of:



(A)



(B)



(C)



(D)

(2) Bis-carboxamide, bis-sulfonamide, bis-urea and bis-thiourea derivatives of polyoxyalkylenediamines having the following structure:

$$R—Y—R'NCXCH_2(OCHXCH_2)_nOCH_2CHX-NR'—Y—R$$

wherein
R, R′, X, and Y are as defined above; and
n=2–400;

(3) Tris-carboxamide, tris-sulfonamide, tris-urea and tris-thiourea derivatives of polyoxyalkylenetriamines having the following structure:

$$\begin{array}{l} CH_2(OCH_2CHX)_nNR'—Y—R \\ | \\ RC(CH_2)_a(OCH_2CHX)_pNR'—Y—R \\ | \\ CH_2(OCH_2CHX)_qNR'—Y—R \end{array}$$

wherein
R, R′, X, and Y are as defined above;
n+p+q=3–500; and
a=0 or 1;

(4) Monourea, monosulfonamide and monothiourea derivatives of bis-polyoxyalkyleneamines having the following structure:

$$R''O(CH_2CHXO)_nCH_2CHX-NR'—Y—NR'CHXCH_2(OCHXCH_2)_nOR''$$

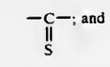
wherein
R, R′, and X are as defined above;
n=1–200;
R″=an alkyl group of 1–3 carbons; and
Y is a divalent connecting group of atoms selected from the group of:



(A)



(B)



(C)

—C(=S)—NH—; and

(5) mixtures thereof.

5,250,110

DUSTFREE INVESTMENT MATERIAL FOR ACCURATELY FITTING CAST PIECES AND METHOD OF PRODUCING THESE INVESTMENT MATERIALS

Gerlinde Gantert, Rodenbach; Bernd Kempf, Freigericht; Klaus-Peter Gundlach, Bohmte, and Ulrich Kump, Frankfurt and Main, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 7, 1991, Ser. No. 771,558

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1990, 4032254

Int. Cl.[5] B28B *7/34;* **B22C** *1/22;* **C09B** *3/00*

U.S. Cl. 106—38.35 **33 Claims**

1. A non-dusty investment material, for the production of accurately fitting cast parts for use in the dental industry or in the jewelry industry, compounded with liquids and containing at least one water-soluble phosphate, magnesium oxide and silicon dioxide, said investment material comprising components (a) and (b), wherein said component (a) contains 100% of the magnesium oxide contained in said investment material, said component (b) contains 100% of the water soluble phosphate contained in said investment material, said silicon dioxide is divided between said components (a) and (b), said component (b) contains at least 0.5% by weight water and contains 100% of the water in said investment material, and said component (a) contains 0.4% to 6% by weight of a hydrophilic, aliphatic solvent having a vapor pressure less than 600 Pa.

5,250,111

PIGMENT COMPOSITIONS

Robert Langley, Newton Mearns, and Michael D. McFarland, Houston, both of Scotland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 6, 1992, Ser. No. 863,634

Claims priority, application United Kingdom, Apr. 11, 1991, 9107651

Int. Cl.[5] C09D *11/02;* **C09B** *47/16, 47/24, 69/00*

U.S. Cl. 106—411 **16 Claims**

1. A pigment composition comprising a) a pigment; and b) a phthalocyanine compound having the formula 1:

$$MPc(CH_2NHCO—A)_n \quad 1$$

in which Pc represents a phthalocyanine residue which is optionally further substituted by up to an average of one chlorine or bromine atom or by a sulphonic acid group; M is hydrogen or a metal capable of forming a metal phthalocyanine; n is a number ranging from 0.1 to 4.0; and A is C_3–C_{21} alkenyl, C_5–C_8 cycloalkyl, C_7–C_{11} aralkyl, C_6–C_{10} aryl, a 5- or 6-membered heterocyclic residue or a fused heterocyclic system.

5,250,112

SPINEL BLACK PIGMENTS BASED ON COPPER-CHROMIUM-MANGANESE MIXED OXIDES, A PROCESS FOR THEIR PREPARATION AND THEIR USE

Klaus Wussow, Siegen; Peter Kuske, Krefeld; Manfred Mansmann, Leverkusen; Dieter Messer, Odenthal, and Dieter Räde, Krefeld-Bockum, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 20, 1992, Ser. No. 979,769

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1991, 4140118

Int. Cl.[5] C09C *1/34*

U.S. Cl. 106—453 **5 Claims**

1. Black pigments with spinel structure based on copper-chromium-manganese mixed oxides having a copper content of from 13 to 25% by weight, a chromium content of from 22 to 41% by weight, and a manganese content of from 7 to 36% by weight, characterized in that they have brightness values L^* in the CIELAB Colour System of from 57 to 61, determined on black pigments incorporated in lacquers after they have been mixed with five times their quqntity of titanium dioxide white pigment wherein Mn_3O_4 is used to provide the manganese.

5,250,113

DRY CASTABLE CONCRETE COMPOSITIONS AND METHODS OF PREPARING AND DRY CASTING THE SAME

Neal S. Berke, Chelmsford, Mass.; Samuel F. Heleba, Issaquah, Wash., and Mario A. Tamez, Houston, Tex., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Jul. 31, 1991, Ser. No. 738,654

Int. Cl.[5] C04B *7/13, 14/00, 28/02*

U.S. Cl. 106—737 **21 Claims**

1. A method for preparing dry concrete mix for use in dry casting methods comprising the steps of:

mixing hydraulic cement, fine aggregate, and coarse aggregate;

adding to the mixture an aqueous slurry of condensed silica fume comprising at least about 5 pounds of condensed silica fume per gallon of slurry, said slurry being added in an amount which provides a condensed silica fume to hydraulic cement weight ratio of about 0.10 to 0.25 and a water to hydraulic cement weight ratio of about 0.18 to 0.33, based on the total amount of water in said concrete mix, to provide a dry concrete mix having a slump of ½ inch or less as measured by ASTM C-143.

5,250,114

COATING APPARATUS WITH NOZZLE MOVING MEANS

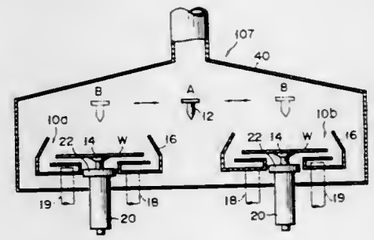
Nobuo Konishi, Kofu; Hideyuki Takamori, Kumamoto; Masami Akimoto, Kumamoto, and Kiyohisa Tateyama, Kumamoto, all of Japan, assignors to Tokyo Electron Limited, Tokyo and Tokyo Electron Kyushu Limited, Kumamoto, both of Japan

Filed Sep. 6, 1991, Ser. No. 755,781

Claims priority, application Japan, Sep. 7, 1990, 2-237664

Int. Cl.[5] H01L *21/68, 21/30;* **B05B** *3/00*

U.S. Cl. 118—321 **8 Claims**



1. A coating apparatus comprising:

two chucks for horizontally fixing, supporting and rotating a wafer-like substrate;

two cups surrounding the two chucks, respectively;

a carrying member commonly used for the two chucks and being able to load and unload a substrate to and from either of the chucks while the other chuck is being used;

coating liquid supply means including a nozzle for supplying a coating liquid onto the substrates supported by the chucks; and

moving means for moving the nozzle between the chucks.

5. A resist-coating apparatus comprising:

two chucks for horizontally fixing, supporting and rotating a wafer-like substrate;

two cups surrounding the two chucks, respectively;

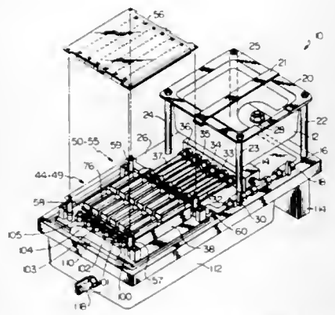
a carrying member commonly used for the two chucks and being able to load and unload a substrate to and from either of the chucks while the other chuck is being used;

coating liquid supply means including a nozzle for supplying

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a coating liquid onto the substrates supported by the chucks;
moving means for moving the nozzle between the chucks; and
a waiting trench located between the chucks to discharge that part of the coating liquid which stays in the nozzle.

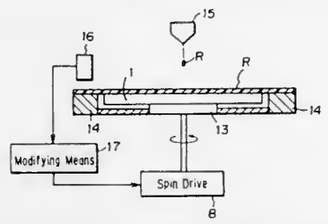
5,250,115
CONNECTOR PIN LUBRICANT APPLICATOR
Carlo M. Faienza; Wayne J. Zadrick, both of Bristol, and Richard M. Speziale, Winchester, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.
Continuation of Ser. No. 594,930, Oct. 10, 1990. This application Oct. 1, 1992, Ser. No. 955,227
Int. Cl.[5] B05C *3/00*
U.S. Cl. 118—429 **8 Claims**



1. A lubricant applicator system for applying a lubricant to the pins of an electronic connector having a connector shell which surrounds the electrically conductive pins, the system comprising:
means for supplying the lubricant;
a valve having a variable flow area which receives lubricant from said means for supplying and controlling the amount of lubricant which flows through said variable flow area to provide a controlled flow of lubricant;
a manifold having a plurality of parallel outlets for receiving said controlled flow of lubricant and for directing said controlled flow to each of said plurality of parallel outlets;
a plurality of containers each operatively connected to receive lubricant from at least one of said plurality of parallel outlets, each of said containers having interconnected vertical walls disposed to contain said lubricant, wherein each of said containers includes at least one orifice on its bottom surface through which lubricant enters;
means for controlling the level of said lubricant within each of said containers such that only a predetermined length of the pins has said lubricant applied thereto; and
means for positioning and holding the connector in place such that said interconnected vertical walls are positioned between the pins of the connector and an inner surface of the connector shell so only the pins of the connector have lubricant applied thereto while avoiding lubricant contact with the inner surface of the connector shell.

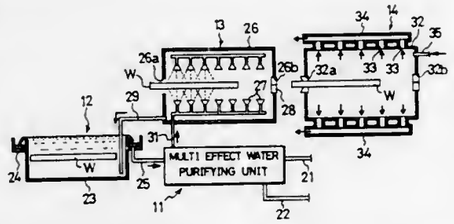
5,250,116
RESIST FILM COATING APPARATUS
Keisuke Tanimoto, Ikoma, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed May 19, 1992, Ser. No. 885,376
Claims priority, application Japan, May 24, 1991, 119817
Int. Cl.[5] B05C *11/02, 5/00*
U.S. Cl. 118—664 **2 Claims**

1. A resist film coating apparatus having a rotatable support plate carrying a wafer, a resist receiving plate arranged along the outer periphery of said support plate, a resist feeder for supplying resist onto the wafer carried on said support plate and a spin drive for rotating said support plate at a predetermined revolution number,
wherein said resist receiving plate is secured to said support plate so as to be disposed along the outer periphery of said wafer,
and further said apparatus comprising measuring means for measuring the film thickness of resist spun out from said



wafer to said resist receiving plate, and modifying means for calculating a necessary revolution number of said support plate to provide a predetermined film thickness on the basis of a result of the resist film thickness measurement by said measuring means and changing the predetermined revolution number of said spin drive such that the revolution number of said support plate coincides with a result of calculation.

5,250,117
DEGREASING-CLEANING METHOD
Takashi Hirano; Hidetaka Sawada; Shoichi Momose; Shiro Inoue; Kazunori Koba, all of Osaka, and Masayuki Isaka, Nara, all of Japan, assignors to Hitachi Zosen Corporation, Osaka, Japan
Filed Dec. 24, 1991, Ser. No. 812,992
Claims priority, application Japan, Dec. 26, 1990, 2-406448; Nov. 19, 1991, 3-303102
Int. Cl.[5] B08B *3/12*
U.S. Cl. 134—1 **6 Claims**

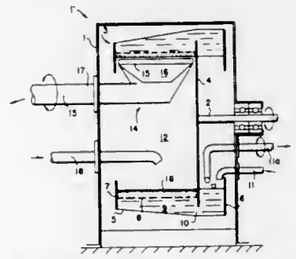


1. A degreasing-cleaning method for removing a water-insoluble organic releasing agent from a molded plastic article, comprising spraying said plastic article with pure water of at least 10 megohm-cm in resistivity at a pressure of at least 8 kg/cm^2, thereby removing said water-insoluble organic releasing agent from the plastic article.

5,250,118
METHOD OF REMOVING FOULANTS AND RESTORING PRODUCTION OF SPINAL-WOUND REVERSE OSMOSIS CARTRIDGES
Craig L. Netwig, 947 Intrepid Ct., Del Mar, Calif. 92014, and David L. Kronmiller, 1717 N. Elm, Escondido, Calif. 92026
Filed May 22, 1992, Ser. No. 886,840
Int. Cl.[5] B08B *9/02;* **B01D** *65/02*
U.S. Cl. 134—22.1 **15 Claims**

1. A method of removing foulants from spiral-wound reverse osmosis cartridges, containing a plurality of semipermeable osmotic membrane envelopes attached to slit openings formed in a center product tube and tightly spiral wrapped thereabout with alternate layers of brine channel webbing, and confined at each end by an anti-telescoping device and sealed about the outer surface and at one end against leakage therefrom, comprising the steps of:
a) freeing the envelopes and webbing from their original confinement;
b) soaking the envelopes and webbing in a cleaning solution, specific to the general chemical nature of the foulants found in the webbing and on the surface of the envelopes, for a period of time sufficient to dissolve, solubilize, soften, and loosen the foulants;
c) unwrapping and washing each membrane envelope and layer of webbing to physically remove the foulants therefrom;
d) rewinding the membrane envelopes and layers of webbing in spiral configuration about the center product tube while simultaneously drawing a vacuum on the product tube to remove air trapped in the envelopes and enable the memory of the envelopes and webbing to urge themselves into their original tightly-wrapped configuration thereabout; and,
e) reconfining the ends of the wrapped layers and resealing the outer surface and one end of the reassembled cartridge against leakage.

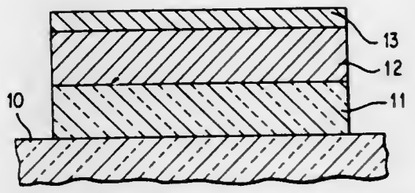
5,250,119
PROCESS FOR CLEANING THE FILTERING MEDIUM OF A FILTERING CENTRIFUGE
Siegfried Pöschl, Penzberg, Fed. Rep. of Germany, assignor to Krauss Maffei, A.G., Fed. Rep. of Germany
Continuation of Ser. No. 655,626, Feb. 15, 1991, abandoned. This application Jul. 8, 1992, Ser. No. 910,043
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1990, 4004763
Int. Cl.[5] B08B *3/06;* **B01D** *24/44, 29/70, 33/15*
U.S. Cl. 134—32 **15 Claims**



1. A process for cleaning a filtering medium disposed about a rotating drum of a filtering centrifuge by removing a base layer of a solid cake of filtered matter, said process comprising the step of:
applying a force to the rotating drum to substantially change the rotational speed thereof so that the base layer separates from the filtering medium as a result of mass inertia shear forces.

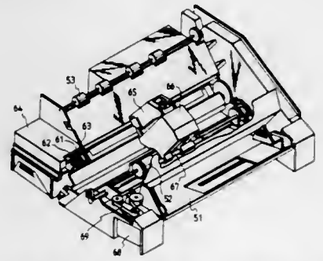
5,250,120
PHOTOVOLTAIC DEVICE
Jun Takada; Akihiko Nakajima; Katsuhiko Hayashi; Keizo Asaoka, and Yoshihisa Tawada, all of Hyogo, Japan, assignors to Kanegafuchi Chemical Industry Co., Ltd., Osaka, Japan
Filed Dec. 5, 1991, Ser. No. 802,996
Claims priority, application Japan, Dec. 7, 1990, 2-400801
Int. Cl.[5] H01L *31/04, 31/0224, 31/0376*
U.S. Cl. 136—256 **8 Claims**

1. A photovoltaic device having a rear electrode disposed on one side of an amorphous semiconductor photosensitive layer which is opposite to the side on which light is incident, which rear electrode comprises a multi-layer structure obtained by



alternately successive depositions, each in a thickness of 0.3 to 50 nm, of two monovalent metals selected from the group consisting of Cu and Ag.

5,250,121
INK-JET TEXTILE PRINTING INK AND INK-JET TEXTILE PRINTING PROCESS
Tomoya Yamamoto; Shoji Koike, both of Yokohama; Koromo Shirota, Tokyo, and Shinichi Satoh, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 22, 1992, Ser. No. 948,492
Claims priority, application Japan, Sep. 26, 1991, 3-247637; Sep. 26, 1991, 3-247638; Sep. 26, 1991, 3-247639; Sep. 26, 1991, 3-247640; Sep. 26, 1991, 3-247641; Sep. 26, 1991, 3-247642; Nov. 13, 1991, 3-297290; Nov. 13, 1991, 3-297291; Nov. 13, 1991, 3-297292
Int. Cl.[5] C09D *11/02*
U.S. Cl. 106—22 R **41 Claims**



1. An ink-jet textile printing ink, comprising from 5% to 30% by weight of a reactive dye having at least one of a monochlorotriazine group and a vinyl sulfone group, and a water-based liquid medium, wherein
said liquid medium comprises from 1% to 50% by weight of thiodiglycol and from 2% to 45% by weight of at least one organic solvent selected from a di-, tri- or tetramer of oxyethylene, a di-, tri- or tetramer of oxypropylene, and a mono- or di-C_1–C_4-alkyl ether of any of these di-, tri- or tetramers.

5,250,122
HEAT TREATING OIL COMPOSITION
Hitoshi Uchida; Saburo Koyama, both of Ichihara, and Eiichi Nakamura, Tokyo, all of Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan
Filed Oct. 16, 1992, Ser. No. 961,649
Claims priority, application Japan, Oct. 18, 1991, 3-271073
Int. Cl.[5] C21D *1/58*
U.S. Cl. 148—29 **10 Claims**

1. A heat treating oil composition which comprises (A) at least one base oil selected from a mineral oil and a synthetic oil

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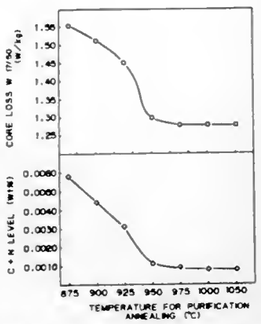
each having a sulfur content of not more than 300 ppm and (B) an alkaline earth metal salt of salicylic acid.

5,250,123

ORIENTED SILICON STEEL SHEETS AND PRODUCTION PROCESS THEREFOR

Hiroyoshi Yashiki, Kobe, and Teruo Kaneko, Hyogo, both of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Mar. 13, 1992, Ser. No. 850,857
Claims priority, application Japan, Mar. 15, 1991, 3-051367
Int. Cl.[5] C22C *38/02*
U.S. Cl. 148—111 **12 Claims**



1. A process for producing a grain-oriented magnetic steel sheet, in which a slab which consists essentially of, on a weight basis, C: not more than 0.01% C, Si: 1.5–3.0%, Mn: 1.0–3.0%, S: not more than 0.01%, sol.Al: 0.003–0.015% and 0.001–0.010% N, and Si (%) $-0.5\times$Mn (%) $\leqq 2.0$, the balance being Fe and incidental impurities is processed by the following steps (i)–(v):

(i) a hot-rolling step to obtain a hot-rolled steel sheet through hot rolling of said slab;

(ii) a cold-rolling step in which the sheet, as hot-rolled or after being subsequently annealed, is cold-rolled one or more times with an intermediate annealing performed between successive stages of cold rolling to prepare a cold-rolled sheet;

(iii) a step of causing primary recrystallization by continuous annealing the cold-rolled sheet;

(iv) a step of causing secondary recrystallization by holding the annealed sheet in a temperature range of 825°–925° C. for 4–100 hours in a nitrogen-containing atmosphere; and

(v) a step of holding the secondary-recrystallized sheet in a temperature range beyond 925° C. and up to 1050° C. for 4–100 hours in a hydrogen-containing atmosphere to reduce the amount of C+N to 0.0020% or smaller.

5,250,124

AMORPHOUS MAGNESIUM ALLOY AND METHOD FOR PRODUCING THE SAME

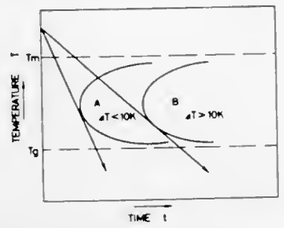
Hitoshi Yamaguchi, Nagano; Toshisuke Shibata, Miyagi; Akihisa Inoue, Miyagi; Akira Kato, Miyagi, and Tsuyoshi Masumoto, 3-8-22, Kamisugi, Aoba-ku, Sendai-shi, Miyagi, all of Japan, assignors to Yoshida Kogyo K.K., Tokyo and Tsuyoshi Masumoto, Miyagi, both of Japan

Filed Mar. 16, 1992, Ser. No. 852,019
Claims priority, application Japan, Mar. 14, 1991, 3-74679; Mar. 14, 1991, 3-74681
Int. Cl.[5] C22C *45/00*
U.S. Cl. 148—403 **5 Claims**

1. An amorphous magnesium alloy comprising:

$$Mg_aM_bAl_cX_dZ_e$$

wherein M is at least one element selected from the group consisting of La, Ce, Y and misch metal, X is at least one element selected from the group consisting of Ni and Cu, and Z is at least one element selected from the group consisting of Mn, Zn, Zr, and Ti, and, a=70~90 at %, b=2~5 at %, c=1~9 at %, d=2~15 at %, e~0.1~8 at



%, a+b+c+d+e=100 at %, the amorphous alloy having a thickness of 1 to 5 mm, and the difference (ΔT) between the magnesium alloy crystallization temperature (Tx) and the magnesium alloy glass transition temperature (Tg) is greater than 10 K.

5,250,125

PROCESS FOR GRAIN REFINEMENT OF ALUMINIUM CASTING ALLOYS, IN PARTICULAR ALUMINIUM/SILICON CASTING ALLOYS

Hubert Koch, Rheinfelden, Fed. Rep. of Germany; Jean-Claude Jaquet, Schaffhausen, Switzerland, and Ulrich Hielscher, Rheinfelden, Fed. Rep. of Germany, assignors to Alusuisse-Lonza Services Ltd., Zurich, Switzerland

Filed Oct. 13, 1992, Ser. No. 959,448
Claims priority, application Switzerland, Oct. 23, 1991, 3092/91
Int. Cl.[5] C22C *1/00*
U.S. Cl. 148—549 **12 Claims**

1. Process for the grain refinement of aluminum casting alloys, which comprises adding to a melt of an aluminum casting alloy nucleating additions of phosphorus-containing substances, wherein the phosphorus-containing substances are selected from the group consisting of gallium phosphide, indium phosphide and mixtures thereof, and wherein the nucleating addition corresponds to 1 to 250 ppm of phosphorus, relative to the melt.

5,250,126

METHOD FOR MANUFACTURING A RAIL FOR USE IN A LINEAR MOTION ROLLING CONTACT GUIDE UNIT

Yasumasa Ohya, Gifu, and Koji Kano, Mino, both of Japan, assignors to Nippon Thompson Co., Ltd., Tokyo, Japan

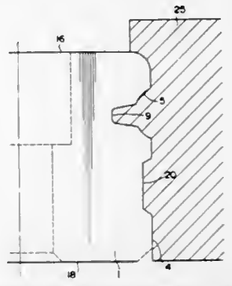
Filed Jun. 17, 1992, Ser. No. 900,042
Claims priority, application Japan, Jun. 19, 1991, 3-174320
Int. Cl.[5] C21D *1/10, 9/04*; F16C *29/02*
U.S. Cl. 148—569 **4 Claims**

1. A method for manufacturing a rail for use in a linear motion rolling contact guide unit, comprising the steps of:

providing a rail intermediate product having a top surface, a pair of side surfaces and a bottom surface by drawing a metal material, such that each of said side surfaces is formed with a guide groove portion extending in parallel with a longitudinal axis of said rail intermediate product;

first hardening said guide groove portion; and

then grinding each of said side surfaces in its entirety using a profiled grinder having a grinding shape complementary



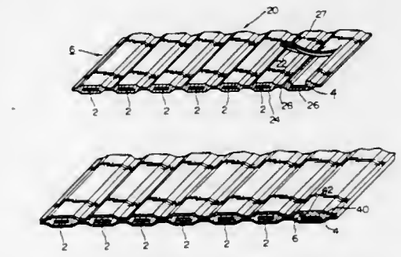
to a shape of a finished side surface of said rail, which includes a tapered relief trench at a bottom thereof.

5,250,127

METHOD OF MANUFACTURE FOR SHIELDED FLAT ELECTRICAL CABLE

Ryoichi Hara, Narita, Japan, assignor to Fujikura Ltd., Tokyo, Japan

Filed Mar. 19, 1991, Ser. No. 671,362
Claims priority, application Japan, Sep. 20, 1988, 63-236115
Int. Cl.[5] H01B *13/26*
U.S. Cl. 156—52 **4 Claims**



1. A method for manufacturing a shielded flat cable from a cladding cable having:

a plurality of parallel conductors of a tape-form arranged horizontally;

an insulating cladding which covers the surface of the conductors and joins the conductors, the cladding having a unitary structure; and

at least one tear-away wire having greater physical strength than the insulating cladding disposed in a direction parallel with the conductors, said wire being placed between at least one conductor and the insulating cladding which covers the conductors;

said method comprising the steps of:

exposing a conductor which is overlaid by a tear-away wire by pulling said tear-away wire in a direction away from the conductor being exposed, so as to cause a portion of the insulating cladding which overlays said tear-away wire to be torn away from an adjacent intact cladding layer, thereby exposing a length of the conductor surface in direct proportion to the length of the wire torn away; and

laying an electrically conductive shield layer in the form of a tape on an exposed surface of the conductor;

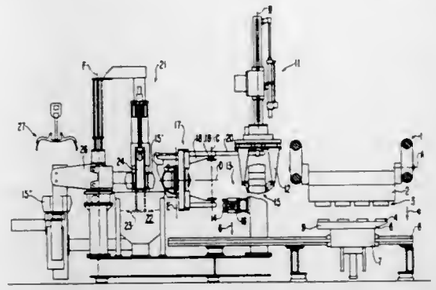
bonding the shield layer to the exposed surface of the conductor so as to establish an electrically conducting bonded interface in a longitudinal direction of the exposed surface of the conductor.

5,250,128

METHOD AND APPARATUS FOR HANDLING CORE PARTS FOR PROVIDING A READY-TO-CAST CORE STACK

Werner Landua, Mannheim; Reiner Rommel, Brühl; Jürgen Müller, and Wolfgang Schimpf, both of Mannheim, all of Fed. Rep. of Germany, assignors to Adolf Hottinger Maschinenbau GmbH, Fed. Rep. of Germany

Filed Oct. 3, 1991, Ser. No. 770,344
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1991, 4100917
Int. Cl.[5] B32B *31/04*
U.S. Cl. 156—60 **6 Claims**



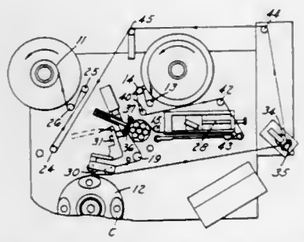
1. Method for handling core parts for providing a core stack, the method comprising the steps of removing the core parts from a core shooting machine, sticking the core parts together in a stacker after removal from the core shooting machine to form a core stack, immersing the core stack into a dipping tank, and supplying the core stack in a positionally correct manner to a casting machine, wherein the step of sticking the core parts together in the stacker includes successively exclusively linearly raising in each case one of an upper core part or an already assembled core part and holding, in each case, a lower core part in a floating manner by an air cushion while the raised core part or core part stack is lowered onto the lower core part for joining.

5,250,129

APPARATUS FOR APPLYING HEAT SENSITIVE LABELS AND PRESSURE SENSITIVE LABELS

Terrance J. Twele, Toledo, Ohio, assignor to Owens-Illinois Plastic Products Inc., Toledo, Ohio

Filed May 1, 1991, Ser. No. 694,183
Int. Cl.[5] B65C *1/00*
U.S. Cl. 156—64 **7 Claims**



1. The method of utilizing an apparatus for applying heat sensitive labels to a container to apply pressure sensitive labels wherein the apparatus applying heat sensitive labels includes a web on which the heat sensitive labels are moved from a feed reel over a shuttle mechanism, a metering mechanism and adjacent a preheater and to a platen where successive labels are applied directly from the web to successive containers on a

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turret and thereafter the web is stored on a take-up reel, which method comprises

removing the preheater and platen,

bypassing the web from the shuttle mechanism,

positioning a peel bar assembly in place of the platen,

providing means in advance of the take-up reel for moving the web with the pressure sensitive labels thereon about the peel bar assembly to peel a label from the web,

applying the pressure sensitive label to an article on the turret, and

providing means for redirecting the web to a take-up reel.

5,250,130

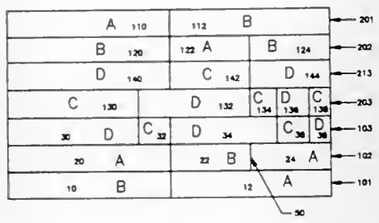
REPLICA HOT PRESSING TECHNIQUE

Jack H. Enloe, Columbia, and John W. Lau, Gaithersburg, both of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Continuation-in-part of Ser. No. 286,557, Dec. 19, 1988, Pat. No. 5,017,434, which is a continuation-in-part of Ser. No. 148,829, Jan. 27, 1988, Pat. No. 4,920,640. This application May 20, 1991, Ser. No. 702,562

Int. Cl.[5] C04B *37/00*; B32B *18/00*

U.S. Cl. 156—89 **19 Claims**



1. A method of hot pressing a green body by heating and applying pressure in a uniaxial direction to said green body for an amount of time wherein said green body has at least one non-uniform composition cross section perpendicular to said uniaxial direction, said cross section having regions which require differing amounts of shrinkage in said uniaxial direction to achieve maximum density under said pressure and heating for said amount of time, the method comprising:

a) laminating auxiliary material with said green body in said uniaxial direction, said auxiliary material having at least one non-uniform composition cross section perpendicular to said uniaxial direction, said auxiliary material cross section having regions which require differing amounts of shrinkage in said uniaxial direction to achieve maximum density under said pressure and heating for said amount of time, whereby the net uniaxial shrinkage required by the laminate to achieve maximum density under said heating and pressure for said amount of time is substantially equal across the laminate;

b) hot pressing said laminate to form a densified body; and

c) delaminating said auxiliary material from said densified body.

5,250,131

METHOD FOR RECOVERING METAL REINFORCEMENT FROM RUBBER TIRES

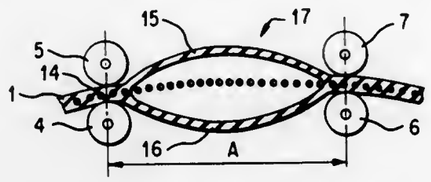
Alexandr I. Gitelman, Kostandi, 180, Odessa, U.S.S.R.

Filed Jan. 22, 1992, Ser. No. 824,099

Int. Cl.[5] B32B *35/00*

U.S. Cl. 156—95 **2 Claims**

1. A method for recovering metal reinforcement from rubber tires, comprising placing a tire having metal reinforcement into a high-frequency electromagnetic field, heating and separating the reinforcement from rubber, characterized by clamping a local portion of the tire between at least two pairs of pressure rolls, heating this portion to a temperature of pyrolysis of rubber layers nearest to the reinforcement and until a



pyrolysis swelling is formed, with subsequent drawing of the tire between the rolls.

5,250,132

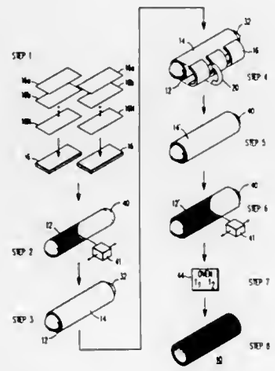
METHOD OF MAKING A COMPOSITE LAMINATE HAVING AN INTERNALLY DAMPED CONSTRAINING LAYER

Christy K. Lapp, Sunnyvale, Calif., and Paul D. Grund, Eagan, Minn., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 2, 1991, Ser. No. 801,563

Int. Cl.[5] B65H *81/00*

U.S. Cl. 156—173 **5 Claims**



1. A method of forming a composite laminate having an internally damped constraining layer, comprising the steps of:

a. forming a plurality of uncured composite constraining layer members each of a filament reinforced resin matrix having a certain gelation temperature;

b. forming a first composite load-bearing member of a filament reinforced resin matrix having a certain gelation temperature different than the gelation temperature of said resin matrix of said constraining layer members;

c. applying a first viscoelastic damping layer to said first composite load-bearing member prior to curing;

d. applying said constraining layer members over said first viscoelastic layer in a predetermined pattern which leaves gaps between said applied layers, and prior to curing, while said resin matrix of said constraining layer members is still tacky;

e. applying a second viscoelastic damping layer over said constraining layer members;

f. forming a second composite load-bearing member over said second viscoelastic damping layer and being of a filament reinforced resin matrix having a gelation temperature the same as the gelation temperature of said resin matrix of said first composite load-bearing member;

g. curing the thus fabricated structure by placing it in an oven and increasing the temperature thereof sequentially through the gelation temperatures of said resin matrices until said composite laminate is cured;

h. the gelatin temperature of said resin matrix of said constraining layer members being higher than that of said resin matrices of said load-bearing members so that the resin matrices of said load-bearing members are completely gelled before the resin matrix of said constraining layer members begin gelation.

5,250,133

METHOD FOR RECORDING IMAGES AND APPARATUS FOR RECORDING IMAGES

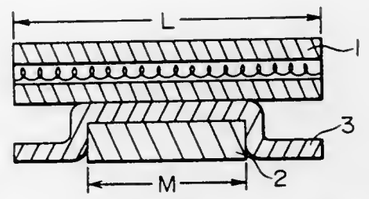
Tomonori Kawamura, and Kunihiro Koshizuka, both of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Apr. 1, 1992, Ser. No. 861,901

Claims priority, application Japan, Nov. 1, 1991, 3-288089

Int. Cl.[5] B44C *1/00*

U.S. Cl. 156—240 **11 Claims**



1. An image recording method comprising steps of

forming a gradation information containing-image on an image receiving layer of an image recording body by means of a thermal sublimation image transfer method,

forming a character information containing-image on said image recording layer by means of a thermal sublimation image transfer method or a thermal fusion image transfer method, and

then transferring a transparent protective layer from a protective layer forming thermal transfer sheet on the surface of said image receiving layer by a hot stamping means having a heating roll so as to cover the whole area of said surface of said image receiving layer, wherein

sad heating roll has a contacting length longer than the width of said image receiving layer and a peripheral length longer than the length of said image receiving layer.

5,250,134

SYSTEM AND METHOD FOR FORMING AN OVERWRAP WEB PROVIDED WITH INSERTS

David A. Thomas, Beverly; Robert M. O'Connell, Belle Mead; Robert C. Reinert, Mount Laurel, all of N.J., and John M. Gillin, Huntington Valley, Pa., assignors to Philip Morris, Inc., New York, N.Y.

Division of Ser. No. 299,053, Jan. 19, 1989, Pat. No. 5,035,935. This application Mar. 5, 1991, Ser. No. 664,878

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—264 **12 Claims**

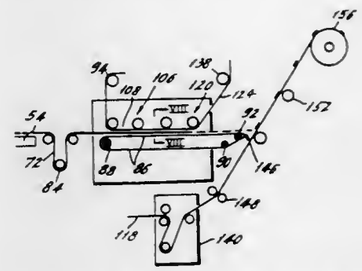
1. An apparatus for forming an overwrap web provided with inserts, said apparatus comprising:

means for applying an overlaminate over pieces of spaced apart paper to form a sandwiched structure and means for cutting said formed inserts out of said sandwiched structure, said formed inserts each comprising one of said pieces of paper covered with a piece of said overlaminate, said inserts being spaced from one another;

first means for advancing said inserts in a first direction;

second means for advancing a film overwrap in a second direction;

means for assembling said inserts against said overwrap with an appropriate spacing between said inserts to form an overwrap web provided with inserts; and



means for winding said overwrap web provided with said inserts into a roll, said roll being adapted to be used for wrapping a plurality of packages with said inserts appropriately positioned with respect to said packages.

5,250,135

REAGENT SOURCE

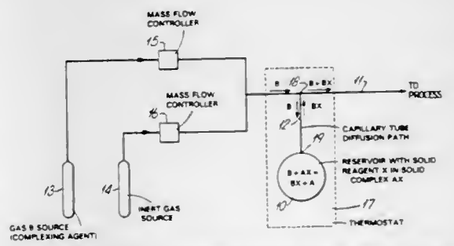
Rodney H. Moss, Felixstowe; Donald C. Bradley, Pinner; Marc M. Faktor, London, and Dario M. Frigo, Kentish Town, all of England, assignors to British Telecommunications public limited company, London, England

Continuation of Ser. No. 52,399, May 21, 1987, abandoned. This application Jun. 11, 1990, Ser. No. 536,086

Claims priority, application United Kingdom, May 21, 1986, 8612402

Int. Cl.[5] C30B *25/16*

U.S. Cl. 156—601 **3 Claims**



1. A method of growing a semiconductor product by metal organic vapour phase epitaxy, which method includes providing a controlled mass flow rate of an organo-metallic reagent X into a metal organic vapour phase epitaxy reaction wherein the reagent X is in the form of a gaseous phase complex BX that is produced from a solid phase complex AX and a gaseous phase complexing reagent B, said method comprising the steps of:

(a) providing a solid phase complex AX in a reservoir having a capillary diffusion path with a first end connected thereto;

(b) providing a controlled partial vapour pressure of a gaseous phase complexing reagent B at an opposite second end of said capillary diffusion path;

(c) conducting said gaseous phase complexing agent B from said second end of said capillary diffusion path to said first end of said capillary diffusion path wherein the reaction

$$AX + B \rightarrow BX + A$$

occurs in said reservoir;

(d) conducting said gaseous phase complex BX produced by

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said reaction from said first end of said capillary diffusion path to said second end of said capillary diffusion path, and

(e) conducting said gaseous phase complex BX from said second end of said capillary diffusion path to a metal organic vapour phase epitaxy growth process,

whereby the mass flow rate of BX to the metal organic vapour phase epitaxy growth process is controlled, at least in part, by controlling said partial vapour pressure of B at said second end of said capillary diffusion path.

5,250,136

METHOD OF MAKING A CORE/PATTERN COMBINATION FOR PRODUCING A GAS-TURBINE BLADE OR COMPONENT

Kurt F. O'Connor, Carmel, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 12, 1992, Ser. No. 834,673
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—272.2 **7 Claims**

1. A method of making a core/pattern combination comprising the steps of:

depositing a first layer of powder comprising a ceramic onto a substrate in a predetermined pattern corresponding to a first cross-sectional region of a hollow portion of a gas-turbine blade or component;

fusing together said first layer of ceramic powder by directing a laser beam over the predetermined pattern of said first layer of powder to form said fused layer of ceramic having a shape of said first cross-sectional region of said hollow portion;

depositing a first layer of powder comprising at least one selected from the group consisting of wax and plastic on said substrate in a predetermined pattern corresponding to a first cross-sectional region of said blade or component;

fusing together said first layer of wax or plastic powder by directing a laser beam over the predetermined pattern corresponding to said first cross-section of blade or component to form a fused layer of wax or plastic having a shape corresponding to said first cross-sectional region of said blade or component;

the fused regions of ceramic and the fused regions of wax or plastic of the first layer forming a first fused layer;

depositing a second layer of ceramic powder onto said first fused layer in a second predetermined pattern corresponding to a second cross-sectional region of said hollow portion which is immediately adjacent said first cross-sectional region for the same;

fusing said second layer of ceramic powder by directing a laser beam over said second predetermined pattern of said hollow portion to form a second fused layer of ceramic having the shape of said second cross-sectional region of said hollow portion, and so that said second fused layer of ceramic is fused to said first fused layer;

depositing a second layer of wax or plastic powder onto said first fused layer in a second predetermined pattern corresponding to a second cross-sectional region of said blade or component which is immediately adjacent to the first cross-sectional region for the same;

fusing said second layer of wax or plastic by directing a laser beam over said second predetermined pattern of said blade or component to form a second fused layer of wax or plastic having the shape of said second cross-sectional region of said blade or component, and so that said fused layer of wax or ceramic is fused to said first fused layer; and

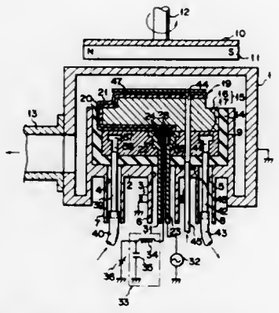
depositing successive layers of powder onto previous fused layers of ceramic or fused layers of wax or plastic in predetermined patterns corresponding to a respective cross-sectional regions of said hollow portion and said blade or component, and fusing each of said successive layers of powder to form successive fused layers, wherein each of said successive fused layers are fused to a previous fused layer to form said core having a configuration corresponding to said hollow portion of said gas-turbine blade and a pattern having a configuration corresponding to said blade or component.

5,250,137

PLASMA TREATING APPARATUS

Junichi Arami, Hachioji; Toshihisa Nozawa, Yokohama; Keiji Horioka, Kawasaki, and Katsuya Okumura, Yokohama, all of Japan, assignors to Tokyo Electron Limited, Tokyo and Kabushiki Kaisha Toshiba, Kawasaki, both of Japan

Filed Jul. 17, 1991, Ser. No. 731,475
Claims priority, application Japan, Jul. 20, 1990, 2-192465
Int. Cl.[5] B05C *5/00*
U.S. Cl. 156—345 **12 Claims**



1. A plasma treating apparatus comprising:

a chamber having a first electrode;

means for supplying a reactive gas into said chamber;

a second electrode located within the chamber and comprising upper and lower electrodes;

a cylindrical high frequency power supply member inserted in the chamber from outside, one tip end of the high frequency power supply member being located between the upper electrode and the lower electrode of the second electrode and being connected to the second electrode, and the interior of the high frequency power supply member being maintained at atmospheric-pressure;

high frequency power supply means for supplying high frequency power to the second electrode via said power supply member to generate plasma in the region between the first and second electrodes;

an electrostatic chuck for electrostatically holding a workpiece upon plasma generation, located on said upper electrode of the second electrode, having one end extending into the region between the upper electrode and the lower electrode, and constructed to include a conductive layer between a two-folded insulating layer;

a cable for applying a high voltage, inserted in the power supply member and having a terminal connected to the conductive layer of the electrostatic chuck located between the upper electrode and the lower electrode; and

pushing means for pushing the terminal toward the conductive layer of the electrostatic chuck.

5,250,138

LABEL APPLICATOR HAVING AUTOMATIC HEIGHT POSITIONING

Richard S. Szewczyk, Madison, and Joseph R. Vivirito, South Windsor, both of Conn., assignors to Gerber Garment Technology, Inc., Tolland, Conn.

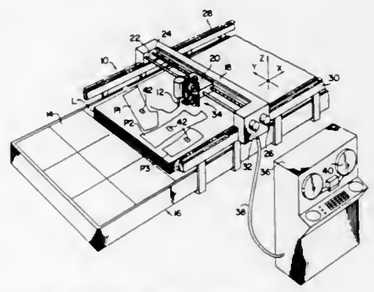
Filed Apr. 8, 1991, Ser. No. 682,439
Int. Cl.[5] G05G *21/00*
U.S. Cl. 156—350 **6 Claims**

1. In combination with a sheet material processing system having a controller, a support surface upon which one or more plies of a sheet material are supported thereon, and a work carriage for movement relative to the support surface, labeller apparatus for applying labels to the uppermost ply supported on the support surface, said apparatus comprising:

means defining a labeller assembly;

means for supporting said labeller assembly for relative vertical movement between said labeller assembly and the sheet material support surface and for relative horizontal movement between said labeller assembly and the support surface;

said labeller assembly supporting means further being supported by the work carriage for relative vertical movement between said labeller assembly supporting means and sheet material support surface whereby said labeller assembly supporting means moves vertically relative to said sheet material support surface and whereby said labeller assembly moves vertically relative to said sheet material support surface and said labeller assembly supporting means;



said labeller assembly further including:

means for sensing the surface of the uppermost ply supported on the support surface, and

means operating in response to said surface sensing means to position said labeller assembly a predetermined distance above said uppermost ply surface and for maintaining said labeller assembly in a non-contact spacial relationship with said uppermost ply surface said responding means automatically and without operator intervention re-positioning said labeller assembly supporting means and said labeller assembly said predetermined distance above said uppermost ply surface each time said surface sensing means senses said uppermost ply surface to maintain said labeller assembly in said non-contact spacial relationship with said uppermost ply to permit passage of said labeller assembly over different elevations of said uppermost ply surfaces as said labeller apparatus moves relative to said work surface.

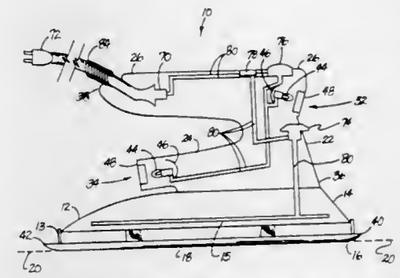
5,250,139

LIGHTED BONDING IRON

David W. Hall, 6 Orchard La., Huntington, Ind. 46750

Continuation of Ser. No. 563,525, Aug. 6, 1990, abandoned. This application Mar. 6, 1992, Ser. No. 846,961
Int. Cl.[5] B32B *31/00*; **D06F** *75/36*
U.S. Cl. 156—379 **21 Claims**

1. A lighted bonding iron apparatus comprising an outer shell having a front portion, a rear portion, and a substantially horizontal handle portion fixably mounted from said front portion, a heating element forming a horizontal planer ironing surface beneath said outer shell, a first light source fixably mounted in said front portion in proximity to said handle portion, and positioned to illuminate the area adjacent to said rear portion of said outer shell, at a location beneath the handle portion, and positioned to illuminate the area adjacent to said



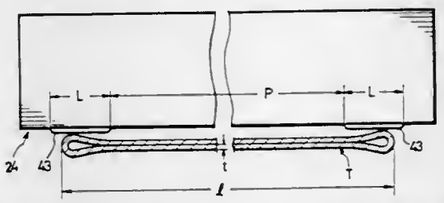
rear portion, and a means for illuminating said first and second light source.

5,250,140

DEVICE HAVING RAISED SIDE EDGE PORTIONS FOR HEAT-SEALING TUBULAR PACKAGING MATERIAL

Kojiro Hayashi; Fumiyuki Iwano, both of Tokushima; Yoichi Nishiguchi, Tokyo; Hisao Takahashi, Tokyo; Masaaki Ogawa, Tokyo, and Yoshio Kobashi, Tokyo, all of Japan, assignors to Shikoku Kakoki Co., Ltd., Itano, Japan

Filed Oct. 18, 1991, Ser. No. 777,707
Claims priority, application Japan, Oct. 19, 1990, 2-282983
Int. Cl.[5] B32B *31/24*
U.S. Cl. 156—380.5 **5 Claims**



1. A device for heat-sealing a tubular packaging material at opposite sides of and along each of cutting portions thereof before the material is cut transversely thereof into lengths each corresponding to a single container, the packaging material being made of a heat-sealable paper-base laminate having an aluminum foil layer, the heat-sealing device comprising:

a pair of press members,

a U-shaped high-frequency coil provided in a pressing surface of one of the press members and having two straight portions extending in parallel to each other for heating the packaging material at the respective sides of the cutting portion therealong, and

two striplike magnetic members arranged on the outer side of the respective straight portions extending approximately over the entire length of the straight portions,

each of the two straight portions of the coil having two separated discrete ridge portions each extending longitudinally on the straight portion for individually applying an increased pressure to opposite side edge portions of the tubular material.

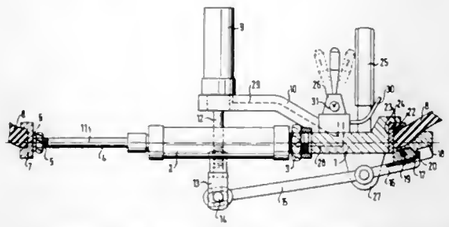
VOL 1155 ISS 1 OCT 5 1993 UMI

5,250,141

HAND-HELD APPARATUS FOR VULCANIZING THE BEAD ZONE OF A PNEUMATIC TIRE

Hans Scheurer, Munich, Fed. Rep. of Germany, assignor to Stahlgruber, Otto Gruber GmbH & Co., Munich, Fed. Rep. of Germany

Filed May 3, 1991, Ser. No. 695,190
Claims priority, application Fed. Rep. of Germany, May 4, 1990, 9005098[U]
Int. Cl.[5] B29C *73/34*
U.S. Cl. 156—398 13 Claims



1. A hand-held apparatus for vulcanizing the bead zone of a pneumatic tire comprising;

a) a support element (**1**);

b) electrically heatable tongs disposed at one end of the support element and having jaws (**18, 23**) for gripping the section of the bead that is to be vulcanized;

c) a hold-up element (**7**) disposed extendably at the other end of the support element for supporting against the diametrically opposite side of the bead from the section of the bead to be vulcanized;

d) at least one transport and manipulation handle (**25**) connected to said support element for transporting the apparatus and placing it in operative position relative to the section of the bead of the tire to be vulcanized; and

e) means for moving the tongs between an opened and closed position and to extend and retract the hold-up element, said means including at least one actuator (**2, 9**) for activating the tongs (**18, 23**) and the hold-up element (**7**); said actuator for moving the tongs (**18, 23**) and for extending the hold-up element (**7**) including:

i) two pressure actuated cylinders (**2, 9**) connected to a pressure supply line; and

ii) a common manual control valve (**26**) for operating the cylinders.

5,250,142

RUBBER SURFACE HAVING NON-STICK PLY TURN-UP BLADDER

Russell Weimer, Wytheville, Va., and Lester J. Savit, Chicago, Ill., assignors to Longwood Elastomers, Inc., Florham Park, N.J.

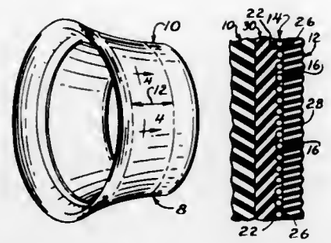
Continuation of Ser. No. 558,907, Jul. 27, 1990, abandoned. This application Apr. 7, 1992, Ser. No. 865,789
Int. Cl.[5] B29D *30/26*
U.S. Cl. 156—401 13 Claims

1. A turn-up bladder having an outer surface for contacting an uncured tire ply, the bladder comprising:

a bladder body made of a first rubbery polymer, the bladder body having an inner and an outer surface;

a fabric secured to the outer surface of the bladder body by being at least partially embedded therein;

a layer of a second rubber polymer on the outer surface of the bladder, the second rubbery polymer layer being in contact with the fabric on the side of the fabric opposite the bladder body, the second rubbery polymer being less adhesive to uncured tire ply than the first rubbery polymer;



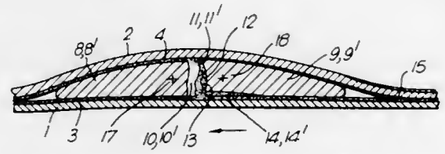
wherein the layer of second rubbery polymer is at least partially secured to the bladder body by the fabric.

5,250,143

HEATABLE SHOE FOR A JOINT WELDING APPARATUS FOR OVERLAPPING PORTIONS OF WEBS

Tore Johanseo, Oslo, Norway, assignor to A/S Fjeldhammer Brug, Fjellhamar, Norway

Filed Jun. 19, 1992, Ser. No. 901,143
Claims priority, application Norway, Jan. 30, 1992, 920400
Int. Cl.[5] B32B *35/00*
U.S. Cl. 156—499 8 Claims



1. A heatable shoe for a joint welding apparatus for running longitudinally along an area of overlapment between an underlying web of material having an upper surface, and being supported on a base, and an overlapping web of material having a heat-softenable sealant applied on an under surface in a portion thereof which is disposed vertically in overlapping registry with a portion of said underlying web of material,

said shoe comprising:

a front part and a rear part, said front part and rear part being arranged to articulate relative to one another about respective transversally oriented horizontal axes while disposed with longitudinal spacing between a trailing end surface of said front part and a leading end surface of said rear part, thereby defining a transversally extending opening down through said shoe delimited in part by said leading end surface;

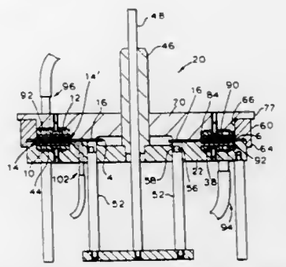
said front and rear parts having respective undersurfaces arranged to be slid along on said upper surface on said portion of said underlying web of material, said undersurfaces being generally horizontal; and said front and rear parts having respective upper surfaces arranged to be slid along in contact with said heat-softenable sealant on said undersurface of said portion of said overlying web of material, so that as said shoe is advanced longitudinally along said area while being heated, said heat-softenable sealant, as softened by said shoe can flow down through said opening and under said under surface of said rear part and onto said upper surface of said portion of said underlying web of material, and, longitudinally behind said shoe said heat softenable sealant can adhere said portion of said underlying web of material to said portion of said overlying web of material.

5,250,144

BONDING APPARATUS

John F. Fitzpatrick-Ellis, Warwick; John S. Bolton, Solibull, and Richard C. M. Cooke, Warwick, all of United Kingdom, assignors to Automotive Products PLC, United Kingdom

PCT No. PCT/GB89/01143, § 371 Date Mar. 26, 1991, § 102(e) Date Mar. 26, 1991, PCT Pub. No. WO90/03526, PCT Pub. Date Apr. 5, 1990
PCT Filed Sep. 27, 1989, Ser. No. 668,508
Claims priority, application United Kingdom, Sep. 27, 1988, 8822671
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—556 10 Claims



1. A bonding apparatus for adhesive bonding a pair of annular friction facings of predetermined thickness to a carrier plate by means of adhesive, the apparatus comprising top and bottom platens mountable one over the other such that a first surface on the top platen faces towards a first surface on the bottom platen, each said first surface having an annular recess therein to receive a friction facing and an annular land radially outwardly thereof such that when the platens are mounted one on top of the other said annular recesses and lands substantially coincide and are substantially co-axial, each recess having a depth equal to the thickness of a friction facing plus a desired thickness of adhesive and having a base with a substantially flat surface at the bottom of the recess, with each base having apertures therein opening to the recess and connectable with a source of vacuum to apply vacuum to the recess and said lands cooperating for clamping the carrier therebetween to hold the carrier during bonding.

5,250,145

APPLICATOR TIP FOR DISPENSING LIQUID ADHESIVE TO SEAM ADJACENT LAYERS OF FLOORCOVERING SHEETING

Maurice L. Despins, 11203 - 105 Street, Edmonton, Alberta, Canada T5G 2M4 , and William H. Carveth, 8118 Rowland Road, Edmonton, Alberta, Canada

Filed Sep. 12, 1991, Ser. No. 758,598
Int. Cl.[5] B65C *11/04*
U.S. Cl. 156—578 16 Claims

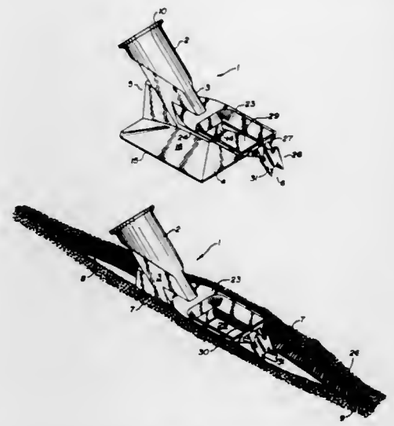
1. An applicator tip for seaming linearly abutting side-by-side layers of floorcovering with liquid sealant to form a seam extending along the line of abutment, comprising:

an upright body having, from top to bottom, a leg portion, a relatively narrow ankle portion and a foot portion, said body having a leading edge and a trailing edge which are aligned with the line of abutment;

said leg portion forming a passageway extending longitudinally therethrough and having means at its upper end for connection with a sealant supply container, whereby sealant may flow downwardly through said leg portion to said ankle portion;

said foot portion having a bottom surface having a longitudinal center line aligned with the seam, said foot portion comprising first means for uplifting and tilting marginal portions of the floorcovering layers, to bring the floorcovering side edges close to the ankle portion side surfaces as the tip is advanced along the seam;

said ankle portion having a longitudinal passageway communicating at its upper end with the leg passageway, said ankle portion forming ankle passageway outlet means for discharging sealant immediately above the central part of said foot portion first means, said body forming a laterally extending barrier immediately to the rear of said outlet means for directing sealant flow laterally as it issues from



said outlet means, whereby the sealant is directed toward the adjacent upraised and tilted floorcovering side edge; and

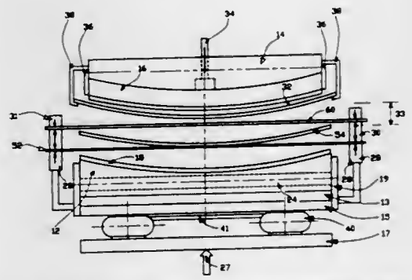
said ankle portion further comprising second means, extending out laterally from each side surface of said ankle portion in spaced relation above the sealant outlet and the top surface of said first means, for contacting said uplifted marginal portions to guide their side edges into close-fitting engagement with said ankle portion side surfaces.

5,250,146

APPARATUS FOR APPLYING ANTI-LACERATIVE FILM TO GLASS

Steven J. Horvath, 3205 Credit Woodlands, Mississauga, Ontario L5C 1V3, Canada

Division of Ser. No. 608,850, Nov. 5, 1990, Pat. No. 5,188,692. This applicatioo Oct. 18, 1991, Ser. No. 779,263
Int. Cl.[5] B30B *5/00*
U.S. Cl. 156—581 6 Claims



1. An apparatus for laminating a layer of polymer plastic film to a precast layer of glass, comprising:

a support saddle for the glass, means for positioning said layer of polymer plastic film in a first orientation at a

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distance away from said glass when a first surface of said glass is supported by said saddle at a first surface thereof, a ram positioned at the side of said polymer plastic film remote from said saddle, and means for effecting relative movement of said ram and said saddle in a second orientation perpendicular to said first orientation so as to close the distance between said ram and said polymer plastic film in the direction of said second orientation sufficiently as to cause a first surface of said ram, said polymer plastic film, said glass, and said first surface of said saddle to be in intimate physical contact seriatim; whereby said polymer plastic film contacts a second surface of said glass opposite said first surface of said glass;

at least one of said saddle and said ram being such as to be able to transmit heat to and remove heat from the precast layer of glass and said polymer plastic film being laminated thereto when said glass is placed on said saddle;

the contours of the opposed first surface of said saddle and first surface of said ram each being substantially identical to the respective first and second surfaces of said precast layer of glass when said glass is placed in said saddle;

at least the first surface of said saddle contacting said glass being of a material which has a substantially identical coefficient of heat expansion and contraction to that of the glass to be placed in said saddle;

whereby very little slippage between the contacting first surface of said saddle and at least portions of said first surface of said glass may occur during heating and cooling of said glass while said polymer plastic film is being laminated thereto;

wherein said first surface of said ram is coated with an elastically deformable material that has heat resistance up to a temperature at least slightly above the highest temperature to which the glass is heated when in place in said saddle and being contacted by said first surface of said ram, and said elastically deformable material is bounded at its periphery by a barrier cage which is formed in the same shape as the outer periphery of the precast glass placed in said saddle, but which is slightly larger than said precast glass so as to extend beyond the periphery thereof, and

a further layer of flexible, hard material placed at the side of said first surface of said ram facing said saddle, said hard material being clamped with said ram so as to be movable therewith; and an extendible piston acting against the side of said flexible material facing the first surface of said ram at the centre thereof so as to flex the flexible material from the centre thereof independently of said ram, in a direction towards the precast glass when placed in said saddle; and

wherein said piston is such as to be able to be withdrawn away from said flexible material while maintaining some pressure thereagainst, so that said flexible material will progressively contact a larger area of the film and glass being laminated while there is relative movement between said ram and said saddle in said second direction so as to close the distance between them.

5,250,147

METHOD OF PRODUCING A LAYER SYSTEM AND A LAYER SYSTEM AS PRODUCED THEREBY

Siegfried Mantl, Jülich, and Helge Bay, Linnich, both of Fed. Rep. of Germany, assignors to Forschungszentrum Julich GmbH, Julich, Fed. Rep. of Germany

Filed Apr. 8, 1992, Ser. No. 866,012

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1991, 4113143

Int. Cl.[5] C30B *1/10*

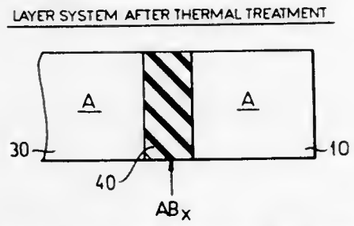
U.S. Cl. 156—603 **13 Claims**

1. A method of making a multilayer structure including at least one epitaxially grown layer, said method comprising the steps of:

(a) epitaxially growing a layer of a first material upon a substrate to form a monocrystalline structure thereon;

(b) while continuing to deposit said first material on the layer formed in step (a), depositing at a transition region a second material on the layer formed in step (a) where said first and second materials are not mutually soluble and at a temperature at which dispersed precipitates are formed of a stable or metastable phase in the first material; and

(c) thereafter heat treating said phase in said first layer at a temperature sufficient to mobilize said second material in



said layer and to impart a sufficiently high diffusion constant to said second material to effect diffusive redistribution of said phase and coalesce said precipitate into a second layer separate from but adjacent said first layer at said transition region and of a composition containing said second material.

5,250,148

PROCESS FOR GROWING GAAS MONOCRYSTAL FILM

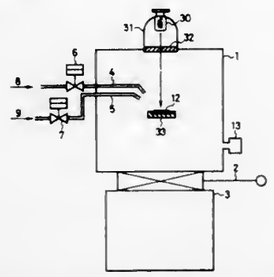
Junichi Nishizawa, and Hitoshi Abe, both of Sendai, Japan, assignors to Research Development Corporation, Tokyo, Japan

Continuation of Ser. No. 423,595, Oct. 17, 1989, abandoned, which is a continuation of Ser. No. 863,280, May 15, 1986, abandoned. This application Nov. 12, 1991, Ser. No. 790,118

Claims priority, application Japan, May 15, 1985, 60-101379

Int. Cl.[5] C30B *25/14*

U.S. Cl. 156—611 **5 Claims**



1. A method for growing a GaAs single crystal film on a base plate by introducing gases containing a crystal component element into a growing vessel evacuated to a vacuum from the outside, the method comprising evacuating said growing vessel to a predetermined pressure of 10^{-7} to 10^{-8} Pascals while introducing triethyl gallium (TEG) into said growing vessel for a 0.5 to 10 seconds under a pressure of 10^{-1} to 10^{-7} Pa, evacuating said vessel, introducing arsine (AsH_3) into said growing vessel for 2 to 200 seconds under a pressure of 10^{-1} to 10^{-7} Pa to thereby repeat a cycle for growing at least substantially one molecular layer, and thereby growing a GaAs single crystal film of a desired thickness, without the presence of carbon, with the accuracy of a single molecular layer.

5,250,149

METHOD OF GROWING THIN FILM

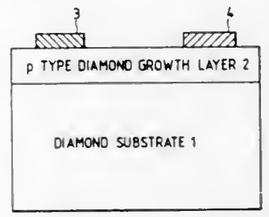
Tsunenobu Kimoto; Tadashi Tomikawa, and Nobuhiko Fujita, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Mar. 6, 1991, Ser. No. 664,581

Claims priority, application Japan, Mar. 6, 1990, 2-55819; Mar. 16, 1990, 2-67762; Dec. 12, 1990, 2-418950

Int. Cl.[5] C30B *29/04*

U.S. Cl. 156—612 **10 Claims**



1. A method for growing a thin epitaxial film selected from a diamond film and a c-BN film, on a substrate selected from diamond and c-BN, by vapor phase synthesis comprising the steps of:

(a) placing the substrate in a vacuum chamber

(b) heating the substrate to a temperature in the range 500° to 1200° C.;

(c) treating the substrate with a gaseous mixture selected from a chlorine containing gaseous mixture and a fluorine containing gaseous mixture;

(d) evacuating the gaseous mixture;

(e) epitaxially growing the thin epitaxial film by introducing a feed gas under chemical vapor deposition conditions.

5,250,150

PROCESS FOR PRODUCING READ AND/OR WRITE HEADS FOR MAGNETIC RECORDING

Pierre Gaud, Stegreve; Henri Sibuet, Le Fontamil; Alain Persico, Martin d'Heres, and Line R. Vieux, Sassenage, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

PCT No. PCT/FR91/00557, § 371 Date Feb. 28, 1992, § 102(e) Date Feb. 28, 1992, PCT Pub. No. WO92/02015, PCT Pub. Date Feb. 6, 1992

PCT Filed Jul. 10, 1991, Ser. No. 836,265

Claims priority, application France, Jul. 11, 1990, 90 08826

Int. Cl.[5] H01L *21/306;* **B44C** *1/22;* **C03C** *15/00;* **C23F** *1/00*

U.S. Cl. 156—647 **10 Claims**

1. A process for producing a magnetic head for magnetic recording comprising the process steps of

anisotropically etching a front face of monocrystalline substrate having crystallographic planes and a front face and a rear face oriented in accordance with a first crystallographic plane thereby forming a lower step, a riser, and an upper step, wherein said riser is etched in accordance with a second crystallographic plane so as to form an angle with the first crystallographic plane,

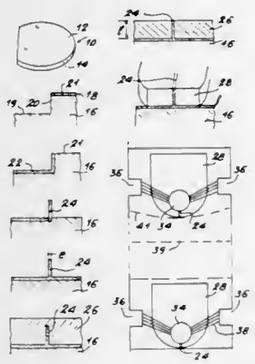
thermally oxidizing at least said riser thereby forming an oxide wall covering said riser,

etching said upper step,

depositing a magnetic coating on both sides of said oxide wall,

etching said magnetic coating to provide it with the shape of a magnetic circuit having a gap constituted by said oxide wall,

forming in the center of the magnetic circuit an opening directed perpendicular to the plane of the coating, and



winding a conductive wire around the magnetic circuit through said opening.

5,250,151

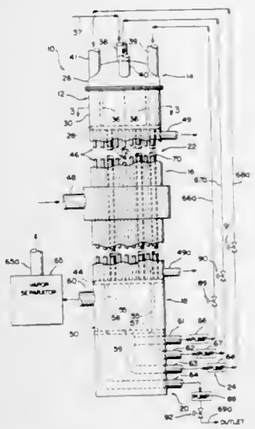
METHOD OF EVAPORATING LIQUIDS

Joaquin Huercanos, Paseo de los Arbustos, 2-1, 20009 San Sebastian, Spain

Division of Ser. No. 596,047, Oct. 11, 1990, Pat. No. 5,151,154. This application Mar. 6, 1992, Ser. No. 846,946

Int. Cl.[5] B01D *1/12, 1/22*

U.S. Cl. 159—47.1 **9 Claims**



1. A method for concentrating liquid, comprising the steps of:

conveying a liquid through an evaporation area from an inlet end to a outlet end;

heating the liquid conveyed through the evaporation area to generate vapors and to concentrate the liquid;

circulating vapors generated by heating the liquid in the evaporation area from the outlet end of the evaporation area to the inlet end of the evaporation area for mixing the liquid in the inlet end to increase velocity of liquid conveyed through the evaporation area; and

collecting concentrated liquid at the outlet end.

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5,250,152

ETHOXYLATED ALCOHOL AND DIALKYLPHENOL SURFACTANTS AS KRAFT PULPING ADDITIVES FOR REJECT REDUCTION AND YIELD INCREASE

Tien-Feng Ling, Jacksonville, and Theresa D. Hancock, Green Cove Springs, both of Fla., assignors to Betz PaperChem, Inc., Jacksonville, Fla.

Continuation-in-part of Ser. No. 657,905, Feb. 20, 1991, abandoned. This application Jul. 14, 1992, Ser. No. 913,519

Int. Cl.[5] **D21C** *3/02, 3/20*

U.S. Cl. 162—72 **6 Claims**

1. A method for enhancing the penetration of cooking liquor into wood chips, the method comprising cooking wood chips in a Kraft liquor to form a Kraft pulp and including at least two surfactants having the general formula:

$$R—O(CH_2CH_2O)_nH$$

where n is an integer from 1 to 50 and R is oleyl in at least one of said surfactants, and R is isostearyl in at least one other of said surfactants, said method resulting in the formation of a microemulsion, an increase in pulp yield and a decrease in reject levels.

5. The method as recited in claim 4 wherein n is an integer from 15 to 24.

5,250,153

METHOD FOR MANUFACTURING A MINERAL WOOL PANEL

David G. Izard, Waucoda, and Mark H. Englert, Buffalo Grove, both of Ill., assignors to USG Interiors, Inc., Chicago, Ill.

Continuation of Ser. No. 333,384, Apr. 3, 1989, abandoned, which is a continuation-in-part of Ser. No. 2,444, Jan. 12, 1987, abandoned. This application Oct. 29, 1990, Ser. No. 605,727

Int. Cl.[5] **D21H** *13/38*

U.S. Cl. 162—152 **14 Claims**

1. A method for manufacturing a lightweight, sag-resistant structural panel on a moving foraminous support wire which comprises the steps of:

forming a dilute aqueous furnish comprising a mineral fiber material;

adding a binder which consists of from about 20% to 100% of an anionically stabilized resin latex and from 0% to about 80% of starch based on the dry weight of total binder solids;

adding a cationic flocculating agent selected from guar gum and a polyacrylamide having a molecular weight of about 1–12 million and at least about 5 mole percent of a cationic component to the furnish in an amount sufficient to coat the mineral fiber material and flocculate the latex binder to coat the mineral fiber surfaces;

after addition of the flocculating agent, providing a period of up to about one minute for a relatively quiescent flow of the furnish;

depositing the furnish on a water flooded section of the support wire to form a self-sustaining, open structure of entangled mineral fiber material having water-filled interstices; and

stripping the water from the interstices and drying the structure without collapsing it by passing air through it at a rate of from about 50 to about 350 cubic feet per minute per square foot of the surface at which the air is directed.

5,250,154

QUICK-RELEASE POST FOR A PAPERMAKING MACHINE PRESS FRAME

James J. Didier, Beloit, Wis., assignor to Beloit Technologies, Inc., Wilmington, Del.

Filed Sep. 17, 1992, Ser. No. 946,992

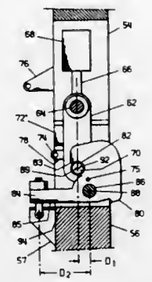
Int. Cl.[5] **D21F** *3/04*

U.S. Cl. 162—273 **8 Claims**

1. In a papermaking machine press frame, a quick-release post apparatus for selectively establishing and releasing structural integrity in the press frame, the apparatus comprising, in combination:

first and second post members, each member having a load end, the load ends opposing each other and being spaced apart for receiving a block means to bear against the respective load ends when the post apparatus is operatively engaged;

a link having a proximate end movably mounted in the first post member, and a distal end having rod means, the link movable to selectively position the rod means from a position away from the second post member for establishing a gap between the post members to a position proximate the second post member for closing the gap between the load ends of the post members;



a swing arm pivotally mounted in the second post member, the swing arm including a lever, and a hook for engaging the rod means when the swing arm is pivoted from an open position away from the second post member to a closed position proximate the second post member;

securing means for selectively securing and releasing the lever from a secured position where the hook engages the rod to cause compressive engagement of the opposed load ends against the block means, and a non-secured position where the hook is disengaged from the rod means such that the block means can be removed from between the post member load ends.

5,250,155

PROCESS FOR REFINING SOAP-CONTAINING CRUDE POLYOL FATTY-ACID POLYESTER REACTION PRODUCTS

Arend Zwanenburg, Vlaardingen, and Bart Barmentlo, Delft, both of Netherlands, assignors to Van den Bergh Foods Co., Division of Conopco, Inc., Lisle, Ill.

Filed Dec. 13, 1990, Ser. No. 626,919

Claims priority, application European Pat. Off., Dec. 21, 1989, 89203310.1

Int. Cl.[5] **B01D** *3/34;* **C07H** *1/00*

U.S. Cl. 203—34 **7 Claims**

1. A process for refining soap-containing crude polyol fatty-acid polyester reaction product avoiding discoloring problems during high temperature refining, the process comprising adding to the crude product 0.5 to 5% by weight of a 0.1 to 6N aqueous alkaline solution, contacting the alkali-added reaction product with an acid to substantially convert the soap into its corresponding free fatty acid and to neutralize the added alkali, then substantially removing from the crude reaction product salts therein, and subsequently, conducting at least one high temperature refining treatment selected from the group consisting of distillation and deodorization carried out at a temperature of from about 150° to 300° C.

5,250,156

METHOD OF SEPARATING ETHYL TERTIOBUTYL ETHER FROM MIXTURES WITH ETHANOL

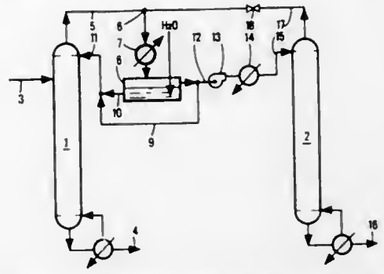
Annick Pucci, Croissy Sur Senie; Paul Mikitenko, Noisy Le Roi, and Massimo Zuliani, Rueil Malmaison, all of France, assignors to Institut Francais Du Petrole, Rueil Malmaison, France

Filed Mar. 9, 1992, Ser. No. 847,731

Claims priority, application France, Mar. 7, 1991, 91 02893

Int. Cl.[5] **B01D** *3/34;* **C07C** *41/42*

U.S. Cl. 203—39 **17 Claims**



1. A method of separating ethyl tertiobutyl ether from mixtures which it forms with ethanol, wherein a charge chiefly comprising ethyl tertiobutyl ether (ETBE) and ethanol is treated continuously in an installation comprising two distillation columns connected overhead to a decanter; the charge is introduced at a temperature of about 50° to 80° C. into the upper part of the first column, which operates at a pressure p1 of 0.05 to 0.2 MPa, said first column being heated to a bottom temperature of about 60° to 95° C.; distillate from the first column is mixed with distillate from the second column and the mixture thus formed is condensed; the condensate obtained is decanted into a lower phase with a major proportion of water and a minor proportion of ethanol, and an upper phase with a major proportion of ethyl tertiobutyl ether and a minor proportion of ethanol; a liquid reflux of a composition close to that of a ternary azeotrope at pressure p1 is produced at the top of the first column at a temperature of about 60° to 70° C., by passing appropriate proportions of a first stream of upper phase and of a stream of lower phase to the top of the first column at a temperature of about 60° to 70° C.; a second stream of upper phase, brought to a pressure p2, which is higher than pressure p1 by a value Δp of 0.4 to 1 MPa, and heated to a temperature of about 100° to 120° C., is fed to the upper part of the second column, which operates at pressure p2 and which is heated to a bottom temperature of about 120° to 150° C.; the distillate from the second column is depressurized to pressure p1 then mixed with the distillate from the first column; and purified ethanol is collected from the bottom of the first column and purified ethyl tertiobutyl ether from the bottom of the second column.

5,250,157

SEPARATION OF TOLUENE FROM METHYL ISOBUTYL KETONE BY AZEOTROPIC DISTILLATION

Lloyd Berg, 1314 S. Third Ave., Bozeman, Mont. 59715, and Randi W. Wytcherley, Bozeman, Moot., assignors to Lloyd Berg, Bozeman, Mont.

Filed Feb. 22, 1993, Ser. No. 20,397

Int. Cl.[5] **B01D** *3/36;* **C07C** *7/06, 45/84*

U.S. Cl. 203—63 **2 Claims**

1. A method for recovering toluene from a mixture of toluene and methyl isobutyl ketone which comprises distilling a mixture of toluene and methyl isobutyl ketone in the presence of an azeotrope forming agent, recovering the toluene and the azeotrope forming agent as overhead product and obtaining the methyl isobutyl ketone from the stillpot, wherein said azeotrope forming agent is 2-methoxyethanol.

5,250,158

METHOD FOR PRODUCING VANADIUM ELECTROLYTIC SOLUTION

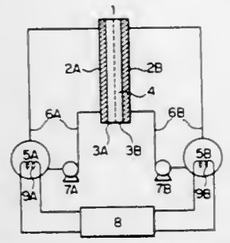
Hiroko Kaneko; Akira Negishi; Ken Nozaki, all of Tsukuba; Kenji Sato, and Ichiro Nakahara, both of Kashima, all of Japan, assignors to Director-General, Agency of Industrial Science and Technology, Tokyo and Kashima-Kita Electric Power Corporation, Ibaraki, both of Japan

Filed Oct. 8, 1991, Ser. No. 772,794

Claims priority, application Japan, Oct. 15, 1990, 2-273356

Int. Cl.[5] **C25B** *1/00*

U.S. Cl. 204—86 **10 Claims**



1. In a method for producing an electrolytic solution for redox batteries using vanadium as an active material in both positive and negative electrodes, the improvement which comprises reducing a vanadium compound selected from the group consisting of ammonium metavanadate and vanadium pentaoxide with a reducing agent in the presence of an inorganic acid to form a solution of the vanadium compound containing tetravalent vanadium ions, and then carrying out at least one further addition of said inorganic acid and said vanadium compound to the resulting solution and further reducing the added vanadium compound to form a solution containing an increased concentration of vanadium tetravalent ions.

5,250,159

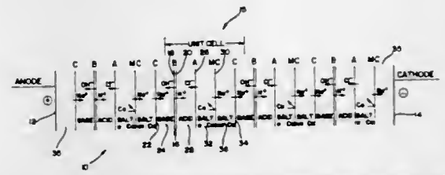
BIPOLAR MEMBRANE STACK AND METHOD FOR PRODUCING ACID AND MONOVALENT BASE FROM IMPURE SALT

Donald J. Butterworth, Stirling, N.J., assignor to The Graver Company, Union, N.J.

Filed Jun. 12, 1991, Ser. No. 713,809

Int. Cl.[5] **B01D** *61/44*

U.S. Cl. 204—98 **7 Claims**



3. A method of generating an acid solution and a base solution by electrodialysis of a salt solution which comprises:

using an electrodialysis cell comprising an anode and a cathode and a unit cell defining a plurality of liquid flow channels disposed between the anode and cathode;

circulating a base solution through a first flow channel formed by a first cation-selective membrane and the anion-selective face of a bipolar membrane;

circulating an acid solution through a second flow channel formed by an anion-selective membrane and the cation-selective face of the bipolar membrane;

circulating a raw material salt solution through a third channel formed by a second cation-selective membrane and the

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anion-selective membrane, said second cation-selective membrane is monocation-selective permitting the passage of monovalent cations while blocking the passage of multivalent cations and said raw material salt solution contains multivalent cations;

circulating a solution of a salt having the cation of said base solution through a fourth channel formed by a third cation-selective membrane and the second cation-selective membrane, said third cation-selective membrane comprises the first cation-selective membrane of a next adjacent unit cell; and

applying a direct current across the anode and cathode.

5,250,160

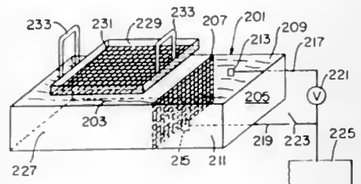
APPARATUS AND METHOD FOR DISINFECTING A CONTAMINATED OBJECT

Henry C. Oksman, 20 Wagon Wheel Rd., Mamaroneck, N.Y. 10543, and Joseph Eisner, 185 E. 85th St., New York, N.Y. 10028

Continuation-in-part of Ser. No. 532,624, Jun. 4, 1990, Pat. No. 5,118,401. This application Feb. 28, 1992, Ser. No. 843,745

Int. Cl.[5] C25F *5/00*; C25B *1/26, 9/00*

U.S. Cl. 204—131 **12 Claims**



10. A method of disinfecting an object comprising electrolyzing a solution of a stable salt and an unstable salt by a applying a voltage across it to cause the unstable salt to release toxic ions, dispersing said toxic ions in said solution about the object until it is disinfected, and, thereafter, interrupting said voltage to render said solution non-toxic.

5,250,161

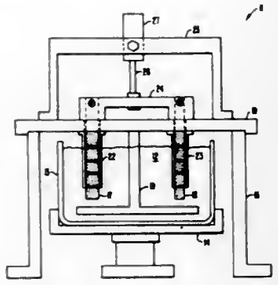
ELECTROCHEMICAL DESENSITIZATION PROCESS

George Chin, Citrus Heights; Rex M. Smith; Michael K. Wong, both of Sacramento, and Patrick J. Wagner, Citrus Heights, all of Calif., assignors to Aerojet-General Corporation, Rancho Cordova, Calif.

Continuation-in-part of Ser. No. 821,349, Jan. 21, 1992, abandoned, which is a continuation-in-part of Ser. No. 645,382, Jan. 24, 1991, abandoned. This application Jun. 26, 1992, Ser. No. 904,813

Int. Cl.[5] C25F *5/00*

U.S. Cl. 204—131 **15 Claims**



1. A process for treating a composition containing one or more energetic compounds bound together by a polymeric binder, said energetic compounds including at least one member selected from the group consisting of nitro-group-bearing, nitramine-group-bearing and nitrato-group-bearing compounds, to substantially reduce the sensitivity of said composition to inadvertent initiation, said process comprising:

(a) placing said composition in contact with a first electrode in an electrolytic cell which further contains a liquid medium connecting said first electrode and a second electrode in said cell;

(b) with said first electrode energized as an anode, passing an electric current between said first and second electrodes to at least partially oxidize said binder; and

(c) subsequent to step (b), energizing said first electrode as a cathode and passing an electric current between said first and second electrodes to reduce at least a portion of said energetic compounds.

6. A process for treating a composition containing one or more energetic compounds selected from the group consisting of nitro-group-bearing, nitramine-group-bearing and nitrato-group-bearing compounds, bound together by a polymeric binder, to substantially reduce the sensitivity of said composition to inadvertent initiation, said process comprising:

(a) contacting said composition with an aqueous liquid to extract water-soluble components therefrom, thereby forming an aqueous solution of water-soluble components of said composition, and dividing said aqueous solution into first and second portions;

(b) combining components of said composition which were not extracted in step (a) with an aqueous liquid to form a slurry;

(c) circulating said first portion of said aqueous solution through an anodic half-cell, and said second portion through a cathodic half-cell separated from said anodic half-cell by an ion-permeable barrier, while passing an electric current across said anodic and cathodic half-cells through said ion-permeable barrier, to generate an acidic solution of oxidizing agents in said anodic half-cell and a basic solution of reducing agents in said cathodic half-cell;

(d) contacting said slurry with said acidic solution in a reactor vessel to cause oxidative decomposition of solid binder materials in said slurry, thereby exposing energetic compounds retained by said binder for chemical attack; and

(e) once said energetic compounds are exposed, contacting said slurry with said basic solution to cause reductive decomposition of said energetic components thus exposed.

5,250,162

METHOD OF REDUCING TI(IV) TO TI(III) IN ACID SOLUTION

Peter C. Foller, Boston; Ravi Vora, Framingham, and Robert J. Allen, Saugus, all of Mass., assignors to Metallgesellschaft AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 29, 1992, Ser. No. 827,731

Int. Cl.[5] C25C *1/06*

U.S. Cl. 204—140 **19 Claims**

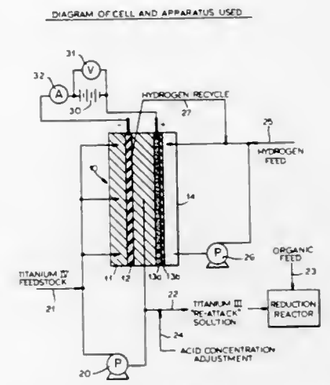
1. A method of reducing Ti(IV) to Ti(III), comprising the steps of:

(a) providing an electrochemical cell having a semi-hydrophobic gas diffusion anode and a cathode traversable by a liquid and coupled to said anode by a diffusion zone;

(b) feeding hydrogen gas to said anode;

(c) feeding an acidic solution of Ti(IV) to said cathode, said acidic solution comprising an acid selected from the group which consists of sulfuric acid, fluoroboric acid, methane sulfonic acid and perchloric acid in a concentration sufficient to retain Ti(IV) in solution; and

()d impressing an electric current across said anode and said cathode to effect cathodic reduction of Ti(IV) similarly



with anodic oxidation of hydrogen, thereby forming Ti-(III) in solution.

5,250,163

PROTON CONCENTRATION SENSOR/MODULATOR FOR SULFONATED AND HYDROXYLATED POLYANILINE ELECTRODES

Arthur J. Epstein, Bexley, Ohio; Jiang Yue, Cambridge, Mass., and David R. Burley, Kinnelon, N.J., assignors to The Ohio State University Research Foundation, Columbus, Ohio

Filed Nov. 27, 1991, Ser. No. 800,363

The portion of the term of this patent subsequent to Aug. 11, 2009, has been disclaimed.

Int. Cl.[5] G01N *27/26*

U.S. Cl. 204—153.21 **25 Claims**

1. A method for sensing the pH of a medium in the vicinity of a sensing electrode, which comprises the steps of:

(a) placing a hydroxylated polyaniline or sulfonated polyaniline (SPAN) electrode and a counter-electrode in said medium; and

(b) monitoring an indicia of said hydroxylated polyaniline or SPAN correlative with the pH of said medium.

5,250,164

BETA-HYDROXY URETHANE LOW TEMPERATURE CURING AGENTS

Joseph T. Valko, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 818,739, Jan. 7, 1992, abandoned, which is a continuation of Ser. No. 315,954, Feb. 27, 1989, abandoned, which is a continuation of Ser. No. 941,919, Dec. 15, 1986, abandoned, which is a continuation of Ser. No. 531,105, Sep. 12, 1983, abandoned, which is a division of Ser. No. 409,273, Aug. 18, 1982, Pat. No. 4,435,559. This application Sep. 28, 1992, Ser. No. 954,591

Int. Cl.[5] C25D *13/04*

U.S. Cl. 204—181.7 **4 Claims**

2. A method of electrocoating an electrically conductive surface serving as a cathode in an electrical circuit comprising said cathode, an anode and an aqueous electrodepositable coating composition, by passing an electric current between said anode and said cathode to form a curable coating on the cathode, wherein the aqueous electrodepositable composition comprises an aqueous dispersion of:

(a) a beta-hydroxy urethane crosslinking agent which is a reaction product of an isocyanate and a 1,2-polyol wherein the equivalent ratio of —NCO groups of the isocyanate to —OH groups of the 1,2-polyol is about 1:1.5 to 1:2,

(b) a cure catalyst, and

(c) an active hydrogen-containing material

said beta-hydroxy urethane being present in an amount sufficient to cure the coating at elevated temperature.

5,250,165

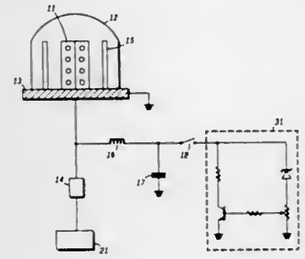
CONTROLLED ISOTROPY REACTIVE ION ETCHER FOR MULTI-STEPPED SLOPED CONTACT ETCH PROCESS

Robert Berglund, Mesa, Ariz.; Karl Mautz, and Jonathan C. Dahm, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 9, 1991, Ser. No. 803,827

Int. Cl.[5] C23C *15/00*

U.S. Cl. 204—192.32 **10 Claims**



1. A controlled isotropy reactive ion etcher comprising: a reaction chamber having a cathode and an anode, wherein one of the cathode and anode is adapted to hold semiconductor substrates; a means for generating an RF plasma between the cathode nd the anode; a means for supplying process gasses to the reaction chamber; a means for removing product gasses from the reaction chamber; and a means for controlling DC bias between the cathode and anode which is controlled independently of the means for generating an RF plasma, wherein the RF plasma creates a self-generated DC bias between the cathode and anode and the means for controlling DC bias comprises a shunt regulator coupled to the cathode for shunting at least a portion of the shelf generated DC bias to ground.

5,250,166

METHOD OF RECOVERING PALLADIUM BY ELECTROLYSIS AND APP±RATUS THEREFOR

Kenji Motojima; Misato Horie, both of Mito, and Shin-ichiro Torada, Ibaraki, all of Japan, assignors to Doryokuro Kakunenryo Kaihatsu Jigyodan and Johoku Chemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 761,242, Sep. 17, 1991, abandoned. This application Apr. 22, 1992, Ser. No. 873,620

Claims priority, application Japan, Sep. 21, 1990, 2-252283

Int. Cl.[5] C25C *7/02, 7/08*

U.S. Cl. 204—222 **5 Claims**

1. An apparatus for recovering palladium by electrolysis comprising:

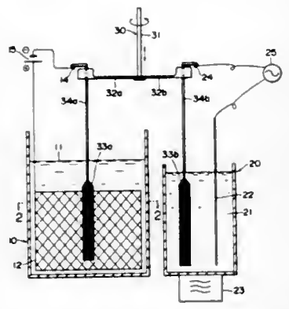
a dc electrolytic cell capable of recovering therein a palladium-containing aqueous solution acidified with nitric acid and equipped with an anode disposed in said cell, a dc supply connected to said anode and a first contact;

a recovery vessel capable of receiving therein dilute nitric acid and equipped with a mechanical shaker for shaking said recovery vessel, a counter electrode disposed in said recovery vessel, an ac supply connected to said counter electrode and a second contact; and

an electrode-transferring mechanism having a drive shaft capable of rotating and moving upward and downward and a pair of arms extending form said drive shaft horizon-

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tally in opposite directions, said electrode-transferring mechanism being equipped with a pair of platinum cathodes each suspended perpendicularly from said arm via a platinum wire so that said cathodes are inserted into said

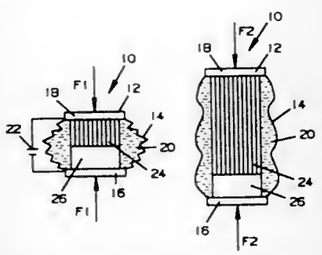


electrolytic cell and said recovery vessel, respectively, in such a manner that the respective cathodes are changed in their positions alternately, and the respective ends of arms are electrically connected to said first and second contacts alternately, at predetermined intervals of time.

5,250,167
ELECTRICALLY CONTROLLED POLYMERIC GEL ACTUATORS

Douglas B. Adolf; Mohsen Shahinpoor; Daniel J. Segalman, and Walter R. Witkowski, all of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 22, 1992, Ser. No. 902,322
Int. Cl.[5] B01D *7/34*
U.S. Cl. 204—299 R **19 Claims**

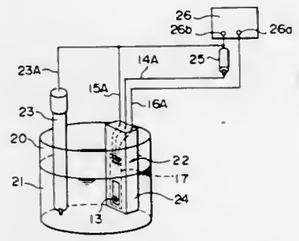


1. A polymeric gel actuator comprising:
fluid containment means for containment of an electrolytic solution;
an electrolytic solution within said containment means;
a first ionizable polymeric gel element disposed within said electrolytic solution;
means for introducing electric current through said solution, said means having an anode and a cathode; and
means for converting translation of at least a portion of said polymeric gel element into mechanical movement external to said fluid containment means;
whereby, upon introduction of electric current through said solution, ions are formed therein which act upon said first polymeric gel element causing a change of dimensions of said polymeric gel element resulting in translation of said portion of said first polymeric gel element relative to another portion of said first polymeric gel element.

5,250,168
INTEGRATED ION SENSOR

Keiji Tsukada, Kastuta; Yuji Miyahara, Hitachi; Yasuhisa Shibata, Ibaraki, and Yoshio Watanabe, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 1, 1991, Ser. No. 723,952
Claims priority, application Japan, Jul. 3, 1990, 2-175738
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—416 **28 Claims**

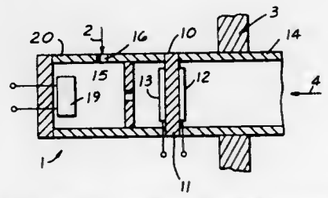


1. An integrated ion sensor, comprising:
at least one ion selective membrane sensitive to ions contained in a solution to be measured for detecting the concentration of said ions to produce a corresponding detected signal;
a signal processing circuit having field effect semiconductor devices, and for inputting the detected signal obtained by said ion selective membrane through said field effect semiconductor devices to process the same;
a reference electrode disposed in a measuring environment made by the solution to be measured and set to a predetermined voltage relationship between said reference electrode and said ion selective membrane;
a single power supply having a negative terminal and a positive terminal, said terminals being connected to said signal processing circuit for supplying a driving power to said signal processing circuit through said terminals, and one of said terminals being connected to said reference electrode, to provide the predetermined voltage relationship;
said signal processing circuit including means to set an active state of the ion sensor at a voltage relative to the voltage of said reference electrode by controlling the threshold value of at least one of said field effect semiconductor devices.

5,250,169
APPARATUS FOR SENSING HYDROCARBONS AND CARBON MONOXIDE

Eleftherios M. Logothetis, Birmingham, and Richard E. Soltis, Redford, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 7, 1991, Ser. No. 713,243
Int. Cl.[5] G01N *27/417*
U.S. Cl. 204—424 **18 Claims**

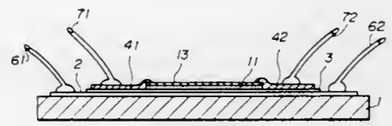


1. An apparatus for measuring hydrocarbons and carbon monoxide in a measurement gas comprising:
a solid state electrochemical oxygen pumping cell comprising a porous electrode layer on each of two opposite sides of an oxygen-ion conducting solid electrolyte member;
a supporting structure which together with said solid state electrochemical oxygen pumping cell substantially defines a volume, one electrode layer of said cell being inside said volume and the other electrode layer being exposed to another gas outside said volume and during operation of said apparatus said electrochemical oxygen pumping cell being capable of providing oxygen into said volume;
an aperture in said supporting structure for providing communication between said volume and said measurement gas present outside said volume; and
a solid state combustibles sensor means mounted within said volume for generating an output signal indicative of the amount of hydrocarbons and carbon monoxide present in said measurement gas.

5,250,170
GAS SENSOR HAVING METAL-OXIDE SEMICONDUCTOR LAYER

Shinji Yagawara, and Wasaburo Ohta, both of Yokohama, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 13, 1991, Ser. No. 668,617
Claims priority, application Japan, Mar. 15, 1990, 2-65258; Jun. 8, 1990, 2-150408; Sep. 10, 1990, 2-239691
Int. Cl.[5] G01N *27/12*
U.S. Cl. 204—431 **12 Claims**



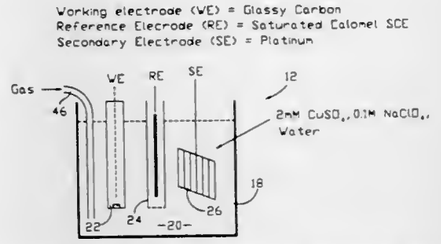
1. A gas sensor comprising:
a base member including a heater member for generating heat;
a metal-oxide semiconductor layer in which a resistance thereof is changed by a gas which is in contact with said metal-oxide semiconductor layer, said metal-oxide semiconductor layer being formed on said base member;
an insulating thin film stacked on said metal-oxide semiconductor layer so as to cover a whole surface of said metal-oxide semiconductor layer; and
electrodes, in contact with said metal-oxide semiconductor layer, for detecting a change in the resistance of said metal-oxide semiconductor layer,
wherein said metal-oxide layer has a portion in which a material of said insulating thin film fills up spaces among crystals of said metal-oxide semiconductor layer.

5,250,171
SENSOR FOR CARBON MONOXIDE

Piers R. G. Warburton, and Daryle H. Busch, both of Lawrence, Kans., assignors to University of Kansas, Lawrence, Kans.

Filed May 10, 1991, Ser. No. 698,169
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—431 **24 Claims**

1. An apparatus for determining the presence of carboon monoxide in a test sample, said apparatus comprising:
an electrical cell assembly including a quantity of electrolyte having hydrated Cu(II) ions therein, and a pair of electrodes in operative contact with said electrolyte;
means for introducing said test sample inot said apparatus in the region of said operative contact between said electrolyte and said electrodes;
means including said electrodes and electrolyte for creating an electrical potential difference between the electrodes of a magnitude of +0.03 to +0.15 volts which favors the reduction of said Cu(II) ions to Cu(I) ions and the formation of Cu(I)-carbonyl complexes by reaction between the Cu(I) ions and carbon monoxide present in said test sample; and

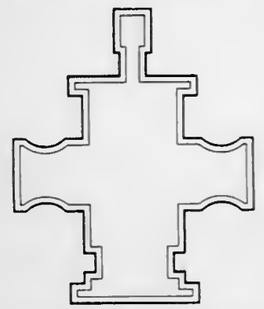


detecting means including structure for detecting an electrical parameter indicative of said reduction of Cu(II) ions to Cu(I) ions.

5,250,172
METHOD TO FABRICATE METALLIC CONTAINERS BY ELECTROPLATING FOR USE IN HOT ISOSTATIC PRESSING OF METALLIC AND/OR CERAMIC POWDERS

Gregorio Vargas-Gutierrez; Carolos Maroto-Cabrera; Horacio Villarreal-Marquez, Ave. Junco de la Vega 208 Col. Roma 64700, all of Monterrey, Nuevo Leon, Mexico

Filed Aug. 5, 1992, Ser. No. 925,015
Int. Cl.[5] C25D *1/10*
U.S. Cl. 205—70 **5 Claims**



1. A method of the manufacturing of metallic containers to be used in the hot isostatic pressing of metallic or ceramic powders or a combination of said powders, which consists of the following steps:
a) manufacturing of a mold of special design which has the shape and dimensions as required in the metallic container to produce a solid mold of materials selected from the group consisting of: waxes, low melting point alloys and plastics;
b) surface conditioning of the mold by a conventional method in order to prepare said surface for metallic coating by electroplating; additionally surface conditioning non-conductive waxes, glass and plastic materials by making their surface electrically conductive through conventional chemical methods;
c) metallic electroplating by coating the mold with one or several metallic layers up to the desired thickness;
d) separation or destruction of the mold from the metallic container and;
e) cleaning by conventional methods followed by a heat treatment process of annealing.

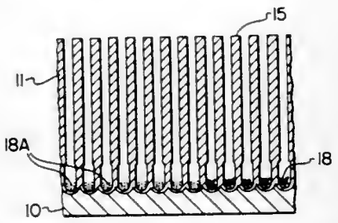
VOL 1155 ISS 1 OCT 5 1993 UMI

5,250,173

PROCESS FOR PRODUCING ANODIC FILMS EXHIBITING COLORED PATTERNS AND STRUCTURES INCORPORATING SUCH FILMS

Mark A. Jozefowicz, Kingston, Canada, assignor to Alcan International Limited, Montreal, Canada

Continuation-in-part of Ser. No. 696,840, May 7, 1991, Pat. No. 5,167,793. This application Oct. 5, 1992, Ser. No. 956,611
Int. Cl.[5] C25D *11/18*
U.S. Cl. 205—121 4 Claims



1. A process of producing a structure incorporating an anodic film exhibiting a coloured pattern, which process comprises:

anodizing a surface of a substrate made of or coated with an anodizable metal selected from the group consisting of aluminum and anodizable aluminum alloys, to produce an anodic film formed on an underlying metal surface;

depositing a semi-reflective layer of a non-noble metal within said film such that reflections from said semi-reflective layer contribute to the generation of a visible colour by effects including light interference;

contacting limited areas of said film with a solution capable of at least partially leaching said metal from said film; and

contacting the surface of said film with a solution of a more noble metal compound in order to at least partially replace non-noble metal remaining in said film by said more noble metal.

5,250,174

METHOD OF BREAKING WATER-IN-OIL EMULSIONS BY USING QUATERNARY ALKYL AMINE ETHOXYLATES

Paul R. Hart, The Woodlands, Tex., assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed May 18, 1992, Ser. No. 884,670
Int. Cl.[5] C10G *33/04;* B01D *17/05*
U.S. Cl. 208—188 10 Claims

1. A method for breaking a water-in-oil emulsion in a hydrocarbon liquid comprising adding to the hydrocarbon liquid from 1 to 1000 ppm. by volume, of a quaternary alkyl amine ethoxylate selected from the group consisting of a methyl quaternary amine having the structure $RN[(EO)_xH]_2CH_3$, wherein EO is ethylene oxide, x is such that the EO content is 50–70% by weight and R is a C_{12}–C_{18} alkyl, and an ethoxyl quaternary amine having the structure $RN[EOH]_3$ or $RN(EOH)_2(CH_2)_3(EOH)_3$, wherein EO is ethylene oxide the EO content is 30–50% by weight and R is a C_{12}–C_{18} alkyl.

5,250,175

PROCESS FOR RECOVERY AND TREATMENT OF HAZARDOUS AND NON-HAZARDOUS COMPONENTS FROM A WASTE STREAM

Thomas F. Des Ormeaux, Houston, Tex., assignor to Seaview Thermal Systems, Blue Bell, Pa.

Filed Nov. 29, 1989, Ser. No. 443,584
Int. Cl.[5] B01D *3/34*
U.S. Cl. 208—356 19 Claims

1. A process for vaporizing compounds in a hydrocarbon-containing waste stream, through heat retention, the process comprising the following steps:

a) introducing a waste stream containing solids into a cylindrical chamber and maintaining the cylindrical chamber at a pre-determined temperature;

b) conveying the waste stream through the cylinder for a time sufficient for compounds having an evaporation point of at least 80 degrees F. to evaporate from the stream;

c) conveying the evaporated stream via an inert gas medium through an air cooler;

d) gravity feeding the remainder of the waste stream to a second, separate chamber; maintaining the second chamber at a second, pre-determined temperature; retaining the remainder of the waste stream in the second chamber for a certain amount of time so that compounds with evaporation point of between 300° F. to 900° F. are evaporated from the stream; gravity feeding the remainder of the waste stream to a third, separate chamber; maintaining the third chamber at a third, pre-determined temperature; retaining the remainder of the waste stream in the third chamber for a certain amount of time so that compounds with an evaporation point of between 900° F. and 1700° F. are evaporated from the stream;

e) conveying the evaporated streams from the first chamber, second chamber, and third chamber, via an inert gas medium for removal of additional solids within the streams;

f) processing the gas stream to remove condensible materials; and

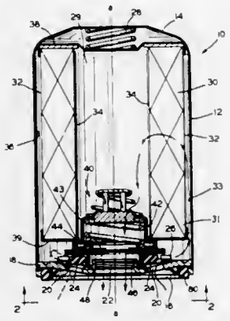
g) recycling the inert gas containing stream to the cylindrical chamber.

5,250,176

MODULAR VALVE ASSEMBLY FOR OIL FILTER

Dieter P. Daniel, Dillon, S.C., assignor to Dana Corporation, Toledo, Ohio

Filed Nov. 27, 1991, Ser. No. 800,193
Int. Cl.[5] B01D *27/10*
U.S. Cl. 210—130 8 Claims



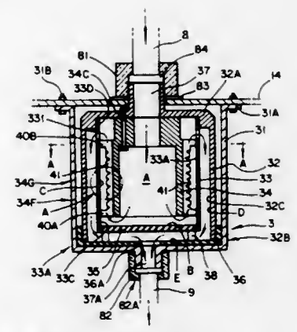
1. In an oil filter assembly including a cup-shaped shell defining a first closed end and a second open end spaced along an axis from said first end, said second open end adapted for entry and exit of oil through selective apertures, said assembly further comprising a cylindrical filter element having first and second ends supported between said first closed end and second open end of said shell, respectively, said assembly also including a unitary valve body supported at said second open end of said filter element for accommodating oil flow through said filter, said valve body being cup-shaped and defining an internal space within the internal boundaries of said body, said body containing a relief valve subassembly in its internal space; an improvement comprising: a clean-side anti-drainback valve subassembly supported on said valve body and situated adjacent said relief valve subassembly and within said filter element, wherein said relief valve comprises a first spring contained and supported internally of said valve body, while said clean-side anti-drainback valve includes a second spring external to and supported on an exterior surface of said valve body, each spring disposed in an axially oriented end-to-end relationship with respect to the other, wherein said relief valve subassembly and said clean-side anti-drainback valve subassembly together comprise a compound modular valve assembly for said oil filter, said relief valve subassamblly further comprising an internal relief valve spring seat within said body of said valve and a first plunger seat situated within said valve body adjacent said second open end of said shell, said first plunger seat including apertures, said first plunger seat spaced from said relief valve spring seat, said relief valve subassembly further including a first plunger adjacent said first plunger seat, said first spring being in engagement with said first plunger to bias said first plunger against said first plunger seat, wherein said first spring extends and is disposed between said internal relief valve spring seat and said first plunger under a permanent compressive force, whereby said apertures are normally closed by said first plunger under said compressive force, wherein said anti-drainback valve subassembly comprises a second plunger and a second plunger seat fixed internally of said valve body, said second seat diametrically opposed to and axially spaced from said first plunger seat, said second plunger seat being adapted for interface with said second plunger, said anti-drainback valve subassembly comprising said second spring wherein said second spring is an anti-drainback spring, a first anti-drainback spring seat supporting said spring, said first spring seat defined by an exterior surface of said valve body, a second anti-drainback spring seat external to and spaced from said valve body, said second seat normally biased away from said valve body by said anti-drainback spring to retain said anti-drainback plunger in a closed position against said second plunger seat, wherein said anti-drainback valve further comprises means for rigidly fixing said second anti-drainback valve spring seat to said second plunger in a permanent axially spaced relationship with respect to said second plunger.

5,250,177

WATER PURIFIER WITH AN OZONE GENERATING DEVICE

Hong K. Cho, Suweon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suweon, Rep. of Korea

Filed Jul. 5, 1991, Ser. No. 726,184
Claims priority, application Rep. of Korea, Jul. 9, 1990, 90-10034[U]
Int. Cl.[5] C02F *1/78*
U.S. Cl. 210—192 7 Claims



1. A water purifier comprising:

an ozone generator for generating ozone, and

conduit means for conducting wafer to be purified through said ozone generator wherein ozone is produced by electrolysis to sterilize the water, said ozone generator comprising:

a cylinder having an interior surface forming a space, and a water entrance and exit communicating with said space,

a bobbin disposed in said space, said bobbin defining a longitudinal axis and including a plurality of radially outwardly projecting ribs which extend generally parallel to said axis, said ribs being circumferentially spaced apart to define therebetween water channels which communicate with said entrance and exit, and

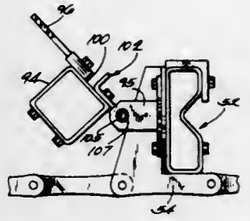
electrically conductive wire means wound around said bobbin in contact with said ribs to form longitudinally alternating positively and negatively charged windings for generating ozone by electrolysis in water flowing through said water channels, said water channels projecting radially inwardly past said windings, said windings being spaced radially inwardly from said interior surface of said cylinder.

5,250,178

BUOYANT CEILING WIPER FOR STACKED TANK CLARIFIER

Thomas J. Casper; Peter G. Dobbeck, both of Waukesha; Franklin J. Koehler, Menomonee Falls; Susan M. Rasper, Wales, and John Thomas, Brookfield, all of Wis., assignors to Envirex Inc., Waukesha, Wis.

Filed Jun. 11, 1992, Ser. No. 897,279
Int. Cl.[5] B07D *21/18*
U.S. Cl. 210—256 20 Claims



1. A wastewater treatment facility comprising:

a stacked tank clarifier including a lower tank having a floor, and including an upper tank positioned above said lower tank said upper tank having a bottom defining a ceiling of said lower tank;

a movable endless chain loop in said lower tank, said chain loop including an upper segment proximate the ceiling of said lower tank and a lower segment proximate the floor of said lower tank;

a collector flight assembly including a flight attachment defining a part of said chain loop, and a collector flight, attached to said flight attachment and movable therewith, having a front face adapted to scrape sludge from the floor of the lower tank when said collector flight is proximate the floor of said lower tank; and

means other than said collector flight, for scraping the ceiling of said lower tank, said scraping means including a buoyant member carried by said collector flight assembly and a resilient scraping member attached to said buoyant member and biased toward the ceiling of said lower tank by said buoyant member.

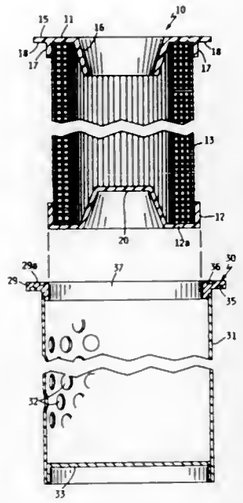
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5,250,179

COMPACTABLE FILTER AND COMPACTABLE FILTER MOUNTING MEANS

Michael R. Spearman, St. Paul, Minn., assignor to Porous Media Corporation, St. Paul, Minn.

Filed Mar. 27, 1992, Ser. No. 859,023
Int. Cl.[5] B01D *27/06, 27/08*
U.S. Cl. 210—315 6 Claims



1. A coreless filter element and a support cage in combination comprising:

a non-by-passing support cage, said non-by-passing support cage including a perforated cylinder and a top end cap having a flanged lip, said flanged lip including a first side with a sealing ring groove and a sealing ring located therein, said flanged lip including a second side opposite of said first side with the second side including a sealing ring groove and a sealing ring located therein said non-by-passing support cage having an inside diameter;

a pleated filter media for filtering particles from a fluid flowing therethrough, said pleated filter media having a central region for unfiltered fluid to enter a downstream side for filtered fluid to discharge therefrom, said pleated filter media including a first end, said pleated filter media having an outside diameter;

a first end cap located on said first end of said pleated filter media;

a flanged lip located on said first end cap of said pleated filter media, said flanged lip on said first end cap having a first annular sealing surface for forming sealing engagement around said first end cap located on said first end of said pleated filter media to seal said pleated filter media against said top end cap with the inside diameter of said non-by-passing-support cage being slightly larger than the outside diameter of the said pleated filter media to allow said pleated filter media to slide inside said non-by-passing support cage to permit said non-by-passing-support cage to provide radial support to said pleated filter element when pressurized fluid is forced through said pleated filter media and;

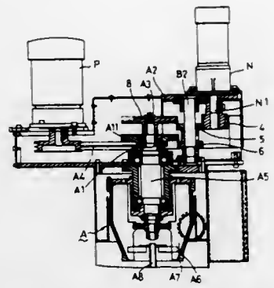
means for securing said flanged lip located on said first end cap of said pleated filter media and said flanged lip on said non-by-passing support cage in a sealing relationship to prevent unfiltered fluid from escaping from said pleated filter media.

5,250,180

OIL RECOVERING APPARATUS FROM USED LUBRICANT

Yun-Te Chang, Tainan Hsien, Taiwan, assignor to FWU Kuang Enterprises Co., Ltd., Tainan Hsien, Taiwan

Filed Nov. 10, 1992, Ser. No. 974,083
Int. Cl.[5] B01D *17/038*
U.S. Cl. 210—375 5 Claims



1. An apparatus for recovering oil from used lubricant from a machine, which comprises:

a centrifuge unit including a tank for receiving used lubricant, a hollow shaft (A5) connected to said tank and having an upper portion extending outwardly from the top of said tank, and a motor operatively connected to said hollow shaft so as to drive said hollow shaft to rotate said tank;

said tank having an inner peripheral wall for deposition of contaminant from used oil by centrifugal force;

means for scraping contaminant from said inner peripheral wall of said tank including a second shaft (A3) which extends axially through and is mounted to said hollow shaft for relative rotation therebetween;

said second shaft having a lower portion extending downwardly out of said hollow shaft into said tank and having an upper portion extending upwardly out of said hollow shaft;

said contaminant-scraping means further including a plurality of scraping blades extending radially outward from said lower portion of said second shaft for scraping contaminant from said inner peripheral wall of said tank; and

a synchronizing mechanism connected to said centrifuge unit and said contaminant-scraping means for driving said hollow shaft and said second shaft simultaneously at different rates, which comprises:

a first gear (8) attached to said upper portion of said second shaft (A3);

a second gear (A11) attached to said upper portion of said hollow shaft (A5);

said first gear and said second gear having a different number of teeth;

a synchronizing shaft (B2) provided adjacent to said first and second gears;

a third gear (5) and a fourth gear (6) mounted on said synchronizing shaft in an axially movable position for engaging with said first and second gears (8, A11) respectively, wherein said third and fourth gears have different numbers of teeth and are spaced at a distance equal to that between said first gear (8) and said second gear (A11);

means (7) for moving axially said third gear (5) and said fourth gear (6) together along said synchronizing shaft (B2) to engage or disengage from said first gear (8) and said second gear (A11) respectively; and

a driving unit operatively connected to said third and fourth gears to rotate said first and second gears via said third and said fourth gears.

5,250,181

PROCESS FOR REMOVING ELEMENTAL SULFUR FROM FLUIDS

Robert J. Falkiner, Mississauga; Marc A. Poirier, and Ian D. Campbell, both of Sarnia, all of Canada, assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 716,485, Jun. 17, 1991, Pat. No. 5,160,645. This application Sep. 8, 1992, Ser. No. 941,823
Int. Cl.[5] B01D *11/00*
U.S. Cl. 210—634 9 Claims

1. A process for reducing the elemental sulfur content of a fluid selected from the group consisting of gasoline, jet fuel, diesel fuel, kerosene and dialkyl ethers containing same, comprising mixing said fluid with water, inorganic caustic and an aliphatic mercaptan in amounts effective to form after completion of mixing an aqueous layer containing polysulfides and a fluid layer having a reduced elemental sulfur level and recovering the treated fluid.

5,250,182

MEMBRANE-BASED PROCESS FOR THE RECOVERY OF LACTIC ACID AND GLYCEROL FROM A "CORN THIN STILLAGE" STREAM

John M. A. Bento, Downsville, Canada, and Hubert L. Fleming, Sussex, N.J., assignors to Zenon Environmental Inc., Burlington, Canada

Filed Jul. 13, 1992, Ser. No. 912,320
Int. Cl.[5] B01D *61/58*
U.S. Cl. 210—641 12 Claims

1. A two-step membrane recovery process for recovering lactic acid and glycerol, together, from thin stillage obtained from the distillation of beer produced in a fermentation zone, said process comprising,

(1) in a first membrane recovery step,

(a) flowing said thin stillage essentially free from insoluble suspended solids larger than about 10 μm, in cross-flow, to an ultrafiltration (UF) zone, at a temperature in the range from about 30°0 C.–100° C. and at a pressure in the range from 1 atm to 10 atm, said UF zone having at least one module containing a UF membrane having a pore size smaller than 0.1 μm, sufficient to remove suspended solids >0.1 μm and 'heavies' in the range from 1000–200,000 Daltons; and,

(b) withdrawing an ultrafiltered permeate (UF permeate) and an ultrafiltered concentrate (UF concentrate) from said UF zone with recovery of UF permeate being at least 50% in said UF zone; said UF permeate containing essentially all 'lights' consisting of soluble solids having a molecular weight <1000 Daltons, said solids being present in said thin stillage; said UF concentrate containing essentially all solid insoluble particulates >0.1 μm and essentially all 'heavies' consisting of soluble solids having a molecular weight >1000 Daltons; and,

(2) in a second membrane recovery step,

(a) flowing said UF permeate at a temperature in the range from 30°0 C.–100° C. and at a pressure in the range from 5 atm to 40 atm, in cross-flow, to a nanofiltration (NF) zone having at least one module with a NF membrane permeable to non-ionized molecules having a molecular weight <200 Daltons; and,

(b) withdrawing a nanofiltered permeate (NF permeate) and a nanofiltered concentrate (NF concentrate) from said NF zone with recovery of NF permeate being at least 50% in said NF zone; said NF permeate containing a major proportion by weight of lactic acid and glycerol present in said UF permeate, said NF permeate being essentially free of dissolved solids having a molecular weight >200 Daltons; said NF concentrate containing essentially all soluble solids having a molecular weight >200 Daltons; and,

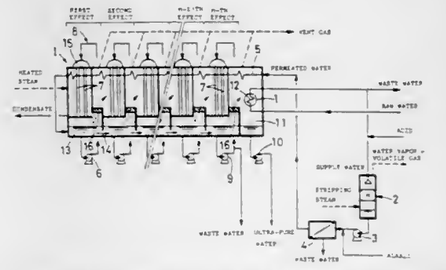
(3) recovering said UF concentrate and said NF concentrate; whereby no UF permeate or NF permeate is flowed to an evaporation zone, and the operation and maintenance of an evaporator for producing syrup from thin stillage is obviated.

5,250,183

APPARATUS FOR MANUFACTURING ULTRA-PURE WATER

Hidetaka Sawada; Shoichi Momose; Shiro Inoue; Hideo Suematsu, and Kazunori Koba, all of Osaka, Japan, assignors to Hitachi Zosen Corporation, Osaka, Japan

Filed Aug. 30, 1991, Ser. No. 751,806
Int. Cl.[5] B01D *61/00*
U.S. Cl. 210—652 11 Claims



5. A method for manufacturing ultra-pure water having an electric resistivity of at least 17MΩ·cm, the method comprising:

supplying water;

purifying said supplied water to an electric resistivity of at least 17MΩ·cm; and

collecting said purified water;

wherein the purifying step comprises:

decarbonating/degassing the supplied water to remove most of carbonic groups dissolved in the supplied water;

purifying the water by reverse osmosis with reverse osmosis equipment in fluid communication with said decarbonator/degassor to remove most of scales in the supplied water, said decarbonator/degassor is disposed upstream of said reverse osmosis equipment; and

evaporating and condensing the supplied water in a multiple effect evaporator, said decarbonator/degassor and said reverse osmosis equipment are disposed upstream of said multiple effect evaporator.

VOL 1155 ISS 1 OCT 5 1993 UMI

5,250,184

PROCEDURE FOR THE PREPARATION OF MICROPOROUS CERAMIC MEMBRANES FOR THE SEPARATION OF GAS AND LIQUID MIXTURES

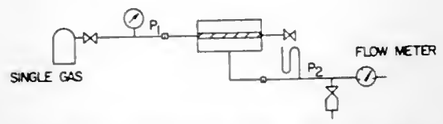
Wilhelm F. Maier, Mülheim/Ruhr, Fed. Rep. of Germany, assignor to Studiengesellschaft Kohle mbH, Mulheim, Fed. Rep. of Germany

Filed May 13, 1992, Ser. No. 882,210

Claims priority, application Fed. Rep. of Germany, May 27, 1991, 4117284

Int. Cl.[5] B01D *61/00*

U.S. Cl. 210—653 **14 Claims**



1. A supported continuous inorganic membrane wherein at least about 90% of the pores of the membrane have an effective diameter between about 0.3 and 1.2 nm and are of substantially the same pore size.

5,250,185

REDUCING AQUEOUS BORON CONCENTRATIONS WITH REVERSE OSMOSIS MEMBRANES OPERATING AT A HIGH PH

Fansheng T. Tao, Sugar Land, Tex.; Paul F. Pilger, Denver, Colo., and Charles A. Dyke, Beacon, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed May 1, 1992, Ser. No. 877,689

Int. Cl.[5] B01D *61/02*

U.S. Cl. 210—654 **9 Claims**

9. A method of treating oilfield produced water to substantially reduce boron concentration, which comprises:

passing an oilfield produced water containing boron and solubilized hydrocarbon compounds through a water softener to remove divalent cations from the water leaving a concentration below about 0.5 mg/L calcium and 0.15 mg/L magnesium;

raising the pH of the water above about 10.5:

passing the water into contact with the high pressure side of a composite cross-linked, interfacially polymerized, aromatic polyamide reverse osmosis membrane;

recovering from the low pressure side of the reverse osmosis membrane having properties sufficient to resist degradation under a pH above about 9.5 an aqueous permeate containing less than about 0.75 mg/L boron; and

recovering from the high pressure side of the reverse osmosis membrane an aqueous retentate having a substantially higher concentration of boron.

5,250,186

HPLC LIGHT SCATTERING DETECTOR FOR BIOPOLYMERS

Gavin D. Dollinger, San Francisco; Robert L. Cunico, Hercules, and Michael G. Kunitani, San Rafael, all of Calif., assignors to Cetus Corporation, Emeryville, Calif.

Division of Ser. No. 601,840, Oct. 23, 1990. This application Oct. 9, 1992, Ser. No. 959,112

Int. Cl.[5] B01D *15/08*

U.S. Cl. 210—656 **17 Claims**

2. A method of determining the average molecular weight of particles in a solution, comprising:

generating incident light having a first wavelength selected to cause a scattered light detector to output a maximum signal;

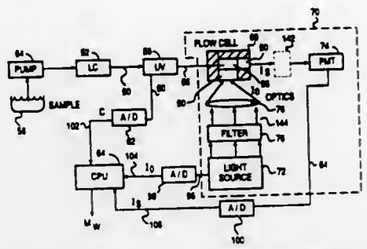
directing said incident light on a solution containing said particles;

generating incident radiation having a second wavelength suitable for measuring Uv absorption;

directing said incident radiation at said second wavelength at a solution containing said particles;

measuring the scattered light intensity for high angle scattered light at said first wavelength and the intensity of light incident on said solution at said first wavelength;

measuring the intensity of transmitted light at said second



wavelength which passed through said solution and the intensity of incident light at said second wavelength falling on said solution;

calculating the weight concentration of said particles using the values of the intensity of incident light and said transmitted light at said second wavelength using a predetermined relationship;

calculating the weight averaged molecular weight of said particles in said solution according to the relationship

$$\frac{I_S}{I_o} = B\,C\,M_w$$

where

I_S/I_o = the intensity of the scattered light at the selected angle;

C = the wight concentration of said particles in said solvent stream;

M_w = the average molecular weight of said particles; and

B = a constant which can be empirically determined for each system by calibrating the system with toluene or by measuring the relative scattered light intensity for each of at least two particle samples having known average molecular weight.

5,250,187

RESIN BED FOR LIQUID TREATMENT

Jeffrey G. Franks, Menomonee Falls, Wis., assignor to Autotrol Corporation, Milwaukee, Wis.

Continuation-in-part of Ser. No. 560,472, Jul. 27, 1990, abandoned, which is a continuation of Ser. No. 308,076, Feb. 8, 1989, abandoned. This application Jun. 28, 1991, Ser. No. 723,364

Int. Cl.[5] B01D *15/04*

U.S. Cl. 210—661 **26 Claims**

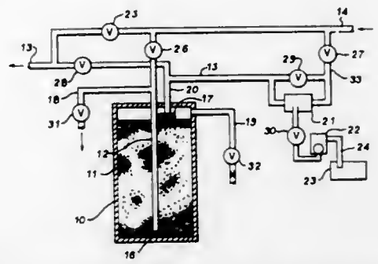
17. A method of operating an ion exchange fluid treatment system wherein a bed of ion exchange resin is placed in a receptacle having an inlet for untreated fluid for raw material to be treated and a spaced outlet for treated fluid comprising:

placing a resin in said receptacle so as to effect a bed of resin, said resin having nonoverlapping terminal velocities in two different ionic forms within a given type of resin;

flowing fluid to be treated downwardly through said bed of resin until some of said resin at a top portion of the resin bed has been changed to a different ionic form;

introducing a fluid upwardly through the resin bed so as to

place said resin in said different ionic form at a bottom portion of said resin bed; and



flowing a regenerant liquid downwardly through said resin bed.

5,250,188

PROCESS OF REMOVING AND CONCENTRATING DESIRED MOLECULES FROM SOLUTIONS

Ronald L. Bruening; Reed M. Izatt; Bryon J. Tarbet, and Jerald S. Bradshaw, all of Provo, Utah, assignors to Brigham Young University, Provo, Utah

Filed Sep. 1, 1989, Ser. No. 401,670

Int. Cl.[5] C02F *1/42*

U.S. Cl. 210—672 **29 Claims**

1. A method for the removal and concentration of desired molecules from a source solution which comprises

bringing said source solution having a first volume into contact with a solid cation-ligand-matrix consisting of a cation complexed to a ligand molecule covalently bonded to a matrix consisting of an organic spacer bonded to a solid inorganic support through a silicon atom said cation having an affinity for the desired molecules to form a complex between said desired molecules and said cation portion of said solid cation-ligand-matrix;

removing said source solution from contact with said cation-ligand-matrix complexed with desired molecules; and

contacting said solid cation-ligand-matrix complexed with said desired molecules with a smaller volume of a receiving solution in which said desired molecules are soluble thereby breaking said complex and recovering the desired molecules in concentrated form in said smaller volume of said receiving solution.

5,250,189

METHOD FOR REMOVING PAINT SOLIDS FROM WATER-BASED PAINT SYSTEMS USING ALUMINUM SALTS

Paul A. Rey, Coraopolis, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

Filed May 14, 1991, Ser. No. 699,549

Int. Cl.[5] C02F *1/52*

U.S. Cl. 210—712 **10 Claims**

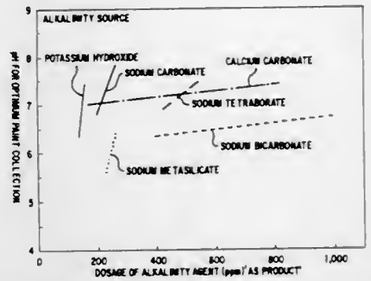
1. A method of treating the circulating water of a paint spray booth system used to capture over-sprayed, water-borne paint, which method comprises:

(a) maintaining the pH of said circulating water between about 5.0 and 9.0, while maintaining the alkalinity of said circulating water within the range of 50–2,000, on a calcium carbonate basis;

(b) adding to said circulating water an effective amount of an aluminum salt;

(c) contacting said over-sprayed, water-borne paint with said circulating water, after completing step (a) and before or after completing step (b);

(d) adding an effective amount of a flocculant to said water after completing steps (a), (b) and (c); and



(e) removing the resulting sludge from said circulating water.

5,250,190

ON-LINE BLENDING METHOD FOR ACTIVATOR CATALYZED PAINT DETACKIFICATION PROGRAM

Mitchell J. Kassouf, Lansdale; Daniel W. Yankovich, Jr., Richboro, and Deborah L. Purnell, Philadephia, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Continuation-in-part of Ser. No. 751,945, Aug. 29, 1991, Pat. No. 5,147,558, which is a continuation-in-part of Ser. No. 590,910, Oct. 1, 1990, abandoned, which is a continuation-in-part of Ser. No. 388,435, Aug. 2, 1989, abandoned, which is a continuation-in-part of Ser. No. 327,846, Mar. 23, 1989, abandoned, which is a continuation-in-part of Ser. No. 161,866, Feb. 29, 1988, Pat. No. 4,853,132. This application Jun. 9, 1992, Ser. No. 895,765

The portion of the term of this patent subsequent to Sep. 15, 2009, has been disclaimed.

Int. Cl.[5] C02F *1/56*

U.S. Cl. 210—712 **1 Claim**

1. A process for detackifying and coagulating paint, lacquer, or enamel in spray booths in which water is used to wash air in said booth and to remove oversprayed paints, enamels or lacquers comprising adding to said water a effective amount of a treatment stream formed by intimately mixing a water soluble or water dispersible cationic polymer selected from the group consisting of polydially dimethyl ammonium chloride, a condensation product of dimethylamine plus epichlorohydrin plus ethylene diamine and a condesation product of dimethylamine plus epichlorohydrin in an aqueous stream to form a cationic polymer stream, and thereafter, in sequence adding to said cationic polymer stream an anionic activator selected from the group consisting of metasilicate, orthosilicate, disilicate, mixed silicate, metaaluminate, aluminsilicate, molybdate, phosphomolybdate and phosphate or the sodium, potassium or ammonium salts thereof wherein the weight ratio of anionic activator to cationic polymer is between 0.25 to 10 and 10 to 1 and intimately mixing said anionic activator with said cationic polymer stream on line during said process to detackify and coagulate said paint, lacquer, or enamel in said water.

5,250,191

PAINT DENATURANT

Michael Cory, High Wycombe, and Ziegmund Zoltowski, Kingston, both of England, assignors to Brent Chemicals International plc, United Kingdom

Filed Jun. 24, 1992, Ser. No. 903,375

Claims priority, application United Kingdom, Jun. 24, 1991, 9113568

Int. Cl.[5] B01D *17/04*

U.S. Cl. 210—712 **21 Claims**

1. A process for detackifying paint comprising contacting an oil-in-water emulsion with an aqueous solution whereby the

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oil-in-water emulsion is destabilised; then contacting paint with the aqueous solution comprising the destabilised oil-in-water emulsion so that the paint is adsorbed onto destabilised emulsion particles.

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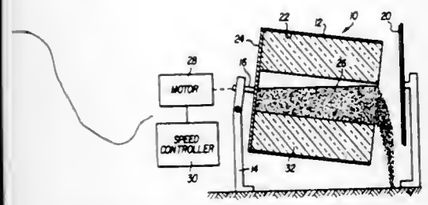
SLUDGE DEWATERING BY FREEZING

Courtland J. Martel, Jr., Enfield, N.H., assignor to The United States of America as represented by the Secretary of the Amry, Washington, D.C.

Division of Ser. No. 173,015, Mar. 23, 1988, abandoned, which is a continuation of Ser. No. 861,811, May 12, 1986, abandoned, which is a division of Ser. No. 611,570, May 18, 1984, abandoned. This application Sep. 29, 1989, Ser. No. 414,228

Int. Cl.[5] C02F *11/20*

U.S. Cl. 210—737 **16 Claims**



1. A method for separating a thermally crystalizable solvent including water from an admixture of the solvent and impurities including sludge, comprising the steps of:

a. rotating a container holding the sludge about an axis of said container at a constant rate of rotation; and

b. subjecting the container to a temperature sufficient to freeze the water in the sludge, the constant rate of rotation of the container being sufficient to form a layer of ice on the container surfaces and to maintain a thin layer of water between the ice layer and the sludge.

5,250,193

WET OXIDATION OF AQUEOUS STREAMS

John E. Sawicki, Breinigsville; Baldomero Casas, Emmaus, both of Pa.; Chiung-Yuan Huang, Glen Ridge, N.J.; William R. Killilea, West Chelmsford, and Glenn T. Hong, Tewksbury, both of Mass., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jul. 28, 1992, Ser. No. 921,190

Int. Cl.[5] C02F *1/72*

U.S. Cl. 210—761 **5 Claims**

1. In a process for the oxidation of organic components by wet oxidation wherein a stream containing organic contaminants is contacted with a source of molecular oxygen at elevated temperature and pressure for times sufficient to effect oxidation of said organic contaminants, the improvement for effecting enhanced continuous wet oxidation of wastewater streams containing organic contaminants and also contaminated with inorganic salts at substantially reduced reaction time which comprises:

contacting said wastewater stream therein with a source of molecular oxygen in a tubular reactor;

maintaining a temperature of at least 325° C. but not above 370° C. and a pressure ranging from 220 to 345 bar such that essentially a single phase reaction is maintained;

maintaining a residence time of 5 minutes or less, the residence time being sufficient to effect oxidation of at least 80% of the organic contaminants contained in said stream; and

wherein the organic contaminants are present in said aqueous wastewater stream in an amount from about 0.5 to 2% by weight.

5,250,194

N-DODECYL HETEROCYCLIC COMPOUNDS USEFUL AS INDUSTRIAL MICROBICIDES AND PRESERVATIVES

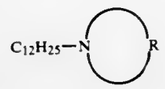
C. George Hollis; S. Rao Rayudu, and Marilyn S. Whittemore, all of Germantown, Tenn., assignors to Buckman Laboratories International, Inc., Memphis, Tenn.

Continuation of Ser. No. 654,492, Feb. 13, 1991, abandoned. This application Jun. 30, 1992, Ser. No. 908,555

Int. Cl.[5] C02F *1/50*

U.S. Cl. 210—764 **25 Claims**

1. A method for inhibiting the growth of at least one microorganism in an industrial aqueous system, said system being susceptible to the growth of a microorganism, comprising the step of contacting said industrial aqueous system with an N-dodecyl heterocyclic compound having the following general formula:



wherein the heterocyclic ring defined by



is a substituted or unsubstituted group selected from pyrrolidinyl, 2-pyrrolidinonyl, pyrrollinyl, pyrazolidinyl, pyrazolinyl, pyrazolyl, imidizolidinyl, imidizolinyl, imidazolyl, oxazolinyl, piperadinyl, piperazinyl, morpholinyl, hexamethyleneimine or heptamethyleneimine, in an amount effective to inhibit the growth of said microorganism.

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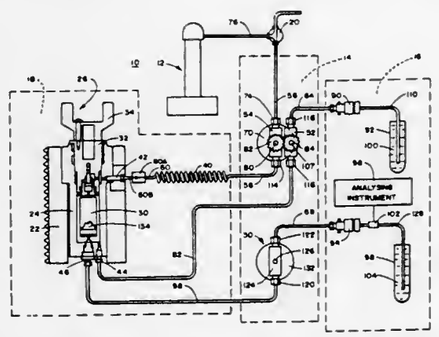
APPARATUS AND METHOD FOR SUPERCRITICAL FLUID EXTRACTION

Robin R. Winters, Robert W. Allington; Daniel G. Jameson, and Dale L. Clay, all of Lincoln, Nebr., assignors to Isco, Inc., Lincoln, Nebr.

Continuation-in-part of Ser. No. 847,652, Mar. 5, 1992, Pat. No. 5,173,188, which is a continuation-in-part of Ser. No. 795,987, Nov. 22, 1991, Pat. No. 5,160,624, which is a continuation-in-part of Ser. No. 553,119, Jul. 13, 1990, Pat. No. 5,094,753. This application Oct. 23, 1992, Ser. No. 966,083

Int. Cl.[5] B01D *11/04*

U.S. Cl. 210—634 **26 Claims**



1. Apparatus comprising: means for supercritical fluid extraction; said means for supercritical fluid extraction including an extraction cartridge having an interior for containing material to be extracted, a plurality of fluid lines in fluid contact with said cartridge interior, a first line of said plurality of fluid lines capable of supplying supercritical fluid at high pressure to said cartridge interior and a second line of said fluid lines capable of depressurizing fluid carrying extractant from said interior to a pressure lower than said high pressure, at least one of the said plurality of fluid lines incorporating a programmable valve having a valve body, said valve being disposed to regulate fluid flow in said one of the fluid lines, said valve further comprising:

a linear actuator;

a nonrotating stem having a first face and a second face;

said nonrotating stem being reciprocally mounted within the valve body wherein said stem may be moved in forward and reverse directions by said linear actuator;

a valve seat in said valve body, with a larger diameter fluid opening on one side and a smaller fluid opening on the other side;

said smaller opening in said valve seat being connected to a fluid inlet port in the valve body and said larger opening in the seat connected to a fluid outlet port in said valve body; and

a ball which cooperates with said valve seat and enters said seat through its larger opening but is too small to pass through said smaller opening of the seat;

said ball being adapted to be pressed into said seat by contact with said first face of said stem a said stem moves in said forward direction thereby forming a conformal seal and stopping flow between said inlet and said outlet ports;

said ball being free to rotate upon being released from said seat as said stem moves in said reverse direction thereby opening flow between said inlet port and said outlet port, wherein the first face of said stem has a compression yield point at least 1.3 times the compression yield point of the seat and no more than 0.8 times the compression yield point of said ball.

17. A method comprising the step of performing supercritical fluid extraction; said step of performing supercritical fluid extraction comprising the substeps of:

automatically injecting a series of samples into a pressure vessel means having an interior for containing material to be extracted, an exterior and a plurality of fluid lines in fluid contact with said interior, a first line of said plurality of fluid lines being adapted to supply supercritical fluid at high pressure to said interior and a second line of said fluid lines being adapted to depressurize fluid carrying extractant from said interior to a pressure lower than said high pressure, wherein at least one of the said first and second fluid lines incorporates a programmable valve having a valve body, a valve inlet and a valve outlet, with said programmable valve being disposed to regulate fluid flow in said one of the fluid lines;

extracting each sample prior to introducing a next sample;

said step of extracting including the step of controlling the fluid by selectively pressing a valve element into a valve seat thereby forming a conformal seal between the valve inlet and valve outlet to stop flow between said inlet and said outlet and for releasing said valve element thereby opening flow between said inlet and said outlet, wherein a first face of said stem has a compression yield point at least 1.3 times the compression yield point of the seat and no more than 0.8 times the compression yield point of said ball;

the step of controlling the fluid by pressing a valve element into said seat including the substeps of pressing a valve element into said seat by contact with said first face of said stem as said stem moves in said forward direction thereby forming said conformal seal and stopping flow between said inlet and said outlet ports and releasing said valve element as said stem moves in said reverse direction thereby opening flow between said inlet port and said outlet port wherein said ball is free to rotate upon being released from said seat as said stem moves in said reverse direction.

5,250,196

METHOD AND DEVICE FOR WORKING UP UNUSED CONCRETE MIX AND/OR MORTAR

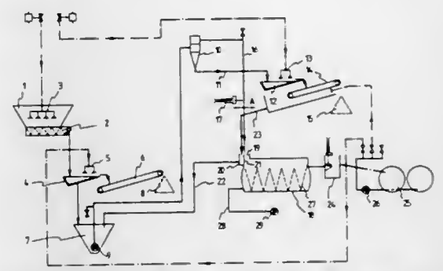
Bertholdus P. Bosch, Berlicum, Netherlands, assignor to Heijmans Materieel Beheer B.V., Netherlands

Filed Jun. 17, 1992, Ser. No. 899,761

Claims priority, application Netherlands, Jun. 20, 1991, 9101062

Int. Cl.[5] B01D *21/26, 15/00*

U.S. Cl. 210—780 **8 Claims**



5. A method for separating the components of unused concrete mixture and/or mortar comprising the steps of:

receiving the unused concrete mix and/or mortar in a receptacle;

discharging the contents of the receptacle onto a first vibrating sieve;

spraying water onto the sieve for washing to contents remaining thereon;

vibrating the first sieve to sift the contents received thereon;

collecting a mixture of water, sand and cement passing through said first sieve in a collecting tank;

pumping said mixture to a separating device;

separating sand from said mixture;

passing the sand separated by said separating device to a second vibrating sieve located remotely from said first sieve;

discharging the unseparated sand, water and cement from said separating device to a substantially vertical duct wherein at least a portion of said vertical duct is horizontally displaceable;

shifting said portion of said duct between a first position and a second position;

directing the unseparated sand, water and cement to the collecting tank when said displaceable portion is in said first position; and

directing the unseparated sand, water and cement to a buffer tank when said displaceable portion is in said second position.

5,250,197

POLLUTION PAD RECONDITIONING/RECYCLING SYSTEM

Ray C. Marcel, 208 Sandra St., Berwick, La. 70342

Continuation of Ser. No. 749,892, Aug. 26, 1991, Pat. No. 5,192,455. This application Aug. 7, 1992, Ser. No. 926,677

The portion of the term of this patent subsequent to Mar. 9, 2010, has been disclaimed.

Int. Cl.[5] B01D *21/26*

U.S. Cl. 210—787 **5 Claims**

1. A method of removing liquid hydrocarbons from pollution pads, restoring the pollution pads to a reusable state, comprising the following steps:

A. providing an apparatus for the removal of liquid hydrocarbons from pollution pads comprising

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drain means for draining excess liquids from the pollution pads;

squeeze means associated with said drain means for squeezing out additional liquid from pollution pads;

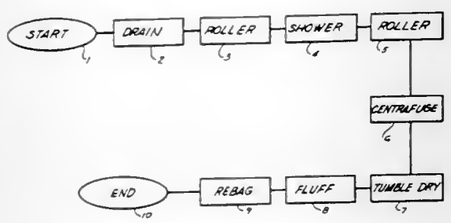
a recirculating liquid cleaning area having an upper portion and a medial portion for diluting and removing the liquid hydrocarbons from the pollution pads, said recirculating liquid cleaning area further including

at least one liquid cleaning area forming the upper portion of said recirculating liquid cleaning area, said liquid cleaning area being configured for evenly dispersing a fluid solvent over the liquid cleaning area;

fluid permeable means for positioning pollution pads within the liquid cleaning area, said fluid permeable means forming the medial area of said recirculating liquid cleaning area;

basin means for receiving a quantity of cleaning fluid, comprising the solvent and a percentage of the liquid hydrocarbon permeating said fluid permeable means, said basin means further including storage means for storing said fluid; and

circulation means for circulating the cleaning fluid from said basin means to said liquid cleaning area, said circulation means further comprising a fluid pump and fluid conveying means directed from said basin to said liquid cleaning area;



said apparatus further comprising

a centrifuge extractor for extracting fluid absorbed by the pollution pads after having been treated by said cleaning fluid; and

a tumble dryer for drying residual solvent absorbed by the pollution pads;

B. draining said pollution pads in said drain means for a period of time so as to allow draining of any excess fluids from the pollution pads;

C. squeezing the pollution pads through said squeeze means so as to remove additional fluid from the pollution pads;

D. positioning the pollution pads in association with said fluid permeable means;

E. cleaning the pollution pads with a solvent, thereby diluting and substantially removing any remaining absorbed liquid hydrocarbons;

F. draining the solvent from the cleaned pollution pads;

G. squeezing the pollution pads again through said squeeze means;

H. extracting the remaining absorbed solvent from the pollution pads by placing them in a centrifuge and spinning them in a centrifuge and spinning them; and

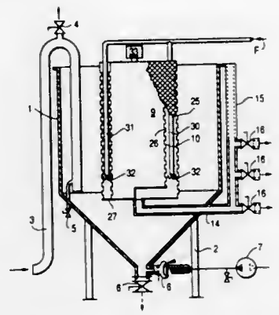
I. tumbling the pollution pads in a tumble dryer until any remaining solvent in the pollution pads has drained or evaporated.

5,250,198

METHOD FOR SEPARATING SOLID PARTICLES FROM A LIQUID

Hans Stedfeldt, Solbacksvägen 19, S-147 41 Tumba, Sweden

Filed Aug. 16, 1991, Ser. No. 745,848
Int. Cl.[5] B01D *24/28*
U.S. Cl. 210—797 **8 Claims**



1. An improved method for dewatering sludge by separating and draining liquid from solid suspensions, comprising the steps of:

introducing the sludge to be dewatered into a container;

providing at least one drainage unit in said container, said drainage unit including double screened jacket walls defining therebetween an annular dewatering chamber;

separating the liquid from the solid suspensions in said container by moving the separated liquid through said jacket walls into said dewatering chamber;

simultaneously with said separating step, imparting a turbulence to the separated liquid in said annular dewatering chamber to prevent deposition of solids on said jacket walls of said annular dewatering chamber while the liquid is being separated therefrom;

draining the separated liquid from said annular dewatering chamber;

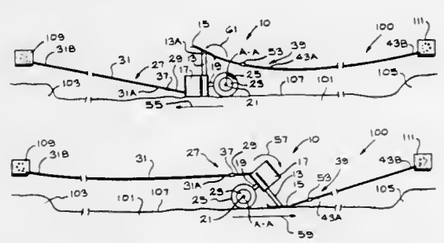
removing the dewatered sludge from the bottom of said container.

5,250,199

SLUDGE SCRAPER APPARATUS

Roger Haag, DeWitt, Mich., assignor to Enviroland, Inc., DeWitt, Mich.

Filed Jun. 15, 1992, Ser. No. 898,409
Int. Cl.[5] B01D *21/18*
U.S. Cl. 210—803 **11 Claims**



1. A method for using a sludge scraper apparatus to move sludge sediment across a sludge containment means having a bottom and a sidewall extending from the bottom to form the containment means, which comprises:

(a) providing the sludge scraper apparatus having a frame means; a plow means mounted on a first end of the frame means; a skid means mounted on a second end of the frame means; a rotating means journaled on an axle means, which is connected to the scraper apparatus, intermediate the ends of the frame means; and a first actuating means and a second actuating means, wherein the first actuating means is connected adjacent the plow means and a first portion of the sidewall of the containment means and serves to move the scraper apparatus in a first direction over the bottom of the containment means with the plow means contacting the bottom of the containment means to move sludge sediment from the bottom of the containment means toward the first portion of the sidewall and wherein the second actuating means is connected adjacent to the skid means and a second portion of the sidewall of the containment means, and serves to cause the scraper apparatus to rotate in a first circular direction about the axle means on the rotating means so that the skid means contacts the bottom of the containment means and the plow means is removed from the bottom of the containment means and wherein the second actuating means is then able to cause the scraper apparatus to slide in a second direction opposite the first direction over the bottom of the containment means on the skid means toward the second portion of the sidewall;

(b) engaging the first actuating means to move the scraper apparatus on the rotating means over the bottom of the containment means in the first direction with the rotating means on the bottom of the containment means and the plow means contacting the bottom of the containment means to move sludge sediment across the bottom of the containment means toward the first portion of the sidewall; and

(c) disengaging the first actuating and engaging the second actuating means, which rotates the scraper apparatus in the first circular direction about the axle means on the rotating means so that the skid means contacts the bottom of the containment means and wherein the second actuating means then slides the scraper apparatus over the bottom of the containment means on the skid means and the rotating means in the second direction.

5,250,200

HYDROFLUOROALKANE FIRE/FLAME EXTINGUISHING COMPOUNDS

Daniel Sallet, Serquigny, France, assignor to Atochem, Puteaux, France

Filed Jun. 10, 1991, Ser. No. 712,720
Claims priority, application France, Jun. 8, 1990, 90 07154
Int. Cl.[5] A62D *1/08*
U.S. Cl. 252—8 **3 Claims**

1. A fire fighting technique comprising directing a fire/flame extinguishing amount of a hydrofluoroalkane compound onto a burning fire or flame, said hydrofluoroalkane compound having the formula:

$$C_nH_mF_x \quad (I)$$

in which n is an integer ranging from 4 to 6, m and x are integers wherein m is 1 or 2, and the sum (m+x) is equal to 2n or 2n+2.

5,250,201

POLYMERIC SUBSTANCE AND METHOD OF SEPARATING AND CULTURING BACTERIA

Moshe Shilo, Jerusalem, and Ali Fattom, Maale Hagalil, both of Israel, assignors to Solmat Systems, Ltd., Yavne and Yissum Research Development Company of the Hebrew University, Jerusalem, both of Israel

Division of Ser. No. 330,816, Mar. 30, 1989, abandoned, which is a division of Ser. No. 58,853, Jun. 5, 1987, Pat. No. 4,826,624, which is a division of Ser. No. 731,002, May 6, 1985, Pat. No. 4,693,842, which is a continuation-in-part of Ser. No. 634,535, Jul. 26, 1984, Pat. No. 4,649,110, which is a continuation of Ser. No. 403,049, Jul. 29, 1982, abandoned. This application Feb. 19, 1991, Ser. No. 656,866
Int. Cl.[5] E21B *43/22*
U.S. Cl. 252—8.554 **4 Claims**

1. A process for secondary recovery of petroleum from a subterranean geological formation comprising injecting into said formation a treatment solution containing a bioemulsifier product of a cyanobacterium that is a member of the Phormidium genus in a concentration sufficient to disperse petroleum in the formation into said treatment solution, and recovering said treatment solution.

5,250,202

PHENYALKYL GLYCIDYL ETHER ADDITION PRODUCTS

Dieter Reinehr, Kandern, Fed. Rep. of Germany, and Rosemarie Töpfl, Dornach, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 543,941, Jun. 26, 1990, Pat. No. 5,097,076. This application Dec. 20, 1991, Ser. No. 811,380
Claims priority, application Switzerland, Jun. 30, 1989, 2436/89
Int. Cl.[5] D06M *13/175*
U.S. Cl. 252—8.6 **10 Claims**

1. An aqueous or anhydrous composition useful as a textile finishing agent which comprises

(i) from 2 to 50% by weight of an acid ester of an addition product of a phenylalkyl glycidyl ether and a polyalkylene glycol ether, said polyalkylene glycol ether having the formula

$$R—O\text{-}(\text{Alkylene-O})_m\text{-}H, \quad (1)$$

wherein R is an aliphatic hydrocarbon radical having at least 4 carbon atoms, "Alkylene" is an alkylene radical of 2 or 3 carbon atoms, and m is a number from 2 to 100, and

(ii) from 5 to 50% by weight of a non-ionic surfactant;

and further comprising at least one of the following components:

(a) from 1 to 30% by weight of a silicone oil,

(b) from 10 to 60% by weight of a mineral oil,

(c) from 20 to 45% by weight of a dialkyl ester of an ethylenically unsaturated aliphatic dicarboxylic acid,

(d) from 10 to 70% by weight of a diffusion accelerator,

(e) from 0.5 to 5% by weight of a salt of a C_{10}–C_{24}fatty acid and a polyvalent metal, and

(f) from 0.5 to 3% by weight of a C_1–C_4alkylene diamide of a fatty acid having from 10 to 24 carbon atoms.

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5,250,203

LUBRICATING OIL COMPOSITIONS CONTAINING A POLYOXYALKYLENE CARBOXYLIC ACID SALT ADDITIVE

Richard A. Denis, Eastlake, and Frederick W. Koch, Willoughby Hills, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 746,526, Aug. 16, 1991, abandoned, which is a continuation of Ser. No. 554,614, Jul. 18, 1990, abandoned, which is a continuation of Ser. No. 263,578, Oct. 27, 1988, Pat. No. 4,954,273, which is a continuation of Ser. No. 20,287, Feb. 27, 1987, Pat. No. 4,784,781. This application Feb. 12, 1992, Ser. No. 834,756

The portion of the term of this patent subsequent to Nov. 15, 2005, has been disclaimed.

Int. Cl.[5] C10M *129/32, 129/40, 129/66, 129/93*

U.S. Cl. 252—18 **20 Claims**

1. An oil composition comprising:

an oil of lubricating viscosity in an amount of 50% or more by weight based on the total weight of the composition, and

a minor amount, sufficient to improve performance characteristics of the composition, of a calcium, magnesium, zinc, barium, ammonium, diethylamine, or triethylamine salt of a compound having structural formula (I)

$$RO—(HC(R_1)HC(R_2)O)_nC(R_3)H—COOH \quad (I)$$

wherein R is a hydrocarbyl group containing 1–44 carbon atoms, R_1 and R_2, are hydrogen, R_3 is hydrogen or an alkyl moiety containing 1–21 carbon atoms, and n is 1–20.

5,250,204

SULFITE OVERBASED PRODUCTS AND PROCESS

Jack L. Karn, Richmond Heights, and John M. Cahoon, Mentor, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 539,775, Jun. 18, 1990, abandoned. This application Jun. 1, 1992, Ser. No. 891,628

Int. Cl.[5] C10M *159/20*

U.S. Cl. 252—33 **56 Claims**

1. A process for preparing a sulfite overbased organic substrate including reacting:

(A) an alkali metal overbased organic substrate prepared by treating the substrate with a source of an alkali metal and an acidic material wherein the acidic material has a higher pKa than sulfurous acid; with

(B) a source of sulfurous acid to displace at least a portion of the acidic material from the overbased organic substrate (A);

said reaction being conducted in the substantial absence of added dispersant, thereby obtaining a sulfite overbased organic substrate.

5,250,205

LUBRICATING OIL

Shin-ichi Akimoto, Tokyo; Tohru Yasukohchi, Kanagawa; Kazuo Furuse, Kanagawa, and Shinya Okumura, Kanagawa, all of Japan, assignors to Nippon Oil and Fats Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 514,901, Apr. 26, 1990, abandoned. This application Dec. 4, 1991, Ser. No. 801,633

Claims priority, application Japan, Apr. 26, 1989, 1-104646; Feb. 28, 1990, 2-45702

Int. Cl.[5] C10M *129/16, 145/04, 145/24*

U.S. Cl. 252—49.3 **14 Claims**

1. In a method of lubricating a substance wherein the improvement comprises lubricating said substance with a copolymer of monomers comprising as essential ingredients a compound represented by formula (1) and one of maleic anhydride, maleic acid, a salt of maleic acid, and an ester of maleic acid

$$Z\begin{<}[O(AO)_aR]l\\[O(AO)_bR^1]m\\[O(AO)_cH]n\end{>} \quad (1)$$

where Z represents a residue of a compound having from 2 to 8 hydroxyl groups; AO represents one or more kinds of oxyalkylene groups each having from 2 to 18 carbon atoms, provided that in the case of two or more kinds of oxyalkylene groups, the oxyalkylene groups are linked to one another in either a block or a random arrangement; R represents an alkenyl group having from 2 to 5 carbon atoms; R^1 represents a hydrocarbon or acyl group having from 1 to 24 carbon atoms; and $a \geqq 0$, $b \geqq 0$, $c \geqq 0$, 1 is a positive integer, and m and n independently are 0 or a positive integer, provided that $l+m+n=2$ to 8, $n/(l+m) \leqq \frac{1}{2}$, and $al+bm+cn=1$ to 1,000.

5,250,206

RARE EARTH ELEMENT-FE-B OR RARE EARTH ELEMENT-FE-CO-B PERMANENT MAGNET POWDER EXCELLENT IN MAGNETIC ANISOTROPY AND CORROSION RESISTIVITY AND BONDED MAGNET MANUFACTURED THEREFROM

Ryoji Nakayama; Takuo Takeshita, and Tamotsu Ogawa, all of Ohmiya, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Sep. 19, 1991, Ser. No. 763,432

Claims priority, application Japan, Sep. 26, 1990, 2-256704; Sep. 26, 1990, 2-256705

Int. Cl.[5] C04B *35/04*

U.S. Cl. 252—62.54 **17 Claims**

1. A rare earth element-Fe-B permanent magnet power excellent in magnetic anisotropy and corrosion resistivity, consisting essentially of powder particles, wherein said powder particles each consist essentially of, in atomic percentage:

at least one element selected from the group consisting of yttrium and rare earth elements: 10–20%;

B: 3–20%;

at least one element selected from the group consisting of Ti, V, Nb, Ta, Al and Si: 0.001–5.0%; and

Fe and inevitable impurities: the balance,

said powder particles each having an aggregated recrystallized structure having a main phase thereof formed of a $R_2Fe_{14}B$ intermetallic compound phase having a tetragonal structure, wherein R is a rare earth element, said intermetallic compound phase being formed of recrystallized grains aggregated therein and including at least 50 volumetric % of recrystallized grains having a ratio of b/a smaller than 2, provided that a is the smallest diameter of each of said recrystallized grains, and b is the largest diameter thereof, said recrystallized grains forming said aggregated recrystallized structure having an average grain size of 0.05–20 μm.

5,250,207

MAGNETIC INK CONCENTRATE

Claudius Kormann, Schifferstadt; Ekkehard Schwab, Neustadt; Friedrich-Wilhelm Raulfs, Limburgerhof, and Karin H. Beck, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 6, 1992, Ser. No. 879,011

Claims priority, application Fed. Rep. of Germany, May 14, 1991, 4115608

Int. Cl.[5] H01F *1/00, 1/26;* C09D *11/00*

U.S. Cl. 252—62.54 **2 Claims**

1. A process for the preparation of a magnetic ink concentrate consisting essentially of a dispersion of superparamagnetic solid particles in water or alcohol in the presence of a dispersant, wherein the dispersant consists of at least one polyelectrolyte having a molecular weight of from 1,000 to 25,000 and selected from the group consisting of polyacrylate, acrylic acid/acrylamide copolymers and polyvinylphosphonic acid and the alkali metal salts of these compounds, with the proviso that the ink concentrate has a viscosity of <10 cP, measured at 22° C., and a saturation magnetization of >32 mT, which process comprises: suspending the superparamagnetic solid particles by adding a 10–90% strength by weight solution of the polyelectrolyte in water or alcohol to the moist filter cake of these solid particles, and dispersing the suspension under the action of high shear forces and separating the sedimented particles by centrifuging.

5,250,208

TERNARY AZEOTROPIC COMPOSITIONS

Abid N. Merchant, and Janet C. Sung, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 2, 1992, Ser. No. 864,817

The portion of the term of this patent subsequent to Mar. 16, 2010, has been disclaimed.

Int. Cl.[5] C09K *5/04;* C11D *7/30, 7/50;* C23G *5/028*

U.S. Cl. 252—67 **5 Claims**

1. An azeotropic or azeotrope like composition consisting essentially of 56.8 to 69.8 weight percent 1,1,2,2,3,3,4,4-octafluorobutane, 27.9 to 39.9 weight percent trans-1,2-dichloroethylene, and 1.8 to 3.8 weight percent methanol, wherein when the pressure has been adjusted to substantially atmospheric pressure, the boiling point of the composition is about 34.7° C.; 63.2 to 69.2 weight percent 1,1,2,2,3,3,4,4-octafluorobutane, 30.0 to 36.0 weight percent trans-1,2-dichloroethylene, and 0.2 to 1.4 weight percent ethanol, wherein when the pressure has been adjusted to substantially atmospheric pressure, the boiling point of the composition is about 36.1° C.; 60.0 to 68.0 weight percent 1,1,2,2,3,3,4,4-octafluorobutane, 31.7 to 39.7 weight percent trans-1,2-dichloro-ethylene, and 0.1 to 0.5 weight percent isopropanol, wherein when the pressure has been adjusted to substantially atmospheric pressure, the boiling point of the composition is about 36.0° C.; 78.2 to 84.2 weight percent 1,1,2,2,3,3,4,4-octafluorobutane, 12.3 to 18.3 weight percent cis-1,2-dichloroethylene, and 2.5 to 4.5 weight percent methanol, wherein when the pressure has been adjusted to substantially atmospheric pressure, the boiling point of the composition is about 40.2° C.; 72.4to 85.4 weight percent 1,1,2,2,3,3,4,4,-octafluorobutane 12.7 to 26.7 weight percent cis-1,2-dichloroethylene, and 0.4 to 2.4 weight percent ethanol, wherein when the pressure has been adjusted to to substantially atmospheric pressure, the boiling point of the composition is about 42.5° C.; 75.0 to 86.0 weight percent 1,1,2,2,3,3,4,4-octafluorobutane, 12.5 to 23.5 weight percent cis-1,2-dichloroethylene, and 0.1 to 1.0 weight percent isopropanol, wherein when the pressure has been adjusted to substantially atmospheric pressure, the boiling point of the composition is about 42.2° C.; 76.6 to 84.6 weight percent 1,1,2,2,3,3,4,4-octafluorobutane, 14.0 to 18.0 weight percent 1,1-dichloroethane, and 1.4 to 5.4 weight percent methanol, wherein when the pressure has been adjusted to substantially atmospheric pressure, the boiling point of the composition is about 40.3° C.; 73.5 to 82.5 weight percent 1,1,2,2,3,3,4,4-octafluorobutane, 17.1 to 24.1 weight percent 1,1-dichloroethane, and 0.4 to 2.4 weight percent ethanol, wherein when the pressure has been adjusted to substantially atmospheric pressure, the boiling point of the composition is about 39.6° C.; and 77.0 to 87.0 weight percent 1,1,2,2,3,3,4,4-octafluorobutane, 12.6 to 22.6 weight percent 1,1-dichlorethane, and 0.1 to 1.0 weight percent isopropanol, wherein when the pressure has been adjusted to substantially atmospheric pressure, the boiling point of the composition is about 42.6° C.

5,250,209

THERMAL COUPLING WITH WATER-WASHABLE THERMALLY CONDUCTIVE GREASE

William L. Jamison, Fishers; Gary J. Larsen, Carmel, and George E. Sears, Jr., Indianapolis, all of Ind., assignors to Thermoset Plastics, Inc., Indianapolis, Ind.

Continuation-in-part of Ser. No. 689,147, Apr. 22, 1991, Pat. No. 5,167,851. This application Apr. 15, 1992, Ser. No. 869,530

Int. Cl.[5] C09K *5/00;* H02B *1/00*

U.S. Cl. 252—74 **5 Claims**

1. In a method for reversible thermal coupling of one or more operating components of an electronic device with an adjacent heat sink by selecting and applying a thermally conductive thixotropic composition in contact with both said operating components and said heat sink, the improvement which comprises selecting and applying a thermally conductive water washable grease comprising

about 10 to about 70 weight percent of a hydrophilic silicone glycol fluid carrier and

about 30 to about 90 weight percent of a microparticulate thermally conductive filler.

5,250,210

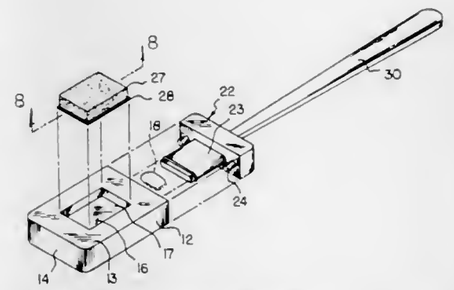
BAR SOAP CONSTRUCTION

Harvey J. Von Culin, 966 Blue Rock La., Blue Bell, Pa. 19422

Filed Dec. 18, 1992, Ser. No. 993,362

Int. Cl.[5] C11D *17/04*

U.S. Cl. 252—90 **4 Claims**



1. A bar soap construction, comprising,

a soap bar, having a bottom wall spaced from a top wall, spaced side walls, a first end wall, and a second end wall spaced from the first end wall, and

a top wall cavity directed into the top wall, with the top wall cavity including a top wall cavity floor spaced from the bottom wall, wherein the top wall cavity is arranged to receive soap pieces within the top wall cavity for their remolding within the top wall cavity, and further including a sponge member, the sponge member having a mesh web base, the mesh web base including a plurality of base apertures directed therethrough, with the mesh web base arranged for positioning upon the top wall cavity floor to receive moistened soap from the top wall cavity floor through the mesh web apertures to lock the mesh web base to the top wall cavity floor.

5,250,211

CLEANSER CONTAINING TSP, EDTA ETHYLENE GLYCOL BUTYL ETHER, AND ACETONE

Gregg Motsenbocker, 874 Felstar St., San Diego, Calif. 92109

Filed Feb. 3, 1992, Ser. No. 829,357

Int. Cl.[5] C11D *7/18, 7/32, 7/50, 7/60*

U.S. Cl. 252—99 **4 Claims**

1. A composition for restoring surfaces which had received deleterious deposits, consisting essentially of:

a. aqueous solution of tri-sodium phosphate (TSP), the ratio

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of TSP to water by weight being between about 12:1 to about 16:20–3 to 4 parts;
b. aqueous solution of, ethylene diamine tetra acetic acid (EDTA);
c. ethylene glycol n-butyl ether (glycol EB) or butyl salicylate, or a mixture of them—2 parts; and
d. acetone—1 part.
2. A modified composition comprising:
a. the composition of claim 1, and in addition, 2 to 4 parts of 3% hydrogen peroxide aqueous solution.

5,250,212

LIQUID DETERGENT CONTAINING SOLID PEROXYGEN BLEACH AND SOLVENT SYSTEM COMPRISING WATER AND LOWER ALIPHATIC MONOALCOHOL

Francesco de Buzzaccarini, Brussels, and Jean P. Boutique, Ernage, both of Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 870,722, Apr. 13, 1992, abandoned, which is a continuation of Ser. No. 420,653, Oct. 11, 1989, abandoned, which is a continuation of Ser. No. 197,874, May 24, 1988, abandoned. This application Jan. 26, 1993, Ser. No. 9,362
Claims priority, application United Kingdom, May 27, 1987, 8712430
Int. Cl.[5] C11D *7/38, 7/54*
U.S. Cl. 252—104 **6 Claims**

1. A liquid, bleach containing detergent composition comprising anionic surfactants and having a pH of at least 9.5, said composition comprising, by weight of the composition, an amount of a solid, water-soluble peroxygen compound, suspended in a liquid phase which comprises a solvent system comprising water and at least one lower aliphatic monoalcohol water-miscible organic solvent wherein the ratio of water to water-miscible organic solvent is from 5:1 to 1:2, characterized in that an amount of available oxygen is dissolved in the liquid phase which is not greater than 0.5% by weight of the liquid phase and corresponds to not more than one fifth of the amount of peroxygen compound of the composition.

5,250,213

1,1,1,2,2,3,3,4,4,5,6-UNDECAFLUOROHEXANE AND USE THEREOF IN COMPOSITIONS AND PROCESSES FOR CLEANING

Shlomo Rozen, Tel-Aviv, Israel, and Frank J. Weigert, Wilmington, Del., assignors to E. I du Pont de Nemours and Company, Wilmington, Del.

Filed May 6, 1991, Ser. No. 695,826
Int. Cl.[5] C11D *7/30, 7/50;* **C07C** *19/02, 19/08*
U.S. Cl. 252—162 **6 Claims**

1. The compound 1,1,1,2,2,3,3,4,4,5,6-undecafluorohexane.

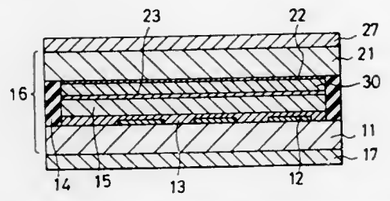
5,250,214

LIQUID CRYSTAL COLOR DISPLAY DEVICE PROVIDED WITH A COLOR FILTER FILM AND AN OPTICAL PHASE PLATE COMPRISING LIQUID CRYSTAL POLYMER

Akihiko Kanemoto; Haruo Iimura, both of Yokohama; Yasuyuki Takiguchi; Shigeki Iida, both of Kawasaki; Takehiro Toyooka, and Hiroyuki Ito, both of Yokohama, all of Japan, assignors to Ricoh Company, Ltd. and Nippon Oil Company, Limited, both of Tokyo, Japan

Filed Apr. 8, 1991, Ser. No. 681,898
Claims priority, application Japan, Apr. 9, 1990, 2-94814; Apr. 19, 1990, 2-104505; Apr. 19, 1990, 2-104506
Int. Cl.[5] C09K *19/52;* **G02F** *1/13*
U.S. Cl. 252—299.01 **13 Claims**

1. A liquid crystal color display device comprising:
a liquid crystal cell comprising a pair of substrates, a liquid crystal layer positioned between the substrates and transparent electrodes on the substrates to apply voltage to the layer;
a pair of polarizers positioned on opposite sides of the cell; and
a combination of a color filter film and an optical phase plate having a function to make a light elliptically polarized by passing through the liquid crystal layer a linearly polar-



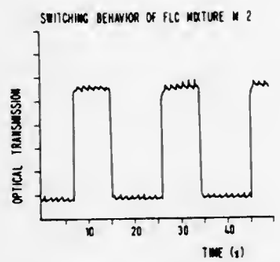
ized light, the plate positioned between the liquid crystal layer and at least one of the polarizers;
wherein the phase plate comprises a film of liquid crystal polymer composition having polyester as a main constituent, being thermotropic and having a glass transition point.

5,250,215

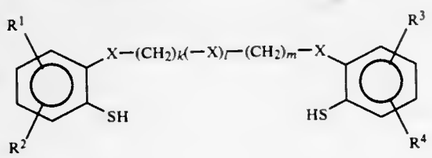
FERROELECTRIC LIQUID-CRYSTAL MIXTURES CONTAINING MERCAPTO COMPOUNDS

Michael Magerstädt, Hofheim am Taunus; Norbert Rösch, Frankfurt am Main, and Rainer Wingen, Hattersheim am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 7, 1991, Ser. No. 741,136
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1990, 4025236
Int. Cl.[5] C09K *19/54, 19/52*
U.S. Cl. 252—299.5 **10 Claims**



1. A liquid-crystalline mixture comprising at least two components, wherein the first component is an aromatic mercapto compound of the formula (I)



where
R^1, R^2, R^3 and R^4, independently of one another, are hydrogen, alkyl having 1 to 8 carbon atoms or alkoxy having 1 to 8 carbon atoms,
—X—is —O—, —S—or —NH—,
k and m, independently of one another, are 1, 2 or 3, and
l is zero or 1.

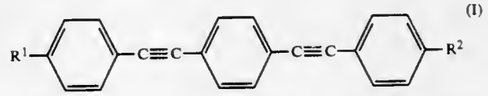
5,250,216

1-(4-ALKYLPHENYLETHYNYL)-4-(ALKYLPHENYLETHYNYL)-BENZENE

Yasuyuki Goto, and Kisei Kitano, both of Chiba, Japan, assignors to Chisso Corporation, Ohsaka, Japan

Continuation of Ser. No. 356,928, May 25, 1989, abandoned. This application Jun. 4, 1991, Ser. No. 711,276
Claims priority, application Japan, May 31, 1988, 63-133577
Int. Cl.[5] C09K *19/06;* **C07C** *15/12*
U.S. Cl. 252—299.6 **2 Claims**

1. A 1-(4-alkylphenylethynyl)-4-(alkylphenylethynyl)-benzene expressed by the formula



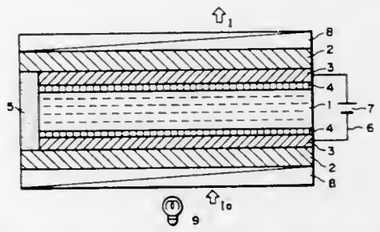
wherein each of R^1 and R^2 represents a straight chain alkyl group of 2 to 10 carbon atoms.

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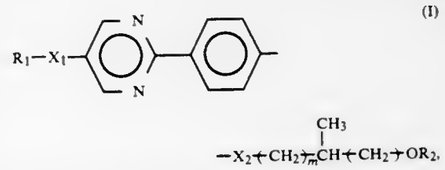
FERROELECTRIC CHIRAL SMECTIC LIQUID CRYSTAL COMPOSITION AND LIQUID CRYSTAL DEVICE USING SAME

Kenji Shinjo, Atsugi; Takao Takiguchi, Tokyo; Hiroyuki Kitayama, Sagamihara; Kazuharu Katagiri, Tama; Masataka Yamashita, Hiratsuka; Takeshi Togano, Yokohama; Masahiro Terada, Atsugi, and Junko Sato, Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

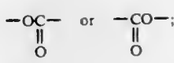
Filed Jun. 23, 1989, Ser. No. 370,890
Claims priority, application Japan, Jun. 24, 1988, 63-157675; Jul. 14, 1988, 63-176587
Int. Cl.[5] C09K *19/34;* **G02F** *1/13*
U.S. Cl. 252—299.61 **6 Claims**



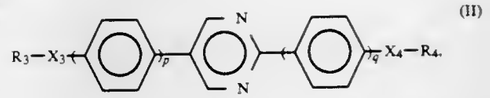
1. A ferroelectric chiral smectic liquid crystal composition, comprising:
at least one compound represented by the following formula (I):



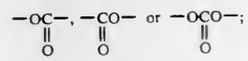
wherein R_1 denotes a linear or branched alkyl group having 1–18 carbon atoms; R_2 denotes a linear or branched alkyl group having 1–14 carbon atoms; X_1 and X_2 denote a single bond —O—,



m is 0–7;
at least one compound represented by the following formula (II):



wherein R_3 and R_4 denote a linear alkyl group having 1–18 carbon atoms and one —CH_2— not bonded to X_4 in the alkyl group can be replaced with —O—; X_3 and X_4 denote a single bond, —O—,



and p and q are 0, 1 or 2 with proviso that both of p and q are not 0.

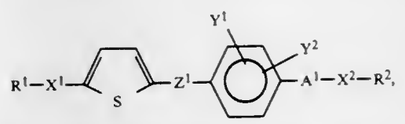
5,250,218

LIQUID CRYSTAL COMPOSITION, LIQUID CRYSTAL DEVICE, DISPLAY APPARATUS AND DISPLAY METHOD

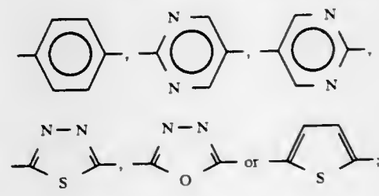
Sbosei Mori, Atsugi; Masataka Yamashita, Hiratsuka; Kazuharu Katagiri, Tama; Kenji Shinjo, and Masahiro Terada, both of Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 19, 1992, Ser. No. 836,964
Claims priority, application Japan, Feb. 20, 1991, 3-026173
Int. Cl.[5] C09K *19/34, 19/30;* **G02F** *1/13*
U.S. Cl. 252—299.61 **29 Claims**

1. A liquid crystal composition, comprising:
at least one mesomorphic compound represented by the following formula (I):



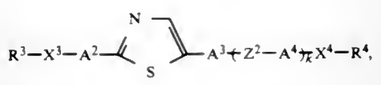
wherein R^1 and R^2 independently denote a linear or branched alkyl group having 1–18 carbon atoms capable of including one or non-neighboring two or more methylene groups which can be replaced with at least one species of —O—, —CO—, —COO—, —OCO—, —OCOO— or —CH(X)— with the proviso that —O— cannot directly be connected to —O— and X denotes halogen; Z^1 denotes —COO— or —CH_2O—; X^1 and X^2 independently denote a single bond, —O—, —COO—, —OCO—, —CO— or —OCOO—; A^1 denotes a single bond



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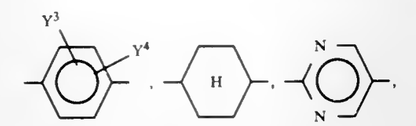
Y^1 and Y^2 independently denote hydrogen, halogen, $-CH_3-$ or CF_3-; and

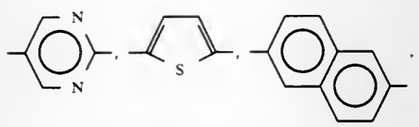
at least one mesomorphic compound represented by the following formula (II):

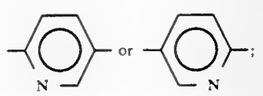


(II)

wherein R^3 and R^4 independently denote a linear or branched alkyl group having 1-18 carbon atoms capable of including one or non-neighboring two or more methylene groups which can be replaced with at least one species of —O—, —CO—, —COO—, —OCO—, —OCOO— or —CH(X)—with the proviso that —O— cannot directly be connected to —O— and X denotes halogen; X^3 and X^4 independently denotes a single bond. —O—, —COO—, —OCO— or —CO—; Z^2 denotes a single bond, —COO— or —OCO—; A^2, A^3 and A^4 independently denote a single bond,







Y^3 and Y^4 independently denote hydrogen, halogen, $-CH_3$ or $-CF_3$; and k is 0 or 1 with the proviso that X^3 is a single bond when A^2 is a single bond, and X^4 is a single bond when A^3 is a single bond and k is 0.

5,250,219

MESOMORPHIC COMPOUND, LIQUID CRYSTAL COMPOSITION CONTAINING SAME AND LIQUID CRYSTAL DEVICE USING SAME

Shosei Mori, Atsugi; Takao Takiguchi, Tokyo; Takashi Iwaki, Isehara; Yoko Yamada, Atsugi; Takeshi Togano, Yokohama; Masataka Yamashita, Hiratsuka; Masahiro Terada, Atsugi, and Kazuharu Katagiri, Tama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 518,941, May 4, 1990, abandoned. This application Apr. 2, 1992, Ser. No. 863,325

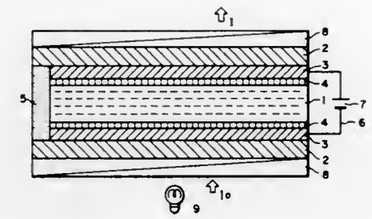
Claims priority, application Japan, May 8, 1989, 1-115682; Jan. 26, 1990, 2-16557

Int. Cl.[5] **C09K** *19/34, 19/30, 19/52;* **G02F** *1/13*

U.S. Cl. 252—299.61 **30 Claims**

1. A liquid crystal composition comprising:

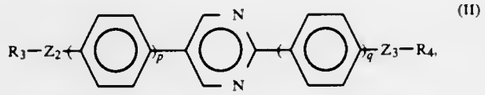
at least one mesomorphic compound having the following formula (I):



(I)

wherein R_1 and R_2 each is a linear or branched alkyl group having 1-16 carbon atoms capable of having a substituent; Y_1 is —COO—, —OCO—, $-CH_2O-$ or $-OCH_2$; Z_1 is a single bond, —O—, —COO, or —OCOO—; and X is a halogen, cyano group or methyl group; and

at least one mesomorphic compound having the following formula (II):



(II)

wherein R_3 and R_4 each is a linear or branched optically inactive alkyl group having 1-18 carbon atoms capable of having C_1-C_{12} alkoxy group; Z_2 and Z_3 each is a single bond, —O—, —OCO—, —COO— or —OCOO—; and p and q are respectively 0, 1 or 2.

5,250,220

2,5-DISUBSTITUTED HETEROCYCLIC COMPOUNDS, AND A LIQUID-CRYSTALLINE MEDIUM

Andreas Wachtler, Griesheim; Reinhard Hittich, Modautal; Eike Poetsch, Mühltal; Joachim Krause, Dieburg; Ulrich Finkenzeller, Plankstadt, all of Fed. Rep. of Germany, and David Coates, Merley, Great Britain, assignors to Merck Patent Gesellschaft Mit Beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

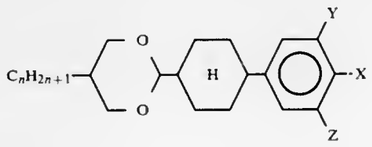
Continuation of Ser. No. 585,126, Oct. 2, 1990, abandoned. This application Sep. 18, 1992, Ser. No. 947,085

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1989, 3926745; Sep. 5, 1989, 3929421

Int. Cl.[5] **C09K** *19/34, 19/30;* **C07D** *319/06*

U.S. Cl. 252—299.61 **9 Claims**

1. A 2,5-disubstituted heterocyclic compound of the formula



in which

n is 1 to 10,

X is $-CF_3$, $-OCF_3$ or $-OCHF_2$, and

Y and Z are each, independently of one another, H or F.

5,250,221

FERROELECTRIC CHIRAL SMECTIC LIQUID CRYSTAL COMPOSITION AND LIQUID CRYSTAL DEVICE USING SAME

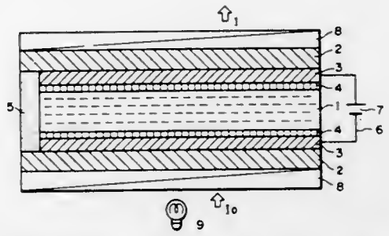
Masataka Yamashita, Hiratsuka; Takeshi Togano, Yokohama; Masahiro Terada, Atsugi; Akio Yoshida, Chigasaki; Yoshiko Kimura, Hiratsuka, and Kenji Shinjo, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 378,987, Jul. 12, 1989, abandoned. This application Oct. 29, 1992, Ser. No. 968,478

Claims priority, application Japan, Jul. 15, 1988, 176474; Jun. 9, 1989, 147991

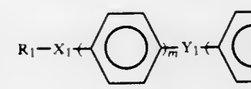
Int. Cl.[5] **C09K** *19/30, 19/34, 29/12;* **G02F** *1/13*

U.S. Cl. 252—299.63 **7 Claims**



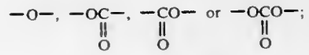
1. A ferroelectric chiral smectic liquid crystal composition, comprising:

at least one compound represented by the following formula (I):



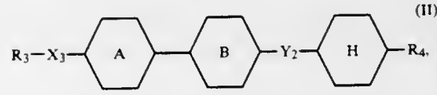
(I)

wherein R_1 and R_2 denote a linear or branched alkyl group having 1-18 carbon atoms; X_1 and X_2 denote a single bond,



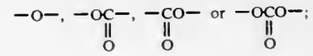
Y_1 denotes $-CH_2O-$ or $-OCH_2-$; and m and n are 1 or 2; and

at least one compound represented by the following formula (II):

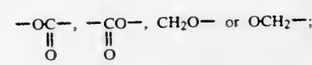


(II)

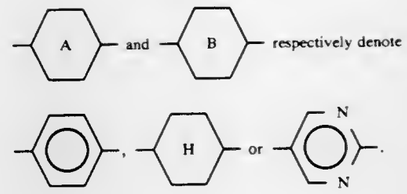
wherein R_3 denotes a linear or branched alkyl group having 1-18 carbon atoms, is optionally substituted with alkoxy group, alkoxycarbonyl group or halogen, R_4 denotes a linear alkyl group having 1-10 carbon atoms; X_3 denotes a single bond,



Y_2 denotes



and



respectively denote

5,250,222

OPTICALLY ACTIVE COMPOUNDS USED FOR LIQUID CRYSTALLINE MIXTURES

Stephen Kelly, Möhlin; Frans Leenhouts, Kaiseraugst, and Alois Villiger, Basel, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 758,245, Sep. 10, 1991, abandoned, which is a continuation of Ser. No. 234,222, Aug. 19, 1988, abandoned. This application Apr. 1, 1992, Ser. No. 866,076

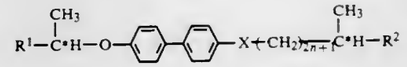
Claims priority, application Switzerland, Aug. 25, 1987, 3245/87; Jul. 7, 1988, 2593/88

Int. Cl.[5] **C09K** *19/12;* **C07C** *41/00*

U.S. Cl. 252—299.66 **9 Claims**

7. A liquid crystalline mixture having at least two components, wherein at least one component is an optically active compound of the formula:

IIIa



wherein R^1 and R^2 each are alkyl with at least 2 carbon atoms; n is an integer of 0 to 4; X is oxygen or a methylene group; and each of the two C* is a chiral carbon atom, one of the chiral carbon atoms having an R-configuration and another chiral carbon atom having an S-configuration.

5,250,223

SOLUTION OF A FLUORESCENT WHITENING AGENT

Massimo Quintini, Bergamo, Italy, assignor to Sigma Prodotti Chimici SpA, Milan, Italy

Filed Nov. 5, 1990, Ser. No. 608,917

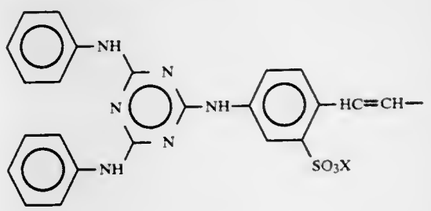
Claims priority, application Italy, Nov. 8, 1989, 22307 A/89

Int. Cl.[5] **C09K** *11/06*

U.S. Cl. 252—301.23 **1 Claim**

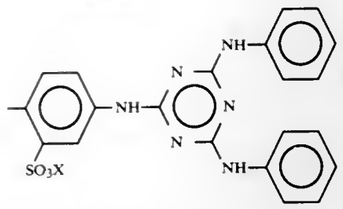
1. A clear stable solution of a fluorescent whitening agent consisting essentially of:

a) a substantially water-insoluble fluorescent whitening agent of formula:



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-continued



wherein X is sodium, potassium, ammonium or an amine; in an amount ≧5% and ≦50% by weight;

b) a solvent selected from the group consisting of ethylene glycol, 1,3 propylene glycol, 1,2 propylene glycol, diethylene glycol, polyethylene glycol with molecular weight up to 400, and mixtures thereof, in an amount ≧50% and ≦95% by weight;

c) water, in an amount >0% and ≦10% by weight.

5,250,224

FOAMED PRODUCTS CONTAINING ENDOTHERMIC BLOWING AGENTS AND PROCESSES

Satish K. Wason, Belair, Md.; Gerry Mooney, West Ajax, Canada; Claude R. Andrews, Pasadena, Md.; Michael E. Tarouini, Havre de Grace, Md.; John A. Kosin, Bel Air, Md., and Rod A. Garcia, Orange, Tex., assignors to J. M. Huber Corporation, Rumson, N.J.

Division of Ser. No. 688,227, Apr. 22, 1991, Pat. No. 5,106,534, which is a division of Ser. No. 352,307, May 16, 1989, Pat. No. 5,009,810. This application Mar. 30, 1992, Ser. No. 856,988

Int. Cl.[5] C08J *9/224*

U.S. Cl. 252—350 **8 Claims**

1. In a method for the preparation of an endothermic blowing agent which comprises a mixture of a polycarboxylic acid and an inorganic carbonate, wherein said polycarboxylic acid and said inorganic carbonate are surface treated with a component which prevents water from being absorbed by said polycarboxylic acid and said inorganic carbonate, the improvement comprising the steps of:

(a) heating a dry powder polycarboxylic acid to a temperature of between about 68° C. and about 80° C. and adding thereto a surface treating component selected from the group consisting of mono glycerides, stearic acid, silane coupling agents and mixtures thereof to form a surface treated polycarboxylic acid;

(b) heating a dry powder of sodium aluminum hydroxy carbonate to a temperature of between about 68° C. and about 80° C. and adding thereto a surface treating agent selected from the group consisting of mono glycerides, stearic acid, silane coupling agents and mixtures thereof to form a surface treated inorganic carbonate and;

(c) mixing together said surface treated polycarboxylic acid and said surface treated inorganic carbonate in a weight ratio of between about 1:1 to 99:1, respectively.

5,250,225

AMMONIUM SALT OF AN ALKENYLSUCCINIC HALF-AMIDE AND THE USE THEREOF AS CORROSION INHIBITOR IN OIL AND/OR GAS PRODUCTION TECHNOLOGY

Knut Oppenlaender, Ludwigshafen; Brigitte Wegner, Speyer, and Wilhelmus Slotman, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

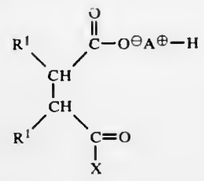
Continuation of Ser. No. 822,265, Jan. 17, 1992, abandoned. This application Jan. 22, 1993, Ser. No. 7,819

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1991, 4103262

Int. Cl.[5] C23F *11/06*

U.S. Cl. 252—389.62 **9 Claims**

1. An ammonium salt of an alkenylsuccinic half-amide of formula (I) below



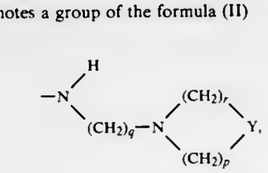
(I)

in which

R^1 denotes H or a C_6–C_{18}-alkenyl radical, provided that the radicals

R^1 are not both H or both C_6–C_{18}-alkenyl,

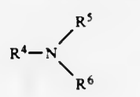
X denotes a group of the formula (II)



(II)

in which q is an integer from 1 to 4, r and p are independently 1 or 2, and Y denotes CR^8_2, NR^8 (where R^8 is H or C_1–C_3-alkyl), O or S, and

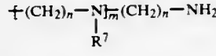
A denotes XH or a different amine of the formula



in which

R^4, R^5 and R^6 independently denote H, C_1–C_6-alkyl or

R^5 and R^6 together form a heterocyclic ring enclosing the nitrogen atom, C_1–C_{10}-hydroxyalkyl or

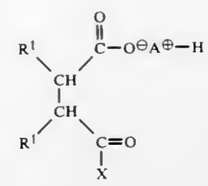


in which R^7 denotes H or C_1–C_3-alkyl,

n is an integer from 2 to 4, and

m is an integer from 1 to 5.

6. A method of inhibiting corrosion in metals which are in contact with corrosive oil/water or gas/water mixtures found in the production, transport and storage of petroleum and natural gas which comprises: injecting into the corrosive mixture a corrosion inhibiting amount of an ammonium salt of an alkenyl succinic half amide of the formula (I) as defined below,

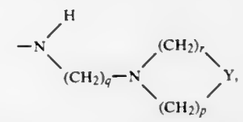


(I)

in which

R^1 denotes H or a C_6–C_{18}-alkenyl radical, provided that the radicals R^1 are not both H or both C_6–C_{10}-alkenyl,

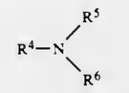
X denotes a group of the formula (II)



(II)

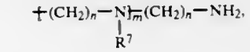
in which q is an integer from 1 to 4, r and p are independently 1 or 2, and Y denotes CR^8_2, NR^8 (where R^8 is H or C_1–C_3-alkyl), O or S, and

A denotes XH or a different amine of the formula



in which

R^4, R^5 and R^6 independently denote H or C_1–C_6-alkyl or R^5 and R^6 together form a heterocyclic ring including the nitrogen atom, C_1–C_{10}-hydroxyalkyl or



in which R^7 denotes H or C_1–C_3-alkyl,

n is an integer from 2 to 4, and

m is an integer from 1 to 5.

5,250,226

ELECTRICAL DEVICES COMPRISING CONDUCTIVE POLYMERS

Ravinder K. Oswal, Union City; Amitkumar N. Dharia, Newark, and Leonard Barrett, Union City, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Jun. 3, 1988, Ser. No. 202,165

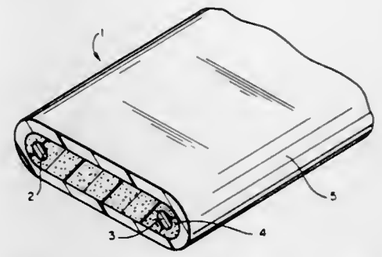
Int. Cl.[5] H01B *1/00*

U.S. Cl. 252—500 **24 Claims**

1. A conductive polymer composition which exhibits PTC behavior and which comprises

(1) a first polymeric component which comprises a crystalline organic polymer which (i) has a melting point T_{m1}, and (ii) has a crystallinity of at least 10%.

(2) a second polymeric component which (i) exhibits side chain crystallization, (ii) has a melting point T_{m2} which is within the range $(T_{m1}-150)$°C. to $(T_{m1}+50)$°C., and (iii)



comprises a vinyl polymer having a linear side chain comprising at least eight carbon atoms; and

(3) a particulate conductive filler.

5,250,227

ELECTRICALLY CONDUCTIVE COATING COMPOSITION FOR PROVIDING A BEND SENSOR

Keith J. Margolin, Gilbertsville, Pa., assignor to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed May 3, 1990, Ser. No. 518,343

Int. Cl.[5] H01B *1/24*

U.S. Cl. 252—511 **2 Claims**

1. An electrically conductive composition for coating on a flexible polyester film substrate and providing a bend sensor in electronic circuits comprising

a) a polymeric binder system comprising phenolic resin that dries and/or cures to a brittle coating which cracks when bent around a mandrel;

b) an amount of discontinuous conductive carbon black ranging from about 3 to 20 wt. percent based on the weight of the binder effective to produce a desired electrical resistance in the composition;

c) graphite particles in an amount effective to stabilize the resistance profile of the composition after cracking on a mandrel and less than the amount that produces a composition having a resistance ratio (bent/straight) equal to 1:1, and

d) a thermoplastic additive to improve adhesion of the composition to said polyester substrate, said additive comprising thermoplastic resin containing acrylic resin, vinyl resin and polyurethane, surfactant and organic solvent therefor.

5,250,228

CONDUCTIVE POLYMER COMPOSITION

Stephen Baigrie, Swindon, United Kingdom; Edward F. Chu, Sunnyvale, Calif.; George B. Park, Swindon, United Kingdom; Vijay N. Reddy, San Mateo, Calif.; James A. Rinde, Fremont, Calif., and Robert P. Saltman, Redwood City, Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Nov. 6, 1991, Ser. No. 788,655

Int. Cl.[5] H01B *1/00, 1/70, 1/22, 1/24*

U.S. Cl. 252—511 **15 Claims**

1. A conductive polymer composition which consists essentially of

(1) a polymeric component consisting essentially of

(a) 10 to 75 parts by weight of the total polymeric component of an essentially amorphous thermoplastic resin, and

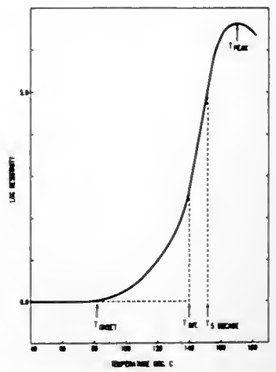
(b) 90 to 25 parts by weight of the total polymeric component of a thermosetting resin; and

(2) a particulate conductive filler dispersed in the polymeric

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component which is 5 to 65% by volume of the polymeric component; and

(3) the optional presence of a curing agent; and



(4) the optional presence of a curing accelerator, said essentially amorphous thermoplastic resin and said thermosetting resin being substantially mutually soluble.

5,250,229

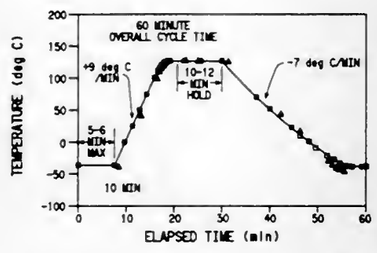
SILVER-RICH CONDUCTOR COMPOSITIONS FOR HIGH THERMAL CYCLED AND AGED ADHESION

Hiroyuki Hara, Kanagawa, Japan; Marc H. La Branche, Wilmington, Del., and Barry E. Taylor, Tokyo, Japan, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 10, 1991, Ser. No. 774,788

Int. Cl.[5] H01B *1/00, 1/02, 1/08*

U.S. Cl. 252—518 **19 Claims**



1. A composition for making solderable electrically conductive layers comprising an admixture of finely divided particles containing by weight % (1) 85–99.9% of at least one solderable electrically conductive metal and (2) 15–0.1% of a additive composition consisting essentially of an admixture of finely divided particles of oxides or precursors of oxides of bismuth, copper, lead, zinc and a transition metal selected from iron, cobalt, nickel and mixtures thereof in which the weight ratio of (a) copper oxide to bismuth oxide and lead oxide is 0.01–2, (b) lead oxide to bismuth oxide and lead oxide is 0–1, (c) zinc oxide to bismuth oxide and lead oxide is 0.01–2, (d) transition metal oxide to bismuth oxide and lead oxide is 0.01–2.

5,250,230

COMPOSITION AND PROCESS FOR CLEANING METALS

Duane C. Steele, and William C. Strickland, both of Sterling Heights, Mich., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Filed Dec. 20, 1991, Ser. No. 811,756

Int. Cl.[5] C11D *3/30, 7/32, 3/075*

U.S. Cl. 252—544 **20 Claims**

1. A composition of matter consisting essentially of:

(A) a water soluble alkalinizing component;

(B) a first water soluble or water dispersible surfactant component that:

(a) has an HLB value in the range from 1 to 7.9; and

(b) consists of molecules that contain at least two nitrogen atoms per molecule and have a chemical structure that can be made by sequential additions of ethylene oxide followed by propylene oxide, or of propylene oxide followed by propylene oxide, to a core molecule that is an organic amine which (i) contains at least two amino groups, each of which has at least one N—H bond, and (ii) contains not more than 22 carbon atoms;

(c) a second component of water soluble or water dispersible surfactants selected from the group consisting of:

(a) nonionic surfactants exclusive of those that have a chemical structure that can be made by sequential additions of ethylene oxide followed by propylene oxide, or of propylene oxide followed by ethylene oxide, to a component of core molecules, said core molecules being organic amines that (i) contain at least two amino groups, each of which contains at least one N—H bond, and (ii) contain not more than 22 carbon atoms;

(b) anionic surfactants and amphoteric ionic surfactants; and

(c) mixtures thereof; and optionally,

(D) a component of sequestering agent; and optionally,

(E) water,

wherein the ratio by weight of component (C) to component (A) is in the range from about 1:100 to about 1:5 and the ratio by weight of component (B) to component (C) is in the range from about 0.35:1.0 to about 0.65:1.0.

5,250,231

NUCLEAR FUEL WITH ISOTOPICALLY DEPLETED BURNABLE ABSORBER

Leonard N. Grossman, Herculaneum, Mo., and Alf I. Jonsson, W. Suffield, Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Sep. 18, 1991, Ser. No. 761,438

Int. Cl.[5] G21C *3/00;* **G21F** *9/00;* **C01F** *1/00, 17/00*

U.S. Cl. 252—636 **16 Claims**

1. An isotopic mixture of isotopes of an element erbium suitable for use as a burnable absorber, wherein:

said mixture comprises a naturally occurring but depleted isotopic mixture that is selectively and substantially depleted only with respect to a first naturally occurring isotope, said first isotope having an isotope mass that is one less than a second naturally occurring isotope of said element, said second isotope having a thermal neutron cross-section which is higher than the thermal neutron cross-section of said first isotope.

5,250,232

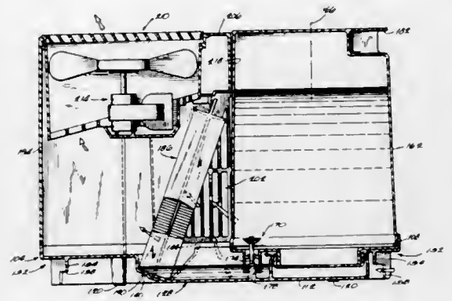
HUMIDIFIER

Kenneth V. Pepper, Plymouth, and John W. Seaman, Sheboygan Falls, both of Wis., assignors to Bemis Manufacturing Company, Sheboygan Falls, Wis.

Continuation-in-part of Ser. No. 825,298, Jan. 23, 1992, Pat. No. 5,133,904, which is a continuation of Ser. No. 599,008, Oct. 17, 1990, abandoned. This application Jul. 17, 1992, Ser. No. 916,356

Int. Cl.[5] B01F *3/04*

U.S. Cl. 261—24 **18 Claims**



1. A portable humidifier adapted to rest on a supporting surface, said humidifier comprising

a base defining a water reservoir and including a bottom wall having therein an air inlet opening spaced horizontally from said reservoir,

means for supporting said bottom wall above the supporting surface,

a wicking element having a lower portion in fluid communication with said water reservoir, extending transversely relative to vertical and relative to horizontal, and having an upper portion extending above said inlet opening, and

blower means for forcing air flow through said inlet opening and through said wicking element, said blower means being supported over said lower portion of said wicking element.

5,250,233

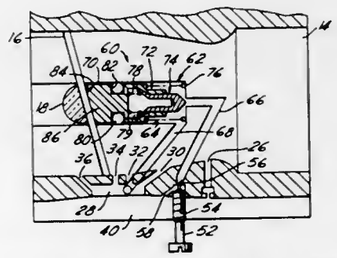
CARBURETOR WITH ACCELERATOR AND IDLE CIRCUIT SHUT-OFF

Mark S. Swanson, Cass City, Mich., assignor to Walbro Corporation, Cass City, Mich.

Filed Nov. 23, 1992, Ser. No. 980,462

Int. Cl.[5] F02M *3/02*

U.S. Cl. 261—34.2 **7 Claims**



1. In a carburetor having a mixing passage, a throttle valve disposed in said mixing passage and movaole between a closed idle position and an wide open throttle position, a liquid fuel metering chamber, a main fuel nozzle communicating with said metering chamber and said mixing passage upstream of said throttle valve when in said idle position, and at least one idle fuel port communicating with said mixing passage downstream of said throttle valve when in its closed idle position, an accelerator and idle fuel shut-off assembly comprising, a piston chamber, an inlet to said piston chamber communicating with said fuel metering chamber, an outlet from said piston chamber communicating with said at least one idle port, a piston slidably received in said piston chamber and movable between extended and retracted positions, a valve member received in said piston chamber and operably associated with said piston for movement thereby to open and closed positions to control admission of fuel from said metering chamber into said piston chamber, and an actuator operably connecting said throttle valve with said piston so that as said throttle valve moves from its closed idle position to its wide open throttle position, said piston and valve are initially advanced to close said valve and thereafter said piston is further advanced to supply fuel from said piston chamber to said at least one idle port for accelerating an engine, and when said throttle is moved to its closed idle position, said piston and valve member are retracted and said valve member is moved to its open position to supply fuel from said metering chamber through said piston chamber and to said at least one idle port for idling the engine.

5,250,234

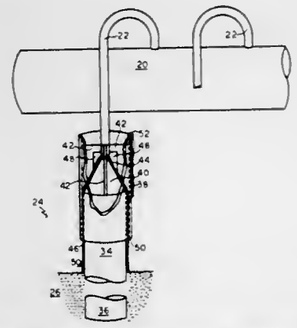
LIQUID DISTRIBUTOR APPARATUS AND METHOD FOR HIGH VISCOSITY LIQUIDS

Chris F. Meyer, Teaneck, N.J.; Chang-Li Hsieh, Carlisle, and Ilya S. Michelson, Brookline, both of Mass., assignors to Koch Engineering Company, Inc., Wichita, Kans.

Filed Oct. 8, 1992, Ser. No. 958,654

Int. Cl.[5] B01F *3/04*

U.S. Cl. 261—97 **29 Claims**



1. A distributor apparatus to distribute a high viscosity liquid generally free of entrapped gas bubbles and generally uniformly across the substantial cross section area of a process vessel containing packing material, which apparatus comprises:

a) a liquid distributor means to receive and distribute a high viscosity liquid, the liquid distributor means having a plurality of openings on the top portion to permit the venting of gases from within the high viscosity liquid from the liquid distributor;

b) feed pipe means to permit the downward flow of the vented high viscosity liquids from the plurality of openings; and

c) flow velocity reduction means comprising a tube means having a one and other end and an exterior surface, the tube means positioned to receive directly the vented high viscosity, downwardly flowing liquid from the liquid distributor means and to form a downwardly flowing, generally continuous film of the vented high viscosity liquid on the exterior surface of the tube means to reduce the liquid velocity and to prevent the further entrainment

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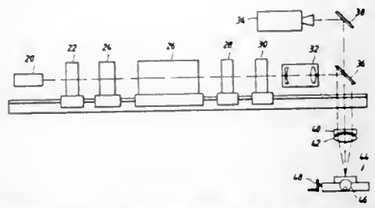
of gas bubbles in the downwardly flowing, high viscosity liquid until the high viscosity liquid reaches a liquid contact location in the process vessel.

5,250,235

METHOD OF MAKING LASER-WELDED INTRAOCULAR LENSES

James R. Cook, Boca Raton, Fla., and Clarence L. Shuff, Huntington, W. Va., assignors to Chiron Intraoptics, Inc., Irvine, Calif.

Filed Apr. 22, 1992, Ser. No. 872,614
Int. Cl.[5] B29D *11/00*
U.S. Cl. 264—1.4 **3 Claims**



1. A method of affixing fixation members to the optical portion of an intraocular lens, comprising:
- selecting a polymethylmethacrylate intraocular lens optic with at least one receiving hole having a cylindrical inner surface in the periphery of the lens optic for receiving one end of a fixation member having a cylindrical outer surface;
- inserting one cylindrical end of a fixation member, having a blue core surrounded by a thin sheath of polymethylmethacrylate, into the receiving hole in the periphery of the lens optic;
- positioning the intraocular lens optic with inserted fixation member on the x-y table of an Nd YAG laser from which the beam-width controlling apertures have been removed;
- using a CCTV and monitor to view the area to be staked and adjusting the position of the x-y table so that the receiving hole with inserted fixation member end is located in the path that a laser beam emitted from the Nd YAG laser would follow when the laser is energized;
- energizing the apertureless Nd YAG laser to produce a multi-mode diffuse laser energy beam of at most about 14 watts;
- passing the diffuse laser beam's energy through the optic and to the blue core of the inserted end of the fixation member for about 1.5 seconds;
- at least partially melting the sheath of the fixation member so that molten polymethylmethacrylate contacts the cylindrical inner surface of the receiving hole; and
- staking the inserted end of the fixation member to the lens optic such that, upon cooling, the laser-staked area of the lens is substantially free of heat-induced defects when viewed under a magnification of 10X and the staked fixation element is able to withstand a pull strength of at least 50 g.

5,250,236

METHOD FOR PRODUCING SOLID LIPID MICROSPHERES HAVING A NARROW SIZE DISTRIBUTION

Maria R. Gasco, Lungo Po Antonelli, 207 - 10153 Torino, Italy

Filed Aug. 2, 1991, Ser. No. 739,440
Int. Cl.[5] A61K *9/52*; B01J *13/06*
U.S. Cl. 264—4.4 **8 Claims**

1. Process for preparing solid lipid microspheres with an average diameter below 1 micron and a polydispersion of between 0.06 and 0.90 and preferably between 0.10 and 0.70, wherein:

a) a molten lipid, which may contain a drug, is contacted with a mixture consisting of water, a surfactant and possibly a co-surfactant heated to a temperature at least equal to the melting temperature of the lipid;

b) the obtained microemulsion is dispersed in water of 2° to 10° C.;

c) the obtained lipid microsphere dispersion is washed with water by diafiltration and lyophilized.

5,250,237

ALCOHOL-BASED SPIN LIQUIDS FOR FLASH-SPINNING POLYMERIC PLEXIFILAMENTS

Hyunkook Shin, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 11, 1992, Ser. No. 881,032
Int. Cl.[5] D01D *5/11*
U.S. Cl. 264—13 **14 Claims**

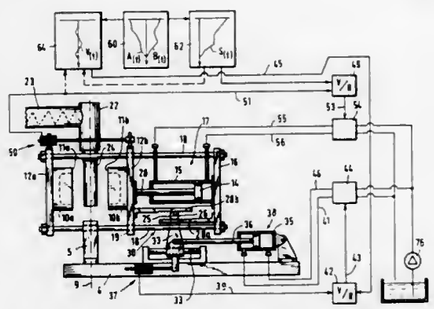
1. A process for flash-spinning plexifilamentary film-fibril strands wherein a polyolefin is dissolved in a spin liquid to form a spin mixture containing 1 to 35 percent of polyolefin by weight of the spin mixture at a temperature in the range of 130 to 300 C. and a mixing pressure that is greater than the autogeneous pressure of the spin mixture, which spin mixture is flash-spun into a region of substantially lower temperature and pressure to form plexifilamentary film-fibril strands, the improvement comprising the spin liquid comprising an alcohol spin liquid containing from 1 to 4 carbon atoms and present in an amount no less than 50 percent by weight of the total spin liquid.

5,250,238

PROCESS FOR BLOW MOLDING HOLLOW BODIES WITH SYMMETRIC MOLD PORTION MOVEMENT

Erich Kiefer; Peter Klüsener, both of Bonn, and Karsten Friedrichs, Bad Honnef, all of Fed. Rep. of Germany, assignors to Krupp Kautex Maschinenbau GmbH, Bonn, Fed. Rep. of Germany

Filed Oct. 11, 1991, Ser. No. 776,522
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1990, 4032659
Int. Cl.[5] B29C *49/56, 49/78*
U.S. Cl. 264—40.5 **23 Claims**



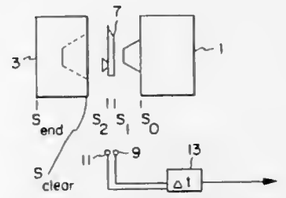
1. A blow molding process employing an apparatus including a blow mold having at least first and second mold portions and a first drive system coupled with the mold portions so as to reciprocate the first and second mold portions in a linear direction together to a closed condition in which the first and second mold portions bear against one another and apart to a spaced condition in closing and opening movements in the linear direction, the process comprising the steps of:
- reciprocating the first and second mold portions together and apart in closing and opening movements, respectively, in the linear direction with the first drive system; and
- at least temporarily displacing at least part of the mold in a second movement in the linear direction during at least part of one of the opening and closing movements with a second drive system also coupled with the mold, the second movement being separate and different from the one movement and being superimposed upon the one movement being performed by the first drive system, the one movement and the second movement combining so as to move the first and second mold portions asymmetrically with respect to a stationary reference plane oriented perpendicularly to the linear direction at least during the part of the one movement.

5,250,239

PROCESS AND APPARATUS FOR CONTROLLING THE MOVEMENTS OF AN INJECTION MOLD AND A HANDLING DEVICE

Richard Herbst, Freisinger Str. 3B, D-8057 Eching, Fed. Rep. of Germany

PCT No. PCT/EP91/00221, § 371 Date Aug. 3, 1992, § 102(e) Date Aug. 3, 1992, PCT Pub. No. WO91/11314, PCT Pub. Date Aug. 8, 1991
PCT Filed Feb. 5, 1991, Ser. No. 917,122
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1990, 4003372
Int. Cl.[5] B29C *45/42, 45/80*
U.S. Cl. 264—40.5 **9 Claims**



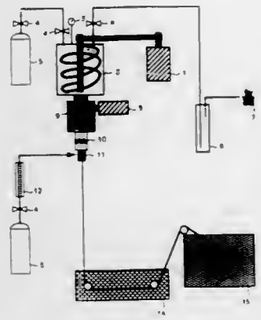
1. A process for controlling the relative movement of a molding tool and a gripping tool of a molding machine, the molding tool being moveable between a closed position for molding a material and a fully open position, the gripping tool being used to remove a molded workpiece from the molding tool and being movable between an extended position in which a portion of the gripping tool is within the molding tool when the molding tool is not closed and a withdrawn position, the method comprising:
- determining the speed of movement of one of the molding tool and the gripping tool at at least one intermediate position,
- determining whether the speed of the one of the molding tool and the gripping tool falls within a predetermined reference range, and
- if the speed of the one of the molding tool and the gripping tool falls within the predetermined reference range, generating a release signal for movement of the other of the molded tool and the gripping tool, and controlling the movement of the other of the molding tool and the gripping tool based upon the release signal.

5,250,240

PROCESS FOR THE PREPARATION OF POROUS POLYOLEFIN SEPARATION MEMBRANES VIA THERMALLY-INDUCED PHASE SEPARATION

Jae-Jin Kim; Sung-Soo Kim; Jeong-Rim Hwang, and Sang-Bong Sub, all of Seoul, Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea

Filed Jul. 15, 1992, Ser. No. 913,405
Claims priority, application Rep. of Korea, Aug. 9, 1991, 13777/1991
Int. Cl.[5] D01D *5/24, 5/247*; D01F *6/04*
U.S. Cl. 264—41 **12 Claims**



1. A process for preparing a hollow, fibrous, porous polyolefin separation membrane, which comprises:
- a) spinning a melt blend solution of a polyolefin, having a melt index of 0.1 to 30 g/10 min., selected from the group consisting of polyethylene and polypropylene, in a diluent selected from the group consisting of natural soybean oil, pure linoleic acid, and a mixture of oleic acid, linoleic acid and palmitic acid to form a hollow, fibrous, porous, polyolefin separation membrane;
- b) extracting out the diluent followed by coagulating the membrane with a coagulating and extracting solvent; and
- c) evaporating out the solvent together with any residue of the diluent.

5,250,241

METHOD FOR FORMING MOLDED PORTION AT END OF EXTRUDED WEATHER STRIP

Tadanobu Iwasa; Tatsuhiko Nagata; Toshiki Iwata, and Hiroyasu Kozawa, all of Inazawa, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Oct. 18, 1991, Ser. No. 779,264
Int. Cl.[5] B29C *67/22*
U.S. Cl. 264—46.4 **2 Claims**



1. A method for forming a molded portion at an end of an extruded weather strip, comprising the steps of:
- placing the end of the extruded weather strip, formed by extruding foamed elastic material, in a cavity defined by a movable mold member and a fixed mold member, the movable mold member and the fixed mold member composing a mold;
- closing said mold with the end of the extruded weather strip clamped by a predetermined clamping force so as to compress the weather strip;

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injecting a foamable molding material into said cavity to begin a molding process;

moving said movable mold member by an amount not more than a displacement caused by said clamping force during foaming of said foamable molding material to reduce clamping and thus compression of said movable mold member and to enlarge said cavity, thereby substantially preventing generation of a step between adjacent surfaces of the extruded weather strip and the molding material;

continuing said molding process with said movable mold member moved by said amount until said foamable molding material expands and fills said enlarged cavity and curing the formed molding material; and

opening said mold when molding of said molded portion is completed.

5,250,242

METHOD OF PRODUCING CERAMIC SINTERED BODY HAVING DENSE CERAMIC MEMBRANE

Hiroaki Nishio; Keiji Watanabe, and Michitaka Sato, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

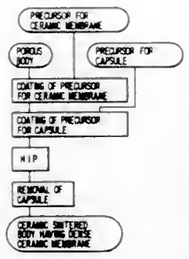
PCT No. PCT/JP90/00500, § 371 Date Dec. 18, 1990, § 102(e) Date Dec. 18, 1990, PCT Pub. No. WO90/12770, PCT Pub. Date Nov. 1, 1990

PCT Filed Apr. 17, 1990, Ser. No. 623,452

Claims priority, application Japan, Apr. 18, 1989, 1-96459

Int. Cl.[5] C04B *41/85*

U.S. Cl. 264—60 **12 Claims**



1. A method of producing a ceramic sintered body having a ceramic membrane which comprises a step of applying a precursor capable of conversion into a ceramic membrane having a new function upon heating, said precursor being a member selected from the group consisting of polysilane, polycarbosilane, polysilastyrene, polysilazane, polymethylsilazane, and hydrolyzates of metal alkoxide, said precursor being applied onto at least the portion of said ceramic body where it is desired to impart said function to the surface of the ceramic porous body, a step of applying a material which inhibits bonding of the ceramic membrane to a gas-impermeable membrane upon heating, a step of applying a metal or ceramic precursor over the whole surface of the porous body, which precursor is capable of conversion into the gas-impermeable membrane upon heating, a process step of forming the gas-impermeable membrane by heating, a step of hot isotactic pressing the porous body, and a step of removing said gas-impermeable membrane by physical means.

5,250,243

METHOD FOR MAKING CERAMIC MATRIX COMPOSITES

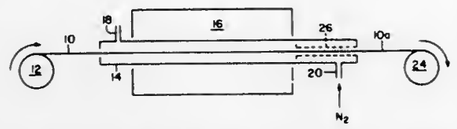
Roger A. Allaire, Big Flats, and Victor F. Janas, Horseheads, both of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Dec. 2, 1991, Ser. No. 800,995

Int. Cl.[5] C04B *35/71*

U.S. Cl. 264—63 **11 Claims**

1. In the method for making a ceramic matrix composite article wherein a dispersion of a ceramic matrix powder in a thermoplastic vehicle is applied to an inorganic fiber reinforcement material to form a prepreg material, the thermoplastic vehicle comprising, in weight percent, about 10–40% of polymer binder components, 35–90% of volatile wax components, at least 60% total of polymer binder and volatile was components, and 0–35% of optional additives selected from the group consisting of surface-active dispersants, polymeric plasticizers, and non-volatile waxes, the prepreg material is collected, the collected prepreg material is formed into a preform for the



article, the preform for the article is subjected to binder burnout, and the preform is thereafter consolidated by the application of heat and pressure to form the article, the improvement wherein:

prior to forming the collected prepreg material into the preform, the prepreg is heated to a temperature sufficient to evaporate at least about 50% by weight of the volatile wax components from the thermoplastic vehicle but insufficient to remove the organic polymer binder component therefrom.

5,250,244

METHOD OF PRODUCING SINTERED CERAMIC BODY

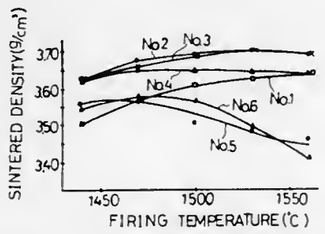
Yukihiro Kimura; Sumihito Tominaga, and Rokuro Kanbe, all of Nagoya, Japan, assignors to NGK Spark Plug Company, Ltd., Aichi, Japan

Continuation of Ser. No. 586,982, Sep. 24, 1990, abandoned. This application Jul. 10, 1992, Ser. No. 911,782

Claims priority, application Japan, Sep. 26, 1989, 1-249737; Sep. 26, 1989, 1-249738

Int. Cl.[5] C04B *35/64*

U.S. Cl. 264—63 **5 Claims**



1. A method of producing a sintered ceramic body comprising the steps of controlling a ceramic base powder to have a particle size distribution such that the amount of powder particles not greater than 1.0 μm in size is 8 to 12% by weight and the average particle diameter is 3 to 4.5 μm, said controlling occurring prior to mixture of said base powder with any other powder; controlling a sintering assistant powder to have a particle size distribution such that the amount of powder particles not smaller than 10 μm in size is not more than 5% by weight; mixing said ceramic base powder, said sintering assistant powder and an organic binder after said controlling steps; molding the resultant mixture; degreasing said mixture by heating to a temperature of 250° C. in air; and sintering the molded body to produce the sintered body.

5,250,245

PROCESS FOR PREPARING POLYESTER FINE FILAMENTS

Robert J. Collins, Wilmington; Hans R. E. Frankfort, Kinston; Stephen B. Johnson, Wilmington, all of N.C.; Benjamin H. Knox, Wilmington, Del., and Elmer E. Most, Jr., Kinston, N.C., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 860,776, Mar. 29, 1992, abandoned, and Ser. No. 5,672, Jan. 19, 1993, which is a continuation-in-part of Ser. No. 647,371, Jan. 29, 1991, abandoned, said Ser. No. 860,776, is a continuation-in-part of Ser. No. 647,371, Jan. 29, 1991, abandoned. This application Feb. 10, 1993, Ser. No. 15,733

Int. Cl.[5] D01D *5/12*; D01F *6/62*; D02G *3/00*

U.S. Cl. 264—103 **6 Claims**

1. A process for preparing spin-oriented polyester fine filaments of denier in the range 0.2 to 0.8, wherein,

(i) a polyester polymer is selected to have a relative viscosity (LRV) in the range of about 13 to about 23, a zero-shear melting point (T_M^0) in the range about 240° C. to about 265° C., and a glass-transition temperature (T_g) in the range of about 40° C. to about 80° C.;

(ii) said polyester polymer is melted and heated to a temperature (T_P) in the range about 25° C. to about 55° C. above the apparent polymer melting point $(T_M)_a$;

(iii) resulting melt is filtered sufficiently rapidly that the residence time (t_r) is less than about 4 minutes;

(iv) the filtered melt is extruded through a spinneret capillary at a mass flow rate (w) in the range about 0.07 to about 0.7 grams per minute, and the capillary is selected to have a cross-sectional are (A_c) in the range about 125×10^{-6} cm^2 to about 1250×10^{-6} cm^2, and a length (L) and diameter (D_{RND}) such that the (L/D_{RND})-ratio is at least about 1.25 and less than about 6,

(v) protecting the extruded melt from direct cooling as it emerges from the spinneret capillary over a distance (L_{DQ}) of at least about 2 cm and less than about (12$\sqrt{}$ dpf)cm, where dpf is the denier per filament of the fine spin-oriented polyester filament,

(vi) cooling the extruded melt to below the polymer glass-transition temperature (T_g) and attenuating to an apparent spinline strain (ϵ_a) in the range of about 5.7 to about 7.6, and to an apparent internal spinline stress (σ_a) in the range of about 0.045 to about 0.195 g/d,

(vii) then converging the cooled filaments into a multifilament bundle by use of a low friction surface at a distance (L_c) from the spinneret capillary in the range about 50 cm to about 140 cm, and

(viii) winding up the multifilament bundle at a withdrawal speed (V) in the range of about 2 to about 6 km/min.

5,250,246

METHOD AND APPARATUS FOR MANUFACTURING SHEETS

Akio Totsuka, Chiba, Japan, assignor to Nippon Petrochemicals Co., Ltd., Tokyo, Japan

Filed Nov. 16, 1990, Ser. No. 614,724

Claims priority, application Japan, Nov. 22, 1989, 1-302230

Int. Cl.[5] B26D *3/10*; B26F *1/38*

U.S. Cl. 264—138 **32 Claims**

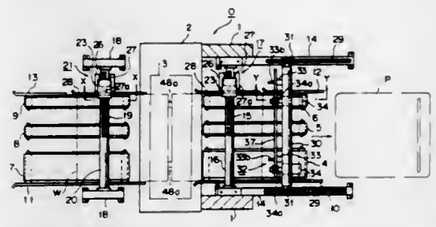
1. A method of manufacturing pallets from a plurality of sheets, said sheets having a predetermined polygonal shape and dimensions substantially the same as the dimensions of the pallets to be manufactured, said plurality of sheets comprising a first sheet, a second sheet and at least a third sheet; the method comprising:

a first step of substantially cutting at the same time a portion of said first sheet positioned in a first area, said first area having one side, said portion of said first sheet facing one side of a second area, and a portion of said second sheet positioned in said second area, said portion of said second sheet facing said one side of said first area; and

a second step of conveying said first sheet from said first area to a discharging area, conveying said second sheet from said second area to said first area, conveying said third sheet from a feeding area to said second area.

15. An apparatus for manufacturing pallets comprising:

a) conveying means for conveying a first sheet and a second sheet in sequence from a feeding position to a second discharging position, said first sheet having a rear side and said second sheet having a front side;



b) positioning means for positioning said first sheet and said second sheet in such a manner that the rear side of said first sheet and the front side of said second sheet face each other at a position adjacent to a predetermined cutting position, said positioning means being located between said feeding position and said discharging position;

c) cutting means for cutting substantially at the same time a portion of the rear side of said first sheet and a portion of the front side of said second sheet.

5,250,247

METHOD AND APPARATUS FOR HEAT TIPPING SUTURES

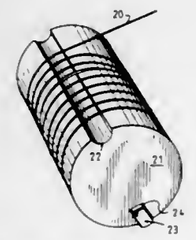
Michael P. Chesterfield, Norwalk; Stanley J. Malinowski, Ridgefield, and George R. Proto, West Haven, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 436,439, Nov. 14, 1989, Pat. No. 5,156,788. This application Jun. 19, 1991, Ser. No. 717,373

The portion of the term of this patent subsequent to Oct. 20, 2009, has been disclaimed.

Int. Cl.[5] B29C *91/02*

U.S. Cl. 264—157 **30 Claims**



1. A method for heat treating a surgical suture comprising:

a) delimiting a portion of the suture to be heat treated; and,

b) heating the delimited portion of the suture to a temperature which is maintained for a period of time sufficient to cause the delimited portion of the suture to become stiffened upon cooling.

25. An apparatus for producing a surgical suture having a reduced diameter end portion which comprises:

a) a drum possessing means for delimiting a portion of suture wound upon the drum;

b) means for applying a suture diameter-reducing tension to the delimited portion of the suture wound upon the drum; and,

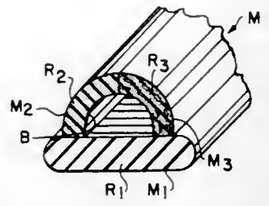
VOL 1155 ISS 1 OCT 5 1993 UMI

c) means for heating the delimited portion of suture wound upon the drum.

5,250,248
APPARATUS AND PROCESS FOR MANUFACTURING A MOLDING

Hidetoshi Arima, Obu, Japan, assignor to Tokai Kogyo Kabushiki Kaisha, Obu, Japan

Division of Ser. No. 695,982, May 6, 1991, Pat. No. 5,124,189. This application Apr. 8, 1992, Ser. No. 865,182
Claims priority, application Japan, May 9, 1990, 2-119475
Int. Cl.[5] B29C *47/20*
U.S. Cl. 264—171 **4 Claims**



1. A process for manufacturing a molding including a portion formed of hard rubber, a portion formed of sponge rubber, and a portion formed of hybrid of the hard rubber and the sponge rubber, comprising the steps of,

providing a molding die having an extrusion opening and at least three flow conduits communicating with said extrusion opening;

simultaneously feeding the hard rubber and the sponge rubber into said molding die;

introducing a part of the hard rubber into the first flow conduit of said molding die and extruding the hard rubber from said extrusion opening to form the portion formed of hard rubber;

introducing a part of the sponge rubber into the second flow conduit of said molding die and extruding the sponge rubber from said extrusion opening to form the portion formed of sponge rubber; and

introducing the remainder of the sponge rubber and the hard rubber into the third conduit of said molding die through a plurality of first ports formed on said molding die and a plurality of second ports positioned between said first ports, respectively, thereby to form a hybrid of the hard rubber and the sponge rubber in which a plurality of hard rubber filaments are uniformly embedded in the sponge rubber, and extruding the hybrid from said extrusion opening to form the portion formed of hybrid of the hard rubber and the sponge rubber.

3. Apparatus for manufacturing a molding including a portion formed of hard rubber, a portion formed of sponge rubber, and a portion formed of hybrid of the hard rubber and the sponge rubber, comprising:

a first feed pipe for feeding hard rubber;

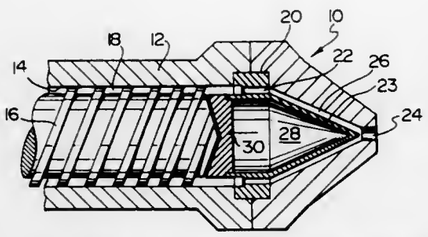
a second feed pipe for feeding sponge rubber; and

a molding die having an extrusion opening, at least three flow conduits communicating with said extrusion opening, a plurality of first ports and a plurality of second ports, the first flow conduit communicating with said first feed pipe, the second flow conduit communicating with said second feed pipe, the third flow conduit communicating with said second feed pipe through said first ports and communicating with said first feed pipe through said second ports, so as to form a hybrid of the hard rubber and the sponge rubber therein when the sponge rubber and the hard rubber are fed from said first and second feed pipes, said second ports being positioned between said first ports so that the hybrid is formed of material in which a plurality of hard rubber filaments are uniformly embedded in sponge rubber.

5,250,249
EXTRUSION APPARATUS AND METHODS OF EXTRUSION

John N. Garner, Kingston, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Sep. 3, 1992, Ser. No. 940,280
Int. Cl.[5] B29C *47/70*
U.S. Cl. 264—176.1 **4 Claims**



1. An extrusion apparatus for plastics material comprising:

an extruder barrel;

an extrusion screw extending along the barrel to define an annular flow passage around the screw, the screw having a downstream end surface disposed inwardly of the annular passage; and

a breaker plate downstream of the extrusion screw, the breaker plate formed with a plurality of apertures extending axially therethrough, all of the apertures being in circumferentially spaced apart relationship, and confined to an annular breaker plate region radially outwardly of the downstream end surface of the screw and an axial alignment with the annular flow passage, the apertures communicating at downstream ends with a tapering flow passage of annular cross-section and of decreasing cross-sectional area in a downstream direction to an extrusion orifice;

the screw extending downstream to a position to cause direct interconnection of the annular flow passage, in annular form, with the circumferentially spaced apertures whereby throughflow of molten plastics material will occur solely along the annular passage, through the apertures, and through the tapering flow passage while bypassing the downstream end surface of the screw.

4. A method of extruding a plastics material comprising:

subjecting the material to the action of a rotating extrusion screw within an extruder barrel of extrusion apparatus to pressurize the material to render it molten and move it downstream along an annular flow passage surrounding the barrel;

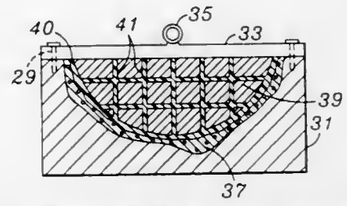
under the extrusion pressure, forcing the molten material in an axial direction through flow apertures formed axially through a breaker plate, all of the apertures being in circumferentially spaced apart relationship, confined to an annular breaker plate region in circumferentially spaced apart relationship radially outwardly of the downstream end surface of the screw and in axial alignment with the annular flow passage, movement to the flow apertures being directly from the annular flow passage while bypassing the downstream end surface of the screw; and

then forcing the material from the flow apertures and along a tapering flow passage of annular cross-section and of decreasing cross-sectional area towards an outlet of the extrusion apparatus.

5,250,250
PROCESS FOR FORMING ARTIFICIAL ROCKS

Dennis Gorski, 21252 Bristlecove, Mission Vlejo, Calif. 92692

Filed Sep. 19, 1991, Ser. No. 762,626
Int. Cl.[5] B29C *33/40*
U.S. Cl. 264—227 **16 Claims**



1. A process of forming a mold useful in the production of artificial rocks comprising:

forming an outer mold, said mold having an outer surface and an inner surface, said inner surface defining the size, shape and detail of the artificial rock;

forming a hard liner upon the inner surface of the outer mold;

forming a mold insert receivable within the hard liner;

securing said mold insert and hard liner in place relative to each other to define a space between the mold insert and the hard liner;

pouring molding material into the space between the mold insert and the hard liner;

allowing the molding material to harden;

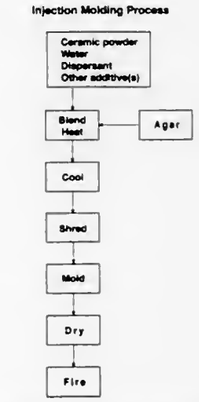
separating the outer mold from the mold insert and attached molding material, the mold insert and attached molding material collectively forming an inner mold; and

separating the hard liner from the outer mold.

5,250,251
AQUEOUS PROCESS FOR INJECTION MOLDING CERAMIC POWDERS AT HIGH SOLIDS LOADINGS

Anthony J. Fanelli, Rockaway; Gary B. Marsh, Pittstown; Joan V. Burlew, Rockaway; Clifford P. Ballard, Lebanon, and William S. Frei, Stanhope, all of N.J., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 748,151, Aug. 22, 1991, abandoned. This application Mar. 31, 1992, Ser. No. 860,919
Int. Cl.[5] C04B *35/64*
U.S. Cl. 264—328.2 **15 Claims**



1. A method of forming an article comprising the steps of:

(a) forming a mixture comprising

(1) ceramic powder, said powder comprising about 40% to 60% by volume of said mixture,

(2) an agaroid gel forming material having a gel strength measured at a temperature between 0° C. and about 22° C. on a gel consisting essentially of about 1.5 wt % of the agaroid gel forming material and water, of at least about 100 g/cm^2, and

(3) an agaroid gel forming material solvent, said mixture being formed in a blender that provides shearing action thereto and said blender being heated to raise the temperature of said mixture to about 70° C. to 100° C.;

(b) cooling said mixture to a temperature below the gel point thereof;

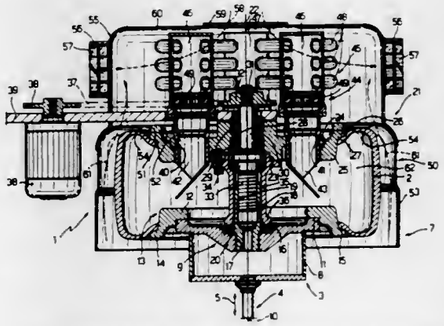
(c) heating to a first temperature and supplying the mixture to a mold, said first temperature being in the range from 60° C. to 100° C.; and

(d) molding the mixture at a second, cooler temperature at or below the gel point of the agaroid gel forming material to produce an article comprising the powder and a gel comprising the agaroid gel forming material, said second cooler temperature being in the range from 10° C. to 35° C.

5,250,252
METHOD AND DEVICE FOR STABILIZING CURED TIRES

Karl J. Siegenthaler, Rome, Italy, assignor to Bridgestone/Firestone, Inc., Akron, Ohio

Filed Jul. 3, 1991, Ser. No. 725,164
Claims priority, application Italy, Jul. 27, 1990, 67595 A/90
Int. Cl.[5] B29C *71/02*
U.S. Cl. 264—502 **11 Claims**



1. A method of stabilizing a cured tire extracted at relatively high temperature from a curing mold; said method comprising the steps of inflating said tire to a given pressure by means of a pressurized fluid; cooling said tire from the inside by circulating said pressurized fluid along a closed circuit defined at least partially by said tire and by radiator means; and cooling said pressurized fluid by passing a second fluid directly over said radiator means by generating, via fan means, a forced stream of outside air through said radiator means.

5. A device for stabilizing cured tires extracted at a relatively high temperature from a tire curing mold; said device comprising:

a) means for applying a pressurized fluid inside a tire whereby said pressurized fluid inflates said tire;

b) closed circuit means for circulating said pressurized fluid through said tire to cool said tire;

c) radiator means included within said closed circuit, and located external of said tire, for passing said pressurized fluid therethrough;

d) fan means for generating a forced stream of outside air through said radiator means; and

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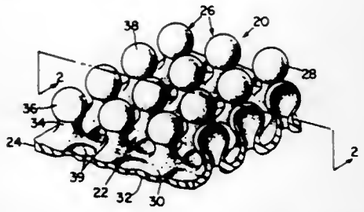
e) means for allowing outside air to flow over said radiator means to extract heat from said pressurized fluid flowing through said radiator means.

5,250,253

METHOD OF MAKING A PRESSURE-SENSITIVE ADHESIVE FASTENER

Charles F. Battrell, Erlanger, Ky., assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 409,206, Sep. 19, 1989, Pat. No. 4,946,527.
This application Apr. 18, 1990, Ser. No. 511,375
Int. Cl.[5] B29C *59/04*
U.S. Cl. 264—557 9 Claims



1. A method for forming a textured pressure-sensitive adhesive fastener, said method comprising the steps of:

(a) providing a backing web having a first surface and a second surface, the backing web having discrete, bulbous surface aberrations projecting from the first surface, at least some of said bulbous surface aberrations having an end portion and base portion, wherein said end portion comprises at least one microbubble substantially coinciding with the point of maximum amplitude of said bulbous surface aberration, and said microbubble and said base portion of said bulbous surface aberration each have opposed walls separated by an intervening space;

(b) coating a pressure-sensitive adhesive layer over at least a portion of the surface of at least some of said bulbous surface aberrations; and

(c) bonding said pressure-sensitive adhesive layer to said backing web.

5,250,254

COMPOUND AND PROCESS FOR AN INJECTION MOLDING

Masakazu Achikita, Kashiwa, and Akihito Ohtsuka, Sakura, both of Japan, assignors to Sumitomo Metal Mining Co., Ltd., Japan

Continuation of Ser. No. 731,000, Jul. 16, 1991, abandoned, which is a division of Ser. No. 555,089, Jul. 18, 1990. This application Dec. 20, 1991, Ser. No. 814,193
Claims priority, application Japan, Jul. 20, 1989, 1-185933
Int. Cl.[5] B22F *1/00, 3/16*
U.S. Cl. 419—37 5 Claims

1. A process of forming a sintered product including the step of placing a compound formed of a binder and at least one metal powder or metal alloy powder in an injection-molded cavity, said binder includes a low density polyethylene, a paraffin way, a borate ester and a polyoxyethylenealkylester or a polyoxyethylene alkylester,

injecting the compound at a speed between 150 and 250 mm/sec and heating the compound in the mold to a temperature of between 150° and 250° C. to form a molded part,

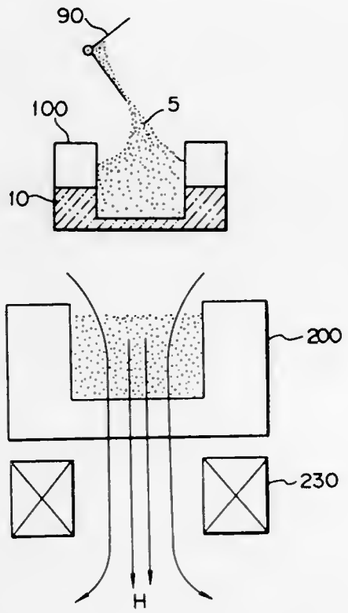
removing the part from the mold and heating the part at a temperature of between 250° C. to 300° C. at a heating rate of 12°–30° C. per hour to remove the binder.

5,250,255

METHOD FOR PRODUCING PERMANENT MAGNET AND SINTERED COMPACT AND PRODUCTION APPARATUS FOR MAKING GREEN COMPACTS

Masato Sagawa; Hiroshi Nagata, and Hiroo Shirai, all of Kyoto, Japan, assignors to Intermetallics Co., Ltd., Kyoto, Japan

Filed Dec. 2, 1991, Ser. No. 800,356
Claims priority, application Japan, Nov. 30, 1990, 2-330048; Feb. 14, 1991, 3-40861; Mar. 1, 1991, 3-59487; Jun. 14, 1991, 3-169346
Int. Cl.[5] B22F *3/12*
U.S. Cl. 419—39 150 Claims



1. A production method for producing a green magnet compact, comprising:

preparing a rubber mold which comprises rubber in at least a side portion thereof and which is located outside a die-press machine;

filling a cavity in the rubber mold with a magnet powder to a density which is at least 1.2 times a natural filling density of the magnet powder, by means of vibrations pressing the magnet powder with pushing or both;

placing the filled rubber mold in the die-press machine; and

compacting the filled rubber mold and the magnet powder therein by a punch in the die-press machine under a magnetic field to obtain a green compact of the magnet powder;

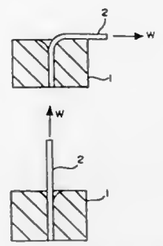
wherein the natural filling density is obtained by allowing the magnet powder to fall under gravity from a powder pan into the rubber mold until the top of the magnet powder arrives at an upper frame which prevents the magnet powder from overflowing the rubber mold, the distance between a bottom end of the powder pan and the bottom of the rubber mold being 3.7 times the depth of the cavity of the rubber mold.

5,250,256

HIGH-TENSILE COPPER ALLOY FOR CURRENT CONDUCTION HAVING SUPERIOR FLEXIBILITY

Yasusuke Ohashi; Tamotsu Nishijima; Toshihiro Fujino, and Yasuhito Taki, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Division of Ser. No. 704,247, May 22, 1992, Pat. No. 5,124,124.
This application Apr. 14, 1992, Ser. No. 868,094
Claims priority, application Japan, May 23, 1990, 2-133572
Int. Cl.[5] C22C *9/00*
U.S. Cl. 420—473 2 Claims



1. A high-tensile copper alloy for current conduction consisting essentially of: from 2.0 to 4.0% weight of Ni; from 0.4 to 1.0% by weight of Si; from 0.05 to 0.3% by weight of In; from 0.01 to 0.2% by weight of Co; and the balance of Cu.

5,250,257

PROCESS FOR THE STERILIZATION OF IMPLANTS

Edmund Lengfelder, Munich, Fed. Rep. of Germany, assignor to adatomed Pharmazeutische und medizintechnische Gesellschaft mbH, Munich, Fed. Rep. of Germany

Filed Oct. 22, 1991, Ser. No. 779,187
Int. Cl.[5] A61L *2/00*
U.S. Cl. 422—22 4 Claims

1. A process for sterilization of an intraocular lens, comprising:

providing an intraocular lens comprising a lens material which is thermolabile and radio-sensitive;

radiating a surface of the lens with alpha rays or beta rays; and

controlling the ray energy wherein said rays exert a sterilizing effect only on the lens surface without penetrating into the lens material.

5,250,258

METHOD FOR PURIFYING AND ACTIVATING AIR AND APPARATUS THEREFOR

Byeung-ok Oh, 10-9 Haewha-Dong, Jongro-Gu, Seoul, Rep. of Korea

Filed Feb. 11, 1992, Ser. No. 833,705
Int. Cl.[5] A61L *9/18*
U.S. Cl. 422—22 16 Claims

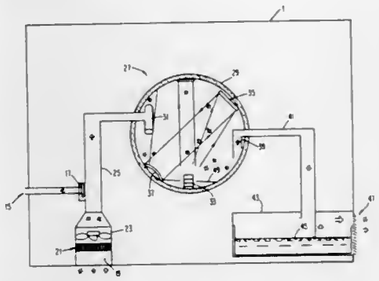
1. An apparatus for treating air containing carbon dioxide in a predetermined energy state comprising:

a) a chamber having an inlet, an outlet and inner surface;

b) an infrared radiation source means arranged on said inner surface for emitting infrared radiation at a predetermined frequency;

c) a diffraction grating means for receiving and correcting said predetermined frequency to a frequency range between 2300 to 2400 cm^{-1}, said grating means disposed on said inner surface;

d) means for passing atmospheric air into said chamber wherein carbon dioxide molecules in said atmosphere are activated by absorption of said infrared radiation such that said predetermined energy state of carbon dioxide molecules increases; and



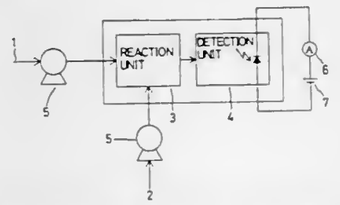
e) means for conducting said air containing carbon dioxide in said increased energy state to atmosphere.

5,250,259

CHEMILUMINESCENT DETECTOR

Masayuki Suda, Tokyo, Japan, assignor to Seiko Instruments Inc., Japan

Filed Apr. 15, 1992, Ser. No. 869,524
Claims priority, application Japan, Apr. 17, 1991, 3-85593
Int. Cl.[5] G01N *21/76*
U.S. Cl. 422—52 14 Claims



1. A chemiluminescent detector for detecting a specific substance contained in a test liquid by a chemiluminescent reaction, comprising:

a reaction unit for inducing a chemiluminescent reaction by mixing a test sample with a chemiluminescent reagent;

a detection unit for detecting chemiluminescent light comprising a photosensor; and

means including a first introduction port for introducing the test sample and a second introduction port for introducing the chemiluminescent reagent into the reaction unit; p1 wherein both of said reaction unit and said detection unit are formed in and integral with a common substrate.

5,250,260

TAPE FOR DETECTING HYDRIDES

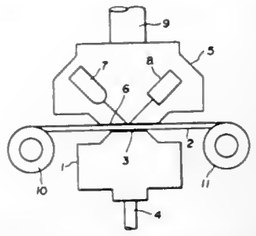
Nobuo Nakano, and Akihiro Yamamoto, both of Tokyo, Japan, assignors to Riken Keiki Co., Ltd., Tokyo, Japan

Flled Oct. 30, 1992, Ser. No. 969,447
Int. Cl.[5] G01N *31/22*
U.S. Cl. 422—56 6 Claims

1. A hydride gas detection tape which comprises a piece of gas-permeable cellulose containing a gas adsorbent and a moisture keeper impregnated with a coloring reagent of silver

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perchlorate and a light resistance enhancer of para-toluenesulfonic acid, whereby hydride gas reacts with said coloring



reagent to produce a color change indicative of the presence of hydride gas.

5,250,261

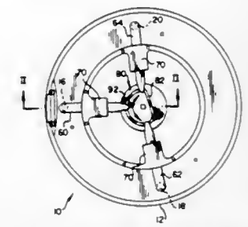
CAM-OPERATED DOORS FOR AN INCUBATOR

Johannes J. Porte, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 22, 1992, Ser. No. 887,976

Int. Cl.[5] G01N *21/00, 35/00*

U.S. Cl. 422—63 **2 Claims**



1. In an incubator comprising a plurality of stations each constructed to hold an assay for incubation at a controlled temperature, a housing enclosing said stations, means for adjusting the temperature within the housing, a plurality of apertures in said housing for providing access to said stations, and door means for opening and closing each at least one aperture automatically in response to a signal, said door means including a movable door for each aperture;

the improvement wherein said door means further comprise a door for each of said apertures, a cam, said cam including a cam track constructed along a path that is eccentric to said axis, a cam follower on each said door that engages said cam in said cam track, and means for rotating said cam about an axis in response to a signal to cause a door to open or close its respective aperture, said track being shaped and connected to said cam followers so that only one of said cam followers and its respective door is moved away from its aperture at any one point in time.

5,250,262

CHEMICAL ANALYZER

Thomas Heidt, Long Valley; Henry Will, Dover; Greydon Rhodes, Chester; Armand Plasensia, Hopatcong, all of N.J., and Roger Clampitt, Hemel Hempstead, United Kingdom, assignors to VetTest S.A., Neuchatel, Switzerland

Continuation of Ser. No. 441,451, Nov. 22, 1989, Pat. No. 5,089,229. This application Dec. 6, 1991, Ser. No. 806,071

Int. Cl.[5] G01N *21/00, 35/00*

U.S. Cl. 422—64 **44 Claims**

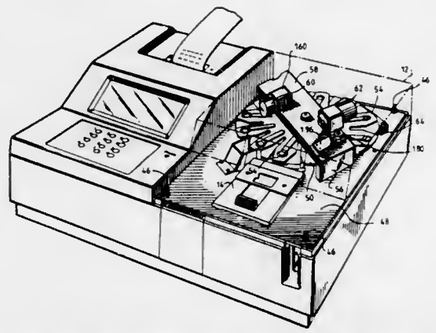
1. A chemical analyzer, which comprises:

a test slide transporter, the test slide transporter including a rotatable turntable for holding a plurality of reagent test slides;

a slide inserter, the slide inserter being positioned adjacent to the circumference of the rotatable turntable for loading reagent test slides onto the rotatable turntable;

means for controlling the temperature of the rotatable turntable, the temperature controlling means including a heating element, the heating element being thermally coupled to the rotatable turntable to conduct heat from the heating element to the rotatable turntable, and a temperature sensor, the temperature sensor being thermally coupled to the rotatable turntable to conduct heat from the heating element to the rotatable turntable, and a temperature sensor, the temperature sensor being thermally coupled to the rotatable turntable;

a sample metering assembly positioned above the rotatable turntable for depositing a predetermined amount of sam-



ple onto each reagent test slide while the reagent test slides remain mounted on the rotatable turntable, the rotatable turntable being disposed for positioning the reagent test slides under the sample metering assembly;

a reflector, the reflectometer being positioned below the rotatable turntable, the rotatable turntable being disposed for positioning the plurality of reagent slides above the reflectometer;

a slide ejector, the slide ejector being positioned in proximity to the rotatable turntable for removing reagent test slides from the rotatable turntable; and

a cover mounted above the rotatable turntable, the cover being at least partially rotatable with respect to the rotatable turntable so as to cover and uncover the reagent test slides carried by the rotatable turntable.

5,250,263

APPARATUS FOR PROCESSING OR PREPARING LIQUID SAMPLES FOR CHEMICAL ANALYSIS

Andreas Manz, Basle, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 30, 1991, Ser. No. 785,134

Claims priority, application Switzerland, Nov. 1, 1990, 3467/90

Int. Cl.[5] G01N *33/00*

U.S. Cl. 422—81 **13 Claims**

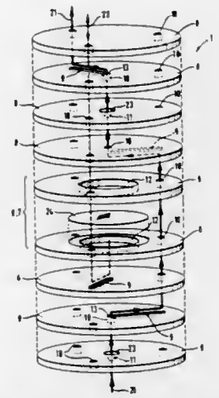
1. An apparatus for processing or preparing liquid samples for chemical analysis, especially for flow injection analysis (FIA), comprising in combination

a plurality of plate components, said plate components each being provided with a central throughhole and several additional throughholes that are distributed across the surface of each plate component,

at least one of said components having a horizontally extending channel segment in the form of a groove that extends from said central throughhole towards the periphery of the respective plate component,

said plate components being stackable in a predetermined order of arrangement one above the other such that said

central throughhole and at least some of the throughholes distributed across each plate component are in alignment with respective throughholes of neighboring components, thus forming at least one interconnected fluid channel system, which extends vertically through the stacked components and includes said horizontally extending channel segment provided in said at least one of said plate components, the channel system being adapted for transportation of a fluid through the stacked plate components; and further comprising



at least one integrally formed diaphragm pump, consisting essentially of two of said neighboring plate components which enclose a diaphragm arranged between them, and

activation means for deflecting the diaphragm vertically between a first and second position such that the diaphragm pump sucks or pumps fluid through respective throughholes which are provided in one of said two neighboring plate components located next to one side of said diaphragm, and which communicate with said at least one fluid channel system.

5,250,264

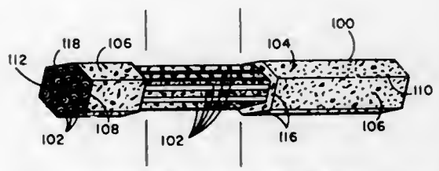
METHOD OF MAKING IMAGING FIBER OPTIC SENSORS TO CONCURRENTLY DETECT MULTIPLE ANALYTES OF INTEREST IN A FLUID SAMPLE

David R. Walt, Lexington, and Steven M. Barnard, Medford, both of Mass., assignors to Trustees of Tufts College, Medford, Mass.

Continuation of Ser. No. 645,787, Jan. 25, 1991. This application Dec. 21, 1992, Ser. No. 994,552

Int. Cl.[5] G01N *21/00*; A61B *5/00*; G02B *6/24*

U.S. Cl. 422—82.07 **6 Claims**



1. A method for making a fiber optic sensor able to detect at least one analyte of interest in a fluid sample, said method comprising the steps of:

obtaining a preformed, unitary fluid optic array comprising a plurality of individually clad, fiber optic strands disposed co-axially along their lengths and having two discrete optic array ends each of which is formed of multiple strand end faces, said preformed, unitary fiber optic array being of determinable configuration and dimensions, said two discrete optic array ends of said preformed, unitary fiber optic array presenting two discrete optic array surfaces for introduction and conveyance of light energy;

preparing photopolymerizable dye mixture comprising a light energy absorbing dye and a monomer mixture polymerizable by light energy;

placing one of said discrete optic array surfaces into contact with said photopolymerizable dye mixture;

introducing light energy to a first portion of the other discrete optic array surface of said preformed, unitary fiber optic array such that a first group of fiber optical strands within said preformed, unitary fiber optic array conveys and introduced light energy to a first spatial position on said contacted discrete optic array surface and causes said photopolymerizable dye mixture to photopolymerize at said first spatial position on said contacted discrete optic array surface as a first uninterrupted deposit of dye upon multiple strand end faces, said first spatially positioned uninterrupted deposit of dye reacting with one analyte of interest is a fluid sample; and

introducing light energy to a second portion of the other discrete optic array surface of said preformed, unitary fiber optic array such that a second group of fiber optical strands within said preformed, unitary fiber optic array conveys said introduced light energy to a second spatial position on said contacted discrete optic array surface and causes said photopolymerizable dye mixture to photopolymerize at said second uninterrupted deposit of dye upon multiple strand end faces, said second spatially positioned uninterrupted deposit of dye reacting with one analyte of interest in a fluid sample.

5,250,265

AUTOMOTIVE SOLAR-OPERATED DEODORIZER WITH SOLAR CELL COOLING AND AUTOMATED OPERATIONAL CONTROL

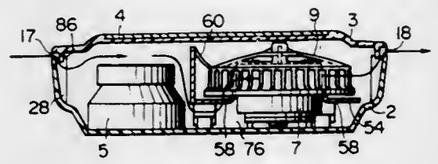
Kiyoshi Kawaguchi, Toyota; Norihisa Itoh, Anjo; Kouji Yamashita, Tokaishi, and Kazuma Matsui, Toyohashi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 682,410, Apr. 8, 1991, abandoned, which is a continuation of Ser. No. 401,410, Sep. 1, 1989, abandoned. This application May 4, 1992, Ser. No. 879,549

Claims priority, application Japan, Sep. 5, 1988, 63-222045; Aug. 5, 1989, 1-203640

Int. Cl.[5] A61L *9/12*

U.S. Cl. 422—107 **19 Claims**



1. A deodorizer for a motor vehicle, said deodorizer comprising:

receptacle means including an opening and a cover for covering said opening, said receptacle means being being shaped to have one end side and an other end side;

a deodorant member disposed within said receptacle means;

an electric motor disposed within said receptacle means, and a fan driven by said electric motor;

said receptacle means being formed with an air suction port provided on the one end side of said receptacle means and an air blowout port provided on the other end side of said

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receptacle means in a way such that a plane connects said air suction port and air blowout port; and

a solar cell provided on a mounting surface of said cover corresponding to an area between said air suction port and said air blowout port and connected to supply a driving power to said electric motor; a part of said fan being within said plane, and said mounting surface located facing said plane such that a blowing action provided by the rotation of said fan from said electric motor causes airflow passing through the interior of said receptacle means to pass over a rear portion of said mounting surface of said cover to thereby cool said solar cell; wherein

said receptacle means further includes means for controlling the rotation of said fan and said electric motor comprising means for mounting said solar cell obliquely to rays from a source of light energy when said cover is in an open position to prevent rotation of said fan and for presenting said solar cell substantially perpendicularly to said rays when said cover is in a closed position to induce rotation of said fan; and

said receptacle means has a substantially flat vertical cross-section and is further constructed so as to present a restricted passageway to increase the velocity of air flowing therethrough.

5,250,266

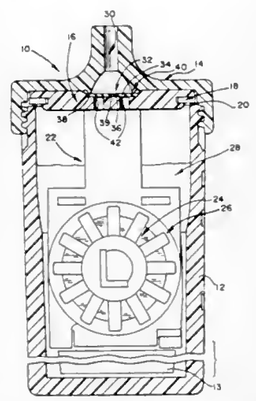
CONTACT LENS CASE VENTING SYSTEM

Rowland W. Kanner, Guntersville, Ala., assignor to Ciba Vision Corporation, Duluth, Ga.

Continuation of Ser. No. 621,351, Nov. 30, 1990. This application Apr. 16, 1992, Ser. No. 869,870

Int. Cl.[5] **B65D** *51/16; G05D 16/00;* **A61L** *2/00*

U.S. Cl. 422—113 **4 Claims**



1. An appliance for disinfecting contact lenses or the like wherein the lenses are disposed within a disinfecting solution which liberates a gas during the disinfecting process, said appliance comprising:

a) a container body including an opening therefrom;

b) a removable cap means closing said opening;

c) a normally closed vent conduit for passage of pressurized effluent gas from said container body through said removable cap; and

d) a check valve in said normally closed vent conduit including a disc member having a linear slit therethrough which closes on itself and which opens for vent discharge of said pressurized effluent gas by sufficient pressure on said disc member exerted by said pressurized effluent gas during passage through said normally closed vent conduit, after which said linear slit recloses to prevent any subsequent leakage of any disinfecting solution therethrough, wherein said removable cap means includes a non-cylindrical supporting surface against which said closed slit is engaged when closed, and from which said slit disengages when opened to form a one-way venting valve.

5,250,267

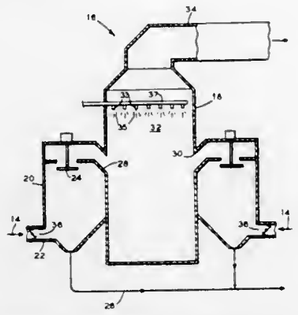
PARTICULATE COLLECTION DEVICE WITH INTEGRAL WET SCRUBBER

Dennis W. Johnson, Barberton; Robert B. Myers, and Donald P. Tonn, both of Copley Township, Summit County, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Jun. 24, 1992, Ser. No. 903,312

Int. Cl.[5] **B01D** *50/00, 51/00;* **B03C** *3/00*

U.S. Cl. 422—168 **7 Claims**



1. A wet scrubber/particulate collection device comprising:

a) a wet scrubber component having a flue gas exit, an internal chamber, and radial midlevel inlets to said chamber;

b) a particulate collection component positional around said wet scrubber and secured around said midlevel inlets of said wet scrubber, said particulate collection component being divided into compartments, each said compartment having a flue gas entrance and at least one isolation dampers located between said wet scrubber component and said particulate collection component, said wet scrubber component and said particulate collection component together comprising a single assembly; and,

c) control means secured to said flue gas entrance for controlling the flow of flue gas through said particulate collection component of said assembly.

5,250,268

CATALYTIC CLEANING ARRANGEMENT FOR EXHAUST FROM AN INTERNAL COMBUSTION ENGINE

Istvan Geiger, Braunschweig, Fed. Rep. of Germany, assignor to Volkswagen AG, Wolfsburg, Fed. Rep. of Germany

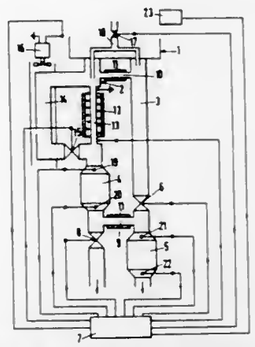
Continuation of Ser. No. 666,894, Mar. 8, 1991, abandoned. This application Sep. 21, 1992, Ser. No. 948,349

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1990, 4007419

Int. Cl.[5] **F01N** *3/20*

U.S. Cl. 422—174 **14 Claims**

1. Apparatus for catalytic cleaning of the exhaust gases of an internal combustion engine comprising an engine having a plurality of combustion chambers, first and second exhaust lines for receiving exhaust from different combustion chambers in the engine, each exhaust line including a catalyst assembly and being arranged to receive exhaust gases from at least one combustion chamber, a first flow connection between the two exhaust lines in the upstream direction from the catalyst assemblies, heater means for heating exhaust gases flowing through a portion of the first exhaust line upstream from the catalyst assembly therein and downstream from the first flow connection, cooling means for cooling hot exhaust gases flowing through a portion of the first exhaust line, the catalyst assembly in the second exhaust line being located at a distance from the engine which is far enough to avoid heating of the catalyst assembly above a selected temperature to inhibit catalyst aging, a second flow connection connecting the first and second exhaust lines downstream from the catalyst assembly in the first exhaust line and upstream from the catalyst assembly in the second exhaust line, valve means in the first and second



exhaust lines and valve control means arranged to connect the catalyst assemblies in the first and second exhaust lines and the heater means in series when the temperature of the second catalyst assembly is below its start-up temperature and to connect each exhaust line to only one of the catalyst assemblies when both catalyst assemblies are above their start-up temperatures.

5,250,269

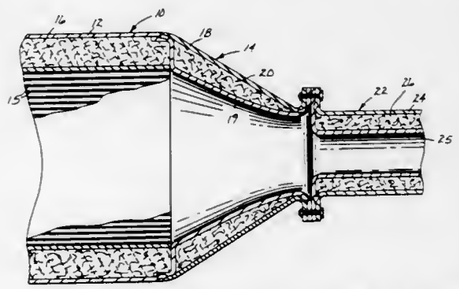
CATALYTIC CONVERTER HAVING A METALLIC MONOLITH MOUNTED BY A HEAT-INSULATING MAT OF REFRACTORY CERAMIC FIBERS

Roger L. Lauger, Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 21, 1992, Ser. No. 887,523

Int. Cl.[5] **B01D** *50/00, 53/34*

U.S. Cl. 422—179 **13 Claims**



13. A catalytic converter comprising a metallic momolith mounted in a canister by a heat-insulating mat which primarily comprises substantially amorphous melt-formed refractory ceramic fibers that have been annealed under conditions sufficient to provide a Resiliency Value of at least 10 kPa.

5,250,270

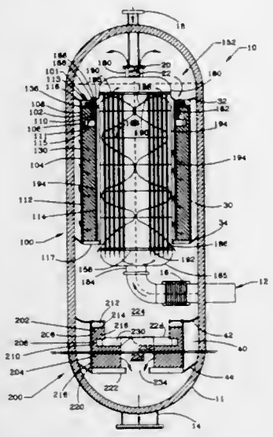
CATALYTIC REACTOR BED

Stephen A. Noe, Houston, Tex., assignor to The M. W. Kellogg Company, Houston, Tex.

Filed Jul. 17, 1992, Ser. No. 916,324

Int. Cl.[5] **B01J** *8/04, 10/00*

U.S. Cl. 422—192 **8 Claims**



1. A catalytic reactor bed comprising:

(a) one or more cylindrical, catalyst supporting baskets concentrically mounted within and spaced apart from a cylindrical wall section of a cylindrical pressure vessel to form annular channels between said baskets and the wall section of said pressure vessel, each of said baskets comprised of a first freeboard, radial gas flow cylindrical catalyst zone defined by spaced apart outside and inside gas permeable cylindrical walls, a second primary, radical gas flow cylindrical catalyst zone defined by spaced apart outside and inside gas permeable cylindrical walls, and a cylindrical catalyst chute defined by spaced apart outside and inside gas impermeable cylindrical walls, said cylindrical catalyst chute being contiguous with and interconnecting said first and second radial gas flow zones;

(b) an annular bed of heterogeneous catalyst supported within the first and second radial gas flow zones and the interconnecting chute of each of said baskets, and

(c) a segmental gas distributor means disposed in said first radial gas flow zone of each of said baskets for partitioning said first radial gas flow zone into a bypass segment essentially free of the catalyst and a plurality of catalyst segments, said distributor means regulating the flow of a reactant gas through said bypass and catalyst segments.

5,250,271

APPARATUS TO CONCENTRATE AND PURIFY ALCOHOL

Hirotoshi Horizoe, Hiroshima; Masura Maki, Kanagawa; Tetsuya Tanimoto, and Masaki Yanagi, both of Hiroshima, all of Japan, assignors to Minister of International Trade & Industry, Tokyo, Japan

Division of Ser. No. 332,933, Feb. 20, 1990, Pat. No. 5,053,563. This application May 16, 1991, Ser. No. 705,017

Claims priority, application Japan, Jul. 24, 1987, 62-183461; Jul. 24, 1987, 62-183462

Int. Cl.[5] **B01D** *11/04*

U.S. Cl. 422—260 **1 Claim**

1. An apparatus for the concentration and purification of alcohol comprising:

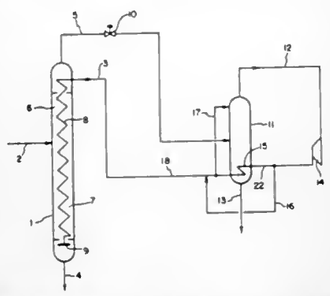
a countercurrent flow extractor having a top, a middle and a bottom, and including a distributor at said bottom and a

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propane solvent supply line at said top disposed within said extractor, wherein said propane solvent supply line is configured to function as a heat exchanger for sending propane solvent in one of a supercritical and pseudocritical condition from above to the distributor at said bottom,

a feed line of aqueous solution of alcohol at said middle, a heavy liquid drawing line at said bottom and a light liquid drawing line at said top;

a propane solvent distillation tower having a tower top and a tower bottom, said distillation tower connected with said light liquid drawing line and having a propane solvent



drawing line at the tower top and a concentrated alcohol drawing line at the tower bottom; and

a connecting line to connect said propane solvent drawing line with said propane solvent supply line of said countercurrent flow extractor through a booster pump and the tower bottom.

said propane solvent supply line being configured in the form of a helical coil, wherein the number of windings per unit axial length of said coil above said alcohol feed line is greater than the number of windings per unit axial length of said coil below said alcohol feed line.

5,250,272

PROCESS FOR LEACHING PRECIOUS METALS WITH HYDROGEN-PEROXIDE AND A CYANIDE LEACHING SOLUTION

Helmut Knorre, Seligenstadt; Juergen Loroesch, Hanau-Steinheim; Steven Gos, Hanau; Mathias Stoll, Steinau-Marjoss, and Annette Ziegler, Offenbach, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 673,868, Mar. 22, 1991, abandoned, which is a continuation of Ser. No. 402,613, Sep. 5, 1989, abandoned. This application Jun. 18, 1992, Ser. No. 899,588

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1988, 3830703

Int. Cl.[5] **C01G** *5/00, 7/00*

U.S. Cl. 423—31 **19 Claims**

1. A process for agitation leaching of gold and silver from a noble metal containing material selected form the group consisting of ores, ore concentrates, wastes of precious metals, and waste materials of prior incomplete leachings, consisting essentially of forming a leaching slurry from said noble metal containing material and an aqueous cyanide leach solution having a pH of 8 to 13, adding to said slurry before or during leaching a catalyst capable of decomposing hydrogen peroxide into oxygen and water, said catalyst being selected from the group consisting of

(1) 0.1 to 50 g powdery or granular activated carbon per kg of leach solution;

(2) 0.1 to 20 g of organic polymeric cation exchangers which contain a heavy metal, which is a decomposition catalyst for hydrogen peroxide, bound thereto per kg of leach solution; and

(3) 0.1 to 20 g of inorganic silicate polymers which contain a heavy metal, which is a decomposition catalyst for hydrogen peroxide, bound thereto per kg of leach solution;

adding an aqueous hydrogen peroxide solution to said slurry in such a way as to set and maintain an oxygen concentration in said slurry in the range of 2 to 20 mg 02 per liter of the leach solution.

5,250,273

HYDROMETALLURGICAL LEACHING PROCESS AND APPARATUS

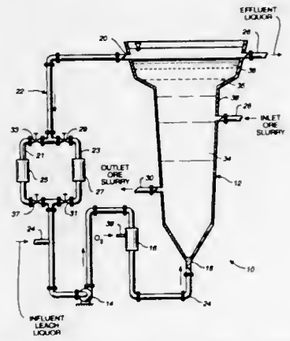
Derek Hornsey, Beaconsfield, and Robert G. H. Lee, Montreal, both of Canada, assignors to Canadian Llquid Air Ltd - Air Liquide Canada LTEE, Montreal, Canada

Continuation of Ser. No. 641,786, Jan. 16, 1991, abandoned. This application Aug. 27, 1992, Ser. No. 933,904

Claims priority, application Canada, Jan. 18, 1990, 2008063

Int. Cl.[5] **C01G** *1/00, 53/00, 43/00, 7/00*

U.S. Cl. 423—3 **19 Claims**



1. A process for recovering a metal from a material containing the metal, said metal being selected from the group consisting of gold, uranium, copper, zinc, nickel and lead, and said material being selected from the group consisting of ores, concentrates and calcines, which process comprises:

a) introducing an aqueous slurry of particles of said material containing the metal into a leaching zone of a vertical column, the vertical column having a lower leaching zone and an upper clarifying zone, sa id slurry containing an aqueous solution of leaching agent, which is initially saturated with dissolved oxygen, and defining a fluid medium, and said particles of said material containing the metal;

b) maintaining a velocity profile in said column spanning said leaching and clarifying zones effective to maintain said particles fluidly suspended in said leaching zone and to promote settling of said porous particles from an upper region of the leaching zone such that said clarifying region comprises an aqueous leachate having not more than 200 mg/l of said particles; and

c) withdrawing a metal-containing leachate from the clarifying zone.

5,250,274

PROCESS FOR THE PRODUCTION OF SODIUM DICHROMATE

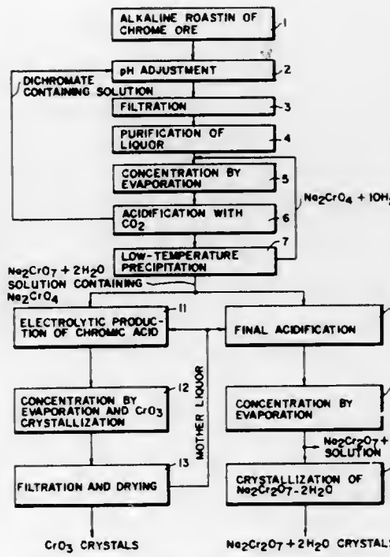
Norbert Lönhoff; Bernhard Spreckelmeyer; Hans-Dieter Block; Rainer Weber, all of Leverkusen; Jost Halstenberg, Cologne, and Bernd Rosenow, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 686,226, Apr. 16, 1991, abandoned. This application Jan. 21, 1992, Ser. No. 824,682

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1990, 4013335

Int. Cl.[5] **C01G** *37/00*

U.S. Cl. 423—61 **3 Claims**



1. A process for the production of sodium dichromate and sodium dichromate solutions from chromes ores by

A) oxidative roasting of chrome ores under alkaline conditions in a roasting furnace to produce furnace to produce furnace clinker,

B) leaching of the furnace clinker leaving the roasting furnace with water or an aqueous chromate-containing solution,

C) adjustment of the pH to from 7 to 9.5 by addition of sodium dichromate solution,

D) removal of insoluble constituents by filtration, thereby obtaining a sodium monochromate solution,

E) concentration the solution from step D) to a content of 750 to 1000 g/l of sodium monochromate by subjecting said solution to an evaporation step,

F) conversion of 40–95% of the monochromate ions of this solution into dichromate ions by acidification with carbon dioxide under pressure with removal of sodium hydrogen carbonate,

G) cooling the solution obtained from step F) to a temperature below 10° C., thereby precipitating sodium monochromate,

H) filtering off the precipitated sodium monochromate and yielding said sodium dichromate solution and

I) returning the precipitated sodium monochromate to step F).

5,250,275

PROCESS FOR SEPARATING SILICON COMPOUNDS CONTAINED IN A HYDROCHLORIC BATH USED FOR PICKLING

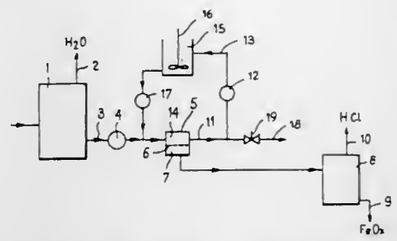
Albert Pavinato, Piennes; Richard Pazdej, and Rémy Nicolle, both of Maizieres-Lès-Metz, all of France, assignors to Sollac, Puteaux, France

Filed Dec. 6, 1991, Ser. No. 803,207

Claims priority, application France, Dec. 13, 1990, 90 15621

Int. Cl.[5] **C02F** *9/00, 1/60, 1/64*

U.S. Cl. 423—138 **8 Claims**



1. A process for separating silicon compounds from a hydrochloric acid bath used for pickling steel, comprising:

(A) evaporating water from said bath, thus concentrating said bath;

(B) carrying out a solid-liquid separation on the concentrated bath by tangential microfiltration, to separate said concentrated bath into a supernatant containing concentrated non-ionic silicon compounds and a permeate containing iron compounds and no non-ionic silicon compounds;

(C) recirculating a major part of said supernatant, to promote precipitation of said concentrated non-ionic silicon compounds;

(D) treating said permeate to recover said iron compounds;

(E) recycling the treated permeate to said hydrochloric acid bath; and

(F) discharging a minor part of said supernatant.

5,250,276

METHOD FOR PREPARING FERRIC CHLORIDE

Pekka Knuuttila, Porvoo; Simo Jokinen, Oulu; Vesa-Pekka Judin; Juhatuomas Vuorisalo, both of Pori, and Simo Salanne, Oulu, all of Finland, assignors to Neste Oy and Kemira Oy, both of Finland

Filed Dec. 20, 1991, Ser. No. 811,313

Claims priority, application Finland, Dec. 21, 1990, 906351

Int. Cl.[5] **C01G** *49/10*

U.S. Cl. 423—138 **7 Claims**

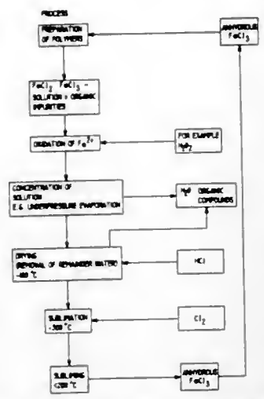
1. A method for preparing an anhydrous ferric chloride from a hydrous iron-containing solution with or without additional organic substances, comprising:

a) removing water from an iron-containing solution comprising a ferric-chloride water solution or a solution comprising ferrous chloride and ferric chloride by drying the solution at a temperature greater than about 70° C. in a hydrochloric acid atmosphere,

b) subliming the anhydrous ferric chloride into a gas phase by exposing said anhydrous ferric chloride to a chlorine

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atmosphere at a temperature greater than about 250° C., and thereafter



c) converting the gaseous ferric chloride into pure crystalline ferric chloride.

5,250,277

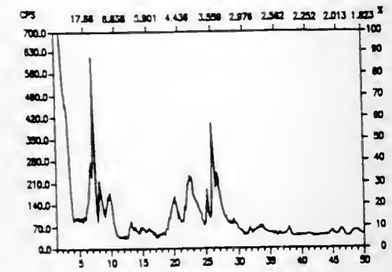
CRYSTALLINE OXIDE MATERIAL

Charles T. Kresge, West Chester, Pa.; Wieslaw J. Roth, Sewell; Kenneth G. Simmons, Williamstown, both of N.J., and James C. Vartuli, West Chester, Pa., assignors to Mobil Oil Corp., Fairfax, Va.

Continuation-in-part of Ser. No. 640,329, Jan. 11, 1991, abandoned, and a continuation-in-part of Ser. No. 640,339, Jan. 11, 1991, abandoned, and a continuation-in-part of Ser. No. 640,341, Jan. 11, 1991, abandoned, and a continuation-in-part of Ser. No. 776,718, Oct. 15, 1991, abandoned, which is a continuation of Ser. No. 640,330, Jan. 11, 1991, abandoned. This application Dec. 20, 1991, Ser. No. 811,360

Int. Cl.[5] C01B *33/34*

U.S. Cl. 423—329.1 28 Claims



1. An oxide material having the X-ray diffraction pattern comprising the following lines:

d(A)	I/I_o
>32.2	vs
12.13 ± 12.66	w–s
3.35 ± 3.51	w–s.

5,250,278

METHOD FOR PRODUCING A CERAMIC PRODUCT

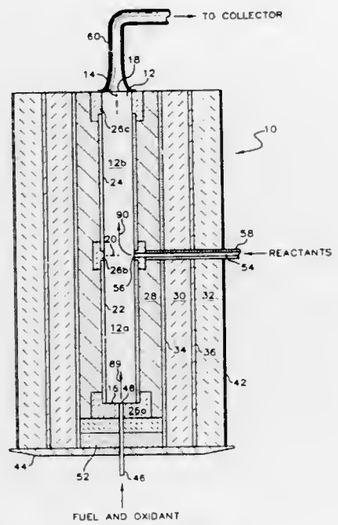
George F. Schuette, and Bruce W. Gerhold, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 19, 1991, Ser. No. 717,596

The portion of the term of this patent subsequent to Apr. 28, 2009, has been disclaimed.

Int. Cl.[5] C01B *31/36, 21/068*

U.S. Cl. 423—346 15 Claims



1. A method comprising the steps of:

providing a reactor having a chamber defined therein which has a longitudinal axis and longitudinally separated upstream and downstream ends, wherein the chamber comprises a combustion zone and a reaction zone such that the combustion zone longitudinally extends from said upstream end to a boundary between the zones and such that the reaction zone longitudinally extends from said boundary to said downstream end;

establishing a flow of a combustible mixture in the combustion zone so as to flow in a direction generally toward the reaction zone, wherein the combustible mixture comprises a mixture of a fuel and an oxidant comprising oxygen;

combusting the combustible mixture in the combustion zone to produce hot combustion products;

injecting at least one reactant into said chamber at said boundary such that the hot combustion products carry said at least one reactant in the reaction zone toward said downstream end, wherein temperature conditions in at least a portion of the reaction zone are at least about 1400° C. and wherein the elemental molar ratio of carbon to oxygen for the combination of the combustible mixture and said at least one reactant is at least about 0.8:1, said at least one reactant being capable of reacting in the reaction zone to form silicon carbide, whereby a precursor product powder comprising the silicon carbide is produced in the reaction zone;

collecting the precursor product powder;

heating the thus collected precursor product powder in a nitrogen-containing atmosphere at a temperature of about 1300° C. to about 1900° C. to produce a final product comprising the silicon carbide as well as silicon nitride.

5,250,279

METHOD FOR THE MANUFACTURE OF HYDROTALCITE

Barry W. Preston, Whiteford; John A. Kosin, Bel Air, and Claude R. Andrews, Pasadena, all of Md., assignors to J. M. Huber Corporation, Rumson, N.J.

Filed Dec. 20, 1991, Ser. No. 812,195

Int. Cl.[5] C01B *31/24;* C01F *5/24;* A01N *59/06;* A61K *33/06*

U.S. Cl. 423—432 8 Claims

1. A method for the preparation of synthetic hydrotalcite having a purity of above 99 percent, a platelet morphology and an average particle size of less than about 2 microns comprising:

reacting a magnesium compound, a bicarbonate compound, alumina trihydrate and an alkali metal aluminate under hydrothermal conditions at a temperature of about 160°–200° C., wherein the magnesium compound is selected from a member of the group consisting of magnesium oxide and magnesium hydroxide and mixtures thereof,

the molar ratio of the alumina trihydrate to the alkali metal aluminate being between about 10:1 to about 5:1,

the molar ratio of the magnesium compound to the bicarbonate compound being between about 0.9:1 to about 1.1:1, and

the atomic ratio of the magnesium to the total aluminum ion being between about 2.2:1 to about 2.3:1.

5,250,280

METHOD OF PREPARING STORAGE-STABLE AQUEOUS SODIUM PEROXYMONSULFATE SOLUTIONS

Birgit Bertsch-Frank, Hanau; Axel Düker, Schleibheim; Friedrich Bittner, Bad Soden, and Gert Rössler, Brühl, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschahft, Fed. Rep. of Germany

Filed Jun. 28, 1991, Ser. No. 721,779

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1990, 4020856

Int. Cl.[5] C01B *15/06, 15/08*

U.S. Cl. 423—513 8 Claims

1. A method for preparing aqueous sodium peroxymonosulfate ($NaHSO_5$) solutions which are storage-stable to the extent that no solid matter is separated and the loss of available oxygen is not more than 1.7% based on the initial value, during storage of 10 days at room temperature, and which have a content of 15% to 35% by weight sodium peroxymonosulfate by means of the partial neutralization of an aqueous solution, which contains Caro's acid and sulfuric acid and which was obtained by means of reacting sulfuric acid or oleum with at least 50% by weight aqueous hydrogen peroxide or by means of the electrolysis of an at least 30% by weight aqueous sulfuric acid with subsequent hydrolysis of the peroxydisulfuric acid formed, with sodium hydroxide or sodium carbonate at a temperature below 50° C.;

a solution containing Caro's acid (H_2SO_5) and sulfuric acid being used which contains less than 2 parts by weight hydrogen peroxide per 100 parts by weight Caro's acid (H_2SO_5) and the partial neutralization being carried out up to an equivalent proportion of total SO_3 to sodium ions in the range of 1 to 1 up to 1 to 1.3, the total SO_3 denoting that molar amount which is bound in said Caro's acid and sulfuric acid containing solution to be partially neutralized in the form of H_2SO_5, H_2SO_4 and $H_2S_2O_8$.

5,250,281

PROCESS FOR MANUFACTURING A VOLTAGE NON-LINEAR RESISTOR AND A ZINC OXIDE MATERIAL TO BE USED THEREFOR

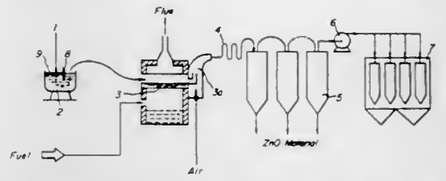
Osamu Imai, Kasugai, and Ritsu Sato, Iwakura, both of Japan, assignors to NGK Insulators, Ltd., Japan

Division of Ser. No. 551,151, Jul. 11, 1990. This application Nov. 22, 1991, Ser. No. 796,367

Claims priority, application Japan, Jul. 11, 1989, 1-177071; Mar. 16, 1990, 2-64432

Int. Cl.[5] C01G *9/02, 9/03*

U.S. Cl. 423—623 4 Claims



1. A zinc oxide powder produced from oxidizing zinc metal for a ZnO-based voltage non-linear resistor, comprising:

an average particle diameter (R) between 0.3 μm and 0.8 μm, wherein at least 70% by weight of said zinc oxide powder has particle diameters within a 0.5 R to 2.0 R particle size distribution, at most 20% by weight of said zinc oxide powder being needle-like crystals, and an SiC content as an impurity of not more than 10 ppm by weight.

5,250,282

USE OF AMPHIPHILIC COMPOUNDS TO PRODUCE NOVEL CLASSES OF CRYSTALLINE OXIDE MATERIALS

Charles T. Kresge, West Chester, Pa.; Michael E. Leonowicz, Medford Lakes; Wieslaw J. Roth, Sewell, both of N.J., and James C. Vartuli, West Chester, Pa., assignors to Mobil Oil Corp., Fairfax, Va.

Continuation of Ser. No. 735,000, Jul. 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 625,245, Dec. 10, 1990, Pat. No. 5,098,684, which is a continuation-in-part of Ser. No. 470,008, Jan. 25, 1990, Pat. No. 5,102,643. This application Oct. 27, 1992, Ser. No. 967,962

The portion of the term of this patent subsequent to Apr. 28, 2009, has been disclaimed.

Int. Cl.[5] C01B *33/34*

U.S. Cl. 423—705 1 Claim

1. A process for using an amphiphilic compound to prepare a highly porous crystalline oxide material exhibiting an X-ray diffraction pattern with at least one peak at a position greater than about 18 Angstrom Units d-spacing with a relative intensity of 100 and a benzene adsorption capacity of greater than about 15 grams benzene per 100 grams anhydrous crystal at 50 torr and 25° C., said process comprising the steps of:

(a) preparing a reaction mixture capable of forming a precursor to said crystalline oxide material, said reaction mixture comprising one or more sources of at least one oxide, a solvent or solvent mixture and an amphiphilic compound;

(b) maintaining said mixture under sufficient conditions of pH, temperature and time for formation of a crystalline oxide containing residual amphiphilic compound;

(c) recovering said crystalline oxide containing residual amphiphilic compound from step (b); and

(d) calcining said recovered material from step (c) under conditions sufficient to remove residual amphiphilic compound,

wherein said amphiphilic compound is a cetyltrimethylammonium compound, and wherein said reaction mixture of step (a) has the mole ratio

$$Solvent/(R'_2O+M_2O)$$

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of greater than 92, where R' is said amphiphilic compound and M is alkali metal or alkali earth metal, and wherein the calcined material from step (d) has a hexagonal electron diffraction pattern and a pore size of at least 13 Angstroms.

5,250,283

ORGANIC CONTRAST AGENT ANALOG AND METHOD OF MAKING SAME

James L. Barnhart, Encinitas, Calif., assignor to Molecular Biosystems, Inc., San Diego, Calif.

Continuation of Ser. No. 500,471, Mar. 28, 1990, Pat. No. 5,143,715. This application Mar. 18, 1992, Ser. No. 853,100

Int. Cl.[5] **A61K** *31/195*

U.S. Cl. 424—5 **1 Claim**

1. A modified organic contrast analog, comprising alpha-fluoro-N-trifluoroacetyl-iopanoic acid.

5,250,284

METHOD FOR INCREASING NUCLEAR MAGNETIC RESONANCE SIGNALS IN LIVING BIOLOGICAL TISSUE USING ZINC

Arnon Krongrad, 9056 Emerson Ave., Surfside, Fla. 33154

Filed Oct. 15, 1991, Ser. No. 776,569

Int. Cl.[5] **G01N** *24/08;* **A61K** *33/32*

U.S. Cl. 424—9 **15 Claims**

1. A method of enhancing a magnetic resonance signal in a living biological tissue comprising the steps of:

(a) selecting ^{67}Zn as a magnetic isotope of an element which is of interest in diagnosis of disease in a living biological tissue;

(b) administering to said living biological tissue a quantity of said ^{67}Zn in a form in which said ^{67}Zn is absorbable by said living biological tissue, which administered quantity of ^{67}Zn has a concentration greater than the concentration of ^{67}Zn naturally occurring outside of said living biological tissue; and

(c) detecting magnetic resonance signal which is emitted from said administered ^{67}Zn in the living biological tissue.

5,250,285

HYDROXY-ARYL METAL CHELATES FOR DIAGNOSTIC NMR IMAGING

Randall B. Lauffer, and Scott K. Larsen, both of Boston, Mass., assignors to The General Hospital Corporation, Boston, Mass.

Continuation of Ser. No. 399,737, Aug. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 860,540, May 7, 1986, abandoned, which is a continuation-in-part of Ser. No. 731,841, May 8, 1985, Pat. No. 4,899,755. This application Feb. 20, 1992, Ser. No. 840,652

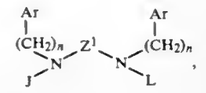
Int. Cl.[5] **A61K** *49/00;* **A61B** *6/00*

U.S. Cl. 424—9 **9 Claims**

1. An NMR contrast composition comprising

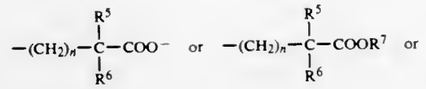
a metal ion selected from the group consisting of gadoliumium (III), iron (III), manganese (II), manganese (III), chromium (III), copper (II), dysprosium (III), terbium (III), holmium (III), erbium (III), europium (II), and europiium (III), and

a ligand of the formula:



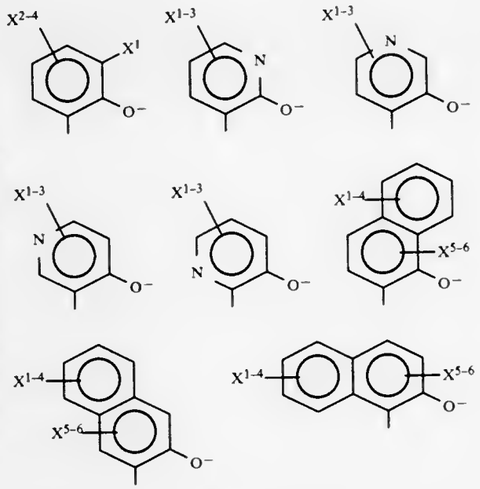
where n is 0 or 1;

each J, L, independently, is

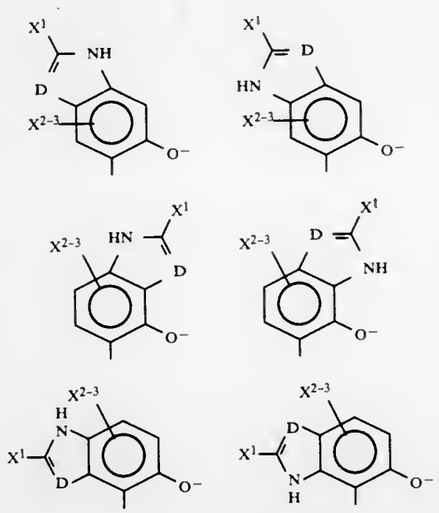


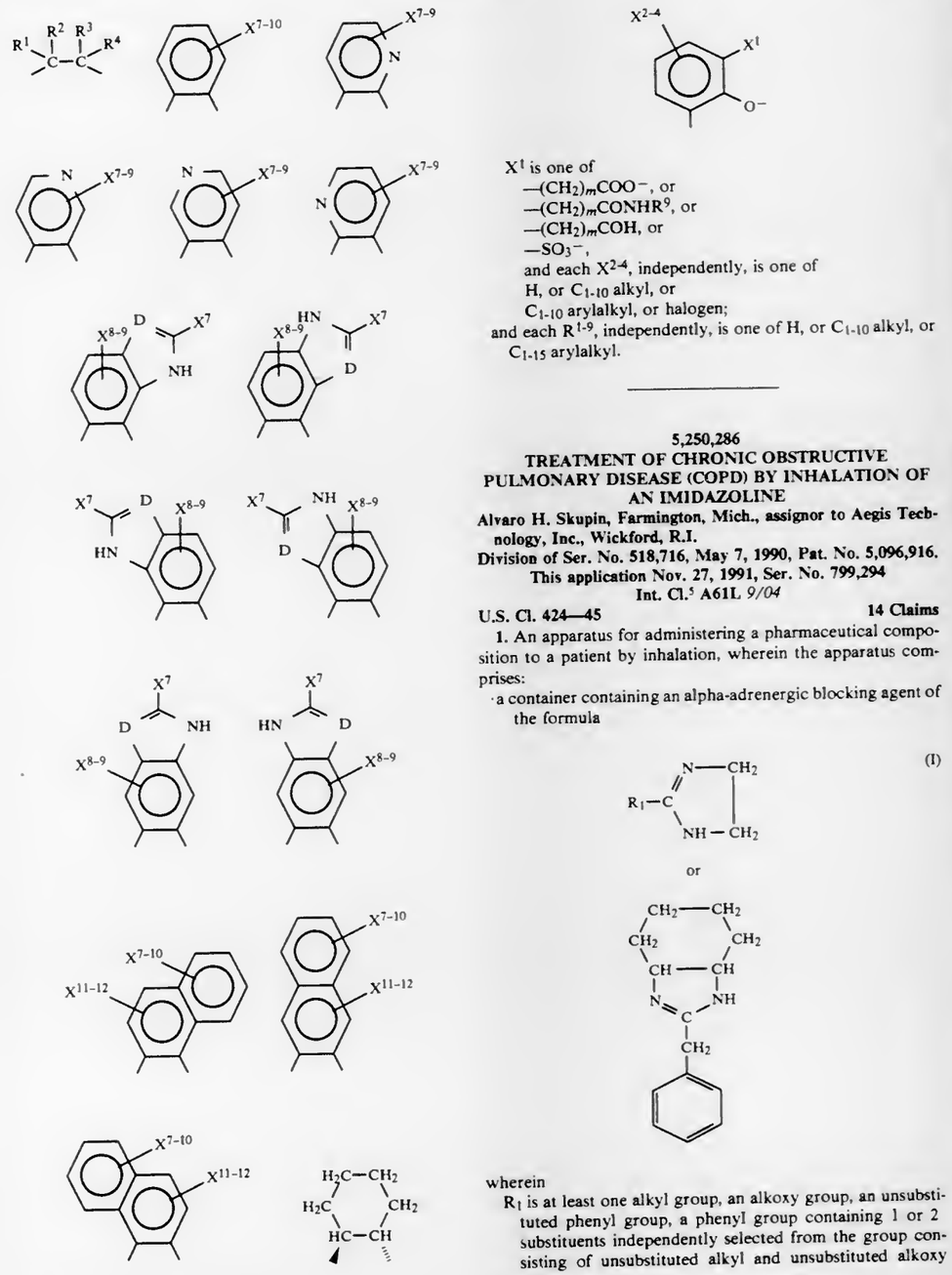
wherein n is 0 or 1;

the aryl groups (Ar) are each one of



Z^1 is one of





X^1 is one of

$-(CH_2)_mCOO^-$, or

$-(CH_2)_mCONHR^9$, or

$-(CH_2)_mCOH$, or

$-SO_3^-$,

and each X^{2-4}, independently, is one of

H, or C_{1-10} alkyl, or

C_{1-10} arylalkyl, or halogen;

and each R^{1-9}, independently, is one of H, or C_{1-10} alkyl, or C_{1-15} arylalkyl.

5,250,286

TREATMENT OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD) BY INHALATION OF AN IMIDAZOLINE

Alvaro H. Skupin, Farmington, Mich., assignor to Aegis Technology, Inc., Wickford, R.I.

Division of Ser. No. 518,716, May 7, 1990, Pat. No. 5,096,916. This application Nov. 27, 1991, Ser. No. 799,294

Int. Cl.[5] **A61L** *9/04*

U.S. Cl. 424—45 **14 Claims**

1. An apparatus for administering a pharmaceutical composition to a patient by inhalation, wherein the apparatus comprises:

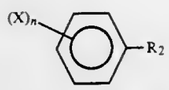
a container containing an alpha-adrenergic blocking agent of the formula

(I)

or

wherein

R_1 is at least one alkyl group, an alkoxy group, an unsubstituted phenyl group, a phenyl group containing 1 or 2 substituents independently selected from the group consisting of unsubstituted alkyl and unsubstituted alkoxy groups, or



where R_2 is a branched or straight chain C_1 to C_5 alkylene

in which D is one of —CH= or —N=,

each X^{1-12}, independently, is one of H, or C_{1-10} alkyl, or C_{10-15} arylalkyl, or halogen, or $-(CH_2)_mCOO^-$, or $-(CH_2)_mCONHR^8$, or $-(CH_2)_mCOOR^8$, or $-(CH_2)_mCOH$, or $-SO_3-$,

where m is an integer from 0–5,

provided that, where the aryl groups (Ar) have the form

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group or a branched or straight chain C_1 to C_5 alkenylene group,

n is 1 or 2, and

each X is independently selected from the group consisting of hydrogen, unsubstituted alkyl, and unsubstituted alkoxy groups; and

means in communication with the container for delivering to a patient a dosage of the alpha-adrenergic blocking agent at least sufficient to alleviate the respiratory distress of chronic obstructive pulmonary disease or COPD where it is associated with asthma.

5,250,287

MULTI-DOSE INSUFFLATOR FOR MEDICAMENTS IN POWDER FORM

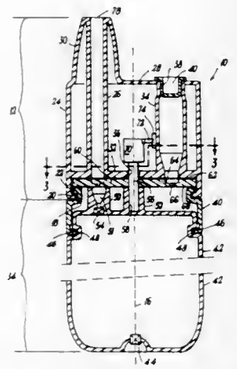
Salvatore Cocozza, Milan, Italy, assignor to Miat S.p.A., Milan, Italy

Filed May 11, 1992, Ser. No. 881,433

Claims priority, application Italy, Jun. 14, 1991, MI91 A 001643

Int. Cl.[5] A61L *9/04*

U.S. Cl. 424—45 **22 Claims**



1. A multi-dose insufflator (**10**) for the nasal administration of medicaments in powder form, comprising a reservoir unit (**34**) for the medicament in powder form, a unit (**60, 64**) for withdrawing and metering the medicament contained in the reservoir unit, and an insufflation unit (**42, 26**) comprising a manually operated pump (**42**) for generating an air stream within a channel (**26**) for conveying an individual dose of medicament into the nasal cavity of the patient; the withdrawal and metering unit (**60, 64**) comprising a conveyor device (**60**) provided with at least one cup (**64**) for withdrawing a dose of powder medicament from the reservoir and conveying it into an insufflation position; the cup having a base hole (**66**) coaxial with the cup itself, and through which the air stream generated by the pump (**42**) passes when the cup (**64**) is in the insufflation position; the base hole (**66**) in the cup (**64**) having a size substantially smaller than that of the mouth of the cup (**64**) and such as to prevent the powder medicament falling through said base hole (**66**), by virtue of the "arching" effect.

5,250,288

METHOD FOR DESENSITIZING TEETH

Samuel S. Turesky, Brookline, and Jean L. Spencer, Boston, both of Mass., assignors to Gillette Canada, Inc., Trans, Canada

Division of Ser. No. 820,348, Jan. 14, 1992, Pat. No. 5,211,939, which is a continuation-in-part of Ser. No. 759,535, Sep. 13, 1991. This application Jan. 25, 1993, Ser. No. 8,524

Int. Cl.[5] A61K *6/02, 6/08, 7/16*

U.S. Cl. 424—49 **16 Claims**



1. A method of desensitizing a hypersensitive tooth, comprising applying an effective amount of charged polymeric particles to the surface of said tooth to cause desensitization of said tooth.

5,250,289

SUNSCREEN COMPOSITIONS

Stephen Boothroyd, Nottingham; Edward Galley, Newark, and Arija M. Stammers, Nottingham, all of England, assignors to The Boots Company PLC, Nottingham, England

Continuation of Ser. No. 222,900, Jul. 22, 1988, abandoned. This application Jan. 11, 1990, Ser. No. 464,609

Claims priority, application United Kingdom, Jul. 24, 1987, 8717662

Int. Cl.[5] A61K *7/42, 7/44, 7/48, 9/10*

U.S. Cl. 424—59 **7 Claims**

1. A sunscreen composition comprising a water-in-oil emulsion which comprises:

(a) 0.5 to 30% by weight of titanium dioxide having a mean particle size of less than 100 nm;

(b) 10 to 50% by weight of an oil phase selected from the group consisting of paraffin, mineral oil, beeswax, paraffin wax, sunflower oil, apricot kernel oil, shea butter, jojoba oil, dimethicone, cyclomethicone, cetyldimethicone and mixtures thereof;

(c) 1 to 15% by weight of an emulsifier selected from the group consisting of (i) polyglycerol-2-sesquioleate in combination with polyethoxylated esters of hydrogenated castor oil, (ii) sorbitan sesquioleate and (iii) a silicone polyol;

(d) at least 40% by weight of an aqueous phase.

5,250,290

COSMETIC USE OF A COMPOSITION HAVING ANTIERYTHEMAL ACTIVITY AND CORRESPONDING COMPOSITION

Paolo Giacomoni, Enghien-les-Bains; Jean-Luc Morançais, Ozoir-la-Ferriere, and Alain Lety, Lagny, all of France, assignors to L'Oreal, Paris, France

Filed Oct. 30, 1991, Ser. No. 784,175

Claims priority, application France, Oct. 30, 1990, 90 13437

Int. Cl.[5] A61K *7/42, 7/48*

U.S. Cl. 424—59 **19 Claims**

1. A composition for protecting the skin from the harmful effects of solar radiation comprising, in a cosmetically acceptable medium, an aqueous solution of a compound having antierythemal activity and being selected from the group consisting of nicotinamide adenosine dinucleotide, nicotinamide adenosine dinucleotide phosphate and a mixture thereof, said aqueous solution being encapsulate in vesicles of an ionic or non-ionic amphiphilic lipid, said vesicles having a lamellar structure and said compound having anti-erythemal activity being present in an amount effective to protect the skin from the harmful effects of solar radiation.

5,250,291

COSMETIC PRODUCT

Andrew C. Park, Wirral, United Kingdom, and Allan R. Burger, Passaic, N.J., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Continuation of Ser. No. 129,640, Dec. 7, 1987, abandoned. This application Oct. 23, 1989, Ser. No. 426,476

Claims priority, application United Kingdom, Dec. 23, 1986, 8630724

Int. Cl.[5] A61K *7/32, 7/34, 7/36, 7/38*

U.S. Cl. 424—66 **16 Claims**

1. A solid antiperspirant product suitable for topical application to the skin, which comprises from 5 to 35% by weight of an antiperspirant agent in the form of fine particles dispersed in a solid matrix comprising:

(i) from 15 to 75% by weight of the product of a substantially anhydrous alcohol selected from the group consisting of ethanol, isopropanol or a mixture thereof;

(ii) from 2 to 15% weight of the product of a hydrophobically-treated clay suspending agent;

(iii) from 0.5% to 35% by weight of a gelling agent;

provided that the weight ratio of the suspending agent to the anhydrous alcohol is from 1:3 to 1:15.

5,250,292

USE OF CYCLIC ORGANIC AMINES IN DERMATOLOGICAL COMPOSITIONS

Giuseppe Raspanti, Bergamo, Italy, assignor to Sigma Prodotti Chimici S.p.A., Milan, Italy

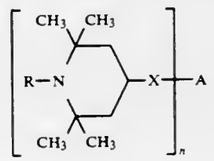
Filed Jun. 12, 1992, Ser. No. 897,403

Claims priority, application Italy, Jul. 5, 1991, MI91 A 001866

Int. Cl.[5] A61K *31/74, 31/445*

U.S. Cl. 424—78.03 **4 Claims**

1. Cosmetic and dermatological compositions useful as an anti-aging treatment of the skin consisting of at least one compound of the formula I



(I)

wherein:

R is selected from hydrogen, C_1–C_{12} alkyl, benzyl, C_2–C_4 hydroxyalkyl, the group of formula II

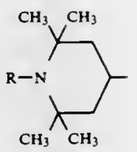
$$-(CH_2\text{-}CH_2\text{-}O)_m\text{—}H \quad \text{(II)}$$

wherein m is an integer from 2 to 20;

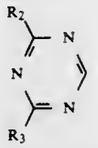
X is selected from oxygen, $-NR_1-$ in which R_1 is hydrogen, C_1–C_{12} alkyl, the group of formula II, C_5–C_6 cycloalkyl;

n is an integer from 1 to 4;

A is an alkyl residue with a valence from 1 to 4, a mono- or polyacyl group deriving with carbonic acid or from an organic mono- or polycarboxylic acid, a carbamoyl or dicarbamoyl group deriving from a mono- or diisocyanate, a group of formula III or IV

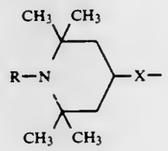


(III)



(IV)

wherein R is as defined above, R_2 and R_3 can be the same or different and are a group of formula V



(V)

the group $-OR_1$; $-NRR_1$, wherein X, R and R_1 are as defined above; and

said compositions being in the form of a preparation suitable for topical application and consisting of lotions, ointments, creams, emulsions, gels and oils.

5,250,293

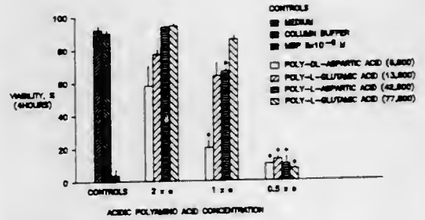
METHOD FOR THE TREATMENT OF HYPERSENSITIVITY DISEASES BY ADMINISTRATION OF ANIONIC POLYMERS

Gerald J. Gleich, 799 SW. Third St., Rochester, Minn. 55902

Filed Apr. 22, 1991, Ser. No. 689,154

Int. Cl.[5] A61K *31/785, 37/00, 9/06, 9/12*

U.S. Cl. 424—78.04 **10 Claims**



1. A method for treating a hypersensitivity disease comprising administering to a human afflicted with such a disease an amount of an anionic polyamino acid salt selected from the group consisting of a salt of polyglutamic acid, a salt of polyaspartic acid and a salt of a copolymer of aspartic acid and glutamic acid, which amount is effective to counteract the symptoms of a disease selected from the group consisting of bronchial asthma, eosinophil-associated nasal inflammation and eosinophil-associated inflammation of the eye, by neutralizing the effect of at least one cationic toxin released by the eosinophils of said human.

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5,250,294
IMPROVED PERFUSION MEDIUM FOR TRANSPLANTATION OF ORGANS
Robert L. Hunter, Tucker, and Alexander Duncan, Dunwoody, both of Ga., assignors to Emory University, Atlanta, Ga.
Continuation of Ser. No. 802,331, Dec. 4, 1991, Pat. No. 5,198,211, which is a continuation of Ser. No. 522,206, May 11, 1990, Pat. No. 5,078,995, which is a continuation of Ser. No. 403,017, Sep. 5, 1989, abandoned, which is a continuation of Ser. No. 303,791, Jan. 30, 1989, abandoned, which is a division of Ser. No. 45,459, May 7, 1987, Pat. No. 4,801,452, which is a continuation-in-part of Ser. No. 43,888, Apr. 29, 1987, abandoned, which is a continuation of Ser. No. 863,582, May 15, 1986, abandoned. This application Nov. 17, 1992, Ser. No. 977,530
Int. Cl.[5] A61K *31/745*
U.S. Cl. 424—78.31 12 Claims

1. An organ perfusion composition containing a solution of:
a perfusion medium; and
an effective amount of a surface active copolymer dissolved in the perfusion medium, the surface-active copolymer having the following formula:

$$HO(C_2H_4O)_a(C_3H_6O)_b(C_2H_4O)_bH$$

wherein a is an integer such that the hydrophobe represented by (C_3H_6O) has a molecular weight of approximately 950 to 4000, and b is an integer such that the hydrophile portion represented by (C_2H_4O) constitutes approximately 50% to 90% by weight of the compound.

5,250,295
NATURAL KILLER CELL ENHANCING FACTOR
Hungyi Shau, Cerritos, and Sidney H. Golub, Los Angeles, both of Calif., assignors to The Regents of the Univ. of California, Oakland, Calif.
Filed Nov. 4, 1991, Ser. No. 787,148
Int. Cl.[5] A61K *37/02*; C07K *15/06*
U.S. Cl. 424—85.2 20 Claims

1. A purified factor comprising a soluble red blood cell cytosol protein having a molecular mass of between 300 and 400 kilodaltons and an apparent molecular weight of about 48 kilodaltons as determined by non-reducing sodium dodecylsulfate polyacrylamide gel electrophoresis.

5,250,296
IMMUNOSTIMULANT AGENT CONTAINING INTERLEUKIN-2 AND 5'-DEOXY-5-FLUOROURIDINE
Koichiro Ootsu, Osaka, Japan, assignor to Takeda Chemical Industries, Ltd., Osaka, Japan
Filed Nov. 27, 1991, Ser. No. 800,366
Claims priority, application Japan, Nov. 29, 1990, 2-325475
Int. Cl.[5] A61K *37/02, 45/05*
U.S. Cl. 424—85.2 19 Claims

1. A method for immunostimulating a mammal, which comprises administering to the mammal an effective amount of interleukin-2 (IL-2) and 5'-deoxy-5-fluorouridine (5'-DFUR) or a salt thereof, wherein the ratio of 5'-DFUR to IL-2 is from about 0.1 to about 100 mg of 5'-DFUR or a salt thereof per 10 μg of protein of IL-2.

5,250,297
TUMOR-ASSOCIATED ANTIGEN, ANTIBODIES, COMPOSITIONS AND USES THEREFOR
Lana S. Grauer, Del Mar; Julia P. Leung, and Barry S. Wilson, both of San Diego, all of Calif., assignors to Hybritech Incorporated, San Diego, Calif.
Continuation of Ser. No. 424,845, Oct. 20, 1989, abandoned. This application Aug. 31, 1992, Ser. No. 939,384
Int. Cl.[5] A61K *39/00*; C07K *15/00*
U.S. Cl. 424—88 3 Claims

1. An isolated tumor-associated antigen, said antigen comprising the characteristics of (1) reactivity with monoclonal antibody LA 20207 generated by ATCC No. HB 10224, (2) a molecular weight within a range of about 50 Kd to about 80 Kd as determined by HPCL gel filtration, and (3) an isoelectric point in solution within a range of about 4.9 to about 6.5.

5,250,298
LIVE ATTENUATED NEWCASTLE DISEASE VIRUS VACCINES AND PREPARATION THEREOF
Jack Gelb, Jr., Landenberg, Pa., assignor to University of Delaware, Newark, Del.
Continuation of Ser. No. 255,009, Oct. 7, 1988, abandoned. This application Dec. 12, 1991, Ser. No. 808,046
The portion of the term of this patent subsequent to Sep. 19, 2006, has been disclaimed.
Int. Cl.[5] A61K *39/12*; C12N *7/00*
U.S. Cl. 424—89 14 Claims

1. A mutant of the Hitchner B_1 strain or Newcastle disease virus identified by microorganism accession number ATCC VR 2213, wherein the mutant virus is less able to replicate at 41° C. than at 37° C.

5,250,299
SYNERGISTIC ANTIMICROBIAL COMPOSITIONS
Stephen R. Good, Elkhart, Ind., and Graham S. Byng, Woodenville, Wash., assignors to Haarmann & Reimer Corp., Springfield, N.J.
Filed Sep. 23, 1991, Ser. No. 763,899
Int. Cl.[5] A61K *37/50*
U.S. Cl. 424—94.4 15 Claims

1. An antimicrobial composition comprising a synergistic combination of an effective amount of a hypothiocyanate generating system adjusted to a pH of between about 1.5 to about 3.6 with a dicarboxylic or tricarboxylic acid selected from the group consisting of citric acid, citramalic acid, fumaric acid, glutamic acid, itaconic acid, malic acid, oxalic acid, succinic acid, tartaric acid and tricarballylic acid.

5,250,300
METHOD FOR TREATING DIGESTIVE ORGAN DISORDERS OF DOMESTIC ANIMALS
Fumio Dozono, 3040, Ohaza-Homanbo, Takajo-cho, Kitamorokata-gun, Miyazaki-ken, Japan, assignor to Fumio Dozono, Miyazaki and Naohiko Sato, Tokyo, both of Japan
Filed Jan. 28, 1992, Ser. No. 827,124
Claims priority, application Japan, Sep. 10, 1991, 3-230632
Int. Cl.[5] A61K *35/78*
U.S. Cl. 424—195.1 4 Claims

1. A method for treating disorders of digestive organs of domestic animals, comprising perorally administering to a domestic animal afflicted with a disorder of a digestive organ, an effective amount of a liquid internal medicine comprising a fermented and concentrated extract from stems of matured Stevia Rebaudiana Bertoni.

5,250,301
METHOD FOR TREATING DIGESTIVE ORGAN DISORDERS
Fumio Dozono, 3040, Ohaza-Homanbo, Takajo-cho, Kitamorokata-gun, Miyazaki-ken, Japan, assignor to Fumio Dozono, Miyazaki and Naohiko Sato, Tokyo, both of Japan
Filed Jan. 28, 1992, Ser. No. 827,130
Claims priority, application Japan, Aug. 1, 1991, 3-193301
Int. Cl.[5] A61K *35/78*
U.S. Cl. 424—195.1 4 Claims

1. A method for treating disorders of digestive organs, comprising perorally administering to a host afflicted with a disorder of a digestive organ, an effective amount of a liquid internal medicine comprising a fermented and concentrated extract from stems of matured *Stevia Rebaudiana Bertoni.*

5,250,302
OSTEOGENIC DEVICES
Hermann Oppermann, Medway; Engin Ozkaynak, Milford; David C. Rueger, Hopkinton, and Thangavel Kuberasampath, Medway, all of Mass., assignors to Stryker Corporation, Kalamazoo, Mich.
Division of Ser. No. 579,865, Sep. 7, 1990, Pat. No. 5,108,753, which is a division of Ser. No. 179,406, Apr. 8, 1988, Pat. No. 4,968,590. This application Jan. 28, 1992, Ser. No. 827,052
Int. Cl.[5] A01J *25/12*; A21C *3/00, 11/00*
U.S. Cl. 424—422 3 Claims

1. A DNA sequence which hybridizes with the DNA probe sequence:

```
          10        20        30
GATCCTAATGGGCTGTACGTGGACTTCCAGCGCG

                                  40
                          ACGTGGGCTGGGAC

50        60        70        80
GACTGGATCATCGCCCCCGTCGACTTCGACGCCTAC

                                  90
                          TACTGCTCCGGA

100       110       120       130
GCCTGCCAGTTCCCCTCTGCGGATCACTTCAACAG

                                  140
                          CACCAACCACGCCG

150       160       170       180
TGGTGCAGACCCTGGTGAACAACATGAACCCCGGC

                                  190
                          AAGGTACCCAAGC

200       210       220       230
CCTGCTGCGTGCCCACCGAGCTGTCCGCCATCAGCAT

                                  240
                          GCTGTACCTGGA

250       260       270
CGAGAATTCCACCGTGGTGCTGAAGAACTACCAGG

                          280       290
                          AGATGACCGTGGT

300       310
GGGCTGCGGCTGCCGCTAACTGCAG,
```

said DNA sequence encoding a polypeptide chain which, when expressed, associated with a second said polypeptide chain, oxidized to form a dimeric protein species and implanted together with a matrix in a mammal induces endochondral bone formation in said mammal, said dimeric protein species having a half maximum bone forming activity of at lest 25-50 ng per 25 mg matrix.

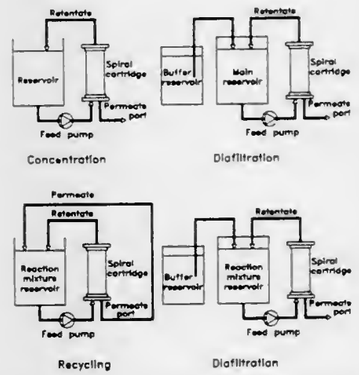
5,250,303
PROCEDURE FOR STORING RED CELLS WITH PROLONGED MAINTENANCE OF CELLULAR CONCENTRATIONS OF ATP AND 2,3 DPG
Harold T. Meryman, Sandy Spring, Md.; Marne Hornblower, Washington, D.C., and Ralph Syring, Silver Spring, Md., assignors to The American National Red Cross, Washington, D.C.
Continuation-in-part of Ser. No. 417,761, Oct. 6, 1989, abandoned. This application Oct. 9, 1990, Ser. No. 594,152
Int. Cl.[5] A61K *35/18*
U.S. Cl. 424—533 14 Claims

1. A method for prolonging the storage shelf life of transfusible red blood cells, comprising:
(a) adjusting the intracellular pH of said cells to a level between about 7.0 to about 8.5 by washing or diluting the cells in a biologically compatible buffered solution comprising an impermeant anion or an impermeant non-electrolyte, wherein said intracellular pH is adjusted by decreasing the intracellular chloride concentration; and
(b) storing said cells in a biologically compatible buffered solution.

5,250,304
TREATMENT OF IODINE DEFICIENCY DISEASES
William R. Ghent, 10 Montreal Street, Suite 201, Kingston, Ontario, Canada M7L 3G6, and Bernard A. Eskin, Presidential Commons Ste. D124, Philadelphia, Pa. 19131
Division of Ser. No. 292,968, Jan. 3, 1989, Pat. No. 5,171,582, which is a continuation-in-part of Ser. No. 889,947, Jul. 28, 1986, Pat. No. 4,816,255, which is a continuation-in-part of Ser. No. 760,950, Jul. 31, 1985, abandoned. This application Dec. 9, 1991, Ser. No. 803,550
The portion of the term of this patent subsequent to Mar. 28, 2006, has been disclaimed.
Int. Cl.[5] A01N *59/22*; A61K *33/36*
U.S. Cl. 424—667 10 Claims

1. A method for therapeutically testing endometriosis in a human patient comprising administering to a patient an aqueous solution of elemental iodine (I_2) in an amount effective to cause subsidence of nodularity of the patient's pelvic peritoneum.

5,250,305
PROCESS FOR ENZYMATIC ULTRAFILTRATION OF DEAMIDATED PROTEIN
Jamel S. Hamada, Metairie, La., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Continuation-in-part of Ser. No. 369,587, Jun. 21, 1989, Pat. No. 5,082,672. This application Jun. 27, 1990, Ser. No. 544,562
Int. Cl.[5] A23J *1/14, 3/16*
U.S. Cl. 426—46 9 Claims



1. A process for enhancing solubility and functional properties of soy proteins which prevents enzyme contamination of the deamidated protein product and maximizes enzyme recycling comprising:
a) hydrolyzing the soy protein with a suitable protease should its molecular weight exceed the molecular weight cut-off used in the semipermeable membrane of step c),
b) solubilizing soy protein to provide a solubilized protein having a predetermined molecular weight,
c) providing a reactor vessel divided by a semipermeable membrane into a feed portion and a permeate portion and, an enzyme present in the feed which will deamidate said solubilized protein, wherein said semipermeable membrane has a molecular weight cut-off smaller than the

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molecular weight of the enzyme and larger than the molecular weight of the solubilized protein,

d) adding the solubilized protein to the feed portion of the reactor vessel to provide a reaction mixture which is allowed a time and temperature sufficient to deamidate said solubilized protein, and

e) allowing said demodulated protein to permeate said semipermeable membrane;

wherein said soy protein is heat treated prior to inclusion in the reactor vessel.

5,250,306

DEBRANCHED ARABAN AND ITS USE AS A FAT SUBSTITUTE

Barry V. McCleary, North Rocks, Australia; Julian M. Cooper, East Dereham, and Edward L. Williams, Costessey, both of United Kingdom, assignors to British Sugar PLC, Peterborough, United Kingdom

PCT No. PCT/GB89/01452, § 371 Date Jul. 15, 1991, § 102(e) Date Jul. 15, 1991, PCT Pub. No. WO90/06343, PCT Pub. Date Jun. 14, 1990

PCT Filed Dec. 5, 1989, Ser. No. 689,866

Claims priority, application United Kingdom, Dec. 5, 1988, 8828378; Dec. 5, 1988, 8828380

Int. Cl.[5] A23L *1/05*

U.S. Cl. 426—52 **21 Claims**

1. A method of forming an aqueous gel of gel-forming debranched araban, comprising:

forming an aqueous mixture of gel-forming debranched araban;

dissolving the debranched araban at an elevated temperature;

cooling the resultant solution for a time sufficient to form a gel.

5,250,307

PRODUCTION OF FEED SUPPLEMENT COMPOSITIONS

Kenneth R. Cummings, Skillman, N.J.; Thomas F. Sweeney, Morrisville, Pa.; M. Stephen Lajoie, Basking Ridge, and Alfredo Vinci, Dayton, both of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Filed Dec. 4, 1991, Ser. No. 802,263

Int. Cl.[5] A23K *1/00*

U.S. Cl. 426—72 **19 Claims**

1. A process for the preparation of a dietary fatty acid salt product which comprises (1) forming an admixture of reactive ingredients consisting essentially of (A) at least one C_{14}–C_{22} fatty acid, (B) between about 0.8–1.5 equivalents of basic alkaline earth metal compound per equivalent of C_{14}–C_{22} fatty acid, (C) between about 0.0–0.4 equivalent of basic alkali metal compound per equivalent of C_{14}–C_{22} fatty acid, and (D) between about 10–50 weight percent of an aqueous suspension medium, based on the weight of (A) C_{14}–C_{22} fatty acid, containing constituents consisting essentially of (a) between about 2–30 weight percent of C_{14}–C_{22} fatty acid alkali metal or ammonium salt, wherein said aqueous suspension medium provides alkali metal or ammonium cations for the formation of C_{14}–C_{22} fatty acid alkali metal or ammonium salt intermediates, and (b) between about 0.5–20 weight percent of a biologically active constituent, based on the weight of aqueous suspension medium; and (2) recovering the dietary salt product after completion of the salt-forming reaction, and wherein said dietary salt product functions as a rumen bypass animal feed supplement.

5,250,308

FORMULATION FOR AND METHOD OF PRODUCING A FIBER FORTIFIED FOODSTUFF

Karen L. Alexander, Belmont; David S. Staley, and Pari Bednarz, both of Grand Rapids, all of Mich., assignors to Amway Corporation, Ada, Mich.

Filed Dec. 13, 1991, Ser. No. 807,140

Int. Cl.[5] A23P *1/08, 1/14*

U.S. Cl. 426—94 **23 Claims**

1. A method of making a fiber fortified extruded puffed snack comprising:

a. preparing a dry puff having a moisture content of less than about 5 percent by weight from a base comprising a cereal and a fiber premix such that the dietary fiber content of the base is at least about 5 percent by weight;

b. coating the dry puffs with an oil slurry comprising from about 90 to about 100 percent by weight of an edible oil and from about 0 to about 10 percent by weight of flavor ingredients; and,

c. topically applying a flavor premix that includes supplemental fiber present at up to about 37 percent by weight of the flavor premix.

5,250,309

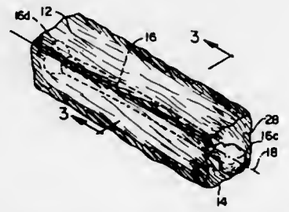
DRESSED THIGH CUT OF POULTRY

Eugene D. Gagliardi, Jr., Wilmington, Del., assignor to Designer Foods, Inc., Chadds Ford, Pa.

Filed Apr. 15, 1991, Ser. No. 685,324

Int. Cl.[5] A23L *1/315*

U.S. Cl. 426—104 **1 Claim**



1. A dressed thigh cut of poultry formed from a thigh cut of poultry having an upper surface, a lower surface and an elongated thigh bone positioned therebetween, the bone having an axis, the thigh cut being formed by making a first cut generally perpendicular to said upper surface along a first cut line extending generally parallel to the axis of said bone to remove a first side meat portion, said first cut line being spaced from a first side of said bone by a first predetermined distance for forming a first meat portion having a generally planar surface making a second cut generally perpendicular to said upper surface along a second cut line extending generally parallel to the axis of said bone to remove a second side meat portion, said second cut line being spaced from a second side of said bone by a second predetermined distance for forming a second meat portion having a generally planar surface, the first and second portions of said thigh cut being generally in the form of a parallelogram in cross section such that the width of the thigh cut is substantially the same throughout.

5,250,310

METHOD FOR PACKING AND STORING MEAT

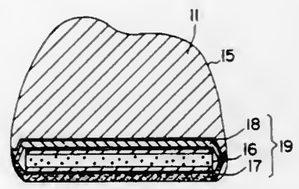
Seizo Fujino, Tokyo; Hidenori Yoshizawa, Ibaragi, and Yoshio Hirose, Tokyo, all of Japan, assignors to Japan Vilene Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 604,943, Oct. 29, 1990, abandoned. This application Dec. 11, 1991, Ser. No. 807,967

Claims priority, application Japan, Nov. 2, 1989, 1-287193

Int. Cl.[5] B65B *55/00*

U.S. Cl. 426—124 **8 Claims**



1. A method for packaging meat to absorb excessive meat juices along the sides of the package and retain freshness which comprises providing a liquid absorbing insert formed by a water absorbing material between a sheet of a liquid impermeable material and a layer of a liquid permeable material, placing said meat so as to face said liquid impermeable sheet and prevent excessive absorption of meat juices, wrapping a gas impermeable sheet about said meat and liquid absorbing insert, and then providing a vacuum so as to form capillaries along the side of the package and provide a capillary action at spaces between the meat and the liquid permeable sheet, whereby surplus juices pass away from the meat through said capillaries to said liquid permeable material.

5,250,311

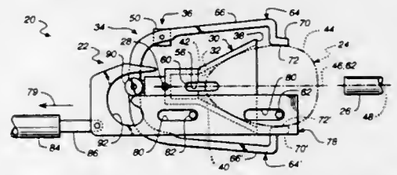
APPARATUS AND METHOD FOR PEELING AND CORING PERISHABLE PRODUCE

Edward E. Ross, San Rafael, and Ronald J. Thibault, Saratoga, both of Calif., assignors to Del Monte Corporation, San Francisco, Calif.

Filed Aug. 24, 1992, Ser. No. 934,426

Int. Cl.[5] A23P *1/00*; A23N *4/00*

U.S. Cl. 426—231 **41 Claims**



26. In a method for insuring proper orientation of perishable produce during produce processing, said produce having a tapered neck portion of reduced transverse dimension including the steps of depositing the produce into a tapered coring cup formed to receive and orient the produce, and processing the produce, the improvement in said method comprising the steps of:

detecting the presence or absence of said tapered neck portion at a location sufficiently close to a narrow end of said coring cup, said presence indicating proper orientation of the produce relative to said coring cup and said absence indicating improper orientation;

upon detecting said absence, removing the produce from said coring cup prior to said processing step; and

upon detecting said presence, gripping the produce by gripping means for further manipulation of said produce for processing.

5,250,312

PROCESS FOR RETAINING MOISTURE IN MEAT, POULTRY AND SEAFOOD

Charles R. Mason, Yonkers, N.Y.; Edward C. Coleman, New Fairfield, Conn.; Sharon R. Birney, Yorktown Heights, and Dalip K. Nayyar, Washingtonville, both of N.Y., assignors to Kraft General Foods, Inc., Northfield, Ill.

Filed Dec. 2, 1991, Ser. No. 801,218

Int. Cl.[5] A23P *1/08*

U.S. Cl. 426—292 **9 Claims**

1. A method for preparing and cooking meat, poultry or seafood comprising the steps of:

(a) evenly applying a dry mix containing salt having a particle size of 100% by weight through a No. 70 U.S. Standard Sieve and particles of carrageenan, the weight ratio of salt to carrageenan being 0.75–10:1, to the surface of uncooked meat, poultry or seafood;

(b) applying a second dry coating mix to the surface of the meat, poultry or seafood from step (a), said second coating containing seasonings; and

(c) cooking the twice-coated meat, poultry or seafood.

5,250,313

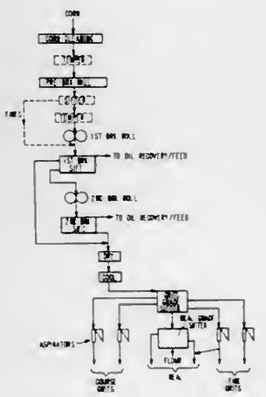
GRAIN MILLING AND DEGERMINATION PROCESS

R. James Giguere, Kansas City, Mo., assignor to Cereal Enterprises, Inc., Kansas City, Mo.

Continuation of Ser. No. 308,099, Feb. 8, 1989, abandoned, which is a continuation of Ser. No. 75,147, Jul. 20, 1987, abandoned, which is a continuation of Ser. No. 419,691, Sep. 20, 1982, abandoned, which is a division of Ser. No. 314,106, Oct. 23, 1981, Pat. No. 4,365,546, which is a division of Ser. No. 93,611, Apr. 27, 1981, Pat. No. 4,301,183, which is a continuation-in-part of Ser. No. 909,974, May 26, 1978, Pat. No. 4,189,503. This application Sep. 25, 1989, Ser. No. 411,662

Int. Cl.[5] B02C *9/02, 9/04*

U.S. Cl. 426—482 **4 Claims**



1. A milling process for corn comprising the steps of:

fracturing the corn kernels into four to six relatively large particles;

passing the fractured particles directly to a first pair of rollers presenting fine corrugations of the type that normally characterize the end of a differential corn milling process, said first pair of rollers being spaced apart a distance to grind the endosperm portion of each particle so at least fifty percent of the product from said passing step will pass through a U.S. #12 sieve while avoiding substantial penetration of the roller corrugations into the germ thereby effecting separation of the germ and endosperm without further size reduction of said germ;

separating the ground particles within a preselected size range from the remaining particles;

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passing the separated particles between a second pair of rollers presenting fine corrugations of the type that normally characterize the end of a differential corn milling process, said second pair of rollers being spaced apart a distance to further grind the endosperm portion of each particle while avoiding substantial penetration of the roller corrugation into the germ, thereby effecting size reduction of the endosperm without further reducing the size of the germ; and

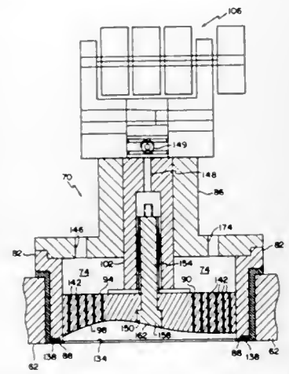
separating the ground particles into a portion rich in endosperm and a portion rich in germ and bran.

5,250,314

THREE DIMENSIONAL FOOD PRODUCT FORMING APPARATUS AND METHOD

James E. Jones, Golden, Colo., assignor to PRC, Englewood, Colo.

Filed May 15, 1992, Ser. No. 884,646
Int. Cl.[5] A23P *1/00*; A22C *7/00*
U.S. Cl. 426—512 **38 Claims**



28. A method for forming a three-dimensional food product, comprising the steps of:

providing a raw food material to a forming cavity means under pressure;

upwardly stretching a membrane, positioned over a mold means, with said raw food material, said mold means being positioned within said forming cavity means and having a three-dimensional contour;

substantially conforming said membrane to said contour of said mold means with said pressurized raw food material to form at least one three-dimensional surface of the food product;

drawing a vacuum in said forming cavity means;

positioning said forming cavity means over a deposit area;

releasing said vacuum; and

contracting said membrane to eject the formed three-dimensional food product from said forming cavity means onto said deposit area.

5,250,315

METHOD FOR COOLING A BEVERAGE

Jonathon Loew, East Meadow, and Michael D. Hanauer, Merrick, both of N.Y., assignors to Design Display Group Inc., Carlstadt, N.J.

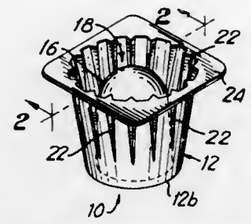
Continuation of Ser. No. 628,856, Dec. 14, 1990, abandoned. This application Aug. 21, 1992, Ser. No. 933,996
Int. Cl.[5] F25C *1/00*
U.S. Cl. 426—524 **16 Claims**

1. A method for cooling a beverage prior to consumption, comprising the steps of:

providing a mold for making a drinking glass formed of a frozen liquid, said mold having

an outer wall having a central vertical axis, said outer wall having an upper end situated in a substantially horizontal upper plane, and a lower end situated in a substantially horizontal lower plane;

a downwardly-opening cup-shaped inner wall substantially coaxial with said outer wall comprising an inner side wall portion and an inner top wall portion, said inner top wall portion being situated below said upper plane in which said upper end of said outer wall is situated, said inner side wall portion being connected at a lower end thereof to said lower end of said outer wall; and



said outer and inner walls defining a mold cavity between them;

filling said mold cavity with a liquid to a height above an uppermost part of said inner top wall portion;

cooling said liquid until it freezes within said mold cavity to form a glass having a beverage-receiving cavity;

removing said glass formed of frozen liquid from said mold cavity; and

pouring beverage to be consumed into said beverage-receiving cavity of said frozen liquid glass,

whereby said beverage is cooled through contact with the frozen liquid of which said glass is formed.

5,250,316

NON-BAKED CHEESECAKE

Booker T. Harris, 480 Parkside Dr., Carol Stream, Ill. 60188

Filed Mar. 27, 1992, Ser. No. 858,887
Int. Cl.[5] A23L *1/05*
U.S. Cl. 426—573 **6 Claims**

1. A method for making an unbaked cheesecake which comprises:

(a) forming a mixture of heated water, sugar, gelatin, a gum and starch;

(b) subjecting said mixture to high shear mixing while said mixture is at a temperature of from about 190° F. to about 210° F. for a period of time sufficient to gelatinize said starch and provide a homogeneous dispersion;

(c) combining said homogeneous dispersion with heated ricotta cheese and continuing said high shear mixing at a temperature of from about 120° F. to about 130° F. to provide a cheese base;

(d) combining said cheese base with a non-dairy whipped topping and subjecting said combination to low shear mixing at a temperature of from about 75° F. to about 85° F. to provide a chesecake blend; and

(e) refrigerating said cheesecake blend for a period of time until firm to produce a cheesecake in final form without baking.

5,250,317

PRODUCTS FROM TREATMENT OF BLACK TEA

Richard T. Liu, Worthington, and John C. Proudley, Delaware, both of Ohio, assignors to Nestec S.A., Vevey, Switzerland

Continuation of Ser. No. 838,523, Feb. 19, 1992, Pat. No. 5,130,154, which is a continuation of Ser. No. 597,069, Oct. 15, 1990, abandoned. This application Jun. 30, 1992, Ser. No. 906,707
The portion of the term of this patent subsequent to Jul. 14, 2009, has been disclaimed.
Int. Cl.[5] A23F *3/08*
U.S. Cl. 426—597 **11 Claims**

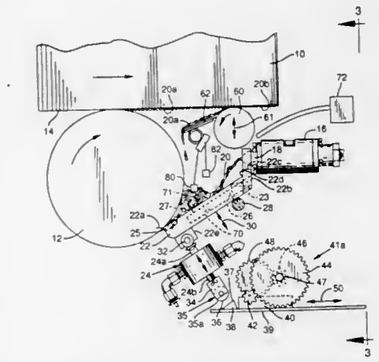
1. A black tea product of a process comprising contacting moist black fermented tea leaves at an elevated temperature at a pressure greater than the water vapor pressure at the elevated temperature with an oxidizing agent which provides an amount of molecular oxygen sufficient to oxidize polyphenolic compounds contained in the moist leaves for obtaining a black tea leaf product which provides, upon aqueous extraction, an extract having a turbidity of less than 200 NTU at room temperature, wherein the turbidity is determined by infusing the product leaves with water having a temperature of about 100° separating infusion extract from the product leaves through a 270 U.S. standard mesh NYTEX screen and adjusting the extract with deionized water to obtain a 2% solids concentration by weight and then measuring the turbidity of the 2% solids extract.

5,250,318

METHOD FOR APPLYING ADHESIVE FOR BOOK BINDING

John C. Tooker, P.O. Box 1165, Medford, Oreg. 97501

Division of Ser. No. 724,176, Jul. 1, 1991, which is a continuation-in-part of Ser. No. 618,721, Nov. 27, 1990, abandoned. This application Jun. 9, 1992, Ser. No. 896,138
Int. Cl.[5] B05D *5/00*
U.S. Cl. 427—8 **5 Claims**



1. In a method of applying polyurethane adhesive to a book spine, an improvement comprising:

maintaining a limited body of said adhesive upon the upper surface of an inclined heated trough having a leading edge positionable with respect to a portion of a heated cylindric roller surface parallel to said leading edge;

rotating said roller to meter said body of adhesive onto said roller surface as a function of the spacing between said leading edge and said roller surface; and

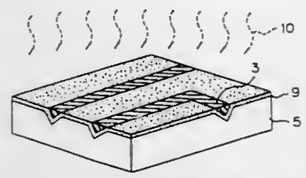
passing said book spine across said roller surface to transfer said adhesive to said book spine.

5,250,319

PROCESS FOR PREPARATION OF ELECTROCONDUCTIVE POLYMERIC MATERIAL PROVIDED WITHIN GROOVES

Nagisa Ohsako, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 643,958, Jan. 22, 1991, abandoned. This application Apr. 10, 1992, Ser. No. 865,752
Claims priority, application Japan, Jan. 24, 1990, 2-012642; Jun. 25, 1990, 2-166043
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—96 **10 Claims**



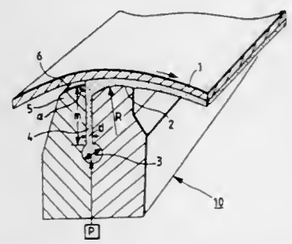
5. A process for the preparation of an electroconductive polymeric material, comprising the steps of forming grooves having a width of less than about 1 μm on a substrate, introducing a catalyst solution into the grooves by the capillary phenomenon and introducing a monomer gas onto the substrate, whereby a polymer having an anisotropy in the longitudinal direction of the grooves is formed in the grooves.

5,250,320

METHOD FOR PRODUCING MAGNETIC RECORDING MEDIUM

Akihiro Suzuki; Norio Shibata, and Shinsuke Takahashi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 4, 1993, Ser. No. 13,352
Claims priority, application Japan, Feb. 28, 1992, 4-75859
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—128 **13 Claims**



1. A method for producing a magnetic recording medium using an extrusion-type coating head in which a magnetic coating composition is continuously extruded from a top end portion of a slit onto the surface of a flexible support running continuously along a back edge surface and a curved doctor edge surface thereby to coat the surface of the support with the magnetic coating composition, characterized in that coating is effected in such a manner that the following condition is satisfied:

$$12\mu\,(m/d^3)Ut > 0.20(T/R)$$

where

μ: composition viscosity (poise)

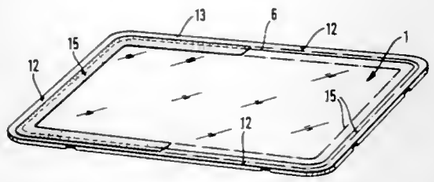
m: slit length (mm)

d: clearance of the slit (mm)

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U: coating speed (m/sec)
t: coating thickness (μm)
T: tension at a coating portion (kgf/whole width)
R: radius of curvature of the doctor edge (mm).

5,250,321
METHOD OF PRINTING A GLASS PANE WITH A DECORATIVE COATING REACHING THE PERIPHERAL FACE OF THE GLASS PANE
Kjell Andersson, Hassleholm; Carl Liden, Eslov; Raimo Eronen, Molnlycke, all of Sweden; Hans Ohlenforst, Aachen, Fed. Rep. of Germany; Dieter Hahn, Ubach - Palenberg, Fed. Rep. of Germany, and Jean-Pierre Lacoste, Aachen, Fed. Rep. of Germany, assignors to Saint-Gobain Vitrage International, Courbevoie, France
Filed Mar. 16, 1992, Ser. No. 851,795
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1991, 4109710
Int. Cl.[5] B05D *5/06*
U.S. Cl. 427—163 **15 Claims**

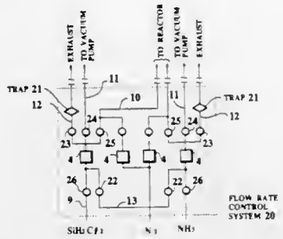


1. A method of printing a glass sheet with a decorative coating, comprising the steps of:
forming, in at least a portion of the glass sheet, a border element comprising a substantially coplanar continuation of the surface of the glass sheet to be printed, the border element abutting the edge of the glass sheet;
printing the decorative coating on the surface to be printed at the portion, the coating extending to and beyond the edge of the glass sheet and onto the border element; and
after permitting the coating to dry, separating the border element from the glass sheet,
wherein said forming of said border element comprises gluing a profiled strip of an elastically deformable material onto the peripheral face of the glass sheet.

5,250,322
WATER-REPELLENT METAL OXIDE FILM COATED ON GLASS SUBSTRATE AND METHOD OF FORMING SAME
Osamu Takahashi, and Hiroaki Arai, both of Mie, Japan, assignors to Central Glass Company Limited, Ube, Japan
Filed Dec. 16, 1992, Ser. No. 990,995
Claims priority, application Japan, Dec. 25, 1991, 3-343656
Int. Cl.[5] B05D *3/02;* **C09K** *3/18*
U.S. Cl. 427—226 **11 Claims**

1. A method of forming a water-repellent metal oxide film on a glass substrate, the method comprising the steps of:
mixing an alkoxysilane with a fluoroalkylsilane in the molar ratio of said alkoxysilane to said fluoroalkylsilane ranging from 1:10 to 10:1 so as to form a mixed solution;
diluting the mixed solution with a solvent such that the total concentration of said alkoxysilane and said fluoroalkylsilane is from 1 to 10 wt % in a diluted solution;
adding water in the amount of 100 mol % to 1000 mol % of the total amounts of said fluoroalkylsilane and said alkoxysilane to the diluted solution so as to partially hydrolyze said fluoroalkylsilane and said alkoxysilane, thereby forming a sol;
applying the sol to the glass substrate, thereby to form a gel film on the glass substrate; and
heating the gel film so as to form the metal oxide film on the glass substrate.

5,250,323
CHEMICAL VAPOR GROWTH APPARATUS HAVING AN EXHAUST DEVICE INCLUDING TRAP
Shinji Miyazaki, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation of Ser. No. 604,176, Oct. 29, 1990, abandoned.
This application Oct. 5, 1992, Ser. No. 956,555
Claims priority, application Japan, Oct. 30, 1989, 1-279976
Int. Cl.[5] C23C *16/00*
U.S. Cl. 427—255.1 **11 Claims**

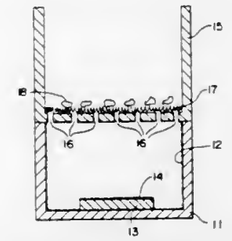


8. A method for growing a chemical vapor deposition layer on a semiconductor substrate, comprising the steps of:
placing a semiconductor substrate in a process chamber for carrying out a chemical vapor growth process;
introducing at least one source gas to the process chamber through a source gas introducing means, a flow rate of the at least one source gas being controlled by a source gas flow-rate control means through which the source gas is introduced;
depositing a film on the semiconductor substrate from the at least one source gas;
exhausting gases and particles generated by chemical reaction from the process chamber through a process chamber exhaust means, said process chamber exhaust means being connected to the process chamber and to a vacuum pump; and
exhausting the at least one source gas remaining in the source gas introducing means and in the source gas flow-rate control means through a source gas exhaust means which is separate from the process chamber exhaust means and connected to the source gas introducing means and the source gas flow-rate control means, the source gas exhaust means including a trap means for absorbing the source gas remaining in the source gas introducing means and the source gas flow-rate control means, the exhausting being carried out by introducing a purge gas through a purge gas introducing means connected to the source gas introducing means and to the source gas flow-rate control means, wherein generation of particles in the source gas introducing means and the source gas flow-rate control means is prevented.

5,250,324
METHOD FOR FORMING A SURFACE COATING USING POWDERED SOLID OXIDANTS AND PARENT METALS
Terry D. Claar, Newark, Del., assignor to Lanxide Technology Company, L.P., Newark, Del.
Continuation of Ser. No. 543,277, Jun. 25, 1990, Pat. No. 5,112,654. This application May 11, 1992, Ser. No. 881,277
The portion of the term of this patent subsequent to May 12, 2009, has been disclaimed.
Int. Cl.[5] B05D *3/02;* **C04B** *35/58*
U.S. Cl. 427—376.6 **22 Claims**

1. A method for forming a coated substrate body comprising:

providing a substrate body;
providing on at least a portion of at least one surface of said substrate body at least one, carbon-based material;
placing at least one powdered parent metal and at least one powdered solid oxidant comprising boron carbide, or boron carbide and a carbon donor material, or boron carbide and a boron donor material at least on said at least a portion of at least one surface of said substrate body;

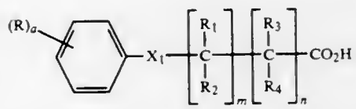


heating said at least one powdered parent metal, said at least one powdered solid oxidant and at least said at least a portion of at least one surface of said substrate body to cause said at least one parent metal to at least react with said at least one powdered solid oxidant; and
continuing said reaction for a sufficient amount of time to produce at least one reaction product coating on said at least a portion of at least one surface of said substrate body.

5,250,325
CORROSION INHIBITORS
Emyr Phillips, Wakefield, and William P. Armstrong, Bolton, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Jan. 21, 1993, Ser. No. 6,443
Claims priority, application United Kingdom, Jan. 25, 1992, 9201642
Int. Cl.[5] B32B *3/02*
U.S. Cl. 427—386 **16 Claims**

1. Coating composition comprising:
A) an organic film-forming binder; and
B) a corrosion-inhibiting amount of a water-insoluble salt of
i) a carboxylic acid having the formula (I):

I



in which a is 0 or an integer ranging from 1 to 5; m and n, independently, are 0 or an integer ranging from 1 to 10; X_1 is O, S or $—C(R_5)(R_6)$ provided that, if m and n are each 0, then X_1 is not O or S; R_1, R_2, R_3, R_4, R_5 and R_6 are the same or different and each is hydrogen, C_1–C_{15} alkyl, C_2–C_{15} alkenyl, C_3–C_{12} cycloalkyl, C_2–C_{15} alkyl interrupted by one or more O-, N- or S-atoms, or each is C_6–C_{10} aryl, C_7–C_{12} aralkyl or C_7–C_{12} aralkenyl each optionally substituted by one to five groups R, or any two of R_1 and R_2, R_3 and R_4 or R_5 and R_6 may form a C_3–C_{12} cycloalkyl ring or a C_6 aryl ring; and R is halogen, nitro, cyano, CF_3, C_1–C_{15} alkyl, C_5–C_{12} cycloalkyl, C_2–C_{15} alkenyl, C_1–C_{15} halogenoalkyl, C_1–C_{12} alkoxy, C_1–C_{12} thioalkyl, C_6–C_{12} aryl, C_6–C_{10} aryloxy, C_7–C_{12} aralkoxy, C_7–C_{12} alkaryl, CO_2H, $CO_2—C_1$–C_{12} alkyl in which the alkyl group is optionally interrupted by one or more O-, N- or S-atoms, $CO_2—C_7$–C_{12} alkaryl, $CO_2—C_6$–C_{12}-aryl in which the aryl group is optionally substituted with one or more carboxy groups, $—C(=O)H$, $—C(=O)—C_1$–C_{12} alkyl in which the alkyl group is optionally interrupted by one or more O-, N- or S-atoms, $—C(=O)—C_7$–C_{12} alkaryl, $—C(=O)—C_6$–C_{12} aryl in which the aryl group is optionally substituted with one or more carboxy groups, NH_2, $NH—C_1$–C_{15} alkyl or $N(C_1$–C_{15} alkyl$)_2$ groups in which the alkyl groups are optionally interrupted by one or more O-, N- or S-atoms, or any two groups R may form a fused aliphatic or C_6 aromatic ring; and ii) a base selected from the group consisting of a) a cation of Group Ib, IIa, IIb, IIIa, IIIb, IVa, IVb, Va, VIa, VIIa or VIIIa of the Periodic Table of Elements, b) an amine of formula II:
in which X, Y and Z are the same or different and each is hydrogen, C_1–C_{24} alkyl optionally interrupted by one or more O- or N-atoms, C_7–C_9 phenylalkyl or C_7–C_9 alkylphenyl, or two of X, Y and Z, together with the N-atom to which they are attached, form a 5-, 6- or 7-membered heterocyclic residue which optionally contains one or more further O-, N- or S-atoms, and which is optionally substituted by one or more C_1–C_4 alkyl, amino, hydroxy, carboxy or C_1–C_4 carboxyalkyl groups, or two of X, Y and Z represent a double bond connected to a carbon atom and, together with the other one of X, Y and Z, form a heterocyclic ring which optionally contains one or more further O-, N- or S-atoms and may be fused to a phenyl ring, provided that X, Y and Z may not be simultaneously hydrogen; c) a guanidine of formula III:

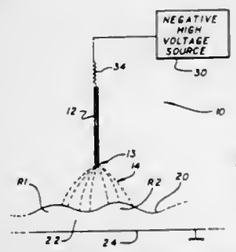
$$R_7—N=C(NH_2)_2 \qquad III$$

in which R_7 is hydrogen or C_1–C_{15} alkyl; d) an amidine of formula IV:

$$R_7—C(=NH)NH_2 \qquad IV$$

in which R_7 has its previous significance; and e) melamine which is optionally substituted with one or more C_1–C_{15} alkyl groups or phenyl groups.

5,250,326
REDUCTION OF NONMETALLIC COATING SURFACE VERTICAL IRREGULARITIES BY ELECTROSTATIC PRESSURE
James E. Drummond, Oceanside; David B. Chang, Tustin, both of Calif., and Alexander H. Joyce, Livonia, Mich., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Continuation of Ser. No. 544,575, Jun. 27, 1990, abandoned.
This application Dec. 20, 1991, Ser. No. 814,206
Int. Cl.[5] B05D *1/04*
U.S. Cl. 427—466 **17 Claims**



1. A technique for expediting the subsidence of irregularities on a surface o a viscous coating composition applied to an electrically conductive object comprising the steps of:
(a) providing electrical conductor means having a curved end with a radius of curvature;
(b) positioning said curved end a desired distance above and facing said surface in a volume of space containing a gas;
(c) coupling a voltage to said conductor, said voltage having a magnitude selected in combination with said radius of curvature to ionize said gas such that electrostatic pres-

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sure is exerted on an area of said surface sufficient to displace vertical irregularities in said area; and

(d) applying said voltage to said conductor for a period of time to cause substantially complete subsidence of all vertical irregularities in said area.

5,250,327

COMPOSITE SUBSTRATE AND PROCESS FOR PRODUCING THE SAME

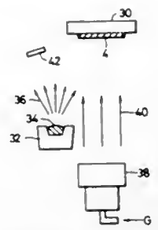
Kiyoshi Ogata; Yasunori Ando, and Eiji Kamijo, all of Kyoto, Japan, assignors to Nissin Electric Co. Ltd., Kyoto, Japan

Continuation of Ser. No. 43,518, Apr. 28, 1987, abandoned. This application Aug. 7, 1989, Ser. No. 390,001

Claims priority, application Japan, Apr. 28, 1986, 61-98886

Int. Cl.[5] B05D *3/06, 5/12;* **C23C** *14/00*

U.S. Cl. 427—528 **10 Claims**



6. A process for producing a composite substrate for electronic devices such as integrated circuits and semiconductors comprising:

a first step wherein more than one cycle of initial deposition of a vaporized material and implantation of an accelerated ion beam on a metal substrate in a vacuum environment and subsequent continued deposition of said vaporized material thereon is carried out with at least one of an evaporant and an ion species in said ion beam being changed, so as to form a plurality of electrically insulating dissimilar ceramic layers on said metal substrate, a first mixed layer being formed in an area near an interface between said metal substrate and an overlying ceramic layer, and a second mixed layer being formed in an area near an interface between any two adjacent ceramic layers, each of said mixed layers being composed of materials constituting each of the layers situated on both sides thereof; and

a second step wherein, initially, a metal vapor is deposited, and an accelerated ionized inert gas is simultaneously allowed to impinge on the topmost ceramic layer formed in said first step and, thereafter, said metal vapor alone is continued to be deposited thereon, so as to form a metal layer on said topmost ceramic layer and a mixed layer in an area near an interface between said topmost ceramic layer and said metal layer, said mixed layer being composed of ceramic and metal materials of the layers situated on both sides thereof.

5,250,328

PROCESS AND APPARATUS FOR PLASMA CVD COATING OR PLASMA TREATING SUBSTRATES

Jürgen Otto, Mainz, Fed. Rep. of Germany, assignor to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Filed Apr. 29, 1992, Ser. No. 875,763

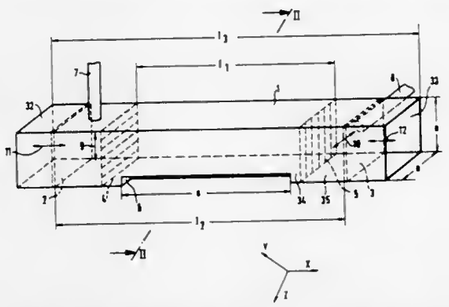
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1991, 4114108

Int. Cl.[5] B05D *3/06, 3/02*

U.S. Cl. 427—535 **30 Claims**

1. A process for treating or coating a substrate which comprises passing over the substrate a stream of a reaction gas, which is capable when excited of depositing a substance therefrom onto the substrate, flows over the surface to be treated or coated and exciting the reaction gas to a band-shaped plasma by microwaves generated in a waveguide, thereby treating the surface or depositing a coating thereon, by:

(a) exciting two standing waves of wavelengths λ_{h1} and λ_{h2} which are polarized perpendicular to one another, and



shifting them relative to each other by one-quarter wavelength, in a waveguide means that is square in cross section; and

(b) coupling the microwaves to the plasma by a lengthwise slit provided in one of the edges of the waveguide means.

5,250,329

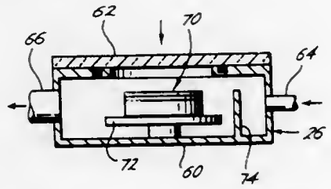
METHOD OF DEPOSITING CONDUCTIVE LINES ON A DIELECTRIC

Robert Miracky, Cedar Park; Joan E. Yater, and Colin A. Mackay, both of Austin, all of Tex., assignors to Microelectronics And Computer Technology Corporation, Austin, Tex.

Continuation of Ser. No. 697,922, May 2, 1991, abandoned, which is a continuation of Ser. No. 334,036, Apr. 6, 1989, abandoned. This application Nov. 13, 1992, Ser. No. 976,057

Int. Cl.[5] B05D *3/06;* **C23C** *16/00, 14/00;* **H01L** *21/306*

U.S. Cl. 427—556 **31 Claims**



1. A method of depositing electrically conductive lines on a dielectric substrate, comprising the steps of:

covering a dielectric substrate with a continuous metallic layer of a first metal, the first metal being adherent to the substrate;

placing the substrate with the metallic layer thereon into a reaction cell containing a gas mixture, at least one gas of which is a compound bearing an electrically conductive second metal different from the first metal, wherein the metallic layer provides a nucleation layer for the second metal;

irradiating the metallic layer at selected portions with a focused laser beam to form continuous, electrically conductive second metal lines at least one micron thick on top of the metallic layer wherein during irradiation the metallic layer provides a more uniform thermal environment which protects the underlying dielectric from deformation; and

chemically etching the metallic layer so as to remove the metallic layer from the unirradiated portions of the substrate while leaving the second metal lines intact.

5,250,330

LIQUID CRYSTAL DEVICE

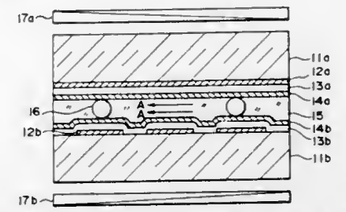
Masanobu Asaoka, Yokohama, and Yasuto Kodera, Fujisawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 22, 1991, Ser. No. 780,288

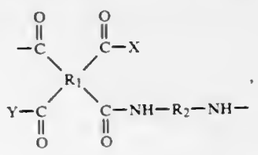
Claims priority, application Japan, Oct. 25, 1990, 2-285866

Int. Cl.[5] G02F *1/1337*

U.S. Cl. 428—1 **5 Claims**



1. A liquid crystal device, comprising: a pair of substrates and a chiral smectic liquid crystal disposed between the substrates; at least one of said pair of substrates having thereon an alignment film comprising a polyimide which contains a structural unit represented by the following formula (I):



(I)

wherein R_1 denotes a tetravalent organic residue group, R_2 denotes a divalent organic residue group, X denotes —NHR_3 or —OH, R_3 denotes an alkyl group having 5–20 carbon atoms, Y denotes —NHR_4 or —OH, and R_4 denotes an alkyl group having 5–20 carbon atoms with the proviso that both X and Y cannot be —OH and the —OH in X or Y can be removed by further cyclization.

5,250,331

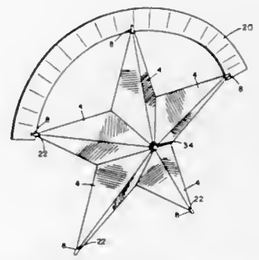
VERSATILE HOLIDAY DECORATION

Larry G. Grefalda, 5317 Perkins Rd., Oxnard, Calif. 93030

Filed Dec. 9, 1991, Ser. No. 804,000

Int. Cl.[5] A47G *33/08*

U.S. Cl. 428—11 **6 Claims**



1. A holiday ornament comprising:

a star-shaped frame having two sides and a plurality of legs, each leg having a point, said frame comprising:

a plurality of dowels;

a plurality of connectors for releasably retaining selected dowels of said plurality of dowels to other dowels of said plurality;

a plurality of panels, each panel configured to fit over one said leg and attach to a connection means on said frame, each said panel being interchangeable with other panels of said plurality; and

a center connector for each side of said frame for attachment to said connection means to hold said plurality of panels onto said frame.

5,250,332

HEAT-SHRINKABLE ENVELOPE HAVING LOW-TEARING SUSCEPTIBILITY

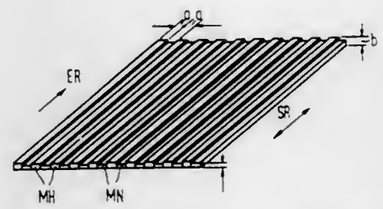
Andreas Kupczyk, and Volker Heinze, both of Hagen, Fed. Rep. of Germany, assignors to RXS Schrumpftechnik Garnituren GmbH, Fed. Rep. of Germany

Filed Oct. 13, 1989, Ser. No. 421,123

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1988, 3835471

Int. Cl.[5] F16L *11/02;* **H01R** *4/00*

U.S. Cl. 428—34.9 **16 Claims**



1. A heat-shrinkable envelope of crosslinked polymeric material for forming a tight closure on articles, said envelope having means for preventing a continued tearing of the envelope and including the envelope being formed of two plastic components having different degrees of shrinking forces, said means having the components being regularly distributed over the entire surface of the envelope as a band structure with side-by-side parallel extending, alternating narrow first and second bands, each of said first and second bands having a width corresponding to the thickness of the band, said bands extending across the width of the envelope, the first bands being a first of said two plastic components having a high degree of shrinking force that guarantees optimum shrinkability, and the second bands being a second of the two plastic components having a shrinking force that provides an optimum mechanical resistance for preventing a continuing tearing of the envelope, each of said plastic components having substantially similar crosslinking and the different degrees of shrinking forces of the bands of the structure being due to the profile structure of special geometric shaping and arrangement for the bands of the different components to cause said difference in shrinking forces.

5,250,333

MODIFIED POLYETHYLENE TEREPHTHALATE

Gerald W. McNeely, and Aylmer J. Woodward, both of Spartanburg, S.C., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Oct. 26, 1992, Ser. No. 965,634

Int. Cl.[5] B65D *1/00*

U.S. Cl. 428—35.7 **13 Claims**

1. Polyethylene terephthalate modified by the incorporation of a small amount of an alkoxylated polyol prepared from a polyol having at least three primary hydroxyl groups.

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5,250,334
COFFEE WEB
Mario Lutterotti, Whithy, Canada, assignor to Du Pont Canada Inc., Mississauga, Canada
Filed Jun. 8, 1992, Ser. No. 895,487
Claims priority, application United Kingdom, Jun. 5, 1991, 9112053
Int. Cl.[5] B65D *1/00*; B35B *15/08*
U.S. Cl. 428—35.9 2 Claims

2. A package of a particulate oxygen-sensitive solid packaged in a laminate of a) a base film of biaxially oriented polyester film or biaxially oriented nylon film, b) a gas barrier layer of aluminum and c) an oriented linear low density polyethylene film having a draw ratio of from about 1.5 to about 5.0, wherein the polyethylene is selected from the group consisting of at least one ethylene/C_4–C_{10} α-olefin copolymer having a density of from 0.905 to 0.940 g/cm^3 and blends of such copolymer with a second polymer selected from at least one of a homopolymer of ethylene and a copolymer of ethylene and vinyl acetate, said second polymer having a density of from 0.910 to 0.945 g/cm^3, said blend having up to 70 wt. % of said second polymer.

5,250,335
POLYESTER VESSEL FOR DRINK AND PROCESS FOR PREPARATION THEREOF
Yoshitsugu Maruhashi, and Setsuko Iida, both of Yokohama, Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan
Filed Jun. 22, 1990, Ser. No. 542,143
Claims priority, application Japan, Jun. 23, 1989, 1-159429; Jun. 23, 1989, 1-159430
Int. Cl.[5] B65D *1/02*; B29C *49/08*
U.S. Cl. 428—36.92 1 Claim

1. A polyester vessel comprising a neck, a barrel and a closed bottom, which is prepared by draw-blow-forming of a thermoplastic polyester, wherein the inner surface and outer surface of the barrel have an orientation satisfying the following requirements:

$$1.500 \geqq ni \geqq 1.492,$$

and

$$0.020 \geqq no - ni \geqq 0.010$$

wherein no represents the refractive index of the outer surface side of the barrel in the thickness direction, determined by using NaD rays, and ni represents the refractive index of the inner surface side of the barrel in the thickness direction, determined by using NaD rays,
and a crystallinity satisfying the following requirements:

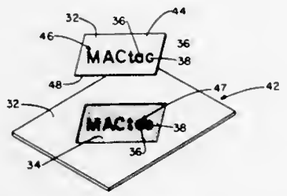
$$35\% \geqq Xi \geqq 20\%,$$

and

$$3\% \geqq Xi - Xo > 0\%$$

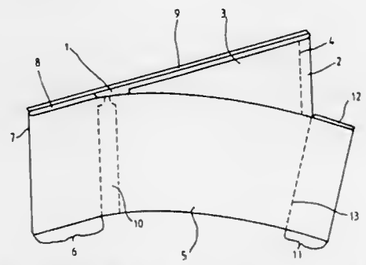
wherein Xo represents the crystallization degree of the outer surface side of the barrel, determined by the density method, and Xi represents the crystallization degree of the inner surface side of the barrel, determined by the density method.

5,250,336
COLORED RELEASE LINER
Herve Greuse, St. Denis, and Guy Siraux, Mignault, both of Belgium, assignors to Morgan Adhesives Company, Stow, Ohio
Filed Feb. 11, 1992, Ser. No. 834,886
Int. Cl.[5] C09J *7/02*
U.S. Cl. 428—40 8 Claims



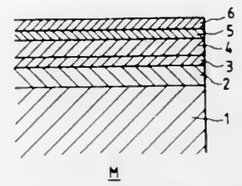
1. A die cut label system comprising:
a backing sheet having an interior and an exterior surface;
a release coating deposited on at least a substantial portion of said interior surface, said release coating formed by the dispersion of a polysiloxane polymer and a non-migratory carbon black colorant in a mixed organic solvent volatilized by subsequent heat cure, said mixed organic solvent having one component which is at least partially polar and one component which is essentially non-polar, said colorant present in sufficient concentration to impart a first color or shade to said release coating;
a release adhesive in contact with said release coating;
a face stock in contact with said adhesive, said face stock having a second color or shade capable of contrasting with said first color or shade imparted to said release coating.

5,250,337
MULTI-LAYERED LABEL FOR ADHESIVELY AFFIXING TO CONTAINERS
Heinz Treichel, Dormagen; Norbert Schiffer, Rommerskirchen, both of Fed. Rep. of Germany, and Franz P. Schüller, Cascais, Portugal, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Sep. 23, 1992, Ser. No. 950,382
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1991, 4132493
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—43 1 Claim



1. Multi-layered label as shown in FIG. 1 for adhesively affixing to containers, such as bottles, cans, canisters, characterised by a base section (1), delimited by a fold (2) from at least one shorter intermediate section (3) and having, a layer of glue (9) on the reverse side, and a top section (5), arranged over the intermediate section (3), top section (5) and base section (1) being joined to each other in the left-hand edge-region (6) by a gluing (8), and the top section (5) having to the right of this gluing (8) a tear-open perforation (10) and overlapping with the right-hand edge region (11) the intermediate section (3) and the base section (1), and this overlapping edge region (11) having, a gluing (12) on the reverse side, the right-hand edge region (11) of the top section (5) being delimited by a tear-off perforation (13), and a tear-off perforation (4) being provided in or close to the fold (2) between base section (1) and intermediate section (3).

5,250,338
MAGNETIC RECORDING MEDIUM
Masaki Shintani, Kamakura; Kanji Takashima, Yokohama; Koichiro Yamazki, Kawasaki, and Toshio Kato, Yamato, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan
Filed Nov. 16, 1989, Ser. No. 614,477
Claims priority, application Japan, Nov. 24, 1989, 1-305866
Int. Cl.[5] G11B *05/00*
U.S. Cl. 428—64 5 Claims

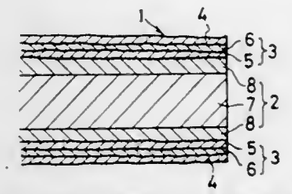


M

1. A magnetic recording medium which comprises a non-ferromagnetic substrate of a disk form, a non-ferromagnetic metal film formed on the non-ferromagnetic substrate, and a Co alloy ferromagnetic film having a crystal structure whose axis of easy magnetization is oriented in an in-plane circumferential direction serving as a recording layer and formed on the non-ferromagnetic metal film, wherein said substrate has two different irregularities on the surface along the circumferential direction, the first irregularity having a center line average roughness of about 150 angstroms, the second having a center line average roughness of from 40 to 50 angstroms, and wherein said non-ferromagnetic metal film is a Cr film having a thickness of from 50 to 700 angstroms and having a crystal structure characterized in that the (200) plane of the crystals is parallel to the surface of the substrate, said crystals further having a <011> orientation directed toward the circumferential direction; and said Co alloy ferromagnetic film has a crystal structure characterized in that the (100) plane of the crystals is parallel to the surface of the substrate, said crystals further having a <001> orientation directed toward the circumferential direction.

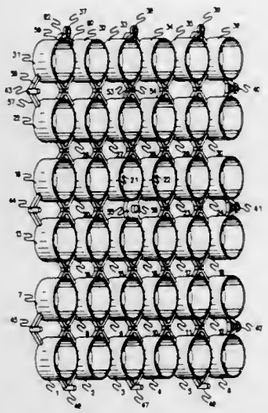
5,250,339
MAGNETIC RECORDING MEDIUM
Noriaki Tani; Kyuzo Nakamura; Michio Ishikawa; Masanori Hashimoto, and Yoshifumi Ota, all of Chiba, Japan, assignors to Nihon Shinku Gijutsu Kabushiki Kaisha, Chigasaki, Japan
Continuation of Ser. No. 594,905, Oct. 9, 1990, abandoned. This application Sep. 8, 1992, Ser. No. 940,753
Claims priority, application Japan, Oct. 9, 1989, 1-262202
Int. Cl.[5] G11B *5/66*; B32B *3/02*
U.S. Cl. 428—64 1 Claim

1. A magnetic recording medium comprising:
(A) a non-magnetic substrate disk;
(B) at least one magnetic layer; and
(C) at least one protective layer;
said magnetic layer (B) and said protective layer (C) being formed in succession on the non-magnetic substrate disk (A),
wherein the non-magnetic substrate disk (A) comprises
(1) a glass substrate having a smooth surface, and
(2) at least one electrically conductive non-magnetic metallic film provided on a surface of the glass substrate by vapor deposition or sputtering in vacuum, said electrically conductive non-magnetic metallic film (A) (2) having a thickness in the range of not less than 0.03 μm and not more than 5 μm, and being provided on a surface thereof with a multitude of fine concentric grooves by texturing treatment of said surface of the electrically conductive non-magnetic metallic film (A) (2);
wherein the magnetic layer (B), which is provided on the surface of the electrically conductive non-magnetic metallic film (A) (2), comprises



(1) a sublayer which is a film of Cr, W or Mo or a film of an alloy consisting essentially of Cr, W or Mo, said sublayer (B) (2) being formed by vapor deposition or sputtering in vacuum; and
(b 2) a main magnetic layer which is a film of Co or a film of an alloy consisting essentially of Co, said main magnetic layer (B) (2) being formed by vapor deposition or sputtering in vacuum on the sublayer (B) (1); and
wherein said protective layer (C) is provided on the main magnetic layer (B) (2).

5,250,340
MAT FOR STABILIZING PARTICULATE MATERIALS
William W. Bohnhoff, 12501 E. Amherst Cir., Aurora, Colo. 80014
Continuation-in-part of Ser. No. 575,630, Aug. 31, 1990, Pat. No. 5,102,048, and a continuation-in-part of Ser. No. 588,455, Sep. 26, 1990, Pat. No. 5,123,778. This application Sep. 9, 1991, Ser. No. 756,459
The portion of the term of this patent subsequent to Apr. 7, 2009, has been disclaimed.
Int. Cl.[5] B32B *3/10*
U.S. Cl. 428—99 21 Claims



1. A mat for stabilizing particulate materials, comprising:
a substantially planar quadrilateral grid formed by a plurality of intersecting substantially perpendicular struts;

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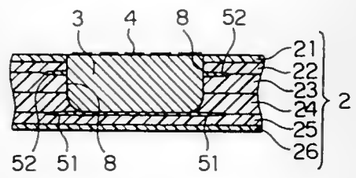
an enlarged reinforced zone formed at each intersection of said struts;
a plurality of upstanding substantially cylindrical tubular members spaced uniformly on said grid;
said tubular members and said grid being semi-rigid and integrally molded from a thermoplastic material;
said tubular members each having a central longitudinal axis extending through an intersection of said struts forming said grid;
said tubular members disposed in a substantially uniform rectangular array defined by a plurality of substantially perpendicular rows and columns;
each adjacent pair of said rows and each adjacent pair of said columns separated by a substantially parallel line formed by intersections of said struts forming said grid;
said intersections of said struts separating said rows and said columns each having an upstanding substantially cylindrical boss to facilitate ejection of said mat from a mold during manufacture;
a plurality of longitudinal ribs extending along an inner cylindrical sidewall of each of said tubular members;
each of said ribs substantially perpendicularly intersecting one of said struts adjacent one end of one of said tubular members;
a plurality of substantially uniformly spaced sockets disposed in a line along two adjacent sides of said grid;
each of said sockets connected to two of said tubular members by a pair of struts;
each of said sockets supported above an upper surface of said struts by a pair of inclined mounting surfaces;
a cross brace extending between each pair of said struts supporting each of said sockets adjacent intersections of said inclined mounting surfaces with said struts;
a plurality of substantially uniformly spaced upstanding pins dimensioned for insertion into said sockets disposed in a line along two adjacent sides of said grid, said pins disposed on opposite sides of said grid with respect to said sockets such that a plurality of mats may be connected by inserting pins on one mat into sockets on another mat; and
said pins extending substantially above said sockets such that said pins may be deformed after insertion into a socket to prevent displacement from said socket.

5,250,341

IC CARD

Makoto Kobayashi, Sanda; Syojiro Kodai, and Katsunori Ochi, both of Itami, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 30, 1991, Ser. No. 648,511
Claims priority, application Japan, Mar. 26, 1990, 2-78295
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—137 **16 Claims**



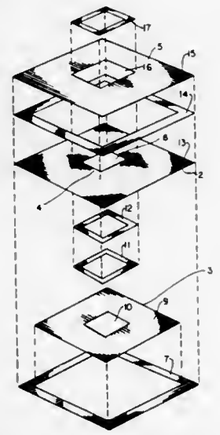
1. An IC card comprising:
an IC module having opposing first and second surfaces, a relatively large cross sectional area in a first portion and a relatively small cross sectional area in a second portion and including an external connection terminal on the first surface;
a card substrate including a stack of a plurality of core sheets, a portion of said plurality of core sheets including through holes forming an opening receiving said IC module with the first surface exposed; and
a plurality of adhesive layers disposed between respective core sheets adjacent said IC module, wherein at least two of said adhesive layers are disposed directly opposite each other adjacent said IC module within said stack of core sheets.

5,250,342

COMPOSITE EMI SHIELD HAVING CLEAN, HIGHLY CONDUCTIVE SURFACES FOR CONDUCTIVE BONDING

Charles F. Lang, Monroe, and Rocco R. DiGenova, Wallingford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 356,456, May 24, 1989, abandoned.
This application Apr. 16, 1992, Ser. No. 869,873
The portion of the term of this patent subsequent to May 24, 2005, has been disclaimed.
Int. Cl.[5] B32B *3/18, 31/18;* **H05K** *9/00*
U.S. Cl. 428—138 **18 Claims**



1. A composite EMI shield comprising:
at least one conductive layer for lightning or electromagnetic interference shielding;
face plies on opposite sides of the conductive layer, each face ply having cutout areas to accommodate mating surfaces;
barrier tape, placed behind the conductive layer, between the conductive layer and the corresponding face ply, complimentary to the cutout areas; and,
removable nonporous tape placed in the cutout areas adjacent the face plies.

5,250,343

PLASTICS MATERIAL

Gregory R. Stewart, Auckland, New Zealand, assignor to Transpak Industries Limited, Auckland, New Zealand

Filed May 12, 1992, Ser. No. 881,863
Claims priority, application New Zealand, May 15, 1991, 238156; Sep. 13, 1991, 239793
Int. Cl.[5] B32B *27/08*
U.S. Cl. 428—141 **11 Claims**

1. A method of making a plastics material having at least first and second layers of plastics polymeric materials bonded together wherein the material of said first layer is selected to have a melting point which is lower than the melting point of the material of said second layer, orientating said layers and heating said layers to a temperature at least that of the melting point of the said first layer but below that of said second layer, said orientating an heating being carried out sequentially or simultaneously, whereby said first layer breaks up to form an irregular surface pattern.

6. A plastics material comprising at least first and second layers of plastics polymeric materials which are bonded together, wherein the melting point of the material of said first



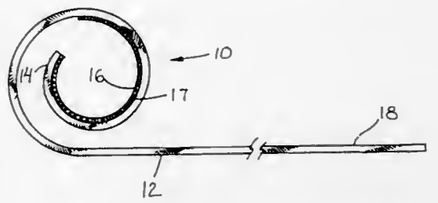
layer is lower than the melting point of the material of said second layer and said first layer is broken up to form an irregular surface pattern by the orientation and the heating of said layers to at least the lower melting point but below the higher melting point.

5,250,344

CAST MATERIAL WITH ENCAPSULATED LUBRICANT

Tony Williamson, Troutman, N.C.; Martin F. Van Buren, Chelmsford, Mass.; Arthur A. Massucco, Natick, Mass., and Richard S. Lindstrom, Reading, Mass., assignors to Zimmer, Inc., Warsaw, Ind.

Continuation of Ser. No. 631,587, Dec. 21, 1990, abandoned.
This application Oct. 9, 1992, Ser. No. 960,183
Int. Cl.[5] B32B *3/00;* **D06N** *7/04;* **A61F** *5/04*
U.S. Cl. 428—143 **8 Claims**



1. An article for use as an orthopedic cast comprising:
a planar substrate having an end;
a resin material embedded in said substrate, said material being hardenable upon exposure thereof to an activating agent; and
a layer of microgranules covering only a portion of at least one surface of said substrate adjacent said end, each of said microgranules comprising an outer coating covering a core of lubricious material, said outer coating being removable upon being subjected to a removing stimulus to release said core of lubricious material.

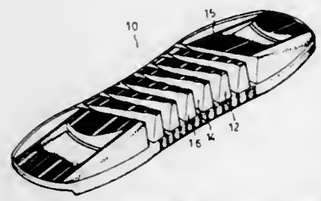
5,250,345

ANTI-SLIP DEVICE FOR A BELT

Chih-ming Chu, No. 25-4, Chueanchow Rd., Houli Hsiang, Taichung County, Taiwan

Filed Feb. 21, 1992, Ser. No. 839,932
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—156 **4 Claims**

1. An anti-slip device for a belt comprising a body including a channel formed in an upper portion thereof through which said belt is engaged, and a pad formed integral on a bottom portion of said body and to be engaged on a shoulder of a user, said pad including a substantially wedge-shaped cross section having a first side of larger thickness, said first side being engaged on an outer portion of said shoulder of said user such



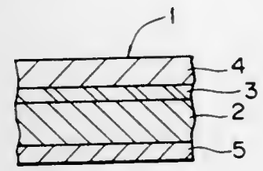
that said belt is held horizontally and such that said pad is prevented from slipping off said shoulder of said user.

5,250,346

THERMAL IMAGE TRANSFER RECORDING MEDIUM

Moriyasu Nagai; Yuichi Taka; Tadafumi Tatewaki, all of Numazu; Shigeru Miyajima, Fuji; Yoshihiko Hiyoshi, Shimizu; Youji Ide, Mishima; Nobuyuki Maeda, Susono; Kumi Surizaki, and Tetsuji Kunitake, both of Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 31, 1991, Ser. No. 738,441
Claims priority, application Japan, Jul. 31, 1990, 2-204598; Nov. 27, 1990, 2-324067; May 22, 1991, 3-146871; Jul. 26, 1991, 3-210158
Int. Cl.[5] B32B *9/04*
U.S. Cl. 428—195 **15 Claims**



1. A thermal image transfer recording medium comprising a support and a thermofusible ink layer formed on said support, with the water-content ratio of said recording medium excluding said support being in the range of 0.3 to 4.0 wt. % of the total weight of said recording medium excluding said support.

5,250,347

MECHANICALLY ENHANCED, HIGH IMPACT STRENGTH TRIAZINE RESINS, AND METHOD OF PREPARING SAME

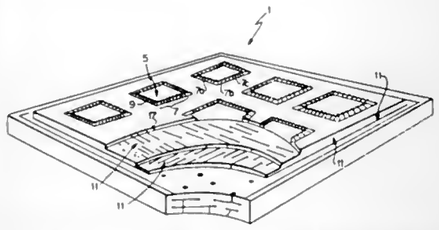
Ashit A. Mehta; Tyan M. Niu, both of Vestal; Lee P. Springer, Endicott; William J. Summa, Endwell, all of N.Y., and Lee P. Wilding, New Milford, Pa., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 10, 1992, Ser. No. 848,772
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—209 **5 Claims**

1. An electronic circuit package having surface circuitization adapted to receive an integrated circuit on at least one surface thereof, and a core comprising a composite dielectric of (1) poly (triazine) and (2) from 5 to 45 weight percent of a dispersed, thermoplastic, particulate, polymeric filler having a

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particle size of 5 to 15 microns and chosen from the group consisting of (a) polyimide polymers of tetracarboxylic dianhydride and aromatic diamine, and (b) polyfluorocarbons, said composite dielectric having a dielectric constant below 3.0.



5,250,348

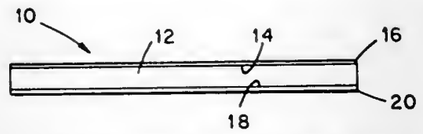
IMPROVED WRAPPER PAPER FOR USE IN VERY LOW CONTACT PRESSURE APPLICATIONS

Gary H. Knauf, Appleton, Wis., assignor to International Paper Company, Tuxedo Park, N.Y.

Division of Ser. No. 806,003, Dec. 9, 1991, Pat. No. 5,175,978. This application Oct. 22, 1992, Ser. No. 964,726

Int. Cl.[5] **B32B** *7/00*

U.S. Cl. 428—211 **7 Claims**



1. An improved wrapper paper for use in packaging of individual quantities of pressure sensitive material, said wrapper paper comprising a base web of paper of between about 30 and about 60 lb/3000 ft^2, said base web including a layer of polyethylene on one of its opposite flat surfaces and a thin layer of primer material of a polyalkyleneimine on the opposite flat surface thereof whereby when said wrapper paper in sheet form is folded about a quantity of said pressure sensitive material with its poyethylene-bearing surface facing said pressure sensitive material, said opposite surface of said wrapper paper faces outwardly from said pressure sensitive material such that overlapping edge portions of said wrapper paper present facing contiguous portions of the wrapper paper surfaces, one of which bears said polyethylene coating and the other of which bears said primer so that upon the application of heat to said overlapping surface portions said surface portions become bonded one to another, with the application of only a light pressure, with a bond which is stronger than the base paper web itself.

5,250,349

RETORTABLE PACKAGING LAMINATE STRUCTURE WITH ADHESIVE LAYER

Mikio Nakagawa, and Masaharu Mito, both of Waki, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 563,351, Aug. 7, 1990, abandoned. This application Jul. 6, 1992, Ser. No. 908,991

Claims priority, application Japan, Aug. 7, 1989, 1-204508; Sep. 19, 1989, 1-242775

Int. Cl.[5] **B32B** *27/36, 7/12;* **C08F** *255/02;* **C08L** *23/04*

U.S. Cl. 428—212 **6 Claims**

1. A laminate structure useable as a retortable packaging material comprising (I) a layer of a polyalkylene terephthalate resin or a polycarbonate resin, (III) a saponified olefin/vinyl acetate copolymer layer, and interposed therebetween (II) a layer of an adhesive resin composition, said adhesive resin composition comprising 100 parts by weight of a soft polymer and 1 to 30 parts by weight of partially or wholly graft-modified polyethylene which has a melt flow rate (ASTM D-1238, condition E) of from 0.1 to 50 g/10 min, a density of 0.900 to 0.980 g/cm^3, and an X-ray crystallinity of at least 30%, and in which the graft monomer is an unsaturated carboxylic acid or a derivative thereof, and wherein the amount of the graft monomer is 0.05 to 15% by weight, wherein the soft polymer comprises (a) 20 to 90 parts by weight of a styrene/ethylene-butene/styrene block copolymer elastomer having styrene polymer blocks on both of the terminals of the polymer molecule, and (b) 80 to 10 parts by weight of an ethylene/α-olefin copolymer having an ethylene content of 45 to 95 mole %, a melt flow rate (ASTM D-1238, condition E) of from 0.1 to 50 g/10 min, a density of from 0.850 to 0.900 g/cm^3 and an X-ray crystallinity of lower than 30%.

5,250,350

MODIFIED BURN CHARACTERISTIC SARANEX FILM

Harvey C. Tung, Newark, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 3, 1991, Ser. No. 801,995

Int. Cl.[5] **B32B** *27/04, 27/08*

U.S. Cl. 428—216 **14 Claims**

1. A coextruded film having both gas barrier properties and modified burn characteristics, comprising:

a Saran resin barrier core layer having on both opposing faces a skin layer, at least one of the skin layers being predominantly a polyethylene selected from the group consisting of low density polyethylene and chlorinated polyethylene, blended with a fire retardant composition and a small amount of slip agent, the proportion of polyethylene being in the range of about 70 to 80 percent by weight, the proportion of fire retardant composition being in the range of about 8 to about 30 percent by weight, and the proportion of slip agent being in the range of about 2 to about 13 percent by weight;

up to one of the skin layers being predominantly ethylene/-vinyl acetate copolymer blended with the fire retardant composition and a small amount of slip agent, the proportion of ethylene/vinyl acetate copolymer being in the range of about 70 to 90 percent by weight, the proportion of fire retardant composition being in the range of about 8 to about 30 percent by weight, and the proportion of slip agent being in the range of about 1 to about 6 percent by weight;

and wherein a skin layer is predominantly polyethylene, there being interposed between the skin layer and the barrier core layer a glue layer of predominantly ethylene/vinyl acetate copolymer blended with the fire retardant composition and a small amount of slip agent, the proportion of ethylene/vinyl acetate copolymer being in the range of about 70 to about 90 percent by weight, the proportion of fire retardant composition being in the range of about 8 to about 30 percent by weight, and the proportion of slip agent being in the range of about 1 to about 6 percent by weight;

the respective layers being in approximate sequential volumetric relation, in percent, 35:10:10:10:35 wherein both skin layers are of predominantly low density polyethylene, and 35:10:10:10:45 wherein one of the skin layers is predominantly of chlorinated polyethylene and represents about 45 percent of the thickness of the film, and the other skin layer is a glue layer that is not covered; and

the fire retardant composition being a polyhalogenated organic compound/antimony oxide blend in a low density polyethylene carrier.

5,250,351

ELASTIC WARP KNITTED FABRIC AND METHOD OF MANUFACTURING SAME

Toshiyuki Kondou, Osaka, and Yoshinori Morifuji, Shiga, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jul. 1, 1992, Ser. No. 906,865

Claims priority, application Japan, Jul. 2, 1991, 3-186954

Int. Cl.[5] **D04B** *23/18;* **D06B** *3/28, 21/02;* **D06P** *5/02*

U.S. Cl. 428—231 **12 Claims**

1. An elastic warp knitted fabric in which an elastic yarn is inserted to sinker loops of a ground knitted weave constituted by a nonelastic yarn, wherein the elastic warp knitted fabric is knitted so that the following conditions a and b are satisfied:

a. a pulling out force for pulling out the elastic yarn at a pulling speed of 10 cm/min from the warp knitted fabric is 30 g or more;

b. a shape of the sinker loop of the nonelastic yarn in the warp knitted fabric satisfies the following equations (1) and (2).

$$\frac{L_0(\max) - L_0(\min)}{L_0(\text{mean})} \times 100 < 15 \quad (1)$$

$$\frac{\Sigma\left(\frac{L - L_0}{L_0}\right)}{15} \times 100 > 4 \quad (2)$$

wherein: L_0, L_0(max), L_0(Min), L_0(mean) and L are measured by the following method:

an electron micrograph of a cross section of the elastic warp knitted fabric is taken at a magnitude of 50, to obtain an enlarged view of the sinker loop, three positions, i.e., a center position and a position remote from each side of the knitted fabric by 30 cm, are selected as positions to be taken by the electron micrograph, and values of L_0 and L of five sinker loops for the three positions are measured, respectively,

L_0: a distance between two points formed by that perpendicular lines projecting from each center of two adjacent elastic yarns toward a straight line connecting each center of two adjacent elastic yarns are crossed with a curve arranged substantially in a middle portion of a sinker loop of the nonelastic yarn,

L_0(max): a maximum value of fifteen value of L_0,

L_0(min): a minimum value of the fifteen value of L_0,

L_0(mean): a mean value of the fifteen value of L_0,

L: a length of a segment of a curve arranged substantially in a middle portion of a sinker loop of the nonelastic yarn which is cut by two perpendicular lines projecting from each center of two adjacent elastic yarns toward a straight line connecting each center of the two adjacent elastic yarns.

10. A method of manufacturing an elastic warp knitted fabric by which an elastic yarn is inserted to sinker loops of a ground knitted weave constituted by a nonelastic yarn, wherein a grey fabric of the elastic warp knitted fabric is knitted in such a manner that the elastic yarn is inserted to sinker loops of a ground knitted weave constituted by a nonelastic yarn by a warp knitting machine, a relaxation treatment using at least one selected from a group of steam, water and air is applied to the grey fabric in a dyeing machine using a flowing gas as an energy of propelling a fabric, a wet heat precess comprising a scouring treatment and a dyeing treatment is applied to the relaxed fabric in the flowing gas dyeing machine, and finally, a finishing set is applied to the knitted fabric obtained.

5,250,352

PROCESS FOR THE PREPARATION OF A DENTAL PROSTHESIS AND THE PROSTHESIS PRODUCED BY SAID PROCESS

Michèle Tyszblat, 3 avenue Séverine, 92400 Courbevoie, France

Continuation of Ser. No. 232,283, Aug. 15, 1988, abandoned, which is a continuation of Ser. No. 57,448, Apr. 10, 1987, Pat. No. 4,772,436. This application Feb. 11, 1991, Ser. No. 653,284

Claims priority, application European Pat. Off., Apr. 11, 1986, 86400781.0

Int. Cl.[5] **B32B** *3/06;* **A61C** *13/00*

U.S. Cl. 428—306.6 **15 Claims**

1. A dental prosthesis consisting essentially of a rigid continuous porous infrastructure of interconnected crystalline particles of a metal oxide fritted in solid phase, the pores of said infrastructure being filled with a continuous mass of glass which contains boron oxide.

5,250,353

ENHANCED PAPER AND PAPERBOARD BIODEGRADABILITY

Gene W. Bartholomew, Tuxedo Park; Mark D. Peterson, Central Valley; Morton S. Delozier, Claryville, all of N.Y., and Michael DeAngelis, Whippany, N.J., assignors to International Paper Company, New York, N.Y.

Filed Jun. 11, 1991, Ser. No. 713,662

Int. Cl.[5] **B32B** *5/16;* **C08L** *3/00*

U.S. Cl. 428—328 **7 Claims**

1. A paper product having enhanced biodegradability comprising:

a substrate comprised of a fibrous based material, with a chemical constituent,

said chemical constituent is a nutrient chemical selected from the group comprising nitrates, sulfates, potassium, phosphate, other nitrogenous sources and micronutrient sources, that increases microbial growth on said substrate;

wherein said chemical constituent is absorbed and retained in said substrate; and

said chemical constituent has properties which increase the decomposition of said substrate.

5,250,354

MAGNETIC RECORDING MEDIUM CONTAINING MAGNETIC ALLOY POWDER AND SPECIFIED BINDER RESINS AND HAVING A KERR ROTATIONAL ANGLE OF 5 MINUTES OR MORE

Kiyomi Ejiri, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 19, 1991, Ser. No. 689,589

Claims priority, application Japan, Apr. 20, 1990, 2-103107

Int. Cl.[5] **G11B** *5/00*

U.S. Cl. 428—336 **10 Claims**

1. A magnetic recording medium having a non-magnetic support and a magnetic layer formed thereon, the magnetic layer containing a magnetic alloy powder and a binder, wherein said magnetic alloy powder has a length in the long axis of 2,000 Åor less and a saturation magnetization (σs) of 100 emu/g or more; said binder contains a vinyl chloride copolymer, a polyisocyanate, and a polyurethane resin, wherein the polyurethane resin has at least 3 hydroxyl groups per molecule and at least 1×10^{-5} eq/g of at least one type of polar group selected from the group consisting of $-SO_3M$, $-O-SO_3M$, —COOM, $-PO(OM')_2$ and $-OPO(OM')_2$ (wherein each of M and M' represents a hydrogen atom, an alkali metal or ammonium ion) and the polyurethane resin is used in an amount equal to or more than by weight that of the polyisocyanate, and wherein the vinyl chloride copolymer has at least 1×10^{-5} eq/g of at least one type of polar group selected from the group consisting of $-SO_3M$, $-OSO_3M$, —COOM, $-PO(OM')_2$ and $-OPO(OM')_2$ (wherein each of M and M' represents a hydrogen atom, an alkali metal or ammonium ion); and

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a Kerr rotational angle measured at a surface of the magnetic layer is 5 minutes or more.

5,250,355
ARC HARDFACING ROD
Harold C. Newman, and Harold E. Kelley, both of Fallon, Nev., assignors to Kennametal Inc., Latrobe, Pa.
Filed Dec. 17, 1991, Ser. No. 808,837
Int. Cl.[5] D02G *3/00*
U.S. Cl. 428—367 **25 Claims**

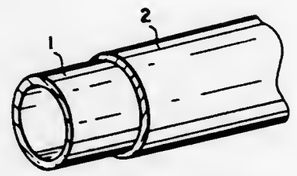


1. An arc hardfacing rod comprising:
a tubular member;
a filler material within said tubular member including a filler flux, a bonding agent and filler carbide particles, said filler carbide particles selected from the group consisting of tungsten carbide particles, titanium carbide particles, tantalum carbide particles, niobium carbide particles, zirconium carbide particles, vanadium carbide particles, hafnium carbide particles, molybdenum carbide particles, chromium carbide particles, silicon carbide particles and boron carbide particles, cemented composites and mixtures thereof;
an insulating coating adhered to an exterior of said tubular member including a coating flux and a coating bonding agent; and
a plurality of uncoated discrete metal carbide particles set within said insulating coating so as a surface of a portion of said metal carbide particles is free of said insulating coating sufficient to form a weld pool including interspersed substantially intact carbide particles surrounded by a lessor dendritic eta phase matrix.

5,250,356
COOKWARE COATING SYSTEM
Kenneth Batzar, Cherry Hill, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Aug. 28, 1992, Ser. No. 937,925
Int. Cl.[5] B32B *15/08*; B05D *1/36*
U.S. Cl. 428—421 **12 Claims**

1. An article of cookware comprising a metal substrate coated with a scratch-resistant, non-stick coating system wherein said coating system comprises a primer applied to a metal substrate, a midcoat adhered to said primer and a topcoat adhered to said midcoat,
said primer comprising about 15 to 35 percent by weight calcined aluminum oxide in the form of particles with an average diameter under 20 microns, about 35 to 70 percent by weight perfluorocarbon polymer comprising 50 to 70 percent by weight polytetrafluoroethylene and 50 to 30 percent by weight copolymer selected from fluorinated ethylene-propylene and perfluoroalkyl vinyl ether copolymer with tetrafluoroethylene, and about 15 to 30 weight percent auxillary heat stabie polymer selected from polyamide-imide, polyphenylene sulfide and polyether sulfone,
said midcoat comprising about 10 to 20 percent by weight of such aluminum oxide, 90 to 80 percent by weight of such perfluorocarbon polymer but in a ratio in the range of 80 to 90 percent by weight polytetrafluoroethylene and 20 to 10 percent by weight of such copolymer, and
said topcoat comprises polytetrafluoroethylene.

5,250,357
MOISTURE STABLE ELASTOMERIC POLYURETHANE BIASABLE TRANSFER MEMBERS
John C. Wilson, Rochester, and William B. Vreeland, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 26, 1991, Ser. No. 798,454
Int. Cl.[5] G03G *15/06*
U.S. Cl. 428—425.8 **23 Claims**



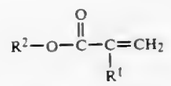
1. A member for electrically cooperating with a conductive support surface to attract charged toner particles from the surface towards the member comprising a conductive substrate capable of supporting a uniform bias potential thereon and at least one coating comprising an elastomeric polyurethane formed by reacting:
(a) a polyisocyanate prepolymer comprising the reaction product of:
(i) a saturated aliphatic polyisocyanate, a saturated cycloaliphatic polyisocyanate or an aromatic polyisocyanate; and
(ii) a polyol free of aliphatic unsaturation; and
(b) a hardening mixture comprising:
(i) a polyol of (a) (ii) or a diamine free of aliphatic unsaturation, or a mixture thereof; and
(ii) as a conductivity control agent for controlling the resistivity of the elastomeric polyurethane to within a range of from about 1.0×10^{7} to about 1.0×10^{11} ohm cm and for imparting a relative humidity sensitivity to the elastomeric polyurethane of from about 1 to about 10, from 0.001 to 5.0 weight percent, based on the total weight of (b), of a complex of ethylene glycol or an oligoethylene glycol selected from the group consisting of di, tri- and tetraethylene glycol with an ionizable antimony halide salt selected from the group consisting of antimony trifluoride, antimony trichloride, antimony tribromide and antimony triiodide,
the coating being in electrical contact with the conductive substrate and having an electrical resistivity such that the coating is capable of transmitting a bias potential from the substrate to the outer periphery of the coating.

5,250,358
PALLADIUM THICK FILM RESISTOR CONTAINING BORON NITRIDE
James H. Lombard, and Leonard J. Anderson, both of Albuquerque, N. Mex., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 2, 1992, Ser. No. 939,223
Int. Cl.[5] B32B *9/00*; H01B *1/02*; C23C *20/02, 20/00*
U.S. Cl. 428—427 **21 Claims**

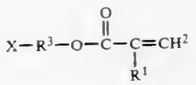
1. An electrically resistive sintered thick film bonded to a ceramic substrate and formed of a sintered metallic matrix composed substantially of palladium metal, a first dispersed phase composed of boron nitride and a second dispersed phase composed of tantalum oxide.

5,250,359
COATING COMPOSITION AND RESIN MOLDED ARTICLE COATED THEREBY
Masaaki Funaki, Ichihara, and Fujio Sawaragi, Kanagawa, both of Japan, assignors to Nippon ARC Co., Ltd., Japan
Division of Ser. No. 749,749, Aug. 26, 1991, Pat. No. 5,191,045.
This application Dec. 2, 1992, Ser. No. 984,507
Claims priority, application Japan, Sep. 10, 1990, 2-239419
Int. Cl.[5] B32B *9/04*
U.S. Cl. 428—447 **3 Claims**

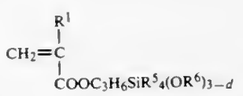
1. A resin molded article coated with an undercoat layer of a coating composition, which contains a copolymer obtained from the following monomer compounds (i), (ii), and (iii),
(i) an acrylic or methacrylic compound containing at least one of the compounds of the formulae (I) and (II),


(I)

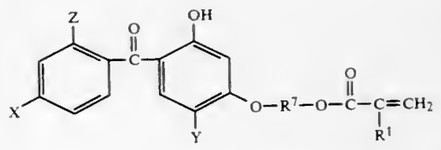
wherein R^1 is hydrogen or a methyl group and R^2 is an alkyl group,


(II)

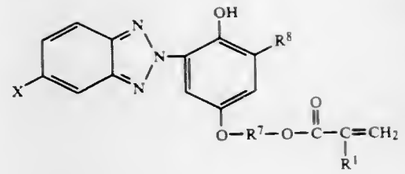
wherein R^1 is hydrogen or a methyl group, R^3 is an alkylene group, and X is a hydroxyl group, a carboxyl group, an amine group, an epoxy group, an amido group or $Si(OR^4)_3$ in which R^4 is an alkyl group,
(ii) an alkoxysilyl group-containing acrylic or methacrylic compound of the formula (III),


(III)

wherein R^1 is hydrogen or a methyl group, R^5 is a hydrocarbon group having 1 to 6 carbon atoms, R^6 is a hydrocarbon group having 1 to 5 carbon atoms, an alkoxyalkyl group or an acyl group having 1 to 4 carbon atoms, and d is 0, 1, or 2, and
(iii) an acrylic or methacrylic compound having ultraviolet light absorbability selected from the group consisting of a benzophenone-substituted acrylic monomer of the formula (IV)

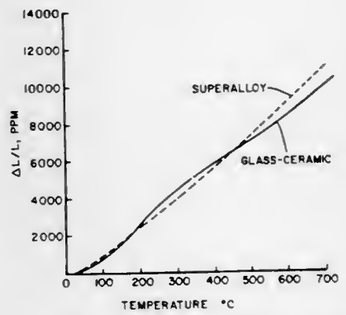

(IV)

wherein R^1 is hydrogen or a methyl group, R^7 is an alkylene group $(CH_2)_n$ in which n is 1 to 5 or a hydroxyalkylene group, Z is hydrogen, a hydroxyl group or a carboxyl group, X is hydrogen or an alkoxy group OR^8 in which R^8 is an alkyl group of C_nH_{2n+1} in which n is 1 to 20, and Y is hydrogen, chlorine or a sulfonic acid group,
and a triazole-substituted acrylic monomer of the formula (V),


(V)

wherein R^1 is hydrogen or a methyl group, R^7 is an alkylene group $-(CH_2)_n$ in which n is 1 to 5 or a hydroxyalkylene group, R^8 is an alkyl group C_nH_{2n+1} in which n is 1 to 20 and X is hydrogen or chlorine and with an overcoat layer of an organopolysiloxane-containing coating composition for forming an overcoat layer.

5,250,360
COATED METAL ARTICLE
Ronald L. Andrus, Elmira, and John F. MacDowell, Penn Yan, both of N.Y., assignors to Corning Incorporated, Corning, N.Y.
Filed Nov. 16, 1987, Ser. No. 121,076
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—471 **22 Claims**



1. A coated article adapted to operate at temperature above 1000° C. in an oxygen-containing environment, said article comprising a superalloy substrate, the superalloy being selected from the group consisting of nickel-based, cobalt-based, chromium-based, and iron-based alloys, and a coating forming an oxygen barrier over the superalloy surface, the coating exhibiting a close match in coefficient of thermal expansion with that of said superalloy and comprising a glass-ceramic having a composition, on an oxide basis in weight percent, selected from the group consisting of a barium silicate system and a strontium silicate system, the barium silicate system being essentially free from R_2O and B_2O_3 and containing 20-65% BaO and 25-65% SiO_2, the strontium silicate system being essentially free from B_2O and B_2O_3 and containing 20-60% SrO and 30-70% SiO_2, each system additionally consisting essentially of at least one oxide selected from the group consisting of up to 15% Al_2O_3, up to 15% ZrO_2, up to 15% Y_2O_3, up to 25% MnO, up to 25% NiO, up to 30% MgO, up to 30% CoO, and up to 40% iron oxide, the total of all such additions not exceeding 50% in the barium silicate system and not exceeding 40% in the strontium silicate system, wherein the glass-ceramic in the barium silicate system contains a primary crystal phase selected from the group consisting of a barium silicate-type and cristobalite and the glass-ceramic in the strontium silicate system contains a primary crystal phase selected from the group consisting of a strontium silicate-type and cristobalite, in each system there being cristobalite crystals

VOL 1155 ISS 1 OCT 5 1993 UMI

concentrated adjacent to the interface between the glass-ceramic and the superalloy.

5,250,361

THERMAL IMAGE TRANSFER RECORDING MEDIUM

Youji Ide, Mishima; Tetsuji Kunitake, Numazu, and Naosbi Yamamoto, Fuji, all of Japan, assignors to Ricoh Company Ltd., Tokyo, Japan

Filed Sep. 20, 1989, Ser. No. 409,745

Claims priority, application Japan, Sep. 28, 1988, 63-240827; Dec. 19, 1988, 63-318615; Mar. 17, 1989, 1-63465; Jun. 28, 1989, 1-163848

Int. Cl.[5] B41M *5/26*

U.S. Cl. 428—500 14 Claims

1. A thermal image transfer recording medium comprising a substrate and an ink layer formed thereon comprising as the main components (i) a coloring agent and (ii) a copolymer consisting of comonomer A selected from the group consisting of acrylonitrile and methacrylonitrile, comonomer B selected from the group consisting of acrylic or methacrylic monomers represented by formula (I):



(I)

wherein R^1 represents hydrogen or a methyl group; and R^2 represents hydrogen, a straight-chain or branched alkyl group having 1 to 4 carbon atoms or a hydroxy group having 2 to 4 carbon atoms, and comonomer C selected from the group consisting of glycidyl acrylate and glycidyl methacrylate.

5,250,362

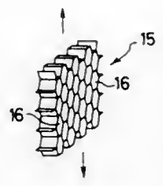
HONEYCOMB CORE

Takatsugu Hama, Hiratsuka; Toshifumi Tsuchihashi, Tokyo, and Kunio Ohya, Wako, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Japan

Filed Jul. 17, 1992, Ser. No. 914,352

Int. Cl.[5] B32B *3/12*

U.S. Cl. 428—542.8 4 Claims



1. A block for forming a honeycomb core which comprises a plurality of layers of steel foil, said steel foil being annealed, said layers being superimposed one upon another and bonded together by an adhesive agent applied in the form of lines spaced a predetermined pitch apart in parallel relationship and shifted by a half pitch between adjacent layers of said steel foil such that the resulting bonded block can be stretched into a honeycomb structure with a uniform cell distribution.

5,250,363

CHROMIUM-ZINC ANTI-TARNISH COATING FOR COPPER FOIL HAVING A DARK COLOR

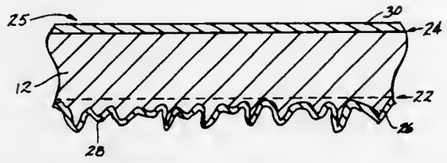
Szuchain F. Chen, Orange, Conn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 855,380, Mar. 20, 1992, which is a continuation-in-part of Ser. No. 673,923, Mar. 25, 1991, Pat. No. 5,098,796, which is a division of Ser. No. 585,832, Sep. 20, 1990, Pat. No. 5,022,968, which is a continuation-in-part of Ser. No. 459,846, Jan. 2, 1990, abandoned, which is a continuation-in-part of Ser. No. 421,475, Oct. 13, 1989, abandoned. This application Oct. 26, 1992, Ser. No. 966,655

The portion of the term of this patent subsequent to Jun. 11, 2008, has been disclaimed.

Int. Cl.[5] B32B *15/20*; C25D *7/06, 11/38*

U.S. Cl. 428—607 20 Claims



1. A composite material, comprising:

a copper or copper alloy substrate having first and second sides;

a first anti-tarnish layer deposited on at least said first side, said first anti-tarnish layer being a nontransparent layer of co-deposited chromium and zinc having a zinc to chromium ratio in excess of about 13 to 1, by weight.

5,250,364

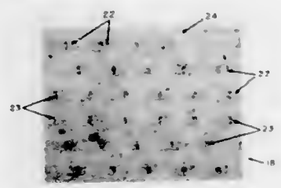
ROLLED PRODUCT WITH TEXTURED SURFACE FOR IMPROVED LUBRICATION, FORMABILITY AND BRIGHTNESS

Louis G. Hector, Jr., and Simon Sheu, both of Murrysville, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Feb. 3, 1992, Ser. No. 829,484

Int. Cl.[5] B21D *53/00*

U.S. Cl. 428—687 7 Claims



1. An aluminum sheet for making rigid container products, said sheet having at least one fissureless surface produced by rolling in a boundary lubrication regime and a lubricant retaining surface of generally uniformly spaced elongated micron-size depressions caused by bulk rolling of the sheet and consequent smearing of the sheet surface with a roll surface having a near-mirror finish and discrete, spaced apart, raised portions, the elongated depressions providing the sheet surface with a quasi-isotropic surface texture having essentially no roll grind marks that lead to bleed through after the products are painted, said texture providing (1) a substantially even distribution of friction at the interface of the textured sheet surface and the surfaces of tooling for forming rigid container products from the sheet, the textured surface providing the outside surface of the container products and a differential friction between interior and exterior container surfaces that promotes plastic flow of container metal while minimizing tensile stress in forming container products, and (2) an exterior surface having a high degree of specular reflection which provides a bright surface and distinctness of an image reflected from the surface.

5,250,365

X-RAY INTENSIFYING SCREENS WITH MIXED MORPHOLOGY PHOSPHORS

David B. Hedden, Sayre, and William Zegarski, Towanda, both of Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 627,991, Dec. 17, 1990, Pat. No. 5,064,729, and a continuation-in-part of Ser. No. 627,993, Dec. 17, 1990, Pat. No. 5,141,673. This application Nov. 12, 1991, Ser. No. 789,484

The portion of the term of this patent subsequent to Nov. 12, 2008, has been disclaimed.

Int. Cl.[5] C09K *11/46*; G03C *5/17*; G21K *4/00*

U.S. Cl. 428—690 9 Claims



1. An X-ray intensifying screen with improved image quality comprising a phosphor-binder layer coated on a support, said phosphor-binder layer comprising a binder and a phosphor dispersed therein, said phosphor having the monoclinic M′ structure and selected from the group consisting of:

(a) $YNb_xTa_{1-x}O_4$, where x is 0 to about 0.15;

(b) $LuNb_xTa_{1-x}O_4$, where x is 0 to about 0.2;

(c) $Y_{1-y}Tm_yTaO_4$, where y is 0 to about 0.03;

(d) a solid solution of (a) and (b);

(e) a solid solution of (a) and (c);

(f) $Y_{1-y}Tb_yTaO_4$, where y is about 0.001 to about 0.15;

(g) $Lu_{1-y}Tb_yTaO_4$, where y is about 0.001 to about 0.15;

(h) $Gd_{1-y}Tb_yTaO_4$, where y is about 0.001 to about 0.15;

(i) a solid solution of at least two of (f), (g) and (h);

(j) any of (a) to (i) wherein up to 45 mole percent of the yttrium, lutetium or gadolinium is replaced by lanthanum;

(k) any of (a) to (i) wherein up to 15 mole percent the yttrium, lutetium or gadolinium is replaced by ytterbium; and

(l) any of (a), (b), (c), (d) and (e) wherein up to 15 mole percent of the yttrium or lutetium is replaced by gadolinium;

wherein about 5–80% of said phosphor has a tabular morphology with an average aspect ratio of at least 2:1 and the remainder of said phosphor has a polyhedral morphology.

5,250,366

PHOSPHOR WHICH EMITS LIGHT BY THE EXCITATION OF X-RAY, AND A X-RAY INTENSIFYING SCREEN USING THE PHOSPHOR

Shigeharu Nakajima; Genichi Shinomiya; Mizuho Takeda, and Satoru Chikutei, all of Anan, Japan, assignors to Nichia Kagaku Kogyo K.K., Tokushima, Japan

Continuation of Ser. No. 549,495, Jun. 29, 1990, abandoned, which is a division of Ser. No. 324,570, Mar. 16, 1989, Pat. No. 4,959,174, which is a continuation of Ser. No. 219,792, Jul. 14, 1988, abandoned, which is a continuation of Ser. No. 823,299, Jan. 28, 1986, abandoned. This application May 8, 1992, Ser. No. 882,243

Claims priority, application Japan, May 18, 1985, 60-106636; Sep. 6, 1985, 60-198052

Int. Cl.[5] C09K *11/78*

U.S. Cl. 428—690 6 Claims

1. A phosphor which emits light by the excitation of X-rays, and has a composition represented by the formula:

$$M_yLn_{1-x-(\frac{y}{3})}DO_4:xR^{3+}$$

where:

M is Sr,

Ln is at least one rare earth element selected from the group consisting of Y, Gd and La,

D is Ta, or Ta and Nb,

R is Tm,

y is a value in the range of 0.030 to 0.075, and

x is a value in the range of 0 to 0.05,

said phosphor being obtained by a process comprising admixing an oxide of Ln in an amount corresponding to $1-x-(\frac{y}{3})$y parts by mol of Ln, an oxide of D in an amount corresponding to one part by mol of D, an oxide of R in an amount corresponding to x parts by mol of R, a carbonate of M in an amount corresponding to y parts by mol of M and lithium chloride flux to prepare an admixture, and firing said admixture at a temperature sufficient to provide a phosphor having said composition and

wherein said phosphor exhibits improved brightness and a smaller afterglow than the same phosphor absent M.

5,250,367

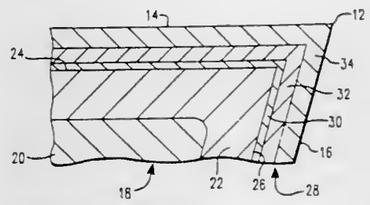
BINDER ENRICHED CVD AND PVD COATED CUTTING TOOL

Anakkavur T. Santhanam, Monroeville; Rajendra V. Godse, Greensburg; George P. Grab, Greensburg; Dennis T. Quinto, Greensburg; Kenneth E. Undercoffer, Greensburg, and Prem C. Jindal, Greensburg, all of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Filed Sep. 17, 1990, Ser. No. 583,544

Int. Cl.[5] B24B *1/00*

U.S. Cl. 428—698 23 Claims



1. A cutting tool comprising:

a rake face and a flank face;

a cutting edge at a junction of said rake face and said flank face;

said cutting tool having a coating and a substrate, wherein said coating is bonded to said substrate;

wherein said substrate is a cemented carbide having hard

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refractory grains bonded together by a binder material, wherein the binder material is cobalt or a cobalt alloy;

wherein the concentration of said binder material is greater near a peripheral boundary of said substrate than the binder concentration is away from the peripheral boundary of the substrate;

said coating having a number of hard refractory layers;

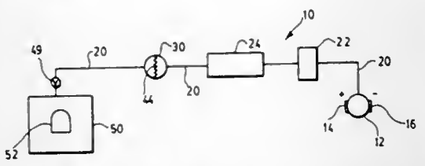
said hard refractory layers including a chemical vapor deposition layer and a physical vapor deposition layer, wherein said physical vapor deposition layer is in a state of residual compressive stress, and wherein said chemical vapor deposition layer is located adjacent to said substrate.

5,250,368

EXTENDED CYCLE-LIFE METAL HYDRIDE BATTERY FOR ELECTRIC VEHICLES

P. Mark Golben, Florida, N.Y., and Timothy D. Meyer, Wyckoff, N.J., assignors to Ergenics, Inc., Ringwood, N.J.

Filed Nov. 19, 1992, Ser. No. 978,815
Int. Cl.[5] H01M *8/06*
U.S. Cl. 429—17 **8 Claims**



1. A battery system utilizing a stream of hydrogen for generating electrical power on demand, comprising:

a hydrogen storage vessel having at least one opening and a metal hydride bed disposed therein, the metal hydride bed being able to absorb hydrogen under certain conditions and to release hydrogen under other conditions;

at least one battery cell enclosed within a vessel, each said battery cell comprising an electrolyte and an oxidant, the enclosure of the battery cell having at least one opening;

in-line piping means having at least two ends, one end being sealingly connected to said hydrogen storage vessel opening and the other end being sealingly connected to the battery cell opening;

a predetermined quantity of hydrogen which is disposed within said system, whereby during discharging of the battery cell, the hydrogen is impelled to flow in a stream from said hydrogen storage vessel to said battery cell and during recharging of the battery cell, the hydrogen stream is impelled to flow from said battery cell to said hydrogen storage vessel;

a catalytic converter disposed in line between the battery cell and the hydride bed; and

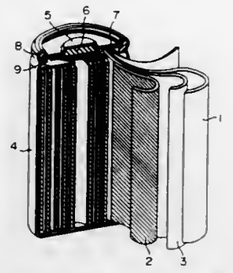
a molecular sieve dryer having a water adsorbing material for adsorbing water vapor from the stream of hydrogen during battery recharging and for releasing water as a vapor into the hydrogen stream during battery discharge, the molecular sieve dryer being disposed in line between said catalytic converter and said metal hydride bed.

5,250,369

ALKALINE STORAGE BATTERY

Kohji Yuasa, Moriguchi; Munebisa Ikoma, Katano; Hirosbi Kawano, Ibaraki; Osamu Takahashi, Fujisawa, and Isao Matsumoto, Osaka, all of Japan, assignors to Matsusbita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 646,007, Jan. 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 356,246, May 24, 1989, Pat. No. 5,034,289. This application Sep. 28, 1992, Ser. No. 952,146
Claims priority, application Japan, Feb. 23, 1989, 1-43709
Int. Cl.[5] H01M *10/52*
U.S. Cl. 429—59 **6 Claims**



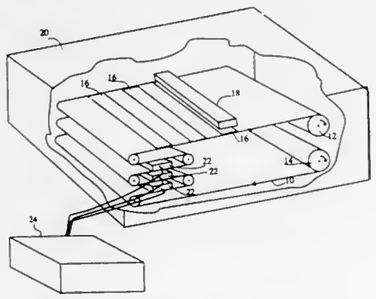
1. An alkaline storage battery comprising: a positive electrode containing a metal oxide as a main constituent material thereof, a negative electrode containing, as a main constituent material thereof, a hydrogen absorbing alloy, an alkaline electrolytic solution, and a separator, in which said separator contains a hydrophobic material disposed in a part of the surface layer of said separator being in contact with said negative electrode, and said negative electrode contains a material capable of catalyzing the decomposition of a hydrogen gas, in the inside of the negative electrode or in the surface of said negative electrode.

5,250,370

VARIABLE AREA DYNAMIC BATTERY

Sades M. Faris, 24 Pocantico River Rd., Pleasantville, N.Y. 10570

Filed Jul. 23, 1992, Ser. No. 921,035
Int. Cl.[5] H01M *10/04*
U.S. Cl. 429—68 **4 Claims**



1. A storage battery structure comprising:

an enclosed container means;

an electrolyte material disposed in said container means;

at least one first type battery electrode disposed in said container means;

at least one second type battery electrode disposed in said container means;

means for moving said at least one second type battery electrode in a path past said at least one first type battery electrode so that a surface of said at least one second type electrode is moved proximately opposite to a surface of said at least one first type electrode, said at least one first type electrode, said at least one second type electrode and said electrolyte means forming a storage battery cell structure when said surfaces of said at least one first type and said at least one second type battery electrodes are moved past each other;

at least one third type electrode disposed proximate to the path of said at least one second type electrode, so that a surface of said at least one second type electrode is moved proximately opposite to said surface of said at least one third type electrode;

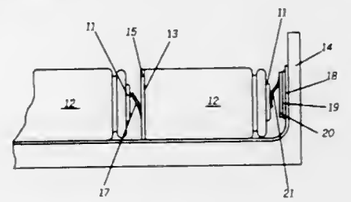
and a source of electrical energy connected to said at least one third type electrode wherein said at least one third type electrode functions as a charging electrode.

5,250,371

WELDLESS SURFACE MOUNTED INTERCONNECT

Raymond J. Kleinert, III, Ft. Lauderdale; John H. Hackenberg, Plantation; Russell E. Gyenes, Sunrise, and Willard F. Amero, Jr., Davie, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 24, 1991, Ser. No. 812,925
Int. Cl.[5] H01M *2/10*
U.S. Cl. 429—99 **13 Claims**



1. A weldless battery pack, comprising:

a housing;

an independent flexible circuit inserted into said housing;

at least one spring contact integrally formed on the flexible circuit; and

a plurality of cells within said housing so that at least two cells include a first end and a second end wherein the first end of one cell is connected to the second end of an adjacent cell by a spring means for reducing intermittency between said cells and said flexible circuit.

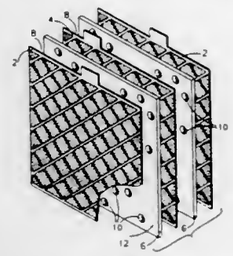
5,250,372

SEPARATOR FOR MAT-IMMOBILIZED-ELECTROLYTE BATTERY

Norman L. Willmann, Anderson; Neil R. Eisenhut, Pendleton, and Jack L. Limbert, Daleville, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 933,603, Aug. 21, 1992, which is a continuation-in-part of Ser. No. 748,020, Aug. 21, 1991, abandoned. This application Nov. 16, 1992, Ser. No. 976,767
Int. Cl.[5] H01M *2/16, 2/14*
U.S. Cl. 429—146 **14 Claims**

1. In a mat-immobilized-electrolyte, Pb-acid storage battery separator comprising a mat of randomly oriented, resilient fibers resistant to and wettable by sulfuric acid electrolyte, and a binder holding said mat in a stressed state at a compressed thickness which is less than the unstressed and uncompressed thickness of the mat, the improvement wherein: said binder comprises a resin which is substantially insoluble in sulfuric acid but is sufficiently degradable therein under battery formation conditions as to free said mat from said stressed state during formation whereby a separator is provided the expansion of which is delayed until after electrochemical formation of the battery has commenced.

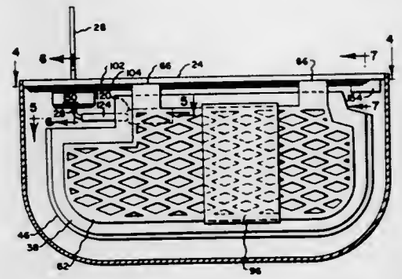


5,250,373

INTERNAL ELECTRODE AND ASSEMBLY METHOD FOR ELECTROCHEMICAL CELLS

Barry C. Muffoletto, Alden, and Raymond J. Kuwik, Lancaster, both of N.Y., assignors to Wilson Greatbatch Ltd., Clarence, N.Y.

Filed Sep. 10, 1991, Ser. No. 757,252
Int. Cl.[5] H01M *2/24*
U.S. Cl. 429—161 **10 Claims**



1. A current collector electrode for an alkali meal/solid cathode electrochemical cell having a conductive casing, an alkali metal anode in said casing and a halogen cathode in said casing and in operative relation with said alkali metal anode to form an alkali metal-halogen electrolyte therebetween, said current collector electrode comprising a unitary body having a pair of wing-like sections joined by an intermediate web section, said alkali metal anode comprising two parts each part being in contact with and carried by corresponding one of said wing sections, and said web section adapted to be placed in contact with said conductive casing in a case negative electrical configuration.

5,250,374

METHOD OF PREPARING A RECHARGEABLE MODIFIED MANGANESE-CONTAINING MATERIAL BY ELECTROLYTIC DEPOSITION AND RELATED MATERIAL

Chaojiong Zhang, College Station, Tex., assignor to RBC Universal, Bryan, Tex.

Filed Jan. 24, 1991, Ser. No. 645,984
Int. Cl.[5] H01M *4/50*; C25B *1/06*
U.S. Cl. 429—224 **45 Claims**

1. A method of making a modified manganese-containing battery electrode material including the steps

mixing manganese nitrate with a doping material having the properties of exhibiting stability in alkaline electrolytes

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and being chemically reactive in a potential range wherein said doping material undergoes electron transfer in said potential range;

placing said mixture in an aqueous solution to create an electrolyte solution;

submerging an anode and a cathode in said electrolyte solution;

passing a current through said anode and said cathode to facilitate an electrolytic reaction resulting in a first modified manganese-containing compound being deposited on said anode, and a second modified manganese-containing compound being deposited on said cathode; and

collecting said first modified manganese-containing compound from said anode.

5,250,375

PHOTOSTRUCTURING PROCESS

Michael Sebald, Hessdorf-Hannberg; Juergen Beck; Rainer Leuschner, both of Erlangen; Recai Sezi, Roettenbach; Siegfried Birkle, Hoechstadt A/Aisch; Hellmut Ahne, Roettenbach, and Eberhard Kuehn, Hemhofen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 20, 1991, Ser. No. 812,585

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1990, 4040998

Int. Cl.[5] **G03C** *5/58;* **G03F** *7/039*

U.S. Cl. 430—8 **14 Claims**

1. A process for producing structures in the submicron range comprising the steps of:

a) depositing onto a substrate a photoresist layer comprising

(1) a polymer constituent having

functional groups, which are capable of reacting with primary or secondary amines, and

N-blocked imide groups blocked with an acid-cleavable protective group,

(2) a photoinitiator which release an acid when irradiated and

(3) a suitable solvent;

b) drying the photoresist layer;

c) exposing the photoresist layer in an imagewise manner;

d) subjecting the exposed photoresist layer to a heating treatment;

e) developing the treated photoresist layer with an aqueous-alkaline or organic developing agent to create a photoresist structure including resist lines; and

f) treating the photoresist structure with a chemical agent containing a primary or secondary amine, so as to expand the resist liens and to produce etching resistance,

wherein, during developing, a defined dark field loss takes place in a range of between 20 and 100 nm.

2. The process according to claim 1, wherein a resist layer which is resistant to substrate etching processes is initially applied to the substrate and is baked out to become insoluble to resist solvents, and wherein the photoresist structure is etched in an anisotropic, oxygen-containing plasma after being treated with the chemical agent.

5,250,376

ELECTROPHOTOGRAPHIC LITHOGRAPHIC PRINTING PLATE

Eiichi Kato; Akio Oda, and Hiroshi Tashiro, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 11, 1992, Ser. No. 943,520

Claims priority, application Japan, Sep. 13, 1991, 3-234526; Oct. 15, 1991, 3-266398; Nov. 13, 1991, 3-297244

Int. Cl.[5] **G03G** *5/087*

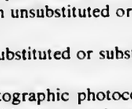
U.S. Cl. 430—49 **9 Claims**

1. A process for the production of an electrophotographic lithographic printing plate, comprising subjecting an electrophotographic photoreceptor to imagewise exposure and forming a toner image, said electrophotographic photoreceptor comprising an electroconductive support having provided thereon at least one photoconductive layer containing photoconductive inorganic compound and a binder resin, the binder resin comprising at least one of the following resins [P] and optionally at least one crosslinking agent, and then subjecting a non-image area of the photoconductive layer to an oil-desensitizing processing with a processing solution containing a hydrophilic compound containing a substituent having a Pearson's nucleophilic constant n of at least 5.5:

Resin [P]

Resin containing at least one of polymeric components each containing a functional group represented by the following General Formula (I_0):

General Formula (I_0):



wherein X and X' are same or different groups at least one of which is an electron-attractive group and which have a sum of Hammet σ_p values of at least 0.45, Q is COO or SO_2 and R_0 is hydrogen atom or an alkyl group having 1 to 6 carbon atoms.

5,250,377

AROMATIC DIOLEFINIC COMPOUNDS, AROMATIC DIETHYL COMPOUNDS AND ELECTROPHOTOGRAPHIC PHOTOCONDUCTORS COMPRISING ONE AROMATIC DIETHYL COMPOUND

Tomoyuki Shimada, Numazu; Masaomi Sasaki, Susono, and Mitsuru Hashimoto, Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 642,686, Jan. 17, 1991, Pat. No. 5,159,087, which is a continuation-in-part of Ser. No. 394,765, Aug. 16, 1989, abandoned, which is a division of Ser. No. 171,422, Mar. 21, 1988, Pat. No. 4,886,846. This application Feb. 21, 1992, Ser. No. 838,672

Claims priority, application Japan, Mar. 28, 1987, 62-77105; Apr. 21, 1987, 62-98393; Apr. 21, 1987, 62-98394; Jun. 9, 1987, 62-142178; Oct. 20, 1987, 62-266068; Oct. 27, 1987, 62-272783

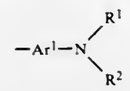
Int. Cl.[5] **G03G** *5/047, 5/09*

U.S. Cl. 430—59 **8 Claims**

1. An electrophotographic photoconductor comprising an electroconductive support and a photoconductive layer formed thereon, comprising a dye sensitizier and at least one aromatic diethyl compound having formula:

$$A—CH_2CH_2—AR—CH_2CH_2—A \quad \text{(II-1)}$$

wherein A represents an N-substituted carbazolyl group, or



wherein Ar^1 represents an unsubstituted or substituted aromatic hydrocarbon group or a heterocyclic group, and

R^1 and R^2 each represent an unsubstituted or substituted alkyl group or an unsubstituted or substituted aryl group; and

Ar represents an unsubstituted or substituted aromatic hydrocarbon group.

5. The electrophotographic photoconductor as claimed in claim 1, wherein said photoconductive layer comprises a charge generating layer containing a charge generating material, and a charge transporting layer containing said aromatic diethyl compound as a charge transporting material.

5,250,378

CHARGE TRANSFER COMPLEXES AND PHOTOCONDUCTIVE COMPOSITIONS CONTAINING FULLERENES

Ying Wang, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 777,849, Oct. 16, 1991, abandoned. This application Sep. 30, 1992, Ser. No. 954,181

Int. Cl.[5] **G03G** *5/06, 5/09*

U.S. Cl. 430—83 **17 Claims**

1. A photoconductive composition comprising at least one organic material selected from the group of photoconductive polymers, low molecular weight electron donor compounds, or mixtures thereof, and

from about 0.1 to about 50.0% by weight, based on the total weight of the photoconductive composition, of at least one fullerene compound having from about 20 to 1000 carbons.

5,250,379

TONER COMPOSITIONS WITH METAL COMPLEX CHARGE ENHANCING ADDITIVES

Denise R. Bayley, Fairport; Thomas R. Pickering, Webster; Roger N. Ciccarelli, Rochester, and Jacques C. Bertrand, Ontario, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 2, 1992, Ser. No. 970,509

Int. Cl.[5] **G03G** *9/083, 9/097*

U.S. Cl. 430—106.6 **21 Claims**

1. A negatively charged toner composition comprised of resin particles, pigment particles, and an aluminum charge enhancing additive obtained from the reaction of an aluminum inorganic salt solution, and xanthene carboxylic acid.

15. A toner composition in accordance with claim 1 wherein the pigment particles are carbon black, magnetites, or mixtures thereof, cyan, magenta, yellow, red, blue, green, or brown pigments, and mixtures thereof.

5,250,380

TONER COMPOSITIONS WITH METAL COMPLEX CHARGE ENHANCING ADDITIVES

Denise R. Bayley, Fairport; Thomas R. Pickering, Webster; Roger N. Ciccarelli, Rochester, and Jacques C. Bertrand, Ontario, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 2, 1992, Ser. No. 970,514

Int. Cl.[5] **G03G** *9/083, 9/097*

U.S. Cl. 430—106.6 **22 Claims**

1. A negatively charged toner composition comprised of resin particles, pigment particles, and an aluminum charge enhancing additive obtained from the reaction of an aluminum inorganic salt solution, and coumarin-3-carboxylic acid.

15. A toner composition in accordance with claim 1 wherein the pigment particles are carbon black, magnetites, or mixtures thereof, cyan, magenta, yellow, red, blue, green, or brown pigments, and mixtures thereof.

5,250,381

TONER COMPOSITIONS WITH ALUMINUM CHARGE ENHANCING ADDITIVES

Roger N. Ciccarelli, Rochester; Jacques C. Bertrand, Ontario; Denise R. Bayley, Fairport, and Thomas R. Pickering, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 25, 1992, Ser. No. 981,632

Int. Cl.[5] **G03G** *9/083, 9/097*

U.S. Cl. 430—106.6 **21 Claims**

1. A negatively charged toner composition comprised of resin particles, pigment particles, and an aluminum salt of thiophenecarboxylic acid charge enhancing additive.

15. A toner composition in accordance with claim 1 wherein the pigment particles are carbon black, magnetites, or mixtures thereof, cyan, magenta, yellow, red, blue, green, or brown pigments, and mixtures thereof.

5,250,382

TONER FOR DEVELOPING ELECTROSTATIC IMAGE, AND IMAGE FIXING METHOD

Minoru Shimojo, Tokyo; Takaaki Kohtaki, and Tsuyoshi Takiguchi, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 26, 1991, Ser. No. 813,677

Claims priority, application Japan, Dec. 25, 1990, 2-412967; Dec. 25, 1990, 2-412968; Jan. 16, 1991, 3-014921; Jan. 21, 1991, 3-019198; Jan. 21, 1991, 3-019199; Jan. 30, 1991, 3-027772; Jun. 13, 1991, 3-167386; Jun. 13, 1991, 3-167388

Int. Cl.[5] **G03G** *9/087*

U.S. Cl. 430—109 **79 Claims**

1. A heat fixable toner for developing an electrostatic image, comprising toner particles containing i) a binder resin comprising a resin composition with a domain-matrix structure and ii) a colorant;

said resin composition with a domain-matrix structure being comprised of a heat fixable resin P1 that forms domain particles and a heat fixable resin P2 that forms a matrix; said heat fixable resin P1 having a glass transition temperature Tg1 of from 15° C. to 50° C., and said heat fixable resin P2 having a glass transition temperature Tg2 of from 55° C. to 80° C., provided that the glass transition temperature Tg2 of said heat fixable resin P2 is at least 5° C. higher than the glass transition temperature Tg1 of said heat fixable resin P1; and said domain particles having an average particle diameter of not larger than 5 μm.

5,250,383

PROCESS FOR FORMING MULTILAYER COATING

Yasuhito Naruse, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 22, 1991, Ser. No. 658,891

Claims priority, application Japan, Feb. 23, 1990, 2-41135; Jun. 14, 1990, 2-153861

Int. Cl.[5] **G03G** *5/04;* **B05D** *1/36*

U.S. Cl. 430—131 **9 Claims**

1. A process for forming a multilayer coating film comprising the steps of:

(a) atomizing a first coating composition in an atomizing room;

(b) forced draft conveying the atomized first coating composition from said atomizing room through an elongate transport passage to a supply nozzle such that large diameter particles of the first coating composition impact against and adhere to wall surfaces of the passage;

(c) establishing a high voltage electrical potential across an outlet of the nozzle to electrostatically charge the atomized first coating composition exiting the nozzle;

(d) impacting the electrostatically charged atomized first coating composition against a surface of a moving web such that the coating composition adheres to the web and forms a first coating film layer thereon;

(e) partially drying the first coating film layer so that a viscosity of the first coating film layer is 100 cp or more;

(f) repeating steps (a) through (d) for a second coating composition to form a second coating film layer on an upper surface of said first coating film layer; and

(g) running said first and second coating film layers, formed on said moving web, through a final drying zone to fully dry said multilayer coating film.

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5,250,384

LIGHT-SENSITIVE HEAT-SENSITIVE COMPOSITION AND RECORDING MATERIAL COMPRISING SAME AND IMAGE FORMATION PROCESS USING SAME

Jun Yamaguchi; Sadao Ishige, and Takekatsu Sugiyama, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 453,734, Dec. 20, 1989, abandoned.
This application Mar. 27, 1991, Ser. No. 676,478
Claims priority, application Japan, Dec. 20, 1988, 63-321429
Int. Cl.[5] G03C 1/72
U.S. Cl. 430—138 10 Claims

1. A light-sensitive heat-sensitive composition consisting essentially of a photohardenable composition comprising a polymerizable vinyl monomer and a photopolymerization initiator, a base precursor which produces a base upon heating, and a colored dye which discolors upon reacting with said base produced upon heating said base precursor, wherein said colored dye is a spectral sensitizing dye for the photopolymerization initiator.

5,250,385

PHOTOPOLYMERIZABLE COMPOSITION

Syunichi Kondo; Yoshimasa Aotani; Akira Umehara, all of Shizuoka, and Tsuguo Yamaoka, Funabashi, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed Aug. 30, 1991, Ser. No. 752,783
Claims priority, application Japan, Sep. 3, 1990, 2-232978
Int. Cl.[5] G03F 7/008, 7/029
U.S. Cl. 430—192 19 Claims

I. A photopolymerizable composition comprising (i) a photopolymerizable ethylenically unsaturated compound having at least two terminal ethylene groups, (ii) a photopolymerization initiator, and (iii) an organic polymer binder, wherein the photopolymerization initiator is an aromatic sulfonic acid salt of an onium compound selected from the group consisting of compounds represented by the following general formulae (1) or (2):



(1)

(2)

wherein Ar^1 and Ar^2, may be the same or different, and each represents a substituted or unsubstituted aryl group, the substituents of the aryl group being selected from the group consisting of alkyl, haloalkyl, cycloalkyl, aryl, alkoxy, nitro, carbonyl, alkoxycarbonyl, hydroxyl and mercapto groups and halogen atoms; R^1, R^2 and R^3, may be the same or different, and each represents a substituted or unsubstituted alkyl or aryl group, with the proviso that each two of R^1, R^2 and R^3, and Ar^1 and Ar^2 may be bonded together through a single bond or a substituent; and X represents an aromatic sulfonate anion selected from the group consisting of those derived from condensed polynuclear aromatic sulfonic acids, anthraquinonesulfonic acids and phenanthraquinonesulfonic acids, naphthoquinonesulfonic acids, and sulfonate group-containing dyes.

5,250,386

DRY IMAGE-FORMING PROCESS

Toshiaki Aono; Koichi Nakamura; Kozo Sato, and Hiroshi Hara, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 183,345, Apr. 12, 1988, abandoned, which is a continuation of Ser. No. 865,953, May 19, 1986, abandoned, which is a continuation of Ser. No. 590,592, Mar. 16, 1984, abandoned. This application Sep. 13, 1991, Ser. No. 759,648
Claims priority, application Japan, Mar. 16, 1983, 58-42092; Apr. 1, 1983, 58-55172
The portion of the term of this patent subsequent to Aug. 28, 2007, has been disclaimed.
Int. Cl.[5] G03C 5/54
U.S. Cl. 430—203 15 Claims

1. A dry image-forming process in which a transfer solvent liquid at room temperature is not employed, which comprises (1) heat developing in the absence of a transfer solvent, a light-sensitive material not containing said transfer solvent and comprising a support having thereon at least a photosensitive silver halide, a binder, and a dye releasing redox compound, said dye releasing redox compound being reductive to the photosensitive silver halide and being capable of releasing a hydrophilic dye upon reaction with the photosensitive silver halide under heating, after or simultaneously with image-wise exposure, to form image-wise a mobile hydrophilic dye and (2) heating, after or simultaneously with the heat development, in the absence of said transfer solvent, the light-sensitive material together with a dye-fixing material which does not contain said transfer solvent and which comprises a support having thereon a dye-fixing layer, a dye-fixing agent, a hydrophilic thermal solvent, a base and/or base precursor, said hydrophilic thermal solvent being a non-hydrolyzable organic material which is solid at an ambient temperature but melts together with other components at the temperature of heating or below, said thermal solvent having a melting point of 40° C. to 250° C., in a coating amount of 20 to 200 percent by weight, based on the total coating amount of the coating compositions for the light-sensitive material and the dye-fixing material, to thereby transfer the mobile hydrophilic dye onto the dye-fixing layer without the use of said transfer solvent, to form a dye image and fix the dye image, so that the mobile hydrophilic dye transfers into the dye-fixing material without use of said transfer solvent, to form a dye image and fix the dye image in said dye-fixing layer.

5,250,387

TRANSFER PROCESS USING ULTRAVIOLET CURABLE, NON-PROLONGED TACK TONING MATERIALS

Robert P. Held, Englishtown, N.J., and Herman A. Yee, Sayre, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 29, 1992, Ser. No. 827,258
Int. Cl.[5] G03C 5/00
U.S. Cl. 430—253 21 Claims

1. A process for forming an image on a receptor comprising the steps of:

(a) providing a photosensitive element comprising a support and a photosensitive layer provided thereon;

(b) exposing imagewise said element to form a latent image having tacky toning material-receptive areas and non-tacky background areas;

(c) applying to the latent image formed in step (b), a non-prolonged tack, ultraviolet curable toning material comprising a thermoplastic polymer and a monomer mixture, to produce a non-tacky toned image;

(d) bringing the element having the non-tacky toned image into intimate contact with a receptor at or above the melting point of the polymer, whereby the toned image becomes tacky, and, while the toned image is still tacky;

(e) separating the element and the receptor whereby a portion of the tacky toned image transfers imagewise to the receptor; and

(f) post-exposing the transferred image on the receptor to actinic radiation to cure the image and make the transferred image non-tacky to back transfer.

5,250,388

PRODUCTION OF HIGHLY CONDUCTIVE POLYMERS FOR ELECTRONIC CIRCUITS

Karl F. Schoch, Jr., Penn Hills; John Bartko, Monroeville; Maurice H. Hanes, Murrysville, and Francis H. Ruddy, Monroeville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 31, 1988, Ser. No. 200,331
Int. Cl.[5] G03C 5/00; H01L 21/04
U.S. Cl. 430—269 31 Claims



1. A process for producing a highly conductive, conductively stable polymer, comprising the steps of:

a. doping selected regions of the polymer with a chemical dopant to give said regions a first conductivity type; and

b. irradiating both the selected region and other regions of said polymer with ions having an energy level high enough to simultaneously stabilize the dopant in the selected regions of the polymer without changing the conductivity type of the chemically doped regions and give the other regions of the polymer a second conductivity type opposite in charge to said first conductivity type,

wherein oxygen-caused deterioration of said selected doped regions is prevented between said doping step (a) and said irradiating step (b).

19. A microelectronic junction including a conductive polymer film produced according to claim 1 interposed between a layer of a first metal and a layer of a second metal.

5,250,389

PHOTOSENSITIVE ELASTOMER COMPOSITION

Shobei Nakamura, and Kousi Anai, both of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP92/00148, § 371 Date May 12, 1992, § 102(e) Date May 12, 1992, PCT Pub. No. WO92/15046, PCT Pub. Date Mar. 9, 1992
PCT Filed Feb. 14, 1992, Ser. No. 849,388
Claims priority, application Japan, Feb. 15, 1991, 3-21844
Int. Cl.[5] G03C 1/725
U.S. Cl. 430—281 8 Claims

1. A photosensitive elastomer composition comparing:

(1) at least 50% by weight, based on the weight of the elastomer composition, of a thermoplastic block copolymer comprising at least one monovinyl substituted aromatic hydrocarbon polymer block comprised mainly of a monovinyl substituted aromatic hydrocarbon and at least one conjugated diene polymer block comprised mainly of a conjugated diene,

said block copolymer having a monovinyl substituted aromatic hydrocarbon content (A) of 10 to 35% by weight and

said conjugated diene having a vinyl content (V) of 20 to 50%,

wherein said (A) and said (V) satisfy the following formula:

$$40 \leqq (A)+(V) \leqq 70;$$

(2) 1 to 20% by weight, based on the weight of the elastomer composition, of an ethylenically unsaturated compound component; and

(3) 0.1 to 3% by weight, based on the weight of the elastomer composition, of a photopolymerization initiator.

5,250,390

LIGHT-CURABLE ELASTOMERIC MIXTURE AND RECORDING MATERIAL, OBTAINED THEREFROM FOR THE PRODUCTION OF RELIEF PRINTING PLATES

Willi-Kurt Gries, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 8, 1991, Ser. No. 772,855
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1990, 4032238
Int. Cl.[5] G03F 7/033, 7/028
U.S. Cl. 430—283 13 Claims

1. A light-curable elastomeric mixture comprising

a) an elastomeric binder or binder mixture,

b) a low molecular-weight compound which is polymerizable by a free-radical mechanism, is compatible with said binder or binder mixture, has at least one ethylenically unsaturated end group and has a boiling point above 100° C. at normal pressure, and

c) a compound or combination of compounds which is capable of initiating the polymerization of compound (b) under the action of actinic light,

wherein said elastomeric binder is a block copolymer, soluble or dispersible in water or in an aqueous solution, having a structure selected from the group consisting of A—B, B—A—B, C—A—B, C—A—C—B, B—C—A—C—B, A_nXB_n, $(A—B)_xX$, $C_nX(A—B)_n$, $(C—A)_nXB_n$, $(C—A—B)_nX$, $C_nX(A—C—B)_n$, $(C—A)_nX(C—B)_n$, $(C—A—C)_nXB_n$, $(C—A—C—B)_nX$, $B_nXA_nXB_n$, $X(B—A—B)_nX$, $(B—C)_nXA_nX(C—B)_n$, $B_nX(C—A—C)_nXB_n$ and $X(B—C—A—C—B)_nX$, in which

A designates hydrophobic soft blocks having $T_g < -30°$ C.,

B designates hydrophilic rigid blocks comprising at least one acid groups and having $T_g > +30°$ C.,

C designates hydrophobic rigid blocks having $T_g > +50°$ C.,

X is a unit formed from a compound having at least two vinyl or isopropenyl groups or a homopolymer block formed from such compounds, and

n is the numerical ratio of A and/or B and/or C homopolymer blocks relative to the unit X or to the homopolymer block X.

9. A light-curable elastomeric mixture as claimed in claim 1, wherein said compound polymerizable by a free-radical mechanism is an ester produced by reacting an acid selected from the group consisting of acrylic acid, methacrylic acid, fumaric acid and maleic acid with a monohydric or polyhydric alcohol, or an amide produced by reacting an acid selected from the group consisting of acrylic acid, methacrylic acid, fumaric acid and maleic acid with an amine.

5,250,391

PHOTOPOLYMER COMPOSITION AND ITS USE

Leory J. Miller, Canoga Park, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 10, 1990, Ser. No. 521,853
Int. Cl.[5] G03C 1/73
U.S. Cl. 430—286 15 Claims

1. A photopolymerizable composition, comprising:

a water-insoluble olefinic compound that is polymerizable with free radical initiators;

an oil soluble phenothiazine dye that is soluble in water-immiscible organic solvents; and

an oil soluble reducing agent operable to react with the dye to form reactive free radicals only when the dye is in an excited state induced by exposure to light.

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5,250,392

PROCESS OF DEVELOPING A NEGATIVE-WORKING RADIATION-SENSITIVE PHOTORESIST CONTAINING CYCLIZED RUBBER POLYMER AND CONTRAST ENHANCING AZO DYE

Stephen F. Marcotte, Jr., Cumberland, R.I., and John Griffiths, Garforth, United Kingdom, assignors to OCG Microelectronic Materials, Inc., Cheshire, Conn.

Division of Ser. No. 650,341, Feb. 4, 1991, Pat. No. 5,206,110. This application Jan. 25, 1993, Ser. No. 9,194

Int. Cl.[5] G03F *7/30, 7/012;* **G03C** *1/695*

U.S. Cl. 430—292 **6 Claims**

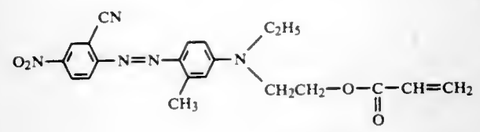
1. The process of developing an image-wise exposed photoresist-coated substrate comprising:

(1) coating said substrate with a negative-working, radiation-sensitive composition useful as a photoresist, said composition comprising an admixture in a solvent of:

(a) at least one cyclized rubber polymer;

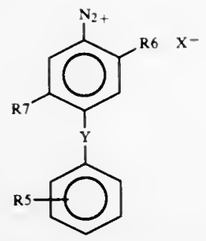
(b) at least one photoactive compound; and

(c) an effective contrast enhancing amount of an azo dye of the formula:



(2) subjecting said coating on said substrate to an image-wise exposure of radiant light energy; and

(3) subjecting said image-wise exposed coating substrate to a developing solution to remove the nonexposed image-wise area of said coated radiation-sensitive composition with said developing solution and to form a negative image-wise pattern in the coating.



wherein R^5 represents a hydrogen atom, an alkyl group, an alkoxy group, a hydroxyl group, a carboxyester group or a carboxyl group; R^6 represents a hydrogen atom, an alkyl group or an alkoxy group, R^7 represents a hydrogen atom, an alkyl group or an alkoxy group; X represents an anion; and Y represents —NH—, —O—, or —S—; and developing the imagewise exposed presensitized plates by repeatedly using a predetermined volume of a developer which comprises an aqueous solution of an alkali metal or ammonium silicate having a ratio; $(SiO_2)/(M)$, where (SiO_2) and (M) represent the molar concentrations of SiO_2 and the alkali metal or ammonium in the developer respectively, ranging from 0.15 to 0.75 and an SiO_2 content ranging from 1.0 to 4.0% by weight on the basis of the total weight of the developer to remove the unexposed portion of the light-sensitive layer, wherein, the activity of the developer deteriorated through the development is compensated by addition of a replenisher which comprises an aqueous solution of an alkali metal or ammonium silicate having a molar ratio: $(SiO_2)/(M)$ ranging from 0.15 to 0.50 and an SiO_2 content ranging from 1.0 to 3.0% by weight on the basis of the total weight of the replenisher.

5,250,394

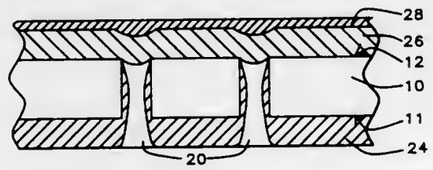
METALLIZATION METHOD FOR MICROWAVE CIRCUIT

Shih-Long Wei, Hsinchu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jan. 21, 1992, Ser. No. 823,351

Int. Cl.[5] H05K *3/02*

U.S. Cl. 430—313 **17 Claims**



15. The method of metallization of a microwave circuit on a substrate to produce a single, highly conductive layer on one side of the substrate and a conductive ground plane on the reverse side of the substrate comprising:

forming via holes through said substrate;

screen printing a first thick film paste over said ground plane side of said substrate;

placing said substrate on a vacuum table and pulling portions of said first thick film paste through said via holes by means of a vacuum;

drying said first thick film paste;

screen printing a copper thick film paste on the reverse side to that of the said ground plane side of said substrate;

drying said copper thick film paste;

simultaneously firing said first and copper thick film paste to form first and copper conductive thick films, respectively;

screen printing metallorganic conductive noble metal paste on the top surface of at least a portion of said copper conductive thick film; and

drying and firing said metallorganic conductive paste to form a conductive metallorganic noble metal thin film layer; said thickness of said first and copper conductive thick films is between about 2 to 25 micrometers and the thickness of said metallorganic conductive noble metal thin film is between about 0.3 to 0.5 micrometers; and photolithography and etching to further define said single, highly conductive layer composed of said copper thick film layer and said metallorganic conductive metal thin film layer to complete said microwave circuit.

5,250,393

METHOD FOR DEVELOPING PRESENSITIZED PLATE FOR USE IN MAKING LITHOGRAPHIC PRINTING PLATE

Masanori Imai, deceased, late of Shizuoka, Japan by Naoko Imai, executor ; Keiji Akiyama, Shizuoka, Japan; Tadao Toyama, Shizuoka, Japan, and Akinobu Koike, Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed Dec. 17, 1991, Ser. No. 808,607

Claims priority, application Japan, Dec. 20, 1990, 2-404539; Jan. 14, 1991, 3-2717; Jul. 11, 1991, 3-171379

Int. Cl.[5] G03F *7/30, 7/021*

U.S. Cl. 430—302 **11 Claims**

1. A method for preparing lithographic printing plates comprising the steps of imagewise exposing, to light, negative-working presensitized plates for use in making a lithographic printing plate which comprises a substrate provided thereon with a light-sensitive layer comprising co-condensed diazo resins comprising repeating units derived from an aromatic compound having at least one member selected from the group consisting of carboxyl groups, phenolic hydroxyl groups, sulfonic acid residues, sulfinic acid residues and phosphorus atom-containing oxyacid residues and those derived from an aromatic diazonium compound represented by the following general formula (C);

5,250,395

PROCESS FOR IMAGING OF PHOTORESIST INCLUDING TREATMENT OF THE PHOTORESIST WITH AN ORGANOMETALLIC COMPOUND

Robert D. Allen; Scott A. MacDonald, both of San Jose; Dennis R. McKean, Cupertino, all of Calif.; Hubert Schlosser, Glashütten, Fed. Rep. of Germany; Robert J. Twieg, San Jose, Calif.; Gregory M. Wallraff, Morgan Hill, Calif., and Carlton G. Willson, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 25, 1991, Ser. No. 735,420

Int. Cl.[5] G03C *5/16, 1/72*

U.S. Cl. 430—325 **8 Claims**

1. A process for generating a negative tone resist image on substrate comprising the steps of:

(a) coating the substrate with a film comprising (i) a polymer having pendant groups with masked reactive functionality and (ii) an effective amount of an aromatic dye to absorb substantially all imaging electromagnetic radiation incident on the film during said process before it hits said substrate;

(b) imagewise exposing the film to imaging electromagnetic radiation having a wavelength of from about 200 nm to about 500 nm to cause unmasking of the reactive functionality in the exposed portion of the film;

(c) contacting said film with an organometallic compound to form an etch barrier with said reactive functionality; and

(d) etching the film with reactive ions to yield development in the dry state.

5,250,396

METHOD FOR PROCESSING SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Shinji Ueda; Takatoshi Ishikawa, and Hiroshi Fujimoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 704,651, May 30, 1991, abandoned, which is a continuation of Ser. No. 299,577, Jan. 23, 1989, abandoned. This application Sep. 30, 1992, Ser. No. 954,411

Claims priority, application Japan, Jan. 21, 1988, 63-11300

Int. Cl.[5] G03C *7/30*

U.S. Cl. 430—357 **23 Claims**

1. A method of continuously processing an imagewise exposed silver halide photographic material using an automatic processor which has a color development bath, comprising the steps of a) developing with a color developer containing an aromatic primary amine color developing agent in an amount of from 0.1 to 20 g per liter and an organic preservative in an amount of from 0.005 to 0.5 mol per liter, and b) adding to the color developer during the continuous processing (i) a replenisher for the color developer containing an aromatic primary amine color developing agent and other components for the development to compensate for active components consumed in the development in an amount of from 20 ml to 600 ml per m^2 of the photographic material processed, and (ii) a water solution containing water as a main component in an amount of from 0.1 to 1.2 times the amount of the developer which has evaporated from the bath at a frequency of about once per week or more often, wherein said water solution is added independent of the replenisher, and said continuous processing is carried out for a period of time exceeding one week.

5,250,397

PROCESS FOR PROCESSING A SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Katsushige Kamada; Keiji Mihayashi, and Yoshihiro Fujita, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

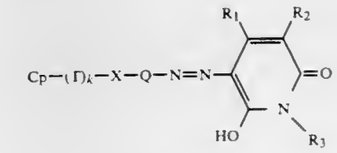
Filed Apr. 2, 1991, Ser. No. 679,418

Claims priority, application Japan, Apr. 2, 1990, 2-88076; Apr. 17, 1990, 2-101157

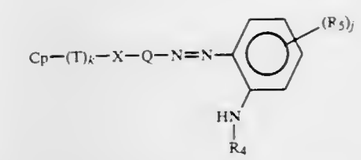
Int. Cl.[5] G03C *7/30, 7/34, 7/40*

U.S. Cl. 430—359 **21 Claims**

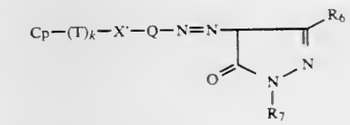
1. A method for processing an imagewise exposed silver halide color photographic material comprising a support having thereon at least one red-sensitive silver halide emulsion layer which comprises: color developing the photographic material with a color developer containing an aromatic primary amine color developing agent, followed by processing with a processing solution having a bleaching ability, wherein the replenishment rate of said color developer is in the range of 600 ml or less per m^2 of the photographic material processed, and wherein said at least one red-sensitive silver halide emulsion layer contains at least one yellow colored cyan coupler represented by the following general formulae (CI), (CII) and (CIV):



(CI)



(CII)



(CIV)

wherein Cp represents a cyan coupler residue (in which T is connected to the coupling position); T represents a timing group; k represents an integer of 0 or 1; X represents a $—OCH_2CH_2O—$ group X' represents a $—OCH_2CH_2O—$ group; O represents an arylene group or a divalent heterocyclic group; R_1 and R_2 each independently represent a hydrogen atom, a carboxyl group, a sulfo group, a cyano group, an alkyl group, a cycloclakyl group, an aryl group, a heterocyclic group, a carbamoyl group, a sulfamoyl group, a carbonamide group, a sulfonamide group, or an alkylsulfonyl group, an aryl group, or a heterocyclic group, with the proviso that at least one of T, X, X', O, R_1, R_2 and R_3 contains a water-soluble group; R_4 represents an acyl group or a sulfonyl group; R_5 represents a substitutable group; j represents an integer of 0 to 4 with the proviso that when j is an integer of 2 to 4, the plurality of R_4 groups may be the same or different; with the proviso that at least one of T, X, X', O, R_4 and R_5 contains a water-soluble group; R_6 represents a hydrogen atom, a carboxyl group, a sulfo group, a cyano group, an alkyl group, a cycloalkyl group, an aryl group, an alkoxy group, a cycloalkyloxy group, an aryloxy group, a heterocyclic group, a car-

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bamoyl group, a sulfamoyl group, a carbonamide group, a sulfonamide group, or an alkylsulfonyl group; and R_7 represents a hydrogen atom, an alkyl group, a cycloalkyl group, an aryl group, or a heterocyclic group; with the proviso that at least one of T, X, X', O, R_6 and R_7 contains a water-soluble group.

5,250,398

PHOTOGRAPHIC SILVER HALIDE MATERIAL AND PROCESS COMPRISING WATER-SOLUBILIZED NAPHTHOLIC COUPLER

William J. Begley, Webster, and Teh-hsuan Chen, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

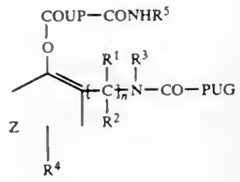
Filed Jun. 28, 1991, Ser. No. 722,808

The portion of the term of this patent subsequent to Sep. 29, 2009, has been disclaimed.

Int. Cl.[5] G03C *7/34*

U.S. Cl. 430—382 **7 Claims**

1. A photographic element comprising a support bearing at least one photographic silver halide emulsion layer, at least one image dye-forming coupler, and at least one coupler (A) represented by the formula



wherein

n is 0 or 1

R^1 and R^2 individually are hydrogen, alkyl or aryl;

R^3 is photographic ballast group;

R^4 is hydrogen or a substituent;

R^5 is hydrogen, CH_3, C_2H_5, $CH_2CO_2R^6$;

R^6 is alkyl;

PUG is a photographically useful group;

COUP is a naphtholic coupler; and,

Z represents the atoms completing a 5 or 6 member aromatic or heterocyclic group.

5. A process of forming a photographic image which comprises developing an exposed photographic silver halide emulsion layer with a color developing agent in the presence of a coupler (A) as defined in claim 1.

5,250,399

PHOTOGRAPHIC MATERIAL AND PROCESS COMPRISING A UNIVERSAL COUPLER

Richard P. Szajewski; Jerrold N. Poslusny, both of Rochester; David A. Steele, Webster; Teh-hsuan Chen, Fairport; Paul A. Burns; Ronald E. Leone, both of Rochester, and William J. Begley, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 28, 1991, Ser. No. 723,080

The portion of the term of this patent subsequent to Sep. 29, 2009, has been disclaimed.

Int. Cl.[5] G03C *7/32*

U.S. Cl. 430—382 **7 Claims**

1. A photographic element comprising a support bearing at least one photographic silver halide emulsion layer and a naphtholic coupler (A) containing in the 2-position a water-solubilizing group selected from $CONH_2$, $CONHCH_3$ and $CONH(CH_2)_2CO_2C_2H_5$, the coupler capable upon oxidative coupling of forming a dye that can be washed out of the element upon processing wherein the coupler (A) comprises, in the coupling position, a coupling-off group that comprises in sequence a releasable ballasted carbamate timing group and a releasable benzotriazole, triazole or tetrazole development inhibitor group, said development inhibitor group is released from the coupling-off group by a single cleavage reaction.

5. A process of forming a photographic image which comprises developing an exposed photographic silver halide emulsion layer with a color developing agent in the presence of a coupler (A) as defined in claim 1.

5,250,400

PHOTOGRAPHIC MATERIAL AND PROCESS COMPRISING A PYRAZOLOTRIAZOLE COUPLER

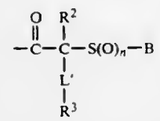
Sundaram Krishnamurthy, Penfield; Ping-Wah Tang, and Stanley W. Cowan, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 26, 1992, Ser. No. 841,461

Int. Cl.[5] G03C *7/38*

U.S. Cl. 430—386 **14 Claims**

12. A process of forming a dye image in an exposed photographic element comprising a support bearing at least one photographic silver halide emulsion layer, said process comprising developing the photographic element with a color silver halide developing agent in the presence of a color coupler of formula (I):



(I)

wherein:

n is 0, 1 or 2;

R^2 is hydrogen or a substituent;

B is hydrogen or a substituent;

L' is selected from the group consisting of O, S, Se, Te, $Si(R^5)_2$, NR^5, PR^5, $P(O)(R^5)_2$ and NR^5SO_2, wherein R^5 is hydrogen, alkyl or aryl; and

R^3 is a substituent.

5,250,401

PROCESSING COMPOSITION FOR SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL AND PROCESSING PROCESS INCLUDING THAT COMPOSITION

Hisashi Okada; Morio Yagihara; Tadashi Inaba, and Hiroyuki Seki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

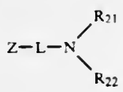
Filed Jul. 30, 1991, Ser. No. 737,876

Claims priority, application Japan, Jul. 30, 1990, 2-201846; Nov. 30, 1990, 2-330775

Int. Cl.[5] G03C *7/42*

U.S. Cl. 430—393 **19 Claims**

1. A method for processing an image-wise exposed silver halide color photographic material in which said material is color-developed and then processed in a processing solution which has a bleaching ability and which contains as a bleaching agent a metal chelating compound formed by a compound represented by formula (II) or (III) and a salt of a metal belonging to Group Ib, IIb, IIIb, IVb, Vb, VIb, VIIb, or VIII of the Periodic Table:

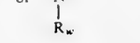


(II)

wherein Z represents a heterocyclic group; L represents a straight chain, branched, or cyclic alkylene group having from 1 to 10 carbon atoms, an alkylene group having from 2 to 10 carbon atoms, an alkinylene group having from 2 to 10 carbon atoms,

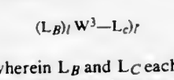


or $-SO_2-$; and R_{21} and R_{22} each represents $-L_1-COOM^1$ or $-L_1-Za$ wherein M^1 represents a hydrogen atom or a cation, Za has the same meaning as Z; and L_1 represents a divalent linkage group represented by formula (L_1).

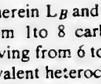


(L_1)

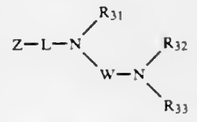
wherein L'_a and L'_b each represents an alkylene group; A' represents —O—, —S—, —COO—,



(wherein R_c represents a hydrogen atom, an alkyl group, an aryl group, or a hydroxy group), or

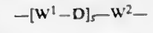


(wherein R_d represents a hydrogen atom, an alkyl group, or an aryl group) m' and n' each represents 0 or 1, and the mark (**) represents a bonding position to the $COOM^1$ or Za;



(III)

wherein Z and L have the same meaning as in formula (II); R_{31}, R_{32}, and R_{33}each represents a hydrogen atom, an aliphatic group, or a heterocyclic group; and W is a divalent linkage group represented by formula (W_1) or (W_2):



(W_1)

wherein W^1 and W^2each represents an alkylene group having from 2 to 8 carbon atoms, an arylene group having from 6 to 18 carbon atoms, or a cyclohexylene group; D represents —O—, —S—,



(wherein R_w represents a hydrogen atom, a hydrocarbon group, $-L_A-COOM^5$, $-L_A-PO_3M^6M^7$, $-L_A-OH$, or $-L_A-SO_3M^8$(wherein $L_A$represents an alkylene group having from 1 to 8 carbon atoms or an arylene group having from 6 to 10 carbon atoms; and M^5, M^6, M^7, and M^8 each represents a hydrogen atom or a cation)); and s represents 0 or an integer of from 1 to 3;

(W_2)

wherein L_B and L_C each represents an alkylene group having from 1to 8 carbon atoms, W^3 represents an arylene group having from 6 to 18 carbon atoms, a cyclohexylene group or a divalent heterocyclic group having a nitrogen atom in its ring, and l and l' each represents 0 or 1, excluding the instance in which l and l' are simultaneously 0.

5,250,402

PHOTOGRAPHIC BLEACHING COMPOSITION AND A PROCESSING METHOD THEREWITH

Hisashi Okada; Tadashi Inaba, and Morio Yagihara, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

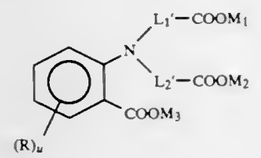
Filed Jun. 25, 1992, Ser. No. 904,334

Claims priority, application Japan, Jun. 26, 1991, 3-180524; Jul. 4, 1991, 3-189555

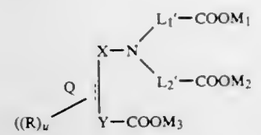
Int. Cl.[5] G03C *7/00, 5/99, 5/38, 5/42*

U.S. Cl. 430—393 **9 Claims**

1. A method for processing an imagewise exposed silver halide photographic light-sensitive material comprising a support having thereon at least one light-sensitive silver halide emulsion layer, which comprises developing in a developing solution and processing said light-sensitive material with a bleaching or bleach-fixing solution containing as a bleaching agent a Fe (III) chelating compound of a monoamine compound or salt thereof represented by formula (I-a') or (I-b'):



(I-a')



(I-b')

wherein R represents a substituent; Q represents a group of non-metal atoms necessary to form a heterocyclic ring; X and Y each represents a carbon atom or a nitrogen atom; L_1' and L_2' each represents an alkylene group; M_1, M_2 and M_3 each represent a hydrogen atom or a cation; and u represents 0, 1, 2, 3 or 4.

5,250,403

PHOTOGRAPHIC ELEMENTS INCLUDING HIGHLY UNIFORM SILVER BROMOIODIDE TABULAR GRAIN EMULSIONS

Michael G. Antoniades; Richard L. Daubendiek, both of Rochester; David E. Fenton, Fairport; Jeffrey L. Hall, and Ramesh Jagannathan, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 679,712, Apr. 3, 1991, abandoned, and a continuation-in-part of Ser. No. 679,714, Apr. 3, 1991, abandoned. This applicatioo Feb. 27, 1992, Ser. No. 842,683

Int. Cl.[5] G03C *7/26*

U.S. Cl. 430—505 **13 Claims**

1. A photographic element comprised of

a support,

a first silver halide emulsion layer coated on the support and sensitized to produce a photographic record when exposed to specular light within the minus blue visible wavelength region of from 500 to 700 nm,

a second silver halide emulsion layer capable of producing a second photographic record coated over the first silver halide emulsion layer to receive specular minus blue light intended for the exposure of the first silver halide emulsion layer, the second silver halide emulsion layer being capable of acting as a transmission medium for delivery of at least a portion of the minus blue light intended for the exposure of the first silver halide emulsion layer in the form of specular light, the second silver halide emulsion layer being comprised of a dispersing medium and silver

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halide grains including tabular grains having {111} major faces,

characterized in that greater than 97 percent of the total projected area of the silver halide grains having an equivalent circular diameter of at least 0.2 μm of the second emulsion layer is accounted for by silver bromoiodide tabular grains having an average equivalent circular diameter of at least 0.7 μm and an average thickness of less than 0.07 μm.

5,250,404

SILVER HALIDE PHOTOGRAPHIC MATERIAL HAVING MAGNETIC RECORDING ELEMENT

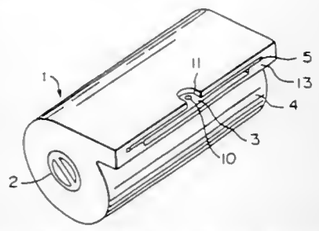
Yoshio Sakakibara, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 12, 1991, Ser. No. 758,151

Claims priority, application Japan, Sep. 14, 1990, 2-245792; Sep. 6, 1991, 3-227097

Int. Cl.[5] G03C *1/76*

U.S. Cl. 430—523 **10 Claims**



1. A silver halide photographic material comprising a transparent support containing a magnetic recording material, wherein the material constituting the transparent support is selected from the group consisting of polycarbonate and cellulose ester, and the transparent support is formed by co-flow-extending a first dope containing magnetic recording material and a second dope not containing magnetic recording material.

5,250,405

COLOR PHOTOGRAPHIC MATERIALS INCLUDING MAGENTA COUPLER, INHIBITOR-RELEASING COUPLER AND CARBONAMIDE COMPOUND, AND METHODS

Paul B. Merkel, Rochester, and Stephen P. Singer, Spencerport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 29, 1991, Ser. No. 752,147

Int. Cl.[5] G03C *1/08, 7/26, 7/32*

U.S. Cl. 430—544 **18 Claims**

1. A color photographic material, comprising a support bearing a silver halide emulsion and a coupler composition comprising (a) a two-equivalent pyrazolone magenta dye-forming coupler, (b) a carbonamide compound of the formula



(V)

wherein, R_6, R_7 and R_8 are individually selected from the group consisting of (i) straight chain, branched and cyclic alkyl groups, straight chain and branched alkenyl groups and straight chain and branched alkylene groups, (ii) said alkyl groups, alkenyl groups and alkylene groups containing one or more substituents selected from the group consisting of alkoxy, aryloxy, aryl, alkoxycarbonyl, aryloxycarbonyl, and acyloxy groups and halogens; (iii) a phenyl group; and (iv) a phenyl group containing one or more substituents selected from the group consisting of alkyl, alkoxy, aryloxy, alkoxycarbonyl, aryloxycarbonyl and acyloxy groups and halogens; and further wherein R_6, R_7 and R_8 combined contain at least 12 carbon atoms, and (c) a developer inhibitor-releasing coupler.

5,250,406

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Mitsuru Yamamoto, and Hidetoshi Kobayashi, both of Minamiashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

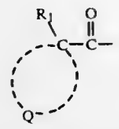
Filed Oct. 7, 1991, Ser. No. 772,701

Claims priority, application Japan, Oct. 9, 1990, 2-271602

Int. Cl.[5] G03C *7/36*

U.S. Cl. 430—544 **20 Claims**

1. A silver halide color photographic material comprising a support having thereon at least one silver halide emulsion layer, which comprises at least one layer constituting said photographic material that contains at least one acylacetamide yellow coupler whose acyl group is represented by the following formula (Y-I):



Formula (Y-I)

wherein R_1 represents a monovalent group and Q represents a group of nonmetallic atoms required to form together with the C a 3- to 5-membered cyclic hydrocarbon group or a 3- to 5-membered heterocyclic group, having therein at least one hetero atom selected from the group consisting of N, O, S, and P, provided that R_1 is a substituent other than a hydrogen atom and does not bond to Q to form a ring, and at least one layer constituting said photographic material that contains at least one compound represented by the following formula (I):



Formula (I)

wherein A represents an oxidation-reduction (redox) residue or its precursor, which is an atomic group that allows —Time)$_t$X to be released only upon oxidation during the photographic development processing, Time represents a group that will release X after being split off from the oxidized product of A, X represents a development retarder, L represents a bivalent linking group, G represents a polarizable group, and n, m, and t each are 0 or 1.

5,250,407

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL CONTAINING AT LEAST ONE 5-PYRAZOLONE COUPLER AND AT LEAST ONE MONODISPERSE CUBIC SILVER HALIDE EMULSION

Akira Kase, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 386,762, Jul. 31, 1989, abandoned. This application Feb. 14, 1992, Ser. No. 834,981

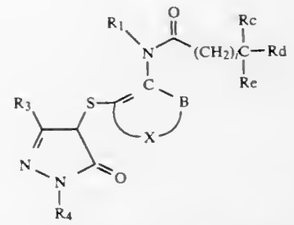
Claims priority, application Japan, Aug. 3, 1988, 63-193672

Int. Cl.[5] G03C *7/384, 1/09*

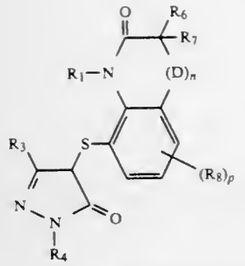
U.S. Cl. 430—5.55 **14 Claims**

1. A silver halide color photographic light-sensitive material, comprising at least one silver halide light-sensitive emulsion layer provided on a support wherein at least one of said light-sensitive emulsion layer contains (i) at least one 5-pyrazolone coupler and (ii) at least one monodisperse cubic silver halide emulsion containing at least an iridium ion in an amount from 1×10^{-9} to 1×10^{-3} mol per mol of silver halide, said emulsion being obtained by incorporating said metal ion into silver halide grains in the silver halide light-sensitive emulsion by adding the ion to an emulsion formation system before or during formation of the grains or after formation of the grains

but before the addition of a chemical sensitizer; wherein said 5-pyrazole coupler is represented by the following formulas: represented by the following formulas:



wherein R^1 represents a hydrogen atom, an alkyl group, an aryl group or a heterocyclic group; R_3 is an anilino group, an acylamino group, a ureido group, a carbamoyl group, an alkoxy group, an allyloxycarbonyl group, an alkoxycarbonyl group or an N-heterocyclic group; R_4 is a substituted or unsubstituted aryl group; Rc and Rd each represents halogen atoms or a group selected from the group consisting of Rb and Z_2Rg; Re is a hydrogen atom or a group as defined for Rc and Rd; Rb is a substituted or an unsubstituted alkyl, alkyl or heterocyclic group; Z_2 represents an oxygen atom or a sulfur atom or NRh; Rf is a hydrogen atom or a group as defined for Rb; Rg is a group defined for Rf; Rh is a group as defined for Rf; Rc may bond with Rd and/or Re to form one or two carbon rings or hetero rings and these may also possess substituents; X represents an atomic group required for the formation of a ring; B represents a carbon atom, an oxygen atom, a nitrogen atom or a sulfur atom; i represents 0 or 1;



wherein R_1, R_3 and R_4 each signifies the same atoms and groups as defined above; R_6 and R_7 each represents an alkyl group or an aryl group; R_8 reptesents a substituted or unsubstituted methylene group or a substituted or unsubstituted ethylene group; D represents a methylene group or an oxygen, nitrogen or sulfur atom; n represents an integer from 0 to 2 when it is a methylene group an is 1 in the other cases; and p is an integer from 0 to 3.

5,250,408

CHLORIDE CONTAINING TABULAR GRAINS WITH HOLES AND PROCESS FOR THEIR PREPARATION

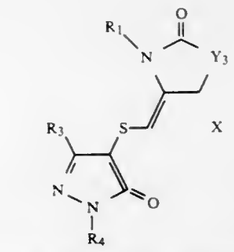
Yun C. Chang, and Joe E. Maskasky, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 15, 1992, Ser. No. 898,612

Int. Cl.[5] G03C *1/005, 1/035*

U.S. Cl. 430—569 **24 Claims**





wherein R_1, R_3, R_4 and X signify the same atoms, groups and atomic groups as defined above; Y_3 represents a substituent or an unsubstituted methylene or ethylene group or



Rf signifies the same atoms and groups as noted as defined above;

1. A process for producing a radiation-sensitive emulsion containing silver halide tabular grains having {111} major crystal faces with a centrally-located hole, said process comprising

providing an emulsion containing tabular grains comprised of silver chloride and silver bromide, having a center portion and a peripheral portion surrounding said center portion, wherein said peripheral portion has a higher solubility than said center portion;

adding a grain protecting material having a purine type molecular structure to said emulsion to adsorb onto said peripheral portion of said silver chlorobromide grains; and

increasing the chloride ion concentration of said emulsion, whereby said center portion is removed, creating a hole in said grain.

5,250,409

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Shoichiro Yasunami, and Yasuo Mukunoki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 548,646, Jul. 5, 1990, abandoned. This application Aug. 27, 1992, Ser. No. 935,336

Claims priority, application Japan, Jul. 5, 1989, 1-173500

Int. Cl.[5] G03C *1/35*

U.S. Cl. 430—927 **8 Claims**

1. A silver halide photographic element which comprises a support having thereon one or more constituent layers includ-

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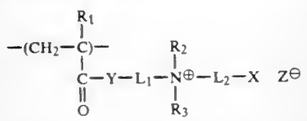
ing at least one silver halide emulsion layer, wherein said constituent layers comprise at least one layer selected from the group consisting of a subbing layer and a backing layer which is formed by (a) coating a composition which contains a high molecular weight compound comprising at least one repeating unit selected from each of the repeating units represented by the following formulae (I) and (V),

the repeating unit represented by formula (I) being contained in a fraction of rom 2 to 60 mol % of the high molecular weight compound,

the repeating unit represented by formula (V) being contained in a fraction of from greater than 0 to 98 mol % of the high molecular weight compound, and

the high molecular weight compound being contained in an amount of from 0.0001 to 2.0 g/m^2 of the photographic element,

and then (b) making the composition undergo a cross-linking reaction through irradiation or heating:



(I)

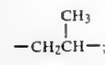
wherein R_1 represents a hydrogen atom or an alkyl group; R_2 and R_3 each represents an alkyl group;

L_1 and L_2 each represents a divalent linking group represented by formula (II):



(II)

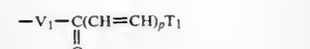
wherein L_3 and L_5 each represents an alkylene group; L_4 represents $-CH_2CH_2-$ or



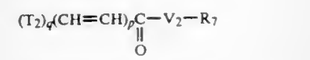
a, c, and d each represents 0 or 1; b represents an integer from 0 to 30; provided that the case a=b=c=d, 0 is excluded therefrom; A, B, and D each represents —O—, —CO_2—, or —CO—; Y represents —O— or



wherein R_4 represents a hydrogen atom or an alkyl group; X is a cross-linking group containing an activated vinyl component, and represented by formulae (III) or (IV):

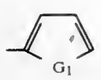


(III)



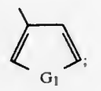
(IV)

wherein V_1 and V_2 each has the same meaning as Y; T_1 represents an aryl group,



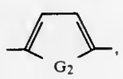
or

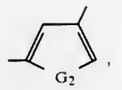
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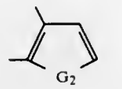


and G_1 represents —O— or —S—;

T_2 represents an arylene group,





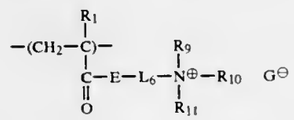


or



and G_2 has the same meaning as G_1; Z represents a counter ion for balancing the electric charge;

R_7 represents a hydrogen atom, or an unsubstituted or substituted alkyl group, alkenyl group, aryl group or aralkyl group; and p is 1 or 2; and



(V)

wherein R_1 has the same meaning as R_1 in formula (I); R_9, R_{10}, and R_{11} each having the same meaning as R_2 in formula (I) and any two or all of R_9, R_{10}, and R_{11} may be condensed together to complete a ring; and E, L_6, and G have the same meanings as Y, L_1, and Z in formula (I), respectively.

5,250,410

RAPID DETECTION OF HERPES VIRUS WITH LECTIN

Malcolm Slifkin, Pittsburgh, Pa., assignor to Allegheny-Singer Research Institute, Pittsburgh, Pa.

Continuation of Ser. No. 810,460, Dec. 18, 1991, abandoned, which is a continuation of Ser. No. 7,137, Jan. 27, 1987, abandoned. This application Sep. 21, 1992, Ser. No. 947,962

Int. Cl.^{5} C12Q *1/70;* **G01N** *33/00*

U.S. Cl. 435—5 **9 Claims**

1. A method for identifying herpes virus in an infected area, comprising the steps of:

a) collecting a specimen from a patient with a swab and transferring at least a portion of said specimen from said swab to a quantity of viral transport medium;

b) combining an aliquot of said viral transport medium with a cell culture and centrifuging the resultant combination;

c) supplementing the combination with growth medium and incubating the supplemented combination for at least about 20 hours at about 37° C.;

d) fixing the incubated cells derived in step c);

e) contacting said incubated cells with fluorescein-conjugated *Helix pomatia* lectin; and,

f) examining said incubated cells for fluorescence wherein the presence of fluorescent foci confirms herpes infection and wherein a diffuse mass pattern of fluorescence indicates HSV-1 serotype and a granular pattern of of fluorescence indicates HSV-2 serotype.

5,250,411

NUCLEIC ACID PROBES SPECIFIC FOR *PLASMODIUM VIVAX* AND METHODS OF USING THE SAME

K. Ayyanathan; P. Bhat; S. Datta; V. S. N. K. Francis; G. Padmanaban, and H. Srinivasa, all of Bangalore, India, assignors to Aktiebolaget Astra, Sodertalje, Sweden

Filed Dec. 4, 1990, Ser. No. 624,313

Claims priority, application Sweden, Dec. 5, 1989, 8904100

Int. Cl.^{5} C12N *15/00, 1/20;* **C12Q** *1/68;* **C07H** *15/12*

U.S. Cl. 435—6 **16 Claims**

4. An isolated and purified DNA fragment having the sequence identified as SEQ ID NO: 1 in the Sequence Listing and given below:

5'- - - - - - - - - AT GTA AGA GCA CAT

GAG ATT TTA TAA GGA TTT CAT TTT

ACT CAG GGT GAA ATG AAG AAG CAC

TAA AAG ATT TTG AGT AGA GTT TCA

T- - - - - - -3'

15. A method for detecting *P. vivax* in a biological sample of vertebrates or invertebrates, by hybridization of a probe according to claim 7 with the respective homologous sequences in the *P. vivax* genome, and detecting the probe which is bound to the *P. vivax* genome.

5,250,412

SWAB DEVICE AND METHOD FOR COLLECTING AND ANALYZING A SAMPLE

Joseph L. Giegel, Miami, Fla., assignor to Diamedix Corporation, Miami, Fla.

Continuation of Ser. No. 29,076, Mar. 23, 1987, abandoned. This application Jul. 16, 1991, Ser. No. 732,423

Int. Cl.^{5} G01N *33/53*

U.S. Cl. 435—7.1 **5 Claims**



1. A method for performing an immunoassay for an analyte with a swab, said method comprising:

a) providing a swab without initial specific binding characteristics and comprising an absorbent means and a support means, said absorbent means having a first area for collecting a sample at a distal end and a second area for retaining liquid extending longitudinally down the support means a length sufficient to permit an immunoassay to be carried out within the absorbent means;

b) collecting a sample containing the analyte on the collecting area of the absorbent means;

c) thereafter adding a labelled component to the absorbent means, the labelled component being specific to the analyte;

d) immunochemically reacting the labelled component and the analyte to form an immunocomplex and allowing the immunocomplex to become physically trapped in the absorbent means;

e) separating the trapped immunocomplex from unreacted labelled component by capillary action of the absorbent means; and

f) detecting the analyte by detecting the label specifically bound to the trapped immunocomplex or detecting the free label not specifically bound and which has been separated from the trapped immunocomplex.

5,250,413

SUBLETHAL BIOASSAY FOR ENVIRONMENTAL QUALITY

Brian P. Bradley, Ellicott City, Md., assignor to The University of Maryland, College Park, Md.

Continuation of Ser. No. 339,594, Apr. 14, 1989, Pat. No. 5,149,634. This application Jun. 30, 1992, Ser. No. 906,416

Int. Cl.^{5} C12Q *1/00*

U.S. Cl. 435—7.21 **3 Claims**

1. A method for determining at least one of the amount and type of environmental stressors to which an organism is exposed, comprising:

1) assaying a tissue sample of said organism for the presence at least one of the amount and type of shock proteins present in said sample, and

2) comparing at least one of the level and type of shock proteins detected with a standard for an unstressed organism of the species of the tested organism, wherein a higher level of shock proteins in said tested organism is indicative of stress in the organism and the types of shock proteins detected in said tested organism is indicative of the type of stressor to which said organism is exposed.

5,250,414

DIAGNOSTIC METHODS USING NEURITE GROWTH REGULATORY FACTORS

Martin E. Schwab; Pierenrico W. Caroni, and Paolo A. Paganetti, all of Zurich, Switzerland, assignors to Erziehungsdirektion of the Canton Zurich, Zurich, Switzerland

Continuation-in-part of Ser. No. 401,212, Aug. 30, 1989, which is a continuation-in-part of Ser. No. 267,941, Nov. 4, 1988, abandoned. This application Jun. 24, 1991, Ser. No. 719,692

Int. Cl.^{5} C12N *9/64*

U.S. Cl. 435—7.72 **17 Claims**

1. A method for diagnosing a malignancy invasive in central nervous system white matter in a patient in vitro comprising detecting the presence in a sample of a plasma membrane-associated metalloprotease characterized by the following properties:

(a) a metalloendoprotease activity which cleaves under suitable conditions the peptide benzyloxycarbonyl-Phe-Ala-Phe-Tyr, which activity is maximally active at a pH in the range of 5.5 to 7.0 and is substantially lost in 1% (w/v) CHAPS; and

(b) the ability to neutralize the inhibitory substrate property of central nervous system myelin of a higher vertebrate, in which the neutralization is detected by observing the ability of the central nervous system myelin in the presence of the metalloprotease to support neurite outgrowth or fibroblast spreading in vitro;

said sample containing cells of the patient suspected of being malignant; in which the presence of the metalloprotease indicates the presence of the malignancy.

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5,250,415

PROCESS FOR THE PREPARATION OF GLUCOSE DEHYDROGENASE FROM *BACILLUS MEGATERIUM*

Wolfgang Ebeling, Bickenbach; Hans J. Heilmann, Griesheim, and Friedhelm Meinhardt, Oer-Erckenschwick, al lof, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Division of Ser. No. 179,359, Apr. 8, 1988, Pat. No. 5,126,256. This application Apr. 24, 1992, Ser. No. 873,146

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1987, 3711881

Int. Cl.[5] **C12N** *9/04;* **C12Q** *1/54, 1/32;* **C12P** *19/02*

U.S. Cl. 435—14 **4 Claims**

1. A substantially pure polypeptide having the biological activity of the enzyme glucose dehydrogenase and encoded by a DNA molecule consisting essentially of the sequence (I).

ATG—TAT—ACA—GAT—TTA—AAA—GAT—AAA—
GTA—GTT—GTA—ATT—
ACA—GGT—GGA—TCA—ACA—GGT—TTA—GGA—
CGC—GGA—ATG—GCT—
GTT—CGT—TTC—GGT—CAA—GAA—GAA—GCA—
AAA—GTT—GTT—ATT—
AAC—TAT—TAC—AAC—AAT—GAA—GAA—GAA—
GCT—CTA—GAT—GCG—
AAA—AAA—GAA—GTA—GAA—GAA—GCA—GGC—
GGA—CAA—GCA—ATC—
ATC—GTT—CAA—GGC—GAT—GTA—ACA—AAA—
GAA—GAA—GAC—GTT—
GTA—AAT—CTT—GTT—CAA—ACA—GCT—ATT—
AAA—GAA—TTT—GGT—
ACA—TTA—GAC—GTA—ATG—ATT—AAC—AAC—
GCT—GGT—GTT—GAA—
AAC—CCA—GTT—CCT—TCT—CAT—GAG—CTA—
TCT—CTA—GAT—AAC—
TGG—AAC—AAA—GTT—ATT—GAT—ACA—AAC—
TTA—ACA—GGT—GCA—
TTC—TTA—GGA—AGC—CGT—GAA—GCA—ATT—
AAA—TAC—TTC—GTT—
GAA—AAC—GAC—ATT—AAA—GGA—AAT—GTT—
ATC—AAC—ATG—TCT—
AGC—GTT—CAC—GAA—ATG—ATT—CCT—TGG—
CCA—TTA—TTT—GTT—
CAC—TAC—GCA—GCA—AGT—AAA—GGC—GGT—
ATG—AAA—CTA—ATG—
ACG—GAA—ACA—TTG—GCT—CTT—GAA—TAT—
GCG—CCA—AAA—GGT—
ATT—CGC—GTA—AAT—AAT—ATT—GGA—CCA—
GGT—GCG—ATG—AAC—
ACA—CCA—ATT—AAC—GCA—GAG—AAA—TTT—
GCA—GAT—CCA—GAA—
CAA—CGT—GCA—GAC—GTA—GAA—AGC—ATG—
ATT—CCA—ATG—GGT—
TAC—ATC—GGT—AAA—CCA—GAA—GAA—GTA—
GCA—GCA—GTT—GCA—
GCA—TTC—TTA—GCT—TCA—TCA—CAA—GCA—
AGC—TAT—GTA—ACA—
GGT—ATT—ACA—TTA—TTT—GCA—GAT—GGC—
GGT—ATG—ACG—AAA—
TAC—CCT—TCT—TTC—CAA—GCA—GGA—AGA—
GGC—TAA—TAG

or by a degenerate equivalent thereof.

5,250,416

METHOD FOR HIGHLY SENSITIVE DETERMINATION OF NADH USING KINASE

Tsuyoshi Obno, Matsudo; Masaru Suzuki; Tatsuo Horiuchi, both of Nagareyama; Yasushi Shirahase; Koji Kishi, botb of Kobe, and Yoshifumi Watazu, Akashi, all of Japan, assignors to Noda Institue for Scientific Research, Chiba and International Reagents Corp., Hyogo, both of Japan

Filed Jan. 21, 1992, Ser. No. 823,113

Claims priority, application Japan, Jan. 25, 1991, 3-007999

Int. Cl.[5] **C12Q** *1/48, 1/26;* **C12P** *19/36;* **C12N** *9/96*

U.S. Cl. 435—15 **2 Claims**

1. A method of highly sensitive determination of NADH which comprises

allowing an NADH kinase highly specific for NADH, prepared by culturing *Pichia membranaefaciens* YS27 (FERM BP-3208), to act on a solution containing NAD^+ and NADH in the presence of (i) at least one divalent metal ion selected from the group consisting of Mg^{2+}, Mn^{2+}, Ca^{2+} and Co^{2+} and (ii) XTP wherein X is adenosine, uridine, guanosine, cytidine, inosine, thymidine, deoxyadenosine, deoxyuridine, deoxyguanosine, deoxycytidine or deoxyinosine to produce NADPH and XDP wherein X is defined as above,

subjecting the NADPH to a cycling reaction using catalytic reactions capable of oxidizing NADPH into $NADP^+$ and reducing $NADP^+$ into NADPH,

measuring the variable amount of a substrate consumed or a product produced by the cycling reaction to determine the amount of only the NADH in the mixed solution containing NAD^+ and NADH.

5,250,417

METHOD FOR ACROSOME REACTION ASSAY

Frederick A. Feuchter, and Buck A. Rhodes, both of Albuquerque, N. Mex., assignors to Rhomed Incorporated, Albuquerque, N. Mex.

Filed Apr. 23, 1991, Ser. No. 690,526

Int. Cl.[5] **C12Q** *1/37, 1/02*

U.S. Cl. 435—23 **24 Claims**

1. A method for evaluating the ability of sperm of male mammals to undergo the acrosome reaction, comprising the steps of:

a) obtaining a sperm sample from a male mammal;

b) incubating the sperm in a bromelain enzyme containing solution in a concentration sufficient to induce capacitation in the sperm;

c) incubating the capacitated sperm in a solution capable of inducing an acrosome reaction in the capacitated sperm; and

d) examining a representative sample of incubated capacitated sperm to determine the ability of sperm of the male mammal to undergo the acrosome reaction.

5,250,418

PROCESS AND REAGENT FOR DETERMINING THE ACTIVITY OF CHYMOTRYPSIN AND TRYPSIN IN FECES

Gerald Möller, and Klaus P. Kaspar, both of Tutzing, Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Continuation of Ser. No. 236,510, Aug. 24, 1988, abandoned, which is a continuation of Ser. No. 431,988, Sep. 30, 1982. abandoned. This application Mar. 17, 1992, Ser. No. 852,887

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1981, 3139719

Int. Cl.[5] **C12Q** *1/37, 1/00;* **G01N** *30/00*

U.S. Cl. 435—23 **15 Claims**

1. A process for the determination of chymotrypsin or trypsin in a feces sample, comprising the steps of:

suspending the feces sample in an aqueous or aqueous-organic suspension medium including one or more water soluble salts in an amount whereby the ionic strength of the salts from 20 to 1000 mval/liter, and from 0.02% to 10% by weight of a surface-active agent selected from the group consisting of cationic and non-ionic tensides;

contacting the suspended sample with a substrate specific for the determination of chymotrypsin or trypsin by measurement of the rate of fission of the substrate; and

photometrically measuring the rate of fission of the substrate as a measure of the activity of chymotrypsin or trypsin in the suspension.

5,250,419

METHOD FOR THE DIRECT MEASUREMENT OF AT LEAST ONE CHEMICAL PARAMETER OF SKIN USING A BIOSENSOR

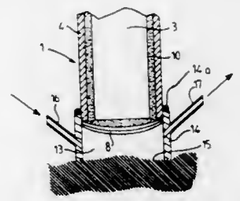
Dominique Bernard, Compiegne; Michel Kermici, and Michel Prunieras, both of Paris, all of France, assignors to L'Oreal, Paris, France

Division of Ser. No. 450,812, Dec. 14, 1989, abandoned. This application Aug. 13, 1991, Ser. No. 744,382

Claims priority, application France, Dec. 16, 1988, 88 16664

Int. Cl.[5] **C12Q** *1/00;* **A61B** *5/00;* **C12M** *1/40, 1/34*

U.S. Cl. 435—25 **4 Claims**



1. A method for the direct measurement of at least one biochemical parameter of the skin, the method comprising the steps of:

providing a biosensor which comprises a measuring cell (**13**), a wall area of said measuring cell being composed of an enzymatic membrane (**8**) having an immobilized enzyme intended to catalyze the transformation of a cutaneous substrate, a means for circulating a liquid within the measuring cell (**13**) for placing in solution said cutaneous substrate to be measured, and a means for detecting a chemical or pressure change caused by said transformation, which is representative of the concentration of said cutaneous substrate to be measured, with said cutaneous substrate being brought into contact with said enzymatic membrane (**8**), said measuring cell (**13**) having an opening which is capable of being closed, during the measurement, by a cutaneous covering area (**15**);

applying said biosensor to a selected zone of said cutaneous covering area (**15**), such that said opening of said measuring cell (**13**) is closed by said zone of said cutaneous covering area (**15**).

filling said measuring cell (**13**) with a liquid capable of solubilizing said cutaneous substrate wherein said cutaneous substrate catalytically reacts with said immobilized enzyme in said enzymatic membrane, producing therein a measurable effect,

after said step of filling said measuring cell, circulating the liquid for solubilization of said cutaneous substrate, and

detecting and measuring said chemical or pressure change caused by the transformation of said cutaneous substrate due to the catalysis of the immobilized enzyme of the enzymatic membrane (**8**).

5,250,420

METHOD AND REAGENT FOR DETERMINATION OF DEHYDROGENASE OR ITS SUBSTRATE

Shigeki Asano; Haruo Watanabe, both of Tsuruga, and Yuzo Hayashi, Ashiya, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 177,354, Apr. 1, 1988, abandoned. This application Aug. 15, 1991, Ser. No. 746,202

Claims priority, application Japan, Apr. 2, 1987, 62-82277

Int. Cl.[5] **C12Q** *1/32*

U.S. Cl. 435—26 **19 Claims**

1. A method for determining a dehydrogenase or its substrate in a dehydrogenase reaction, comprising the steps of:

(a) mixing of dehydrogenase and its substrate in the presence of an electron carrier or a combination of a coenzyme and an electron carrier, such that H_2O_2 is formed through transfer of electrons derived from the substrate by the dehydrogenase reaction to O_2 via the electron carrier or via the coenzyme and electron carrier;

(b) adding a stopping reagent to the mixture of step (a) such that the dehydrogenase reaction is terminated by the addition of said reagent;

(c) adding a peroxidase and a chromogen which is oxidized to develop color with H_2O_2 in the presence of peroxidase to the mixture of step (b) such that the H_2O_2 oxidizes the chormogen to be oxidized with H_2O_2 to produce a dye and wherein step (c) is performed simultaneously or subsequently to step (b); and

(d) measuring said dye and correlating said dye measurement to the present of said dehydrogenase or its substrate.

5,250,421

METHOD FOR PRODUCING FACTOR VIII:C-TYPE PROTEINS

Randal J. Kaufman, Boston, and S. Robert Adamson, Chelmsford, both of Mass., assignors to Genetics Institute, Inc., Cambridge, Mass.

Continuation of Ser. No. 260,085, Oct. 19, 1988, abandoned, which is a continuation-in-part of Ser. No. 816,031, Jan. 3, 1986, abandoned, and Ser. No. 942,338, Dec. 16, 1996, abandoned, and Ser. No. 34,882, Apr. 6, 1987, abandoned, and Ser. No. 68,865, Jul. 2, 1987, abandoned. This application Jan. 17, 1992, Ser. No. 824,765

Int. Cl.[5] **C12P** *21/00;* **C12N** *5/02*

U.S. Cl. 435—69.6 **4 Claims**

1. A process for producing high levels of recombinant factor VIII:c protein or its analogs which comprises the steps of:

(a) adding a serum-free preparation of phospholipid to a serum-free culture medium containing mammalian cells transfected with an expression vector containing DNA encoding recombinant factor VIII:c protein or its analogs, said phospholipid being added in an amount greater than 100 ug/ml of culture medium,

(b) culturing said cells in said medium under suitable culture conditions to produce said factor VIII:c or its analogs, and

(c) recovering said factor VIII:c or its analogs from said medium.

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5,250,422

BIOTRANSFORMATION PROCESS FOR THE PRODUCTION OF IVERMECTIN DERIVATIVES

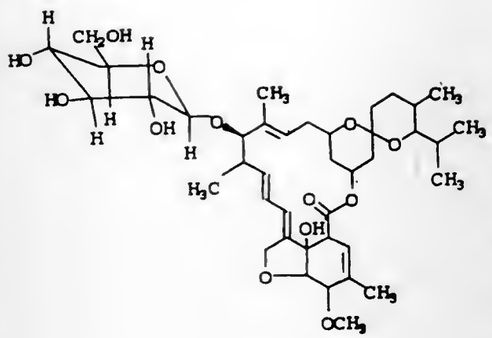
Brian R. Petuch, Florence; Edward S. Inamine, Rahway; Shieh-Shung T. Chen, Morganville; Raymond F. White, Englishtown, and Byron H. Arison, Watchung, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

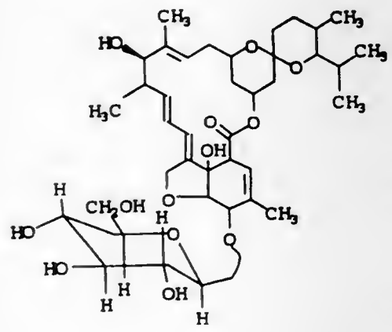
Continuation-in-part of Ser. No. 597,603, Oct. 15, 1990, abandoned, and a continuation-in-part of Ser. No. 597,658, Oct. 15, 1990, abandoned. This application May 11, 1992, Ser. No. 880,870

Int. Cl.[5] C12P *19/02*

U.S. Cl. 435—105 **15 Claims**

1. A process for the preparation of the following compounds:





which comprises incubating 13β-hydroxy ivermectin aglycone in a nutrient medium containing *Bacillus subtilis*, MB-4974, ATCC 55060 until a recoverable amount of the foregoing compounds is obtained; optionally including a strain of *Streptomyces griseus*, HCA-185 ATCC 55070 in the nutrient medium until a recoverable amount of the foregoing compounds is obtained and recovering the compounds by solvent extraction and chromatographic fractionations.

5,250,423

METHOD FOR THE PRODUCTION OF L-LYSINE EMPLOYING THERMOPHILIC CORYNEBACTERIUM THERMOAMINOGENES

Yutaka Murakami; Harufumi Miwa, and Shigeru Nakamori, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Apr. 22, 1991, Ser. No. 688,301

Claims priority, applicatioo Japan, Apr. 20, 1990, 2-104459

Int. Cl.[5] C12P *13/08*

U.S. Cl. 435—115 **5 Claims**

1. A method for producing L-lysine by fermentation comprising:

culturing in a nutrient medium containing assimilable sources of carbon, nitrogen, and inorganic salts a strain of *Corynebacterium thermoaminogenes* which is capable of growing at 40° C. or higher and is resistant to S-(2-aminoethyl)-L-cysteine under conditions effective for the production of L-lysine wherein said strain is selected from the group consisting of *Corynebacterium thermoaminogenes* AJ 12521, FERM BP-3304, *Corynebacterium thermoaminogenes* AJ 12522, FERM BP-3305, *Corynebacterium thermoaminogenes* AJ 12523, FERM BP-3306, *Corynebacterium thermoaminogenes* AJ 12524, FERM BP-3307; and

collecting L-lysine from the culture medium.

5,250,424

PROCESSES FOR PREPARING NOVEL SQUALENE SYNTHETASE INHIBITORS

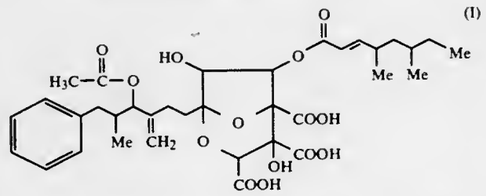
Gerald F. Bills, Cranford, N.J.; Maria T. Diez, Madrid, Spain; Mary N. Omstead, Gladstone, N.J., and Fernando Pelaez, Madrid, Spain, assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 715,535, Jun. 14, 1991, Pat. No. 5,200,342. This application Dec. 14, 1992, Ser. No. 990,158

Int. Cl.[5] C12P *17/18;* C12N *1/14;* C12R *1/645*

U.S. Cl. 435—119 **10 Claims**

1. A process for making a compound of structure:



(I)

comprising cultivating *Curvularia lunata* under conditions suitable for formation of the compound and recovering the compound.

5,250,425

PROCESS FOR PRODUCING ASCORBIC ACID-2-PHOSPHATE

Tatsuro Fujio, Hofu; Sadao Teshiba, Machida; Akihiko Maruyama, Kawasaki, and Satoshi Koizumi, Machida, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Jun. 21, 1991, Ser. No. 717,332

Claims priority, application Japan, Jun. 21, 1990, 2-163877

Int. Cl.[5] C07H *21/04;* C12N *9/12, 15/54;* C12P *9/00*

U.S. Cl. 435—131 **10 Claims**

1. A process for producing ascorbic acid-2-phosphate which comprises the steps of:

i) reacting ascorbic acid with a phosphate donor in the presence of cells, treated cells, a culture broth or a treated culture broth, of a microorganism belonging to the species *Escherichia coli* which carries a recombinant DNA comprising an isolated DNA fragment containing a DNA having a nucleotide sequence defined in the Sequence Listing by SEQ ID NO: 1, in an aqueous solution under an acidic condition at a temperature of 20° to 70° C. for 0.5 to 48 hours; and

ii) recovering ascorbic acid-2-phosphate therefrom; said treated cells being selected from the group consisting of dried cells, acetone-treated cells, cells treated with at least one of a surfactant or an organic solvent, bacteriolytic enzyme-treated cells, immobilized cells, or enzyme preparations extracted from cells; and said treated culture broth being selected from the group consisting of a concentrate of the culture broth, a dried culture broth, a culture broth treated with at least one of a surfactant or an organic solvent, and an acetone-treated culture broth.

5,250,426

MOLECULES WITH ANTIBODY COMBINING SITES THAT INDUCE ASYMMETRY

Richard A. Lerner, La Jolla, and Kim Janda, San Diego, both of Calif., assignors to The Scripps Research Institute, La Jolla, Calif.

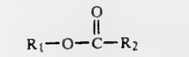
Filed Oct. 22, 1991, Ser. No. 781,720

Int. Cl.[5] C12P *7/42;* C12N *9/00*

U.S. Cl. 435—146 **8 Claims**

1. Monoclonal antibody molecules or paratope-containing portions thereof that catalytically hydrolyze a preselected carboxylic ester bond of a substrate enol ester reactant ligand to yield a product containing relatively more of one of a pair of enantiomers than the other enantiomer, said paratope binding to:

(a) an enol ester substrate ligand having the structural formula:



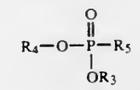
wherein

R_1 is an alkenyl or cycloalkenyl group containing at least 5 carbon atoms and a prochiral center, with the α-carbon atom of the ethylenic unsaturation bonded directly to the oxygen atom of the illustrated ester linkage, thereby constituting the enolic portion of the ester, and the β-carbon of the ethylenic unsaturation bonded to a C_1-C_6 alkyl group defining the β-carbon as the prochiral center;

R_2 is an alkyl, aralkyl or aromatic radical containing at least 1 carbon atom; and

at least one of R_1 and R_2 containing a ring structure having five to seven carbon atoms in the ring; and

(b) an analog-ligand of said enol ester reactant ligand having the structural formula:



wherein R_4 is structurally analogous to R_1 except that R_4 is saturated at positions analogous to the enolic unsaturation of R_1, contains a pseudoprochiral center structurally analogous to said prochiral center, and R_4 is bonded to the phosphonate ester oxygen at a position other than at a position analogous to said α-carbon atom and within 2 carbon atoms of said pseudoprochiral center;

R_5 is structurally analogous to R_2, except that an R_5 group of an analog-ligand further includes a group or radical through which said analog-ligand can be linked to an antigenic carrier for purposes of immunization; and

R_3 is hydrogen, C_1-C_4 alkyl, benzyl or an alkali metal salt.

5,250,427

PHOTOCONVERSION OF GASIFIED ORGANIC MATERIALS INTO BIOLOGICALLY-DEGRADABLE PLASTICS

Paul F. Weaver, and Pin-Ching Maness, both of Golden, Colo., assignors to Midwest Research Institute, Kansas City, Mo.

Filed Jun. 25, 1992, Ser. No. 904,194

Int. Cl.[5] C12N *13/00;* C12P *39/00, 3/00, 1/38*

U.S. Cl. 435—42 **8 Claims**

1. A process for producing cell mass, comprising the steps of:

(a) thermally gasifying organic materials to produce a gaseous mixture consisting essentially of carbon monoxide and hydrogen;

(b) contacting said mixture with photosynthetic bacteria selected from the group consisting of the Rhodospirillales order of photographic bacteria; wherein said bacteria metabolizing carbon monoxide in light; and

(c) exposing said bacteria to radiant energy whereby said gaseous mixture is assimilated by said bacteria into bacterial cell mass.

5,250,428

L-GULONO-GAMMA-LACTONE-DEHYDROGENASE FOR PRODUCING VITAMIN C

Tatsuo Hoshino, Kamakura, Japan; Peter K. Matzinger, Rodersdorf, Switzerland; Setsuko Ojima, Fujisawa, and Teruhide Sugisawa, Yokohama, both of Japan, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Sep. 17, 1991, Ser. No. 761,140

Claims priority, application European Pat. Off., Sep. 17, 1990, 90117842

Int. Cl.[5] C12N *9/04;* C12P *17/16, 17/06*

U.S. Cl. 435—190 **1 Claim**

1. An essentially pure L-gulono-gamma-lactone-dehydrogenase having the following properties:

a) a high substrate specificity with L-gulono-gamma lactone and D-xylose;

b) an optimum pH of about 7 to about 8;

c) a molecular weight of 110,000±2,000 consisting of three subunits, the subunits comprising a flavoprotein prosthetic group having a molecular weight of 61,000±1,000, a cytochrome c protein having a molecular weight of 32,500±1,000, and a simple protein having a molecular weight of 16,500±500; and

d) inhibition by the metal ions Cu^{2+} and Mn^{2+}.

5,250,429

GLASSIFIED RESTRICTION ENZYMES

James F. Jolly, Glendale, Wis.; Jack G. Chirikjian, Potomac, Md., and Caecilia J. Huang, New Berlin, Wis., assignors to Pharmacia P-L Biochemicals Inc., Milwaukee, Wis.

Filed Sep. 20, 1991, Ser. No. 763,034

Int. Cl.[5] C12N *9/14, 9/16;* C12Q *1/34, 1/44*

U.S. Cl. 435—196 **7 Claims**

1. A glassified composition comprising a glassified carbohydrate stabilizer having dispersed in it a Type II restriction enzyme selected from the group consisting of Type II enzymes that use Mg^{+2} as a co-factor for digesting DNA, and an amount of Mg^{+2}, wherein less than 5% of the weight of the composition is glycerol and wherein the amount of Mg^{+2} is sufficient to facilitate restriction enzyme digestion of DNA having a restriction site that the enzyme recognizes upon hydration of the glassified composition while not interfering with stability during long term room temperature storage of the glassified composition wherein the enzyme is selected from the group consisting of HaeIII and HinfI and wherein the amount of $M_g{}^{+2}$ in the glassified composition provides about 10 mM Mg^{+2} in the digestion solution.

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5,250,430

POLYHYDROXYALKANOATE POLYMERASE

Oliver P. Peoples, Arlington, and Anthony L. Sinskey, Boston, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 700,109, May 8, 1991, which is a continuation of Ser. No. 378,155, Jul. 10, 1989, abandoned, which is a continuation-in-part of Ser. No. 67,695, Jun. 29, 1987, abandoned. This applicatioo Sep. 14, 1992, Ser. No. 944,839

Int. Cl.[5] C12N *9/88*

U.S. Cl. 435—232 2 Claims

1. Polyhydroxyalkanoate polymerase expressed from an isolated strucutral gene.

5,250,431

ALTERATION OF THE INTERACTION OF A T-CELL RECEPTOR WITH A PROTEINTYROSINE KINASE

Christopher Rudd, Somerville, and Stuart Schlossman, Newton Center, both of Mass., assignors to Dana-Farber Cancer Institute, Inc., Boston, Mass.

Continuation of Ser. No. 206,003, Jun. 13, 1988, abandoned. This application Sep. 12, 1991, Ser. No. 759,639

Int. Cl.[5] C12N *5/00, 15/00;* C07K *13/00*

U.S. Cl. 435—240.2 18 Claims

1. A modified CD4 T cell receptor having a reduced binding capability, compared to that of naturally occurring CD4 T cell receptor, for $p56^{lck}$, wherein said modified receptor has an alteration or deletion in the $p56^{lck}$ binding site located on the cytoplasmic tail of said naturally occurring CD4 T cell receptor.

13. A mammalian cell transfected with DNA encoding the modified receptor of claim 1 and expressing on its surface the modified receptor of claim 1.

5,250,432

METHOD OF CULTURING ANIMAL CELLS

Michiyuki Takashiki, Hachioji; Kimihiko Hamamoto, Hino, and Kenji Ishimaru, Iwakuni, all of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation-in-part of Ser. No. 463,997, Jan. 12, 1990, abandoned, which is a continuation-in-part of Ser. No. 939,102, Dec. 8, 1986, abandoned. This application Sep. 27, 1990, Ser. No. 589,495

Claims priority, application Japan, Dec. 6, 1985, 60-273503; Apr. 24, 1989, 1-101641; Jul. 3, 1989, 1-171393; Sep. 27, 1989, 1-249269

Int. Cl.[5] C12N *5/02, 5/06, 5/12, 5/16*

U.S. Cl. 435—240.25 27 Claims

1. A method of culturing animal cells, which comprises

(A) subjecting living animal cells to suspension culture in a culture tank,

(B) withdrawing a portion of the suspension culture fluid containing living animal cells from the culture tank,

(C) continuously feeding the withdrawn suspension culture fluid into the centrifuging space of a rotating centrifugal separating device for a certain period of time from a feed opening, and continuously withdrawing the mother liquor separated from the living animal cells for a certain period of time from a discharge opening, the centrifugal force acting on the feed opening being higher than that on the discharge opening, and accumulating the living cells in the centrifuging space,

(D) feeding a liquid medium which is immiscible with water, has a density higher than the animal cells and the culture fluid and does not inhibit the growth of the animal cells into the feed opening while the centrifugal separating device is kept rotating, and withdrawing the living animal cells accumulated in the centrifuging space together with the mother liquor from the discharge opening by pushing them with the liquid medium, and

(E) returning at least a portion of the withdrawn animal cells to the culture tank for step (A).

5,250,433

GRAMINEOUS HYBRID PLANTS AND PROCESS FOR PREPARING THEM

Ko Shimamoto, Kanagawa; Junko Watanabe, Tokyo; Rie Terada, and Yasuyuki Hayashi, both of Kanagawa, all of Japan, assignors to Mitsubishi Kasei Corporation and Mitsubishi Corporation, both of Tokyo, Japan

Continuation of Ser. No. 474,668, Feb. 6, 1990, abandoned, which is a continuation of Ser. No. 97,163, Sep. 16, 1987, abandoned. This application Oct. 5, 1991, Ser. No. 770,766

Claims priority, application Japan, Sep. 20, 1986, 223346

Int. Cl.[5] A01H *4/00;* C12N *5/26*

U.S. Cl. 435—240.47 6 Claims

1. A process for preparing a gramineous hybrid plant, comprising:

a) preparing a first protoplast from a callus or suspension cell derived from *Oryza sativa,*

b) preparing a second protoplast from a callus or suspension cell derived from plant *Oryza eichingeri,*

c) subjecting the first protoplast to treatment with an iodine compound, comprising iodoacetamide or monoiodoacetic acid,

d) subjecting the second protoplast to treatment with a Rhodamine compound, comprising Rhodamine 6G,

e) subjecting the protoplast to cell fusion by successive electric treatment with (i) an alternate current of 2,000–7,000 KHz and 50–500 V/cm for 1 to 30 seconds, with (ii) 1 to 10 pulses of direct current with 1.5–7.5 KV/cm, the duration of each pulse being 1–100 microseconds at an interval between two successive pulses of 0.1 to 5 seconds, and then with (iii) said alternate current for 1 to 200 seconds,

f) co-cultivating the fused cells under dark at 23–27° C. with slow shaking of 20–50 rpm in a culture medium containing cultured cells of *Oryza sativa* as nurse cells in an amount of about 100–300 mg per fresh weight per petri dish, using 0.2 to 0.5% potassium nitrate as a nitrogen source to from colonies, and

g) further cultivating the formed colonies in a culture medium containing a plant hormone.

5,250,434

MICROORGANISMS FOR PRODUCTION OF GLUTAMIC ACID

Kazuhiko Yamada, and Akira Seto, both of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Continuation of Ser. No. 160,845, Feb. 26, 1988, abandoned. This application May 16, 1991, Ser. No. 702,111

Claims priority, application Japan, Mar. 27, 1987, 62-075727

Int. Cl.[5] C12N *1/20;* C12P *13/14*

U.S. Cl. 435—252.1 1 Claim

1. A biologically pure culture of a *Corynebacterium thermoaminogenes* selected from the group consisting of FERM BP-1539, FERM BP-1540, FERM BP-1541, and FERM BP-1542.

5,250,435

MUTANT STRAINS OF *ASPERGILLUS TERREUS* FOR PRODUCING 7-[1,2,6,7,8,8A(R)-HEXA-HYDRO-2(S),6(R)-DIMETHYL-8(S)-HYDROXY-1(S)-NAPHTHYL]-3(R),5(R)-DIHYDROXY-HEPTANOIC ACID (TRIOL ACID),I)

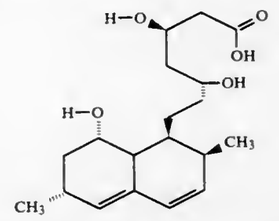
William H. Cover, Lansdale, Pa.; Rebecca L. Dabora, Andover, Mass.; Anderson Hong, Taipei, Taiwan; Christopher Reeves, Mill Creek, Wash.; Robert W. Stieber, Harrisonburg, and Victor A. Vinci, Charlottesville, both of Va., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 4, 1991, Ser. No. 709,950

Int. Cl.[5] C12P *7/42, 17/06;* C12N *1/14;* C07D *305/00*

U.S. Cl. 435—256.1 4 Claims

1. A culture of a mutant strain of *Aspergillus terreus* wherein said strain is formed from the mutagenesis of a lovastatin producing strain of *Aspergillus terreus*, and wherein said mutant culture is capable of forming a compound of structure:



(I)

with the formation of less than 0.002% yield of lovastatin under culture conditions.

5,250,436

GLUCAN COMPOSITIONS AND PROCESS FOR PREPARATION THEREOF

Spiros Jamas; ChoKyun Rha, and Anthony J. Sinskey, all of Boston, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 504,454, Apr. 3, 1990, abandoned, which is a division of Ser. No. 333,630, Apr. 5, 1989, Pat. No. 5,028,703, which is a continuation-in-part of Ser. No. 166,929, Mar. 11, 1988, abandoned, which is a division of Ser. No. 675,927, Nov. 28, 1984, Pat. No. 4,810,646. This application Jun. 2, 1992, Ser. No. 893,583

Int. Cl.[5] C12N *1/16*

U.S. Cl. 435—255.2 14 Claims

1. The mutant yeast strain *Saccharomyces cerevisiae* R4 (NRRL Y-15903).

5,250,437

REAGENT FOR SIMULTANEOUS DETERMINATION OF HEMOGLOBIN AND LEUKOCYTES IN BLOOD

Syouzou Toda; Takashi Sakata, and Yukio Hamaguchi, all of Hyogo, Japan, assignors to TOA Medical Electronics Co., Ltd., Japan

Filed Oct. 10, 1990, Ser. No. 596,207

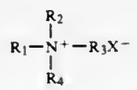
Claims priority, application Japan, Oct. 23, 1989, 1-275280

Int. Cl.[5] G01N *33/48*

U.S. Cl. 436—10 7 Claims

1. A reagent for enabling measuring a hemoglobin concentration by counting the number of leukocytes present in a blood sample to be counted, which is free of cyanides comprising a solution with a pH ranging from 3.0 to 9.0 containing:

(i) at least two quaternary ammonium salts having the formula:



where R_1 is a C_8 to C_{20} alkyl, alkenyl or alkynyl group, R_2, R_3, and R_4 are a C_1 to C_8 alkyl, alkenyl or alkynyl group,

X^- is an anionic group;

said quaternary ammonium salts having a total concentration in the range of 0.1 to 12.0 g/l and being capable of hemolyzing the erythrocytes in the blood and denaturing hemoglobin; and

ii) at least one oxidant capable of oxidizing heme in hemoglobin, selected from the group consisting of nitrite ion, quinone, alloxan, methylene blue, aniline, acetanilide, nitrobenzene, acetophenetidin, nitrotoluene, sulfonamide, phenylhydrazine, ascorbic acid and aminophenol; said at least one oxidant having a total concentration in the range of 0.5 to 10.0 g/l, and said reagent is capable of dividing leukocytes into at least two fractions.

5,250,438

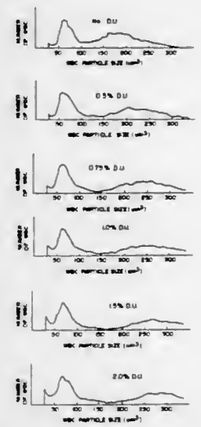
METHOD FOR DIFFERENTIAL DETERMINATION OF WHITE BLOOD CELLS USING DIAZOLIDINYL UREA TO STABILIZE WHITE BLOOD CELLS

Wayne L. Ryan, Omaha, Nebr., assignor to Streck Laboratories, Inc., Omaha, Nebr.

Filed May 9, 1990, Ser. No. 520,884

Int. Cl.[5] G01N *33/48*

U.S. Cl. 436—17 7 Claims



1. In a method for the differentiation of white blood cells in whole blood using a differential hematology analyzing instrument wherein a whole blood sample diluted with a diluent containing a white blood cell stabilizer is mixed with a lysing agent to lyse the red blood cells and differentiate said white blood cells for counting by said instrument, the improvement comprising using as said white blood stabilizer diazolidinyl urea in an amount sufficient to stabilize said white blood cells against shrinkage during said lysis.

5,250,439

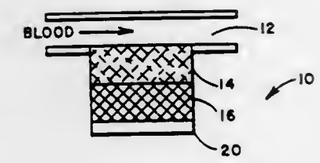
USE OF CONDUCTIVE SENSORS IN DIAGNOSTIC ASSAYS

Matthew K. Musho, Elkhart; J. Oakey Noell, and Pius H-S. Tse, both of Mishawaka, all of Ind., assignors to Miles Inc., Elkhart, Ind.

Division of Ser. No. 793,180, Nov. 18, 1991, Pat. No. 5,202,261. This application Dec. 14, 1992, Ser. No. 990,340

Int. Cl.[5] C12Q *1/54, 1/26, 1/28*

U.S. Cl. 435—25 8 Claims



1. A method of determining the presence or concentration of a predetermined analyte in a liquid test sample, said predetermined analyte capable of interacting with an oxidase e said method comprising: 1) contacting a liquid test sample contain-

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ing a predetermined analyte with a conductive sensor comprising:

a) a layer of a host matrix permeable to the predetermined analyte, said host matrix layer having homogeneously incorporated therein an oxidase enzyme capable of interacting with the predetermined analyte, a compound having peroxidase activity and a dopant compound precursor, and wherein the predetermined analyte, the oxidase enzyme, the compound having peroxidase activity and the dopant compound precursor interact to generate a dopant compound;

b) a layer of a conducting polymer in contact with the host matrix layer such that the dopant compound generated in the host matrix layer migrates to and oxidatively dopes the conducting polymer layer causing a change in its conductivity; and

c) means operatively connected to the conducting polymer layer for measuring the change in conductivity of the conducting polymer layer; and,

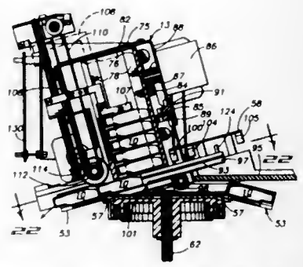
2) correlating the change in conductivity of the conducting polymer layer to the concentration of the predetermined analyte in the liquid test sample.

5,250,440

CUVETTE DELIVERY MODULE AND TURNTABLE FOR A CHEMICAL ANALYZER

Norman Kelln, Spokane; Bruce Weyrauch, Newman Lake; James Clark, and Dan Cutler, both of Spokane, all of Wash., assignors to Schiapparelli Biosystems, Inc., Fairfield, N.J.

Filed Jul. 16, 1992, Ser. No. 916,179
Int. Cl.[5] G01N *35/02, 21/00*
U.S. Cl. 436—48 **20 Claims**



1. A method of providing an automated supply of cuvettes to a chemical analyzer, comprising the steps of:

storing multiple upright stacks of cuvettes in a magazine, each stack of cuvettes including an exposed cuvette at its lower end;

linearly moving the magazine to access the exposed cuvette at the lower end of a selected stack of cuvettes; and

removing the exposed cuvette from the selected stack of cuvettes within the magazine; and

inserting the exposed cuvette into an awaiting compartment within a turntable adapted to releasably mount a plurality of cuvettes.

5,250,441

METHOD FOR KIT FOR ESTIMATING THE AMOUNT OF METHYL ANTHRANILATE

Peter F. Vogt, 239 Woodcrest Dr., Loveland, Ohio 45140, and Bruce Becraft, 7350 Blue Ash Rd., Cincinnati, Ohio 45236

Filed Jan. 8, 1993, Ser. No. 2,192
Int. Cl.[5] G01N *33/00*
U.S. Cl. 436—111 **6 Claims**

1. A method for estimating the amount of methyl anthranilate (MA) in water, comprising the steps of:

a) obtaining a sample suspected of having methyl anthranilate (MA);

b) acidifying the sample with a strong acid;

c) adding sodium nitrite to the acidified sample producing nitrous acid which in the presence of methyl anthranilate produces a diazonium ion;

d) adding a reagent to remove excess nitrous acid;

e) adding N-(1-naphtyl)ethylenediamine which reacts with the diazonium ion to produce a measurable color response; and

f) comparing the obtained color response to standards prepared using known amounts of methyl anthranilate to estimate the amount of methyl anthranilate in said sample.

5,250,442

METHOD OF TREATING RHEUMATOID ARTHRITIS USING TETRACYCLINE

Orestes Cabezas, 10201 Fontainebleau Blvd., Unit 205, Miami, Fla. 33172

Filed Apr. 8, 1993, Ser. No. 44,054
Int. Cl.[5] G01N *33/564;* **A61K** *31/65*
U.S. Cl. 436—509 **3 Claims**

1. A method of treating rheumatoid arthritis comprising the steps of:

a) first, determining a rate of erythrocyte sedimentation and presence of rheumatoid factor in the blood;

b) second, fasting for a period of 12 hours;

c) third, orally administering a 500 milligram dosage of tetracycline achromycin every 24 hours after fasting for 12 hours;

d) fourth, observing any change of symptoms of the rheumatoid arthritis condition including any reduction of swelling and pain;

e) fifth, periodically testing the blood to determine a change in the rate of erythrocyte sedimentation and rheumatoid factor;

f) sixth, repeat steps 1-5 until the rheumatoid factor and erythrocyte sedimentation rate has decreased by a predetermined percentage from the initial determination;

g) seventh, after the rheumatoid factor and erythrocyte sedimentation rate has decreased by the predetermined percentage, reducing the dosage in step 3 to 250 milligrams; and

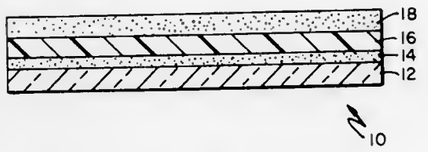
h) eighth, continuing to orally administer a 250 milligram dosage every 24 hours, repeating steps 2, 4, 5 and 6, until the symptoms of the rheumatoid arthritis condition disappear.

5,250,443

BIOLOGICAL DIAGNOSTIC ASSAY SYSTEM

Edward P. Liodholm, Brookline, and Ernest J. Yamartino, Jr., Burlington, both of Mass., assignors to PB Diagnostic Systems, Inc., Westwood, Mass.

Continuation of Ser. No. 275,351, Nov. 23, 1988, abandoned. This application Feb. 12, 1992, Ser. No. 835,016
Int. Cl.[5] G01N *33/549, 21/00*
U.S. Cl. 436—529 **9 Claims**



1. A multilayer diagnostic assay element comprising:

a support layer;

a reagent layer which comprises a reagent immobilized in a matrix material which includes glyoxyl agarose, wherein said glyoxyl agarose is not in the saturated amine form; and

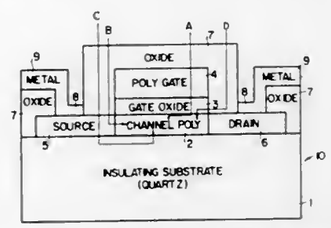
a light blocking layer.

5,250,444

RAPID PLASMA HYDRDOGENATION PROCESS FOR POLYSILICON MOSFETS

Babar Khan, Ossining; Barbara A. Rossi, Putnam Valley, both of N.Y., and Uday Mitra, San Jose, Calif., assignors to North American Philips Corporation, New York, N.Y.

Filed Feb. 21, 1992, Ser. No. 842,854
Int. Cl.[5] H01L *21/324*
U.S. Cl. 437—24 **9 Claims**



1. A method of manufacturing a semiconductor device which comprises the steps of

(a) providing a semiconductor body capable of undergoing hydrogen in-diffusion and hydrogen out-diffusion at selected temperatures;

(b) subjecting said semiconductor body to plasma hydrogenation to effect in-diffusion of atomic hydrogen, said in-diffusion being effected at a hydrogenation temperature that is higher than the out-diffusion temperature at which a substantial amount of hydrogen escapes from said semiconductor body; and

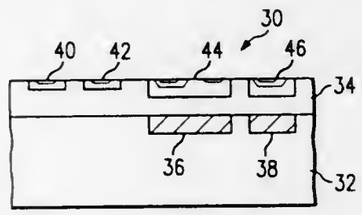
(c) maintaining said hydrogenation plasma while said semiconductor body is cooled to a temperature at which out-diffusion is substantially avoided.

5,250,445

DISCRETIONARY GETTERING OF SEMICONDUCTOR CIRCUITS

Kenneth E. Bean, Richardson; Satwinder S. Malhi, Garland, and Walter R. Runyan, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 560,473, Jul. 27, 1990, abandoned, which is a continuation of Ser. No. 287,743, Dec. 20, 1988, abandoned. This application Jan. 17, 1992, Ser. No. 824,770
Int. Cl.[5] H01L *21/205*
U.S. Cl. 437—11 **18 Claims**



1. A method for forming an integrated circuit having a multiplicity of devices, comprising the steps of:

providing a silicon substrate;

introducing germanium atoms into selected areas of a surface of said substrate to form gettering areas, wherein said gettering areas have a molar concentration of between about 1.5% and 2.0% of germanium to germanium-doped silicon;

forming a crystalline semiconductor layer on said surface of said silicon substrate such that a lattice mismatch strain field exists between said gettering areas of said substrate and said crystalline layer; and

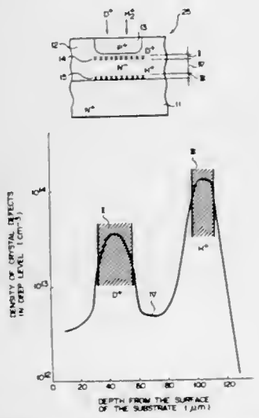
forming at least some of said multiplicity of devices in said crystalline layer, selected ones of said at least some devices disposed proximate said gettering areas having a lattice mismatch and at a surface of said crystalline layer spaced from said gettering areas such that contaminants migrate to said gettering areas and forming at least some others of said multiplicity of devices in said crystalline layer, said some others of said multiplicity of devices disposed such that contaminants are not substantially gettered from said some others of said multiplicity of devices.

5,250,446

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE BY FORMING AT LEAST THREE REGIONS OF DIFFERENT LIFETIMES OF CARRIERS AT DIFFERENT DEPTHS

Akihiko Osawa, Tokyo; Yoshiro Baba, Yokohama; Mitsuhiko Kitagawa, Tokyo, and Tetsujiro Tsunoda, Fujisawa, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 865,626, Apr. 4, 1992, abandoned, which is a continuation of Ser. No. 636,284, Dec. 31, 1990, abandoned. This application Oct. 9, 1992, Ser. No. 959,465
Claims priority, application Japan, Jan. 11, 1990, 2-3870
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—24 **4 Claims**



1. A method of manufacturing a semiconductor device comprising the steps of:

introducing a mixture of at least two kinds of charged particles having substantially the same value e/m obtained by dividing the electric charge of an ion by the mass of the ion into a semiconductor substrate simultaneously and from the same surface of said semiconductor substrate; and

forming at least three regions of different lifetimes of carriers in said semiconductor substrate.

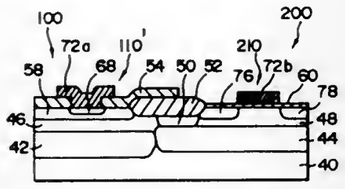
VOL 1155 ISS 1 OC 5 1993 UMI

5,250,447

SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING THE SAME

Tomoyuki Furuhata, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Aug. 14, 1991, Ser. No. 744,853
Claims priority, application Japan, Aug. 23, 1990, 2-221932; Aug. 23, 1990, 2-221933; Jul. 16, 1991, 3-175391
Int. Cl.[5] H01L 21/265, 27/02
U.S. Cl. 437—28 11 Claims



1. A method of manufacturing a semiconductor device, comprising the steps of:
(a) forming first and second buried layers on a single semiconductor substrate, forming an epitaxial grown layer on said first and second buried layers, said epitaxial grown layer having a MOS-element region and a bipolar-element region, and forming a well having a surface at the MOS-element region in said epitaxial grown layer;
(b) forming a single CVD film, as a base/emitter electrode insulating film having an emitter region, in the bipolar-element region of said epitaxial grown layer;
(c) forming a gate oxide film having a gate electrode region on the surface of said well, said gate oxide film being thinner than said single CVD film and performing ion implantation through said single CVD film to form a base region in said bipolar-element region of said epitaxial grown layer;
(d) forming an emitter opening in the emitter region of said base/emitter electrode insulating film and forming a polycrystalline silicon film simultaneously over both said bipolar-element region and said MOS-element region; and
(e) removing a portion of said polycrystalline silicon film while leaving parts of said polycrystalline silicon film at the emitter region to form an emitter electrode and at the gate electrode region to form a gate electrode;
(f) whereby both a bipolar element having said base/emitter electrode insulating film and a MOS element having said gate oxide film are formed on the single semiconductor substrate.

5,250,448

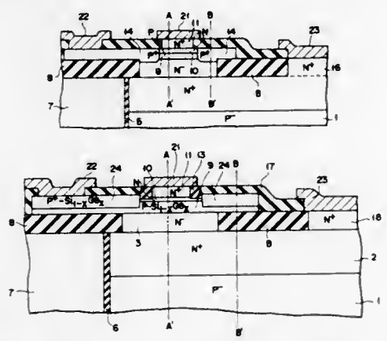
METHOD OF FABRICATING A MINIATURIZED HETEROJUNCTION BIPOLAR TRANSISTOR

Toshihiko Hamasaki, Yokohama, and Hideki Satake, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 31, 1991, Ser. No. 648,819
Claims priority, application Japan, Jan. 31, 1990, 2-18920; Nov. 14, 1990, 2-306054
Int. Cl.[5] H01L 21/265, 21/20
U.S. Cl. 437—31 16 Claims

1. A method of fabricating a miniaturized heterojunction bipolar transistor wherein at least one of an emitter layer and a collector layer is formed of a semiconductor material having a wider band gap than a material of a base layer, said method comprising the steps of:
forming a first silicon layer of a first conductivity type on a substrate, said first silicon layer serving as a collector layer;
etching a selected portion of the first silicon layer to form a groove which defines an area of said collector layer, and burying an insulating layer in said groove, said insulating layer having a top surface being substantially flush with that of said first silicon layer;
forming a silicon-germanium alloy layer of a second conductivity type, serving as a base layer, on the first silicon layer and that part of the insulating layer surrounding the first silicon layer;
forming a second silicon layer of the first conductivity type, serving as an emitter layer, on the silicon-germanium alloy layer; and
selectively doping an impurity of the second conductivity type into said base layer, said emitter layer and said collector layer, thereby to provide a heavily-doped layer serving as an external base layer, said external base layer having opposing edge portions between which the emitter and base layers are located and a distance between which is smaller than a width of said collector layer.

9. A method of fabricating a miniaturized heterojunction bipolar transistor wherein at least one of an emitter layer and a collector layer is formed of a semiconductor material having a wider band gap than a material of a base layer, said method comprising the steps of:
forming a first silicon layer of a first conductivity type on a substrate, said first silicon layer serving as a collector layer;
etching an unnecessary portion of the first silicon layer to form a groove, and burying a first insulating layer in said groove;



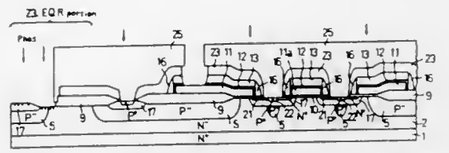
epitaxially growing a first silicon-germanium alloy of a second conductivity type, serving as a base layer, on the first silicon layer and that part of the insulating layer surrounding the first silicon layer;
forming successively a second silicon layer of the first conductivity type, which will become an emitter layer, and a third silicon layer of the first conductivity type, which will become an emitter-contact layer, on the surface of the first silicon-germanium alloy layer;
patterning a second insulating layer on the third silicon layer so as to cover the emitter region, and, using the second insulating layer as a mask, etching and removing the third silicon layer;
selectively forming a third insulating layer on a side wall of a laminated structure of the third silicon layer and the second insulating layer;
etching and removing the second silicon layer, with the second and third insulating layers used as a mask, and subsequently etching the first silicon-germanium alloy layer to a predetermined thickness;
epitaxially growing a second silicon-germanium alloy layer serving as an external base layer on the remaining first silicon-germanium alloy layer, said second silicon-germanium alloy layer having a narrower band gap than the first silicon-germanium alloy layer and a greater thickness than the first silicon-germanium alloy layer; and
doping an impurity in the second silicon-germanium alloy layer, thereby forming an external base layer of the second conductivity type.

5,250,449

VERTICAL TYPE SEMICONDUCTOR DEVICE AND METHOD FOR PRODUCING THE SAME

Akira Kuroyanagi, Okazaki; Masami Yamaoka, and Yoshifumi Okabe, both of Anjo, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 30, 1991, Ser. No. 767,313
Claims priority, application Japan, Oct. 1, 1990, 2-264701
Int. Cl.[5] H01L 21/265
U.S. Cl. 437—40 9 Claims



1. A method for producing a vertical semiconductor device comprising the steps of:
preparing a semiconductor substrate provided with a semiconductor region of a first conduction type on one principal plane;
forming a gate structure including at least a gate electrode on the surface of said semiconductor region;
forming an insulating mask member having a width on each side of said gate structure;
forming channel regions of a second conduction type, said channel regions formed from opposite sides of said gate structure in a manner self-aligning with said gate structure and said mask member to create PN junctions between said channel regions and said semiconductor region, and so that
a distance L_1 between edges of said channel regions is longer than a length at which a resistance of a JFET including said channel regions below said gate structure and said semiconductor region begins increasing sharply; and
forming a source region of the first conduction type in each of said channel regions in a manner self-aligning with said gate structure and said mask member to create PN junctions between said source regions and said channel regions, each of said channel regions electrically separating a corresponding one of said source regions from said semiconductor region.

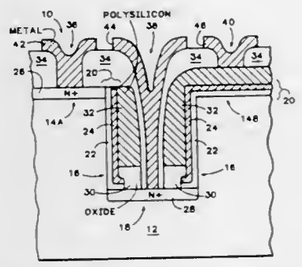
5,250,450

INSULATED-GATE VERTICAL FIELD-EFFECT TRANSISTOR WITH HIGH CURRENT DRIVE AND MINIMUM OVERLAP CAPACITANCE

Ruojia Lee, and Fernando Gonzalez, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Division of Ser. No. 682,623, Apr. 8, 1991, Pat. No. 5,122,848.
This application Feb. 12, 1992, Ser. No. 835,691
Int. Cl.[5] H01L 21/265
U.S. Cl. 437—40 19 Claims

9. A method of fabricating an insulated-gate vertical field-effect transistor comprising the steps of:
a) providing a semiconductor substrate of a first conductivity type having a reference surface;
b) forming a trench in the semiconductor substrate, the trench defining a surface including a mesa at the level of the reference surface, a sidewall, and a base recessed from the reference surface;
c) forming an insulated gate layer on the sidewall;
d) forming a first layer of a second conductivity type in the mesa and a second layer of the second conductivity type in the base of the trench;
e) forming a conductor that extends from the mesa of the trench to the base of the trench to ohmically contact the second layer of the second conductivity type;



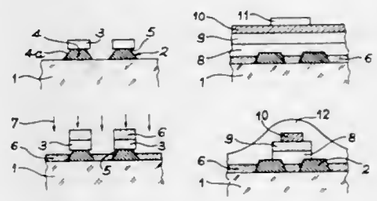
f) partially filling the trench with a spacer dielectric layer; and
g) opening the spacer dielectric layer to expose the layer of the second conductivity type at the base of the trench for ohmic contact with the conductor.

5,250,451

PROCESS FOR THE PRODUCTION OF THIN FILM TRANSISTORS

Yannick Chouan, Louanoec, France, assignor to France Telecom Etablissement Autonome De Droit Public, France

Filed Apr. 10, 1992, Ser. No. 866,342
Claims priority, application France, Apr. 23, 1991, 91 04994
Int. Cl.[5] H01L 21/265
U.S. Cl. 437—40 11 Claims



1. Process for the production of a thin film transistor comprising:
a) depositing on an electrically insulating substrate (1) a layer (2) of a first conductive material,
b) producing photosensitive resin patterns (3) on the layer of the first conductive material defining the patterns to be etched in said layer,
c) eliminating the areas of the first conductive material layer not covered with resin,
d) depositing an amorphous hydrogenated carbon layer (6) on the structure obtained in c),
e) dissolving the resin patterns in order to eliminate the amorphous carbon deposited on the resin,
f) depositing a layer (8) of a semiconductor on the structure obtained in e),
g) depositing a layer (9) of a first electrical insulant on the semiconductor layer,
h) depositing a layer (10) of a second conductive material on the layer of the first insulant,
i) photoengraving the stack of layers of the second conductive material, the first electrical insulant and the semiconductor in order to fix the dimensions of the transistor and
j) passivating the structure obtained in i) with a second electrical insulant (12).

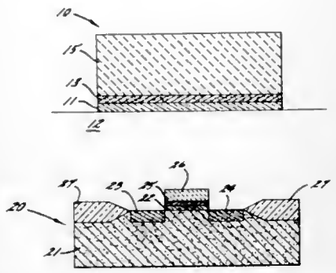
VOL 1155 ISS 1 OCT 5 1993 UMI

5,250,452

DEPOSITION OF GERMANIUM THIN FILMS ON SILICON DIOXIDE EMPLOYING INTERPOSED POLYSILICON LAYER

Mehmet Ozturk, Cary, and Jimmie Wortman, Chapel Hill, both of N.C., assignors to North Carolina State University, Raleigh, N.C.

Division of Ser. No. 515,595, Apr. 27, 1990, Pat. No. 5,101,247.
This application Jun. 19, 1991, Ser. No. 717,631
Int. Cl.[5] H01L *21/441*
U.S. Cl. 437—41 14 Claims



1. A method of depositing polycrystalline germanium films on silicon dioxide that is advantageous in the fabrication of self-aligned metal-oxide-semiconductor (MOS) structures, the method comprising:

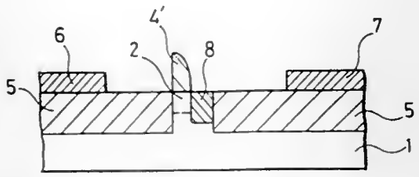
depositing a layer of polycrystalline silicon on a silcon dioxide layer until the layer of polycrystalline silicon is thick enough to support the deposition of polycrystalline germanium thereon while thin enough to be deposited sufficiently rapidly to substantially avoid deleterious effects on the characteristics of the oxide structure during the deposition process; and exposing the polycrystalline silicon layer to a germanium-containing gas at a temperature below that at which germanium will deposit on silicon dioxide alone while preventing native growth of silicon dioxide on the polycrystalline silicon layer and for a time sufficient to deposit a layer of polycrystalline germanium upon the layer of polycrystalline silicon that is thick enough to mask the polycrystalline silicon layer and the silicon dioxide layer therebeneath from ion implantation.

5,250,453

PRODUCTION METHOD OF A SEMICONDUCTOR DEVICE

Yasutaka Kohno, and Tomoki Oku, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 504,837, Apr. 5, 1990, Pat. No. 5,187,112.
This application Sep. 29, 1992, Ser. No. 953,049
Claims priority, application Japan, Apr. 12, 1989, 1-93579
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—41 6 Claims



1. A method for producing a semiconductor device comprising:

forming an active region in and at a surface of a semiconductor substrate;

depositing a first insulating film on said active region;

removing a portion of said first insulating film at the active region, leaving a side wall of said first insulating film substantially perpendicular to the surface of said substrate;

depositing a refractory metal material layer on the first insulating film and surface of said semiconductor substrate;

removing said refractory metal material except for a residual portion at the side wall of said first insulating film to produce a gate electrode;

producing an intermediate dopant concentration region in said semiconductor substrate by ion implantation using said first insulating film and said gate electrode as a mask;

depositing a second insulating film on the first insulating film, gate electrode, and surface of said substrate;

removing said second insulating film except for a residual portion at the gate electrode;

removing said first insulating film;

producing relatively high dopant concentration regions in said semiconductor substrate by ion implantation using said gate electrode and the residual portion of said second insulating film as a mask; and

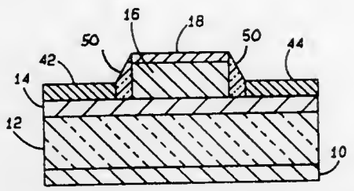
producing a drain electrode on the relatively high dopant concentration regions at a first side of the gate electrode where said intermediate dopant concentration region is disposed and producing a source electrode on the other of said relatively high dopant concentration regions opposite the first side of said gate electrode.

5,250,454

METHOD FOR FORMING THICKENED SOURCE/DRAIN CONTACT REGIONS FOR FIELD EFFECT TRANSISTORS

Witold P. Maszara, Columbia, Md., assignor to Allied Signal Inc., Morris Township, Morris County, N.J.

Filed Dec. 10, 1992, Ser. No. 988,584
Int. Cl.[5] H01L *21/336, 21/3205*
U.S. Cl. 437—41 15 Claims



11. A method for thickening the source and drain contact regions of a field effect transistor formed on a substrate comprising the steps of:

forming a gate on said silicon layer between said source contact region and said drain contact region, said gate including a side wall spacer separating said gate from said source contact region and said drain contact region, respectively;

depositing a layer of amorphous silicon covering said gate, said source contact region, said drain contact region and the exposed surfaces of said side wall spacers;

heating said amorphous silicon to a temperature sufficient to induce epitaxial regrowth of said amorphous silicon layer on said source contact region and said drain contact region to form thickened source and drain contact regions;

wet-etching said substrate to selectively remove the portion of said amorphous silicon in the regions where epitaxial growth was not induced and to remove at least a portion of said insulator side wall spacer, said removal of said side wall spacer forming a groove circumscribing said gate, exposing said substrate silicon layer; and

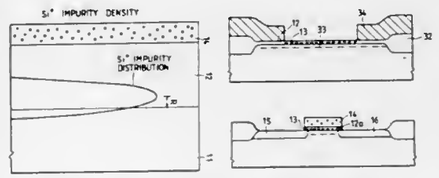
forming a second side wall spacer in said groove to prohibit a subsequently formed silicide on said source contact region and said drain contact region, respectively, from penetrating said silicon layer between said gate and said source and drain contact regions.

5,250,455

METHOD OF MAKING A NONVOLATILE SEMICONDUCTOR MEMORY DEVICE BY IMPLANTING INTO THE GATE INSULATING FILM

Takashi Ohzone, and Takashi Hori, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Continuation of Ser. No. 659,762, Feb. 25, 1991, abandoned, which is a division of Ser. No. 506,610, Apr. 10, 1990, abandoned. This application Jun. 18, 1992, Ser. No. 899,584
Int. Cl.[5] H01L *21/266*
U.S. Cl. 437—43 3 Claims



1. A method of preparing a nonvolatile semiconductor memory, comprising the steps of:

forming a gate insulating film on a silicon semiconductor substrate;

implanting a Group IV ion in said gate insulating film to form an ion-implanted region which is parallel to an interface between said silicon substrate and said gate insulating film, said ion-implanted region having a peak of impurity density of said implanted Group IV which is parallel to and located at said interface;

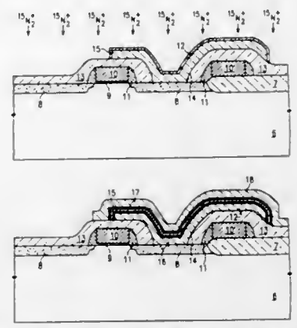
forming a gate electrode, a source region, and a drain region.

5,250,456

METHOD OF FORMING AN INTEGRATED CIRCUIT CAPACITOR DIELECTRIC AND A CAPACITOR FORMED THEREBY

Frank R. Bryant, Denton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Sep. 13, 1991, Ser. No. 759,465
Int. Cl.[5] H01L *21/70, 21/265*
U.S. Cl. 437—47 17 Claims



1. A method of fabricating a capacitor in an integrated circuit, comprising:

forming a first capacitor plate comprising silicon at a semiconducting surface of a body;

forming a first dielectric layer comprising silicon dioxide over a surface of said first capacitor plate;

implanting nitrogen through said first dielectric layer and into said first capacitor plate;

heating said body under time and temperature conditions so that at least some of the implanted nitrogen accumulates at the interface between said first capacitor plate and said first dielectric layer; and

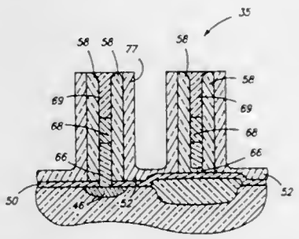
forming a second capacitor plate over said first capacitor plate in such a manner that said first dielectric layer is disposed therebetween.

5,250,457

METHOD OF FORMING A BURIED BIT LINE ARRAY OF MEMORY CELLS

Charles Dennison, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Feb. 19, 1992, Ser. No. 838,549
Int. Cl.[5] H01L *21/70, 27/00*
U.S. Cl. 437—48 40 Claims



21. A method of forming a buried bit line array of memory cells comprising:

providing an array of substantially electrically isolated conductive word lines atop a semiconductor wafer, the conductive portions of adjacent word lines being separated from one another by a selected separation distance;

providing active areas adjacent to the word lines to define an array of memory cell FETs, the active areas being defined by a first active region for electrical connection with a memory cell capacitor and a second active region for electrical connection with a bit line;

providing a layer of first material atop the wafer to a selected thickness;

patterning and etching the layer of first material to define a pattern of buried bit line grooves for formation of buried bit lines therewithin;

providing bit line contact openings to second active regions within the bit line grooves;

providing a layer of conductively doped polysilicon atop the wafer to a selected thickness sufficient to plug the bases of the bit line grooves and electrically engage second active regions therewithin to at least partially form bit lines;

providing a conductive material having higher conductivity than the conductively doped polysilicon within the bit line grooves atop the polysilicon within the bit line grooves;

providing an insulating material above the conductive material; and

providing an array of capacitors above the bit lines, the capacitors electrically engaging the first active regions.

VOL 1155 ISS 1 OC 5 1993 UMI

5,250,458

METHOD FOR MANUFACTURING SEMICONDUCTOR MEMORY DEVICE HAVING STACKED MEMORY CAPACITORS

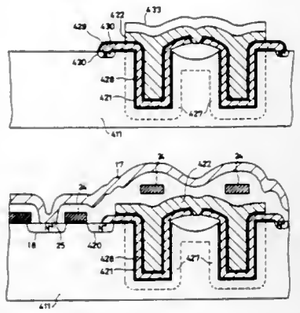
Katsuhiro Tsukamoto; Masahiro Shimizu; Kazuyasu Fujishima, and Yoshio Matsuda, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 158,323, Feb. 19, 1988, Pat. No. 4,855,953. This application Nov. 18, 1991, Ser. No. 793,971

Claims priority, applicatioo Japan, Feb. 25, 1987, 62-43422; Feb. 25, 1987, 62-43423; Feb. 25, 1987, 62-43424; Feb. 25, 1987, 62-43425; Feb. 26, 1987, 62-44275; May 19, 1987, 62-122024

Int. Cl.[5] **H01L** *29/78, 29/92*

U.S. Cl. 437—52 **14 Claims**



1. A method for manufacturing a semiconductor memory device, comprising the steps of:

preparing a semiconductor substrate of a first conductivity type,

implanting impurities of the first conductivity type into the surface of said semiconductor substrate and thereby forming an opposite electrode region,

forming a first capacitor dielectric film on said opposite electrode region,

forming a common electrode layer of a predetermined pattern on said first capacitor dielectric film, said opposite electrode, said first capacitor dielectric film and said common electrode constituting a first memory capacitor,

implanting impurities of a second conductivity type into a region which is in contact with an end surface of said common electrode layer, on the surface of said semiconductor substrate and thereby forming a first electrode region of a read/write transistor,

forming an electrode layer on said common electrode layer and the first electrode region of said transistor,

etching said electrode layer so that a sidewall electrode covering only the end surface of said common electrode layer is left on the first electrode region of said transistor,

forming a second capacitor dielectric film on said common electrode layer and the sidewall electrode,

forming a cell plate electrode of a predetermined pattern on said second capacitor dielectric film, said common electrode, said second capacitor dielectric film and said cell plate electrode constituting a second memory capacitor,

forming a control electrode of the read/write transistor in a region adjacent to said first electrode region coupled to said sidewall electrode, on the surface of said semiconductor substrate,

implanting impurities of the second conductivity type into a region adjacent to said control electrode and opposite to said first electrode region, on the surface of said semiconductor substrate and thereby forming a second electrode region of the read/write transistor, and

forming a bit line to be connected to said second electrode region.

5,250,459

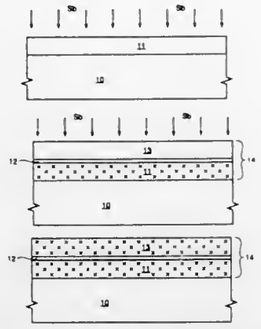
ELECTRICALLY PROGRAMMABLE LOW RESISTIVE ANTIFUSE ELEMENT

Roger R. Lee, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Apr. 14, 1992, Ser. No. 869,355

Int. Cl.[5] **H01L** *21/70, 21/265*

U.S. Cl. 437—52 **15 Claims**



1. A method of forming a programmable antifuse element fabricated on a substrate comprising the steps of:

a) forming a first conductive antifuse electrode;

b) forming an antifuse dielectric layer superjacent said first conductive electrode;

c) forming a second conductive antifuse electrode superjacent said antifuse dielectric layer;

d) selecting at least one of said conductive electrodes, wherein said selected electrode comprises an n-type dopant selected from the group consisting essentially of arsenic impurities and phosphorous impurities; and

e) introducing antimony impurities into said selected conductive electrode.

5,250,460

METHOD OF PRODUCING SEMICONDUCTOR SUBSTRATE

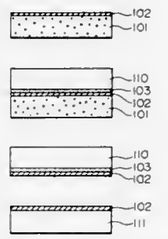
Kenji Yamagata, Kawasaki, and Takao Yonebara, Atsugi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 9, 1992, Ser. No. 958,724

Claims priority, application Japan, Oct. 11, 1991, 3-292258

Int. Cl.[5] **H01L** *21/76*

U.S. Cl. 437—62 **4 Claims**



1. A method of producing a semiconductor substrate, comprising the steps of:

forming pores in the entire body of a single-crystal silicon substrate by anodization;

epitaxially growing a single-crystal silicon layer on a surface of the porous single-crystal silicon substrate having many pores;

sticking a supporting substrate of a desired kind to the surface of the epitaxial layer of single-crystal silicon by using an adhesive of a desired kind therebetween;

selectively etching said porous single-crystal silicon substrate;

sticking said epitaxial layer fast to a transparent insulating substrate containing SiO_2 as a main constituent;

separating said supporting layer from said epitaxial layer by removing said adhesive; and

heat-treating the epitaxial layer stuck fast on said transparent insulating layer.

5,250,461

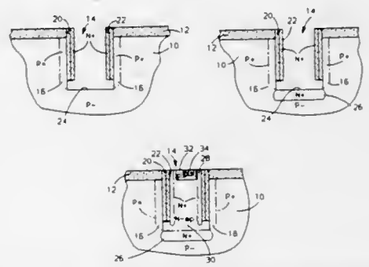
METHOD FOR DIELECTRICALLY ISOLATING INTEGRATED CIRCUITS USING DOPED OXIDE SIDEWALLS

Douglas R. Sparks, Kokomo, Ind., assignor to Delco Electronics Corporation, Kokomo, Ind.

Division of Ser. No. 701,896, May 17, 1991, abandoned. This application Apr. 20, 1992, Ser. No. 871,147

Int. Cl.[5] **H01C** *21/76*

U.S. Cl. 437—67 **17 Claims**



1. A method for dielectrically isolating an integrated circuit comprising the following steps:

providing a silicon substrate having a surface oriented along a single crystallographic plane and characterized by a first electrical conductivity type;

depositing a first layer of silicon oxide onto said surface of said substrate;

patterning said first layer of oxide so as to expose at least one region of said underlying substrate;

etching said at least one exposed region of said silicon substrate so as to form a corresponding number of trenches within said silicon substrate, the integrated circuit being subsequently formed within said trench;

depositing a second layer of silicon oxide on the sidewalls and bottom surface of said trench, said second layer of silicon oxide comprising an appropriate dopant so as to be characterized by an opposite electrical conductivity type as said silicon substrate;

etching said second layer of silicon oxide from said bottom surface of said trench so as to again expose said underlying silicon substrate, wherein the portions of said second layer of silicon oxide deposited on said sidewalls of said trench remain; and

epitaxially growing silicon from said exposed underlying silicon within said trench at a temperature sufficient to effect substantial diffusion of said dopant within said second silicon oxide layer on said sidewalls into an adjacent diffusion region of said epitaxial silicon, said diffusion region of epitaxial silicon being characterized by an electrical conductivity type opposite to said substrate;

wherein the method is effective to dielectrically

isolate the integrated circuit formed within said epitaxial silicon.

5,250,462

METHOD FOR FABRICATING AN OPTICAL SEMICONDUCTOR DEVICE

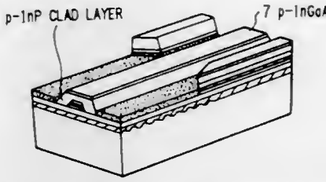
Tatsuya Sasaki; Ikuo Mito, and Tomoaki Katoh, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Aug. 26, 1991, Ser. No. 750,172

Claims priority, application Japan, Aug. 24, 1990, 2-222928; Apr. 1, 1991, 3-67498

Int. Cl.[5] **H01L** *21/20*

U.S. Cl. 437—89 **7 Claims**



1. A method for fabricating an optical semiconductor device, comprising the steps of:

forming a dielectric layer on a semiconductor substrate, said dielectric layer being formed as two dielectric stripes which are parallel to each other and defining a predetermined interval therebetween;

growing a crystal selectively on said semiconductor substrate, using said dielectric stripes as a mask, to form a multi layer structure having a width which is determined by said predetermined interval;

etching portions of said dielectric stripes to change the size of said predetermined interval; and

selectively growing an additional crystal between said predetermined interval after said etching step.

5,250,463

METHOD OF MAKING DOPED SEMICONDUCTOR FILM HAVING UNIFORM IMPURITY CONCENTRATION ON SEMICONDUCTOR SUBSTRATE

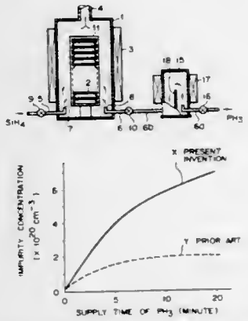
Yuuichi Mikata, Kawasaki; Katsunori Isbihara, and Katsuya Okumura, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 24, 1991, Ser No. 719,362

Claims priority, application Japan, Jun. 26, 1990, 2-167989

Int. Cl.[5] **H01L** *21/20*

U.S. Cl. 437—109 **7 Claims**



1. A method of depositing a doped semiconductor film on a plurality of semiconductor substrates comprising the steps of:

placing said plurality of semiconductor substrates in a reduced pressure reaction chamber;

introducing a raw gas for semiconductor film into said re-

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duced pressure reaction chamber to deposit an undoped semiconductor film on each of said plurality of semiconductor substrates;

decomposing an impurity raw gas in a sub-reaction chamber to produce a decomposed impurity gas;

introducing said decomposed impurity gas into said reduced pressure reaction chamber to dope said undoped semiconductor film with the dopant impurity; and

repeating the introducing and decomposing steps several times to deposit said doped semiconductor film on each of said plurality of semiconductor substrates to a predetermined thickness.

5,250,464

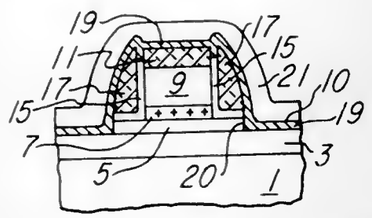
METHOD OF MAKING A LOW CAPACITANCE, LOW RESISTANCE SIDEWALL ANTIFUSE STRUCTURE

Man Wong, and David K. Liu, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 11, 1992, Ser. No. 850,192

Int. Cl.[5] H01L *21/14*

U.S. Cl. 437—170 **8 Claims**



1. A method of forming an antifuse structure comprising the steps of:

(a) providing a substrate having an oxide layer on a surface thereof,

(b) forming a pedestal having a sidewall on said oxide layer comprising a first layer of electrically conductive material on said oxide layer and a first electrically insulating layer on said first electrically conductive layer remote from said oxide layer,

(c) forming a conformal layer of electrically conductive material on said pedestal and exposed substrate extending along said sidewall,

(d) forming a sidewall insulating layer along the sidewall portion of said layer of electrically conductive material,

(e) removing all of the exposed portion of said layer of electrically conductive material while retaining the portion of said layer of electrically conductive material between said pedestal and said sidewall insulating layer,

(f) forming a second layer of electrically insulating material over the structure of (e), and

(g) forming a second layer of electrically conductive material over said second layer of electrically insulating material.

5,250,465

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES

Masako Iizuka; Ryoichi Mukai, and Motoo Nakano, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 24, 1992, Ser. No. 825,255

Claims priority, application Japan, Jan. 28, 1991, 3-008464

Int. Cl.[5] H01L *21/26, 21/306*

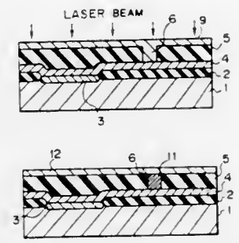
U.S. Cl. 437—173 **14 Claims**

1. A method of manufacturing a semiconductor device having a conductive layer connected to conductive plugs formed in via-holes, the method comprising;

forming via-holes in an interlayer insulating film provided on an underlying conductive layer, the periphery of each via hole being defined by a corresponding inside wall of the interlayer insulating film;

depositing a first, continuous metal film on the top surface of the interlayer insulating film and the inside wall of each of the via-holes by a chemical vapor deposition process;

depositing a second metal film on the first metal film by a physical vapor deposition process; and



melting the first and the second metal films by irradiation of same with an energy beam, thereby to cause the melted metal material of corresponding portions of the first and second metal films, deposited on the top surface of the interlayer insulating film adjacent to the periphery of each via-hole, to flow into and fill the via-hole completely and thereby form a conductive plug therein.

5,250,466

METHOD FOR MANUFACTURING OHMIC CONTACTS FOR COMPOUND SEMICONDUCTORS

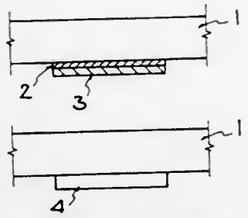
Jochen Gerner, Wiesloch, and Werner Schairer, Weinsberg, both of Fed. Rep. of Germany, assignors to Telefunken electronic GmbH, Heilbronn, Fed. Rep. of Germany

Filed Apr. 10, 1992, Ser. No. 866,861

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1991, 4113969

Int. Cl.[5] H01L *21/441, 21/477*

U.S. Cl. 437—184 **13 Claims**



1. A method for manufacturing ohmic contacts on an n-doped semiconductor layer of III-V compound semiconductor material comprising the following process steps:

depositing a first metal layer comprising AuGe on said semiconductor layer, wherein the Ge content of said first metal layer does not exceed 1% by weight,

depositing a second metal layer comprising Au on said first metal layer, and

tempering the layer sequence at 360°–390° C. for a duration of 40–180 minutes.

5,250,467

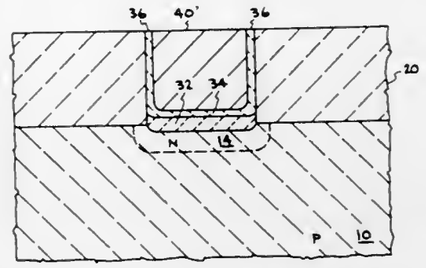
METHOD FOR FORMING LOW RESISTANCE AND LOW DEFECT DENSITY TUNGSTEN CONTACTS TO SILICON SEMICONDUCTOR WAFER

Sasson Somekh, Los Altos Hills; Jaim Nulman, Palo Alto, and Mei Chang, Cupertino, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Mar. 29, 1991, Ser. No. 677,681

Int. Cl.[5] H01L *21/44, 21/48*

U.S. Cl. 437—192 **18 Claims**



1. A process for forming low resistance, low defect density, planar electrical contacts through a SiO_2 insulation layer to a silicon semiconductor wafer thereunder which comprises:

a) sputtering depositing, in a PVD station in a vacuum apparatus, a layer of titanium over:

i) exposed surfaces of said insulation layer, including sidewall insulation surfaces of a contact opening previously formed through said insulation layer to said silicon wafer; and

ii) a surface of said silicon wafer exposed by said contact opening;

b) transferring said titanium-coated wafer from said PVD station to an annealing station in a vacuum apparatus without exposing said titanium to oxygen-containing gases;

c) initially annealing said deposited titanium at said annealing station within a temperature range of from about 500° C. to about 695° C. in the presence of a nitrogen-bearing gas, and in the absence of an oxygen-containing gas, to form titanium silicide over the exposed silicon wafer surface at the bottom of said contact opening and titanium nitride over said insulation surface and said titanium silicide;

d) further annealing said titanium nitride and said titanium silicide within a temperature range of from about 800° C. to about 900° C.;

e) transferring said wafer from said annealing station to a CVD station in a vacuum apparatus;

f) depositing a layer of tungsten by a CVD process over:

i) said titanium nitride surfaces on said SiO_2 insulating layer; and

ii) said titanium nitride on said titanium silicide formed over said silicon substrate;

to fill said contact opening with tungsten and form a planarized layer of tungsten over said titanium nitride-coated insulation layer;

to thereby form a good electrical contact between said tungsten in said contact opening and said silicon wafer through said titanium nitride and titanium silicide, and a good bond between said tungsten and said titanium nitride formed on said surfaces of said insulating layer.

5,250,468

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE INCLUDING INTERLAYING INSULATING FILM

Masazumi Matsuura; Hideo Kotani; Atsuhiro Fujii; Shigeo Nagao, and Hideki Genjo, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

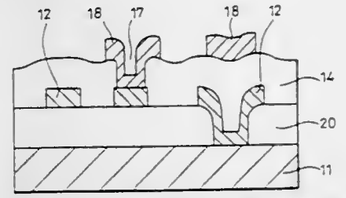
Division of Ser. No. 618,284, Nov. 28, 1990, Pat. No. 5,132,774.

This application Mar. 25, 1992, Ser. No. 857,141

Claims priority, application Japan, Feb. 5, 1990, 2-26751; Nov. 6, 1990, 2-301467

Int. Cl.[5] H01L *21/441*

U.S. Cl. 437—194 **5 Claims**



1. A method of forming an interlayer insulating film for mutually insulating a first layer and a second layer of conductor patterns in a semiconductor device, said method comprising the steps of:

preparing a reaction gas including at least ozone and silicon alkoxide, with the ratio of ozone with respect to said silicon alkoxide in said reaction gas adjusted to be not less than 5, and

forming an insulating film by CVD reacting said reaction gas at atmospheric pressure at a temperature of 350°–450° C., wherein said interlayer insulating film includes at least the insulating film formed by said atmospheric pressure CVD reaction.

5,250,469

IC MOUNTING CIRCUIT SUBSTRATE AND PROCESS FOR MOUNTING THE IC

Yasuyuki Tanaka, Tsuchiura, and Chikafumi Oomachi, Kashiwa, both of Japan, assignors to Nippon Mektron, Ltd., Tokyo, Japan

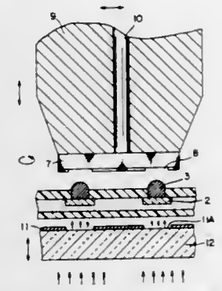
PCT No. PCT/JP91/00680, § 371 Date Dec. 13, 1991, § 102(e) Date Dec. 13, 1991, PCT Pub. No. WO91/18415, PCT Pub. Date Nov. 28, 1991

PCT Filed May 22, 1991, Ser. No. 776,340

Claims priority, application Japan, May 24, 1990, 2-134783

Int. Cl.[5] H01L *21/60*

U.S. Cl. 437—209 **12 Claims**



4. An IC mounting process comprising the steps of: manufacturing an IC mounting circuit substrate by forming a predetermined circuit conductor pattern on a first side of an insulating layer, forming electrically conductive IC pad junctioning

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bumps electrically connected to predetermined portions of circuit conductor pattern and projecting through said insulating layer and extending outwardly from a second side of said insulating layer which is disposed oppositely with respect to said first side, and forming an insulating coating which is transparent to an irradiation beam over said conductor pattern whereby a said irradiation beam may be transmitted through said coating for heating and melting said bumps; providing a shielding mask member over said transparent insulating coating, said shielding mask member being provided with openings through which a said irradiation beam may pass, said openings of said shielding mask member being in registration with said bumps; and causing the contact pads of an IC chip to contact said bumps on said first side of said insulating layer while heating and melting said bumps by the action of a said irradiation beam supplied concentratedly from the side of said transparent insulating coating to said bumps through said shielding mask member openings whereby the IC chip contact pads will be electrically connected to said conductor pattern through said bumps.

5,250,470

METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE WITH CORROSION RESISTANT LEADS

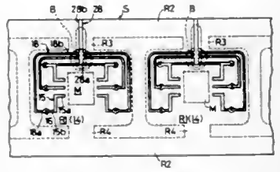
Tadashi Yamaguchi, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

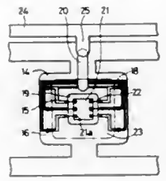
Division of Ser. No. 627,413, Dec. 14, 1990, abandoned. This application Jan. 29, 1992, Ser. No. 826,689

Claims priority, application Japan, Dec. 22, 1989, 1-331028

Int. Cl.[5] H01L *21/56, 21/58, 21/60*

U.S. Cl. 437—211 **22 Claims**





1. A method of fabrication of a semiconductor device comprising the steps of:

providing a board member having first regions disposed for forming a row of supporting members, second regions disposed for forming a pair of ribbon parts extending parallel with each other, and third regions disposed for forming pairs of bridging parts for the respective supporting members and for bridging the corresponding supporting members to said pair of ribbon parts, said first regions each having a mount region for mounting of a semiconductor element having pads;

forming on each of said first regions, a respective conductive pattern comprising individual lead elements having first ends positioned near said mount region and having second ends connected in a branch area to a first end of a common plating lead element extending through one of the corresponding third regions;

electroplating a protective film over said conductive pattern using said common plating lead element as a plating lead;

removing the parts of said individual lead elements and said common lead element in said branch area to isolate the remaining parts of said individual lead elements from each other;

mounting a semiconductor element having pads on said mount region in each said first region;

connecting said first ends of said leads and pads of said semiconductor element by means of conductors; and

sealing said branch area, said semiconductor element and said conductors by means of a sealing material.

5,250,471

METHOD FOR MANUFACTURING COMPOUND SEMICONDUCTOR DEVICES INCLUDING A STEP WHERE THE SEMICONDUCTOR IS ETCHED WITHOUT EXPOSURE TO LIGHT

Kazuo Kogure, Urawa, and Masanori Ishii, Sagamihara, both of Japan, assignors to The Furukawa Electric Co., Tokyo and Fujitsu Limited, Kawasaki, both of Japan

Filed Dec. 22, 1989, Ser. No. 453,297

Claims priority, application Japan, Dec. 26, 1988, 63-328696

Int. Cl.[5] H01L *21/302*

U.S. Cl. 437—225 **12 Claims**

1. A method for manufacturing a compound semiconductor device in which a mixed crystal layer containing a III-V group compound is formed on a substrate, characterized in that when an etching portion of said mixed crystal layer is subjected to etching by an etching liquid, said etching portion is subjected to etching while maintaining the state of not exposing light to the etching portion, thereby preventing occurrence of defects.

5,250,472

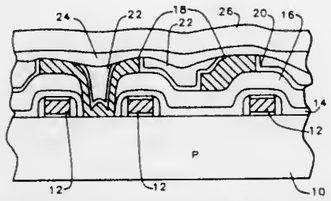
SPIN-ON-GLASS INTEGRATION PLANARIZATION HAVING SILOXANE PARTIAL ETCHBACK AND SILICATE PROCESSES

Kuang-Chao Chen, and Shaw-Tzeng Hsia, both of Taipei, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Sep. 3, 1992, Ser. No. 941,161

Int. Cl.[5] H01L *21/465*

U.S. Cl. 437—231 **12 Claims**



7. The method of planarizing the surfaces of a submicron integrated circuit without the incorporation of voids and etch encroachment of a conductive layer comprising:

providing a thin insulator layer over said conductive layer which connects devices within said integrated circuit wherein there are substantial surface irregularities;

said thin insulator layer is deposited upon the said surface irregularities having vertical and horizontal components and the sidewall thickness of said insulator layer covering the vertical components is equal to 0.6 times the surface thickness of said insulator layer on the horizontal components and furthermore, the space between adjoining insulator sidewalls wherein the size of said space equals the feature size minus two times said sidewall thickness must be greater than or equal to 0.3 microns so that said space can be filled by said siloxane spin-on-glass;

covering said thin insulator layer with at least one siloxane spin-on-glass layer to fill the valleys of the said irregularities and baking but not curing said siloxane spin-on-glass layer;

partially blanket anisotropically etching said siloxane spin-on-glass layer through its thickness and the thickness of said insulator layer to underlying metal layer at its highest points and leaving the siloxane layer portions in said valleys;

covering said partially etched back siloxane spin-on-glass layer with a silicate spin-on-glass layer and baking said silicate spin-on-glass layer;

curing both said siloxane and said silicate spin-on-glass layers; and

depositing top dielectric layer over said silicate spin-on-glass layer to complete said planarization.

5,250,473

METHOD OF PROVIDING SILICON DIOXIDE LAYER ON A SUBSTRATE BY MEANS OF CHEMICAL REACTION FROM THE VAPOR PHASE AT A LOW PRESSURE (LPCVD)

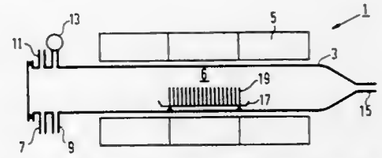
Jacobus W. M. Smits, Eindhoven, Netherlands, assignor to U.S. Philips Corp., New York, N.Y.

Filed Aug. 2, 1991, Ser. No. 739,624

Claims priority, application Netherlands, Aug. 6, 1990, 9001770

Int. Cl.[5] H01L *21/00, 21/02, 21/20, 21/205*

U.S. Cl. 437—238 **12 Claims**



1. A method of providing silicon dioxide layer having a substantially uniform thickness at an improved deposition rate on a substrate by means of chemical vapor deposition at a low pressure (LPCVD) from a mixture comprising an oxidizing agent and a chlorosilane, wherein the chlorosilane is a monochlorosilane of the formula R_1R_2SiHCl, where R_1 and R_2 represent an alkyl group and wherein the silicon dioxide layer may be deposited on various substrates including substrates comprising aluminum.

5,250,474

GLASS POWDER WHICH IS CRYSTALLIZABLE TO YIELD A SINTERED GLASS CERAMIC CONTAINING HEXAGONAL CORDIERITE AS THE PRINCIPAL CRYSTALLINE PHASE

Friedrich Siebers, Mainz, Fed. Rep. of Germany, assignor to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Continuation of Ser. No. 832,832, Feb. 7, 1991, abandoned. This application Feb. 9, 1993, Ser. No. 15,086

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1991, 4103778

Int. Cl.[5] C03C *10/08, 3/112*

U.S. Cl. 501—9 **13 Claims**

1. Glass powder crystallizable to yield a sintered glass ceramic containing hexagonal cordierite as at least 50% by weight of resultant crystalline phase, said glass powder having a composition, in mol % on an oxide basis, consisting essentially of

48–61	SiO_2	0–1.5	BaO	0–3	ZnO
10–16	Al_2O_3	0–3	PbO	0–3	CaO
23–35	MgO	0–3	SrO		
0–4	B_2O_3	0–3	SnO_2		
0–2.5	P_2O_5	0–3	Σ PbO + SrO + SnO_2		
0.5–5	Σ B_2O_3 + P_2O_5	0.5–12	F as a substitute for O.		

5,250,475

BLACK GLASS PASTES FOR GLAZING AND THEIR PRODUCTION

Paul Zybell, Dalmine, and Ruggero Bertocchi, Capriate S.G., both of Italy, assignors to Bayer S.p.A.

Filed Mar. 9, 1992, Ser. No. 848,154

Claims priority, application Italy, Mar. 20, 1991, MI-91A000747

Int. Cl.[5] C03C *8/14, 8/16, 8/10*

U.S. Cl. 501—17 **7 Claims**

1. Black glass paste comprising ground, sulfide or polysulfide modified lead borosilicate glass which has 0.1 to 12% by weight - based on borosilicate glass - of sulfides and/or polysulfides fused therein, 10 to 35% by weight of black ground inorganic pigments and 15 to 25% by weight of a carrier medium.

5,250,476

CERAMIC BINDER AND USE THEREOF

Gurli Mogensen, Bjaeverskov, Denmark, and Bruno Kindl, Peterborough, Canada, assignors to Haldor Topsoe A/S, Denmark

Filed Apr. 13, 1992, Ser. No. 867,751

Claims priority, application Denmark, Apr. 30, 1991, 0806/91

Int. Cl.[5] C04B *35/02*

U.S. Cl. 501—94 **16 Claims**

1. Ceramic binder for forming and processing ceramic ware, comprising a sol-gel of a mixture of an aluminum tridecamer and at least one low charged metal hydroxy cation, the aluminum tridecamer and low charged metal hydroxy cation being able to form an aqueous sol, wherein the aluminum tridecamer and the low charged metal hydroxy cation are present in the binder in amounts effective for binding powders, fibers or mixtures thereof of a ceramic material.

5,250,477

SILICON NITRIDE BASED COMPOSITE WITH IMPROVED FRACTURE TOUGHNESS

Joseph G. Baldoni, II, Norfolk, and Sergej-Tomislav Buljan, Acton, both of Mass., assignors to GTE Valenite Corporation, Troy, Mich.

Division of Ser. No. 892,642, Aug. 4, 1986, abandoned. This application Oct. 11, 1990, Ser. No. 596,112

Int. Cl.[5] C04B *35/56*

U.S. Cl. 501—95 **2 Claims**

1. A method for continuous or interrupted machine cutting of cast iron stock comprising the step of milling, turning, or boring with a shaped tool of a densified abrasion and fracture resistant composite material comprising:

about 5–60% by volume of one or more first dispersoid materials selected from the group consisting of whiskers of carbides, nitrides, and carbonitrides of titanium, hafnium, tantalum, niobium, and tungsten, and solid solutions thereof; and

optionally, one or more other dispersoid materials selected from the group consisting of particles and polycrystalline fibers of carbides, nitrides, and carbonitrides of titanium, zirconium, hafnium, vanadium, niobium, tantalum, chromium, molybdenum, and tungsten, and silicon carbide, titanium diboride, hafnium diboride, and alumina, and mixtures and solid solutions thereof; wherein the combined dispersoid materials comprise about 5–70% by volume of the densified composite material;

the remainder of the densified composite material being a two-phase matrix comprising a first phase of silicon nitride grains and a second, continuous intergranular phase formed from one or more suitable densification aids;

wherein the dispersoid materials are substantially uniformly distributed in the two-phase matrix, and the densified composite material has a density greater than about 98% or theoretical and a fracture toughness greater than or equal to 3.5 MPa.m$^{\frac{1}{2}}$.

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5,250,478
ALUMINUM NITRIDE SINTERED BODY AND PROCESS FOR PREPARATION THEREOF

Masanobu Ishida, and Yoshihiro Okawa, both of Kokubu, Japan, assignors to Kyocera Corporation, Kyoto, Japan

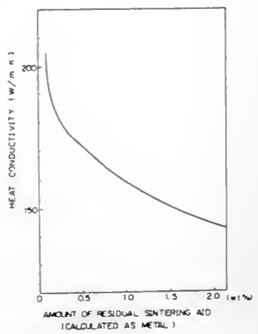
Continuation of Ser. No. 386,789, Jul. 27, 1989, abandoned. This application Jan. 17, 1992, Ser. No. 824,681

Claims priority, application Japan, Jul. 28, 1988, 1-189133; Apr. 18, 1989, 1-98495; Apr. 18, 1989, 63-98496

The portion of the term of this patent subsequent to Dec. 31, 2008, has been disclaimed.

Int. Cl.[5] C04B *35/58*

U.S. Cl. 501—98 36 Claims



1. An aluminum nitride sintered body consisting essentially of: aluminum nitride and a sintering aid, wherein the sintered aid is composed of at least one component selected from the group consisting of Yb_2O_3 and Er_2O_3, and the sintered body contains up to 0.5% by weight of Yb and/or Er as the metal and has a density of 3.2 to 3.3 g/cm^3 and a heat conductivity of at least 170 W/m·K.

5,250,479
MAGNESIA-CARBON REFRACTORY COMPOSITIONS FOR SLIDE GATE PLATES AND METHOD OF MANUFACTURE

Gilbert Rancoule, Monaca, and Duane L. DeBastiani, Pittsburgh, both of Pa., assignors to Vesuvius Crucible Company, Pittsburgh, Pa.

Filed Apr. 16, 1992, Ser. No. 869,932

Int. Cl.[5] C04B *35/04, 35/52*

U.S. Cl. 501—101 20 Claims

1. A fired, carbon impregnated refractory shape formed from a batch consisting essentially of by weight percent:

2 to 8 graphite;

3 to 8 aluminum metal powder;

1 to 5 of at least one of a silicon yielding powder and a finely divided silica;

an effective amount of carbon resin necessary to form a carbon bond during firing;

the balance coarse and fine magnesia grains plus incidental impurities; and

wherein said fired and carbon impregnated shape has a total carbon content of between about 6 to 12 weight percent and has an apparent porosity of between about 3%–6%.

5,250,480
METHOD FOR PREPARING ZIRCON POWDER

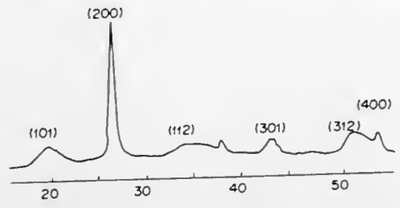
Hirokuni Hoshino; Toshiyuki Mori; Hiroshi Yamamura, and Naoki Kosugi, all of Kanagawa, Japan, assignors to Tosoh Corporation, Tokyo, Japan

Continuation of Ser. No. 902,429, Jun. 24, 1992, abandoned, which is a continuation of Ser. No. 668,261, Mar. 12, 1991, abandoned. This application Dec. 3, 1992, Ser. No. 985,455

Claims priority, application Japan, Mar. 16, 1990, 2-64026; Sep. 19, 1990, 2-247060; Dec. 18, 1990, 2-411264

Int. Cl.[5] C04B *35/48*

U.S. Cl. 501—106 2 Claims



1. A method for preparing zircon powder having a purity of at least 96%, which comprises mixing (1) silica sol and (2) an aqueous zirconium oxychloride solution having a concentration which would be from 0.1 to 2 mols/l after mixed with the silica sol, in a SiO_2/ZrO_2 molar ratio of from 0.95 to 1.10, heating the mixture to hydrolyze the zirconium oxychloride, followed by dehydration treatment to obtain a powder, heating the powder from room temperature to a calcination temperature over a period of from 0.7 to 30 hours and calcining the powder at a temperature of from 1,200° to 1,400° C. for a period of time satisfying the relation of:

$$t \geqq 116 - 0.08T$$

where t is the calcination time (hr) and T is the calcination temperature (°C.), or heating the powder from room temperature to a calcination temperature over a period of from 0.8 to 70 hours and calcining the powder at a temperature higher than 1,400° C. and not higher than 1,700° C. for a period of time satisfying the relation of:

$$t \geqq 18 - 0.01T$$

where t is the calcination time (hr) and T is the calcination temperature (°C.).

5,250,481
HIGH DIELECTRIC CERAMIC COMPOSITION

Sung Y. Park, Seoul, Rep. of Korea, assignor to Samsung Electro-Mechanics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 24, 1992, Ser. No. 950,165

Claims priority, application Rep. of Korea, Dec. 28, 1991, 24911

Int. Cl.[5] C04B *35/46*

U.S. Cl. 501—138 1 Claim

1. A ceramic composition having a high dielectric constant, said ceramic composition essentially consisting of 97.04 weight % to 97.80 weight % of $BaTiO_3$ as a host material, 1.42 weight % to 1.92 weight % of Nb_2O_5, 0.04 weight % to 0.06 weight % of MnO_2, 0.33 weight % to 0.45 weight % of CoO, 0.31 weight % to 0.41 weight % of CeO_2 and 0.10 weight % to 0.12 weight % of ZnO.

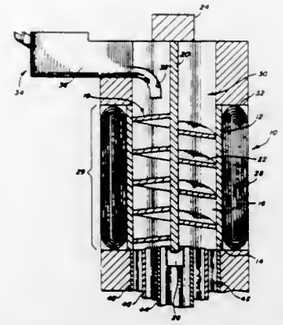
5,250,482
PROCESS FRO MAGNETIC BENEFICIATING PETROLEUM CRACKING CATALYST

Richard D. Doctor, Lisle, Ill., assignor to University of Chicago, Chicago, Ill.

Filed Aug. 20, 1992, Ser. No. 933,497

Int. Cl.[5] B01J *29/38, 37/34;* C01G *11/05;* B03C *1/36*

U.S. Cl. 502—5 10 Claims



1. A process for beneficiating a particulate zeolite petroleum cracking catalyst having metal values in excess of 1000 ppm nickel equivalents, comprising passing said particulate catalyst through a magnetic field in the range of from about 2 Tesla to about 5 Tesla generated by a superconducting quadrupole open-gradient magnetic system for a time sufficient to effect separation of said catalyst into a plurality of zones having different nickel equivalent concentrations, said zones including at least on zone having nickel equivalents of about 6,000 ppm and greater, another zone having nickel equivalents in the range of from about 2000 ppm to about 6000 ppm, at least one zone having nickel equivalents of about 2000 ppm and less, separating said catalysts from said zones, and recycling the catalyst from said another zone to a fluidized bed of zeolite petroleum cracking catalyst for producing a higher percentage of gasoline during petroleum cracking than catalyst having higher or lower nickel equivilants.

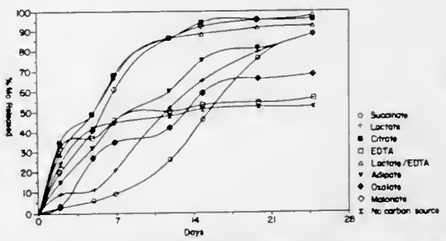
5,250,483
METHOD FOR TREATMENT OF CATALYSTS USING DENITRIFYING BACTERIA

George T. Sperl, and Donald O. Hitzman, both of Bartlesville, Okla., assignors to Geo-Microbial Technologies, Inc., Ochelata, Okla.

Filed May 22, 1992, Ser. No. 887,011

Int. Cl.[5] B01J *37/36, 29/38;* C01G *39/00, 51/00*

U.S. Cl. 502—7 10 Claims



1. A method for regenerating a catalyst, comprising the step of treating a catalyst containing contaminating metals with a solution containing heterotrophic, denitrifying bacteria to remove said contaminating metals and wherein the activity level of the catalyst is restored.

5,250,484
SURFACE MODIFIED POROUS ACIDIC CRYSTALLINE CATALYST

Jeffrey S. Beck, Lawreoceville; Roland H. Heck, Pennington, both of N.J., and Jose G. Santiesteban, Yardley, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Nov. 26, 1991, Ser. No. 798,485

Int. Cl.[5] B01J *29/28, 37/00*

U.S. Cl. 502—71 5 Claims

1. A process of making a shape-selective catalyst comprising contacting acidic porous crystalline material with an aqueous solution of ammonia borane deactivating agent to effect deposition of said ammonia borane on the surface of said material; and

exposing said material to thermal conditions which convert said ammonia borane to a ceramic having a boron to nitrogen bond.

2. The process of claim 1 wherein said acidic porous crystalline material is a crystalline silicate selected from the group consisting of ZSM-5, ZSM-11, ZSM-12, ZSM-22, ZSM-23, ZSM-35, and ZSM-48, said aqueous solution of ammonia borane deactivating material has an $NH_3.BH_3$ molar concentration of 0.005M to 10M and said thermal conditions comprise temperatures of 50° to 700° C.

5,250,485
PROCESS FOR PREPARING CATALYSTS USED FOR PRODUCTION OF METHACROLEIN AND METHACRYLIC ACID

Toru Kuroda, and Motomu Oh-Kita, both of Otake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Jul. 8, 1992, Ser. No. 910,585

Claims priority, application Japan, Jul. 17, 1991, 3-176997

Int. Cl.[5] B01J *31/00*

U.S. Cl. 502—159 1 Claim

1. A process for preparing a catalyst used for production of methacrolein and methacrylic acid by vapor phase catalytic oxidation of isobutylene or tertiary butanol which comprises adding an organic high-molecular weight compound selected from the group consisting of polymethyl methacrylate, polyisobutyl methacrylate and polystyrene, and having an average particle size of 0.01 μm to 10 μm to a catalyst component having the composition represented by the formula:

$$Mo_aBi_bFe_cA_dX_eY_fZ_gO_h$$

wherein Mo, Bi, Fe and O denote molybdenum, bismuth, iron and oxygen, respectively, A denotes at least one element selected from the group consisting of nickel and cobalt, X denotes at least one element selected from the group consisting of potassium, rubidium, cesium and thallium, Y denotes at least one element selected from the group consisting of magnesium, zinc, manganese, lead, tin and chromium, Z denotes at least one element selected from the group consisting of phosphorus, boron, antimony, silicon, sulfur, tellurium, tungsten and cerium, a, b, c, d, e, f, and g denote atomic ratios of respective elements, and when a is 12, b is 0.01–3, c is 0.5–4, d is 1–12, e is 0.01–2, f is 0–5 and g is 0–20, and h is the number of oxygen atoms necessary to satisfy valences of the above respective components to obtain a mixture, molding the resulting mixture to obtain a molded product and heat treating the molded product.

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5,250,486
POLYPHENYLENE ETHER PROCESS AND RESIN COMPOSITION

Timothy D. Shaffer, Voorheesville, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 629,538, Dec. 18, 1990, Pat. No. 5,037,943. This application May 13, 1991, Ser. No. 699,105
Int. Cl.[5] B01J *31/00*
U.S. Cl. 502—164 **15 Claims**

1. A catalyst system for the oxidative polymerization of a 2,6-disubstituted phenol which comprises an effective amount of:
(a) a manganese compound;
(b) a chelating agent;
(c) a substantially water-soluble base;
(d) an unsaturated compound selected from the class consisting of alpha, beta-unsaturated ketones, beta-diketones having at least one hydrogen atom on the carbon between the ketone carbonyl groups, and a vinyl ether; and
(e) optionally, a phase transfer agent.

5,250,487
CARRIER CATALYST, PROCESS FOR ITS PREPARATION, AND ITS USE FOR THE PREPARATION OF VINYL ACETATE

Peter Wirtz, Königstein/Taunus; Karl-Fred Wörner, Eschborn; Friedrich Wunder, Hattersheim am Main; Klaus Fichler, Eschborn; Günter Roscher, Kelkheim, all of Fed. Rep. of Germany, and Ioan Nicolau, Corpus Christi, Tex., assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 18, 1992, Ser. No. 900,839
Claims priority, application Fed. Rep. of Germany, Jun. 21, 1991, 4120492
Int. Cl.[5] B01J *37/06, 23/06, 23/44*
U.S. Cl. 502—243 **15 Claims**

1. A process for the preparation of a catalyst which contains palladium and/or compounds thereof and alkali metal compounds, and additionally cadmium compounds and/or gold and/or compounds thereof, on support particles which ave been pressed from SiO_2 or an SiO_2-Al_2O_3 mixture with the aid of a binder comprising one or more Li, Mg, Al, Zn, Fe or Mn salts of a C_2–C_{26}-carboxylic acid and have subsequently been roasted in oxygen-containing gases which comprises
a) washing the roasted support particles with an acid which does not react with SiO_2 or SiO_2-Al_2O_3 mixtures, until no further cations of the binder employed during pressing of the support particles are released from the support particles;
b) impregnating the support particles with palladium, and optionally gold or cadmium or mixtures thereof;
c) bringing the impregnated support particles into contact with a solution of a base at least until the thickness of the noble metal shell generated in this way on the support particles no longer changes substantially; and
d) impregnating the support particles with an alkali metal compound.

11. A catalyst made by the process as claimed in claim 1.

5,250,488
MINERAL FIBERS DECOMPOSABLE IN A PHYSIOLOGICAL MEDIUM

Sylvie Thelohan, 5, Rue Georges Sache, Paris, France 75014 ; Alain De Meringo, 9, Rue Terdonnet, Paris, France 75010 ; Hans Furtak, Im Oberkammerer 35, Speyer Am Rhein, Fed. Rep. of Germany, and Wolfgang Holstein, Herderstrasse 2, Homberg, Fed. Rep. of Germany 6313

Continuation of Ser. No. 708,661, May 31, 1991, abandoned, which is a continuation-in-part of Ser. No. 565,282, Aug. 9, 1990, Pat. No. 5,108,957. This application Nov. 25, 1992, Ser. No. 982,136
Claims priority, application France, Aug. 11, 1989, 89 10834; Feb. 9, 1990, 90 01497; Jun. 1, 1990, 90 06841
Int. Cl.[5] C03C *13/06*
U.S. Cl. 501—36 **7 Claims**

1. A mineral fiber composition decomposable in a physiological medium, said composition consisting essentially of:

SiO_2	37 to 58 wt. %;
Al_2O_3	4 to 14 wt. %;
CaO	7 to 40 wt. %;
MgO	4 to 16 wt. %;
P_2O_5	1 to 10 wt. %;
Fe_2O_3	0.1 to 15 wt. %;
$Na_2O + K_2O$	up to about 7 wt. %; and
Impurities	up to about 3 wt. %,

wherein the amount of $CaO+MgO+Fe_2O_3$ is greater than 25 wt % of said composition.

5,250,489
CATALYST STRUCTURE HAVING INTEGRAL HEAT EXCHANGE

Ralph A. Dalla Betta; Fabio H. Ribeiro, both of Mountain View; Toru Shoji, Sunnyvale, all of Calif.; Kazunori Tsurumi, Fujisawa; Nobuyasu Ezawa, Koto, both of Japan, and Sareoto G. Nickolas, Livermore, Calif., assignors to Catalytica, Inc., Mountain View, Calif. and Tanaka Kikinzoku Kogyo K.K., Japan

Filed Nov. 26, 1990, Ser. No. 617,974
Int. Cl.[5] B01J *23/40, 23/42, 23/46*
U.S. Cl. 502—262 **41 Claims**

1. A catalyst structure comprising a metallic catalyst support comprising aluminum, a high temperature metal alloy, stainless steel, or an aluminum-containing steel having a multitude of longitudinal passageways adapted for the passage of combustible gas and having interior surfaces where at least a portion but not all of the interior surfaces are coated with a catalytic material suitable for oxidizing the combustible gas, and the interior surfaces coated with catalytic material are in heat exchange relationship with interior surfaces not coated with a catalytic material.

5,250,490
NOBLE METAL SUPPORTED ON A BASE METAL CATALYST

James S. Ritscher, Marietta, Ohio; Wei T. Yang, Belle Mead, N.J.; George M. Omietanski, Marietta, Ohio; Robert L. Ocheltree, Pennsboro, and Earl E. Malson, New Martinsville, both of W. Va., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Dec. 24, 1991, Ser. No. 813,083
Int. Cl.[5] B01J *23/60, 23/64, 23/89*
U.S. Cl. 502—313 **24 Claims**

1. An electroless process for making a catalyst having a noble metal deposited on a base metal, which process comprises in a liquid or gaseous medium
(1) contacting a base metal with a chemical cleaning agent selected from the group consisting of a chlorosilane, an alkoxysilane and a non-oxidizing acid, and

(2) treating said base metal under reducing conditions with a noble metal-containing material.

5,250,491
PREPARATION OF HIGH ACTIVITY, HIGH DENSITY ACTIVATED CARBON

Zhiquan Q. Yan, Mt. Pleasant, S.C., assignor to Westvaco Corporation, New York, N.Y.

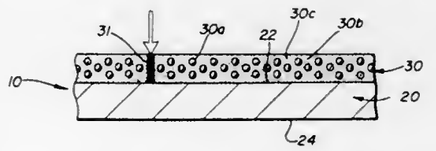
Filed Aug. 11, 1992, Ser. No. 929,166
Int. Cl.[5] C01B *31/12;* **B01J** *20/20;* **B01D** *53/02;* **C09C** *1/44*
U.S. Cl. 502—424 **10 Claims**

1. A method for producing high activity, high density activated carbon derived from lignocellulosic material comprising the steps of:
(a) blending together fragments of the lignocellulosic material with a chemical activation agent selected from the group consisting of phosphoric acid and zinc chloride to form an acid char;
(b) heat treating the blended material both to effect plasticization and drying of the acid-treated lignocellulosic material to a moisture content of up to about 25% by weight;
(c) shaping and densifying the heat-treated, acid-treated lignocellulosic material by sequentially pulverizing the material into fine particles followed by re-agglomeration of the fine particles in the presence of moisture to form generally spherical shaped, high density carbon in a pin mixer; and
(d) activating the shaped, high density carbon by heating gradually up to a final activation temperature of about 550° C., wherein the final shaped, high density carbon is characterized by a butane working capacity of from about 15 to about 25 g/100 cm^3 and a pore volume greater than 50% in pores from about 1.8 to about 50 nm in diameter and less than 20% in pores greater than 50 nm in diameter, based on total pore volume.

5,250,492
COATINGS FOR USE WITH BUSINESS FORMS, SECURITY DOCUMENTS, OR SAFETY PAPER

Mark D. Dotson, and Frank V. Parenti, both of Dayton, Ohio, assignors to The Standard Register Company, Dayton, Ohio

Filed Mar. 7, 1991, Ser. No. 666,194
Int. Cl.[5] B41M *5/132*
U.S. Cl. 503—201 **25 Claims**



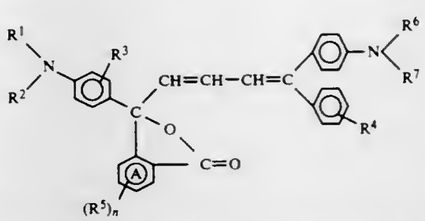
1. A business form comprising:
at least one substrate having a first and second major surface, and having a self-contained coating composition on at least a portion of one of said major surfaces, said self-contained coating composition comprising an admixture of a color former which si stabilized with a complexing agent to prevent premature coloration, a color developer, and a plurality of pressure-rupturable microcapsules containing a solvent, said self-contained coating composition being adapted to release said solvent form said microcapsules upon the impact of the imaging device, to permit reaction of said color former and said color developer to form a visible color.

5,250,493
THERMOSENSITIVE RECORDING MATERIAL

Takashi Ueda, Numazu, and Yasuhiko Watanabe, Shizuoka, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 22, 1991, Ser. No. 796,390
Claims priority, application Japan, Nov. 22, 1990, 2-320245
Int. Cl.[5] B41M *5/28*
U.S. Cl. 503—220 **8 Claims**

1. A thermosensitive recording material comprising: a support, and a thermosensitive coloring layer formed on said support, which thermosensitive coloring layer comprises at least a first thermosensitive coloring layer which comprises at least one leuco dye selected from the group consisting of leuco dyes having formulas (I), (II) and (1lI) and a color developer capable of inducing color formation in said leuco dye under application of heat thereto, and a second thermosensitive coloring layer which comprises at least one leuco dye having formula (IV) and a color developer capable of inducing color formation in said leuco dye under application of heat thereto:

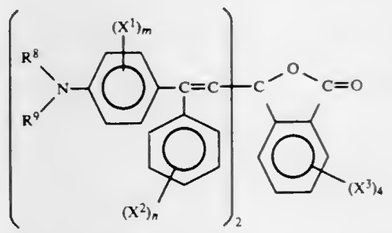


(I)

wherein R^1 and R^2 each represent a lower alkyl group having 1 to 8 carbon atoms, a substituted alkyl group having 1 to 8 carbon atoms, an aralkyl group which may have a substituent, or an aryl group which may have a substituent; R^3 represents hydrogen, a lower alkyl group having 1 to 8 carbon atoms, an alkoxyl group having 1 to 8 carbon atoms, or an aralkyloxy group; R^4 represents hydrogen, a lower alkyl group having 1 to 8 carbon atoms, an alkoxyl group having 1 to 8 carbon atoms, a halogen, or a dialkylamino group having 1 to 8 carbon atoms; R^5 represents hydrogen, a halogen, or a dialkylamino group having 1 to 8 carbon atoms; R^6 and R^7 each represent a lower alkyl group having 1 to 8 carbon atoms;



represents a benzene ring or a naphthalene ring; and n is an integer of 1 to 4;

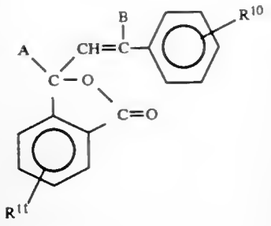


(II)

wherein R^8 represents an alkyl group having 8 carbon atoms or less; R^9 represents an alkyl group having 8 carbon atoms or less, a cycloalkyl group having 5 to 7 carbon atoms, or a benzyl group or a phenyl group which may be substituted with chlo-

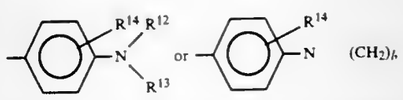
VOL 1155 ISS 1 OC 5 1993 UMI

rine, bromine, or an alkyl group having 4 carbon atoms or less; X^1 and X^2 each represent an alkyl group having 8 carbon atoms or less, an alkoxyl group having 8 carbon atoms or less, fluorine, chlorine, or bromine provided that each X^1 may be the same or different and each X^2 may also be the same or different; X^3 represents chlorine or bromine; and m and n are integers of 0 to 3;



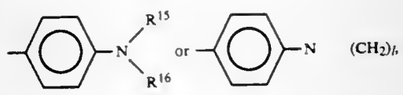
(III)

wherein A represents

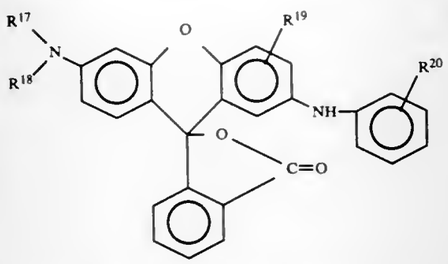


in which R^{12} and R^{13} each represent an alkyl group having 1 to 8 carbon atoms, a cycloalkyl group, or a benzyl group; R^{14} represents hydrogen, an alkyl group having 1 to 8 carbon atoms, or an alkoxyl group having 1 to 8 carbon atoms; and l is an integer of 4 to 6,

B represents



in which R^{15} and R^{16} each represent an alkyl group having 1 to 8 carbon atoms or a benzyl group; and l is an integer of 4 or 6, R^{10} represents hydrogen, an alkyl group having 1 to 8 carbon atoms, a halogen, or a nitro group; and R^{11} represents hydrogen, an alkyl group having 1 to 8 carbon atoms, an alkylamino group having 1 to 8 carbon atoms, a dialkylamino group having 1 to 8 carbon atoms, a cyclic amino group, an amino group, or a halogen;



(IV)

wherein R^{17} and R^{18} each represent a saturated or unsaturated hydrocarbon group having 1 to 10 carbon atoms, which may be cyclic or non-cyclic, and may have an ether linkage; R^{19} represents a hydrocarbon group having 1 to 2 carbon atoms or a halogen; and R^{20} represents hydrogen, a halogen, or a hydrocarbon group having 1 to 6 carbon atoms.

5,250,494

DYE ACCEPTOR ELEMENT FOR THE THERMAL SUBLIMATION PRINTING PROCESS

Rolf Wehrmann, Krefeld, Fed. Rep. of Germany; Hermann Uytterhoeven, Bonheiden, Belgium, and Richard Weider, Leverkusen, Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 8, 1991, Ser. No. 773,036

Claims priority, application European Pat. Off., Oct. 17, 1990, 90202759; Aug. 28, 1991, 91114420

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 **8 Claims**

1. Dye acceptor element for the thermal sublimation printing process, having a base and a dye acceptor layer which is located thereon and contains a polyester formed from diols and dicarboxylic acids, wherein 0.5 to 60 mol% of the diol component of the polyester consists of one or more dialkyl-substituted diols having 24 or more carbon atoms and optionally containing a saturated, unsaturated or aromatic ring.

5,250,495

HEAT TRANSFER RECORDING PROCESS

Hitoshi H. S. Saito; Masaki M. K. Kutsukake; Mineo M. Y. Yamauchi, and Minoru M. F. Furuse, all of Tokyo, Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Continuation of Ser. No. 480,718, Feb. 15, 1990, Pat. No. 5,130,293. This application Apr. 30, 1992, Ser. No. 876,414

Claims priority, application Japan, Feb. 15, 1989, 1-33754

The portion of the term of this patent subsequent to Jul. 14, 2009, has been disclaimed.

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 **12 Claims**

1. A heat transfer recording process which performs dotwise printing by means of a dotwise heating means, comprising the steps of:

providing (a) a heat transfer sheet comprising a lubricating layer provided on one surface of a substrate film and a dye layer comprising a sublimable dye and a binder, the dye layer being provided on the other surface of the substrate film, and (b) an image-receiving sheet comprising a substrate film and an image-receiving layer formed thereon, the dynamic frictional coefficient at non-printing between the dye layer of the heat transfer sheet and the image-receiving surface of the image-receiving sheet being within the range of from 0.1 to 0.6;

bringing the heat transfer layer of the heat transfer sheet into contact with the image-receiving layer of the image-receiving sheet; and

carrying out dotwise printing in accordance with the image information.

5,250,496

RECEIVING ELEMENT WITH CELLULOSE PAPER SUPPORT FOR USE IN THERMAL DYE TRANSFER

Cheryl L. Warner, Brockport, and Douglas G. Wimer, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 17, 1992, Ser. No. 822,522

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 **14 Claims**

9. In a process of forming a dye transfer image comprising:

a) imagewise-heating a dye-donor element comprising a support having thereon a dye layer comprising a dye dispersed in a binder, and

b) transferring a dye image to a dye-receiving element comprising a cellulose fiber paper support having thereon a dye image-receiving layer to form said dye transfer image,

the improvement wherein the cellulose fibers of the paper support are fibers of hardwood varieties selected from those a) having a length weighted average fiber length equal to or less than about 0.5 mm as measured after pulping and bleaching or b) pulped by the sulfite process, the paper support having a specific bending stiffness of less than or equal to about 0.33 Nm^7/kg^3 for paper prepared on a continuous Fourdrinier wire machine as measured in the machine direction.

5,250,497

HEAT TRANSFER SHEET

Hideo Fujimura; Noritaka Egashira; Tamami Iwata, and Naoto Satake, all of Tokyo, Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Continuation of Ser. No. 455,968, Dec. 13, 1989, abandoned. This application Feb. 7, 1992, Ser. No. 832,312

Claims priority, application Japan, Dec. 13, 1988, 63-312878; Dec. 16, 1988, 63-316323

The portion of the term of this patent subsequent to Feb. 9, 2010, has been disclaimed.

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 **5 Claims**

1. A heat transfer sheet comprising:

a substrate film comprising a first surface and an opposed second surface, said substrate film comprising a polyethylene naphthalate film having a thickness of 3 microns or less;

a heat migratable dye layer formed on said first surface of said substrate film, said heat migratable dye layer comprising a dye and a binder; and

a heat-resistant layer formed on said second surface of said substrate film.

5,250,498

HERBICIDAL 2-IMINOPYRIDINES

Roland Andree, Langenfeld; Hauke Fürstenwerth, Leverkusen; Klaus Jelich, Wuppertal; Gunther Beck, Leverkusen; Peter Babczinski, Wuppertal; Klaus Lürssen, Bergisch Gladbach; Hans-Joachim Santel, Leverkusen, and Robert R. Schmidt, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

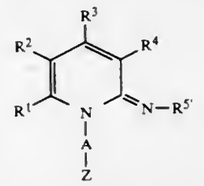
Filed Dec. 7, 1990, Ser. No. 624,022

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1989, 3941233; Jul. 5, 1990, 4021439

Int. Cl.[5] C07D *207/20;* **A01N** *47/18*

U.S. Cl. 504—105 **5 Claims**

1. A method of combating unwanted vegetation which comprises applying to such vegetation or to a locus from which it is desired to exclude such vegetation, a herbicidally effective amount of a 2-iminopyridine of the formula



(IA)

in which

R^1, R^2, R^3 and R^4 independently of one another represent hydrogen, halogen, alkyl, halogenoalkyl, alkoxy, halogenoalkoxy, alkylthio or halogenalkylthio,

$R^{5'}$ represents cyano, straight-chain or branched alkylcarbonyl having 1 to 20 carbon atoms in the alkyl moiety, or represents straight-chain or branched alkenylcarbonyl or alkynylcarbonyl each of which has 2 to 20 carbon atoms in the alkenyl or alkynyl moiety, or represents straight-chain or branched halogenoalkylcarbonyl having 1 to 20 carbon atoms in the alkyl moiety and 1 to 41 identical or different halogen atoms, or represents straight-chain or branched halogenoalkenylcarbonyl having 2 to 20 carbon atoms in the alkenyl moiety and 1 to 39 identical or different halogen atoms, or represents straight-chain or branched halogenoalkynylcarbonyl having 2 to 20 carbon atoms in the alkynyl moiety and 1 to 37 identical or different halogen atoms, or represents straight-chain or branched alkoxycarbonyl having 1 to 20 carbon atoms in the alkoxy moiety, or represents phenylcarbonyl, phenoxycarbonyl, phenylaminocarbonyl, phenylmethylcarbonyl, phenylethylcarbonyl, phenylpropylcarbonyl, phenylethenylcarbonyl, phenoxymethylcarbonyl or phenoxyethylcarbonyl, each of which is monosubstituted or polysubstituted by identical or different substituents, the phenyl substituents being selected from the group consisting of halogen, cyano, nitro, straight-chain or branched alkyl having 1 to 4 carbon atoms, straight-chain or branched halogenoalkyl having 1 to 4 carbon atoms and 1 to 9 identical or different halogen atoms, straight-chain or branched alkoxy having 1 to 4 carbon atoms, and also straight-chain or branched halogenoalkoxy having 1 to 4 carbon atoms and 1 to 9 identical or different halogen atoms; or $R^{5'}$ furthermore represents straight-chain or branched alkylsulphonyl having 1 to 4 carbon atoms, or represents alkylaminocarbonyl having 1 to 20 carbon atoms in the straight-chain or branched alkyl moiety, or represents phenylsulphonyl which is either substituted, monosubstituted or polysubstituted by identical or different substituents selected from the group consisting of halogen, cyano, nitro, straight-chain or branched alkyl having 1 to 4 carbon atoms, straight-chain or branched halogenoalkyl having 1 to 4 carbon atoms and 1 to 9 identical or different halogen atoms, straight-chain or branched alkoxy having 1 to 4 carbon atoms, straight-chain or branched halogenoalkoxy having 1 to 4 carbon atoms and 1 to 9 identical or different halogen atoms, and also alkoxycarbonyl having 1 to 4 carbon atoms in the straight-chain or branched alkoxy moiety, or represents cycloalkylcarbonyl having 3 to 6 carbon atoms in the cycloalkyl moiety, or represents straight-chain or branched alkoxyalkylcarbonyl having 1 to 4 carbon atoms in the alkoxy- and alkyl moiety, or represents straight-chain or branched alkylcarbonyloxalkylcarbonyl, or alkoxycarbonylcarbonyl having 1 to 4 carbon atoms in the alkoxy- or alkyl moiety respectively, or represents straight-chain or branched halogenalkylsulphonyl having 1 to 4 carbon atoms and 1 to 9 identical or different halogen atoms,

A represents alkanediyl and

Z represents phenyl, or thienyl, thiazolyl, isothiazolyl, isoxazolyl or oxa-2,4-diazolyl, each of which is either unsubstituted or monosubstituted or polysubstituted by identical or different substituents selected from the group consisting of nitro, cyano, halogen, straight-chain or branched alkyl having 1 to 4 carbon atoms, straight-chain or branched halogenoalkyl or halogenoalkylthio each of which has 1 to 4 carbon atoms and each of which has 1 to 9 identical or different halogen atoms, straight-chain or branched alkoxy or alkylthio each of which has 1 to 4 carbon atoms, straight-chain or branched halogenoalkoxy having 1 to 4 carbon atoms and 1 to 9 identical or different halogen atoms, straight-chain or branched alkoxycarbonyl having 1 to 4 carbon atoms in the alkoxy moiety, and also phenoxy which is either unsubstituted or monosubstituted or polysubstituted by identical or different substituents from the group consisting of halogen, C_1–C_4-alkyl or halogeno-C_1–C_4-alkyl.

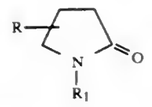
VOL 1155 ISS 1 OCT 5 1993 UMI

5,250,499
DELIVERY SYSTEM FOR AGRICULTURAL CHEMICALS

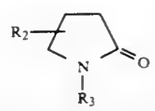
Kolazi S. Narayanan, Palisades Park; Ratan K. Chaudhuri, Butler, and Manilal Dahanayake, Wayne, all of N.J., assignors to ISP Investments Inc., Wilmington, Del.

Continuation of Ser. No. 448,707, Dec. 11, 1989, Pat. No. 5,071,463. This application Oct. 31, 1990, Ser. No. 606,497
The portion of the term of this patent subsequent to Nov. 3, 2009, has been disclaimed.
Int. Cl.[5] A01N *57/00, 43/00, 43/48*
U.S. Cl. 504—116 23 Claims

1. A stable emulsifiable concentrate comprising an agricultural active chemical which is substantially insoluble in water, an organic diluent, a surfactant and a solvent composed of first and second components, said first component having a sufficiently high hydrophilic property and being present in an amount effective to solubilize the agriculturally active chemical and is selected from the group consisting of pyrrolidones having the formula



wherein R is hydrogen or lower alkyl and R_1 is lower alkyl, wherein lower alkyl is an alkyl group having from 1 to 4 carbon atoms, and the second component having an HLB value of from about 2 to 8 and being present in an amount, in conjunction with a surfactant, effective to disperse the agriculturally active chemical and is selected from the group consisting of pyrrolidones having a formula



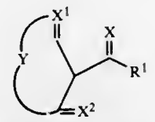
wherein R_2 is hydrogen or alkyl having from 6 to 14 carbon atoms and R_3 is alkyl having from 6 to 14 carbon atoms with the proviso that at least one of R_2 or R_3 must be contain at least 6 carbon atoms and the sum of the carbon atoms in R_2 and R_3 cannot exceed 14;
and combinations thereof, wherein the alkyl portion may be distributed at one or more sites on the ring so long as one portion contains at least 6 carbon atoms and the total number of alkyl carbon atoms does not exceed 14.

5,250,501
HERBICIDAL COMPOUNDS

John E. D. Barton; David Cartwright, both of Reading; John M. Cox, Wokingham; Glynn Mitchell, Iver, all of United Kingdom; Charles G. Carter, Silver Spring, Md.; David L. Lee, Martinez, Calif.; Francis H. Walker, Mill Valley, Calif., and Frank X. Woolard, Pt. Richmond, Calif., assignors to Imperial Chemical Industries PLC, London, England and ICI Americas, Inc., Wilmington, Del.

Division of Ser. No. 595,710, Oct. 9, 1990, Pat. No. 5,098,464, which is a continuation of Ser. No. 170,389, Mar. 18, 1988, abandoned. This application Jan. 10, 1992, Ser. No. 819,080
Claims priority, application United Kingdom, Mar. 19, 1987, 8706557; May 21, 1987, 8712037; May 21, 1987, 8712038; Jun. 26, 1987, 8715044; Dec. 14, 1987, 8729108
Int. Cl.[5] A01N *43/76;* C07D *275/02*
U.S. Cl. 504—266 9 Claims

1. A compound of formula (I):



(I)

or an agriculturally acceptable salt, enamine, acylate, sulphonate, carbamate or ether derivative thereof; wherein X, X^1 and X^2 are independently oxygen or sulphur, R^1 is an isoxazolyl, oxazolyl, isothiazolyl or thiazolyl group and Y is a C_2–C_4 alkylene group which is optionally substituted by oxo, mercapto, halo, nitro, cyano, amino, mono- or di-alkylamino, amido, alkyl, alkenyl, alkynyl, cycloalkyl, haloalkyl, haloalkoxy, phenyl, naphthyl, hydroxy, alkoxy, alkoxycarbonyl, alkylcarbonyl, mono- or dialkylcarbamoyl, alkythio, alkylsulphinyl, alkylsulphonyl, sulphonamido, alkylcarbonyloxy, alkyl carbonylamino, pyridyl or thienyl and which may also have a single hetero atom optionally interposed between adjacent carbons of a C_2 alkylene group, said hetero atom being an oxygen atom, a sulphur atom in a group



or an optionally alkyl- or alkoxy-substituted nitrogen atom, wherein p is 0, 1 or 2.

5,250,500
HERBICIDAL COMPOSITIONS CONTAINING TETRAPOTASSIUM PYROPHOSPHATE AS SPRAY ADJUVANT

Travis R. Jones, and E. Robert Gates, both of Memphis, Tenn., assignors to Floratine Products Group, Collierville, Tenn.

Continuation-in-part of Ser. No. 153,805, Feb. 8, 1988, abandoned. This application Aug. 13, 1992, Ser. No. 929,136
Int. Cl.[5] A01N *25/00, 59/26, 55/02, 57/04*
U.S. Cl. 504—165 9 Claims

1. A herbicidal composition suitable for application as a foliar spray consisting essentially of an aqueous solution of an effective amount of a post-emergence herbicide and tetrapotassium pyrophosphate as the spray adjuvant.

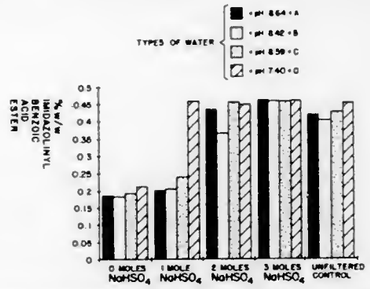
5,250,502
METHOD FOR ENHANCING THE HERBICIDAL ACTIVITY OF FORMULATIONS CONTAINING SOLID IMIDAZOLINYL BENZOIC ACID ESTERS WITH BISULFATE

Charles P. Grasso, Somerset, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 517,886, Apr. 30, 1990, abandoned. This application Apr. 1, 1992, Ser. No. 861,047
Int. Cl.[5] A01N *43/50, 59/02*
U.S. Cl. 504—277 12 Claims

1. A method for enhancing the biological activity of a formulation containing a solid imidazolinyl benzoic acid ester which comprises:

(a) diluting the ester containing formulation with water; and



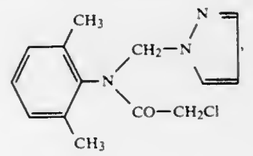
(b) adjusting the pH of the diluted ester containing formulation to a value of about 1.0 to 3.8 by the addition of an effective amount of a bisulfate.

5,250,503
MONOCLINIC METAZACHLOR AND COMPOSITION

Michael Keil, Freinsheim; Bjoern Girgensohn, Mannheim; Gotthard Synnatschke, Ludwigshafen; August Wigger, Neubofen; Hans Ziegler, Mutterstadt, and Walter Gueckel, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwidgsbafen, Fed. Rep. of Germany

Continuation of Ser. No. 551,778, Jul. 12, 1990, abandoned. This application Jul. 24, 1992, Ser. No. 920,815
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1989, 3925253
Int. Cl.[5] C07D *231/12;* A01N *43/56*
U.S. Cl. 504—280 4 Claims

1. The monoclinic crystalline form of 2-chloro-(2',6'-dimethyl-N-pyrazol-1--ylmethyl)-acetanilide of the formula I



I

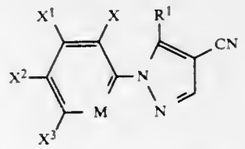
said monoclinic crystalline form having a melting point of 76° C.

5,250,504
HERBICIDAL β-PYRAZOLYLACRYLIC ACIDS

Lester L. Maravetz, Westfield, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 795,403, Nov. 20, 1991, Pat. No. 5,198,014. This application Jan. 29, 1993, Ser. No. 11,015
Int. Cl.[5] A01N *43/56;* C07D *231/14*
U.S. Cl. 504—280 9 Claims

1. A herbicidal compound of the formula



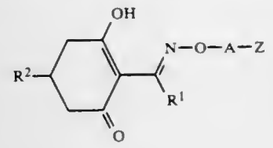
wherein X is chlorine or fluorine, X^1 is hydrogen, chlorine, or fluorine, X^2 is chlorine, fluorine, trifluoromethyl, or ethoxy, and X^3 is hydrogen, chlorine, or fluorine, M is —CH—, —CF—, or —CCl—; and R^1 is —CH=C(—R^2)—C(—=O)—Z—$[S(O)_2]_n$—R^3 wherein R^2 is hydrogen or methyl; R^3 is hydrogen, lower alkyl, or phenylmethyl optionally substituted with one or more of chlorine, bromine, fluorine, or methyl; Z is —O—, —S— or —NR^4; and n is 0 or 1; provided that when Z is —O— or —S—, n is 0.

5,250,505
CYCLOHEXENONE OXIME ETHERS, THEIR PREPARATION, INTERMEDIATES FOR THEIR PREPARATION AND THEIR USE AS HERBICIDES

Juergen Kast, Boehl-Iggelheim; Norbert Meyer, Ladenburg; Ulf Misslitz, Neustadt; Albrecht Harreus, Ludwigshafen; Thomas Kuekenhoehner, Frankenthal; Harald Bang, Ludwigshafen; Matthias Gerber, Mutterstadt; Karl-Otto Westphalen, Speyer, and Helmut Walter, Obrigheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 8, 1991, Ser. No. 697,058
Claims priority, application Fed. Rep. of Germany, May 9, 1990, 4014984
Int. Cl.[5] A01N *43/16;* C07D *311/00, 315/00*
U.S. Cl. 504—292 6 Claims

1. A cyclohexenone oxime either of the formula I



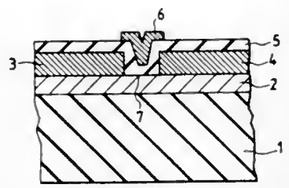
(I)

where
R^1 is C_1–C_6-alkyl;
A is a C_3–C_6-alkynylene chain which is unsubstituted or substituted by 1 to 3 C_1–C_3-alkyl groups or halogen atoms; Z is phenyl which is unsubstituted or substituted by n identical or different radicals X;
X is nitro, cyano, halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy, carboxyl, C_1–C_4-alkoxycarbonyl, benzyloxycarbonyl or phenyl, where the aromatic radicals may carry one to three substituents selected from the group consisting of nitro, cyano, halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy, carboxyl, C_1–C_4-alkoxycarbonyl and benzyloxycarbonyl; n is from 0 to 3, or from 1 to 5 where K is halogen, and R^2 is C_1–C_4-alkoxy-C_1–C_6 alkyl or C_1–C_4-alkylthio-C_1–C_6-alkyl; C_3–C_7-cycloalkyl or C_5–C_7-cycloalkenyl, where these groups may furthermore carry one to three radicals selected from the group consisting of C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkyl, hydroxyl and halogen;
a 6-membered or 7-membered saturated or monounsaturated or diunsaturated heterocyclic structure containing one or two hetero atoms selected from the group consisting of oxygen and sulfur, where the heterocyclic structure may furthermore carry one to three radicals selected from the group consisting of hydroxyl, halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio and C_1–C_4-haloalkyl; and its agriculturally useful salts and esters of C_1–C_{10}-carboxylic acids and inorganic acids.

5,250,506
SUPERCONDUCTIVE SWITCHING ELEMENT WITH SEMICONDUCTOR CHANNEL

Shinichiroh Saitoh, Tokyo; Yosbinobu Tarutani, Yamanashi; Tokuumi Fukazawa; Masahiko Hiratani, both of Tokyo; Toshikazu Nishino, Kanagawa; Haruhiro Hasegawa, Tokyo; Ushio Kawabe, Tokyo; Kazumasa Takagi, Tokyo, and Mitsno Suga, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 29, 1991, Ser. No. 647,234
Claims priority, application Japan, Feb. 2, 1990, 2-21983
Int. Cl.[5] H01L *39/22;* B05D *5/12;* H01B *12/00*
U.S. Cl. 505—1 13 Claims

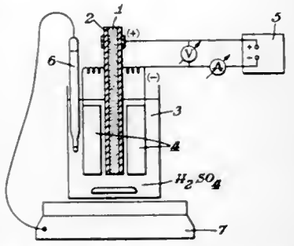


1. A superconductive device comprising:
first and second superconductive electrodes each composed of an oxide superconductor material and
a semiconductor film composed of an oxide semiconductor material interposed in the current path between said first and second superconductive electrodes adjacent to said first and second superconductive electrodes, said current path defining a channel having a length between 0.1 and 1.0 microns, wherein
said oxide superconductor material has the formula $RBa_2Cu_3O_{7-x}$ where R represents a rare earth element and $0 \leqq \times \leqq 0.5$, and
said oxide semiconductor material has the formula $R'_mBa_{3-m}Cu_3O_y$ where R' represents a rare earth element other than Pr, $1.3 \leqq m \leqq 1.5$, and $6.8 \leqq y \leqq 7.2$, and has a crystal structure identical with or similar to that of said oxide superconductor material.

5,250,507
PROCESS FOR PRODUCING MOLDED BODIES FROM PRECURSORS OF OXIDIC HIGH-TEMPERATURE SUPERCONDUCTORS

Eberhard Preisler, and Joachim Bock, both of Erftstadt, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 2, 1991, Ser. No. 739,871
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1990, 4026014
Int. Cl.[5] C25F *3/02, 5/00;* H01B *12/02*
U.S. Cl. 505—1 4 Claims

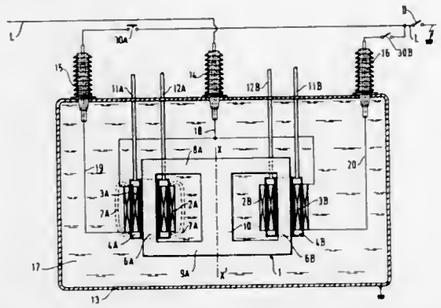


1. A process for producing molded bodies from precursors of oxidic high-temperature superconductors by electrolytic dissolution of copper molds, which comprises wiring a copper mold of the desired shape which encloses a solidified bismuth strontium calcium cuprate melt as anode in a direct current circuit composed of anode, cathode and an electrolyte, using a dilute sulfuric acid of 2 to 35% by weight strength as electrolyte and subjecting the electrolyte to a direct current of 1 to 50 $mA.cm^{-2}$ until the copper mold wired as anode is dissolved and the BSCCO molded body is laid bare, the BSCCO molded body being protected by a layer composed of at least one of strontium and calcium sulfates, which layer is formed from the sulfate contained in the sulfuric acid and strontium and calcium contained in the BSCCO molded body and suppresses further attack of the sulfuric acid on the BSCCO molded body.

5,250,508
SUPERCONDUCTOR CURRENT-LIMITING APPARATUS

Van Doan Pham, Meyzieu, France, assignor to GEC Alsthom SA, Paris, France

Filed Sep. 16, 1991, Ser. No. 760,315
Claims priority, application France, Sep. 14, 1990, 90 11383
Int. Cl.[5] H02H *9/02*
U.S. Cl. 505—1 5 Claims

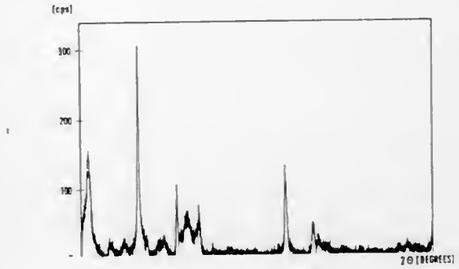


1. Superconductor current-limiting apparatus to be inserted in a line to be protected (L) and comprising two current-limiting units, each unit being constituted by a magnetic core (6A, 6B), a superconductor component (3A, 3B) and an electric coil (2A, 2B) disposed around said magnetic core, said two current-limiting units being contained in a single tank (13) filled with a dielectric cooling fluid (17), each superconductor component being disposed in an insulating cryostat (4A, 4B) filled with a cryogenic fluid, each magnetic core being part of a closed magnetic circuit, the tank having electrical bushings (14, 15, 16) and means including a circuit-breaker (D) for selectively connecting the electric coils (2A, 2B) in series with the line (L) to be protected via respective circuit-breakers (30A, 30B) in parallel; and wherein in normal operation one of said coils (2A) is inserted in the line (L) via circuit-breaker (30A) upon closure of circuit-breaker (D) with circuit-breaker (30B) open and electric coil (2B) out of the circuit such that in event of a fault in the line (L) current increase in the electric coil (2A) causes superconductor (3A) to change state, and wherein opening of line circuit-breaker (30A) and line circuit-breaker (D) are effected in a significantly short time of 40 milliseconds thereby permitting near instantaneous closure of circuit-breaker (30B) and circuit-breaker (D) to switch coil (2B) into the circuit while waiting for superconductor (3A) to recover its superconductivity state, thereby significantly reducing the time required for re-closing of the circuit.

5,250,509
BISMUTH-CONTAINING SUPERCONDUCTING MATERIAL AND PROCESS FOR PRODUCING IT

Bernhard Hettich, Eppstein; Peter Majewski, Rudersberg; Klaus Schulze, deceased, late of Stuttgart by Heidemarie Schulze, heir , and Günter Petzow, Leinfelden-Echterdingen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Feb. 20, 1992, Ser. No. 839,324
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1991, 4108869
Int. Cl.[5] C01F *11/02;* C01G *3/02, 29/00;* H01L *39/12*
U.S. Cl. 505—1 10 Claims

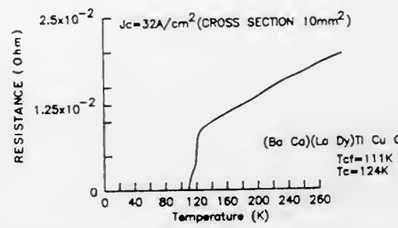


1. An oxide-ceramic superconducting material which consists essentially of bismuth, strontium, calcium and copper and has an overall composition of $Bi_yCa_2Sr_2Cu_3O_x$, where y is an integer from 2.35 to 2.6 and x is about 10 to 12, and which has a critical temperature T_c above 105 K and a proportion of the phase $Bi_2Sr_2Ca_2Cu_3O_x$ of at least 85% by volume.

5,250,510
SUPERCONDUCTING MATERIAL

Hideo Itozaki; Saburo Tanaka; Nobuhiko Fujita; Shuji Yazu, and Tetsuji Jodai, all of Hyogo, Japan, assignors to Sumitomo Electric Industries Ltd., Osaka, Japan

Continuation of Ser. No. 652,218, Feb. 6, 1991, abandoned, which is a continuation of Ser. No. 351,784, May 15, 1989, abandoned, which is a continuation-in-part of Ser. No. 223,634, Jul. 25, 1988, Pat. No. 4,880,773. This application Jun. 15, 1992, Ser. No. 899,025
Claims priority, application Japan, Jul. 25, 1987, 62-185739; Jul. 26, 1987, 62-185710
The portion of the term of this patent subsequent to Nov. 14, 2006, has been disclaimed.
Int. Cl.[5] C01F *11/02, 11/00;* C01G *3/02;* H01L *39/12*
U.S. Cl. 505—1 7 Claims



1. A material comprising a compound oxide which exhibits superconducting properties at high temperatures, said compound oxide having the general formula:

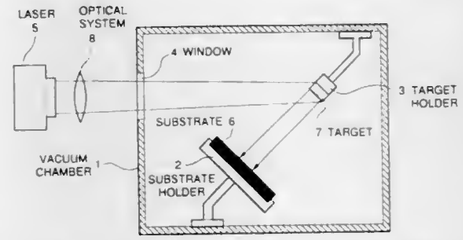
$$(Ba,Ca)_x(\alpha,Dy)_{1-x}Tl_yCu_{1-y}O_{3-z}$$

wherein
"α" represents Y or La;
the atomic ratio of Ca to Ba is between 1% and 90%;
the atomic ratio of Dy to α is between 1% and 90%;
x, y, and z are within the ranges of $0<x<1$, $0<y<1$, and $0 \leqq z<1$ respectively.

5,250,511
LASER EVAPORATION METHOD FOR PREPARING A SUPERCONDUCTING OXIDE THIN FILM

Tatsuoki Nagaishi; Hidenori Nakanishi; Saburo Tanaka, and Hideo Itozaki, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 29, 1992, Ser. No. 921,028
Claims priority, application Japan, Jul. 29, 1991, 3-211503
Int. Cl.[5] B05D *3/06, 5/12*
U.S. Cl. 505—1 10 Claims



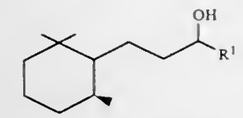
1. In a method for preparing a superconducting film of compound oxide on a substrate by laser evaporation technique, the improvement comprising using a target having a surface area which is smaller than an irradiation area of a spot of a laser beam used so that the whole surface of said target is irradiated with said laser beam.

5,250,512
PROPANOL DERIVATIVES AND PERFUMES CONTAINING THE SAME

Tatsuya Ohmoto; Akemi Shimada, and Takeshi Yamamto, all of Tokyo, Japan, assignors to Takasago International Corporation, Tokyo, Japan

Continuation of Ser. No. 592,099, Oct. 3, 1990, abandoned. This application May 6, 1992, Ser. No. 879,738
Claims priority, application Japan, May 17, 1990, 2-125520
Int. Cl.[5] A61K *7/46*
U.S. Cl. 512—22 9 Claims

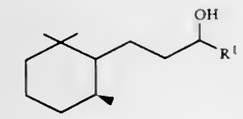
1. An optically active 3-[6(S)-2,2,6-trimethylcyclohexan-1-yl]propanol derivative represented by formula (I):



(I)

wherein R^1 represents a lower alkyl group.

2. A perfume composition comprising an optically active 3-[6(S)-2,2,6-trimethylcyclohexan-1-yl]propanol derivative represented by formula (I):



(I)

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wherein R^1 represents a lower alkyl group, as an active ingredient.

5,250,513

ANTIOXIDANT SYSTEM BASED ON A BASIC AMINO ACID IN COMBINATION WITH A TOCOPHEROL OR DERIVATIVE THEREOF AND A NONTHIOLATED POLYPEPTIDE, AND COMPOSITIONS CONTAINING THE SAME

Quang L. N'Guyen, Antony; Francois Millecamps, and Jean-Baptiste Galey, both of Paris, all of France, assignors to L'Oreal, Paris, France

Filed Sep. 13, 1991, Ser. No. 759,560

Claims priority, application France, Sep. 14, 1990, 90 11384

Int. Cl.[5] A61K *37/02, 37/12, 37/22*

U.S. Cl. 514—2 **10 Claims**

1. An antioxidant system based on (a) at least one basic amino present in an amount ranging from 0.5 to 50 weight percent, (b) at least one of a tocopherol, a tocopherol acetate or tocopherol nicotinate or a mixture thereof, present in an amount ranging from 0.5 to 20 weight percent and (c) at least one nonthiolated polypeptide present in an amount ranging from 0.5 to 90 weight percent.

5,250,514

METHOD OF TREATING INFERTILITY OR SUB-FERTILITY IN ADULT MEN, AND THE USE OF PREPARATIONS IN THE METHOD

Niels E. Skakkeb k, Farum, Denmark, assignor to Novo Nordisk A/S, Bagsvaerd, Denmark

PCT No. PCT/DK90/00194, § 371 Date Jan. 13, 1992, § 102(e) Date Jan. 13, 1992, PCT Pub. No. WO91/01747, PCT Pub. Date Feb. 21, 1991

PCT Filed Jul. 27, 1990, Ser. No. 807,861

Claims priority, application Denmark, Jul. 28, 1989, 3725/89

Int. Cl.[5] A61K *37/36, 37/38, 37/43*

U.S. Cl. 514—12 **14 Claims**

1. A method for treating non-surgically correctable infertility or sub-fertility in adult men having poor semen quality comprising administering a preparation of human growth hormone in an amount effective to improve semen quality.

5,250,515

METHOD FOR IMPROVING THE EFFICACY OF INSECT TOXINS

Roy L. Fuchs, St. Charles; Ganesh M. Kishore, Chesterfield, and Susan C. MacIntosh, St. Louis, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 179,709, Apr. 11, 1988, abandoned. This application Dec. 20, 1991, Ser. No. 812,890

Int. Cl.[5] A01N *27/00;* **C07K** *13/00, 15/00;* **A61K** *35/78*

U.S. Cl. 514—12 **4 Claims**

1. A composition comprising a toxin protein of a *Bacillus thuringiensis* bacteria, which toxin protein exhibits toxicity to Lepidopteran or Coleopteran insects, and a potentiating amount of a trypsin inhibitor which amount of inhibitor is between about 0.000002 and 2.0 weight percent of the composition and the molar ratio of inhibitor to toxin is in the range of about 1/1 to 104/1.

5,250,516

BIOELASTOMERIC MATERIALS SUITABLE FOR THE PROTECTION OF BURN AREAS OR THE PROTECTION OF WOUND REPAIR SITES FROM THE OCCURRENCE OF ADHESIONS

Dan W. Urry, Birmingham, Ala., assignor to UAB Research Foundation, Birmingham, Ala.

Continuation-in-part of Ser. No. 900,895, Aug. 27, 1986, Pat. No. 4,783,523, and a continuation-in-part of Ser. No. 853,212. Apr. 17, 1986, abandoned. This application Apr. 21, 1988, Ser. No. 184,407

Int. Cl.[5] A61K *37/00*

U.S. Cl. 514—17 **19 Claims**

1. A method for substantially preventing wound adhesion which comprises forming a protective layer between a mammalian wound repair site and a second tissue site wherein said protective layer comprises an elastomeric material capable of reversibly contracting and relaxing by inverse temperature transition wherein a change in chemical potential of a molecular species will effect a change in said inverse temperature transition, and wherein said elastomeric material comprises a bioelastomer containing repeating units selected from the group consisting of elastomeric tetrapeptide and pentapeptide repeating units wherein said repeating units comprise amino acid residues selected from the group consisting by hydrophobic amino acid and glycine residues, and wherein said repeating units exist in a conformation having a β-turn.

5,250,517

RENIN INHIBITING COMPOUNDS

Quirico Branca, Basel; Albrecht Edenhofer, Riehen, both of Switzerland; Eva-Maria Gutknecht, Buggingen-Seefelden; Werner Neidhart, Freiburg im Breisgau, both of Fed. Rep. of Germany; Henri Ramuz, Birsfelden, Switzerland, and Wolfgang Wostl, Grenzach-Wyhlen, Fed. Rep. of Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 254,003, Oct. 5, 1988, abandoned. This application May 4, 1992, Ser. No. 879,522

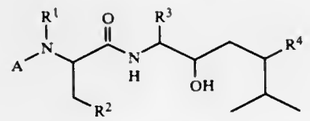
Claims priority, application Switzerland, Oct. 6, 1987, 3903/87

The portion of the term of this patent subsequent to Aug. 8, 2009, has been disclaimed.

Int. Cl.[5] C07K *5/10, 5/08;* **C07D** *235/14;* **A61K** *37/02*

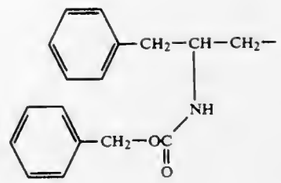
U.S. Cl. 514—18 **11 Claims**

1. A compound of the formula

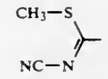


I

in which R^1 is hydrogen or methyl, R^2 is imidazol-4-yl, R^3 is isobutyl, cyclohexylmethyl, or benzyl, R^4 is phenyl, furyl, vinyl, ethyl, or 1,2-dihydroxyethyl and A is -Y-Z in which Y is a bivalent residue of optionally N- and/or α-methylated phenylglycine, cyclohexylglycine, phenylalanine, cyclohexylalanine, 4-fluorophenylalanine, 4-chlorophenyldamine, tyrosine, methionine, proline, α-napththylalanine, homophenylalanine, aspartic acid ethyl ester, or glutamic acid benzyl ester linked with Z at the N-terminal, and Z is hydrogen, a group of the formula



or



or is the residue, linked with Y at the C-terminal, of optionally N- and/or α-methylated natural amino acid with the L-configuration which is optionally N-substituted with the group R^b—CO— or R^a—O—CO— or of an epimer of such an amino acid with the D-configuration or of a dipeptide from two such amino acids or a tripeptide from three such amino acids or the group R^b—CO— or R^a—O—CO—, wherein R^a is an optionally substituted residue selected from $C_{1\text{-}18}$alkyl; $C_{2\text{-}8}$alkenyl; $C_{2\text{-}8}$alkynyl; $C_{3\text{-}8}$cycloalkyl; $C_{3\text{-}8}$cycloalkenyl; $C_{5\text{-}10}$bicycloalkyl; C_8tricycloalkyl; $C_{5\text{-}10}$bicycloalkenyl; $C_{3\text{-}8}$cycloalkyl-$C_{3\text{-}8}$alkyl; $C_{3\text{-}8}$cycloalkenyl-$C_{1\text{-}8}$alkyl; $C_{3\text{-}8}$cycloalkyl-$C_{2\text{-}8}$alkenyl; $C_{3\text{-}8}$cycloalkenyl-$C_{2\text{-}8}$alkenyl; aryl selected from phenyl, naphthyl, and fluorenyl; a heteroaromatic residue, a heteroaromatic-$C_{1\text{-}8}$alkyl residue, an aryl $C_{1\text{-}8}$alkyl residue, or a heterocycle, wherein the heteroaromatic portion of the heteroaromatic and heteroaromatic-$C_{1\text{-}8}$-alkyl residues is selected from the group of moieties consisting of pyrrolyl, furyl, thienyl, imidazolyl, pyrazolyl, oxazolyl, thiazolyl, pyridyl, pyrazinyl, pyramidinyl, indolyl, quinolyl, isoquinolyl, quinoxalinyl and β-carbolinyl, or a benz-fused derivative of the above moieties, said above moieties which contain a nitrogen atom can be substituted at said nitrogen atom with alkyl, phenyl or phenylalkyl, said above moieties also can be substituted on at least one of the carbon atoms with alkyl, phenyl, phenylalkyl, halogen, hydroxy, alkoxy, phenylalkoxy, and oxo, the aryl portion of the aryl-$C_{1\text{-}8}$-alkyl residue is selected from the group consisting of phenyl, α- or β-naphthyl, indenyl and phenanthryl which can be substituted with at least one of alkyl, alkoxy, alkanoyloxy, amino, alkylamino, dialkylamino, alkanoylamino hydroxy, halogen trifluoromethyl and nitro, the heterocycle is selected from the group consisting of pyrrolidin-3-yl, 4-hydroxypyrrolidin-2-yl, 5-oxo-pyrrolidin-2-yl, piperidin-2yl, piperdin-3-yl, 1-methylpiperidin-2-yl, 1-methylpiperidin-3-yl, 1-methylpiperidin-4-yl, morpholin-2yl, morpholin-3yl, thiomorpholin-2yl, thiomorpholin-3yl, 1,4-dimethylpiperazin-2-yl, 2-indolinyl, 3-indolinyl, 1,2,3,4-tetrahydroquinol-2-, -3 or -4-yl, 1,2,3,4-tetrahydroisoquinol-1-, -3- or -4-yl, 1-oxo-1,2,3,4-tetrahydroisoquinol-3-yl, tertiary butoxy-carbonyl piperidin-2-yl, thiazolidin-4-yl, hexahydro-8a-methyl-5-oxo-5H-thiazolo[3,2-a]pyrid-3-yl, and tetrahydro-7a-methyl-pyrrolo[2,1-b]thiazol-3-yl; and R^b is R^a or hydrogen, the compound being in the form of an optionally pure diastereomer, diastereomeric mixture, diastereomeric racemate of mixture of diastereomeric racemates; or a pharmaceutically acceptable usable salt of the compound.

5,250,518

O-METHYL DERIVATIVES OF AZITHROMYCIN A

Gabrijela Kobrehel; Slobodan Djoki, and Gorjana Lazarevski, all of Zagreb, Yugoslavia, assignors to Pliva Farmaceutska, Kemijska, Prehrambena I Kozmeticka, Yugoslavia

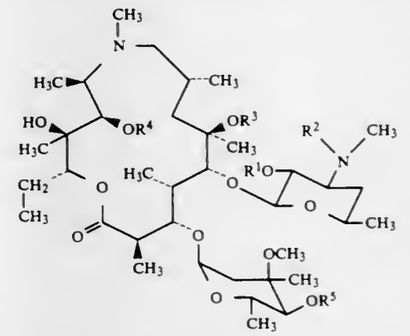
Filed Jul. 18, 1991, Ser. No. 731,781

Claims priority, application Yugoslavia, Jul. 18, 1990, 1409/90

Int. Cl.[5] C07H *17/08;* **A61K** *31/70*

U.S. Cl. 514—29 **4 Claims**

1. O-methyl derivative of azithromycin A of the formula (I)



I

wherein

$R^1=R^4=R^5=H$, $R^2=R^3=CH_3$ or

$R^1=R^3=R^5=H$, $R^2=R^4=CH_3$

or a pharmaceutically acceptable addition salt with inorganic or organic acid.

4. A method for treating a bacterial infection in a mammal, which comprises administering to a mammal having said infection an antibacterially and pharmaceutically effective amount of a compound of claim 1 and a pharmaceutically acceptable carrier.

5,250,519

NON-ANTICOAGULANT HEPARIN DERIVATIVES

H. Edward Conrad, and Yuchuan Guo, both of Alameda, Calif., assignors to Glycomed Incorporated, Alameda, Calif.

Filed Mar. 29, 1991, Ser. No. 677,737

Int. Cl.[5] A61K *31/725;* **C08B** *37/10*

U.S. Cl. 514—56 **10 Claims**

1. A process to convert heparin to a deacetylated, oxidized, reduced heparin derivative that inhibits smooth muscle cell proliferation and substantially lacks anticoagulant activity, which process comprises:

deacetylating N-acetylglucosamine(GlcNAc) of said heparin periadate;

oxidizing the deacetylated heparin to effect complete conversion of gem-diols of iduronic and glucuronic acid that are not sulfated at either the 2or 3 positions of said acids, and gem OH/NH_2 of deacetylated GlcNAc to aldehydes;

reducing the aldehydes to alcohols without substantially fragmenting said deacetylated, oxidized treated heparin; and

recovering the deacetylated, oxidized, reduced heparin derivative.

3. The process of claim 1 wherein oxidizing said deacetylated heparin comprises combining in solution 0.5–10% deacetylated heparin (w/v) with 0.01–0.10 M periodate at pH3–6 at 0°–37° for a time sufficient to affect complete oxidation of said heparin by periodate.

4. The process of claim 3 wherein said reducing aldehydes to alcohols is conducted by treating the deacetylated periodate oxidized heparin with sodium borohydride at about 0.1–0.3 M and pH 8.9.

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5. A non-coagulant, antiproliferative heparin derivative composition prepared by the process of claim 4.

6. A process to convert heparin to a composition comprising a heparin derivative capable of inhibiting smooth muscle proliferation but lacking anticoagulant properties, which process comprises:

treating said heparin with a reagent to effect deacetylation of said heparin;

incubating a solution containing 0.5–10% deacetylated heparin (w/v), 0.01–0.1 M periodate, and pH 3–6 at 0°C.–37° C. for a time sufficient to effect complete conversion of gem-diols and gem OH/NH_2 to aldehydes in said heparin by periodate;

removing excess periodate;

removing salt to obtain a salt-free resultant;

treating the resultant with reducing agent effective to convert substantially all aldehyde moieties to alcohol moieties under conditions wherein fragmentation of said heparin derivative is inhibited; and

recovering said unfragmented heparin derivative.

5,250,520

POLYSULFATE OF CYCLODEXTRIN DERIVATIVE AND PROCESS FOR PREPARING THE SAME

Hironori Kurita, Warabi; Tamon Moriya, Takatsuki; Toru Otake; Haruyo Mori, both of Nara, and Motoko Morimoto, Osaka, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Mar. 13, 1991, Ser. No. 668,634

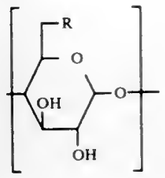
Claims priority, application Japan, Mar. 15, 1990, 2-65924; Mar. 15, 1990, 2-65925; Mar. 15, 1990, 2-65926; Sep. 27, 1990, 2-259257; Sep. 27, 1990, 2-259258

Int. Cl.[5] **A01N** *43/04, 53/00;* **C08B** *37/16, 37/02*

U.S. Cl. 514—58 **5 Claims**

1. A compound which is a polysulfate of a cyclodextrin in which at least one of 6 to 8 D-glucose units constituting the cyclodextrin has been replaced by a unit represented by Formula (I):

(I)



wherein R is a group represented by the formula:

$-SR^2$

where R^2 is a C_{1-20} alkyl group; a C_{1-4} alkyl having 1 to 3 substituents selected from the group consisting of a phenyl group, a halogeno-substituted phenyl group and a C_{1-4} alkoxy-substituted phenyl group; a phenyl group; a halogeno-substituted phenyl group; a C_{1-4} alkyl-substituted phenyl group; a C_{1-4} alkoxy-substituted phenyl group; or a purinyl group, or a salt thereof.

5,250,521

SUBSTITUTED PYRAZOLOPYRIMIDINES AS ANGIOTENSIN II ANTAGONISTS

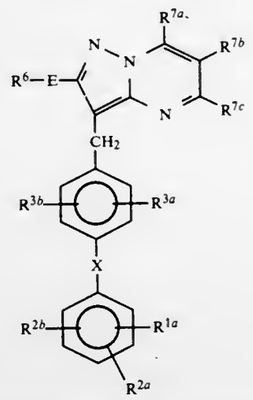
Eric E. Allen, Somerset; William J. Greenlee, Teaneck; Prasun K. Chakravarty, Edison; Malcolm MacCoss, Freehold; Arthur A. Patchett, and Thomas F. Walsh, both of Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 623,880, Dec. 7, 1990, abandoned. This application Nov. 25, 1991, Ser. No. 794,533

Int. Cl.[5] **C07D** *487/04;* **A61K** *31/505, 31/535, 31/54*

U.S. Cl. 514—81 **11 Claims**

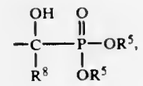
1. A compound having the formula:



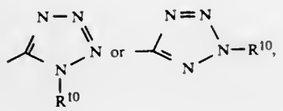
or its pharmaceutically acceptable salt wherein:

R^{1a} is

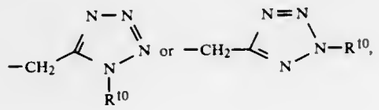
(a) —H,
(b) $-CO_2R^4$,
(c) $-SO_3R^5$,
(d) $-NHSO_2CF_3$,
(e) $-PO(OR^5)_2$,
(f) $-SO_2-NH-R^8$,
(g) $-CONHOR^5$,
(h)



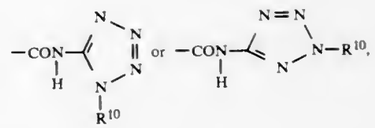
(i) —CN,
(j) $-PO(OR^5)R^4$,
(k)



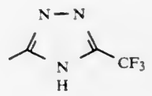
(l)



(m)

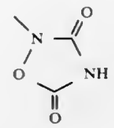


(n) $-CONHNHSO_2CF_3$,
(o)



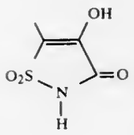
(p)

(p)

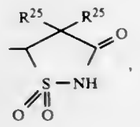


(q)

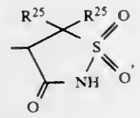
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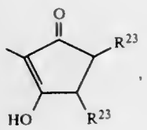
(t) $CONHSO_2R^{20}$,
(u) SO_2NHCOR^{20},
(v) —SO_2NH-heteroaryl, wherein heteroaryl is an unsubstituted, monosubstituted or disubstituted five- or six-membered aromatic ring which can contain 1 to 3 heteroatoms selected from the group consisting of O, N or S and wherein the substituents are members selected from the group consisting of: —OH, —SH, —(C_1-C_4)-alkyl, —(C_1-C_4)-alkoxy, Cl, Br, F, I, $-NO_2$, $-CO_2H$, $-CO_2-(C_1-C_4$-alkyl, $-NH_2$, —NH[(C_1-C_4)-alkyl] and $-N[(C_1-C_4)\text{-alkyl}]_2$,
(w) $-CH_2SO_2NH$-heteroaryl, as defined above
(x) $-CH_2SO_2NHCO-R^{20}$,
(y) $-CH_2CONH-SO_2R^{20}$,
(z) $-NHSO_2NHCO-R^{20}$,
(aa) $-NHCONHSO_2-R^{20}$,
(ab) $-CONHSO_2NR^4R^{20}$,
(ac) $-SO_2NHCONR^4R^{20}$,
(ad) $-SO_2N(R^{22})OR^{22}$,
(ae) $-SO_2NHSO_2R^{21}$,
(af) $-SO_2NHPO(R^{24})_2$,
(ag) $-CONHPO(R^{24})_2$,
(ah) $-SO_2NHCN$,
(ai) $-SO_2NHCOR^{21}$,
(aj) $-SO_2NHSO_2NR^{26}R^{27}$
(ak) $-SO_2NHSO_2N[CH_2CH_2]_2Y$, wherein Y is O or S,
(al) $-NHSO_2NHSO_2R^{21}$,
(am) $-NHSO_2NHPO(R^{24})_2$,
(an) $-NHSO_2R^{21}$,
(ao) $-NR^{26}COCO_2H$,
(ap) $-SO_2NHCO_2R^{20}$,
(aq)



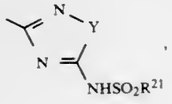
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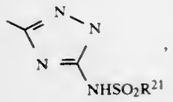
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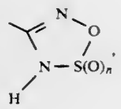
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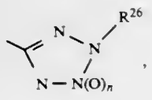
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(av)

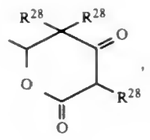


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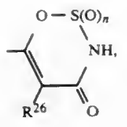


VOL 1155 ISS 1 OCT 5 1993 UMI

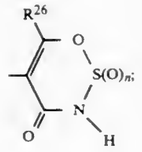
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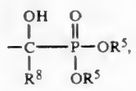
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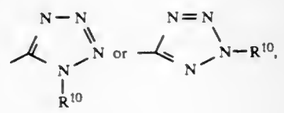
or
(az)



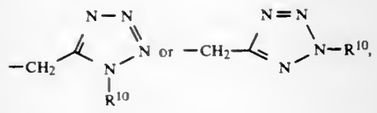
wherein n is 0 to 2;
R^1 is:
(a) $—CO_2H$,
(b) $—CO_2R^{29}$,
(c) $—CONH—SO_2—R^{20}$,
(d) $—CONHSO_2NR^8R^8$,
(e) $—CONHOR^5$,
(f)



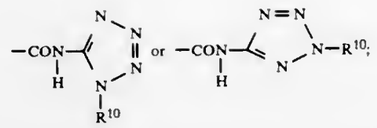
(g) —CN,
(h) $CONHNHSO_2CF_3$,
(i) CH_2SO_2NH-heteroaryl, as defined above,
(j) $CH_2SO_2NHCOR^{20}$,
(k) $CH_2CONHSO_2R^{20}$,
(l)



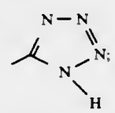
(m)



or
(n)



R^{2a} and R^{2b} are each independently
(a) H,
(b) Br, Cl, F, I,
(c) NO_2,
(d) NH_2,
(e) $NH[(C_1–C_4)\text{-alkyl}]$,
(f) $N[(C_1–C_4)\text{-alkyl}]_2$
(g) SO_2NHR^8,
(h) CF_3,
(i) $(C_1–C_6)$-alkyl, $(C_2–C_6)$-alkenyl, or $(C_2–C_6)$-alkynyl, or
(j) $(C_1–C_4)$-alkoxy;
R^{3a} is
(a) H,
(b) Cl, Br, I, or F,
(c) $(C_1–C_6)$-alkyl,
(d) $(C_1–C_6)$-alkoxy,
(e) $(C_1–C_6)$-alkoxy-$(C_1–C_4)$-alkyl;
R^{3b} is
(a) H,
(b) Cl, Br, I, or F,
(c) NO_2,
(d) $(C_1–C_6)$-alkyl, $(C_2–C_6)$-alkenyl, or $(C_2–C_6)$-alkynyl,
(e) $(C_1–C_6)$-alkanoyloxy,
(f) $(C_3–C_6)$-cycloalkyl,
(g) $(C_1–C_6)$-alkoxy,
(h) $—NHSO_2R^4$,
(i) hydroxy-$(C_1–C_4)$-alkyl,
(j) furyl,
(k) $(C_1–C_4)$-alkylthio,
(l) $(C_1–C_4)$-alkylsulfinyl,
(m) $(C_1–C_4)$-alkylsulfonyl,
(n) NH_2,
(o) $NH[(C_1–C_4)\text{-alkyl}]$,
(p) $N[(C_1–C_4)\text{-alkyl}]_2$,
(q) $(C_1–C_4)$-perfluoroalkyl,
(r) $—SO_2—NHR^8$,
(s) aryl, wherein aryl is phenyl unsubstituted or substituted with one or two substituents selected from the group consisting of Cl, Br, I, F or $(C_1–C_4)$-alkyl, which is substituted or unsubstituted with members selected from the group consisting of: $N(R^4)_2$, CO_2R^4, OH, $N(R^4)CO_2R^{20}$, $S(O)_nR^{20}$, wherein n is 0 to 2; $(C_1–C_4)$-alkoxy, NO_2, CF_3, $(C_1–C_4)$-alkylthio, OH, NH_2, $—NH[(C_1–C_4)\text{-alkyl}]$, $—N[(C_1–C_4)\text{-alkyl}]_2$, $—CO_2H$, $—CO_2—(C_1–C_4)$-alkyl, $N(R^4)CO_2R^{20}$, or



(t) aryl-$(C_1–C_4)$-alkyl;
R^4 is H, $(C_1–C_6)$-alkyl unsubstituted or substituted with aryl;
R^{4a} is $(C_1–C_6)$-alkyl, aryl or aryl-$CH_2—$;
R^5 is H, or $—CHR^4OCOR^{4a}$;
E is a single bond, $—NR^{12}(CH_2)_s—$, $—S(O)_n(CH_2)_s—$ wherein s is 0 to 5, —CH(OH)—, —O—, CO—;
R^6 is
(a) aryl, **1**
(b) $(C_1–C_6)$-alkyl, $(C_2–C_5)$-alkenyl or $(C_2–C_5)$-alkynyl each of which is unsubstituted or substituted with a substituent selected from the group consisting of: aryl, $C_3–C_7$-cycloalkyl, Cl, Br, I, F, —OH, CF_3, $—CF_2CF_3$, CCl_3, $—NH_2$, $—NH[(C_1–C_4)\text{-alkyl}]$, $—N[(C_1–C_4)\text{-alkyl}]_2$, $—NH—SO_2R^4$, $—COOR^4$, $—SO_2NHR^8$, $(C_1–C_4)$-alkoxy, $(C_1–C_4)$-alkyl-S;
(c) an unsubstituted, monosubstituted or disubstituted heteroaromatic 5 or 6 membered cyclic ring which can contain one or two members selected from the group consisting of: N, O, S, and wherein the substituents are members selected from the group consisting of: —OH, —SH, $(C_1–C_4)$-alkyl, $(C_1–C_4)$-alkyloxy, Cl, Br, I, F, NO_2, $—CO_2H$, $—CO_2—(C_1–C_4)$-alkyl, $—NH_2$, $—NH[(C_1–C_4)\text{-alkyl}]$, $—N[(C_1–C_4)\text{-alkyl}]_2$;
(d) $(C_3–C_7)$-cycloalkyl;
R^{7a}, R^{7b} and R^{7c} are independently

H,

aryl-$(C_1–C_4)$-alkyl-,

heteroaryl-$(C_1–C_4)$-alkyl-, wherein heteroaryl is as defined above as,
(d) $(C_1–C_4)$-alkyl, unsubstituted or substituted with a substituent selected from the group consisting of: —OH, $—NH_2$, guanidino, $(C_1–C_4)$-alkoxy, $—S(O)_nR^{20}$, $(C_1–C_4)$-alkylamino, $(C_1–C_4)$-dialkylamino, $—COOR^4$, $—CON(R^4)R^{20}$, $—OCON(R^4)R^{20}$, $—O—COR^4$, $(C_3–C_5)$-cycloalkyl, $—N(R^4)CON(R^4)R^{20}$, $—N(R^4)COOR^{20}$, $—CONHSO_2R^{20}$, $—N(R^4)SO_2R^{20}$;

$(C_2–C_4)$-alkenyl,
(f) —CO-aryl,
(g) $(C_3–C_7)$-cycloalkyl,
(h) Cl, Br, I, or, F
(i) —OH,
(j) $—OR^{20}$,
(k) $(C_1–C_4)$-perfluoroalkyl,
(l) —SH,
(m) $—S(O)_nR^{20}$,
(n) —CHO,
(o) $—CO_2R^4$,
(p) $—SO_3H$,
(q) $—N(R^4)2$,
(r) $—N(R^4)CO_2R^{20}$,
(s) $—N(R^4)CONR^4R^{20}$,
(t) $—N(R^4)CSNR^4R^{20}$,
(u) $—N(R^4)CON[CH_2CH_2]_2G$, wherein G is $—CH_2—$, —O— $—N(R^4)—$, or $—N(COR^{20})—$,
(v) $—SO_2NR^8R^9$,
(w) $—CH_2OCOR^4$,
(x) $—N(R^4)—SO_2—(C_1–C_4)$-alkyl,
(y) 5 or 6 membered saturated heterocycle containing one nitrogen atom and optionally containing one other heteroatom selected from N, O or S,
(z) aryl.

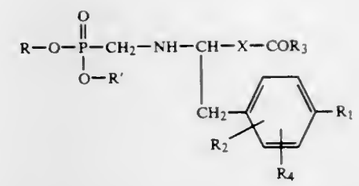
5,250,522

PHOSPHONO/BIARYL SUBSTITUTED AMINO ACID DERIVATIVES

Stéphane De Lombaert, Bernardsville, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 9, 1992, Ser. No. 959,000
Int. Cl.[5] **A61K** *31/66;* **C07F** *9/38, 9/40*
U.S. Cl. 514—114 **19 Claims**

1. A compound of the formula I



(I)

wherein X represents a direct bond, C_{1-4}-alkylene or $C_2–C_4$-alkenylene; R and R' represent independently hydrogen, carbocyclic aryl, 6-tetrahydronaphthyl, 5-indanyl, α-(trichloromethyl, carboxyl, esterified carboxyl or amidated carboxyl)substituted-(lower alkyl or aryl-lower alkyl), acyloxymethyl optionally monosubstituted on methyl carbon by C_{1-20}-alkyl, by $C_5–C_7$-cycloalkyl, by aryl or by aryl-lower alkyl; R_1 represents monocyclic carbocyclic or monocyclic heterocyclic aryl; COR_3 represents carboxyl or carboxyl derivatized in form of a pharmaceutically acceptable ester; R_2 and R_4 represent hydrogen, lower alkyl, trifluoromethyl, lower alkoxy or halogen; or a pharmaceutically acceptable salt thereof.

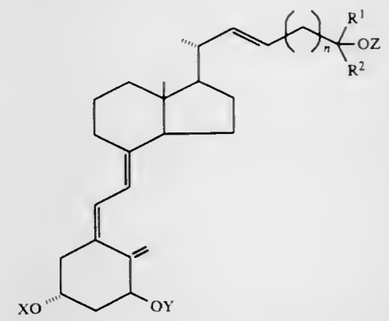
5,250,523

SIDE CHAIN UNSATURATED 1α-HYDROXYVITANIM D HOMOLOGS

Hector F. DeLuca, Deerfield; Heinrich K. Schnoes, Madison, and Kato L. Perlman, 1 Chippewa Ct., both of Madison, all of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation-in-part of Ser. No. 428,139, Oct. 30, 1989, abandoned, which is a cootinuation-in-part of Ser. No. 187,675, Apr. 29, 1988, abandoned. This application Feb. 14, 1990, Ser. No. 481,993
Int. Cl.[5] **A61K** *31/59;* **C07J** *172/00, 175/00*
U.S. Cl. 514—167 **35 Claims**

1. Compounds having the structure



where Z is hydrogen or a hydroxy protecting group, X and Y, which may be the same or different, are hydrogen or a hydroxy-protecting group, n is an integer having the value of 1 to 5, and R^1 and R^2, which may be the same or different, each represent an alkyl group of from 2 to 5 carbons in all isomeric forms, and R^1 and R^2 when taken together represent the group $—(CH_2)_m—$ where m is an integer having the value of 2 to 5.

VOL 1155 ISS 1 OCT 5 1993 UMI

5,250,524

BILE ACID DERIVATIVES, PROCESS FOR THEIR PREPARATION AND USE OF THESE COMPOUNDS AS PHARMACEUTICALS

Werner Kramer, Mainz; Günther Wess, Erlensee; Stefan Müllner, Hochheim, and Horst Neubauer, Königstein/Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 4, 1991, Ser. No. 802,413

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1990, 4038833

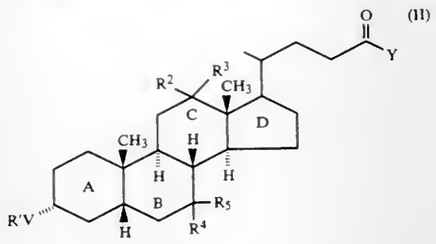
Int. Cl.[5] A61K *31/56;* **C07J** *53/00*

U.S. Cl. 514—177 **9 Claims**

1. A dimeric bile acid derivative of formula (I)

G1—X—G2 (I)

wherein G1 is a compound of formula (II)



(II)

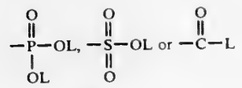
in which

V is O, NH or CH_2

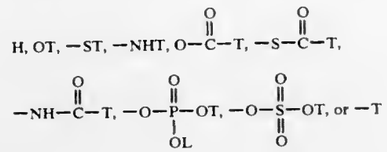
Y is a free valency for bonding the group X of —OL, —NHL, —NL_2, an amino acid or aminosulfonic acid bonded via the amino group and their (C_1-C_4) alkyl esters and alkali metal and alkaline earth metal salts, —O—M, where M is a cation selected from an alkali metal ion, an alkaline earth metal ion or a quarternary ammonium ion, and in which L is H, a saturated or unsaturated alkyl radical having 1-10 carbon atoms, which is branched or unbranched, a cycloalkyl radical having 3-8 carbon atoms, a phenyl radical which is unsubstituted or monosubstituted to trisubstituted by F, Cl, Br, (C_1-C_4)-alkyl or (C_{1-4})-alkoxy, a benzyl radical which is unsubstituted or monosubstituted to trisubstituted by F, Cl, Br, (C_1-C_4)-alkyl or (C_1-C_4)-alkoxy, is methyl, isopropyl, isobutyl, 2-butyl, benzyl, 4-hydroxybenzyl, hydroxymethyl, 1-hydroxyethyl, $H_3CSCH_2CH_2$—, HO_2CCH_2— or $HO_2CCH_2CH_2$—,

R^1 is a free valency for bonding the group X or H, a saturated or unsaturated alkyl radical having 1-10 carbon atoms, which is branched or unbranched, a cycloalkyl radical having 3-8 carbon atoms, a phenyl radical which is unsubstituted or monosubstituted to trisubstituted by F, Cl, Br, (C_1-C_4)-alkyl or (C_1-C_4)-alkoxy, —N^+H_3, —OPO_3^-, a benzyl radical which is unsubstituted in the ring or monosubstituted to trisubstituted by F, Cl, Br, (C_1-C_4)-alkyl, (C_1-C_4)-alkoxy, —N^+H_3, —OPO_3^- or phenyl, which can in turn be monosubstituted to trisubstituted by F, Cl, Br, (C_1-C_4)-alkyl or (C_1-C_4)-alkoxy, —N^+H_3, —OPO_3^-, a biphenylmethyl radical which is unsubstituted or monosubstituted to trisubstituted by F, Cl, Br, (C_1-C_4)-alkyl or (C_1-C_4)-alkoxy, —N^+H_3, —OPO_3^-, a triphenylmethylradical which is unsubstituted or monosubstituted to trisubstituted by F, Cl, Br, (C_1-C_4)-alkyl or (C_1-C_4)-alkoxy, —N^+H_3, —OPO_3^-, a 1- or 2-naphthylmethyl radical which is unsubstituted or monosubstituted to trisubstituted by F, Cl, Br, (C_1-C_4)-alkyl or (C_1-C_4)-alkoxy, —N^+H_3, —OPO_3—, a 9-fluorenyl radical which is unsubstituted or monosubstituted to trisubstituted by F, Cl, Br, (C_1-C_4)-alkyl or (C_1-C_4)-alkoxy, —N^+H_3, —OPO_3^-

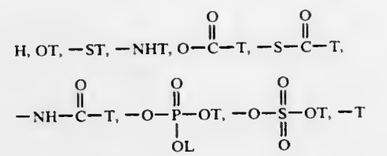
a 2-, 3- or 4-pyridyl radical, a radical



where L has the above-mentioned meaning, R^2 to R^5, where R^2 and R^3 or R^4 and R^5 in each case together are the oxygen of a carbonyl group, or individually and in each case independently of one another are

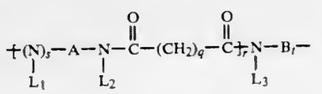


H, OT, —ST, —NHT,



where L has the above mentioned meaning and T has the meaning of L or a free valency for bonding the group X, with the restriction that altogether only one free valency for bonding the group X starts from G1,

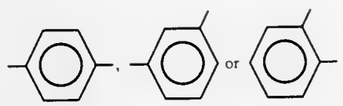
X is a single bond or a group of formula III



(III)

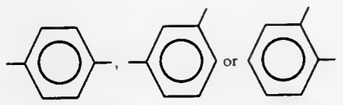
where

A is an alkylene chain which is branched or unbranched, saturated or unsaturated and can be optionally interrupted in the chain by —O—, —S— or arylene, where the linkage



takes place and the chain contains altogether 2 to 12 chain members p;

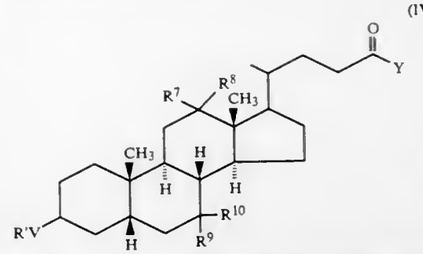
B is an alkylene chain which is branched or unbranched, saturated or unsaturated and can be optionally interrupted in the chain by —O—, —S— or arylene, where the linkage



takes place and the chain contains altogether 2 to 18 chain members n,

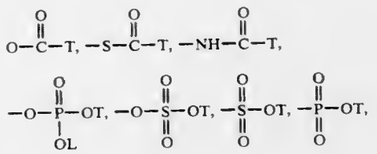
L_1, L_2 and L_3 are identical or different and have the meaning of L, and

q is 0-5,
r is 0 or 1 and
s is 0 or 1,
t is 0 or 1,
G2 is a compound of formula (IV)



(IV)

in which V, Y and R^1 have the meaning indicated under G1 and R^7 to R^{10}, where R^7 and R^8 or R^9 and R^{10} in each case are the oxygen of a carbonyl group or individually and in each case independently of one another are H, OT, —ST, —NHT



or —T

where L and T have the meaning indicated under G1, likewise with the restriction that altogether only one free valency for bonding the group X starts from G2 derivative is not and wherein the linkage of the radicals G1 and G2 is unsymmetrical.

5,250,525

4-OXO-AZETIDINE-2-SULFONIC ACIDS AND THEIR SALTS, PROCESSES FOR THE PREPARATION THEREOF AND THEIR USE

Miće Kovačević; Zorica Mandić; Mirjana Tomić; Zinka Brkić; Jure J. Herak; Irena Lukić, all of Zagreb, Yugoslavia, assignors to Pliva Handels GmbH, Croatia

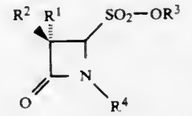
Filed Feb. 11, 1992, Ser. No. 833,856

Claims priority, application Yugoslavia, Feb. 12, 1991, 250/91; Aug. 12, 1991, 1390/91

Int. Cl.[5] C07D *205/09, 205/095, 417/12;* **A61K** *31/395*

U.S. Cl. 514—210 **25 Claims**

1. 4-Oxo-azetidine-2-sulfonic acids and their salts of the formula I



I

wherein the radicals have the meanings:

R^1 = hydrogen, halogen, phenylacetamido;

R^2 = hydrogen, halogen, phenylacetamido, phenoxyacetamido, phthalimido, 5-methyl-3-o-chlorophenyl-isoxazole-4-carboxamido;

R^3 = hydrogen, alkali metal, alkaline earth metal, tetrabutyl ammonium group;

R^4 = hydrogen, SO_2O^- + NBu_4-n, $(CH_3)_2C{=}C{-}COOCH_3$, $(CH_3)_2C{=}C{-}COOCH_2{-}C_6H_5$, $(CH_3)_2C{=}C{-}COOCH_2{-}C_6H_4{-}NO_2$-p, $(CH_3)_2C{=}C{-}COOCH_2{-}C_6H_4{-}CH_3$-m.

5,250,526

PYRIDINECARBOXYLIC ACID AMIDE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS COMPRISING SAME

Katsutoshi Miura, Ohi; Hiroyasu Koyama, Ageo; Toshiji Sugai, Tsurugashima; Hiroaki Yamada; Einosuke Sakurai, both of Ohi, and Masato Horigome, Tokyo, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

Filed Aug. 19, 1991, Ser. No. 746,636

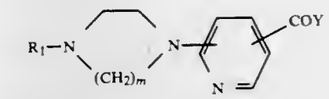
Claims priority, application Japan, Aug. 31, 1990, 2-228381; Dec. 28, 1990, 2-418550

The portion of the term of this patent subsequent to Feb. 19, 2008, has been disclaimed.

Int. Cl.[5] C07D *401/04, 401/06;* **A61K** *31/495, 31/55*

U.S. Cl. 514—218 **10 Claims**

1. A compound of formula (I)



(I)

wherein R_1 is hydrogen, C_1-C_3 alkyl or diphenylmethyl; Y is —$NH(CH_2)_n$—R_2; R_2 is OH or —ONO_2; m is 2 or 3; and n is 9 to 13 or a physiologically acceptable acid addition salt thereof.

5,250,527

PYRIDYL CONTAINING BENZIMIDAZOLES, COMPOSITIONS AND USE

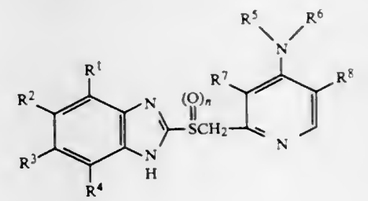
Robert J. Ife, Stevenage, England, assignor to SmithKline & French Laboratories Limited, Welwyn Garden City, England

Continuation-in-part of Ser. No. 92,251, Sep. 2, 1987, abandoned, which is a continuation-in-part of Ser. No. 44,880, Apr. 30, 1987, abandoned, which is a continuatioo-in-part of Ser. No. 790,994, Oct. 24, 1985, abandoned. This application Sep. 23, 1988, Ser. No. 249,209

Int. Cl.[5] A61K *31/44, 31/535;* **C07D** *401/12, 413/14*

U.S. Cl. 514—234.5 **25 Claims**

1. A compound of structure (I)



(I)

in which,

R^1 to R^4 are the same or different and are each hydrogen, halogen, trifluoromethyl, C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} alkanoyl or C_{1-6} alkoxycarbonyl, RCF_2O, an ethoxy group substituted by 3 to 5 fluorine atoms;

R is hydrogen or fluorine;

m is 1 or 2;

n is 0 or 1;

R_5 and R^6 are the same or different and are each C_{1-6}alkyl or R^5 and R^6 together with the nitrogen atom to which they are attached form a piperidino or morpholino- group; and

one of R^7 and R^8 is halogen, and the other is hydrogen or C_{1-6} alkyl;

or a pharmaceutically acceptable salt thereof, provided that

VOL 1155 ISS 1 OCT 5 1993 UMI

when R^5 and R^6 are both alkyl, one of R^7 and R^8 is halogen and the other is C_{1-6} alkyl.

5,250,528

NEW AMINOPIPERAZINE DERIVATIVES

Teruo Oku, Tsukuba; Eishiro Todo, Toyonaka; Yoshihiro Yokota; Hiroshi Kayakiri, both of Tsukuba, and Masashi Hashimoto, Tokyo, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

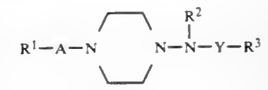
Continuation of Ser. No. 671,797, Apr. 2, 1991, abandoned. This application Oct. 8, 1992, Ser. No. 957,759

Claims priority, application United Kingdom, Aug. 2, 1989, 8917687

Int. Cl.[5] **A61K** *31/495;* **C07D** *295/32, 409/06, 403/06*

U.S. Cl. 514—252 **8 Claims**

1. A compound of the formula:



[I]

wherein

R^1 is lower alkyl, phenyl, naphthyl, tolyl, xylyl, mesityl, cumenyl or thienyl,

R^2 is hydrogen or lower alkyl,

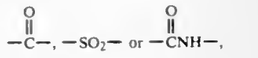
R^3 is cyclo(lower)alkyl or phenyl, each of which may be substituted with halogen,

A is



and

Y is



or pharmaceutically acceptable salts thereof.

5,250,529

METHOD ALLEVIATING MIGRAINE HEADACHE WITH MAST CELL DEGRANULATION BLOCKING AGENTS

Theoharis C. Theoharides, Brooklhne, Mass., assignor to KOS Pharmaceuticals, Inc., Miami, Fla.

Continuation-in-part of Ser. No. 478,164, Feb. 8, 1990, abandoned. This application Dec. 27, 1991, Ser. No. 815,124

Int. Cl.[5] **A61K** *31/495, 31/41, 31/35, 31/21, 31/13, 31/135*

U.S. Cl. 514—255 **17 Claims**

1. A method of alleviating a migraine headache which comprises the step of administering to a patient a pharmaceutically effective amount of a mast cell degranulation blocking agent only during the prodrome phase in the absence of an analgesic administered prior to the onset of the acute migraine phase.

5,250,530

AMINOPYRIMIDINE DERIVATIVES, AND THEIR USE AS FUNGICIDES

Wolfgang Giencke, Hofheim am Taunus; Burkhard Sachse, Kelkheim, and Heinrich Wicke, Eppstein/Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

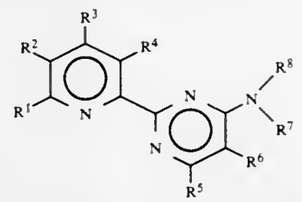
Filed Jul. 9, 1990, Ser. No. 549,764

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1989, 3922735

Int. Cl.[5] **C07D** *401/04, 401/14;* **A01N** *43/54*

U.S. Cl. 514—256 **8 Claims**

1. A compound of the formula I



(I)

wherein

R^1 is (C_2-C_6)alkyl, (C_1-C_4)alkoxy-(C_1-C_4)alkyl, (C_1-C_4)alkylthio-(C_1-C_4)alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, (C_3-C_7)cycloalkyl and C_3-C_7)cycloalkyl-(C_1-C_4)alkyl, where the last two radicals can be up to trisubstituted in the cycloalkyl moiety by (C_1-C_4)alkyl, or is a group R^7R^8N-(C_1-C_4)-alkyl, phenyl, phenoxy-(C_1-C_4)alkyl, phenylmercapto-(C_1-C_4)-alkyl, phenyl-(C_1-C_4)alkyl and phenoxyphenoxy-(C_1-C_4)alkyl, where the last five radicals can be up to trisubstituted in the phenyl moiety by halogen, nitro, cyano, (C_1-C_4)alkyl, (C_1-C_4)alkoxy, (C_1-C_4)-alkylthio, (C_1-C_4)haloalkyl or (C_1-C_4)haloalkoxy,

R^2, R^3 and R^4 independently of one another are hydrogen, (C_1-C_6)alkyl or phenyl, where the phenyl radical can be up to trisubstituted by halogen, nitro, cyano, (C_1-C_4)alkyl, (C_1-C_4)alkylthio, (C_1-C_4)haloalkyl or $(C_1-C_4$-)haloalkoxy,

R^5 is hydrogen, (C_1-C_6)alkyl, (C_3-C_7)cycloalkyl or (C_3-C_7)-cycloalkyl-(C_1-C_4)alkyl, where the last two radicals can be up to trisubstituted in the cycloalkyl moiety by (C_1-C_4)alkyl, or is (C_1-C_4)haloalkyl, (C_1-C_4)alkoxy, (C_1-C_4)alkylthio, (C_1-C_4)alkoxy-(C_1-C_4)alkyl, a group R^7R^8N-, (C_1-C_4)alkylthio-(C_1-C_4)alkyl, a group R^7R^8N-(C_1-C_4)alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl, phenoxy, phenyl(C_1-C_4)alkyl, phenoxy-(C_1-C_4)alkyl, phenyl-mercapto-(C_1-C_4)alkyl, phenylmercapto, phenyl-(C_1-C_4)alkoxy or phenyl-(C_1-C_4)alkylthio, where the last seven radicals can be up to trisubstituted in the phenyl moiety by halogen, nitro, cyano, (C_1-C_4)alkyl, (C_1-C_4)alkoxy, (C_1-C_4)halo-alkyl or (C_1-C_4)haloalkoxy;

R^6 is hydrogen, (C_1-C_4)alkyl, (C_1-C_4)alkoxy, (C_2-C_5)alkenyloxy, (C_2-C_6)alkynyloxy, (C_1-C_4)alkylthio, halogen or phenyl, where the phenyl radical can be up to trisubstituted by halogen, nitro, cyano, (C_1-C_4)alkyl, (C_1-C_4)alkoxy, (C_1-C_4)alkylthio, (C_1-C_4)haloalkyl or $(C_1-C_4$-)haloalkoxy, or

R^5 and R^6 together form a polymethylene chain of the formula $—(CH_2)_m—$ with m being 3–4 and

R^7 and R^8 independently of one another are hydrogen, (C_1-C_6)alkyl, (C_1-C_4)alkoxy-(C_1-C_6)alkyl, hydroxy-(C_1-C_6)alkyl, (C_1-C_4)alkylthio-(C_1-C_6)alkyl, $R^9R^{10}N$-(C_1-C_6)alkyl, (C_3-C_6)alkenyl, (C_3-C_6)alkynyl, $(C_3-C_7$-)cycloalkyl or (C_3-C_7)cycloalkyl-(C_1-C_4)alkyl, where the last two radicals can be up to trisubstituted in the cycloalkyl moiety by (C_1-C_4)alkyl; or are formyl, phenyl or phenyl-(C_1-C_4)alkyl, where the last two radicals can be up to trisubstituted in the phenyl moiety by halogen, nitro,

cyano, (C_1-C_4)alkyl, (C_1-C_4)alkoxy, (C_1-C_4)alkylthio, (C_1-C_4)haloalkyl or (C_1-C_4)haloalkoxy;

or the two radicals R^7 and R^8 together with the nitrogen atom to which they are bonded stand for a heterocycle selected from the group consisting of piperidine, pyrrolidine, morpholine, pyrrole, piperazine and hexahydroazepine, which heterocycle is unsubstituted or up to tetrasubstituted by $(C_1-C_4$-alkyl);

R^9 and R^{10} independently of one another are hydrogen, (C_1-C_6)alkyl, (C_3-C_6)alkenyl, (C_3-C_6)alkynyl, (C_3-C_7)-cycloalkyl or (C_3-C_7)cycloalkyl-(C_1-C_4)alkyl, where the last two radicals can be up to trisubstituted in the cycloalkyl moiety by (C_1-C_4)alkyl; or are formyl, phenyl, phenyl(C_1-C_4)alkyl, where the last two radicals can be up to trisubstituted in the phenyl moiety by halogen, nitro, cyano, (C_1-C_4)-alkyl, (C_1-C_4)alkoxy, (C_1-C_4)alkylthio, (C_1-C_4)haloalkyl or (C_1-C_4)haloalkoxy;

or the two radicals R^9 and R^{10} together with the nitrogen atom to which they are bonded strand for pyrrolidine and the acid addition salts thereof.

5,250,531

DIHYDROPYRIMIDINE ANTIALLERGY AGENTS

Kelvin Cooper, Noank, Conn., assignor to Pfizer Inc., New York, N.Y.

PCT No. PCT/EP90/00392, § 371 Date Aug. 29, 1991, § 102(e) Date Aug. 29, 1991, PCT Pub. No. WO90/11281, PCT Pub. Date Oct. 4, 1990

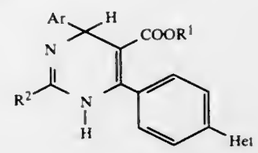
PCT Filed Mar. 9, 1990, Ser. No. 752,524

Claims priority, application United Kingdom, Mar. 17, 1989, 8906168

Int. Cl.[5] **C07D** *401/10, 403/10, 413/10;* **A61K** *31/505*

U.S. Cl. 514—256 **9 Claims**

1. A compound of formula (I):



(I)

or a pharmaceutically acceptable salt thereof, where Ar is either (a) phenyl optionally substituted by 1 to 3 substituents each independently selected from nitro, halo, trifluoromethyl, C_1-C_4 alkyl, C_1-C_4 alkoxy, fluoro-$(C_1-C_4$ alkoxy), C_1-C_4 alkylthio, C_1-C_4 alkylsulphonyl, hydroxy and cyano, or (b) methylene-dioxyphenyl or benzothienyl; R^1 is C_1-C_4 alkyl; R^2 is hydroxy; C_1-C_4 alkoxy; C_1-C_4 alkylthio, C_1-C_4 alkyl; phenyl optionally substituted by 1 or 2 halo substituents; or a group of the formula $—NR^3R^4$ where R^3 and R^4 are each independently H or C_1-C_4 alkyl; and "Het" is a imidazolyl, thiazolyl, oxazolyl, triazolyl, pyridyl;, benzimidazolyl, imidazopyridyl or imidazothiazolyl group, either or both of the rings thereof being optionally substituted with up to three substituents each independently selected from C_1-C_4 alkyl, C_1-C_4 alkoxy, halo, trifluoromethyl and cyano.

5,250,532

3,4,N-TRISUBSTITUTED-4,5-DIHYDRO-1H-PYRAZOLE-1-CARBOXAMIDES AND THEIR USE AS INSECTICIDES

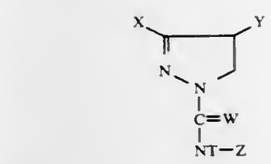
Kevin L. McLaren, Concord; Mark B. Hertlein, Pleasant Hill; James T. Pechacek, Clayton; Michael J. Ricks, Concord; Yulan C. Tong, Walnut Creek, and Laura L. Karr, Pittsburg, all of Calif., assignors to DowElanco, Indianapolis, Ind.

Continuation-in-part of Ser. No. 684,525, Apr. 11, 1991. This application Feb. 27, 1992, Ser. No. 842,834

Int. Cl.[5] **C07D** *401/04, 403/04;* **A01N** *43/56*

U.S. Cl. 514—256 **47 Claims**

1. A 3,4N-triaryl-4,5-dihydro-1H-pyrazole-1-carboxamide compound of the formula



wherein

Y represents 5-substituted-2-pyridinyl, 6-substituted-3-pyridinyl, (6 or 7)-substituted-2-quinolinyl, (6 or 7)-substituted-3-quinolinyl, 5-substituted-2-pyrimidinyl, 2-substituted-5pyrimidinyl, 5-substituted-2-pyrazinyl, or 6-substituted-3-pyridazinyl wherein the substituent is selected from F, Cl, Br, CN, COQ, CF_3, OR', SR', SOR', and OAr;

X represents phenyl or phenyl substituted in the 4-position with F, Cl, Br, CN, COQ, R, OR', SR', SOR', SO_2R', NO_2, or OAr, and/or in the 3-position with F, Cl, Br, CN, R, or OR';

Z represents phenyl substituted in the 4-position with F, Cl, Br, CN, COQ, R, OR', SR', SOR', SO_2R', OSO_2R', NO_2, or OAr, and optionally in the 2-position with F and optionally in the 3- or 5-position with F, Cl, Br, CN, R, or OR';

T represents H, R", C(W)R, C(W)WR", SAr, SNR"R"', SM, or CH_2OR";

each W independently represents O or S;

R represents C_1-C_3 alkyl, C_2-C_3 alkenyl, or C_2-C_3 alkynyl optionally singly to completely substituted with fluorine or chlorine;

R' represents C_1-C_3 alkyl optionally singly to completely substituted with fluorine or chlorine;

R" represents C_1-C_4 alkyl, C_3-C_4 alkenyl, or C_3-C_4 alkynyl;

R"' represents R", $CO_2(C_1-C_{20}$ alkyl or C_3-C_{20} alkenyl);

M represents a 5–7 membered saturated aliphatic nitrogen heterocycle, morpholine, or thiomorpholine moiety attached to the S atom of SM at the N atom;

Ar represents phenyl optionally substituted with 1 or 2 compatible substituents selected from F, Cl, Br, CN, COQ, R, OR', SR', SOR', SO_2R' and NO_2; and

Q represents OR", SR", NH_2, NHR", or NR"$_2$.

5,250,533

FUNGICIDAL PYRIDINYLPYRIMIDINES

Ulrich Heinemann, Leichlingen; Alexander Klausener, Krefeld; Dieter Berg, Wuppertal; Stefan Dutzmann, Duesseldorf, and Wilhelm Brandes, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

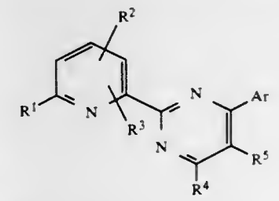
Continuation-in-part of Ser. No. 608,100, Oct. 31, 1990, abandoned. This application Mar. 2, 1992, Ser. No. 844,808

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1989, 3940476

Int. Cl.[5] **A01N** *43/54;* **C07D** *401/04, 401/14*

U.S. Cl. 514—256 **18 Claims**

1. A pyridinylpyrimidine of the formula



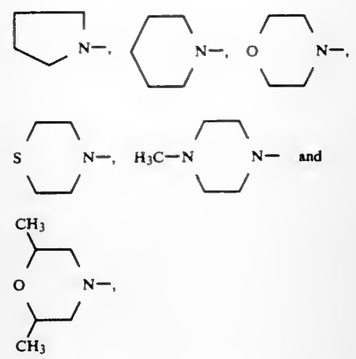
(I)

in which

R^1 represents hydrogen, halogen, in each case straight-chain

VOL 1155 ISS 1 OCT 5 1993 UMI

or branched alkoxy or alkylthio each of which has 1 to 6 carbon atoms, or represents straight-chain or branched halogenoalkyl having 1 to 6 carbon atoms and 1 to 13 identical or different halogen atoms, or R^1 represents amino, alkylamino or dialkylamino each of which has 1 to 6 carbon atoms in the respective straight-chain or branched alkyl moieties, or R^1 represents a radical selected from



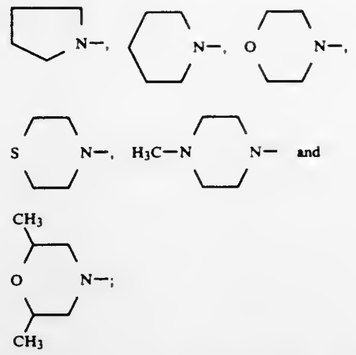
or

R^1 furthermore represents phenoxy or phenylthio, each of which is optionally monosubstituted, disubstituted or trisubstituted by identical or different substituents selected from the group consisting of halogen, cyano, nitro, alkyl, alkoxy or alkylthio each of which has 1 or 2 carbon atoms, and also halogenoalkyl, halogenoalkoxy or halogenoalkylthio each of which has 1 or 2 carbon atoms and each of which has 1 to 5 fluorine plus chlorine atoms, or R^1 represents phenylalkoxy or phenylalkylthio each of which has 1 to 4 carbon atoms in the respective straight-chain or branched alkyl moiety and each of which is optionally monosubstituted, disubstituted or trisubstituted on the phenyl moiety by identical or different substituents selected from the group consisting of halogen, cyano, nitro, alkyl, alkoxy or alkylthio each of which has 1 or 2 carbon atoms, and also halogenalkyl, halogenoalkoxy or halogenalkylthio each of which has 1 or 2 carbon atoms and each of which has 1 to 5 fluorine plus chlorine atoms.

R^2 and R^3 are independent of one another and identical or different and in each case represent hydrogen, halogen, straight-chain or branched alkyl having 1 to 6 carbon atoms, or represents straight-chain or branched halogenoalkyl having 1 to 6 carbon atoms and 1 to 13 identical or different halogen atoms, or represents in each case straight-chain or branched alkoxy or alkylthio each of which has 1 to 6 carbon atoms, or represents straight-chain or branched alkoxycarbonyl having 1 to 6 carbon atoms in the alkoxy moiety, or

R^2 and R^3 together represent an alkylene chain which has 3 to 5 carbon atoms and which is linked via the ring positions 3 and 4 or 4 and 5,

R^4 represents hydrogen; halogen; straight-chain or branched alkyl having 1 to 6 carbon atoms; straight-chain or branched halogenoalkyl having 1 to 6 carbon atoms and 1 to 13 identical or different halogen atoms; hydroxyl; mercapto; straight-chain or branched alkoxy or alkylthio each of which has 1 to 6 carbon atoms; amino; alkylamino or dialkylamino each of which has 1 to 6 carbon atoms in the respective straight-chain or branched alkyl moieties, or R^4 is represents a radial selected from



or

R^4 represents in each case straight-chain or branched alkenyloxy or alkynyloxy each of which has 2 to 6 carbon atoms.

R^5 represents hydrogen or straight-chain or branched alkyl having 1 to 6 carbon atoms, and

Ar represents phenyl which is optionally monosubstituted, disubstituted or trisubstituted by identical or different substituents selected from the group consisting of halogen, cyano, nitro, hydroxyl, amino, mercapto, straight-chain or branched alkyl having 1 to 6 carbon atoms, straight-chain or branched halogenalkyl having 1 to 6 carbon atoms and 1 to 13 identical or different halogen atoms, straight-chain or branched alkoxy or alkylthio each of which has 1 to 6 carbon atoms, straight-chain or branched halogenalkylthio or halogenoalkoxy each of which has 1 to 6 carbon atoms and each of which has 1 to 13 identical or different halogen atoms, straight-chain or branched alkenyl or alkynyl having 2 to 6 carbon atoms, straight-chain or branched alkenyloxy or alkylnyloxy having 2 to 6 carbon atoms, cycloalkyl having 3 to 8 carbon atoms, phenyl, phenoxy, phenylthio, and phenylalkylthio or phenylalkyloxy each of which has 1 to 4 carbon atoms in the straight-chain or branched alkyl moiety,

with the exception of the compounds 4-phenyl-2-(2-pyridinyl) pyrimidine, 4-(methyl-phenyl)-2-(2-pyridinyl)-pyrimidine, 4-halo-6-phenyl-2-(2-pyridyl)-pyrimidines and 4-halo-6-(methyl-phenyl)-2-(2-pyridyl)-pyrimidines.

5,250,534

PYRAZOLOPYRIMIDINONE ANTIANGINAL AGENTS

Andrew S. Bell; David Brown, and Nicholas K. Terrett, all of Groton, Conn., assignors to Pfizer Inc., New York, N.Y.

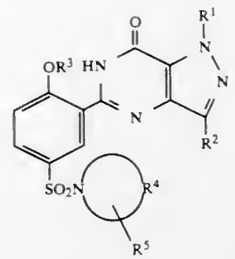
Continuation of Ser. No. 717,227, Jun. 18, 1991, abandoned. This application May 14, 1992, Ser. No. 882,988

Claims priority, application United Kingdom, Jun. 20, 1990, 9013750

Int. Cl.[5] **A61K** *31/505;* **C07D** *487/04*

U.S. Cl. 514—258 **8 Claims**

1. A compound of the formula:



wherein

R^1 is H, C_1–C_3 alkyl, C_3–C_5 cycloalkyl or C_1–C_3 perfluoroalkyl;

R^2 is H, C_1–C_6 alkyl optionally substituted by OH, C_1–C_3 alkoxy or C_3–C_6 cycloalkyl, or C_1–C_3 perfluoroalkyl;

R^3 is C_1–C_6 alkyl, C_3–C_6 alkenyl, C_3–C_6 alkynyl, C_3–C_7 cycloalkyl, C_1–C_6 perfluoroalkyl or (C_3–C_6 cycloalkyl)-C_1–C_6 alkyl;

R^4 taken together with the nitrogen atom to which it is attached completes a 4-N-(R^6)-piperazinyl group;

R^5 is H, C_1–C_4 alkyl, C_1–C_3 alkoxy, NR^7R^8, or $CONR^7R^8$;

R^6 is H, C_1–C_6 alkyl, (C_1–C_3 alkoxy) C_2–C_6 alkyl hydroxy C_2–C_6 alkyl, (R^7R^8N)C_2–C_6 alkyl, (R^7R^8NCO)C_1–C_6 alkyl, $CONR^7R^8$, $CSNR^7R^8$ or $C(NH)NR^7R^8$;

R^7 and R^8 are each independently H, C_1–C_4 alkyl, (C_1–C_3 alkoxy)C_2–C_4 alkyl or hydroxy C_2–C_4 alkyl; and

pharmaceutically acceptable salts thereof.

5,250,535

SUBSTITUTED 9-(1 OR 3-MONOACYLOXY OR 1,3-DIACYLOXY-2-PROPOXYMETHYL) PURINES AS ANTIVIRAL AGENT

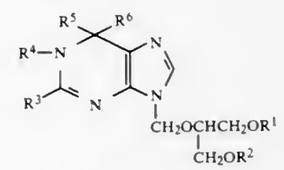
Julien P. H. Verheyden, Los Altos, and John C. Martin, Redwood City, both of Calif., assignors to Syntex Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 344,703, Feb. 1, 1982, abandoned. This application Dec. 22, 1982, Ser. No. 451,262

Int. Cl.[5] **C07D** *473/18;* **A61K** *31/52*

U.S. Cl. 514—262 **47 Claims**

1. A compound of the formula



(I)

of a pharmaceutically acceptable acid addition salt thereof wherein

R^1 is hydrogen or —C(O)R^7 wherein R^7 is hydrogen, alkyl of one to nineteen carbon atoms, hydroxyalkyl of one to eight carbon atoms, alkoxyalkyl of two to nine carbon atoms, alkenyl of two to nineteen carbon atoms, phenyl, or 2-carboxyethyl and the pharmaceutically acceptable alkali metal salts thereof;

R^2 is —C(O)R^7 wherein R^7 is as defined above;

R^3 is amino; and

(a) R^6 is hydrogen, thio, or amino and R^4 together with R^5 is a bond; or

(b) R^5 together with R^6 is a keto group and R^4 is hydrogen.

5,250,536

HETEROCYCLIC COMPOUNDS

Michael D. Turnbull, Reading, England, assignor to Imperial Chemical Industries PLC, London, Great Britain

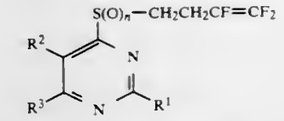
Filed Mar. 18, 1992, Ser. No. 853,456

Claims priority, application United Kingdom, Mar. 28, 1991, 9106609

Int. Cl.[5] **C07D** *239/38, 239/56;* **A01N** *43/54*

U.S. Cl. 514—269 **17 Claims**

1. A compound of formula (I):



(I)

wherein R^1, R^2 and R^3 are independently hydrogen, C_1–C_4 alkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, C_3–C_6 cycloalkyl, C_3–C_7 alkylcycloalkyl, halogen, C_1–C_4 haloalkyl, C_1–C_4 alkoxy, alkenoxy containing up to 6 carbon atoms, alkoxyalkyl containing up to 6 carbon atoms, haloalkoxy containing up to 6 carbon atoms, C_1–C_4 alkylthio, cyano, nitro, amino, NR^5R^6, hydroxy, $NHCOCH_3$, $NHCOC_2H_5$, —CO_2R^4, —O(CH_2)$_m$$CO_2R^4$, phenyl, phenoxy, benzyl or benzyloxy, the phenyl group or phenyl moiety of the benzyl group being optionally substituted in the ring with halogen, cyano, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy, C_1–C_6 haloalkoxy; or R^2 and R^3 when taken together form —$(CH_2)_3$—, —$(CH_2)_4$— or —CH=CH—CH=CH—; m is 1 or 2; R^4 and R^6 are hydrogen or C_{1-4} alkyl; R^5 is C_{1-4} alkyl; n is 0, 1 or 2.

5,250,537

5,6,7,8,9,10-HEXAHYDRO-7,10-IMINOCYCLOHEPT[-B]INDOLE,-6,7,8,9,10-HEXAHYDRO-7,11-IMINO-5H-CYCLOOCT[B]INDOLE AND SUBSTITUTED DERIVATIVES

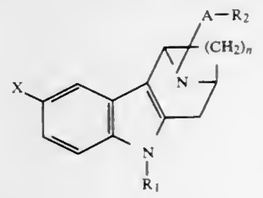
Richard E. Mewshaw, Baltimore; Carl Kaiser, Millersville, and Mary E. Abreu, Baltimore, all of Md., assignors to Scios Nova Inc., Mountain View, Calif.

Filed Mar. 13, 1992, Ser. No. 850,761

Int. Cl.[5] **A61K** *31/435;* **C07D** *471/18, 471/20*

U.S. Cl. 514—278 **15 Claims**

1. A chemical compound of the formula:



Formula 1

in which:

X represents hydrogen, fluoro, chloro, or bromo;

R_1 represents hydrogen, C_{1-4} alkyl, benzyl, substituted benzyl, substituted phenyl or, provided X is not hydrogen, phenyl wherein said substitutions are selected from the group consisting of halogen, hydroxy, C_{1-4} alkoxy, C_{1-4} alkyl or any combination thereof;

A represents C_{1-6} alkylene, or C_{1-6} alkylene wherein one of the methylene carbons is replaced by a carbonyl group;

R_2 represents phenyl, substituted phenyl, benzyl, substituted benzyl, phenoxy, substituted phenoxy, diphenyl C_{1-4} alkyl, pyridyl, 2-isoindolinyl, 2-(1,3-dioxoindolinyl), 8-(7,9-dioxo-8-azaspiro[4.5]decanyl), N-(3,4-dichlorophenethyl)-N-methylamino, N-(3,4-dichlorophenylacetyl)-N-methylamino, hydroxyl or C_{1-4} alkoxy wherein said sub-

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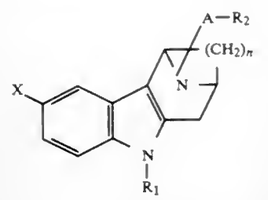
stitutions are selected from the group consisting of halogen, hydroxy, C_{1-4} alkoxy, C_{1-4} alkyl or any combination thereof; and

n=2 or 3

or a pharmaceutically acceptable acid addition salt thereof.

10. A method for treating sigma, dopamine, or serotonin receptor-related psychoses which comprises administering to a subject in need thereof an effective amount of a compound of the following Formula II:

Formula II



in which:

X represents hydrogen, fluoro, chloro, or bromo;

R_1 represents hydrogen, C_{1-4} alkyl, benzyl, substituted benzyl, phenyl or substituted phenyl wherein said substitutions are selected from the group consisting of halogen, hydroxy, C_{1-4} alkoxy, C_{1-4} alkyl or any combination thereof;

A represents C_{1-6} alkylene, or C_{1-6} alkylene wherein one of the methylene carbons is replaced by a carbonyl group;

R_2 represents phenyl, substituted phenyl, benzyl, substituted benzyl, phenoxy, substituted phenoxy, diphenyl C_{1-4} alkyl, pyridyl, 2-isoindolinyl, 2-(1,3-dioxoindolinyl), 8-(7,9-dioxo-8-azaspiro[4.5]decanyl), N-(3,4-dichlorophenethyl)-N-methylamino, N-(3,4-dichlorophenylacetyl)-N-methylamino, hydroxyl or C_{1-4} alkoxy wherein said substitutions are selected from the group consisting of halogen, hydroxy, C_{1-4} alkoxy, C_{1-4} alkyl or any combination thereof; and

n=2 or 3

or a pharmaceutically acceptable acid addition salt thereof.

5,250,538

INDOLE DERIVATIVES AND THEIR USE

Lone Jeppesen, Virum; Peter H. Andersen, Soborg; Louis B. Hansen, Vaerlose; Peter Farrup, Vaerlose, and John B. Hansen, Jyderup, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Division of Ser. No. 645,381, Jan. 23, 1991, Pat. No. 5,126,363. This application Apr. 7, 1992, Ser. No. 864,734

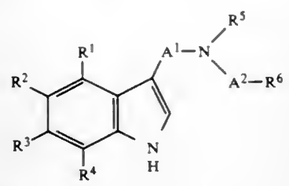
Claims priority, application Denmark, Feb. 13, 1990, 0377/90

Int. Cl.[5] **C07D** *401/12;* **A61K** *31/445*

U.S. Cl. 514—278 **10 Claims**

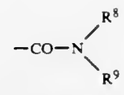
1. A compound of formula (I)

(I)



wherein

R^1, R^2, R^3 and R^4, which may be the same or different, are hydrogen; C_{1-4}-alkyl, optionally substituted by one or more halogen; $—OR^7$ wherein R^7 is hydrogen or C_{1-4}-alkyl; halogen; or the group

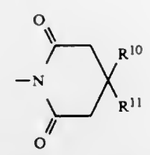


wherein R^8 and R^9, which may be the same or different, are hydrogen or C_{1-4}-alkyl;

A^1 is straight or branched C_{2-4}-alkylene;

A^2 is straight or branched C_{2-6}-alkyl;

R^5 is hydrogen or straight or branched C_{1-5}-alkyl and R^6 is



wherein R^{10} and R^{11}, which may be the same or different, each represents a C_{1-3}-alkyl group, or R^{10} and R^{11} together represent a tetra- or pentamethylene chain, thereby forming with the heterocyclic ring an azaspiro-decanedione or -undecanedione ring structure; or a pharmaceutically acceptable salt thereof.

5,250,539

HEXAHYDROBENZO[F]QUINOLINONES

Kenneth S. Hirsch, and Charles D. Jones, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

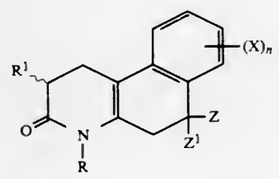
Continuation-in-part of Ser. No. 748,134, Aug. 21, 1991, abandoned. This application Oct. 21, 1991, Ser. No. 780,166

Int. Cl.[5] **C07D** *221/14, 295/073;* **A61K** *31/44*

U.S. Cl. 514—290 **36 Claims**

1. A compound having the Formula

I



where:

R is hydrogen, C_1–C_4 alkyl, unsubstituted or substituted phen(C_1–C_4)alkyl where the substituent is on the phenyl ring and is selected from halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, amino, C_1–C_4 alkylamino, or C_1–C_4 dialkylamino;

Z and Z^1 are independently selected from hydrogen and C_1–C_4 alkyl;

R1 is hydrogen or C_1–C_4 alkyl;

n is 1 or 2;

X is halogen, NO_2, cyano, CF_3, C_1–C_6 alkyl, C_1–C_6 alkoxy, carboxy, C_1–C_6 alkoxycarbonyl, amino, C_1–C_4 alkylamino, C_1–C_4 dialkylamino, amido, C_1–C_4 alkylamido, C_1–C_4 dialkylamido, mercapto, C_1–C_6 alkylthio, C_1–C_6 alkylsulfinyl, C_1–C_6 alkylsulfonyl, or a group $—A—R^2$ where A is C_1–C_6 alkylene C_2–C_6 alkenylene or C_2–C_6 alkynylene; and R^2 is halogen, hydroxy, CF_3, C_1–C_6 alkoxy, carboxy, C_1–C_6 alkoxycarbonyl, amino, C_1–C_4 alkylamino, C_1–C_4 dialkylamino, amido, C_1–C_4 alkylamido, C_1–C_4 dialkylamido, C_1–C_4 alkylsulfonylamino, aminosulfonyl or C_1–C_4 alkylaminosulfonyl, and pharmaceutically acceptable salts thereof; provided that:

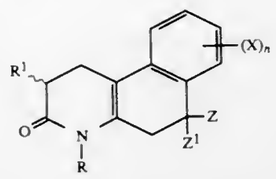
(a) when R is hydrogen, X is not halo or methoxy;

(b) when R is methyl, ethyl or benzyl, X is not methoxy; and

(c) when R is methyl, R^1 is not methyl.

13. A method for inhibiting 5α-reductase in mammals, which comprises administering to a mammal requiring 5α-reductase inhibition, a pharmaceutically effective amount of a compound of the Formula

I



where:

R is hydrogen, C_1–C_4 alkyl, unsubstituted or substituted phen(C_1–C_4)alkyl;

Z and Z^1 are independently selected from hydrogen and C_1–C_4 alkyl;

R^1 is hydrogen or C_1–C_4 alkyl;

n is 1 or 2;

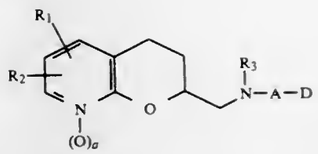
X is hydrogen, halogen, NO_2, cyano, CF_3, C_1–C_6 alkyl, C_1–C_6 alkoxy, carboxy, C_1–C_6 alkoxycarbonyl, amino, C_1–C_4 alkylamino, C_1–C_4 dialkylamino, amido, C_1–C_4 alkylamido, C_1–C_4 dialkylamido, mercapto, C_1–C_6 alkylthio, C_1–C_6 alkylsulfinyl, C_1– C_6 alkylsulfonyl, or a group $—A—R^2$ where A is C_1–C_6 alkylene, C_2–C_6 alkenylene or C_2–C_6 alkynylene; and R^2 is halogen, hydroxy, CF_3, C_1–C_6 alkoxy, carboxy, C_1–C_6 alkoxycarbonyl, amino, C_1–C_4 alkylamino, C_1–C_4 dialkylamino, amido, C_1–C_4 alkylamido, C_1–C_4 dialkylamido, C_1–C_4 alkylsulfonylamino, aminosulfonyl or C_1–C_4 alkylaminosulfonyl, and pharmaceutically acceptable salts thereof.

19. A method of treating benign prostatic hyperplasia in a mammal comprising administering to a mammal in need of treatment from benign prostatic hyperplasia, an effective amount of a compound of claim **1**.

25. A method of treating hirsutism in a mammal comprising administering to a mammal in need of treatment from hirsutism, an effective amount of a compound of claim **1**.

31. A method of treating acne vulgaris in a mammal comprising administering to a mammal in need of treatment from acne vulgaris, an effective amount of a compound of claim **1**.

(I)



in which

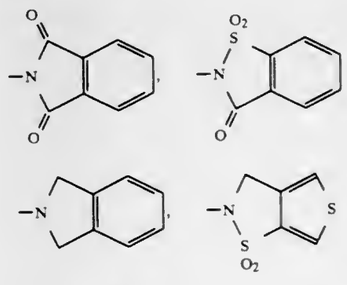
R_1 and R_2 are identical or different and represent hydrogen, halogen, nitro, trifluoromethyl, hydroxyl or straight-chain or branched alkyl or alkoxy each having up to 8 carbon atoms;

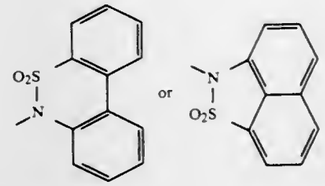
R_3 represents hydrogen, straight-chain or branched alkyl having up to 8 carbon atoms or benzyl, or represents the —A—D group;

a represents the number 0 to 1;

A represents straight-chain or branched alkylene or alkenylene each having up to 8 carbon atoms; and

D represents:





or a salt of said compound.

5,250,540

AMINOMETHYL-SUBSTITUTED 2,3-DIHYDROPYRANO[2,3-B]PYRIDINES AND THEIR USE IN MEDICAMENTS

Dieter Arlt, Köln; Hans-Georg Heine, Krefeld; Rudolf Schohe-Loop, Wuppertal; Thomas Glaser, Overath, and Jean M. V. De Vry, Rösrath, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 11, 1992, Ser. No. 896,956

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1991, 4120322

Int. Cl.[5] **C07D** *491/052;* **A61K** *31/435*

U.S. Cl. 514—302 **7 Claims**

1. An aminomethyl-substituted 2,3-dihydropyrano[2,3-b]pyridine compound of the formula (I):

5,250,541

KYNURENIC ACID DERIVATIVES, THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Flavio Moroni, Florence, and Roberto Pellicciari, Perugia, both of Italy, assignors to Fidia S.p.A., Abano Terme, Italy

Filed Feb. 5, 1992, Ser. No. 828,927

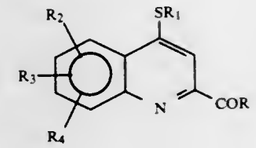
Claims priority, application Italy, Aug. 11, 1989, 21512 A/89

Int. Cl.[5] **A01N** *43/42*

U.S. Cl. 514—312 **9 Claims**

1. Compounds of formula I

(I)



wherein:

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R is hydroxy or a physiologically acceptable group which may be converted in vivo to OH group;
R_1 is hydrogen or a physiologically acceptable group which may be hydrolized in vivo to give the free thio group;
R_2, R_3 or R_4, which are the same or different, are hydrogen, halogen, C_1–C_6 alkyl, C_1–C_6 alkoxy, C_1–C_6 alkylthio, trifluoromethyl, nitro, cyano, C_1–C_6 haloalkoxy, C_1–C_6 alkoxycarbonyl, C_1–C_6 acyl, hydroxy, C_1–C_6 acyloxy groups.

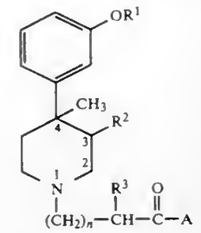
5,250,542

PERIPHERALLY SELECTIVE PIPERIDINE CARBOXYLATE OPIOID ANTAGONISTS

Buddy E. Cantrell, Fountaintown, and Dennis M. Zimmerman, Mooresville, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 677,042, Mar. 29, 1991, abandoned. This application Jul. 17, 1992, Ser. No. 916,783
Int. Cl.[5] **A61K** *31/445;* **C07D** *401/12, 211/32*
U.S. Cl. 514—315 **40 Claims**

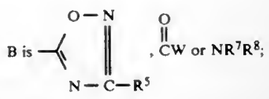
1. A trans-3,4 isomer of a compound of the formula (I)



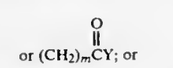
wherein
R^1 is hydrogen or C_1–C_5 alkyl;
R^2 is hydrogen, C_1–C_5 alkyl or C_2–C_6 alkenyl;
R^3 is hydrogen, C_1–C_{10} alkyl, C_3–C_{10} alkenyl, phenyl, cycloalkyl, C_5–C_8 cycloalkenyl, cycloalkyl-substituted C_1–C_3, alkyl C_5–C_8 cycloalkyl-substituted C_1–C_3 alkyl or phenyl-substituted C_1–C_3 alkyl;

A is OR^4 or NR^5R^6;

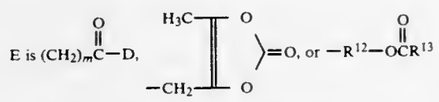
wherein:
R^4 is hydrogen, C_1–C_{10} alkyl, C_2–C_{10} alkenyl, cycloalkyl, C_5–C_8 cycloalkenyl, cycloalkyl-substituted C_1–C_3 alkyl, C_5–C_8 cycloalkenyl-substituted C_1–C_3 alkyl or phenyl-substituted C_1–C_3 alkyl;
R^5 is hydrogen or C_1–C_3 alkyl;
R^6 is hydrogen, C_1–C_{10} alkyl, C_3–C_{10} alkenyl, cycloalkyl, phenyl, cycloalkyl-substituted C_1–C_3 alkyl, C_5–C_8 cycloalkenyl, C_5–C_8 cycloalkenyl-substituted C_1–C_3 alkyl, phenyl-substituted C_1–C_3 alkyl, or $(CH_2)_q$—B; or
R^5 and R^6 together with N form a saturated non aromatic 4- to 6-membered heterocyclic ring;



R^7 is hydrogen or C_1–C_3 alkyl;
R^8 is hydrogen, C_1–C_{10} alkyl, C_3–C_{10} alkenyl, cycloalkyl-substituted C_1–C_3 alkyl, cycloalkyl, C_5–C_8 cycloalkenyl, C_5–C_8 cycloalkenyl-substituted C_1–C_3 alkyl, phenyl or phenyl-substituted C_1–C_3 alkyl; or
R^7 and R^8 together with N form a saturated non aromatic 4- to 6-membered heterocyclic ring;
W is OR^9, $NR^{10}R^{11}$, or OE;
R^9 is hydrogen, C_1–C_{10} alkyl, C_2–C_{10} alkenyl, cycloalkyl, C_5–C_8 cycloalkenyl, cycloalkyl-substituted C_1–C_3 alkyl, C_5–C_8 cycloalkenyl-substituted C_1–C_3 alkyl or phenyl-substituted C_1–C_3 alkyl;
R^{10} is hydrogen or C_1–C_3 alkyl;
R^{11} is hydrogen, C_1–C_{10} alkyl, C_3–C_{10} alkenyl, phenyl, cycloalkyl, C_5–C_8 cycloalkenyl, cycloalkyl-substituted C_1–C_3 alkyl, phenyl-substituted C_1–C_3 alkyl,



R^{10} and R^{11} together with N form a saturated non aromatic 4- 6-membered heterocyclic ring;



R^{12} is C_1–C_3 alkyl substituted methylene,
R^{13} is C_1–C_{10} alkyl;
D is OR^{14} or $NR^{15}R^{16}$;
wherein:
R^{14} is hydrogen, C_1–C_{10} alkyl, C_2–C_{10} alkenyl, cycloalkyl, C_5–C_8 cycloalkenyl, cycloalkyl-substituted C_1–C_3 alkyl, or C_5–C_8 cycloalkenyl-substituted C_1–C_3 alkyl or phenyl-substituted C_1–C_3 alkyl;
R^{15} is hydrogen, C_1–C_{10} alkyl, C_3–C_{10} alkenyl, phenyl, phenyl-substituted C_1–C_3 alkyl, cycloalkyl, C_5–C_8 cycloalkenyl, cycloalkyl-substituted C_1–C_3 alkyl or C_5–C_8 cycloalkenyl-substituted C_1–C_3 alkyl; and
R^{16} is hydrogen or C_1–C_3 alkyl; or
R^{15} and R^{16} together with N form a saturated non aromatic 4- to 6-membered heterocyclic ring;
Y is OR^{17} or $NR^{18}R^{19}$;
R^{17} is hydrogen, C_1–C_{10} alkyl, C_2–C_{10} alkenyl, cycloalkyl, C_5–C_8 cycloalkenyl, cycloalkyl-substituted C_1–C_3 alkyl, C_5–C_8 cycloalkenyl-substituted C_1–C_3 alkyl, or phenyl-substituted C_1–C_3 alkyl;
R^{18} is hydrogen or C_1–C_3 alkyl; and
R^{19} is hydrogen, C_1–C_{10} alkyl, C_3–C_{10} alkenyl, phenyl, cycloalkyl, C_5–C_8 cycloalkenyl, cycloalkyl-substituted C_1–C_3 alkyl, C_5–C_8 cycloalkenyl-substituted C_1–C_3 alkyl, or phenyl-substituted C_1–C_3 alkyl; or
R^{18} and R^{19} together with N form a saturated non aromatic 4- to 6-membered heterocyclic ring;
n is 0–;
q is 1–4;
m is 1–4;
or a pharmaceutically acceptable salt thereof.

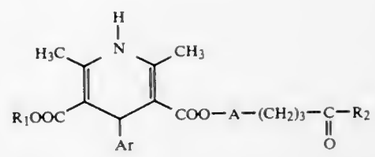
5,250,543

DERIVATIVES OF 1,4-DIHYDROPYRIDINE, THEIR PREPARATION PROCEDURE AND THERAPEUTIC COMPOSITIONS CONTAINING THEM

Louis Lafon, Paris, France, assignor to Laboratoire L. Lafon, Maisons Alfort, France

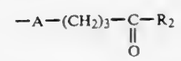
Filed Jan. 8, 1992, Ser. No. 818,037
Claims priority, application France, Jan. 9, 1991, 91 00201
Int. Cl.[5] **A61K** *31/445;* **C07D** *401/02, 401/14*
U.S. Cl. 514—318 **7 Claims**

1. A compound selected from the compounds having the formula:

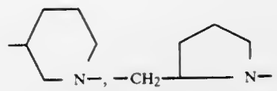


(I)

in which:
Ar represents a group selected from 2-nitrophenyl, 3-nitrophenyl, 2-chlorophenyl, 2,6-dichlorophenyl, 2-trifluoromethylphenyl and 3-trifluoromethylphenyl;
R_1 represents a C_1–C_4 alkyl group or a group having the formula:



A represents a group selected from the groups with the formulae:



and R_2 represents a group selected from 2,4,6-trimethoxyphenyl, and their addition salts with pharmaceutically acceptable acids.

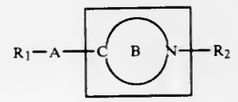
5,250,544

NEW PIPERIDINE TETRAHYDROPYRIDINE AND PYRROLIDINE COMPOUNDS

Gilbert Lavielle, La Celle Saint Cloud; Michel Laubie, Vaucresson, and Francis Colpaert, Le Vesinet, all of France, assignors to Adir et Compagnie, Courbevoie, France

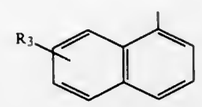
Filed Jul. 1, 1991, Ser. No. 723,757
Claims priority, application France, Jul. 10, 1990, 90 08729
Int. Cl.[5] **A61K** *31/445;* **C07D** *211/06*
U.S. Cl. 514—319 **6 Claims**

1. A compound selected from those of the formula I:



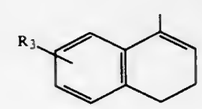
(I)

in which
R_1 represents a naphthyl radical, of formula y_1:



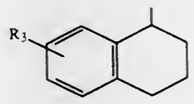
(y_1)

a dihydronaphthyl radical, of formula y_2:



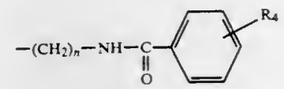
(y_2)

a tetrahydronaphthyl radical of formula y_3:



(y_3)

(in which formulae R_3 represents hydrogen, halogen, alkyl having 1 to 6 carbon atoms inclusive hydroxyl, or an alkoxy having 1 to 6 carbon atoms inclusive),
A represents a single bond, a double bond (on condition, however, that R_1 represents a tetrahydronaphthyl radical),
R_2 represents:
an aminoalkyl having 1 to 6 carbon atoms inclusive, cyanoalkyl having 1 to 6 carbon atoms inclusive or a radical of formula w_1:



(w_1)

in which:
n is 1–6 inclusive and
R_4 represents hydrogen, halogen, alkyl having 1 to 6 carbon atoms inclusive or alkoxy having 1 to 6 carbon atoms,
its possible stereoisomers,
and its addition salts with a pharmaceutically-acceptable acid.

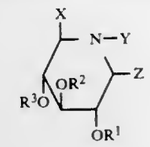
5,250,545

CANCER CELL METASTASIS INHIBITOR METHODS

Tsutomu Tsuruoka; Satoru Nakabayashi; Harumi Fukuyasu; Yuuko Ishii; Takashi Tsuruoka; Haruo Yamamoto; Shigeharu Inouye, and Shinichi Kondo, all of Yokohama, Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Division of Ser. No. 307,387, Feb. 6, 1989, Pat. No. 4,985,445. This application Dec. 3, 1990, Ser. No. 621,699
Claims priority, application Japan, Feb. 12, 1988, 63-31095; Apr. 15, 1988, 63-93673; Apr. 19, 1988, 63-97454; Jun. 14, 1988, 63-147815; Jun. 14, 1988, 63-147816
Int. Cl.[5] **C07D** *211/06;* **A61K** *31/70*
U.S. Cl. 514—328 **1 Claim**

1. A method of inhibiting cancer cell metastasis comprising administering to a host afflicted with cancer cells a pharmaceutical preparation comprising as an active ingredient an effective amount of a compound represented by the formula (I):



(I)

wherein
X is $—CH_2OH$;
Y is a hydrogen atom;
Z is a hydrogen atom; and
R^1, R^2 and R^3 and each a hydrogen atom, and a pharmaceutically acceptable carrier therefor.

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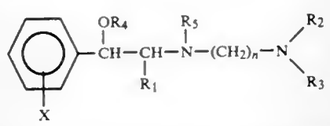
5,250,546

AMINO-ALCOHOL DERIVATIVES AND PROCESSES FOR THEIR PREPARATION

Mitsuo Masaki, Chiba; Haruhiko Shinozaki, Omiya; Masaru Satoh, Koshigaya; Naoya Moritoh, Kuki; Koichi Hashimoto, and Toshiro Kamishiro, both of Misato, all of Japan, assignors to Nippon Chemiphar Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 191,743, May 6, 1988, abandoned, which is a continuation of Ser. No. 778,967, Sep. 23, 1985, abandoned. This applicatioo Jul. 11, 1990, Ser. No. 551,037
Claims priority, application Japan, Sep. 28, 1984, 59-203623
Int. Cl.[5] A61K *41/445*
U.S. Cl. 514—331 48 Claims

1. An amino-alcohol derivative of the formula (I),



(I)

where R_1 is a straight or branched alkyl group having 3 to 8 carbon atoms, R_2 and R_3 are each a lower alkyl group, or R_2 and R_3 form a 5- to 7-membered ring together with the adjacent nitrogen atom which may have an oxygen atom attached thereto, R_4 is a hydrogen atom or a lower alkyl group, R_5 is a hydrogen atom or a lower alkyl group, X is a hydrogen or halogen atom or a lower alkyl or lower alkoxy group, and n is an integer of 2 or 3, or an acid addition salt thereof.

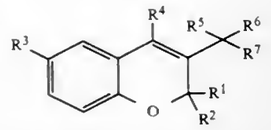
5,250,547

BENZOPYRAN DERIVATIVES

Alistair W. Lochead, Charenton; Michel J. Navet, Bretigny-Sur-Orge, and Peter E. Hicks, Saint-Remy-Les-Chevreuse, all of France, assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Aug. 29, 1991, Ser. No. 751,491
Int. Cl.[5] A61K *31/44;* C07D *405/04*
U.S. Cl. 514—337 25 Claims

1. A compound of the formula:

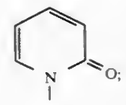


wherein:

R^1 and R^2 are independently hydrogen or lower alkyl, or when taken together with the carbon to which they are attached are cycloalkyl of 3 to 8 carbon atoms;

R^3 is fluoro lower alkyl; cyano; or nitro;

R^4 is



R^5 and R^6 are independently hydrogen or lower alkyl; and

R^7 is $—NR^8R^9$, wherein:

R^8 is hydrogen; lower alkyl; lower alkoxy; hydroxy; or hydroxy lower alkyl; and

R^9 is hydrogen; lower alkyl; hydroxy lower alkyl; $—SO_2R^{10}$; $—CO_2R^{10}$; $—C(O)NR^{11}R^{12}$; $—C(S)NR^{11}R^{12}$; or $—C(O)R^{12}$;

wherein:

R^{10} is lower alkyl;

R^{11} is hydrogen or lower alkyl; and

R^{12} is hydrogen, lower alkyl, or fluoro lower alkyl;

with the proviso that R^8 and R^9 cannot both be hydrogen; or a pharmaceutically acceptable salt thereof.

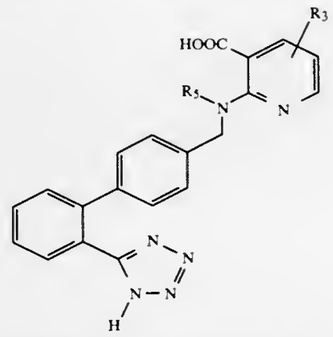
5,250,548

ANGIOTENSIN II RECEPTOR ANTAGONISTS

Martin Winn, Deerfield; Biswanath De, Buffalo Grove; Thomas M. Zydowsky, Waukegan; Daniel J. Kerkman, Lake Villa; John F. DeBernardis, Lindenhurst; Saul H. Rosenberg; Kazumi Shiosaki, both of Libertyville; Fatima Z. Basha, Lake Forest; Andrew S. Tasker, Lindenhurst; Thomas W. von Geldern, Richmond; Jeffrey A. Kester, Deerfield; Steven Boyd, Mundelein; Diane M. Yamamoto, and Anthony K. L. Fung, Gurnee, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 744,241, Aug. 15, 1991, which is a continuation-in-part of Ser. No. 580,400, Sep. 10, 1990, abandoned. This application Mar. 2, 1992, Ser. No. 844,351
Int. Cl.[5] A61K *31/44;* C07D *401/12*
U.S. Cl. 514—340 16 Claims

1. A compound of the formula:



wherein R_3 is hydrogen, halo or loweralkyl and R_5 is loweralkyl; or a pharmaceutically acceptable salt thereof.

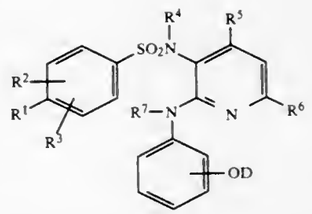
5,250,549

SULFONAMIDE DERIVATIVES

Hiroshi Yoshino, Chiba; Norihiro Ueda, Ibaraki; Hiroyuki Sugumi, Ibaraki; Jun Niijima, Ibaraki; Yoshihiko Kotake, Ibaraki; Toshimi Okada, Ibaraki; Nozomu Koyanagi, Ibaraki; Tatsuo Watanabe, Osaka; Makoto Asada, Ibaraki; Kentaro Yoshimatsu, Ibaraki; Atsumi Iijima, Ibaraki; Takeshi Nagasu, Ibaraki; Kappei Tsukahara, Ibaraki, and Kyosuke Kitoh, Ibaraki, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Aug. 8, 1991, Ser. No. 742,618
Claims priority, application Japan, Aug. 20, 1990, 2-218710; Mar. 5, 1991, 2-38509; May 27, 1991, 3-121041
Int. Cl.[5] C07D *213/74, 213/75, 213/76;* A61K *31/44*
U.S. Cl. 514—345 9 Claims

1. Sulfonamide derivatives of general formula (1) or pharmacologically acceptable salts thereof:



(I)

wherein:

R^1 represents a hydrogen atom, halogen atom, lower alkyl group, lower alkoxy group, hydroxyl group, nitro group, phenoxy group, cyano group, acetyl group or amino group, R^2 and R^3 may be the same or different from each other and each represent a hydrogen atom, halogen atom, lower alkyl group or lower alkoxy group, R^4 and R^7 may be the same or different from each other and each represent a hydrogen atom or lower alkyl group, R^5 and R^6 may be the same or different from each other and each represents a hydrogen atom, halogen atom, lower alkoxy group, amino group or an amino group substituted with a lower alkyl or a phenyl group, and D represents H or NO.

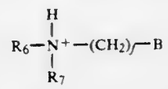
5,250,550

COMPLEXES OF NITRIC OXIDE WITH POLYAMINES

Larry K. Keefer, Bethesda, and Joseph A. Hrabie, Frederick, both of Md., assignors to The Government of the United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

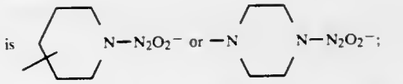
Continuation of Ser. No. 585,793, Sep. 20, 1990, Pat. No. 5,155,137. This application Jun. 30, 1992, Ser. No. 906,479
Int. Cl.[5] A01N *43/40*
U.S. Cl. 514—357 13 Claims

1. A compound of Formula II:



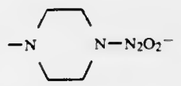
Formula II

wherein:

B is 

and

R_6 and R_7, same or different, are hydrogen, C_{3-8} cycloalkyl, C_{1-12} straight or branched chain alkyl, benzyl, benzoyl, phthaloyl, acetyl, trifluoroacetyl, p-toluyl, t-butoxycarbonyl or 2,2,2-trichloro-t-butoxycarbonyl; f is 0 to 12, with the proviso that when B is the substituted piperazine moiety



then f is 2 to 12; or

a pharmaceutically acceptable salt thereof.

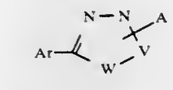
5,250,551

NEW (HETERO)ARYL SUBSTITUTED DIAZOLE DERIVATIVES, THE METHOD OF PREPARING THEM AND APPLICATION THEREOF IN THERAPEUTICS

René L. Milcent, Paris; Luc Lebreton, Maisons Laffitte; Fathi Mazouz, Antony; Claude Burstein, Coye La Foret, and Salah Gueddari, Noisy Le Grand, all of France, assignors to Delalande S.A., Courbevoie, France

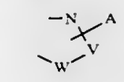
Division of Ser. No. 357,421, May 25, 1989, Pat. No. 5,100,910. This application Jan. 3, 1992, Ser. No. 816,819
Claims priority, application France, May 27, 1988, 88 07114
Int. Cl.[5] A61K *31/41;* C07D *271/10*
U.S. Cl. 514—364 4 Claims

1. Compounds of formula:

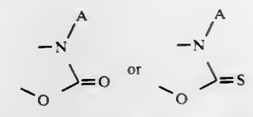


(I)

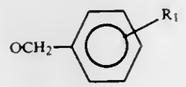
in which the chain



represents the chain of structure



where A is a 2-cyano ethyl group, Ar represents a phenyl nucleus substituted by a C_1–C_4 alkyl, C_1–C_4 alkoxy, phenyl or benzyloxy group of formula



where R_1 represents a hydrogen atom, one or two halogen atoms or CN, NO_2, NH_2, CF_3, C_1–C_4 alkyl, C_1–C_4 alkoxy or C_2–C_4 acylamino groups, or acid addition salts of these compounds (I) having a salifiable group.

5,250,552

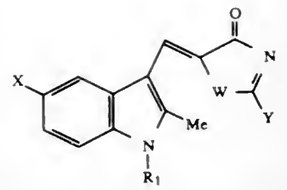
3-[THIAZOLIDINONE, OXAZOLIDINONE, IMIDAZOLIDINONE]-INDOLES AS ANTIINFLAMMATORY AGENTS

Diane H. Boschelli, Plymouth, and David T. Connor, Ann Arbor, both of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 697,823, May 9, 1991, Pat. No. 5,143,927. This application May 6, 1992, Ser. No. 879,045
Int. Cl.[5] C07D *413/06;* A61K *31/42*
U.S. Cl. 514—376 6 Claims

1. A compound of the formula (I)

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I

or a pharmaceutically acceptable salt thereof; wherein
(1) R_1 is hydrogen, lower alkyl or



wherein R_4 is lower alkyl, phenyl, or phenyl substituted by from one to three of lower alkyl, lower alkoxy, hydroxy, halogen, trifluoromethyl, NO_2, mercapto, lower alkylthio, $NR_{10}R_{11}$ wherein R_{10} and R_{11} are independently hydrogen or lower alkyl;
(2) X is hydrogen, hydroxyl, chlorine, bromine, fluorine, iodine, or O-lower alkyl;
(3) Y is
a) NH_2;
b) SR_2 wherein R_2 is lower alkyl or CH_2COOR_3wherein R_3 is hydrogen or lower alkyl;
c) $S(O)_nR_2$ wherein n is 1 or 2 and R_2 is as defined above;
d) NR_2R_3 wherein R_2 and R_3 are as defined above;
e) NHCN;
f) $NHC(A)NHR_3$ wherein A is oxygen, sulfur, or NH and R_3 is as defined above;
g) $NR_3(OR_{3a})$ wherein R_3 is as defined above and R_{3a} is hydrogen or lower alkyl;
h) $NHNHC(S)NH_2$;
i) $NHNHC(NH)NH_2$;
(4) W is oxygen,
(5) Me is methyl.

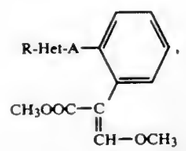
5,250,553

METHYL α-ARYLACRYLATES SUBSTITUTED BY A HETEROCYCLIC RADICAL AND THEIR USE

Franz Schuetz, Ludwigshafen; Hans-Juergen Neubauer, Muenster-Hiltrup; Thomas Kuekenhoehner, Frankenthal; Ulrich Schirmer, Heidelberg; Peter Hofmeister, Neustadt; Christoph Kuenast, Otterstadt; Eberhard Ammermann, Ludwigshafen; Gisela Lorenz, Neustadt, and Uwe Kardorff, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 701,019, May 13, 1991, Pat. No. 5,166,216, which is a continuation of Ser. No. 418,664, Oct. 10, 1989, abandoned. This application Jul. 30, 1992, Ser. No. 921,765
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1988, 3836581
Int. Cl.[5] **C07D** *261/08, 261/12;* **A01N** *43/80*
U.S. Cl. 514—378 **6 Claims**

1. Methyl α-arylacrylates substituted by a heterocyclic radical and having the general formula



(I)

where R is C_1–C_8-alkyl, C_2–C_8-alkenyl, C_1–C_4-haloalkyl, C_3–C_6-cycloalkyl, C_1–C_4-alkoxy, C_1–C_4-alkylcarbonyl, C_1–C_4-alkoxycarbonyl, halogen or aryl, the aromatic ring being unsubstituted or substituted by C_1–C_8-alkyl, C_3–C_6-cycloalkyl, C_1–C_2-haloalkyl, C_1–C_4-alkoxy, halogen, cyano or nitro, Het. is isoxazolyl which is unsubstituted or substituted by methyl at a nitrogen atom and is bonded to A via a carbon atom, and A is ethenylene, ethylene, methyleneoxy or methylenethio.

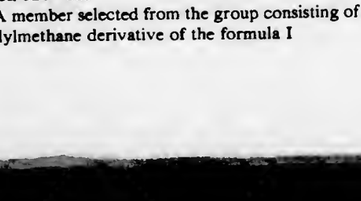
5,250,554

BENZIMIDAZOLE DERIVATIVES USEFUL AS ANGIOTENSIN II INHIBITORS

Takehiko Naka, Kobe, and Kohei Nishikawa, Kyoto, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 599,894, Oct. 19, 1990, Pat. No. 5,128,356. This application Apr. 21, 1992, Ser. No. 871,736
Claims priority, application Japan, Oct. 24, 1989, 1-277385; Dec. 18, 1989, 1-328974; Jan. 11, 1990, 2-005147; Apr. 5, 1990, 2-091675; Apr. 11, 1990, 2-097324; Apr. 27, 1990, 2-113145
The portion of the term of this patent subsequent to Jul. 7, 2009, has been disclaimed.
Int. Cl.[5] **A61K** *31/415;* **C07D** *235/14, 235/12, 235/10*
U.S. Cl. 514—381 **12 Claims**

1. A compound of the formula (I):



wherein
R^1 is lower (C_{2-5}) alkyl unsubstituted or substituted with hydroxyl, amino, N-lower (C_{1-4}) alkylamino, N,N-dilower (C_{1-4}) alkylamino, halogen, lower (C_{1-4}) alkylthio or lower (C_{1-4}) alkoxy;
R^2 is a group of the formula: —CO—D'
wherein D' is hydroxyl or lower (C_{1-4}) alkoxy unsubstituted or substituted with hydroxyl, amino, halogen, lower (C_{2-6}) alkanoyloxy, lower (C_{1-6}) alkoxy, lower (C_{1-6}) alkylthio or lower (C_{1-6}) alkoxycarbonyloxy;
R^3 is carboxyl group or tetrazolyl group, said groups being unsubstituted or substituted with lower (C_{1-4}) alkyo, lower (C_{2-5}) alkanoyl or benzoyl;
R^1 is hydrogen, lower (C_{1-4}) alkyl or halogen; and
X is a direct bond or a divalent chain selected from the class consisting of lower (C_{1-4}) alkylene, —CO—, —O—, —S—, —NH—, —CO—NH—, —O—CH_2— and —CH=CH—,
or a pharmaceutically acceptable salt thereof.

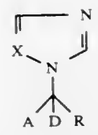
5,250,555

1-HALO-1-AZOLYLMETHANE DERIVATIVES AND FUNGICIDES CONTAINING THESE

Rainer Seele, Fussgoenheim; Norbert Goetz, Worms; Thomas Saupe, Sandhausen; Gisela Lorenz, Neustadt, and Eberhard Ammermann, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 23, 1991, Ser. No. 763,812
Claims priority, application Fed. Rep. of Germany, Oct. 29, 1990, 4034352
Int. Cl.[5] **A01N** *43/653;* **C07D** *249/08*
U.S. Cl. 514—383 **8 Claims**

1. A member selected from the group consisting of a 1-halo-1-azolylmethane derivative of the formula I



I

where
A and R are identical or different and are each C_1–C_8-alkyl, C_3–C_8-cycloalkyl, benzyl, benzoyl, C_1–C_8-acyl, biphenylyl, naphthyl, or phenyl, it being possible for each of these radicals to be substituted one to three times by halogen, nitro, phenoxy, amino, C_1–C_4-alkyl, C_1–C_4-alkoxy or C_1–C_4-haloalkyl;
D is Cl or Br, and
X is N,
and the plant-compatible acid addition salts and metal complexes thereof.

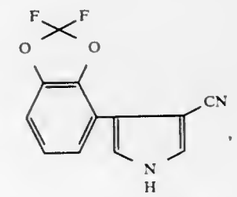
5,250,556

MICROBICIDAL COMPOSITIONS

Bernhard Steck, Muntelier, and Robert Nyfeler, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

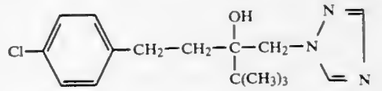
Filed Nov. 13, 1991, Ser. No. 791,861
Claims priority, application Switzerland, Nov. 16, 1990, 3637/90-3
Int. Cl.[5] **A01N** *43/36, 43/64*
U.S. Cl. 514—383 **11 Claims**

1. A composition for controlling or preventing infections by plant pathogenic fungi, containing a synergistic plant pathogenic fungicidally effective amount of a mixture of two active ingredient components I) and II), component I) being 4-(2,2-difluoro-1,3-benzodioxol-7-yl)-1H-pyrrole-3-carbonitrile of the formula



(I)

component II) being α-[2-(4-chlorophenyl)ethyl]-α-(1,1-dimethylethyl-β-(1H-1,2,4-triazolyl)-1-ethanol of the formula



(II)

or a salt thereof, the synergistic ratio by weight of I):II) being from 1:2.32 to 6.8:1, together with a suitable carrier.

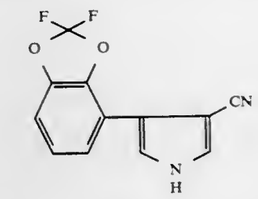
5,250,557

MICROBICIDAL COMPOSITIONS

Andrew Leadbeater, Great Dunmow, England; Bernhard Steck, Muntelier, and Robert Nyfeler, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

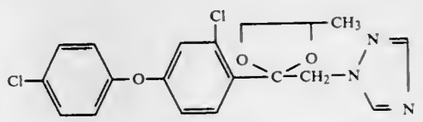
Filed Nov. 15, 1991, Ser. No. 792,845
Claims priority, application Switzerland, Nov. 20, 1990, 3682/90
Int. Cl.[5] **A01N** *43/36, 43/64*
U.S. Cl. 514—383 **10 Claims**

1. A composition for controlling or preventing infections by plant pathogenic fungi, containing a synergistic plant pathogenic fungicidally effective amount of a mixture of two active ingredient components I)and II), component I) being 4-(2,2-difluoro-1,3-benzodioxol-7-yl)-1H-pyrrole-3-carbonitrile of the formula



(I)

component II) being 1-{2-[2-chloro-4-(4-chlorophenoxy)-phenyl]-4-methyl-1,3-dioxolan-2-ylmethyl}-1H-1,2,4-triazole of the formula



(II)

or a salt thereof, the synergistic ratio by weight of I):II) being from 1:1.66 to 1:52.63, together with a suitable carrier.

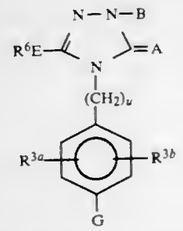
5,250,558

SUBSTITUTED TRIAZOLINONES, TRIAZOLINETHIONES, AND TRIAZOLINIMINES AS NEUROTENSIN ANTAGONISTS USED TO TREAT PSYCHOSIS

Prasun K. Chakravarty, Edison, N.J., and Richard W. Ransom, New Britian, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

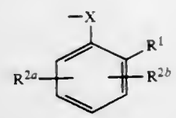
Filed Jan. 28, 1992, Ser. No. 826,704
Int. Cl.[5] **A61K** *31/41, 31/34, 31/40, 31/445*
U.S. Cl. 514—383 **7 Claims**

1. A method of treating, psychoses, a central nervous system disorder which comprises administering to a patient in need of such treatment a therapeutically effective amount of a compound of structural formula:



(I)

or a pharmaceutically acceptable salt thereof, wherein:
G is R^1 or



R^1 is
(a) $—NHSO_2R^{23}$,

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(b) $-NHSO_2NHCOR^{23}$,
(c) $-NHCONHSO_2R^{23}$,
(d) $-SO_2NHR^{23}$,
(e) $-SO_2-NHCOR^{23}$,
(f) $-SO_2NHCOR^{23}R^{24}$,
(g) $-SO_2NHCOOR^{23}$,
(h) $-SO_2NHOR^{23}$,
(i) $-CH_2SO_2NHCOR^{23}$,
(j) $-CH_2SO_2NHCONHR^{23}$, or
(k) $-CO_2H$;

R^{2a} and R^{2b} are each independently:
(a) hydrogen,
(b) —Cl, —Br, —I, or —F
(c) $-CF_3$,
(d) C_1–C_4-alkyl, or
(e) C_1–C_4-alkoxy;

R^{3a} is
(a) —H,
(b) —Cl, —Br, —I, or —F
(c) C_1–C_6-alkyl,
(d) C_1–C_6-alkoxy, or
(e) C_1–C_6-alkoxy-C_1–C_4-alkyl;

R^{3b} is
(a) —H,
(b) —Cl, —Br, —I, or —F,
(c) C_1–C_6-alkyl,
(d) C_1–C_5-alkylcarbonyloxy,
(e) C_3–C_6-cycloalkyl
(f) C_1–C_6-alkoxy, or
(g) CF_3;

R^4 is H, C_1–C_6 alkyl, $-CH_2$-aryl or aryl wherein aryl is phenyl or naphthyl unsubstituted or substituted with one or two substituents selected from the group consisting of: —Cl, —Br, —I, —F, C_1–C_4-alkyl, C_1–C_4-alkoxy, NO_2, CF_3, C_1–C_4-alkylthio, —OH, $-NH_2$, $-CO_2H$, $-CO_2-C_1$–C_4-alkyl, —CN and $-NHCOR^9$;

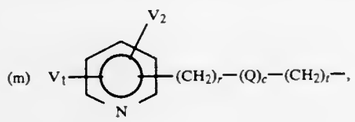
R^5 is H or $-CH(R^4)-O-CO-R^{4a}$, wherein R^{4a} is C_1–C_6-alkyl, aryl or $-CH_2$-aryl;

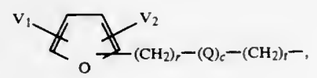
E is a single bond, $-NR^{13}(CH_2)_s-$, $-S(O)_x(CH_2)_s-$ where x is 0 to 2 and s is 0 to 5, —CH(OH)—, $-O(CH_2)_s-$, —CO—;

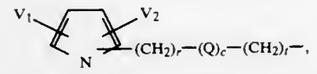
R^6 is
(a) phenyl, unsubstituted or substituted with 1 or 2 substituents selected from the group consisting of Cl, Br, I, F, $-O-C_1$–C_4-alkyl, C_1–C_4-alkyl, $-NO_2$, $-CF_3$, $-SO_2NR^9R^{10}$, $-S-C_1$–C_4-alkyl, —OH, $-NH_2$, C_3–C_7-cycloalkyl, and C_3–C_{10}-alkenyl;
(b) C_1–C_6-alkyl, C_2–C_6-alkenyl or C_2–C_6-alkynyl each of which is unsubstituted or substituted with one or more substituents selected from the group consisting of: aryl, C_3–C_7-cyclo-alkyl, Cl, Br, I, F, —OH, $-O-C_1$–C_4-alkyl, $-NH_2$, $-NH(C_1$–C_4-alkyl), $-N(C_1$–C_4-alkyl)$_2$, $-NH-SO_2R^4$, $-COOR^4$, $-SO_2NHR^9$, and $-S-C_1$–C_4-alkyl;
(c) mono-, di-, tri- or polyfluoro-C_1–C_5-alkyl;
(d) C_3–C_7-cycloalkyl, unsubstituted or substituted with one or more substituents selected from the group consisting of C_1–C_4-alkyl, O—C_1–C_4-alkyl, S—C_1–C_4-alkyl, OH, perfluoro-C_1–C_4-alkyl, Cl, Br, F, and I; or
(e) C_3–C_7-cycloalkyl-C_1–C_3-alkyl, wherein the cycloalkyl is unsubstituted or substituted as in (e) above;

A is =O, =S or $=NR^{21}$;

B is
(a) H provided A is not NR^{21};
(b) C_1–C_{10}-alkyl;
(c) substituted C_1–C_{10}-alkyl in which one or more substituent(s) is selected from the group consisting of:
(1) I, Br, Cl, or F,
(2) hydroxy,
(3) C_1–C_{10}-alkoxy,
(4) C_1–C_5-alkoxycarbonyl,
(5) C_1–C_4-alkylcarbonyloxy,
(6) C_3–C_8-cycloalkyl,
(7) phenyl, naphthyl or biphenyl,
(8) substituted phenyl, naphthyl or biphenyl in which the substituents are V_1, V_2, V_3, V_4 and V_5,
(9) C_1–C_{10}-alkyl-$S(O)_p$ in which p is 0 to 2,
(10) C_3–C_8-cycloalkyl-$S(O)_p$,
(11) phenyl-$S(O)_p$,
(12) substituted phenyl-$S(O)_p$ in which the substituents are V_1–V_5,
(13) oxo,
(14) carboxy,
(15) NR^9R^9,
(16) C_1–C_5-alkylaminocarbonyl,
(17) di(C_1–C_5-alkyl)aminocarbonyl,
(18) cyano,
(19) $-OCONR^{21}R^{22}$,
(20) $-NR^{21}COR^{22}$,
(21) $-NR^{21}CO_2R^{22}$, or
(22) $-NR^{21}CONR^{21}R^{22}$;
(d) C_2–C_{10}-alkenyl,
(e) C_2–C_{10}-alkynyl,
(f) C_3–C_8-cycloalkyl,
(g) substituted C_3–C_8-cycloalkyl or substituted C_3–C_8-cycloalkyl-C_1–C_4-alkyl having one or more substituents selected from the group consisting of:
(1) Cl, Br, F, or I,
(2) hydroxy,
(3) C_1–C_6-alkyl,
(4) C_1–C_6-alkoxy,
(5) C_1–C_4-alkylcarbonyloxy,
(6) C_1–C_5-alkoxycarbonyl,
(7) carboxy,
(8) oxo,
(9) C_1–C_5-alkylaminocarbonyl,
(10) di(C_1–C_5-alkyl)aminocarbonyl,
(11) C_1–C_4-alkylcarbonyl,
(12) phenyl, naphthyl or biphenyl,
(13) substituted phenyl, naphthyl or biphenyl in which the substituents are V_1, V_2, V_3, V_4 and V_5,
(14) $-NR^{21}COR^{22}$,
(15) $-NR^{21}CO_2R^{22}$,
(16) $-OCONR^{21}R^{22}$, and
(17) —CN;
(h) phenyl, naphthyl or biphenyl,
(i) substituted phenyl, naphthyl or biphenyl in which the substituents are V_1, V_2, V_3, V_4 and V_5,
(j) phenyl$-(CH_2)_r-(Q)_c-(CH_2)_t-$,
(k) substituted phenyl$-(CH_2)_r-(Q)_c-(CH_2)_t-$ in which the phenyl group is substituted with V_1, V_2, V_3, V_4 and V_5,

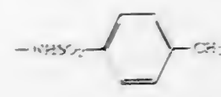
(m) 

(n) 

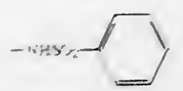
(o) 

R^9 is H, C_1–C_5-alkyl, aryl or $-CH_2$-aryl;
R^{10} is H, C_1–C_4-alkyl, or
R^9 and R^{10} together can be $-(CH_2)_m-$ where m is 3–6;
R^{11} is H, C_1–C_6-alkyl, C_2–C_4-alkenyl, C_1–C_4-alkoxy-C_1–C_4-alkyl, or $-CH_2-C_6H_4R^{20}$;
R^{12} is —CN, $-NO_2$ or $-CO_2R^4$;
R^{13} is H, C_2–C_4-alkanoyl, C_1–C_6-alkyl, allyl, C_3–C_6-cycloalkyl, phenyl or benzyl;

R^{14} is H, C_1–C_4-alkyl, C_1–C_4-perfluoroalkyl, C_3–C_6-cycloalkyl, phenyl or benzyl;
R^{15} is H, C_1–C_4-alkyl, hydroxy
R^{16} is H, C_1–C_4-alkyl, C_3–C_6-cycloalkyl, phenyl or benzyl;
R^{17} is $-NR^9R^{10}$, $-OR^{10}$, $-NHCONH_2$, $-NHCSNH_2$, $-NHSO_2CF_3$,



or



R^{18} and R^{19} are independently C_1–C_4-alkyl or taken together are $-(CH_2)_q-$ where q is 2 or 3
R^{20} is H, $-NO_2$, $-NH_2$, —OH or $-OCH_3$
R^{21} is
(a) H,
(b) phenyl, unsubstituted or substituted with 1 or 2 substituents selected from the group consisting of Cl, Br, I, F, $-O-C_1$–C_4-alkyl, C_1–C_4-alkyl, $-NO_2$, $-CF_3$, $-SO_2NR^9R^{10}$, $-S-C_1$–C_4-alkyl, —OH, $-NH_2$, $-COOR^4$, C_3–C_7-cycloalkyl and C_3–C_{10}-alkenyl
(c) C_1–C_4-alkyl, C_2–C_4-alkenyl or C_2–C_4-alkynyl each of which is unsubstituted or substituted with one or more substituents selected from the group consisting of aryl, C_3–C_7-cyclo-alkyl, Cl, Br, I, F, —OH, $-O-C_1$–C_4-alkyl, $-NH_2$, $-NH(C_1$–C_4-alkyl), $-N(C_1$–C_4-alkyl)$_2$, $-NH-SO_2R^4$, $-COOR^4$, $-SO_2NHR^9$, and $-S-C_1$–C_4-alkyl,
(d) C_3–C_7-cycloalkyl, unsubstituted or substituted with one or more substituents selected from the group consisting of C_1–C_4-alkyl, $-O-C_1$–C_4-alkyl, $-S-C_1$–C_4-alkyl, —OH, $-COOR^4$, C_1–C_4-perfluoroalkyl, Cl, Br, F, and I, or
(e) (C_1–C_4)-perfluoroalkyl,
R^{22} is R^{21} excluding H,
R^{23} is
(a) aryl,
(b) heteroaryl, wherein heteroaryl is defined as pyridine and which can be unsubstituted, monosubstituted or disubstituted with substituents selected from the group consisting of —OH, —SH, C_1–C_4-alkyl, C_1–C_4-alkoxy, $-CF_3$, Cl, Br, F, I, $-NO_2$ $-CO_2H$, $-CO_2-C_1$–C_4-alkyl, $-NH_2$, $-NH(C_1$–C_4-alkyl) and $-N(C_1$–C_4-alkyl)$_2$;
(c) C_3–C_7-cycloalkyl optionally substituted with one or more substituents selected from the group consisting of C_1–C_4-alkyl, $-O-C_1$–C_4-alkyl, $-S-C_1$–C_4-alkyl, —OH, $-COOR^4$, perfluoro-C_1–C_4-alkyl, Cl, Br, F, and I,
(d) C_1–C_8-alkyl unsubstituted or substituted with one or two substituents selected from the group consisting of: aryl, heteroaryl, —OH, —SH, C_1–C_4-alkyl, C_2–C_4-alkenyl, C_2–C_4-alkynyl, $-O(C_1$–C_4-alkyl), $S(C_1$–C_4-alkyl), $-C_3$–C_8-cycloalkyl, $-CF_3$, Cl, Br, F, I, $-NO_2$, $-CO_2H$, $-CO_2-C_1$–C_4-alkyl, $-PO_3H$, $-PO(OH)(O-C_1$–C_4-alkyl), $-PO(OR^4)(R^9)$, $-NH_2$, $-NH(C_1$–C_4-alkyl), $-N(C_1$–C_4-alkyl)$_2$, —NH-aryl, $-N(aryl)_2$, $-N(CH_2CH_2)_2L$ $-NR^4COR^{22}$, $-CONR^4R^{22}$, $-OCONR^4R^{22}$, $SO_2NR^4R^{22}$, $-NR^4SO_2R^{22}$,
(e) polyfluoro-C_1–C_4-alkyl;
(f) $-NR^{21}R^{21}$, or
(g) $-N(CH_2CH_2)L$;

X is
(a) a single bond,
(b) —CO—,
(c) —O—
(d) —S—

(e)

(f) —CON—
R^{15}

(g) —NCO—
R^{17}

(a) $-OCH_2-$
(b) $-CH_2O-$
(c) $-SCH_2-$.
(d) $-CH_2S-$.
(e) $-NHC(R^9R^{10})-$.
(f) $-NR^9SO_2-$.
(g) $-SO_2NR^9-$.
(h) $-OR^9R^{10}NH-$.
(p) —CH=CH—.
(q) —CF=CF—.
(r) —CH=CF—.
(s) —CF=CH—.
(t) $-CH_2CH_2-$.
(u) $-CF_2CF_2-$.
(v) 1,1-dimethylcyclopropyl or 1,2-dimethylcyclopropyl

(w) 

(x)

(y)

or

(z)

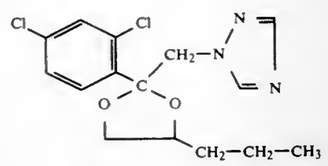
Q is —C(O)—, —S—, —O— or $-NR^4$;
c is 0 or 1;
r and t are 0 to 2;
V_1, V_2, V_3, V_4 and V_5 are each independently selected from:
(a) H,
(b) C_1–C_5-alkoxy,
(c) C_1–C_5-alkyl,
(d) hydroxy,
(e) C_1–C_5-alkyl-$S(O)_p$,
(f) —CN,
(g) $-NO_2$,
(h) $-NR^9R^{10}$,
(i) C_1–C_5-alkyl-$CONR^9R^{10}$,
(j) $-CONR^9R^{10}$,
(k) $-CO_2R^9$,
(l) C_1–C_5-alkyl-carbonyl,
(m) CF_3,
(n) I, Br, Cl, F,
(o) hydroxy-C_1–C_4-alkyl-,
(p) carboxy-C_1–C_4-alkyl-,
(q) $-NH-SO_2CF_3$,
(r) aryl,
(s) C_1–C_5-alkyl-CO_2R^9,
(t) aryloxy,
(u) aryl-C_1–C_3-alkoxy,
(v) aryl-C_1–C_3-alkyl,

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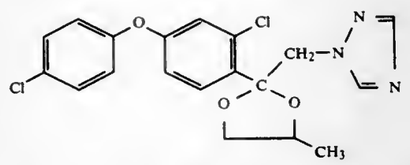
(w) carboxyphenyl,
(x) —$(CH_2)_tOCOR^{22}$,
(y) —$(CH_2)_tOCONR^{21}R^{22}$,
(z) —$(CH_2)_tNR^{21}COR^{22}$,
(aa) —$(CH_2)_tNR^{21}CO_2R^{22}$, or
(bb) —$(CH_2)_tNR^{21}CONR^{23}R^{22}$;
u is 1 or 2;
Z is O, NR^{13} or S.

5,250,559
MICROBICIDAL COMPOSITIONS
Ludwig Mittermeier, Freiburg, Fed. Rep. of Germany, and Wilhelm Ruess, Pfeffingen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Continuation of Ser. No. 826,187, Jan. 21, 1992, abandoned, which is a continuation of Ser. No. 649,130, Jan. 29, 1991, abandoned, which is a continuation of Ser. No. 435,920, Nov. 13, 1989, abandoned. This application Jul. 27, 1992, Ser. No. 920,023
Claims priority, application Switzerland, Nov. 18, 1988, 4284/88
Int. Cl.[5] A01N *43/64*
U.S. Cl. 514—383 **9 Claims**

1. A plant fungicidal composition containing a plant synergistic fungicidally effective amount of a plant fungicidally active ingredient, said active ingredient essentially consisting of a mixture of two active ingredient components I) and II), component I) being 1-[2-(2,4-dichloro-phenyl)-4-propyl-1,3-dioxolan-2-ylmethyl]-1H-1,2,4-triazole of the formula



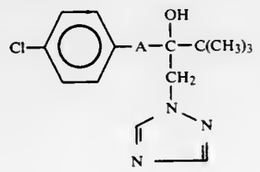
or a salt thereof and component II) being 1-{2-[2-chloro-4-(4-chlorophenoxy)-phenyl]-4-methyl-1,3-dioxolan-2-ylmethyl}-1H-1,2,4-triazole of the formula



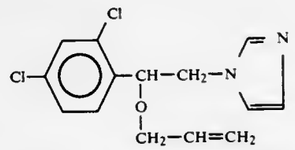
or a salt thereof, together with a suitable carrier, the synergistic ratio by weight of I):II) being from 10:1 to 1:10.

5,250,560
FUNGICIDAL AGENTS
Wilhelm Brandes, Leichlingen; Gerd Hänssler, Leverkusen; Paul Reinecke, Leverkusen; Hans Scheinpflug, Leverkusen, and Graham Holmwood, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Division of Ser. No. 865,008, Apr. 8, 1992, Pat. No. 5,198,231, which is a division of Ser. No. 762,274, Sep. 19, 1991, Pat. No. 5,137,903, which is a division of Ser. No. 587,193, Sep. 24, 1990, Pat. No. 5,082,855, which is a division of Ser. No. 487,680, Mar. 2, 1990, Pat. No. 4,990,527, which is a division of Ser. No. 330,331, Mar. 29, 1989, Pat. No. 4,933,337, which is a division of Ser. No. 193,437, May 12, 1988, Pat. No. 4,845,111, which is a continuation of Ser. No. 89,698, Aug. 26, 1987, abandoned, which is a division of Ser. No. 801,549, Nov. 25, 1985, abandoned, which is a continuation of Ser. No. 646,591, Aug. 31, 1984, abandoned. This application Oct. 29, 1992, Ser. No. 968,029
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1983, 3333411
Int. Cl.[5] A01N *43/64, 43/50*
U.S. Cl. 514—383 **4 Claims**

1. A fungicidal composition comprising a synergistic fungicidally effective amount of (i) a substituted 1-hydroxyethyl-triazole of the formula



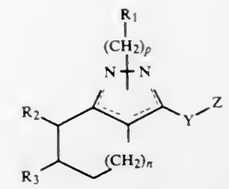
in which
A is —CH_2—CH_2—,
and (ii) an imidazole derivative of the formula



or a salt thereof, wherein the synergistic weight ratio of (i):(ii) is about 1:1.

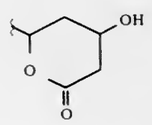
5,250,561
TETRAHYDROINDAZOLE, TETRAHYDROCYCLOPENTAPYRAZOLE, AND HEXAHYDROCYCLOHEPTAPYRAZOLE COMPOUNDS AND THEIR USE AS HMG-COA REDUCTASE INHIBITORS
Peter J. Connolly, Morristown, and Michael P. Wachter, Bloomsbury, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.
Division of Ser. No. 742,788, Aug. 8, 1991, Pat. No. 5,134,155. This application May 20, 1992, Ser. No. 886,569
Int. Cl.[5] A61K *31/415;* **C07D** *405/06*
U.S. Cl. 514—403 **7 Claims**

1. A compound of the formula I:



I

wherein R_1 is selected from any one of H, alkyl, aryl, or substituted aryl; wherein R_2 is selected from any one of H, alkyl, aryl, substituted aryl, aralkyl, substituted aralkyl, aralkenyl, or cycloalkyl;
wherein R_3 is H; or
wherein R_2 and R_3 may be taken together to form a benzo or naphtho ring system;
wherein Y is alkyl or alkenyl;
wherein Z is:

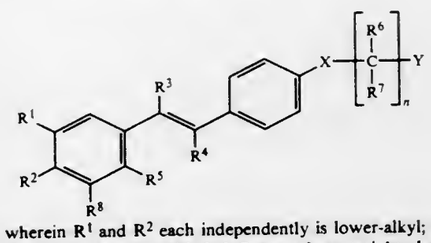


II

wherein R_4 is selected from anyone of H, alkyl, a protonated amine of the formula $HN(R_5)_3^+$ wherein R_5 is any one of H or alkyl, or a cation;
wherein n=0 to 3 and p=0 to 3 and pharmaceutically acceptable acid salts thereof.

5,250,562
STILBENE DERIVATIVES
Michael Klaus, Weil/Rhein, Fed. Rep. of Germany; Peter Mohr, Basel, Switzerland, and Ekkehard Weiss, Inzlingen, Fed. Rep. of Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Division of Ser. No. 510,705, Apr. 19, 1990, Pat. No. 5,106,981, which is a division of Ser. No. 310,442, Feb. 14, 1989, Pat. No. 4,940,707. This application Feb. 3, 1992, Ser. No. 829,666
Claims priority, application Switzerland, Feb. 24, 1988, 689/88; Dec. 14, 1988, 4622/88
Int. Cl.[5] A61K *31/40;* **C07D** *207/06*
U.S. Cl. 514—408 **7 Claims**

1. A compound of the formula



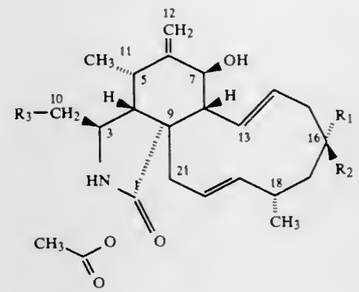
I

wherein R^1 and R^2 each independently is lower-alkyl; or together are alkylene with 3-5 C-atoms in a straight chain; or together are alkylene with 3-5 C-atoms in a straight chain wherein said alkylene is lower-alkyl substituted; one of the residues R^3 and R^4 is hydrogen and the other is hydrogen or lower-alkyl; R^6 and R^7 are hydrogen or lower-alkyl; R^5 and R^8 are hydrogen, lower-alkyl, lower-alkoxy or halogen; X is —O—, —S—, —SO—, —SO_2— or —NR^9; R^9 is hydrogen, lower-alkyl or acyl; Y is pyrrolidino attached via the N-atom; n is 2, 3 or 4.

5,250,563
INHIBITORS OF HIV PROTEASE
Shieh-Shung T. Chen, Morganville; George A. Doss, Westfield, and Russell B. Lingham, Watchung, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.
Continuation of Ser. No. 765,627, Sep. 25, 1991, abandoned. This application Sep. 25, 1992, Ser. No. 951,927
Int. Cl.[5] A61K *31/40;* **C07D** *209/56*
U.S. Cl. 514—411 **9 Claims**

1. A compound of the formula

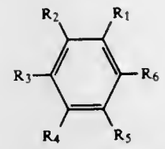
A



wherein:
R_1 is CH_2OH;
R_2 is H or OH; and
R_3 is phenyl, 4-hydroxyphenyl, 3-hydroxyphenyl or 3,4-dihydroxyphenyl;
or pharmaceutically acceptable salt or ester thereof.

5,250,564
AROMATIC PEPTIDOMIMETICS
Ralph Hirschmann, Blue Bell; Ellen Leahy, and Paul Sprengeler, both of Philadelphia, all of Pa., assignors to Trustees of the University of Pennsylvania, Philadelphia, Pa.
Filed Dec. 12, 1991, Ser. No. 806,048
Int. Cl.[5] A61K *31/40, 31/405;* **C07D** *209/04*
U.S. Cl. 514—414 **12 Claims**

1. A compound having the structure:



R_1 is —$CH_2O(CH_2)_nR_A$, where R_A is heteroacryl having from about 6 to about 14 carbon atoms and one nitrogen atom, and n is an integer from 0 to about 2;
R_2, R_3, and R_4, independently, are —H or —$CH_2O(CH_2)_mR_B$, where R_B is aryl having from about 6 to about 14 carbon atoms, and m is an integer from 0 to about 5, provided that at least one of R_2, R_3, and R_4 is —$CH_2O(CH_2)_mR_B$;
R_5 is —$CH_2O(CH_2)_pNHR_C$, where:
p is an integer from 2 to about 8;
R_C is —R_E or —$C(O)R_E$;
R_E is —H, alkyl or alkenyl having from about 1 to about 14 carbon atoms and up to about 4 nitrogen atoms, or aryl having from about 6 to about 14 carbon atoms; and
R_6 is —H or —OH;
or a pharmaceutically acceptable salt thereof.

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5,250,565
INDOLE-,BENZOFURAN-,AND BENZOTHIOPHENE-CONTAINING LIPOXYGENASE-INHIBITING COMPOUNDS

Dee W. Brooks, and James B. Summers, both of Libertyville, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 572,451, Aug. 28, 1990, abandoned, which is a continuation-in-part of Ser. No. 404,300, Sep. 7, 1989, abandoned, which is a continuation-in-part of Ser. No. 138,073, Jan. 11, 1988, Pat. No. 4,873,259, which is a continuation-in-part of Ser. No. 60,784, Jnn. 10, 1987, abandoned, which is a continuation-in-part of Ser. No. 12,970, Feb. 10, 1987, abandoned. This application Jan. 21, 1992, Ser. No. 823,411

The portion of the term of this patent subsequent to Oct. 10, 2006, has been disclaimed.

Int. Cl.[5] **A61K** *31/38, 31/34;* **C07D** *209/04, 333/52*

U.S. Cl. 514—443 **3 Claims**

1. A compound selected from the group consisting of
N-ethoxycarbonyloxy-N-[1-(benzo[b]thien-2-yl)ethyl]urea;
N-methoxycarbonyloxy-N-[1-(benzo[b]thien-2-yl)ethyl-]urea;
N-tert-butoxycarbonyloxy-N-[1-(benzo[b]thien-2-yl)ethyl-]urea;
N-thioethylcarbonyloxy-N-[1-(benzo[b]thien-2-yl)ethyl-]urea;
N-glutaryloxy-N-[1-(benzo[b]thien-2-yl)ethyl]urea;
N-succinyloxy-N-[1-(benzo[b]thien-2-yl)ethyl]urea;
N'-acetyl-N-hydroxy-N-[1-(benzo[b]thien-2-yl)ethyl]urea; and
N'-carbamoyl-N-hydroxy-N-[1-(benzo[b]thien-2-yl)ethyl-]urea.

5,250,566
METHOD FOR CONTROLLING NEMATODES

Muraleedharan G. Nair, Okemos, Mich., assignor to Board of Trustees operating Michigan State University, East Lansing, Mich.

Continuation-in-part of Ser. No. 177,311, Apr. 5, 1988, abandoned. This application Dec. 23, 1991, Ser. No. 811,950

Int. Cl.[5] **A01N** *43/16*

U.S. Cl. 514—459 **12 Claims**

1. A method for killing a nematode which comprises exposing the nematode to an effective amount of



a nitrophenyl $-(CH=C)_x-R$-pyrone.

wherein x is an integer between 0 and 8 and R is selected from the group consisting of a direct bond, —CH=CH— and —CH= furanyl substituents to kill the nematode.

5,250,567
CYCLIC PHENOLIC THIOETHERS

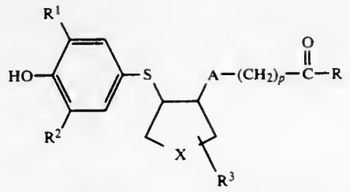
Richard A. Mueller, Glencoe, and Richard A. Partis, Evanston, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Division of Ser. No. 697,849, May 9, 1991, Pat. No. 5,147,893. This application Jun. 24, 1992, Ser. No. 903,832

Int. Cl.[5] **A61K** *31/34;* **C07D** *307/20*

U.S. Cl. 514—473 **19 Claims**

1. A compound of the formula:



where R^1 and R^2 are the same or different and independently represent tert-alkyl or phenyl; R^3 represents hydrogen or alkyl; x represents $-(CH_2)_w$-B-$(CH_2)_y-$ wherein B represents O and w and y can each independently be an integer from 0 to 3 with the proviso that the sum of w + y is equal to or less than 3; A represents O or $S(O)_n$ wherein n is 0, 1, or 2; p is an integer from 0 to 4; and R represents:
(a) alkyl;
(b) OH;
(c) OR^4 wherein R^4 is alkyl of 1 to 4 carbon atoms;
(d) $(CH_2)_tCOOR^7$ wherein t is an integer from 1 to 4 and R^7 is hydrogen or alkyl of 1 to 4 carbon atoms;
or a pharmaceutically acceptable salt thereof.

5,250,568
ACYLATED AMINOPHENOL DERIVATIVES

Bernd-Wieland Krüger; Klaus Sasse, both of Bergisch Gladbach, and Heinz-Wilhelm Dehne, Monheim, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

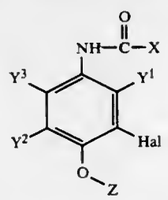
Filed Jun. 18, 1992, Ser. No. 900,632

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1991, 4120904

Int. Cl.[5] **A01N** *47/06;* **C07C** *67/48*

U.S. Cl. 514—512 **5 Claims**

1. Compounds of the formula (I) in which



(I)

X represents cycloalkyl selected from the group consisting of cyclopropyl, cyclopentyl, cyclohexyl or cycloheptyl, it being possible for the cycloalkyl radical to be monosubstituted to hexasubstituted by identical or different straight-chain or branched alkyl substituents having 1–4 carbon atoms,
Hal represents fluorine, chlorine or bromine,
Y^1, Y^2 and Y^3 are identical or different and represent hydrogen, fluorine, chlorine, bromine, straight-chain or branched alkyl having 1–4 carbon atoms, straight-chain or branched alkoxy or alkylthio having in each case 1–4 carbon atoms, or represent halogenoalkyl, halogenoalkoxy or halogenoalkylthio, each of which has 1–4 carbon atoms in the straight-chain or branched alkyl moiety and 1–5 identical or different halogen atoms,
Z represents $COSR^1$ where
R^1 represent C_1–C_8-alkyl, C_1–C_4-alkoxy-C_1–C_4-alkyl, C_1–C_4-alkoxy-C_1–C_4-alkoxy-C_1–C_4-alkyl, C_1–C_4-alkylthio-C_1–C_4-alkyl, each of which is optionally monosubstituted to nonasubstituted by halogen, or represent C_3–C_7-cycloalkyl which is unsubstituted or monosubstituted to pentasubstituted by identical or different substituents from the series consisting of C_1–C_4-halogenoalkyl, halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy hydroxyl or C_1–C_4-alkylcarbonyloxy, or represents phenyl-C_1–C_4-alkyl which is unsubstituted or monosubstituted to pentasubstituted in the phenyl moiety by identical or different $Y^{1\prime}$–$Y^{5\prime}$ substituents, or represents phenoxyalkyl which is unsubstituted or monosubstituted to pentasubstituted in the phenyl moiety by identical or different $Y^{1\prime}$–$Y^{5\prime}$ substituents,
where $Y^{1\prime}$–$Y^{5\prime}$ have the meaning of Y^1–Y^3, NO_2 and cyano.

5,250,569
AMINO ACID FLAVORINGS OF ALUMINUM ASTRINGENT FOR ORAL USE

John C. Godfrey, Huntingdon Valley, Pa., assignor to Godfrey Science & Design, Inc., Huntingdon, Pa.

Filed Apr. 22, 1991, Ser. No. 688,318

Int. Cl.[5] **A01N** *37/12, 37/44;* **A61K** *31/195*

U.S. Cl. 514—561 **29 Claims**

1. A slow-release candy composition for oral consumption comprising a hard candy base material and uniformly contained in said hard candy base material an aluminum compound and an amino acid, said amino acid being capable of forming a complex with said aluminum compound and being selected from the group consisting of glycine, L-alanine, D,L-alanine, L-2-aminobutyric acid, D,L-2-aminobutyric acid, L-valine, D,L-valine, L-isovaline, D,L-isovaline, L-leucine, D,L-leucine, D-isoleucine, D,L-isoleucine, L-lysine, and D,L-lysine; said composition containing from about 1 mg to about 10 mg of aluminum for each gram of said composition, and the molar ratio of said amino acid to aluminum being from about 1 to 20; whereby said aluminum is slowly and uniformly released as said composition is being orally consumed.

5,250,570
AMIDOBENZENE DERIVATIVES, COMPOSITIONS AND USE

David R. Brittain, Rochdale; Steven P. Brown; Anthony L. Cooper, both of Bude; Jethro L. Longridge, Macclesfield; Jeffrey J. Morris, Sandbach; John Preston, Knutsford, and Linda Slater, Macclesfield, all of England, assignors to Imperial Chemical Industries PLC, London, England

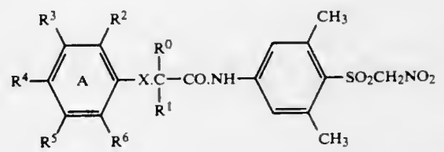
Continuation of Ser. No. 738,438, Jul. 31, 1991, abandoned. This application Dec. 31, 1992, Ser. No. 999,690

Claims priority, application United Kingdom, Aug. 2, 1990, 9016980

Int. Cl.[5] **A61K** *31/165*

U.S. Cl. 514—622 **10 Claims**

1. An acyl derivative of the compound (4-amino-2,6-dimethylphenylsulphonyl)nitromethane having the formula I:



I

wherein R^0 and R^1 are independently hydrogen or (1–4C)alkyl; and on benzene ring A, one, two or three of R^2, R^3, R^4, R^5 and R^6 are independently selected from the group consisting of hydrogen, halogeno, trifluoromethyl, nitro, cyano, (1–4C)alkyl, (1–4C)alkoxy and (1–4C)alkanoyl, and the remainder of R^2–R^6 is hydrogen; or an adjacent pair of R^2, R^3, R^4, R^5 and R^6 completes, together with the adjoining carbon atoms, a further benzene ring which may itself optionally bear a halogeno, (1–4C)alkyl or (1–4C)alkoxy substituent, another of R^2–R^6 is hydrogen, halogeno, trifluoromethyl, nitro, cyano, (1–4C)alkyl or (1–4C)alkoxy, and the remainder of R^2–R^6 is hydrogen; and X is oxygen or sulphur; or a pharmaceutically acceptable salt thereof.

5,250,571
(S)-NORFLUOXETINE IN METHOD OF INHIBITING SEROTONIN UPTAKE

Ray W. Fuller; David Mitchell, both of Indianapolis; David W. Robertson, Greenwood; Gregory A. Stephenson, Anderson, and David T. Wong, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 615,201, Nov. 19, 1990, abandoned, which is a continuation-in-part of Ser. No. 486,478, Feb. 28, 1990, abandoned, which is a continuation-in-part of Ser. No. 412,687, Sep. 26, 1989, abandoned, which is a continuation-in-part of Ser. No. 270,177, Nov. 14, 1988, abandoned. This application Apr. 21, 1992, Ser. No. 873,520

Int. Cl.[5] **A61K** *31/165*

U.S. Cl. 514—651 **25 Claims**

1. A method for inhibiting serotonin uptake in mammals which comprises administering to a mammal requiring increased neurotransmission of serotonin an effective amount of (S)-norfluoxetine or a salt or solvate thereof substantially free of (R)-norfluoxetine.

5,250,572
(R)-NORFLUOXETINE IN METHOD FOR OCCUPYING SEROTONIN IC RECEPTORS

David W. Robertson, San Diego, Calif., and David T. Wong, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 501,063, Mar. 29, 1990, abandoned. This application Apr. 21, 1992, Ser. No. 873,521

Int. Cl.[5] **A61K** *31/165*

U.S. Cl. 514—651 **3 Claims**

1. A method for occupying serotonin 1C receptors in mammals which comprises administering to a mammal requiring altered neurotransmission of serotonin an effective amount of (R)-norfluoxetine or a pharmaceutically acceptable acid addition salt or solvate thereof, substantially free of (S)-norfluoxetine.

5,250,573
GLUTARALDEHYDE-BASED STERILISING COMPOSITION OF ANTIBACTERIAL AND ANTIMYCOTIC ACTIVITY, IN AN AQUEOUS VEHICLE

Luigi F. Magni, Milan, Italy, assignor to Germo S.p.A., Italy

Continuation-in-part of Ser. No. 71,939, Jul. 9, 1987, abandoned. This application Nov. 9, 1988, Ser. No. 268,990

Int. Cl.[5] **A61K** *31/11, 31/045*

U.S. Cl. 514—701 **3 Claims**

1. A disinfectant and sterilizing aqueous glutaraldehyde solution having a pH of 3.5 to 5.5 containing
0.02 to 0.2% by weight of glutaraldehyde,
an alkyl-, aryl- or halogen-substituted pbenol or thiobisphenol, present in an amount of 0.1 to 0.75 parts by weight per part by weight of glutaraldehyde,
a nonionic surface active agent which is an alkyl phenol with a C_8–C_9 alkyl and ethoxylated with 9 to 12 moles of ethylene oxide or a linear C_{11}–C_{16} aliphatic alcohol ethoxylated with 9 to 12 moles of ethylene oxide, present in an amount of 0.3 to 25 parts by weight per part by weight of glutaraldehyde, and
a linear or branched C_2–C_5 alkanol, present in an amount of 3 to 28 parts by weight per part of weight of glutaraldehyde.

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5,250,574

AROMATIC COMPOUNDS AND THEIR COMPOSITIONS FOR THE CONTROL OF INSECT PESTS

Noriyasu Sakamoto; Akira Shuto; Hirosi Kisida, all of Hyogo; Hiroaki Fujimoto, Osaka, and Kimitoshi Umeda, Osaka, all of Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

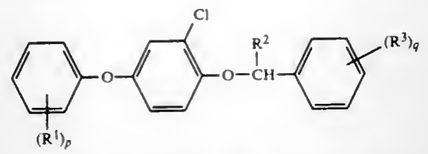
Filed Oct. 25, 1991, Ser. No. 782,822

Claims priority, application Japan, Nov. 28, 1990, 2-331070; May 10, 1991, 3-135820

Int. Cl.[5] A01N *31/04, 31/14;* C07C *43/225;* C07D *319/18*

U.S. Cl. 514—721 22 Claims

1. An aromatic compound of the formula:



wherein R^1 is the same or different and each is a halogen atom, a C_1-C_4 alkyl group, a C_1-C_4 haloalkyl group, a C_1-C_3 alkoxy group or a C_1-C_3 haloalkoxy group; R^2 is a hydrogen atom or methyl group; R^3 is the same or different and each is a halogen atom, a C_1-C_4 alkyl group, a C_1-C_4 haloalkyl group, a C_1-C_2 alkoxy group or a C_1-C_2 haloalkoxy group, or two adjacent R^3 groups may be combined together to represent a C_1-C_2 alkylenedioxy group optionally bearing one or two substituents selected from halogen and methyl; p is an integer of 2 to 5; and q is an integer of 0 to 5.

5,250,575

USE OF 1-OCTEN-4-OL IN REPELLING HOUSE FLIES

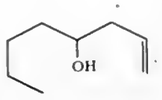
Richard A. Wilson, Westfield; Braja D. Mookherjee, Holmdel, both of N.J., and Jerry F. Butler, Gainesville, Fla., assignors to International Flavors & Fragrances Inc., New York, N.Y. and The University of Florida, Gainesville, Fla.

Continuation-in-part of Ser. No. 760,085, Oct. 24, 1991, Pat. No. 5,175,175, which is a division of Ser. No. 691,638, Apr. 25, 1991, Pat. No. 5,091,423, which is a division of Ser. No. 589,016, Sep. 27, 1990, Pat. No. 5,118,711. This application Sep. 18, 1992, Ser. No. 946,904

Int. Cl.[5] A01N *31/02*

U.S. Cl. 514—739 2 Claims

1. A method of repelling (*Musca domestica L.*(Diptera:Muscidae) for a finite period of time from a three-dimensional space inhabitable by said *Musca domestica L.*(Diptera:Muscidae) comprising the step of exposing said three-dimensional space to an effective *Musca domestica L.*(Diptera:Muscidae) repelling concentration and quantity of 1-octen-4-ol having structure:



5,250,576

PROCESS FOR PREPARING EMULSIONS THAT ARE POLYMERIZABLE TO ABSORBENT FOAM MATERIALS

Thomas A. DesMarais, Norwood; Stephen T. Dick, Blue Ash, and Thomas M. Shiveley, Moscow, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 935,935, Aug. 27, 1992, Pat. No. 5,198,472, which is a division of Ser. No. 830,159, Feb. 3, 1992, Pat. No. 5,149,720, which is a continuation-in-part of Ser. No. 743,947, Aug. 12, 1991, abandoned. This application Feb. 3, 1993, Ser. No. 12,675

Int. Cl.[5] C08J *9/26, 9/28*

U.S. Cl. 521—63 3 Claims

1. A continuous process for the preparation of a collapsed, but expandable, absorbent foam material made from a polymerized high internal phase emulsion, which process comprises:

A) providing a liquid feed stream of an oil phase comprising

i) from about 3% to 41% by weight of a substantially water-insoluble, monofunctional glassy monomer component;

ii) from about 27% to 73% by weight of a substantially water-insoluble, monofunctional rubbery comonomer component;

iii) from about 8% to 30% by weight of a substantially water-insoluble, polyfunctional cross-linking agent component; and

iv) from about 2% to 33% by weight of an emulsifier component selected from sorbitan monolaurate and combinations of sorbitan monolaurate with a co-emulsifier selected from polyglycerol fatty acid esters or sorbitan monopalmitate;

B) providing a liquid feed stream of a water phase comprising an aqueous solution containing from about 0.2% to 40% by weight of water-soluble electrolyte;

C) simultaneously introducing said liquid feed streams into a dynamic mixing zone at flow rates such the the initial weight ratio of water phase to oil phase being introduced ranges from about 2:1 to 10:1;

D) subjecting the combined feed streams in said dynamic mixing zone to sufficient shear agitation to at least partially form an emulsified mixture in said zone while maintaining steady, non-pulsating flow rates for the oil and water phase streams;

E) steadily increasing the ratio of water to oil feed streams being introduced into said dynamic mixing zone to within the range of from about 12:1 to 100:1 at a rate of increase which does not destroy the emulsified nature of the contents of said dynamic mixing zone, while maintaining the emulsified contents of said dynamic mixing zone at a temperature of from 25° C. to 60° C., and while subjecting the emulsified contents of said zone to continued shear agitation which is sufficient to eventually form a high internal phase emulsion that, upon subsequent polymerization, provides a foam having an average cell size of from about 5 to 30 microns;

F) continuously withdrawing the emulsified contents of said dynamic mixing zone and continuously introducing said emulsified contents into a static mixing zone wherein said emulsified contents are further subjected to sufficient shear mixing to thereby completely form a stable high internal phase emulsion having a water to oil phase weight ratio of from about 12:1 to 100:1;

G) continuously withdrawing said stable high internal phase emulsion from said static mixing zone;

H) subjecting said stable high internal phase emulsion withdrawn from said static mixing zone to conditions suitable for effecting polymerization of the polymerizable monomers, comonomers and cross-linking agents in the oil phase of said stable high internal phase emulsion to thereby form a polymeric foam material; and

I) dewatering said polymeric foam material to an extent which is sufficient to cause said foam material to collapse into an absorbent foam material which will reexpand upon contact with aqueous body fluids.

5,250,577

POLYSTYRENE FOAM MADE WITH ONLY CARBON DIOXIDE AS A BLOWING AGENT AND A PROCESS FOR MAKING THE SAME

Gary C. Welsh, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 2, 1989, Ser. No. 388,468

Int. Cl.[5] C08J *9/08*

U.S. Cl. 521—79 8 Claims

1. A process for producing a thermoplastic foam comprising the following steps:

(a) melting a styrenic polymer;

(b) continuously directly introducing into the melted styrenic polymer a blowing agent consisting essentially of carbon dioxide in an amount of about 0.5 to about 6 weight percent based on the weight of the styrenic polymer;

(c) mixing intimately the styrenic polymer and the carbon dioxide; and

(d) extruding and foaming the mixture at a die temperature able to maintain a foamable mixture of the molten styrenic polymer and the carbon dioxide but below about 150° C. into a region of lower pressure to form thermoplastic foam having cell sizes in all direction which are less than one millimeter and a foam sheet thickness which is less than about 0.5 inch.

5,250,578

FOAMED CEMENTITIOUS COMPOSITION AND METHOD OF MAKING

Charles E. Cornwell, 7104 Marlan Dr., Alexandria, Va. 22307

Filed Jul. 5, 1991, Ser. No. 726,196

Int. Cl.[5] C04B *38/00;* C08J *9/00*

U.S. Cl. 521—83 20 Claims

1. A cementitious composition with sound absorbing capability having an interconnected open cellular structure such that at least 20–100% of said composition's surface area is open to provide access to sound waves and has an air-dry density in a range of 12–90 pounds per cubic foot comprising a cement, an aggregate, water, a water reducing agent and a stabilized foaming composition wherein said stabilized foaming composition comprises at least one water-soluble film forming agent and at least one foaming agent.

5,250,579

CELLULAR POLYMER CONTAINING PERFORATED CELL WINDOWS AND A PROCESS FOR THE PREPARATION THEREOF

Guido F. Smits, Wijnegem, Belgium, and Johan A. Thoen, Terneuzen, Netherlands, assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 28, 1992, Ser. No. 951,970

Int. Cl.[5] C08J *9/40*

U.S. Cl. 521—98 8 Claims

1. A process for preparing a cellular polymer containing perforated cell windows wherein the polymer is prepared in the presence of perforating agent characterized in that the perforating agent, present in from about 0.01 to about 1.0 percent based on total weight of polymer, is a polyfluorinated liquid having an average molecular weight of at lest 350 and a boiling point at a temperature of at least 130° C., which temperature is greater than the maximum temperature encountered in the process of preparing the polymer.

5,250,580

FLAME RETARDANT POLYURETHANE FOAMS

John R. Parsonage, and EDwin Metcalfe, both of London, England, assignors to Unilever Patent Holdings B.V., Vlaardingen, Netherlands

Filed Mar. 4, 1992, Ser. No. 844,486

Claims priority, application United Kingdom, Mar. 4, 1991, 9104495

Int. Cl.[5] C08J *9/12*

U.S. Cl. 521—110 20 Claims

1. A foam of a polyurethane derived from a polyol and a polyisocyanate, which foam contains water-soluble silicate particles in an amount of at least 30 parts per 100 parts by weight of the polyol of the polyurethane, which silicate particles have an average size of from 90 to 450 microns inclusive and contain at least 10% by weight of the particles of water of hydration.

5,250,581

POLYMER POLYOLS CONTAINING HALOGENATED AROMATIC MONOMERS

Robert G. Gastinger, West Chester, Pa.; John E. Hayes, Wilmington, Del., and Philippe C. Motte, Media, Pa., assignors to Arco Chemical Technology, L.P., Wilmington, Del.

Filed Sep. 26, 1990, Ser. No. 588,648

Int. Cl.[5] C08G *18/50, 18/28*

U.S. Cl. 521—137 61 Claims

1. A polymer polyol produced by a process comprising polymerizing, via a free-radical reaction, an addition polymerizable aromatic monomer component with ethylenic unsaturation having more than one aromatic halogen, in the presence of a base polyol.

5,250,582

PROCES FOR MAKING CELLULAR AND MICROCELLULAR POLYURETHANE FOAMS

Robert C. Hire, Dayville, and Ronald S. Blackwell, Waterbury, both of Conn., assignors to Olin Corporation, Cheshire, Conn.

Continuation-in-part of Ser. No. 518,393, May 3, 1990. This application Jul. 23, 1990, Ser. No. 556,131

The portion of the term of this patent subsequent to Sep. 7, 2010, has been disclaimed.

Int. Cl.[5] C08G *18/00*

U.S. Cl. 521—157 8 Claims

1. A process for producing a cellular or microcellular polyurethane foam wherein the reactants provide a built-in blowing capability, said process being effected by reacting a polyisocyanate with a carboxy-modified polyol, in the presence of a chlorofluorocarbon or hydrochlorofluorocarbon supplemental blowing agent, to form a polyurethane or other isocyanate derivative product and carbon dioxide, said carbon dioxide acting as an in situ blowing agent to foam said polyurethane into a cellular or microcellular polyurethane foam, said carboxy-modified polyol being a carboxylic acid grafted polyol which is the reaction product of a monoether polyol or polyether polyol and a carboxylic acid.

5,250,583

OCULAR LENS MATERIAL

Toru Kawaguchi, Gifu; Ichiro Ando, Aichi; Noboyuki Toyoshima, Nagoya; Yasushi Yamamoto, Takasaki; Hiroshi Yoshioka, Tokyo, and Toshio Yamazaki, Annaka, all of Japan, assignors to Menicon Co., Ltd., Nagoya and Shin-Etsu Chemical Co., Ltd., Tokyo, both of Japan

Filed Jun. 9, 1992, Ser. No. 895,836

Claims priority, application Japan, Jul. 23, 1991, 3-182267

Int. Cl.[5] C08F *12/20, 230/08*

U.S. Cl. 523—107 5 Claims

1. An ocular lens material comprising a copolymer prepared by polymerizing a monomer mixture comprising, as main components, (A) 15 to 40% by mole of a fluoroalkyl (silicon-containing alkyl) fumarate, (B) 35 to 55% by mole of an N-vinyl

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lactam, (C) 3 to 30% by mole of at least one of acrylic acid and methacrylic acid, and (D) 0.1 to 20% by mole of a crosslinkable monomer.

5,250,584

PERIODONTIUM-REGENERATIVE MATERIALS

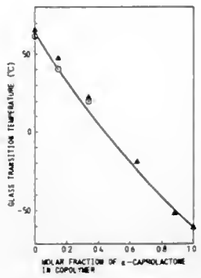
Yoshito Ikada, Uji, and Shokyu Gen, Kyoto, both of Japan, assignors to G-C Dental Industrial Corp., Tokyo, Japan

Continuation of Ser. No. 707,940, May 28, 1991, abandoned, which is a continuation of Ser. No. 566,896, Aug. 14, 1990, abandoned, which is a continuation of Ser. No. 391,922, Aug. 10, 1989, abandoned. This application Jul. 21, 1992, Ser. No. 915,770

Claims priority, application Japan, Aug. 31, 1988, 63-214835

Int. Cl.[5] A61F *2/00;* **C08G** *63/08*

U.S. Cl. 523—114 **1 Claim**



1. A periodontium-regenerating material consisting essentially of bio-degradable/absorbable high-molecular weight material of lactide/ε-caprolactone copolymer or a lactide/-glycolide copolymer which is used for the regenerative treatment of the periodontium, said copolymer being in a form of a porous film or a sheet and having a weight-average molecular weight in the range of 40,000 to 500,000, a molar ratio in the range of 90:10 to 5:95 mol %, a thickness in the range of 10 to 500 μm, a dynamic modulus of elasticity in the range of 5×10^7 to 5×10^9 dynes/cm^2, a tensile strength of 3.1 N/mm^2 or greater, an elongation rate of 100 to 2,000% each measured at room temperature (25° C.), retention rate of tensile strength reduced to zero after a lapse of one to six months due to hydrolysis action in vitro measured in a phosphate buffer solution of 37° C. and pH 7.4; and the transistion temperature is below body temperature.

5,250,585

DENTAL MATERIAL IN POWDER FORM, PROCESS FOR ITS PREPARATION AND USE

Rainer Guggenberger, Seefeld; Klaus Ellrich, Wörthsee; Oswald Gasser, Seefeld, all of Fed. Rep. of Germany; John W. McLean, London, Great Britain, and Owen Makinson, Wattle Park SA, Australia, assignors to ESPE Stiftung & Co. Produktions- und Vertriebs KG, Seefeld, Fed. Rep. of Germany

PCT No. PCT/EP89/00856, § 371 Date Mar. 21, 1990, § 102(e) Date Mar. 21, 1990, PCT Pub. No. WO90/00893, PCT Pub. Date Feb. 8, 1990

PCT Filed Jul. 21, 1989, Ser. No. 466,363

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1988, 3825027

Int. Cl.[5] A61K *6/08;* **C08K** *3/08*

U.S. Cl. 523—116 **8 Claims**

1. A powder-form dental material based on

(a) aluminum-fluorosilicate glass,

(b) a tin metal or a tin alloy wherein said tin alloy contains tin and a base metal selected from the group consisting of titanium, tantalum, germanium, niobium, aluminum and zinc which contains at least some of constituent (a) as a sintered mixture with constituent (b).

5,250,586

METHOD FOR THE PRODUCTION OF FINELY DIVIDED WATER SOLUBLE POLYMERS

Clyde S. Scanley, 330 Speedwell Ave., Morristown, N.J. 07960

Divisionof Ser. No. 344,770, Apr. 28, 1989, Pat. No. 5,155,156, which is a continuation-in-part of Ser. No. 206,804, Jun. 15, 1988, abandoned. This application Mar. 11, 1992, Ser. No. 849,532

Int. Cl.[5] C08K *11/00*

U.S. Cl. 523—129 **17 Claims**

1. A method of making a water dispersible mixture of a water soluble polymer in an oil comprising the steps of:

(a) providing a first dispersion of particles of said polymer in a first oil substantially immiscible with said polymer, said first dispersion incorporating a first surfactant, said polymer particles in said first dispersion being substantially dry; and

(b) converting said first dispersion to a second dispersion of said polymer particles in an oil immiscible with said polymer, said second dispersion having a lower surfactant content than said first dispersion.

5,250,587

ACTIVATION OF ETHYLENE/CARBON MONOXIDE POLYMERS

Edward R. Peterson, Lake Jackson, and Gerald M. Lancaster, Surfside, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 642,101, Jan. 16, 1991, abandoned. This application Jan. 13, 1992, Ser. No. 819,557

Int. Cl.[5] C08G *67/02;* **C08K** *3/14, 3/22, 3/34*

U.S. Cl. 523—137 **16 Claims**

1. A method for heating olefin/carbon monoxide copolymers, comprising:

dispersing an amount of an agent in an olefin polymer containing from about I percent up to about 50 percent by weight of carbon monoxide groups along the polymer chain;

subjecting the polymer to high frequency radiation effective to heat the dispersion;

wherein said agent has a higher dielectric constant and a lower loss factor at said frequency, relative to said olefin polymer, said amount being effective to increase the rate and/or extent of the heating of the polymer.

5,250,588

ORGANIC FRICTION MATERIAL COMPOSITION FOR USE TO PRODUCE FRICTION LININGS

Pierre Delvaux, Bromptonville; Luc Desrosiers, Rock Forest, and Alain Roy, Ascot Corner, all of Canada, assignors to Ceram SNA Inc., Sherbrooke, Canada

Filed Jan. 16, 1990, Ser. No. 465,979

Int. Cl.[5] C08J *5/14;* **C08K** *7/12*

U.S. Cl. 523—159 **11 Claims**

1. An organic friction material composition comprising:

a) a fibrous-like synthetic forsterite, hereinafter called FRITMAG, obtained by calcination of chrysotile asbestos fibers at a temperature of from 650° C. to 1450° C. said synthetic forsterite having an MgO: SiO2 ratio lower than 1.1, a raw loose density of from 3 to 40 pcf, a thermal conductivity "k" factor of from 0.25 to 0.40 BTU. in/hr. °F.ft^2 and a fusion point of from 1600° to 1700° C.;

b) a thermosetting resin having heat resistant properties;

c) at least one friction additive present in such an amount as to adjust the friction and wear properties of the material to some predetermined values, and, if desired,

d) at least one other additive or filler,

wherein the weight ratio of said resin to said FRITMAG is ranging between0.25 and0.70; and

wherein the ratio of the total weight of said at least one friction additive and of said at least one other additive or filler to the total weight of the composition is equal to or lower than 0.55.

5,250,589

STABILIZATION OF METHACRYLIC POLYMERS AGAINST STERILIZING RADIATION

Paul J. Keating, Newportville, and Donald E. Roach, Willingboro, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 751,421, Aug. 28, 1991, which is a division of Ser. No. 499,104, Mar. 26, 1990, Pat. No. 5,102,940. This application Dec. 10, 1992, Ser. No. 988,644

Int. Cl.[5] C08F *20/68*

U.S. Cl. 523—206 **6 Claims**

1. A container, tube, or medical tool with improved resistance to sterilizing radiation formed by the process of:

a. preparing a polymer comprising at least 50% of units derived from one or more alkyl methacrylate monomers and, optionally, one or more other monomers selected from vinyl or vinylidene monomers;

b. admixing the polymer with up to about 50 weight percent, based on the polymer, of an impact modifier for the polymer;

c. admixing the polymer-impact modifier mixture with from about one-half to about two percent by weight of the polymer of at least one aliphatic alcohol, the alcohol containing up to about ten carbon atoms, no ultraviolet stabilizer being present, so as to distribute the alcohol essentially uniformly throughout the polymer;

d. forming the polymer-impact modifier-alcohol mixture into a container, tube, or medical tool.

5,250,590

FLAME RETARDANT RESIN COMPOSITION

Fumio Nakai, Kurita; Hidetaka Matsuzaki, Settsu; Koji Matsumoto, Ibaraki, and Ichiro Kondou, Amagasaki, all of Japan, assignors to Sumitomo Naugatuck Co., Ltd., Japan

PCT No. PCT/JP91/00332, § 371 Date Nov. 5, 1991, § 102(e) Date Nov. 5, 1991, PCT Pub. No. WO91/13937, PCT Pub. Date Sep. 19, 1991

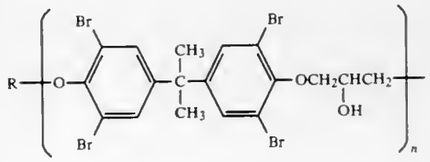
PCT Filed Mar. 12, 1991, Ser. No. 775,972

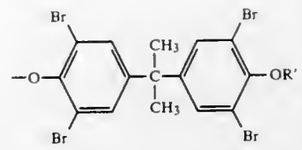
Claims priority, application Japan, Mar. 12, 1990, 2-62164

Int. Cl.[5] C08K *5/06, 3/22;* **C08L** *69/00, 55/02*

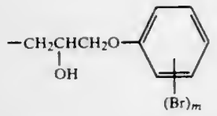
U.S. Cl. 523—435 **1 Claim**

1. A flame retardant resin composition comprising (A) 70 to 10% by weight of a rubber-reinforced styrene base resin, (B) 20 to 85% by weight of a polycarbonate resin, (C) 5 to 35% by weight of a high molecular weight halogen-containing compound of the formula:





wherein n is an average polymerization degree and an integer of 4 to 30, R and R' are independently a hydrogen atom, a methyl group, an epoxypropyl group, a phenyl group, a halogenated phenyl group or a group of the formula:



wherein m is an integer of 0 to 3, which compound has a bromine content of at least 45% by weight and an epoxy equivalent of at least 20,000 g/mol but less than 100,000 g/mol and (D) 0 to 10% by weight of an antimony compound.

5,250,591

CURABLE ADHESIVE COMPOSITION

Ryuichi Fujii, and Takayuki Kawano, both of Tokyo, Japan, assignors to Somar Corporation, Tokyo, Japan

Continuation of Ser. No. 313,210, Feb. 21, 1989, abandoned. This application Jun. 19, 1991, Ser. No. 680,016

Claims priority, application Japan, Feb. 20, 1988, 63-37853; Feb. 20, 1988, 63-37854

The portion of the term of this patent subsequent to Mar. 19, 2008, has been disclaimed.

Int. Cl.[5] C08L *67/06, 39/04;* **C08J** *3/28;* **C08F** *271/02*

U.S. Cl. 523—521 **16 Claims**

1. A curable adhesive composition comprising a polymerizable prepolymer selected from the group consisting of unsaturated polyesters, epoxy (meth)acrylates, urethane (meth)acrylates and oligoester (meth)acrylates, a reactive diluent which differs from said polymerizable prepolymer, which reactive diluent is selected from the group consisting of a mono- or polyfunctional (meth)acrylates, said reactive diluent being added to adjust the viscosity of the curable adhesive composition, and a polymerization initiator for the polymerization for the polymerization of ethylenically unsaturated group, wherein said composition further comprises an inorganic filler comprising a combination of a spherical inorganic filler and a flaky inorganic filler, with the contents of said spherical inorganic filler and flaky inorganic filler being from 10 to 50 parts by weight and from 50 to 150 parts by weight, respectively, based on 100 parts by weight of the total amount of said polymerizable prepolymer and reactive diluent.

5,250,592

ISOINDOLINONE COMPOUNDS AS STABILIZERS FOR ORGANIC MATERIALS

Peter Nesvadba, Marly, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 682,054, Apr. 8, 1991, abandoned. This application Dec. 23, 1992, Ser. No. 996,376

Claims priority, application Switzerland, Apr. 12, 1990, 1283/90

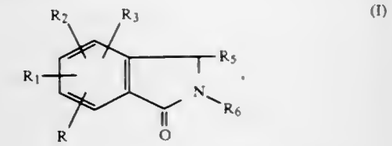
Int. Cl.[5] C08K *5/34*

U.S. Cl. 524—89 **13 Claims**

1. A stabilized composition comprising

(a) an organic material liable to thermal, oxidative and/or actinic degradation, which material is a lubricant, a metal processing fluid, a hydraulic fluid or a synthetic polymer, and

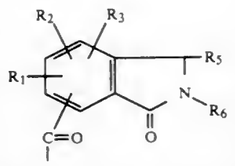
(b) an effective stabilizing amount of at least one compound of the formula (I)



in which R is hydrogen, C_1-C_{18}alkyl, C_1-C_{18}alkoxy,

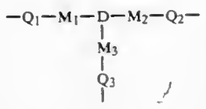
VOL 1155 ISS 1 OC 5 1993 UMI

halogen, nitro, phenyl-C_1-C_4alkoxy, C_2-C_{18}alkanoyl, benzoyl, (C_1-C_6alkyl)benzoyl, C_2-C_{18}alkenoyl, —N(R_7)(R_{7a}), —OH or —CO—A, R_1 has the same possibilities of meaning as R, R_2 is hydrogen or C_1-C_4alkyl and R_3 is hydrogen or halogen, A is hydroxyl, C_1-C_{18}alkoxy, C_5-C_{12}cycloalkoxy, benzyloxy or benzyloxy substituted by C_1-C_4alkyl and/or halogen, —N(R_7)(R_{7a}), —NH—NH—R_8 or —G_1—(G)$_n$, n is a number from 1 to 3 and G is a radical of the formula



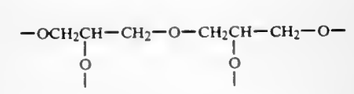
(II)

G_1 in the case where n=1 is —O—R_{20}—O—, —NH—R_{21}—NH— or —NH—NH—, in the case where n=2 is a group of the formula

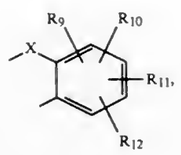


(III)

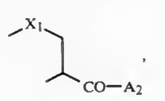
and in the case where n=3 is (—O—CH_2)$_4$C or



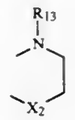
where D is N, CH or C(C_1-C_4alkyl), Q_1, Q_2 and Q_3 independently of one another are O or NH and M_1, M_2 and M_3 independently of one another are C_1-C_6alkylene or C_2-C_{12}alkylene which is interrupted by —O—, or in the case where D=CH or C(C_1-C_4alkyl) —M_3—Q_3 is also —O— or in the case where D=N —M_3—Q_3 is also a direct bond, R_5 and R_6 together form a group of the formula



(IV)



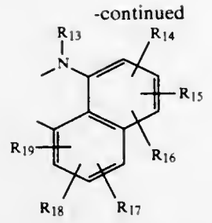
(V)



or

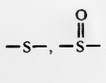
(VI)

-continued

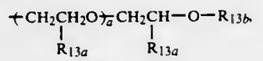


(VII)

X is —O—, —S—, , ,  or —N()—,

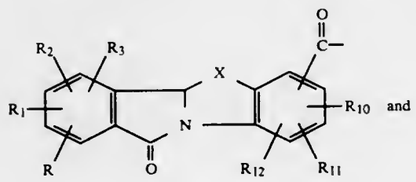
X_1 is —S—,  or  and

X_2 is —CH_2— or a direct bond, R_7 and R_{7a} independently of one another are hydrogen, C_1-C_{18}alkyl, phenyl-C_1-C_4alkyl, C_2-C_{18}alkanoyl, C_2-C_{18}alkenoyl, C_2-C_4hydroxyalkyl, benzoyl or (C_1-C_6alkyl)benzoyl or, together with the N atom to which they are bonded, are piperidyl, morpholinyl, piperazinyl or 4-methylpiperazinyl, R_8 is hydrogen, C_2-C_{18}alkanoyl, benzoyl or (C_1-C_6alkyl)benzoyl, R_9, R_{10}, R_{11} and R_{12} have the same possibilities of meaning as R, R_1, R_2 and R_3 (in this sequence), where —CO—A is to be replaced by —CO—A_1, R_{13} is hydrogen, C_1-C_{18}alkyl, C_2-C_{18}alkenyl, C_5-C_{12}cycloalkyl, phenyl-C_1-C_4alkyl, C_2-C_{18}alkanoyl, C_2-C_{18}alkenoyl, benzoyl, (C_1-C_6alkyl)benzoyl, cyano-C_1-C_4alkyl, C_2-C_{19}alkoxycarbonyl-C_1-C_4alkyl, carboxy-C_1-C_4alkyl, hydroxy-C_1-C_4alkyl or



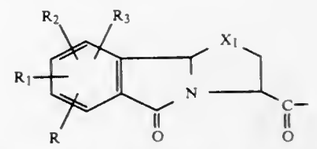
R_{13a} is hydrogen or methyl and R_{13b} is hydrogen, C_1-C_{18}alkyl, phenyl-C_1-C_4alkyl, C_1-C_{18}alkanoyl, benzoyl, C_2-C_{18}alkenoyl or (C_1-C_6alkyl)benzoyl and a is a number from 0 to 6, R_{14}, R_{15}, R_{16}, R_{17}, R_{18} and R_{19} independently of one another are hydrogen, C_1-C_4alkyl, halogen, hydroxyl, C_1-C_{18}alkoxy or —N(R_{7b})(R_{7c}), in which R_{7b} and R_{7c} independently of one another are hydrogen or C_1-C_{18}alkyl, R_{20} is C_1-C_{12}alkylene, C_2-C_8alkenylene, C_3-C_6alkynylene or C_2-C_{24}alkylene which is interrupted by O, S and/or —N(R_{22})—, R_{21} is C_1-C_{12}alkylene and R_{22} is hydrogen, C_1-C_{18}alkyl, phenyl, (C_1-C_6alkyl)phenyl or phenyl-C_1-C_4alkyl, A_1 is hydroxyl, C_1-C_{24}alkoxy, C_5-C_{12}cycloalkoxy, benzyloxy or benzyloxy substituted by C_1-C_6alkyl and/or halogen, —N(R_7)(R_{7a}), —NH—NH—R_8 or —G_1—(G_2)$_n$, and A_2 is hydroxyl, C_1-C_{24}alkoxy, C_5-C_{12}cycloalkoxy, benzyloxy or benzyloxy substituted by C_1-C_6alkyl and/or halogen, —N(R_7)(R_{7a}), —NH—NH—R_8 or —G_1—(G_3)$_n$, where G_1 and n are as defined above, G_2 is a radical of the formula

(VIII)



and

G_3 is a radical of the formula



(IX)

with the proviso that only one substituent —CO—A, CO—A_1 or —CO—A_2 is present in the molecule, in which A, A_1 or A_2 is a radical —G_1—(G)$_n$, —G_1—(G_2)$_n$ or —G_1—(G_3)$_n$; with the further proviso that silver halide containing photographic emulsions are excluded from the organic material of component (a).

5,250,593

STABILIZED POLYOLEFIN COMPOSITION

Tamaki Ishii, Suita; Shinichi Yachigo, Toyonaka; Fumitoshi Kojima, Ibaraki, and Kanako Ida, Ashiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Sep. 3, 1992, Ser. No. 940,375

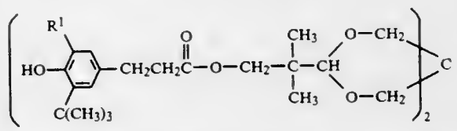
Claims priority, application Japan, Sep. 3, 1991, 3-222727

Int. Cl.[5] **C08K** *5/5393, 5/527, 5/526, 5/51*

U.S. Cl. 524—100 **17 Claims**

1. A polyolefin composition comprising a polyolefin and, per 100 parts by weight Of the polyolefin, the following components:

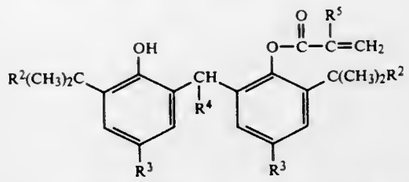
(A) 0.01 to 1 part by weight of a hindered phenolic compound represented by the formula (I):



(I)

wherein R^1 is hydrogen or an alkyl of 1 to 3 carbon atoms;

(B) 0.01 to 1 part by weight of an acrylate compound represented by the formula (II):



(II)

wherein R^2 is an alkyl of 1 to 5 carbon atoms, R^3 is an alkyl of 1 to 8 carbon atoms, R^4 is hydrogen or an alkyl of 1 to 8 carbon atoms, and R^5 is hydrogen or methyl; and

(C) 0.01 to 1 part by weight of at least one organic phosphorous compound selected from the group consisting of

bis(2,6-di-t-butyl-4-methylphenyl) pentaerythritol diphosphite,

bis(2,4-di-t-butylphenyl) pentaerythritol diphosphite,

tris(2,4-di-t-butylphenyl) phosphite, tetrakis(2,4-di-t-butylphenyl) 4,4'-biphenylene diphosphonite,

2,2'-ethylidenebis(4,6-di-t-butylphenyl) fluorophosphite, and

2,2'-methylenebis(4,6-di-t-butylphenyl) octyl phosphite.

5,250,594

AQUEOUS POLYMER DISPERSION WITH POLYMER PARTICLES EXHIBITING POLYOL GROUPS

Karl Hahn, and Bernhard Stützel, both of Marl, Fed. Rep. of Germany, assignors to Hüls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Jul. 5, 1991, Ser. No. 726,221

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1990, 4027283

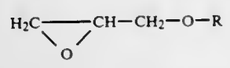
Int. Cl.[5] **C08K** *5/15*

U.S. Cl. 524—114 **7 Claims**

1. An aqueous polymer dispersion of polymer particles having polyol groups, obtained by:

(A) preparing an aqueous polymer dispersion of a polymer comprising

(i) 0.5 to 25 wt. %, based on the total monomers, of monomeric units from a monomer of the formula (I)



(I)

wherein R is —CO—CR_1=CH_2 or —CH_2—CR_1=CH_2 and R_1 is H or a C_1-C_4 alkyl group, and

(ii) 75 to 99.5 wt. %, based on the total monomers, of at least one other olefinically unsaturated monomer, copolymerizable with said monomer in the presence of a radical initiator; and

(B) reacting the aqueous polymer dispersion prepared in part (A) with a low molecular weight, polyhydroxylated derivative of a pentitol, a hexitol, or a hexose having a primary or secondary amino group of a carboxyl group.

5,250,595

FLAME-RETARDANT RESIN COMPOSITION

Shunitsu Miyashita, and Kenji Mogami, both of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

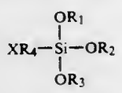
Continuation of Ser. No. 658,456, Feb. 22, 1991, abandoned, which is a continuation of Ser. No. 483,309, Feb. 21, 1990, abandoned, which is a continuation of Ser. No. 379,662, Jul. 13, 1989, abandoned, which is a continuation of Ser. No. 945,709, Dec. 23, 1986, abandoned. This application Mar. 26, 1992, Ser. No. 859,242

Claims priority, application Japan, Dec. 25, 1985, 60-297809

Int. Cl.[5] **C08K** *5/54*

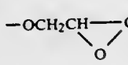
U.S. Cl. 524—114 **9 Claims**

1. A flame-retardant resin composition which comprises a thermoplastic polyester; a flame retardant containing an organic halide compound in an amount of 5 to 50 parts by weight based on 100 parts of weight of the thermoplastic polyester and an alkoxysilane compound of formula (B);



(B)

wherein each of R_1, R_2, R_3 and R_4 is an alkyl group having 1 to 5 carbon atoms or —C_mH_{2m}—O—C_nH_{2n+1} wherein m+n is an integer of 5 or less, and X represents —CH=CH_2, —$COOCH_3C$=CH_3, —NH_2, —$NHC_2H_4NH_2$, —$NHCONH_2$ or



in an amount of 0.03 to 2.0% by weight of the flame retardant resin; and an antimony compound in an amount of 1 to 20 parts by weight based on 100 parts by weight of the thermoplastic polyester,

wherein said antimony compound is not previously coated

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with the alkoxysilane compound prior to formation of the flame retardant composition.

5,250,596

ACRYLIC RESIN COMPOSITION

Bill R. Edwards, 4605 Wimbledon Dr., Lawrence, Kans. 66047

Division of Ser. No. 920,829, Jul. 27, 1992, which is a continuation of Ser. No. 720,009, Jun. 24, 1991, Pat. No. 5,134,210, which is a continuation-in-part of Ser. No. 568,194, Aug. 15, 1990, Pat. No. 5,045,613, which is a continuation-in-part of Ser. No. 528,728, May 23, 1990, Pat. No. 5,023,313, which is a division of Ser. No. 386,501, Jul. 25, 1989, Pat. No. 4,945,122. This application Apr. 15, 1993, Ser. No. 47,795

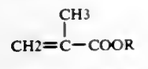
The portion of the term of this patent subsequent to Jun. 11, 2008, has been disclaimed.

Int. Cl.[5] **C08K** *5/42;* **C08F** *2/38*

U.S. Cl. 524—166 **21 Claims**

1. A method for producing an article of an acrylic resin such that the article is substantially bubble and void free, while exhibiting improved clarity, the method comprising:

admixing an acrylic monomer represented by the formula



wherein R is an alkyl moiety containing 1 to about 18 carbon atoms, with a non-peroxide oxygen donator 2,2-bis(allyloxymethyl)-butan-1-ol or diallylphthalate, a mercaptan and a crosslinking agent compatible with the acrylic monomer to form an intimate blend containing from about 300 to 1000 parts by volume of the acrylic monomer, from about 0.1 to about 1000 parts by volume of the non-peroxide oxygen donator, from about 0.5 to about 5 parts by volume of the mercaptan and from about 0.3 to about 40 parts by volume of the crosslinking agent;

heating the blend at a temperature of from about 80 degrees Centigrade to about 110 degrees Centigrade for a period of time effective to provide a polymerization syrup having a predetermined viscosity;

incorporating into the polymerization syrup a catalytic amount of a polymerization catalyst to effect polymerization of the polymerization syrup;

introducing the catalyst activated polymerization syrup into a mold;

maintaining the catalyst activated polymerization syrup in the mold for a period of time to effect curing; and

removing a resulting article from the mold.

5,250,597

FLUOROPOLYMER FILM PREPARATION

Ronald E. Uschold, West Chester, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 725,169, Jul. 3, 1991, abandoned. This application Jun. 19, 1992, Ser. No. 900,749

Int. Cl.[5] **C08K** *5/10*

U.S. Cl. 524—280 **2 Claims**

1. A dispersion comprising poly(vinyl fluoride) and propylene carbonate dispersant, and about from 10 to 50%, by weight of the total dispersant, of toluene.

5,250,598

LIQUID ELECTRICAL TAPE FORMULATION

Peter Dornau, 4041 SW. 47 Ave., Ft. Lauderdale, Fla. 33314; Robert R. Russo, 35 Carlton Ave., East Rutherford, N.J. 07073, and Jeffrey Tieger, 10180 SW. 4th, Plantation, Fla. 33324

Continuation of Ser. No. 424,466, Oct. 20, 1989, abandoned. This application Apr. 10, 1991, Ser. No. 683,580

Int. Cl.[5] **C08K** *5/01, 5/02, 5/07, 5/12*

U.S. Cl. 524—297 **9 Claims**

1. A thermoplastic liquid electrical tape formulation having good shelf life, said formulation in itself forming a durable vinyl coating or film or wires, junctions and objects, said formulation consisting essentially in weight percentages of from 10 to 60% of an electrically insulating vinyl material effective to achieve said durable vinyl coating, said vinyl material consisting essentially of a vinyl chloride copolymer including a major amount of vinyl chloride and a minor amount of vinyl acetate, said formulation further including from 1 to 2% of a vinyl toluene/acrylate copolymer thixotropic agent to add body, and 5 to 15% of a plasticizer to impart flexibility to the vinyl coating, said formulation further including a stabilizing agent present in an amount of about 3 to 5% to prevent acid release, and at least one solvent present in an amount from 20 to 40% to enable the application of a satisfactory coating.

5,250,599

AQUEOUS AEROSOL COATING COMPOSITIONS

Andrew J. Swartz, Newtown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Jul. 30, 1991, Ser. No. 738,009

Int. Cl.[5] **C08K** *5/06*

U.S. Cl. 524—366 **12 Claims**

1. An aqueous aerosol coating composition which comprises a blend of a water-soluble salt of an acrylic dispersible polymer with an ammonium or amine salt of a drying oil-modified copolymer in dimethyl ether, water and a water-soluble organic solvent.

5,250,600

LOW TEMPERATURE FLEXIBLE DIE ATTACH ADHESIVE AND ARTICLES USING SAME

My N. Nguyen, and Yuan Y. Chien, both of San Diego, Calif., assignors to Johnson Matthey Inc., Wayne, Pa.

Filed May 28, 1992, Ser. No. 890,618

Int. Cl.[5] **C08K** *5/06*

U.S. Cl. 524—377 **15 Claims**

1. A flexible adhesive formulation comprising the reaction product of a cyanate ester-containing material and at least one flexibilizer from the group of polyhydroxyl polymer compounds within at least one of the following formula:

$$HO-(CH_2)_m-CO-O-(CH_2)_n-OH$$

and/or

$$HO-(CH_2)_m-O-C-O-R-C-O-(CH_2)_n-OH.$$

5,250,601

HIGH-STRENGTH HEAT INSULATING MATERIAL AND METHOD OF PRODUCING SUCH MATERIAL

Kazuo Knbota; Masaaki Kayama, and Yasumichi Mukaida, all of Kanagawa, Japan, assignors to Nichias Corporation, Tokyo, Japan

Filed Sep. 2, 1992, Ser. No. 939,462

Claims priority, application Japan, Sep. 5, 1991, 3-252730

Int. Cl.[5] **C08K** *3/34, 11/00*

U.S. Cl. 524—442 **5 Claims**

1. A high-strength heat insulating material comprising:

fibers of aromatic polyether amide dispersed in water in the form of filaments having a content of approximately 1–5% by weight;

fibrous wollastonite having a content between 20–70% by weight; and

a matrix made of a calcium silicate hydrate, said heat insulating material having a density between 1.3–1.9 g/cm^3.

5,250,602

POLYMER EMULSION AND METHOD FOR PREPARING THE SAME

Hiroshi Itoda, Yokohama; Naotaka Watanabe, and Yoshio Hosoya, both of Tokyo, all of Japan, assignors to Mitsui-Cyanamid, Ltd., Tokyo, Japan

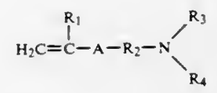
Filed Jan. 31, 1990, Ser. No. 473,155

The portion of the term of this patent subsequent to Dec. 3, 2008, has been disclaimed.

Int. Cl.[5] **C08J** *3/02;* **C08L** *9/00, 39/02;* **C08F** *20/10*

U.S. Cl. 524—457 **8 Claims**

1. A polymer emulsion prepared by a method which consists essentially of neutralizing a seed polymer with an acid or a salt or by quaternizing it with a quaternizing agent, the surfaces of the emulsion grains being thereby very densely cationated, where the seed polymer is formed by adding a monomer as represented by the following formula (I) or a mixture of the monomer (I) and copolymerizable ethylenic unsaturated monomer(s) (II) to a seed latex of a carboxyl-modified synthetic rubber latex or synthetic resin emulsion and polymerizing them:



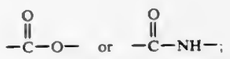
(I)

in which R_1 represents H or CH_3;

R_2 represents an alkylene group having from 2 to 5 carbon atoms;

R_3 and R_4 each represent H or an alkyl group having from 1 to 5 carbon atoms:

A represents



R_1, R_3 and R_4 are so selected that the monomer is hardly soluble or insoluble in water.

5,250,603

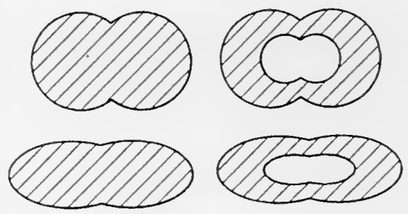
POLYMER/BI-LOBAL FIBER COMPOSITES HAVING IMPROVED STRENGTH

Roy F. Wright, and Edwin Boudreaux, Jr., both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 24, 1992, Ser. No. 824,971

Int. Cl.[5] **C08K** *7/14*

U.S. Cl. 524—494 **20 Claims**



1. A composition comprising:

(a) poly(arylene sulfide) in an amount from about 45% to about 75% by weight of said total composition; and

(b) bi-lobal fiber in an amount from about 25% to about 55% by weight of said total composition.

5,250,604

GLASS FIBER REINFORCED POLYAMIDE COMPOSITION AND THE PROCESS FOR MANUFACTURING THE SAME

Takeshi Moriwaki, and Kenji Tsutsui, both of Osaka, Japan, assignors to Kishimoto Sangyo Company Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 696,722, May 7, 1991, abandoned. This application Apr. 9, 1992, Ser. No. 867,000

Claims priority, application Japan, May 7, 1990, 2-127487

Int. Cl.[5] **C08J** *5/08;* **C08K** *3/40;* **C08L** *77/00*

U.S. Cl. 524—494 **2 Claims**

1. Glass fiber reinforced polyamide composition comprising:

(A) 100 parts by weight of the mixture of (a) 95–60 parts by weight of crystalline aliphatic polyamide, (b) 5–40 parts by weight of amorphous polyamide and (c) 0.2–10 parts by weight of crystalline aliphatic copolyamide having a melting point at least 20° C. lower than that of the crystalline polyamide of (a), and

(B) 100–250 parts by weight of glass fiber.

5,250,605

COATING COMPOSITIONS COMPRISING AN ORGANOSILANE POLYMER AND REACTIVE DISPERSED POLYMERS

Isidor Hazan, Clementon, and Mitzie K. Rummel, Mt. Laurel, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 627,999, Dec. 17, 1990, abandoned. This application Mar. 16, 1992, Ser. No. 852,456

The portion of the term of this patent subsequent to Sep. 14, 2010, has been disclaimed.

Int. Cl.[5] **C08J** *3/00;* **C08K** *5/00;* **C08L** *51/00;* **C08G** *63/48*

U.S. Cl. 524—504 **26 Claims**

1. A composition useful for coating a substrate, which composition comprises:

(a) from about 20 to 90% by weight, based on the weight of the binder solids, of a film-forming essentially epoxy-free alkoxysilane-functional polymer having a weight average molecular weight of about 500–30,000 comprising from about 30 to 95% by weight, based on the weight of the alkoxysilane-functional polymer, of ethylenically unsaturated monomers which do not contain an alkoxysilane functionality and about 5 to 70% by weight ethylenically unsaturated monomers which contain an alkoxysilane functionality; and

(b) from about 10 to 60%, based on the weight of the binder solids, of a dispersed polymer having an average particle size of at least about 0.1 micron, comprising:

(i) a core comprising a macromolecular polymer; and

(ii) a plurality of macromonomer chains, attached to the macromolecular core, having a weight average molecular weight of about 1,000 to 30,000, comprising 3 to 30% by weight, based on the weight of the macromonomer, of polymerized ethylenically unsaturated monomers which comprise a crosslinking functionality capable of forming a covalent bond with an alkoxysilane functionality in said alkoxysilane-functional polymer and about 70 to 95% by weight, based on the weight of the macromonomer, of at least one other polymerized ethylenically unsaturated monomer without a crosslinking functionality; and

(c) from about 25 to 50% by weight, based on the weight of the composition, of a liquid organic carrier.

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5,250,606

POLYMER BLEND COMPOSITIONS CONTAINING A STYRENIC COPOLYMER, AN ACETAL POLYMER AND A THERMOPLASTIC POLYESTER OR POLYCARBONATE RESIN INGREDIENT

Martin J. Guest, Terneuzen; P. F. M. v/d Berghen, Graauw, both of Netherlands; Ludo M. Aerts, Lokeren, Belgium; Antonios Gkogkidis, Terneuzen, Netherlands, and Abraham F. de Bert, Zelzate, Belgium, assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 474,171, Feb. 2, 1990, abandoned. This application Apr. 7, 1992, Ser. No. 865,806

Int. Cl.[5] C08L *51/04, 55/02*

U.S. Cl. 524—504 **9 Claims**

1. A polymer blend composition comprising, on the basis of a total of 100 parts by weight of the stated polymer ingredients:

A. from 15 to 55 parts by weight of a rubber modified monovinylidene aromatic copolymer comprising, in polymerized form and on a rubber-modified copolymer weight basis

1. from about 75 to about 97 weight percent of a monovinylidene aromatic copolymer ingredient which comprises, in polymerized form and on an aromatic copolymer ingredient weight basis, from about 55 to about 99 weight percent of one or more monovinylidene aromatic monomers and from about 1 to about 45 weight percent of one or more relatively polar comonomer ingredients; and

2. from about 3 to 25 weight percent of dispersed particles of a rubbery polymer selected from the group consisting of homopolymers of a 1,3-conjugated alkadiene monomer and copolymers of from about 60 to 99 weight percent of a 1,3-conjugated alkadiene monomer with from about 1 to about 40 weight percent of a monoethylenically unsaturated monomer;

B. from 15 to 40 parts by weight of one or more acetal homopolymer or copolymer ingredients;

C. from 20 to 45 parts by weight of one or more thermoplastic polycarbonate resin ingredients having a melt flow rate, as measured according to ASTM D-1238 at 300° C. and 1.2 kg load, of from about 15 to about 75 grams per 10 minutes; and

D. from 5 to 35 parts by weight of one or more elastomeric thermoplastic polyurethane or copolyester elastomer ingredients.

5,250,607

MOISTURE CURED ELASTOMERIC INTERPENETRATING NETWORK SEALANTS

Ahmet Comert, Chaineux; Michel Ladang, Herve, and Dominique Petit, Housse-Blegny, all of Belgium, assignors to Norton Company, Worcester, Mass.

Continuation-in-part of Ser. No. 140,851, Jan. 5, 1988. This application Jan. 22, 1990, Ser. No. 468,408

Int. Cl.[5] C08L *27/06*

U.S. Cl. 524—507 **6 Claims**

1. An extrudable thermoplastic composition of matter comprising an intimate mixture of:

(a) a first component which is a prepolymer having a number average molecular weight of about 1,000 to about 15,000, a backbone and an average of about 2 terminal isocyanate groups which are reactive with each other in the presence of ambient moisture to form a derivative polymer having a longer average chain length than said prepolymer:

(b) a second component which is a plasticized polyvinylchloride polymer which is non-chemically reactive with itself and with said first component in the presence or absence of moisture,

wherein said composition of matter after cure by exposure to moisture forms an elastomeric interpenetrating network.

5,250,608

CURABLE COMPOSITIONS

Michael L. Orton, Hartford; Susanne H. Rogers, Blumdellsands, and Ian M. Fraser, Yarm, all of England, assignors to Imperial Chemical Industries plc, London, England

Filed Aug. 3, 1992, Ser. No. 923,420

Claims priority, application United Kingdom, Aug. 2, 1991, 9116781

Int. Cl.[5] C08L *39/04*

U.S. Cl. 524—548 **18 Claims**

1. A polymerisable composition comprising a polymerisable liquid component which on curing forms a solid polymer, said polymerisable liquid comprising:

(i) an ethylenically unsaturated isocyanurate resin which is the product obtained on trimerising an ethylenically unsaturated, isocyanate functional urethane composition which comprises monourethane compounds having both an ethylenically unsaturated group and an isocyanate group, said urethane composition being the product obtained from the reaction of a reactant mixture comprising:

(a) a proportion of a polyisocyanate composition comprising a mixture of 2,4'-diphenylmethane and 4,4'-diphenylmethane diisocyanates; and

(b) a proportion of at least one hydroxyl functionalised vinyl monomer;

wherein the proportions of the polyisocyanate composition and the at least one hydroxyl functionalised vinyl monomer are such that the number of isocyanate groups are in excess over the number of hydroxyl groups, and

(ii) at least one ethylenically unsaturated monomer which is a solvent for the ethylenically unsaturated isocyanurate resin and is copolymerisable therewith.

5,250,609

AQUEOUS COATING COMPOSITION

Minoru Kato; Osamu Kikuchi; Kyoko Kadoya, and Teruo Hiraharu, all of Yokkaichi, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1992, Ser. No. 866,553

Claims priority, application Japan, Apr. 10, 1991, 3-104651

Int. Cl.[5] C08L *25/06, 31/02*

U.S. Cl. 524—560 **8 Claims**

1. A aqueous coating composition comprising 15 to 40% (as a solid) by weight of an aqueous copolymer latex prepared by the emulsion polymerization of monomer components which comprises:

(A) 10 to 70 parts by weight of a (meth)acrylate monomer comprising (A-1) 20 to 80% by weight of a branched C_{3-5}-alkyl (meth)acrylate and (A-2) 80 to 20% by weight of a linear C_{2-4} alkyl (meth)acrylate;

(B) 10 to 25 parts by weight of an ethylenically unsaturated carboxylic acid; and

(C) 0 to 85 parts by weight of at least one monomer copolymerizable with said components (A) and (B) selected from the group consisting of aromatic vinyl compounds, (meth)acrylic acid esters having 1 carbon atom, (meth)acrylic acid esters having 6 or more carbon atoms, and (meth)acrylic acids having an aromatic group.

5,250,610

AQUEOUS POLYURETHANE DISPERSIONS AND THEIR USE AS LAMINATING ADHESIVES

Eduard Hänsel, Wuppertal; Walter Meckel, Neuss, and Thomas Münzmay, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 30, 1992, Ser. No. 828,079

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1991, 4103347

Int. Cl.[5] C08L *75/06*

U.S. Cl. 524—591 **3 Claims**

1. An aqueous polyurethane dispersion based

A) on a high molecular weight polyhydroxyl component containing carboxylic acid groups,

B) optionally another high molecular weight polyhydroxyl component which is substantially free of a carboxylic acid group,

C) optionally a low molecular weight polyhydroxyl compound as a chain lengthening agent,

D) an organic polyisocyanate and

E) a neutralizing agent capable of converting the carboxylic acid groups into carboxylate groups,

characterized in that the high molecular weight polyhydroxyl component containing carboxylic acid groups A) is the esterification product of a polyether polyol a1) in the molecular weight range of from 400 to 5000, and polycarboxylic acid a2) which is characterized in that said component a2) is trimellitic acid or trimellitic acid anhydride.

5,250,611

PREPARATION OF ABS MOLDING MATERIALS

Ehrenfried Baumgartner, Roedersheim-Gronau; Hermann Gausepohl, Mutterstadt, and Rudolf H. Jung, Worms, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 25, 1992, Ser. No. 857,135

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1991, 4110009

Int. Cl.[5] C08F *279/04*

U.S. Cl. 525—52 **5 Claims**

1. A process for the continuous preparation of impact-resistant polystyrene acrylonitrile by free radical polymerization in two or more reaction zones, which comprises contacting 90 to 60 parts of a monomer selected from the group consisting of styrene, αmethylstyrene, o-methylstyrene, m-methylstyrene, p-methylstyrene and tert-butylstyrene, 10 to 40 parts of a monomer selected from the group consisting of acrylonitrile, and methacrylonitrile and 3–30% by weight based on the weight of the monomers of polybutadiene having a weight average molecular weight of 70,000–350,000 dissolved in a solvent therefor at a temperature of 90° C. or less and, for a time that phase inversion takes place, wherein the first reaction zone is present at lest in duplicate and is in each case, in the form of a stirred kettle being operated batchwise and alternately with the other in such a way that the reaction mixture is polymerized until phase inversion is complete or an initiator has been consumed, and the kettle content is then fed continuously to a second reaction zone in the form of a tube reactor.

5,250,612

POLYETHYLENE FILMS EXHIBITING LOW BLOCKING FORCE

Lonnie G. Hazlitt; Pak-Wing S. Chum, both of Lake Jackson; Seema V. Karande, Missouri City; John E. Lastovica, III, Lake Jackson, all of Tex., and Ian M. Munro, Edmonton, Canada, assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 7, 1991, Ser. No. 773,375

Int. Cl.[5] C08L *23/08, 23/20*

U.S. Cl. 525—53 **6 Claims**

1. In a method of preparing a film having a blocking force of about 30 grams or less without adding antiblock agents from interpolymer product pellets having a melt flow ratio, I_{10}/I_2, from about 8 to about 30, and a density of about 0.935 grams/milliliter or less, comprising the steps of:

a) polymerizing ethylene and at least one alpha-olefin in at least one higher molecular weight zone or a reactor at temperatures and pressures sufficient to produce a polymer,

b) interpolymerizing ethylene and at least one alpha-olefin in at least one other zone of a reactor at temperatures and pressures sufficient to produce an interpolymer having a lower molecular weight than the first polymer,

c) combining the polymer from (a) with the interpolymer of (b) to form an interpolymer product containing (a) in an amount from about 0.5% up to about 50%,

d) extruding the interpolymer product into pellets, and

e) extruding the pellets of (d) into film, the improvement comprising selecting an ethylene interpolymer product having:

(i) a weight average molecular weight less than or equal to about 200,000,

(ii) at least about 0.5 percent to about 4 percent by weight of the interpolymer product has a weight average molecular weight of at least about 1,000,000 grams/mole, and

(iii) wherein at least one component of the interpolymer product has a M_w/M_n value of greater than about 3.

5,250,613

SOLID SURFACE COATED WITH A HYDROPHILIC OUTER LAYER WITH COVALENTLY BONDED BIOPOLYMERS, A METHOD OF MAKING SUCH A SURFACE, AND A CONJUGATE THEREFOR

Karin Bergstrom, Kungälv, and Krister Holmberg, Molndal, both of Sweden, assignors to Berol Nobel AB, Stenungsund, Sweden

Filed Sep. 13, 1991, Ser. No. 759,020

Claims priority, application Sweden, Oct. 22, 1990, 9003363

Int. Cl.[5] C08G *69/10;* **C08H** *1/00;* **C08L** *1/00*

U.S. Cl. 525—54.1 **10 Claims**

1. A process for preparing an immobilized biopolymer immobilized on a solid surface and useful in biochemical application, comprising a reaction stage selected from the group consisting of

a) reacting a water-soluble conjugate comprising nonionic hydrophilic polymer covalently bonded to a polyethylene imine and at least partly to a biopolymer, with anionic groups on the surface;

b) reacting a polyethylene imine substituted by nonionic hydrophilic polymer with anionic groups on the surface, and reacting biopolymer is caused to react with reactive groups of the nonionic hydrophilic polymer in the presence of a reaction medium having a dielectric constant less than 10% of the dielectric constant of pure water; and

c) reacting a polyethylene imine substituted by an anionic hydrophilic polymer derived from a nonionic hydrophilic polymer having a cloud point which is at least 5° C. above the temperature at which the immobilized biopolymer is to be used, and having biopolymer-reactive groups, and reacting biopolymer forming covalent bonds with reactive groups of the nonionic polymer in a water-base reaction medium at a temperature which is more than 5° C. below the cloud point of the nonionic hydrophilic polymer in the reaction medium; thereby forming a hydrophilic outer surface layer comprising a covalently bonded biopolymer and comprising nonionic polymer.

5,250,614

GRAFT COPOLYMERS AND COATING COMPOSITIONS COMPRISING THE SAME

Ichiro Ono, Annaka, and Hiroshi Yoshioka, Tokyo, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed May 28, 1991, Ser. No. 706,427

Claims priority, application Japan, Jun. 1, 1990, 2-144223

Int. Cl.[5] C08L *29/04*

U.S. Cl. 525—58 **29 Claims**

1. A graft copolymer which comprises a vinyl polymer selected from the group consisting of a vinyl butyral/vinyl alcohol/vinyl acetate terpolymer and a vinyl formal/vinyl alcohol/vinyl acetate terpolymer, said vinyl polymer being grafted with an organopolysiloxane.

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5,250,615

POLYORGANOSILOXANE SERIES THERMOPLASTIC RESIN AND COMPOSITION THEREOF

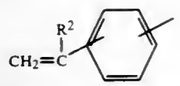
Yuji Yamamoto; Takashi Kurata; Kazuyoshi Nakazawa; Yusuke Tsuda, all of Tokyo; Junichiro Watanabe, Gunma; Makoto Matsumoto, Gunma; Akitsugu Kurita, Gunma, and Yuichi Funahashi, Gunma, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd. and Toshiba Silicone Co., Ltd., Tokyo, Japan

Division of Ser. No. 429,551, Oct. 31, 1989, Pat. No. 5,147,947.
This application Jun. 10, 1992, Ser. No. 883,220
Claims priority, application Japan, Oct. 31, 1988, 63-274727; Oct. 31, 1988, 63-274728; Nov. 8, 1988, 63-281603; Nov. 18, 1988, 63-290128
Int. Cl.[5] C08F *283/12*
U.S. Cl. 525—63 7 Claims

1. A thermoplastic resin composition comprising from 1 to 99% by weight of a polyorganosiloxane series thermoplastic resin comprising a graft copolymer (V) obtained by graft polymerizing at least n kind of a vinyl monomer (IV) to a modified polyorganosiloxane (III) obtained by condensing a mixture consisting essentially from 90 to 99.8% by weight of an organosiloxane (I) having a structure unit represented by the following formula

$$R^1_nSiO_{(4-n)/2}$$

wherein R^1 represents a monovalent hydrocarbon group or a monovalent hydrocarbon group substituted by halogen, cyano or a UV absorbing group, and n represents 0 or an integer of from 1 to 3, with from 10 to 0.2% by weight of a graft cross-linking agent (II) having both an unsaturated group represented by the following formula



wherein R^2 represents a hydrogen atom or an alkyl group having from 1 to 6 carbon atoms, and an alkoxysilyl group, and from 99 to 1% by weight of another polymer.

5,250,616

HIGH IMPACT POLYVINYL HALIDE COMPOSITIONS

Riley E. Asay, and David Mok, both of Austin, Tex., assignors to Vista Chemical Company, Houston, Tex.

Filed Apr. 9, 1992, Ser. No. 866,328
Int. Cl.[5] C08L *27/06, 33/04, 33/20, 55/02*
U.S. Cl. 525—84 4 Claims

1. A polyvinyl halide composition comprising:
from about 45 to about 75 percent by weight of a polyvinyl halide polymer:
from about 12 to about 50 percent by weight of copolymer of acrylonitrile, butadiene and styrene containing at least about 7 percent weight by acrylonitrile and at least about 60 percent by weight butadiene:
from about 5 to about 30 percent by weight of a copolymer of α-methyl styrene and acrylonitrile containing from about 30 to about 35 percent by weight acrylonitrile: and
from about 2 to about 4 percent by weight of a copolymer of ethylene and vinyl acetate containing about 45 percent by weight vinyl acetate.

5,250,617

POLYMER BLENDS CONTAINING ETHYLENE POLYMERS FOR FLEXIBLE FILMS

Karl-Erwin Piejko, Bergisch Gladbach; Hans Wunderlich, Leverkusen; Hans-Eberhard Braese, and Christian Lindner, both of Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 27, 1992, Ser. No. 919,262
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1991, 4125981
Int. Cl.[5] C08L *33/26, 33/08, 51/04, 33/20*
U.S. Cl. 525—85 2 Claims

1. Polymer blends of
(a) 10 to 60 parts by weight of a graft polymer of
(a.1) mixtures of 20 to 40% by weight acrylonitrile and 80 to 60% by weight styrene, styrene, alpha methyl styrene, para methyl styrene, alkyl methacrylates or mixtures thereof or
(a.2) methyl methacrylate, optionally mixed with 0 to 30% by weight styrene and/or 0 to 30% by weight alkyl acrylates and/or 0 to 19% by weight acrylonitrile on
(a.3) a particulate highly crosslinked alkyl acrylate rubber which may contain 0 to 30% by weight copolymerized dienes and which has an average particle diameter (d_{50}) of 80 to 1,000 nm, the graft polymers (a) having rubber contents of 30 to 80% by weight,
(b) 10 to 50 parts by weight of a partly crosslinked rubber-like copolymer of 5 to 40% by weight acrylonitrile, styrene, alkyl methacrylate or mixtures thereof and 95 to 60% by weight alkyl acrylate with a gel content of 20 to 99% by weight and an average particle diameter (d_{50}) of 100 to 600 nm and,
(c) optionally 5 to 40 parts by weight vinyl polymer comprising an uncrosslinked polymer of alpha methyl styrene, para methyl styrene, acrylonitrile, methacrylonitrile, esters of (meth)acrylic acid or mixtures of these monomers having intrinsic viscosities [η] (as measured in dimethyl formamide at 23° C.) of 0.3 to 1.5 dl/g and
(d) 1 to 40 parts by weight of an ethylene/vinyl acetate copolymer having vinyl acetate contents of 25 to 75% by weight.

5,250,618

BLENDS BASED ON VINYL AROMATIC POLYMERS WITH ENHANCED MECHANICAL CHARACTERISTICS

Gian C. Fasulo, San Silvestro; Dario Ghidoni, Gonzaga; Andrea Callaioli, Mantova, and Savino Matarrese, Verona, all of Italy, assignors to Montedipe S.r.l., Italy

Filed Feb. 13, 1991, Ser. No. 654,462
Claims priority, application Italy, Feb. 16, 1990, 19382 A/90
Int. Cl.[5] C08L *53/02*
U.S. Cl. 525—89 18 Claims

1. A blend based on vinyl aromatic polymers endowed with high mechanical properties even after successive processings at temperatures equal to or higher than 200° C., comprising:
from about 10 to 90% by weight of a vinyl aromatic polymer (A) formed by the polymerization of a vinyl aromatic monomer in the presence of both a linear block polymer and a diene rubber, wherein the vinyl aromatic polymer (A) contains from 0.5 to 5% by weight of a vinyl aromatic monomer-conjugated diene linear block polymer and from 5 to 15% of a diene rubber;
from about 5 to 50% by weight of a polyolefin (B); and,
from about 5 to 40% by weight of a vinyl aromatic monomer-conjugated diene linear block polymer (C) having a diene amount between 20 and 80% by weight, wherein the sum of the above three components is equal to 100.

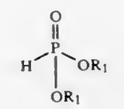
5,250,619

PROCESS FOR THE PREPARATION OF HIGH MOLECULAR WEIGHT POLYAMIDES

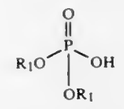
Hans-Detlef Heinz; Helmut Schulte, and Hans-Josef Buysch, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 16, 1990, Ser. No. 553,261
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1989, 3924680; Jul. 26, 1989, 3924681
Int. Cl.[5] C08L *77/00*
U.S. Cl. 525—92 5 Claims

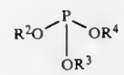
1. Process for the preparation of particulate, high molecular weight polyamides by a catalyzed solid phase after-condensation reaction characterized in that
A. low molecular weight, particulate polyamides having relative viscosities (1% by weight solution in m-cresol; 25° C.) in the range of from 2.4 to 5.5 are homogeneously mixed in the molten state with
B. at least one concentrate comprising
B.1 at least one phosphorus compound as catalyst for the after condensation reaction corresponding to the formulae (I) to (V)



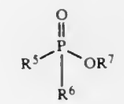
(I)



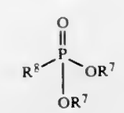
(II)



(III)



(IV)



(V)

wherein the symbols
R_1 denote, independently of one another, hydrogen or an (ar)alkyl group having 1 to 22 carbon atoms or an (alk)aryl group having 6 to 20 carbon atoms or alkali metal atoms or NH_4 and
R^2–R^4 and R^8 independently of one another denote C_{1-22}-(ar)alkyl radical or a C_{6-25}-(alk)aryl radical
R^5 and R^6 independently of one another denote H or an (ar)alkyl radical having 1 to 22 C atoms or an (alk)aryl radical having 6 to 25 C atoms.
R^7 independently of one another denote hydrogen or alkali metal atoms or NH_4, or are identical to R^2–R^4 and
B.2 a thermoplast selected from the group consisting of PA 6, PA 66, 6/66-copolyamides, PA 11, PA 12, 6/11- and 6/12-copolyamides, PA 610, PA 1010, PA 1012, polyether amides, polyether ester amides, PA 12/12, polyethylene, polypropylene, polystyrene, styrene/acrylonitrile copolymers, polymethyl methacrylate, thermoplastic polyurethanes, ethylene/propylene copolymers, copolymers of ethylene or propylene with higher alpha-olefins or acrylates, and butadiene/styrene block copolymers,
wherein the melt of A and B is cooled and granulated and the granulate is after-condensed in the solid phase at temperatures of about 145° to 195° C., the phosphorus content of the after-condensed polyamide granulate being in the range of from 5 to 300 ppm, based on the polyamide content, and the reaction rate of the after-condensation reaction being higher by at least 100% than that of a catalyst free polyamide, and, if the thermoplast B.2 is a polyamide, preparation of the concentrate B. is carried out by the polycondensation or polymerization of the polyamide-forming starting materials in the presence of the corresponding quantity of catalyst B.1.

5,250,620

HYDROPHILIC POLYVINYLPYRROLIDONE COMPOSITIONS HAVING A LOW COEFFICIENT OF FRICTION

Ashok M. Sarpeshkar, Upper St. Clair; Peter H. Markusch, McMurray, both of Pa., and Charles S. Gracik, McMechen, W. Va., assignors to Miles Inc., Pittsburgh, Pa.

Filed Nov. 21, 1991, Ser. No. 796,100
Int. Cl.[5] C08L *75/04*
U.S. Cl. 525—131 7 Claims

1. A hydrophilic composition which can absorb more than 50% by weight of water and which has a low coefficient of friction when wetted with an aqueous liquid, and which comprises the reaction product of:
a) from 1 to 50% by weight of a polyvinylpyrrolidone,
b) from 1 to 60% by weight of an organic monoisocyanate, and
c) from 2 to 65% by weight of an oxyalkylene group containing compound wherein no more than 30% of the oxyalkylene units are oxypropylene and which is selected from the group consisting of: polyoxyethylene diols, polyoxyethylene monohydroxy compounds, and polyoxyethylene/polyoxypropylene diols and polyoxyethylene/-polyoxypropylene monohydroxy compounds,
and wherein the percent by weights of components a), b) and c) total 100%.

5,250,621

INTERPOLYMERS OF AROMATIC POLYESTERS AND RUBBERS

Holger Lütjens, Cologne; Uwe Westeppe, Mettmann; Leo Morbitzer, Cologne; Karl-Erwin Piejko, Bergisch-Gladbach, and Christian Lindner, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 17, 1991, Ser. No. 716,219
Claims priority, application Fed. Rep. of Germany, Jun. 26, 1990, 4020256
Int. Cl.[5] C08G *63/79, 64/22, 77/445, 77/448*
U.S. Cl. 525—148 7 Claims

1. A process for the production of interpolymers of aromatic polyesters and cross-linked (or partially cross-linked) rubbers, said aromatic polyesters and rubbers being chemically linked together to form said interpolymers, wherein a mixture of i) a cross-linked rubber in latex form containing reactive groups capable of reacting with said aromatic polyesters as they are formed, and ii) an aqueous solution of an alkali metal or alkaline earth metal diphenolate, is reacted with a solution of a dicarboxylic acid halide and/or a carbonyl halide in a water-immiscible organic solvent, to form an aromatic polyester at the water/organic solvent phase boundary, which aromatic polyester goes over into the organic phase together with the rubber to form the interpolymer.

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5,250,622

POLYMER COMBINATIONS WITH A HIGH RUBBER CONTENT

Holger Lütjens, Cologne; Karl-Erwin Piejko, Bergisch Gladbach; Christian Lindner, Cologne, and Dieter Constant, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 23, 1992, Ser. No. 856,379

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1991, 4110974

Int. Cl.[5] C08G *63/79, 64/24;* C08L *67/03, 69/00*

U.S. Cl. 525—148 16 Claims

1. A process for the preparation of polymer combinations having a high rubber content from A) aromatic polyesters and B) at least partially cross-linked rubbers, wherein

1) an aqueous rubber latex having a rubber solids content of up to 65% by weight is mixed with an aqueous alkali metal diphenolate solution and a water immiscible organic solvent in a quantity of from 10 to 100 parts by weight per 100 parts by weight of rubber in the latex,

2) the mixture obtained according to 1) is reacted with dicarboxylic acid halides, carbonyl halides or mixtures thereof and

3) the polymer combination formed is recovered.

5,250,623

COMPATIBLE POLYMERIC MIXTURES

Werner Siol, Darmstadt-Eberstadt; Jens-Dieter Fischer, Bickenbach; Thomas Sufke, Robdorf; Erwin Felger, Darmstadt, and Klaus Frank, Muhltal, all of Fed. Rep. of Germany, assignors to ROHM GmbH, Darmstadt, Fed. Rep. of Germany

PCT No. PCT/DE91/00054, § 371 Date Jul. 10, 1991, § 102(e) Date Jul. 10, 1991, PCT Pub. No. WO91/11490, PCT Pub. Date Aug. 8, 1991

PCT Filed Jan. 21, 1991, Ser. No. 721,466

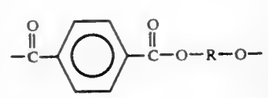
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1990, 4003088

Int. Cl.[5] C08L *33/08, 33/10, 67/02*

U.S. Cl. 525—176 8 Claims

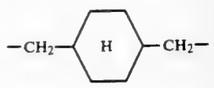
1. Compatible polymer blends with polyesters as mix components, wherein said polymer blends comprise

A) 0.1 to 99.9 wt. % of a halogen-free polyester synthesized from units of formula I



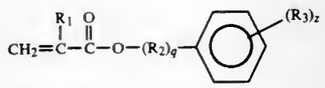
I

where R stands for a group $-(CH_2)_m-$ or for a group



and where m stands for a number from 2 to 6, and

B) 99.9 to 0.1 wt. % of a halogen-free polyaryl(meth)acrylate synthesized from 20–100 wt. % from monomers of formula II



II

where R_1 stands for hydrogen or methyl, R_2 stands for a spacing group having 1–6 members, R_3 stands for an alkyl group, alkoxyl group or aminoalkyl- or dialkyl group having 1 to 6 carbon atoms, q stands for zero or one and z stands for zero, one or two.

5,250,624

MISCIBLE BLENDS OF POLYAMIDES AND VINYLPHENOL CONTAINING POLYMERS

David M. Teegarden, Rochester; Christine J. T. Landry; Michael R. Landry, both of Honeoye Falls; Timothy E. Long, Hilton; Dennis J. Massa, Pittsford, and Ralph H. Colby, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 7, 1992, Ser. No. 879,679

Int. Cl.[5] C08L *77/00, 77/02*

U.S. Cl. 525—178 19 Claims

1. A miscible blend composition comprising (a) a polyamide selected from the group consisting of nylon 4; nylon 4.6; nylon 6; nylon 6.6; nylon 6.9; nylon 6.10; nylon 6.12; nylon 11; nylon 12; nylon 3Me6T; and nylon MXD-6 and (b) a vinylphenol containing polymer, wherein said miscible blend has a single glass transition temperature.

5,250,625

PROCESS FOR THE CROSS-LINKING OF HALOGENATED POLYMERS

Helfried Ehrend, Speyer, Fed. Rep. of Germany, assignor to Rhein Chemie Rheinau GmbH, Mannheim

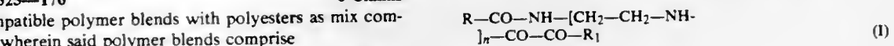
Filed Apr. 16, 1991, Ser. No. 686,131

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1990, 4013714

Int. Cl.[5] C08L *37/00, 39/00*

U.S. Cl. 525—182 16 Claims

1. Process for the cross-linking of a halogenated polymer selected from the group consisting of chlorinated polyethylene, epichlorohydrine rubber and epichlorohydrine ethylene oxide copolymer, wherein the polymer is subjected to the action of bis-(2,5-dithio-1,3,4-thiadiazole) or derivatives thereof in the presence of a basic material consisting of an amidamine corresponding to the following formula



(I)

wherein

R denotes a saturated or unsaturated hydrocarbon group having 6 to 22 C-atoms,

R_1 denotes alkyl, aryl, cycloalkyl, aralkyl or $R-COCH_2CH_2$ and

n denotes an integer from 1 to 10.

5,250,626

MISCIBLE BLENDS OF POLYPHOSPHAZENES AND ACIDIC FUNCTIONAL POLYMERS

Christine J. T. Landry, Honeoye Falls; Wayne T. Ferrar, Fairport, and David M. Teegarden, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

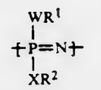
Filed Nov. 8, 1990, Ser. No. 610,673

Int. Cl.[5] C08G *79/02;* C08L *85/02*

U.S. Cl. 525—188 8 Claims

1. A miscible blend comprising

a) an etheric polyphosphazene comprising recurring units represented by the structural formula:



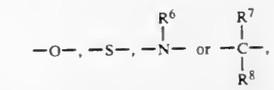
wherein

R^1 and R^2 each independently represents the formula $-(R^3-O)_n-R^4$ where n is 0 to 50 and n is 1 or more in at least half of the total substituents,

R^3 is randomly alkyl having from 2 to 4 carbon atoms between oxygen atoms,

R^4 is alkyl, alkylaryl, alkenyl, haloalkyl, aryl, substituted aromatic, aminoalkyl or thioalkyl,

W and X each independently represents



R^6, R^7 and R^8 each independently represents H, alkyl, alkenyl, alkynyl, haloalkyl, haloalkenyl, haloalkynyl, phenyl, substituted aromatic, aminoalkyl or thioalkyl, and

(b) a polymer made from a monomer or combination of monomers selected from the group consisting of acrylic acid, methacrylic acid, maleic acid, citriconic acid, 1-propene-1,2,3-tricarboxylic acid, a-chloroacrylic acid, fumaric acid, chlorofumaric acid, itaconic acid, vinylbenzoic acid, phenolic polymers (e.g., phenol formaldehyde resins), vinylphenol, N-(hydroxyphenyl)acrylamide, N-(hydroxyphenyl)methacryla-mide, hydroxyphenyl acrylate, hydroxyphenyl methacrylate, 3-sulfopropylmethacrylate, 2-acrylamido-2-methylpropane sulfonic acid, vinyl alcohol, vinyl chloride, 2-ethenylbenzenesulfonic acid, 4-ethenylbenzenesulfonic acid, 2-isopropenylbenzenesulfonic acid, 4-isopropenylbenzenesulfonic acid, α,α-bis(trifluoromethyl)-4-ethenylbenzenemethanol, and α,α-bis(trifluoromethyl)-4-isopropenylbenzenemethanol.

5,250,627

RUBBER COMPOSITION

Keisaku Yamamoto; Hideaki Yamada, both of Ichihara; Masahiro Fukuyama, Sodegaura, and Noriyasu Yasuda, Ichihara, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Feb. 5, 1992, Ser. No. 831,449

Claims priority, application Japan, Mar. 8, 1991, 3-043409

Int. Cl.[5] C08L *23/26, 9/02, 23/08*

U.S. Cl. 525—194 16 Claims

1. A rubber composition which comprises:

(A) an ethylene copolymer rubber comprising ethylene and (i) at least one compound selected from the group consisting of acrylates and methacrylates, or (ii) at least one member selected from the group consisting of acrylates and methacrylates, and an epoxy group-containing compound, wherein the molar ratio of the at least one member selected from the group consisting of acrylates and methacrylates to ethylene in component (A) is 50–15:50–85,

(B) a hydrogenated unsaturated nitrile-conjugated diene copolymer rubber, and

(C) a vulcanizing agent comprising an organic peroxide.

5,250,628

THERMOPLASTIC COMPOSITIONS WITH ELASTIC MEMORY AND A PROCESS FOR THEIR PREPARATION

Brigitte M. Seguela, Hinges, and Patrick Kaifasz, Lens, both of France, assignors to Elf Atochem S.A., Paris-La Defense, France

Continuation of Ser. No. 691,019, Sep. 16, 1991, abandoned. This application Feb. 4, 1993, Ser. No. 13,553

Claims priority, application France, Nov. 16, 1989, 89 15057

Int. Cl.[5] C08L *23/08, 23/16, 45/00*

U.S. Cl. 525—210 14 Claims

1. Thermoplastic composition with elastic memory comprising a mixture of about 5 to 20 parts by weight of polynorbornene, about 80 to 95 parts by weight of at least one polyolefin and an amount of plasticiser for polynorbornene sufficient for reducing its glass transition temperature down to the range of rubbers, characterised in that the polyolefin chosen is a composition comprising:

80 to 100% of at least one copolymer made of ethylene and at least one alpha-olefin chosen from propylene and 1-butene, said copolymer having a relative density between 0.850 and 0.890 and a flow index between 0.3 and 15 dg/min, and

0 to 20% of at least one propylene polymer.

5,250,629

GRAFT COPOLYMER AND PROCESS FOR PRODUCING THE SAME

Noriyuki Tani; Shuji Machida, and Toshinori Tazaki, all of Sodegaura, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Filed Dec. 6, 1991, Ser. No. 802,840

Claims priority, application Japan, Dec. 10, 1990, 2-407148; Mar. 29, 1991, 3-089073

Int. Cl.[5] C08F *4/00*

U.S. Cl. 125—268 15 Claims



1. A process for producing a styrenic graft copolymer which comprises copolymerizing a styrenic monomer and a styrenic monomer having a hydrocarbon radical with an unsaturated bond in the presence of a catalyst comprising as primary ingredients (A) a transition metal compound and (B) a contact product of an organoaluminum compound and a condensation agent and subsequently graft polymerizing an ethylenically unsaturated monomer onto the resultant styrenic copolymer.

5,250,630

PNEUMATIC TIRE

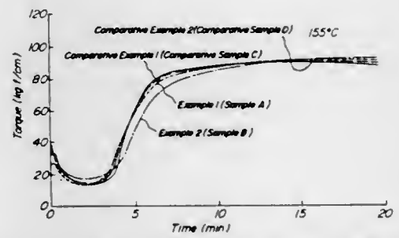
Nobumitsu Oshima, Kodaira; Takashi Kitamura, Musashimurayama; Ryota Fujio, Akigawa, and Kenji Matsuo, Kodaira, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Apr. 26, 1991, Ser. No. 691,879

Claims priority, application Japan, Apr. 27, 1990, 2-110652

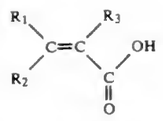
Int. Cl.[5] C08F *265/02, 267/02*

U.S. Cl. 125—301 5 Claims



1. A pneumatic tire comprising, in the tread of the tire, a rubber composition comprising, as a main rubber component, at least one modified, conjugated diene based polymer prepared by reacting an organic halogenating agent and an α, β-unsaturated carboxylic acid represented by the following formula:

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(I)

wherein R_1, R_2 and R_3 independently represent a hydrogen atom, a halogen atom, or an alkyl, alkenyl or allyl group having at most 5 carbon atoms, or a substituted alkyl, alkenyl or allyl group,

with a conjugated diene based polymer in an organic solvent, wherein the content of the α,β-unsaturated carboxylic acid is within the range between 0.1% and 5.0% based on the weight of the conjugated diene based polymer.

5,250,631

POLYMER COMPOSITIONS

James D. McCullough, Jr., Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 664,721, Mar. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 538,062, Jun. 13, 1990, abandoned. This application Oct. 1, 1991, Ser. No. 769,263

Int. Cl.[5] **C08L** *23/10, 23/26, 23/18;* **C08F** *297/08*

U.S. Cl. 525—322 **13 Claims**

1. A polypropylene impact polymer comprising

a) a homopolymer phase of predominantly homopolymeric polypropylene which is prepared in a first reactor, and

b) a terpolymer phase having polyethyleneic-type crystallinity prepared from three different monomers in a second reactor, said terpolymer phase containing 80 to 94 weight percent ethylene units (E_c), 1 to 15 weight percent of units (B_c) of an α-olefin of at least four carbon atoms and at least five weight percent propylene units (P_c) wherein P_c plus B_c equals 100 minus E_c, and wherein;

i) the relative crystallinity of said homopolymer phase to said terpolymer phase is between 0.8 and 2.0,

ii) said terpolymer phase comprises from about 5% by weight to about 26% by weight of said impact polymer,

iii) said homopolymer phase has a xylene solubles content equal to less than seven weight percent,

iv) said impact polymer is prepared by the sequential polymerization of said hompolymer phase then said terpolymer phase, wherein said three different monomers are polymerized in the presence of said predominantly homopolymeric crystalline polypropylene,

v) the ratio of the intrinsic viscosity of the terpolymer phase to the homopolymer phase is about 1.2 to about 3.0,

vi) propylene monomer is present in the second reactor at an amount of at least 8 mole % based on total monomers content of the second reactor, and

vii) said impact polymer has a melt flow from about 1 to about 70 dg/min.

5,250,632

HEIMD-CONTAINING POLYETHERAMINE CURATIVE FOR FLEXIBLE, TOUGHENED PRODUCTS

Harold G. Waddill; Wei-Yang Su; Michael Cuscurida, and Terry L. Renken, all of Austin, Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Filed Aug. 13, 1992, Ser. No. 928,583

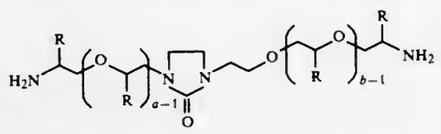
Int. Cl.[5] **C08G** *59/40, 59/62, 65/00*

U.S. Cl. 525—407 **4 Claims**

1. An epoxy resin composition comprising:

a) a diglycidyl ether of Bisphenol A having an epoxy equivalent weight of (EEW) 185 to 192, and an amount sufficient to provide

b) about 0.8 to 1.2 amino groups per oxirane group of an aminated propoxylated derivative of 1,2'-hydroxyethyl-2-imidazolidone (HEIMD) represented by the following:



wherein R is methyl and a+b=n, wherein n is a number from about 2 to 80, wherein the derivative has an equivalent weight of from about 105 to 185.

5,250,633

FIBERS AND FIBRETS FROM BLENDS OF POLYBEZIMIDAZOLES AND AROMATIC POLYAMIDES, AROMATIC POLYAMIDE-HYDRAZIDES OR AROMATIC POLYAMIDES CONTAINING HETEROCYCLIC LINKAGES

Gordon W. Calundann; Edward C. Chenevey, both of N. Plainfield, and Tai-Shung Chung, Randolph, all of N.J., assignors to Hoechst Celanese Corp., Somerville, Del.

Filed Jan. 29, 1991, Ser. No. 647,392

Int. Cl.[5] **C08L** *79/06, 79/08*

U.S. Cl. 525—420 **29 Claims**

1. Fibers or fibrets comprised of a blend of component polymers comprising from about 5 weight percent to about 95 weight percent of a polybenzimidazole and from about 95 weight percent to about 5 weight percent of an aromatic polyamide.

5,250,634

POWDER COATING COMPOSITION

Yuji Toyoda; Akimitsu Uenaka; Tasaburo Ueno, and Kouichi Tsutsui, all of Osaka, Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Jun. 28, 1991, Ser. No. 723,268

Claims priority, application Japan, Jul. 3, 1990, 2-176795

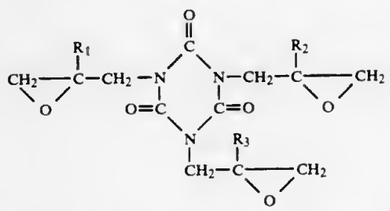
Int. Cl.[5] **C08L** *63/06;* **C08G** *59/14;* **C08F** *20/00*

U.S. Cl. 525—438 **3 Claims**

1. A powder coating composition comprising, as main components,

(A) a carboxyl group containing resin having a number average molecular weight of 1,000–30,000, an acid value of 5–200 KOH mg/g and a glass transition temperature of 20° C.–120° C., and

(B) a polyglycidyl compound having, on average, 2 to 6 glycidyl groups in its molecule, obtained by the addition reaction of a polyester oligomer having 2 or more carboxyl groups in its molecule and having a number average molecular weight of 200–1,200, with an epoxy compound of the formula (I):



in which R_1, R_2 and R_3 are the same or different groups and each represents hydrogen atom or methyl group, the ratio of carboxyl groups in said (A) resin to glycidyl groups in said (B) polyglycidyl compound being, in terms of functional group equivalent ratio, 0.5 to 2.0.

5,250,635

POLYCARBONATE COMPOSITION WITH REDUCED DRIP RATE ON BURNING

Douglas G. Powell, Coraopolis, and Sivaram Krishnan, Pittsburgh, both of Pa., assignors to Miles Inc., Pittsburgh, Pa.

Continuation of Ser. No. 662,048, Feb. 28, 1991, abandoned. This application Jul. 15, 1992, Ser. No. 914,816

Int. Cl.[5] **C08L** *69/00;* **C08K** *5/16*

U.S. Cl. 525—467 **6 Claims**

1. A transparent thermoplastic molding composition comprising

(a) a polycarbonate resin, and

(b) an agent selected from the group consisting of (i) a monomer conforming to

NCO—R—OCN

wherein R denotes a divalent aromatic radical containing 6 to 40 carbon atoms, and (ii) a partially cured compound polymerized from said monomer containing at least one cyanurate moiety and at least about 75 percent of free cyanate functionality relative to the original amount of cyanate as determined by infrared spectroscopy, said agent being present in amount sufficient to reduce the drip rate of said resin when tested in accordance with UL-94 ignition test said amount being about 0.25 to 1.0 percent relative to the weight of said composition.

5,250,636

POLY(ARYLENE THIOETHER-KETONE-KETONE) COPOLYMER AND PRODUCTION PROCESS THEREOF

Yoshikatsu Satake; Yoshiyuki Inaguma, and Jiro Masuko, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo K.K., Tokyo, Japan

Filed Apr. 18, 1991, Ser. No. 686,980

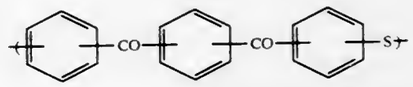
Claims priority, application Japan, Apr. 25, 1990, 2-109482; Mar. 8, 1991, 3-67550

The portion of the term of this patent subsequent to Sep. 28, 2017, has been disclaimed.

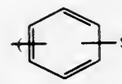
Int. Cl.[5] **C08G** *75/02, 75/14*

U.S. Cl. 525—471 **5 Claims**

1. A poly(arylene thioether-ketone-ketone) copolymer comprising (A) at least one poly(arylene thioether-ketone-ketone) segment having at least 50 wt. % recurring units of the formula



and (B) at least one poly(arylene thioether) segment having at least 50 wt. % recurring units of the formula



(a) the ratio of the total amount of the poly(arylene thioether) segment (B) to the total amount of the poly(arylene thioether-ketone-ketone) segment (A) ranging from 0.1 to 9 by weight,

(b) the weight-average molecular weight of the poly(arylene thioether) segment (B) being at least 200 but lower than 1000, and

(c) said copolymer having a melt viscosity of 2–100,000 poises as measured at 380° C., a shear rate of 1,200/sec, a melt crystallization temperature, Tmc (400° C./10 min) of at least 170° C. and a residual melt crystallization enthalpy, ΔHmc (400° C./10 min) of at least 10 J/g, wherein Tmc (400° C./10 min) and ΔHmc (400° C./10 min) are determined by a differential scanning calorimeter at a cooling rate of 10° C./min after the copolymer is held at 50° C. for 5 minutes in an inert gas atmosphere, heated at 400° C. at a rate of 75° C./min and then held for 10 minutes at 400° C.

5,250,637

SEMICONDUCTOR ENCAPSULATING EPOXY RESIN COMPOSITIONS AND SEMICONDUCTOR DEVICES

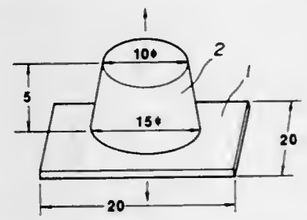
Toshio Shiobara, Annaka; Kazutoshi Tomiyoshi; Yasuo Tarumi, both of Takasaki, and Hiromasa Yamaguchi, Annaka, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Nov. 25, 1992, Ser. No. 981,209

Claims priority, application Japan, Nov. 25, 1991, 3-335610

Int. Cl.[5] **C08F** *283/10*

U.S. Cl. 525—487 **15 Claims**



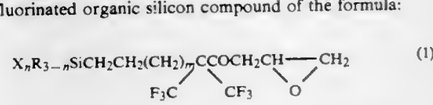
1. An epoxy resin composition for semiconductor encapsulation comprising

an epoxy resin,

a curing agent,

an inorganic filler, and

a fluorinated organic silicon compound of the formula:



(1)

wherein X is a hydrolyzable group, R is a substituted or unsubstituted monovalent hydrocarbon group, n is an integer of 1 to 3, and m is equal to 0 or 1.

5,250,638

EPOXY RESIN CURATIVES AND METHOD USING LACTONE-IMIDAZOLE COMPLEXES

Wei-Yang Su, and Harold G. Waddill, both of Austin, Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Continuation-in-part of Ser. No. 736,842, Jul. 29, 1991, abandoned. This application Oct. 1, 1992, Ser. No. 955,376

Int. Cl.[5] **C08G** *59/68, 65/10, 63/82*

U.S. Cl. 525—504 **6 Claims**

1. A composition comprising:

(1) a polyglycidylether epoxy resin, and

(2) an effective curing amount of an epoxy curing agent comprising a lactone-imidazole complex wherein the lactone-imidazole complex the lactone is selected from the group consisting of:

beta-butyrolactone,

gamma-butyrolactone,

epsilon-caprolactone, and

gamma-caprolactone;

and the imidazole is

1-isopropyl-2-methyl imidazole,

and

wherein the mole ratio of lactone-imidazole ranges from 1:1 to 2:1.

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5,250,639

POLYANILINE DERIVATIVES AND THEIR PRODUCTION PROCESS

Osamu Oka, Shizuoka, Japan, assignor to Tomoegawa Paper Co., Ltd., Tokyo, Japan

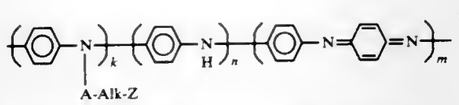
Filed Jul. 8, 1992, Ser. No. 909,530

Claims priority, application Japan, Jul. 9, 1991, 3-193565; Jan. 17, 1992, 4-25951; Jun. 23, 1992, 4-187326

Int. Cl.[5] C08F *283/00*

U.S. Cl. 525—540 **14 Claims**

1. A polyaniline derivative which is represented by the following formula (I) having a quinodiimine unit structure, an imino-1,4-phenylene unit structure and a N-polyether chain substituted imino-1,4-phenylene unit structure bonding at random to one another,



(I)

wherein k is an integer of at least 1, m and n each is zero or an integer of at least 1, k+m+n=10 to 5,000, m/(n+m)=0 to 1, Alk represents a polyether chain having a number average molecular weight of 100 to 100,000 as measured by GPC and having oxygen atoms at both terminals, A represents a linking group selected from the group consisting of the following formula (1) through (9),

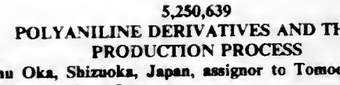


(1)

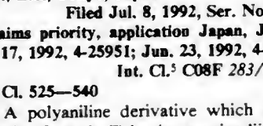
(2)

(3)

(4)



(5) (6) (7)



(8)

(9)

wherein R is a divalent hydrocarbon group having 1 to 30 carbon atoms, a divalent hydrocarbon group having 1 to 30 carbon atoms substituted with a halogen atom or COOM, wherein M is a hydrogen atom, Li, Na, K, Cs, Rb or NH_4, X represents an oxygen atom or a sulfur atom, Y represents an oxygen atom, a sulfur atom or —NH—, B represents a hydrocarbon group having 1 to 30 carbon atoms or an alkoxy group having 1 to 30 carbon atoms, and p is zero or an integer of 1 or 2, and Z represents a hydrogen atom, a hydrocarbon group having 1 to 30 carbon atoms, $R^1C(=O)$— or $R^1OC(=O)CH_2$—, wherein R^1 is a hydrogen atom, an alkyl group having 1 to 30 carbon atoms, an alkenyl group, a benzyl group, an aryl group, a substituted alkyl group having 1 to 30 carbon atoms, a substituted alkenyl group, a substituted benzyl group, or a substituted aryl group.

5,250,640

METHOD FOR PRODUCTION OF PARTICULATE HYDROGEL POLYMER AND ABSORBENT RESIN

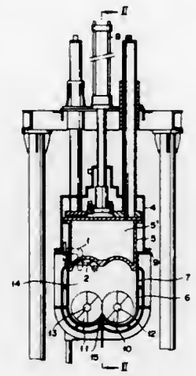
Yoshio Irie; Takumi Hatsuda, both of Himeji; Koichi Yonemura, Suita, and Kazumasa Kimura, Ikoma, all of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Filed Apr. 9, 1992, Ser. No. 865,865

Claims priority, application Japan, Apr. 10, 1991, 3-77921

Int. Cl.[5] C08F *2/10*

U.S. Cl. 526—88 **17 Claims**



1. A method for the production of a particulate hydrogel polymer by the exposure of a hydrogel polymer possessing a cross-linked structure to shear force in a vessel thereby finely dividing said hydrogel polymer, which method comprises exerting shear force repeatedly on said hydrogel polymer while keeping said hydrogel polymer at a temperature in the range of from 40° to 110° C. and applying a load on said hydrogel polymer in the range of from 0.01 to 1.5 kg/cm^2, wherein said vessel has an inner volume 1.1 to 1.8 times the volume of said hydrogel polymer.

5,250,641

CURING OF DENTAL RESIN

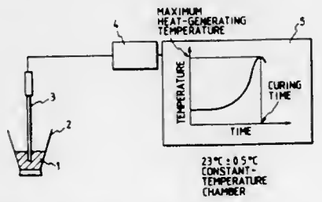
Tomohiro Kumagai, Kasugai, and Akira Hasegawa, Inuyama, both of Japan, assignors to GC Dental Products Corp., Kasugai, Japan

Filed Apr. 3, 1992, Ser. No. 863,416

Claims priority, application Japan, Nov. 13, 1991, 2-324111

Int. Cl.[5] C08F *4/44, 120/18*

U.S. Cl. 526—141 **10 Claims**



1. A method of curing a dental resin by polymerizing
(A) a polymerizable compound having at least one ethyienically unsaturated double bond in the presence of:
(B) a morpholine derivative,
(C) 1-cyclohexyl-5-ethylpyrimidinetrione,
(D) an organometal compound or compounds selected from the group consisting of acetylacetone copper, copper 4-cyclo-hexyl butyrate, copper acetate, acetylacetone manganese, manganese naphthenate, manganese octylate, acetylacetone cobalt (III), cobalt naphthenate, acetylacetone lithium, lithium acetate, acetylacetone zinc, acetylacetone nickel, nickel acetate, acetylacetone aluminum, acetylacetone calcium, acetylacetone chromium (III), acetylacetone iron (III), sodium naphthenate and rare earth octoate, and
(E) an organohaloger compound.

5,250,642

COPOLYMERS OF AMPHOLYTIC ION PAIRS CONTAINING VINYLIC TERTIARY AMINE AND OLEFINIC COMONOMERS

Iqbal Ahmed, and Henry L. Hsieh, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 20, 1992, Ser. No. 886,215

Int. Cl.[5] C08F *220/06, 230/02, 228/02*

U.S. Cl. 526—240 **20 Claims**

1. A composition comprising repeating units derived from: (a) an ampholytic ion pair which is prepared from a polymerizable vinylic tertiary amine-containing monomer selected from the group consisting of N-vinylimidazole, 1-methyl-2-vinylimidazole, 2-vinylimidazole, 4(5)-vinylimidazole, 2-vinylpyridine, 4-vinylpyridine, 2-dimethylaminoethyl methacrylate, 2-diethylaminoethyl methacrylate, 3-methacrylamidopropyldimethylammonium, 2-methacryloyloxyethyldimethylammonium, 3-methacrylamidobutyldimethylammonium, diallyldimethylammonium, 2-vinylquinoline, and mixtures thereof and an acid having an ethylenic moiety wherein said acid is selected from the group consisting of carboxylic acid, phosphoric acid alkali salts thereof, and mixtures thereof; (b) at least one comonomer selected from the group consisting of acrylamide, methacrylamide, acrylonitrile, acrylic acid, methacrylic acid, alkali salts of acrylic acid, alkali salts of methacrylic acid, 2-methacryloyloxyethyltrimethylamine, 2-acrylamido-2-methylpropane sulfonic acid, alkali salts of 2-acrylamido-2-methylpropane sulfonic acid, 2-methacryloyloxyethane sulfonic acid, alkali salts of 2-methacryloyloxyethane sulfonic acid, 2-methacrylamidopropyltri-methylamine, 3-methacrylamidopropyldimethylamine, 2-methacryloyloxyethyldiethylamine, styrene sulfonic acid, alkali salts of styrene sulfonic acid, and N-vinyl-2-pyrrolidone.

5,250,643

DIALKYLIDENECYCLOBUTANE/ACRYLATE COMPOSITION

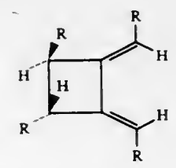
Larry S. Corley, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 733,947, Jul. 22, 1991, Pat. No. 5,147,953. This application May 28, 1992, Ser. No. 890,059

Int. Cl.[5] C08F *32/06*

U.S. Cl. 526—308 **4 Claims**

1. A composition comprising
(a) a polyacrylate monomer; and
(b) a 1,2-dialkylidenecyclobutane represented by the structural formula



in which each R is selected independently from the group consisting of hydrogen, $C_{1\text{-}10}$ alkyl, halo, aryl, alkoxy, aryloxy, alkylthio, arylthio and dialkylamino.

5,250,644

CROSSLINKABLE ACRYLIC RUBBER AND METHOD FOR PRODUCING THE SAME

Terumitsu Tokunaga, Toyonaka; Katunori Tanaka, and Michinori Kurava, both of Nara, all of Japan, assignors to Toyo Seal Kogyo Kabushiki Kaisha, Nara, Japan

Filed Jul. 30, 1991, Ser. No. 738,019

Claims priority, application Japan, Aug. 3, 1990, 2-207197

Int. Cl.[5] C08F *222/16, 220/10*

U.S. Cl. 526—318 **7 Claims**

1. An elastomeric acrylic copolymer consisting essentially of an acrylic acid ester and 0.2 to 15% by weight, based on said acrylic acid ester, of at least one partial ester of unsaturated polycarboxylic acid selected from the group consisting of an itaconic acid monoester, a fumaric acid monoester and an aconitic acid ester, said partial ester being an ester with an alkyl alcohol having 1 to 4 carbon atoms, wherein said copolymer is prepared in absence of diene rubber.

5,250,645

POLYMERISABLE COMPOSITIONS AND USE OF THESE COMPOSITIONS FOR SEALING SUBTERRANEAN ENVIRONMENTS

Robert Maurer, Saint Cyr Au Mont d'Or, France, assignor to Rhone-Poulenc Chimie, Courbevoie, France

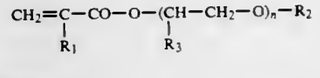
Continuation of Ser. No. 647,014, Jan. 29, 1991, abandoned. This application May 5, 1992, Ser. No. 879,136

Claims priority, application France, Jul. 30, 1990, 90 09922

Int. Cl.[5] C08F *18/00, 20/26, 20/68, 22/10, 118/00, 120/26, 120/68, 122/10, 218/00, 220/26, 220/68*

U.S. Cl. 526—320 **20 Claims**

1. A polymerisable aqueous composition comprising:
at least one water-soluble or dispersible monomer of formula (I):



(I)

wherein:
R_1 denotes a hydrogen atom or a methyl radical,
R_2 denotes a methyl or ethyl radical,
R_3 denotes a hydrogen atom or a methyl radical,
n is an integer from 3 to 6,
at least one initiator selected from alkali metal persulphates, ammonium persulphate and hydrogen peroxide,
at least one polymerisation accelerator, and
water.

5,250,646

PROCESS FOR THE PREPARATION OF METALLOPOLYSILANES, AND THEIR USE

Wilfried Kalchauer, Burghausen, Fed. Rep. of Germany, assignor to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Sep. 30, 1991, Ser. No. 767,583

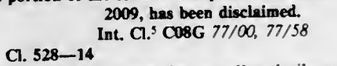
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1990, 4036988

The portion of the term of this patent subsequent to Nov. 24, 2009, has been disclaimed.

Int. Cl.[5] C08G *77/00, 77/58*

U.S. Cl. 528—14 **9 Claims**

1. A process for preparing metallopolysilanes, which consists essentially of reacting at least one disilane of the general formula



(1)

in which R is selected from the group consisting of a hydrogen atom and a monovalent hydrocarbon radical, R^1 is a monovalent alkyl group, and n is 2, 3, 4, 5 or 6, and optionally mixed with at least one compound of the general formula

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$$R^2_{4-m}Si(OR^4)_m \quad (II)$$

in which R^2 is is a monovalent hydrocarbon radical having from 1 to 12 carbon atoms, R^4 is the same as R^1, and m is 1, 2, 3 or 4, with at least one compound of the general formula

$$(R^5O)[A(OR^5)_{a-2}O]_xR^5 \quad (III)$$

where R^5 is the same as R^1, A is a metal selected from the group consisting of IIa, IIIa, IVa, Va, IIIb, IVb, and Vb of the Periodic Table, x is an integer of from 1 to 1,000, and a represents the valency of A, in the presence of at least one compound of the general formula

$$MOR^3 \quad (IV)$$

in which R^3 is the same as R^1, and M is an alkali metal atom.

5,250,647

ORGANOSILICON COMPOUNDS CONTAINING ALKENYL GROUPS, PROCESS FOR THEIR PREPARATION, AND USE OF THE SAME

Christian Herzig, Tachin am See, Fed. Rep. of Germany, assignor to Wacker-Chemie GmbH, Munich

Filed Feb. 19, 1992, Ser. No. 837,386

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1991, 4108334

Int. Cl.[5] C08G *77/08*

U.S. Cl. 528—15 **9 Claims**

1. An organosilicon compound containing alkenyl groups and having average units of the formula

$$A_aR_bSi(OR^1)_cO_{\frac{4-(a+b+c)}{2}} \quad (I)$$

in which R is selected from the group consisting of monovalent hydrocarbon radicals having from 1 to 18 carbon atom(s) per radical and monovalent halogenated hydrocarbon radicals having from 1 to 18 carbon atom(s) per radical, R^1 is selected from the group consisting of alkyl radicals having from 1 to 8 carbon atom(s) per radical and alkyl radicals having from 1 to 8 carbon atom(s) per radical which are substituted by one of more ether oxygen atom(s), a is 0 or 1, with an average of from 0.003 to 1.0, b is 0, 1, 2 or 3, with an average of from 0.0 to 3.0, c is 0, 1, 2 or 3, with an average of from 0.0 to 3.0, with the proviso that each molecule contains at least one radical A, where A is a radical of the formula

$$(H_2C{=}CR^4CHR^3O(R^5O)_v(R^2)_xH_{1-x}C{=}$$

$$|$$

$${=}CH_{2-y}(R^2(OR^5)_wOCHR^3CR^4{=}CH_2)_y$$

in which R^2 is an alkylene radical having from 1 to 4 carbon atom(s), R^3 is selected from the group consisting of a hydrogen atom and a methyl radical, R^4 is selected from the group consisting of a hydrogen atom, a methyl radical and an ethyl radical, R^5 is an alkylene radical having from 1 to 4 carbon atom(s), v is 0 or an integer and w is 0 or an integer, with the proviso that the radical A contains at least one spacer —(R-[5]O)—, and x is 0 or 1 and y is 0 or 1, with the proviso that the sum x+y is 1 or 2.

5,250,648

PREPARATION OF ORGANIC SILIZANE POLYMERS AND CERAMIC MATERIALS THEREFROM

John Huggins, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 29, 1992, Ser. No. 875,497

Claims priority, application Fed. Rep. of Germany, May 1, 1991, 4114217

Int. Cl.[5] C08G *77/06*

U.S. Cl. 528—21 **7 Claims**

1. A process for the preparation of an organic silazane polymer comprising

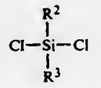
a) reacting at least one organochlorosilane of the formula



(I)

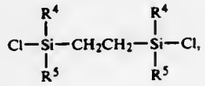
in which

R^1 is Cl, H, C_1- to C_4-alkyl or phenyl, optionally together with at least one organochlorosilane of the formula



(II)

or



(III)

in which

R^2, R^3, R^4 and R^5 each, independently is Cl, C_1- to C_4-alkyl, vinyl or phenyl, with ammonia in an inert solvent at a temperature from about −80° C. to 120° C. to form a product of ammonolysis, and

b) polymerizing the product of ammonolysis in the presence of a basic catalyst of the formula

$$R^6R^7R^8R^9N^+A^- \quad (IV)$$

in which

R^6, R^7, R^8 and R^9 each independently is an organic group having 1 to 24 carbon atoms, and

A^- is a basic anion capable of causing deprotonation, to form an organic silazane polymer.

5,250,649

MELT PROCESSABLE POLYURETHANEUREA COPOLYMERS AND METHOD FOR THEIR PREPARATION

Fidelis C. Onwumere, Miamisberg, and Donald D. Solomon, Spring Valley, both of Ohio, assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Jun. 29, 1990, Ser. No. 546,825

The portion of the term of this patent subsequent to Aug. 14, 2007, has been disclaimed.

Int. Cl.[5] C08G *18/00*

U.S. Cl. 528—44 **23 Claims**

1. A melt processable polyurethaneurea consisting essentially of a product reaction of a diisocyanate, a polyetherglycol, a diol chain extender, an amine terminated polyether and atmospheric moisture as a curing agent, said polyurethaneurea having amino end caps as a result of being cured with said atmospheric moisture.

5,250,650

CHIP RESISTANT POLYURETHANE COATING

Leon N. Boretzky, Wexford; Kurt E. Best, Pittsburgh; David C. McClurg, Carnegie, and Angela I. Wallace, Aliquippa, all of Pa., assignors to Miles Inc., Pittsburgh, Pa.

Filed Mar. 27, 1992, Ser. No. 858,822

Int. Cl.[5] C08G *18/70*

U.S. Cl. 528—67 **6 Claims**

1. An elastomeric polyurethane coating which is resistant to chipping and chemicals which is the reaction product of

a) a first component which includes

1) an aromatic polyamine and

2) a hydroxyl terminated polyether polyol or a hydroxyl terminated saturated polyester in amounts such that the equivalent ratio is from about 80 to about 97 parts polyamine 1) and from about 3 parts to about 20 parts of hydroxyl terminated polyether or polyester 2) with the sum of the parts of 1) plus 2) equal to approximately 100 parts; and

b) a second component which includes

3) an aromatic polyisocyanate and

4) a polyfunctional polyisocyanate adduct which is selected from the group consisting of polyfunctional aliphatic polyisocyanates and toluene diisocyanate-based aromatic polyisocyanate adducts in amounts such that the equivalent ratio is from about 50 to about 75 parts of polyisocyanate 3) and from about 25 to about 50 parts of polyisocyanate 4) with the sum of the parts of 3) plus 4) equal to approximately 100 parts.

5,250,651

CROSSLINKED POLYETHER POLYOL SEALANT

Jack L. Price, Austin, Tex., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 30, 1992, Ser. No. 969,408

Int. Cl.[5] C08G *18/30*

U.S. Cl. 528—59 **16 Claims**

1. A sealant composition comprising a urethane crosslinked polymer of monomers containing

a sufficient amount of at least one isocyanate component to provide from about 1 to 3 percent NCO wherein said isocyanate component contains at least one aliphatic isocyanate,

at least about 100 parts of a polyether component containing at least one polyether selected from the group consisting of polyether polyols and polyether polyamines, from about 0.005% to about 5.0% of an antioxidant, and from about 0.1% to about 10% of a catalyst, said urethane crosslinked polymer having an isocyanate index of from about 60 to about 80; wherein said sealant has a ¼ cone penetration value of from about 20 to about 200^{-1} mm, said isocyanate reacting with said polyether component to form said urethane crosslinked polymer when all ingredients are combined.

5,250,652

HIGH LOADING WATER-DISPERSIBLE UVA AND/OR UVB LIGHT-ABSORBING COPOLYMER

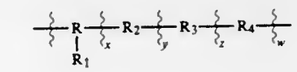
Matthew E. Langer, New City, N.Y., and Ferial Khorshahi, Leonia, N.J., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Jul. 30, 1992, Ser. No. 922,589

Int. Cl.[5] C08G *14/00*

U.S. Cl. 528—125 **11 Claims**

1. A copolymer having the formula:



wherein:

R is a difunctional aryl or alkyl group or a difunctional straight or branched alkyl chain containing 4 to 16 carbon atoms;

R_1 is hydrogen or an aliphatic group having 1 to 20 carbons, an aryl, an alkaryl, a secondary amine, an alkali metal sulfonate, an alkali metal carboxylate, an alkyl ether, or a halogen atom;

R_2 is a difunctional moiety absorbing UVA light at λmax;

R_3 is a charged moiety selected from the group consisting of a carboxylate salt, a sulfonate salt, and a quaternary ammonium derivative;

R_4 is a difunctional moiety absorbing UVB light at λmax;

x is selected such that the hydrophobe is present at 0 to 49.9 mol % of the polymer;

y is selected such that the R_2 group is present at 0 to 99.9 mol % of the polymer;

z is selected such that the R_3 group is present at 0.5 to 49.9 mol % of the polymer; and

w is selected such that the R_4 group is present at 0 to 99.9 mol % of the polymer;

wherein y must be greater than 0 if w is 0 and w must be greater than 0 if y is 0.

5,250,653

PHENOLIC NOVOLAK RESIN COMPOSITIONS CONTAINING 5-INDANOL AND THEIR USE IN RADIATION-SENSITIVE COMPOSITIONS

Medhat A. Toukhy, Barrington, R.I., assignor to OCG Microelectronic Materials, Inc., Cheshire, Conn.

Continuation of Ser. No. 713,894, Jun. 12, 1991, abandoned. This application Feb. 22, 1993, Ser. No. 21,634

Int. Cl.[5] C08G *8/04;* **G03F** *7/023, 7/32*

U.S. Cl. 528—153 **3 Claims**

1. A phenolic novolak resin composition comprising a condensation product of at least one aldehyde source with a phenolic source comprising 5-indanol and at least one unit of a phenolic monomer selected from the group consisting of phenol, cresols, xylenols, and trimethylphenols.

5,250,654

THERMOTROPIC LIQUID CRYSTALLINE POLYESTER COMPOSITIONS

Gregory R. Alms, Hockessin; Michael R. Samuels, Wilmington, and Marion G. Waggoner, Hockessin, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmingtoo, Del.

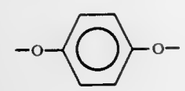
Filed May 4, 1992, Ser. No. 878,150

Int. Cl.[5] C08G *63/00, 63/02*

U.S. Cl. 528—193 **11 Claims**

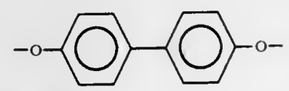
1. A thermotropic liquid crystalline polyester composition consisting essentially of recurring units of

structure (I),



(I)

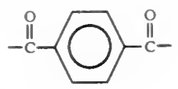
structure (II),



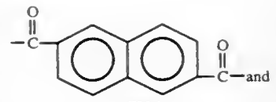
(II)

structure (III),

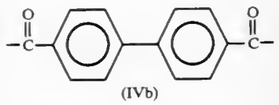
VOL 1155 ISS 1 OC 5 1993 UMI



structure (IV),

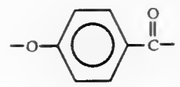


(IVa)



(IVb)

and
structure (V),



wherein the molar ratio of (I):(II) ranges from 65:35 to 40:60, wherein the molar ratio of (III):(IVa+IVb) ranges from 85:15 to 50:50, wherein the molar ratio of the total of (I) and (II) to the total of (III) and (IVa+IVb) is substantially 1:1, further wherein there are 100 to 400 moles of (V) per 100 moles of (I) plus (II), and further wherein the molar ratio of (IVb) to (IVa) is 0.001:1 to 2:1, having a melting point less than 365° C. and a heat distortion temperature greater than 200° C.

5,250,655

MELT PREPARATION OF POLYCARBONATE WITH METAL COMPOUND AND P COMPOUND CATALYSTS

Masuzo Yokoyama; Junji Takano, and Kazuhide Takakura, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company, Ltd., Tokyo, Japan

Filed Aug. 24, 1992, Ser. No. 934,716

Claims priority, application Japan, Sep. 24, 1991, 3-243673

Int. Cl.[5] C08G *64/30*

U.S. Cl. 528—200 **19 Claims**

1. A method for producing an aromatic polycarbonate which comprises melt polycondensing an aromatic diol and a carbonate diester in the presence of a metal-containing compound as ester interchange catalyst and in the presence of a compound selected from the group consisting of phosphorous acid, a phosphorous ester and mixtures thereof.

5,250,656

HIGH MOLECULAR WEIGHT POLYMETHYLENE ADIPATES

Reginald T. Agger, Leicester, Great Britain, assignor to Bostik, Inc., Middleton, Mass.

Filed Feb. 4, 1992, Ser. No. 830,412

Claims priority, application United Kingdom, Feb. 12, 1991, 9102950

Int. Cl.[5] C08G *63/82*

U.S. Cl. 528—279 **18 Claims**

1. Polymethylene adipate having a molecular weight M_n of at least about 30,000.

5,250,657

PROCESS FOR PREPARING POLYARYLENE THIOETHER

Eisbun Tsuchida; Hiroyuki Nishide; Kimihisa Yamamoto, all of Tokyo; Mitsutoshi Jikei, Saitama, and Junya Katoh, Tokyo, all of Japan, assignors to Seisan Kaihatsu Kagaku Kenkyusho, Kyoto, Japan

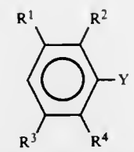
Filed Jan. 29, 1991, Ser. No. 646,546

Claims priority, application Japan, Jan. 29, 1990, 2-20181; Aug. 3, 1990, 2-207353

Int. Cl.[5] C08G *75/00, 75/20*

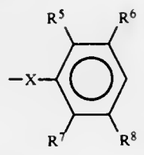
U.S. Cl. 528—383 **11 Claims**

1. A process for preparing a polyarylene thioether comprising the step of oxidatively polymerizing an aromatic compound of the formula:



(I)

where R^1, R^2, R^3 and R^4 are independently a hydrogen atom, a halogen atom, a lower alkyl group or a lower alkoxy group, and Y is a hydrogen atom or Y is a group of the formula:



(II)

wherein R^5, R^6, R^7 and R^8 are independently a hydrogen atom, a halogen atom, a lower alkyl group or a lower alkoxy group and X is —O—, —S—, a methylene group or an ethylene group with a sulfidizing agent halogenated sulfur compound in the presence of an acid and an oxidizing agent at a time and a temperature sufficient to effect such polymerization and to produce said polyarylene thioether.

5,250,658

ISOLATION OF POLYCARBONATE WITH CARBON DIOXIDE

Hanns-Ingolf Paul; Rolf Treckmann, both of Cologne; Günther Weymans; Jürgen Kirsch, both of Leverkusen, and Wolfgang Herrig, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 4, 1992, Ser. No. 940,566

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1991, 4130105

Int. Cl.[5] C08G *64/40*

U.S. Cl. 528—490 **4 Claims**

1. A process for isolating polycarbonate from methylene chloride by precipitation in fluid containing carbon dioxide comprising

a) forming a solution of polycarbonate in methylene chloride containing 10 to 40% by weight polycarbonate, based on the total weight of the polycarbonate solution,

c) combining said solution with fluid containing carbon dioxide in a two-component nozzle under a pressure of 50 to 300 bar and at a temperature of 40°to 80° C., to cause rapid precipitation of polycarbonate in the form of solid particles, said combining being controlled in such a way that polycarbonate does not get,

wherein the process is improved by the following measures:

f) adding a large excess of CO_2 of at least 7 to 15 parts by weight fluid containing carbon dioxide per part by weight of polymer solution and

g) reducing the CO_2 excess in 1 to 5 minutes to excesses of 4:1 to 2:1 per part by weight polycarbonate solution, and

h) avoiding the gel-forming range of the polycarbonate/-methylene chloride/CO_2 fluid system.

5,250,659

USE OF 1,3-DIOXACYCLOPENTANE AS A SOLVENT FOR POLYESTER RESINS

Linwood E. Bradford, Cambridge, Mass.; Patricia Flannagan, Allamuchy, and Ronald J. Caimi, Somerset, both of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed May 8, 1992, Ser. No. 880,633

Int. Cl.[5] C08J *3/02*

U.S. Cl. 528—494 **8 Claims**

1. A solution of a substantially linear polyester resin by weight total of 100 parts comprising:

(A) 15–40 parts of polyester resin comprising the polymerized residues of dibasic acids and diols, dibasic anhydrides and diols, the lower alkyl esters of dibasic acids and diols, and combinations of those, and

(B) at least 60 parts of solvent comprising by weight of the solvent

(i) 25–100% 1,3-dioxacyclopentane, and

(ii) 0–75% non-halogenated cosolvent.

5,250,660

PEPTIDE PURIFICATION PROCESS

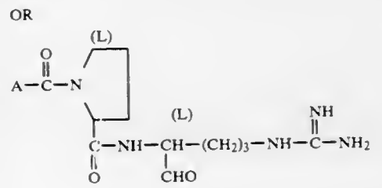
Robert T. Shuman, Greenwood, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 12, 1991, Ser. No. 790,884

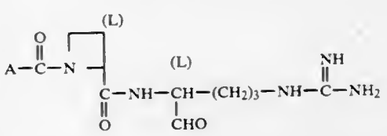
Int. Cl.[5] A61K *37/02;* **C07K** *5/00*

U.S. Cl. 530—344 **8 Claims**

1. A method for purifying a compound of the formulae



1

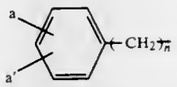


2

which comprises chromatographing said compound on a reversed phase high pressure liquid chromatogram by gradient elution with a gradient comprising an organic phase of about 2% to about 40% by volume of eluant of acetonitrile in an aqueous phase comprising a dilute sulfuric acid at a pH between about 2 and about 3; adjusting the pH of the eluate to about 4 to about 6.5 with a water insoluble basic resin; separating the resin from the eluate; and, removing the water from the eluate; wherein A is 1) a group of the formula



wherein R is a phenyl group of the formula



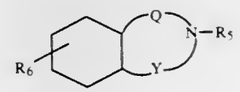
wherein a and a' independently are hydrogen, lower alkyl, lower alkoxy, halogen, trifluoromethyl, hydroxy, hydroxymethyl, amino, or aminomethyl; and n is 0 or 1; or R is thienyl, furyl, naphtyl, or naphthyl mono- or disubstituted by lower alkyl, lower alkoxy, halogen, amino, mono- or di-(lower alkyl-)amino, or hydroxy; or R is cyclohexadienyl, cyclohexenyl, cyclohexyl or cyclopentyl;

R_1 is hydrogen, methyl or ethyl;

B is lower alkyl, lower alkoxy, hydroxy, or an amino group of the formula

wherein R_2 and R_3 independently are hydrogen or lower alkyl, or R_2 is hydrogen, and R_3 is C_1–C_6 alkanoyl, halo substituted C_2–C_6 alkanoyl, or an oxycarbonyl group of the formula

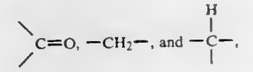
wherein R_4 is C_1–C_6 alkenyl, C_3–C_7 cycloalkyl, benzyl, nitrobenzyl, diphenylmethyl, or a phenyl group as defined above; provided, that when R_1 is methyl or ethyl, B is other than methyl or ethyl; 2) a bicyclic group of the formula 3



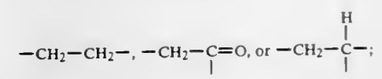
3

wherein

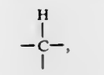
Q is a one carbon radical represented by



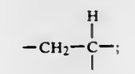
or a two carbon radical represented by



Y is a one carbon radical represented by

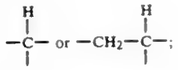


or a two carbon radical represented by



provided that one, but not both, of Q and Y is

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and, provided further, that only one of Q and Y is a two carbon radical;

R_5 is hydrogen or an oxycarbonyl group, R_4—OC(O)—, as defined above; and R_6 is hydrogen, lower alkyl, lower alkoxy, halogen, hydroxy, trifluoromethyl, carboxy, carbamoyl, or aminosulfonyl; and the dotted circle within the 6-membered ring indicates an aromatic ring or a perhydro ring;

and the salts thereof formed with sulfuric acid.

5,250,661

ESTABLISHED CELL LINE

Yoshiyuki Kanai, Tokyo, and Akira Awaya, Yokohama, both of Japan, assignors to Mitsui Toatsu Chemicals Incorporated, Tokyo, Japan

Division of Ser. No. 798,043, Nov. 27, 1991, Pat. No. 5,132,222, which is a continuation of Ser. No. 651,118, Feb. 5, 1991, abandoned, which is a continuation of Ser. No. 917,056, Oct. 19, 1986, abandoned. This application May 5, 1992, Ser. No. 878,451

Claims priority, application Japan, Oct. 15, 1985, 227709

Int. Cl.[5] **C07K** *13/00, 15/00, 15/06;* **A61K** *37/02*

U.S. Cl. 530—351 **1 Claim**

1. A concentrated supernatant containing a B cell differentiation factor produced by a cell line having all the identifying characteristics of cell line KML_1-7, deposit number 86/091801.

5,250,662

ALBUMIN PURIFICATION

Chong E. Chang, La Canada, Calif., assignor to Alpha Therapeutic Corporation, Los Angeles, Calif.

Continuation of Ser. No. 417,287, Oct. 5, 1989, abandoned. This application Feb. 27, 1992, Ser. No. 842,749

Int. Cl.[5] **C07K** *3/22, 15/06*

U.S. Cl. 530—364 **16 Claims**

1. A process for separating albumin from an impure protein fraction comprising albumin and unwanted protein contaminants, the process comprising the steps of:

a) providing a first aqueous solution containing the impure protein fraction;

b) adjusting the pH of the first aqueous solution to a value of from about 4.5 to about 4.7 to precipitate protein contaminants; and

c) purifying the albumin further by ion-exchange chromatography, wherein the ion-exchange chromatography steps consist essentially of:

binding soluble protein contaminants in the first aqueous solution to an anion-exchange resin;

separating the precipitated contaminants and the anion-exchange resin-bound contaminants from the first aqueous solution to provide a second aqueous solution containing albumin;

adjusting the pH of the second aqueous solution to a value of from 5.0 to about 6.1 to precipitate protein contaminants;

binding additional soluble protein contaminants in the second aqueous solution to an anion-exchange resin; and

separating the precipitated contaminants and the anion-exchange resin-bound contaminants from the second aqueous solution to provide a third aqueous solution containing albumin.

5,250,663

PREPARING ESSENTIALLY MONOMERIC NORMAL HUMAN SERUM ALBUMIN

Robert A. Tenold, Suisun City, Calif., assignor to Miles Inc., Berkeley, Calif.

Division of Ser. No. 511,362, Apr. 19, 1990. This application Mar. 9, 1992, Ser. No. 848,439

Int. Cl.[5] **C07K** *3/24, 15/06*

U.S. Cl. 530—364 **2 Claims**

1. A method of preparing human albumin which is substantially monomeric essentially free of aluminum contaminants and remains so during extended storage, comprising the sequential steps of:

A. adding water to an albumin source to make a first suspension;

B. adjusting the pH of said first suspension to less than 5;

C. removing solids from said first suspension;

D. adjusting the pH to from about 5 to about 6;

E. adding sodium caprylate and ethanol to form a 10 to 20% alcohol second suspension;

F. elevating the temperature of the resulting second suspension to a range of temperatures above said second suspension starting temperature, said range of temperatures being from about 20° C. to about 50° C.;

G. maintaining said second suspension at the elevated temperature for a period of at least about one hour;

H. reducing the second suspension temperature to a range of temperatures less than about 10° C.;

I. removing the solids from the second suspension; and then

J. diafiltering the resultant filtrate while at a pH of from about 6 to about 8.5 with an ionic diafiltration buffer.

5,250,664

PROCESS FOR TANNING PROTEIN SUBSTANCES, IN PARTICULAR VEGETABLE PROTEIN SUBSTANCES SUCH AS THE PROTEINS OF OIL SEEDS AND TANNED PROTEIN SUBSTANCES OBTAINED USING THIS PROCESS

Jacques P. Fromont, Lesigny, and Claude Portilla, Bayonne, both of France, assignors to Societe Nationale De Commercialisation Des Oleagineux Du Senegal, Dakar, Senegal

Filed Oct. 16, 1991, Ser. No. 778,448

Claims priority, application France, Oct. 19, 1990, 90 12979

Int. Cl.[5] **K23J** *3/00;* **A23K** *1/18*

U.S. Cl. 530—377 **12 Claims**

1. A process for processing protein substance from the deaminating action of the digestive flora, said process comprising;

obtaining a protein substance susceptible to the deaminating action of the digestive flora; and

preparing a solution of a strong acid partially degraded dithiocarbamate; and

treating the protein substance with said partially degraded dithiocarbamate.

5,250,665

SPECIFICALLY β-β CROSS-LINKED HEMOGLOBINS AND METHOD OF PREPARATION

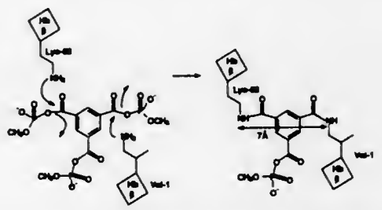
Ronald Kluger, Don Mills, and Jolanta Wodzinska, Scarborough, both of Canada, assignors to The University of Toronto Innovations Foundation, Toronto, Canada

Continuation-in-part of Ser. No. 707,350, May 31, 1991, abandoned. This application Aug. 16, 1991, Ser. No. 746,372

Int. Cl.[5] **C07C** *103/52;* **C07K** *13/00;* **A61K** *35/14*

U.S. Cl. 530—385 **36 Claims**

1. A modified hemoglobin comprising hemoglobin which is intramolecularly cross-linked between the epsilon amino group lysine 82 of a first β chain of the hemoglobin and the alpha amino group valine-1 of a second β chain of the hemoglobin, which has a distance between the β chains at the cross-link between about 5 to 9 angstroms, and which is obtained by cross-linking hemoglobin with a cross-linking reagent comprising an aromatic- or aliphatic-derived acyl material having at least two anionic leaving groups each anionic leaving group being adjacent to an electrophile group, said cross-linking reagent being selected such that a first electrophile group



reacts covalently with the epsilon amino group lysine 82 of a first β chain of said hemoglobin and a second electrophile group reacts covalently with the alpha amino group valine-1 of a second β chain of said hemoglobin.

5,250,666

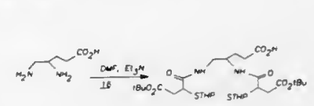
RADIONUCLIDE METAL CHELATES FOR THE RADIOLABELING OF PROTEINS

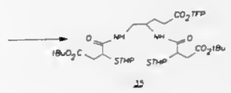
Linda M. Gustavson, Seattle; Ananthachari Srinivasan; Sudhakar Kasina, both of Kirkland, and Alan R. Fritzberg, Edmonds, all of Wash., assignors to NeoRx Corporation, Seattle, Wash.

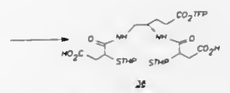
Division of Ser. No. 577,959, Sep. 5, 1990, Pat. No. 5,164,176, which is a continuation-in-part of Ser. No. 367,502, Jun. 16, 1989, abandoned. This application Nov. 6, 1992, Ser. No. 973,048

Int. Cl.[5] **A61K** *43/00*

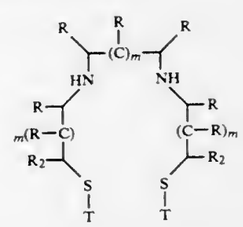
U.S. Cl. 530—391.5 **16 Claims**







1. A compound of the formula:



wherein:

each R independently represents =O, H_2, lower alkyl, $-(CH_2)_n-COOH$, or R_1-Z;

n is 0 to 3;

R_1 represents a lower alkyl or substituted lower alkyl group;

Z represents a protein conjugation group or a antibody or antigen binding fragment of said antibody;

each R_2 independently represents H_2, lower alkyl, $-(CH_2)_n-COOH$, or R_1-Z;

each m is 0 or 1, with at most one m = 1;

each T represents a sulfur protecting group; and

the compound comprises at least one $-(CH_2)_n-COOH$ substituent and one $-R_1-Z$ substituent.

5,250,667

1-[(HYDROXYPHENOXY)PHENYLENE]TRIAZENES, POLYMERS CROSSLINKED THEREWITH, AND METHODS THEREFOR

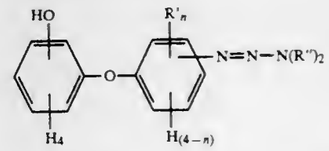
Aldrich N. K. Lau, Palo Alto, and Lanchi P. Vo, San Jose, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Sep. 9, 1992, Ser. No. 943,093

Int. Cl.[5] **C07C** *245/24;* **C08L** *71/12*

U.S. Cl. 534—554 **7 Claims**

1. A compound of the structure



where —R′ is —F, $-CF_3$, —CN, or —Cl; each —R″, which may be the same or different, is independently selected from the group consisting of C_1-C_6 alkyl or hydroxyalkyl moieties and aryl moieties; and n is 0 or 1.

5,250,668

PRODUCTION AND USE OF PORPHYRIN DERIVATIVES AND OF COMPOSITIONS CONTAINING SUCH DERIVATIVES

Alan R. Morgan, 3750 County Rd. E., Swanton, Ohio 43558, and Steven H. Selman, 4534 Granville Ct., Toledo, Ohio 43615

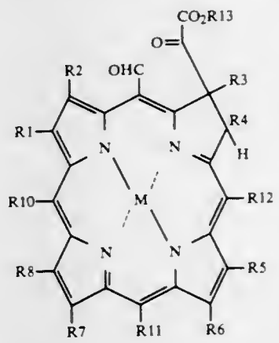
Continuation-in-part of Ser. No. 562,168, Aug. 3, 1990, Pat. No. 5,109,129, which is a continuation-in-part of Ser. No. 448,738, Dec. 11, 1989, Pat. No. 4,988,808, which is a continuation-in-part of Ser. No. 142,034, Jan. 11, 1988, abandoned. This application Jan. 8, 1992, Ser. No. 818,133

Int. Cl.[5] **C07F** *1/08, 3/06, 15/00, 15/02*

U.S. Cl. 540—145 **4 Claims**

1. As a composition of matter, a metal complex of a porphyrin derivative having the structure of FIG. 10, below:

FIG. 10



wherein

M comprises a metal cation that is complexed with two of

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the nitrogens of the porphyrin derivative and is Ag, Al, Ce, Co, Cr, Cu, Dy, Er, Eu, Fe, Ga, Gd, Hf, Ho, In, La, Lu, Mn, Mo, Nd, Pb, Pd, Pr, Pt, Rh, Sb, Sc, Sm, Sn, Tb, Th, Ti, Tl, Tm, U, V, Y, Yb, Zn or Zr,

R13 is an alkyl group other than t-butyl having from 1 to 4 carbon atoms, and each of R1 through R8 and R10 through R12 is H or CHO,

an alkyl group other than t-butyl having from 1 to 4 carbon atoms,

n alkylene group having from 2 to 4 carbon atoms,

a group having the formula $R_2N(R_3)_2$ where R_2 is a bivalent aliphatic hydrocarbon radical having from 1 to 4 carbon atoms, wherein any carbon to carbon bond is either a single or a double bond, and not more than one is a double bone; R_3 is hydrogen or an alkyl radical having from 1 to 2 carbon atoms and the two R_3 groups can be the same or different,

a group having the formula $R_2N(R_4)_3$ A where R_2 is a bivalent aliphatic hydrocarbon radical having from 1 to 4 carbon atoms, wherein any carbon to carbon bond is either a single or a double bond, and not more than one is a double bond; A is a physiologically acceptable anion and R_4 is an alkyl group having from 1 to 2 carbon atoms and the three R_4 groups can be the same or different,

a group having the formula R_2OH were R_2 is a bivalent aliphatic hydrocarbon radical having from 1 to 4 carbon atoms, wherein any carbon to carbon bond is either a single or a double bond, and not more than one is a double bond, or

CO_2R', CH_2CO_2R' or $CH_2CH_2CO_2R'$ where R' is H, or an alkyl group other than t-butyl having from two to four carbon atoms, with the proviso that not more than one of R1 through R8, and R10 through R12 is CHO, a group having the formula $R_2N(R_3)_2$, or a group having the formula $R_2N(R_4)_3A$.

5,250,669

PHOTOSENSITIVE COMPOUND

Kazufumi Ogawa, Hirakata; Masayuki Endo, Izumi; Keiji Ohno, Sakado, and Mamoru Nagoya, Saitama, all of Japan, assignors to Wako Pure Chemical Industries, Ltd. and Matsushita Electric Industrial Co., Ltd., both of Osaka, Japan

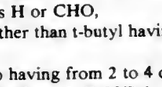
Continuation of Ser. No. 676,471, Mar. 27, 1991, abandoned, which is a continuation of Ser. No. 277,742, Nov. 30, 1988, abandoned. This application Apr. 23, 1992, Ser. No. 873,490

Claims priority, application Japan, Dec. 4, 1987, 62-306878; Dec. 7, 1987, 62-309336; Dec. 8, 1987, 62-310737

Int. Cl.[5] **C07C** *245/00;* **G03F** *7/022*

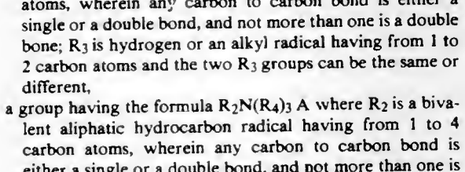
U.S. Cl. 534—557 **12 Claims**

1. A compound represented by the formula:

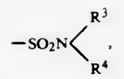


(I)

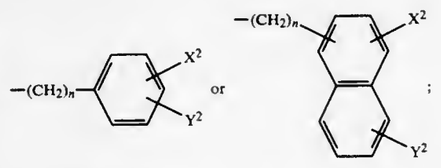
wherein R^1 is



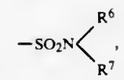
X^1 and Y^1 are independently a hydrogen atom, a halogen atom, a lower alkyl group having 1 to 5 carbon atoms, a lower alkoxy group having 1 to 5 carbon atoms, $—SO_2Cl$, $—SO_2Br$,



$—SO_3H$ or $—SO_3R^5$; R^3 and R^4 are independently a hydrogen atom or a lower alkyl group having 1 to 5 carbon atoms which may have one or more substituents, or R^3, R^4 and N taken together may form a heterocyclic ring; R^5 is a lower alkyl group having 1 to 5 carbon atoms; the $—SO_2Cl$ or $—SO_2Br$ group may include a quaternary salt thereof; the $—SO_3H$ group may include an ammonium salt thereof, an organic base salt thereof and a quaternary salt thereof; m is an integer of 1 to 20; R^2 is an alkyl group, a cycloalkyl group, a hydroxyalkyl group, an alkoxyalkyl group,



X^2 and Y^2 are independently a hydrogen atom, a halogen atom, a lower alkyl group having 1 to 5 carbon atoms, a lower alkoxy group having 1 to 5 carbon atoms, $—SO_2Cl$, $—SO_2Br$,



$—SO_3H$ or $—SO_3R^8$; R^6 and R^7 are independently a hydrogen atom or a lower alkyl group having 1 to 5 carbon atoms which may have one or more substituents, or R^6, R^7 and N taken together may form a heterocyclic ring; R^8 is a lower alkyl group having 1 to 5 carbon atoms; the $—SO_2Cl$ or $—SO_2Br$ group may include a quaternary salt thereof; the $—SO_3H$ group may include an ammonium salt thereof, an organic base salt thereof and a quaternary salt thereof; n is an integer of 1 to 20.

5,250,670

WATER-SOLUBLE MONOAZO COMPOUNDS CONTAINING FIBER-REACTIVE GROUPS OF VINYL SULFONE SERIES AS WELL AS TRIAZINYL RADICAL, AND PROCESS FOR DYEING WITH SAME

Ludwig Schläfer, Kelkheim, and Werner H. Russ, Flörsheim am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

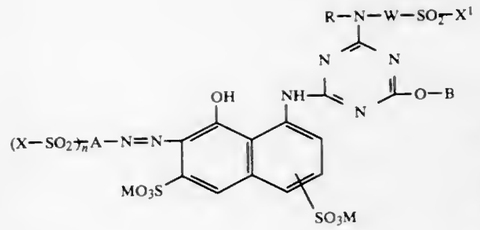
Filed Sep. 24, 1992, Ser. No. 950,930

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1991, 4132223

Int. Cl.[5] **C09B** *62/51;* **D06P** *1/384*

U.S. Cl. 534—642 **17 Claims**

1. A monoazo compound of the formula



in which

A is phenylene unsubstituted or substituted by 1 to 2 substituents, or is naphthylene unsubstituted or substituted by sulfo;

X is vinyl, or is ethyl substituted by a substituent which is eliminated by alkali with formation of the vinyl group;

n is the number 1 or 2;

M is hydrogen or an alkali metal;

R is hydrogen or alkyl or 1 to 4 carbon atoms;

W is alkylene of 2 to 4 carbon atoms;

X^1 is vinyl, or is ethyl substituted by a substituent which is eliminated by alkali with formation of a vinyl group;

B is alkyl of 1 to 4 carbon atoms;

the group $—SO_3M$ bound to the 8-naphthol moiety, is bound in the 3- or 4-position.

5,250,671

UNSYMMETRICAL 1:2 CHROMIUM COMPLEX DYESTUFFS

Winfried Mennicke, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

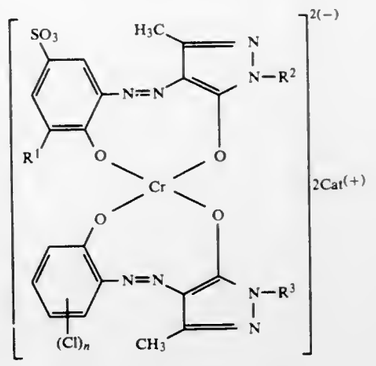
Filed Sep. 8, 1992, Ser. No. 941,493

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1991, 4130806

Int. Cl.[5] **C09B** *45/16, 45/48;* **D06P** *1/10*

U.S. Cl. 534—698 **7 Claims**

1. An unsymmetrical 1:2 chromium complex dyestuff of the formula

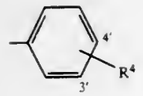


(I)

in which

R^1 represents hydrogen, chlorine or nitro,

R^2 and R^3, independently of one another, represent hydrogen or a radical of the formula



in which

R^4 represents alkyl which is bound to the phenyl ring in the 3' or 4' position,

with the proviso that one of the radicals R^2, R^3 denotes hydrogen,

n represents 1 or 2 and

$Cat^{(+)}$ represents a cation.

5,250,672

CONTRAST AGENT FOR NMR IMAGING

Peter J. Sadler, Pitstone, and Charles T. Harding, Long Croft, both of England, assignors to Guerbet S.A., Villepinte, France

PCT No. PCT/GB86/00540, § 371 Date Jun. 30, 1987, § 102(e) Date Jun. 30, 1987, PCT Pub. No. WO87/01594, PCT Pub. Date Mar. 26, 1987

PCT Filed Sep. 11, 1986, Ser. No. 48,091

Claims priority, application United Kingdom, Sep. 11, 1985, 8522535

Int. Cl.[5] **C07H** *17/02, 23/00;* **G01N** *24/00;* **A61B** *5/05*

U.S. Cl. 536—7.3 **11 Claims**

1. An NMR diagnostic agent comprising a polysaccharide selected from the group consisting of dextran, dextrin, cellulose, Sepharose and starch, to which are chemically linked by a cyanogen bromide linkage both a nitroxyl spin label compound and an organic complexant consisting of an aminopolyacetic acid to which is complexed a paramagnetic metal ion having an atomic number selected from the group consisting of 58 to 70, 42, 44 and 21 to 29, wherein the organic complexant forms a chelate with the said paramagnetic metal ion.

5,250,673

2'-DEOXY-5-SUBSTITUTED URIDINE DERIVATIVES

Setsuro Fujii, Toyonaka; Jun-ichi Yamashita, Tokusbima; Hiroshi Matsumoto, Tokushima; Setsuo Takeda, Tokushima; Tadafumi Terada, Tokushima; Mitsugi Yasumoto, Tokushima, and Norio Unemi, Tokushima, all of Japan, assignors to Taiho Pharmaceutical Company, Ltd., Tokyo, Japan

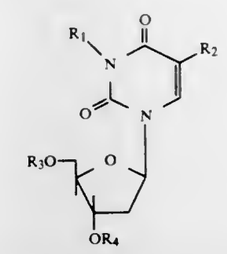
Continuation of Ser. No. 163,237, Feb. 26, 1988, Pat. No. 4,886,877, which is a cootinuation of Ser. No. 611,678, May 18, 1984, abandoned. This application Oct. 17, 1989, Ser. No. 422,721

Claims priority, application Japan, May 23, 1983, 58-91190; Sep. 14, 1983, 58-170147; Sep. 14, 1983, 58-170149

Int. Cl.[5] **C07H** *19/073*

U.S. Cl. 536—28.55 **7 Claims**

1. A 2'-deoxy-5-substituted uridine compound of the formula (I),



(I)

wherein R_1 is hydrogen, benzoyl or tetrahydrofuranyl; R_2 is fluorine; and one of R_3 and R_4 is hydrogen and the other one is ethyl, alkenyl having 2 to 6 carbon atoms, benzyl or benzyl

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having substituents selected from the group consisting of halogen, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms and nitro.

5,250,674

Patent Not Issued For This Number

5,250,675

Patent Not Issued For This Number

5,250,676

PROCESS FOR THE PREPARATION OF 3-SUBSTITUTED-2-AZETIDINONES

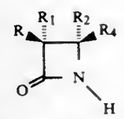
Catherine M. Gasparski, Irvine, Calif.; Marvin J. Miller, South Bend, and Min Teng, Mishawaka, both of Ind., assignors to University of Notre Dame du Lac, Notre Dame, Ind.

Filed Mar. 23, 1992, Ser. No. 855,402

Int. Cl.[5] **C07D** *205/85, 205/08;* **C07F** *39/00, 45/06*

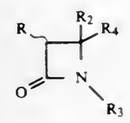
U.S. Cl. 540—200 **6 Claims**

1. A process for the preparation of compounds of the formula



(I)

which comprises the step of subjecting a compound of the formula



(II)

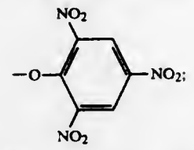
to a salt whose anion is a nucleophilic base whose conjugate acid has a pKa in the range of between about −7 to about 14; wherein

R_1 is said nucleophile;

R is hydrogen,

R_2 is hydrogen or C_1–C_6 alkyl;

R_3 is a leaving group selected from —OSO_nO, where n is 1 or 2 and O is C_1–C_6 alkyl, C_1–C_6 substituted alkyl, phenyl or phenyl substituted with 1, 2, or 3 substituents selected from C_1–C_6 alkyl, C_1–C_6 alkoxy, C_1–C_6 alkylthio, nitro, halo, carboxy and amido; OPO(phenyl or substituted phenyl)$_2$; —OPO(C_1–C_6 alkyl or substituted alkyl)$_2$; —OPO(OO)$_2$; O_2NO; or a group of the formula



and

R_4 is hydrogen, C_1–C_6 alkyl, or a group of the formula

—CH_2CH_2—R_6

wherein

R_6 is 2-furyl, naphthyl, phenyl, phenyl substituted with 1, 2 or 3 substituents selected from C_1–C_6 alkyl, C_1–C_6 alkoxy, C_1–C_6 alkylthio, nitro, halo, carboxy and amido; or

R_6 is a group of the formula

—$COOR_7$

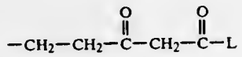
or

—$COSR_7$

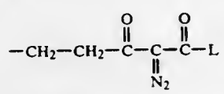
in which

R_7 is selected from C_1–C_6 alkyl, C_2–C_6 alkenyl, benzyl, phenyl, or benzyl or phenyl substituted with 1, 2 or 3 substituents selected from C_1–C_6 alkyl, C_1–C_6 alkoxy, C_1–C_6 alkylthio, nitro, halo, carboxy and amido; or

R_4 is a group of the formula



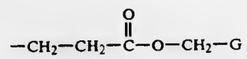
or



wherein

L is —OR_7 where R_7 is as defined; or

R_4 is a group of the formula



wherein:

G is trimethylsilylmethyl, hydrogen, C_1–C_6 alkyl, C_1–C_6 substituted alkyl, phenyl, or phenyl substituted with 1, 2 or 3 substituents selected from C_1–C_6 alkyl, C_1–C_6 alkoxy, C_1–C_6 alkylthio, nitro, halo, carboxy and amido.

5,250,677

AZETIDIN-2-ONE DERIVATIVES AS SERINE PROTEASE INHIBITORS

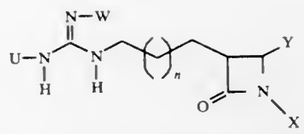
William T. Han, Cheshire, Conn., assignor to Bristol-Myers Squibb Company, New York, N.Y.

Division of Ser. No. 833,876, Feb. 11, 1992, Pat. No. 5,175,283, which is a division of Ser. No. 696,641, May 7, 1991, Pat. No. 5,110,812, which is a division of Ser. No. 533,270, Jun. 4, 1990, Pat. No. 5,037,819. This application Oct. 6, 1992, Ser. No. 957,233

Int. Cl.[5] **C07D** *205/08, 205/09, 247/00;* **A61K** *31/395*

U.S. Cl. 540—200 **8 Claims**

1. 3-Guanidinoalkyl-2-azetidinones of the formula



I

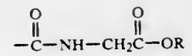
wherein

U and W can be the same or different and are selected from the group consisting of phenylmethoxycarbonyl and t-butyloxycarbonyl;

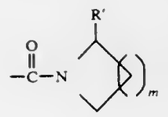
n is 1 to 3;

X is trialkylsilyl; and

Y is a member selected from the group consisting of hydrogen, arylalkenyl, arylalkyl, formyl, carboxy, alkoxycarbonyl, acyloxy, arylthio, arylsulfonyl, alkylthio, alkylsulfonyl, arylaminocarbonyl, the radical



in which R is hydrogen, alkyl or arylalkyl, and the radical



in which m is 1 to 3 and R′ is hydrogen or —CO_2R'' wherein R″ is hydrogen, alkyl or arylalkyl.

5,250,678

O-ARYL, O-ALKYL, O-ALKENYL AND O-ALKYNYLMACROLIDES HAVING IMMUNOSUPPRESSIVE ACTIVITY

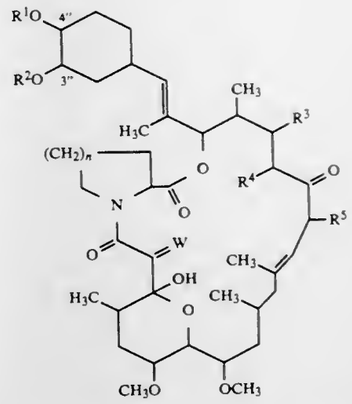
Mark Goulet, Westfield; Frederick Wong, Glen Ridge; Peter J. Sinclair, Highland Park, and Matthew J. Wyvratt, Mountainside, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 809,998, Dec. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 699,407, May 13, 1991, abandoned. This application May 1, 1992, Ser. No. 875,036

Int. Cl.[5] **C07D** *491/16;* **A61K** *31/435*

U.S. Cl. 540—456 **15 Claims**

1. A compound of formula I:



or a pharmaceutically acceptable salt thereof, wherein:

R^1 and R^2 are independently selected from

(1) hydrogen;

(2) phenyl;

(3) substituted phenyl in which the substituents are X, Y and Z;

(4) 1- or 2- naphthyl;

(5) substituted 1- or 2- naphthyl in which the substituents are X, Y and Z;

(6) biphenyl;

(7) substituted biphenyl in which the substituents are X, Y and Z;

(8) C_{1-10} alkyl;

(9) substituted C_{1-10} alkyl in which one or more substituents(s) is (are) selected from:

(a) hydroxy,

(b) oxo,

(c) C_{1-6}-alkoxy,

(d) phenyl-C_{1-3}alkoxy,

(e) substituted phenyl-C_{1-3}alkoxy, in which the substituents on phenyl are X, Y and Z,

(f) —OCO—C_{1-6}alkyl,

(g) —NR^6R^7, wherein R^6 and R^7 are independently selected from

(i) hydrogen,

(ii) C_{1-10}alkyl unsubstituted for substituted with one or more of the substituent(s) selected from:

(a′) phenyl, which is unsubstituted or substituted with X, Y and Z,

(b′) —OH,

(c′) C_{1-6}alkoxy,

(d′) —CO_2H,

(e′) —CO_2—C_{1-6}alkyl,

(f′) —C_{3-7}cycloalkyl, and

(f′) —OR^{11},

(iii) C_{3-10}alkenyl unsubstituted or substituted with one or more of the substituent(s) selected from:

(a′) phenyl, which is unsubstituted or substituted with X, Y and Z,

(b′) —OH

(c′) C_{1-6}alkoxy,

(d′) —CO_2H,

(e′) —CO_2—C_{1-6}alkyl,

(f′) —C_{3-7}cycloalkyl, and

(g′) —OR^{11},

(iv) or where R^6 and R^7 and the N to which they are attached can form a 3-7-membered saturated heterocyclic ring, unsubstituted or substituted with C_{1-6} alkyl or phenyl, the ring being selected from the group consisting of: aziridine, morpholine, thiomor-

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pholine, thiomorpholine-oxide, thiomorpholine-dioxide, piperidine, pyrrolidine, and piperizine,
(h) $—NR^6CO—C_{1-6}alkyl—R^7$, wherein R^6 is as defined above,
(i) $—NR^6CO_2—C_{1-6}alkyl—R^7$,
(j) $—NR^6CONR^6R^7$,
(k) $—OCONR^6R^7$,
(l) $—COOR^6$,
(m) —CHO,
(n) phenyl,
(o) substituted phenyl in which the substituents are X, Y and Z,
(p) phenyloxy,
(q) substituted phenyloxy in which the substituents are X, Y and Z,
(r) 1- or 2- naphthyl,
(s) substituted 1- or 2- naphthyl in which the substituents are X, Y and Z,
(t) biphenyl
(u) substituted biphenyl in which the substituents are X, Y and Z;
(v) $—OR^{11}$, and
(w) $—S(O)_p—C_{1-6}alkyl$;
(10) C_{3-10} alkenyl;
(11) substituted C_{3-10} alkenyl in which one or more substituent(s) is(are) selected from:
(a) hydroxy,
(b) oxo,
(c) C_{1-6}alkoxy,
(d) phenyl-C_{1-3}alkoxy,
(e) substituted phenyl-C_{1-3}alkoxy, in which the substituents on phenyl are X, Y and Z,
(f) $—OCO—C_{1-6}alkyl$,
(g) $—NR^6R^7$, wherein R^6 and R^7 are as defined above
(h) $—NR^6CO—C_{1-6}alkyl$, wherein R^6 is as defined above,
(i) $—COOR^6$, wherein R^6 is as defined above,
(j) —CHO,
(k) phenyl,
(l) substituted phenyl in which the substients are X, Y and Z,
(m) 1- or 2-naphthyl,
(n) substituted 1- or 2-naphthyl in which the substituents are X, Y and Z,
(o) biphenyl,
(p) substituted biphenyl in which the substituents are X, Y and Z,
(q) $—OR^{11}$, and
(r) $—S(O)_p—C_{1-6}alkyl$;
(12) C_{3-10}alkynyl;
(13) substituted C_{3-10}alkynyl in which one or more substituent(s) is(are) selected from:
(a) hydroxy,
(b) oxo,
(c) C_{1-6}alkoxy,
(d) phenyl-C_{1-3}alkoxy,
(e) substituted phenyl-C_{1-3}alkoxy, in which the substituents onphenyl are X, Y and Z,
(f) $—OCO—C_{1-6}alkyl$,
(g) $—NR^6R^7$, wherein R^6 and R^7 are as defined above,
(h) $—NR^6CO—C_{1-6}alkyl$, wherein R^6 is as defined above,
(i) $—COOR^6$, wherein R^6 is as defined above,
(j) —CHO,
(k) phenyl,
(l) substituted phenyl in which the substituents are X, Y and Z,
(m) 1- or 2-naphthyl,
(n) substituted 1- or 2-naphthyl in which the substituents are X, Y and Z,
(o) biphenyl,
(p) substituted biphenyl in which the substituents are X, Y and Z, and
(q) $—OR^{11}$;

with the proviso that R^1 and R^2 are not simultaneously hydrogen, methyl or combinations thereof and the further proviso that R^1 is not benzyl;
R^3 is hydrogen, hydroxy, $—OR^{11}$ or C_{1-6} alkoxy;
R^4 is hydrogen, or R^3 and R^4 taken together form a double bond;
R^5 is methyl, ethyl, propyl or allyl;
R^{11} is selected from:
(a) $—PO(OH)O^-M^+$, whereim M^+ is a positively charged inorganic or organic counterion, selected from the group consisting of: ammonium, sodium, lithium, postassium, calcium, magnesium, dicyclohexylamine, N-methyl-D-glucamine, arginine and lysine,
(b) $—SO_3^-M^+$,
(c) $—CO(CH_2)_qCO_2^-M^+$, wherein q is 1-3, and
(d) $—CO—C_{1-6}alkyl-NR^6R^7$, wherein R^6 and R^7 are as defined above and the alkyl is unsubstituted or substituted with one or more substituents selected from:
(i) hydroxy,
(ii) C_{1-6}alkoxy,
(iii) $—NR^{16}R^{17}$, wherein R^{16} and R^{17} are independently selected from:
(a') hydrogen, and
(b') C_{1-6}alkyl,
(iv) $—COOR^6$, wherein R^6 is as defined above,
(v) phenyl,
(vi) substituted phenyl in which the substituents are X, Y and Z,
(vii) —SH, and
(viii) $—S—C_{1-6}alkyl$;
W is O or (H, OH);
X, Y and Z independently are selected from:
(a) hydrogen,
(b) c_{1-7} alkyl,
(c) C_{2-6} alkenyl,
(d) halogen,
(e) $—(CH_2)_m—NR^6R^7$, wherein R^6 and R^7 are as defined above, and m is 0 to 2,
(f) —CN,
(g) —CHO,
(h) $—CF_3$,
(i) $—SR^8$, wherein R^8 is hydrogen, C_{1-6}alkyl, trifluoromethyl, or phenyl,
(j) $—SOR^8$, wherein R^8 is as defined above,
(k) $—SO_2R^8$, wherein R^8 is as defined above,
(l) $—CONR^6R^7$, wherein R^6 and R^7 are as defined above,
(m) $R^9O(CH_2)_m—$ wherein R^9 is hydrogen, C_{1-3} alkyl, hydroxy-C_{2-3}alkyl, trifluoromethyl, phenyl or naphthyl and m is as defined above,
(n) $—CH(OR^{12})(OR^{13})$, wherein R^{12} and R^{13} are C_{1-3}alkyl or taken together form an ethyl or propyl bridge,
(o)



wherein R^9 and m are as defined above, and
(p)



wherein R^9 and m are as defined above, and
(q) $—OR^{11}$;
or any two of adjacent X, Y and Z can be joined to form a ring selected from the group consisting of: dioxolanyl, dihydrofuranyl, dihydropyranyl, and dioxanyl; and
n is 1 or 2.

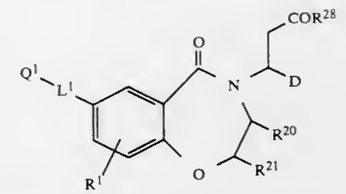
5,250,679

NONPEPTIDYL PLATELET AGGREGATION INHIBITORS HAVING SPECIFICITY FOR THE GPII$_b$III RECEPTOR

Brent Blackburn; Robert McDowell, botb of San Francisco; Thomas Gadek, Oakland; Peter Barker, El Granada; Lawrence McGee, Pacifica, and Rob Webb, Moss Beach, all of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

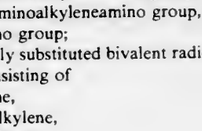
Continuation-in-part of Ser. No. 781,477, Oct. 18, 1991, abandoned. This application Apr. 10, 1992, Ser. No. 866,931
Int. Cl.[5] **C07D** *261/14;* **A61K** *31/55*
U.S. Cl. 540—490 **1 Claim**

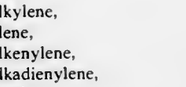
1. A compound represented by formula V:



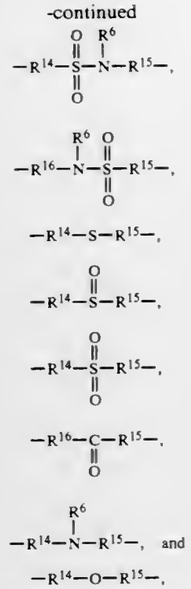
(V)

where
R^1 is one to three groups independently selected from hydrogen and halogen(F, Cl, Br, I);
Q^1 is selected from the group consisting of
(A) an amino group,
(B) an amidino group,
(C) a C_1–C_6 aminoalkyleneimino group,
(D) a C_1–C_7 iminoalkyleneamino group, and
(E) a guanidino group;
L^1 is an optionally substituted bivalent radical selected from the group consisting of
C_3–C_7-alkylene,
C_3–C_7-cycloalkylene,
C_3–C_7-alkenylene,
C_4–C_7-cycloalkenylene,
C_5–C_8-cycloalkadienylene,
C_3–C_7-alkadienylene,
C_3–C_7-alkynylene,
C_4–C_7-alkenynylene,
C_6–C_{14}-arylene,
C_6–C_{14}-aryl-C_2–C_4-alkynylene,
C_1–C_3-alkyl-C_6–C_{14}-aryl-C_2–C_4-alkynylene,
C_6–C_{14}-aryl-C_2–C_4-alkenylene,
C_1–C_3-alkyl-C_6–C_{14}-arylene,
C_1–C_3-alkyl-C_6–C_{14}-aryl-C_2–C_4-alkenylene,
C_6–C_{14}-aryl-C_1–C_3-alkylene,
C_6–C_{14}-aryl-C_1–C_3-alkyloxyene,
C_1–C_3-alkyl-C_6–C_{14}-aryl-C_1–C_2-alkylene,
C_1–C_3-alkyloxy-C_6–C_{14}-arylene,
C_2–C_8-alkyloxyene,
C_1–C_5-alkyloxy-C_1–C_5-alkylene,
C_6–C_{10}-aryloxyene,
C_6–C_{10}-aryloxy-C_1–C_5-alkylene,
C_6–C_{10}-arylthio-C_1–C_5-alkylene,





-continued



where
R^{14} is selected from
C_2–C_5-alkyl,
C_3–C_7-cycloalkyl,
C_3–C_5-alkenyl,
C_3–C_5-alkynyl,
C_6–C_{10}-aryl,
C_1–C_2-alkyl-C_6–C_{12}-aryl,
C_1–C_2-alkyl-C_6–C_{10}-aryl-C_1–C_2-alkyl,
C_6–C_{10}-aryl-C_1–C_2-alkyl, and
C_6–C_{10}-aryloxy-C_1–C_2-alkyl;
R^{15} is chemical bond connecting L^1 to position 8 of the benzazepine-one;
R^{16} is selected from
C_2–C_5-alkyl,
C_3–C_7-cycloalkyl,
C_3–C_5-alkenyl,
C_3–C_5-alkynyl,
C_6–C_{10}-aryl,
C_1–C_2-alkyl-C_6–C_{12}-aryl, and
C_6–C_{10}-aryl-C_1–C_2-alkyl,
wherein R^{14} and R^{16} bond L^1 to Q^1, and where the substituents are selected from the group hydrogen, halo(F, Cl, Br, I), C_1–C_4 alkoxy, C_1–C_4 alkyl, phenyl, benzyl, and halo(F, Cl, Br, I)-C_1–C_4 alkyl;
R^{20} is hydrogen;
R^{21} is selected from the group consisting of (i) hydrogen, (ii) optionally substituted C_1–C_{12}-alkyl, (iii) optionally substituted C_6–C_{14}-aryl, (iv) optionally substituted C_3–C_{14}-cycloalkyl, (v) optionally substituted C_1–C_{12}-alkyl-C_6–C_{14}-aryl, (vi) optionally substituted C_1–C_{12}-alkyl-C_3–C_{14}-cycloalkyl, where the substituents are selected from (a) halo (F, Cl, Br, I), (b) nitro, (c) hydroxy, (d) carboxy, (e) tetrazole, (f) hydroxamate, (g) sulfonamide, (h) trifluoroimide, (i) phosphonate, (j) C_1–C_6-alkyl, (k) C_6–C_{14}-aryl, (l) benzyl, (m) C_3–C_{14}-cycloalkyl, (n) COR^{24} where R^{24} is selected from the group C_1–C_8-alkoxy, C_3–C_{12}-alkenoxy, C_6–C_{12}-aryloxy, di-C_1–C_8-alkylamino-C_1–C_8-alkoxy, alkanoylamino-C_1–C_8-alkoxy selected from the group acetylaminoethoxy, nicotinoylaminoethoxy, uccinamidoethoxy, and pivaloyloxyethoxy, and C_6–C_{12}-aryl-C_1–C_8-alkoxy where the aryl group is unsubstituted or substituted with one to three

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of the groups nitro, halo (F, Cl, Br, I), C_1–C_4-alkoxy, amino, hydroxy, hydroxy-C_2–C_8-alkoxy, and dihydroxy-C_3–C_8-alkoxy, (o) $CONR^{25}R^{26}$ where R^{25} and R^{26} are independently selected from hydrogen, C_1–C_{10}-alkyl, C_3–C_{10}-alkenyl, C_6–C_{14}-aryl, C_1–C_6-alkyl-C_6–C_{10}-aryl, optionally R^{25} and R^{26} taken together may form trimethylene, tetramethylene, pentamethylene, and 3-oxopentamethylene, and (vii) Q^2—L^3— where Q^2 is selected from hydrogen and Q^1, and L^3 is selected from a chemical bond and L^1 where R^{15} bonds L^1 to position 4 of the benzazepine-one;

D is selected from the group consisting of R^{21}, and —(C=O)—Xaa, where Xaa is one to three D or L α-amino acid residues;

R^{28} is selected from the group consisting of (i) hydroxy, (ii) C_1–C_8-alkoxy, (iii) C_3–C_{12}-alkenoxy, (iv) C_6–C_{12}-aryloxy, (v) C_1–C_6-alkyl-C_6–C_{12}-aryloxy, (vi) di-C_1–C_8-alkylamino-C_1–C_8-alkoxy, (vii) acylamino-C_1–C_8-alkoxy selected from the group (a) acetylaminoethoxy, (b) nicotinoylaminoethoxy, and (c) succinamidoethoxy, (viii) C_1–C_8-alkanoyloxy-C_1–C_8-alkoxy, (ix) C_6–C_{12}-aryl-C_1–C_8-alkoxy where the aryl group is unsubstituted or substituted with one to three of the groups (a) nitro, (b) halo (F, Cl, Br, I), (c) C_1–C_4-alkoxy, and (d) amino, (x) hydroxy-C_2–C_8-alkoxy, (xi) dihydroxy-C_3–C_8-alkoxy, and (xii) $NR^{29}R^{30}$ where R^{29} and R^{30} are independently selected from the group (a) hydrogen, (b) C_1–C_8-alkyl, (c) C_3–C_8-alkenyl, (d) C_6–C_{12}-aryl where the aryl group is unsubstituted or substituted with one to three of the groups nitro, halo (F, Cl, Br, I), C_1–C_4-alkoxy, and amino, and (e) C_6–C_{12}-aryl-C_1–C_8-alkyl where the aryl group is unsubstituted or substituted with one to three of the groups nitro, halo (F, Cl, Br, I), and C_1–C_4-alkoxy; and

pharmaceutically acceptable salts thereof.

5,250,680

HETEROGENEOUS SYNTHESIS OF AZEPINONES FROM ESTERS

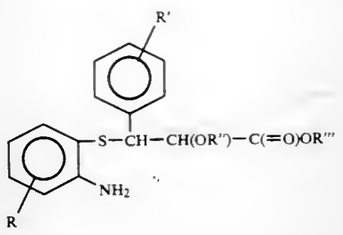
Daniel E. Martin, Lee's Summit, Mo., assignor to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation of Ser. No. 673,043, Mar. 21, 1991, abandoned, which is a continuation of Ser. No. 400,658, Aug. 31, 1989, abandoned. This application Sep. 2, 1992, Ser. No. 939,536

Int. Cl.[5] **C07D** *281/02*

U.S. Cl. 540—491 **1 Claim**

1. A procedure for cyclization of an amino-acid ester compound comprising contacting the amino-acid ester compound in an aqueous medium with a heterogeneous acidic ion-exchange resin under conditions sufficient to form a cyclic amido-carbonyl compound, said amino-acid ester compound being represented by a compound of the following formula:



(I)

wherein

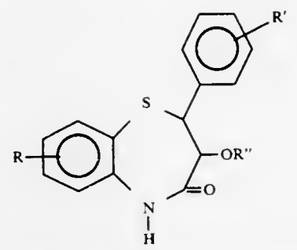
R is H or Cl;

R' is selected from the group consisting of H, lower alkoxy, lower alkyl, lower acyl, trifluoromethyl and nitro;

R'' is H or acetyl; and

R''' is lower alkyl; and

said cyclic amido-carbonyl compound is represented by a compound of the formula:



(II)

wherein R, R' and R'' are as defined in Formula (I).

5,250,681

PIPERIDINE DERIVATIVES AND HYPOTENSIVES CONTAINING THE SAME

Masataka Shoji; Kozo Toyota; Chikahiko Eguchi; Ryota Yoshimoto; Yoshikatsu Koyama; Hideki Domoto, and Akira Kamimura, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

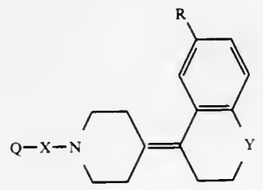
Continuation-in-part of Ser. No. 443,438, Nov. 30, 1989, abandoned, which is a continuation-in-part of Ser. No. 354,880, May 22, 1989, which is a continuation-in-part of Ser. No. 201,911, Jun. 2, 1988, abandoned. This application Feb. 15, 1991, Ser. No. 655,775

Claims priority, application Japan, Nov. 30, 1988, 63-303461; Mar. 16, 1989, 1-64059

Int. Cl.[5] **C07D** *211/70, 487/14*

U.S. Cl. 540—577 **9 Claims**

1. A piperidine compound of the formula (I)



(I)

A

having antihypertensive activity in mammals, wherein:

A is thiophene or pyridine;

R is —H, Cl or —OCH_3;

X is —CH=CH—CH_2— or substituted or unsubstituted

$$+CH_2\rightarrow_n$$

in which n is an integer of from 0 to 10;

Y is —CH=CH—, —CH_2CH_2—, —CH_2CO—, —O—, —S—, —NH—, —OCH_2—, —SCH_2—, —$NHCH_2$—, —CH(OH)CH_2— or —CH(OH)CH(OH)—;

Q is substituted or unsubstituted in n-hexyl, substituted or unsubstituted carboxypropyl, substituted or unsubstituted ethoxycarbonylpropyl, substituted or unsubstituted cyanopropyl, substituted or unsubstituted cyclohexyl, substituted or unsubstituted indanyl, substituted or unsubstituted naphthyl, substituted or unsubstituted tetrahydronaphthyl, substituted or unsubstituted benzocycloheptyl, substituted or unsubstituted piperidinyl, substituted or unsubstituted tetrahydroisoquinolinyl, substituted or unsubstituted indolyl, substituted or unsubstituted pyrolyl, substituted or unsubstituted furyl, substituted or unsubstituted thienyl, substituted or unsubstituted thiazolyl or substituted or unsubstituted oxazolyl;

wherein any one or more of the

$$+CH_2+$$

groups of the hexyl, carboxypropyl, ethoxycarbonylpropyl and cyanopropyl may be replaced by —CH=CH, —C≡C—, —O—, —S—, —NH—, —$N(COCH_3$—, —$N(COC_2H_5)$—, —N(CHO)—, —$N(CH_3$—, —CO—, —SO— or —SO_2—;

wherein the hydrogen atoms of one or more of the

$$+CH_2+$$

groups in X and Q may be substituted by

$$+CH_2\rightarrow_4 \text{ or } +CH_2\rightarrow_5$$

thereby forming a ring structure;

wherein the substituted members of the groups X and Q are substituted by at least one substituent selected from the group consisting of

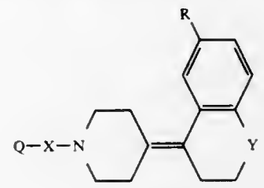
$$H+CH_2\rightarrow_n$$

wherein n is an integer of 1 to 10,

$$Cl+CH_2\rightarrow_3$$

allyl, phenyl, isopropyl, hydroxy, methoxy, ethoxy, fluoro, chloro, acetoxy, 2-methoxyacetoxy, ethoxycarboxyl, carboxyl, methoxycarbonyl, ethoxycarbonyl, cyano, imidazolylmethyl, trifluoromethyl, benzoyl, 2-hydroxybenzyl, nitro, amino, acetylamino, propanoylamino, butanoylamino, pivaloylamino, trifluoromethylamino, methoxycarbonylamino, ethoxycarbonylamino, cinnamoylamino, methanesulfonylamino, N,N-bis(methanesulfonyl)amino, aminocarbonyl, aminosulfonyl, hydroxymethyl and acetoxymethyl.

2. A piperdine compound of the formula (I)



(I)

A

having antihypertensive activity in mammals, wherein:

A is benzene;

R is —H, Cl or —OCH_3;

X is —CH=CH—CH_2— or substituted or unsubstituted

$$+CH_2\rightarrow_n$$

in which n is an integer of from 0 to 10;

Y is —CH_2CH_2—, —SCH_2—;

Q is substituted or unsubstituted in n-hexyl, substituted or unsubstituted carboxypropyl, substituted or unsubstituted ethoxycarbonylpropyl, substituted or unsubstituted cyanopropyl, substituted or unsubstituted cyclohexyl, substituted or unsubstituted indanyl, substituted or unsubstituted naphthyl, substituted or unsubstituted tetrahydronaphthyl, substituted or unsubstituted benzocycloheptyl, substituted or unsubstituted piperidinyl, substituted or unsubstituted tetrahydroisoquinolinyl, substituted or unsubstituted indolyl, substituted or unsubstituted pyrolyl, substituted or unsubstituted furyl, substituted or unsubstituted thienyl, substituted or unsubstituted thiazolyl or substituted or unsubstituted oxazolyl;

wherein any one or more of the

$$+CH_2+$$

groups of the hexyl, carboxypropyl, ethoxycarbonylpropyl and cyanopropyl may be replaced by —CH=CH, —C≡C—, —O—, —S—, —NH—, —$N(COCH_3$—, —$N(COC_2H_5)$—, —N(CHO)—, —$N(CH_3$—, —CO—, —SO— or —SO_2—;

wherein the hydrogen atoms of one or more of the

$$+CH_2+$$

groups in X and Q may be substituted by

$$+CH_2\rightarrow_4 \text{ or } +CH_2\rightarrow_5$$

thereby forming a ring structure;

wherein the substituted members of the groups X and Q are substituted by at least one substituent selected from the group consisting of

$$H+CH_2\rightarrow_n$$

wherein n is an integer of 1 to 10,

$$Cl+CH_2\rightarrow_3$$

allyl, phenyl, isopropyl, hydroxy, methoxy, ethoxy, fluoro, chloro, acetoxy, 2-methoxyacetoxy, ethoxycarboxyl, carboxyl, methoxycarbonyl, ethoxycarbonyl, cyano, imidazolylmethyl, trifluoromethyl, benzoyl, 2-hydroxybenzyl, nitro, amino, acetylamino, propanoylamino, butanoylamino, pivaloylamino, trifluoromethylamino, methoxycarbonylamino, ethoxycarbonylamino, cinnamoylamino, methanesulfonylamino, N,N-bis(methanesulfonyl)amino, aminocarbonyl, aminosulfonyl, hydroxymethyl and acetoxymethyl.

5,250,682

PROCESS FOR THE PREPARATION OF 6-[3-SUBSTITUTEDAMINOPROPIONYL]-7-DEACETYL-FORSKOLIN DERIVATIVES

Yatendra Khandelwal; Bansi Lal, and Jürgen Blumbach, all of Bombay, India, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 22, 1991, Ser. No. 733,812

Claims priority, application European Pat. Off., Jul. 24, 1990, 90114125

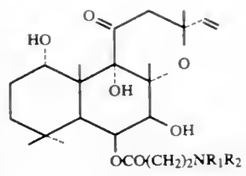
Int. Cl.[5] **C07D** *405/02, 311/92*

U.S. Cl. 540—596 **6 Claims**

1. Process for the manufacture of 6β-(3-substituted amino)-propionyloxy-7-deacetyl-forskolin derivatives of the general formula I

VOL 1155 ISS 1 OCT 5 1993

(I)



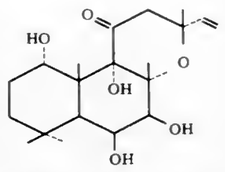
wherein

R_1 and R_2 each stands for hydrogen, alkyl, aryl, aralkyl or dialkylaminoalkyl; or

R_1 and R_2 together with the nitrogen to which they are attached form a heterocycle selected from the group consisting of morpholino, piperidino, pyrrolidino, piperazino, or homopiperidino, which may optionally be substituted at one or more positions by alkyl, alkoxy, hydroxyl, halogen or aryl and pharmaceutically acceptable salts thereof, which comprises

reacting in a one-pot reaction sequence 7-deacetyl forskolin of the formula II

(II)



with a 3-halopropriony1halide in the presence of an organic base and treating the 6β-(3-halopropionyloxy) derivative thus obtained with aqueous acetonitrile and an alkali hydroxide, followed by treating the 6β-(3-halopropionyloxy) derivative with an amine of the formula



wherein R_1 and R_2 have the meaning given above and, if desired, converting the compounds of the formula I into their pharmaceutically acceptable salts.

5,250,683

CERTAIN SUBSTITUTED TAXANES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

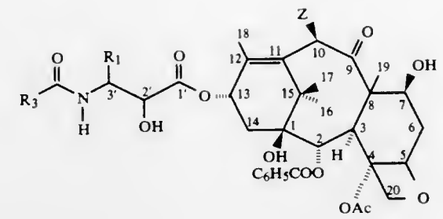
Robert A. Holton; Hossain Nadizadeh; Seokchan Kim, and Ronald J. Beidiger, all of Tallahassee, Fla., assignors to Florida State University, Tallahassee, Fla.

Continuation-in-part of Ser. No. 763,805, Sep. 23, 1991, abandoned. This application Apr. 3, 1992, Ser. No. 863,451

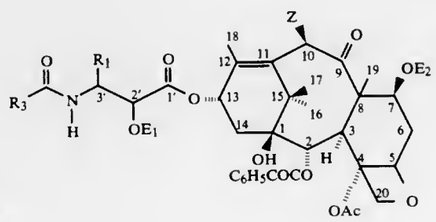
Int. Cl.[5] **C07D** *417/08, 305/14*

U.S. Cl. 544—60 **20 Claims**

1. A taxane derivative of the formula

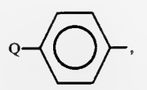


(3)

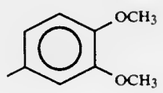


wherein

R_1 and R_3 are independently selected from the group consisting of phenyl, naphthyl, C_6H_5CHCH—, and



or



provided, however, R_1 and R_3 are not both phenyl;

Q is CH_3—, $(CH_3)_3C$—, Cl, Br, F, or NO_2,

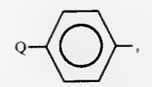
Z is —OT_1,

T_1 is hydrogen, hydroxyl protecting group, or —COT_2,

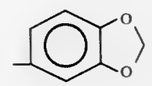
T_2 is H, C_1–C_6 alkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl or monocylic aryl, and

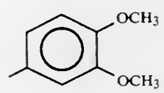
Ac is acetyl.

14. A taxane derivative having the formula:



and





provided, however, R_1 and R_3 are not both phenyl;

Q is CH_3—, $(CH_3)_3C$—, CH_3O—, Cl, Br, F, or NO_2—, Z is —OT_1,

T_1 is hydrogen, hydroxyl protecting group, or —COT_2, T_2 is H, C_1–C_6 alkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl or monocylic aryl,

Ac is acetyl, and

E_1 and E_2 are independently selected from hydrogen and functional groups which increase the water solubility of the taxane derivative, the functional groups having the formula —$COGCOR^1$ wherein

G is ethylene, propylene, —CH=CH—, 1,2-cyclohexane, or 1,2-phenylene,

R^1=OH base, NR^2R^3, OR^3, SR^3, $OCH_2CONR^4R^5$, or OH,

R^2=hydrogen or methyl,

$R^3=(CH_2)_nNR^6R^7$ or $(CH_2)_nN^{\oplus}R^6R^7R^8X^{\ominus}$,

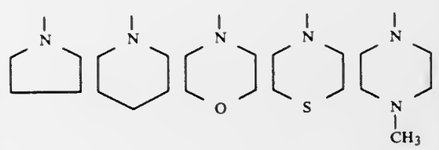
n=1 to 3,

R^4=hydrogen, lower alkyl containing 1 to 4 carbons, or

R^5=hydrogen, lower alkyl containing 1 to 4 carbons, benzyl, hydroxyethyl, CH_2CO_2H, dimethylaminoethyl, or

R^6R^7=lower alkyl containing 1 or 2 carbons, benzyl or R^6 and

R^7 together with the nitrogen atom of NR^6R^7 form the following rings



R^8=lower alkyl containing 1 or 2 carbons or benzyl,

$X^{\ominus}$=halide, and

base=NH_3, $(HOC_2H_4)_3N$, $N(CH_3)_3$, $CH_3N(C_2H_4OH)_2$, $NH_2(CH_2)_6NH_2$, N-methylglucamine, NaOH, or KOH.

5,250,684

Patent Not Issued For This Number

5,250,685

PROCESS FOR THE PREPARATION OF S-ALKYL-ISOTHIOUREIDOAZINES

Hans-Jochem Riebel, Wuppertal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

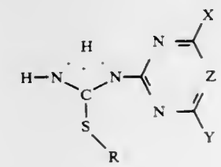
Filed Sep. 21, 1992, Ser. No. 949,181

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1991, 4131136

Int. Cl.[5] **C07D** *251/42, 251/48, 251/54*

U.S. Cl. 544—199 **9 Claims**

1. A process for the preparation of an S-alkyl-isothioureidoazine of the formula



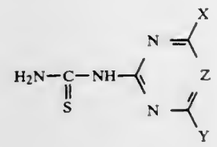
in which

R is methyl or ethyl,

X and Y each independently is selected from the group consisting of hydrogen, halogen, C_1–C_4-alkyl, C_1–C_4-halogenoalkyl, C_1–C_2-alkoxy -C_1–C_2-alkyl, C_1–C_4-alkoxy, C_1–C_4-halogenoalkoxy, C_1–C_4-alkylthio, C_1–C_4-halogenoalkylthio, and C_1–C_4-alkylamino or di-(C_1–C_2-alkyl)-amino, and

Z is nitrogen or CH

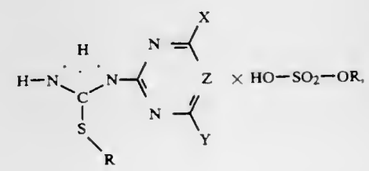
which comprises in a first step reacting an thioureidoazine of the formula



with a dialkyl sulphate of the formula

RO—SO_2—OR

at a temperature between about 20° C. and 150° C., thereby to form an adduct of the formula



and in a second step reacting the adduct with an acid acceptor in the presence of an aprotic polar diluent at a temperature between about 0° C. and 50° C.

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5,250,686

PROCESS FOR PRODUCING TRIAZINE COMPOUNDS

Ryoichi Adachi; Kazufumi Nakamura; Masahiro Nishii; Masahiro Yoshida; Izumi Terada, and Hidetoshi Koga, all of Sodeganra, Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

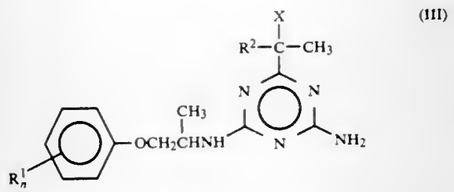
Filed Apr. 14, 1992, Ser. No. 868,727

Claims priority, application Japan, Apr. 18, 1991, 3-087000

Int. Cl.[5] **C07D** *251/18*

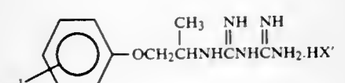
U.S. Cl. 544—206 **20 Claims**

1. A process for producing a triazine derivative of the formula (III).



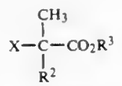
(III)

wherein R^1 is a C_1–C_4 alkyl group, n is an integer of 0 to 2, R^2 is hydrogen or a C_1–C_2 alkyl group, and X is a halogen atom, which comprises reacting a biguanide derivative of the formula,



(I)

wherein R^1 and n are as defined in the formula (III), and X′ is a halogen atom,
with a halocarboxylic acid ester of the formula,



(II)

wherein R^2 and X are as defined in the formula (III), and R^3 is a C_1–C_4 alkyl group,
in the presence of a base, wherein a dehydrating agent is present in the reaction system.

5,250,687

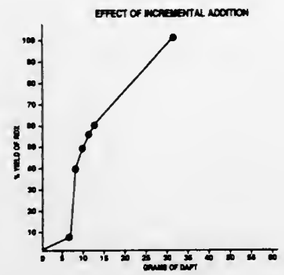
PROCESS FOR PREPARATION OF RDX

William J. Lukasavage, Las Vegas, Nev.; Steven Nicolich, Saddle Brook, and Norman Slagg, Wayne, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 28, 1992, Ser. No. 936,375

Int. Cl.[5] **C07D** *251/06*

U.S. Cl. 544—215 **5 Claims**



1. The process of making RDX which comprises reacting DAPT with ammonium nitrate, nitric acid and acetic anhydride.

5,250,688

PURINE DERIVATIVES

Michael R. Harnden, Horsham, and Richard L. Jarvest, Surbiton, both of England, assignors to Beecham Group p.l.c., England

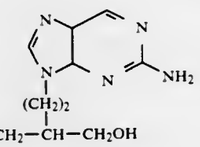
Continuation of Ser. No. 285,399, Dec. 15, 1988, abandoned, which is a continuation of Ser. No. 777,188, Sep. 18, 1985, abandoned. This application Jan. 22, 1992, Ser. No. 825,440

Claims priority, application United Kingdom, Sep. 20, 1984, 8423833; Apr. 23, 1985, 8510331; Aug. 16, 1985, 8520618

Int. Cl.[5] **C07D** *473/34;* **A61K** *31/52*

U.S. Cl. 544—277 **1 Claim**

1. A compound, having the name 2-amino-9-(4-hydroxy-3-hydroxymethylbut-1-yl)purine, of Formula I



I

or a pharmaceutically acceptable salt thereof.

5,250,689

PROCESS FOR THE PRODUCTION OF 2-(METHYLTHIO)-DISODIUM BARBITURATE

Jean-Paul Roduit, Sierre; Marcel Etzensperger, Gamsen, and Alain Wellig, Ried bei Morel, all of Switzerland, assignors to Lonza, Ltd., Gampel/Valais, Switzerland

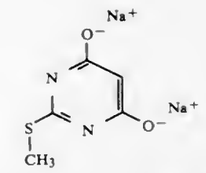
Filed Aug. 27, 1992, Ser. No. 936,205

Claims priority, application Switzerland, Aug. 30, 1991, 2555/91

Int. Cl.[5] **C07D** *239/02*

U.S. Cl. 544—299 **18 Claims**

1. Process for the production of 2-(methylthio)-disodium barbiturate of the formula:



I

characterized in that, in the first stage, thiourea, malonic acid dimethyl ester and sodium methanolate, in methanol, are reacted to disodium thiobarbiturate and, in the second stage, the latter is reacted with methyl bromide to the end product according to formula I.

5,250,690

HALOALKOXY ANILIDE DERIVATIVES OF 2-4(-HETEROCYCLIC OXYPHENOXY)ALKANOIC OR ALKENOIC ACIDS AND THEIR USE AS HERBICIDES

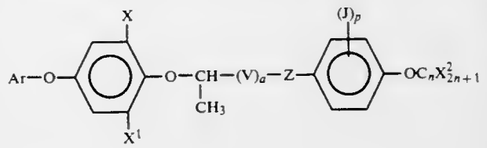
James A. Turner, Pittsburg; Wendy S. Jacks, Walnut Creek, both of Calif.; Paul S. Zorner, Durham, N.C., and Susan K. Moore, Pittsburg, Calif., assignors to DowElanco, Indianapolis, Ind.

Continuation of Ser. No. 439,063, Nov. 20, 1989, abandoned, which is a continuation-in-part of Ser. No. 730,353, May 2, 1985, abandoned. This application Jun. 27, 1991, Ser. No. 722,580

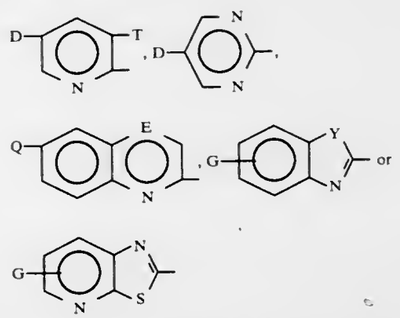
Int. Cl.[5] **C07D** *241/40, 239/34, 213/643, 263/58*

U.S. Cl. 544—354 **49 Claims**

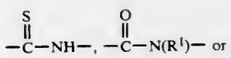
1. A compound or an optical isomer thereof corresponding to the formula



wherein
Ar represents



X and X^1 each independently represents —H or —F;
each X^2 independently represents —H, —Br, —Cl or —F, with the proviso that at least one X^2 is other than —H; and that all X^2's cannot be —Br or —Cl;
Y represents oxy9en or sulfur;
Z represents



D represents —Br, —Cl, —I, or —CF_3;
E represents ═CH or ═N;
G represents at the 5 or 6 ring position, —Br, —Cl, —F or —CF_3;
R represents C_1–C_4 alkyl;
R^1 represents —H, C_1–C_4 alkyl, —CH_2OH or the agriculturally acceptable salts (—C$O^{\ominus}M^{(+)}$);
J represents —Br, —Cl, —F, —I, —NO, —R, —CN, —OR, —NH_2, —NHR, —$N(R)_2$ or —COOR;
T represents —H, —Br, —Cl or —F;
Q represents —Br, —Cl, —F, or —CF ;
V represents —CH_2CH_2— or —CH═CH—;
a represents an integer of 0 or 1;
n represents an integer of from 1 to 4, inclusive; and
p represents an integer of 0, 1 or 2.

5,250,691

HETEROARYL DERIVATIVES OF MONOCYCLIC BETA-LACTAM ANTIBIOTICS

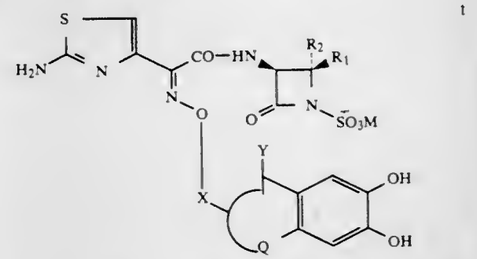
Henner Straub, Regensburg, and Jakob-Matthias Drossard, Tegernheim, both of Fed. Rep. of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Sep. 9, 1991, Ser. No. 756,939

Int. Cl.[5] **A61K** *31/495;* **C07D** *417/14*

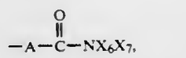
U.S. Cl. 544—355 **14 Claims**

1. Compounds having the formula



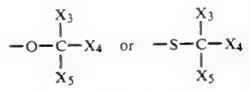
I

wherein R_1 and R_2 are the same or different and each is hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, phenyl, substituted phenyl or a 4, 5, 6 or 7-membered heterocycle, hereinafter referred to as R_a, or one of R_1 and R_2 is hydrogen and the other is azido, halomethyl, dihalomethyl, trihalomethyl, alkoxycarbonyl, phenylethyl, 2-phenylethenyl, 2-phenylethynyl, carboxyl, —CH_2X_1; wherein X_1 is azido, amino, hydroxy, carboxyl, alkoxycarbonyl, alkanoylamino, phenylcarbonylamino, (substituted phenyl) carbonylamino, alkylsulfonyloxy, phenylsulfonyloxy, (substituted phenyl) sulfonyloxy, phenyl, substituted phenyl, cyano

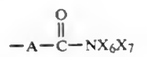


—S—X_2, or —O—X_2 wherein A, X_2, X_6 and X_7 are as hereinafter defined; —S—X_2 or —O—X_2; wherein X_2, is alkyl, substituted alkyl, phenyl, substituted phenyl, phenylalkyl, (substituted phenyl) alkyl, formyl, alkanoyl, substituted alkanoyl, phenylalkanoyl, substituted phenylalkanoyl, phenylcarbonyl, substituted phenylcarbonyl, heteroaryl, heteroarylalkyl, heteroarylalkanoyl or heteroarylcarbonyl, and in the case of when X_1 is —O—X_2 then X_2 can also be alkylideneamino, alkanoylamino, carboxyalkylideneamino, alkylsulphonylamino, alkoxycarbonyl or alkylsulphonylamino and R_1 and R_2 can be

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wherein one of X_3 and X_4 is hydrogen and the other is hydrogen or alkyl, or X_3 and X_4 when taken together with the carbon atom to which they are attached form a cycloalkyl group; and X_5 is formyl, alkanoyl, phenylcarbonyl, substituted phenylcarbonyl, phenylalkylcarbonyl, substituted phenylalkylcarbonyl, carboxyl, alkoxycarbonyl, aminocarbonyl, substituted aminocarbonyl, or cyano; or



wherein A is —CH=CH—, $-(CH_2)_m-O-$, $-(CH_2)_m-NH-$, or $-CH_2-S-CH_2-$, m is 0, or an integer of 1 or 2, and X_6 and X_7 are the same or different and each is hydrogen, alkyl, phenyl or substituted phenyl, or X_6 is hydrogen and X_7 is amino, substituted amino, alkanoylamino or alkoxy, or X_6 or X_7 when taken together with the nitrogen atom to which they are attached form a 4, 5, 6 or 7-membered heterocycle;

M is hydrogen, or a cation capable of forming a pharmaceutically acceptable salt;

Q completes a 6-membered aromatic or nonaromatic heterocyclic ring, optionally substituted with an oxo, having 1 to 2 heteroatoms independently selected from N and NR_{12};

R_{12} is hydrogen, lower alkyl, cycloalkyl or carboxyalkyl, or a salt thereof;

X is attached through an available carbon atom and is $(CH_2)_n$ wherein n is an integer of 1 to 4 or CR_3R_4 wherein R_3 and R_4 are the same or different and each is hydrogen, CH_3 or C_2H_5 or R_3 and R_4 taken together with the carbon atom to which they are attached form a 3, 4, 5, 6 or 7-membered cycloalkyl ring;

Y is attached through an available carbon atom and is hydrogen, amino, hydroxy, halogen, carboxamide or carboxyl; with the proviso that Q along with the attached benzo is not quinoxaline;

the term "substituted alkyl" refers to alkyl groups substituted with one or more azido, amino ($-NH_2$), halogen, hydroxy, carboxy, cyano, alkoxycarbonyl, aminocarbonyl, alkanoyloxy, alkoxy, phenyloxy, (substituted phenyl) oxy, R_1-oxy, mercapto, alkylthio, phenylthio, (substituted phenyl) thio, alkylsulfinyl, or alkylsulfonyl groups;

the term "substituted phenyl" refers to a phenyl group substituted with 1, 2 or 3 amino, halogen, hydroxyl, trifluoromethyl, alkyl (of 1 to 4 carbon atoms), alkoxy (of 1 to 4 carbon atoms), alkanoyloxy, aminocarbonyl, or carboxy groups;

the term "a 4, 5, 6, or 7-membered heterocycle" refers to pyridinyl, furanyl, pyrrolyl, thienyl, 1,2,3-triazolyl, 1,2,4-triazolyl, imidazolyl, thiazolyl, thiadiazolyl, pyrimidinyl, oxazolyl, triazinyl, tetrazolyl, azetidinyl, oxetanyl, thietanyl, piperidinyl, piperazinyl, imidazolidinyl, oxazolidinyl, pyrrolidinyl, tetrahydropyrimidinyl, dihydrothiazolyl or hexahydroazepinyl or one of the above groups substituted with one or more oxo, halogen, hydroxy, nitro, amino, cyano, trifluoromethyl, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylsulfonyl, phenyl, substituted phenyl, 2-furfurylideneamino, benzylideneamino, or alkyl wherein the alkyl group has 1 to 4 carbon atoms;

the term "substituted amino" refers to a group having the formula $-NX_8X_9$ wherein X_8 is hydrogen, alkyl, phenyl, substituted phenyl, phenylalkyl or (substituted phenyl) alkyl, and X_9 is alkyl, phenyl, substituted phenyl, phenylalkyl, (substituted phenyl) alkyl, hydroxy, cyano, alkoxy, phenylalkoxy or amino; and

the term "heteroaryl" refers to pyridinyl, furanyl, pyrrolyl, thienyl, 1,2,3-triazolyl, 1,2,4-triazolyl, imidazolyl, thiazolyl, thiadiazolyl, pyrimidinyl, oxazolyl, triazinyl, tetrazolyl or one of the above groups substituted with one, or more, halogen, hydroxy, nitro, amino, cyano, trifluoromethyl, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylsulfonyl, phenyl, substituted phenyl, 2-furfurylideneamino, benzylideneamino or substituted alkyl groups, wherein the alkyl group has 1 to 4 carbon atoms.

5,250,692

WATER-SOLUBLE METHINE COMPOUNDS USEFUL IN PHOTOGRAPHIC SILVER HALIDE EMULSIONS

Keizo Koya; Toshinao Ukai, and Haruo Takei, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

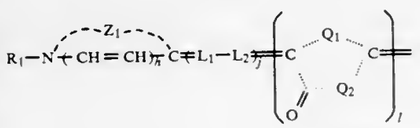
Filed Apr. 18, 1991, Ser. No. 686,974

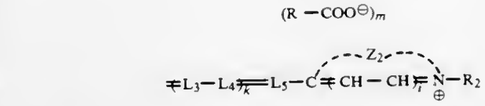
Claims priority, application Japan, Apr. 20, 1990, 2-103108

Int. Cl.[5] C09B *69/06, 23/01, 23/02, 23/06;* **G03C** *1/12, 1/126*

U.S. Cl. 546—140 **4 Claims**

1. A water-soluble methine compound represented by





wherein Z_1 and Z_2 each independently represents a non-metallic atomic group required for forming a 5-membered or 6-membered nitrogen-containing heterocyclic ring selected from the group consisting of a thiazole, a benzothiazole, a naphthothiazole, an oxazole, a benzoxazole, a naphthoxazole, a selenazole, a benzoselenazole, a naphthoselenazole, a tellurazole, a benzotellurazole, a naphthotellurazole, a thiazoline, an oxazoline, an isoxazole, a benzisoxazole, a dialkylindolenine, a pyridine, a quinoline, a naphthridine, a tetrazole, an imidazoquinoxaline, and a dioxodihydronaphthoimidazole; R_1 and R_2 each independently is selected from the group consisting of methyl, ethyl and vinylmethyl; Q_1 represents a sulfur atom and Q_2 represents a nitrogen atom; L_1, L_2, L_3, L_4 and L_5 each represents an unsubstituted methine group; R represents a methyl group; m represents 1; i and h each represents 0 or 1; l represents 1 or 2; and j and k each represents 0, 1, 2 or 3.

5,250,693

QUINOLINYLMETHOXY NAPHTHALENEPROPIONIC ACID DERIVATIVES AS ANTI-INFLAMMATORY/ANTIALLERGIC AGENTS

Anthony F. Kreft, III, Langhorne, Pa.; John H. Musser, Alameda, Calif.; James J. Bicksler, Cranbury, N.J.; John W. Giberson, Newtown; Dennis M. Kubrak, Fairless Hills, both of Pa., and Annette L. Banker, Plainsboro, N.J., assignors to American Home Products Corporation, New York, N.Y.

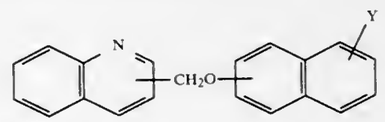
Continuation-in-part of Ser. No. 578,367, Sep. 6, 1990, Pat. No. 5,084,575, which is a continuation-in-part of Ser. No. 351,119, May 12, 1989, Pat. No. 4,960,892, which is a continuation-in-part of Ser. No. 202,975, Jun. 10, 1988, abandoned, which is a continuation-in-part of Ser. No. 80,122, Jul. 31, 1987, abandoned. This application Dec. 13, 1991, Ser. No. 806,518

The portion of the term of this patent subsequent to Jan. 28, 2009, has been disclaimed.

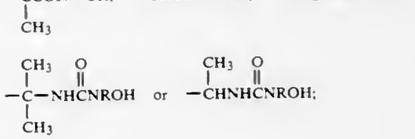
Int. Cl.[5] C07D *215/38*

U.S. Cl. 546—175 **6 Claims**

1. A compound having the formula



wherein
Y is



R is hydrogen or lower alkyl;
or a pharmaceutically acceptable salt thereof.

5,250,694

PROCESS FOR THE PREPARATION OF 2,3-PYRIDINE-DICARBOXYLIC ACIDS FROM 3-(2-IMIDAZOLIN-2-YL)PICOLINIC ACIDS

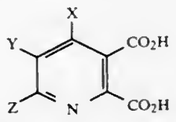
Paul E. Miller, Palmyra, Mo., assignor to American Cyanamid Company, Stamford, Conn.

Filed Aug. 26, 1992, Ser. No. 935,957

Int. Cl.[5] C07D *401/04*

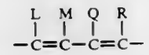
U.S. Cl. 546—321 **13 Claims**

1. A process for the preparation of a 2,3-pyridinedicarboxylic acid of formula I

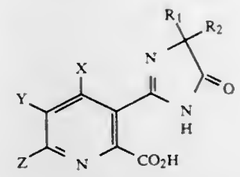


(I)

wherein
X is hydrogen or methyl; and
Y and Z are each independently hydrogen, halogen, C_1-C_6 alkoxy, C_1-C_4 alkylthio, C_1-C_6 alkyl optionally substituted with one to three C_1-C_4 alkoxy groups, phenoxy optionally substituted with one C_1-C_4 alkyl or C_1-C_4 alkoxy group, or phenyl optionally substituted with one C_1-C_4 alkyl or C_1-C_4 alkoxy group; and,
when taken together, Y and Z may form a ring in which YZ is represented by the structure: $-(CH_2)_n-$, where n is an integer of 3 or 4, or

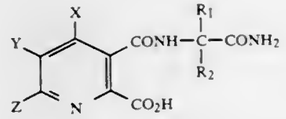


where L, M, Q and R are each independently hydrogen, C_1-C_4 alkyl or C_1-C_4 alkoxy, which comprises reacting a 3-(2-imidazolin-2-yl)picolinic acid of formula II



(II)

wherein X, Y and Z are as described above, R_1 is C_1-C_4 alkyl and R_2 is C_1-C_4 alkyl or C_3-C_6 cycloalkyl, and when R_1 and R_2 are taken together with the carbon atom to which they are attached they may represent C_3-C_6 cycloalkyl optionally substituted with methyl, with a metal hydroxide in the presence of water at a pH range from about pH 8.5 to pH 11.5 and at a temperature range from about 20° C. to 120° C. to form a 3-[(1-carbamoylpropyl)-carbamoyl]picolinic acid of formula III



(III)

wherein X, Y, Z, R_1 and R_2 are as described above and reacting said formula III compound with an acid in the presence of water at a pH range from about pH 1.0 to pH 4.0 and at a temperature range from about 20° C. to 120° C. to form the desired formula I 2,3-pyridinedicarboxylic acid.

5,250,695

USE OF SPECIFIC COUNTERANIONS TO MODIFY THE SOLUBILITY OF TETRAZOLIUM SALTS

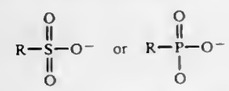
Joel M. Blatt, Granger, and Robert P. Hatch, Elkhart, both of Ind., assignors to Miles Inc., Elkhart, Ind.

Filed Jun. 15, 1992, Ser. No. 898,317

Int. Cl.[5] C07D *417/04, 257/04*

U.S. Cl. 548—150 **10 Claims**

1. Sulfonate and phosphonate salts of tetrozolium compounds wherein the anion is represented by the formula:



wherein R is a straight or branched alkyl group of from 1 to 7 carbon atoms or phenyl.

VOL 1155 ISS 1 OC 5 1993 UMI

5,250,696

2-SACCHARINYLMETHYL ARYL CARBOXYLATE

Richard P. Dunlap, Penfield; Neil W. Boaz, Waterloo; Albert J. Mura, Rochester; Virendra Kumar, Colonie; Chakrapani Subramanyam, East Greenbush; Ranjit C. Desai, Colonie; Dennis J. Hlasta, Clifton Park; Manohar T. Saindane; Malcolm R. Bell, both of East Greenbush, and John J. Court, Colonie, all of N.Y., assignors to Sterling Winthrop Inc., New York, N.Y.

Division of Ser. No. 782,016, Oct. 24, 1991, Pat. No. 5,128,339, which is a continuation-in-part of Ser. No. 608,068, Nov. 1, 1990, abandoned. This application Mar. 30, 1992, Ser. No. 860,340

Int. Cl.[5] **C07D** *275/06*

U.S. Cl. 548—210 **1 Claim**

1. 2-(2,6-Dichlorobenzoyloxymethyl)-4,5,6,7-tetrahydro-4,7-methano-1,2-benzisothiazol-3(2H)-one 1,1-dioxide.

5,250,697

CYCLOBUTANE DERIVATIVES

Koichi Narasaka, and Yujiro Hayashi, both of Tokyo, Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 19, 1991, Ser. No. 657,463

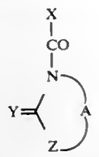
Claims priority, application Japan, Mar. 1, 1990, 2-47168; Mar. 23, 1990, 2-72024

Int. Cl.[5] **C07D** *263/04*

U.S. Cl. 548—230 **3 Claims**

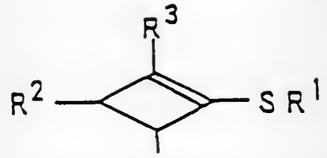
1. A cyclobutane derivative represented by the following general formula (I):

(I)



wherein X represents a group represented by the formula

(I)



(wherein R^1 represents a methyl group; R^2 represents a protected carboxyl group; R^3 represents hydrogen; A represents a polymethylene group having 2 carbon atoms; Y represents an oxygen atom; and Z represents an oxygen atom.

5,250,698

2-(2-HYDROXY-3-PERFLUOROALKYL THIOMETHYL-5-ALKYLPHENYL)2H-BENZOTRIAZOLES AND STABILIZED COMPOSITIONS THEREOF

Robert A. Falk, New City, and Gregory R. Coughlin, Poughkeepsie, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

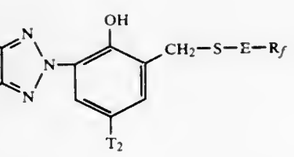
Filed Aug. 5, 1992, Ser. No. 926,105

Int. Cl.[5] **C07D** *249/20*

U.S. Cl. 548—260 **9 Claims**

1. A compound of formula I

(I)



wherein

T_1 is hydrogen, halogen, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms,

T_2 is alkyl of 1 to 18 carbon atoms, cycloalkyl of 5 to 12 carbon atoms or phenylalkyl of 7 to 15 carbon atoms,

E is a branched or straight chain alkylene of 1 to 10 carbon atoms or said alkylene interrupted by one to three groups selected from the group consisting of —NR—, —O—, —S—, $—SO_2—$, —COO—, —OOC—, —CONR—, —NRCO—, $—SO_2NR—$, $—NRSO_2—$, or terminated at the R_f end with —CONR— or $—SO_2NR—$, where R_f is attached to the carbon or sulfur atom, and where R is independently hydrogen, alkyl of 1 to 6 carbon atoms or hydroxyalkyl of 2 to 6 carbon atoms, and

R_f is a straight or branched chain perfluoroalkyl of 1 to 12 carbon atoms, perfluoroalkyl of 2 to 6 carbon atoms substituted by perfluoroalkoxy of 2 to 6 carbon atoms, or R_f is an oligo(hexafluoropropene oxide) terminal group.

5,250,699

2-OXO-5-MERCAPTOMETHYLIMIDAZOLIDIN-4-OLS

Michael Casutt, Erzhausen; Eike Poetsch, Mübtal, both of Fed. Rep. of Germany, and Willem N. Speckamp, EC Heiloo, Netherlands, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

PCT No. PCT/EP90/01235, § 371 Date Apr. 10, 1991, § 102(e) Date Apr. 10, 1991, PCT Pub. No. WO91/02734, PCT Pub. Date Mar. 7, 1991

PCT Filed Jul. 28, 1990, Ser. No. 671,770

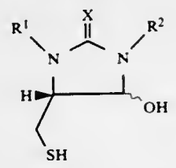
Claims priority, applicatioo Fed. Rep. of Germany, Aug. 12, 1989, 3926690

Int. Cl.[5] **C07D** *233/02, 233/04, 233/20, 233/50, 233/48, 233/52*

U.S. Cl. 548—319.1 **8 Claims**

1. A compound of formula II,

II



wherein

R^1 is H, or a group $R^3R^4CH—$ or $—SiR^5R^6R^7$, in which R^3 and R^4 are each independently H, unsubstituted alkyl, cycloalkyl or unsubstituted or C_{1-3}-alkyl-monosubstituted aryl, aralkyl or, taken together, are unsubstituted alkylene;

R^5 and R^6 and R^7 in each case independently of one another are unsubstituted alkyl, cycloalkyl, aryl or

R^2 is H or a protective group suitable for a nitrogen atom; and

X is O, S or N—R^8, in which R^8 is an alkyl, cycloalkyl, aryl or alkoxycarbonyl group or a dialkylamino group.

5,250,700

PHENYL PYRAZOLIDINONES AS BRONCHODILATORS AND ANTI-INFLAMMATORY AGENTS

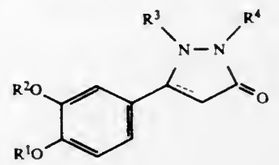
Jehan F. Bagli, Princeton; Louis J. Lombardo, Belle Mead, and Jerauld S. Skotnicki, Allentown, all of N.J., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 694,197, May 1, 1991, Pat. No. 5,191,084. This application Dec. 9, 1992, Ser. No. 988,062

Int. Cl.[5] **C07D** *233/02*

U.S. Cl. 548—366.1 **30 Claims**

1. A compound having the formula



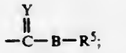
wherein

R^1 is hydrogen or lower alkyl;

R^2 is C_{3-7} alkyl or C_{3-7} cycloalkyl;

R^3 is hydrogen, lower alkyl, carboxyloweralkyl, lower alkoxycarbonyl, lower alkoxycarbonyl loweralkyl, C_{6-10} aryl or C_{12-16} aralkyl;

R^4 is hydrogen, C_{1-8} alkyl or



B is a bond, NH or O;

Y is O or S;

R^5 may be hydrogen when B is NH, or

R^5 is lower alkyl, C_{3-8} cycloalkyl, C_{6-10}, aryl, substituted C_{6-10} aryl, C_{12-16} aralkyl, substituted C_{12-16} aralkyl wherein the substituent for the forgoing substituted aryl is selected from lower alkyl and oxo, C_{12-16} aralkenyl, C_{18-26} aralkenylalkyl, $—(CH_2)_nNR^1R^1$,

n is 0–5;

the dotted line represents an optional double bond;

or a pharmacologically acceptable salt thereof.

5,250,701

ALLOSTERIC HEMOGLOBIN MODIFIERS WHICH DECREASE OXYGEN AFFINITY IN BLOOD

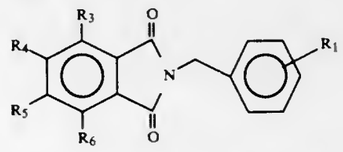
Donald J. Abraham, Midlothian, Va.; Mona Mahran, Alexandria, Egypt; Ahmed Mehanna, Winchester, Mass., and Ramnarayan Randad, Richmond, Va., assignors to Center for Innovative Technology, Herndon, Va.

Continuatioo of Ser. No. 885,721, May 18, 1992, Pat. No. 5,248,785, which is a continuation-in-part of Ser. No. 702,947, May 20, 1991, Pat. No. 5,122,539, which is a continuation-in-part of Ser. No. 478,848, Feb. 12, 1990, Pat. No. 5,049,695, which is a continuation-in-part of Ser. No. 722,382, Jun. 26, 1991, which is a continuatioo of Ser. No. 623,346, Dec. 7, 1990. This application Jan. 19, 1993, Ser. No. 6,378

Int. Cl.[5] **C07D** *209/48, 209/00;* **C09B** *5/00;* **A61K** *31/40*

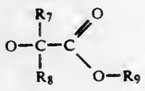
U.S. Cl. 548—478 **1 Claim**

1. A compound of the general structural formula:



wherein R_{3-6} are either hydrogen, halogen, or a substituted or unsubstituted C_{1-3} alkyl group, or a C_{1-3} ether or ester, and these moieties may be the same or different, or alkyl moieties of an aromatic or aliphatic ring incorporating two of the R_{3-6} sites, and

wherein R_1 has the formula:



where R_1 can be connected to any position on the phenyl ring, and

where R_7 and R_8 are hydrogen, halogen, methyl, or ethyl groups and these moieties may be the same or different, or alkyl moieties as part of an aliphatic ring connecting R_7 and R_8, and

where R_9 is a hydrogen, halogen, C_{1-3} loweralkyl, or a salt cation.

5,250,702

DIETHYLENETRIAMINE PENTAACETIC ACID DERIVATIVES

Susumu Kondo; Miki Kurami, and Makoto Azuma, all of Chiba, Japan, assignors to Nihon Medi-Physics Co., Ltd., Hyogo, Japan

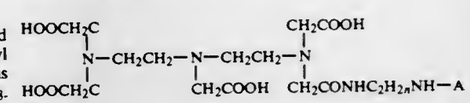
Division of Ser. No. 362,370, Jun. 5, 1989, Pat. No. 5,094,950. This application Apr. 26, 1991, Ser. No. 691,989

Claims priority, application Japan, Jun. 7, 1988, 63-139685; Jun. 7, 1988, 63-139686

Int. Cl.[5] **C07D** *207/46, 401/12;* **C07C** *103/50, 403/12*

U.S. Cl. 548—542 **5 Claims**

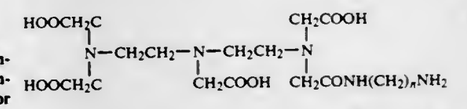
1. A compound of the formula I:



wherein

n is an integer of 2 to 10, and

A is a monovalent group formula by reacting a compound of the formula IIIa:



wherein n is an integer of 3 to 10, with one of the two reactive groups of a cross linking reagent in a solvent at a temperature ranging from that obtained by cooling from room temperature to that obtained by slight heating from room temperature for about 10 minutes to a few hours, said cross linking reagent being selected from the group consisting of

(h) dimethyl-3,3'-dithiobispropionimidate.2Hcl (DTBP) and

(n) 2-iminothiolane.Hcl.

5,250,703

PYRROLIDIN-3,4-DIOL DERIVATIVES OF HEPTITOLS AND PREPARATION THEREOF

George W. J. Fleet, Oxford, and Bryan G. Winchester, London, both of United Kingdom, assignors to Monsanto Company, St. Louis, Mo.

Filed Sep. 29, 1992, Ser. No. 954,199

Int. Cl.[5] **C07D** *207/12, 407/06*

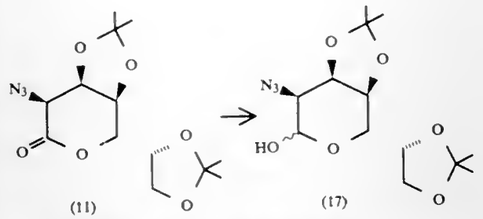
U.S. Cl. 548—556 **2 Claims**

1. 2,5-Dideoxy-2,5-imino-D-glycero-D-talo-heptotol.

VOL 1155 ISS 1 OCT 5 1993 UMI

2. A method for the synthesis of 1,5-dideoxy-2,5-imino-D-glycero-D-Talo-heptitol (4) comprising carrying out the reactions in solution phase and in about stoicheometric proportions of reactants shown by formulas in the following reaction steps:

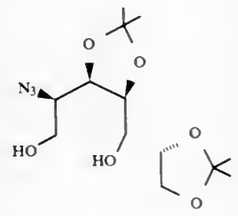
a. reducing 2-azido-2-deoxy-3,4:5,6-di-O-isopropylidene-D-glycero-D-talo-heptono-1,5lactone (11) with diisobutylaluminum hydride to give the corresponding lactol (17),



(11) (17)

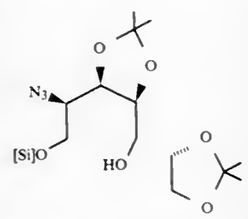
b. reacting the lactol (17) with alkali metal borohydride to provide ring opening and give the diol (18),

(18)



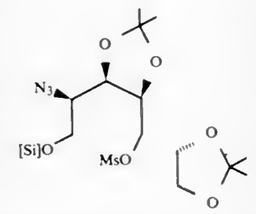
c. reacting the diol (18) with tert-butyldiphenyl-silylchloride to protect the primary hydroxyl group as the tert-butyldiphenylsilyl ether (19),

(19)



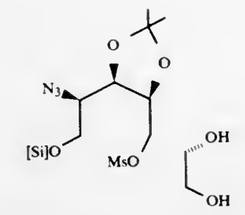
d. esterifying the hydroxyl of the tert-butyldiphenylsilyl ether (19) at C-5 with mesyl chloride to give azidomesylate (20),

(20)



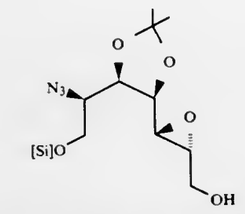
e. selectively hydrolyzing the terminal acetonide at C-6, C-7 in the azidomesylate (20) with organic acid to give monoacetonide (21),

(21)



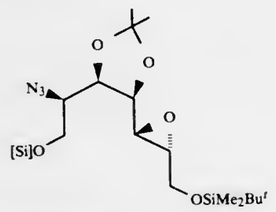
f. reacting the monoacetonide (21) with barium methoxide to give epoxide (22),

(22)



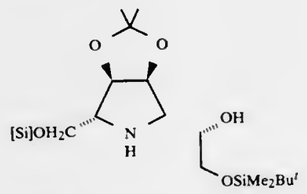
g. reacting the epoxide (22) with tert-butyldimethylsilyl-chloride to protect the primary hydroxyl group as the tert-butyldimethylsilyl ether (23),

(23)



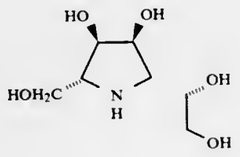
h. hydrogenating the tert-butyldimethylsilyl ether (23) in the presence of palladium black to give the protected pyrrolidine (24), and

(24)



i. removing all the hydroxyl protecting groups in the protected pyrrolidine (24) by acid hydrolysis to give the desired 2,5-dideoxy-2,5-imino-D-glycero-D-talo-heptitol (4)

(4)



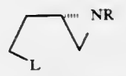
5,250,704

PROCESS FOR THE MANUFACTURE OF (S)-3-AMINO-1-SUBSTITUTED-PYRROLIDINES

Tung Van Le, Jenison; F. Gregory Spence, and James N. Wemple, both of Holland, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 874,657, Apr. 27, 1992, Pat. No. 5,177,217.
This application Sep. 10, 1992, Ser. No. 943,343
Int. Cl.[5] C07D *207/14, 203/08, 203/24*
U.S. Cl. 548—557 **3 Claims**

1. A compound of the formula



wherein L is halo or alkyl- or arylsulfonyloxy and R is an alkyl or arylsulfonyl group.

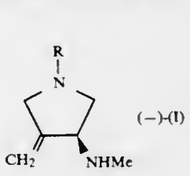
5,250,705

OPTICALLY ACTIVE CYCLIC AMINE AND THE PROCESS OF OPTICAL RESOLUTION THEREFOR

Tetsuo Okada, and Tadahiko Tsushima, both of Osaka, Japan, assignors to Shiooogi & Co., Ltd., Osaka, Japan

Division of Ser. No. 789,079, Nov. 7, 1991, abandoned. This application Oct. 1, 1992, Ser. No. 955,246
Claims priority, application Japan, Nov. 21, 1990, 2-319107
Int. Cl.[5] C07D *207/04, 207/22*
U.S. Cl. 548—557 **1 Claim**

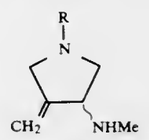
1. A process for the isolation of optically pure (−)-(S)-3-methylamino-4-methylenepyrrolidine derivatives of the formula:



(−)-(I)

wherein R is hydrogen or amino-protecting group, from the racemic mixture of the formula (I):

(I)



wherein R has the same meaning as defined above, which comprises in a single procedure salt formation of the racemate (I) with L-(+)-tartaric acid in a molar ratio of 2:1 and subsequent treatment with a base, and optionally followed by deprotection of the amino-protecting group.

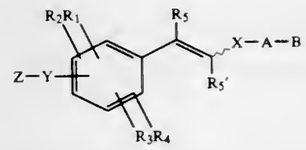
5,250,706

HETEROARYL SUBSTITUTED PHENYLETHENYL COMPOUNDS HAVING RETINOID-LIKE BIOLOGICAL ACTIVITY

Roshantha A. S. Chandraratna, El Toro, Calif., assignor to Allergan, Inc., Irvine, Calif.

Filed Feb. 11, 1992, Ser. No. 833,682
Int. Cl.[5] C07D *333/32, 213/55*
U.S. Cl. 549—71 **28 Claims**

1. A compound of the formula



wherein

R_1, R_2, R_3 and R_4 independently are hydrogen, lower alkyl of 1 to 6 carbons, halogen or lower alkoxy of 1 to 6 carbons;

R_5 and R_5' independently are hydrogen or lower alkyl of 1 to 6 carbons;

Y is oxygen or sulfur;

Z is n-alkyl having 1 to 10 carbons, cyclo or branch-chained alkyl of 3 to 10 carbons, and straight chain alkenyl having 2 to 10 carbons, or cyclo or branched chained alkenyl of 3 to 10 carbons;

X is a heteroaryl group selected from a group consisting of thienyl, and furyl;

A is $(CH_2)_n$, where n is 0–5, lower branched chain alkyl having 3 to 6 carbons, cycloalkyl having 3 to 6 carbons, alkenyl having 2 to 6 carbons and 1 or 2 double bonds, alkynyl having 2 to 6 carbons and 1 or 2 triple bonds;

B is hydrogen, COOH or a pharmaceutically acceptable salt thereof, $COOR_8$, $CONR_9R_{10}$, $—CH_2OH$, CH_2OR_{11}, CH_2OCOR_{11}, CHO, $CH(OR_{12})_2$, $CHOR_{13}O$, $—COR_7$, $CR_7(OR_{12})_2$, or $CR_7OR_{13}O$, where R_7 is an alkyl, cycloalkyl or alkenyl group containing 1 to 5 carbons, R_8 is an alkyl group of 1 to 10 carbons, or a cycloalkyl group of 5 to 10 carbons, or R_8 is phenyl or lower alkylphenyl, R_9 and R_{10} independently are hydrogen, an alkyl group of 1 to 10 carbons, or a cycloalkyl group of 5 to 10 carbons, or phenyl or lower alkylphenyl, R_{11} is alkyl of 1 to 10 carbons, phenyl or lower alkylphenyl, R_{12} is lower alkyl, and R_{13} is divalent alkyl radical of 2–5 carbons.

5,250,707

PROCESS FOR PREPARING ϵ-CAPROLACTONE

Yukio Inaba; Yohsuke Ueno; Takafumi Hirakawa, and Suzuo Takiguchi, all of Ube, Japan, assignors to Ube Industries, Ltd., Ube, Japan

Filed Apr. 22, 1991, Ser. No. 689,151
Claims priority, application Japan, Apr. 25, 1990, 2-107674
Int. Cl.[5] C07D *313/04*
U.S. Cl. 549—266 **14 Claims**

1. In a process for preparing ϵ-caprolactone comprising;

i) preparing a percarboxylic acid solution mixture by

(a) oxidizing organic carboxylic acid in a reaction mixture including an organic solvent comprising a lower alkyl ester of an aliphatic carboxylic acid, in the presence of hydrogen peroxide and boric acid catalyst,

(b) while removing water from the reaction mixture by distillation as an azeotrope which includes said organic solvent,

ii) supplying the percarboxylic acid solution mixture and cyclohexanone to the reaction system for reacting cyclohexanone with the percarboxylic acid, to prepare a reaction-starting mixture in which

(a) the rate of the percarboxylic acid supplied is 1 to 1.5 mole per mole of the cyclohexanone,

(b) the rate of hydrogen peroxide supplied with the percarboxylic acid is 0.001 to 0.01 mole per mole of the cyclohexanone, and

(c) the rate of the boric acid catalyst supplied with the percarboxylic acid is 0.001 to 0.03 mole per mole of the cyclohexanone, and then,

iii) reacting the cyclohexanone with percarboxylic acid in the reaction system, so as to synthesize ϵ-caprolactone with high yield and purity and to inhibit side reactions.

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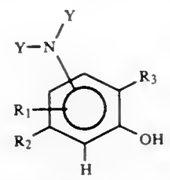
5,250,708

POLY(OXYALKYLENE) SUBSTITUTED AMINOPHENOL INTERMEDIATE AND XANTHENE COLORANT

Carey N. Barry, Jr., Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Aug. 13, 1991, Ser. No. 744,253
Int. Cl.[5] C07D *311/82*
U.S. Cl. 549—226 **30 Claims**

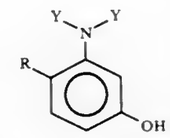
1. A colorant intermediate comprising a compound having the structure:



wherein Y is poly(oxyalkylene) substituent having a straight or branched chain of from 3 to 250 monomer units selected from ethylene oxide, propylene oxide, butylene oxide and glycidol;

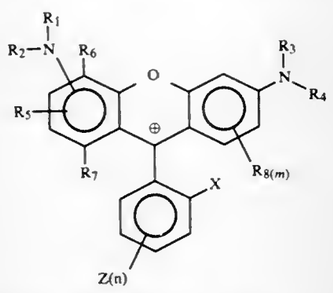
R_1, R_2 and R_3 are independently selected from H, C1–C4 alkyl, C1–C4 alkoxy, Cl, Br and I.

8. A colorant intermediate comprising a compound having the structure:



wherein Y is poly(oxyalkylene) substituent having a straight or branched polymer chain of from 3 to 250 monomer units selected from ethylene oxide, propylene oxide, butylene oxide and glycidol; R is H, C1–C4 alkyl, C1–C4 alkoxy, Cl, Br or I.

16. A xanthene colorant comprising a compound having the structure:



where R_1 and R_2 are independently selected from H, C1–C20 alkyl and aryl, or are both Y, where Y is a poly(oxyalkylene) substituent having a straight or branched polymer chain of from 3 to 250 monomer units selected from ethylene oxide, propylene oxide, butylene oxide and glycidol;

R_3 and R_4 are both Y;

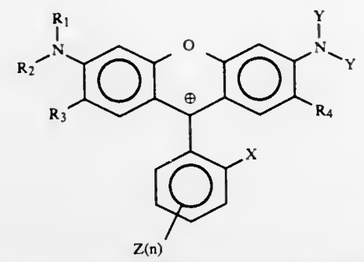
R_5, R_6 and R_7 are independently selected from H, C1–C4 alkyl, C1–C4 alkoxy, Cl, Br and I;

each R_8 is independently selected from C1–C4 alkyl, C1–C4 alkoxy, Cl, Br and I, and m is 0, 1, 2 or 3;

X is selected from H, SO_3—, CO_2—, $COOR_9$, Cl, Br and OH, and R_9 is C1–C8 alkyl or aryl; and

each Z is independently selected from SO_3—, CO_2—, $COOR_{10}$, Cl, Br and OH, and R_{10} is C1–C8 alkyl or aryl, and n is 0, 1, 2 or 3.

24. A xanthene colorant comprising a compound having the structure:



wherein Y is a poly(oxyalkylene) substituent having a straight or branched polymer chain of from 3 to 250 monomer units selected from ethylene oxide, propylene oxide, butylene oxide and glycidol;

R_1 and R_2 are independently selected from H, C1–C8 alkyl, aryl and Y, provided that if either R_1 or R_2 are Y, the other is not H;

R_3 and R_4 are independently selected from H, C1–C4 alkyl, C1–C4 alkoxy, Cl, Br and I;

X is selected from H, SO_3—, CO_2— and $COOR_5$, where R_5 is C1–C4 alkyl or aryl; and

each Z is independently selected from SO_3—, CO_2—, $COOR_6$, and OH, where R_6 is C1–C4 alkyl or aryl, and n is 0, 1, 2 or 3.

5,250,709

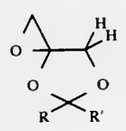
DIOXOLANE-CONTAINING FLUOROEPOXIDES

Ming-Hong Hung, and Shlomo Rozen, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 746,241, Aug. 15, 1991, Pat. No. 5,198,556. This application Nov. 10, 1992, Ser. No. 974,198
Int. Cl.[5] C07D *317/08*
U.S. Cl. 549—332 **8 Claims**

1. A dioxolane-containing fluoroepoxide of the structure 2,

2



wherein

R and R′ are independently F, C_1 to C_3 fluoroalkyl or chlorofluoroalkyl with at least one fluorine substituent.

5,250,710

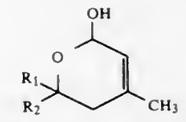
DIHYDROPYRAN DERIVATIVES, PROCESSES FOR PREPARATION AND USE

Pierre F. Chabardes, Sainte Foy Les Lyon; Lucette Duhamel; Pierre Duhamel, both of Mont Saint Aignan; Jerome Guillemont, Beuzeville, and Jean-Marie Poirier, Saint Martin de Vivier, all of France, assignors to Rhone-Poulenc Nutrition Animale, Commentry, France

Division of Ser. No. 620,609, Dec. 3, 1990, Pat. No. 5,157,133. This application May 7, 1992, Ser. No. 879,335
Claims priority, application France, Dec. 1, 1989, 89 15869
Int. Cl.[5] C07D *315/00*
U.S. Cl. 549—423 **3 Claims**

1. A process for preparing dihydropyran derivatives of formula I:

I



wherein R_1 and R_2, which may be identical or different, are hydrogen, linear or branched alkyl groups, linear or branched alkenyl groups or aryl groups, but are not simultaneously hydrogen, comprising contacting lithium dienolate of prenal with an aldehyde of formula R_1CHO or a ketone of formula R_1COR_2, wherein R_1 and R_2 are defined as above.

5,250,711

AMINE SALTS OF ALKANE-1,N-DICARBOXYLIC ACID MONO-(2-SULFATO-ETHYL) AMIDES

Bruce A. Pearlman, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

PCT No. PCT/US88/02181, § 371 Date Jan. 12, 1990, § 102(e) Date Jan. 12, 1990
Continuation of Ser. No. 74,381, Jul. 16, 1987, abandoned. This PCT application Jul. 1, 1988, Ser. No. 459,745
Int. Cl.[5] C07D *75/00, 7/00, 213/18;* C07C *309/15*
U.S. Cl. 552—575 **8 Claims**

1. A compound having the Formula I

$$HOC(O)—(CH_2)_n—C(O)—N(R_1)—CH_2CH-{}_2SO_3^-{}^+HN(R_2)_3 \quad I$$

wherein R_1 is selected from the group consisting of hydrogen, C_1–C_8 alkyl and phenyl; R_2 is C_1–C_8 alkyl or $(R_2)_3$ when taken together with the nitrogen atom is pyridinyl; and n is an integer of from 4 to 20.

5,250,712

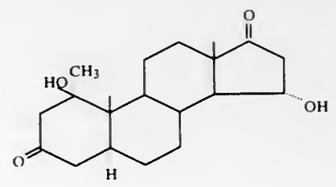
1β,15α-DIHYDROXY-1α-METHYL-5α-ANDROSTANE-3,17-DIONE, ITS PRODUCTION AND USE

Karl Petzoldt, and Helmut Hofmeister, both of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Continuation of Ser. No. 459,697, Jan. 30, 1990, abandoned. This application Jun. 22, 1992, Ser. No. 902,567
Claims priority, application Fed. Rep. of Germany, May 30, 1988, 3818747
Int. Cl.[5] C07J *1/00*
U.S. Cl. 552—613 **1 Claim**

1. 1β,15α-Dihydroxy-1α-methyl-5α-androstane-3,17-dione of formula I

(I)



5,250,713

PROCESS FOR PRODUCING DESULFURIZED FATS AND OILS OR FATTY ACID ESTERS AND PROCESS FOR PRODUCING ALCOHOLS BY USING SAID DESULFURIZED FATS AND OILS OR FATTY ACID ESTERS

Hiroyuki Tamura; Yasuyuki Hattori; Kunizo Hashiba; Osamu Tabata; Kiyoshi Tsukada, and Noriaki Fukuoka, all of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Mar. 11, 1992, Ser. No. 849,187
Claims priority, application Japan, Mar. 11, 1991, 3-44708; Nov. 19, 1991, 3-303202
Int. Cl.[5] C07C *51/36*
U.S. Cl. 554—141 **9 Claims**

1. A process for producing desulfurized fats and oils or fatty acid esters which comprises treating fats and oils or fatty acid esters under a hydrogen or a mixture of hydrogen and an inert gas atmosphere at a temperature of from 100° to 350° C. in the presence of a catalyst represented by the following formula (I):

$$Cu{\cdot}X_xY_yO_z$$

wherein X represents an element selected from Fe, Zn and Cr;

Y represents an element selected from Al, Si and Ti;

x and y each represent an atomic ratio determined by referring to Cu as 1, provided that x is a value of from 0.02 to 2.4 and y is a value of from 0 to 2.0; and

z is an atomic ratio of oxygen satisfying the valence requirements of the elements represented by X and Y.

5,250,714

FATTY ACID SALT PRODUCTION

M. Stephen Lajoie, Basking Ridge, N.J., assignor to Church & Dwight Co., Inc., Princeton, N.J.

Filed Sep. 17, 1991, Ser. No. 761,235
The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.
Int. Cl.[5] C07C *51/00*
U.S. Cl. 554—156 **10 Claims**

1. A process for the preparation of a fatty acid salt product which comprises (1) forming an admixture of reactive ingredients comprising (a) at least one C_{14}–C_{22} fatty acid, (b) between about 0.8–1.2 equivalents of basic alkaline earth metal compound per equivalent of C_{14}–C_{22} fatty acid, (c) a quantity of basic alkali metal compound which provides an alkaline earth metal:alkali metal atomic ratio between about 2:1 and 20:1, and (d) between about 10–50 weight percent of an aqueous medium, based on the weight of fatty acid; and (2) recovering the salt product after completion of the exothermic salt-forming reaction.

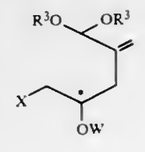
5,250,715

OPTICALLY ACTIVE 2-METHYLENEPENTANE DERIVATIVE AND PROCESS FOR PREPARING SAME

Takashi Takahashi, Kanagawa, and Yoshikazu Takehira, Hyogo, both of Japan, assignors to Daiso Co., Ltd., Osaka, Japan

Division of Ser. No. 727,193, Jul. 9, 1991, Pat. No. 5,216,187. This application Mar. 30, 1992, Ser. No. 860,618
Int. Cl.[5] C07F *7/08;* C07D *309/12;* C07C *309/63, 43/30*
U.S. Cl. 556—446 **2 Claims**

1. An optically active 2-methylenepentane derivative represented by the general formula



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wherein W is a hydrogen atom or a protective group for hydroxyl selected from the group consisting of alkenyl, aralkyl, alkyloxyalkyl, silyl, tetrahydropyranyl and tetrahydrofuranyl, R^3 is a protective group for hydroxyl selected from the group consisting of alkyl and aralkyl, wherein R^3 can be the same or different, and each R^3 can be bonded to each other to form a cyclic acetal, X is a halogen atom or R^4SO_3 group, R^4 is alkyl or aryl, and the symbol • represents an asymmetric carbon atom.

5,250,716

METHOD FOR MAKING A SILICON/COPPER CONTACT MASS SUITABLE FOR DIRECT REACTION

Jeffrey Y. P. Mui, 21 Rita La., Bellingham, Mass. 02019

Filed May 28, 1992, Ser. No. 889,423

Int. Cl.[5] C07F *7/04*

U.S. Cl. 556—472 **16 Claims**

1. A method to prepare an active silicon/copper contact mass for the direct reaction of an organic halide with silicon to make organohalosilanes, said method comprising the steps of:

treating particles of silicon with a copper catalyst vapor in a mechanical mixing device;

mixing said silicon particles with said copper catalyst vapor;

contacting said vapor with said particles; and

forming active Cu-Si alloys on said particles to form said contact mass.

5,250,717

PROCESS FOR PREPARING N,N-DIARYLTHIOUREAS AND ARYLISOTHIOCYANATES

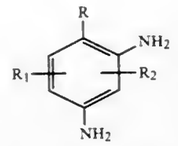
Gordon G. Knapp, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 601,238, Oct. 22, 1990, abandoned. This application Jun. 1, 1992, Ser. No. 891,250

Int. Cl.[5] C07C *209/60, 335/20*

U.S. Cl. 558—18 **8 Claims**

1. A process for the preparation of N,N'-diarylthioureas and arylisothiocyanates comprising treating a compound of the formula:



where R, R_1 and R_2 are the same or different and are hydrogen or C_1 to C_6 linear or branched alkyl with thiourea at a temperature of from about 150° C. to about 250° C. and separating said N,N'-diarylthiourea and arylisothiocyanate from the mixture produced from said treating.

5,250,718

PROCESS FOR THE PREPARATION OF SECONDARY ALKYL SULFATE-CONTAINING SURFACTANT COMPOSITIONS

Eugene F. Lutz, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 28, 1992, Ser. No. 951,955

The portion of the term of this patent subsequent to Dec. 24, 2008, has been disclaimed.

Int. Cl.[5] C07C *315/04*

U.S. Cl. 558—41 **34 Claims**

1. A process for preparing secondary alkyl sulfate-containing surface active compositions substantially free of unreacted organic matter and water, which process comprises: a) sulfating a reactant selected from the group consisting of a detergent range olefin having from about 8 to about 22 carbon atoms, a detergent range alcohol having from about 8 to about 22 carbon atoms and mixtures thereof, with a sulfating agent, b) neutralizing the product of step a) with a base dispersed in a non-surfactant carrier, c) saponifying the product of step b), d) passing the product of step c) through a thin film evaporator to evaporate unreacted organic matter from said product and recovering a secondary alkyl sulfate-containing product.

5,250,719

PROCESS FOR THE PREPARATION OF L-α-GLYCERYLPHOSPHORYL-CHOLINE AND OF L-α-GLYCERYLPHOSPHORYLETHANOLAMINE

Giovanni Tronconi, Grato-Lodi, Italy, assignor to Prime European Therapeuticals S.p.A., Lodi, Italy

PCT No. PCT/EP90/00717, § 371 Date Nov. 8, 1991, § 102(e) Date Nov. 8, 1991, PCT Pub. No. WO90/13552, PCT Pub. Date Nov. 15, 1990

PCT Filed May 4, 1990, Ser. No. 773,923

Claims priority, application Italy, May 8, 1989, 20413 A/89

Int. Cl.[5] C07F *9/10*

U.S. Cl. 558—146 **5 Claims**

1. A process for the purification of glycerylphosphorylcholine (GPC) and glycerylphosphorylethanolamine (GPE) from a crude alcoholic mixture thereof obtained by deacylating crude or deoleated soy or egg lecithin or alcoholic extracts thereof comprising:

a) charging said mixture on a resin in acid form having carboxylic acid or sulfonic anchor groups, the resulting supported mixture having the formula

$$(nGPC)+mGPE)+pResin$$

wherein

n represents mmoles of GPC and has a value of 0–1;

m represents mmoles of GPE and has a value of 0–1;

and p represents mequivalents of resin and has a value of 3–6 a for strong cationic resin and 6–8 for a weak cationic resin;

b) washing said supported mixture with methanol, ethanol or a hydrated mixture thereof;

c) eluting said washed supported mixture with water to obtain an aqueous solution of nGPC+mGPE; and

d) eluting said aqueous solution of nGPC+mGPE with a strong basic resin in OH form to separate purified GPE from purified GPC.

5,250,720

INTERMEDIATES FOR PREPARING PEPTIDE BORONIC ACID INHIBITORS OF TRYPSIN-LIKE PROTEASES

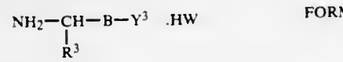
Charles A. Kettner, and Ashokkumar B. Shenvi, both of Wilmington, Del., assignors to The Dupont Merck Pharmaceutical Company, Wilmington, Del.

Division of Ser. No. 178,368, Apr. 6, 1988, Pat. No. 5,187,157, which is a continuation-in-part of Ser. No. 59,670, Jun. 5, 1987, abandoned. This application Mar. 9, 1992, Ser. No. 852,023

Int. Cl.[5] C07F *5/04*

U.S. Cl. 558—288 **2 Claims**

1. A compound of the formula



FORMULA II

wherein

Y^3 is a moiety derived from a dihydroxy compound having at least two hydroxy groups separated by at least two connecting atoms in a chain or ring, wherein the oxygen atoms of two of said hydroxy groups are bonded to B, said chain or ring comprising 1 to about 20 carbon atoms and optionally a heteroatom which can be N, S or O;

R^3 is a substituted alkyl selected from the group consisting of $-(CH_2)_z-W^1$, $-CH(CH_3)-(CH_2)_2-W^1$, $-CH_2-CH(CH_3)-CH_2-W^1$, $-(CH_2)_2-C(CH_3)_2-W^1$ and $-CH_2)_2-CH(CH_3)_2-W^1$;

W and W^1, independently, are Cl or Br; and

z is 3 to 5.

5,250,721

METHOD FOR STABILIZATION OF CRUDE ACETONITRILE AS OXIDATION OR AMMOXIDATION FEED

Mark C. Cesa, South Euclid, and Mark R. Bruce, Seven Hills, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 11, 1991, Ser. No. 805,216

Int. Cl.[5] C07C *253/32, 253/34*

U.S. Cl. 558—435 **6 Claims**

1. A process for stabilizing crude acetonitrile comprising:

(a) mixing crude acetonitrile with a strong base and aldehyde to form a mixture, wherein said mixture has a pH greater than 10,

(b) heating said mixture to its reflux temperature for a time sufficient to enable said crude acetonitrile to stabilize, and

(c) recovering said stabilized crude acetonitrile from said mixture.

5,250,722

TAXANE DERIVATIVES, THEIR PREPARATION AND USE IN ONCOLOGY

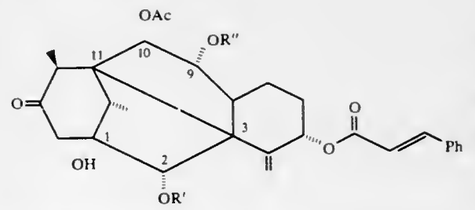
Ezio Bombardelli, and Bruno Gabetta, both of Milan, Italy, assignors to Indena S.p.A., Milan, Italy

Filed May 11, 1992, Ser. No. 881,047

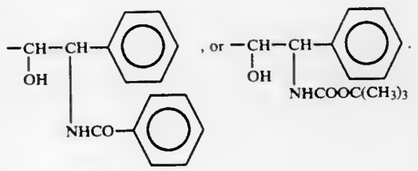
Int. Cl.[5] C07C *69/76*

U.S. Cl. 560—104 **10 Claims**

1. A compound of the formula:



wherein each of R' and R'' independently of the other is hydrogen, alkanoyl of 2 to 7 carbon atoms,



5,250,723

HIGH SURFACE HARDNESS TRANSPARENT RESIN AND POLYMERIZABLE MONOMER

Toshiyuki Suzuki; Katsuyoshi Sasagawa; Masao Imai, and Yoshinobu Kanemura, all of Kanagawa, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

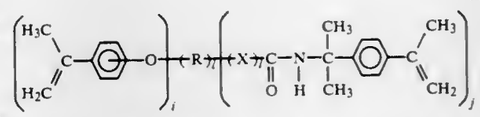
Division of Ser. No. 487,212, Mar. 1, 1990, Pat. No. 5,145,927. This application Aug. 10, 1992, Ser. No. 926,300

Claims priority, application Japan, Mar. 1, 1989, 1-48919; Mar. 20, 1989, 1-66240; May 26, 1989, 1-131559

Int. Cl.[5] C07C *265/02, 271/00*

U.S. Cl. 560—355 **3 Claims**

1. A polymerizable monomer for a high surface hardness transparent resin represented by the formula



(I)

wherein R is an aliphatic residue having or not having an oxygen atom, an alicyclic ring, a heterocyclic ring or an aromatic ring, or an alicyclic residue, l is 0 or 1, each of i and j is an integer of 1 or more, and when l=0, i=j=1, when l=1, (i+j) is 4 or less, when j=1, X is oxygen or sulfur, when j≧2, all X's are oxygen or sulfur, or one X is oxygen and the other X's are sulfur, or one X is sulfur and the other X's are oxygen.

5,250,724

PROCESS FOR THE PREPARATION OF TRIMELLITIC ACID

Carlo Fumagalli, Valbremo; Lorenzo Capitanio, Mozzo, and Giancarlo Stefani, Gorle, all of Italy, assignors to Alusuisse Italia S.p.A., Milan, Italy

Filed May 12, 1992, Ser. No. 881,812

Claims priority, application Italy, May 17, 1991, MI 91A001360

Int. Cl.[5] C07C *51/265*

U.S. Cl. 562—416 **15 Claims**

1. A process for the preparation of trimellitic acid comprising catalytically oxidating pseudocumene with air in acetic acid as a solvent and in the presence of cobalt, manganese, cerium, titanium and bromine as a catalyst.

5,250,725

AROMATIC ACID INTERMEDIATES

Dominique Olliero; Bernard Labeeuw, both of Montpellier; Gilles Roche, Saint Jean De Vedas, and Ali Salhi, Saint Gely du Fesc, all of France, assignors to Elf Sanofi, Paris, France

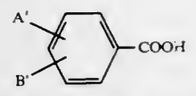
Division of Ser. No. 420,270, Oct. 13, 1989, Pat. No. 5,079,241, which is a continuation-in-part of Ser. No. 121,846, Nov. 17, 1987, abandoned, and Ser. No. 254,822, Oct. 7, 1988, abandoned. This application Sep. 3, 1991, Ser. No. 754,037

Claims priority, application France, Nov. 20, 1986, 86 16175; Oct. 8, 1987, 87 13925

Int. Cl.[5] C07C *311/17*

U.S. Cl. 562—430 **1 Claim**

1. A compound corresponding to the formula



in which the groups A' and B' are different and occupy the meta and para positions on the benzene ring, one of them representing a group OH and the other representing a group X—NH—Alk—SO_2—NH—, in which X represents hydrogen

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or a protecting group for the amine group and Alk represents a C_2–C_4 lower alkylene group.

5,250,726
PROCESS FOR THE PREPARATION OF 3-PENTENOIC ACID FROM BUTADIENE

Patrick M. Burke, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 24, 1992, Ser. No. 933,942
Int. Cl.[5] C07C *51/14*
U.S. Cl. 562—522 **7 Claims**

1. A process for the preparation of 3-pentenoic acid which comprises forming a reaction mixture of: butadiene; carbon monoxide; water in the amount of 1 to 20 percent by weight of the reaction mixture; a carboxylic acid solvent selected from the group of aliphatic C_2–C_{20} carboxylic acids, benzoic acid and alkyl-substituted benzoic acids wherein the total number of carbons in the alkyl group(s) is not more than 3; a homogeneous rhodium catalyst; a heterogeneous or homogeneous sulfonic acid catalyst; and an iodide promoter and reacting said mixture at a carbon monoxide partial pressure in the range of about 50 to 1000 psi, and at a temperature of about 50° to 120° C.

5,250,727
PREPARATION OF ALKOXYALKANOIC ACIDS

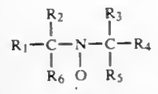
Herbert E. Fried, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 23, 1992, Ser. No. 996,287
Int. Cl.[5] C07C *51/16, 51/235, 51/27, 51/245*
U.S. Cl. 562—540 **24 Claims**

1. A process for the preparation of an alkoxyalkanoic acid of the formula

$$RO(CH_2CHR'O)_nCH_2CO_2H$$

wherein R is an alkyl group of from 1 to about 1,000 carbon atoms, R′ is hydrogen or methyl or mixtures thereof (on the individual molecule) and n is an integer greater than 12, which comprises reacting the corresponding alkoxyalkanol with a stable free radical nitroxide having the formula:



wherein (1) (a) each of R_1, R_2, R_3 and R_4 is an alkyl, aryl or heteroatom substituted alkyl group having 1 to about 15 carbon atoms, and (b) R_5 and R_6 (i) each is an alkyl group having 1 to about 15 carbon atoms provided that R_1–R_6, are not all alkyl groups, or a substituted alkyl group having 1 to about 15 carbon atoms wherein the substituent is hydrogen, cyano, —$CONH_2$, —OCOCH, $OCOC_2H_5$, carbonyl, alkenyl wherein the double bond is not conjugated with the nitroxide moiety, or —COOR wherein R of the —COOR group is alkyl or aryl, or (ii) together form part of a ring that contains 5 carbon atoms and up to two heteroatoms of O or N, or (2) the



moiety individually are aryl, in the presence of a NO_x-generating compound at a temperature in the range of from about 0° C. to about 100° C. and thereafter separating out the alkoxyalkanoic acid.

5,250,728
PREPARATION OF ETHYLENEDIAMINETRIACETIC ACID

Brian A. Parker, Nashua; Barry A. Cullen, Lyndeborough, and Roger R. Gaudette, Hudson, all of N.H., assignors to Hampshire Chemical Corp., Lexington, Mass.

Filed Dec. 12, 1991, Ser. No. 806,567
Int. Cl.[5] C07C *229/00*
U.S. Cl. 562—565 **10 Claims**

1. A process for the preparation of salts of ethylenediamine triacetic acid, comprising:
   a. reacting formaldehyde with an alkali metal or alkaline earth metal salt of ethylenediaminediacetic acid;
   b. reacting the product of step a with a cyanide source;
   c. allowing for the spontaneous cyclization of the resulting monoamide-diacid; and
   d. reacting the cyclization product of step c with at least 1 equivalent of alkali metal or alkaline earth metal hydroxide.

5,250,729
PROCESS FOR PREPARING UNSATURATED CARBOXYLIC ACID OR ESTER THEREOF

Takafumi Abe, and Shinichi Hieda, both of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Dec. 4, 1989, Ser. No. 445,543
Claims priority, application Japan, Jan. 26, 1989, 1-15110
Int. Cl.[5] C07C *57/00, 51/00, 67/00, 69/00*
U.S. Cl. 562—599 **2 Claims**

1. In a process for preparing a product comprising an α,β-unsaturated carboxylic acid, an α,β-unsaturated carboxylic acid ester or a mixture thereof from a starting material comprising at least one ester selected from the group consisting of an α-hydroxycarboxylic acid ester, an α-alkoxycarboxylic acid ester and a β-alkoxycarboxylic acid ester by a vapor-phase catalytic reaction, the improvement which comprises said catalyst being a crystalline aluminosilicate Molecular Sieve 13X zeolite, the starting material being selected from the group consisting of methyl α-hydroxyisobutyrate, methyl β-methoxyisobutyrate and methyl lactate; and the process being carried out at a temperature of 200° to 350° C.

5,250,730
PROCESS FOR PRODUCING HYDROXY TERMINATED NITRAMINES

Donna M. Cason-Smith, Columbia, and Horst G. Adolph, Burtonsville, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 13, 1992, Ser. No. 912,416
Int. Cl.[5] C07C *241/00*
U.S. Cl. 564—109 **5 Claims**

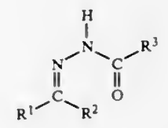
1. A method of producing dihydroxy terminated nitramines comprising
   contacting a diacetoxy terminated nitramine that is 1,7-diacetoxy-2,4,6-trinitro-2,4,6-triazaheptane or 1,9-diacetoxy-2,4,6,8-tetranitro-2,4,6,8-tetraazanonane with a concentrated aqueous hydrochloric acid comprising from 28 to 32 percent by weight hydrogen chloride with the remainder being water at ambient temperature until the diacetoxy terminate nitramine is hydrolyzed to form the corresponding dihydroxy terminated nitramine, 1,7-dihydroxy-2,4,6-trinitro-2,4,6-triazaheptane or 1,9-dihydroxy-2,4,6,8-tetranitro-2,4,6,8-tetraazanonane, respectively.

5,250,731
PREPARATION OF OPTICALLY ACTIVE HYDRAZINES AND AMINES

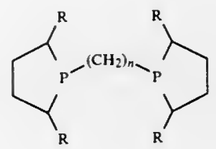
Mark J. Burk, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 17, 1992, Ser. No. 852,592
Int. Cl.[5] C07C *243/14*
U.S. Cl. 564—150 **10 Claims**

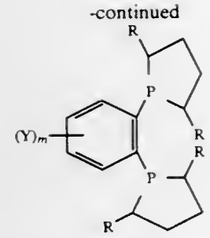
1. A process for the asymmetric hydrogenation of N-acylhydrazones comprising reacting with hydrogen a compound of formula 2


(2)

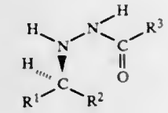
wherein
R^1 and R^2 are not the same and are each C_1 to C_{15} cyclic, linear or branched alkyl; C_1 to C_{15} cyclic, linear or branched alkyl substituted with at least one of hydrogen, halogen, alkyl, perfluoroalkyl, alkoxy, aryl, acyl, aryloxy, nitro, amino, carboalkoxy, trialkylsilyl, triphenylsilyl, vinyl, or alkynyl, C_1 to C_8 fluoroalkyl; C_1 to C_8 perfluoroalkyl; aryl; aryl substituted with at least one of hydrogen, halogen, alkyl, perfluoroalkyl, alkoxy, aryl, acyl, aryloxy, nitro, amino, carboalkoxy, trialkylsilyl, triphenylsilyl, vinyl, or alkynyl; aralkyl; ring substituted aralkyl substituted with at least one of hydrogen, halogen, alkyl, perfluoroalkyl, alkoxy, aryl, acyl, aryloxy, nitro, amino, carboalkoxy, trialkylsilyl, triphenylsilyl, vinyl, or alkynyl; carboalkoxy, carboamido, acyl, vinyl, substituted vinyl, alkynyl and
R^3 is aryl, aryl substituted with at least one of hydrogen, halogen, alkyl, alkoxy, aryl, aryloxy, nitro or amino, or a linear, branched or cyclic C_1 to C_8 alkyl;
in the presence of a catalyst comprising a complex wherein a transition metal is bonded to both phosphorus atoms of a chiral ligand selected from the group consisting of:
(S)-(−)-2,2′-bis(diphenylphosphino)-1,1′-binaphthyl;
(R)-(+)-2,2′-bis(diphenylphosphino)-1,1′-binaphthyl;
(2S,4S)-2,4-bis(diphenylphosphino)pentane;
(2R,4R)-2,4-bis(diphenylphosphino)pentane;
(2S,3S)-bis(diphenylphosphino)butane;
(2R,3R)-bis(diphenylphosphino)butane;
(+)-2,3-O-isopropylidene-2,3-dihydroxy-1,4-bis(diphenylphosphino)butane;
(−)-2,3-O-isopropylidene-2,3-dihydroxy-1,4-bis(diphenylphosphino)butane;
phenyl-4,6-O-(R)-benzylidene-2,3-O-bis(diphenylphosphino)-β-D-glucopyranoside;
phenyl-4,6-O-(S)-benzylidene-2,3-O-bis(diphenylphosphino)-β-D-glucopyranoside;
a chiral ligand of formula I and II

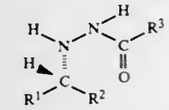

(I)

-continued


(II)

wherein
n is an integer from 1 to 12;
Y is each independently hydrogen, halogen, alkyl, alkoxy, aryl, aryloxy, nitro, dialkylamino, vinyl, substituted vinyl, alkynyl, of sulfonic acid;
m is an integer from 1 to 4;
R is a radical comprising linear, branched or cyclic C_1 to C_8 alkyl; linear, branched or cyclic C_1 to C_8 fluoroalkyl; linear, branched or cyclic C_1 to C_8 perfluoroalkyl; aryl; aryl substituted with at least one of hydrogen, halogen, alkyl, alkoxy, aryl, aryloxy, nitro, amino, vinyl, alkynyl, or sulfonic acid; aralkyl; ring-substituted aralkyl substituted with at least one of hydrogen, halogen, alkyl, alkoxy, aryl, aryloxy, nitro, amino, vinyl, alkynyl, or sulfonic acid;
provided that the catalyst is other than ruthenium (2,2′-bis(-diphenylphosphino)-1,1′-binaphthyl) dichloride dimer or bis-2-(methylallyl)ruthenium ((2S,5S)-2,5-dimethylphospholano)benzene;
to yield an optically active mixture of enantomeric N-acylhydrazines of formula (3A) and (3B)


(3A)


(3B)

wherein
R^1, R^2 and R^3 are as defined above.

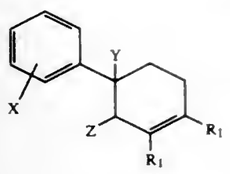
5,250,732
KETAMINE ANALOGUES FOR TREATMENT OF THROMBOCYTOPENIA

Timothy P. Kogan, Half Moon Bay, and Todd C. Somers, Montara, both of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

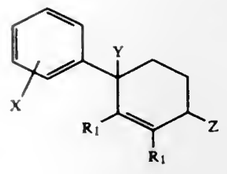
Filed Jul. 18, 1991, Ser. No. 732,365
Int. Cl.[5] C07C *233/06, 237/18*
U.S. Cl. 564—221 **5 Claims**

1. A compound represented by structural formulae I or II

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I



II

where:

X is selected from one or more of the group
hydrogen;
halogen (F, Cl, Br, I);
C_1–C_6-alkyl; and
C_1–C_6-alkoxy;

Y is selected from the group
hydroxy;
acyloxy;
—NHR_2; and
—NR_2R_3;
provided that when the compound is represented by formula I, —NHR_2 and —NR_2R_3 are not —NH_2 or —$NHCH_3$;

Z is selected from the group
oxo;
C_2–C_4-alkylenedioxy; and
hydroxy;

each R_1 is independently selected from the group
hydrogen; and
C_1–C_6-alkyl;

R_2 and R_3 are independently selected from the group
unsubstituted or substituted C_1–C_6-alkyl;
unsubstituted or substituted C_6–C_{14}-aryl;
unsubstituted or substituted C_1–C_6-alkanoyl;
unsubstituted or substituted C_7–C_9-aralkyl; and
biotinoyl;
wherein the substituents are selected from one or more of the group
halo (F, Cl, Br, I); cyano; azido; nitro; amino; amidino; imino; aminomethyleneamino; iminomethylamino; guanidino; N^G— aminoguanidino; C_1–C_6-alkylamino; C_2–C_{10}-dialkylamino; C_2–C_{10}-alkylideneamino; C_2–C_6-acylamino; formylamino; N-(C_1–C_6)-alkyl-N-(C_1–C_6)-acylamino; C_1–C_6-alkylsulfonamido; N-(C_1–C_6)alkyl-N-(C_1–C_6)-alkylsulfonylamino; thioformamido; N-(C_1–C_6)-alkyl-N-thioformylamino; thio(C_1–C_6)-acylamino; N-(C_1–C_6)-alkyl-N-thio(C_1–C_6)-acylamino; thioureido; C_2–C_6alkylsulfinamido; N-(C_1–C_6)-alkyl-N-(C_1–C_6)-alkylsulfinylamino; N,N-di(C_1–C_{10})-acylamino; carboxy; C_2–C_6-carbalkoxy; formyl; C_2–C_6-alkylcarbonyl; formyloxy; C_2–C_6-alkanoyloxy; carbamoyl (carboxamido); N-(C_1–C_6)-alkylcarboxamido; N,N-di(C_1–C_{10})-alkylcarboxamido; carbamoyloxy; N-(C_1–C_6)-carbamoyloxy; N,N-di(C_1–C_6)-alkylcarbamoyloxy; mercapto; C_1–C_6-alkylsulfinyl; C_1–C_6-alkylsulfonyl; C_1–C_6-alkylsulfonato; C_1–C_6-alkylthio; sulfonamido; N-(C_1–C_6)-alkylsulfonamido; N,N-di(C_1–C_6)-alkylsulfonamido; hydroxy; C_1–C_6-alkyloxy; C_1–C_6-alkyl optionally substituted with halo (F, Cl, Br, I), amino, C_1–C_6-alkylamino, carboxy, C_1–C_4-alkoxy, and hydroxy; C_2–C_6-alkenyl; C_2–C_6-alkynyl; C_3–C_6-cycloalkyl; C_6–C_{10}-aryl optionally substituted with halo (F, Cl, Br, I), amino, C_1–C_6-alkylamino, carboxy, C_1–C_4-alkoxy, and hydroxy; and heterocycloalkyl and heteroaryl having from 1 to 3 rings, each ring having from 0–3 hetero atoms selected from N, O, and S provided that at least one ring contains a heteroatom optionally substituted with halo (F, Cl, Br, I), amino, C_1–C_6-alkylamino, carboxy, C_1–C_4-alkoxy, and hydroxy;

R_2 and R_3 taken together may form C_4–C_8-alkylene or C_4–C_8-oxydialkylene;
and pharmaceutically acceptable salts thereof.

5,250,733

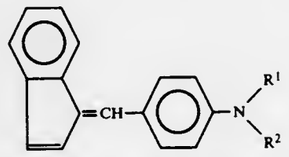
BENZYLIDENEINDENE COMPOUNDS AND ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR USING THE SAME

Tamotsu Aruga, Numazu, Japan; Masaomi Sasaki, Susono, and Mitsuru Hashimoto, Numazu, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 550,546, Jul. 10, 1990, abandoned, which is a division of Ser. No. 281,210, Dec. 8, 1988, Pat. No. 4,959,290. This application Feb. 19, 1992, Ser. No. 837,697
Claims priority, application Japan, Dec. 8, 1987, 62-308597; Mar. 8, 1988, 63-054548
Int. Cl.[5] C07C *211/44*; C07D *209/82*
U.S. Cl. 564—308 **3 Claims**

1. Benzylideneindene compounds having formula (I-1):

(I-1)



wherein R^1 and R^2 each represent a phenyl group which may have a substituent, a benzyl group which may have a substituent, or a biphenylyl group.

5,250,734

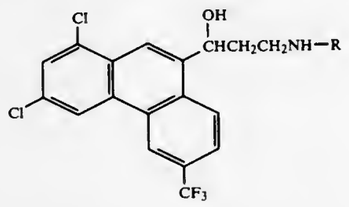
PHENANTHRENE METHANOL COMPOUNDS USEFUL AS ANTIMALARIAL AGENTS

Jean-Francois Rossignol, S. Clearwater, and Michael E. Randazzo, Tampa, both of Fla., assignors to Belmac Corporation, Tampa, Fla.

Filed May 28, 1992, Ser. No. 889,407
Int. Cl.[5] C07C *215/16*
U.S. Cl. 564—355 **3 Claims**

1. A compound represented by the following formula (I):

(I)



R is a group of the formula $(CH_2)_x$-Z where x is 1 to 4 and Z is a 6-membered ring from phenyl, cyclohexyl,
phenyl substituted with a hydroxy group (s) or cyclohexyl substituted with a hydroxy group (s), and a pharmaceutically acceptable salt thereof.

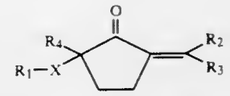
5,250,735

2-(N-SUBSTITUTED-AMINOALKYL)-5-(E)-ALKYLIDENE CYCLOPENTANONES, 2-(N-SUBSTITUTED-AMINOALKYL)-5-(E)-ARYLALKYLIDENE CYCLOPENTANONES, AND DERIVATIVES THEREOF

Lan K. Wong, Pittsburgh, Pa.; Hai-Tao Chen, and Zhi-Zhong Ji, both of Shenyang, China, assignors to University of Pittsburgh, Pittsburgh, Pa., by said Lan K. Wong

Filed Apr. 3, 1992, Ser. No. 847,910
Int. Cl.[5] C07C *211/25*
U.S. Cl. 564—442 **14 Claims**

1. A compound of the formula



and pharmaceutically acceptable salts thereof, wherein x is methylene or ethylene; R_1 is dimethylamino, diethylamino, 1-pyrrolidinyl, 1-piperidinyl, 4-morpholinyl, anilino or halide-, hydroxyl-, alkoxyl-, or alkyl-substituted anilino; R_2 is hydrogen, straight or branched alkyl of 1 to 9 carbon atoms, aryl or arylalkyl; R_3 is hydrogen, straight or branched alkyl of 1 to 9 carbon atoms, aryl or arylalkyl; or R_2 and R_3 are both ethylene and are bonded to each other to form a five member ring; and R_4 is hydrogen, methyl, ethyl, allyl, benzyl, substituted benzyl, cyclopentyl, halide-, hydroxyl-, alkoxyl-, or alkyl-substituted cyclopentyl, cyclopenten-1-yl, or halide-, hydroxyl-, alkoxyl-, or alkyl-substituted cyclopenten-1-yl; and wherein aryl is phenyl or phenyl-substituted with one or more methoxyl, hydroxyl, methylenedioxy, chloro, bromo, fluoro, ethoxycarbonylmethoxy, benzoxy, alkyl group, or their combination.

5,250,736

METHOD OF PREPARING A PHOSPHINE COMPOUND

Colleen E. Micklethwaite, and Allan J. Robertson, both of Thorold, Canada, assignors to Cyanamid Canada Inc., Markham, Canada

Filed Aug. 11, 1992, Ser. No. 927,998
Claims priority, application Canada, Oct. 30, 1991, 2054546-1
Int. Cl.[5] C07F *9/50*
U.S. Cl. 568—8 **16 Claims**

1. A process for preparing an allylphosphine or a vinylphosphine which comprises reacting, in the presence of acetonitrile and a nonpolar organic solvent, a phosphine with an allylhalide or a vinylhalide to form an allylphosphonium salt or a vinyl phosphonium salt, respectively, followed by treatment with a base to convert the phosphonium salt to the free allylphosphine or vinylphosphine base.

5,250,737

PROCESS FOR HYDROCARBYL TRISULFIDE PRODUCT

Nubar Ozbalik, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Jan. 31, 1992, Ser. No. 828,561
Int. Cl.[5] C07C *319/24*
U.S. Cl. 568—21 **19 Claims**

1. A method for preparing an essentially chlorine free additive mixture for oleaginous fluids containing less than 15 wt. % dialkyl higher-polysulfides, said process comprising:
a) forming a reaction mass comprising olefin, a sulfur source selected from hydrogen sulfide, flowers of sulfur, and a mixture of hydrogen sulfide and flowers of sulfur, and alumina catalyst;
b) agitating while heating the reaction mass to a temperature within the range of from about 50° to about 200° C. and for a period of time sufficient to form a reaction mixture of olefin, alkyl mercaptan, dialkyl disulfide, dialkyl trisulfide and dialkyl higher-polysulfide;
c) subsequently, cooling the reaction mixture to a temperature of less than about 35° C.;
d) removing a substantial portion of hydrogen sulfide and unreacted olefin from the reaction mixture; and
e) refluxing the reaction mixture obtained in (d) for a period of time which is sufficient to convert at least a portion of the dialkyl higher-polysulfides to dialkyl trisulfide so as to obtain said additive mixture containing less than 15 wt. % dialkyl higher-polysulfides.

5,250,738

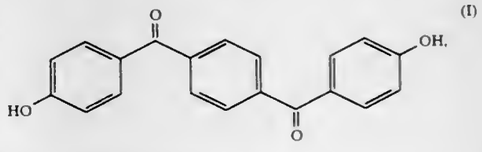
PROCESS FOR THE PREPARATION OF 1,4-BIS(4-HYDROXYBENZOYL)-BENZENE

Joachim Hackenbruch, Ginsheim, and Theodor Papenfuhs, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

PCT No. PCT/EP90/01002, § 371 Date Feb. 24, 1992, § 102(e) Date Feb. 24, 1992, PCT Pub. No. WO90/00256, PCT Pub. Date Jan. 10, 1991
PCT Filed Jun. 25, 1990, Ser. No. 778,162
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1989, 3921449
Int. Cl.[5] C07C *45/64*
U.S. Cl. 568—316 **12 Claims**

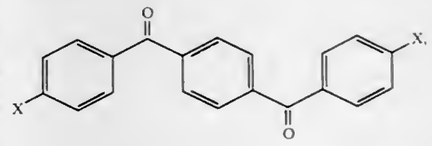
1. A process for the preparation of 1,4-bis(4-hydroxybenzoyl)benzene of the formula (I)

(I)



which comprises reacting a 1,4-bis(4-halobenzoyl)-benzene of the formula (II)

(II)



in which X is a fluorine, chlorine or bromine atom, with an alkali metal hydroxide or alkaline earth metal hydroxide or with a mixture of these hydroxides in an amount of about 200 to about 500 mol percent per halogenatom to be replaced, in a solvent which is inert to the reaction conditions and not miscible with water or in a two phase system of water and said inert organic solvent at temperatures of about 100° C. to about 250° C., if appropriate in the presence of a phase transfer catalyst.

5,250,739

PROCESS FOR CATALYTICALLY OXIDIZING CYCLOOLEFINS, PARTICULARLY CYCLOHEXENE

Noritaka Mizuno, Sapporo, Japan; David K. Lyon, Bend, and Richard G. Finke, Eugene, both of Oreg., assignors to Catalytica, Inc., Mountain View, Calif.

Filed Mar. 20, 1992, Ser. No. 854,552
Int. Cl.[5] C07C *45/34*
U.S. Cl. 568—360 **14 Claims**

1. A process for the oxidation of cyclohexene comprising the steps of:
contacting a cyclohexene-containing solution with a solvent containing a dissolved catalyst, the catalyst comprising a

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cation and anion where the anion has the following formula:

$$[L_nIr^{(I)}.X_2M_{15}M'_3O_{62}]^{y-}$$

where L is an olefinic ligand,
n is 1 or 2,
X is selected from B, Si, Ge, P, As, Se, Te, I, Co, Mn, and Cu,
M is W or Mo,
M' is Nb or V, and
y is the resulting ionic charge; and
contacting the resulting mixture with gaseous oxygen so as to produce oxygenated cyclohexene.

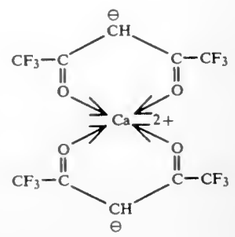
5,250,740

PRECURSORS FOR METAL FLUORIDE DEPOSITION AND USE THEREOF

Kevin J. Mackey; Anthony W. Vere, both of Worcestershire; Donald C. Bradley, London, all of England; Daro M. Frigo, Utrecht, Netherlands, and Marc M. Faktor, deceased, late of London, England by Jill Faktor, executrix , assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, Great Britain

Division of Ser. No. 619,831, Nov. 30, 1990, Pat. No. 5,116,785. This application Jan. 9, 1992, Ser. No. 818,384
Claims priority, application United Kingdom, Mar. 31, 1988, 8807793; May 3, 1988, 8810404
Int. Cl.[5] C07C *45/77*
U.S. Cl. 568—412 **2 Claims**

1. A complex for use as a precursor in forming a layer of a fluoride of a group II or group III metal on a semiconductor substrate, said complex having the formula:



5,250,741

PROCESS FOR THE PREPARATION OF 5-ALKOXY-2-NITROSO PHENOLS

Robert J. Maleski, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 13, 1992, Ser. No. 912,372
Int. Cl.[5] C07C *41/18, 201/00, 315/04, 67/313*
U.S. Cl. 568—587 **3 Claims**

1. Process for the preparation of a 5-alkoxy-2-nitrosophenol which comprises contacting an aqueous solution of an alkali nitrite with a solution of a 3-alkoxyphenol in an aliphatic, carboxylic acid having up to about 5 carbon atoms at a temperature of about −10° to 25° C., wherein the liquid reaction medium of the resulting mixture comprises at least about 70 weight percent of the aliphatic carboxylic acid and wherein at least one mol of alkali nitrite per mol of 3-alkoxyphenol is used.

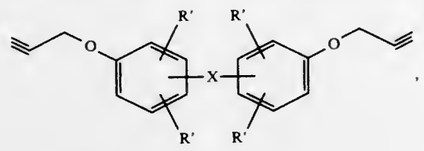
5,250,742

PROCESS FOR THE PRODUCTION OF PROPARGYL ETHERS AND NEW PROPARGYL ETHERS

Burkhard Köhler; Ralf Dujardin, and Wolfgang Ebert, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

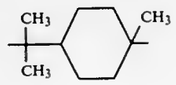
Filed Jul. 6, 1992, Ser. No. 908,460
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1991, 4123535
Int. Cl.[5] C07C *43/215*
U.S. Cl. 568—640 **3 Claims**

1. Propargyl ethers corresponding to general formula I



(I)

in which
R′ represents hydrogen or methyl and
X represents the substituent



5,250,743

METHOD OF INTERCOVERSION OF ENANTIOMERS OF ACYCLIC 1,2-DIHYDROXY-3-ALKENES

Neil W. Boaz, Waterloo, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 31, 1992, Ser. No. 999,240
Int. Cl.[5] C07C *41/03, 27/00*
U.S. Cl. 568—678 **20 Claims**

1. A method for the interconversion of enantiomers of an acylic 1,2-dihydroxy-3-alkene or converting either enantiomer of an acylic 1,2-dihydroxy-3-alkene to a corresponding antipodal 1-hydroxy-2-alkoxy-3-alkene compound comprising reacting in an acidic reaction media either enantiomer of an acylic vinyl epoxide with water, an alcohol, or a mixture thereof to form a product comprising an inverted acylic 1,2-dihydroxy-3-alkene or an inverted 1-hydroxy-2-alkoxy-3-alkene compound.

5,250,744

PROCESS FOR THE PREPARATION OF 2-ARYL-1,3-PROPANEDIOLS

Francis Johnson, Setauket, N.Y., and Richard Miller, Woodstown, N.J., assignors to Ganes Chemicals Inc., Carlstadt, N.J.

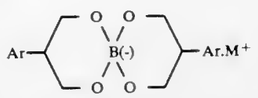
Continuation-in-part of Ser. No. 945,854, Sep. 16, 1992. This application Nov. 17, 1992, Ser. No. 977,542
Int. Cl.[5] C07C *33/26*
U.S. Cl. 568—811 **33 Claims**

1. A method of producing 2-aryl-1,3-propanediol comprising:
(a) reacting a compound of formula II:

$$ArCH(CH_2OH)COOR \quad (II)$$

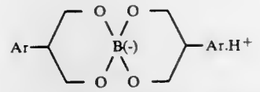
wherein Ar is an aryl group selected from the group consisting of phenyl, naphthyl, biphenylyl and thienyl which may be substituted with a substituent selected from the group consisting of halogen, alkoxy having 1–5 carbon atoms, hydroxy, aryloxy, dialkylamino and diarylamino, and R is selected from the group consisting of an alkyl group having 1–5 carbon atoms, an aralkyl group selected from the group consisting of o-tolyl, p-tolyl, and p-ethyl-

phenyl and an aryl group selected from the group consisting of phenyl, benzyl and phenethyl with a metal borohydride compound at a pH of at least 7.0 in the presence of at least one solvent to produce a compound of the Formula III:



(III)

wherein Ar is as defined above and M^+ is a metal cation;
(b) reacting the compound of Formula (III) with an acid of sufficient strength to convert the compound of Formula (III) to a compound of Formula (IV); and



(IV)

(c) reacting the compound of Formula (IV) with a base in a hydroxylic solvent of sufficient strength to convert the compound of formula IV to the 2-aryl-1,3-propanediol.

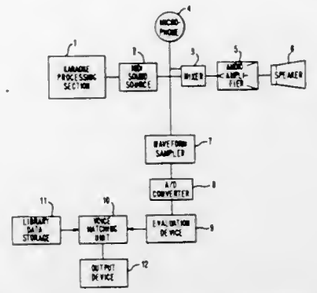
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5,250,745

KARAOKE MUSIC SELECTION DEVICE

Mihoji Tsumura, Osaka, Japan, assignor to Ricos Co., Ltd., Osaka, Japan

Filed May 12, 1992, Ser. No. 881,818
Claims priority, application Japan, Jul. 31, 1991, 3-216106
Int. Cl.[5] G10H *3/00, 7/00*
U.S. Cl. 84—603 6 Claims



1. A karaoke music selection device comprising

a sampling means which subjects voice signals converted by a microphone to sampling at suitable intervals,

a conversion means which converts sample waveforms generated by said sampling means into specimens consisting of digital values,

an evaluation means which holds a plurality of stored data items relating to various vocal characteristics to each of which a comparison data code is assigned, and which, on the input of specimens from said conversion means, compares said specimens with the plurality of stored data items and selects those data items which form the closest match, and

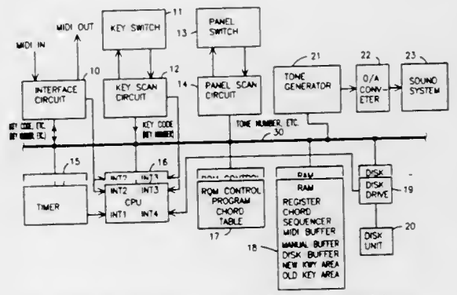
a voice matching means which receives input of the comparison data codes assigned to the data items selected by said evaluation means, and which accesses library data relating to a plurality of pieces of karaoke music to which codes identical to said comparison data codes have been assigned, thereafter extracting those pieces of music with matching codes.

5,250,746

CHORD DETECTING APPARATUS

Tsutomu Saito, Shizuoka, and Taichi Kosugi, Hamamatsu, both of Japan, assignors to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamatshu, Japan

Filed Apr. 9, 1992, Ser. No. 866,374
Claims priority, application Japan, Apr. 9, 1991, 3-103367; Apr. 16, 1991, 3-109679
Int. Cl.[5] G10H *1/06, 1/38, 7/00*
U.S. Cl. 84—613 16 Claims



1. A chord detecting/storing apparatus, comprising:

designating means for designating musical tones formed by a plurality of notes;

note detecting means for detecting individual notes of the musical tones designated by said designating means;

note extracting means for extracting one of said individual notes detected by said note detecting means;

note bit preparing means for preparing a row of note bits;

said note bit preparing means including means for deleting at least one note bit form said row of note bits;

a chord table for storing chord information to correspond to a pattern of said row of note bits; and

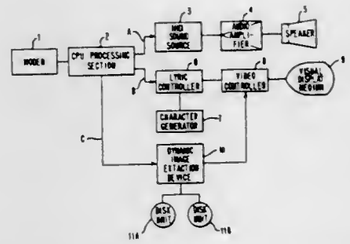
control means for searching said chord table using said row of note bits, and reading chord out information to detect a chord.

5,250,747

KARAOKE MUSIC REPRODUCTION DEVICE

Mihoji Tsumura, Osaka, Japan, assignor to Ricos Co., Ltd., Osaka, Japan

Filed May 12, 1992, Ser. No. 881,815
Claims priority, application Japan, Jul. 31, 1991, 3-216107
Int. Cl.[5] G09B *15/04;* G10H *7/00*
U.S. Cl. 84—645 7 Claims



1. In a karaoke music reproduction device which transmits MIDI data and lyric data, which has been converted into digital form and incorporated into a karaoke data string including a header and a footer, by way of a public telephone line, said MIDI data being used for the reproduction of music and said lyric data being used for the display of song lyrics on a visual display medium, a karaoke music reproduction device comprising a dynamic image extraction means that controls a memory means, which writes special codes in advance into a part of said karaoke data string and which holds a number of groups of dynamic images, each of said dynamic images having been assigned a code to match one or other of said special codes, said karaoke music reproduction device inputting the code written into said karaoke data string into a dynamic image extraction means before initiating the reproduction of the karaoke music and accessing said memory means, reading out those dynamic images which have codes corresponding to said special code and mixing said dynamic images with the song lyrics for output to said visual display medium.

5,250,748

TONE SIGNAL GENERATION DEVICE EMPLOYING A DIGITAL FILTER

Hideo Suzuki, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Continuation of Ser. No. 139,659, Dec. 30, 1987, abandoned. This application Aug. 14, 1989, Ser. No. 395,199
Claims priority, application Japan, Dec. 30, 1986, 61-311285
Int. Cl.[5] G10H *1/12*
U.S. Cl. 84—661 11 Claims

1. A tone signal generation device comprising:

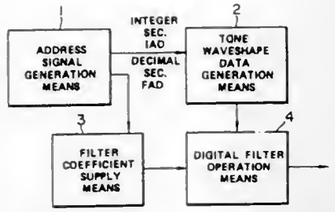
means for generating a binary address signal whose value changes at a rate corresponding to the tone pitch of a tone to be generated;

tone waveshape data generation means responsive to a first

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part of said address signal for generating a tone waveshape in the form of a sampled value;

filter coefficient supply means for supplying an integer number n of filter coefficients in response to a second part of said address signal;



digital operation means, having a structure of an integer order m, where $n<m$ for digital filtering of said tone waveshape in accordance with said integer number n of filter coefficients.

5,250,749

DEVELOPING UNIT PROVIDED WITH MECHANISM FOR EXHAUSTING DEVELOPING POWDER FROM DEVELOPING UNIT

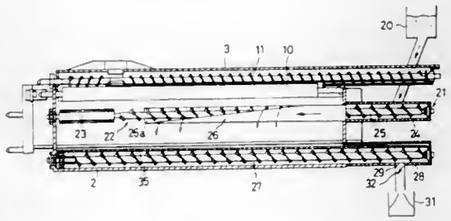
Toyoka Aimoto, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 22, 1992, Ser. No. 918,493

Claims priority, application Japan, Feb. 19, 1992, 4-031839; Apr. 24, 1992, 4-106447

Int. Cl.[5] G03G *15/08*

U.S. Cl. 118—653 **7 Claims**



4. A developing unit comprising:

a developing bath having an exhaust outlet formed on a bottom thereof;

one or more rollers for development being rotatably fitted to the inside of said developing bath;

means for exhausting developing powder out of said developing bath through said exhaust outlet, said exhausting means providing a pair of rotary bodies for carrying the developing powder axially, one rotary body carrying the developing powder in an opposite direction to the other rotary body and facing said exhaust outlet;

means for selectively opening or closing said exhaust outlet;

means for driving said rotary bodies; and

means for controlling said opening or closing means and said driving means, said controlling means being arranged to have means for activating said opening or closing means into an open state and driving said driving means when exhausting the developing powder and means for activating said opening or closing means into a closed state and driving said driving means to circulate and store the developing powder at any time except when exhausting the developing powder.

5,250,750

APPARATUS AND OIL COMPOSITIONS CONTAINING OLEFIN DIMER PRODUCTS

Ronald L. Shubkin, and Kevin J. Theriot, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 705,960, May 28, 1991, Pat. No. 5,171,918, which is a continuation-in-part of Ser. No. 684,291, Apr. 12, 1991, abandoned, which is a continuation-in-part of Ser. No. 554,727, Jul. 19, 1990, Pat. No. 5,068,487. This application Sep. 8, 1992, Ser. No. 942,016

Int. Cl.[5] H01B *3/22*

U.S. Cl. 174—17 LF **7 Claims**

1. An electrical power transformer, said transformer comprising an electrical component, a synthetic oil surrounding the electrical component and means for containing said synthetic oil, wherein said synthetic oil is selected from the group consisting of 1-octene dimer, 1-decene dimer, co-dimer of 1-octene and 1-decene, and mixtures thereof wherein (a) said 1-octene dimer further consists of a mixture of $C_{16}H_{32}$ isomers, which mixture includes 7-methylpentadecene isomers, provided that said mixture contains less than about 2.5 weight percent of said 7-methylpentadecene isomer based on the weight of said mixture, (b) said 1-decene dimer further consists of a mixture of $C_{20}H_{40}$ isomers, which mixture includes 9-methylnonadecene isomers, provided that said mixture contains less than about 2.5 weight percent of said 9-methylnonadecene isomers based on the weight of said mixture, and (c) said co-dimer further consists of a mixture of $C_{18}H_{36}$ isomers, which mixture includes $C_{18}H_{36}$ isomers selected from the group consisting of 7-methylpentadecene, 9-methylheptadecene isomers, and mixtures thereof, provided that said mixture contains less than about 2.5 weight percent of said 7-methylpentadecene and 9-methylheptadecene isomers based on the weight of said mixture.

5,250,751

ELECTROMAGNETIC SHIELDING GASKET

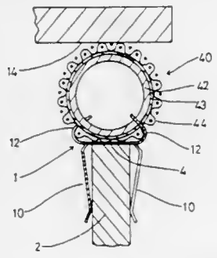
Akio Yamaguchi, Kasugai, Japan, assignor to Kitagawa Industries Co., Ltd., Japan

Filed Apr. 21, 1992, Ser. No. 871,851

Claims priority, application Japan, Jul. 17, 1991, 3-176876

Int. Cl.[5] H05K *9/00*

U.S. Cl. 174—35 GC **7 Claims**



1. An electromagnetic shielding gasket for attaching to a board member and engaging a desired contact portion of an adjacent member to provide electromagnetic shielding, said electromagnetic shielding gasket comprising:

an elongate flat base portion having a width substantially equal to a thickness of a desired portion of said board member to which said electromagnetic shielding gasket is to be attached;

a plurality of pairs of resilient fingers being arranged along a longitudinal direction of said base portion, each of said pairs of resilient fingers projecting from a side edge portion of said base portion;

a first set of said resilient fingers being bent toward one another to form clamping means for releasably clamping and securing said electromagnetic shielding gasket to the desired portion of said board member; and

a second set of resilient fingers being configured to facilitate contact of said electromagnetic shielding gasket with the desired contact portion of said adjacent member;

each pair of said plurality of pairs of resilient fingers comprising a resilient finger of said first set and a resilient finger of said second set and said resilient fingers of said first and said second sets, respectively, being arranged in an alternating pattern along the longitudinal length of said base portion;

wherein said second set of resilient fingers engage a meshed metal material for facilitating contact with the desired contact portion of a said adjacent member said meshed metal material comprises:

a resilient cylindrical core material;

a metallic mesh disposed around said core material; and

a resin layer provided on an outer periphery of the core material for securing the metallic mesh to the core material.

5,250,752

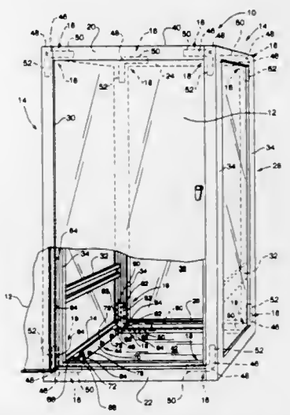
KNOCKDOWN EMI/RFI SHIELDED ELECTRONIC RACK ENCLOSURE

David F. Cutright, York, Pa., assignor to Gamlet Incorporated, York, Pa.

Filed Nov. 23, 1992, Ser. No. 980,625

Int. Cl.[5] H05K *9/00*

U.S. Cl. 174—35 R **12 Claims**



1. A knockdown EMI/RFI shielded electronic rack enclosure, said enclosure comprising in combination a three dimensional rectangular shaped mechanically rigid free-standing support structure comprised of a plurality of corner juncture interconnected vertical and horizontal frame members to describe a front and a rear and a pair of interconnected opposing side walls with a top and a bottom therefor, a corresponding plurality of unitary L-shaped squaring bracket assemblies each of said assemblies respectively having a horizontal flanged leg joined to a vertical flanged leg at a 90-degree angle by an interconnecting unflanged web segment for mechanically joining detachably by a nut and bolt connector means each of said plurality of corner juncture interconnected vertical and horizontal frame members describing said support structure, a door affixed by hinge means to enclosably cover the front of said support structure, a rear enclosement panel affixed by attachment means to enclosably cover the rear of said support structure, and a pair of side wall enclosement panels respectively affixed by an elongated U-shaped joining clamp adapted to slidably receive in close contact communication therewithin and compressively engage the upper and lower ends of said side wall enclosement panels respectively to a top enclosement panel end and a bottom enclosement panel end thereby to enclosably cover said pair of interconnecting opposing side walls and said top and said bottom of said support structure.

5,250,753

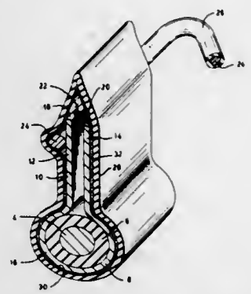
WIRE ASSEMBLY FOR ELECTRICALLY CONDUCTIVE CIRCUITS

Walter T. Schneider, Portsmouth, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 10, 1992, Ser. No. 866,921

Int. Cl.[5] H01B *7/34*

U.S. Cl. 174—36 **16 Claims**



1. A wire assembly for electrically conductive circuits, the assembly comprising a circuit conductor wire having a coating of insulative material thereon, a shielding foil wrapped at least partially around said coating and having a leg portion extending outwardly from said coating, a shield conductor wire fixed to said shielding foil, and an insulated outer layer enclosing said shielding foil and said shield conductor wire, wherein said shield wire is fixed to an outboard surface of said leg portion of said shielding foil.

5,250,754

CLAMPING DEVICE

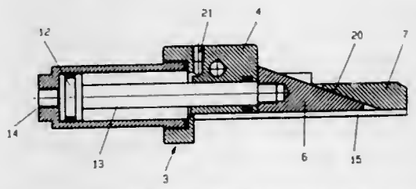
Thomas Wolf, Rossbrunnenstgr. 10, D-6308 Butzbach, and Rainer Klauer, Ferbornstr. 15, D-6333 Braunfels, both of Fed. Rep. of Germany

Filed Oct. 18, 1991, Ser. No. 776,769

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1990, 9014426[U]

Int. Cl.[5] H05K *5/00*; H02G *3/04*

U.S. Cl. 174—50 **5 Claims**



1. Clamping device for a cable duct pressure plate arranged in a frame comprising two wedges whose respective hypotenuses rest on one another, said wedges being moveable longitudinally relative to one another and adapted to be pushed between the pressure plate and the frame, and a piston-cylinder unit for moving the wedges relative to each other which has a piston rod, wherein the first of said wedges is mounted directly on the piston rod such that said first wedge can be moved away from the piston-cylinder unit to spread the wedges and wherein the second of said wedges, which rests on the hypotenuse of the first wedge, is held onto the first wedge by means

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of a strap which is pivotally connected to the second wedge and to the piston-cylinder unit.

5,250,755

X-RAY CONDUITS

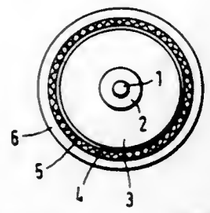
Helmut Dinzen, Koln, and Peter Funken, Frechen, both of Fed. Rep. of Germany, assignors to Felten & Guilleaume, Köln, Fed. Rep. of Germany

Filed Jan. 30, 1992, Ser. No. 828,216

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1991, 4102698; Nov. 27, 1991, 4138889

Int. Cl.[5] H01B *7/34, 11/18*

U.S. Cl. 174—102 SC **21 Claims**



1. An X-ray cable, comprising a plurality of elements arranged concentrically relative to one another and including from inside toward outside at least one inner conductor, an inner conducting sleeve, a high voltage insulation, an outer conducting sleeve, a screen and a casing, said inner conductor being composed of one or several wires each with a diameter between 0.1 and 0.6 mm, at least one of said wires being composed of ferromagnetic material with high permeability at frequencies over 1 MHz, and a direct current resistance of said inner conductor lies under 20 Ω/m, so that without the use of damping members, strongly increasing damping of occurring transient over voltages with a frequency of above 1 MHz is provided.

5,250,756

PULTRUDED CONDUCTIVE PLASTIC CONNECTOR AND MANUFACTURING METHOD EMPLOYING LASER PROCESSING

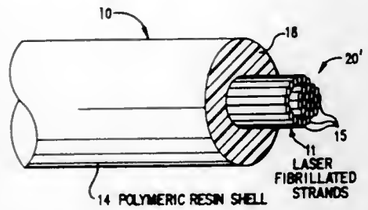
Joseph A. Swift, Ontario; Thomas E. Orlowski, Fairport, and Alan J. Werner, Jr., Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 21, 1991, Ser. No. 795,435

The portion of the term of this patent subsequent to Aug. 18, 2009, has been disclaimed.

Int. Cl.[5] H01B *7/00*

U.S. Cl. 174—119 R **15 Claims**



1. A high voltage connector for making electrical connection to a surface, comprising:

a composite pultruded member including:

a plurality of high resistance electroconductive strands;

a resin material in which said plurality of high resistance electroconductive strands are embedded;

a nonconductive shell surrounding said embedded high resistance electroconductive strands;

said composite pultruded member having exposed conductive strands on a front face of the connector for making point contacts to the surface when the strands are brought into contact therewith;

said resin material and said shell providing rigid support for said plurality of high resistance electroconductive strands, to maintain contact of said strands with said surface when said strands are brought into contact therewith; and

said nonconductive shell having a laser cut end with said exposed conductive strands extending between said laser cut end and said front face, wherein said exposed conductive strands are fibrillated between said laser cut end and said front face to form a highly dense area of point contacts.

5,250,757

PRINTED WIRING BOARD HAVING A CONNECTING TERMINAL

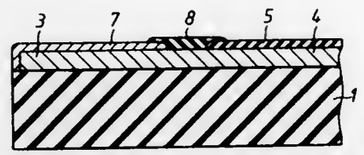
Shin Kawakami; Tatsuhiko Hayashida, and Mitsuo Nakahara, all of Fujikubo, Japan, assignors to Nippon CMK Corp., Japan

Filed Apr. 16, 1992, Ser. No. 869,663

Claims priority, application Japan, Apr. 12, 1991, 3-348277

Int. Cl.[5] H05K *1/00*

U.S. Cl. 174—250 **20 Claims**



1. A printed wiring board, comprising: a base material, a connecting terminal formed on the base material for effecting an electrical connection to an external device, a solder resist layer formed on the base material excluding a connecting terminal forming region thereof, a conductive protecting layer formed on a portion of the connecting terminal forming region and covering the connecting terminal so that the end portion of the solder resist layer is separated from the end portion of the conductive protecting layer and a portion of the connecting terminal between the solder resist layer and the conductive protecting layer is left exposed, and an insulating overcoat layer formed on the separating portion for bridging the end portion of the solder resist layer and the end portion of the conductive protecting layer to insulate and protect the exposed portion of the connecting terminal.

5,250,758

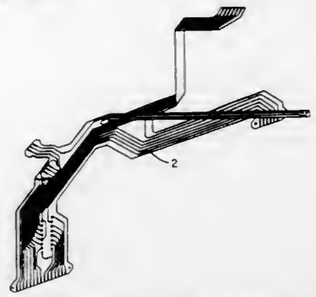
METHODS AND SYSTEMS OF PREPARING EXTENDED LENGTH FLEXIBLE HARNESSES

Joseph C. Fjelstad, Cupertino; Leo G. Svendsen, Redwood City; Gary 1. Geschwind, Palo Alto, and Raymond J. Noel, Jr., Menlo Park, all of Calif., assignors to ELF Technologies, Inc., Foster City, Calif.

Filed May 21, 1991, Ser. No. 703,724

Int. Cl.[5] H01K *1/00*

U.S. Cl. 174—254 **28 Claims**



1. An extended length printed harness formed on a flexible substrate, said harness comprising:

a toner image of a continuously updated conductor pattern formed on a continuous flexible substrate; and

a conductive path established as a harness branch on the continuous flexible substrate in accordance with the toner image of the conductor pattern.

5,250,759

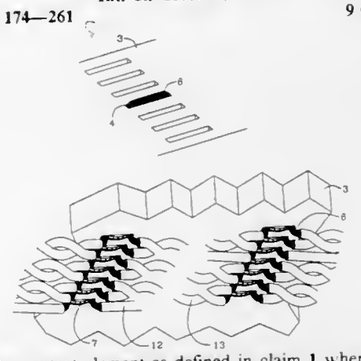
SURFACE MOUNT COMPONENT PADS

Troy M. Watson, 5672 E. Kelso St., Tucson, Ariz. 85712

Filed Feb. 28, 1992, Ser. No. 842,972

Int. Cl.[5] H05K *1/00*

U.S. Cl. 174—261 **9 Claims**



7. The contact element as defined in claim 1 wherein the hookup wire is one of a plurality of like hookup wires each having a like stripped portion, the stripped portions being made parallel and each formed into a like loop anchored in a like manner in an array of adjacent like cavities in the circuit board so as to provide an array of adjacent like contact elements.

5,250,760

SEMICONDUCTOR DEVICE

Isao Kano, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

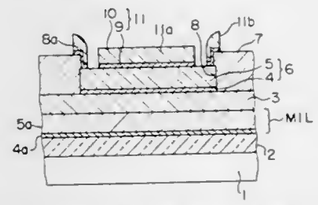
Filed Nov. 15, 1991, Ser. No. 795,934

Claims priority, application Japan, Nov. 24, 1990, 2-318614

Int. Cl.[5] H05K *1/00*

U.S. Cl. 174—262 **13 Claims**

1. A semiconductor device having a multilayer interconnection structure which comprises a plurality of insulating layers formed by coatings, a plurality of metal interconnection layers insulated by these insulating layers, a part of the uppermost metal interconnection layer being formed as a bonding pad portion, the bonding pad portion being formed by forming the



uppermost metal interconnection layer in a hall in the uppermost interlayer insulating layer, and a ring-shaped portion formed by a part of the uppermost metal interconnection layer covering the sides of the hall, the ring-shaped portion being separated from the bonding-pad portion.

5,250,761

MANAGING SYSTEM FOR CONSTRUCTION VEHICLES

Satoru Koyanagi, Kanagawa, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Japan

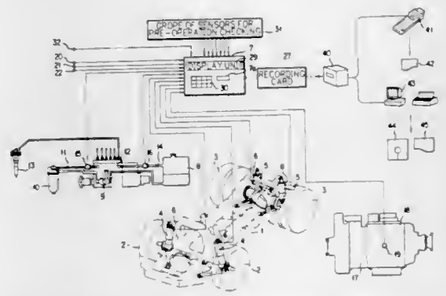
PCT No. PCT/JP90/01271, § 371 Date Mar. 31, 1992, § 102(e) Date Mar. 31, 1992, PCT Pub. No. WO91/05319, PCT Pub. Date Apr. 18, 1991

PCT Filed Oct. 2, 1990, Ser. No. 842,389

Claims priority, application Japan, Oct. 2, 1989, 1-255247; Dec. 27, 1989, 1-336695; Feb. 19, 1990, 2-036242

Int. Cl.[5] G01G *19/10, 19/40;* **G06F** *15/48*

U.S. Cl. 177—141 **7 Claims**



1. A managing system for a construction vehicle having front and rear wheels for which hydro-pneumatic suspension cylinders are provided, comprising:

a set of sensors including sensors operably attached to a brake fluid meter, an engine oil meter, a hydraulic fluid meter, a transmission oil meter, a retarder fluid meter, a radiator water level gauge and a battery liquid meter, respectively;

a vehicle travelling speed sensor unit for detecting a travelling speed, a highest and lowest vehicle travelling speeds and a distance travelled;

a vehicle control monitor, including: means for computing the weight of load according to respective pressures applied to the hydro-pneumatic suspension cylinders; means for recording an unloading time, the weight of load and the kind of load according to a combination of a vessel raising/lowering signal and a signal of a kind of load inputted by means of ten-key; means for computing fuel consumption per unit time according to a flow rate of fuel in a fuel supply line of an engine; means for computing the vehicle travelling speed, the highest and the lowest vehi-

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cle travelling speeds and the distance travelled according to an output signal from said vehicle travelling speed sensor unit; means for recording the results of a pre-operation check of the vehicle according to output signals from said sensors attached to the brake fluid meter, the engine oil meter, the hydraulic operating fluid meter, the transmission oil meter, the retarder fluid meter, the radiator water level gauge and the battery liquid meter, respectively; means for recording working hours measured by a built-in timer; and means for recording vehicle maintenance and descriptive data;

a non-contact type recording card for recording the information recorded in said vehicle control monitor;

means for reading out the information recorded in said recording card; and

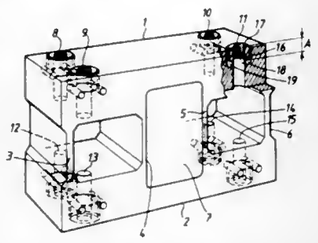
means for compiling a management ledger on the basis of the information read out from said recording card.

5,250,762

LOAD CELL HOUSING HAVING TILTABLE CONTACT BODIES ON OPPOSITE SIDES THEREOF

Pär Gustafsson, Liljanstorpsvägen 76, S-722 46 Västerås, and Ake Persson, Humlegatan 35 C, S-722 26 Västerås, both of Sweden

Filed Jan. 7, 1992, Ser. No. 817,492
Int. Cl.[5] G01G *21/28*
U.S. Cl. 177—244 **3 Claims**



1. A load cell housing which comprises first and second parallelepipedic yokes and a plurality of membranes connected therebetween, said first and second yokes defining planar surfaces on outwardly facing sides thereof and a plurality tubular bodies that project beyond said planar surfaces and provide flat contact surfaces, said first and second yokes defining gaps around said tubular bodies to allow said tubular bodies to individually tilt and conform to an uneven support surface.

5,250,763

ACOUSTICAL EQUALIZATION DEVICE SYSTEM

William G. Brown, P.O. Box 102, Bridgeport, N.Y. 13030

Continuation of Ser. No. 772,570, Oct. 7, 1991, abandoned. This application Mar. 3, 1993, Ser. No. 34,796
Int. Cl.[5] H05K *5/00*
U.S. Cl. 181—155 **6 Claims**

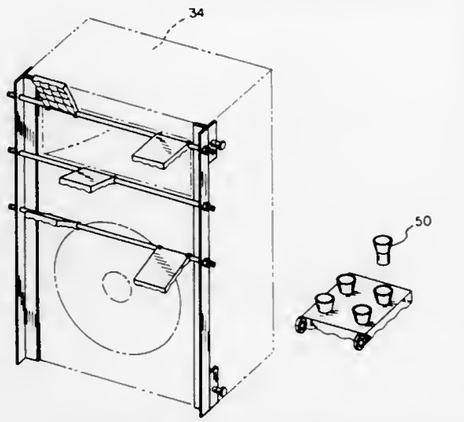
4. A new and improved acoustical equalization device comprising:

support means adapted to be positioned in relation to a sound source so as to intercept acoustical the signature radiated by said sound source,

a multiplicity of discrete baffles, each of said baffles comprising a substantially flat plate having opposed surfaces of differing acoustical characteristics, one of said surfaces being sound absorbent and the other opposed surface being sound reflective, said plate having a mounting edge forming a portion of the peripheral extent thereof,

means for pivotally mounting said baffle plates on said support means, said mounting means being located on said mounting edge and defining an axis of rotation for said plate relative to said support means, said mounting means further including means for permitting slidable movement of said plate mounting edge along said support means in the direction of said axis, and

means cooperating with said mounting means for maintaining each baffle plate in an adjusted pivotal and axial orientation relative to said support means, said sound source and each other whereby desired equalization of the acoustical signature radiated from said sound source may be effected.

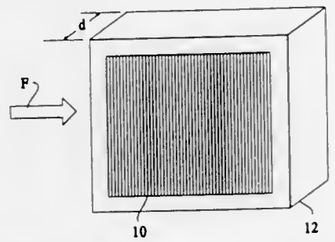


5,250,764

CONSECUTIVE PLATE ACOUSTIC SUPPRESSOR APPARATUS AND METHODS

Joseph Doychak, Westlake, Ohio, and Tony L. Parrott, Williamsburg, Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics & Space Administration, Washington, D.C.

Filed Oct. 16, 1992, Ser. No. 961,943
Int. Cl.[5] E04F *17/04*
U.S. Cl. 181—224 **25 Claims**



1. An apparatus for attenuating sound in a flow duct, comprising:

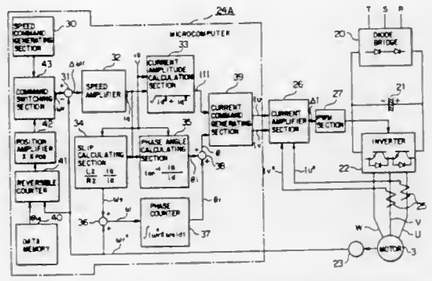
a plurality of closely spaced plates disposed in said flow, said plates extending substantially perpendicular to a flow duct surface having a specific geometry, said plates having a predetermined depth and inter-plate spacing in the range between 0.005 and 0.025 inches.

5,250,765

APPARATUS FOR CONTROLLING ELEVATOR DOOR

Masamoto Mizuno; Terumi Hirabayashi; Masanori Tawada, and Toshiyuki Kodera, all of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 11, 1991, Ser. No. 713,095
Claims priority, application Japan, Jun. 25, 1990, 2-155354
Int. Cl.[5] B66B *13/14*
U.S. Cl. 187—103 **9 Claims**



1. An apparatus for controlling an elevator door comprising:

a motor for opening and closing an elevator door;

an inverter unit connected to said motor which controls the driving of said motor;

door position detecting means connected to said motor for detecting the position of the door;

first and second sensors connected to said door position detecting means which respectively detect that said door passes through a terminal reference point on an opening side and a terminal reference point on a closing side;

speed command generating means for generating a door speed command on the basis of a distance between the door position detected by said door position detecting means to a stop target position on the opening side or the closing side when said first and second sensors respectively detect the passage of said door by the opening and closing side terminal reference points; and

control means for controlling said inverter unit on the basis of the speed command output from said speed command generating means.

5,250,766

ELEVATOR CONTROL APPARATUS USING NEURAL NETWORK TO PREDICT CAR DIRECTION REVERSAL FLOOR

Shiro Hikita, Hyogo, and Shintaro Tsuji, Aichi, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 23, 1991, Ser. No. 705,070
Claims priority, application Japan, May 24, 1990, 2-132470
Int. Cl.[5] B66B *3/00*
U.S. Cl. 187—133 **28 Claims**

1. An elevator control apparatus comprising:

an input data conversion means for converting traffic state data including elevator cage positions, cage running directions, and calls to be responded, into data in the form usable as input data to a neural network;

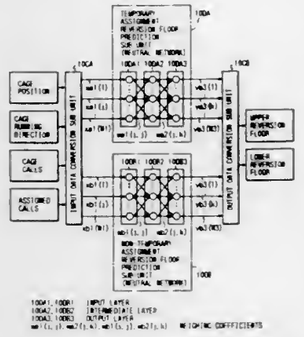
means for predicting a reversal floor including a neural network having a least an input layer for receiving input data from said input data conversion means, an output layer for outputting, as output data, data corresponding to the predicted reversal floors at which elevator cages are predicted to reverse their moving directions, and an intermediate layer disposed between said input layer and said output layer which simultaneously processes the neural network data having weighing coefficients, said reversal floor prediction means transmitting data corresponding to the floors at which said elevator cages are predicted to reverse their moving direction, whenever a landing place call is registered;

an output data conversion means for converting the output data into data in a form usable for a predetermined control operation, means for detecting floors at which the cages are actually reversed;

learning data forming means for storing the predicted reversal floors of the cages together with the input data at the time of prediction and the floors at which the cages are actually reversed as learning data at a predetermined point of time in a running period of the elevator;

correction means for correcting the weighing coefficients of said reversal floor prediction means using the learning data; and

means for controlling the operation of the cages on the basis of the converted output data.

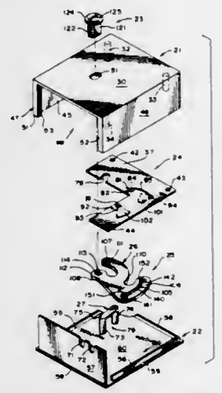


5,250,767

TELEVISION RECEIVER SIGNAL BLOCKING SYSTEM

Michael D. Sammon, Warwick, N.Y., assignor to Vectron, Inc., Warwick, N.Y.

Filed Apr. 16, 1991, Ser. No. 685,755
Int. Cl.[5] H01H *27/06*
U.S. Cl. 200—43.08 **19 Claims**



1. A television receiver signal blocking system comprising a television receiver having an electrical power conductor for conducting electrical power to said television receiver, a television receiver signal blocking mechanism associated with said television receiver, said television receiver signal blocking mechanism including first and second electrical contacts normally in electrically insulated relationship to each other, a first

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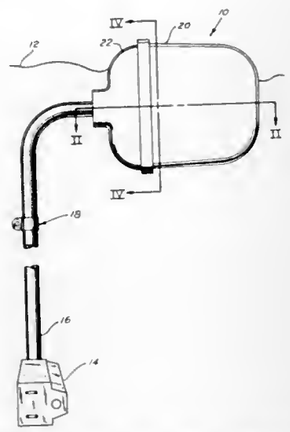
electrical conductor for conducting a television signal being connected to said first electrical contact, a second electrical conductor being connected to said second electrical contact and to a television signal input terminal of said television receiver, switch means for selective operability between at least first and second positions in which said first and second electrical contacts respectively remain electrically insulated from each other and are in electrically conductive relationship to each other, means for locking said switch means in said first position, said television receiver signal blocking mechanism including means for supporting said locking means and said switch means, said supporting means being formed of at least first and second members, and latch means operable by said locking means for latching said first and second members together when said switch means is in said first position.

5,250,768

FLOAT SWITCH WITH SNAP ACTION MEMBER

Robert A. Van Fossen, Auburn, Ind., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Jan. 17, 1992, Ser. No. 822,350
Int. Cl.[5] H01H *35/18*
U.S. Cl. 200—84 R **1 Claim**



1. An improved float switch for controlling electrically powered devices by sensing a liquid level and switching from an "on" position to an "off" position in response to changes in the same, comprising:

hollow housing means adapted to float on liquid, including upper and lower housing shells, said shells being hermetically joined to prevent the entry of liquid;

an electric cord extending from said lower housing shell, said cord being secured at a tether point below the liquid level to permit free movement of said housing means on the liquid surface, wherein a change in liquid level results in a change in orientation of the transverse axis of said hollow means;

spring-loaded switch means for completing electrical circuit across said electrical cord, said switch being biased toward an open condition, electrically connected to said cord and carried within said lower housing shell, said switch means including a bearing point means for moving said switch from said open condition to a closed condition in response to an application of pressure on said bearing point; including

a pivot terminal, having generally parallel arms extending from base member to define a generally U-shaped portion thereof, mounted within said lower shell with the open end of said U-shaped portion aligned transverse to the axis of travel of said actuator means;

a snap member, formed of a thin, flexible electroconductive material, generally E-shaped with three generally parallel legs extending from a transverse bar, having the central leg thereof extending beyond the outer legs, said snap member being joined to said pivot terminal by having said snap member central leg extended into said U-shaped portion of said pivot terminal, with the distal end there of affixed to said pivot terminal base member, with each of said snap member outer arms being affixed to the termination of said pivot terminal arms, such that said outer legs are bowed in the same direction in the same direction, forming a leaf spring; and

said bearing point means, carried on said snap member central leg;

actuator means, generally cylindrical in form, carried adjacent to said switch means in said housing for gravitationally-induced movement between first and second positions in response to said orientation of said housing means, said actuator means having a camming surface formed on the surface thereof, divided into a plurality of camming portions circumferentially around said actuator means, each said camming portion adapted to interact with said bearing point means for operating said switch means; said camming portions including:

a dwell portion adapted to make no contact with said bearing point,

a snap portion flaring outward from said dwell portion sufficient to make contact with said bearing point and to move the same a distance greater than the distance required to operate said switch means; and

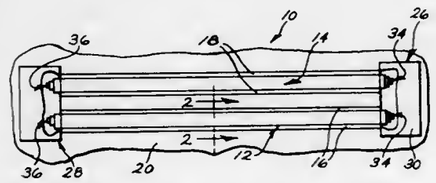
a detent portion, having a circumference less than the circumference of the distal end of the snap portion; wherein the weight of said of said actuator means is selected such that the force exerted by actuator means, applied at said snap portion to said bearing point as the transverse axis of said housing means moves from horizontal toward the vertical, to overcome the resistance of said spring loading of said switch means at a preselected angle of said housing, providing a snap action closing of said switch.

5,250,769

ROADWAY TREADLE SWITCH ASSEMBLY

Curtis W. Moore, 976 Plouvier Rd., Hodgensville, Ky. 42748

Filed Jun. 23, 1992, Ser. No. 902,847
Int. Cl.[5] G02B *6/26;* **H01H** *13/16*
U.S. Cl. 200—86 R **14 Claims**



1. A roadway treadle switch assembly comprising

a treadle constructed of a compressible, resilient material defining a hollow passageway terminating at openings located on opposite ends thereof, said treadle being adapted for disposition in a surface portion of a roadway such that a vehicle tire passing thereover will compress the same to effectively close a portion of said passageway,

means located at one end of said treadle for transmitting a light beam through said hollow passageway, and

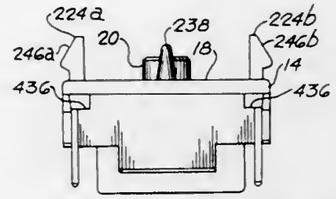
means located at the other end of said treadle for receiving said light beam as transmitted through said hellow passageway by said transmitting means, and for generating an output signal upon interruption of said light beam caused by a compression of said treadle and an effective closure of a portion of said passageway, indicative of the passage of a vehicle tire across said treadle, a portion of passageway located between said transmitting and receiving means being free of solid objects.

5,250,770

ROTARY VACUUM-ELECTRIC SWITCH

John G. Cummings, Cary, Ill., assignor to Indak Manufacturing Corp., Northbrook, Ill.

Filed May 8, 1991, Ser. No. 697,592
Int. Cl.[5] H01H *9/02*
U.S. Cl. 200—295 **17 Claims**



1. A rotary control device for an automotive vehicle,

said device comprising a housing made of a resinous plastic material and having a front wall facing forwardly on said housing,

a rotary control shaft rotatably mounted in said housing and projecting forwardly from said front wall,

said rotary control shaft being rotatable in said housing about a rotary axis,

said housing having a generally cylindrical boss projecting forwardly from said front wall of said housing and being coaxial with said rotary axis,

a substantially cylindrical opening extending axially through said boss and said front wall,

said rotary control shaft being rotatably mounted in said cylindrical opening,

first and second flexible resilient mounting members formed in one piece with said housing and projecting forwardly thereon beyond said front wall thereof,

said mounting members having front portions in the form of respective latching hooks,

each of said latching hooks having a hook shoulder ramp facing generally rearwardly toward said front wall and a lateral ramp tapering forwardly and laterally from the corresponding hook shoulder ramp,

each of said hook shoulder ramps slanting forwardly and laterally and terminating in a hook extremity constituting an intersection member between said hook shoulder ramp and the corresponding lateral ramp,

the forward and lateral slanting of each of said hook shoulder ramps being adapted to compensate for variations in thickness of a panel on which said control device is to be mounted by said latching hooks,

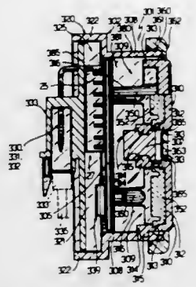
said hook extremity on each of said latching hooks comprising a rearwardly protruding rounded portion forming said intersection member between said hook shoulder ramp and said lateral ramp of each of said latching hooks.

5,250,771

MANUALLY CONTROLLED KEY DEVICE

Enzo Brusasco, Turin, and Giuseppe Boero, Candiolo, both of Italy, assignors to Roltra-Morse S.p.A., Cascine Vica-Rivoli, Italy

PCT No. PCT/IT90/00022, § 371 Date Sep. 9, 1991, § 102(e) Date Sep. 9, 1991, PCT Pub. No. WO90/10558, PCT Pub. Date Sep. 20, 1990
PCT Filed Mar. 6, 1990, Ser. No. 752,568
Claims priority, application Italy, Mar. 7, 1989, 52925/89[U]
Int. Cl.[5] H01H *21/00*
U.S. Cl. 200—553 **17 Claims**



1. A manually controlled key device comprising

a main frame formed by two pairs of walls, the walls of one pair being orthogonal to the walls of the other pair,

a cover plate, said cover plate extending generally orthogonally to the pairs of walls of the main frame in a manner covering a first open end of the main frame, and having connection means for removably connecting the cover plate to the main frame;

at least one aperture in the cover plate;

a printed circuit board, mounted in said main frame and extending substantially orthogonal to the pairs of walls of the main frame and dividing the interior of the main frame into a first and a second space;

at least one key, partially accommodated in the at least one aperture of the cover plate, said key including an actuation portion which slightly protrudes outwardly from the cover plate, support means which cooperates with the main frame for supporting the key in a displaceable manner, and at least one leg which protrudes into the first space of the main frame;

electrically conductive, elastically resilient contact means, supported by said printed circuit board and arranged in said first space in a position facing said leg of the key, the resilient contact means being displaceable by said leg upon actuation of the key, for opening and closing an electrical path of the printed circuit board;

an electronic unit supported by and electrically connected to said printed circuit board, said electronic unit being arranged in said second space and processing an electrical signal received from said printed circuit board in response to displacement of said contact means by manual displacement of the key and generating information signals for an actuator device as a result thereof.

5,250,772

MICROWAVE FURNACE WITH UNIFORM POWER DISTRIBUTION

John H. Booske, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

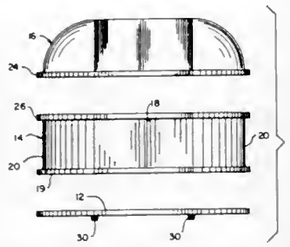
Filed Sep. 21, 1992, Ser. No. 948,169
Int. Cl.[5] H05B *6/64*
U.S. Cl. 219—10.55 R **5 Claims**

1. A microwave furnace having uniform power distribution comprising:

a substantially planar base,

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an intermediate portion comprising:
a pair of substantially planar spaced apart elongated sidewalls extending upwardly from said base, the distance between said sidewalls being within ±20% of the length of said sidewalls and the height of said sidewalls being within ±20% of one-half of the length of each of said sidewalls and
a pair of arcuate spaced apart end-walls extending upwardly from said base and disposed at each end of said sidewalls,



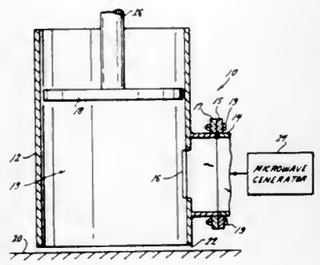
said end-walls having a height substantially equal to said sidewall height and a radius of curvature within ±20% of one-half of said distance between said sidewalls,
a domed cover co-extensive with the perimeter of said intermediate portion and having a radius of curvature within ±20% of one-half of the length of each of said sidewalls, and
means disposed within the furnace for introducing microwaves into the chamber defined by said base, said intermediate portion and said cover.

5,250,773

MICROWAVE HEATING DEVICE

Arthur C. Lind, Chesterfield, and Frederick C. Wear, St. Louis, both of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Mar. 11, 1991, Ser. No. 667,657
Int. Cl.[5] H05B *6/64*
U.S. Cl. 219—10.55 A **15 Claims**



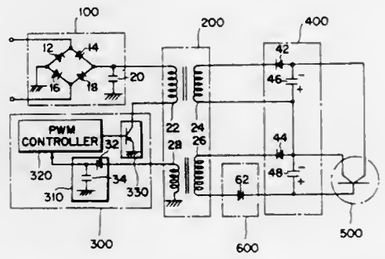
1. A microwave heating device for inducing currents in an electrically conductive surface to be heated, comprising:
a) a microwave energy source means for generating microwave energy;
b) a waveguide means coupled to the microwave energy source means for transmitting the microwave energy from the microwave energy source means;
c) a cylindrical housing means coupled to the waveguide means for resonating predetermined modes of microwave energy:
d) the cylindrical housing means having an adjustable end mounted to provide axial movement within the cylindrical housing means to change the length thereof; and
e) the cylindrical housing means having an open end for resonating microwave energy within a cavity formed by the cylindrical housing means and an electrically conductive surface in close proximity to the open end of the cylindrical housing means for coupling microwave energy to the electrically conductive surface.

5,250,774

POWER SUPPLY CIRCUIT FOR DRIVING MAGNETRON

Kyong-Keun Lee, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suweon City, Rep. of Korea

Filed Jun. 16, 1992, Ser. No. 899,360
Claims priority, application Rep. of Korea, Jun. 28, 1991, 91-10970
Int. Cl.[5] H05B *6/68*
U.S. Cl. 219—10.55 B **10 Claims**



1. A power supply circuit for driving a magnetron comprising:
a transformer having a magnetron driving secondary winding;
a high voltage condenser for driving the magnetron; and
an LC resonance preventing diode connected between a terminal of the magnetron driving secondary winding of said transformer and a terminal of the high voltage condenser,
an output voltage of the magnetron driving secondary winding of the transformer being exchangeably induced depending on a feedback voltage, to provide a stable power supply voltage to the magnetron.

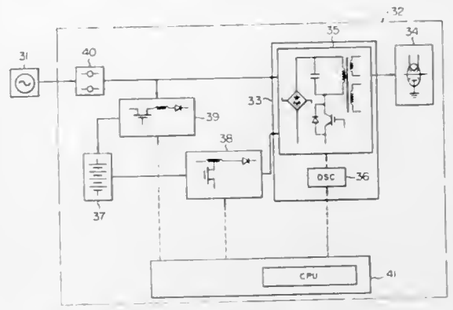
5,250,775

ELECTRIC COOKING APPARATUS ADAPTED FOR GENERATING HIGH POWER OUTPUT CONTAINING A BATTERY

Naoyoshi Maehara; Daisuke Bessyo, both of Nara; Yuji Nakabayashi; Makoto Shibuya, both of Yamatokoriyama; Takabiro Matsumoto, Nara; Shigeru Kusunoki, and Susumu Kiritoshi, both of Yamatokoriyama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Mar. 12, 1992, Ser. No. 849,976
Claims priority, application Japan, Mar. 20, 1991, 3-056590; Mar. 20, 1991, 3-056630
Int. Cl.[5] H05B *6/68*
U.S. Cl. 219—10.55 B **11 Claims**

1. An electric cooking apparatus comprising:
a single power converter section, for connection at an input thereof to an external AC power source, for converting power supplied from the external AC power source;
a heating-energy radiator section, coupled to an output of the power converter section, for receiving the converted power from the power converter section and radiating heating energy to a heating chamber; and
a battery for supplying power to the power converter section; and
coupling means for coupling the battery o an input of the power converter section, wherein a sum of the power from the external AC power source and the battery is converted by the power converting section when an instantaneous voltage of the external AC power source is smaller than a predetermined voltage level, which predetermined voltage level is smaller than a maximum instantaneous voltage of the external AC power source.

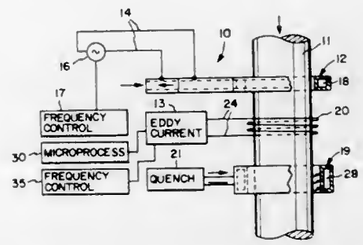


5,250,776

APPARATUS AND METHOD OF MEASURING TEMPERATURE

George D. Pfaffmann, Farmington, Mich., assignor to Tocco, Inc., Boaz, Ala.

Filed Sep. 30, 1991, Ser. No. 768,026
Int. Cl.[5] H05B *6/64*
U.S. Cl. 219—10.77 **22 Claims**



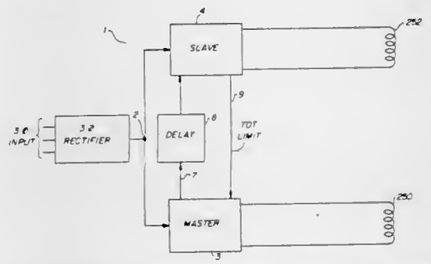
1. A method of monitoring a heating cycle of an induction heating system wherein an inductor at least partially encircles a metal workpiece and an alternating current is applied through said inductor from a power supply during said heating cycle, and wherein an eddy current coil adjacent to said inductor at least partially encircles said metal workpiece and a high frequency low power current is periodically applied to said eddy current coil from an eddy current power source to periodically produce eddy currents in said workpiece during said heating cycle, said method comprising the steps of:
(a) periodically reducing said alternating current to said inductor during said heating cycle and producing said eddy currents in said workpiece during periods of reduced current to said inductor;
(b) detecting said eddy currents produced during said periods of reduced current and recording the detected eddy currents;
(c) generating an analog signal form said detected eddy currents representative of electric and electromagnetic characteristics of said workpiece as said workpiece is being heated;
(d) digitizing said analog signal;
(e) creating a trace of said digitized analog signal, said trace being indicative of the electrical and magnetic characteristics of said workpiece as sensed by said detected eddy currents during said heating cycle; and
(f) evaluating said sensed electrical and magnetic characteristics by comparing said created trace with a preselected control pattern.

5,250,777

METHOD AND APPARATUS FOR VARIABLE PHASE INDUCTION HEATING AND STIRRING

Oleg Fishman, Maple Glen, Pa., assignor to Inductotherm Corp., Kancocas, N.J.

Continuation-in-part of Ser. No. 732,869, Jul. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 503,335, Apr. 2, 1990, abandoned. This application Sep. 10, 1992, Ser. No. 943,099
Int. Cl.[5] H05B *6/08*
U.S. Cl. 219—10.77 **22 Claims**



1. A channel-type induction furnace comprising: a crucible having a lower portion housing at least a first and a second induction coil, said induction coils between separated from each other and from said lower portion so to provide at least a dual-channel with the first channel being between the coils themselves, and the second channel being between the induction coils and the lower portion;
first and second inverters each having switch means with known turn-off-time characteristics for generating an alternating polarity output voltage across a load, the first inverter being connected to said first induction coil, and the second inverter being connected to said second induction coil;
means associated with the first inverter for monitoring the current and detecting zero-crossing of the current in said first induction coil, and for generating a control signal in response to such detection of zero-crossing, said means generating the control signal at an interval following detection of the zero-crossing which is greater than the turn-off-time characteristic of the switch means;
means for supplying the control signal to the switch means of the inverters to change the polarity of the inverter voltage in response to said signal;
means associated with the second inverter for introducing a selectable delay of said control signal to the switch means of the second inverter to produce a relative phase difference between the output voltages of the first and second inverters.

5,250,778

METHOD AND APPARATUS FOR WELDING PAD MATERIAL TO A SPARK PLUG ELECTRODE

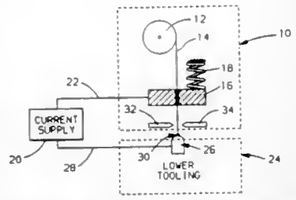
Randolph K. Chiu, Davison; John F. McKeon, Swartz Creek, and Paul A. Wheeler, Linden, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 23, 1991, Ser. No. 782,239
Int. Cl.[5] B23K *11/00*
U.S. Cl. 219—117.1 **11 Claims**

1. A method of forming a contact pad of platinum that is welded to a metallic electrode of a spark plug, the steps comprising, placing said spark plug electrode in contact with a welding electrode, applying a force to said spark plug electrode to force said spark plug electrode into tight contact with

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said welding electrode, moving the end of a platinum wire into engagement with said spark plug electrode while forcing said end of said wire against said spark plug electrode, causing electrical current to flow through a portion of said wire adjacent said spark plug electrode, through said spark plug electrode and through said welding electrode to thereby cause an end portion of said wire to be welded to said spark plug electrode and then severing said wire at a point closely adjacent said spark plug electrode.



5,250,779

METHOD AND APPARATUS FOR HEATING-UP A SUBSTRATE BY MEANS OF A LOW VOLTAGE ARC DISCHARGE AND VARIABLE MAGNETIC FIELD

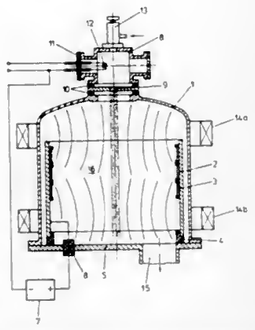
Helmut Kaufmann, Triesen, Liechtenstein, and Roland Schmid, Göfis, Austria, assignors to Balzers Aktiengesellschaft, Liechtenstein

Continuation of Ser. No. 784,703, Oct. 30, 1991, abandoned. This application Dec. 18, 1992, Ser. No. 995,947

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1990, 4035131

Int. Cl.[5] B23K *9/00*

U.S. Cl. 219—121.12 9 Claims



1. A method for uniformly heating-up a commodity having a surface, comprising:

providing a vacuum chamber containing the commodity with the commodity surface extending in a selected direction, the vacuum chamber having an opening with a line extending through the opening into the vacuum chamber substantially parallel to the selected direction;

generating electrons at a cathode outside the vacuum chamber, the cathode communicating with the opening for supplying the electrons in a stream to the opening and along the line into the vacuum chamber;

providing an anode in the vacuum chamber for attracting the electrons to the surface of the commodity for heating-up the commodity during a heating-up phase of operation;

generating at least two partially overlapping magnetic fields spaced along the line, the at least two magnetic fields having flux extending at least substantially parallel to the line, the flux spacially varying in strength along the line in a direction away from the opening; and

locally temporally varying the magnetic field with time along the line for influencing a distribution of the electrons along the surface of the commodity to uniformly distribute the electrons on the surface for uniformly heating-up the surface at least during the heating-up phase, the local temporal varying of the magnetic field comprising operating the two magnetic fields so that during part of the time of the heating-up phase, one of the magnetic fields is stronger and the other of the magnetic fields is weaker, and during another part of the time of the heating-up phase, said one of the magnetic fields is weaker and said other of the magnetic fields is stronger, the two magnetic fields alternating between being stronger and being weaker a plurality of times during the heating-up phase for causing a uniform distribution of electrons along the surface of the commodity, the strength of the two partly overlapping magnetic fields always being different from each other during the heating-up phase.

5,250,780

APPARATUS FOR TREATING THE SURFACE OF WORKPIECES BY MEANS OF A PLASMA TORCH

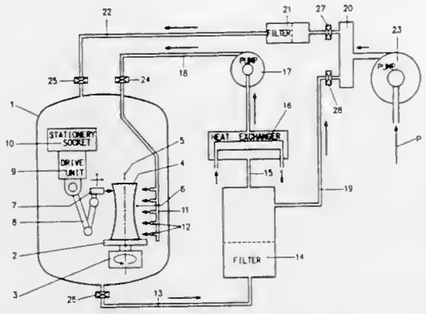
Bernard Hansz, 28 Rue Marcel Charon, F-91710 Vert le Pett, France, and Silvano Keller, Neumattweg 40 Charon, CH-5315 Bottstein, Switzerland

Filed Sep. 6, 1991, Ser. No. 755,892

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1990, 4028482

Int. Cl.[5] B23K *9/00*

U.S. Cl. 219—121.49 7 Claims



1. An apparatus or treating the surface of a workpiece by means of a plasma torch, the treatment being performed in an inert operating gas atmosphere and the workpiece to be treated being of a substantially thermally sensitive material, said apparatus comprising:

a work station having a plasma gun means and means for receiving the workpiece to be treated;

a gas-tight container enclosing said work station;

cooling means for cooling the surface of said workpiece to be treated, said cooling means including a fluid cooling medium directed against said surface of said workpiece to be treated, said fluid cooling medium being a portion of said inert operating gas atmosphere contained in said container;

said cooling means further comprising a cooling medium outlet member stationary arranged in the interior of said container;

a closed cooling medium circulation circuit in which said portion of said inert operating gas circulates, said cooling medium circuit being connected, at the input side, to an outlet of said container and, at the outlet side, to said cooling medium outlet member; and

a second closed circulation circuit for the operating gas which serves to maintain the inert gas atmosphere in the interior of said container, said second closed circulation circuit being coupled to said circulation circuit for cooling medium.

5,250,781

LASER BONDING APPARATUS

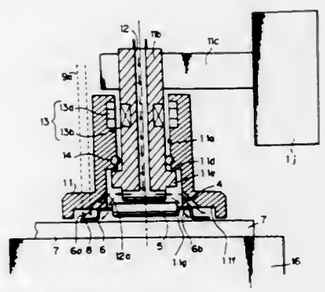
Makoto Kanda, and Masaharu Yoshida, both of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 22, 1991, Ser. No. 780,495

Claims priority, application Japan, Nov. 16, 1990, 2-312194

Int. Cl.[5] B23K *26/12, 26/14*

U.S. Cl. 219—121.63 7 Claims



1. A bonding apparatus, comprising:

a base for supporting a printed circuit board;

an atmosphere cover comprising a laser light transmitting material, which has a concavity formed for covering a semiconductor device mounted on the printed circuit board, a part of the concavity being formed to contact an upper portion of a lead terminal of the semiconductor device a lower portion of the atmosphere cover being formed to project over said lead terminal, at least said projecting portion being formed of said laser transmitting material;

a holder for slidably holding the atmosphere cover and for facilitating vertical movement thereof between upper and lower positions;

load means provided on the holder for applying a load toward said lower position of the atmosphere cover;

driving means for moving the holder upward and downward with respect to the printed circuit board;

atmosphere gas supplying means for supplying a selected atmosphere gas into the concavity; and

laser heating means for irradiating laser light outside of said holder and through a part of the atmosphere cover towards a bonding agent applied on junctions of the semiconductor device and the printed circuit board, for heating and fusing the bonding agent.

5,250,782

METHOD FOR THE CLOSING, BY LASER, OF ELECTRONIC CIRCUIT PACKAGES, NOTABLY HYBRID CIRCUIT PACKAGES, MINIMIZING MECHANICAL STRESSES

Christian Cordelle, Les Ulis; Florence de Reynal, Saint Mande; Dominique Goujard, Chilly Mazarin, and Michel Sergent, Paris, all of France, assignors to Thomson-CSF, Puteaux, France

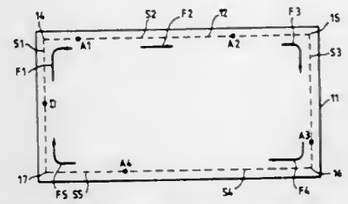
Filed Aug. 17, 1992, Ser. No. 931,052

Claims priority, application France, Sep. 3, 1991, 91 10863

Int. Cl.[5] B23K *26/00*

U.S. Cl. 219—121.64 3 Claims

1. A method for the closing, by laser, of packages of electronic circuits, notably hybrid circuit packages, said method minimizing mechanical stresses, the package being constituted by a substrate, a frame and a lid, the soldering of the lid to the frame being done by the moving of the laser beam along a given path on the lid of the package, the path being closed, wherein the soldering path is divided into segments and wherein two consecutive segments are never soldered one after the other.



5,250,783

METHOD OF LASER-WELDING METAL SHEETS HAVING DIFFERENT THICKNESS

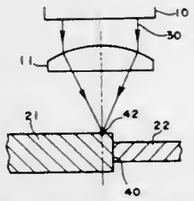
Eiji Nishi; Taminori Yanagisawa; Toshiyuki Takasago, and Kouichi Arima, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 2, 1992, Ser. No. 939,467

Claims priority, application Japan, Sep. 5, 1991, 3-252817

Int. Cl.[5] B23K *26/00*

U.S. Cl. 219—121.64 15 Claims



1. A method of laser-welding metal sheets together, each having different thicknesses, for one-piece stamping, comprising the steps of:

clamping the metal sheets of different thicknesses so that the metal sheets abut each other at end surfaces thereof to define an abutment line;

generating a laser beam with a laser welding apparatus;

directing the laser beam toward a line parallel to the abutment line and apart from the abutment line on the thicker sheet side, the line apart from the abutment line defining a weld line; and

during said step of directing, moving said laser beam along the weld line, thereby to form a weld bead which laser-welds the metal sheets together.

5,250,784

METHOD AND DEVICE FOR CUTTING A MULTILAYER ASSEMBLY COMPOSED OF A PLURALITY OF THIN FILMS AND COMPRISING A THIN FILM ELECTROCHEMICAL GENERATOR OR A COMPONENT PART THEREOF

Daniel Muller, Pau, France, and Bruno Kapfer, Longueil, Canada, assignors to Societe Nationale Elf Aquitaine, Courbevoie, France and Hydro-Quebec, Montreal, Canada

PCT No. PCT/FR91/00051, § 371 Date Oct. 24, 1991, § 102(e) Date Oct. 24, 1991, PCT Pub. No. WO91/11287, PCT Pub. Date Aug. 8, 1991

PCT Filed Jan. 29, 1991, Ser. No. 768,551

Claims priority, application France, Jan. 30, 1990, 90 01049

Int. Cl.[5] B23K *26/00*

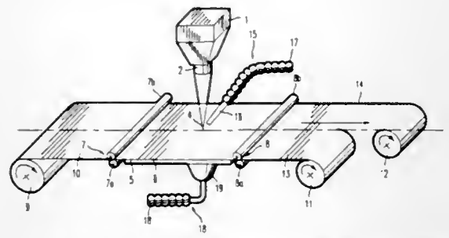
U.S. Cl. 219—121.72 20 Claims

1. A process for carrying out the cutting, to a desired shape, of a multilayer assembly selected from the group consisting of

VOL 1155 ISS 1 OC 5 1993 UMI

a thin layer electrochemical generator and a constituent part of such a generator, said multilayer assembly comprising a plurality of thin layers at least one of which is selected from the group consisting of a metal ribbon and a macromolecular material containing layer, said process comprising the steps of:

focusing at least one laser beam on a face of the assembly to be cut, at a point on said cancelled face lying on the outline to be cut and termed point of impact and said beam on said face, so as to provide at said point a disintegration of the material of said assembly;



driving the laser beam in a relative movement with respect to the assembly to be cut such that said point of impact describes a trajectory corresponding to the outline to be cut out, while maintaining a controlled atmosphere in a zone surrounding said point of impact; and

selecting as the controlled atmosphere a reactive atmosphere which reacts with at least one of the components of the multilayer assembly in order to form a protective layer on a slice of the cut part of the assembly.

5,250,785

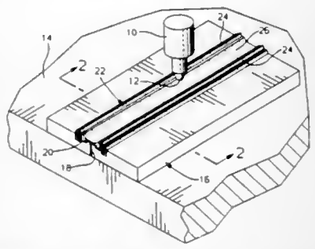
METHOD FOR LASER SPLITTING WIPER BLADES

Scot A. Blommel, Yellow Springs, and Harvey J. Lambert, West Milton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 14, 1992, Ser. No. 944,611

Int. Cl.[5] B23K *26/00*

U.S. Cl. 219—121.72 **1 Claim**



1. A method for laser slitting the web of a molded wiper blade pair with a laser having a lens housing and a beam with a predetermined focal point, comprising the steps of,

placing said blade pair in a fixture to securely support said web,

placing said web beneath said lens housing with said focal point located slightly above said web, and,

setting said laser to a predetermined power and pulse length designed to minimize the power of said laser, and

running said laser beam straight along said web while maintaining said beam focal point location, thereby slitting said web and producing a pair of sharp, square cornered edges.

5,250,786

D-C ARC WELDING APPARATUS

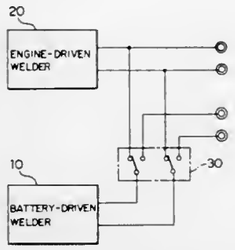
Shinji Kikuchi; Toshihiko Tanuma, and Toshimichi Suzuki, all of Gunma, Japan, assignors to Sawafuji Electric Co., Ltd., Tokyo, Japan

Filed Sep. 25, 1991, Ser. No. 766,416

Claims priority, application Japan, Sep. 27, 1990, 2-258628; Jul. 24, 1991, 3-58025[U]; Aug. 7, 1991, 3-61997[U]; Aug. 13, 1991, 3-202760

Int. Cl.[5] B23K *9/10*

U.S. Cl. 219—130.32 **12 Claims**



1. A welding apparatus comprising:

an engine welder including an alternator means for generating an a-c voltage, said engine welder also including a means for converting said a-c voltage into d-c voltage;

a battery welder including a battery;

changeover means for connecting said engine welder and said battery welder in parallel, said change over means also separately connecting said engine welder to engine welding outputs and said battery welder to battery welding outputs;

switching means for blocking and passing current between a negative terminal of said battery welding outputs and a ground terminal of said battery;

a shunt resistor connected between said switching means and said ground terminal of said battery;

current approximation means for detecting current flowing in said shunt resistor and for generating a welding current waveform substantially representative of a current flowing through said battery welding terminals; and

controller means for controlling said switching element dependent on said welding current waveform.

5,250,787

OPTICAL-DISK PLAYBACK APPARATUS, METHOD OF OPTICAL-DISK PLAYBACK AND COMBINED MEMORY MEDIUM, HAVING CONTROL PROGRAMS STORED IN THE OPTICAL-DISC AND SPECIFIED BY BARCODES STORED IN A BARCODE MEMORY MEDIUM

Kouji Arii, Takatsuki; Tetsuo Maeda, Neyagawa; Tetsuo Tomimoto, Ibaraki, and Ryo Akiyama, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 12, 1989, Ser. No. 406,281

Claims priority, application Japan, Sep. 14, 1988, 63-230413; Mar. 29, 1989, 1-078842

Int. Cl.[5] G11B *27/28;* **G06K** *7/10*

U.S. Cl. 235—375 **8 Claims**

1. An optical-disk playback apparatus for use with an optical-disk adapted to be set in said apparatus and a barcode memory medium, wherein said optical-disk has recorded information thereon comprising first information including control programs specifying operations of said apparatus and second information, and said barcode memory medium has recorded thereon barcodes respectively bearing information corresponding to said control programs, said apparatus comprising:

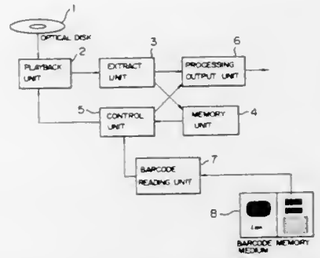
playback means for playing back said optical-disk when it is set to said apparatus to derive said recorded information;

extract means for extracting said first information and said second information from said recorded information derived by said playback means;

memory means for storing at least said control programs included in said first information extracted by said extract means;

barcode read means manually operative to read selectively at least one of said barcodes recorded on said barcode memory medium;

control means connected to said barcode read means, said playback means and said memory means, and including



means for operating said playback means to play back said optical-disk when it is set to said apparatus to derive said recorded information and means for receiving said at least one of said barcodes read-out by said barcode read means and selecting one of said control programs stored in said memory means corresponding to said at least one of said barcodes read out by said barcode read means; and

processing output means, connected to said control means and said extract means, for receiving at least said second information included in said recorded information derived by said playback means and said one of said control programs selected by said control means and processing said second information based on said one of said control programs to be played back by said apparatus.

5,250,788

APPARTUS FOR HANDLING SHEETS OF PAPER USING ROBOT HANDS

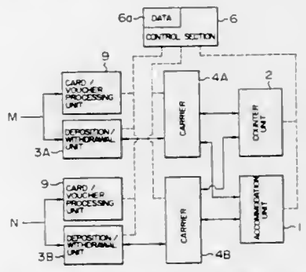
Kazunari Sugai, Niigata, and Kenji Taguchi, Shibata, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 27, 1990, Ser. No. 572,620

Claims priority, application Japan, Aug. 31, 1989, 1-223154

Int. Cl.[5] G06F *15/30*

U.S. Cl. 235—379 **12 Claims**



1. An apparatus for handling sheets of paper comprising:

a plurality of transaction ports for depositing/dispensing sheets of paper for transaction operations;

a plurality of transaction medium processing sections for receiving a transaction medium corresponding to and used with the transaction ports by an operator at the time of a transaction;

one counter section for processing and counting sheets of paper received from or delivered to each of said transaction ports in the processing of a transaction;

an accommodation section for accommodating sheets of paper received from or delivered to said counter section;

a plurality of carrier means for transporting sheets of paper between the transaction ports and the counter section and between the counter section and the accommodation section; and

a control section for controlling the transaction operation of each of said sections in response to a transaction operation initiated at one of the transaction ports by the receiving of a transaction medium at the transaction medium processing section corresponding to the one transaction port.

5,250,789

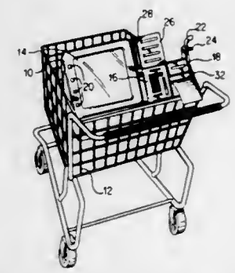
SHOPPING CART

Edward L. Johnsen, Five Bent Ave., Wayland, Mass. 01778

Filed Oct. 31, 1991, Ser. No. 786,051

Int. Cl.[5] G06F *15/24*

U.S. Cl. 235—383 **22 Claims**



1. A shopping list display system for use in a store comprising:

means for receiving data corresponding to a shopping list;

first database means for identifying a location in said store for each item in said shopping list;

means, in communication with said receiving means and said first database means, for organizing said shopping list in order of the location of the items on the list; and

means, in communication with said organizing means, for displaying a list of items from said shopping list in order of location as provided by said organizing means.

5,250,790

HAND-MOUNTED SCANNER WITH AUTOMATIC MANUAL INITIATION OF READING INDICIA

Boris Melitsky, Stony Brook; Mark Krichever, Hauppauge; Ed Barkan, S. Setauket; Howard M. Shepard, Great Neck; Jerome Swartz, Old Field, all of N.Y., and Joseph Sandor, Balboa Island, Calif., assignors to Symbol Technologies, Inc., Bohemia, N.Y.

Division of Ser. No. 699,417, May 13, 1991, Pat. No. 5,191,197, which is a continuation-in-part of Ser. No. 193,265, May 11, 1988, Pat. No. 5,144,120. This application Jun. 12, 1992, Ser. No. 897,837

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—462 **17 Claims**

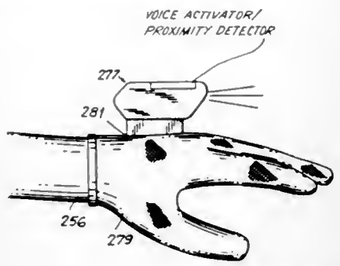
1. A scanning system for reading indicia having parts of different light reflectivity, comprising:

(a) a housing having a window;

(b) actuatable electro-optical scanner means in the housing, for projecting a light beam through the window to indicia to be read, for scanning the indicia, and for detecting light of variable intensity that is reflected off the indicia to generate an electrical signal representative of the indicia;

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(c) a glove worn on an operator's hand, said glove having finger-receiving sheaths and a glove backing integral with the sheaths and overlying the back of the operator's hand;



(d) means for mounting the housing in a stationary position entirely above the glove backing rearwardly of the finger-receiving sheaths; and

(e) actuating means for actuating the scanner means to initiate reading of the indicia.

5,250,791

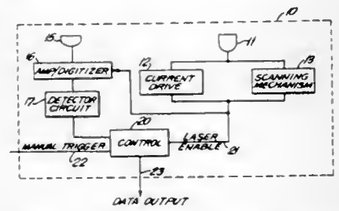
SCANNING SYSTEM WITH ADJUSTABLE LIGHT OUTPUT AND/OR SCANNING ANGLE

Frederic Heiman, Los Gatos, Calif., and Glenn Spitz, Far Rockaway, N.Y., assignors to Symbol Technologies, Inc., Bohemia, N.Y.

Continuation of Ser. No. 740,232, Aug. 5, 1991, abandoned, which is a division of Ser. No. 506,674, Apr. 9, 1990, abandoned. This application May 26, 1992, Ser. No. 890,374

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—472 **25 Claims**



1. A system for reading bar code symbols or the like, comprising scanning means for generating a laser beam directed toward a target producing a narrow angled or spot laser beam that enables the user to manually aim and direct the beam to the location desired by the user and a wide angled laser beam that sweeps an entire symbol to be read, said narrow angled or spot laser beam and said wide angled laser beam being generated from a single laser, and detection means for receiving reflected light from such symbol to produce electrical signals corresponding to data represented by such symbol.

5,250,792

PORTABLE LASER DIODE SCANNING HEAD

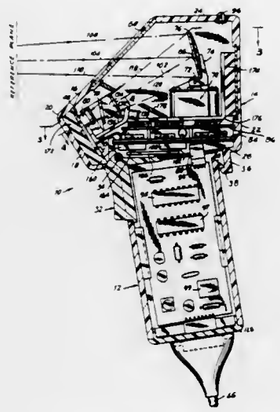
Jerome Swartz, Setauket; Howard M. Shepard, Great River, both of N.Y.; Eric F. Barkan, San Francisco, Calif.; Mark J. Krichever, Hauppauge, N.Y.; Boris Metlitsky, Hauppauge, N.Y.; Edward Barkan, Gouth Setauket, N.Y., and Alexander M. Adelson, Peekskill, N.Y., assignors to Symbol Technologies, Inc., Bohemia, N.Y.

Division of Ser. No. 690,702, Apr. 24, 1991, Pat. No. 5,149,950, which is a division of Ser. No. 454,144, Dec. 21, 1991, Pat. No. 5,021,641, which is a division of Ser. No. 295,151, Jan. 9, 1989, Pat. No. 4,897,532, which is a continuation of Ser. No. 148,669, Jan. 26, 1988, Pat. No. 4,825,057, which is a division of Ser. No. 706,502, Feb. 28, 1985, abandoned. This application Aug. 18, 1992, Ser. No. 931,728

The portion of the term of this patent subsequent to Apr. 25, 2006, has been disclaimed.

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—472 **12 Claims**



1. A hand-held scanning head for reading bar code symbols, said head comprising:

a) a body portion;

b) scanning means mounted in said body portion for scanning said bar code symbols, and including light-sensitive means responsive to light from said bar code symbols to generate electrical signals, and signal processing means responsive to said electrical signals to produce data represented by said bar code symbols; and

c) a handle portion detachably fixed to said body portion and accommodating at least one printed circuit board such that said circuit board is adapted to be electrically connected to said scanning means when said handle portion is attached to said body portion, said at least one printed circuit board being removably connected to said scanning means whereby a function of the scanning head is changed by changing or adding to said printed circuit board.

5,250,793

CONVEYING APPARATUS FOR TICKET PROCESSING MACHINE

Masayoshi Nagashima, Chigasaki, and Mamoru Honma, Yokohama, both of Japan, assignors to Kabusbiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 27, 1991, Ser. No. 813,940

Claims priority, application Japan, Jan. 31, 1991, 3-10860

Int. Cl.[5] G06K *13/00*

U.S. Cl. 235—475 **10 Claims**

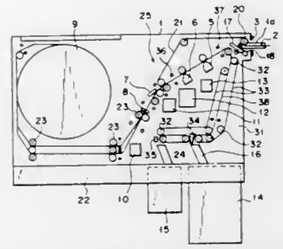
1. A conveying apparatus for conveying a recording medium having data recorded thereon, comprising:

an inlet port for receiving the recording medium;

reading means for reading the data from the recording medium;

first conveying means for conveying the recording medium from the inlet port to the reading means;

second conveying means for conveying the recording medium read by the reading means from the reading means to another position in the apparatus, the second conveying means branching from a predetermined position of the first conveying means; and



guiding means, provided at the predetermined position of the first conveying means and selectively positionable at first and second positions, for guiding the recording medium from the inlet port to the first conveying means when the guiding means is at the first position and for both guiding the recording medium from the first conveying means to the second conveying means and preventing insertion of another recording medium, received by the inlet port, into the first conveying means when the guiding means is at the second position.

5,250,794

APPARATUS FOR MOUNTING CARD-LIKE INFORMATION RECORDING MEDIUM

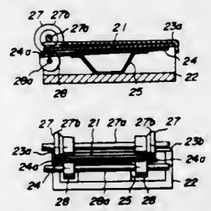
Junichiro Ito, Akishima, and Tsuyoshi Togawa, Hino, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 1, 1991, Ser. No. 677,397

Claims priority, application Japan, Oct. 1, 1990, 2-260512

Int. Cl.[5] G06K *13/08*

U.S. Cl. 235—479 **4 Claims**



1. An apparatus for mounting a card-like information recording medium for use in an information recording/reproducing device, in which information is recorded on and/or reproduced from said card-like recording medium by effecting relative movement between said apparatus for mounting said card-like recording medium and an information recording/reproducing head in a reciprocal manner, comprising:

first and second feeding means for loading and unloading said card-like recording medium onto and from a given position in said information recording/reproducing device by moving said card-like recording medium in a first direction, each of said first and second feeding means being arranged rotatably about a rotation axis extending in a second direction which is perpendicular to said first direction, and one of said first and second feeding means being a movable feeding means which is arranged movably in a third direction which is perpendicular to a plane of said card-like recording medium;

moving means for moving said movable feeding means in said third direction when said card-like recording medium is inserted into or removed from said apparatus; and

holding means for holding said card-like recording medium in a predetermined position in said apparatus by pressing said card-like recording medium in said third direction;

wherein when said card-like recording medium is inserted into or removed from said apparatus, said movable feeding means is brought into contact with said holding means such that a pressing operation of said holding means against said card-like recording medium is released.

5,250,795

FEEBLE LIGHT MEASURING DEVICE

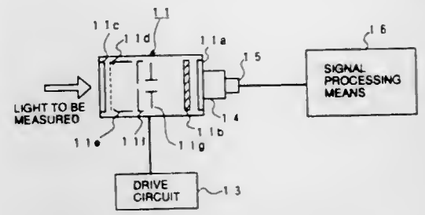
Musubu Koishi, and Motoyuki Watanabe, both of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Hamamatsu, Japan

Filed Jul. 24, 1992, Ser. No. 918,410

Claims priority, application Japan, Jul. 24, 1991, 3-184839

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—214 VT **17 Claims**



1. A feeble light measuring device comprising:

photon counting means including photo-electric conversion means for generating an electron upon an incidence of light to be measured, electron multiplying means for multiplying the electron from the photo-electric conversion means, the electron multiplying means being not saturated by an incidence of one electron, and luminous means for converting the electrons multiplied by the electron multiplying means into a light image;

image detecting means for converting the light intensity image from the photon counting means to electric outputs; and

signal processing means for removing noise components of the electric outputs from the image detecting means to extract signal components of the electric outputs.

5,250,796

NOISE REDUCTION SYSTEM FOR OPTICAL RECORD AND REPRODUCTION APPARATUS USING AUTO-POWER CONTROLLED SEMICONDUCTOR LASER DEVICE

Toyoki Taguchi, Yokohama; Toshihiro Sugaya, Ibaraki; Hisashi Yamada, and Kei Shimura, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 9, 1992, Ser. No. 942,463

Claims priority, application Japan, Sep. 9, 1991, 3-229148; Mar. 25, 1992, 4-66849

Int. Cl.[5] G01J *1/32*; **G11B** *7/00*

U.S. Cl. 250—205 **25 Claims**

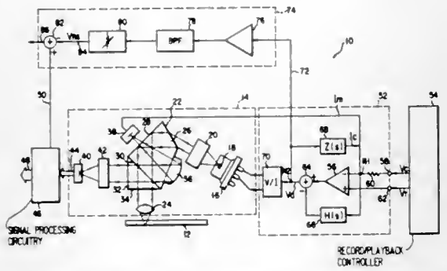
1. An apparatus for suppressing or eliminating a noise from a reproduced information signal read out of an optical record carrier body using a slid-state light emission device, said apparatus comprising:

driver means for receiving a control voltage signal externally supplied thereto to designate a light emission of said light emission device, and for supplying said light emission device with a corresponding drive current signal in response to the control signal;

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optical detector means for partially receiving a light sent forth from said light emission device, and for generating a detection current signal corresponding in magnitude to a detected amount of light;

compensator means coupled to said driver means and said optical detector means, for generating a voltage signal that compensates for a possible variation in the light sent



forth from said light emission device, which si supplied to said driver means; and

noise reduction means for receiving the voltage signal and the reproduced information signal, for using said voltage signal as a noise monitor signal, and for subtracting this noise monitor signal from said reproduced information signal to generate a noise-suppressed reproduction signal.

5,250,797

EXPOSURE METHOD AND APPARATUS FOR CONTROLLING LIGHT PULSE EMISSION USING DETERMINED EXPOSURE QUANTITIES AND CONTROL PARAMETERS

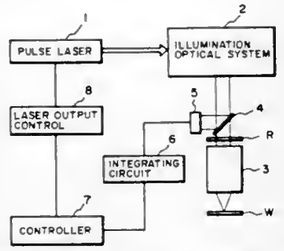
Naoto Sano, Kunitachi, and Tsutomu Asahina, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 4, 1991, Ser. No. 771,221

Claims priority, application Japan, Oct. 5, 1990, 2-266685; Sep. 4, 1991, 3-250320

Int. Cl.[5] G01J *1/32*

U.S. Cl. 250—205 **8 Claims**



1. An exposure apparatus for transferring a pattern to a substrate, said apparatus comprising:

a light source for emitting pulses of light to expose the substrate;

control means for controlling said light source in accordance with a control parameter, said control means causing said light source to emit the pulses of light in accordance with successively changed control parameters;

detecting means for detecting a quantity related to the quantity of exposure of the substrate by each pulse of light from said light source and quantities related to the quantities of exposure of the substrate by the emitted pulses of light; and

parameter determining means cooperating with said control means and said detecting means such that said parameter determining means determines the relationship between each control parameter and a corresponding quantity of exposure of the substrate on the basis of the quantities detected by said detecting means and wherein said parameter determining means further determines a control parameter for the subsequent light pulse emission of said light source on the basis of the determined relationship.

5,250,798

SOLID STATE IMAGE SENSOR DEVICE WITH MICROLENSES

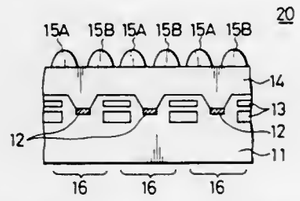
Yasuo Iizuka, Yokohama, and Akira Komatsu, Yokosuka, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 24, 1991, Ser. No. 813,037

Claims priority, application Japan, Dec. 27, 1990, 2-408422

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—208.1 **6 Claims**



1. A solid state image sensor device comprising:

a semiconductor substrate;

a plurality of picture elements arranged on the semiconductor substrate in a matrix; and

a plurality of microlenses, each of said microlenses arranged with a single-layer microlens on each of said picture elements, such that said microlenses are spaced apart from each other for condensing an incident light transferred from outside of the solid state image sensor device.

5,250,799

METHOD FOR ADAPTING THE LIGHT INTENSITY OF THE SUMMATION LIGHT TO THE EXTERNAL LIGHT

Walter Werner, Dornbirn, Austria, assignor to Zumtobel Aktiengesellschaft, Austria

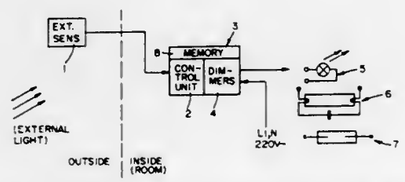
PCT No. PCT/EP90/01230, § 371 Date Jan. 28, 1992, § 102(e) Date Jan. 28, 1992, PCT Pub. No. WO91/02441, PCT Pub. Date Feb. 21, 1991

PCT Filed Jul. 27, 1990, Ser. No. 828,917

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1990, 3925151

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—214 AL **15 Claims**



1. A method for adapting the light intensity of the summation light of a room, lighted by internal light internal to the room, and by external light external to the room, to the light external to the room varying with the time of day, in which the light intensity of the internal light is controlled in dependence on one or more control parameters according to a function between the internal light and said one or more control parameters, with the function being variable according to individual preference, comprising the steps of:

a. generating said one or more control parameters by one or more external light sensors;

b. setting a plurality of independent values of the function in a memory, with each independent function value being variable and set in memory independently of the other independent function values; and

c. defining said function from said plurality of independent values of the function set in memory according to a predetermined routine.

5,250,800

PHOTO-ELECTRIC INTEGRATED CIRCUIT DEVICE WITH OPPOSITE PHASE AMPLIFIERS INTO LOGIC CIRCUITRY

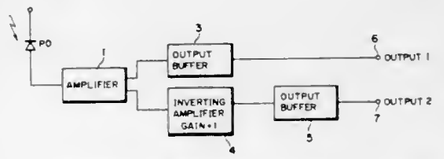
Goro Sasaki, Yokohama, Japan, assignor to Sumitomo Electric Industries Ltd., Osaka, Japan

Filed Sep. 30, 1992, Ser. No. 953,804

Claims priority, application Japan, Oct. 4, 1991, 3-257802; Oct. 4, 1991, 3-257809

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—214 A **10 Claims**



1. A photo-electronic integrated circuit device comprising;

first and second output terminals for supplying first and second output signal of opposite polarities to an external differential input logic circuit;

a photo-detecting device for converting an input light signal to an electrical signal;

a first amplifier for amplifying the electrical signal of said photo-detecting device and outputting the same from said first output terminal as said first output signal; and

a second amplifier for amplifying the output of said first amplifier and outputting said second output signal having the opposite phase to that of said first output signal, from said second output terminal.

5,250,801

OPTICAL SENSOR FOR DETECTING ARTICLES IN A MONITORED REGION AND METHOD FOR OPERATING THE SAME

Roland Grozinger, Staufen; Ottmar Kappeler, Nuremberg, both of Fed. Rep. of Germany; Herbert Krickl, Kyoto, and Fritz Kuhn, Waldkirch, both of Japan, assignors to Erwin Sick GmbH Optik Elektronik, Waldkirch, Fed. Rep. of Germany

PCT No. PCT/EP91/01889, § 371 Date Jul. 2, 1992, § 102(e) Date Jul. 2, 1992, PCT Pub. No. WO92/06387, PCT Pub. Date Apr. 16, 1992

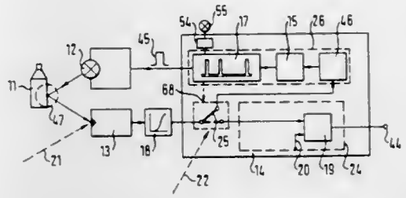
PCT Filed Oct. 2, 1991, Ser. No. 867,239

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1990, 4031142

Int. Cl.[5] G01N *9/04*

U.S. Cl. 250—223 B **19 Claims**

1. Method for the operation of an optical sensor arrangement for the detection of articles present in a monitored region with a pulsed light transmitter which transmits light pulses with a time spacing one after the other into the monitored region and with a light receiver which in the absence of articles to be detected receives substantially no light from the light receiver, but which on the presence of an article to be detected in the monitored region receives so much light from the light transmitter by reflection or transmission that a received signal processing stage connected to the light receiver transmits an article detection signal, characterised in that after transmitting a transmitted light pulse the received signal processing stage (24) is switched off and the output signal of the light receiver (13) is investigated, at least in the end region of the subsequent pause until the next transmitted pulse (45), as to whether a varying disturbing signal is present; and in that on finding a



varying disturbing signal the transmission of the next transmitted pulse is shifted timewise by an amount such that on transmitting the next transmitted pulse the disturbing signal has sunk at least with a certain probability below the response threshold of the received signal processing circuit (24).

5,250,802

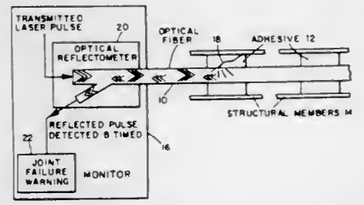
FIBER OPTIC STRESS SENSOR FOR STRUCTURAL JOINTS

Jack A. Runner, San Diego, Calif., assignor to Teledyne Ryan Aeronautical, Division of Teledyne Industries, Inc., San Diego, Calif.

Filed Nov. 4, 1991, Ser. No. 787,688

Int. Cl.[5] H01J *5/16*

U.S. Cl. 250—227.15 **13 Claims**



1. A method for monitoring the structural integrity of a joint between a first substantially rigid structural member and a second substantially rigid structural member, said first structural member having a first surface and said second structural member having a second surface substantially parallel to said first surface, said joint having an adhesive between said surfaces for joining said structural members, comprising the steps of:

disposing a portion of an optical fiber between said surfaces and embedded in said adhesive, said fiber not penetrating said surfaces, said fiber having an end;

injecting an optical signal into said end of said optical fiber;

detecting a reflection of said optical signal at said end of said fiber, said reflection having a transit time; and

providing a strain detection signal in response to said detection of said reflection.

5,250,803

SYSTEM FOR SETTING A DOCUMENT FEEDING APPARATUS FOR PROPER OPERATION

Bernhard J. Christ, Yonkers, N.Y.; Edward M. Ifkovits, Jr., New Fairfield, and Philip G. Ruess, Norwalk, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jun. 24, 1992, Ser. No. 903,592

Int. Cl.[5] G01N *9/04*

U.S. Cl. 250—223 R **14 Claims**

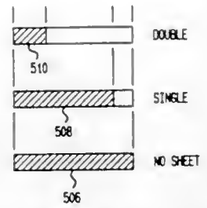
1. A system for determining the proper operation of a feed-

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ing apparatus that is adapted to feed various different types of documents, comprising:

means for detecting the feeding of two or more overlapped documents;

adjusting means connected to said detecting means for adjusting said detecting means to detect the presence of overlapped documents for the various different type of documents to be fed by said feeding apparatus; and,



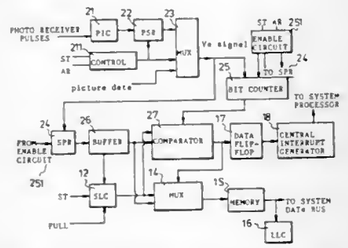
display means connected to said detecting means for displaying a first condition when no documents are detected by said detecting means displaying a second condition when a single document is detected by said detecting means, and displaying a third condition when overlapped documents are detected by said detecting means.

5,250,804

LOST SCAN LINE DETECTING METHOD AND DEVICE FOR A HANDHELD SCANNER HAVING A LOST LINE COUNTER

Robert Chin, Taipei, Taiwan, assignor to Ultima Electronic Corp., Taipei, Taiwan

Filed Sep. 10, 1992, Ser. No. 943,346
Int. Cl.[5] H01J *3/14*
U.S. Cl. 250—234 **9 Claims**



1. A lost scan line detecting method for providing lost scan line information to a computer system which is connected to and which receives scan line picture data from a handheld scanner so as to enable said computer system to derive picture data which corresponds to a lost scan line from available scan line picture data, said handheld scanner generating a series of photo receiver pulses and a series of step trigger signals, each of said photo receiver pulses indicating that said handheld scanner has traveled by a distance which is equivalent to one scan line on a document being scanned, said handheld scanner generating each of said step trigger signals after one of said photo receiver pulses has been generated, the period between two said step trigger signals being constant and corresponding to a predetermined maximum scanning speed of said handheld scanner, said method comprising the steps:

providing a first counter means to count said photo receiver pulses;

providing a second counter means to count said step trigger signals; and

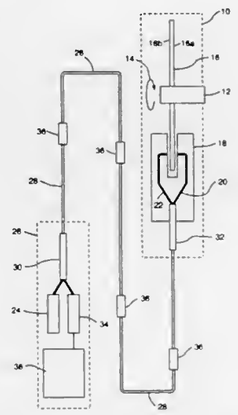
providing a comparator means to compare count outputs of said first and second counter means and to generate a lost scan line signal whenever said count outputs are unequal so as to indicate to said computer system that a lost scan line condition has occurred.

5,250,805

OPTICAL SENSING TECHNIQUE PROVIDING BUILT IN TEST

Eric D. Park, Carlsbad, Calif., assignor to BEI Electronics, Inc., San Francisco, Calif.

Filed Jun. 12, 1991, Ser. No. 713,885
Int. Cl.[5] H01J *3/14*
U.S. Cl. 250—237 G **18 Claims**



1. An optical apparatus for sensing the motion of an object, including a light source for propagating light waves and a photodetector for receiving light waves, comprising:

a. first optical means coupled to the light source for transmitting light waves along an optical path and for receiving light which is propagating toward the first optical means along the optical path;

b. second optical means coupled to the light source and positioned opposite the first optical means for transmitting light waves along the optical path toward the first optical means, and for receiving light which is propagating toward the second optical means along the optical path; and

c. modulator means positioned in the optical path between the first and second optical means and coupled for movement with the object, said modulator means having a pattern of alternating reflective and transmissive regions thereon, wherein said first and second optical means receive light which is reflected from the reflective regions when the reflective regions are positioned in the optical path, and wherein said first and second optical means receive light which is transmitted through the transmissive regions when the transmissive regions are positioned in the optical path.

5,250,806

STAND-OFF COMPENSATED FORMATION MEASUREMENTS APPARATUS AND METHOD

Erik Rhein-Knudsen; Michael Evans, both of Missouri City, and Jacques M. Holenka, Houston, all of Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Mar. 18, 1991, Ser. No. 670,819
Int. Cl.[5] G01N *5/10, 5/14*
U.S. Cl. 250—254 **18 Claims**

1. Apparatus for measuring characteristics of earth formations surrounding a borehole while drilling tool comprising:

a tubular body having upper and lower ends and adapted to be coupled to a drill string and adapted to provide a fluid flow path between its upper and lower ends, said tubular body having a nominal tubular outer radius, and having a source of neutrons disposed coaxially within said body;

a plurality of stabilizer blades secured symmetrically about the outer periphery of said tubular body, said blades having a maximum outer radius greater than said tubular outer radius, each of said blades having a longitudinal length and an angular width dimensions such that the angular width of each blade is substantially less than the angular distance between each blade;



a plurality of detector cavities in registration with each of said stabilizer blades, each of said cavities formed by an outwardly facing slot of said body which faces an inwardly facing slot of a stabilizer blade, said cavities characterized by an outer radial extend substantially greater than said nominal tubular outer radius,

longitudinally spaced secondary radiation detectors associated with each of said cavities; and

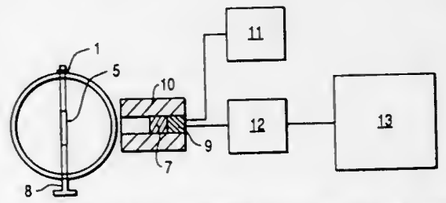
means responsive to said longitudinally spaced radiation detectors to generate first radiation signals useful for determining porosity of said earth formations.

5,250,807

SAND DETECTOR

Terje Sontvedt, Gjettum, Norway, assignor to Norsk Hydro a.s., Oslo, Norway

PCT No. PCT/NO90/00112, § 371 Date Dec. 11, 1991, § 102(e) Date Dec. 11, 1991, PCT Pub. No. WO91/00991, PCT Pub. Date Jan. 24, 1991
PCT Filed Jul. 6, 1990, Ser. No. 778,925
Claims priority, application Norway, Jul. 7, 1989, 892819
Int. Cl.[5] G01N *3/56, 15/06*
U.S. Cl. 250—303 **9 Claims**



1. A method for determining the content of particulate material in a fluid flow passing through a pipe, said method comprising:

positioning in said fluid flow within said pipe, at respective different positions across the internal cross section thereof, a plurality of probes each including radioactive material that is subject to being abraded by said particulate material in said fluid flow and that emits radiation that diminishes as a function of such abrasion;

positioning a plurality of radiation detectors outwardly of said pipe at locations such that each said detector detects radiation emitted only by a respective said probe;

detecting by said detectors radiation emitted from respective said probes; and

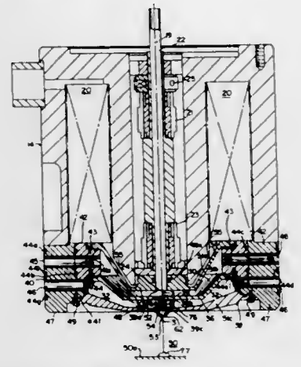
determining the content of said particulate material in said fluid flow as a function of abrasion of said radioactive material of said probes based on the radiation detected by respective said probes.

5,250,808

INTEGRATED ELECTRON OPTICAL/DIFFERENTIAL PUMPING/IMAGING SIGNAL SYSTEM FOR AN ENVIRONMENTAL SCANNING ELECTRON MICROSCOPE

Gerasimos D. Danilatos, North Bondi, Australia, and George C. Lewis, Sudbury, Mass., assignors to ElectroScan Corporation, Wilmington, Mass.

Continuation of Ser. No. 810,565, Dec. 20, 1991, which is a continuation of Ser. No. 595,753, Oct. 5, 1990, which is a continuation of Ser. No. 415,401, Sep. 29, 1989, which is a continuation of Ser. No. 302,434, Jan. 26, 1989, which is a continuation of Ser. No. 158,208, Feb. 19, 1988, Pat. No. 4,823,006, which is a continuation-in-part of Ser. No. 52,700, May 21, 1987, Pat. No. 4,785,182. This application Jul. 1, 1992, Ser. No. 908,870
The portion of the term of this patent subsequent to May 3, 2006, has been disclaimed.
Int. Cl.[5] H01J *37/252*
U.S. Cl. 250—310 **20 Claims**



1. An objective lens assembly for an environmental scanning electron microscope comprising:

(a) an objective lens magnetic housing having two annular diaphragms attached thereto at different axial locations defining a series of pressure zones through which an electron beam passes;

(b) an aperture holder releasably secured between said two diaphragms, said aperture holder comprising:

(i) a main body having a conduit therein;

(ii) a lower pressure limiting aperture in the lower end of said conduit sized to permit an electron beam to pass therethrough and sealed to one of said diaphragms to limit the passage of gas from a specimen chamber to a zone of higher pressure between said diaphragms;

(iii) a port in said main body above the said lower aperture, said port providing communication from said conduit into said zone of higher pressure between said diaphragms; and

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(iv) an upper pressure limiting aperture within said conduit positioned above said lower aperture and above the said port therein, said upper aperture being sized to permit an electron beam to pass therethrough and sealed to the other of said diaphragms to limit the passage of gas from the conduit to a higher passage within said objective lens assembly.

5,250,809

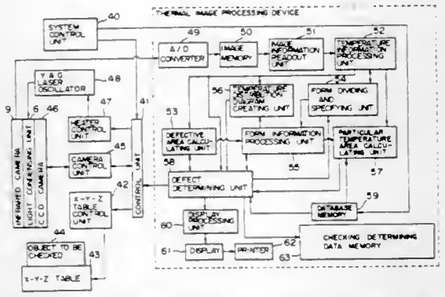
METHOD AND DEVICE FOR CHECKING JOINT OF ELECTRONIC COMPONENT

Shuji Nakata, 7-17, Honmachi 5-Chome, Toyonaka-Shi, Osaka-Fu; Minoru Nakamura, Osaka; Takeo Sakai, Kawagoe; Yoshimasa Shimizu, Kawagoe, and Yoshihiro Kondo, Kawagoe, all of Japan, assignors to Shuji Nakata, Osaka and Denyo Kabushiki Kaisha, Tokyo, both of Japan

Filed Jan. 22, 1992, Ser. No. 824,081

Int. Cl.[5] G01N *25/72*

U.S. Cl. 250—330 **8 Claims**



1. In a device for checking a joint of an electronic component having means for applying heat energy to a joint portion containing a heat conductive material, means for receiving the infrared rays radiated from said joint portion with an infrared ray camera, said device comprising:

means for memorizing an output signal of said infrared camera as image information;

means for calculating a threshold temperature value for dividing and specifying a defect, based on said memorized image information;

means for dividing and specifying said defect depending on said threshold temperature value;

means for obtaining the coordinates of pixels corresponding to a contour of the divided and specified area of said defect;

means for calculating an area or an area ratio of said divided defective portion, based on said threshold temperature value or calculating an area of each defect from said coordinates of the pixels;

means for comparing said area or area ratio or area of each defect with a corresponding predetermined value recorded in the database, for determining whether or not the joining state of said joint is defective.

5,250,810

MID-INFRARED LIGHT HYDROCARBON DIAL LIDAR

Allen R. Geiger, Las Cruces, N. Mex., assignor to LaSen, Inc., Las Cruces, N. Mex.

Continuation of Ser. No. 539,230, Jun. 18, 1990, Pat. No. 5,157,257. This application Apr. 23, 1992, Ser. No. 872,306

Int. Cl.[5] G01N *21/35*

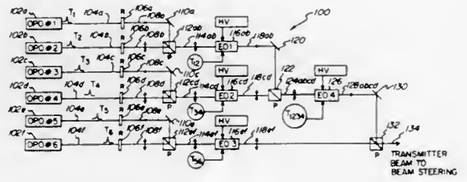
U.S. Cl. 250—338.5 **9 Claims**

1. A method of detecting light hydrocarbons in the atmosphere, comprising the following steps:

generating at lest two pairs of pulsed polarized beams by optical parametric oscillation with at least two tunable coherent light sources, each beam tuned to a different wavelength, each pair of beams having a common polarization state;

directing the polarized beams so that they are substantially located on a common optical axis;

transmitting the beams into the atmosphere;



receiving returns from light hydrocarbons in the atmosphere; and

analyzing the returns to determine the light hydrocarbon content in the atmosphere.

5,250,811

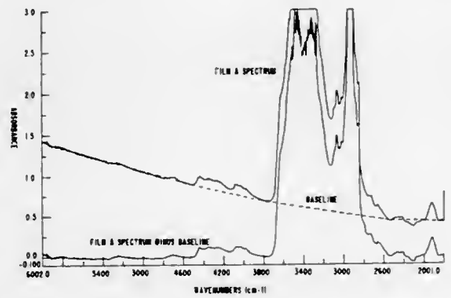
METHOD FOR DETERMINING COMPOSITIONAL INFORMATION OF A MULTILAYER WEB

Joseph E. Lippert, and Russell Jacobsmeyer, both of Rochester, N.Y., assignors to Eastman Kodak Company

Filed Dec. 20, 1991, Ser. No. 812,247

Int. Cl.[5] G01N *21/25, 21/31, 21/35*

U.S. Cl. 250—339 **13 Claims**



1. A method for determining compositional information of a multilayer web comprising the steps of:

a) determining at least one set of coefficients from specimens of multilayer webs having known compositional information, each set of coefficients including a coefficient for each item of compositional information to be determined, each set of coefficients being calculated for a selected wavenumber range, a number of selected wavenumber ranges being at least equal to the number of items of compositional information to be determined;

b) generating a broad spectrum of infrared rays;

c) projecting said broad spectrum of infrared rays through open air off the sample web;

d) detecting said broad spectrum projected off the sample web to obtain a single beam background spectrum;

e) projecting said broad spectrum of infrared rays onto a sample web;

f) detecting said broad spectrum projected onto the sample web to obtain a sample single beam spectrum;

g) calculating a sample spectrum from the single beam background spectrum and the sample single beam spectrum;

h) obtaining a corrected sample spectrum by subtracting a baseline spectrum from the sample spectrum;

i) integrating the corrected sample spectrum, the integration

performed for each selected wavenumber range used in calculating the coefficients in step a), thereby defining sample integrated values for each selected wavenumber range;

j) comparing the sample integrated values to standard support type values to determine a type of support in the multilayer web and a corresponding set of coefficients from step a) to be used in step k); and

k) combining the sample integrated values with the set of coefficients to solve at least one equation for the values of the items of compositional information to be determined.

5,250,812

ELECTRON BEAM LITHOGRAPHY USING AN APERTURE HAVING AN ARRAY OF REPEATED UNIT PATTERNS

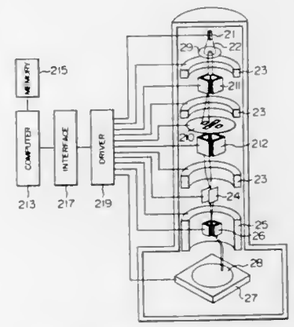
Fumio Murai, Nishitama; Shinji Okazaki, Urawa; Haruo Yoda, Nishitama; Yukinobu Shibata, Ibaraki, and Akira Tsukizoe, Koganei, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 27, 1992, Ser. No. 858,868

Claims priority, application Japan, Mar. 29, 1991, 3-66218; Aug. 28, 1991, 3-217227

Int. Cl.[5] H01J *37/04*

U.S. Cl. 250—492.2 **19 Claims**



1. An electronic beam lithography method of delineating an array pattern only of repeated unit patterns on a substrate by use of an electron beam, comprising:

a step of passing a first electron beam through a first aperture to form a second electron beam and making delineation on said substrate to form a part of the array pattern by use of said second electron beam, said first aperture including an array of repeated unit patterns of a predetermined shape so that the cross section of said second electron beam takes a shape substantially identical with the repetition of said unit pattern; and

a step of passing said first electron beam through a second aperture to form a third electron beam and making delineation on said substrate to form a residual part of said array pattern by use of said third electron beam, the cross section of said third electron beam being variable by shifting the irradiation position of the first electron beam with the second aperture.

5,250,813

PRINT PAPER DETECTING CIRCUITS WITH GAIN REDUCTION

Yoshinori Takahashi, and Toshikazu Ito, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Oct. 28, 1992, Ser. No. 967,057

Claims priority, application Japan, Oct. 29, 1991, 3-311760

Int. Cl.[5] H01J *40/14;* **G01N** *21/86*

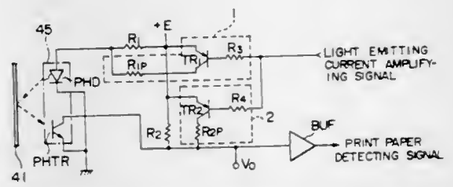
U.S. Cl. 250—561 **12 Claims**

1. A print paper detecting circuit for detecting the presence of a print paper at a desired position along a paper feedpath, said circuit comprising:

an optical sensor disposed at the desired position and having a light emitting diode for emitting light and a phototransistor for receiving the light and producing an output voltage corresponding to the received light;

a current supply circuit for normally supplying a constant current to said light emitting diode;

a current amplifying means, responsive to a control pulse



and connected to said current supply circuit, for supplying a current pulse to amplify the current supplied to said light emitting diode;

a gain reducing circuit means, responsive to said control pulse, for reducing the gain of the output voltage from said phototransistor to less than a normal steady state gain during the time the current pulse is supplied; and

an output circuit means, responsive to the output voltage of said phototransistor, for providing an output signal indicating the presence of a print paper at the desired position.

5,250,814

SEMICONDUCTOR LIGHT-EMITTING DEVICES

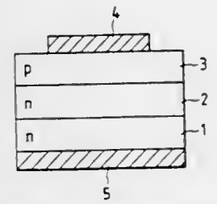
Yoshio Morita, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Japan

Filed Jun. 4, 1992, Ser. No. 894,320

Claims priority, application Japan, Jun. 5, 1991, 3-133961

Int. Cl.[5] H01L *33/00*

U.S. Cl. 257—13 **19 Claims**



1. A semiconductor light-emitting device comprising a substrate and an p-n junction structure formed on said substrate, said p-n junction structure having first and second semiconductor layers, each consisting essentially of $(Cu_aAg_{1-a})(Al_b Ga_{1-b})(Se_cS_{1-c})_2$, wherein $0 \leqq a \leqq 1$, $0 \leqq b \leqq 1$, and $0 \leqq c \leqq 1$, said first semiconductor layer being doped with one or more elements selected from a first group consisting of N, P, and As to be of a p-type, said second semiconductor layer being doped with one or more elements selected from a second group consisting of Zn, Cd, Cl, Br, and I to be of an n-type.

VOL 1155 ISS 1 OCT 5 1993 UMI

5,250,815

HOT ELECTRON INJECTOR GUNN DEVICE WITH ANODE HEAT SINK

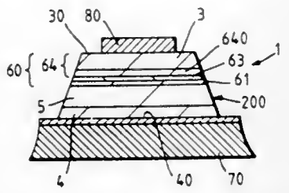
Stephen J. Battersby, Haywards Heath, and Stewart B. Jones, Poynton, both of England, assignors to U.S. Philips Corp., New York, N.Y.

Filed Jun. 18, 1991, Ser. No. 717,225

Claims priority, application United Kingdom, Jun. 20, 1990, 9013790

Int. Cl.[5] H01L *47/02, 23/34*

U.S. Cl. 257—6 6 Claims



1. A transferred electron effect device comprising a semiconductor body having cathode and anode contact regions, an active region of n conductivity type disposed between the contact regions and formed of a semiconductor material having a relatively low mass, high mobility conduction band main minimum and at least one relatively high mass, low mobility conduction band satellite minimum, and an injection zone adjoining the active region and defining a potential barrier between the cathode contact region and the active region for causing electrons to be emitted, under the influence of an electric field applied between the cathode and anode contact regions, from the injection zone into the active region with an energy comparable to that of a relatively high mass, low mobility conduction band satellite minimum of the active region, characterized in that the device is provided with a heat sink region and the anode contact region but not the cathode contact region is in thermal contact with said heat sink region for removing heat dissipated within the semiconductor body, said cathode contact region being free of any heat sink.

5,250,816

MULTICHIP SYSTEM AND METHOD OF SUPPLYING CLOCK SIGNAL THEREFOR

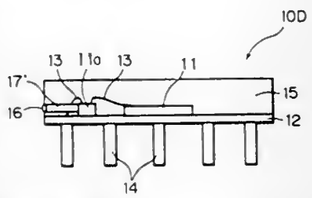
Kazuo Kitamura, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 24, 1992, Ser. No. 824,982

Claims priority, application Japan, Apr. 8, 1991, 3-074858; Apr. 18, 1991, 3-086834

Int. Cl.[5] H01L *27/14*

U.S. Cl. 257—81 6 Claims



1. A multichip system, comprising;

(a) a clock signal supply unit for generating a clock signal, said clock signal being an electric signal;

(b) a light emitting unit blinking in response to said clock signal from said clock signal supply unit, to thereby transform said clock signal into a light signal corresponding to said clock signal; and

(c) a plurality of semiconductor chips each of which includes

(c-1) a semiconductor element having an internal circuit,

(c-2) a photodetector for transforming said light signal back into an electric signal, said photodetector being electrically connected to said internal circuit such that said electric signal is supplied to said internal circuit, said electric signal serving as a clock signal for said internal circuit, and

(c-3) a light transmission unit for receiving said light signal from said light emitting unit to transmit said light signal to said photodetector, including an optical element and a hollow, said optical element being fitted on a side surface of said semiconductor chip, said hollow being provided in an internal portion of said semiconductor chip such that said light signal from said light emitting unit passes through said optical element and impinges through said hollow upon said photodetector.

5,250,817

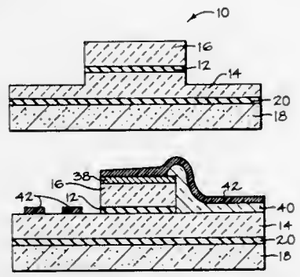
ALKALI BARRIER SUPERCONDUCTOR JOSEPHSON JUNCTION AND CIRCUIT

Richard L. Fink, Austin, Tex., assignor to Microelectronics and Computer Technology Corporation, Austin, Tex.

Filed Aug. 12, 1992, Ser. No. 928,984

Int. Cl.[5] H01L *39/22*; B05D *5/12*; H01B *12/00*

U.S. Cl. 257—35 25 Claims



1. A superconductor Josephson junction comprising:

a first and a second superconducting material of substantially the same chemical composition, wherein each material comprises a first alkali ion concentration and a chemical selected from the group consisting of $Ba_{1-x}K_xBiO_3$ and $Ba_{1-x}Rb_xBiO_3$ (wherein $0.37 \leqq x \leqq 0.5$); and

an insulating barrier formed between said first and second superconducting materials, wherein said barrier comprises an alkali compound having an alkali ion concentration greater than said first alkali ion concentration.

5,250,818

LOW TEMPERATURE GERMANIUM-SILICON ON INSULATOR THIN-FILM TRANSISTOR

Krishna C. Saraswat, and Tsu-Jae King, both of Santa Clara County, Calif., assignors to Board of Trustees of Leland Stanford University, Stanford, Calif.

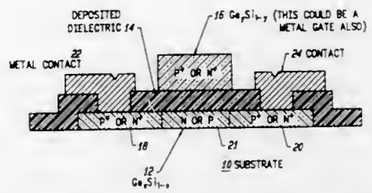
Filed Mar. 1, 1991, Ser. No. 663,092

Int. Cl.[5] H01L *29/04, 27/108, 29/76, 31/117*

U.S. Cl. 257—66 7 Claims

2. A MOS thin film transistor formed on an insulating substrate comprising a first layer of source and drain regions separated by a channel region,

contacts to said source and drain region, a gate dielectric overlying said channel region, and



a conductive gate overlying said gate dielectric and said channel region, said conductive gate being formed of a polycrystalline Ge_ySi_{1-y} alloy, where $1>y>0$.

5,250,819

LIGHT EMITTING DEVICE HAVING STEPPED NON-NUCLEATION LAYER

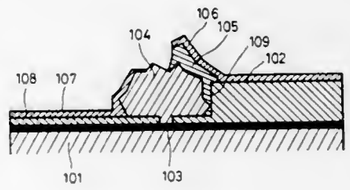
Hideji Kawasaki, Yamato, and Hiroyuki Tokunaga, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 10, 1992, Ser. No. 866,480

Claims priority, application Japan, Apr. 15, 1991, 3-108124

Int. Cl.[5] H01L *33/00*

U.S. Cl. 257—88 6 Claims



1. A light emitting device comprising:

a non-nucleation base layer including a first layer portion having an arbitrarily determined thickness as measured from a bottom surface of said first layer portion, a second layer portion having a thickness greater than that of said first layer portion, and a wall surface connecting said first and second layer portions, thereby forming a step;

a plurality of compound semiconductor crystal islands grown at a plurality of locations along said first layer portion and said wall surface from at least one of points on said first layer portion adjacent to the wall surface and points on said wall surface;

a plurality of light emitting regions formed on areas corresponding to concentric circles around each location at which said compound semiconductor crystal islands are grown;

electrodes disposed outside said light emitting regions, thereby forming electrode regions; and

a wiring section formed on said second layer portion.

5,250,820

LIGHT EMITTING DIODE HAVING UNIFORM LIGHT DISTRIBUTION

Kensuke Sawase, and Hiromi Ogata, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Jan. 30, 1992, Ser. No. 828,141

Claims priority, applicatioo Japan, Jan. 30, 1991, 3-9202[U]

Int. Cl.[5] H01L *33/00*

U.S. Cl. 257—99 6 Claims

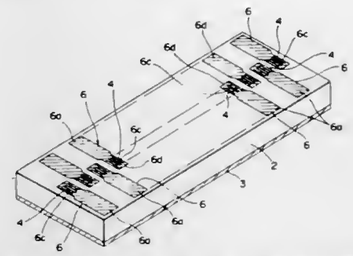
1. A light emitting diode comprising:

a substrate having end portions;

a plurality of light emitting regions provided on the substrate between said end portions;

an electrode provided on said substrate for supplying a current to the light emitting regions;

a plurality of strip-like conductor portions which are connected to a first end portion of the electrode such that said conductor portions extend over the light emitting regions



in the direction from said first end portion toward a second end portion of said substrate so as to establish ohmic contact and supply a current to each light emitting region; and

a non-light-emitting region provided approximately at a central portion of the light emitting region which is enclosed by the plurality of strip-like conductor portions.

5,250,821

ELECTRONIC POWER DEVICE HAVING PLURAL ELEMENTARY SEMICONDUCTOR COMPONENTS CONNECTED IN PARALLEL

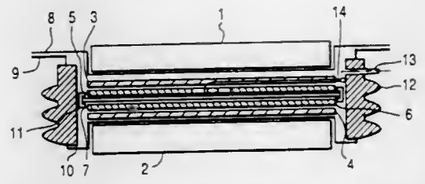
Giuseppe Ferla; Cesare Ronsisvalle, both of Catania, and Pier E. Zani, Genova, all of Italy, assignors to SGS-Thomson Microelectronisc S.r.L., Brianza and Ansaldo Transporti S.p.A., Naples, both of Italy

Filed Jan. 9, 1992, Ser. No. 819,362

Claims priority, application European Pat. Off., May 23, 1991, 91830215.9

Int. Cl.[5] H01L *25/04, 23/54*

U.S. Cl. 257—181 11 Claims



1. An electronic power device in which a plurality of elementary semiconductor power components are connected in parallel, said device comprising:

a plurality of modular elementary semiconductor power components respectively contained within a plurality of semiconductor chip regions of a same semiconductor slide having opposite first and second surfaces, each of said modular elementary power components having an anode electrode, a cathode electrode and a control electrode;

a metallic layer covering said first surface of said semiconductor slice and commonly connected to said anode electrodes of said plurality of modular elementary semiconductor power components;

a plurality of spaced apart metallic layer regions respectively covering said plurality of semiconductor chip regions on said second surface of said semiconductor slice and respectively connected to said cathode electrodes of said plurality of modular elementary semiconductor power components;

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a plurality of first metallic tracks respectively spaced apart from and surrounding said plurality of metallic layer regions on said second surface of said semiconductor slice, each respective first metallic track connected to the control electrode of the modular elementary semiconductor power component contained within the semiconductor chip region surrounded by the respective first metallic track;

a plurality of second metallic tracks extending spaced apart from and between said plurality of first metallic tracks on said second surface of said semiconductor slice to form a lattice configuration on said second surface of said semiconductor slice;

a control pad located on said second surface of said semiconductor slice and electrically connected to said plurality of second metallic tracks; and,

a plurality of connection elements, located on said second surface of said semiconductor slice, respectively connecting each of said plurality of first metallic tracks to at least one adjacent one of said plurality of second metallic tracks.

5,250,822

FIELD EFFECT TRANSISTOR

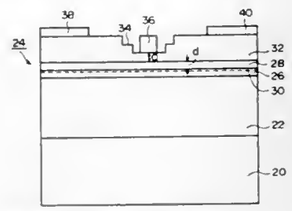
Takuji Sonoda; Shinichi Sakamoto, and Nobuyuki Kasai, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 25, 1992, Ser. No. 857,460

Claims priority, application Japan, Mar. 26, 1991, 3-60636

Int. Cl.[5] H01L *29/161, 29/205, 29/225*

U.S. Cl. 257—194 **9 Claims**



1. A field effect transistor comprising:

a heterojunction structure having at least one doped first semiconductor electron supply layer having a first electron affinity, a shallow dopant impurity concentration, and a substantially negligible deep dopant energy level and at least one undoped second semiconductor channel layer having a second electron affinity larger than the first electron affinity contacting and forming a heterojunction with said at least one electron supply layer;

a layer of a third semiconductor material contacting one of said at least one electron supply and channel layers and having the same conductivity type as said at least one electron supply layer and a dopant concentration of less than the dopant concentration of said at least one electron supply layer; and

gate, drain, and source electrodes in contact with said third semiconductor material layer.

5,250,823

INTEGRATED CMOS GATE-ARRAY CIRCUIT

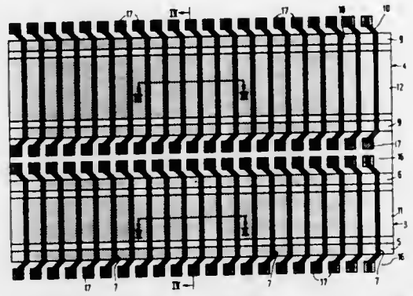
Hendrikus J. M. Veendrick; Andreas A. J. M. van den Elshout, and Dirk W. Harberts, all of Eindhoven, Netherlands, assignors to U.S. Philips Corp., New York, N.Y.

Continuation of Ser. No. 518,690, May 3, 1990, abandoned. This application Dec. 5, 1991, Ser. No. 804,468

Claims priority, application Netherlands, Oct. 24, 1989, 8902629

Int. Cl.[5] H01L *27/104, 29/76*

U.S. Cl. 257—206 **3 Claims**



1. An integrated CMOS circuit of the gate array type having a semiconductor body provided at a surface and comprising:

a first row and an adjacent parallel second row of n-channel MOS transistors having common gate electrodes in the form of conductor tracks extending transverse to the row direction over both rows;

a first row and an adjacent parallel second row of p-channel MOS transistors having common gate electrodes in the form of conductor tracks extending transverse to the row direction over both rows;

characterized in that between the first and second rows of n-channel transistors and between the first and second rows of p-channel transistors, respectively, at least one further row of n-channel transistors and at least one further row of p-channel transistors, respectively, is provided, which extend parallel to the first and second rows, the gate electrodes of the first and second rows of n-channel transistors constituting gate electrodes of the at least one further row of n-channel transistors and the gate electrodes of the first and second rows of p-channel transistors constituting gate electrodes of the at least one further row of p-channel transistors, while the transistors of the at least one further row of n-channel transistors and p-channel transistors, respectively, have a width which is at least three times the width of the transistors of the first and second rows of n-channel transistors and p-channel transistors, respectively, the width of the transistors of the first and second rows of n-channel transistors being equal, and the width of the transistors of the first and second rows of p-channel transistors being equal.

5,250,824

ULTRA LOW-NOISE CHARGE COUPLED DEVICE

James R. Janesick, La Canada, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Continuation of Ser. No. 575,215, Aug. 29, 1990, abandoned. This application May 11, 1992, Ser. No. 881,080

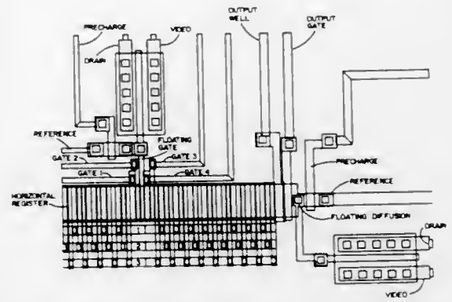
Int. Cl.[5] H01L *29/78;* **G11C** *19/28;* **H03K** *23/46*

U.S. Cl. 257—216 **13 Claims**

1. An electronic apparatus for providing an ultra-low noise sensing of charge; the apparatus comprising:

a buried-channel charge-coupled device having a floating gate amplifier with a potential well;

said device also having means for repeatedly transferring a charge to be sensed into and out of said potential well sequentially for generating a corresponding plurality of charge-sensing voltages, each such voltage corresponding to the respective magnitude of the sensed charge transferred into said potential well; said transferring means including at least one input gate in said device adjacent said floating gate and means for clocking said charge back and forth between said input gate and said floating gate; and



means for averaging said plurality of voltages for improving by a factor dependent upon the number of transfers of said charge into said potential well, the signal-to-noise ratio of an output signal representing the magnitude of said sensed charge.

5,250,826

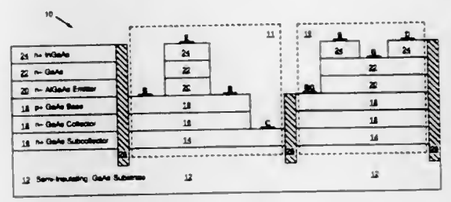
PLANAR HBT-FET DEVICE

Mau-Chung F. Chang, Thousand Oaks; Peter M. Asbeck, San Diego, and Richard L. Pierson, Jr., Thousand Oaks, all of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Sep. 23, 1992, Ser. No. 949,901

Int. Cl.[5] H01L *29/72*

U.S. Cl. 257—273 **13 Claims**



1. A planar HBT-FET device, comprising:

a semiconductor substrate;

an HBT formed atop said substrate, said HBT having a collector comprising a collector layer of semiconductor material deposited atop said substrate, a base comprising a base layer of semiconductor material deposited atop said collector layer, and an emitter;

said emitter comprising an emitter layer of semiconductor material deposited atop said base layer, an emitter cap layer of semiconductor material deposited atop said emitter layer, and an emitter contact layer of semiconductor material deposited atop said emitter cap layer;

a FET formed from said layers of semiconductor material and isolated from said HBT;

said FET having a source and a drain formed in said emitter contact layer, a gate recess in said emitter contact layer between said source and drain, and a Schottky gate metal contact deposited atop said emitter cap layer in said gate recess, said emitter cap layer forming a channel for said FET.

5,250,825

SMEAR SUPRESSING CCD IMAGER

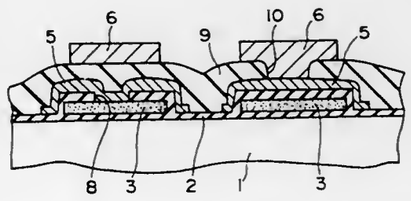
Michio Negishi, Kanagawa, and Kazuya Yonemoto, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 17, 1992, Ser. No. 821,829

Claims priority, application Japan, Jan. 17, 1991, 3-018237; Jan. 17, 1991, 3-018239

Int. Cl.[5] H01L *29/796, 27/14, 31/00*

U.S. Cl. 257—232 **6 Claims**



1. A CCD imager, comprising:

a transfer electrode formed from a semiconductor layer;

a light intercepting film formed from a first layer metal film on said transfer electrode; and

a shunt wiring film formed from a second layer metal film on said first layer metal film;

said transfer electrode and said shunt wiring film being electrically connected to each other by way of said light intercepting film.

5,250,827

SEMICONDUCTOR INTEGRATED CIRCUIT HAVING A DRAM CELL UNIT AND A NONVOLATILE CELL UNIT

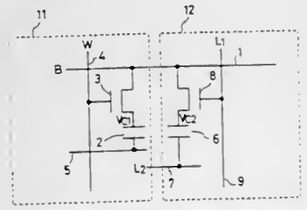
Naoto Inoue; Motoo Toyama; Hiroshi Takahashi, and Masahiko Kinbara, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Filed Jun. 18, 1991, Ser. No. 717,409

Claims priority, application Japan, Jun. 21, 1990, 2-163673; Aug. 29, 1990, 2-229480

Int. Cl.[5] H01L *29/68*

U.S. Cl. 257—295 **9 Claims**



1. A semiconductor integrated circuit, comprising:

a first transistor having a first gate electrode, first drain electrode and first source electrode, the first transistor being connected to a bit line at one of the first drain and first source electrodes;

a first capacitor comprising a paraelectric substance, the first capacitor having first and second electrodes, one of the first and second electrodes of the first capacitor being

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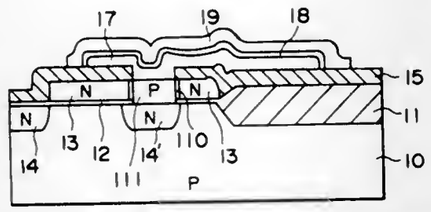
connected to the other one of the first drain and first source electrodes which is not connected to the bit line;
a first line connected to the other one of the first and second electrodes of the first capacitor which is not connected to the first transistor;
a word line connected to the first gate electrode of the first transistor;
a second transistor having a second gate electrode, second drain electrode and second source electrode, the second transistor being connected to the bit line at one of the second source and second drain electrodes;
a second capacitor comprising a ferroelectric substance, the second capacitor having first and second electrodes, one of the first and second electrodes of the second capacitor being connected to the other one of the second source and second drain electrodes of the second transistor which is not connected to the bit line;
a second line connected to the second gate electrode of the second transistor; and
a third line connected to the other one of the first and second electrodes of the second capacitor which is not connected to the second transistor.

5,250,828

STRUCTURE OF SEMICONDUCTOR MEMORY DEVICE

Tosbihiro Honma, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Apr. 3, 1992, Ser. No. 863,039
Claims priority, application Japan, Apr. 3, 1991, 3-071059
Int. Cl.[5] H01L *27/10*
U.S. Cl. 257—296 **10 Claims**



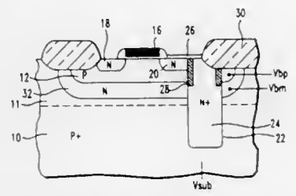
1. A dynamic random access memory (DRAM) having a stack capacitor cell structure including a lateral transistor, a vertical transistor and a capacitor,
said structure comprising:
a first conductive type semiconductor substrate having a principal surface;
a first and a second diffusion regions having a second conductive type formed on the principal surface of said first conductive type semiconductor substrate;
a first thin insulation film formed on the principal surface of the semiconductor substrate and located between the first and second diffusion regions;
a gate electrode formed on the first thin insulating layer, said gate electrode having a side surface which is substantially perpendicular to the principal surface of said semiconductor substrate;
a second thin insulation film formed on the side surface of said gate electrode;
a semiconductor layer having the first conductive type formed on said second diffusion region and said second this insulation film;
a charge accumulation semiconductor electrode having the second conductive type formed on said semiconductor layer;
a third thin insulation film formed on said semiconductor electrode; and
an upper electrode formed on said third thin insulation film;
wherein said first and second diffusion regions, said first thin insulation film and said gate electrode serve as the lateral transistor;
said second diffusion region, said second thin insulation film, said semiconductor layer, said gate electrode and said semiconductor electrode serve as the vertical transistor; and
said semiconductor electrode, said third thin insulation layer and said upper electrode serve as the capacitor.

5,250,829

DOUBLE WELL SUBSTRATE PLATE TRENCH DRAM CELL ARRAY

Gary B. Bronner, Mount Kisco; Sang H. Dhong, Mahopac, and Wei Hwang, Armonk, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 9, 1992, Ser. No. 818,668
Int. Cl.[5] H01L *27/02, 29/78, 27/04*
U.S. Cl. 257—301 **5 Claims**



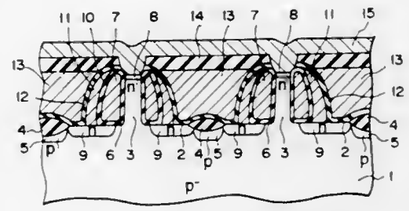
1. A dynamic random access memory device comprising:
a semiconductor substrate having a first region of a first conductivity type;
at least one array of dynamic memory cells, each cell comprising an access transistor coupled to a storage capacitor, the transistors of each memory cell being formed within a second region of said semiconductor substrate, each access transistor having a control electrode, a data line contact, a storage node, and a channel region;
a plurality of signal storage capacitors formed in a plurality of trenches formed in said substrate, each capacitor including a signal storage node and a reference voltage node separated by a dielectric insulator, the reference node being connected to said substrate and the storage node of each capacitor being connected to a corresponding storage node of one of said access transistors;
means for physically and electrically isolating all of the channel regions of said access transistors within said one array from said first region of said substrate, said means comprising a third region of opposite conductivity type to said first region, said third region formed between between said first and second regions, said third region intersecting all of said trenches; said third region comprising a doped well formed in said substrate wherein the doped well extends beyond and below said second region and having a depth within said substrate less than that of said trenches; and
means for biasing said first, second and third regions of said substrate to first, second and third different reference voltages.

5,250,830

DYNAMIC TYPE SEMICONDUCTOR MEMORY DEVICE AND ITS MANUFACTURING METHOD

Atsushi Yagishita; Katsuhiko Hieda, both of Yokohama; Akihiro Nitayama, Kawasaki, and Fumio Horiguchi, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 25, 1991, Ser. No. 797,192
Claims priority, application Japan, Nov. 30, 1990, 2-340402; Oct. 31, 1991, 3-286258
Int. Cl.[5] H01L *29/68, 29/78, 29/92*
U.S. Cl. 257—302 **10 Claims**



1. A dynamic type semiconductor memory device wherein a memory cell is formed of a MOS transistor and a capacitor around a semiconductor pillar portion, said device comprising:
a semiconductor substrate;
a plurality of semiconductor pillar portions arranged in a matrix manner by forming a groove extending in first and second directions of said matrix transverse to each other in said semiconductor substrate;
at least one field region formed in a central portion of said groove between a pair of adjacent pillar portions;
a MOS transistor having an insulated gate electrode formed to surround each of said semiconductor pillar portions, a first diffusion layer formed as a source in an upper portion of each of said semiconductor pillar portions and a second diffusion layer formed as a drain at a bottom portion of said groove;
a storage node of said capacitor formed to be separated from said gate electrode by an interlayer insulating film to surround each of said semiconductor pillar portions on which said gate electrode is formed, and to be in contact with said second diffusion layer;
a cell plate insulatively buried in said groove to oppose said storage node; and
a bit line arranged to be in contact with said first diffusion layer.

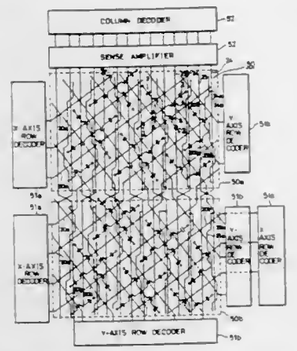
5,250,831

DRAM DEVICE HAVING A MEMORY CELL ARRAY OF A DIVIDED BIT LINE TYPE

Tatsuya Ishii, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 22, 1991, Ser. No. 673,823
Claims priority, application Japan, Mar. 28, 1990, 2-79603
Int. Cl.[5] H01L *29/68, 29/78, 29/92*
U.S. Cl. 257—354 **7 Claims**

1. A DRAM device comprising a memory cell array which includes a plurality of memory cells for storing memory information in a minimum unit on a main surface of a semiconductor substrate of a first conductivity type; said device comprising:
said memory cells, each of which includes one transfer gate transistor (**14**) and one capacitor (**3**);
said transfer gate transistors, each of which includes a gate electrode (**20***a*) including a part of a word line (**20***a*) extending on a main surface of said semiconductor substrate (**7**) with an insulator layer (**14**) therebetween, and first and second impurity regions (**11** and **13**) of a second conductivity type which are formed in said semiconductor substrate with a predetermined space from each other and are self-aligned to said gate electrode;
said capacitors, each of which is connected to said second impurity region (**11**) in said transfer gate transistor, and has a portion extending over the gate electrode;
said transfer gate transistors arranged in such a manner that each said first impurity region is commonly used by the four transfer gate transistors which have said second impurity regions symmetrically and uniformly disposed around the first impurity region;
said word lines which are arranged perpendicularly to the adjacent word lines and are continuous to the transfer gate transistors, respectively; and
bit lines (**24**, **25**) connected to said first impurity regions, each of which is commonly used by said four transfer gate transistors, and extending in an oblique direction with respect to said word lines.

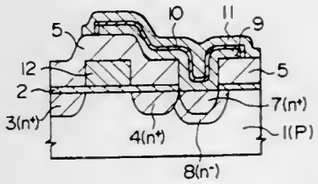


5,250,832

MOS TYPE SEMICONDUCTOR MEMORY DEVICE

Ichiro Murai, Tokyo, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Filed Oct. 4, 1991, Ser. No. 770,873
Claims priority, application Japan, Oct. 5, 1990, 2-267747
Int. Cl.[5] H01L *29/68, 29/167*
U.S. Cl. 257—306 **11 Claims**



1. A MOS type semiconductor memory device comprising:
a silicon (Si) substrate of a first conductivity type; and
a memory cell formed on a main surface of the Si substrate, the memory cell comprising:
a MOS transistor including first and second high concentration diffused layers highly doped with impurities of a second conductivity type different from the first conductivity type and formed in predetermined regions apart from each other in the main surface of the Si substrate so as to provide source and drain of the MOS transistor, and a gate electrode of a conductive material formed on a channel between the first and second high concentration diffused layers with an insulation layer of an insulating material interposed therebetween;

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an inter-layer insulating film of an insulating material formed so as to cover the MOS transistor;

a capacitor cell formed on the inter-layer insulating film and including a lower electrode layer of a conductive material formed on the inter-layer insulating film and having a portion extending through a contact hole formed in the inter-layer insulating film to a junction portion in the Si substrate adjacent to one of the first and second high-concentration diffused layers, a dielectric film formed on the lower electrode layer and an upper electrode layer formed on the dielectric film; and

a double-diffused layer doped with impurities of the second conductivity type and formed so as to overlap with one of the first and second high-concentration diffused layers at the junction in the Si substrate so that an electric contact is made between a source-drain circuit of the MOS transistor and the lower electrode, wherein said double-diffused layer comprises a shallow highly doped diffused layer doped with impurities of the second conductivity type and a deep lightly doped diffused layer doped with impurities of the second conductivity type; and

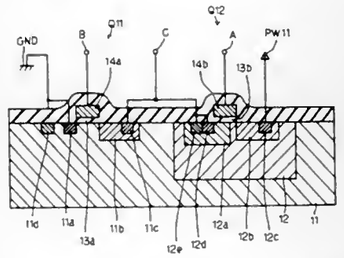
wherein said first conductivity type is a P type, and said double-diffused layer includes a high concentration diffused layer highly and shallowly doped with As and a low concentration diffused layer lightly and deeply doped with P.

5,250,833

POWER TRANSISTOR FREE FROM BACK GATE BIAS EFFECT AND AN INTEGRATED CIRCUIT DEVICE USING THE SAME

Toshio Watanabe, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 21, 1993, Ser. No. 7,237
Claims priority, application Japan, Jan. 21, 1992, 4-008762
Int. Cl.[5] H01L *29/10, 27/02, 29/06, 29/78*
U.S. Cl. 257—335 **5 Claims**



1. A power transistor fabricated on a semiconductor substrate of a first conductivity type, comprising:

a) a well of a second conductivity type formed in a surface portion of said semiconductor substrate, and reversely biased with respect to said semiconductor substrate, said second conductivity type being opposite to said first conductivity type;

b) a first impurity region of said first conductivity type formed in a predetermined surface portion of said well, and partially used as a channel region;

c) a gate insulating film covering said channel region and another surface portion of said well adjacent to said predetermined surface portion;

d) a gate electrode formed on said gate insulating film;

e) a source region of said second conductivity type formed in yet another surface portion of said well adjacent to said another surface portion, and having a boundary substantially aligned with an edge of said gate electrode;

f) a drain region of said second conductivity type formed in a predetermined surface portion of said first impurity region, and having a boundary substantially aligned with the opposite edge of said gate electrode;

g) a second impurity region of said first conductivity type formed in another surface portion of said first impurity region; and

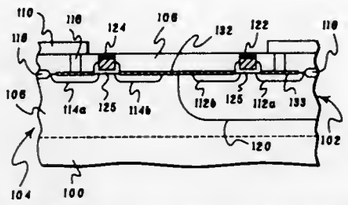
h) means for supplying a certain bias voltage to said second impurity region, said second impurity region transferring said certain bias voltage to said first impurity region for controlling back gate biassing phenomenon in said channel region.

5,250,834

SILICIDE INTERCONNECTION WITH SCHOTTKY BARRIER DIODE ISOLATION

Edward J. Nowak, Essex, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 19, 1991, Ser. No. 762,277
Int. Cl.[5] H01L *29/80, 27/01, 27/13, 29/34*
U.S. Cl. 257—350 **12 Claims**



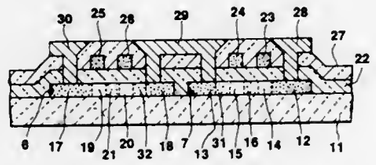
1. A semiconductor device comprising: a substrate of a first conductivity type having a well region therein of a second conductivity type, and an interconnect region for coupling a first diffusion region of said second conductivity type formed in the substrate to a second diffusion region of said first conductivity type formed within said well region, said interconnect region comprising an interconnecting layer disposed between said first diffusion and said second diffusion region such that an electrical interconnection is formed between said first diffusion region and said second diffusion region, said interconnecting layer forming a schottky barrier diode to said substrate and said well region and an ohmic contact to said first diffusion region and said second diffusion region.

5,250,835

FIELD EFFECT TYPE THIN FILM TRANSISTOR HAVING A PLURALITY OF GATE ELECTRODES

Mitsuharu Izawa, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Dec. 20, 1991, Ser. No. 812,578
Claims priority, application Japan, Jan. 16, 1991, 3-3501
Int. Cl.[5] H01L *29/76, 29/04, 29/94, 31/062*
U.S. Cl. 257—408 **10 Claims**



1. A thin film semiconductor device having a plurality of transistors comprising:

a thin film semiconductor island having a first zone and a second zone, said first and second zones being contiguously formed;

said island including:

a source region in which ion impurities are diffused to have a high density, said source region being disposed at an end portion of said first zone of said island;

a drain region in which ion impurities are diffused to have a high density, said drain region being disposed at an end portion of said second zone of said island;

said source region being disposed on said island at a side of said island that is opposite to said drain region;

a first low impurity region in which ion impurities are diffused and have a density that is lower than said high density of said drain region, said first low impurity region being disposed adjacent to said drain region in said second zone of said island;

a second low impurity region in which ion impurities are diffused to have a density that is lower than said high densities of said source and drain regions, said second low impurity region being disposed between said first low impurity regions and said source region;

a first channel region provided between said second low impurity region and said source region in said first zone of said island; and

a second channel region provided between said first and second low impurity regions in said second zone of said island;

a gate insulating film formed on said island;

a first gate electrode formed on said gate insulating film at a position on said first zone in said island that corresponds to a position of said first channel region in said island; and

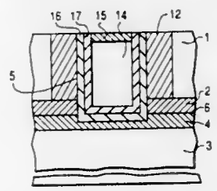
a second gate electrode formed on said gate insulating film at a position on said second zone in said island that corresponds to a position of said second channel region in said island; whereby: (A) said source region, said first channel region and said second low impurity region that are respectively provided in said first zone of said island, are operationally coupled with said first gate electrode, to form a first thin film transistor; and (B) said drain region, said first low impurity region, said second channel region and said second low impurity region that are respectively provided in said second zone of said island, are operationally coupled with said second gate electrode to form a second thin film transistor that is drivable when a gate voltage is applied to said second gate electrode independently of a driving of said first gate electrode of said first thin film transistor.

5,250,836

SEMICONDUCTOR DEVICE HAVING SILICON-ON-INSULATOR STRUCTURE

Takao Miura, Tokyo, and Kazunori Imaoka, Komae, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 870,238, Apr. 20, 1992, abandoned, which is a continuation of Ser. No. 627,197, Dec. 13, 1990, abandoned. This application Nov. 12, 1992, Ser. No. 975,897
Claims priority, application Japan, Dec. 20, 1989, 1-328303
Int. Cl.[5] H01L *27/12*
U.S. Cl. 257—506 **19 Claims**



1. A semiconductor device comprising:

a first substrate made of a semiconductor;

a first insulator layer which is formed on said first substrate;

a second substrate made of a semiconductor and formed on said first insulator layer, said second substrate having a top surface;

a trench which extends from the top surface of said second substrate into at least a part of said first insulator layer, said trench having a side wall on a vertical portion of said trench and having a bottom, said first insulator at the bottom of said trench being thinner than at other portions of said trench; and

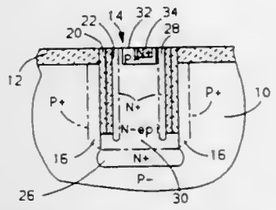
a second insulator layer which substantially defines the side wall on the vertical portion of said trench and contacts said first insulator layer at the bottom of said trench.

5,250,837

METHOD FOR DIELECTRICALLY ISOLATING INTEGRATED CIRCUITS USING DOPED OXIDE SIDEWALLS

Douglas R. Sparks, Kokomo, Ind., assignor to Delco Electronics Corporation, Kokomo, Ind.

Continuation of Ser. No. 701,896, May 17, 1991, abandoned. This application Aug. 31, 1992, Ser. No. 936,720
Int. Cl.[5] H01L *29/62, 27/12*
U.S. Cl. 257—519 **4 Claims**



1. A semiconductor integrated circuit comprising:

a monocrystalline silicon substrate oriented along a single crystallographic plane of P-type electrical conductivity;

a trench-like region in a monocrystalline silicon surface of said monocrystalline silicon substrate, wherein said trench-like region has monocrystalline silicon side walls and a monocrystalline silicon bottom wall;

a P-type region in said monocrystalline silicon substrate, which region is substantially coextensive with said trench side walls;

a buried layer of N+ type electrical conductivity in said monocrystalline silicon substrate substantially coextensive with the bottom wall of said trench;

N-type monocrystalline silicon on said trench bottom wall, effective to contact said buried layer, and extending up from said trench bottom wall to substantially fill said trench; a doped silicon oxide coating on said trench sidewalls, which doped silicon oxide coating contains an N-type conductivity determining impurity and laterally substantially dielectrically isolates said monocrystalline silicon which substantially fills said trench from monocrystalline silicon of said substrate which is coextensive with said trench sidewalls; and

a heavily doped N-type diffusion region in said monocrystalline silicon in said trench, which region is adjacent to said doped oxide sidewalls characterized by a dopant level of between about 10^{17} atoms; cm^3 and about 10^{21} atoms/cm^3, effective to provide a low electrical resistance path between said buried layer and said surface within said trench and adjacent said doped oxide coating.

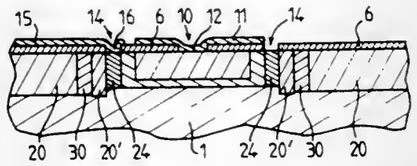
VOL 1155 ISS 1 OCT 5 1993 UMI

5,250,838

SEMICONDUCTOR DEVICE COMPRISING AN INTEGRATED CIRCUIT HAVING A VERTICAL BIPOLAR TRANSISTOR

Pierre Leduc, 4, rue Amiral Courbet, 14880 Colleville-Montgomery, France

PCT No. PCT/NL89/00097, § 371 Date Sep. 24, 1990, § 102(e) Date Sep. 24, 1990, PCT Pub. No. WO90/07193, PCT Pub. Date Jun. 28, 1990
PCT Filed Dec. 18, 1989, Ser. No. 474,831
Claims priority, application France, Dec. 16, 1988, 88 16640
Int. Cl.[5] H01L *29/72*
U.S. Cl. 257—578 5 Claims



1. A semiconductor device comprising an integrated circuit with a vertical bipolar transistor having a collector region and an emitter region of a first conductivity type and an intermediate base region of a second conductivity type opposite to the first type, wherein the emitter region has a thickness and doping level such that the diffusion length of the minority carriers injected into the emitter during operation is at least equal to the thickness of the emitter region and wherein the emitter is covered by an insulating layer which is provided with a contact window through which an electrical contact is provided on an emitter contact region, characterized in that the ratio between the area of the emitter region and the area of the emitter contact region is at least equal to 5, thereby causing, during operation, the total current of minority carriers injected from the base into the emitter region to be much smaller than the current density of minority carriers injected from the base into the emitter region under the emitter contact region multiplied by the total surface area of the emitter region.

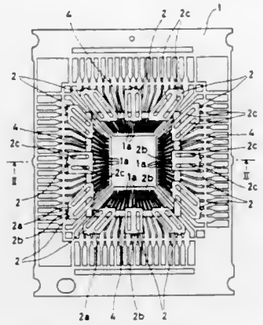
5,250,839

MULTI-LAYER LEADFRAMES, ELECTRICALLY CONDUCTIVE PLATES USED THEREFOR AND PRODUCTION OF SUCH CONDUCTIVE PLATES

Kazunori Katoh; Yuji Yamaguchi, both of Tokyo; Hiromichi Suzuki, Kodaira; Takayuki Okinaga, Kodaira; Takashi Emata, Kodaira, and Osamu Horiuchi, Kodaira, all of Japan, assignors to Dai Nippon Printing Co., Ltd.; Hitachi, Ltd. and Hitachi VLSI Engineering Corporation, Japan

Filed Sep. 25, 1991, Ser. No. 765,146
Claims priority, application Japan, Sep. 26, 1990, 2-256091; Sep. 26, 1990, 2-256092
Int. Cl.[5] H01L *23/48, 23/50*
U.S. Cl. 257—666 12 Claims

1. A multi-layer leadframe, comprising:
a plurality of outer leads electrically connected to an external circuit;
a plurality of inner leads provided continuous to these outer leads for electrical connection to a plurality of electrodes of a mounted semiconductor element through conductive wires;
an insulating layer bonded on said inner leads to extend across the inner leads to prevent deformation of the inner leads and contact between the inner leads themselves; and
an electrically conductive plate having a planar portion, a given number of lead portions protruding from the planar portion, said planar portion being arranged to stride over said insulating layer, a first one of said lead portions being fixedly connected on one side with respect to said insulating layer to a first one of said inner leads, and a second one of said lead portions being fixedly connected on the other side with respect to said insulating layer to said first one of said inner leads.

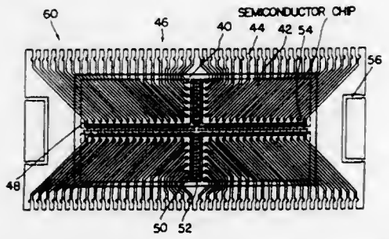


5,250,840

SEMICONDUCTOR LEAD FRAME WITH A CHIP HAVING BONDING PADS IN A CROSS ARRANGEMENT

Dong Y. Oh; Hyeon J. Jeong, both of Incheon, and Heung K. Kwon, Bucheon, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suweon, Rep. of Korea

Continuation of Ser. No. 874,610, Apr. 27, 1992, abandoned.
This application Jan. 19, 1993, Ser. No. 6,202
Claims priority, application Rep. of Korea, Feb. 24, 1992, 92-2797
Int. Cl.[5] H01L *23/48*
U.S. Cl. 257—666 8 Claims



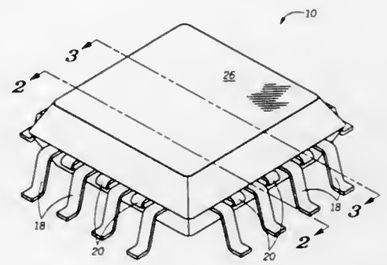
1. A semiconductor lead frame comprising a rectangular semiconductor chip having length and width dimensions, said chip including a plurality of bonding pads which enable external connection of circuits contained in said chip, said bonding pads being aranged in bands confined in central regions of said chip extending in the length and width directions of the chip at right angles to one another to form a cross-arrangement of said pads, a plurality of leads having inner and outer ends, a plurality of bus bars, insulator means for electrically insulating said chips and said leads, and a plurality of metal wires respectively electrically connecting said inner ends of said leads to selected ones of said bonding pads, and said bus bars, in common, to other selected ones of said bonding pads.

5,250,841

SEMICONDUCTOR DEVICE WITH TEST-ONLY LEADS

James W. Sloan, Austin; Timothy J. Mennitt, Cedar Park, and John P. Warren, Austin, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 864,255, Apr. 6, 1992, abandoned. This application Jan. 21, 1993, Ser. No. 7,036
Int. Cl.[5] H01L *23/48, 23/50*
U.S. Cl. 257—666 17 Claims



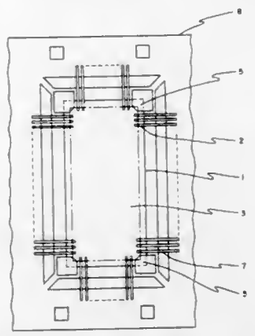
1. A semiconductor device comprising:
a semiconductor die having an integrated circuit formed thereon, a first plurality of bond pads electrically coupled to operational portions of the integrated circuit, and a second plurality of bond pads electrically coupled to test portions of the integrated circuit;
a first plurality of conductive leads electrically coupled to the first plurality of bond pads, each lead of the first plurality of leads being configured for connection to a user substrate; and
a second plurality of conductive leads electrically coupled to the second plurality of bond pads, each lead of the second plurality of leads being configured for testing of the device and being configured such that connection to the user substrate is impeded, and wherein the second plurality of leads is singularly interdigitated among the first plurality of leads.

5,250,842

SEMICONDUCTOR DEVICES USING TAB TAPE

Yukihito Ikeda, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Sep. 5, 1991, Ser. No. 755,541
Claims priority, application Japan, Sep. 7, 1990, 2-94403[U]
Int. Cl.[5] H01L *23/48, 23/28*
U.S. Cl. 257—668 10 Claims



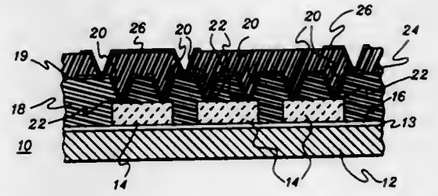
1. A semiconductor device comprising: a semiconductor chip having a first quadrilateral shape with four corners; a tape carrier including a base tape made of a thin insulating material strip and having an upper surface, said base tape having a device hole formed therein with a second quadrilateral shape having four corner portions of said base tape forming projections extending into said device hole, said second quadrilateral shape being larger than said first quadrilateral shape of said semiconductor chip and said four projections extending far enough into said hole to, respectively, support said four corners of said semiconductor chip, and a plurality of inner leads made of a metal foil attached to said upper surface of said base tape, said inner leads projecting onto said device hole in order to form portions for making connections to said semiconductor chip, said semiconductor chip being electrically connected and mechanically fixed to said connecting portions of said inner leads; and a resin coating said semiconductor chip and said connecting portions of said inner leads.

5,250,843

MULTICHIP INTEGRATED CIRCUIT MODULES

Charles W. Eichelberger, Schenectady, N.Y., assignor to Integrated System Assemblies Corp., Woburn, Mass.

Continuation of Ser. No. 676,937, Mar. 27, 1991, abandoned.
This application Sep. 8, 1992, Ser. No. 942,105
The portion of the term of this patent subsequent to May 5, 2009, has been disclaimed.
Int. Cl.[5] H01L *23/48, 29/46, 29/54*
U.S. Cl. 257—692 54 Claims



1. A multichip integrated circuit package comprising:
a substrate having a flat upper surface;
a plurality of unpackaged integrated circuit chips disposed above said substrate's flat upper surface, said integrated circuit chips each being spaced apart from the other of said integrated circuit chips and each having at least one interconnection pad on a top surface thereof, the top surfaces of said integrated circuit chips being in a plane substantially parallel to said substrate's flat upper surface, said integrated circuit chips also each having at least one side surface;
an encapsulant surrounding said integrated circuit chips including said top surfaces and said at least one side surfaces thereof and completely filling all space between adjacent integrated circuit chips disposed above said substrate's flat upper surface, said encapsulant having an upper surface above the tops of the integrated circuit chips and having a plurality of via openings therein, said openings being aligned with at least some of said interconnection pads; and
a pattern of interconnection conductors disposed within at least some of said plurality of via openings and above the upper surface of said encapsulant so as to extend between said at least some of said plurality of via openings, and so as to provide direct electrical connection to at least some of said interconnection pads through said openings, wherein a unitary package of multiple directly interconnected integrated circuit chips is produced.

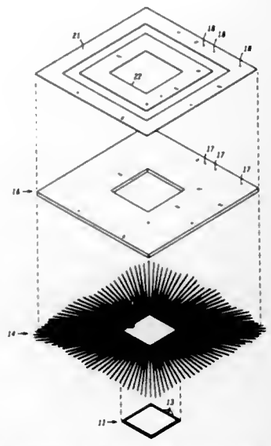
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5,250,844

MULTIPLE POWER/GROUND PLANES FOR TAB

Brenda K. Smith, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 583,403, Sep. 17, 1990, abandoned. This application Oct. 9, 1992, Ser. No. 960,181
Int. Cl.[5] H01L *23/48*
U.S. Cl. 257—695 5 Claims



1. A tape automated bonding lead frame having concentric power/ground planes, comprising:

a plurality of electrically conductive leads lying in a common plane which are tape automated bonded to a plurality of connecting pads of an integrated circuit, the plurality of electrically conductive leads extending in a radial pattern from a central location;

an electrically conductive plane divided into a plurality of concentric power/ground planes, each one of the plurality of concentric power/ground planes being electrically isolated from each other one of the plurality of concentric power/ground planes; and

a dielectric layer which electrically isolates the plurality of concentric power/ground planes from the plurality of electrically conductive leads, wherein the concentric power/ground planes provide shielding to the plurality of electrically conductive leads.

5,250,845

TOTALLY ENCLOSED HERMETIC ELECTRONIC MODULE

Michael D. Runyan, Torrance, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 30, 1990, Ser. No. 621,182
Int. Cl.[5] H01L *23/02, 23/12*
U.S. Cl. 257—729 21 Claims

1. A hermetic module comprising:

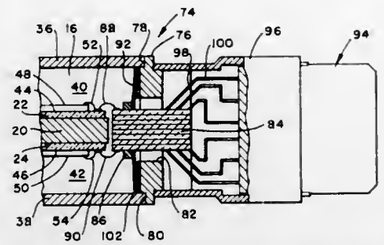
a heat sink panel, two parallel-facing walls and a rear wall perpendicularly disposed to said parallel-facing walls attached to said heat sink panel, a front bulkhead attached to said parallel-facing walls, said walls and said front bulkhead extending above said heat sink panel to define a component pocket above said heat sink panel and between said walls and to carry hermetic closure lids;

high density interconnect substrates carrying circuit pads on top surface thereof for wire bonding, wherein said substrates are mounted on top and bottom surfaces of said heat sinks;

closure means for closing said module below said component pocket and below said heat sink panel;

a cover for sealing against said walls and front bulkhead for closing said component pocket above said heat sink panel; and

an opening in said front bulkhead, a ceramic connector block in said opening, conductor pads on the inner surfaces in said connector block and conductor pads on top and bottom surfaces of the exterior of said connector block for connection between the interior and exterior of said package, a low expansivity alloy flexible seal attached to said connector block and to said front bulkhead to close said opening through said front bulkhead so that a hermetic modular package is achieved and wherein said front bulkhead is a multi-layer structure of a low expansivity alloy material layer diffusion bonded to an aluminum layer and said low expansivity alloy seal is welded to said low expansivity alloy layer of said front bulkhead.

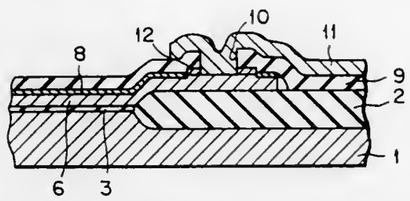


5,250,846

SEMICONDUCTOR DEVICE WITH MULTI-LAYER LEADS

Toshihiko Kondo, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Aug. 9, 1991, Ser. No. 742,808
Claims priority, application Japan, Aug. 9, 1990, 2-210806; Jul. 16, 1991, 3-175392
Int. Cl.[5] H01L *23/54*
U.S. Cl. 257—756 7 Claims



1. A semiconductor device comprising: a substrate

a first lead layer comprising a polycrystalline silicon layer containing impurities and carried by the substrate, and a titanium silicide layer formed over at least part of the polycrystalline silicon layer;

an intermediate insulating layer formed on the first lead layer, the intermediate insulating layer having a thickness dimension and being formed with a contact hole penetrating through the thickness dimension thereof, the contact hole enclosing a contact area; and

a second lead layer comprising a layer of polycrystalline silicon and an upper layer of a refractory metal or a refractory metal silicide overlying said polycrystalline silicon layer of said second lead layer, said second lead layer being formed over the intermediate insulating layer, with polycrystalline silicon of the second lead layer extending into the contact hole to contact the polycrystalline silicon layer of the first lead layer,

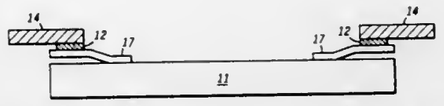
wherein the titanium silicide layer is not present in the contact area enclosed by the contact hole for permitting direct contact of the polycrystalline silicon layer of the first lead layer with the polycrystalline silicon of the second lead layer which extends into the contact hole.

5,250,847

STRESS ISOLATING SIGNAL PATH FOR INTEGRATED CIRCUITS

Ira E. Baskett, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 722,459, Jun. 27, 1991, abandoned. This application Aug. 12, 1992, Ser. No. 928,674
Int. Cl.[5] H01L *29/04, 21/44*
U.S. Cl. 257—773 8 Claims



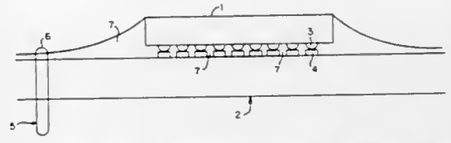
1. A stress isolated integrated circuit comprising: an integrated circuit having circuitry formed on an upper surface, wherein the circuitry includes an area for receiving an electrical signal; a polysilicon spring formed on the circuitry and having a first end coupled to the arms for receiving an electrical signal and a second end, wherein the first end is affixed to the integrated circuit and the second end is separated from the upper surface of the integrated circuit by a gap.

5,250,848

SOLDER INTERCONNECTION STRUCTURE

Frederick R. Christie; Kostas I. Papathomas, both of Endicott, and David W. Wang, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 624,973, Dec. 10, 1990, Pat. No. 5,089,440, which is a division of Ser. No. 493,126, Mar. 14, 1990, Pat. No. 4,999,699. This application Jul. 30, 1991, Ser. No. 737,473
The portion of the term of this patent subsequent to Mar. 12, 2008, has been disclaimed.
Int. Cl.[5] H01L *23/48, 29/40, 29/64, 39/02*
U.S. Cl. 257—778 24 Claims



1. A solder interconnection for forming connections between an integrated semiconductor device and a carrier substrate comprising

a plurality of solder connections that extend from the carrier substrate to electrodes on said semiconductor device to form a gap between said carrier substrate and the semiconductor device, wherein said gap is filled with a composition obtained from curing a composition containing:

A. a binder selected from the group of cycloaliphatic polyepoxide, cyanate ester, prepolymer of cyanate ester and mixtures thereof, said binder having a viscosity at room temperature of no greater than about 1,000 centipoise;

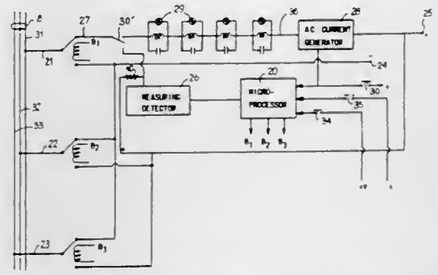
B. filler having a maximum particle size of 31 microns and being substantially free of alpha particle emissions; wherein the amount of A is about 60 to about 25% by weight of the total of A and B and correspondingly, the amount of B is about 40 to about 75 percent by weight based upon the amount of A and B, and C a surfaeta.

5,250,849

DEVICE FOR MONITORING THE CLOSURE OF THE OPENING POINTS OF A MOTOR VEHICLE

Pierre Periou, Cergy Pontoise, France, assignor to Rockwell Automotive Body Systems, France

Filed Jun. 4, 1991, Ser. No. 709,938
Claims priority, application France, Jun. 5, 1990, 90 06936
Int. Cl.[5] E05B *47/00*
U.S. Cl. 307—10.1 1 Claim



1. Device for the centralized control and monitoring of opening points (2, 3, 4) of a motor vehicle in which the opening points have electrical motors (M1, M2) and a closure contact which are connected by means of a single common line (8) having three conductors (31, 32, 33) to a central control unit, the central control unit (1) comprises at least one periodic signal generator connected to conductors (31, 32) and each opening point (2 through 4) comprises a passive receiver in unit (17, 18) tuned to the frequency of the periodic signal supplied by the generator (28) of the central unit (1), the passive circuit being connected in series with the closure contact (19) of the opening point, the device comprises means for signaling a closure fault which is sensitive to the variations of the signal generated by the generator in response to the actuation of the corresponding closure contact (19) and first motor (M1) connected between two conductors (12, 13) of the line (8) and a second motor (M2) connected directly to one of said two conductors (12, 13) and connected to the other of these conductors through a first diode (D1), the cathode of which is connected to the said second motor, and a second diode (D2) is connected between the terminal of the second motor (M2) and said third conductor (11) of the line (8), the anode of this second diode being connected to the second motor (M2).

5,250,850

AUTOMOTIVE LIGHT AND WIPER CONTROL CIRCUIT

Albert Pace; William R. Neuhaus, and Alan S. Lipman, all of c/o 1 South St., Washingtonville, N.Y. 10992

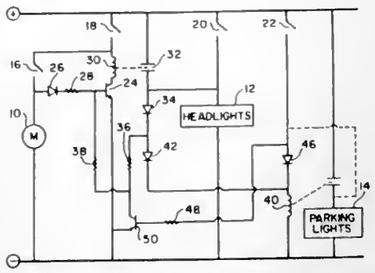
Filed Jan. 14, 1991, Ser. No. 640,810
Int. Cl.[5] B60L *1/14;* B60Q *1/02*
U.S. Cl. 307—10.8 3 Claims

1. Apparatus for controlling the operation of automobile headlights and parking lights in conjunction with operation of windshield wipers, comprising:

a transistor serving as a first switch means operable by the presence of a voltage applied to a windshield wiper motor, said switch means coupled to first relay means, a pair of contacts of said first relay means being in parallel with a switch for the automobile headlights; latch means operable by said first switch means to latch said first switch means in a closed position upon first closing of said first switch means; second relay means coupled to said first relay means contacts, a pair of contacts of said second relay means being in series with the automotive parking

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lights to cause energization thereof upon closure and operable in response to the closing of said first relay means contacts; a transistor serving as a means for decoupling said latch means from said first switch means, said decoupling means further including a parking lights switch of the automobile, said parking lights switch being coupled to said decoupling means transistor whereby said decou-



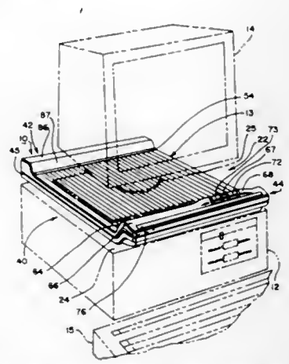
pling means transistor is energized to decouple said first switch means from said latch means upon momentary parking lights switch energization and said decoupling means transistor grounds an interconnection between said first switch means and latch means upon energization, whereby said first relay means becomes disengaged in the absence of wiper motor voltage such that said headlights and parking lights are extinguished.

5,250,851

VIDEO MONITOR SUPPORT AND POWER DISTRIBUTION ASSEMBLY

William J. McKnight, San Diego, and Eric S. Stevens, El Cajon, both of Calif., assignors to Proxima Corporation, San Diego, Calif.

Filed Jun. 19, 1991, Ser. No. 717,375
Int. Cl.[5] F16M *11/00*
U.S. Cl. 307—38 **16 Claims**



1. A power distribution unit for controlling electrical equipment including a central processing unit, and a video monitor unit, said video monitor unit having a viewing screen and being adapted to be supported from below by a top wall of the central processing unit with the viewing screen in ergonomic alignment with the line of sight of a viewer when the user is in a normal sitting position in front of the units, comprising:

lower housing means having a bottom wall being dimensioned to enable it to fit on the top wall of the central processing unit;

upper housing means connected to said lower housing means, said upper housing means having platform means for supporting from below the video monitor in a spaced apart manner from the central processing unit, said platform means being dimensioned to enable it to receive the video monitor unit in resting relationship thereon;

said lower housing means and said upper housing means defining a hollow housing unit having a sufficiently thin, low profile to maintain substantially said ergonomic alignment;

said platform means and said bottom wall being spaced apart a sufficiently short distance to cause the video monitor to be in close proximity to the top wall of the central processing unit when the video monitor is supported from below by said platform means and said bottom wall is positioned on the top wall of the central processing unit to help maintain substantially said ergonomic alignment;

said housing unit having at least one upturned angularly inclined hollow peripheral edge portion angularly inclined relative to said platform means for helping to contain the video monitor in its resting relationship on said platform means;

computer electrical connector means mounted on said housing unit for coupling power to the electrical equipment including the video monitor unit and the central processing unit;

power electrical connector means attached to said housing unit for coupling the computer electrical connector means electrically to a supply of electrical power;

actuator means in circuit with at least one of said connector means for enabling a user to activate or deactivate electrically the electrical equipment to be controlled; and

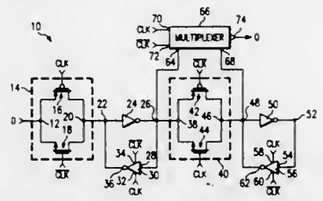
a surge suppressor mounted within said upturned edge portion and in circuit with said actuator means for helping to attenuate undesirable electrical power transient signals to protect the electrical equipment to be controlled.

5,250,852

CIRCUITRY AND METHOD FOR LATCHING A LOGIC STATE

Kevin M. Ovens, Plano, and Clive D. Bittlestone, Allen, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 869,591, Apr. 16, 1992, abandoned. This application Dec. 9, 1992, Ser. No. 988,395
Int. Cl.[5] H03K *17/56, 3/289*
U.S. Cl. 307—272.2 **33 Claims**



1. Circuitry for latching a logic state, comprising:

an input node for inputting an input signal;

first transfer circuitry coupled to said input node for outputting a first signal indicating a logic state of said input signal in response to a first transition of a clock signal;

second transfer circuitry coupled to said first transfer circuitry for outputting a second signal indicating a logic state of said first signal in response to a second transition of said clock signal; and

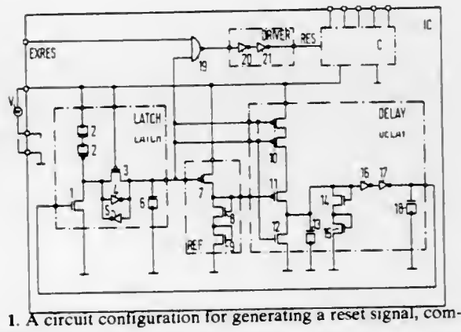
multiplexing circuitry coupled to said first and second transfer circuitry for outputting an output signal indicating said logic state of said first signal in response to said second transition and indicating a logic state of said second signal in response to said first transition.

5,250,853

CIRCUIT CONFIGURATION FOR GENERATING A REST SIGNAL

Tommaso Bacigalupo, München, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, München, Fed. Rep. of Germany

Filed Jan. 29, 1992, Ser. No. 827,758
Claims priority, application European Pat. Off., Jan. 29, 1991, 91101146.8
Int. Cl.[5] G11C *11/00*; H03K *3/01*
U.S. Cl. 307—272.3 **14 Claims**



1. A circuit configuration for generating a reset signal, comprising:

a bistable switch element assuming a preferential state upon application of a supply voltage, said bistable switch element having an output carrying a reset signal in the preferential state and having an input.

an on and off switchable reference voltage source having a control input connected to the output of said bistable switch element, said on and off switchable reference voltage source being switched on in the preferential state of said bistable switch element,

an on and off switchable delay line having a control terminal connected to the output of said bistable switch element, an output connected to the input of said bistable switch element, and a reference input connected to said on and off switchable reference voltage source for switching on said delay line in the preferential state of said bistable switch element,

said bistable switch element being switched out of the preferential state with a time delay when the supply voltage exceeds a reference value specified by said on and off switchable reference voltage source, and

including a supply voltage source for issuing the supply voltage, said supply voltage source having two poles,

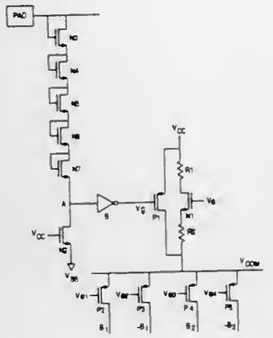
said bistable switch element having a first MOSFET of one conduction type having a source terminal connected to one of the poles of said supply voltage source, a gate terminal forming the input of said bistable switch element and a drain terminal; a first capacitor connected between the other of the poles of said supply voltage source and the drain terminal of said first MOSFET; two antiparallel-connected inverters; a second MOSFET of the other conduction type having a source-to-drain path connected parallel to said inverters and a gate terminal connected to the other pole of said supply voltage source, said inverters and said second MOSFET being connected between the output of said bistable switch element and the drain terminal of said first MOSFET; and a second capacitor connected between the output of said bistable switch element and the one pole of said supply voltage source.

5,250,854

BITLINE PULL-UP CIRCUIT OPERABLE IN A LOW-RESISTANCE TEST MODE

Chuen-Der Lien, Mountain View, Calif., assignor to Integrated Device Technology, Inc., Santa Clara, Calif.

Filed Nov. 19, 1991, Ser. No. 794,471
Int. Cl.[5] H03K *3/01, 17/16*
U.S. Cl. 307—296.1 **24 Claims**



1. A circuit, for connection to a first node maintained at voltage V_{CC} including:

a first branch circuit connected between the first node and a second node, wherein the first branch circuit includes a first transistor having a first control terminal; and

a second branch circuit including a MOS transistor having a control terminal and non-control terminals, wherein the control terminal receives a mode-selection voltage, a first one of the non-control terminals is connected to the first node, and a second one of the non-control terminals is connected to the second node, wherein at times when the MOS transistor is switched on in response to the mode-selection voltage, the second branch circuit shunts out the first branch circuit and raises the second node to a high voltage level, and at times when the MOS transistor is switched off in response to the mode-selection voltage, the first branch circuit raises the second node to second voltage level, wherein the second voltage level is lower than the high voltage level, and wherein the first control terminal receives a first control voltage that is independent from the mode-selection voltage, wherein the first transistor selectively switches on and off in response to the first control voltage, wherein at times when the MOS transistor is switched off, the first branch circuit raises the second node selectively to one of a first low voltage level and a second low voltage level in response to the first control voltage, and wherein each of the first low voltage level and the second low voltage level is lower than the high voltage level.

5,250,855

FAST LOGIC CIRCUITS

Creighton S. Asato, San Jose, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Mar. 20, 1992, Ser. No. 855,612
Int. Cl.[5] H03K *19/017*
U.S. Cl. 307—443 **11 Claims**

1. An AND Gate comprising:

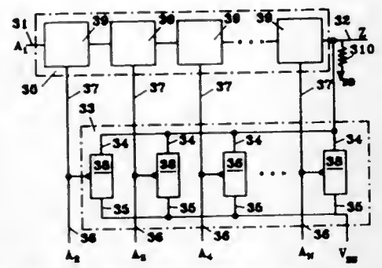
a master transmission gate connected between a first input port, on which a first input logic signal A_1 is to be applied, and an output on which an output signal Z is produced;

a master switch connected between a first reference voltage source, of voltage V_0 which is representative of a logical zero, and said output port;

said master transmission gate being responsive to a set of

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N−1 input logic signals $A_2, \ldots, A_N$ such that this master transmission gate transmissive if and only if all of the N−1 signals $A_2, \ldots, A_N$ are all equal to a logic one; and



said master switch being transmissive if any of $A_2, \ldots, A_N$ is equal to a logic zero.

5,250,856

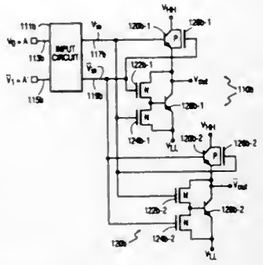
DIFFERENTIAL INPUT BUFFER-INVERTERS AND GATES

Edward A. Burton, Lindon, and Thomas D. Fletcher, Orem, both of Utah, assignors to North American Philips Corp., New York, N.Y.

Continuation of Ser. No. 458,217, Dec. 28, 1989, abandoned. This application Jul. 1, 1991, Ser. No. 863,551

Int. Cl.[5] H03K *19/02*

U.S. Cl. 307—446 **39 Claims**



1. An electronic circuit comprising:

input means for providing a differential input formed with a noninverting input and an inverting input;

a first bipolar transistor having a base directly coupled to the noninverting input, a collector coupled to a first voltage reference rail, and an emitter;

a second bipolar transistor having a base directly coupled to the inverting input, a collector coupled to the first rail, and an emitter;

a third bipolar transistor having a base, a collector directly coupled to the emitter of the first bipolar transistor, and an emitter coupled to a second voltage reference rail;

a fourth bipolar transistor having a base, a collector directly coupled to the emitter of the second bipolar transistor, and an emitter coupled to the second rail;

a first MOS transistor having a gate electrode directly coupled to the inverting input, a drain coupled to the emitter of the third bipolar transistor, and a source coupled to the base of the third bipolar transistor;

a second MOS transistor having a gate electrode directly coupled to the noninverting input, a drain coupled to the emitter of the second bipolar transistor, and a source coupled to the base of the fourth bipolar transistor, the first and second MOS transistors being of a first type;

a third MOS transistor having a gate electrode directly coupled to the inverting input, a source coupled to the first rail, and a drain coupled to the emitter of the first bipolar transistor; and

a fourth MOS transistor having a gate electrode directly coupled to the noninverting input, a source coupled to the first rail, and a drain coupled to the emitter of the second bipolar transistor, the third and fourth MOS transistors being of a second MOS type opposite to the first MOS type, a pair of outputs of the circuit being available at nodes respectively at the emitters of the first and second bipolar transistors.

5,250,857

DYNAMIC LOGIC CIRCUIT WITH REDUCED OPERATING CURRENT

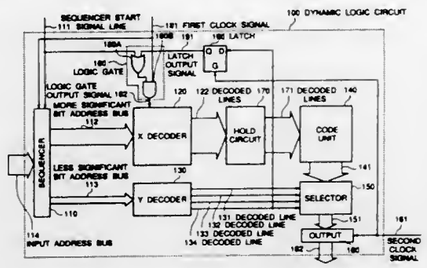
Takashi Miyazaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 27, 1992, Ser. No. 825,682

Claims priority, application Japan, Jan. 25, 1991, 3-007562

Int. Cl.[5] H03K *19/20;* **G11C** *7/00*

U.S. Cl. 307—449 **10 Claims**



1. A dynamic logic circuit comprising a sequencer receiving an input address for generating an internal address on the basis of said input address in response to a predetermined timing signal, said sequencer sequentially generating a continuous address in response to each of first clock signals supplied after said predetermined timing signal, a first decoder receiving and decoding only a more significant bit portion of said internal address and having internal decoded lines precharged in response to each of said first clock signals so as to activate selectively said internal decoded lines on the basis of the result of the decoding of said more significant bit portion of said internal address, a hold circuit receiving and holding said selectively activated status of said internal decoded lines, a code circuit coupled to said hold circuit for generating a plurality of logics corresponding to said selectively activated status of said internal decoded lines held in said hold circuit, a second decoder receiving and decoding only a less significant bit portion of said internal address for selectively activating a plurality of decoded lines thereof, a selector receiving said plurality of logics and controlled by said plurality of decoded lines of said second decoder so as to output one of said plurality of logics selected in accordance with the result of decoding of said second decoder, and precharge inhibit means receiving a selected portion of said plurality of decoded lines of said second decoder for controlling said first decoder so that the precharge of said internal decoded lines of said first decoder is inhibited when said selected portion of said plurality of decoded lines of said second decoder fulfills a predetermined condition.

5,250,858

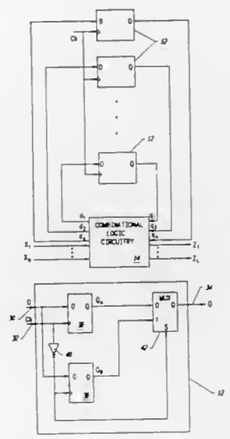
DOUBLE-EDGE TRIGGERED MEMORY DEVICE AND SYSTEM

Richard M. Strong, Pittsburgh, Mass., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Feb. 19, 1992, Ser. No. 838,625

Int. Cl.[5] H03K *19/177*

U.S. Cl. 307—465 **13 Claims**



2. A state machine, for use with a clock signal having a series of alternating rising and falling edge transitions, comprising:

storage means for storing a present state vector having at least one element;

next state means for providing a next state vector having at least one element; and

updating means for updating each element of said present state vector in response to the contents of said next state vector at the time of each of said alternating edge transitions in said clock signal.

5,250,859

LOW POWER MULTIFUNCTION LOGIC ARRAY

Cecil H. Kaplinsky, 140 Melville Ave., Palo Alto, Calif. 94301

Filed Sep. 27, 1991, Ser. No. 767,256

Int. Cl.[5] H03K *19/193*

U.S. Cl. 307—465 **38 Claims**

1. A programmable logic array comprising

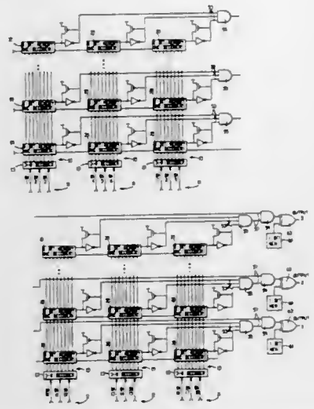
a set of array inputs,

a plurality of multibit memory elements, each memory element having a plurality of address inputs and a single memory output, each multibit memory element being programmable by the loading of data bits at specified addresses therein to provide a specified data bit on its memory output in response to input signals received on its address inputs,

means for coupling said set of array inputs to said pluralities of address inputs of said plurality of memory elements,

a plurality of logic gates, each logic gate having a set of gate inputs and a gate output, said sets of gate inputs of said plurality of logic gates being coupled to said memory outputs of said plurality of memory elements,

a set of array outputs, and



means for coupling said gate outputs of said plurality of logic gates to said set of array outputs.

5,250,860

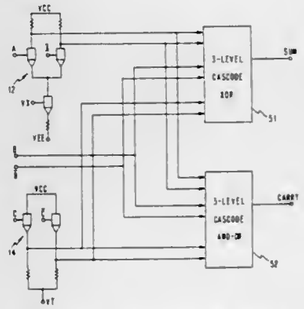
THREE-LEVEL CASCODE DIFFERENTIAL CURRENT SWITCH

William M.-S. Chu, Hyde Park, and Carl K.-L. Wong, Woodstock, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 25, 1992, Ser. No. 904,125

Int. Cl.[5] H03K *19/092*

U.S. Cl. 307—475 **9 Claims**

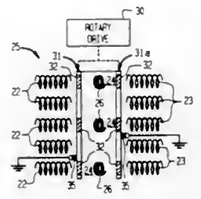


1. Input voltage level conversion circuitry for three-level cascode logic circuits, said three-level cascode logic circuits having an upper level, middle level and lower level connected in a tree structure, a first standard current source connected to a base of said tree structure and each of said levels receiving respective differential inputs, said input circuitry comprising an upper level stage comprising an upshift circuit having a second standard current source identical to said first standard current source and translating a voltage level of a first pair of differential inputs to a higher level and connecting the translated voltage level to the upper level of one or more of said three-level cascode logic circuits, a middle level stage connecting a second pair of differential inputs directly connected to the middle level of one or more of said three-level cascode logic circuits, and a lower level stage comprising a downshift circuit translating a voltage level of a third pair of differential inputs to a lower level and connecting the translated voltage

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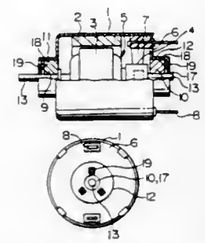
level to the lower level of one or more of said three-level cascode logic circuits.

5,250,861
SUPERCONDUCTOR ELECTRICAL POWER GENERATING SYSTEM
Stephen F. Cummins, 443 Taunton St., Wrentham, Mass. 02093
Filed Apr. 13, 1992, Ser. No. 867,393
Int. Cl.[5] H02K *1/22*
U.S. Cl. 310—10 **11 Claims**



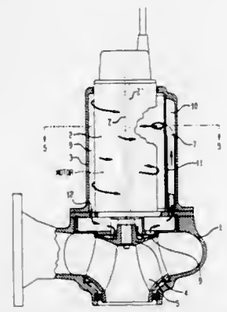
1. An electric power generating system comprising:
a plurality of individual magnetic field sources each producing a magnetic field in a different distinct region;
an electrical conductor means disposed in each of said different distinct regions so as to be linked by magnetic flux of said magnetic field therein;
magnetic shield means; and
motive means for producing movement of said shield means with respect to said magnetic field sources such that said shield means sequentially moves through said different distinct regions to intercept at least a portion of the magnetic field therein and thereby vary said magnetic flux linked with said conductor means therein and thereby produce in said conductor means an electromagnetic force; and including a plurality of additional magnetic field sources each disposed in a different one of different regions.

5,250,862
MINATURE MOTOR WITH IMPROVED BEARING RETAINERS
Motohisa Uzawa, Matsudo, Japan, assignor to Mabuchi Motor Co., Ltd., Chiba, Japan
Filed May 28, 1992, Ser. No. 890,531
Claims priority, application Japan, May 30, 1991, 3-039506[U]
Int. Cl.[5] H02K *5/16;* **F16C** *33/10*
U.S. Cl. 310—40 MM **6 Claims**



1. A miniature motor, comprising:
a housing made of a metallic material, formed into a bottomed hollow cylindrical shape and having a permanent magnet on the inner circumferential surface thereof;
a rotor including a commutator and an armature facing said permanent magnet;
and end plate fitted to the opening of said housing and having brushes for making sliding contact with said commutator and having input terminals electrically connected to said brushes;
a bearing retainers formed on said bottom of said housing and formed on said end plate, said bearing retainers including a bottomed hollow cylindrical shaped portion defining a recess in each of said bottom of said housing in said end plate, said bearing retainers each having a bearing retainer end face with a plurality of local projections extending inwardly; and
oil-impregnated bearings having a cylindrical shape, said oil impregnated bearings being positioned in said recess of a corresponding one of said bearing retainers such that an end face of each of said oil-impregnated bearings faces said inside end face of said bearing retainer wherein said end face of each said oil-impregnated bearings contact each of said plurality of local projections of said corresponding one of said bearing retainers.

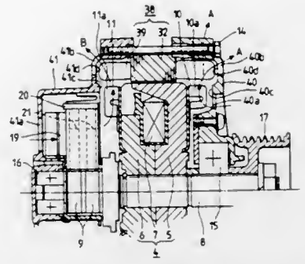
5,250,863
MOTOR AND COOLING MEANS THEREFOR
Bengt Å. Brandt, Sundbyberg, Sweden, assignor to ITT Flygt AB, Solna, Sweden
Filed Aug. 10, 1992, Ser. No. 927,770
Claims priority, application Sweden, Sep. 3, 1991, 9102517
Int. Cl.[5] H02K *9/20, 5/19*
U.S. Cl. 310—54 **5 Claims**



1. A motor and cooling means therefor, comprising:
a water-proof electric motor;
a stator housing enclosing said motor, said housing having a central, vertical axis;
a casing, substantially enclosing said motor and housing therewithin, said casing having a central longitudinal axis which is offset and parallel to said vertical axis; and
an arcuate wall segment joined to said casing and interposed between said housing and a portion of said casing;
said housing, wall segment and casing cooperatively define a uniform annular chamber therebetween; and
liquid pumping means for pumping liquid into said chamber.

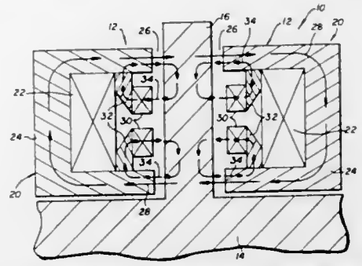
5,250,864
AC GENERATOR FOR VEHICLES
Katsuhiko Kusumoto, and Toshinori Tanaka, both of Hyogo, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan
Filed Jul. 13, 1992, Ser. No. 912,471
Claims priority, application Japan, Jul. 19, 1991, 3-064598[U]
Int. Cl.[5] H02K *5/00, 9/00*
U.S. Cl. 310—58 **2 Claims**

1. An AC generator having a cooling means for use in a vehicle, comprising:
a stator including a stator iron core and a stator coil mounted to the stator iron core and extending in an axial direction;
a rotor including two magnetic pole iron cores and an exciting coil secured to said magnetic pole iron cores, the magnetic pole iron cores being fixed to a rotary shaft;
two fans having blades which are respectively mounted to opposite axial end portions of the magnetic pole iron cores as said cooling means, said blades having a predetermined length in said axial direction; and
front and rear brackets fixedly connected to said stator and supporting the rotary shaft through bearings, each of said brackets including a plurality of air suction holes and a plurality of air exhaust holes for cooling air flow;
wherein said stator coil is formed such that a portion thereof



extending from a front end of said coil to a rear end thereof in said axial direction overlaps at least a portion of said blades in said axial direction, wherein at least one of said front and rear brackets is formed such that the inner end face thereof opposing the coil end portion of said stator coil includes a recessed portion which is shifted axially and radially outwardly with respect to the inner end face thereof opposing said fans and wherein said exhaust hole in said one bracket is in said recessed portion.

5,250,865
ELECTROMAGNETIC THRUST BEARING FOR COUPLING A ROTATABLE MEMBER TO A STATIONARY MEMBER
Crawford R. Meeks, Woodland Hills, Calif., assignor to AVCON - Advanced Controls Technology, Inc., Northridge, Calif.
Filed Apr. 30, 1992, Ser. No. 876,586
Int. Cl.[5] H02K *7/09*
U.S. Cl. 310—90.5 **19 Claims**



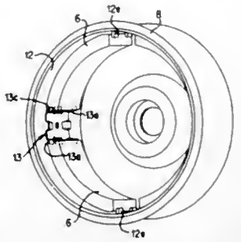
19. An electromagnetic thrust bearing for axially flux coupling a rotatable member relative to a stationary member, the thrust bearing comprising:
a thrust disc fixed to and extending radially from the rotatable member, the thrust disc having first and second opposite, axially-facing, sides;
first means associated with the stationary member and adjacent to the first side of the thrust disc, for generating an axially polarized, controllable electromagnetic field, wherein the first electromagnetic field generating means includes a first solenoid having a first electromagnetic coil situated within a first ferromagnetic housing which circumscribes a portion of the rotatable member;
second means associated with the stationary member and adjacent to the second side of the thrust disc, for generating an axially polarized, controllable electromagnetic field, wherein the second electromagnetic field generating means includes a second solenoid having a second electromagnetic coil situated within a second ferromagnetic housing which circumscribes a portion of the rotatable member;
first means associated with the stationary member and adjacent to the first side of the thrust disc, for generating a constant flux, high density magnetic field, wherein the first constant flux magnetic field generating means includes a first pair of arcuately shaped, axially polarized permanent magnets radially spaced from one another and linked magnetically to the first ferromagnetic housing by respective pole pieces, and wherein the first pair of radially spaced permanent magnets are each linked magnetically to the thrust disc through a first air gap such that axially directed flux from the first pair of permanent magnets passes through the first air gap to create a high density magnetic field between the thrust disc and the stationary member;
second means associated with the stationary member and adjacent to the second side of the thrust disc, for generating a constant flux, high density magnetic field, wherein the second constant flux magnetic field generating means includes a second pair of arcuately shaped, axially polarized permanent magnets radially spaced from one another and linked magnetically to the second ferromagnetic housing by respective pole pieces, and wherein the second pair of radially spaced permanent magnets are each linked magnetically to the thrust disc through a second air gap such that axially directed flux from the second pair of permanent magnets passes through the second air gap to create a high density magnetic field between the thrust disc and the stationary member;
means for directing substantially all magnetic flux from the first and second electromagnetic field generating means and the first and second constant flux magnetic field generating means, axially between the thrust disc and the stationary member, to magnetically link the thrust disc to the solenoids and provide a magnetic flux path for the electromagnetically generated flux around the permanent magnets and the electromagnetic coils, and provide controlled magnetic flux coupling of the rotatable member to the stationary member; and
means for determining axial positioning of the rotatable member relative to the stationary member, and for controlling axial positioning of the thrust disc by varying the magnetic flux generated by the first and second electromagnetic field generating means.

5,250,866
STRUCTURE FOR FIXING PERMANENT MAGNETS IN MOTOR
Masashi Fukui, Ashikaga, and Takayoshi Sakamoto, Tatebayashi, both of Japan, assignors to Mitsuba Electric Mfg. Co., Ltd., Gunma, Japan
Filed May 18, 1992, Ser. No. 884,193
Claims priority, application Japan, May 24, 1991, 3-46968[U]
Int. Cl.[5] H02K *21/26, 21/38, 23/04*
U.S. Cl. 310—154 **21 Claims**

1. A structure for fixing permanent magnets in a motor, said structure comprising:
at least one pair of first and second magnet receiving pieces projecting from an internal peripheral surface of a cylindrical yoke;
at least one magnet holder having elastically deformable first and second magnet pressure pieces which are formed at first and second sides of said magnet holder in a peripheral direction of said structure; and
at least one pair of first and second permanent magnets, the first and second permanent magnets being held respectively between said first and second magnet pressure pieces of said magnet holder and the first and second

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magnet receiving pieces, wherein said first and second permanent magnets are pressed respectively against sides of said first and said second magnet receiving pieces due to an elastic restoring force acting on said first and second



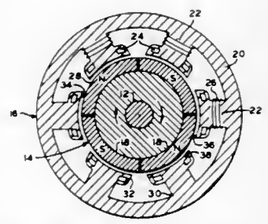
magnet pressure pieces of said magnet holder, said at least one pair of permanent magnets and said at least one magnet holder being integrally fixed to the internal peripheral surface of said yoke.

5,250,867

PERMANENT MAGNET BRUSHLESS DC MOTOR HAVING REDUCED COGGING

Daniel Gizaw, Indianapolis, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Nov. 20, 1991, Ser. No. 796,041
Int. Cl.[5] H02K *21/12, 1/14*
U.S. Cl. 310—179 **24 Claims**



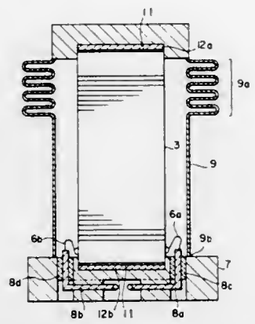
1. A dynamoelectric machine comprising:
a movable member having a face and a direction of movement, said movable member further having means for producing a predefined number of magnetic poles; and
a stationary member having a core and having a predefined number of salient poles projecting from said core and toward said movable member, the number of salient poles of said stationary member being greater than the number of magnetic poles of said movable member, each of said salient poles having a winding and having a pole head portion forming a pole face disposed substantially adjacent to said movably member face to form an air gap therebetween, at least one of said salient poles having aperture means, including at least one aperture symmetrically disposed within said pole head portion and substantially adjacent but not adjoining said pole face, for creating a nonuniform reluctance path within said pole head portion for magnetic flux emanating from said movable member face across said air gap to said stationary member core, and for reducing the cogging torque normally present in a dynamoelectric machine having a salient pole configuration.

5,250,868

PIEZOELECTRIC EFFECT DEVICE

Tetsuo Shirasu, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jun. 24, 1991, Ser. No. 720,255
Claims priority, application Japan, Jun. 27, 1990, 2-169139
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—328 **5 Claims**



1. A piezoelectric effect device comprising: a piezoelectric body comprised of a sintered multilayer pillar composed of alternately laminated piezoelectric ceramic sheets and internal electrodes such that edges of the internal electrodes are alternately insulated along opposite side faces of the sintered multilayer pillar, and a pair of external electrodes provided on the opposite side faces to electrically connect to noninsulated edges of the internal electrodes; a metal stem having a pair of hermetically sealed external terminals electrically coupled to the pair of external electrodes; a metal case having flexibility in a displacement direction of the piezoelectric body and being seal-welded to the metal stem at their contacts to hermetically enclose the piezoelectric body; and a pair of metal pads being dimensioned to substantially cover opposite end faces of the piezoelectric body, one metal pad being centrally spot-welded to an inner face of the metal stem in opposed relation to one end face of the piezoelectric body and being secured thereto by an adhesive, the other metal pad being centrally spot-welded to an inner face of the metal case in opposed relation to the other end face of the piezoelectric body and being secured thereto by an adhesive, said metal stem and metal case having a coefficient of thermal expansion of between ten and several ppm/°C. and said metal pad having a coefficient of thermal expansion of less than 5 ppm/°C.

5,250,869

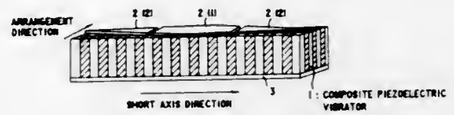
ULTRASONIC TRANSDUCER

Hiroshi Ishikawa, Kawasaki; Kazuhiro Watanabe, Tokyo; Kiyoto Matsui; Yasushi Hara, both of Kawasaki; Kenji Kawabe, Yokohama, and Takaki Shimura, Tokyo, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

PCT No. PCT/JP90/01374, § 371 Date Sep. 26, 1991, § 102(e) Date Sep. 26, 1991, PCT Pub. No. WO91/13588, PCT Pub. Date Sep. 19, 1991
PCT Filed Oct. 25, 1990, Ser. No. 768,445
Claims priority, application Japan, Mar. 14, 1990, 2-63901
Int. Cl.[5] H01L *41/04;* **H04R** *17/00*
U.S. Cl. 310—334 **14 Claims**

1. An ultrasonic transducer for controlling an ultrasonic beam comprising:
a plurality of piezoelectric elements arranged in a form of an array in an insulator to form a composite piezoelectric element vibrator, a plurality of said composite piezoelectric element vibrators forming an ultrasonic vibrator; and

electrodes attached to said composite piezoelectric vibrators and divided in a short axis direction orthogonally crossing



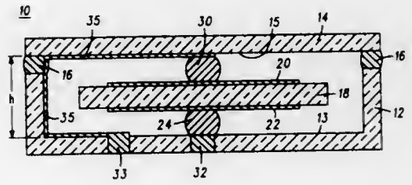
an arrangement direction of said plurality of piezoelectric elements.

5,250,870

ULTRA-THIN SURFACE MOUNT CRYSTAL PACKAGE

Paul F. Fenlon, Elmwood Park; Thomas A. Knecht, Crystal Lake; Robert S. Witte, Algonquin; William G. Skoda, Oak Park, and R. Victor Thompson, Palatine, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 25, 1992, Ser. No. 857,349
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—345 **24 Claims**



1. A thin quartz crystal package comprised of:
a housing enclosing a cavity, said housing comprised of:
a lower substrate having at least one substantially planar inner surface;
an upper substrate having at least one substantially planar inner surface;
a piezoelectric element, within said cavity, having upper and lower surfaces;
a first compliant, adhesive mounting dollop coupled to the inner surface of said lower substrate and the lower surface of said piezoelectric element; and
a second compliant, adhesive mounting dollop coupled to the inner surface of said upper substrate and the upper surface of said piezoelectric element.

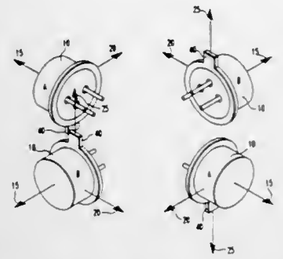
5,250,871

LOW VIBRATION SENSITIVITY CRYSTAL RESONATOR ARRANGEMENT

Michael M. Driscoll, Ellicott City, and Norman G. Matthews, Sparks, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 13, 1991, Ser. No. 713,260
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—348 **3 Claims**

1. A low vibration sensitivity crystal resonator arrangement comprising:
a plurality of crystal resonators, each having orthogonal crystallographic axes;
a first pair of said crystal resonators being positioned so that two of the crystallographic axes of one of said first pair are in antiparallel relationship with two of the crystallographic axes of the other one of said first pair, and
a second pair of said crystal resonators being positioned so that two of the crystallographic axes of one of said second pair are in antiparallel relationship with two of the crystal graphic axes of the other one of said second pair, and so that a third crystallographic axis of each of said first pair



is in antiparallel relationship with a third crystallographic axis of each of said second pair

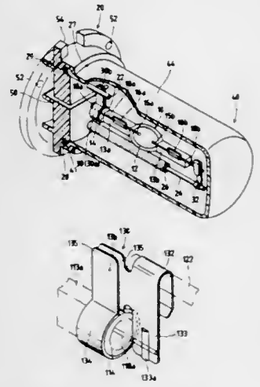
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5,250,872

DISCHARGE LAMP UNIT HAVING IMPROVED DISCHARGE TUBE MOUNT

Yukio Wakimizu; Hirohiko Ohshio; Yonemasa Yoshida; Yasuo Hirozumi, and Masami Handa, all of Shizuoka, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Jul. 16, 1991, Ser. No. 730,716
Claims priority, application Japan, Jul. 20, 1990, 2-190771; Jan. 17, 1991, 3-3933
Int. Cl.[5] H01J *61/00, 5/54, 61/34*
U.S. Cl. 313—25 **7 Claims**



1. A discharge lamp unit comprising:
a discharge lamp including:
a closed glass bulb and pinch-sealed portions extending from both ends of said closed glass bulb;
discharge electrodes arranged confronting one another in said closed glass bulb;
an elongated portion disposed at substantially an end of one of said pinch-sealed portions; and
first and second lead wires protruding through respective ones of said pinch-sealed portions;
an insulating base;
first and second lead supports embedded in said insulating base and protruding from a face of said insulating base on a side of said discharge lamp; and
first and second metal supports each for supporting said discharge lamp in said first and second lead supports, respectively, said first metal support being disposed near said insulating base, said first metal support comprising a band of metal having a cylindrical center

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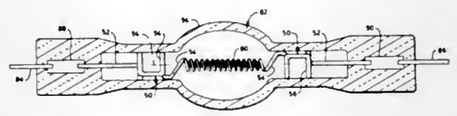
portion for slidably and rotatably receiving said elongated portion of said discharge lamp and support said lamp on said first lead support via said elongated portion of said discharge lamp, and said second metal support connecting said second lead wire to said second lead support, said first metal support further comprises a unitary plate of predetermined configuration shaped and bent so as to form a substantially J-shaped lead support clamping portion and a substantially arcuate lamp holding portion, said lead support clamping portion being spot-welded to said first lead support, and said lamp holding portion conforming to and receiving said elongated portion, said lamp holding portion having a pair of plate-shaped elongations extending from both ends of said lamp holding portion.

5,250,873

FILAMENT SUPPORT FOR TUBULAR LAMP CAPSULE

John F. McHugh, Rochester, Vt., assignor to GTE Products Corporation, Danvers, Mass.

Filed Dec. 27, 1991, Ser. No. 815,004
Int. Cl.[5] H01K *1/24*
U.S. Cl. 313—274 **9 Claims**



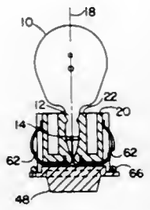
1. A filament support for supporting and centering a filament in a double-ended lamp envelope, comprising:
an inlead portion defining a central axis of said filament support;
a filament attachment portion; and
a centering portion interconnecting the inlead portion and the filament attachment portion, said centering portion including first and second arcuate segments for contacting an inner surface of the lamp envelope, said first and second arcuate segments being axially spaced apart and interconnected by a linear axial segment.

5,250,874

SOCKETLESS LAMP WITH SPRING SIDE CONTACTS

Rolland B. Hall, Keene, and John A. Bergin, Hancock, both of N.H., assignors to GTE Products Corporation, Danvers, Mass.

Filed Dec. 13, 1991, Ser. No. 806,194
Int. Cl.[5] H01J *5/48, 5/50*
U.S. Cl. 313—318 **15 Claims**



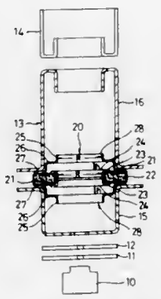
1. A plug in lamp with spring side contacts comprising:
a) a bulb enclosing a light source, and having a bulb seal and at leas two leads extending for electrical connection,
b) a holder to hold the bulb having a top wall, an interior wall defining a socket cavity sufficient to receive at least a portion of the bulb seal, formed with internal channels extending from the socket cavity through the holder to an opposite bottom side of the holder, and lug guides formed on an exterior holder surface,
c) a cap with an interior surface mated with and enclosing the bottom side of the holder, and an opposite exterior cap surface, and
d) at least two lugs each having a respective interior end and a lug spring region, each lug respectively positioned adjacent the bottom side of the holder, and the respective lug spring region extending first away from the holder and towards the bulb, and then extending back towards the holder to couple a portion of the extending lug in the lug guide.

5,250,875

ELECTRON GUN FOR A CATHODE RAY TUBE

Nam J. Kho, Kyungsangbuk, Rep. of Korea, assignor to Gold-Star Co., Ltd., Rep. of Korea

Filed Aug. 30, 1991, Ser. No. 753,171
Claims priority, application Rep. of Korea, Aug. 31, 1990, 90 13720
Int. Cl.[5] H01J *29/50, 29/62*
U.S. Cl. 313—414 **8 Claims**



1. An electron gun for a cathode ray tube arranged vertically from the bottom of axis of the cathode ray tube in the sequence of a cathode, a first grid electrode, a second grid electrode, a first accelerating/focusing electrode, and a second accelerating/focusing electrode comprising:
a third grid electrode assembly having a lower electrode and an upper electrode, including an inter-grid assembly installed between the lower electrode and the upper electrode, forming the first accelerating/focusing electrode;
a main electrostatic focusing lens formed between a fourth grid electrode and the upper electrode of the third grid electrode assembly to receive the electron beam emitted at a predetermined angle from the third grid electrode assembly; and
an electrostatic focusing lens formed in an electrostatic optical arrangement between the inter-grid assembly and the upper and lower electrodes installed in the third grid electrode assembly to perform multifocussing of the electron beam on a screen.

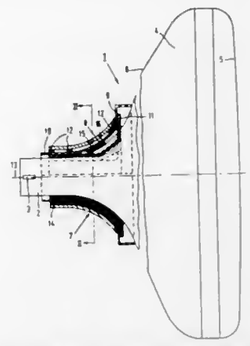
5,250,876

DISPLAY TUBE AND DEFLECTION UNIT SUITABLE FOR SUCH A DISPLAY TUBE

Alexander G. J. G. Van Mierlo, and Martinus A. M. Van den Heuvel, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 552,740, Jul. 12, 1990, abandoned. This application May 21, 1992, Ser. No. 888,470
Claims priority, application Netherlands, Jul. 14, 1989, 8901820; Feb. 16, 1990, 9000373
Int. Cl.[5] H01J *29/70*
U.S. Cl. 313—440 **9 Claims**

1. A display tube comprising an envelope including a display window, an electron gun system disposed within the envelope, and a deflection unit mounted on the envelope, said deflection unit comprising first and second deflection coil devices for producing respective deflection fields, a carrier device of electrically insulating material having a substantial portion thereof disposed between the first and second deflection coil devices, and magnetic field guiding means secured to the carrier device disposed between the first and second deflection coil devices, said field guiding means and adjacent areas of the carrier device being covered by an electrically insulating, vibration dampening material to substantially avoid effecting resonant vibration of the carrier device during operation of the display tube.

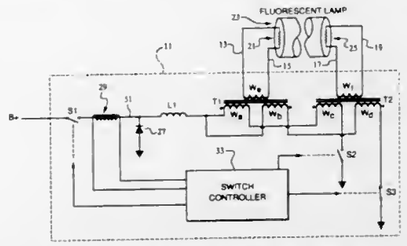


5,250,877

METHOD AND APPARATUS FOR DRIVING A GAS DISCHARGE LAMP

Gregory M. Fischer, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Jun. 4, 1991, Ser. No. 709,942
Int. Cl.[5] H05B *39/04*
U.S. Cl. 315—106 **3 Claims**



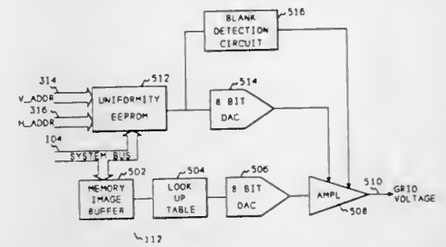
1. An apparatus for driving at least one cathode of a hot cathode gas discharge lamp, the apparatus comprising:
first means for supplying a regulated current and having an input means and an output means,
second means suitable for enabling connection of said output means to the lamp cathode,
third means suitable for enabling connection of said input means to a DC voltage source.
said first means comprises a current mode control switching current supply,
said output means comprises a transformer secondary winding, and
said second means comprises means suitable for enabling connection of said secondary across said filament,
wherein the apparatus is for driving the recited cathode and a second cathode of the lamp, and said output means includes a secondary winding of a second transformer, and said second means includes means for enabling connection of the second secondary across the second cathode.

5,250,878

CRT BEAM INTENSITY CORRECTION SYSTEM

Rick Rothe, Littleton, and Kerry L. Shaklee, Brighton, both of Colo., assignors to Alliant Techsystems, Inc., Littleton, Colo.

Filed Oct. 7, 1992, Ser. No. 957,699
Int. Cl.[5] G09G *1/04;* **H01J** *29/52;* **H04N** *5/84*
U.S. Cl. 315—383 **4 Claims**



1. A CRT intensity correction system having an electron beam for illuminating a phosphor area on the face of the CRT, said system comprising:
deflection controller means for sending a horizontal position address that varies from a left most position on the face of the CRT to a right most position on the face of the CRT and a vertical position address that varies from a top most position on the face of the CRT to a bottom most position on the face of the CRT;
data translation means responsive to said horizontal position address and said vertical position address for modifying an intensity of said electron beam at each position in accordance with data retrieved from a memory image buffer;
uniformity translation means responsive to said horizontal position address and said vertical position address for further modifying said intensity of said electron beam at each position in accordance with a predefined intensity adjustment value, and wherein said uniformity translation means further comprises intensity adjustment values for each position adjacent a position containing a predefined blanking code, wherein said adjacent positions are within a same row of the CRT as said position containing said predefined blanking code; and
blanking means responsive to an output of said uniformity translation means for blanking said electron beam when said predefined blanking code is retrieved, from said uniformity translation means, at a position.

5,250,879

DEFLECTION CIRCUIT HAVING A CONTROLLABLE SAWTOOTH GENERATOR

Kark R. Koblitz, Meylan, France, assignor to Thomson Consumer Electronics, S.A., Courbevoie, France

Continuation-in-part of Ser. No. 843,063, Mar. 2, 1992, abandoned. This application Oct. 8, 1992, Ser. No. 958,594
Int. Cl.[5] H01J *29/70, 29/76*
U.S. Cl. 315—403 **13 Claims**

1. A video display deflection apparatus, comprising:
a first capacitor;
means responsive to a synchronizing signal at a frequency related to a deflection frequency for generating a current that flows in said capacitor in a first direction to produce a first ramping portion of a sawtooth signal in said capacitor during a first portion of a period of said sawtooth signal, and in a direction that is opposite to said first direction to produce a second ramping portion of said sawtooth

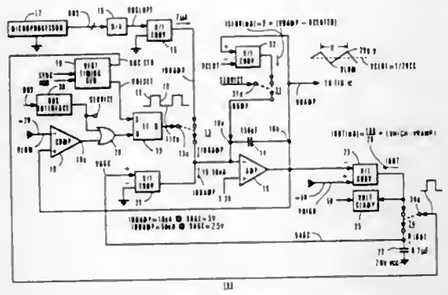
VOL 1155 ISS 1 OCT 5 1993 UMI

signal during a second portion of said period, such that said sawtooth signal is synchronized to said synchronizing signal;

means responsive to a signal at a first reference level and coupled to said capacitor for establishing, during a first instant of said period, said first ramping portion at a level that corresponds to said first reference level;

means responsive to said synchronizing signal for generating a timing control signal during said first ramping portion;

means responsive to said timing control signal, to said sawtooth signal and to a signal at a second reference level and coupled to said capacitor current generating means for controlling said capacitor current in a gain control feedback manner, in accordance with a difference between



said first ramping portion and said second reference level, said difference being determined when said timing control signal is generated, such that a length of an interval between said first instant when said first predetermined level is established and a second instant when said timing control signal is generated, is greater than one-half of a length of said first ramping portion of said sawtooth signal and is unaffected by field-to-field variations of said period of said sawtooth signal;

a cathode ray tube; and

a first amplifier responsive to said sawtooth signal and coupled to a deflection winding for generating a deflection current in said deflection winding that varies in accordance with said sawtooth signal to form a raster on a screen of said cathode ray tube.

5,250,880

LINEAR MOTOR CONTROL SYSTEM AND METHOD

David J. Chesney, Livonia; Robert C. Petrof, Farmington Hills; Nathaniel L. Field, Northville; Bernard Huang, Ann Arbor, and John W. Grant, Plymouth, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 22, 1992, Ser. No. 965,146

Int. Cl.[5] H02K *41/02*; **B23C** *9/00*

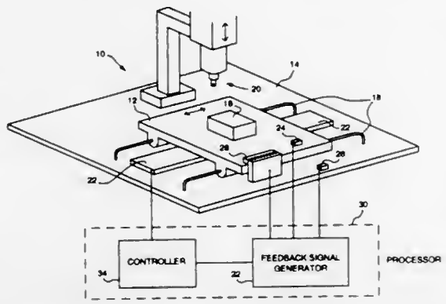
U.S. Cl. 318—135 **13 Claims**

1. In a linear motor for use with a slide mass moveable with respect to a base mass, a control system for providing motor resistance to external forces in accordance with selected operating parameters, comprising:

primary sensor means mountable to said slide mass for detecting the acceleration of said slide mass relative to ground and generating a first acceleration signal corresponding thereto;

secondary sensor means mountable to said base mass for detecting the acceleration of said base mass relative to ground and generating a second acceleration signal corresponding thereto; and

signal processor means in electrical communication with said primary and secondary sensor means for receiving and processing said first and second acceleration signals



and generating a motor control signal operative to provide said linear motor resistance to said external forces.

5,250,881

HALL EFFECT MOTOR CONTROL CIRCUIT AND MOTOR DRIVE SYSTEM USING THE SAME

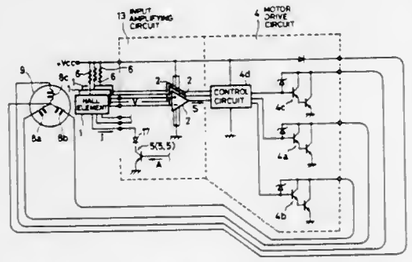
Motoyasu Yoshino, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Aug. 7, 1992, Ser. No. 925,783

Claims priority, application Japan, Aug. 8, 1991, 3-223344

Int. Cl.[5] H02P *7/00*

U.S. Cl. 318—254 **2 Claims**



1. A motor control circuit including an input amplifying circuit which receives a detection signal relating to the rotation of the motor from a hall element and amplifies the detection signal to provide an output signal, and a motor drive circuit connected to a power source line and receiving said output signal for generating a drive current that drives the motor and in which at least said input amplifying circuit is formed in an IC, comprising:

said hall element generating first and second outputs,

said input amplifying circuit having a differential amplifying circuit including a first transistor of an NPN type having a base that receives the first output of the hall element, a second transistor of an NPN type having a base that receives the second output of the hall element, and a constant current source circuit constituted by one transistor of an NPN type having a collector that receives the current of emitters of the first and second transistors and having an emitter that is connected to a reference line,

a resistor connected between the power source line and the hall element having a predetermined resistance value dependent upon the characteristic of the hall element,

a switching circuit including two transistors of NPN type in Darlington connection of which the emitter is connected to said reference line, and

a diode disposed between the hall element and said reference line in the forward direction and connected to the reference line via said switching circuit; and wherein said diode and said switching circuit are formed in said IC together with said input amplifying circuit, the hall element is outside the circuit formed in said IC, and the diode voltage of said diode induced at the connection side with the hall element is set nearly equal to or higher than the lower limit voltage level of the input signal of said input amplifying circuit.

5,250,882

SUNSHADE OPEN/CLOSE CONTROL DEVICES FOR VEHICULAR SUN ROOFING APPARATUS

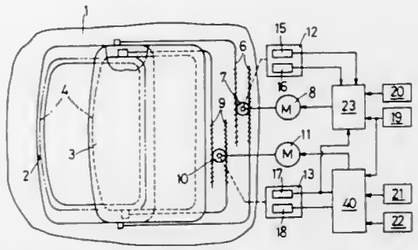
Kozo Odoi, Aki, and Akefumi Takeda, Kamo, both of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jun. 24, 1992, Ser. No. 903,737

Claims priority, application Japan, Jun. 27, 1991, 3-157101

Int. Cl.[5] B60J *7/047, 7/057*

U.S. Cl. 318—467 **16 Claims**



1. A sunshade open/close control device for a vehicle sun roofing apparatus including a panel and a sunshade to open/close an opening provided in a vehicle roof, and a panel actuation motor for opening/closing the panel in response to panel opening/closing switches; comprising a sunshade actuation motor for opening/closing the sunshade, sunshade opening/closing switches, and a control circuit, said control circuit being provided for driving the sunshade actuation motor in opening and closing direction s in response to actuating of said sunshade opening/closing switches, and for causing the sunshade to reach a preselected position in dependence on a location of the sunshade existing at the time that the sunshade opening/closing switches are actuated in response to an opening command at the panel opening/closing switches; wherein said control circuit controls both forward and reverse operation of the panel actuation motor and the sunshade actuation motor for producing opening and closing movements of both the panel and the sunshade.

5,250,883

MOTOR DRIVE CONTROL APPARATUS

Tadashi Okada, Shiga, Japan, assignor to Nippon Densan Corporation, Kyoto, Japan

Filed Feb. 18, 1992, Ser. No. 837,329

Claims priority, application Japan, Feb. 21, 1991, 3-27498; Feb. 21, 1991, 3-27499

Int. Cl.[5] H02P *3/10, 7/285*

U.S. Cl. 318—494 **5 Claims**

1. A drive control apparatus for a motor, comprising:

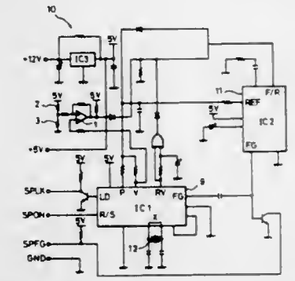
drive means for controlling current supplied to an armature coil;

control means for controlling the rotation speed of a rotor based on a rotation speed signal proportional to the rotation speed of said rotor; and

mode switch means disposed between said drive means and said control means;

wherein said mode switch means has comparing means for comparing a rotation speed signal output from said control means and a predetermined reference voltage,

wherein said comparing means generates a normal rotation mode signal when an output voltage of the rotation speed signal is more than the predetermined reference voltage, and generates a reverse rotation mode signal when the output voltage of the rotation speed signal is less than in



the predetermined reference voltage, braking being performed by free run of said rotor when said comparing means generates the normal rotation mode signal, and by supplying a reverse current to said armature coil when comparing means generates the reverse mode signal.

5,250,884

DRIVE CONTROLLING APPARATUS

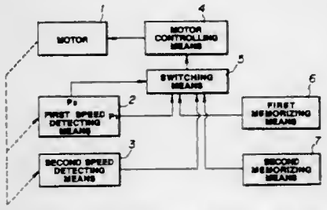
Yoichiro Okumura, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 15, 1991, Ser. No. 656,815

Claims priority, application Japan, Feb. 20, 1990, 2-40723

Int. Cl.[5] G05B *11/01*

U.S. Cl. 318—560 **38 Claims**



1. A drive controlling apparatus for driving a driven body by a motor, comprising:

a first encoder generating pulses in response to the movement of said driven body;

a second encoder generating pulses in response to the movement of said driven body with a phase different from that of said first encoder;

a judging means subtracting pulses outputted from one of said first encoder and second encoder from a driving count representing a displacement between a present position and a target position of the driven body being controlled by said drive controlling apparatus and judging whether the result is within a predetermined range of the target position;

a motor speed controlling means whereby, in a control range at least near said target position, when a result of said judgement is outside a predetermined range, the speed of said motor will be controlled employing a pulse interval of pulses output from a selected one of said first encoder and second encoder; and

said motor speed controlling means including means, whereby, when a result of said judgement is inside the predetermined range, the speed of said motor will be controlled with a pulse interval of pulses output from both said first encoder and second encoder.

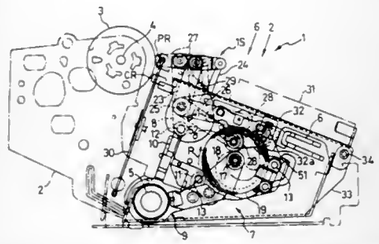
VOL 1155 ISS 1 OCT 5 1993 UMI

5,250,885

SERVO MOTOR CONTROL DEVICE

Noriaki Kabeya, Aichi, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Feb. 3, 1992, Ser. No. 829,382
Claims priority, application Japan, May 9, 1991, 3-135825
Int. Cl.[5] G05B *11/01*
U.S. Cl. 318—560 20 Claims



1. A servo motor having a servo motor control device for controlling the servo motor based on an encoding signal, comprising:
an electric motor having a driving shaft;
an encoder disk plate fixed to a rotational member, said rotational member rotating with the driving shaft of the motor, said disk plate rotating with said rotational member, said disk plate having a plurality of slits provided therein, said slits being spaced by at least a predetermined interval in a circumferential direction of said disk plate;
a phase setting portion disposed in said disk plate, said phase setting portion comprising an interval larger than said predetermined interval between a pair of said slits, remaining ones of said slits being spaced by said predetermined interval;
detecting means for detecting a plurality of said slits in said disk plate and for providing an encoding signal;
control means for controlling a rotational speed of said motor based on said encoding signal from said detecting means;
count means for counting the slits based on said encoding signal from said detecting means and for providing a count value; and
instruction means for instructing said control means to cease controlling the rotational speed of the motor while at least said detecting means detects said phase setting portion in said disk plate based on said count value of said count means.

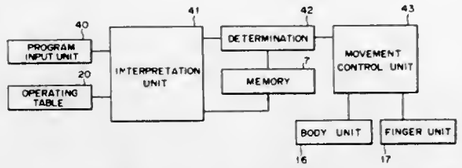
5,250,886

METHOD OF CONTROLLING ROBOT AND ROBOT CONTROL APPARATUS

Masateru Yasuhara, Kawasaki; Katsumi Ishihara, Tokyo, and Toshihiro Yamamoto, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 742,073, Aug. 7, 1991, abandoned, which is a continuation of Ser. No. 457,885, Dec. 27, 1989, abandoned. This application Jun. 23, 1992, Ser. No. 902,499
Claims priority, application Japan, Dec. 27, 1988, 63-327660; Dec. 27, 1988, 63-327661
Int. Cl.[5] G06B *19/00*
U.S. Cl. 318—567 18 Claims

1. A method of storing teaching points of a robot, said method comprising the steps of:
a) inputting index information for discriminating a teaching point to be input;
b) inputting identification data representative of with which of a plurality of moving units of the robot the teaching point to be input is associated;
c) inputting position information of the teaching point to be input, and temporarily storing the input position information in a register; and
d) reading out the position information stored in the register and providing correspondence between the read out position information, the index information input in the step (a) and the identification data input in the step (b) to store them into a storage area of storage means independent of a kind of moving unit.

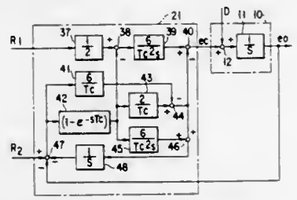


5,250,887

FEEDBACK CONTROLLER

Ryoichi Kurosawa, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 24, 1992, Ser. No. 873,191
Claims priority, application Japan, Apr. 26, 1991, 3-097371
Int. Cl.[5] G05B *11/00*; H02P *7/00*
U.S. Cl. 318—610 8 Claims



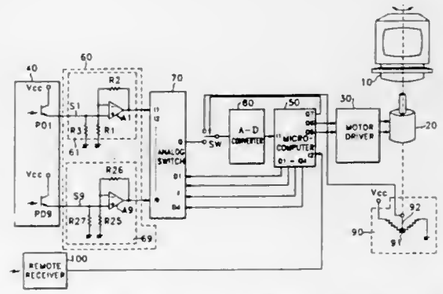
1. A feedback control system comprising:
a controlled object having a relative degree g; and
a controller, including:
a first input for receiving a reference signal;
a second input for receiving a feedback signal from the controlled object;
an output, connected to an input of the controlled object, for outputting a control signal;
control means, connected to the first input, the second input, and the output, having a predetermined gain, for receiving the reference signal from the first input and the feedback signal from the second input, and for generating the control signal in accordance with said gain to equalize the feedback signal with the reference signal;
wherein, the controlled object comprises:
means for generating a response waveform, f(t) having a plurality of degrees, of the feedback signal of the controlled object when a disturbance is imparted on the controlled object, a relative degree of the disturbance being d;
means for generating a response waveform, p(t), of the feedback signal of the controlled object when the controlled object and the controller are in an open loop state such that the feedback signal from the controlled object is not received by the controller;
wherein said means for generating the response waveform f(t) generates said response waveform f(t) such that a differential of said response waveform f(t) for each of said plurality of degrees up to at least a degree $(2g+d-2)$ is equal to a differential corresponding to the response waveform p(t) at time $t=0$; and
wherein said means for generating the response waveform f(t) generates said response waveform f(t), such that a differential of said each of said degrees of said response waveform up to at least a degree $(2g+d-2)$ is zero at a finite time $t=Tc$ and such that a differential of each of said degrees of said response waveform f(t) is zero after said finite time, $t>Tc$.

5,250,888

APPARATUS FOR AND PROCESS OF ROTATING A DISPLAY

Hang du Yu, Kyunggi, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Rep. of Korea

Filed Jan. 31, 1992, Ser. No. 829,774
Claims priority, application Rep. of Korea, Jan. 31, 1991, 91-1694
Int. Cl.[5] G05B *1/04*
U.S. Cl. 318—640 9 Claims



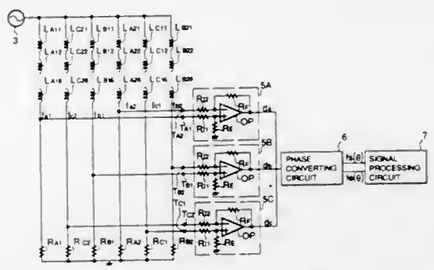
1. An apparatus for rotating a display in response to a received remote control optical signal, the apparatus comprising:
a turnable for supporting a display;
driving means for rotating said turntable;
a position meter for outputting a signal corresponding to a rotation angle of said turntable;
an optical sensor for detecting an incident direction of the received remote control optical signal; and
a controller for controlling said turntable driving means by determining an amount and direction of rotation of said turntable in accordance with the outputs of said optical sensor and position meter and causing said driving means to rotate said turntable in the determined direction by the determined amount.

5,250,889

VARIABLE RELUCTANCE RESOLVER

Yasuhiro Ezuka, Maebashi, Japan, assignor to NSK Ltd., Tokyo, Japan

Filed Oct. 23, 1992, Ser. No. 965,010
Claims priority, application Japan, Oct. 29, 1991, 3-283082
Int. Cl.[5] H02M *5/38*
U.S. Cl. 318—661 1 Claim



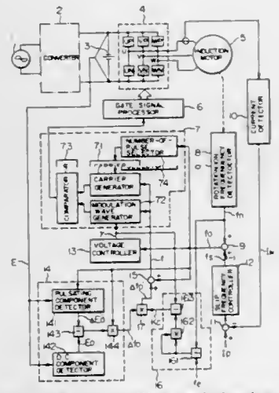
1. A variable reluctance resolver comprising:
a rotor core and stator magnetic poles structured to enable reluctance in a space between the rotor core and stator magnetic poles to be changed by the positions of the rotor core and to make a fundamental wave component of the reluctance variation N cycles per revolution of the rotor core, N being an integer of 1 or more;
said stator magnetic poles including first magnetic poles having a predetermined number of 3N phases and arranged at equal intervals;
said stator magnetic poles further including second magnetic poles having a predetermined number of 3N phases and disposed at the central positions between said first magnetic poles;
excitation coils arranged individually at said first and second magnetic poles and connected in series to each other for each phase of said first magnetic poles and for each phase of said second magnetic poles;
current detecting means for detecting current values changing due to the variation of the reluctance when an alternating current is applied to the magnetic coils of each phase of said first magnetic poles and said second magnetic poles;
3N difference value calculating means for calculating the difference values between the detected current values of said first magnetic poles and second magnetic poles of each phase detected by said current detecting means;
phase converting means for converting outputs of the difference values from said difference value calculating means into a 2N-phase output; and
signal processing means for calculating rotational angles or rotational speeds on the basis of the converted output of said phase converting means.

5,250,890

INVERTER CONTROL APPARATUS

Tokunosuke Tanamachi; Kiyoshi Nakamura, both of Katsuta; Kiyoshi Nakata, Ibaraki; Yoshio Tsutsui; Wataru Miyake, both of Katsuta, and Katsuaki Suzuki, Kitaibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 2, 1988, Ser. No. 201,449
Claims priority, application Japan, Jun. 3, 1987, 62-138089; Sep. 30, 1987, 62-243804
Int. Cl.[5] H02P *5/40*
U.S. Cl. 318—811 31 Claims



1. An apparatus for controlling an induction motor by an inverter comprising:
an a.c.-d.c. converter;
a pulse width modulation inverter supplied with power from said converter through a filter circuit to generate an a.c. output;
an induction motor energized by the output of said inverter;

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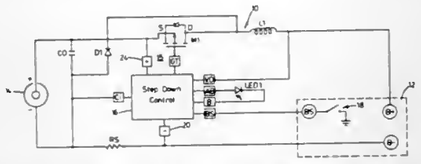
rotation frequency detecting means for detecting the rotation frequency of said induction motor;
slip frequency commanding means for commanding the slip frequency of said induction motor;
frequency control means for controlling the output frequency of said inverter by adding or subtracting the output of said slip frequency commanding means to or from the output of said rotation frequency detecting means;
voltage control means for controlling the output voltage of said inverter according to the output of said frequency control means;
means for detecting a ripple factor of the input voltage of said inverter;
means for adjusting the output frequency of said inverter according to the output of said voltage ripple-factor detecting means; and
frequency adjusting-factor correcting means for correcting the output of said frequency adjusting means according to at least one of the output of said rotation frequency detecting means and the output of said voltage control means;
wherein said frequency adjusting means multiplies the output of said frequency control means by the output of said voltage ripple-factor detecting means, multiplies then the result of multiplication by the output of said frequency adjusting-factor correcting means, and adds the latter result of multiplication to the output of said frequency control means.

5,250,891

BATTERY CHARGING METHOD AND APPARATUS

Kevin L. Glasgow, North Fond du Lac, Wis., assignor to Milwaukee Electric Tool Corporation, Brookfield, Wis.

Filed May 13, 1991, Ser. No. 699,489
Int. Cl.[5] H02J *7/00*
U.S. Cl. 320—31 **27 Claims**



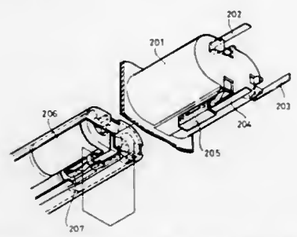
1. The combination of a relatively fixed source of DC voltage and a battery charger from said DC source for charging any one of a plurality of battery means having different nominal voltage ratings, said DC voltage source having a voltage level which is higher than the nominal voltage levels of the battery means to be charged, said charger including first connector means for connecting said battery charger to said DC voltage source and second connector means constructed and arranged to be connected to and disconnected from a battery means for connecting said battery charger to a battery means to be charged, step down converter means having an input coupled to said first connector means and an output connected to said second connector means, said step down convertor means comprising means for providing a lower output voltage from the relatively higher input voltage of the DC voltage source, said step down converter means including current supply means connected to said second terminal means and operative when activated for providing a relatively constant charging current to the battery means to be charged and having current regulating means for regulating charging current, battery presence responsive means coupled to said second connector means and to said current supply means for sensing the connection and disconnection of a battery means to the second connector means and operative upon sensing the connection of a battery means to said second connector means for initiating the operation of said current supply means, disabling means responsive to the occurrence of a charge in the battery means being charged in excess of a predetermined level for disabling the current supply means to terminate the flow of charging current to the battery means being charged, said battery presence responsive means also being operable to prevent the operation of the current supply means after the battery means is charged to a predetermined level and until the battery presence responsive means senses both the disconnection of the charged battery means from the second connector means and the connection of another battery means to said second connector means.

5,250,892

BATTERY CHARGE WITH TEMPERATURE-SENSITIVE CUT-OFF SWITCH

Tai-Her Yang, 5-1 Taipin St. Si-Hu Town, Dzan-Hwa, Taiwan

Filed Mar. 31, 1992, Ser. No. 861,003
Claims priority, application United Kingdom, Apr. 5, 1991, 9107102
Int. Cl.[5] H02J *7/04*
U.S. Cl. 320—35 **4 Claims**



1. In a battery charger which includes two separable parts and a temperature-sensitive switch arranged to open when a temperature sensed by the switch exceeds a predetermined temperature, said temperature-sensitive switch being positioned in a first of two separable parts, the improvement comprising:
magnetic latching means positioned on a second of said two parts for latching the temperature-sensitive switch in an open position when said first part and said second part are joined together and said switch has opened as a result of an increase in said temperature beyond said predetermined temperature, said magnetic latching means maintaining said switch in said open position after the temperature of the battery falls below said predetermined temperature so long as the two separable parts are together whereby said switch can be reset to a closed position by separating said two parts.

5,250,893

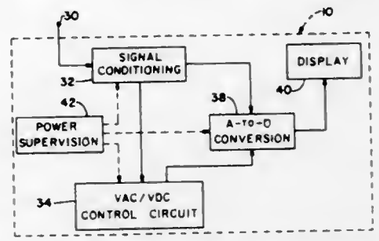
DIGITAL VOLTMETER

Terry A. Gambill, N. Perry, and Roger B. Fell, Madison, both of Ohio, assignors to Tegam, Inc., Madison, Ohio

Filed Jan. 31, 1992, Ser. No. 830,227
Int. Cl.[5] G01R *15/08*
U.S. Cl. 324—115 **19 Claims**

1. A digital voltage measuring instrument for providing a display of the magnitude of an analog voltage signal, comprising:
input terminal means for operatively connecting an input analog voltage to be measured to a metering circuit,
said metering circuit comprising a signal conditioning circuit having impedance means to attenuate voltage transients and overloads for protection of the metering circuit and gain adjust said input voltage,
a VAC/VDC control circuit connected to said signal conditioning circuit for automatically detecting whether said input voltage is an AC or DC voltage, and generating control signals indicating the current-type of the input voltage as well as controlling the measurement of said voltage, said control circuit having a zero-cross detecting

means including a comparator to which said input voltage is supplied and a peak to peak rectifier coupled to said comparator,
an A/D converter having inputs from said signal conditioning circuit and said VAC/VDC control circuit supplied



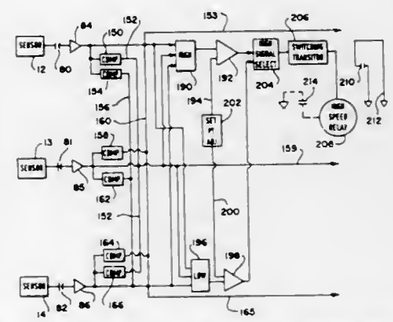
thereto so as to generate digital output signals indicative of the magnitude of said input voltage,
the A/D converter of said metering circuit being operatively connected to a display means to receive said digital output signals and visually display them in a readable form.

5,250,894

CURRENT SENSING SYSTEM HAVING ELECTRONIC COMPENSATION CIRCUITS FOR CONDITIONING THE OUTPUTS OF CURRENT SENSORS

Ronald P. Bridges, Heber Springs, and John B. Beard, Benton, both of Ark., assignors to Bridges Electric, Inc., Heber Springs, Ark.

Filed Mar. 31, 1992, Ser. No. 861,095
Int. Cl.[5] G01R *33/06*
U.S. Cl. 324—117 H **18 Claims**



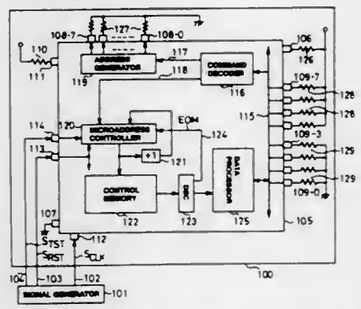
16. A current sensing system for independently monitoring the separate phase components transmitted in a three phase transmission line having first, second and third parallel conductors arranged in a triangular configuration comprising:
a first sensor associated with a first one of the three phase components;
a second sensor associated with a second one of the three phase components;
a third sensor associated with a third one of the three phase components, each of the first sensor and the second sensor and the third sensor measuring the effect of a composite magnetic field induced by the three phase components current and providing an output signal in proportional response thereto;
fixture means for positioning each of the sensors in the composite magnetic field in a predetermined spaced orientation relative to the conductors; and
electronic circuit means for conditioning the output signal of one of the sensors with the output signals of the other of the sensors whereby the effects of individual magnetic fields surrounding each of the conductors associated with the other sensors can be compensated for such that each sensor is effective to generate a signal representative of the phase component flowing through only the conductor associated with the one sensor.

5,250,895

METHOD OF ACCELERATION TESTING OF RELIABILITY OF LSI

Hisao Harigai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 23, 1992, Ser. No. 823,785
Claims priority, application Japan, Jan. 23, 1991, 3-006311
Int. Cl.[5] G01R *31/00*
U.S. Cl. 324—158 R **4 Claims**



1. A method of acceleration testing of reliability of an LSI, said LSI having a control memory, a microaddress controller for generating a microaddress and supplying it to said control memory, an incrementer for receiving said microaddress and incrementing it by "1", an input terminal for receiving input signals, and a test signal input terminal for inputting a signal to said microaddress controller thereby to change the LSI to a test mode from a normal mode, said method comprising the steps of:
placing said LSI in an acceleration testing apparatus wherein an acceleration test environment can be externally controlled;
switching an operation mode of the LSI under test to the test mode by applying a signal to said test signal input terminal;
clamping said input terminal of the LSI through a resistor to a power source or to a ground;
supplying the LSI with a source voltage and with a clock signal and a reset signal from a signal generator outside said acceleration testing apparatus; and
selecting an output of said incrementer by said microaddress controller while the LSI is set at the test mode.

5,250,896

HAND-HELD MAGNETIC CONTACT TACHOMETER WITH TOOTHED ROTATABLE WHEEL

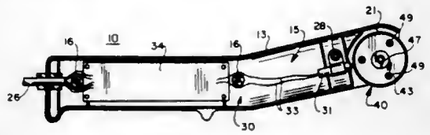
Daniel Mieczkowski; Robert J. Holmen; Robert D. Johnson, all of Kenosha, and John E. Stanley, Racine, all of Wis., assignors to Snap-on Tools Corporation, Kenosha, Wis.

Filed Jul. 12, 1991, Ser. No. 729,469
Int. Cl.[5] G01P *3/488*
U.S. Cl. 324—174 **15 Claims**

1. A hand-held apparatus for detecting the speed of a moving surface comprising: a wheel, handle means supporting said wheel with said wheel projecting radially therefrom for engagement with the associated moving surface thereby to rotate said wheel about an axis at a speed proportional to the speed of the moving surface, said wheel having a molded non-magnetic

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body and a magnetic ring insert molded in and completely surrounded by said body in an integral molded construction, said ring having radially outwardly extending teeth equiangularly spaced apart about said axis, and magnetic sensing means



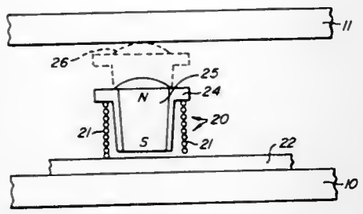
carried by said handle means and responsive to passage of said magnetic teeth for generating a pulsating signal having a frequency proportional to the speed of the associated moving surface.

5,250,897

SOLENOID/SLUG GAP MEASUREMENT TOOL FOR SEMICONDUCTOR EQUIPMENT AND METHOD OF MEASUREMENT

Salvatore P. Dilorio, Campbell, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed May 7, 1992, Ser. No. 879,476
Int. Cl.[5] G01B *7/14*; H01L *21/306*
U.S. Cl. 324—207.16 **13 Claims**



1. A tool for measuring a gap between two parallel plates for processing semiconductor wafers, said tool comprising
a base plate for placement on a first of said two plates and between said two plates;
a wire cylindrically coiled around an axis perpendicular to a base plate;
a slug containing a magnet, said slug slidably mounted within said coil along said axis;
means connected to said wire coil for driving an electrical current therethrough and displacing said slug toward and in contact with said second plate; and
means connected to said wire coil for measuring said current through said wire coil when the slug contacts said second plate;
whereby the amount of said measured current corresponds to a slug displacement and a gap between said two plates.

5,250,898

METHOD AND MEANS FOR MAGNETIC RESONANCE IMAGING AND SPECTROSCOPY USING PULSED SATURATION TRANSFER CONTRAST

Bob S. Hu, and Steven M. Conolly, both of Menlo Park, Calif., assignors to Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Aug. 9, 1991, Ser. No. 743,055
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 **13 Claims**

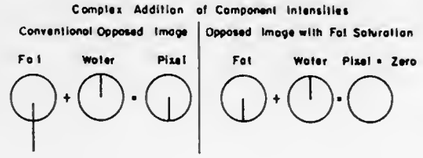
1. A method of detecting NMR signals indicative of a short T_2 species in the presence of a long T_2 species utilizing magnetization transfer between species comprising the steps of
a) positioning a body including said short T_2 species and said long T_2 species in a static magnetic field (B_0),
b) applying at least one zero degree RF pulse to said body at a resonance frequency for said short T_2 species and said long T_2 species, said RF pulse providing selective magnetization saturation of said short T_2 species, and said RF pulse being spaced in time from detection to allow magnetization transfer from said short T_2 species to said long T_2 species, and
c) detecting signals from said long T_2 species in response to magnetization transfer from said short T_2 species to said long T_2 species.

5,250,899

METHOD FOR FAT SUPPRESSION IN MAGNETIC RESONANCE IMAGING

John Listerud, Philadelphia, Pa., and Teresa Chan, Wauwatosa, Wis., assignors to Trustees of the University of Pennsylvania, Philadelphia, Pa.

Filed Aug. 12, 1991, Ser. No. 744,193
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 **3 Claims**



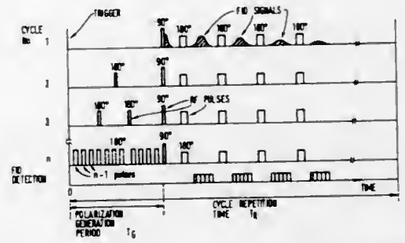
1. A method for suppressing a fat signal in a magnetic resonance image of a target organ, wherein fat is present in the vicinity of said target organ, said method comprising the steps of:
subjecting said target organ to electromagnetic energy so as to cause a fat response related to the magnetization of said fat, wherein said step of subjecting comprises the steps of subjecting said target organ to a saturation preamble for selective excitation of said fat thereby causing a fat signal and for de-phasing said fat signal and thereafter subjecting said target organ to an imaging acquistion sequence wherein said sequence excites said fat signal and a water-like signal, and causes the gradient echo to occur at a time when the phases of said fat signal and said water-like signal are opposed;
detecting said organ response; and
generating image information based on said response.

5,250,900

NMR INVESTIGATION OF REPEATED ELECTROMAGNETIC EVENTS

Gösta J. Ehnholm, Helsinki, Finland, assignor to Instrumentarium Corporation, Helsinki, Finland

Filed Nov. 15, 1991, Ser. No. 792,782
Claims priority, application United Kingdom, Mar. 12, 1991, 9105203
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 **6 Claims**



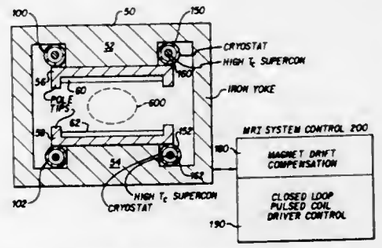
1. A method of nuclear magnetic resonance investigation of a repeated electromagnetic event in a sample, said method comprising subjecting said sample to a series of magnetic resonance signal excitation and detection cycles, each cycle comprising a nuclear spin polarization generation period, exposing said sample to RF radiation during said periods and varying the exposure of the sample to said radiation from period to period to thereby modulate the nuclear spin polarization achieved in said periods, and generating from the detected magnetic resonance signals a further signal indicative of variations of nuclear spin polarization rate resulting from said event, said variations being selected from temporal and spatial variations.

5,250,901

OPEN ARCHITECTURE IRON CORE ELECTROMAGNET FOR MRI USING SUPERCONDUCTIVE WINDING

Leon Kaufman, San Francisco, and Joseph W. Carlson, Kensington, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Nov. 7, 1991, Ser. No. 789,041
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—318 **30 Claims**



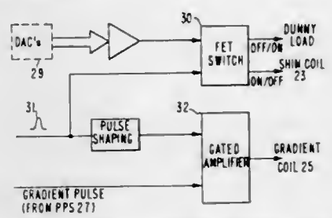
1. An MRI magnet structure comprising:
a pair of magnetically permeable poles having faces opposingly disposed about an air gap including a patient imaging volume;
a magnetically permeable yoke structure, providing a magnetic flux return circuit between said poles, said yoke structure including apertures for access to said patient imaging volume; and
at least one high T_c superconductive electromagnet magnetically coupled to said poles to generate a MRI static magnetic field B_o within said imaging volume in said air gap when energized.

5,250,902

REDUCTION OF GRADIENT COIL INTERACTION WITH ROOM TEMPERATURE SHIMS

Evan H. Williams, Menlo Park, and Norbert Schuff, San Francisco, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Dec. 19, 1991, Ser. No. 811,442
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—320 **2 Claims**



1. Apparatus for magnetic resonance measurement comprising:
(a) Main polarizing magnet means for establishing an axis of precession for nuclear spins; and,
(b) At least one magnet shimming means for compensating an undesired magnetic field component, said magnet shimming means comprising:
(1) a shim coil and,
(2) a shim power supply communicating with said shim coil for supplying current to said shim coil,
(c) Pulsed gradient field means for imposing a transient magnetic gradient on a sample space, comprising:
(1) pulse gradient power supply further comprising a gated amplifier; and,
(2) gradient coils means, communicating with said pulse gradient power supply,
(d) Switch means for disabling said communication of said shim power supply to said shim coil and establishing communication of said shim power supply to a dummy load; and,
(e) Gate signal means for actuating said switch means and for concurrently enabling said gated amplifier to activate said gradient coil, whereby said shim coil is an open circuit when said transient gradient coil is activated.

5,250,903

METHOD AND APPARATUS USING OSCILLATORY MAGNETIC FIELD TO DETERMINE STATE OF CHARGE OF AN ELECTROLYTIC STORAGE CELL

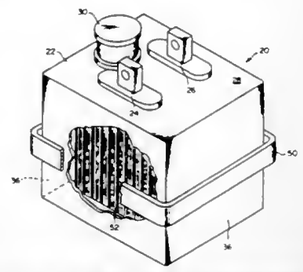
Donald Limuti, Kirkland; James M. Ross, Jr., Bothell, and Thomas L. Churchill, North Bend, all of Wash., assignors to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 359,642, May 31, 1989, Pat. No. 5,132,626. This application Mar. 13, 1992, Ser. No. 851,984
Int. Cl.[5] G01N *27/416, 27/72*
U.S. Cl. 324—427 **23 Claims**

7. Apparatus for determining the state of charge of an electrolytic storage cell, comprising:
means for generating an oscillatory magnetic field from a circulating current that penetrates a predetermined volume of a storage cell having a plurality of metallic electrodes immersed in electrolyte that vary their metallic volume in proportion to the state of charge of said storage cell;
means for adjusting the frequency of said oscillatory magnetic field to induce oscillatory currents in said electrolyte and in each of said plurality of electrodes of said storage cell; and

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means for measuring the change of energy of said magnetic field within said predetermined volume due to the change in said induced oscillatory currents in said plurality of



electrodes that is caused by the change in metallic volume of said plurality of metallic electrodes to determine the state of charge of said storage cell.

5,250,904

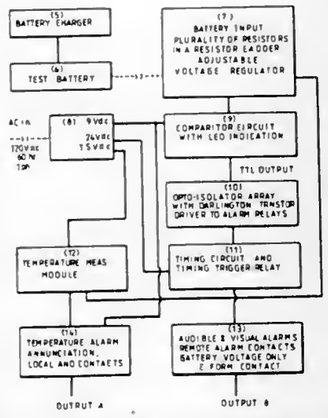
DEVICE FOR PREDICTING IMMINENT FAILURE OF A STATIONARY LEAD ACID BATTERY IN A FLOAT MODE

Arthur B. Salander, Commack, and Douglas C. Fortner, Setauket, both of N.Y., assignors to Advanced Power Technology Inc., Seatuket, N.Y., by said Douglas Fortner

Continuation of Ser. No. 742,022, Aug. 8, 1991, abandoned. This application Dec. 16, 1992, Ser. No. 991,481

Int. Cl.[5] **G01N** *27/42;* **H02J** *7/00*

U.S. Cl. 324—430 **13 Claims**



1. A device for predicting an imminent failure of a stationary lead acid battery/cell comprising a means for monitoring a first predetermined upper voltage limit of said battery/cell and a means for monitoring a predetermined lower limit thereof in a float mode, said float mode comprising a condition in which said battery/cell's voltage level is in an electrical equilibrium, being neither substantially electrically charged nor substantially electrically drained in the float mode, said float mode comprising;

a) a float voltage level, said float voltage level being intermediate between said upper voltage limit and said lower voltage limit, the device further comprising:

(b) a current limit battery charger maintaining said voltage level across said battery/cell, said current limiting battery charger causing and maintaining said battery float mode;

(c) said means for monitoring a predetermined upper voltage limit, said means for monitoring a predetermined lower voltage limit and said means for monitoring a float voltage level producing respective output signals, said output signals being fed up to a comparator means;

d) said comparator means being for comparing said float voltage output signals with said predetermined upper voltage limit and said lower voltage limit, said comparator means generating an alarm output signal as required, said upper and lower voltage limits serving as reference values, said comparator means further being capable of delivering discernable output signals in response to input of said predetermined float voltage level across said battery/cell;

e) said discernable comparator output signals being indicative of changes in said float voltage level of said battery/cell and,

f) means for warning a user of an imminent failure of said battery/cell, said warning means comprising a first transistor and alarm means for generating an alarm signal perceivable by said user, said first transistor capable of energizing said warning means and said first transistor responsive to said discernable comparator output signals and, said first transistor capable of energizing said alarm means for warning a user of imminent battery failure of said battery/cell, said device further having

g) a time measurement means for measuring a predetermined interval, said time measurement means providing output signals capable of being fed to said comparator means, said time interval measurements being critical to the operation of said comparator means;

h) said comparator means requiring a predetermined time interval for determining when to generate an alarm output change as required, said alarm signal output being required when said comparator means has detected a battery/cell float voltage level which has exceeded said predetermined upper voltage limit or said predetermined lower voltage limit for a time period exceeding said predetermined time interval and further:

i) said comparator means being capable of delaying an alarm response until an expiration of said predetermined time interval.

5,250,905

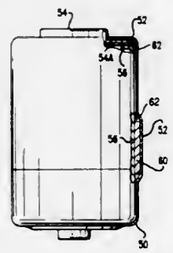
BATTERY WITH ELECTROCHEMICAL TESTER

Han C. Kuo, Burlington; Ignacio Chi, Dracut, both of Mass., and Frederick A. Kulik, Atkinson, N.H., assignors to Duracell Inc., Bethel, Conn.

Filed Sep. 24, 1991, Ser. No. 764,610

Int. Cl.[5] **G01N** *27/416*

U.S. Cl. 324—435 **18 Claims**



1. In combination, a battery and a battery condition indicator wherein said indicator comprises an electrochemical cell comprising a pair of electrodes, said cell being permanently electrically connected in parallel to the battery with at least one of said electrodes of said indicator being visible, whereby the condition of the battery is determined by observing a change in said visible electrode.

5,250,906

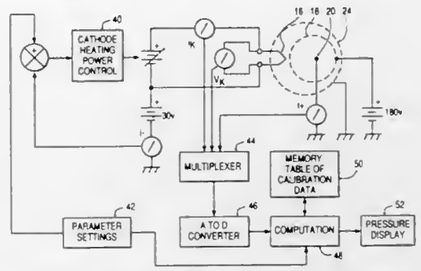
IONIZATION GAUGE AND METHOD OF USING AND CALIBRATING SAME

Daniel G. Bills, and Michael D. Borensteln, both of Boulder, Colo., assignors to Granville-Phillips Company, Boulder, Colo.

Filed Oct. 17, 1991, Ser. No. 778,371

Int. Cl.[5] **G01L** *21/32*

U.S. Cl. 324—462 **45 Claims**



1. In controller circuitry for controlling the operation of a predetermined ionization gauge having a source of electrons, an anode, and an ion collector electrode, said controller circuitry including means for biasing said electron source, anode, and collector electrode at predetermined potentials; means for substantially maintaining the electron emission current from said electron source at a predetermined value; and means for measuring the ion current to the collector electrode to obtain a measured value of the ion collector current at an unknown pressure; the improvement comprising:

means for storing a plurality of calibration data sets for at least collector electrode currents and gauge sensitivities obtained with at least one reference gauge at representative values of at least known pressures where said reference gauge has substantially the same gauge sensitivity at any given pressure as does said predetermined gauge;

means responsive to at least one of said data sets together with said measured value of the ion collector current for calculating the gauge sensitivity corresponding to the unknown pressure; and

means responsive to the calculated sensitivity, the measured ion collector current, and the electron emission current for calculating the unknown pressure.

5,250,907

DIGITAL SIGNAL MEASUREMENT APPARATUS

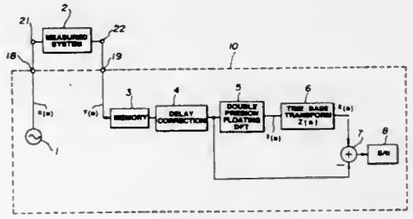
Takao Fukui, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed Apr. 16, 1992, Ser. No. 868,861

Claims priority, application Japan, Apr. 27, 1991, 3-125464

Int. Cl.[5] **H04B** *1/12;* **G01R** *23/20*

U.S. Cl. 324—614 **7 Claims**



1. A digital signal measurement apparatus for measuring a signal-to-noise ratio of a measured circuit such that a digital signal is inputted thereto and is outputted therefrom,

said apparatus comprising:

measurement signal generator means for generating a measurement signal on the time domain which is delivered to said measured circuit;

frequency domain transform means for transforming the measurement signal on the time domain through the measured circuit to a signal on the frequency domain; and

time domain transform means for transforming the signal on the frequency domain from said frequency domain transform means to a second signal on the time domain;

wherein a signal-to-noise ratio of the measured circuit is measured by using, as a noise component in the signal-to-noise ratio, a difference between the measurement signal on the time domain through the measured circuit and the second signal on the time domain outputted from the time domain transform means.

5,250,908

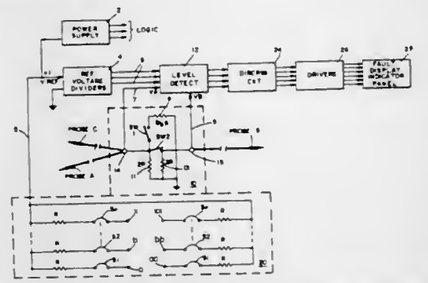
PORTABLE APPARATUS FOR TESTING MULTI-WIRE HARNESSES AND ELECTRICAL ASSEMBLIES TO IDENTIFY WIRING ERRORS

Liemeng Liu, Glendale, and Gerald L. Smith, Torrance, both of Calif., assignors to Magl Power & Electronics, Inc., Compton, Calif.

Filed Dec. 13, 1991, Ser. No. 807,091

Int. Cl.[5] **G10R** *31/02;* **G08B** *21/00*

U.S. Cl. 324—542 **12 Claims**



1. A portable wiring analyzer device for multi-wire harnesses, comprising in combination:

(a) a power supply means; said power supply means supplying a +1 Volt dc reference output and regulated dc voltages for operating said device;

(b) a wiring test array, connected to said +1 Volt dc reference output and having a multiplicity of paralleled resistive branches arranged in pairs with terminals for the connection of said multi-wire harnesses thereto; said each resistive branch pair including a fixed resistor having a resistance value of R ohms;

(c) a resistance balance circuit comprising a network of first, second and third resistors connected in parallel to ground, and a first switch and a second switch; said resistors having values of resistance ratioed to the value of said wiring test array fixed resistors as follows: said first resistor value = 2 times R ohms, said second resistor value = ⅔ times R ohms and said third resistor value = 2 times R ohms; said first switch connecting the terminal of said first resistor to the terminal of said second resistor, and being normally closed; said second switch connecting the terminal of said first resistor to the terminal of said third resistor, and being normally open; said first and second switch status producing a balance circuit configuration to match with said wiring test array and suitable for testing multi-wire harnesses;

said first resistor having a signal line connected to its terminal for output of voltage signal V_A; said third resistor having a signal line connected to its terminal for output of voltage signal V_B; said voltage signals V_A and

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V_B being generated when said resistance balance circuit is activated;

(d) logic and display circuit means, having said voltage signals V_A and V_B connected input to it and producing output signals indicative of the status of wiring faults in said multi-wire harness under test;

(e) a fault display indicator panel; said panel receiving signals for wiring fault indication from said logic and display circuits means, and displaying indication of any detected faults in said multi-wire harness;

(f) a first probe designated probe A, a second probe designated probe B and a third probe designated probe C;

said probe A and probe C being connected as alternates to said first resistor terminal in said resistance balance circuit for output of said voltage signal V_A, and said probe B being connected to said third resistor terminal in said resistance balance circuit for output of said voltage signal V_B; said resistance balance circuit being activated by an operator grasping said probe A and probe B, one in each hand, and contacting each said probe in sliding engagement with the wire harness terminals on said wiring test array, causing said resistance balance circuit to be connected in a voltage divider configuration to said wiring test array as each set of harness terminals is contacted, and outputting said voltage signals V_A and V_B to said logic and display means and said indicator panel which indicates the status of said wire harness faults.

5,250,909

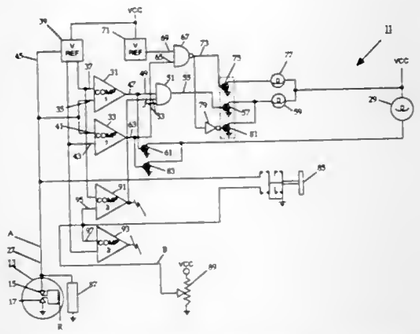
AUTOMATIC FAULT DETECTION SYSTEM IN ELECTRICAL SENSING CIRCUIT

Donald R. Bitts, Grand Prairie, Tex., assignor to Benz Companies, Inc., Fort Worth, Tex.

Filed May 21, 1992, Ser. No. 886,620

Int. Cl.[5] G01R *31/02*

U.S. Cl. 324—542 **13 Claims**



1. A fault detection system, comprising:

a) a sensor and conductors connected to said sensor, said sensor being of the normally open circuit type;

b) means for providing a leakage current through said sensor;

c) means for detecting an open circuit or high resistance in said conductors and said sensor, said means for detecting being connected to said conductors;

d) means for driving an indicator in response to a detected open circuit or high resistance, said means for driving being connected to said means for detecting and to said indicator.

5,250,910

PUSH-PUSH OSCILLATOR HAVING IN-PHASE AND ANTI-PHASE OUTPUT COMBINING CIRCUITS

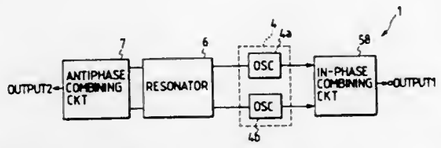
Hiroyuki Yabuki, Kawasaki; Isao Ishigaki, Kouriyama, and Mitsuo Makimoto, Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 6, 1992, Ser. No. 925,158

Claims priority, application Japan, Aug. 12, 1991, 3-201681; Dec. 6, 1991, 3-322695

Int. Cl.[5] H03B *5/18*

U.S. Cl. 331—56 **23 Claims**



1. A push-push oscillator comprising:

(a) a resonator having a transmission line and a capacitance connected to said transmission line in parallel;

(b) oscillating means responsive to said resonator for oscillating and for producing first and second outputs having an antiphase relation therebetween;

(c) in-phase combining means for summing said first and second outputs of said oscillating means to produce a summed signal; and

(d) antiphase combining means responsive to two components from said resonator having an antiphase relation for producing a differential signal in accordance with a difference between said two components.

5,250,911

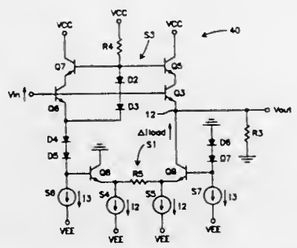
SINGLE-ENDED AND DIFFERENTIAL TRANSISTOR AMPLIFIER CIRCUITS WITH FULL SIGNAL MODULATION COMPENSATION TECHNIQUES WHICH ARE TECHNOLOGY INDEPENDENT

Lloyd F. Linder, Agora Hills, and Dwight D. Birdsall, Norwalk, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 20, 1992, Ser. No. 871,861

Int. Cl.[5] H03F *1/14*

U.S. Cl. 330—149 **33 Claims**



1. A transistor circuit, comprising:

transistor means having a predetermined transfer function for producing an output signal in response to an input signal, said transfer function having a non-linear error;

compensator means connected in circuit with the transistor means; and

compensation signal generator means for producing and applying a compensation signal to the compensator means as a predetermined function of the input signal such that the compensator means produces a signal which has a non-linear error which is substantially equal and opposite to and cancels said non-linear error of the transistor means, and the transistor circuit has a substantially linear transfer function; in which

the transistor means comprises a main bipolar transistor having an emitter, a base and a collector; and

the compensator means and generator means are configured to maintain a constant voltage difference between said base and said collector.

5,250,912

RF POWER AMPLIFIER

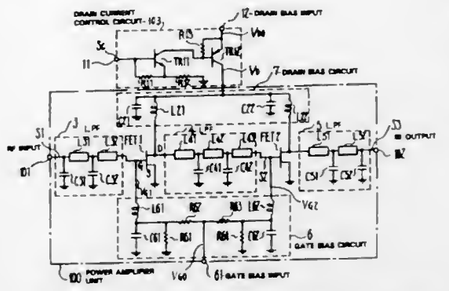
Noriyuki Fujita, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed May 29, 1992, Ser. No. 891,416

Claims priority, application Japan, May 30, 1991, 3-155869

Int. Cl.[5] H03G *3/30*

U.S. Cl. 330—285 **13 Claims**



1. A radio frequency (RF) power amplifier comprising:

a field effect transistor (FET) for amplifying an RF signal applied to a gate electrode thereof to thereby output an amplified RF signal via a drain electrode thereof;

drain bias applying means for applying a drain bias to said drain electrode of said FET;

gate bias applying means for applying a gate bias to said gate electrode of said FET, said drain bias applying means and said gate bias applying means setting an idling current for class "A" amplification in said FET;

an output low pass filter (LPF) disposed between an RF signal output terminal to which a load is connected and said drain electrode for matching said FET and said load with respect to power, said output LPF having an impedance higher than an impedance which gives said RF power amplifier substantially the maximum gain when said RF power amplifier produces a regular output; and

bias application control means for turning on and turning off the application of the drain bias to said drain bias applying means in synchronism with the turn-on and turn-off of the RF signal.

5,250,913

VARIABLE PULSE WIDTH PHASE DETECTOR

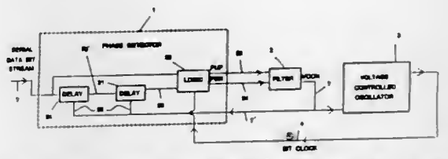
Marc C. Gleichert, and Thomas Korn, both of San Jose, Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Feb. 21, 1992, Ser. No. 839,868

Int. Cl.[5] H03L *7/089*

U.S. Cl. 331—25 **11 Claims**

1. In a phase locked loop for synchronizing to a serial data bit stream including a VCO (voltage controlled oscillator) generating a bit clock, a phase detector for comparing said serial data bit stream to said bit clock and for passing an error signal to a low pass filter coupled to said phase detector, said low pass filter connected to said VCO for correcting the frequency of said VCO responsive to said filter output,



means to also couple said low pass filter output back to said phase detector, and wherein said phase detector includes a time delay circuit responsive to said low pass filter output.

5,250,914

OSCILLATION CIRCUIT OPERATING WITH STABLE OSCILLATION FREQUENCY AT A SPECIFIC LOW POWER-SUPPLY VOLTAGE

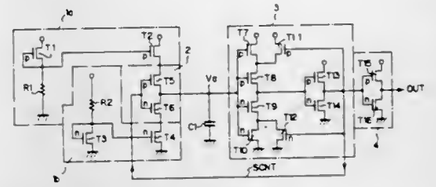
Ichiro Kondo, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 24, 1992, Ser. No. 903,337

Claims priority, application Japan, Jun. 26, 1991, 3-153654

Int. Cl.[5] H03K *3/356*

U.S. Cl. 331—111 **7 Claims**



1. An oscillation circuit comprising:

a capacitor which outputs a charge-discharge voltage;

a first current source circuit of the current mirror type for determining the strength of a charging current which flows into said capacitor;

a second current source circuit of the current mirror type for determining the strength of a discharging current which flows out from said capacitor;

a switching circuit for selectively connecting either said first current source circuit or said second current source circuit with said capacitor; and

a Schmidt circuit having a first and a second threshold voltage;

wherein:

said Schmidt circuit generates a control signal of a first level when said charge-discharge voltage to be inputted from said capacitor shifts to voltage higher than said first threshold voltage and generates a control signal of a second level when said charge-discharge voltage shifts to a voltage lower than said second threshold voltage; and

said switching circuit connects said second current source circuit with said capacitor when said control signal is of said first level and connects said first current source circuit with said capacitor when said control signal is of said second level; and

said oscillation circuit further including a first power-supply voltage supply terminal and a second power-supply voltage supply terminal wherein

said first current source circuit comprises:

a first transistor of one conduction type, the gate and drain of which are connected with each other and the source of which is connected with said first power-supply voltage supply terminal,

a first resistor, one end of which is connected with the drain of said first transistor and the other end of which is con-

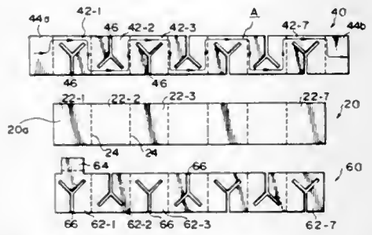
VOL 1155 ISS 1 OCT 5 1993 UMI

nected with said second power-supply voltage supply terminal, and
a second transistor of said one conduction type, the source of which is connected with said first power-supply voltage supply terminal and the gate of which is connected with the drain of said first transistor;
said second current source circuit comprises:
a third transistor of another conduction type, the gate and drain of which are connected with each other and the source of which is connected with said second power-supply voltage supply terminal,
a second resistor, one end of which is connected with the drain of said third transistor and the other end of which is connected with said first power-supply voltage supply terminal, and
a fourth transistor of said another conduction type, the source of which is connected with said second power-supply voltage supply terminal and the gate of which is connected with the drain of said third transistor;
said switching circuit comprising:
a fifth transistor of said one conduction type, the source of which is connected with the drain of said second transistor and the gate of which is supplied with said control signal, and
a sixth transistor of said another conduction type, the gate and drain of which are connected with the gate and drain, respectively, of said fifth transistor and the source of which is connected with the drain of said fourth transistor;
and said capacitor is provided between the drain of said fifth transistor and said second power-supply voltage supply terminal.

5,250,915
LAMINATE TYPE LC FILTER

Takeshi Ikeda, 2-5-6-213, Sanno, Ohta-ku, Tokyo, and Akira Okamoto, Ageo, both of Japan, assignors to Takeshi Ikeda, Tokyo, Japan

Filed Feb. 19, 1992, Ser. No. 836,877
Claims priority, application Japan, Feb. 21, 1991, 3-50600
Int. Cl.[5] H03H *7/01*; H01G *4/40*
U.S. Cl. 333—181 **28 Claims**

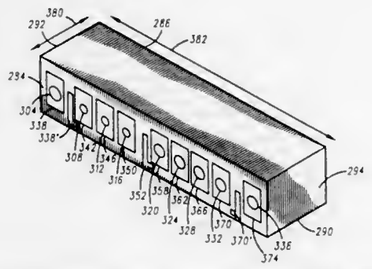


1. A laminate type LC element comprising:
a plurality of first insulating layers forming a laminate by stacking adjacent first insulating layers one above another;
a first conductor including a plurality of first sheet-like conductive elements electrically connected to one another, said first conductor continuously winding and extending between the adjacent first insulating layers of said plurality of insulating layers, each of said plurality of first sheet-like conductive elements including a slit formed therein to form an energizing path along said first conductor continuously winding and extending between the adjacent insulating layers, said first conductor functioning as a coil having a preselected number of turns; and
a second conductor including a plurality of second sheet-like conductive elements, said second conductor located between said plurality of first insulating layers and arranged such that each of said plurality of second sheet like conductive elements is in a face-to-face relationship to a corresponding one of said plurality of first sheet-like conductive elements through a corresponding one of said plurality of first insulating layers to form a capacitance between said first and second conductors.

5,250,916
MULTI-PASSBAND DIELECTRIC FILTER CONSTRUCTION HAVING FILTER PORTIONS WITH DISSIMILARLY-SIZED RESONATORS

Zdravko M. Zakman, Schaumburg, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 30, 1992, Ser. No. 876,607
Int. Cl.[5] H01P *1/205*
U.S. Cl. 333—206 **19 Claims**



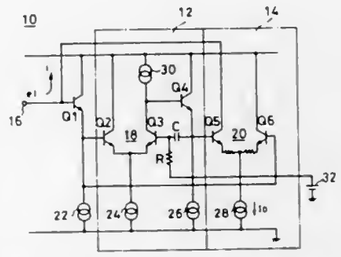
1. A multi-passband filter construction formed of a dielectric block defining top, bottom, and at least first and second side surfaces, said filter construction comprising:
a first filter circuit portion formed of a first portion of the dielectric block for generating a first filtered signal responsive to application of a first input signal thereto, the first filter circuit portion formed of at least one resonator defined by sidewalls of at least one cavity formed to extend essentially longitudinally along a longitudinal axis thereof between the top and bottom surfaces of the dielectric block the at least one resonator having a cross-section forming a closed curve of a first configuration;
a second filter circuit portion formed of a second portion of the dielectric block located adjacent to the first portion of the dielectric block of which the first filter circuit portion is formed, said second filter circuit portion for generating a second filtered signal responsive to application of a second input signal thereto, the second filter circuit portion formed of at least one resonator defined by sidewalls of at least one cavity formed to extend essentially longitudinally along a longitudinal axis thereof between the top and bottom surfaces of the dielectric block and having a cross-section forming a closed curve of a second configuration defined by a transverse axis extending in a direction transverse to the longitudinal axis wherein the cross-section of the second configuration is of a configuration dissimilar with that of the cross-section of the first configuration; and
an electrically-conductive material coated upon the first and second side surfaces of the dielectric block and upon the sidewalls of the at least one resonator of the first and second filter circuit portions, respectively.

5,250,917
EQUIVALENT INDUCTANCE CIRCUIT

Fumiaki Honda, Takatsuki, and Nobukazu Hosoya, Nara, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Apr. 28, 1992, Ser. No. 875,797
Claims priority, application Japan, Apr. 30, 1991, 3-098889
Int. Cl.[5] H03H *11/00*
U.S. Cl. 333—214 **3 Claims**

1. An equivalent inductance circuit, comprising:
an integration circuit for integrating an input signal, including two transistors connected as a differential pair, a capacitor connected to a base of one of said two transistors of said differential pair, and a resistor connected in series to said capacitor;
a differential circuit for detecting a difference component between an output signal of said integration circuit and said input signal, including two further transistors connected as a further differential pair, wherein said capacitor is connected to a base of one of said two further transistors of said further differential pair;

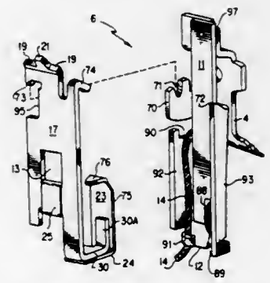


a feed-back path for feeding a signal of said difference component detected by said differential circuit back to said input signal; and
a selectively controllable constant current source connected to one coupled end of said further differential pair, such that an equivalent inductance formed by said integration circuit, said differential circuit, and said feed-back path varies inversely to the current controlled to flow through the selectively controllable constant current source.

5,250,918
AUTOMATIC MINIATURE CIRCUIT BREAKER WITH Z-AXIS ASSEMBLAGE CURRENT RESPONSE MECHANISM

Thomas A. Edds, Cedar Rapids, Iowa; James V. Fixemer, Denton, Nebr.; Matthew D. Sortland, Swisher; John M. Winter, Cedar Rapids, both of Iowa; Charles H. Wagner, Hickman, and Guntis U. Strauss, Lincoln, both of Nebr., assignors to Square D Company, Palatine, Ill.

Filed May 5, 1992, Ser. No. 878,676
Int. Cl.[5] H01H *75/12*
U.S. Cl. 335—35 **4 Claims**

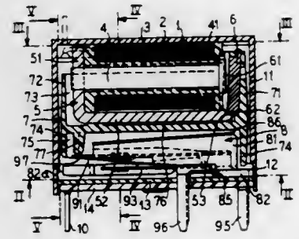


1. An electric circuit breaker comprising:
a base;
a cover operatively associated with said base to form an enclosure;
a line terminal carried by said base;
a load terminal carried by said base;
an electrical circuit extending between said line terminal and said load terminal, said electrical circuit comprising;
a first contact;
a second contact;
a movable contact carrier carrying said second contact and movable between (i) a first position wherein said second contact is engaged with said first contact and corresponding to a closed electrical circuit condition wherein said electrical circuit is completed between said line terminal and said load terminal and (ii) a second position wherein said second contact is spaced away from said first contact and corresponding to an open electrical circuit condition wherein said electrical circuit is not completed between said line terminal and said load terminal;
operating means for moving said contact carrier from said first position to said second position;
said operating means including a current responsive means associated therewith for releasing said operating means to move said contact carrier from said first position to said second position in response to predetermined current conditions;
said current responsive means comprising a bimetal member connected at one end to said load terminal;
a yoke connected to an opposite end of said bimetal member, said yoke having a back portion, and a pivot support portion and a cradle slot portion extending therefrom;
a flexible conductor connected at a first end to said yoke, said flexible conductor being wrapped around said yoke and having an opposite end connected to said contact carrier; and
an armature operatively associated with said yoke, said armature including a face plate, a first end of said face plate having an angularly disposed pivot tab adapted to be supported on said pivot support portion and a rocker portion adapted to be received in said cradle slot portion so as to pivotably support said armature on said yoke, said face plate further having a cut out central portion adapted to receive said trip lever.

5,250,919
ELECTROMAGNETIC RELAY

Helmut Schedele, Unterer Forst, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

PCT No. PCT/DE89/00722, § 371 Date May 6, 1992, § 102(e) Date May 6, 1992, PCT Pub. No. WO91/07769, PCT Pub. Date May 30, 1991
PCT Filed Nov. 16, 1989, Ser. No. 855,037
Int. Cl.[5] H01H *51/22*
U.S. Cl. 335—128 **6 Claims**



1. An electromagnetic relay comprising:
a cap-shaped housing open towards a terminal end of the relay, said cap-shaped housing having a guideway,
a magnet system with a coil and an armature arranged in an upper, closed zone of the housing, and
a contact system arranged in a lower, open zone of the housing, said contact system including a carrier of insulating material, at least one moveable contact element in said carrier, an actuator operationally connecting said at least one moveable contact element to the armature, the carrier

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at least partly closing an open side of the housing from below, wherein

each moveable contact element extends essentially parallel to a terminal plane of said relay and is actuatable in a direction perpendicular thereto,

the magnet system being anchored directly in the housing and

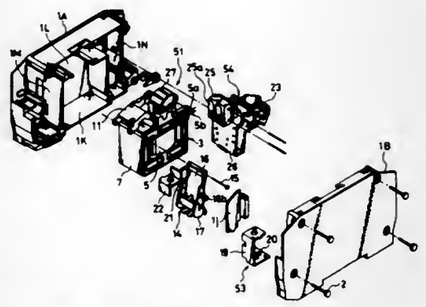
the carrier of the contact system being guided in said guideway of the housing parallel to an actuating direction of said at least one moveable contact element without a stop and connected to the housing in a freely settable insertion position.

5,250,920

REMOTE CONTROLLED RELAY

Hiroaki Fujihisa, and Manabu Sogabe, both of Fukuyama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 27, 1991, Ser. No. 799,124
Int. Cl.[5] H01H *9/02*
U.S. Cl. 335—202 6 Claims



1. A remote controlled relay comprising:

a housing which includes a base member and a cover member and has a center large space which is defined by partition walls, a center small space which is positioned on and in communication with the front portion of said center large space, and a first space and a second space which are positioned respectively on either side of said center large space and in communication with said center small space;

a main driving unit having an electromagnetic device and a driving mechanism driven by said electromagnetic device, said main driving unit straddling said center large space and said center small space;

a circuit unit provided in said first space and having a switch for changing the current direction to be supplied to said electromagnetic device and a pair of remote control terminals which are to be connected to a remote control circuit, whereto lead wires of said electromagnetic device are electrically connected;

a fixed contact unit having a fixed contact, provided on the bottom of said second space;

a moving contact unit having a moving contact, coupled to said driving mechanism by a pin-joint for being driven in a manner to make and break contact with said fixed contact and provided in said second space; and

fixing means for fixing said cover member to said base member

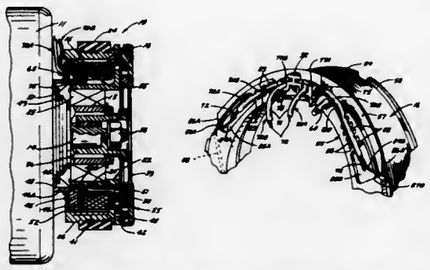
wherein said main driving unit, said circuit unit, said moving contact unit, and said fixed contact unit are mounted on said base member.

5,250,921

FIELD ASSEMBLY FOR AN ELECTROMAGNET

Kalvin G. Van Laningham, Beloit, Wis.; Mark E. Blakeman, South Beloit, Ill.; Dwight E. Booth, Janesville, Wis.; John C. Carlson, Beloit, Wis.; Douglas J. Clemens, Garrett, Ind.; Stewart B. Dobson, Janesville, Wis., and Robert D. Keller, Roscoe, Ill., assignors to Dana Corporation, Toledo, Ohio

Filed Oct. 19, 1990, Ser. No. 600,199
Int. Cl.[5] H01F *3/00*
U.S. Cl. 335—296 32 Claims



1. A field assembly for an electromagnet adapted to be excited by a voltage source, said field assembly comprising an annular bobbin molded of plastic, said bobbin having a generally cylindrical tubular spool and having an annular flange molded integrally with and projecting radially outwardly from the spool, said flange having inboard and outboard sides, a multiple turn winding of electrical wire supported on said spool adjacent the inboard face of said flange and adapted to be connected to said voltage source, a terminal block molded integrally with and projecting axially from the outboard face of said flange, a field shell molded of powdered metal having low magnetic reluctance, said shell having a tubular hub and having an annular flange formed integrally with and projecting radially outwardly from said hub between the ends thereof whereby said shell is generally T-shaped in radial cross-section, a window extending axially through one end portion of the flange of said shell, said bobbin being assembled with said shell with the spool of said bobbin telescoped over one end portion of said hub, with the outboard face of the flange of said bobbin lying in face-to-face engagement with a first axially facing side of the flange of said shell, and with said terminal block extending into said window, and means for holding said bobbin in assembled relation with said shell.

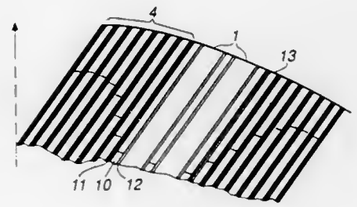
29. A field assembly for an electromagnet adapted to be excited by a voltage source, said field assembly comprising a shell made of a material having low magnetic reluctance, and a bobbin made of plastic and supported by and secured to said shell, said bobbin having a generally cylindrical tubular spool and having an annular flange molded integrally with and projecting radially outwardly from the spool, said flange having inboard and outboard faces, a multiple turn winding of electrical wire of relatively small diameter, said winding being supported on said spool adjacent the inboard face of said flange and having a starting end portion and a finishing end portion, a pair of angularly spaced notches formed in the periphery of said flange and permitting said wire end portions to cross over said flange to the outboard face thereof, a pair of angularly spaced potting cavities formed in the outboard face of said flange for receiving the free ends of said wire end portions, first and second electrical leads of greater diameter than the wire of said winding and adapted to be connected to said starting and finishing wire end portions, respectively, a terminal block molded integrally with said flange between said notches and extending axially from the outboard face of said flange, first and second axially and radially outwardly opening grooves formed in said terminal block and receiving portions of said first and second leads, respectively, first and second additional grooves formed in the outboard face of said flange and receiving additional portions of said first and second leads, respectively, said first additional groove in said flange extending from said first groove in said block to the potting cavity for said starting wire end portion, said second additional groove in said flange extending from said second groove in said block to the potting cavity for said finishing wire end portion, and said first and second leads having conductors joined electrically to said starting wire end portion and said finishing wire end portion, respectively, in said potting cavities.

5,250,922

TRANSFORMER OR REACTOR COOLED BY AN INSULATING AGENT

Erik Forsberg, Smedjebacken, and Sören Petersson, Ludvika, both of Sweden, assignors to ASEA Brown Boveri AB, Västerås, Sweden

Filed Oct. 20, 1992, Ser. No. 963,738
Claims priority, application Sweden, Oct. 23, 1991, 9103087
Int. Cl.[5] H01F *27/08*
U.S. Cl. 336—60 5 Claims



1. A transformer or reactor comprising a core of magnetic material with at least one leg and one yoke and at least one winding (4, 5) of sheet-formed conductor material (10) in the form of metal foil arranged substantially concentrically around the leg, at least on one side of the conductor sheet there being arranged an insulating film (11, 12) which has a width in the axial direction of the winding which is greater than the width of the conductor sheet, at the edges of the winding and in the axial extension of the conductor sheet there being arranged edge strip which has an axial width corresponding to the difference between the width of the conductor sheet and the width of the insulating film, the winding comprising at least one cooling element (1) arranged between two consecutive winding turns, characterized in that the axial length of the metal foil within a region nearest the at least one cooling element decreases for each winding turn towards both inner and outer cylindrical surfaces of the at least one cooling element.

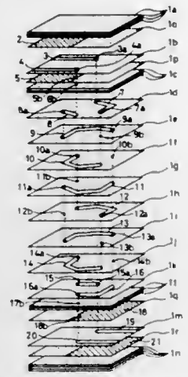
5,250,923

LAMINATED CHIP COMMON MODE CHOKE COIL

Tomoaki Ushiro; Toshio Kawabata; Daiji Kono, and Hisato Oshima, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Dec. 28, 1992, Ser. No. 997,393
Claims priority, application Japan, Jan. 10, 1992, 4-021774
Int. Cl.[5] H01F *27/30*
U.S. Cl. 336—83 5 Claims

1. A laminated chip common mode choke coil wherein a pair of coils and lead-out electrodes led out from said coils are formed by laminating a plurality of magnetic substance sheets provided with conductor patterns and through-holes for connecting said conductor patterns and wherein permeability around said lead-out electrodes is reduced by applying non-magnetic material to said magnetic substance sheets around the



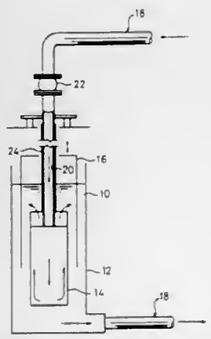
conductor patterns that become said lead-out electrodes and by diffusing the non-magnetic material.

5,250,924

POWER SUPPLY TESTING SYSTEM FOR NON-UTILITY POWER GENERATORS AND SO ON

Toyoshi Kondoh, Tokyo, Japan, assignor to Tatsumi Corporation, Tokyo, Japan

Filed Nov. 5, 1991, Ser. No. 788,295
The portion of the term of this patent subsequent to Apr. 21, 2009, has been disclaimed.
Int. Cl.[5] H01C *1/082*
U.S. Cl. 338—56 3 Claims



1. A power supply testing system for use with non-utility power generators said system comprising: a test tank filled with a resistive liquid; a main electrode housed within said test tank to receive power from a power generator to be tested; a movable electrically insulative member interposed between said main electrode and said test tank to regulate the amount of power supplied from said main electrode to said tank; and piping means for cooling or filtering said resistive liquid within said test tank and returning it to said test tank, thereby recycling said resistive liquid,

said main electrode being supported at an upper portion of said test tank and depending therefrom,

part of said piping means being an inlet pipe located above said test tank for feeding said resistive liquid into said test tank, and power being supplied to said main electrode through said inlet pipe.

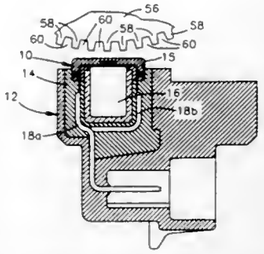
VOL 1155 ISS 1 OC 5 1993 UMI

5,250,925

PACKAGE FOR SPEED SENSING DEVICE HAVING MINIMUM AIR GAP

George A. Shinkle, Luxembourg, Luxembourg, assignor to General Motors Corporation, Detroit, Mich.

Filed May 11, 1992, Ser. No. 881,114
Int. Cl.[5] H01L *43/00*
U.S. Cl. 338—32 R 22 Claims



1. A rugged magnetic sensor assembly which includes a housing having an opening for receiving a magnetic sensing unit, said sensor assembly comprising:
a prepackaged magnetic sensing unit which is not sufficiently rugged to be used in a given application, said sensing unit having first and second external surface areas and comprised of an encapsulated sensing device having electrical leads, wherein the encapsulation is not adequately protective of the electrical lead areas of said prepackaged sensing unit, said first external surface being a sealing surface and said second external surface being proximate said sensing device;
a housing having an opening therein adapted to cooperatively receive said sensing unit;
said sensing unit of size and shape complementary to said housing opening, effective to be at least partially received in said opening of said housing;
said sensor unit at least partially disposed within said opening and having said first exterior surface cooperatively disposed with respect to an interior surface of said housing, which interior surface defines said opening in said housing, and leaving said second exterior surface exposed outside said housing; and
means for sealing said exterior surface on said sensing unit against said interior surface of said housing;
wherein said sealing means, external surface of said sensing unit, and said interior surface of said housing define an enclosure for retaining said sensing unit in fixed position and for protecting said electrical lead areas of said sensing unit from deleterious environmental effects of said given application, and wherein portions of said housing do not overlie said second surface portion of said sensing unit and thereby substantially decrease magnetic sensitivity of said sensing unit.

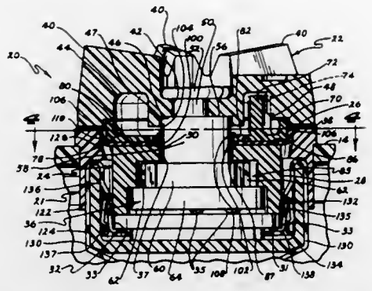
5,250,926

POTENTIOMETER WITH IMPROVED SEAL

John P. McSwiggen, South St. Paul, Minn., assignor to Wilbrecht Electronics, Inc., St. Paul, Minn.

Filed Apr. 29, 1992, Ser. No. 875,425
Int. Cl.[5] H01C *10/32*
U.S. Cl. 338—164 20 Claims

1. A potentiometer comprising:
a housing having a central bore and defining a chamber therein;
a rotor having inner and outer ends, said rotor outer end extending through said housing central bore and having a manipulative portion for rotating said rotor;
sealing means extending between said central bore and said rotor outer end, said sealing means being provided for substantially preventing the intrusion of corrosive materials into said housing;
a wiper carried by said rotor inner end, said wiper including a pair of contacts; and



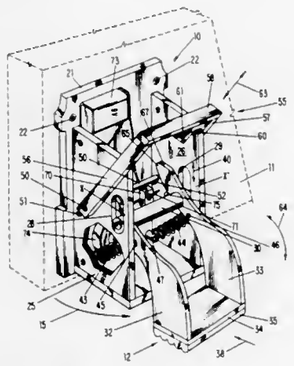
a base plate attached to said housing and carrying a resistive strip engaged by one of said contacts.

5,250,927

INSIDE MOUNTING DOOR STOP AND ALARM

Kervis P. Nevels, 7401 San Pedro N.E., Space 10, Albuquerque, N. Mex. 87109

Filed Jul. 1, 1992, Ser. No. 909,105
Int. Cl.[5] G08B *13/08*
U.S. Cl. 340—545 20 Claims



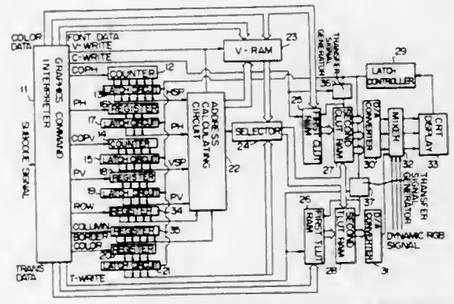
20. A door-stop alarm, comprising:
a pair of lever arms;
a floor engaging means carried between said pair of lever arms at one end thereof;
a frame assembly that is affixable to an inside surface of a door at a location to allow the pair of lever arms to be movable to bring the floor engaging means into engagement with a surface of a floor, said frame assembly comprising a base plate and left and right walls, said left and right walls having vertical slots;
a pivot pin carrying said lever arms, constrained within said vertical slots in said frame assembly to allow rotational and up and down movement of said lever with respect to said frame assembly, whereby when said door is opened slightly when said lever is in a downward, floor-engaging position, said lever arms are constrained to move upwardly with respect to said frame, but to prevent the door from opening;
a pair of springs each attached between one of said lever arms and said frame assembly to bias said lever arms to said downward, floor-engaging position at which said floor engaging means engages the surface of the floor;
a rod located within said frame assembly to engage another end of said lever arms opposite said one end that carries the floor engaging means, when said lever arms are rotated away from said downward, floor-engaging position, to hold the lever arms in a downward, floor-non-engaging position;
and a handle to move the rod assembly from said another end of said lever arms, said handle being actuatable to move said rod to release said lever arms from being held in said downward, floor-non-engaging position to be moved by said pair of springs to said downward, floor-engaging position;
an alarm, a switch, and a battery circuit connected in series, said switch being connected to turn the alarm on and off;
a projection on one of said lever arms that engages said switch when said lever arms are moved in an upward direction with respect to said frame assembly to turn on said alarm; and
a portion of said one of said lever arms engaging the switch for turning the alarm off when the lever arms are rotated to a floor-non-engaging position.

5,250,928

GRAPHICS DECODER

Shinji Kuriki, Koufu, Japan, assignor to Pioneer Video Corporation, Yamanashi and Pioneer Electronic Corporation, Tokyo, both of Japan

Filed Jun. 24, 1992, Ser. No. 903,165
Claims priority, application Japan, Oct. 16, 1991, 3-267797
Int. Cl.[5] G09G *1/28*
U.S. Cl. 345—153 6 Claims



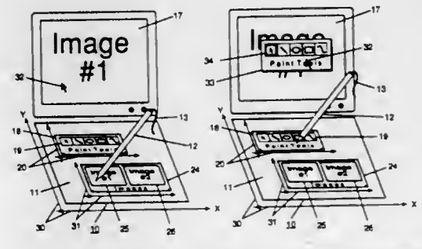
1. A graphics decoder for producing a graphics RGB signal to be supplied to an image display apparatus from a command code signal including various kinds of graphics data, comprising:
interpreting means for interpreting a graphics command in said command code signal;
a display memory having a plurality of memory locations corresponding to pixels of said image display apparatus;
writing means for, when a result of interpretation in said interpreting means is a write command, writing color number data included in said write command at a designated memory location in said display memory;
data generating means for, when the result of interpretation in said interpreting means is a screen-scroll command, generating scroll data in accordance with pointer data included in said screen-scroll command;
read address setting means for sequentially setting a read address of said display memory in accordance with said scroll data;
reading means for reading out color number data from a memory location in said display memory which corresponds to said read address; and
first storage means having a color look-up table to be updated by graphics RGB data for each color number included in a color look-up table write command, for, when the result of interpretation in said interpreting means is said color look-up table write command, reading out graphics RGB data associated with the read-out color number data from said color look-up table and outputting said graphics RGB data as said graphics RGB signal,
whereby outputting of new scroll data from said data generating means and updating of said color look-up table in said first storage means are performed at timings synchronous with a horizontal sync signal or a vertical sync signal of said image display apparatus.

5,250,929

INTERACTIVE OVERLAY-DRIVEN COMPUTER DISPLAY SYSTEM

Clifford J. Hoffman, Dayton, and Kelth A. Combs, Kettering, both of Ohio, assignors to Conference Communications, Inc., Dayton, Ohio

Filed Jul. 29, 1991, Ser. No. 734,155
Int. Cl.[5] G09G *3/02*
U.S. Cl. 345—146 9 Claims



1. The combination comprising: a computer; a computer controlled display and cursor generating means; digitizing means operatively coupled to said computer operatively connected with said display means and having a surface which includes a plurality of coordinately arranged active locations thereon and a manually operable pointing means for providing an output signal which is representative of each of said locations, as determined by the contiguous positioning of said pointing means with respect thereto; storage means operable by said computer for storing information therein which is representative of an overlay positioned on said digitizer surface means coupled to said storage means and to said digitizing means and responsive to a predetermined output signal from said digitizing means for initiating the display on said display means of a representation of said overlay; and means operable whenever said pointing means is at a predetermined position with respect to said positioned overlay for initiating the generation of said predetermined output signal to effect the display by said display means of an image representative of said positioned overlay and including means for controlling said cursor generating means whereby a cursor is simultaneously displayed on said display in substantially the same relative position with respect to the displayed image as the position of said pointing means is with respect to said positioned overlay.

5,250,930

SWITCHING APPARATUS FOR ELECTRONIC DEVICES

Tatsuo Yoshida, Kanagawa, and Kazuhiko Otake, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 9, 1991, Ser. No. 756,457
Claims priority, application Japan, Sep. 12, 1990, 2-241408
Int. Cl.[5] G09G *3/02*
U.S. Cl. 345—168 9 Claims

1. An electronic device for controlling movement of an image on a display unit, comprising:
a stop pushbutton generating a stop signal when pressed and

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having a top side, a bottom side, a right side, and a left side;

an upward pushbutton generating an upward signal when pressed and having a bottom side, a right side, and a left side, the bottom side of the upward pushbutton positioned adjacent to the top side of the stop pushbutton;

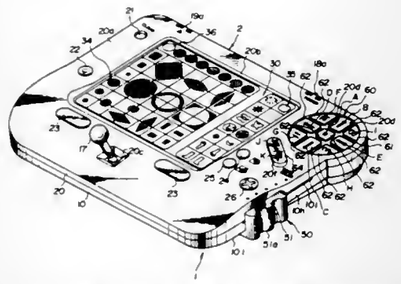
a downward pushbutton generating a downward signal when pressed and having a top side, a right side, and a left side, the top side of the downward pushbutton positioned adjacent to the bottom side of the stop pushbutton;

a rightward pushbutton generating a rightward signal when pressed and having a top side, a bottom side, and a left side, the left side of the rightward pushbutton positioned adjacent to the right side of the stop pushbutton;

a leftward pushbutton generating a leftward signal when pressed and having a top side, a bottom side, and a right side, the right side of the leftward pushbutton positioned adjacent to the left side of the stop pushbutton, the upward signal, the downward signal, the rightward signal, and the leftward signal forming a set of linear signals;

a first non-linear pushbutton generating a first non-linear signal and having a bottom side and a right side, the bottom side of the firs non-linear pushbutton positioned adjacent to the top side of the leftward pushbutton and the right side of the first non-linear pushbutton positioned adjacent to the left side of the upward pushbutton;

a second non-linear pushbutton generating a second non-linear signal and having a bottom side and a left side, the



bottom side of the second non-linear pushbutton positioned adjacent to the top side of the rightward pushbutton and the left side of the non-linear pushbutton positioned adjacent to the right side of the upward pushbutton;

a third non-linear pushbutton generating a third non-linear signal and having a top side and a right side, the top side of the third non-linear pushbutton positioned adjacent to the bottom side of the leftward pushbutton and the right side of the third non-linear pushbutton positioned adjacent to the left side of the downward pushbutton;

a fourth non-linear pushbutton generating a fourth non-linear signal and having a top side and a left side, the top side of the fourth non-linear pushbutton positioned adjacent to the bottom side of the rightward pushbutton and the left side of the fourth non-linear pushbutton positioned adjacent to the right side of the downward pushbutton, the first non-liner signal, the second non-linear signal, the third non-linear signal, and the fourth non-linear signal forming a set of non-linear signals;

pushbutton assembly means for supporting the stop pushbutton, the upward pushbutton, the downward pushbutton, the rightward pushbutton, the leftward pushbutton, the first non-linear pushbutton, the second non-linear pushbutton, the third non-linear pushbutton, and the fourth non-linear pushbutton;

a substrate having a plurality of electrical contacts, each electrical contact corresponding to one pushbutton, wherein the electrical contact engages its corresponding pushbutton when the pushbutton is pressed; and

control circuit means or receiving the stop signal and for halting a movement of the image as it moves across the display unit in response thereto, for receiving each of the linear signals and for moving the image linearly across the display unit in response thereto, and for receiving each of the non-linear signals and for moving the image non-linearly across the display unit in response thereto.

5,250,931

ACTIVE MATRIX PANEL HAVING DISPLAY AND DRIVER TFT'S ON THE SAME SUBSTRATE

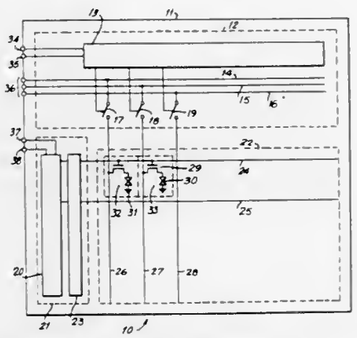
Toshiyuki Misawa, and Hiroyuki Oshima, both of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed May 15, 1989, Ser. No. 351,758

Claims priority, application Japan, May 17, 1988, 63-119919

Int. Cl.[5] G09G *3/20*

U.S. Cl. 345—206 **125 Claims**



1. An active matrix device, comprising:

a substrate having an active display region and at least one driver region;

a plurality of substantially parallel source lines;

a plurality of substantially parallel gate lines crossing the plurality of substantially parallel source lines forming a plurality of source line-gate line intersections, the source lines and gate lines being disposed on the substrate in the display region;

a matrix of driving electrodes, each driving electrode being disposed substantially at one of the source line-gate line intersections;

a matrix of thin film transistors formed in the display region, each thin film transistor connected to one of the source line-gate line intersections and serving as switching means for coupling the driving electrode associated with the transistor to the source line of the transistor; and

driving means formed on the substrate in the at least one driver region for driving at least one of the source lines and gate lines and including a shift register having thin film transistors in a CMOS configuration, said thin film transistors of said driving means in said CMOS configuration having a dimension different from the corresponding dimension of the thin film transistors of the display region to provide a desired operating condition for a driving means for an active matrix device;

wherein the matrix of thin film transistors formed in the display region have essentially the same cross-sectional structure as the thin film transistors of the driving means shift register.

5,250,932

LIQUID CRYSTAL DISPLAY DEVICE

Hataaki Yoshimoto, Chiba, and Katsuhiro Ito, Ichihara, both of Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

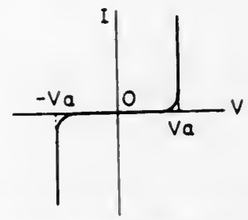
Continuation of Ser. No. 334,640, Apr. 7, 1989, Pat. No. 5,070,326. This application Sep. 23, 1991, Ser. No. 764,233

Claims priority, application Japan, Apr. 13, 1988, 63-89224; Jun. 6, 1988, 63-138870; Jun. 8, 1988, 63-139438

The portion of the term of this patent subsequent to Dec. 3, 2008, has been disclaimed.

Int. Cl.[5] G09G *3/36*

U.S. Cl. 345—206 **20 Claims**



1. A multiplex drive, liquid crystal display device comprising:

a first transparent base;

a plurality of picture element electrodes arranged on the first base;

a plurality of signal lines arranged on the first base adjacent the plurality of picture element electrodes and supplying electric signals to each one of the plurality of picture element electrodes;

a second transparent base disposed parallel to and separated from the first base by a predetermined spacing;

a plurality of scanning electrodes arranged on a surface of the second base such that the plurality of scanning electrodes opposes the picture element electrodes across the predetermined spacing between the first and second bases;

a layer of liquid crystal material including material of the numeric curvilinear aligned phases type disposed between the plurality of picture element electrodes and the plurality of scanning electrodes and being dispersed in a matrix consisting essentially of a polymeric material; and

a plurality of varistors connecting the plurality of picture element electrodes to the adjacent plurality of signal lines, each one of said plurality of varistors formed as a layer comprising fine particles having a size of from 0.1 to 30 μm.

5,250,933

METHOD AND APPARATUS FOR THE SIMULTANEOUS DISPLAY OF ONE OR MORE SELECTED IMAGES

Raymond A. Beaudin, Windham, N.H.; Joseph R. Fallon, Boxford, Mass., and Leslie I. Halberg, North Reading, Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 2, 1989, Ser. No. 318,028

Int. Cl.[5] G09G *1/06*

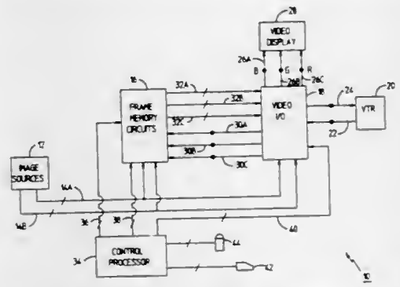
U.S. Cl. 345—115 **22 Claims**

1. A system for periodically refreshing two or more displayed images on a video display device of a type wherein each image appears as an image frame in a display frame formed from a plurality of display pixels, the system comprising:

frame memory means storing a plurality of image frames, at least some of said image frames containing two or more different types of information;

means operative during each periodic refreshing of a display frame for reading out at least one of said image frames containing different types of information a selected plurality of times; and

means for selectively processing said image frame for each readout thereof to cause multiple images of said image frame to be simultaneously displayed, said multiple images



containing the processed content of said image frame in various permutations and combinations.

5,250,934

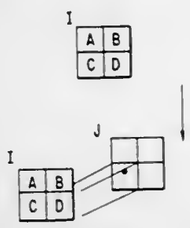
METHOD AND APPARATUS FOR THINNING PRINTED IMAGES

Michel J. Denber, and Henry P. Jankowski, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 31, 1990, Ser. No. 636,395

Int. Cl.[5] G09G *1/06*

U.S. Cl. 345—136 **9 Claims**



1. A method for correcting half-bit errors due to write-white fonts in write-black xerographic and video output devices, comprising:

generating a source image comprising bit-image data in an image generation unit, said source image having half-bit errors due to a write-white font;

transmitting said source image to a processor as a series of binary data for each successive scan line of the source image;

storing in a first shift register in said processor all "on" binary digits, said shift register comprising a series of successive memory locations equal in number to one raster width, an input, and an output, whereby each datum appearing at said input is shifted through each of said successive memory locations to said output;

receiving from said image generation unit said binary data;

shifting each binary datum into said first shift register and performing a logical AND comparison between the same binary datum about to be shifted into said first shift register and the binary datum being shifted out of said first shift register, said logical AND comparison removing said half-bit errors and forming an output binary datum;

transmitting said output binary datum to a raster output scanner and converting said output binary datum to an output signal for an output device; and

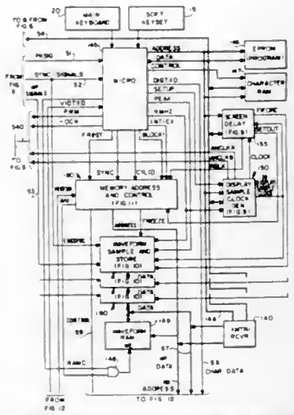
displaying said output signal at said output device.

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5,250,935
WAVEFORM PEAK CAPTURE CIRCUIT FOR DIGITAL ENGINE ANALYZER

Gary D. Jonker, Kenosha, Wis.; Craig F. Govekar, Gurnee, Ill.; Michael B. Meeker; James R. Piehl, both of Kenosha, Wis.; Michael C. Putrow, Racine, Wis., and John C. Sniegowski, Kenosha, Wis., assignors to Snap-on Tools Corporation, Kenosha, Wis.

Filed Sep. 24, 1990, Ser. No. 587,357
Int. Cl.[5] G09G *5/00*
U.S. Cl. 345—134 9 Claims



1. Apparatus for displaying on a screen of a digital oscilloscope a substantially accurate representation of an analog cylinder ignition waveform signal of a multiple cylinder internal combustion engine, said cylinder ignition waveform signal having a corresponding cylinder time period, said apparatus comprising: analog-to-digital conversion means for receiving the analog waveform signal and digitizing it to produce a series of digital data samples at a first sampling rate, clock means for generating display sampling signals at a rate substantially less than said first sampling rate, peak capture means coupled to said conversion means for storing the maximum value of the digital data samples occurring between two consecutive display sampling signals, display drive means coupled to said clock means and to said peak capture means and to said conversion means and to the oscilloscope and responsive to each display sampling signal for selecting a digital data sample for display, said display drive means being operable in a first mode wherein it selects for display in response to each display sampling signal the value of the most recent sample from said conversion means and a second mode wherein it selects in response to each display sampling signal the sample value stored in said peak capture means, and control means for selectively operating said display drive means in either of said first and second modes, said control means including means automatically switching between said first and second modes within each cylinder time period on the basis of the nature of the analog waveform signal.

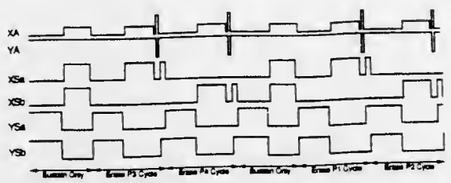
5,250,936
METHOD FOR DRIVING AN INDEPENDENT SUSTAIN AND ADDRESS PLASMA DISPLAY PANEL TO PREVENT ERRANT PIXEL ERASURES

Kevin W. Warren, Champaign, Ill., and Larry F. Weber, New Paltz, N.Y., assignors to Board of Trustees of the University of Illinois, Urbana, Ill.

Filed Apr. 23, 1990, Ser. No. 512,880
Int. Cl.[5] G09G *3/22*
U.S. Cl. 345—60 17 Claims

1. A method for erasing pixel cells in an ISA AC plasma display panel, wherein said panel comprises a plurality of cell groups aligned along first and second orthogonal dimensions, each said cell group including an address cell, two first dimension coupling cells, two second dimension coupling cells and four pixel cells, first dimension and second dimension address lines intersecting each said address cell, and sustain lines positioned on either side of each said address line and intersecting adjacent series of pixel cells and coupling cells in each cell group, intersections between sustain lines defining said pixel cells by type, each cell group having identical first through fourth types at corresponding sustain line intersections, said method comprising:

a. energizing said address and sustain lines to turn ON at least a selected first type pixel cell in an addressed cell group, said first type pixel cell and a second type pixel cell respectively resident at intersections between a first dimension sustain line and first and second, second dimension sustain lines;



b. applying sustain pulses to said sustain lines, with at least one less sustain pulse being applied to second dimension sustain lines which intersect said second type pixel cells in all cell groups;

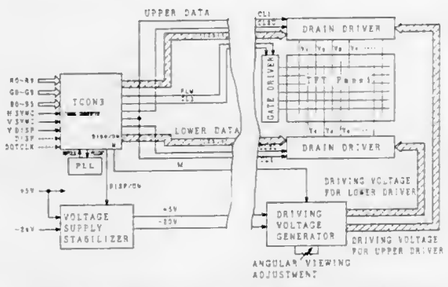
c. applying erase address potentials to selected first and second dimension address liens to induce wall charges in second dimension coupling cells associated with an address cell in an addressed cell group; and

d. applying to said sustain lines a potential to cause discharge of a second dimension coupling cell and a resulting migration of charge into an ON first type pixel cell, whereby erasure of said selected first type pixel cell in said addressed cell group is achieved.

5,250,937
HALF TONE LIQUID CRYSTAL DISPLAY CIRCUIT WITH AN A.C. VOLTAGE DIVIDER FOR DRIVERS

Ono Kikuo, Hitachi; Kohji Takahashi, Chiba; Nobutake Konishi, Hitachiohta; Jun-ichi Ohwada, Mobara, and Takeshi Tanaka, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 8, 1991, Ser. No. 666,900
Claims priority, application Japan, Mar. 8, 1990, 2-57781
Int. Cl.[5] G09G *3/36*
U.S. Cl. 345—89 30 Claims

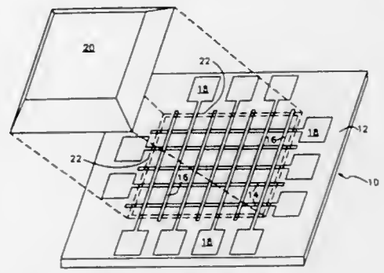


1. An observation angle correcting method in the half tone display of a liquid crystal, comprising the steps of: generating an approximate reference voltage from a voltage which is approximately determined on the basis of a point of intersection of the extensions of straight lines along the gradients of brightness-voltage characteristics corresponding to at least two observation angles vertically different with respect to a liquid crystal display panel; generating a voltage which is varied to correspond to said observation angles; and generating driving voltages for the half tone displays, which are corrected by a divided voltage associated with said voltage.

5,250,938
ELECTROPHORETIC DISPLAY PANEL HAVING ENHANCED OPERATION

Frank J. DiSanto, North Hills, and Denis A. Krusos, Lloyd Harbor, both of N.Y., assignors to Copytele, Inc., Huntington Station, N.Y.

Continuation of Ser. No. 630,238, Dec. 19, 1990, abandoned. This application Oct. 13, 1992, Ser. No. 960,572
Int. Cl.[5] G09G *3/34*
U.S. Cl. 345—107 12 Claims



1. An electrophoretic display comprising:

(a) a fluid-tight envelope having a portion thereof which is at least partially transparent;

(b) an electrophoretic fluid containing within said envelope, said fluid having pigmented particles suspended therein;

(c) a plurality of elongated substantially parallel cathode members having two ends and passing through said envelope and said fluid, said cathode members selectively electrically chargeable to induce movement of said particles within said fluid, said particles being at least partially visible through said transparent portion of said envelope, with at least some of said cathode members extending beyond said fluid contained in said envelope thereof whereby either of said two ends of said cathode members are located within said fluid preventing discontinuities in electrostatic field strength and corresponding detrimental effects upon said fluid at said ends when said display is operated.

5,250,939
DRIVE APPARATUS FOR OPTICAL ELEMENT ARRAY

Itsuo Takanashi, Kamakura; Shintaro Nakagaki, Miura; Ichiro Negishi; Tetsuji Suzuki, both of Yokosuka; Fujiko Tatsumi, Yokohama; Ryusaku Takahashi; Keiichi Maeno, both of Yokosuka, and Tsuyoshi Yoshimura, Tokyo, all of Japan, assignors to Victor Company of Japan, Ltd., Japan

Filed Nov. 5, 1991, Ser. No. 787,867
Claims priority, application Japan, Nov. 30, 1990, 2-336122; May 31, 1991, 3-155266
Int. Cl.[5] G09G *3/00*
U.S. Cl. 345—204 2 Claims

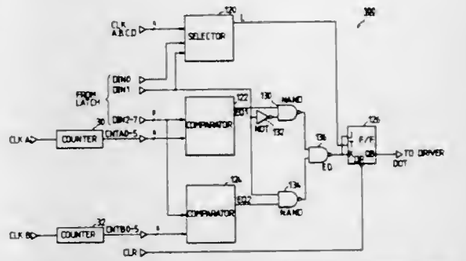
1. A drive apparatus for an optical element array, comprising:

first and second counters counting clock pulses and being periodically reset at a horizontal scanning period, the first counter and the second counter outputting a first counter signal and a second counter signal respectively, the first counter signal and the second counter signal being out of phase with each other;

means for latching a pixel-corresponding segment of an input image signal;

means for selecting one of clock signals out of phase with each other in response to the pixel-corresponding input-signal segment latched by the latching means;

a first comparator comparing the first counter signal and the pixel-corresponding input-signal segment latched by the latching means, and outputting a first identity signal when the first counter signal and the pixel-corresponding input-signal segment are equal to each other;



a second comparator comparing the second counter signal and the pixel-corresponding input-signal segment latched by the latching means, and outputting a second identity signal when the second counter signal and the pixel-corresponding input-signal segment are equal to each other;

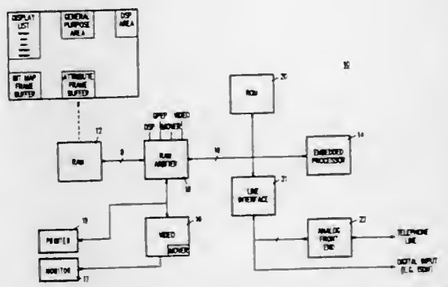
means for generating a pulse which starts in synchronism with a start of a horizontal scanning period and which ends in response to the clock signal selected by the clock selecting means and in response to the first and second identity signals; and

means for driving an optical element in the array in response to the pulse generated by the pulse generating means.

5,250,940
MULTI-MODE HOME TERMINAL SYSTEM THAT UTILIZES A SINGLE EMBEDDED GENERAL PURPOSE/DSP PROCESSOR AND A SINGLE RANDOM ACCESS MEMORY

Maurice Valentaten, Geltendorf; Bernd Moeschen, Starnberg, both of Fed. Rep. of Germany; Yehezkel Friedman, Tel-Aviv, Israel; Yom-Tov Sidi, Nes-Ziona, Israel; Zeev Bikowsky, Natania, Israel, and Zohar Peleg, Yavne, Israel, assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jan. 18, 1991, Ser. No. 642,928
Int. Cl.[5] G09G *1/02*
U.S. Cl. 345—189 20 Claims



6. An integrated multi-mode home terminal system that recovers video/graphics digital data from a digital input sam-

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ple signal, converts the video/graphics digital data to corresponding mix video data and processes the mix video data to generate display data for display by an associated output device, the integrated multi-mode home terminal system comprising:

a single embedded processor that performs both digital signal processing operations to recover the video/graphics digital data from the digital input sample signal and general purpose processing operations to convert the video/graphics digital data to mix video data that includes both bit map frame buffer data and corresponding attributes frame buffer data;

a video processor that processes the bit map frame buffer data and the corresponding attributes frame buffer data to generate display data that is provided to the output device for display thereby;

a single shared RAM array for storing digital signal processor (DSP) data that is utilizable by the single embedded processor for performing the digital signal processing operations, general purpose digital data that is utilizable by the single embedded processor for performing the general purpose processing operations, and the bit map frame buffer data and the corresponding processor, the single shared RAM array being connected both to the single embedded processor and to the video attributes frame buffer data processed by the video processor via a single access data bus such that both the single embedded processor and the video processor access the single shared RAM array via a common output port of the single shared RAM array; and

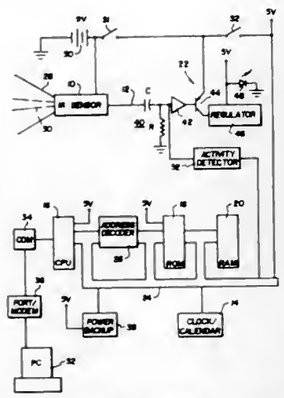
a RAM arbiter that is connected to the single access data bus and that responds to access addresses issued by the single embedded processor by arbitrating simultaneous requests by the single embedded processor and the video processor for access to the single shared RAM array.

5,250,941

CUSTOMER ACTIVITY MONITOR

Peter L. McGregor, and Lily Cohen-Miller, both of 14 Beaufort, D.D.O., Quebec, Canada H9A 2M6

Filed Aug. 9, 1991, Ser. No. 742,879
Int. Cl.[5] H04Q *1/00*
U.S. Cl. 340—825.65 **11 Claims**



1. An entity monitoring arrangement comprising:

a sensor responsive to the presence of an entity for generating a signal;

clock means for measuring the passage of time;

digital data processing means connected to said sensor and to said clock means for correlating each signal from said sensor with time as measured by said clock means;

digital storage means connected to said data processing means for storing each correlated signal as data;

a battery; and

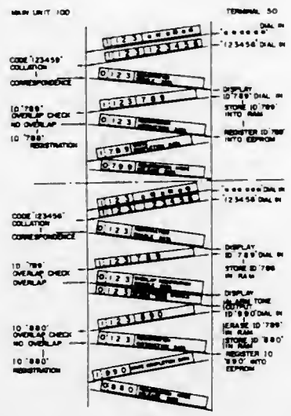
power-saving means connected to said sensor and between said battery and said data processing and storage means for applying power to said data processing and storage means only during a time period immediately after said sensor generates a signal, and for disconnecting power from said data processing and storage means at all other times, said battery being connected to said sensor at all times for powering said sensor continuously.

5,250,942

EQUIPMENT AND METHOD FOR MANAGEMENT OF TERMINAL IDENTIFICATION NUMBER IN COMMUNICATION SYSTEM

Yasunobu Nakayama, Hachioji, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 469,079, Jan. 23, 1990, abandoned. This application Sep. 4, 1991, Ser. No. 754,312
Claims priority, application Japan, Jan. 23, 1989, 1-13699
Int. Cl.[5] H04Q *1/00*
U.S. Cl. 340—825.52 **5 Claims**



1. A communication system, including a center and a plurality of terminals communicable with the center, identification numbers of the respective terminals being registered in advance in the center, data being communicated between the center and the respective terminals;

each of the terminals comprising:

(a) terminal side memory means for storing a determined identification number of the terminal registered therefor;

(b) terminal side communication means for effecting data communication with the center, the terminal side communication means transmitting to the center an initial identification number initially stored in the terminal side memory means, when the terminal operates initially, each proper initial identification number including a predetermined common code;

(c) input means for inputting an arbitrary number as a proposed identification number of the terminal, the proposed identification number being transmitted to the center through the terminal side communication means; and

(d) terminal side registration means for registering the proposed identification number as the determined identification number in the terminal side memory means only when a registration instruction data is received

from the center by the terminal side communication means;

the center comprising:

(e) center side memory means for storing determined identification numbers of all the terminals registered therein;

(f) center side communication means for effecting data communication with the terminals;

(g) authorizing means for authorizing the registration of the proposed identification number on the condition that the initial identification number received from the terminal is in correspondence with a predetermined initial identification number which is commonly applied to all the terminals;

(h) overlap check means for checking whether or not the proposed identification number received from the terminal and the determined identification numbers of the other terminals previously registered in the center side memory means overlap with each other;

(i) center side registration means for registering the proposed identification number as the determined identification number of the terminal in the center side memory means only when the registration of the proposed identification number is authorized by the authorizing means and a check result indicative of no overlapping is obtained from the overlap check means; and

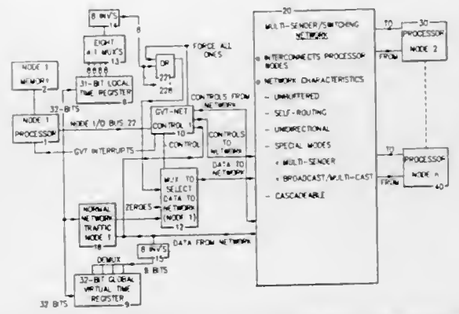
(j) center side control means for transmitting the registration instruction data to the terminal through the center side communication means only when the registration of the proposed identification number is authorized by the authorizing means and the check result indicative of no overlapping is obtained from the overlap check means, thereby permitting the terminal to register the proposed identification number in the terminal side memory means.

5,250,943

GVT-NET—A GLOBAL VIRTUAL TIME CALCULATION APPARATUS FOR MULTI-STAGE NETWORKS

Philip L. Childs; Howard T. Olnowich, both of Endicott, and Joseph F. Skovira, Binghamton, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 677,543, Mar. 29, 1991. This application Aug. 21, 1991, Ser. No. 748,295
Int. Cl.[5] H04Q *11/04*
U.S. Cl. 340—825.8 **29 Claims**



1. A multi-stage interconnection network and Global Virtual Time apparatus (GVT-NET), jointly functioning in a system having n processor nodes, comprising:

a plurality of transmitting elements;

a plurality of receiving elements;

a multi-sender switch apparatus means comprising a network for coupling said elements asynchronously through input to output port connections for establishing point to point input to output port connections, single input to multiple or all output port connections, and multiple or all input port connections to multiple or all output port connections;

a GVT-NET apparatus located at every system element and comprised of identical functions at each element including:

a local time register;

a global virtual time register;

a GVT-NET control function;

a normal network traffic control function;

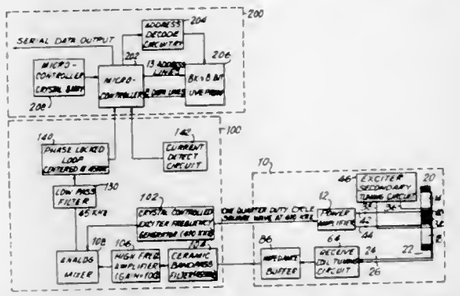
a data selection multiplexer for selecting various data sources for transmission of data to the said network.

5,250,944

ANTENNA AND DRIVING CIRCUIT FOR TRANSMITTING AND RECEIVING IMAGES TO AND FROM A PASSIVE TRANSPONDER

Donald J. Urbas, Evergreen, and David Ellwood, Golden, both of Colo., assignors to Bio Medic Data Systems, Inc., Maywood, N.J.

Filed Oct. 29, 1990, Ser. No. 605,049
Int. Cl.[5] G08C *19/06*
U.S. Cl. 340—870.31 **23 Claims**



1. A system for transmitting an exciter signal to a passive transponder and receiving a transponder signal containing data pre-programmed in said transponder, said system comprising receiving means for generating an exciter signal, probe means for transmitting said exciter signal to a passive transponder, said exciter signal having a first frequency, said probe means being adapted to receive said transponder signal from a transponder, said transponder signal having a second frequency, said probe means including antenna means for transmitting said exciter signal, said antenna means including a secondary coil, a primary coil wound about said secondary coil and inductively coupled therewith, said secondary coil being tuned to resonate at said first frequency, and said receiver means receiving said transponder signal, said receiver means including coil driving means for applying said exciter signal to said primary coil so that said secondary coil resonates at said first frequency of said exciter signal to transmit said exciter signal.

5,250,945

SCHOOL BUS OBSTACLE DETECTION DEVICE

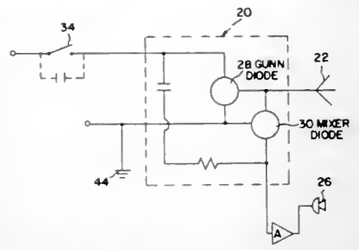
Anthony E. Dombrowski, 5130 S. 98th Ct. #5, Omaha, Nebr. 68127

Continuation of Ser. No. 617,948, Nov. 27, 1990, abandoned, which is a continuation of Ser. No. 178,777, Apr. 1, 1988, abandoned, which is a continuation of Ser. No. 38,448, Apr. 14, 1987, abandoned, which is a continuation of Ser. No. 633,523, Jul. 23, 1984, abandoned, which is a continuation-in-part of Ser. No. 579,160, Feb. 10, 1984, abandoned. This application Jan. 5, 1993, Ser. No. 804
Int. Cl.[5] G08G *1/00*
U.S. Cl. 340—901 **3 Claims**

1. A driver alerting device for a school bus, said school bus including forward and rearward ends, a pair of front wheels, at least a pair of rear wheels, a passenger door at a side of the

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school bus adjacent the forward end, and means for opening and closing said passenger door, said driver alerting device comprising: a first transceiver which produces a wave output, comprising a microwave radar device using the Doppler shift principle to detect the presence of an object which is moving relative to said first transceiver and within the range of said first transceiver; means for supporting said first transceiver at the forward end of the bus on a side of the bus opposite to the passenger door side for directing the wave output thereof across the area directly in front of the bus, said transceiver range extending for a distance substantially equal to a width of the bus; means for supplying to said first transceiver return wave signals from any target within the range of said first transceiver; a remote audible alarm positioned within the passenger compartment of the bus; a second transceiver which produces a wave output, comprising a microwave radar device using the Doppler shift principle to detect the presence of an



object which is moving relative to said second transceiver and within the range of said second transceiver; means for supporting said second transceiver beneath said bus closely adjacent and between said rear wheels for directing the wave output thereof beneath the bus forwardly of the rear wheels and to the side thereof in an area beneath and adjacent said passenger door, said transceiver range spanning less than a full width of said school bus and extending to a forward edge of said passenger door; means for supplying to said second transceiver return wave signals from a target within the range of said second transceiver; and means for electrically connecting said remoter audible alarm to said first and second transceivers for activation of said alarm in response to detection by either or both of said transceivers of return wave signals from any target within the range of either or both of said transceivers, the transceivers, in operation, being substantially unaffected by varying weather conditions.

5,250,946

DEVICE FOR ESTIMATING THE BEHAVIOR OF ROAD-USERS

Daniel Stanzcyk, Jarny, France, assignor to Centre d'Etudes Techniques de l'Equipment de l'Est Service Exterieur de l'etat, Metz Cedex, France

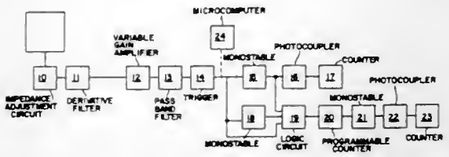
PCT No. PCT/FR90/00470, § 371 Date Feb. 10, 1992, § 102(e) Date Feb. 10, 1992, PCT Pub. No. WO91/00581, PCT Pub. Date Jan. 10, 1991

PCT Filed Jun. 26, 1990, Ser. No. 778,187

Claims priority, application France, Jun. 26, 1989, 89 08662

Int. Cl.[5] G08G *1/01*

U.S. Cl. 340—936 **8 Claims**



1. Device for determining the proportion of traffic of moving bodies exceeding a speed threshold, the device comprising a case, the case comprising sensing means for providing a signal representative of the speed of a moving body and having a converting means to convert the sensed signal into a train of pulses which converting means adjusts the frequency of the pulses according to the speed of the sensed body and further having counting means for counting the number of pulses in a time period; and

the case further comprising, mounted externally thereof, a means to indicate the number of moving bodies exceeding the threshold and a means to indicate the total number of moving bodies sensed, wherein the case contains:

a power source and

a Doppler effect sensor, arranged to convey a sensed signal to an amplifier stage and thence to a counter control logic state, and then via an impedance adjustment circuit and derivative filter means, to a variable gain amplifier and a pass band filter; the signal then being conveyed to a trigger stage having a variable input arranged to supply a signal to a first monostable circuit which conveys a signal to a photocoupler controlling a counter to count the total number of bodies sensed, and a signal to a second monostable circuit to invert and to count the voltage peaks, the second circuit being connected to a logic circuit to convey the signal with inverted peaks to a program counter to count a value representing a predetermined speed threshold, and a signal to a third monostable circuit which controls a photocoupler arranged to activate a programmable counter to count those signals having a frequency equal to or greater than the programmed number in the counter therefor, thereby to count the number of moving bodies exceeding the speed threshold.

5,250,947

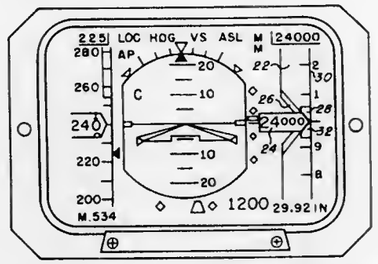
ALTITUDE TAPE FOR AIRCRAFT DISPLAYS

James K. Worden, Glendale; John C. Todd, Phoenix, and Gerald B. Jnnes, Jr., Glendale, all of Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 16, 1992, Ser. No. 851,585

Int. Cl.[5] G01C *23/00*

U.S. Cl. 340—973 **2 Claims**



1. An improved apparatus for providing a display of flight instrument parameters for a piloted aircraft and having a display face for providing the pilot with an indication of altitude, comprising:

a stationary window defining a field of view for providing a digital readout of altitude, generally disposed laterally on said display face and on a central horizontal axis, said window further defining an altitude reference index pointer,

said window adapted for displaying altitude numerals in accordance with a sensed altitude signal,

a vertically elongated moveable altitude scale, said scale including a plurality of altitude graduation marks and corresponding altitude numerals extending in predetermined spaced relationship for representing predetermined increments of altitude relative to said index of said window, a given graduation mark corresponding to an increment of altitude and when aligned with said altitude reference index pointer being correspondingly numerically displayed within said window, said altitude scale being responsive to said altitude signal for moving said scale upwardly or downwardly with respect to said altitude reference index pointer and in a direction opposite to changes in altitude of said aircraft,

said altitude scale further comprising a plurality of tape index pointers, each of said plurality being disposed at a predetermined altitude increment such that a given tape index pointer is aligned with said altitude reference index pointer when said aircraft is at a desired altitude corresponding to a given multiple of said graduation marks and such that deviations from said desired altitude are indicated by a displacement of said given tape index pointer with respect to said altitude reference index pointer, each of said plurality of tape index pointers bearing an indicia for identifying a predetermined increment of altitude, wherein said indicia is in the form of a chevron comprising a single striped element alternating with a plurality of parallel striped elements, the spacing between successive single striped elements comprising a given plurality of said graduation marks, and the spacing between successive parallel striped elements comprising a given plurality of single striped elements, and

further comprising a pilot operated index pointer cooperating with said altitude scale and moveable vertically in predetermined increments independent of said increments of said altitude scale, said pilot operated index pointer being responsive to an altitude command signal for alignment with said altitude scale in accordance with a preselected altitude and cooperating with said altitude reference index pointer such that said pilot operated index pointer and said altitude reference index pointer are aligned when said aircraft has achieved a predetermined altitude as indicated by the position of said pilot operated index pointer on said altitude scale, said pilot operated index pointer having a vertical dimension corresponding to the distance between successive graduation marks on said altitude scale, and operative such that a divergence of said aircraft from an altitude designated by said pilot operated index pointer results in a proportional displacement of said pilot operated index pointer with respect to said altitude reference index pointer,

said altitude reference index pointer, said tape index pointer, and said pilot operated index pointer being comprised of complementary chevron indices, such that operation of said aircraft at a pilot command altitude corresponding to a given indicia of said altitude scale results in alignment and superposition of said given indicia, said pilot operated index pointer, and said altitude reference index pointer.

5,250,948

HIGH LEVEL RESOLUTION ENHANCEMENT FOR DUAL-RANGE A/D CONVERSION

Lawrence J. Berstein, Honeoye Falls, and Kenneth A. Parulski, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 19, 1991, Ser. No. 810,230

Int. Cl.[5] H03M *1/62, 1/06, 1/18*

U.S. Cl. 341—131 **6 Claims**

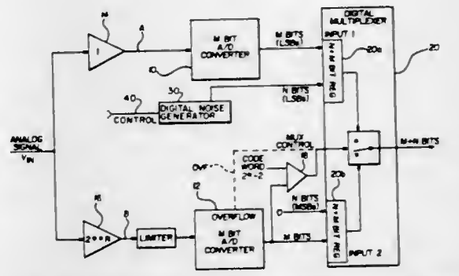
1. A dual range analog-to-digital converter for converting analog input signals into digital output signals, the digital signals having code values corresponding to the analog levels of the input signals, said converter comprising:

a first signal path including a first analog-to-digital converter for converting the analog input signals into first digital signals;

a second signal path including a second analog-to-digital converter for converting the analog input signals into second digital signals;

amplification means for providing signal gain in the respective signal paths, the gain applied to the second path being a nominal multiple of the gain applied to the first path;

multiplexing means responsive to the the signals in the respective signal paths for generating the digital output signals from either the first signal path or the second signal path;



means for appending a predetermined number N of random noise bits as the N least significant bits of the first digital signals, and

means for adding N bits of a predetermined value to the N most significant bits of the digital signal in said second path.

5,250,949

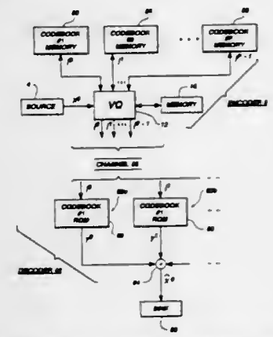
SYSTEM AND METHOD FOR DATA COMPRESSION USING MULTIPLE CODEWORDS AND TRANSMITTED INDICES

Richard L. Frost; Christopher F. Barnes, both of Provo; Douglas M. Chabries, Salem, and Richard W. Christiansen, American Fork, all of Utah, assignors to Brigham Young University, Provo, Utah

Filed Aug. 14, 1989, Ser. No. 392,905

Int. Cl.[5] H03M *1/00*

U.S. Cl. 341—200 **60 Claims**



1. A data compression system for operating upon input data sequences comprising

A. an encoder for receiving each input sequence, said encoder including

two or more quantizer stages, each having a memory for storing an established set of codewords preselected such that the sum of different combinations of codewords, one from each stage, is representative of likely to occur input data sequences, each codeword of each stage having a respective index associated therewith,

means for selecting a codeword from at least two of the stages such that the sum of the selected codewords is a closer match to said each input sequence than any other sum of codewords formed from the selected stages,

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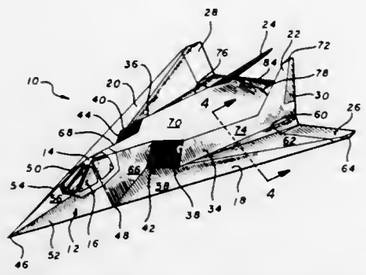
means for retrieving the selected codewords' indices,
means for operating upon the retrieved indices, and
B. a decoder coupled to the operating means, said decoder including
a decoder memory for storing said established sets of codewords with respective indices,
means for retrieving from the decoder memory the codewords whose respective indices are operated upon by the operating means,
means for adding the retrieved codewords to produce a reproduction data sequence representing an approximation of the said each input data sequence, and
c. wherein said established sets of codewords comprise codewords determined by
(a) means for storing a training set of data sequences statistically representative of likely to occur input data sequences,
(b) means for storing current sets of codewords, one set for each stage
(c) means for forming equivalent codewords by adding together different combinations of one codeword from each current set, each equivalent codeword thus being comprised by the sum of a unique combination of constituent codewords,
(d) means for forming subsets of the training set of data sequences, one for each equivalent codeword, including in each subset those training set data sequences which match the said each equivalent codeword more closely than any other equivalent codeword,
(e) means for computing and storing a first distortion measure between the training set data sequences and their closest equivalent codewords,
(f) means for establishing the current sets of codewords as the said established sets of codewords if the distortion measure is less than a predetermined threshold, otherwise continuing to next step,
(g) means for, for each stage, replacing the current set of codewords with a computed set of codewords, each computed set being formed for each current codeword of the corresponding stage including
means for selecting all equivalent codewords of which the said each current codeword is a constituent, said each current codeword thus associating with a corresponding group of equivalent codewords and their associated subsets of training sequences,
means for subtracting from each training sequence of the said associated subsets of each current codeword the difference of the associated subsets' corresponding equivalent codeword and said each current codeword to thereby form a set of residual training sequences,
means for averaging the said set of residual training sequences to form a computed codeword,
means for replacing said each current codeword by said computed codeword,
(h) means for forming new equivalent codewords from the computed codewords, and computing and storing a second distortion measure between the new equivalent codewords and the existing training sequences of the corresponding associated subsets, and operating
the means for forming subsets of the training set of data sequences if the second distortion measure is less than a second predetermined threshold, otherwise operating the means for replacing the current set of codewords with a computed set of codewords.

5,250,950

VEHICLE

Richard Scherrer, La Canada; Denys D. Overholser, Frazier Park, and Kenneth E. Watson, North Hollywood, all of Calif., assignors to Lockheed Corporation, Calabasas, Calif.

Filed Feb. 13, 1979, Ser. No. 11,769
Int. Cl.[5] H01Q *17/00*
U.S. Cl. 342—2 **21 Claims**



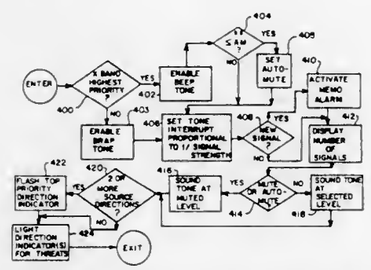
1. A vehicle including flight control means and propulsion means, comprising:
a fuselage and wings; and
a plurality of surfaces defining the exterior of said fuselage and wings, said surfaces consisting of a series of facets.

5,250,951

MOTOR VEHICLE POLICE RADAR DETECTOR FOR DETECTING MULTIPLE RADAR SOURCES

Michael D. Valentine; Stephen R. Scholl, and Clarence R. Groth, all of Cincinnati, Ohio, assignors to Valentine Research, Inc., Cincinnati, Ohio

Division of Ser. No. 891,715, Jun. 1, 1992, which is a division of Ser. No. 687,282, Apr. 18, 1991, Pat. No. 5,146,226. This application Nov. 27, 1992, Ser. No. 982,594
Int. Cl.[5] G01S *7/40*; G08B *29/00*
U.S. Cl. 342—20 **5 Claims**



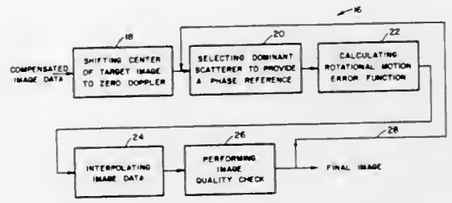
2. A method of operating a motor vehicle police radar signal detector for alerting an operator of a motor vehicle to incoming radar signals, said method comprising the steps of:
detecting incoming radar signals;
identifying detected radar signals to generate identification signals;
storing identification signals representative of identified radar signals;
generating an audible tone representative of identified radar signals, said audible tone being sounded at a defined volume;
switching said radar signal detector to a mute state in response to a mute signal such that said audible tone is reduced in volume;
marking all identified radar signals as muted in response to said mute signal; and
maintaining the muted marking of an identified radar signal for as long as an identification signal is stored for said identified signal.

5,250,952

METHOD OF CORRECTING ROTATIONAL MOTION ERROR IN SAR AND ISAR IMAGERY

Duane Roth, 405 West Wilson St., Apartment B, Ridgecrest, Calif. 93555

Filed Jul. 1, 1991, Ser. No. 727,257
Int. Cl.[5] G01S *13/90*
U.S. Cl. 342—25 **8 Claims**



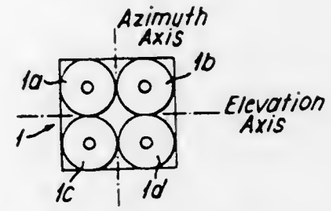
1. A method of correcting rotational motion error in SAR and ISAR imagery, comprising the steps of:
shifting the center of the image of a target to zero doppler and thus at the center of rotation of the target being imaged;
selecting a dominant scatterer in a range cell to provide a phase reference;
calculating the rotational motion error function from the phase reference provided by the selected scatterer;
interpolating raw radar return image data between the original unequal angular samples by using the rotational motion error function to obtain equal angular samples of a reflectivity function for the target; and
performing an image quality check to produce a value which constitutes a relative measure of focus of the corrected image.

5,250,953

TRACKING RADAR SYSTEMS

Michael A. Jones, Edgware; John W. Attwood, Watford; John T. Floyd, Hemel Hempstead, and Alan J. Mitchell, Borehamwood, all of United Kingdom, assignors to The Marconi Company Limited, Chelmsford, England

Filed Nov. 10, 1977, Ser. No. 851,895
Claims priority, application United Kingdom, Nov. 19, 1976, 48345
Int. Cl.[5] G01S *13/00, 5/02*; F41G *7/00*
U.S. Cl. 342—62 **15 Claims**



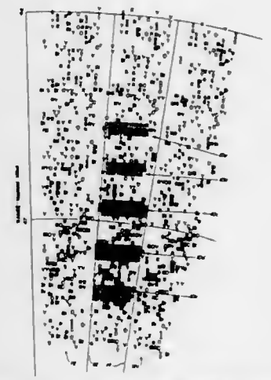
1. A tracking radar system comprising:
A) an aerial arrangement having a plurality of outputs;
B) means for deriving from the aerial outputs a sum signal representative of the sum of the aerial outputs and a difference signal representative of the direction of a target relative to the aerial;
C) a receiver for processing said signals to produce corresponding intermediate frequency sum and difference signals;
D) means for comparing the intermediate frequency sum signal with the output of an oscillator in a first phase-locked loop and using the resulting signal to control the oscillator frequency so as to cause the oscillator to lock on to the frequency of the intermediate frequency sum signal;
E) a phase-sensitizer detector for comparing the intermediate frequency difference signal with the output of the oscillator to produce an output signal representative of the phase difference between the sum and difference signals; and
F) bandwidth alteration means responsive to the sum signal to alter the bandwidth of the first phase-locked loop,
a) the band width alternation means including a quadrature phase-sensitive detector for comparing the $\pi/2$ phase shifted output of the oscillator and the intermediate frequency sum signal, a filter and time delay circuit connected to the output of quadrature phase-sensitive detector, and a threshold detector connected to the output of the filter and time delay circuit and arranged to produce a first output signal for changing gain of the variable gain circuit to decrease the bandwidth of the first phase-locked loop.

5,250,954

COLOR-CODED RADAR PLAN POSITION INDICATOR

Clifford L. Temes, Alexandria, Va., and George J. Linde, Accokeek, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 28, 1991, Ser. No. 722,804
Int. Cl.[5] G01S *7/12*
U.S. Cl. 342—181 **7 Claims**

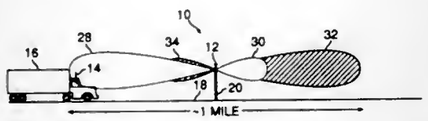


1. A method to enhance target detectability on a radar plan position indicator, the method comprising the steps of:
receiving coherent pulse-burst waveforms from a target so that at least one complete burst is included in each dwell of a scanning surveillance fan beam;
performing a fast fourier transform on each returned coherent burst to form Doppler channels in predetermined range cells;
selecting the largest signal from the Doppler channels in each range cell;
color coding the selected signals of the Doppler channels; and
displaying the color coded signals on the plan position indicator; and
wherein numerical values of target velocity and position are determined including the steps of: checking a continuity of range cells by comparing a selected Doppler channel having a largest amplitude in a range cell with that of a

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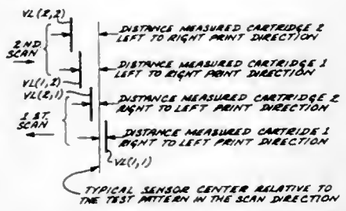
next azimuth to determine if both channels are the same and determining the start and end of a target arc of echoes by noting any adjacent pairs of same Doppler channels.

5,250,955
STATE ENTRY BEACON SYSTEM
Harvey W. Major, Saratoga; James C. Beffa, Sunnyvale; Frank D. Butscher, San Jose, and Bruce A. Beauchamp, Sunnyvale, all of Calif., assignors to Lockheed Information Services Company, Teaneck, N.J.
Filed Jun. 5, 1992, Ser. No. 894,700
Int. Cl.[5] G01S 3/02
U.S. Cl. 342—457 6 Claims



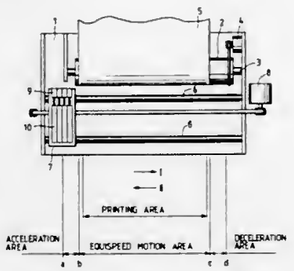
1. A beacon system for automatically marking and identifying a boundary landmark along a path of travel to a data gathering device in a moving vehicle, comprising:
a radio beacon station placed adjacent the boundary landmark for broadcasting as a first beacon signal a first location signal and as a second beacon signal a second location signal, said first and second location signals being transmitted from a single location on a single frequency alternately in opposite directions along a path of travel; and
a radio receiving means, said radio receiving means including a radio receiver for said single frequency and a data analysis means, said radio receiving means being disposed in the moving vehicle for receiving said first and second location signals from the beacon station as the vehicle approaches and passes the boundary landmark, said data analysis means including means for determining from reception of both the first location signal and the second location signal the point of passing of the boundary landmark.

5,250,956
PRINT CARTRIDGE BIDIRECTIONAL ALIGNMENT IN CARRIAGE AXIS
Robert D. Haselby, San Diego, Calif.; Michael A. Nguyen, Singapore, Singapore, and Keith E. Cobbs, San Diego, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Oct. 31, 1991, Ser. No. 785,651
Int. Cl.[5] G01D 15/16; B41J 29/26
U.S. Cl. 346—1.1 14 Claims



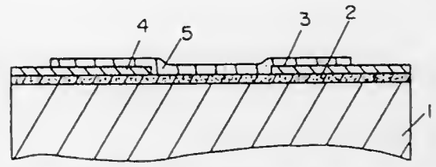
1. In a swath printer having (a) a cartridge that is movable along a horizontal carriage scan axis in first and second carriage scan directions, (b) horizontally separated first and second printhead cartridges supported by the movable carriage for printing onto a print media that is selectively movable along a vertical media scan axis, each printhead cartridge having a plurality of ink jet nozzles arranged in at least one column aligned with the media scan axis, (c) a swath random access memory for storing a swath bit map, (d) control means for selectively shifting the swath data provided to the printhead cartridges to compensate for the horizontal offset of the printhead cartridges, (e) cartridge timing delay means for delaying the timing of the nozzles of the printhead cartridges, and (f) an optical sensor supported by the movable carriage for imaging a vertical line and providing an output indicative of the horizontal position of such line within a horizontal operating range of the optical sensor, a method for aligning the printhead cartridges along the horizontal carriage can axis comprising the steps of:
(A) causing each cartridge to print a plurality of non-overlapping vertical test lines in each scan direction at a predetermined swath position;
(B) determining with the optical sensor the respective horizontal positions of the vertical test lines;
(C) for each cartridge, averaging the horizontal positions of the vertical lines printed by the cartridge for each scan direction, so as to provide for each cartridge for each scan direction an average horizontal test line position that is representative of the actual horizontal position of a vertical test line segment printed by each cartridge for each scan direction at the predetermined swath position;
(D) determining a horizontal reference to which the cartridges will be aligned when printing at the predetermined swath position;
(E) determining the horizontal distances of the average horizontal test line positions from the horizontal reference; and
(F) adjusting the swath data shifts and the timing delays for the first and second printhead cartridges on the basis of the horizontal distances determined in step (E) so that vertical lines printed by both cartridges pursuant to both scan directions at a fixed swath position are more closely vertically aligned.

5,250,957
METHOD OF DETECTING AN INK RESIDUAL QUANTITY IN AN INK JET PRINTER
Takashi Onozato, Morioka, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan
Filed Jul. 10, 1992, Ser. No. 911,437
Claims priority, application Japan, Jul. 29, 1991, 3-188881
Int. Cl.[5] G01D 15/16
U.S. Cl. 346—1.1 6 Claims



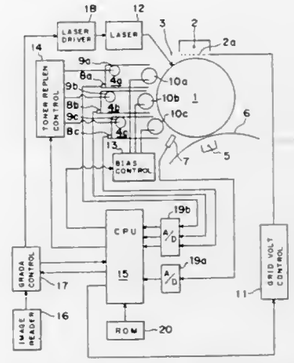
6. A method of detecting an ink residual quantity within an ink tank in an ink jet printer, having a carriage mounted with an ink jet head and said ink tank, for effecting a print by moving said carriage in printing strokes, each of said printing strokes including an equispeed motion portion and an acceleration portion, said ink jet printer further having ink residual quantity detecting means for detecting the quantity of ink remaining in said ink tank by causing an electric current to flow through said ink in said ink tank, said method comprising the step of:
causing said electric current to flow through said ink to make said ink residual quantity detecting means perform the detection, only during said equispeed motion portion of one of said printing strokes.

5,250,958
THERMAL HEAD AND MANUFACTURING METHOD THEREOF
Akihiko Yoshida, Hirakata; Atsushi Nishino, Neyagawa; Nobuyuki Yoshiike, Ikoma; Yoshihiro Watanabe, Osaka, and Yasuhiro Takeuchi, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Continuation of Ser. No. 399,551, Aug. 7, 1989, abandoned. This application Feb. 5, 1992, Ser. No. 830,457
Claims priority, application Japan, Dec. 10, 1987, 62-312744; Jun. 29, 1988, 63-161667; Jul. 22, 1988, 63-184354; Jul. 22, 1988, 63-184356
Int. Cl.[5] B41J 2/325
U.S. Cl. 346—76 PH 4 Claims



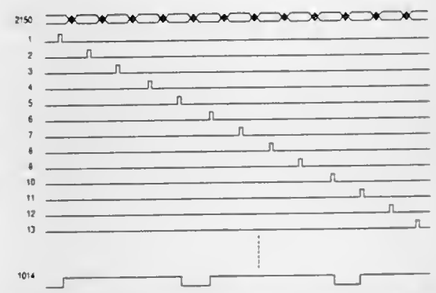
1. A thermal head comprising at least a pair of electrodes, resistor layers in contact against both the electrodes, and a base plate with the electrodes and the resistor layers being supported on a surface thereof, at least a surface thereof having insulation properties, each of the resistor layers being composed of a matrix of glass, Ru and/or Ru oxide of a resistor component element existing in a gap of an atomic bonding of the matrix, wherein the ruthenium and/or oxide of ruthenium contained in each of the resistor layers is 10% or lower by weight and which further comprises rhodium in said resistor component element such that the weight ratio of Rh to Ru is $0<Rh/Rh<5$.

5,250,959
ELECTROPHOTOGRAPHIC IMAGE FORMING APPARATUS AND METHOD
Takanobu Yamada, Toyokawa, and Kazuyuki Fukui, Toyohashi, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed May 10, 1991, Ser. No. 698,103
Claims priority, application Japan, May 15, 1990, 2-125823
Int. Cl.[5] H04N 1/21
U.S. Cl. 346—108 17 Claims



16. An electrophotographic image forming apparatus which forms multi-tone images in accordance with pixel image data corresponding to a density of each pixel of the images to be formed, comprising:
a photosensitive member;
a light source for generating a light beam and for applying said light beam so as to form an electrostatic latent image on said photosensitive member;
developing means for developing the electrostatic latent image on the photosensitive member with toner;
memory means or storing a plurality of gradation data for converting said pixel image data to an analog signal indicating an amount of the light beam of said light source;
toner density detecting means for detecting a toner density of said developing means;
selecting means for selecting one of said plurality of gradation correction data; and
driving means for driving said light source based on said analog signal converted by said radiation correction data selected by said selecting means.

5,250,960
SYSTEM AND METHOD EMPLOYING MULTIPLE PULSES PER PIXEL TO REPRODUCE AN IMAGE
Frank C. Genovese, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 31, 1991, Ser. No. 815,218
Int. Cl.[5] G01D 15/06
U.S. Cl. 346—159 8 Claims



1. A method of operating a system for rendering an image having a plurality of pixel rows, the system including N iongraphic reproduction elements, each iongraphic reproduction element being capable of receiving data and of being enabled, the method comprising the steps, performed for each pixel row, the method comprising the steps of:
a first step of sending data to a first iongraphic reproduction element;
a second step of sending data to a second iongraphic reproduction element, after the first sending step;
an Nth step of sending data to an Nth iongraphic reproduction element, after the (N-1)th sending step; and
enabling image output including substeps, each substeps performed a plurality of times per performance of the first sending step, said substeps comprising of
enabling each iongraphic reproduction element at a common time, and
disabling each iongraphic reproduction element at a common time, after the enabling substeps.

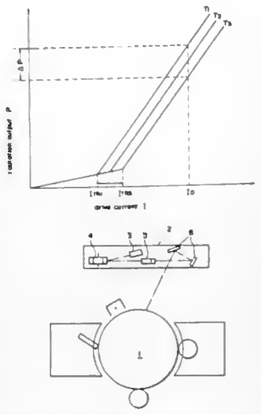
VOL 1155 ISS 1 OCT 5 1993 UMI

5,250,961

IMAGE FORMING APPARATUS WITH IMPROVED LASER TRANSMITTING OPTICAL SYSTEM

Toshihisa Yamanaka, Machida, and Tatsuya Eguchi, Toyohashi, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jun. 9, 1992, Ser. No. 895,923
Claims priority, application Japan, Jun. 14, 1991, 3-143226
Int. Cl.[5] G03G *15/04*
U.S. Cl. 346—108 16 Claims



1. An image forming apparatus comprising:
a semiconductor laser;
a photosensitive member;
an optical system for transmitting a laser beam emitted from said semiconductor laser to said photosensitive member, wherein the following expression is satisfied:

$$X \leqq 2AP_p/\Delta I.\eta$$

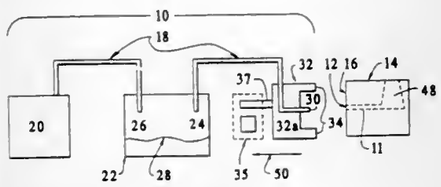
where X is a transmittance of the optical system, A is allowable variation ratio of the ,laser beam intensity on the photosensitive member, P_P is a set value of the laser beam intensity on the photosensitive member, ΔI is a variation range of threshold current of the semiconductor laser corresponding to an allowable temperature range and η is a differential efficiency of the semiconductor laser.

5,250,962

MOVABLE INK JET PRIMING STATION

Almon P. Fisher, Rochester, and Herman A. Hermanson, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 16, 1991, Ser. No. 777,043
Int. Cl.[5] G01D *15/16, 15/18*
U.S. Cl. 346—140 R 24 Claims



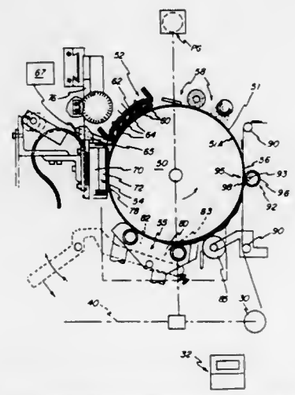
1. An ink jet printer comprising:
a printhead having a linear array of nozzles located on a planar surface of said printhead, said linear array of nozzles extending in a line parallel to said planar surface; and
a movable priming station capable of priming a portion of said linear array of nozzles at one time by applying a vacuum to at least one nozzle located on said portion of said linear array, said movable priming station including:
a support capable of moving parallel with said line of nozzles;
a vacuum tube attached to said support for movement with said support, said vacuum tube including a vacuum port located at one end thereof, said vacuum port being maintained a predetermined distance, greater than zero, from said planar surface of said printhead by said support;
means for moving said support parallel to said line of nozzles so that said vacuum port is located closely adjacent to said at least one nozzle in a selected portion of said extended array for applying a vacuum to said at least one nozzle;
wherein said support of said movable priming station contacts said planar surface only at an area spaced perpendicularly away from said line of nozzles, when said at least one nozzle is having a vacuum applied thereto.

5,250,963

IMAGING DIODE ARRAY AND SYSTEM

Ronald S. Smith, Palm Bay, Fla.; Matthew J. Olenski, Dayton, Ohio; Vincent T. Kubert, Melbourne, Fla., and Mark F. Duchesne, Dayton, Ohio, assignors to AM International, Inc., Chicago, Ill.

Division of Ser. No. 457,433, Dec. 27, 1989, Pat. No. 5,121,146.
This application Aug. 8, 1991, Ser. No. 743,455
Int. Cl.[5] G01D *15/14*
U.S. Cl. 346—160 3 Claims



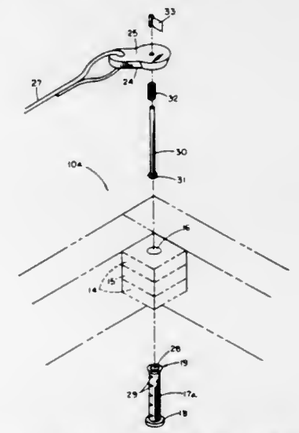
1. A high speed image forming system for creating a digitally defined image on a photoreceptor surface, comprising:
1) an array including a plurality of pixel generators each capable of selectively generating a light beam of dot-like configuration and arranged in adjacent positions such that the light beams therefrom can be focused to illuminate uniformly sized adjacent pixel areas within an image area on the photoreceptor surface to produce an image;
2) means for producing relative motion through a range of velocities between said array and the photoreceptor surface;
3) a latch pulse generator for producing latch pulses synchronized to the relative motion between said array and the photoreceptor;
4) driving circuits connected to each of said pixel generators to cause the generators to illuminate;
5) data register means receiving said latch pulses including separate registers, one register for each of said driving circuits for holding data for said driving circuits to determine pixel areas to be illuminated by said pixel generators, said registers being organized into distinct groups;
6) memory means for storing compensation information based on differences in optical output power of individual pixel generators in the array;
7) a plurality of data input channels connected in parallel, one for each of said groups of data register means,
(a) said data input channels supplying pixel writing data to said memory means;
(b) said memory means supplying compensated pixel driving data, in response to said writing data, to said data register means;
8) clock means for controlling transfer of writing data from said data input channels;
9) means for generating timebase pulses;
10) comparator means controlled by said timebase pulses to transfer a compensated pixel driving data to said driving circuits, wherein said timebase pulses vary the length of on-time of the pixel generators depending upon the compensation information, said comparator means synchronising the timebase pulses to the latch pulses from said latch pulse generator so that there are a same number of timebase pulses centered between successive latch pulses, wherein said latch pulses control a rate of transfer of data from said data register means.

5,250,964

SPECTACLE HINGE HAVING FLANGE PLATES AND RESILIENT CUP MEMBER

Marie E. Gapinski, 518 Maple Ave., Waukesha, Wis. 53186

Filed Jan. 27, 1992, Ser. No. 826,041
Int. Cl.[5] G02C *5/14, 5/22*
U.S. Cl. 351—153 5 Claims



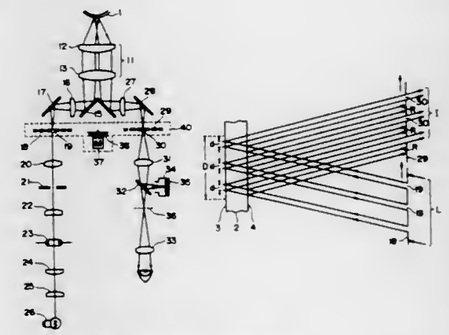
1. A spectacle apparatus including a spectacle frame, the spectacle frame including a plurality of temple legs hingedly mounted to the spectacle frame, each temple leg hingedly mounted to the spectacle frame about a hinge assembly, and
each hinge assembly including at least a first plate fixedly mounted to the spectacle frame, and at least one second plate fixedly mounted to the temple leg, each of the first and second plates arranged in a stacked relationship relative to one another, including a coaxially aligned hinge assembly bore, the hinge assembly bore is oriented parallel relative to the spectacle frame and the temple legs, and
the hinge assembly bore including a tabular hinge pin directed therethrough, the tubular hinge pin includes a first flange plate mounted to a lower distal end of the hinge pin, and a second flange plate mounted to an upper distal end of the hinge pin, and
the second flange plate is spaced above the first and second plates and includes a resilient cup member mounted to the second flange plate, the resilient cup member including a cavity to receive the second flange plate therewithin.

5,250,965

EYEBALL MICROSCOPE HAVING PARALLEL SLITS MOVING ACROSS THE OPTICAL PATH

Kuniomi Abe, and Susumu Fujita, both of Kobe, Japan, assignors to Konan Camera Research Institute Inc., Hyogo, Japan

Filed Oct. 2, 1991, Ser. No. 769,787
Claims priority, application Japan, Oct. 25, 1990, 2-112498[U]
Int. Cl.[5] A61B *3/10*
U.S. Cl. 351—221 4 Claims



1. An eyeball microscope comprising:
a first lens to be positioned close to an object;
second and third lenses located rearwardly of respective halves of said first lens as viewed from said object;
a first light shielding rotary member having substantially parallel slits arranged at equal intervals to traverse an optical axis of said second lens in a conjugate focal plane of said object attributable to said first and second lenses;
a second light shielding rotary member having substantially parallel slits arranged at equal intervals to traverse an optical axis of said third lens in a conjugate focal plane of said object attributable to said first and third lenses;
an illuminating optical system for projecting an illuminating light beam onto said object through the slits of said first light shielding rotary member to form images of said slits on said object;
an observing optical system for observing or photographing an imaging light beam from said object through the slits of said second light shielding rotary member;
a driving device for rotating said first and second light shielding rotary members in synchronism with each other to move said images of the slits normally thereto and lead the imaging light beams from said moving images into said observing optical system through the slits of said second light shielding rotary member;
wherein the intervals of the slits of said light shielding rotary members are selected so that images of certain slits of said first light shielding rotary member are always projected onto said object and all of said images are concurrently observed or photographed through slits of said second light shielding rotary member which are same in number as said certain slits.

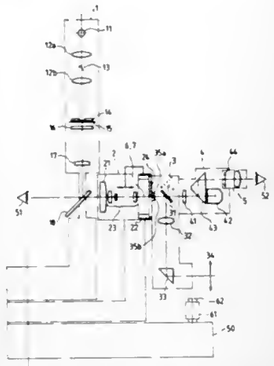
VOL 1155 ISS 1 OCT 5 1993 UMI

5,250,966

OPHTHALMIC PHOTOGRAPHING APPARATUS HAVING A DISPLACEMENT MEASUREMENT UNIT

Haruo Oda, Yokohama; Eiji Satake, Machida, and Ken Tomioka, Zushi, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Mar. 13, 1992, Ser. No. 851,479
Claims priority, application Japan, May 10, 1991, 3-105813
Int. Cl.[5] A61B *3/14*
U.S. Cl. 351—208 **12 Claims**



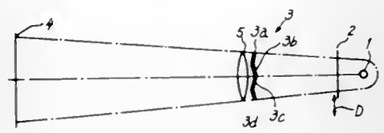
1. An ophthalmic photographing apparatus comprising:
an illumination optical system for illuminating an eye to be tested;
a viewing optical system having a variable magnification optical system for viewing the illuminated eye to be tested;
a photographing device detachably mounted on said viewing optical system;
displacement measurement means for measuring a displacement of a predetermined part due to the change of magnification of said variable magnification optical system; and
signal output means for outputting a signal representing the displacement measured by said displacement measurement means.

5,250,967

LIQUID CRYSTAL PROJECTOR

Yoshiaki Miyasbita, Daito, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Dec. 26, 1991, Ser. No. 813,633
Claims priority, application Japan, Dec. 27, 1990, 2-408215; Jun. 6, 1991, 3-135053
Int. Cl.[5] G03B *21/00*
U.S. Cl. 353—38 **5 Claims**



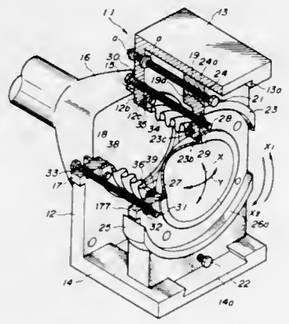
1. A liquid crystal projector comprising:
three liquid crystal panels for three primary colors for projecting original images formed on the liquid crystal panels onto a screen on an enlarged scale each liquid crystal panel being formed of an array of picture elements having non-transmission portions interspaced between liquid crystal cells;
optical means provided between the liquid crystal panels and the screen for light from the panels to pass therethrough, the optical means comprising a plurality of light refraction portions joined to one another for projecting original images from the liquid crystal panels onto the screen, as shifted by an amount not greater than the pitch of picture elements;
wherein each light refracting portion of said plurality of light refracting portions of the optical means comprises a flat glass plate of uniform thickness inclined with respect to the optical axis of the liquid crystal panels;
and wherein the amount of shift of images on the screen by said plurality of light refracting portions of the optical means approximately corresponds to a band width of latticelike shade produced when nontransmission portions between liquid crystal cells forming the liquid crystal panels are projected as enlarged on the screen.

5,250,968

IMAGE PROJECTING UNIT

Kiyoshi Numata, Kanagawa; Toshio Maruyama, Tokyo, and Ryuichi Okumura, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 27, 1992, Ser. No. 888,868
Claims priority, application Japan, May 30, 1991, 3-126430
Int. Cl.[5] H04N *5/74*
U.S. Cl. 353—101 **16 Claims**



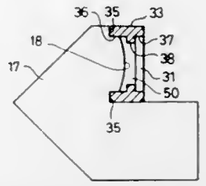
2. An image projecting unit comprising:
a first structure having a display surface on which a visual image is displayed;
a second structure having an opening formed therethrough, said second structure being secured to said first structure in such a manner that the display surface is exposed through said opening;
a third structure positioned in front of said second structure and being movable in a fore-and-aft direction relative to said second structure;
a fourth structure universally pivotally connected to said third structure;
a lens assembly mounted to said fourth structure in such a manner that a rearmost lens thereof faces the display surface through said opening of the second structure;
a bellows assembly disposed between said second and fourth structures to defined a sealed space to which said display surface and said rearmost lens are exposed;
a liquid contained in said sealed space to optically connecting said display surface and said rearmost lens; and
driving means for pivoting said fourth structure in universal directions relative to said third structure.

5,250,969

DUSTPROOF VIEW FINDER

Tetsuya Abe, Hokkaido, and Katsuhiko Nozaki, Tokyo, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 19, 1991, Ser. No. 795,179
Claims priority, application Japan, Nov. 26, 1990, 2-123879[U]
Int. Cl.[5] G03B *13/02*
U.S. Cl. 354—219 **16 Claims**



1. A dustproof view finder in which an image formed by an objective optical system is erected by an image erecting optical system and is observed by an ocular optical system as an erect image, said dustproof view finder comprising a pair of front and rear optical elements spaced from one another at a predetermined distance to define an aerial space therebetween, and an enclosing device which encloses the aerial space, the enclosed aerial space defining therein an image forming position at which an object image is formed by the objective optical system;
wherein the following relationship exists between focal length "fe" of the ocular optical system, optical path length "d" from the image forming position to a front surface of the front optical element, and refractive index "n" of the front optical element:

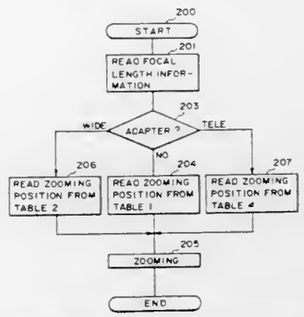
$$|(1000\times d)/\{n\times(fe)^2\}|\geq 2.0.$$

5,250,970

ELECTRONIC FLASHING APPARATUS AND CAMERA SYSTEM

Hiroshi Sakamoto, Kawasaki, and Hideki Matsui, Yokohama, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Oct. 29, 1991, Ser. No. 783,891
Claims priority, application Japan, Nov. 6, 1990, 2-115965[U]
Int. Cl.[5] G03B *15/03*
U.S. Cl. 354—149.1 **4 Claims**



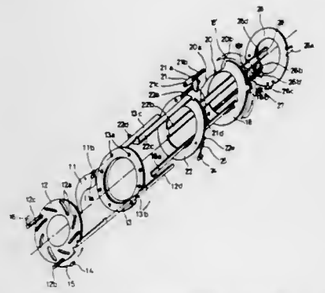
1. An electronic flash apparatus having an automatic zooming mechanism capable of modifying illuminating angles automatically by changing zooming positions in response to focal length information from a photographing lens, comprising:
adapter attachment detecting means for detecting attachment of an adapter to said flash apparatus which further modifies said illuminating angles; and
zoom position determining means for determining any one of a plurality of different zooming positions of said automatic zooming mechanism, with or without the adapter attached, in response to both the detecting result of said adapter attachment detecting means and the focal length information from the photographing lens.

5,250,971

APPARATUS FOR STOPPING DOWN DIAPHRAGM TO AN INTERMEDIATE SETTING, UPON SETTING DIAPHRAGM TO A DESIRED SETTING

Zenichi Okura, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisba, Tokyo, Japan

Filed Nov. 15, 1990, Ser. No. 612,992
Claims priority, application Japan, Nov. 15, 1989, 1-296998; Nov. 15, 1989, 1-296999
Int. Cl.[5] G03B *9/07*
U.S. Cl. 354—274 **19 Claims**



1. An automatic diaphragm apparatus of a lens, comprising:
a diaphragm opening and closing ring and a diaphragm supporting ring for supporting a plurality of diaphragm blades and for opening and closing a diaphragm aperture in accordance with a relative rotation of said diaphragm opening and closing ring and said diaphragm supporting ring;
a diaphragm value setting ring for setting a diaphragm value;
a releasing member which is actuated upon a release of a shutter to rotate said diaphragm opening and closing ring so as to stop-down said diaphragm aperture to a final diaphragm value;
a cam mechanism that operates in association with a rotation of said diaphragm value setting ring to restrict an angular displacement of said diaphragm opening and closing ring into a stopping-down direction;
stopping-down means for rotating said diaphragm supporting ring into a stopping-down direction in association with said rotation of said diaphragm value setting ring in a first angular range from a full open position of said diaphragm value setting ring to a predetermined intermediate diaphragm value thereof, said predetermined intermediate diaphragm value being greater than the diaphragm value corresponding to the full open position, and less than said final diaphragm value to which said diaphragm opening and closing ring is rotated by said releasing member, at the same diaphragm setting, upon release of a shutter;
a diaphragm data transmitting member that is separate from said diaphragm value setting ring for transmitting diaphragm value data to a camera body side of a camera; and,
a selective associating mechanism which maintains said diaphragm data transmitting member to a predetermined position in said first angular range from said full open position of said diaphragm value setting ring to said predetermined intermediate diaphragm value thereof, regardless of the angular position of said diaphragm value setting ring and which rotates said diaphragm data transmitting

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member together with said diaphragm value setting ring in a second angular range from said predetermined intermediate diaphragm value of said diaphragm value setting ring to a maximum diaphragm value.

5,250,972

DROP-IN LOADING TYPE CAMERA

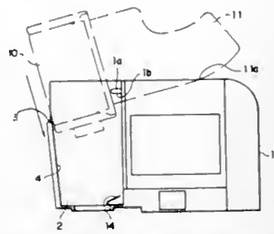
Michio Hirohata, Yokohama; Minoru Tanabe, Kawasaki; Makoto Miyawaki, Yokohama, and Hiroaki Maegawa, Machida, all of Japan, assignors to Canon Kabusbiki Kaisha, Tokyo, Japan

Filed Apr. 25, 1991, Ser. No. 691,429

Claims priority, application Japan, Apr. 26, 1990, 2-111215; Apr. 26, 1990, 2-111216; Apr. 26, 1990, 2-111218; Apr. 26, 1990, 2-111219; Apr. 27, 1990, 2-111971

Int. Cl.[5] G03B *1/00*

U.S. Cl. 354—288 **6 Claims**



1. A drop-in loading type camera, comprising:

an openable cartridge chamber for receiving a film cartridge that is dropped into said cartridge chamber along an axial direction of the film cartridge; and

holding means which holds the film cartridge obliquely with respect to the cartridge chamber until a film leader is dropped in at a position beyond an aperture so that the film leader is dropped in later than the film cartridge proper when dropping the film cartridge into said cartridge chamber;

wherein said holding means includes a projection to be provided in said cartridge chamber.

5,250,973

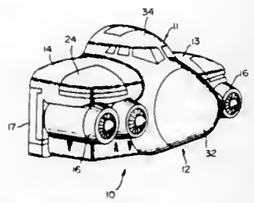
CAMERA COMBINATION

Ron Pijlman, Bothell, Netherlands, assignor to ID Traders Limited, Kowloon, Hong Kong

Filed May 18, 1992, Ser. No. 884,013

Int. Cl.[5] G03B *17/02, 29/00*

U.S. Cl. 354—288 **12 Claims**



1. A camera and simulated aircraft carrying case combination comprising;

a hollow aircraft fuselage body portion including front and rear sides and wing sections extending laterally therefrom,

a cockpit section on said fuselage body having a nose cone area on the front side thereof with camera lens opening means therein,

a camera unit having a housing and including lens means, film winding means and shutter trip means,

means mounting said camera unit in said fuselage body with the camera housing defining the rear side thereof and said lens means in registry with the lens opening means, and

opening means on the surface of said fuselage body providing access to said film winding means and said shutter trip means.

5,250,974

APPARATUS FOR SUPPLYING A FILM FOR USE IN AN AUTOMATIC DEVELOPING MACHINE

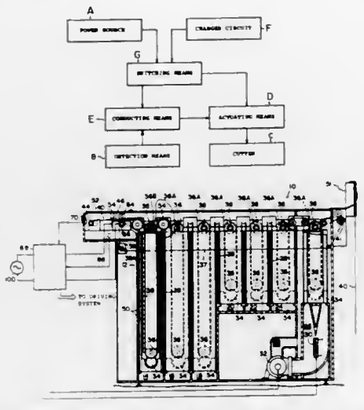
Hideo Iwasaki, and Takeo Ohtomo, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 16, 1991, Ser. No. 730,429

Claims priority, application Japan, Jul. 20, 1990, 2-192077

Int. Cl.[5] G03B *3/08*

U.S. Cl. 354—319 **20 Claims**



1. Apparatus for supplying a film for use in an automatic developing machine wherein film stored within a cartridge is withdrawn and supplied to an automatic developing machine, which, by a power supply from a power source, automatically conveys the film for processing, said apparatus comprising:

a cutter for cutting film;

means, coupled to a power supply, for actuating said cutter to cut a trailing end of the film when the trailing end of the film is detected;

a charger circuit including a capacitor electrically charged by a power supply from said power source; and

means for switching the power supply provided to said actuating means from said power source to said charged capacitor when said power supply of said power source is interrupted.

5,250,975

APPARATUS FOR SIMULTANEOUSLY PROCESSING PLURAL WEBS OF PHOTOSENSITIVE MATERIAL

Lutz Beckmann, Munich, and Viktor Osegowitsch, Taufkirchen, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 3, 1992, Ser. No. 893,122

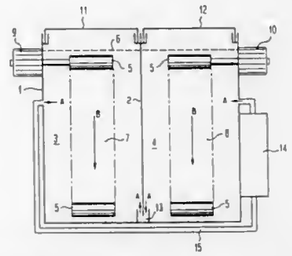
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1991, 4121729

Int. Cl.[5] G03D *3/08*

U.S. Cl. 354—321 **11 Claims**

1. Apparatus for simultaneously processing a plurality of discrete webs of photosensitive material, comprising at least one treating unit; a plurality of transporting devices, one for each web and each defining a discrete path for advancement of the respective web through said at least one treating unit, said at least one treating unit comprising a liquid confining tank and

means for sealing said paths from each other against penetration of light, said tank including a discrete compartment for each of said paths and a discrete light intercepting closure for each of said compartments; and means for operating said transporting devices including a discrete drive for each of said transporting devices so that each of said transporting devices can advance the respective web independently of each other web.



5,250,976

AUTOMATIC FOCUSING CAMERA WITH CONTROL OF FOCUSING OPTICAL SYSTEM POSITION AND DRIVING POWER SOURCE VELOCITY

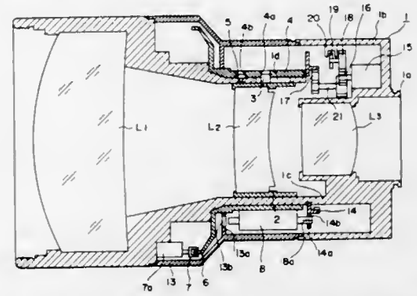
Yoshiharu Shiokama, Chiba; Hiroshi Tanioka, Kashiwa, both of Japan, and Shozo Yamano, Tokyo, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Oct. 24, 1991, Ser. No. 782,297

Claims priority, application Japan, Oct. 30, 1990, 2-290904; Dec. 25, 1990, 2-414275

Int. Cl.[5] G03B *3/10*

U.S. Cl. 354—400 **4 Claims**



1. An automatic focusing camera system provided with a lens barrel in which a focusing optical system is incorporated, and a camera body, comprising:

focus detecting means incorporated in said camera body, said focus detecting means detecting a focusing condition of an objective image to output a focus detecting signal;

calculating means incorporated in said camera body, said calculating means calculating driving information of said focusing optical system based upon said focus detecting signal output by said focus detecting means;

driving means incorporated in said lens barrel, said driving means having a driving power source and a transmission member for transmitting driving power of said driving power source to said focusing optical system to drive said focusing optical system based upon said driving information;

first signal generating means incorporated in said lens barrel, said first signal generating means being provided at a final stage of said transmission member to generate a first driving signal in response to driving of said focusing optical system;

second signal generating means incorporated in said lens barrel, said second signal generating means being provided at an initial stage of said transmission member to generate a second driving signal in response to driving of said focusing optical system; and

driving control means incorporated in said lens barrel, said driving control means controlling position of said focusing optical system based upon said first driving signal and said driving information, and controlling velocity of said driving power source based upon said second driving signal.

5,250,977

ELECTRONIC FLASH UNIT

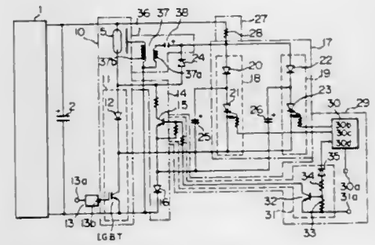
Kazuo Tanaka, Neyagawa, Japan, assignor to West Electric Co., Ltd., Osaka, Japan

Filed Sep. 11, 1992, Ser. No. 944,122

Claims priority, application Japan, Sep. 19, 1991, 3-239456

Int. Cl.[5] G03B *15/05*; H05B *41/14*

U.S. Cl. 354—413 **2 Claims**



1. An electronic flash unit comprising:

a high voltage DC power source having two terminals;

a main capacitor having two terminals connected between the two terminals of said high voltage DC power source and charged by power supply therefrom;

a first series member composed of a flash discharge tube and a seriate combination including a first diode having an anode and a cathode and an insulated gate bipolar transistor (IGBT) having a control terminal connected in series to said cathode, said first series member connected between the two terminals of said main capacitor;

a second series member composed of a first control switch element having a control terminal and a second diode having an anode and a cathode, said anode being connected to said first control switch element, said second series member connected between two ends of said seriate combination;

a parallel member composed of plural series members connected in parallel, each of said series members being composed of a third diode having an anode and a cathode and a second control switch element having a control terminal, said parallel member connected between two ends of said first diode through a fourth diode having an anode connected with the anode of said first diode;

a plurality of voltage boosting capacitors each connected between the anode of said second diode and the cathode of each said third diode;

charging means for charging said plurality of voltage boosting capacitors through said third diodes and said second diode;

switch control means, in response to a supplied light emission starting signal, for operating said first control switch and also selecting one of said plural second control switch elements to operate individually;

driving control circuit connected to said control terminal of said IGBT for controlling a turn-on voltage to be supplied

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to the control terminal of said IGBT so as to control an on/off state of said IGBT; and

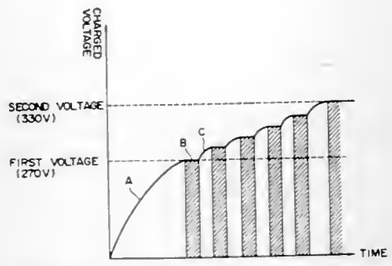
a trigger circuit having a third series member composed of a trigger capacitor and a primary winding of a trigger transformer, said third series member connected between two ends of said parallel member through said IGBT, said trigger circuit operating to excite said flash discharge tube.

5,250,978

FLASHING DEVICE

Kimiaki Ogawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 6, 1992, Ser. No. 832,074
Claims priority, application Japan, Feb. 7, 1991, 3-102198
Int. Cl.[5] G03B *15/05*; H05B *41/32*
U.S. Cl. 354—418 **24 Claims**



1. A flashing device for emitting light, comprising means for emitting light, a condenser that is charged to supply electricity to said light emitting means, and means for charging said condenser, said flashing device further comprising:

means for detecting a voltage of said condenser;

means for controlling said charging means to intermittently charge said condenser in accordance with said voltage detected by said detecting means after said detected voltage reaches a predetermined value; and

means for terminating said intermittent charging of said condenser if said detected voltage reaches a second predetermined value.

5,250,979

TECHNIQUE SUITED FOR USE IN FIXED FOCUS CAMERAS FOR IMPROVING IMAGE QUALITY FOR NON-STANDARD DISPLAY SIZES AND/OR DIFFERENT FOCAL LENGTH PHOTOGRAPHING MODES

Richard B. Wheeler, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 3, 1992, Ser. No. 971,143
Int. Cl.[5] G03B *15/05, 17/24, 7/00, 27/52*
U.S. Cl. 354—423 **53 Claims**

1. A method for use in an image capturing device for capturing an image of a scene on a frame of photographic film wherein the image as captured on the frame will be subsequently enlarged, in a manner defined by a pre-defined display characteristic, into an output image, said scene having a subject with near and distant subject elements, and said device having a shutter speed and a fixed focus lens with respectively a variable shutter speed and a variable lens aperture associated therewith, said method comprising the steps of:

determining an initial value of the lens aperture that provides sufficient depth-of-field such that the near and far subject elements can be photographed with a pre-defined amount of image blur;

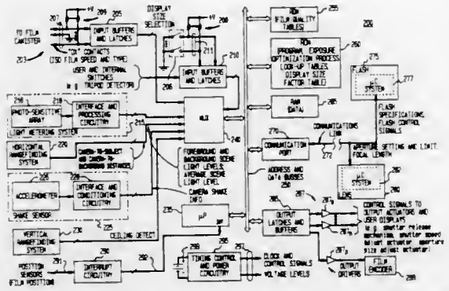
selecting an initial value of the shutter speed such that a combination of the initial values of the shutter speed and the lens aperture will provide a baseline exposure of said scene;

determining, in response to said pre-defined display characteristic, a new lens aperture value such that the image blur in said captured image when enlarged in said manner will possess image blur that will not exceed the pre-defined amount;

selecting a new value of the shutter speed which, in conjunction with said new lens aperture value, will produce said baseline exposure of said scene;

capturing an image of said scene using said new lens aperture and shutter speed values; and

printing, on said film and in a vicinity of said frame, data indicative of the pre-defined display characteristic.

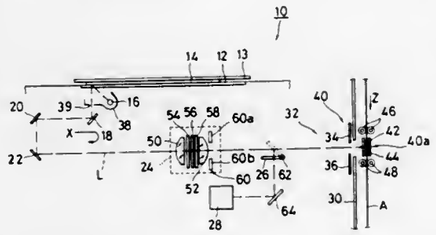


5,250,980

SLIT SCANNING EXPOSURE APPARATUS

Minoru Yakubo, Kawaguchi, and Ryoichi Kato, Yokohama, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 482,098, Feb. 20, 1990. This application Nov. 13, 1991, Ser. No. 791,263
Claims priority, application Japan, Feb. 20, 1989, 1-40005; Mar. 20, 1989, 1-69066
Int. Cl.[5] G03B *27/32, 27/52*
U.S. Cl. 355—32 **13 Claims**



1. A slit scanning exposure apparatus, comprising;

an exposing light source,

a plurality of mirrors by which light emitted from said exposing light source and reflected from an image on a document moving relative to said exposing light source is reflected toward a predetermined exposure position,

an imaging lens unit which acts on an optical path of said reflected light and by which the image on said document is focused at said exposure position on a light-sensitive material, said material being transported in synchronism with the speed at which the image on said document is scanned with said exposing light source,

at least one color filter insertable into the optical path of said reflected light in the scanning direction,

a pair of slit plates provided in front of said exposure position and movable independently of each other in a scanning direction,

means for driving said pair of slit plates independently of each other, and

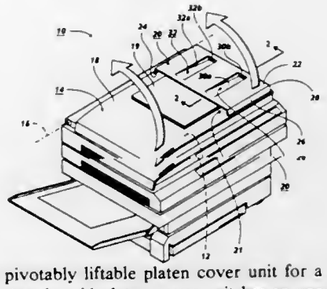
control means for controlling said drive means so that said pair of slit plates will move independently of each other in accordance with the area of said light sensitive material to be exposed.

5,250,981

COPIER OR SCANNER PLATEN COVER DOCUMENTS RETAINER

Harold O. Greene, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 13, 1992, Ser. No. 928,569
Int. Cl.[5] G03B *27/62, 27/64*
U.S. Cl. 355—76 **4 Claims**



1. In a pivotably liftable platen cover unit for a copier or scanner, wherein said platen cover unit has an upper surface and at least one pocket for document sheets, the improvement comprising:

a document retaining pocket providing an integral document retaining surface when the platen cover unit is lifted, and

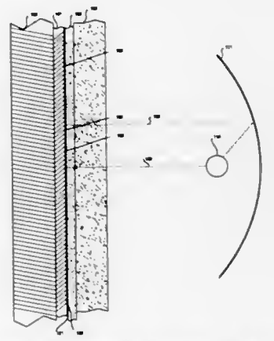
integral spring retaining means for retaining documents in said pocket when said platen cover unit is lifted.

5,250,982

APPARATUS AND METHOD OF IMAGING UV-SENSITIVE MEDIA

David J. Schoon, Mendota Heights, Minn., assignor to Schoonscan, Inc., Mendota Heights, Minn.

Filed Jul. 15, 1992, Ser. No. 914,450
Int. Cl.[5] G03B *27/02*; G03G *21/00*
U.S. Cl. 355—78 **20 Claims**



1. An apparatus for creating an image on a photosensitive medium, comprising:

a. A photosensitive medium, the photosensitive medium having an emulsion side, the photosensitive medium having a surface area;

b. A xerographically printed piece of paper, the paper having a toner side; the piece of paper having a surface area;

c. Clamping means, the clamping means being adapted to hold the emulsion side of the photosensitive medium in an abutting relationship with the toner side of the piece of paper;

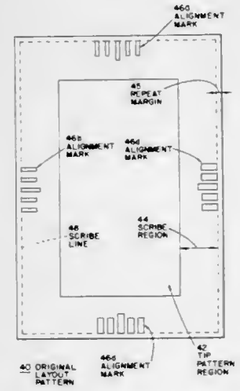
d. A light source, the light source emitting light so as to cause light to pass through the piece of paper and impinge upon the emulsion side of the photosensitive medium, thereby creating an image on the emulsion side corresponding to information printed on the piece of paper.

5,250,983

PHOTO RETICLE FOR FABRICATING A SEMICONDUCTOR DEVICE

Ryuji Yamamura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 10, 1992, Ser. No. 911,475
Claims priority, application Japan, Jul. 12, 1991, 3-198385
Int. Cl.[5] G03B *27/28*; G03F *9/00*
U.S. Cl. 355—125 **3 Claims**



1. A reticle for fabricating a semiconductor device, comprising:

a plurality of tip pattern regions;

a scribe region surrounding said plurality of tip pattern regions;

a repeat region provided at an outer periphery of said scribe region;

a first alignment mark provided on said scribe region used for detection of rotation from a standard angle, said first alignment mark being terminated on a border line between said scribe and repeat regions; and

a second alignment mark provided on both sides of a symmetrical line defined on said scribe region between said plurality of tip pattern regions, said second alignment mark being composed of first and second mark segments separated by said symmetrical line, said first and second mark segments being common in configuration partially to said first alignment mark.

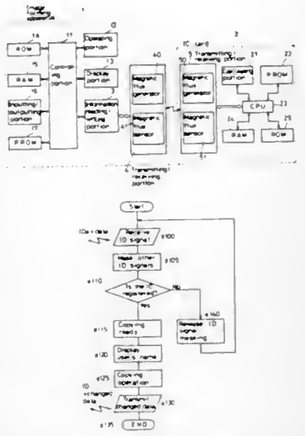
VOL 1155 ISS 1 OCT 5 1993 UMI

5,250,984

IMAGE FORMING SYSTEM INCLUDING IMAGE FORMING APPARATUS WHICH COMMUNICATES WITH AN IC CARD OVER A MAGNETIC FLUX CARRIER

Katsunori Masai, Amagasaki, Japan, assignor to Mita Industrial Co., Ltd., Japan

Filed Apr. 27, 1992, Ser. No. 874,109
Claims priority, application Japan, May 2, 1991, 3-130348
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—202 15 Claims



1. An image forming system comprising:
an IC card including a signal transmitting portion for transmitting an identification code signal which specifies said IC card over a magnetic flux carrier; and
an image forming apparatus including a signal receiving portion for receiving said identification code signal from said IC card without contact with said card, a display portion, and controlling means for causing said image forming apparatus to be brought into an image formation ready condition and causing said display portion to provide a display based upon said identification code signal when said identification code signal is received by said signal receiving portion.

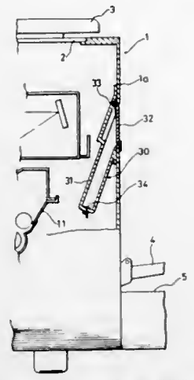
5,250,985

IMAGE FORMING APPARATUS EQUIPPED WITH A BINDING FUNCTION

Yoshifumi Ishii, Daito, and Naruyuki Miyamoto, Sakai, both of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Oct. 22, 1991, Ser. No. 780,331
Claims priority, application Japan, Oct. 29, 1990, 2-292773; Oct. 29, 1990, 2-292774
Int. Cl.[5] G03G *15/00, 21/00*
U.S. Cl. 355—206 16 Claims

1. An image forming apparatus having a binding function, comprising:
means for forming an image onto a sheet;
electric heat binding means for binding sheets by heat, provided adjacent to said image forming means;
means for detecting a malfunction in the operation of said binding means; and
malfunction indicating means for indicating a malfunction in response to a malfunction detection by said malfunction detecting means, said malfunction indicating means including a binding condition indicator, wherein said binding condition indicator includes a heating indicator for



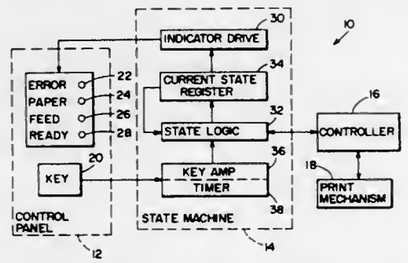
indicating a heating state of said binding means, and a cooling indicator for indicating a cooling state thereof.

5,250,986

PERIPHERAL UNIT CONTROL PANEL WITH SMART KEY

Bruce Axten, and Richard Beaufort, both of Boise, Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 6, 1992, Ser. No. 879,670
Int. Cl.[5] B41J *29/38*
U.S. Cl. 355—206 8 Claims



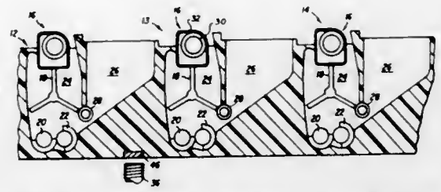
1. In a peripheral unit, the combination comprising:
a control panel including a plurality of indicators, each indicator for displaying to a user a state condition of said peripheral unit, and a user operable key;
current state means responsive to a functional state of said peripheral unit to cause said indicators to manifest a selected one of a set of peripheral unit states, said current state means enabling an indicator to be in an ON condition, an OFF condition or a FLASHING condition, each said condition manifesting a different state of said peripheral unit;
control means for initiating peripheral unit operation;
state logic means responsive to each manifested state of said set and an actuation of said key, to cause said control means to initiate a peripheral unit operation, said operation uniquely related to a state manifested by said indicator; and
timer logic means responsive to an actuation of said user operable key for a period that is at least equal to a predetermined time period to effect a reset action, said reset action occurring in lieu of a peripheral unit operation that would be initiated by an actuation of said user operable key for a period less than said predetermined time period.

5,250,987

TONER MONITOR TO CONTROL DEVELOPMENT CONCENTRATION AND LOCATE DEVELOPER STATIONS WITH RESPECT TO A STATIONARY PHOTO-CONDUCTOR IN AN ELECTROPHOTOGRAPHIC APPARATUS

Steven M. Gern, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 23, 1992, Ser. No. 917,655
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—208 13 Claims



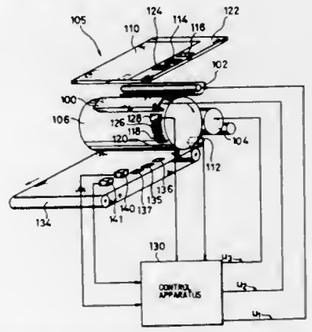
1. An electrostatographic apparatus in which successive latent images recorded on a photoconductive member are developed with different color toner at a development position, said apparatus comprising:
at least four developer units adapted to move in unison with one another, each developer unit develops the latent image recorded on the photoconductive member with a different color toner;
drive means for moving the development units laterally in an incremental fashion;
monitor means for producing a signal representative of the concentration of toner particles in the developer unit when positioned in the development positions during a set-up cycle that increases to a peak during movement of a developer unit into the development position; and
positioning means responsive to said signal to identify the peak in said signal so as to accurately position the developer unit laterally within the development position.

5,250,988

ELECTROPHOTOGRAPHIC APPARATUS HAVING IMAGE CONTROL MEANS

Sadahiro Matsuura, Takatsuki; Osamu Ito, Kadoma, and Yasuyuki Shintani, Kobe, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 2, 1992, Ser. No. 956,953
Claims priority, application Japan, Oct. 4, 1991, 3-257406
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—208 10 Claims



1. An electrophotographic apparatus comprising:
a first reference mark of a high density, a second reference mark of a low density and a third reference mark having a plurality of alternatingly arranged high density parts and low density parts, said reference marks being disposed adjacent to a manuscript to be copied,
charging means for charging photoconductive substance of the electrophotographic apparatus with a predetermined voltage of static electricity,
light emitting means for forming latent image of the static electricity of said first reference mark, second reference mark and third reference mark on said photoconductive substance by applying light emitted from said light emitting means activated by an input voltage,
developer means for generating visible image of said latent image on said photoconductive substance by supplying toner which is biased by a predetermined developer bias voltage,
density sensor means for detecting density of said visible image of said first and second reference marks formed on said photoconductive substance,
line width sensor means for detecting a line width of one of said high density parts and said low density parts of said third reference mark, and
control means for controlling said voltage of static electricity for charging said photoconductive substance, said input voltage which is applied to said light emitting means and said developer bias voltage on the basis of outputs of said density sensor and said line width sensor, said control means comprising:
a density control unit including:
input variation vector generating means for generating a plurality of input variation vectors for varying two selected from said voltage of static electricity, said input voltage and said developer bias voltage,
qualitative model calculation means for outputting predictive sign data by applying calculation to said input variation vector on the basis of a predetermined qualitative model,
error sign detection means for detecting the sign of a difference between an aimed density value and the detected value of said line width sensor means,
an input variation vector selection circuit for selecting an input variation vector from said input variation vector generating means on the basis of both the output of said error sign detection means and predictive sign data, and
input vector renewal means for adding voltages of said selected input variation vectors to said two selected from said voltage of static electricity, said input voltage and said developer bias voltage,
a line width control unit including:
input variation vector generating means for generating a plurality of input variation vectors for varying remaining one of said voltage of static electricity, said input voltage and said developer bias voltage,
qualitative model calculation means for outputting predictive sign data by applying calculation to said input variation vector on the basis of a predetermined qualitative model,
error sign detection means for detecting the sign of a difference between an aimed line width value and the detected value of said line width sensor means,
an input variation vector selection circuit for selecting an input variation vector from said input variation vector generating means on the basis of both the output of said error sign detection means and predictive sign data,
input vector renewal means for adding a voltage of said selected input variation vector to said remaining one of said voltage of static electricity, said input voltage and said developer bias voltage, and
switching means for alternately activating said density control unit and said line width control unit.

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5,250,989

IMAGE FORMING APPARATUS HAVING DETACHABLE PROCESS CARTRIDGE WITH PROTECTIVE TRANSFER ZONE COVER

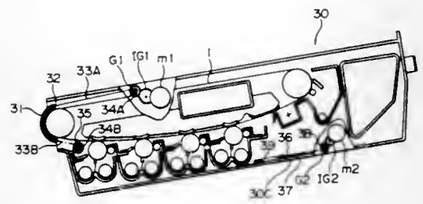
Shizuo Morita, Tachikawa; Masakazu Fukuchi, Hachioji; Satoshi Haneda, Hachioji; Hisao Satoh, Hachioji, and Tadayoshi Ikeda, Hachioji, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 788,798, Nov. 5, 1991, abandoned. This application Dec. 2, 1992, Ser. No. 985,242

Claims priority, application Japan, Nov. 10, 1990, 2-305537; Mar. 28, 1991, 3-064661; Apr. 22, 1991, 3-090191

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—210 **6 Claims**



1. An image forming apparatus comprising:
(a) an image carrying member on which a latent image and corresponding toner image can be formed during an image forming operation;
(b) means for cleaning said toner image from said image carrying member;
(c) a process cartridge including said image carrying member and said cleaning means, said process cartridge being detachably mountable to said apparatus;
(d) a protective cover movably disposed to face said image carrying member in an image transfer zone thereof; and
(e) means for moving said protective cover to temporarily expose said image carrying member for a predetermined period of time during the image forming operation, and to automatically cover said image carrying member when said process cartridge is being attached to and detached from said apparatus and at times other than during said predetermined period of time when said process cartridges is detachably mounted to said apparatus.

5,250,990

IMAGE-BEARING MEMBER FOR ELECTROPHOTOGRAPHY AND BLADE CLEANING METHOD

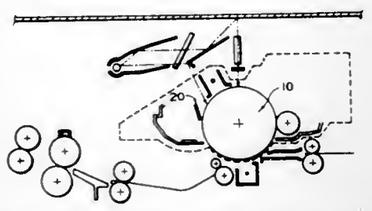
Naoto Fujimura, Yokohama; Kiyoshi Sakai, Chofu; Teigo Sakakibara, Yokohama, and Junichi Kishi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 368,887, Jun. 20, 1989, abandoned, which is a continuation of Ser. No. 912,123, Sep. 29, 1986, abandoned. This application Mar. 28, 1990, Ser. No. 500,216

Claims priority, application Japan, Sep. 30, 1985, 60-214700

Int. Cl.[5] G03G *15/00, 21/00*

U.S. Cl. 355—211 **15 Claims**



1. A cylindrical image-bearing member for electrophotography to be used in an electrophotographic apparatus having a blade cleaning system, wherein said image-bearing member has a ratio of the diameter to the length of 1:5 or more, and the surface of said image-bearing member having a frictional coefficient against urethane rubber, based on polyethylene terephthalate film as the standard, of 0.9 or less, said image-bearing member comprising an organic photoconductive material and having a diameter of 45 mm or less and wherein said image-bearing member has an uppermost layer comprising a thermoplastic binder resin matrix.

5,250,991

IMAGE FORMING APPARATUS INCLUDING CLEANING MEANS FOR CLEANING CHARGING MEANS

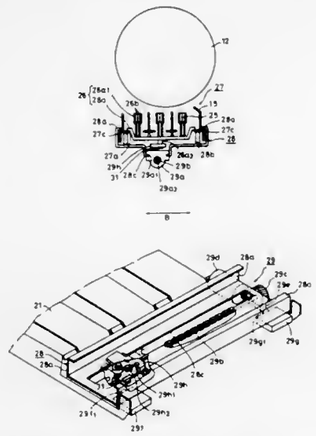
Masamichi Ikeda, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 21, 1992, Ser. No. 886,155

Claims priority, application Japan, May 24, 1991, 3-148071

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—215 **14 Claims**



1. An image forming apparatus, comprising:
a charging unit detachably mountable to said apparatus, said charging unit comprising charging means for charging a member to be charged, and cleaning means, movable along said charging means within a cleaning range, for cleaning said charging means; and
driving means movable along said charging means for transmitting to said cleaning means a driving force for moving said cleaning means along said charging means, said driving means being separated from said cleaning means when said charging unit is detached from said apparatus,
wherein the driving force of said driving means is transmitted to said cleaning means after re-engagement of said driving means with said cleaning means by movement of said driving means along said charging means when said charging unit is mounted to said apparatus, independent of a stopping position of said cleaning means within the cleaning range.

5,250,992

IMAGE FORMING APPARATUS HAVING SHARP EDGED ELECTRODE

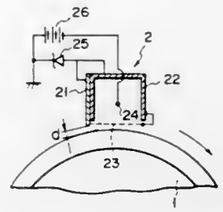
Kenichi Tsuneeda, Yokohama, and Yoshiyuki Fukuda, Fujisawa, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 29, 1991, Ser. No. 800,019

Claims priority, application Japan, Nov. 30, 1990, 2-340527

Int. Cl.[5] G03G *15/02*

U.S. Cl. 355—221 **15 Claims**



1. An image forming apparatus comprising:
discharging means for discharging a surface of an image bearing member;
means for charging the surface of said image bearing member to have a first potential; and
an electrode member having a sharp edge, arranged opposite to said image bearing member between said discharging means and said charging means, and have a second potential, for forming an unbalanced electric field between said image bearing member and said electrode, wherein said electrode is arranged to have an interval of 1 to 3 mm with said image bearing member.

5,250,993

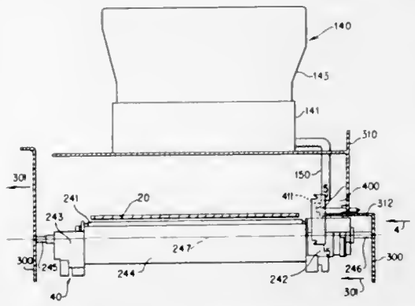
CONNECTION BETWEEN MOVABLE DEVELOPER UNIT AND STATIONARY TONER RESERVOIR

Joseph A. Seyfried; L. James Rolph, both of Webster, and Kirk A. Blakesley, Newark, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 5, 1991, Ser. No. 755,419

Int. Cl.[5] G03G *15/06*

U.S. Cl. 355—245 **8 Claims**



1. An apparatus for supplying toner material to a developer unit of an electrophotographic system, the developer unit being mounted within a drawer and being pivotable within the drawer about a longitudinal pivot axis of the developer unit between an active position and a non-active position, said apparatus comprising:
a. a pivot stack having an upper end and a lower end and being connected to the developer unit at said lower end for pivoting within the developer unit about the developer unit pivot axis, said pivot stack having a first toner passage therethrough;
b. means for retaining said upper end of said pivot stack in a position fixed with respect to the pivot axis; and
c. means for sealing said lower end of said pivot stack to said developer unit to prevent leakage of toner therebetween.

5,250,994

IMAGE FORMING APPARATUS HAVING TRANSFER MEMBER SUPPORTING MEMBER

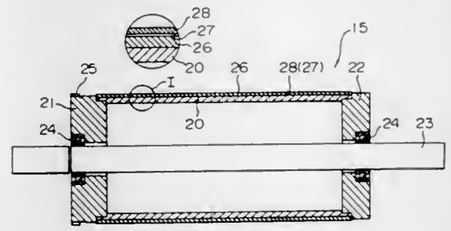
Akira Ito, Tokyo; Mitsugu Inomata, Kawasaki; Yasuo Ito, Yokosuka; Hisayoshi Kojima, Yokohama; Tatsuya Kobayashi, and Toshiaki Miyashiro, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 23, 1992, Ser. No. 965,708

Claims priority, application Japan, Oct. 30, 1991, 3-311795; Oct. 30, 1991, 3-311797

Int. Cl.[5] G03G *15/14*

U.S. Cl. 355—271 **13 Claims**



1. An image forming apparatus comprising:
an image carrier;
image forming means for forming a toner image on said image carrier; and
a transfer member at a transfer position at which the toner image on said image carrier is transferred to the transfer member, said transfer member supporting member having a dielectric layer defining its outer surface and an elastic layer provided inside the dielectric layer, wherein said elastic layer has a compression range between about 0 to 2 mm at the transfer position, the total pressure of said compression is about 1 kg/mm in said compression range.

5,250,995

ELECTROPHOTOGRAPHIC DEVELOPING APPARATUS HAVING IMAGE QUALITY IMPROVING DEVICES

Carlo Fare' , Limito, Italy, assignor to Bull HN Information Systems Italia, S.p.A., Phoenix, Ariz.

Filed Jul. 17, 1991, Ser. No. 731,690

Claims priority, application European Pat. Off., Jul. 20, 1990, 90830342.3

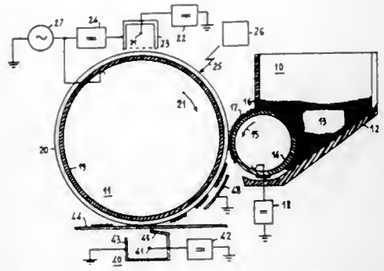
Int. Cl.[5] G03G *15/14*

U.S. Cl. 355—273 **5 Claims**

1. Electrophotographic developing apparatus comprising a carrier of latent image formed on a photoconductive layer superposed to a conductive layer, a carrier of developing material juxtaposed to said latent image carrier at a developing zone for transferring said developing material on said photoconductive layer in a configuration corresponding to said latent image, a transfer station for transferring said developing material from said photoconductive layer to a printing support, juxtaposed to said latent image carrier at said transfer station, said electrophotographic developing apparatus characterized in that it further comprises image quality improving means for developing a periodically variable electrical field, perpendicular to said photoconductive layer, generated around said latent image carrier at said developing zone, said transfer station and therebetween, said image quality improving means including:

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a first voltage generator for applying to said developing material carrier a predetermined potential as to ground; and



a second voltage generator connected between ground and said conductive layer of said latent image carrier for applying to said conductive layer an alternating potential having a predetermined frequency and amplitude as to ground.

5,250,996

METHOD FOR FIXING FULL COLOR TONER IMAGES

Yutaka Sugizaki; Hiroshi Takayama; Hideyuki Akagi; Takashi Imai; Susumu Saito; Yoshio Shoji; Yasuhiro Uehara; Masanori Ichimura; Tomohiro Ohkawa; Manabu Serizawa; Yasuo Yamamoto; Michio Take, and Satoshi Inoue, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

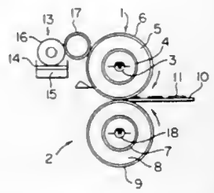
Continuation-in-part of Ser. No. 683,806, Apr. 11, 1991, Pat. No. 5,157,445. This application May 13, 1992, Ser. No. 882,136

Claims priority, application Japan, Apr. 12, 1990, 2-94976; May 14, 1991, 3-137045

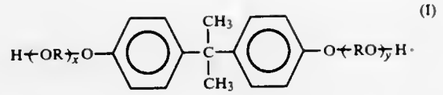
The portion of the term of this patent subsequent to Oct. 20, 2009, has been disclaimed.

Int. Cl.[5] G03G *15/20*

U.S. Cl. 355—284 **2 Claims**

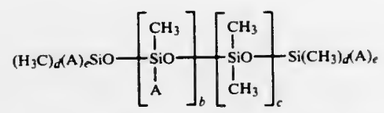


1. A method for fixing a full color toner image by inserting a transfer medium to which a toner image is transferred, between a pair of rolls of a fixing apparatus, and pressing the medium therebetween, wherein said toner image is formed of a full color toner prepared by dispersing a colorant into a polyester resin containing a diol component represented by general formula (I) as a constituent and having a softening point of 100° to 120° C., as measured by a ring and ball method, a glass transition temperature of 55° C. or more, a Gardner color scale of 2 or less and a haze value of 15 or less, and the fixing operation is conducted while supplying a silicone composition containing at least a functional group-containing organopolysiloxane having a viscosity of 10 to 100,000 cs at 25° C. represented by general formula (II) to a roll in contact with said toner image:



(I)

wherein R represents an ethylene group or a propylene group, each of x and y is an integer of 1 or more, and x+y is 2 to 6,



(II)

wherein A represents $-R^1NH_2$, $-R^1NHR^2NH_2$, $-R^1-O-Y_f-H$ or -H (wherein each of R^1 and R^2 represents an alkylene group having 1 to 8 carbon atoms and Y represents an alkyleneoxy group having 2 to 4 carbon atoms), b is 0 to 10, c is 10 to 1,000, d is 2 or 3, e is 0 or 1, f is 0 to 10, d+e is 3, and b and c are not 0 at the same time.

5,250,997

FINE PARTICLE RECOVERY DEVICE FOR RECOVERING PARTICLES, SUCH AS TONER, FROM A PLURALITY OF LOCATIONS

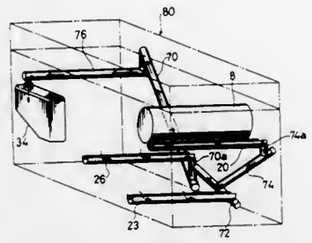
Hidetoshi Kaneko, Nara; Takashi Kubo, Yamatokoriyama; Yasutoshi Kawai, Yamatokoriyama, and Koichi Moriyama, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 17, 1992, Ser. No. 869,969

Claims priority, application Japan, Apr. 18, 1991, 3-86509; Mar. 6, 1992, 4-49660

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—298 **17 Claims**



1. A fine particle recovery device for recovering fine particles accumulating at a plurality of locations in an image forming apparatus, comprising:

transport path means for passing the fine particles accumulating at the respective locations, the transport path means extending horizontally by all the locations containing the fine particles and the transport path means sequentially receiving the fine particles from all of the respective locations, the fine particles being cumulatively added to the transport path means from the respective locations, the transport path means moving the fine particles in a plurality of directions;

recovery means for storing the fine particles in one lot, the recovery means being disposed at an exit of the transport path means; and

conveying means for conveying the fine particles toward the recovery means, the conveying means being installed in the transport path means and conveying the fine particles upwardly before depositing the fine particles in the recovery means.

5,250,998

FIXING APPARATUS HAVING TWO NIP REGIONS

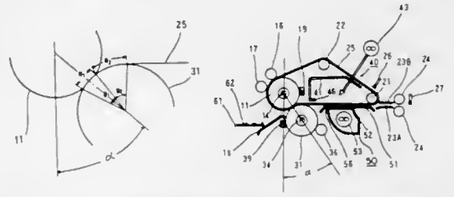
Masato Ueda, Hino; Tadashi Miwa; Satoshi Haneda, both of Hachioji; Yasuhiko Tanaka, Kodaira; Kiyoaki Kawamoto, Kunitachi; Tetsuko Omoto, Kokubunji; Toshinori Yamazaki; Masakazu Fukuchi, both of Hachioji, and Shizuo Morita, Tachikawa, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Feb. 25, 1992, Ser. No. 840,539

Claims priority, application Japan, Feb. 28, 1991, 3-34471; May 20, 1991, 3-114745; May 20, 1991, 3-114746; May 20, 1991, 3-114747

Int. Cl.[5] G03G *15/20*

U.S. Cl. 355—285 **8 Claims**



1. An apparatus for fixing a toner image, comprising:

a heating roller including a heater;

a conveyance roller spaced a predetermined distance from said heating roller;

an endless belt looped up around said heating roller and said conveyance roller;

a pressure roller including a heater, for pressing a recording material having the toner image onto said heating roller at a pressing portion with said endless belt intervening between said pressure roller and said heating roller, wherein at least one of said heating roller and said pressure roller is made of rubber so that a first nip region N1 is formed on said pressing portion in which said pressure roller presses said recording material onto said heating roller with said belt over said first nip region; and

said pressure roller is relatively disposed in relation to said belt to form a second nip region N2 continuing with said first nip region N1, wherein said pressure roller comes over said second nip region N2 in contact with said belt without pressing said heating roller, and wherein the first nip region N1 and the second nip region N2 satisfy a following relation:

$$1 \leqq (N2/N1) \leqq 3.$$

5,250,999

IMAGE FORMING APPARATUS HAVING TRANSFER VOLTAGE AND PROCESS SPEED CONTROL

Kiyoshi Kimura; Hiroyuki Honda, and Toshifumi Isobe, all of Tokyo, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jan. 14, 1991, Ser. No. 640,696

Claims priority, application Japan, Jan. 17, 1990, 2-7699

Int. Cl.[5] G03G *15/01, 21/00*

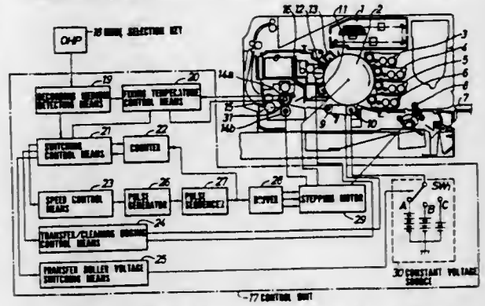
U.S. Cl. 355—327 **8 Claims**

1. An apparatus for forming a color image wherein toner images of a plurality of colors are formed one on another on an image carrier, transferred onto a recording medium, said apparatus comprising

a speed switch for switching a process speed while said image carrier is rotating after said toner images of a plurality of colors are formed on said image carrier,

a process control for controlling at least transfer conditions of said toner images onto said recording medium in response to switching of said process speed,

a selector for selecting OHP mode, said speed switch including a timer for measuring time elapsed since OHP mode as selected by said selector, said control including a voltage



switch for reducing a voltage applied to a transfer device when said timer measures a predetermined elapsed time.

5,251,000

APPARATUS FOR MEASURING A DISTANCE BETWEEN TWO RUNNING VEHICLES USING LIGHT WAVE

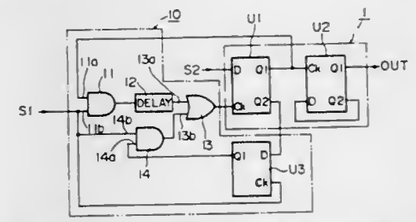
Yukio Ohmamyuda, Sagamihara; Shigeru Kimura, Yokohama; Toru Tanabe, Machida; Takao Seto, Yokohama; Kazuhisa Iwasaki, Yokohama; Hideki Kitamura, Yokohama, and Yasushi Senoo, Yokohama, all of Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Dec. 10, 1992, Ser. No. 988,782

Claims priority, application Japan, Dec. 16, 1991, 3-351816

Int. Cl.[5] G01C *3/08*

U.S. Cl. 356—5 **3 Claims**



1. An apparatus for measuring a distance between a first vehicle and a second vehicle running ahead of said first vehicle using a light wave, comprising:

means for irradiating a measurement light beam from said first vehicle toward said second vehicle;

means for receiving the reflected measurement light beam from said second vehicle and for converting the received reflected measurement light beam into a step-type measurement signal;

digital mix-down circuit means, including a two-stage flip-flop circuit, for determining a phase difference between a step-type reference signal and said step-type measurement signal;

clock delay circuit means coupled to said digital mix-down circuit means for delaying a rising edge of said step-type measurement signal while said step-type reference signal is going high at an output terminal of said flip-flop circuit on an input side of said digital mix-down circuit means; and

data delay circuit means coupled to said digital mix-down circuit means for delaying a falling edge of said step type reference signal which is input into a data terminal of said flip-flop circuit of said digital mix-down circuit means;

said digital mix-down circuit means providing an output corresponding to the distance between said first and second vehicles.

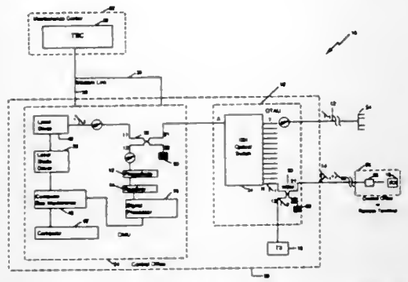
VOL 1155 ISS 1 OCT 5 1993 UMI

5,251,001

REFLECTED OPTICAL POWER FIBER TEST SYSTEM

Rajesh P. Dave, Greyslake, and Ernst B. Riemann, Libertyville, both of Ill., assignors to Teradyne, Inc., Boston, Mass.

Filed Nov. 18, 1991, Ser. No. 793,595
Int. Cl.[5] G01N *21/88*
U.S. Cl. 356—73.1 24 Claims



1. A system for testing optical fibers used in communications comprising

an optical switch connected to a plurality of fibers under test,

a light source connectable through said optical switch to provide light to one end of one of said plurality of fibers under test at one time,

an optical power detector connectable through said optical switch to receive light from said one end of said one of said plurality of fibers under test,

reflectors at the other ends of said fibers under test,

monitoring means operatively connected to said light source and detector to make a baseline measurement of optical power reflected by said reflectors and subsequent measurements of optical power reflected by said reflectors and to compare said subsequent measurements with said baseline measurements to determine if there has been a change in optical power reflected by said reflectors, and

means to control said optical switch and monitoring means to sequentially connect said fibers and sequentially make said baseline measurements and sequentially make said subsequent measurements,

each said baseline measurement and each said subsequent measurement involving no more than a single pulse of light from said light source and involving a power measurement made during a time period window that includes a time corresponding to the time it takes for light to travel to the reflector connected to said one fiber and back, said single pulse of light being substantially shorter in duration than the time to travel to said reflector and back.

5,251,002

MODE TRANSITION MATRIX MEASURING SYSTEM

Thomas J. Gryk, Norwich, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 25, 1992, Ser. No. 841,105
Int. Cl.[5] G01N *21/59, 21/84*
U.S. Cl. 356—73.1 7 Claims

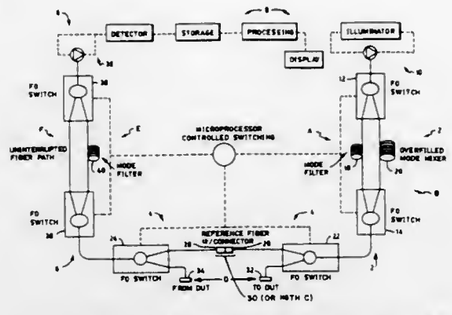
1. A mode transition matrix measurement system for nondestructively calculating mode-dependent losses and coupling of a multi-mode, graded-index, connectorized, passive fiber optic component, said mode transition matrix measuring system comprising:

mode selective launcher means having a plurality of optical paths with varying launch conditions;

input-output optic means having at least one reference optical path and at least one optical path for said passive fiber optic component under test;

mode selective detection means having a plurality of optical paths with a variety of mode filters; and

means for data storage and matrix calculation, wherein the



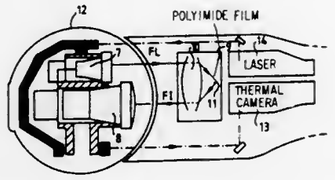
mode transition matrix and the modal power vector are calculated using measurements of the optical power propagated through optical courses comprising said optical paths.

5,251,003

DEVICE FOR MONITORING OF ALIGNMENT OF TWO OPTICAL PATHS AND LASER DESIGNATION SYSTEM EQUIPPED WITH SUCH A MONITORING DEVICE

Jean-Francois Vigouroux, Paris; Jean-Marc Rouchon, Orsay; Jean-Louis Ricci, Paris, and Marc Wally, Montigny le Bretonneux, all of France, assignors to Thomson-CSF, Puteaux, France

PCT No. PCT/FR91/00845, § 371 Date Jul. 13, 1992, § 102(e) Date Jul. 13, 1992, PCT Pub. No. WO92/08944, PCT Pub. Date May 29, 1992
PCT Filed Oct. 25, 1991, Ser. No. 863,310
Claims priority, application France, Nov. 16, 1990, 90 14285
Int. Cl.[5] G01B *11/26;* G01C *1/00;* G01J *1/00*
U.S. Cl. 356—152 11 Claims



1. A system for monitoring an alignment of two optical paths including a laser beam aiming path and an infrared imaging path, comprising:

means for converting the laser beam into an infrared beam parallel to the laser beam;

means for aligning the infrared imaging path on the converted infrared beam;

an optical housing containing the means for converting and including:

a cassette containing a polyimide film in a strip associated with an optical assembly for focusing the laser beam and the collimation of the converted infrared beam.

5,251,004

INTEGRATING SPHERE POWER METER

Daniel R. Doiron, Santa Ynez; Paul M. Paspa, Santa Barbara, and John B. Dunn, Buellton, all of Calif., assignors to PDT Systems, Inc., Goleta, Calif.

Filed Mar. 13, 1992, Ser. No. 851,472
Int. Cl.[5] G01J *1/42*
U.S. Cl. 356—236 2 Claims



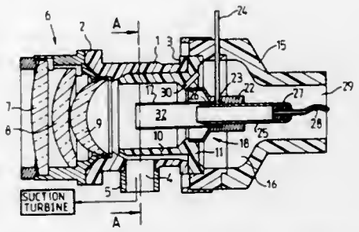
1. In an integrating sphere power meter for measuring the light energy emitted from a source of light energy, said integrating sphere comprising a substantially spherical cavity having a source aperture in the surface thereof, said source aperture comprising an elongate tubular member projecting radially inward toward the center of said cavity, said source aperture dimensioned to receive said source of light energy, and a detector aperture on the surface of the cavity, the improvement comprising a sterilizable, fluid-filled source aperture insert, said source aperture insert further comprising a substantially tubular housing for said light source, said sterilizable source aperture insert having inner and outer walls, the outer surface of said outer wall being dimensioned to fit snugly within said source aperture and the interior of said sterilizable source aperture insert dimensioned to accommodate said light source.

5,251,005

BURNER USABLE IN AN APPARATUS FOR ANALYZING A GAS COMPOSITION BY FLAME SPECTROPHOTOMETRY

Pierre Suzanne, Oncy sur Ecole; Patrick Bleuse, Le Quesnoy; Gilles Guene, Elancourt, and Pierre Clausin, Ville d'Avray, all of France, assignors to L'etat Francais, represente par le Delegue General pour l'Armement and Proengin S.A., both of France

Filed Dec. 17, 1990, Ser. No. 628,542
Claims priority, application France, Dec. 18, 1989, 89 16876
Int. Cl.[5] G01N *21/72*
U.S. Cl. 356—315 11 Claims



1. A burner usable in an apparatus for analyzing a gas composition by flame spectrometry, comprising, disposed coaxially with respect to each other

i. a tubular body having a first open end portion provided with a coaxial optical system and a second open end portion located opposite said first end portion, said body delimiting an internal chamber;

ii. a sample taking nozzle which extends said body from said second end portion while defining an intake chamber provided with an intake orifice;

iii. a tubular skirt mounted coaxially in said internal chamber and forming with said body at least one intercalary demisting channel opening on one side in the vicinity of said optical system and communicating on the other side with said intake chamber through a calibrated orifice, and a suction chamber which communicates with said internal chamber through a suction opening located in the vicinity of the optical system and with external suction means through a lateral orifice provided in said body;

iv. a radial collar extending radially from said second end portion of said body and provided with a coaxial bore, through which is sealingly engaged a coaxial tubular chimney extending in said internal chamber over a part of its length and separating said intake chamber from a combustion chamber which opens in front of said optical system;

v. an intake nozzle for said gas composition which extends inside said intake chamber and which is partially engaged coaxially inside said chimney, while forming therewith an annular intercalary chamber which communicates with said combustion chamber, said annular intercalary chamber being connected to a constant flow combustible gas source through an intake duct; and

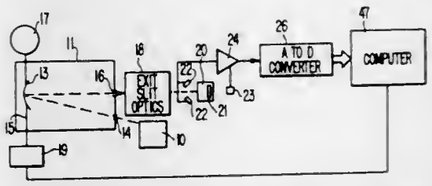
vi. a capillary tube for intake of said gas composition said capillary tube being connected to said intake nozzle by an end located in said intake chamber.

5,251,006

AUTOMATIC SPECTROPHOTOMETER CALIBRATION SYSTEM

David E. Honigs, Laurel, and Timothy G. Kelly, Silver Spring, both of Md., assignors to NIRSystems Incorporated, Silver Spring, Md.

Filed Mar. 7, 1991, Ser. No. 666,139
Int. Cl.[5] G01J *3/06, 3/18*
U.S. Cl. 356—319 7 Claims



1. In a spectrophotometer having an oscillating grating, an exit slit, said grating scanning the wavelength passing through said exit slit as said grating oscillates, a standard absorbance plate selectively positionable in the path of light passing through said exit slit, said absorbance plate exhibiting known peaks of absorbance at known wavelengths in a selected spectrum, means to detect the intensity of light passing through said exit slit and coming into contact with a sample, and means responsive to an input signal to oscillate said grating to perform a reference scan with said standard absorbance plate out of the path of the light passing through said slit, the improvement comprising calibrating means responsive to the input signal to automatically perform the following steps each time said reference scan is carried out:

(1) oscillating said grating to perform said reference scan

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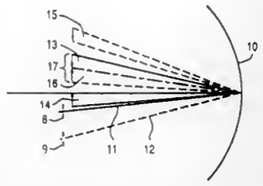
with said standard absorbance plate out of the path of the light passing through said exit slit,
(2) measuring the intensity of the light passing through said exit slit in step (1) at each angular increment of a set of angular increments of said grating distributed through said selected spectrum,
(3) pivoting said standard absorbance plate into the path of light passing through said exit slit,
(4) oscillating said grating to perform a calibration scan with said standard absorbance plate in the path of light passing through said exit slit,
(5) measuring the intensity of the light passing through said exit slit in step (4) and optically contacting said absorbance plate at each of said angular increments,
(6) determining the absorbance (log 1/R) of said standard absorbance plate at each of said angular increments from the measurements made in step (2) and (5),
(7) determining the location of the peaks of absorbance occurring for said standard absorbance plate from the data determined in step (6),
(8) computing corrected coefficients in an equation relating angular position of said grating to wavelength passing through said exit slit from the locations of the peaks determined in step (7) and the known wavelengths at which the peaks of absorbance occur in said standard absorbance plate, and
(9) storing said corrected coefficients to be used by said instrument in measuring a transmittance or reflectance from an unknown sample.

5,251,007

DUAL-BEAM SPECTROMETER

Günter Rinke, Weingarten, Fed. Rep. of Germany, assignor to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe and Bernath Atomic GmbH & Co. KG, Wennigsen, both of Fed. Rep. of Germany

PCT No. PCT/DE90/00887, § 371 Date Jul. 1, 1991, § 102(e) Date Jul. 1, 1991, PCT Pub. No. WO91/08454, PCT Pub. Date Jun. 13, 1991
PCT Filed Nov. 19, 1990, Ser. No. 720,757
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1989, 3939148
Int. Cl.[5] G01J *3/42*
U.S. Cl. 356—319 **3 Claims**



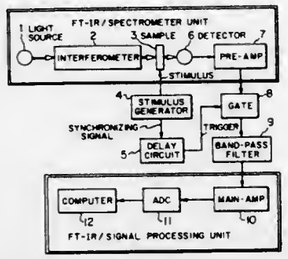
1. A dual-beam spectrometer comprising:
a lamp for generating a beam of light;
a beam divider disposed for dividing the beam of light from said lamp into a measuring beam and a reference beam;
an optical deflection system for deflecting the reference beam;
a measuring cell through which the measuring beam passes; and
a spectrometer comprising:
a first entrance slit which permits the measuring beam, once it has passed through the measuring cell, to enter the spectrometer;
a second entrance slit, arranged separately from said first entrance slit, which permits the reference beam to enter into the spectrometer;
an optical grating having a center point and disposed for spectrally separating the measuring beam and the reference beam to form respective spectra of said measuring and reference beams, wherin said first and second entrance slits, the center point of said grating, and the spectra of the measuring beam and of the reference beam lie in a common plane; and
a single detector array on which the spectra of the measuring beam and of the reference beam are imaged for simultaneously recording the spectra of the measuring beam and of the reference beam, wherein said first and second entrance slits are arranged at respective angles relative to the grating normal so that the spectrum of the measuring beam of the +1 order immediately follows, in an inverse direction, the spectrum of the reference beam of the −1 order.

5,251,008

FOURIER TRANSFORM SPECTROSCOPY AND SPECTROMETER

Koji Masutani, Tokyo, Japan, assignor to JEOL Ltd., Tokyo, Japan

Filed Jan. 9, 1992, Ser. No. 818,809
Claims priority, application Japan, Jan. 11, 1991, 3-2278; Mar. 28, 1991, 3-64623; Mar. 28, 1991, 3-64624; Mar. 29, 1991, 3-66704
The portion of the term of this patent subsequent to Jun. 4, 2008, has been disclaimed.
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—346 **16 Claims**



1. A Fourier transform spectroscopy comprising steps of:
causing a stimulus generator to repeatedly give a stimulus to a sample under investigation at intervals of time longer than the duration of response of the sample to each stimulus;
illuminating the sample with radiation via a rapid scan interferometer;
detecting the radiation emanating from the sample by a detector;
permitting passage of the output signal from the detector with a given delay with respect to each stimulation;
extracting frequency components lying in the frequency range given by

$$m/2\tau < f < (m+1)/2\tau$$

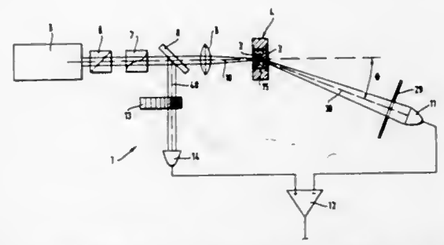
(where m is a positive integer, f is the frequency at which the radiation is modulated by the interferometer, and $1/\tau$ is the frequency of the stimuli) from the passed signal;
sampling the extracted frequency components;
obtaining an interferogram from the resulting samples; and
Fourier-transforming the interferogram to obtain a spectrum representing the state of the sample assumed after the given delay time.

5,251,009

INTERFEROMETRIC MEASURING ARRANGEMENT FOR REFRACTIVE INDEX MEASUREMENTS IN CAPILLARY TUBES

Alfredo E. Bruno, Oberwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 641,192, Jan. 15, 1991, abandoned. This application Feb. 2, 1993, Ser. No. 12,610
Claims priority, application Switzerland, Jan. 22, 1990, 185/90
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—361 **15 Claims**



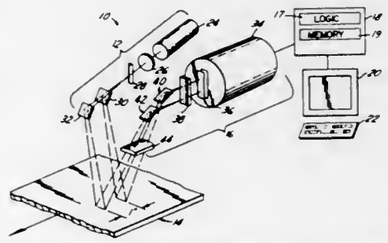
1. A refractive index monitoring apparatus having a radiation-permeable, preferably round capillary tube with a radiation inlet side and a radiation outlet side, for accommodating a sample flowing therethrough, and having an interferometric device which comprises a source of radiation and a photoelectric detector sensitive to said radiation;
said capillary tube being arranged in the path of said radiation between said source of radiation and said photoelectric detector, and, at least on said radiation-inlet side, said capillary tube being surrounded by a layer of material that is permeable to said radiation and that has a refractive index that, within a tolerance limit of approximately ±25%, corresponds to that of the wall-material of said capillary tube;
said interferometric device being adapted to produce an interference pattern upon said radiation passing through said sample flowing through said capillary tube, said interference pattern being generated in the path of said radiation on the side of said detector;
and said photoelectric detector being adapted to monitor changes of said refractive index pattern responsive to changes of the refractive index of said sample flowing through said capillary tube.

5,251,010

OPTICAL ROLLER WAVE GAUGE

Robert E. Maltby, Jr., Wayne, Ohio, assignor to Glasstech, Inc., Perrysburg, Ohio

Filed Jun. 7, 1991, Ser. No. 711,932
Int. Cl.[5] G01B *11/30;* **G01N** *21/86*
U.S. Cl. 356—371 **11 Claims**



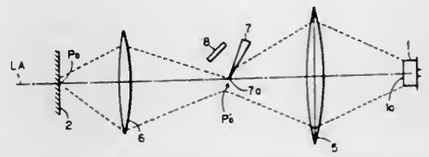
1. An apparatus for inspecting glass sheets transported on a horizontal roller conveyor to determine roller wave distortion on the glass sheets, the apparatus comprising:
a light source, including,
means for generating a monochromatic beam of light,
means for shaping the beam into a slit image of rectangular cross-section,
means for splitting the beam into a pair of beams of equal intensity spaced apart at a first distance, and
means for directing the pair of beams onto a selected surface of the glass sheet as it is transported on the conveyor;
light detection means mounted to receive the pair of beams reflected from the selected surface of the glass sheet including a photosensitive linear array, the light detection means including filtering means interposed in the paths of the reflected beams between the photosensitive linear array and the glass sheet, for allowing transmission of light over a limited range of wavelengths including the wavelength of the pair of beams, and means for scattering the light in the pair of beams mounted in the path of the beams between the surface of the glass sheet and the photosensitive array to obscure any interference fringes caused by reflection of light from a surface on the glass sheet other than the selected surface;
first logic means for periodically determining a second distance between the reflected beams on the photosensitive array;
memory means for storing a preselected number of second distances determined by the first logic means; and
second logic means for retrieving the preselected number of stored second distances and generating a quality value representing the roller wave distortion as a function of the first distance and the second distances for that portion of the glass sheet over which the preselected number of second distances was determined.

5,251,011

DISPLACEMENT DETECTION SYSTEM

Nariaki Fujiwara, and Tokaji Shibahara, botb of Kyoto, Japan, assignors to Dainippon Screen Manufacturing Co., Ltd., Japan

Continuation of Ser. No. 546,409, Jun. 28, 1990, abandoned. This application Aug. 10, 1992, Ser. No. 927,872
Claims priority, application Japan, Jun. 28, 1989, 1-166462; Jun. 28, 1989, 1-166463; Jun. 28, 1989, 1-166464
Int. Cl.[5] G01B *11/14*
U.S. Cl. 356—373 **34 Claims**



1. A system for detection displacement of a sample surface from a predetermined reference position comprising:
(a) a light source for projecting light towards said sample surface;
(b) an objective lens located between said light source and said sample surface, wherein said light is projected onto said sample surface through said objective lens and is reflected upon said sample surface to thereby obtain a reflecting light travelling through said objective lens;
(c) a light blocking member located between said light source and said objective lens on one side only of the optical axis between said light source and said objective lens, wherein said light blocking member has a first surface that faces said objective lens and a second surface that faces said light source, and an edge of said light blocking

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member is located on a first position which is conjugate with said reference position across said objective lens, said light projected from said light source being partially blocked by a light blocking area which is defined on said second surface of said light blocking member and which includes said edge of said light blocking member; and

(d) photo-sensor means for detecting an amount of said reflecting light which travels towards said first surface, said displacement being detected as a function of said amount of said reflecting light.

5,251,012

ELECTRO-OPTICAL SCANNER

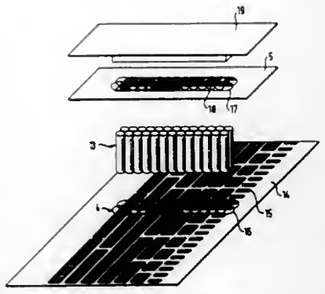
Johannes Riegger, Wurmlingen, and Karl-Heinz Weber, Tuttlingen, both of Fed. Rep. of Germany, assignors to Elektrotechnik KG, Tuttlingen, Fed. Rep. of Germany

Filed Aug. 9, 1991, Ser. No. 743,529

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1990, 9011628[U]; Apr. 6, 1991, 9104157[U]

Int. Cl.[5] G01B *11/14*

U.S. Cl. 356—374 **23 Claims**



1. An electro-optical scanner particularly for position-, angle- and rotation-measuring instruments, comprising an illuminated or transilluminated code carrier, at least one optically scannable code track on said code carrier, an electro-optical sensor having a light-sensitive surface, and a rod-shaped lens adapted to reproduce said code track on said light-sensitive surface.

5,251,013

VEHICLE STRAIGHTENER MEASURING UNIT, MEASURING APPARATUS RELIANT ON REFLECTED BEAM(S), AND SOURCE, TARGETS AND METHOD

Glen C. Danielson, 1619 Gretchen Ave., Grand Island, Nebr. 68803, and Thomas M. Westhoff, 716 NW. 8th St., Willmar, Minn. 56201

Continuation-in-part of Ser. No. 359,921, May 31, 1989, Pat. No. 4,997,283, which is a continuation-in-part of Ser. No. 329,010, Mar. 27, 1989, abandoned. This application Nov. 28, 1990, Ser. No. 619,294

The portion of the term of this patent subsequent to Mar. 5, 2008, has been disclaimed.

Int. Cl.[5] G01C *5/00*

U.S. Cl. 356—375 **18 Claims**

MICROFICHE APPENDIX INCLUDED (280 Microfiche, 4 Pages)

1. Apparatus for indicating deformation of a vehicle body or the like, said vehicle body having at least one reference point and a normal position thereof, said apparatus comprising:

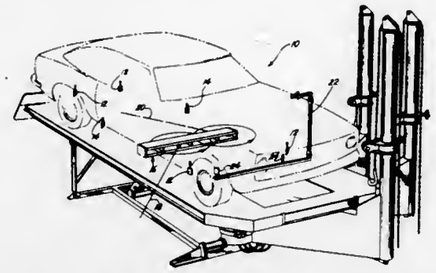
at least one target means including a reflective portion, positioned in a predetermined location relative to the reference point on the vehicle body for indicating deformation of the body by the position of the target means relative to said normal position;

means for sweeping a beam of radiation across the reflective portion of the target means, said reflective portion reflecting said beam;

means for receiving radiation reflected from the target means;

means for interpreting the radiation reflected from the target means and for indicating at least the two-dimensional spatial position of the reference point relative to normal position,

wherein the target means comprises at least two reflective areas separated by a non-reflective area, wherein width of at least one of the two reflective areas in the direction which the beam sweeps across the target means is indicative of a spatial coordinate of the target means transverse to the sweep of the beam,



wherein the target means is rectangular in overall shape having vertical sides defining its width and top and bottom sides defining its height; the reflective areas are positioned to each of the vertical sides respectively and extended substantially between the top and bottom sides of the target means while varying inversely in width over their length between the top and bottom of the target means,

wherein the target means further includes an additional reflective area and an additional non-reflective area, said additional areas extending substantially between the top and bottom of the target means, each of said areas being of a predetermined width so that the combination of the additional reflective and non-reflective areas provide a code for uniquely identifying each coded reflective target.

5,251,014

CIRCUIT FOR DETECTING PHASE ERROR OF COLOR BURST SIGNAL

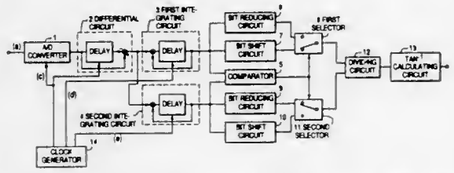
Takashi Inoue, Osaka; Nobuyuki Ogawa, Takatsuki; Hiromu Kitaura, Osakasayama; Tokikazu Matsumoto, and Fumiaki Koga, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 4, 1992, Ser. No. 894,277

Claims priority, application Japan, Jun. 4, 1991, 3-132568

Int. Cl.[5] H04N *9/45*

U.S. Cl. 358—19 **4 Claims**



1. A phase error detecting circuit for detecting a phase error of a color burst signal of a video signal, comprising:

means for differentiating a digital video signal at sampling points apart from each other by ½ period of a reference color burst signal to obtain a differential signal;

means for generating a first sampling pulse of a frequency twice as high as a frequency of the reference color burst signal;

first integrating means for obtaining a first integral signal of M bits (M being a positive number) by integrating the differential signal by the first sampling pulse;

means for generating a second sampling pulse which is the same in frequency as and different in phase by 180 degrees from the first sampling pulse;

second integrating means for obtaining a second integral signal of M bits by integrating the differential signal by the second sampling pulse;

first converting means for obtaining a first N-bit integral signal by reducing the number of bits of the first integral signal of M bits to N bits (N being a positive number, N<M);

second converting means for obtaining a second N-bit integral signal by reducing the number of bits of the second integral signal of M bits to N bits;

dividing means for dividing the first N-bit integral signal by the second N-bit integral signal; and

means for obtaining an arc-tangent of an output of the dividing means.

5,251,015

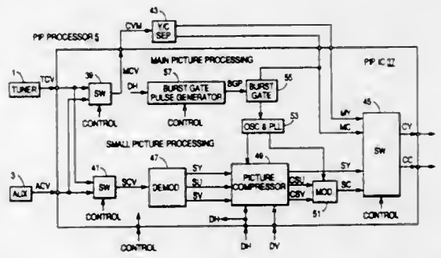
APPARATUS FOR POSITIONING A TIMING SIGNAL RELATIVE TO A SYNCHRONIZATION SIGNAL DERIVED IN THE DEFLECTION SECTION OF A TELEVISION SYSTEM

Mark F. Rumreich, Indianapolis, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed May 6, 1991, Ser. No. 696,488

Int. Cl.[5] H04N *9/44*

U.S. Cl. 358—20 **16 Claims**



1. In a television system including a picture tube and a deflection coil associated with said picture tube, apparatus comprising:

a source of a video signal including image and an image synchronization component;

means for processing said image component of said video signal and applying a processed version of said image component to said picture tube;

means for processing said synchronization component of said video signal to derive a deflection signal for said deflection coil;

means responsive to said deflection signal for generating a deflection related synchronization signal;

means for generating a delay control signal representing the time delay between said deflection related synchronization signal and said image synchronization component of said video signal;

means which does not receive said image synchronization component of said video signal for generating a timing signal delayed in time from said deflection responsive synchronization signal in accordance with said delay control signal in response to said deflection responsive synchronization signal and said delay control signal but not directly in response to said image synchronization component of said video signal; and

means for utilizing said timing signal.

5,251,016

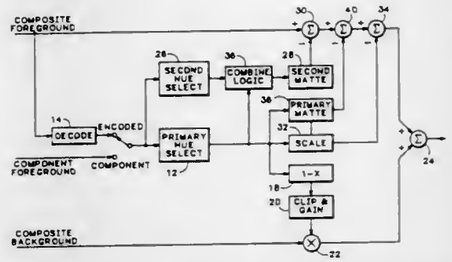
CHROMA KEYER WITH SECONDARY HUE SELECTOR

James A. Delwiche, Grass Valley, Calif., assignor to The Grass Valley Group, Inc., Nevada City, Calif.

Filed May 11, 1992, Ser. No. 880,861

Int. Cl.[5] H04N *5/275*

U.S. Cl. 358—22 **9 Claims**



1. A chroma keyer of the type that combines a shaped foreground video signal with a shaped background video signal to produce a composited output video signal, the shaped background video signal being a function of a background video signal and a primary chroma key signal derived from a foreground video signal and based upon a first hue range, comprising:

first means for generating a secondary chroma key signal from the foreground video signal based upon a second hue range;

second means for generating a fringe chrominance signal as a function of the secondary chroma key signal; and

means for combining the fringe chrominance signal with the foreground video signal to produce the shaped foreground video signal.

5,251,017

GAMMA CORRECTION CIRCUIT FOR AN ANALOG VIDEO SIGNAL

Marc Riviere, Chante Pie, France, assignor to France Telecom (Centre National d'Etudes des Telecommunications), Issy les Moulineaux, France

Filed Jun. 26, 1991, Ser. No. 721,385

Claims priority, application France, Jul. 6, 1990, 90 08618

Int. Cl.[5] H04N *9/69*

U.S. Cl. 358—32 **12 Claims**

1. A video signal gamma correction circuit comprising:

a video signal analog input;

a video path connected to the video signal input and including a wideband logarithmic amplifier and a video path output;

a second input receiving a reference DC voltage;

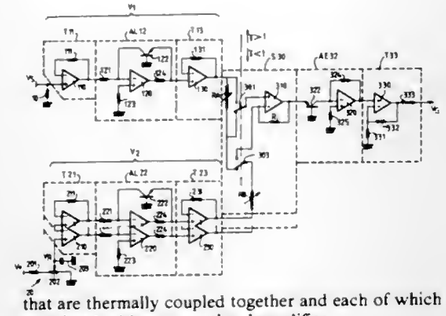
a reference path connected to said second input and comprising a wideband logarithmic amplifier having the same characteristics as the logarithmic amplifier in the video path, said reference path having a reference path output;

a weighted analog summing circuit for summing the outputs from the two paths with a gain of gamma for the video path and with a gain of one minus gamma for the reference path; and

a wideband exponential amplifier, responsive to said summing circuit, whose output provides a gamma corrected

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signal, wherein the two wideband logarithmic amplifiers and the exponential amplifier are made using transistors



that are thermally coupled together and each of which is associated with an operational amplifier.

5,251,018

COLOR SIGNAL CONTOUR COMPENSATOR FOR MATCHING THE RISE TIMES OF COLOR AND LUMINANCE SIGNALS OF A VIDEO SIGNAL TO PRODUCE SHARPER IMAGES

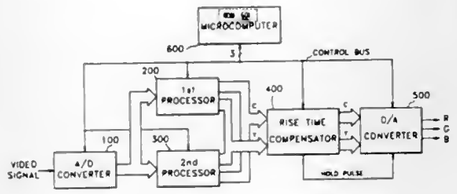
Ki-nam Jang, and Baek-beui Han, both of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Rep. of Korea

Filed Jan. 29, 1992, Ser. No. 827,771

Claims priority, application Rep. of Korea, Jan. 29, 1991, 91-1517

Int. Cl.[5] H04N *5/208*

U.S. Cl. 358—37 **9 Claims**



1. A color signal contour compensator comprising:

an input path through which a composite video signal including a color signal and a luminance signal is input;

signal processor means for processing the composite video signal input from said input path into a digital color signal and a digital luminance signal;

color signal rise time compensator means for detecting a rise time of the digital color signal output from said signal processor means so as to output a delay control signal in response to a comparison of an amplitude of said digital color signal with a predetermined amplitude indicating when the rise time of the digital color signal equals a rise time of the digital luminance signal;

converter means for converting the digital color signal and the digital luminance signal output from said color signal rise time compensator means into analog signals, wherein the digital color signal is converted into an analog signal at a time determined by the delay control signal output from said color signal rise time compensator means, so as to output the digital color signal and the digital luminance signal as analog red, green and blue signals; and

controller means for controlling said signal processor means, said color signal rise time compensator means and said converter means and for supplying said predetermined amplitude, a rise time value of the digital luminance signal, and delay values for delaying the digital luminance signal and the digital color signal for respective predetermined periods of time to said color signal rise time compensator means.

5,251,019

SOLID STATE COLOR IMAGE SENSOR USING A FIELD-STAGGERED COLOR FILTER PATTERN

Michael C. Moorman, Princeton, N.J.; Robert H. Hibbard, Fairport, and Kenneth A. Parulski, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 646,130, Jan. 25, 1991. This application Jul. 24, 1992, Ser. No. 918,875

Int. Cl.[5] H04N *9/07*

U.S. Cl. 358—44 **2 Claims**

FIELD 1	G	G	G	**R**	G	G	G	**R**	LINE 1
FIELD 2	G	**R**	G	G	G	**R**	G	G	LINE 2
FIELD 1	G	G	G	**B**	G	G	G	**B**	LINE 3
FIELD 2	G	**B**	G	G	G	**B**	G	G	LINE 4
FIELD 1	G	G	G	**R**	G	G	G	**R**	LINE 5
FIELD 2	G	**R**	G	G	G	**R**	G	G	LINE 6
FIELD 1	G	G	G	**B**	G	G	G	**B**	LINE 7
FIELD 2	G	**B**	G	G	G	**B**	G	G	LINE 8

1. Color image sensing apparatus of the type used for interlaced scanning of a color image sensor having an area array of color filter elements covering a like array of image sensing elements, the array of color filter elements being configured in horizontal lines and vertical columns in relation to the image sensor such that at least 75% of the image sensing elements of each line are green sensing elements and the rest of the elements of each line are either red or blue chrominance sensing elements, the chrominance sensing elements of the same type for each line being separated in a horizontal line direction by at least three green sensing elements, said color image sensing apparatus comprising:

a sensor having a two-dimensional array of sensing elements and a single horizontal read out register for separately reading out first and second fields, said sensor having a configuration in which the horizontal lines containing the chrominance sensing elements of the same type are arranged in line pairs with the chrominance sensing element of the first line of said line pairs being shifted by half the distance between the chrominance sensing elements of the second line of said line pairs, whereby chrominance sensing elements appear in every other column of the sensor to increase the horizontal sampling frequency of the chrominance sensing elements while totally surrounding each chrominance element with green elements to increase the accuracy of the luminance reconstruction; and

means for providing interlaced scanning of said sensor through said single horizontal read out register in a configuration of odd and even video fields, the odd field read out through said register including the first of said lines of said line pairs, and the even field read out through said register including the second of said lines of said line pairs.

5,251,020

COLOR IMAGE COMMUNICATION APPARATUS CAPABLE OF TRANSMITTING OR RECEIVING A COLOR EXPRESSION FORM

Mitsumasa Sugiyama, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 21, 1991, Ser. No. 795,802

Claims priority, application Japan, Nov. 21, 1990, 2-318976; Nov. 21, 1990, 2-318977; Nov. 21, 1990, 2-318985

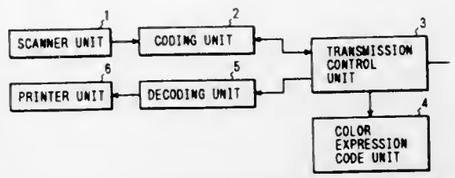
Int. Cl.[5] H04N *1/46*

U.S. Cl. 358—500 **19 Claims**

7. A color image receiving apparatus comprising:

means for receiving data representing a color expression form from an image transmitter;

means for converting the color expression form of the color image data to a suitable color expression form for a color output device; and



means for controlling said converting means in accordance with the received image data representing the color expression form.

5,251,021

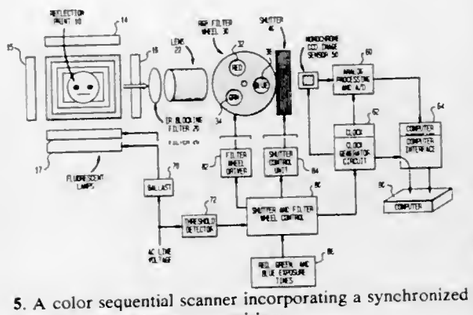
COLOR SEQUENTIAL SCANNER INCORPORATING A SYNCHRONIZED VARIABLE EXPOSURE SHUTTER

Kenneth A. Parulski, Rochester; Gordon Geisbuesch, East Rochester, and John C. Rutter, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 575,772, Aug. 31, 1990, abandoned. This application Aug. 5, 1992, Ser. No. 925,281

Int. Cl.[5] H04N *1/46, 9/07*

U.S. Cl. 358—500 **5 Claims**



5. A color sequential scanner incorporating a synchronized variable exposure shutter comprising:

an illumination source comprised of at least one fluorescent lamp and powered by an AC source for illuminating a color image to form a color image beam;

a color filter means positioned for sequentially inserting red, green, and blue color filters in the formed color image beam;

a shutter means positioned to control passing of the color image beam through the color filters in said color filter means;

an image sensor means for converting the color image beam passed through the color filters into electrical signals;

a storage means for receiving and storing the electrical signals from said image sensor means;

a threshold detector means connected to said AC source for providing a synchronizing signal when the magnitude of a voltage from the AC source is above a threshold value;

means connected to said shutter means for controlling the passing of said image beam using the provided synchronizing signal; and

means for establishing three different exposure time periods for the red, green, and blue filters whereby the amount of time that the shutter means passes the color image beam to said image sensor means through the red, green and blue filters provides proper white balance.

5,251,022

METHOD OF AND APPARATUS FOR PRODUCING OVERLAPPING IMAGE AREA

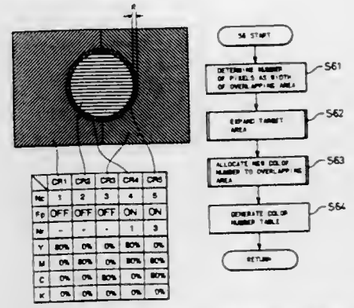
Hideaki Kitamura, Kyoto, Japan, assignor to Dainippon Screen Manufacturing Co., Ltd., Japan

Filed Nov. 5, 1991, Ser. No. 788,211

Claims priority, application Japan, Nov. 6, 1990, 2-300565

Int. Cl.[5] H04N *5/272*

U.S. Cl. 358—528 **16 Claims**



1. A method of producing an overlapping image area on a boundary between adjacent image areas by processing image data of an original image including said image areas, comprising the steps of:

(a) selecting one image area in said original image as a target area;

(b) expanding said target area to produce said overlapping image area having a predetermined width along the contour of said target area; and

(c) assigning a color to each pixel in said overlapping image area based on the original color of the pixel before said step (b) and the color of said target area.

5,251,023

IMAGE PROCESSING METHOD INCLUDING MEANS FOR JUDGING A CHROMATIC PORTION OF AN IMAGE

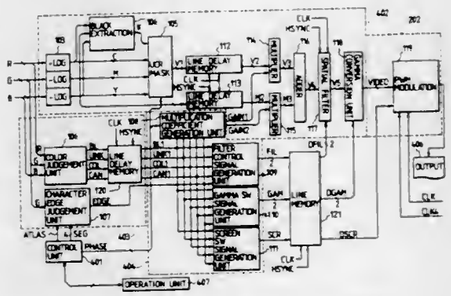
Shinobu Arimoto; Masahiro Funada; Michio Kawase, and Takashi Suzuki, all of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 561,292, Aug. 2, 1990, abandoned. This application Jan. 8, 1993, Ser. No. 2,679

Claims priority, application Japan, Aug. 2, 1989, 1-199343; Aug. 2, 1989, 1-200471; Aug. 2, 1989, 1-200472; Aug. 2, 1989, 1-200473; Aug. 2, 1989, 1-200474; Aug. 2, 1989, 1-200475; Aug. 2, 1989, 1-200476; Aug. 2, 1989, 1-200499

Int. Cl.[5] H04N *1/46*

U.S. Cl. 358—529 **14 Claims**

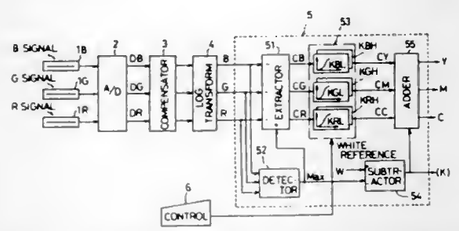


1. An apparatus for image processing comprising:

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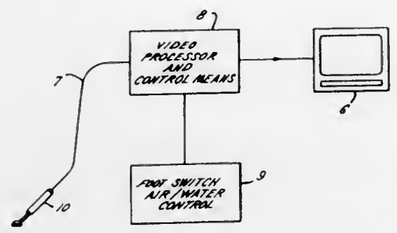
processing means for executing a predetermined processing in units of one pixel on black character areas in an image represented by an input color image signal;
first judgement means for judging a chromatic pixel in the image;
second judgement means for judging an achromatic pixel in the image neighboring a pixel judged to be a chromatic pixel by said first judgement means; and
control means for controlling said processing means in units of one pixel according to the judgement made by said second judgement means.

5,251,024
IMAGE READER USING CCD LINE SENSORS
Itaru Furukawa, and Takashi Sakamoto, both of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan
Filed Mar. 1, 1991, Ser. No. 662,607
Claims priority, application Japan, Mar. 27, 1990, 2-77666
Int. Cl.[5] G03F *3/08*
U.S. Cl. 358—527 **15 Claims**



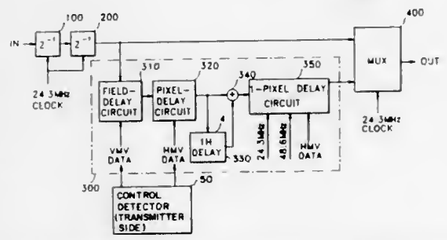
1. An image reading apparatus using CCD line sensors comprising:
a logarithmic transformer for effecting logarithmic transformation of blue (B), green (G) and red (R) signals resulting from reading of a color original by said CCD line sensors;
a luminance signal detector for detecting a luminance signal among signals emerging from the logarithmic transformation;
a color difference signal extractor for extracting color difference signals by subtracting said luminance signal from the respective signals emerging form the logarithmic transformation;
a color corrector for effecting color correction of said color difference signals, said color corrector including at least one first color correcting means having color correction characteristics for increasing enlargement ratios of said color difference signals for small values of said color difference signals in order to improve color reproduction in highlight portions, and at least one second color correcting means having color correction characteristics for limiting the enlargement ratios of said color difference signals for small values of said color difference signals in order to reduce noise in shadow portions;
control means for manually switching said color correcting means; and
an adder for obtaining yellow (Y), magenta (M) and cyan (C) image signals by adding a black signal obtained from said luminance signal to said color difference signals color corrected by said color corrector.

5,251,025
ELECTRONIC VIDEO DENTAL CAMERA
David H. Cooper, Saratoga, and Charles S. Bush, Los Gatos, both of Calif., assignors to Fuji Optical Systems, Inc., Los Gatos, Calif.
Division of Ser. No. 149,521, Jan. 28, 1988, Pat. No. 5,016,098, which is a continuation-in-part of Ser. No. 22,171, Apr. 10, 1989, Pat. No. 4,727,416. This application Aug. 2, 1989, Ser. No. 389,289
The portion of the term of this patent subsequent to Feb. 23, 2005, has been disclaimed.
Int. Cl.[5] H04N *7/18*; A61B *1/04, 1/06, 1/24*
U.S. Cl. 358—98 **76 Claims**



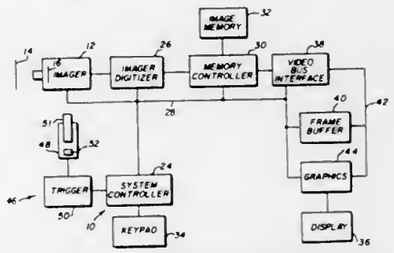
1. A dental camera for use in displaying an image from inside the mouth onto a monitor comprising:
a handle;
a camera head including a means for receiving an image located at the distal end of said handle, said camera head being formed such that said means for receiving an image is placed at an angle from the axis of said handle;
means for providing a flow of fluid over the surface of said means for receiving an image;
and a malleable member connecting said handle and said camera head.

5,251,026
INTERFIELD INTERPOLATING APPARATUS HAVING A VERTICAL/HORIZONTAL MOTION COMPSENSATING FUNCTION
Seok-yun Jeong, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyunggi-do, Rep. of Korea
Filed Dec. 20, 1991, Ser. No. 810,874
Claims priority, application Rep. of Korea, Dec. 26, 1990, 90-21770
Int. Cl.[5] H04N *7/18*
U.S. Cl. 358—105 **6 Claims**



1. An interfield interpolating apparatus having a vertical and horizontal motion compensating function comprising:
delay circuits serially connected for delaying an image data for a predetermined interval;
a motion-compensating unit including a field-delay circuit for delaying the delayed image data from said delay circuits by predetermined scanning lines and pixels in accordance with the corresponding data of horizontal and vertical motion vectors from a control signal detector, so that horizontal and vertical motion compensation is implemented; and
a multiplexer for receiving the corresponding output data from said delay circuits and said motion-compensating unit including a field-delay circuit, respectively and for outputting either one of these received data in accordance with a clock signal.

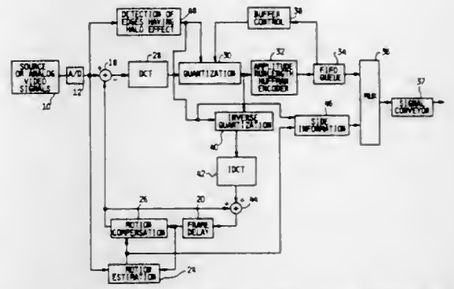
5,251,027
TELEPHOTO SENSOR TRIGGER IN A SOLID STATE MOTION ANALYSIS SYSTEM
Gary A. LaBeau, LaMesa, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.
Continuation of Ser. No. 618,210, Nov. 26, 1990. This application May 11, 1992, Ser. No. 884,315
Int. Cl.[5] H04N *7/18*
U.S. Cl. 358—105 **12 Claims**



1. A solid state motion analysis system comprising:
solid state imager means for capturing an image of a scene, and for producing an image frame signal, wherein said imager means is selectively operable at different image frame rates up to several hundred frames per second;
telephoto sensor means, for passively, noninvasively sensing a change in a changeable characteristic of said scene wherein said telephoto sensor means includes a telephoto lens and a photosensor optically coupled to said telephoto lens, such that said telephoto lens produces an optical image of a scene which is focused on said photosensor;
wherein said telephoto sensor means is separate from said imager means and independently locatable relative thereto at a substantial distance therefrom;
means for producing a trigger signal in response to a change in scene characteristic sensed by said photosensor of said telephoto sensor means; and
solid state memory means for storing a plurality of image frame signals produced by said imager means, wherein an alteration in the mode of operation of said memory means is effected in response to said trigger signal.

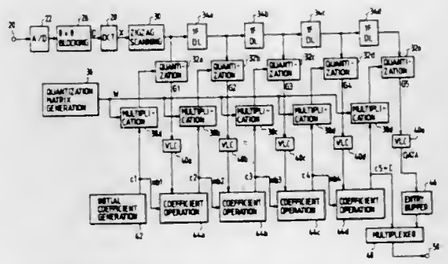
5,251,028
APPARATUS FOR REDUCING QUANTIZATION ARTIFACTS IN AN INTERFRAME HYBRID CODING SYSTEM WITH MOTION COMPENSATION
Siu-Leong Iu, Bensalem, Pa., assignor to Matsushita Electric Corporation of America, Secaucus, N.J.
Filed Aug. 8, 1991, Ser. No. 742,397
Int. Cl.[5] H04N *7/12*
U.S. Cl. 358—133 **19 Claims**

1. In an interframe hybrid coding system that includes quantization means for quantizing frequency coefficients derived by a two dimensional transform from signals in a selected area with a given step size, the improvement comprising:
means for providing a first indication if said selected area contains an edge;
means for providing a second indication if there is a flat area adjacent to said selected area and substantially equal in size to said area; and



means for reducing the step size used by the quantization means to quantize the coefficients derived from said selected area if said first and second indications are present.

5,251,029
IMAGE ENCODING APPARATUS
Masahiko Enari, Yokohama; Kenichi Nagasawa; Akihiro Shikakura, both of Kawasaki; Yuushi Kaneko, Yokohama; Yoshifumi Satake, Yokohama, and Hiroshi Takizawa, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 3, 1992, Ser. No. 829,404
Claims priority, application Japan, Feb. 7, 1991, 3-16466; May 17, 1991, 3-113189; May 17, 1991, 3-113226; Oct. 30, 1991, 3-284956; Oct. 30, 1991, 3-284957
Int. Cl.[5] H04N *7/133*
U.S. Cl. 358—133 **32 Claims**



1. An image encoding apparatus comprising:
a) conversion means for converting image information into data on a frequency region;
b) parallel output means for parallelly outputting the converted data to output the converted data of a plurality of channels;
c) quantization means for respectively quantizing the converted data of the plurality of channels output from said parallel output means;
d) operation means for calculating a data amount to be obtained when one of the converted data of the plurality of channels output from said quantization means is encoded;
e) coefficient generation means for generating a quantization coefficient for controlling a quantization step of converted data of other channels of said quantization means according to an output from said operation means;
f) encoding means for encoding at least one of the converted data of the plurality of channels output from said quantization means; and
g) multiplexing means for multiplexing encoded data output

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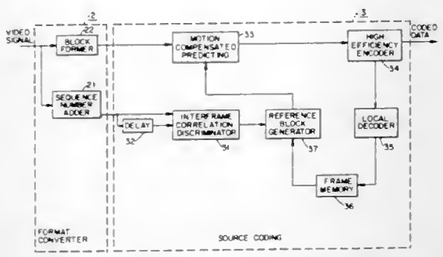
from said encoding means, and the quantization coefficient for obtaining the encoded data.

5,251,030

MC PREDICTING APPARATUS

Kouichi Tanaka, Kanagawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 10, 1992, Ser. No. 896,327
Claims priority, application Japan, Jun. 12, 1991, 3-167774
Int. Cl.[5] H04N *7/137*
U.S. Cl. 358—136 **9 Claims**



1. An MC predicting apparatus comprising: means for outputting an input block by forming a block from a digital image signal stream within a frame;

means for outputting a prediction error block based on a difference between said input block and a prediction block selected from a reference block group, the reference block group including a plurality of prediction blocks located in the same position as, or in the vicinity of, the position of said input block;

means for adding a sequence number to each frame of the digital image signal stream; and

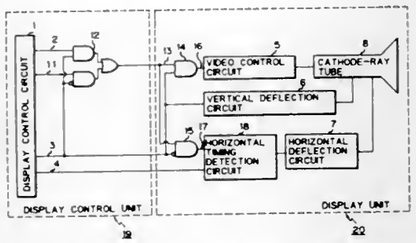
means for causing said means for outputting a prediction error block to adaptively control a reference range of the reference block group based on a difference in the sequence numbers of current and preceding frames, said sequence numbers received from the means for adding.

5,251,031

DISPLAY CONTROL SYSTEM

Fumitaka Tagami, Kanagawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 12, 1991, Ser. No. 667,963
Claims priority, application Japan, Mar. 13, 1990, 2-61641
Int. Cl.[5] H04N *3/227*
U.S. Cl. 358—139 **4 Claims**



1. A display control method of adjusting the position of an image to be displayed, comprising the steps of:

(a) generating a composite video signal by combining a video signal obtained during a display period of a vertical synchronizing signal with a display position signal obtained during a blanking period of the vertical synchronizing signal;

(b) separating said composite video signal into a reproduced video signal and a reproduced display position signal in accordance with the display period and the blanking period of the vertical synchronizing signal;

(c) detecting a difference in phase between said reproduced display position signal and a horizontal synchronizing signal;

(d) generating a timing adjusting signal for the horizontal synchronizing signal in accordance with the detected phase difference;

(e) displaying the reproduced video signal to form the image; and

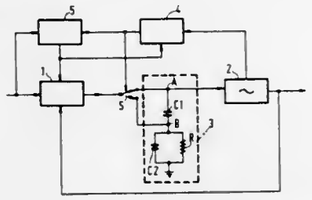
(f) adjusting the position of the image in accordance with the timing adjusting signal.

5,251,032

LINE SYNCHRONIZING CIRCUIT

Henricus J. Heerkens, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 696,324, Apr. 30, 1991, Pat. No. 5,113,257, which is a continuation of Ser. No. 534,000, Jun. 5, 1990, abandoned, which is a continuation of Ser. No. 249,629, Sep. 26, 1988, abandoned. This application Feb. 26, 1992, Ser. No. 842,784
Claims priority, application Netherlands, Oct. 26, 1987, 8702538
Int. Cl.[5] H04N *5/05*
U.S. Cl. 358—158 **11 Claims**



7. A line synchronization circuit for a picture display device comprising:

a line oscillator having a control input,

a phase discriminator having an output and a first input for receiving a signal generated by the line oscillator and a second input for receiving an incoming line synchronizing signal,

a loop filter for smoothing a signal at the output of the phase discriminator to obtain a control signal, said control signal being applied to the control input of the line oscillator for controlling the frequency and/or the phase of the signal generated by said line oscillator, wherein the loop filter includes a first part for deriving a first control signal having a first response time and second part for deriving a second control signal having a second response time which is shorter than the first response time and with both parts of the filter being coupled to the control input of the line oscillator, and

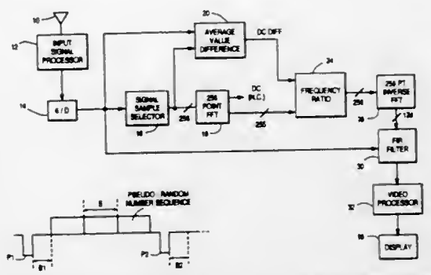
switching means for coupling the two parts of the filter or the second part of the filter to the output of the phase discriminator as a function of a phase difference determined by the phase discriminator.

5,251,033

D.C. RESPONSIVE EQUALIZATION FOR TELEVISION TRANSMISSION CHANNEL IRREGULARITIES

Bruce J. Anderson, Monmouth Junction, and Charles B. Dieterich, Kingston, both of N.J., assignors to RCA Thomson Licensing Corporation, Princeton, N.J.

Filed Mar. 16, 1992, Ser. No. 851,434
Int. Cl.[5] H04N *5/21*
U.S. Cl. 358—167 **5 Claims**



1. In a system for receiving a video signal subject to exhibiting phase or frequency irregularities attributable to transmission channel characteristics, equalizer apparatus for compensating for said irregularities, comprising:

transform means for providing a transformed video signal;

DC response providing means for providing a signal representative of a DC response of said video signal, independent of said transform of said video signal;

ratioing means responsive to said representative signal and to said transformed video signal for providing an output signal containing values representing ratios of desired to actual values for said DC representative signal and for said transformed video signal; and

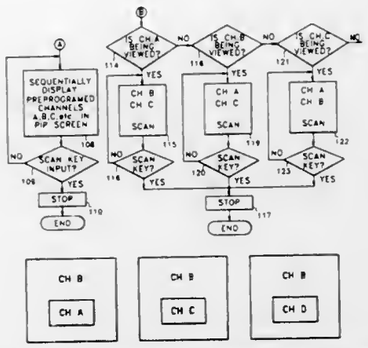
filter means having a signal input for receiving said television signal, and a control input for receiving said output signal from said ratioing means to determine the operation of said filter for equalizing said video signal.

5,251,034

AUTOMATIC PIP CHANNEL SEARCHING APPARATUS AND METHOD

Un-heui Na, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Rep. of Korea

Filed Mar. 10, 1992, Ser. No. 849,157
Claims priority, application Rep. of Korea, Jul. 9, 1991, 91-11621
Int. Cl.[5] H04N *5/50*
U.S. Cl. 358—183 **7 Claims**



1. In a channel search method of a television (TV) having a picture-in-picture (PIP) function, an automatic PIP channel search method used during TV viewing, the method comprising the steps of:

setting the currently-viewed broadcast channel as a main screen, if a scan key is input when watching a TV channel;

setting each of a plurality of broadcasting channels, excluding said currently-viewed broadcast channel which is set as said main screen, for display as a subscreen with said main screen; and

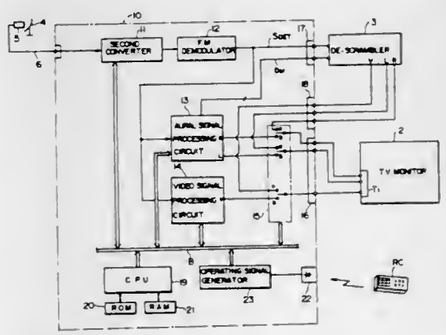
automatically displaying each of the channels set as said single subscreen, wherein said step of automatically displaying comprises the step of automatically sequentially displaying each of said broadcasting channels set for display as said single subscreen so that only a single channel is displayed as a subscreen with said main screen.

5,251,035

SATELLITE BROADCASTING TUNER

Tadashi Kurita, and Osamu Yamakami, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 13, 1991, Ser. No. 744,520
Claims priority, application Japan, Aug. 17, 1990, 2-215743
Int. Cl.[5] H04N *5/44, 5/50*
U.S. Cl. 358—188 **2 Claims**



1. A satellite broadcasting receiving system for use with a television monitor, comprising:

demodulating means for demodulating a received satellite broadcasting signal;

video signal processing means for extracting a video signal from an output of said demodulating means;

aural signal processing means for extracting an aural signal from said output of said demodulating means and for outputting digital control data indicating a scrambled state of said output from said demodulating means;

first external output terminal means for outputting a video signal and an aural signal from said video signal and aural signal processing means, respectively, to the television monitor;

an external decoding apparatus;

second external output terminal means for outputting said output of said demodulating means and said digital control data from said aural signal processing means to said external decoding apparatus;

external input terminal means for receiving a video signal and an aural signal from the external decoding apparatus connected to said second external output terminal means;

changing over means for alternatively coupling a video signal and an aural signal from said external input terminal means or a video signal from said video signal processing means and an aural signal from said aural signal processing means to said first external output terminal means;

storage means for storing therein a channel or channels of satellite broadcasting which is broadcast in a specially processed signal form;

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means for selectively designating a channel of satellite broadcasting; and

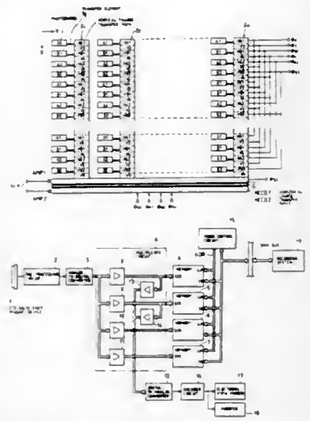
controlling means for judging whether or not a channel designated by said means for selectively designating is the channel or one of the channels stored in said storage means and for controlling said changing over means to alternatively couple a video signal and an aural signal supplied from the external decoding apparatus by way of said external input terminal means through said first external output terminal means to the television monitor when the designated channel is the channel or one of the channels stored in said storage means.

5,251,036

HIGH-DEFINITION STILL PICTURE CAMERAS HAVING A SOLID-STATE IMAGING DEVICE WITH PHOTOELECTRIC CONVERSION ELEMENTS DIVIDED INTO FOUR FIELDS

Yoshiki Kawaoka; Kazuya Oda, and Masahiro Konishi, all of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 651,970, Feb. 7, 1991, Pat. No. 5,177,614.
This application Sep. 28, 1992, Ser. No. 952,667
Claims priority, application Japan, Feb. 7, 1990, 2-25934; Feb. 9, 1990, 2-28177
Int. Cl.[5] H04N *3/14, 5/335*
U.S. Cl. 358—213.11 **6 Claims**



1. A still picture camera comprising:

solid-state imaging means for generating image signals of an image to be photographed including a plurality of columns of vertical repeating sequences of photoelectric conversion elements A_1, B_1, A_2 and B_2, coupled through transfer gates to respective vertical transfer lines which are equal in number to said plurality of columns, said vertical transfer lines coupled to a horizontal charge transfer line which transfers and outputs individual pixel signals as said image signals corresponding to said photoelectric conversion elements which have passed through said transfer gates and said vertical transfer lines, in accordance with drive signals;

pre-processing means, coupled to said imaging means, for performing γ and white balance correction operations and analog to digital conversion of said image signals to generate and output corrected image signals;

memory means for separately storing in four different memory areas said corrected image signals corresponding to specific ones of said pixel signals of said photoelectric conversion elements A_1, B_2, A_2, and B_2 as separated image signals A_1, B_1, A_2 and B_2;

multiplexing means, coupled to said pre-processing means, for separating and outputting said corrected image signals as said separated image signals A_1, B_1, A_2 and B_2 to said memory means;

viewfinder means, coupled to said multiplexing means, for generating video signals in accordance with said separated image signals A_1 and A_2 and for displaying said image to be photographed as a motion picture in accordance with said generated video signals; and

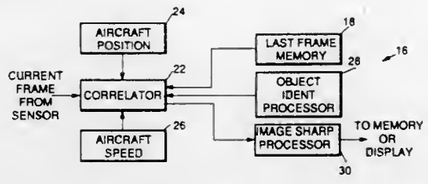
recording means, coupled to said memory means, for recording a still picture based upon said separated image signals A_1, B_1, A_2 and B_2 stored in said memory means under control of a video control circuit and in response to activation of a shutter release to record the still picture of the image displayed on said viewfinder means.

5,251,037

METHOD AND APPARATUS FOR GENERATING HIGH RESOLUTION CCD CAMERA IMAGES

Stavros N. Busenberg, Claremont, Calif., assignor to Hughes Training, Inc., Arlington, Tex.

Filed Feb. 18, 1992, Ser. No. 838,611
Int. Cl.[5] H04N *3/14, 5/335*
U.S. Cl. 358—213.28 **7 Claims**



7. A method for generating photogrammetric images including the steps of:

acquiring sequential images of terrain from a moving vehicle with a partially masked CCD camera having n uniformly staggered registers exposed at any given time;

establishing the position of said vehicle; and

processing the output of said camera to obtain a database of improved resolution data, wherein each pixel of said camera provides an average intensity F_{ij} as:

$$F_{ij} = \frac{1}{\delta^2} \int_{i\frac{\delta}{n}}^{\delta + i\frac{\delta}{n}} \int_{j\frac{\delta}{n}}^{\delta + j\frac{\delta}{n}} f(u, v)dudv.$$

where n^2 is the degree of resolution enhancement, δ is the length of a single CCD pixel projected onto the ground, and f(u,v) is the luminous intensity of the point (u,v) on the ground.

5,251,038

SOLID STATE IMAGER WITH A CONDENSER LENS ON A PHOTO SENSOR

Isao Hirota, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

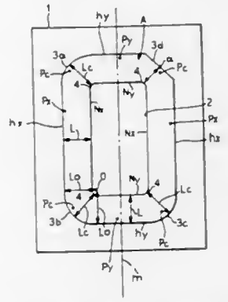
Filed Jan. 27, 1992, Ser. No. 826,517
Claims priority, application Japan, Jan. 28, 1991, 3-026889
Int. Cl.[5] H04N *3/14, 5/225;* **G02B** *13/16*
U.S. Cl. 358—225 **5 Claims**

1. A solid state imager, comprising:

a substrate;

a photosensor formed on said substrate, said photosensor having a sensor opening through which light is received, said sensor opening having a plurality of rectilinear sides and rounded corners joining said sides; and

a condenser lens secured over said photosensor, said condenser lens having a base with a plurality of rectilinear sides and rounded corners joining said sides corresponding to those of said sensor opening, but of greater dimension, corners of said condenser lens being formed to be substantially spherical in shape so that incident light through said corners converges into said sensor opening, a



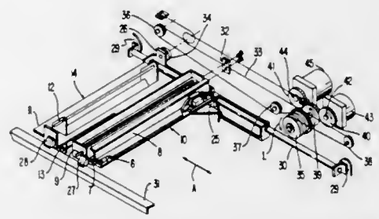
distance in a horizontal direction between said corners of said sensor opening and said corners of said condenser lens is substantially approximate to a distance in a horizontal direction between said sides of said sensor opening and said sides of said condenser lens.

5,251,039

SYSTEM FOR RECIPROCATING OPTICAL UNITS OF DIFFERENT SPEEDS IN OPPOSITE DIRECTIONS BY USE OF TWO MOTORS

Hiroshi Kusumoto, Wakayama, and Hideki Ishida, Yao, both of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jan. 22, 1992, Ser. No. 824,175
Claims priority, application Japan, Feb. 4, 1991, 3-035720
Int. Cl.[5] H04N *1/036, 1/04;* **B41J** *19/30*
U.S. Cl. 358—296 **3 Claims**



1. In a system including first and second optical units movable together for reciprocating movement in a scanning first direction to scan a manuscript and in an opposite return second direction, relative speed maintaining means, operatively coupled to said first and second optical units, for ensuring that said first optical unit moves at a speed twice that of said second optical unit during movement of said optical units in both said first direction and second direction, and means for driving said optical units at higher respective speeds in said second direction than in said first direction, the improvement wherein said driving means is of a construction for ensuring high torque and low noise operation thereof during movement of said optical units in both said first direction and second direction and wherein said driving means comprises:

a first pulse motor, operatively coupled to said speed maintaining means, for imparting therethrough force for driving said optical units in said first direction at respective first speeds, said first pulse motor being operable at a first motor speed range suitable for achieving said driving of said optical units at said respective first speeds and at a first motor speed within said first motor speed range to rotate an output shaft of said first pulse motor at 1.15 kpps, and at said first motor speed generates a torque of at least 1.0 kgf-cm and generates a noise level of no more than 40 dB; and

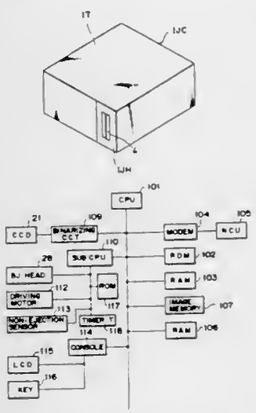
a second pulse motor, separate from said first pulse motor and operatively coupled to said speed maintaining means, for imparting therethrough force for driving said optical units in said second direction at respective second speeds greater than said respective first speeds, said second pulse motor being operable at a second motor speed range, greater than said first motor speed range, suitable for achieving said driving of said optical units at said respective second speeds and at a second motor speed within said second motor speed range to rotate an output shaft of said second pulse motor at 4.5 kpps, and at said second motor speed generates a torque of at least 1.0 kgf-cm and generates a noise level of no more than 43 dB.

5,251,040

IMAGE COMMUNICATION APPARATUS HAVING INK JET RECORDER WITH TIMER FOR CONTROLLING RECEPTION OF SUCCESSIVE PAGES OF IMAGE DATA

Atsushi Saito, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 658,390, Feb. 20, 1991, abandoned.
This application Sep. 23, 1992, Ser. No. 949,357
Claims priority, application Japan, Feb. 23, 1990, 2-41060
Int. Cl.[5] H04N *1/21, 1/32;* **G01D** *15/16*
U.S. Cl. 358—296 **6 Claims**



1. An image communication apparatus for recording an image using a recording head capable of ejecting ink utilizing energy generated from ejection energy generating elements, the apparatus comprising:

communication means for communicating with another image communication apparatus to receive image data therefrom;

driving means for driving said recording head to eject ink onto a recording medium in accordance with the image data received by said communication means;

timer means for counting a predetermined period of time associated with the processing of one page of image data, the predetermined period of time being set in accordance with the amount of time required to fix the ink ejected onto the recording medium; and

communication control means for transmitting a signal to the other image communication apparatus, to enable reception of a succeeding page of image data, in accordance with the count of said timer means.

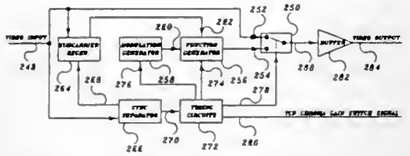
VOL 1155 ISS 1 OCT 5 1993 UMI

5,251,041

METHOD AND APPARATUS FOR MODIFYING A VIDEO SIGNAL TO INHIBIT UNAUTHORIZED VIDEOTAPE RECORDING AND SUBSEQUENT REPRODUCTION THEREOF

Philip L. Young, 1548 County Rd. 59, Fremont, Ohio 43420, and Leonard H. Greenberg, 1147 Elm Ave., #204, Glendale, Calif. 91201

Filed Jun. 21, 1991, Ser. No. 718,622
Int. Cl.[5] H04N *5/78, 9/79*
U.S. Cl. 358—310 **37 Claims**



1. A method for processing a video signal formed of successive video signal lines of information so as to inhibit the making of acceptable videotape recordings therefrom while producing a normal picture on a video monitor therefrom comprising the steps of:

a. identifying a predetermined signal portion in a video signal line of information of a video signal which is detected by signal reproduction circuitry in at least one of a video monitor and a VCR; and

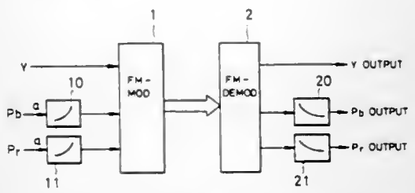
b. generating at least one copy protection signal and adding said copy protection signal to said predetermined signal portion to form a modified video signal whereby upon reproduction of said modified video signal, said copy protection signal does not interfere with the visual display of a normal picture on a video monitor, and upon subsequent videotape recording and subsequent reproduction of said modified video signal by processing said modified video signal through a comb filter present in a VCR, said copy protection signal is altered by the comb filter, the comb filter delaying said copy protection signal by at least one video signal Tine, inverting said copy protection signal and summing said inverted copy protection signal with a non-delayed video signal line of the video signal to interfere with the normal operation of the video monitor signal reproduction circuitry to prevent the visual display of a normal picture.

5,251,042

COMPONENT VIDEO SIGNAL TRANSMITTING APPARATUS

Toru Akiyama, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 6, 1992, Ser. No. 878,979
Claims priority, application Japan, Sep. 20, 1991, 3-241960
Int. Cl.[5] H04N *9/79, 11/14, 9/64*
U.S. Cl. 358—330 **1 Claim**



1. A component video signal transmitting apparatus for transmitting a luminance signal and color difference signals corresponding to an original color video signal, comprising:

high level expanding means for expanding in level the color difference signals in a high level region and obtaining high level expanded color difference signals;

transmitting means for transmitting signals which are obtained by modulating the high level expanded color difference signals and the luminance signal;

demodulating means for demodulating the signals transmitted by the transmitting means and obtaining the high level expanded color difference signals and the luminance signal; and

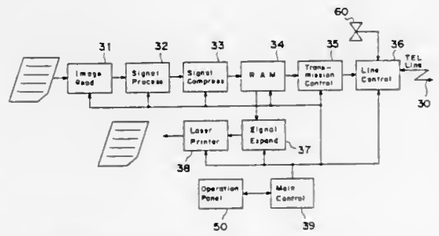
high level compressing means for compressing in level the high level expanded color difference signals in said high level region.

5,251,043

FACSIMILE APPARATUS COMPRISING MEANS FOR CONTINUOUSLY TRANSMITTING PLURAL GROUPS OF IMAGE DATA TO THE SAME RECEIVER PARTY

Hiroaki Hamano, Osaka, and Akio Nakajima, Toyokawa, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 15, 1991, Ser. No. 776,636
Claims priority, application Japan, Oct. 15, 1990, 2-277402; Oct. 15, 1990, 2-277403; Oct. 15, 1990, 2-277404
Int. Cl.[5] H04N *1/32*
U.S. Cl. 358—402 **13 Claims**



1. A facsimile apparatus comprising:

reading means for reading images of first and second documents to be transmitted set thereon and converting said read images into first and second image data, respectively;

party setting means for setting a first receiver party to which said first image data are to be transmitted and a second receiver party to which said second image data are to be transmitted;

transmitting means for transmitting image data to a facsimile apparatus of a receiver party;

communication line control means for connecting said transmitting means through a communication line with a facsimile apparatus of a receiver party set by said party setting means before start of transmitting image data by said transmitting means, and disconnecting said connected facsimile apparatus from said transmitting means after completion of transmitting said image data by said transmitting means;

reservation control means for controlling said transmitting means to start transmitting said second image data at a predetermined timing;

judgment means for judging whether or not said first receiver party set by said party setting means agrees with said second receiver party set by said party setting means when said first image data are transmitted by said transmitting means after said communication line control means connects said transmitting means through said communication line with a facsimile apparatus of said first receiver party; and

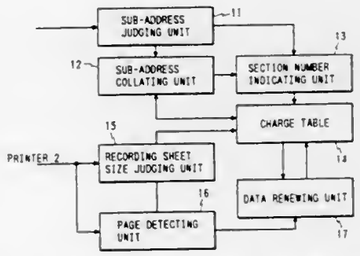
transmission control means for controlling said transmitting means and said communication line control means to start transmitting said second image data without disconnecting said transmitting means from said facsimile apparatus of said first receiver party after completion of transmitting said first image data, when it is judged by said judgment means that said first receiver party agrees with said second receiver party.

5,251,044

FACSIMILE APPARATUS FOR ACCOUNTING FOR SUPPLIES USED IN RECEIVING FACSIMILE TRANSMISSIONS

Tadahiko Ikegaya, Saitama, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Aug. 27, 1991, Ser. No. 750,479
Claims priority, application Japan, Oct. 24, 1990, 2-284380
Int. Cl.[5] H04N *1/00*
U.S. Cl. 358—440 **3 Claims**



1. A facsimile apparatus connected to an ISDN network for use by a plurality of users having associated party subaddresses or party numbers, comprising:

means for identifying a user in receipt of a facsimile transmission received by the facsimile apparatus based on a called party sub-address or called party number transmitted from a caller;

means for storing an accumulated consumption amount of an expandable supply of the facsimile apparatus for each of the users receiving facsimile transmission from a caller;

means for detecting a consumption amount of the expendable supply consumed in connection with each facsimile transmission received by the facsimile apparatus; and

means for updating the accumulated consumption amount of the identified user in receipt of the facsimile transmission based on the detected consumption amount.

5,251,045

MAGNIFICATION CHANGING SYSTEM FOR A COPIER

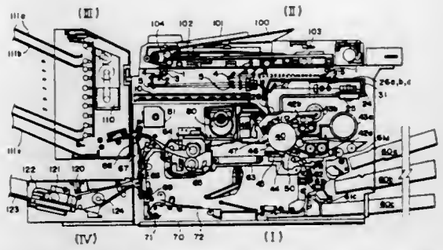
Seiji Sakata, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 752,201, Aug. 21, 1991, abandoned, which is a continuation of Ser. No. 525,317, May 21, 1990, abandoned, which is a continuation of Ser. No. 191,329, May 9, 1988, abandoned. This application Jul. 13, 1992, Ser. No. 911,363
Claims priority, application Japan, May 9, 1987, 62-113071; May 9, 1987, 62-113072
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—451 **38 Claims**

1. In a magnification changing system for a copier, the improvement:

wherein in an independent longitudinal and lateral magnification change mode of said copier and longitudinal magnification and a lateral magnification are displayed when said longitudinal and lateral magnifications are independently set, an exclusive area is provided for setting a magnification other than the longitudinal and lateral magnifications being displayed and wherein said magnification ratio in both the longitudinal and lateral directions are automatically computed independently from each other and are computed at least in part from a manual input which indicates the input size in both the longitudinal and lateral directions of the area to be copied and an output size desired in longitudinal and lateral directions;

means for storing said computed magnification ratios for later use; and



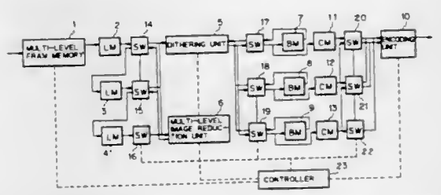
means for manually and numerically inputting the dimensions of the original and the size of the desired copied output.

5,251,046

HIERARCHY ENCODING SYSTEM OF MULTI-LEVEL IMAGE THROUGH DITHER CONVERSION

Hisaharu Kato, and Toshiaki Endo, both of Tokyo, Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Mar. 11, 1992, Ser. No. 851,040
Claims priority, application Japan, Mar. 12, 1991, 3-70346
Int. Cl.[5] H04N *1/41*
U.S. Cl. 358—457 **3 Claims**



1. A hierarchy encoding system of dithered image comprising;

a multi-level image frame memory (1) for storing a frame of an original input image with multi-levels,

a plurality of multi-level line memories (LM2, LM3, LM4) coupled with said frame memory (1), each of said line memories having capacity of several lines of an image, and each of said line memories storing a part of an input image in full size manner and reduced manner,

a dithering unit (5) for converting content of each of said line memories to bi-level dithering image,

a multi-level image reduction unit (6) for reducing a multi-level image stored in said line memories (LM2, LM3, LM4),

a first group of switches (SW14, SW15, SW16) for selectively coupling said line memories to said dithering unit and said reduction unit,

a plurality of bi-level line memories (BM7, BM8, BM9) for storing dithered images which relate to said multi-level image line memories,

a second group of switches (SW17, SW18, SW19) for selectively coupling said dithering unit (5) with said bi-level line memories, a plurality of coding memories (CM11, CM12, CM13) for storing a frame of dithered images relating to said bi-level line memories,

an encoding unit (10) for effecting hierarchy encoding for

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images stored in said coding memories, beginning lowest resolution image to higher resolution images,

a third group of switches (SW20, SW21, SW22) for selectively coupling outputs of said coding memories with said encoding unit,

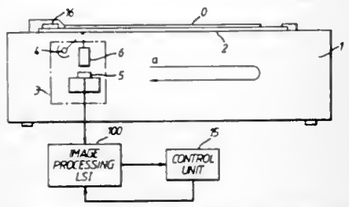
wherein an original multi-level image is first reduced so that a plurality of reduced multi-level images are obtained in said multi-level line memories, each layer of reduced multi-level image is dithered to bi-level images which are stored in said bi-level line memories, and dithered bi-level images are encoded through differential encoding manner.

5,251,047

APPARATUS INCLUDING A CIRCUIT FOR PROCESSING AN ANALOG IMAGE SIGNAL SUPPLIED FROM AN ARRAY SENSOR

Shuji Kizu, Kanagawa; Junichi Koseki, and Jun Sakakibara, both of Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Aug. 23, 1991, Ser. No. 748,879
Claims priority, application Japan, Aug. 24, 1990, 2-221259
Int. Cl.[5] H04N *3/14*
U.S. Cl. 358—471 **8 Claims**



1. An integrated circuit device for processing an analog image signal supplied from a CCD sensor having two horizontal transfer registers and a photodiode array between and coupled to the horizontal transfer registers, the horizontal transfer registers transferring respective first and second photosignals, the CCD sensor having a first reading system which generates the analog image signal by combining first and second photosignals with respectively opposite phases and a second reading system which generates the analog image signal by combining first and second photosignals respectively in-phase, the integrated circuit device comprising:

means for processing the analog image signal supplied from the CCD sensor; and

means for generating a selecting signal in response to an input to represent the use of the first reading system or the second reading system to the processing means and to enable processing respectively of the analog image signal supplied from the CCD sensor using the first reading system or the analog image signal supplied from the CCD sensor using the second reading system.

5,251,048

METHOD AND APPARATUS FOR ELECTRONIC SWITCHING OF A REFLECTIVE COLOR DISPLAY

J. William Doane, and Deng-Ke Yang, both of Kent, Ohio, assignors to Kent State University, Kent, Ohio

Filed May 18, 1992, Ser. No. 885,754
Int. Cl.[5] G02F *1/133*; G09G *3/36*
U.S. Cl. 359—51 **11 Claims**

1. Bistable light modulating apparatus comprising:

a) a light modulating material including polydomains of polymer network dispersed in a chiral nematic liquid crystal having positive dielectric anisotropy;

b) substrates confining the light modulating material between parallel inner surfaces treated to promote homogeneous alignment of the chiral nematic liquid crystal near the inner surfaces, whereby

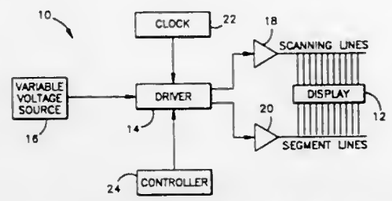
i) the material aligns in a reflective mode during trailing edges of at least some voltage pulses having amplitudes no less than a reference voltage V_R, and

ii) the material aligns in a scattering mode during rising edges of pulses having amplitudes no less than a reference voltage V_S and less than the reference voltage V_R;

c) elongated electrically-conductive scanning line paths supported on one side of the light modulating material by one of the substrates;

d) elongated electrically-conductive segment line paths skewed with respect to the scanning line paths and supported by another of the substrates on an opposite side of the light modulating material;

e) a first gating system in electrical communication with the scanning line paths for enabling a constant voltage V_{12}



along each of the scanning line paths and sequentially enabling a scanning voltage pulse of amplitude V_P superimposed on the constant voltage V_{12} along each scanning line path; and

f) a second gating system in electrical communication with the segment line paths for enabling a voltage V_{21} or a voltage V_{22} to at least one of the segment line paths synchronously with the scanning pulse;

g) wherein the amplitudes of the pulses enabled by the first and second gating systems satisfy the relationships

i) $|V_{21}-V_{12}|<V_S$;

ii) $|V_{22}-V_{12}|<V_S$;

iii) $V_S<|V_{21}-V_{12}-V_P|<V_R$; and

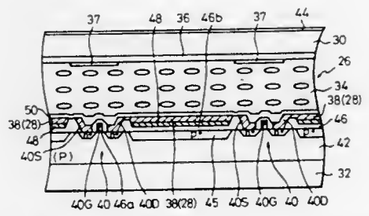
iv) $|V_{22}-V_{12}-V_P|<V_R$.

5,251,049

REFLECTION TYPE ACTIVE MATRIX LIQUID CRYSTAL APPARATUS

Masuji Sato; Akira Tanaka, and Noboru Wakatsuki, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 18, 1991, Ser. No. 717,066
Claims priority, application Japan, Jun. 22, 1990, 2-162955
Int. Cl.[5] G02F *1/133, 1/137*
U.S. Cl. 359—40 **10 Claims**



1. A reflection type liquid crystal apparatus comprising:

a liquid crystal panel comprising:

a pair of first and second, substantially parallel plates arranged in opposed relationship and having respective inner and outer surfaces, the first plate being transparent,

a first, common electrode formed as a continuous layer on the inner surface of the first plate,

a matrix of a plurality of picture elements and an associated active matrix driver formed on the inner surface of the second plate, the picture elements being positioned in alignment in first and second directions and spaced by intervening spaces between the respective peripheries of the adjacent picture elements in each of the first and second directions, and the active matrix driver comprising a plurality of switching elements respectively associated with the plurality of picture elements and formed in the respective intervening spaces and first and second pluralities of electrical conductors extending respectively in the first and second directions and formed in the corresponding intervening spaces, each switching element interconnecting the respectively associated picture element with respectively corresponding ones of the first and the second pluralities of conductors and being selectively operable for applying a voltage, supplied to the corresponding conductors, to the respectively associated picture element, each picture element furthermore comprising a storage capacitor of uniform thickness formed on the inner surface of the second plate and having an outer perimeter spaced from the switching elements of the active matrix driver formed within the respectively associated intervening spaces and a picture element electrode formed in registry with and on a capacitance electrode of the respectively associated storage capacitor and having an outer perimeter disposed inwardly of the outer perimeter of the respectively associated storage capacitor and having an outer perimeter disposed inwardly of the outer perimeter of the respectively associated storage capacitor, the picture element electrodes defining a reflecting layer of the liquid crystal panel, and

a nematic liquid crystal material received within and filling the space between the first and second opposed plates of the liquid crystal panel and having a positive birefringence and arranged in a homogeneous orientation with a constant director;

a light beam source;

means for selectively controlling each of the switching elements for selectively applying the voltage, supplied to the corresponding conductors, to the respectively associated picture element of the liquid crystal panel; and

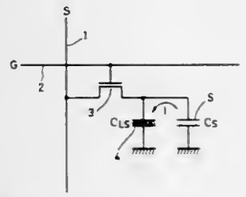
polarizer means selectively operable for receiving the light beam from the light beam source and supplying a polarized light beam to, and so as to be incident on, the outer surface of the first plate, the incident polarized light beam having a plane of vibration which forms a selected angle relative to the director of the liquid crystal material in the liquid crystal panel and propagating through the liquid crystal panel and being reflected internally therein by the reflecting layer, and the polarizer means further being selectively operable for receiving a reflected light beam emerging from the liquid crystal panel and selectively transmitting therethrough the received, emerging light beam and, for each picture element and in the absence of a voltage being applied thereto, the incident polarized light beam propagating therethrough in a double refraction mode with a first birefringence value and after being internally reflected therein by the reflecting layer propagating therethrough and emerging from the first plate of the liquid crystal panel as an emerging polarized light beam which is substantially transmitted by the polarizer means, and when a voltage is selectively applied to the picture element, the incident polarized light beam propagating through the liquid crystal panel in a double refraction mode with a single birefringence value, smaller than the first birefringence value, and after being internally reflected therein by the reflecting layer emerging as an emerging polarized light beam which is not substantially transmitted by the polarizer means.

5,251,050

LIQUID CRYSTAL DISPLAY HAVING SPONTANEOUS POLARIZATION ABOVE THRESHOLD VOLTAGE TIMES LIQUID CRYSTAL AND SUB-CAPACITOR CAPACITANCE OVER TWO TIMES PIXEL AREA

Katsumi Kurematsu, Kawasaki, and Sbuzo Kaneko, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 22, 1992, Ser. No. 916,629
Claims priority, application Japan, Jul. 25, 1991, 3-207272
Int. Cl.[5] G02F *1/1343, 1/13*
U.S. Cl. 359—57 **11 Claims**



7. A display apparatus comprising:

an active matrix cell having a matrix of pixels each having a sub-capacitor and including a liquid crystal having a spontaneous polarization value P_S in C/cm^2 expressed by the following formula:

$$P_S > V_{th}(C_{LC}+C_S)/2A,$$

where C_{LC} represents a capacitance in F of each said pixel serving as a capacitor, C_S represents a capacitance in F of said sub-capacitor, A represents an area in cm^2 of each said pixel, and V_{th} represents an inversion threshold voltage of said liquid crystal; and

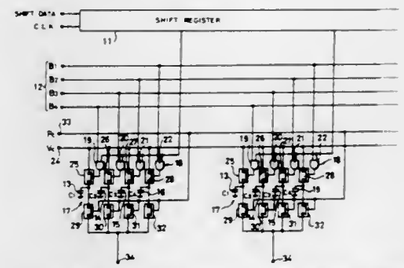
voltage application means for applying to each said pixel a voltage signal high enough to reset each said pixel to an initial state followed by application of a gradation voltage signal corresponding to gradation information to be displayed.

5,251,051

CIRCUIT FOR DRIVING LIQUID CRYSTAL PANEL

Tatsumi Fujiyoshi, Sendai, and Munemitsu Abe, Miyagi, both of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Jul. 27, 1992, Ser. No. 920,410
Claims priority, application Japan, Aug. 8, 1991, 3-199642
Int. Cl.[5] G02F *1/133*; G09G *3/36*
U.S. Cl. 359—85 **1 Claim**



1. A circuit for driving a liquid crystal panel in which a plurality of scanning electrodes and a plurality of signal electrodes which cross the plurality of scanning electrodes are provided, by sequentially scanning the plurality of scanning electrodes and supplying image data to the plurality of signal electrodes, said circuit comprising:

a conversion section for converting image data to digital

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data binarized according to the gradation of the image data;

a horizontal scanning signal generation section for generating horizontal scanning signals used to select a signal electrode to which the digital data is input;

capacitor groups, each of which capacitor groups being formed of capacitors the number of which corresponds to the number of bits of the digital data;

selection sections, provided in correspondence with the plurality of signal electrodes, for selecting none or at least one capacitor from among the capacitor group on the basis of the horizontal scanning signals and the digital data;

a power-supply section for supplying an electric charge to each of the capacitor group;

first switch sections, provided in correspondence with the plurality of signal electrodes, for charging selected capacitors only by the selection sections of the capacitor group in every horizontal synchronization period; and

second switch sections, provided in correspondence with the plurality of signal electrodes, for connecting all capacitors of the capacitor group, including capacitors which are not selected by the selection sections, to corresponding signal electrodes and supplying the electric charge which has been charged to the signal electrodes, in every horizontal synchronization period.

5,251,052

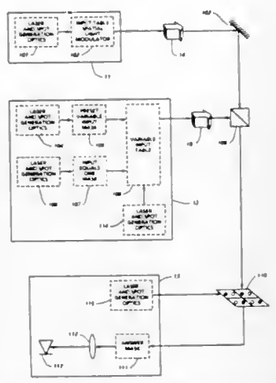
SYSTEM FOR SOLVING BOOLEAN EQUATIONS USING OPTICAL LOOKUP TABLES

Roy M. Reyes, Dahlgren, and Scott E. Spence, Fredericksburg, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 2, 1992, Ser. No. 939,229

Int. Cl.[5] G02F *3/00*; G06E *3/00*

U.S. Cl. 359—107 **4 Claims**



1. An optical system for solving Boolean equations comprising:

a lookup table comprising a matrix of symmetric-self electro-optic effect devices;

an input table stage comprising spot generation optics providing input to a spatial light modulator, wherein the output of said input table stage is input to said lookup table;

a plurality of variable input stages comprising spot generation optics providing an input to a preset variable input mask which in turn is connected as an input to a variable input table, wherein the outputs of said variable input stages are connected as inputs to said lookup table; and

means for reading the output result from said lookup table.

5,251,053

RADIO COMMUNICATION SYSTEM

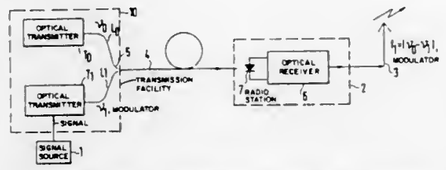
Rolf Heidemann, Tamm, Fed. Rep. of Germany, assignor to Alcatel N.V., Netherlands

Filed Jun. 4, 1991, Ser. No. 710,158

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1990, 4019224

Int. Cl.[5] H04B *10/00, 10/12*

U.S. Cl. 359—145 **8 Claims**



1. A cellular radio communication system, comprising:

a transmission facility provided with means for receiving an information signal from an information-signal source;

a distant radio station; and

an optical waveguide connecting the transmission facility to the radio station for carrying the information signal to the radio station, and wherein the radio station sends out a radio signal in free space containing the information signal and has a carrier frequency f_1, the transmission facility transmits on the optical waveguide to the radio station an optical carrier wave modulated with the information signal and having a first optical frequency and an unmodulated optical carrier wave having a second optical frequency, with the two optical frequencies selected to differ by the value of the carrier frequency f_1, and the radio station includes a device which generates the radio signal containing the information signal and having the carrier frequency f_1 by mixing the modulated and unmodulated optical carrier waves.

5,251,054

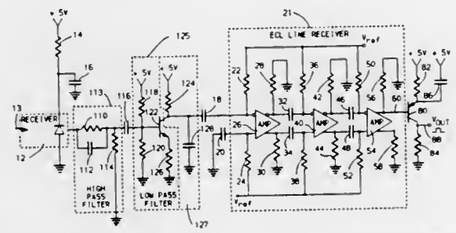
LAN ELECTRO-OPTICAL INTERFACE

Mark A. Lynn, Warren, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 24, 1991, Ser. No. 782,177

Int. Cl.[5] H04B *10/06, 10/20*

U.S. Cl. 359—189 **4 Claims**



1. An apparatus coupled between an analog receiver and a line receiver means, comprising:

first filter means for receiving an electrical signal from the analog receiver and for first filtering the electrical signal, filtering low frequency noise from the electrical signal while passing data signals contained in the electrical signal, the data signals having a data frequency, the first filter means outputting a first filtered signal at a first filter output;

amplification means, connected to the output of the first filter means, for amplifying the first filtered signal, outputting, as a result, an amplified signal;

second filter means, coupled between the amplification means and the line receiver means, for receiving the amplified signal and for second filtering the amplified signal to filter high frequency noise from the amplified signal while passing data signals contained in the amplified signal, the second filter means outputting a second filtered signal to the line receiver means, which, in response thereto, outputs a robust square signal, whereby the sensitivity of the system is increased,

wherein the first filter means comprises

a parallel circuit including a first resistor connected in parallel with a capacitor, the parallel circuit having a first connection and a second connection, the first connection coupled to the output of the analog receiver and the second connection coupled to the amplification means; and

a second resistor connected between the second connection of the parallel circuit and ground,

whereby the first filter means comprises a first order high pass filter having a break frequency below the data frequency and operational to attenuate low frequency noise, which comprises all frequencies below the break frequency, whereby the first filter means decreases a bit error rate of the apparatus and increases sensitivity of the system.

5,251,055

OPTICAL SCANNING APPARATUS

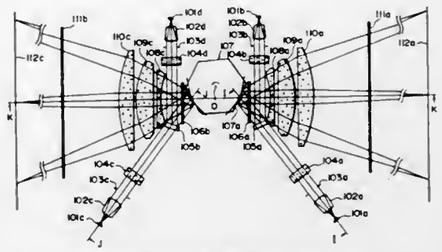
Jun Koide, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 22, 1990, Ser. No. 497,315

Claims priority, application Japan, Mar. 23, 1989, 1-071530; Jul. 20, 1989, 1-188474

Int. Cl.[5] G02B *26/08*

U.S. Cl. 359—216 **28 Claims**



13. An optical scanning apparatus comprising:

means for generating plural light beams;

a deflector for deflecting plural light beams from said generating means;

an optical system for focusing plural light beams deflected by said deflector onto predetermined planes; and

means for guiding some of said plural light beams from said generating means to said deflector after passing between said deflector and said optical system.

5,251,056

HIGH-SPEED LIGHT BEAM DEFLECTOR

J. Kelly Lee, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 31, 1992, Ser. No. 923,405

Int. Cl.[5] G02B *26/08*

U.S. Cl. 359—224 **11 Claims**

1. A high-speed beam deflector for use in deflecting a light beam incident thereon, comprising:

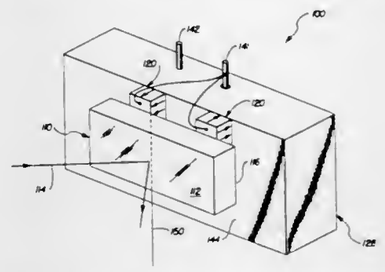
a platform;

first and second piezoelectric means, each means including a piezoelectric element operable in a d_{33} mode, and means operatively connected to the piezoelectric element to operate the piezoelectric element in the d_{33} mode;

a reflecting body including a first reflective surface suitable for reflecting the light beam, and a second back surface;

first means for operatively connecting the piezoelectric means to the platform; and

second means for operatively connecting the reflecting body



to the first and second piezoelectric means wherein piezoelectric expansion or contraction of each of said piezoelectric element according to said d_{33} mode in the piezoelectric means is coupled to the reflecting body at a location substantially adjacent to a selected one of first and second nodal points of the reflecting body.

5,251,057

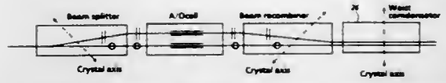
MULTIPLE BEAM OPTICAL MODULATION SYSTEM

Jean-Michel Guerin, Glendale, and Melvin E. Swanberg, Claremont, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 13, 1989, Ser. No. 421,226

Int. Cl.[5] G02F *1/01, 1/11, 1/29*; G02B *5/30*

U.S. Cl. 359—249 **3 Claims**



1. A beam modulator for producing two parallel modulated beams from one original unmodulated beam comprising:

a splitter for splitting said original beam into two parallel beams separated by a first distance, said parallel beams being polarized ninety degrees apart,

two intensity modulators for individually and independently intensity modulating said parallel beams,

a recombiner for bringing the parallel beams, which have travelled different distances, together so that they are within a second distance of each other, and

a waist compensator, positioned after said recombiner, which reduces the transmission rate of the parallel beam which has travelled the shortest distance, relative to the other parallel beam, to bring the waists of both parallel beams to the same plane.

5,251,058

MULTIPLE BEAM EXPOSURE CONTROL

Thomas D. MacArthur, Pasadena, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 13, 1989, Ser. No. 421,227

The portion of the term of this patent subsequent to Oct. 2, 2007, has been disclaimed.

Int. Cl.[5] G02F *1/01, 1/11, 1/29*; G02B *5/30*

U.S. Cl. 359—249 **3 Claims**

2. A modulator for modulating a beam comprising:

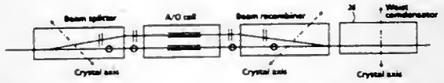
a splitter for splitting one original beam into first and second

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parallel beams, said first and second parallel beams being polarized ninety degrees apart,

two intensity modulators for individually and independently intensity modulating each parallel beam,

a recombiner for bringing the parallel beams together to form one intensity modulated beam, and



means for adjusting the polarization angle of the original beam prior to said original beam's intersecting said splitter to equalize the amount of power in each of the two beams output by said splitter.

5,251,059

FREQUENCY CONVERSION DEVICE AND METHOD OF FABRICATING THE SAME

Hikaru Kouta, Tokyo, Japan, assignor to Nec Corporation, Tokyo, Japan

Filed Dec. 27, 1991, Ser. No. 813,846

Claims priority, application Japan, Jan. 9, 1991, 3-11664

Int. Cl.[5] H01S *3/10;* **H03F** *7/00*

U.S. Cl. 359—326 **10 Claims**

1. A frequency conversion device for providing a second harmonic of light of 1.064 μm generated from a YAG laser, comprising: a single crystal of lithium borate (LiB_3O_5), having a phase matching angle of $\theta = 55°$ and $\phi = 28°$, in which a laser damage threshold value becomes maximum.

5,251,060

LIGHT-SOURCE UNIT

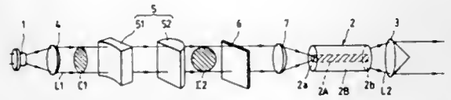
Naota Uenishi, and Takafumi Uemiya, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sep. 30, 1992, Ser. No. 953,241

Claims priority, application Japan, Sep. 30, 1991, 3-79216[U]

Int. Cl.[5] H03F *7/00*

U.S. Cl. 359—328 **19 Claims**



1. A light source unit comprising:

a laser source for generating a laser light beam having a fundamental wavelength and a generally elliptical shape in cross-section;

a beam shaping assembly for converting the elliptically shaped in cross-section laser beam from the laser unit into a circularly shaped in cross-section beam, the beam shaping assembly including at least one lens having a cylindrical surface and an optical axis, the cylindrical surface having generatrix lines that are perpendicular to the optical axis of the lens; and

a wavelength converter for receiving the light from the beam shaping assembly and for generating light of a second harmonic (half wavelength of the fundamental).

5,251,061

TELECOMMUNICATIONS SYSTEM HAVING FIBER OPTICAL AMPLIFIERS FOR TRANSMITTING SIGNALS OVER LONG DISTANCES

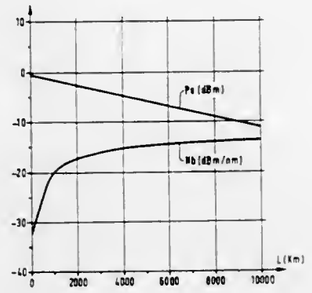
Jacques Auge, Saint Cheron; Jean-Pierre Blondel, Viroflay; Hervé Février, Massy, and Jean-Francois Marcerou, Courcouronnes, all of France, assignors to Alcatel N.V., Netherlands

Filed Apr. 22, 1992, Ser. No. 872,177

Claims priority, application France, Apr. 22, 1991, 91 04930

Int. Cl.[5] H01S *3/30, 3/06;* **G02C** *6/26*

U.S. Cl. 359—341 **2 Claims**



1. A telecommunications system incorporating a plurality of optical amplifiers containing erbium-doped fibers for transmission of signals of which at least one signal has a wavelength of approximately 1550 nm, and said system comprising at least one erbium-doped optical fiber amplifier which performs a self-filtering function, such that the noise peak which said at least one optical fiber amplifier generates at around 1536 nm is reabsorbed and appears at 1550 nm, wherein the pump power ranges between 2 mW and 300 mW at a wavelength of 980 nm ± 40 nm and/or 1480 nm ± 40 nm, the length of said doped fiber ranges between 1 m and 60 km, and a core of said fiber being aluminum-free, doped with erbium in a proportion of between 0.1 ppb and 500 ppm, and doped with germanium in a proportion of more than 2%, such that the signal/noise ratio of said telecommunications system remains sufficient after signal propagation over 10,000 km, without the need of an intermediate filter.

5,251,062

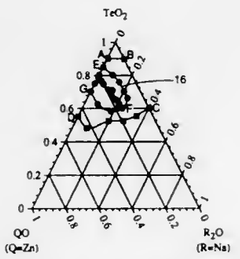
TELLURITE GLASS AND FIBER AMPLIFIER

Elias Snitzer, Piscataway; Eva M. Vogel, Berkeley Heights, and Jau-Sheng Wang, Piscataway, all of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed Oct. 15, 1992, Ser. No. 961,557

Int. Cl.[5] H01S *3/00, 3/16*

U.S. Cl. 359—341 **19 Claims**



1. A tellurite glass material suitable for making an optical fiber amplifier, said material comprising an excitable rare-earth ion in a host composition consisting essentially of TeO_2, R_2O, and QO in molar proportions included within line EFGE of FIG. 2 and wherein the molar proportion of R_2O is at least 0.05 mole %, where R is a monovalent metal selected from the group consisting of Na, K, Rb, Cs, Tl, and Ag, and Q is a divalent metal selected from the group consisting of Zn, Be, Mg, Ca, Sr, and Ba.

5,251,063

LARGE-APERTURE THREE-LENS OBJECTIVE WITH ASPHERICAL-SURFACES

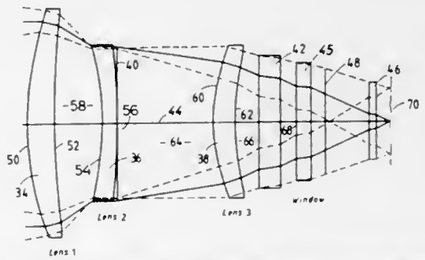
Rainer Baumann, Uberlingen/Bodensee, Fed. Rep. of Germany, assignor to Bodenseewerk Geratetechnik GmbH, Bodensee, Fed. Rep. of Germany

Filed Oct. 16, 1992, Ser. No. 961,815

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1991, 4134227

Int. Cl.[5] G02B *9/14, 13/14, 13/18*

U.S. Cl. 359—355 **18 Claims**



1. A three-lens objective comprising three lenses and having a relatively short and a relatively long back or front focal length, respectively, each of said lenses having a front surface facing an object and a rear surface facing an image of said object, wherein

a front one of said lenses consists of a first material of relatively low dispersion, a median one of said lenses consists of a second material of relatively larger dispersion, and a rear one of said lenses consists of a material of relatively low dispersion,

said front lens has positive power, said median lens has negative power, and said rear lens has positive power,

the spacing between said front lens and said median lens is substantially smaller than the distance between said median lens and said rear lens, and

each of said lenses has at least one aspherical surface.

5,251,064

LIGHTING FIXTURE REFLECTOR CONTAINING ULTRAVIOLET ABSORBER

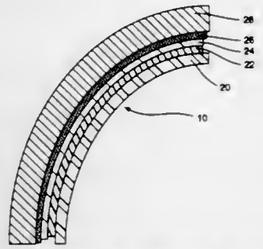
R. Alexander Tennant, Santa Clara, and Thomas G. Hood, San Francisco, both of Calif., assignors to Southwall Technologies Inc., Palo Alto, Calif.

Filed Mar. 8, 1991, Ser. No. 665,841

Int. Cl.[5] G02B *5/08, 5/20;* **F21V** *7/22;* **B32B** *15/08*

U.S. Cl. 359—361 **14 Claims**

1. In a metalized reflector film comprising a sheet of flexible plastic carrying a vacuum-deposited layer of reflective silver metal, the improvement comprising employing as the flexible



plastic a plastic containing an effective silver-to-plastic bond degradation-preventing concentration of ultraviolet absorber.

5,251,065

POLARIZING SCREEN AND PROJECTOR USING THE SAME

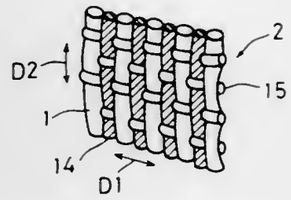
Masao Uetsuki, Kurashiki, Japan, assignor to Kuraray Co., Ltd., Kurashiki, Japan

Filed Jul. 29, 1992, Ser. No. 921,219

Claims priority, application Japan, Jul. 31, 1991, 3-215829; Jul. 31, 1991, 3-215830

Int. Cl.[5] G03B *21/60;* **H04N** *9/31*

U.S. Cl. 359—454 **16 Claims**



1. A polarizing screen for visually presenting a picture in response to receipt of projected imagewise rays of light having a first polarizing direction, said polarizing screen comprising;

a screen base having first and second surfaces opposite to each other, said first surface when the polarizing screen is in use facing a viewer; and

a polarizing fabric overlaying the first surface of the screen base and operable to pass therethrough the projected imagewise rays of light having the first polarizing direction, but absorb rays of light having a second polarizing direction perpendicular to the first polarizing direction;

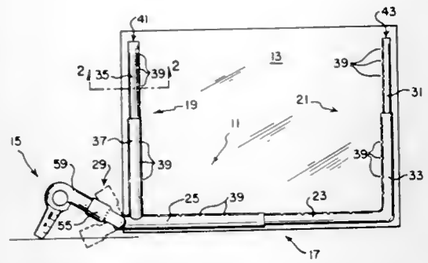
said polarizing fabric includes a plurality of juxtaposed polarizing fibers operable to pass therethrough the projected imagewise rays of light having the first polarizing direction, but absorb rays of light having the second polarizing direction and a plurality of juxtaposed non-polarizing fibers interlaced with said juxtaposed polarizing fibers so as to extend perpendicular to said juxtaposed polarizing fibers; and

each of said polarizing fibers being made of material having an affinity with a polarization developing substance and added with the polarization developing material, said each polarizing fiber being elongated in a lengthwise direction conforming to the second polarizing direction.

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VOL 1155 ISS 1 OCTOBER 5 1993 UMI

5,251,066
BATHROOM MIRROR DEMISTER
Paul Appelbaum, 219 Broadway, Suite 510, Laguna Beach, Calif. 92651
Filed Nov. 12, 1992, Ser. No. 974,609
Int. Cl.[5] G02B *7/18*
U.S. Cl. 359—509 **8 Claims**



1. Device for demisting the surface of a mirror mounted to a vertical wall, using hot air supplied by a portable hand-held hot-air blower having a tubular exhaust nozzle, and said mirror being generally rectangular and said surface including a lower edge portion, and opposing side edge portions, said device including:

a) a first, horizontally extending duct member having a plurality of spaced-apart nozzles along one side of said duct member, said duct member adapted to extend along said mirror lower edge portion;

b) at least one vertically extending duct member having a plurality of spaced-apart nozzles along one side of said duct, and connected in flow-communication with one end of said first duct and adapted to extend along one of said mirror surface side edge portions;

c) fastening means for removably attaching said first and said vertically extending ducts to said mirror surface; and

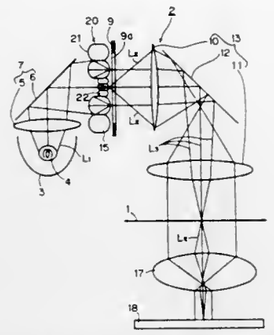
e) a generally tubular inlet member for hot air, attached in flow-communication with said first duct member, and adapted to slidably and removably receive the tubular exhaust nozzle of said blower, whereby said device is operative to receive hot air from said blower and direct said hot air through said nozzles and across the surface of said mirror.

5,251,067
FLY-EYE LENS DEVICE AND LIGHTING SYSTEM INCLUDING SAME
Kazuya Kamon, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 5, 1991, Ser. No. 788,109
Claims priority, application Japan, Jan. 8, 1991, 3-000465
Int. Cl.[5] G02B *3/08, 27/12;* **F21V** *5/04;* **G03B** *27/54*
U.S. Cl. 359—628 **7 Claims**

1. A fly-eye lens device incorporated in a projection printing apparatus comprising:

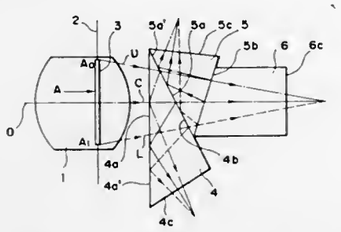
a fly-eye lens comprising a two-dimensional arrangement of plural types of fly-eye constituent lenses of unequal size; and

supporting means for supporting said fly-eye lens,



wherein the types of said fly-eye constituent lenses are disposed in order of ascending size from the center of said fly-eye lens toward the periphery thereof.

5,251,068
OBJECTIVE LENS HAVING A FILTER
Shigeru Oshima, Yokohama, and Yusuke Furue, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 691,422, Apr. 25, 1991, abandoned. This application Jan. 8, 1993, Ser. No. 2,677
Claims priority, application Japan, Apr. 27, 1990, 2-112544
Int. Cl.[5] G02B *5/22, 27/14;* **H04N** *9/097*
U.S. Cl. 359—634 **12 Claims**



1. An objective lens unit disposed forwardly of a prism block for dividing light into a plurality of light components, said objective lens unit comprising:

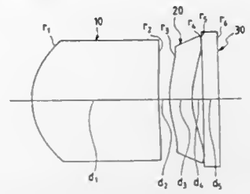
optical conveying means for conveying light beams from an object along an optical light path; and

an optical unit disposed in the optical light path and differing in the transmission factor for a wavelength depending on the areas of said optical unit.

5,251,069
IMAGING LENS SYSTEM
Takashi Iizuka, Tokyo, Japan, assignor to Asahi Kogaku Kogyo K.K., Tokyo, Japan
Continuation of Ser. No. 915,766, Jul. 21, 1992, abandoned, which is a continuation of Ser. No. 634,907, Dec. 27, 1990, abandoned. This application Jan. 4, 1993, Ser. No. 526
Claims priority, application Japan, Dec. 28, 1989, 1-344030
Int. Cl.[5] G02B *15/14, 13/18*
U.S. Cl. 359—717 **16 Claims**

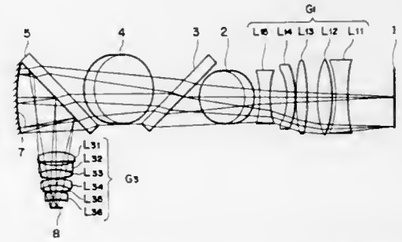
1. An imaging lens system comprising a focusing lens and a correcting meniscus lens which is located on an image side of said focusing lens and which has on both sides aspherical

surfaces each convex toward the object side in a paraxial area, wherein an object disposed perpendicular to an optical axis of



said lens system is imaged on a light receiving element disposed perpendicular to the optical axis.

5,251,070
CATADIOPTRIC REDUCTION PROJECTION OPTICAL SYSTEM
Sumio Hashimoto, Tokyo; Yutaka Ichihara, and Hideo Mizutani, both of Yokohama, all of Japan, assignors to Nikon Corporation, Tokyo, Japan
Filed Sep. 22, 1992, Ser. No. 948,428
Claims priority, application Japan, Sep. 28, 1991, 3-276593; Sep. 28, 1991, 3-276595
Int. Cl.[5] G02B *17/00*
U.S. Cl. 359—732 **12 Claims**



12. A catadioptric reduction projection optical system for reduction-projecting the pattern of a first surface onto a second surface, including:

a semi-transparent mirror having a plane parallel plate for dividing the optical path of a light beam from said first surface into a reflecting optical path and a transmitting optical path;

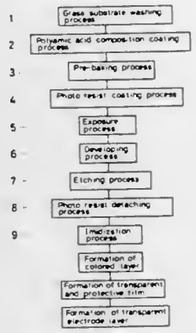
a concave reflecting mirror disposed on one of the transmitting optical path and the reflecting optical path of a light beam emerging from said semi-transparent mirror for returning said emerging light beam to said semi-transparent mirror;

an anterior lens unit disposed between said semi-transparent mirror and said first surface;

a posterior lens unit of positive refractive power for converging the light beam returned to said semi-transparent mirror by said concave reflecting mirror and emerging from said semi-transparent mirror and forming a reduced image of the pattern of said first surface on said second surface; and

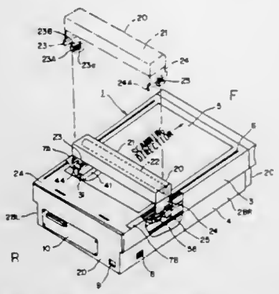
aberration correcting means disposed between said anterior lens unit and said semi-transparent mirror to correct aberrations created by said semi-transparent mirror, said aberration correcting means having at least one correcting plane parallel plate disposed obliquely with respect to the optical axis of said anterior lens unit, said correcting plane parallel plate and the plane parallel plate of said semi-transparent mirror being disposed at locations whereat azimuth angles defined as the directions of normals to said plane parallel plates have been rotated by a multiple of 90° about the optical axis of said anterior lens unit.

5,251,071
COLOR FILTER
Hiroyuki Kusukawa, and Yasuhide Nakajima, both of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan
Filed Oct. 18, 1991, Ser. No. 779,353
Claims priority, application Japan, Oct. 19, 1990, 2-280753
Int. Cl.[5] G02B *5/22*
U.S. Cl. 359—891 **2 Claims**



1. A color filter provided with a colored layer comprising resin and a black matrix to define the colored layer formed on a transparent matrix, characterized in that the black matrix is obtained by imidizing a plyimide precursor composition mixed with a silane coupling agent of epoxy type.

5,251,072
IMAGE READER
Hiroaki Fukuoka; Junji Kawano; Yoshikazu Miyashita; Hideaki Sekiguchi, and Hitoshi Nakagawa, all of Ise, Japan, assignors to Shinko Electric Co., Ltd., Tokyo, Japan
Filed May 27, 1992, Ser. No. 890,760
Claims priority, application Japan, May 28, 1991, 3-123358; Oct. 18, 1991, 3-270869; Nov. 8, 1991, 3-292924
Int. Cl.[5] G02B *27/00*
U.S. Cl. 359—896 **14 Claims**



1. In an image reader which includes:

a casing having a ceiling of a transparent manuscript plate, the casing further housing therein a read unit provided with a reflection read light source unit, a drive mechanism for reciprocally moving the read unit from its home position, and a luminaire power source unit; and a transmission read light source unit provided separately from the casing; wherein the transmitted light which has passed through the manuscript or the reflected light which has reflected from the manuscript is focused on a receiving surface of a read sensor of the read unit to thereby produce an image thereon;

the improvement comprising wherein the image reader

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further includes a holding mechanism for supporting the transmission read light source unit and a connecting mechanism for connecting the transmission read light source unit to the read unit mechanically and electrically, the connecting mechanism being slidable in holder recesses provided in the ceiling, the luminaire power source unit being provided with an inverter power source which is common to the reflection read light source unit and the transmission read light source unit and being provided with a light source unit switching device which can switch the output of the inverter power source to the reflection read light source unit or the transmission read light source unit.

5,251,073

HIGH-APERTURE WIDE ANGLE LENS

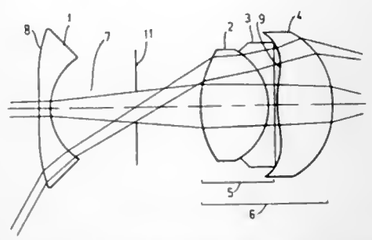
Udo Schauss, Waldböckelheim, Fed. Rep. of Germany, assignor to Jos. Schneider Optische Werke Kreuznach GmbH & Co. KG, Bad Kreuznach, Fed. Rep. of Germany

Filed Aug. 28, 1991, Ser. No. 750,869

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1990, 4027273; Aug. 27, 1991, 4128435

Int. Cl.[5] G02B *3/02*

U.S. Cl. 359—715 **10 Claims**



3. A high-aperture wide-angle lens assembly, comprising:

a divergent front lens group consisting of at least one lens with considerable effect on distortion correction and relative luminous intensity having a negative refraction decreasing continuously from an optical axis of said assembly outwardly to an edge thereof and with an aspherical front surface;

a relatively large air space following said front lens group and having a thickness of at least three times an overall focal length of the assembly;

a rear lens group separated by said relatively large air space from said front lens group and consisting of at least three lenses in the order from an objective side to an image side including:

a first convergent lens group consisting of a cemented element, and

a second convergent lens group separated by a small air space from said first convergent lens group and having an effect on spherical aberration and image field convexity, said rear lens group having a positive refracting action continuously decreasing from said optical axis outwardly to an edge by reason of at least one aspherical surface of said second convergent lens group facing said cemented element, said cemented element consisting of two lenses; and

an aperture diaphragm with vignetting action located substantially at the center of the thickness of said relatively large air space for image field correction.

5,251,074

METHOD AND APPARATUS FOR CONTROLLING A VIDEO SIGNAL PRINT SYSTEM

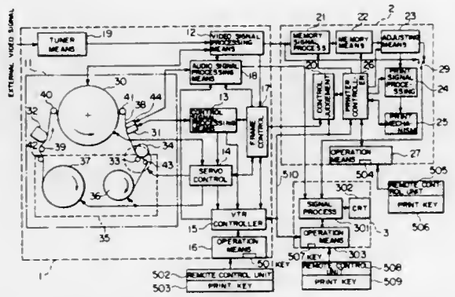
Kentaro Hamma, Katsuta; Yasunori Kobori, Yokohama; Hiroyuki Kimura, Kanagawa; Yosbinori Okada, Yokohama; Shoji Ohno, Katsuta; Osamu Numata, Katsuta; Kotaro Kawamura, Mito; Hideo Nisbijima, Katsuta, and Naohiro Ozawa, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 12, 1990, Ser. No. 507,870

Claims priority, application Japan, Apr. 14, 1989, 1-092838; Jul. 28, 1989, 1-194072

Int. Cl.[5] H04N *5/782*

U.S. Cl. 360—10.1 **28 Claims**



1. A method for use in controlling a video print system including at least a recording medium playback apparatus, a printer and a monitor, said method comprising the steps of:

(1) playing back a recording medium by moving said recording medium frame by frame in a forward/back direction;

(2) entering a command for freezing a specific frame of a picture;

(3) moving said recording medium in a reverse direction for a prescribed amount in response to an instruction from said printer upon receiving said freeze command;

(4) counting an amount of reverse movement of said prescribed amount;

(5) further playing back said recording medium again by moving said recording medium in a forward direction;

(6) counting an amount of forward movement of said recording medium during said further playback;

(7) comparing the counted amount of forward movement with said amount of reverse movement, and producing a freeze signal when the difference between said amount of forward movement and said amount of reverse movement is equal to a prescribed amount;

(8) storing said specific frame of said picture in a memory of said printer upon receiving said freeze signal; and

(9) printing said stored frame of said picture.

5,251,075

CUE SIGNAL DETECTING APPARATUS

Yoshiyuki Yoshida, and Seiichi Sakuma, both of Osaka, Japan, assignors to Sanyo Electric Co., Ltd., Japan

PCT No. PCT/JP90/00147, § 371 Date Oct. 4, 1990, § 102(e) Date Oct. 4, 1990, PCT Pub. No. WO90/09662, PCT Pub. Date Aug. 23, 1990

PCT Filed Feb. 6, 1990, Ser. No. 582,834

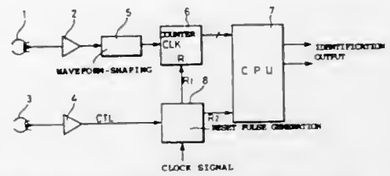
Claims priority, application Japan, Feb. 8, 1989, 1-30621; Dec. 18, 1989, 1-327641

Int. Cl.[5] G11B *5/02, 27/02*

U.S. Cl. 360—18 **4 Claims**

1. In a system for recording and reproducing signals to/from a magnetic tape, wherein said system has a magnetic tape pre-recorded with a main audio signal, a cue signal, a first signal and an auxiliary audio signal that is auxiliary to the main audio signal, the auxiliary audio signal and cue signal being in a same audio frequency band and are time division multiplex recorded onto an audio track on said magnetic tape, wherein the first signal is recorded on a track different from the audio track and is used by the system to control the system, apparatus for detecting the cue signal by reproducing a signal from said audio track, said apparatus comprising:

means for reproducing said first signal to control said system during operation of the system in a reproduction mode,



said first signal having a frequency proportional to a speed of the magnetic tape and being reproduced from a track different from the audio track of said magnetic tape;

means for detecting a wave number of the signal reproduced from said audio track, said wave number being detected during a predetermined time period defined by said first signal; and

means for determining, in response to said wave number being within a predetermined range, that said signal reproduced from said audio track is said cue signal.

5,251,076

RECORDING APPARATUS FOR ELECTROCARDIOGRAPHS

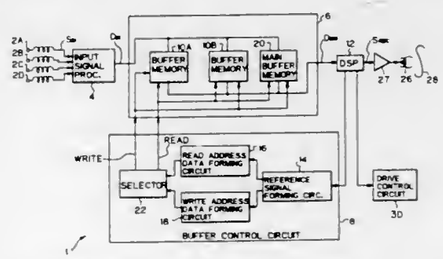
Motoharu Hagiwara, Chiba; Kazumasa Sato; Isao Tamaki, both of Tokyo; Tadao Sasaki, Kanagawa; Yasukazu Sato, Tokyo; Yoichi Hishijima; Mitsuru Harada, both of Kanagawa, and Hirokazu Kimura, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 7, 1991, Ser. No. 666,021

Claims priority, application Japan, Mar. 7, 1990, 2-55526; Mar. 16, 1990, 2-66176; Mar. 20, 1990, 2-69992

Int. Cl.[5] G11B *5/09*

U.S. Cl. 360—32 **3 Claims**



1. A magnetic recording apparatus comprising:

a signal processor configured for processing an analog signal to produce a digital signal comprising a serial stream of digital data;

memory means having parallel first, second and third memories connected to said signal processor and configured for storing therein at a first rate serial stream of digital data in accordance with the following repeating order; said first memory, said second memory, said third memory and then said second memory, and for retrieving therefrom at a second rate higher than said first rate the serial stream of digital data from the appropriate memory during the storage of said serial stream of digital data into another of said memories;

recording signal generating means for converting the serial stream of digital data retrieved from the memory means to a recording signal suitable for recording;

recording means for recording the recording signal; and

drive means for driving said recording means intermittently in response to a timing signal and configured for outputting the recording signal from the recording signal generating means to the recording means.

5,251,077

METHOD OF READING DIGITAL DATA ON MAGNETIC TAPE

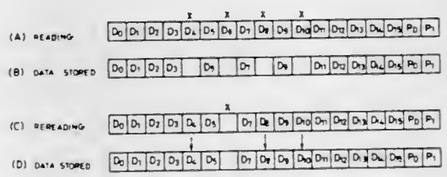
Shuichi Saitoh, Tachikawa, Japan, assignor to TEAC Corporation, Tokyo, Japan

Filed Jun. 11, 1991, Ser. No. 715,085

Claims priority, application Japan, Jun. 15, 1990, 2-157840

Int. Cl.[5] G11B *20/12, 20/18*

U.S. Cl. 360—53 **3 Claims**



1. In an apparatus having a transducer for reading digital data on a magnetic tape having a series of frames each constituted of a predetermined number of blocks in succession, each block having stored thereon the digital data along with a check signal for the determination of whether the data on that block has been read by the transducer correctly or not, a reading method which comprises:

(a) providing a temporary storage device capable of storing at one time the data from at least one frame of the tape;

(b) reading the successive blocks of any selected frame;

(c) concurrently with step (b), checking the data from each block of the selected frame for a read error by the check signal read from that block;

(d) also concurrently with step (b), writing on the temporary storage device the data from only those blocks where no read error has been found in step (c);

(e) rereading all the blocks of the selected frame in the case where a read error has been found in step (c);

(f) concurrently with step (e), checking the data from any block where a read error has been found in step (c), for a read error by the check signal read from that block;

(g) also concurrently with step (e), writing on the temporary storage device the data from any block where no read error has been found in step (f); and

(h) repeating, as necessary, steps (e), (f) and (g) up to a predetermined number of times.

5,251,078

TAPE POSITION DETECTING DEVICE THAT COMPARES AND SELECTS BETWEEN TWO MODES OF DETECTING THE TAPE POSITION

Ichiro Aki, and Toshiaki Kojima, both of Kanagawa, Japan, assignors to Sony Corporation, Japan

Filed Mar. 18, 1991, Ser. No. 671,094

Claims priority, application Japan, Mar. 28, 1990, 2-79919

Int. Cl.[5] G11B *15/18*

U.S. Cl. 360—72.2 **5 Claims**

1. A tape position detecting device which comprises:

relative position detecting means for detecting an amount of movement of a tape-shaped recording medium, and providing relative position data according to the result of detection;

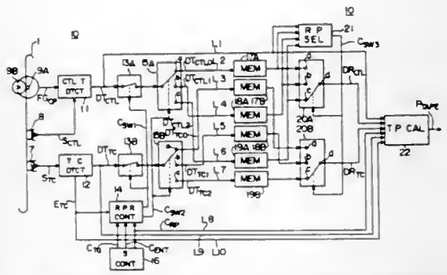
absolute position detecting means for detecting a means on

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said tape-shaped recording medium to produce absolute position data;

reference position data storing means for storing said relative position data and said absolute position data for predetermined reference points; and

tape position data generating means in which, with respect to an arbitrary point, first tape position data is generated using said relative position data, second tape position data is generated using the difference between said absolute



position data of said arbitrary point and said absolute position data of said reference point added to or subtracted from said relative position data of said reference point, and when the difference between said first and second tape position data is out of a predetermined range, said first tape position data is transmitted as a tape position data output, whereas when said difference is in said predetermined range, said second tape position data is transmitted as said tape position data output.

5,251,079

TRACKING CONTROL CIRCUIT INCLUDING GAIN CORRECTION CONTROL

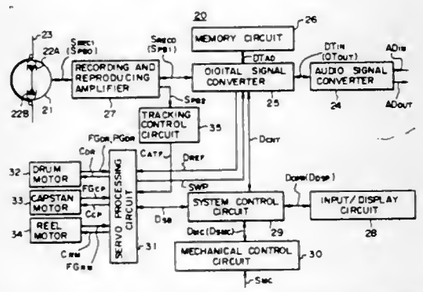
Makoto Yamada, Tokyo; Masayoshi Noguchi, Chiba, and Junji Ono, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 7, 1990, Ser. No. 610,408

Claims priority, application Japan, Dec. 30, 1989, 1-340278; Dec. 30, 1989, 1-340370

Int. Cl.[5] G11B *5/584*

U.S. Cl. 360—77.14 **2 Claims**



1. A tracking control circuit of a rotary head type magnetic recording and reproducing apparatus, which positions magnetic heads which generate a reproduction signal from a recording track using a first pilot signal and a second pilot signal for tracking reproduced from adjacent recording tracks in response to a synchronization signal for tracking which is recorded on the recording track, the recording tracks being arranged in an oblique direction with respect to the running direction of the magnetic tape, and wherein a third pilot signal is recorded on the recording track after the synchronization signal, comprising:

synchronization signal detecting means for generating a first sampling pulse, a second sampling pulse, and a third sampling pulse depending on the recording positions of the first pilot signal, the second pilot signal, and the third pilot signal relative to the synchronization signal;

envelope detecting means for detecting the first pilot signal, the second pilot signal, and the third pilot signal from the reproduction signal and generating an envelope signal;

analog to digital conversion means for sampling the envelope signal with the timing of the first sampling pulse, the second sampling pulse and the third sampling pulse and converting it into digital data in the form of first pilot data, second pilot data, and third pilot data for tracking depending on the first pilot signal, the second pilot signal, and the third pilot signal;

gain correction means supplied with the third pilot data for comparing the third pilot data with predetermined reference data and generating corresponding gain correction data for correcting gain or loss;

tracking error detecting means supplied with the first pilot data and the second pilot data for generating tracking error data from the first pilot data and the second pilot data, the tracking error detecting means including adding means for adding the gain correction data to the tracking error data to produce gain corrected tracking error data; and

magnetic tape driving means supplied with the gain corrected tracking error data for controlling the feeding speed of the magnetic tape based on the gain corrected tracking error data.

5,251,080

TAPE LOADING AND BIASING DEVICE FOR RECORDING OR REPRODUCING APPARATUS

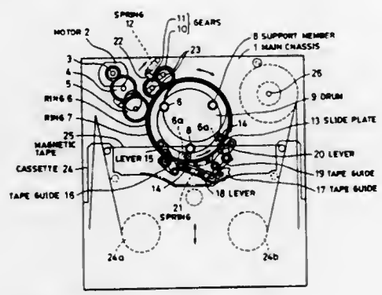
Hidetoshi Matsuoka; Makoto Fujiki; Junji Kobayashi, all of Tokyo, and Hiroo Edakubo, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 499,982, Mar. 27, 1990, abandoned. This application Aug. 21, 1992, Ser. No. 931,498

Claims priority, application Japan, Mar. 28, 1989, 1-73804

Int. Cl.[5] G11B *5/027*

U.S. Cl. 360—85 **16 Claims**



1. A tape loading apparatus comprising:

(A) loading means, including two tape guide members respectively mounted on two tape guide driving members, for forming a predetermined tape path by moving said tape guide members along respective predetermined paths by driving said two tape guide driving members;

(B) means for producing a driving force to move said tape guide members along their respective predetermined paths, and transmission members for directing said driving force, which is provided to only one of said tape guide driving members, to drive the other tape guide driving member;

(C) a supporting member for supporting said transmission members; and

(D) energizing means for resiliently pulling said supporting

member in a predetermined direction, and for positioning said tape guide members to positions which form the predetermined tape path in the state where a loading operation has been completed.

5,251,081

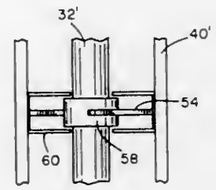
SPINDLE GROUNDING DEVICE

Luke A. Cossette; Christopher G. Keller, both of Rochester, and Brian E. Schultz, Lakeville, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 708,544, May 31, 1991, abandoned. This application Jan. 8, 1993, Ser. No. 1,942

Int. Cl.[5] G11B *33/14, 17/02*

U.S. Cl. 360—97.02 **20 Claims**



1. A disk drive comprising:

a housing;

a spindle shaft attached to said housing;

a hub mounted to said spindle shaft so that the hub can rotate about said spindle shaft;

a plurality of fingers attached to said hub and contacting said spindle shaft, each of said plurality of fingers located within substantially the same plane;

a disk mounted on said hub;

one or more transducers; and

actuator means for moving the transducer over the surface of the disk.

5,251,082

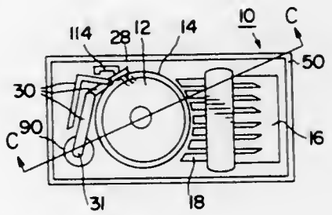
MINIATURIZED DISK FILE PLUGGABLE INTO A CARD TERMINAL

Timothy J. Elliott, 6172 Kimberly Dr., Huntington Beach, Calif. 92647; Robert W. Herman, 1034 Basa St., Laguna Beach, Calif. 92651; William L. Cooper, 2-1171 E. Cliff Dr., Santa Cruz, Calif. 95062, and Robert S. Smith, 1263 Emory St., San Jose, Calif. 95126

Filed Jun. 13, 1991, Ser. No. 714,561

Int. Cl.[5] G11B *17/02, 5/37, 5/54, 5/55*

U.S. Cl. 360—98.07 **43 Claims**



1. A disk file which comprises:

a housing having a base wall;

a disk means having at least one disk with a rim and an information storage surface;

a bearing means supported by said housing for rotatably supporting said disk means substantially at a center of said at least one disk;

a head assembly means with at least one read/write head for writing and reading said information on said information storage surface;

a means for supporting said head assembly means with said at least one read/write head positioned on said information storage surface of said disk means;

an actuator means mounted on said base wall supporting said head assembly supporting means for positioning said read/write head at selected locations on said information storage surface;

a rotor magnet means for turning said disk means attached to at least one rim of said at least one said disk;

a stator means supported on said base wall outside and around said rim and adjacent to said rotor means for driving said rotor means.

5,251,083

FLYING HEAD SLIDER AND METHOD OF PRODUCING THE SAME

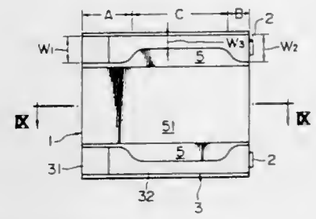
Yoshinori Takeuchi, Ishioka; Yuzo Yamaguchi, Tsuchiura; Fumitaka Muranushi; Katsuyuki Tanaka, both of Ibaraki; Kanji Kawakami, Hiratsuka; Hiroshi Daito, Kanagawa, and Tetsuo Masukawa, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 529,452, May 29, 1990, Pat. No. 5,128,821. This application Jun. 8, 1992, Ser. No. 895,134

Claims priority, application Japan, May 29, 1989, 1-132630

Int. Cl.[5] G11B *5/60*

U.S. Cl. 360—103 **20 Claims**



1. A flying head slider comprising:

a slider body adapted to be disposed in opposed relation to a rotating recording medium;

a pair of gas bearing rails provided on a surface of said slider body facing said recording medium, said gas bearing rails flying said slider body by a pressure produced by a stream of gas resulted from the rotation of said recording medium;

shallow bleed portions respectively provided at said surface of said slider body along a side of each one of said pair of gas bearing rails, said shallow bleed portions being depressed with respect to gas bearing rail surfaces of said gas bearing rails and having depths from said gas bearing rails surfaces that are substantially the same; and

a deep bleed portion centrally disposed on said slider body, said deep bleed portion being depressed with respect to the gas bearing rail surfaces of said gas bearing rails and having a depth from said gas bearing rail surfaces deeper than said shallow bleed portions.

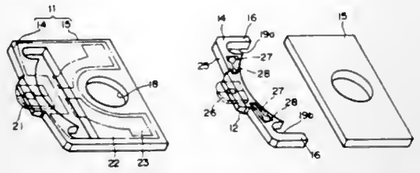
VOL 1155 ISS 1 OCT 5 1993 UMI

5,251,084

TRANSDUCER HEAD BASE FOR MULTIPLE SIZE DRUMS

Shinichi Nanjyo, Miyagi; Minoru Shonai, Kanagawa, and Futoshi Yoshida, Miyagi, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 3, 1991, Ser. No. 709,217
Claims priority, application Japan, Jun. 5, 1990, 2-59255[U]
Int. Cl.[5] G11B 5/53, 21/24
U.S. Cl. 360—104 9 Claims



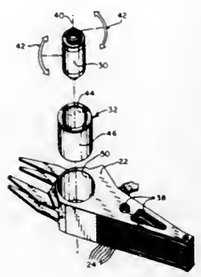
1. A head base for supporting a transducing head, comprising a single base plate having a transverse hole perforated therein, said base plate having a front portion for supporting said transducing head, a rear portion and a pair of frangible connecting portions which connect said front and rear portions to each other, said base having an overall size set in accordance with a first diameter drum in a rotary drum apparatus, said rear portion of said head base having a first attachment portion for attachment to said first diameter drum when said rear portion is attached to said front portion, said connecting portions being readily cut or broken such that said front portion and said rear portion are separated from each other at said connecting portions, and said front portion of said head base having a second attachment portion for attachment to a drum of a second diameter smaller than said first diameter, when said front portion is separated from said rear portion.

5,251,085

PIVOTABLE ARM ASSEMBLY WITH REDUCED THERMAL DISTORTION

Frank I. Morris, San Jose; King L. Wong, Cupertino, and Robert L. Talbot, San Jose, all of Calif., assignors to Maxtor Corporation, San Jose, Calif.

Filed Jul. 17, 1991, Ser. No. 731,548
Int. Cl.[5] G11B 5/55
U.S. Cl. 360—106 18 Claims



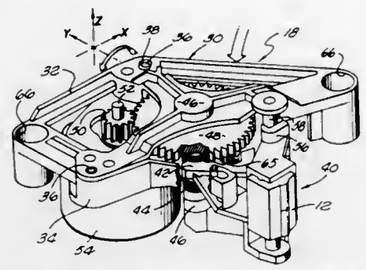
1. An actuator arm assembly with reduced thermal distortion, said actuator arm assembly comprising:
an actuator arm having a bore extending therethrough;
a sleeve positioned within said bore, said sleeve having a size for an interference fit within said bore; and
an anti-friction material positioned between the outer surface of the sleeve and said bore.

5,251,086

TAPE DRIVE SUBASSEMBLY

W. Keith Beisner, Scotts Valley, and Tom Winsemius, Soquel, both of Calif., assignors to MPC Nakamichi Peripheral Corporation, Cypress, Calif.

Filed Oct. 11, 1991, Ser. No. 776,094
Int. Cl.[5] G11B 5/55
U.S. Cl. 360—106 40 Claims



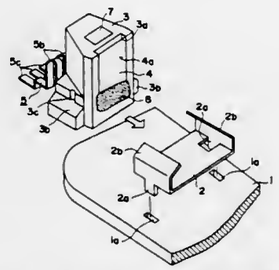
1. A tape drive that records and plays a tape, the tape drive being oriented within an orthogonal x, y and z coordinate system, comprising:
a baseplate adapted to support the tape;
a housing operatively connected to said baseplate having a pivot member that allows said housing to pivot about said baseplate;
adjustment spring means operatively connected to said housing for biasing said housing relative to said baseplate;
a tape head operatively connected to said housing;
first adjustment means operatively connected to said housing for rotating said tape head relative to said baseplate about the y axis; and,
second adjustment means operatively connected to said housing for rotating said tape head relative to said baseplate about the x axis.

5,251,087

HOLDER FOR MAGNETIC SENSITIVE ELEMENT

Hiroshi Sakashita; Norihide Yoshida, and Tatemi Yoneda, all of c/o Kabushiki Kaisha Sankyo Seiki Seisakusho, Komagane Works, 14-888, Akaho, Komagane-shi, Nagano, Japan

PCT No. PCT/JP89/00132, § 371 Date Aug. 9, 1990, § 102(e) Date Aug. 9, 1990, PCT Pub. No. WO89/07751, PCT Pub. Date Aug. 24, 1989
PCT Filed Feb. 10, 1989, Ser. No. 555,499
Claims priority, application Japan, Feb. 10, 1988, 63-27696
Int. Cl.[5] G11B 5/56, 21/24; H03M 1/22
U.S. Cl. 360—109 14 Claims



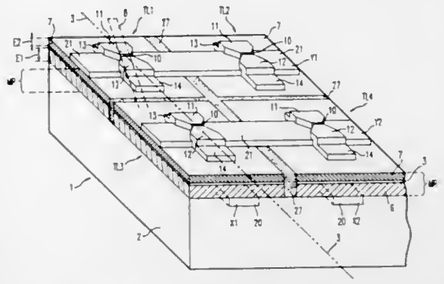
1. A holder for a magnetic sensitive element having a magnetic sensitive surface, said magnetic sensitive element being disposed in opposed relation to magnetic recording medium, with a gap provided therebetween, said holder comprising:
a movable holder which is connected to a flexible signal input/output member, said movable holder holding said magnetic sensitive element;
a fixed holder which is fixed to a board and formed from an elastic material, said fixed holder holding said movable holder in such a manner as to allow said movable holder to move in a direction perpendicular to said magnetic sensitive surface of said magnetic sensitive element, while simultaneously applying a first biasing force to said movable holder in a direction perpendicular to the line of movement of said movable holder for lateral movement relative to said fixed holder, simultaneous with a second biasing force applied perpendicular to said lateral movement of said movable holder by said fixed holder, and
a guide means positioned between said movable and fixed holders, said movable holder thereby moving in a direction perpendicular to the magnetic sensitive surface of said magnetic sensitive element, said perpendicular direction to said magnetic sensitive surface, to permit adjustment of said gap between said magnetic sensitive element and said magnetic recording medium;
wherein said first and second biasing forces of said fixed holder act to normally retain said movable holder thereon, while permitting the same to be movable thereon, so that said movable holder may be moved and retained at a desired point for said gap adjustment on said movable holder in such a manner as to permit movement of said movable holder of said gap adjustment, so that said movable holder may be both movable and temporarily securable at a desired point.

5,251,088

MAGNETIC READ HEAD WITH MAGNETO-RESISTANCE EFFECT

Jean-Marc Coutellier, Maurepas; Thierry Valet, Viroflay, and François X. Pirot, Les Ulis, all of France, assignors to Thomson-CSF, Puteaux, France

Filed Jul. 19, 1991, Ser. No. 732,797
Claims priority, application France, Jul. 20, 1990, 9009301
Int. Cl.[5] G11B 5/127
U.S. Cl. 360—113 10 Claims



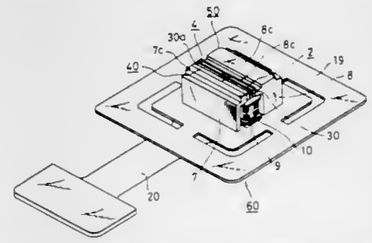
1. A magnetic reading device comprising:
a substrate having at least one magnetic read head to be subjected to the influence of a magnetic track;
a multilayer magneto-resistance element, forming the at least one magnetic read head, comprising a stack formed by at least a first and a second magnetic layer respectively forming a stable magnetic layer having a first coercive field and a sensitive magnetic layer having a second coercive field with a value less than said first coercive field, the first and second magnetic layers being separated by a nonmagnetic layer; and
conductor means for establishing a current between the first and second magnetic layers by applying a control voltage to said first and second magnet layers;
wherein the read head comprises a magnetic circuit having a ring like configuration in which the sensitive magnetic layer is inserted, the magnetic circuit being opened by an air gap located close to a passage plane of magnetic track, with a plane of the ring being perpendicular to a plane of substrate, and
wherein the stable magnetic layer is located outside the ring of the magnetic circuit.

5,251,089

MAGNETIC HEAD

Koichi Hara, Chichibu, Japan, assignor to Canon Denshi Kabushiki Kaisha, Chichibu, Japan

Filed Jul. 8, 1991, Ser. No. 725,324
Claims priority, application Japan, Jul. 9, 1990, 2-179549
Int. Cl.[5] G11B 5/29, 5/115
U.S. Cl. 360—121 13 Claims



1. A magnetic head for use with a recording medium which moves in a sliding direction relative to said magnetic head, said sliding direction being transverse to a direction of width of a track on said recording medium, said magnetic head comprising:
(a) a first magnetic core having a read/write core and an erasing core arranged downstream from said read/write core in said sliding direction of said recording medium, said first magnetic core having a surface that is disposed opposite said recording medium and having a reverse surface that faces away from said recording medium;
(b) a second magnetic core having only a read/write core, said second magnetic core having a surface that is disposed opposite said recording medium and having a reverse surface that faces away from said recording medium;
(c) a partition wall plate through which said first magnetic core and said second magnetic core are securely joined in said direction of width of a track, said partition wall plate having a surface that is disposed opposite said recording medium and having a reverse surface that faces away from said recording medium; and
(d) sliders disposed on outer surfaces of both of said first and second magnetic cores in said direction of width of a track, said sliders having surfaces that are disposed opposite said recording medium,
at least part of said surface of said partition wall plate that is disposed opposite said recording medium being separated from said recording medium more than said surfaces of said first and second magnetic cores and said sliders that are disposed opposite said recording medium, and
said reverse surface of said partition wall plate being arranged on a common plane with at least a portion of said reverse surface of said first magnetic core and at least a portion of said reverse surface of said second magnetic core.

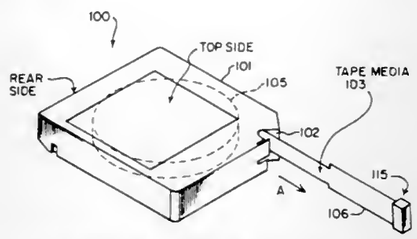
VOL 1155 ISS 1 OCT 5 1993 UMI

5,251,090

SELF SEALING DATA STORAGE ELEMENT

Samuel D. Cheatham, Golden, and Jerry L. Donze, Arvada, both of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Aug. 9, 1991, Ser. No. 743,457
Int. Cl.[5] G03B 15/32; G11B 23/02
U.S. Cl. 360—132 7 Claims



1. A self sealing data storage cartridge, capable of housing a tape media, said data storage cartridge capable of being inserted into a unit for reading/writing data on said tape media, comprising:

housing means, having predetermined exterior dimensions and an interior and having an opening in one corner thereof;

a single reel means, located within said interior of said housing means, for containing a length of said tape media wound thereon;

leader block means, attached to said tape media for transporting said tape media from said interior of said housing means via said opening; and

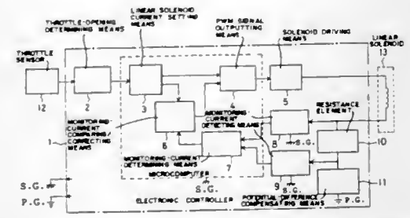
means, mechanically interconnecting said tape media and said leader block means, for sealing said tape media from environmental contamination, independent of said leader block means, when said tape media is substantially completely wound around said single reel means.

5,251,091

SOLENOID DRIVING CIRCUIT FOR AUTOMATIC TRANSMISSION

Yasunobu Ito, Okazaki, and Kunihiro Yamada, Anjo, both of Japan, assignors to Aisin AW Co, Ltd., Japan

Filed Jun. 18, 1991, Ser. No. 717,193
Claims priority, application Japan, Jun. 18, 1990, 2-159531
Int. Cl.[5] H01H 47/32
U.S. Cl. 361—152 4 Claims



1. A solenoid driving circuit for an automatic transmission for a vehicle, comprising:

a solenoid disposed in a hydraulic controller of the automatic transmission for a vehicle, said hydraulic controller controlling hydraulic pressure supplied thereto;

solenoid driving means for driving said solenoid with an actuating current;

setting means for setting a value for said actuating current;

a resistance element electrically connected in series with said solenoid;

a Darlington-connected transistor circuit electrically connected between the resistance element and a power ground;

first detecting means for detecting a voltage of a connecting point between the solenoid and the resistance element, said first detecting means being connected to a signal ground;

second detecting means for detecting a voltage of a connecting point between the resistance element and the Darlington-connected transistor circuit, said second detecting means being connected to the signal ground;

monitoring current determining means for receiving the detected voltages of the first and second detecting means and for calculating a monitoring current as a function of a voltage difference between opposite ends of the resistance element;

controlling means for effecting feedback control of the actuating current by comparing the calculated monitoring current with the set value and generating an error signal on the basis of said comparing, said actuating current being corrected to said set value responsive to said error signal, said controlling mens being connected to a signal ground; and

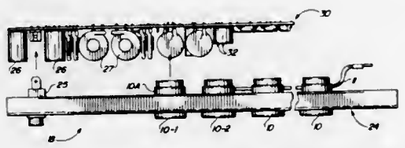
wherein said controlling means includes abnormality determining means for determining if the calculated monitoring current is abnormal and for turning off said Darlington-connected transistor circuit when the monitoring current value is determined to be abnormal.

5,251,092

RECEPTACLE ASSEMBLY WITH BOTH INSULATION DISPLACEMENT CONNECTOR BUSSING AND FRICTION CONNECTOR COUPLING OF POWER CONDUCTORS TO SURGE SUPPRESSOR CIRCUIT

Peter J. Brady, Glendale; Carol Miller, Mesa, and David R. Powell, Phoenix, all of Ariz., assignors to Protek Devices, LP, Tempe, Ariz.

Filed Nov. 27, 1991, Ser. No. 800,629
Int. Cl.[5] H02H 9/04
U.S. Cl. 361—56 11 Claims



1. A power receptacle assembly comprising in combination:

(a) an AC snap receptacle including a base containing three insulation displacement connectors each electrically connected to a separate female receptacle connector element and each having a knife edge slot, the AC snap receptacle also including a snap-on retainer, the snap-on retainer having three connector-receiving slots;

(b) three insulated wires, each having an inner power conductor, pressed by the snap-on retainer into the three knife edge slots, respectively, causing knife edges of the knife edge slots to displace insulation of the three insulated wires and electrically contact the three power conductors, respectively; and

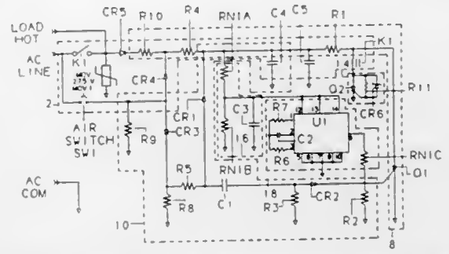
(c) three slotted male tab friction fit connectors connected to a circuit that interacts with the three power conductors, each slotted male tab friction fit connector having an elongated slot separating two bifurcated prongs, outer edges of each pair of prongs frictionally engaging a pair of inner contact surfaces of a separate insulation displacement/connector, respectively, the three insulated wires extending through the elongated slots, respectively.

5,251,093

SIMPLIFIED SELF-LATCHING RELAY SWITCHING CIRCUIT

John A. Dickey, Palm Bay, Fla., assignor to SpaTron Corporation

Filed May 24, 1991, Ser. No. 705,373
Int. Cl.[5] H01H 47/32
U.S. Cl. 361—160 14 Claims



1. A self-latching relay circuit for providing power to a load comprising:

a power supply node to which a source of power for said load is supplied;

an output node from which power is applied to said load;

a relay having a relay coil coupled in circuit between said output node and a reference potential terminal, and a normally open relay contact coupled between said power supply node and said output node, said relay contact, in its normally open state, preventing power that is supplied to said power supply node from being coupled to said output node and, therefrom, to components of said relay circuit including said relay coil, said relay contact being closed by the energization of said relay coil, such that power may be supplied from said power supply node through the closed relay contact to said output node, for application to said load and to said relay coil, so as to hold said relay in a self-latched state; and

a relay operation control circuit, coupled in circuit with said power supply node and said relay coil, said relay operation control circuit, for the case of a first, normally open state of said relay contact, also preventing power that is supplied to said power supply node from being coupled to said output node and therefrom to components of said relay circuit including said relay coil, so that said relay circuit draws no current during its off state, said relay operation control circuit being controllably operative to supply power from said power supply node to said relay coil, thereby energizing said relay coil and causing said normally open relay contact to close and place said relay in said self-latched state.

5,251,094

TERMINAL ELECTRODES FOR MULTILAYER CERAMIC CAPACITOR AND METHOD OF MANUFACTURE THEREOF

Kosbi Amano, and Masatoshi Mizobata, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Apr. 23, 1992, Ser. No. 872,804
Claims priority, application Japan, May 29, 1991, 3-126104
Int. Cl.[5] H01G 7/00, 1/14
U.S. Cl. 361—308.2 22 Claims

1. A multilayer ceramic capacitor, comprising:

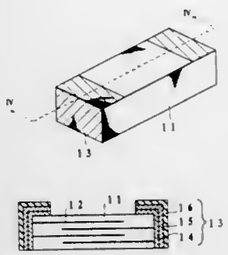
a main body made of ceramic material having an insulating property;

a plurality of internal electrodes in said main body, wherein said plurality of internal electrodes alternate with adjacent internal electrodes, and an end of each internal electrode emerges from a side of said main body;

a first and a second external electrode on first and second opposite ends of said main body, respectively;

said first external electrode on said first end extending onto at least one of adjacent four sides of said main body;

said second external electrode on said second end extending onto said at least one of said adjacent four sides of said main body; and



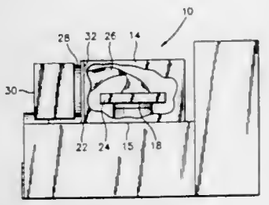
said first external electrode on said first end, and said second external electrode on said second end being omitted from at least one of said adjacent four sides, whereby a dimensional accuracy of said first and second external electrodes is improved.

5,251,095

LOW TEMPERATURE CONDUCTION MODULE FOR A CRYOGENICALLY-COOLED PROCESSOR

William C. Miller, Owego, N.Y.; Russell N. Smith, Friendsville, Pa., and Randall J. Stutzman, Vestal, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 31, 1992, Ser. No. 922,901
Int. Cl.[5] H05K 7/20
U.S. Cl. 361—694 8 Claims



1. An electronic assembly comprising:

a hermetic enclosure having a plurality of surfaces, said enclosure being disposed about a cryogenically-cooled surface;

a hermetic multilayer circuit board having one or more circuit card connectors, said multilayer circuit board being disposed to form at least part of one said surface of said hermetic enclosure such that said one or more circuit card connectors are located on the outside of said hermetic enclosure;

a processor module mounting plate disposed within said hermetic enclosure to make thermally-conductive contact with said cryogenically-cooled surface; and

one or more flexible bus cables disposed within said hermetic enclosure to transfer electrical or optical signals between said processor module mounting plate and said multilayer circuit board.

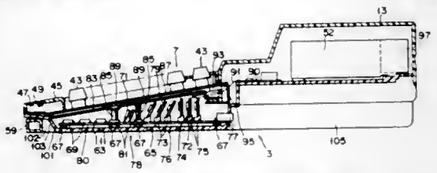
VOL 1155 ISS 1 OC 5 1993 UMI

5,251,096

PORTABLE ELECTRONIC APPARATUS

Takashi Hosoi; Keizo Ohgami, and Fumiaki Takeda, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 695,501, May 6, 1991. This application Aug. 27, 1992, Ser. No. 935,258
Claims priority, application Japan, May 7, 1990, 2-115810
Int. Cl.[5] H05K 7/20
U.S. Cl. 361—695 9 Claims



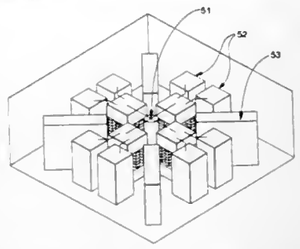
1. A portable electronic apparatus comprising:
a circuit board;
heat generating components mounted on said circuit board;
a housing containing the circuit board and having a bottom wall and a front end wall, said front end wall having an inclined wall portion being at an oblique angle relative to said bottom wall;
means for cooling said heat generating components, said cooling means including a plurality of intake ports formed in said inclined wall portion, and suction means arranged in said housing for sucking outside air into said housing through said intake ports; and
a carrying handle retractably attached to said housing and having a retracted position and an extended position, said handle including a grip section spaced from said inclined wall portion so as to define a finger recess therebetween when said handle is in said retracted position for facilitating manual gripping of said handle from said housing and for enabling air to be sucked through said intake ports.

5,251,097

PACKAGING ARCHITECTURE FOR A HIGHLY PARALLEL MULTIPROCESSOR SYSTEM

Frederick J. Simmons, Neillsville; Steve S. Chen; Greg W. Pautsch, both of Chippewa Falls; Michael H. Rabska, Eau Claire; Dennis F. Girling, Cadott; Douglas C. Paffel, Stanley; Dan L. Massopust, Eau Claire; Lisa Heid, Eau Claire; Felix R. Lesmerises, Eau Claire; Christopher J. Sperry, Eau Claire, and Edward C. Priest, Eau Claire, all of Wis., assignors to Supercomputer Systems Limited Partnership, Eau Claire, Wis.

Filed Jun. 11, 1990, Ser. No. 536,395
Int. Cl.[5] H02B 1/20; H05K 7/20
U.S. Cl. 361—687 13 Claims



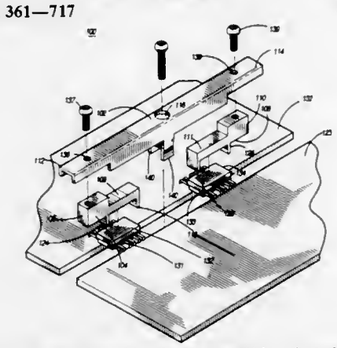
5. A packaging architecture for a multiprocessor cluster for a highly parallel computer processing system, said multiprocessor cluster comprising shared resource means for storing and retrieving data and control information, a plurality of processors capable of parallel processing, and one or more arbitration node means operably connected to said processors and said shared resource means for symmetrically interconnecting said processors with said shared resource means, said packaging architecture comprising:
a plurality of modular brick means for packaging a portion of electronic circuitry for said computer processing system, each brick means comprising:
switching circuit means for controlling the routing of signals to and from said brick means operably connected to a plurality of spaced apart first substrates;
functional circuit means for performing functional operations operably connected to a plurality of spaced apart second substrates, each of said second substrates being associated with one of said first substrates; and
transformation board means intersecting each of said plurality of first and second substrates for providing a plurality of signal paths to interconnect said switching circuit means and said functional circuit means; and
a plurality of columns, each column comprised of two or more of said brick means operably connected together.

5,251,098

MULTIPLE TRANSISTOR CLAMPING DEVICE AND METHOD

Detlef W. Schmidt, Schaumburg, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 31, 1992, Ser. No. 829,122
Int. Cl.[5] H05K 7/20
U.S. Cl. 361—717 30 Claims



1. A heat sink-hybrid circuit assembly clamping device having a net coefficient of linear expansion (CLE) substantially equal to a net coefficient of shared substrates of hybrid circuit assemblies that are soldered to common transistors, such that hybrid circuit assembly substrate-transistor solder joint stress is minimized, comprising at least:
A) an elongated central member (CEM) including first and second end portions and having means for coupling said CEM to a heat sink, and
B) at least two elongated cantilever members (CAMs), each having first and second end portions for facilitating uniform pressure and contact between the transistors of said hybrid circuit assemblies and the heat sink, wherein coupling means is utilized for distally coupling each first CAM end portion to one of the CEM end portions.

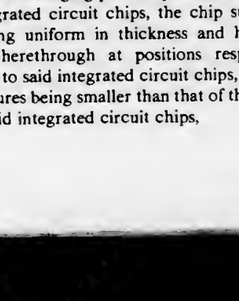
5,251,099

HIGH DENSITY ELECTRONICS PACKAGE HAVING STACKED CIRCUIT BOARDS

Steven R. Goss, and Owen H. Taggart, both of Tucson, Ariz., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 14, 1992, Ser. No. 929,354
Int. Cl.[5] H05K 7/20
U.S. Cl. 361—721 11 Claims

1. An electronics package comprising:
a housing having a first conical shaped surface disposed around the periphery of an internal wall thereof;
a first heat sink disposed within the housing that has a conical shaped surface that slidably engages the first conical shaped surface along their respective conical shaped surfaces;
first and second circuit boards disposed on opposite surfaces of the first heat sink that are interconnected by first connection means disposed through the first heat sink;
a second heat sink disposed within the housing that has a conical shaped surface that is oriented in a direction opposite to the conical shaped surface of the first heat sink;
third and fourth circuit boards disposed on opposite surfaces of the second heat sink that are interconnected by means of a second connection means disposed through the second heat sink, and wherein the third circuit board is also interconnected to the second circuit board by the first connection means;
an expandable conical shaped member that contacts the conical shaped surface of the second heat sink along at least a portion thereof;
an electrical interconnection circuit board electrically connected to the fourth circuit board that comprises means for coupling electrical signals to the respective circuit boards from outside the electronics package; and



a locking mechanism that engages the housing and the electrical interconnection circuit board, and forces the electrical interconnection circuit board and expandable conical shaped member toward the first conical surface of the housing, thus forcing the circuit boards and heat sinks against the first conical surface on the inner wall of the housing, and thus securing the heat sinks, circuit boards, and electrical interconnection circuit board in the housing.

5,251,100

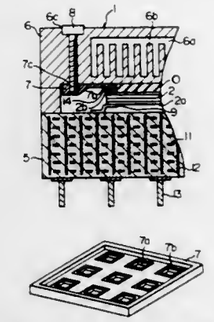
SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE WITH COOLING SYSTEM AND MANUFACTURING METHOD THEREFOR

Yuuji Fujita, Koganei, and Masahide Tokuda, Ome, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 25, 1992, Ser. No. 934,330
Claims priority, application Japan, Aug. 28, 1991, 3-216793
Int. Cl.[5] H05K 7/20
U.S. Cl. 361—719 13 Claims

1. A semiconductor integrated circuit device with a cooling system, comprising:
a circuit board;
a plurality of integrated circuit chips mounted on the circuit board;
the cooling system serving to cool the plurality of integrated circuit chips, one plane surface of the cooling system being kept in thermal contact with upper surfaces of said plurality of integrated circuit chips; and
a chip surface arranging plate disposed on upper surfaces of said integrated circuit chips, the chip surface arranging plate being uniform in thickness and having apertures formed therethrough at positions respectively corresponding to said integrated circuit chips, a size of each of the apertures being smaller than that of the corresponding one of said integrated circuit chips,

said plurality of integrated circuit chips being joined to a lower surface of said chip surface arranging plate after being drawn to the lower surface of the plate by applying a vacuum causing suction of air through said apertures, and



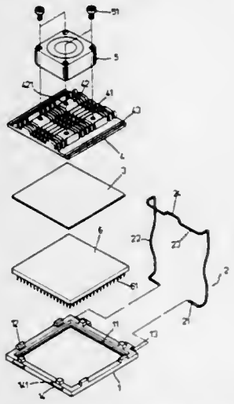
said cooling system being in thermal contact with an upper surface of said chip surface arranging plate.

5,251,101

DISSIPATING STRUCTURE FOR CENTRAL PROCESSING UNIT CHIP

Te-Chang Liu, No. 15-3, Lane 86, Fung Chiang Rd., Tai Shan Hsiang, Taipei Hsien, Taiwan

Filed Nov. 5, 1992, Ser. No. 972,384
Int. Cl.[5] H05K 7/20
U.S. Cl. 361—717 2 Claims



1. A dissipating structure for central processing unit chip comprising:
a frame of a square strip having an annular flange at inner perimeter resting the edges of a cpu chip, a plurality of circumferentially spaced blocks extending upwardly one side thereof, two lugs extending from one edge, and two protuberances;
a dissipating board being shaped like said cpu chip having a plurality of dissipating elements fastened on top thereof, which includes at least four blocks at four corners each having an aperture adapted to fasten a fan thereon, two grooves at respective sides;
a clip being made from a flexible metallic material and bent into shape having an open end rotatably hinged to said lugs of said frame, holding portions at rest edges and a finger grip;
a felt board being shaped like said cpu chip adapted to prevent said dissipating board from slippery and to dissipate heat created by said cpu chip as well.

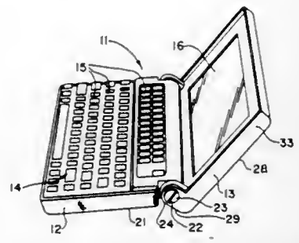
VOL 1155 ISS 1 OCT 5 1993 UMI

5,251,102

COMPUTER AND COMPUTER TERMINALS WITH DEPENDING, SUPPORTING RIDGE

Thomas E. Kimble, Glendale, Ohio, assignor to Randon Corporation, Cincinnati, Ohio

Filed Oct. 10, 1991, Ser. No. 774,473
Int. Cl.[5] H05K 5/03; G06F 1/16
U.S. Cl. 361—683 44 Claims



1. In a laptop computer or computer terminal housing having a lower section having a first front edge, a first rear edge, and first and second side edge connected to said first front edge and said first rear edge, and a bottom surface connected to said first front edge, said first rear edge, and said first and second side edges, an upper section having a second front edge, a second rear edge, third and fourth side edges connected to said second front edge and said second rear edge, and a top surface connected to said second front edge, said second rear edge, and said third and fourth side edges, and holding means, coupled to said upper section and to said lower section, for retaining said upper section in any of a plurality of configurations relative to said lower section, with said holding means, in a closed configuration, retaining said upper section upon said lower section, with said first front edge adjacent to said second front edge, said first rear edge adjacent to said second rear edge, and said first and second side edges adjacent to said third and fourth side edges, respectively, and in at least two open configurations, retaining most of said upper section away from said lower section, said configurations differing from each other by rotating said upper section, relative to said lower section, about an axis passing through both said upper section and said lower section, one of said open configurations lying intermediate said closed configuration and another open configuration, the improvement comprising support means, coupled to said upper section, for, when said upper section is in one of said open configurations, holding said first rear edge of said lower section off a surface on which said computer housing is placed, said support means including a tilting surface extending at least about half of the distance between said third and fourth side edges of said upper section, said tilting surface, when said upper section occupies one of said open configurations, extending below said bottom surface of said lower section with said first front edge on said surface on which said computer housing is placed.

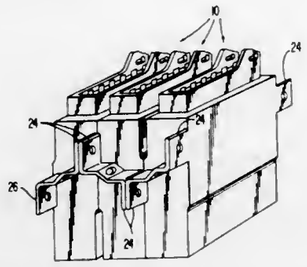
5,251,103

VEHICLE COMPONENT HOLDING CASE

Rudolf Haberstroh, Schonach; Wolfgang Robde, Sindelfingen, and Hans-Jürgen Meier, Höxter, all of Fed. Rep. of Germany, assignors to Mercedes-Benz A.G., Fed. Rep. of Germany

Filed Jul. 13, 1992, Ser. No. 912,264
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1991, 4123261
Int. Cl.[5] H05K 5/00
U.S. Cl. 361—728 6 Claims

1. A casing comprising means for holding components, including electronic components, in a vehicle and having opposite side walls, comprising first and second fastening lugs each having a fastening opening and projecting laterally from respective first and second edges on one of the opposite side walls in a plane of one of the sidewall, and third and fourth fastening lugs each having a fastening opening and projecting laterally from respective third and fourth edges on another of the opposite side walls in a plane of the another sidewalls, wherein axes through the fastening openings of the first and



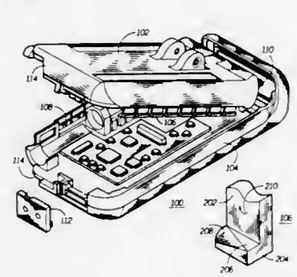
third fastening lugs projecting from the first and third edges at a first side of the casing and axes through the fastening openings of the second and fourth fastening lugs projecting from the second and fourth edges at a second side of the casing are offset with respect to one another.

5,251,104

ENCLOSURE LATCH SYSTEM INCLUDING A BEARING SURFACE TAPERING FROM FLAT TO CYLINDRICAL

Henry Wandt, Boca Raton, and Dwight D. Brooks, Boynton Beach, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 25, 1992, Ser. No. 904,113
Int. Cl.[5] H05K 5/02; E05C 19/06
U.S. Cl. 361—736 15 Claims



11. A latch system for latching and unlatching first and second structures, the latch system comprising:

a flexible extension member having an attachment end and a free end, the attachment end connected to the first structure in a manner that extends the free end towards the second structure;

a latch tooth contiguous with the free end of the flexible extension member and having a bearing surface for engaging with a mating recess formed in the second structure,

wherein the bearing surface tapers from a substantially flat surface at a first side of the latch tooth to a substantially cylindrical surface at a second side of the latch tooth opposite the first side, and

wherein, when the latch tooth is inside the mating recess, the substantially flat surface engages with the mating recess, thereby latching the first and second structures together, and

wherein, in response to application at a first end of the first and second structures of a directional unlatching force of sufficient magnitude to flex the flexible extension member, the substantially cylindrical surface makes contact with the mating recess in a manner that forces the latch tooth from the mating recess, thereby unlatching the first and second structures; and

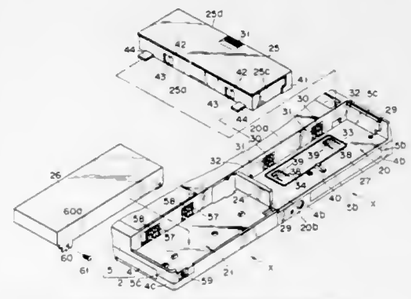
hinge means for rotatably engaging the first and second structures with one another at a second end opposite the first end for facilitating latching of the latch system and for preventing application of the directional unlatching force in a direction that could damage the latch system.

5,251,105

PORTABLE ELECTRONIC APPARATUS HAVING A BATTERY PACK WITH A MECHANISM FOR LATCHING AND AN INDEPENDENT MECHANISM FOR TEMPORARILY PREVENTING DETACHMENT

Takaichi Kobayashi, and Mitsuhiro Yoshida, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 717,837, Jun. 21, 1991, abandoned.
This application Nov. 6, 1992, Ser. No. 972,719
Claims priority, application Japan, Jun. 25, 1990, 2-166221
Int. Cl.[5] H05K 7/10; G06F 1/16
U.S. Cl. 361—683 25 Claims



1. A portable electronic apparatus comprising:

a battery pack having an engaging section;

a base body comprising means for removably storing the battery pack when the battery pack is inserted therein, the storing means comprising means for engaging the engaging section of the battery pack when the batter back is inserted in the storing means; and

latch means for releasably locking the battery pack in the storing means when the battery pack is inserted therein, the engaging means temporarily preventing the battery pack from exiting the storing means when the latch means is released, the latch means being independent of the engaging means and the engaging section and operating independent of the engaging means.

5,251,106

STACKABLE ENCLOSURE FOR ELECTRONIC DEVICES

John T. Hui, San Jose, Calif., assignor to Everex Systems, Inc., Fremont, Calif.

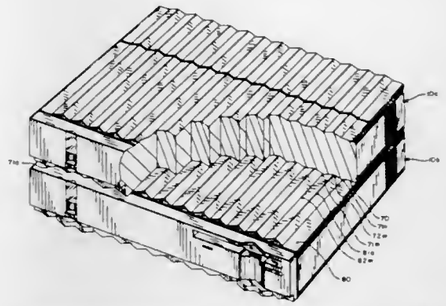
Filed Mar. 6, 1992, Ser. No. 848,420
Int. Cl.[5] H05K 7/00
U.S. Cl. 361—744 18 Claims

1. A stackable electronic device enclosure, comprising:

(A) a housing having a top surface and a bottom surface;

(B) a first plurality of projections extending upwardly from said top surface, wherein said first plurality of projections are spaced to define a first group of grooves therebetween;

(C) a second plurality of projections extending downwardly from said bottom surface, wherein said second plurality of projections are spaced to define a second group of grooves therebetween, wherein each of said second group of grooves corresponds to a respective one of said first plurality of projections, wherein each of said first group of grooves corresponds to a respective one of said second plurality of projections, wherein said first and second plurality of projections comprise spaced parallel ridges



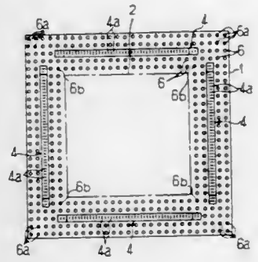
running from the back of said stackable electronic device enclosure toward its front.

5,251,107

SEMICONDUCTOR PACKAGE

Seiji Takemura, Itami, and Masataka Kawai, Kawanishi, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 27, 1991, Ser. No. 798,737
Claims priority, application Japan, Nov. 28, 1990, 2-322288
Int. Cl.[5] H05K 7/02
U.S. Cl. 361—783 6 Claims



1. A semiconductor package mounting comprising:

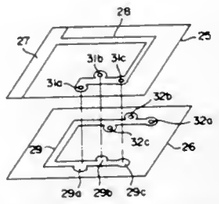
a substrate having a rectangular shape including four sides and four corners and four connector land arrays, each land array comprising a plurality of discrete electrically conductive connector lands disposed substantially along a straight line parallel to a corresponding side of said substrate;

a semiconductor chip having a rectangular configuration including four sides and four corners, and a plurality of first terminals disposed along the four sides of said semiconductor chip, said semiconductor chip being mounted on said substrate with respective sides of said semiconductor chip aligned with corresponding sides of said substrate; and

a plurality of second terminals disposed on said substrate surrounding said semiconductor chip wherein each of said connector lands is electrically connected to a respective first terminal and to a corresponding second terminal on said substrate, and the number of second terminals per unit area is smaller near the corners of said substrate than remote from the corners of said substrate.

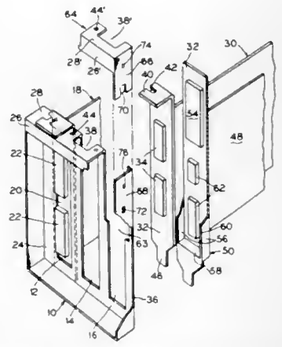
VOL 1155 ISS 1 OCT 5 1993 UMI

5,251,108
LAMINATED ELECTRONIC DEVICE WITH STAGGERED HOLES IN THE CONDUCTORS
Kazuyuki Doshita, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan
Filed Jan. 29, 1992, Ser. No. 827,596
Claims priority, application Japan, Jan. 30, 1991, 3-2488[U]
Int. Cl.[5] H05K *1/11*; H01F *27/28*
U.S. Cl. 361—792 **8 Claims**



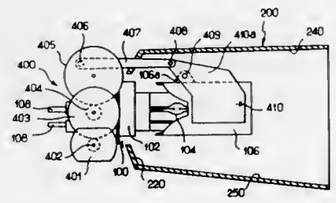
1. A laminated electronic device comprising:
plural base sheets which are laminated;
a conductor provided on each of the base sheets; and
at least two through-holes in the conductor on each of the base sheets for connecting the conductors electrically, said at least two through-holes being formed in a staggered relationship along the conductor on each of the base sheets.

5,251,109
HOLDING DEVICE FOR PLUG-IN CARDS
Günter Baitz, Krantorweg, Fed. Rep. of Germany, assignor to Siemens Nixdorf Informationssysteme AG, Fed. Rep. of Germany
PCT No. PCT/EP91/00477, § 371 Date Sep. 21, 1992, § 102(e) Date Sep. 21, 1992, PCT Pub. No. WO91/15102, PCT Pub. Date Oct. 3, 1991
PCT Filed Mar. 14, 1991, Ser. No. 927,529
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1991, 9003253[U]
Int. Cl.[5] H05K *7/18*
U.S. Cl. 361—796 **5 Claims**



1. A holding device for plug-in cards of an electric device, comprising:
a card rack forming a frame-like plug-in connection panel and operating panel,
plug-in cards mounted on said card rack in parallel with one another by means of front plates provided at one of their edges, each front plate carrying at least one plug-in connector and one operating and display element which is arranged in the area of an aperture of the card rack closed by a respective front plate,
said card rack defining at least one aperture dimensioned to be larger than remaining apertures and
the front plate provided for said at least one aperture carrying at least one plug-in connector and one operating or display element in a section of its aperture which is enlarged compared with the other apertures.

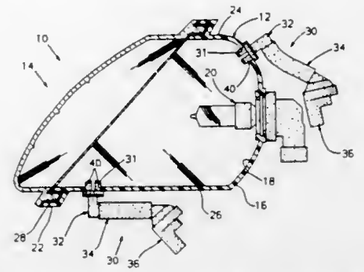
5,251,110
MULTI-FUNCTION HEADLAMP FOR A MOTOR VEHICLE, ADAPTED TO IMPROVE THE ILLUMINATION OF ROAD SIGNS
Joël Leleve, Epinay-sur-Seine, France, assignor to Valeo Vision, Bobigny Cedex, France
Filed Jun. 28, 1991, Ser. No. 722,659
Claims priority, application France, Jul. 3, 1990, 90 08392
Int. Cl.[5] B60Q *1/04*
U.S. Cl. 362—61 **7 Claims**



1. A multi-function headlamp for a motor vehicle comprising:
a reflector;
lamp means constituting a light source and disposed within the reflector, and adapted for emitting visible light and ultra violet radiation simultaneously, the lamp means defining an optical axis;
occulting means associated with the lamp means for defining a cut-off line whereby to produce a dipped beam;
a front closure lens, made of a material which is at least partially transparent to ultra violet radiation and overlying an open front of the reflector, the occulting means being opaque to visible light radiation but at least partially transparent to ultra violet radiation, and the multi-function headlamp further including means mounting the occulting means for displacement of the occulting means between an occulting position in which it intercepts all visible radiation directed above the cut-off line of the beam defined by the occulting means, and a retracted position in which the transmission of visible light radiation is substantially unaffected by the occulting means, wherein the reflector has a height and comprises a first reflecting zone and a second reflecting zone, for generating two respective different light beams, said first and second reflecting zones being disposed side by side and each extending over the whole height of the reflector, with each of said first and second reflecting zones comprising a part of a reflecting surface which of itself generates an associated beam, and wherein the said occulting means comprise at least one screen which, in the said occulting position, is situated laterally of the said lamp means.

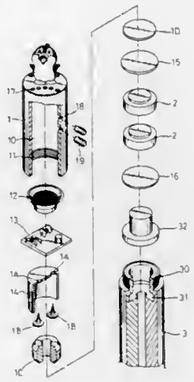
5,251,111
COMPOSITE HEADLAMP VENT DEVICE
William E. Nagengast, and David R. Mc Mahan, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed Sep. 28, 1992, Ser. No. 952,235
Int. Cl.[5] B60Q *1/04*
U.S. Cl. 362—61 **9 Claims**

1. In combination with a lamp having a reflector member the front portion of which is closed by a lens, said reflector member having a backwall defined by an inner curved reflecting surface and an outer support surface, a light source located at the focal point of the curved reflecting surface so as to allow said reflecting surface to project light rays forwardly through the lens, said reflector member having a mounting hole formed therein, a vent assembly connected to said mounting hole for preventing water from gaining access into the interior of the



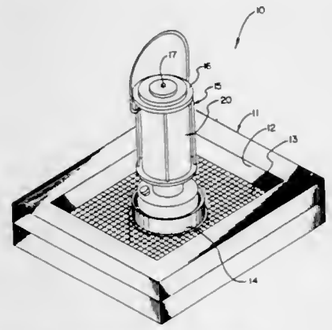
lamp while allowing air to flow into and out of the interior of the lamp so as to provide ventilation thereof, said vent assembly including a housing provided with a first passage for connection with the interior of said headlamp through said mounting hole, a second passage for connection with atmosphere, and a buoyant member located within the housing adapted to close said first passage when water enters the housing through said second passage.

5,251,112
FLASHING AND MUSICAL DEVICE FOR A WRITING IMPLEMENT
Ming H. Chen, P.O. Box 82-144, Taipei, Taiwan
Filed Sep. 24, 1992, Ser. No. 950,026
Int. Cl.[5] B43K *29/10*
U.S. Cl. 362—118 **1 Claim**



1. A flashing and musical device for a writing implement comprising:
an upper cylindrical member formed with a recess having internal threads at a lower end;
a speaker mounted within the recess of said upper cylindrical member;
a controlling board electrically connected with said speaker and mounted within the recess of said upper cylindrical member;
a trigger mounted under said controlling board and having two holes each engaged with a conical conducting member and a movable member disposed within said trigger;
a light-emitting diode mounted on the upper cylindrical member and electrically connected with said controlling board;
an upper conducting plate mounted under said trigger;
a battery disposed under said upper conducting plate;
a lower conducting plate arranged under said battery;
a lower cylindrical member with external threads and a recess on a top being engaged with said upper cylindrical member;
a knob fitted into the recess of said lower cylindrical member and located under said lower conducting plate.

5,251,113
LANTERN FLOAT APPARATUS
Danny L. Wagoner, 1375 S. Garrison Chapel Rd., Bloomington, Ind. 47403, and Timothy Honeycutt, 1721 Shawnee Dr., Ellettsville, Ind. 47429
Filed Jul. 2, 1992, Ser. No. 907,591
Int. Cl.[5] F21V *21/00*
U.S. Cl. 362—190 **7 Claims**



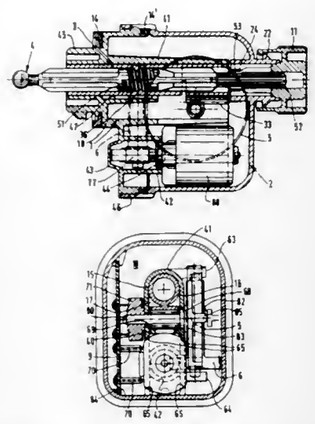
1. A lantern float apparatus, comprising,
a buoyant continuous frame, with the frame having a continuous frame interior wall, and
a light transmissive support mounted coextensively to the interior wall within the frame, and
a cylindrical support mount fixedly mounted medially to a top surface of the light transmissive support, and
a lantern having a lantern base, with the lantern base positioned within the support mount, and the lantern including a top wall, and
a lantern lens below the top wall.

5,251,114
ACTUATOR FOR CONTROLLING THE ORIENTATION OF A MOTOR VEHICLE HEADLAMP
Jean-Pierre Cantin, St. Cheron, and Gérard Hallier, Arpajon, both of France, assignors to Valeo Vision, Bobigny Cedex, France
Filed May 21, 1991, Ser. No. 703,818
Claims priority, application France, May 25, 1990, 90 06515
Int. Cl.[5] B60Q *1/04*; F21M *3/18*
U.S. Cl. 362—286 **15 Claims**

1. An actuator for controlling the orientation of a motor vehicle headlamp, having a substantially hollow body comprising: a housing and a cover for closing the housing, the housing having a front wall, support means integrally formed with the housing; an actuating sliding rod carried by said support means and extending through said front wall for controlling the headlamp orientation, a reversible electric motor and a mechanical transmission, supported within the housing, said mechanical transmission including a drive element engaging and operating the sliding actuating rod and an intermediate element, at least one first lateral wall projecting internally and forming part of the housing, said intermediate element being in operative en-

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gagement with said drive element and being supported by said at least one first lateral wall, and a second lateral wall projecting internally and forming part of the front wall of the housing, the at least one first and the second lateral wall being disposed on either side of the drive element and sliding actuating rod.

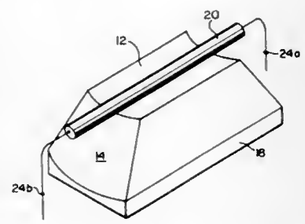


5,251,115

SPECIFIC INTENSITY DISTRIBUTION LIGHT REFLECTOR

Lloyd W. Hillman, Huntsville, and William H. Parsons, 4205 Kennesaw Dr., Birmingham, Ala. 35213, assignors to William H. Parsons, Birmingham, Ala.

Filed May 15, 1992, Ser. No. 883,880
Int. Cl.[5] F21V *7/12*
U.S. Cl. 362—296 **16 Claims**



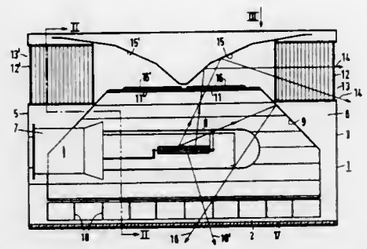
1. A light reflector for providing a desired light intensity distribution from an elongated light source, said reflector comprising:
- a first reflecting surface having first and second ends, a longitudinal axis extending between said ends and parallel to the light source and a length along said axis and between said ends that is shorter than a total length of the light source; and
- a second reflecting surface which intersects said first surface at said first end thereof, said second surface sloping away from said first surface and said light source at a predetermined angle relative to the longitudinal axis of said first surface.

5,251,116

LUMINAIRE FOR CREATING A PRIMARY BEAM AND A SECONDARY BEAM

Hendrik Wijbenga, and Jean P. Entrop, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 24, 1992, Ser. No. 874,255
Claims priority, application European Pat. Off., May 16, 1991, 91107903.6
Int. Cl.[5] F21V *7/00*
U.S. Cl. 362—308 **10 Claims**



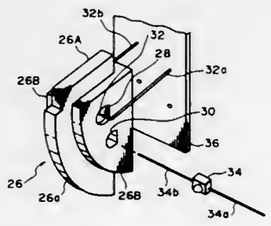
1. A luminaire for creating a primary beam of light and a secondary beam of light comprising
- (a) a housing structure having an emission window for passing a primary beam of light and having a plurality of sidewalls about said emission window, said plurality of sidewalls having at least one window for passing a secondary beam of light;
- (b) a lampholder within said housing structure for accommodating an electric lamp adjacent said emission window;
- (c) concave reflector means for reflecting light generated by said electric lamp through said emission window as at least part of said primary beam of light, said concave reflector means having an opening remote from said emission window;
- (d) secondary reflector means within said housing structure for reflecting light that passes through said opening toward said at least one window in said plurality of sidewalls, said opening being closed by a color filter defining secondary light; and
- (e) light distributing means adjacent said at least one window for distributing said secondary light through said at least one window.

5,251,117

STRUCTURE OF A DIFFUSING LENS FOR A LIGHT EMITTING DIODE

Michio Nagai, Tokyo, Japan, assignor to Nec Corporation, Japan

Filed Feb. 21, 1992, Ser. No. 839,917
Claims priority, application Japan, Feb. 21, 1991, 3-048902
Int. Cl.[5] G08B *5/22*
U.S. Cl. 362—311 **16 Claims**



4. A structure comprising:

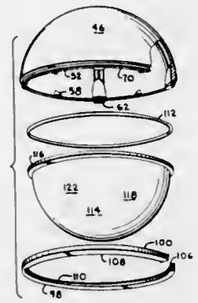
a plate-like diffusing lens which is capable of diffusing light emitted from a light emitting device in a direction perpendicular to the thickness of said lens;
an equipment casing having a slot formed at an end thereof and fitted with said lens; and
a through hole formed in said diffusing lens for accommodating a light emitting device therein;
said diffusing lens providing a substantially straight light transmitting path in said perpendicular direction from a device received in said through hole to said light emitting surface, for transmitting light from said device directly to the outside of said casing.

5,251,118

MODULAR LIGHTING SYSTEM AND METHOD

William F. Budnovitch, Parkville; Mahendra K. Patel, Weatherby Lake, both of Mo., and Lawrence W. Luciano, Morristown, N.J., assignors to Devine Lighting, Inc., North Kansas City, Mo.

Filed Aug. 16, 1991, Ser. No. 745,835
Int. Cl.[5] F21V *17/00*
U.S. Cl. 362—362 **71 Claims**



1. A lighting fixture, which comprises:
- (a) a frusto-spherical body with a concave inner surface forming an interior and a convex outer surface, said body including a rim having a curvilinear configuration, said body encompassing one or more 90 degree sectors, said body including a thickened strip along each edge of one or more of said 90 degree sectors with each said strip at least partially extending from said rim to a top portion of said body;
- (b) a lens with a curvilinear edge having a configuration generally corresponding to the body rim configuration;
- (c) a lens mounting ring with a curvilinear configuration corresponding to the configurations of the body rim and the lens curvilinear edge;
- (d) lens mounting means for mounting said lens and said lens mounting ring on said body rim;
- (e) light source means mounted in said body interior; and
- (f) fixture mounting means for mounting said fixture, said fixture mounting means being connected to said body.

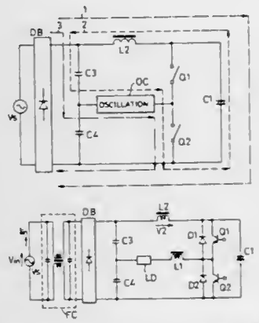
5,251,119

INVERTER WITH SHARED CHOPPER FUNCTION FOR HIGH INPUT POWER FACTOR WITH RESTRAINED HIGHER HARMONICS

Minoru Maehara, Osaka, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Dec. 23, 1991, Ser. No. 811,967
Claims priority, application Japan, Dec. 25, 1990, 2-405558; Aug. 22, 1991, 3-211187; Aug. 22, 1991, 3-211188
Int. Cl.[5] H02M *5/458*
U.S. Cl. 363—37 **7 Claims**

1. An inverter with shared chopper function for high input power factor with restrained higher harmonics comprising:
- an AC power source producing an AC source voltage;
- a rectifier having a positive terminal and a negative terminal and receiving the AC source voltage from said AC power source and producing a pulsating DC voltage;
- an inductor having first and second terminals and connected at said first terminal to said positive terminal of said rectifier;
- a first condenser coupled to said second terminal of said inductor for receiving through said inductor the pulsating DC voltage from said rectifier and producing a smoothed DC voltage; and
- an inverter circuit section connected in parallel with said rectifier, receiving the pulsating DC voltage from said



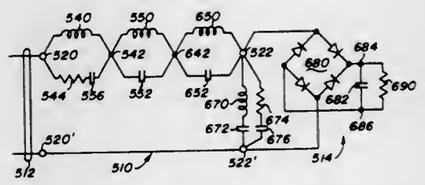
rectifier and the smoothed DC voltage from said first condenser through said inductor, said inverter circuit section including:
- a chopper circuit comprising switching means,
- an oscillation circuit including a load element wherein a high frequency voltage is applied to said load element by switching of said switching means, and
- a second condenser receiving the pulsating DC voltage from said rectifier, wherein said switching means, said oscillation circuit, and said second condenser form a series circuit having first and second ends and connected at said first end to said first terminal of said inductor and coupled at said second end to said second terminal of said inductor.

5,251,120

HARMONIC NOISE ISOLATION AND POWER FACTOR CORRECTION NETWORK

Steve Smith, 5100 Channel Ave., Richmond, Calif. 94804

Continuation-in-part of Ser. No. 888,137, Jul. 23, 1986, Pat. No. 5,113,335. This application Jan. 2, 1992, Ser. No. 817,927
Int. Cl.[5] H02M *1/12*
U.S. Cl. 363—44 **13 Claims**



1. A harmonic noise isolation and power factor correction network that has an input to output impedance magnitude, in ohms, that is at least ten percent of an input voltage, in volts, divided by a resulting current through the network, in amperes, at a predetermined power line frequency, the network comprising:

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a pair of first and second power input terminals for receiving a single phase alternating current (AC) power input of said predefined power line frequency;

a pair of first and second power output terminals for driving a capacitor-input rectifier combination that generates odd harmonics of said predefined power line frequency and that has a constant conduction angle, said second output terminal being in common with said second input terminal;

a first two-terminal parallel resonant circuit including a first parallel inductor in parallel with a first parallel capacitor, and having a first resonant frequency, the first parallel resonant circuit being connected in series between said first power input terminal and said first power output terminal, the first two-terminal parallel resonant circuit having a resonant frequency approximately equal to five times said predefined power line frequency; and

one and only one two-terminal series resonant circuit including a first series inductor connected in series with a first series capacitor, the first series resonant circuit being connected in shunt with said first and second output terminals, the series resonant circuit having a resonant frequency approximately equal to an odd harmonic plus one half times said predefined power line frequency.

5,251,121

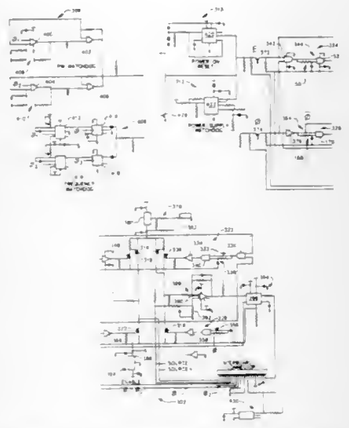
POWER SUPPLIES

Daniel W. Knodle, Seattle; Walter A. Cooke, Monroe, and Paul K. Graham, Renton, all of Wash., assignors to NTC Technology, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 528,059, May 23, 1990, which is a continuation-in-part of Ser. No. 598,984, Oct. 17, 1990. This application Oct. 18, 1990, Ser. No. 599,888

Int. Cl.[5] H02M *7/537*

U.S. Cl. 363—98 **18 Claims**



11. A pulsed power supply as defined in claim 8:

wherein the parameter comprises the voltages of the operating pulses; and

the means for disenabling the pulse generating circuit means comprises a power supply watchdog circuit which keeps the ENABLE signal from being inputted to the MOSFET drive means for so long as the voltage parameter is not met.

5,251,122

SYSTEM FOR AUTOMATICALLY GENERATING A SEQUENTIAL CONTROL PROGRAM

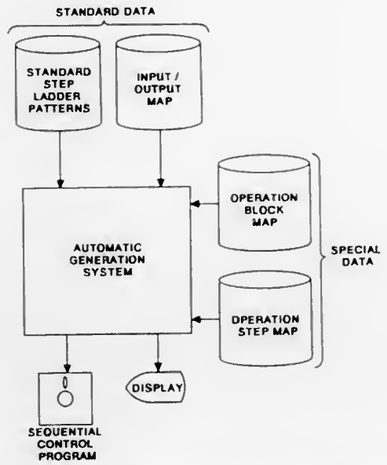
Shunji Sakamoto, and Toshihiko Hoshino, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Sep. 28, 1990, Ser. No. 590,079

Claims priority, application Japan, Sep. 29, 1989, 1-253991; Feb. 9, 1990, 2-30378; Feb. 9, 1990, 2-30379; Aug. 31, 1990, 2-231843; Aug. 31, 1990, 2-231845

Int. Cl.[5] G06F *15/46*

U.S. Cl. 364—147 **8 Claims**



1. A method in which operations to be successively performed by various equipment units for a production line are grouped into blocks of operation each having a sequence of unit operations to automatically compose a sequential control program describing the operations of the production line with respect to the operation blocks, the operation blocks being grouped so that each operation block can be conducted independently of the other operation blocks from the start to the end of the block, said method comprising the steps of:

a) previously forming and storing at least one standardized step ladder pattern for operation steps constituting each of the operation blocks before the program composition;

b) inputting and storing first data for describing the operation blocks representing the program composition object production line, and the ordinal relationship between the operation blocks;

c) inputting and storing second data for describing specific operations of the operation steps constituting each of the operation blocks along with third data designating the order of execution of the operation steps in each operation block;

d) reading out of the memory the step ladder pattern corresponding to one of the operation steps constituting each operation block along with the second data input for this operation step;

e) appending the second data to the read step ladder pattern to complete a step ladder element;

f) successively performing the operations of the steps d and e with respect to the operation steps in order of upper to lower operation steps based on the third data; and

g) performing the operation of the step f with respect to all the operation blocks based on the first data.

5,251,123

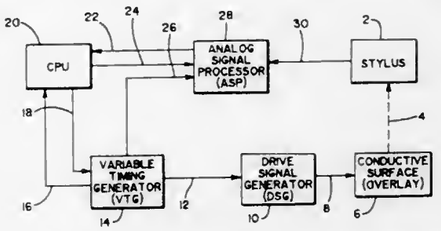
HIGH RESOLUTION SYSTEM FOR SENSING SPATIAL COORDINATES

Leonard Reiffel, Chicago; Wayne D. Jung, Skokie; Thomas Rosevear, and Thomas Jakobs, both of Chicago, all of Ill., assignors to I C Operating, Inc., New York, N.Y.

Continuation of Ser. No. 616,732, Nov. 21, 1990, abandoned, which is a continuation of Ser. No. 363,287, Jun. 7, 1989, abandoned, which is a continuation of Ser. No. 110,140, Oct. 19, 1987, abandoned. This application Aug. 13, 1991, Ser. No. 746,285

Int. Cl.[5] G06F *19/64*; G05B *19/18*; G08C *21/00*

U.S. Cl. 364—167.01 **24 Claims**



1. An apparatus for determining the spatial position of a probe with respect to a conductive surface, comprising:

drive means connected to the conductive surface for providing alternating electrical current to the conductive surface in predetermined directions and at predetermined intervals of time;

amplifier means connected to the probe for amplifying alternating electrical signals produced on the probe when the probe is brought into proximity of the conductive surface;

rectifying means connected to the amplifier means for controllably rectifying the amplified alternating electrical signals output from the amplifier means, wherein the rectifying means during periodic intervals does not provide rectification of the alternating electrical signals;

integrating means for periodically integrating the rectified electrical signals output from the rectifying means and for producing output signals in response to the rectified electrical signals, wherein the integrating means is reset during intervals in which the integrating means is not integrating the rectified electrical signals output from the rectifying means;

analog-to-digital converter means for producing digital signals in response to the output signals of the integrating means to a digital signal;

processing means connected to the analog-to-digital converter means for calculating the spatial position of the probe with respect to the conductive surface based on the digital signals produced by the analog-to-digital converter means; and

control means for generating control signals for controlling the drive means, rectifying means, integrating means and processing means, wherein the integrating means is reset in a periodic interval during which the rectifying means is not providing rectification of the alternating electrical signals output from the amplifier means.

5,251,124

FUZZY CONTROLLER APPARATUS AND METHOD FOR STEADY STATE CONTROL

Nobutomo Matsunaga, Hirakata, Japan, assignor to Omron Corporation, Kyoto, Japan

Filed Apr. 30, 1991, Ser. No. 693,635

Int. Cl.[5] G05B *13/00*

U.S. Cl. 364—176 **9 Claims**

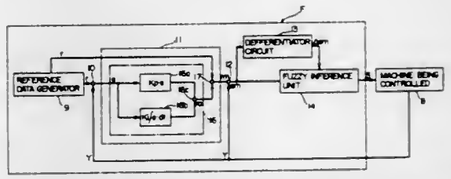
1. A fuzzy controller comprising:

a first error generator which generates a first error value based on a difference between a present feedback value and a desired value;

a first storage device for storing said first error value;

a desired value corrector for producing a corrected desired value by determining an amount of correction needed based on said first error and adding an appropriate amount of correction to said desired value;

a second error generator for generating a second error value based on a difference between said present feedback value and said corrected desired value;



a second storage device for storing said second error value;

a fuzzy inference unit for computing fuzzy inference based on fuzzy rules and membership function, in accordance with said second error value and for producing a control signal based on a result of said fuzzy inferences; and

a controlled object for receiving said control signal in order that operations of said controlled object can be affected by said received control signal.

5,251,125

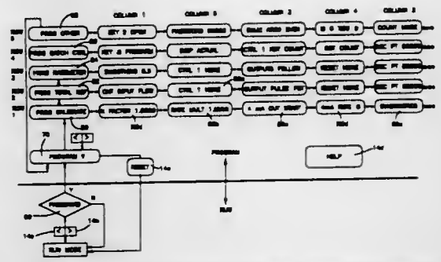
USER INTERFACE FOR A PROCESS CONTROL DEVICE

Thomas A. Karnowski, Olonomowoc; Fred W. Haselow, Watertown; Richard L. Rejret, Watertown, and Edwin C. Witte, Watertown, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Apr. 30, 1990, Ser. No. 516,165

Int. Cl.[5] G05B *19/42*; G09G *3/02*

U.S. Cl. 364—189 **6 Claims**



1. A method for configuring a process control device such as a flow controller, comprising:

a) providing a keyboard means to enable a user to input data into said device;

b) monitoring said keyboard means to check for user input indicating that a configuration mode of operation is desired;

c) initiating a menu driven configuration mode upon receiving configuration mode selection input from said keyboard means;

d) while in said configuration mode, monitoring said keyboard means for entry of directional and position data;

e) providing a menu system in said control device, said menu system comprising a menu matrix having a plurality of menu items arranged in rows and columns;

f) activating menu items in said menu system sequentially when directional data is entered and activating a menu

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item directly when position data corresponding to the row and column of said menu item is entered form said keyboard means; and,

g) accepting data from said keyboard means when a menu item has been selected and storing said data in association with said menu item.

5,251,126

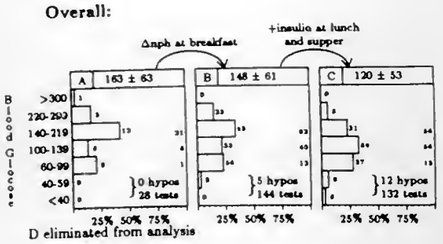
DIABETES DATA ANALYSIS AND INTERPRETATION METHOD

Michael G. Kahn, St. Louis, Mo.; Dijia Huang; Stephen A. Bussmann, both of Granger, Ind.; Steve B. Cousins; Charlene A. Abrams, both of St. Louis, Mo., and James C. Beard, University City, Mo., assignors to Miles Inc., Elkhart, Ind.

Filed Oct. 29, 1990, Ser. No. 605,400

Int. Cl.[5] G06F *15/42, 15/74*

U.S. Cl. 364—413.11 **58 Claims**



1. A method of operating a digital computer for automated diabetes data interpretation by processing recorded diabetes data, including data corresponding to blood glucose levels and insulin therapy for a diabetic patient taken over a period of time, said method comprising the steps of:

i) loading said diabetes data into said digital computer;

ii) processing said diabetes data with said digital computer to

a) identify insulin intake regimens corresponding to predefined significant changes in insulin therapy which are sustained for at least a predefined segment of said period of time,

b) identify resulting statistically significant changes in said blood glucose levels across adjacent ones of said identified insulin intake regimens, and

c) identify clinically significant changes in said blood glucose levels from said identified statistically significant changes; and

iii) generating an output from said digital computer highlighting the results of said processing of said diabetes data, including details pertaining to said identified insulin intake regimens and said clinically significant changes in said blood glucose levels.

5,251,127

COMPUTER-AIDED SURGERY APPARATUS

Simon Raab, Longwood, Fla., assignor to Faro Medical Technologies Inc., Lake Mary, Fla.

Continuation-in-part of Ser. No. 230,588, Aug. 10, 1988, abandoned. This application Jul. 31, 1990, Ser. No. 562,213

Claims priority, application Canada, Feb. 1, 1988, 557814

Int. Cl.[5] G06F *15/00*

U.S. Cl. 364—413.13 **16 Claims**

1. A computer-aided surgical device, having an associated three-dimensional co-ordinate reference system, for aiding a medical practitioner is positioning a surgical instrument or implant when performing surgery on, or examining, portions of a orientations in or on said patient defined either by physical measurement of the positions and orientations, in said co-ordinate reference system, of said portions using said device, or by communication to said device, from an external 2- or 3-dimensional imaging information source, of the positions and orientations, in said co-ordinate reference system, of said portions, said measurement of said commutation defining two- or three-dimensional patient data of the position and orientation of said portions in said co-ordinate system;

whereby, said patient data identifies the position and orientation of said portions to which surgical procedures, or examinations, are to be applied;

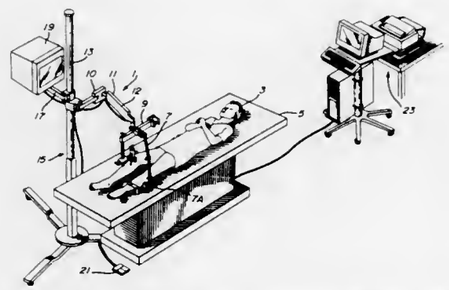
said device comprising;

a reference means having a referenced point in the reference co-ordinate system thereon;

said reference means and said reference point being disposed outside of and apart from said patient;

means for determining the position and orientation of said portion on said patient in said co-ordinate reference system relative to said reference point and for developing two- or three-dimensional patient display data proportional to said position and orientation of said portion;

instrument position determining means including sensing means for sensing the position and orientation of said



instrument or implant in said co-ordinate reference system relative to said reference point and for developing two- or three-dimensional instrument data proportional to said position and orientation of said instrument;

a display means;

means for converting said patient display data to objective signals for presenting an objective display on said display means,

means for converting said instrument data to instrument signals for presenting the position and orientation of said instrument or implant on said display means;

and further including means for providing a known physical relationship between said portion on said patient and said reference point;

whereby, the position and orientation of said portion and the position and orientation of said instrument or implant are both displayed on said display means;

even when said patient is moved;

whereby, to guide said medical practitioner in manipulating said instrument.

5,251,128

MOTION ARTIFACT REDUCTION IN PROJECTION IMAGING

Carl R. Crawford, Milwaukee, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Nov. 19, 1990, Ser. No. 615,778

Int. Cl.[5] G06F *15/42*

U.S. Cl. 364—413.19 **10 Claims**

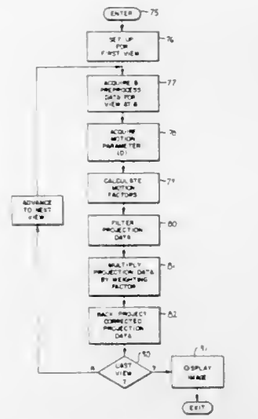
1. A method for producing an image, of a patient, the steps comprising:

performing a scan in which a plurality of sets of projection data are acquired, each set of projection data being a view of a physical characteristic of the patient as seen from a different projection angle (θ);

acquiring a motion parameter with each set of acquired projection data, each acquired motion parameter being

indicative of the position of the patient as the projection data is acquired; and

back projecting each set of projection data to produce the image of the patient using a back projection formula which is modified by a displacement factor that has a



value which is a function of the acquired motion parameter and a geometric model of patient motion;

whereby artifacts produced in the image by movement of the patient from view-to-view during the scan are reduced.

5,251,129

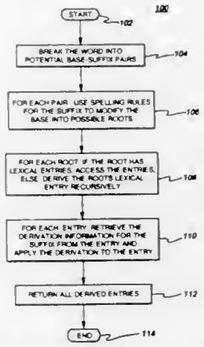
METHOD FOR AUTOMATED MORPHOLOGICAL ANALYSIS OF WORD STRUCTURE

Paul S. Jacobs, Clifton Park, and George R. Krupka, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 21, 1990, Ser. No. 570,583

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—419.08 **10 Claims**



1. A computer based method for performing morphological analysis of word structure comprising the steps of:

breaking a word into possible base-affix pairs;

modifying the base of each base-affix pair into possible roots;

retrieving each lexical entry of each root in a lexicon;

deriving a lexical entry for a root if a lexical entry is not provided in the lexicon;

retrieving derivation information for each affix from its lexical entry;

creating a new lexical entry with a target as its part-of-speech for each lexical target; and

generating semantic transformations of the derivation information for a sense and storing the result in the lexical entry.

5,251,130

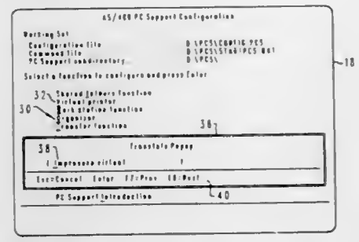
METHOD AND APPARATUS FOR FACILITATING CONTEXTUAL LANGUAGE TRANSLATION WITHIN AN INTERACTIVE SOFTWARE APPLICATION

Gregory P. Andrews, and Phillip C. Schloss, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 18, 1991, Ser. No. 687,257

Int. Cl.[5] G06F *15/38*

U.S. Cl. 364—419.03 **7 Claims**



1. A method for facilitating contextual translation of textual entries within an interactive software application executable within a data processor having a video output display and an operator input device, said textual entries displayed within a defined display area within said video output display, said method comprising steps of:

loading a contextual translation procedure into said interactive software application;

executing said interactive software application within said data processor;

displaying within said video output display at least one textual entry within a defined display area during the execution of said interactive software application;

invoking said contextual translation procedure utilizing said operator input device;

utilizing said contextual translation procedure to permit an operator to input a translation of said at least one textual entry;

displaying said input translation within said video output display in proximity to said at least one textual entry;

determining if said input translation may be displayed within said defined display area utilizing said data processor;

automatically altering an area within said defined display area to accommodate said input translation, if required; and

substituting said input translation for said at least one textual entry within said interactive software application.

5,251,131

CLASSIFICATION OF DATA RECORDS BY COMPARISON OF RECORDS TO A TRAINING DATABASE USING PROBABILITY WEIGHTS

Brij M. Masand, Medford, and Stephen J. Smith, Lynnfield, both of Mass., assignors to Thinking Machines Corporation, Cambridge, Mass.

Filed Jul. 31, 1991, Ser. No. 739,111

Int. Cl.[5] G06F *15/38;* **G01L** *1/06*

U.S. Cl. 364—419.08 **37 Claims**

1. A system for classifying natural language data, comprising:

means for storing a new record including a plurality of

predictor data fields containing the natural language data expressed in natural language values,

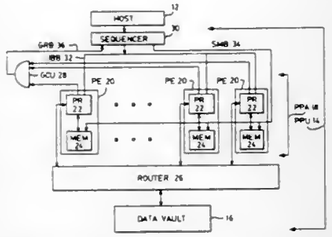
means for storing a plurality of training records,

each training record including

a plurality of predictor data fields, each predictor data field containing a feature, wherein each feature is a natural language term, and

a target data field containing a target value representing a classification of a training record, and

probability weight means for storing, for each feature, a probability weight value representing a probability that a new record will have the target value contained in the target data field if a feature contained in a corresponding predictor data field occurs in the new record,



query means for extracting features from the new record and querying the training records with each feature extracted from the new record,

the query means being responsive to a match between a feature extracted from the new record and a feature stored in said training record for providing the probability weight corresponding to the feature, and

metric means for receiving the probability weights from the query means and accumulating for each training record a comparison score representing the probability that said training record matches the new record, and

providing an output indicating said target field value of said training record as said target value of the new record.

5,251,132

CLUTCH PRESSURE CONTROL BASED ON OUTPUT SHAFT SPEED

Garth H. Bulgrien, Ephrata, Pa., assignor to Ford New Holland, Inc., New Holland, Pa.

Filed Feb. 5, 1991, Ser. No. 651,700

Int. Cl.[5] F16H *5/42*

U.S. Cl. 364—424.1 **7 Claims**

1. In a powershift transmission having an output shaft for driving a load and first and second clutches for transmitting torque to the output shaft, said transmission being shiftable from a first gear to a second gear by decreasing the first clutch pressure and increasing the second clutch pressure, a method of controlling said second clutch pressure during shifting from said first gear to said second gear, said method comprising:

applying an initial clutch pressure to the second clutch;

establishing a clutch pressure slope value representing a fixed increment by which the pressure applied to the second clutch may be incremented;

repeatedly determined the speed of the output shaft;

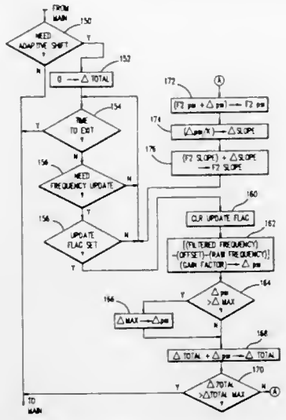
determining when the speed of the output shaft is decreasing during the shift,

when the speed of the output shaft is decreasing,

generating pressure change signals having magnitudes dependent on the change in the output shaft speed, and,

increasing the clutch pressure slope value and the pressure applied to the second clutch in accordance with the generated pressure change signals; and,

when the speed of the output shaft it not decreasing during the shift, incrementing the second clutch pressure in accordance with the clutch pressure slope value at fixed intervals of time.



5,251,133

REFERENCE POINT RECOGNITION APPARATUS FOR THE STEERING CONTROL SYSTEM OF A VEHICLE

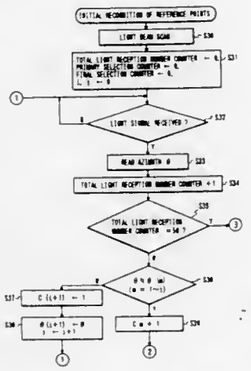
Kenji Kamimura, and Sadachika Tsuzuki, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 11, 1991, Ser. No. 683,730

Claims priority, application Japan, Apr. 20, 1990, 2-104449

Int. Cl.[5] G06F *15/50*

U.S. Cl. 364—424.02 **8 Claims**



1. A reference point recognition apparatus for a steering control system of a moving vehicle wherein a light beam is scanned in the circumferential direction around the moving vehicle while being vertically swung, light beams reflected by a plurality of light reflecting means disposed at reference points remote from the moving vehicle are received to measure the azimuths of the light reflecting means as viewed from the moving vehicle, and the moving vehicle is made to travel along a predetermined path on the basis of the obtained azimuths and a positional information of the reference points, the reference point recognition apparatus comprising:

means for detecting the azimuths of light detected by a beam receiver during a plurality of circumferential light beam scans performed prior to the start of the traveling of the moving vehicle,

means for storing the detected azimuths and the number of times light has been detected in each of the detected azimuths,

means for detecting that the number of times light has been detected in each of particular azimuths stored in the memory means has reached a predetermined value,

means for determining that said particular azimuths are the azimuths of light reflecting means disposed at said reference points when lights have been detected more than said predetermined number of times in said particular azimuths; and

means for starting the traveling of the moving vehicle after lights have been detected more than said predetermined number of times in said particular azimuths.

5,251,134

SUSPENSION SYSTEM FOR AUTOMOTIVE VEHICLE

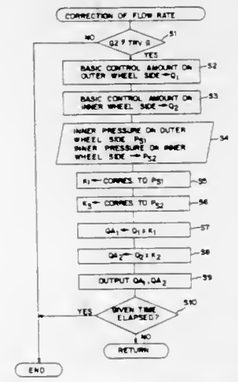
Shin Takehara; Toshiki Morita, and Kenji Hamada, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jun. 28, 1991, Ser. No. 722,821

Claims priority, application Japan, Jun. 28, 1990, 2-170643

Int. Cl.[5] B60G *17/08*

U.S. Cl. 364—424.05 **18 Claims**



1. A suspension system for an automotive vehicle, comprising:

a cylinder unit interposed independently and separately between a vehicle body and each of the wheels so as to adjust a vehicle height of the vehicle body in accordance with supply or discharge of operating fluid;

flow rate adjusting means for supplying or discharging the operating fluid to or from the cylinder unit;

roll controlling means for generating a control value to the flow rate adjusting means so as to allow an actual angle of a roll of the vehicle body to agree with a target angle of the roll of the vehicle body;

inner-pressure detecting means for detecting an inner pressure of the cylinder unit;

cornering detecting means for detecting cornering of the automotive vehicle; and

correcting means for correcting the control value so as to make a quantity of the operating fluid to be supplied or to be discharged become smaller as the inner pressure detected by the inner pressure detecting means becomes larger, when the cornering of the automotive vehicle is detected by the cornering detecting means.

5,251,135

VEHICLE STEERING CONTROL SYSTEM

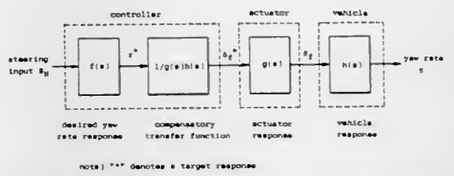
Mitsuya Serizawa, and Yorihisa Yamamoto, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 24, 1991, Ser. No. 764,728

Claims priority, application Japan, Sep. 25, 1990, 2-255695

Int. Cl.[5] B62D *5/04*

U.S. Cl. 364—424.05 **15 Claims**



13. A steering control system for a vehicle, comprising:

steering input means;

a steering mechanism for steering steerable wheels;

a powered actuator for actuating said steering mechanism according to a steering input signal from said steering input means;

means for evaluating a response of said vehicle to said steering input signal; and

compensation means interposed between said steering input means and said powered actuator for modifying said steering input signal based on an output of said evaluating means, said compensation means having a transfer function

$$G_C(s)=f(s)/G_\delta(s)G_A(s)$$

where $f_{(s)}$ is a desired transfer function of a dynamic vehicle response to a steering input signal from said steering input means, $G_\delta(s)$ is a transfer function of said dynamic vehicle response to a steering input from said steerable wheels, and $G_A(s)$ is a transfer function of an output of said powered actuator to said steering input signal from said steering input means.

5,251,136

ACTIVELY CONTROLLED SUSPENSION SYSTEM FOR AUTOMOTIVE VEHICLES

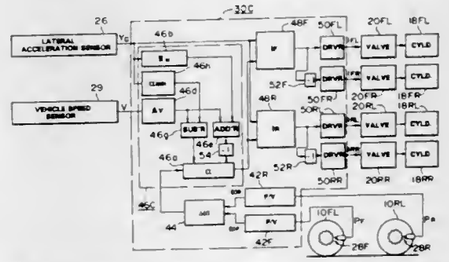
Kensuke Fukuyama; Naoto Fukushima; Yosuke Akatsu; Itaru Fujimura, and Masaharu Sato, all of Kanagawa, Japan, assignors to Nissan Motor Company, Ltd., Japan

Filed Jan. 24, 1992, Ser. No. 825,215

Claims priority, application Japan, Jan. 29, 1991, 3-8958

Int. Cl.[5] B60G *17/00*

U.S. Cl. 364—424.05 **16 Claims**



14. An actively controlled suspension system for a front-wheel drive vehicle, comprising:

a front suspension system disposed between a vehicle body and a suspension member rotatably suspending at least one pair of front wheels, said front suspension system employing a front pair of fluid pressure operated cylinders, for

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providing a front lateral load shift variable via working fluid pressure supplied thereto;

a rear suspension system disposed between the vehicle body and a suspension member rotatably suspending at least one pair of rear wheels, said rear suspension system employing a rear pair of fluid pressure operated cylinders, for providing a rear lateral load shift variable via working fluid pressure supplied thereto;

front fluid pressure control valve means connected to said front pair of cylinders, for varying said front lateral load shift created at said front suspension system in accordance with a first command;

rear fluid pressure control valve means connected to said rear pair of cylinders, for varying said rear lateral load shift created at said rear suspension system in accordance with a second command;

means for monitoring a lateral acceleration exerted on the vehicle body;

means for deriving a wheel speed difference between front and rear wheel speeds;

means for controlling said front and rear lateral load shifts independently of each other so as to suppress rolling of said vehicle body and to enhance steering characteristics of said vehicle;

said controlling means including a first arithmetic means for deriving an entire magnitude of said front and rear lateral load shifts depending on said lateral acceleration such that said entire magnitude is proportional to said lateral acceleration, and a second arithmetic means for deriving a distribution ratio between said front and rear lateral load shifts depending on both said lateral acceleration and said wheel speed difference such that a distribution ratio of said rear lateral load shift is increased according to an increase in said wheel speed difference and a rate of change in said distribution ratio of said rear lateral load shift is decreased according to the increase in said lateral acceleration;

said controlling means generating said fist and second commands based on both said entire magnitude and said distribution ratio between said first and second lateral load shifts; and

said second arithmetic means including a first function generating means for holding said distribution ratio of said front lateral load shift at a designated reference value when said wheel speed difference is less than a present threshold, and for decreasing said distribution ratio of said front lateral load shift with a negative controllable gain according to an increase in said wheel speed difference after said wheel speed difference reaches said threshold, and a second function generating means for attenuating the rate of change of said distribution ratio of said front lateral load shift according to the increase in said lateral acceleration such that said distribution ratio is approached towards said designated reference value.

5,251,137

VEHICLE HANDLING CONTROL METHOD FOR ANTILOCK BRAKING

Yuen-Kwok Chin, and William C. Lin, both of Troy, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 10, 1991, Ser. No. 727,616
Int. Cl.[5] B60T *8/58*
U.S. Cl. 364—426.02 **15 Claims**

1. In a vehicle having an antilock brake system, a method of enhancing cornering ability during antilock brake operation comprising the steps of:

measuring vehicle deceleration;

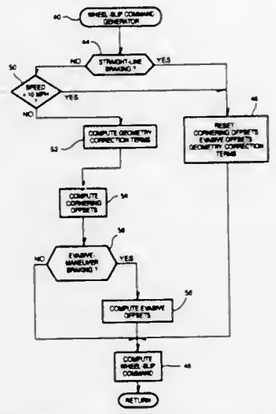
determining a wheel slip of each wheel;

sensing an amount of steering wheel rotation and calculating the rate of said steering wheel rotation;

calculating for each wheel a peak slip value which can generate the highest amount of surface adhesion;

calculating a cornering term for each wheel as a function of said steering wheel rotation;

calculating an evasive term as a function of said calculated rate of said steering wheel rotation and said measured vehicle deceleration;



calculating a target slip value of each wheel as a function of the evasive term, the cornering term and the peak slip value; and

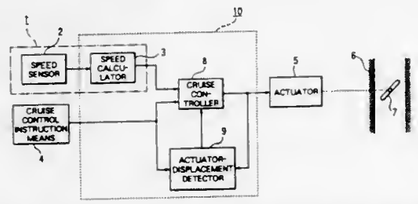
regulating each wheel to the respective target slip value.

5,251,138

CRUISE CONTROL APPARATUS FOR A VEHICLE

Kazuyori Katayama, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 8, 1991, Ser. No. 789,664
Claims priority, application Japan, Nov. 9, 1990, 2-302778
Int. Cl.[5] B60K *41/18*
U.S. Cl. 364—426.04 **5 Claims**



1. A cruise control apparatus for a vehicle having an automatic transmission with a predetermined gear shift characteristic in which a gear ratio is automatically shifted on the basis of a relationship between the speed of the vehicle and the opening degree of a throttle valve (7), said apparatus comprising:

vehicle speed sensing means (2, 3) for sensing the actual speed of the vehicle and generating a corresponding output signal;

cruise control instruction means (4) for generating an instruction signal for instructing a specific one of various cruise control modes;

a cruise controller (8) for performing cruise control on the vehicle based on the output signal from said vehicle speed sensing means and the instruction signal from said cruise control instruction means;

an actuator (5) operatively connected with the throttle valve for driving said valve in accordance with an output signal from said cruise controller; and

an actuator-displacement detector (9) responsive to the instruction signal from said cruise control instruction means and the output signal from said cruise controller for successively detecting a displacement of said actuator, said detector being operable to:

a) compare the thus detected displacement (S_3) of said actuator with a threshold value (S_{th}) for a current gear ratio of the transmission, said threshold value being less than a predetermined value which corresponds to a critical opening degree of the throttle valve at which a gear shift in the transmission takes place at the sensed vehicle speed,

b) generate a comparison output signal (S_4) when the detected displacement of said actuator is equal to or greater than said threshold value, and

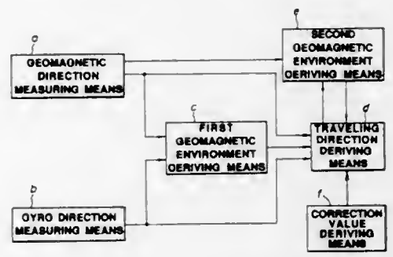
c) supply the comparison output signal to said cruise controller such that the displacement of said actuator and attendantly the driving of the throttle valve does not cause a gear shift in the transmission.

5,251,139

VEHICULAR TRAVELING DIRECTION MEASURING SYSTEM

Kenji Takano; Hiroshi Tsuda, and Toshiyuki Itoh, all of Kanagawa, Japan, assignors to Nissan Motor Co., Ltd., Japan

Filed Nov. 1, 1990, Ser. No. 607,923
Claims priority, application Japan, Nov. 2, 1989, 1-284811
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—454 **14 Claims**



1. A system for measuring a traveling direction of a vehicle, comprising:

a geomagnetic sensor, mounted to the vehicle, which produces a first output signal indicative of directional data relating to a geomagnetic field around the vehicle;

a gyro sensor, mounted to the vehicle, which produces a second output signal indicative of angular variation data independently of the geomagnetic field; and

a control circuit operatively connected to said geomagnetic sensor and said gyro sensor for receiving said first and second output signals and modifying said first and second output signals to derive a corrected traveling direction based on said modified output signals, said control circuit including:

first means for deriving a first variation in a traveling direction of the vehicle based on said second output signal from the gyro sensor;

second means for deriving a first vehicle traveling direction based on said first directional variation;

third means for deriving a second vehicle traveling direction based on said first output signal from the geomagnetic sensor;

fourth means for deriving a second variation in said second vehicle traveling direction;

fifth means for deriving a first value indicative of a disturbance of the geomagnetic field on a short interval basis, said first short interval based value being derived by calculating a difference between said first and second directional variations;

sixth means for deriving a second value indicative of a disturbance of the geomagnetic field on a long interval basis said second long interval based value being derived by calculating a difference between said first and second vehicle traveling directions;

seventh means for deriving a first correction value indicative of a drift error causes by said gyro sensor; and

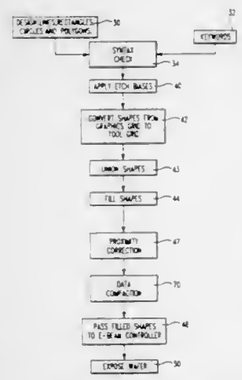
eighth means for deriving a third vehicle traveling direction as said corrected traveling direction based on said first and second derived vehicle traveling directions by changing a rate of dependence upon said first and second vehicle traveling directions depending on said first short interval based value, said second long interval based value and said first correction value.

5,251,140

E-BEAM CONTROL DATA COMPACTION SYSTEM AND METHOD

Virginia M. Chung, Pleasant Valley; Joseph B. Frei, and James E. Stuart, both of Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 26, 1991, Ser. No. 736,654
Int. Cl.[5] G06F *15/46*; H01J *37/302*
U.S. Cl. 364—474.02 **45 Claims**



26. A method of controlling a particle beam tool for exposing a radiation sensitive layer to a design shape, said design shape having at least one angled edge, said method comprising the steps of:

filling said design shape with fill rectangles and at least one FILLSHAPE;

determining an equivalent rectangle for each said FILLSHAPE;

determining a proximity correction value for each said equivalent rectangle;

applying each said proximity correction value to each said FILLSHAPE; and

exposing said radiation sensitive layer by said particle beam tool according to said applied proximity correction value.

5,251,141

APPARATUS FOR DIVIDING WORKPIECES ESPECIALLY OF WOOD

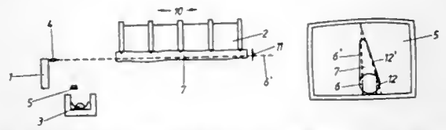
Hans Payr, Graben 1, A-9560 Feldkirchen Pointschach (Karnten), Austria

Filed Jun. 22, 1990, Ser. No. 542,417
Claims priority, application Austria, Jun. 26, 1989, 1558/89
Int. Cl.[5] G06F *15/46*; B27B *13/00*
U.S. Cl. 364—474.09 **11 Claims**

1. In apparatus for dividing workpieces (7), wherein a tool (1) having at least one dividing plane for dividing the workpiece (7) and the workpiece (7) are movable relative to each other along a predetermined travel route (arrow 10) for performing the dividing work, and wherein the workpiece (7) is

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fixed on a support (2) with an image recorder (4) covering the workpiece; the improvement in which the image recorder (4), detecting at least the end face of the workpiece (7) to be divided, is mounted in at least one said dividing plane (6') of the dividing tool, a monitor (5) to which the image recorder (4) is connected, on which there is produced an image of at least the end face of the workpiece (7) to be divided which faces the



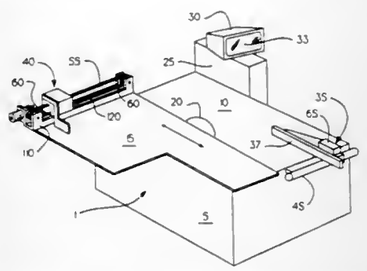
dividing tool (1) and the image recorder (4); means for displaying on the monitor at least one line (6) symbolizing the plane (6') in which the dividing tool (1) is effective; and means for moving said support (2) transversely to said plane (6') to position the workpiece (7) such that the tool (1) will divide the workpiece (7) at a desired location as depicted by the position of said line (6) on said image of the workpiece that appears on the monitor (5).

5,251,142

RIP FENCE OF TABLE SAW WHICH MAY BE POSITIONED BY COMPUTER CONTROL

Fred C. Cramer, Allegheny County, Pa., assignor to Digital Cutting Systems, Inc., Bethel Park, Pa.

Filed Dec. 14, 1990, Ser. No. 627,409
Int. Cl.[5] G06F *15/46*; B26D *5/00*
U.S. Cl. 364—474.13 **28 Claims**



1. A power saw of the type having a tabletop cutting surface, a cutting blade mounted thereon, the power saw comprising:

(a) at least one motor driven fence adjustably mounted to sequentially position workpiece with respect to the cutting blade;

(b) controller means connected to said motor driven fence for controlling and indexing the movement thereof;

(c) data input means for receiving cutting instructions from a user;

(d) processor and memory means connected to said controller means and said data input means for compiling an optimum cut sequence and cut pattern for said workpiece from said instructions, and sequentially positioning said motor driven fence according to said optimum cut sequence as prompted by said user through said data input means; and

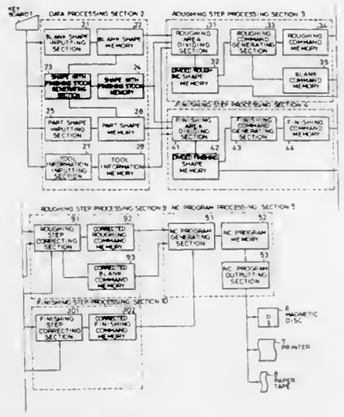
(e) display means connected to said processor and memory means for displaying said optimum cut sequence and cut pattern in a graphic format.

5,251,143

APPARATUS FOR GENERATING NUMERICAL CONTROL PROGRAMS WHICH GENERATE NO UNDERCUTTING AND NO CUTTING REMAINDER

Takeharu Maeda, Niwa, Japan, assignor to Kabushiki Kaisha Okuma Tekkosho, Aichi, Japan

Filed Dec. 7, 1990, Ser. No. 623,618
Claims priority, application Japan, Dec. 8, 1989, 1-319352
Int. Cl.[5] G05B *19/18, 19/405*
U.S. Cl. 364—474.18 **1 Claim**



1. An apparatus for generating numerical control programs which cause no undercutting and no cutting remainder comprising:

a blank shape memory for storing a blank shape;

a shape with finish stock memory for storing a part shape added to a finish stock;

a part shape memory for storing a part shape; a tool information memory for storing tool information;

a data processing section for inputting data to said blank shape memory, said shape with finish stock memory, said part shape memory and said tool information memory through an inputting means;

a roughing area dividing section for dividing an area which is defined by the blank shape stored in said blank shape memory and the shape stored in said shape with finish stock memory and which is to be removed by roughing, into plural areas;

a divided roughing area memory for storing the roughing areas divided by said roughing area dividing section;

a roughing command generating section for generating a roughing command and a blank command based on the area stored in said divided roughing area memory;

a roughing command memory for storing said roughing command generated by said roughing command generating section;

a blank command memory for storing said blank command generated by said roughing command generating section;

a finishing area dividing section for dividing the shape stored in said part shape memory;

a divided finishing area memory for storing the shapes divided by said finishing area dividing section;

a finishing command generating section for generating a finishing command based on the shape stored in said divided finishing area memory;

a finishing command memory for storing the finishing command generated by said finishing command generating section;

a roughing step correcting section for respectively generating a corrected roughing command and a corrected blank command from the roughing command stored in said roughing command memory and the blank command stored in said blank command memory, said roughing step correcting section including means for selectively:

(1) extending a start point of a roughing command stored in said roughing command memory by a length of the tip radius stored in said tool information memory in a tangential direction of the roughing command;

(2) extending a start point of a roughing command stored in said roughing command memory by a length of the tip radius stored in said tool information memory along the shape stored in said part shape memory when the extended path of the start point interferes with the shape stored in said part shape memory;

(3) offsetting a straight line command, wherein the start point of the roughing command stored in said roughing command memory is included, by a distance of the tip radius stored in said tool information memory in a direction toward the outside of the area to be roughed by said roughing command formed in said divided roughing area memory when said straight line command is on a dividing line of mutual areas formed in said divided roughing area memory by said roughing area dividing section, simultaneously extending the start point of the blank command stored in said blank command memory by a length of said tip radius along the shape stored in said blank shape memory;

(4) storing the corrected roughing command and the corrected blank command;

a corrected roughing command memory for storing said corrected roughing command formed by said roughing step correcting section;

a corrected blank command memory for storing said corrected blank command formed by said roughing step correcting section;

a finishing step correcting section for forming a corrected finishing command from the finishing command stored in said finishing command memory, said finishing step correcting section including means for selectively:

(1) extending a start point of a finishing command stored in said finishing command memory by a length of the tip radius stored in said tool information memory in a tangential direction of the finishing command;

(2) extending a start point of a finishing command stored in said finishing command memory by a length of the tip radius stored in said tool information memory along the shape stored in said part shape memory when the extended path of the start point interferes with the shape stored in said part shape memory;

(3) extending a start point of a finishing command stored in said finishing command memory so as to be outside of the shape stored in said shape with finishing stock memory, when the extended path of the start point is inside of the shape stored in said shape with finishing stock memory;

(4) extending a end point of a finishing command stored in said finishing command memory by a length of the tip radius stored in said tool information memory in a tangential direction of the finishing command;

(5) extending a end point of a finishing command stored in said finishing command memory by a length of the tip radius stored in said tool information memory along the shape stored in said part shape memory when the extended path of the start point interferes with the shape stored in said part shape memory;

(6) storing the corrected finishing command;

a corrected finishing command memory for storing said corrected finishing command formed by said finishing step correcting section; and

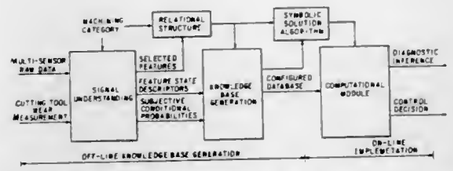
an NC program processing section for generating a NC program according to the machining commands stored in said corrected roughing command memory, said corrected blank command memory and said corrected finishing command memory, and for outputting said NC program onto a storage medium.

5,251,144

SYSTEM AND METHOD UTILIZING A REAL TIME EXPERT SYSTEM FOR TOOL LIFE PREDICTION AND TOOL WEAR DIAGNOSIS

Krishnamoorthy Ramamurthi, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 18, 1991, Ser. No. 687,259
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—474.19 **17 Claims**



1. A system for predicting the life of a cutting tool in an automated metal cutting machine, comprising:

a plurality of sensors for measuring physical data relating to a cutting operation of said machine; and

a computer connected to said sensors, comprising

a feature extractor for transforming said physical data into feature values;

a tool life predictor for arriving at a prediction of the life of said cutting tool, having

an influence diagram having an input level of feature nodes, intermediate nodes connected to said feature nodes and to a machining class node, an output node connected to said intermediate nodes;

a first module for computing averages of feature values for each sensor;

a second module responsive to said feature averages for making a classification of said feature average as indicative of a long life or a short life; and

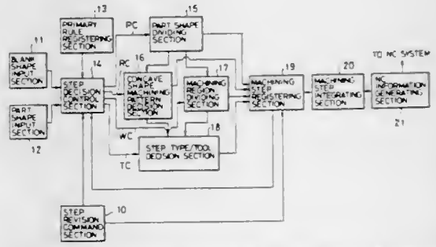
a third module connected to said influence diagram for combining said classifications to arrive at a classification and a conditional probability at each intermediate node and a classification at said output node which is the predicted life of said cutting tool.

5,251,145

DECISION APPARATUS FOR MACHINING STEPS OF NUMERICAL CONTROL INFORMATION GENERATING FUNCTION

Kyoichi Yamamoto, and Kenji Ito, both of Niwa, Japan, assignors to Okuma Corporation, Aichi, Japan

Filed Apr. 10, 1991, Ser. No. 683,604
Claims priority, application Japan, Apr. 13, 1990, 2-98249
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—474.22 **8 Claims**



1. An apparatus for determining machining steps in a numerical control information generating device which receives input shape data denoting the shape of a blank to be machined and the shape of a machined part and which generates numeri-

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cal control information for a machining process based on the input shape data, said apparatus comprising:

automatic decision means for receiving the input shape data and for automatically determining types of machining steps, tools to be used and machining scopes of the machining process based on the input shape data and primary rules, the primary rules defining criteria used to automatically determine the types of machining steps, tools to be used and machining scopes of the machining process from the input shape data, the criteria including a rule for dividing a machining region of the blank shape according to a line segment extending in a negative Z-axis direction from a division point between forward and backward machining directions, and further dividing the machining region of the blank shape by a line segment extending parallel to an X-axis from a division point between inner diameter and outer diameter machining away from the machined part shape, and further dividing the machining region of the blank shape by either a line segment extending from a point having a minimum value in the X-axis direction of the inner diameter from among face element lines of element lines defining the machined part shape and the maximum value in the X-axis direction of the outer diameter to a line segment which divides the blank shape in parallel to the X-axis direction or the forward and backward directions, or a line segment extending from a point having a maximum value in the Z-axis direction of the forward direction and a minimum value in the Z-axis direction of the backward direction of longitudinal line elements of the line elements defining the machined part shape, and a rule for specifying face machining when a ratio of a maximum width in the X-axis direction to a maximum width in the Z-axis direction of a machining scope obtained by said dividing of the machining region is more than a predetermined value, and for specifying longitudinal machining if the ratio is less than the predetermined value;

designation means for receiving operator commands and for designating types of machining steps, tools to be used and machining scopes automatically determined by said automatic decision means as identified in the operator commands which an operator has selected for revision;

extraction means for extracting the types of machining steps, tools to be used and machining scopes designated by said designation means; and

automatic revision means for automatically revising the types of machining steps, tools to be used and machining scopes extracted by said extraction means according to secondary rules which the operator prefers over the primary rules.

5,251,146

INJECTION COMPRESSION MOLDING METHOD AND AN APPARATUS THEREFOR

Noriaki Neko, Oshino; Hiroshi Umemoto, Hino, and Kazuo Kubota, Fujiyoshida, all of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

Continuation of Ser. No. 381,639, Jul. 5, 1989, abandoned. This application Sep. 21, 1992, Ser. No. 947,964

Claims priority, application Japan, Feb. 5, 1988, 63-23957

Int. Cl.[5] G06F *15/46;* **B29C** *45/76*

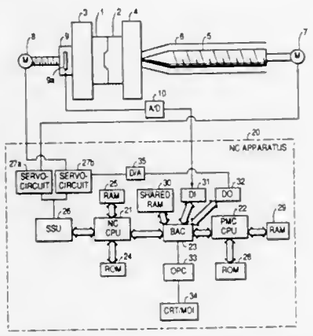
U.S. Cl. 364—476 **8 Claims**

1. An injection compression molding method comprising the steps of:

(a) determining whether or not a condition for starting an operation of compressing molten resin is fulfilled;

(b) delivering a command for operation of compressing the molten resin, information specifying an axis associated with the molten resin compression, and information for controlling the molten resin compression, from a programmable machine controller for effecting sequence control of various operating sections of an injection molding machining to a processing device for numerical control for drivingly controlling servomotors associated with individual axes of the injection molding machine, when the start condition is fulfilled;

(c) executing pulse distribution associated with the axis specified for molten resin compression during an injection/hold pressure operation or a metering operation in response to the command and on the basis of the control information by means of the processing device for numerical control to convert the movement of the axis specified into movement in the direction of the axis of an injection screw; and



(d) controlling an output torque of a servomotor associated with the axis specified for molten resin compression during the execution of said step, so that a compression force actually applied to the molten resin attains a preset value, whereby a molten resin compressing operation is carried out by the servomotor associated with the specified axis during an injection molding operation including injection, hold, and metering.

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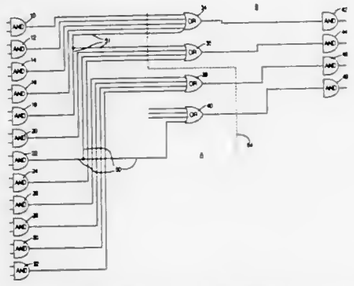
MINIMIZING THE INTERCONNECTION COST OF ELECTRONICALLY LINKED OBJECTS

James L. Finnerty, Lexington, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 20, 1989, Ser. No. 369,655

Int. Cl.[5] G06F *15/60*

U.S. Cl. 364—490 **16 Claims**



1. A method for operating a programmable computing apparatus to minimize the interconnection cost between ports of a plurality of models forming a logic design to be placed on a supporting structure having a plurality of placement slots; the method comprising the steps of:

a. bisecting an initial assignment of models to the plurality of placements slots on the supporting structure, to obtain a first and a second partition;

b. computing a partial gain for each of said models based upon the electrical properties of said models and the critical and noncritical delays associated with interconnections;

c. ordering said partial gains for the models in the first partition in a first data structure and the models in the second partition in a second data structure;

d. swapping a pair of said placement slots, one from each of the first and second data structures, to obtain a total maximum gain;

e. storing the swapped pair and a cumulative gain for the logic design in a third data structure and removing the swapped pair from their respective first and second data structures;

f. repeating steps (b)–(e) for a predetermined number of the placement slots; and

g. replaying the swaps stored in the third data structure to restore the logic design solution to its point of maximum cumulative gain.

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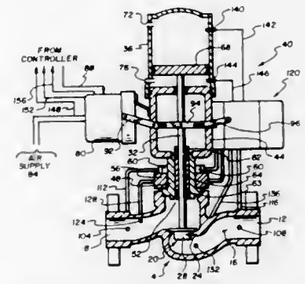
INTEGRATED PROCESS CONTROL VALVE

Lawrence A. Haines, Mapleton; Edward A. Messano, Provo; Kenneth L. Beatty, Spanish Fork; Robert E. Gooch, Provo; Alan H. Glenn, Salem, and Dennis E. O'Hara, Mapleton, all of Utah, assignors to Valtek, Inc., Springville, Utah

Filed Jun. 1, 1990, Ser. No. 533,166

Int. Cl.[5] G05D *11/13*

U.S. Cl. 364—509 **38 Claims**



1. A process control valve comprising

a fluid valve body having an inlet for receiving fluid, an outlet for discharging fluid, a fluid flow passage connecting the inlet and outlet, and a controllable throttling element which is moveable to selectively vary the cross-sectional area of flow of at least a portion of the passage,

actuator means coupled to the valve body and responsive to control signals for selectively moving the throttling element,

a first pressure sensor disposed at the inlet of the valve body for producing a first signal representing the pressure P_1 of the fluid at the inlet,

a second pressure sensor disposed at the outlet of the valve body for producing a second signal representing the pressure P_2 of the fluid at the outlet,

utilization means for receiving said first and second signals and for developing an output dependent upon the received signals,

said utilization means including

means for determining the fluid pressure drop across the valve body from the first and second signals,

means for storing a predetermined fluid pressure drop value,

means for comparing the determined fluid pressure drop with the stored fluid pressure drop value and for producing a difference signal whose magnitude represents a difference between the compared values, and

means for producing control signals for application to the actuator means to cause it move the throttling element to thereby vary the fluid pressure drop across the valve body to more closely match the stored fluid pressure drop value and reduce the magnitude of the difference signal.

5,251,149

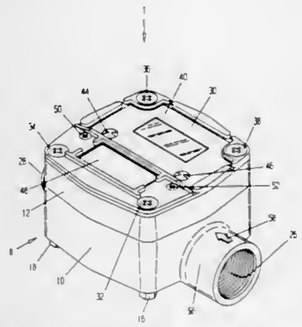
ELECTRONIC NUTATING DISC FLOW METER

Jeffrey J. Williams; Robert W. Calvert, and Richard M. Kruse, all of Wichita, Kans., assignors to Great Plains Industries, Inc., Wichita, Kans.

Filed Aug. 2, 1991, Ser. No. 739,846

Int. Cl.[5] G01F *1/72, 1/08*

U.S. Cl. 364—510 **31 Claims**



1. An electronic nutating disc flow meter for measuring volumetric fluid flow comprising:

a. a housing defining a central chamber, said housing having an axially aligned inlet and outlet to permit fluid communication with said central chamber, said housing formed from a composite material;

b. a metering assembly including a wobble disc positioned in said central chamber, said metering assembly defining an internal circular passageway having an inlet and an outlet, said inlet of said metering assembly in fluid communication with said inlet of said housing and said outlet of said metering assembly in fluid communication with said central chamber of said housing, said wobble disc having a protruding drive pin extending through an aperture in said metering assembly;

c. a free floating signal generator disc positioned in said central chamber between said metering assembly and said housing, said signal generator disc formed from a composite material having a friction reducing component and including a plurality of ferrous, non-magnetized slugs positioned about the circumference, said signal generator disc engaging and being rotated by said drive pin as the fluid passes through the electronic nutating disc flow meter along the following flow path: fluid enters through said inlet of said flow meter and passes into said inlet of said metering assembly through said internal passageway causing said wobble disc to nutate and exiting through said outlet of said metering assembly, passing through said central chamber and exiting through said outlet of the flow meter;

d. sensor means located outside of said central chamber and isolated from the fluid for detecting movement of said slugs as said signal generator disc rotates in said central chamber, said sensor means sending a pulsed signal each time a slug passes by said sensor means;

e. computer means including means for storing data defining a calibrated nonlinear relationship between a K-factor of the meter and a corresponding volumetric flow rate of the meter, said computer means, response to the sensor signal and the relationship data in the storing means, for determining volumetric fluid flow through the electronic nutating disc flow meter and for generating a volumetric signal

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representative of the determined volumetric fluid flow; and

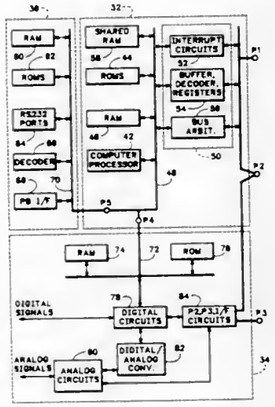
f. means, responsive to the volumetric signal, for displaying a fluid volume corresponding to the determined volumetric fluid flow.

5,251,150

SUB-MODULAR DEVELOPMENT SYSTEM FOR MODULAR COMPUTER-BASED INSTRUMENTS

Desmond C. Ladner, Camas, and Spass Stoiantschewsky, Vancouver, both of Wash., assignors to Tektronix, Inc., Wilsonville, Oreg.

Filed Jan. 13, 1989, Ser. No. 297,529
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—550 **13 Claims**



1. An instrument module development system for facilitating the development of hardware and firmware for a computer-based modular instrument system of the type having a chassis with slots for receiving a plurality of instrument modules and a timing and resource manager module including a host computer, and having a system bus coupled to the slots for conveying signals to and from the instrument modules and the timing and resource management module when the modules are inserted in the slots, each instrument module comprising:

a module housing for insertion into one of said slots;

a development circuit board mounted on said module housing having an internal processor, an internal bus to which the internal processor is coupled, and means for communicating with the host computer over said system bus when said module housing is inserted into one of said slots for conveying said signals between modules;

an instrument circuit board mounted on said module housing having an internal bus and means for interfacing with the development circuit board such that the internal buses form an integral internal bus; and

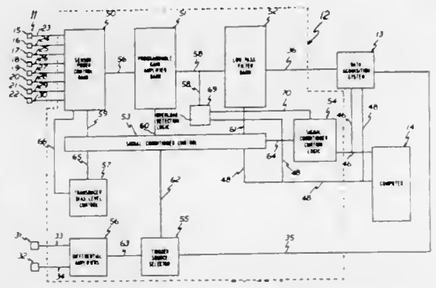
means for accessing the development circuit board for loading, running and debugging application specific firmware for the instrument module.

5,251,151

METHOD AND APPARATUS FOR DIAGNOSING THE STATE OF A MACHINE

Victor Demjanenko, North Tonawanda; David M. Benenson, Williamsville, both of N.Y.; Soon Y. Park, Chonnam, Rep. of Korea; Selwyn Wright, Palo Alto, Calif.; Andres Soom, Williamsville, N.Y.; Raj S. Acharya, East Amherst, N.Y., and Mehrdad Soumekh, Snyder, N.Y., assignors to Research Foundation of State Univ. of N.Y., Buffalo, N.Y.

Continuation-in-part of Ser. No. 591,825, Oct. 2, 1990, abandoned, which is a continuation of Ser. No. 200,116, May 27, 1988, Pat. No. 4,980,844. This application Dec. 24, 1990, Ser. No. 634,091
Int. Cl.[5] G01H *11/00*; G10M *7/00*
U.S. Cl. 364—550 **25 Claims**



21. An apparatus for extracting a set of events from a vibrational signal of a machine wherein a subset of said events corresponds to a physical action of said machine, comprising:

means for sensing a vibrational signal of said machine;

means for creating a time domain signature from said vibrational signal;

means for processing said signature to obtain a set of clustered events from a plurality of sets of possible events including in said set of clustered events a subset which corresponds to a physical action of said machine; and

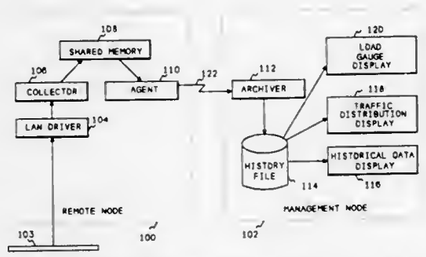
means for obtaining from said subset information representing the mechanical condition of said machine.

5,251,152

STORAGE AND DISPLAY OF HISTORICAL LAN TRAFFIC STATISTICS

Peter C. Notess, Fort Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 17, 1991, Ser. No. 642,733
The portion of the term of this patent subsequent to Sep. 7, 2010, has been disclaimed.
Int. Cl.[5] G06F *15/76*
U.S. Cl. 364—550 **16 Claims**



1. A method for collecting and displaying statistical data for a plurality of local area networks, said process comprising the steps of:

(a) collecting the statistical data in a first task in each of a plurality of multi-tasking remote computer systems, one of said plurality of multi-tasking remote computer systems connected to each of the plurality of local area networks, said method comprising the steps of

(a1) receiving each transmission on the local area network,

(a2) collecting the local area network transmission data,

(a3) reducing said transmission data to create the statistical data, and

(a4) storing the statistical data in a shared random access memory area;

(b) retrieving said statistical data from said shared random access memory area into a second task of each of said remote computer systems, and transferring the statistical data to a management node computer system, wherein said first and second tasks operate concurrently;

(c) receiving, assembling, storing, and displaying the statistical data in said management node computer system;

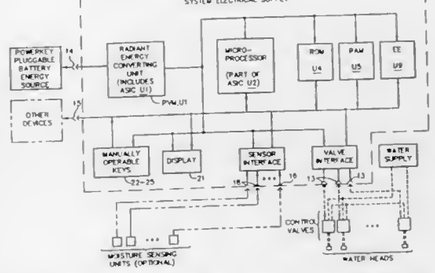
(d) formatting and displaying the statistical data and dynamically displaying new data received by said management node computer system.

5,251,153

FLEXIBLY PROGRAMMABLE IRRIGATION SYSTEM CONTROLLER

Wyn Y. Nielsen, La Jolla; Steven C. Carlin, Spring Valley, and Dennis A. Kaiser, Escondido, all of Calif., assignors to Solatrol, Inc., San Diego, Calif.

Continuation of Ser. No. 250,841, Sep. 28, 1988, abandoned. This application Apr. 18, 1991, Ser. No. 687,762
Int. Cl.[5] H04Q *3/00*; G05B *23/02*
U.S. Cl. 364—550 **3 Claims**



1. A method of setting up an irrigation system having an irrigation controller selectively communicating with a plurality of irrigation elements logically identified by the controller, and a plurality of physical irrigation elements each connected by wiring to respective physical terminals of the irrigation controller, so that the physical terminals to which the plurality of irrigation elements respectively connect may be selectively individually associated with the logical plurality of irrigation elements that the controller controls, the method comprising:

first identifying to the irrigation controller, by manually momentarily inducing electrical continuity across terminals to which a one of the plurality of irrigation elements is connected, an existence of an irrigation element that is connected to these terminals, the momentary inducing of electrical continuity across terminals continuing until, at a certain time, each one of the physical plurality of irrigation elements has been identified to the particular terminals to which it electrically connects;

second identifying to the irrigation controller the logical number of each of the logical plurality of irrigation elements upon each of the times when each corresponding one of the physical plurality of irrigation elements is also first identified to the irrigation controller by the momentary manual inducing of the electrical continuity; and

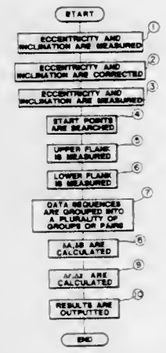
building a cross-reference map in the irrigation controller by which it may associate each numbered one of the logical plurality of irrigation elements that it serves to control with a corresponding physical one of the physical plurality of irrigation elements.

5,251,154

METHOD FOR MEASURING ACCURACY OF THREAD GROOVE AND SYSTEM FOR THE SAME

Yasutami Matsumoto, Yamato; Shigemi Tsukamoto, Tsukuba; Takashi Otani, Fujisawa; Kunio Kawashima, Yokohama, and Shoji Jibu, Hiratsuka, all of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 9, 1990, Ser. No. 611,023
Claims priority, application Japan, Nov. 9, 1989, 1-292015
Int. Cl.[5] G01B *5/20, 7/28*; G06F *15/46*
U.S. Cl. 364—551.02 **12 Claims**



1. A method for measuring the accuracy of a threaded groove in one of an external thread having a ball thread and an internal thread having a ball thread, the method comprising the steps of:

measuring the coordinates of a plurality of points on each of a pair of flanks along a thread axis line direction;

comparing the coordinates of the plurality of points measured on one flank with the coordinates of the plurality of points measured on the other flank;

selecting, as measurement starting points on said respective flanks, two points having the same radial coordinate whose distance in the thread axis line direction is equal to an axial distance between ball loci on said pair of flanks, said distance being known from a designed size;

measuring a displacement in a depth direction of one point on each of said pair of flanks constituting the thread groove by moving the position of the one point along a longitudinal direction of the thread groove, and obtaining a pair of measured data sequences, the one point selected on a locus of a ball on each of the pair of flanks, the one point being a point of measurement;

grouping elements of said pair of measured data sequences into a plurality of groups so that each group includes a pair of elements which are respectively included in the pair of measured data sequences and which are corresponding to each other;

obtaining the accuracy in the depth direction of the thread groove with respect to a reference thread groove on the basis of a sum of the elements in each group; and

obtaining the accuracy in the thread axis line direction of the thread groove with respect to the reference thread groove on the basis of a difference between the elements in each group.

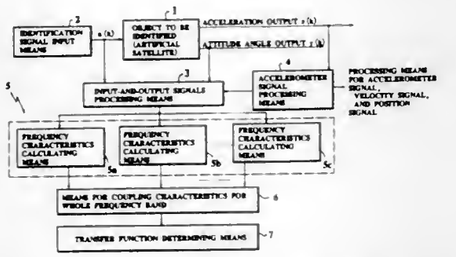
VOL 1155 ISS 1 OCT 5 1993 UMI

5,251,155

SYSTEM IDENTIFICATION APPARATUS USING SPECTRUM ANALYSIS OF RESONATION FREQUENCIES

Shuichi Adachi, Kanagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 23, 1991, Ser. No. 644,380
Claims priority, application Japan, Jan. 24, 1990, 2-12442
Int. Cl.[5] G06F *15/20;*
U.S. Cl. 364—553 **6 Claims**



1. A system identification apparatus for determining the dynamic characteristics of a system, comprising:

identification signal input means for inputting an input signal to said system, said system outputting an output signal indicative of the position of said system in response to said input signal;

a band-pass filter connected to said identification signal input means and said system for partially transmitting said input signal and said output signal in accordance with the pass-band of said band-pass filter;

a sampler connected to said band-pass filter for sampling said input signal and said output signal from said band-pass filter at specified sampling intervals; and

means connected to said sampler for calculating a transfer function from the samples of said input signals and said output signals,

wherein the passband of said band-pass filter and the sampling interval of said sampler are determined by:

means connected to said identification signal input means and said system for calculating a spectrum from said input signal and said output signal or a differential of said output signal; and

means connected to said spectrum calculating means, said band-pass filter and said sampler for determining appropriate values of the passband of said band-pass filter and the sampling interval of said sampler in accordance with the spectrum;

whereby the outputs of said band-pass filters and the sampling periods enable the identification of a system by transfer functions indicative of its characteristic oscillations.

5,251,156

METHOD AND APPARATUS FOR NON-CONTACT MEASUREMENT OF OBJECT SURFACES

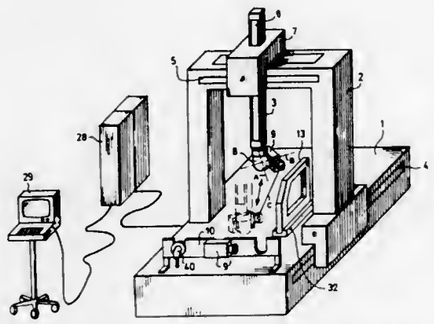
Helmut Heier; Klaus-Peter Koch, both of Aalen, and Karl-Hermann Breyer, Heidenheim, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Oberkochen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 616,627, Nov. 21, 1990. This application Jul. 11, 1991, Ser. No. 728,557
Claims priority, applicatioo Fed. Rep. of Germany, Aug. 25, 1990, 4026942
Int. Cl.[5] G01B *11/24*
U.S. Cl. 364—559 **14 Claims**

1. A method of using a camera and a coordinate-measuring machine for non-contact measurement of coordinates on object surfaces, wherein the coordinate-measuring machine has a movable measurement arm (3) and associated measurement scales (4, 5, 6) for measuring measurement-arm movement in three directions in space, and wherein articulating-head means (8) mounts a camera and is carried by said measurement arm (3), said articulating-head means (8) having (i) two orthogonally related axes of independent action for controlled roatary and pivotal angular orientation of the mounted camera, and (ii) associated angle-measurement means providing angle-measurement values (a, b) of the articulating-head means (8), said method comprising:

moving the measurement arm (3) into two different positions that are spaced apart;

using the articulating-head means (8) to target the object to be measured, by rotating or pivoting the camera, and



using the camera to take object-targeted pictures at each of the two positions;

storing and evaluating pictures taken by the camera in the two positions, the evaluating being with respect to the coordinates of characteristic points on the surface of the object, by known photogrammetric methods of evaluation; and

calculating object coordinates (xi, yi, zi) from picture coordinates (Uij, Vij) of the camera, using position and angle measurement values (xoj, yoj, zoj; aoj, boj) obtained from the scales of the coordinating-measuring machine and angle-measurement values obtained from the articulating-head means (8).

5,251,157

PROCESS FOR OFFSET ADJUSTMENT OF A MICROPROCESSOR BASED OVERCURRENT PROTECTIVE DEVICE AND APPARATUS

Edward C. Prather, Hendersonville, N.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 28, 1990, Ser. No. 636,870
Int. Cl.[5] G06F *15/56;* **G01R** *35/00*
U.S. Cl. 364—571.04 **9 Claims**

1. An electrical contactor that acts in the presence of a predetermined value of an input, electrical variable at an input thereto to perform a function, where an offset coefficient and a calibration factor are digitally stored in a memory region of said contactor and where any input electrical value within a range of input electrical values provides a corresponding derived electrical value in said contactor, comprising:

supply means for supplying a first value of said input electrical variable to said input where said first value is zero;

sensing means for sensing said supplied input electrical variable and producing a corresponding first derived value related thereto;

computing means having said first value of input electrical variable available thereto;

first communicating means for communicating said first derived value to said computing means;

said computing means calculating an offset coefficient within said computing means according to the relationship;

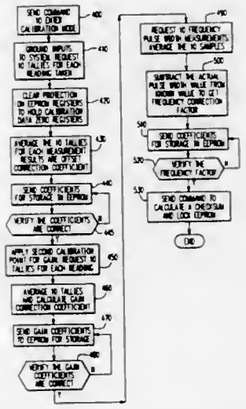
said offset coefficient equals said first derived value;

second communicating means for communicating said offset coefficient to said memory region for digital placement therein;

means for using said offset coefficient by said contactor in performing said function;

said supply supplying a second value of said input electrical variable to said input;

said sensing means sensing said supplied second input electrical variable and producing a corresponding second derived value related thereto;



said first communicating means communicating said second derived value to said computing means which also has said second value of input electrical variable available thereto;

said computing means calculating a calibration factor within said computing means according to the relationship:

said calibration factor is related to said second value of input electrical variable and said second derived value;

said second communicating means communicating said calibration factor to said memory region for digital placement therein; and

means for using said calibration factor by said contactor in performing said function.

5,251,158

Patent Not Issued For This Number

5,251,159

CIRCUIT SIMULATION INTERFACE METHODS

James A. Rowson, Fremont, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Mar. 20, 1991, Ser. No. 672,257
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—578 **18 Claims**

1. Using a computer, a method for presenting to a user intermediate and final results of computer simulation and analysis of designs for integrated circuits, comprising the steps of:

accepting a user definition of a user-defined control panel display composed of tiles including at least one of:

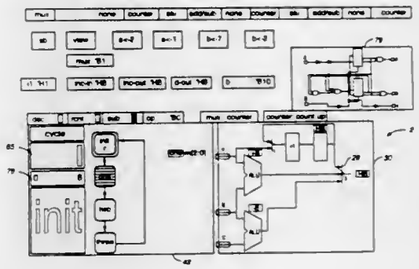
a datapath compiler tile depicting a datapath and, apart from depiction of said datapath, representing data flow through said datapath in a current logic state;

a logic synthesizer tile depicting a logic state diagram and representing a current logic state;

an analytical results tile depicting a functional relationship between two circuit variables; and

a specification tile depicting specified circuit parameter limits and representing a degree to which said specified circuit parameter limits have been met;

said method comprising the further steps of:



causing a circuit design simulation to be executed on said computer;

indexing simulation results for distribution to appropriate tiles of the user-defined control panel display;

distributing simulation results to appropriate tiles of a user-defined control panel display; and,

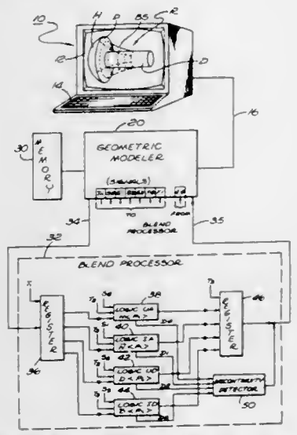
modifying at least one tile to illustrate the simulation results.

5,251,160

SYSTEM FOR BLENDING SURFACES IN GEOMETRIC MODELING

Alyn P. Rockwood, Moss Beach, Calif., and John C. Owen, Cambridge, United Kingdom, assignors to Evans & Sutherland Computer Corporation, Salt Lake City, Utah

Continuation of Ser. No. 509,695, Apr. 16, 1990, abandoned, which is a continuation of Ser. No. 159,612, Feb. 23, 1988, abandoned. This application Aug. 27, 1991, Ser. No. 750,690
Int. Cl.[5] G06F *15/68*
U.S. Cl. 364—578 **14 Claims**



1. A computer-aided design system for use with an interactive terminal for generating a graphic display of a localized superelliptical blend and blends between a plurality of geometric primitive shapes, said geometric primitive shapes including bland and blends which are truncated such that only a part of said blend and blends between predetermined locations of said geometric primitive shapes is generated said system comprising:

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central processing means to generate and modify said graphic display of said geometric primitive shapes at said interactive terminal; and

blend processing means which comprises:

a logic structure for implementing geometric blending operations and geometric blending functions on said pixels for truncating said blend and blends to generate said localized superelliptical blend and blends for said graphic display, wherein said logic structure generates said blend and blends in accordance with an expression:

$$N<P_i>=R<P_i>\{1-(\Sigma_i Q_i)^{1/5}\}$$

where

$$R<P_i>=\Sigma_i(Q_i/\Sigma_i Q_i)R_i$$

and

$$Q_i=[1-P_i/R_i]^t+$$

wherein $N<P_i>$ defines said localized superelliptical blend and blends between said geometric primitive shapes,

$R<P_i>$ = rescaling function corresponding to a non-Euclidean distance measure of said blend and blends from a zero surface of a selected geometric primitive shape within said blend and blends,

R_i = variable range defining bounds of said blend and blends,

P_i = implicit function defining said selected geometric primitive shape indexed by i, and

t = thumbweight, a constant which determines a degree of curvature of said blend and blends,

register means, operatively connected to said central processing means, for temporary storage of said geometric primitive shapes and said generated blend and blends from said blend processing means.

5,251,161

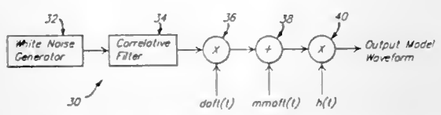
METHOD OF GENERATING MODEL CRASH WAVEFORMS FOR TESTING VEHICLE CRASH DETECTION SYSTEMS

Tony Gioutsos, Brighton, and Michael A. Piskie, Bloomfield Hills, both of Micb., assignors to Automatic Systems Laboratory, Inc., Farmington Hills, Mich.

Filed Feb. 25, 1992, Ser. No. 841,381

Int. Cl.[5] G06G *3/10;* **G06F** *101/18;* **B60Q** *11/00;* **B60R** *21/00*

U.S. Cl. 364—578 **8 Claims**



1. A method of modeling a vehicle crash waveform comprising the steps of:

separating a signal of interest from a predetermined crash data set;

generating a signal indicative of noise present in said predetermined crash data set based on said signal of interest;

generating information characteristic of said noise signal;

generating a randomly variable waveform;

modifying said randomly variable waveform with said characteristic information; and

combining said modified randomly variable waveform with said signal of interest to generate said model crash waveform.

5,251,162

INTEGRATABLE CIRCUIT CONFIGURATION WITH AN ANALOG NETWORK

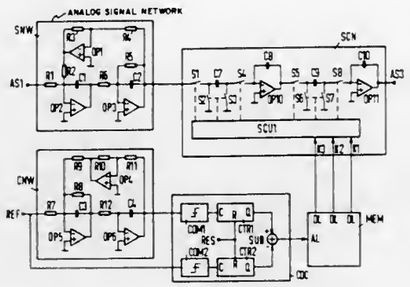
Lajos Gazsi, Düsseldorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 18, 1992, Ser. No. 947,724

Claims priority, application European Pat. Off., Sep. 18, 1991, 91115875

Int. Cl.[5] G06J *1/00*

U.S. Cl. 364—602 **8 Claims**



1. An integratable circuit configuration, comprising

(a) an analog signal network receiving an analog input signal and supplying an analog output signal, said analog signal network having a transfer function being subject to fluctuations in a given way with respect to a desired transfer function;

(b) switched capacitor network connected to said analog signal network, said switched capacitor network receiving an analog input signal and supplying an analog output signal, said switched capacitor network having a transfer function being adjustable with at least one filter coefficient;

(c) an analog comparison network receiving an excitation signal and supplying a response signal in response to the excitation signal, said analog comparison network having a transfer function being subject to the fluctuations in the given way; and

(d) an evaluation circuit connected to said analog comparison network and to said switched capacitor network for setting the at least one filter coefficient of said switched capacitor network for performing the desired transfer function.

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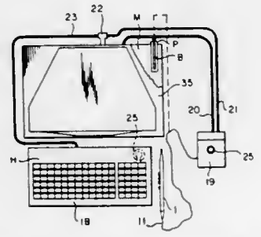
KEYPOINTER FOR SINGLE-HAND COMPUTER KEYBOARD

Sayd Z. Rouhani, 3028 Hartert Dr., Idaho Falls, Id. 83404

Filed Jan. 13, 1992, Ser. No. 818,773

Int. Cl.[5] G06F *3/02*

U.S. Cl. 364—709.12 **15 Claims**



1. A data entry device for use in inputting data to a data processing device, comprising:

(a) a keyboard electrically connected with said data processing device including a plurality of data keys and a plurality of signal controlling keys, wherein at least some of said data keys are operable to send to said data processing device a first signal when said data key is depressed, and a second signal, which is distinct from said first signal, when one of said signal controlling keys is simultaneously depressed with said data key;

(b) a hand-held keypointer electrically connected with said data processing device having one end which is operable to depress said data keys on said keyboard, and further wherein said keypointer includes a plurality of signal controlling buttons thereon, each of said signal controlling buttons corresponding to and providing the same function as one of said signal controlling keys; and

(c) electronic interface means for electrically connecting said keypointer with said data processing device, said interface means being operable to receive signals from said keypointer and send said signals to said data processing device, said data processing device being loaded with a keypointer driver program which interprets said signals received from said keypointer and said keyboard and modifies said keyboard signal in accordance with said keypointer signal, thereby to permit said data entry device to be used as a standard two-hand keyboard or as a single-hand keyboard.

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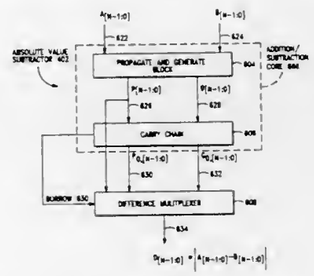
LOW-POWER AREA-EFFICIENT ABSOLUTE VALUE ARITHMETIC UNIT

Jeffrey M. Dodson, Santa Cruz, and Christopher T. Cheng, Palo Alto, both of Calif., assignors to S-MOS Systems, Inc., San Jose, Calif.

Filed May 22, 1992, Ser. No. 887,511

Int. Cl.[5] G06F *7/38*

U.S. Cl. 364—715.01 **13 Claims**



1. An absolute value arithmetic unit comprising:

a propagate-and-generate block operable to receive two M-bit wide operands, A and B, and produce a first set of propagate and generate signals, as a function of said received operands, said propagate-and-generate block comprising N substantially identical propagate-and-generate circuits, each of said propagate-and-generate circuits having two input terminals and two output terminals, wherein M and N are predetermined integer values and $1 \leqq M \leqq N$;

carry-chain means, having a set of input terminals coupled to the output terminals of said propagate-and-generate circuits and a set of output terminals, for producing a first set of carry-chain-propagate and carry-chain-generate signals; and

a difference multiplexer having a set of input terminals and a set of output terminals, operable to produce a first result equal to (A_i-B_i) and a second result equal to (B_i-A_i), where i is a single bit position, $i=(M-1)$ is the most significant bit position, and $i=0$ is the least significant bit position;

wherein said difference multiplexer selects said (A_i-B_i) result when a carry-chain-generate signal in the most significant bit position is in a first state and selects said (B_i-A_i) result when said carry-chain generate signal in the most significant bit position is in a second state, said difference multiplexer being electrically coupled to said propagate-and-generate block and said carry chain; and

wherein $|A_i-B_i|$ is produced at an output node of said difference multiplexer based upon one of said selections.

5,251,165

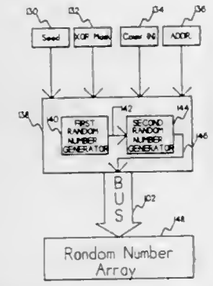
TWO PHASE RANDOM NUMBER GENERATOR

J. Colin James, III, 8250 W. 44th Ave., Wheat Ridge, Colo. 80033-4427

Filed Apr. 9, 1992, Ser. No. 865,474

Int. Cl.[5] G06F *1/02*

U.S. Cl. 364—717 **10 Claims**



1. An apparatus for generating random numbers comprised of

first input register, said first input register specifying a random number seed,

a second input register, said second input register specifying a random number mask,

means to automatically control the number of random numbers to computer,

first means for generating a series of intermediate random numbers coupled to said control means and coupled to said input means, and

second means for generating final random numbers, coupled to said first generating means, each said final random number corresponding to and depending on a different intermediate random number.

5,251,166

REDUNDANT BINARY TYPE DIGITAL OPERATION UNIT

Ryuji Ishida, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 7, 1992, Ser. No. 864,599

Claims priority, application Japan, Apr. 8, 1991, 3-73521

Int. Cl.[5] G06F *7/38, 11/00*

U.S. Cl. 364—746.2 **5 Claims**

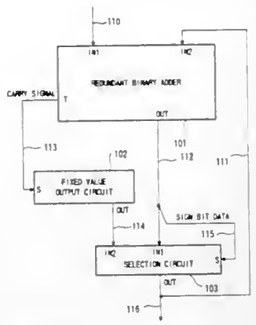
1. A redundant binary type digital operation unit comprising:

redundant binary adder means having first and second input terminals, a data output terminal and a carry output terminal, said first input terminal receiving a redundant binary data input and said second input terminal receiving an accumulation data input, said redundant binary adder means providing an operation word on said output terminal, said operation word having a word length determined by providing a plurality of carry margin digits on a higher value side of the word and one protection digit for overflow judgment at a highest position to the word length of the redundant binary data input;

fixed value data output means to which a carry signal representing a value of a carry output from said carry output terminal of said redundant binary adder means is input and

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which outputs one of first and second predetermined fixed value data depending on the value of said carry signal; and selection means which selectively outputs the operation word from said data output terminal from said redundant



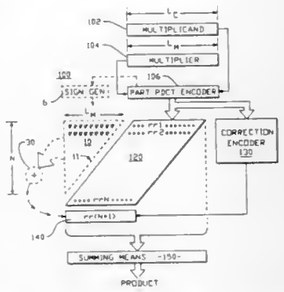
binary adder means or the fixed value data from said fixed value data output means depending on the protection digit as a selection signal from said redundant binary adder means.

5,251,167

METHOD AND APPARATUS FOR PROCESSING SIGN-EXTENSION BITS GENERATED BY MODIFIED BOOTH ALGORITHM

Stephen M. Simmonds, Mountain View; John M. Lade, Pacifica, both of Calif., and Greg A. Marek, Livonia, Mich., assignors to Amdahl Corporation, Sunnyvale, Calif.

Filed Nov. 15, 1991, Ser. No. 792,715
Int. Cl.[5] G06F *7/52*
U.S. Cl. 364—760 **12 Claims**



6. A signal processing circuit for receiving binary encoded signals representing signed partial products pp(1), pp(2), ... pp(N), where each partial product pp(i) is of the form C×m(i), C being a multiplicand m(i) being a binary-coded multiplying factor that is separable from the multiplicant C and is associated with each partial product pp(i), where for i greater than 1 each multiplying factor m(i) has at least one more bit than a preceding multiplying factor m(i−1), where said signal processing circuit produces a result signal representing the sum of the signed partial products pp(1), pp(2), . . . , pp(N) under a condition where the sign bit of each received partial product signal is in essence, unaccompanied by a corresponding sign extension subfield, the signal processing circuit comprising:

a correction-bits encoder circuit, responsive to the signal of each partial product p(i), for generating a correction signal having correction bits representing the sum of the sign extension subfields which conventionally would have accompanied the partial product representing signals where the correction signal has fewer bits than said sign extension subfields; and

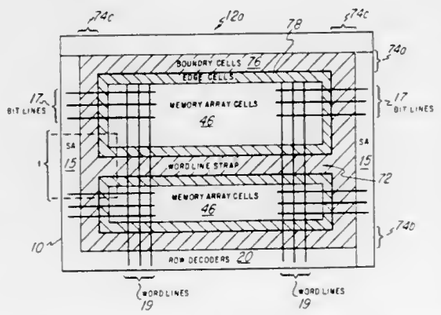
a summing circuit, coupled to receive the correction signal and to receive the partial products representing signals unaccompanied by corresponding sign ex extension subfield representing signals, for summing together the correction signal and the received partial product representing signals.

5,251,168

BOUNDARY CELLS FOR IMPROVING RETENTION TIME IN MEMORY DEVICES

Gishi Chung, Garland; William R. McKee, Plano; William F. Richardson, Richardson, and Lionel S. White, Jr., Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 31, 1991, Ser. No. 738,383
Int. Cl.[5] G11C *7/02*
U.S. Cl. 365—51 **17 Claims**



1. A memory device formed on a semiconductor substrate, comprising:

an array of memory cells laid out on the semiconductor substrate in a pattern, having edge memory cells separated from each other by a boundary internal to the array; and

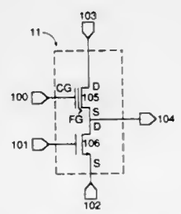
boundary cells laid out in the internal boundary, some of the boundary cells laid out in the internal boundary are electrically biased.

5,251,169

NON-VOLATILE ERASABLE AND PROGRAMMABLE INTERCONNECT CELL

Gregg Josephson, Aloha, Oreg., assignor to Lattice Semiconductor Corporation, Hillsboro, Oreg.

Filed May 6, 1991, Ser. No. 696,453
Int. Cl.[5] G11C *7/00, 11/40*
U.S. Cl. 365—72 **12 Claims**



1. An interconnect cell for coupling a first lead to a second lead, said interconnect cell comprising:

a first transistor, having first and second terminals defining a signal carrying path and a control terminal, coupled to said first lead and said second lead of said interconnected cell; and

a non-volatile programmable cell connected to said control terminal of said first transistor;

wherein said programmable cell transfers a first voltage to said control terminal to turn on/off said transistor, thereby coupling/decoupling said first lead to said second lead; and

wherein said programmable cell comprises:

a second transistor including a floating gate, a control gate, and source and drain regions, said drain of said second transistor connected to a first variable voltage source, said control gate of said second transistor connected to a second variable voltage source; and

a third transistor having a control gate, source and drain regions, said source of said third transistor connected to a third variable voltage source, said gate of said third transistor connected to a fourth variable voltage source, said drain of said third transistor connected to said source region of said second transistor;

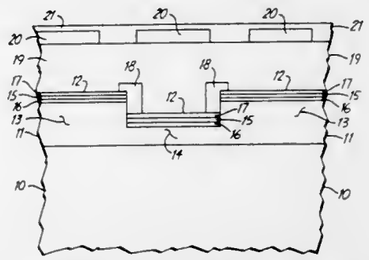
wherein said first voltage is drawn from the common connection between said second transistor and said third transistor.

5,251,170

OFFSET MAGNETORESISTIVE MEMORY STRUCTURES

James M. Daughton, Edina, Minn., and Arthur V. Pohm, Ames, Iowa, assignors to Nonvolatile Electronics, Incorporated, Plymouth, Minn.

Filed Nov. 4, 1991, Ser. No. 786,128
Int. Cl.[5] G11C *11/15*
U.S. Cl. 365—158 **14 Claims**



1. A ferromagnetic thin-film based digital memory using magnetoresistive sensing, said memory comprising:

a first storage line structure having a first storage line pair of end terminals adapted to conduct electrical current in at least one direction, said storage line structure end terminals having electrically connected in series therebetween a plurality of bit structures with each said bit structure electrically connected at a bit juncture to at least one other said bit structure such that adjacent said bit structures are offset from one another in a direction substantially perpendicular to that path followed by said first storage line structure in extending between said first storage line structure end terminals, each said bit structure having a structure comprising:

an intermediate layer of a kind of separating material, said intermediate layer having two major surfaces on opposite sides thereof such that said major surfaces are separated by a separating layer thickness, and with said adjacent bit structures being offset from one another, as aforesaid, by an offset distance exceeding said separating layer thickness, and

memory film on each side of intermediate layer major surfaces with said memory film being of a magnetoresistive, anisotropic, ferromagnetic material, and

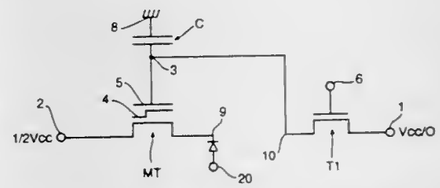
a plurality of word line structures each having a pair of word line end terminals adapted to conduct electrical current in at least one direction with each of said pairs of word line end terminals having an electrical conductor electrically connected therebetween which is located across an electrical insulating layer from said memory film on one of said major surfaces of said intermediate layer of a selected one of said bit structures.

5,251,171

METHOD OF OPERATING A SEMICONDUCTOR MEMORY DEVICE

Yoshimitsu Yamauchi, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 18, 1991, Ser. No. 644,332
Claims priority, application Japan, Jan. 19, 1990, 2-11050
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—185 **1 Claim**



1. A method of operating a semiconductor memory device comprising a volatile memory means and a non-volatile memory means, said volatile memory means comprising a MOS transistor, and a capacitor means, one electrode of said capacitor means being connected to the source of said MOS transistor, said non-volatile memory means comprising a floating gate transistor, said semiconductor memory device further comprising a switch means connected between said source of said MOS transistor and one of a source and a drain of said floating gate transistor, the control gate of said floating gate transistor being connected to said source of said MOS transistor,

said method comprising the step of, when said switch means is off and said semiconductor memory device works as a volatile memory, applying a voltage to the other of said source and drain of said floating gate transistor, the level of said voltage being substantially one half of that of a power source voltage with respect to the ground level.

5,251,172

SEMICONDUCTOR MEMORY APPARATUS HAVING REDUCED AMOUNT OF BIT LINE AMPLIFICATION DELAY

Hiroyuki Yamauchi, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

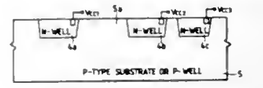
Filed Mar. 25, 1991, Ser. No. 673,981
Claims priority, application Japan, Mar. 26, 1990, 2-76023
Int. Cl.[5] G11C *11/34*; H01L *27/06*
U.S. Cl. 365—189.09 **23 Claims**

1. A semiconductor memory apparatus comprising a plurality of memory cells and a plurality of sense amplifiers, said sense amplifiers being respectively coupled to amplify voltage differences read out from said memory cells, and a plurality of peripheral circuits being circuits other than said memory cells and said sense amplifiers, wherein said memory cells, said sense amplifiers and said peripheral circuits each comprise transistors; and

circuit means for providing an absolute value of threshold voltage of said transistors of the sense amplifiers is smaller

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than an absolute value of threshold voltage of said transistors of the memory cells and smaller than an absolute



	PRIOR ART	PRESENT INVENTION
FIG. 1	$V_{CC1} + V_{CC2} < V_{CC3}$	$V_{CC1} \geq V_{CC2} > V_{CC3}$
FIG. 2	$\lvert V_{tp1} \rvert < \lvert V_{tp2} \rvert < \lvert V_{tp3} \rvert$	$\lvert V_{tp1} \rvert \geq \lvert V_{tp2} \rvert > \lvert V_{tp3} \rvert$
FIG. 3	$\lvert V_{tp1} \rvert < \lvert V_{tp2} \rvert < V_{CC3}$	$\lvert V_{tp1} \rvert < \lvert V_{tp2} \rvert$ $V_{CC3} \geq V_{CC2} > V_{CC1}$
FIG. 4	$\lvert V_{tp1} \rvert < \lvert V_{tp2} \rvert < \lvert V_{tp3} \rvert < V_{CC3}$	$\lvert V_{tp1} \rvert \geq \lvert V_{tp2} \rvert \geq \lvert V_{tp3} \rvert > V_{CC3}$

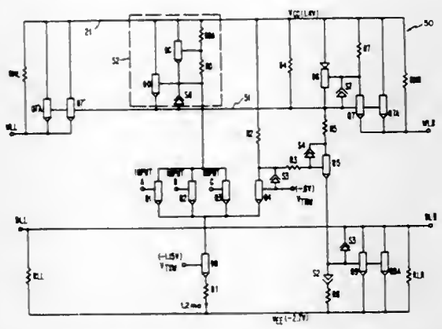
value of threshold voltage of said transistors of the peripheral circuits.

5,251,173

HIGH-SPEED, LOW DC POWER, PNP-LOADED WORD LINE DECORDER/DRIVER CIRCUIT

Joseph Y. Wong, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 6, 1991, Ser. No. 651,680
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.110 **14 Claims**



1. A word line driver circuit for a memory device, said word line driver circuit having a standby current limiting resistor connected between a power source and a base electrode of a word line driver transistor, said word line driver circuit including

at least one active pull up circuit means for shunting said current limiting resistor.

5,251,174

MEMORY SYSTEM

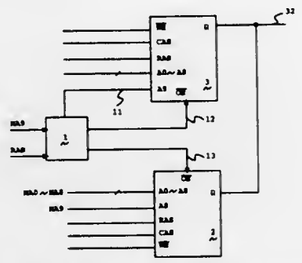
Ching-Tung Hwang, Lungtan, Taiwan, assignor to Acer Incorporated, Taipei, Taiwan

Filed Jun. 12, 1992, Ser. No. 898,040
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—200 **7 Claims**

1. A memory system adapted to be electrically connected to a memory controller capable of providing to said memory system an address strobe signal and a plurality of memory address signals including a first indicative address signal, comprising:

a first memory chip having a first data signal line and a first input terminal, and being logically divided into a first upper part and a first lower part each of which is accessible depending on the value of said first indicative address signal;

a controlling circuit responsive to said first indicative address signal and said address strobe signal for outputting a second indicative address signal, a first output enabling



signal to said first input terminal, and a second output enabling signal; and

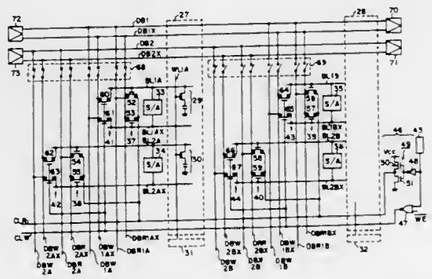
a second memory chip being logically divided into a second upper part and a second lower part each of which is accessible depending on the value of said second indicative address signal, and having a second input terminal for receiving said second output enabling signal and a second data signal line electrically connected to said first data signal line so that only one of said first and second memory chips is accessible at any time.

5,251,175

SEMICONDUCTOR MEMORY DEVICE

Masao Taguchi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 11, 1992, Ser. No. 849,353
Claims priority, application Japan, Mar. 13, 1991, 3-47981
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—208 **98 Claims**



1. A semiconductor memory device comprising:

a memory cell array unit formed by a plurality of memory cells arranged in a matrix form, in which

the datum stored in a selected memory cell are read out through a pair of bit lines provided at each column of said memory cell array unit, a sense amplifier, a readout column gate, and a pair of data buses provided commonly for columns of said memory cell array unit,

said readout column gate comprises a first transistor and a second transistor,

said first transistor has its controlling electrodes connected to one of said pair of bit lines and the other of said pair of bit lines, and its controlled electrodes connected to one of said pair of data buses and said readout column selection line, and

said second transistor has its controlling electrodes connected to one of said pair of bit lines and the other of said pair of bit lines, and its controlled electrodes connected to the other of said pair of data buses and said readout column selection line;

a column driver for setting, at a column selection time, the voltage of said readout column selection line to a voltage different than the precharged voltage of said pair of bit lines; and

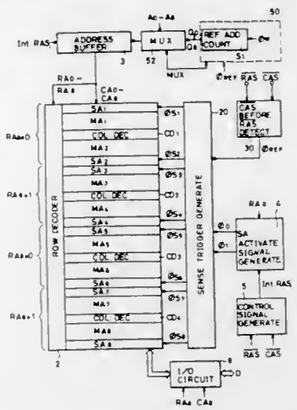
a column decoder for decoding a column address signal and for outputting to said column driver a signal indicating whether or not a column is selected.

5,251,176

DYNAMIC TYPE SEMICONDUCTOR MEMORY DEVICE WITH A REFRESH FUNCTION AND METHOD FOR REFRESHING THE SAME

Takahiro Komatsu, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 27, 1991, Ser. No. 750,793
Claims priority, application Japan, Aug. 29, 1990, 2-229085
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—222 **8 Claims**



1. A dynamic type semiconductor memory device comprising:

m memory cell blocks each having a plurality of memory cells, said m being an integer;

a plurality of sense amplifier groups associated with said memory cell blocks, one for each said cell block, and operable to sense and amplify information of selected memory cells in the associated memory cell blocks;

means for generating a refresh instruction detecting signal providing the indication of a refresh mode in response to an externally applied refresh mode instruction signal; and

sense amplifier activating means responsive to said refresh instruction detecting signal and a block selecting signal for activating all of the sense amplifier groups associated with the memory cell blocks selected by said block selecting signal, said block selecting signal simultaneously activating n memory cell blocks among said m memory cell blocks, said n being an integer not greater than said m,

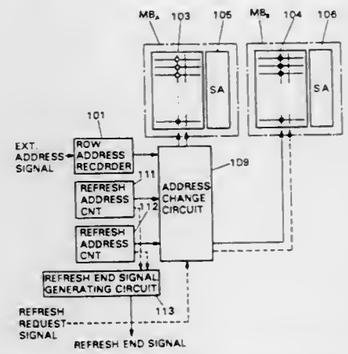
said sense amplifier activating means including means operable to sequentially activates the sense amplifier groups associated with said n memory cell blocks at different timings only when said refresh instruction detecting signal is active.

5,251,177

SEMICONDUCTOR MEMORY DEVICE HAVING AN IMPROVED REFRESH OPERATION

Hironori Akamatsu, Moriguchi; Akinori Shibayama, Neyagawa; Hisakazu Kotani, Takarazuka, and Junko Matsushima, Kashihara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 468,438, Jan. 22, 1990, abandoned. This application Nov. 26, 1991, Ser. No. 799,925
Claims priority, application Japan, Jan. 23, 1989, 1-013818
Int. Cl.[5] G11C *7/00, 13/00*
U.S. Cl. 365—222 **4 Claims**



1. In a semiconductor memory device comprising a plurality of memory blocks, said memory blocks comprising: memory cells arranged in a matrix form; pairs of bit lines for selecting column addresses of said memory cells; word lines for selecting row addresses of said memory cells; sense amplifiers; and a sense amplifier control circuit for controlling said sense amplifiers;

said semiconductor memory device further comprises:

a control means for controlling said word lines of all said memory blocks;

a selection means for selecting one or more blocks of said memory blocks to be subjected to a write and/or read operation;

a first process means for performing the write and/or read operation in said selected memory blocks; and

a second process means for performing the refresh operation in the unselected memory blocks, when said first process means is operated,

said sense amplifier control circuit comprises a first portion for writing or reading, and a second portion for refreshing, said first portion being used in the write and/or read operation, and said second portion being used in the refresh operation, the level of a current for driving said second portion being smaller than the level of a current for driving said first portion.

5,251,178

LOW-POWER INTEGRATED CIRCUIT MEMORY

Jimmie D. Childers, 1306 Village Garden Dr., Missouri City, Tex. 77459

Filed Mar. 6, 1991, Ser. No. 665,388
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—227 **12 Claims**

1. An integrated circuit memory capable of receiving address signals and capable of being coupled to a source of electrical power, comprising:

a plurality of array banks, each array bank having a plurality of memory cells arranged in rows and columns;

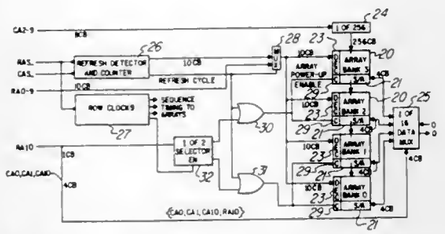
means for addressing said rows and columns of each said array bank in response to said address signals;

means for de-coupling said source of electrical power from

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at least a part of at least one said array bank in response to at least one bit of at least one said address signal;

a refresh detector and counter means and including at least one OR circuit having first and second inputs and an output; said output of said OR circuit coupled to said one array bank;



said first input of said OR circuit coupled to refresh detector and counter means;

said second input of said OR circuit coupled to said at least one bit of said at least one address signal.

5,251,179

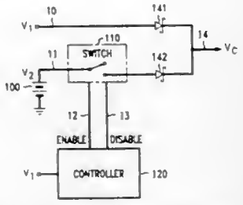
APPARATUS AND METHOD FOR EXTENDING BATTERY LIFE

Brian A. Wittman, Indianapolis, Ind., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 29, 1991, Ser. No. 677,032

Int. Cl.[5] G11C *11/00*; H02J *9/00*

U.S. Cl. 365—227 **14 Claims**



1. An electrical product including a battery for supplying electrical power to a power-using device when its primary source of electrical power is absent, the product further including switching means having set and reset states, the switching means interconnecting the battery and the device in its set state and disconnecting the battery from the device in its reset state, characterized by:

means responsive to the application of the primary source to the electrical product for setting the switching means; and

means for precluding the switching means from being reset more than one time.

5,251,180

SEMICONDUCTOR MEMORY DEVICE

Shigeo Ohshima, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 29, 1991, Ser. No. 799,988

Claims priority, application Japan, Nov. 30, 1990, 2-336066

Int. Cl.[5] G11C *11/407*

U.S. Cl. 365—230.03 **3 Claims**

1. A semiconductor memory device, comprising:

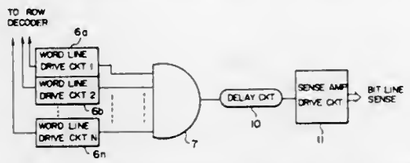
a plurality of memory cell arrays in each of which dynamic memory cells are arranged in matrix form;

a plurality of word line driving circuits provided for said memory cell arrays, respectively and arranged in a row direction of said memory cell arrays;

a plurality of sense amplifiers for outputting logical level outputs to bit lines arranged in a column direction of each of said memory cell arrays;

drive signal detecting means for obtaining a logical product of the outputs of said word line driving circuits;

a delay circuit for delaying an output of said drive signal detecting means by a sufficient time during which said



word lines are driven so that electric charges move from said corresponding memory cells to the bit lines and therefore potentials at the bit lines change slightly; and

a sense amplifier driving circuit for driving said sense amplifiers in response to a signal outputted by said drive signal detecting means and delayed by said delay circuit.

5,251,181

RANDOM ACCESS MEMORY DEVICE AND METHOD OF CONTROLLING SAME IN PIPE LINE PAGE MODE

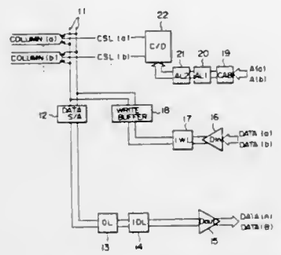
Haruki Toda, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 5, 1992, Ser. No. 892,820

Claims priority, application Japan, Jun. 5, 1991, 3-134086

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—230.08 **6 Claims**



1. A random access memory device, comprising:

a random access memory array having dynamic memory cells arranged in matrix form;

a column address buffer circuit for writing a column address of said random access memory array from the outside in a first cycle, and for converting a level of a column address signal;

an address data hold circuit for holding an address data level converted by said column address buffer circuit till a second cycle succeeding to the first cycle;

a column decoder for forming a column select signal on the basis of the address data held by said address data holding circuit in the second cycle;

a data input buffer circuit for writing a write data to be written to the cell in data write operation from the outside in the first cycle, and for converting level of the signal;

a write data hold circuit provided midway in a data transfer route to a column selected in accordance with the column address, for holding the write data till the second cycle;

a sense amplifier circuit for sensing and amplifying a data read from a column selected in accordance with the column address written in the first cycle in a data read operation;

a read data hold circuit for holding the read data amplified by said sense amplifier circuit till a start time of the second cycle; and

a data output buffer for outputting an output of said read data hold circuit to the outside.

5,251,182

HYDROPHONE CABLE CONSTRUCTION

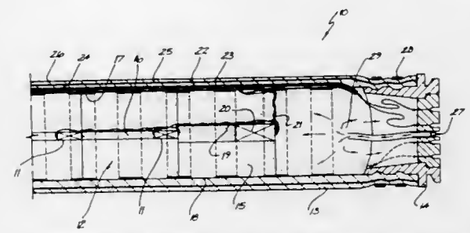
Allan L. Carpenter, Surrey Downs, Australia, assignor to Australia Sonar Systems Pty Ltd, Technology Park, Australia

Filed Apr. 10, 1992, Ser. No. 867,483

Claims priority, application Australia, Apr. 11, 1991, PK5569

Int. Cl.[5] G01V *1/38*

U.S. Cl. 367—20 **16 Claims**



1. An acoustic sensor module for an acoustic array of the type suitable for towing behind vessels, the module being generally cylindrical in shape and comprising:

a fluid-tight longitudinal enclosure, provided by an extruded thermoplastic material jacket having inside and outside surfaces and end caps;

open cell plastic foam for filling spaces within the enclosure;

a plurality of acoustic sensors mounted at intervals along the length of the enclosure and utilizing the foam as a vibration isolating mounting, the sensors having connecting leads passing through the foam;

a plurality of thin, strengthening rings positioned around the foam within the jacket and spaced apart along the length of the enclosure;

a plurality of power and data cables and a plurality of longitudinal strength members, the cables and strength members extending longitudinally within the thermoplastic material of the extruded jacket between inside and outside surfaces thereof; and

a low density fluid for substantially filling all voids within the enclosure.

5,251,183

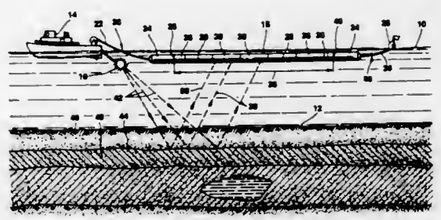
APPARATUS AND METHOD FOR MARINE SEISMIC SURVEYING UTILIZING ADAPTIVE SIGNAL PROCESSING

Joseph R. McConnell, 2910 Grantslake #804, Sugar Land, Tex. 77479, and George Wood, 4106 Sugar Crossing Ct., Sugar Land, Tex. 77478

Filed Jul. 8, 1992, Ser. No. 910,601

Int. Cl.[5] G01V *1/38, 1/36*

U.S. Cl. 367—21 **10 Claims**



1. A method of attenuating bulge wave noise in seismic data comprising:

transforming a first accelerometer signal component of an intra-shot set of signals;

transforming a first seismic detector signal component of an intra-shot set of signals, wherein the first seismic detector signal component contains a first bulge wave noise component;

transforming a second accelerator signal component of an inter-shot set of signals, said inter-shot set of signals obtained in the period established between successive periods in which said intra-shot set of signals was obtained;

transforming a second seismic detector signal component of an inter-shot set of signals, wherein the second seismic detector signal component contains a second bulge wave noise component;

deriving inter-shot complex weights from the inter-shot set of signals; and

attenuating the first bulge wave noise component from the intra-shot set of signals by combining the inter-shot complex weights with the intra-shot set of signals.

5,251,184

METHOD AND APPARATUS FOR FINDING HORIZONS IN 3D SEISMIC DATA

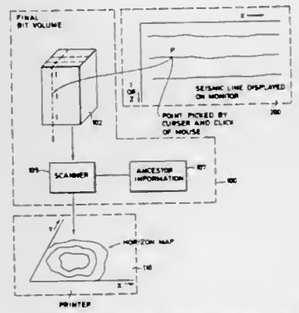
Harold A. Hildebrand, Applegate, Calif.; Aftab Alam, Sugar Land, Tex., and Peter Caragounis, Amersham, United Kingdom, assignors to Landmark Graphics Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 727,410, Jul. 9, 1991, Pat. No. 5,153,858. This application Jul. 23, 1992, Ser. No. 919,167

The portion of the term of this patent subsequent to Oct. 6, 2009, has been disclaimed.

Int. Cl.[5] G01V *1/30*

U.S. Cl. 367—72 **28 Claims**



1. Apparatus for automatically picking horizons from a three dimensional volume of seismic data traces and creating an indicia volume representative of horizons in the earth's crust, where a horizon is a bedding interface in the earth's crust and is represented in said seismic data traces through said bedding interface by a common attribute of a seismic wavelet, and where said common attribute may vary in depth as a function of x-y coordinates of said seismic data traces, comprising

computer program means for converting each of said seismic data traces to an indicia trace defined by a sequence of a first indicium and a second indicium as a function of depth, where a first indicium at any depth of such indicia trace indicates that a horizon exists at such depth of said seismic data trace and a second indicium at any depth of such indicia trace indicates that a horizon does not exist at such depth of said seismic data trace, and

means for storing each of said indicia traces in the memory of a computer as a three-dimensional indicia volume of indicia traces.

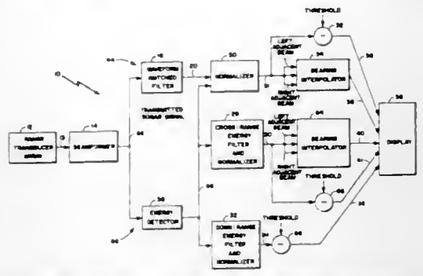
VOL 1155 ISS 1 OCT 5 1993 UMI

5,251,185

SONAR SIGNAL PROCESSOR AND DISPLAY

Paul M. Baggenstoss, Newport, R.I., assignor to Raytheon Company, Lexington, Mass.

Filed Oct. 15, 1992, Ser. No. 961,224
Int. Cl.[5] G01S *15/00*
U.S. Cl. 367—100 **7 Claims**



1. A sonar system for receiving signals reflected from objects in response to a transmitted sonar signal and for processing the received signals to provide events corresponding to said objects with each event having a range and a bearing associated therewith and corresponding to the range and bearing of said objects, said system comprising:

means, fed by said reflected signals, for providing a first plurality of signals, each one indicating the extent to which a corresponding one of said reflected signals replicates said transmitted sonar signal;

a cross-range energy filter for providing a second plurality of signals, each one representing the magnitude of a corresponding one of said reflected signals with respect to other ones of said reflected signals having a different bearing and the same range;

a down-range energy filter for providing a third plurality of signals, each one representing the strength of a corresponding one of the reflected signals with respect to reflected signals received at a different time and having the same bearing; and

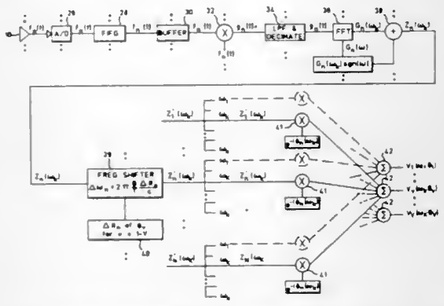
means, fed by said first, second, and third pluralities of signals for displaying events corresponding to objects.

5,251,186

PREPROCESSOR AND ADAPTIVE BEAMFORMER FOR LINEAR-FREQUENCY MODULATION ACTIVE SIGNALS

James C. Lockwood, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 6, 1992, Ser. No. 957,544
Int. Cl.[5] G01S *15/00*
U.S. Cl. 367—103 **8 Claims**



1. A signal processor for processing an echo received by an array of N receiving elements from a target at range R ensonified or irradiated by an LFM signal of bandwidth B transmitted at a time t=0 for a duration T comprising:

means for receiving each element's output $f_n(t)$ over the element's total receiving time and for selecting time-window element outputs $f'_n(t)$ which are discrete portions of $f_n(t)$, each time window extending from arbitrary initial time T_0 to final time T_f, where for each window, T_0 and T_f are the same for all $f'_n(t)$, T_f is spaced from T_0 no more than T, and an observation time T_n for any element is less than $T_f T_0$ and is defined such that the arrival time of a target echo from range R, if the target is within the window, is given by $t=T_0+T_n$; and

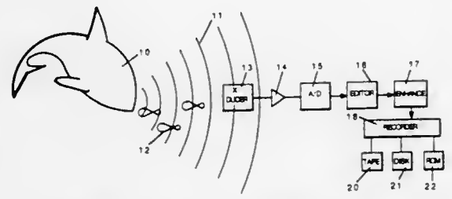
means operatively connected to the receiving and selecting means for multiplying the element outputs $f'_n(t)$ by a replica of the transmitted LFM signal and for filtering the result to remove unwanted sum-frequency terms for producing element frequency-difference outputs $g_n(t)$, the outputs $g_n(t)$ being frequencies which are directly proportional to the time T_n of the target from the time T_0 so that the range $R=(c/2)(T_0+T_n)+\Delta R_n$, where c is the speed of sound, and ΔR_n is the distance by which R differs from each element's range to the target.

5,251,187

METHOD AND APPARATUS FOR SEPARATING DOLPHIN FROM TUNA AND STEERING DOLPHIN TO A SAFE AREA

Jorge M. Parra, 7332 Grand Blvd., New Port Richey, Fla. 34652

Division of Ser. No. 672,228, Mar. 20, 1991, Pat. No. 5,117,572.
This application Jul. 26, 1991, Ser. No. 736,324
Int. Cl.[5] H04B *1/02. 1/03*
U.S. Cl. 367—139 **11 Claims**



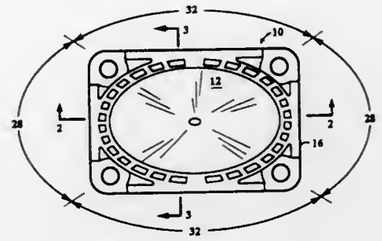
1. An apparatus for separating dolphin from tuna, comprising, digital record means having stored therein a digitally synthesized feeding frenzy sounds of one or more killer whale(s), means for editing said digitally synthesized feeding frenzy sounds of one or more killer whale(s) to remove splash and other non-useful sounds to produce edited digitally synthesized feeding frenzy sounds of one or more killer whale(s), playback means for playing said edited digitally synthesized feeding frenzy sounds of one or more killer whale(s), a transducer means immersible in the water and connected to said playback means for broadcasting said digitally edited synthesized feeding frenzy sounds of one or more killer whale(s) in the water, means for selectively turning said playback means "on" including, coding means for producing and broadcasting a unique code signal for said transducer means, and means connected to said transducer for decoding said unique code and selectively activating said transducer means to broadcast said edited digitally synthesized feeding frenzy sounds of one or more killer whale(s) in the water.

5,251,188

ELONGATED-PATTERN SONIC TRANSDUCER

Natan E. Parsons, Brookline, and Joel S. Novak, Sudbury, both of Mass., assignors to Recurrent Solutions Limited Partnership, Cambridge, Mass.

Filed Apr. 13, 1992, Ser. No. 867,944
Int. Cl.[5] G10K *13/00;* **H04R** *7/00*
U.S. Cl. 367—140 **10 Claims**



1. A sonic transducer comprising:

A) a base;

B) a diaphragm forming end edges and side edges and having a width between its side edges and a length between its end edges that is at least 1.2 times the width;

C) means for converting between diaphragm motion and electrical signals; and

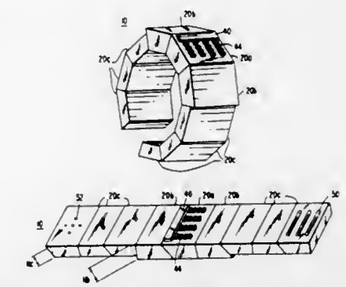
D) means for securing the diaphragm's side edges to the base, thereby causing the diaphragm to have a lengthwise stiffness, and for securing its end edges to the base sufficiently more rigidly than the side edges that the diaphragm has a lengthwise stiffness within 50% of its widthwise stiffness.

5,251,189

WRISTWATCH RADIOTELEPHONE

Christopher S. Thorp, Mystic, Conn., assignor to Timex Corporation, Middlebury, Conn.

Filed Oct. 16, 1992, Ser. No. 962,353
Int. Cl.[5] G04F *8/00;* **G04B** *47/00;* **A44C** *5/00*
U.S. Cl. 368—4 **20 Claims**



1. Apparatus which is convertible between an arcuate shape adapted for wearing around the wrist as a wristwatch and an elongated shape in which said apparatus is suitable for use as a hand-held radiotelephone with a microphone and speaker adjacent respective opposite ends of said elongated shape, said apparatus comprising:

a plurality of substantially rigid members, each said member having at least one face substantially parallel to a face of an adjacent said member; and

means for connecting said members together end to end in a series along said substantially parallel faces, each said connecting means being positioned between each adjacent pair of said members;

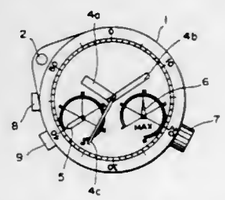
wherein said members are shaped and positioned such that in a first orientation said members form a substantially arcuate configuration in which said each of said substantially parallel faces abuts another of said substantially parallel faces and in a second orientation said members form a substantially straight configuration.

5,251,190

ELECTRONIC TIMEPIECE HAVING FUNCTIONAL HANDS

Kenji Miyasaka; Noritoshi Suzuki; Shinichi Yamada; Kenji Shimoda, and Nobuyuki Uehara, all of Tanashi, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Feb. 19, 1992, Ser. No. 836,854
Claims priority, application Japan, Feb. 22, 1991, 3-014510[U]; Aug. 30, 1991, 3-076764[U]; Sep. 4, 1991, 3-079477[U]; Sep. 15, 1991, 3-228472
Int. Cl.[5] G04B *47/06;* **G01L** *7/00*
U.S. Cl. 368—10 **12 Claims**



1. An electronic timepiece with time indicating hands and functional hands other than time, comprising:

a timepiece base plate,

a motor and associated train wheels thereof situated in a middle portion of the base plate for actuating the time indicating hands,

a winding stem for operating the timepiece,

an indicating hand correction mechanism having a clutch wheel associated with the winding stem so that when the winding stem is operated, the time indicating hands are adjusted,

a patterned circuit board with an IC chip and a crystal oscillator situated on the base plate with a space therebetween,

a battery block situated behind the circuit board for driving the motor and the circuit board,

detection means for detecting information other than time,

function display means formed of first and second functional hands, said first and second functional hands having first and second functional wheels, respectively, said function display means receiving information from the detection means and displaying the information by the first and second functional hands,

first functional train wheel engaging the first functional wheel of the first functional hand, and second functional train wheels engaging the second functional wheel of the second functional hand, said first and second functional train wheels being formed independently from each other and arranged between the base plate and the circuit board and on the base plate at a side of a dial, and

a first motor for the first functional hand and a second motor for the second functional hand, said first and second motors being formed independently from each other and from the motor for the time indicating hands, said first and second motors and the motor for the time indicating hands being interposed between the base plate and the circuit board.

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5,251,191

REMOTELY-SYNCHRONIZABLE TIME DISPLAY

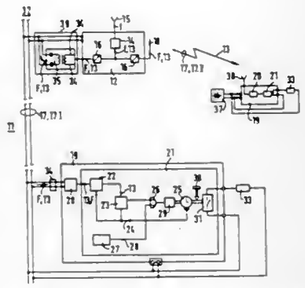
Wilhelm Sturzl, Winkelhaid, Fed. Rep. of Germany, and Bernard Schott, Strassburg, France, assignors to Diehl GmbH & Co., Fed. Rep. of Germany

Filed Oct. 15, 1990, Ser. No. 597,728

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1989, 8912675[U]

Int. Cl.[5] **G04C** *9/02;* **H04M** *11/00;* **G05D** *27/02*

U.S. Cl. 368—47 **4 Claims**



1. An arrangement for transmitting encoded absolute time information to at least one evaluating station which is connected to a local AC power transmission network which supplies AC electrical power to the at least one evaluating station, comprising

a central converter-receiver, including a receiver for receiving a carrier frequency encoded absolute time information signal, and a frequency converter connected to the output of said receiver for converting the frequency of the carrier frequency encoded absolute time information signal to a converted frequency to derive a converted frequency encoded absolute time information signal and for conducting the converted frequency encoded absolute time information signal into the local AC power transmission network which is connected between the frequency converter and the at least one evaluating station as a local transmission path for the converted frequency encoded absolute time information signal, and

the at least one evaluating station includes an autonomously operated timer which is remotely-synchronizable by the converted frequency encoded absolute time information signal, a timer actuated switch for time controlled switching of electrical power to a load or appliance, a station receiver for receiving the converted frequency encoded absolute time information signal from the local AC power transmission network for correction of the absolute time of the autonomously operated timer, an input coupling stage for inductively coupling the station receive to the local AC power transmission network which includes a coupling transformer and an oscillating circuit, the frequency of which is correlated to the converted frequency, and the station input coupling stage is combined with an AC power supply connector for the station.

5,251,192

CD PLAYER ACTUATION SYSTEM

Ping-Hsiung Liu, Tainan Hsien, Taiwan, assignor to Hanpin Electron Co., Ltd., Tainan Hsien, Taiwan

Filed Oct. 30, 1991, Ser. No. 784,917

Int. Cl.[5] **G11B** *17/22*

U.S. Cl. 369—36 **5 Claims**

1. A CD player actuation system comprising:

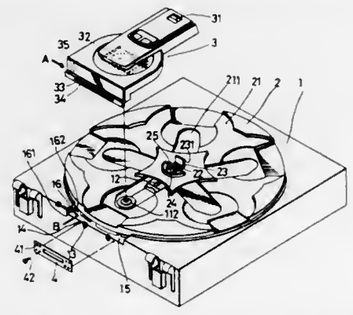
a motor for rotating a CD turning disc;

a laser source to generate a laser beam;

a base containing the motor and the laser source, having a recess formed within a rear side top section, a switch consisting of two springs provided at one end of the recess, one of the two springs having an end provided with projection, a plurality of projecting posts spaced apart on the wall below the recess, and several threaded holes spaced apart on the wall below the recess;

a turning plate having a plurality of CD recesses spaced around on an upper surface thereof for CDs to be placed thereon, a position plate located centrally, said position plate provided with an upright hook to be inserted upward through an opening in a CD cap to hook the CD cap securely when the CD cap is closed on a CD placed in one of the CD recesses of the turning plate;

said CD cap having a round portion for a cover disc to be movably coupled under the cap and a rectangular portion with a bent-down end wall extending forward from the round portion, said rectangular portion having an opening for positioning the hook of the position plate of the turning plate for upward insertion therethrough to hook the



CD cap when it is closed, the bent down end wall having a plurality of projecting posts and a plurality of threaded holes spaced apart so as to couple the CD cap with the base by means of a connecting plate having holes to fit with the projecting posts of the base and the CD cap and aligned with the holes of the base and the CD cap for screws to pass therethrough, said cover disc having a downwardly directed central projection at its center; and

a rectangularly contoured connecting plate having a plurality of holes for insertion of said projecting posts of the base and the CD cap to pass through and for screws to pass through to screw with the threaded holes of the base and the CD cap to couple the CD cap with the base so that the CD cap can be swung up and down at a free end with one end as a pivot to maintain the CD stable when placed on one of the CD recesses in the turning plate and to further actuate power to the CD.

5,251,193

SOLID STATE OPTICAL DISK READER

Jonathan B. Nelson, 512 W. Green, Apt. 8, Champaign, Ill. 61820, and Neil R. Brown, 8600 Skokie Blvd., Skokie, Ill. 60077

Filed Sep. 24, 1991, Ser. No. 765,031

Int. Cl.[5] **G11B** *7/085, 7/095*

U.S. Cl. 369—44.12 **19 Claims**

1. A solid state optical disk reader for accessing data stored on an optical disk comprising:

(a) a light source emitting a monochromatic beam in a beam direction;

(b) a waveguide optically coupled to said light source and confining said beam to a defined region;

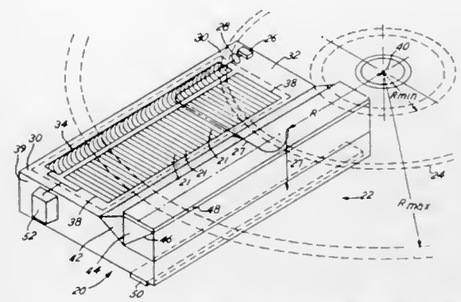
(c) electro-optic adjustment and focus means including:

(i) an integrated electro-optic coarse adjustment means which electrically deflects said beam in said waveguide at the approximate radial distance of the desired data track, and

(ii) a separate electro-optic focus means which focuses

said course adjusted beam upon the surface of said data track;

(d) reflecting means coupled to said waveguide for reflecting said beam from said waveguide to said data track;



(e) detector means for detecting said beam after reflection of said beam from said data track, said detector means responsively issuing a signal; and

(f) a control circuit receiving said signal from said detector and responsively issuing control signals to said electro-optic adjustment and focus means.

5,251,194

TECHNIQUES FOR CONTROLLING BEAM POSITION AND FOCUS IN OPTICAL DISK DRIVES

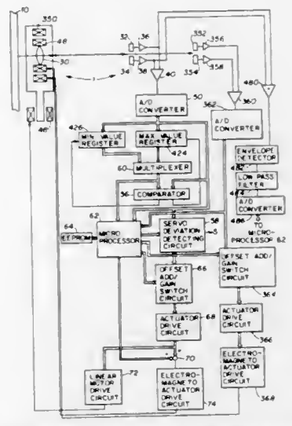
Kyosuke Yoshimoto; Osamu Ito; Kimiyuki Koyanagi; Yoshiki Nakajima; Shuitsu Takeda, and Kyoji Shimoda, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 12, 1990, Ser. No. 513,079

Claims priority, application Japan, Apr. 17, 1989, 1-98136; Jun. 5, 1989, 1-142441; Jun. 13, 1989, 1-150881; Jul. 4, 1989, 1-173343; Jul. 4, 1989, 1-173344; Jul. 20, 1989, 1-189632; Jul. 20, 1989, 1-189633; Dec. 7, 1989, 1-318524; Feb. 22, 1990, 2-43236

Int. Cl.[5] **G11B** *7/095*

U.S. Cl. 369—44.26 **25 Claims**



1. An optical disk drive which irradiates a beam onto an optical disk, and controls irradiation of said beam using a servo-circuit responsive to reflected light of the irradiated beam, comprising:

means for detecting a calibrating value for said servo-circuit in a plurality of regions on said optical disk, said plurality of regions being located within a data recording zine and comprising track groups in a radial direction and sector groups in a circumferential direction, and means for calibrating the servo-circuit in each of said regions using the calibrating value detected by said detecting means in each of said regions, the calibrated servo-circuit controlling irradiation of the beam.

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DISC PLAYER WITH SIMPLIFIED LIFTING AND LOWERING MECHANISM

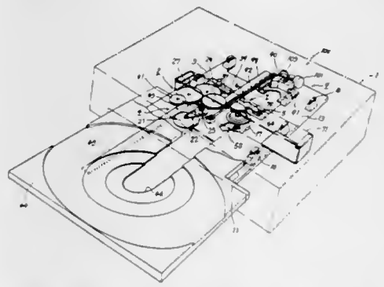
Kouichi Kawakami; Masahiro Moriyama, both of Daito; Hiroki Koba, Hirakata, and Toshihide Hamaguchi, Higashiosaka, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Mar. 29, 1991, Ser. No. 677,542

Claims priority, application Japan, Mar. 30, 1990, 2-87141

Int. Cl.[5] **G11B** *17/04*

U.S. Cl. 369—75.2 **3 Claims**



1. A disc player having a turntable drivable by a spindle motor, a tray drive mechanism for driving a tray from a disc discharge position to a loading completed position above the turntable, a disc clamp mechanism for pressing a disc on the tray into contact with the turntable, and a pickup assembly for recording signals on and reproducing signals from the disc on the turntable, wherein the tray drive mechanism, the disc clamp mechanism and the pickup assembly are provided on a fixed chassis, the tray drive mechanism, the disc clamp mechanism, and the pickup assembly are associated with a drive gear mechanism, and driven through employment of a single loading motor as a drive source, the spindle motor is coupled to a motor lift mechanism and drivable upward and downward relative to the chassis, the turntable is movable upward from a standby position below the tray in the loading completed position through a central opening of the tray to a disc clamping completed position where the disc can be pressed into contact with a clamp of the disc clamp mechanism, the drive gear mechanism is fixed on the fixed chassis, and the drive gear mechanism has a plurality of output portions coupled to the tray drive mechanism, the motor lift mechanism, and the pickup assembly, respectively, and a power transmission change-over mechanism is provided to the drive gear mechanism for transmitting the power of the loading motor selectively to one of the tray drive mechanism, the disc clamp mechanism, and the pickup assembly,

wherein the pickup assembly comprises a slide base disposed on the chassis reciprocatingly movably along a radial line of the turntable and reciprocatingly drivable between a first position opposed to the innermost peripheral portion of the disc to be clamped on the turntable and a second position opposed to or further outward of the outermost peripheral portion of the disc, and a pickup supported on the slide base upwardly and downwardly movable and drivable upward and downward between a retracted position below the path of reciprocating movement of the tray and a raised position close to the tray for recording or

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reproducing signals, the pickup being settable in the retracted position where the tray is being loaded.

5,251,196
OPTICAL PICK-UP SELECTIVELY READING AND WRITING AN OPTICAL AND MAGNETO-OPTICAL RECORDED MEDIUM

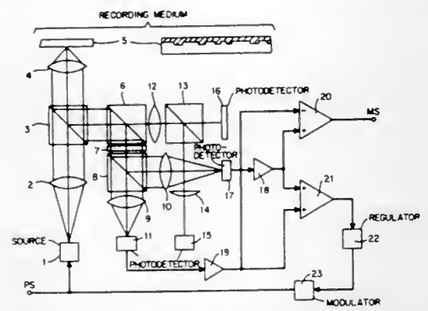
Yasuaki Morimoto; Friedhelm, Zucker, both of Villingen-Schwenningen; Christian Büchler, and Heinz-Jörg Schröder, both of Marbach, all of Fed. Rep. of Germany, assignors to Deutsche Thomson-Brandt GmbH, Hannover, Fed. Rep. of Germany

Continuation of Ser. No. 250,732, Sep. 28, 1988, abandoned. This application Jan. 27, 1992, Ser. No. 826,676

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1987, 3732874

Int. Cl.[5] G11B *13/04*

U.S. Cl. 369—110 **4 Claims**



1. An optical pickup for reading information from a magneto-optical recording medium having stored data magnetic domains and stored optical pits superimposed thereon, said medium being free of surfaces with a periodic wave-shaped pattern which does not store information, said optical pickup comprising: a light source projecting a light beam on said medium, said light beam scanning simultaneously said magnetic domains and said stored pits; beam splitting means for splitting a light beam reflected from said medium into first and second splitted light beams; first and second photodetectors receiving said first and second beams, respectively, and having output photovoltages; differentiating means responsive to said first and second photodetectors for generating a magneto-optical recording signal representing said stored magnetic domains; summing means with inputs connected to inputs of said differentiating means and thereby also responsive to said first and second photodetectors; regulating means connected between an output of said summing means and said light source for providing a regulating signal to regulate an intensity of said light beam reflected from said medium to be at a constant value, said differentiating means having an output for providing said magneto-optical recording signal representing data read out from said stored magnetic domains, said regulating means having an output simultaneously with the output of said differentiating means and providing a signal representing data read out from said stored pits, the output of said regulating means regulating the intensity of said light beam dependent on the light reflected from the recording medium.

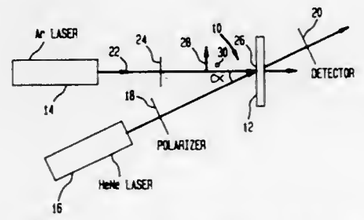
5,251,197
POLARIZATION DEPENDENT WRITING AND ERASING PROCESS FOR ORGANIC OPTICAL MEDIA

Hartmann F. Leube, Summit, and Leroy McKenzie, Newark, both of N.J., assignors to Hoechst Celanese Corp., Somerville, N.J.

Filed Feb. 13, 1992, Ser. No. 835,645

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—110 **17 Claims**



1. A method of optically recording and erasing information comprising:

(a) irradiating a bistable film with light of a first linear polarity wherein said first linear polarity is substantially perpendicular to the surface of said film, said bistable film having in its initial state an optical axis perpendicular to the film surface, said irradiation being effective to induce birefringence along the direction of said optical axis in a portion of said film; and

(b) irradiating said portion of said film with light of a second linear polarity wherein said second linear polarity is substantially perpendicular to the surface of said film, said second linear polarity being angularly offset with respect to said first linear polarity, wherein irradiating said portion with light of said second linear polarity is effective to return said portion to its initial state such that the optical axis of said portion is perpendicular to the film surface.

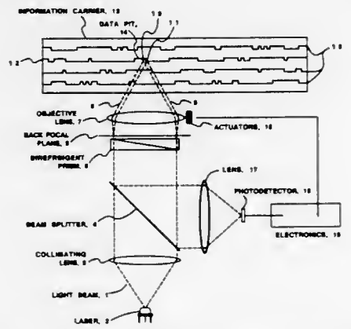
5,251,198
READING DEVICE FOR MULTI-LAYERED OPTICAL INFORMATION CARRIER

James H. Strickler, 109 Harvard Pl., Ithaca, N.Y. 14850

Filed May 29, 1992, Ser. No. 891,938

Int. Cl.[5] G11B *7/12*

U.S. Cl. 369—110 **16 Claims**



1. A device for reading an optical information carrier having a plurality of partially reflective data layers comprising:

light beam means for illuminating said carrier;

shearing means for splitting said light beam into two divergent component light beams;

focusing means for focusing said component light beams to adjacent locations at one of said data layers;

collection means for collecting component light beams reflected from said carrier;

recombining means for merging said reflected component light beams to form a single beam;

detection means for determining the intensity of said single beam.

5,251,199
LASER DIODE DRIVE CONTROL APPARATUS

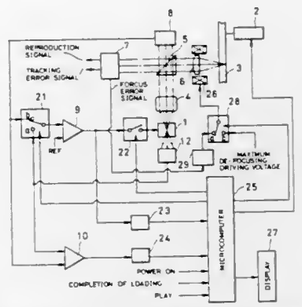
Yoshihiro Utsumi, and Yoshiyuki Kakuta, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 17, 1992, Ser. No. 899,883

Claims priority, application Japan, Nov. 8, 1991, 3-293412

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—116 **2 Claims**



1. A laser diode drive control apparatus comprising:

a laser diode irradiating first and second light beams in front and rear directions, said light beams having an intensity according to a magnitude of a driving current supplied thereto;

optical transmitting means including an objective lens for leading said first light beam to an optical recording medium;

a focusing servo loop for driving an actuator of said objective lens, thereby performing a focusing servo operation;

first light beam detecting means for generating a first detection signal having a level according to a level of the first light beam which is led to the optical recording medium;

second light beam detecting means for generating a second detection signal having a level according to a level of the second light beam; and

control means for comparing the levels of said first and second detection signals and controlling said driving current,

wherein said control means comprising first means for turning off a loop switch of said focusing servo loop of said objective lens, thereby setting the lens into a de-focusing state,

discriminating means for comparing the levels of the first and second detection signals after said de-focusing state of the lens by the actuator by the first means was obtained, thereby discriminating whether a ratio of said levels lies within a predetermined range or not, and

second means for shutting off the driving current when it is determined by said discriminating means that said ratio is out of said predetermined range.

5,251,200
TRACKING METHOD FOR MEMORY APPARATUS

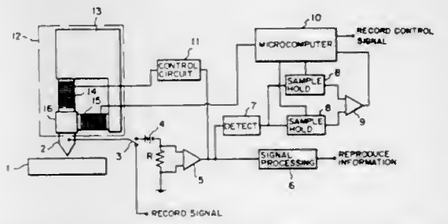
Katsunori Hatanaka, Yokohama; Kunihiro Sakai, Isehara; Hiroyasu Nose, Zama; Kiyoshi Takimoto, Isehara; Yuji Kasanuki, Machida; Yoshihiro Yanagisawa, Isehara; Takahiro Oguchi, Atsugi; Akihiko Yamano, and Shunichi Shido, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 11, 1991, Ser. No. 758,896

Claims priority, application Japan, Sep. 14, 1990, 2-242775; May 31, 1991, 3-157625

Int. Cl.[5] G11B *9/00*

U.S. Cl. 369—126 **14 Claims**



1. A method for reproducing information recorded onto a recording medium by using a probe, said method comprising the steps of:

detecting at least one of an increase and a decrease in an amplitude of a signal in an information bit obtained by scanning the probe along an information bit line formed on the recording medium, the probe facing the recording medium; and

relatively displacing the probe in a direction intersecting the direction in which the information bit line is formed on the recording medium so that the amplitude increases.

5,251,201
OPTICAL DISK DEVICE

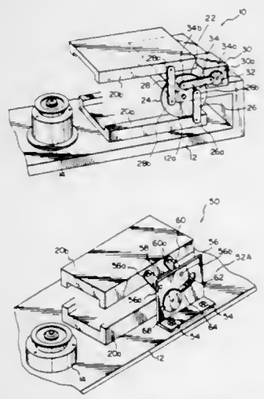
Tadashi Nomura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 19, 1991, Ser. No. 732,550

Claims priority, application Japan, Jul. 19, 1990, 2-191755

Int. Cl.[5] G11B *17/08*

U.S. Cl. 369—195 **5 Claims**



1. An optical disk device capable of accessing data recorded on both sides of an optical disk simultaneously, said device comprising:

a main base;

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a first subbase member supported on said main base;
a first optical head assembly comprising a first optical head for writing information to, or reading information from, one side of said optical disk, said first optical head assembly being supported on said first subbase member;
a second subbase member supported on said main base;
a second optical head assembly comprising a second optical head for writing information to, or reading information from, the other side of said optical disk, said second optical head assembly being supported on said second subbase member;
loading means for selectively driving said first and second subbase members toward or away from said optical disk, said loading means comprising drive means for generating a drive force and transmitting means for transmitting said drive force from said drive means to said first and second subbase members;
said transmitting means comprising a disk rotatably mounted about a fulcrum point on said main base, a first link having one end which is rotatably connected to said first subbase member and another end which is rotatably connected to a first peripheral point of said disk, a second link having one end which is rotatably connected to said second subbase member and another end which is connected to a second peripheral point of said disk, said second peripheral point being diametrically opposite said first peripheral point, and a drive link having one end which is rotatably connected to a third peripheral point of said disk, said third peripheral point being located at an angular distance of substantially 90 degrees from both said first and second peripheral points, another end of said drive link being connected to said drive means.

5,251,202

OPTICAL INFORMATION RECORDING MEDIUM HAVING MULTI-LAYERED STRUCTURES FOR PREVENTING UNDESIRED REFLECTION AND ELECTRIC CHARGING

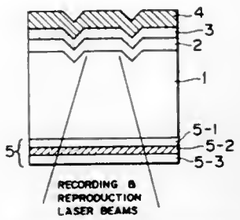
Yujiro Kaneko, Machida; Wasaburo Ohta, Yokohama; Masashi Nakazawa, Yokohama; Michiaki Shinozuka, Yokohama; Isao Miyamoto, Yokohama; Hitoshi Nakamura, Kawasaki; Toshihiko Yoshio, Yonago; Masaaki Ishiyama, and Yuuzi Onodera, both of Hanamaki, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 14, 1992, Ser. No. 883,297

Claims priority, application Japan, May 23, 1991, 3-147953; May 31, 1991, 3-155436

Int. Cl.[5] **G11B** *7/24*

U.S. Cl. 369—286 **22 Claims**



1. An optical information recording medium comprising a transparent substrate, a recording layer provided on said substrate, which is transparent with respect to a light beam for reproducing information recorded in said recording layer, a reflection layer provided on said recording layer, and an anti-reflection layer provided on the back side of said substrate opposite to said recording layer, said anti-reflection layer comprising a plurality of overlaid layers, at least one of said layers being a transparent electrocondutive layer, further comprising an interference layer interposed between said transparent substrate and said recording layer; and an electroconductive layer which is interposed between said transparent substrate and said interference layer, so that said transparent substrate has a sheet resistance of not more than 10 kΩ/□ on the side on which said interference layer is provided.

5,251,203

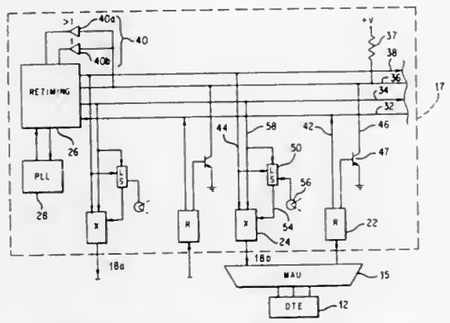
HUB PRIVACY FILTER FOR ACTIVE STAR CSMA/CD NETWORK

Geoffrey O. Thompson, Palo ALto, Calif., assignor to Xerox Corporation, Rochester, N.Y.

Filed Dec. 23, 1991, Ser. No. 812,275

Int. Cl.[5] **H04L** *12/26;* **H04B** *17/02*

U.S. Cl. 370—13.1 **6 Claims**



1. An active repeater unit for use in a data communications system of the type having a communicating medium, and a plurality of data stations attached to the communicating medium, each data station capable of: monitoring the medium to sense whether a carrier signal is present on the medium, transmitting carrier signals in the form of data packets onto the medium only when no carrier signal is sensed on the medium, and receiving data packets communicated onto the medium by another data station; each data packet including a destination address portion identifying the data station at which the data packet is intended to be received, and a source address portion identifying the data station which transmitted the data packet, said active repeater unit comprising:

a) a plurality of port means for receiving and transmitting the data packets placed on the communicating medium by the data stations, each of said port means being attachable to a corresponding data station;

b) retiming means for receiving the data packets received by each port means, for retransmitting said received data packets as a serial data stream to each of said port means, and for transmitting a clock signal in parallel with said serial data stream to each of said port means; and

c) wherein at least one of said port means includes logic means for:

i) determining whether the destination address of data packets received as said serial data stream by said active repeater unit match the address of the data station attached to said at least one port means; and

ii) transmitting said data packet to the data station attached to said at least one port means when the determination made in (i) is a match, otherwise transmitting said clock signal to the data station attached to said at least one port means.

5,251,204

TRANSMISSION TEST SYSTEM IN A BROADBAND ISDN

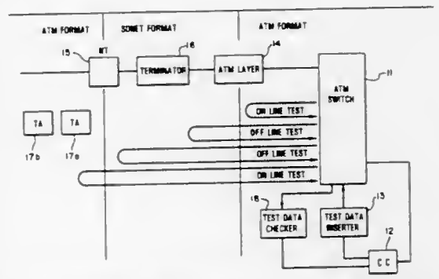
Naoyuki Izawa, Mitaka; Shuji Yoshimura, and Satoshi Kakuma, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 19, 1991, Ser. No. 762,338

Claims priority, application Japan, Sep. 19, 1990, 2-247287

Int. Cl.[5] **H04J** *3/14*

U.S. Cl. 370—15 **9 Claims**



5. A transmission line test system in a broadband integrated services digital network (ISDN) using an asynchronous transmission mode (ATM) switching unit with a central controlling unit and an ATM switch, comprising:

a synchronous optical network (SONET) transmission line;
an ATM layer provided between said ATM switch and said SONET transmission line;
a terminator provided in the SONET transmission line;
a network terminator connected to said SONET transmission line;
means for inserting test data into an ATM formatted cell according to a command of said central controlling unit in said ATM switching unit, to provide a test cell;
means for sending said test cell after the insertion of said test data through an ATM switch in said ATM switching unit;
a command transmission line provided separately from said SONET transmission line, for transmitting from the central controlling unit of said ATM switching unit to each of said terminator and said network terminator a test frame loopback command as a flag notifying of a loopback point of a test frame configured by said ATM layer as containing said test cell; and
means for checking said test data which are generated as containing said test cell by said ATM layer in a test frame turned around by the terminator in said SONET transmission line or by the network terminator at a subscriber terminal in the SONET transmission line, to conduct an off-line transmission line test with communication by said ATM switching unit stopped.

5,251,205

MULTIPLE PROTOCOL ROUTING

Ross W. Callon, Bedford; Radia J. Perlman, Acton; Eric C. Rosen, Arlington, all of Mass., and John Harper, Reading, England, assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Sep. 4, 1990, Ser. No. 577,437

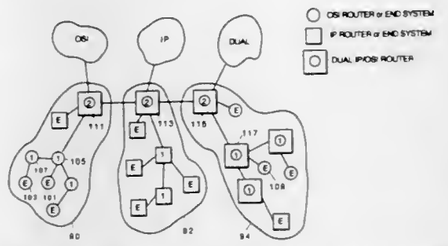
Int. Cl.[5] **H04J** *3/26;* **H04L** *12/56*

U.S. Cl. 370—60 **24 Claims**

1. A method of calculating routes for sending user data packets via information handling devices which forward data packets through a communications network, comprising

including in at least a first and a second user data packet, destination address information conforming to two or more different addressing conventions of two or more different independent protocol suites,

determining routes for said first and said second user data packets using a route calculation algorithm corresponding to a single routing protocol, chosen from an arbitrary protocol suite, regardless of the addressing convention to which the destination address information in said user data packet conforms,



said route being determined using the destination address information in said user data packets without converting said destination address information from the addressing convention to which it forms to another addressing convention.

5,251,206

HYBRID SWITCHING SYSTEM FOR A COMMUNICATION NODE

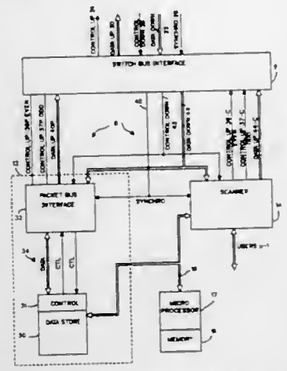
Jean Calvignac; Eric Saint Georges, both of La Gaude; Daniel Orsatti, Cagnes sur Mer; Gilles Toubol, Villeneuve Loubet; Fabrice Verplanken, Le Haute de Cagnes, and Francois Nicolas, Villeneuve Loubet, all of France, assignors to International Business Machines Corp., Armonk, N.Y.

Filed Apr. 12, 1991, Ser. No. 684,111

Claims priority, application European Pat. Off., May 15, 1990, 90480069.5

Int. Cl.[5] **H04L** *12/56, 12/50*

U.S. Cl. 370—60.1 **11 Claims**



1. A packet and circuit switching system for a communication node which comprises switching means, a plurality of interface communication modules, each module being connected to the switching means through an input bus and an output bus, and comprising at least a packet information processing unit and, for at least two of said modules, a circuit information processing unit, said switching means being able to selectively connect input busses to output busses in order to allow transfers of packet or circuit information to be performed between user interface modules in frames of time period T, divided into a fixed number b of burst times Bj, with j lying between 0 and b–1, said burst times being comprised of slots td, with each slot being able to carry circuit or packet

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information bytes, said system being characterized in that it comprises:

selection means located in said switching means, which selection means are responsive to packet transfer requests received from said packet information processing unit in said user interface modules through said input busses to select, during each burst time Bj, pairs of said user interface modules comprising an origin module and a target module between which packet information will be transferred during a next burst time (B(j+p), p being an integer number equal to or higher than 1,

inhibiting means responsive to circuit transfer requests received from circuit information processing units in said user interface modules through said input busses to select, during each burst time Bj, pairs of said user interface modules comprising an origin module and a target module between which packet information will be transferred during a next burst time B(j+p), p being an integer number equal to or higher than 1,

said inhibiting means being responsive to circuit transfer requests received from circuit information processing units in said user interface modules through said input busses during a burst time B(j−q), q being an integer number equal to or higher than 1, to prevent the modules from which the circuit transfer requests are received from being selected by the selection means as origin and target modules during burst time Bj, and circuit information transfer enabling means in each said circuit information processing unit which causes circuit information to be transferred from the circuit information processing unit within an origin module to the said circuit information processing unit within a target module during the burst time B(j+p) when said circuit information processing unit within the said origin module has sent a circuit transfer request during burst time B(j−q).

5,251,207

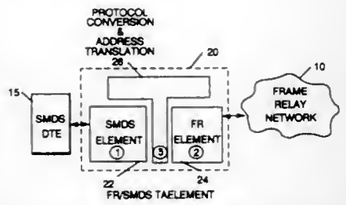
COMBINED TERMINAL ADAPTER FOR SMDS AND FRAME RELAY HIGH SPEED DATA SERVICES

Daniel S. Abensour; Jon E. Fox, both of Cary; Mehendra J. Joshi; Fuyung Lai, both of Raleigh, all of N.C., and Kian-Bon K. Sy, Yokohama, Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 10, 1992, Ser. No. 848,907

Int. Cl.[5] H04L *12/56*

U.S. Cl. 370—60.1 **19 Claims**



8. A system for retrieving a particular entry based upon a particular call-up number having a plurality of digits, said system comprising:

a plurality of tables each having a plurality of memory spaces, each memory space of each table having an entry portion and further having a unique memory-address indicating the location of that memory space within its table, each table further having an associated pointer register having a value ranging from the lowest memory-address to the highest memory-address of that table;

means for forming the values of said pointer registers based upon said call-up number by segmenting said call-up number into a plurality of portions and assigning each portion to a pointer register;

means for examining the contents of the memory space of each table having a memory-address equal to the value of the table's associated pointer register;

means for determining whether the contents of each of said addressed memory spaces is valid; and

means for retrieving a valid entry when any of said addressed memory spaces has a valid entry.

9. The system as defined in claim **8** further comprising a separate buffer and means for retrieving the contents of said separate buffer when there is no valid entry among said addressed memory spaces.

5,251,208

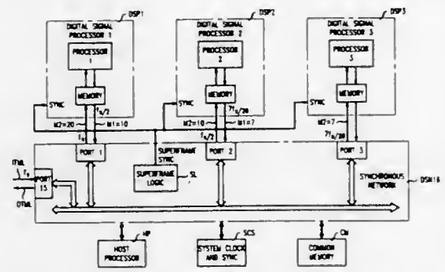
DIGITAL SIGNAL PROCESSOR SYNCHRONOUS NETWORK

Ronald J. Canniff; Philip C. Chao, both of Naperville; Alan H. Matten, Chicago, and Charles E. Stroud, North Aurora, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 19, 1991, Ser. No. 810,100

Int. Cl.[5] H04J *3/00*

U.S. Cl. 370—77 **28 Claims**



1. Apparatus for performing real-time, digital signal processing comprising

a plurality of digital signal processors each including memory and each programmed to perform a part of a digital signal processing function and

a synchronous network for providing time division multiplexed communication links for communicating intermediate processing results between ones of said processors in performance of said digital signal processing function, said network comprising

a plurality of port circuits each connected to an associated one of said processors, and

timing means for generating timing signals defining frames of time slots and defining superframes comprising N of said frames, N being a positive integer,

wherein each of said port circuits comprises means responsive to said timing signals for controlling the transmission of digital data, to said each port circuit from the memory of the processor associated with said each port circuit, during M1 time slots of each of said superframes, where M1 is a positive integer which may vary among said plurality of port circuits, and

wherein said each port circuit further comprises means responsive to said timing signals for controlling the writing of digital data, from said each port circuit into the memory of the processor associated with said each port circuit, during M2 time slots of each of said superframes, where M2 is a positive integer which may vary among said plurality of port circuits.

5,251,209

PRIORITIZING ATTRIBUTES IN INTEGRATED SERVICES NETWORKS

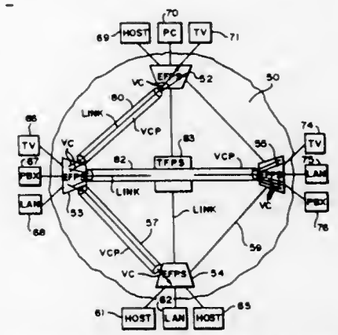
Mark Jurkevich, Burtonsville, Md., and Simon Bernstein, Reston, Va., assignors to Sprint International Communications Corp., Reston, Va.

Filed Mar. 28, 1991, Ser. No. 676,515

The portion of the term of this patent subsequent to Sep. 21, 2010, has been disclaimed.

Int. Cl.[5] H04J *3/16*

U.S. Cl. 370—82 **10 Claims**



1. A method of transmitting information between a multiplicity of subscribers as components of traffic in an integrated services network (ISN), in which the information traffic consists of a multiplicity of media types associated with respective ones of the different subscribers including voice, video and data traffic component types, each traffic component type having attributes relevant to transmission through the ISN which may differ from such attributes of the other traffic component types such as delay sensitivity, loss tolerance, activity level, burst size, average packet length, and probability of buffer overflow; said method comprising the steps of

assembling a plurality of said traffic component types to be transmitted from subscribers at an entry point of said ISN into a single composite frame of variable size for transmission along a path through the ISN,

limiting the traffic component types assembled into said single composite frame to those destined for subscribers at the same exit point of the ISN,

assigning a different priority level to each traffic component type for transmission through the ISN according to the respective attributes of the traffic component types, and

selectively blocking the transmission of composite frames containing lower priority level traffic component types while allowing the transmission of composite frames containing relatively higher priority level traffic component types during periods of traffic congestion or when control of traffic flow is otherwise required along said path.

5,251,210

METHOD AND APPARATUS FOR TRANSFORMING LOW BANDWIDTH TELECOMMUNICATIONS CHANNELS INTO A HIGH BANDWIDTH TELECOMMUNICATION CHANNEL

Alan B. Mann; Alexander J. Ra, both of Raleigh; Jeffrey W. Reedy, Durham, and Spiros J. Teleoglou, Raleigh, all of N.C., assignors to IBM Corporation, Armonk, N.Y.

Filed Nov. 1, 1991, Ser. No. 786,570

Int. Cl.[5] H04J *3/04, 3/22*

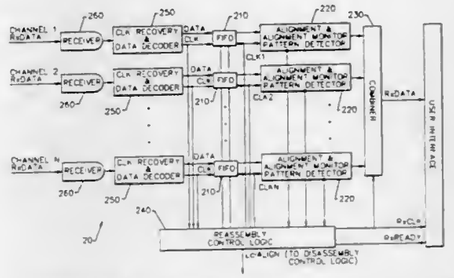
U.S. Cl. 370—84 **57 Claims**

1. Apparatus for transforming a plurality of relatively low bandwidth telecommunications channels into a relatively high bandwidth telecommunications channel, comprising:

means for determining relative transmission time delays among said low bandwidth channels; and

means, responsive to said determining means, for equalizing transmission time delay across said plurality of low bandwidth channels to produce a plurality of time delay equalized low bandwidth channels;

wherein said determining means comprises means for identifying one of the low bandwidth channels among said plurality of low bandwidth channels having longest transmission time delay, and for calculating a time delay difference between the identified one of the low bandwidth



channels having longest transmission time delay and each of said plurality of low bandwidth channels other than the identified one of the low bandwidth channels having the longest transmission time delay; and

wherein said equalizing means comprises means for adding time delay to each low bandwidth channel other than the identified one of the low bandwidth channels having longest transmission time delay, corresponding to the calculated time delay difference for the associated low bandwidth channel;

whereby the time delay equalized low bandwidth channels form a single high bandwidth channel.

5,251,211

MULTIPLEX TRANSMISSION SYSTEM FOR AUTOMOTIVE VEHICLES

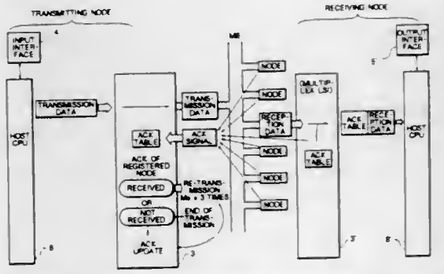
Makoto Mutoh, Akita; Yutaka Matsuda, Hiratsuka; Yusaku Himono, Tokyo; Osamu Michihira, and Toshimichi Tokunaga, both of Hiroshima, all of Japan, assignors to Furukawa Electric Co., Ltd, Tokyo and Mazda Motor Corporation, Hiroshima, both of Japan

Filed Oct. 25, 1989, Ser. No. 426,399

Claims priority, application Japan, Oct. 31, 1988, 63-273306

Int. Cl.[5] H04J *3/02*

U.S. Cl. 370—85.1 **8 Claims**



1. A multiplex transmission system for automotive vehicles, having a plurality of communication nodes interconnected via

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a common multiplex transmission line, each of said plurality of communication nodes comprising:

communication control means for controlling communication among said communication nodes in accordance with a decentralized multiplex protocol;

transmitting means for transmitting a reception acknowledgement signal to the multiplex transmission line in a transmission phase when reception data from the other communication nodes via the multiple transmission line has been received errorless in a reception phase;

memory means for storing beforehand reception acknowledgment reference patterns from respective ones of said communication nodes, each of the reference patterns defining a power ON/OR condition of each communication node;

detection means for detecting a current power ON/OFF condition;

comparator means for comparing, after a transmission, a signal pattern having actual reception acknowledgement signals from the other communication nodes with the reference pattern which corresponds to a power ON/OFF condition detected by the detection means; and

re-transmission control means for performing re-transmission control of communication among said communication nodes based on the results of the comparison by said comparator means.

5,251,212

BUS TRANSMISSION METHOD AND SYSTEM

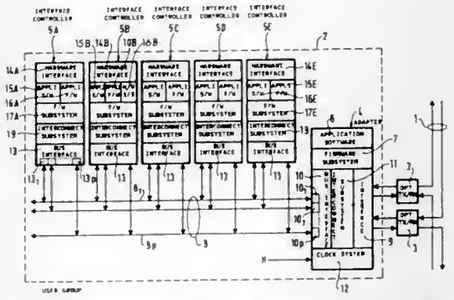
Raymond Gass, Erstein, France, assignor to Alcatel N.V., Amsterdam, Netherlands

Filed Jul. 9, 1991, Ser. No. 727,254

Claims priority, application France, Jul. 10, 1990, 90 08750

Int. Cl.[5] H04J *3/02*

U.S. Cl. 370—85.2 **7 Claims**



4. Transmission method for a communication system bus which interconnects a plurality of devices communicating with each other by means of cells formed from data relating to one or more isochronous or asynchronous transmission channels and which comprises a predetermined plurality p of physical time-division multiplex links with each of the physical links being connected to each of the devices, said method comprising the steps:

providing succession of p contention phases each relating to a different said physical link and staggered in time so that at any given time there will be at most one contention phase,

transmitting conjointly and bit by bit during a respective related contention phase over a respective one of said p physical links, respective distinctive cell assignment messages from those contending devices simultaneously desiring to transmit on said respective physical link based on respective individual priorities translated into a predetermined binary form, each said cell assignment message including a contention resolution field which includes at least one priority element representative of a priority level of at least one of said devices requesting to transmit having a highest priority and being preceded by a reservation field indicating whether the cell following the received cell assignment message is an asynchronous cell available for a transmission from any of the contending devices,

disconnecting each lower priority contending device on the first bit of a composite cell assignment message received over said respective physical link which does not match the corresponding bit of the respective cell assignment message by said each lower priority device,

sending at least one cell in serial form over the respective physical link from a higher priority device for which the composite contention resolution message received over the respective link matches the respective contention resolution message sent by said higher priority device.

5,251,213

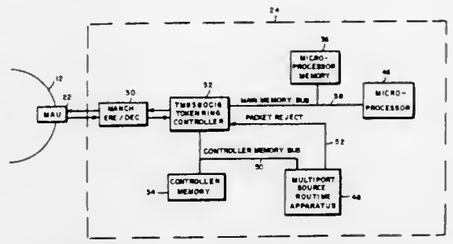
MULTIPORT SOURCE ROUTING TOKEN RING BRIDGE APPARATUS

Gary B. Videlock, Foxborough; Russell C. Gocht, N. Attleboro; Tom P. Gloria, Cambridge, and Douglas Wainer, Roslindale, all of Mass., assignors to Microcom Systems, Inc., Wilmington, Del.

Filed May 12, 1992, Ser. No. 881,806

Int. Cl.[5] H04J *3/02*

U.S. Cl. 370—85.12 **13 Claims**



1. A multiport source routing bridge apparatus, for selectively bridging a data packet between an input network and at least one output network, said data packet comprising routing information, said routing information further comprising at least ring-in identification information associated with said input network and ring-out identification information associated with said at least one output network, said multiport source routing bridge apparatus comprising:

first memory means for storing ring-in identification information identifying the input network to which the multiport source routing bridge apparatus is connected;

second memory means for storing ring-out identification information identifying each of the output networks to which the multiport source routing bridge apparatus is connected;

first packet parsing means for extracting ring-in identification information from a data packet;

second packet parsing means for extracting ring-out identification information from said data packet;

first comparison means for comparing said ring-in identification information extracted from said data packet with the ring-in identification information stored in said first memory means and providing a first indication signal, of a first predetermined value, when said extracted ring-in identification information is found within said first memory means; and

second comparison means, responsive to said first indication signal when said first indication signal is of said first predetermined value, for comparing said ring-out identification information extracted from said data packet with the ring-out identification information stored in said second memory means and providing a second indication signal, at a second predetermined value, when said extracted ring-out identification information is found within said second memory means;

wherein said multiport source routing bridge apparatus will pass said data packet from said input network to said at least one output network when said first indication signal and said second indication signal respectively are of said first and second predetermined values.

5,251,214

METHOD FOR TRANSMITTING DATA TO A PLURALITY OF DATA STATIONS

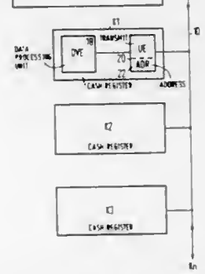
Klaus-Dieter Mertens, Paderborn-Elsen; Klaus Becker, Berlin; Thomas Wolfbeisz, Berlin, and Rainer Goetsch, Berlin, all of Fed. Rep. of Germany, assignors to Siemens Nixdorf Informationssysteme A.G., Fed. Rep. of Germany

Filed Apr. 13, 1992, Ser. No. 867,525

Claims priority, application European Pat. Off., Apr. 17, 1991, 91106117.4

Int. Cl.[5] H04J *3/24;* **H04L** *12/40*

U.S. Cl. 370—92 **19 Claims**



1. A method for transmitting data from a central station to a plurality of data stations via a multipoint connection according to a prescribed transmission protocol, every data station having an address allocated to it under which it receives data and also outputs messages to the central station, and at least two data stations of the plurality of data stations requesting the same data from the central station, comprising the steps of: selecting by the central station one data station of data stations that are requesting the same data and communicating the address of the selected data station from the central station to the at least one other data station of the data stations that are requesting the same data; in response thereto, modifying the address of the at least one other data station to the address of the selected data station; transmitting data from the central station to the selected data station, the transmitted data also being received by the at least one other data station whereby the transmission protocol is only processed between the central station and the selected data station during the data transmission; and resetting the address of the at least one other data station after the conclusion of the data transmission.

5,251,215

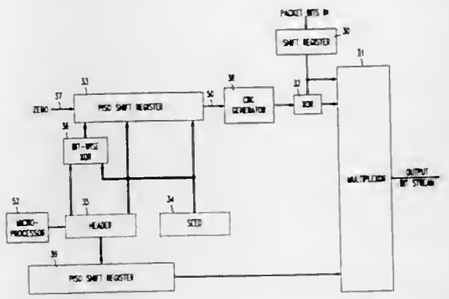
MODIFYING CHECK CODES IN DATA PACKET TRANSMISSION

Subrahmanyam Dravida, Highland Park; Daniel S. Greenberg, and David J. Hodgdon, both of Troy Hills, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 13, 1992, Ser. No. 819,554

Int. Cl.[5] G06F *11/08*

U.S. Cl. 370—94.1 **14 Claims**



8. A circuit for re-transmitting an incoming data packet which includes a data field and a cyclic redundancy check code based on a first seed field having a first bit length comprising:

means for receiving the incoming data packet;

means for generating a bit stream which includes a second seed field, a field comprising the exclusive OR function of at least a portion of a header and at least a portion of the first seed field, and a string of zeros equal to the bit length of the data field of the incoming packet;

a CRC generator;

means for loading the bit stream into the generator;

means for exclusive ORing the updated CRC code generated at the output of the generator with the CRC code of the incoming packet to produce a modified CRC code; and

means for re-transmitting the data packet with the modified CRC code.

5,251,216

RECEIVER GAIN CONTROL FOR RADIO TELEPHONE SYSTEM

Keith Marshall; Robert O. Bristow, both of Basingstoke, and Andrew P. Cheer, Hartley Wintney, all of England, assignors to Orbitel Mobile Communications Limited, Bracknell, England

Filed Jun. 26, 1990, Ser. No. 543,470

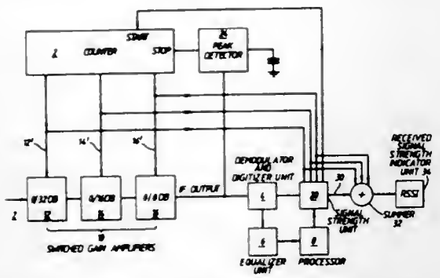
Claims priority, application United Kingdom, Jul. 1, 1989, 8915172

Int. Cl.[5] H02K *47/04;* **H04J** *3/00*

U.S. Cl. 370—95.3 **7 Claims**

1. A receiver for a mobile telephone system operating in a time division multiple access (TDMA) system, the receiver being capable of operating alternately in a monitor mode in which the receiver scans for incoming control signals, and a traffic mode in which the receiver receives incoming data signals, the receiver including a gain control means coupled to receive said incoming control signals and said incoming data signals and being switchable under the control of digital control signals between a plurality of gain levels, and determining means for determining the value of the received signal, and providing said digital control signals to set the gain level constant for a time slot of the TDMA system whilst the receiver is operating in said traffic mode, said determining means including recording means for recording the determined signal value

and setting the level of said gain control means whilst the receiver is operating in the monitor mode and prior to a predetermined time slot based upon measurements made during a preceding time slot.

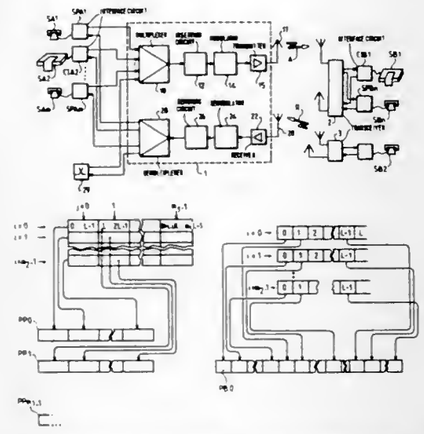


5,251,217

TIME-DIVISION MULTIPLEX INFORMATION TRANSMISSION SYSTEM HAVING A VARIABLE STRUCTURE

Jean-François Travers, Lannion; Jacques Briand, Minihy-Treguier, and Yvon Guedes, Lannion, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 4, 1991, Ser. No. 772,811
Claims priority, application France, Oct. 9, 1990, 90 12415
Int. Cl.[5] H04J *3/22*
U.S. Cl. 370—112 6 Claims



1. A time-division multiplex information transmission system capable of transmitting information packets having differing data rates and packet structures, for transmitting information packets from selected ones of a first plurality of subscriber units to corresponding selected ones of a second plurality of subscriber units via a communications arrangement, said corresponding selected ones including units having a first coder data rate and packet structure, and units having a second coder data rate and packet structure independent of said first coder data rate and packet structure, and each of said selected one having respectively the same coder data rate and packet structure as said corresponding selected one,

characterized in that said communications arrangement comprises a time division multiplex circuit for multiplexing information signals and forming transmission packets for transmission as part of a multi-frame including a plurality of frames, each frame including a plurality of equal duration time intervals forming a selected plurality of channels, each channel corresponding to a respective selected one of said first plurality of subscriber units, and

said multiplex circuit includes interleaving means for transforming m_2 different information packets constituted by m_1 sub-packets of information signals having said first code data rate, to be transmitted to a first subscriber unit, into m_1 transmission packets constituted by m_2 sub-packets of different information signals, inserting the first of said m_1 transmission packets into a first time interval which is part of one channel, and inserting at least one other of said m_1 transmission packets into at least a second time interval forming part of said one channel; and for inserting bits of other different information packets having said second coder data rate independent of said first coder data rate, to be transmitted to a second subscriber unit, into a third time interval which is part of another channel, said third time interval lying between said first and second time intervals,

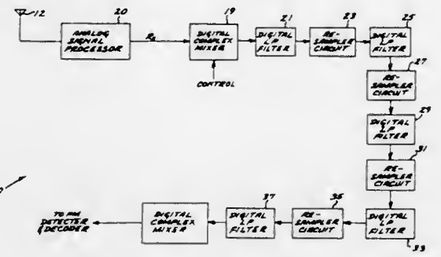
whereby said equal duration time intervals in a given frame, with interleaved bits from different information packets, include bits from information packets independent of the sameness or difference of the respective code-data rates of said different information packets.

5,251,218

EFFICIENT DIGITAL FREQUENCY DIVISION MULTIPLEXED SIGNAL RECEIVER

Wade J. Stone, Topanga; Kikuo Ichiroku, Santa Monica; Edwin A. Kelley, Los Angeles, and Don C. Devendorf, Carlsbad, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 293,894, Jan. 5, 1989, Pat. No. 5,058,107. This application Jul. 31, 1991, Ser. No. 739,593
Int. Cl.[5] H04J *1/00*
U.S. Cl. 370—120 16 Claims



1. A frequency division multiplex receiver for isolating a frequency division multiplex channel contained within a predetermined frequency division multiplex (FDM) band, comprising:

an RF amplifier;

an RF bandpass anti-alias filter having a passband between a lower passband frequency f_{pl} and a higher passband frequency f_{ph} for passing substantially the entire predetermined FDM band, further having a lower stopband frequency f_{sl} that is less than said lower passband frequency and a higher stopband frequency f_{sh} that is greater than said higher passband frequency, said passband including frequencies above a sample frequency F_s, at which the output of the filter is sampled;

analog-to-digital conversion means for sampling the analog output of said anti-alias filter to provide an aliased frequency, down converted digital version of the received frequency division multiplexed electromagnetic signals within the predetermined frequency division multiplex band, wherein said analog to digital conversion means has said sample frequency F_s less than the lowest frequency in the predetermined FDM band and is subject to the following for at least one value of N which is a non-zero positive integer:

$$(f_{pl}+f_{sl})/(2N) \geq F_s \geq (f_{ph}+f_{sh})/(2N+1), \text{ for odd N;}$$

$$(f_{pl}+f_{sl})/(2N-1) \geq F_s \geq (f_{ph}+f_{sh})/(2N), \text{ for even N;}$$

and

$$F_s \geq (f_{ph}-f_{pl})+(f_{sh}-f_{sl}),$$

whereby the output of the analog to digital conversion means includes a non-distorted aliased image of the predetermined frequency division multiplex band, said non-distorted aliased image being located between 0 Hz and $F_s/2$;

a gain controlled amplifier responsive to the output of said analog to digital conversion means for controlling the gain of the analog received RF signal provided to said analog to digital conversion means;

digital complex frequency translation means for frequency translating said aliased frequency down converted digital signal providing a frequency translated digital signal having the center of the selected channel at zero frequency; and

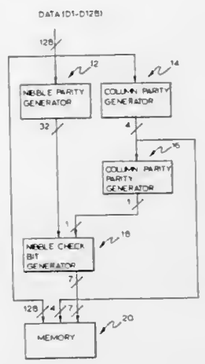
means for filtering said translated sampled digital received signal to isolate said selected channel.

5,251,219

ERROR DETECTION AND CORRECTION CIRCUIT

Brendan J. Babb, Anchorage, Ak., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Sep. 10, 1990, Ser. No. 579,721
Int. Cl.[5] G06F *11/10*
U.S. Cl. 371—37.4 15 Claims



1. A system for detecting and correcting errors in a k bit data word comprising:

an encoder circuit for providing an error detecting and correcting code comprising:

first nibble parity generator means for converting said k bit data word into a first n by m matrix having n rows and m columns, each row having one m bit nibble of data from said data word and n×m being equal to k and for generating a first respective parity bit across each of said n nibbles;

first column parity generator means for generating a first column parity bit for each of the m columns of said matrix;

first column parity parity generator means for generating a column parity parity bit in response to said column parity bits; and

nibble check bit generator means responsive to said first nibble parity generator means and said first column parity parity generator means for generating a plurality of nibble check bits and

a decoder circuit for decoding said error detecting and correcting code comprising

second nibble parity generator means for converting said k bit data word into a second n by m matrix having n rows and m columns, each row having one m bit nibble of data from said data word and n×m being equal to k and for generating a second respective parity bit across each of said n nibbles;

second column parity generator means for generating a second column parity bit for each of the m columns of said matrix;

second column parity parity generator means for generating a column parity parity bit in response to said first column parity bits;

nibble syndrome generator means responsive to said nibble check bits and said second column parity parity generator means bits for comparing said nibble bits generated by first nibble parity generator means to respective nibble parity bits generated by said second nibble parity generator means and providing nibble syndrome bits in response thereto;

column syndrome generator means for comparing said first column parity bits to said second column parity bits and providing column syndrome bits in response thereto; and

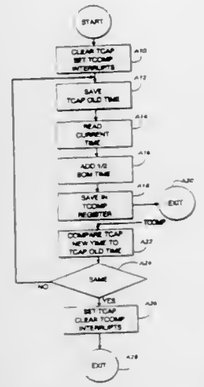
syndrome decoder means for detecting errors in said data work in response to said nibble syndrome bits and said column syndrome bits and providing error detection signals in response thereto.

5,251,220

METHOD AND APPARATUS FOR ERROR DETECTION AND PROCESSING

Mark E. Schutte, Sugar Hill, Ga., assignor to Scientific-Atlanta, Inc., Norcross, Ga.

Filed Nov. 28, 1990, Ser. No. 619,364
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—55 10 Claims



1. A method of detecting errors in a modified Manchester digital data stream of two levels having transitions between the levels, said method comprising the steps of:

sensing level transitions of one particular direction in the digital data stream;

measuring the amount of time between consecutive level transitions of said one particular direction; and

comparing the measured amount of time with a plurality of predetermined data transition times, said predetermined data transition times corresponding to the durations between valid level transitions of said one particular direction in said digital data stream, and detecting a data error

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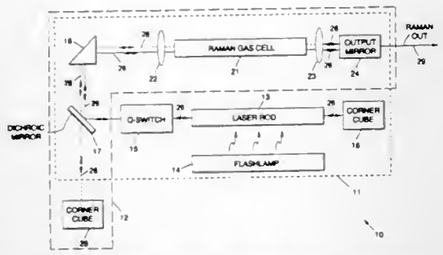
if said measured amount of time is not substantially equivalent to one of said predetermined data transition times.

5,251,221

SELF ALIGNING INTRACAVITY RAMAN LASER

Robert D. Stultz, Huntington Beach, and Michael E. Ehritz, Hermosa Beach, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 10, 1992, Ser. No. 926,736
Int. Cl.[5] H01S *3/30*
U.S. Cl. 372—3 17 Claims



1. A self-aligning intracavity Raman laser comprising:
a pump resonator comprising:
a laser rod;
pumping means disposed adjacent the laser rod for pumping energy into the laser rod;
a first retroreflector disposed at one end of the pump resonator;
an output mirror disposed at an opposite end of the pump resonator;
a Q-switch disposed between the laser rod and the output mirror;
a dichroic mirror disposed between the Q-switch and the output mirror; and
a prism disposed between the dichroic mirror and the output mirror;
wherein the pump resonator is adapted to radiate pump energy at a first predetermined wavelength between the first retroreflector and the output mirror; and
a Raman resonator comprising:
a Raman gas cell having first and second lenses disposed on opposite ends thereof for focusing laser energy into the Raman cell; and
a second retroreflector that forms one end of the Raman resonator;
wherein the output mirror forms an opposite end of the Raman resonator, and wherein the dichroic mirror and the prism are disposed between the second retroreflector and the first lens, and wherein the Raman resonator is adapted to radiate Raman laser energy at a second predetermined wavelength between the second retroreflector and the output mirror.

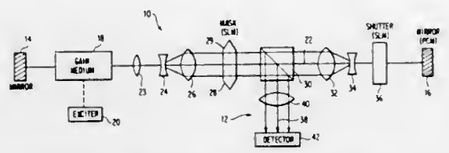
5,251,222

ACTIVE MULTI-STAGE CAVITY SENSOR

Charles F. Hester, and Steven M. Burke, both of Huntsville, Ala., assignors to Teledyne Industries, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 678,706, Apr. 1, 1991. This application Mar. 2, 1992, Ser. No. 843,071
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—26 15 Claims

1. Optical apparatus forming an optical cavity with an element to be investigated, said optical apparatus and said element to be investigated providing an optical sensor which indicates whether a given spatial pattern that is characteristic of said optical apparatus corresponds to a spatial pattern generated by the element when the optical cavity is formed by said optical apparatus, the element, and coherent light provided in said optical apparatus, said optical apparatus comprising:
a gain medium excitable at least into a state of fluorescence to spontaneously emit light which forms a wavefront that is spatially modulated by an element to be investigated to impose a spatial pattern representative of the element on said wavefront;
reflective means, located at one end of said optical cavity, for reflecting light propagating in said cavity under resonant conditions to pass back through said gain medium;
spatial light modulating means for modulating light incident



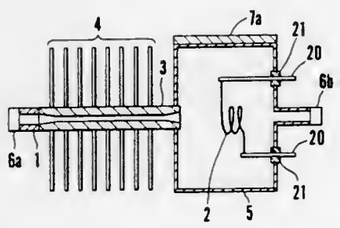
thereon according to said characteristic spatial pattern of said optical apparatus and for permitting resonance within said cavity when the spatial pattern generated by the element to be investigated corresponds with said characteristic spatial pattern, whereby stimulated emission is produced by said gain medium, said spatial light modulation means preventing resonance within said cavity when the spatial pattern of the element to be investigated and said spatial pattern characteristic of said apparatus do not correspond; and
lens means for focussing light incident on both the element and on said spatial light modulating means.

5,251,223

AIR-COOLED ARGON ION LASER TUBE

Masaaki Hiroshima, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 26, 1992, Ser. No. 935,435
Claims priority, application Japan, Aug. 27, 1991, 3-214904
Int. Cl.[5] H01S *3/04*
U.S. Cl. 372—34 6 Claims



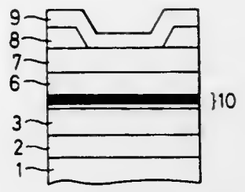
1. An air-cooled argon ion laser tube comprising:
a laser tube for excitation for laser oscillation;
a plurality of heat radiating plates each mounted on the outside of the laser tube;
a metallic cathode bulb connected to one end of the laser tube;
an anode disposed in the vicinity of the other end of the laser tube;
a filament type hot cathode disposed in the cathode bulb;
a semitransparent mirror disposed on the other end of the laser tube;
a total reflection mirror disposed at a location on said cathode bulb opposite to the one end of the laser tube;
said semitransparent mirror and said total reflection mirror constituting an optical resonator; and
a thermal expansion compensating member having a thermal expansion coefficient different to that of the cathode bulb on said cathode bulb for compensating a temperature difference between any portions on said cathode bulb.

5,251,224

QUANTUM BARRIER SEMICONDUCTOR OPTICAL DEVICE

Michinori Irikawa, Yokohama, and Masayuki Iwase, Tokyo, both of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Nov. 8, 1991, Ser. No. 789,201
Claims priority, application Japan, Nov. 9, 1990, 2-305785
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—45 5 Claims



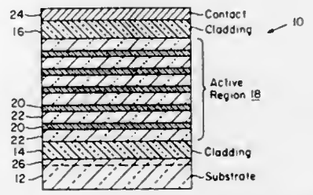
1. A semiconductor optical device comprising a substrate, a buffer layer formed on said substrate, a double heterostructure including a pair of p-type and n-type cladding layers and an active layer consisting of $Ga_xIn_{1-x}As_yP_{1-y}(0<x\leqq 0.47, 0<y\leqq 1.0)$ or $(Ga_{0.47}In_{0.53}As)_{1-z}(Al_{0.48}In_{0.52}As)_z(0<Z\leqq 1)$ lattice matched to InP and sandwiched between said cladding layers and a pair of ohmic metals, a part of said p-cladding layer consisting of a strained-layer multi-quantum barrier structure having a strained-layer super-lattice structure which reflects an electron wave incident upon said p-type cladding layer from said active layer in such a phase condition so that said incident electron wave and reflected wave of said incident electron wave enhance each other, said multi-quantum barrier structure having an effective barrier height against said incident electrons higher than actual barrier height.

5,251,225

QUANTUM-WELL DIODE LASER

Stephen J. Eglash, and Hong K. Choi, both of Concord, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 8, 1992, Ser. No. 880,622
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—45 71 Claims



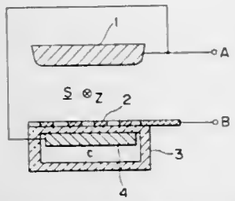
1. A laser comprised of a body within a resonant cavity and formed of a plurality of quantum-well layers separated by barrier layers forming a planar active region with cladding layers on each planar side of the active region and wehrein the quantum-well layers are formed of an alloy composed of the following elements GaInAsSb and the cladding and barrier layers of an alloy composed of the following elements AlGaAsSb.

5,251,226

DISCHARGE EXCITING EXCIMER LASER DEVICE

Shuntaro Watanabe, Kashiwa; Yasuo Oeda, Sodegaura; Ken Ohmata, Sodegaura; Michito Uehara, Sodegaura; Mitsugu Terada, Sodegaura; Hideaki Shibata, Sodegaura, and Yuichiro Terashi, Sodegaura, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

PCT No. PCT/JP91/00288, § 371 Date Nov. 4, 1991, § 102(e) Date Nov. 4, 1991, PCT Pub. No. WO91/14302, PCT Pub. Date Sep. 19, 1991
PCT Filed Mar. 4, 1991, Ser. No. 775,937
Claims priority, application Japan, Mar. 5, 1990, 2-53188
Int. Cl.[5] H01S *3/097*
U.S. Cl. 372—87 6 Claims



1. A discharge exciting excimer laser device comprising
a pair of main discharge electrodes with a laser optical axis being in a longitudinal direction, said main discharge electrodes being arranged opposedly to each other over said laser optical axis,
a dielectric arranged externally of said pair of main discharge electrodes and opposedly to one of said main discharge electrodes, and
an auxiliary electrode opposed to said one of said main discharge electrodes through said dielectric;
wherein a side of said dielectric which is opposed to said one of said main discharge electrodes is in the form of a flat plate,
said auxiliary electrode being surrounded by said dielectric leaving a space and being opposed to said one of said main discharge electrodes with said side of said dielectric in the form of a flat plate sandwiched therebetween, and
at least one surface of said side of said dielectric in the form of a flat plate having been subjected to mirror surface polishing so that a difference of altitude in unevenness of said surface is 100 μm or less, said one of said main discharge electrodes or said auxiliary electrode being placed in close contact with said surface.

5,251,227

TARGETED RESETS IN A DATA PROCESSOR INCLUDING A TRACE MEMORY TO STORE TRANSACTIONS

William Bruckert, Northboro, Mass.; Thomas D. Bissett, Derry, N.H.; John Munzer, Brookline; David Kovalcin, Grafton, both of Mass., and Mitchell Norcross, Nashua, N.H., assignors to Digital Equipment Corporation, Maynard, Mass.

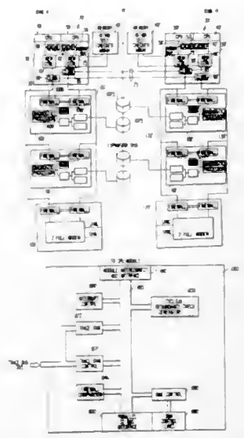
Continuation of Ser. No. 789,443, Nov. 7, 1991, abandoned, which is a continuation of Ser. No. 388,087, Aug. 1, 1989, abandoned. This application Mar. 17, 1992, Ser. No. 852,509
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—12 24 Claims

1. In a data processing system having a central processor connected to a plurality of components via a data pathway, the components including resettable elements, and the central processor executing a sequence of instructions which cause a series of transactions to be forwarded along the data pathway, a method of resetting the data processing system without altering the sequence of instruction execution comprising the steps, executed by the data processing system, of:
sequentially storing, in a trace RAM coupled to the data

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pathway, the series of transactions being forwarded along the data pathway;

detecting a condition for which a reset is indicated is detected, reset signals to selected ones of the plurality of components along the data pathway, the reset signals



causing the selected ones of the plurality of components to reset portions of their elements; and

reforwarding, from the trace RAM, a most recently stored one of the series of transactions along the data pathway after transmission of the reset signals.

5,251,228

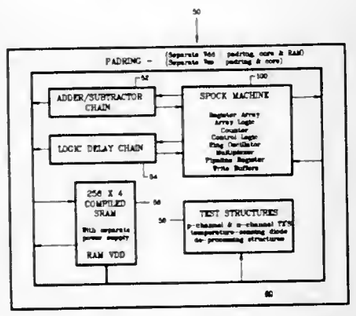
RELIABILITY QUALIFICATION VEHICLE FOR APPLICATION SPECIFIC INTEGRATED CIRCUITS

Sabbas A. Daniel, Campbell, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Dec. 5, 1989, Ser. No. 446,030

Int. Cl.[5] G01R *31/28*

U.S. Cl. 371—22.1 **3 Claims**



1. A reliability qualification vehicle for use with an application specific integrated circuit design system, said system including a design library of a plurality of cells and a place and route scheme providing different cell designs and cell interconnection routes to enable a plurality of different integrated circuits to be designed from said cells using said place and route scheme, said vehicle comprising:

a first integrated circuit employing from said library at least some cells that are representative of the plurality of cells in the library, and using said place and route scheme, such that said cells in said first integrated circuit are designed and interconnected in a manner representative of a predetermined number of said plurality of integrated circuits so that reliability testing of said first integrated circuit will indicate the some of said cells and employing said place and route scheme.

said first circuit including an internal clock generating means for generating an internal clock signal that is selectable for operating the first circuit during reliability testing, said internal clock generating means comprises an oscillator comprising a chain of delay means with feedback paths, wherein the frequency of the internal clock signal is selectable by selecting one of the feedback paths to be operational, said first circuit also including control means responsive to an external clock signal or the internal clock signal and an internal/external clock select signal for selecting between the internal and external clock signals for operating the vehicle, wherein when the control means selects the external clock for operating the vehicle, the feedback paths in the oscillator are disabled so that the internal clock signal generating means operates as a delay chain.

5,251,229

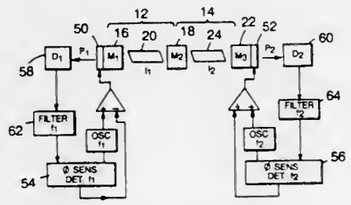
LASER WITH REDUCED INTENSITY FLUCTUATIONS

William R. Bennett, Jr., New Haven, Conn., and Veniamin P. Chebotayev, Novosibirsk, U.S.S.R., assignors to Yale University, New Haven, Conn.

Filed Oct. 18, 1991, Ser. No. 779,721

Int. Cl.[5] H01S *3/08, 3/10*

U.S. Cl. 372—92 **25 Claims**



1. An intensity stabilized laser comprising:

a gain cavity containing a gain medium; and

an absorbing cavity containing a nonlinear absorbing medium, wherein the absorbing cavity is located with respect to the gain cavity and the characteristics of the nonlinear absorbing medium are selected so as to provide negative feedback via reflected energy from the absorbing cavity to the gain cavity during operation of the laser to thereby control the gain of the gain cavity.

5,251,230

RESONANT CAVITY DITHER WITH INDEX OF REFRACTION MODULATOR

Ming Lai, Encinitas, Calif., and Jean-Claude M. Diels, Albuquerque, N. Mex., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed May 8, 1992, Ser. No. 880,426

Int. Cl.[5] H01S *3/083*

U.S. Cl. 372—94 **17 Claims**

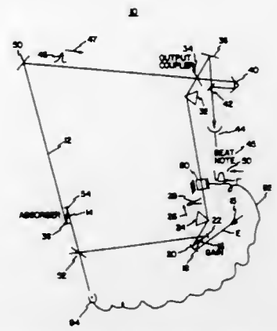
1. A laser gyro having a laser source of laser energy, comprising:

laser gain means for receiving the laser energy and for generating first and second counterpropagating laser pulses along a common optical path;

control means for detecting at least one of the pulses and for generating an index of refraction control signal representative of the detected at least one pulse;

refraction varying means for varying the index of refraction of a segment of the optical path in response to the index of refraction control signal such that the index of refraction

of the segment of the optical path changes an optical path length for at least one laser pulse; and



detector means for sensing a beatnote between the first and second propagating laser pulses.

5,251,231

VACUUM FURNACE

Michael N. Croker, Huntingdon, and Michael G. Ellis, St. Ives, both of England, assignors to Ipsen Industries International GmbH, Fed. Rep. of Germany

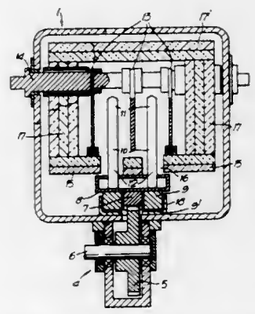
PCT No. PCT/GB90/00468, § 371 Date Nov. 26, 1991, § 102(e) Date Nov. 26, 1991, PCT Pub. No. WO90/12266, PCT Pub. Date Oct. 18, 1990

PCT Filed Mar. 29, 1990, Ser. No. 777,338

Claims priority, application United Kingdom, Apr. 10, 1989, 8907994

Int. Cl.[5] H05B *3/10*

U.S. Cl. 373—109 **8 Claims**



1. An electrically heated furnace for heat treating metallic articles comprising:

a pressure vessel housing, said housing having a longitudinal dimension;

holding means for positioning the metallic articles to be heat treated in said housing in at least a pair of rows of articles arranged parallel to the longitudinal dimension of said housing; and

a plurality of heating elements in said housing, said heating elements being spaced apart in a first direction normal to the longitudinal dimension of said housing and lying parallel to said longitudinal dimension, said heating elements extending in a second direction normal to said longitudinal dimension and said first direction to have sides lying parallel to said longitudinal dimension, said heating elements being interleaved with the rows of articles positioned by said holding means, at least one of said heating elements applying radiant heat to articles from both sides of said heating element to heat treat the articles.

5,251,232

RADIO COMMUNICATION APPARATUS

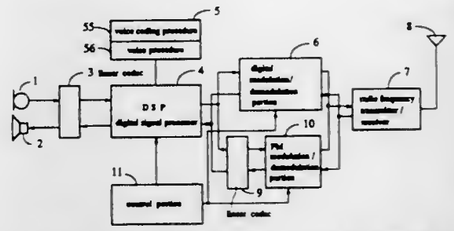
Takayuki Nonami, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 12, 1991, Ser. No. 789,905

Claims priority, application Japan, Mar. 6, 1991, 3-063750

Int. Cl.[5] H04L *25/00;* **H04B** *13/02*

U.S. Cl. 375—5 **6 Claims**



1. A radio communication apparatus useful for both digital communications and analog communications comprising:

a first linear codec for converting an analog signal to a digital signal, and for converting a digital signal to an analog signal;

a ROM for storing a plurality of signal procedures used for the processing of analog communications and digital communications;

a digital signal processor (DSP) connected to said first linear codec for processing digital signals which are received from and delivered to said first linear codec by said DSP according to said corresponding signal procedures stored in the ROM;

a control portion connected to said DSP for controlling the processing according to signal procedures stored in said ROM of digital signals received from and delivered to said first linear codec for both the analog communications and digital communications of said communications apparatus;

a digital modulation/demodulation portion connected on the opposite side of said DSP from said first linear codec for generating digital modulated signals from digital coded signals delivered to said digital modulation/demodulation portion by said DSP, and for generating coded digital signals to be delivered to said DSP from digital modulated signals received by said digital modulation/demodulation portion;

an FM modulation/demodulation portion for generating analog FM modulated signals from analog modulation signals, and for generating analog demodulated signals from analog FM modulated signals; and

a second linear codec positioned between the DSP and said FM modulation/demodulation portion, for generating said analog modulation input signal to said FM modulation/demodulation portion from digital coded signals received from said DSP, and for generating digital demodulated signals for delivery to said DSP from said analog demodulated signals received from said FM modulation/demodulation portion;

whereby communication signals for both digital communications and analog communications are processed through said DSP in digital form.

5,251,233

APPARATUS AND METHOD FOR EQUALIZING A CORRUPTED SIGNAL IN A RECEIVER

Gerald P. Labedz, Chicago; Michael D. Kotzin, Buffalo Grove, and Joseph J. Schuler, Roselle, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 20, 1990, Ser. No. 630,922

Int. Cl.[5] H03H *7/30*

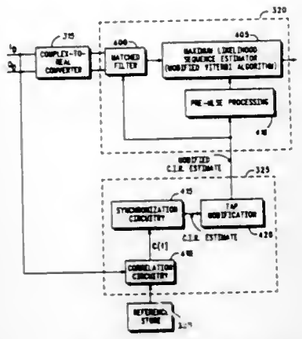
U.S. Cl. 375—12 **55 Claims**

1. An equalization system employed in a communication

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system receiver to equalize a corrupted data signal, the corrupted data signal having been detected from a radio channel signal received by the communication system receiver, the equalization system comprising:

means for estimating a channel impulse response from the corrupted data signal;



means, coupled to said means for estimating, for modifying said channel impulse response to produce a modified channel impulse response; and

means, coupled to the corrupted data signal and said means for modifying, for enhancing the corrupted data signal utilizing said modified channel impulse response.

5,251,234

DATA TRANSMISSION SYSTEM

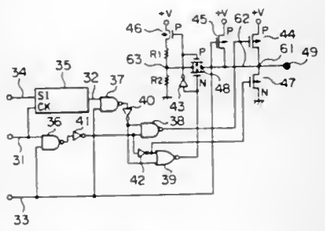
Norihiko Iida, Tokyo, Japan, assignor to Nec Corporation, Japan

Filed Aug. 23, 1989, Ser. No. 397,665

Claims priority, application Japan, Aug. 24, 1988, 63-211216; Jan. 4, 1989, 64-683

Int. Cl.[5] **H04L** *25/493*

U.S. Cl. 375—20 **6 Claims**



6. A combination comprising a data transmission unit, a data receiving unit, and a single transmission line connected between said data transmission unit and said data receiving unit, said data transmission unit comprising:

means for generating cyclically recurring clock pulses;

means for synchronizing data to be transmitted with clock signals, said clock signal comprising a series of alternately low and high voltage levels;

means for transmitting said data to a data receiving unit via a single transmission line;

first means responsive to data signals for outputting a first voltage level to said single transmission line during one-half of each of a plurality of timing intervals;

second means responsive to data signals for outputting a second voltage level to said single transmission line during half of each of the timing intervals when said data to be transmitted are on a first logical level;

third means responsive to data signals for outputting an intermediate voltage level which is between said first and second voltage levels to said single transmission line during half of the corresponding timing interval when said data to be transmitted are on a second logical level;

said data receiving unit comprising:

fourth means for producing a timing signal when a voltage level on said single transmission line is changed from said first voltage level to either said second voltage level or said intermediate voltage level;

fifth means for outputting said first logical level when a signal level on said single transmission line is changed from the first voltage level to the second voltage level and for outputting said second logical level when said single transmission line is changed to the intermediate voltage level;

sixth means for discriminating between the logical levels which are output by the fifth means in response to said timing signal from the fourth means in order to reproduce said data which is to be transmitted;

a shift register means driven responsive to said clock signals, a plurality of logic gate means coupled to an output of said shift register means, a pair of transistors coupled in series between a high potential source and a low potential source, an output terminal coupled to a junction between said two series connected transistors, said first means comprising individually associated ones of said logic gate means responsive to one phase of said clock signals for switching on one of said transistors coupled between said low potential source and said output terminal, whereby said low potential is applied to said output terminal;

said second means comprising other individually associated ones of said logic gate means responsive to another phase of said clock signals for switching on the other of said transistors coupled between said high potential and said output terminal, whereby said high potential is applied to said output terminal;

a voltage divider connected between said high potential source and said low potential source, electronic switch means coupled between an output of said voltage divider and said output terminal; and

said third means comprising still other individually associated ones of said logic gate means responsive to another phase of said clock pulses for applying a voltage taken from said the output of voltage divider to said output terminal.

5,251,235

SINGLE RECEIVER FOR RECEIVING WIRELESS TRANSMISSION OF SIGNALS IS FOR USE WITH A SERIAL TWO-CONDUCTOR DATA BUS

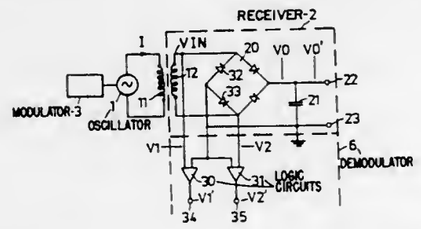
Bengt Henoch, Backvindelin 90, S-126 57 Högersten, Sweden

Continuation of Ser. No. 460,870, Feb. 8, 1990, abandoned. This application Sep. 24, 1991, Ser. No. 764,124

Claims priority, application Sweden, Jun. 14, 1988, 8802230

Int. Cl.[5] **H04L** *7/06*

U.S. Cl. 375—37 **10 Claims**



1. A single receiver comprising: a demodulator, an output which is a serial, two-conductor data bus and input means to receive a wireless transmission of a modulated carrier signal from a transmitter that uses an oscillator to generate and transmit an alternating carrier signal which has been modulated by independent clock signals and data signals from a serial, two-conductor data bus input which has data signals that have a positive and a negative flank which respectively do not coincide with a positive or negative flank of the clock signals, and the modulated carrier signal, before transmission, having been modulated in dependence on the signal on the input clock conductor and in dependence on the signal on the input data conductor respectively, so that the transmitted carrier signal includes two significant, mutually independent, separate signal channels, which do not coincide in time, the first channel being caused by modulation steps on one of the groups of positive half cycles and negative half cycles of the alternating carrier signal being transmitted and the second channel being caused by modulation steps on the other of the groups of half cycles, and the first channel being for modulations representing data signals from the input data signal conductor and the second channel being for modulations representing clock signals from the input clock signal conductor and wherein the steps of the modulations of the carrier signal representing the clock signals are out-of-phase with the steps of the modulations of the carrier signal representing the data signals; and said receiver demodulator comprising means to demodulate the transmitted modulated, oscillator generated carrier signal received by the single receiver and to recreate independent clock and data signals corresponding to the independent clock and data signals conducted from the input serial, two-conductor data bus to the transmitter, and which do not coincide in time; and further comprising that said demodulator has a clock conductor output for said recreated clock signal and a data conductor output for said recreated data signal, said clock conductor output and said data conductor output being connected to the said output serial two-conductor data bus.

a transmitter section for transmitting the trellis encoded frames.

5,251,237

RECEIVER FOR A DIGITAL TRANSMISSION SYSTEM

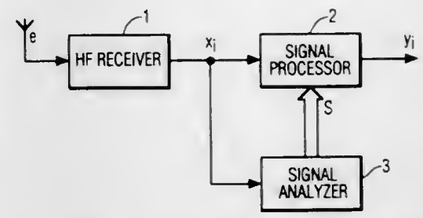
Alfred Baier, Eckental, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 24, 1992, Ser. No. 828,531

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1991, 4102151

Int. Cl.[5] **H03D** *1/04;* **H03H** *7/30;* **H04L** *27/14*

U.S. Cl. 375—99 **20 Claims**



1. A receiver for a digital transmission system, comprising

means for receiving an incoming signal, and providing as an output a received signal, and

signal processing means, comprising processing circuitry, for receiving said received signal and recovering a transmitted data sequence from said received signal,

characterized in that the receiver further comprises signal analysis means for determining a quality factor for said received signal different from the magnitude of said incoming signal being received by said means for receiving, and

means, responsive to the determined quality factor being higher than a given value, for controlling said processing circuitry to provide error correction while reducing power consumption of the receiver.

5,251,236

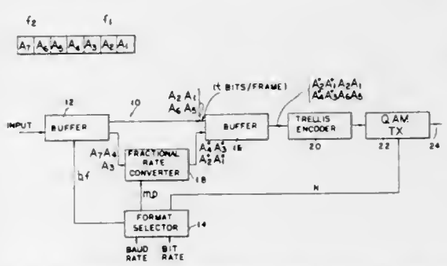
FRACTIONAL RATE MODEM WITH TRELLIS

Linda S. Brehmer, St. Petersburg, and Keith Souders, Tampa, both of Fla., assignors to AT&T Paradyne Corporation, Largo, Fla.

Filed Apr. 5, 1991, Ser. No. 681,136

Int. Cl.[5] **H04L** *27/04*

U.S. Cl. 375—59 **11 Claims**



1. A modem for data transmission at fractional data rates comprising:

transmitter means including:

buffer meas for receiving a stream of binary data, said buffer means being provided for partitioning said stream into frames of unequal number of bits and separating the bits of each frame into a first group and a second group of bits;

fractional rate encoding means for receiving said first group and performing a fractional encoding thereon to generate a group of fractionally encoded bits; combining means for combining said group of fractionally encoded bits with said second groups into frames of equal number of bits;

trellis encoding means for trellis encoding said frames of equal number of bits; and

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5,251,238

CIRCUIT ARRANGEMENT AND METHOD FOR THE REGENERATION AND SYNCHRONIZATION OF A DIGITAL SIGNAL

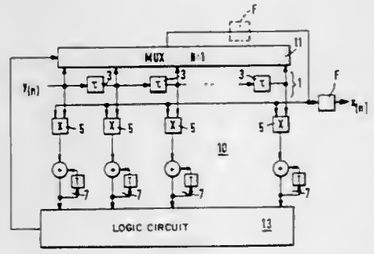
Klaus-Dieter Menk, Eppstein-Bremthal, and Helmut Preisach, Murr, both of Fed. Rep. of Germany, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Aug. 7, 1991, Ser. No. 741,682

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1990, 4025004

Int. Cl.[5] **H04L** *7/00*

U.S. Cl. 375—106 **17 Claims**



1. A circuit arrangement for regenerating an synchronizing a high-bit-rate digital signal $y_{(n)}$ into a synchronized digital signal $x_{(n)}$, comprising:

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a variable delay line connected to the digital signal $y_{(n)}$ for generating a series
of time delayed signals for each bit of said digital signal;
a correlation circuit (5,7 or 35,37) connected tot he digital signal $y_{(n)}$, the time delayed signals of the variable delay line, and to the synchronized digital data $x_{(n)}$, said correlation circuit generating correlation output signals representing the correlation between the synchronized data signal $x_{(n)}$ and the digital signal $y_{(n)}$;
at least one logic circuit (13; 55; or 73) connected to the correlation output signals for evaluating the correlation output signals and generating a control signal which represents the middle of the eye opening between the digital signal $y_{(n)}$ and the synchronized digital signal $x_{(n)}$; and
a multiplexer (11) connected to the output of the logic circuit, the digital signal $y_{(n)}$, and the time delayed signals from the variable delay line, for generating the synchronized digital signal $x_{(n)}$ based upon the control signal from the logic circuit.

5,251,239

SYNCHRONIZING METHOD FOR SDH SYSTEMS AS WELL AS METHOD OF AND CIRCUIT ARRANGEMENT FOR IDENTIFYING DIFFERENT DATA STRUCTURES

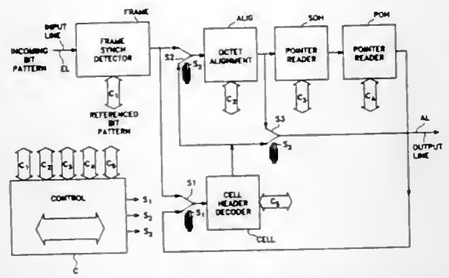
Karl-Albert Turban, Gerlingen, and Lothar Krank, Korntal-Münchingen, both of Fed. Rep. of Germany, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Apr. 22, 1991, Ser. No. 690,165

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1990, 4012762; May 12, 1990, 4015283

Int. Cl.[5] H04L *7/06*

U.S. Cl. 375—114 **10 Claims**



8. Circuit arrangement for identifying different data structures of asynchronous-transport-module-transmitting systems, wherein
said circuit arrangement comprises:
a frame sync word detection unit,
an input line connected to said frame sync word detection unit,
a first switching unit having first and second switch positions,
a cell header decoder unit,
an output line connected to said cell header decoder unit,
a second switching unit having first and second switch positions,
reading means for reading a pointer spaced a predetermined distance from the frame sync word, and
switchover means for switching said first and second switches from said first switch position to said second switch position in response to detection of a frame synch word;
said first position of said first switching unit connects said frame synch word detection unit to said cell header decoder unit;
said second switch position of said second switching unit connects the frame sync word detection unit to said reading means; and
said second switch position of said first switching unit connects the reading means to the cell header decoder unit.

5,251,240

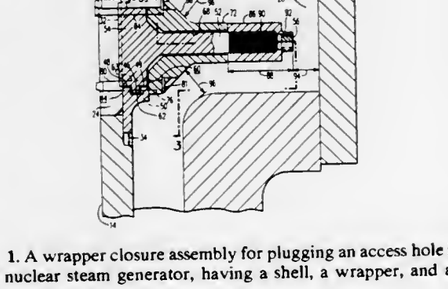
METHOD AND APPARATUS FOR EMPLOYING RESONANCE-PRODUCED GAMMA RAYS TO DETECT THE PRESENCE OF BOTH NITROGEN AND OXYGEN IN OBJECTS THAT MAY CONTAIN EXPLOSIVES

Lee Grodzins, Lexington, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 4, 1990, Ser. No. 518,785

Int. Cl.[5] G01N *23/00*

U.S. Cl. 376—157 **20 Claims**



1. A method of employing resonance-produced gamma rays to detect the presence of both nitrogen and oxygen content in objects that may contain explosives, that comprises, directing resonance-produced gamma rays of each of ^{14}N and ^{16}O upon such objects and detecting changes in the respective intensities of such rays as they pass through the object, indicative of resonance absorption by both nitrogen and oxygen constituents in the object, the ^{14}N resonance-produced gamma rays being of 9.172 MeV and the ^{16}O resonance-produced gamma rays being of 6.92 and/or 7.12 MeV.

5,251,241

NUCLEAR STEAM GENERATOR WRAPPER CLOSURE ASSEMBLY AND METHOD OF INSTALLING SAME

Jay T. Moore, Milton, and John R. Bayless, Pensacola, both of Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 28, 1992, Ser. No. 937,761

Int. Cl.[5] G21C *13/00*

U.S. Cl. 376—204 **17 Claims**

1. A wrapper closure assembly for plugging an access hole in a nuclear steam generator, having a shell, a wrapper, and an annulus positioned between the shell and the wrapper, comprising:
a plate, attached to the wrapper, having a bore therethrough and a first mating connection on an inside diameter of the plate, the first mating connection having at least one aperture;
a plug having a first end and a second end, the first end of the plug having a second mating connection for engagement with the first mating connection of the plate to prevent entry of said plug through the access hole and into the steam generator, the second mating connection having at least one aperture which aligns with the aperture through the first mating connection;
a sleeve having a first end, a second end, and a bore therethrough, the first end of the sleeve being positioned adjacent the first end of the plug when the sleeve is disposed on the plug, the first end of the sleeve having at least one aperture which aligns with the apertures in the first and second mating connections; and
a pin positioned in the apertures of the sleeve, the first mating connection, and the second mating connection.

5,251,242

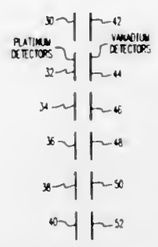
BI-METALLIC, SELF POWERED, FIXED INCORE DETECTOR, AND METHOD OF CALIBRATING SAME

Albert J. Impink, Jr., Murrysville; Louis R. Grobmyer, North Huntingdon; Kenneth G. Lunz, Fox Chapel, and Stephen N. Tower, Washingtown Township, Westmoreland County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 22, 1992, Ser. No. 902,141

Int. Cl.[5] G21C *17/00*

U.S. Cl. 376—254 **9 Claims**



1. A fixed incore detector apparatus, comprising:
vanadium detectors fixedly positioned along a length in a reactor core; and
platinum detectors adjacent to and electrically separate from said vanadium detectors, positioned along the length and spatially congruent with the said vanadium detectors.

5,251,243

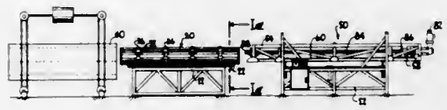
AUTOMATIC FUEL ASSEMBLY LOADER

Theodore W. Nylund; Kendell L. McDill, both of Columbia, and David V. Lambert, St. Matthews, all of S.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 21, 1992, Ser. No. 933,274

Int. Cl.[5] G21C *21/00*

U.S. Cl. 376—261 **17 Claims**



1. A fuel assembly loading apparatus for moving fuel rods in at least one loading between a fuel rod skeleton defining an array of for the fuel rods, and a fuel rod magazine for the fuel rods, the apparatus comprising:
a chassis having means for supporting the fuel rod skeleton at a loading position;
a carriage having a plurality of individual fuel rod engaging devices for moving the fuel rods in said loading direction;
a plurality of selection devices coupled to the engaging devices, said selection devices being operable selectably to actuate at least a subset of the fuel rod engaging devices, such that when actuated the subset of the engaging devices are coupled for movement in the loading direction whereby selected ones of the fuel rods are displaced;
powered means operable to move the subset of fuel rod engaging devices in the loading direction; and,
a controller coupled to the powered means and to at least some of the selection devices, the controller being operable to store data defining preset pattern of receptacles in the array, to operate the selection devices for actuating a group of said engaging devices corresponding to the pattern, and to operate the powered means for moving fuel rods in the preset pattern in the loading direction.

5,251,244

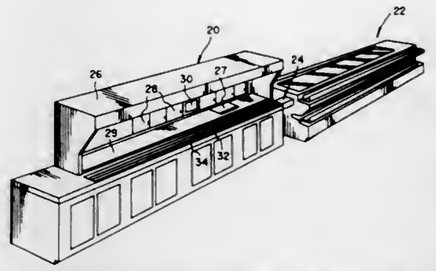
NUCLEAR FUEL PELLET LOADING SYSTEM

David F. Wazybok, Castle Hayne, N.C.; Bobby R. Cosper, Piedmoot, S.C.; Harold B. King, Jr., Wrightsville Beach, N.C.; David K. Underwood, Stokesdale, N.C., and James E. Pierce, Wilmington, N.C., assignors to General Electric Company, San Jose, Calif.

Filed Aug. 21, 1992, Ser. No. 933,279

Int. Cl.[5] G21C *21/00*

U.S. Cl. 376—261 **18 Claims**



1. An apparatus for loading nuclear fuel pellets into the open one ends of elongated cladding tubes having their other ends closed by end plugs; said apparatus comprising, in combination:
A. first and second elongated tracks in which fuel pellets are manually placed in face-to-face relation to form respective first and second rows of fuel pellets;
B. a cladding tube handler for accommodating a batch of cladding tubes arranged in parallel, serial relation, said handler including
1) an indexer for positioning successive pairs of empty cladding tubes into first and second preloading positions respectively axially aligned with said first and second tracks, and
2) reciprocating gripper means for axially translating the pair of cladding tubes between said first and second preloading positions and first and second loading positions proximate said first and second tracks;
C. a stationary bushing assembly including
((b 1) a first pellet passageway having an entry end juxtaposed with a loading end of said first track and an exit end juxtaposed with the open end of the cladding tube in said first loading position; and
(2) a second pellet passageway having an entry end juxtaposed with a loading end of said second track and an

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exit end juxtaposed with the open end of the cladding tube in said second loading position; and

D. first and second independent pusher means, said first pusher means pushing a row of fuel pellets along said first track, through said first passageway and into the cladding tube in said first loading position, and said second pusher means pushing a row of fuel pellets along said second track, through said second passageway and into the cladding tube in said second loading position;

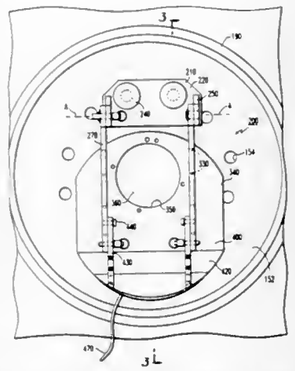
E. whereupon, said gripper means retracks the loaded pair of cladding tubes to said first and second preloading positions, and said indexer replaces the load pair of cladding tubes with a next pair of cladding tubes in said first and second preloading positions.

5,251,245

SHIELDED ACCESS DOOR FOR A NUCLEAR STEAM GENERATOR MANWAY PORT HAVING A BEAM OF RADIATION STREAMING THERETHROUGH

David M. Evans; Ricky L. Tucker, both of Spartanburg, S.C., and John O. Izzo, Pittsburgh, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 11, 1992, Ser. No. 943,954
Int. Cl.[5] G21C *11/02*
U.S. Cl. 376—287 **10 Claims**



1. A shielded access door for a port having a beam of nuclear radiation streaming therethrough, the port surrounded by a flange, comprising:

(a) a bracket adapted to connect to the flange;

(b) first shield means connected to said bracket and disposed adjacent the port for shielding against the beam of radiation, said first shield means having a ventilation hole therethrough for ventilating the port, the beam of radiation capable of passing through the hole, said first shield means including an angled skirt portion for shielding against the beam of radiation while simultaneously allowing access to the port;

(c) second shield means aligned with the hole of said first shield means and spaced-apart from said first shield means for shielding against the beam of radiation, said second shield means attached to said first shield means; and

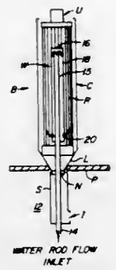
(d) a duct connected to said first shield means and in communication with the hole of said first shield means for ventilating the port.

5,251,246

WATER ROD CONCEPT WITHOUT LOSS IN ACTIVE FLOW

Bruce Matzner, San Jose, Calif., assignor to General Electric Company, San Jose, Calif.

Continuation of Ser. No. 856,417, Mar. 23, 1982, abandoned. This application Jan. 8, 1993, Ser. No. 1,928
Int. Cl.[5] G21C *3/322*
U.S. Cl. 376—444 **2 Claims**



1. In a boiling water nuclear reactor having in combination, a reactor vessel;

a steam generating core in said reactor vessel including a plurality of side by side fuel bundles forming said core, said side by side fuel bundles of said core for receiving water from below said core, generating steam within said fuel, bundles, an discharging said water an steam above said core in an upper plenum to participate in power generation;

a higher pressure, lower plenum, below said core for distributing water under pressure for flow to said fuel bundles from below said core;

means for recirculating water under pressure within said vessel from the top of said core to said higher pressure lower plenum, below said core;

each said fuel bundle having a flow path in said core including,

a fuel support assembly including an inlet orifice for communicating water to said fuel bundle from said higher pressure, lower plenum, below said core;

a lower tie plate communicated at the bottom to said fuel support assembly for admitting water to the interior of said fuel bundle an supporting on the top of a plurality of upstanding fuel rods for the generation of steam within said fuel bundle and providing a flow path there through for permitting water to flow upwardly about said fuel rods;

an upper tie plate for fastening at the bottom to at least some of said fuel rods and permitting the outflow of water and generated steam from said fuel bundle;

a fuel channel extending around said fuel rods from said lower tie plate to said upper tie plate to define a flow path of water through said fuel bundle confined to said fuel bundle;

a water rod within said fuel bundle for providing to the upper two phase region of said fuel bundle water sufficient to moderate fast neutrons generated in a nuclear reaction to slow neutrons for continuing said nuclear reaction in said fuel bundle;

a reactor core plate below said core for separating said higher pressure, lower plenum, having apertures for said fuel support assembly for distributing water through said core for communicating to said fuel bundles said water in said lower plenum;

the improvement to said water rod in said fuel bundles comprising in combination:

a water rod having a sealed top;

said water rod having a first vertical inlet flow path from the bottom of said water rod to said sealed top of said water rod;

a second vertically down outlet flow path from said sealed top of said water rod to a selected elevation toward the bottom of said water rod for maintaining water within said water rod sufficient to moderate the reaction within the upper two phase region of said fuel bundle;

said first and second vertical flow paths being relatively sized to assure a stable flow of water only interior of said water rod;

a discharge adjacent the lower end of said second vertical flow path in to said fuel bundle above said lower tie plate for returning water flowing through said water rod to the steam generating flow path in said fuel bundle above said lower tie plate; and,

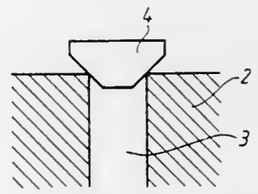
an inlet conduit to said first vertical flow path communicated to said higher pressure lower plenum, along a flow path beyond said inlet orifice in said fuel support assembly for permitting said water in said higher pressure, lower plenum, below said core to have direct access to said first vertical inlet path of said water rod.

5,251,247

METHOD OF SEALING A FUEL ROD BY WELDING

Thorbjörn Sahlin, and Katarina Wisén, both of Västerås, Sweden, assignors to ABB Atom A.B., Västerås, Sweden

PCT No. PCT/SE90/00305, § 371 Date Oct. 15, 1991, § 102(e) Date Oct. 15, 1991, PCT Pub. No. WO90/13898, PCT Pub. Date Nov. 15, 1990
PCT Filed May 8, 1990, Ser. No. 768,740
Claims priority, application Sweden, May 9, 1989, 8901635-6
Int. Cl.[5] G21C *3/10*
U.S. Cl. 376—451 **7 Claims**



1. A method of sealing a fuel rod which has been pressurized with helium and which includes a tube having a plug at one end thereof, the plug providing a fill hole which has an outer portion of a predetermined cross sectional shape and dimension, said method comprising the steps of:

(a) providing a zirconium alloy body having a portion whose cross sectional shape corresponds with said predetermined cross sectional shape of said outer portion of said fill hole and which provides an outer surface that defines an endless line of contact which is equal in dimension to said dimension of said outer portion of said fill hole,

(b) inserting said body into said fill hole until said endless line of contact of said outer surface of said portion makes contact with said outer portion of said fill hole, and

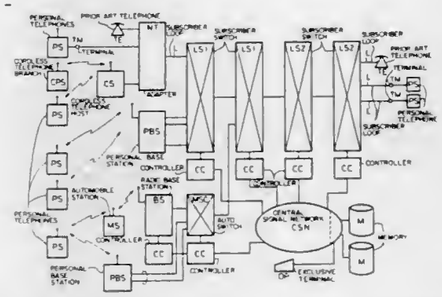
(c) sealingly connecting said body to said plug by resistance projection welding along said endless line of contact while pressing said body against said plug.

5,251,248

TELEPHONE NETWORK HAVING PERSONAL NUMBERS FOR POSITION-INDEPENDENT

Hirosbi Tokunaga, Iruma; Noriaki Yoshikawa, Kokubunji; Takesbi Hattori, Miura; Hidetsugu Kobayashi, Iruma; Yoshiyuki Yasuda, Yokobama, and Tatsuo Nobara, Hachiooji, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

PCT No. PCT/JP90/00839, § 371 Date Apr. 19, 1991, § 102(e) Date Apr. 19, 1991, PCT Pub. No. WO91/00664, PCT Pub. Date Jan. 10, 1991
PCT Filed Jun. 28, 1990, Ser. No. 663,932
Claims priority, application Japan, Jun. 30, 1989, 1-168725
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—58 **15 Claims**



1. A personal communication system wherein a subscriber is assigned a personal telephone number, a telephone is recorded with a station number in a mode readable as signals, a subscriber loop of the network is assigned a subscriber loop address and the subscriber loop or a terminal connected thereto is provided with a connection terminal for connection with said telephone, said system comprising:

a memory circuit which has a reference table of personal telephone numbers, station numbers registered under respective personal telephone numbers, and subscriber loop addresses at which the registered telephones are being connected stored therein,

connection controller means for connecting a call with said currently connected subscriber loop address when a call for a personal telephone number is generated by referring to said table,

reading means for reading out the station number of a telephone connected to the connection terminal of the subscriber loop address in accordance with the call and for collating the number with said reference table, said station number being recorded fixedly on the telephone either in the order of manufacture or distribution according to a certain rule in order to avoid duplication, and

registration means for writing in or modifying said reference table.

5,251,249

METHOD OF UPGRADING A CELLULAR NETWORK

Daniel L. Allen, McKinney; Lance M. La Bauve, Plano, and Aziz A. Meghani, Carrollton, all of Tex., assignors to Northern Telecom Limited, Montreal, Canada

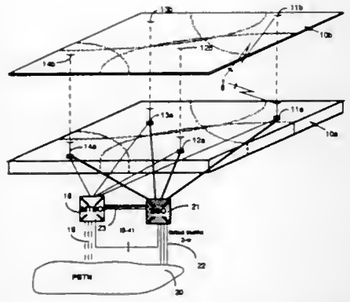
Filed Nov. 26, 1990, Ser. No. 617,547
The portion of the term of this patent subsequent to May 4, 2000, has been disclaimed.
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—59 **4 Claims**

1. A method for providing an overlay cellular network and operating in tandem said overlay cellular network with an existing cellular network to upgrade said existing network's

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capacity and service, said existing network having a plurality of cells with at least a first base station in each cell connected to a mobile telephone switching office (MTSO) connected to a public switched telephone network (PSTN), said MTSO having paging/access control channels, said MTSO servicing a first category of subscribers having basic cellular service, said method comprising the steps of:

a) providing a second switching office (SSO) for servicing a second category of subscribers having premium cellular service, said SSO having paging/access control channels;
b) coupling in and out trunks between said PSTN and said SSO;
c) coupling inter-office trunks from said SSO to said MTSO and from said MTSO to said SSO;
d) decoupling in and out trunks between said MTSO and said PSTN;
e) providing a second base station in each cell, said second base station being associated with said SSO;
f) decoupling all dedicated paging/access control channels for each cell associated with said MTSO;



g) assigning for each cell associated with said SSO a paging-/control channel such that an incoming or outgoing call of a mobile is initiated through said SSO paging/access control channel;
h) initiating incoming and outgoing calls to and from a mobile through said SSO on one of said paging/control channels assigned to said SSO;
i) setting up by said SSO said incoming and outgoing calls to and from said mobile on a voice channel assigned to said SSO;
j) servicing by said SSO calls directed to and from said second category of subscribers;
k) handing off by said SSO to said MTSO for service calls directed to and from said first category of subscribers from a voice channel assigned to said SSO to a voice channel assigned to said MTSO via said inter-office trunks; and
l) servicing by said MTSO calls handed off by said SSO.

5,251,250

METHOD OF STORING CALLERS TELEPHONE NUMBERS IN DURING-ABSENCE AUTOMATIC TELEPHONE ANSWERING STATE

Kijuro Obata, and Takeshi Shimizu, both of Iwaki, Japan, assignors to Alpine Electronics, Inc., Tokyo, Japan

Filed Aug. 21, 1991, Ser. No. 748,219

Claims priority, application Japan, Sep. 12, 1990, 2-241817; Sep. 12, 1990, 2-241818

Int. Cl.[5] H04M *11/00;* **H04B** *1/00;* **G08B** *5/22*

U.S. Cl. 379—59 **10 Claims**

1. A method for storing incoming call telephone numbers transmitted by callers during an automatic telephone answering state in a telephone system, said method comprising the steps of:

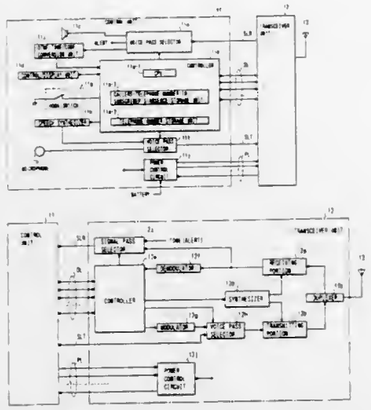
providing a first memory for storing therein telephone numbers and associated names, and a second memory for storing therein incoming telephone numbers transmitted by callers during the automatic telephone answering state;

determining if an incoming call is during the automatic telephone answering state;

generating a message in response to receiving the incoming call during the automatic telephone answering state;

receiving a signal indicative of the incoming call telephone number and converting the signal into the incoming call telephone number;

determining if the incoming call telephone number coincides with one of the telephone numbers stored in the first memory;



reading the associated name from the first memory in response to the incoming call telephone number coinciding with one of the telephone numbers stored in the first memory;

storing in time sequential order in the second memory a plurality of incoming call telephone numbers from the telephone numbers transmitted by the callers during the automatic telephone answering state and also storing the associated names read from the first memory;

sequentially displaying the incoming call telephone numbers received during the automatic telephone answering state and stored in the second memory; and

transferring a displayed telephone number to an empty storage area in the first memory.

5,251,251

TELECOMMUNICATIONS NETWORK-BASED GREETING CARD METHOD AND SYSTEM

Kathryn Barber, Upper Montclair, and Brad Wendkos, Hackensack, both of N.J., assignors to Greetings By Phoneworks, Hackensack, N.J.

Filed Sep. 6, 1991, Ser. No. 755,958

Int. Cl.[5] H04M *1/64, 1/00*

U.S. Cl. 379—67 **15 Claims**

1. A message telecommunication system for sending personalized voice messages from a central controller to a recipient at a voice entry terminal connected to a telecommunications network, comprising:

a mailing card having a field bearing an access code to be sent to the recipient;

the central controller including

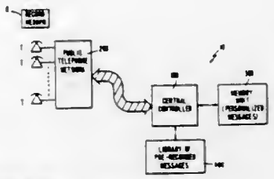
(a) a memory for storing a personalized voice message received from a subscriber over said telecommunications network, and

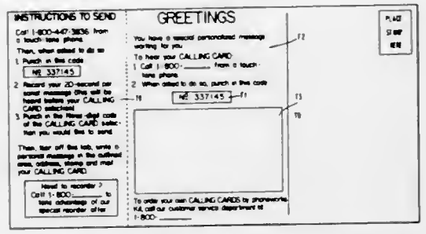
(b) a prerecorded message data base storing a library of subscriber-selectable prerecorded messages in a plurality of different voices other than the voice of the subscriber;

a record medium, provided with said card, containing a listing of said prerecorded messages together with associated library selection codes;

the central controller further including

(c) means for associating said access code with said personalized message received from said subscriber and a prerecorded message previously selected from said card listing by said subscriber and sent to the central controller over said telecommunications network, and





(d) means, coupled to said telecommunications network and responsive to said access code read from the mailing card and transmitted to the central controller over said telecommunications network by said recipient, for sending successively said personalized and subscriber-preselected messages over said telecommunications network to said recipient.

5,251,252

TELEPHONE INTERFACE CALL PROCESSING SYSTEM WITH CALL SELECTIVITY

Ronald A. Katz, Los Angeles, Calif., assignor to First Data Resources Inc., Omaha, Nebr.

Continuation of Ser. No. 425,779, Oct. 23, 1989, Pat. No. 5,128,984, which is a continuation-in-part of Ser. No. 312,792, Feb. 21, 1989, Pat. No. 5,073,929, which is a continuation-in-part of Ser. No. 194,258, May 16, 1988, Pat. No. 4,845,739, which is a continuation-in-part of Ser. No. 18,244, Feb. 24, 1987, Pat. No. 4,792,968, which is a continuation-in-part of Ser. No. 753,299, Jul. 10, 1985, abandoned. This application Oct. 21, 1991, Ser. No. 779,762

The portion of the term of this patent subsequent to Jul. 7, 2009, has been disclaimed.

Int. Cl.[5] H04M *11/00*

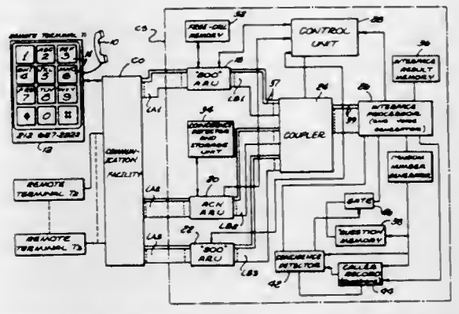
U.S. Cl. 379—92 **18 Claims**

3. A telephone call processing system for receiving calls from a multitude of terminals for processing in a lottery interface format wherein callers are cued by synthesized voice signals supplied to said terminals and respond with digital signals, as by actuating push buttons at said terminals, said system comprising:

means for selectively receiving calls from said multitude of terminals to establish telephone communication with a select subset of callers;

means for generating identification signals for specifically identifying each of said callers of said select subset;

means for individually cuing said callers of said select subset to prompt digital signals for processing to isolate a sub-subset of said callers; and



means for storing said identification signals for said callers of said sub-subset.

5,251,253

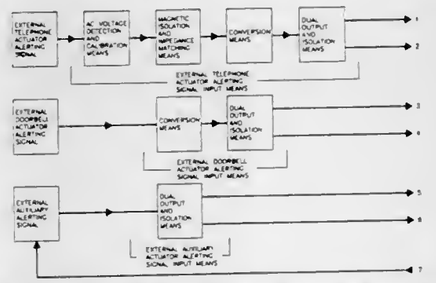
ALERT SYSTEM FOR HEARING IMPAIRED PERSONS

Mitchell C. Chutuk, 1200 Harbor Dr. N. U15C, Oceanside, Calif. 92054

Continuation of Ser. No. 558,514, Dec. 6, 1983, abandoned. This application Nov. 1, 1991, Ser. No. 786,707

Int. Cl.[5] H04M *11/00, 11/08*

U.S. Cl. 379—104 **10 Claims**



1. An alert system for hearing impaired persons that provides muting of external and remote competing sound sources such as TV's, stereos, radios and other sound sources generated by electric and electronic devices, the muting being accomplished by an integrated design for processing signal devices such as ringing telephones, doorbells and auxiliary signal inputs, and actuates visual and aural alerts such as lights and bells, the system comprising:

an external telephone actuator alerting signal input means comprising an alternating current (AC) voltage detection and calibration means connected to a magnetic isolation and impedance matching means connected to a first voltage conversion means connected to a first dual output and isolation means;

an external doorbell actuator alerting signal input means comprising a second voltage conversion means connected to a second dual output and isolation means;

an external auxiliary actuator alerting signal input means comprising a third dual output and isolation means;

a first variable time delay means connected to said first dual output and isolation means;

a second variable time delay means connected to said second dual output and isolation means;

a third variable time delay means connected to said third dual output and isolation means;

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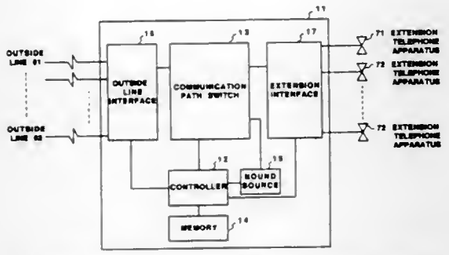
a first single output and isolation means connected to said first variable time delay means;
a second single output and isolation means connected to said second variable time delay means;
a third single output and isolation means connected to said third variable time delay means;
a first multiple input coupling and isolation means connected to said first, second, and third dual output and isolation means;
a second multiple input coupling and isolation means connected to said first, second, and third single output and isolation means;
a first paralleling and storage means connected to said first multiple input coupling and isolation means;
a second paralleling and storage means connected to said second multiple input coupling and isolation means;
a gated controller means connected to said first and second paralleling and storage means;
an output switching means connected to said gated controller means;
a closed loop power latching means connected to said gated controller means and said output switching means;
a gated controller termination means connected to said gated controller means and said output switching means; and
an external actuator identification means connected to said first, second, and third variable time delay means and to said first, second, and third single output and isolation means.

5,251,254

CONTROL OF INCOMING AND OUTGOING CALLS IN A KEY SYSTEM

Yoshihiro Tanigawa; Tsutomu Nishino, both of Yokohama, and Shoichi Takashima, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 29, 1992, Ser. No. 827,937
Claims priority, application Japan, Feb. 1, 1991, 3-012093; Mar. 6, 1991, 3-040117; Apr. 24, 1991, 3-094381
Int. Cl.[5] H04M *1/72*
U.S. Cl. 379—165 **21 Claims**



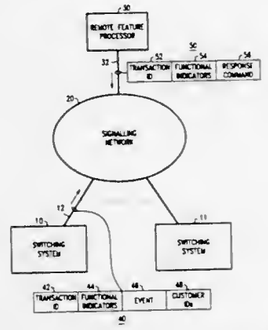
1. A communication apparatus accommodating a plurality of analog communication lines and a plurality of communications terminals, comprising:
detection means for detecting incoming calls to said analog communication lines;
selection means for selecting a first unoccupied analog line in the plurality of analog lines; and
calling means for sending a call onto the first analog communication line selected by said selection means based on a request from one of the communication terminals,
wherein said selection means selects a second unoccupied analog communication line and said calling means calls through the second unoccupied analog communication line, in the case where said detection means detects an incoming call to the first analog communication line which was selected by said selection means.

5,251,255

PROCESSING INTERACTIONS AMONG TELECOMMUNICATIONS CALL FEATURES

Robert V. Epley, Aurora, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 17, 1991, Ser. No. 686,647
Int. Cl.[5] H04M *3/00, 3/42, 7/00*
U.S. Cl. 379—242 **13 Claims**



1. A method of processing a call, comprising the steps of:
responsive to receipt of data for said call in a switching system, transmitting a request message to a remote feature processor system, the remote feature processor for serving a plurality of switching systems, said request message comprising an event indication for a state of said call and indications of active ones of a plurality of functional indicators for said call;
responsive to receipt of said request message in said remote feature processor, processing said request message, using said event indication and using said indications of active ones of said plurality of functional indicators, to formulate and transmit a response message comprising an indication of a response command from said remote feature processor to said switching system; and
responsive to receipt of said response message, executing said response command in said switching system;
wherein said request message further comprises customer indentification data for said call; wherein said remote feature processor comprises data for customers identified by said customer identification data; and wherein said remote feature processor further modifies the processing of said request message by using said data stored for customers identified by said customer identification data;
wherein one of said functional indicators is a do not disturb indicator.

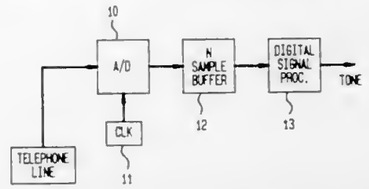
5,251,256

INDEPENDENT HYSTERESIS APPARATUS FOR TONE DETECTION

Andrew S. Crowe, and Tain-Shiuann Lin, both of San Jose, Calif., assignors to Rolm Company, Santa Clara, Calif.

Filed Jul. 15, 1991, Ser. No. 730,324
Int. Cl.[5] H04M *1/00*
U.S. Cl. 379—386 **20 Claims**

1. Apparatus for enabling the accurate detection of a given tone of at least one specified frequency present on a noisy analog communications path, comprising:
tone detector means coupled to said path and operative to provide an output signal during the presence of said given tone on said path wherein during the presence of noise said output signal is provided undesirably;
counting means having an input responsive to said output signal of said tone detector means and operative between a first and a second counting threshold to provide a first output when one of said thresholds is exceeded and a second output when said other threshold is reached; and
means responsive to said tone detector output signal and said first and second output of said counting means for incrementing and decrementing said counting means, whereby if a true tone is present on said path, said counting means will provide a given output.

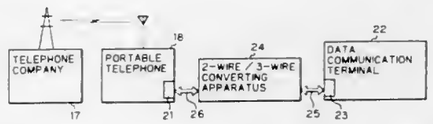


5,251,257

2-WIRE/3-WIRE CONVERTING APPARATUS

Seiti Senoo, Shiki, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 9, 1991, Ser. No. 756,184
Claims priority, application Japan, Sep. 12, 1990, 2-243095; Sep. 12, 1990, 2-243096
Int. Cl.[5] H04M *1/00, 3/00*
U.S. Cl. 379—399 **8 Claims**



2. A communication system including a telephone having a 3-wire interface for connection with a 3-wire circuit, a data communication terminal having a 2-wire interface for connection with a 2-wire circuit, and a 2-wire/3-wire connecting circuit allowing connection between said telephone and said data communication terminal,
wherein said 2-wire/3-wire connecting circuit comprises:
two transmission/reception terminals to be connected to said 2-wire circuit:
a transmission terminal, a reception terminal and a common terminal to be connected to said 3-wire circuit;
means connected between said reception terminal and one of said two transmission/reception terminals for setting between said one of said two transmission/reception terminals and said common terminal a first voltage represented by an addition of a voltage signal supplied from the 2-wire circuit and a second voltage proportionai to a voltage reception signal conveyed on said 3-wire circuit;
means for subtracting said second voltage from said first voltage; and
means for applying said subtracted voltage between said transmission terminal and said common terminal.

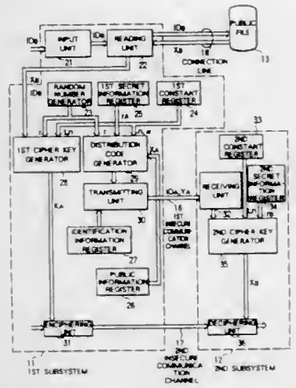
5,251,258

KEY DISTRIBUTION SYSTEM FOR DISTRIBUTING A CIPHER KEY BETWEEN TWO SUBSYSTEMS BY ONE-WAY COMMUNICATION

Kazue Tanaka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 28, 1992, Ser. No. 843,275
Claims priority, application Japan, Mar. 5, 1991, 3-119544
Int. Cl.[5] H04L *9/02*
U.S. Cl. 380—21 **4 Claims**

1. A method of distributing a cipher key between a first subsystem for a first converser and a second subsystem for a second converser via a communication channel by using a public file which stores public information corresponding to identification information assigned to conversers, said first and said second conversers being assigned with first and second identification information, respectively, said first and said second identification information corresponding to first and second public information, respectively, said first and said second subsystems having first and second secret information, respectively, said method comprising the following steps:
(a) accessing, in said first subsystems, said public file by said second identification information to read said second public information;
(b) generating, in said first subsystem, a random number;
(c) generating, in said first subsystem, a first cipher key by applying a first predetermined transformation on said second public information and said second identification information on the basis of first and second constants and said random number;
(d) generating, in said first subsystem, a key distribution code by applying a second predetermined transformation on said first public information and a third constant on the basis of said first constant, said first secret information, and said random number;
(e) transmitting, as distribution information, said key distribution code and said first identification information from said first subsystem to said second subsystem via said communication channel;



(f) receiving, in aid second subsystem, said distribution information from said first subsystem; and
(g) generating, in said second subsystem, a second cipher key by applying a third predetermined transformation on said key distribution code and said first identification information on the said of said first and said second constants and said second secret information, said cipher key being equal to said first cipher key;
wherein r is said random number, n, t, and α are said first, said second, and said third constants, ID_A and ID_B are said first an said second identification information, X_A and X_B are said first and said second public information, r_A and r_B are said first and said second secret information, K_A and K_B are said first and said second cipher keys, Y_A is said key distribution code, said first predetermined transformation being represented by

$$K_A=(X_B{}^t\times ID_B)^r \ (mod\ n);$$

said second predetermined transformation being represented by

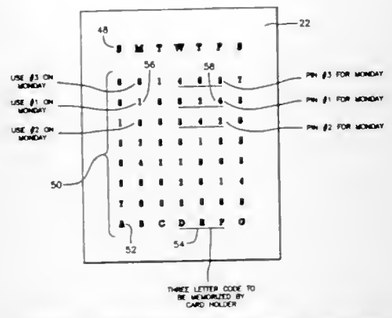
$$Y_A=X_Z\times\alpha^{t-r}A \ (mod\ n);$$

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and said third predetermined transformation being represented by

$$K_B=(Y_A{}^t\times ID_A)^{YB}\ (mod\ n).$$

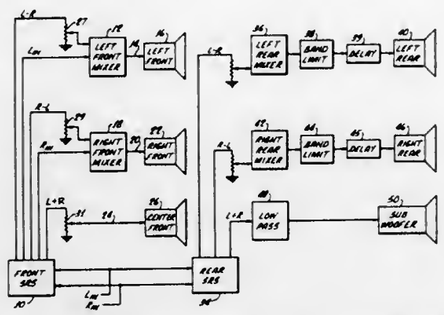
5,251,259
PERSONAL IDENTIFICATION SYSTEM
Ernest D. Mosley, 572 Dunleith, Greenville, Miss. 38701
Filed Aug. 20, 1992, Ser. No. 932,689
Int. Cl.[5] H04K *1/00*
U.S. Cl. 380—23 **7 Claims**



1. A credit card fraud prevention system comprising:
communication means for conveying a personal identification number and credit card information,
personal identification number card means for providing said personal identification number to be conveyed by said communication means dependent upon a day and frequency of use of said credit card, said personal identification number being varied by said personal identification number means according to a day and frequency of use of said credit card, and
comparator means for comparing said personal identification number conveyed by said communication means against a predetermined personal identification number, said predetermined personal identification number being selected dependent upon the day and frequency of use of said credit card.

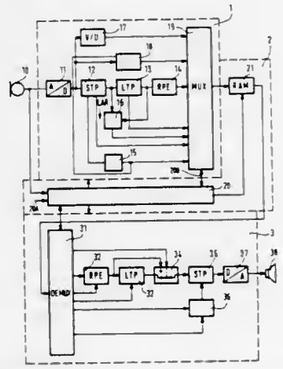
5,251,260
AUDIO SURROUND SYSTEM WITH STEREO ENHANCEMENT AND DIRECTIVITY SERVOS
Stephen F. Gates, Mission Viejo, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Aug. 7, 1991, Ser. No. 741,692
Int. Cl.[5] H04R *5/00*
U.S. Cl. 381—18 **12 Claims**

1. A surround audio system for providing a set of front signals for a set of front speakers and a set of rear signals for a set of rear speakers, said set of front speakers including left, right and center speakers, and said set of rear speakers comprising left, right and sub-woofer speakers, said audio system comprising:
a front audio processing system and a rear audio processing system, wherein each said audio processing system includes left and right directivity servos and a center directivity control, and wherein the center directivity control of said front audio processing system has a response time slower than the response time of the center directivity control of said rear audio processing system each said processing system comprising:
a) means for providing sum and difference signals based on left and right stereo input signals,
b) means for boosting amplitudes of components of said difference signal in a band of relatively higher frequencies and in a band of relatively lower frequencies, relative to amplitudes of said sum signal in corresponding bends of higher and lower frequencies respectively, and
c) means responsive to said boosted components of said difference signal and to said sum signal for providing left, right and center output signals,
means adapted to feed said left and right output signals of



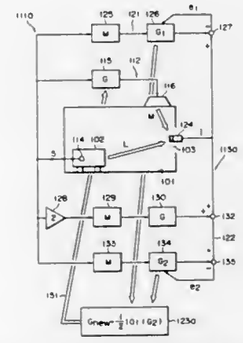
said front processing system to left and right front speakers of said front speaker set and to feed said center output signal to said center speaker, and
means adapted to feed said left and right output signals of asid rear processing system to left and right speakers of said set of rear speakers and to feed said center output signal to said sub-woofer speaker.

5,251,261
DEVICE FOR THE DIGITAL RECORDING AND REPRODUCTION OF SPEECH SIGNALS
Peter Meyer, Fürth, and Rudolf Hofmann, Forchheim, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 3, 1990, Ser. No. 623,870
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1990, 9006717[U]
Int. Cl.[5] G10L *5/00*
U.S. Cl. 381—36 **31 Claims**



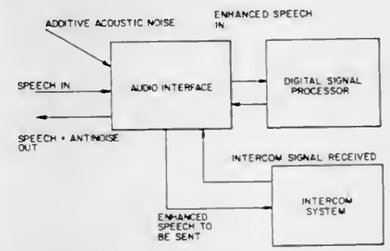
9. A device for the recording and reproduction of a speech signal comprising:
short term prediction means for analyzing the speech signal in a first time frame so as to form a first code word that codes a spectral envelope of the speech signal in said first time frame,
long term prediction means for forming a second code word which codes a periodicity of the speech signal in said first time frame and for forming a residual signal representing a residue of the speech signal,
regular pulse excitation coding means for forming a third code word which codes the residual signal in said first time frame,
overall code word forming means coupled to the short term prediction means, the long term prediction means and the regular pulse excitation coding means thereby to form an overall code word for the first time frame, which overall code word comprises the first, second and third code words,
detection means fed by at least one of said short term prediction means, said long term prediction means and said regular pulse excitation coding means, the detection means detecting whether the speech signal in the first time frame meets a suppression condition and thereupon generating a suppression code,
means included in said code word forming means and fed by said detection means for, under control of said suppression code, suppressing any code word signal meeting the suppression condition from the overall code word, any overall code word containing at least a distinctive part of said suppression code,
storage means coupled to said overall code word forming means for storing the overall code word, and
speech synthesizing means for reading the overall code word from said storage means and for, in a second time frame, regenerating the speech signal from the overall code word.

5,251,262
ADAPTIVE ACTIVE NOISE CANCELLATION APPARATUS
Seiichirou Suzuki, Yokohama; Susumu Saruta, Ebina, and Hiroshi Tamura, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jun. 28, 1991, Ser. No. 723,420
Claims priority, application Japan, Jun. 29, 1990, 2-170274; Jun. 29, 1990, 2-173070; Nov. 28, 1990, 2-322572
Int. Cl.[5] G10K *11/16*
U.S. Cl. 381—71 **13 Claims**



1. An adaptive active noise cancellation apparatus comprising:
first sensor means for detecting a sound generated by a sound source and outputting a detection signal;
filter means, having a predetermined filter coefficient, for filtering the output signal from said first sensor means by using the predetermined filter coefficient, and outputting a filtered signal;
sound generating means for receiving the filtered signal and generating a sound corresponding to the filtered signal;
an active noise cancellation control system for actively canceling a source sound at a control target point by using the sound generated by said sound generating means;
second sensor means, arranged at the control target point, for detecting a sound at the control target point and outputting a detection signal; and
an adaptive control system for receiving the output signals from said first and second sensor means and adaptively updating the filter coefficient in accordance with a state of a system for which noise cancellation is to be performed by said active noise cancellation control system,
wherein said adaptive control system comprises means for stopping said active noise cancellation control system in an adaptive operation, and a correction system for correcting the output signal from said first sensor means or said second sensor means by using a transfer function corresponding to a delay in a spatial system between said sound generating means and said second sensor means and a delay required for calculation processing,
wherein said correction system comprises an inverse filter having an inverse function of the transfer function and arranged in an output signal path of said second sensor means.

5,251,263
ADAPTIVE NOISE CANCELLATION AND SPEECH ENHANCEMENT SYSTEM AND APPARATUS THEREFOR
Douglas Andrea, Old Brookville, and John Kowalski, Greenlawn, both of N.Y., assignors to Andrea Electronics Corporation, Long Island City, N.Y.
Filed May 22, 1992, Ser. No. 887,500
Int. Cl.[5] G10K *11/16*
U.S. Cl. 381—71 **19 Claims**



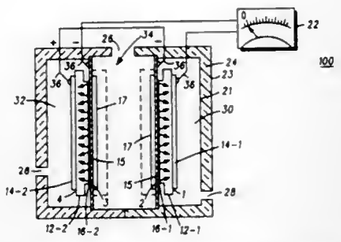
1. Headset apparatus to be worn by an operator for use in a adaptive signal processing system having first processing means for adaptively processing reference signals supplied thereto so as to form a first processed signal, means for combining the first processed signals and an exterior signal supplied from a microphone used by another operator so as to form an input signal, determining means for determining if a received signal represents speech originating from the operator wearing said headset apparatus and including switch means for supplying the speech signal therefrom if the determination indicates that said received signal represents said speech, and second processing means receiving said speech signal from said switch means for adaptively processing the same so as to remove residual broadband components in said speech signal for supply to another of said operators, said apparatus comprising at least one housing each having first microphone means receiving a reference acoustic signal for producing a reference signal for supply to said first processing means, speaker means receiving said input signal for producing audible information to the operator wearing said headset apparatus, and second microphone means receiving an acoustic sound from within the housing for producing a signal for supply to said determining means.

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5,251,264
MECHANICAL-VIBRATION-CANCELLING PIEZO CERAMIC MICROPHONE

Thomas H. Tichy, Albuquerque, N. Mex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 25, 1992, Ser. No. 857,210
Int. Cl.[5] H04R *25/00, 3/00*
U.S. Cl. 381—173 **8 Claims**



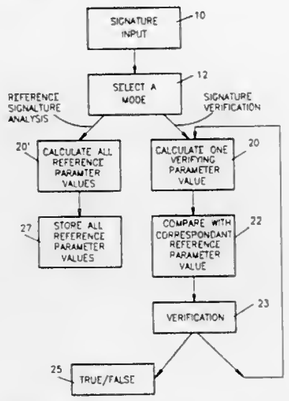
1. A mechanical-vibration-cancelling microphone comprised of:
a housing having interior and exterior surfaces, substantially enclosing a first volume (a first enclosed volume) within said interior surfaces and having at least one opening through said interior and exterior surfaces through which acoustic waves can pass into said enclosed volume;
a first PZT pressure sensor having first and second substantially planar sides, said first PZT sensor being capable of generating a voltage between said first and second sides upon its lateral deformation and fixed within said housing at a first predetermined location;
a second PZT pressure sensor having first and second substantially planar sides, said second PZT sensor being capable of generating a voltage between said first and second sides upon its lateral deformation and being fixed within said housing at a second predetermined location;
said first and second PZT pressure sensors being fixed within said housing such that said first PZT pressure sensor encloses a first unsealed volume between its first side and said housing interior surface and said second PZT pressure sensor encloses a second unsealed volume between its second side and said housing interior surface and where said first and second PZT pressure sensors enclose a third, unsealed volume substantially between said second side of said first PZT pressure sensor and said first side of said second PZT pressure sensor, said third unsealed volume being acoustically coupled to acoustic waves external to said housing by said opening.

5,251,265
AUTOMATIC SIGNATURE VERIFICATION

Lothar Döhle, Herrenberg; Volker Rudolph, Aidlingen, and Werner Ruppert, Schoenaich, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 25, 1991, Ser. No. 783,450
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1990, 90120620
Int. Cl.[5] G06K *9/00, 9/46*
U.S. Cl. 382—3 **27 Claims**

1. A method for automatically verifying a person's signature on a check or other document, said method comprising the steps of:
storing in a memory one or more references defining one or more respective characteristics of a value signature of said person;
digitizing an image of the signature to be verified, the digitized image representing grey scale levels of a multiplicity of image elements;
using a computer system, determining a center of gravity line in a direction for the digitized image by determining a plurality of centers of gravity of the pixels perpendicular to said direction at respective spaced locations in said direction using the grey scale levels as weighting factors for the respective pixels, and then determining said center of gravity line based on said plurality of centers of gravity;
using a computer system, comparing said center of gravity line to said one or more stored references for the valid signature; and

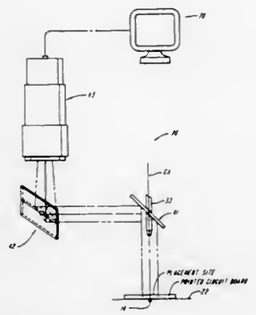


using a computer system, determining validity of the signature to be verified based on the comparing step; and
if said signature is determined to be invalid, rejecting said check or other document, and
if said signature is determined to be valid, accepting said check or other document.

5,251,266
SYSTEM FOR PLACEMENT AND MOUNTING OF FINE PITCH INTEGRATED CIRCUIT DEVICES USING A SPLIT MIRROR ASSEMBLY

Donald J. Spigarelli, Carlisle, Mass., and John M. DeCarlo, York, Me., assignors to Sierra Research and Technology, Inc., Westford, Mass.

Continuation of Ser. No. 573,459, Aug. 27, 1990. This application Apr. 21, 1992, Ser. No. 873,581
Int. Cl.[5] G06K *9/00;* **B23P** *19/00;* **G02B** *27/32;* **B25J** *19/00*
U.S. Cl. 382—8 **12 Claims**

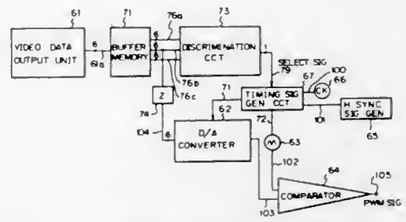


1. A guidance type placement apparatus for placing and mounting an integrated circuit device in a predetermined position on a designated placement site of a printed circuit board, comprising:
mechanical positioning means operative for sequentially positioning the printed circuit board and the integrated circuit device for generation of images thereof, for aligning the integrated circuit device with the designated placement site of the printed circuit board, and for placing the integrated circuit device at the designated placement site of the printed circuit board;
image acquisition means for generating an image corresponding to at least one pair of opposed corners of the designated placement site superimposed and overlapped by at least one pair of opposed corners of the integrated circuit device to define a location and orientation of the integrated circuit device relative to the designated placement site; and
a control system, coupled to said image acquisition means, for providing, in response to said image, a feedback control signal to said mechanical positioning means such that said mechanical positioning means may iteratively regulate placement of the integrated circuit device at the designated placement site.

5,251,267
IMAGE RECORDING APPARATUS FOR PROCESSING IMAGE DATA BASED ON CHARACTERISTICS OF IMAGE DATA

Naoto Kawamura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 642,434, Jan. 17, 1991, abandoned, which is a division of Ser. No. 378,488, Jul. 12, 1989, Pat. No. 5,029,227, which is a continuation of Ser. No. 188,712, Apr. 29, 1988, abandoned, which is a continuation of Ser. No. 901,825, Aug. 29, 1986, abandoned. This application Jan. 19, 1993, Ser. No. 6,123
Claims priority, application Japan, Aug. 30, 1985, 60-189941; Aug. 30, 1985, 60-189942; Aug. 30, 1985, 60-189943
The portion of the term of this patent subsequent to Sep. 26, 2006, has been disclaimed.
Int. Cl.[5] G06K *9/34;* **H04N** *1/17*
U.S. Cl. 382—9 **11 Claims**

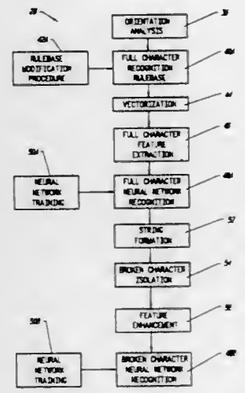


1. An image processing apparatus comprising:
an image signal generating means for generating an image signal;
discriminating means for discriminating characteristics of the image signal generated by said image signal generating means; and
pulse-width-modulated signal generating means for processing the image signal generated by said image signal generating means and outputting a pulse-width-modulated signal,
wherein said pulse-width-modulated signal generating means generates a first pulse-width-modulated signal corresponding to a first resolution and a second pulse-width-modulated signal corresponding to a second resolution different from the first resolution and the first or second resolution is selected in accordance with a discrimination result obtained by said discriminating means.

5,251,268
INTEGRATED METHOD AND APPARATUS FOR CHARACTER AND SYMBOL RECOGNITION

Robert W. Colley, Menlo Park, Calif.; Parvathy Bhaskaran, Mesa, Ariz.; Alan Filipski; Robert Flandrena, both of Tempe, Ariz.; Tad Krolik, Phoenix, Ariz.; Mark Janney, Tempe, Ariz., and Steven Ruggiero, Chandler, Ariz., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Aug. 9, 1991, Ser. No. 743,504
Int. Cl.[5] C06K *9/62*
U.S. Cl. 382—14 **37 Claims**



1. A method of recognizing written items including characters and symbols, comprising the steps of:
feeding said items to rulebases for recognition;
processing selected features of items which are not recognized during said feeding step; and
conveying said selected features corresponding to said items which are not recognized during said feeding step to neural networks for recognition.

5,251,269
MULTI-LAYER NEURAL NETWORK MODELLED AFTER THE STRIATE CORTEX FOR RECOGNIZING VISUAL PATTERNS

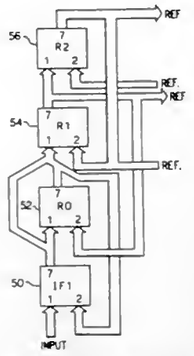
Edgar Körner, Ilmenau, German Democratic Rep.; Hiroshi Shimizu, Tokyo, Japan; Ichiro Tsuda, Tokyo, Japan, and Hiroaki Tanaka, Tokyo, Japan, assignors to Research Development Corporation of Japan, Tokyo, Japan

Continuation of Ser. No. 219,576, Jul. 15, 1988, abandoned. This application Oct. 10, 1991, Ser. No. 774,376
Claims priority, application Japan, Jul. 15, 1987, 62-176959
Int. Cl.[5] G06K *9/62;* **G01L** *1/06;* **G06F** *15/00*
U.S. Cl. 382—15 **9 Claims**

1. A pattern recognition system comprising at least first, second, third, and fourth basic associative units, each unit having at least first and second unit ports for receiving pattern signal groups and a third unit port for outputting a pattern signal group, each of the basic units operating to derive weighting values for respective signals of the pattern signal groups inputted to the first and second unit ports of the basic unit itself in accordance with the degree of consistency between a previously given weighting pattern and respective patterns specified by the pattern signal groups inputted to the first and second unit ports of the basic unit itself, each of the basic units also operating to modulate the respective signals of the pattern signal groups inputted to the first and second unit ports of the basic unit in accordance with the derived weighting values and to totalize the modulated signals so as to form an output signal outputted from the third unit port of the basic unit itself, said first basic associative unit having its first unit port coupled to receive an input pattern signal group for

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an object to be recognized, the first to fourth basic associative units being coupled in cascade in the named order in such a manner that the third unit port of an upstream one of each pair of adjacent basic associative units is coupled to the first unit port of a downstream basic associative unit and the third unit port of the downstream basic associative units is coupled to the second unit port of the upstream basic associative unit, said fourth basic associative unit having its second unit port coupled to receive a reference pattern signal group, at least one of the first to fourth basic associative units having its third unit



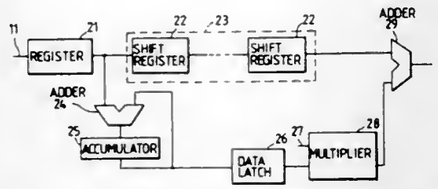
port coupled to one of the first and second unit ports of a non-adjacent downstream one of the basic associative units and further including means for detecting the fact that one of the association units has stabilized the output pattern on its third unit port into a predetermined condition and for inhibiting, for a predetermined time of period, the output of at least one signal processing cell which is included in a group including the association unit having settled its output pattern and association units upstream adjacent to the association unit having settled its output pattern and which cell has an output having reached a predetermined value.

5,251,270

MATRIX CALCULATING CIRCUIT

Shinjiro Toyoda, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 751,536, Aug. 29, 1991, abandoned. This application Feb. 12, 1993, Ser. No. 17,440
Claims priority, application Japan, Aug. 30, 1990, 2-226512
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—27 **6 Claims**



1. A matrix calculating circuit for calculating a matrix having diagonally dispersed elements on each diagonal line equal to one another and having the remaining elements other than the diagonally dispersed elements equal to one another, said matrix calculating circuit comprising:

register means for successively latching a predetermined number of items of data that are time-sequentially inputted thereto;

delay means for delaying the data supplied from said register means by a number of clock periods equal to said predetermined number;

total-sum calculating means for calculating a total-sum of items of data supplied from said register means upon each of said predetermined number of clocks;

data latch means for latching the total sum of all of said predetermined number of items of data of said total-sum calculating means; and

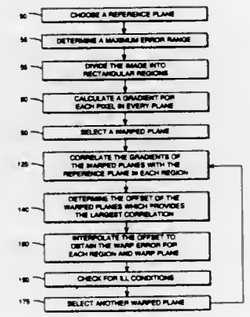
adder means for successively adding the data sequentially supplied from said delay means to output data of said data latch means.

5,251,271

METHOD FOR AUTOMATIC REGISTRATION OF DIGITIZED MULTI-PLANE IMAGES

Russell T. Fling, Naperville, Ill., assignor to R. R. Donnelley & Sons Co., Lisle, Ill.

Filed Oct. 21, 1991, Ser. No. 780,009
Int. Cl.[5] G06K *9/32*
U.S. Cl. 382—44 **20 Claims**



1. A method of measuring warp calculations for a plurality of regions of a digitized warped plane of an image relative to corresponding regions of a digitized reference plane of the same image, each of the planes comprising pixels representing luminosity values having scalar x and y coordinates representing positions in the horizontal and vertical directions, respectively, said method comprising the steps of:

(1) dividing said digitized reference plane into a plurality of reference regions;

(2) dividing said digitized warped plane into a plurality of corresponding regions;

(3) determining a central pixel of each said reference region of said digitized reference plane;

(4) determining a central pixel of each said corresponding region of said digitized warped plane;

(5) calculating a plurality of correlation values between each reference region centered on the central pixel thereof and a plurality of regions on the warped plane offset from said corresponding region of the warped plane centered on said central pixel thereof in a plurality of x and y directions, each of said correlation values being calculated as a function of gradient values for said warped plane region and said reference plane region, wherein each of said gradient values corresponds to the gradient of the plane at each of said pixel locations;

(6) comparing said plurality of correlation values to identify the offset region having a maximum correlation value with said reference region; and

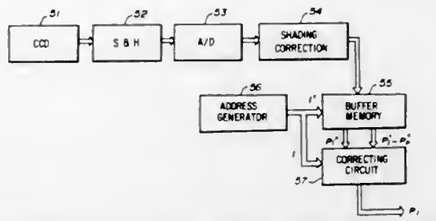
(7) calculating warp error values in the x and y directions for said warped region as a function of a scalar offset value corresponding to the offset of the central pixel of said maximum correlation offset region.

5,251,272

IMAGE SIGNAL PROCESSING METHOD AND APPARATUS WITH CORRECTION FOR A SECONDARY LIGHT SOURCE EFFECT

Makoto Hino, Tokyo, and Osamu Takase, Yokohama, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 1, 1991, Ser. No. 724,165
Claims priority, application Japan, Jul. 2, 1990, 2-174867; Jul. 2, 1990, 2-174868; Apr. 16, 1991, 3-084027
Int. Cl.[5] G06K *9/40;* **H04N** *1/40*
U.S. Cl. 382—54 **9 Claims**



1. A method for processing an image signal generated in an image reading apparatus comprising light source means for illuminating a document, an optical system, and optical detecting means for detecting a light which is reflected at a reading point on the document and passes through said optical system and for outputting an image signal corresponding to an amount of light detected thereby, said method comprising the following steps (a) and (b) of:

(a) obtaining a secondary light source effect function which describes a degree that a light reflected at each point other than the reading point on the document affects the image signal corresponding to the reading point, said secondary light source effect function being inherent in said image reading apparatus, wherein said step of obtaining the secondary light source function comprises the steps of:

(a-1) moving black plates up to a reading point on a white document having a predetermined white density;

(a-2) obtaining an image signal output from said optical detecting means in said image reading apparatus while said step (a-1) is being carried out; and

(a-3) generating the secondary light source effect function based on a variation of the image signal obtained by said step (a-2); and

(b) correcting the image signal output from said optical detecting means based on said secondary light source effect function obtained by said step (a) and an image signal corresponding to each point so that a component corresponding to the light which is reflected at each point other than the reading point and affects the image signal corresponding to the reading point is eliminated from the image signal,

whereby a corrected image signal is obtained by said step (b).

5,251,273

DATA PROCESSING SYSTEM AND METHOD FOR SEQUENTIALLY REPAIRING CHARACTER RECOGNITION ERRORS FOR SCANNED IMAGES OF DOCUMENT FORMS

Timothy S. Betts, Germantown; Valerie M. Carras, Kensington; Lewis B. Knecht, Olney, all of Md.; Gerald B. Anderson, Scarborough, Canada, and Thomas L. Paulson, Potomac, Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 15, 1992, Ser. No. 870,129
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—57 **10 Claims**

1. In a data processing system, a method for repairing character recognition errors for digital images of document forms, comprising:

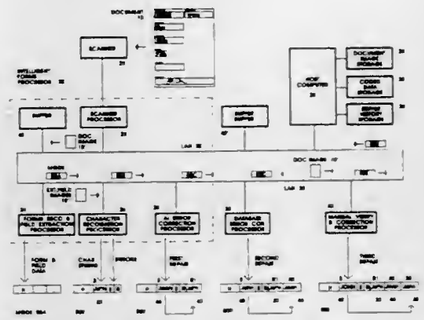
inputting a digital document image of a document form and extracting a field image from said document image, forming a corresponding extracted field image;

generating recognition coded data from said extracted field image and generating recognition error data using a character recognition process;

assembling a machine generated data structure (MGDS) which includes a field data segment including a coded data buffer portion and an error buffer portion for said extracted field image;

inserting said recognition coded data into said coded data buffer portion and inserting said recognition error data into said error buffer portion of said field data segment;

transferring said MGDS to a coded data repair process, for repairing said recognition coded data;



augmenting said MGDS with a repair segment which includes a repair data buffer portion;

accessing said recognition coded data from said coded data buffer portion and accessing said recognition error data from said error buffer portion of said field data segment and generating repaired coded data using said repair process;

inserting said repaired coded data into said coded data buffer portion of said field data segment and inserting said recognition coded data into said repair data buffer portion of said repair segment; and

transferring said MGDS to a utilization device and accessing the contents of said coded data buffer portion of said field data segment for use as a corrected form of said recognition coded data.

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OPTICAL FIBRE CABLE FOR DETECTING A CHANGE IN TEMPERATURE

Bengt J. A. Carlström, Göteborg, and Gunnar S. Forsberg, Stockholm, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

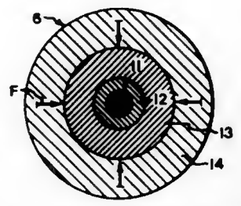
PCT No. PCT/SE90/00632, § 371 Date May 5, 1992, § 102(e) Date May 5, 1992, PCT Pub. No. WO91/05230, PCT Pub. Date Apr. 18, 1991
PCT Filed Oct. 2, 1990, Ser. No. 844,592
Claims priority, application Sweden, Oct. 2, 1989, 8903229
Int. Cl.[5] G02B *6/02*
U.S. Cl. 385—13 **9 Claims**

1. An optical fibre cable for detecting a change in temperature, said optical fibre cable comprising an optical fibre that includes a core and a cladding having different refractive indexes, and a temperature-responsive device comprised of a casing of polymer material which surrounds the optical fibre along at least a part of its length, said polymer material having a coefficient of heat expansion within a limited temperature detection range which is large in comparison with the coeffici-

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ent of heat expansion of the polymer material in temperature detection ranges that are adjacent said limited temperature detection range such that a light pulse which is sent into the fibre from one end thereof will be attenuated substantially uniformly along parts of the fibre where the temperature-responsive device is subjected to a temperature within said adjacent temperature detection ranges and said light pulse is further attenuated along parts of the fibre where the temperature-responsive device is subjected to a temperature



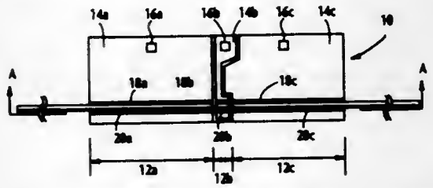
within said limited temperature detection range, the attenuation of the light pulse in parts of the fibre where the temperature-responsive device is subjected to a temperature within the limited temperature detection range being in a range of between 0.01 to 0.1 decibels per meter of fibre cable, depending on the composition of said polymer material.

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TUNABLE FIBER FABRY-PEROT ETALON OPTICAL FILTER

Toshihide Kuriyama, and Masahiko Fujiwara, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed May 8, 1992, Ser. No. 880,227
Claims priority, application Japan, May 8, 1991, 3-102281
Int. Cl.[5] G02B *6/12, 6/26*
U.S. Cl. 385—14 **8 Claims**



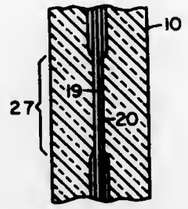
1. A tunable Fabry-Perot etalon optical filter, comprising:
a substrate which is divided into first, second and third substrate portions, said second substrate portion being arranged in a manner to be adjacent to said first and third substrate portions and displaceable with respect to said first and third substrate portions in response to a voltage difference between said second substrate portion and one of said first and third substrate portions; and
first, second and third optical fibers portions which are respectively positioned on said first, second and third substrate portions, each of first and third optical fiber portions being provided with a mirror at the endface thereof for acting as an optical filter.

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ENVIRONMENTALLY ROBUST FIBER OPTIC COUPLER AND METHOD

George E. Berkey, Pine City, and William J. Miller, Corning, both of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Jul. 16, 1992, Ser. No. 913,622
Int. Cl.[5] G02B *6/255*
U.S. Cl. 385—43 **17 Claims**



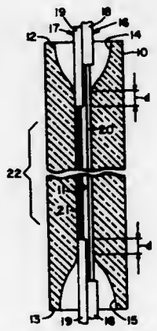
1. A fiber optic coupler comprising
a plurality of contiguously extending optical fibers, said fibers extending through a coupling region and through the bore of a tube situated longitudinally adjacent said coupling region, said fibers being fused together in said coupling region, the diameters of said fibers in said coupling region being smaller than the diameters thereof in said tube,
a drop of glue completely surrounding said fibers at that end of said tube bore opposite said coupling region,
a bead of glue between at least one of said fibers and the adjacent wall of said tube bore, said bead extending from said drop of glue into said bore a distance of at least 30% of the total distance from said drop of glue to that end of said bore adjacent said coupling region.

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OPTICAL FIBER COUPLER EXHIBITING REDUCED POLARIZATION SENSITIVITY AND METHOD OF MAKING SAME

Donald R. Young, Jr., Corning, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Sep. 11, 1992, Ser. No. 944,044
Int. Cl.[5] G02B *6/26, 23/20*
U.S. Cl. 385—43 **14 Claims**



1. A fiber optic coupler comprising
an elongated body of matrix glass of refractive index n_3, said body having first and second opposed ends and a midregion,
a plurality of optical fibers extending longitudinally through said body, each of said fibers comprising a core of refractive index n, surrounded by a cladding of refractive index n_2, where $n_1 > n_2 > n_3$,
said fibers being fused to the midregion of said body, the diameter of the central portion of said midregion and the diameters of said optical fibers in said central portion of said midregion being smaller than the diameters thereof at the ends of said body,
said body having an inner region adjacent said optical fibers, an outer region having a radius greater than that of said inner region, and a transition region between said inner and outer regions, the softening point temperature of said inner region being sufficiently high that stress in said midregion adjacent said fibers is sufficiently low that said coupler exhibits a relatively low value of polarization dependent excess loss, the softening point temperature of said outer region being sufficiently low that said coupler exhibits a relatively low excess loss.

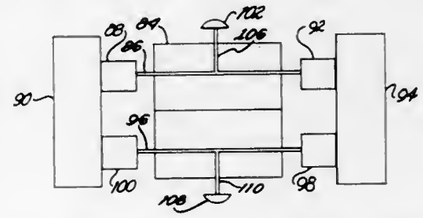
11. A method of making a fiber coupler comprising
providing a glass tube having first and second opposite end portions and a midregion, a longitudinal bore within said tube, said tube having an inner region adjacent said bore and an outer region of radius greater than that of said inner region, and a transition region between said inner and outer regions, the softening point temperature of said inner region being greater than that of said outer region,
disposing within said longitudinal bore at least a portion of each of a plurality of glass optical fibers, each of said fibers having a core surrounded by a cladding of refractive index less than that of said core, the refractive index of the claddings of said plurality of optical fibers being greater than the refractive index of said tube, at least that part of each fiber that is located in the tube midregion having no coating thereon, said fibers having a coextensive relationship in said tube midregion, at least a portion of at least one of the fibers in said midregion extending beyond the first end of said tube, at least a portion of at least another of the fibers in said midregion extending beyond the second end of said tube,
collapsing said tube midregion onto said fibers, and
drawing the central portion of said midregion to reduce the diameter thereof and form a coupling region in which light propagating in one of said fibers couples to another of said fibers, the softening point temperature of said inner region being sufficiently high that stress in said midregion adjacent said fibers is sufficiently low that said coupler exhibits a relatively low value of polarization dependent excess loss, the softening point temperature of said outer region being sufficiently low that said coupler exhibits a relatively low excess loss.

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FIBER OPTIC MONITORING DEVICE

James K. Samborsky, 605 Groves Blvd., N. Augusta, S.C. 29841

Filed May 22, 1992, Ser. No. 887,028
Int. Cl.[5] G02B *6/26*
U.S. Cl. 385—48 **8 Claims**



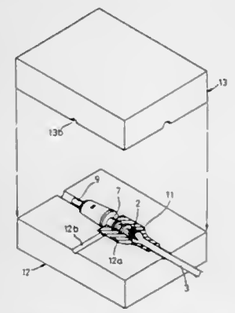
6. An apparatus for monitoring at least one transmitted signal in a light carrying means, said apparatus comprising:
an optical fiber having a connecting end and a non-connecting end, said connecting end tapped into said light carrying means so that, when said light carrying means carries said transmitted signal, said optical fiber obtains and carries a portion of said transmitted signal without disrupting said transmitted signal;
a divergent lens for viewing said portion of said transmitted signal, said divergent lens generally occupying said non-connecting end of said optical fiber, said divergent lens receiving said portion from said tapping means and dispersing said portion of said transmitted signal over a solid angle, said solid angle dimensioned so that said dispersed light can be seen without the need to be aligned with the axis of said optical fiber to receive said portion from said tapping means.

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OPTICAL CONNECTOR WITH MOLDED-ON RESIN BOOT COVERING DISTAL ENDS OF TENSION MEMBER AND SHEATH OF OPTICAL FIBER

Nobuyuki Shibata; Kenji Suzuki, and Ren-ichi Yuguchi, all of Tokyo, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

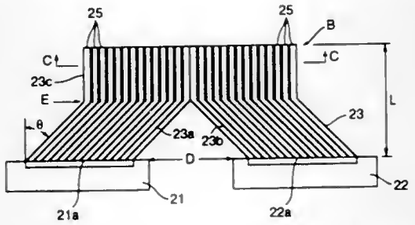
PCT No. PCT/JP91/00814, § 371 Date Feb. 13, 1992, § 102(e) Date Feb. 13, 1992, PCT Pub. No. WO91/20008, PCT Pub. Date Dec. 26, 1991
PCT Filed Jun. 18, 1991, Ser. No. 834,336
Claims priority, application Japan, Jun. 19, 1990, 2-64687[U]
Int. Cl.[5] G02B *6/36*
U.S. Cl. 385—86 **7 Claims**



1. An optical connector for use with an optical fiber cord having a jacketed optical fiber covered by a sheath with a tension member between the sheath and the jacketed optical fiber, comprising:
a ferrule provided on a distal end of said optical fiber cord;
an elongated stop ring also provided on said distal end of said optical fiber cord, and whose distal end position on said optical fiber cord is regulated by said ferrule; and
a molded-on resin boot, which is molded onto distal ends of said tension member and said sheath, for integrally fixing the respective distal ends of both said tension member and said sheath, said resin boot being also molded onto a rear portion of said stop ring and onto a portion of said sheath and tension member, said resin boot not extending to the front end of said stop ring.

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LIQUID CRYSTAL DISPLAY APPARATUS
Atsushi Asada; Toshio Ishikawa, both of Nara; Yasuo Nakata, Kashihara; Yoshio Yoshida, and Yukio Kurata, both of Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Nov. 8, 1991, Ser. No. 791,660
Claims priority, application Japan, Nov. 9, 1990, 2-304613; Nov. 19, 1990, 2-313588
Int. Cl.[5] G02B 6/06
U.S. Cl. 385—115 8 Claims



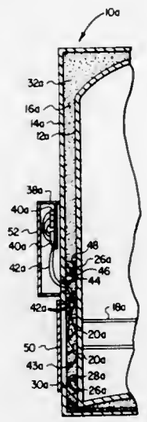
1. A liquid crystal display apparatus including at least two display devices each having screens, an optical fiber bundle connected to the respective screens so as to transmit an image therethrough, wherein the optical fiber bundle comprises optical fibers arranged side by side and fastened to each other to take the form of a letter Y having a straight portion and branch portions, the straight portion being perpendicularly connected to an output end face, and the branch portions being connected to an input end face, and spacers interposed between adjacent optical fibers in a portion of the bundle at least toward the output end face.

5,251,281
ARM SUPPORTED PORTABLE ELECTRIC HEAT BLOWER
Clifford H. Fravel, Jr., 4313 Windlestraw La., Greensboro, N.C. 27410
Filed Feb. 18, 1992, Ser. No. 836,250
Int. Cl.[5] F24H 3/04; A47L 5/24; F04B 35/04
U.S. Cl. 392—384 18 Claims

1. In a portable blower of the type having means for driving a fan in a housing for forcing air through an elongated conduit joined to the housing, the improvement comprising: means to stabilize the blower on top of the arm of the user proximate the user's shoulder, said stabilizing means comprising a rigid loop-like support, said support laterally affixed to said housing to allow the arm of the user to pass therethrough.

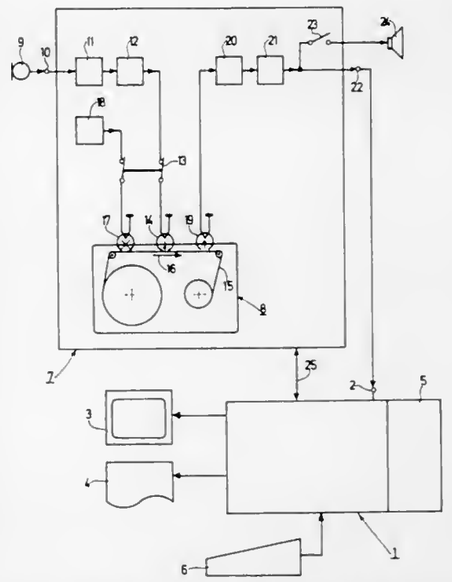
5,251,282
ELECTRIC WATER HEATER WITH IMPROVED INSULATION STRUCTURE AND CONTROL PANEL HOUSING ARRANGEMENT
David M. Hanning, Montgomery, and Timothy E. Powell, Tallassee, both of Ala., assignors to Rheem Manufacturing Company, New York, N.Y.
Filed Feb. 19, 1993, Ser. No. 20,331
Int. Cl.[5] F22B 37/26; H05B 1/02; F24H 1/20
U.S. Cl. 392—449 8 Claims

1. An electric water heater comprising:
a hot water storage tank having upper and lower ends;
an electric resistance heating element extending generally horizontally through a lower interior end portion of said tank and having an electrical end connector portion exteriorly mounted on said tank;
a jacket structure extending around said tank in an outwardly spaced relationship therewith, said tank and said jacket structure forming therebetween a hollow insulation space that horizontally circumscribes and extends across the top end of said tank,
said jacket structure having a first opening formed therethrough in general outward alignment with said end connector portion, and a second opening formed therethrough and being upwardly spaced apart from said first opening;
a foam stop member interposed between said jacket structure and said tank within said insulation space at said end connector portion, said foam stop member having:
an edge periphery outwardly circumscribing said end connector portion and having an upper end portion disposed above said second jacket structure opening and a lower end portion disposed below said first jacket structure opening, and
a cutout area, disposed inwardly of said edge periphery, through which said end connector portion is exposed to said first jacket structure opening, said cutout area having an upper end surface portion positioned upwardly adjacent said second jacket structure opening;
a hardened foam insulation material disposed within and essentially filling the portion of said insulation space not occupied by said foam stop member, said hardened foam insulation material extending peripherally around said



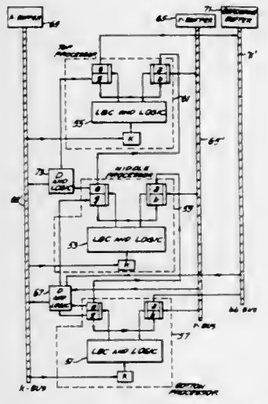
foam stop member and having a thermal resistivity appreciably higher than that of said foam stop member;
a control panel housing exteriorly mounted on said jacket structure and having:
a top end disposed above said upper end portion of said edge periphery of said foam stop member,
a bottom end disposed between said first and second jacket structure openings, and
a lower interior end portion communicating with an upper end portion of said foam stop member cutout area through said second jacket structure opening;
an electrical control component disposed within an interior portion of said control panel housing positioned above said foam stop member,
whereby a portion of said hardened foam insulation material is interposed between said electrical component and said tank; and
electrical wiring operatively interconnecting said electrical control component and said end connector portion, said electrical wiring extending from said electrical control component to said end connector portion sequentially through the interior of said control panel housing, said second jacket structure opening, and said foam stop member cutout area.

5,251,283
SPEECH RECOGNITION SYSTEM WITH AN AUTOMATIC ADAPTIVE LEARNING DEVICE
Rudolf Honis, Vienna, Austria, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 4, 1989, Ser. No. 446,495
Claims priority, application Austria, Dec. 7, 1988, 3002/88
Int. Cl.[5] G10L 9/00
U.S. Cl. 395—2 3 Claims



1. A speech-recognition system comprising: a speech-recognition arrangement including means for recognizing speech signals applied to the system and means for applying information signals relating to recognized speech signals to an output of the system, a learning device which interacts with the speech-recognition arrangement during an adaptive learning mode and includes means for adapting the speech-recognition arrangement to the characteristic pronunciation of a given speaker, a keyboard for applying certain words to the speech-recognition arrangement during a learning procedure, a microphone for converting sound signals associated with said certain words and originating from the given speaker to electric speech signals and for applying said speech signals to the speech-recognition arrangement, wherein said speech-recognition arrangement also includes means for determining the progress of the learning procedure in the learning mode, means for displaying details of the learning procedure progress in the learning mode on a display screen, to which the given speaker is to react, characterized in that in normal operation of the system electric speech signals corresponding to a text are fed in to the system via a scannable storage medium in a recording and reproducing device, and wherein electric speech signals which are fed in to the system during the learning procedure of the speech-recognition arrangement are first stored in a storage medium of the recording and reproducing device and subsequent thereto are scanned from the storage medium and fed in to the speech-recognition arrangement, said storage medium having a transmission characteristic that closely approximates the transmission characteristic of said scannable storage medium.

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OPTIMAL PARAMETRIC SIGNAL PROCESSOR WITH LATTICE BASIC CELL
George Carayannis; Christos Halkias; Elias Koukoutsis, all of Athens, Greece, and Dimitris Manolakis, Chestnut Hill, Mass., assignors to Adler Research Associates, Union, N.J.
Continuation of Ser. No. 423,540, Oct. 11, 1989, abandoned, which is a continuation-in-part of Ser. No. 298,338, Jan. 13, 1989, abandoned, which is a continuation of Ser. No. 904,382, Sep. 4, 1986, abandoned, which is a continuation-in-part of Ser. No. 837,260, Mar. 7, 1986, abandoned. This application Jan. 22, 1992, Ser. No. 826,262
Int. Cl.[5] G10L 9/02
U.S. Cl. 395—2 24 Claims



1. A signal processor which receives autocorrelation coefficients r_o–r_p from a system having order P, where P is an integer, for providing lattice coefficients K_1–k_p of said system, comprising:
a plurality of physical parallel processing units, the number of which is less than the system order P, for receiving during a first time interval autocorrelation coefficients r_o through r_n, where n is less than the system order P and is related to the number of said physical parallel processing units, said plurality of physical parallel processing units configured to concurrently produce first intermediate values

$$\zeta_i^1 = r_i + k_1 r_{i-1}, \text{ for } i = 2 \text{ through } n, \text{ and}$$
$$\zeta_{-i}^1 = r_i + k_1 r_{i+1}, \text{ for } i = 0 \text{ through } n-1;$$

feedback means for applying selected ones of said first intermediate values to at least one of said physical parallel processing units, to produce at least a plurality of second intermediate values

$$\zeta_i^2 = \zeta_i^1 + k_2 \zeta_{2-i}^1, \text{ for } i = 3 \text{ through } n, \text{ and}$$
$$\zeta_{-i}^2 = \zeta_{-i}^1 + k_2 \zeta_{2+i}^1, \text{ for } i = 0 \text{ through } n-2;$$

said first and second intermediate values being produced in succession within said first time interval;
means for applying all remaining autocorrelation coefficients to at least one of said plurality of said physical parallel processing units if the system order P is less than or equal to 2n, and otherwise applying autocorrelation coefficients r_n through r_{2n} to said plurality of said physical parallel processing units, to thereby produce additional first and second intermediate values during a second time interval subsequent to said first time interval; and
divider circuitry for dividing autocorrelation coefficient r_1

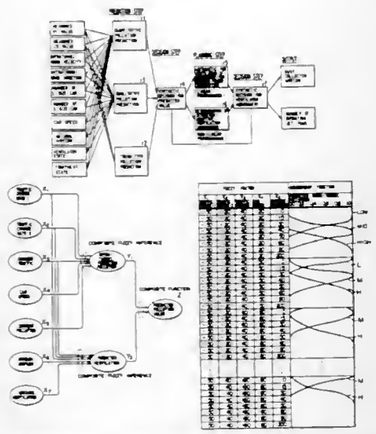
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by r_0 to produce k_1, and for dividing first intermediate value ζ_2^1 by ζ_0^1 to produce k_2.

5,251,285
METHOD AND SYSTEM FOR PROCESS CONTROL WITH COMPLEX INFERENCE MECHANISM USING QUALITATIVE AND QUANTITATIVE REASONING

Haruki Inoue, Katsuta; Motohisa Funabashi, Sagamihara; Masakazu Yahiro, and Yoshiyuki Satoh, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Engineering Co., Ltd., Ibaraki, both of Japan

Division of Ser. No. 328,520, Mar. 24, 1989, Pat. No. 5,051,932.
This application Jun. 7, 1991, Ser. No. 712,104
Claims priority, application Japan, Mar. 25, 1988, 63-69577
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—10 **10 Claims**



1. A method of performing process control in accordance with a target value of a controlled object with a transition of the process being predicted, comprising the steps of:

inputting process information;

determining whether a process behavior at a current control timing is linear based on an evaluation rule for evaluating linearity of the process behavior;

in response to a determination indicating a linear behavior in said determining step, predicting a control quantity of the controlled object a predetermined period of time after the current control timing, using means for performing a quantitative arithmetic operation which simulates the process in a linear relation;

in response to a determination indicating no linear behavior in said determining step, predicting the control quantity of the controlled object a predetermined period of time after the current control timing, using means for performing a qualitative arithmetic operation which simulates the process in a fuzzy rule relation;

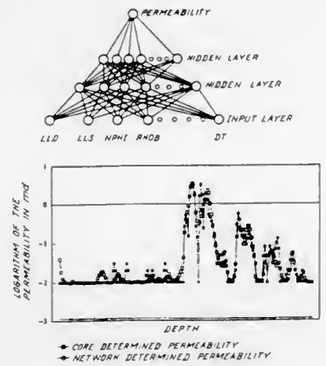
determining a manipulation quantity of a control effector from a difference between a predicted value obtained in a selected one of said predicting steps and the target value; and

controlling the process using the determined manipulation quantity.

5,251,286
METHOD FOR ESTIMATING FORMATION PERMEABILITY FROM WIRELINE LOGS USING NEURAL NETWORKS

Jacky M. Wiener; Robert F. Moll, both of Englewood, and John A. Rogers, Castle Rock, all of Colo., assignors to Texaco, Inc., White Plains, N.Y.

Filed Mar. 16, 1992, Ser. No. 852,036
Int. Cl.[5] G06F *15/18*
U.S. Cl. 395—22 **14 Claims**



1. A method for studying formation permeability from wireline well logs utilizing a neural network having at least input, intermediate and output levels and means to supply wireline well log data to said neural network, said method comprising the steps of:

checking wireline well log data and corresponding core permeability data for quality and accuracy and correcting said data;

depth shifting the wireline well log data so that all the log data measurements and corresponding core data measurements are at like depth in the well;

using resistivity, neutron porosity, bulk density, and sonic measurements, to compute total porosity, water saturation and bulk volume all as an input into the neural network;

averaging the value of each log measurement and subtracting said average value from each log;

using this averaged data to "train" the neural network to recognize corresponding core permeability which is likely to be encountered in the study area;

testing the trained network on wireline log data from other wells where permeability is known from core measurements; and

applying to the network processed well log data from other wells whereby current wireline data from an area is used to make a determination of formation permeability.

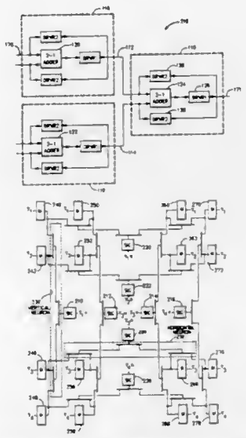
5,251,287
APPARATUS AND METHOD FOR NEURAL PROCESSING

Stamatis Vassiliadis, Vestal, and Gerald G. Pechanek, Endwell, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 740,568, Aug. 5, 1991, abandoned, which is a division of Ser. No. 526,866, May 22, 1990, Pat. No. 5,065,339. This application Jan. 6, 1993, Ser. No. 915
Int. Cl.[5] G06F *15/18*
U.S. Cl. 395—24 **2 Claims**

1. A scalable neural array processor, comprising a plurality of sets of interconnection structures and activity generators, a

portion of said plurality of sets being orthogonal to a remaining portion of said plurality of sets, each said activity generator

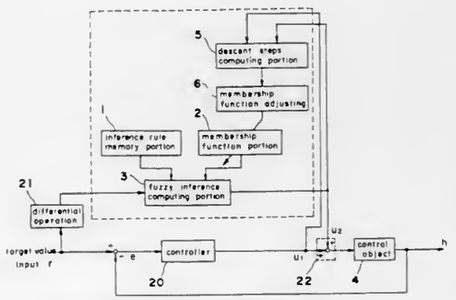


including means responsive to an output signal from one of said interconnection structures to generate a neuron value.

5,251,288
FUZZY INFERENCE APPARATUS WITH MEMBERSHIP FUNCTION ADJUSTMENT

Hiroyoshi Nomura, Neyagawa; Isao Hayashi, Osaka, and Noboru Wakami, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 26, 1991, Ser. No. 750,120
Claims priority, application Japan, Sep. 3, 1990, 2-233546
Int. Cl.[5] G06F *15/00;* **395** *900, 61, 3, 51*
U.S. Cl. 395—51 **6 Claims**



1. A fuzzy inference system comprising:

a controlled machine for operating in accordance with control input values and for producing control observation values responsive to an operation thereof; and,

a fuzzy inference apparatus, coupled to said controlled machine, including

(a) an inference computing portion for effecting a fuzzy inference operation based on the control input values and corresponding control observation values of said controlled machine so as to generate an operation amount with respect to said controlled machine,

(b) an inference rule memory portion for storing inferences rules used in said inference computing portion,

(c) a membership function memory portion for storing geometric data of membership functions of antecedent parts and functions of consequent parts of each inference rule used in said inference computing portion,

(d) a descent method computing portion for effecting a descent method computing operation according to input-/output data provided in advance and the operation amount generated by said inference computing portion,

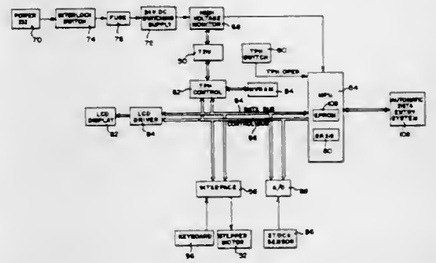
(e) a membership function adjusting portion for varying at least one of the membership functions of the antecedent parts and the functions of the consequent part stored in said membership function memory portion in accordance with an output of said descent method computing portion,

(f) an error computing portion for computing an inference error from the input/output data and the operation amount generated by said inference computing portion, and for ceasing operations of said descent method computing portion and said membership function adjusting portion when at least one of the inference error and a change in the inference error satisfies a predetermined condition.

5,251,289
PRINTER WITH IMPROVED DATA ENTRY

Thomas D. Fidler, Springboro, and Patricia A. Schaeffer, Spring Valley, both of Ohio, assignors to Monarch Marking Systems, Inc., Miamisburg, Ohio

Filed Jan. 11, 1989, Ser. No. 296,182
Int. Cl.[5] G06K *15/00*
U.S. Cl. 395—112 **33 Claims**



1. A printer for printing on a web of record members comprising:

means for powering up said printer;

means actuable by a user for entering at least one user command and data;

first storage means for storing data representing semi-fixed information to be printed; and

means for controlling the storage of new print data in said first storage means in response to the receipt of a user command only within a predetermined period of time of the powering up of said printer.

5,251,290
MODELING METHOD FOR SORTING DEPENDENCIES AMONG GEOMETRIC ENTITIES

Jahir A. Pabon, Austin, Tex., assignor to Schlumberger Technology Corporation, Austin, Tex.

Filed Mar. 25, 1991, Ser. No. 675,592
Int. Cl.[5] G06F *15/60, 15/62*
U.S. Cl. 395—120 **23 Claims**

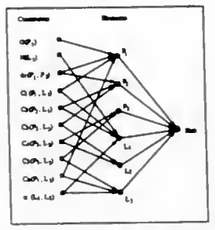
1. A computer-aided modeling method for representing a network having geometric entities and configuration constraints comprising the steps of:

representing the entities and constraints as nodes in a directed graph;

allocating degrees of freedom to each entity and each constraint including a maximal flow configuration of said directed graph of said degrees of freedom from the constraint nodes through the entity nodes to a sink node;

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generating an ordered dependency list of the geometric entities using said maximal flow configuration; and



utilizing the dependency list as an execution sequence for updating the configuration of the geometric entities in the network.

5,251,291

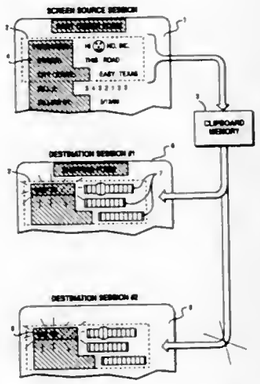
METHOD OF SELECTIVELY TRANSFERRING VIDEO DISPLAYED INFORMATION

Jerry W. Malcolm, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 421,479, Oct. 13, 1989, abandoned. This application Jul. 30, 1992, Ser. No. 923,008

Int. Cl.[5] **G06F** *15/62*

U.S. Cl. 395—146 **15 Claims**



1. A user controlled method for transferring information in an information processing system having a video display, comprising the steps of:

selecting from a source space as may be depicted by a video display a first field of first format, information and a second field of second format information;

selecting a destination space as may be depicted by a video display having a third field of first format information and a fourth field for second format information;

comparing selected information from the first field of first format information in the source space to selected information from the third field of first format information in the destination space; and

selectively transferred second field information from the source space to the fourth field in the destination space responsive to the outcome of the comparison.

5,251,292

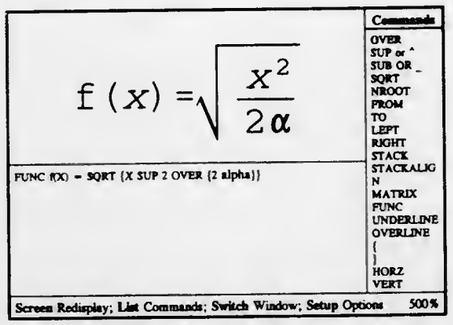
METHOD AND APPARATUS FOR AN EQUATION EDITOR

Joseph Martel, Jr., Orem, and David C. Moon, Alpine, both of Utah, assignors to WordPerfect Corporation, Orem, Utah

Filed Jul. 25, 1990, Ser. No. 557,946

Int. Cl.[5] **G06F** *15/20*

U.S. Cl. 395—150 **4 Claims**



1. An equation editing system implemented on a digital computer for enabling a user to edit a mathematical equation to be placed in a document and to display the equation as it would appear in final printed form, the system comprising:

(a) display means comprising an editing window, a palette window and a display window;

(b) memory means;

(c) microprocessor means;

(d) storage means;

(e) input means including a standard computer keyboard whereby a user can enter a textual description of the equation;

(f) a first portion of the memory means being adapted to store the textual description of each element of the equation entered by the user;

(g) the editing window being associated with the memory means and being adapted to display the textual description of each element of the equation as it is entered by a user;

(h) a second portion of the memory means being adapted to store predefined keywords in an equation editor grammar that may be used to construct the textual description, the grammar being composed of tokens which include the keywords;

(i) parser means containing stored grammar rules describing sequences in which the tokens of the textual description may be combined;

(j) lexical scanning means for causing the microprocessor to successively compare tokens of the stored textual description with the keywords and, when a token corresponds to one of the keywords, for passing a unique value representing the token to the parser means;

(k) the parser means being adapted to receive keywords from the lexical scanning means, process those keywords according to the stored grammar rules and generate data structures describing the appearance of the equation in a printed document and the display window;

(l) means for causing the equation to be displayed in the display window;

(m) the palette window containing multiple selectable menus which enable a user to use the input means to select keywords for editing said textual descriptions; and

(n) means for causing the display means to display the mathematical equation in the display window simultaneously with the textual description of said mathematical equation in the editing window.

5,251,293

CHARACTER DISPLAY APPARATUS

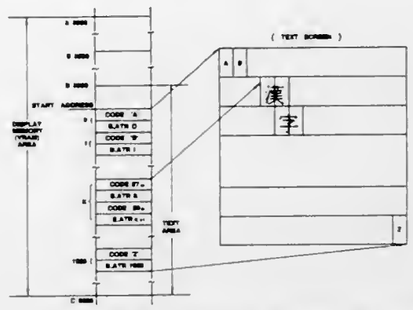
Takatoshi Ishii; Taiju Ogawa, and Shozo Omae, all of Tokyo, Japan, assignors to Ascii Corporation, Minato, Japan

Continuation of Ser. No. 239,186, Aug. 31, 1988, abandoned. This application Jul. 31, 1990, Ser. No. 561,371

Claims priority, application Japan, Sep. 2, 1987, 62-219576; Oct. 9, 1987, 62-255042

Int. Cl.[5] **G06F** *15/66*

U.S. Cl. 395—151 **1 Claim**



1. A character display apparatus for displaying on a display screen, several kinds of characters including said apparatus comprising:

(a) a memory portion for storing character codes, each said character code designating corresponding character data and attribute data representative of a characteristic of said several kinds of characters, the memory portion having a first memory plane for storing the character data and a second memory plane for storing the attribute data;

(b) a code fetch portion for retrieving character codes consisting of character data and attribute data from the memory portion, the code fetch portion discriminating the attribute data from the character data;

(c) an attribute data latch portion for sequentially receiving and storing the attribute data that is retrieved by the code fetch portion;

(d) a character code latch portion consisting of a first starting portion and a second storing portion, the second storing portion sequentially receiving and storing the character codes that are retrieved by the code fetch portion, the character codes that are supplied to the second storing portion are sequentially supplied to the first storing portion;

(e) a character width detecting portion for detecting whether the character code within the first storing portion represents a full-width character code or a half-width character code, the full-width character code being designated by two bytes, the half-width character code being designated by one byte, the character width detecting portion providing a character width signal indicating half-width or full-width character codes;

(f) a character generator address generating portion receiving the character codes, the character generator address generating portion providing character generator addresses based on the character codes, the character generator address generating portion providing a chip select signal and a character generator address signal, the character generator address generating portion generating character generator addresses based on the character codes within the first and the second storing portions when a full-width character signal is provided, the character generator address generating portion generating character generator addresses based on the character codes within the first storing portion when a half-width character signal is provided;

(g) a first character generator for pre-storing font data corresponding to the alpha-numeric characters at character generator addresses provided by the character generator address generating portion;

(h) a second character generator for pre-storing font data corresponding to composed Chinese characters at character generator addresses provided by the character generator address generator portion;

(i) a judgment portion for judging whether each said character code being read from said memory portion in accordance with scanning of said display screen corresponds to one of said alpha-numeric characters or said composed Chinese characters, by judging whether said character code comprises the full-width character code or the half-width character code; and

(j) a control portion for reading out from said first character generator when said alpha-numeric characters are to be displayed, said font data corresponding to said character code judged by said judgment portion, so that each of said alpha-numeric characters is displayed in said attribute represented by said attribute data accompanied with said character code, said control portion reading out from said second character generator when said Chinese characters are to be displayed, said font data corresponding to said character code judged by said judgment portion, so that each of said Chinese characters is displayed in said attribute represented by said attribute data accompanied with said character code.

5,251,294

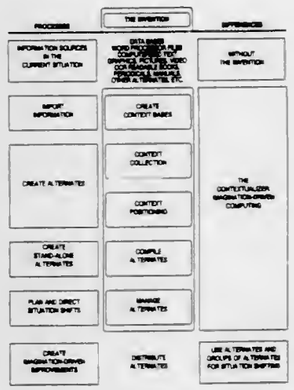
ACCESSING, ASSEMBLING, AND USING BODIES OF INFORMATION

Daniel H. Abelow, 71 W. Pine St., Newton, Mass. 02166

Filed Feb. 7, 1990, Ser. No. 476,931

Int. Cl.[5] **G06F** *15/62*

U.S. Cl. 395—155 **78 Claims**



1. A computer-based method for aiding a user in assembling a customized body of information from a larger body of available information segments, the method comprising

displaying a set of labels, each label providing an abbreviated indication of information content of a corresponding one of said available information segments in said larger body,

enabling a user to point to individual labels in said set using an electronic pointing technique,

for each label to which said user points, displaying to the user, for previewing, information content of the corresponding segment,

enabling a user to choose to include in the customized body of information, selected ones of said available information segments, while excluding from the customized body of information other available information segments, and

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assembling said customized body of information in response to choices of information segments made by said user.

5,251,295

IMAGE PROCESSING SYSTEM HAVING SLAVE PROCESSORS FOR CONTROLLING STANDARD AND OPTIONAL MODULES

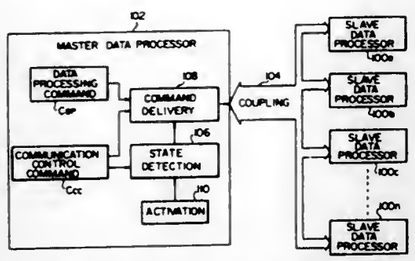
Yoshikazu Ikenoue; Hirokazu Yamada; Syuzi Maruta; Kazuhiro Araki, all of Osaka; Kaoru Hashimoto, Amagasaki, and Yoichi Kawabuchi, Osaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 377,943, Jul. 10, 1989. This application Sep. 24, 1992, Ser. No. 950,232

Claims priority, application Japan, Nov. 7, 1988, 63-172444; Nov. 7, 1988, 63-172445

Int. Cl.[5] G06F *3/14*

U.S. Cl. 395—163 6 Claims



1. An image processing system which comprising

a) at least one slave data processor unit operative to execute a set of predetermined functions assigned thereto,

b) a master data processor unit for controlling the operation of said slave data processor unit, and

c) coupling means providing bidirectional connection between said slave data processor unit and said master data processor unit,

d) first and second address spaces each under the control of said master data processor unit,

e) third and fourth address spaces each under the control of said slave data processor unit, the third address space being to renewably retain therein detailed information relating to current operating conditions of said slave data processor unit, the fourth address space being to renewably retain therein brief information relating to the current operating conditions of the slave data processor unit,

said slave data processor unit having incorporated therein information transfer means operative to transfer said detailed information from said third address space to said first address space and said brief information from said fourth address space to said second address space at a request from said master data processor unit,

the master data processor unit having incorporated therein

b/1) brief information requesting means for requesting said information transfer means to transfer said brief information from said fourth address space to said second address space,

b/2) control means operative to control the operation of said slave data processor unit on the basis of said brief information transferred to said second address space, said control means being further operative to determine on the basis of said brief information whether or not it is necessary for said control means to check the detailed information currently retained in said third address space, and

b/3) detailed information requesting means for requesting said information transfer means to transfer the detailed information from said third address space to said first address space when it is determined by said control means that the detailed information currently retained in said third address space should be checked by said control means.

5,251,296

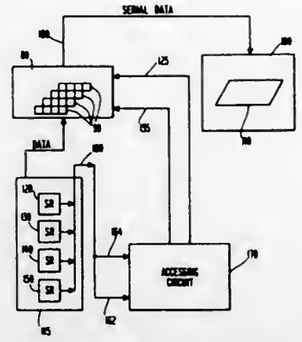
METHODS AND APPARATUS FOR GENERATING ARBITRARILY ADDRESSED, ARBITRARILY SHAPED TILES IN COMPUTER GRAPHICS SYSTEMS

Desi Rhoden, Boulder; Byron A. Alcorn, Fort Collins; Darel N. Emmot, Ft. Collins, and Ronald D. Larson, Fort Collins, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 16, 1990, Ser. No. 494,997

Int. Cl.[5] G06F *15/20, 15/00*

U.S. Cl. 395—164 18 Claims



1. A method of rendering graphics primitives to a display device in a computer graphics frame buffer system including an array of addressable video random access memory (VRAM) chips associated to form a graphics frame buffer, comprising the steps of:

addressing the VRAMs in the frame buffer with coordinate pixel locations on the display device corresponding to locations of the graphics primitives on the display device, said addressing step including individually addressing each VRAM with a separate column and row address on the display device; and

accessing the frame buffer with a graphics renderer according to arbitrarily shaped tiles containing pixels such that the pixels with the tiles have potentially different VRAM addresses, said accessing step comprising the sub-steps of generating a plurality of tiles for all pixels of a particular primitive that have a common y address modulo N, where N represents a predetermined number; assigning a separate modulo N number to each of the plurality of tiles; generating all pixels for a primitive with a common y address, thereby generating a span of each of the plurality of tiles; sequentially generating consecutive x addresses for each span; providing the column and row addresses of a first pixel in each span and a subsequent column for generation of subsequent tiles; and generating frame buffer addresses for the graphics primitives from the plurality of span column and row addresses.

5,251,297

PICTURE IMAGE PROCESSING SYSTEM FOR ENTERING BATCHES OF ORIGINAL DOCUMENTS TO PROVIDE CORRESPONDING PICTURE IMAGE DATAFILES

Hiroshi Takayanagi, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 10, 1990, Ser. No. 595,220

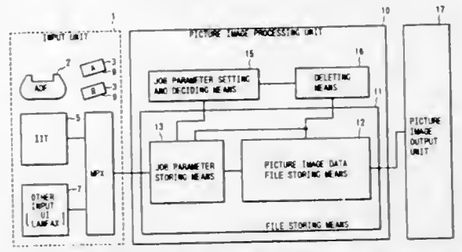
Int. Cl.[5] G06F *15/20*

U.S. Cl. 395—164 24 Claims

1. A picture image processing system for entering batches of original documents to provide corresponding picture image datafiles corresponding to each of the batches of original documents comprising:

means for storing the picture image datafiles;

means for assigning a storage retention priority to each of said stored picture image datafiles, said storage retention priority being one of a plurality of levels from a highest retention priority to a lowest retention priority;



means responsive to an application of power to the image processing system for identifying said image datafiles having the lowest retention priority; and

deleting means for deleting from said storing means said picture image datafiles identified by said identifying means as having the lowest retention priority.

5,251,298

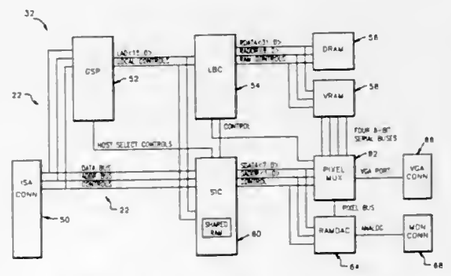
METHOD AND APPARATUS FOR AUXILIARY PIXEL COLOR MANAGEMENT USING MONOMAP ADDRESSES WHICH MAP TO COLOR PIXEL ADDRESSES

Robert M. Nally, Houston, Tex., assignor to Compaq Computer Corp., Houston, Tex.

Filed Feb. 25, 1991, Ser. No. 661,076

Int. Cl.[5] G06F *15/00*

U.S. Cl. 395—166 19 Claims



1. An apparatus for performing supplemental graphical processing duties in a computer system having a processor that generates addresses and generates and receives data, the apparatus comprising:

video memory which stores pixel data;

monomap memory coupled to the processor having source and destination regions, wherein each monomap address in said source and destination regions maps to a plurality of addresses in said video memory;

source address receiving means coupled between the processor and said monomap memory for receiving source region monomap addresses generated by the processor and translating said received monomap addresses into corresponding source addresses in said video memory;

pixel data storage means coupled to said video memory and said source address receiving means for reading pixel data located at said corresponding source video memory addresses and storing said pixel data after the processor generates said source monomap addresses;

destination receiving means coupled between the processor and said monomap memory for receiving destination region monomap addresses generated by the processor and translating said received destination monomap addresses into corresponding destination addresses in said video memory; and

pixel data writing means coupled to said video memory, said pixel data storage means and said destination receiving means for writing said pixel data to said corresponding destination addresses in said video memory after the processor generates said destination monomap addresses.

5,251,299

SYSTEM FOR SWITCHING BETWEEN PROCESSORS IN A MULTIPROCESSOR SYSTEM

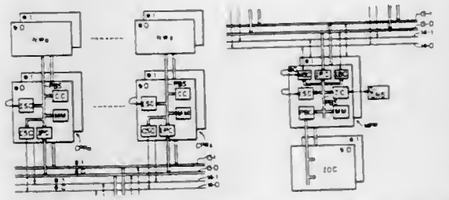
Hiroki Masuda; Yoso Igi, both of Yokohama, and Koji Eto, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 947,410, Dec. 29, 1986, abandoned. This application Mar. 19, 1990, Ser. No. 523,823

Claims priority, application Japan, Dec. 28, 1985, 60-293482; Dec. 28, 1985, 60-293483

Int. Cl.[5] G06F *13/00, 11/00*

U.S. Cl. 395—200 21 Claims



1. A multi-processor system for controlling a switching network including networks, comprising:

a first system having an active state and a standby state and including

a first system bus;

a first plurality of secondary processors, respectively connected to the first system bus, for processing information and communicating with secondary processors of said first plurality of secondary processors, and each of said first plurality of secondary processors connected to and controlling a first corresponding network of the switching network;

a first main processor, connected to the first system bus, for communicating with the first plurality of secondary processors and for governing and managing the first plurality of secondary processors;

a second system having an active state and a standby state and including

a second system bus;

a second plurality of secondary processors, respectively connected to the second system bus, for processing information and communicating with secondary processors of said second plurality of secondary processors, and each of said second plurality of secondary processors connected to and controlling a second corresponding network of the switching network;

a second main processor, connected to the second system bus, for communicating with the second plurality of secondary processors and for governing and managing the second plurality of secondary processors; wherein

said first and second main processors, said first and second pluralities of secondary processors and said first and second system buses are duplexed;

each of said first and second main processors includes first means, operatively connected to each other, for detecting

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a fault among a corresponding one of the first system and second system, for transmitting a system switching command due to a fault being detected, for transmitting the system switching command to a corresponding one of the first system bus and the second system bus, and for switching a corresponding one of the first and second main processors between the active state and the standby state, and

each of said first and second pluralities of secondary processors includes second means for receiving the system switching command via a corresponding one of the first system bus and second system bus, and for switching an associated one of the first and second plurality of secondary processors between the active state and the standby state.

5,251,300

DATA PROCESSING NETWORK

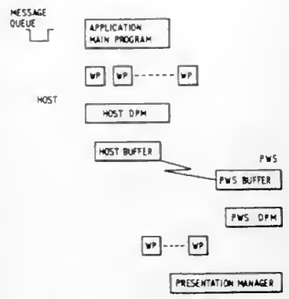
Harry Halliwell, Winchester; David J. Vines, Romsey, and Hugh W. Prior, Eastleigh, all of England, assignors to International Business Machines Corporation, Armonk, N.Y.

PCT No. PCT/GB89/00887, § 371 Date Apr. 2, 1991, § 102(e) Date Apr. 2, 1991, PCT Pub. No. WO91/02314, PCT Pub. Date Feb. 21, 1991

PCT Filed Aug. 3, 1989, Ser. No. 671,839

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—200 **15 Claims**



1. A data processing network having a first processor, a second processor and a communication system linking said first processor and said second processor characterised in that when said first processor issues a call for triggering said second processor to allocate a real identifier for an entity, control logic associated with said first processor and responsive to said call from said first processor allocates a local identifier available for immediate use by said first processor and subsequently transforms between said local identifier and said real identifier.

5,251,301

COMPUTER REMOTE CONTROL THROUGH A VIDEO SIGNAL

Gary M. Cook, Pepperell, Mass., assignor to PC Connection, Inc., Marlow, N.H.

Continuation of Ser. No. 711,267, Jun. 4, 1991, abandoned, which is a continuation of Ser. No. 506,858, Apr. 9, 1990, abandoned, which is a division of Ser. No. 199,624, May 27, 1988, Pat. No. 4,920,503. This application May 22, 1992, Ser. No. 888,043

Int. Cl.[5] G06F *15/16;* **H04N** *7/08*

U.S. Cl. 395—200 **21 Claims**

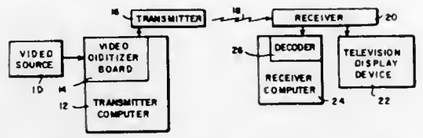
11. A method for viewing a video program in conjunction with a computer demonstration comprising the steps of:

receiving a modified video signal containing a video program and computer data;

displaying a video picture corresponding to the modified video signal so as to substantially permit viewing of the video program;

converting the modified video signal to form a digital received signal;

extracting digital bits from the digital received signal corresponding to said computer data; and



automatically inputting said digital bits into a computer so that said digital bits automatically control the computer wherein said computer operates in response to the computer data in the modified video signal simultaneously with viewing the video program in the modified video signal.

5,251,302

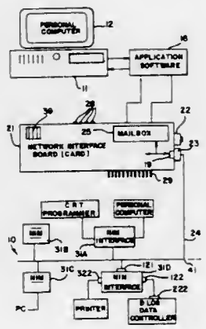
NETWORK INTERFACE BOARD HAVING MEMORY MAPPED MAILBOX REGISTERS INCLUDING ALARM REGISTERS FOR STORING PRIORITIZED ALARM MESSAGES FROM PROGRAMMABLE LOGIC CONTROLLERS

Edward H. Weigl, Deerfield, Ill.; David J. Sackmann, Milwaukee and Steven J. Gans, Mequon, all of Wis., assignors to Square D Company, Palatine, Ill. Continuation of Ser. No. 179,756, Apr. 11, 1988, abandoned.

This application Dec. 26, 1991, Ser. No. 815,565

Int. Cl.[5] G05B *19/00;* **G06F** *11/30*

U.S. Cl. 395—250 **10 Claims**



1. A network interface board for facilitating communication between a personal computer having a memory space and a plurality of programmable logic controllers connected in a communication network which is arranged in a bus configuration for controlling machines, said network interface board comprising:

(a) terminal means (29) for connecting said network interface board (21) to said personal computer.

(b) port means (23) for connecting said network interface board to said communication network;

(c) mailbox memory means (25), connected to said port means and to said terminal means, for reading and writing messages through said terminal means by said personal computer and through said port means by said programmable logic controllers;

(d) reply register means in said mailbox memory means for storing messages received from said programmable logic controllers and for sending said received messages to said personal computer;

(e) write register means in said mailbox memory means for

storing and sending messages from said personal computer to said programmable logic controllers;

(f) control register means in said mailbox memory means for setting routes and addresses of said programmable logic controllers to selectively send messages stored in said write register means to said programmable logic controllers;

(g) alarm register means in said mailbox memory means for storing alarm messages received from said programmable logic controllers and for sending said alarm messages to said personal computer;

(h) address mapping means for mapping said reply register means, said write register means, and said alarm register means into the memory space of said personal computer, said personal computer directly accessing said replay register means, said write register means, and said alarm register means in a predetermined sequence; and wherein said alarm messages include fault messages, alert messages, and warning messages, and further wherein said alarm register means include separate, prioritized alarm queues, each alarm queue for respectively storing said fault messages, said alert messages, and said warning messages.

5,251,303

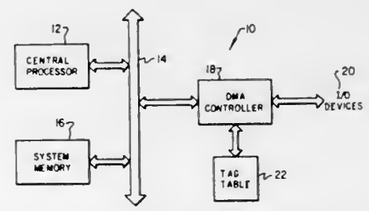
SYSTEM FOR DMA BLOCK DATA TRANSFER BASED ON LINKED CONTROL BLOCKS

Richard G. Fogg, Jr., Austin; Joseph R. Mathis, Georgetown, and James O. Nicholson, Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 13, 1989, Ser. No. 297,778

Int. Cl.[5] G06F *13/28*

U.S. Cl. 395—275 **8 Claims**



1. A system for controlling data transfers in a digital computer between a memory and another device, comprising:

a controller for transferring data over a system bus between the memory and the other device independently of a central processor, such transfer performed according to transfer control parameters in said controller, said control parameters including a next field; and

a memory coupled to said controller directly, wherein said controller accesses the memory independently from the system bus, wherein said memory contains a plurality of objects containing transfer control parameters, and wherein, upon completion of a data transfer defined by the transfer control parameters in said controller, the transfer control parameters in a next object identified by the next field are transferred to said controller and a new data transfer automatically begun, whereby a block of data defined by at least two sets of control parameters is transferred.

5,251,304

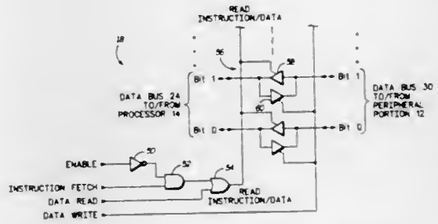
INTEGRATED CIRCUIT MICROCONTROLLER WITH ON-CHIP MEMORY AND EXTERNAL BUS INTERFACE AND PROGRAMMABLE MECHANISM FOR SECURING THE CONTENTS OF ON-CHIP MEMORY

James M. Sibigtroth, Round Rock; Michael W. Rhoades, Austin; George G. Grimmer, Jr., Austin, and Susan W. Longwell, Austin, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 28, 1990, Ser. No. 589,246

Int. Cl.[5] G06F *12/00, 12/14*

U.S. Cl. 395—375 **2 Claims**



1. An integrated circuit microcontroller comprising:

a data processor;

an address bus coupled to the data processor;

a data bus coupled to the data processor; a control bus coupled to the data processor for carrying a data write control signal and a data read control signal provided by the data processor;

a memory coupled to the address bus and to the data bus;

instruction fetch sensing means coupled to the data processor for determining when the data processor is fetching an instruction and for activating an instruction fetch control signal when the data processor is fetching an instruction;

a programmable security device for providing a secure mode enable signal in response to a control signal when the microcontroller is to operate in a secure mode, and

an external bus interface coupled to the address bus and to the data bus and coupled to receive the instruction fetch control signal and the secure mode enable signal, the external bus interface further comprising:

a plurality of bi-directional buffers, each bi-directional buffer having a first data terminal connected to a bit of the data bus, a second data terminal connected to a bit of an external data bus, a first control input coupled to receive said data write control signal from the data processor and a second control input coupled to receive a read control signal, each of the plurality of bi-directional buffers further comprising:

i) first buffer means having an input coupled to said bit of the data bus, an output coupled to said bit of the external data bus and a control input coupled to receive the data write control signal, the first buffer means is for coupling the input to the output when the data write control signal is active; and

ii) second buffer means having an input coupled to said bit of the external data bus, an output coupled to said bit of the data bus and a control input coupled to receive the read control signal, the first buffer means is for coupling the input to the output when the read control signal is active; and

logic means having a first input coupled to receive the secure mode enable signal, a second input coupled to receive the instruction fetch control signal, a third input coupled to receive said data read control signal from the data processor and an output for producing the read control signal, the logic means is for producing an active read control signal if the data read control signal received from the data processor is active or, if the instruction fetch control signal is active and the secure mode enable signal

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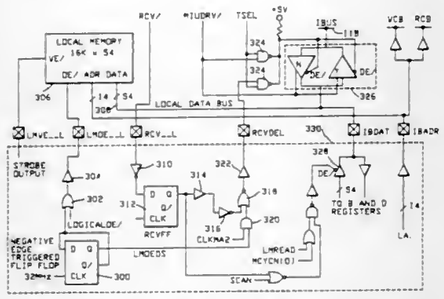
is inactive, but not for producing said active read control signal if the instruction fetch control signal is active and the secure mode enable signal is also active, whereby the data processor is prevented from fetching an instruction external to the microcontroller.

5,251,305

APPARATUS AND METHOD FOR PREVENTING BUS CONTENTION AMONG A PLURALITY OF DATA SOURCES

Philip A. Murphy, Jr., King of Prussia; Wayne A. Genetti, Phoenixville; Gunnar K. Gunnarsson, West Chester; Edward J. Pullin, Norwood, and Gary Chang-Feng Wu, Audubon, all of Pa., assignors to Unisys Corporation, Plymouth Meeting, Pa.

Filed Apr. 4, 1991, Ser. No. 680,345
Int. Cl.[5] G06F *13/36*
U.S. Cl. 395—325 **8 Claims**



1. In a computer system in which a plurality of data sources having respective output drivers are coupled to a common bus using a common bus access clock signal, apparatus which selectively disables the output drivers of all but one of the data sources in order to prevent potential bus contention, said apparatus comprising:

a source of first clock signal having a frequency greater than the frequency of the bus access clock signal;

signal timing means, responsive to said first clock signal, for producing a periodic signal having transitions that are shifted in phase with respect to transitions of the bus access clock signal; and

logic means, associated with a predetermined one of said plurality of data sources, for gating said periodic signal to produce multiple disable signals, said disable signals being applied to the output drivers of all of the data sources, except the predetermined data source, prior to each common bus access cycle,

whereby the output drivers of all of the data sources except the predetermined data source are disabled prior to each common bus access cycle in order to prevent potential bus contention.

5,251,306

APPARATUS FOR CONTROLLING EXECUTION OF A PROGRAM IN A COMPUTING DEVICE

Thang M. Tran, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jan. 16, 1990, Ser. No. 465,808
Int. Cl.[5] G06F *9/30*
U.S. Cl. 395—375 **6 Claims**

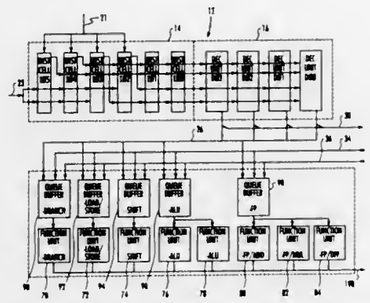
1. An apparatus for effecting a program in a computing device, said progarm being expressed as a plurality of instructions arranged for execution in a particular order; said plurality of instructions being stored in an instruction store; the apparatus comprising:

an instruction fetching means for fetching said plurality of instructions from said instruction store in a plurality of fetch batches, each of said plurality of fetch batches including at least two instructions of said plurality of instructions;

a register means for storing information;

a decoding means for translating said plurality of instructions to a plurality of decoded instructions, said decoding means being operatively connected with said instruction fetching means and with said register means; and

an executing means for executing said plurality of decoded instructions, said executing means being operatively connected with said register means and with said decoding maens, said executing emans including a plurality of functional units, each of said plurality of functional units being configured to perform a predetermined operation, said plurality of functional units being arrayed for receiving said plurality of decoded instructions in parallel, each respective decoded instruction of said plurality of decoded instructions being received by a specified functional unit of said plurality



of functional units, said specified functional unit being configured to perform said predetermined operation required for executing said respective decoded instruction;

said register means including a plurality of storage means for storing data dependency information for selected instructions of said plurality of instructions in a plurality of information packets, each respective information packet of said plurality of information packets being identifiably associated with a particular decoded instruction of said plurality of decoded instructions; each said respective information packet indicating availability of respective operand information required for execution of said associated particular decode dinstruction;

said decoding means effecting provision of each said particular decoded instruction to said executing means according to predetermined arrangements depending upon information stored in said associated respective information packet.

5,251,307

CHANNEL APPARATUS WITH A FUNCTION FOR CONVERTING VIRTUAL ADDRESS TO REAL ADDRESS

Takashi Sugiyama, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 21, 1989, Ser. No. 389,270
Claims priority, application Japan, Jul. 26, 1988, 63-184704
Int. Cl.[5] 106F *12/10, 13/28*
U.S. Cl. 395—400 **15 Claims**

1. A channel apparatus controlling n (n is an integer not less than 1) channels while sequentially updating real addresses in response to a transfer start virtual address and performing DMA (direct memory access) transfer on the basis of said start virtual address, comprising:

processor means for controlling an operation of said channel apparatus;

first memory means for storing B (an integer not less than 2) bits of data at each address position, having n first areas, each corresponding to a respective one of said n channels, each of said first areas having a plurality of storage areas

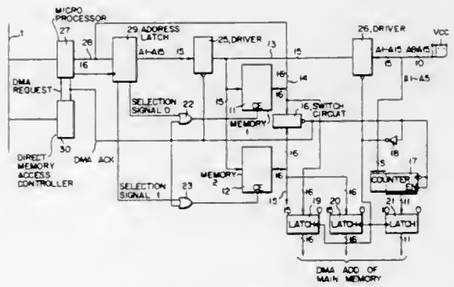
each of which can be addressed by an address signal and stores data;

second memory means for storing B bits of data at each address position, having n second areas, each of which is set aside for each for said n channels, each of said second areas having a plurality of storage areas, each of which can be addressed by the address signal and stores data, a portion of a given real page address having C bits (C is an integer greater than B) and a remaining portion of said given real page address being stored in those storage area of said first and second areas which can be addressed by the same address, data other than said real page address being stored in areas other than said first and second areas of said first and second memory means;

enabling means for enabling one of said first and second memory means in response to an address output from said processor means in a normal state, and for enabling both of said first and second memory means in response to a signal from said data processor means in a DMA address generating cycle for DMA transfer;

address bus means, for transferring address data, said address bus means being commonly connected to said first and second memory means;

first data bus means for transferring data, said first data bus means being connected to said first memory means;



second data bus means for transferring data, said second data bus means being connected to said second memory means;

switch means for connecting said first and second data bus means and said processor means in a normal state and for preventing collision of data on said first and second bus means in the DMA address generating cycle for DMA transfer;

at least n counter means each for performing a count operation in every DMA address generating cycle for DMA tranfer of the corresponding channel;

driver means for, when said processor means accesses said first and second memory means in the normal state, outputting an address from said processor means onto said address bus means, thereby said processor means both reading and writing data to or from the other portion of one of said memory means enabled by said enabling means through said data bus means, and for, in the DMA address generating cycle, outputting an address obtained by adding a value specific to the corresponding channel to predetermined upper bits of an output from said counter means for the corresponding channel onto said address bus means; and

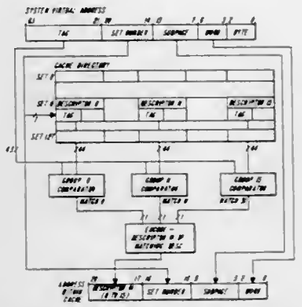
means for combining to one address said bits of data read out onto said first and second data bus means from said first and second memory means in the DMA address generating cycle to generate a real page address of a page.

5,251,308

SHARED MEMORY MULTIPROCESSOR WITH DATA HIDING AND POST-STORE

Steven J. Frank, Hopkinton; Henry Burkhardt, III, Manchester; James B. Rothnie, Brookline; Benson I. Margulies, Arlington; Frederick D. Weber, Concord; Linda Q. Lee, Cambridge; Glen Dudek, Woburn; William F. Mann, Sudbury; Edward N. Kittlitz, Cambridge, and Ruth Shelley, Upton, all of Mass., assignors to Kendall Square Research Corporation, Waltham, Mass.

Continuation-in-part of Ser. No. 136,930, Dec. 22, 1987, Pat. No. 5,055,999. This application Jun. 22, 1989, Ser. No. 370,287
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—425 **20 Claims**



1. A digital data processing system comprising

A. plural processing cells, each comprising a central processing unit and an associated memory element for storing information-representative signals, said plural memory elements together forming a common memory,

B. each said central processing unit including access request means for generating an access-request signal representative of a request for access to an information-representative signal stored in said common memory, and

C. each said processing cell including memory management means, coupled to the corresponding central processing unit and memory element of that processing cell, for selectively responding to an access-request signal for at least signaling the availability of an information-representative signal stored in that corresponding memory element,

the memory management means of respective processing cells being coupled to one another for selective transfer of access-request signals therebetween,

D. each said memory management means including directory means for storing an ANCHOR signal corresponding to each of at least selected information-representative signals in the corresponding memory element, said ANCHOR signal being indicative of a mode by which the corresponding information-representative signal is accessible,

E. said memory management means including means for responding to an access-request signal generated by any of said central processing units directed to an information-representative signal having an ANCHOR signal indicative of a first alternative mode of access for at least signaling the requesting central processing unit that the requested information-representative signal is stored in said common memory, and

F. said memory management means including means for responding to an access-request signal

i) generated by the central processing unit corresponding to that memory management means and directed to an information-representative signal stored within the corresponding memory element, which information-representative signal is associated with an ANCHOR signal indicative of a second alternative mode of access,

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for signaling that corresponding central processing unit that the requested information-representative signal is stored in said common memory, and

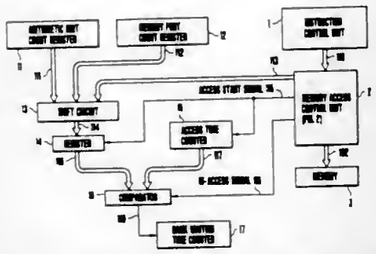
ii) generated by any other of said central processing units directed to that same information-representative signal for signaling the requesting central processing unit that the requested information-representative signal is not stored in said common memory.

5,251,309

SYSTEM FOR MEASURING THE EFFICIENCY OF ACCESSING VECTOR ELEMENTS USING INTERELEMENT DISTANCE OF VECTOR DATA OR BANK CONFLICTS

Kouji Kinoshita, Tokyo; Shigeyuki Ozawa, and Shigenori Takekawa, both of Yamanashi, all of Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Nov. 3, 1989, Ser. No. 431,188
Claims priority, application Japan, Nov. 7, 1988, 63-279410
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—425 **3 Claims**



1. A data processing apparatus for accessing vector data from a memory having a plurality of banks to perform a vector arithmetic operation by determining, dependent on an interelement distance of the vector data, both a number of elements to be accessed simultaneously and a time interval for each element to be accessed, comprising:

calculating means for calculating a minimum period of time required to access all elements which constitute the vector data when the vector data is accessed and outputting a calculated value which is dependent upon an access time required when there is no bank conflict, said bank conflict being dependent upon said interelement distance;

first counting means for counting a period of time elapsed after access for the vector data is started and outputting a counted value;

a comparator receiving said calculated value and said counted value and outputting a comparison result; and

second counting means, receiving said comparison result, for incrementing a bank waiting time in accordance with said comparison result.

5,251,310

METHOD AND APPARATUS FOR EXCHANGING BLOCKS OF INFORMATION BETWEEN A CACHE MEMORY AND A MAIN MEMORY

Donald Smelser, Bolton; Nicholas A. Warchol, Boxborough, and Gary Lidington, Wayland, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

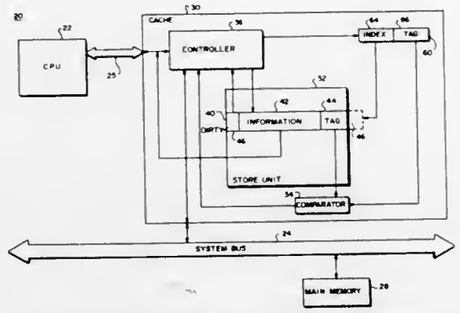
Filed Jun. 29, 1990, Ser. No. 546,572
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—425 **8 Claims**

1. In a data processing system including a main memory coupled to a cache memory by a bus, said main memory having a plurality of storage locations, a method of exchanging a first block of information in said cache memory with a second block of information in said main memory, said method comprising the steps of:

issuing a single memory access request from a controller of said cache memory over said bus to said main memory, said memory access request including a command field, an index field, a first tag field and a second tag field;

decoding said command field at said main memory to identify said single memory access request as comprising a fetch operation and a store operation, and, in response to said decoded command field:

fetching said second block of information from a second storage location of said main memory as said first block of information is transferred from said cache memory over said bus to a temporary register in said main memory;



transferring said fetched second block of information from said main memory over said bus to said cache memory; and

storing said first block of information in said temporary register at a first storage location in said main memory,

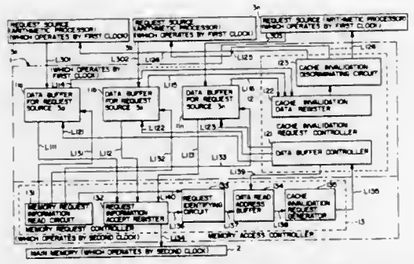
whereby said first and second blocks of information are exchanged in accordance with said single memory access request to thereby reduce the access time for obtaining said second block of information while increasing the throughout of said data processing system.

5,251,311

METHOD AND APPARATUS FOR PROCESSING INFORMATION AND PROVIDING CACHE INVALIDATION INFORMATION

Hiroyoki Kasai, Yamanashi, Japan, assignor to Nec Corporation, Tokyo, Japan

Filed Oct. 11, 1990, Ser. No. 595,575
Claims priority, application Japan, Oct. 12, 1989, 1-265733
Int. Cl.[5] G06F *12/00*
U.S. Cl. 395—425 **2 Claims**



1. An information processing system operating asynchronously under a first and a second clock for processing a cache invalidation operation, said system comprising:

a main memory operating in synchronism with said second clock;

a request source operating in synchronism with said first clock, including means for performing a cache function, said request source outputting a memory request and memory request information to said main memory;

a data buffer operating in synchronism with said first clock, provided between said request source and said main memory, receiving and temporarily storing said memory request information from said request source;

memory request control means operating in synchronism with said second clock for reading out said memory request information from said data buffer to execute and control access of said main memory; and

cache invalidation control means for controlling cache invalidation processing with respect to said request source on the basis of the memory request information,

said memory request control means including a data read address buffer for storing a storage address of said memory request information in said data buffer; and

said cache invalidation control means including

a data buffer controller supplying a read address to said data read address buffer and reading out said storage address in said data read address buffer to access said data buffer,

a register storing a memory request address of said memory request information read out from said data buffer in response to said storage address, and

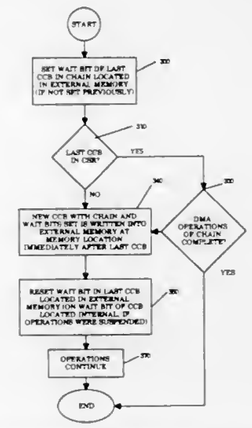
a cache invalidation discrimination circuit, receiving said memory request address and outputting said memory request address and a cache invalidation request to said request source.

5,251,312

METHOD AND APPARATUS FOR THE PREVENTION OF RACE CONDITIONS DURING DYNAMIC CHAINING OPERATIONS

Martin Sodos, San Jose, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Dec. 30, 1991, Ser. No. 814,864
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—425 **12 Claims**



1. In a computer system comprising a CPU, memory, and I/O storage devices coupled to a bus, an apparatus for dynamically chaining direct memory access operations to be performed to said I/O storage devices comprising:

a direct memory access (DMA) controller, coupled to said bus, for performing DMA operations, said DMA controller comprising DMA controller logic and at least one channel control block register accessed by said DMA controller comprising a channel control block (CCB) identifying DMA transfer parameters which specify an operation to be performed by said DMA controller, said DMA controller logic performing operations in accordance with the CCB, said CCB comprising a wait status bit, said wait status bit indicating to the DMA controller logic to suspend processing until the wait bit is reset;

an I/O storage device, external to and coupled through said bus to said DMA controller, from which said DMA controller retrieves at least one next CCB to be processed subsequent to a first CCB; and

said DMA controller further comprising chip control status coupled to said DMA controller logic for providing to said DMA controller logic status regarding DMA operations to be performed, said chip control status comprising an external memory address pointer which identifies an address in the I/O storage device external to said DMA controller of the next CCB to be processed, said external memory address pointer being incremented after each access to a CCB in the I/O storage device to point to the next CCB in a chain of CCBs to be processed;

if said wait bit is not set, said DMA controller reading the external I/O storage device at the address specified by the external memory address pointer, storing the CCB read in the CCB register and processing the CCB to perform operations in accordance with the CCB located in the CCB register; and

an external processor coupled to said bus for setting and resetting the wait bit in a CCB prior to the location of a CCB to be added and/or removed from the chain of CCBs, said external processor enabled to dynamically modify the chain of CCBs to produce a modified chain of CCBs by setting the wait bit, adding and/or removing at least one CCB, resetting the wait bit, wherein processing continues in the modified chain of CCBs;

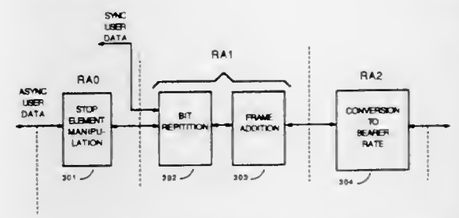
whereby said DMA controller can dynamically modify a chain of operations by modifying a chain of CCBs without increasing the amount of memory required in said DMA controller and without incurring errors due to race conditions.

5,251,313

METHOD OF BIT RATE ADAPTION USING THE ECMA 102 PROTOCOL

John W. Spenik, Fairfax, Va.; Robert E. Renner, and Greig R. Detering, both of Phoenix, Ariz., assignors to AG Communication Systems Corporation, Phoenix, Ariz.

Filed Nov. 19, 1990, Ser. No. 615,661
Int. Cl.[5] G06F *3/00*
U.S. Cl. 395—500 **14 Claims**



1. A method of converting user data to rate adapted data where said user data being received by a data adapter means from a user terminal at a first data rate, said rate adapted data being transmitted by said data adapter means at a second data rate, and said second data rate being greater than said first data rate, said user data being either in a first or a second format, said user data containing a start element and at least one stop element, said method being performed by said data adapter means, said method comprising the steps of:

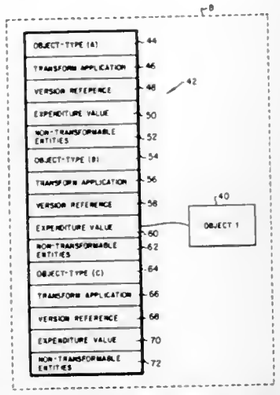
(1) receiving said user data at said first data rate;

(2) converting said user data into an intermediate data;

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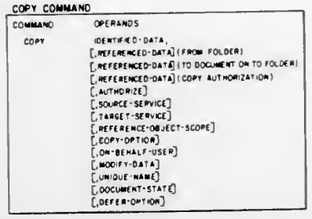
(3) storing said intermediate data in a receive buffer means;
(4) only if said user data is in said first data format, adding new stop elements to said intermediate data;
(5) transferring said intermediate data in said receive buffer means to an intermediate buffer means;
(6) constructing a frame means using data from said intermediate buffer means;
(7) transmitting said frame means where said step of transmitting changes said frame means into said rate adapted data.

5,251,314
SYSTEM FOR CONVERTING FROM ONE DOCUMENT TYPE TO A PLURALITY OF DOCUMENT TYPES ALLOWING ACCURATE REVERSAL THEREFROM USING TABLES CONTAINING INDICATIONS REGARDING NON-TRANSFORMABLE ELEMENTS
Marvin L. Williams, Lewisville, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 7, 1990, Ser. No. 534,825
Int. Cl.[5] G06F *15/38, 15/40*
U.S. Cl. 395—600 **6 Claims**



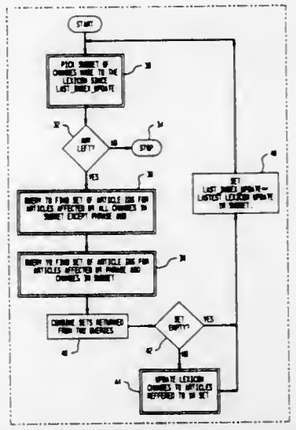
1. A computer implemented method in a data processing system for efficiently managing the transformation of a document from a first document type to one of a plurality of second document types by a plurality of applications which may not be able to transform all entities in said document, said method comprising the computer implemented steps of:
creating and storing within said data processing system a transform information object in association with said document;
storing within said transform information object within said data processing system: a plurality of document type indications, each of said document type indications relating to a different one of said plurality of second document types, wherein each of said document type indications has been created as a result of a transformation of said document; a plurality of application identifications, each of said application identifications indicating a different one of said plurality of applications which performed an associated transformation, said application identifications comprising an address location for an associated application; and, a plurality of entity indications, each of said entity indications indicating said entities within said document which were not transformable by said application such that a reversal of any transformation listed within said transform information object may be accurately accomplished within said data processing system by a reference to said transform information object; and
selectively reversing a transformation of said document from one of said second document types to said first document type by referencing said transform information object.

5,251,315
ATOMIC CHECK-IN CHECK-OUT DOCUMENT COPY COMMANDS PARTITIONED INTO DOCUMENT INTERCHANGE ARCHITECTURE SYSTEM OPERANDS
Diana S. Wang, Trophy Club, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 21, 1990, Ser. No. 543,903
Int. Cl.[5] G06F *15/403*
U.S. Cl. 395—600 **7 Claims**



1. A computer implemented method of checking out a first document from a source library and copying it to a target library as a second document by a user in a data processing system, said first and second documents having a document interchange architecture composed of a plurality of objects including a profile object, contents object, document model object and access object, said method comprising the steps of:
specifying in a first operand of a single copy command in said data processing system by said user said first document in said document interchange architecture in said source library;
specifying in a second operand of said single copy command in said data processing system by said user said second document in said target library;
specifying in a third operand of said single copy command in said data processing system by said user a check out function for said first document in said source library;
executing said single copy command within said data processing system by a library service and in response to said execution:
determining if said first document in said source library is revisable;
determining if document modifications are in progress on said first document in said data processing system;
copying said profile and contents objects of said first document from said source library into said target library as said second document in said target library when said first document is revisable and no document modifications are in progress, and prohibiting copying when said first document is not revisable and/or document modifications are in progress;
creating a first indicator in said document model object to indicate checked out for said first document in said source library, a second indicator in said document model object to indicate checked in for said second document in target library; and
changing said first document in said source library to not revisable.

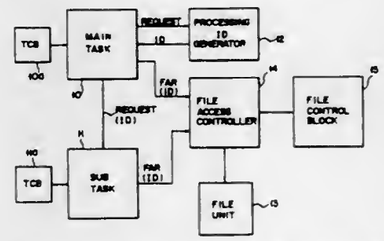
5,251,316
METHOD AND APPARATUS FOR INTEGRATING A DYNAMIC LEXICON INTO A FULL-TEXT INFORMATION RETRIEVAL SYSTEM
Peter G. Anick, Marlboro, and Rex A. Flynn, Belmont, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.
Filed Jun. 28, 1991, Ser. No. 723,229
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—600 **14 Claims**



1. A method of reindexing a plurality of indices representative of information stored in an information retrieval system, the system including memory having a database stored therein, the database being logically divided to include the plurality of indices, an information database having information objects stored therein and a lexicon, the lexicon including a plurality of data items and groups of data items that appear in the information database, the method comprising the steps of:
(a) maintaining a predetermined time variable representative of the last time the plurality of indices were reindexed;
(b) making a plurality of changes to the lexicon;
(c) attaching a time stamp to each one of the plurality of changes to the lexicon to indicate when the change was made to the lexicon;
(d) locating information objects in the information database that are affected by the plurality of changes to the lexicon;
(e) reindexing portions of the plurality of indices representative of the information objects located in step (d) to reflect the changes in the lexicon;
(f) updating the predetermined time variable to equal the value of the time stamp of a most recent one of the plurality of changes to indicate the changes to the lexicon that have been processed; and
(g) repeating steps (c)–(f) until all changes to the lexicon after the predetermined time have been applied to the plurality of indices.

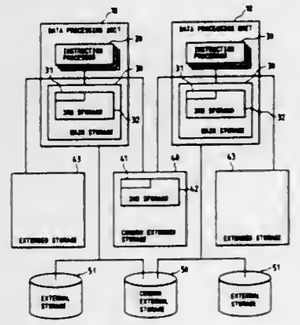
5,251,317
COMPUTER SYSTEM WITH AN ACCESS CONTROL UNIT FOR RESOURCE
Matoi Iizuka, Oome, and Hitoshi Kubo, Tanashi, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jan. 24, 1990, Ser. No. 469,209
Claims priority, application Japan, Jan. 25, 1989, 1-15510
Int. Cl.[5] G06F *9/46*
U.S. Cl. 395—650 **8 Claims**

1. A computer system of multi-task type, comprising:
a plurality of task means including a main task means and a sub task means, which execute related data processing operations and share a resource, the main task means for outputting an ID data and a resource name when accessing the resource, for requesting the sub task means to execute a related data processing operation and for transferring the ID data necessary to access the resource to the sub task means;
ID data generator means for generating the ID data corresponding to the related data processing operation in response to a request by the main task means;



access control block means for storing the resource name of the resource to be accessed by the main task means and the sub task means and for storing the ID data generated by the ID data generator means;
access controller means for accepting the ID data and the resource name from the main task means and the sub task means, for checking the ID data and the resource name stored in the access control block means, and for accessing the resource when the accepted ID data is coincident with the stored ID data corresponding to the resource.

5,251,318
MULTIPROCESSING SYSTEM COMPARING INFORMATION COPIED FROM EXTENDED STORAGE BEFORE AND AFTER PROCESSING FOR SERIALIZING ACCESS TO SHARED RESOURCE
Jun Nitta, Yokohama; Shigeru Yoneda, Ebina, and Tetsuo Murakawa, Hiratsuka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Aug. 23, 1989, Ser. No. 397,679
Claims priority, application Japan, Sep. 2, 1988, 63-218385; Sep. 14, 1988, 63-228683
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—725 **8 Claims**



1. A composite data processing system including a plurality of data processing units, each including at least one instruction processor and a main storage, said plurality of data processing units being connected in common to an extended storage, said system comprising:
means associated with one of said data processing units for

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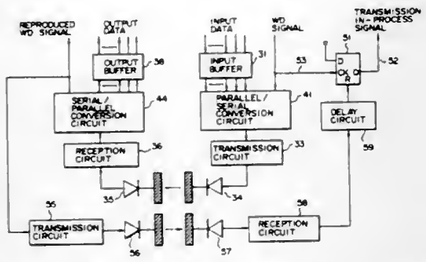
storing therein information fetched from a part of a designated area in said extended storage;
an instruction processor in said one data processing unit for subsequently processing information fetched from said designated area in said extended storage;
means, coupled to said storing means, for subsequently referring to said designated area by said instruction processor in said one data processing unit to examine a condition of said information stored in said part of said designated area to determine whether it is in a predetermined condition in which it corresponds to the part previously stored based upon information stored in said storing means;
means for rewriting said designated area in said extended storage by said instruction processor in response to said part of said designated area being in said predetermined condition as indicated by said means for referring; and
means responsive to a single instruction for controlling said referring means and said rewriting means to execute the operations from said referring operation to said rewriting operation as an inseparable operation during which the designated area is locked to other instruction processors.

5,251,319

OPTICAL TRANSMISSION APPARATUS FOR DIGITAL DEVICES

Chikao Wagai; Shigeki Yokoyama, and Motoichi Kusakabe, all of Tokyo, Japan, assignors to Kodeo Industry Co., Ltd., Japan

Continuation of Ser. No. 463,049, Jan. 11, 1990, abandoned. This application Apr. 9, 1992, Ser. No. 865,729
Claims priority, application Japan, Apr. 17, 1989, 1-88739
Int. Cl.[5] G06F *13/00, 1/04*
U.S. Cl. 395—275 **11 Claims**



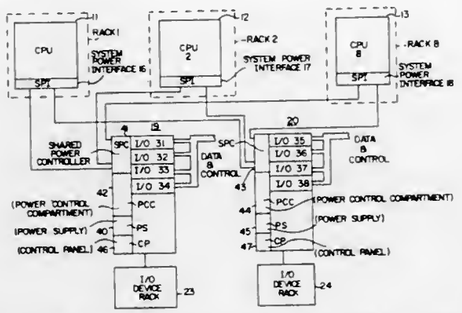
6. An optical transmission apparatus used in association with data transmission equipment for generating a data transmission start designation signal and data reception equipment, said optical transmission apparatus comprising:
(1) parallel/serial converting means for converting input data including parallel data from said data transmission equipment into serial data in response to the data transmission start designation signal;
(2) transmitting means for generating an optical signal corresponding to the serial data output from said parallel/serial converting means;
(3) optical transmission path means for transmitting the optical signal generated from said transmitting means;
(4) receiving means for converting the optical signal supplied through said optical transmission path means into an electrical signal, to output the electrical signal as serial data;
(5) serial/parallel converting means for converting the serial data output from said receiving means into parallel data in response to detection of reception of the end of serial data transmitted from said transmitting means, and for outputting said parallel data to said data reception equipment; and
(6) transmission in-process signal generating means coupled to said parallel/serial converting means for detecting said data transmission start designation signal and for generating a transmission in-process signal which is active during a conversion/transmission interval, and for supplying said transmission in-process signal to said data transmission equipment to prevent said data transmission equipment from sending more data to said parallel/serial converting means before processing of previous data is finished, thereby eliminating and reducing multiple data sampling and transmission among various equipments having different transmission speeds, said transmission in-process signal indicating that data transmission processing is being performed during said conversion/transmission interval, said conversion/transmission interval comprising the time during which said parallel/serial conversion means is converting parallel data to serial data plus the interval during which said serial data is being transmitted from said data transmission equipment to said data reception equipment.

5,251,320

POWER CONTROLLER FOR PERMITTING MULTIPLE PROCESSORS TO POWER UP SHARED INPUT/OUTPUT DEVICES AND INHIBIT POWER DOWN UNTIL ALL PROCESSORS HAVE CEASED SERVICE WITH THE I/O DEVICES

Mark J. Kuzawinski, Maine, and Edward J. Zielinski, Endicott, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 25, 1990, Ser. No. 528,974
Int. Cl.[5] G06F *9/00*
U.S. Cl. 395—750 **3 Claims**



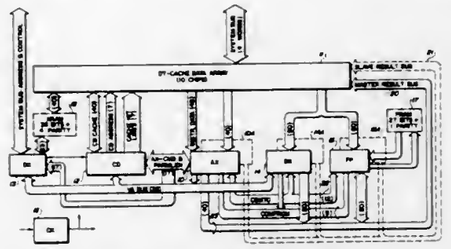
1. In a multiprocessor system for data processing having shared input/output devices, a shared power controller for enabling said devices comprising:
a plurality of input connections of a plurality of control modules for receiving control signals from a system power interface of each processor;
a plurality of switching devices included within the control modules for supplying a first control signal to an output module for indicating a power up command in response to a POWER PICK signal and POWER HOLD signal received from said input connections;
a relay means included in said output module for supplying a second control signal to an external power control compartment, coupled with said shared input/output devices when any one of said switching devices is supplying said first control signal indicating a power up command and maintaining said second control signal as long as any one of said switching devices is asserting a first control signal, and means for supplying a pulse output signal to said external power control compartment when all of said switching devices are not supplying a power command, whereby said input/output devices are initially powered up when any one of said processor system power interfaces issues a POWER PICK signal, and is subsequently powered down only when none of said processor system power interfaces generates a POWER PICK or POWER HOLD signal; and,
means located at a rack of said shared input/output devices for implementing a self-test of shared input/output devices which asserts a power pick signal to said plurality of switching means for generating a power up command in a local mode of operation when none of said processors are accessing said shared input/output devices.

5,251,321

BINARY TO BINARY CODED DECIMAL AND BINARY CODED DECIMAL TO BINARY CONVERSION IN A VLSI CENTRAL PROCESSING UNIT

Donald C. Boothroyd, Phoenix; Clinton B. Eckard; Ronald E. Lange, both of Glendale; William A. Shelly, Phoenix, and Ronald W. Yoder, Mesa, all of Ariz., assignors to Bull HN Information Systems Inc., Phoenix, Ariz.

Continuation of Ser. No. 541,229, Jun. 20, 1990. This application Sep. 30, 1992, Ser. No. 954,437
Int. Cl.[5] G06F *5/06*
U.S. Cl. 395—775 **4 Claims**



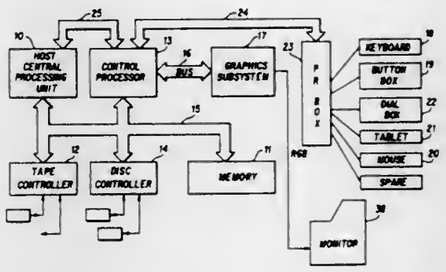
1. A central processing unit (CPU) comprising:
a decimal numeric (DN) unit for executing decimal numeric instructions;
a floating point (FP) unit for executing floating point instructions;
a cache unit for storing instructions and operands consisting of a plurality of bits in addressable locations;
a clock unit for producing clock pulses for the units of the CPU; and
an address and execution (AX) unit including means for producing addresses, and control signals required by the units of CPU to execute an instruction, each of said DN, FP, and AX units being implemented on a single very large scale integrated (VLSI) chip;
bus means interconnecting the units of the CPU for transmitting signals representing instructions, operands, clock pulses, and control signals between said units;
said AX unit including means for fetching an instruction from the cache unit, means for decoding said instruction, hereafter the instruction in execution, to produce control signals to control operation of the units of the CPU in executing the instruction in execution, said AX unit further including means for transmitting over the bus means control signals required by the units of the CPU to execute the instruction in execution, and AX conversion register means for temporarily storing the bits of an operand;
said DN unit including means for storing control signals received from the AX unit over the bus means, DN conversion register means for temporarily storing the bits of an operand, and binary coded decimal to binary conversion means for converting a given binary coded decimal operand stored in said DN conversion register means of the DN unit to a resultant binary operand at the rate of one bit per clock pulse, both the given and the resultant operands having the same numeric value;
the means for decoding an instruction of the AX unit in response to the receipt of an instruction to convert a binary coded decimal operand to a resultant binary operand, producing control signals to cause the DN unit to fetch the given binary coded decimal operand from the cache unit and to store said given operand in the DN conversion register means, control signals produced by the AX unit causing the DN unit to apply the bits of said given operand at the rate of one bit per clock bit to the DN unit's binary coded decimal to binary conversion means for converting the bits of the given operand to the bits of the resultant operand;
control signals exchanged between the DN and AX units causing the bits of said resultant operand to be stored in the AX conversion register at the rate of one bit per clock pulse;
said AX unit producing control signals which cause the AX unit to transmit the resultant operand from the AX conversion register means to the cache unit for storage in the cache unit.

5,251,322

METHOD OF OPERATING A COMPUTER GRAPHICS SYSTEM INCLUDING ASYNCHRONOUSLY TRAVERSING ITS NODES

Peter L. Doyle, Northboro; John P. Ellenberger, Grotoa; Ellis O. Jones, Andover; David C. Carver, Medway; Steven D. DiPirro, Holliston; Branko J. Gerovac, Marlboro, all of Mass.; William P. Armstrong; Ellen S. Gibson, both of Salt Lake City, Utah; Raymond E. Shapiro, Marlboro, Mass.; Kevin C. Rushforth, West Valley City, and William C. Roach, Salt Lake City, both of Utah, assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 184,406, Apr. 20, 1988, abandoned, which is a continuation of Ser. No. 85,081, Aug. 13, 1987, Pat. No. 5,155,822. This application Feb. 8, 1990, Ser. No. 477,151
Int. Cl.[5] G06F *3/14*
U.S. Cl. 395—800 **6 Claims**



1. A method of operating a computer graphics system having a host processor for running application programs and a graphics subsystem separate from the host processor, comprising the steps of:
a) building a graphics data structure with one of said application programs and storing the graphics data structure in the graphics subsystem, said graphics data structure including a plurality of nodes, at least one of said plurality of nodes referencing at least one operand defining a plurality of different sequences of nodes in said graphics data structure, the operand being contained in a memory in the graphics subsystem;
b) operating said computer graphics system to manipulate data contained in said memory in the graphics subsystem to determine a value of said operand;
c) operating a structure walker in said graphics subsystem to access said operand from said memory;
d) operating the structure walker in said graphics subsystem to perform a test on the value of said operand;
e) traversing by said structure walker one of said plurality of different sequences of nodes in the graphics data structure as a function of the result of said test, the traversal being

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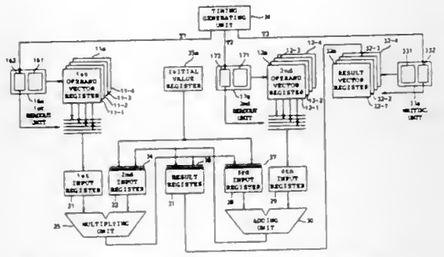
asynchronous to the running of said application programs by the host processor.

5,251,323

VECTOR PROCESSING APPARATUS INCLUDING TIMING GENERATOR TO ACTIVATE PLURAL READOUT UNITS AND WRITING UNIT TO READ VECTOR OPERAND ELEMENTS FROM REGISTERS FOR ARITHMETIC PROCESSING AND STORAGE IN VECTOR RESULT REGISTER

Yonko Isobe, Yamanashi, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 5, 1990, Ser. No. 505,685
Claims priority, application Japan, Apr. 6, 1989, 1-87688
Int. Cl.[5] G06F *15/347*
U.S. Cl. 395—800 **3 Claims**



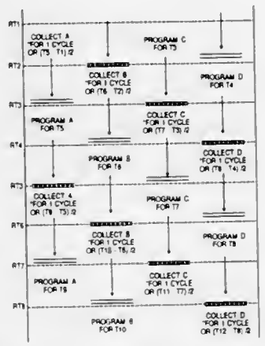
1. In vector processing apparatus which includes
an operand vector register for storing vector operand data consisting of a plurality of vector operand elements,
a first input register connected to said operand vector register for holding each of said vector operand elements of said vector operand data as a primary input element of first input data,
a second input register for holding a secondary input element of second input data,
an arithmetic logic unit operable under M-stage pipeline control, where M represents a predetermined natural number, and connected to said first and second input registers for carrying out an operation on said first second input data to produce vector result data consisting of a plurality of vector result elements,
a readout unit connected to said operand vector register for reading said vector operand data out of said operand vector register to supply said vector operand data to said first input register as said first input data,
delivering means for delivering said vector result data from said arithmetic logic unit to said second input register as said second input data,
a result register connected to said arithmetic logic unit for holding each of said vector result elements of said vector result data,
a result vector register connected to said result register for storing said vector result data, and
a writing unit connected to said result vector register for writing said vector result data into said result vector register,
the improvement wherein:
said readout unit successively reads n vector operand elements, where n represents a predetermined integer between two and M, both inclusive, of said vector operand data out of said operand vector register every (M+1) machine cycles;
said writing unit successively writing n vector result elements of said vector result data into said result vector register every said (M+1) machine cycles;
said vector processing apparatus comprising
a timing generating unit connected to said readout unit and to said writing unit for activating said readout unit and said writing unit by a readout timing signal and a writing timing signal, respectively,
said readout timing signal being produced when said second input register is supplied with said vector result element of said vector result data from said arithmetic logic unit, and
said writing timing signal being produced when said result register produces said vector result element of said vector result data.

5,251,324

METHOD AND APPARATUS FOR GENERATING AND COLLECTING VIEWING STATISTICS FOR REMOTE TERMINALS IN A CABLE TELEVISION SYSTEM

Jay C. McMullan, Jr., Doraville, Ga., assignor to Scientific-Atlanta, Inc., Norcross, Ga.

Continuation-in-part of Ser. No. 562,675, Aug. 3, 1990, which is a division of Ser. No. 503,422, Apr. 2, 1990, Pat. No. 5,142,690, which is a continuation-in-part of Ser. No. 498,084, Mar. 20, 1990, Pat. No. 5,155,590, and Ser. No. 498,083, Mar. 20, 1990. This application Mar. 19, 1991, Ser. No. 671,532
Int. Cl.[5] H04H *9/00*
U.S. Cl. 455—2 **34 Claims**



17. A channel monitoring apparatus for monitoring remote terminal channel viewing information in a bi-directional cable television system, the channel monitoring apparatus comprising:
(a) a system manager for initiating a programming function to program a remote terminal to record channel viewing information at a specific record time, and
(b) transmission means for transmitting to one or more remote terminals record times relating to the specific time at which the remote terminal is to store viewing statistics data representing at least the channel being viewed.

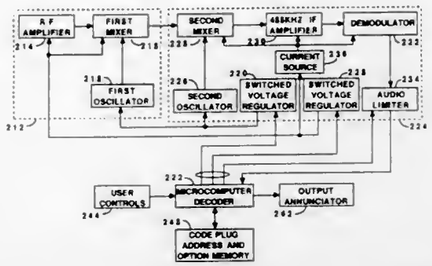
5,251,325

BATTERY SAVING METHOD AND APPARATUS FOR PROVIDING SELECTIVE RECEIVER POWER SWITCHING

Walter L. Davis, Coral Springs, and James G. Mittel, Boynton Beach, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 4, 1990, Ser. No. 532,844
Int. Cl.[5] H04Q *3/02*; H04B *1/16, 7/00*
U.S. Cl. 455—38.3 **11 Claims**

1. A battery powered communication receiver for receiving coded message signals, comprising:
a receiver portion for receiving and demodulating the coded message signals, said receiver portion including
a first receiver function requiring power to be supplied thereto for at least a first predetermined time interval prior to and continuing therefrom the reception of the coded message signals, and
at least a second receiver function requiring power to be supplied thereto for at least a second predetermined time interval prior to and continuing therefrom the reception of the coded message signals; and
battery saving means, coupled to said receiver portion, and responsive to the coded message signals, said battery saving means including



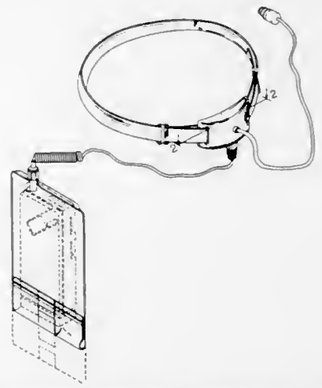
first means for selectively supplying power to said first receiver function for the first predetermined time interval prior to and continuing therefrom the reception of the coded message signals, and
at least a second means for selectively supplying power to at least said second receiver function for the second predetermined time interval prior to and continuing therefrom the reception of the coded message signals.

5,251,326

TWO WAY COMMUNICATION SYSTEM FOR WATER SPORTS

Michael Silverman, 16410 Calahan St., Sepulveda, Calif. 91343

Filed Sep. 17, 1990, Ser. No. 583,435
Int. Cl.[5] H04B *13/02, 1/38*
U.S. Cl. 455—40 **1 Claim**



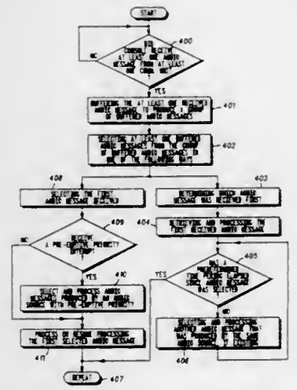
1. An apparatus for two way communication comprising:
a transceiver, capable of sending and receiving radio signals of voice transmissions, said transceiver impervious to water;
a connecting line removably attachable to said transceiver, said connecting line forming a waterproof seal to said transceiver to prevent water leaking in, said connecting line capable of conducting electrical signals therethrough;
a speaker/microphone transducer removably connected to said connecting line, said speaker/microphone transducer capable of generating both electrical and acoustic signals;
a housing incorporating said speaker/microphone transducer in a watertight compartment, said housing having two external slots;
an adjustable strap by which to affix said housing to a portion of a human body, said adjustable strap attached to said housing through said external slots in said housing by loops with sliding buckles;
a hollow acoustical transmission tube connected to said housing for the transmission of acoustic signals therethrough, said hollow acoustical transmission tube being removably attachable to and forming a watertight seal with said housing; and
an earplug for the inserting into a human ear so that acoustical signals may be conducted therethrough, said earplug removably attachable to said hollow acoustic transmission tube and forming a watertight seal therewith and with the inner surface of said human ear, said earplug also capable of conducting acoustic signals from said human ear to said hollow acoustic transmission tube.

5,251,327

METHOD AND APPARATUS FOR PROCESSING AUDIO MESSAGES WITHIN A COMMUNICATION SYSTEM

Vitaly Lenchik, Lake Zurich; Bhadresh Patel, Des Plaines; Kevin J. Krueger, Palatine; Kevin T. Tenbrunsel, Schaumburg, and Brian Stinton, Itasca, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 27, 1992, Ser. No. 842,837
Int. Cl.[5] H04B *7/26*
U.S. Cl. 455—54.2 **7 Claims**

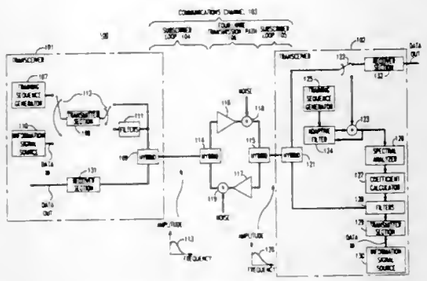


1. In a communication system that includes a plurality of audio message sources, a limited number of communication resources that carry audio messages, and at least one audio message receiver, a method for the at least one audio receiver to process audio messages produced by the plurality of audio message sources, the method comprises the steps of:
a) receiving at least one audio message from at least one audio message source of the plurality of audio message sources to produce at least one received audio message;
b) buffering the at least one received audio message to produce a group of buffered audio messages;
c) determining which of the at least one received audio message was received first to produce a first received audio message;
d) selecting the first received audio message from the group of buffered audio messages after the first audio message has been buffered;
e) initializing a predetermined period of time when the first received audio message is selected;

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f) selecting, during the predetermined period of time, another buffered audio message from the group of buffered audio messages provided that the another buffered audio message was produced by the audio message source that produced the first audio message;
g) resetting the predetermined period of time whenever the another buffered audio message has been selected;
h) retrieving the first received audio message and, when the another audio message was produced by the audio source that produced the first audio message and was selected during the predetermined period of time, retrieving the another audio message to produce at least one retrieved audio message; and
i) processing the at least one retrieved audio message to render the at least one retrieved audio message audible.

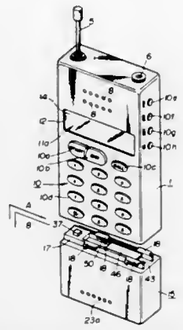
5,251,328
PREDISTORTION TECHNIQUE FOR COMMUNICATIONS SYSTEMS
David G. Shaw, Middletown, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Dec. 20, 1990, Ser. No. 630,636
Int. Cl.[5] H04B *1/38, 1/40*
U.S. Cl. 455—73 **21 Claims**



1. Transceiver apparatus for use in a communications system wherein a communications channel through which a signal is transmitted introduces amplitude distortion, said apparatus comprising
means responsive to a received signal from said communications channel for determining substantially less than all of the amplitude distortion introduced within said communications channel, said determining means being designed for determining substantially less than all of the amplitude distortion introduced within said communications channel; and
means responsive to said determined amplitude distortion for predistorting a transmitted signal from said transceiver.

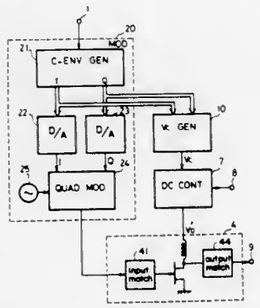
5,251,329
RADIO TELEPHONE APPARATUS WITH MICROPHONE MOUNTED IN BATTERY CASE
Kotaro Takagi; Kunio Sato, both of Tokyo, and Kazunori Imazaki, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Mar. 7, 1991, Ser. No. 666,048
Claims priority, application Japan, Mar. 7, 1990, 2-23012[U]; Oct. 26, 1990, 2-112538[U]; Nov. 2, 1990, 2-114698[U]
Int. Cl.[5] H04B *1/38*
U.S. Cl. 455—89 **7 Claims**

4. A radio telephone apparatus, comprising:
a first casing containing a transmitter section and a receiver section, said first casing having adjacent one end thereof a speaker unit, and at an opposite end thereof a stationary contact protruding therefrom;
a second casing mateable with said first casing and comprising a battery container having a spring contact at a first end thereof contactable with said stationary contact of said first casing;
said second casing having means for slidable attachment of said first end of said second casing to said other end of said first casing;
a contact cover means provided at said first end of said second casing for sliding between a position overlying said spring contact and a position where said spring



contact is uncovered for connection to said stationary contact;
biasing means for resiliently biasing said contact cover means to said overlying position; and
an abutting member means at said other end of said first casing for abutting against said cover member means for sliding the same to said uncovered position when said second casing is slid into connection with said first casing.

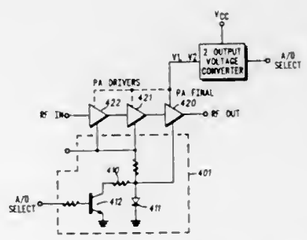
5,251,330
LINEAR TRANSMITTER
Kouji Chiba; Toshio Nojima; Yasushi Yamao, all of Yokosuka; Shigeru Tomisato, Yokohama, and Tadao Takami, Yokosuka, all of Japan, assignors to Nippon Telegraph & Telephone Corporation, Tokyo, Japan
PCT No. PCT/JP90/00838, § 371 Date Apr. 19, 1991, § 102(e) Date Apr. 19, 1991, PCT Pub. No. WO91/00653, PCT Pub. Date Jan. 10, 1991
PCT Filed Jun. 28, 1990, Ser. No. 651,375
Claims priority, application Japan, Jun. 30, 1989, 1-68723; Sep. 19, 1989, 1-242465; Sep. 29, 1989, 1-254457; Jan. 29, 1990, 2-18735; Feb. 13, 1990, 2-33126
Int. Cl.[5] H04B *1/02, 1/04*
U.S. Cl. 455—91 **12 Claims**



1. A linear transmitter including a modulation unit which modulates an input signal in amplitude, an RF power amplifier which amplifies the modulated signal outputted from said modulation unit with a solid state amplification device with a

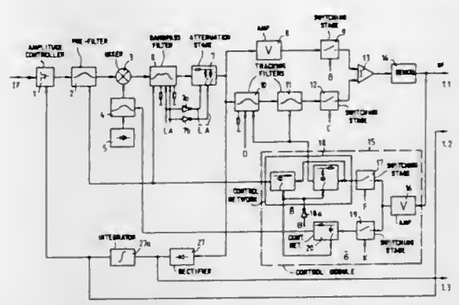
grounded source or a grounded emitter and operating using a bias voltage, and a bias means which outputs a DC voltage substantially proportional to an envelope of said modulated signal as the bias voltage of said power amplifier, which is characterized in that said modulation unit includes a complex envelope generator which generates an in-phase envelope component and a quadrature envelope component of the modulated signal out of the input signal, a quadrature modulator which generates the modulated signal with said in-phase envelope component and quadrature envelope component, and drain voltage controlling means which obtains the envelope out of said in-phase envelope component and said quadrature envelope component and supplies the same to said bias means.

5,251,331
HIGH EFFICIENCY DUAL MODE POWER AMPLIFIER APPARATUS
Dale G. Schwent, Hoffman Estates; Rashid M. Osmani, Carol Stream, and Gary M. Cristiano, Hoffman Estates, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 13, 1992, Ser. No. 850,615
Int. Cl.[5] H04B *1/04, 1/40;* **H03F** *3/04*
U.S. Cl. 455—127 **5 Claims**



1. A dual mode power amplifier apparatus comprising:
at least one amplifier having a supply input, a signal input, and an output, the amplifier generating a signal at the output that has amplified characteristics of an input signal coupled to the signal input; and
a switching power supply having a mode select input, a power input, and an output, the switching power supply being off in a first mode, thereby allowing a signal at the power input to pass through to the output, and the switching power supply being on in a second mode, thereby supplying a predetermined voltage to the switching power supply output, the first and second modes being selected in response to a mode select signal coupled to the mode select input, the switching power supply output coupled to the supply input.

5,251,332
FM RECEIVER WHICH DETECTS AND RESPONDS TO RECEIVING AND INTERFERENCE STATES
Jens Hansen, Berlin, Fed. Rep. of Germany, assignor to H.u.C. Elektronik GmbH, Berlin, Fed. Rep. of Germany
Filed Oct. 31, 1990, Ser. No. 603,765
Claims priority, application Fed. Rep. of Germany, May 30, 1988, 3818752
Int. Cl.[5] H04B *1/16, 1/10*
U.S. Cl. 455—200.1 **16 Claims**



1. An improved FM receiver which includes an IF unit having a plurality of stages and an LF unit having a plurality of stages, the stages of the IF unit including a relatively narrowbanded IF filter having a controllable center frequency, wherein the improvement comprises:
at least one stage of the IF unit has a control input port and at least one stage of the LF unit has a control input port; and
the FM receiver additionally includes a transmission characteristic change means for changing the signal transmission characteristic of at least one of the IF and LF units, said means including
a signal detector module (**28**) including detector circuits (**29** to **33**) for detecting values characteristic of receiving and interference states, with the inputs of said detector circuits each being connected with a stage of the IF or LF unit carrying a signal to be processed, and outputs for signals characteristic of receiving and interference states, respectively,
a signal processing unit (**600**) for the signals characteristic of receiving and interference states, respectively, including at least one threshold circuit whose input is connected with an output of the signal detector module, and
a signal output unit (**400**, **600**) for outputting processed signals characteristics of receiving and interference states, respectively, as control signals to influence the processing characteristic of at least one of the IF and LF units, with inputs of the signal output unit being connected with outputs of the signal processing unit and the outputs of the signal output unit being connected with control input ports of the IF and LF units, respectively,
wherein the stages of the IF unit include rectifier means (**27**) for rectifying an IF signal, integrator means (*27a*) for integrating the rectified IF signal, and amplitude control means (**1**), responsive to the output of the integrator means, for regulating the level of the IF signal, and
wherein the output of the rectifier means and the output of the integrator means serve as input signals for the signal detector module.

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DESIGNS

OCTOBER 5, 1993

339,893
SNACK FOOD
Denise Thronlley, Maywood, and Bernhard H. van Lengerich, Ringwood, both of N.J., assignors to Nabisco, Inc., Parsippany, N.J.
Filed Nov. 27, 1991, Ser. No. 798,762
Term of patent 14 years
U.S. Cl. D1—106



339,894
SNACK FOOD
Denise Thornilley, Maywood, and Bernhard H. van Lengerich, Ringwood, both of N.J., assignors to Nabisco, Inc., Parsippany, N.J.
Filed Nov. 27, 1991, Ser. No. 798,763
Term of patent 14 years
U.S. Cl. D1—106



339,895
SNACK FOOD
Denise Thornilley, Maywood, and Bernhard H. van Lengerich, Ringwood, both of N.J., assignors to Nabisco, Inc., Parsippany, N.J.
Filed Nov. 27, 1991, Ser. No. 798,766
Term of patent 14 years
U.S. Cl. D1—107



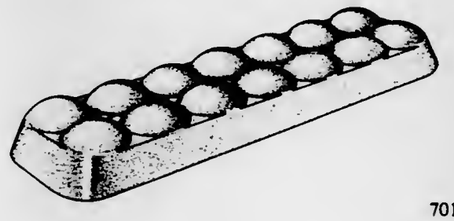
339,896
SNACK FOOD
Denise Thornilley, Maywood, and Bernhard H. van Lengerich, Ringwood, both of N.J., assignors to Nabisco, Inc., Parsippany, N.J.
Filed Nov. 27, 1991, Ser. No. 798,765
Term of patent 14 years
U.S. Cl. D1—107



339,897
SNACK FOOD
Denise Thornilley, Maywood, and Bernhard H. van Lengerich, Ringwood, both of N.J., assignors to Nabisco, Inc., Parsippany, N.J.
Filed Nov. 27, 1991, Ser. No. 798,768
Term of patent 14 years
U.S. Cl. D1—107

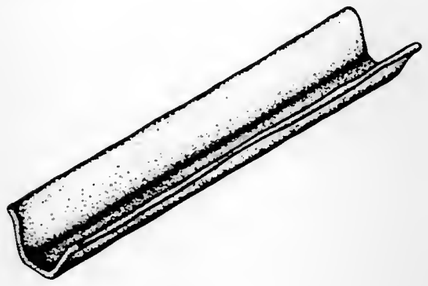


339,898
FOOD PRODUCT
Gordon S. Lane, Baldwinsville, N.Y., assignor to Nestec S.A., Vevey, Switzerland
Filed Mar. 12, 1992, Ser. No. 851,349
Term of patent 14 years
U.S. Cl. D1—121



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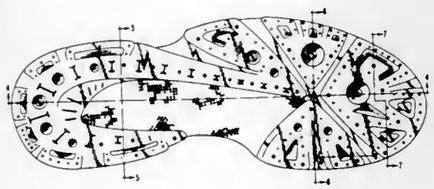
339,899
PIZZA CRUST
Jerry L. Kittleson, Issaquah, Wash., assignor to Pietro's Corporation, Lynnwood, Wash.
Filed Nov. 15, 1990, Ser. No. 621,721
Term of patent 14 years
U.S. Cl. D1—122



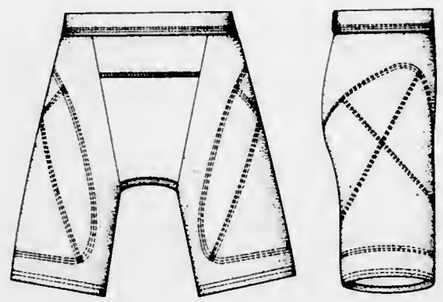
339,900
BODYSUIT FOR A WRESTLER
Bobby R. Fanning, R.R. #2, Box 52A, Watonga, Okla. 73772
Filed Nov. 1, 1991, Ser. No. 787,967
Term of patent 14 years
U.S. Cl. D2—36



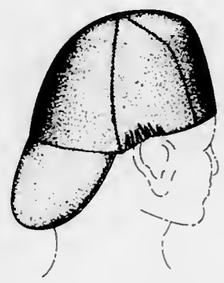
339,901
SOLE BOTTOM FOR A SHOE
Mark J. Smith, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Dec. 11, 1992, Ser. No. 2,419
Term of patent 14 years
U.S. Cl. D2—320



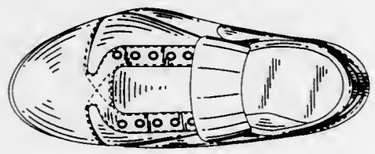
339,902
PAIR OF SHORTS
Sara J. Doherty, Franklin, N.H., assignor to Star Specialty Knitting, Inc.
Filed Dec. 12, 1991, Ser. No. 809,065
Term of patent 14 years
U.S. Cl. D2—42



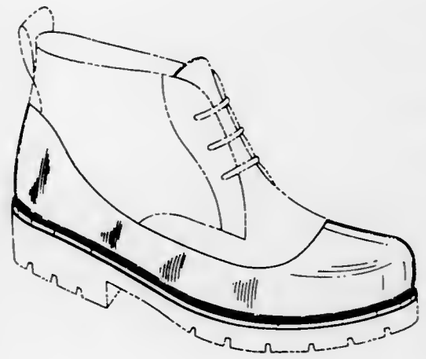
339,903
CAP
Jay C. Ballew, 15818 - 180th Ave. NE., Woodinville, Wash. 98072
Filed Dec. 12, 1990, Ser. No. 626,179
Term of patent 14 years
U.S. Cl. D2—244



339,904
SPORTING SHOE
Akira Suzuki, Oomiya, Japan, assignor to Zett Kabushiki Kaisha, Osaka, Japan
Filed Jul. 12, 1991, Ser. No. 728,211
Term of patent 14 years
U.S. Cl. D2—311



339,905
FOOTWEAR UPPER
Douglas W. Beasley, Batawa Gardens, Apt. 1, Batawa, Ontario, Canada K0K 1E0
Filed Jul. 15, 1991, Ser. No. 737,537
Claims priority, application Canada, Jan. 29, 1991, 29-01-91-8
Term of patent 14 years
U.S. Cl. D2—314



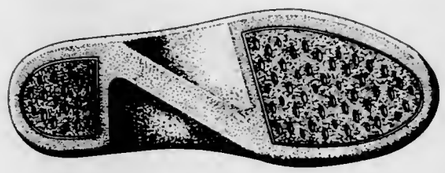
339,906
SHOE INSERT
Enrico Frachey, Ponderano, and Alfredo Crespan, Mignagola di Carbonera, both of Italy, assignors to Global Sports Technologies, Inc., Tortola, British Virgin Isls.
Division of Ser. No. 812,223, Dec. 23, 1991, Pat. No. D.330,628, which is a continuation-in-part of Ser. No. 527,876, May 24, 1990, Pat. No. 5,092,060. This application May 22, 1992, Ser. No. 886,482
Claims priority, application Italy, May 24, 1989, 20614 A/89
Term of patent 14 years
U.S. Cl. D2—318



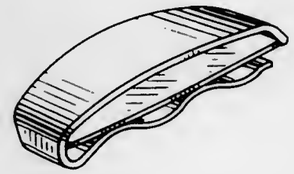
339,907
SHOE SOLE
Gary Banik, Mill Valley, Calif., assignor to C. & J. Clark America, Inc, Kennett Square, Pa.
Filed Apr. 6, 1992, Ser. No. 864,078
Term of patent 14 years
U.S. Cl. D2—320



339,908
SHOE SOLE
Gary Banik, Mill Valley, Calif., assignor to C. & J. Clark America, Inc, Kennett Square, Pa.
Filed Apr. 6, 1992, Ser. No. 864,079
Term of patent 14 years
U.S. Cl. D2—320

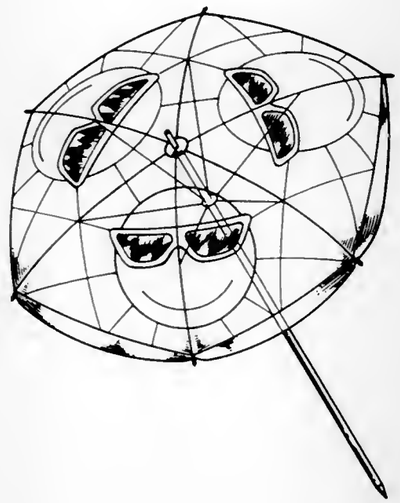


339,909
BELT CLIP
Daryl J. Burton, 148 W. 23rd St., Apt. 10D, New York, N.Y. 10011
Filed Nov. 12, 1991, Ser. No. 791,623
Term of patent 14 years
U.S. Cl. D2—639

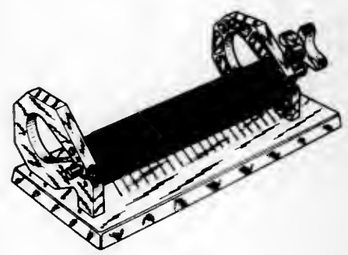


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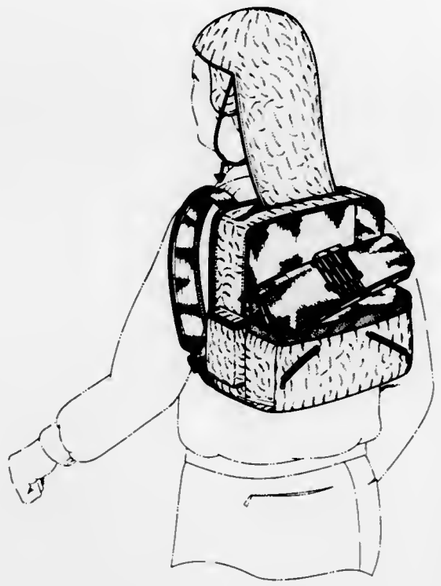
339,910
UV BLOCKING BEACH UMBRELLA
Walter T. Flanagan, 80-09 35th Ave. #E-16, Jackson Heights, N.Y. 11372
Filed Jul. 8, 1991, Ser. No. 726,550
Term of patent 14 years
U.S. Cl. D3—6



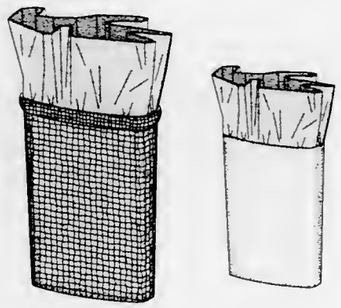
339,911
PLEATING MACHINE
Tjeerd J. Kooistra, 356 Marion Road, North Plympton, Adelaide 5037 South Australia, Australia
Filed Aug. 2, 1990, Ser. No. 561,666
Claims priority, application Australia, Mar. 28, 1990, 935/90
Term of patent 14 years
U.S. Cl. D3—18



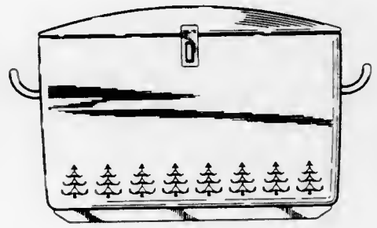
339,912
COMBINED BACKPACK AND HOOD
Keith H. Delauter, 12040 Wolfsville Rd., Myersville, Md. 21773
Filed Apr. 2, 1992, Ser. No. 862,594
Term of patent 14 years
U.S. Cl. D3—32



339,913
EYEGLASS CASE
Elmer Reed, The Aristocraft Company, 3001 S. Kilbourn Ave., Chicago, Ill. 60623
Filed Mar. 11, 1991, Ser. No. 666,682
Term of patent 14 years
U.S. Cl. D3—34



339,914
DECOY CARRYING BASKET
William M. Fredericks, 922 Elizabeth St., Ogdensburg, N.Y. 13669
Filed Sep. 19, 1990, Ser. No. 584,869
Term of patent 14 years
U.S. Cl. D3—38



339,915
TOTE BAG
Robert A. Lucas, 12513 Sherwood, Leawood, Kans. 66209
Filed Feb. 13, 1992, Ser. No. 834,701
Term of patent 14 years
U.S. Cl. D3—44



339,916
FOOTBALL KEY RING
Kurosh N. Behbahani, P.O. Box 110453, Campbell, Calif. 95011
Filed Jan. 14, 1992, Ser. No. 820,399
Term of patent 14 years
U.S. Cl. D3—63



339,917
LUGGAGE CASE
Roger Pedlar, London, England, assignor to Samsonite Corporation, Denver, Colo.
Filed Nov. 19, 1991, Ser. No. 793,977
Claims priority, application United Kingdom, May 20, 1991, 2014837
Term of patent 14 years
U.S. Cl. D3—76

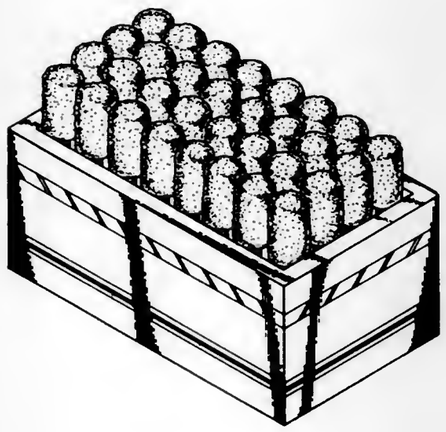


339,918
COMBINED DISPENSER AND APPLICATOR FOR CAR WAX
Kevin P. Chamberlain, 271 E. Main St., Norwalk, Ohio 44857
Filed Jun. 24, 1991, Ser. No. 719,558
Term of patent 14 years
U.S. Cl. D4—114

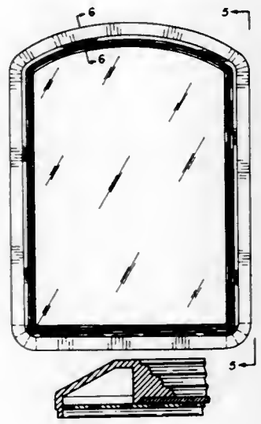


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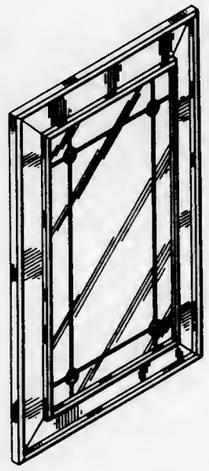
339,919
SHOE CLEANING DEVICE
Franklin C. Cox, 1210 Park Dr., Stamford, Tex. 79553
Filed Nov. 22, 1991, Ser. No. 796,215
Term of patent 14 years
U.S. Cl. D4—119



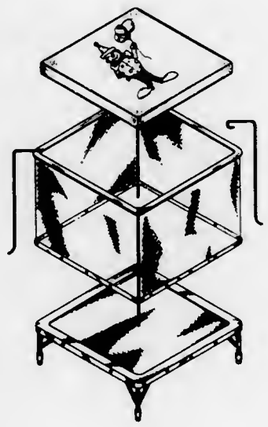
339,920
MIRROR
James Hampshire, Solon, Ohio, assignor to Interdesign, Inc., Solon, Ohio
Filed Sep. 27, 1991, Ser. No. 769,008
Term of patent 14 years
U.S. Cl. D6—300



339,921
MIRROR
Aagie M. T. Nourse, Fort Worth, Tex., assignor to BBA Holdings, Inc., Wilmington, Del.
Filed Dec. 6, 1991, Ser. No. 803,362
Term of patent 14 years
U.S. Cl. D6—300



339,922
CONVERTIBLE PLAY PEN
Ruth Williams, P.O. Box 127, Jackson, Ky. 41339
Filed Feb. 7, 1992, Ser. No. 831,307
Term of patent 14 years
U.S. Cl. D6—331



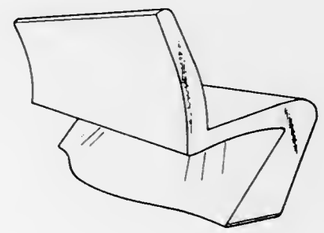
339,923
SEAT PRIMARILY FOR A CHILD
James A. Clarke, 96A Newlands Park, London, United Kingdom SE26 5NB
Filed Nov. 16, 1990, Ser. No. 615,631
Term of patent 14 years
U.S. Cl. D6—333



339,924
CHAIR
Dale Fahnstrom, Chicago, Ill.; Michael McCoy, Bloomfield Hills, Mich., and Carl G. Magnusson, New York, N.Y., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jan. 11, 1990, Ser. No. 463,806
Term of patent 14 years
U.S. Cl. D6—366



339,925
BENCH
Emilio Farré-Escofet Paris, Barcelona, Spain, assignor to Hijo de E. F. Escofet S.A., Barcelona, Spain
Filed Sep. 12, 1991, Ser. No. 758,818
Claims priority, application Spain, Apr. 17, 1991, 124.683
Term of patent 14 years
U.S. Cl. D6—364



339,926
CHAIR
Dale Fahnstrom, Chicago, Ill.; Michael McCoy, Bloomfield Hills, Mich., and Carl G. Magnusson, New York, N.Y., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jan. 11, 1990, Ser. No. 463,808
Term of patent 14 years
U.S. Cl. D6—366



339,927
CHAIR
Dale Fahnstrom, Chicago, Ill.; Michael McCoy, Bloomfield Hills, Mich., and Carl G. Magnusson, New York, N.Y., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jan. 11, 1990, Ser. No. 463,809
Term of patent 14 years
U.S. Cl. D6—366



339,928
CHAIR
John Caldwell, 1829 Warwick Rd., San Marino, Calif. 91108
Filed May 23, 1991, Ser. No. 704,622
Term of patent 14 years
U.S. Cl. D6—370



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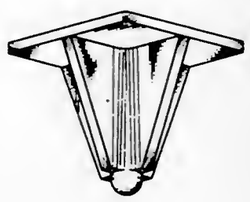
339,929
ARM CHAIR
Larry A. Schwartz, Franklin, N.J., assignor to Omni Products International, Inc., Richmond, Va.
Filed Oct. 3, 1991, Ser. No. 774,058
Term of patent 14 years
U.S. Cl. D6—370



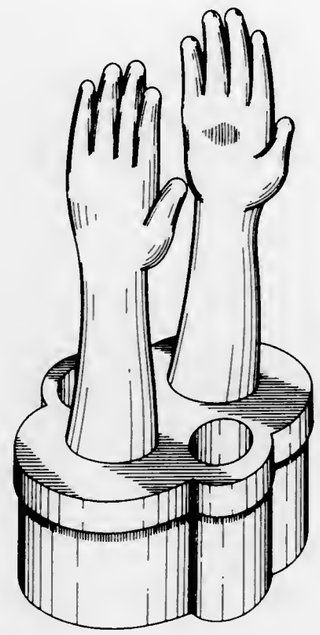
339,930
FOLDING SEAT
Peter M. Urban, 822 W. Spring Meadow Ct., Edgewood, Md. 21040
Filed Jul. 27, 1990, Ser. No. 558,388
Term of patent 14 years
U.S. Cl. D6—374



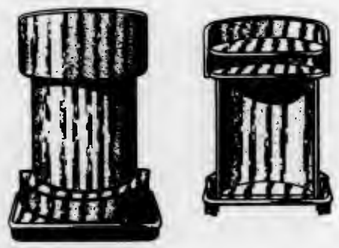
339,931
PLANTER SUPPORT
Basil S. Gemette, 944 Summerfield Rd., Santa Rosa, Calif. 95405
Filed Dec. 16, 1991, Ser. No. 806,755
Term of patent 14 years
U.S. Cl. D6—403



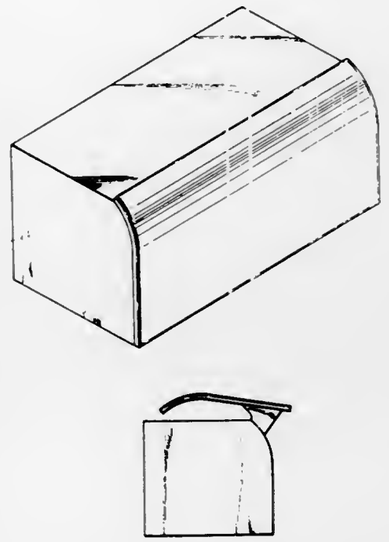
339,932
COMBINED DISPLAY AND STORAGE FOR GLOVES
Doris Hinds, 1144 Grassmere Ter., Far Rockaway, N.Y. 11691
Filed Mar. 27, 1991, Ser. No. 675,707
Term of patent 14 years
U.S. Cl. D6—412



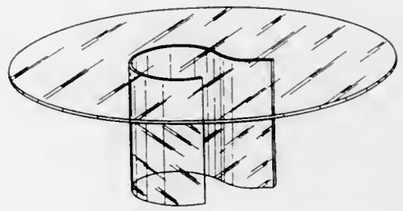
339,933
PODIUM
Aris Fafoutis, 400 Prince Royal Dr., Corte Madera, Calif. 94925
Filed May 10, 1991, Ser. No. 698,577
Term of patent 14 years
U.S. Cl. D6—419



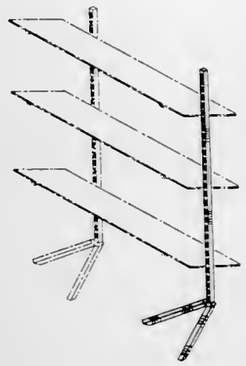
339,934
STORAGE CABINET
Robert E. Reuter, Stony Brook, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Sep. 26, 1991, Ser. No. 765,870
Term of patent 14 years
U.S. Cl. D6—441



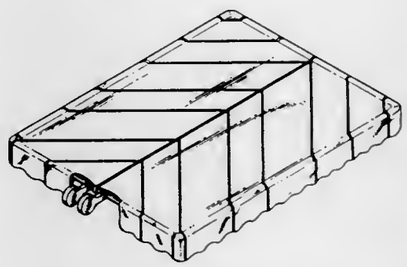
339,935
DINING TABLE
Giorgetto Giugiaro, Turin, Italy, assignor to Fiam Italia S.p.A., Tavullia-Pesaro, Italy
Filed Jul. 18, 1991, Ser. No. 731,921
Claims priority, application Italy, Mar. 8, 1991, MI 910000194
Term of patent 14 years
U.S. Cl. D6—485



339,936
SHELF STRUCTURE
Judy V. Gunten, and Lee V. Gunten, both of 64 Newtown Dr., Buffalo Grove, Ill. 60089
Filed Apr. 16, 1993, Ser. No. 509,623
Term of patent 14 years
U.S. Cl. D6—491



339,937
COVER FOR AN INFANT CAR SEAT
Mark G. Ryan, 529 Marigold Ave., Orlando, Fla. 32807
Filed Dec. 26, 1991, Ser. No. 812,964
Term of patent 14 years
U.S. Cl. D6—491



339,938
LEG AND SIDE STRUCTURE FOR FURNITURE
Ronald D. Fisher, 1007 W. Church St., Marshalltown, Iowa 50158
Filed Oct. 30, 1990, Ser. No. 605,772
Term of patent 14 years
U.S. Cl. D6—492

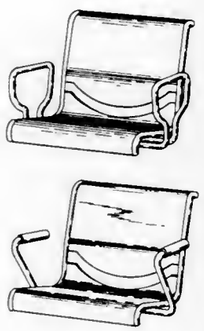


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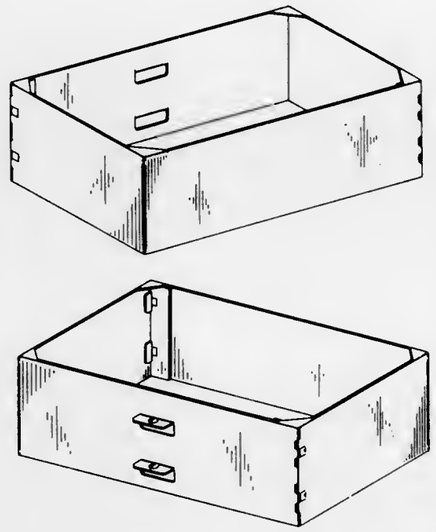
339,939
FRONT PANEL FOR A DRAWER
John B. Brandon, Attica, N.Y., assignor to Harrow Products, Inc., Grand Rapids, Mich.
Filed Feb. 5, 1991, Ser. No. 650,671
Term of patent 14 years
U.S. Cl. D6—492



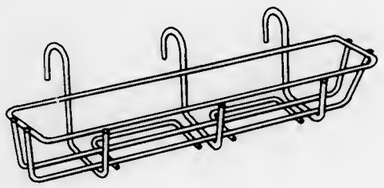
339,940
CHAIR SEAT
Nicola Balderi, Green Bay, and David R. Funk, De Pere, both of Wis., assignors to Krueger International, Inc., Green Bay, Wis.
Filed Nov. 25, 1991, Ser. No. 797,347
Term of patent 14 years
U.S. Cl. D6—502



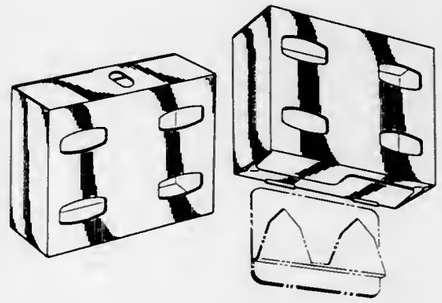
339,941
ADVERTISING SLEEVE
Kermit E. Meehan, Wayzata, Minn., assignor to The Mike Meehan Company, Plymouth, Minn.
Filed Apr. 22, 1991, Ser. No. 688,889
Term of patent 14 years
U.S. Cl. D6—509



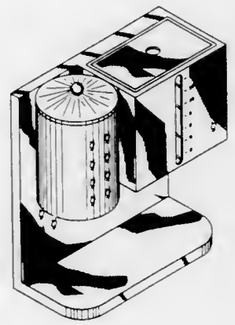
339,942
RAILING PLANTER BOX HOLDER
Seymour Emalfarb, 1585 Saunders Rd., River Woods, Ill. 60015, and Bradley S. Emalfarb, 26529 N. Highway 83, Mundelein, Ill. 60060
Filed Aug. 9, 1991, Ser. No. 742,936
Term of patent 14 years
U.S. Cl. D6—513



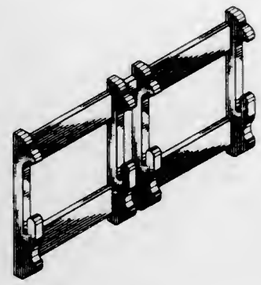
339,943
LENS TISSUE DISPENSING UNIT
Steve J. Romme, Woodstock, and L. Wesley Smith, Roswell, both of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Dec. 14, 1990, Ser. No. 627,427
The portion of the term of this patent subsequent to Apr. 6, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—515



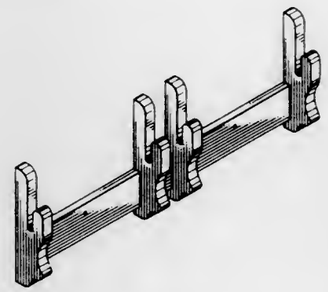
339,944
COMBINED CUP AND MOUTHWASH DISPENSER
Teresa S. Slomiana, 120 Pemberwick Rd., Greenwich, Conn. 06831
Filed Oct. 18, 1990, Ser. No. 601,185
Term of patent 14 years
U.S. Cl. D6—542



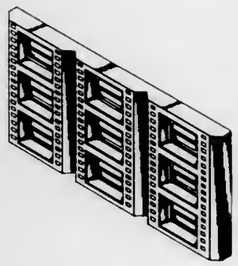
339,945
PLATE RACK
Julie D. Moser, 5025-B Swenson Rd., Deer Park, Wash. 99006
Division of Ser. No. 723,510, Jun. 28, 1991. This application Mar. 31, 1993, Ser. No. 6,498
Term of patent 14 years
U.S. Cl. D6—570



339,946
PLATE RACK
Julie D. Moser, 5025-B Swenson Rd., Deer Park, Wash. 99006
Division of Ser. No. 723,510, Jun. 28, 1991. This application Mar. 31, 1993, Ser. No. 6,499
Term of patent 14 years
U.S. Cl. D6—570

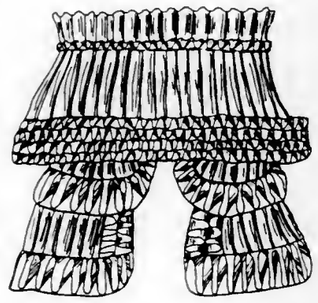


339,947
WALL STORAGE PANEL FOR ENTERTAINMENT MEDIA
Eugene J. Marostica, 1703-200 Bay Street, Ottawa, Ontario, Canada K1P 6K9
Filed Dec. 2, 1991, Ser. No. 801,724
Term of patent 14 years
U.S. Cl. D6—571

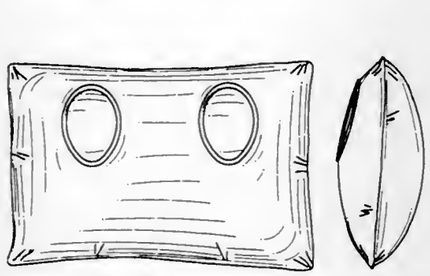


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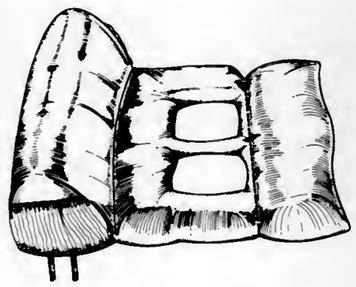
339,948
WINDOW CURTAIN
Letha M. Cromartie, Rt. 1 Box 24, Parkton, N.C. 28371
Filed Dec. 6, 1989, Ser. No. 446,912
Term of patent 14 years
U.S. Cl. D6—578



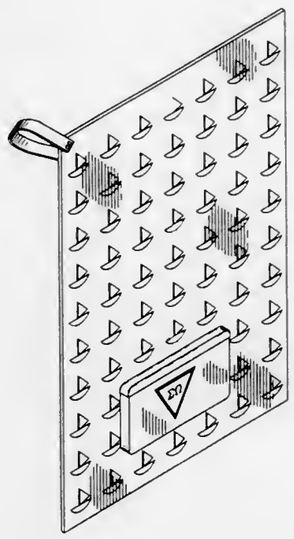
339,949
FOOT WARMING PILLOW
Christine Wei, and Richard L. Leza, both of 4191 Briarwood Way, Palo Alto, Calif. 94306
Filed May 15, 1991, Ser. No. 700,645
Term of patent 14 years
U.S. Cl. D6—601



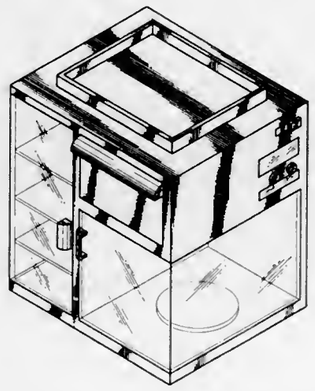
339,950
SHOPPING CART PILLOW
Linda T. Jung, 634 N. St. Patrick, New Orleans, La. 70119
Filed Sep. 11, 1992, Ser. No. 943,608
Term of patent 14 years
U.S. Cl. D6—601



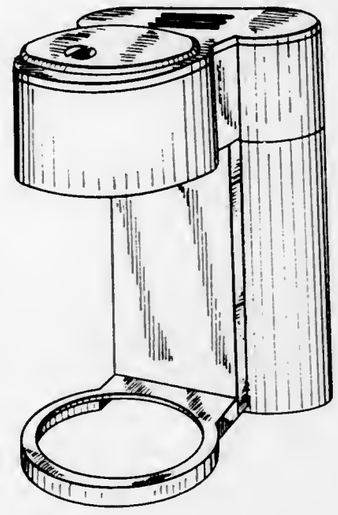
339,951
SPORTS TOWEL WITH POCKET
Gary A. Parkison, and Brinda K. Parkison, both of 12185 SW. Calico Ct. Apt G, Beaverton, Oreg. 97005
Filed Jan. 18, 1991, Ser. No. 643,658
Term of patent 14 years
U.S. Cl. D6—608



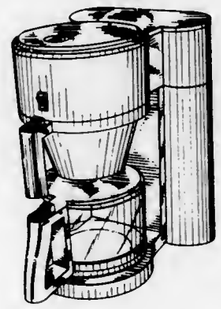
339,952
COMBINED ALARM CLOCK AND COFFEEMAKER
Rosalyn E. Rosen, 25 W. Highland Dr. #4, Seattle, Wash. 98119
Filed Aug. 21, 1991, Ser. No. 748,054
Term of patent 14 years
U.S. Cl. D7—305



339,953
BREWER BODY
Arthur H. Bunn, Springfield, Ill., and Robert Worrell, Hopkins, Minn., assignors to Bunn-O-Matic Corporation, Springfield, Ill.
Filed Jun. 11, 1991, Ser. No. 714,082
Term of patent 14 years
U.S. Cl. D7—309



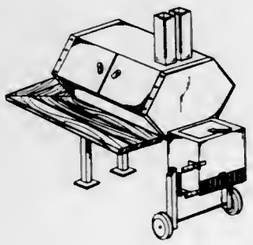
339,954
HOME BREWER
Arthur H. Bunn, 1601 Willemore Ave., Springfield, Ill. 62704, and Robert Worrell, 148 Interlacken Rd., Hopkins, Minn. 55343
Filed May 20, 1991, Ser. No. 702,671
Term of patent 14 years
U.S. Cl. D7—309



339,955
LID FOR SQUEEZE BOTTLE BEVERAGE CONTAINER
Jonathan D. Katz, Kansas City, Mo., assignor to American Beverage Container Corporation, Kansas City, Kans.
Filed Oct. 22, 1990, Ser. No. 601,069
Term of patent 14 years
U.S. Cl. D7—392.1

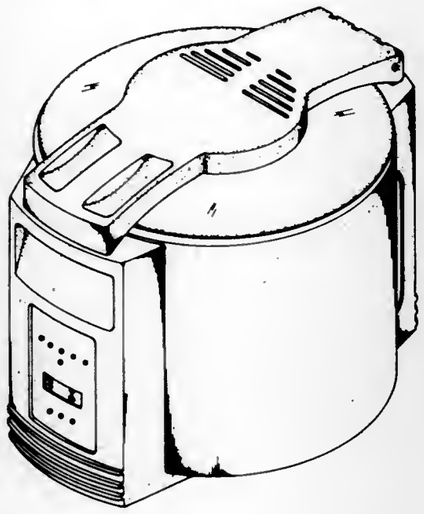


339,956
BARBECUE GRILL
Samuel George, Jr., 1585 S. Broad St., Cairo, Ga. 31728
Continuation-in-part of Ser. No. 608,737, Nov. 5, 1990, abandoned. This application Sep. 6, 1991, Ser. No. 756,128
Term of patent 14 years
U.S. Cl. D7—334

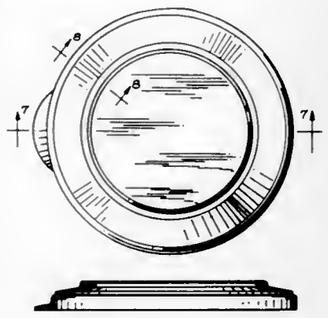


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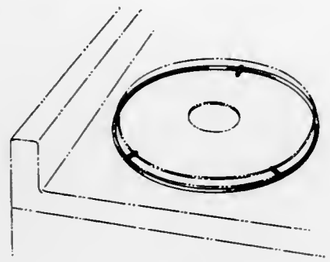
339,957
MULTIPURPOSE COOKER
Kwei-Tang Chang, No. 14, Lane 54, Luong Chuan St., Panchiao, Taipei Hsien, Taiwan
Filed Feb. 14, 1992, Ser. No. 835,669
Term of patent 14 years
U.S. Cl. D7—354



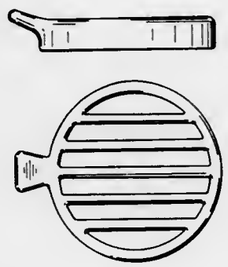
339,958
CONTAINER SEAL
Eskil H. Olsen; Stig Lillelund, both of Gentofte, Denmark, and Robert H. C. M. Daenen, Erembodegem, Belgium, assignors to Dart Industries Inc., Deerfield, Ill.
Filed Sep. 4, 1991, Ser. No. 755,214
Term of patent 14 years
U.S. Cl. D7—392.1



339,959
VENT RING FOR AN ELECTRIC RANGE ELEMENT
Hanford L. Eckman, Shavertown, Pa., assignor to Energy Convertors, Incorporated, Dallas, Pa.
Filed Sep. 19, 1991, Ser. No. 762,224
Term of patent 14 years
U.S. Cl. D7—407



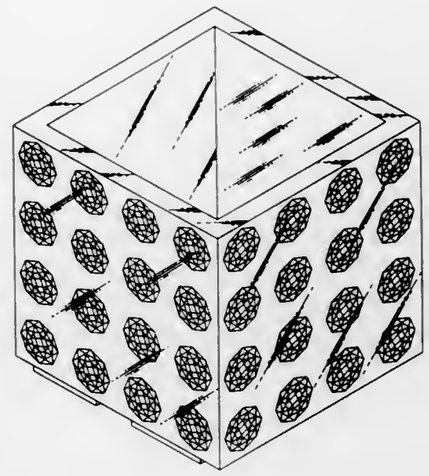
339,960
GRATE FOR FOOD COOKING
Samuel C. Page, Jr., 206 Denise Dr., Marshall, Tex. 75670
Filed Apr. 26, 1991, Ser. No. 692,054
Term of patent 14 years
U.S. Cl. D7—409



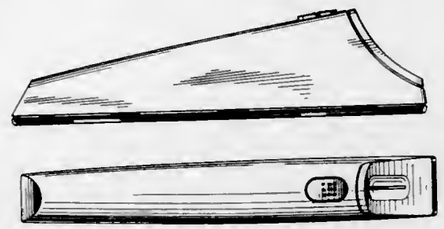
339,961
DRINKING CONTAINER
Moises Ravelo, 1371 W. 37th St., Hialeah, Fla. 33012, and William Duncan, 10515 SW. 154th Ct., Apartment #1, Miami, Fla. 33196
Filed Dec. 9, 1991, Ser. No. 804,205
Term of patent 14 years
U.S. Cl. D7—515



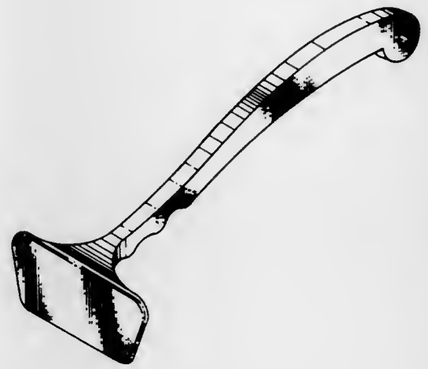
339,962
SUGAR BOWL
John Holland, 10 Ullswater Gardens, Aylesham NR Canterbur, Kent, England
Filed Mar. 14, 1991, Ser. No. 669,290
Term of patent 14 years
U.S. Cl. D7—560



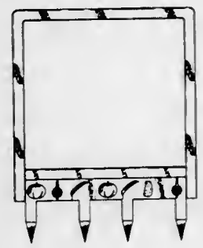
339,963
SCABBARD FOR A KNIFE
Ian D. Roberts, and Andrew J. Howard, both of Cardiff, Great Britain, assignors to McPherson's Limited, Victoria, Australia
Filed Oct. 2, 1991, Ser. No. 771,312
Claims priority, application United Kingdom, Apr. 4, 1991, 2013948
Term of patent 14 years
U.S. Cl. D7—638



339,964
EATING UTENSIL FOR MOVING FOOD TO A FORK OR SPOON
Joyce H. Knox, 25 London La., Sharpsburg, Ga. 30277
Filed Feb. 28, 1992, Ser. No. 844,380
Term of patent 14 years
U.S. Cl. D7—642



339,965
GARDENING TOOL FOR PRODUCING MULTIPLE HOLES
Victor H. Ihde, W204N10530 Hilltop Dr., Germantown, Wis. 53022
Filed Jul. 1, 1991, Ser. No. 723,631
Term of patent 14 years
U.S. Cl. D8—13

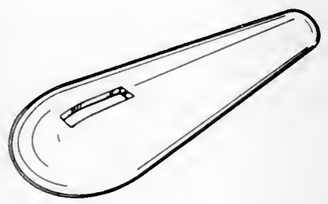


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339,966
SOD SHIFTER
David W. Burnett, 18800 Pinion Pine, Reno, Nev. 89506
Filed Nov. 12, 1991, Ser. No. 792,060
Term of patent 14 years
U.S. Cl. D8—13



339,967
BOTTLE-OPENER
Dario Tanfoglio, Fornaci-Brescia, Italy, assignor to Fratelli Guzzini S.p.A., Recanati, Italy
Filed Aug. 10, 1992, Ser. No. 927,817
Claims priority, application Italy, Feb. 13, 1992, MI920 000078
Term of patent 14 years
U.S. Cl. D8—40



339,968
BOTTLE CAP AND PULL-TAB REMOVER
Chane-Jane Shy, No. 219, Chieh-Shou-Hsin Tsuen, Changhua City, Taiwan
Filed Sep. 28, 1992, Ser. No. 952,165
Term of patent 14 years
U.S. Cl. D8—40



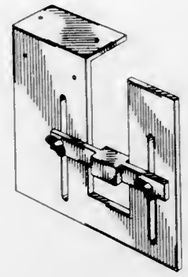
339,969
COMBINED BOTTLE OPENER AND STOPPER
Earl Gonyaw, 1317 Lake St. Louis Blvd., Lake St. Louis, Mo. 63367
Filed Sep. 2, 1992, Ser. No. 938,348
Term of patent 14 years
U.S. Cl. D8—42



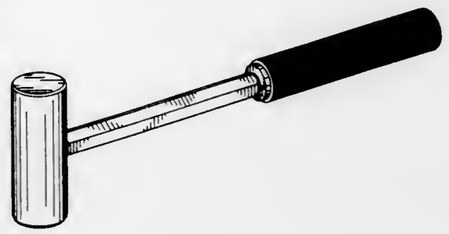
339,970
LENS GRIPPING TOOL
Garry N. Marshall, 15248 SE. 39th, Bellevue, Wash. 98006, and Christopher D. Schorr, 1925 S. 291st, Federal Way, Wash. 98003
Filed Apr. 16, 1990, Ser. No. 510,782
Term of patent 14 years
U.S. Cl. D8—52



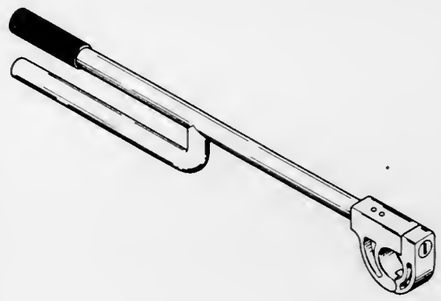
339,971
FASCIA HOLDER
David E. Hatcher, 3120 W. Wethersfield Rd., Phoenix, Ariz. 85029
Filed May 28, 1991, Ser. No. 706,068
Term of patent 14 years
U.S. Cl. D8—71



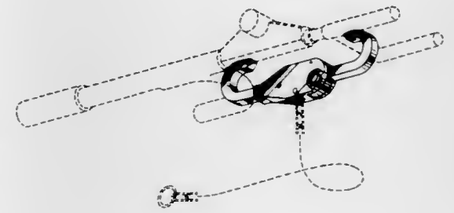
339,972
HAMMER
Edward P. Forman, 1230 Honey Lake Rd., Lake Zurich, Ill. 60047
Filed Dec. 23, 1991, Ser. No. 817,103
Term of patent 14 years
U.S. Cl. D8—77



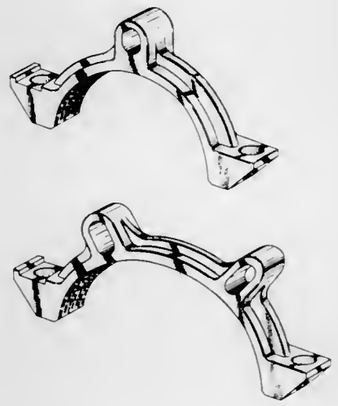
339,973
STEERING WHEEL LOCK
Ruei-Mei Chen, No. 18, Lane 76, Sec. 2, Hsin Sheng N. Rd., Taipei, Taiwan
Filed May 28, 1992, Ser. No. 889,305
Term of patent 14 years
U.S. Cl. D8—331



339,974
HOLDER FOR A VEHICLE STEERING WHEEL LOCK BAR
John R. Wilcox, Farrell, Pa., assignor to Winner International, Sharon, Pa.
Filed Nov. 22, 1991, Ser. No. 796,231
Term of patent 14 years
U.S. Cl. D8—343

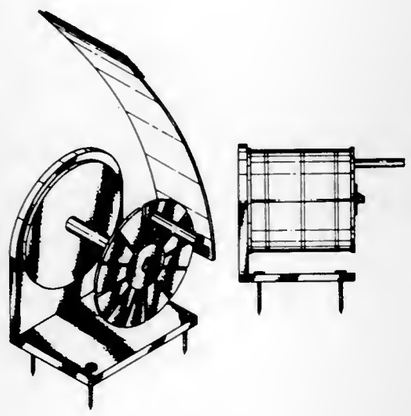


339,975
PIPE RESTRAINER COLLAR MEMBER
Edwin A. Bird, Ashdown, Ark.; Michael E. Corwon, and Kirby L. Shaddix, both of Texarkana, Tex., assignors to M&FC Holding Co., Inc., Wilmington, Del.
Filed Nov. 6, 1991, Ser. No. 789,143
Term of patent 14 years
U.S. Cl. D8—354

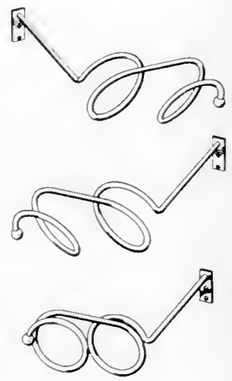


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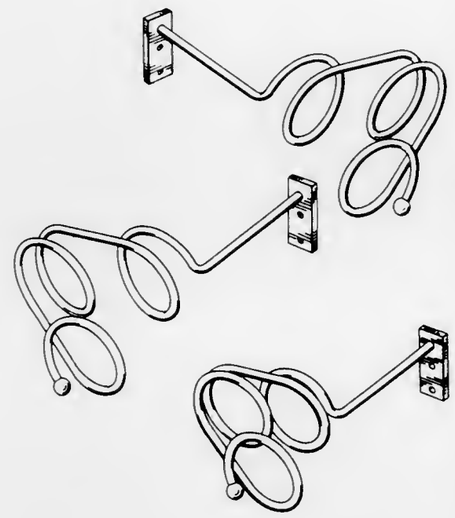
339,976
COMBINED CHRISTMAS TREE LIGHT STORAGE REEL AND COVER THEREFOR
Richard P. Ferguson, Sr., 5902 Klettner, St. Clair, Mich. 48079
Filed Oct. 15, 1991, Ser. No. 775,377
Term of patent 14 years
U.S. Cl. D8—359



339,977
DRAPERY HOOK
Morris Ferdman, Downsview, Canada, assignor to Canadian Drapery Hardware Ltd., Downsview, Canada
Filed Oct. 24, 1991, Ser. No. 783,071
Claims priority, application Canada, Jun. 20, 1991, 20-06-91-17
Term of patent 14 years
U.S. Cl. D8—368



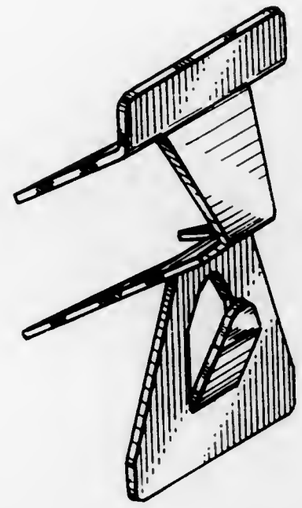
339,978
DRAPERY HOOK
Morris Ferdman, Downsview, Canada, assignor to Canadian Drapery Hardware Ltd., Downsview, Canada
Filed Oct. 24, 1991, Ser. No. 783,072
Claims priority, application Canada, Jun. 20, 1991, 20-06-91-18
Term of patent 14 years
U.S. Cl. D8—368



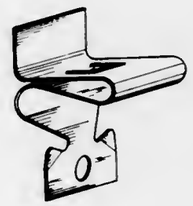
339,979
COMBINED GARMENT BAG HOOK AND STRAP THEREFOR
H. Bernice Wehrley, 323 S. Barnwell St., Oceanside, Calif. 92054
Filed Jun. 12, 1991, Ser. No. 714,062
Term of patent 14 years
U.S. Cl. D8—372



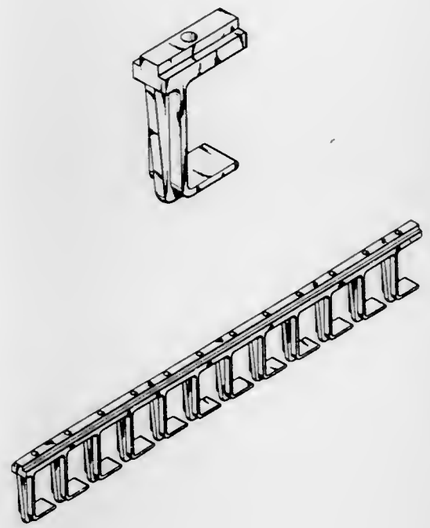
339,980
PICTURE HANGER
Robert K. Sheehan, Cincinnati, Ohio, assignor to Indevco Corporation, Cincinnati, Ohio
Filed Oct. 28, 1991, Ser. No. 783,088
Term of patent 14 years
U.S. Cl. D8—373



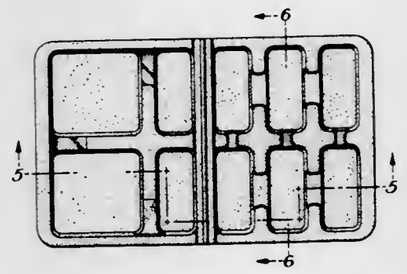
339,981
PICTURE HANGER CLIP
Renny Barnes, 8146 Crestridge Rd., Fairfax Station, Va. 22039
Filed Nov. 5, 1991, Ser. No. 787,961
Term of patent 14 years
U.S. Cl. D8—373



339,982
GUIDE FOR CABLES
Rafael Rodriguez Prados, Madrid, Spain, assignor to Telefonica de Espana, S.A., Madrid, Spain
Filed Oct. 30, 1991, Ser. No. 784,217
Claims priority, application Spain, May 3, 1991, 124814
Term of patent 14 years
U.S. Cl. D8—356

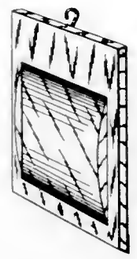


339,983
VIAL PROTECTIVE TRAY
Donald V. Breton, No. Vassalboro, and Louis D. Legacy, Winslow, both of Me., assignors to Keyes Fibre Co., Waterville, Me.
Filed Feb. 18, 1992, Ser. No. 837,426
Term of patent 14 years
U.S. Cl. D9—347

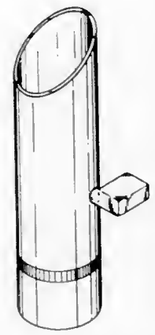


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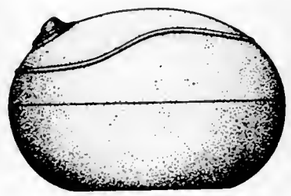
339,984
PACKAGE
Moshe Cohen, Herzlia, Israel, assignor to Delta Galil Industries Ltd., Petach-Tikuch, Israel
Filed Aug. 19, 1992, Ser. No. 932,046
Claims priority, application Israel, Feb. 20, 1992, 19131
Term of patent 14 years
U.S. Cl. D9—415



339,985
CONTROLLABLE POURING SPOUT
Ray Tarte, 2911 Cherrywood Ave., Bellingham, Wash. 98225
Filed Nov. 22, 1991, Ser. No. 797,095
Term of patent 14 years
U.S. Cl. D9—447



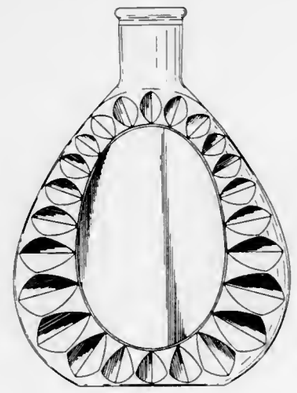
339,986
FACIAL CREAM CONTAINER
Elizabeth Garouste, Marcilly sur Eure, and Mattia Bonetti, Paris, both of France, assignors to Parfums Nina Ricci, Paris, France
Filed Jun. 3, 1992, Ser. No. 894,154
Term of patent 14 years
U.S. Cl. D9—529



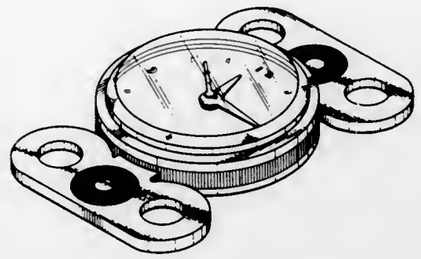
339,987
BOTTLE
Jean-Michel Jobit, Angouleme, France, assignor to Martell & Co., Cognac, France
Filed May 3, 1991, Ser. No. 695,708
Claims priority, application Int'l Pat. Institute, Nov. 26, 1990, DM/018193
Term of patent 14 years
U.S. Cl. D9—550



339,988
BOTTLE
Norton J. Cooper, 2633 Trenton Ave., Philadelphia, Pa. 19125
Filed Nov. 19, 1991, Ser. No. 796,123
Term of patent 14 years
U.S. Cl. D9—544



339,989
WATCH FOR ATTACHMENT TO A SHOE
Karri L. Parsons, 21600 Bon Brae, St. Claire Shores, Mich. 48081
Filed Dec. 13, 1991, Ser. No. 806,468
Term of patent 14 years
U.S. Cl. D10—30



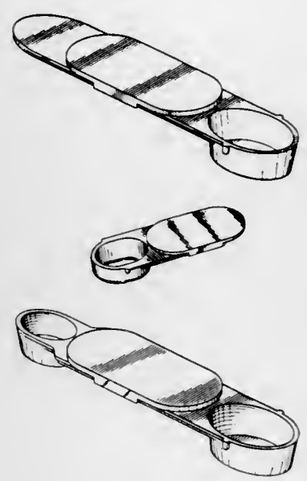
339,990
WRISTWATCH
Myron Polenberg, New York, N.Y., assignor to Swiss Army Brands, Ltd., Shelton, Conn.
Filed Apr. 8, 1991, Ser. No. 683,361
Term of patent 14 years
U.S. Cl. D10—39



339,991
MEASURING SCOOP
Patrick E. Mulry; Dennis J. Kool, both of Kentwood, Mich.; Mike B. Tyberghein, Marietta, Ga.; Donald S. Gura, Decatur, Ga., and Jeffrey D. Plyler, Duluth, Ga., assignors to Amway Corporation, Ada, Mich.
Continuation-in-part of Ser. No. 696,543, May 7, 1991, Pat. No. Des. 331,023. This application Nov. 6, 1992, Ser. No. 1,278
Term of patent 14 years
U.S. Cl. D10—46.2



339,992
MEASURING TOOL WITH SLIDING LEVELER
Sarah A. Goldman, 1 Rue Montreux, Newport Beach, Calif. 92660
Division of Ser. No. 729,803, Jul. 15, 1991, Pat. No. Des. 332,579. This application Nov. 18, 1992, Ser. No. 1,644
Term of patent 14 years
U.S. Cl. D10—46.2

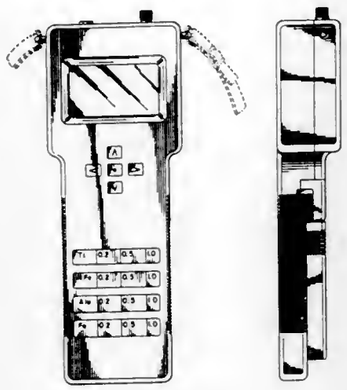


339,993
SLACK ADJUSTER
Claud E. Irvin, 2531 Leeland Rd., Gainesville, Ga. 30507
Filed Jan. 18, 1991, Ser. No. 643,054
Term of patent 14 years
U.S. Cl. D10—65



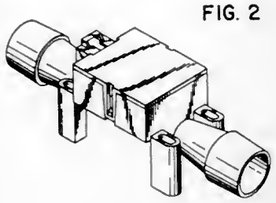
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339,994
EDDY CURRENT CRACK DETECTOR
Jürgen Rohmann, Beindersheim, Fed. Rep. of Germany, assignor to Rohmann GmbH, Frankenthal, Fed. Rep. of Germany
Filed Mar. 4, 1991, Ser. No. 664,650
Claims priority, applicatioo Fed. Rep. of Germany, Oct. 19, 1990, 9006956
Term of patent 14 years
U.S. Cl. D10—78

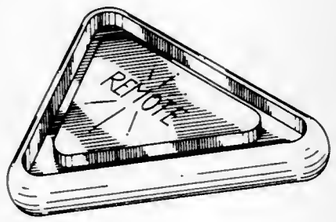


339,995
MASS AIR FLOW SENSOR
Jamie T. Wandler, Freeport, Ill., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Jan. 6, 1992, Ser. No. 817,251
Term of patent 14 years
U.S. Cl. D10—85

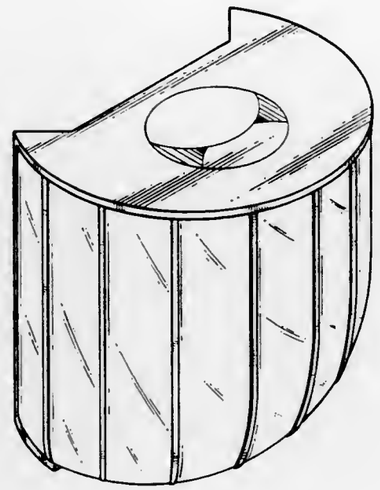
FIG. 2



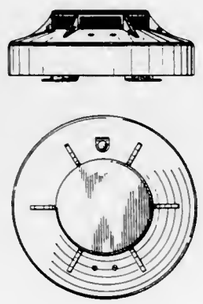
339,996
TOOL FOR LOCATING A REMOTE CONTROL
Charles K. Rattley, 5751 Riverdale Rd. 5-C, College Park, Ga. 30349
Filed Oct. 9, 1991, Ser. No. 773,284
Term of patent 14 years
U.S. Cl. D10—104



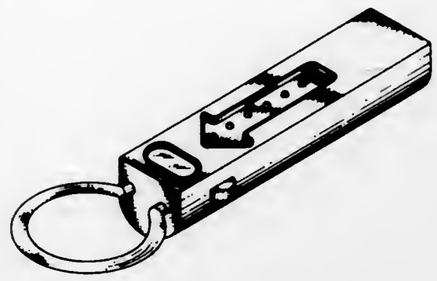
339,997
SENSOR HOUSING FOR ACTUATING OUTDOOR LIGHTING SWITCHES
George F. Manor, Jr., and Gayle Manor, both of 39434 Wendy Ct., Mt. Clemens, Mich. 48044
Filed Apr. 30, 1992, Ser. No. 877,052
Term of patent 14 years
U.S. Cl. D10—104



339,998
SMOKE DETECTOR
Yoshinori Igarashi; Yasuo Ariga, and Ichirou Kobayashi, all of Tokyo, Japan, assignors to Nohmi Bosai Ltd., Tokyo, Japan
Filed Apr. 5, 1991, Ser. No. 682,012
Claims priority, application Japan, Dec. 19, 1990, 2-42042
The portion of the term of this patent subsequent to Sep. 28, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D10—106



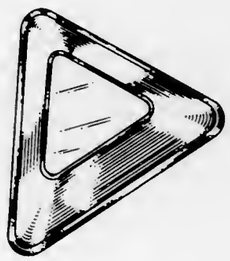
339,999
SIGNALLING RECEIVER FOR ANIMAL LOCATING
Willie Greear, 13924 Archdale, Detroit, Mich. 48227
Filed May 14, 1992, Ser. No. 881,546
Term of patent 14 years
U.S. Cl. D10—106



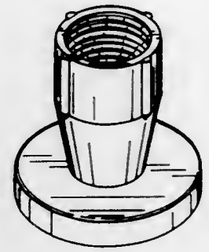
340,000
VEHICLE ALARM TRANSMITTER
Darrell E. Issa, 1598 Parkview Dr., Vista, Calif. 92083
Filed Sep. 28, 1992, Ser. No. 952,186
Term of patent 14 years
U.S. Cl. D10—106



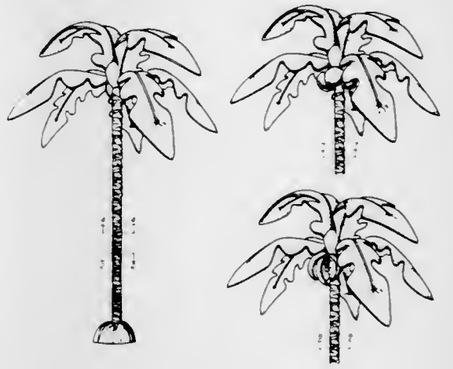
340,001
HOUSE IDENTIFICATION LIGHT FOR EMERGENCIES
Daniel Watkins, 2495 Brenda Way, Carson City, Nev. 89704
Filed Aug. 22, 1991, Ser. No. 748,392
Term of patent 14 years
U.S. Cl. D10—114



340,002
HOLDER FOR CHEMILUMINESCENT SIGNAL
Jacob O. Smith, Sr., 601 Armenia Dr., Pensacola, Fla. 32505
Filed Dec. 13, 1991, Ser. No. 807,569
Term of patent 14 years
U.S. Cl. D10—114



340,003
ARTIFICIAL PALM TREE
Jeffery J. Wright, and Lisa K. Wright, both of 3171 Sturbridge Ct., Riverside, Calif. 92503
Filed Aug. 19, 1991, Ser. No. 746,565
Term of patent 14 years
U.S. Cl. D11—118

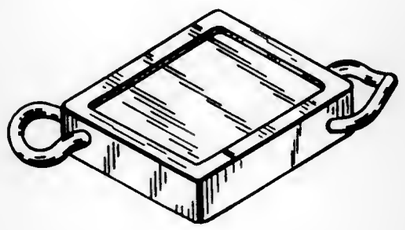


340,004
EXPANSION BRACELET
George T. Butler, Warwick, R.I., assignor to Textron Inc., Providence, R.I.
Division of Ser. No. 895,820, Jun. 5, 1992, Pat. No. D. 335,638.
This application Oct. 19, 1992, Ser. No. 645
Term of patent 14 years
U.S. Cl. D11—19



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340,005
PHOTO IDENTIFICATION LOCKET
George T. Butler, Jr., Warwick, R.I., assignor to Textron Inc., Providence, R.I.
Filed Mar. 5, 1991, Ser. No. 665,001
The portion of the term of this patent subsequent to Feb. 23, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D11—80



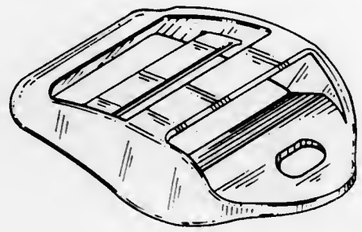
340,006
VASE
Andrew J. Barger, III, Box 296 Dixon Run, Tridelphia, W. Va. 26059
Filed May 13, 1991, Ser. No. 699,224
Term of patent 14 years
U.S. Cl. D11—150



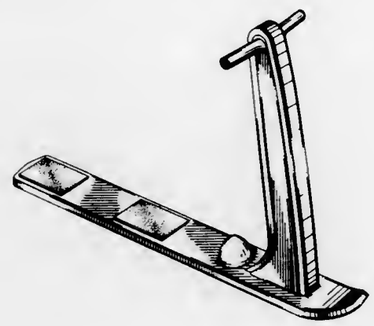
340,007
LOCKING BURR FOR INTERLOCKING FASTENERS
Bruce Gershenson, 26645 Irving, Franklin, Mich. 48025
Filed Mar. 23, 1992, Ser. No. 855,935
Term of patent 14 years
U.S. Cl. D11—200



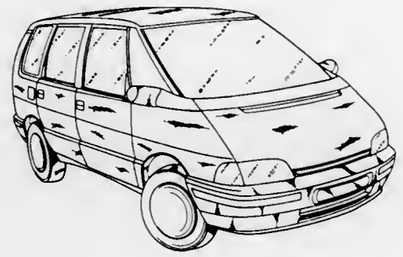
340,008
TENSIONLOCK FASTENER
Joseph A. Anscher, Port Washington, N.Y., assignor to National Molding Corporation, Farmingdale, N.Y.
Filed May 28, 1991, Ser. No. 706,117
Term of patent 14 years
U.S. Cl. D11—218



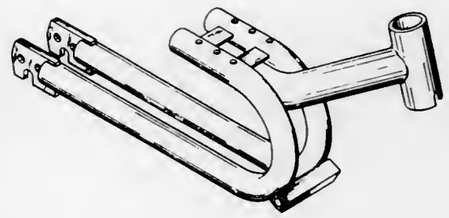
340,009
SKI SLED
Paul K. Simpson, Millbrae, Calif., assignor to Hamson Products, Inc., Merrimack, N.H.
Filed May 19, 1992, Ser. No. 889,100
Term of patent 14 years
U.S. Cl. D12—8



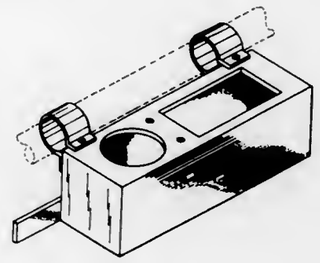
340,010
PASSENGER CAR
Philippe Guedon, Davron, France, assignor to Matra Automobile, Paris, France
Filed Feb. 25, 1991, Ser. No. 659,935
Term of patent 14 years
U.S. Cl. D12—90



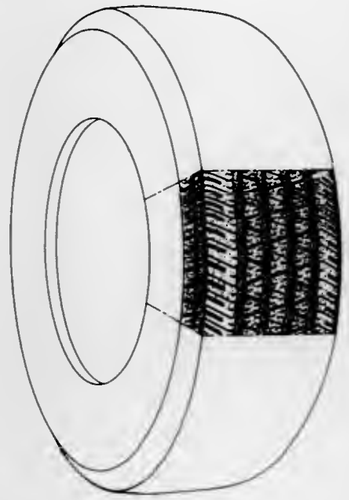
340,011
FRAME OF BICYCLE
Ting-Hsing Chen, Tainan Hsien, Taiwan, assignor to Far Great Plastics Industrial Co., Ltd., Tainan, Taiwan
Filed Apr. 7, 1992, Ser. No. 864,810
Term of patent 14 years
U.S. Cl. D12—111



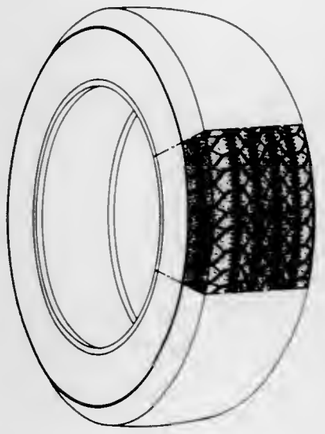
340,012
WALKER CADDY CONTAINER
Paul T. Azzarelli, 645 Magnus La., Coraopolis, Pa. 15108
Filed Jun. 12, 1992, Ser. No. 897,553
Term of patent 14 years
U.S. Cl. D12—133



340,013
TIRE
William A. Downey, and Ronald L. Messer, both of Simpsonville, S.C., assignors to Uniroyal Goodrich Tire Company, Akron, Ohio
Filed Oct. 16, 1991, Ser. No. 777,653
Term of patent 14 years
U.S. Cl. D12—147

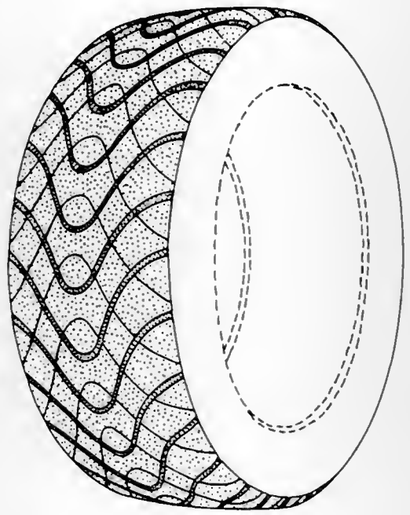


340,014
TIRE
Philippe Grenie, Greer, S.C., and Sylvain Leynaert, Les Martres D'Artiéres, France, assignors to Michelin Recherche et Technique, Fribourg, Switzerland
Filed Oct. 22, 1991, Ser. No. 781,340
Term of patent 14 years
U.S. Cl. D12—147

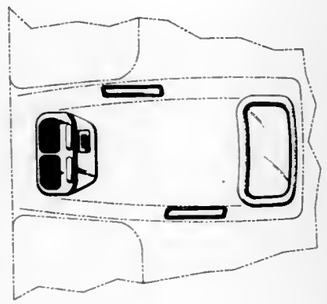


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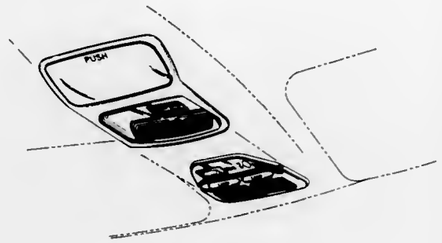
340,015
TIRE TREAD AND BUTTRESS
Paul B. Maxwell, Stow, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Nov. 8, 1991, Ser. No. 789,481
Term of patent 14 years
U.S. Cl. D12—151



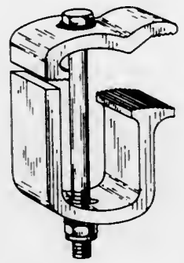
340,016
SET OF ACCESSARY PANELS FOR AN OVERHEAD CONSOLE
Monte L. Falcoff, Southfield, Mich., assignor to United Technologies Automotive, Inc., Dearborn, Mich.
Filed Aug. 1, 1989, Ser. No. 388,219
Term of patent 14 years
U.S. Cl. D12—155



340,017
SET OF ACCESSORY PANELS FOR AN OVERHEAD CONSOLE
Monte L. Falcoff, Southfield, Mich., assignor to United Technologies Automotive, Inc., Dearborn, Mich.
Filed Oct. 2, 1991, Ser. No. 770,942
Term of patent 14 years
U.S. Cl. D12—155



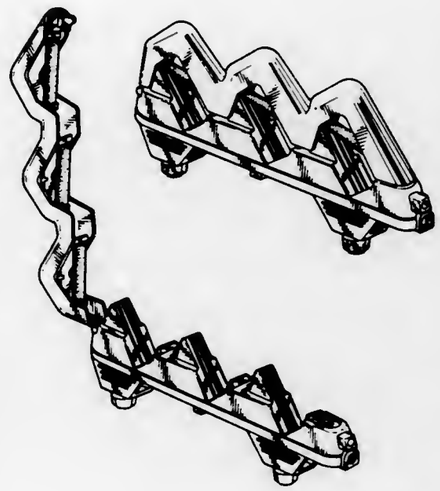
340,018
TRUCK BED COVER MOUNTING CLAMP
Ronald L. Yoder, Topeka, Ind., assignor to Universal Consolidated Methods, Inc., Topeka, Ind.
Filed Apr. 6, 1992, Ser. No. 864,085
Term of patent 14 years
U.S. Cl. D12—156



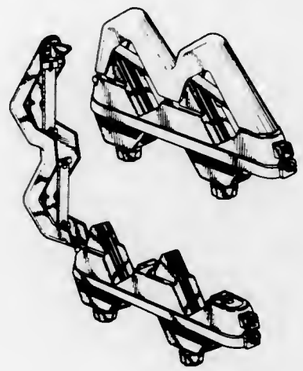
340,019
PICK-UP TRUCK COVER MOUNTING CLAMP
Ronald L. Yoder, Topeka, Ind., assignor to Universal Consolidated Methods, Inc., Topeka, Ind.
Filed Dec. 14, 1992, Ser. No. 2,512
Term of patent 14 years
U.S. Cl. D12—156
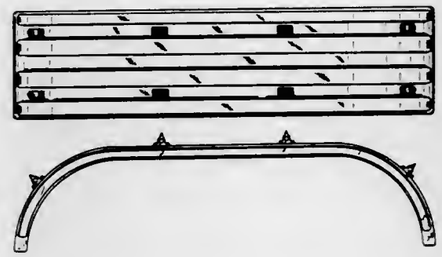


340,020
VEHICULAR SKI CARRIER
Teruaki Yamamoto, Tokyo, Japan, assignor to Piaa Design International Corporation, Tokyo, Japan
Filed Aug. 23, 1991, Ser. No. 748,909
Term of patent 14 years
U.S. Cl. D12—157



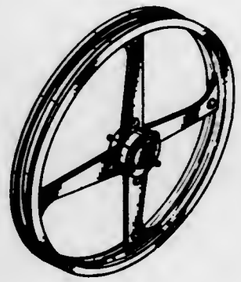
340,021
VEHICULAR SKI CARRIER
Teruaki Yamamoto, Tokyo, Japan, assignor to Piaa Design International Corporation, Tokyo, Japan
Filed Aug. 23, 1991, Ser. No. 748,911
Term of patent 14 years
U.S. Cl. D12—157



340,022
TANDEM WHEEL TRUCK FENDER
Franklin B. Lawrence, Saratoga, Calif., assignor to Ultimate Products Corporation, Campbell, Calif.
Filed Jun. 12, 1991, Ser. No. 714,051
Term of patent 14 years
U.S. Cl. D12—184



340,023
LIGHTED BICYCLE WHEEL
Michael Geran, 56 Johnson Ave., Matawan, N.J. 07747
Filed Nov. 25, 1992, Ser. No. 1,872
Term of patent 14 years
U.S. Cl. D12—211

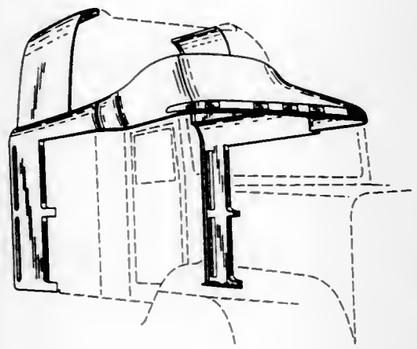


340,024
BICYCLE ANTI-LOCK BRAKE REGULATOR
Milton Passmore, 1729 Greenwood Rd., Chattanooga, Tenn. 37406
Filed Mar. 27, 1992, Ser. No. 859,533
Term of patent 14 years
U.S. Cl. D12—180

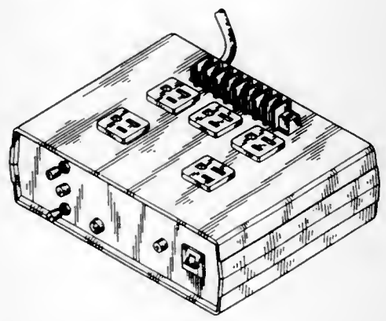


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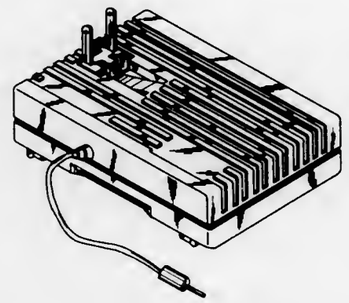
340,025
AIR FAIRING
William M. Brownlie, Dearborn, Mich., and Hans P. Wolsdorf, Friedrichshafen, Fed. Rep. of Germany, assignors to Freightliner Corporation, Portland, Oreg.
Filed Nov. 19, 1990, Ser. No. 617,513
Term of patent 14 years
U.S. Cl. D12—181



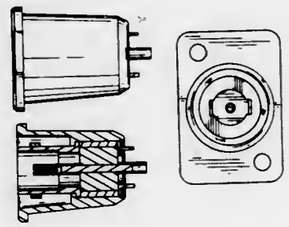
340,026
LIGHTNING SURGE PROTECTOR FOR SATELLITE SIGNAL-RECEIVING SYSTEMS
Steve R. Slagel, Swannanoa, N.C., assignor to Universal R & D, Inc., Swannanoa, N.C.
Filed Oct. 1, 1991, Ser. No. 770,976
Term of patent 14 years
U.S. Cl. D13—142



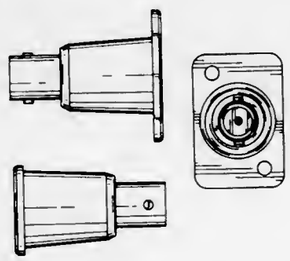
340,027
PORTABLE, BATTERY-OPERATED, RECHARGEABLE, ELECTRICAL POWER SUPPLY PACK FOR A COMPUTER OR VIDEO GAME
Angelo Tortola, Lexington, Mass., assignor to Curtis Manufacturing Company, Inc., Jaffrey, N.H.
Filed Sep. 16, 1991, Ser. No. 764,489
Term of patent 14 years
U.S. Cl. D13—103



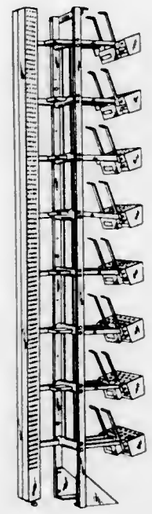
340,028
COAXIAL CONNECTOR
Takeshi Takizawa, Tokyo, Japan, assignor to Canare Electric Co., Ltd., Aichi, Japan
Continuation-in-part of Ser. No. 178,280, Apr. 6, 1988, abandoned. This application Jan. 16, 1992, Ser. No. 821,951
Term of patent 14 years
U.S. Cl. D13—133



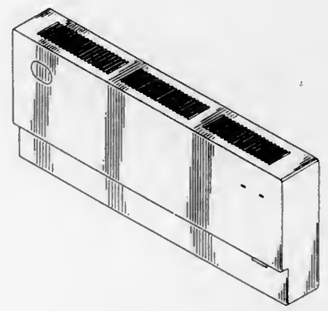
340,029
COAXIAL CONNECTOR
Takeshi Takizawa, Tokyo, Japan, assignor to Canare Electric Co., Ltd., Aichi, Japan
Continuation-in-part of Ser. No. 178,282, Apr. 6, 1988, abandoned. This application Jan. 16, 1992, Ser. No. 821,952
Term of patent 14 years
U.S. Cl. D13—133



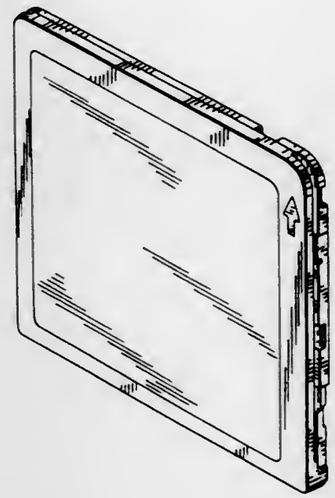
340,030
DISTRIBUTION FRAME FOR COAXIAL COMMUNICATION CABLES
Gerard H. Groters, Leusden, Netherlands, assignor to Koninklijke PTT Nederland N.V., Groningen, Netherlands
Filed Nov. 8, 1991, Ser. No. 792,093
Claims priority, application Netherlands, May 17, 1991, 66571/01
Term of patent 14 years
U.S. Cl. D13—154



340,031
ENCLOSURE FOR A PROGRAMMABLE INPUT/OUTPUT CONTROLLER
David W. Hill, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 15, 1990, Ser. No. 598,447
Term of patent 14 years
U.S. Cl. D13—162



340,032
OPTICAL DISK CARTRIDGE
Hirotoshi Fujisawa, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Sep. 25, 1991, Ser. No. 765,103
Claims priority, application Japan, Apr. 27, 1991, 3-12635
Term of patent 14 years
U.S. Cl. D14—114

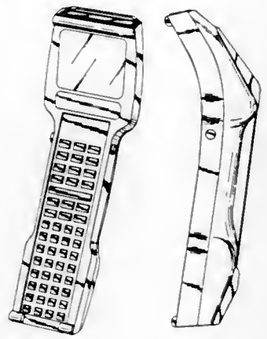


340,033
RADIO RECEIVER OF HEADPHONE TYPE
Kazumasa Okumura, and Akiyoshi Okada, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Feb. 25, 1991, Ser. No. 659,047
Claims priority, application Japan, Aug. 23, 1990, 2-28241
Term of patent 14 years
U.S. Cl. D14—192

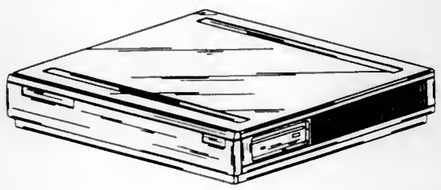


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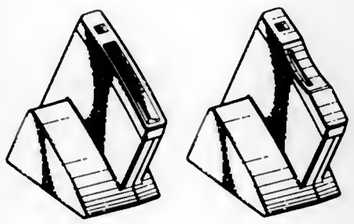
340,034
HANDHELD COMPUTER WITH BUILT-IN BAR CODE SCANNER
Charles J. Hofstetter, Aurora, Ohio, and Robert F. Meyerson, Captiva Island, Fla., assignors to Telxon Corporation, Akron, Ohio
Filed Jun. 14, 1991, Ser. No. 715,664
Term of patent 14 years
U.S. Cl. D14—100



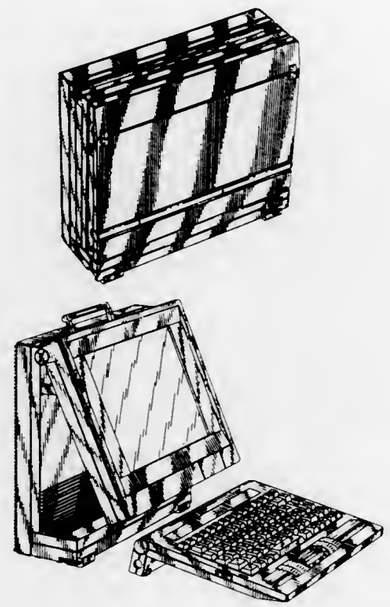
340,035
CENTRAL PROCESSING UNIT ENCLOSURE
Robert T. Faranda, Acton, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.
Filed Oct. 11, 1991, Ser. No. 777,893
Term of patent 14 years
U.S. Cl. D14—100



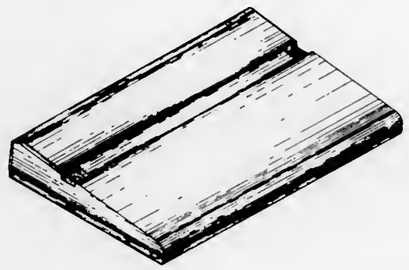
340,036
SMART CARD READER
John K. Connors, Elwood; Richard W. Curry, Fountaintown, both of Ind.; Richard M. Joffe, Teaneck, N.J.; John N. McGarvey, Drexel Hill, Pa., and David C. Stowers, Nutley, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Nov. 4, 1991, Ser. No. 788,710
Term of patent 14 years
U.S. Cl. D14—105



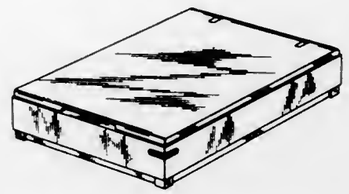
340,037
PORTABLE COMPUTER
Masao Yokota, Santa Cruz; John T. Hui, and Wayne A. Yankee, both of San Jose, all of Calif., assignors to Everex Systems, Inc., Fremont, Calif.
Filed Mar. 6, 1992, Ser. No. 847,827
Term of patent 14 years
U.S. Cl. D14—106



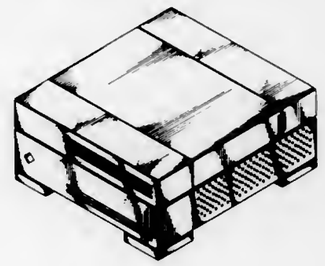
340,038
BAR CODE WEDGE READER
William J. A. Venne, Redmond; Darryl C. Carver, and Kaye Brunson, both of Seattle, all of Wash., assignors to Intermec Corporation, Everett, Wash.
Filed Apr. 5, 1991, Ser. No. 681,208
Term of patent 14 years
U.S. Cl. D14—107



340,039
IMAGE READING DEVICE
Naoki Tashiro, Tokyo; Hiroyuki Tokuda, Yokohama, and Ryoko Mizuta, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 22, 1992, Ser. No. 824,454
Claims priority, application Japan, Jul. 29, 1991, 3-22659
Term of patent 14 years
U.S. Cl. D14—107



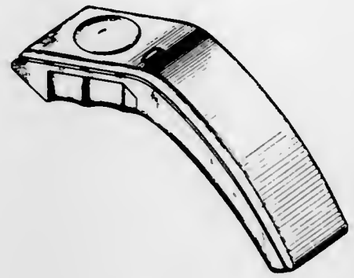
340,040
PERIPHERAL DISK DRIVE HOUSING
Michael F. Gifford, San Jose; Craig M. Leverault, Mountain View; Tuan T. Vu, San Jose, and Philip G. Yurkonis, Campbell, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.
Continuation-in-part of Ser. No. 558,172, Jul. 25, 1990, Pat. No. Des. 320,007. This application Jul. 3, 1991, Ser. No. 725,242
Term of patent 14 years
U.S. Cl. D14—109



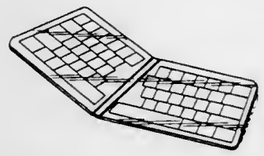
340,041
ACTUATOR CONTROLLER
Sousuke Kawashima, and Toshiyuki Onizuka, both of Gumma, Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 1, 1991, Ser. No. 662,883
Term of patent 14 years
U.S. Cl. D14—114



340,042
HANDHELD COMPUTER POINTING DEVICE
John M. Copper, and Dan H. Chinda, both of Pittsburgh, Pa., assignors to MicroMed Systems, Inc., Pittsburgh, Pa.
Filed Oct. 4, 1991, Ser. No. 771,931
Term of patent 14 years
U.S. Cl. D14—114



340,043
KEYBOARD PANEL FOR AN INFORMATION SYSTEM TERMINAL
William M. Louis, Encinitas, Calif., assignor to TypeRight Keyboard Corporation, Encinitas, Calif.
Filed Feb. 21, 1991, Ser. No. 659,189
Term of patent 14 years
U.S. Cl. D14—115

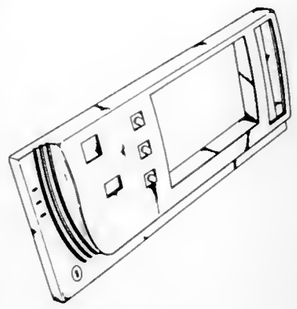


340,044
COMPUTER MAINFRAME FRONT PANEL
Edward Chu, 2F., No. 10, Lane 329, Sec. 1, Tunhua S. Rd., Taipei, Taiwan
Filed Oct. 30, 1991, Ser. No. 784,781
Term of patent 14 years
U.S. Cl. D14—115

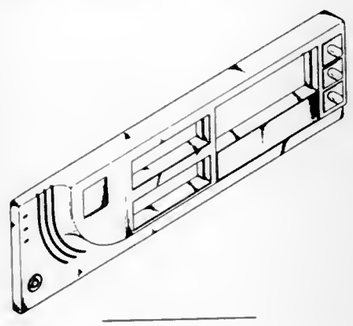


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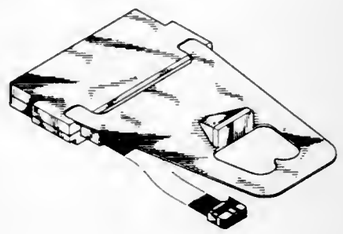
340,045
COMPUTER MAINFRAME FRONT PANEL
Edward Chu, 2F., No. 10, Lane 329, Sec. 1, Tunhua S. Rd., Taipei, Taiwan
Filed Oct. 30, 1991, Ser. No. 784,785
Term of patent 14 years
U.S. Cl. D14—115



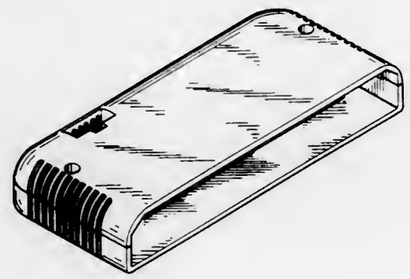
340,046
COMPUTER MAINFRAME FRONT PANEL
Edward Chu, 2F., No. 10, Lane 329, Sec. 1, Tunhua S. Rd., Taipei, Taiwan
Filed Oct. 30, 1991, Ser. No. 784,786
Term of patent 14 years
U.S. Cl. D14—115



340,047
CARD-ADAPTER FOR VIDEO GAME
Ching J. Tseng, No. 13-2, Lane 778, Hua Cheng Rd., Hsin Chuang City, Taipei Hsien, Taiwan
Filed Sep. 11, 1992, Ser. No. 943,209
Term of patent 14 years
U.S. Cl. D14—121



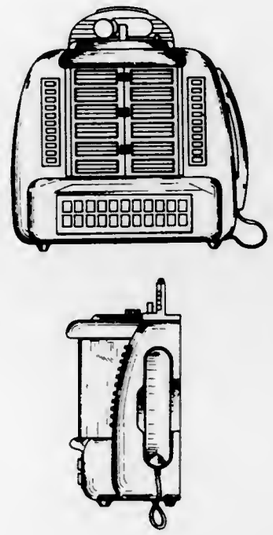
340,048
CARD-ADAPTER FOR VIDEO GAME
Ching J. Tseng, No. 13-2, Lane 778, Hua Cheng Rd., Hsing Chuang City, Taipei Hsien, Taiwan
Filed Sep. 11, 1992, Ser. No. 943,210
Term of patent 14 years
U.S. Cl. D14—121



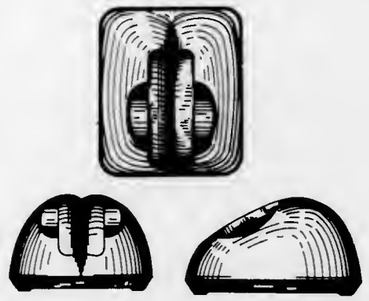
340,049
OUTDOOR VIDEO DISPLAY UNIT
Robert J. Liljenwall, 444 9th St., Manhattan Beach, Calif. 90266, and Jerry N. Moscovitch, 59 Cowan Avenue, Toronto, Ontario M6K2N1, Canada
Filed Mar. 19, 1991, Ser. No. 672,584
Term of patent 14 years
U.S. Cl. D14—124



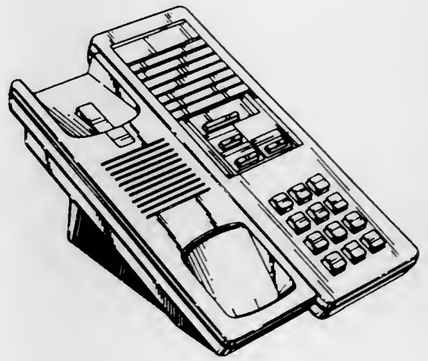
340,050
JUKEBOX TELEPHONE
Ralph Ochoa, 4401 Sonfield St., Apt. A, Metaire, La. 70006
Continuation-in-part of Ser. No. 399,295, Aug. 28, 1989, Pat. No. Des. 325,030. This application Dec. 16, 1991, Ser. No. 807,899
Term of patent 14 years
U.S. Cl. D14—143



340,051
TELEPHONE
Diane L. Rockwell, 1241 N. Milwaukee St., Milwaukee, Wis. 53202
Filed Mar. 4, 1991, Ser. No. 663,660
Term of patent 14 years
U.S. Cl. D14—149



340,052
TELEPHONE BASE
David A. Nogas, Ottawa, Canada, assignor to Mitel Corporation, Canada
Filed May 20, 1991, Ser. No. 703,128
Claims priority, application Canada, Dec. 14, 1990, 1412-90-23
Term of patent 14 years
U.S. Cl. D14—151

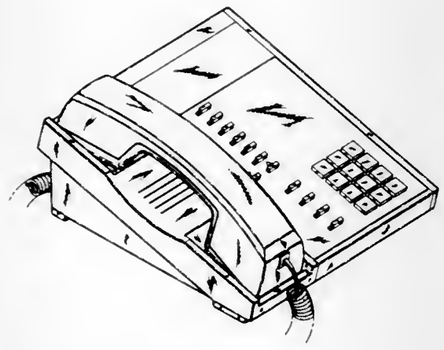


340,053
TELEPHONE BASE
Guy E. Desbarats, London, England, assignor to British Telecommunications public limited company, London, England
Filed Jan. 21, 1992, Ser. No. 823,423
Claims priority, application United Kingdom, Jul. 18, 1991, 2016075; Jul. 18, 1991, 2016077
Term of patent 14 years
U.S. Cl. D14—151

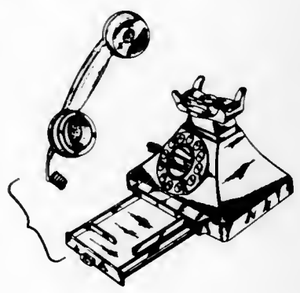


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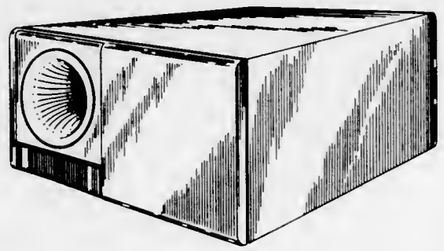
340,054
TELEPHONE SET
Timothy D. Wetzel, San Jose, Calif.; Wayne McKinnon, Georgetown, Tex.; David Bryant, Austin, Tex., and William McRight, Round Rock, Tex., assignors to ROLM Company, Santa Clara, Calif.
Filed Jun. 22, 1992, Ser. No. 901,903
Term of patent 14 years
U.S. Cl. D14—151



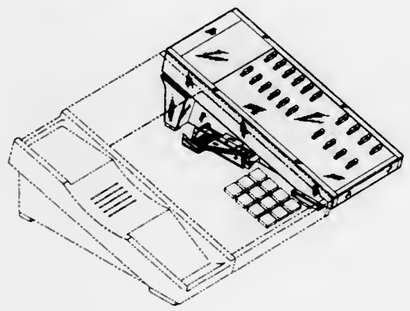
340,055
TELEPHONE
Gerald Huang, 15320-4 Valley View Ave., La Mirada, Calif. 90638
Filed Apr. 15, 1992, Ser. No. 869,032
Term of patent 14 years
U.S. Cl. D14—153



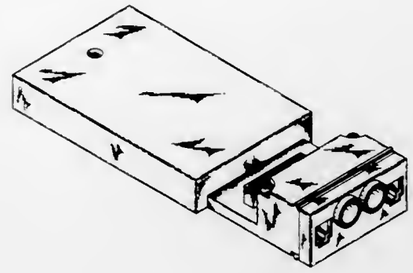
340,056
LOUDSPEAKER MODULE
Gerald F. Caron, Andover, and Louis Genatossio, Shrewsbury, both of Mass., assignors to Bose Corporation, Framingham, Mass.
Filed Jun. 6, 1991, Ser. No. 711,160
Term of patent 14 years
U.S. Cl. D14—204



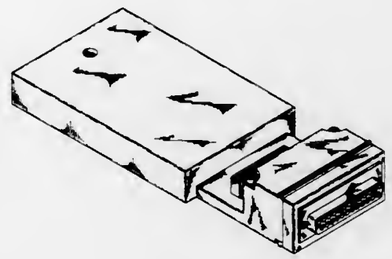
340,057
ADD-ON CONSOLE FOR A TELEPHONE SET
Timothy D. Wetzel, San Jose, Calif.; Wayne McKinnon, Georgetown, Tex.; William McRight, Round Rock, Tex., and Pearce Jones, Austin, Tex., assignors to Rolm Company, Santa Clara, Calif.
Filed Jun. 22, 1992, Ser. No. 901,900
Term of patent 14 years
U.S. Cl. D14—241



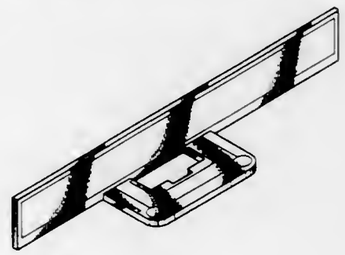
340,058
INTERFACE TO A TELEPHONE SET
Timothy D. Wetzel, San Jose, Calif.; Wayne McKinnon, Georgetown, Tex.; David Bryant, and Pearce Jones, both of Austin, Tex., assignors to Rolm Company, Santa Clara, Calif.
Filed Jun. 22, 1992, Ser. No. 901,901
Term of patent 14 years
U.S. Cl. D14—256



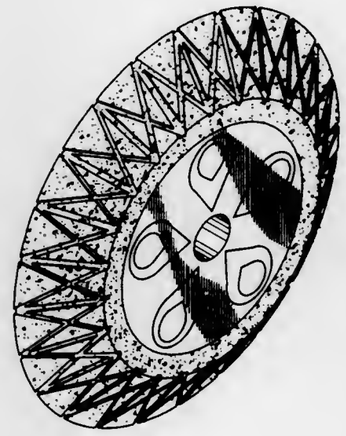
340,059
INTERFACE TO A TELEPHONE SET
Timothy D. Wetzel, San Jose, Calif.; Wayne McKinnon, Georgetown, Tex.; David Bryant, and Pearce Jones, both of Austin, Tex., assignors to Rolm Company, Santa Clara, Calif.
Filed Jun. 22, 1992, Ser. No. 901,897
Term of patent 14 years
U.S. Cl. D14—256



340,060
POWER PLANER/JOINER TABLE
Robert S. Emerich, Kent Hill Rd., P.O. Box 55, Dorset, Vt. 05251
Filed Jun. 21, 1991, Ser. No. 718,825
Term of patent 14 years
U.S. Cl. D15—141



340,061
UNIVERSAL DISC
Henry K. Wojdylo, P.O. Box 8040, Honolulu, Hi. 96830
Continuation-in-part of Ser. No. 78,690, Jul. 28, 1987, abandoned. This application Jun. 10, 1991, Ser. No. 712,620
Term of patent 14 years
U.S. Cl. D15—139

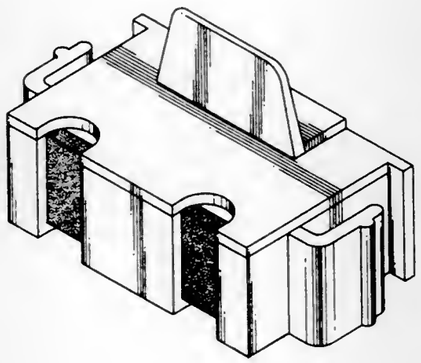


340,062
DULCIMER
Rogers Magee, 612 Laurel Dr., Aiken, S.C. 29801
Filed Jul. 16, 1990, Ser. No. 554,572
Term of patent 14 years
U.S. Cl. D17—14

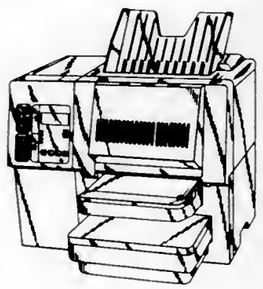


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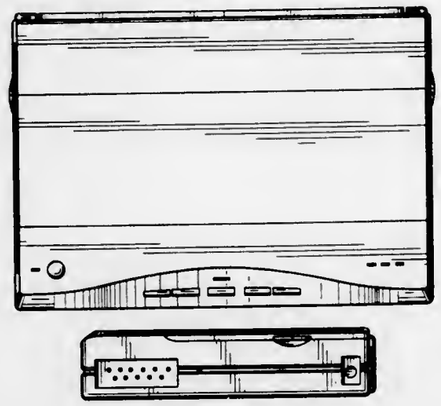
340,063
INK RESERVOIR
Yiu-Wah Chow, Suite 7, 1st Floor, City Garden Shopping Centre, City Garden, 233 Electric Road, North Point, Hong Kong
Filed Dec. 5, 1991, Ser. No. 802,762
Term of patent 14 years
U.S. Cl. D18—12



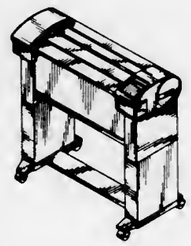
340,064
LASER BEAM PRINTER
Yoshinori Makiura, Kawachinagano, and Koji Migita, Sakai, both of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan
Filed Nov. 18, 1991, Ser. No. 793,679
Claims priority, application Japan, May 28, 1991, 3-15569
Term of patent 14 years
U.S. Cl. D18—50



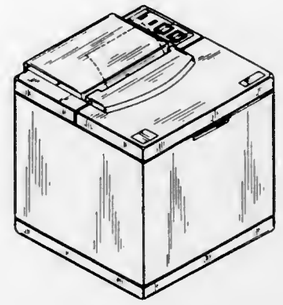
340,065
PRINTER FOR COMPUTER
Kouki Fukuda, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Feb. 25, 1992, Ser. No. 841,441
Claims priority, application Japan, Aug. 27, 1991, 3-25784
Term of patent 14 years
U.S. Cl. D18—50



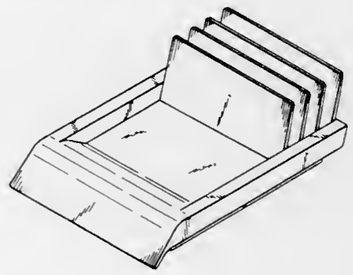
340,066
INK JET PLOTTER
Tetsuya Iwanaga, Tokyo, Japan, assignor to Mutoh Industries Ltd., Tokyo, Japan
Filed Jul. 22, 1991, Ser. No. 733,407
Claims priority, application Japan, Jan. 22, 1991, 3-1113
Term of patent 14 years
U.S. Cl. D18—53



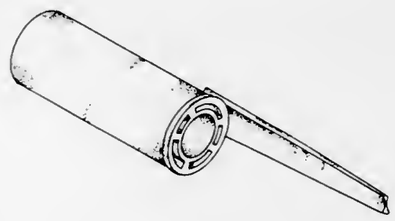
340,067
ROLL PRINTER
James S. Arakaki, Loomis; Allan Avnet, Fountain Valley, and J. Mark Stanton, San Jose, all of Calif., assignors to VeriFone, Inc., Redwood City, Calif.
Filed Nov. 18, 1991, Ser. No. 793,600
Term of patent 14 years
U.S. Cl. D18—53



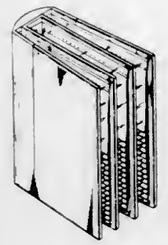
340,068
COMBINED MEMO HOLDER AND VERTICAL FILE
Eric P. Chan, New York, N.Y., assignor to American Trading & Production Corporation, Baltimore, Md.
Filed Dec. 26, 1991, Ser. No. 814,914
The portion of the term of this patent subsequent to Jun. 22, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D19—90



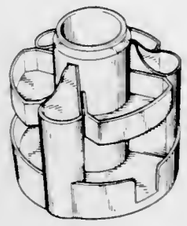
340,069
PEN CAP
Patrick J. Garry, Louisville, Ky., assignor to Stry-Lenkoff Company, Louisville, Ky.
Filed Jun. 10, 1991, Ser. No. 712,652
Term of patent 14 years
U.S. Cl. D19—57



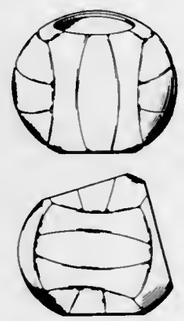
340,070
PHOTO ALBUM
Kheng K. Tan, Johor, Malaysia, assignor to Red Box (M) Berhad, Johor, Malaysia
Filed Apr. 27, 1992, Ser. No. 874,419
Term of patent 14 years
U.S. Cl. D19—26



340,071
ROTARY ORGANIZER FOR ASSORTED DESK ARTICLES
Jam Sun, No. 39, Lane 106, Sec. 7, Yenping N. Rd., Taipei, Taiwan
Filed Jun. 3, 1992, Ser. No. 891,480
Term of patent 14 years
U.S. Cl. D19—77



340,072
DESKTOP CONTAINER
Lawrence H. Turner, P.O. Box 2612, Fair Oaks, Calif. 95628
Filed Jan. 14, 1992, Ser. No. 821,544
The portion of the term of this patent subsequent to Jul. 14, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D19—82



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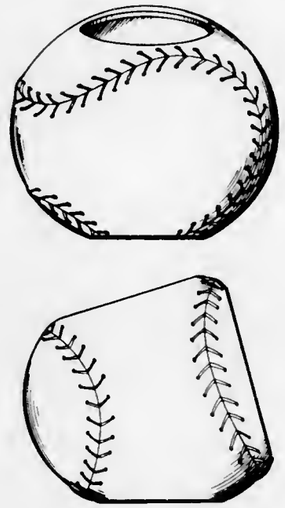
340,073
DESKTOP CONTAINER
Lawrence H. Turner, P.O. Box 2612, Fair Oaks, Calif. 95628
Filed Jan. 14, 1992, Ser. No. 821,547
The portion of the term of this patent subsequent to Jul. 14, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D19—82



340,074
DESKTOP CONTAINER
Lawrence H. Turner, P.O. Box 2612, Fair Oaks, Calif. 95628
Filed Jan. 14, 1992, Ser. No. 821,545
The portion of the term of this patent subsequent to Jul. 14, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D19—82



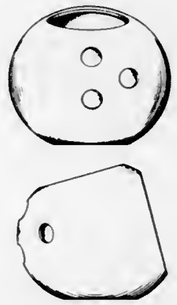
340,075
DESKTOP CONTAINER
Lawrence H. Turner, P.O. Box 2612, Fair Oaks, Calif. 95628
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The portion of the term of this patent subsequent to Jul. 14, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D19—82



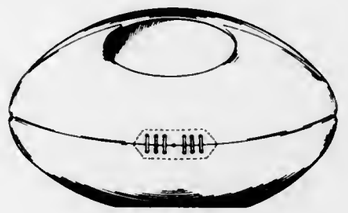
340,076
DESKTOP CONTAINER
Lawrence H. Turner, P.O. Box 2612, Fair Oaks, Calif. 95628
Filed Jan. 14, 1992, Ser. No. 821,548
The portion of the term of this patent subsequent to Jul. 14, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D19—82



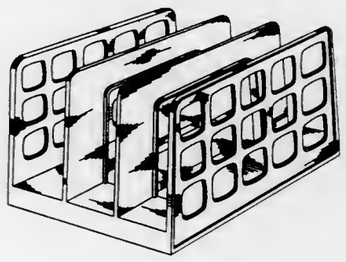
340,077
DESKTOP CONTAINER
Lawrence H. Turner, P.O. Box 2612, Fair Oaks, Calif. 95628
Filed Feb. 10, 1992, Ser. No. 832,504
The portion of the term of this patent subsequent to Jul. 14, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D19—82



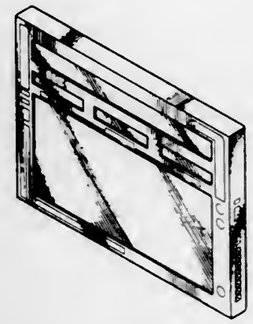
340,078
DESKTOP CONTAINER
Lawrence H. Turner, P.O. Box 2612, Fair Oaks, Calif. 95628
Filed Jul. 10, 1992, Ser. No. 912,615
The portion of the term of this patent subsequent to Jan. 26, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D19—82



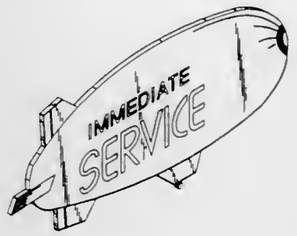
340,079
VERTICAL DOCUMENT SORTER
Eric R. Aaldenberg, Bayside, N.Y., assignor to Esselte Pendaflex Corporation, Garden City, N.Y.
Filed Aug. 14, 1991, Ser. No. 745,361
Term of patent 14 years
U.S. Cl. D19—90



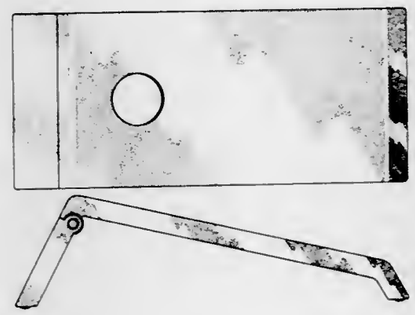
340,080
PERSONNEL LOCATION RECORDING DISPLAY BOARD
James C. Sheilds, 405 10th Ave., Haddon Heights, N.J. 08035
Filed Apr. 30, 1992, Ser. No. 876,225
Term of patent 14 years
U.S. Cl. D20—42



340,081
BUSINESS SIGN
Stanley F. Pannkuk, 1819 Jones Pl., Placentia, Calif. 92670
Filed Jan. 6, 1992, Ser. No. 817,413
Term of patent 14 years
U.S. Cl. D20—42

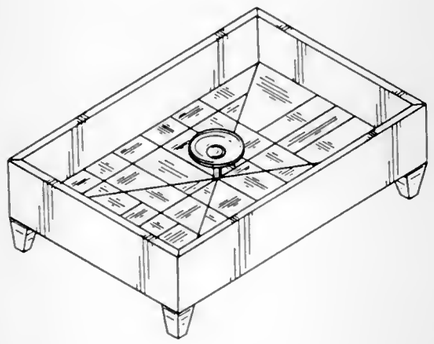


340,082
BEANBAG TOSSING GAME TARGET
Richard J. DeLapa, Akron, Ohio, assignor to Mul-Del Enterprises, Inc., Akron, Ohio
Filed Aug. 19, 1992, Ser. No. 932,885
Term of patent 14 years
U.S. Cl. D21—5

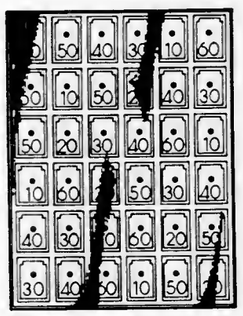


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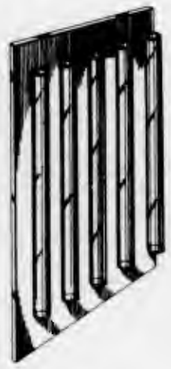
340,083
GAME BOARD
Kenneth Davis, 166-26 Powells Cove Blvd., Whitestone, N.Y. 11357
Filed Nov. 29, 1990, Ser. No. 620,912
Term of patent 14 years
U.S. Cl. D21—22



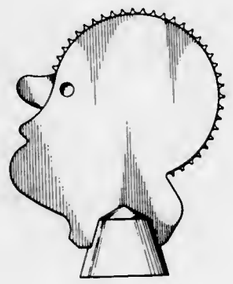
340,084
CHANCE GAME
John K. Martin, 2316 Grand Ave., Bronx, N.Y. 10468
Filed Apr. 25, 1991, Ser. No. 691,105
Term of patent 14 years
U.S. Cl. D21—34



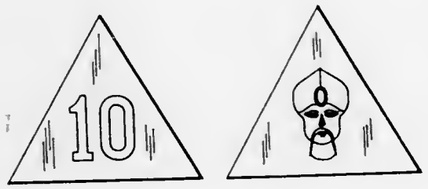
340,085
GAME MASTERBOARD FOR SELECTING NUMBERS
Joseph R. D. Jeaurond, 27 James Street, Aylmer, Quebec, Canada J9H 4S7
Filed Feb. 18, 1992, Ser. No. 836,447
Term of patent 14 years
U.S. Cl. D21—37



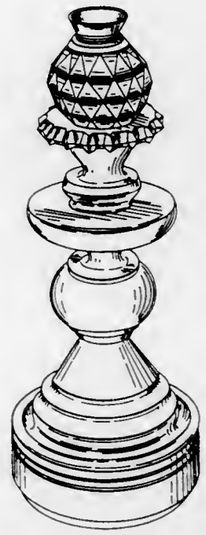
340,086
LOTTERY NUMBER SELECTOR
Frank A. Schmidt, 5142 Encino Ave., Encino, Calif. 91316
Filed Feb. 13, 1992, Ser. No. 836,780
Term of patent 14 years
U.S. Cl. D21—37



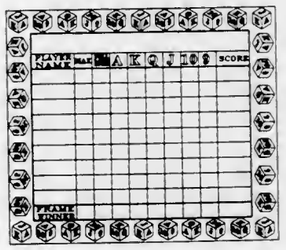
340,087
TRIANGULAR LOTTERY NUMBER SELECTOR TILE
Robert Adell, 31800 S. Brandingham, Franklin, Mich. 48025
Filed Feb. 19, 1992, Ser. No. 836,949
Term of patent 14 years
U.S. Cl. D21—37



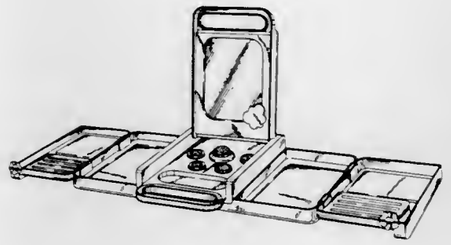
340,088
CENTERPIECE FOR A ROULETTE WHEEL
Johann Graf, Gumpoldskirchen, and Werner Machac, Vienna, both of Austria, assignors to Novo Invest Casino Development, Gumpoldskirchen, Austria
Filed Jul. 12, 1991, Ser. No. 728,994
Claims priority, application Austria, Jan. 17, 1991, MU 103/91
Term of patent 14 years
U.S. Cl. D21—39



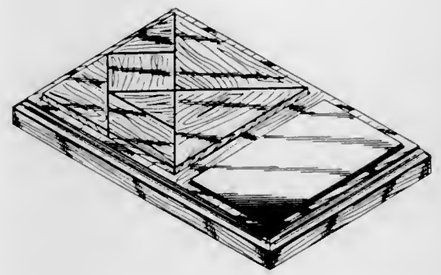
340,089
CASINO GAME
Patricia Reichhardt, and Shawn Reichhardt, both of W. 11th St., Houston, Tex. 77008
Filed Jun. 14, 1991, Ser. No. 715,236
Term of patent 14 years
U.S. Cl. D21—41



340,090
PLAY CASE
Leonhard Augenstein, Ungsteinerstr. 3, 8000 München 90, Fed. Rep. of Germany
Filed May 8, 1991, Ser. No. 697,277
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1990, 9007848
Term of patent 14 years
U.S. Cl. D21—59



340,091
TANGRAM, ASSOCIATED WRITTEN MATERIAL AND HOLDER THEREFOR
George E. Miller, 17502 W. Highway 101, Wayzata, Minn. 55391
Filed Feb. 13, 1992, Ser. No. 835,265
Term of patent 14 years
U.S. Cl. D21—104

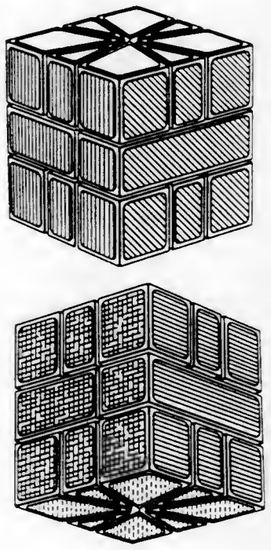


340,092
TOY RIFLE
Dennis E. Carter, Rt. 2 Inez Dr. Box 27, Jeanerette, La. 70544-9503
Filed Aug. 7, 1990, Ser. No. 563,339
Term of patent 14 years
U.S. Cl. D21—146



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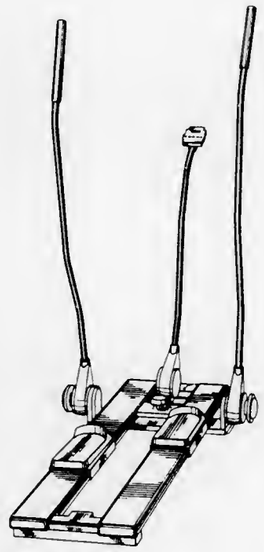
340,093
CUBE-LIKE PUZZLE
Karel Hrsel, Nedvedovo nam. 5, 14700 Prague 4, and Vojtech Kopsky, Prague, both of Czechoslovakia, assignors to Karel Hrsel, Prague, Czechoslovakia
Filed Dec. 26, 1990, Ser. No. 639,429
Claims priority, application Czechoslovakia, Jun. 28, 1990, 22396/90
Term of patent 14 years
U.S. Cl. D21—104



340,094
TOY BEAUTY SALON CHAIR
Robert L. Houry, Solon; John R. Nottingham, and John W. Spirk, Jr., both of Moreland Hills, all of Ohio, assignors to The Little Tikes Company, Hudson, Ohio
Filed Jan. 24, 1992, Ser. No. 825,165
Term of patent 14 years
U.S. Cl. D21—123



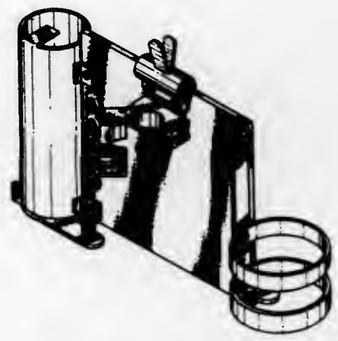
340,095
CROSS-COUNTRY SKI SIMULATOR EXERCISER
Adolf H. Friedebach, Chaska, Minn., assignor to Fitness Master, Inc., Waconia, Minn.
Filed May 29, 1991, Ser. No. 706,739
Term of patent 14 years
U.S. Cl. D21—192



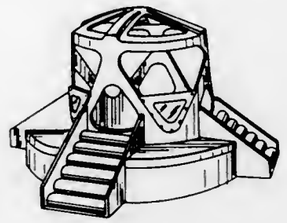
340,096
TENNIS PADDLE
Wallace Woo, 6th Fl. No. 16, An Ho Road, Taipei, Taiwan
Filed Nov. 26, 1991, Ser. No. 798,687
Term of patent 14 years
U.S. Cl. D21—213



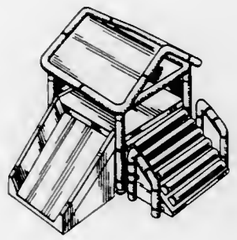
340,097
CARRYALL FOR USE ON A GOLF CART
Duane J. Hubbard, 6902 County Farm Rd., Lexington, Mich. 48450
Filed Oct. 9, 1991, Ser. No. 773,291
Term of patent 14 years
U.S. Cl. D21—234



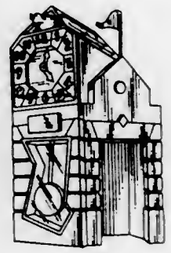
340,098
PLAYHOUSE
Richard J. Petersheim, Charlotte, N.C., assignor to Restaurant Technology, Inc., Oak Brook, Ill.
Filed Feb. 4, 1992, Ser. No. 831,040
Term of patent 14 years
U.S. Cl. D21—242



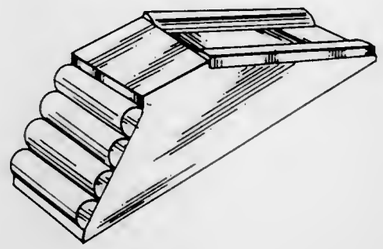
340,099
PLAYHOUSE
Mitchell R. Warren, and James F. Gleeson, both of Charlotte, N.C., assignors to Restaurant Technology, Inc., Oak Brook, Ill.
Filed Jan. 30, 1992, Ser. No. 828,594
Term of patent 14 years
U.S. Cl. D21—243



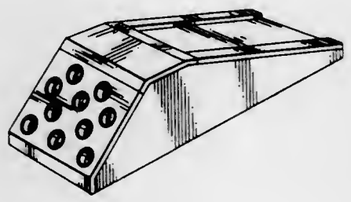
340,100
PLAY CLOCK TOWER
James F. Gleeson, Charlotte, N.C., assignor to Restaurant Technology, Inc., Oak Brook, Ill.
Filed Jan. 30, 1992, Ser. No. 828,589
Term of patent 14 years
U.S. Cl. D21—243



340,101
COMBINED SLIDE AND CLIMBER
Dana W. Ingold, Salisbury, and Richard J. Petersheim, Charlotte, both of N.C., assignors to Restaurant Technology, Inc., Oak Brook, Ill.
Filed Feb. 4, 1992, Ser. No. 830,270
Term of patent 14 years
U.S. Cl. D21—244

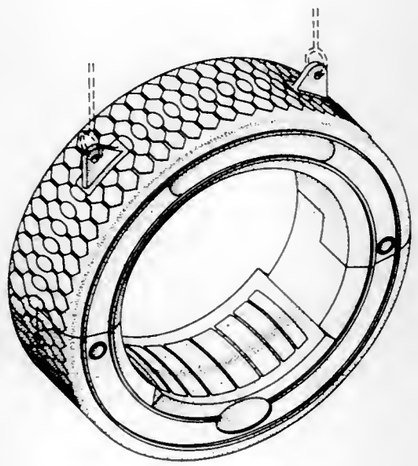


340,102
COMBINED SLIDE AND CLIMBER
Mitchell R. Warren, Charlotte, N.C., assignor to Restaurant Technology, Inc., Oak Brook, Ill.
Filed Feb. 4, 1992, Ser. No. 830,269
Term of patent 14 years
U.S. Cl. D21—244



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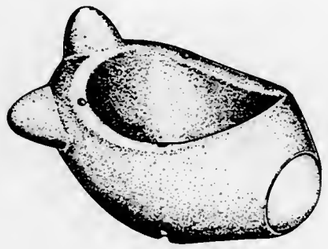
340,103
TWO-PIECE TIRE SWING SEAT
Robert J. Nolan, Columbus, Miss., assignor to Par Industries, Inc., Medina, Ohio
Filed Jul. 20, 1992, Ser. No. 916,417
Term of patent 14 years
U.S. Cl. D21—246



340,104
SPIN CONNECTOR FOR A CHILD'S SWING
Robert J. Nolan, Columbus, Miss., assignor to Par Industries, Inc., Medina, Ohio
Filed Jul. 31, 1992, Ser. No. 923,349
Term of patent 14 years
U.S. Cl. D21—246

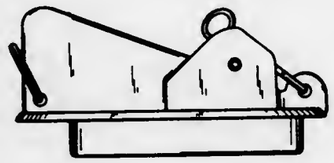


340,105
SWING
Robert L. Houry, Solon; John R. Nottingham, Chagrin Falls, and John W. Spirk, Jr., Moreland Hills, all of Ohio, assignors to The Little Tikes Company, Hudson, Ohio
Filed Aug. 28, 1992, Ser. No. 935,234
Term of patent 14 years
U.S. Cl. D21—246

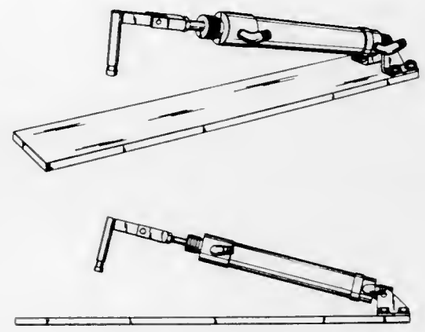


340,106
PURSE RING FOR USE IN THE FISHING INDUSTRY
Per H. Hystad, 4250 Kopervik, Norway
Filed Jul. 18, 1991, Ser. No. 732,301
Claims priority, application Norway, Mar. 13, 1991, D910190
Term of patent 14 years
U.S. Cl. D22—135

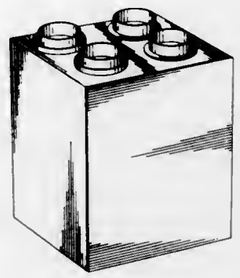
340,107
TROLLING SINKER
Russell W. Weber, 6120 W. Port Ave., Milwaukee, Wis. 53223
Filed Oct. 11, 1991, Ser. No. 775,072
Term of patent 14 years
U.S. Cl. D22—145



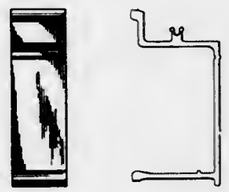
340,108
SHOTSHELL RELOADER ACTUATOR
Carter A. Spolar, 17376 Filbert, Fontana, Calif. 92335
Filed Dec. 3, 1991, Ser. No. 801,835
Term of patent 14 years
U.S. Cl. D22—199



340,109
VENTILATOR HOUSING
Michel Julien, St-Nicéphore, Canada, assignor to Venmar Ventilation Inc., Drummondville, Canada
Filed Dec. 20, 1991, Ser. No. 810,917
Claims priority, application Canada, Sep. 11, 1991, 11-09-91-1
Term of patent 14 years
U.S. Cl. D23—370



340,110
BRACKET FOR A HOT WATER BASEBOARD HEATING UNIT
John E. Reed, Westfield, and Ray L. Buil, West Springfield, both of Mass., assignors to Mestek, Inc., Westfield, Mass.
Filed May 15, 1992, Ser. No. 884,112
Term of patent 14 years
U.S. Cl. D23—389



340,111
CATHETER
Masashi Yoshikawa, Kanagawa, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 6, 1990, Ser. No. 578,863
Claims priority, application Japan, Mar. 7, 1990, 2-7149
Term of patent 14 years
U.S. Cl. D24—112

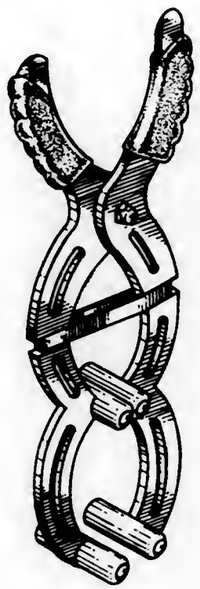


340,112
EAR SYRINGE TIP
Michael G. Zeman, 1205 Arrowhead Dr., Dubuque, Iowa 52001
Filed Mar. 15, 1991, Ser. No. 670,218
Term of patent 14 years
U.S. Cl. D24—121

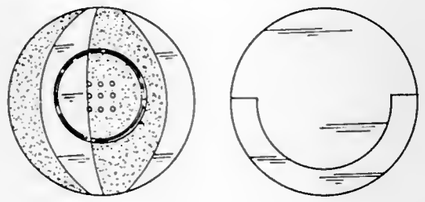


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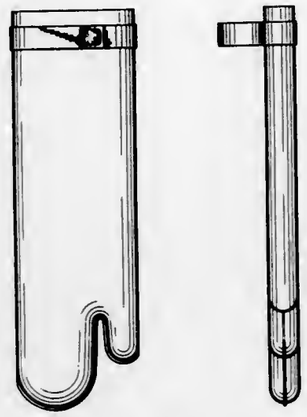
340,113
SKIN HOLDER FOR INJECTIONS
Charles Knoblauch, and Elsie Knoblauch, both of 717 Hirsch Ave., Runnemede, N.J. 08078
Filed Oct. 9, 1991, Ser. No. 773,297
Term of patent 14 years
U.S. Cl. D24—143



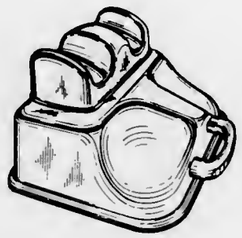
340,114
ADHESIVE BANDAGE
Richard C. Arginsky, Ellenville, N.Y., assignor to Upstate Design and Marketing, Inc., Ellenville, N.Y.
Filed May 7, 1991, Ser. No. 696,535
Term of patent 14 years
U.S. Cl. D24—189



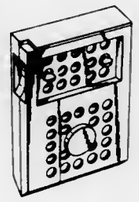
340,115
PROTECTIVE SLEEVE
James E. Carmack, 3706 Chateaugnay Dr., Decatur, Ga. 30034
Filed Sep. 23, 1991, Ser. No. 763,758
Term of patent 14 years
U.S. Cl. D24—190



340,116
ELECTRIC MASSAGER
Keiichi Ohashi, Shizuoka, Japan, assignor to Skylite Industry Co., Ltd., Shizuoka, Japan
Filed Sep. 23, 1991, Ser. No. 763,761
Term of patent 14 years
U.S. Cl. D24—213



340,117
PROCESSING CASSETTE
Graham M. Smalley, Manchester, and Alan Heywood, Warrington, both of England, assignors to Life Sciences International (Europe) Limited, Runcorn, England
Filed Jan. 16, 1991, Ser. No. 642,073
Claims priority, application United Kingdom, Jul. 17, 1990, 2008353
Term of patent 14 years
U.S. Cl. D24—224



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 5TH DAY OF OCTOBER, 1993

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-Dec, Inc.: *See*—
Austin, George K., Jr.; and Halbirt, J. Rick, 5,249,881, Cl. 403-378.000.
A. J. Giammanco & Associates, Inc.: *See*—
Giammanco, Angelo J.; and Dulin, John W., 5,249,324, Cl. 15-1.700.
A/S Fjeldhammer Brug: *See*—
Johansen, Tore, 5,250,143, Cl. 156-499.000.
A. Stephan und Soehne GmbH & Co.: *See*—
Otto, Friedrich; and Dubielzyk, Albert, 5,249,514, Cl. 99-454.000.
AB Sjobo Bruk: *See*—
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AB Volvo: *See*—
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Batzar, Kenneth, to Du Pont de Nemours, E. I., and Company. Cookware coating system. 5,250,356, Cl. 428-421.000.

Baucom, Larry H., to L & S Design, Inc. Mounting device for displaying packaged three dimensional articles and article display formed therewith. 5,249,683, Cl. 206-462.000.

Baumann, Hans-Peter, to Sandoz Ltd. Process for the treatment of polyamide or leather substrates with sulpho group-containing aromatic compounds, compositions containing such compounds and their production. 5,250,079, Cl. 8-557.000.

Baumann, Rainer, to Bodenseewerk Geratetechnik GmbH Large-aperture three-lens objective with aspherical-surfaces. 5,251,063, Cl. 359-355.000.

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Kase, Akira, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material containing at least one 5-pyrazolone coupler and at least one monodisperse cubic silver halide emulsion. 5,250,407, Cl. 430-5.550.

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Kashiwagi, Nobuaki: *See—*
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Kato, Eiichi; Oda, Akio; and Tashiro, Hiroshi, to Fuji Photo Film Co., Ltd. Electrophotographic lithographic printing plate. 5,250,376, Cl. 430-49.000.

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Kawamura, Osamu; and Murata, Shigeo, to Nippon Piston Ring Co., Ltd.; and Nissan Motor Co., Ltd. Synchronizer ring. 5,249,661, Cl. 192-107.00M.

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Keating, Paul J.; and Roach, Donald E., to Rohm and Haas Company. Stabilization of methacrylic polymers against sterilizing radiation. 5,250,589, Cl. 523-206.000.

Keating, Robert F., to Westinghouse Electric Corp. Tube plug for plugging a tube. 5,249,604, Cl. 138-89.000.

Keefer, Larry K.; and Hrabie, Joseph A., to United States of America, Health and Human Services. Complexes of nitric oxide with polyamines. 5,250,550, Cl. 514-357.000.

Keil, Michael; Girgensohn, Bjoern; Synnatschke, Gotthard; Wigger, August; Ziegler, Hans; and Gueckel, Walter, to BASF Aktiengesellschaft. Monoclinic metazachlor and composition. 5,250,503, Cl. 504-280.000.

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Kelln, Norman; Weyrauch, Bruce; Clark, James; and Cutler, Dan, to Schiapparelli Biosystems, Inc. Cuvette delivery module and turntable for a chemical analyzer. 5,250,440, Cl. 436-48.000.

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Kendall Square Research Corporation: *See—*
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Kennel, George W. Adjustable hexagonal wrench. 5,249,490, Cl. 81-405.000.

Kensey, Kenneth, to Kensey Nash Corporation. System for introducing a therapeutic agent into the rectum. 5,250,024, Cl. 604-275.000.

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Kettner, Charles A.; and Shenvi, Ashokkumar B., to Dupont Merck Pharmaceutical Company, The. Intermediates for preparing peptide boronic acid inhibitors of trypsin-like proteases. 5,250,720, Cl. 558-288.000.

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Khan, Babar; Rossi, Barbara A.; and Mitra, Uday, to North American Philips Corporation. Rapid plasma hydrogenation process for polysilicon MOSFETs. 5,250,444, Cl. 437-24.000.

Khandelwal, Yatendra; Lal, Bansi; and Blumbach, Jurgen, to Hoechst Aktiengesellschaft. Process for the preparation of 6-[3-sub-

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Kikuchi, Hiromichi; Hideshima, Yoshinori; and Tanji, Keisuke, to Asami Corporation. Method of fabric-to-fabric bonding and seamless quilt formed thereby. 5,249,323, Cl. 5-502.000.

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Kikuchi, Shinji; Tanuma, Toshihiko; and Suzuki, Toshimichi, to Sawafuji Electric Co., Ltd. D-C arc welding apparatus. 5,250,786, Cl. 219-130.320.

Kikuo, Ono; Takahashi, Kohji; Konishi, Nobutake; Ohwada, Jun-ichi; and Tanaka, Takeshi, to Hitachi, Ltd. Half tone liquid crystal display circuit with an A.C. voltage divider for drivers. 5,250,937, Cl. 345-89.000.

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Kimura, Kiyoshi; Honda, Hiroyuki; and Isobe, Toshifumi, to Konica Corporation. Image forming apparatus having transfer voltage and process speed control. 5,250,999, Cl. 355-327.000.

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Kimura, Yukihiro; Tominaga, Sumihito; and Kanbe, Rokuro, to NGK Spark Plug Company, Ltd. Method of producing sintered ceramic body. 5,250,244, Cl. 264-63.000.

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King, Charles W.; and Caddy, Bruce W., to Marathon Oil Company. Method of aerating drilling fluid. 5,249,635, Cl. 175-48.000.

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King, Tsu-Jae: *See—*
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King, William L., to Samsonite Corporation. Hand luggage with intelligent opening feature. 5,249,653, Cl. 190-109.000.

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Kishi, Koji: *See—*
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Kishi, Mitsuhiro, to Japanic Corporation. Lifting apparatus. 5,249,642, Cl. 182-2.000.

Kishi, Shiro: *See—*
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Klenk, Martin; Moser, Winfried; and Kantschar, Anton, to Robert Bosch GmbH. Method for protecting a catalytic converter. 5,249,562, Cl. 123-679.000.

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Knorre, Helmut; Loroesch, Juergen; Gos, Steven; Stoll, Mathias; and Ziegler, Annette, to Degussa Aktiengesellschaft. Process for leaching precious metals with hydrogen-peroxide and a cyanide leaching solution. 5,250,272, Cl. 423-31.000.

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Kobayashi, Takashi, to Matsushita Electric Industrial Co., Ltd. On-vehicle display device. 5,249,833, Cl. 296-21.000.

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Koblitz, Kark R., to Thomson Consumer Electronics, S.A. Deflection circuit having a controllable sawtooth generator. 5,250,879, Cl. 315-403.000.

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Moore, Melanie. Method for setting a hair twist. 5,249,589, Cl. 132-210.000.

Moore, Richard B. Spring seated fastener. 5,249,901, Cl. 411-182.000.

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Rydell, Mark A., to Everest Medical Corporation. Bipolar laparoscopic instrument with replaceable electrode tip assembly. 5,250,047, Cl. 606-48.000.

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Saito, Hitoshi H. S.; Kutsukake, Masaki M. K.; Yamauchi, Mineo M. Y.; and Furuse, Minoru M. F., to Dai Nippon Insatsu Kabushiki Kaisha. Heat transfer recording process. 5,250,495, Cl. 503-227.000.

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Saito, Yoshio; Umeda, Masaru; Ninomiya, Kohei; and Kikuchi, Masao, to Kabushiki-kaisha Hitachi Seisakusho. Vapor drier. 5,249,371, Cl. 34-78.000.

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Warren, Mitchell R.; and Gleeson, James F., to Restaurant Technology, Inc. Playhouse. 340,099, 10-5-93, Cl. D21-243.000.

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Fahnstrom, Dale; McCoy, Michael; and Magnusson, Carl G., 339,926, Cl. D6-366.000.
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Wilcox, John R., to Winner International. Holder for a vehicle steering wheel lock bar. 339,974, 10-5-93, Cl. D8-343.000.
Williams, Ruth. Convertible play pen. 339,922, 10-5-93, Cl. D6-331.000.
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  Wilcox, John R., 339,974, Cl. D8-343.000.
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  Bunn, Arthur H.; and Worrell, Robert, 339,953, Cl. D7-309.000.
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  Yokota, Masao; Hui, John T.; and Yankee, Wayne A., 340,037, Cl. D14-106.000.
Yoder, Ronald L., to Universal Consolidated Methods, Inc. Truck bed cover mounting clamp. 340,018, 10-5-93, Cl. D12-156.000.
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Yokota, Masao; Hui, John T.; and Yankee, Wayne A., to Everex Systems, Inc. Portable computer. 340,037, 10-5-93, Cl. D14-106.000.
Yoshikawa, Masashi, to Terumo Kabushiki Kaisha. Catheter. 340,111, 10-5-93, Cl. D24-112.000.
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  Guillen, Mario A., 8,407, Cl. 87.600.
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  Guillen, Mario, 8,410, Cl. 87.600.
  Trees, Scott C., 8,406, Cl. 87.600.
  Trees, Scott C., 8,409, Cl. 87.600.
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LIST OF STATUTORY INVENTION REGISTRATIONS

APPLICANTS TO WHOM

STATUTORY INVENTION REGISTRATIONS WERE ISSUED ON THE 5TH DAY OF OCTOBER, 1993

Barditch, Irving F.: *See*—
  Schabdach, Paul G.; Barditch, Irving F.; and Elwood, Scott H., H1236, Cl. 102-217.000.
Burgner, Gary R., to United States of America, Navy. Solid propellant air-turborocket. H1234, 10-5-93, Cl. 60-246.000.
Canaday, Michael C., to United States of America, Navy. Armor-piercing projectile. H1235, 10-5-93, Cl. 102-334.000.
Caterpillar Inc.: *See*—
  Duncan, Michael R., H1238, Cl. 280-688.000.
Diaz, Dinah: *See*—
  Synosky, Steven P.; Diaz, Dinah; and Hartman, Scott, H1241, Cl. 426-3.000.
Duncan, Michael R., to Caterpillar Inc. Suspension for an oscillating axle. H1238, 10-5-93, Cl. 280-688.000.
Dusek, Joseph T., to United States of America, Energy. Extrusion of metal oxide superconducting wire, tube or ribbon. H1239, 10-5-93, Cl. 264-63.000.
Elwood, Scott H.: *See*—
  Schabdach, Paul G.; Barditch, Irving F.; and Elwood, Scott H., H1236, Cl. 102-217.000.
Evans, Gary E., to United States of America, America. Device for absorbing resonances in large circular cavities. H1244, 10-5-93, Cl. 333-251.000.
Griswold, Donald R.; and Lamp, Robert J., to United States of America, Army. High-G support frame assembly. H1245, 10-5-93, Cl. 361-419.000.
Grove, Corey M.: *See*—
  Tardiff, Albert N., Jr.; and Grove, Corey M., H1240, Cl. 55-323.000.
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  Griswold, Donald R.; and Lamp, Robert J., H1245, Cl. 361-419.000.
Lowther, Frank E.; and Ruckel, Douglas J. Method for stabilizing an area of the earth's surface. H1237, 10-5-93, Cl. 165-45.000.
Michiue, Kenji: *See*—
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  Lowther, Frank E.; and Ruckel, Douglas J., H1237, Cl. 165-45.000.
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  Shimba, Satoru; Tobita, Keisuke; Michiue, Kenji; and Yabuuchi, Katuya, H1243, Cl. 430-508.000.
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    Schabdach, Paul G.; Barditch, Irving F.; and Elwood, Scott H., H1236, Cl. 102-217.000.
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    Dusek, Joseph T., H1239, Cl. 264-63.000.
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    Burgner, Gary R., H1234, Cl. 60-246.000.
    Canaday, Michael C., H1235, Cl. 102-334.000.
Yabuuchi, Katuya: *See*—
  Shimba, Satoru; Tobita, Keisuke; Michiue, Kenji; and Yabuuchi, Katuya, H1243, Cl. 430-508.000.
Yoshida, Kazuhiro: *See*—
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CLASS 206

1.8 5,249,667
45.14 5,249,668
45.15 5,249,669
45.31 5,249,670
63.3 5,249,672
5,249,673
63.6 5,249,671
102 5,249,674
216 5,249,675
264 5,249,676
310 5,249,677
320 5,249,678
366 5,249,679
5,249,680
427 5,249,681
438 5,249,682
462 5,249,683
503 5,249,684
523 5,249,685
555 5,249,686

CLASS 208

188 5,250,174
356 5,250,175

CLASS 209

3.3 5,249,687
170 5,249,688
546 5,249,689
630 5,249,690

CLASS 210

130 5,250,176
192 5,250,177
256 5,250,178
315 5,250,179
375 5,250,180
634 5,250,181
5,250,195
641 5,250,182
652 5,250,183
653 5,250,184
654 5,250,185
656 5,250,186
661 5,250,187
672 5,250,188
712 5,250,189
5,250,190
5,250,191
737 5,250,192
761 5,250,193
764 5,250,194
780 5,250,196
787 5,250,197
797 5,250,198
803 5,250,199

CLASS 215

100 R 5,249,691

CLASS 219

10.55 A 5,250,773
10.55 B 5,250,774
5,250,775
10.55 R 5,250,772
10.77 5,250,776
5,250,777
117.1 5,250,778
121.12 5,250,779
121.49 5,250,780
121.63 5,250,781
121.64 5,250,782
5,250,783
121.72 5,250,784
5,250,785
130.32 5,250,786

CLASS 220

216 5,249,692
263 5,249,693
276 5,249,694
5,249,695
367 5,249,696
484 5,249,697
565 5,249,698
571 5,249,699
574 5,249,700
612 5,249,701
705 5,249,702
719 5,249,703
724 5,249,704

CLASS 221

6 5,249,705

CLASS 222

20 5,249,706
40 5,249,707
83 5,249,708
137 5,249,709
146.6 5,249,710
189 5,249,711
5,249,712
321 5,249,713
500 5,249,714
519 5,249,715
598 5,249,717
642 5,249,718

CLASS 223

96 5,249,719
112 5,249,720

CLASS 224

35 5,249,721
42.45 R 5,249,722
257 5,249,723
275 5,249,724

CLASS 228

5.5 5,249,725
6.2 5,249,726
104 5,249,727
111 5,249,728
125 5,249,729
131 5,249,730
148 5,249,731
179.1 5,249,732
180.22 5,249,733
182 5,249,734
183 5,249,735

CLASS 229

110 5,249,736
122.1 5,249,737
235 5,249,738

CLASS 235

375 5,250,787
379 5,250,788
383 5,250,789
462 5,250,790
472 5,250,791
5,250,792
475 5,250,793
479 5,250,794

CLASS 236

15 BR 5,249,739
44 A 5,249,740
49.3 5,249,741

CLASS 237

2 B 5,249,742

CLASS 238

283 5,249,743

CLASS 239

23 5,249,744
76 5,249,745
296 5,249,746
373 5,249,747
690 5,249,748

CLASS 241

46.016 5,249,749
69 5,249,750
222 5,249,751

CLASS 242

35.06 E 5,249,752
55 5,249,754
55.2 5,249,755
56 R 5,249,756
58.6 5,249,757
65 5,249,758
71.1 5,249,753
199 5,249,759
279 5,249,760

CLASS 244

3.21 5,249,761
199 5,249,762

CLASS 248

27.1 5,249,763
68.1 5,249,764
181 5,249,766
188.2 5,249,767
188.7 5,249,768
225.31 5,249,769
311.2 5,249,770
317 5,249,771
475.1 5,249,765
523 5,249,772

CLASS 250

205 5,250,796
5,250,797
208.1 5,250,798
214 A 5,250,800
214 AL 5,250,799
214 VT 5,250,795
223 B 5,250,801
223 R 5,250,803
227.15 5,250,802
234 5,250,804
237 G 5,250,805
254 5,250,806
303 5,250,807
310 5,250,808
330 5,250,809
338.5 5,250,810
339 5,250,811
492.2 5,250,812
561 5,250,813

CLASS 251

129.11 5,249,773
306 5,249,774
330 5,249,775

CLASS 252

8 5,250,200
8.554 5,250,201
8.6 5,250,202
18 5,250,203
33 5,250,204
49.3 5,250,205
62.54 5,250,206
5,250,207
67 5,250,208
74 5,250,209
90 5,250,210
99 5,250,211
104 5,250,212
162 5,250,213
299.01 5,250,214
299.5 5,250,215
299.6 5,250,216
299.61 5,250,217
5,250,218
5,250,219
5,250,220
299.63 5,250,221
299.66 5,250,222
301.23 5,250,223
350 5,250,224
389.62 5,250,225
500 5,250,226
511 5,250,227
5,250,228
518 5,250,229
544 5,250,230
636 5,250,231

CLASS 254

26 E 5,249,776
289 5,249,777

CLASS 257

6 5,250,815
13 5,250,814
35 5,250,817
66 5,250,818
81 5,250,816
88 5,250,819
99 5,250,820
181 5,250,821
194 5,250,822
206 5,250,823
216 5,250,824
232 5,250,825
273 5,250,826
295 5,250,827
296 5,250,828
301 5,250,829
302 5,250,830
306 5,250,832
335 5,250,833
350 5,250,834
354 5,250,831
408 5,250,835
506 5,250,836
519 5,250,837
578 5,250,838
666 5,250,839
5,250,840
5,250,841
668 5,250,842
692 5,250,843
695 5,250,844
729 5,250,845
756 5,250,846
773 5,250,847
778 5,250,848

CLASS 261

24 5,250,232
34.2 5,250,233
97 5,250,234

CLASS 264

1.4 5,250,235
4.4 5,250,236
13 5,250,237
40.5 5,250,238
5,250,239
41 5,250,240
46.4 5,250,241
60 5,250,242
63 5,250,243
5,250,244
103 5,250,245
138 5,250,246
157 5,250,247
171 5,250,248
176.1 5,250,249
227 5,250,250
328.2 5,250,251
502 5,250,252
557 5,250,253

CLASS 266

99 5,249,778
224 5,249,779
230 5,249,780

CLASS 267

33 5,249,781
140.14 5,249,782
217 5,249,783
219 5,249,784

CLASS 269

21 5,249,785
43 5,249,786

CLASS 271

6 5,249,787
10 5,249,788
115 5,249,789
182 5,249,790
5,249,791
189 5,249,792
220 5,249,793
225 5,249,794
265 5,249,795

CLASS 273

55 D 5,249,796
57.2 5,249,797
73 C 5,249,798
73 G 5,249,799
138 A 5,249,800
148 R 5,249,801
157 R 5,249,802
193 A 5,249,803
232 5,249,804
237 5,249,805
238 5,249,806
242 5,249,807
249 5,249,808
274 5,249,809
330 5,249,810
422 Re.34,397

CLASS 277

1 5,249,811
15 5,249,812
165 5,249,813
206 R 5,249,814

CLASS 279

4.04 5,249,815

CLASS 280

14.2 5,249,816
94 5,249,817
281.1 5,249,818
602 5,249,819
614 5,249,820
638 5,249,821
646 5,249,822
656 5,249,823
729 5,249,824
743 5,249,825
777 5,249,826

CLASS 282

568 5,249,716

CLASS 283

36 5,249,827
61 5,249,828

CLASS 285

112 5,249,829
319 5,249,830

CLASS 292

144 5,249,831

CLASS 294

3.6 5,249,832

CLASS 296

21 5,249,833
35.1 5,249,834
97.6 5,249,835
180.1 5,249,836
180.3 5,249,837

CLASS 297

301 5,249,839
328 5,249,838
378.12 5,249,840
452.18 5,249,841

CLASS 298

6 5,249,842
23 DF 5,249,843

CLASS 299

17 5,249,844

CLASS 300

11 Re.34,398

CLASS 301

37.37 5,249,845
64.7 5,249,846
105.1 5,249,847

CLASS 303

100 5,249,848
5,249,849
103 5,249,850
104 5,249,851
108 5,249,852
114.1 5,249,853
115.4 5,249,854

CLASS 307

10.1 5,250,849
10.8 5,250,850
38 5,250,851
272.2 5,250,852
272.3 5,250,853
296.1 5,250,854
443 5,250,855
446 5,250,856
449 5,250,857
465 5,250,858
5,250,859
475 5,250,860

CLASS 310

10 5,250,861
40 MM 5,250,862
54 5,250,863
58 5,250,864
90.5 5,250,865
154 5,250,866
179 5,250,867
328 5,250,868
334 5,250,869
345 5,250,870
348 5,250,871

CLASS 312

138.1 5,249,855
238 5,249,856
263 5,249,857
319.6 5,249,858

CLASS 313

25 5,250,872
274 5,250,873
318 5,250,874
414 5,250,875
440 5,250,876

CLASS 315

106 5,250,877
383 5,250,878
403 5,250,879

CLASS 318

135 5,250,880
254 5,250,881
467 5,250,882
494 5,250,883
560 5,250,884
5,250,885
567 5,250,886
610 5,250,887
640 5,250,888
661 5,250,889
811 5,250,890

CLASS 320

31 5,250,891
35 5,250,892

CLASS 324

115 5,250,893

117 H 5,250,894
158 R 5,250,895
174 5,250,896
207.16 5,250,897
309 5,250,898
5,250,899
5,250,900
318 5,250,901
320 5,250,902
427 5,250,903
430 5,250,904
435 5,250,905
462 5,250,906
542 5,250,908
5,250,909
614 5,250,907

CLASS 330

149 5,250,911
285 5,250,912

CLASS 331

25 5,250,913
56 5,250,910
111 5,250,914

CLASS 333

181 5,250,915
206 5,250,916
214 5,250,917

CLASS 335

35 5,250,918
128 5,250,919
202 5,250,920
296 5,250,921

CLASS 336

60 5,250,922
83 5,250,923

CLASS 338

32 R 5,250,925
56 5,250,924
164 5,250,926

CLASS 340

545 5,250,927
825.52 5,250,942
825.65 5,250,941
825.8 5,250,943
870.31 5,250,944
901 5,250,945
936 5,250,946
973 5,250,947

CLASS 341

131 5,250,948
200 5,250,949

CLASS 342

2 5,250,950
20 5,250,951
25 5,250,952
62 5,250,953
181 5,250,954
457 5,250,955

CLASS 345

60 5,250,936
89 5,250,937
107 5,250,938
115 5,250,933
134 5,250,935
136 5,250,934
146 5,250,929
153 5,250,928
168 5,250,930
189 5,250,940
204 5,250,939
206 5,250,931
5,250,932

CLASS 346

1.1 5,250,956
5,250,957
76 PH 5,250,958
108 5,250,959
5,250,961
140 R 5,250,962
159 5,250,960
160 5,250,963

CLASS 351

153 5,250,964
208 5,250,966
221 5,250,965

CLASS 353

38 5,250,967
101 5,250,968

CLASS 354

149.1 5,250,970
219 5,250,969
274 5,250,971
288 5,250,972
5,250,973
319 5,250,974
321 5,250,975
400 5,250,976
413 5,250,977
418 5,250,978
423 5,250,979

CLASS 355

32 5,250,980
76 5,250,981
78 5,250,982
125 5,250,983
202 5,250,984
206 5,250,985
5,250,986
208 5,250,987
5,250,988
210 5,250,989
211 5,250,990
215 5,250,991
221 5,250,992
245 5,250,993
271 5,250,994
273 5,250,995
284 5,250,996
285 5,250,998
298 5,250,997
327 5,250,999

CLASS 356

5 5,251,000
73.1 5,251,001
5,251,002
152 5,251,003
236 5,251,004
315 5,251,005
319 5,251,006
5,251,007
346 5,251,008
361 5,251,009
371 5,251,010
373 5,251,011
374 5,251,012
375 5,251,013

CLASS 358

19 5,251,014
20 5,251,015
22 5,251,016
32 5,251,017
37 5,251,018
44 5,251,019
98 5,251,025
105 5,251,026
5,251,027
133 5,251,028
5,251,029
136 5,251,030
139 5,251,031
158 5,251,032
167 5,251,033
183 5,251,034
188 5,251,035
213.11 5,251,036
213.28 5,251,037
225 5,251,038
296 5,251,039
5,251,040
310 5,251,041
330 5,251,042
402 5,251,043
440 5,251,044
451 5,251,045
457 5,251,046
471 5,251,047
500 5,251,020
5,251,021
527 5,251,024
528 5,251,022
529 5,251,023

CLASS 359

40 5,251,049
51 5,251,048
57 5,251,050
85 5,251,051
107 5,251,052
145 5,251,053
189 5,251,054
216 5,251,055
224 5,251,056
249 5,251,057
5,251,058
326 5,251,059
328 5,251,060
341 5,251,061
5,251,062
355 5,251,063
361 5,251,064
454 5,251,065
509 5,251,066
628 5,251,067
634 5,251,068
715 5,251,073
717 5,251,069
732 5,251,070
891 5,251,071
896 5,251,072

CLASS 360

10.1 5,251,074
18 5,251,075
32 5,251,076
53 5,251,077
72.2 5,251,078
73.01 Re.34,399
77.14 5,251,079
5,251,080
85 5,251,081
97.02 5,251,082
98.07 5,251,083
103 5,251,084
104 5,251,085
106 5,251,086
5,251,087
109 5,251,088
113 5,251,089
121 5,251,090
132 5,251,091

CLASS 361

56 5,251,092
152 5,251,093
160 5,251,094
308.2 5,251,102
683 5,251,105
5,251,097
687 5,251,095
694 5,251,096
695 5,251,098
717 5,251,101
5,251,100
719 5,251,099
721 5,251,103
728 5,251,104
736 5,251,106
744 5,251,107
783 5,251,108
792 5,251,109
796 5,251,110

CLASS 362

61 5,251,111
5,251,112
118 5,251,113
190 5,251,114
286 5,251,115
296 5,251,116
308 5,251,117
311 5,251,118
362 5,251,119

CLASS 363

37 5,251,120
44 5,251,121
98 5,251,122

CLASS 364

147 5,251,123
167.01 5,251,124
176 5,251,125
189 5,251,126
413.11 5,251,127
413.13 5,251,128
413.19 5,251,130
419.03 5,251,129
419.08 5,251,131
5,251,133
424.02 5,251,134
424.05 5,251,135
5,251,136
424.1 5,251,132
426.02 5,251,137
426.04 5,251,138
454 5,251,139
474.02 5,251,140
474.09 5,251,141
474.13 5,251,142
474.18 5,251,143
474.19 5,251,144
474.22 5,251,145
476 5,251,146
490 5,251,147
509 5,251,148
510 5,251,149
550 5,251,150
5,251,151
5,251,152
5,251,153
551.02 5,251,154
553 5,251,155
559 5,251,156
571.04 5,251,157
578 5,251,159
5,251,160
5,251,161
602 5,251,162
709.12 5,251,163
715.01 5,251,164
717 5,251,165
746.2 5,251,166
760 5,251,167

CLASS 365

51 5,251,168
72 5,251,169
158 5,251,170
185 5,251,171
189.09 5,251,172
189.110 5,251,173
200 5,251,174
208 5,251,175
222 5,251,176
5,251,177
227 5,251,178
5,251,179
230.03 5,251,180
230.08 5,251,181

CLASS 366

109 5,249,859
135 5,249,860
194 5,249,861
312 5,249,862

CLASS 367

20 5,251,182
21 5,251,183
72 5,251,184
100 5,251,185
103 5,251,186
139 5,251,187
140 5,251,188

CLASS 368

4 5,251,189
10 5,251,190
47 5,251,191

CLASS 369

36 5,251,192
44.12 5,251,193
44.26 5,251,194
75.2 5,251,195
110 5,251,196
5,251,197
5,251,198
5,251,199
5,251,200
195 5,251,201
286 5,251,202

CLASS 370

13.1 5,251,203
15 5,251,204
60 5,251,205
60.1 5,251,206
5,251,207
77 5,251,208
82 5,251,209
84 5,251,210
85.1 5,251,211
85.12 5,251,213
85.2 5,251,212
92 5,251,214
94.1 5,251,215
95.3 5,251,216
112 5,251,217
120 5,251,218

CLASS 371

12 5,251,227
22.1 5,251,228
37.4 5,251,219
55 5,251,220

CLASS 372

3 5,251,221
26 5,251,222
34 5,251,223
45 5,251,224
5,251,225
87 5,251,226
92 5,251,229
94 5,251,230

CLASS 373

109 5,251,231

CLASS 374

102 5,249,863
110 5,249,864
161 5,249,865
176 5,249,866

CLASS 375

5 5,251,232
12 5,251,233
20 5,251,234
37 5,251,235
59 5,251,236
99 5,251,237
106 5,251,238
114 5,251,239

CLASS 376

157 5,251,240
204 5,251,241
254 5,251,242
261 5,251,243
5,251,244
287 5,251,245
444 5,251,246
451 5,251,247

CLASS 379

58 5,251,248
59 5,251,249
5,251,250
67 5,251,251
92 5,251,252
104 5,251,253
165 5,251,254
242 5,251,255
386 5,251,256
399 5,251,257

CLASS 380

21 5,251,258
23 5,251,259

CLASS 381

18 5,251,260
36 5,251,261
71 5,251,262
5,251,263
173 5,251,264

CLASS 382

3 5,251,265
8 5,251,266
9 5,251,267
14 5,251,268
15 5,251,269
27 5,251,270
44 5,251,271
54 5,251,272
57 5,251,273

CLASS 384

45 5,249,867
276 5,249,868
278 5,249,869
420 5,249,870
551 5,249,871
574 5,249,872

CLASS 385

13 5,251,274
14 5,251,275
43 5,251,276
5,251,277
48 5,251,278
86 5,251,279
115 5,251,280

CLASS 392

384 5,251,281
449 5,251,282

CLASS 395

2 5,251,283
5,251,284
10 5,251,285
22 5,251,286
24 5,251,287
51 5,251,288
112 5,251,289
120 5,251,290
146 5,251,291
150 5,251,292
151 5,251,293
155 5,251,294
163 5,251,295
164 5,251,296
5,251,297
166 5,251,298
200 5,251,299
5,251,300
5,251,301
250 5,251,302
275 5,251,303
5,251,319
325 5,251,305
375 5,251,304
5,251,306
400 5,251,307
425 5,251,308
5,251,309
5,251,310
5,251,311
5,251,312
500 5,251,313
600 5,251,314
5,251,315
5,251,316
650 5,251,317
725 5,251,318
750 5,251,320
775 5,251,321
800 5,251,322
5,251,323

CLASS 400

120 5,249,873
208 5,249,874

CLASS 401

148 5,249,875
261 5,249,876

CLASS 403

24 5,249,877
291 5,249,878
374 5,249,879
5,249,880
378 5,249,881

CLASS 404

31 5,249,883
42 5,249,884
89 5,249,886

CLASS 405

36 5,249,887
44 5,249,885
128 5,249,888
5,249,889
186 5,249,890
191 5,249,891
233 5,249,892
258 5,249,893

CLASS 407

114 5,249,894

CLASS 408

156 5,249,895

CLASS 409

191 5,249,896

CLASS 411

50 5,249,897
82 5,249,898
5,249,899
182 5,249,900
5,249,901
399 5,249,882

CLASS 412

7 5,249,902

CLASS 414

24.5 5,249,903
282 5,249,904
401 5,249,905
417 5,249,906
430 5,249,907
446 5,249,908
476 5,249,909
538 5,249,910
563 5,249,911
746.3 5,249,912
789.6 5,249,913
793.4 5,249,914
796.7 5,249,915
798.9 5,249,916
799 5,249,917

CLASS 415

108 5,249,918
119 5,249,919
134 5,249,920
138 5,249,921
191 5,249,922
202 5,249,923

CLASS 416

48 5,249,924
134 A 5,249,925
143 5,249,926
189 5,249,927
223 R 5,249,928

CLASS 417

207 5,249,929
313 5,249,930
356 5,249,931
386 5,249,932
404 5,249,933
406 5,249,934
415 5,249,935
444 5,249,936
475 5,249,937
477 5,249,938
569 5,249,939

CLASS 418

55.2 5,249,943
55.5 5,249,940
5,249,941
171 5,249,942

CLASS 419

37 5,250,254
39 5,250,255

CLASS 420

473 5,250,256

CLASS 422

22 5,250,257
5,250,258
52 5,250,259
56 5,250,260
63 5,250,261

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64 5,250,262
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107 5,250,265
113 5,250,266
168 5,250,267
174 5,250,268
179 5,250,269
192 5,250,270
260 5,250,271

CLASS 423

3 5,250,273
31 5,250,272
61 5,250,274
138 5,250,275
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329.1 5,250,277
346 5,250,278
432 5,250,279
513 5,250,280
623 5,250,281
705 5,250,282

CLASS 424

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9 5,250,284
5,250,285
45 5,250,286
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49 5,250,288
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94.4 5,250,299
195.1 5,250,300
5,250,301
422 5,250,302
533 5,250,303
667 5,250,304

CLASS 425

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114 5,249,945
142 5,249,946
150 5,249,947
376.1 5,249,948
385 5,249,949
412 5,249,950
589 5,249,951

CLASS 426

46 5,250,305
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231 5,250,311
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524 5,250,315
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CLASS 427

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96 5,250,319
128 5,250,320
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226 5,250,322
255.1 5,250,323
376.6 5,250,324
386 5,250,325
466 5,250,326
528 5,250,327
535 5,250,328
556 5,250,329

CLASS 428

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34.9 5,250,332
35.7 5,250,333
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36.92 5,250,335
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336 5,250,354
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607 5,250,363
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698 5,250,367

CLASS 429

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CLASS 430

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5,250,380
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109 5,250,382
131 5,250,383
138 5,250,384
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203 5,250,386
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283 5,250,390
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CLASS 433

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247 5,249,967
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301 5,250,003

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739 5,250,575

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157 5,250,582

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CLASS 526

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153 5,250,653
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494 5,250,659

CLASS 530

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377 5,250,664
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391.5 5,250,666

CLASS 534

554 5,250,667
557 5,250,669
642 5,250,670
698 5,250,671

CLASS 536

7.3 5,250,672
28.55 5,250,673
124 5,250,674

CLASS 540

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456 5,250,678
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596 5,250,682

CLASS 544

60 5,250,683
142 5,250,684
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321 5,250,694

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210 5,250,696
230 5,250,697
260 5,250,698
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366.1 5,250,700
478 5,250,701
542 5,250,702
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CLASS 549

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226 5,250,708
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CLASS 552

575 5,250,711
613 5,250,712

CLASS 554

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156 5,250,714

CLASS 556

446 5,250,715
472 5,250,716

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435 5,250,721

CLASS 560

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355 5,250,723

CLASS 562

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Ronald H. Brown, *Secretary*
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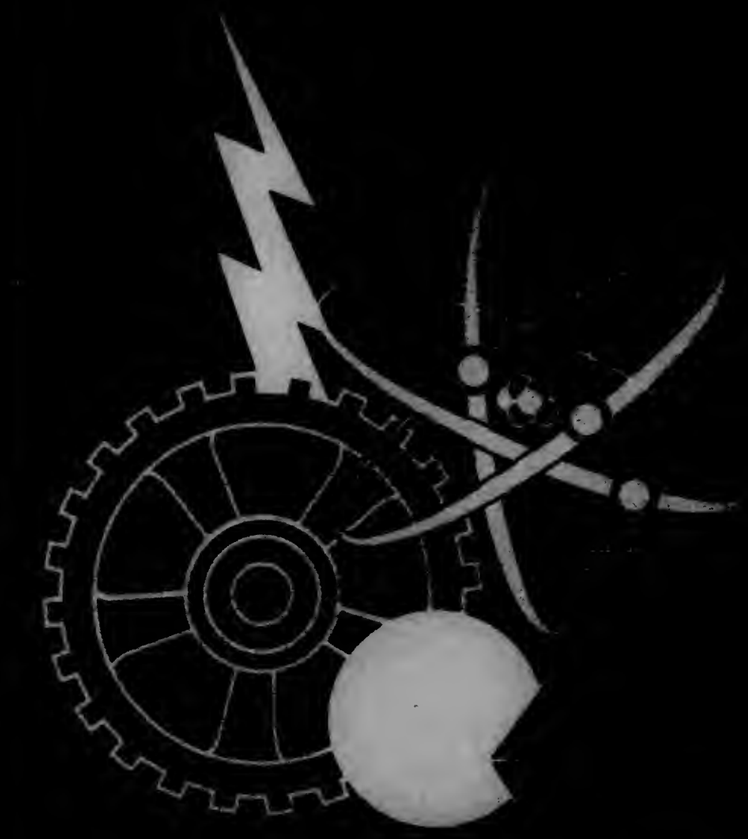
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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1153 O.G. 3, on Aug. 3, 1993.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1993, due to changes in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1154 O.G. 25, on Sept. 14, 1993.

International fees were changed, effective on May 1, 1993, due to changes in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1992, and were announced in the *Official Gazette* at 1141 O.G. 68, on Aug. 25, 1992.

The schedule of PCT fees (in U.S. dollars), effective Oct., 1, 1993, is as follows:

International Applications (PCT Chapter I) fees:	
Transmittal fee:	200.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	620.00
—Corresponding prior U.S. national application filed	410.00
—Supplemental search fee, per additional invention	170.00
European Patent Office as ISA	1415.00
International fees	
Basic fee	530.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
For the first 10 national or regional offices designated	128.00
For each designation fee in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
Designation fee	128.00
Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	450.00
—Additional examination fee, per additional invention (payable only upon invitation	140.00
—USPTO was not ISA in PCT Chapter I	670.00
—Additional examination fee, per additional invention (payable only upon invitation	230.00

U.S. National Stage fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
All claims presented satisfied provisions of PCT Article 33(2) to (4)	45.00	90.00
All claims presented did not satisfy provisons of PCT Article 33(2) to (4)	320.00	640.00
USPTO was ISA but not IPEA	355.00	710.00
USPTO was neither ISA nor IPEA		
Filed without a search report from the European Patent Office or the Japanese Patent Office	475.00	950.00
Filed with a search report from the European Patent Office or the Japanese Patent Office	415.00	830.00
Other National Fees		
—For each independent claim in excess of 3	37.00	74.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	115.00	230.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Sept. 13, 1993

BRUCE A. LEHMAN,
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks.

Patent Cooperation Treaty Update
Declaration of Continuation by Uzbekistan

The United States Patent and Trademark Office has received notification from the World Intellectual Property Organization (WIPO) that Uzbekistan on Aug. 18, 1993, deposited a declaration the effect of which is that the PCT is applied by Uzbekistan. Consequently, nationals and residents of Uzbekistan are entitled to file international applications under the PCT, and Uzbekistan may be designated and elected in international applications. Moreover, the extension to Uzbekistan of the effects of each international application filed on or after Dec. 25, 1991 (the date on which the Soviet Union ceased to exist) and no later than Oct. 18, 1993, may be requested by the applicant concerned. That request must be filed with, and the prescribed fee must be paid to, the International Bureau of WIPO within three months from the date of its notification informing the applicant that a request for extension may be made. An applicant may also extend to Uzbekistan the effect of an international application wich was filed before Dec. 25, 1991, provided the application designated the Soviet Union and other conditions and procedures as prescribed by Uzbekistan are met.

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Listing of PCT Member Countries

	Country	Instrument	Deposit of Instrument	Entry into Force[1]
(1)	Central African Republic[2]	Accession 15	September 1971 24	January 1978
(2)	Senegal[2]	Ratification 08	March 1972 24	January 1978
(3)	Madagascar	Ratification 27	March 1972 24	January 1978
(4)	Malawi	Accession 16	May 1972 24	January 1978
(5)	Cameroon[2]	Accession 15	March 1973 24	January 1978
(6)	Chad[2]	Accession 12	February 1974 24	January 1978
(7)	Togo[2]	Ratification 28	January 1975 24	January 1978
(8)	Gabon[2]	Accession 06	March 1975 24	January 1978
(9)	United States of America	Ratification 26	November 1975 24	January 1978
(10)	Germany[3]	Ratification 19	July 1976 24	January 1978
(11)	Congo[2]	Accession 08	August 1977 24	January 1978
(12)	Switzerland[3]	Ratification 14	September 1977 24	January 1978
(13)	United Kingdom[3]	Ratification 24	October 1977 24	January 1978
(14)	France[3]	Ratification 25	November 1977 25	February 1978
(15)	Russian Federation	Ratification 29	December 1977 29	March 1978
(16)	Brazil	Ratification 09	January 1978 09	April 1978
(17)	Luxembourg[3]	Ratification 31	January 1978 30	April 1978
(18)	Sweden[3]	Ratification 17	February 1978 17	May 1978
(19)	Japan	Ratification 01	July 1978 01	October 1978
(20)	Denmark[3]	Ratification 01	September 1978 01	December 1978
(21)	Austria[3]	Ratification 23	January 1979 23	April 1979
(22)	Monaco[3]	Ratification 22	March 1979 22	June 1979
(23)	Netherlands[3]	Ratification 10	April 1979 10	July 1979
(24)	Romania	Ratification 23	April 1979 23	July 1979
(25)	Norway	Ratification 01	October 1979 01	January 1980
(26)	Liechtenstein[3]	Accession 19	December 1979 19	March 1980
(27)	Australia	Accession 31	December 1979 31	March 1980
(28)	Hungary	Ratification 27	March 1980 27	June 1980
(29)	Democratic People's Republic of Korea (North Korea)	Accession 08	April 1980 08	July 1980
(30)	Finland	Ratification 01	July 1980 01	October 1980
(31)	Belgium[3]	Ratification 14	September 1981 14	December 1981
(32)	Sri Lanka	Accession 26	November 1981 26	February 1982
(33)	Mauritania[2]	Accession 13	January 1983 13	April 1983
(34)	Sudan	Accession 16	January 1984 16	April 1984
(35)	Bulgaria	Accession 21	February 1984 21	May 1984
(36)	Republic of Korea (South Korea)	Accession 10	May 1984 10	August 1984
(37)	Mali[2]	Accession 19	July 1984 19	October 1984
(38)	Barbados	Accession 12	December 1984 12	March 1985
(39)	Italy[3]	Ratification 28	December 1984 28	March 1985
(40)	Benin[2]	Accession 26	November 1986 26	February 1987
(41)	Burkina Faso[2]	Accession 21	December 1988 21	March 1989
(42)	Spain[3]	Accession 16	August 1989 16	November 1989
(43)	Canada	Ratification 02	October 1989 02	January 1990
(44)	Greece[3]	Accession 09	July 1990 09	October 1990
(45)	Poland	Accession 25	September 1990 25	December 1990
(46)	Cote d'Ivoire[2]	Ratification 31	January 1991 30	April 1991
(47)	Guinea[2]	Accession 27	February 1991 27	May 1991
(48)	Mongolia	Accession 27	February 1991 27	May 1991
(49)	Czech Republic	Declaration[4] 18	December 1992 01	January 1993
(50)	Ireland[3]	Ratification 01	May 1992 01	August 1992
(51)	Portugal[3]	Accession 24	August 1992 24	November 1992
(52)	New Zealand	Accession 01	September 1992 01	December 1992
(53)	Ukraine	Declaration[4] 21	September 1992 25	December 1991
(54)	Viet Nam	Accession 10	December 1992 10	March 1993
(55)	Slovak Republic	Declaration[4] 30	December 1992 01	January 1993
(56)	Niger[2]	Accession 21	December 1992 21	March 1993
(57)	Kazakhstan	Declaration[4] 16	February 1993 25	December 1991
(58)	Belarus	Declaration[4] 14	April 1993 25	December 1991
(59)	Latvia	Accession 07	June 1993 07	September 1993
(60)	Uzebekistan	Declaration[4] 18	August 1993 25	December 1991

[1]Although the PCT entered into force on January 24, 1978, the Assembly of the PCT Union fixed June 1, 1978, as the date from which international applications could be filed and demands for international preliminary examination could be submitted.

[2]Members of African Intellectual Property Organization (OAPI) regional patent system. Only regional patent protection is available for OAPI countries. A designation of any country is an indication that all OAPI countries have been designated. Only one designation fee is due regardless of the number of OAPI member countries designated.

[3]Member of European Patent Convention (EPC) regional patent system. Either national or European patents for member countries are available through PCT, except for France, Monaco, Belgium, Italy, Greece and Ireland for which only European patents are available if PCT is used. Note: Only one designation fee is due if European regional patent protection is sought for one, several or all EPC member countries under the PCT.

[4]Declaration of continued application.

Sept. 13, 1993

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d) provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on October 9, 1990 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,961,232 through 4,962,545
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on October 7, 1986 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,614,046 through 4,616,364
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after December 12, 1980, but before August 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months and 7 years and six months and 11 years and six months are set forth in 37 CFR 1.20(e) - (g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 , in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9f) $465.00
By other than a small entity $930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9f) $935.00
By other than a small entity $1,870.00

(g) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity(§ 1.9(f)) $1,410.00
By other than a small entity $2,820.00

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(h), and (i), which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980

By a small entity (§ 1.9f) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been

(1) unavoidable $620.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED JULY 25, 1993
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,530,114	06/398,842	7/23/85
4,530,115	06/454,991	7/23/85
4,530,117	06/574,920	7/23/85
4,530,121	06/616,133	7/23/85
4,530,124	06/534,537	7/23/85
4,530,128	06/564,084	7/23/85
4,530,130	06/498,985	7/23/85
4,530,133	06/577,877	7/23/85
4,530,135	06/520,005	7/23/85
4,530,143	06/491,465	7/23/85
4,530,144	06/502,588	7/23/85
4,530,145	06/484,635	7/23/85
4,530,149	06/489,307	7/23/85
4,530,151	06/515,147	7/23/85
4,530,153	06/547,404	7/23/85
4,530,155	06/591,407	7/23/85
4,530,159	06/531,422	7/23/85
4,530,160	06/531,329	7/23/85
4,530,161	06/621,057	7/23/85
4,530,162	06/521,044	7/23/85
4,530,166	06/584,028	7/23/85
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4,530,174	06/638,604	7/23/85
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4,530,181	06/534,726	7/23/85
4,530,182	06/560,912	7/23/85
4,530,189	06/488,308	7/23/85
4,530,190	06/563,805	7/23/85
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4,530,194	06/458,214	7/23/85
4,530,198	06/520,355	7/23/85

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Patent Number	Serial Number	Issue Date
4,530,199	06/378,820	7/23/85
4,530,201	06/337,504	7/23/85
4,530,203	06/504,884	7/23/85
4,530,209	06/609,532	7/23/85
4,530,212	06/547,245	7/23/85
4,530,213	06/508,408	7/23/85
4,530,214	06/597,240	7/23/85
4,530,215	06/523,616	7/23/85
4,530,222	06/376,445	7/23/85
4,530,229	06/498,233	7/23/85
4,530,230	06/551,183	7/23/85
4,530,232	06/590,519	7/23/85
4,530,233	06/515,092	7/23/85
4,530,234	06/509,759	7/23/85
4,530,238	06/509,485	7/23/85
4,530,242	06/516,542	7/23/85
4,530,246	06/466,352	7/23/85
4,530,249	06/593,815	7/23/85
4,530,250	06/599,292	7/23/85
4,530,251	06/510,408	7/23/85
4,530,252	06/393,942	7/23/85
4,530,254	06/530,245	7/23/85
4,530,258	06/489,869	7/23/85
4,530,259	06/511,190	7/23/85
4,530,267	06/473,046	7/23/85
4,530,271	06/496,710	7/23/85
4,530,279	06/654,298	7/23/85
4,530,282	06/610,599	7/23/85
4,530,284	06/586,856	7/23/85
4,530,286	06/642,494	7/23/85
4,530,290	06/576,599	7/23/85
4,530,300	06/443,332	7/23/85
4,530,303	06/522,007	7/23/85
4,530,304	06/587,617	7/23/85
4,530,305	06/586,951	7/23/85
4,530,308	06/529,846	7/23/85
4,530,312	06/623,934	7/23/85
4,530,313	06/627,560	7/23/85
4,530,314	06/590,568	7/23/85
4,530,315	06/630,704	7/23/85
4,530,326	06/581,858	7/23/85
4,530,329	06/543,653	7/23/85
4,530,330	06/546,305	7/23/85
4,530,332	06/545,792	7/23/85
4,530,334	06/555,482	7/23/85
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4,530,357	06/486,097	7/23/85
4,530,358	06/471,673	7/23/85
4,530,359	06/464,892	7/23/85
4,530,364	06/489,061	7/23/85
4,530,367	06/532,736	7/23/85
4,530,369	06/457,240	7/23/85
4,530,370	06/498,903	7/23/85
4,530,376	06/533,464	7/23/85
4,530,378	06/403,398	7/23/85
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4,530,382	06/529,549	7/23/85
4,530,383	06/454,858	7/23/85
4,530,391	06/541,700	7/23/85
4,530,394	06/547,530	7/23/85
4,530,400	06/565,237	7/23/85
4,530,401	06/365,844	7/23/85
4,530,402	06/527,902	7/23/85
4,530,413	06/491,947	7/23/85
4,530,415	06/428,646	7/23/85
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4,530,428	06/511,480	7/23/85
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4,850,866	07/202,487	7/25/89
4,850,869	06/911,917	7/25/89
4,850,874	07/003,065	7/25/89
4,850,876	07/096,017	7/25/89
4,850,878	06/777,186	7/25/89
4,850,882	07/138,832	7/25/89
4,850,896	07/200,866	7/25/89
4,850,898	06/756,477	7/25/89
4,850,899	07/208,463	7/25/89
4,850,909	07/100,421	7/25/89
4,850,914	07/034,648	7/25/89
4,850,916	07/021,679	7/25/89
4,850,917	07/083,566	7/25/89
4,850,924	07/197,267	7/25/89
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4,850,930	07/006,429	7/25/89
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4,850,979	07/146,130	7/25/89
4,850,983	07/149,462	7/25/89
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4,850,994	07/067,451	7/25/89
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4,851,041	07/053,267	7/25/89
4,851,042	07/220,515	7/25/89
4,851,044	07/055,964	7/25/89
4,851,063	06/881,503	7/25/89
4,851,064	07/209,094	7/25/89
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4,851,066	06/562,547	7/25/89
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4,851,072	06/926,744	7/25/89
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4,851,084	07/213,528	7/25/89
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4,851,118	07/189,911	7/25/89
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4,851,163	07/267,483	7/25/89
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4,851,194	07/268,643	7/25/89
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4,851,197	07/007,526	7/25/89
4,851,200	07/140,362	7/25/89
4,851,201	07/073,980	7/25/89
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4,851,233	06/915,482	7/25/89
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4,851,546	07/266,261	7/25/89
4,851,550	07/099,287	7/25/89
4,851,552	06/690,222	7/25/89
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4,851,666	06/585,579	7/25/89
4,851,672	06/642,396	7/25/89
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4,851,703	07/183,789	7/25/89
4,851,709	07/096,345	7/25/89
4,851,729	07/205,509	7/25/89
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4,851,822	06/945,225	7/25/89
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4,851,924	07/220,171	7/25/89
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4,851,941	07/019,937	7/25/89
4,851,946	07/261,885	7/25/89
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4,851,961	07/270,773	7/25/89
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4,852,085	06/859,287	7/25/89
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4,852,107	07/043,383	7/25/89
4,852,109	07/278,997	7/25/89
4,852,115	07/038,629	7/25/89
4,852,129	06/888,453	7/25/89
4,852,135	07/116,531	7/25/89
4,852,139	06/803,260	7/25/89
4,852,142	07/190,592	7/25/89
4,852,146	07/058,038	7/25/89
4,852,147	07/177,271	7/25/89
4,852,153	07/230,958	7/25/89
4,852,163	07/081,462	7/25/89
4,852,166	07/115,477	7/25/89
4,852,182	06/731,018	7/25/89

Reissue Applications Filed

Notice under 37 CFR 1.11 (b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21 (b)).

4,211,086, Re. S.N. 08/080,663, Filed June 21, 1993, Cl. 62/50, CRYOGENIC BREATHING SYSTEM, Rex D. Leonard, et. al., Owner of Record: *Minnesota Valley Engineering, Inc., New Prague, Minn.*, Attorney or Agent: Dennis J. Williamson, Ex. Gp.: 3404

4,679,333, Re. S.N. 08/103,880, Filed Aug. 4, 1993, Cl. 34/155, APPARATUS FOR THE DRY TREATMENT OF A FABRIC, Jim Anglada Vinas, Owner of Record: *Inventor*, Attorney or Agent: John J. McGlew, Ex. Gp.: 3404

4,919,936, Re. S.N. 08/069,200, Filed May 28, 1993, Cl. 424/442, FEEDS, Takefumi Iwanami, et. al., Owner of Record: *Calpis Food Industry Co., Ltd., Tokyo, Japan*, Attorney or Agent: S. Peter Ludwig, Ex. Gp.: 1502

4,992,896, Re. S.N. 08/017,220, Filed Feb. 12, 1993, Cl. 360/99.6, CARTRIDGE SHUTTER ACTUATING DEVICE IN RECORDING AND/OR REPRODUCING APPARATUS, Yoshihisa Inoue, et. al., Owner of Record: *Nakamichi Corp., Tokyo, Japan*, Attorney or Agent: Thomas K. Ziegler, Ex. Gp.: 2512

5,021,951, Re. S.N. 08/071,235, Filed June 4, 1993, Cl. 395/800, DATA PROCESSOR, Shiro Baba, Owner of Record: *Hitachi, Ltd., Tokyo, Japan*, Attorney or Agent: Carl I. Brundidge, Ex. Gp.: 2315

5,030,431, Re. S.N. 08/085,656, Filed July 1, 1993, Cl. 423/305, HIGH PORE VOLUME AND PORE DIAMETER ALUMINUM PHOSPHATE, Rimantas Glamza, Owner of Record: *W. R. Grace & Co.-Conn., New York, N.Y.*, Attorney or Agent: Steven Capella, Ex. Gp.: 1103

5,038,972. Re. S.N. 08/105,862, Filed Aug. 11, 1993, Cl. 222/25, METERED AEROSOL FRAGRANCE DISPENSING MECHANISM, Kenneth J. Murderlak, et. al., Owner of Record: *Technical Concepts, L.P., Chicago, Ill.*, Attorney or Agent: Howard B. Rockman, Ex. Gp.: 3108

5,041,088, Re. S.N. 08/109,643. Filed Aug. 30, 1993, Cl. 604/88, MULTIPLE CHAMBER AUTOMATIC INJECTOR, Geoffrey Ritson, et. al., Owner of Record: *Survival Technology, Inc., Rockville, Md.*, Attorney or Agent: Jack S. Barufka, Ex. Gp.: 3306

5,042,951, Re. S.N. 08/108,530, Filed Aug. 16, 1993, Cl. 356/369, HIGH RESOLUTION ELLIPSOMETRIC APPARATUS, Nathan Gold, et. al., Owner of Record: *Therma-Wave, inc., Freemont, Calif.*, Attorney or Agent: Michael A. Stallman, Ex. Gp.: 2505

5,045,504, Re. S.N. 08/109,672, Filed Aug. 20, 1993, Cl. 437/235, DIELECTRIC LAYER AT FIRST INTERCONNECTION FOR ELECTRONIC SEMICONDUCTOR DEVICES, Fabio Gualandris, et. al., Owner of Record: *SGS-Thomson Microelectronics S.R.L., Milano, Italy*, Attorney or Agent: Richard A. Bachand, Ex. Gp.: 1104

5,075,112, Re. S.N. 08/106,524, Filed Aug. 16, 1993, Cl. 424/434, METHOD OF AND DOSAGE UNIT FOR INHIBITING ANGIOGENESIS OR VASCULARIZATION IN AN ANIMAL USING SHARK CARTILAGE, Irwin W. Lane, Owner of Record: *Cartilage Technologies Inc., Rockley, Barbados*, Attorney or Agent: Charles B. Rodman, Ex. Gp.: 1502

5,088,533, Re. S.N. 08/012,829, Filed Feb. 3, 1993, Cl. 144/364, METHOD AND DEVICE FOR THE PRODUCT OF WOOD SHEETS FROM CUT WOOD, Hans Binder, Owner of Record: *Inventor*, Attorney or Agent: Robert L. Price, Ex. Gp.: 3201

5,092,514, Re. S.N. 08/104,457, Filed Aug. 9, 1993, Cl. 229/69, TWO-PART OR THREE-PART CONTINUOUS FORM, Edmund G. Van Malderghem, et. al., Owner of Record: *Moore Business Forms, Inc., Grand Island, New York*, Attorney or Agent: Richard G. Besha, Ex. Gp.: 2401

5,120,408, Re. S.N. 08/102,727, Filed Aug. 6, 1993, Cl. 204/101, ELECTROCHEMICAL GENERATION OF N_2O_5, Rodney V. Marshall, et. al., Owner of Record: *Secretary of State for Defense in Her Britannic Majesty's Government of the United Kingdom of Great Britian and Northern Ireland, Whitehall, London*, Attorney or Agent: Arthur R. Crawford, Ex. Gp.: 1102

5,169,208, Re. S.N. 08/105,152, Filed Aug. 12, 1993, Cl. 297/85, CHAISE LOUNGE RECLINER CHAIR, Frank M. Re, et. al., Owner of Record: *Inventors*, Attorney or Agent: David D. Kaufan, Ex. Gp.: 3507

5,198,456, Re. S.N. 08/104,961, Filed Aug. 10, 1993, Cl. 514/383, FUNGICIDAL ACTIVE COMPOUND COMBINATIONS. Stefan Dutzmann, et. al., Owner of Record: *Bayer Aktiengesellschaft, Leverkusen, Germany*, Attorney or Agent: Leonard Horn, Ex. Gp.: 1205

5,202,067, Re. S.N. 08/103,859, Filed Aug. 9, 1993, Cl. 264/40.5, POWDER COMPACTING PRESS APPARATUS AND METHODS, Michael C. Solazzi, et. al., Owner of Record: *Chemplex Industries, Inc., Tuckahoe, N.Y.*, Attorney or Agent: Arthur L. Plevy, Ex. Gp.: 1307

Requests for Reexamination Filed

Notice under 37 CFR 1.11 (c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19 (a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,868,545, Reexam. No. 90/003,152, Requested Aug. 5, 1993, Cl. 340/573, ALCOHOL OR DRUGS BREATH DETECTING DEVICES, Thomas P. Jones, Owner of Record: *Lion Tech, Ltd., Barry, England*, Attorney or Agent: Young & Thompson, Arlington, Va., Ex. Gp.: 2605, Requester: MPD, Inc., Owensboro, Ky.

4,976,510, Reexam. No. 90/003,170, Requested Aug. 16, 1993, Cl. 385/053, COMMUNICATION OUTLET, Dan I. Davila, et. al., Owner of Record: *Siecor Corp., Hickory, N.C.*, Attorney or Agent: J. David Abernathy, Hickory, N.C., Ex. Gp.: 2501, Requester: Owner

5,062,052, Reexam. No. 90/003,163. Requested Aug. 18, 1993, Cl. 364/473, LOGIC CONTROLLED PLASTIC MOLDING MACHINE WITH PROGRAMMABLE OPERATOR INTERFACE, Ronald M. Sparer, et. al., Owner of Record: *Cincinnati Milacron, Inc., Cincinnati, Ohio*, Attorney or Agent: Stephen H. Friskney, Cincinnati, Ohio, Ex. Gp.: 2306, Requester: Owner

5,117,623, Reexam. No. 90/003,165, Requested Aug. 17, 1993, Cl. 060, OPERATING FLEXIBILITY IN IGCC STATIONS, David G. Arundale, Owner of Record: *H & G Process Contracting, Ltd., Croyden, England*, Attorney or Agent: Charles R. Wolfe, Jr., Bacon & Thomas, Alexandria, Va., Ex. Gp.: 3403, Requester: John M. Cone, Strasburger & Price, L.L.P., Austin, Tex.

5,195,299, Reexam. No. 90/003,166, Cl. 053/428, METHOD OF REDUCING MOISTURE CONTENT OF HERMETIC PACKAGES CONTAINING SEMICONDUCTOR DEVICES, My N. Nguyen, Owner of Record: *Johnson Matthey, Inc., Wayne, Pa.*, Attorney or Agent: Vincent G. Gioia, Christie, Parker & Hale, Pasadena, Calif., Ex. Gp.: 3201, Requester: Owner

Notice of Expiration of Trademark Registrations Due to Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED AUGUST 23, 1993
DUE TO FAILURE TO RENEW

Reg. No.	Serial Number	Reg. Date
39,313	70/039,313	11/18/1902
39,326	70/039,326	11/18/1902
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298,921	71/316,841	11/15/1932
298,930	71/295,501	11/15/1932
298,951	71/328,265	11/15/1932
298,956	71/328,847	11/15/1932
298,966	71/326,683	11/15/1932
298,969	71/325,322	11/15/1932
299,001	71/328,315	11/15/1932
299,002	71/328,314	11/15/1932
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566,797	71/566,632	11/18/1952
566,800	71/575,509	11/18/1952
566,801	71/575,727	11/18/1952
566,805	71/581,087	11/18/1952
566,806	71/581,394	11/18/1952
566,810	71/585,443	11/18/1952
566,812	71/586,031	11/18/1952
566,817	71/588,546	11/18/1952
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566,947	71/620,286	11/18/1952
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566,950	71/620,714	11/18/1952
566,952	71/620,831	11/18/1952
566,958	71/621,314	11/18/1952
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566,996	71/624,184	11/18/1952
566,997	71/624,186	11/18/1952
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947,070	72/379,367	11/14/1972
947,072	72/386,033	11/14/1972
947,073	72/393,844	11/14/1972
947,076	72/398,281	11/14/1972
947,077	72/402,673	11/14/1972
947,081	72/388,402	11/14/1972
947,082	72/389,367	11/14/1972
947,085	72/362,334	11/14/1972
947,088	72/384,635	11/14/1972
947,091	72/389,446	11/14/1972
947,092	72/393,019	11/14/1972
947,095	72/394,809	11/14/1972
947,097	72/348,657	11/14/1972
947,106	72/419,514	11/14/1972
947,107	72/419,538	11/14/1972
947,110	72/398,016	11/14/1972
947,111	72/403,063	11/14/1972
947,112	72/403,101	11/14/1972
947,114	72/336,779	11/14/1972
947,116	72/373,440	11/14/1972
947,120	72/382,681	11/14/1972
947,126	72/351,825	11/14/1972
947,127	72/377,190	11/14/1972
947,128	72/385,100	11/14/1972
947,130	72/393,039	11/14/1972
947,131	72/393,040	11/14/1972
947,134	72/403,721	11/14/1972
947,136	72/403,821	11/14/1972
947,140	72/380,174	11/14/1972
947,143	72/386,985	11/14/1972
947,144	72/405,770	11/14/1972
947,146	72/419,289	11/14/1972
947,147	72/421,482	11/14/1972
947,150	72/358,881	11/14/1972
947,151	72/364,686	11/14/1972
947,153	72/372,506	11/14/1972
947,154	72/373,320	11/14/1972
947,155	72/373,321	11/14/1972
947,156	72/378,070	11/14/1972
947,160	72/392,510	11/14/1972
947,162	72/393,243	11/14/1972
947,163	72/397,560	11/14/1972
947,167	72/398,759	11/14/1972
947,169	72/347,243	11/14/1972
947,175	72/386,406	11/14/1972
947,177	72/387,088	11/14/1972
947,183	72/392,718	11/14/1972
947,184	72/394,484	11/14/1972
947,186	72/400,693	11/14/1972
947,189	72/402,495	11/14/1972
947,192	72/404,887	11/14/1972
947,195	72/407,496	11/14/1972
947,196	72/410,385	11/14/1972
947,197	72/410,424	11/14/1972
947,199	72/413,863	11/14/1972
947,202	72/304,565	11/14/1972
947,203	72/348,585	11/14/1972
947,204	72/358,011	11/14/1972
947,207	72/375,064	11/14/1972
947,209	72/387,694	11/14/1972
947,210	72/388,156	11/14/1972
947,212	72/396,989	11/14/1972
947,213	72/397,375	11/14/1972
947,218	72/405,187	11/14/1972
947,219	72/406,488	11/14/1972
947,221	72/407,303	11/14/1972
947,227	72/374,679	11/14/1972
947,228	72/379,963	11/14/1972
947,229	72/383,629	11/14/1972
947,231	72/390,528	11/14/1972
947,232	72/393,292	11/14/1972
947,234	72/386,819	11/14/1972
947,236	72/419,334	11/14/1972
947,239	72/378,347	11/14/1972
947,244	72/402,969	11/14/1972
947,245	72/348,733	11/14/1972
947,247	72/376,342	11/14/1972
947,248	72/383,692	11/14/1972
947,253	72/398,370	11/14/1972
947,264	72/343,499	11/14/1972
947,266	72/359,837	11/14/1972
947,270	72/368,321	11/14/1972
947,279	72/399,546	11/14/1972
947,281	72/402,164	11/14/1972
947,286	72/379,934	11/14/1972
947,288	72/395,165	11/14/1972
947,295	72/404,885	11/14/1972
947,296	72/404,920	11/14/1972
947,297	72/405,197	11/14/1972
947,300	72/371,394	11/14/1972
947,301	72/376,754	11/14/1972
947,307	72/403,409	11/14/1972
947,310	72/403,412	11/14/1972
947,311	72/386,638	11/14/1972
947,312	72/402,071	11/14/1972
947,320	72/387,107	11/14/1972
947,321	72/387,108	11/14/1972
947,323	72/394,976	11/14/1972
947,329	72/372,893	11/14/1972
947,330	72/378,200	11/14/1972
947,332	72/388,376	11/14/1972
947,336	72/397,008	11/14/1972
947,337	72/400,409	11/14/1972
947,338	72/400,502	11/14/1972
947,348	72/410,106	11/14/1972
947,349	72/351,250	11/14/1972
947,356	72/379,667	11/14/1972
947,358	72/384,175	11/14/1972
947,360	72/391,804	11/14/1972
947,362	72/365,571	11/14/1972
947,365	72/401,038	11/14/1972
947,366	72/322,475	11/14/1972
947,368	72/378,228	11/14/1972
947,369	72/379,142	11/14/1972
947,371	72/384,811	11/14/1972
947,372	72/386,941	11/14/1972
947,378	72/410,052	11/14/1972
947,381	72/362,330	11/14/1972
947,384	72/394,431	11/14/1972
947,387	72/410,955	11/14/1972
947,388	72/416,598	11/14/1972
947,394	72/404,062	11/14/1972
947,396	72/410,326	11/14/1972
947,398	72/400,352	11/14/1972
947,400	72/407,595	11/14/1972
947,402	72/414,982	11/14/1972

Reg. Number	Serial Number	Reg. Date
947,403	72/414,983	11/14/1972
947,405	72/414,979	11/14/1972
947,406	72/414,980	11/14/1972
947,409	72/415,141	11/14/1972
947,412	72/415,145	11/14/1972
947,413	72/415,146	11/14/1972
947,414	72/415,147	11/14/1972
947,416	72/379,238	11/14/1972
947,419	72/356,849	11/14/1972
947,432	72/390,346	11/14/1972
947,439	72/355,314	11/14/1972
947,444	72/402,379	11/14/1972
947,452	72/370,667	11/14/1972
947,453	72/387,082	11/14/1972
947,459	72/416,709	11/14/1972
947,460	72/392,433	11/14/1972
947,461	72/377,195	11/14/1972
947,463	72/385,593	11/14/1972
947,464	72/389,758	11/14/1972
947,467	72/343,287	11/14/1972

Errata

The following registration numbers were inadvertently listed as cancelled in the "Trademark Registration Cancelled, Section 8" and "Index of Registrants" sections of the *Official Gazette*:

TM 281, TMI 22	1405839	4/06/93
TM 397, TMI 24	1402204	11/03/92
TM 284, TMI 31	1408160	4/27/93
TM 288, TMI 6	1354793	3/16/93
TM 506, TMI 78	1391046	11/04/93
TM 471, TMI 11	1385031	12/15/92
TM 375, TMI 25	1414928	6/16/93

Consequently, the above-identified registrations are still active.

Aug. 16, 1993

DAVID E. BUCHER
Director of Trademark Examining Groups

The following registration numbers were inadvertently listed as cancelled in the "Trademark Registration Cancelled, Section 18" and "Index of Registrants" sections of the *Official Gazette*:

TM 235, TMI 24	1512472	1/14/92
TM 471, TMI 48	625603	9/22/92
TM 471, TMI 48	625604	9/22/92
TM 471, TMI 16	1441461	9/22/92
TM 690, TMI 21	1382525	6/23/92

Consequently, the above-identified registrations are still active.

Aug. 16, 1993

DAVID E. BUCHER
Director of Trademark Examining Groups

The following registration numbers listed in the "Trademark Registrations Issued" and "Index of Registrants" sections of the *Official Gazette* were listed inadvertently:

TM 293, TMI 28	1774865	6/08/93
TM 269, 272-275, TMI 7	1774049	6/01/93
TM 279, TMI 38	1771719	5/18/93
TM 284, TMI 27	1771925	5/18/93
TM 283, TMI 29	1773003	5/25/93
TM 283, TMI 29	1773004	5/25/93
TM 268, TMI 29	1774024	6/01/93
TM 214, TMI 5	1762884	4/06/93
TM 266, 270, TMI 22	1764793	4/13/93
TM 318, 319, TMI 11	1752625	2/16/93
TM 252, TMI 10	1759709	3/23/93
TM 299, TMI 23	1769849	5/11/93
TM 228, TMI 4	1750514	2/02/93
TM 268, TMI 32	1782583	7/20/93
TM 267, TMI 21	1782536	7/20/93
TM 263, TMI 28	1782332	7/20/93
TM 552, TMI 3	1702962	7/28/93
TM 258, 259, TMI 12	1759954	3/23/93
TM 140, TMI 28	1781591	7/13/93

Consequently, the certificates of registration bearing the above-identified registration numbers were not issued on the date indicated, and the registration numbers have been vacated.

Sept. 10, 1993

DAVID E. BUCHER
Director of Trademark Examining Groups

The following registration numbers were inadvertently listed as renewed in the "Trademark Registration Renewed", and "Index of Registrants" sections of the *Official Gazette*:

TM 296, TMI 8	949797	6/29/93
TM 380, TMI 8	954788	12/29/92
TM 212, TMI 3	885112	2/20/90
TM 457, TMI 24	82980	5/12/92

Consequently, the above-identified registrations are still active.

Sept. 10, 1993

DAVID E. BUCHER
Director of Trademark Examining Groups

The following registration numbers listed in the "Trademark Registrations Issued" and "Index of Registrants" sections of the *Official Gazette* sections of the *Officia Gazette* of July 13, 1993 were listed inadvertently:

TM 140, TMI 28	1781591
TM 130, TMI 31	1781129
TM 145, TMI 15	1781795
TM 136, TMI 27	1781399
TM 128, TMI 13	1781027

Consequently, the certificates of registration bearing the above identified registration numbers were not issued on the date indicated, and the registration numbers have been vacated.

Sept. 10, 1993

DAVID E. BUCHER
Director of Trademark Examining Groups

The following registration number listed in the "Trademark Registrations Issued under 1(d)" and "Index of Registrants" sections of the *Official Gazette* was listed inadvertently in Aug. 3, 1993:

TM 290, TMI 16 1786128

Consequently, the certificate of registration bearing the above-identified registration number was not issued on the date indicated, and the registration nnumber has been vacated.

Sept. 10, 1993

DAVID E. BUCHER
Director of Trademark Examining Groups

The following registration numbers were inadvertently listed as cancelled in the "Trademark Registration Cancelled, Section 8" and "Index of Registrants" sections of the *Official Gazette*:

VOL
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UMI

TM 206, TMI 3	1436355	7/13/93
TM 385, TNI 9	1432605	7/20/93
TM 275, TMI 2	1404612	3/30/93
TM 390, TMI 26	1363921	11/03/92

Consequently, the above-identified registrations are still active.

Sept. 10, 1993

DAVID E. BUCHER
Director of Trademark
Examining Groups

The following registration numbers listed in the "Trademark Registrations Issued" and "Index of Registrants" sections of the *Official Gazette* of Aug. 10, 1993 were listed inadvertently:

TM 223, 228, 231, TMI 8	1786810
TM 219, TMI 19	1786672
TM 219, TMI 11	1786665

Consequently, the certificates of registration bearing the above identified registration numbers were not issued on the date indicated, and the registration numbers have been vacated.

Sept. 10, 1993

DAVID E. BUCHER
Director of Trademark
Examining Groups

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by certified mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Blue Buffalo, Inc., San Diego, Calif., Reg. No. 1,428,861, for the mark "COCONUT'S ON SHELTER ISLAND" and design, Canc. No. 20,991.

Telemart Discount Centers, Inc., Springfield, Ill., Reg. No. 1,484,732, for the mark "TELEMART DISCOUNT CENTERS, INC.", Canc. No. 21,703.

H.C. & E., Inc., Conrad, Mont., Reg. No. 1,066,843, for the mark "CUDDLE BUDDY", Canc. No. 21,212.

Instasan Brand Products, Inc., Detroit, Mich., Reg. No. 989,943, for the mark "ODOR GUARD", Canc. No. 20,749.

Colorguard Franchising Corporation, Long Beach, Calif., Reg. No. 1,497,348, for the mark "COLORCARE", Canc. No. 21,714.

Jacob Finkelstein & Sons Inc., Woonsocket, R.I., Reg. No. 699,462, for the mark "AGINCOURT", Canc. No. 21,727.

Feather Kogyo Kabushiki Kaisha, Arlington, Va., Reg. No. 982,943, for the mark "FEATHER AND DESIGN", Canc. No. 21,764.

JEAN BROWN
Administrator, Trademark
Trial and Appeal Board
for ROBERT M. ANDERSON
Acting Assistant Commissioner
for Trademarks

Erratum

"All reference to Patent No. 5,242,876 to Edwar S. Shamshoum, et. al., of Texas for `HOMOGENEOUS-HETEROGENEOUS CATALYST SYSTEM FOR POLYOLEFINS' apearing in the *Official Gazette* of Sept. 7, 1993 should be deleted since no patent was granted."

Recordation of Trade Name

Number: 93-00005
Effective Date: Aug. 20, 1993
Term: Indefinite
Subject: "U.S. ROPE," (Rope) - Recordation
References: 15 U.S.C. 1124, 19 U.S.C. 1526 and 1595a(c), Sections 133.21 - 133.24, Customs Regulations.

1. Purpose

To Inform Customs officers of the recordation of a trade name "U.S. ROPE."

2. Information

In the *Federal Register* of Mar. 3, 1993, (58 FR 12629), public notice was given that an application had been filed with the U.S. Customs Service for the recordation of the subject trade name. No responses were received in opposition to the notice. Accordingly, in the *Federal Register* of June 8, 1993 (58 FR 32169), public notice of the final recordation of the trade name was given, effective on that date. "U.S. ROPE," is used by United States Rope Company, located at 709 Hamilton Ave., Menlo Park, Calif. 94025. The trade name is used in connection with the sale of rope and other cordage, including rope made of polypropylene, nylon, polyester, Mylar and blended materials, they are of three stranded twisted and of braided construction.

Customs protection for trade names is limited to articles bearing copies or simulations of the entire trade name.

3. Action

Genuine trademarked articles may be imported by anyone without restriction, insofar as Customs trademark laws are concerned. Imported articles bearing copying or simulating (confusingly similar) or counterfeit names or marks shall be seized under the appropriate authority listed in Customs Directive Number 2300-08 dated 1/16/90: Subject Trademark & Trade Name Protection.

File: TMK-2-CO:R:IT:I
454824 DC

JOHN F. ATWOOD, *Chief*
Intellectual Property Rights Branch

Recordation of Trade Name

Number: 93-00006
Effective Date: Aug. 20, 1993
Term: Indefinite
Subject: "U.S. ROPE CO." (Rope) - Recordation
References: 15 U.S.C. 1124, 19 U.S.C. 1526 and 1595a(c), Sections 133.21 - 133.24, Customs Regulations.

1. Purpose

To Inform Customs officers of the recordation of a trade name "U.S. ROPE CO."

2. Information

In the *Federal Register* of Mar. 3, 1993, (58 FR 12629), public notice was given that an application had been filed with the U.S. Customs Service for the recordation of the subject trade name. No responses were received in opposition to the notice. Accordingly, in the *Federal Register* of June 8, 1993 (58 FR 32169), public notice of the final recordation of the trade name was given, effective on that date. "U.S. ROPE CO.," is used by United States Rope Company, located at 709 Hamilton Ave., Menlo Park, Calif. 94025. The trade name is used in connection with the sale of rope and other cordage, including rope made of polypropylene, nylon, polyester, Mylar and blended materials, they are of three stranded twisted and of braided construction.

Customs protection for trade names is limited to articles bearing copies or simulations of the entire trade name.

3. Action

Genuine trademarked articles may be imported by anyone without restriction, insofar as Customs trademark laws are concerned. Imported articles bearing copying or simulating (confusingly similar) or counterfeit names or marks shall be seized under the appropriate authority listed in Customs Directive Number 2300-08 dated 1/16/90: Subject Trademark & Trade Name Protection.

File: TMK-2-CO:R:IT:I
454823 DC

JOHN F. ATWOOD, *Chief*
Intellectual Property Rights Branch

Recordation of Trade Name

Number: 93-00007
Effective Date: Aug. 20, 1993
Term: Indefinite
Subject: "UNITED STATES ROPE COMPANY" (Rope) - Recordation
References: 15 U.S.C. 1124, 19 U.S.C. 1526 and 1595a(c), Sections 133.21 - 133.24, Customs Regulations.

1. Purpose

To Inform Customs officers of the recordation of a trade name "UNITED STATES ROPE COMPANY."

2. Information

In the *Federal Register* of Mar. 3, 1993, (58 FR 12629), public notice was given that an application had been filed with the U.S. Customs Service for the recordation of the subject trade name. No responses were received in opposition to the notice. Accordingly, in the *Federal Register* of June 8, 1993 (58 FR 32169), public notice of the final recordation of the trade name was given, effective on that date. "UNITED STATES ROPE COMPANY," is used by United States Rope Company, located at 709 Hamilton Ave., Menlo Park, Calif. 94025. The trade name is used in connection with the sale of rope and other cordage, including rope made of polypropylene, nylon, polyester, Mylar and blended materials, they are of three stranded twisted and of braided construction.

Customs protection for trade names is limited to articles bearing copies or simulations of the entire trade name.

3. Action

Genuine trademarked articles may be imported by anyone without restriction, insofar as Customs trademark laws are concerned. Imported articles bearing copying or simulating (confusingly similar) or counterfeit names or marks shall be seized under the appropriate authority listed in Customs Directive Number 2300-08 dated 1/16/90: Subject Trademark & Trade Name Protection.

File: TMK-2-CO:R:IT:I
454825 DC

JOHN F. ATWOOD, *Chief*
Intellectual Property Rights Branch

Recordation of Trade Name

Number: 93-00008
Effective Date: Aug. 20, 1993
Term: Indefinite
Subject: "UNITED STATES ROPE" (Rope) - Recordation
References: 15 U.S.C. 1124, 19 U.S.C. 1526 and 1595a(c), Sections 133.21 - 133.24, Customs Regulations.

1. Purpose

To Inform Customs officers of the recordation of a trade name "UNITED STATES ROPE."

2. Information

In the *Federal Register* of Mar. 3, 1993, (58 FR 12629), public notice was given that an application had been filed with the U.S. Customs Service for the recordation of the subject trade name. No responses were received in opposition to the notice. Accordingly, in the *Federal Register* of June 8, 1993 (58 FR 32169), public notice of the final recordation of the trade name was given, effective on that date. "UNITED STATES ROPE," is used by United States Rope Company, located at 709 Hamilton Ave., Menlo Park, Calif. 94025. The trade name is used in connection with the sale of rope and other cordage, including rope made of polypropylene, nylon, polyester, Mylar and blended materials, they are of three stranded twisted and of braided construction.

Customs protection for trade names is limited to articles bearing copies or simulations of the entire trade name.

3. Action

Genuine trademarked articles may be imported by anyone without restriction, insofar as Customs trademark laws are concerned. Imported articles bearing copying or simulating (confusingly similar) or counterfeit names or marks shall be seized under the appropriate authority listed in Customs Directive Number 2300-08 dated 1/16/90: Subject Trademark & Trade Name Protection.

File: TMK-2-CO:R:IT:I
454826 DC

JOHN F. ATWOOD, *Chief*
Intellectual Property Rights Branch

Patents Available for License or Sale

4,776,623 APPARATUS FOR STORING AND TRANSPORTING CASSETTES, James A. Manning, 921 South Highway U.S. 301, Hawthorne, Fl. 32640

4,813,775 EYEGLASS FRAMES, Pirjo Kaksonen-Kuusisto, P.O. Box 4272, San Leandro, Calif. 94579, (510) 483-2576

4,924,543 SOFABED SHEET SET, Margret A. Hoss, 1456 E. Philadelphia St., #6, Ontario, Calif. 91761-5730, (909) 923-8191

4,930,731 NO-TILL FIELD IMPLEMENT, Joseph W. Holloway, RR 3, Box 175, Liberty, Ill. 62347

5,255,395 VENTILATING SYSTEM FOR THE TOILET BOWL, Roland L. Morneau, 800 Place-Victoria, Suite 3400, Montreal, Canada H4Z 1E9

Certificates of Correction for Week of Oct. 12, 1993

B1-Re. 33,128	4,541,992	4,956,556	5,008,774
B1-4,887,813	4,743,308	4,961,530	5,009,171
B1-4,896,499	4,747,249	4,962,891	5,013,727
Des. 325,874	4,763,209	4,966,981	5,015,024
Des. 327,839	4,783,543	4,967,376	5,015,658
Des. 329,315	4,813,258	4,981,551	5,023,477
Des. 330,094	4,822,606	4,982,106	5,023,722
Des. 330,301	4,838,150	4,987,834	5,026,590
Des. 330,389	4,863,574	4,990,231	5,032,863
Des. 330,855	4,863,654	4,990,615	5,035,497
Des. 331,540	4,880,911	4,991,583	5,036,781
Des. 336,073	4,912,027	4,992,118	5,038,211
Re. 33,808	4,925,758	4,992,176	5,039,775
Re. 33,989	4,933,456	4,994,106	5,039,878
Re. 34,093	4,936,649	4,994,451	5,041,946
Re. 34,107	4,937,689	4,999,561	5,042,311
4,169,597	4,943,650	5,002,768	5,044,056
4,270,995	4,954,440	5,003,834	5,046,272

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5,048,072	5,097,204	5,118,991	5,130,576	5,138,025	5,146,179	5,155,211	5,162,600
5,048,740	5,097,272	5,119,043	5,130,716	5,138,069	5,146,247	5,155,267	5,162,620
5,049,295	5,097,332	5,119,094	5,130,791	5,138,187	5,146,260	5,155,385	5,162,632
5,050,373	5,097,546	5,119,184	5,130,842	5,138,342	5,146,375	5,155,361	5,162,640
5,050,977	5,097,607	5,119,373	5,131,346	5,138,343	5,146,382	5,155,425	5,162,798
5,051,626	5,097,650	5,119,414	5,131,427	5,138,352	5,146,459	5,155,678	5,162,937
5,054,494	5,097,707	5,120,011	5,131,434	5,138,538	5,146,508	5,155,735	5,163,243
5,055,333	5,098,407	5,120,288	5,131,550	5,138,552	5,146,592	5,155,743	5,163,296
5,055,397	5,098,519	5,120,416	5,131,791	5,138,555	5,146,741	5,155,839	5,163,307
5,057,622	5,098,684	5,120,457	5,131,899	5,138,571	5,146,996	5,155,947	5,163,483
5,057,669	5,098,906	5,120,508	5,132,022	5,138,596	5,147,008	5,155,970	5,163,491
5,060,390	5,099,133	5,120,561	5,132,127	5,138,643	5,147,468	5,155,971	5,163,778
5,063,866	5,099,152	5,120,587	5,132,262	5,138,673	5,147,770	5,156,013	5,163,793
5,064,659	5,099,509	5,120,897	5,132,273	5,138,798	5,147,970	5,156,206	5,164,110
5,065,640	5,100,435	5,121,010	5,132,305	5,138,809	5,148,076	5,156,539	5,164,140
5,066,738	5,100,586	5,121,369	5,132,327	5,138,935	5,148,214	5,156,664	5,164,215
5,067,088	5,100,983	5,121,404	5,132,334	5,139,375	5,148,264	5,156,770	5,164,217
5,068,262	5,101,283	5,121,447	5,132,533	5,139,426	5,148,287	5,156,815	5,164,445
5,069,701	5,101,532	5,121,468	5,132,628	5,139,481	5,148,372	5,156,861	5,164,572
5,070,139	5,101,697	5,121,469	5,132,798	5,139,541	5,148,760	5,156,890	5,164,590
5,070,459	5,101,931	5,121,508	5,132,807	5,139,573	5,148,795	5,156,919	5,164,802
5,071,061	5,102,627	5,121,701	5,132,818	5,139,786	5,149,128	5,156,975	5,164,978
5,071,610	5,102,738	5,121,725	5,133,251	5,140,011	5,149,200	5,156,980	5,165,110
5,072,238	5,103,137	5,121,948	5,133,264	5,140,131	5,149,364	5,157,008	5,165,161
5,072,966	5,103,332	5,121,989	5,133,307	5,140,137	5,149,528	5,157,051	5,165,325
5,074,813	5,103,741	5,122,137	5,133,356	5,140,299	5,149,529	5,157,082	5,165,460
5,074,992	5,105,085	5,122,247	5,133,386	5,140,330	5,149,541	5,157,134	5,165,522
5,075,428	5,105,225	5,122,361	5,133,465	5,140,366	5,149,582	5,157,175	5,165,602
5,076,333	5,105,507	5,122,684	5,133,559	5,140,392	5,149,781	5,157,183	5,165,728
5,076,469	5,105,900	5,122,935	5,133,605	5,140,438	5,149,812	5,157,192	5,165,731
5,121,474	5,105,953	5,123,001	5,133,645	5,140,566	5,149,925	5,157,355	5,166,355
5,077,128	5,106,046	5,123,125	5,133,691	5,140,625	5,150,131	5,157,783	5,166,435
5,077,350	5,106,115	5,123,879	5,134,260	5,140,938	5,150,161	5,157,841	5,166,443
5,077,755	5,106,191	5,123,960	5,134,346	5,140,979	5,150,222	5,157,974	5,166,503
5,078,795	5,107,011	5,123,981	5,134,517	5,141,004	5,150,306	5,157,994	5,166,751
5,079,108	5,107,338	5,124,173	5,134,546	5,141,132	5,150,345	5,158,221	5,167,228
5,079,358	5,107,350	5,124,201	5,134,667	5,141,221	5,150,372	5,158,247	5,167,231
5,080,397	5,107,495	5,124,268	5,134,714	5,141,467	5,150,462	5,158,420	5,167,261
5,080,435	5,107,498	5,124,302	5,134,815	5,141,567	5,150,567	5,158,471	5,167,266
5,080,521	5,107,837	5,124,344	5,134,817	5,141,615	5,150,653	5,158,553	5,167,310
5,081,059	5,108,636	5,124,454	5,134,925	5,141,656	5,150,698	5,158,674	5,167,784
5,081,060	5,108,899	5,124,548	5,135,065	5,141,862	5,150,872	5,158,783	5,167,831
5,081,223	5,109,344	5,124,674	5,135,087	5,142,064	5,151,106	5,158,795	5,167,839
5,081,636	5,109,486	5,124,820	5,135,163	5,142,160	5,151,174	5,158,868	5,168,202
5,081,861	5,110,267	5,124,943	5,135,216	5,142,172	5,151,189	5,158,958	5,168,522
5,083,304	5,110,587	5,124,997	5,135,435	5,142,308	5,151,288	5,158,967	5,169,080
5,083,356	5,110,969	5,125,088	5,135,607	5,142,315	5,151,432	5,159,142	5,169,163
5,084,566	5,111,570	5,125,145	5,135,754	5,142,323	5,151,433	5,159,176	5,169,260
5,084,743	5,111,624	5,125,149	5,135,786	5,142,332	5,151,435	5,159,291	5,169,379
5,086,213	5,111,733	5,125,995	5,135,914	5,142,348	5,151,670	5,159,297	5,169,465
5,086,278	5,112,076	5,126,301	5,135,975	5,142,374	5,151,736	5,159,346	5,169,525
5,086,503	5,112,082	5,126,374	5,136,130	5,142,666	5,151,840	5,159,540	5,169,967
5,086,683	5,112,133	5,126,477	5,136,169	5,142,826	5,152,009	5,159,559	5,170,164
5,087,459	5,112,680	5,126,494	5,136,222	5,142,953	5,152,068	5,159,686	5,170,758
5,087,985	5,113,141	5,126,762	5,136,279	5,142,968	5,152,428	5,159,679	5,170,855
5,088,566	5,113,172	5,126,927	5,136,324	5,143,018	5,152,635	5,159,792	5,170,956
5,089,095	5,113,393	5,127,307	5,136,340	5,143,028	5,152,765	5,160,123	5,171,320
5,089,235	5,113,990	5,127,513	5,136,358	5,143,208	5,152,777	5,160,191	5,172,741
5,089,285	5,113,997	5,127,527	5,136,450	5,143,421	5,152,874	5,160,331	5,171,992
5,089,680	5,114,312	5,127,640	5,136,501	5,143,739	5,152,895	5,160,404	5,172,335
5,090,474	5,114,673	5,127,781	5,136,504	5,143,812	5,153,004	5,160,424	5,173,254
5,090,524	5,115,080	5,127,946	5,136,552	5,143,864	5,153,223	5,160,425	5,173,354
5,090,852	5,115,239	5,128,108	5,136,660	5,143,875	5,153,226	5,160,727	5,173,492
5,091,252	5,115,702	5,128,410	5,136,695	5,143,916	5,153,346	5,160,801	5,174,651
5,091,652	5,116,083	5,128,554	5,136,765	5,144,353	5,153,358	5,160,871	5,174,913
5,091,733	5,116,346	5,128,690	5,136,833	5,144,488	5,153,654	5,161,006	5,175,202
5,091,847	5,116,429	5,128,926	5,137,010	5,144,636	5,153,655	5,161,276	5,175,218
5,092,339	5,116,524	5,128,994	5,137,024	5,144,693	5,153,705	5,161,439	5,175,254
5,093,138	5,116,535	5,129,359	5,137,120	5,144,733	5,153,792	5,161,547	5,177,779
5,093,432	5,116,880	5,129,465	5,137,136	5,145,019	5,153,907	5,161,936	5,222,738
5,094,174	5,117,022	5,129,491	5,137,140	5,145,108	5,153,963	5,161,971	5,229,233
5,094,260	5,117,099	5,129,835	5,137,302	5,145,350	5,154,439	5,162,128	5,231,891
5,094,282	5,117,399	5,130,180	5,137,343	5,145,769	5,154,467	5,162,413	
5,094,565	5,117,649	5,130,218	5,137,493	5,145,868	5,154,941	5,162,516	
5,094,982	5,118,118	5,130,302	5,137,500	5,146,067	5,155,058	5,162,571	
5,095,191	5,118,141	5,130,375	5,137,603				
5,095,259	5,118,409	5,130,439	5,137,810				
5,095,683	5,118,441	5,130,563	5,137,996				
5,096,999	5,118,481	5,130,566	5,138,016				

Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

August 30 - September 3, 1993

Date Issued	Type of Proceeding[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods of Registration Cited by Examining Atty.	Recommended for Publication
8-30	OPP	79,689	Converse Inc. v. All Star Sports, Inc.	2(d)	Opposition Sustained	"ALL STAR" et. al. [footwear, sports apparel, etc.)	"ALL STAR SPORTS" (and design) [athletic clothing and sports equipment]		No
8-30	CAN	18,985	Columbiaknit, Inc. v. Columbia Sportswear Co.	2(d)	Petition to Cancel Granted (as to the clothing items in class 22 only)	"COLUMBIAKNIT" [clothing]	"COLUMBIA" [rucksacks (class 18); pants, parkas, etc. (class 22)]		No
8-30	OPP	79,876	Lily of France, Inc. v. Knits by Lily, Inc.	2(d); nonuse of mark on some of the goods recited as of filing date	Opposition Sustained (on 2(d) ground only)	"LILY OF FRANCE" et. al. [ladies' apparel]	"LILLY OF CALIFORNIA" [women's knit clothing]		No
8-30	EX	74/151,142	Geoffrey, Inc.	2(e)(1)	Refusal Reversed		"HIGH FREQUENCY" [stereo headphones]		No
8-30	EX	74/003,954	Joseph Davis-Suthem	2(d)	Refusal Reversed		"DRUGBUSTERS" [association services, namely, promoting opposition to drug abuse via educational programs, etc.]	"DRUGBUSTERS" [computer programs dealing with drug abuse]	No
9-1	EX	74/166,239	Ellen Tracy, Inc.	Section 6 disclaimer requirement (of word "COMPANY")	Refusal Reversed		"COMPANY ELLEN TRACY" (and design) [clothing]		No

(1) EX= EX PARTE APPEAL; OPP= OPPOSITION; C= CANCELLATION; CU= CONCURRENT USE; (R)= REQ. FOR RECONSIDERATION

Date Issued	Type of Proceeding[1]	Proceeding or App'n No.	Party/Parties	Issue	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods of Registration Cited by Examining Atty.	Recommended for Publication	TTAB Decision
9-1	OPP	82,375	Airway Industries, Inc. v. Oshkosh B'Gosh, Inc.	2(d); counterclaim asserting abandonment	"OSHKOSH" [luggage]	"OSHKOSH B'GOSH" [all purpose sports bags, etc.]		No	Opposition Sustained; Counter-claim to Cancel Dismissed
9-1	EX	74/044,523	Pratt & Whitney Canada Inc.	2(d)		"EAGLE SERVICE PLAN" [aircraft engine repair & maintenance services]	"EAGLE AVIATION" [maintenance & repair of aircraft]; "EAGLE" [military aircraft]	No	Refusal Affirmed (as to the mark "EAGLE AVIATION" only)
9-2	EX	74/169,609	Kleen Brite Laboratories, Inc.	2(d)		"KLEEN BRITE" [laundry detergents, household cleaning solutions, etc.]	"CLEANBRIGHT" (& design) [motor washes, glass cleaner, etc.]	No	Request for Reconsid-eration Denied [Refusal Affirmed]
9-3	OPP	80,834	Chia-Chi Enterprises, Inc. v. Tzu Wei Chen Food Co. Ltd.	2(d); whether there was bad faith adoption by opposer	"HEI CHAO" [processed food]	"BLACK BRIDGE" (and design, including Chinese characters) [processed food]		No	Opposition Sustained

(1) EX= EX PARTE APPEAL; OPP= OPPOSITION; C= CANCELLATION; CU= CONCURRENT USE; (R)= REQ. FOR RECONSIDERATION

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MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300 — J. J. LOVE, Director	308-0858	10/06/92
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400 — JOHN KITTLE, Director	308-0861	8/13/92
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500 — A.L. SMITH, Director	308-1021	9/18/992

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during Sept. 1993 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151

Patents ..... Numbers 3,978,525 to 3,983,579 inclusive
Plant Patents ..... 3,949 to 3,952

TRADEMARK OPERATION

Bruce Lehman, Commissioner
Robert M. Anderson, Acting Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of September 1, 1993

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308-9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/19/93	8/18/93
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308-9104 Scientific Equipment. Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/17/93	6/28/93
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308-9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/19/93	6/03/93
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308-9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/14/93	7/19/93
Law Office 7—David Shallant, Managing Attorney, (703) 308-9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/10/93	6/21/93
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308-9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/27/93	6/21/93
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308-9109 Lubricants, Industrial Equipment, Materials & Musical Instruments-Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	4/13/93	7/09/93
Law Office 10—Jean Logan, Managing Attorney, (703) 308-9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Covering-Int. Classes 22, 23, 24, 25, 26, 27 Services-Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/24/93	7/16/93
Law Office-11—Thomas Howell, Managing Attorney, (703) 308-9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	4/23/93	5/14/93
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308-9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/24/93	8/17/93
Law Office 13—Craig Morris, Managing Attorney, (703) 308-9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/12/93	7/29/93
Law Office 14—Ron Williams, Managing Attorney, (703) 308-9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/14/93	7/27/93
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308-9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/24/93	5/17/93
** Collective Marks—Class 200		
** Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308-9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308-9500		
Affidavits Under Sections 8 & 15 (All Classes)	5/13/92	—0—
Renewals (All Classes)	12/29/92	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

1. ** Assigned to each law office
2. Applicants with inquiries concerning the status of their applications and a touch tone telephone should call (703) 305-8747 from 6:30 A.M. to Midnight Est, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure.*
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner

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REEXAMINATIONS

OCTOBER 12, 1993

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,217,462 (2098th)

ROTARY FURNACE FOR THE FUSION OF MINERAL BEARING SUBSTANCES, APPARATUS AND METHOD

William T. Rawles, Greeneville, and Kenneth Jenkins, Moshein, both of Tenn., assignors to Insul-Therm Co., Midway, Tenn.

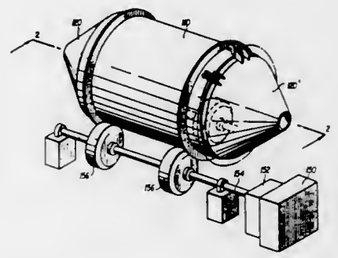
Reexamination Request Nos. 90/001,934, Feb. 7, 1990 and 90/002,024, May 14, 1990 and 90/002,353, May 24, 1991.

Reexamination Certificate for Patent No. 4,217,462, issued Aug. 12, 1980, Ser. No. 27,155, Apr. 4, 1979.

Continuation-in-part of Ser. No. 904,441, May 9, 1978, abandoned

Int. Cl.[5] **F27B** *7/10, 7/32, 7/34*

U.S. Cl. 373—62



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1, 2,** and **5** are cancelled.

Claims **3** and **4** are determined to be patentable as amended.

New claims **6–22** are added and determined to be patentable.

14. Rotary furnace for the continuous electric heating and fusion of mineral bearing substances comprising:

a cylindrical housing having a longitudinal axis, said housing having a first conical extension fixed to one end thereof and a second removable conical extension detachably secured to an opposite end thereof to provide for selective access to and removal of a fused mass formed in the interior of the housing, both said extensions having outer openings which are coaxially aligned with the housing;

opposed electrodes having a source of power, said electrodes being set in coaxial relation to the housing and being removably sustained, in spaced relationto each other and to the outer openings of the conical extensions; and

means engageable with the exterior of the housing to rotate the housing.

B1 4,486,857 (2099th)

DISPLAY SYSTEM FOR THE SUPPRESSION AND REGENERATION OF CHARACTERS IN A SERIES OF FIELDS IN A STORED RECORD

Paul C. Heckel, Los Altos, Calif., assignor to Quickview Partners, Los Altos, Calif.

Reexamination Request No. 90/002,127, Sep. 10, 1990.

Reexamination Certificate for Patent No. 4,486,857, issued Oct. 6, 1982, Ser. No. 433,141, Dec. 4, 1984.

Int. Cl.[5] **G06F** *3/14*

U.S. Cl. 395—100

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **11**, and **21** are determined to be patentable as amended.

Claims **2–10** and **12–20**, dependent on an amended claim, are determined to be patentable.

New claims **22–42** are added and determined to be patentable.

1. In a microprocessor system having an input subsystem [,] *and* an output subsystem [capable of] *for* displaying a string of alphanumeric characters of length S, and a storage subsystem capable of storing strings of alphanumeric characters, each made up of no more than n substrings F_i of alphanumeric



characters each of length L_i, *where n is less than S, and each substring F_i has a display size D_i less than S,* and a processor subsystem, an improved data display system comprising:

means for recognizing certain preselected alphanumeric characters in each substring F_i,

means for selectively removing *at least some of* the recognized preselected characters in each substring F_i so that the length L_i of F_i is reduced to a shortened substring f_i of [predetermined] length l_i less than L_1 *where the sum of all said lengths l_i is less than or equal to S and at least one such substring F_j has length l_j less than L_j and the length l_j is not equal to D_j,* and then *simultaneously* displaying the reduced-length substring [s] f_i *on said output subsystem*, and

means for displaying a full-length substring F_i selectively chosen from one of the displayed reduced [fields] *substrings* f_i.

B1 4,558,594 (2100th)

PHASED ARRAY ACOUSTIC ANTENNA

Martin Balser, Encino, and Frank E. Ambler, Sepulveda, both of Calif., assignors to Aerovironment Inc., Monrovia, Calif.

Reexamination Request No. 90/002,987, Mar. 1, 1993.

Reexamination Certificate for Patent No. 4,558,594, issued Dec. 17, 1985, Ser. No. 624,465, Jun. 25, 1984.

Int. Cl.[5] **G01W** *1/02;* **G01S** *11/14*

U.S. Cl. 73—170.16

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

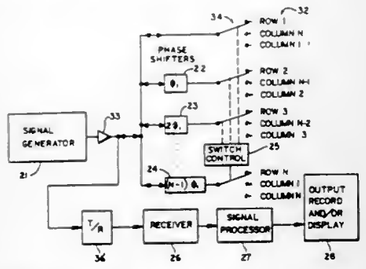
The patentability of claims **1–10** is confirmed.

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1. In a system for remote measurement of wind velocity, the combination of:

an array of acoustic transducer elements providing for transmitting a beam of acoustic energy along a path and receiving such transmitted energy as scattered by wind in said path;

signal transmitting means including an electrical signal generator providing an electrical signal for driving said elements, and phase shifting means having said electrical



signal as input and providing as output a shifted electrical signal;

first switching means for selectively connecting said signals to said elements for driving selected elements at predetermined phases to produce first, second and third beams in sequence at three different angles;

signal receiving means; and

second switching means for connecting said elements to said signal receiving means.

B1 4,774,680 (2101st)

METHOD AND APPARATUS FOR NET OIL MEASUREMENT

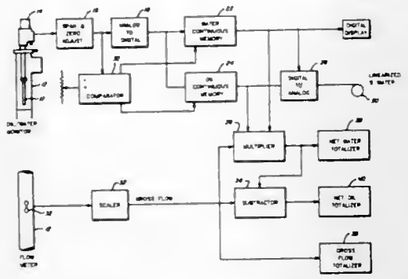
Joram Agar, Grand Cayman, Cayman Islands, assignor to Agar Corporation Ltd., Grand Cayman, Cayman Islands

Reexamination Request No. 90/002,684, Mar. 27, 1992.

Reexamination Certificate for Patent No. 4,774,680, issued Sep. 27, 1988, Ser. No. 909,626, Sep. 19, 1986.

Int. Cl.[5] **G01N** *15/00, 27/00;* **G01F** *1/74*

U.S. Cl. 364—550



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentablility of claims **1–16** is confirmed.

New claims **17–34** are added and determined to be patentable.

1. A comparator circuit for use in determining phase conditions of fluids where there is a pronounced step jump joining two independent curves, such as in the electrical properties of an oil/water mixture or the flow characteristics of a fluid, said comparator circuit receiving data from a probe device such as an oil/water monitor or a turbine flow meter, comprising:

a. a first memory for storing a first data curve representing a first set of phase characteristics;

b. a second memory for storing a second data curve representing a second set of phase characteristics; and

c. a computer means for receiving the data from the probe device, said computer means comparing the data received to a predetermined value, thereby allowing said computer means to select said first memory if the data received from the probe device is less than the predetermined value or to select said second memory if the data received from the probe device is greater than the predetermined value.

B1 4,789,360 (2102nd)

ELECTRICAL CONNECTOR WITH REAR REMOVABLE CONTACTS

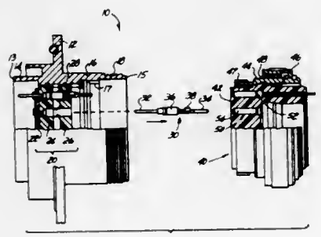
Richard L. Paul, and Ronald W. Morse, both of Sidney, N.Y., assignors to Bankers Trust Company, New York, N.Y.

Reexamination Request No. 90/002,894, Nov. 23, 1992.

Reexamination Certificate for Patent No. 4,789,360, issued Dec. 6, 1988, Ser. No. 153,731, Jan. 19, 1988.

Int. Cl.[5] **H01R** *13/66*

U.S. Cl. 439—620



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–5** is confirmed.

1. An electrical connector assembly for receiving and transmitting an electrical signal comprising a hollow cylindrical metal shell having a mating forward and a rearward end portion, a dielectric insert having an array of first passages extending therethrough, each first passage receiving an electrical first contact, said first contact comprising a mating forward and rearward end portion and a medial portion having circuit protection means electrically connected thereto for preventing transmission of signals from the assembly which exceed a predetermined value, grounding means electrically connected to each first contact for grounding the contacts to the shell, and mounting means for releasablymounting the first contacts in the shell, the mounting means comprising a removable insert assembly having a like array of second passages extending therethrough and carrying an electrical contact in each respective second passage thereof, each second contact being nonremovably mounted in the insert assembly and having a forward end portion for mating with the rearward end portion of a first contact and a rearward end portion for further interconnection to transmit a protection signal, means for removably securing the insert assembly to the rearward end portion of the shell and means for aligning the dielectric insert and insert assembly so that the arrays of first and second passages are aligned with one another, said first contacts being individually removable from the rearward end portion of the shell upon removal of the insert assembly.

B1 4,888,713 (2103rd)

SURFACE DETAIL MAPPING SYSTEM

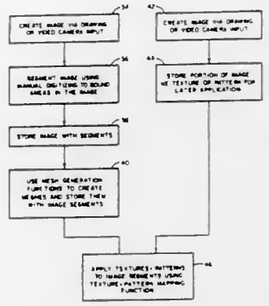
Edward K. Falk, Grand Rapids, Mich., assignor to CDI Technologies, Inc.

Reexamination Request No. 90/002,200, Nov. 2, 1990.

Reexamination Certificate for Patent No. 4,888,713, issued Dec. 19, 1989, Ser. No. 904,682, Sep. 5, 1986.

Int. Cl.[5] **G06F** *15/72, 3/14*

U.S. Cl. 395—125



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **4–8**, **22**, **23** and **26** are cancelled.

Claims **1–3**, **9**, **17**, **20**, **21**, **24**, **25** and **27** are determined to be patentable as amended.

Claims **10–16**, **18** and **19**, dependent on an amended claim, are determined to be patentable.

New claims **28** and **29** are added and determined to be patentable.

1. In a computer-assisted design system, a method for providing surface detail to computer generated two-dimensional graphic images of three-dimensional surfaces to create a three-dimensional appearance comprising:

[generating a perspective mesh on said computer-generated two-dimensional graphic image such that said mesh creates a three-dimensional visual appearance;

mapping surface detail to said mesh point-by-point such that said surface detail produces a three-dimensional appearance; and

producing a graphic visual image of said two-dimensional graphic image with said surface detail applied'.]

producing a two-dimensional image of a three-dimensional object in a digital form for storage and processing by a digital computer;

dividing said two-dimensional image into segments, each segment representing a portion of said three-dimensional object;

generating at least one mesh within each segment wherein said at least one mesh creates a three-dimensional visual appearance, wherein said step of generating at least one mesh comprises:

entering geometric information into said computer for determining the shape of the mesh that is to be associated with said segment; and

calculating a two-dimensional perspective mesh based on said geometric information which perspective mesh is represented internal to said computer as two-dimensional data defining a plurality of horizontal and vertical lines spatially arranged to form a plurality of quadrilaterals representing a three-dimensional surface for each said segment, as such three-dimensional surface would appear to the eye, in two-dimensional form;

producing at least one image of surface detail in digital form for storage and processing by a digital computer;

mapping said surface detail to said mesh within each said segment such that said surface detail produces a three-dimensional appearance; and

producing a graphic visual image of said two-dimensional image covered by said surface detail wherein said image presents a three-dimensional appearance.

B1 4,952,142 (2104th)

METHOD OF BONDING ORTHODONTIC BRACKETS

James Nicholson, 128 S. 28th Ave., Hattiesburg, Miss. 39401

Reexamination Request No. 90/002,812, Aug. 17, 1992.

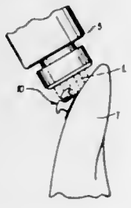
Reexamination Certificate for Patent No. 4,952,142, issued Aug. 28, 1990, Ser. No. 199,755, May 27, 1988.

Continuation-in-part of Ser. No. 691,101, Jan. 14, 1985, Pat. No. 4,749,352, which is a continuation-in-part of Ser. No. 632,931, Jul. 20, 1984, abandoned

The portion of the term of this patent subsequent to Jun. 7, 2005, has been disclaimed.

Int. Cl.[5] **A61C** *3/00*

U.S. Cl. 433—9



AS A RESULT OF REEXAMINATION, IT HAS HAS BEEN DETERMINED THAT:

The patentability of claims **1–9** is confirmed.

1. A method for bonding orthodontic brackets to teeth comprising the steps of:

cleaning the surface of the tooth in the area to which the bracket is to be applied;

etching the surface of the tooth and drying the etched area where the bracket is to be placed;

applying a photopolymerizable liquid bonding mixture to the etched area of the tooth;

applying a photopolymerizable bonding agent composite to the base of the bracket wherein the composite is sufficiently viscous in an uncured state to retain the bracket in position on the tooth when the bracket is applied thereto;

applying the base of the bracket to the etched area of the tooth by applying sufficient pressure to the bracket to expel composition therefrom;

insuring proper positioning of the bracket;

applying sufficient pressure to the bracket to insure the base is securely seated against the tooth and to expel any remaining excess composition or air from the tooth bracket interface to insure intimate contact at the tooth bracket interface;

directing a primarily visible light source from the bracket side of the tooth to the interface between the tooth and the base of the bracket to cure the bonding agent and securely fix the bracket to the tooth in a period of less than twenty seconds.

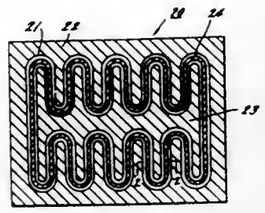
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B1 4,959,699 (2105th)

HIGH POWER MOSFET WITH LOW ON-RESISTANCE AND HIGH BREAKDOWN VOLTAGE

Alexander Lidow, Manhattan Beach, and Thomas Herman, Redondo Beach, both of Calif.

Reexamination Request No. 90/002,515, Nov. 13, 1991.
Reexamination Certificate for Patent No. 4,959,699, issued Sep. 25, 1990, Ser. No. 371,678, Jun. 22, 1989.
Int. Cl.[5] H01L *29/10, 29/78, 29/68, 27/02*
U.S. Cl. 257—328



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1** to **3** and **5** to **24** is confirmed.

Claim **4** is cancelled.

1. A high power metal oxide silicon field effect transistor device exhibiting relatively low on-resistance and relatively high breakdown voltage; said device comprising:

a wafer of semiconductor material having first and second opposing semiconductor surfaces; said wafer of semiconductor material having a relatively lightly doped major body portion for receiving junctions and being doped with impurities of one conductivity type;

at least first and second spaced base regions of the opposite conductivity type to said one conductivity type formed in said wafer and extending from said first semiconductor surface to a first depth beneath said first semiconductor surface; the space between said at least first and second base regions defining a common conduction region of one conductivity type at a given first semiconductor surface location;

first and second source regions of said one conductivity type formed in each pair of said at least first and second base regions respectively at first and second first surface location to a depth less than said first depth; the outer rim of each of said first and second source regions being laterally spaced along said first semiconductor surface from the lateral outer periphery of its said base region to define first and second channel regions along said first semiconductor surface between each pair of said first and second source regions, respectively, and said common conduction region;

source electrode means connected to said source regions;

gate insulation layer means on said first surface, disposed at least on said first and second channel regions;

gate electrode means on said gate insulation layer means and overlying said first and second channel regions;

a drain conductive region remote from said common region and separated therefrom by said relatively lightly doped major body portion;

a drain electrode coupled to said drain conductive region; and

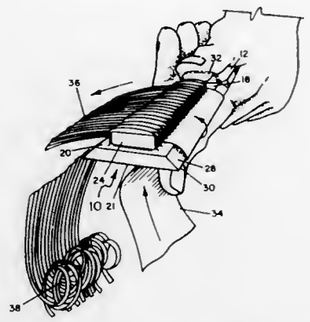
at least said base region being a cellular polygonal region; said cellular polygonal region being surrounded by said common conduction region; said first source region having the shape of an annular ring disposed within said cellular polygonal first base region.

B1 4,980,942 (2106th)

SHREDDER/CURLING DEVICE

Robert M. Spargo, Sr., Gastonia, N.C., assignor to Ad-Teck Limited, Clover, N.C.

Reexamination Request No. 90/002,759, Jun. 22, 1992.
Reexamination Certificate for Patent No. 4,980,942, issued Jan. 1, 1991, Ser. No. 482,564, Feb. 21, 1990.
Int. Cl.[5] B25F *1/00*
U.S. Cl. 7—158



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **12** and **13** is confirmed.

Claim **6** is cancelled.

Claims **1**, **3**, **8** and **9** are determined to be patentable as amended.

Claims **2**, **4**, **5**, **7**, **10** and **11**, dependent on an amended claim, are determined to be patentable.

1. A device for reconfiguring a flat length of ribbon, comprising:

(a) a handle;

(b) an elongated support member attached to said handle;

(c) a plurality of means for separating the ribbon into discrete segments, said separating means being secured to and extending away from said support member; [and]

(d) said support member defining at least one elongated sharp edge for curling ribbon; *and*

a recess defined in said handle near said support member, said recess being configured to receive the end of a human thumb.

B1 5,033,812 (2107th)

GRATING COUPLER WITH A TAPERING WAVEGUIDE FOR CHANGING A COUPLING COEFFICIENT

Toshihiko Yoshida, and Osamu Yamamoto, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

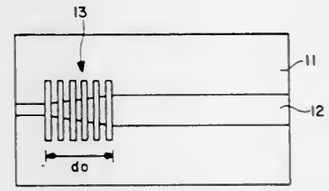
Reexamination Request No. 90/002,876, Oct. 23, 1992.
Reexamination Certificate for Patent No. 5,033,812, issued Jul. 23, 1991, Ser. No. 481,369, Feb. 16, 1990.
Claims priority, application Japan, Feb. 17, 1989, 1-38686
Int. Cl.[5] G02B *6/34*
U.S. Cl. 385—37

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1** and **2** are determined to be patentable as amended.

New claims **3** and **4** are added and determined to be patentable.

2. A grating coupler comprising an optical waveguide and a grating formed on said optical waveguide in which light is propagated for optically coupled light rays inside and outside of said optical waveguide, wherein the coupling coefficient of said grating coupler is gradually *and linearly* changed in the direction of propagation of guided light in said optical waveguide, wherein the thickness of said optical waveguide is tapered *so as to make the thickness thinner* in the direction of propagation of the guided light therein so that the thinnest portion of said optical waveguide is positioned at one end of said grating and the thickest portion thereof is positioned at the other end of said grating, *wherein said grating is constructed from multiple plate-like scatterers of equal length, the plate-like*



scatterers intersecting the optical waveguide perpendicularly to its length.

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REISSUES

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,402

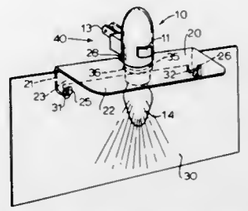
FLEA TRAP UTILIZING NIGHT-LIGHT

Clarence O. Williams, P.O. Box 7203, Rocky Mount, N.C. 27804

Original No. 5,044,112, dated Sep. 3, 1991, Ser. No. 590,678, Oct. 1, 1990. Application for reissue Jun. 2, 1992, Ser. No. 892,237

Int. Cl.[5] **A01M** *1/04*

U.S. Cl. 43—113 **7 Claims**



7. A trap for catching wingless, non-flying fleas, comprising:

(a) an electrically energized, visible light source having a pair of prongs through which the source is energized to produce a near-floor-level light when said prongs are installed in a mating near-floor-level electrical receptacle, a bulb housing formed of electrically insulating material secured to and supported by said prongs and enclosing an electrically conductive bulb socket electrically connected to said prongs and an electric bulb installed in said socket and energized through said socket and prongs to produce light, said bulb being positioned such that said bulb and the light produced thereby are visible to the fleas to be trapped; and

(b) insect trapping means providing a near-floor-level planar trapping surface supported by structure comprising said source, below and illuminated by said light at near-floor-level and in a position which is exposed to the fleas to be trapped and is directly accessible to and operative to catch the fleas to be trapped when lured by said light.

Re. 34,403

HOT-WIRE TYPE AIR FLOW METER AND AN INTERNAL COMBUSTION ENGINE WITH THE SAME

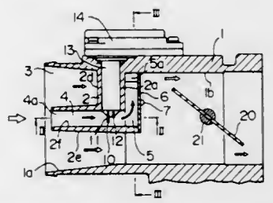
Nobukatsu Arai, Ushiku; Yoshihito Sekine, Niihari; Tadao Osawa, Katsuta; Hiroatsu Tokuda, Katsuta; Toshifumi Usui, Katsuta, and Mitsukuni Tsutsui, Naka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Original No. 4,887,577, dated Dec. 19, 1989, Ser. No. 207,525, Jun. 16, 1988. Application for reissue Dec. 19, 1991, Ser. No. 810,111

Claims priority, application Japan, Jun. 17, 1987, 62-148993

Int. Cl.[5] **F02D** *5/00*

U.S. Cl. 123—494 **28 Claims**



12. A thermal type air-flow meter, comprising a body member forming a primary flow path constituting an intake air passage of an internal combustion engine, a thermal resistor for measuring an intake air, an auxiliary flow path provided in said primary flow path and having said thermal resistor mounted thereon, a projecting portion integrated with said body member forming said primary flow path and having the auxiliary flow path formed thereon, said primary flow path having in the neighborhood of an outlet of the auxiliary flow path, a cross-sectional area which is less than the cross-sectional area at the inlet of the auxiliary flow path, with the formation of said projecting portion changing between said outlet said inlet.

Re. 34,404

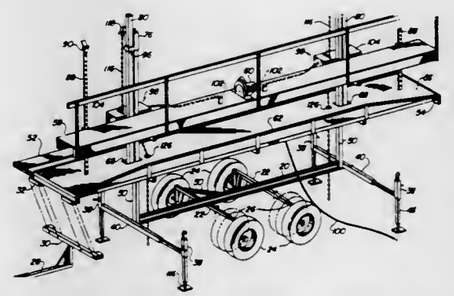
MOBILE PLATFORM WITH POWER OPERATED PLATFORM ELEVATION

Gaston L. Dupont, 30 Charles St., Holyoke, Mass. 01040, and Andre G. Dupont, 644 Federal St., Belechertown, Mass. 01007

Original No. 4,886,139, dated Dec. 12, 1989, Ser. No. 234,353, Aug. 19, 1988. Application for reissue May 17, 1990, Ser. No. 524,513

Int. Cl.[5] **E04G** *1/20*

U.S. Cl. 182—146 **19 Claims**



15. A scaffold structure having wheels for mobility and with a platform adapted to be raised to a predetermined height above the ground, comprising an elongated, horizontal base having opposite ends, ground-engaging means supporting the base above the ground including a pair of wheeled axles disposed transversely of the base and vertically extendable and retractable outriggers carried by the base adjacent to the ends thereof, a pair of masts spaced apart longitudinally of and rigidly affixed to the base, said wheeled axles disposed medially of the length of said base a substantial longitudinal distance inwardly of said masts, said outriggers being disposed longitudinally outward of the wheeled axles a substantial distance, each of said masts being of tubular cross-section, the platform being superimposed over the base, a pair of guide means fixed to the platform and each being of tubular cross-section slidably fitted onto said masts and cooperating respectively with the masts to guide the platform for vertical movement relative to the masts and at least one supplemental mast extension of tubular cross-section attachable to the upper end of each mast as a prolongation of the mast for selectively increasing the overoll mast height to said predetermined height above ground level.

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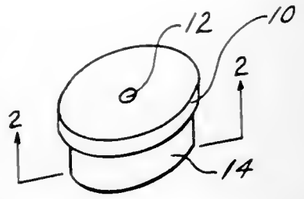
Re. 34,405
DETERMINATION OF ANALYTES IN PARTICLE-CONTAINING MEDIUM

Dennis R. Gould, San Gregorio, and Robert F. Zuk, Burlingame, both of Calif., assignors to Abbott Laboratories, Abbott Park, Ill.

Original No. 4,552,839, dated Nov. 12, 1985, Ser. No. 519,300, Aug. 1, 1983. Application for reissue Nov. 12, 1987, Ser. No. 120,455

Int. Cl.[5] **G01N** *33/535, 33/536, 33/538, 33/52*

U.S. Cl. 435—7.1 **46 Claims**



1. A method for detecting the presence of a member of a specific binding pair ("sbp member") in a [liquid assay medium] *sample*, said specific binding pair consisting of ligand and homologous receptor, where said method involves particles to which are bound at least one member of a specific binding pair, a solid bibulous member and a signal-producing system which involves at least one label which is bound to said particles or an sbp member,

said method comprising:

combining in an aqueous assay medium, [said] a sample *suspected of containing an sbp* member and at least one *of the group consisting* of said particles and *said* labeled sbp members, with the proviso that particles are added when said sample lacks particles having an sbp member; under conditions where particles only within a predetermined size[,] range and charge will concentrate in an area on said bibulous member adjacent the air/liquid interface, when said bibulous member is contacted with said assay medium;

contacting said bibulous member with said assay medium whereby said assay medium is wicked past said area and particles within said predetermined size *range* and charge concentrate at a small site in said area; and

detecting the signal as a result of said signal-producing system, wherein said signal is related to the amount of label in said area and the amount of label in said area is related to the amount of said sbp member in said sample.

Re. 34,406
PRINTER FOR CONTINUOUS FORM WITH JUSTIFICATION CONTROL

Kiyoshi Negishi; Ikuo Negoro, and Masahiro Kita, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Original No. 4,870,434, dated Sep. 26, 1989, Ser. No. 195,661, May 18, 1988. Application for reissue Sep. 25, 1991, Ser. No. 765,323

Claims priority, application Japan, May 19, 1987, 62-121690

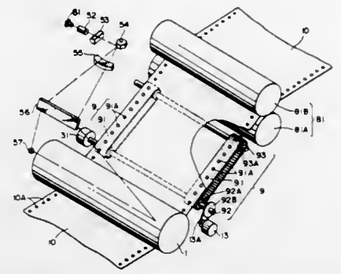
Int. Cl.[5] **G01D** *15/14;* **G03G** *21/00*

U.S. Cl. 346—160 **7 Claims**

6. A justification system for use in an electrophotographic printer in which the surface of a photoconductive drum is main-scanned in a direction of the axis of the drum and in which electrophotographic printing occurs on a continuous form which is fed at a predetermined rate by a feed mechanism, said form being provided with a plurality of print segments, said justification system comprising:

means for monitoring the relationship of each segment of said continuous form and a predetermined area on said drum;

means for printing information on said continuous form; and



means for controlling printing in such a manner that printing on said continuous form always occurs at a preselected position with respect to each said segment.

Re. 34,407
WATER SPORTS APPARATUS

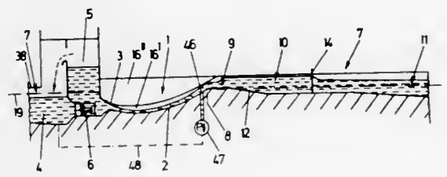
Otto Frenzl, Innsbruck, Austria, assignor to Light Wave, Ltd., LaJolla, Calif.

Original No. 4,905,987, dated Mar. 6, 1990, Ser. No. 265,318, Oct. 27, 1988. Continuation of Ser. No. 131,302, Dec. 7, 1987, abandoned, which is a continuation of Ser. No. 799,129, Nov. 18, 1985, abandoned. Application for reissue Feb. 21, 1992, Ser. No. 843,950

Claims priority, application European Pat. Off., Nov. 22, 1984, 84114072.6

Int. Cl.[5] **A63G** *3/00, 31/16*

U.S. Cl. 472—113 **12 Claims**



7. A water sports apparatus for conducting water through a course, said apparatus comprising:

a) elevated container, said elevated container of sufficient volume to receive a quantity of water for starting circulation of water through the course;

b) a water container adjacent said elevated container, said water container having an inclined floor surface leading from a lower edge to an upper edge and a closable supply nozzle connecting the elevated container and the water container for directing water from the elevated container upward over the inclined floor surface in a super critical torrential flow, the upper edge of the inclined floor surface constituting an overflow;

c) a supplementary pool adjacent said overflow;

d) a return line comprising an open trough extending between said supplementary pool and said elevated container, said return line having an inlet positioned in said supplementary pool and a circulation pump to conduct water from the supplementary pool to the elevated container.

Re. 34,408
PROCESS FOR PRODUCING 4-BENZOYL-5-HYDROXYPYRAZOLES

Norio Tanaka; Takuya Kakuta; Eiichi Oya, and Masatoshi Baba, all of Funabashi, Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

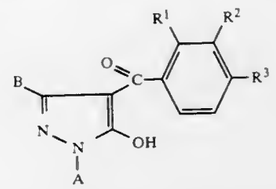
Original No. 4,942,246, dated Jul. 17, 1990, Ser. No. 360,468, Jun. 2, 1989. Application for reissue May 20, 1992, Ser. No. 885,990

Claims priority, application Japan, Jun. 3, 1988, 63-137095

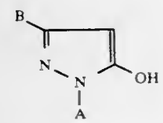
Int. Cl.[5] **C07D** *231/20*

U.S. Cl. 548—369.4 **1 Claim**

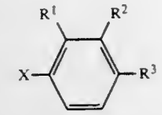
1. A process for producing a 4-benzoyl-5-hydroxylpyrazole of the formula III:



wherein A is an alkyl group having from 1 to 3 carbon atoms, an allyl group or a propargyl group, B is a hydrogen atom or a methyl group, R^1 is an alkyl group having from 1 to 4 carbon atoms, a trifluoromethyl group, a nitro group, a cyano group or a halogen atom, R^2 is a hydrogen atom, an alkyl group having from 1 to 4 carbon atoms, an alkoxy group having from 1 to 4 carbon atoms, a hydroxy group, an alkoxyalkoxy group having from 3 to 6 carbon atoms, an alkoxyalkyl group having from 2 to 5 carbon atoms, an alkoxycarbonyl group having from 2 to 5 carbon atoms, a carboxyl group, a nitro group, a cyano group or a halogen atom, and R^3 is an alkylthio group having from 1 to 2 carbon atoms, an alkylsulfinyl group having 1 or 2 carbon atoms, an alkanesulfonyl group having 1 or 2 carbon atoms, a trifluoromethyl group, a nitro group, a cyano group or a halogen atom, which comprises reacting carbon monoxide and a 5 -hydroxypyrazole of the formula II:



wherein A and B are as defined above, to a substituted benzene of the formula I:



wherein X is a bromine atom, an iodine atom or a diazonium tetrafluoroboron salt group, R^1 is as defined [above, provided that when X is a bromine atom, R^1 is a fluorine atom or a chlorine atom, and when X is an iodine atom, R^1 is a fluorine atom, a chlorine atom or a bromine atom, R^2 is as defined above, provided that when X is a bromine atom, R^2 is a fluorine atom or a chlorine atom, and when X is an iodine atom, R^2 is a fluorine atom, a chlorine atom or a bromine atom, and R^3 is as defined above, provided that when X is a bromine atom, R^3 is a fluorine atom or a chlorine atom, and when X is an iodine atom, R^3 is a fluorine atom, a chlorine atom or a bromine atom,] *above, provided that when* R^1 is a bromine atom, X is an iodine atom or a diazonium tetrafluoroboron salt group, and when R^1 is an iodine atom, X is a diazonium tetrafluoroboron salt group, R^2 is as defined above, provided that when R^2 is a bromine atom, X is an iodine atom or a diazonium tetrafluoroboron salt group, and when R^2 is an iodine atom, X is a diazonium tetrafluoroboron salt group, and R^3 is as defined above, provided that when R^3 is a bromine atom, X is an iodine atom or a diazonium tetrafluoroboron salt group, and when R^3 is an iodine atom, X is a diazonium tetrafluoroboron salt group, in the presence of a base and a catalyst of Group VIII of the Periodic Table.

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PLANT PATENTS

GRANTED OCTOBER 12, 1993

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,411

MINIATURE ROSE PLANT NAMED SAVAKLIM

F. Harmon Saville, Rowley, Mass., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed Nov. 30, 1992, Ser. No. 983,463
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—3 1 Claim

1. A new and distinct variety of climbing rose plant of the miniature rose class, substantially as shown and described.

8,412

MINIATURE ROSE PLANT NAMED SAVAJINKS

F. Harmon Saville, Rowley, Mass., assignor to Nor'East Miniagure Roses, Inc., Rowley, Mass.

Filed Sep. 4, 1992, Ser. No. 940,630
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—7.1 1 Claim

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described.

8,413

GRANDIFLORA ROSE PLANT NAMED TWOETERN

Jerry Twomey, Leucadia, Calif., assignor to DeVor Nurseries, Inc., Watsonville, Calif.

Filed Sep. 14, 1992, Ser. No. 944,448
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—20 1 Claim

1. A new and distinct variety of rose plant of the grandiflora rose class, substantially as shown and described.

8,414

HYBRID TEA ROSE PLANT NAMED WEKMAR

Joseph Winchel, Harbor City, Calif., assignor to Weeks Wholesale Rose Grower, Inc., Upland, Calif.

Filed Nov. 30, 1992, Ser. No. 983,464
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—11 1 Claim

1. A new and distinct variety of hybrid tea rose plant substantially as described and illustrated herein.

8,415

PEACH TREE "SNOW KING"

Chris F. Zaiger, 537 Rosemore Ave.; Gary N. Zaiger, 1907 Elm Ave.; Leith M. Gardner, 1207 Grimes Ave., and Grant G. Zaiger, 4005 California Ave., all of Modesto, Calif. 95358

Filed Dec. 31, 1992, Ser. No. 999,202
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—42.1 1 Claim

1. A new and distinct variety of peach tree, substantially as illustrated and described, characterized by its large size, vigorous upright growth and a productive and regular bearer of large, white flesh, freestone fruit with excellent flavor and eating quality; the fruit is further characterized by having firm flesh with good handling and shipping quality, holding firm on the tree 6 to 7 days after maturity (shipping ripe), having an attractive red skin color and ripening in the late maturity season, approximately 5 to 6 days after O'Henry Peach (U.S. Plant Pat. No. 2,964).

8,416

CARNATION PLANT NAMED 'CFPC TISKET'

Walter H. Jessel, Jr., Salinas, Calif., assignor to California Florida Plant Co., L.P., Salinas, Calif.

Filed Aug. 13, 1992, Ser. No. 930,831
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—70.2 1 Claim

1. A new and distinct variety of true dwarf pot carnation plant, substantially as shown and described.

8,417

CARNATION PLANT NAMED CFPC FESTIVE

Walter H. Jessel, Jr., Salinas, Calif., assignor to California Florida Plant Co., L.P., Salinas, Calif.

Filed Sep. 24, 1992, Ser. No. 950,304
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—70.2 1 Claim

1. A new and distinct variety of carnation plant, substantially as shown and described.

8,418

CARNATION PLANT NAMED CFPC DAINTY

Walter H. Jessel, Jr., Salinas, Calif., assignor to California Florida Plant Co., L.P., Salinas, Calif.

Filed Aug. 13, 1992, Ser. No. 930,835
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—70.5 1 Claim

1. A new and distinct variety of true dwarf pot carnation plant, substantially as shown and described.

8,419

CARNATION PLANT NAMED CFPC CUPID

Walter H. Jessel, Jr., Salinas, Calif., assignor to California Florida Plant Co., L.P., Salinas, Calif.

Filed Aug. 13, 1992, Ser. No. 930,837
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—70.6 1 Claim

1. A new and distinct variety of true dwarf pot Carnation plant, substantially as shown and described.

8,420

CARNATION PLANT NAMED CFPC STANZA

Walter H. Jessel, Jr., Salinas, Calif., assignor to California Florida Plant Co., L. P., Salinas, Calif.

Filed Sep. 30, 1992, Ser. No. 954,349
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—71.1 1 Claim

1. A new and distinct variety of Carnation plant, substantially as shown and described.

8,421

IMPATIENS PLANT NAMED BORA BORA

Ludwig Kientzler, Gensingen, Fed. Rep. of Germany, assignor to Paul Ecke Ranch, Inc., Encinitas, Calif.

Filed Apr. 23, 1992, Ser. No. 872,320
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.6 1 Claim

1. A new and distinct cultivar of Impatiens plant named Bora Bora, as illustrated and described.

8,422

IMPATIENS PLANT NAMED SAMOA

Ludwig Kientzler, Gensingen, Fed. Rep. of Germany, assignor to Paul Ecke Ranch, Inc., Encinitas, Calif.

Filed Apr. 23, 1992, Ser. No. 872,326
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.6 1 Claim

1. A new and distinct cultivar of Impatiens plant named Samoa, as illustrated and described.

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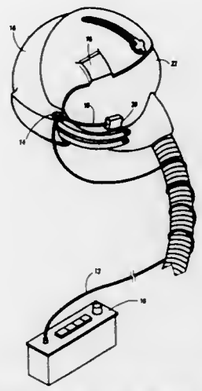
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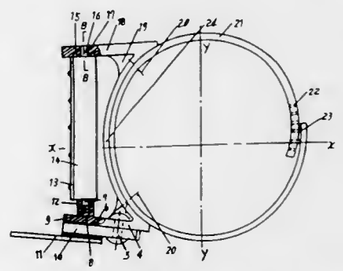
GENERAL AND MECHANICAL

5,251,333
HELMET MOUNTED DISPLAY DEVICE
Nir Tsook, 36 Hate'ena Street, Carmei Yosef, Israel
Filed Sep. 29, 1992, Ser. No. 953,513
Claims priority, application Israel, Oct. 9, 1991, 99697
Int. Cl.[5] A42B 3/00
U.S. Cl. 2—6.2 8 Claims



1. A helmet including a transparent visor, a display device including an opaque multi-element LCD display element mounted on said helmet visor so as to be directly viewable by a wearer at a location outside of the wearer's usual instantaneous field of view and a display control circuit disposed remotely from the display element and coupled thereto by signal transmission apparatus.

5,251,334
ANTI-DAZZLING DEVICE
Chen Y. Yang, 11912 Riding Loop Ter., North Potomac, Md. 20878
Filed Jul. 2, 1991, Ser. No. 724,640
Claims priority, application China, Jul. 10, 1990, 90104564.0
Int. Cl.[5] A61F 9/00
U.S. Cl. 2—15 10 Claims



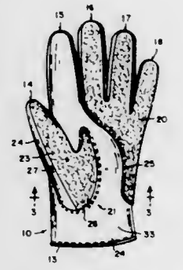
1. An anti-dazzling device for protecting the eyes of a motor vehicle operator from strong light and/or glare of oncoming vehicles, said device having in position of use a left side, a right side, a front side, and a rear side with a centerline X—X between the left and the right sides, said device comprising in combination a shield, securing means, and adapter means:

wherein said securing means secures said shield on the head of a vehicle operator or other use, said adapter means connects said shield and said securing means to each other, said adapter means extending forward from one side of said securing means at an angle to said centerline X—X, said adapter means includes a coupling assembly connecting said shield at one side thereof so that it is placed at one side of the operator's eyes to hold one end of the shield inclined to the centerline X—X away from the eyes;

wherein said device comprises a further shield to be placed in front of the user's eyes and said adapter means has an additional coupling assembly holding said further shield in front;

wherein said securing means is a head hoop (21) of adjustable diameter, said adapter means is formed with a curved base (24), a left side rod (4) extending forward from the left end of the curved base (24) inclining to said centerline X—X, a rotatable plate (10) rotatable around a rotatable shaft (5) and being securely attached to a side surface of the left side rod (4), said first recited shield (11) being securely attached to the side surface of the rotatable plate and adjustably connected therewith through different positions of said rotatable plate.

5,251,335
GOLF GLOVE
Ralph DeFusco, North Kingston, R.I., assignor to Tretorn AB, Helsingborg, Sweden
Filed Jan. 17, 1992, Ser. No. 822,471
Int. Cl.[5] A41D 19/00
U.S. Cl. 2—163 8 Claims



1. A golf glove comprising a thumb stall, an index finger stall, a pinky stall having an outer side and a third and fourth finger stalls positioned between said index finger stall and said pinky finger stall, a palm side of said glove, having a heel portion said palm of said glove comprising man-made material and first and second non-synthetic leather sections, said first leather section forming the pinky and third and fourth finger stalls on the palm of the glove and extending to the heel of the palm of the glove and forming a part of the palm side of the glove and said index finger stall on said palm side of said glove being entirely of man-made material and said second lather section is separated from said first leather section and forms the thumb stall on the palm side of the glove, the backside of said thumb and the backside of the finger stalls of the glove being of man-made material.

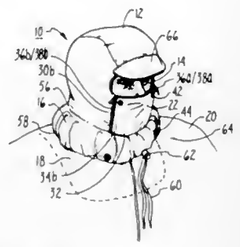
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5,251,336

HEAD PROTECTOR FOR INCLEMENT WEATHER

Michael A. Nevins, 14257 Half Moon Bay Dr., Del Mar, Calif. 92014

Filed Feb. 28, 1992, Ser. No. 843,406
Int. Cl.[5] A42B *1/04*
U.S. Cl. 2—202 **14 Claims**



1. An inclement weather head protector for wear by a user which comprises:

a hood having an outside surface and an inside surface and formed with a facial port, said hood having a neck portion surrounding a neck channel to allow insertion of the head of a user through said neck channel and into contact with said inside surface of said hood to expose the face of the user through said facial port;

a dickey having an edge defining a hole through said dickey, said edge being attached to said neck portion of said hood to place said dickey in a surrounding relationship with said neck channel;

an integral collar having an outer periphery and an opening defined by an inner periphery, said inner periphery being attached to said outside surface of said hood at said neck portion of said hood to position said collar between said dickey and said facial port of said hood;

a face shield attached to said hood across a portion of said facial port to cover the nose and mouth of the user, said face shield including a mesh panel to facilitate breathing by the user, wherein said face shield is substantially rectangular and has an upper edge, a lower edge, and a pair of opposed side edge with said lower edge and said side edges being attached to said hood, and said hood further comprising:

a substantially rectangular flap having an upper edge, a lower edge and a pair of opposed side edges, said lower edge of said flap being fixedly attached to said neck portion of said hood adjacent said lower edge of said face shield; and

a plurality of fasteners, individual said fasteners being attached along each said side edge of said flap and along each said side edge of said face shield to releasably hold said flap across said face shield.

5,251,337

METHOD OF MANUFACTURE OF INFLATABLE APPLIQUE

Alexander Sloot, Stamford, Conn., assignor to Printmark Industries, Inc., Hazleton, Pa.

Continuation-in-part of Ser. No. 543,668, Jun. 25, 1990, Pat. No. 5,079,778. This application Jan. 9, 1992, Ser. No. 818,795
The portion of the term of this patent subsequent to Jan. 14, 2009, has been disclaimed.
Int. Cl.[5] A41D *27/00*
U.S. Cl. 2—243.1 **12 Claims**

1. A method of manufacturing an inflatable applique for a fabric article, comprising the steps of:

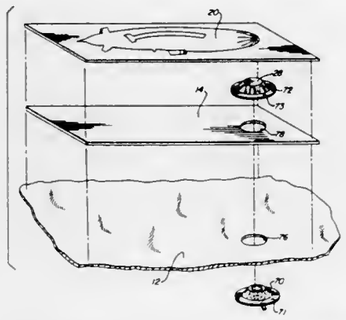
affixing a valve having a valve flange to an air impervious valve layer of a polymeric material, said affixing step including

cutting an aperture sized to be contained within the valve flange in said valve layer,

welding said valve flange to said valve layer with said flange surrounding and containing said aperture;

affixing a backing layer to a fabric article;

sealingly affixing a top layer to said backing layer at least around a peripheral zone of said top layer to form a substantially airtight inflatable enclosure that defines a three dimensional object;



one of said backing and top layers comprising said valve layer;

cutting said top and backing layers to provide said top and backing layers with complementary peripheral outlines; and

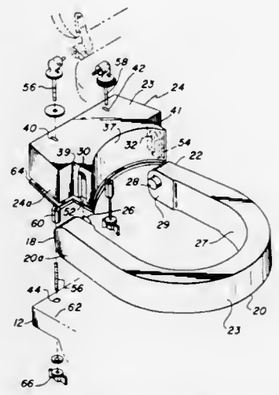
separating excess top and backing layers from around the perimeter of said enclosure.

5,251,338

TOILET HEIGHT CONVERSION APPARATUS

Homer E. Light, 9 E. Jefferson Ave., Myerstown, Pa. 17067

Continuation-in-part of Ser. No. 734,600, Jul. 23, 1991, abandoned. This application Jul. 2, 1992, Ser. No. 907,903
Int. Cl.[5] A47K *13/00*
U.S. Cl. 4—235 **21 Claims**



1. A toilet seat height conversion apparatus for use in combination with an existing toilet seat, lid and mounting bolts, comprising:

a mounting block having a top and bottom surface defining a predetermined height, said mounting block being provided with aligned holes extending through said surfaces such that the mounting block may be mounted to the upper rear surface of a toilet utilizing the holes provided in the toilet for the mounting of a toilet seat, said block being provided with structure for making a pivotal connection; and

a connector nut and extension bolt adapted to be attached to each of said mounting bolts such that each of said mounting bolts may extend through a hole in said top surface and being secured to said toilet utilizing the holes provided in said toilet; and

a member having a height substantially the same as the predetermined height of the mounting block with structure for pivotally connecting to the pivotal connection structure for pivotally connecting to the pivotal connection structure of the mounting block; and

wherein said existing toilet seat and lid are connected with said mounting bolts to said block such that they may be pivoted to a raised position or to a position overlying said member.

5,251,339

RETRIEVING DEVICE

James Piskula, P.O. Box 26174, Milwaukee, Wis. 53226

Filed Jan. 31, 1992, Ser. No. 830,126
Int. Cl.[5] A47K *11/10*
U.S. Cl. 4—255.01 **4 Claims**



1. In combination with a sewer pipe and a flush toilet emptying into the sewer pipe, a retrieving device to catch objects flushed down said toilet into the sewer pipe and to permit said objects to be retrieved from the sewer pipe without them passing back through said toilet, said retrieving device comprising:

(a) hook means removably positioned in a sewer pipe at a point downstream of where the toilet empties into the sewer pipe;

(b) cable means attached at one end to the hook means; and

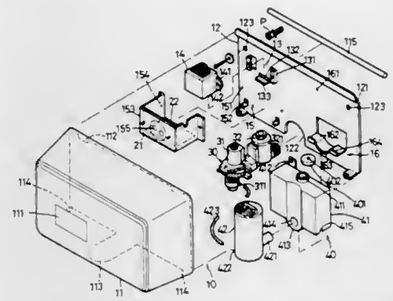
(c) removable plug means attached to the other end of the cable means, said plug means closing an opening in the sewer pipe so that said plug means when it is removed from the opening in the sewer pipe can serve as a handle by which said hook means and any objects caught thereby can be removed from the sewer pipe through said opening without having to pass again through said toilet.

5,251,340

FLUSH TOILET WITH AN AUTOMATIC STERILIZING DEVICE

Liao Su-Land, Room 2, 5th Fl., No. 13, Lane 198, Chung-Hsing Rd., Fung-Yuan City, Tai-Chung Hsian, Taipei, Taiwan

Filed Mar. 9, 1992, Ser. No. 848,288
Int. Cl.[5] E03D *9/02*
U.S. Cl. 4—304 **1 Claim**



1. A urinal cleaning and sterilizing device comprising a vertical back board (**12**) having an upper edge, a lower edge and two side edges;

a step down transformer (**14**) detachably mounted on said back board near one of the side edges;

an electronic circuit means mounted on said back board in vertical alignment with said transformer;

a sterilizing liquid container means (**41**) mounted on said back board near its other side edge; said container means having a front wall, and a liquid discharge opening in said front wall;

a motor-operated pump mounted on the front wall of said container means; said pump having a liquid inlet (**421**) connected to the liquid discharge opening, said pump having a liquid outlet (**422**); said pump comprising a motor having terminals accessible through the space above the pump;

an upright solenoid valve means (**30, 32**) centrally located between said sterilizing liquid container means and said electronic circuit means; said solenoid valve means having a water supply inlet means (**321**) extending through the backboard near its lower edge; said solenoid valve means having a downwardly-directed liquid discharge means;

a connector tube (**311**) extending from the pump outlet to said liquid discharge means so that when both the solenoid valve means and the pump are electrically energized a dilute sterilizing solution flows downwardly through said liquid discharge means;

said transformer and said electronic circuit means being electrically connected to said solenoid valve means and said pump, such that the valve means can be operated alone, and then the valve means and pump can be operated synchronously to achieve a cleaning and sterilizing cycle; and

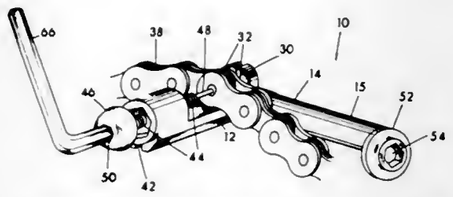
and a hood (**10**) detachably connected to said backboard in surrounding relation to the transformer, circuit means, container means, pump and solenoid valve means;

said hood having a front wall extending generally parallel to said backboard; said electronic circuit means comprising an integral infrared sensor (**155**) targeted through the hood front wall to trigger the circuit means;

said circuit means being constructed so that the valve means and pump are operated synchronously only when said sensor signals the circuit means that a person is no longer standing in front of the urinal, whereby the sterilizing operation constitutes the final phase in each cycle.

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5,251,341
BICYCLE TOOL
Robert L. Seals, 13524 Autumn La., Chico, Calif. 95926
Filed Mar. 18, 1993, Ser. No. 34,757
Int. Cl.[5] B25B *13/00*
U.S. Cl. 7—138 **4 Claims**

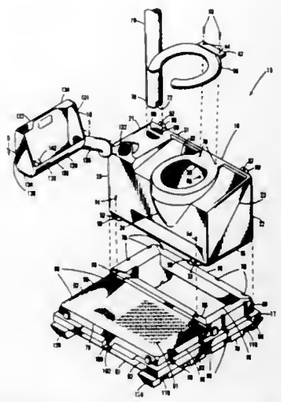


1. A hand tool having a chain breaker for manipulating chain links on a bicycle, said hand tool structured for removable storage within an open-ended tube of a bicycle, said hand tool comprising an elongated main body having a chain anvil affixed on a top surface thereof, said main body having a head affixed on said top surface with said head having a threaded bore therethrough with a threadably engaged rotatable push pin within said threaded bore, said push pin having chain link ejector means cooperatively functional with said chain anvil to assist in the dismantling of a drive chain,

means for securing said hand tool releasably within an open-ended tube of a bicycle for storage,

said hand tool with said means for securing said hand tool being sized sufficiently small to be at least in part inserted in an open-ended tube of a bicycle, said means for securing said hand tool being affixed to said hand tool and further being outwardly extendable to secure said hand tool stationary within an open-ended tube of a bicycle by pressing against the tube of the bicycle.

5,251,342
PLASTIC PORTABLE TOILET ASSEMBLY
Clyde B. Sansom, St. Louis, Mo.; David C. Keeling; Kenneth C. Wilken, both of Minneapolis, Minn.; Ronald D. Olson, Portage, and Michael J. Wolfe, Pardeeville, both of Wis., assignors to Synergy World, Inc., St. Louis, Mo.
Filed Nov. 7, 1991, Ser. No. 789,069
Int. Cl.[5] A47K *11/00, 11/12*
U.S. Cl. 4—462 **11 Claims**

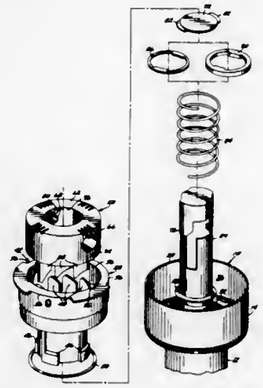


1. A twin-sheet thermoformed plastic toilet tank comprising:

a) a thermoplastic tank upper sheet, having portions defining a tank opening; and

b) a thermoplastic tank lower sheet, wherein portions of the lower sheet are fused to the upper sheet to form a hollow cavity for receiving and containing human waste introduced through the tank opening, and the upper and lower sheets each have first and second coextensive thermoplastic layers, and the first layer is of a different color than the second layer, such that the first layers of the two sheets oppose one another and define the cavity such that the cavity formed by the fused sheets is substantially one color and the exterior of the tank is substantially another color; and wherein portions of the fused upper and lower sheets protrude from the tank exterior to form at least one flange adapted for attachment to a supporting surface and the flange has portions which define a hole adapted to receive a fastener.

5,251,343
SWIMMING POOL POP-UP FITTING
John M. Goettl, Phoenix, Ariz., assignor to Paramount Leisure Industries, Inc., Scottsdale, Ariz.
Filed May 5, 1992, Ser. No. 880,086
Int. Cl.[5] E04H *4/16;* **B05B** *3/16*
U.S. Cl. 4—490 **14 Claims**



1. A swimming pool pop-up fitting comprising:

a housing having a cylindrical housing lower portion for attachment to a swimming pool water inlet pipe, and further having a cylindrical housing upper portion larger in diameter than the housing lower portion, the upper portion having an open end for mounting generally flush with a surface of the swimming pool;

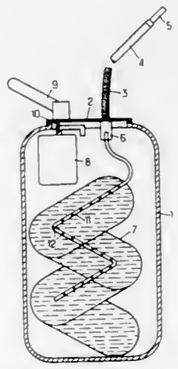
a retainer removably fixed within the housing and having a cylindrical retainer lower portion and a cylindrical retainer upper portion larger in diameter than the retainer lower portion, the retainer lower and upper portions being located within the housing lower and upper portions, respectively, and defining, respectively, a cylindrical stem recess and a cylindrical nozzle recess which is larger in diameter than the stem recess;

first indexing means carried by the housing upper portion within the nozzle recess;

a pop-up head having a cylindrical stem and a cylindrical nozzle located within the stem recess and the nozzle recess, respectively, the nozzle being larger in diameter than the stem, the pop-up head being reciprocable between a retracted position wherein the nozzle is located within the nozzle recess, and a projected position wherein the nozzle is located above its retracted position for directing a jet of pressurized water over the adjacent surface of the swimming pool, the nozzle being adapted to carry second indexing means for cooperation with the first indexing means to incrementally rotate the pop-up head upon each projection and retraction of the pop-up head;

and retraction means operative to urge the pop-up head toward its retracted position.

5,251,344
TANK FOR STERILE, PORTABLE, SELF-CONTAINED SHOWER AND SHOWER EQUIPPED THEREWITH
Joël Blomet, Valmondois, France, assignor to Prevor International, France
Filed Nov. 12, 1991, Ser. No. 789,847
Claims priority, application France, Nov. 9, 1990, 90 13926
Int. Cl.[5] A47K *3/22*
U.S. Cl. 4—602 **12 Claims**



1. A tank for a sterile portable self-contained shower, comprising:

an elongated tank body having an end opening and containing a single, flexible sterile pocket which contains a washing liquid therein, said tank having a shutter sealing said end opening, said shutter having a tank outlet opening, the inside of the sterile pocket having a connection to said tank outlet opening,

a cartridge located in the tank having a compressed propulsive gas and including means for releasing the compressed propulsive gas out from the cartridge into the tank body,

the sterile pocket being elongated and generally circular in cross section, the cross section being small enough to fit through the said end opening and substantially less than the cross section of the tank body itself, the length of the sterile pocket, in its elongated direction being at least several times the length of the tank body,

said sterile pocket being positioned in the tank in a configuration wherein the elongated sterile pocket is folded upon itself so as to take up within the tank body a length which is substantially less than the total length of the unfolded sterile pocket, and

a tube extending in the sterile pocket over a substantial portion of its length, said tube forming the connection to the said tank outlet opening.

5,251,345
PORTABLE SHOWER AND WASH
Murray Pechner, 3309 W. Harvard St., Santa Ana, Calif. 92704, assignor to Murray Pechner, Santa Ana, Calif.
Filed Feb. 12, 1992, Ser. No. 836,223
Int. Cl.[5] A47K *3/22*
U.S. Cl. 4—603 **1 Claim**

1. A portable shower device comprising:

a base portion having a compartment therein; a handle-carrying portion opposed to said base portion and provided with a handle;

a first pair of generally parallel side wall portions extending generally normally from said base portion and said handle-carrying portion;

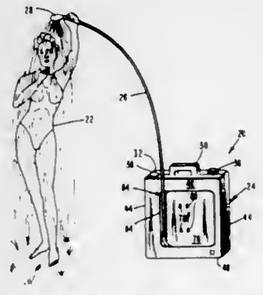
a second pair of generally parallel wall portions extending generally normally from said base and handle-carrying portions, said second pair of wall portions having an area which is greater than that of said first pair of side wall portions;

said portions defining a water tight enclosure;

a sealable inlet disposed in one of said portions for enabling placement of the water into said enclosure;

an annularly shaped recess in one of said second pair of wall portions;

an electrically operated pump secured within said base portion compartment, said pump having a fluid coupling to the enclosure interior and to the water a fluid coupling to the enclosure interior and to the water therein and an electric coupling matable to sources of electric power;



a hose having a spray head connected at one end and being connected to said pump at the other end through said annularly shaped recess;

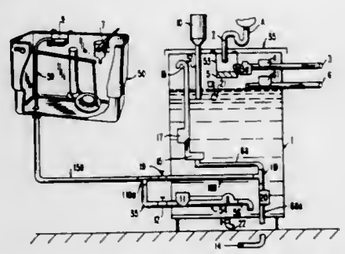
said spray head and said hose being adapted to be coiled and retained within said annularly shaped recess means when not in use and to be uncoiled and extended therefrom when used;

a cover plate having two pairs of holes therein;

a pair of studs extending from said one of said second pair of wall portions;

wherein with said spray head and said hose housed in said recess said plate having one of said pair of holes engaged with said studs will cover said annular recess and with said spray head and hose retracted from said annular recess the other of said pair of holes can be engaged with said studs so that said plate will cover only a portion of said annular recess.

5,251,346
WATER RECYCLING DEVICE FOR FLUSH TOILET USE
William R. Donati, 161 W. 16th St., New York, N.Y. 10011
Filed Nov. 19, 1992, Ser. No. 978,814
Int. Cl.[5] A47K *4/00*
U.S. Cl. 4—665 **11 Claims**



1. A compact, modular control and reservoir unit water

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recycling system for storing and reusing gray waters for providing flush toilet water supply, the modular unit comprising a full enclosure for the control and reservoir unit having a volumetric capacity sufficient to store adequate water for pattern family toilet use; water flow connection means for connecting the enclosure interior with a source of gray water; flow filtration means within the enclosure in direct flow relationship with the water flow connection means for providing an initial filtering of said gray water; overflow outlet means connected to the enclosure for draining gray water from the enclosure in excess of a predetermined maximum level; discharge pipe means for connecting the interior of the enclosure to a flush toilet tank; an electrically operated pump within the enclosure and in fluid flow connection in said discharge pipe means for pumping said gray water from the interior of the enclosure; and outlet filter means in said discharge means located within the interior of the enclosure for providing an auxiliary filtering of said gray water prior to entering said pump; and first electrically operated signal means within the interior of the enclosure for actuating the pump in response to a decrease of water level in the toilet tank to below a designated level; and flow means for connecting a potable water system of a house to the interior of the enclosure, including electrically operated potable water inlet valve means for controlling the flow of potable water into the enclosure and second electrically operated signal means within the enclosure and operatively connected to the potable water inlet valve means and designed to cause the potable water inlet valve means to open in response to a decrease in water level within the enclosure below said predetermined maximum level and the absence of gray water from said gray water source to said enclosure; and electrical connection means designed to connect said electrically operated components to a source of electricity.

5,251,347

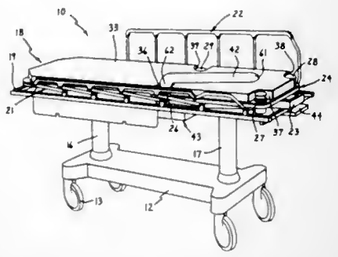
BED HAVING PATIENT WARMING APPARATUS

Christopher J. Hopper, Oshtemo Township, Kalamazoo County; Louis A. Haddock, Jr., Emmett Township, Calhoun County; John S. Messner, Battle Creek, and Larry W. Gardner, Kalamazoo Township, Kalamazoo County, all of Mich., assignors to Stryker Corporation, Kalamazoo, Mich.

Filed Jan. 3, 1992, Ser. No. 816,557

Int. Cl.[5] A61G *7/00*

U.S. Cl. 5—423 **71 Claims**



15. An apparatus comprising: a bed having an upwardly facing support surface; an air outlet device mounted on said bed and having therein an air outlet opening, said air outlet opening having in an inner surface thereof a circumferential groove; air supply means coupled to said air outlet device for supplying thereto air which is then emitted through said air outlet opening; and a diffusion member having a tubular air inlet portion which includes an open outer end encircled by a flexible annular retaining member removably disposed in said groove of said air outlet device.

5,251,348

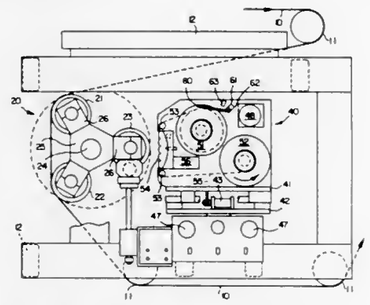
CONTACT CLEANER ROLL CLEANING SYSTEM

Frank C. Corrado, 33 Gateway Rd., Rochester, N.Y. 14624; Ronald G. Egan, 945 Joylene Dr.; Gary R. Larsen, 726 Eastwood Cir., both of Webster, N.Y. 14580, and Ronald W. Sweet, 2234 E. Lake Rd., Conesus, N.Y. 14435

Filed Oct. 19, 1992, Ser. No. 962,854

Int. Cl.[5] B08B *1/00, 13/00*

U.S. Cl. 15—256.53 **8 Claims**



1. A contact cleaner roll cleaning system, including:

a frame to support the system relative to a moving web; a contact cleaner roll turret on said frame; and a roll cleaner on said frame;

said turret including a plurality of rotatable contact cleaner rolls supported thereon; an active one of said rolls disposed for rolling contact with said web, and an idle one of said rolls disposed out of contact with said web and in operative engagement with drive means to maintain the rotational speed of said idle roll; said turret being rotatable to sequentially place said rolls into and out of contact with said web;

said roll cleaner mounted adjacent to said idle roll for movement into and out of engagement therewith and lengthwise therealong; said roll cleaner including an absorbent cleaning material for placement against said idle roll.

5,251,349

MULTI-MODAL PATIENT SUPPORT SYSTEM

James M. C. Thomas, Mt. Pleasant; James R. Stolpmann, Charleston; William T. Sutton, Charleston, and James J. Romano, Charleston, all of S.C., assignors to SSI Medical Services, Inc., Charleston, S.C.

Continuation of Ser. No. 693,918, Apr. 29, 1991, Pat. No. 5,182,826, which is a division of Ser. No. 555,319, Jul. 19, 1990, Pat. No. 5,121,513, which is a division of Ser. No. 355,755, May 22, 1989, Pat. No. 4,949,414, which is a continuation-in-part of Ser. No. 321,255, Mar. 9, 1989, abandoned. This application Mar. 19, 1992, Ser. No. 853,943

The portion of the term of this patent subsequent to Aug. 21, 2007, has been disclaimed.

Int. Cl.[5] A47C *27/10;* **A61G** *7/057*

U.S. Cl. 5—453 **11 Claims**

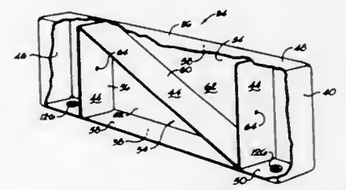
1. A multi-modal patient support system, the system comprising:

a plurality of inflatable sacs forming at least a portion of a patient support surface, said inflatable sacs supported generally transversely upon a rigid support member, each said inflatable sac comprising at least two internal chambers defined by at least one internal web;

means for pressurizing said internal chambers in a first constant pressure mode so that said inflatable sacs are maintained at a relatively constant predetermined pressure whereby a patient resting upon said inflatable sacs is supported at said relatively constant pressure;

means for pressurizing said internal chambers in a second pulsation mode whereby at least two sets of said inflatable sacs are alternately inflated and deflated so as to provide alternating pressure point relief to a patient resting upon said inflatable sacs; and

means for pressurizing said internal chambers in a third turning mode whereby generally oppositely disposed



portions of at least certain of said inflatable sacs are alternately inflated and deflated so that a patient resting upon said sacs can be automatically turned from side-to-side, said support system being switchable from one of said modes of operation to any other of said modes of operation.

5,251,350

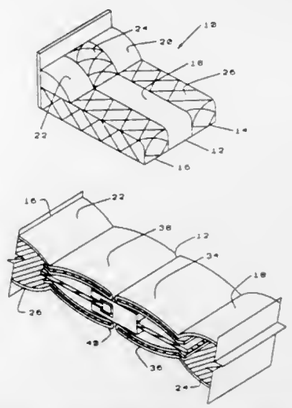
INTERCHANGEABLE BEDSPREAD

Dallas J. Bordenave, Sr., and Dallas J. Bordenave, Jr., both of 21839 S. Avalon Blvd., #101, Carson, Calif. 90745

Filed Aug. 13, 1992, Ser. No. 929,002

Int. Cl.[5] A47G *9/04*

U.S. Cl. 5—482 **5 Claims**



1. A bedspread comprising: a plurality of panels, each having an edge and formed with a first surface providing a first decorative effect and a second surface providing a second decorative effect and

releasable fastening means connecting adjacent edges of said panels and extending along the entire length of said edges,

portions of said first and second surfaces extending beyond the edge of said panel in continuous planes above and below said fastening means to cover said fastening means in a manner to cause said fastening means to be substantially invisible.

5,251,351

COMBINATION TOOL, IN PARTICULAR FOR MOTOR VEHICLES

Manfred Klotz, Friedrich-List-Strasse 25, 4790 Paderborn, Fed. Rep. of Germany

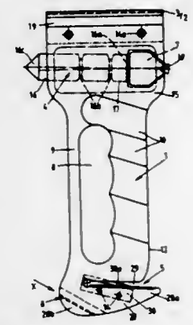
PCT No. PCT/EP91/00083, § 371 Date Oct. 23, 1991, § 102(e) Date Oct. 23, 1991, PCT Pub. No. WO91/12981, PCT Pub. Date Sep. 5, 1991

PCT Filed Jan. 18, 1991, Ser. No. 773,665

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1990, 4005690

Int. Cl.[5] B25F *1/00*

U.S. Cl. 7—100 **26 Claims**



1. A combination tool, in particular for motor vehicles, having an ice scraper and/or squeegee for moisture removal disposed on a handle, said tool further comprising:

an emergency hammer (**4**) on said handle (**1**) disposed adjacent to said ice scraper (**2**) and/or said squeegee (**3**);

a cutting element (**5**) and a wiper blade sharpener (**6**) mounted on said handle (**1**) at a distance from said emergency hammer (**4**);

a molded finger cutout (**8**) between said emergency hammer (**4**), and said cutting element (**5**) and said wiper blade sharpener (**6**);

said molded finger cutout (**8**) forming a protective bar (**9**) for fingers on a side of said handle from which said emergency hammer (**4**) extends.

5,251,352

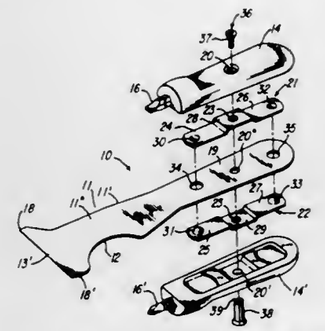
SEVEN WAY COMBINATION TOOL

Jesse L. Cullison, 2515 S. Union Rd., Dayton, Ohio 45418

Filed Apr. 16, 1992, Ser. No. 868,879

Int. Cl.[5] B44C *7/00*

U.S. Cl. 7—105 **10 Claims**



1. A seven-way combination tool allowing for separate and

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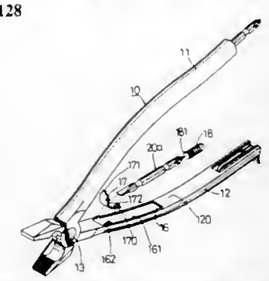
independent use of each functional portion thereof comprising a central blade with upper and lower portions, the lower portion having a concave edge surface, and whose blade tip is beveled; upper and lower tool handle portions both of which are rotatable 360° independently of one another and each of which has a polygonal opening shaped to accommodate polygonal shafted screwdrivers of different head types; and tip angle edge portions of different areas located at opposite edges of the tip of said central blade, one of which is located adjacent to said concave surface edge of said blade.

5,251,353

MULTIPURPOSE PLIER

Ming-Shi Lin, No. 59-50, Tung-Shan Rd., Ching-Shui Chen, Taichung Hsien, Taiwan

Filed Apr. 1, 1993, Ser. No. 41,704
Int. Cl.[5] B25F *1/04*
U.S. Cl. 7—128 2 Claims



1. A multipurpose plier including first and second handle portions, each of which having a front end, a rear end and a jaw formed on said front end, said first and second handle portions being connected pivotally at a pivot point adjacent to said front end;

the improvements comprising: said first handle portion having a receiving channel which extends interiorly from said rear end thereof, said receiving channel being polygonal in cross section;

a tool bit inserted detachably in said receiving channel;

means for retaining said tool bit in said receiving channel;

said second handle portion having an internal surface, an external surface opposite to said internal surface, and a first elongated groove which extends from a predetermined position in said internal surface toward said rear end of said second handle portion, said second handle portion further having an engaging hole which is formed adjacent to said predetermined position and which communicates said first elongated groove and said external surface of said second handle portion; and

a blade carrier having a shape that conforms to said first elongated groove of said second handle portion and having a plurality of cutting devices mounted pivotally thereon, a first engaging piece and a second engaging piece opposite to said first engaging piece, said first engaging piece being received in said engaging hole, said second engaging piece having a protruded portion which engages releasably said rear end of said second handle portion when said blade carrier is press-fitted in said first elongated groove.

5,251,354

TRANSFER DEVICE

James F. Murphy, Dunganny, Trim, County Meath, Ireland

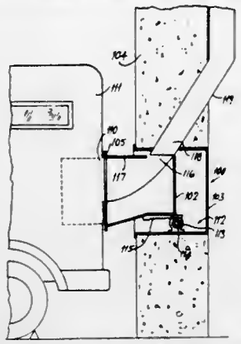
Continuation of Ser. No. 770,154, Oct. 3, 1991, abandoned, which is a continuation of Ser. No. 582,644, Sep. 13, 1990, abandoned. This application Jun. 30, 1992, Ser. No. 908,551
Claims priority, application Ireland, Sep. 13, 1989, 2928/89
Int. Cl.[5] E01D *1/00, 15/00*
U.S. Cl. 14—71.5 20 Claims

1. A security transfer device for transferring valuables between a building and a vehicle each having a transfer opening in a face thereof comprising:

a support frame for mounting in one of said transfer openings;

a duct slidably mounted on the support frame and movable through said one of said openings between a retracted stored position and an extended in-use position for abutment against the face surrounding the other of said openings;

a releasable stop means mounted between said duct and said



support frame and being operable to prevent unauthorized retraction of said duct from an extended position toward said retracted position;

a lockable security first closure member mounted within said duct for movement between an open position and a closed position; and

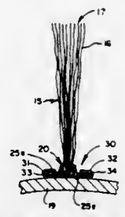
automatically operated releasable locking means mounted on said duct for movement relative to said duct and said first closure member and engageable with said first closure member for automatically locking said first closure member in said closed position when said duct is in said retracted stored position and automatically releasing said first closure member when said duct is at a predetermined distance outwardly of said retracted stored position in the direction of said extended position.

5,251,355

STRIP BRUSH FOR MOUNTING ON A ROTARY DRUM

Arthur E. Drumm, 14808 Hillview Rd., Marysville, Ohio 43040

Continuation-in-part of Ser. No. 777,905, Oct. 17, 1991, Pat. No. 5,160,187. This application Oct. 9, 1992, Ser. No. 958,799
Int. Cl.[5] A46B *9/08*
U.S. Cl. 15—182 7 Claims



1. A bristle strip comprising a supporting channel having spaced side flanges upstanding from a bottom,

a mat of U-shaped flexible bristle having a closed curved lower end, an open upper end and spaced sides, the closed lower end being positioned between said upstanding flanges,

said mat having a continuous retaining wire extending through the closed end of the bristles, said flanges being crimped into engagement with the sides of the mat above the retaining wire to clamp the mat and thereby hold it in the channel,

laterally-extending guide members carried directly on said supporting channel which project laterally outwardly beyond said upstanding flanges thereof to serve as guide and retaining members which can be slipped into opposed grooves in a drum mounted track, said guide members being in the form of laterally-extending lugs carried at longitudinally spaced intervals on said supporting channel mounted on said channel in pairs of opposed slots formed in the side flanges of said channel and above the bottom thereof in engagement with the closed end of the said mat below said retaining wire and projecting laterally from each side flange of the channel to provide projecting guide ears,

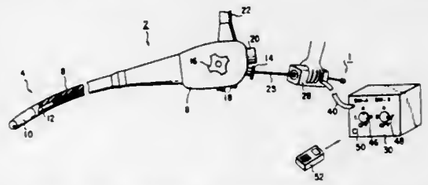
each lug being provided with retaining means engaged by the lower closed end of the U-shaped bristles to hold it in a fixed lateral position with the ears projecting from the channel.

5,251,356

DEVICE FOR CLEANING PIPE PASSAGES OF MEDICAL DEVICES

Yoshinao Oaki; Hisao Yabe; Hideo Ito; Koji Koda; Akio Ogawa; Daisaku Negoro; Masabu Yajima; Yoshihiro Iida; Ichiro Nakamura, and Akira Suzuki, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 3, 1992, Ser. No. 863,410
Claims priority, application Japan, Apr. 12, 1991, 3-080166
Int. Cl.[5] B08B *9/02*
U.S. Cl. 15—104.095 13 Claims



1. A device for cleaning a pipe passage of an endoscope comprising:

a brush having an elongated rod portion and a brush portion;

a case for supporting the elongated rod portion;

rotating means, including a first motor and a first motor driver electrically connected to the first motor, for rotating the brush;

moving means, including a second motor and a second motor driver electrically connected to the second motor, for moving the brush in a longitudinal direction of the elongated rod portion of the brush; and

control means for controlling the first and second motor drivers, such that the rotating means rotates the brush independent of the moving of the brush by the moving means.

5,251,357

WINDSHIELD WIPER BLADE WITH DEFORMABLE INTERNAL CAVITY

Sei J. Jang, Ellicott City, and In J. Lee, Baltimore, both of Md., assignors to Alberee Ltd., Inc., Baltimore, Md.

Continuation of Ser. No. 695,110, May 3, 1991, abandoned. This application Apr. 20, 1992, Ser. No. 870,237
Int. Cl.[5] B60S *1/28, 1/38*
U.S. Cl. 15—250.4 8 Claims

1. A windshield wiper blade for use in a windshield wiper assembly for vehicles, which comprises,

a body,

a mounting member permitting smooth and tight mounting within a windshield wiper frame,

a web connecting said body to said mounting member,

said body including a squeegee member having a first side and a second side,

said squeegee member including a bendable elongated lip,

means for wiping and cleaning a windshield,

said means being located on each of said first side and said second side of said squeegee member,

said means including an end edge on said bendable elongated lip on each of said first side and said second side,

said means also including on each of said first side and said second side a first projecting edge connected to said bendable elongated lip by a first concave portion of said side, a second projecting edge connected to said first projecting edge by a first straight portion of said side and a second concave portion of said side, and an uppermost third projecting edge connected to said second projecting edge by a second straight portion of said side, and a third concave portion of said side,



said first and second projecting edges jut out beyond said line connecting said lip end edge and said uppermost third edge,

a longitudinally disposed, rectangular cavity, made up of only four straight sides when viewed in a plane of a transverse cross section taken through said squeegee member, disposed in a center of said squeegee member for providing an efficient cushion action so as to give flexibility and constant pressure to said wiping and cleaning means,

said bendable elongated lip having a center line extending from between the lip edges to the mounting member, and

a line on each of said first side and said second side drawn in a plane of a transverse cross section of said squeegee member connecting one said lip end edge and said uppermost third edge being at an angle of about 12° to 18° to the center line of said bendable elongated lip so that said squeegee member has a substantially triangular configuration.

5,251,358

VACUUM CLEANER WITH FUZZY LOGIC

Masaru Moro; Tadashi Matsuyo, both of Yokaichi, and Seiji Yamaguchi, Shiga, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 22, 1991, Ser. No. 796,316
Claims priority, application Japan, Nov. 26, 1990, 2-323679
Int. Cl.[5] G06F *9/44;* **A47L** *9/28*
U.S. Cl. 15—319 5 Claims

3. A vacuum cleaner comprising:

dust amount detecting means for detecting the amount of dust in response to a signal outputted thereto from a sensor provided in an airflow passage and for producing an output;

comparing/counting means for performing a comparison and counting of the amount of dust and for producing an output;

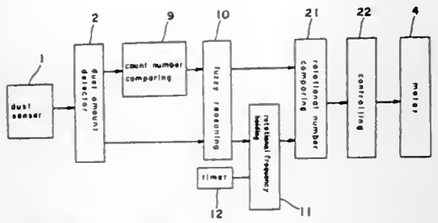
a fuzzy inferring device for determining the speed of a motor in response to the output of said dust amount detecting means and the output of said comparing/counting means and for producing an output;

means for holding the motor speed determined by said fuzzy

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inferring device for a predetermined period of time and for producing an output; and

speed comparing means, in response to the output of said fuzzy inferring device and the output of said means for holding the motor speed, for immediately changing the motor speed to the output of said fuzzy inferring device if



said output of said fuzzy inferring device exceeds the output of said means for holding during the predetermined period of time,

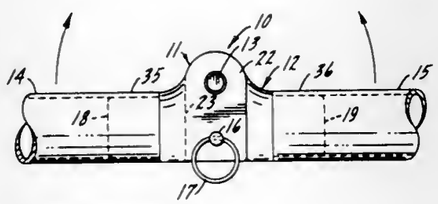
wherein after the motor speed is held for said predetermined period of time, said motor is driven for a certain period of time at the motor speed subsequently determined by said fuzzy inferring device.

5,251,359

HEAVY DUTY OFFSET TUBE HINGE

Anthony W. Finkl, 445 E. Royal Flamingo Dr., Sarasota, Fla. 34236

Filed Jun. 22, 1992, Ser. No. 902,126
Int. Cl.[5] E05D *11/00*
U.S. Cl. 16—349 **16 Claims**



1. A hinge comprising:

a clevis,

a spade,

a pivot pin,

the clevis having an inner end and an outer end, the inner end being U-shaped for accommodating the spade, the U-shaped inner end including two parallel ear portions and a wall disposed between the two parallel ear portions, each ear portion including an upper end and a lower end, the wall having an upper end and a lower end,

the spade having an inner end and an outer end, the inner end of the spade engaging the U-shaped inner end of the clevis, the inner end of the spade including an ear portion, the ear portion of the spade being at least partially disposed between the parallel ear portions of the clevis whereby the ear portions are in an at least partially overlapping relationship, the ear portion of the spade including an upper end and a lower end,

the lower end of the ear portion of the spade being in abutting engagement with the lower end of the wall of the clevis when the hinge is in an open position,

the overlapped areas of the upper ends of each ear portion including a hole for accommodating the pivot pin, the pivot pin providing a pivot axis about which the hinge pivots from an open to a closed position.

the outer end of the clevis and the outer end of the spade each being attached to an extension member,

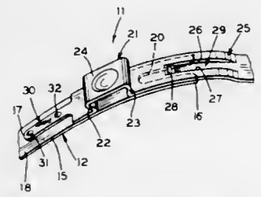
whereby the hinge is pivotable about an axis defined by the pivot pin, the hinge pivoting from the open position of about a 0° angle where the extension members attached to the clevis and the spade portions overlie each other to the closed position where the lower end of the ear portion of the spade is in abutting engagement with the lower end of the wall of the clevis.

5,251,360

SEAL RETAINING CLAMPING APPARATUS

Raymond J. Putz, 37159 Golfview, Sterling Heights, Mich. 48312

Filed Aug. 5, 1992, Ser. No. 925,956
Int. Cl.[5] F16L *33/02*
U.S. Cl. 24—20 R **13 Claims**



1. A clamping apparatus comprising:

band means having an outer surface, an inner surface, a free end, and an opposite end;

a means for receiving a tongue-like means formed in said free end;

a means for tightening the clamping apparatus about an object formed adjacent said opposite end;

a step formed between said means for tightening and said free end;

a first tongue-like means formed at said step; and

a second tongue-like means formed at said opposite end wherein said opposite end overlaps said free end and said second tongue-like means is fixedly attached to said outer surface to form a continuous ring with said first tongue-like means received in said means for receiving to form said inner surface into a substantially gap-free surface for contacting an object encircled by the clamping apparatus when the clamping apparatus is tightened about the object by said means for tightening, and said second tongue-like means and said means for receiving are substantially similar in size and shape.

5,251,361

LADIES BELT CLIP

Leanne M. Owens, and Robert J. Owens, both of 2859 Via Cordoba Ct., San Ramon, Calif. 94583

Continuation of Ser. No. 543,657, Jun. 26, 1990, Pat. No. 5,044,049. This application Apr. 19, 1991, Ser. No. 688,161
Int. Cl.[5] A44B *11/00*
U.S. Cl. 24—182 **2 Claims**

1. A device for releasably securing the free end of the belt to the body of the belt, comprising

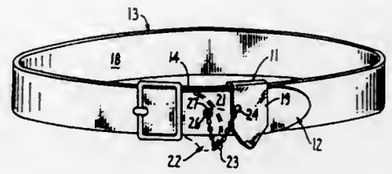
a unitary spring clip adapted for fitting over the free end portion of a belt and desired portion of the body of the same belt and resiliently forcing said belt portions tightly together for preventing said free end portion from dangling,

said unitary spring having generally parallel front and rear leaves joined at one end of such leaves by a joining portion with said leaves in closely-spaced relation to each other,

the distal ends of said leaves being forced apart when said spring clip is fitted over said free end portion and said

body portion of said belt so as to resiliently force said belt portions tightly together; and wherein,

means is provided for releasably securing said unitary spring clip to said body of said belt comprising



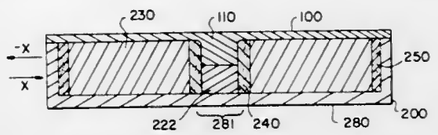
a flexible elongated member having a first end secured to said clip and a second end adapted for releasably securing said member to said body of said belt without encircling said belt.

5,251,362

MAGNETIC LATCH

Robert G. Riceman, West Caldwell, N.J., and Mitchell A. Medina, New York, N.Y., assignors to Randolph-Rand Corporation, New York, N.Y.

Continuation of Ser. No. 705,036, May 24, 1991, abandoned. This application Sep. 11, 1992, Ser. No. 944,711
Int. Cl.[5] H01F *7/02*
U.S. Cl. 24—303 **22 Claims**



1. A magnetic latch, comprising:

a first member including magnetically attractable material; and

a second member including:

a first magnet to attract said first member, said first magnet defining a cavity; and

a single solid non-magnetic member arranged inside of said cavity, said single solid non-magnetic member concentrating magnetic force within said cavity;

said first and second members including means for preventing the lateral movement of the first member relative to the second member when said first and second members are latched together said means for preventing lateral movement comprises a protrusion formed on said first member and extending into the cavity of said first magnet.

5,251,363

METHOD AND APPARATUS FOR COMBINING DIFFERENTLY COLORED THREADS INTO A MULTI-COLORED YARN

Klaus Gerhards, Hückeswagen, and Klaus Burkhardt, Schwelm, both of Fed. Rep. of Germany, assignors to Barmag AG, Remscheid, Fed. Rep. of Germany

Filed Nov. 6, 1991, Ser. No. 788,341
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1990, 4035812; Feb. 2, 1991, 4103526
Int. Cl.[5] D02B *11/00*
U.S. Cl. 28—221 **20 Claims**

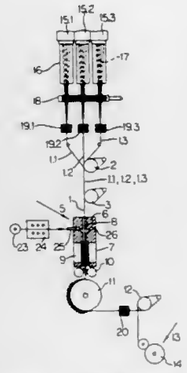
7. A method of forming a multi-colored crimped yarn, comprising the sequential steps of

simultaneously spinning a plurality of groups of filaments, with said groups advancing in parallel directions, and with each group being of a color which is different from the color of at least one of the other groups,

subjecting each filament of the groups to a treatment liquid,

combining the filaments of each of said groups to form respective strands,

guiding each of the strands through a flow of pressurized fluid and so as to subject each of the strands to a tangling process,



stretching the strands by guiding them in parallel relationship over at least first and second godets,

forming the stretched strands into a composite yarn by subjecting the strands to a flow of heated fluid while causing the strands to collide against a surface so as to form the strands into a plug,

cooling the plug and withdrawing the composite yarn from the downstream end thereof, and

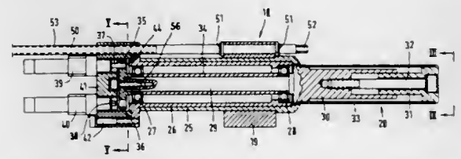
winding the withdrawn composite yarn into a package.

5,251,364

DRAWING DEVICE FOR SYNTHETIC FILAMENTS

Hinrich Münster, Ennigerloh, Fed. Rep. of Germany, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 9, 1992, Ser. No. 895,687
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1991, 4129839
Int. Cl.[5] D02J *1/22*
U.S. Cl. 28—240 **7 Claims**



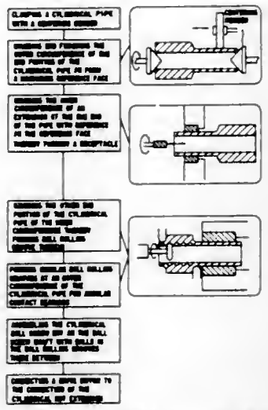
1. A drawing device for synthetic filaments comprising at least one draw pin having a circumference for sliding filaments frictionally against a portion thereof to form a wrap angle, said draw pin having a longitudinal axis and being rotatable about said longitudinal axis in order to change the portion of the pin circumference exposed to friction of the filaments a stepper switch device for stopping and releasing said pin after a predetermined time so that said draw pin rotates by a pulling affect of the filaments sliding over said draw pin for one angular step, said angular step being smaller than said warp angle.

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5,251,365
METHOD FOR MAKING BALL SCREW NUT

Hiroshi Teramachi, 34-8, Higashitamagawa 2-chome, Setagaya-ku, Tokyo, Japan

Division of Ser. No. 670,408, Mar. 15, 1991, abandoned, which is a continuation of Ser. No. 948,189, Dec. 31, 1986, abandoned. This application Aug. 29, 1991, Ser. No. 752,917
Claims priority, application Japan, Jan. 9, 1986, 61-1365
Int. Cl.[5] F16C *33/64*
U.S. Cl. 29—898.063 **1 Claim**



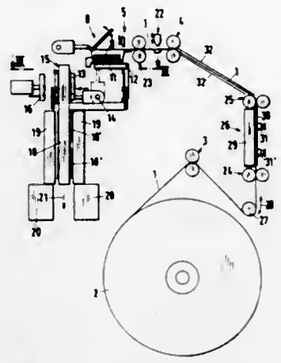
1. A method for making a ball screw unit having a cylindrical ball screw nut to be supported on a ball screw shaft, said method comprising the steps of:
clamping opposing ends of a cylindrical pipe with a centering member;
grinding and finishing an outer circumference of one end portion of said cylindrical pipe and forming a machining reference face;
grinding an inner circumference of an extension at said one end portion of said pipe with reference to said reference face, thereby forming a receptacle;
grinding an end portion of said cylindrical pipe, opposite said one end portion, at its inner circumference thereby forming ball rolling grooves therein and, simultaneously forming angular ball rolling grooves at an outer circumference of said cylindrical pipe for an angular contact bearing, thereby completing formation of said cylindrical ball screw nut; and
assembling said cylindrical ball screw nut, so ground and finished, on said ball screw shaft, with balls in said ball rolling grooves therebetween.

5,251,366
APPARATUS FOR FEEDING SHEET-LIKE BLANKS TO A DEEP-DRAWING MACHINE

Wilhelm Reil, Bensheim; Udo Liebram, Pfungstadt; Manfred Wallich, Nauheim, and Bernhard Korus, Darmstadt, all of Fed. Rep. of Germany, assignors to Tetra Alfa Holdings S.A., Pully, Switzerland

Filed Aug. 20, 1992, Ser. No. 932,780
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1991, 4127854
Int. Cl.[5] B29C *31/04*
U.S. Cl. 29—33 Q **11 Claims**

1. An apparatus for feeding sheet-shaped blanks (9) of deep-drawable synthetic plastic material to a receiving station of a deep-drawing machine having at least one heatable suction plate (15) having first and second sides, which comprises a supply roll (2) with a web (1) of deep-drawable synthetic plastic material; pairs (3,4,23) of drive rollers; a cutting means (5) wherein said deep-drawing synthetic plastic material is intermittently driven in front of said cutting means (5); a magazine (8) located on a downstream side of said cutting means; a movable flap (11) provided with suckers (33); a first supporting plate located on said first side of said heatable suction plate and adapted to be brought into engagement with a take-off side of

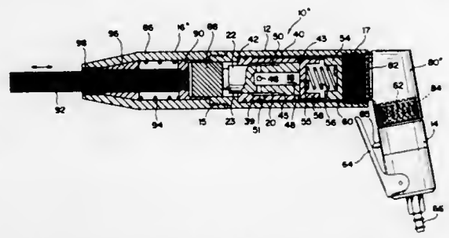


the magazine (8); a second movable supporting plate (16) provided with suckers (33) which plate is disposed adjacent to said second side of which comprise a conveyer (37) for passing the blanks (9) from the movable flap (11) onto said second side of the heatable suction plate (15) to the second supporting plate (16).

5,251,367
PNEUMATICALLY DRIVEN DESCALING TOOLS

James E. Ward, Glendora, Calif., and Leo Swan, Jefferson, Md., assignors to Equipment Development Company, Inc., Frederick, Md.

Continuation-in-part of Ser. No. 747,968, Aug. 21, 1991, Pat. No. 5,184,382. This application Jun. 29, 1992, Ser. No. 905,369
Int. Cl.[5] B21C *43/00*
U.S. Cl. 29—81.15 **22 Claims**

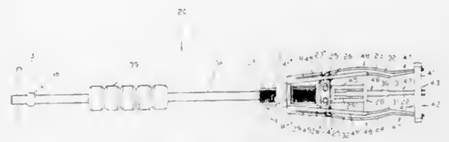


1. A hand-held pneumatic impact tool, comprising:
a generally cylindrical housing sized for manual gripping and having tool component coupling means at each end for selectively attaching an interchangeable tool component thereto;
a pneumatically powered tool actuator assembly located in said housing and including a reciprocating type piston member mounted in an outer cylinder member affixed to an inner surface of said housing, an inner rear end section located between both said outer cylinder member including said piston member and said pneumatic valve, and a first air passage extending from said pneumatic valve between said inner surface of said housing and an outer surface of said inner rear end section and said outer cylinder member,
said piston member further comprising a double acting piston member including a generally cylindrical body member having an enlarged rear portion facing said inner rear end section and having a peripheral surface defining a first shoulder region thereat, an axial bore in said piston member open to said inner rear end section and at least one transverse opening in said piston member at a forward section of said axial bore, said outer cylinder member having at least one opening therein in relatively close proximity to said at least one transverse opening in said piston member, and an enlarged forward portion facing said tool head and having a peripheral surface thereat defining a second shoulder region, the space between said first and second shoulder regions defining a second air passage for driving said piston member, said first and second air passages being connected by said at least one opening in said outer cylinder, whereby compressed air from said pneumatic valve is supplied via said first air passage to said bore of said piston member through said at least one transverse opening therein and said at least one opening in said outer cylinder causing the piston member to be driven in a forward direction until said at least one transverse opening is blocked by the forward portion of said outer cylinder, whereupon air being fed to said second air passage is now be supplied to said first shoulder region of said piston member driving it in a rear direction, a repetitive forward and rear motion thereby being imparted to said piston member and said work tool;
a plurality of different type detachable and interchangeable tool heads connectable to one end of said housing, each of said tool heads including a respective work tool selected from a group consisting of descaling, chipping, chiseling and abrading tools and being driven by a forward portion of said piston member; and
a readily removable hand actuated pneumatic valve coupled to the other end of said housing for supplying compressed air to said tool actuator assembly for powering said piston member,
whereby a set of interchangeable impact tool components can be assembled on demand to provide a plurality of tool configurations for performing a plurality of different work functions.

5,251,368
INTERNAL LOCKING PULLER DEVICE

Dean S. Somerville, 805 Sunflower Ave., P.O. Box 246, Cooperstown, N. Dak. 58425, and Mitchel D. Trostad, R.R. 1, Box 107, Aneta, N. Dak. 58212

Filed Nov. 2, 1992, Ser. No. 969,955
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—255 **8 Claims**

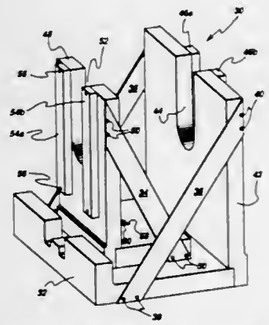


1. An internal locking puller device comprising:
a collar having a plurality of slots axially extending through a wall thereof and having a receiving member integrally protruding rearwardly therefrom, said slots generally equally spaced about said collar, an elongate threaded sleeve removably threaded in said receiving member of said collar,
a T handle threaded on said sleeve for forward and rearward movement along said sleeve,
a ring rotatably mounted to said T handle for movement therewith,
a cam ring forward of said ring and interconnectively attached to said ring by a plurality of braces, each said brace having a longitudinal slot extending therethrough and extending from said cam ring to said ring, said cam ring further having an outer edge and having a plurality of slots in said outer edge,
lug means integral to and radially extending inwardly from an outer edge of said cam ring,
a plurality of jaws having rearward ends pivotally and removably mounted with pins in said slots about said collar, also said jaws mounted in opposition about said collar, each said jaws further having a pair of rails integral to and longitudinally extending along under edges of said jaws and laterally extending from said under edges at under surfaces of said jaws,
a slide rod mounted through said sleeve and threaded into said collar, said slide rod having an impacted means and a handle means at an end thereof opposite said end threaded into said collar, and
a slide hammer slidably mounted on said slide rod for reciprocal movement along said slide rod for impacting force on said impacted means to force rearward movement of the object relative to its original position.

5,251,369
ALIGNMENT ASSEMBLY JIG FOR A MODULAR FACE-PUMPED LASER

John L. August, Jr., Schenectady, and Mark J. Kukla, Ballston Spa, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 28, 1992, Ser. No. 952,081
Int. Cl.[5] B25B *27/14*
U.S. Cl. 29—281.5 **3 Claims**



1. An alignment jig assembly for a modular face-pumped laser head, wherein said assembly is comprised of:
a bottom plate means;
first and second end plate means operatively connected to said bottom plate means such that a distance between said first and second plates is adjustable;
an alignment means operatively connected to said first and second end plate means wherein said alignment means is further comprised of:
a block means;
a first slot means substantially located on said first end plate means; and
a fastener means operatively connected to said bottom plate means and said first slot means; and
a support means operatively connected to said bottom plate means and said first and second end plate means.

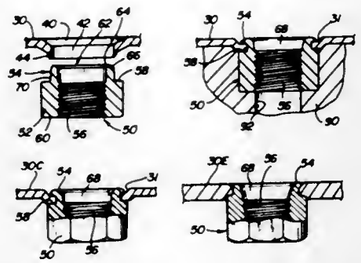
VOL 1155 ISS 2 OCT 12 1993 UMI

5,251,370

METHOD OF ATTACHING A FASTENING ELEMENT TO A PANEL

Rudolf R. M. Muller, Frankfurt, and Jiri Babej, Lich, both of Fed. Rep. of Germany, assignors to Profil Verbindungstechnik GmbH & Co., Fed. Rep. of Germany

Filed Oct. 31, 1991, Ser. No. 786,204
Int. Cl.[5] B23P *11/00*
U.S. Cl. 29—512 12 Claims



1. A method of attaching a fastening element to a plastically deformable metal panel, said fastening element including a body portion and a tubular barrel portion extending from said body portion and said body portion having an annular bearing surface surrounding said tubular barrel portion, said method comprising the steps of:

(a) forming a hole through said panel;

(b) forcing a plastic member against said panel adjacent said hole thereby drawing and plasticly deforming said panel into a generally frusto-conical portion surrounding said hole with said hole at a smaller diameter of said frusto-conical portion;

(c) inserting said tubular barrel portion through said hole from adjacent the apex of said generally frusto-conical portion and said bearing surface of said body portion engaging a panel portion surrounding said panel hole; and

(d) driving said body portion annular bearing surface of said fastening element against said panel portion surrounding said hole plasticly deforming said panel frusto-conical portion to a generally planar shape, thereby reducing the internal diameter of said hole into engagement with said tubular barrel portion and substantially simultaneously plasticly deforming a projecting free end of said tubular barrel portion radially outwardly entrapping said panel portion between said annular bearing surface and said radially deformed free barrel portion end.

5,251,371

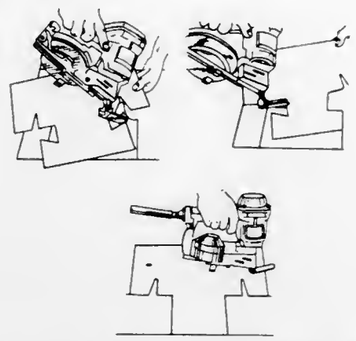
T-LOCK SHINGLE ATTACHMENT FOR PNEUMATIC NAILERS

Jack D. Powers, 434 Valley High Cir. #B1, Colorado Springs, Colo. 80910

Filed Oct. 20, 1992, Ser. No. 963,463
Int. Cl.[5] B25C *1/04*
U.S. Cl. 29—524 1 Claim

1. A method for positioning and nailing a T-lock shingle in place, the method comprising:

providing a forwardly protruding horizontal T-lock spoon member attached to a nail discharge shoe of a pneumatic nailer;



locking T-shaped tabs of the T-lock shingle into lace on an adjacent T-lock shingle using said forwardly protruding horizontal T-lock spoon member; and

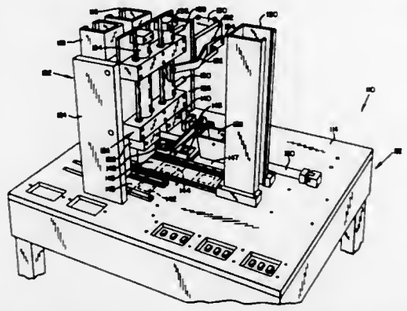
nailing the T-lock shingle using the pneumatic nailer.

5,251,372

METHOD AND APPARATUS FOR FRAMING A FILM MOUNTED INTEGRATED CIRCUIT

Jou C. Houghton, 16205 Black Diamond Rd., Auburn, Wash. 98002, and Chester H. Petry, Jr., 17908 SW. Eldorado St., Tigard, Oreg. 97224

PCT No. PCT/US89/03285, § 371 Date Mar. 5, 1991, § 102(e) Date Mar. 5, 1991
Continuation-in-part of Ser. No. 228,365, Aug. 3, 1988, Pat. No. 4,949,159. This PCT application Aug. 2, 1989, Ser. No. 671,681
Int. Cl.[5] H01R *43/00;* B23P *23/00*
U.S. Cl. 29—827 36 Claims



1. A method for framing a tape-assisted bonding (TAB) segment, comprising the steps of:

providing a TAB carrier including a body member having a rectangular cavity on one side thereof for receiving a rectangular TAB segment and a retainer member shaped and sized to fit conformably within the cavity and cover a margin of the TAB segment;

positioning the body member in a loading station with the cavity exposed on one side, and the body member supported on the opposite side,

inserting a TAB segment in the exposed cavity;

inserting the retainer member in the cavity over the TAB segment;

interlocking the body member and retainer member along opposed peripheries of the cavity and retainer member;

in-feeding a continuous strip of flexible film to a cutting station adjacent said loading station;

cutting said TAB segment from the film; and

transferring the TAB segment from the cutting station to the loading station for insertion into the cavity of the body member.

15. An apparatus for framing a tape-assisted bonding (TAB) segment in a TAB carrier of the type having first and second carrier members which are engageable with one another for framing the TAB segment therebetween, said apparatus comprising:

a frame;

a loading station for supporting a first TAB carrier member, said loading station being located on said frame;

means for supporting a TAB segment, said TAB segment supporting means being located on said frame adjacent one side of said loading station;

means for supporting a second TAB carrier member, said second TAB carrier member supporting means being located on said frame adjacent another side of said loading station;

means for transferring a TAB segment supported by said TAB segment supporting means to said loading station;

means operatively associated with said TAB segment transferring means for transferring a second TAB carrier member supported by said second TAB carrier member supporting means to said loading station; and

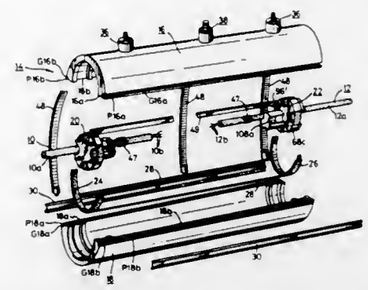
means located on said frame for engaging first and second carrier members with one another in said loading station after said TAB segment and said second TAB carrier member are transferred to said loading station thereby framing such a TAB segment therebetween.

5,251,373

METHOD FOR PROTECTION OF CABLE SPLICES

David J. DeCarlo, Toms River; Thomas L. Mineur, High Bridge, and Ronald S. Stanwick, Belvidere, all of N.J., assignors to Thomas & Betts Corporation, Bridgewater, N.J.

Filed Oct. 15, 1991, Ser. No. 776,139
Int. Cl.[5] H01R *43/00*
U.S. Cl. 29—870 7 Claims



1. In a method for protectively enclosing one or more electrical cables, the steps of:

A. applying end plate means to a cable, said end plate means being predefined to have a cable passage therethrough and having a cable seal in said cable passage;

B. sealably applying to said end plate means a housing enclosing said end plate means and defining a hollow interior;

C. placing a pressure-relief valve in communication with said housing interior, said pressure-relief valve being selected to pass an encapsulant therethrough on exposure to a predetermined pressure in said housing interior; and

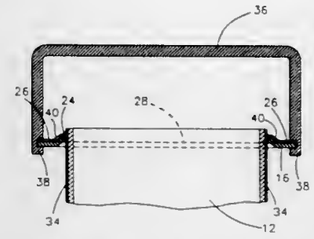
D. introducing an encapsulant under pressure into said housing interior until said encapsulant passes through said pressure-relief valve.

5,251,374

METHOD FOR FORMING HEAT EXCHANGERS

Gary A. Halstead, 109 Parklane Cir., Lockport, N.Y. 14094, and Paul J. Conn, 1371 West River Rd., Grand Island, N.Y. 14072, assignors to Gary A. Halstead, Lockport; Paul J. Conn, Grand Island and S. A. Day Manufacturing Company Inc., Buffalo, all of N.Y.

Filed Sep. 1, 1992, Ser. No. 938,945
Int. Cl.[5] B23P *15/26*
U.S. Cl. 29—890.047 19 Claims



1. A method for assembling and brazing a heat exchanger having at least one tube extending from a header, said method comprising the steps of:

forming the tube and header from aluminum alloys, wherein the header has at least one aperture corresponding in size to the tube and wherein the header and tube have corresponding surfaces which serve as joining surfaces therebetween;

depositing a substantially nonaqueous flux-brazing composition on at least one of said joining surfaces in an amount sufficient to enhance brazeability and braze said joining surfaces during a brazing operation, said flux-brazing composition comprising a flux material, an aluminum-silicon powder, and hydroxypropyl cellulose as a binder;

inserting the tue into said aperture in the header so as to mate said joining surfaces and form an assembly; and

heating said assembly for a duration which is sufficient to melt the flux-brazing composition and thereby braze the tube to the header to form a monolithic heat exchanger;

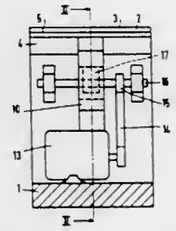
whereby said heating step is effective to form leak-proof brazed joints at said joining surfaces so as to produce a leak-proof aluminum heat exchanger.

5,251,375

SHAVING APPARATUS

Jacobus Crucq; Marinus J. J. Dona, and Wilhelmus M. Walraven, all of Eiodhoven, Netherlands, assignors to U.S. Philips Corp., New York, N.Y.

Filed Mar. 10, 1992, Ser. No. 848,813
Claims priority, application Netherlands, Mar. 12, 1991, 9100439
Int. Cl.[5] B26B *19/12*
U.S. Cl. 30—43.9 15 Claims



1. A shaving apparatus comprising a housing provided with

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a first shaving member having a first cutting edge and with a second shaving member having a second cutting edge, which second shaving member is drivable relative to the first shaving member, the movement of the second cutting edge relative to the first cutting edge being composed of the movements in two main directions H and V where H is parallel to the work plane, V is perpendicular to the work plane, and the work plane coincides with the skin to be shaved;

wherein the second shaving member is provided with a carrier mounted in the housing so as to be movable in both main directions, said carrier comprising at least two surfaces which extend transversely of the main directions and which engage against a cam disc rotatably driven about a rotation axis extending parallel to the at least two surfaces.

5,251,376

RAZOR HEAD, ESPECIALLY RAZOR BLADE UNIT OF A WET RAZOR

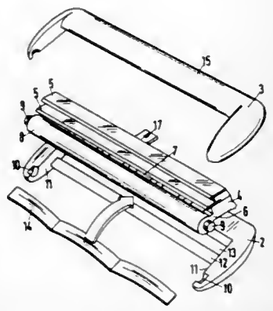
Wolfgang Althaus, Wuppertal, and Michael Schwarz, Herne, both of Fed. Rep. of Germany, assignors to Wilkinson Sword Gesellschaft mit beschränkter Haftung, Solingen, Fed. Rep. of Germany

Filed Jun. 25, 1992, Ser. No. 905,405

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1991, 9108214[U]

Int. Cl.[5] B26B *21/00*

U.S. Cl. 30—50 **15 Claims**



1. A razor head, especially a razor blade unit of a wet razor, with razor head being disposed at an end of a handle and comprising:

a plastic housing having a front guide strip;

a blade member to which blade means are secured, with said blade member being pivotably and yieldingly mounted in said plastic housing; and

spring means disposed in said plastic housing for effecting said yielding mounting of said blade member, with said blade member being pivotable against a spring force of said spring means about an axis that extends parallel to said guide strip, wherein said blade member is fixedly connected to said guide strip to form a unit that is pivotable about said axis, which extends through said guide strip, and with said plastic housing including a cover means having a stop surface for limiting pivoting movement of an upper side of said blade member.

5,251,377

VEGETABLE AND FRUIT PEELER AND PEEL COLLECTOR

Tze H. Ho, 3101 Montezuma Ave., Alhambra, Calif. 91803

Filed Mar. 30, 1993, Ser. No. 40,111

Int. Cl.[5] A47J *17/02*

U.S. Cl. 30—123.5 **3 Claims**

1. A vegetable peeler comprising:

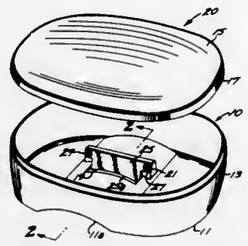
a housing having a bottom and an open top;

a cover engageable over said open top of said housing, said cover and said housing being configured so as to be easily grasped by a person's hand with the cover resting against the palm of the person's hand;

a concavely curved surface formed in the bottom of said housing;

a slot formed in said concavely curved surface; and

a blade secured inside the housing and projecting through



said slot, said blade having a curved cutting edge that is located outside said slot and generally conforming to the curvature of the portion of said concavely curved surface adjacent thereto;

whereby peelings resulting from use of the vegetable peeler are pushed through said slot into said housing and stored therein.

5,251,378

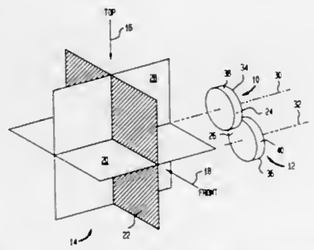
CUTTING IMPLEMENT

Lloyd Ayer, Bethany; Thomas Zamecnik, Clinton, both of Conn., and Attila Bodnar, Cliffside Park, N.Y., assignors to P.A.J. America, Ltd., White Plains, N.Y.

Filed Jan. 30, 1992, Ser. No. 828,133

Int. Cl.[5] B26B *19/14, 3/00, 9/00*

U.S. Cl. 30—205 **21 Claims**



1. A shear cutting implement having a handle, an upper roller carrier and a lower roller carrier, means for substantially rigidly connecting the upper and lower roller carriers to each other, said upper and lower roller carriers also being substantially rigidly connected to said handle, a first roller mounting shaft located on said upper carrier and a second roller mounting shaft located on said lower roller carrier; a first cylindrical roller rotatably mounted on said first roller mounting shaft and a second cylindrical roller rotatably mounted on said second roller mounting shaft, the axes of said first and second roller mounting shafts being offset from each other along a longitudinal plane so as to create a small amount of overlap between opposed facing sides of the first and second cylindrical rollers, the cylindrical surfaces of said roller being parallel to each other and adapted to contact the surface of a material as it is cut; means for causing the opposed facing sides of said first and second rollers to contact each other at a contact point; and passage means for allowing material that has been cut to pass unobstructedly after the material exits the said rollers.

5,251,379

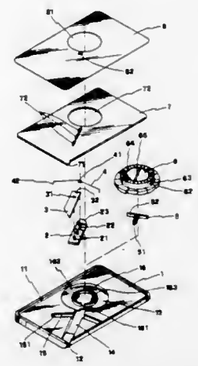
PAPER CUTTER

Fulton Kuo, No. 3, Lane 13, Jinn Shyne Road, 5 Lin, Jyr Yih Village, Jyr Guan Hsian, Kaohsiung Hsien, Taiwan

Filed Nov. 25, 1992, Ser. No. 981,550

Int. Cl.[5] B26B *29/00, 29/06*

U.S. Cl. 30—293 **1 Claim**



1. A paper cutter comprising

a base in the form of a plate with a flange extended along its edges, a notch at a corner for extension of a blade, a circular recession at the middle and extended till the notch to form a wing slot with two recessed wing portions each extended from a side of the slot, a hole at the end of each wing portion, an annular projection at the middle of the recession, an opening facing the notch at the annular projection, and two sets of tenons at the annular projection at such positions 90 degree from the opening so as to form a catch **163** in the middle of each set of the tenons;

a cutter holder located within the slot and having two tenon elements on it, a post behind the tenon elements, and a slope on the back side;

a blade having a conventional beveled front edge, a hole for fixing to a tenon element, and a notch for fixing to another tenon element;

a spring wire in the form of a wire spring located in the wing slot, having a hole in the middle for fixing to the post, and a bent end at the tip of each wire extending laterally so that each of the bent end can be inserted to a wing hole;

an adjusting spring plate made of a rigid material turned to form a front tip and two wings perpendicular to the front tip and retained in the said catches respectively

an adjusting knob in the form of a hollow knob structure having a plurality of recessions of equal diameter along the inner wall and a plurality of worm-like protuberances of different diameters, a cylindrical body extended upward from its center with some divisions marked on it, and a coin slot at the middle for turning of the knob;

an intermediate plate having a size and shape corresponding to the base for placing on the base, a tab at a position corresponding to the notch so that the notch can be fitted therein to cover the blade, a middle hole corresponding to the cylindrical body so that the cylindrical body is exposed after fixing, and a slot corresponding to the post and the tenon elements to secure the cutter holder and the blade;

a top cover in the form of a plate having an opening at a position corresponding to the cylindrical body, a mark on the cover;

whereby the blade is exposed out of the notch for cutting while the cutter holder is retained by a protuberance of the adjusting knob and the thickness of cutting is adjustable by selection of protuberance of different diameter.

5,251,380

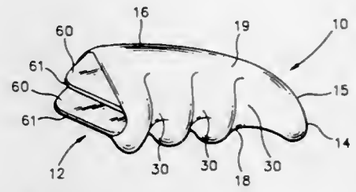
HANDLE GRIP FOR A UTILITY KNIFE

Steven Craig, 6157 Briercrest, Lakewood, Calif. 90713

Filed Aug. 14, 1992, Ser. No. 930,717

Int. Cl.[5] B25G *1/00*

U.S. Cl. 30—329 **11 Claims**



1. A knife handle grip, comprising:

an elongate sheath with an open end and a closed end, a front edge and a back edge, and first and second side, both the first side and second side transitioning to the front and back edges;

a curved transitional surface joining the back edge and the closed end;

a plurality of indentations, each indentation extending substantially around the sheath from the first side to the second side across the front edge and forming a respective recess on the front edge; and

a pair of spacer flanges on the elongate sheath in a spaced relationship on either side of the open end, each spacer flange being bendable into the interior of the elongate sheath through the open end to a position which is substantially parallel and adjacent to a respective side of the elongate sheath.

5,251,381

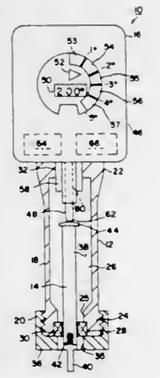
PRECISION ANGULARITY HOLE CHECKER WITH INDICATOR

Glenn V. Turner, Newport Beach, Calif., and Omer D. Shearhart, Nowata, Okla., assignors to Northrop Corporation, Hawthorne, Calif.

Filed Oct. 17, 1991, Ser. No. 777,968

Int. Cl.[5] G01B *3/56, 7/30*

U.S. Cl. 33—538 **19 Claims**



1. An apparatus for measuring the angularity of a hole in a member relative to a surface of the member that the hole projects into, the apparatus comprising:

A housing having means for stabily positioning the housing on the surface of the member and a bearing mounted to the housing proximate the means for stabily positioning;

a probe pivotally connected to the housing at the bearing,

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whereby a longitudinal axial movement of the probe relative to the housing is precluded, and whereby further a pivotal movement of the probe relative to the housing about a 360° plane proximate the bearing is provided, the probe having a probe tip adapted for being partially inserted into the hole and further having mound-shaped surface at a top end of the probe opposite from the probe tip;

an indicator connected to the housing and including

a longitudinally movable rod having a bottom end positioned against the mound-shaped surface of the probe, whereby the pivotal movement of the probe relative to the housing is translated into a longitudinal movement of the rod.

means for measuring the longitudinal movement of the rod,

means for determining an angular deviation of the probe in accordance with the measured longitudinal movement of the rod; and

means for displaying the determined angular deviation, the means for displaying including an electrical digital display connected to the housing.

5,251,382

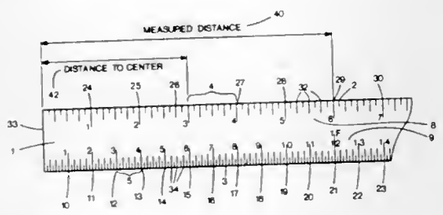
TAPE MEASURE FOR DETERMINING THE CENTERPOINT OF A DISTANCE

James C. Hellar, East Sound, Wash., assignor to Baklund-Hellar, Inc., East Sound, Wash.

Continuation of Ser. No. 662,579, Feb. 28, 1991, abandoned. This application Mar. 23, 1992, Ser. No. 859,647

Int. Cl.[5] G01B *3/10*

U.S. Cl. 33—759 **6 Claims**



1. A method of locating the center of a distance measured between first and second points comprising:

extending a flexible tape having first and second side edges and a first end edge to position the first end edge of the tape at the first point and a portion of the tape spaced from the first end edge at least to the second point;

reading a first distance indicia at the second point from a full scale at a first side edge of the tape to measure the distance between the first and second points, the full scale ascending from the first end edge;

reading a second distance indicia from a one-half scale at the second side edge of the tape, the one-half scale ascending from the first end edge of the tape, the second distance indicia being at a third point between the first and second points and corresponding to the first distance indicia but the third point being at a distance from the first end edge which is one-half of the distance between the first and second points; and

retracting the flexible tape.

5,251,383

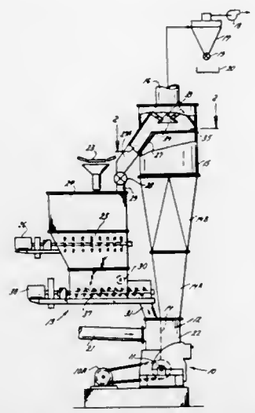
APPARATUS FOR AND A METHOD OF DISPOSING OF WET SLUDGE

Robert M. Williams, 16 La Hacienda, Ladue, Mo. 63124

Filed Jul. 6, 1992, Ser. No. 908,080

Int. Cl.[5] F26B *7/00*

U.S. Cl. 34—12 **7 Claims**



5. A method of disposing of wet sludge by employing the wet sludge in a transformation form as the medium to dry the wet sludge and produce a product therefrom, the method comprising the steps of:

a) mixing wet sludge material with a coarse heated drying material for intermixing to render the wet sludge flowable by the drying material as a composite material suitable for reduction;

b) subjecting the composite material following the intermixing to a grinding step of converting the composite material into coarse fractions and fine fractions;

c) introducing heat into the step of converting the composite material such that the coarse and fine fractions constitute drying materials;

d) employing the coarse fractions as the source of the drying material for the first mentioned step; and

e) collecting the fine fractions independently of the wet sludge as a product derived from the drying material.

5,251,384

FLUIDIZED BED APPARATUS INCLUDING DOUBLE CHAMBER CARTRIDGE FILTER SYSTEM

Kenneth W. Olsen, Montvale, and Richard A. Smith, Ringwood, both of N.J., assignors to Glatt Air Techniques, Inc., Ramsey, N.J.

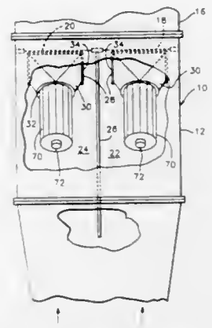
Filed Jun. 28, 1991, Ser. No. 723,177

Int. Cl.[5] F26B *21/06*

U.S. Cl. 34—82 **13 Claims**

7. Apparatus for treating particulate matter having a processing gas flow therethrough, the apparatus comprising a filter housing and a processing chamber positioned below said filter housing, means for passing processing gas upwardly through said processing chamber and into said filter housing, said filter housing including partition means for dividing the interior of said filter housing into separate downwardly-opening, open-bottom filter housing compartments, at least one processing gas outlet associated with each filter housing compartment, a filter cartridge mounted in each filter housing compartment and interconnected with said processing gas outlet such that processing gas may flow through the cartridge and through the processing gas outlet, cleaning gas input means for selectively introducing high pressure cleaning gas into the interior of the filter cartridge in a direction opposite

the processing gas flow for cleaning the filter cartridge, processing gas flow on/off valve means operatively associated with each processing gas outlet for selectively opening and



closing the processing gas outlet downstream from the associated filter cartridge wherein during the introduction of high pressure cleaning gas into the interior of the filter cartridge, the corresponding processing gas outlet is closed.

5,251,385

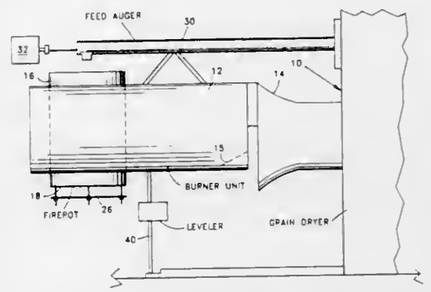
METHOD OF HEATING A GRAIN DRYER AND APPARATUS THEREFOR

John Secor, 4556 S. Kear Rd., and James Luffman, 6000 Monks Rd., both of Canandaigua, N.Y. 14424

Filed Jul. 15, 1991, Ser. No. 729,593

Int. Cl.[5] F26B *19/00*

U.S. Cl. 34—86 **6 Claims**



1. A corn burner for supplying heat to a grain dryer of the kind having a chamber for holding grain to be dried and a blower for forcing air through the chamber and through grain therein, said burner comprising a cylindrical fire pot having perforated bottom and lower side walls arranged to serve as a fire grate, the perforations being sized to hold corn, a horizontal duct for guiding gases from said fire pot to one end of said duct, said fire pot being supported extending vertically through said duct with said perforated bottom and lower side walls protruding outside of and below said duct, the top of said fire pot extending through the top of said duct, and a lid for said fire pot, said lid having a centrally located hole for admitting corn to be burned in the fire pot, said fire pot also having an opening in an upper side wall thereof facing said one end of said duct for allowing free escape of combustion products from the fire pot into the duct, thence through the duct and out of said one end thereof when the duct is positioned with said one end facing the intake of the blower of the grain dryer so that in operation the blower of the dryer provides ample draft to ensure adequate burning of corn fed into the fire pot.

5,251,386

PROTECTIVE COVER FOR SHOES, BOOTS AND THE LIKE

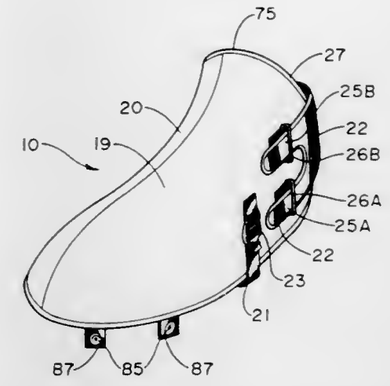
Vincent Diaz, 504-03 Eastview Ter., Abingdon, Md. 21009

Continuation-in-part of Ser. No. 746,054, Aug. 12, 1991, Pat. No. 5,172,493, which is a continuation of Ser. No. 445,788, Nov. 29, 1989, abandoned. This application Sep. 20, 1991, Ser. No. 764,605

The portion of the term of this patent subsequent to Dec. 22, 2009, has been disclaimed.

Int. Cl.[5] A41D *17/00*

U.S. Cl. 36—2 R **16 Claims**



1. A removable cover intended to protect the foot of a person in combination with a shoe worn by said person, particularly when the person is using a chainsaw to cut timber, foreset products and lumber the cover being wrapped around the shoe on the person's foot and being substantially universal for a variety of shoe sizes, wherein the shoe includes a toe portion, an instep, a sole plane, said portions joining the instep and sole plane, respectively, and a back portion, the cover comprising a flexible multi-layer unitary member including an inner fabric layer, an outer fabric layer and an aramid lining therebetween, the aramid lining impeding the chainsaw and substantially jamming the same in the even the chainsaw is accidentally brought into contact with the cover and cuts into the cover, the cover further comprising a substantially-flat member having a central forwardly-disposed upwardly projecting portion slipped over the toe portion and instep of the shoe, the shoe being received within the cover as the cover is wrapped around the shoe, the cover having respective side portions including a left side portion and a right side portion, each side portion having a respective upper portion and a respective lower portion, the upper portion of each side curving downwardly toward the back portion of the shoe, the lower portion of each side curving upwardly toward the back portion of the shoe, one of the side portions having a rearwardly-extending tab formed thereon, the tab extending substantially continuously from the upwardly curving portion to the downwardly curving portion of side portions of the cover, the other side portion having a loop means thereon through which the tab is received, the tab being grasped and pulled through and around the loop means to tighten the cover on the shoe, first quick-release fastening means between the tab and the one side portion of the cover to secure the cover to the shoe longitudinally thereof, and means for detachably securing the lower portion of each side portion of the cover to the sole plane of the shoe whereby the cover is precluded from being separated from the shoe upon contact between the chainsaw and the cover.

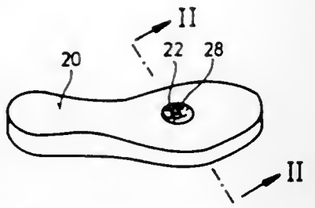
VOL 1155 ISS 2 OCT 12 1993 UMI

5,251,387

SHOE INSOLE IN THE FORM OF A SEPARATE INSOLE INSERT OR AN INTEGRATED INSOLE ATTACHED TO THE SHOE

Ute Jürgens, Frankstr. 27, D-5000 Cologne 1, Fed. Rep. of Germany

PCT No. PCT/DE90/00042, § 371 Date Jul. 19, 1991, § 102(e) Date Jul. 19, 1991, PCT Pub. No. WO90/08486, PCT Pub. Date Aug. 9, 1990
PCT Filed Jan. 24, 1990, Ser. No. 730,961
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1989, 3902207
Int. Cl.[5] A61F 5/14; A43B 13/38
U.S. Cl. 36—43 10 Claims



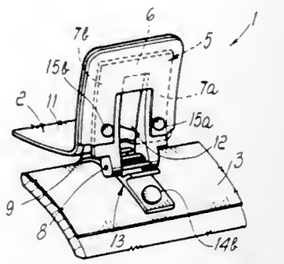
1. A shoe insole manufactured from a material with a consistency ranging from the elasticity of hard rubber to rigid and with an upper surface (20) which is generally smooth and which is formed to fit the sole of the foot, having at least one basin shape, local depression (22) in the upper surface of the insole, said depression opening into the upper surface (20) of the insole with a gently rounded rim (24) along the entire length of its edge and having within this rim a base (26) lying a few millimeters deeper than the upper surface (20) of the insole and being in area smaller than 1/10 of the entire surface area of the upper surface (20) of the insole, whereby in the central area of this base (26) a knob (28) having a free tip (30) which lies, essentially, at the same level as the upper surface (20) of the insole.

5,251,388

LEVER DEVICE FOR SPORTS FOOTGEAR, PARTICULARLY FOR SKI BOOTS

Alessandro Pozzobon, Paderno Di Ponzano Veneto; Giancarlo Foscaro, Treviso, and Adolfo Pozzebon, Sala D'istrana, all of Italy, assignors to Nordica S.p.A., Montebelluna, Italy

Continuation of Ser. No. 783,759, Oct. 28, 1991, abandoned.
This application Apr. 9, 1993, Ser. No. 44,884
Claims priority, application Italy, Nov. 7, 1990, 40143 A/90
Int. Cl.[5] A43B 5/04; A43C 11/00
U.S. Cl. 36—50.5 11 Claims



1. In combination, an item of sports footgear and a lever device, said sports footgear comprising a first flap and a second flap, said lever device being a lever device for securing said first flap and said second flap of the item of sports footgear, the lever device comprising:

a rack element connected to said second flap and comprising a plurality of teeth protruding from said second flap; and

a lever arm having a pair of wings defining an interspace therebetween, said pair of wings being mutually interconnected at upper ends thereof by a base member and being mutually interconnected at lower ends thereof by a pivot element, said pivot element being removably and selectively pivotally engageable in one of said plurality of teeth;

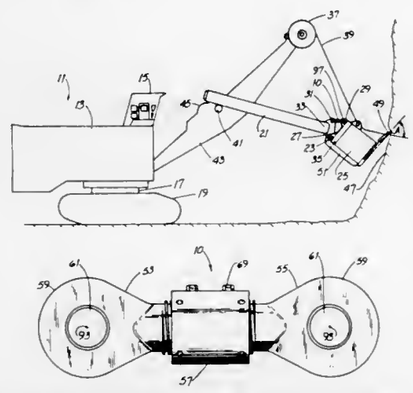
said first flap being connected to said lever arm by means of a hollowed seat provided at an end of said first flap, said base of said lever arm being inserted in said hollowed seat and said lower ends of said lever arm extending out of said hollowed seat wherein a longitudinal opening is provided in said first flap at a position thereof which overlies said interspace between said pair of wings of said lever arm, said longitudinal opening of said first flap extending sufficiently so that said plurality of teeth of said rack element are accommodated therein when said lever arm is in a closure position.

5,251,389

BRACE FOR MAINTAINING RELATIVE ARM-DIPPER ANGLE

Jay C. Bessey, Greenfield, Wis., assignor to Harnischfeger Corporation, Milwaukee, Wis.

Filed Jul. 7, 1992, Ser. No. 909,698
Int. Cl.[5] E02F 3/36
U.S. Cl. 37—398 9 Claims



9. A brace for maintaining a selected angle between the arm and the digging dipper of a mining machine and including:

a generally cylindrical collar;

a pair of end lugs coupled to the collar, each end lug having a groove engaged by a separate position-retaining screw extending through the collar;

the collar including separate tool-engaging means adjacent to each end lug for coupling a spanner wrench to the collar,

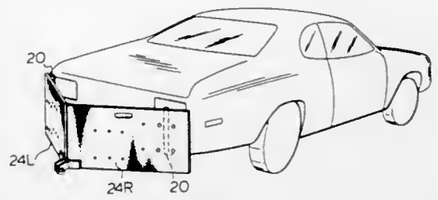
whereby, by disengaging a screw form a lug groove to free an end lug for rotation, the collar or that freed end lug may be relatively rotated one to the other without disengaging the screw from the groove of the other end lug.

5,251,390

SNOWPLOW

Michael Wong, 2369 Kingston Road East, P.O. Box 28013, Scarborough, Ontario, Canada M1N 1T0

Filed Dec. 15, 1992, Ser. No. 991,357
Int. Cl.[5] E01H 5/06
U.S. Cl. 37—231 14 Claims



7. A plow for automobiles comprising :

a pair of plates hinged together, each having a lower edge approximately perpendicular to a hinge axis, and defining an outward side and an inward side,

at least one mounting bracket on the inward side of each plate,

said mounting bracket defining a bore approximately parallel to the hinge axis,

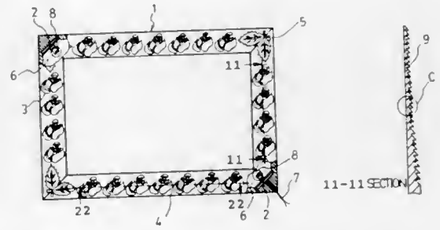
said brackets being movable about said hinge from a position nearly parallel to a position where said outer faces are between 270° and 240° to each other.

5,251,391

ILLUMINANT PHOTO FRAME

Ching-Hwei Lan, No. 9, Alley 1, Lane 458, Yuang Ho Rd., Chung Ho City, Taiwan

Filed Jan. 30, 1992, Ser. No. 828,042
Int. Cl.[5] G09F 13/00
U.S. Cl. 40—152.2 4 Claims



1. An illuminant photo frame and night lamp, comprising;

a transparent photo support means for supporting and displaying a photo,

said transparent photo support means having a front side and back side,

at least one recess formed on said back side,

a plurality of integrant 45° prisms adjacent to said at least one recess forming selected patterns on said back side,

a small light bulb engaged to a PC board installed in said at least one recess,

said PC board having a photoresistance (CDS) circuit for sensing light and actuating an electricity supply for said small light bulb,

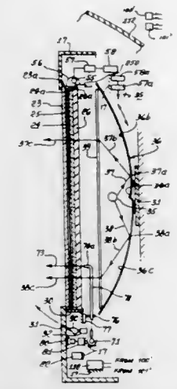
wherein when said photoresistance (CDS) circuit actuates said light bulb, light emitted therefrom travels in said transparent photo support means until reflected out said front side by said 45° prisms to brightly illuminate said selected patterns, display a photo and function as a night lamp.

5,251,392

ARTIFICIAL WINDOW

Paul G. McManigal, Newport Beach, Calif., assignor to Vemco Corporation, San Dimas, Calif.

Filed Feb. 8, 1991, Ser. No. 652,779
Int. Cl.[5] B44F 1/06
U.S. Cl. 40—427 25 Claims



1. An artificial window comprising in combination

a) a box having a rear wall, and side walls bounding an interior space which faces longitudinally forwardly,

b) sheet means extending laterally crosswise of said space, said sheet means including a generally transparent sheet defining a plane and having an edge, and forward and rearward facing sides, and viewable pattern means placed on the transparent sheet to be illuminated by light passing forwardly from the box interior space,

c) first light source means in said interior space and located rearwardly of said pattern means for illuminating said rearward facing side of said transparent sheet, and second light source means located in facing alignment with said edge for illuminating said edge of said transparent sheet relative to the plane thereof,

d) there being control means associated with said first and second light source means, for separately controlling both of said first and second light source means to independently, differentially and progressively change the illumination of the viewable pattern means,

e) and there being additional means associated with said first light source means for causing substantial uniformity of its controlled illumination of the rear ward facing side of said transparent sheet over the major area of said transparent sheet, and

f) said sheet means also including first and second translucent sheets at the forward and rearward sides of said generally transparent sheet, said second light source means directly facing edges of at least one of the translucent sheets and said generally transparent sheet.

5,251,393

LUMINOUS DISPLAY DEVICE FOR ELECTRIC EQUIPMENTS

Cesare Gallone, Signal Lux S.p.A. Via Milano 27, 20010 Cornaredo MI, Italy

Filed Dec. 10, 1991, Ser. No. 804,438
Claims priority, application Italy, Mar. 22, 1991, M191 U 000240
Int. Cl.[5] G09F 9/00
U.S. Cl. 40—448 3 Claims

1. A luminous display device for electric equipment comprising:

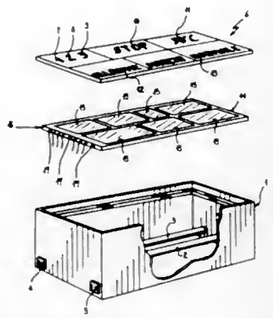
a base container housing a light source, and on top of said

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base container a board having silk-screen printed alphanumeric characters or symbolisms is positioned, said board being partially slightly translucent,

a liquid crystal board positioned between said light source and said board with said silk-screen printed alphanumeric characters or symbolisms,

liquid crystals in said liquid crystal board which provide an optical barrier for light from the light source towards the



silk-screen printed board, the symbolisms of which highlight operation modalities of said equipment,

said liquid crystals being susceptible of activation to a low voltage in order to be made transparent or opaque to the underlying light source,

said light source being always electrically activated to cause or inhibit the passage of a luminous beam from the underlying light source for highlighting or not highlighting said symbolisms.

5,251,394

SAFETY DEVICE FOR SEMIAUTOMATIC PISTOL

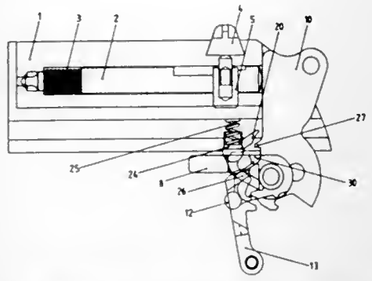
Jose C. M. Bornancini, Porto Alegre, Brazil, assignor to Forjas Taurus S/A, Porto Alegre, Brazil

Filed Apr. 10, 1992, Ser. No. 866,438

Claims priority, application Brazil, Apr. 18, 1991, PI 9001879

Int. Cl.[5] F41A *17/62*

U.S. Cl. 42—70.05 **7 Claims**



1. An "IMPROVED SAFETY FOR A SEMIAUTOMATIC PISTOL", of a kind assembled in a frame of the pistol and comprising a three position safety device where an upper position sets in action a pistol locking mechanism, a transitory lower position sets in action a hammer decocking mechanism, and a neutral horizontal position that allows shooting of the pistol; said safety device being composed by two action keys (7, 8), each said key disposed on each side of the pistol, a first key (7) having a first axle (9) on which a hammer (10) is assembled, and a second key (8) having means (11) for holding the axle (9) and a first arm (12) parallel to said axle (9) which blocks a hammer sear (13) acting on a strucking face of the sear (13) when both of said keys (7, 8) are in a locking position and further being characterized by the first key (7) having a cam (15), a retentor (17) composed by a second axle (18) endowed with an indenture (19) and, from the second axle (18), a retention arm (20) and a driving lever (21) not parallel in relation to each other, an ejector (22) endowed with at least one groove (23) in its lower portion, a plunger (24) that is disposed in said at least one ejector groove (23), and impelled by a helicoidal spring (25) against the indenture (19) of the second axle (18) of the retentor (17); the sear (13) being endowed with a lateral projection (26) and the hammer (10) having a knocking face and being endowed with a dent (27) in a lower portion of said knocking face (28).

5,251,395

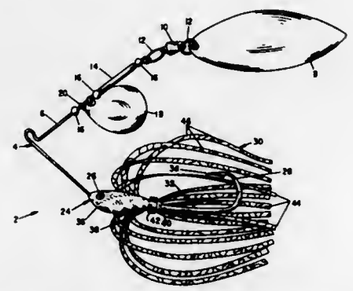
PRINTED ELASTOMER FISHING LURE DRESSING

Craig Wicklund, 3030 Westwood Rd., Minnetonka Beach, Minn. 55361

Filed Jul. 15, 1992, Ser. No. 914,426

Int. Cl.[5] A01K *85/00*

U.S. Cl. 43—42.25 **14 Claims**



1. An elastomer fishing lure dressing comprising:

a) a silicone based elastomer substrate having a colorant containing a liquid silicone carrier coated onto an exposed surface of the substrate and thermally cured to said surface and wherein said substrate is separated into a plurality of filaments; and

b) means for semi-permanently binding said filaments to one another.

5,251,396

FISHING TACKLE

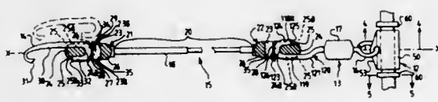
Leonard Haigh, Evesham, United Kingdom, assignor to Entaco Limited, United Kingdom

Filed Feb. 19, 1992, Ser. No. 835,430

Claims priority, application United Kingdom, Jul. 25, 1990, 9016320

Int. Cl.[5] A01K *91/00, 91/18*

U.S. Cl. 43—42.74 **13 Claims**



1. A fishing tackle comprising

a line,

an attachment member comprising a generally cylindrical sleeve rotatably mounted directly on the line,

the sleeve having,

a wall defining a generally cylindrical passage in which the line is received with the wall contacting the line,

a generally outwardly extending lug comprising an attachment means,

a slit in the cylindrical wall extending longitudinally of the sleeve and the slit being disposed at the base of the lug, the slit having an initial width to permit the line to pass therethrough into said passage and the clip having been deformed to close the slit to retain the line in the passage;

an intermediate member comprising

a first connecting element of loop configuration that interengages with an opening in said lug to secure the intermediate member to the attachment means to enable the intermediate member to move relative to the attachment member about two relatively perpendicular axes of rotation, a second connecting element

the first and second elements being interconnected to permit a rotation of the second element relative to the first element about a further axis

a snood connected to the second element;

a hook connected to the snood; and

a pair of stop means to prevent movement of the attachment member along the line,

the stop means comprising,

a pair of clips disposed adjacent opposite ends of the sleeve and

each clip having a loop provided with a gap between end parts of the loop and the loop being at least substantially closed around the line whereby a part of the clip of smaller dimension than the cross-section of the line penetrates the line.

5,251,397

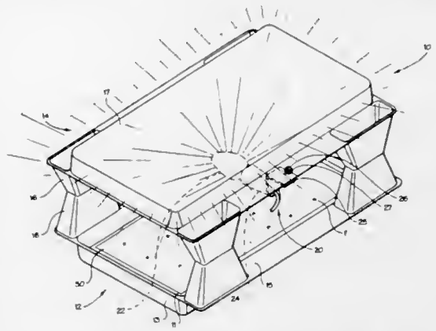
ILLUMINATED FLEA TRAP

Joe Exum, Snow Hill, and Jess Mellenthin, Oxford, both of N.C., assignors to Happy Jack, Inc., Snow Hill, N.C.

Filed Mar. 9, 1992, Ser. No. 848,374

Int. Cl.[5] A01M *1/04*

U.S. Cl. 43—115 **15 Claims**



1. An apparatus for attracting and trapping insects and retaining the trapped insects for later disposal thereof comprising:

(a) a tray having a generally planar tray wall portion forming an insect trapping area, said tray having a plurality of support members formed integrally with and projecting away from said tray wall portion;

(b) a cover having a generally planar cover wall portion and a plurality of support members formed integrally with and projecting away from said cover wall portion, and engaging said support members of said tray, said cover being formed of a generally lightly colored translucent material that will diffuse light to present a glowing appearance on the outer surface thereof when illuminated;

(c) means for detachably connecting said cover to said tray in spaced vertical relation therewith;

(d) light emitting means mounted to said cover for attracting insects by illuminating the area around said apparatus and being positioned on said cover to cause said emitted light to be diffused through said translucent material of said cover for illuminating the outer surface thereof presenting a glowing appearance for enhanced insect attraction; and

(e) adhesive means removably disposed in said insect trapping area for retaining insects which are attracted to said light emitting means and enter said insect trapping area thereby becoming adhered to said adhesive means, which retains the insects so that they may be disposed of by removal of said adhesive means.

5,251,398

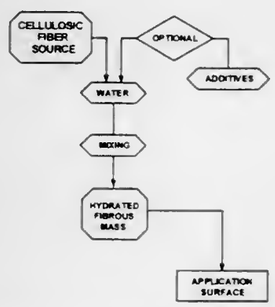
FIBROUS COATINGS FOR PROTECTING FRUIT BEARING OR BLOSSOMING TREES, SHRUBS OR OTHER VEGETATION FROM FREEZE AND FROST

Leslie L. Balassa, Shore Dr., Blooming Grove, N.Y. 10914

Continuation-in-part of Ser. No. 518,726, May 4, 1990, which is a continuation-in-part of Ser. No. 259,174, Oct. 18, 1988, which is a continuation-in-part of Ser. No. 20,110, Apr. 24, 1987, Pat. No. 4,787,928, which is a division of Ser. No. 744,119, Jun. 12, 1985, Pat. No. 4,665,993. This application Jul. 25, 1990, Ser. No. 557,924

Int. Cl.[5] A01G *13/00*

U.S. Cl. 47—2 **18 Claims**



1. A method of protecting plants and attendant fruit or blossoms comprising

coating said plants with a composition comprising cellulose fibers, an adhesive and a foaming surfactant, said coating resulting in the adherence of said composition to the leaves, blossoms or blossom-forming bud structures of said plants.

5,251,399

VERTICAL PLANT STAND

Von O. Rasmussen, 4408 Mark Ave., Las Vegas, Nev. 89108

Filed Oct. 23, 1992, Ser. No. 965,740

Int. Cl.[5] A01G *31/00, 9/24*

U.S. Cl. 47—39 **15 Claims**

1. A vertical plant stand assembly comprising:

a) a lower base section including an electrical compartment and a water reservoir compartment;

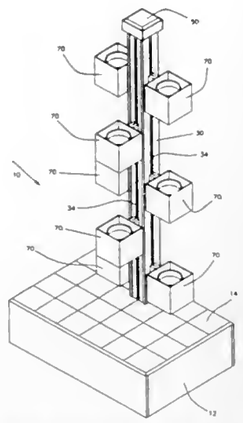
b) a central vertical support column extending upwardly from the lower base section to a top, the central vertical support column including at least one mounting track attached thereto and at least one plant station mounted to the mounting track;

c) an upper cover section attached to the top of the central vertical support column, the upper cover section including a water distribution system;

d) the water reservoir compartment including a water reservoir and a watering pump;

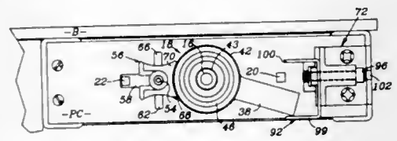
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e) a main water line extending from the water reservoir to the water distribution system; and



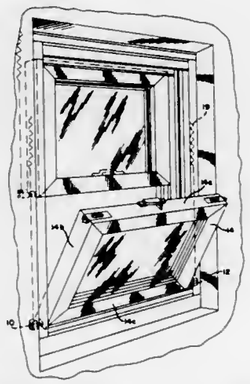
f) a water feed line extending from the water distribution system to the at least one plant station.

5,251,400
CONTROL FOR A DOOR CLOSER HAVING A POWER-ASSIST OPENING FEATURE
Eckart F. Schultze, Charlotte, N.C. 28210, assignor to Yale Security Inc., Monroe, N.C.
Filed Jun. 29, 1992, Ser. No. 905,420
Int. Cl.[5] E05F *15/10*
U.S. Cl. 49—32 **9 Claims**



1. A control for an hydraulically driven door closer/opener including an hydraulic circuit having an electric pump, an electric circuit for activating the pump, an hydraulic cylinder in the hydraulic circuit operatively enclosing a piston provided with a rack, the rack driving a pinion having a shaft extending outside the cylinder connected to the operating arm of the door, the pump adapted to pressurize the hydraulic circuit to drive the piston toward the open position of the door, the control comprising:
1) drive wheel frictionally mounted on the pinion shaft external of the cylinder,
2) pump-activating means comprising:
a. an activating arm extending outward from the wheel and frictionally gripped by the wheel,
b. a fixed pump-on photoelectric sensor in the electric circuit mounted adjacent the end of the arm and adapted to turn on the pump when the arm arrives at a position closely proximate the sensor,
c. an adjustable abutment surface to limit the movement of the arm away from the sensor,
3) pump-deactivating means comprising:
a. a driven rotary follower mounted on the closer/opener adjacent the wheel and having an axis parallel to the pinion shaft,
b. a deactivating arm extending outward from the follower,
c. a fixed pump-off photoelectric sensor in the electric circuit mounted adjacent the end of the deactivating arm and adapted to turn off the pump when the deactivating arm leaves a position closely proximate the pump-off sensor,
d. interfitting lost-motion-transmitting means on the peripheries of the wheel and the follower, such that when the wheel nears a position corresponding to the desired openness of the door, the lost-motion-transmitting means causes the follower to rotate to swing the deactivating arm away from the sensor to turn off the pump.

5,251,401
PIVOT CORNER FOR A SASH WINDOW
James G. Prete, Hinsdale, Ill., and James Sharp, Cedar Lake, Ind., assignors to Ashland Products, Inc., Chicago, Ill.
Filed Oct. 2, 1991, Ser. No. 770,182
Int. Cl.[5] E05D *15/22*
U.S. Cl. 49—181 **16 Claims**

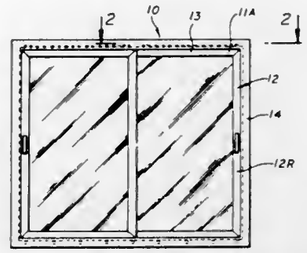


1. A pivot corner adapted for operative engagement with a brake assembly of a pivotable sash window, said pivot corner comprising:
a housing having an axial bore, said bore having a non-circular cross-section; and,
a pivot pin having a first portion disposed within said bore and having a second portion extending outwardly therefrom and adapted for operative engagement with said brake assembly, said first portion having a cross-section substantially complementary to said bore to provide a limited rotary interference fit between said bore and said first pin portion, said limited interference fit permitting said pin to rotate relative to said bore upon application of a predetermined torque without breakage of said pin, and, said bore and said first pin portion being generally octagonal in cross-section.

5,251,402
SELF RETURN MECHANISM
Richard J. Richardson, Simi Valley, and Charles E. Crown, San Fernando, both of Calif., assignors to Anthony's Manufacturing Company, Inc., San Fernando, Calif.
Filed Mar. 10, 1992, Ser. No. 848,203
Int. Cl.[5] E05D *15/06*
U.S. Cl. 49—404 **23 Claims**

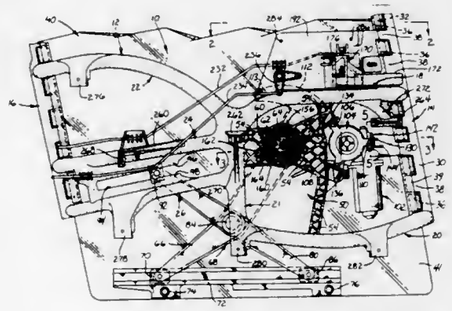
1. A self-return mechanism, comprising:
a support structure defining an opening;
a movable closure supported during movement by the support structure to permit the closure to move between a plurality of positions, including a closed position to close the opening;
an element mounted on the closure and defining a passageway so as to be aligned in a given direction; and

a closure return element for moving the closure from a first position to a second position, having a first portion coupled to the support structure and a second portion coupled to the closure and having an intermediate segment having an outer dimension and oriented to pass through the passageway of the fixed element as the closure moves from a



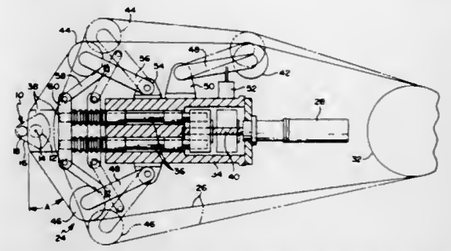
first position to a second position such that the fixed element remains aligned as the closure moves from the first position to the second position, wherein the outer dimension of the segment passing through the passageway changes as the closure moves from the first position to the second position.

5,251,403
TUBULAR PLASTIC MOUNTING PANEL FOR DOOR HARDWARE
David E. Compeau, Oxford; Jayprakash U. Raisoni, Troy, and Suresh D. Shah, Rochester Hills, all of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Mar. 16, 1992, Ser. No. 852,055
Int. Cl.[5] B60J *5/04*
U.S. Cl. 49—502 **5 Claims**



1. A mounting panel for mounting a window and a window regulator in a vehicle door, comprising:
a one piece plastic molded member having a plurality of spaced apart hollow tubular spokes molded integrally and radiating generally forward and rearward therefrom, first and second window guide channels respectively molded integrally with the forward and rearward radiating spokes to receive the edges of the window, and a plurality of integrally molded arm rest supports projecting laterally from the molded member and adapted to support an armrest structure of the vehicle door.

5,251,404
BELT GRINDER FOR CRANKSHAFT PINS
Eberhard E. Wasserbaech, Shelby Township, Macomb County, assignor to General Motors Corporation, Detroit, Mich.
Continuation of Ser. No. 843,034, Feb. 28, 1992, abandoned. This application Dec. 21, 1992, Ser. No. 994,488
Int. Cl.[5] B24B *17/00*
U.S. Cl. 51—142 **14 Claims**



1. Apparatus for grinding crankshaft pins during rotation of the crankshaft about its main journals, the apparatus comprising a belt grinder including:
an abrasive belt of substantially constant length for grinding a crankshaft pin;
stationary drive means having a rotatable member engaging the belt for driving the belt in a closed path;
a grinding shoe engaging the side of the belt opposite the pin at the location of belt engagement with the pin for holding the belt against the pin, the shoe being spaced from the driving means;
means for moving the grinding shoe in cycles to maintain the belt against the pin as the crankshaft turns, the shoe movement varying the spacing of the shoe from the driving means, thereby altering the shape of the belt path; and
means for adjusting the belt path during each cycle of shoe movement to maintain a substantially constant path length equal to the belt length, the adjusting means including;
belt guide means engaging the belt closely adjacent to the shoe and movable toward and away from the shoe for alternately shortening and lengthening the portion of the belt path between the guide means and the shoe to compensate for the effect of shoe travel on the path length while also maintaining substantially constant a predetermined angle of the belt relative to the shoe.

5,251,405
METHOD FOR CIRCUMFERENTIAL GRINDING OF RADIALLY NON-CIRCULAR WORKPIECES
Siegbert Clauss, Esslingen; Peter Meusburger; Stefan Brandt, both of Stuttgart; Roland Schmitz, Vaihingen, and Gerhard Walz, Wendlingen, all of Fed. Rep. of Germany, assignors to Fortuna-Werke Maschinenfabrik GmbH, Fed. Rep. of Germany
Filed Jul. 24, 1991, Ser. No. 734,964
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1990, 4023587
Int. Cl.[5] B24B *49/04*
U.S. Cl. 51—165.75 **7 Claims**

1. A method of grinding workpieces along a non-cylindrical peripheral surface thereof, the method comprising the steps of:
chucking said workpiece within chucking means, said chucking means having first drive means;
rotating said workpiece in subsequent revolutions about a first axis under the action of said first drive means;
displacing a rotating grinding wheel along a second axis intersecting said workpiece surface under the action of second drive means, said second axis extending at an angle with respect to said first axis, for grinding said workpiece surface

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during said subsequent revolutions along a non-cylindrical contour;

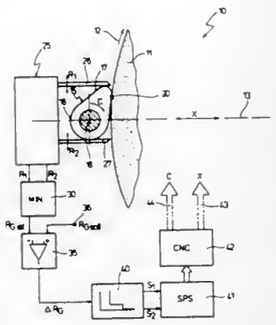
measuring a predetermined dimension of said workpiece surface for obtaining a dimension value during grinding of said workpiece surface;

wherein said steps of rotating and displacing are performed simultaneously under numerical control and comprise the sub-steps of:

loading a data memory of said numerical control with a predetermined number of data sets, each data set corresponding to control signals for actuating said first and said second drive means during one revolution of said workpiece;

advancing said grinding wheel for bringing same into engagement with said workpiece surface;

initiating a grinding control program calling a first data set from said memory;



in a first grinding step displacing said grinding wheel and simultaneously rotating said workpiece under control of said first data set during a first revolution of said workpiece;

further working said grinding control program by stepwise calling subsequent data sets;

in further grinding steps further displacing said grinding wheel and simultaneously rotating said workpiece under control of said subsequent data sets during subsequent revolutions of said workpiece;

comparing said dimension value with a predetermined dimension value during said subsequent revolutions for generating a deviation value;

comparing said deviation value with a predetermined threshold value; and

jumping within said control program over any remaining subsequent data sets when said deviation value falls below said predetermined threshold value.

5,251,406

POWER HAND TOOL WITH A GEARBOX CASING WITH SEALING WASHER

Manfred Kirn, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE90/00369, § 371 Date Oct. 18, 1991, § 102(e) Date Oct. 18, 1991

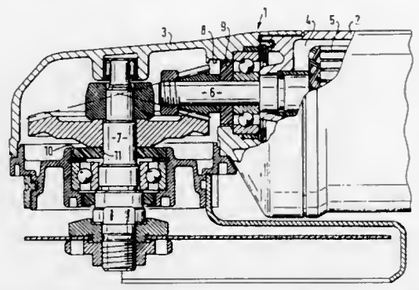
PCT Filed May 17, 1990, Ser. No. 768,885

Claims priority, application Fed. Rep. of Germany, May 20, 1989, 3916495

Int. Cl.[5] B24B *23/00;* **F16C** *33/74*

U.S. Cl. 51—170 R **14 Claims**

1. A power hand tool, comprising a gear box casing having an opening; at least one high speed shaft extending through said opening; sealing means for sealing said gear box casing against lubricant leakage, said sealing means including a sealing washer which sits tightly and non-rotatably on said shaft and which radially touches a circumference of said opening, said



sealing washer being composed of a material which can absorb and release lubricant.

5,251,407

GRINDING DEVICE

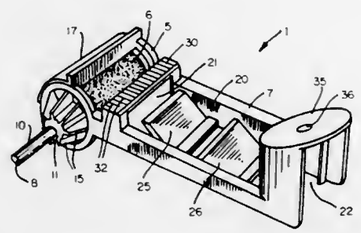
Mohammad Afshar, Dublin, Ireland, assignor to Mayka Research and Development, Dublin, Ireland

Filed Feb. 12, 1992, Ser. No. 834,396

Claims priority, application Ireland, Feb. 15, 1991, 527/91

Int. Cl.[5] B24B *3/36*

U.S. Cl. 51—241 R **15 Claims**



1. A hand-held grinding device for sharpening a cutting edge of a tool such as a chisel, the device comprising:

a housing;

a shaft rotatably mounted in the housing for rotation about an axis of rotation, the shaft having a free end for attachment to a chuck for rotation of the shaft;

a grinding wheel mounted on the shaft, the grinding wheel having a grinding surface;

an elongate handle member extending from the housing, the elongate handle member defining a tool guide channel adapted to direct a cutting edge of the tool to be sharpened to the grinding surface of the grinding wheel, and the tool guide channel having an end exit adjacent to the grinding surface of the grinding wheel and a rear end entry through which the tool is inserted into the tool guide channel for sharpening; and

biassing means on the elongate handle member extending into the tool guide channel and against which a user presses the tool to engage the cutting edge of the tool against the grinding surface of the grinding wheel.

5,251,408

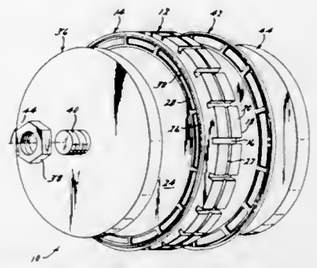
GRINDING WHEEL ASSEMBLY

Premakaran T. Boaz, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 27, 1992, Ser. No. 919,313

Int. Cl.[5] B24B *55/02, 5/10*

U.S. Cl. 51—267 **14 Claims**



1. A grinding wheel assembly, comprising:

a) a grinding wheel having two spaced-apart major surfaces, including a plurality of parallel, spaced-apart transverse slots formed in a peripheral surface of the grinding wheel;

b) a flange adjacent a major surface of the grinding wheel, including a circumferential trough formed at the periphery of the flange for holding a fluid therein by centripetal force during rotation of the assembly and a plurality of apertures in the flange for admitting a flow of fluid therethrough to the circumferential trough wherein the trough opens directly into the slots of the grinding wheel; and

c) means for securing the flange adjacent the grinding wheel.

5,251,409

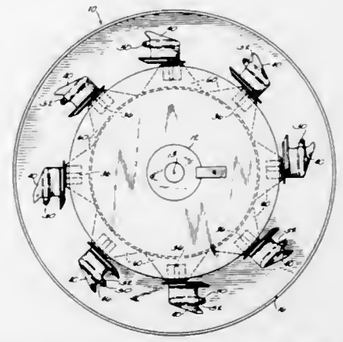
METHOD OF DRAG FINISHING A HOUSING

Robert P. Orbank, Gurnee, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Jun. 15, 1992, Ser. No. 898,497

Int. Cl.[5] B24B *1/00, 31/00*

U.S. Cl. 51—318 **25 Claims**



1. In conjunction with a drag finishing machine having a center spindle adapted to revolve about a vertical axis, a work station attached to said spindle for rotation therewith, adapted to releasably support a housing for a shaft, and movable between a load position and a dragging position with said housing immersed in media in a stationary tub, said housing including a center plane containing said shaft, a method of drag finishing said housing comprising the steps of:

connecting a first end portion of said shaft to said housing to be drag finished;

connecting a second end portion of said shaft to said work station while said work station is in said load position so that said shaft extends radially outwardly from said work station;

canting said center plane of said housing at a first angle to a plane perpendicular to said vertical axis by rotating said shaft about its longitudinal axis to said first angle and maintaining said shaft at said first angle;

displacing said work station to said dragging position and thereby immersing said canted housing into said media;

dragging said housing through said media in a first direction for a first period of time by revolving said spindle about said vertical axis in a first direction; and

dragging said housing through said media in a second direction for a second period of time by revolving said spindle about said vertical axis in a second direction.

5,251,410

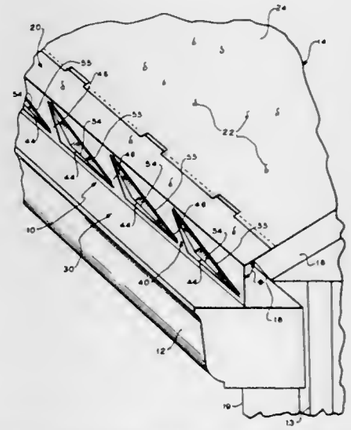
RAIN GUTTER COVER

Robert J. Carey, P.O. Box 403, Middletown, N.J. 07748

Filed Apr. 13, 1992, Ser. No. 867,392

Int. Cl.[5] E04D *13/06*

U.S. Cl. 52—12 **9 Claims**



1. Rain gutter cover for being mounted over the top of a rain gutter attached to a building adjacent the bottom edge of a roof upon which rain falls, said rain gutter cover for preventing entrance into the rain gutter of leaves and other debris which cause rain gutter clogging and the stoppage of rain flow into downspouts, comprising:

a generally angular upper portion, a generally horizontal bottom portion, and a generally vertical intermediate portion intermediate and interconnecting said upper and bottom portions;

said generally angular upper portion for being mounted adjacent said bottom edge of said roof and for transferring rain from said roof to said intermediate portion;

said generally vertical intermediate portion provided with a single horizontally disposed row of interrupted slots with adjacent pairs of said slots being interrupted by a solid portion of said intermediate portion, each slot including at least one diagonally disposed upper portion and at least one diagonally disposed lower portion, said diagonally disposed upper portion of predetermined ones of said slots extending generally vertically over said diagonally disposed lower portion of an adjacent slot such that there is no generally vertical path of rainflow down said intermediate portion which is not interrupted by at least one of said slots; and

said upper and intermediate portions covering a portion of

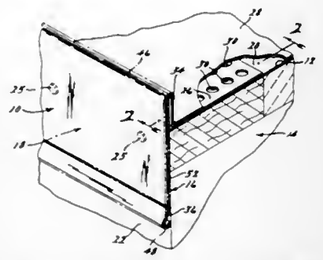
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the top of said rain gutter and said bottom portion covering the balance of the top of said rain gutter.

5,251,411
ROOF EDGE ANCHORING DEVICES FOR BUILDING STRUCTURES

Tommy D. Kelley; Mark D. Braine, both of Asheville; Gregory Henson, Canton; John B. Hickman; Ralph Kirby, both of Asheville; William C. Roberts, Weaverville, and Kevin D. Rogers, Swannanoa, all of N.C., assignors to W. P. Hickman Company, Asheville, N.C.

Filed Apr. 15, 1992, Ser. No. 868,948
Int. Cl.[5] E04D *1/36*
U.S. Cl. 52—60 **11 Claims**

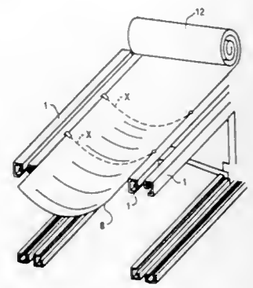


1. A roof component assembly for sealingly anchoring a sheet-type base roofing material on a building roof structure, said assembly comprising:
an anchoring flange member extending over a portion of said base roofing material, said anchoring flange member being secured to the roof structure and having a number of openings extending therethrough;
a marginal strip overlapping at least a portion of said openings in said anchoring flange member and a portion of said base roofing material;
means for bonding said marginal strip directly to said base roofing material, through said openings in said anchoring flange member at a location interior of said anchoring flange member; and
said assembly including a gutter member thereon.

5,251,412
PANTOGRAPHICALLY MOVABLE SUPPORT APPARATUS

Carlos A. de Almeida Borges, Rua Nova Jerusalem, 475, Rio de Janeiro, Brazil

Filed Jan. 14, 1992, Ser. No. 820,249
Claims priority, application Brazil, Feb. 5, 1991, PI91 00456
Int. Cl.[5] E04H *12/18*
U.S. Cl. 52—109 **4 Claims**

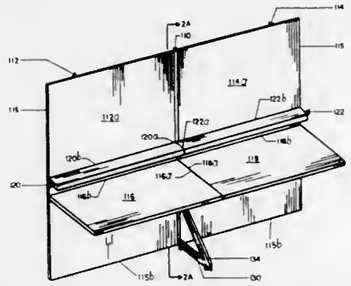


1. Support apparatus, comprising:
first and second, parallel opposed lengthwise beams coupled together by a plurality of first members, the beams being coupled to said first members to be pantographically movable relative to each other between a first, folded position to a second, open position, and a volume of the support apparatus is reduced from the second, open position to the first, folded position,
wherein the support apparatus is in the second, open position when in use, and further includes a plurality of second members arranged to extend between said lengthwise beams to maintain said support system in the second, open position,
wherein two of said apparatus are arranged parallel to each other, and further comprising third members which secure one of said apparatus to the other,
wherein arcuate supports extend between an upper beam of each of the two apparatus and support a cover, and
wherein said arcuate supports are longitudinally spaced from one another and define a concave surface on which said cover is supported.

5,251,413
STABILIZED SPACE DIVIDING FRAMES AND PANELS

Steven F. Goodman, Wyoming, Mich., assignor to Herman Miller, Inc., Zeeland, Mich.

Filed Jan. 19, 1990, Ser. No. 467,637
Int. Cl.[5] E04H *6/00*
U.S. Cl. 52—239 **14 Claims**

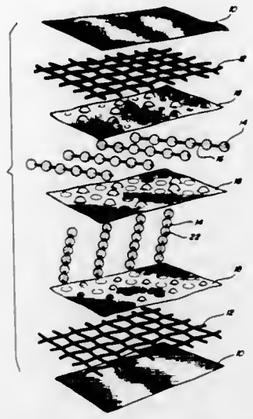


1. A space divider system, comprising:
at least two adjacent rigid rectangular frames, said frames having edge portions, bottom portions and face portions;
means for rigidly securing said frames together at the edge portions;
means for mounting modular components such as work surfaces, storage cabinets and the like to said frames; and
means for stabilizing said frames to oppose the bending moments of said modular components mounted to said frames;
wherein the improvement in said stabilizing means comprises:
a spacer having opposed outer faces flush with the face portions of said frames and substantially coextensive with a bottom portion thereof;
a foot rigidly secured to a lower end of said spacer and extending outwardly from at least one face thereof;
a brace secured to said foot and to said spacer at a location above said foot, the length of the foot and the location of the brace on the spacer being selected to effectively rigidly brace said spacer against the bending moments from said modular components mounted to said frames above said braces; and
means for rigidly connecting said spacer between said at least two adjacent frames at the edge portions thereof.

5,251,414
ENERGY ABSORBING COMPOSITE AND REINFORCING CORE

Darryl A. Duke, 8876 Tackles, Pontiac, Mich. 48054

Filed Mar. 16, 1992, Ser. No. 851,603
Int. Cl.[5] E04C *2/32*
U.S. Cl. 52—309.16 **15 Claims**

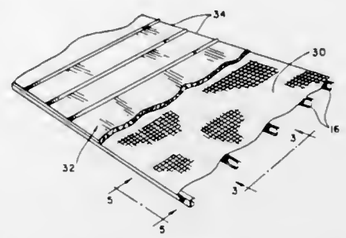


1. A reinforcing core structure useful in the formation of an energy absorbing composite having external walls, said reinforcing core structure comprising:
a polymer matrix; a plurality of particulate, reinforcing members;
and an undulating, reinforcing, sheet member having longitudinally spaced, alternating crests and troughs which are formed on a molding means having a first and second series of intersecting parallel axes and
wherein said particulate, reinforcing members have a diameter up to about the thickness of the space between the walls of said composite.

5,251,415
MESH ROOF FACING SYSTEM

Richard H. Van Auken, Prairie Village, Kans.; Lawrence D. Englehart, Largo, Fla., and Ralph C. Hall, Enon, Ohio, assignors to Butler Manufacturing Company, Grandview, Mo.

Filed Jan. 3, 1991, Ser. No. 637,334
Int. Cl.[5] E04B *7/00*
U.S. Cl. 52—407 **3 Claims**

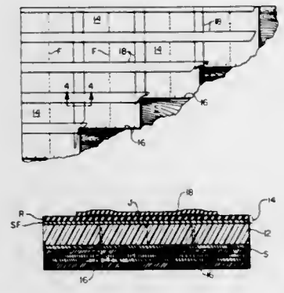


1. In a roof construction including
a plurality of transverse beams,
a plurality of spaced, parallel purlins each extending orthogonal to the beams, and
a plurality of roof panels laid across and supported by the purlins, the improvement comprising
at least one length of a nonmetallic mesh extending over and supported by said purlins, beneath said panels, said mesh having a width of at least thirty feet and no seam weaker than the material itself, and
an insulating layer supported from below by said mesh, between the mesh and the roof panels,
wherein said non-metallic mesh sags at least six inches between adjacent purlins, to avoid undue compression of the insulating material.

5,251,416
INSULATED PANELIZED ROOFING SYSTEM

Daniel R. White, 355 E. Las Colinis Blvd., Suite 217, Irving, Tex. 75039

Filed Oct. 17, 1991, Ser. No. 777,801
The portion of the term of this patent subsequent to Oct. 30, 2007, has been disclaimed.
Int. Cl.[5] E04B *5/00*
U.S. Cl. 52—410 **27 Claims**



1. A panelized roof system construction for application over a roof substrate comprising:
a plurality of panels positioned on said substrate in abutting relationship so as to form joints therebetween and substantially cover the top surface of said substrate, said panels comprising a foam insulation board having a mat of synthetic fiber reinforced rubber sheet bonded to the top surface thereof so as to render said foam insulation board substantially waterproof;
a plurality of fasteners positioned in spaced-apart relationship along at least two sides of each of said panels and adjacent to said joints, said fasteners penetrating the panels so as to secure said panels to said roof substrate; and
a plurality of reinforced rubber strips being applied with adhesive or adhesive tape so as to overlap both said joints between said panels and any of said fasteners positioned adjacent thereto.

5,251,417
DECORATIVE ART GLASS WINDOW GRID SYSTEM

H. Dale Yates, Jr., 6999 Oakland Rd., Loveland, Ohio 45140

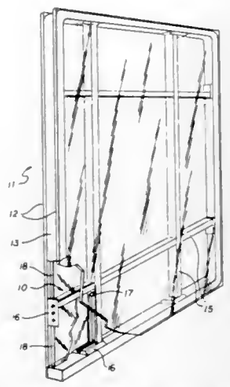
Filed Sep. 8, 1992, Ser. No. 941,709
Int. Cl.[5] E06B *3/64*
U.S. Cl. 52—456 **19 Claims**

9. A double window pane unit comprising two window panes with a frame extending around the peripheries of the two window panes and suited for mounting in a window frame and having a grid system for holding decorative art glass panes positioned between said two window panes, said grid system having:
(a) a set of at least two elongated members dimensioned to interconnect with one another to form a grid and having sufficient lengths for mounting within the confines of the window panes, each said elongated member having a first groove extending along one side of the member to receive an edge of each decorative art glass pane capable of being associated therewith, a second groove extending along an opposite side of the member to receive an edge of another decorative art glass pane capable of being associated

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therewith and an interior channel extending along the elongated member between said first groove and said second groove; and

(b) a set of holding feet slidably positioned in the interior channel of the elongated members, each foot having a substantially flat base which mounts in the double window



pane unit, said flat base having a face with a groove to snugly hold an edge of each decorative art glass pane capable of being associated therewith and a post extending substantially vertically from the face of the flat base to fit into the interior channel of the elongated member to hold said flat base in position.

5,251,418

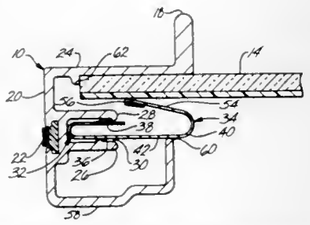
PANEL DOOR FRAME ASSEMBLY

Kenneth Jacobs, Bramley, England, and Torsti T. T. Jerila, West Covina, Calif., assignors to The Stanley Works, New Britain, Conn.

Filed Jul. 17, 1991, Ser. No. 731,411

Int. Cl.[5] E04B *9/00*

U.S. Cl. 52—475 **23 Claims**



1. A stile and spring panel retainer for a panel door comprising:

an elongated stile having a front wall, a back wall, and a panel receiving channel adjacent to the front wall of the stile;

a retainer channel behind the panel receiving channel and having a front wall and a back wall; and

an elongated spring retainer in the retainer channel, the spring retainer comprising:

a portion which bears against two spaced apart portions of the back wall of the retainer channel, and

a deflection arm having an end opposite a position between the spaced apart portions for bearing against one face of a panel inserted into the panel receiving channel.

5,251,419

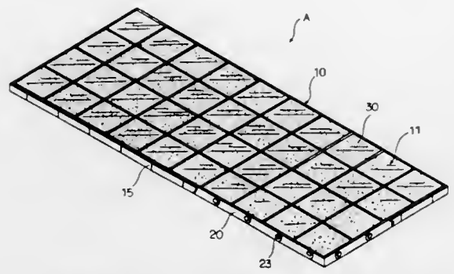
STONE-PAVED FLOOR CONSTRUCTION, AND METHOD OF PAVING FLOOR WITH STONE

Nobuhiko Ohtsuka, Gunma, Japan, assignor to Incorporated Company Ohtsuka, Gunma, Japan

Filed Sep. 24, 1992, Ser. No. 950,325

Int. Cl.[5] E04B *5/14*

U.S. Cl. 52—477 **6 Claims**



1. A stone-paved floor construction, comprising a plurality of connector bars having apertures on opposite ends thereof adapted to receive a screw for joining said connector bars, thereby providing substantially rotatable joints, said connector bars being linked to one another by said rotatable joints to form a flexible frame structure having a plurality of enclosures therein; and paving stones fitted in said enclosures circumvented by said joined connector bars to form a stone-paved floor surface.

5,251,420

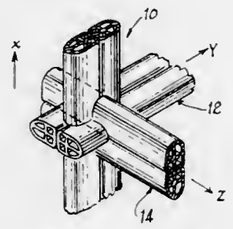
WEBBED STRUCTURAL TUBE

David W. Johnson, 2601 Hoover, Suite H, National City, Calif. 92050

Division of Ser. No. 636,489, Dec. 31, 1990, Pat. No. 5,197,253. This application Jul. 8, 1992, Ser. No. 909,390

Int. Cl.[5] E04C *5/04*

U.S. Cl. 52—664 **13 Claims**



1. Structural member for use in an interlocking joint of similar structural members in which at least one notch is defined in some of said similar structural members to interlock to define said joint substantially rigidly, said structural member comprising:

(a) an elongated hollow tubular shell;

(b) at least one notch defined in said structural member; and,

(c) at least one internal transverse reinforcing web substantially spanning the length of said tubular shell and at least in part defining a floor for said notch to support a member seated therein.

5,251,421

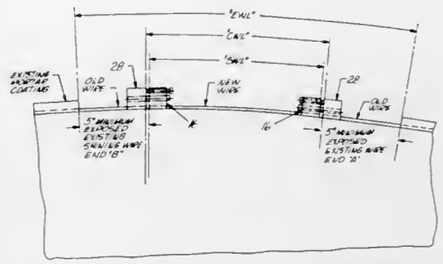
PRESTRESS WIRE SPLICING APPARATUS

Ralph S. Friedrich, Hermosa Beach; Ming C. Kuo, Cerritos, and Danny I. Wang, Fullerton, all of Calif., assignors to Ameron, Inc., Pasadena, Calif.

Filed Feb. 7, 1992, Ser. No. 832,788

Int. Cl.[5] E04C *3/10, 5/08;* **E04G** *23/02*

U.S. Cl. 52—749 **23 Claims**



1. A method for repairing a section of concrete prestressing wire by splicing in a new section of wire comprising the steps of:

removing a portion of prestressing wire and preparing each remaining exposed wire end such that it is clean and undamaged;

cutting a prestressing splice wire to approximately the same length as the removed portion;

installing a splice-wire anchor block onto each end of the splice wire;

installing an exposed-wire anchor block onto each exposed wire end;

attaching each splice-wire anchor block to an exposed-wire anchor block;

applying a clamping device to a set of attached anchor blocks and compressing the anchor blocks together until a desired wire tension is achieved;

fastening the attached anchor blocks together for retaining a desired prestress tension in the wires; and

releasing and removing the clamping device.

5,251,422

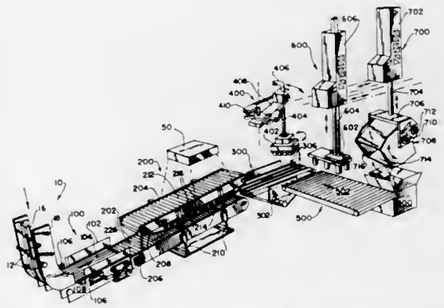
POTATO CHIP PACKAGE VERTICAL PACKAGING MACHINE

James A. Goodman, Glencoe, and Fred A. Herdrich, Lake Villa, both of Ill., assignors to Prototype Equipment Corporation, Lake Forest, Ill.

Filed Mar. 26, 1992, Ser. No. 857,837

Int. Cl.[5] B65B *5/08*

U.S. Cl. 53—251 **32 Claims**



1. In a machine for packaging bags, that have been filled with product, inflated and pneumatically sealed, in cartons such that the bags are vertically orientated in the carton comprising:

a machine conveyor system,

a index conveyor including drive means and having a first edge, said index conveyor being adapted to convey bags in a direction parallel to said first edge,

pick-up means for picking up a bag from the machine conveyor system and depositing the bag horizontally on the index conveyor with the longitudinal axis of the bag transverse to the direction of movement of the index conveyor and the top of the bag adjacent the first edge of the index conveyor,

a packaging head having a length substantially equal to a layer of bags to be packaged in the carton,

means for controlling the drive means for the index conveyor such that the index conveyor is moved one bag width after a bag has been deposited thereon until the final bag in a layer of bags has been deposited thereon, at which time said means for controlling the drive means for the index conveyor causes the index conveyor to move the layer of bags to a packaging head pick-up station.

5,251,423

METHOD OF AND APPARATUS FOR STERILE PACKAGING USING STACKED PACKAGING ELEMENTS, ESPECIALLY PLASTIC CUPS WITH VARYING WALL THICKNESS

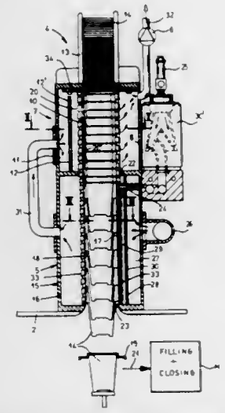
Alfons Turtschan, Schwabisch-Hall, Fed. Rep. of Germany, assignor to Gasti Verpackungsmachinen GmbH, Schwabisch-Hall, Fed. Rep. of Germany

Continuation of Ser. No. 702,601, May 17, 1991, abandoned. This application May 6, 1992, Ser. No. 882,368

Claims priority, application Fed. Rep. of Germany, May 30, 1990, 4017332

Int. Cl.[5] B65B *55/04*

U.S. Cl. 53—426 **16 Claims**



1. A method of sterile packaging using stacked packaging elements, comprising the steps of:

(a) presterilizing in a presterilizing area within a housing said packaging elements with at least partial separation thereof from a stack of said elements prior to entry thereof into a separate sterilizing chamber of a filling and sealing machine, said presterilizing area being formed with a presterilizing chamber , a fluid-distribution space and a partition with a plurality of throughgoing openings separating said space from an H_2O_2 vapor outlet, said presterilizing chamber functioning to receive said packaging elements and being positioned between said H_2O_2 vapor outlet and said partition, said presterilizing step including:

(a1) passing said packaging elements through said pre-

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sterilizing chamber between said partition and said H_2O_2 vapor outlet;

(a2) passing H_2O_2 vapor through said plurality of throughgoing openings to facilitate uniform distribution of said vapor onto said elements to thereby presterilize said elements; and

(a3) discharging said vapor via said vapor outlet and said presterilized packaging elements from said presterilizing chamber;

(b) introducing said presterilized packaging elements from step (a) into said separate sterilizing chamber of said filling and sealing machine through an opening connecting sad presterilizing and sterilizing chambers and contacting said elements in said sterilizing chamber with H_2O_2 vapor, thereby condensing H_2O_2 on said elements, and thereafter contacting said elements with hot sterile air to remove H_2O_2 from said elements to complete sterilization thereof;

(c) directing said H_2O_2-containing air and hot sterile air from said sterilizing to said presterilizing chamber via a duct external to both said chambers and then through said openings in said partition to contact a new charge of packaging elements; and

(d) effecting sterile packaging in said machine with said elements that exit said sterilizing chamber.

5,251,424

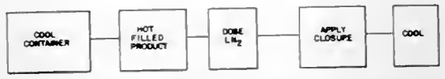
METHOD OF PACKAGING PRODUCTS IN PLASTIC CONTAINERS

Richard D. Zenger, Downers Grove; Stephen W. Cornell, Wheaton, and E. James Schneiders, Winnetka, all of Ill., assignors to American National Can Company, Chicago, Ill.

Continuation of Ser. No. 639,974, Jan. 11, 1991, abandoned. This application Apr. 2, 1992, Ser. No. 863,157

Int. Cl.[5] B65B *31/04, 7/28, 63/08*

U.S. Cl. 53—431 **10 Claims**



1. A method of hot-fill packaging a product comprising the steps of:

providing a blow-molded plastic container having an inherently high polymer orientation and subject to thermal deformation at an elevated hot-fill temperature;

introducing product into said plastic container at said elevated hot-fill temperature;

introducing a predetermined quantity of liquified gas into the container;

permitting said gas to begin to vaporize; and

rapidly sealing the container before any significant thermal distortion of the container occurs, and to retain an amount of said vaporized gas sufficient to provide a positive pressure within said container and, thereby, to prevent thermal or vacuum induced deformation of said container.

5,251,425

ENVELOPING DEVICE

Peter Kern, Oberdiessbach, Switzerland, assignor to Kern AG, Konolfingen, Switzerland

Filed Mar. 11, 1992, Ser. No. 851,009

Claims priority, application Switzerland, Mar. 12, 1991, 747/91

Int. Cl.[5] B65B *43/39*

U.S. Cl. 53—460 **20 Claims**

20. A process for feeding and stuffing envelopes comprising:

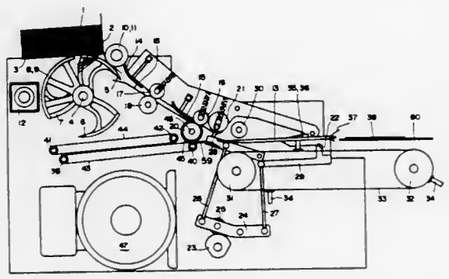
supporting an upwardly extending stack of envelopes having first and second panels defining an open end, with a flap connected to said second panel on the open end of said envelopes folded under the bottoms of respective envelopes;

rotating a flap opening element around an axis and opening the flap on the bottom envelope of said stack by said flap opening element from the folded position underneath the bottom of said bottom envelope to a position extending outwardly from said open end of said envelope and in substantially the plane of said second panel;

engaging said outwardly extending flap by first rotating conveyor elements comprising means rotatable around said axis, and rotating said rotatable means around said axis for stripping said bottom envelope from said stack of envelopes and feeding said stripped envelope toward a pivotally mounted packing trap having a front end for receiving said stripped envelope;

pivoting said packing trap to an envelope receiving position for receiving at the front end thereof the open end of said envelope;

urging said stripped envelope against said front end of said



packing trap in the receiving position thereof to guide said open end of said envelope onto said front end of said packing trap;

feeding said stripped envelope onto said packing trap while maintaining said second panel in the same orientation relative to said first panel and said stack and simultaneously opening at least the open end of said envelope by said packing trap in the receiving position;

pivoting said packing trap to a discharging position wherein said front of said packing trap is displaced from said receiving position;

supporting contents to be inserted in said envelope proximate the other end of said packing trap opposite said front end thereof;

inserting said contents through said open end of said envelope when said packing trap is in said discharging position;

pushing said envelope with said contents therein off of said packing trap from the front end thereof; and

conveying said discharged envelope and contents therein away from said packing trap.

5,251,426

METHOD AND APPARATUS FOR CONVEYING STACKS OF NESTED PREFORMED LIDS

Rick Heisler, 21 Colgate Rd., Oakland, N.J. 07436; Ronald Heisler, 45 Snake Den Rd., Wanaque, N.J. 07465, and John Taylor, 218 Zabriskie Pl., New Milford, N.J. 07645

Filed Dec. 15, 1992, Ser. No. 990,399

Int. Cl.[5] B65B *7/28, 43/44*

U.S. Cl. 53—485 **13 Claims**

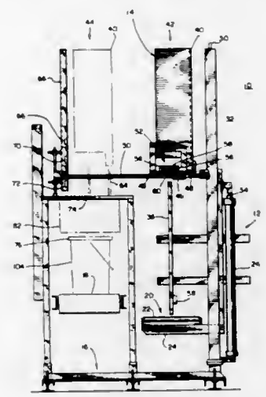
1. An apparatus for the on demand conveying of a stack of preformed and nested lids to a magazine of a lid placer, said apparatus comprising:

(a) a platform assembly which is adapted for receiving a stack of nested lids thereon, said platform assembly being further adapted for being selectively moved between a lowermost position and an uppermost position;

(b) a guide assembly which is sized for accepting said stack

of nested lids interior thereof, said guide assembly including a gating means mounted at a lower portion thereof, said gating means being selectively moveable between an open condition and a closed condition said closed condition providing for said stack of nested lids to be supported thereon while allowing said platform assembly to pass therethrough, said guide assembly further adapted for being horizontally shuttled between a first position and a second position, said first position being in a selective spaced and vertical relationship with the lowermost position of the platform assembly, said second position being in substantial vertical alignment with the magazine of said lid placer; and

(c) wherein said platform assembly with said stack-of nested



lids thereon is selectively elevated to said uppermost position so that said stack of nested lids is disposed interior of said guide assembly and completely above said gating means when said gating means is in the open condition, said gating means being selectively brought to the closed condition first, immediately followed by lowering said platform to said lowermost position so that said stack of said nested lids is supported at said first position by said gating means in said closed position, said guide assembly and gating means with said nested stack therein and thereon being selectively shuttled from said first position to said second position, said gating means being selectively brought to the open condition for depositing said nested stack of lids on an uppermost lid being held in said magazine.

5,251,427

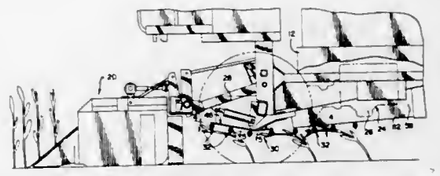
CROP HARVESTER PLANT DEFLECTOR ASSEMBLY

Timothy G. Ulschmid, Oak Creek, Wis., and Earl R. Snyder, Bolingbrook, Ill., assignors to Case Corporation, Racine, Wis.

Filed Apr. 8, 1992, Ser. No. 865,558

Int. Cl.[5] A01D *46/08*

U.S. Cl. 56—1 **11 Claims**



8. A plant deflector assembly adapted for mounting to an open frame of a row crop harvester which is movable over a field of plants, said plant deflector assembly comprising:

a mounting apparatus adapted for securement to the open frame of the row crop harvester, said mounting apparatus including at least two fore-and-aft extending and generally parallel arms adapted to extend generally parallel to the harvester frame when said mounting apparatus is secured thereto, with each arm having a series of mounting holes defined therein;

a series of elongated plant deflector members adapted for releasable securement to said mounting apparatus; and

fasteners for releasably securing each plant deflector member to the parallel arms of said mounting apparatus such that the members extend transversely across said frame when the deflector assembly is secured thereto for vertically deflecting and inhibiting plants passing under said frame from becoming entangled with operating components of the harvester.

5,251,428

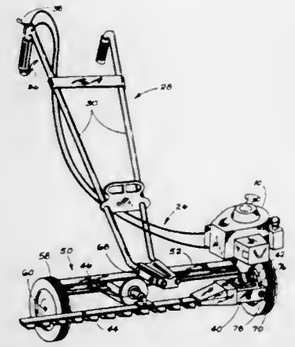
SICKLE-BAR MOWER

Benjamin A. Gay, Tryon, N.C., assignor to Servo-Mechanical Systems, Inc., Tyron, N.C.

Filed Nov. 18, 1991, Ser. No. 793,553

Int. Cl.[5] A01G *3/04*

U.S. Cl. 56—16.7 **16 Claims**



12. A multi-purpose yard maintenance apparatus consisting of the sickle-bar mower and a sickle-bar hedge trimmer said apparatus including;

a sickle-bar hedge trimmer assembly having a housing, a engine mounting means mounting a gasoline engine, a pair of handles and a sickle-bar cutting assembly;

a sickle-bar frame assembly having handle assembly mounting means, sickle-bar hedge trimmer mounting means and a pair of wheels;

a handle assembly including a pair of handles secured to said handle assembly mounting means, whereby;

said hedge trimmer assembly including said gasoline engine may be utilized as a hedge trimmer; and

said hedge trimmer assembly including said gasoline engine may be used in combination with said sickle-bar frame assembly and said handle assembly as a sickle-bar mower.

5,251,429

LAWN MOWER

Kazuhiro Minato, Dublin, and Kazunobu Sato, Columbus, both of Ohio, assignors to Honda Giken Kogyo Kabusbiki Kaisha, Tokyo, Japan

Filed Jan. 13, 1992, Ser. No. 819,240

Int. Cl.[5] A01D *34/68*

U.S. Cl. 56—17.2 **25 Claims**

18. A lawn mower comprising:

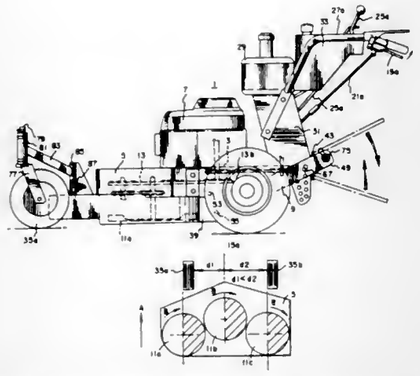
(a) a frame means;

(b) an engine mounted on said frame means;

(c) cutting deck means mounted on said frame means, said

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cutting deck means including at least two rotating cutting blades, such that when rotating, a first portion of each blade cuts in the forward direction during a portion of a single revolution and a second portion of each blade cuts in the rearward direction during the same portion of a single revolution;



(d) rear wheel means mounted on said frame means;

(e) a pair of front wheels mounted on said cutting deck, wherein each of said front wheels is aligned with a corresponding one of said second portions of said blades during the portion of a single revolution.

5,251,430

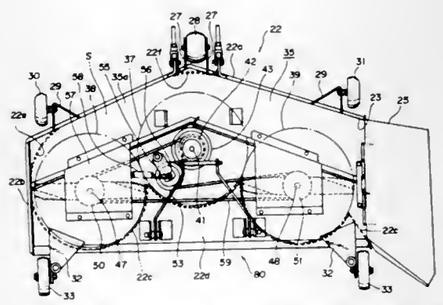
CUTTER AND HOUSING ASSEMBLY FOR LAWN MOWER

Naoki Matsumoto, Saitama, and Naoki Kinoshita, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 10, 1990, Ser. No. 565,795

Int. Cl.[5] A01D *34/66*

U.S. Cl. 56—17.5 **29 Claims**



11. A cutter and housing assembly for a lawn mower, comprising:

means for cutting including a single center blade and two side blades disposed one on each side of said center blade; and

a cutter housing accommodating said cutting means therein and having at least an upper panel and a side grass clipping discharge outlet;

said upper panel having an elevated panel portion which defines within said cutter housing a grass clipping discharge passage positioned forwardly, with respect to the lawn mower, of paths of rotational motion of said blades and contiguous to said grass clipping discharge outlet;

said cutter housing having a rear panel, a side panel joined to said rear panel, and a front panel joined to said side panel, and wherein one of said side blades which is positioned remotely from said grass clippings discharge outlet has a path of rotational motion which is spaced from said rear panel, said side panel, and said front panel by respective distances which are progressively larger along the direction in which said one side blade rotates, whereby an upstream portion of said grass clipping discharge passage around said one side blade is of a scroll shape.

5,251,431

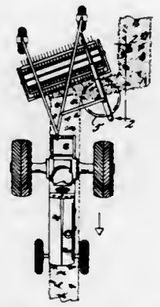
BAR RAKE ATTACHED TURNTABLE DEVICE

Craig A. Shoop, 299 Shoop Rd., Halifax, Pa. 17032

Filed Jun. 25, 1992, Ser. No. 904,040

Int. Cl.[5] A01D *43/02, 78/14*

U.S. Cl. 56—366 **6 Claims**



1. A windrow turning device for pulling by a vehicle over windrows to thus invert such windrows comprising: raking means for contacting said windrow and pushing said hay forward and upward, said raking means mounted on wheels and attached to said vehicle for pulling in a forward direction, framework in connection with said raking means, turntable in connection with said framework and mounted to one side of a centerline bisecting said raking means, said turntable fixed for rotational movement along a plane tilted toward said raking means, ground wheel in connection with said framework and in frictional connection with one side of said turntable so as to impart rotational movement to said turntable.

5,251,432

METHOD FOR OPERATING A GAS AND STEAM TURBINE PLANT

Hermann Brückner, Uttenreuth, and Werner Emsperger, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 17, 1992, Ser. No. 916,033

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1991, 4123730

Int. Cl.[5] F02C *6/00*

U.S. Cl. 60—39.02 **10 Claims**

1. A method for operating a gas and steam turbine plant having a gas turbine and a steam turbine with a water-steam loop, whereby the gas turbine is selectively fueled with coal gas or natural gas, which comprises:

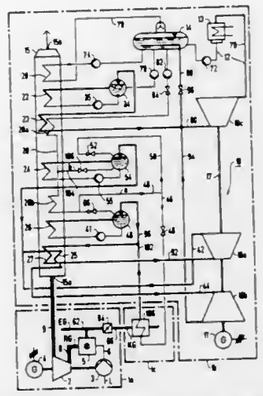
generating steam for the steam turbine with working fluid expanded in the gas turbine;

drawing a partial quantity of preheated water at high pressure from the water-steam loop of the steam turbine;

when coal gas is used as fuel for the gas turbine, cooling the coal gas with the partial quantity for forming steam for the steam turbine;

when natural gas is used as fuel for the gas turbine, expanding the drawn partial quantity and forming medium pressure steam, and superheating the medium pressure steam at medium pressure for forming superheated steam;

recycling the superheated steam to the water-steam loop of the steam turbine; and



evaporating water remaining in the expanding step at medium pressure for forming additional steam at medium pressure.

5,251,433

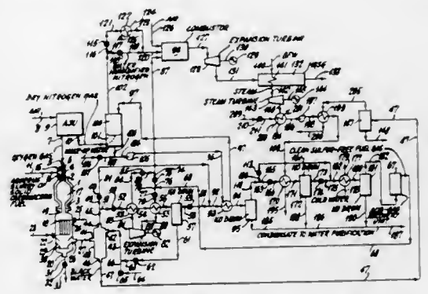
POWER GENERATION PROCESS

Paul S. Wallace, Katy, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 24, 1992, Ser. No. 996,271

Int. Cl.[5] F02B *43/12;* **F02C** *3/28, 3/30*

U.S. Cl. 60—39.05 **16 Claims**



1. A process for producing power comprising:

(1) cooling a stream of scrubbed raw fuel gas comprising H_2, CO, H_2O and at least one acid gas selected from the group consisting of CO_2, H_2S, COS, and mixtures thereof, below the dew point in a plurality of separate indirect heat exchange means with a plurality of separate streams of coolant; separating condensed water from said raw fuel gas in a plurality of knock-out drums to produce dewatered raw fuel gas; wherein at least one stream of said coolant is water and said water is circulated in a closed loop between a nitrogen gas humidifying means where the temperature of said coolant water is reduced and at least one of said indirect heat exchange means where the temperature of said coolant water is increased to provide warm coolant water and the temperature of the stream of raw fuel gas is reduced;

(2) directly contacting dry nitrogen gas at a temperature in the range of about 100° to 600° F. and a pressure in the range of about 200 to 500 psig with said warm coolant water from (1) in said nitrogen gas humidifying means thereby heating said nitrogen gas and humidifying it with water while simultaneously cooling the coolant water; and recycling the cooled coolant water to said indirect heat exchange means in (1) to cool said raw fuel gas stream;

(3) scrubbing the dewatered raw fuel gas from (1) with an acid gas solvent in an acid gas removal zone thereby removing any sulfur-containing gases and optionally CO_2 from said fuel gas to produce dewatered sulfur-free fuel gas;

(4) separately introducing the dewatered sulfur-free fuel gas stream from (3) and said stream of water humidified nitrogen gas from (2) into a combustion zone and burning the mixture with air to produce flue gas; and

(5) passing the flue gas from (4) through an expansion turbine to produce power.

5,251,434

PRESSURIZED FLUIDIZED-BED BOILER POWER PLANT

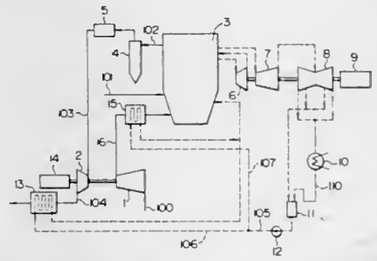
Shigehisa Sugita; Yoshiki Noguchi; Kazuo Ikeuchi, all of Hitachi; Taro Sakata, Hiroshima, and Shigeyoshi Kawano, Kure, all of Japan, assignors to Hitachi, Ltd. and Babcock-Hitachi Kabushiki Kaisha, both of Tokyo, Japan

Filed Nov. 29, 1991, Ser. No. 799,963

Claims priority, application Japan, Nov. 30, 1990, 2-328932

Int. Cl.[5] F02C *3/26, 6/18*

U.S. Cl. 60—39.182 **8 Claims**



1. In a pressurized fluidized-bed boiler power plant comprising:

a pressurized fluidized-bed boiler containing a boiler and body in a pressure vessel;

a gas turbine system including a gas turbine, an air compressor and a gas turbine electric generator which are joined together by one shaft;

an air supplying pipe for supplying to said pressure vessel pressurized air produced in said air compressor;

a combustion gas supplying pipe for conducting to said gas turbine combustion gases produced in said boiler body; and

a steam turbine generator driven by steam produced in said boiler body; said pressurized air supplied to said pressure vessel serving to pressurize the interior of said pressure vessel and pressurized air being introduced into said boiler body for combustion; wherein the improvement comprises an air cooler provided midway said air supplying pipe.

5,251,435

REVERSER INNER COWL WITH INTEGRAL BIFURCATION WALLS AND CORE COWL

Gerald A. Pauley, Hamilton, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Oct. 30, 1991, Ser. No. 784,855

Int. Cl.[5] F02K *3/02*

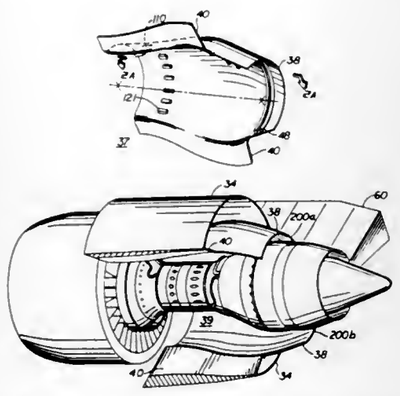
U.S. Cl. 60—226.1 **16 Claims**

1. A cowling for use in an aircraft turbofan engine having a

VOL 1155 ISS 2 OCT 12 1993 UMI

fan section, a fan frame, and a turbine frame and a bifurcated fan duct including a fan nozzle, said cowling comprising:

a generally semi-circular annular core cowl generally extending axially between the fan frame and the turbine frame of the engine and radially extending fan duct bifurcation sidewalls at circumferentially opposite ends of said core



cowl wherein said sidewalls extend axially aftwardly of said fan frame over a first portion of said core cowl said first portion ending at the end of the fan nozzle which lies between the fan frame and turbine frame and a second portion of said core cowl extends axially aftwardly of said sidewalls.

5,251,436

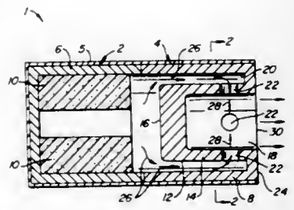
THRUST-REDUCING, CHAOTIC-FLOW NOZZLE

Robert Brogan, Rancho Cordova, Calif., assignor to Aerojet General Corporation, Rancho Cordova, Calif.

Filed Jul. 1, 1992, Ser. No. 907,466

Int. Cl.[5] F02K *9/00*

U.S. Cl. 60—254 **12 Claims**



1. A thrust reducing rocket nozzle comprising:

an outer generally cylindrical wall having an upstream portion and a downstream portion; and

a cup-shaped member disposed within said outer wall, said cup-shaped member having a closed end formed by an imperforate wall, an open end directly exposed to the atmosphere, and a generally cylindrical portion extending therebetween, said closed and open ends being in the vicinity of said upstream and downstream portions respectively, said cylindrical portion being radially spaced from said outer wall forming a generally annular channel therebetween, said cylindrical portion further including multiple openings formed therethrough and providing fluid flow communication between said annular chamber and the interior of said cup-shaped member such that when high-pressure rocket gases are introduced into the vicinity of the closed end of said cup-shaped member, the gases enter said channel where they flow downstream through said openings and into said cup-shaped member to exit from said open end.

5,251,437

METHOD AND SYSTEM FOR CONTROLLING AIR/FUEL RATIO FOR INTERNAL COMBUSTION ENGINE

Junichi Furuya, Isesaki, Japan, assignor to Japan Electronic Control Systems Co., Ltd., Isesaki, Japan

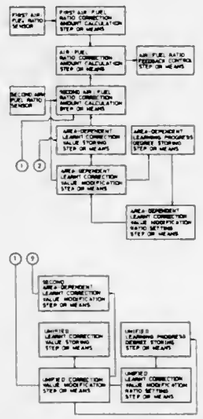
PCT No. PCT/JP91/01184, § 371 Date May 1, 1992, § 102(e) Date May 1, 1992, PCT Pub. No. WO92/04538, PCT Pub. Date Mar. 19, 1992

PCT Filed Sep. 4, 1991, Ser. No. 849,085

Claims priority, application Japan, Sep. 4, 1990, 2-232494

Int. Cl.[5] F01N *3/20*

U.S. Cl. 60—274 **8 Claims**



1. A method of controlling an air/fuel ratio in an internal combustion engine, comprising the steps of:

providing a first air/fuel ratio sensor for sensing a concentration of a specific gas component in an exhaust gas and outputting a first output value, the specific gas component being varied in accordance with the air/fuel ratio to vary the first output value thereof, said first air/fuel ratio sensor being provided in an exhaust passage of the internal combustion engine, upstream of an emission control catalyst device, and a second air/fuel ratio sensor for sensing a concentration of the specific gas component in the exhaust gas and outputting a second output value, the specific gas component being varied in accordance with the air/fuel ratio to vary the second output value, said second air/fuel ratio sensor being provided in the exhaust passage downstream of said emission control catalyst device;

a first air/fuel ratio correction amount calculation step for calculating a first air/fuel ratio correction amount depending upon the first output value of said first air/fuel ratio sensor;

a second air/fuel ratio correction amount calculation step for calculating a second air/fuel ratio correction amount depending upon the second output value of said second air/fuel ratio sensor;

an air/fuel ratio correction amount calculation step for calculating a final air/fuel ratio correction amount on the basis of said first air/fuel ratio correction amount and said second air/fuel ratio correction amount;

an air/fuel ratio feedback control step for a feedback control of the air/fuel ratio toward a target air/fuel ratio on the basis of said final air/fuel ratio correction amount;

an area-dependent learnt correction value storing step for re-writably storing area-dependent learnt correction values for correcting said second air/fuel ratio correction amount with respect to a plurality of divided driving ranges; and

an area-dependent learnt correction value modification step for re-writing said area-dependent learnt correction values of corresponding driving ranges stored in said area-dependent learnt correction value storing step with values modified on the basis of the output of said second air/fuel ratio sensor;

wherein the method further comprises the steps of:

an area-dependent learning progress degree storing step for measuring and storing a degree of progress of a learning of the area-dependent learnt correction value with respect to each of said driving ranges of said area-dependent learnt correction value storing step; and

an area-dependent learnt correction value modification ratio setting step for setting a modification ratio for each learning of said area-dependent learnt correction values in said area-dependent learnt correction value modifying step, depending upon a degree of progress of a learning, and storing same with respect to each driving range in said area-dependent learning progress degree storing step.

5,251,438

AIR-FUEL RATIO CONTROL APPARATUS FOR ENGINE

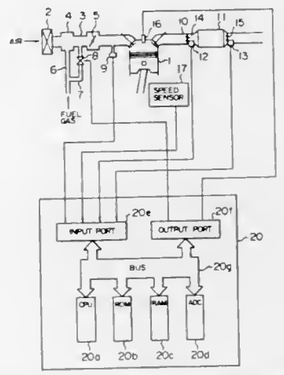
Kazumi Ishida, Aichi; Hiroshi Haraguchi, and Toshio Kondo, both of Kariya, all of Japan, assignors to Nippondenso Co. Ltd., Kariya, Japan

Division of Ser. No. 690,825, Apr. 26, 1991, Pat. No. 5,154,053. This application Jul. 21, 1992, Ser. No. 916,268

Claims priority, application Japan, Apr. 26, 1990, 2-110873

Int. Cl.[5] F01N *3/20*

U.S. Cl. 60—274 **6 Claims**



1. An air-fuel ratio control apparatus for a gas engine, comprising:

a mixer for mixing intake air and a fuel gas for supply to a gas engine;

subsidiary supply means for supplying at least one of the intake air and the fuel gas downstream of said mixer, with said mixer being bypassed;

oxygen concentration sensors disposed in an exhaust system of said gas engine for detecting a concentration of oxygen in an exhaust gas exhausted from said gas engine;

means for detecting operating conditions of said gas engine;

means for setting a basic amount of gas supplied through said subsidiary supply means in accordance with the operating conditions of said gas engine;

means for setting a correction amount proportional to a total fuel gas supply rate including an amount of fuel gas supplied directly to said mixer and an amount of fuel as supplied through said subsidiary supply means, in accordance with output signals of said operating condition detecting means and output signals of said oxygen concentration sensors; and

means for setting a control amount of gas supplied through said subsidiary supply means by adding the correction amount to the basic amount.

5,251,439

EXHAUST DEVICE FOR SMALL SIZED BOAT ENGINE

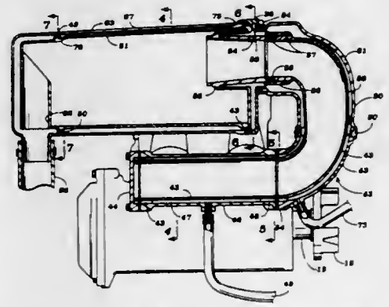
Ryoichi Nakase, and Shigeharu Mineo, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Division of Ser. No. 638,824, Jan. 8, 1991, abandoned, which is a division of Ser. No. 411,033, Sep. 22, 1989, Pat. No. 4,989,409. This application Jun. 9, 1992, Ser. No. 898,379

Claims priority, application Japan, Sep. 22, 1988, 63-238260

Int. Cl.[5] F01N *3/02, 7/10*

U.S. Cl. 60—310 **12 Claims**



1. A cooling system for the powering, water cooled, internal combustion engine of a watercraft having a hull, said engine having a cylinder block with a cooling jacket, an exhaust manifold for receiving exhaust gases from said engine with an exhaust manifold cooling jacket completely encircling said exhaust manifold and having an upper portion and a lower portion in open communication with said upper portion, an exhaust system for receiving exhaust gases from said exhaust manifold and discharging said exhaust gases to the atmosphere, means for drawing cooling water from the body of water in which said watercraft is operating and delivering such water only to said exhaust manifold cooling jacket through the lower portion before circulation through said cylinder block cooling jacket, means for delivery of at least a portion of such water from said exhaust manifold cooling jacket directly to said cylinder block cooling jacket, and means for returning said cooling water from said cylinder block cooling jacket to the body of water through said exhaust system.

5,251,440

CONTROL APPARATUS AND METHOD FOR AUTOMATICALLY CONTROLLING A HYDRAULIC SYSTEM FOR HEAVY CONSTRUCTION EQUIPMENT

Hoang Bong-dong, Changweon; Jo Jang-ug, Chungmu; Jeong Sang-tae, Seoul; Lee Chan-hee, Hoaseong; Song Myeong-hun, Yoogho 3-dong, and Lee Jin-han, Yeongi, all of Rep. of Korea, assignors to Samsung Heavy Industries Co., Ltd., Changwon, Rep. of Korea

Filed Nov. 12, 1991, Ser. No. 790,769

Claims priority, applicatioo Rep. of Korea, Nov. 13, 1990, 90-18305; Nov. 30, 1990, 90-19522; Dec. 29, 1990, 90-22382

Int. Cl.[5] F16D *31/00*

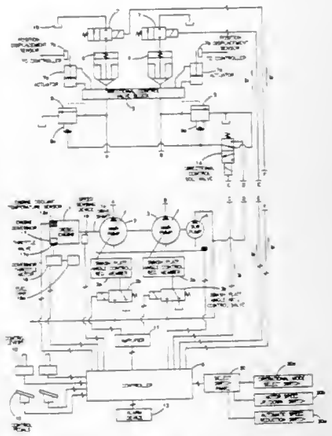
U.S. Cl. 60—329 **9 Claims**

1. A control apparatus for automatically controlling the operation of a hydraulic system, said hydraulic system comprising:

an engine for generating output power, the engine having a running speed and including coolant;

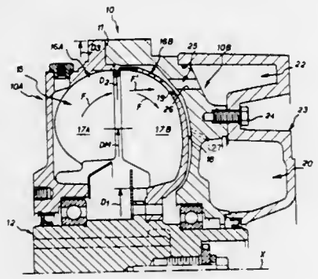
VOL 1155 ISS 2 OCT 12 1993 UMI

a plurality of actuators;
an electronic controller for controlling said hydraulic system;
hydraulic fluid;
said hydraulic pumps operably connected to the engine and said actuators which are driven by the output power of said engine and which deliver pressurized hydraulic fluid to said actuators, said main hydraulic pumps including swash plates that are moveable to various inclination angles to control the quantity of the pressurized hydraulic fluid being delivered;
a sub-hydraulic pump also operably connected to the engine which is driven by the output power of said engine and which is adapted to deliver pilot pressurized fluid;
swash plate inclination angle control valves connected to both the controller and the main pumps and which are operably connected to and driven by the pilot pressurized fluid of said sub-hydraulic pump to control the inclination angles of the swash plates of said main hydraulic pumps, and as a result, control the quantity of pressurized fluid delivered by said main pumps;
positional sensors which are provided at said actuators in order to sense positional displacement values of said actuators, said positional sensors being connected to said controller and outputting output signals corresponding to the positional displacement values to said controller;



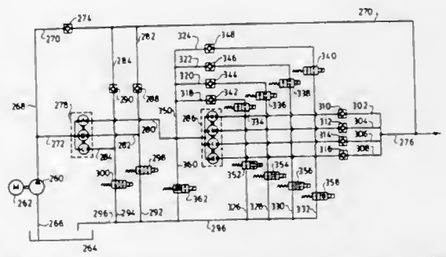
a directional control valve block connected to both said main hydraulic pumps and said electronic controller, said valve block being adapted to control the operational direction of said actuators as well as the quantity of said pressurized fluid to be supplied to said actuators;
control levers and pedals adapted to generate output signals corresponding to manipulation values, said control levers and said pedals being operably connected to said controller for controlling said actuators;
an amplifier connected to said controller for amplifying an electric signal outputted from the controller, said amplifier being operably connected to said controller and to said swash plate inclination angle control valves;
at least one hydraulic conduit extending between the directional control valve block and the main hydraulic pumps;
relief valves operably connected to said hydraulic conduit for preventing said hydraulic conduit from being overpressurized;
directional control solenoid valves connected to the directional control valve block;
a solenoid valve connected to said controller in order to selectively control preset pressures of the directional control solenoid valves and the relief valves;
the control apparatus comprising:
means for sensing temperatures of the engine coolant and the hydraulic fluid, said sensing means being disposed at the engine and the hydraulic pumps;
means for giving an alarm to the operator in response to a control signal from said controller when the temperature of one of the engine coolant and the hydraulic fluid are higher than respective predetermined reference overheat temperatures, said alarm means being operably electrically connected to said controller; and
means for controlling the running speed of said engine, said controlling means reducing the running speed of said engine when the temperatures of one of the coolant and the hydraulic fluid are higher than the respective predetermined reference overheat temperatures, but increasing the running speed of the engine when the respective temperature of the coolant and the hydraulic fluid are lower than the respective predetermined safety operational temperatures, said controlling means being electrically connected to said controller.

5,251,441
FLUID COUPLING
Christian Eon, Nevers, and Patrice Levassort, Marzy Nevers, both of France, assignors to Sime Industrie, La Guerche sur l'Aubois, France
Filed Feb. 18, 1992, Ser. No. 836,542
Claims priority, application France, Mar. 13, 1991, 91 03031
Int. Cl.[5] F16D *33/00*
U.S. Cl. 60—352 **11 Claims**



1. Fixed fluid capacity fluid coupling comprising a casing, two members being disposed in face-to-face relationship in said casing, said members defining between each other a working circuit containing a fluid, the members extending radially in relation to an axis of the coupling, one of the members comprising an impeller wheel defining a pump and the other of the members being an output wheel defining a turbine, two bypass chambers connected to said working circuit for reducing the quantity of fluid therein upon starting up the coupling, said bypass chambers being disposed annularly around the axis of the coupling, said bypass chambers comprising a first, main chamber and a second, auxiliary chamber, offtake channels for the flow of fluid between the working circuit and each of said main and auxiliary bypass chambers and said offtake channel for said auxiliary bypass chamber including at least one hole in said output wheel radially inwardly of the outer periphery thereof, the volumetric capacity of the auxiliary bypass chamber lying substantially entirely radially inwardly of the outer periphery of the working circuit.

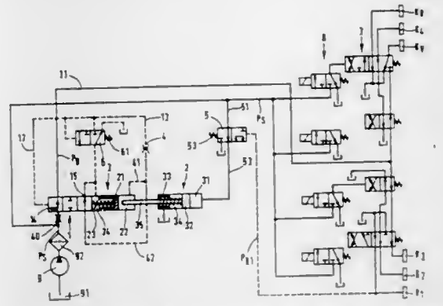
5,251,442
FLUID POWER REGENERATOR
Richard M. Roche, Gresham, Oreg., assignor to Roche Engineering Corporation, Portland, Oreg.
Filed Oct. 24, 1991, Ser. No. 782,162
Int. Cl.[5] F16D *31/00*
U.S. Cl. 60—368 **12 Claims**



4. A fluid power regenerator for saving energy in a fluid pumping system having a fixed displacement pump that draws fluid from a reservoir for providing a flow of fluid under pressure to a load comprising:
first and second displacers that are mechanically interconnected with each other independently of the fixed displacement pump for dividing the flow of fluid into predetermined proportions;
a first pressure line operating at a first fluid pressure for connecting an output port of the fixed displacement pump to respective input ports of said first and second displacers;
a second pressure line operating at a second fluid pressure for connecting respective output ports of said first and second displacers to the load;
a return line for connecting said output port of the first displacer to the reservoir;
a valve for alternatively connecting said output port of the first displacer to one of said second pressure line and said return line;
a sensor for monitoring the second fluid pressure in said second pressure line;
a control system for comparing the second fluid pressure to a desired pressure and for determining changes in a rate of fluid flow to the load required to maintain the second fluid pressure at the desired pressure; and
said control system including a logic network controlling operation of said valve for connecting said output port of the first displacer to said return line in response to the second fluid pressure being greater than the desired pressure to reduce both the rate of fluid flow to the load and the first fluid pressure in said first pressure line.

5,251,443
PRESSURE-CONTROL DEVICE
Friedrich Ebrlioger, Friedrichshafen; Wilhelm Härdtle, Markdorf, and Peter Hartig, Ravensburg, all of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Fed. Rep. of Germany
Filed Jan. 30, 1992, Ser. No. 828,990
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1989, 3928309
Int. Cl.[5] F16D *31/02;* **F15B** *11/00*
U.S. Cl. 60—426 **13 Claims**

1. A pressure-control device, for controlling engagement of a plurality of powershift clutches (K1-KX) of a powershift transmission, comprising:
a regulating valve (1) being connected to a supply of pressurized fluid via a system pressure line (P_S), the regulating valve (1) containing a control piston (14) for controlling flow of pressurized fluid therethrough to a regulated pressure line (P_R), the regulated pressure line being connected to the plurality of powershift clutches (K1-KX) to supply pressurized fluid thereto;
a damping device (2), containing a damper piston (21), interacting with the regulating valve (1) and functioning as a pressure-control valve, when a desired one of the plurality of powershift clutches (K1-KX) is engaged, through which a pressure cycle for a more or less smooth gearshift is established; and
at least one choke (4, 40) being situated in at least one of the regulated and the system pressure lines (P_R, P_S), and the system pressure line being connected to a valve mechanism for controlling the flow of pressurized fluid from the



regulated pressure line (P_S) to the plurality of powershift (K1-KX) clutches;
wherein a pressurized piston device (3) is directly connected to the system pressure line (P_S) and interacts with the damper piston (21) of the damping device (2), and travel of the damper piston (21) in a direction toward the regulating valve (1) and thus also the time for a slipping phase in the desired one of the plurality of powershift clutches (K1-KX) to be engaged is shortened and, in combination with a high initial pressure (P_{A2}) after filling the desired one of the plurality of powershift clutches (K_2-K_4) to be engaged, results in a reduction in friction.

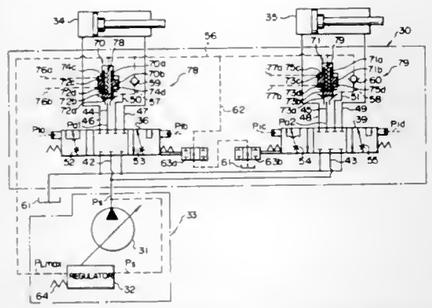
5,251,444
HYDRAULIC DRIVE SYSTEM AND VALVE APPARATUS
Masami Ochiai, Atsugi, and Takashi Kanai, Kashiwa, both of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan
PCT No. PCT/JP91/00903, § 371 Date Oct. 16, 1991, § 102(e) Date Oct. 16, 1991, PCT Pub. No. WO92/01163, PCT Pub. Date Jan. 23, 1992
PCT Filed Jul. 4, 1991, Ser. No. 768,189
Claims priority, application Japan, Jul. 5, 1990, 2-176273
Int. Cl.[5] F16D *31/02*
U.S. Cl. 60—452 **10 Claims**

1. A hydraulic drive system comprising a hydraulic fluid supply source, a plurality of hydraulic actuators driven by a hydraulic fluid supplied from said hydraulic fluid supply source, a valve apparatus having a plurality of directional control valves to control flows of the hydraulic fluid supplied from said hydraulic fluid supply source to said plurality of actuators, and means for taking out a maximum load pressure among load pressures of said plurality of actuators, said plurality of directional control valves respectively comprising supply passages communicating with said hydraulic fluid supply source, load passages communicating with associated ones of said actuators, first passages capable of communicating with said supply passages, second passages capable of communicating with said first passages and said load passages, flow control valves for controlling flow rates of the hydraulic fluid passing between said supply passages and said first passages dependent upon openings of variable restricting means disposed therebetween, and also for selectively communicating between said

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second passages and said load passages, and pressure control valves disposed between said first passages and said second passages for controlling pressures in said first passages, said pressure control valves respectively comprising valve bodies having first pressure receiving sectors operative in a valve opening direction and second pressure receiving sectors operative in a valve closing direction, first control chambers to which the pressures in said first passages are introduced for causing the introduced pressures to act on said first pressure receiving sectors, and second control chambers to which said maximum load pressure is introduced as a first control pressure for causing said first control pressure to act on said second pressure receiving sectors, wherein:

said hydraulic drive system further comprises first pressure generating means for generating second control pressures different from said first control pressure, and



second pressure generating means for generating third control pressures different from said first and second control pressures, and

said pressure control valves further respectively having third pressure receiving sectors operative in the valve closing direction and fourth pressure receiving sectors operative in the valve opening direction, said third and fourth pressure receiving sectors being provided on said valve bodies, and also having third control chambers to which said second control pressures are introduced for causing said second control pressures to act on said third pressure receiving sectors, and fourth control chambers to which said third control pressures are introduced for causing said third control pressures to act on said fourth pressure receiving sectors.

5,251,445

HAND OPERATED HYDRAULIC PUMP HAVING PRESSURIZED RESERVOIR WITHIN PISTON

Robert E. Farell, Scarsdale, and Ronald Johnson, Putnam Valley, both of N.Y., assignors to Hydra-Ram Inc., North Salem, N.Y.

Filed Oct. 3, 1991, Ser. No. 770,413

Int. Cl.[5] F16D *31/02*

U.S. Cl. 60—474 **10 Claims**

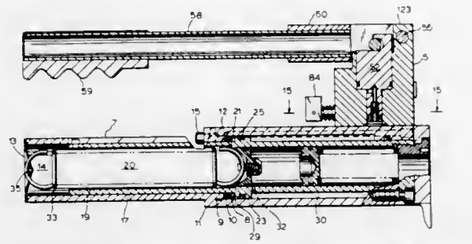
1. A hand operated hydraulic press comprising a body having a cylindrical first bore with a first end and a second end,

hollow forcing rod means slidably mounted in said first bore for axial movement toward said second end to an extended position and toward said first end to a retracted position, said forcing rod means comprising chamber partition means in slidable sealing engagement with said body for dividing said first bore into a pressure chamber and a reservoir chamber,

a charge of hydraulic fluid in at least one of said pressure and reservoir chambers,

pressure means mounted in said body for continuously maintaining the fluid in said reservoir chamber under pressure,

said pressure means comprising reservoir piston means slidably mounted within said hollow forcing rod means and a spring means within said hollow forcing rod means disposed between said body second end and said reservoir piston means for urging said reservoir piston means toward said body first end, and



pump means mounted on said body for pumping said fluid from said reservoir chamber into said pressure chamber for urging said forcing rod means toward said extended position.

5,251,446

MASTER CYLINDER WITH ANNULAR SPACER

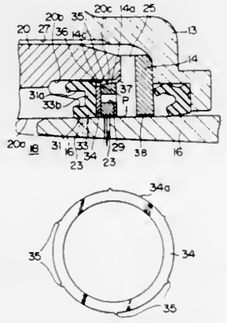
Kohei Mori, and Riichirou Sugimoto, both of Higashimatsuyama, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Dec. 4, 1991, Ser. No. 802,273

Claims priority, application Japan, Dec. 28, 1990, 2-406095[U]

Int. Cl.[5] B60T *11/26;* **F15B** *7/08*

U.S. Cl. 60—533 **3 Claims**



1. A master cylinder comprising:

a piston guide disposed in a cylinder housing;

a cylindrical piston inserted through said piston guide; and

an annular seal attached to said piston guide for effecting a seal between said piston guide and said piston, wherein an oil reservoir is connected to a pressure chamber by through holes formed from the external surface to the internal surface in said piston guide and said piston, and the communication between said oil reservoir and said pressure chamber is cut off by moving said piston so that the through hole in said piston moves along said annular seal,

said master cylinder including:

a communicating passage formed in said piston guide which passage is in communication with the through hole in said piston guide and opens to a side surface of said piston guide,

an annular spacer interposed between the side surface of said piston guide and said annular seal which spacer has a plurality of projections protruding outward from the external surface at intervals, whereby said annular spacer is positioned in said cylinder housing with the projections of said annular spacer abutting the internal surface of said cylinder housing, and

an oil passage formed between the external surface of said annular spacer excluding said projections and the internal surface of said cylinder housing.

5,251,447

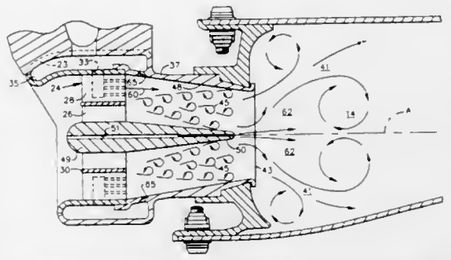
AIR FUEL MIXER FOR GAS TURBINE COMBUSTOR

Narendra D. Joshi, Cincinnati; Edward E. Ekstedt, Montgomery; Michael J. Epstein, West Chester, and Randall C. Bauer, Hamilton, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Oct. 1, 1992, Ser. No. 955,379

Int. Cl.[5] F23R *3/32*

U.S. Cl. 60—737 **29 Claims**



1. An apparatus for premixing fuel and air prior to combustion in a gas turbine engine, comprising:

(a) a linear mixing duct having a circular cross-section defined by a wall;

(b) a shroud surrounding the upstream end of said mixing duct, said shroud having contained therein a fuel mainfold in flow communication with a fuel supply and control means;

(c) a set of inner and outer annular counter-rotating swirlers adjacent the upstream end of said mixing duct for imparting swirl to an air stream, said inner and outer annular swirlers including hollow vanes with internal cavities, wherein the internal cavities of at least said outer swirler vanes are in fluid communication with said fuel manifold, and said outer swirler vanes have a plurality of passages therethrough in flow communication with said internal cavities to inject fuel into said air stream; and

(d) a hub separating said inner and outer annular swirlers to allow independent rotation thereof, said hub extending only the length of said swirlers;

wherein high pressure air from a compressor is injected into said mixing duct through said swirlers to form an intense shear region and fuel is injected into said mixing duct from said swirler vane passages so that the high pressure air and the fuel is uniformly mixed therein so as to produce minimal formation of pollutants when the fuel/air mixture is exhausted out the downstream end of said mixing duct into the combustor and ignited.

5,251,448

HEAT MACHINE

Keith P. Rodger, West Midlands, England, assignor to Lucas Industries, public limited company, West Midlands, England

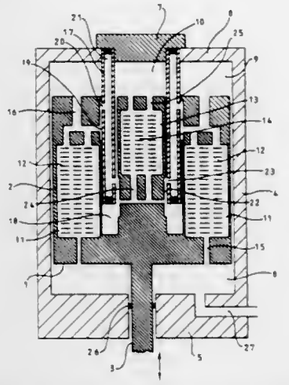
Filed Mar. 10, 1992, Ser. No. 848,922

Claims priority, application United Kingdom, Mar. 16, 1991, 9105593

Int. Cl.[5] F25B *9/00, 9/14*

U.S. Cl. 62—6 **11 Claims**

1. A heat machine comprising: a housing having first and second ends; a displacer having first and second ends, said displacer being reciprocable within said housing; a first regenerator; a second regenerator; and a partition, said first end of said housing and said first end of said displacer defining a first working volume, said second end of said housing and said



second end of said displacer defining second and third working volumes, and said partition separating said second and third working volumes.

5,251,449

PROCESS AND APPARATUS FOR AIR FRACTIONATION BY RECTIFICATION

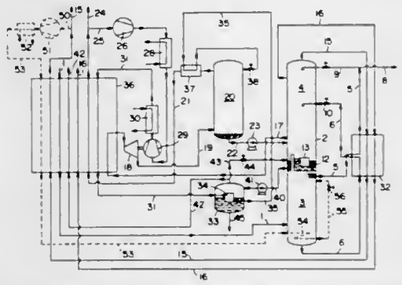
Dietrich Rottmann, München, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Aug. 13, 1992, Ser. No. 929,180

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1991, 4126945

Int. Cl.[5] F25J *3/04*

U.S. Cl. 62—22 **18 Claims**



1. In an air fractionation process by rectification, wherein air (1) is compressed, purified, cooled (36), and preliminarily fractionated in a high pressure column (3) of a two-stage rectification column (2) into an oxygen-rich liquid (6) and into a nitrogen-rich fraction (5), the oxygen-rich liquid (6) and/or nitrogen-rich fraction (5) being fed at least in part to the medium pressure column (4) of the rectification column (2) and separated into oxygen and nitrogen, and wherein an argon-containing oxygen stream (17) and an oxygen product stream (40) are withdrawn from the medium pressure column (4), the argon-containing oxygen stream being introduced into a crude argon column (20) operated under a pressure lower than the pressure of the medium pressure column (4), and gaseous crude argon (21) being removed from an upper zone of said crude argon column, the improvement wherein the oxygen product stream (40) is discharged in the liquid condition from the medium pressure column (4), at least a portion (31) of the gaseous

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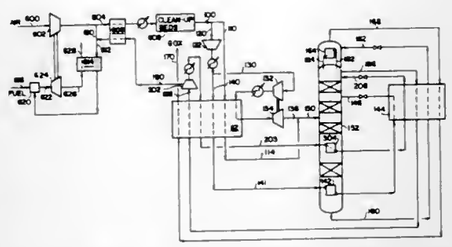
crude argon withdrawn from the crude argon column (**20**) is condensed in indirect heat exchange (**34**) against the liquid oxygen product stream (**40**), the oxygen product stream (**40**) being at least partially vaporized, and resultant condensed crude argon (**35**) is reintroduced into the crude argon column (**20**).

5,251,450

EFFICIENT SINGLE COLUMN AIR SEPARATION CYCLE AND ITS INTEGRATION WITH GAS TURBINES

Rakesh Agrawal, Emmaus, and Jianguo Xu, Fogelsville, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Aug. 28, 1992, Ser. No. 938,737
Int. Cl.[5] F25J *3/02*
U.S. Cl. 62—25 **14 Claims**



1. A process for the cryogenic distillation of air to produce both nitrogen and oxygen products, wherein the cryogenic distillation is carried out in a single distillation column; wherein a feed air stream is compressed, essentially freed of impurities which freeze out at cryogenic temperatures, cooled and fed to the single distillation column thereby producing a nitrogen overhead and a liquid oxygen bottoms characterized by:

(a) operating the single distillation column at a pressure between 70 and 300 psia [480 and 2,070 kPa(absolute)];

(b) withdrawing a portion of the liquid oxygen bottoms having an oxygen concentration greater than 80% oxygen from the bottom of the single distillation column and reducing the pressure of and vaporizing the withdrawn liquid oxygen by heat exchange against a condensing nitrogen stream removed from a top section of the single distillation column;

(c) feeding the condensed, nitrogen stream to a top section of the single distillation column as reflux; and

(d) recovering the vaporized oxygen as at least a substantial portion of the oxygen product.

5,251,451

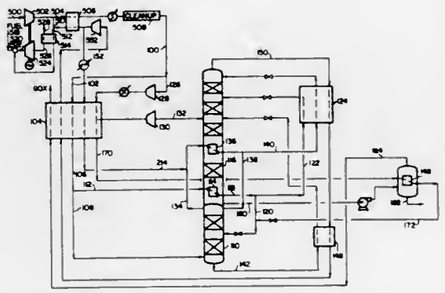
MULTIPLE REBOILER, DOUBLE COLUMN, AIR BOOSTED, ELEVATED PRESSURE AIR SEPARATION CYCLE AND ITS INTEGRATION WITH GAS TURBINES

Jianguo Xu, Fogelsville, and Rakesh Agrawal, Emmaus, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Aug. 28, 1992, Ser. No. 937,629
Int. Cl.[5] F25J *3/02*
U.S. Cl. 62—25 **14 Claims**

1. In a process for the cryogenic distillation of air to separate out and produce at least one of its constituent components, wherein the cryogenic distillation is carried out in a distillation column system having at least two distillation columns operating at different pressures; a feed air stream is compressed to a pressure in the range between 70 and 300 psia and essentially freed of impurities which freeze out at cryogenic temperatures; at least a portion of the compressed, essentially impurities-free feed air is cooled and fed to and distilled in the first of the two distillation columns thereby producing a higher pressure nitrogen overhead and a crude liquid oxygen bottoms; the crude oxygen bottoms is reduced in pressure, and fed to and distilled in the second distillation column thereby producing a lower pressure nitrogen overhead and a liquid oxygen bottoms; a fraction of the cooled, compressed, essentially impurities-free feed air portion is at least partially condensed by heat exchange against the liquid oxygen bottoms in a first reboiler/condenser located in the bottom of the second distillation column and fed to at least one of the two distillation columns; at least a portion of the higher pressure nitrogen overhead is condensed by heat exchange against liquid descending the second distillation column in a second reboiler/condenser located in the low pressure column between the bottom of the second distillation column and the feed point of the crude liquid oxygen bottoms; the condensed higher pressure nitrogen is fed to at least one of the two distillation columns as reflux; and a gaseous nitrogen product is produced; the improvement to allow effective operation of the process at elevated pressures comprises:

(a) further compressing and cooling another portion of the compressed, essentially impurities free, feed air, thereby producing a further compressed second portion;



(b) removing and increasing the pressure of a portion of the liquid oxygen bottoms of the second column and heat exchanging the increased pressure liquid oxygen bottoms against at least a fraction of the further compressed second portion of step (a) so that upon heat exchange the fraction of the further compressed second portion of step (a) is condensed and the increased pressure liquid oxygen bottoms portion is at least partially vaporized;

(c) feeding the condensed fraction of step (b) to at least one of the two distillation columns;

(d) warming the at least partially vaporized oxygen of step (b) to recover refrigeration;

(e) compressing a portion of the gaseous nitrogen product and cooling it to a temperature near its condensation temperature by heat exchange against warming process streams; and

(f) condensing the cooled, compressed gaseous nitrogen product portion of step (e) and feeding the condensed nitrogen portion as reflux to at least one of the distillation columns.

5,251,452

AMBIENT AIR VAPORIZER AND HEATER FOR CRYOGENIC FLUIDS

Lawrence Z. Wieder, Poway, Calif., assignor to Cryoquip, Inc., Murrieta, Calif.

Filed Mar. 16, 1992, Ser. No. 851,739
Int. Cl.[5] F17C *9/02*
U.S. Cl. 62—50.2 **34 Claims**

1. An atmospheric heat exchanger for vaporizing cryogenic liquids and heating the resulting vapor to a temperature within an range of about 10°–40° F. of the ambient temperature comprising:

a base adapted to be positioned in an area exposed to the atmosphere;

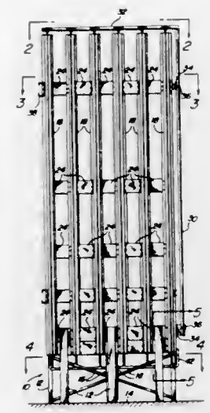
at least one finned tube having a top and bottom end;

means for mounting the tube on the base so that the tube is vertically oriented;

an inlet manifold connected to the bottom end of the tube for supplying cryogenic fluid substantially in its liquid state thereto;

an outlet manifold connected to the top end of the tube for receiving the heated cryogenic vapor;

the tube having an upper portion, a lower portion, a plurality of external fins and a plurality of radially extending internal projections, the internal projections forming a plural-



ity of passageways symmetrically arranged about a central opening, the passageways having an outer surface for contacting the fluid; and

means for closing the central opening for the upper portion of the tube so that fluid flowing through said upper portion is confined to the passageways to thereby provide an increased rate of heat transfer between the fluid in its vapor phase and the outer surface of the passageways in said upper portion as compared to the heat transfer rate between the fluid in its vapor phase and the outer surface of the passageways in which said lower portion in the central opening is not closed, the lengths of the upper and lower portions being arranged so that the cryogenic fluid is substantially in its vapor phase in the upper portion.

5,251,453

LOW REFRIGERANT CHARGE DETECTION ESPECIALLY FOR AUTOMOTIVE AIR CONDITIONING SYSTEMS

Edwin J. Stanke, Bloomfield Hills, and David L. Montgomery, Utica, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

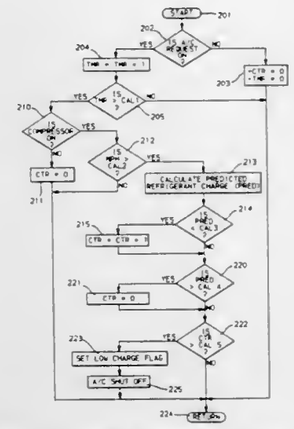
Filed Sep. 18, 1992, Ser. No. 947,667
Int. Cl.[5] F25B *49/02*
U.S. Cl. 62—126 **9 Claims**

1. In a vehicle air conditioning system having a compressor, expansion valve, evaporator and condenser, a method of preventing compressor damage due to a low refrigerant charge, said method comprising:

measuring ambient air temperature to produce a load signal;

measuring evaporator temperature and vehicle speed to produce respective first and second capacity signals corresponding thereto;

predicting said refrigerant charge from said load signal and said first and second capacity signals; and



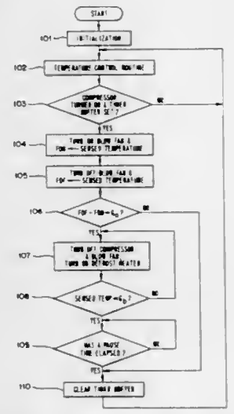
disabling said compressor when said predicted refrigerant charge is below a predetermined level.

5,251,454

DEFROST CONTROL APPARATUS AND METHOD FOR A REFRIGERATING SYSTEM

Kwang H. Yoon, Suweon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suweon, Rep. of Korea

Filed Jan. 30, 1992, Ser. No. 827,336
Claims priority, application Rep. of Korea, Jan. 31, 1991, 91-1696
Int. Cl.[5] F25D *21/02*
U.S. Cl. 62—156 **4 Claims**



1. A refrigerating system including an evaporator, a fan for blowing air through the evaporator and a defrost heater, comprising:

a temperature sensing means disposed near the evaporator:

a microprocessor for obtaining a difference between a temperature sensed by the temperature sensing means when the fan is driven and a temperature sensed by the temperature sensing means when the fan is paused, said microprocessor controlling the fan, initiating a defrost operation by driving the defrost heater when the difference in tem-

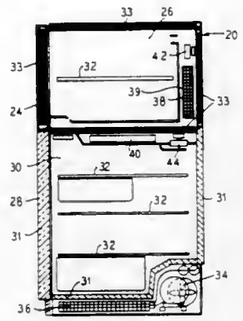
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perature is less than a first set value, and completing the defrost operation by turning off the defrost heater when the temperature sensed by the temperature sensing means is greater than a second set value.

5,251,455
ENERGY EFFICIENT INSULATION SYSTEM FOR REFRIGERATOR/FREEZER

Nihat O. Cur, Royalton Township, Berrien County; Steven J. Kuehl, Lincoln Township, Berrien County, both of Mich., and Richard A. Sunshine, City of Granger, Ind., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 14, 1992, Ser. No. 931,097
Int. Cl.[5] F25B *39/02*
U.S. Cl. 62—199 **20 Claims**



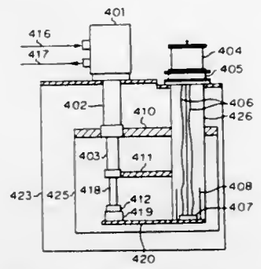
1. A refrigeration appliance comprising:
an external cabinet;
an interior liner, spaced inwardly of said external cabinet to form at least two refrigeration compartments, each compartment having its own access door;
vacuum insulation panels being positioned in a space between said cabinet and said liner adjacent to said first compartment;
a first evaporator for said first compartment, said first evaporator operating at a first pressure level;
a second evaporator for said second compartment, said second evaporator operating at a pressure level higher than said first pressure level; and
control means operative to sequentially operate said evaporators, such that only one evaporator provides cooling at any given time.

5,251,456
MULTI-STAGE COLD ACCUMULATION TYPE REFRIGERATOR AND COOLING DEVICE INCLUDING THE SAME

Masashi Nagao; Hideto Yoshimura, and Takashi Inaguchi, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 722,547, Jun. 26, 1991, Pat. No. 5,154,063, and Ser. No. 721,816, Jun. 26, 1991, Pat. No. 5,144,805, and Ser. No. 721,135, Jun. 26, 1991, Pat. No. 5,144,810, which is a division of Ser. No. 430,582, Nov. 1, 1989, Pat. No. 5,092,130.
This application May 29, 1992, Ser. No. 890,264
Claims priority, application Japan, Nov. 9, 1988, 284450; Nov. 9, 1988, 284452; Nov. 9, 1988, 284453; Nov. 9, 1988, 284454; Nov. 9, 1988, 284455; Nov. 11, 1988, 285991
Int. Cl.[5] F25D *23/12*
U.S. Cl. 62—259.2 **13 Claims**

1. A superconducting computer cooling device comprising a liquid helium bath, liquid helium contained in said liquid helium bath, a logic and memory card formed of a superconductor, said logic and memory card being immersed in said liquid helium, and a multi-stage cold accumulation type refrigerator having a plurality of thermal stages for condensing helium vaporized from said liquid helium, wherein said multi-stage cold accumulation type refrigerator comprises a compressor disposed at an ordinary temperature, a helium gas as a common operating fluid to be compressed by said compressor, a plurality of thermal stages, at least one cylinder, and one or more expansion chambers and cold accumulators of different temperature levels, said thermal stages and said cylinders having outer surfaces, the improvements wherein at least one of said

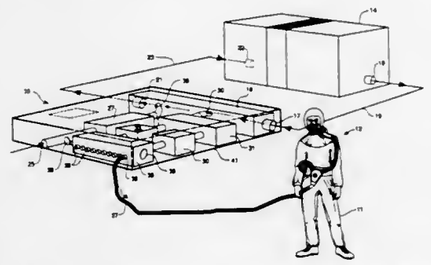


expansion chambers has a seal to prevent leakage to said helium gas, said seal being capable of sliding, wherein sliding resistance of said seal generates less heat than the theoretical generated refrigeration quantity of said expansion chamber, said theoretical generated refrigeration quantity being based on isothermal expansion in said expansion chamber; and a cold accumulating member of said cold accumulators is formed of an alloy or compound containing a rare earth metal.

5,251,457
PRESSURIZED AIR DISTRIBUTION SYSTEM

Yasu T. Chen, San Antonio, Tex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 12, 1993, Ser. No. 17,160
Int. Cl.[5] B60H *3/04*
U.S. Cl. 62—259.3 **6 Claims**

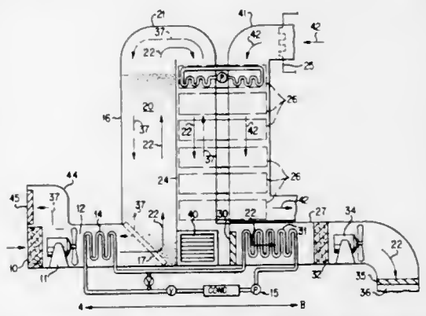


1. A system for providing intermittent cooling to a plurality of persons wearing protective garments for working in a hot contaminated environment, comprising:
(a) an air conditioning unit having an inlet and an outlet and a cooling capacity of at least 1.5 tons at a flow rate of at least 1,000 cubic feet per minute;
(b) an air control plenum having first and second ends, a first inlet at said first end thereof and a first outlet at said second end thereof, and a second inlet near said second end and a second outlet near said first end;
(c) first conduit means operatively interconnecting said first outlet of said plenum and said inlet of said air conditioning unit and second conduit means operatively interconnecting said first inlet of said plenum and said outlet of said air conditioning unit;
(d) blower means having an inlet open to ambient and an outlet operatively connected to said second inlet of said plenum for supplying ambient air to said air conditioning unit;
(e) manifold means comprising a plurality of outlets for supplying conditioned air from said air conditioning unit to a corresponding plurality of protective garments having means for operative connection to said outlets;
(f) filter means operatively interconnecting said second outlet of said plenum and said manifold means for filtering conditioned air from said air conditioning unit;
(g) means for regulating airflow through said blower and manifold means whereby a maximum of 20 percent of said flow rate from said air conditioning unit is supplied to said outlets and the balance of said flow rate is recirculated through said plenum to said inlet of said air conditioning unit.

5,251,458
PROCESS AND APPARATUS FOR REDUCING THE AIR COOLING AND WATER REMOVAL REQUIREMENTS OF DEEP-LEVEL MINES

Dimiter I. Tchernev, 75 Middlesex Ave., Natick, Mass. 01760

Filed Aug. 19, 1991, Ser. No. 746,893
Int. Cl.[5] F25D *17/08;* **B01D** *47/00*
U.S. Cl. 62—271 **20 Claims**

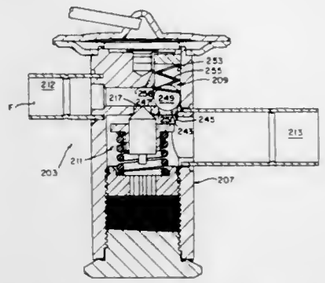


1. A method of extending the working depth of underground lines which comprises the steps of:
introducing ambient air into air drying and cooling passageway means disposed at the surface of a mine proximate to the mine's ventilation air inlet;
removing sufficient moisture from the air by desiccant drying while passing said air through said passageway means and thereby reducing the moisture content in said air to less than 0.001 kilogram of moisture per kilogram of dry air;
cooling said dry air in said passageway means and introducing said cooled dry air as ventilation air into said underground mine;
conveying said cooled dried ventilation air to the working level of said underground mine;
humidifying said cooled dried ventilation air at said working level whereby said air is further cooled at said working level by the evaporation of water therein; and
exhausting said humidified air from said working level of the mine and conveying said humidified air including the water carried by such air to the surface.

5,251,459
THERMAL EXPANSION VALVE WITH INTERNAL BY-PASS AND CHECK VALVE

Thomas Grass, and Robert W. Haul, both of St. Louis County, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Continuation-in-part of Ser. No. 706,374, May 28, 1991, abandoned. This application Mar. 31, 1992, Ser. No. 861,318
Int. Cl.[5] F25B *13/00*
U.S. Cl. 62—324.1 **10 Claims**



1. In a heat pump system comprising a compressor having an inlet and an outlet, a first heat exchanger to be located outdoor, a second heat exchanger to be located indoors, said indoor and outdoor heat exchangers being in communication with one another, a shiftable valve connected to the outlet and the inlet of the compressor and to the outdoor and indoor heat exchangers, said valve being selectively shiftable between a first position in which refrigerant is delivered from the outlet of the compressor to the outdoor heat exchanger such that the heat pump system is operated in a cooling mode and a second position in which refrigerant is delivered form the outlet of said compressor to said indoor heat exchanger such that said heat pump system is operated in a heating mode, and at least one thermostatic expansion valve between said indoor and said outdoor heat exchangers, said thermostatic expansion valve comprising a valve body including a flowpath therethrough having an inlet and an outlet, a thermal expansion port in said flowpath, movable valve means to selectively open and close said expansion port, wherein the improvement comprises: an internal by-pass flow path within said valve body, said by-pass flowpath having a check valve therein, said check valve being in fluid communication with said valve body flowpath inlet and with said valve body flowpath outlet, said check valve comprising a check valve seat, a movable check valve ball separate from said expansion valve means, means for biasing said check valve toward its said closed position, and means for fully opening said check valve; said check valve ball being movable in a guide path between a closed position in which said check valve member engages said check valve seat thereby to block the flow of refrigerant through said by-pass flow path from said inlet to said outlet, and an open position in which said check valve member is clear of said check valve seat thereby to permit flow of refrigerant from said outlet to said inlet through said by-pass flow path around said expansion port; said means for fully opening said check valve including a pressure relief port in said guide path, said pressure relief means providing an escape for fluid contained in said guide path.

5,251,460
COOLER COVER FOR BEVERAGE KEGS

Edward DeMarco, 2233 Browning Rd., Apt. 2, Pennsauken, N.J. 08110, and John M. Friel, 112 W. Central Ave., Apt. 2, Moorestown, N.J. 08057

Filed Oct. 26, 1992, Ser. No. 966,516
Int. Cl.[5] E25D *3/08*
U.S. Cl. 62—371 **11 Claims**

1. A thermally insulated portable cover device for storing

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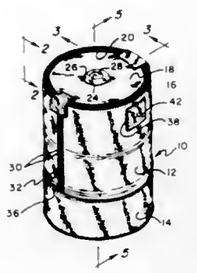
and carrying a beverage keg having a dispensing pipe extending upwardly centrally from a top of the keg and having hand gripping depressions into opposite sides of a rim extending upwardly from an upper edge of a cylindrical side wall of the keg, the depressions forming horizontal depending surfaces that can receive a person's hands to allow the keg to be lifted, the cover device comprising:

(A) an open topped insulated hollow cylindrical flexible cover member comprising a cylindrical side wall portion having an upper circular edge and a circular bottom wall portion, the cover defining an internal cavity into which the beverage keg coaxially fits.

(B) a thermally insulated closing lid comprising:

(i) a circular shaped disc member having a circular shaped peripheral edge coterminous with the upper circular edge of the cylindrical side wall portion,

(ii) fastening means to releasably fasten the peripheral edge of the disc shaped member to the upper circular edge of the cylindrical side wall portion, and



(iii) a centered round hole forming a circular shaped edge around the hole wherein the circular shaped edge comprises:

(a) resilient material allowing it to stretch to a greater diameter opening, and

(a) is sized to be smaller in diameter than an outside diameter of the dispensing pipe extending upwardly from the top of the beverage keg coaxially fitted inside the cover device.

(C) vertical fastening means to releasably fasten vertical edges of a vertical cut through the cylindrical side wall portion extending from a position on upper circular edge downwardly to a lower position on the side wall portion,

(D) a pair of openings through opposite sides of the cylindrical side wall portion at a height to correspond and align with to open directly to the horizontal surfaces of the gripping handle openings into the beverage keg coaxially fitted inside the cover device, and

(E) cover means to selectively open or cover and insulate the pair of openings through the cylindrical side wall portion of the cover device.

5,251,461

GRILLE FOR PACKAGED TERMINAL AIR CONDITIONER

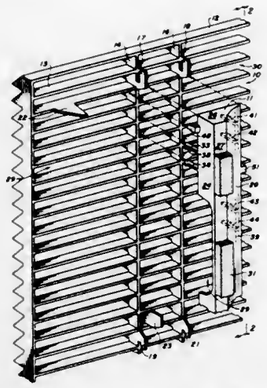
Walter J. Fallows, III, Windsor, Mass.; Dennis C. Jones, Clay, and John H. Michaels, Baldwinsville, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Sep. 18, 1992, Ser. No. 946,701
Int. Cl.[5] F25D *17/06*
U.S. Cl. 62—428 **15 Claims**

1. An improved grille and baffle structure for an air conditioner of a type having a central portion for receiving outdoor air to be recirculated through a coil and then discharged through side portions of the grille, wherein the improvement comprises:

a grille having vertical ribs for separating the central portion from a side portion of the grille;

a baffle for placement on the rear side of said grille, in alignment with said vertical ribs, the baffle having a sloping surface to inhibit the flow of discharged air into the grille central portion; and



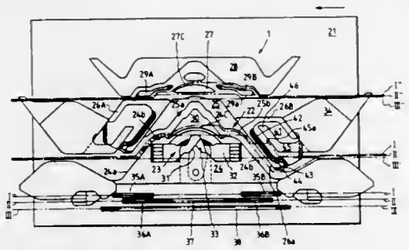
a plurality of flexible fingers attached to and extending from said baffle and engagable with sides of said vertical ribs to secure said baffle to said grille.

5,251,462

KNIT RUN CAM

Masahiro Shima, Wakayama, Japan, assignor to Shima Seiki Mfg. Ltd., Japan

Filed Feb. 7, 1991, Ser. No. 651,965
Claims priority, application Japan, Feb. 14, 1990, 2-33327
Int. Cl.[5] D04B *15/36*
U.S. Cl. 66—78 **3 Claims**



1. A knit run cam system comprising:

a knitting needle having a needle butt,

a knitting cam (**26B**) having a needle butt lowering inclined face (**26***a*) and a lowermost end (**44**) wherein the needle butt of the knitting needle engages the needle butt lowering inclined face (**26***a*) and the lowermost end (**44**) to form knit and tuck stitches, wherein said knitting cam (**26B**) has a depression (**41**), said depression formed at a central portion thereof, and

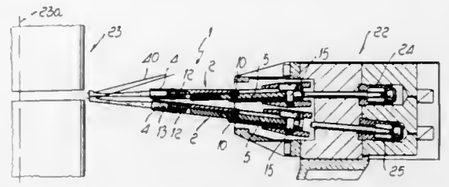
a fixed guide cam (**34**) having a needle butt lowering inclined face (**45***a*) and a lowermost end extension (**45**) for engagement with the needle butt of the knitting needle to form tuck stitches of decreased density, wherein the needle butt lowering inclined face (**45***a*) and the lowermost end extension (**45**) of said fixed guide cam overlap the depression (**41**) in said knitting cam (**26B**) such that the lowermost end extension (**45**) of said fixed guide cam (**34**) is spaced from the lowermost end (**44**) of said knitting cam (**26B**).

5,251,463

THREAD GUIDE STRUCTURE FOR CIRCULAR KNITTING MACHINE, IN PARTICULAR FOR LINE-FORMING UNITS IN DOUBLE-CYLINDER MACHINES FOR MANUFACTURING SOCKS AND STOCKINGS

Francesco Lonati; Ettore Lonati; Fausto Lonati, and Tiberio Lonati, all of Brescia, Italy, assignors to Lonati S.r.l., Brescia, Italy

Filed Sep. 14, 1992, Ser. No. 944,763
Claims priority, application Italy, Sep. 19, 1991, 91 A002476
Int. Cl.[5] D04B *15/60*
U.S. Cl. 66—140 R **20 Claims**



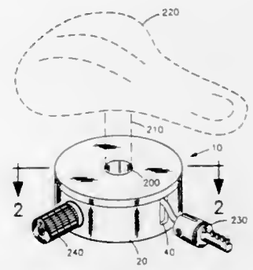
1. Thread guide structure for circular knitting machines comprising a thread guide body having an elongated configuration and, proximate to a longitudinal end, a thread dispensing passage, wherein said thread guide body has at least one first part and one second part mutually articulated proximate to an intermediate region of the thread guide body, said first part provided with said thread dispensing passage and oscillatable with respect to said second part about an oscillation axis arranged transversely to a longitudinal extension of said thread guide body, wherein said thread guide body is mounted on a supporting element oscillatable associated with a supporting block for oscillation of the thread guide in a plane about the oscillation axis of said supporting element with respect to said supporting block, said first part of the thread guide body being pivoted to said second part about an axis substantially parallel to the plane of oscillation of the thread guide for an oscillation of said first part in a plane substantially perpendicular to the plane of oscillation of the thread guide.

5,251,464

BICYCLE LOCK WITH STORABLE REEL CABLE

Robert Halter, 15469 Chemical La., Huntington Beach, Calif. 92649

Filed Sep. 3, 1992, Ser. No. 940,069
Int. Cl.[5] E05B *71/00*
U.S. Cl. 70—30 **4 Claims**



1. A bicycle lock assembly comprising:

a housing having an annular outer wall with a cable access slot and an integral rear wall defining a drum-like compartment, the rear wall supporting a tubular inner wall extending from the rear wall coaxially with the outer wall to define a torus shaped interior space;

a reel providing a tubular core rotatably mounted onto the inner wall, the core supporting a pair of spaced apart guide walls defining a coiling space therebetween;

a flexible cable wound onto the reel between the guide walls, one end of the cable being fixed to the core, the other end of the cable extending through the access slot;

a coil spring having one end fixed to the annular outer wall and the other end fixed to the core of the reel, the spring laying in a spiral form adjacent to one of the guide walls such that rotation of the reel to unreel the cable causes the coil spring to tighten and rotation of the reel to reel-in the cable causes the coil spring to loosen;

a housing cover fixed to an open side of the housing to enclose said housing, the cover having a central hole aligned with an inside diameter of the core so that the housing may be placed onto a bicycle, the inner wall fitting around a tubular member of the bicycle and being captured thereon by a dismountable member of the bicycle;

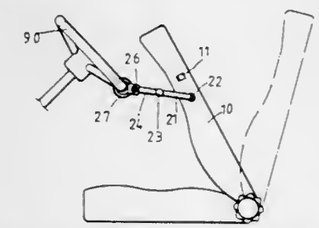
the cable having a first lock mechanism at the other end, the housing having a second lock mechanism, the first and second lock mechanisms being engagably lockable for securing the bicycle to a fixed object.

5,251,465

ANTI-THEFT DEVICE FOR AUTOMOBILES

Ying-Teh Hwang, No. 220, Ruey Feng Street, Kaohsiung, Taiwan

Filed Jun. 8, 1992, Ser. No. 895,035
Int. Cl.[5] B60R *25/02*
U.S. Cl. 70—209 **5 Claims**



1. An anti-theft device for coupling the back of a driver's seat and a steering wheel of an automobile to prevent unauthorized access to the driver's seat, which device comprises:

a) a rod for extending laterally through a driver's seat back;

b) a pair of arms, each arm having a first end and a second end, the first ends being coupled together by the rod for pivotal movement of the arms between a position of use and a position of storage, and each second end being provided with a first half of a ball and socket joint;

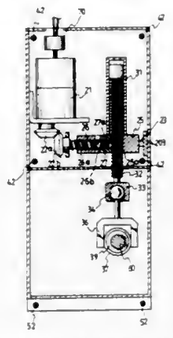
c) a pair of locks, each lock including a second half of a ball and socket joint and a hook for detachable engagement with the steering wheel;

d) the first and second halves of the ball and socket joints being engageable with each other to permit pivotal movement between each lock and each arm; and

e) whereby when the arms are disposed in the position of use and the hooks are in engagement with the steering wheel, unauthorized access to the driver's seat is prevented.

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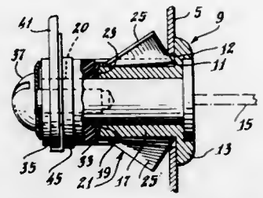
5,251,466
LOCK ASSEMBLY FOR GEAR SHIFTER
Chao-Sheng Chang, No. 57, Sec. 3, Chung Yang Rd., San Chung City, Taipei Hsien, Taiwan
Filed Feb. 11, 1993, Ser. No. 16,526
Int. Cl.[5] B60R *25/06*
U.S. Cl. 70—247 5 Claims



1. A lock assembly for a gear shifter of a vehicle comprising:
a base frame mounted to a floor of the vehicle adjacent to the gear shifter;
a pair of mount plates being spaced on said base frame, a guiding bar means extending between said mount plates, a hollow holder being mounted on and movable along said guiding bar means, a holder block being provided inside said hollow holder;
a guiding sleeve mounted on said base frame for receiving a screw therein, an end of said screw extending out of said guiding sleeve and cooperating with a holder means for securely holding said gear shifter and for moving therewith;
a jointing means mounted between said screw and said holder means for converting a non-linear motion of the gear shifter to a linear motion of said screw in said guiding sleeve;
a housing enclosing said lock assembly, said housing having an opening through which the gear shifter passes and allowing the gear shifter to perform its function;
a screw member rotatably mounted in one of said mount plates, said screw member comprising a right hand thread portion which engages with one of said hollow holder and said holder block and a left hand thread portion which engages with the remaining of said hollow holder and said holder block;
a driving means for driving said screw member; and
means for activating said driving means;
whereby said screw is locked between said hollow holder and said holder block when said driving means is activated by said activating means to turn in one direction, and said screw is unlocked when said driving means is activated by said activating means to turn in another direction.

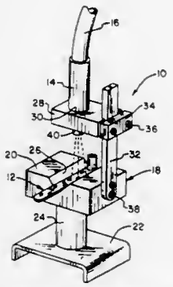
5,251,467
FRONT-INSTALLED CAM LOCK
Victor R. Anderson, Trumbull, Conn., assignor to Loctec Corporation, Newtown, Conn.
Filed Sep. 8, 1992, Ser. No. 941,912
Int. Cl.[5] E05B *9/08*
U.S. Cl. 70—370 19 Claims

14. A retaining spring for use in securing a front-mounted unit in a panel through an opening in said panel by pressing said unit in an axial direction through said opening, said retaining spring including
a planar base and means for securing said base to said unit with the plane of said base transverse to the axis of said unit, at least one leg integral with said base and secured to said base only at the end of said leg, said leg having a length and a width said leg and said base being formed of spring steel, and said leg being substantially transverse to the plane of said base,
said leg having two opposite edges of substantially equal length not attached to said base, one of said edges of said leg being angled along a portion of its length to create



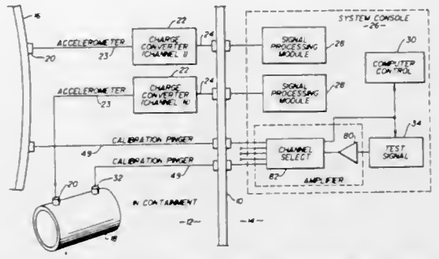
edges such that one said edge is effectively shorter than the other said edge so the end of said leg is not perpendicular to said edges, said angled edge, and only said angled edge, being bent outwardly away from said axis when said base has been secured to said unit,
whereby the end of said leg can press against the inside of said panel to hold said unit permanently in a fixed position on said panel.

5,251,468
METHOD OF SURFACE FINISHING ORTHOPAEDIC IMPLANT DEVICES USING A BIOACTIVE BLASTING MEDIUM
Steve T. Lin, Ft. Wayne; Mike Hawkins, Columbia City, and Steve Krebs, Fort Wayne, all of Ind., assignors to Zimmer, Inc., Warsaw, Ind.
Filed Dec. 14, 1992, Ser. No. 990,207
Int. Cl.[5] B24C *1/00*; A61F *5/04*
U.S. Cl. 72—53 2 Claims



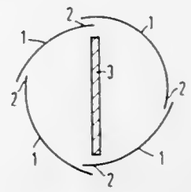
1. A method of surface finishing an orthopaedic implant device, the method comprising the steps of:
a) providing a metal substrate in the form of an orthopaedic implant device with an outer surface;
b) providing a bioactive shot formed from a bioactive material; and
c) shot blasting said outer surface of said metal substrate with said bioactive about, wherein said bioactive material is from the group of calcium phosphate ceramics, phosphate glass compositions, bioabsorbable glass, partially absorbable glass, totally bioabsorbable bioceramics, partially bioabsorbable bioceramics, non-absorbable bioceramics.

5,251,469
CALIBRATION SYSTEM
Thomas J. Chan, Arcadia, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.
Filed Apr. 29, 1991, Ser. No. 692,435
Int. Cl.[5] G01D *18/00*
U.S. Cl. 73—1 DV 12 Claims



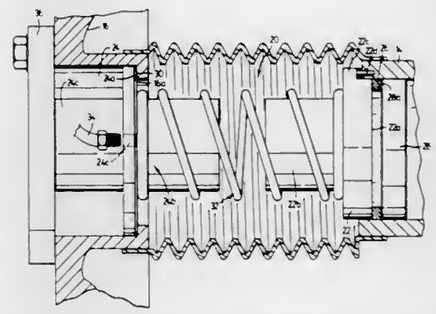
1. A test system for use with a physical disturbance monitoring system having one or more sensors for sensing a physical disturbance, comprising:
transducer means responsive to electrical stimulation signals for producing physical vibrations simulating vibrations caused by a physical disturbance, said transducer means being positioned proximate to a physical disturbance sensor; and
test signal stimulation means for providing an electrical stimulation signal to the transducer means so as to cause the transducer means to produce physical vibrations proximate to the sensor, wherein the electrical stimulation signal is derived from the output of a physical disturbance sensor.

5,251,470
HOUSING FOR FAST EXHAUST GAS SENSORS FOR A CYLINDER-SELECTIVE LAMBDA MEASUREMENT IN AN INTERNAL COMBUSTION ENGINE
Uwe Lampe, Erding; Wolfgang Hanrieder, Munich, and Hans Meixner, Haar, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Feb. 7, 1992, Ser. No. 832,801
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1991, 4107908
Int. Cl.[5] G01N *27/416*
U.S. Cl. 73—31.05 6 Claims



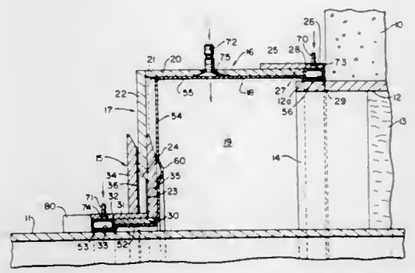
1. In a housing for a fast exhaust sensor for a cylinder-selective lambda measurement in an internal combustion engine, said housing being a hollow-cylindrical housing for receiving the sensor, and having at least one opening for enabling exhaust gas to enter the housing for sensing, the improvements comprising means for preventing deposit of particles on the sensor, said means for preventing consisting of at least two slot-shaped openings arranged rotationally symmetrically in the circumferential wall of the cylindrical housing and extending parallel to an axis of the cylindrical housing, each of the openings having one long edge which overlaps the other long edge in the fashion of a venetian blind.

5,251,471
DEVICE TO TEST THE BELLOWS OF A STERN DRIVE MOTOR FOR LEAKAGE
Joseph C. Minten, R.R. #1, Lakefield Ontario, Canada K0L 2H0
Filed Apr. 9, 1992, Ser. No. 865,867
Int. Cl.[5] G01M *3/04*
U.S. Cl. 73—40 5 Claims



1. A leakage test device for a stern drive motor of the type having a transom assembly including a bellows located between an inner transom portion and an outer transom portion, said device comprising: an inner sealing plug to seal against said inner transom portion; an outer sealing plug to seal against said outer transom portion, said inner and outer sealing plugs constituting means to establish a substantially air tight chamber within said inner and outer transom portions and said bellows, and means to pressurize said bellows in order to detect leakage thereof.

5,251,472
HIGH PRESSURE PIPE SLEEVE FOR PRESSURE TESTING OF JOINT SEALS
Edward R. Carlson, New Fairfield, and William J. Schrull, New Milford, both of Conn., assignors to The Presray Corporation, Pawling, N.Y.
Filed Jul. 13, 1992, Ser. No. 912,499
Int. Cl.[5] G01M *3/28*
U.S. Cl. 73—46 12 Claims



1. An apparatus for pressure testing a penetration seal between a process pipe and a surrounding penetration sleeve of larger diameter than said process pipe, which comprises
(a) an elastomeric boot of annular configuration positioned around said process pipe,
(b) said boot having a first portion closely surrounding said process pipe, a second portion closely surrounding a portion of said penetration sleeve, and a third portion joining

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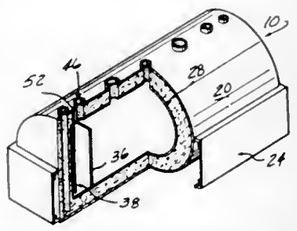
said first and second portions to form a pressurizable chamber exposed to said penetration seal,
(c) a first collar set closely surrounding said process pipe and securing the first portion of said elastomeric boot,
(d) a second collar set closely surrounding said penetration sleeve and securing the second portion of said elastomeric boot,
(e) said first and second collar sets each including radially extending wall portions, with the wall portions of the first collar set overlapping the wall portions of the second collar set in movable relation to accommodate eccentricity and movement of said process pipe in relation to said penetration sleeve, and
(f) a pressurizing valve connected to said elastomeric boot and extending through one of said collar sets for imparting positive pressures to said chamber,
(g) said collar sets forming a rigid containment for said elastomeric boot while said chamber is pressurized.

5,251,473

METHOD AND STORAGE TANK SYSTEM FOR ABOVEGROUND STORAGE OF FLAMMABLE LIQUIDS

R. Allan Reese, Seattle, Wash., assignor to Ace Tank & Equipment Company, Seattle, Wash.

Filed Sep. 21, 1990, Ser. No. 587,019
Int. Cl.[5] G01M *3/04;* **B65D** *90/48, 90/06*
U.S. Cl. 73—49.2 **17 Claims**



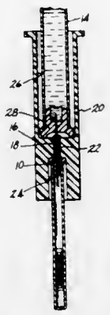
1. A tank system for storage of flammable liquids comprising:
a storage tank located above ground in an exposed position, said storage tank having an internal storage cavity;
said storage tank including an inner tank of welded steel defining said storage cavity and an outer tank of welded steel completely enclosing said inner tank with an intervening space therebetween;
a mass of refractory insulating material completely filling the interposed space between said inner tank and said outer tank;
a filler tube extending into said inner tank storage cavity and being externally accessible for filling with a flammable liquid;
a withdrawal tube extending into said inner tank storage cavity and being externally accessible for withdrawing flammable liquid from said inner storage tank;
at least one vent tube extending into said inner tank storage cavity to provide for pressure equalization between the atmosphere and said inner storage tank under both normal and emergency operating conditions;
at least one vent means extending into said outer tank to provide for pressure equalization between the atmosphere and said intervening space under both normal and high pressure operating conditions;
means for monitoring for the presence of flammable fluid in said intervening space between said inner and outer storage tanks;
said inner tank including a partition therein subdividing said storage cavity into subdivided portions; said partition only partially subdividing said storage cavity to allow overflow of a flammable liquid out of one portion of said storage cavity and into the other of said portions of said storage cavity, said other portion comprising an overfill containment chamber; and
a sensor mounted to detect the presence of flammable liquid in said overfill containment chamber.

5,251,474

CENTRIFUGED MATERIAL LAYER MEASUREMENT IN AN EVACUATED TUBE

Stephen C. Wardlaw, 191 N. Cove Rd., Old Saybrook, Conn. 06475, and Robert A. Levine, 31 Pilgrim La., Guilford, Conn. 06437

Filed Jan. 16, 1992, Ser. No. 822,321
Int. Cl.[5] G01N *33/48;* **B04B** *5/04;* **B01D** *21/26, 17/038*
U.S. Cl. 73—61.41 **13 Claims**



7. An assembly for performing tests on blood constituents in a centrifuged sample of blood contained in the assembly without exposing one performing the test to the blood being sampled, said assembly comprising: a sealed transparent tube for holding the sample of blood; an elongated transparent cylindrical float disposed in said tube, said float having an axially extending passage for receiving and physically elongating the entirety of any layers of centrifuged blood constituents to be tested during centrifugation of the blood sample to enable measurement of said elongated blood constituent layers in said passage, and said float having an outer surface extending from one end of said float to the other with a diameter which closely conforms to the internal diameter of said tube; and means for contracting said float outer diameter during centrifugation of the assembly and a contained blood sample, whereby said float can freely move axially of said tube during the centrifugation step.

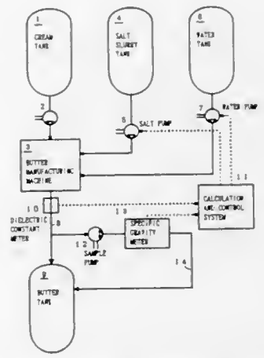
5,251,475

METHOD AND APPARATUS FOR DETERMINING CONTENTS OF SALT AND WATER IN WATER-IN-OIL TYPE EMULSIFIED PRODUCT

Mikio Kanzaki; Toyohiko Doi; Hiroshi Nakanuma, all of Tokyo, and Miyuki Shibuya, Saitama, all of Japan, assignors to Morinaga Milk Industry Co., Ltd., Tokyo, Japan

Filed Oct. 1, 1991, Ser. No. 769,286
Claims priority, application Japan, Oct. 2, 1990, 2-263063
Int. Cl.[5] G01N *33/06*
U.S. Cl. 73—61.41 **3 Claims**

1. A method for controlling the contents of salt and water, respectively, in a water-in-oil emulsified composition produced in a continuous production line, comprising the steps of:
a) measuring two physical parameter of specific gravity and dielectric constant or microwave absorption index, which correlates to the contents of salt and water in a plurality of water-in-oil emulsified compositions having known salt and water contents, whereby a set of measured parameters and known salt and water contents are determined;
b) subjecting the set of measured parameters and known salt and water contents to a bivariable multiple regression analysis, thereby determining a first equation for calculating salt content and a second equation for calculating water content in a water-in-oil emulsified composition from the two physical parameters;
c) directly measuring the two physical parameters in the continuous water-in-oil emulsified composition production line;



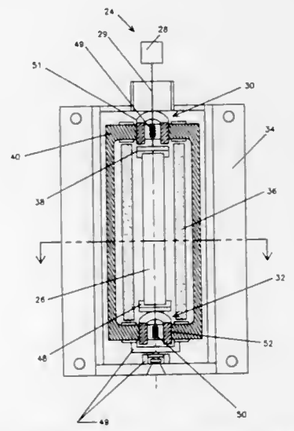
d) determining the respective contents of salt and water in the water-in-oil emulsified composition production line having unknown salt and water content, by applying the two physical parameters measured in step (c) to the first and the second equations determined in step (b); and
e) adjusting the amount of water and salt slurry, respectively, added to the continuous water-in-oil emulsified composition production line based on the salt and water contents determined in step (d).

5,251,476

METHOD FOR DETERMINING A COEFFICIENT OF MOISTURE EXPANSION OF A WORKPIECE

James F. Gilmore, Rochester, and Carl A. Lloyd, Bloomfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 26, 1992, Ser. No. 905,586
Int. Cl.[5] G01N *25/16, 5/04*
U.S. Cl. 73—73 **3 Claims**



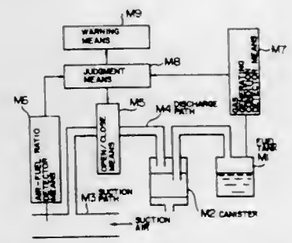
1. A method for determining a coefficient of moisture expansion of a single, identified workpiece, comprising the steps of:
(1) positioning a workpiece in a chamber having known environmental parameters;
(2) connecting one end of said workpiece through a core of a first linear variable differential transformer to a weighing means and connecting an opposite end of said workpiece to a core of a second linear variable differential transformer;
(3) measuring changes in said workpiece's length change, value ΔL, by utilizing said first and second linear variable differential transformers caused by a chamber-induced change in said workpiece's moisture content, value ΔM;
(4) determining a moisture-induced change in said workpiece's moisture content value ΔM, by weighing said workpiece utilizing said weighing means; and
(5) utilizing said workpiece's ΔL and ΔM values to determine said workpiece's coefficient of moisture expansion.

5,251,477

SELF-DIAGNOSIS APPARATUS IN A SYSTEM FOR PREVENTION OF SCATTERING OF FUEL EVAPORATION GAS

Akihiro Nakashima, Obu; Shigenori Isomura, Kariya; Satoru Namizaki, Toyohashi, and Hidehiko Inoue, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 25, 1991, Ser. No. 659,720
Claims priority, application Japan, Feb. 26, 1990, 2-46925; Feb. 26, 1990, 2-46926; Feb. 26, 1990, 2-46927; Feb. 26, 1990, 2-46928; Jul. 24, 1990, 2-195474
Int. Cl.[5] G01M *19/00*
U.S. Cl. 73—118.1 **7 Claims**



1. In a fuel evaporation gas scattering preventing system comprising a canister communicating with a fuel tank and containing therein an absorption material adapted to absorb a fuel evaporation gas in said fuel tank, and a discharge path for making said canister communicate with a suction path of an internal combustion engine, whereby the fuel evaporation gas absorbed into said canister is sucked from said suction path of said internal combustion engine through said discharge path to thereby prevent the fuel evaporation gas from scattering, a self-diagnosis apparatus comprising:
opening/closing means provided in said discharge path;
air-fuel ratio detector means for detecting an air-fuel ratio of an air-fuel mixture fed to said internal combustion engine; and
abnormality judgment means for controlling said opening/closing means to open/close said discharge path for judging that said gas scattering preventing system is abnormal when the magnitude of a change in said air-fuel ratio detected by said air-fuel ratio detector means upon opening/closing said discharge path is less than a predetermined value.

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5,251,478

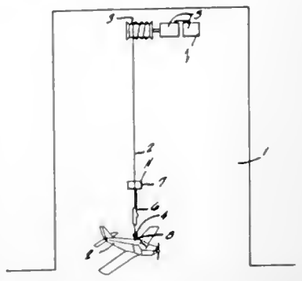
DEVICES AND MEANS TO SUSPEND SCALED FLYING CRAFTS DURING TEST AND TRAINING FLIGHTS

Tara C. Singhal, P.O. Box 5075, Torrance, Calif. 90510

Continuation-in-part of Ser. No. 707,593, May 30, 1991, abandoned. This application Aug. 4, 1992, Ser. No. 924,498

Int. Cl.[5] G01M 9/00

U.S. Cl. 73—147 5 Claims



1. A device to suspend a scaled flying craft during test and training flights in a controlled environment space comprising:

(a) a flying craft tethered from a central location on top of the flying craft by one end of a tether, the other end of the tether connected to a high point in the controlled environment space;

(b) the connection at said high point comprises of a winch driven by an electrical motor to lower or raise the flying craft;

(c) said tether is equipped with an electrical slack sensor to measure slack of the tether;

(d) said electrical slack sensor generating an electrical output indicating slack in said tether;

(e) said electrical output connected to an electrical circuit;

(f) said electrical circuit controlling said electrical motor;

(g) said electrical motor driving said winch;

wherein said electrical output via said electrical circuit driving said electrical motor in forward, reverse, and stop modes to maintain a predetermined slack in the tether, so that the predetermined slack allows said flying craft to freely move about in said controlled environment space under its own power.

5,251,479

DOWNHOLE WELLBORE TOOL FOR MEASURING FLOW PARAMETERS

Robert W. Siegfried, II, Richardson, and Keith W. Katahara, Allen, both of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Oct. 3, 1991, Ser. No. 770,261

Int. Cl.[5] E21B 21/08, 47/10; G01N 27/00, 33/26

U.S. Cl. 73—155 4 Claims

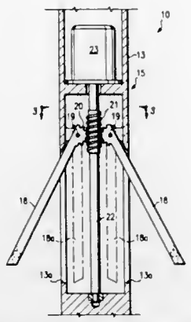
1. A downhole tool adapted to be positioned into a wellbore for measuring the flow velocity of a flowstream in said wellbore said tool comprising:

a housing;

a plurality of elongated arms radially spaced around said housing, each arm having an inner end and an outer end;

means for pivotably mounting the inner end of each arm in said housing;

a sensor for sensing the flow velocity of the flowstream carried on each of said arms near its respective outer end and means for rotating said arms about their respective pivots to extend said sensor laterally from said housing into said flowstream without substantially restricting or redirecting said flowstream.



5,251,480

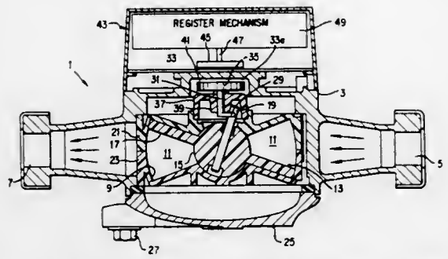
FROST-PROOF DRIVE SHAFT FOR WATER METER

Charles P. Brunson, IV, Montgomery, and Thierry Swinson, Wetumpka, both of Ala., assignors to Schlumberger Industries, Inc.

Filed Jun. 2, 1992, Ser. No. 892,291

Int. Cl.[5] G01F 15/10

U.S. Cl. 73—253 12 Claims



1. In a water meter of the type having an oscillatory positive displacement measuring element disposed in a chamber, the measuring element including a drive spindle coupled to means for magnetically driving a register, the improvement comprising:

means for coupling the drive spindle to the magnetic drive means comprising:

a drive shaft connected at one end to the magnetic drive means, the other end of the drive shaft including a flexible portion extending radially away from a longitudinal axis of the drive shaft;

the drive spindle engaging the flexible portion of the drive shaft to turn the drive shaft magnetic drive means when the measuring element and drive spindle oscillate due to the passage of water through the chamber.

5,251,481

DIRECT-INTAKE AIR MEASURING APPARATUS

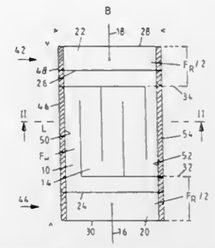
Ralf Huck, Hanau, and Eckert, Gründau, both of Fed. Rep. of Germany, assignors to Sensycon, Fed. Rep. of Germany

Filed Jun. 24, 1991, Ser. No. 719,370

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1990, 9006967[U]

Int. Cl.[5] G01F 1/68

U.S. Cl. 73—204.26 8 Claims



1. An anemometer for measurement of the flow speed or mass flow of gases or fluids comprising a block-shaped substrate composed of glass material and having a leading edge, a temperature-dependent surface resistor partially covering said substrate, said substrate and at least a portion remaining covered by said surface resistor adjacent said leading edge, said surface resistor comprising a meander-shaped current path and being electrically connected with a source of current, at least a portion of said substrate remaining uncovererd by the surface resistor closest to the trailing edge of the substrate said anemometer having a covering layer on said surface resistor and in contact with said substrate, at least in the area adjacent said leading edge, said covering comprising a first cooling contacting said surface resistor and said substrate and a second coating contacting said first coating, the first coating having a melting point lower than the softening point of said substrate.

5,251,482

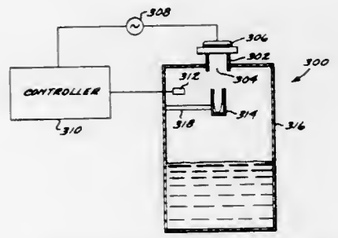
LOW FREQUENCY ACOUSTIC FUEL SENSOR

Kenn S. Bates, Long Beach, and David B. Chang, Tustin, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 16, 1990, Ser. No. 552,642

Int. Cl.[5] G01F 17/00, 23/28

U.S. Cl. 73—290 V 8 Claims



1. An apparatus for measuring the volume of a substance in a cavity within a container, comprising:

means for acoustically exciting said cavity at one or more excitation frequencies within a first frequency range;

means for providing a cavity response signal indicative of the acoustic response of said cavity within the container to the acoustic excitation signals;

means for calibrating said apparatus to the speed of sound within said cavity and for providing a volume signal indicative of the volume of substance within said container, comprising:

an auxiliary chamber of known volume disposed within said cavity so as to be above the level of said substance within said cavity, said chamber having a known resonant frequency when the speed of sound propagation in said chamber is at a predetermined nominal value, said known resonant frequency of said auxiliary chamber being higher than a resonant frequency of said cavity, said chamber exposed to the atmosphere within said container so that the actual resonant frequency of said chamber will be dependent on the actual speed of sound propagation through said atmosphere;

means for acoustically exciting said chamber at excitation frequencies within a second frequency range distinct from said first frequency range;

means for providing a chamber response signal indicative of the acoustic response of the chamber to said chamber excitation signals; and

processing means responsive to said cavity response signal and to said chamber response signal for providing a volume signal compensated for the actual speed of sound propagation within said cavity and indicative of the volume of substance within said cavity.

5,251,483

PIEZOELECTRIC SENSOR ELEMENT INTENDED FOR A GYRO

Jan Söderkvist, Täby, Sweden, assignor to Swedish Ordnance-FFV/Bofors AB, Bofors, Sweden

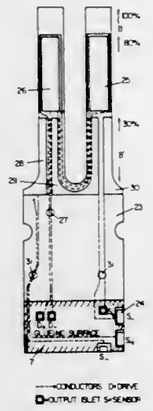
PCT No. PCT/SE90/00112, § 371 Date Aug. 27, 1991, § 102(e) Date Aug. 27, 1991, PCT Pub. No. WO90/10196, PCT Pub. Date Sep. 7, 1990

PCT Filed Feb. 20, 1990, Ser. No. 743,338

Claims priority, application Sweden, Feb. 27, 1989, 8900666

Int. Cl.[5] G01P 9/04

U.S. Cl. 73—505 13 Claims



1. A sensor element intended for a gyro, said sensor element comprising:

an elongated body including at least one elongated element defining a tine and having a first and a second end, said first end being freely vibratable in two planes perpendicular in relation to each other, designated as the X-Y plane and the Y-Z plane, said second end being fixedly secured in a body rotatable about a longitudinal axis which coincides with said planes;

drive and sensor electrodes for piezoelectrically providing and detecting vibrations of said first end, said drive electrodes providing vibrations in a plane perpendicular in relation to the plane in which said sensor electrodes detect

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vibrations, said latter vibrations being generated by Coriolis forces acting upon the sensor element when said sensor element is rotated about the longitudinal axis,

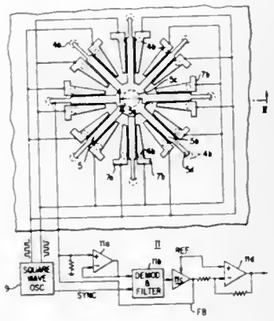
said drive and sensor electrodes covering substantial portions of said first vibratable end of said at least one elongated element;

said at least one elongated body, at its second fixedly secured end including a transitional portion and an anchorage portion which do not participate in the vibration to any appreciable degree;

said anchorage portion including a connection means which through connectors coupled to said connection means connects said sensor element to outer electronics; and

wherein said elongated body including said at least one elongated element, said transitional portion and said anchorage portion is manufactured as one common piece of piezoelectric material.

5,251,484
ROTATIONAL ACCELEROMETER
Mark D. Mastache, Boise, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Apr. 3, 1992, Ser. No. 862,909
Int. Cl.[5] G01P *15/125*
U.S. Cl. 73—517 A **11 Claims**



1. A rotary accelerometer, comprising:

a substrate;

an angularly flexible, rotary electrode comprising a central hub having an axis, and a least one pair of, substantially radially disposed spoke electrodes projecting in opposite directions from said central hub, substantially along a common diameter, each spoke electrode having opposite sides;

means attaching said central hub to said substrate, and

an elongated electrode fixedly attached to said substrate, respectively on the same side of said opposite sides of each spoke electrode and defining with each spoke electrode respective circumferential gaps which are substantially equal.

5,251,485
SEMICONDUCTOR ACCELEROMETER
Yuji Kondo, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed May 7, 1991, Ser. No. 695,819
Claims priority, application Japan, May 7, 1990, 2-117088
Int. Cl.[5] G01P *15/12*
U.S. Cl. 73—517 R **3 Claims**

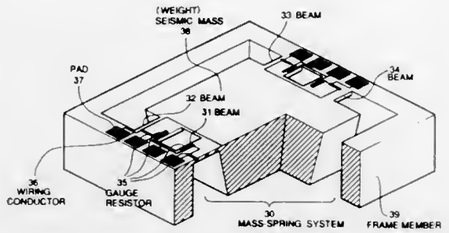
1. A semiconductor accelerometer comprising:

a semiconductor frame member;

a mass-spring system having a seismic mass elastically supported at its opposite sides by a plurality of beams extending from the semiconductor frame member, wherein a first pair of said beams extend from one side of the semiconductor frame member to one facing side of the seismic mass, and a second pair of the beams extend from a side of the semiconductor frame member opposite to said one side of the semiconductor frame member from which the first pair of beams extends, said second pair of beams reaching a side of the seismic mass opposite to the side to which the first pair of beams are coupled; and

a pair of gauge resistors formed in each of the beams such that one of the gauge resistors extends along a lengthwise direction of the beams and the other of the gauge resistors extends along a widthwise direction of the beams, wherein

said gauge resistors formed in the first pair of beams being interconnected to form a first Wheatstone bridge, each connection node of which is connected through a wiring

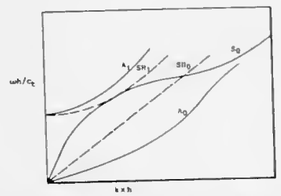


conductor to a corresponding one of external connection pads formed on a first portion of the semiconductor frame member adjacent to the first pair of beams,

said gauge resistors formed in the second pair of beams being interconnected to form a second Wheatstone bridge, each connection node of which is connected through a wiring conductor to a corresponding one of external connection pads formed on a second portion of the semiconductor frame member adjacent to the second pair of beams, and

said gauge resistors having diffusion resistors and contact diffusion regions, each of said contact diffusion regions is formed at each end of the diffusion resistors and has a diffusion concentration which is higher than that of the diffusion resistors.

5,251,486
METHOD OF ULTRASONIC MEASUREMENT OF TEXTURE
R. Bruce Thompson; John F. Smith, both of Ames, Iowa; Seung S. Lee, Taejon Ch'ungmam, Rep. of Korea, and Yan Li, Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa
Continuation of Ser. No. 475,352, Feb. 5, 1990, abandoned, which is a continuation of Ser. No. 188,495, Apr. 29, 1988, Pat. No. 4,899,589. This application Aug. 3, 1992, Ser. No. 924,176
Int. Cl.[5] G01N *24/00*
U.S. Cl. 73—597 **62 Claims**



1. A method for analyzing texture of sheet material comprised of polycrystals of various crystallite symmetries and which has a rolling direction and boundary surfaces, using non-destructive ultrasonic investigation of the sheet material, comprising the steps of:

measuring the velocity of ultrasonic propagating in at least one plate mode of the sheet material in one or more directions relative to the rolling direction of the sheet material; and

deriving texture-related characteristics from said measurements by analyzing the absolute values and anisotropies of said plate mode velocity measurements in terms of theory of wave propagation in anisotropic plates, which simultaneously takes into account the influence of boundary surfaces of the sheet material and anisotropies in elastic stiffnesses on the velocity of plate mode propagation and which thereby recognizes that the anisotropies of plate mode velocities are different than those of plane waves because of the influence of the boundary surfaces.

5,251,487
APPARATUS FOR ACOUSTICALLY COUPLING AN ULTRASONIC TRANSDUCER WITH A BODY
Scot H. Marshall, Slidell, La., assignor to Martin Marietta Corporation, Bethesda, Md.
Division of Ser. No. 329,939, Mar. 29, 1989, Pat. No. 5,056,367.
This application Oct. 15, 1991, Ser. No. 776,845
Int. Cl.[5] G01N *29/00*
U.S. Cl. 73—644 **5 Claims**

3. An apparatus for acoustically coupling an ultrasonic transducer with a body along whose surface waves are to be transmitted, the apparatus comprising:

a wedge having:

(a) a first surface for acoustically contacting a surface of a body along which surface waves are to be transmitted;

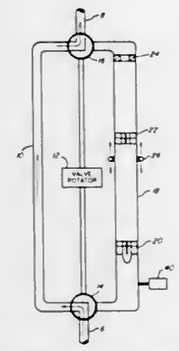
(b) a second surface for acoustically contacting an ultrasonic transducer;

(c) a third surface for acoustically contacting an ultrasonic transducer;

(d) first orienting means for relatively orienting the first and second surfaces to each other and maintaining the relative orientation of the first and second surfaces to each other such that ultrasonic waves emitted by an ultrasonic transducer generate surface waves which travel on a surface of a body when the ultrasonic transducer is in acoustic contact with the second surface and the first surface is in acoustic contact with the surface of the body; and

(e) second orienting means for orienting the third surface relative to the first surface such that ultrasonic waves emitted by an ultrasonic transducer when the transducer is in acoustic contact with the third surface generate surface waves which travel on the surface of the body in a direction opposite to the surface waves generated by an ultrasonic transducer which is in acoustic contact with the second surface.

5,251,488
MULTIPHASE VOLUME AND FLOW TEST INSTRUMENT
John P. Haberman, and Gregory J. Hatton, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.
Filed Feb. 14, 1991, Ser. No. 655,476
Int. Cl.[5] G01F *15/08*
U.S. Cl. 73—861.04 **10 Claims**



1. An apparatus for determining volumetric flow rates of phases in multiphase fluid flow through a main pipe, comprising:

(a) a test section connected at spaced points to the main pipe;

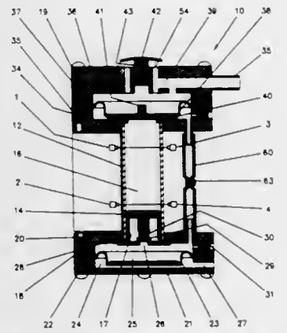
(b) switching means at spaced points of said test section capable of directing fluid flow through said test section or through the main pipe;

(c) a float inside said test section capable of locating at least one interface between the fluid phases, and whose position in said test section is capable of being determined;

(d) a piston located at a starting position in said test section and movable from said starting position by the multiphase fluid flow in said test section;

(e) sensing means for detecting arrival of said piston at an arrival location spaced from said starting position in said test section and for determining the location of said float in said test section.

5,251,489
FLUID FLOW MEASURING DEVICE
Hill S. Lalin, 10 Bonita Ter., Wayne, N.J. 07470
Filed Oct. 22, 1991, Ser. No. 781,501
Int. Cl.[5] G01F *13/00*
U.S. Cl. 73—861 **16 Claims**



1. A fluid flow measuring device comprising:

a hollow flowtube having first and second opposite open

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ends and a movable piston disposed therein for movement between said opposite ends, respectively;

first means for enclosing said first open end of said flowtube, with said first means comprising: a flexible diaphragm for sealing said flowtube at said first open end from the ambient atmosphere; a housing surrounding said flexible diaphragm; a plenum chamber in said housing adjacent said flexible diaphragm, with said flexible diaphragm separating said plenum chamber from said flowtube; inlet means for connecting said plenum chamber to an external source of fluid; valve means connected to said housing and having an open position in which said plenum chamber is open to the atmosphere for causing said piston to move to said second open end, and a closed position for causing said piston to move to said first open end; means connected to said flexible diaphragm for switching said valve means into said open position when said piston reaches a position adjacent to said fist open end; and means for switching said valve means into said closed position when said piston reaches a position adjacent to said second open end;

second means for enclosing said second open end of said flowtube, with said second means comprising: a diaphragm for sealing said flowtube at said second open end from the ambient atmosphere; a housing surrounding said diaphragm; said housing having a plenum chamber adjacent said diaphragm on one side thereof in communication with said second open end of said flowtube and a cavity adjacent the opposite side of said diaphragm; inlet means for coupling said cavity to said external source of fluid; and

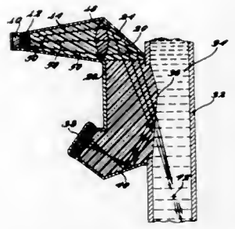
means for optically detecting the movement of said piston between selected positions along said flowtube.

5,251,490

ULTRASONIC FLUID FLOW MEASUREMENT METHOD AND APPARATUS

James W. Kronberg, 108 Independent Blvd., Aiken, S.C. 29801

Filed Feb. 7, 1992, Ser. No. 832,567
Int. Cl.[5] G01F *1/66*
U.S. Cl. 73—861.25 **20 Claims**



1. Apparatus for use in measuring the speed and direction of fluid flowing in a pipe, said pipe having a longitudinal axis and an opening, said apparatus comprising:

means for generating sound waves;

means for focusing said sound waves; including a cone having a proximal end and a distal end, said proximal end facing said generating means, said cone receiving said sound waves from said generating means at said proximal end and guiding said sound waves to said distal end;

means for directing said focused sound waves through said opening at an angle subparallel to said longitudinal axis, said sound waves propagating in said pipe with a velocity having a component parallel to said longitudinal axis and a component perpendicular to said longitudinal axis, said parallel component being greater than said perpendicular component; and

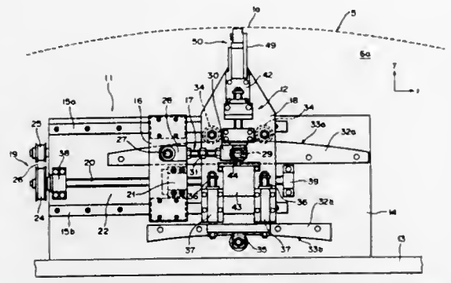
means for detecting sound waves reflected by inhomogeneities within said fluid.

5,251,491

METHOD OF AND APPARATUS FOR MEASURING A TENSION OF GRID ELEMENT

Susumu Nakaoka; Sadao Kozuka, and Tomoyuki Kurihara, all of Aichi, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 27, 1991, Ser. No. 766,507
Claims priority, application Japan, Sep. 28, 1990, 2-259571
Int. Cl.[5] G01L *5/04*
U.S. Cl. 73—862.41 **13 Claims**



1. A method of measuring a tension of a grid element stretched to a color selecting electrode frame of a color cathode ray tube comprising the steps of: vibrating said grid element by the flow of air from an air nozzle so that said grid element is resonated;

counting the number of vibrations of said grid element per second by the radiation of a laser light emitted from a very small distance measuring device; and

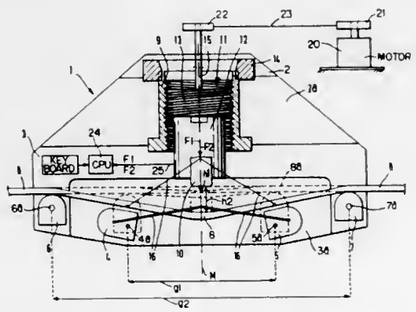
calculating a resonance frequency of said grid element from the number of said vibrations to thereby obtain a tension of said grid element.

5,251,492

APPARATUS AND METHOD FOR MEASURING A TENSION FORCE IN A ROPE OR CABLE

Alfons Nowag, Bremen, Fed. Rep. of Germany, assignor to Deutsche Aerospace Airbus GmbH, Hamburg, Fed. Rep. of Germany

Filed Feb. 27, 1992, Ser. No. 842,446
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1991, 4106266
Int. Cl.[5] G01L *5/04*
U.S. Cl. 73—862.472 **10 Claims**



1. An apparatus for ascertaining a tension biasing force in an elongated, tensioned flexible member (8), comprising at least two supports spaced at a first distance value (g1) from each other for supporting said flexible member (8) at two supported locations spaced at said first distance value (g1) from each other for holding said flexible member (8), force applying

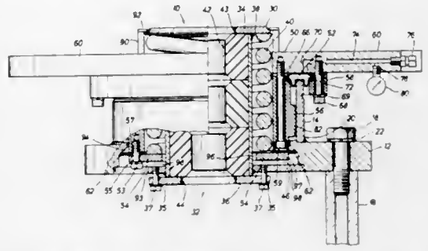
means including a load cell (12) for applying a first force value (F1) perpendicularly to said tensioned flexible member for deflecting said tensioned flexible member (8) to a first deflection value (h1) while said flexible member (8) is supported at said first distance value (g1), means for spacing said at least two supports from each other at a second distance value (g2) for holding said tensioned flexible member (8) at said second distance value (g2) during application of a second perpendicular force value (F2) by said force applying means for deflecting said flexible member (8) to a second deflection value (h2), while said flexible member (8) is supported at said distance value (g2), said force applying means (10) applying said first and second force values (F1, F2) to said member (8) perpendicularly to said flexible member and centrally between said at least two supports, said load cell (12) being arranged for sensing said forces (F1 and F2), and means for receiving and processing said force values, said deflection values, and said distance values to ascertain said tension force, whereby measuring errors due to said applying of said first and second force values are eliminated.

5,251,493

LOAD CELL FOR WELL TUBULARS OR THE LIKE

David L. Sipos, Friendswood, Tex., assignor to Bowen Tools, Inc., Houston, Tex.

Filed Mar. 20, 1991, Ser. No. 672,376
Int. Cl.[5] G01L *1/02*
U.S. Cl. 73—862.584 **2 Claims**



1. A load indictor comprising

a stationary assembly having a piston means including an inner surface,

a movable assembly including a body member, a pressure chamber means containing fluid and mounted to the body member, and bearing means for contacting the inner surface of said piston means for positioning of the movable assembly relative to the stationary assembly;

seal means for sealing off a space between the bearing means and the piston means to inhibit debris from entering the space;

wherein the seal means is a diaphragm secured to the body member of which the bearing member means is a part, and force of material moving toward the space forces the diaphragm against a plate to which the piston means is secured to close off the space.

5,251,494

LIGHT-WEIGHT, DIRECT FIXING DEVICE FOR HANDLEBAR STEM

Craig H. Edwards, 3765 Honolulu Ave., La Crescenta, Calif. 91214

Filed Sep. 18, 1992, Ser. No. 947,160
Int. Cl.[5] B62K *21/12*
U.S. Cl. 74—551.1 **7 Claims**

1. A device for fixing a stem to a fork tube, said stem fixing device comprising:

a. an approximately vertical tube of said stem being received telescopically into said fork tube,

b. a gap in the circumference of said vertical tube,

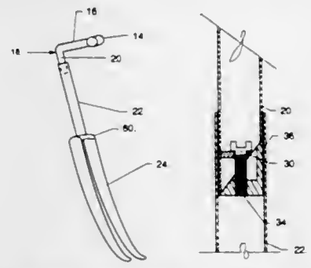
c. a highest point of said gap,

d. a lower portion of said vertical tube,

e. said lower portion defined as the portion of said vertical tube not higher than said highest point of said gap,

f. an expansion means,

g. a tightening means capable of being attached to said expansion means and to said vertical tube, which, when attached to said expansion means and to said vertical tube



and operated, causes a cross-sectional area occupied by at least a part of said lower portion of said vertical tube and at least a part of said expanding means to expand laterally against said fork tube,

h. a mounting means for attaching said tightening means to said vertical tube,

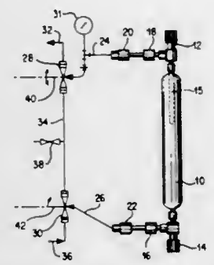
i. said mounting means attached to said vertical tube at a location which is at or below said highest point of said gap.

5,251,495

MINIMUM EMISSION CLOSED LOOP SAMPLING SYSTEM FOR TRANSPORTABLE CONTAINERS

S. Wayne Kuhner, Worthington, Ky., assignor to Ashland Oil, Inc., Ashland, Ky.

Continuation of Ser. No. 631,828, Dec. 21, 1990, Pat. No. 5,131,282. This application Jan. 27, 1992, Ser. No. 826,340
Int. Cl.[5] G01N *1/10*
U.S. Cl. 73—863.71 **9 Claims**



1. A sampling system for sampling fluids with minimal hand operations and with minimum atmospheric contamination, said system comprising in combination:

A. transportable container means for containing samples having provision for flowing fluids through said container means, and comprising an inlet valve and an outlet valve mounted on substantially opposite portions of said container means;

B. quick connect means connected to said inlet valve and said outlet valve;

C. two three-position valves having quick-connect means to mate with said quick-connect means mounted on said inlet and said outlet valve, said three-position valves being alternately configured to a sample mode in which a fluid sample flows through said container, a venting mode in

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which volumes leading to said container means from the source of said fluid to be sampled are vented to suitable disposal means for receiving vented fluid, and a shut-off mode in which flow is blocked through said three-way valves; and

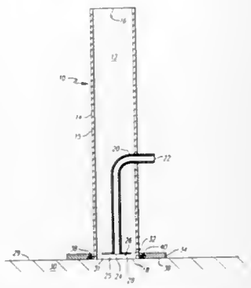
wherein said quick-connect means communicating with said three-way valves are mounted on a panel and wherein said three-way valves have handles which extend through another position on said panel, whereby said quick-connect means on said inlet and said outlet valve of said transportable container means can be simultaneously bayoneted into said quick-connect means on said panel.

5,251,496

SURFACE SAMPLING TESTER

Gary F. Platek, 9460 Mulberry Rd., Chesterland, Ohio 44026

Filed May 3, 1991, Ser. No. 695,685
Int. Cl.[5] G01N *1/14*
U.S. Cl. 73—864 **13 Claims**



1. Apparatus for exposing a predetermined area of the surface of an object to a rinsing agent and for collecting such rinsing agent after exposure, said apparatus comprising:

a body having an internal cavity, said body having at least first and second openings that are in communication with the internal cavity;

means for supplying the rinsing agent to said internal cavity through said first opening;

a conduit that is connected to said body, said conduit having a discharge end that is located externally from said body, said conduit also having an inlet end that is located within said internal cavity and spaced apart from the second opening of said body; and

means for sealing, said sealing means being located adjacent to the second opening of said body and forming a seal between said body and the surface of the object that is to be exposed to the rinsing agent at times when said sealing means is in contact with said surface.

5,251,497

TEST DEVICE FOR EQUIPMENT IN MOTION

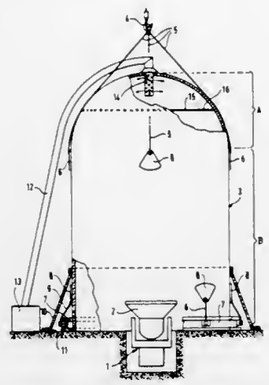
Elie Bressan, L'Union, France, assignor to Alcatel Espace, Courbevoie, France

Filed Nov. 1, 1991, Ser. No. 786,839
Claims priority, application France, Nov. 6, 1990, 90 13729
Int. Cl.[5] G01N *17/00*
U.S. Cl. 73—865.6 **14 Claims**

1. A test device for testing equipment in motion, comprising:

testing means for testing equipment; and

a mobile enclosure surrounding said equipment being tested by said testing means, characterized in that said enclosure contains a gas lighter than air and comprises a material



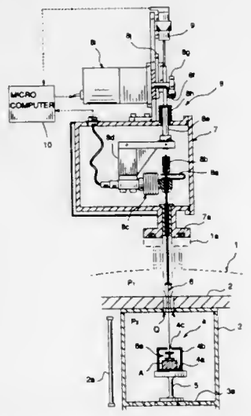
which is flexible and is gastight to said gas lighter than air, said enclosure being inflatable.

5,251,498

DEVICE FOR MEASURING THE PHYSICAL STATE OF AN OBJECT

Eiji Nakatsukasa; Ippey Yamauchi, both of Kyoto, and Susumu Takano, Shiga, all of Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Mar. 25, 1992, Ser. No. 857,431
Claims priority, application Japan, Mar. 27, 1991, 3-63590
Int. Cl.[5] B60K *17/354*
U.S. Cl. 73—865.8 **5 Claims**



1. A device for measuring the physical state of an object comprising:

frame means for holding said object;

base means for supporting said frame means;

a probe having an end portion and disposed for movement relative to said object and said frame means;

drive means for causing relative movement of said probe so that said end portion of said probe moves between said object and said frame means and for lifting said frame means together with said object away from said base means;

first detecting means for detecting a relative displacement of said probe;

and second detecting means for detecting a load imposed on said probe;

signal processing means for processing the signal from both said detecting means and for controlling said drive means;

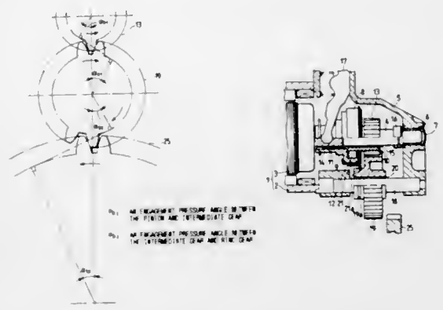
whereby a change in the vertical dimension of said object and a change in the weight of said object are measured substantially simultaneously.

5,251,499

INTERMEDIATE GEAR TYPE STARTER MOTOR

Shuzou Isozumi, Hyogo, Japan, assignor to Mitsubishi Denki K.K., Tokyo, Japan

Filed May 12, 1992, Ser. No. 881,660
Claims priority, application Japan, May 13, 1991, 3-43194[U]
Int. Cl.[5] F02N *15/06*
U.S. Cl. 74—7 E **2 Claims**



1. An intermediate gear type starter motor comprising:

an output shaft extended integrally or connected to and extended from a front portion of a rotary shaft of a motor;

an overrunning clutch connected axially movably to the output shaft by means of a helical spline for transmitting rotation in one way;

a pinion, which is a profile shifted gear, provided in the front end portion of a clutch inner member of the overrunning clutch, an intermediate gear shaft mounted to or supported by a front bracket of the motor; and

an intermediate gear, which is another profile shifted gear, supported through a bearing by the intermediate gear shift, the intermediate gear being always in engagement with the pinion, being movable through linking means by the axial movement of the overrunning clutch, and being engagable with a ring gear of an engine when moved forwardly to thereby transmit reduced rotation thereto;

wherein the shift coefficient of said pinion is set smaller than that of said intermediate gear to thereby be able to minimize a difference between two engagement pressure angles respectively obtained between said pinion and intermediate gear and between said intermediate gear and ring gear.

5,251,500

INDUSTRIAL ROBOT WITH A COMPOUND DRIVE MECHANISM

Nobutoshi Torii, Hachioji; Ryo Nihei, and Mitsuhiro Yasumura, both of Yamanashi, all of Japan, assignors to Fanuc Ltd., Yamanashi, Japan

PCT No. PCT/JP91/01290, § 371 Date May 26, 1992, § 102(e) Date May 26, 1992, PCT Pub. No. WO92/05921, PCT Pub. Date Apr. 16, 1992
PCT Filed Sep. 27, 1991, Ser. No. 859,371
Claims priority, application Japan, Sep. 27, 1990, 2-255378
Int. Cl.[5] F16H *25/20;* **B25J** *18/00*
U.S. Cl. 74—89.15 **14 Claims**

1. A compound drive mechanism for an industrial robot, capable of driving an output element thereof for linear motion and of driving said output element for a rotational motion independently of the linear motion, said compound drive mechanism comprising:

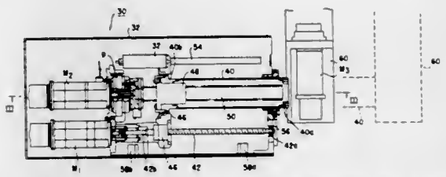
a housing means for internally accommodating said compound drive mechanism;

a rotation drive motor means arranged at a fixed position in said housing means;

a linear-motion drive motor means arranged at a fixed position in said housing means;

a rotary spline shaft means attached at a first end to said rotation drive motor means;

a spline nut means having one end joined to said output element and engaging said rotary spline shaft means;



a rotary screw shaft means attached at an inner end to said linear-motion drive motor means;

a liner-motion nut means engaged with said rotary screw shaft means for a linear motion on said rotary screw shaft means; and

a rolling contact bearing means interconnecting said linear-motion nut means and said spline nut means to thereby relatively rotate said spline nut means with respect to said linear-motion nut means, wherein

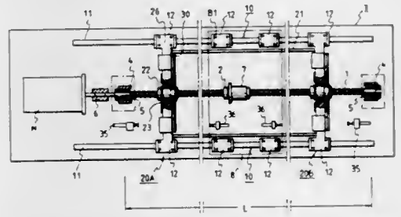
the linear motion of said linear-motion nut means moves the output element linearly through the spline nut means, and the output element is rotated together with the spline nut means.

5,251,501

INTERMEDIATE SUPPORT DEVICE FOR SCREW SHAFT

Masayuki Katahira, Gunma, Japan, assignor to NSK Ltd., Tokyo, Japan

Filed Sep. 30, 1992, Ser. No. 953,225
Claims priority, application Japan, Sep. 30, 1991, 3-079208[U]
Int. Cl.[5] B23Q *5/40*
U.S. Cl. 74—89.15 **6 Claims**



1. An intermediate support device for a screw shaft comprising:

a nut threadedly engaged with a screw shaft which is rotatably supported at opposite ends thereof;

a pair of linear movement guiding members extending parallel to said screw shaft, each of said linear movement guiding members having a slider;

a connecting member interconnecting said sliders and said nut, said connecting member rotatably supporting said nut through a rolling bearing; and

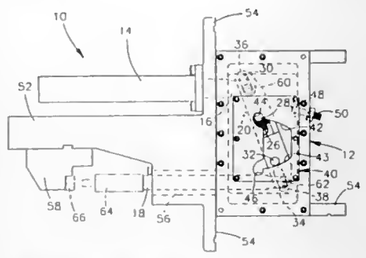
a braking means mounted on said connecting member for restraining the rotation of said nut.

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5,251,502
SEQUENTIAL PIVOT PIN MULTIPLIER

Ronald J. Eisbrenner, Shelby Township, Maccomb County; Edward E. Sunderman, and Donald B. DeCorte, both of Mt. Clemens, all of Mich., assignors to Savair Inc., St. Clair, Mich.

Filed Jun. 9, 1992, Ser. No. 895,784
Int. Cl.[5] F16H *21/10*; B21J *9/18*
U.S. Cl. 74—110 **19 Claims**



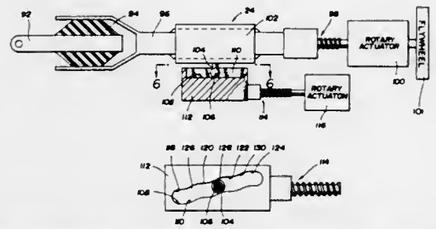
1. A mechanical force enhancer for use with a tool that performs work on a workpiece, said mechanical force enhancer comprising:
- a housing having a camming plate;
- a first and second camming contour formed in said camming plate;
- a first and second fulcrum associated with said first and second camming contours, respectively;
- linkage means operatively associated with said camming plate, said linkage means having a driven portion adjacent said first camming contour and a driving portion adjacent said second camming contour;
- a pair of spaced-apart camming means attached to said linkage means such that a first camming means of said pair of spaced-apart camming means engages said first fulcrum while a second camming means of said pair of spaced-apart camming means cams with said second camming contour, and such that said second camming means engages said second fulcrum while said first camming means cams against said first camming contour;
- means engaged with said driven portion of said linkage means for stroking said first camming means between said first fulcrum and said first camming contour; and
- an output member engaged with said driving portion of said linkage means;
- whereby said stroking means strokes said driven portion of said linkage means while said first camming means is engaged with said first fulcrum and said second camming means cams with said second camming contour to stroke said output member at a first rate and force level until said second camming means engages said second fulcrum, whereupon said first camming means disengages said first fulcrum and cams with said first camming contour so as to stroke said output member at a slower rate but higher force level than said first rate and force level.

5,251,503
ELECTRO-MECHANICAL POWER CONTROLLER FOR A GEAR SHIFT MECHANISM

Robert L. Morris, Livonia, and Andrew L. Bartos, Clarkston, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 758,019, Sep. 12, 1991, Pat. No. 5,150,629. This application Jun. 22, 1992, Ser. No. 902,159
The portion of the term of this patent subsequent to Sep. 29, 2009, has been disclaimed.
Int. Cl.[5] F16H *59/10*; G05G *11/00*
U.S. Cl. 74—337.5 **2 Claims**

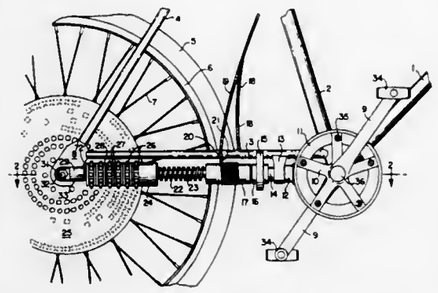
1. An electro-mechanical controller in a transmission gear selector having a plurality of forward gear ratios, a reverse gear ratio and a neutral condition, said gear selector being movable linearly for selection of the gear ratios, and rotatably for movement in the neutral condition between gear ratios; said controller comprising: a first rotary drive means for providing a gear selection input including a first drive translating means for converting rotary motion to linear motion; a selector rod drivingly connected with said first drive translating means for selective movement thereby to provide linear movement thereof for controlled selection of the forward and reverse gear ratios; a second rotary drive means for providing movement in said neutral condition including a cam member comprising a plurality of ramp portions and a dwell portion between adjacent ramp portions; cam follower means operatively connected with said selector rod and drivingly connected with said cam member and cooperating with said ramp portions for enforcing rotary movement of said selector rod to provide movement in said neutral condition and cooperating with said dwell portion for permitting linear movement of said first drive translating means for gear ratio selection; compliant coupling means operatively connected between said first drive translating means and said selector rod for providing compliance and damping therebetween in response to input motion; and flywheel means rotatable with said first rotary drive means for selectively storing and releasing energy during controlled selection of the forward and release gear ratios.



5,251,504
AUTOMATIC TRANSMISSION

Andrew G. Summerville, Jr., 75 Grove St., Clinton, Conn. 06413, and Albert V. Mirto, Jr., 3 Pioneer Dr., North Branford, Conn. 06471

Filed Jul. 31, 1992, Ser. No. 922,510
Int. Cl.[5] F16H *3/08*
U.S. Cl. 74—368 **26 Claims**

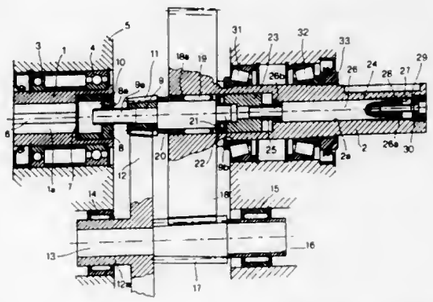


1. An automatic transmission for driving a rotating wheel having an axle mounted onto a support frame, said transmission comprising, in combination:
- a power input means mounted to said frame for receiving power input;
- a drive shaft rotatably mounted to said support frame;
- means for transmitting said power input from said power input means to said drive shaft causing said drive shaft to rotate;
- a plurality of driving elements mounted for rotation freely about said drive shaft in at least one direction and having engagement means on the surface thereof, one of said driving elements being a lead driver connected to said drive shaft for driven rotation along with said drive shaft, said driving elements being located at successively greater distances along said drive shaft from said axle with said lead driver being the farthest from said axle;
- a drive plate coupled to said rotating wheel and having a surface extending outwardly away from said axle, said drive plate having on said surface a plurality of concentrically arranged engagement means which mate simultaneously with said engagement means on said driving elements for transmitting rotational power from said drive shaft to said drive plate;
- means for transferring torsional thrust between said plurality of driving elements under axial load; and
- means for applying an axial load to said plurality of driving elements along said drive shaft.

5,251,505
SPEED REDUCER WITH GEARS HAVING PARALLEL AXES

Giovanni Castellani, Via E. Orlandi 9, 41100 Modena, Italy

Filed Dec. 12, 1991, Ser. No. 805,769
Claims priority, application Italy, Dec. 17, 1990, 3777 A/90
Int. Cl.[5] F16H *35/02, 35/08, 55/18*
U.S. Cl. 74—392 **7 Claims**



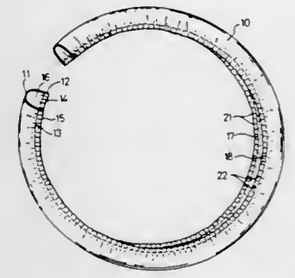
1. Speed reducer with gears having parallel axis comprising:
- a motor shaft;
- a first shaft being axially slidably supported and adapted for being rotated by said motor shaft and coaxial thereto;
- a pinion fixed to said first shaft;
- a second shaft being axially slidably supported with an axis parallel to said first shaft;
- a further pinion fixedly mounted on said second shaft;
- a gear fixedly mounted on said second shaft;
- an output shaft mounted coaxial to said first shaft;
- a further gear fixedly mounted on said output shaft;
- an adjustment device for adjusting the axial position of said first shaft;

wherein said pinion and said further gear have teeth slightly beveled in opposite directions for meshing into respectively said gear and said further pinion both having teeth slightly beveled with the bevel in correspondingly opposite directions, said pinion being axially movable with said first shaft by means of said adjustment device for being in close mesh with said gear and further for causing axial movement of said second shaft for moving said further pinion in close mesh with said further gear.

5,251,506
COVER MATERIAL FOR STEERING WHEEL OF VEHICLE AND MANUFACTURING METHOD THEREOF

Toshio Itagaki, Souka, Japan, assignor to Midori Anzen Kogyo Co., Ltd., Tokyo, Japan

Filed Aug. 27, 1991, Ser. No. 750,578
Claims priority, application Japan, Sep. 7, 1990, 2-93600[U]; Nov. 16, 1990, 2-119273[U]; Nov. 16, 1990, 2-119372[U]; May 2, 1991, 3-40103[U]
Int. Cl.[5] B62D *1/06*; G05G *1/10*
U.S. Cl. 74—558 **29 Claims**

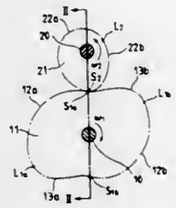


1. For use with a steering wheel of a vehicle, said steering wheel including a central hub and a rim, said rim having an outer and an inner peripheral surface, said cover comprising:
- An elongate body having a central portion having a first length adapted substantially identical with the circumference of the outer peripheral surface of a steering wheel rim; and
- a pair of side skirts extending radially inwardly from respective longitudinal edges of said central body portion, each said side skirt having a distal longitudinal edge comprising permanent pleats sewn therein;
- each said permanently pleated distal edge having a length adapted to be substantially equal to the inner circumference of said steering wheel rim;
- said central body portion and said pair of side skirts cooperatively defining a cover for encasing said steering wheel rim, said cover having a transverse width adapted transversely encircle the steering wheel rim.

5,251,507
NON-CIRCULAR GEAR PAIR

Toshiyuki Takahara, and Akira Takami, both of Hyogo, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan

Filed Mar. 30, 1990, Ser. No. 503,024
Claims priority, application Japan, Apr. 11, 1989, 1-92543
Int. Cl.[5] F16H *55/17*
U.S. Cl. 74—567 **4 Claims**



1. A non-circular gear pair comprising a first non-circular gear fixedly mounted on a first rotary shaft and a second non-circular gear fixedly mounted on a second rotary shaft and engaged with said first non-circular gear, said fears being continuously rotated to transmit torque while being inter-

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meshed with each other, in which said first and second non-circular gears are shaped as follows:

at least one main mode portion which, when the absolute value $|\omega_2/\omega_1|$ of a ratio of a rotational speed ω_2 of said second non-circular gear to a rotational speed ω_1 of said first non-circular gear is represented by $F(\theta)$ which is a function of an angular displacement θ of said first non-circular gear, allows $K=d \log F(\theta)/d\theta$ which is a differential equation involving said angular displacement θ to be constant, and at least one return mode portion extending from at least one of a start point and an end point of said main mode portion, the start point of said main mode portion and an end mode portion and a start point of said return mode portion overlapping thereby to define connecting points, the number of said return mode portions being provided as many as the number of said main mode portions thereby to form the intermeshing pitch curves of said first and second non-circular gears, and

throughout said main mode and return mode portions including said connecting points thereof, the value of said function $F(\theta)$ and a differential value $dF(\theta)/d\theta$ of $F(\theta)$ with respect to θ change continuously, such that at a corresponding one of said connecting points between said main mode portion and said return mode portion of each of said first and second non-circular gears, the rotational speed ratio $F(\theta)$ of said first non-circular gear to said second non-circular gear when said first and second non-circular gears are engaged at said main mode portions is equal to the ratio $F(\theta)$ when said first and second non-circular gears are engaged at said return mode portions, and such that at said corresponding one of said connecting points the differential value $dF(\theta)/d\theta$ of the rotational speed ratio $F(\theta)$ by the angular displacement θ of said first non-circular gear to said second non-circular gear when said first and second non-circular gears are engaged at said main mode portions is equal to the differential value $dF(\theta)/d\theta$ of the rotational speed ratio $F(\theta)$ when said first and second non-circular gears are engaged at said return mode portions.

5,251,508

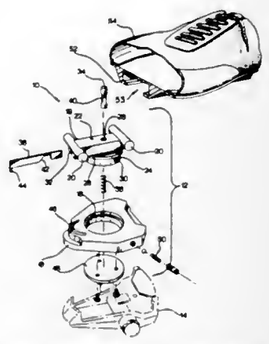
DEVICE FOR CONNECTING A CYCLING SHOE TO THE CRANK ARM OF A BICYCLE

Steven E. Robbins, Westmount, Canada, assignor to 174805 Canada Inc., Canada

Continuation of Ser. No. 584,041, Sep. 18, 1990, abandoned. This application Aug. 21, 1992, Ser. No. 931,499

Int. Cl.[5] G05G *1/14*; A43B *5/00*

U.S. Cl. 74—594.6 **16 Claims**



1. A device for connecting a cycling shoe to a crank arm of a bicycle, comprising:

a) a first member for rotational connection to the crank arm about a pivot axis;

b) a second member for connection to the cycling shoe, said members being in a mutual engagement constituting means for allowing a selective shift of position of one member relative to the other along a path of travel extending across the pedal pivot axis; and

c) a locking device operatively associated with said members for precluding said shift of position when said locking device is in a locked condition, said locking device also being capable of assuming an unlocked condition in which said shift of position is permitted, said mutual engagement further constituting means for preventing separation of said members when said locking device assumes either of said locked or unlocked conditions, such that the operator of the bicycle can maintain his position on the pedal, while on the bicycle, with said locking device in either of said locked or unlocked conditions, said locking device being responsive to a movement of one member relative to the other by the operator, while said first and second members are in said mutual engagement to assume said unlocked condition, thereby allowing the operator of the bicycle to selectively shift the position of one member relative to the other in order to longitudinally reposition the cycling shoe with respect to the pedal pivot axis while said first and second members are in said mutual engagement, said locking device being capable of assuming said locked condition at a plurality of positions of one member relative to the other along said path of travel for locking the cycling shoe with respect to the pedal pivot axis in any one of said positions.

5,251,509

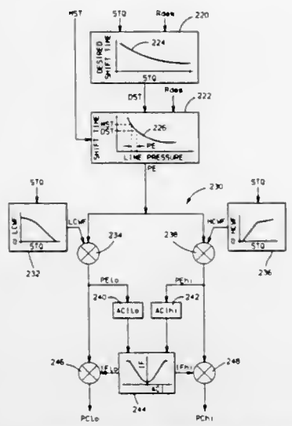
ADAPTIVE PRESSURE CONTROL FOR AN AUTOMATIC TRANSMISSION

Scott B. Pollack, Livonia, and Joseph L. Wanamaker, Tecumseh, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 3, 1992, Ser. No. 862,930

Int. Cl.[5] B60K *41/06*

U.S. Cl. 74—861 **3 Claims**



1. In a motor vehicle multiple speed ratio automatic transmission including a fluid operated torque transmitting device to be engaged for shifting the transmission from a current speed ratio to a target speed ratio, means for regulating a fluid pressure supplied to said torque transmitting device in accordance with a predetermined pressure command for engaging such device, control apparatus comprising:

means for forming a measured shift time signal corresponding to a measured duration of a predetermined portion of a shift to said target speed ratio;

means for forming a desired shift time signal corresponding to a desired duration of said predetermined portion of a shift to said target;

means for applying said desired shift time signal and said measured shift time signal to a predetermined shift time vs. supply pressure characteristic to form first and second pressure signals corresponding to said desired and measured durations, respectively;

means for forming a pressure correction signal in relation to a difference between said first and second pressure signals; and

correction means for adjusting said predetermined pressure command in accordance with said pressure correction signal during a subsequent engagement of said torque transmitting device.

5,251,510

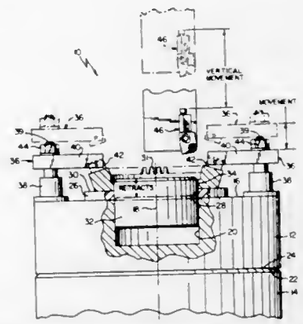
RING GEAR FIXTURE AND MACHINING PROCESS THEREFOR

Neil R. Trim, Fort Wayne, and Robert Cable, Auburn, both of Ind., assignors to Dana Corporation, Toledo, Ohio

Filed Sep. 17, 1991, Ser. No. 760,938

Int. Cl.[5] B23B *1/00, 31/02*

U.S. Cl. 82—1.11 **4 Claims**



1. A method for machining a ring gear having a body including a toothed front face, a rear face, and a central bore coaxial with the axis of rotation of the gear, the central bore to be machined over a substantial portion of its axial depth, requiring clearance in a machining fixture greater than the axial depth of the gear, comprising the steps of:

placing the ring gear with the rear face against a mounting surface of a machining fixture which has a central locator movably disposed therein, the locator movable between a first position above the surface of said fixture and a second position below the surface of said fixture;

extending said locator to said first position such that a portion of said locator contacts the central bore of the ring gear to position the ring gear;

clamping against a portion of the toothed front face of the ring gear to hold the ring gear in place against said machining fixture during machining;

retracting said locator to said second position;

gradually inserting a cutting tool cartridge assembly into the central bore of the ring gear to a depth greater than the axial depth of the ring gear to permit the cutting portion of said assembly to contact and interact with the complete bore surface along its entire axial depth without said assembly contacting said fixture at any time; and

machining the central bore surface of the ring gear.

3. A fixture for positioning and holding a ring gear having a body including a toothed front face, a rear face, and a central bore coincident with the axis of rotation of the gear, the central bore to be machined over a substantial portion of its axial depth, requiring clearance in said fixture to a depth greater than the axial depth of the gear, comprising:

a base having a surface against which the rear face of the gear is positioned and a generally cylindrical bore extending into said base from said surface of said base;

means connected to said base for clamping the ring gear which includes means for fixably interacting with the toothed front face of the gear to maintain the gear in position, wherein said clamping means includes a base portion connected to said base of said fixture, an arm pivotally connected to said base portion and wherein said fixably interacting means is a work holding block pivotally connected to said arm, said work holding block engaging and seating between an adjacent pair of teeth of the gear; and

a generally cylindrical locator movably disposed in said cylindrical bore of said fixture such that said locator is movable between a first position wherein an end of said locator extends above said surface of said base for positioning the gear by aligning the bore of the gear with respect to said fixture so that said clamping means can be positioned and tightened to hold the gear in place against said base, and a said second position below said surface of said base so that the gear can be machined without interference by said locator.

5,251,511

TOOL HEAD FOR USE IN MACHINE TOOLS

Werner Muendlein, Bietigheim-Bissingen; Gerhard Scheer, Loechgau, and Gerhard Stolz, Ingersheim, all of Fed. Rep. of Germany, assignors to KOMET Praezisionswerkzeuge Robert Breuning GmbH, Besigheim, Fed. Rep. of Germany

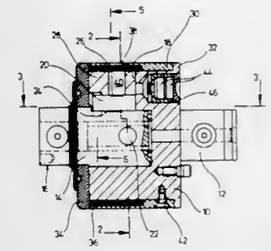
PCT No. PCT/EP90/01416, § 371 Date Feb. 21, 1992, § 102(e) Date Feb. 21, 1992, PCT Pub. No. WO91/03345, PCT Pub. Date Mar. 21, 1991

PCT Filed Aug. 24, 1990, Ser. No. 835,442

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1989, 3930196

Int. Cl.[5] B23B *25/06*; B23Q *17/22*

U.S. Cl. 82—1.2 **32 Claims**



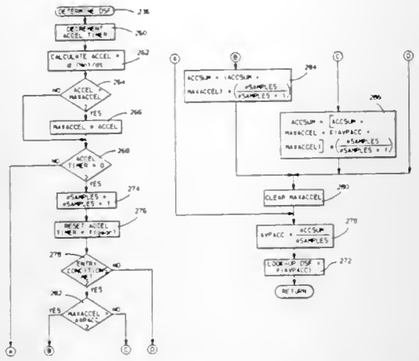
1. A tool head for use in machine tools comprising a main body rotating about an axis of rotation, at least one slide adjustable relative to the main body and being adapted to carry thereon at least one cutting tool, a device for effecting a direct measuring of the displacement path of the slide relative to the main body and a battery operated scanning and evaluating device for scanning evaluating and displaying the results of the displacement path of the slide, said main body having means defining a recess to receive therein the battery-operated scanning and evaluating device, necessary, with a radially outwardly facing digital display and with at least one of the slide and the main body having a measuring scale thereon and the other of the slide and the main body having a sensor for scanning the measuring scale thereon, said sensor being connected to the scanning and evaluating device, wherein the measuring scale and the sensor are arranged in the direct vicinity of the axis of rotation and have flat surfaces which face one another, said surfaces being separated from one another by a narrow gap, and through which surfaces extends the axis of rotation.

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5,251,512
DYNAMIC SHIFT CONTROL FOR AN AUTOMATIC TRANSMISSION

Melissa M. Koenig, Ann Arbor, and William J. Vukovich, Ypsilanti, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 776,030, Oct. 15, 1991, Pat. No. 5,152,192. This application Jul. 8, 1992, Ser. No. 910,488
Int. Cl.[5] B60K *41/22*
U.S. Cl. 74—862 6 Claims



1. In a motor vehicle adapted to be driven by an operator, including transmission gear elements defining a plurality of forward speed ratios and control elements for shifting between speed ratios in response to predefined shift control parameters, first look-up means for storing a first set of shift control parameters for said control elements which set is suited for a normal driving style of said operator, and second look-up mans for storing a second set of shift control parameters for said control elements which is suited for a performance-oriented driving style of said operator, a method of operation comprising the steps of:

periodically measuring specified operating parameters of said vehicle to form a dynamic shift control signal indicative of a current driving style of said operator;

obtaining a first shift control parameter form said first look-up means and a second shift control parameter form said second look-up means; and

ratiometrically determining a shift control parameter for said control elements intermediate said first and second shift control parameters based on said dynamic shift control signal, thereby to define a shift control parameter based on the driving style of said operator.

5,251,513
ADAPTIVE SELF-ADJUSTMENT OF AUTOMATIC TRANSMISSION TO INPUT TORQUE CHANGE DUE TO AUXILIARY DEVICE

Michio Asada, Shizuoka, Japan, assignor to Jatco Corporation, Japan

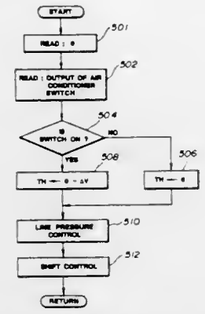
Continuation of Ser. No. 722,191, Jun. 27, 1991. This application Feb. 2, 1993, Ser. No. 12,806
Claims priority, application Japan, Jun. 28, 1990, 2-171043
Int. Cl.[5] F16H *11/02*
U.S. Cl. 74—866 3 Claims

1. A method of an adaptive self-adjustment of an automatic transmission of an automotive vehicle, the automotive vehicle including an auxiliary device driven by an engine with a throttle valve which opens in degrees, the automatic transmission including an input shaft driven by the engine and an output shaft, the automatic transmission including hydraulically actuable and frictionally engageable couplings for transmitting torque from the input shaft to the output shaft, the method comprising the steps of:

detecting an opening degree of the throttle valve and generating a throttle opening degree indicative signal indicative of said detected opening degree;

detecting whether the auxiliary device is in operation or not and generating an auxiliary device in-operation indicative signal when it is detected that the auxiliary device is in operation;

setting said throttle opening degree indicative signal as a predetermined parameter in response to an absence of said auxiliary device in-operation indicative signal;



decreasing said throttle opening degree indicative signal to give a corrected throttle opening degree indicative signal;

setting said corrected throttle opening degree indicative signal as said predetermined parameter in response to a presence of said auxiliary device in-operation indicative signal;

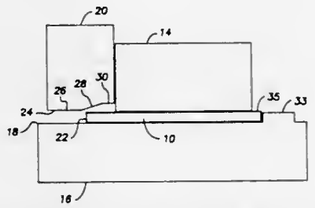
carrying out a line pressure control based on said predetermined parameter such that a line pressure is adjusted to a target value which is variable in a predetermined pattern against variation in said predetermined parameter; and

applying hydraulic pressure under said line pressure to at least one of the hydraulically actuable and frictionally engageable couplings.

5,251,514
METHOD FOR FORMING MOWER BLADES

Charles R. Rhodarmer; George J. Reed, both of Orangeburg, and David F. Fowler, Cameron, all of S.C., assignors to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Nov. 2, 1992, Ser. No. 970,285
Int. Cl.[5] B21K *11/00*
U.S. Cl. 76—104.1 2 Claims



1. A method for forming a cutting edge on a strip-like lawn mower blade having an elongate edge, comprising:

positioning said blade on a die;

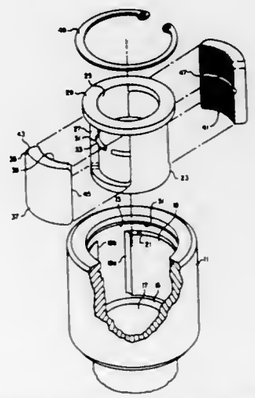
forcing a coining punch against said blade near said elongate edge, said punch forcing a portion of said blade to be squeezed plastically between said punch and die resulting in said blade having a beveled portion and a squeezed outwardly portion; and

shearing said squeezed outwardly portion from said blade leaving said beveled portion as said cutting edge.

5,251,515
BREAK-OUT DEVICE FOR STUDS

Jake Merrick, Lubbock, Tex., assignor to Trycon Services, Inc., Stuart, Fla.

Continuation of Ser. No. 937,497, Aug. 28, 1992, abandoned, which is a continuation of Ser. No. 772,578, Oct. 7, 1991, Pat. No. 5,152,195. This application Feb. 3, 1993, Ser. No. 13,247
The portion of the term of this patent subsequent to Oct. 6, 2009, has been disclaimed.
Int. Cl.[5] B25B *13/50*
U.S. Cl. 81—53.2 7 Claims



1. An apparatus for gripping a threaded member to rotate the threaded member, comprising in combination:

a housing having an axial bore with an axis and an open end, the housing being adapted to be connected to a rotary power source for rotation therewith;

a plurality of cam surfaces formed in the bore, each cam surface extending circumferentially a selected distance and decreasing in distance to the axis from an outer end to an inner end;

a cage carried in the bore, the cage having a plurality of windows, each located adjacent one of the cam surfaces;

a jaw in each window of the cage, each having an outer side that mates with one of the cam surfaces and an inner side adapted to grip the threaded member;

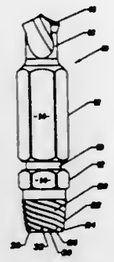
spring means mounted to the interior of the cage in engagement with the inner side of each jaw for retaining each jaw in each window free of attachment to the cage other than through the spring means so that each portion of each jaw will move radially relative to the cage between an outer position in which each jaw is at the outer end of one of the cam surfaces to an inner position in which each jaw is at the inner end of one of the cam surfaces, and for during the jaws to the outer position; and

the housing being rotatable relative to the cage such that when the power source rotates the housing, inertia of the cage and jaws will cause the housing to rotate a limited amount relative to the cage and jaws, causing the cam surfaces to force the jaws toward the inner position to grip the threaded member.

5,251,516
TOOL FOR EXTRACTING BROKEN BOLTS AND THE LIKE

Donald J. Desaulniers, Wolcott, Conn., assignor to Alden Corporation, Wolcott, Conn.

Continuation-in-part of Ser. No. 791,374, Nov. 14, 1991, abandoned. This application Jan. 28, 1993, Ser. No. 10,370
Int. Cl.[5] B25B *13/50*
U.S. Cl. 81—53.2 7 Claims



1. A tool for extracting broken bolts and the like comprise.

a. a central section having a plurality of flat longitudinal surfaces adapted to be engaged by a drill chuck,

b. a left-hand bit section at one end of the central section, the bit having a drilling head to make a cylindrical drilled hole of a drilling diameter in a broken bolt, and Being necked in intermediate the central section and the head,

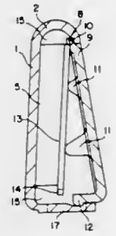
c. an extraction section at the other end of the central section, the extraction section having a portion tapering toward its distal end and being formed with left hand threads on the exterior of the taper, the distal end being chamfered at an angle more abrupt than the angle of the tapered portion and intersecting the threads to be flush with the root of the threads at a first diameter adjacent the beginning of the chamfer and flush with the crest of the threads at a diameter farther along the chamfer outward of the first diameter to form gradually rising threads, the length of the drilling diameter being intermediate the lengths of the first and second diameters,

whereby the chamfered portion of the extraction section may be inserted into the drilled hole and the threads between the first and second diameters will engage and grip the margin of the hole.

5,251,517
HARMONICA CONSTRUCTION

Paul Thevis, Oberndorf, Fed. Rep. of Germany, assignor to Matth. Hohner AG, Trossingen, Fed. Rep. of Germany

Filed Oct. 30, 1992, Ser. No. 969,475
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1991, 4136124
Int. Cl.[5] G10D *7/12*
U.S. Cl. 84—377 20 Claims



1. A harmonica comprising:

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means defining a open-sided housing, said housing defining means including a first end portion which forms a mouthpiece, said mouthpiece having a first array of air flow ports, said housing defining means further including a back and a plurality of spaced apart generally parallel compartment walls extending therefrom;

sounding board means, said sounding board means being sized and shaped to be received in said housing and supported on the free ends of said compartment walls, said sounding board means cooperating with said housing back and compartment walls to define a plurality of reed compartments which are in fluid communication with respective of said ports of said first array, said sounding board means including at least a first reed positioned in registration with a cooperating slot located at a first side of each of said reed compartments; and

means defining a lid for the open side of said housing, said lid defining means having a first attachment portion which mechanically engages the first end portion of said housing defining means, said lid defining means also having a second attachment portion disposed oppositely with respect to said first attachment portion, said second attachment portion mechanically engaging said housing defining means to lock said lid defining means to said housing defining means, said lid defining means further having a plurality of contact members which extend in the direction of said housing defining means back, said contact members engaging said sounding board means and urging said sounding board means against the ends of said compartment walls.

5,251,518

PIPE WRENCH

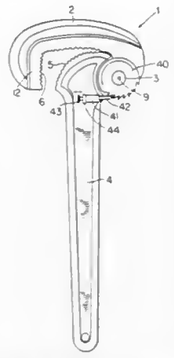
Young S. Woo, 279-133 Sangdo-dong, Dongjak-gu, Seoul, Rep. of Korea

Filed Aug. 6, 1992, Ser. No. 925,203

Claims priority, application Rep. of Korea, Aug. 26, 1991, 13653/1991; Dec. 19, 1991, 22789/1991; Mar. 16, 1992, 4185/1992

Int. Cl.[5] **B25B** *13/28*

U.S. Cl. 81—99 **1 Claim**



1. A pipe wrench, comprising:

a handle including an upper portion having a plurality of teeth and a disc shaped plate having a central bore;

a pivotable member including a surface having a plurality of teeth and a right-angled corner;

a ratchet gear integrally formed on the pivotable member, the rachet gear including a central bore;

means, disposed within the central bore of the rachet gear and the central bore of the handle, for joining the pivotable member to the upper portion of the handle so that the plurality of teeth on the pivotable member are opposed to the plurality of teeth on the upper portion of the handle;

an engaging member having two ends, one end having an inclined surface which engages the rachet gear, and the second end including a handle;

a housing supporting the engaging member on the upper portion of the handle; and

a spring disposed within the housing, the spring urging the inclined surface of the engaging member into contact with the rachet gear.

5,251,519

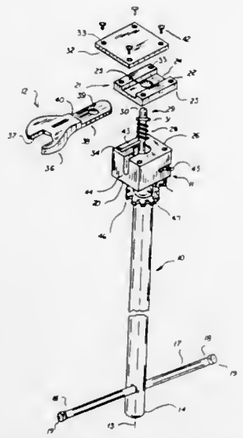
T-HANDLE WRENCH KIT

John W. Lang, 7062 Shady Arbor, Houston, Tex. 77040-4725

Filed Mar. 22, 1993, Ser. No. 35,162

Int. Cl.[5] **B25G** *3/12;* **B25B** *13/02*

U.S. Cl. 81—177.2 **4 Claims**



1. A wrench kit comprising a wrench adapted to apply rotational force to a square or hexagonal fastener having parallel surfaces, said kit comprised of:

1) a wrench member comprised of:

a) a shaft elongated upon a longitudinal axis between proximal and distal extremities and having a bore penetrating said shaft adjacent said proximal extremity in orthogonal relationship to said longitudinal axis,

b) an operational block having a rear extremity associated with the distal extremity of said shaft, a forward extremity defined by a panel orthogonally disposed to said axis and bounded in part by a rearward surface and a flat forward surface bifurcated by a receiving groove containing a central aperture, and a cylindrical channel coaxially aligned with said longitudinal axis and communicating with said forward surface,

c) retaining means adapted to reciprocate within said channel and urged by a coil spring toward said forward surface, said retaining means having a forward end configured to penetrate said aperture,

d) a flat plate affixed to said forward surface and thereby covering said groove in a manner to create a passage of rectangular configuration, and

e) a straight handle held by said bore, and

2) a plurality of heads, each having a working extremity equipped with fixed parallel jaws adapted to engage the parallel surfaces of said fastener in close conformity therewith, an elongated mounting extremity adapted to slidably engage said passage and having a locking recess adapted to be engaged by the forward end of said retaining means, and a shoulder adapted to abut said block.

5,251,520

WRENCH FOR HEXAGONAL REGULAR NUTS AND LOCKNUTS

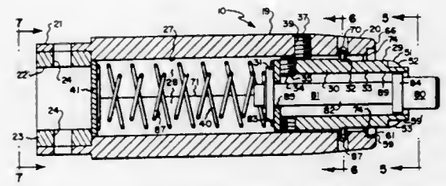
Thomas R. Lanham, Eggertsville, N.Y., assignor to McGard, Inc., Orchard Park, N.Y.

Continuation-in-part of Ser. No. 749,986, Aug. 26, 1991, Pat. No. 5,127,289, which is a continuation-in-part of Ser. No. 656,698, Feb. 19, 1991, abandoned. This application Mar. 18, 1992, Ser. No. 852,321

The portion of the term of this patent subsequent to Jul. 7, 2009, has been disclaimed.

Int. Cl.[5] **B25B** *15/00*

U.S. Cl. 81—436 **24 Claims**



1. A wrench for turning a nut having a threaded bore therein comprising a wrench body having a bore therein and an open end, first means proximate said open end for entering said threaded bore and mounting said nut thereon, second means proximate said open end for releasably supporting said nut while said first means is located in said threaded bore, third means proximate said open end for effecting a turning relationship with said nut, and fourth means for exerting a yieldable force on said first means to permit said first means to move out of said threaded bore of said nut as a stud enters said threaded bore as said nut is being mounted on said stud, said nut having a polygonal outer surface, and said second means comprising spring means for engaging said polygonal outer surface.

5,251,521

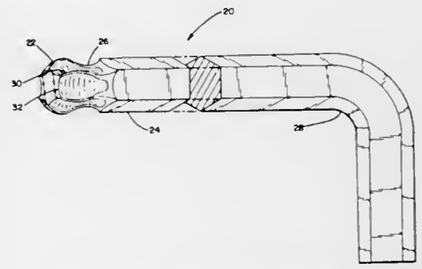
TORX-COMPATIBLE ELLIPTICAL DRIVER

Dennis A. Burda, Buffalo, and Michael D. Blackston, Hopkins, both of Minn., assignors to Bondhus Corporation, Monticello, Minn.

Filed Jan. 31, 1992, Ser. No. 830,367

Int. Cl.[5] **B25B** *23/00*

U.S. Cl. 81—460 **4 Claims**



1. An elliptical driver for transmitting torque to a cavity in the head of a fastener, the inner surfaces of the cavity defining a continuous curve of uniformly distributed elevations and depressions parallel to a fastener axis passing longitudinally through the center of the fastener and the cavity, comprising:

a shaft with a central longitudinal axis; and

a drive element with an elliptical cross section secured to said shaft, said drive element having a minor axis extending along said central longitudinal axis of said shaft and a major axis plane perpendicular to said minor axis at the center of said drive element, said elliptical cross section located on planes containing said minor axis, said drive element having elevations forming drive lobes and depressions which traverse a longitudinal elliptical path on the surface of said drive element, said lobes and depressions being substantially complementary to the inner surface of the cavity at said major axis plane and said lobes becoming narrower as they approach said minor axis, the centers of curvature of the tops of said lobes being located at a plurality of points defining a first circle on said major axis plane with the center of said first circle being said minor axis, the centers of curvature of the bottom of said depressions located at a plurality of points defining a second circle concentric with said first circle on said major axis plane, and a center line perpendicular to the fastener axis defining a mid point in the depth of the cavity so that the intersection of said minor and said major axis of said drive element is located below the center line when engaged with the cavity, whereby said drive element can effectively transmit tongue to the fastener even when pivoted with respect to the fastener axis.

5,251,522

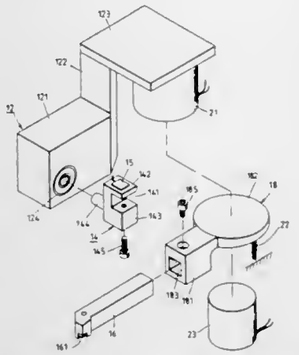
PROTECTIVE APPARATUS PREVENTING LATHE TOOL FROM BREAKING

Wu Chin-Long, No. 136-12, Young Ho Road, Ta Ya Hsiang, Taichung Hsien, Taiwan

Filed Nov. 2, 1992, Ser. No. 970,385

Int. Cl.[5] **B23B** *21/00, 29/04;* **B23Q** *15/007, 5/58*

U.S. Cl. 82—134 **3 Claims**

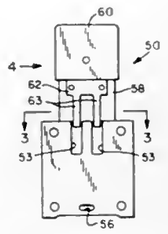


1. A protective apparatus preventing lathe tool from breaking comprising a lathe tool support having a front chucking stand and a rear chucking stand mounted thereon; wherein said front chucking stand is provided with an opening which is used for receiving and locking said lathe tool and is used to divide said front chucking stand into a first chucking block and a second chucking block, said first chucking block having a pivot shaft pivoted to said lathe tool support, said second chucking block having an inner surface making contact with said lathe tool and an outer surface with a strain gage attached thereto; wherein said rear chucking stand has a through hole located at the front end thereof for receiving and locking the rear end of said lathe tool and has an actuating board attached to the rear end thereof; wherein said lathe tool support is provided with at least an electromagnet and a biasing means, which are opposite in location to said actuating board; and wherein said strain gage deforms, at such time when said lathe tool is overloaded, to send out a signal to regulate the power supply to said electromagnet in order that said actuating board is triggered to move from a first position to a second position so as to cause a cutting edge of said lathe tool to do an accelerated motion in an arcuate manner to move away from a work piece being lathed.

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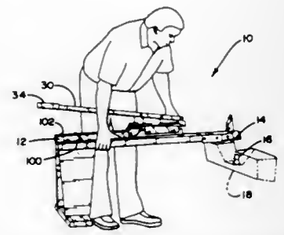
VOL 1155 ISS 2 OCT 12 1993 UMI

5,251,523
EXTRUDED PLASTIC CUTTING ASSEMBLY AND MACHINE
Harry M. Fisher, Whitestone, and Stuart N. Fisher, Floral Park, both of N.Y., assignors to Fisher Automation, Inc., Whitestone, N.Y.
Filed Mar. 23, 1992, Ser. No. 856,529
Int. Cl.[5] B26D *1/08, 5/28, 7/18*
U.S. Cl. 83—98 11 Claims



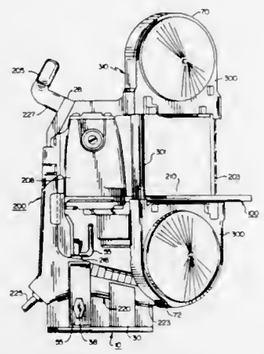
1. A cutter assembly for cutting elongated extruded plastic articles comprising:
a pair of side-by-side, plate-like cutting die bushings having a transverse article opening formed therethrough configured and dimensioned to accommodate passage and guidance of an elongated extruded plastic article therethrough, said cutting die bushings each having an elongated slot formed therein;
a thin, generally planar cutting blade having a cutting edge supportable for reciprocable movement between said cutting die bushings for movement between an operative position in which said blade moves across said article opening so as to cut an article disposed therein and an inoperative position in which said blade is displaced from said article opening; and
support means for supporting said cutting blade for reciprocable movement between said operative and inoperative positions thereof, said support means including at least one pair of support fingers, each of which is disposed on an opposite side of said blade spaced from said cutting edge thereof and which is receivable in a respective slot of one of said cutting die bushings to prevent buckling of said blade as said blade moves from said inoperative to said operative position.

5,251,524
CONVERTIBLE SIDING CUTTER
Leo D. Clifford, 10155 Greenbrier Rd., Minnetonka, Minn. 55343
Filed Aug. 21, 1992, Ser. No. 933,390
Int. Cl.[5] B26D *1/30*
U.S. Cl. 83—383 18 Claims



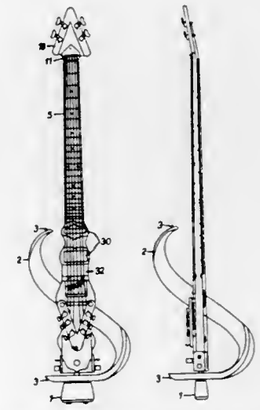
10. A convertible siding cutter, which comprises:
a base;
front and rear lower knife assemblies secured in aligned, end-to-end relationship to said base, each of said lower knife assemblies including front and rear ends and a pair of cutting blades secured in fixed predetermined spaced-part relationship;
an upper knife assembly, said upper knife assembly including a cutting blade and a handle;
means for securing said upper knife assembly to the front end of said front lower knife assembly for pivotal movement between a raised position and a lowered position with the blade of said upper knife assembly extending between the blades of said lower knife assemblies;
safety catch means for selectively holding a section of siding in place on said lower knife assemblies during cutting, the rear end of said rear lower knife assembly being undercut so as to receive a lip extending along an edge of the siding to be cut;
means located at the rear end of said rear lower knife assembly for supporting said safety catch means for pivotal movement between downward engaged and upward disengaged positions relative to a section of siding positioned in the cutter; and
means responsive to movement of said handle for selectively locking said safety catch means in a downward position engaged with the section of siding being cut.

5,251,525
CONVERSION KIT FOR PORTABLE BANDSAW
Ronald G. Galloway, 87 Tappan St., Baldwinsville, N.Y. 13027
Filed Aug. 18, 1992, Ser. No. 931,359
Int. Cl.[5] B23D *55/02;* B27B *13/02*
U.S. Cl. 83—574 7 Claims



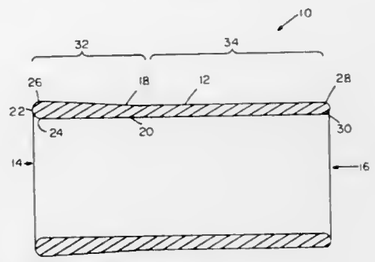
1. A cradle for supporting a portable bandsaw, said bandsaw having an upper portion and being of the type having a motor having an axis, said motor being mounted in a casing over a saw blade, so that the axis of the motor is generally parallel with said saw blade and a trigger mounted in an L-shaped trigger guard having a hand grip forming one leg thereof and located behind the motor, said cradle comprising:
a horizontally disposed base,
a vertically disposed pedestal, having a top, said pedestal being mounted on said base,
a short, narrow facing piece mounted on said base, parallel to said pedestal and at a distance such that said L-shaped trigger guard, when placed in an upright position, will snugly fit between said pedestal and said facing piece,
a saddle means, fitted between said pedestal and said facing piece and contoured to complement the hand grip of the trigger guard,
a bracket means, situated near the top of said pedestal said bracket means serving to retain the upper portion of said bandsaw so that said bandsaw remains firmly fixed in an upright position in said cradle with said trigger guard positioned beneath the motor directly over said base whereby an exposed section of said saw blade passes vertically through a work station, and
a trigger actuating means mounted on said pedestal for holding the trigger of said bandsaw suspended in the cradle in either an on or an off position.

5,251,526
ROTATING ELECTRICAL STRINGED INSTRUMENT
Jason P. Hill, 2947 Wyandot, Denver, Colo. 80211
Filed Jul. 23, 1992, Ser. No. 917,368
Int. Cl.[5] G10D *1/00*
U.S. Cl. 84—263 6 Claims



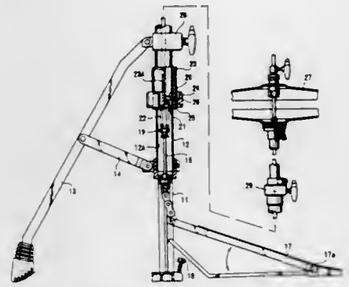
1. A multi faced rotating stringed musical instrument in the nature of an electric guitar enabling simultaneous and individual multi voice play comprising: a straight thru neck comprising at least two sides wherein said neck is attached at one end to a multi planar body by means of a mechanical rotary device thereby enabling said straight thru neck to rotate in both a clockwise and counter clockwise direction.

5,251,527
GUITAR SLIDE
Jeffrey A. Roberts, 12851 Floral Ave., Apple Valley, Minn. 55124
Filed Sep. 6, 1991, Ser. No. 755,788
Int. Cl.[5] G10D *3/00*
U.S. Cl. 84—319 2 Claims



1. A guitar slide comprising:
a. a solid brass generally tubular body;
b. a first open finger-receiving end on the body;
c. a second end on the body;
d. the body having a first conical section tapering from a first diameter adjacent to the first end to a second narrower diameter; and,
e. a second section adjacent the second end having a generally constant diameter.

5,251,528
SPRING TENSION ADJUSTING APPARATUS FOR HIGH-HAT STAND
Makoto Kurosaki, Shizuoka, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan
Filed May 23, 1991, Ser. No. 704,809
Claims priority, application Japan, May 25, 1990, 2-54846[U]
Int. Cl.[5] G10D *13/00*
U.S. Cl. 84—422.3 15 Claims



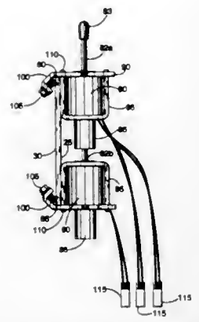
1. A spring tension adjusting apparatus for a high-hat stand, comprising:
a cylindrical post set on a stand in a vertical position;
a cymbal operating member housed in said cylindrical post to be vertically movable and having a lower end coupled to a footboard through a link;
a spring member, having one end locked in said cymbal operating member, for biasing said cymbal operating member upward;
a slide pin, one end of which is coupled to the other end of said spring member, and the other end of which is loosely fitted in an elongated hole, formed in said cylindrical post in an axial direction thereof, so as to protrude from said elongated hole;
an engaging portion formed around said cylindrical post and including an elongated hole formed to correspond to said elongated hole in said cylindrical post, a plurality of engaging grooves formed in at least a direction to cross an axis of said cylindrical post, and a guide path formed to intersect said engaging grooves; and
a rotary knob having a ring-like shape arranged along an outer surface of said engaging portion for partial rotation about said cylindrical post and including a lock portion for locking the other end of said slide pin protruding from said elongated hole with a biasing force of said spring member, and a positioning projection for engagement with said guide path and said engaging grooves.

5,251,529
SOLENOID MOUNTING SYSTEM FOR A KEYBOARD INSTRUMENT
Kirk Burgett, 3504 Barrington, Sacramento, Calif. 95864
Filed Mar. 24, 1992, Ser. No. 856,513
Int. Cl.[5] G10C *3/12*
U.S. Cl. 84—423 R 13 Claims

1. A solenoid mounting system for use with a keyboard musical instrument proximate a keyboard, comprising:
a) a mounting rail having a top border, a bottom border, a front mounting rail surface, a back mounting rail surface, and two opposing end borders;
b) a solenoid assembly having a supporting frame;
c) means associated with said supporting frame for clamping said solenoid assembly to said mounting rail proximate either said top or said bottom border, wherein said sup-

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porting frame clamping means comprises a hook, wherein when said solenoid assembly is mounted on said front mounting rail surface said hook projects from said supporting frame past said top border or said bottom border and terminates proximate said fastening cooperation means; and



d) means associated with said mounting rail, proximate said top and said bottom borders, for cooperating with said frame clamping means for fastening said solenoid assembly to said mounting rail.

5,251,530

METHOD FOR ASSEMBLING A HOLLOW-CHARGE PROJECTILE

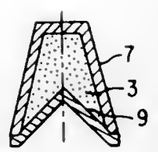
Rudolf Kaeser, Thun, Switzerland, assignor to Schweizerische Eidenossenschaft Vertreten Durch Die Eidg. Munitionsfabrik Thun Der Gruppe Fur Rustungsdienste, Switzerland

Filed Jan. 8, 1992, Ser. No. 817,796

Claims priority, application Switzerland, Jan. 11, 1991, 00062/91

Int. Cl.[5] F42B *33/02*

U.S. Cl. 86—20.14 **11 Claims**



1. A method for assembling a hollow-charge projectile including a precision charge, a metallic jacket and an insert, comprising the steps of:

at first, cooling down the press-formed precision charge, accurate with regard to shape and dimensions, to a first predetermined temperature;

heating the metallic jacket to a second predetermined temperature;

introducing the precision charge, in an unstressed state, into the metallic jacket;

subsequently heating the jacketed precision charge to an intermediate temperature between said first predetermined temperature and said second predetermined temperature;

cooling the insert to a third predetermined temperature; and

axially pressing the insert into the jacketed precision charge so that it is fixedly held by force therein.

5,251,531

METHOD AND APPARATUS TO PREPARE MONOBASIC PROPELLANT CHARGE POWDERS WITH ALCOHOL AND ETHER AS SOLVENTS

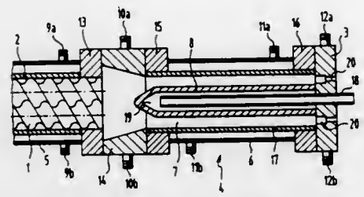
Wolfgang Miebling, Mühldorf, Fed. Rep. of Germany, assignor to WNC-Nitrochemie GmbH, Fed. Rep. of Germany

Division of Ser. No. 634,161, Dec. 13, 1990, Pat. No. 5,186,871. This application Nov. 30, 1992, Ser. No. 983,208

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1989, 3913603

Int. Cl.[5] F42B *3/20*

U.S. Cl. 86—21 **3 Claims**



1. An apparatus for preparing monobasic propellant charge powders with alcohol and ether as solvents, comprising at least one screw supported in a housing and an extruder head, including at least one die, disposed at the discharge end of the housing and having a cooling means to cool the propellant charge powder located at the discharge end, characterized in that a passage is provided between the end region of the screw and the die and a cooling mandrel is arranged in said passage.

5,251,532

CARTRIDGE CLIP FOR SETTING TOOL

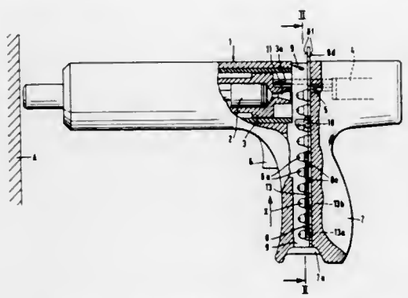
Markus Frommelt, Schaan, Liechtenstein, and Uwe Hilmert, Sevelen, Switzerland, assignors to Hilti Aktiengesellschaft, Fürstentum, Liechtenstein

Filed Nov. 6, 1992, Ser. No. 972,672

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1991, 4136932

Int. Cl.[5] B25C *1/16*

U.S. Cl. 89—1.14 **8 Claims**



1. An explosive powder charge operated setting tool including a strip-shaped cartridge clip (**8**) having a first end and a second end with a pair of long sides extending in the direction between the first end and the second end and recesses spaced apart in each of the long sides, said setting tool comprising a housing (**1**) extending in the setting direction and a handle (**7**) located at a rear end of the tool and extending transversely of the setting direction, said handle (**7**) and housing (**1**) forming a guide channel (**9**) extending generally perpendicularly to the setting direction, feed means (**10**) and restraining means (**15**) located within the guide channel for engaging said recesses (**8***e*) in the cartridge clip (**8**), wherein the improvement comprises blocking parts (**13, 14**) extending in the direction of and

located on opposite sides of the guidance channel, so that the blocking parts extend along the long sides of the cartridge clip, said blocking parts are flexurally biased towards one another by spring force and are displaceable away from one another by overcoming the spring force, said guide channel has an insertion end for inserting said cartridge clip (**8**) and an outlet end for removing said cartridge clip, said blocking parts project into said guide channel adjacent the insertion end thereof when the channel is free of said cartridge clip and are located upstream from said feed means (**10**) and restraining means (**15**), said blocking parts have a length in the insertion end-outlet end direction of said guide channel greater than the length in the same direction of one recess (**8***e*), and said cartridge clip has control cams at the first end thereof inserted first into the insertion end of said guide channel for displacement of said blocking parts laterally outwardly away from one another.

5,251,533

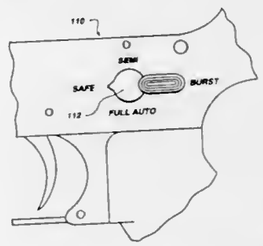
FIRING MODE SELECTION APPARATUS

Mark Layton, 984 South 1000 East, Orem, Utah 84058

Filed Jun. 8, 1992, Ser. No. 895,359

Int. Cl.[5] F41A *19/46*

U.S. Cl. 89—142 **16 Claims**



1. Mode selection apparatus for use in a firearm firing mechanism comprising: a sear; a sear leg attached to the sear and rotatably attached to the firearm, the sear leg including a forward edge; means for biasing the sear and sear leg in a position wherein they are tilted toward the front of the firearm; a selector lever cam against which the forward edge of the sear leg abuts; and a cam depression;

characterized in that the cam depression is disposed at a tangential angle of between 20 and 80 degrees in and to the selector lever cam, the cam depression being positioned to selectively receive the forward edge of the sear leg such that four modes of firing the firearm are arranged to be selected in a logical sequence from safe to semi-automatic to burst to full automatic or from safe to full automatic to burst to semi-automatic.

5,251,534

INPUT APPARATUS

Yoshitake Yonekubo, Tokyo; Hideshi Koiwai, Toda, and Susumu Narita, Sagamihara, all of Japan, assignors to Kayaba Industry Co. Ltd., Tokyo, Japan

Filed Apr. 29, 1992, Ser. No. 875,642

Int. Cl.[5] F01B *31/12*

U.S. Cl. 91—1 **3 Claims**

1. An input apparatus comprising:

a control section;

a body;

a plurality of sets of push rods arranged in said body in a manner to correspond to a plurality of actuators and commonly operatively connected to said control section, said sets each comprising two push rods;

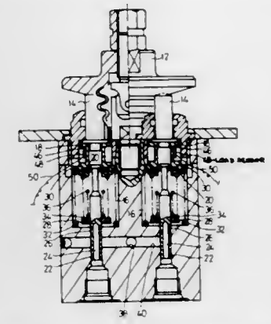
a block and elastic means arranged in said body and operatively connected to each of said push rods;

a spool arranged in said body and operatively connected through said block and elastic means to each of said push rods;

said body being formed therein with a hydraulic oil feed passage;

said spool being formed with a passage;

said control section being pressedly operated to force each of said spools through said push rod, block and elastic means to permit said hydraulic oil feed passage of said body and said passage of said spool to communicate with each other to feed the actuator with hydraulic oil and



balance force generated due to passage of hydraulic oil and acting to forcedly return said spool with elastic force of said elastic means to position said spool depending on the amount of operation of said control section, to thereby feed hydraulic oil in an amount corresponding to the amount of operation of said control section to the actuator; and

electrical load sensors for detecting the amount of operation of said control section to generate an electrical signal corresponding to the amount of operation of said control section.

5,251,535

PROCESS FOR CONTROLLING AN ACTUATOR WHICH CAN BE ADJUSTED BY MEANS OF A PROPORTIONAL VALVE

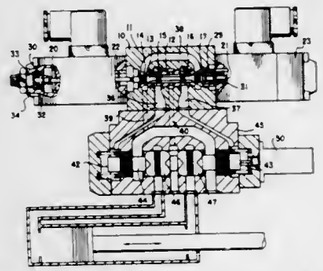
Franz X. Lacher, Barbing; Erwin Grauvogl, Sinzing; Hans Rauner, Nittenau; Reinhard Auffhammer, Dachau; Harald Hahn, and Helmut Patze, both of Frammersbach, all of Fed. Rep. of Germany, assignors to Siemens AG, Munich; Mannesmann Rexrogh GmbH, Lohr and Bayerische Motoren Werke AG, Munich, all of Fed. Rep. of Germany

Filed Jul. 2, 1992, Ser. No. 907,835

Claims priority, application Fed. Rep. of Germany, Jan. 5, 1990, 4000221

Int. Cl.[5] F15B *13/043*

U.S. Cl. 91—471 **9 Claims**



1. A process for controlling an actuator which can be adjusted by means of a proportional valve, which comprises

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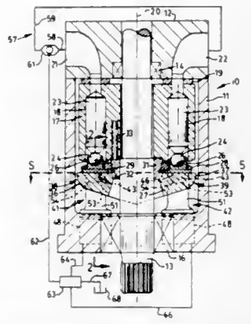
controlling the proportional valve by means of two control magnets with control pulses acting in opposite directions and having a specific frequency and specific mutual phase angle and at least one of variable amplitude and variable pulse duration, and varying the phase angle as a function of at least one control variable.

5,251,536

AXIAL PISTON PUMP WITH OFF-CENTER PIVOT

William K. Engel, Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Jan. 15, 1992, Ser. No. 821,101
Int. Cl.[5] F04B *1/26*
U.S. Cl. 91—506 9 Claims



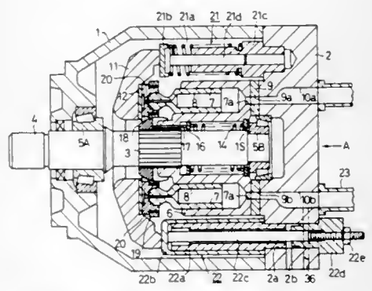
2. The fluid translating device of claim 1 wherein the actuator means includes a bore in the housing, a piston slidably disposed in the bore and engaging the second side of the swash plate, and valve means for controlling fluid flow into and out of the bore in the housing.

5,251,537

HYDRAULIC DRIVING SYSTEM

Tatsuyuki Hoshino; Kunifumi Goto, and Shigeki Kanzaki, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Jul. 14, 1992, Ser. No. 913,603
Claims priority, application Japan, Jul. 16, 1991, 3-175596
Int. Cl.[5] F04B *1/26*
U.S. Cl. 91—506 14 Claims



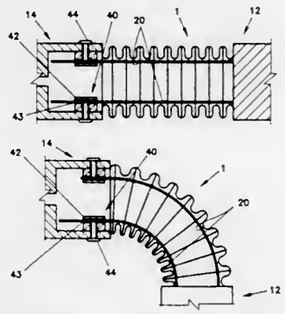
1. A hydraulic driving system comprising:
a power source;
a variable capacity type swash plate piston pump, said piston pump having a swash plate and swash-plate tilt angle control means for controlling the tilt angle of said swash plate, said piston pump being connected to said power source for drawing and discharging operation oil;
an oil passage provided with a restriction means and connected to a discharge side of said piston pump, said restriction means including an input side and an output side;
a control valve operable as a function of the difference of pressures between said input and output sides of said restriction means, for feeding said operation oil to said tilt angle control means from said oil passage, and for allowing a generally constant quantity of operation oil to be discharged from said piston pump;
said tilt angle control means including:
tilt angle generating means for permitting said operation oil controlled by said control valve to act on said swash plate, for increasing its tilt angle;
tilt angle restriction means engaging said swash plate for urging said swash plate to decrease said tilt angle such that the capacity of said piston pump is minimized; and
a switching valve disposed intermediate said tile angle generating means and said control valve, said switching valve being positionable between at least two positions;
whereby when said switching valve is located in a first switching position, the communication of said operation oil to said tilt angle generating means is interrupted, and when said switching valve is set in a second switching position, said operation oil is supplied to said tilt angle generating means.

5,251,538

PREHENSILE APPARATUS

Christopher M. Smith, Richland, Wash., assignor to Battelle Memorial Institute, Richland, Wash.

Filed Aug. 21, 1991, Ser. No. 748,989
Int. Cl.[5] F01B *19/00*
U.S. Cl. 92—34 5 Claims



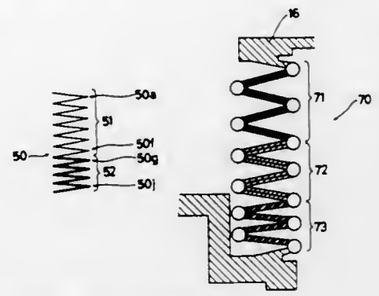
1. An apparatus for handling a workpiece, comprising:
(a) a longitudinally extensible, pressurizable, and laterally flexible bellows, said bellows having a wall with closed first end and an open second end for receiving pressure,
(b) at least one longitudinally nonextensible and laterally flexible member separate and distinct from said bellows that is placed either inside or outside the wall, said member having first and second ends and attached to the bellows with the first end of the member attached near the closed first end of the bellows and the second end of the member attached near the open second end of the bellows,
(c) means for pressurizing the bellows such that upon pressurization the nonextensible laterally flexible member constrains a longitudinal section of the bellows to be nonextensible while remaining longitudinal sections of the bellows expand, thereby causing the bellows to bend in the direction of the constrained side.

5,251,539

BELLOWS PUMP

Koichiro Hirosawa; Hiroshi Kubo, both of Kariya, and Masanobu Matsuzaka, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 18, 1992, Ser. No. 853,590
Claims priority, application Japan, Mar. 26, 1991, 3-86113; Mar. 26, 1991, 3-86114; Mar. 30, 1991, 3-93191
Int. Cl.[5] F16J *3/04*
U.S. Cl. 92—34 9 Claims



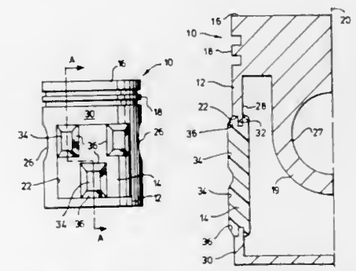
1. A bellows pump comprising:
a body;
a movable supporting member movably supported in the body;
a bellows fixed between the body and the movable supporting member, said bellows having peak portions; and
driving means for driving the movable supporting member,
the bellows having a thin portion and a thick portion, and pitches of the bellows being in inverse proportion to the thicknesses thereof.

5,251,540

PISTON HAVING AN APERTURE WITH AN INSERT SECURED THEREIN

Michael L. P. Rhodes, Rugby, and Alan M. Gould, Ladbroke, both of United Kingdom, assignors to T&N Technology Limited, Warwickshire, United Kingdom

Filed Jun. 11, 1991, Ser. No. 713,061
Claims priority, application United Kingdom, Jun. 23, 1990, 9014046
Int. Cl.[5] F16J *1/04*
U.S. Cl. 92—212 6 Claims



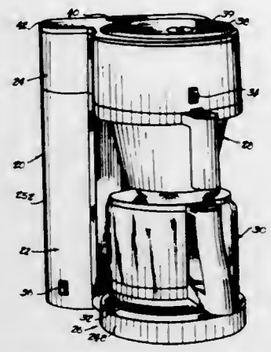
1. A piston for an engine or motor comprising a crown and a skirt, wherein the skirt has an aperture therein in which an insert made of a different material from the remainder of the skirt is secured, the insert providing a plurality of pads each of which has bevelled edges designed to cause lubricant to be forced over the pad by hydrodynamic action during reciprocation of the piston, the pads extending from a thrust surface of the skirt so that the pads can transmit lateral thrusts of the piston against a wall of an associated cylinder.

5,251,541

HOME BREWER

James H. Anson, and William E. Midden, both of Springfield, Ill., assignors to Bunn-O-Matic Corporation, Springfield, Ill.

Filed Nov. 1, 1991, Ser. No. 786,306
Int. Cl.[5] A47J *31/00*
U.S. Cl. 99—280 16 Claims



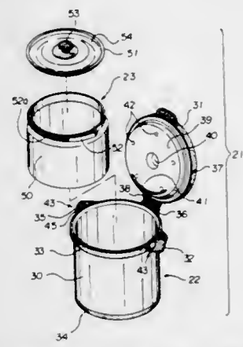
1. A beverage brewing apparatus including a reservoir controllably communicating with a fill basin and a brewing assembly, a fill port for passing water from said fill basin to said reservoir and a drain port for passing water from said reservoir to said brewing assembly, an opening in said fill basin for receiving fill water therethrough; a fill water control assembly for controllably regulating the flow of water from said fill basin to said reservoir, said fill water control assembly including a lid assembly displaceably covering said opening and a valve displaceably engaging said fill port, said lid assembly and valve being operatively associated for controlling water flow into and out of said fill basin, said lid assembly moving said valve to engage said fill port when said lid assembly is displaced from said opening and said lid assembly operatively displacing said valve from said fill port when said lid assembly is positioned to cover said opening.

5,251,542

HEAT INSULATING COOKING VESSEL

Seiichi Itoh; Takeshi Kuwana, and Shigeru Tsuchiya, all of Niigata, Japan, assignors to Nippon Sanso Corporation, Tokyo, Japan

Filed Mar. 8, 1993, Ser. No. 27,454
Int. Cl.[5] A47J *27/00, 36/00;* A45C *11/20*
U.S. Cl. 99—403 11 Claims



1. A heating insulating cooking vessel including a heat insulating container having a mouth portion, a lid for closing the

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mouth portion of said heat insulating container, a grip handle attached by attachment parts to the outer surface of the mouth portion of said heat insulating container so as to be freely raisable or lowerable, a cooking pot having a mouth portion and contained releasably in said heat insulating container, and a lid member for closing the mouth portion of said cooking pot, said heat insulating cooking vessel characterized in that:

said insulating container comprises a container member and attachment shafts which are formed to opposing sides of said container member and support said grip handle;

said lid comprises locking piece attached to opposing sides of said lid;

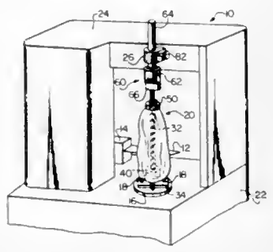
said grip handle is provided at said attachment parts thereof with an open portion which permits the free movement of said locking piece in the upper direction when said grip handle is lowered to one side of said container member, and with a concave shaped engaging part which covers said locking piece when said container member is covered by said lid, said engaging part comprising a bearing face at the inner surface thereof, said bearing face pressing said lid on to the mouth portion of said container member by pressing on said locking piece when said grip handle is placed in the upright position or is lowered to the other side of said container member.

5,251,543

APPARATUS FOR SPIRAL SLICING A BONELESS CUT OF MEAT

Daniel L. Brothers, Norcross, Ga., assignor to The Original Honey Baked Ham Company of Georgia, Inc., Atlanta, Ga.

Filed Mar. 26, 1992, Ser. No. 858,065
Int. Cl.[5] A23L *1/31*; A23N *7/00*; A47J *17/00*
U.S. Cl. 99—538 **29 Claims**



1. An accessory for supporting a boneless cut of meat, for use in conjunction with a spiral meat slicer having an upper support bracket and a rotatable turntable positioned below the support bracket, the turntable having a plurality of prongs extending upwardly therefrom, said accessory comprising:

a skewer assembly including a skewer and a base for supporting said skewer, said skewer having an apex and a foot at opposite ends thereof, said foot being attached to said base, and said-base having a plurality of holes formed therein dimensioned and positioned to receive the prongs of the turntable;

a vertically-adjustable stop member slidably carried by said skewer;

a vertically-adjustable prong member slidably carried by said skewer and positioned above said stop member; and

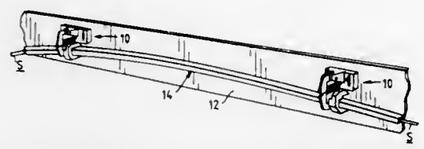
a spindle assembly including bracket-engaging means for engaging the bracket and skewer-receiving means for receiving said apex of said skewer.

5,251,544

CHUTE MOUNTING AND BIASING MECHANISM FOR STRAPPING MACHINE

Jack S. Abrams, Arlington Heights, Ill., assignor to Signode Corporation, Glenview, Ill.

Filed Mar. 2, 1993, Ser. No. 25,155
Int. Cl.[5] B65B *13/06*
U.S. Cl. 100—26 **4 Claims**



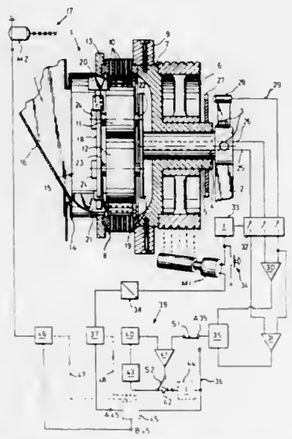
1. In a chute system for a strapping machine, the chute system comprising a fixed wall and a movable chute, the chute having a generally U-shaped cross-section defining a bight and two generally parallel flanges with a space between the flanges to accommodate a strap being fed along the chute, the chute being movable toward and away from a closed position wherein the flanges bear against the wall, a mechanism for mounting the chute to the wall and for biasing the chute toward the wall while permitting the chute to move away from the wall so as to allow a strap to be pulled from the chute, the mechanism comprising a first bracket mounted fixedly to the wall, a second bracket movable conjointly with the chute, and a pivot arm having a first end portion connected pivotally to the first bracket, a second end portion connected pivotally to the second bracket, and an intermediate portion between the first and second ends the mechanism further comprising means for biasing the pivot arm so as to bias the chute toward the wall but so as to permit the chute to move away from the wall.

5,251,545

METHOD FOR SLIP REGULATION OF A PELLET MILL AND APPARATUS FOR CARRYING OUT THE PROCESS

Willi Wetzel, Uzwil, Switzerland, assignor to Bühler AG, Uzwil, Switzerland

Division of Ser. No. 733,216, Jul. 19, 1991, Pat. No. 5,152,215. This application Jun. 29, 1992, Ser. No. 906,158
Claims priority, application Switzerland, Aug. 20, 1990, 02697/90
Int. Cl.[5] B30B *11/22*
U.S. Cl. 100—41 **18 Claims**



1. A method for operating a pallet mill of the type having at least one perforated die and at least one press roll forming a desire gap between its circumference and the die and cooperating with said die to press materials to be formed into pellets through the perforations of the die by providing a desired supply of material and a desired relative speed between said die said press roll, said method comprising the steps of

determining the nominal speed the press roll should have on said die;

determining the actual speed of the press roll;

comparing the normal speed and the actual speed to determine any difference that may occur which constitutes a measure of slippage between said press roll and said die,

generating a slippage signal when a difference of speed will occur of an actual valve beyond a predetermined value, and

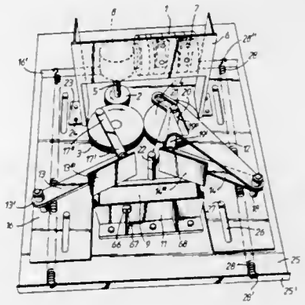
controlling one parameter of said pellet mill being selected from the group of the supply of material, the relative speed of said die and said press roll, and said gap in correspondance with said slippage signal so as to diminish said difference of speed so as to bring it down at least to said predetermined value.

5,251,546

HANDLING AND COMPACTING OF EMPTY BEVERAGE CANS

Halvor Wergeland, Hogstadveien; Tore Planke, Nykirke, both of Norway, and Tommy Wincent, Sutargränd, Sweden, assignors to Tomra Systems A/S, Asker, Norway

Division of Ser. No. 699,175, May 13, 1991, abandoned. This application Aug. 10, 1992, Ser. No. 927,823
Int. Cl.[5] B30B *15/14, 9/32*
U.S. Cl. 100—53 **17 Claims**



9. A device for compacting empty beverage cans, comprising:

electric motor means having an output shaft;

gear means coacting with the output shaft of said electric motor means;

means for receiving a can that has a mid-section and end regions with respective end faces;

means for delivering the can to said receiving means;

an operation site cooperable with said receiving means such that said receiving means locates the can delivered by the delivering means to the operation site;

abutment means for providing an abutment surface for said can at said operation site;

a first arm means drivingly connected to said gear means and being movable across said operation site towards said abutment surface to compress the mid-section of said can against said abutment surface;

second and third arm means drivingly connected to said gear means and being movable across said operation site towards said abutment surface to compress the end regions of said can against said abutment surface, causing the respective end faces of the can to lie substantially parallel to said abutment surface;

said gear means coacting with said first, second and third arm means to provide a synchronized movement of said first, second and third arm means towards and away from said abutment surface, said synchronized movement including positive pulling of said first arm means away from said abutment surface while said second and third arm means are positioned proximate said abutment surface to retain said can against said abutment surface; and

further including support means for said first, second and third arm means and wherein said gear means includes a second gear and a third gear, the driving connection between said second arm means and said gear means includes a first link means having a first end and an opposite end, said second arm means having one end hinge connected to said support means and an opposite end pivotally joined to the first end of said first link means, the opposite end of said first link means being pivotally connected to said second gear at a predetermined peripheral location of said second gear such that rotation of said second gear enables said first link means to move said second arm means toward and away from said abutment surface; and

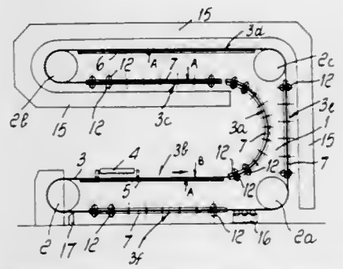
the driving connection between said third arm means and said gear means includes a second link means having a first end and an opposite end, said third arm means having one end hinge connected to said support means and an opposite end pivotally joined to the first end of said second link means, the opposite end of said second link means being pivotally connected to said third gear at a predetermined peripheral location of said third gear such that rotation of said third gear enables said second link means to move said third arm means towards and away from said abutment surface.

5,251,547

ROTATING-BELT PRINTING MACHINE FOR TEXTILE PRODUCTS AND THE LIKE

Franco Frigeni, Saronno, Italy, assignor to MS Macchine e Sistemi S.R.L., Bollate, Italy

Filed Oct. 28, 1991, Ser. No. 783,791
Claims priority, application Italy, Oct. 30, 1990, 21919 A/90
Int. Cl.[5] B41F *13/24*
U.S. Cl. 101—232 **7 Claims**



1. Rotating-belt printing machine for textile products and the like, comprising:

a supporting structure which extends vertically and supports a plurality of mutually synchronized motorized rollers which are arranged so that their axes are mutually parallel and are divided substantially in pairs which are arranged on mutually superimposed and spaced planes;

a belt which is closed in a loop, is guided on the rollers of each pair without tension in the axial direction lengthwise said belt, and said belt having such an extension as to form, between the two pairs of mutually superimposed rollers, at least one wide loop essentially shaped like a U which has a horizontal axis and extends in depth so as to create, between the lower pair of rollers and the adjacent upper one, a portion of horizontal belt in order to allow printing by means of at least one printing head;

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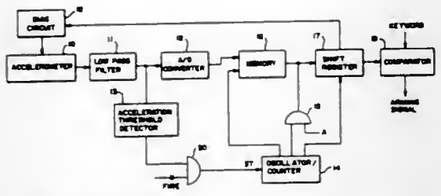
belt support and guiding means which act along both edges of said belt and which are arranged both at the curved regions of the loop or loops of the belt and at all the straight portions of belt which, during translatory motion, must never have the face which bears the printed product in direct contact with said motorized rollers or sliding planes.

5,251,548

MISSILE ACCELERATION AND ARMING DEVICE

John J. Spence, Oakland, N.J., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Nov. 27, 1981, Ser. No. 325,526
Int. Cl.[5] F42C *15/40*
U.S. Cl. 102—221 **10 Claims**



1. A safing and arming device for arming a warhead on a projectile subsequent to its launch comprising:

means for sensing when said missile is experiencing a threshold acceleration and providing a first signal indicating same, and

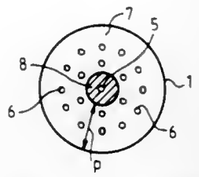
means enabled by said first signal for checking the acceleration of said projectile at a plurality of points in time subsequent to its launch to determine if the projectile is undergoing a proper acceleration profile and to provide an arming signal used to arm said warhead when the acceleration profile is that for the projectile in proper flight.

5,251,549

MULTI-PERFORATED DIVIDED PROPELLENT POWDER STICKS, MANUFACTURING EQUIPMENT AND ITS USE

Jean Boisseau, Martignas sur Jalles; Jean-Louis Paulin, Ballancourt, and Christiane Reynaud, Mennecy, all of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Jul. 13, 1992, Ser. No. 912,905
Claims priority, application France, Aug. 1, 1991, 91 09800
Int. Cl.[5] C06B *45/00*
U.S. Cl. 102—289 **6 Claims**



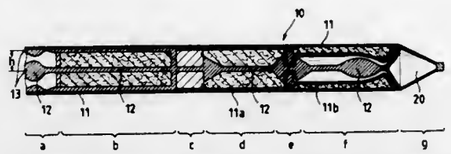
1. A multi-perforated stick (**1**) of propellant powder having a cylindrical shape and an outer surface (**2**), bases (**3**,**4**), of thickness (e), generatrices having a length (L), said length being at least equal to three times said thickness (e) of said bases, said stick having a central channel (**5**) parallel to said generatrices, a plurality of peripheral channels (**6**) parallel to said central channel and disposed between said central channel (**5**) and said outer surface (**2**), and comprising radial slits (**7**) perpendicular to said generatrices and formed starting from the outer surface (**2**) of said stick, said slits (**7**) being continuous over said entire outer surface (**2**) and having such a depth (p) that they cut at least some of said peripheral channels (**6**) but they allow a continuous cover (**8**) of propellant material to remain at least around said central channel (**5**).

5,251,550

APPARATUS WITH RAPID MAGNETIC FIELD COMPRESSION

Peter Grössler, Hochstadt, and Norbert Nissl, Aresing, both of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Aug. 7, 1986, Ser. No. 900,986
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1985, 3528338
Int. Cl.[5] F42B *12/02*
U.S. Cl. 102—293 **9 Claims**



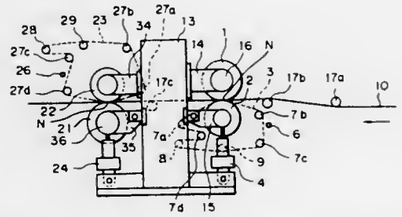
1. A missile having a weapon efficiency effected by means of a highly compressed magnetic field, comprising an axially elongated casing having a leading end and a trailing end with a plurality of stages within said casing, at lest one propelling charge-operated magnetohydrodynamic generator stage located within said casing, a stage for magnetic field compression located between said magnetohydrodynamic stage and the leading end of said casing, said magnetohydrodynamic generator stage and said magnetic field compression stage cooperating for the production of at lest one of current and amplification, and said magnetic field compression stage produces a weapon effect produced by said magnetohydrodynamic generator stage acting as a base field.

5,251,551

CALENDERING APPARATUS FOR PAPER MAKING PROCESS

Tsuyoshi Abe, and Jun Kobayashi, both of Tokyo, Japan, assignors to Jujo Paper Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 729,563, Jul. 15, 1991, abandoned, which is a continuation of Ser. No. 413,243, Sep. 27, 1989, abandoned. This application Mar. 2, 1992, Ser. No. 844,284
Claims priority, application Japan, Sep. 29, 1988, 63-245524
Int. Cl.[5] B30B *15/34, 5/04*; D21G *1/00*
U.S. Cl. 100—93 RP **11 Claims**



1. A calendering apparatus for performing a calendering treatment on a paper sheet to smooth a surface of the paper sheet in a paper making process, said apparatus including at

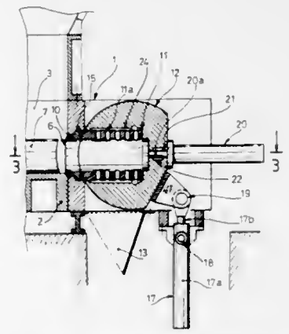
least one nip formed by two rolls, said two rolls comprised of a chilled roll and a backing roll, means for heating said chilled roll whereby said chilled roll heats the paper sheet, said backing roll including a metallic outer periphery, and an endless elastic belt having a longer length than a circumferential length of said outer periphery of said backing roll, said belt arranged in contact with both said paper sheet and a nip-defining portion of said outer periphery of said backing roll so that said belt can be moved by a rotation of said backing roll to nip said surface of the paper sheet against said chilled roll in said nip, and a contacting angle of the endless elastic belt around the backing roll at the nip portion of the backing roll being 30 degrees or less, whereby irregularities of said paper sheet surface are transferred to a back surface of said paper sheet, a plurality of belt-supporting rolls spaced from said chilled roll and said backing roll, said belt passing around said belt-supporting rolls in contact therewith.

5,251,552

PRESS FOR HETEROGENEOUS WASTE

Jacques Gourdol, Notre-Dame de Lachal, 38760 Varces Allieres Risset, France

Filed Jun. 11, 1992, Ser. No. 896,996
Claims priority, application France, Jun. 11, 1991, 91 07087
Int. Cl.[5] B30B *9/06*
U.S. Cl. 100—127 **7 Claims**



1. Press for heterogeneous waste comprising a solid phase and a liquid phase, said press comprising

(a) a frame (**1**) supporting a receptacle (**2**) forming a feed zone (**3**) receiving heterogeneous waste, said feed zone having an open top and first and second opposing lateral openings (**5**, **6**);

(b) a compression piston (**7**) and means for moving said compression piston between said first opening (**5**) of said feed zone (**3**) and a position located downstream of said second opening (**6**) of said feed zone, said first and second openings having a cross-section substantially equal to a cross-section of said compression piston;

(c) a chamber (**9**) in which said waste is compressed by said compression piston in order to separate said solid phase and said liquid phase, said chamber being formed by a die (**11**) with a cross-section substantially equal to said cross-section of said compression piston (**7**) and comprising calibrated passages (**11***a*) connecting said pressing chamber (**9**) to a collector (**25**) located below said pressing chamber for recovery of said liquid phase; and

(d) a hatch (**13**) located below said pressing chamber for discharge of said solid phase;

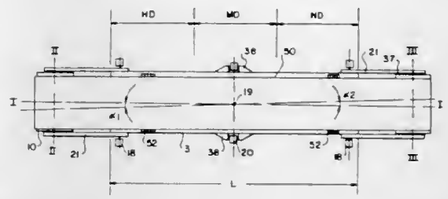
(e) wherein said die (**11**) is mounted in a slide (**12**), connected to means for controlling angular displacement of said slide between a first position in which said pressing chamber (**9**) is in communication with said feed zone (**3**) and a second position in which said pressing chamber (**9**) is in communication with said hatch (**13**), said slide being associated with means for effecting discharge of said solid phase and means for effecting discharge of said liquid phase.

5,251,553

DEVICE FOR GUIDING STEEL BANDS

Friedrich B. Bielfeldt, Eppingen, Fed. Rep. of Germany, assignor to Maschinenfabrik J. Dieffenbacher GmbH & Co., Eppingen, Fed. Rep. of Germany

Division of Ser. No. 672,668, Mar. 21, 1991, Pat. No. 5,182,986. This application Oct. 30, 1992, Ser. No. 969,055
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1990, 4017812
Int. Cl.[5] B30B *5/06*
U.S. Cl. 100—151 **9 Claims**



1. A device for guiding first and second steel bands about a longitudinal axis of a continuously working press, said press including a pressing ram having a vertical axis, a pressing table, and a high-pressure region, said bands transmitting pressing pressure to the material to be pressed and drawing said material through said press, said device comprising:

(A) driving drums and return drums which guide said first and second bands around said pressing ram and said pressing table, respectively;

(B) a plurality of co-rotating steel rods which are guided with their axis of rotation extending transversely to the direction of travel of said bands, said steel rods supporting said first and second steel bands with an adjustable pressing gap formed therebetween;

(C) a fixed frame;

(D) stops which are connected to said frame and between which said pressing ram is rotatable about said vertical axis of said pressing ram through an angle α;

(E) tension-frame uprights which support said press ram, each of said uprights comprising a pair of parallel tension straps and parallel upper and lower crossheads connecting said tension straps to one another, said tension straps supporting said press ram and being pivotable together as legs of parallelograms through an angle β;

(F) four displacement cylinders which are connected to respective corners of said pressing ram and which drive said pressing ram to rotate about said vertical axis of said press; and

(G) short-stroke pressure cylinders which are located in said high pressure region of said press and which apply a pressing pressure to said bands, said short-stroke pressure cylinders being deactivated when said pressing ram is rotating.

5,251,554

MAILING MACHINE INCLUDING SHUTTER BAR MOVING MEANS

Alton B. Eckert, Jr., New Fairfield; Arnold Fassman, Westport; John R. Nobile, Fairfield, and Thomas M. Pfeifer, Bridgeport, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 19, 1991, Ser. No. 810,257
Int. Cl.[5] B41L *47/46*
U.S. Cl. 101—91 **14 Claims**

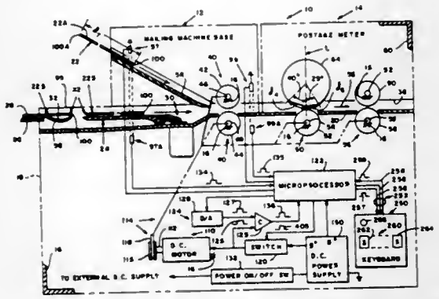
1. A mailing machine base adapted to have a postage meter mounted thereon, wherein the meter includes a printing drum

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and a drive gear therefor, and wherein the meter includes a shutter bar mounted for movement into and out of locking engagement with the drive gear to respectively prevent and permit driving the drive gear and thus the printing drum, the mailing machine base comprising:

a. framework;

b. means for moving the shutter bar out of locking engagement with the drive gear and then moving the shutter bar into locking engagement with the drive gear, the moving means including a lever arm pivotally attached to the framework and adapted to be disposed in bearing engagement with the shutter bar when the meter is mounted on the base, the lever arm including a yoke portion depending therefrom, the moving means including a cam shaft journaled for rotation to the framework, the moving means including a cam connected to the cam shaft for



rotation therewith and having an end portion thereof disposed within and in bearing engagement with the yoke portion, the moving means including a first pulley connected to the cam shaft for rotation thereof, the moving means including a d.c. motor having an output shaft, the moving means including a second pulley mounted on the output shaft for rotation therewith, and the moving means including a belt looped about the first and second pulleys for transmitting motor drive from the output shaft to the cam shaft;

c. means for controlling the moving means, and the controlling means including means for driving the motor in one direction to move the shutter bar out of locking engagement with the drive gear and for driving the motor in the opposite direction to move the shutter bar into locking engagement with the drive gear.

5,251,555

METHOD AND APPARATUS FOR SIMULTANEOUSLY FORMING A PLURALITY OF CHARACTERS ON THE SURFACE OF AN OBJECT

Edwin W. Speicher, Pittsburgh, Pa., assignor to M. E. Cunningham Company, Ingomar, Pa.

Continuation of Ser. No. 792,438, Nov. 15, 1991, abandoned, which is a continuation of Ser. No. 562,737, Aug. 3, 1990, abandoned. This application May 21, 1992, Ser. No. 886,292

Int. Cl.[5] B41J *3/00*

U.S. Cl. 101—93.04 **10 Claims**

1. Apparatus for simultaneously marking a preselected array of characters on an object comprising,

a housing,

a marking device for imprinting a preselected array of characters on an object, said marking device having a longitudinal axis,

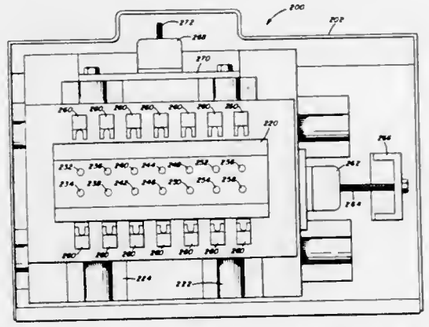
support means for movably supporting said marking device within said housing to move said marking device incrementally along a pair of intersecting axes adjacent to said object to be marked,

said marking device having a plurality of marking elements positioned in spaced relation to form a linear array for simultaneously marking the object with a preselected number of characters at preselected positions in a linear array where the number of marking elements on said marking device is less than the maximum number of characters to be marked in the linear array,

said array of marking elements being positioned to extend on a preselected axis spaced apart a distance greater than the distance between characters in the linear array, said preselected axis of said marking elements being positioned parallel to said longitudinal axis of said marking device,

first means for linearly moving said support means in a direction parallel to said longitudinal axis of said marking device along a preselected first axis for marking, said preselected axis of said marking elements being aligned with said preselected first axis for marking,

said first means for moving said marking device including control means drivingly connected to said marking device for incrementally moving said marking elements to se-



lected positions along said first axis for marking more characters in a linear array on the object than the number of said marking elements on said marking device,

actuating means positioned on said marking device for selectively actuating said marking elements to strike the object and simultaneously mark said object with portions of each of said preselected array of characters on said first axis for marking, said actuating means provided for each of said marking elements and movable therewith,

second means for moving said marking device and marking elements on said support means relative to the object to be marked to a second axis for marking, said first and second axes for marking being parallel, and

said first means for moving said marking device and said actuating means actuates said marking elements on said second axis for simultaneously marking the object with other portions of each of the characters of said preselected array of characters.

5,251,556

AUXILIARY BED EXTENSION FOR SEWING MACHINE

Lucien Ravenelle, and Richard Lacasse, both of 42 Montcalm Street, St-Pie (Quebec), Canada J0H 1W0

Filed Aug. 6, 1992, Ser. No. 925,164

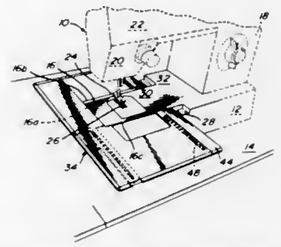
Int. Cl.[5] D05B *73/10*

U.S. Cl. 112—260 **5 Claims**

1. An auxiliary bed extension member for use with a flat cylinder bed of a sewing machine, for increasing the planar, work-supporting surface defined by that sewing machine, said extension member comprising:

(a) a main, rigid, panel member, said panel member defining a generally U-shape, having a transverse web leg and two lateral side legs;

(b) first adjustment means, for adjustably varying the width of said inner recess, and including telescopic means for telescopingly extending said web leg; and



(c) second adjustment means, for adjustably varying the length of at least one of said lateral side legs.

5,251,557

SEWING MACHINE WITH AN EDGE GUIDING DEVICE TO GUIDE ONE OR MORE PLIES OF MATERIAL

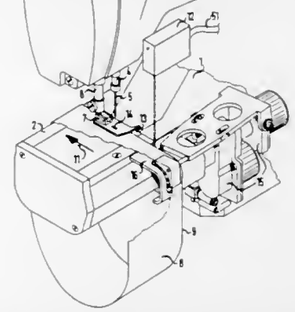
Günter Rohr, Hemmingen, Fed. Rep. of Germany, assignor to Union Special GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 28, 1992, Ser. No. 967,419

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1992, 4226161

Int. Cl.[5] D05B *27/16*

U.S. Cl. 112—306 **12 Claims**



1. A workpiece guide device for a sewing machine for automatically aligning an edge of a workpiece with respect to a sewing needle of the sewing machine, the workpiece being movable in a feed direction for allowing the sewing needle to sew the workpiece at a prescribed distance from the edge of the workpiece, the guide device comprising:

a sensor for detecting the edge of the workpiece;

a moveable guide wheel coupled to a first motor for imparting movement to said guide wheel;

an abutment for securing the workpiece between said abutment and said guide wheel such that movement of said guide wheel moves the workpiece in a first direction;

secondary wheels movably positioned around a circumferential side of said guide wheel, said secondary wheels being angularly positioned with respect to the guide wheel in order to contact and guide the workpiece in a second direction;

said secondary wheels coupled to a second motor for imparting movement to said secondary wheels; and

said sensor coupled to at least one of said first and second motors for controlling said first and second motors.

5,251,558

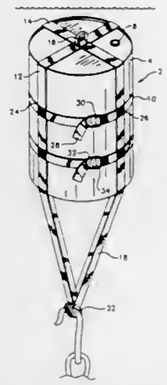
UNDERWATER SALVAGE APPARATUS

Ward J. Bekins, 1419 Nob Hill Ave. N., Seattle, Wash. 98109, and Sylvester Wilson, 607 - 91st SW., Everett, Wash. 90204

Filed May 26, 1992, Ser. No. 888,133

Int. Cl.[5] B63C *7/00*

U.S. Cl. 114—52 **32 Claims**



1. An underwater salvage apparatus comprising:.

a substantially cylindrical drum having a top and having an air inlet and a water vent; and

a harness adapted to be oriented on said drum, said harness comprising:

a plurality of spaced longitudinally extending straps each having an upper end interconnected at said top of said drum by fastening means, each of said longitudinally extending straps having a lower free end adapted to be disposed below said drum, each of said lower free ends having a means for securing said free end to an object to be salvaged; and

at least one circumferentially disposed strap interconnecting said plurality of longitudinally extending straps, said circumferentially disposed strap having a pair of free ends and having means for tightening said harness onto said drum by securing said pair of free ends.

5,251,559

DRAIN CLEANER DISPENSER WITH LOCKING FEATURE

Arthur Sternbeimer, Spring Valley, N.Y., and Anthony Delia, W. Redding, Conn., assignors to Block Drug Company, Inc., Jersey City, N.J.

Continuation-in-part of Ser. No. 681,953, Apr. 8, 1991. This application Jan. 22, 1992, Ser. No. 824,160

Int. Cl.[5] B67D *5/00*

U.S. Cl. 141—98 **23 Claims**

1. A combination of a container and a dispenser, comprising:

(a) a drain cleaner;

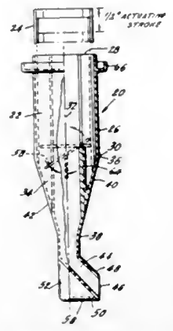
(b) a container housing the drain cleaner;

(c) a dispenser which includes a sleeve for slidably receiving the container therein and means for dispensing the drain cleaner from the sleeve to a position outside of the dispenser;

(d) means for opening the container and causing the drain cleaner to enter the sleeve in response to a dispensing motion in which the container and the dispenser are moved relative to one another in a predetermined manner; and

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(e) a locking mechanism for preventing the relative dispensing motion between the container and the dispenser until



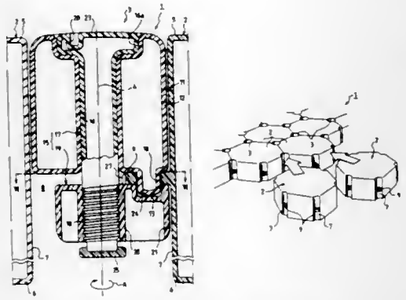
the locking mechanism is unlocked by the user of the drain cleaner.

5,251,560

WATER-FLOAT COUPLING DEVICE

Koichiro Ban; Akihiko Tanaka; Magohei Tsukamoto, and Toshi Goto, all of Shizuoka, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Shizuoka, Japan

Filed Aug. 6, 1992, Ser. No. 930,244
Claims priority, application Japan, Jun. 11, 1992, 4-152411
Int. Cl.[5] B63B *3/08*
U.S. Cl. 114—266 **18 Claims**



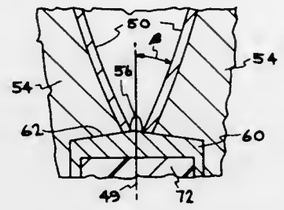
1. A water-float coupling device comprising:
a fastening means provided on at least one side of each of a plurality of floats;
said fastening means of two of said floats being horizontally juxtaposed;
a locking part detachably engaged with said horizontally juxtaposed fastening means of two of said floats; and
tightening means for maintaining said locking part engaged with said juxtaposed fastening means, said juxtaposed fastening means being positioned in generally vertically parallel relationship to each other when said tightening means is tightened.

5,251,561

OPEN APEX SHAPED CHARGE-TYPE EXPLOSIVE DEVICE HAVING SPECIAL DISC MEANS WITH SLIDE SURFACE THEREON TO INFLUENCE MOVEMENT OF OPEN APEX SHAPED CHARGE LINER DURING COLLAPSE OF SAME DURING DETONATION

Michael J. Murphy, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 11, 1992, Ser. No. 897,150
Int. Cl.[5] F42B *1/02*
U.S. Cl. 102—307 **20 Claims**



1. An open apex shaped charge explosive device comprising:
(a) an inner liner within said device defining a cone truncated at one end thereof;
(b) explosive materials within said device surrounding the outer surface of said inner liner;
(c) disc means within said device having a slide surface located adjacent said truncated end of said inner liner on which the end of said truncated end of said inner liner will slide during detonation; and
(d) a primer charge within said device adjacent an opposite surface and the end edge of said disc means whereby said disc means will direct the detonation of said primer charge around said end edge of said disc means to said explosive materials surrounding said inner liner;
said slide surface on said disc means facilitating collapse of said inner liner by allowing said truncated end of said inner liner to slide on said slide surface as said explosive material surrounding said inner liner detonates.

5,251,562

DEVICE FOR AERODYNAMICALLY STABILIZING A BOMBLET

Patrice H. Chemiere, La Chapelle Saint Ursin, and Jean-Paul A. Dupuy, Bourges, both of France, assignors to Giat Industries, Versailles, France

Filed Oct. 16, 1992, Ser. No. 961,636
Claims priority, application France, Oct. 17, 1991, 91 12797
Int. Cl.[5] F42B *12/58*
U.S. Cl. 102—386 **19 Claims**



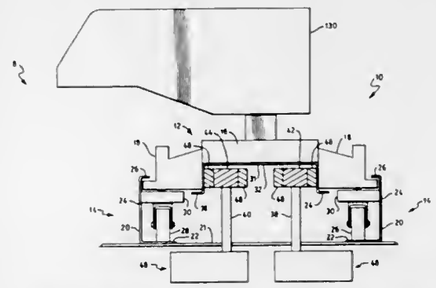
1. An apparatus for aerodynamically braking and stabilizing a bomblet, comprising:
a parachute ribbon having a substantially constant width and being attached to a body of said bomblet in a fastening region so as to form a loop, said loop having a lengthwise dimension greater than a lengthwise dimension of said body; and
at least one member attached to said bomblet body and extending to either side of said fastening region for partially deploying said parachute ribbon.

5,251,563

SYNCHRONOUS DRIVE AND BRAKING MEANS FOR MATERIAL HANDLING CAR

Joel L. Staehs, DeSoto; Gene DiFonso, Arlington, and William C. Bortzfield, deceased, late of Grand Prairie, all of Tex. by Beverly J. Bortzfield, executrix , assignors to BAE Automated Systems, Inc., Carrollton, Tex.

Filed Oct. 28, 1992, Ser. No. 967,667
Int. Cl.[5] B61B *13/00*
U.S. Cl. 104—168 **30 Claims**



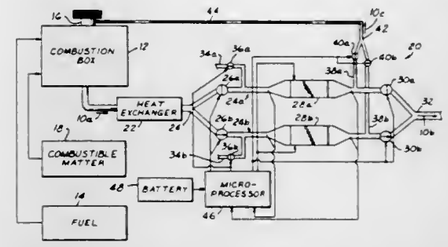
1. A material handling car and track assembly, said assembly comprising:
a car having a chassis portion,
a track having two parallel rails,
travel wheels mounted on said chassis portion for rolling on said rails,
frame means depending from an underside of said chassis portion, said frame means comprising first and second frame portions spaced from each other, said frame portions having vertical walls with inboard surfaces thereon, said frame members extending lengthwise of said car,
first and second spindles mounted between said rails,
contact wheels mounted on said spindles, said contact wheels being in a plane normal to said spindles, engaging means on the peripheries of said contact wheels for engaging said inboard surfaces of said frame means, said first and second spindles being disposed between said vertical walls when said contact wheels engage said vertical walls, and
actuating means for driving said contact wheels at selected rotational speed, whereby upon engagement of said contact wheels with said frame portions, said contact wheels are operative to modify the speed of said car in accordance with said selected rotational speed of said actuating means.

5,251,564

COMBUSTION BOX EXHAUST FILTRATION SYSTEM AND METHOD

Julius J. Rim, 2743 Bloomfield Crossing, Bloomfield Hills, Mich. 48304, and Ho Rim, 601-4 Sinsa-Dong, Kangnam-Ku, Seoul, Rep. of Korea

Continuation-in-part of Ser. No. 549,738, Jul. 9, 1990, Pat. No. 5,085,049. This application Nov. 25, 1991, Ser. No. 797,701
Claims priority, application Rep. of Korea, Apr. 26, 1990, 90-5855
The portion of the term of this patent subsequent to Feb. 4, 2009, has been disclaimed.
Int. Cl.[5] F23J *3/00*
U.S. Cl. 110—344 **15 Claims**



1. A filtration system for removing particulate matter and unburned hydrocarbons from exhaust gas of a combustion box, said filtration system being connected with an exhaust system of the combustion box, the combustion box having an air intake for aspiration, said filtration system comprising:
a first filter connected with the exhaust system, said first filter being structured so as to trap particulate matter from the exhaust gas;
a second filter connected with the exhaust system, said second filter being structured so as to trap particulate matter from the exhaust gas;
first valve means connected with the exhaust system for selecting at least one of said first and second filters for filtering said exhaust gas;
exhaust gas cooling means connected with said exhaust system upstream of said first and second filter means for providing a predetermined exhaust gas temperature at said first and second filters whereat said unburned hydrocarbons will condense out of said exhaust gas, raid condensed unburned hydrocarbons at least in part condensing onto said trapped particulate matter;
ignition means connected with said first and second filters for selectively initiating regeneration of said first and second filters;
catalytic law temperature regeneration means present at each of said first and second filters during the respective regeneration thereof, said catalytic low temperature regeneration means providing for combustion of said particulate matter and said unburned hydrocarbons at a predetermined rate;
second valve means connected with said first and second filter means for selectively admitting air into one of said first and second filters when said one of said first and second filters is being regenerated;
conduit means for routing combustion gases produced by said combustion in any of said first and second filters to the air intake of the combustion box said predetermined rate of combustion producing said combustion gases at a rate which does not adversely affect combustion performance of the combustion box; and
third valve means connected with said conduit means for selectively routing said gases produced by combustion in any of said first and second filters to the air intake of the combustion box.

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5,251,565

PROCESS AND APPARATUS FOR REMOVAL OF CARBONACEOUS MATERIALS FROM PARTICLES CONTAINING SUCH MATERIALS

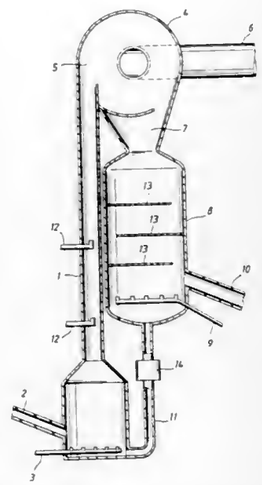
Michael C. Phillips, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 794,106, Nov. 18, 1991, abandoned. This application Mar. 23, 1992, Ser. No. 855,822

Claims priority, application United Kingdom, Dec. 13, 1990, 9027038.0

Int. Cl.[5] F23G 5/00

U.S. Cl. 110—346 13 Claims



1. A process for the removal of carbonaceous materials from particles containing such materials using two reactors each with a distinguishable upper and lower part, the process comprising:

a. introducing said particles into said lower part of a first, riser-type reactor along with an oxygen-containing gas;

b. reacting said particles with said oxygen-containing gas such that a resulting flue gas is formed;

c. reacting said particles with said oxygen-containing gas in said first reactor under entrainment conditions with a relatively high density phase in said lower part and a relatively low density phase in said upper part at a temperature suitable to burn said carbonaceous materials off of said particles at such a rate that said flue gas at the top of said first riser reactor does not contain any substantial amount of oxygen;

d. separating said flue gas and said reacted particles at the top of said first riser reactor;

e. introducing said reacted particles into said upper part of a second, fluidized bed-type reactor while also introducing an oxygen-containing gas into said lower part of said second reactor;

f. operating said second reactor under fluidized bed conditions at a temperature suitable to burn off said carbonaceous materials and produce a flue gas and processed particles and further adjusting the amount of oxygen-containing gas being utilized in such a way that said flue gas at the top of said second reactor is substantially free of oxygen; and

g. removing said processed particles from the lower part of said second reactor, and recirculating a part of said processed particles to said lower part of said first riser reactor.

5,251,566

STENCIL PRINTER WITH A CAM BAISSED PRESS ROLLER

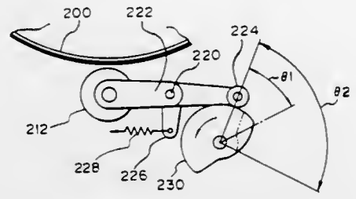
Kazuyosi Kobayasi, Murata; Tomoya Otomo, Sendai, and Mitsuo Satō, Shibata, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 753,235, Aug. 30, 1991, Pat. No. 5,172,632. This application Sep. 28, 1992, Ser. No. 951,851

Claims priority, application Japan, Aug. 31, 1990, 2-232074; Dec. 7, 1990, 2-407377; Dec. 11, 1990, 2-402870; Feb. 18, 1991, 3-013684; Mar. 25, 1991, 3-060116

Int. Cl.[5] B41L 13/04

U.S. Cl. 101—120 5 Claims



1. A printer for printing out an image formed in a stencil on a sheet, comprising:

a rotatable drum comprising a hollow cylindrical support constituted by an apertured portion which is formed with a number of apertures and a non-apertured portion, a stencil being wrapped around an outer periphery of said support;

clamp means provided on said non-apertured portion of said support for clamping one edge of said stencil wrapped around said support;

ink supply roller means disposed in said support for supplying ink to said stencil via said apertured portion of said support;

press roller means for pressing a sheet against said stencil; and

means for selectively urging said press roller means toward said drum such that said press roller means contacts said drum at least 25 mm in advance of a first printing location of said stencil, whereby oscillation of the press roller means resulting from contact of the press roller means with one of the drum and stencil is terminated prior to initiation of printing.

5,251,567

STENCIL MAKING DEVICE HAVING MEANS FOR CONTROLLING DOT PERFORATION DENSITY

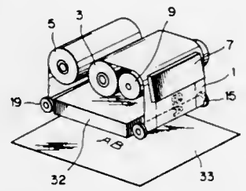
Tetsuji Fuwa, Hashima, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed May 27, 1992, Ser. No. 888,864

Claims priority, application Japan, Jun. 6, 1991, 3-134937

Int. Cl.[5] B41C 1/14

U.S. Cl. 101—128.4 10 Claims



1. A stencil making device for transferring an ink through a perforated image formed in a heat sensitive stencil sheet to form an inked image corresponding to the perforated image on a print sheet, the heat sensitive stencil sheet being formed of a thermoplastic film and a porous support bonded thereto, the stencil making device comprising:

feeding means for feeding the heat sensitive stencil sheet;

a thermal head which includes a plurality of heat generating dots, each having an ON and OFF dot portion, where ON indicates heat is being generated at the ON dot portion and OFF indicates a lack of heat being generated at the OFF dot portion, said thermal head being used for forming perforations to form the perforated image on the thermoplastic film of the stencil sheet, the perforations being formed at the ON dot portions of the thermal head;

an input means for inputting character data into a control means;

a character generator for providing and sending a bit map data tot he control means in response to the character data;

control means for controlling numbers of perforations depending on crowdedness of the ON dot portions, the control means comprising:

means for storing the bit map data inputted from the character generator, the bit map data being indicative of ON bits region and OFF bits region;

means for converting densely congregated ON bits region among the bit map data into OFF bits region;

means for providing a final ON bits region by removing the OFF bit region from the ON bit region of the bit map data, the final ON bit region providing the ON dot portions of the thermal head; and

means for transmitting the final ON bits region to the thermal head.

5,251,568

ACTUATING DRIVE FOR INSTALLATION IN A BODY OF A MOTOR VEHICLE

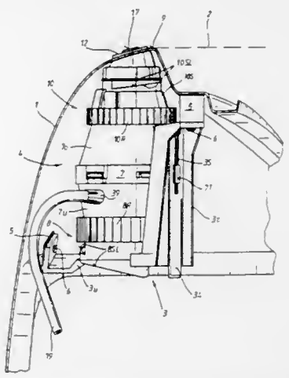
Dieter Feichtiger, Aidlingen; Josef Schumacher, Reutlingen; Tobias Reis, Wildberg; Klaus-Jürgen Heimbrodt, and Georg Klink, both of Treuchtlingen, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG and Walter Alfmeier GmbH, both of Fed. Rep. of Germany

Filed Dec. 4, 1991, Ser. No. 802,287

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1990, 4038550

Int. Cl.[5] G09F 17/00; B60Q 9/00

U.S. Cl. 116—28 R 18 Claims



1. In an actuating device for installation in a body of a motor vehicle, comprising:

a housing with an exit opening having an edge;

a retractable and extendable actuator guided in the housing so as to penetrate the exit opening;

mounting means for attaching the housing to the body, the exit opening of the attached housing supporting the edge at a body edge of a body opening which is likewise penetrated by the actuator; and

wherein said mounting means includes means for guidably supporting said housing on one side at least indirectly so as to be displaceable with respect to said mounting device along a displacement axis in a direction of movement of said actuator; and

means for clamping an outer contour projecting from said housing on another side of the edge against an inner side of the body opening.

5,251,569

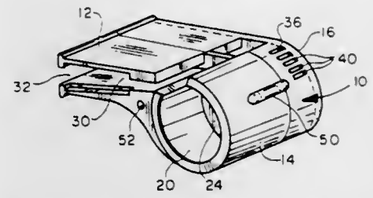
MULTIPLE TONE WHISTLE

Suren V. Seron, Platville, Ill., assignor to Seron Manufacturing Co., Joliet, Ill.

Filed Nov. 4, 1991, Ser. No. 787,375

Int. Cl.[5] G10K 5/00

U.S. Cl. 116—137 R 14 Claims



14. A whistle including a main whistle body having a mouthpiece end and an opposite, sound chamber end; a sound chamber within said sound chamber end; a channel within said body extending from said chamber to said mouthpiece end for receipt of air under pressure; an orifice in said body opening to said chamber; and a plurality of knockouts in said body adapted to be removed to create one or more additional orifices opening to said chamber to selectively vary the pitch of the whistle.

5,251,570

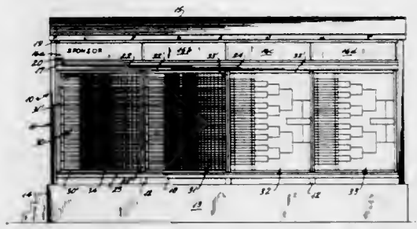
MULTIPURPOSE SCOREBOARD SYSTEM

Eugene Creech, Plattsburg, N.Y., assignor to Eagle Scoring Systems, Reno, Nev.

Filed Jan. 24, 1992, Ser. No. 825,024

Int. Cl.[5] G09F 11/00; A63F 9/00

U.S. Cl. 116—225 6 Claims



1. A scoreboard system for selective recording information with regard to players involved in a different types of tournament play comprising, a support structure, a plurality of independently moveable panels each having a first and a second surface and upper and lower edges, a support means for removably supporting each of said panels to said support structure, at least one of said panels having a first grid pattern permanently affixed to the first surface thereof for receiving written indicia reflecting one type of tournament play, and at least two of said panels having a second grid pattern permanently affixed to the second surface thereof of each for accepting indicia with respect to a second type of tournament play,

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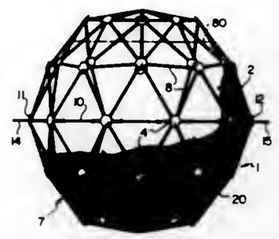
one of said at least two panels being selectively invertible 180° relative to the other of said at least two panels so that its lower edge is positioned above its upper edge so that said second grid patterns are aligned to form a combined third grid pattern, whereby said panels may be aligned relative to one another to define three different grid patterns for recording information with regard to players involved in tournament play.

5,251,571

SUBMERSIBLE CAGE SYSTEM FOR CULTURING AQUATIC ANIMALS

Michael D. Willinsky, Nepean, Canada, and Donald R. Robson, Halifax, Scotland, assignors to Innovation & Development Partners Inc./IDP Inc., Ottawa, Canada

Continuation-in-part of Ser. No. 576,833, Sep. 4, 1990, abandoned. This application Sep. 5, 1991, Ser. No. 755,042
Claims priority, application Canada, Jun. 11, 1991, 2044301
Int. Cl.[5] A01K *61/00*
U.S. Cl. 119—215 11 Claims



1. A submersible cage system for culturing aquatic animals comprising:
- a rigid geodesic frame comprising a plurality of elongated members interconnected at hubs to form contiguous predominantly triangular segments defining a spheroidal shape;
- a net supported by said rigid frame to define a water permeable enclosure for said aquatic animals;
- means for supporting said rigid frame for rotation about a horizontal axis; and
- means for anchoring said frame in a marine environment whereby said cage can be raised or lowered relative to the surface of the water.

5,251,572

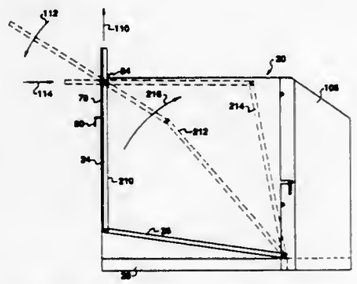
ANIMAL TRANSPORT-TRANSFER CAGE SYSTEM

William A. Frame, 1119 Haverford Rd., Ridley Park, Pa. 19078, and Julian T. Canuso, Jr., 1704 Bayshore Ave., Brigantine, N.J. 08203

Filed Jun. 1, 1992, Ser. No. 891,575
Int. Cl.[5] A01K *1/00*
U.S. Cl. 119—17 18 Claims

1. A reuseable animal transport-transfer cage comprising:
- a) an enclosed framework assembly having an open front end and an open back end,
- b) a front panel removeably attached to the open front end of the framework assembly,
- c) a back panel having a closed position coincident with the open back end and a means for slidably moving about a fixed point of the framework assembly to an opened position,
- d) a moveable partition generally coextensive with the height and width dimensions of the enclosed framework having a first normal position and a second position and a first end rotatably connected to the back panel and a second end pivotally connected to the open front end of the framework assembly,

whereby the sliding movement of the back panel from the closed to opened position causes the partition to sweep through the framework assembly from its first normal position to its second position generally coincident with the open front



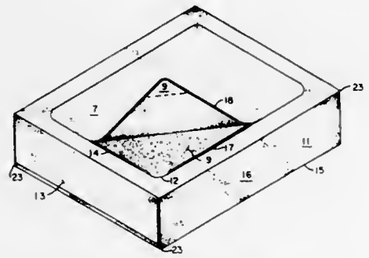
end of the framework assembly sufficiently to evacuate an animal from the cage.

5,251,573

DISPOSABLE PET LITTER CONTAINER

Mark B. Bremley, St. Louis, Mo., assignor to Sean P. McGivern, Edwardsville, Ill., a part interest

Filed Sep. 8, 1992, Ser. No. 941,718
Int. Cl.[5] A01K *29/00*
U.S. Cl. 119—168 14 Claims



1. A disposable pet litter box comprising:
- a laminated moisture-proof outer shell having a bottom wall, side walls, end walls and a top wall generally opposed to said bottom wall; and,
- said top wall having a removable panel formed therein, said removable panel defined by a cut made approximately half-way through said outer shell from the outside creating the shape of said panel, and by a cut made approximately half-way through said top shell from the inside following the shape of said outside cut, the interior cut being in-set from the outside cut and creating an off-set cut area for delaminating said top between said cuts to allow removal of said removable panel.

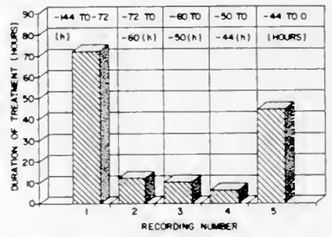
5,251,574

METHOD AND APPARATUS FOR INCREASING THE QUANTITY AND IMPROVING THE QUALITY OF HATCHLINGS INCUBATED AND HATCHED UNDER ARTIFICIAL CONDITIONS BY EXPOSING THE EGGS TO NATURAL SOUNDS

Matthew R. Foster, Cambridge; Bruce Greenlees, Dundas, and Ian J. H. Duncan, Guelph, all of Canada, assignors to The Marmon Corporation of Canada, Ltd., Cambridge, Canada

Filed Dec. 16, 1992, Ser. No. 991,683
Int. Cl.[5] A01K *29/00*
U.S. Cl. 119—174 18 Claims

1. A method for improving the yield and quality of hatchlings from eggs incubated and hatched under artificial conditions comprising the steps of:
- A. recording all sounds generatred in a natural incubation and hatching environment to which eggs are exposed,
- B. exposing eggs incubating and hatching under artificial conditions to said recorded sounds,



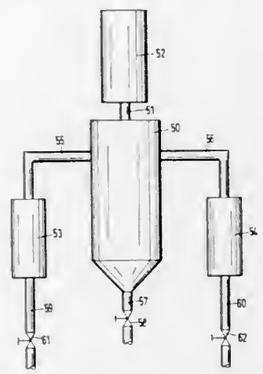
whereby the spread of time over which the hatchlings emerge from eggs incubated and hatched under artificial conditions is reduced as is the stress experienced by both the unhatched embryos and by the hatchlings.

5,251,575

INSTALLATION FOR COOLING HOT, DUST-CHARGED GAS IN A STEAM GENERATOR, AND A PROCESS FOR OPERATING SAID INSTALLATION

Roland Michel, Kreuzlingen, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Sweden

Filed May 1, 1992, Ser. No. 877,569
Claims priority, application Switzerland, Jun. 12, 1991, 01753/91
Int. Cl.[5] F22D *1/00*
U.S. Cl. 122—7 R 6 Claims



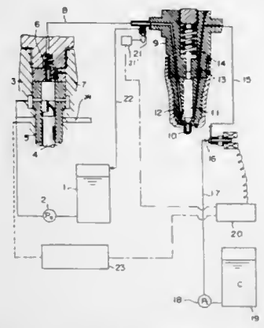
1. An installation for a cooling hot, dust-charged gas flow from a reactor, which is under a pressure of more than 1 bar, comprising a steam generator including a first heat exchanger receiving the hot gas flow coming from the reactor for lowering the temperature of the hot gas flow to a temperature below the softening point of the dust in the gas flow, at least two second heat exchangers connected in the gas flow downstream of the first heat exchanger and in parallel to one another for lowering the temperature of the gas flow by convention, and a shut-off device disposed in the gas flow downstream of each second heat exchanger.

5,251,576

SYSTEM AND METHOD FOR FEEDING FUEL TO A FINE-PARTICLE-MIXED FUEL BURNING DIESEL ENGINE

Hiroshi Nakagawa, and Yuuji Oda, both of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 12, 1992, Ser. No. 897,794
Claims priority, application Japan, Jun. 14, 1991, 3-143231; Jul. 23, 1991, 3-205630
Int. Cl.[5] F02D *19/04*
U.S. Cl. 123—23 4 Claims



1. A fuel feed system of a fine-particle-mixed fuel burning diesel engine in which fuel oil containing fine particles of solid fuel is employed as fuel to be burnt, said system comprising: an injection valve having an oil reservoir defined therein, a nozzle head defined therethrough and through which fuel is to be injected, and a needle valve movable between respective positions which open and close a path between the oil reservoir and the nozzle hole; a fuel feed pipe interposed between the oil reservoir of said injection valve and a fuel tank for accommodating fuel containing fine particles; a control valve operative to control the amount of fuel flowing through said fuel feed pipe; a check valve provided within said injection valve and which allows fuel flowing from the control valve to flow only towards the oil reservoir; a high-pressure pump operatively interposed between an oil tank and said injection valve so as to pressurize oil within the oil tank and feed it to the injection valve; a pressure wave propagation pipe interposed between a delivery port of said high-pressure pump and the oil reservoir defined in the injection valve; a circulation valve operative to open and close said pressure wave propagation pipe; and a control device which controls the opening and closing of said circulation valve and said control valve.

5,251,577

WATER JACKET ARRANGEMENT FOR MARINE TWO CYCLE INTERNAL COMBUSTION ENGINE

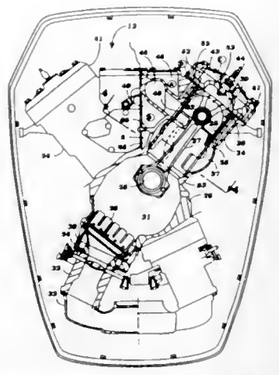
Akinori Kojima, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Division of Ser. No. 481,978, Feb. 16, 1990, Pat. No. 5,048,467.
This application Feb. 21, 1991, Ser. No. 658,538
Claims priority, application Japan, Feb. 17, 1989, 1-36109
Int. Cl.[5] F02B *75/18*
U.S. Cl. 123—41.74 5 Claims

1. A cooling arrangement for a liquid cooled internal combustion engine having a cylinder head cylinder block assembly comprising a cylinder block with a cooling jacket and a cylinder head affixed to said cylinder block and having a cooling jacket, and exhaust port formed in said cylinder head cylinder block assembly for discharging exhaust gases from said engine, an exhaust cooling jacket formed in said cylinder head, cylin-

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der block assembly encircling said exhaust port, and means for circulating liquid coolant first through said exhaust cooling



jacket, then through said cylinder head cooling jacket and then through said cylinder block cooling jacket.

5,251,578

COOLING SYSTEM FOR INTERNAL COMBUSTION ENGINE

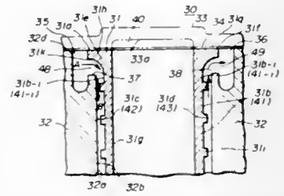
Masato Kawauchi, Mishima; Kiyoshi Nakanishi; Masayoshi Tokoro, both of Susono, and Shizuo Abe, Mishima, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed May 27, 1992, Ser. No. 888,653

Claims priority, application Japan, Jun. 4, 1991, 3-133051; Aug. 27, 1991, 3-215510

Int. Cl.[5] F02F *1/10*

U.S. Cl. 123—41.84 7 Claims



1. A cooling system for an internal combustion engine comprising:

a supply source of a coolant for cooling a cylinder liner;

a plurality of annular grooves, spaced apart from each other in an axial direction of said cylinder liner, formed along a circumference of an outer surface of said cylinder liner, a cross section of all of said plurality of annular grooves being the same and uniform;

longitudinal grooves, for inflow and outflow of a coolant, each of said longitudinal grooves connecting all of said plurality of annular grooves by extending in a direction of an axis of said cylinder liner, and provided at opposite sides of a diameter of said cylinder liner, the coolant being supplied to one end of one of said longitudinal grooves for inflow of a coolant from a direction perpendicular to the extending direction of said longitudinal grooves; and

an introducing passage part formed so as to smoothly introduce the coolant from said supply source to the extending direction of said longitudinal groove for inflow of a coolant.

5,251,579

CYLINDER LINERS

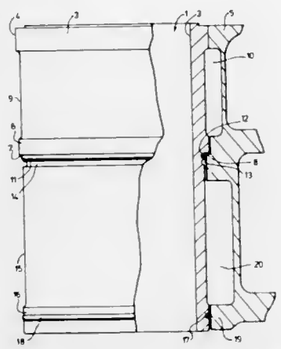
Leonard E. Morris, Colne, United Kingdom, assignor to AE Auto Parts Limited, England

Continuation of Ser. No. 731,279, Jul. 17, 1991, abandoned. This application Mar. 31, 1992, Ser. No. 860,252

Claims priority, application United Kingdom, Jul. 2[illegible], 1990, 9015932

Int. Cl.[5] F01P *3/02*

U.S. Cl. 123—41.84 13 Claims



1. In an internal combustion engine having a block containing a cylinder cavity extending between an engine head and a crankshaft to which a piston is connected for reciprocating travel within the cylinder cavity, a liner stop positioned intermediate the ends of the cylinder cavity, a liner coolant passage adapted to provide coolant to the outer surface of a cylinder liner, and a substantially annular radial support section for a bottom end of the liner,

a substantially cylindrical, replaceable cylinder liner having top and bottom ends which comprises:

(i) a top end boss having a cylindrical axially extending outer surface forming an interference fit within the cylinder cavity,

(ii) a midstop flange having a radially extending surface which engages the liner stop in the cylinder cavity,

(iii) a portion between said top boss and said midstop flange which forms a wall of the coolant passage,

(iv) a substantially cylindrical portion below said midstop flange which forms at least 30% of the axial length of the liner,

(v) an annular groove in an outer surface of the liner adjacent to said bottom end of the liner, and

(vi) a support ring located in said groove, said ring having an outside diameter not substantially greater than an outside diameter of said bottom end before use, and being of a material which will swell under the influence of engine oil to thereby cause said ring to contact said substantially annular radial support section.

5,251,580

CRANK CHAMBER PRECOMPRESSION TYPE TWO-CYCLE INTERNAL COMBUSTION ENGINE

Katsumi Torigai, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Apr. 22, 1992, Ser. No. 872,184

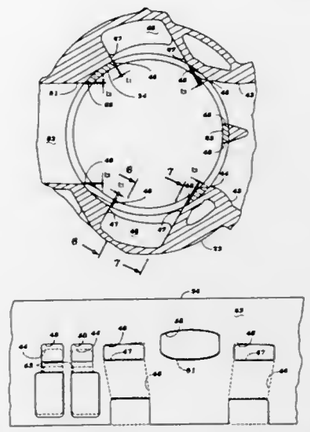
Claims priority, application Japan, Apr. 30, 1991, 3-126735

Int. Cl.[5] F02B *75/40*

U.S. Cl. 123—65 P 3 Claims

1. A porting arrangement for a two-cycle internal combustion engine comprising a cylinder block, a cylinder liner having a cylinder bore supported within said cylinder block, a piston reciprocating in said cylinder bore, an exhaust port opening through said cylinder liner and opened and closed by

said piston for discharge of exhaust gases from said cylinder bore, a scavenging port opening through said cylinder bore and having a side edge adjacent a side edge of said exhaust port, said scavenging port being opened and closed by the reciprocation of said piston for admitting a charge to said cylinder, a scavenge passage formed in said cylinder block and



terminating in a scavenge passage opening formed adjacent said cylinder liner and said scavenge port, said scavenging port being defined in part by a top edge intersecting said side edge, said top edge being configured to mask only the portion of said scavenging passage opening adjacent said exhaust port for precluding the flow of scavenging gases directly from said scavenging port to said exhaust port.

5,251,581

TWO CYCLE ENGINE PROVIDED WITH A SCAVENGING PUMP

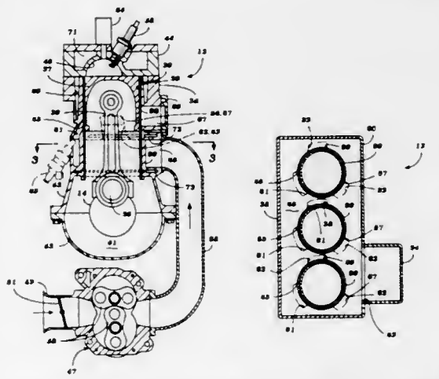
Masanori Takahashi, and Masahiko Kotoh, both of Hamamatsu, Japan, assignors to Sanshin Kogsyo Kabushuki Kaisha, Hamamatsu, Japan

Filed Apr. 22, 1992, Ser. No. 872,183

Claims priority, application Japan, Apr. 23, 1991, 3-116595

Int. Cl.[5] F02B *25/16, 33/34;* F02F *1/22*

U.S. Cl. 123—65 P 16 Claims



1. An internal combustion engine comprised of a cylinder block forming at least one cylinder and cylinder bore, said cylinder block being formed with an internal plenum chamber surrounding said cylinder, at least a pair of scavenge ports extending through said cylinder for admitting a charge thereto, at least a pair of scavenge riser passages communicating said plenum chamber with respective of said scavenge ports, said plenum chamber having a substantially greater dimension radially of said cylinder bore than said scavenge riser passages for supplying an unrestricted flow to said scavenge riser passages, and an inlet opening entering into said plenum chamber and having a width greater than the diameter of said cylinder bore.

5,251,582

STARTING FUEL SYSTEM FOR ENGINE

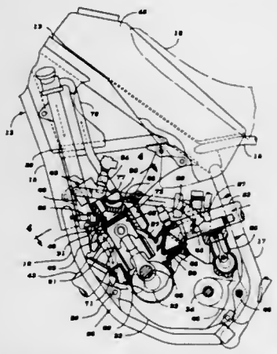
Norihisa Mochizuki, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Oct. 21, 1991, Ser. No. 780,727

Claims priority, application Japan, Nov. 28, 1990, 2-331107

Int. Cl.[5] F02B *33/04*

U.S. Cl. 123—73 A 25 Claims



1. A fuel injection system for a two cycle crankcase compression engine having an induction system and a combustion chamber to which the induction system delivers a charge, a first fuel injector for injecting fuel directly into said combustion chamber, a second fuel injector for injecting fuel into said induction system, and control means for controlling the operation of said fuel injectors so that only said second fuel injector supplies fuel to said engine during starting.

5,251,583

INTAKE APPARATUS FOR TWO CYCLE ENGINE

Masakazu Shiohara, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jun. 10, 1991, Ser. No. 712,481

Claims priority, application Japan, Jun. 9, 1990, 2-150913; Jun. 9, 1990, 2-150915; Jun. 9, 1990, 2-150916

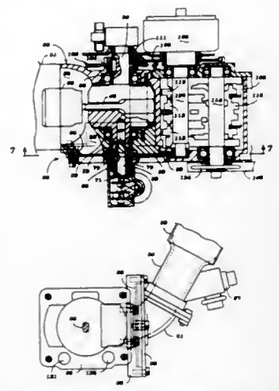
Int. Cl.[5] F01L *7/06;* F02B *33/04*

U.S. Cl. 123—73 D 21 Claims

1. An induction system of a two cycle, crankcase compression internal combustion engine comprising a crankcase chamber, an intake port in a vertically extending wall of said crankcase chamber for serving said engine to deliver an intake charge thereto, a single valve plate rotatably journaled relative to said intake port, drive means for driving said valve plate in sequence with the output shaft of said engine, said drive means including mans for varying the angular relationship of said

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valve plate to said output shaft for adjusting the timing of the events of the intake port, and a vertically extending intake pipe



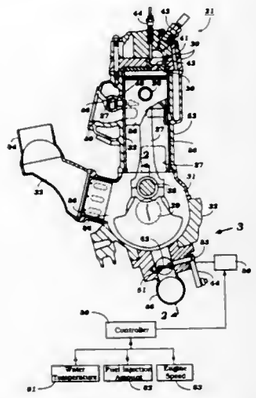
extending upwardly along said vertically extending wall of said crankcase chamber for serving said intake port.

5,251,584

TWO CYCLE ENGINE

Akihiko Ohkubo, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Continuation-in-part of Ser. No. 734,497, Jul. 23, 1991, abandoned. This application Nov. 12, 1992, Ser. No. 974,983
Claims priority, application Japan, Jul. 13, 1990, 2-201250
Int. Cl.[5] F02B *33/04*
U.S. Cl. 123—73 V **20 Claims**



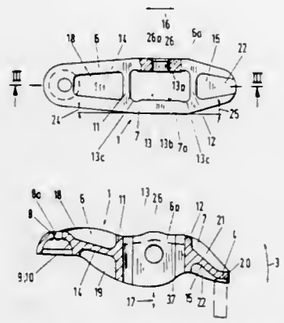
1. A two cycle, crankcase compression, internal combustion engine having at least three crankcase chambers to which an air charge is admitted, scavenge passages for transferring the charge from each of said crankcase chambers to respective combustion chambers, a balance passage, means interconnecting each of said crankcase chambers independently with said balance passage, and control valve means for controlling the communication of said crankcase chambers with said interconnecting means for controlling the communication of said crankcase chambers with each other through said balance passage.

5,251,585

TWO-ARMED LEVER

Andreas Gräber, Offenburg, Fed. Rep. of Germany, assignor to Erich Neumayer GmbH & Co. K.G., Hausach, Fed. Rep. of Germany

Filed Feb. 1, 1993, Ser. No. 12,001
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1992, 4204030
Int. Cl.[5] F01L *1/18*
U.S. Cl. 123—90.39 **7 Claims**



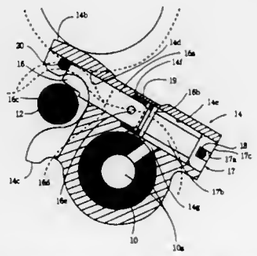
1. A pivotable lever, particularly a rocker arm for actuation of a valve in a combustion engine, comprising a first arm; a second arm; and a median portion disposed between said arms and having a passage extending substantially transversely of said arms and arranged to receive a cam-actuated device, said median portion having walls completely surrounding said passage, said first arm including a motion receiving first portion and a second portion having a substantially H-shaped cross-sectional outline and disposed between said first portion and said walls, said second arm including a first portion arranged to transmit motion to a shank of a valve and a second portion having a substantially H-shaped cross-sectional outline and disposed between said walls and the first portion of said second arm.

5,251,586

VALVE MECHANISM FOR AN INTERNAL COMBUSTION ENGINE

Kazuhiro Koga, Tokyo; Takashi Yamamoto, Hiroshima; Shinji Kamimaru, and Kenzo Watanabe, both of Tokyo, all of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1992, Ser. No. 858,674
Claims priority, application Japan, Mar. 29, 1991, 3-28604[U]; Mar. 29, 1991, 3-28613[U]
Int. Cl.[5] F01L *1/34*
U.S. Cl. 123—90.16 **9 Claims**



1. A valve mechanism for an internal combustion engine having at least one intake valve and at least one exhaust valve, a cam shaft with a low-speed cam and a high-speed cam, a low-speed rocker arm operatively connected to one of said valves, a high-speed rocker arm rocked by the high-speed cam, a connecting shaft secured to said low-speed rocker arm and arranged to rock the low-speed rocker arm by said low-speed cam, and a changeover pin slidably mounted in an oil chamber formed in said high-speed rocker arm, an improvement of the mechanism comprising:

a flat engaging face formed in a front portion of said changeover pin so as to be engaged with said connecting shaft when the changeover pin is projected by oil supplied to said oil chamber; and

means for preventing said changeover pin from rotating about an axis thereof.

5,251,587

VALVE LIFTER FOR ENGINE

Kazuaki Mori, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Apr. 17, 1992, Ser. No. 870,598
Claims priority, application Japan, Apr. 17, 1991, 3-113991
Int. Cl.[5] F01L *1/14*
U.S. Cl. 123—90.51 **12 Claims**



1. A tappet assembly for transmitting motion between an actuating member and a valve stem member in a reciprocating machine, said tappet assembly being comprised of a hollow main body element formed from a light weight material and having a cylindrical surfaced adapted to be supported for reciprocation in a bore of a component of said machine and an end surface adapted to be operated by the actuating member, an under side of said end surface being in facing relation with said valve stem member for actuating said valve, an engaging element formed from a harder more wear resistant material than said body element, said engaging element and said main body element having cooperating interengaging cylindrical surfaces, at least one of said elements comprising a male portion having a discontinuity in its cylindrical surface and a larger diameter adjacent part acting as a pressing member with the other of said element comprising a female portion having a portion thereof plastically deformed by the action of said pressing member to extend into said surface discontinuity upon assembly of said elements for interlocking said elements to each other with said engaging element position to engage and operate said valve.

5,251,588

CONTROLLER FOR HYBRID VEHICLE DRIVE SYSTEM

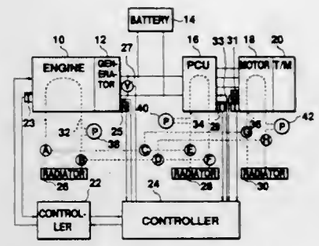
Hiroshi Tsujii; Megumu Suda, both of Susono, and Yoshihide Nii, Fuji, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Nov. 12, 1992, Ser. No. 974,786
Claims priority, application Japan, Nov. 15, 1991, 3-300185
Int. Cl.[5] F02N *17/04*
U.S. Cl. 123—142.5 R **20 Claims**

1. A controller mounted on a hybrid vehicle having a plurality of heat generating components including an engine, each of said plurality of heat generating components including a cooling conduit through which a fluid flows to cool the respective components, the cooling conduits of said plurality of heat generating components being selectively interconnected, said controller comprising:

first decision means for deciding whether said engine is in a warmed-up condition;

second decision means for deciding whether components whose rejected heat is to be utilized are in a warmed-up condition, said components whose rejected heat is to be utilized including at least one of said plurality of heat generating components to be mounted on the hybrid vehicle except said engine; and



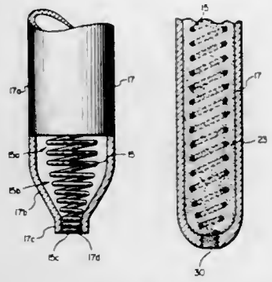
control means for allowing the fluid to flow between the cooling conduit of said engine and the cooling conduit of the component whose rejected heat is to be utilized when said first decision means determines that said engine is not in a warmed-up condition and said second decision means determines that the component whose rejected heat is to be utilized is in a warmed-up condition.

5,251,589

HOT TIP GLOW PLUG AND METHOD FOR MAKING

David E. Duba, and Steven W. Fair, both of Shelbyville, Ind., assignors to Wellman Automotive Products, Inc., Shelbyville, Ind.

Filed Mar. 16, 1992, Ser. No. 851,516
Int. Cl.[5] F02P *19/00*; F02Q *7/00*
U.S. Cl. 123—145 A **12 Claims**



1. A hot tip glow plug for use in a direct injection engine having fuel ignition means, comprising

a housing for mounting in an engine cylinder head wall,

a sheath mounted in the housing, said sheath being formed of high heat strength alloy and having an opening in the outer end thereof,

an electrical heating element in said sheath formed of a wire material having a positive temperature coefficient of resistance and connected to said sheath, said element being helical in shape with the adjacent coils of said helical element being spaced from each other,

a compacted body of electrically insulating heat conducting material supporting said heating element in spaced relation to said tubular metal sheath, and

a core formed of several coils of melted wire material filling the opening in the sheath and forming a core of positive coefficient of resistance material at the outer end of the sheath with said core heating said tip of said sheath to

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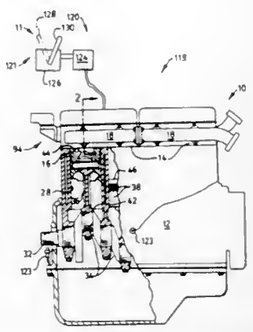
incandescence prior to said portions of said sheath inward of said tip.

5,251,590

METHOD AND APPARATUS FOR STARTING AN ENGINE UTILIZING UNIT VALVE ACTUATION

James J. Faletti, Spring Valley, and Yung T. Bui, Peoria Heights, botb of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Jun. 1, 1992, Ser. No. 891,617
Int. Cl.[5] F02N *17/00*
U.S. Cl. 123—179.21 **20 Claims**



1. A starting system adapted for use with an engine having a conventional four cycle including an intake stroke, a compression stroke, an expansion stroke and an exhaust stroke and including a passage, a pair of bores, a piston during operation of the engine being movably positioned within respective bores between a top dead center position and a bottom dead center position forming the expansion stroke and the reciprocal movement of the piston forming the exhaust stroke;

a pair of valves each being operatively associated with the passage and communicating therebetween the passage and the respective bores and having a closed position and an open position;

means for opening each of the valves independently in response to receiving a control signal;

an electronic control system connected to the opening means and outputting the control signals to the opening means in a first predetermined logic pattern during normal engine operation wherein one of said pair of valves in the generally open position during the exhaust stroke before top dead center position; and

starting control means connected to the electronic control system for causing discrete control signals to be outputted to the opening means in a second predetermined logic pattern to vary the operation of the valves retaining an exhaust valve in the closed position for a portion of the exhaust stroke so that each of the pair of valves associated with the respective bores is in the generally closed position for a portion of the exhaust stroke before top dead center effectively increasing the heat within the engine during the movement of the piston within the respective bore from a bottom dead center position toward the top dead center position.

5,251,591

ROTARY VALVE FOR AN INTERNAL COMBUSTION ENGINE

William R. Corrin, 4327 E. Colorado St., Long Beach, Calif. 90814

Filed Aug. 10, 1992, Ser. No. 927,744
Int. Cl.[5] F01L *7/00;* **F02D** *9/08*
U.S. Cl. 123—190.6 **15 Claims**

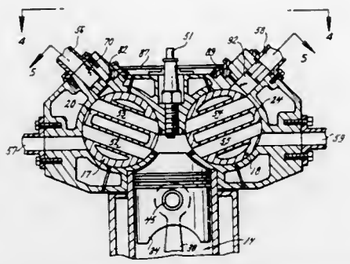
1. A rotary valve for an internal combustion engine comprising:

a valve cylinder having two parallel and transverse passageways bored therethrough:

a valve shaft including a plurality of said valve cylinders, and being capable of rotating about an axial axis of rotation:

said engine including a plurality of engine cylinders, intake ports, and exhaust ports:

two of said valve shafts lying in parallel, namely, a first valve shaft and a second valve shaft;



each of said engine cylinders fluidly communicating with one of said exhaust ports and one of said intake ports by means of one of said valve cylinders included in said first valve shaft, and also fluidly communicating with another of said exhaust ports and another of said intake ports by means of one of said valve cylinders included in said second valve shaft; and

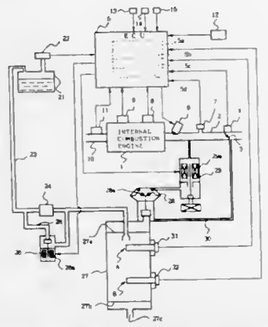
said two valve shafts rotating in opposite directions.

5,251,592

ABNORMALITY DETECTION SYSTEM FOR EVAPORATIVE FUEL CONTROL SYSTEMS OF INTERNAL COMBUSTION ENGINES

Yasunari Seki; Shigetaka Kuroda; Kazutomo Sawamura; Masatoshi Udagawa; Youichi Iwata, and Takushi Toda, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 4, 1992, Ser. No. 831,029
Claims priority, application Japan, Feb. 20, 1991, 3-047689; Feb. 20, 1991, 3-047690; Feb. 20, 1991, 3-047691
Int. Cl.[5] F02B *77/00;* **F02M** *33/02*
U.S. Cl. 123—198 D **17 Claims**



1. In an abnormality detection system for detecting abnormality in an evaporative fuel control system for an internal combustion engine having a fuel tank, and an intake system, said evaporative fuel control system having an evaporative fuel storage device accommodating an absorbent for adsorbing evaporative fuel generated in said fuel tank, the improvement comprising:

a plurality of temperature sensors arranged in said evaporative fuel storage device at different locations for detecting temperature of said adsorbent or in the vicinity thereof within said evaporative fuel storage device at said different locations;

evaporative fuel control means for controlling at least one of charging of said evaporative fuel from said fuel tank to said evaporative fuel storage device and purging of said evaporative fuel from said evaporative fuel storage device to said intake system of said engine; and

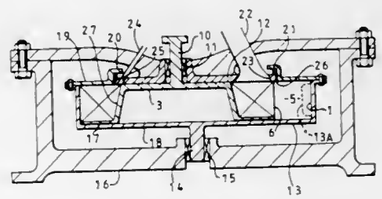
abnormality determining means for determining whether or not there is an abnormality in said evaporative fuel control system, based upon output values from said temperature sensors assumed when said evaporative fuel control system is operative.

5,251,593

THERMODYNAMIC LIQUID RING MACHINE

John R. Pedersen, 3 Priors Rd., Cheltenham Gloucestershire, United Kingdom

PCT No. PCT/GB90/00835, § 371 Date Nov. 26, 1991, § 102(e) Date Nov. 26, 1991, PCT Pub. No. WO90/15250, PCT Pub. Date Dec. 13, 1990
PCT Filed May 30, 1990, Ser. No. 776,273
Claims priority, application United Kingdom, May 31, 1989, 8912505
Int. Cl.[5] F02B *53/00;* **F04B** *37/00*
U.S. Cl. 123—204 **8 Claims**



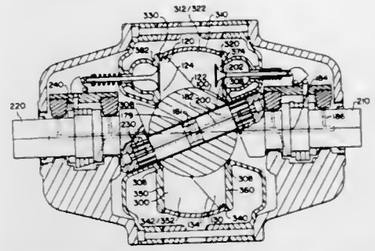
1. A liquid ring machine having a plurality of liquid ring assemblies each comprising a drum having a cylindrical wall surrounding a central axis, a vaned rotor rotatable within the drum about an axis which is parallel to, but offset from, the central axis of the drum, and a liquid disposed within the drum such that, when the rotor rotates at a sufficient speed, the liquid forms a rotating ring adjacent the cylindrical wall of the drum and the ends of the vanes on the rotor are maintained in contact with the liquid during such rotation so that a series of chambers is formed between the vanes of the rotor, the chambers being bounded at the outer periphery by the liquid ring and varying in volume in dependence on the angular orientation of the rotor in view of the offset between the axis of rotation of the rotor and the central axis of the drum, and inlet and outlet means by means of which a working fluid is introduced into, and discharged from, each of the chambers at appropriate angular positions of the rotor, wherein at least the cylindrical wall of the drum is freely rotatable about the central axis to enable the cylindrical wall to be rotated by the liquid ring, wherein the liquid ring machine is a thermodynamic machine which comprises a liquid ring compression part having an inlet for fluid and an outlet for compressed fluid, and a liquid ring expansion part having an inlet for fluid and an outlet for expanded fluid, the liquid ring compression part and the liquid ring expansion part being formed by respective said liquid ring assemblies, wherein the liquid ring compression part and the liquid ring expansion part are mounted on separate drive shafts so as to be capable of rotating at different speeds, and wherein a further liquid ring expansion part having an inlet for fluid and an outlet for expanded fluid is mounted on a common drive shaft to the liquid ring compression part to drive the liquid ring compression part.

5,251,594

NUTATING INTERNAL COMBUSTION ENGINE

Leonard Meyer, 122 Tanglewood Dr., Elk Grove Village, Ill. 60007

Filed Dec. 31, 1991, Ser. No. 815,232
Int. Cl.[5] F02B *53/00;* **F01C** *9/00*
U.S. Cl. 123—228 **54 Claims**



1. A nutating-disc, internal combustion engine comprising:

a nutating-disc having cone-shaped surfaces and a centrally disposed sphere,

a symmetrical, spherical-segment shaped chamber adapted to contain said disc, said chamber having a central bearing to movably engage said sphere and to allow said disc to nutate within said chamber,

a crankshaft rotationally disposed on the axis of said disc within said sphere,

drive shafts disposed on the axis of said chamber positioned on both sides of said chamber, said drive shafts being eccentrically affixed to said crankshaft whereby the nutating motion of said disc causes said drive shafts to turn,

said disc having a plurality of gaps, said chamber having a plurality of stops aligned with said gaps to divide said chamber into an intake/compression portion and a combustion/exhaust portion, said disc having a first portion which divides said intake/compression portion into two sections, said disc having a second portion which divides said combustion/exhaust portion into two sections, and

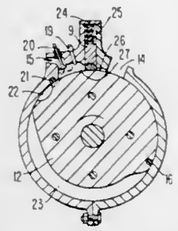
wherein at least one of said stops includes at least one port to pass fuel into at least one portion.

5,251,595

ROTOR ENGINE

Shen Wei-Min, Hunan, China, assignor to Shenzhen Aote Electrical Appliances Co. Ltd., Shenzhen, China, a part interest

Filed Dec. 3, 1991, Ser. No. 801,735
Claims priority, application China, Dec. 6, 1990, 90 1 06132.8
Int. Cl.[5] F02B *53/08*
U.S. Cl. 123—237 **3 Claims**



1. A rotor engine having air-compressing components and engine components comprising an air-compressing rotor and an engine rotor which are fitted on a principal shaft generally parallel to one another to thereby provide an axially outer face and an axially inner face of each said rotor; a gas shield disk mounted between said air-compressing rotor and said engine

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rotor to thereby separate said air-compressing rotor from said engine rotor; end plates mounted at said axially outer faces of both said air-compressing and engine rotors; wherein said air-compressing rotor, said engine rotor, said gas shield disk and said end plates being tightly retained in a chassis, said chassis having an air inlet and compressed air outlet provided therein at positions radial to said air-compressing rotor and a compressed air inlet and an exhaust port provided in said chassis in a region radial to said engine rotor; said compressed air outlet of said air compressing rotor being fitted with an exhaust valve to regulate compressed gas out of said compressed air outlet and said compressed air outlet and said compressed air inlet communicating with each other to permit compressed air to flow therebetween into a combustion chamber formed adjacent to said compressed air inlet; means for igniting said compressed air in said combustion chamber; said air compressing rotor having at least one air intake groove formed along the outer periphery thereof to define a first volume varying chamber formed between said air-compressing rotor and said chassis; said engine rotor further having at least one expansion groove formed along the outer periphery thereof to define a second volume varying chamber formed between said engine rotor and said chassis and an auxiliary exhaust groove cut therein adjacent the trailing edge of the expansion groove to assist in exhausting exhaust gas from the combustion chamber and through said exhaust port; and spring-biased abutments reciprocally movable in said chassis, each having a respective end thereof in abutting engagement with said outer periphery of said air-compressing rotor and said engine rotor to thereby vary the amount of air contained within said air inlet and exiting said compressed air outlet due to said first volume varying chamber and to vary the amount of compressed air in said combustion chamber and exiting said exhaust port due to said second volume varying chamber.

5,251,596

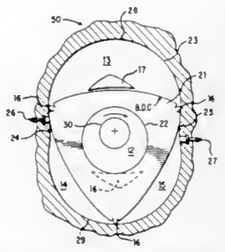
TWO STROKE ROTARY INTERNAL COMBUSTION ENGINE

Martin W. Westland, 8379 S. 19th, Bozeman, Mont. 59715

Filed Dec. 31, 1990, Ser. No. 636,101

Int. Cl.[5] F02B *53/00*

U.S. Cl. 123—242 **12 Claims**



1. An improvement in a rotary internal combustion engine of the two-stroke Wankel type having an intake means and an exhaust means and a multifaced rotor within a two lobe epitrochoidal housing, one of the rotor and housing being connected to rotate with respect to the other, and the housing having a first side wall and a second side wall and having at least two top dead center positions and at least two bottom dead center regions and wherein a power stroke originates upon the rotation of each face of the rotor past one of the top dead center positions; the improvement comprising;

intake port means within said first side wall proximate to the rotor when it is in the bottom dead center region in said housing and transecting the major axis of the housing; and

exhaust port means within said second side wall in a region proximate the rotor when it is in bottom dead center positions in said housing.

5,251,597

ENGINE AIR SUPPLY SYSTEMS

Darren A. Smith, Scarborough, and Robert M. Davis, Maylands, both of Australia, assignors to Orbital Engine Company (Australia) Pty Limited, Balcatta, Australia

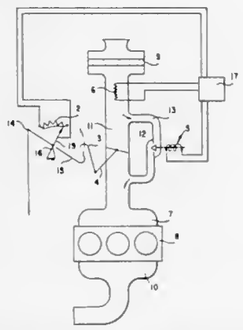
PCT No. PCT/AU90/00063, § 371 Date Aug. 2, 1991, § 102(e) Date Aug. 2, 1991, PCT Pub. No. WO90/09516, PCT Pub. Date Aug. 23, 1990

PCT Filed Feb. 19, 1990, Ser. No. 721,576

Claims priority, application Australia, Feb. 17, 1989, PJ2785

Int. Cl.[5] F02D *41/08*

U.S. Cl. 123—339 **49 Claims**



1. An internal combustion engine air supply system comprising:

a first air intake passage through which air can flow to the engine;

a first control means operable to vary the air flow rate through the first passage;

a driver actuated mechanism operatively coupled to said first control means to vary the air flow rate through the first passage to the engine in response to the driver demand;

a second air intake passage through which air can flow to the engine;

a second control means operable to vary the air flow rate through the second passage to the engine; and

an actuator means operable in response to sensed engine operating conditions to operate the second control means to vary the air flow rate through the second passage to the engine, wherein

said first control means and second control means are operable independently, so that the air supplied to the engine may be solely through one of the first or second air passages or simultaneously through both, and

said actuator means is arranged so that, at least during a first part of said initial portion of driver induced movement of said actuator means, said second control means does not substantially increase the mass of air delivered per cylinder through said second air intake passage.

5,251,598

SYSTEM FOR REGULATING THE IDLING SPEED OF AN INTERNAL-COMBUSTION ENGINE

Juergen Wietelmann, Ditzingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 19, 1992, Ser. No. 853,942

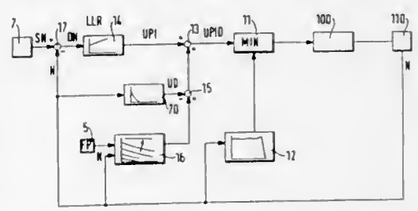
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1991, 4112848

Int. Cl.[5] F02D *41/16*

U.S. Cl. 123—339 **17 Claims**

1. A control system for regulating the idling speed of an internal-combustion engine of a vehicle, comprising:

a differential component receiving at least one correction value based upon a rotational speed of the engine and upon at least one of a plurality of engine characteristics selected as a function of a position of a gas pedal of the vehicle, the differential component generating a first output signal based upon the correction value; and



an integral component receiving the first output signal from the differential component, and generating a second output signal based thereon for controlling the idling speed of the engine.

5,251,599

INTERNAL COMBUSTION ENGINE CONTROL DEVICE HAVING EXHAUST GAS RECYCLE SYSTEM

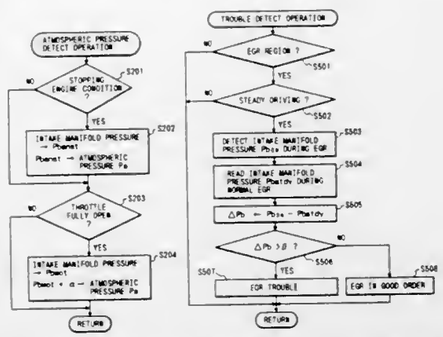
Hirofumi Ohuchi, and Yoshiaki Kanno, both of Hyogo, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan

Filed Jun. 9, 1992, Ser. No. 895,848

Claims priority, application Japan, Jun. 10, 1991, 3-137455

Int. Cl.[5] F02M *25/07;* **F02D** *41/08;* **F02P** *5/12*

U.S. Cl. 123—339 **4 Claims**



1. An internal combustion engine control device having an exhaust gas recycle system which has an exhaust gas recycle line to an air intake pipe, in which an intake air passes through a throttle valve and intake manifold, said engine control device comprising:

driving condition detect means for detecting driving conditions of said internal combustion engine, in which a pressure detect member is provided downstream of said throttle valve for detecting a pressure value in said intake pipe for detecting an exhaust gas recycle condition while said exhaust gas is recycled;

trouble detect means for detecting a trouble in said exhaust gas recycle system on the basis of the pressure value detected by said pressure detect member; and

engine control means for controlling the engine condition based on said detecting driving conditions by said driving condition detect means and an atmospheric pressure calculated from said pressure value detected by said pressure detect member, wherein said engine control means decides said pressure value detected by said pressure detect member as said atmospheric pressure during an engine failure condition and calculates said atmospheric pressure by adding a predetermined pressure loss of the air intake system to said pressure value detected by said pressure detect member.

5,251,600

ARRANGEMENT FOR DETERMINING ANGLE OF ROTATION OF TWO ROTATING PARTS

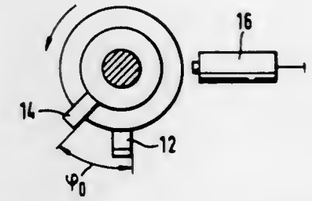
Heinz Britsch, Bietigheim-Bissingen; Nikolaus Benninger, Vaihingen/Enz, and Peter Schomakers, Tamm, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 19, 1992, Ser. No. 901,128

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1991, 4129344

Int. Cl.[5] F02P *5/00*

U.S. Cl. 123—414 **6 Claims**



1. An arrangement for determining rotation angle of two rotating parts in internal combustion engines having a camshaft and a crankshaft, comprising

a first rotating part having at least one protruding member extending laterally from the first rotating part, said first rotating part being connected with a crankshaft of an internal combustion engine;

a second rotating part having at least one protruding element extending laterally therefrom, said second rotating part being connected to a camshaft of the internal combustion engine and said second rotating part being positioned adjacent to said first rotating part;

sensor means for generating a first output signal when one of said at least one protruding members passes by said sensor means during rotation of said first rotating part and for generating a second output signal when one of said at least one protruding elements passes by said sensor means during rotation of said second rotating part, said sensor means being positioned adjacent said first and second rotating part;

signal processing means for receiving said first and second output signals from said sensor means, for determining a time interval between said first and second output signals and for calculating an angular displacement between the first and second rotating part to determine an adjustment angle between the crankshaft and the camshaft, said signal processing means being connected to said sensor means;

wherein said sensor means includes only one pickup device for generating each of said first and said second output signals and said at least one protruding member and said at least one protruding element are shaped and positioned so that each of said first output signals and said second output signals is generated by said pickup device.

5,251,601

LEAN BURN MIXTURE CONTROL SYSTEM

Michael D. Leshner, Columbia, Md., assignor to Lean Power Corporation, Silver Spring, Md.

Filed Jul. 28, 1992, Ser. No. 920,855

Int. Cl.[5] F02M *7/00*

U.S. Cl. 123—436 **16 Claims**

1. An engine having a control system for controlling a valve means in said engine to alter the ratio of the fuel/air mixture applied to said engine, comprising:

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means for controlling said valve means to alter said ratio of the fuel/air of said mixture wherein said controlling means generally is changing said ratio of said mixture at a first rate and in a leaner direction;

means for detecting the occurrence of deceleration in said engine above a set value indicative of a weak combustion event, said detection means further having means for generating a signal and sending said signal to said controlling means when said deceleration above said set value is detected; and

said controlling means, upon receipt of said signal, changing said ratio of said mixture at a second rate and in a richer direction for a predetermined period of time, said second rate being faster than said first rate, after which said period of time said controlling means again changes said ratio at said first rate and in said leaner direction.

5,251,602

FUEL SUPPLY SYSTEM FOR GAS-FUELED ENGINE

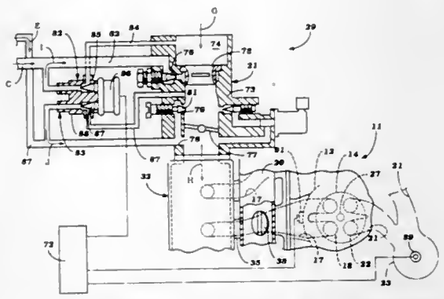
Noriuiki Kurihara, and Yoshikatsu Iida, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Apr. 16, 1992, Ser. No. 869,374

Claims priority, application Japan, Apr. 20, 1991, 3-116991; Apr. 20, 1991, 3-116994

Int. Cl.[5] F02M *21/02*

U.S. Cl. 123—527 **23 Claims**



1. A charge forming system for an internal combustion engine comprising a carburetor for mixing fuel with atmospheric air for delivery to a combustion chamber of said engine, said carburetor having a main fuel discharge circuit including a main fuel control means for controlling the amount of fuel mixed with atmospheric air in said carburetor, a source of gaseous fuel stored under pressure as a liquid, pressure regulator means communicating with said source for reducing the pressure of said fuel in a gaseous fuel from said source for delivery to said carburetor fuel control means, means for selectively mixing atmospheric air with said fuel between said regulator and said carburetor fuel control means and an additional fuel circuit for said carburetor having means for adjusting the fuel supply to said additional fuel supply circuit, said means for selectively mixing atmospheric air delivering atmospheric air also to said additional fuel circuit upstream of said means for adjusting the fuel flow through said additional circuit.

5,251,603

FUEL COOLING SYSTEM FOR MOTORVEHICLES

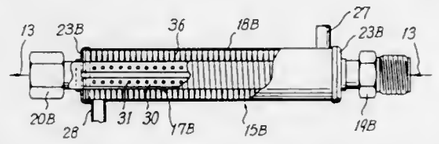
Hideo Watanabe, Wako; Noboru Sagara, Ibaraki, and Hideki Kimura, Furukawa, all of Japan, assignors to Sanoh Kogyo Kabushiki Kaisha and Honda Giken Kogyo, both of Tokyo, Japan

Filed May 27, 1992, Ser. No. 887,755

Claims priority, application Japan, May 29, 1991, 3-39384[U]

Int. Cl.[5] F02M *15/00*

U.S. Cl. 123—541 **3 Claims**



1. A fuel cooling system for a motor vehicle which comprises a heat exchanger in line with a fuel return pipe for returning fuel from an engine to a fuel tank and in line with a refrigerant pipe through which passes a refrigerant: said heat exchanger including,

an inner tube having a first end in communication with a first section of the refrigerant pipe and a second end in communication with a second section of the refrigerant pipe so as to define a longitudinal inner flow passage between said first and second inner tube ends;

an outer tube encompassing said inner tube so as to form an enclosed annular space which defines a longitudinal outer flow passage;

connecting means for connecting said enclosed annular space with the fuel return pipe, said connecting means including a first connecting member opening into said enclosed annular space and connected to a first section of the fuel return pipe and a second connecting member opening into said enclosed annular space and connected to a second section of the fuel return pipe, said second connecting member being positioned downstream in fuel flow direction to said first connecting member;

first heat transfer fin means secured in said inner flow passage, said first heat transfer fin means extending in said inner flow passage longitudinally thereof and being waveshaped in a cross section taken perpendicuarly to a longitudinal axis of the inner flow passage so as to have a plurality of wave portions, said wave portions being arranged circumferentially within the inner flow passage so as to encircle a longitudinal axis of said inner tube; and

second heat transfer fin means secured in said outer flow passage, said second heat transfer fin means comprising helical heat transfer fins disposed in said outer flow passage and extending radially outward from the inner tube and longitudinally along the outer flow passage.

5,251,604

SYSTEM AND METHOD FOR DETECTING DETERIORATION OF OXYGEN SENSOR USED IN FEEDBACK TYPE AIR-FUEL RATIO CONTROL SYSTEM OF INTERNAL COMBUSTION ENGINE

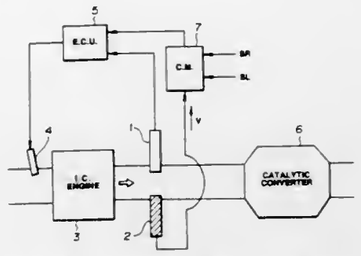
Hiroaki Kaneko; Kouichi Nemoto, and Akihide Okada, all of Kanagawa, Japan, assignors to Nissan Motor Company, Ltd., Japan

Filed Jun. 11, 1991, Ser. No. 713,230

Claims priority, application Japan, Jun. 19, 1990, 2-158664

Int. Cl.[5] F02D *41/14*

U.S. Cl. 123—688 **10 Claims**



1. In a feedback type air-fuel ratio control system which controls the air-fuel ratio of air-fuel mixture fed to an internal combustion engine in accordance with an information signal issued from a first oxygen sensor installed in an exhaust line of said engine, said exhaust line having a catalytic converter mounted thereto at a position downstream of said first oxygen sensor,

a combination which comprises:

a second oxygen sensor installed in said exhaust line at a position upstream of said catalytic converter, said second oxygen sensor being of a delayed response type;

first means for defining higher and lower slice levels with respect to the output of said second oxygen sensor; and

second means for detecting deterioration of said first oxygen sensor by comparing the output of said second oxygen sensor with said higher and lower slice levels.

5,251,605

AIR-FUEL CONTROL HAVING TWO STAGES OF OPERATION

Craig R. Swailes, Taylor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 11, 1992, Ser. No. 989,315

Int. Cl.[5] F02M *51/00*

U.S. Cl. 123—695 **12 Claims**

1. A method for dynamically adjusting an air-fuel mixture supplied to an engine, said mixture defining a ratio between air and fuel, said engine exhibiting operating parameters and including both an exhaust conduit, for carrying exhaust gas from said engine, an oxygen sensor switch, for changing states when an oxygen level in said exhaust conduit moves across a predetermined threshold, and an air-fuel distribution control, for receiving a control signal and responsively providing said mixture to said engine, said engine defining a normal operating condition, when said air-fuel ratio remains substantially directly unaltered by said state of said oxygen sensor switch, said air-fuel ratio defining a first level when said engine is in said normal condition and a second level when said sensor switch changes states, comprising the steps of:

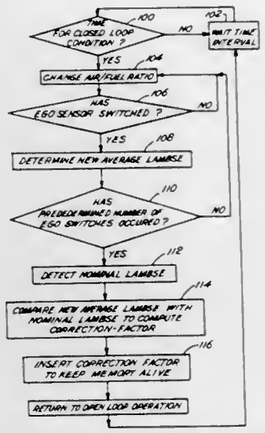
maintaining said engine in said normal operating condition;

detecting said operating parameters of said engine;

moving said engine from said normal operating condition by changing said air-fuel ratio of said mixture supplied to said engine until said sensor switch changes state;

detecting an actual variance corresponding to a change in said air-fuel ratio that occurred for said engine when said air-fuel ratio moved from said first level to said second level;

determining a nominal variance corresponding to a change in said air-fuel ratio that would have occurred for an exemplary engine under said operating parameters when said air-fuel ratio moved from said first level to said second level;



comparing said actual variance with said nominal variance to determine a correction factor for said control signal; and

returning said engine to said normal operating condition and changing said control signal with said correction factor, whereby operation of said air-fuel distribution control is adjusted.

5,251,606

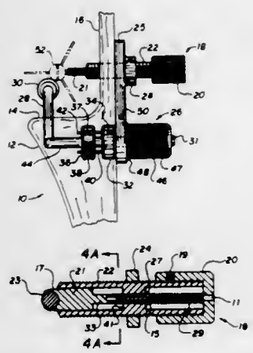
MICRO-ADJUST ARROW STABILIZING ASSEMBLY

Richard O. Colvin, Baldwinsville, N.Y., assignor to Kinetronic Industries, Inc., Media, Pa.

Filed Sep. 11, 1991, Ser. No. 757,815

Int. Cl.[5] F41B *5/22*

U.S. Cl. 124—44.5 **28 Claims**



18. An adjustable arrow-stabilizing rest device for an archery bow, comprising:

mounting means adapted to fasten said arrow rest to said bow;

an arrow support arm having at least one free end, and a fixed end, said free end being positioned at an angle to said fixed end and being pivotable;

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torquing means including adjustable spring means for exerting a desired biasing force on said fixed end;

means for adjusting the free end to a fixed lateral position, comprising:

a laterally extending threaded member anchored to said arrow rest;

spacer means achored to said arrow support arm;

threaded adjustment means mounted on said threaded member and interconnected with said spacer means such that rotation of said threaded adjustment means causes lateral movement of said threaded adjustment means, the interconnected spacer means, and said free end.

23. A cushion-plunger arrow-stabilizing device for an archery bow comprising:

hollow sleeve means adapted to pass through said archery bow and to be fastened thereto, said hollow sleeve means having an open end, a substantially closed end, and a partition between said open and closed ends, said partition including a through passage from said open end to said closed end;

an elongated rod having a first end with a hole extending therein into, said hole having interior threads and being parallel to the rod's longitudinal axis, said rod being slidably and non-rotatably enclosed within said hollow sleeve means, and having a second end extending from said open end of said hollow sleeve means, said first end extending into said passage of said partition within said hollow sleeve means;

threaded fastener means for adjusting lateral positioning of said elongated rod, comprising a portion having screw threads on its surface, and a head of dimensions too large to enter said passage, said fastener means adjustably holding said elongated rod in said partition by the mating engagement of said screw threads on said threaded portion of said threaded fastener means and said interior threads of said hole; and

spring means disposed between said substantially closed end of said hollow sleeve means and said head of said threaded fastener means, for biasing said head against an entrance to said passage, and for biasing said elongated rod toward said open end of said hollow sleeve means;

wherein rotation of said threaded fastener means in said hole provides longitudinal adjustment of said elongated rod.

5,251,607

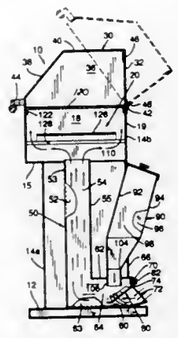
PELLET-FIRED COOKING GRILL

Joseph P. Traeger, 250 S. Oak St.; Mark A. Traeger, 530 Alder St., and Randolph J. Traeger, 540 Leo St., all of Mt. Angel, Oreg. 97362

Filed Mar. 2, 1992, Ser. No. 844,548

Int. Cl.[5] A47J *37/00*

U.S. Cl. 126—25 R **1 Claim**



1. A pellet-fired cooking grill comprising:

a housing having an upper portion and a lower portion,

a grill chamber defined within the upper portion of the housing and the grill chamber having an open top and a base, a grill adjacent the top of the chamber, an opening in the base of the chamber,

tubular structure with a hollow interior extending downwardly from the base of the chamber with said interior connecting with said opening,

a burning zone defined within said tubular structure spaced from said opening, and

a gravity fed solid fuel burner disposed within said burning zone adapted to receive pellet fuel,

said lower portion of the housing having an inner surface defining a hollow cavity within the lower portion and said tubular structure extending downwardly through said cavity with an air space defined between said tubular structure and said inner surface of said lower portion of the housing

said lower portion of the housing having an upstanding side wall and the grill further including a fuel hopper disposed above the burning zone with a feed chute leading from the base of the hopper adapted to dump through gravity pellet fuel onto said fuel burner, the hopper extending through said side wall of the lower portion of the housing.

5,251,608

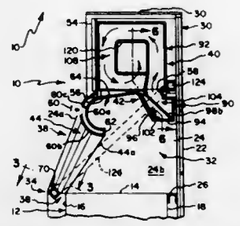
AIR CANOPY VENTILATION SYSTEM

Cameron Cote, 1047 MacKid Road, NE, Calgary, Alberta T2E 6A8, Canada

Continuation-in-part of Ser. No. 530,746, Apr. 30, 1990, Pat. No. 5,042,456. This application Jul. 22, 1991, Ser. No. 734,179

Int. Cl.[5] B08B *15/02*

U.S. Cl. 126—299 D **29 Claims**



1. A canopy system for use in combination with equipment producing fumes whose escape into the environment adjacent the equipment is not desired, said equipment having front, rear and sides, and said system comprising: rear and side walls adapted to upstand from adjacent said rear and sides; an upper canopy surmounting said rear and side walls and cooperating therewith to define a volume for receiving fumes produced by said equipment; means for producing an air curtain including an air curtain directing means arranged to extend substantially between said side walls in a forwardly spaced relationship from said front for cooperation with said front to bound a make-up air receiving inlet for permitting passage of air from said environment into said volume and for cooperation with said side walls and said upper canopy to bound an access opening for said volume, said air curtain directing means directs an air curtain towards said upper canopy; and exhaust means having an exhaust inlet extending along an upper extent of said rear wall for withdrawing fumes and air from said volume.

5,251,609

HEATING APPARATUS WITH CATALYTIC BURNER

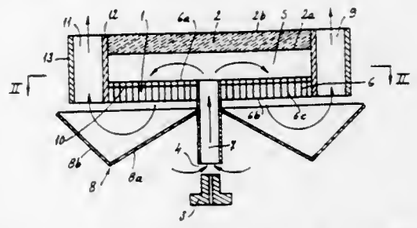
Jean-Jacques Thibault, Lyons; Hervé Bouvard, Oullins; Daniel Demilliere-Vergnais, Francheville; Jean-Claude Pivot, Vourles Vernaison, and Nino Urbano, Oullins, all of France, assignors to Application Des Gaz, Paris, France

Filed Jun. 23, 1992, Ser. No. 902,848

Claims priority, application France, Jun. 28, 1991, 91 08339

Int. Cl.[5] F24C *3/00*

U.S. Cl. 126—39 J **12 Claims**



1. A heating apparatus comprising a catalytic burner and a thermal receiver consuming at least one portion of heat generated by said catalytic burner, said catalytic burner comprising a member for ejecting a flow of combustible gas, an admixing member for admixing primary air with said flow in order to obtain a mixture to be burnt, a distribution chamber for receiving the mixture from said admixing member and distributing said mixture, and a catalytic combustion structure having an upstream face and a downstream face positioned such that said mixture moves from said distribution chamber in through said upstream face, and combustion exhaust gases are removed out through said downstream face, wherein the distribution chamber is located at least in part between said upstream face of said catalytic combustion structure and the thermal receiver, said thermal receiver extending in front and along substantially the entire surface of said upstream face of said catalytic combustion structure so as to receive radiative energy emitted by a radiating flameless combustion front located in the vicinity of said upstream surface of said catalytic combustion structure, wherein said thermal receiver is arranged to dissipate, on a side opposite the upstream face of the catalytic structure, at least 30% of thermal energy received by said thermal receiver.

5,251,610

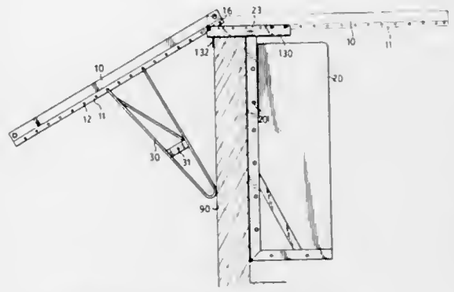
SOLAR HEATER ASSEMBLY

Herman Lai, No. 25, Ta Chin Rd., Taichung, Taiwan

Filed Dec. 22, 1992, Ser. No. 994,656

Int. Cl.[5] F24J *2/00, 2/38*

U.S. Cl. 126—608 **8 Claims**



1. A solar heater assembly comprising,

a container for receiving liquid, therein;

a frame mechanically affixed to said container;

a bracket mechanically affixed to said frame and having at least one wheel rotatably mounted on one end thereof;

a solar heater having at least one track disposed along a longitudinal side thereof for receiving said wheel, said track having a plurality of orifices, said solar heater and said track slidable along said wheel relative to said bracket; and

at least one support for supporting said solar heater and said container at a predetermined slope, said at least one support having a first end portion for engagement with at least one of said orifices.

5,251,611

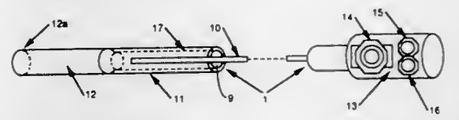
METHOD AND APPARATUS FOR CONDUCTING EXPLORATORY PROCEDURES

Wendell E. Zehel, 553 Harrogate Rd., Pittsburgh, Pa. 15241; Dwight M. Baumann, 1235 Squirrel Hill Ave., Pittsburgh, Pa. 15217, and William B. Brenner, 81 Chapel Ridge Pl., Pittsburgh, Pa. 15238

Filed May 7, 1991, Ser. No. 696,803

Int. Cl.[5] A61B *1/00*

U.S. Cl. 128—4 **16 Claims**



1. A flexible steerable device for use in exploratory procedures, said device comprising an inner flexible conduit and an outer flexible conduit running substantially coaxially and concentrically over said inner flexible conduit, the inner flexible conduit and the outer flexible conduit being disposed for sliding axial movement relative to each other, said inner flexible conduit and said outer flexible conduit each having a distal end and a proximal end, at least one of said inner flexible conduit and said outer flexible conduit including stiffening means in operative connection therewith and operable to render the associated one of said inner flexible conduit and outer flexible conduit rigid along its length, and slidably axially movable relative to the other conduit whereby upon relative sliding movement, the conduit which is in a flexible state is constrained to follow the shape of the conduit which is in a rigid state.

5,251,612

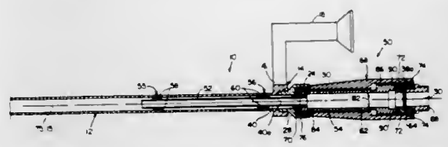
SELF-ALIGNING COUPLER FOR A LASER ENDOSCOPE

Charles C. Negus, Framingham, Mass., assignor to Laser Engineering, Inc., Milford, Mass.

Filed Nov. 13, 1991, Ser. No. 791,469

Int. Cl.[5] A61B *1/06*

U.S. Cl. 128—6 **13 Claims**



1. A self-aligning coupler for a laser endoscope having a body and a lumen extending therefrom, comprising:

a coupler housing; an input port adapted for connection to a laser beam source; and an output, port adapted for connection to the endoscope body; a tilt assembly within said coupler housing; an alignment sleeve fixed to said tilt assembly for extending through said output port and body into said lumen; lens means mounted with the tilt assembly for projecting the laser beam down said alignment sleeve

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and fixing the focus of the beam generally on the axis of said alignment sleeve; means for centering said sleeve with respect to said lumen and generally aligning said lumen and sleeve axes; and gap means between said tilt assembly and said coupler housing for enabling said tilt assembly to float in the coupler housing laterally relative to the axes of said sleeve and lumen for accommodating misalignment between the body and lumen while maintaining alignment of said lens means, sleeve and lumen.

5,251,613

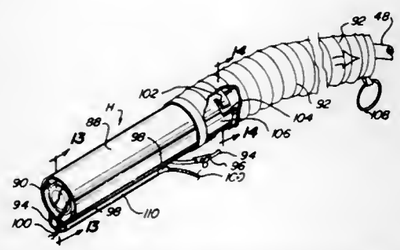
METHOD OF CERVICAL VIDEOSCOPE WITH DETACHABLE CAMERA

Edwin L. Adair, 2800 S. University Blvd., Denver, Colo. 80210

Division of Ser. No. 695,727, May 6, 1991, Pat. No. 5,143,054. This applicatioo Jun. 9, 1992, Ser. No. 895,731

Int. Cl.[5] A61B *1/06*

U.S. Cl. 128—6 **4 Claims**



1. A method of examining various internal body surfaces for lesions having predetermined characteristics, said method comprising the steps of:

mounting a video camera unit and a source of illumination on a blade of a vaginal speculum, wherein the video camera unit has a cable trailing from the distal end thereof and the light source has an optical bundle trailing from the distal end thereof;

inserting the speculum into the vagina of the patient;

illuminating the cervix and inspecting it for lesions;

removing the speculum from the vagina and removing the video camera unit and illumination source from the speculum;

inserting the video camera unit and illumination source into a cylindrical, sterilizable sheath, having a window at a distal end and an accordian-folded cylindrical sleeve adjacent the proximate end;

pulling the sleeve over the trailing cable and optical bundle;

inserting the sheath, with the video camera unit and light source in place into one or more body passageways to position the video camera unit for viewing a selected site; and

examining the site for lesions.

5,251,614

METHOD AND DEVICE INTERPOSING AN ELECTRICALLY CONDUCTIVE LIQUID BETWEEN ELECTRODES AND SHOCKWAVE APPARATUS FOR METHOD AND DEVICE

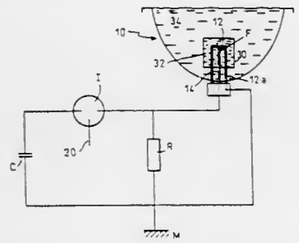
Dominique Cathignol, Genas; Jean-Louis Mestas, Chassieu; Paul Dancer, Saint Etienne, and Maurice Bourlion, Saint Chamond, all of France, assignors to Technomed International, Paris and ISERM, Paris Cedex, both of France

Continuation-in-part of Ser. No. 742,097, Aug. 2, 1991, Pat. No. 5,105,801, which is a continuation of Ser. No. 545,519, Jun. 28, 1990, abandoned. This application Dec. 18, 1991, Ser. No. 809,597

Claims priority, application France, Jun. 30, 1989, 89 08846; Dec. 26, 1990, 90 16282

Int. Cl.[5] A61B *17/22*

U.S. Cl. 128—24 EL **16 Claims**



1. A method for improving reproducibility of electric discharge produced in a liquid medium confined in a housing for producing shockwaves, comprising the steps of:

providing in said housing filled with a liquid medium two closely-spaced discharge electrodes forming part of a discharge circuit having an inductance L and a capacitance C defining a critical resistance R_c equal to $\sqrt{L/C}$;

disposing an enclosure about said electrodes in said housing;

filling said enclosure with an electrically conductive liquid medium having an electrical resistance providing said discharge circuit with an electrical resistance value at or near the critical resistance R_c; and

intermittently feeding said electrodes with electric current for producing a discharge therebetween.

5,251,615

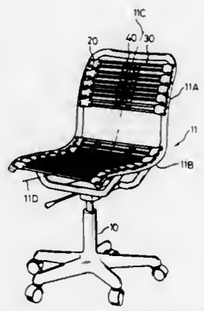
CHAIR STRUCTURE

Ruey C. Sheen, Taipei, Taiwan, assignor to Wei Ri Healthy Chair Co., Tainan, Taiwan

Filed Jul. 16, 1992, Ser. No. 913,701

Int. Cl.[5] A61H *15/00*

U.S. Cl. 128—57 **6 Claims**



1. An improved chair structure comprising a frame having a vertical portion and a horizontal portion which is mounted on a body, a plurality of flexible support means being horizontally attached across said vertical portion, a roller means being rotatably attached between each two adjacent flexible support means thereby constituting a first line of roller means substantially perpendicular to said flexible support means, a second line of roller means being formed parallel to said first line of roller means with both lines being symmetrical about a central line of said vertical portion, such that a user's spine is located between said two roller lines when seated, each of said roller means having a rotating axis perpendicular to said flexible support means, a pair of engaging means being engaged between each end of each said support means and said vertical frame portion, each said engaging means comprising at least one funnel hole to receive one end of said flexible support means, a corresponding securing ring being secured to the end of said flexible support means, and an ear portion being secured to said vertical frame portion.

5,251,616

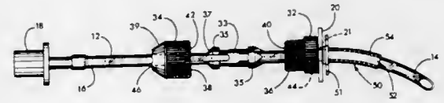
ADJUSTABLE TRACHEOSTOMY TUBE ASSEMBLY

Larry W. Desch, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Jul. 23, 1992, Ser. No. 918,179

Int. Cl.[5] A61M *16/00*

U.S. Cl. 128—200.26 **9 Claims**



1. A tracheostomy tube assembly comprising:

a. a tracheostomy tube having an adjustable length, the tracheostomy tube having a first end adapted for insertion into the trachea through an incision in a patient's neck and a second end adapted to extend from the trachea;

b. a neck collar adapted to fit on the exterior of the patient's neck, the neck collar having an opening through which the tracheostomy tube passes; and

c. locking means secured to the neck collar and including means for allowing passageway of the tracheostomy tube therethrough, the locking means further including means independent of the neck collar and freely slidable along the tracheostomy tube in a loosened adjustment position for providing freely slidable release of the tracheostomy tube in said loosened adjustment position, said means independent of the neck collar for providing a secure friction gripping of the tracheostomy tube in a tightened position to secure the tracheostomy tube at a predetermined length.

5,251,617

ENDOTRACHEAL TUBE WITH CONCENTRICALLY MOUNTED AND AXIALLY SLIDABLE CONNECTOR

Gerald S. Linder, 16693 Charmel La., Pacific Palisades, Calif. 90272

Filed Dec. 11, 1992, Ser. No. 989,138

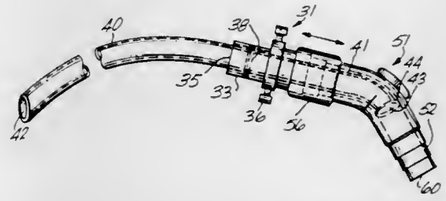
Int. Cl.[5] A61M *16/00*

U.S. Cl. 128—200.26 **5 Claims**

5. A medical appliance comprising in combination:

(a) a cuff-type endotracheal tube consisting of a hollow, cylindrical tube of flexible material having open proximal and distal ends, said cuff-type endotracheal tube having an inflatable cuff surrounding the distal end portion of the hollow, cylindrical tube near the open distal end, said cuff-type endotracheal tube having an inflation line attached to the hollow, cylindrical tube between said open proximal and distal ends, said inflation line being adapted for conveying air under pressure to said cuff when said cuff is to be inflated;

(b) a hollow, cylindrical connector composed of relatively hard material concentrically mounted upon the hollow, cylindrical tube of flexible material forming said endotracheal tube, said hollow, cylindrical connector being positioned on said hollow, cylindrical tube between said inflation line and said open proximal end, said hollow, cylindrical connector having a hollow, cylindrical input section, a hollow, cylindrical output section, a central passageway extending therebetween, and an external central flange situated between said hollow, cylindrical input and output sections, said hollow, cylindrical input section having a bore of first diameter, said hollow, cylindrical output section having a bore of second diameter smaller than said bore of first diameter, an annular internal ridge situated within said hollow, cylindrical output section, said annular internal ridge projecting radially inward from the inner



cylindrical wall of said hollow, cylindrical output section, said annular internal ridge having a smooth, rounded peripheral tip physically engaging and depressing the outer cylindrical surface of the hollow, cylindrical flexible tube of said endotracheal tube to form an airtight seal between connector and endotracheal tube; and

(c) an annular flange attached to the open proximal end of said hollow, cylindrical tube forming said endotracheal tube, said annular flange having an outer diameter larger than said second diameter of said bore of said hollow, output section and smaller than said first diameter of said bore of said hollow input section, said hollow, cylindrical connector being axially slidable over the outer surface of said hollow, cylindrical tube of flexible material forming said endotracheal tube between said annular flanged proximal end of said endotracheal tube and said inflation line without loss of the airtight seal between said connector and said endotracheal tube.

5,251,618

REGULATOR SECOND STAGE FOR SCUBA

Tony Christianson, 277 Grulla Ct., Norco, Calif. 91760

Division of Ser. No. 403,594, Sep. 5, 1989, Pat. No. 5,035,238, which is a division of Ser. No. 103,829, Sep. 30, 1987, Pat. No. 4,862,884. This application Aug. 2, 1990, Ser. No. 561,802

Int. Cl.[5] A62B *9/02, 7/04;* **A61M** *16/00;* **F16K** *31/26*

U.S. Cl. 128—205.24 **11 Claims**

11. An underwater breathing apparatus regulator device of the type incorporating conduit means having at least one inlet and at least one outlet, said inlet adapted to receive pressurized gas and said conduit means adapted to communicate fluid flow between said inlet and said outlet, valve means for regulating the flow of said gas from said inlet, forcing means causing said valve means to interrupt the flow of gas from said inlet to said outlet, and control means operative to selectively counter said forcing means; the improvement comprising:

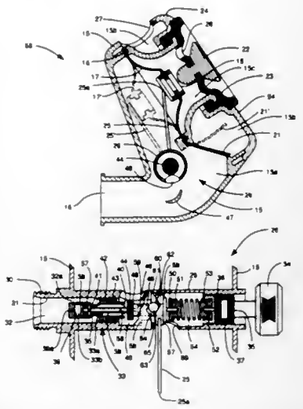
retainer means for maintaining said forcing means in a substantially pivotal relationship with said valve means;

said control means includes a collar means having at least one notch therein;

housing means having at least a surface therein which in-

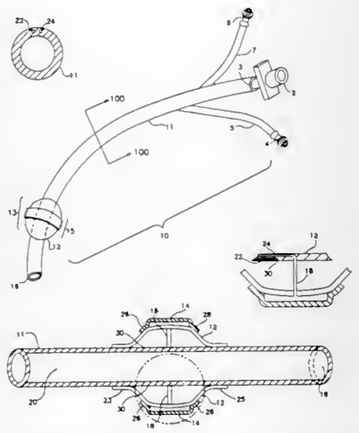
VOL 1155 ISS 2 OCT 12 1993 UMI

cludes at least one notch therein which is the complement of the notch in said collar means; and



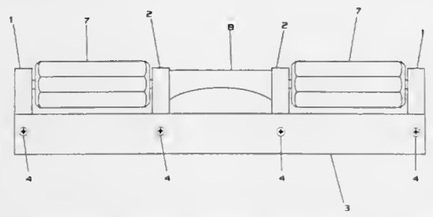
rotating means intermediate said surface and said collar means and within said notches.

5,251,619
TONOMETRIC TRACHEAL TUBE
Myung-Ho Lee, 21 E. Hillside Terrace Ave., White Plains, N.Y. 10601
Filed Dec. 4, 1991, Ser. No. 802,359
Int. Cl.[5] A61M *16/04*; A61B *5/02*
U.S. Cl. 128—207.15 **2 Claims**



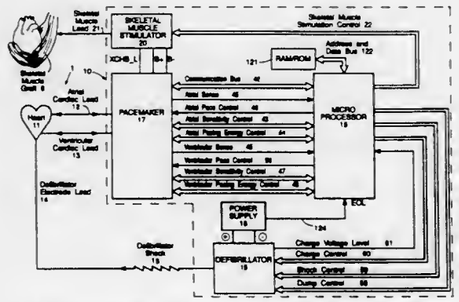
1. A cuffed tracheal tube adapted for insertion through the mouth or tracheostomy site of a patient and into the patient's trachea comprising:
an elongated tube means having a proximal end and a distal end portion, with said tube means defining a central ventilation passage;
an inflatable primary sleeve means encircling said tube means between said proximal end and distal end for generally centrally locating and sealing the tube means in the trachea upon inflating thereof;
second sleeve means located on said primary sleeve means and composed of a material that is freely permeable to carbon dioxide but poorly permeable to liquid or tracheobronchial contents for measuring the intramucosal partial pressure of carbon dioxide under said inflatable primary sleeve means;
first means for selectively inflating and deflating said inflatable primary sleeve means; and,
second means for infusing and withdrawing liquid from said second sleeve means whereby a liquid is transmitted into the said second sleeve means.

5,251,620
HEAT MASSAGER
Richard L. Boucher, and Gerard J. Boucher, both of 8 S. Lisbon St., Lewistown, Me. 04240
Filed Mar. 9, 1992, Ser. No. 849,710
Int. Cl.[5] A61H *1/00, 15/00*
U.S. Cl. 128—24.3 **13 Claims**



8. Apparatus for providing massage and heat to a foot or feet comprising:
a hardwood material base member comprising external and internal support structures connected with a plurality of longitudinal connecting means;
said internal support structures having recessed receiving means;
at least one roller made substantially of a solid block of soapstone having an extending pin from each end thereof connected to and rotatably mounted on said support structures within said receiving means; wooden handle means connected between said internal support structures, and
wherein said at least one roller is removable from said receiving means, heatable and replaceable and wherein said at least one roller is free to rotate.

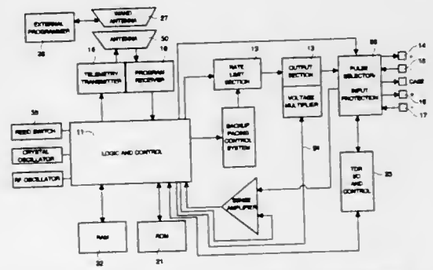
5,251,621
ARRHYTHMIA CONTROL PACER USING SKELETAL MUSCLE CARDIAC GRAFT STIMULATION
Kenneth A. Collins, Neutral Bay, Australia, assignor to Telectronics Pacing Systems, Inc., Englewood, Colo.
Filed Dec. 18, 1991, Ser. No. 809,913
Int. Cl.[5] A61N *1/368*
U.S. Cl. 607—4 **19 Claims**



1. An antiarrhythmia pacemaker for stimulating a patient's heart that has a skeletal muscle grafted to the cardiovascular

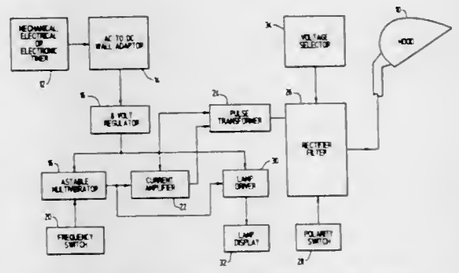
system of the patient to assist cardiac functions of the heart, comprising:
means for detecting and classifying occurrences of at least one abnormal condition of the heart selected from the group comprising tachycardia, fibrillation and precursors of such tachycardia and fibrillation,
heart stimulating means for generating and delivering stimulating pulses to the heart,
at least one muscle stimulation electrode adapted to be placed in electrical contact with said muscle,
muscle pulse stimulating means electrically coupled to said muscle stimulation electrode for generating and delivering stimulating pulse trains of sufficient energy to effect a desired contraction of said muscle,
heart and muscle stimulation control means responsive to said detecting and classifying means for controlling said heart stimulating means and said muscle pulse stimulating means to direct a combined antiarrhythmia therapy and muscle stimulation therapy corresponding to the classification of the abnormal condition determined by said detecting and classifying means, wherein said detecting and classifying means detects ventricular tachycardia episodes and, in response to such detection and classification, said heart and muscle stimulation control means select and direct an appropriate antitachycardia pacing therapy in the form of timed electrical pulses generated and delivered by said heart stimulating means, and wherein in response to such tachycardia classification, said heart and muscle stimulation control means control said muscle pulse stimulating means to generate and deliver stimulating pulse trains in which: (1) said pulse trains are synchronous to the timing of heart contractions but are generated for only a predetermined ratio of cardiac cycles so that the interval between muscle stimulation trains is greater than a predetermined tachycardia cycle interval, and (2) the duration of said pulse trains is greater than in the case in which a tachycardia condition is not detected in order to stimulate pulse trains of sufficient energy to effect a less frequent but stronger contraction of said muscle.

5,251,622
RESPONSIVE PACEMAKER WITH TIME DOMAIN REFLECTOMETER AND METHOD OF USE
Jack R. Robson, Beech Grove, Ind., assignor to Random Technologies, Inc., Indianapolis, Ind.
Continuation-in-part of Ser. No. 866,850, Apr. 10, 1992, Pat. No. 5,231,987. This application Nov. 4, 1992, Ser. No. 971,281
Int. Cl.[5] A61N *1/362*
U.S. Cl. 607—19 **31 Claims**



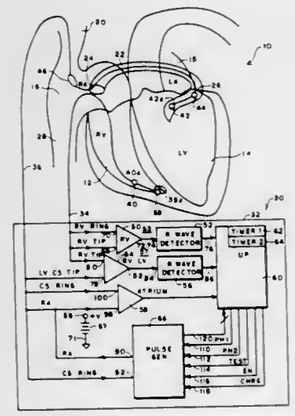
1. A responsive heart stimulating device, comprising:
means for generating a heart stimulating waveform and transmitting the waveform to an electrode receiving means,
a time domain reflectometer (TDR) for generating TDR signals, the TDR being operatively coupled to the means for generating a heart stimulating waveform;
processor means for processing the TDR signals, the processor means operatively connected to the TDR and to the generating means;
means for altering the waveform based on the processing of the TDR signals.

5,251,623
HAIR REGROWTH METHOD AND APPARATUS
Paul D. Groux, Clovis, and Marvin A. Burgess, La Mesa, both of Calif., assignors to 314613 B.C. Ltd., Vancouver, Canada
Filed Oct. 26, 1990, Ser. No. 604,744
Int. Cl.[5] A61N *1/36*
U.S. Cl. 607—50 **2 Claims**



1. A hair regrowth method, comprising the steps of:
(a) positioning a plurality of electrodes closely proximate to, but not touching, the subject's scalp;
(b) applying to said electrodes a low voltage, low frequency pulse train signal;
(c) continuing application of said signal to said electrodes for about 12 minutes; and,
(d) repeating steps (a) through (c) once or twice per week for about 32 weeks.

5,251,624
PULSE GENERATOR FOR USE IN AN IMPLANTABLE ATRIAL DEFIBRILLATOR
Joseph M. Bocek, Seattle; Kenneth R. Infinger, Redmond, and Darrell O. Wagner, Monroe, all of Wash., assignors to InControl, Inc., Redmond, Wash.
Filed Jun. 22, 1992, Ser. No. 902,998
Int. Cl.[5] A61N *1/36*
U.S. Cl. 607—6 **66 Claims**



1. A pulse generator for use in an implantable atrial defibril-

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lator for providing cardioverting electrical energy to the atria of a heart through lead means associated with the atria of the heart, said pulse generator comprising:

a depletable, low-voltage, power source;

oscillator means for generating a low duty cycle control voltage;

charging means coupled to said power source, said charging means including storage capacitor means for storing electrical energy and a charging circuit responsive to said low duty cycle control voltage for converting said power source low voltage to pulsating high voltage electrical energy and applying said pulsating high voltage electrical energy to said storage capacitor means for storing electrical energy in said storage capacitor; and

switch means for selectively coupling said storage capacitor means to said lead means for applying a portion of said stored electrical energy to the atria of the heart through said lead means for cardioverting the atria of the heart.

5,251,625

APPARATUS AND METHOD FOR CONTROLLING TACHYARRHYTHMIA CONFIRMATION IN RESPONSE TO PATIENT HISTORY

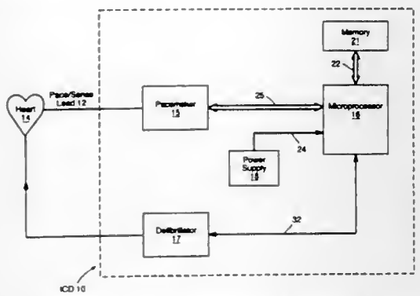
Stephen G. Wilson, Stanmore, and Anthony C. Stephens, Willoughby, both of Australia, assignors to Telectronics Pacing Systems, Inc., Englewood, Colo.

Filed Jun. 12, 1992, Ser. No. 898,966

Claims priority, application Australia, Oct. 22, 1991, PK9024

Int. Cl.[5] A61N *1/362*

U.S. Cl. 607—6 **12 Claims**



1. Apparatus for delivering electrical therapy to a heart for reverting an arrhythmia, said apparatus comprising:

means for detecting the presence of the arrhythmia;

first means responsive to detection of an arrhythmia by said detecting means for comparing characteristics of said arrhythmia to a first set of parameters to confirm said arrhythmia;

means for delivering electrical therapy to the heart;

means for activating said electrical therapy delivering means to revert the arrhythmia if said first comparing means indicates that the severity of the arrhythmia is greater than a predetermined threshold, and for withholding deliverable of electrical therapy if said arrhythmia is confirmed but the severity of said arrhythmia is not beyond said predetermined threshold;

second means, responsive to said confirmation, for comparing characteristics of said arrhythmia to a second set of parameters to reconfirm said arrhythmia, said first and second sets of parameters being different from each other; and

means for activating said electrical therapy delivering means if said arrhythmia is reconfirmed.

5,251,626

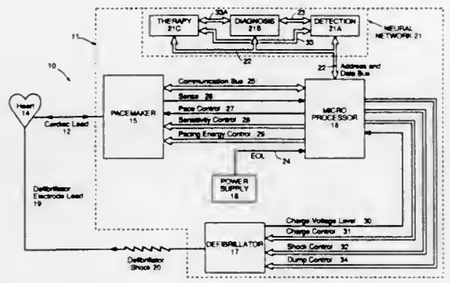
APPARATUS AND METHOD FOR THE DETECTION AND TREATMENT OF ARRHYTHMIAS USING A NEURAL NETWORK

Peter Nickolls, Vaucluse; Geoff Drane, Annandale; Barry Flower, Manly; Paul Lunsmann, Birchgrove; Robert Dodd, Gladesville; David Bassin, Coogee; John Wickham, Fivedock, and Tony Murphy, Homestead West, all of Australia, assignors to Telectronics Pacing Systems, Inc., Engelwood, Colo.

Division of Ser. No. 759,603, Sep. 13, 1991, abandoned, which is a continuation of Ser. No. 547,958, Jul. 3, 1990, abandoned. This application Jul. 22, 1992, Ser. No. 918,934

Int. Cl.[5] A61N *1/365*

U.S. Cl. 607—14 **10 Claims**



1. An arrhythmia control apparatus, comprising:

means for acquiring physiological signals representative of heart activity of the patient;

means for processing said physiological signals, said processing means including a plurality of neural networks coupled to said acquiring means for receiving the physiological signals, classifying said signals into pathological and non-pathological categories, and selecting therapy to be applied to the heart if a pathological condition is determined to be present in the heart, said plurality of neural networks being arranged in series so that the output of one of said networks comprises the input of another of said networks, one of said networks selecting the therapy to be delivered to the heart in the event a pathological condition is determined to be present in the heart; and,

therapy means coupled to said processing means for delivering to the heart the therapy selected by said processing means.

5,251,627

NON-INVASIVE MEASUREMENT OF EYEBALL PRESSURE USING VIBRATION

Donald E. Morris, 44 Marguerita Rd., Kensington, Calif. 94707

Filed Jun. 27, 1991, Ser. No. 722,036

Int. Cl.[5] A61B *3/16*

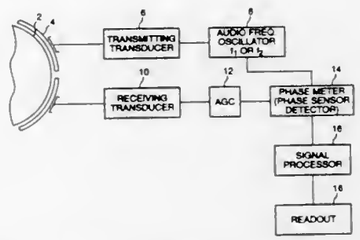
U.S. Cl. 128—645 **7 Claims**

1. A method for determining the internal pressure in an eyeball comprising:

a) applying continuously varying mechanical waves at a first location on an eyeball;

b) detecting said waves at a second location on said eyeball, said detecting step determining a phase of said waves at said second location;

c) determining a velocity of said waves on said eyeball between said first and second locations on said eyeball based on said phase of said waves;



d) using said velocity of said waves to determine pressure in said eyeball; and

e) displaying said eyeball pressure.

5,251,628

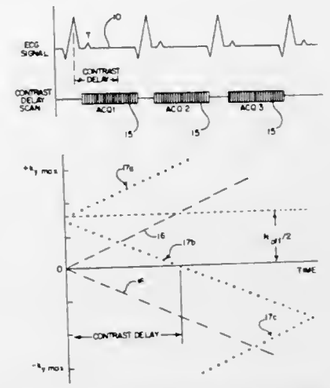
VARIABLE ECG DELAY IN FAST PULSE SEQUENCE SCANS

Thomas K. Foo, Waukesha, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Jun. 23, 1992, Ser. No. 902,627

Int. Cl.[5] A61B *5/055*

U.S. Cl. 128—653.2 **6 Claims**



1. An NMR system for conducting a scan in which a set of slice acquisitions are performed to acquire NMR signals which enable a corresponding set of images of a subject to be reconstructed, the combination comprising:

means for generating a polarizing magnetic field;

excitation means for generating an RF excitation magnetic field which produces transverse magnetization in spins subjected to the polarizing magnetic field;

receiver means for sensing an NMR signal produced by the transverse magnetization and producing digitized samples of the NMR signal;

first gradient means for generating a first magnetic field gradient to phase encode the NMR signal;

second gradient means for generating a second magnetic field gradient to frequency encode the NMR signal;

cardiac signal means for generating a trigger signal in synchronism with the subject's cardiac cycle;

pulse control means coupled to the excitation means, first gradient means, second gradient means, cardiac signal means, and receiver means, said pulse control means being operable to conduct the set of slice acquisitions, each slice acquisition comprised of a series of fast pulse sequences which are performed within a single cardiac cycle when a trigger signal is generated, and in which the first gradient means is stepped through a set of phase encoding values ranging from low order values which produce relatively small first magnetic field gradients to high order values which produce relatively large first magnetic field gradients, and in which the order the first gradient means is stepped through its set of phase encoding values by the pulse control means is selected such that the low order values are performed at a preselected contrast delay interval after the generation of the trigger signal.

5,251,629

INSPECTION METHOD AND APPARATUS UTILIZING NUCLEAR MAGNETIC RESONANCE

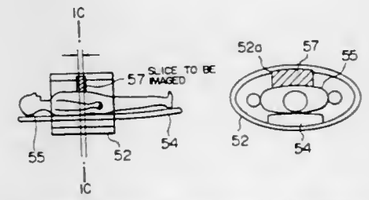
Hideaki Koizumi, Katsuta, and Kazuya Sukegawa, Ibaraki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 602,636, Oct. 24, 1990, abandoned. This application Jul. 20, 1992, Ser. No. 915,400

Claims priority, application Japan, Oct. 27, 1989, 1-278405

Int. Cl.[5] A61B *5/055*

U.S. Cl. 128—653.2 **14 Claims**



1. An inspection method utilizing nuclear magnetic resonance for inspecting an object in a physical portion of a patient which physical portion has physiological movement, comprising the steps of:

stimulating the patient in at least a part of an area of a surface of the physical portion of the patient having physiological movement which exists on a plane indicative of a slice including the object to be inspected to cause the patient to suppress the physiological movement in said stimulated part, said stimulating being accomplished without tight binding or pressing the portion; and

forming a tomogram of the object to be inspected by using the nuclear magnetic resonance while said physiological movement is suppressed.

5,251,630

PRESSURE PULSE GENERATOR HAVING AN ELECTROMAGNETIC PRESSURE PULSE SOURCE

Manfred Rattner, Grossenseebach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 11, 1992, Ser. No. 897,063

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1991, 4123160

Int. Cl.[5] A61B *17/22*

U.S. Cl. 128—660.03 **12 Claims**

1. A pressure pulse generator comprising:

a housing filled with an acoustic propagation medium;

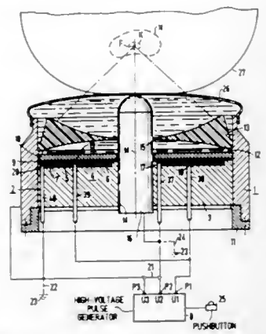
an electromagnetic pressure pulse source disposed in said housing and having an electrical coil and a flexible membrane disposed for interacting with said acoustic propagation medium;

drive means for electrically driving said coil for causing rapid displacement of said flexible membrane from said coil for emitting a pressure pulse into said acoustic propagation medium, said drive means having a plurality of outputs connected to said coil and respectively at first, second and third electrical potentials;

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said coil and said membrane each having a central opening; and

said coil consisting of first and second coil sections each having an inner end and an outer end, said first coil section surrounding said central opening and said second coil



section surrounding said first coil section, said outer end of said first coil section and said inner end of said second coil section being at said first potential, said inner end of said first coil section being at said second potential, and said outer end of said second coil section being at said third potential.

5,251,631

ULTRASONIC IMAGING APPARATUS

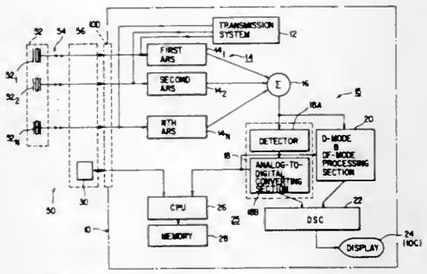
Masayoshi Tsuchiko, Tochigi; Hiromi Maekawa, and Kazunari Nakata, both of Ootawara, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 6, 1991, Ser. No. 788,473

Claims priority, application Japan, Nov. 7, 1990, 2-301343

Int. Cl.[5] A61B *8/00*

U.S. Cl. 128—661.01 **12 Claims**



1. An ultrasonic imaging apparatus comprising:

a main body including at least a transmission system, a reception system having a plurality of receiving sections, a signal processing system, a display system, and a first connector;

probe means including a plurality of transducers;

a second connector for connecting the probe means to the first connector of the main body in a detachable manner;

data storage means installed in the second connector for storing data on a transducer channel parameter for each of the plurality of transducers, the transducer channel parameter being at least one of a sensitivity level and a phase difference between transducer channels inherent to the probe means; and

calibration means installed in the main body for retrieving stored data from the data storage means and for calibrating a receiving channel parameter for each of the plurality of receiving sections of the reception system, the receiving channel parameter being at least one of a sensitivity level and a phase difference between the transducer channels inherent to the reception system.

5,251,632

TISSUE OXYGEN MEASURING SYSTEM

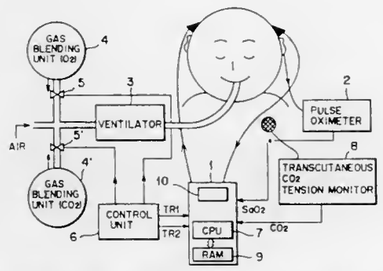
David T. Delpy, London, United Kingdom, assignor to Hamamatsu Photonics K.K., Shizuoka, Japan

Filed Jul. 9, 1991, Ser. No. 727,168

Claims priority, application European Pat. Off., Mar. 7, 1991, 91301920

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—633 **17 Claims**



1. A tissue oxygen measuring system comprising:

a ventilator unit for supplying air to a living subject for the living subject to breath;

a control means connected to said ventilator unit for controlling said ventilator unit to cyclically change gaseous content of the air at a predetermined interval;

means for producing trigger signals in timed relation to the cyclic changes of the gaseous content of the air;

measuring means for measuring oxygen in a tissue of the living subject and supplying data regarding measured results; and

a data processing means responsive to the trigger signals for receiving the data from said measuring means and based on said trigger signals cyclically computing information regarding blood flowing in the tissue.

5,251,633

OPTICAL PROBE

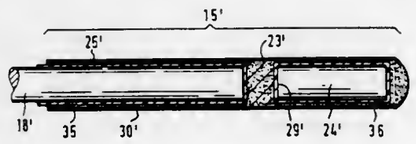
Martin Wunderling, Boeblingen; Lothar Rupp, Kirchstrasse, and Martin Guenther, Wildberg, all of Fed. Rep. of Germany, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 8, 1991, Ser. No. 742,596

Claims priority, application European Pat. Off., Aug. 13, 1990, 90115496.3

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—634 **15 Claims**



1. An optical probe for the invasive measurement of at least the pCO_2 of a biologic circulatory system comprising:

a pCO_2 sensor including

(a) a sensing diffusion zone comprising a gel containing a dye that is optically sensitive to H^+ ions; and

(b) components coupled to said gel including an optical element having an end portion in optical communication with the gel; and

a semi-permeable membrane at least partially enclosing said pCO_2 sensor and said gel and components and comprising a material permeable to CO_2 molecules but substantially impermeable to H^+ ions;

wherein at least one of said components is covered by a coating comprising a substance that is substantially impermeable to H^+ ions.

5,251,634

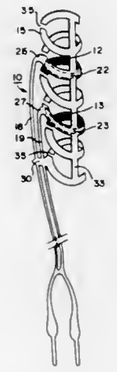
HELICAL NERVE ELECTRODE

Steven L. Weinberg, League City, Tex., assignor to Cyberonics, Inc., Webster, Tex.

Filed May 3, 1991, Ser. No. 695,543

Int. Cl.[5] A61B *5/04;* **A61N** *1/05*

U.S. Cl. 128—642 **14 Claims**



1. A nerve electrode array comprising:

an electrically conductive filament,

an electrically insulative carrier having a plurality of loops in a helical array, at least one of said loops encompassing said filament, and

connecting means securing said plurality of loops together to substantially maintain the helical array configuration thereof,

each of said loops having a cut therethrough away from said connecting means to allow each loop to be opened independently of the other loops of the array, the cuts in said loops being staggered relative to one another lengthwise of said array.

5,251,635

STEREOSCOPIC X-RAY FLUOROSCOPY SYSTEM USING RADIOFREQUENCY FIELDS

Charles L. Dumoulin, Ballston, and Robert D. Darrow, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 3, 1991, Ser. No. 753,564

Int. Cl.[5] A61B *6/00, 5/00*

U.S. Cl. 128—653.1 **19 Claims**

1. A tracking and imaging system adapted for providing stereoscopic images to each of a viewer's eyes of a location of at least one invasive device within a subject, comprising:

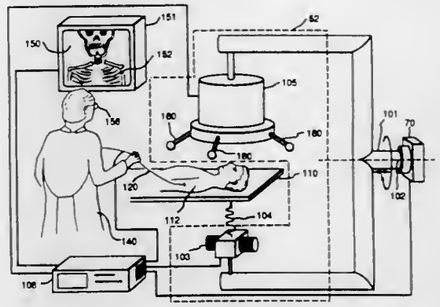
a) an invasive device;

b) an electromagnetic (EM) field creation means adapted for creating an electromagnetic field of known geometry within the subject attached to the invasive device;

c) a radiofrequency (RF) receiver means adapted for detecting the electromagnetic field at a plurality of M selected locations;

d) a tracking means adapted for computing a position and an orientation of the EM field creation means at the M selected locations, responsive to the detected electromagnetic field;

e) an imaging means adapted for acquiring at least two medical diagnostic images each at selected view angles, each of the view angles being selected to correspond to an angle of each of said viewer's eyes with respect to the invasive device so as to produce the stereoscopic images;



f) superposition means adapted for superimposing a symbol at the computed position representing the EM field creation means on each of the two medical diagnostic images resulting in a pair of superimposed images; and

g) stereoscopic display means adapted for displaying the pair of superimposed images to said viewer to produce a stereoscopic visualization of the invasive device allowing said viewer to obtain a three-dimensional view and to determine depth of the invasive device within said subject.

5,251,636

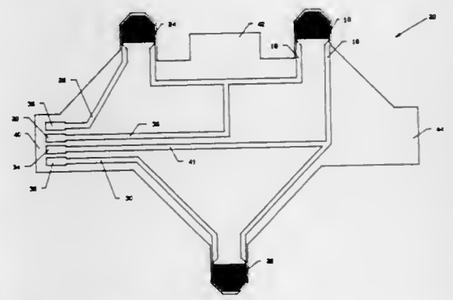
MULTIPLE THIN FILM SENSOR SYSTEM

Michael Neuman, Chesterland, Ohio, assignor to Case Western Reserve University, Cleveland, Ohio

Filed Mar. 5, 1991, Ser. No. 665,596

Int. Cl.[5] A61B *5/08*

U.S. Cl. 128—724 **15 Claims**



1. An apparatus comprising:

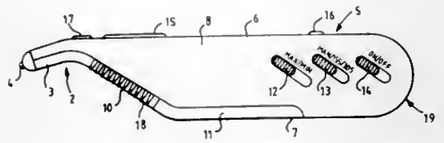
a. a bendable substrate;

b. a first sensing element comprising a thin film metalization layer of a first conductive material deposited on and fixedly attached to said substrate wherein said first sensing element comprises a first sensor; and

c. at least a second sensing element comprising a thin layer of a second conductive material fixedly attached to said substrate and electrically coupled to said first sensing element via a thin layer of a third metalized conductive material applied on said substrate.

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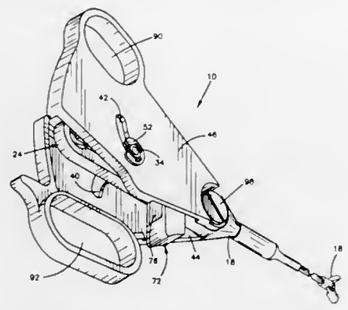
5,251,637
ELECTRO-THERAPEUTIC DEVICE
Ram Shalvi, Kowloon, Hong Kong, assignor to Solar Wide Industrial Ltd., Hong Kong
PCT No. PCT/GB89/01309, § 371 Date May 21, 1991, § 102(e) Date May 21, 1991, PCT Pub. No. WO90/04997, PCT Pub. Date May 17, 1990
PCT Filed Nov. 2, 1989, Ser. No. 689,804
Claims priority, application United Kingdom, Nov. 2, 1988, 8825604
Int. Cl.[5] A61H *39/02*; A61N *1/36*
U.S. Cl. 128—735 13 Claims



1. A hand-held electro-therapeutic device for applying electrical stimuli to selected points of contact on the body of a user, the device comprising
a casing which is holdable in the hand,
mounted to the casing a first active electrode for making electrical contact with a selected point of the body and a second passive electrode disposed on the casing for making electrical contact with the hand,
voltage applying means for applying an alternating voltage across the electrodes to pass an alternating current through the body of the user to apply the stimuli thereto, and
resistance detecting means for detecting when the first electrode is located at or near a low resistance point on the body, said resistance detecting means comprising means for detecting variations in the resistance between the electrodes and means providing an audible signal representative of the resistance,
wherein the casing is elongate and the first electrode is mounted at one end thereof, the casing having transverse to an elongate direction thereof, a cross-section having major and minor axes, the major axis being longer than the minor axis, the second electrode being mounted on a wall of the casing on the major axis.

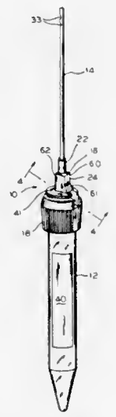
5,251,638
BIOPSY FORCEPS DEVICE HAVING IMPROVED HANDLE ASSEMBLY
Robert J. Cottone, Jr., Fort Lauderdale, Fla.; Joseph J. Kopp, Jr., Atlanta, and David S. Rowley, Smyrna, both of Ga., assignors to Cordis Corporation, Miami, Fla.
Filed Apr. 16, 1992, Ser. No. 869,379
Int. Cl.[5] A61B *10/00*
U.S. Cl. 128—751 6 Claims

1. A biopsy forceps device comprising:
an elongated hub member having distal and proximal ends;
an elongated flexible hollow body portion having a lumen extending therethrough and having a proximal end and a distal end;
a forceps assembly coupled to the distal end of said body portion, and including a pair of forceps;
a control wire having proximal and distal ends and extending through the lumen in said body portion and coupled at its said distal end to said forceps assembly;
a control wire actuator connected to the proximal end of said control wire, said actuator being slidably mounted to said hub member for slidable movement relative thereto between a proximal position and a distal position for respectively causing said forceps to be in a closed condition and in an open condition;
releasable forceps locking means for normally blocking forward slidable movement of said actuator when said actuator is in its said proximal position thereby preventing said forceps from being actuated to said open condition;
said releasable forceps locking means includes means for displacing said locking means to unblock said locking means from preventing forward movement of said actuator means;
said releasable forceps locking means includes a finger actuatable trigger pivotally mounted to said hub member for pivotal movement between a normal extended position



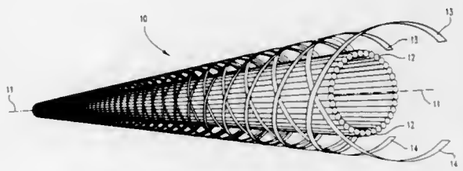
whereby said actuator is blocked and a retracted position whereby said actuator is blocked and which may be actuated by an operator's finger from said normal extended position to said retracted position for causing said forceps assembly to be in its open position;
means for resiliently biasing said actuator means toward its said distal position; and
means for causing said forceps to be actuated to its closed condition.

5,251,639
CATHETER DEVICE
Hans Rentsch, Riverwoods, Ill., assignor to Medline Industries, Inc., Mundelein, Ill.
Filed Jul. 15, 1992, Ser. No. 914,768
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—761 10 Claims



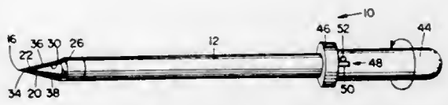
1. A catheter device comprising:
a urine collection receptacle having an aperture;
a catheter tube adapted to extend through the aperture to the receptacle to deliver fluid to the receptacle;
means for sealing the aperture, the sealing means having an open and closed position whereby the sealing means in the open position provides access into the collection receptacle to receive urine and in the closed position closes the aperture;
means for removably securing the catheter tube to the sealing means when the sealing means is in the open position, the securing means frictionally and releasably engaging both the catheter tube and the sealing means to hold the catheter tube and sealing means in secure relationship.

5,251,640
COMPOSITE WIRE GUIDE SHAFT
Thomas A. Osborne, Bloomington, Ind., assignor to Cook, Incorporated, Bloomington, Ind.
Filed Mar. 31, 1992, Ser. No. 861,428
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—772 10 Claims



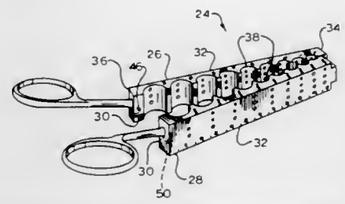
1. A composite wire guide shaft comprising:
first fibers helically wound about a longitudinal axis;
second fibers arranged substantially parallel to said longitudinal axis adjoining said first fibers;
said first fibers and said second fibers being embedded in an adhesive matrix; and
said first fibers and said second fibers being a majority of the weight of the wire guide shaft.

5,251,641
BIOPSY NEEDLE
Alfredo F. Xavier, New Bedford, Mass., assignor to HGG Laser Fare, Inc., Smithfield, R.I.
Filed Jul. 29, 1992, Ser. No. 921,338
Int. Cl.[5] A61B *10/00*
U.S. Cl. 128—754 10 Claims



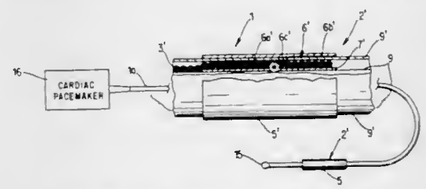
1. A biopsy needle adapted for end cutting, side cutting and extracting of tissue specimens comprising:
a hand held outer cannula having an open longitudinal channel and a wedge shaped semi-conical hollow piercing tip, said piercing tip having an open distal channel in continuity with the open longitudinal channel,
the wedge shaped hollow piercing tip being defined by two converging lateral cutting surfaces, interconnected inferiorly by a transverse semi-conical base surface,
and interconnected superiorly by a semicircumferential cutting edge, angled forwardly with reference to the longitudinal axis of the cannula toward the distal end of said cannula,
a hand held inner cannula telescopically and rotatably fitted within the outer cannula and having an open distal channel co-extensive with the distal channel of the outer cannula, the open distal channels jointly defining a tissue sampling chamber,
the inner cannula having a semi-conical hollow piercing tip defined by two converging lateral cutting surfaces, interconnected inferiorly by a semi-conical transverse base surface, and superiorly interconnected by a semi-circumferential cutting edge, angled rearwardly toward the posterior of the needle with reference to the longitudinal axis of the cannula, toward the proximal end of said cannula.

5,251,642
TISSUE MEASURING AND SUTURING DEVICE
Kurt E. Handlos, Crestline, Calif., assignor to Baxter International Inc., Deerfield, Ill.
Filed Jun. 6, 1991, Ser. No. 711,240
Int. Cl.[5] A61B *5/103*
U.S. Cl. 128—774 23 Claims



1. A medical device for measuring the diameter of a piece of body tissue, comprising:
first and second arms, each arm having a series of semicircular shaped sizing sleeves, each sleeve on one arm being positioned to mate with another identically sized sleeve on the other arm to provide a circular sizing sleeve when said first and second arms are placed in parallel juxtaposition with one another, and
a means for allowing puncture of said tissue, said means for allowing puncture located through at least one of said arms at at least one of said semicircular shaped sizing sleeves.

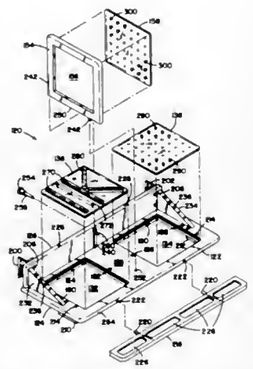
5,251,643
MULTIPOLAR CARDIAC PACEMAKER LEAD
Peter Osypka, Basler Strasse 109, D-7889 Grenzach-Wyhlen, Fed. Rep. of Germany
Filed Nov. 19, 1991, Ser. No. 794,871
Claims priority, application European Pat. Off., Dec. 22, 1990, 90125337
Int. Cl.[5] A61N *1/05*
U.S. Cl. 607—122 21 Claims



1. A cardiac pacemaker lead having a proximal end and a distal end and comprising a first pacing electrode at said distal end; a second pacing electrode between said first electrode and said proximal end; a first elongated conductor connected to said first electrode and extending toward said proximal end; a second elongated conductor insulated from said first conductor and extending from said second electrode toward said proximal end; at least one substantially band-shaped third conductor; and means for positively connecting said at least one third conductor to said second conductor, said connecting means comprising a tubular fourth conductor positively connected with said at least one third conductor, one of said fourth conductor and said second electrode surrounding the other of said fourth conductor and said second electrode.

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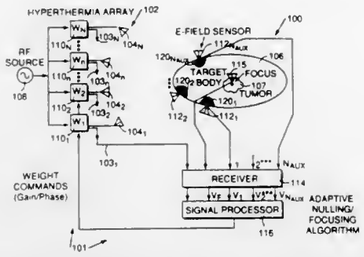
5,251,644
UPPER EXTREMITY ASSESSMENT SYSTEMS AND METHODS
Jacqueline A. Fitzgerald, Shoreview, Minn., assignor to Key Functional Assessments, Inc., Minneapolis, Minn.
Filed May 29, 1992, Ser. No. 891,287
Int. Cl.[5] A61B *5/05*
U.S. Cl. 128—782 **14 Claims**



1. An upper extremity assessment device comprising:
a first support having an opening therethrough, the first support defining a first plane;
a work plate positioned at least partially in the opening through the first support;
testing means, associated with the work plate, for assessing the functional capacity of an upper extremity of a user of the device;
means for selectively mounting the work plate to the first support;
a second support extending from the first support and defining a second plane perpendicular to the first plane;
a third support defining a third plane;
testing means, associated with the third support, for assessing the functional capacity of an upper extremity of the user of the device; and
means for selectively mounting the third support to at least one of the first support and the second support such that the third plane defined by the third support is perpendicular to the first plane defined by the first support and perpendicular to the second plane defined by the second support.

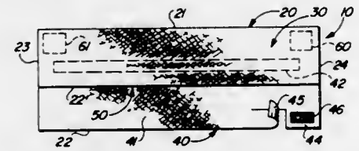
5,251,645
ADAPTIVE NULLING HYPERTHERMIA ARRAY
Alan J. Fenn, Wayland, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.
Filed Jun. 26, 1991, Ser. No. 722,612
Int. Cl.[5] A61N *5/00*
U.S. Cl. 607—154 **30 Claims**

1. A hyperthermia applicator for inducing a temperature rise in a target, comprising
a plurality of electric field radiators;
a source of electric field radiation coupled to each electric field radiator through a controllable transmit weighting network coupled to a respective electric field radiator, each weighting network controlling the phase and amplitude of electric field radiation coupled from the source to the respective electric field radiator in response to a respective feedback signal;
at least one electric field probe for detecting electric field radiation from the plurality of radiators; and
a controller means coupled to the electric field probes for receiving the detected electric field radiation and generating the respective feedback signals, and for adjusting the feedback signal in response to the detected electric field



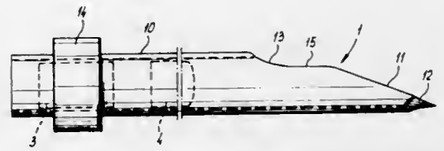
radiation so that the detected electric field radiation is minimized at the electric field probe.

5,251,646
PROTECTIVE COVERING FOR A SPHYGMOMANOMETER CUFF
Thomas Bowen, 13745 SW. 79th Ct., Miami, Fla. 33158
Filed Jun. 29, 1992, Ser. No. 905,395
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—878 **7 Claims**



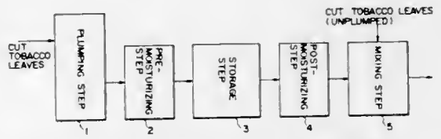
1. A protective covering structured and disposed to receive and enclose therein a cuff of a sphygmomanometer, of the type having a plurality of hoses extending therefrom; the protective covering comprising:
a flexible, disposable material sleeve, said sleeve including a front panel and a rear panel, each of said panels including a top edge, a bottom edge, and opposite side edges,
said front panel and said rear panel further including an outer layer and an inner layer, said inner layer being formed of a flexible, fluid impervious material, said outer layer being formed of a soft, flexible material.
said front panel being attached to said rear panel along said top edge and said opposite side edges so as to define a punch therebetween, said punch being structured and disposed to receive the cuff therein through an open lower portion thereof,
said rear panel being wider than said front panel, such that said lower edge of said rear panel is disposed in substantially spaced apart relation from said lower edge of said front panel, thereby defining a flap portion of said rear panel,
said flap portion being structured and disposed to be tucked within said pouch, through said open lower portion of said pouch, so as to substantially surround and enclosure the cuff in protected relation therein,
an adjustable access opening formed in said flap portion on said lower edge of said rear panel, said access opening being structured and disposed to allow passage of the hoses attached to the cuff therethrough, said access opening being adjustable in size and including a pair of perpendicularly disposed slits formed in said flap portion so as to form a vertical strip and a horizontal strip, said horizontal strip being sufficiently elongate such that said vertical strip may be disposed in overlying relation thereto, and such that a hook portion on said inner layer of said flap portion on said vertical strip may adhere to said outer layer of said flap portion on said horizontal strip,
fastening means disposed on said outer layer of said rear panel at a point near said top edge of one of said side edges of said rear panel, said fastening means being structured and disposed to enable said sleeve to be wrapped about a limb for adjustable, fitted fastening thereabout,
pouch closure means disposed along said bottom edge of said front panel on said inner layer, said pouch closure means being structured and disposed to securely close said pouch so as to completely contain the cuff therein, and
stabilizing means disposed within said pouch, said stabilizing means being structured and disposed to hold the cuff non-slidably within said pouch.

5,251,647
METHOD FOR INTRODUCING A TRANSPONDER TOGETHER WITH A DISINFECTANT
Henk Velten, Enter, Netherlands, assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Oct. 11, 1991, Ser. No. 775,667
Claims priority, application Netherlands, Oct. 11, 1990, 9002215
Int. Cl.[5] A61B *19/00, 5/07*
U.S. Cl. 128—899 **8 Claims**



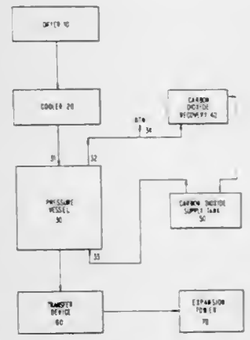
1. A disinfectant/transponder assembly for introduction into a living creature, comprising a bioabsorbable tablet disinfectant essentially having the same cross-sectional shape as the transponder wherein aid bioabsorbable tablet is introduced into the living creature in front of said transponder.

5,251,648
METHOD FOR PLUMPING AND MOISTURE REGULATING CUT TOBACCO
Takashi Ogawa; Masaru Sakuma; Masami Nakamura; Katsuhiko Kan, and Mitsuru Chujo, all of Hiratsuka, Japan, assignors to Japan Tobacco Inc., Tokyo, Japan
Filed Oct. 3, 1991, Ser. No. 770,351
Claims priority, application Japan, Oct. 4, 1990, 2-265061
Int. Cl.[5] A24B *3/18, 3/02*
U.S. Cl. 131—291 **5 Claims**



1. A method of plumping cut tobacco comprising:
a plumping step which includes exposing said cut tobacco to an adjuvant plumping agent to impregnate the tissues of the cut tobacco with the agent and forcing the adjuvant plumping agent to expand in order to inflate the tissues of said cut tobacco;
an idle storage step which includes idly storing the plumped tobacco with a first moisture content of less than 10 wt % for at least 7 days after the plumping step which stabilizes the tissues of the inflated cut tobacco; and
a moisture-content regulating step which includes remoisturizing the cut tobacco after the idle storage step by adding moisture to the cut tobacco to achieve a predetermined second moisture content level.

5,251,649
PROCESS FOR IMPREGNATION AND EXPANSION OF TOBACCO
Kwang H. Cho, Midlothian; Thomas J. Clarke; Joseph M. Dobbs, both of Richmond; Eugene B. Fischer, Chester; Jose M. G. Nepomuceno, Beaverdam, and Ravi Prasad, Midlothian, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.
Filed Jun. 18, 1991, Ser. No. 717,064
Int. Cl.[5] A24B *3/18*
U.S. Cl. 131—296 **72 Claims**



1. A process for expanding tobacco comprising the steps of:
(a) contacting the dioxide gas at a pressure of from about 400 psig to about 1057 psig and at a temperature such that the carbon dioxide gas is at or near saturated conditions;
(b) allowing the tobacco to contact the carbon dioxide for a time sufficient to impregnate the tobacco with carbon dioxide;
(c) releasing the pressure;
(d) thereafter subjecting the tobacco to conditions such that the tobacco is expanded; and
(e) prior to step (a), removing a sufficient amount of heat from the tobacco to cause a controlled amount of carbon dioxide to condense on the tobacco such that the tobacco is cooled to a temperature of from about −35° F. to about 30° F. after releasing the pressure in step (c).

5,251,650
HAIR PIN FOR A HAIR STYLING TOOL
Tomima L. Edmark, 6522 Mimosa La., Dallas, Tex. 75230
Filed Sep. 11, 1992, Ser. No. 944,132
Int. Cl.[5] A45D *8/02*
U.S. Cl. 132—281 **12 Claims**



1. A hair pin for attachment to an elastic hair binding element used to form a hair tail on a user's head, the hair pin comprising:

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a platform,

at least one front prong and at least two rear prongs, each of said prongs extending downwardly from an underside of the platform,

each rear prong being disposed adjacent to the head of the user, each front prong being disposed outward from each rear prong and outward from the head, the elastic hair binding element being accommodated between the front and rear prongs.

at least one front prong including stop means for engaging the elastic hair binding element, the stop means for engaging the elastic hair binding element including at least one inwardly protruding tab disposed on the front prong below the platform with a section therebetween,

the elastic hair binding element being accommodated in the section between the tab and the platform,

the elastic hair binding element maintaining the tab at a position below the elastic hair binding element and the elastic hair binding element maintaining the platform at a position above the elastic hair binding element,

whereby a relative vertical position of the hair pin is maintained when the elastic hair binding element is accommodated between the front and rear prongs and when the elastic hair binding element is also engaged by the stop means for engaging the elastic hair binding element.

5,251,651

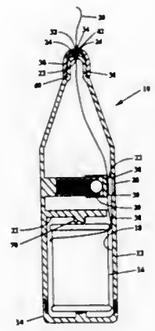
WATERPROOF DENTAL FLOSSING TOOL

Robert F. Mason, 10763 Hedda Pl., Cerritus, Calif. 90701

Continuation-in-part of Ser. No. 504,003, Apr. 4, 1990, abandoned. This application Jan. 13, 1992, Ser. No. 819,861

Int. Cl.[5] A61C *15/00*

U.S. Cl. 132—326 **12 Claims**



1. A dental flossing tool comprising:

a tool having a handle and an elongated tip formed of rigid material having:

a storage area for retaining a quantity of dental flossing material,

sealing means located adjacent one end of said tip, means adjacent said tip for clamping said sealing means to prevent moisture from entering said tool, and

means for controlling passage of a strand of dental flossing material through the interior of said tool to project out said tip adjacent said sealing means.

5,251,652

STREET SWEEPER

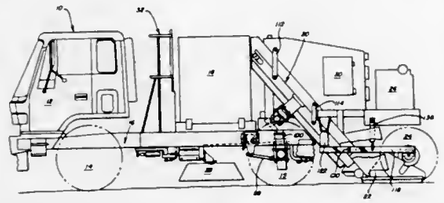
Daniel P. Strauser, Elgin, and Roger D. Star, St. Charles, both of Ill., assignors to Elgin Sweeper Company, Elgin, Ill.

Continuation-in-part of Ser. No. 241,329, Sep. 7, 1988, Pat. No. 5,060,334. This application Oct. 28, 1991, Ser. No. 784,169

The portion of the term of this patent subsequent to Oct. 29, 2008, has been disclaimed.

Int. Cl.[5] E01H *1/04*

U.S. Cl. 134—84 **36 Claims**



1. In a vehicle for collecting and hauling material which carries an elevatable hopper, the improvement comprising, in combination:

hopper elevation means for elevating the hopper which comprises a first, vertically extending mast section carried by the vehicle; an intermediate vertically extending mast section carried by the first mast section, means for vertically elevating the intermediate mast section over the first mast section; an added vertically extending mast section carried by the intermediate mast section; and means for vertically elevating the added mast section over the intermediate mast section; said hopper being carried by said added mast section; and means for laterally tipping said hopper to dump its contents while said intermediate and added mast sections are in vertically elevated position.

5,251,653

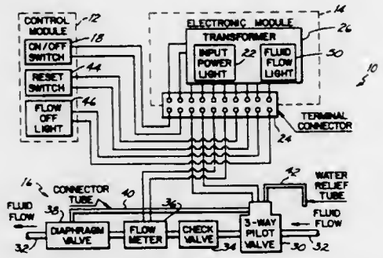
CONTROL SYSTEM FOR AUTOMATIC FLUID SHUT-OFF

Orrin E. Tucker, 45 Timberline Ct., and Ronald J. Kestermann, 4767 E. Miami River Rd., both of Cleves, Ohio 45002

Filed Feb. 12, 1993, Ser. No. 17,619

Int. Cl.[5] F16K *17/32*

U.S. Cl. 137—460 **7 Claims**



1. A control system for automatically shutting off fluid flow in a fluid system responsive to detection of unwanted fluid flow therein, said system comprising:

a control module which includes means for activating said control system;

a hydraulic subassembly; and

an electronic module electrically coupled to both said control module and said hydraulic subassembly for controlling the operation of said hydraulic subassembly;

said hydraulic subassembly adapted to be placed in a fluid flow path within said fluid system and to shut off fluid flow therein responsive to detection of unwanted fluid flow in said fluid system, said hydraulic subassembly including:

(a) a three-way pilot valve for directing fluid flow within said hydraulic subassembly;

(b) a flow meter for detecting unwanted fluid flow in said fluid system; and

(c) a diaphragm valve for shutting off fluid flow in said fluid system, said diaphragm valve actuated by said three-way pilot valve, which is in turn activated by said electronic module in response to the detection of unwanted fluid flow by said flow meter.

5,251,654

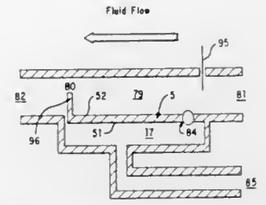
FLOW REGULATOR ADAPTABLE FOR USE WITH EXHAUST FROM A PROCESS CHAMBER

David Palmer, 200 Berkeley Rd., North Andover, Mass. 02174

Continuation-in-part of Ser. No. 669,746, Mar. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 405,835, Sep. 11, 1989, Pat. No. 5,000,221, which is a continuation-in-part of Ser. No. 178,505, Apr. 7, 1988, abandoned. This application Mar. 13, 1992, Ser. No. 850,767

Int. Cl.[5] G05D *7/01*

U.S. Cl. 137—501 **38 Claims**



1. A device for regulating the flow of fluid through a passageway from an environment, where the fluid is substantially still, the device comprising:

a conduit having a wall defining the passageway through the device;

a hingedly mounted piston having a bottom face, exposed to the environment's pressure, and a top face, forming a portion of the conduit wall, directly over which fluid in the passageway flows;

impedance means, attached to the piston downstream of the top face of the piston, for variably impeding fluid flowing through the passageway, so that the impedance means's impedance on the fluid flow varies as a function of the pressure differential across the piston; and

restoring means, including the weight of the piston, for exerting a force on the piston so as to tend to cause the impedance means to lessen the impedance on the fluid flow, and so that when there is no flow through the passageway the amount that the impedance means impedes the flow is relatively low.

5,251,655

FLOW CONTROL VALVES FOR POST-MIX BEVERAGE DISPENSERS

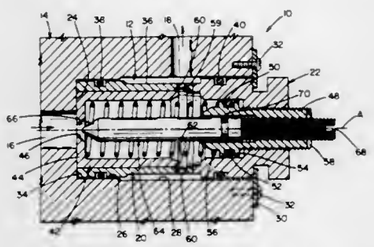
Michael Low, Norcross, Ga., assignor to Wilshire Partners, Cleveland, Ohio

Filed Jul. 6, 1992, Ser. No. 913,882

Int. Cl.[5] G05D *7/01*

U.S. Cl. 137—501 **40 Claims**

1. A flow regulating valve for maintaining a desired flow rate for a liquid in a post-mix beverage dispenser comprising cylinder means having axially opposite first and second end means and radial outlet means spaced from said first end means, piston means axially slidable in said cylinder means and having outer and inner end means, said outer end means being adjacent said first end means of said cylinder means, means including orifice means opening through said outer end means of said piston means to provide an inlet for liquid to flow through said cylinder means to said outlet port means, said piston means being displaceable in said cylinder means from a first toward a second position by liquid under pressure flowing



through said orifice means into said cylinder means, said piston means in moving from said first toward said second position controlling the flow of said liquid through said outlet means to maintain a predetermined flow rate of said liquid through said valve, and first and second selectively adjustable means for changing said predetermined flow rate.

5,251,656

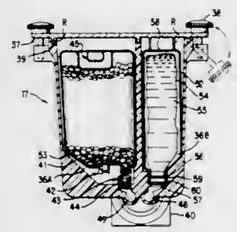
MULTIPLE CHEMICAL FEEDER FOR SWIMMING POOLS

Wilson B. Sexton, Sr., 5330 Pebblebrook Dr., Dallas, Tex. 75229

Filed Feb. 19, 1993, Ser. No. 19,793

Int. Cl.[5] B01D *11/02*

U.S. Cl. 137—1 **14 Claims**



11. A method for introducing in liquid form a combination of at least two different chemicals, at least one of which is a solid chemical, from distinct compartments into a flowing liquid stream and in relative predetermined proportional amounts comprising:

a. providing a sealable housing for containing and dispensing the chemicals;

b. introducing a solubilizing liquid into a first compartment within said housing, said compartment containing a reservoir of soluble solid material, said first compartment being provided with an opening for the introduction therein of a solubilizing liquid for dissolving solely a portion of said soluble solid material that is contained in the lower part of said compartment, and for dispensing said solubilized portion;

c. introducing into a second compartment in said housing and separate from said first compartment and positioned contiguous to said first compartment a liquid material;

d. providing means for connecting said apparatus to a pressure side of said liquid stream to dispense liquid from said first and second compartments separately into said stream;

e. maintaining the solid soluble material contained in said first compartment isolated from the soluble liquid contained in said second compartment;

f. dispensing on demand from the lower portion of each of

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said first and second compartments and into said liquid stream, a predetermined quantity of liquid from each of said compartments; and

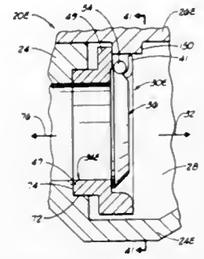
g. maintaining the chemicals to be dispensed separated until the chemicals are introduced into said liquid stream.

5,251,657

TOP-ENTRY CHECK VALVE WITH CARTRIDGE SECURED BY PROJECTIONS

John P. Scaramucci, 10724 Woodridden, Oklahoma City, Okla. 73170

Division of Ser. No. 761,594, Sep. 18, 1991, Pat. No. 5,143,113.
This application May 4, 1992, Ser. No. 878,093
Int. Cl.[5] F16K *15/03, 43/00*
U.S. Cl. 137—315 9 Claims



1. A top entry check valve, comprising:

a valve cartridge assembly having upstream and downstream ends, a seat, a cage and a disc, the cage having an upstream extension and a shoulder extending radially outward therefrom, the shoulder of the cage having a downstream facing surface;

a body having upstream and downstream ends, a valve chamber therein communicating with the upstream and downstream ends thereof, and an access opening in a side wall thereof communicating with the valve chamber of a size to accommodate the entry and removal of the valve cartridge assembly therethrough, said body also having an annular shoulder therein facing downstream sized to engage the upstream extension of the cage and prevent the valve cartridge from moving upstream;

a bonnet removably attached to the body over said access opening forming a wall of the valve chamber; and

a bonnet lug ext ending from the bonnet into the valve chamber alongside the downstream facing surface of the cage and engaging the downstream facing surface of the cage to prevent downstream movement of the valve cartridge assembly.

5,251,658

FLUID APPARATUS WITH AT LEAST ONE TUBE WELL

Donald L. Zink, Billings, Mont., assignor to Montana Sulphur & Chemical Co., Billings, Mont.

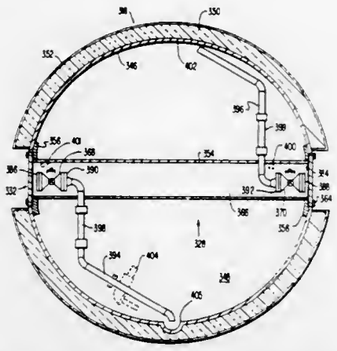
Continuation of Ser. No. 595,463, Oct. 10, 1990, abandoned.
This application Dec. 5, 1991, Ser. No. 802,699
Int. Cl.[5] F16K *24/00*
U.S. Cl. 137—347 74 Claims

1. A fluid apparatus comprising:

a fluid tank having a tank shell and defining at least in part a fluid containment compartment, said tank shell having spaced first and second tank shell openings therethrough;

a tube well extending generally through said fluid containment compartment, said tube well comprising a tube connected at first and second ends thereof with said tank shell, said first end being at and communicating with said tank shell opening, and said second end being at and communicating with said second tank shell opening; and

a fitting operatively associated with said fluid containment compartment, positioned in said tube well and accessible through at least one of said first and second tank shell openings;



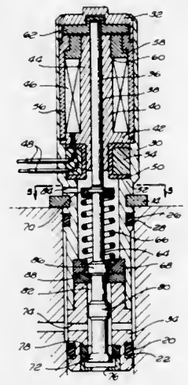
wherein said tube well defines a tube well interior inside said tube, and said tube well interior is fluid isolated and separated from the fluid of said fluid containment compartment.

5,251,659

HIGH SPEED MINIATURE SOLENOID

Oded E. Sturman, 3973 Santa Monica Ct., Newbure Park, Calif. 91320; Benjamin Grill, 9819 Etiwanda Ave., Northridge, Calif. 91329, and Walter L. Harrison, 23554 Cherry St., Newhall, Calif. 91321

Filed Jul. 22, 1991, Ser. No. 733,733
Int. Cl.[5] F16K *11/04, 31/06*
U.S. Cl. 137—339 11 Claims



1. A solenoid valve, comprising:

a housing having an inlet and an outlet;

an armature within said housing;

a first magnetic core coaxial with and adjacent to said armature, said first magnetic core having a first end and a second end, said second end further having an outer seat;

a coil wrapped around said first magnetic core, said coil being constructed to emit a magnetic flux;

a second magnetic core coaxial with said first magnetic coil, said second magnetic core having a first end connected to said first end of said first magnetic core and a second end spaced from said second end of said first magnetic core, said second end having an inner seat;

a first bushing between said first and second magnetic cores, said first bushing having an inner corner which sits within said outer seat of said first magnetic core and an outer seat that cooperates with said inner seat of said second magnetic core so that said first bushing is captured by said first and second magnetic cores;

a magnetic plate adjacent to said second ends of said first and second magnetic cores and attached to said armature, such that when said coil emits said magnetic flux said magnetic plate moves toward said magnetic cores, wherein said armature moves within said housing from a first position to a second position;

a rod within said housing and adjacent to said armature such that when said armature moves from said first position to said second position, said rod moves from a first position to a second position, said rod having a first spool located relative to said outlet such that when said rod is in said first position said first spool prevents fluid communication between said inlet and said outlet, and when said rod is in said second position said first spool allows fluid communication between said inlet and said outlet; and,

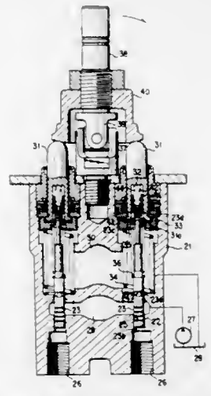
a spring operatively connected to said rod to bias said rod and said armature into said first position.

5,251,660

HYDRAULIC PILOT VALVE UNIT

Shyuji Hori, Kawasaki, and Jun Maruyama, Yokohama, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

PCT No. PCT/JP89/00339, § 371 Date Jan. 25, 1990, § 102(e) Date Jan. 25, 1990, PCT Pub. No. WO89/09360, PCT Pub. Date Oct. 5, 1989
PCT Filed Mar. 31, 1989, Ser. No. 442,068
Claims priority, application Japan, Mar. 31, 1988, 63-76298
The portion of the term of this patent subsequent to Sep. 12, 2007, has been disclaimed.
Int. Cl.[5] F15B *13/06*
U.S. Cl. 137—636.1 1 Claim



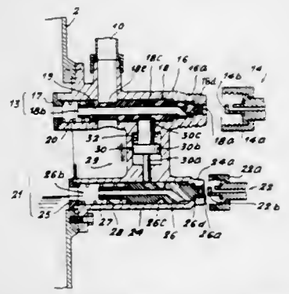
1. A hydraulic pilot valve unit, characterized in that it comprises a valve body; valve spools mounted slidably in a plurality of axially extending valve holes formed within the valve body and along the circumferential of the latter, said valve being slidably movable freely between a first position where pilot pressurized fluid outlet ports formed on one side of said valve body and continuously with the valve holes, respectively, are allowed to communicate with an inlet port formed in said valve body so that the outlet ports may communicate with a pilot pressurized fluid supply pump, and a second position where said outlet ports are allowed to communicate with a reservoir port so that the outlet ports may communicate with a fluid reservoir, a plurality of pistons mounted axially slidably in the valve body on the other side thereof and arranged such that they may be aligned with said spools and their respective leading ends may project from the valve body; an operating lever connected with a pusher member, which is kept in contact with the projecting leading end of each of the pistons, and adapted to move the pusher member down towards said pistons when it is tilted manually by the operator; first compression springs each being mounted between the valve body and each of the pistons so as to bias normally each of the pistons towards said pusher member; second compression springs each being mounted between the piston and the valve spool so that movement of each of said pistons by the operating lever in one direction may cause movement of each of said valve spools to the first position; damper pistons each being mounted slidably in a cylinder hole formed in each of said pistons on the opposite side of said pusher member so as to extend axially from the base end face of each of said pistons, thereby defining a damper chamber in the cylinder hole; and damper orifices each being formed in each of said damper pistons so as to allow the damper chambers to communicate with the reservoir port formed in the valve body, the arrangement being made such that each of said damper pistons is abutted against one end of each of said valve spools by the resilient force of a third compression spring mounted between each of the damper pistons and the innermost walls of each of the cylinder holes so as to block each of said damper orifices.

5,251,661

REMOTE FILLING DEVICE FOR AN OIL TANK

Michel G. Hugues, Bois Le Roi, and Gilles C. G. Massot, Le Mee sur Seine, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation S.N.E.C.-M.A., Paris, France

Filed Jan. 8, 1992, Ser. No. 818,129
Claims priority, application France, Jan. 9, 1991, 91 00183
Int. Cl.[5] F01M *11/03*; F02C *7/06*
U.S. Cl. 137—637.1 6 Claims



1. A device for the remote filling of an oil tank having an internal space for containing the oil, and a degasser, said device being adapted to be attached to said tank and comprising:

a remote oil filler comprising an oil inlet nozzle arranged to be open to said internal space of said tank, a detachable oil supply pipe adapted to be connected to said inlet nozzle, and an automatic closer for said inlet nozzle;

an excess oil remover comprising an outlet nozzle arranged to be open to said internal space of said tank, a detachable removal pipe adapted to be connected to said outlet nozzle, and an automatic closer for said outlet nozzle; and

a lock interposed between said automatic closer for said outlet nozzle and said automatic closer for said inlet nozzle which prevents connection of said oil supply pipe to said inlet nozzle when said removal pipe is not connected to said outlet nozzle.

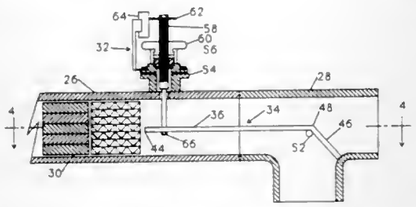
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5,251,662

DEVICE TO EQUALLY DISTRIBUTE THE VAPOR AND LIQUID PHASES DURING WET STEAM FLOW THROUGH BRANCH TEE JUNCTIONS

Mark T. Rubel, Houston, and James R. Stoy, Missouri City, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 19, 1992, Ser. No. 962,554
Int. Cl.[5] F16K *11/00*
U.S. Cl. 137—875 7 Claims



1. An apparatus for equally distributing liquid and vapor phases of wet steam flowing through a T junction, said apparatus comprising:

a conduit member having upstream and downstream ends;

a T junction having an upstream branch connected to said conduit member and two downstream branches;

variable area dividing means pivotally mounted in said T junction about an axis substantially transverse to the plane defined by the axes of said T junction with a first end of said variable area dividing means extending generally toward said upstream branch and a second end extending generally toward one of said downstream branches; and

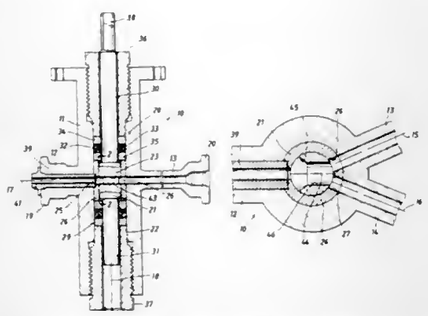
means to adjust the position of said variable area dividing means with respect to the axis of said conduit member whereby distribution of the liquid and vapor phases through said junction is controlled.

5,251,663

HIGH-TEMPERATURE, HIGH-PRESSURE OXYGEN METERING VALVE

Rollin C. Christianson; Peter P. Lycou, and James A. Daniel, all of Las Cruces, N. Mex., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 14, 1992, Ser. No. 929,552
Int. Cl.[5] F16K *5/04*
U.S. Cl. 137—876 6 Claims



1. A high-temperature, high-pressure metering valve comprising:

a tubular valve body having an axial bore extending therethrough, an intermediate portion of said bore having an inlet and first and second outlet passages extending there into, the outlet passages being angularly opposed to said inlet passage, all three passages having longitudinal axes which lie in a transverse plane perpendicular to the axis of the axial bore;

a cylindrical sleeve mounted in the intermediate portion of said axial bore having ports aligned with the longitudinal bores of the inlet and outlet passages;

an elongated cylindrical valve member cooperatively mounted in said cylindrical sleeve having an enlarged diameter mid-portion having a transverse passage with an oblong cross section alignable with the inlet passage and one or more of the outlet passages, one end of the valve member provided with means to facilitate rotation of the valve member around the center axis of the axial bore; and

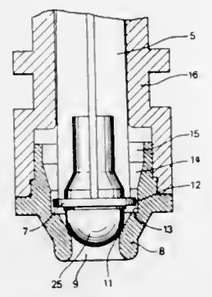
sealing means adjacent each end of the cylindrical sleeve establishing a seal around the cylindrical valve member and with the axial bore; said sealing means include first and second annular backup members, the first annular backup members contacting an end of the cylindrical sleeve, first and second frustoconical seals interfitted with one another and disposed between said first and second annular backup members, and externally threaded annular members, each annular member cooperatively arranged with an end portion of the valve body for compressing said frustoconical seals between said first and second annular backup members thereby expanding said frustoconical seals into sealing engagement.

5,251,664

QUIET CHECK VALVE FOR PULSATING FLOW

Hans Arvidsson, Trollhättan, and Gert Bjerendal, Sjuntorp, both of Sweden, assignors to SAAB Automobile Aktiebolag, Sweden

PCT No. PCT/SE91/00123, § 371 Date Sep. 11, 1992, § 102(e) Date Sep. 11, 1992, PCT Pub. No. WO91/12450, PCT Pub. Date Aug. 22, 1991
PCT Filed Feb. 19, 1991, Ser. No. 934,468
Claims priority, application Sweden, Feb. 19, 1990, 9000602
Int. Cl.[5] F16K *15/06*
U.S. Cl. 137—514 18 Claims



1. A check valve comprising:

a valve body having an internal wall shaped to define a flow channel through the valve body, the flow channel having a flow inlet and a flow outlet spaced away from the inlet;

a valve seat in the channel at the wall, the seat having an opening through it for passage of liquid past the seat;

a valve head disposed in the channel, the valve head having a seating part of a size and shape to engage and cooperate with the valve seat for blocking return flow through the channel past the valve seat and toward the inlet, said valve head seating part being at least partly spherical where it contacts the valve seat, said valve head having an opening stroke length in the channel;

a flange on the valve head located downstream in the channel from the seating part, the flange having an outer peripheral edge toward the channel wall and the flange having a cross section in the channel out to the peripheral edge of the flange which exceeds the cross section in the channel of the seating part of the valve head;

the channel wall having a first part which is shaped to define a relatively narrower opening valve seat for contacting the seating part of the valve head;

the wall having a second part that defines a first throttling gap between the flange outer edge and the channel wall, the first throttling gap being downstream of the valve seat, the wall second part being so placed and of such a length as to extend around the valve head and around the flange as the valve head seating part shifts downstream off the valve seat or shifts upstream in the direction toward the valve seat; the second part of the channel wall being shaped and of such length that the first throttling gap has a first flow cross sectional area during a first part of the opening stroke of the valve head seating part off the valve seat and for a first distance of movement of the valve head toward the channel outlet, the first throttling gap extending along the channel over at least 10% of the opening stroke length of the valve head, the flange cooperating with the first throttling gap to prevent substantial flow when the flange is adjacent the second wall part and forcing the valve head to a safe distance from the valve seat during developed flow thereby preventing valve noise during pulsating flow;

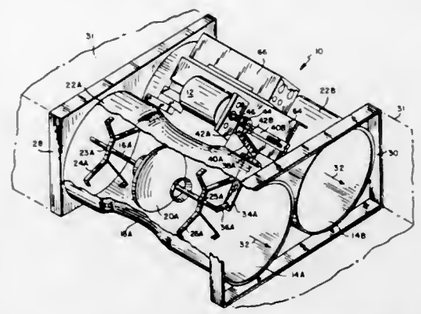
the wall having a third part downstream in the flow direction from the second part and placed to extend around the outer edge of the flange over a second part of the opening stroke of the flange and the valve head toward the outlet, the third part of the wall defining a second throttling gap between the peripheral edge of the flange and the wall, the second throttling gap having a gradually increasing cross section of flow area in the second part of the opening stroke of the valve head and the flange away from the valve seat toward the channel outlet.

5,251,665

MECHANISM FOR OPERATING MULTIPLE AIR FLOW CONTROL VALVES

Jerome J. Schaufeld, Framingham, Mass., assignor to Phoenix Controls Corporation, Newton, Mass.

Filed Jul. 20, 1992, Ser. No. 916,906
Int. Cl.[5] F16K *11/04*
U.S. Cl. 137—554 11 Claims



1. A mechanism for converting substantially linear movement of a valve actuator into predictable, proportioned, substantially linear movements of at least two air valve control shafts, the mechanism comprising:

a yoke attached to move with said valve actuator, said yoke having a leg for each valve, which leg extends generally in the direction of the corresponding valve control shaft;

a lever pivotably connected at one end to the corresponding valve control shaft and extending in at least one plane toward the corresponding yoke leg; and

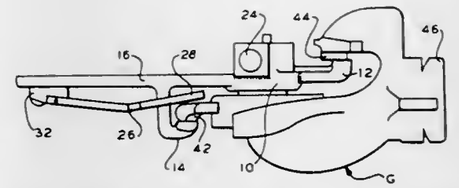
means for resolvably connecting the yoke leg for each valve to the extending end of the corresponding lever, each means for resolvably connecting including a link pivotably connected at one end to the yoke leg for the corresponding valve and at the other end to the extending end of the corresponding lever.

5,251,666

BRAKE HOSE COUPLING

Francis Kimball, Edison, N.J., and Michael W. Davis, Terre Haute, Ind., assignors to Strato Supply Co., Inc., Piscataway, N.J.

Filed Mar. 8, 1991, Ser. No. 666,368
Int. Cl.[5] F16K *37/00*; F16L *39/00*
U.S. Cl. 137—557 13 Claims



1. A brake hose coupling for coupling to a glad hand body having a primary port and a pair of primary flanges bordering and angularly spaced about said primary port, said coupling comprising:

a coupling body having a complementary port and a pair of complementary flanges, one of said flanges being larger than the other, said coupling body being adapted to rotate coaxially into engagement with said primary flanges of said glad hand body, said complementary flanges bordering and being angularly spaced about said complementary port, the larger one of said complementary flanges having a stalk terminating with a bearing surface; and

a lock comprising:

a) a latching member including a fork a pair of tines straddling said stalk, a first one of said tines extending alongside said stalk, said fork having an end distal from the tines and pivotally connected to said coupling body, said fork of said latching member mounted to reciprocate on said coupling body adjacent and transversely to one of said complementary flanges between a release and an engage position, and

b) a leaf spring bias means coupled between said coupling body and said fork to urge said fork into said engage position,

in said release position said second one of said tines having clearance to allow passage of a corresponding one of said primary flanges, in said engage position said second one of said tines blocking passage of said corresponding one of said primary flanges, so that said latching member is operable to lock said coupling body on said glad hand body.

5,251,667

THREE-WAY SOLENOID OPERATED CONTROL VALVE

Bernard L. Kunz, Madison County, Ill., and Randy L. Bomkamp, St. Louis County, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

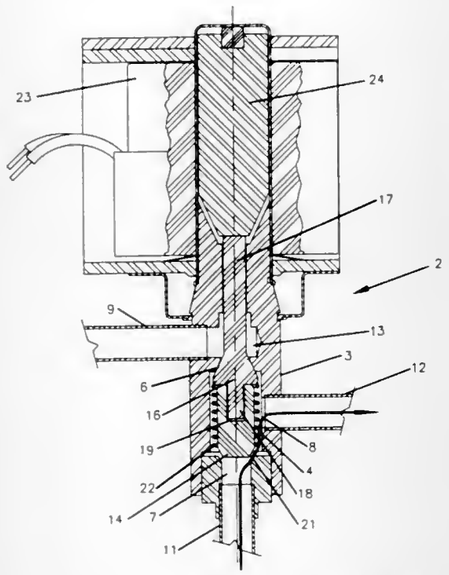
Filed Oct. 20, 1992, Ser. No. 963,804
Int. Cl.[5] F16K *11/14*
U.S. Cl. 137—607 12 Claims

12. A three-way fluid valve for a variable fluid system comprising: a housing member including a vertically extending ported chamber having three spaced ports, two ports of which are linearly and vertically aligned in spaced opposed relation at opposite ends of said vertically extending chamber to serve as first upper and second lower inlet ports with the third port extending horizontally from said chamber intermediate said

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spaced first and upper and second lower ports to serve as an outlet port;

first and second vertically aligned, lineally extending armature parts slidably disposed within said chamber, said first armature part including an integral upper valve lid positioned to nest with said first upper inlet port and having an integral actuating arm portion vertically and movably extending upwardly in said housing member outside said ported chamber and an integral nesting tail portion vertically extending downwardly within said chamber, said second armature part including an integral lower valve lid positioned at the lower extremity thereof to nest with said second lower inlet port and having a recess therein at the upper extremity thereof to nestingly receive said downwardly extending tail portion of said first armature part in slidable relation therewith so that said first and second armature parts within said ported chamber are in slidable, moveable relation with respect to each other to allow independent valve lid actions with respect to said relatively moveable first and second armature parts with said



first and second opposed inlet ports each tapering inwardly in a direction away from said ported chamber and with said upper and lower valve lids compatibly tapering to nest respectively with said upper and lower opposed inlet ports; a coil spring disposed within said ported chamber in surrounding relation to said second armature part and engaging with said first armature part to yieldingly urge said first armature part and the valve lid integral therewith into "closed" position with said upper inlet port; and, a solenoid coil and plunger assembly with said coil surrounding said plunger of said assembly and with said plunger extending vertically to abuttingly engage the upper extremity of said integral actuating arm portion arm of said first armature part which extends upwardly in said housing member outside said ported chamber to move said first armature part and said first valve lid into "open" position against said yielding coil spring; and pressure responsive control means to insure closing of both said inlet ports when the pressure in said outlet port exceeds either of the pressures in said inlet ports.

5,251,668

COUPLING SUITABLE FOR USE IN REFUELING LINES OR THE LIKE

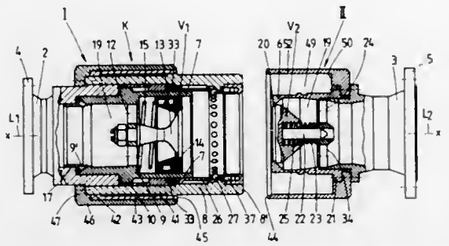
Henning D. Walther, Haan, Fed. Rep. of Germany, assignor to Carl Kurt Walther GmbH & Co. KG, Wuppertal, Fed. Rep. of Germany

Filed Sep. 27, 1991, Ser. No. 766,583

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1990, 4040077

Int. Cl.[5] F16K *31/122, 31/46*

U.S. Cl. 137—614.06 **8 Claims**



1. A coupling suitable for installation in fueling lines or the like including a feed line and a discharge line, the coupling including a first coupling half connected to the discharge line and a second coupling half connected to the feed line, the coupling having closure means which block the flow path of a fluid, the closure means being brought into a closed position as a function of displacement of the feed line relative to the discharge line;

wherein the coupling is a rapid-closure coupling comprising an ejector ram which is acted on by a pressure fluid due to the action of a sensor, the closure means includes a first shut-off valve disposed in said first coupling half, and a second shut-off valve disposed in said second coupling half;

said coupling further comprises a first annular piston coupled to said first shut-off valve and being slidable along said first coupling half under fluid pressure for opening and closing said closure means;

the ram, upon activation by the pressure fluid, provides for a separation of the two coupling halves from a junction of the two coupling halves, the junction having been established previously by a switching of control pressure, the first and the second shut-off valves being closed upon a switching of control pressure;

said second coupling half has an annular shoulder;

the ejector ram includes a second annular piston seated in said first coupling half and extending directly in front of the annular shoulder of the second coupling half; and

the shoulder is located approximately at the height of a parting line of the two coupling halves, and is aligned in extended final position with a free end of the first coupling half.

5,251,669

POWER STEERING VALVES

Arthur E. Bishop, Northwood NSW, Australia, assignor to A. E. Bishop & Associates Pty. Limited, New South Wales, Australia

Filed May 7, 1992, Ser. No. 879,381

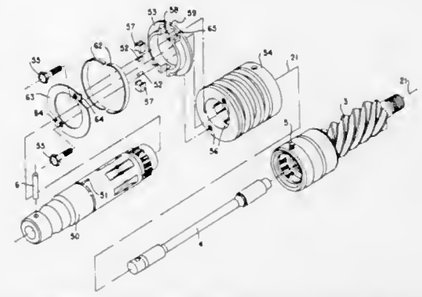
Claims priority, application Australia, May 24, 1991, PK6333

Int. Cl.[5] B62D *5/083*

U.S. Cl. 137—625.23 **13 Claims**

1. A rotary valve for a power steering gear comprising an input-shaft, a sleeve, a driven member and an entirely mechanically actuated centring mechanism, the centring mechanism comprising at least one rolling element, each of said at least one rolling element being disposed between a pair of opposed

notched elements, one notched element of each pair being rotationally fixed with respect to the input-shaft and the other notched element of each pair being rotationally fixed with respect to one of the sleeve and the driven member, each pair of opposed notched elements being urged together by spring means to trap one of the rolling elements between them, thereby producing a detent action between the input-shaft and one of the sleeve and driven member, whereby relative rotation occurs between the input-shaft and one of the sleeve and



driven member only upon application of an input torque exceeding a predetermined threshold, wherein, after the predetermined threshold input torque has been exceeded, each rolling element rolls between opposite surface contours of the pair of opposed notched elements, the contours each including a convex surface, the shape of which is such that a centring torque between the input-shaft and one of the sleeve and driven member is produced which decreases for increasing amounts of rotation away from a neutral condition of the rotary valve.

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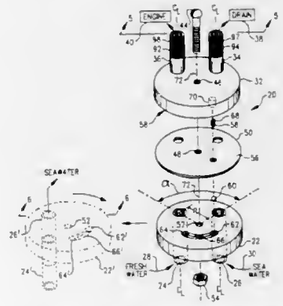
FLUSH VALVE

Lyle D. Bates, 16107 44th Ave. E., Tacoma, Wash. 98446

Filed Jun. 25, 1991, Ser. No. 721,085

Int. Cl.[5] F16K *11/074*

U.S. Cl. 137—625.46 **7 Claims**



1. A valve apparatus, said apparatus comprising:

(a) a first end portion having first and second inlet conduits, said end portion including a first engaging surface having a axis of rotation extending therethrough;

(b) a second end portion having first and second outlet conduits, said second end portion having a second engaging surface having an axis of rotation extending therethrough, wherein said first surface and second surface are rotatably secured together on said axis to allow said first end portion and said second end portion to be alternated between:

(i) a first, single fluid communication relationship wherein said first inlet conduit allows flow of a first fluid therethrough and thence to a first outlet conduit, and

(ii) a second, multiple fluid communication relationship wherein said first inlet conduit allows flow of said first fluid therethrough to a second outlet conduit and of a second fluid therethrough to said first outlet conduit, and

(c) sealing means between said first and said second engaging surfaces for preventing liquid from escaping through the gap therebetween.

5,251,671

PRESSURE CONTROL VALVE ASSEMBLY WITH FEATURE OF EASY ADJUSTMENT OF SET LOAD

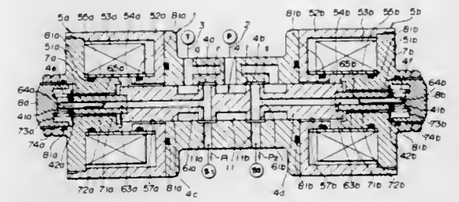
Kazuchika Hiroki, Kanagawa, Japan, assignor to Atsugi Unisia Corporation, Japan

Continuation of Ser. No. 609,745, Nov. 6, 1990, abandoned. This application Jul. 23, 1992, Ser. No. 918,807

Claims priority, application Japan, Nov. 7, 1989, 1-130069[U]

Int. Cl.[5] F15B *13/044*

U.S. Cl. 137—625.65 **10 Claims**



1. A pressure control valve assembly comprising:

a valve housing defining therein an axially extending valve bore, said valve housing having an inlet port in communication with a pressurized fluid source and said valve bore for introducing pressurized fluid from said pressurized fluid source into said valve bore, and an outlet port in communication with a load and said valve bore for feeding said pressurized fluid to said load;

a valve spool movably disposed within said valve bore for selectively establishing and blocking fluid communication between said valve bore and said outlet port and for adjusting output pressure according to the axial position thereof, said valve spool defining therein a feedback chamber in communication with said outlet port for introducing fluid pressure discharged from said outlet port;

an electromagnetic actuator, responsive to an electric control signal for driving said valve spool to cause axial movement of said valve spool from a neutral position to adjust the output pressure in response to said control signal;

a plunger, associated with said electromagnetic actuator, for causing axial movement of said valve spool, said plunger being formed integrally with said valve spool;

pilot piston means slidably disposed in said feedback chamber on an end of which the fluid pressure in said feedback chamber acts; and

mechanical set spring means including a spring and a spring force adjusting member, the spring serving to constantly exert a spring force on said plunger for biasing said valve spool and for positioning said valve spool at the neutral position, the spring force adjusting member being arranged to adjust the spring force of the spring exerted on the plunger and acting on said pilot piston means to restrict sliding motion of said pilot piston means in an active direction of the fluid pressure in said feedback chamber for providing a reaction force against said fluid pressure in said feedback chamber to act on said valve spool to be urged to a position where a balance between a actuation

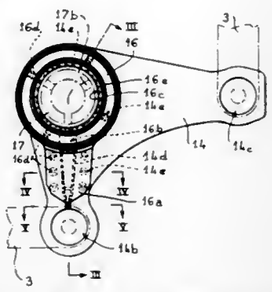
VOL 1155 ISS 2 OCT 12 1993 UMI

force of said electromagnetic actuator and the reaction force is established for determining the output pressure at said outlet port.

5,251,672
DRAWN LEVER LUBRICATION APPARATUS FOR A WEAVING MECHANISM

Jean P. Froment, Doussard, and André Fumex, Talloires, both of France, assignors to S.A. des Etablissements Staubli (France), Faverges, France

Filed Jul. 7, 1992, Ser. No. 910,712
Claims priority, application France, Jul. 15, 1991, 91 09116
Int. Cl.[5] D03C *13/00*
U.S. Cl. 139—82 **11 Claims**



1. In a drawing mechanism interposed between a weaving mechanism and heddle frames mounted on a weaving loom, and which includes connecting rods coupled to one another with rocking levers, the rocking levers including a center opening by way of which the levers are mounted by bearings to a pivot shaft, and at least one extension arm having an opening therein through which a connecting rod extends, the improvement comprising; at least one of the rocking levers having a lateral element including a principal portion which surrounds the pivot shaft center opening and between which lubricant is retained, and at least one lubricating conduit extending from said principal portion to said opening of said at least one extension arm.

5,251,673
WEFT SENSING IMAGING SYSTEM FOR WEAVING MACHINE

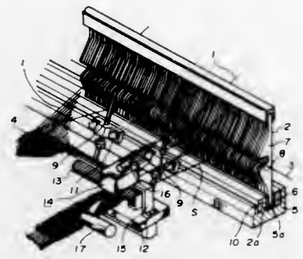
Masahiro Adachi; Keizo Shizuka, and Eiji Shigeyoshi, all of Tokyo, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 26, 1991, Ser. No. 813,679
Claims priority, application Japan, Dec. 28, 1990, 2-408880; Dec. 28, 1990, 2-409024
Int. Cl.[5] D03D *49/00, 51/34*
U.S. Cl. 139—370.1 **47 Claims**

1. A weft inserting and beating system for a weaving machine, comprising:

an image sensor for detecting a weft yarn at a predetermined position in said weft inserting and beating system;

means for aiming said image sensor at a weft insertion path of said weft inserting and beating system along which the weft yarn moves; and

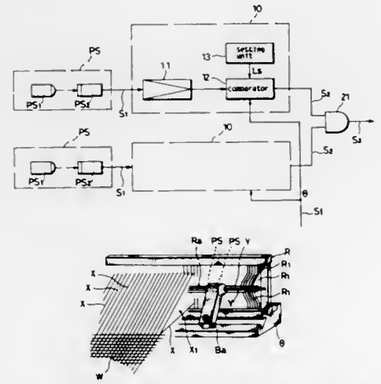


means for causing said image sensor to scan along a direction intersecting said weft insertion path.

5,251,674
WEFT FEELER DEVICE OF LOOM

Akira Nakano, Ishikawa, Japan, assignor to Tsudakoma Kogyo Kabushiki Kaisha, Kanazawa, Japan

Filed Jul. 17, 1991, Ser. No. 731,327
Claims priority, application Japan, Jul. 18, 1990, 2-190110
Int. Cl.[5] G01N *21/89;* **D03D** *51/34*
U.S. Cl. 139—370.2 **6 Claims**



1. A weft feeler device for detecting a success or a failure of an insertion of two wefts in a loom while weaving two wefts per one picking, the device comprising:

a plurality of photo-electrical sensors for sensing inserted wefts at a separate position respectively and providing a signal corresponding to the number of detected inserted wefts;

threshold setting means for setting an intermediate value between a first signal outputted from each of said photo-electrical sensors when one weft is detected and a second signal outputted from said photo-electrical sensor when two wefts are detected;

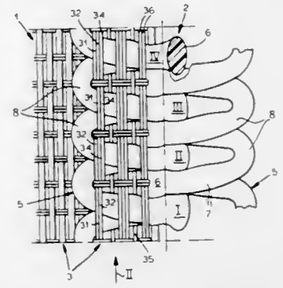
comparator means connected with each of said photo-electrical sensors and the threshold setting means for comparing the signals from each of said photo-electrical sensors with the intermediate value and then outputting discriminating signals when the signal from the photo-electrical sensors is less than the intermediate value; and

a gate circuit connected with the output of the comparator means for outputting a failure weft insertion signal which represents a non-presence of the two wefts when the comparator means output the discriminating signals.

5,251,675
SLIDE FASTENER WITH CONTINUOUS COUPLING COIL WOVEN INTO THE SUPPORT TAPE

Alfons Fröhlich, Essen, Fed. Rep. of Germany, assignor to Opti Patent-, Forschungs- und Fabrikations- AG, Riedern-Allmeind, Switzerland

Filed Jun. 5, 1992, Ser. No. 894,707
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1991, 4120030
Int. Cl.[5] D03D *13/00*
U.S. Cl. 139—384 B **11 Claims**



1. A woven-tape slide-fastener half with a plastic monofilament coupling row woven therein, comprising:

a woven tape having a multiplicity of double wefts interwoven with warps, the double wefts being formed by a continuous weft yarn defining in the tape a ground weft; and

a continuous plastic monofilament coupling row woven into said tape along a longitudinal edge thereof, said coupling row being comprised of coupling elements having:

spaced apart coupling heads formed by bends of the plastic monofilament,

a pair of shanks extending rearwardly from each of said heads as a monofilament double weft so that projections of each shank on a plane of the tape are substantially superimposed, and

respective connecting bights along a rear of the row connecting each of said shanks to a shank of an adjoining coupling element,

each of said pair of shanks overlying a double weft of said ground weft,

a further double weft of said ground weft being disposed between pairs of shanks of successive coupling elements without passing over said row,

the warps in a region of said row including a plurality of binding warp yarns passing in part over said elements,

the further double wefts being drawn up from said plane to a region of an upper shank of the respective pair by at least one of said binding warp yarns to form a bracing loop of said weft yarn between the pairs of shanks of said coupling elements,

said binding warp yarns including a first group comprised of a plurality of said binding warp yarns so interwoven in said tape as always to pass under double wefts of the ground weft, over at least two coupling elements of the row and then under a pair of shanks and the double weft of the ground weft underlying same,

said binding warp yarns including a second group comprised of at least one binding warp yarn in succession, passing over the double wefts of the ground weft between the coupling elements, and under a pair of shanks and the double weft of the ground weft underlying same, and

each pair of shanks and an underlying double weft of the ground weft beneath which a binding warp yarn of the first group passes also being underpassed by a binding warp yarn of the second group, the binding warp yarns of the first group having a binding warp yarn insertion ratio of substantially 1.25:1 to 1.35:1.

5,251,676
CLEANING TISSUE WITH A RAYON CUT PILE

Joe Yeh, Chiao, Taiwan, assignor to Antoinette LeFrancois, C.P., Beloeil, Canada

Filed Aug. 7, 1991, Ser. No. 741,726
Int. Cl.[5] D03D *27/02*
U.S. Cl. 139—402 **1 Claim**



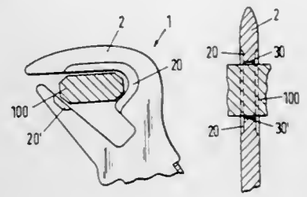
1. Tissue for cleaning or applying product comprising a textile material consisting of interwoven synthetic filaments defining warps and wefts, and a fluffy layer of a pile of rayon fixed to said textile material,

said pile having a base which is curved around said warps and wefts of said textile material and being shaved to define a uniform surface, the length of said pile being between 0.2 and 1.0 centimeter, the textile material comprising a polyester filament.

5,251,677
PICKING DEVICE IN PROJECTILE LOOMS

Peter Riesen, Elgg, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Aug. 31, 1992, Ser. No. 937,931
Claims priority, application Switzerland, Sep. 18, 1991, 2760/91
Int. Cl.[5] D03D *49/26*
U.S. Cl. 139—439 **12 Claims**



1. A picking device in projectile looms for supporting and/or guiding picking projectiles comprising:

guide teeth including spaced apart, first and second side surfaces which are adapted to contact warp yarns, guide surfaces adapted to contact the picking projectiles and being oriented transverse to the side surfaces, and first and second narrowing zones extending from the guide surface towards the first and second side surfaces, which are adapted to receive lubricant transferred from the projectiles to the guide teeth, and at least the first narrowing zone being formed by rounded inside edges extending from the guide surface toward the first side surface.

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5,251,678

DEVICE FOR FORMING COILS FOR WINDINGS FOR DYNAMO-ELECTRIC MACHINES

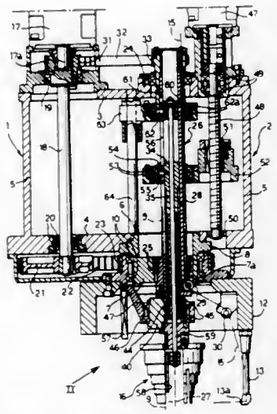
Roberto Orecchia, Riva Presso Chieri, Italy, assignor to Axis S.p.A., Val Di Pesa, Italy

Filed Jan. 13, 1992, Ser. No. 819,818

Claims priority, application Italy, Mar. 13, 1991, TO91-1A000181

Int. Cl.[5] B21F *03/04*

U.S. Cl. 140—92.1 **8 Claims**



1. A device for forming coils for winds for dynamo-electric machines, including:

a form on which a coil is to be wound,

a head for winding the coil on the form,

a fixed support structure which supports the head for rotation around the form,

means for rotating the winding head,

a shaft which is mounted on the fixed support structure so as to be rotatable concentric with an axis parallel to the axis of rotation of the winding head and has means for guiding a winding wire towards the winding head, the form being mounted on the shaft so that it can rotate freely concentric with the axis thereof,

means for rotating the shaft in synchronism with the winding head, and

means for preventing the rotation of the form, wherein the winding head and the shaft of the device rotate about separate, laterally spaced axes, and the means for preventing the rotation of the form include a member which supports the form and can rotate freely relative to the shaft about the axis thereof and also relative to the winding head about the axis of rotation thereof.

5,251,679

APPARATUS FOR SHAPING OUTBOARD TERMINALS OF SURFACE-MOUNTABLE CIRCUIT MODULES

Matthias Schweizer, Igenhausen, Fed. Rep. of Germany, assignor to Siemens Nixdorf Informationssysteme AG, Fed. Rep. of Germany

Filed Jun. 8, 1992, Ser. No. 894,253

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1991, 4121108

Int. Cl.[5] B21F *1/00;* **B23P** *23/00*

U.S. Cl. 140—105 **1 Claim**

1. An apparatus for shaping outboard terminals of a surface-mountable integrated component applied to a carrier having the terminals extending to the component, comprising:

an automatic slotting unit for cutting slots in the carrier thereby forming retaining webs;

an automatic cutting and bending tool including:

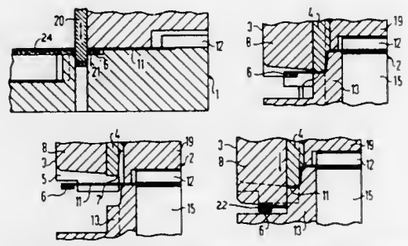
four bending dies rigidly joined to one another and arranged in a quadrangle, lower die faces being shaped to a desired shape of the terminals,

cutting dies joined to said four bending dies as horizontal extensions of sides of said quadrangle, said cutting dies extending below a lower edge of said four bending dies to separate the retaining webs from one another;

a pneumatic cylinder for driving said cutting and bending tool in a vertical direction;

four trimming dies positioned immediately adjacent said four bending dies and being vertically movable relative to said four bending dies;

a lower bending part being a hollow rectangular column arranged below said cutting and bending tool, upper edges of said lower bending part being shaped to correspond to



a desired shape of the terminals and adapted to a shape of said four bending dies;

a supporting element having a surface adapted to a shape of the component and being vertically displaceable in a cavity of said hollow rectangular column of said lower bending part;

stop sections at four corners of said lower bending part at a predetermined distance below said upper edges of said lower bending part for abutment with said cutting and bending tool to limit a vertical stroke of said cutting and bending tool; and

module hold-down means in an interior of said four bending dies for holding the terminals of the component on said lower bending part.

5,251,680

COLLISON-PREVENTING APPARATUS FOR ELECTRIC MOTOR VEHICLE

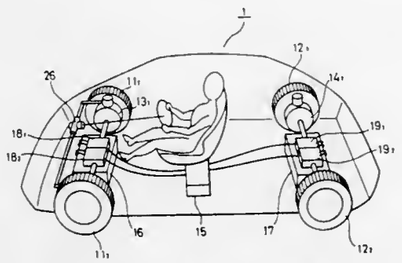
Yukihiro Minezawa; Mutsumi Kawamoto, both of Tokyo, and Hidemitsu Inagaki, Nishio, all of Japan, assignors to Aisin AW Co., Ltd., Japan

Filed Aug. 8, 1991, Ser. No. 741,949

Claims priority, application Japan, Aug. 8, 1990, 2-209483

Int. Cl.[5] B60K *31/00*

U.S. Cl. 180—169 **11 Claims**



1. A collision-preventing apparatus for an electric motor vehicle in which at least one wheel is driven by an electric motor, said apparatus comprising:

an obstacle sensor for detecting the presence of an obstacle and for generating signals indicative of the distance between the vehicle and a detected obstacle;

a control unit including:

a first map of speeds of the vehicle relative to the obstacle correlated with distances, said first map being divided into safe and unsafe areas;

a second map of steering angles correlated with distances, said second map being divided into safe and unsafe areas;

calculating means for calculating the speed of the vehicle relative to the detected obstacle on the basis of said signals received from said obstacle sensor;

first determining mans for determining if the calculated relative speed and distance fall within said unsafe area of said first map;

second determining means for determining if said sensed steering angle and distance fall within said unsafe area of said second map; and

brake signal generating means for generating a brake actuation signal if within said unsafe area both of said first map and said second map; and

braking means for braking said electric motor responsive to said brake actuation signal.

5,251,681

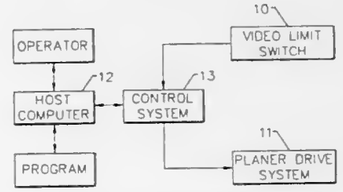
METHOD AND APPARATUS FOR OPTIMIZING PLANER MILL OUTPUT

David K. Davenport, Dover, N.C., assignor to Newman-Whitney, Greensboro, N.C.

Filed Jun. 5, 1992, Ser. No. 894,449

Int. Cl.[5] B27C *1/14;* **B27B** *1/00;* **G06F** *15/20*

U.S. Cl. 144—356 **20 Claims**



1. A method of optimizing the output production of a woodworking tool in a production lien of the type in which individual boards are sequentially handled by different tools that typically operate at different speeds, the method comprising:

selecting a target rate of board treatment by the woodworking tool;

measuring the difference between the actual rate of board treatment by the woodworking tool and the selected target rate;

calculating the tool speed required to reduce the difference between the target rate nd the actual rate to zero; and

periodically adjusting the tool speed of the woodworking tool based on the calculated speed required to reduce the difference to zero.

5,251,682

CAST DISK AND METHOD OF MANUFACTURING THE SAME

Roger T. Cline; George B. Day, both of Mason County, and Wilford R. Shaw, Lewis County, all of Ky., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 27, 1992, Ser. No. 873,775

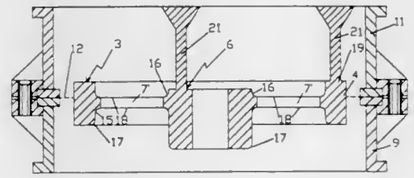
Int. Cl.[5] B22D *31/00, 25/00*

U.S. Cl. 164—76.1 **10 Claims**

1. A method of forming with minimal balancing operations a finished cast uniform throughout power rotatable motion transmission disk including a spaced peripheral rim shaped to provide at least one rotatable motion transmission unit and hub integrally joined by a radially extending body portion consisting of;

forming a first mold contoured to solely form only a uniform major portion of said rotatable motion transmission disk including major portions of said peripheral rim and hub and the completed entirety of said radial extending body portion extending between said major portions of said peripheral rim and said tub so that a major portion of a rotatable disk formed thereby is balanced without necessitating further finishing and balancing; said first mold including passageways to conduct fluid material to be cast to said first mold contoured major disk portion;

forming a mating second mold contoured to form the remaining minor portion of said disk including the remaining minor portions of said rim and hub with a parting plane so positioned to be coincident with the adjacent face of said complete entire body portion when said first and



second molds are positioned in faced casting relation, said second mold including passageways to conduct fluid material to be cast to said second mold contoured positions

said molds being contoured to include preselectively chamfered and draft release areas and preselectively material reinforcing areas;

placing said first and second contoured molds in faced molding position;

passing a fluid medium through said passageways in said first and second contoured molds to cast said disk;

separating said first and second molds along said parting plane and removing said cast disk;

rotatably chucking and squaring only said major balanced portion of said cast disk formed in said first mold; and,

machine index finishing preselected areas of the minor portion of said cast disk formed in said second mold to produce a balanced, finished and usable product.

5,251,683

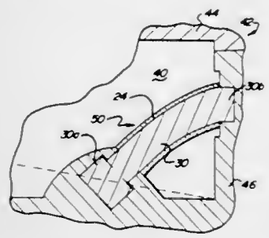
METHOD OF MAKING A CYLINDER HEAD OR OTHER ARTICLE WITH CAST IN-SITU CERAMIC TUBES

Gerald P. Backer, Southfield, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 11, 1991, Ser. No. 667,922

Int. Cl.[5] B22D *19/00*

U.S. Cl. 164—98 **13 Claims**



1. A method of making a cast iron article comprising a tubular passage with a cast-in place ceramic tube lining the passage, comprising:

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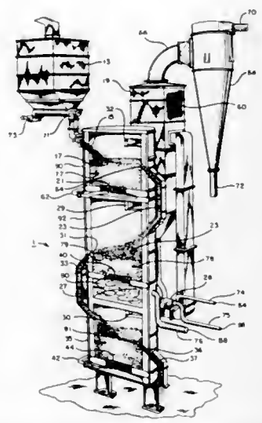
(a) forming a removable core in the ceramic tube of a core material having a thermal expansion coefficient not exceeding about 10 times the thermal expansion coefficient of the ceramic tube so as to minimize cracking of the ceramic tube from differential thermal expansion-induced tensile stresses when molten iron is cast about the ceramic tube,
(b) casting molten iron about the cored ceramic tube positioned in an article-shaped mold cavity to form a solidified, cast article with the ceramic tube cast in-situ therein,
(c) subjecting the cast iron article and ceramic tube to an elevated temperature stress-relieving treatment before the cast iron article cools below about 500° F., and
(d) removing the core from the cast in-situ ceramic tube.

5,251,684

METHOD FOR CONTROLLING THE OXIDATION AND CALCINATION OF WASTE FOUNDRY SANDS

Robert S. L. Andrews, and Gerald J. Reier, both of Fort Worth, Tex., assignors to GMD Engineered Systems, Inc., Fort Worth, Tex.

Filed Dec. 6, 1991, Ser. No. 803,047
Int. Cl.[5] B22C *5/00*
U.S. Cl. 164—456 9 Claims



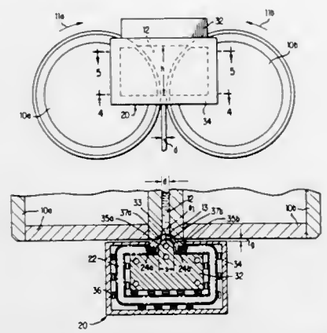
1. A method for controlling the oxidation and calcination of waste foundry sands during a thermal reclamation process, the waste foundry sands having binders with a fuel content adhering thereto, the method comprising the steps of:
passing the waste sands to a calcining chamber having a top, a floor and connecting sidewalls, the floor of the calcining chamber being provided with a plurality of vents the calcining chamber also being connected to a separate firebox capable of producing fluidizing hot gases for fluidizing the waste sands within the calcining chamber and forming a fluidized sand bed, the fluidizing hot gases being introduced to the calcining chamber by means of the floor vents;
producing fluidizing hot gases by combustion means in the firebox, wherein the combustion means includes a burner, a source of primary combustion air for the burner and a source of secondary combustion air for the firebox;
generating a first signal with a first signal generating means, wherein the first signal is representative of the temperature of the waste sands within the fluidized sand bed;
generating a second signal with a second signal generating means, wherein the second signal is representative of the volume of available free oxygen in the fluidizing hot gases within the firebox, leaving the firebox and entering the calcining chamber through the floor vents; and
using control means to precisely control the temperature of the waste sand s within the fluidized sand bed with respect to a preselected set point, wherein the control means follows a temperature control method comprising the steps of:
analyzing the first and second signals generated by the first and second signal generating means,
comparing the analyzed first and second signals with the preselected set point and
adjusting the rate of waste sand feed to the calcining chamber and the quantity of supplementary fuel combusted in the firebox based on the comparison of the first and second signals with the preselected set point.

5,251,685

APPARATUS AND METHOD FOR SIDEWALL CONTAINMENT OF MOLTEN METAL WITH HORIZONTAL ALTERNATING MAGNETIC FIELDS

Walter F. Praeg, Palos Park, Ill., assignor to Inland Steel Company, Chicago, Ill.

Filed Aug. 5, 1992, Ser. No. 926,166
Int. Cl.[5] B22D *27/02, 11/06*
U.S. Cl. 164—467 65 Claims



1. A magnetic confining apparatus for preventing the escape of molten metal through an open side of a vertically extending gap between two horizontally spaced members and between which said molten metal is located, said apparatus comprising:
magnetic core means;
electrically conductive coil means operatively associated with said magnetic core means;
said magnetic core means comprising a pair of horizontally disposed, spaced, magnet poles disposed adjacent the open side of said gap for generating a mainly horizontal magnetic field which extends through the open side of said gap to said molten metal;
said magnet poles being sufficiently proximate to said open side of the gap so that said generated horizontal magnetic field has a strength sufficient to exert a confining pressure against the molten metal in the gap; and
an inner, non-magnetic, electrically conductive shield means disposed between the magnet poles adjacent to the open side of the gap, and shaped to confine the horizontal magnetic field through the gap substantially to the molten metal.

59. A magnetic confining method for preventing the escape of molten metal through the open side of a vertically extending gap between two horizontally spaced members and between which said molten metal is located, said method comprising the steps of:
disposing a pair of spaced, cooperating magnet poles adjacent to the open side of said gap;
generating, at a location adjacent the open side of said gap, a horizontal magnetic field which extends through the open side of said gap to said molten metal from said pair of spaced magnet poles;
generating said horizontal magnetic field sufficiently proximate to said open side of the gap so that said horizontal magnetic field has a strength sufficient to exert a confining pressure against the molten metal in said gap; and
confining said magnetic field to said open side of the gap by disposing a shaped inner non-magnetic conductor between the magnet poles and adjacent to said gap.

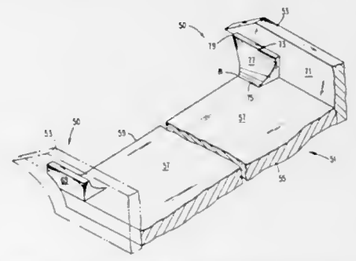
64. A magnetic confining method for preventing the escape of molten metal through an open side of a vertically extending gap between two horizontally spaced non-magnetic conductive members and between which said molten metal is located, said method comprising the steps of:
disposing a pair of spaced, cooperating magnet poles adjacent to the open side of the gap and set back from non-magnetic edges of the horizontally spaced conductive members and having a wider spacing than the spacing of the edges of the conductive members, and generating, at a location adjacent the open side of said gap, a magnetic field that is larger than required for sidewall containment of the molten metal while limiting the amount of push back of the molten metal by the magnetic flux shielding effect of the conductive members, and disposing an inner, non-magnetic, electrically conductive shield means between the magnetic poles adjacent to the open side of the gap.

5,251,686

TUNDISH OUTLET EDGE SEAL AND RISER FOR CONTINUOUS CASTING APPARATUS AND METHOD

James C. Key, Garland County, Ark., assignor to Reynolds Metals Company, Richmond, Va.

Filed Oct. 13, 1992, Ser. No. 959,855
Int. Cl.[5] B22D *11/10, 11/06*
U.S. Cl. 164—479 16 Claims



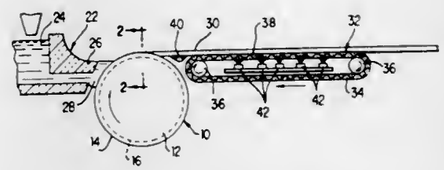
1. A method of producing a continuously cast metal strip having a uniform cross-sectional profile comprising the steps of:
a) providing a tundish having molten metal therein, said tundish including a tundish floor having an outlet lip and being disposed between a pair of sidewalls, a portion of said sidewalls extending beyond said outlet lip;
b) providing a moving chill surface adjacent said outlet lip, said moving chill surface and a bottom face of each said portion of each said sidewall forming a gap therebetween;
c) flowing said molten metal from said tundish onto said moving chill surface;
d) forming a meniscus of molten metal extending beyond said outlet lip, said meniscus adjacent to and spaced from each said gap to substantially prevent molten metal flow through said gaps;
e) withdrawing a strip of metal from said moving chill surface; and
f) recovering said strip of metal.

5,251,687

CASTING OF METAL STRIP

Sankaranarayanan Ashok, Bethany, and Harvey P. Cheskis, North Haven, both of Conn., assignors to Olin Corporation, Cheshire, Conn.

Continuation of Ser. No. 753,538, Sep. 3, 1991, abandoned. This application Jan. 4, 1993, Ser. No. 528
Int. Cl.[5] B22D *11/06, 11/124*
U.S. Cl. 164—479 6 Claims



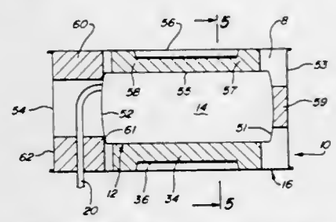
1. A process for casting metal comprising:
a. providing a source of molten metal,
b. passing a moving substrate through a position relative to said source of metal to receive a molten metal strip deposit thereon,
c. depositing a stream of molten metal from the source as a molten metal strip deposit onto the moving substrate at the position,
d. cooling a bottom and side of the molten strip deposit, while on the moving substrate, sufficiently to preliminarily solidify just the outer portion of the bottom and side to form a tray like shell of enough strength to contain the molten remainder of the molten strip deposit without side support and without full bottom support, and
e. removing said strip from said moving substrate, after the preliminary solidification,
f. transferring the partially solidified strip onto an open mesh moving support while the strip has a solidified lower surface and a liquid upper surface, and
g. supporting the partially solidified strip on the moving mesh support while cooling the strip to further solidification, whereby the size of the moving substrate can be minimized to make the casting process more economical without sacrificing metal quality.

5,251,688

VACUUM INSULATING STRUCTURE SUITABLE FOR THE TRANSMISSION OF THRUST FORCES, MORE PARTICULARLY FOR HEAT STORAGE MEANS IN MOTOR VEHICLES

Oskar Schatz, Waldpromenade 16, D-W-8035 Gauting, Fed. Rep. of Germany

Filed Jun. 12, 1991, Ser. No. 713,888
Int. Cl.[5] F28D *20/00*
U.S. Cl. 165—10 17 Claims



1. A vacuum thermal insulation structure suitable for the transmission of thrust forces and more particularly for heat storage means in motor vehicles, comprising an inner container and an outer container and an evacuated insulating zone between the containers and a load-bearing brace member of pore-forming insulating material extending between the two

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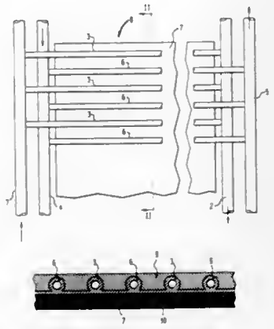
containers and substantially fully surrounding the inner container, wherein the load-bearing, pore-forming insulating material in the insulating zone is arranged as the sole brace material, at least in the zones with a need to be supported, continuously, the mass density of the insulating material is so reduced that it is just sufficient to take up the thrust forces to be transmitted and the gas pressure is reduced in accordance with the desired insulating effect.

5,251,689

ROLLABLE HEAT EXCHANGER

Parviz Hakim-Elahi, Wilhelmsburg, Austria, assignor to Solkav Solartechnik Gesellschaft m.b.H., Wilhelmsburg, Austria

Filed Jan. 7, 1991, Ser. No. 638,499
Claims priority, application Austria, Jan. 5, 1990, A22/90
Int. Cl.[5] F28F *3/12*
U.S. Cl. 165—46 **7 Claims**



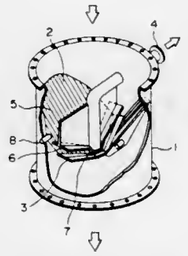
1. A rollable heat exchanger comprising:
flexible passageway means, including parallel flexible passageways for circulation of a fluid;
elastic connecting means including webs for continuously linking adjacent parallel passageways over a substantial portion thereof;
said webs and said flexible parallel passageways defining a flat surface on a passageway - distant side of said connecting means and a corrugated surface on a passageway - near side of said connecting means wherein said flexible parallel passage ways define crests of said corrugated surface;
a filler formed as a separate layer which is attached to said passageway-near side of said connecting means for embedding said passageway means, said filler being made of flexible, elastic heat conducting material for allowing the unimpeded rolling up of the heat exchanger and for selective use of the heat exchanger for covering a surface and for bridging hollow spaces for use as a sports ground and recreational surface; and
an insulator of heat insulating material and formed as a further separate layer for insulating said passageway means, said insulator having an inner flat surface attached to said passageway-distant side of said connecting means in opposition to said filler.

5,251,690

APPARATUS FOR COLLECTING CLEANING BODIES FOR TUBULAR HEAT EXCHANGER

Katsumoto Otake; Yoshio Sumiya, both of Hitachi; Yasuo Fujitani, Ibaraki; Shigeo Oda, Hitachi; Tokunori Matsushima, Ibaraki; Takuya Sasaki; Keizo Isbida, both of Hitachi; Hideki Kon; Hiroshi Satoh, both of Yokosuka; Toshibiko Kaneko, and Makoto Yanagihara, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Machinery and Engineering, Ltd., Kanagawa, both of Japan

Filed May 14, 1991, Ser. No. 699,608
Claims priority, application Japan, May 14, 1990, 2-121161; Mar. 20, 1991, 3-057067
Int. Cl.[5] F28G *1/12*
U.S. Cl. 165—95 **11 Claims**



1. An apparatus for collecting cleaning bodies from a flow stream of a tubular heat exchanger, comprising:
a cleaning body guide having an inlet and an outlet;
a collection lattice means including an upstream end facing said inlet and a donwstream end facing said outlet, said collection lattice means being V-shaped such that a lattice of the collection lattice means converges from said upstream end to said downstream end;
a cleaning body discharge means for removing the cleaning bodies trapped by said collection lattice means from said cleaning body guide, said cleaning body discharge means including an open end facing said outlet and a pipe section extending upstream from said open end within said collection lattice means;
a flow rectifying means dividing the flow stream passing through said collection lattice means and rectifying disturbances in said flow stream to reduce stagnation adjacent to said collection lattice means, said flow rectifying means being fixed to said pipe section of said cleaning body discharge means; and
a guide means fixed to said open end of said cleaning body discharge means for guiding the cleaning bodies collection on said collection lattice means to said open end.

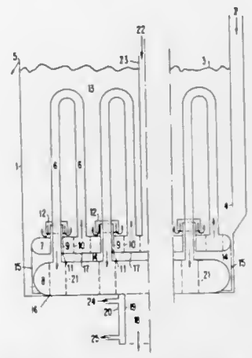
5,251,691

DEVICE FOR THE INDIRECT HEATING OF AIR

Per Collin, Orrspelsuägen 4, S-182 75 Stocksund, and Mans Collin, Telegrafgatan 33, S-149 00 Nynäshamn, both of Sweden

PCT No. PCT/SE90/00452, § 371 Date Jan. 23, 1992, § 102(e) Date Jan. 23, 1992, PCT Pub. No. WO90/15963, PCT Pub. Date Dec. 27, 1990
PCT Filed Jun. 21, 1990, Ser. No. 820,626
Int. Cl.[5] F28C *3/16*; F23D *1/00*
U.S. Cl. 165—104.16 **20 Claims**

1. A device for indirect heating of air or other gases of high pressure to high temperature particularly suitable for large flows, comprising a heat exchanger of special design submerged in a fluidized bed of "classical" type, through which finely comminuted bed material is flowing, which bed material, as an example, has been heated by combustion of coal in mixture with the bed material, wherein:
a) the fluidized bed is maintained in a chamber which is supplied with hot bed material below the bed surface and from which chamber the bed material flows over a weir;
b) the heat exchanger surface consists of an adapted number of hairpin bent tubes with vertical downward pointing legs of different length opening into and fastened to separate disc shaped pressure chambers—an upper inlet chamber and an outlet chamber situated just below—each with plane parallel horizontal walls fortified between themselves by fortifying elements and sides with half circular section, whereby the short leg of the hairpin tubes opens into the upper horizontal wall of the inlet chamber while the long leg extends down through a tube shaped conduit between the horizontal walls of the inlet chamber and



opens into the upper horizontal wall of the outlet chamber;
c) the tube shaped conduit of the inlet chamber is fastened between the horizontal walls of the chamber concentrically with the long leg of the hairpin bent tube extending therethrough and has such length, that it extends above the upper horizontal wall of the inlet chamber and has such inner diameter, that an annular channel with adapted width is formed between the tube leg and the conduit;
d) a bubblecap is fastened on every long leg at an adapted level above the upper end of the conduit, thereby together with the annular channel forming a suitable distributor of bubblecap type for the fluidizing air of the bed in which the heat exchanger is submerged.

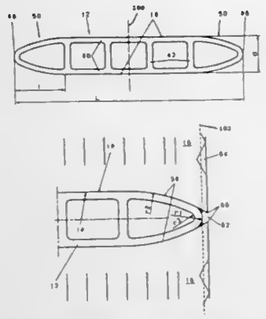
5,251,692

FLAT TUBE HEAT EXCHANGER, METHOD OF MAKING THE SAME AND FLAT TUBES FOR THE HEAT EXCHANGER

Roland Haussmann, Wiesloch, Fed. Rep. of Germany, assignor to Thermal-Werke Wärme-, Kälte-, Klimatechnik GmbH, Hockenheim, Fed. Rep. of Germany

Filed Jun. 22, 1992, Ser. No. 902,230
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1991, 4120442; Jan. 23, 1992, 4201791
Int. Cl.[5] F28D *1/04*
U.S. Cl. 165—152 **20 Claims**

1. A flat tube heat exchanger, comprising:
a plurality of flat tubes, each flat tube having a pair of flat sides and a pair of rounded short sides which connect the flat sides, each flat tube extending in a longitudinal direction when seen in a perpendicular cross-section, each rounded short side of a flat tube extending a longitudinal extension distance in the longitudinal direction of the respective flat tube, the longitudinal extension distance being greater than half the distance between the outer surfaces of the flat sides of the respective flat tube; and
zigzag fins internested in a sandwich-like fashion between the flat tubes, each zigzag fin being bonded to a flat side of at least one flat tube and to portions of both rounded short sides of the respective at least one flat tube,



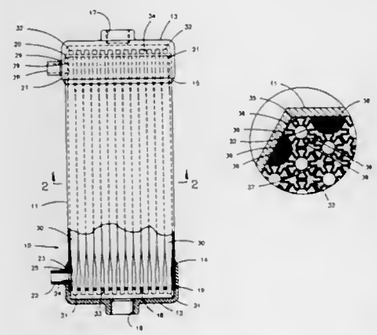
wherein each rounded short side has an apex with an internal radius of at least 0.2 mm and an external radius of at least 0.6 mm.

5,251,693

TUBE-IN-SHELL HEAT EXCHANGER WITH LINEARLY CORRUGATED TUBING

Lothar R. Zifferer, P.O. Box 20688, Waco, Tex. 76702-0668

Filed Oct. 19, 1992, Ser. No. 962,661
Int. Cl.[5] F28D *7/00*
U.S. Cl. 165—160 **29 Claims**



1. A tube-in-shell heat exchange apparatus for passing two fluids in countercurrent linear heat exchange comprising
a tubular shell closed on opposite ends,
a pair of tube plates positioned at the ends of said shell and defining inlet and outlet headers at said tubular shell closed ends,
said closed ends having an inlet opening in one and an outlet opening in the other opening into the respective inlet and outlet headers,
each of said tube plates having a plurality of openings spaced in a predetermined manner,
a plurality of heat exchange tubes, one for each of said tube plate openings, of a size substantially larger than said tube plate openings and having opposite end portions reduced in diameter and correspondingly increased in wall thickness fitted and sealed in said tube plate openings,
said tubes each having the portion intermediate said reduced end portions linearly corrugated to provide a plurality of equally spaced deep corrugations extending in a straight line parallel to the axis of said tubes, and
said shell having an inlet opening at one end and an outlet

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opening at the other end inside the space between said tube plates,

whereby one fluid may be passed from said closed end inlet through said linearly corrugated tubes and out through the said closed end outlet, and

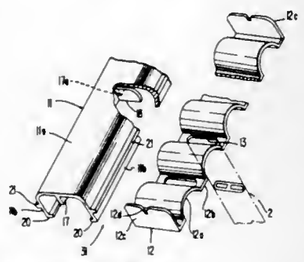
another fluid may be passed through said shell inlet and the space between said linearly corrugated tubes and out through said shell outlet.

5,251,694

HEAT EXCHANGER

Hitoshi Chigira, Gunma, Japan, assignor to Sanden Corporation, Gunma, Japan

Filed Jul. 2, 1991, Ser. No. 724,905
Claims priority, application Japan, Jul. 2, 1990, 2-172648
Int. Cl.[5] F28F *9/02*
U.S. Cl. 165—173 13 Claims



10. A heat exchanger comprising:

a first header pipe including a plurality of elongate holes;

a second header pipe comprising a U-shaped wall and a front wall connected thereto to define a hollow portion, said front wall comprising a plurality of arc-shaped portions and a plurality of elongate holes, said arc-shaped portions extending toward said U-shaped wall;

a plurality of fluid tubes disposed between said header pipes in fluid communication therewith via said elongate holes; and

a plurality of corrugated fin disposed between opposed outer surfaces of said fluid tubes.

5,251,695

TUBING CONNECTOR

Martin P. Coronado, Houston, Tex., assignor to Baker Hughes Incorporated, Houston, Tex.

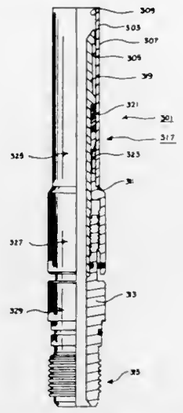
Filed Jan. 13, 1992, Ser. No. 820,158
Int. Cl.[5] E21B *17/043;* F16L *21/04*
U.S. Cl. 166—242 21 Claims

1. A connector for coupling a tubular member to a selected apparatus, said tubular member having inner and outer surfaces, and terminating at an end, said inner surface at least in-part defining a central bore, comprising:

a central body having first and second ends;

a linkage member disposed at said first end of said central body for connecting said central body to said selected apparatus;

a tubing coupler disposed at said second end of said central body, operable in an insertion mode of operation in a radially-reduced position for insertion at said end into said central bore of said tubular member, and a coupling mode of operatin in a radially-expanded position for grippingly



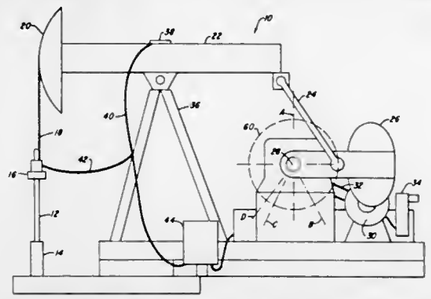
and sealingly engaging said inner surface of said tubular member.

5,251,696

METHOD AND APPARATUS FOR VARIABLE SPEED CONTROL OF OIL WELL PUMPING UNITS

James R. Boone, 510 B Ave. J. East, Grand Prairie, Tex. 75050; Larry D. Best, Rte. 3, Box 317, Springtown, Tex. 76082; Ronnie D. Brown, 6808 Shadydale, North Richland Hills, Tex. 76180, and Hugh A. Brooks, 3410 Faulkner Drive, Rowlett, Tex. 75088

Filed Apr. 6, 1992, Ser. No. 863,838
Int. Cl.[5] E21B *43/12;* F04B *49/00, 49/06*
U.S. Cl. 166—250 9 Claims



1. A method of variable speed control of the operation of an oil well pumping unit wherein variations in oil viscosity may be efficiently accommodated, said method comprising the steps of:

detecting variations in position of said oil well pumping unit during operation thereof;

detecting load variations within said oil well pumping unit at selected positions during operation thereof; and

variably adjusting the speed of operation of said oil well pumping unit in response to said load variations within said oil well pumping unit wherein variations in oil viscosity may be efficiently accommodated.

3. A variable speed control for controlling the operation of an oil well pumping unit powered by a motor, said variable speed control comprising:

position detection means for detecting variations in position of said oil well pumping unit during operation thereof;

load detection means for detecting variations in load which occur within said oil well pumping unit;

variable coupling means for variably coupling said oil pumping well unit to said motor; and

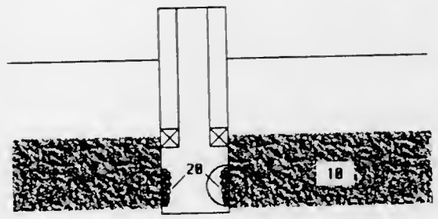
control means coupled to said load detection means, said position detection means and said variable coupling means for selectively varying said coupling between said oil well pumping unit and said motor in response to variations in load which occur within said oil well pumping unit at selected positions during operation thereof.

5,251,697

METHOD OF PREVENTING IN-DEPTH FORMATION DAMAGE DURING INJECTION OF WATER INTO A FORMATION

Patrick J. Shuler, Yorba Linda, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.

Filed Mar. 25, 1992, Ser. No. 857,148
Int. Cl.[5] E21B *43/02, 43/20*
U.S. Cl. 166—268 5 Claims



1. A method of preventing in-depth formation damage during injection of water into an injection well within a formation comprising adding to said water non-compressible solids of sufficient size and concentration to form a permeable external filter cake within the injection well.

5,251,698

METHOD OF USING LIGNOSULFONATE-ACRYLIC ACID GRAFT COPOLYMERS AS SACRIFICIAL AGENTS FOR SURFACTANT FLOODING

George Kalfoglou, and Grover S. Paulett, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 23, 1992, Ser. No. 903,114
Int. Cl.[5] E21B *43/22*
U.S. Cl. 166—274 9 Claims

1. A method of recovering hydrocarbons from a subterranean hydrocarbon formation which is penetrated by at least one injection well and at least one production well wherein a surfactant system is injected into the formation to sweep oil through the formation to at least one production well, which comprises:

injecting into the formation a solution containing about 0.02% to about 5% by weight of a sacrificial agent designed to prevent the loss to the formation of chemicals in an injected surfactant system,

said sacrificial agent comprising a lignosulfonate-acrylic acid graft copolymer having about 2% to about 70% by weight of acrylic acid; and

injecting into the formation a surfactant system to sweep hydrocarbons to a production well for recovery.

5,251,699

LOW-VISCOSITY GRAVEL PACKING PROCESS

Hon C. Lau, and Louis A. Bernardi, Jr., both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed May 26, 1992, Ser. No. 888,092
Int. Cl.[5] E21B *43/04*
U.S. Cl. 166—278 16 Claims

1. A process to provide a gravel packed section of a wellbore comprising the steps of:

a) perforating the section of the wellbore;

b) inserting a gravel packing tool and a screen into the section of the wellbore;

c) injecting into the section of the wellbore surrounding the screen a gravel pack slurry comprising a carrier fluid, a thickener in an amount sufficient to impart a viscosity to the carrier fluid of between about two and about ten centipoise at a shear rate of about 100 sec^{-1} at the temperature of the wellbore, and between about one-half and about five pounds of gravel pack sand per gallon of carrier fluid; and

d) returning through the screen about 20 to about 85 percent of the carrier fluid and thereby leaving a gravel packed wellbore and perforations surrounding the screen.

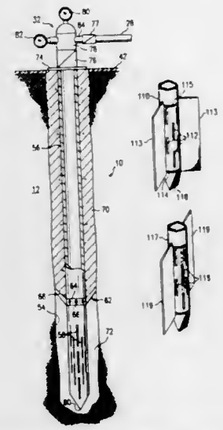
11. A gravel pack slurry comprising a carrier fluid; a thickener in an amount sufficient to impart a viscosity to the carrier fluid of between about two and about ten centipoise at a shear rate of about 100 sec^{-} at the temperature of the wellbore; and between about one-half and about five pounds of gravel pack sand per gallon of carrier fluid.

5,251,700

WELL CASING PROVIDING DIRECTIONAL FLOW OF INJECTION FLUIDS

Joseph M. Nelson, Wilmington, Del., and Garland R. Rau, Lewisville, Tex., assignors to Hrubetz Environmental Services, Inc., Dallas, Tex.

Division of Ser. No. 458,084, Feb. 5, 1990, Pat. No. 5,011,329.
This application Jan. 31, 1991, Ser. No. 648,659
Int. Cl.[5] E02D *3/11;* E21B *36/00, 43/24, 43/30*
U.S. Cl. 166—305.1 15 Claims



1. A casing fixed in a wellbore to direct a fluid in a predetermined pattern, comprising a tubular member having formed in at least a lower section thereof a plurality of apertures in a sidewall thereof, said apertures being bounded by a pair of blades extending outwardly from said casing for directing the fluid discharged from said apertures in a predefined wellbore area while other areas of the wellbore are unaffected by the fluid.

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13. A method for directing a fluid outwardly from a well casing in a directional pattern, comprising the steps of:

fixing an apertured casing in a wellbore formed in the earth, said casing having a plurality of apertures formed in at least a bottom portion thereof and only circumferentially about a portion of the casing;

blocking annulus of the wellbore above the casing apertures;

pumping a fluid down the casing so that the fluid is forced out of the casing apertures; and

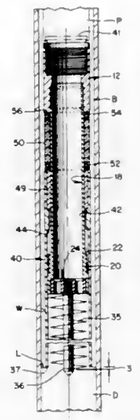
directing the flow of the fluid in the annulus adjacent the apertures between a pair of planar blades attached vertically along outer sidewalls of the casing, and causing the blades to engage the earth material of the wellbore to channel the fluid outwardly in a selected area of the earth material and not directed to other portions of the earth material of the wellbore.

5,251,701

METHODS AND APPARATUS FOR REMOVING DEBRIS FROM A WELL BORE

Robert M. Williams, and Bob Davis, both of Hobbs, N. Mex., assignors to Wada Ventures, N. Mex.

Filed Mar. 12, 1992, Ser. No. 849,981
Int. Cl.[5] E21B *10/44, 37/00*
U.S. Cl. 166—311 **17 Claims**



2. A well clean-out tool positionable within a well bore for removing debris therefrom, comprising:

a cylindrical member;

auger means including a helical conveyor screw disposed within said cylindrical member, said conveyor screw being slidable vertically relative to said cylindrical member for being retracted into said cylindrical member; and

drive means for rotating said conveyor screw relative to said cylindrical member with a lower end of said conveyor screw projecting slightly downwardly below a lower end of said cylindrical member, for conveying debris upwardly.

5,251,702

SURFACE CONTROLLED SUBSURFACE SAFETY VALVE

Gonzalo Vazquez, Houston, Tex., assignor to AVA International Corporation, Houston, Tex.

Filed Jul. 16, 1991, Ser. No. 730,702
Int. Cl.[5] F21B *34/10*
U.S. Cl. 166—324 **6 Claims**

1. A surface-controlled, subsurface safety valve comprising

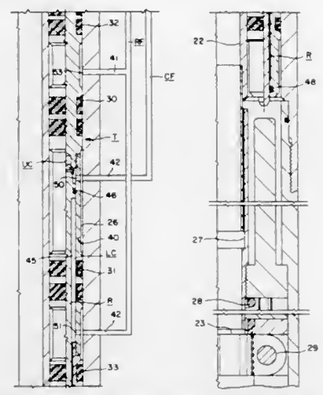
a tubular body connectible in a well string disposable in a well bore and having a bore therethrough,

a closure member mounted on the body for opening and closing the bore,

means forming a cylinder in the body to one side of the bore,

means including an actuator having a piston sealably slidable in the cylinder and vertically reciprocable in the cylinder to open the closure member as it is lowered and close the closure member as it is raised,

spaced-apart means sealing between the actuator and cylinder to separate a first pressure chamber above the piston from well fluid above the cylinder,



means for connecting a first source of pressure fluid at the surface with the first pressure chamber to urge the actuator downwardly,

means sealing between the actuator and the cylinder to form a second pressure chamber below the piston, and

means for connecting a second source of pressure fluid at the surface with the second pressure chamber to urge the actuator upwardly and with the area between the spaced-apart sealing means,

the lower end of the actuator beneath the second sealing means being acted upon by well fluid below the cylinder.

5,251,703

HYDRAULIC SYSTEM FOR ELECTRONICALLY CONTROLLED DOWNHOLE TESTING TOOL

Neal G. Skinner, Lewisville, Tex., assignor to Halliburton Company, Duncan, Okla.

Continuation of Ser. No. 658,485, Feb. 20, 1991, abandoned. This application Jul. 2, 1992, Ser. No. 909,056
Int. Cl.[5] E21B *34/10*
U.S. Cl. 166—374 **27 Claims**

1. A downhole tool apparatus, comprising:

a housing having a power chamber, a high pressure source chamber and a low pressure dump chamber defined therein, said housing having a power port means defined therein for communicating said high pressure source chamber with a well annulus surrounding said housing;

a power piston slidably disposed in said power chamber and dividing said power chamber into first and second power chamber portions;

a pressure transfer piston, slidably disposed in said high pressure source chamber and dividing said high pressure source chamber into a well side chamber portion and a tool side chamber portion, said well side chamber portion being in fluid flow communication with said power port means;

said housing further includes power passage means defined therein for providing fluid pressure communication between said power chamber and each of said tool side chamber portion and said low pressure dump chamber, said power passage means including:

a first flow path communicating said first power chamber portion with said tool side chamber portion of said high pressure source chamber;

a second flow path communicating said second power chamber portion with said low pressure dump chamber;

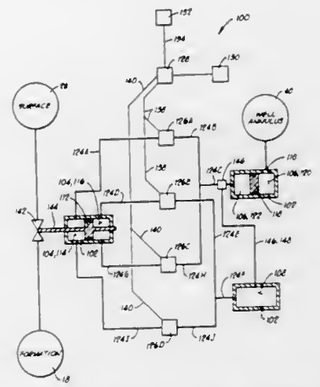
a third flow path communicating said second power chamber portion with said tool side chamber of said high pressure source chamber; and

a fourth flow path communicating said first power chamber portion with said low pressure dump chamber; and

electric solenoid control valve means, disposed directly in said power passage means, for selectively controlling fluid pressure communication between said power chamber and each of said tool side chamber portion and said low pressure dump chamber, said electric solenoid control valve means having:

a first position wherein said first power chamber portion is communicated with said tool side chamber portion and said second power chamber portion is communicated with said low pressure dump chamber, so that a pressure differential between said well annulus and said low pressure dump chamber acts in a first direction across said power piston; and

a second position wherein said first power chamber portion is communicated with said low pressure dump



chamber and said second power chamber portion is communicated with said tool side chamber portion so that said pressure differential between said well annulus and said low pressure dump chamber acts in a second direction across said power piston; and

pressure regulator means, disposed in said first and third flow paths, for regulating the fluid pressure supplied from said high pressure source chamber and for thereby limiting a pressure differential across said electric solenoid control valve means in said first and third flow paths and for thereby reducing the electric power required to operate said electric solenoid control valve means.

25. A method of operating a downhole tool, comprising:

providing a power passage in said tool connecting a power piston of said tool with a well annular outside said tool and with a lower pressure dump chamber in said tool;

operating at least one electric solenoid control valve disposed directly in said power passage to selectively apply a pressure differential in alternating directions across said power piston to operate said tool;

isolating said electric solenoid control valve and said power piston from contact with well fluid from said well annulus; and

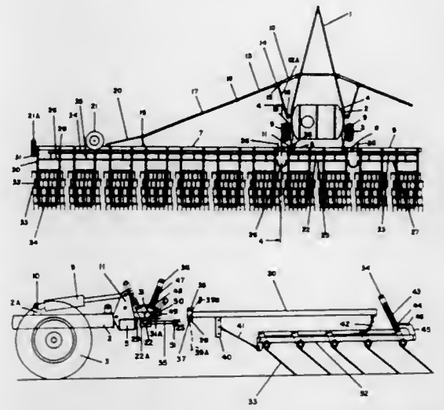
regulating fluid pressure supplied from said well annulus to said electric solenoid control valve.

5,251,704

DETACHABLE HARROW SPRAYER

Gerard F. Bourgault, and Darryl Kerr, both of St. Brieux, Canada, assignors to F.P. Bourgault Industries Air Seeder Division Ltd., Saskatchewan, Canada

Filed Jan. 31, 1992, Ser. No. 830,322
Claims priority, application Canada, Sep. 12, 1991, 2051253
Int. Cl.[5] A01B *49/06*
U.S. Cl. 172—311 **6 Claims**



1. A rearwardly folding harrow sprayer implement adapted to be towed by a power source such as a tractor for use in pre- and post-emergent spraying operations, said implement comprising:

a framed cart adapted to support a spray tank;

a wheeled support, including a forwardly extending hitch, supporting said framed cart;

a central main boom mounted on said cart, and at least two main wing booms attached to said central main boom by universal type joints;

a plurality of harrow arm receivers fixedly mounted to said main booms, extending rearwardly therefrom when the implement is in a field position, and vertically therefrom when the implement is in a transport position;

each of said harrow arm receivers comprising an elongate arm, rectangular in cross section, and a rectangular planar end plate of greater cross section than said arm, and which end plate is fixedly mounted to the remote end of, and extends above and below said arm when the implement is in the field position;

harrow frames each having a plurality of tines thereon;

a plurality of harrow lift arms each including a connection adapted to detachably receive one of said harrow arm receivers;

said harrow lift arms being flexibly connected to said harrow frames by means of cables or chains such that when said harrow lift arms are to be connected or disconnected to said harrow arm receivers, said harrow lift arms can be moved independently of said harrow frames without moving said harrow frames;

power means for rotating said main booms from said field position to said transport position and vice versa;

a dry spray boom comprising a central section and at least two wing sections, each of said sections being rotatably supported int he implement and being parallel to said main booms;

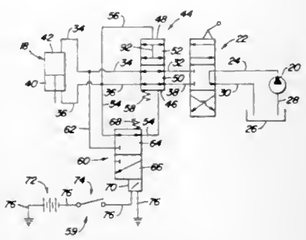
said sections of said dry spray boom lying adjacent said main booms, respectively;

a wet spray boom comprising a central section and at least two wing sections, each of said sections of said wet spray boom being spaced apart and parallel to respective sections of said dry spray booms and attached thereto by a

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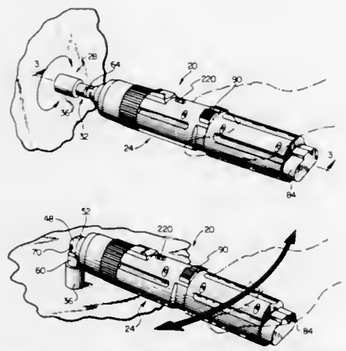
series of struts which are perpendicular to said wet and dry spray booms;
means for rotating said dry spray boom sections thereby raising or lowering said respective wet boom sections;
a plurality of spray nozzles attached to said wet spray boom sections;
a boom draw attached to each of said main wing booms at a respective end thereof, each said boom draw including an inner boom draw arm, an outer boom draw arm pivotably attached to said inner boom draw arm, said boom draw arms capable of receiving a pin which will rigidly fix the positions of said boom draw arms relative to one another, a wing draw hitch latch arm extending outboard from said framed cart, a latch detachably connecting said wing draw hitch latch arm to said boom draw arms, and a support arm pivotally attached to said framed cart and to said inner boom draw arm; and
wheel means for supporting said main wing booms in said field and said transport positions;
whereby when said harrow arms are disconnected from said harrow arm receivers, said harrow arms, harrow frames, and tines can be left int he field permitting said implement to be used as a sprayer,
when said means for rotating said dry spray boom sections are activated, said wet spray booms are raised or lowered to a desired height from the ground to provide an effective spraying operation for crops which have emerged from the ground,
and when said spraying operation is terminated, and said implement is moved rearwardly to an original position, said wet spray booms can be raised to clear said harrow arms so that said harrow arms can be reconnected to said harrow arm receivers, thus providing an implement capable of both harrowing and spraying operations.

5,251,705
ELECTRICAL TRIGGER FOR QUICK DROP VALVE
Van E. Waggoner, and Donald E. McGovern, both of Dubuque, Iowa, assignors to Deere & Company, Moline, Ill.
Filed Mar. 19, 1992, Ser. No. 854,509
Int. Cl.[5] E02F *3/85*; F15B *13/04*
U.S. Cl. 172—812 **12 Claims**



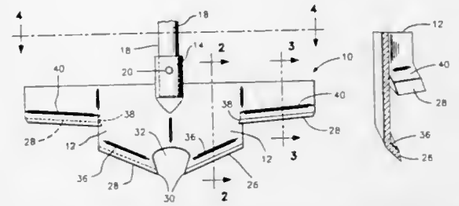
1. A hydraulic circuit comprising
a pump for pressurizing hydraulic fluid;
a hydraulic fluid reservoir for supplying hydraulic fluid to the pump;
a hydraulic cylinder to which the pressurized hydraulic fluid is directed from the pump, the hydraulic cylinder having a lift side and a drop side, the hydraulic cylinder is mechanically coupled to a working implement;
a control valve for controlling the flow of pressurized hydraulic fluid to and from the pump to the hydraulic cylinder for manipulating the working implement, the control valve is hydraulically located between the pump and the hydraulic cylinder;
a quick drop valve hydraulically located between the control valve and the hydraulic cylinder, when triggered the quick drop valve short circuits the flow of fluid from the lift side of the hydraulic cylinder to the reservoir and redirects it to the drop side of the hydraulic cylinder for quickly dropping the working implement, the quick drop valve is a pilot operated valve having first and second sides, the quick drop valve is also provided with first and second pilot lines for controlling the positioning of the valve, the first pilot line being hydraulically coupled to the first side of the quick drop valve and the second pilot line being hydraulically coupled to the second side of the quick drop valve; and
means for triggering the quick drop valve by an electrical signal, the means for triggering is a two-position spring biassed solenoid valve that controls the flow of fluid through the pilot lines.

5,251,706
RATCHET DRIVE TOOL WITH MANUAL AND NON-MANUAL POWER ACTUATION
Jack Evans, 5515 Bent Green, Dallas, Tex. 75248
Filed Dec. 3, 1992, Ser. No. 984,967
Int. Cl.[5] B25B *21/00*
U.S. Cl. 173—29 **8 Claims**



1. A drive device operational, optionally and selectively with non-manual power and with manual power,
said device comprising coupler means for engaging a tool element forcibly to be rotated, rotatable drive shaft means for reversibly driving said coupler means, selectively, in each of two opposite rotational modes,
pivot joint means interposed between said drive shaft means and said coupler means for connecting said drive shaft means to said coupler means,
said coupler means being manipulable at said pivot joint means to extend, selectively, coaxially with said drive shaft means and, alternatively, to assume an attitude normal to said drive shaft means,
housing means extending coaxially with said drive shaft means for defining handle means for manually gripping and for manipulating said drive device,
speed-reducing and power-amplifying means confined in said housing means for regulating rotation of said drive shaft means,
non-manual power means for driving said speed-reducing and power-amplifying means, and connector means for coupling said non-manual power means to said drive shaft means, for rotating said drive shaft, in each of two opposite drive directions,
said housing means being arcuately manipulable manually, forcibly to rotate said coupler means when said housing means is pivoted at said pivot joint means to extend normally of a rotational axis of said coupler means connected to said drive shaft means,
switch means operationally interposed between said non-manual power means and said drive shaft means for selectively connecting power to and for interrupting delivery of power to said drive shaft means,
said switch means being closed and functioning to effect delivery of power to said drive shaft means when said drive shaft means extends coaxially with said coupler means, and
interrupter means for opening said switch means to cut off power to said drive shaft means when said coupler means is pivotally oriented to extend normally of a rotational axis of said drive shaft means.

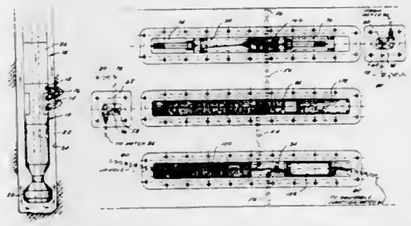
5,251,707
ICE AUGER CUTTING HEAD
Paul F. Grahl, P.O. Box 909, Campbellsport, Wis. 53010
Filed Mar. 26, 1992, Ser. No. 858,008
Int. Cl.[5] E21B *10/44*
U.S. Cl. 175—18 **12 Claims**



1. An ice auger cutting head including an elongated, center axis defining shaft portion having first and second ends facing in opposite first and second directions, said first end being adapted to have rotary input torque applied thereto for rotating said shaft portion about said center axis, said second end including opposite side laterally outwardly projecting panel-like wings, each of said wings including elongated, beveled inner and outer blade edges extending therealong and facing in said second direction with all of said edges facing in the same direction of rotation of said head about said center axis, said blade edges being generally longitudinally straight and including inner and outer ends, said blade edges being inclined outwardly in said first direction, said blade edges being inclined relative to a plane normal to said center axis with the beveled edges of said inner blade edges being inclined relative to said plane more than the outer beveled blade edges, said inner beveled blade edges including inner terminal ends adjacent, but spaced outwardly of said center axis, said inner blade edges being disposed fully forward of said outer blade edges in said second direction.

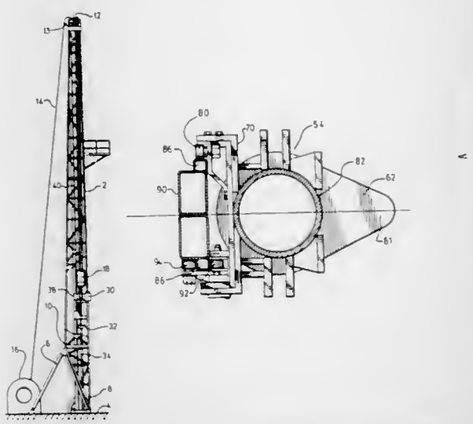
5,251,708
MODULAR CONNECTOR FOR MEASUREMENT-WHILE-DRILLING TOOL
Carl A. Perry, Middletown; Mark Wassell, Glastonbury; George Talmadge, Clinton, and John Grunbeck, Northford, all of Conn., assignors to Baker Hughes Incorporated, Houston, Tex.
Division of Ser. No. 511,537, Apr. 17, 1990, Pat. No. 5,144,126.
This application Mar. 8, 1991, Ser. No. 666,626
The portion of the term of this patent subsequent to Sep. 1, 2009, has been disclaimed.
Int. Cl.[5] E21B *47/12*
U.S. Cl. 175—41 **16 Claims**

1. A measurement-while-drilling tool comprising:
a drill collar sub having a sub wall and having opposed ends;
a bus substantially through the length of said sub, said bus transmitting at least one of power and signals;
a first ring connector on one of said opposed ends and a second ring connector on the other of said opposed ends, said first and second ring connectors being in electrical communication with said bus;
an insulative ring partially surrounding each of said ring connectors and being disposed in an annular groove in each end of said sub; and



first anti-rotation anchor means extending from each of said ring connectors and preventing rotation of said ring connectors.

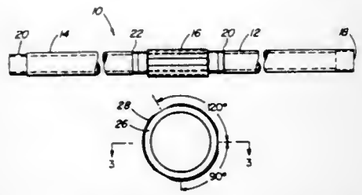
5,251,709
DRILLING RIG
Allan S. Richardson, 1165G - 44th Avenue, SE. Calgary, Alberta, Canada T2G 4X4
Continuation-in-part of Ser. No. 474,981, Feb. 6, 1990, abandoned. This application Mar. 31, 1992, Ser. No. 861,127
Int. Cl.[5] E21B *15/00, 3/02*
U.S. Cl. 175—220 **17 Claims**



17. In a top drive for use in rotating a drill string in a drilling rig having a base, mast, crown block, travelling block, means to move said travelling block vertically in said mast, and means to support a drill string from said travelling block, the improvement comprising:
guide means to control lateral and rotational forces on said top drive;
said guide means comprising a carriage attached to said top drive for vertical movement therewith;
a torque guide comprising a vertical hollow shaft having spaced apart front, rear, and side faces;
said side faces each having a track means to guide said carriage therealong and permit vertical movement while providing restraint against lateral or rotational forces on said carriage from said top drive;
said torque guide being mounted to said rig base and having sufficient torsional rigidity to resist said lateral and rotational forces; and
said track means being spaced apart so that the distance between said track means is approximately the same order of magnitude as the distance between a track means and the drill string.

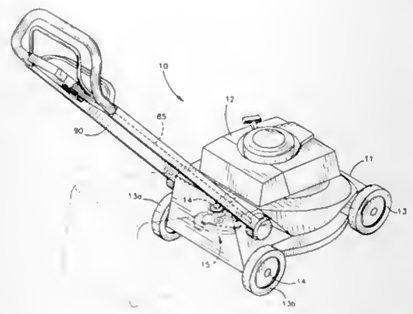
VOL 1155 ISS 2 OCT 12 1993 UMI

5,251,710
STABILIZED DRILL TUBE
Irwin J. Laporte, and Amos J. Watkins, both of North Bay, Canada, assignors to JKS Boyles International Inc., Canada
Filed Mar. 19, 1992, Ser. No. 853,925
Claims priority, application Canada, Mar. 25, 1991, 2038378
Int. Cl.[5] E21B *17/10*
U.S. Cl. 175—325.2 4 Claims



1. A stabilized drill string component comprising an elongated tubular body, said body comprising upper and lower tubular sections disposed in flanking relation to an intermediate tubular stabilization section and integrally joined together in axially aligned relation, the intermediate stabilization section being several times shorter than either of the upper and lower sections, and said intermediate stabilization section being of unitary construction and having exterior surface portions which are substantially harder than the material of the upper and lower sections thereby to provide increased resistance to wear, said exterior surface portions comprising circumferentially spaced cylindrical portions separated by axially extending flats, said cylindrical portions being substantially larger in a circumferential direction than said flats, said cylindrical portions having greater diameter than the upper and lower sections whereby the intermediate stabilization section assists in stabilizing the drill string component during drilling through contact of said cylindrical portions with the wall of the well bore.

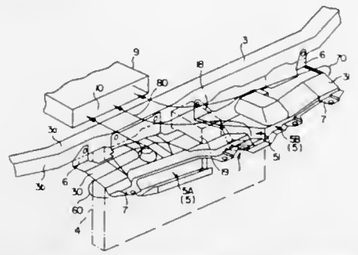
5,251,711
LAWN MOWER
Robert B. Meyer, Middleburg Heights; John R. Lackner, Westlake; Hans J. Matuscheck, Parma, and Daniel J. Kennedy, Cleveland, all of Ohio, assignors to The Scott Fetzer Company, Westlake, Ohio
Continuation-in-part of Ser. No. 708,464, May 31, 1991, which is a division of Ser. No. 442,615, Nov. 29, 1989, abandoned. This application Feb. 18, 1992, Ser. No. 837,157
Int. Cl.[5] B62D *51/04*
U.S. Cl. 180—19.1 18 Claims



1. In a power driven walk-behind-type mower having an engine, at least one driven wheel and handle structure for steering the mower, the improvement comprising an operator controlled drive train comprising:

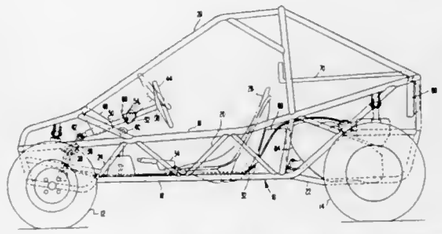
a. a driven member coupled to the engine for constant rotation about a driven axis when the lawn mower is in use;
b. an output element axially aligned with the driven member for selective rotation about the driven axis;
c. a movable clutch operatively interposed between the driven member and the output element for selectively establishing a drive connection there between;
d. a lever operatively connected to the clutch;
e. the handle structure including a gripping and control portion for steering the mower whereby the speed and direction of the mower can be controlled by the operator without removing a hand from said gripping and control portion;
f. an interconnection interposed between said gripping and control portion and the lever for transmitting operator applied speed control forces to the lever and thence to the clutch; and,
g. said interconnection including a surge suppression means for modulating forces applied to the clutch.

5,251,712
AIR INTAKE DEVICE HAVING AN INTAKE DUCT FOR AN AUTOMOTIVE VEHICLE
Kiyoshi Hayashi, Hatsukaichi, and Tadayuki Odamura, Hiroshima, both of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan
Filed Jun. 24, 1992, Ser. No. 903,828
Claims priority, application Japan, Jun. 24, 1991, 3-056637[U]
Int. Cl.[5] B60K *13/02*
U.S. Cl. 180—68.3 11 Claims



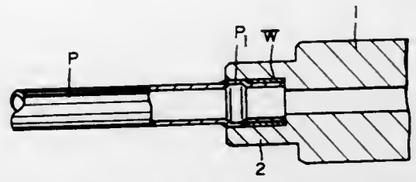
1. An air intake for supplying fresh air to an intake duct of an automotive vehicle, comprising:
an upper shroud member interconnecting front ends of a pair of wheel apron reinforcements on said automotive vehicle;
an intake port of the intake duct disposed near an upper portion of the upper shroud member;
a radiator;
a fresh air inlet disposed at a front face portion of the automotive vehicle so that fresh air inducted through the fresh air inlet passes into a space formed between the front face portion of the automotive vehicle and the radiator; and
a sealing panel member disposed in front of the upper shroud member and the radiator so as to substantially cover the space between the front face portion of the automotive vehicle and the radiator, the sealing panel member defining an air passage through which the fresh air inducted into the space flows between the front face portion of the automotive vehicle and the radiator toward the inlet port of the intake duct in cooperation with a hood of the automotive vehicle, the sealing panel member comprising a pair of panels each disposed so as to extend along a width of the automotive vehicle, each said panel having an inside end portion which approaches the other panel and is disposed so that there is a predetermined vertical distance between the inside end portions of the panels and so that each said end portion overlaps the other, whereby a portion of the air passage is formed between the inside end portions of said panels wherein a portion of said air entering said fresh air inlet flows upwardly from said space into said air passage formed by said inside end portions of said first and second panels and exits upwardly towards said intake port.

5,251,713
FOUR WHEEL VEHICLE
Akio Enokimoto, Rancho Palos Verdes, Calif., assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 20, 1989, Ser. No. 410,172
Int. Cl.[5] B60K *11/04*
U.S. Cl. 180—68.4 10 Claims



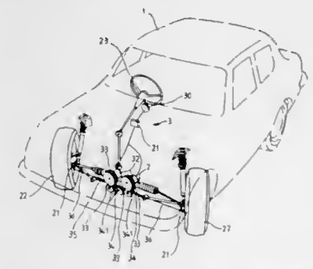
1. A four wheel vehicle having an open cockpit, comprising a frame;
two laterally spaced seats mounted on said frame;
a seat back associated with each said seat, said seat backs being laterally spaced apart to define an opening therebetween;
a water-cooled engine mounted on said frame behind said seat backs;
a radiator mounted on said frame behind said engine and disposed at a location to receive a flow of cooling air unimpeded by said seat backs and said engine, said radiator being disposed above said engine in a region of said vehicle to receive cooling air flow from the space between said seat backs;
a carrier rack mounted on said frame between said seats and said radiator and above said engine.

5,251,714
METHOD FOR SOLDERING PIPE END AND COUNTER MEMBER
Kunitoshi Murofushi, Tagata, Japan, assignor to Msui Kokusai Sangyo Kaisha, Ltd., Japan
Filed Aug. 18, 1989, Ser. No. 396,301
Claims priority, application Japan, Aug. 26, 1988, 63-212256
Int. Cl.[5] F16L *13/08*; B23K *101/04*
U.S. Cl. 228—136 3 Claims



1. A method for soldering an end part of a pipe member to a counter member, said counter member having a connecting wall part, said method consisting of the steps of: first integrally forming on the end part of said pipe member an annular wall part having a different diameter from said pipe member, said annular wall part of a different diameter comprising a radial contracted wall part dimensioned to be fitted into abutting engagement with an outer peripheral surface of said connecting wall part of said counter member, said radially contracted wall part being disposed at a terminal part of said pipe member, second bringing said annular wall part into abutting engagement with the connecting wall part of said counter member, thereby causing opposed peripheral surfaces of said connecting wall part and portions of said pipe members spaced from said annular wall part to define a minute clearance of less than 0.3 mm, third disposing a soldering material near said clearance, and fourth heat treating said pipe member and said counter member to a temperature above the melting point of said soldering material and thereby causing the soldering material to permeate into the minute clearance by virtue of capillary phenomenon to mutually solder the connecting wall part of the counter member and the end part of the pipe member.

5,251,715
AUXILIARY POWER STEERING MECHANISM
Wen J. Riu, P.O. Box 82-144, Taipei, Taiwan
Filed Nov. 25, 1992, Ser. No. 981,292
Int. Cl.[5] B62D *5/04*
U.S. Cl. 180—79.1 1 Claim



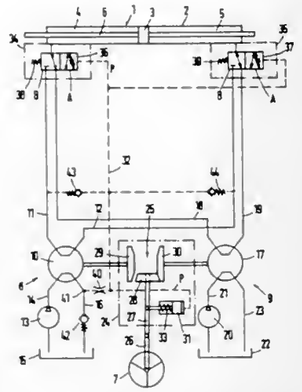
1. An auxiliary power steering mechanism for attachment to vehicle steering arms located at each of two steerable wheels, said steering mechanism comprising:
an angle sensor for detecting an angle moved by a steering wheel;
a direction controlling processor electrically connected with said angle sensor;
at least one dc motor controlled by said angle sensor and said direction controlling processor;
two ratchet wheels driven by said at least one dc motor and each being provided with a guard plate at both sides thereof;
two cables each connected with a vehicle steering arm;
a chain connected between said two cables and engaged on one side thereof with said ratchet wheels; and
a plurality of idle wheels arranged at an opposite side of said chain from said two ratchet wheels for holding said chain against said ratchet wheels.

5,251,716
TWO-LOOP STEERING SYSTEM FOR MOTOR VEHICLES
Harry E. Pedersen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark
Filed Sep. 30, 1991, Ser. No. 767,464
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1990, 4031969
Int. Cl.[5] B62D *5/08*
U.S. Cl. 180—133 1 Claim

1. A steering system for motor vehicles, comprising,
main and auxiliary circuit loops,
a steering motor having oppositely effective expansible chambers,
two changeover valves connected respectively to said chambers with each of said valves having primary and auxiliary operating positions,

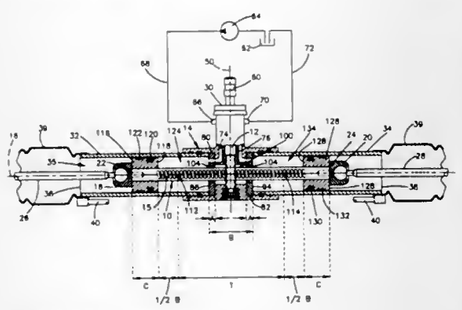
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each of said loops having a steering unit with pump and tank means associated therewith,
each of said steering units having associated left and right motor lines connected respectively to said changeover valves,
each of said steering units having steering control means for selectively and alternately effecting the pressurizing and exhausting of the left and right motor lines associated therewith,
steering handwheel means having primary and auxiliary operating positions and being selectively connectable with



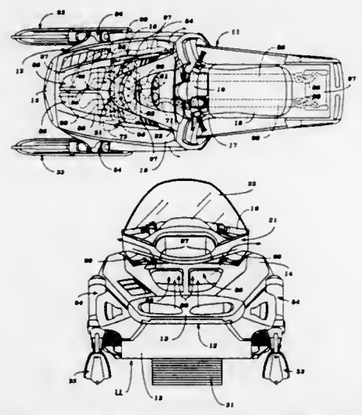
and cooperable with either of said steering control means to effect operation thereof,
said changeover valves and said steering handwheel means each being pressure operable to effect said primary position and being spring biased to effect said auxiliary position in the absence of pressure being applied thereto,
and control pressure line means connected to said pump means of said steering control unit in said main loop to said changeover valves and to said steering handwheel means to establish said primary operating positions for said changeover valves and said steering handwheel means when said control pressure line means is pressurized.

5,251,717
HYDRAULIC RACK AN PINION STEERING ASSEMBLY
Edwin G. Klosterhaus, Livonia, Mich., assignor to TRW Inc., Lyndhurst, Ohio
Filed Jun. 18, 1991, Ser. No. 717,324
Int. Cl.[5] B62D *5/06*
U.S. Cl. 180—148 **11 Claims**



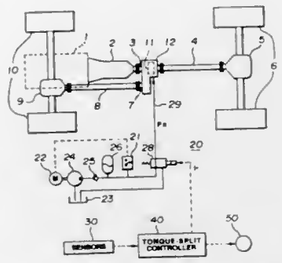
1. Apparatus comprising:
a housing defining a passage;
first and second wall members fixed to said housing in said passage, said wall members being spaced from each other and defining a first hydraulic chamber in said housing between said wall members, each of said wall members having an opening therethrough;
a pinion supported for rotation in said first hydraulic chamber;
an elongate rack having rack teeth engaged with said pinion, said rack extending through said openings in said first and second wall members and being supported for longitudinal movement in said passage;
a first piston fixed to said rack for movement in said passage with said rack, said first piston defining a second hydraulic chamber in said housing extending from said first piston and to first wall member; and
a second piston fixed to said rack for movement in said passage with said rack, said second piston defining a third hydraulic chamber in said housing extending from said second piston to said second wall member.

5,251,718
WIND LEADING SYSTEM FOR SNOWMOBILE
Hiroyuki Inagawa, and Takashi Yamamura, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed Jan. 13, 1992, Ser. No. 820,324
Claims priority, application Japan, Jan. 16, 1991, 3-17073
Int. Cl.[5] B62D *27/00*
U.S. Cl. 180—190 **5 Claims**



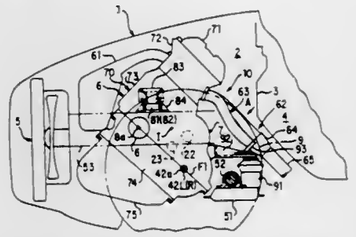
1. A snowmobile having a body carrying a seat at a rear end thereof, a drive belt suspended beneath said seat, a handlebar assembly positioned forwardly of said seat for steering of said snowmobile by at least one dirigible ski mounted at a front portion of said body, an engine compartment positioned forwardly of said seat, a windshield having a base carried by said body forwardly of said seat and said handlebar assembly, a water cooled internal combustion engine contained within said engine compartment for driving said drive belt, a radiator for receiving coolant from said engine, said radiator being positioned within said body at a forward portion thereof, an air inlet opening formed in said body forwardly of said radiator for directing air flow through said radiator, and outlet duct means for ducting the air exiting said radiator along the base of said windshield and rearward and outwardly away from said windshield and said handlebar assembly wherein the outlet duct means comprises a pair of outlet ducts formed by recesses in the body on opposite sides of the base of the windshield.

5,251,719
ACTIVE TORQUE-SPLIT CONTROL SYSTEM FOR ACTIVELY DISTRIBUTING DRIVING TORQUES APPLIED TO WHEELS IN FOUR-WHEEL DRIVE VEHICLES
Yoshiyuki Eto, Isehara; Akira Kiribe, Hatano; Hitoshi Tanaka, Shimotsuga; Takashi Yonezawa, Kawachi, and Takayuki Watanabe, Sagamihara, all of Japan, assignors to Nisson Motor Company, Ltd., Japan
Filed Jan. 9, 1992, Ser. No. 817,891
Claims priority, application Japan, Jan. 11, 1991, 3-001969
Int. Cl.[5] B60K *17/348*
U.S. Cl. 180—197 **11 Claims**



11. An active torque-split control system for actively controlling a driving torque distribution between front and rear wheels in a four-wheel drive vehicle employing an anti-skid brake control system and a transfer device provided for splitting torque output from a transmission into a front-wheel driving torque and a rear-wheel driving torque, comprising:
a transfer clutch disposed in said transfer device for varying said driving torque distribution depending on a controllable engaging force thereof;
sensor means for monitoring a degree of turning of the vehicle and a slippage occurring at the vehicle wheels, to generate a signal representative thereof, said sensor means includes means for detecting whether said anti-skid brake control system is activated or deactivated and means for detecting whether brakes are applied to the wheels;
discrimination means for discriminating on the basis of said signal from said sensor means, whether said vehicle is in a cornering warning region that is close to a critical state in which the vehicle experiences oversteer; and
control means for variably controlling said engaging force of said transfer clutch so as to switch from a first controllable front-wheel driving torque to a second controllable front-wheel driving torque only when said discrimination means determines that said vehicle is in said cornering warning region under a particular condition wherein said anti-skid brake control system is deactivated in the absence of application of the brakes, said first controllable torque being set such that said rear-wheel driving torque is greater than said front-wheel driving torque in accordance with a given first driving torque distribution derived on the basis of said signal from said sensor means in order to maintain the behavior of the vehicle in substantially neutral steer, and said second controllable torque being set such that a front-wheel speed becomes substantially equal to a rear-wheel speed, in accordance with a given second driving torque distribution derived on the basis of said signal from said sensor means in order to shift the behavior of the vehicle from oversteer to understeer within said cornering warning region, whereby a torque-split mode of the four-wheel drive vehicle is quickly shifted towards a more rigid torque-split mode according to which the engaging force of said transfer clutch is stepped up through a quick torque distribution shift from said first controllable torque to said second controllable torque, immediately upon a determination that said cornering warning region is reached.

5,251,720
STRUCTURE FOR MOUNTING POWERTRAIN OF VEHICLE
Sakumi Hasetoh; Osamu Kameda, both of Hiroshima; Junichi Okita, Iwakuni; Ichiro Hirose; Yoshimichi Tanaka, both of Hiroshima; Akie Kondo, and Hitoshi Akutagawa, both of Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan
Filed Mar. 5, 1992, Ser. No. 845,929
Claims priority, application Japan, Mar. 8, 1991, 3-043259; Mar. 25, 1991, 3-060514
Int. Cl.[5] B60K *5/04*
U.S. Cl. 180—297 **16 Claims**



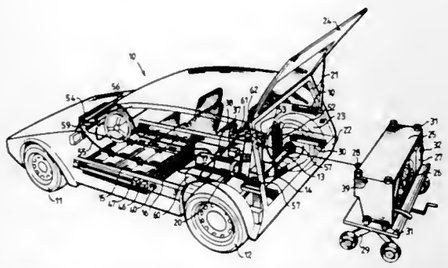
1. A powertrain mounting structure for mounting a powertrain on a vehicle body, said powertrain including at least an engine and a transmission constructed as one unit and having a front and back, said engine being transversely placed with its crankshaft oriented in a transverse direction of the vehicle body and provided with an exhaust pipe assembly extending initially rearwardly and down therefrom and then under the vehicle body toward a rear end of the vehicle body, the transmission being oriented in said transverse direction and placed adjacent to and behind said engine with its input and output shafts oriented parallel to said crankshaft, said powertrain mounting structure comprising:
mounting means for flexibly mounting said powertrain on said vehicle body, said mounting means fixedly supported by said vehicle body so as to flexibly support said powertrain laterally in a line extending in said transverse direction not lower than a center axis of inertia of said one unit parallel to a center axis of rotation of said crankshaft;
retainer means fixed to said vehicle body for flexibly supporting said powertrain from its back and a portion of said exhaust pipe assembly extending rearwardly and down from its underside; and
a cross member, on which said retainer means is fixed, extending in said transverse direction behind said powertrain and fixed to said vehicle body.

5,251,721
SEMI-HYBRID ELECTRIC AUTOMOBILE
Bjorn A. Örtenheim, Stockholm, Sweden, assignor to Richard Ortenheim, Hovas, Sweden
Filed Apr. 21, 1992, Ser. No. 871,693
Int. Cl.[5] B60K *5/10*
U.S. Cl. 180—298 **14 Claims**

1. An automobile comprising:
a compartment, adapted to receive an easily removable fuel propulsion unit therein in a predetermined accurate position,
a transmission, adapted to establish a torque-transmitting connection between an output shaft of the fuel propulsion unit, when it is placed in said predetermined accurate position in said compartment, and a drive axle of the automobile, propulsion of said automobile being selec-

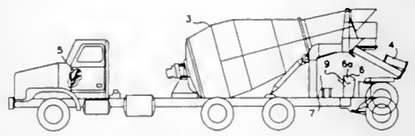
VOL 1155 ISS 2 OCT 12 1993 UMI

tively provided by only one of electric power from an electric battery power source and mechanical power from a fuel propulsion unit, and



guide means for guiding the fuel propulsion unit into said predetermined accurate position when propulsion of said automobile is to be provided by mechanical power.

5,251,722
REAR-DISCHARGE CONCRETE MIXER HAVING REAR-END TRANSMISSION CONTROL
Leroy G. Scratchard, York, Pa., assignor to T. L. Smith Machine Co., Inc., Springville, N.Y.
Filed Sep. 26, 1991, Ser. No. 765,663
Int. Cl.[5] B60K *26/00*
U.S. Cl. 180—321 **14 Claims**



1. A vehicle having a rear mounted control station comprising in combination:

A. an electronically controlled automatic transmission having a cab mounted electrical control unit and a rear mounted electrical control unit;

B. an actuator interface connected to said cab mounted electrical control unit and to said rear mounted electrical control unit to actuate said electronically controlled automatic transmission;

C. said actuator interface including means for transferring control of said transmission between said cab mounted electrical control unit in response to a signal generated when said transmission gear selectors is in a designated position, said signal originating at the location of the controlling electrical control unit.

5,251,723
SERVICE BRAKE AND SHIFT LEVER INTERLOCK SYSTEM
Adam E. Rolinski, Grand Haven, and Greg R. Pattok, Spring Lake, both of Mich., assignors to Sparton Corporation, Jackson, Mich.
Continuation of Ser. No. 591,605, Oct. 2, 1990, Pat. No. 5,129,494, which is a continuation of Ser. No. 314,717, Feb. 23, 1989, Pat. No. 5,018,610. This application Apr. 22, 1992, Ser. No. 872,172
The portion of the term of this patent subsequent to May 28, 2008, has been disclaimed.
Int. Cl.[5] B60K *41/28*
U.S. Cl. 192—4 A **3 Claims**

1. An interlock system for a vehicle having a transmission, an engine and a service brake system operable in a brake applied mode and a brake release mode, comprising:

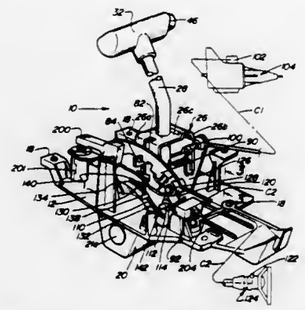
(a) shift lever means movable between a non-drive position and a drive position,

(b) detent means for releasably retaining the shift lever means in a selected position,

(c) an ignition switch mechanism having a "Lock" position, a "Start" position to start the engine and a "Run" position to operate the engine,

(d) a locking lever operably connected to the ignition switch mechanism by connecting means,

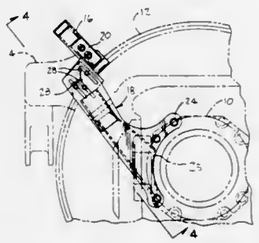
(e) said connecting means moving said locking lever to a locking position when the ignition switch mechanism is moved to the "Lock" position with the shift lever releasably retained in said non-drive position such that said locking lever in said locking position prevents actuation of



the detent means to release the shift lever when the ignition switch mechanism is in the "Lock" position, and

(f) lever locking means responsive to the mode of the service brake system for engaging the locking lever in said locking position independently of said connecting means to block movement of the locking lever when the shift lever is in the non-drive position with the ignition switch mechanism in the "Start" position or "Run" position and with the service brake system in the brake release mode and for disengaging from the locking lever to enable movement thereof from said locking position when the shift lever is in the non-drive position with the ignition switch mechanism in the "Start" position or "Run" position and with the service brake system in the brake applied mode such that said shift lever can be moved to the drive position.

5,251,724
RAIL LUBRICATION APPLICATION SYSTEM
James G. Szatkowski, Elmhurst, and Timothy D. Kohler, Frankfort, both of Ill., assignors to General Motors Corporation, Detroit, Mich.
Filed Mar. 16, 1992, Ser. No. 851,726
Int. Cl.[5] B61K *3/00*
U.S. Cl. 184—3.2 **19 Claims**



1. In a locomotive having axle mounted wheels supporting a truck wherein the truck has an axle associated unsprung portion and each wheel includes a flange and is rotatable on an axis, a rail lubrication system comprising:

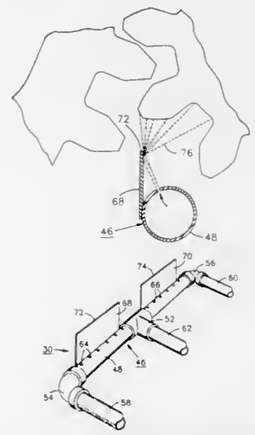
a tubular applicator having an outlet for dispensing lubricant;

solid lubricant held within the applicator for application to a locomotive wheel flange;

means for holding the applicator adjacent a wheel flange for lubricant application to the flange, said holding means including a first bracket secured to the axle associated unsprung portion of the truck near a wheel and extending toward the wheel periphery and a second bracket adjustably secured to the first bracket and attached to the tubular applicator to adjustably position said outlet of the applicator adjacent the flange;

wherein the holding means support the applicator at a substantial angle from the top of the wheel but not more than about 45° around the wheel axis.

5,251,725
LUBRICATION OF POWER DRIVE COMPRISING LARGE DIAMETER GEAR
Charles D. Barrett, Jr., Hoffman Estates, Ill., assignor to Castrol Limited, Wiltshire, England
Filed Jul. 7, 1992, Ser. No. 909,974
Int. Cl.[5] F01M *9/00*
U.S. Cl. 184—6.14 **16 Claims**

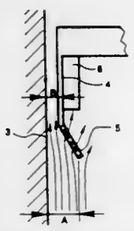


1. In a power drive comprising first and second gears in mesh with each other, said gears having an approach side, a pitch point and axes of rotation, a lubricating system comprising:

means providing a header at the approach side of the pitch point of said gears, said header having an interior and extending substantially parallel to the axis of said second gear and having a plurality of orifices for the flow of lubricant in streams outward from the interior of said header; and

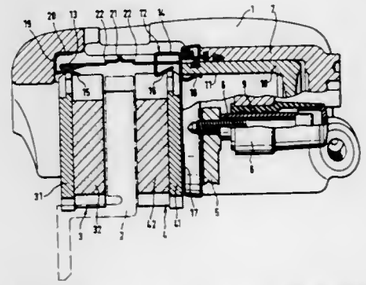
deflector means, located between said gears on the approach side of said pitch point and in the paths of said streams, for breaking up each of said streams into a spray directed toward said second gear.

5,251,726
TOE GUARD FOR AN ELEVATOR
Johannes de Jong, Jarvenpaa, Finland, assignor to Kone Elevator GmbH, Baar, Switzerland
Filed Jun. 2, 1992, Ser. No. 892,314
Claims priority, application Finland, Jun. 6, 1991, 912719
Int. Cl.[5] B66B *9/00*
U.S. Cl. 187—1 R **6 Claims**



1. A toe guard for an elevator car, said toe guard comprising a downward extension of the front wall of said elevator car, wherein at least part of the toe guard is inclined away from an adjacent wall of an elevator shaft and provided with a plurality of passages formed therein to permit passage of air therethrough.

5,251,727
WEAR COMPENSATING RETURN SPRING FOR FLOATING CALIPER DISC BRAKE SHOES
Josef Loeffler, and Hilmar Teitge, both of Frankfurt am Main, Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany
Filed May 14, 1992, Ser. No. 882,990
Claims priority, application Fed. Rep. of Germany, May 14, 1991, 4115635
Int. Cl.[5] F16D *65/02*
U.S. Cl. 188—73.38 **10 Claims**



1. A floating-caliper disc brake, in particular for automotive vehicles, including a rotary brake disc, a fixed brake carrier adjacent said brake disc brake shoes, each brake shoe comprising a backing plate and a friction lining fixed thereto, said brake shoes positioned respectively on either side of said brake disc, and mounted to be axially movable towards and away from said brake disc, a brake caliper which straddles said brake shoes and an outer edge of said brake disc and which is axially slidingly supported on said brake carrier, an actuatable brake piston mounted in said brake caliper adjacent and facing one side of said of said brake shoes, said brake caliper including a supporting surface on the other side of said other brake shoe, an elongated spring element extending across both of said brake shoes and compressed lengthwise between said brake piston and said brake caliper supporting surface, said spring element including a pair of arm portions, each arm portion

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located at a respective end of said spring element, each arm portion engaging a carrier plate of a respective one of said brake shoes and exerting a retracting force thereon upon releasing actuation of said brake piston, said spring element elastically deformed by an actuating stroke of said brake piston, said elastic deformation limited to that occuring by a predetermined actuating stroke, which actuating stroke corresponds to a combined normal clearance of both said brake shoes with said brake disc, said spring element including a section plastically deformed if said elastic actuating stroke exceeds said predetermined actuating stroke producing an elastic deformation of said spring element.

5,251,728

HYDRAULIC VIBRATION DAMPER OR SHOCK ABSORBER WITH ELECTRICAL CONTROL CONNECTIONS AND CONNECTOR THEREFOR

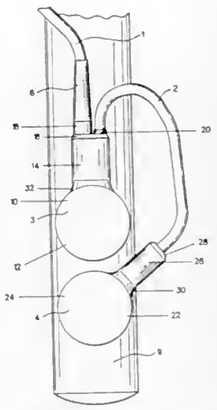
Jochen Mund, Eitorf, and Wilfried Krämer, Windreck-Rosbach, both of Fed. Rep. of Germany, assignors to BOGE AG, Eitorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 546,538, Jun. 9, 1990, abandoned. This application Dec. 2, 1991, Ser. No. 801,033

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1989, 3922043

Int. Cl.[5] F16F *9/46*

U.S. Cl. 188—299 **20 Claims**



1. An adjustable hydraulic vibration damper having an electrically operated valve system, said damper comprising:

a working cylinder comprising a damping fluid and a damping piston, said damping fluid and said damping piston being disposed within said working cylinder;

a first solenoid valve and a second solenoid valve, both for controlling the flow of damping fluid in said damper, each of said first solenoid valve and said second solenoid valve being externally mounted on said working cylinder and connected thereto; and

means for controlling said first solenoid valve and said second solenoid valve comprising:

a first connection line extending to said first solenoid valve;

said first connection line comprising a plurality of electrical leads disposed therewithin;

at least one of said plurality of electrical leads of said first connection line being configured for transmitting electrical signals to said first solenoid valve to control said first solenoid valve;

at least one other of said plurality of electrical leads of said first connection line being configured for transmitting electrical signals to said second solenoid valve to control said second solenoid valve;

a second connection line extending directly from said first solenoid valve to said second solenoid valve;

said second connection line comprising at least one electrical lead disposed therewithin;

said at least one other of said plurality of electrical leads of said first connection line being configured for being electrically connected, through said first solenoid valve, with said at least one electrical lead of said second connection line;

at least one of said at least one electrical lead of said second connection line being configured for transmitting electrical signals to said second solenoid valve to control said second solenoid valve; and

said first connection line and said second connection line being mounted externally of said working cylinder.

5,251,729

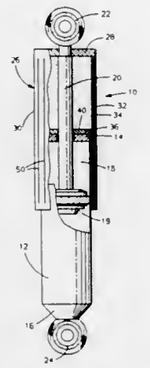
VEHICLE SUSPENSION DAMPER WITH RELATIVE VELOCITY SENSOR HAVING CONTROLLED FLUX PATH

Thomas W. Nehl; Jeri A. Betts, both of Shelby Township, Utica County, and Larry S. Mihalko, Farmington Hills, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 20, 1991, Ser. No. 811,428

Int. Cl.[5] B60G *11/26*

U.S. Cl. 188—299 **4 Claims**



1. In a vehicle suspension damper comprising (a) a cylindrical body made of a magnetic material and having a closed end attached to one of a vehicle sprung mass and unsprung mass for vertical movement therewith and an opposite end, (b) a piston axially movable in the cylindrical body and fixed to a rod made of a magnetic material and projecting axially from the opposite end of the cylindrical body and attached to the other of the vehicle sprung mass and unsprung mass for vertical movement therewith, and (c) a cylindrical dust tube having a closed end attached to the rod adjacent the other of the vehicle sprung mass and unsprung mass for axial movement therewith and further having an opposite open end, the dust tube surrounding and being radially spaced from a portion of the cylindrical body including the opposite end thereof, apparatus for sensing relative velocity of movement between the vehicle sprung and unsprung masses, the apparatus comprising:

an annular member closing the opposite end of the cylindrical body except for an opening through which the rod extends, the annular member comprising a magnetic portion extending radially across the annular member to form a first air gap with the rod at a radially inner end of the magnetic portion and a second air gap with the dust tube at a radially outer end of the magnetic portion, the magnetic portion comprising a radially polarized permanent magnet and both the first air gap and second air gap being substantially invariant with relative vertical movement between the sprung and unsprung masses;

a sensor winding extending axially over a substantial length of an inner side of the dust tube through the second air gap; and

the dust tube being made of a magnetic material to form, with the rod and magnetic portion of the annular member, a closed magnetic circuit for the permanent magnet through an adjacent portion of the sensor winding, whereby uncontrolled stray magnetic flux is eliminated and a flux linkage of the sensor winding enclosed by the closed magnetic circuit exhibits a linear variation with relative vertical movement between the vehicle sprung and unsprung masses to generate a voltage accurately representing the velocity of said movement.

5,251,730

ADJUSTABLE VIBRATION DAMPER

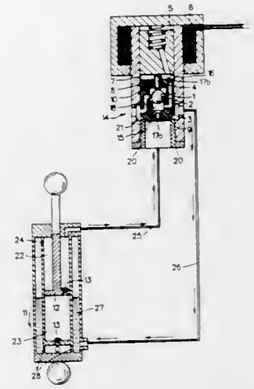
Norbert Ackermann, and Hubert Beck, both of Eitorf, Fed. Rep. of Germany, assignors to Boge Aktiengesellschaft, Eitorf, Fed. Rep. of Germany

Filed Jul. 17, 1992, Ser. No. 916,065

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1991, 4125316

Int. Cl.[5] F16F *9/46, 9/34*

U.S. Cl. 188—299 **17 Claims**



1. An adjustable vibration damper for motor vehicles, said adjustable vibration damper comprising:

a cylinder;

damping fluid disposed within said cylinder;

a piston rod projecting into said cylinder, said piston rod being movable axially within said cylinder;

a damping piston fastened to said piston rod, said damping piston for dividing said cylinder into a first chamber and a second chamber;

fluid communication means for providing communication of damping fluid between said first and said second chambers;

a damping valve for regulating flow of the damping fluid through said fluid communication means, said damping valve comprising:

a fluid inlet;

a fluid outlet;

a valve seat;

a first displaceable component for opening and closing against said valve seat to vary the cross-section of said fluid commutation means between said fluid inlet and said fluid outlet;

said first displaceable component having a first end potion for being disposed against said valve seat and a second end portion disposed opposite said first end portion;

at least one first, constantly open, bypass orifice disposed from said first end portion to said second end portion for bypassing damping fluid from said first end portion at least to said second end portion;

said first displaceable component defining a recess therein;

a second bypass orifice being disposed in said first displaceable component, said second bypass orifice being disposed from said first end portion to said fluid outlet;

a second displaceable component for varying flow of damping fluid through said second bypass orifice, said second displaceable component being disposed within said recess in said first displaceable component;

an electromagnet, said electromagnet comprising a moveable armature, said armature having a first end disposed adjacent said first displaceable component and a second end opposite said first end;

connecting means for connecting said second displaceable component to said armature for movement of said second displaceable component with said armature;

said connecting means has an exterior surface;

said first displaceable component comprises a first bore through which said connecting means passes, said first bore having an internal surface for being disposed adjacent the external surface of the connecting element; and

said internal surface of said first bore and said external surface of said connecting means form a pressurized differential surface therebetween.

5,251,731

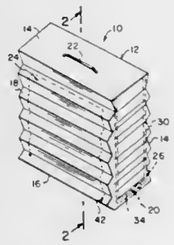
COLLAPSIBLE SUITCASE

Daniel S. Cassese, 28 Elva Rd., No. Weymouth, Mass. 02191, and George Spector, 233 Broadway-Room 702, New York, N.Y. 10279

Filed Aug. 3, 1992, Ser. No. 924,283

Int. Cl.[5] A45C *7/00, 13/04, 13/34*

U.S. Cl. 190—107 **5 Claims**



1. A collapsible suitcase which comprises:

a) a housing having a top portion, a bottom portion and a peripheral accordion wall thereabout;

b) means within said housing that can be manipulated to a position for supporting said housing in an expanded condition and to a position of non support whereby the suitcase can be collapsed for storage;

c) a handle affixed to an upper surface of said top portion of said housing; for carrying said collapsible suitcase;

d) a closure member in said housing, so as to gain access into said housing; wherein said supporting means is a pair of brace members, each located at opposite ends within said housing including hinges attaching said brace members to a lower surface of said top portion of said housing; wherein each said brace member includes:

e) a U-shaped leg; and

f) a pair of foldable braces with ends, each hinged to said leg and said lower surface wherein each brace is foldable between said ends.

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5,251,732

SUPPORT RAIL FOR COMPOSITE CONTINUOUS RAIL

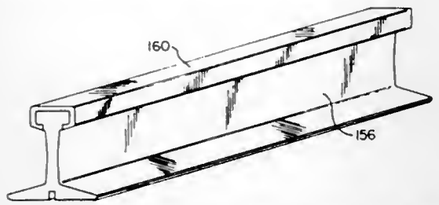
Donald D. Bruning, 7137 Carter Trail, Boulder, Colo. 80301

Continuation-in-part of Ser. No. 760,658, Sep. 16, 1991, Pat. No. 5,154,346, which is a division of Ser. No. 569,104, Aug. 17, 1990, Pat. No. 5,120,910. This application Jun. 5, 1992, Ser. No. 893,614

The portion of the term of this patent subsequent to Jun. 9, 2009, has been disclaimed.

Int. Cl.[5] **B60M** *1/34*

U.S. Cl. 191—22 DM **13 Claims**



1. A support rail carrying a continuous surface rail to form a composite rail for a railroad track having a continuous operative surface for vehicles running on the composite rail, the surface rail having a predetermined shape for mounting on said support rail, said support rail comprising:

a support rail section shaped as a rail with a foot, a head and a body, said section having a length independent of the surface rail and having ends for connection with ends of adjacent support rail sections whereby a long support rail with expansion joints is formed; and

said head of each of said sections has an exterior surface shaped to slideably hook onto the predetermined shape of the surface rail so that the surface rail is engaged with said adjacent support rail sections and slides relative to each of said support rail sections as the surface rail or said support rail sections expands or contracts.

5,251,733

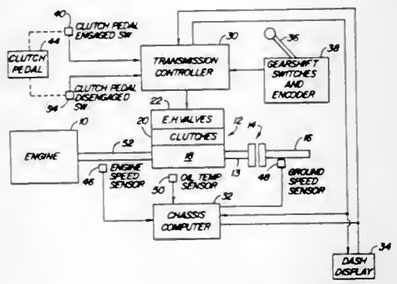
TRANSMISSION CONTROL WITH LIMP-HOME FUNCTION

Peter L. Falck, Waterloo, and Charles W. Formwalt, Jr., Janesville, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jul. 31, 1992, Ser. No. 923,701

Int. Cl.[5] **B60K** *41/28*

U.S. Cl. 192—0.092 **7 Claims**



6. In a control system for a powershift transmission of a vehicle having an engine for driving the transmission, an operator movable clutch pedal operable to control transmission of torque through the transmission, an operator movable shift lever for generating transmission shift signals and movable to a neutral position and to at least one non-neutral position, a plurality of hydraulic pressure operated control elements for engaging a gear of the transmission, a plurality of control valves for controlling pressurization of the control elements, a plurality of driver circuits for controlling operation of the control valves, a source of electrical power, an operator configurable limp-home circuit for supplying electrical power to the driver circuits when the limp-home circuit is placed in a normal configuration and for supplying electrical power directly to the control valves when the limp-home circuit is placed in a limp-home configuration, a start-in-gear circuit comprising:

a limp-home relay connected to the limp-home circuit; and

a clutch switch operatively coupled to the clutch pedal and connected between the source of electrical power and the limp-home relay, the clutch switch and the limp-home relay cooperating when the limp-home circuit is in the limp-home configuration to prevent energization of at least one of the valve drivers unless the clutch pedal is depressed and released.

5,251,734

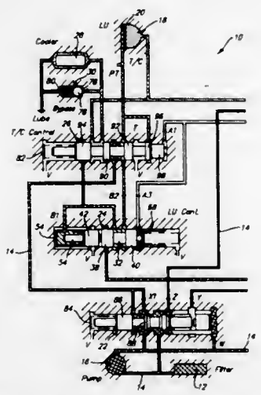
HYDRAULIC CONTROLS FOR LOCK-UP CLUTCH OF A TORQUE CONVERTER ASSEMBLY

Howard L. Benford, Bloomfield Hills, and Roy S. Nassar, Canton, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed May 8, 1992, Ser. No. 883,631

Int. Cl.[5] **F16H** *45/02, 61/14*

U.S. Cl. 192—3.3 **13 Claims**



1. In a vehicle transmission having a torque converter assembly for transmitting torque from an output member of a vehicle engine to an input member of the vehicle transmission and having a fluid actuated lock-up device for frictionally engaging the torque converter assembly to the output member of the vehicle engine during an engagement operating mode and disengaging the torque converter assembly during a disengagement operating mode, a valve assembly in a fluid system of the vehicle transmission for directing fluid flow from a fluid source to the torque converter assembly, said valve assembly comprising:

a regulator valve means for establishing a pressure level of fluid flow from a fluid source;

a first fluid path communicating with said regulator valve means and a release side of the torque converter assembly;

a second fluid path communicating with an apply side of the torque converter assembly;

a torque converter control valve disposed in said first and second fluid paths for controlling fluid pressure in said first fluid path to the torque converter assembly during the disengagement operating mode and venting said first fluid path during the engagement operating mode; and

a lock-up control valve receiving fluid pressure feedback from said torque converter control valve to close a third fluid path during the disengagement operating mode and opening the third fluid path for allowing fluid pressure to the apply side of the torque converter assembly during the engagement operating mode.

5,251,735

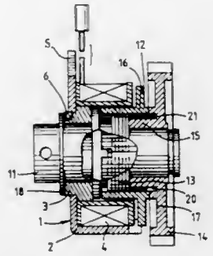
ELECTROMAGNETIC WRAP SPRING CLUTCH

George Lamoureux, Rockford, Ill., assignor to Dynacorp, Inc., Rockford, Ill.

Filed Nov. 19, 1992, Ser. No. 978,817

Int. Cl.[5] **F16D** *27/105*

U.S. Cl. 192—84 T **7 Claims**



1. An electromagnetic wrap spring clutch comprising:

a field assembly and a clutch body assembly:

said field assembly including a generally rigid L-shaped bracket of a predetermined width having a first wall with an upper edge and a lower edge and a second wall having a proximal edge and distal edge, said first wall and said second wall being connected at respective lower and promixal edges with said first and second walls being substantially perpendicular to one another, said first wall having a hole for receipt of said clutch body assembly therein on an axis generally normal to the plane of said first wall, said field assembly further including a wire coil disposed concentric with said axis; and

said clutch body assembly including an input hub, an output shaft, a cylindrical armature having an armature flange being rotationally matable and coplanar with a bracket flange on the distal end of said second wall, and a wrap spring means for connecting said armature with said input hub and for transmitting rotational forces from said input hub to said output shaft when current is passed through said wire coil.

5,251,736

CLUTCH PLATE FOR A MOTOR VEHICLE FRICTION CLUTCH

Harald Jeppe, Schweinfurt; Matthias Fischer, Eltingshausen; Martin Langfeldt, Schweinfurt; Peter Schultes, Niederwerrn, and Winfried Feller, Gerolzhofen, all of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Dec. 8, 1992, Ser. No. 987,165

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1991, 4140643

Int. Cl.[5] **F16D** *3/14, 3/66*

U.S. Cl. 192—106.2 **8 Claims**

1. A clutch plate for a motor vehicle friction clutch, comprising:

a hub which is concentric to an axis of rotation and having a guide region;

a plurality of radially resilient spring tongues carried by the guide region of the hub, said tongues being distributed in peripheral direction of the hub and rigidly connected to the hub;

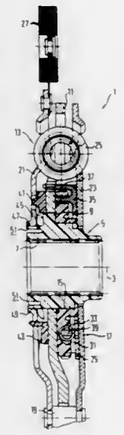
stops located on the hub in the region of the spring tongues;

a hub disc which is connected with limited rotational play to the hub;

lateral discs arranged axially on either side of the hub disc and rigidly connected to one another, said lateral discs being rotatable relative to the hub disc, at least one lateral disc having a central opening into which the guide region of the hub extends axially, said guide region being concentric to the axis of rotation and radially guiding said lateral disc having a central opening;

a plurality of springs torsionally and elastically coupling the lateral discs to the hub disc; and

clutch friction linings held on said lateral disc having a central opening;



wherein the spring tongues extend into the central opening of said lateral disc having a central opening and rest in the central opening under radial tension on said lateral disc having said central opening, the stops extend into the central opening of said lateral disc having a central opening, the stops being radially substantially rigid and having a radially outer contour diameter which is smaller than the internal diameter of the central opening, and the stops limiting the radial resilient travel of said lateral disc having a central opening relative to the axis of rotation of the hub.

5,251,737

SELF-ADJUSTING MEANS AND METHOD FOR FRICTION CLUTCHES

Richard A. Flotow, Butler, and Martin E. Kummer, Auburn, both of Ind., assignors to Dana Corporation, Toledo, Ohio

Filed Mar. 31, 1992, Ser. No. 861,139

Int. Cl.[5] **F16D** *13/75*

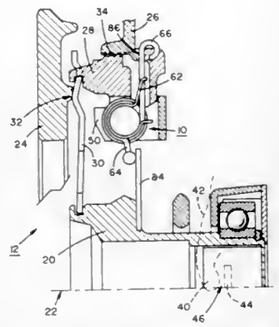
U.S. Cl. 192—111 A **13 Claims**

1. A self-adjusting mechanism for a friction clutch, said friction clutch having a cover, a pressure plate moveable relative to said cover to cause friction surfaces of said clutch to engage, and adjusting ring adjustably moveable toward said pressure plate, a release sleeve movable toward and away from said pressure plate, and a release lever having its ends engaging said adjusting ring and said release sleeve with an intermediate point on said release lever engaging said pressure plate, such that movement of said release sleeve toward said pressure plate will cause said release lever to apply pressure to said pressure plate to cause said pressure plate to move to cause said engagement of said friction surfaces and movement of said release sleeve away from said pressure plate will, in opposite manner, cause disengagement of said friction surfaces, a release yoke engagable with said release sleeve to move said release sleeve away from said pressure plate, said release yoke having a

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selected free play distance between unengaged and engaged positions with respect to said release sleeve, said free travel distance decreasing as said friction surfaces wear, said mechanism comprising:

(a) sensing means to sense a decrease in said free travel distance as said engagement occurs; and



(b) adjusting means responsive to said sensing means to cause said adjusting ring to advance toward said pressure plate as said disengagement subsequently occurs, to compensate for said decrease in said free travel distance.

5,251,738

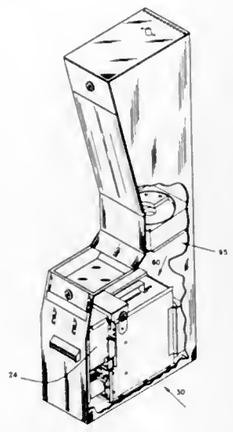
CURRENCY HANDLING SYSTEM

Stanley P. Dabrowski, Las Vegas, Nev., assignor to Sevens Unlimited, Inc., Las Vegas, Nev.

Continuation-in-part of Ser. No. 645,966, Jan. 23, 1991, Pat. No. 5,098,339, and a continuation-in-part of Ser. No. 721,668, Jun. 26, 1991, Pat. No. Des. 335,149. This application Mar. 23, 1992, Ser. No. 855,427

Int. Cl.[5] G07F *7/04*; B65H *29/46*

U.S. Cl. 194—206 **19 Claims**



1. A currency stacker comprising:

a) a base plate,

b) a cassette sleeve mounted to the base plate,

c) a drive wheel mounted to the cassette sleeve, an archimedean screw attached to the drive wheel and a positioning plate attached to the archimedean screw, the positioning plate having a generally planar currency engaging surface,

d) a currency cassette having a hollow interior removably positioned inside the cassette sleeve, the currency cassette including an archimedean screw slot and a positioning plate slot to receive the positioning plate and the archimedean screw when the currency cassette is loaded into the cassette sleeve, and

e) the currency cassette further including a biasing member attached to the interior of the currency cassette, a pressure plate attached to one end of the biasing member and a restraining member attached to the interior of the currency cassette adjacent to the pressure plate

whereby as currency is fed into the currency stacker, the currency is stacked in an upright position against the pressure plate and retained in position by the restraining member.

5,251,739

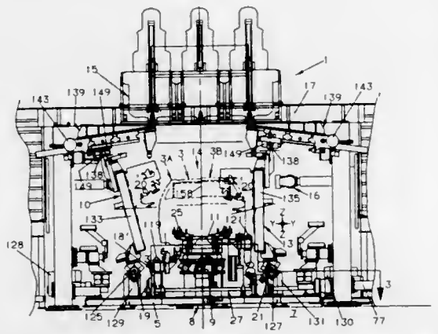
AUTOMATIC FRAMING SYSTEM

Gary Tolocko, Milton, Wis., assignor to Giddings & Lewis, Inc., Fond du Lac, Wis.

Division of Ser. No. 649,487, Feb. 1, 1991, Pat. No. 5,191,958. This application Oct. 1, 1992, Ser. No. 955,150

Int. Cl.[5] B65G *37/00*

U.S. Cl. 198—346.2 **3 Claims**



1. Apparatus for lifting a workpiece from a transfer point to a work station comprising:

a. a base;

b. a frame generally underlying the workpiece at the transfer point, the frame having a plurality of generally horizontal arms extending therefrom and including finger means for contacting the workpiece at the transfer point;

c. a bar in association with each frame arm, each bar having a first end pivotally connected to the frame arm and a second end;

d. actuator means connected between each frame arm and the second end of the associated bar for pivoting the bar with respect to the frame arm;

e. cam follower means in associated with each bar for supporting the second ends of the associated bars; and

f. drive means supported on the base for raising and lowering the cam follower means relative to the base to thereby raise and lower the bars and frame supported thereon, the drive means operating the cam follower means to raise the frame from a lowered position whereat the finger means is remote from the workpiece at the transfer point to an intermediate position whereat the finger means is proximate the workpiece at the transfer point, and the actuator means pivoting the bars to raise the frame relative to the cam follower means to a third position whereat the frame finger means contacts and lifts the workpiece from the transfer point to the work station.

5,251,740

COMPACTING UNIT FOR GROUPS OF FLAT PRODUCTS ARRANGED SIDE BY SIDE AND ON EDGE

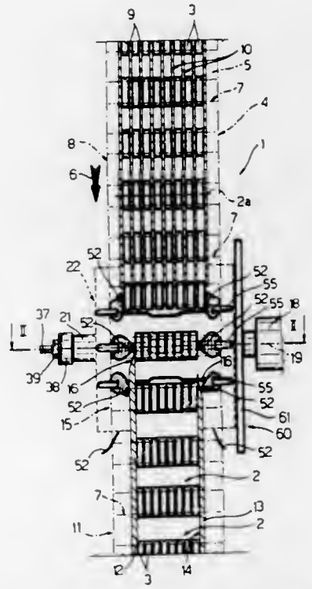
Mario Spatafora, and Giulio Strazzari, both of Bologna, Italy, assignors to Azionaria Construzioni Macchine Automatiche A.C.M.A. S.p.A., Bologna, Italy

Filed Oct. 22, 1992, Ser. No. 964,888

Claims priority, application Italy, Oct. 24, 1991, BO91 A 000396

Int. Cl.[5] B65G *47/26*

U.S. Cl. 198—458 **7 Claims**



1. A unit (**1**) for compacting groups (**2**) of flat products (**3**) arranged side by side and on edge along a first axis (*2a*) perpendicular to the products (**3**); said unit (**1**) comprising conveyor means (**4**) for feeding said groups (**2**) successively and in a given traveling direction (**6**) perpendicular to said first axis (*2a*), and a compacting device (**22**) cooperating with said conveyor means (**4**); the conveyor means (**4**) comprising a number of pocket means (**7**), each designed to receive a respective said group (**2**) and feed it in said direction (**6**) at a given speed, a first and second portion (**8**, **15**) arranged in series in said traveling direction (**6**), and spacing means (**9**) extending along said first portion (**8**) for maintaining the products (**3**) in each group (**2**) separated along the first axis (*2a*) and achieving a first given axial dimension of the group (**2**) greater than a second dimension equal to the total axial dimension of the relative products (**3**); characterized by the fact that the compacting device (**22**) cooperates with said second portion (**15**), and comprises a number of pairs of compacting elements (**44**) on either side of said second portion (**15**); drive means (**60**, **61**) for moving each said pair of compacting elements (**44**) along said second portion (**15**) and substantially in time with a respective said pocket means (**7**); and guide means (**25**) connected to the compacting elements (**44**) in each said pair, for moving the compacting elements (**44**) in relation to each other, and in opposite directions, between a first and second position wherein the compacting elements (**44**) are separated by a distance respectively greater than said first axial dimension and substantially equal to said second axial dimension.

5,251,741

CARRYING APPARATUS HAVING CARRIER LEVITATED BY MAGNETIC FORCE

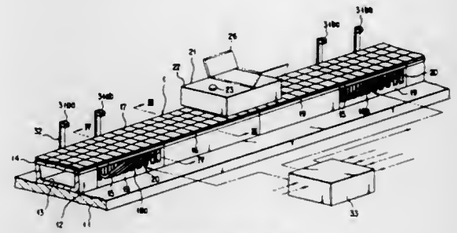
Mimpei Morishita; Masakuni Akasbi, and Noriko Kasahara, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 26, 1992, Ser. No. 904,674

Claims priority, application Japan, Jun. 28, 1991, 3-183671; Jun. 28, 1991, 3-183741; Jun. 28, 1991, 3-183755

Int. Cl.[5] B65G *15/58*

U.S. Cl. 198—690.1 **26 Claims**



1. A carrying apparatus comprising:

a track path having a track surface;

magnetic field generating means, provided along said track surface of said track path, for generating, along said track surface, a magnetic field having a predetermined magnetic flux distribution pattern in a direction perpendicular to an extending direction of said track path;

a carrier movably arranged on said track surface of said track path;

at least one superconductor element mounted in said carrier, said superconductor element trapping a magnetic flux of a magnetic field applied during transition from a normal conducting state to a superconducting state and supplying a levitating force and a guide force acting in a direction perpendicular to the extending direction of said track path to said carrier by a magnetic force generated between the trapped magnetic flux and the magnetic field generated by said magnetic field generating means; and

propelling means for supplying a moving force to said carrier in a direction of said track path in a non-contact manner.

5,251,742

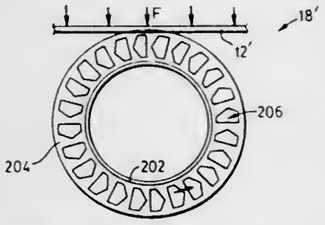
CONVEYOR INSTALLATION AND SHOCK ABSORBING ELEMENTS FOR USE THEREIN

Noel B. Campbell, Edmonton, Canada, assignor to CP Rubber, a Div. of Starcan Corporation, Nisku, Canada

Filed Nov. 21, 1991, Ser. No. 795,468

Int. Cl.[5] B65G *15/60*

U.S. Cl. 198—841 **9 Claims**



1. A conveyor installation comprising:

an endless belt formed from rigid material wound around a head pulley and a tail pulley and extending between an impact station wherein material is placed on said belt and

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a drop off zone wherein said material is removed from said belt;

drive means to rotate at least one of said head and tail pulleys to move said belt between said impact station and said drop off zone; and

a plurality of closely spaced rollers supporting the undersurface of said belt in said impact zone, each of said rollers including a generally cylindrical support member and a generally cylindrical body of unitary construction formed of elastomeric material and surrounding said support member, said body having a plurality of circumferentially spaced, longitudinally extending passages provided therethrough to define a pair of concentric, generally cylindrical inner and outer members connected by a plurality of internal body wall members, each of said body wall members comprising a buckling element and having one side surface defining a wall of one passage and another side surface defining a wall of another passage whereby the one side surface of each of said body wall members is radially disposed and the another side surface of each of said body wall members presents an angle with respect to the radial direction, said body wall members being configured so that adjacent internal body wall members buckle in the same direction under an impact force.

5,251,743

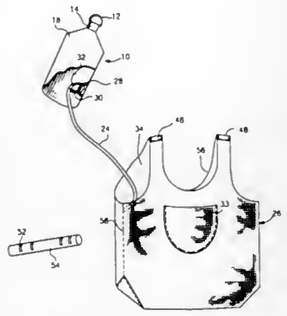
REUSABLE UTILITY BAG SYSTEM

Annette C. Pulido, 8258 Sugarman Dr., La Jolla, Calif. 92037, and Barbara Frank, Avoca, Wis., assignors to Annette C. Pulido, La Jolla, Calif.

Continuation-in-part of Ser. No. 777,022, Oct. 16, 1991, abandoned, and Ser. No. 688,084, Apr. 10, 1991. This application Aug. 11, 1992, Ser. No. 928,503

Int. Cl.[5] A45C *11/32*

U.S. Cl. 206—38.1 **8 Claims**



1. A shopping bag system comprising:

(a) A carrier comprising:

(1) a flexible carrier body having an opening with a self-closing device for releasably closing said opening for receiving and holding objects;

(2) a clasp attached to the exterior of the carrier body for releasably holding small objects threaded onto the clasp; and

(3) a lanyard being attached to the carrier body near said opening and having at the proximal end a fastener for releasably attaching the lanyard to itself so as to form a holding loop; and

(b) at least one lightweight, foldable, reusable bag releasably tethered to the carrier by the lanyard; wherein the carrier body is sized to contain the bag and lanyard when the self-closing device is engaged;

wherein the lanyard is releasably attached at the proximal end to the interior of the carrier by passing it through a fixed loop in the interior of the carrier and closing a fastener on the lanyard around the fixed loop and the lanyard is fixedly attached at the distal end to the interior of the bag.

5,251,744

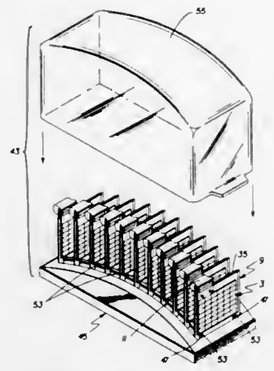
STORAGE ASSEMBLAGE FOR INDEX PRINT SHEETS AND CASSETTES

Mark D. Dziersk, Simsbury, and William H. Valls, Harwinton, both of Conn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 12, 1993, Ser. No. 3,153

Int. Cl.[5] B65D *85/672*

U.S. Cl. 206—232 **5 Claims**



1. A storage assemblage for cassettes each of which contains an image bearing medium having recorded images and for index print sheets each of which has printed pictures that match the images on the image bearing medium in one of the cassettes, said storage assemblage comprising:

envelopes each of which is dimensioned to store an index print sheet with its printed pictures visible;

holders each of which is shaped to store a cassette and includes means for engaging an envelope substantially at one of its edges to affix the holder to the envelope and for disengaging the envelope to release the holder from the envelope;

a storage base for said envelopes and said holders; and

respective means on said envelopes and said storage base for movably supporting the envelopes mutually aligned with their edges at which said holders engage the envelopes being located outermost, whereby said holders when engaged with said envelopes can be grasped to move the envelopes relative to one another to laterally separate one envelope from another in order to view the printed pictures on an index print sheet in an envelope.

5. A storage assemblage comprising:

cassettes each of which contains an image bearing medium having recorded images;

index print sheets each of which has printed pictures that match the images on said image bearing medium in one of said cassettes;

holders each of which is shaped to store a cassette and includes means for an index print sheet substantially at one of its edges to affix the holder to the index print sheet and for disengaging the index print sheet to release the holder from the index print sheet;

a storage base for said index print sheets and said holders; and

respective means on said index print sheets and said storage base for movably supporting the index print sheets mutually aligned with their edges at which said holders engage the index print sheets being located outermost, whereby said holders when engaged with said index print sheets can be grasped to move the index print sheets relative to one another to laterally separate one index print sheet from another in order to view the printed pictures on the index print sheet.

5,251,745

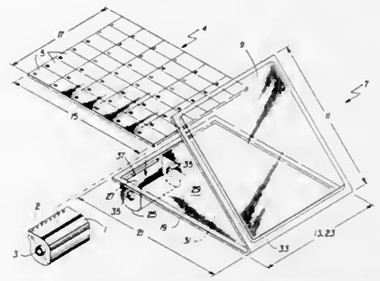
CONTAINER FOR INDEX PRINT SHEET AND CASSETTE

Timothy C. Repp, New Hartford; William H. Valls, Harwinton, both of Conn., and Robert J. Blackman, Rochester, N.Y., assignors to Eastman Kokak Company, Rochester, N.Y.

Filed Jan. 12, 1993, Ser. No. 3,207

Int. Cl.[5] B65D *83/08, 85/671*

U.S. Cl. 206—232 **1 Claim**



1. A container for a cassette capable of advancing a filmstrip with visible recorded images through a film passageway out of the cassette responsive to unwinding rotation of a spool which supports the filmstrip inside the cassette and for an index print sheet with printed pictures that match the visible images on the filmstrip, said container comprising:

a transparent sheet-like cover having a length and width larger than corresponding dimensions of the index print sheet to overlay the index print sheet; and

a sheet-like back having a length and width similar to the length and width of said cover to store the index print snugly between the cover and said back with the printed pictures on the index print sheet visible through the cover; and

at least one of said cover and said back includes an integrally formed nest for storing the cassette and having an access opening arranged to be aligned with the spool and a film egress opening arranged to be aligned with the film passageway when the cassette is located in said nest, whereby the filmstrip can be advanced first out of the cassette and then out of said nest to examine the recorded images in relation to the printed pictures without removing the cassette from the nest or removing the index print sheet from between said cover and said back.

5,251,746

CONTAINER FOR CASSETTE, PRINT STACK, AND INDEX PRINT

Timothy F. Gresh, Canton, and William H. Valls, Harwinton, both of Conn., assignors to Eastman Kodak Company, Rochester, N.Y.

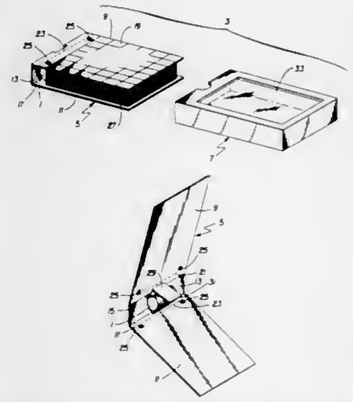
Filed Jan. 12, 1993, Ser. No. 3,336

Int. Cl.[5] B65D *85/671*

U.S. Cl. 206—232 **5 Claims**

1. A container for a cassette housing an image bearing medium having recorded images, for a stack of photographic picture prints made form the recorded images, and for an index print having rows of small-size positive images that match the recorded images, said container comprising:

a book-like jacket including a pair of leaves separated by a spine joined to said leaves at respective fold lines to permit the leaves to be arranged opposing each other, at least one of said leaves being dimensioned to bear the index print, and said spine being wide enough to permit the stack of photographic picture prints to be stored between said leaves when the leaves oppose each other; and



openable pocket means joined to said leaves across said spine to open to receive the cassette when the leaves oppose each other.

5,251,747

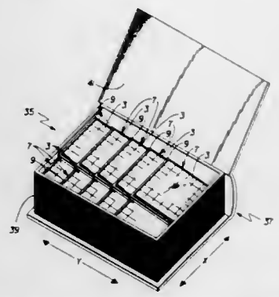
STORAGE ASSEMBLAGE FOR INDEX PRINT SHEETS AND CASSETTES

David E. Hansen, Fairport; Joel S. Lawther, and Robert J. Blackman, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 12, 1993, Ser. No. 3,363

Int. Cl.[5] B65D *85/672*

U.S. Cl. 206—232 **3 Claims**



1. A storage assemblage for cassettes each of which holds an image bearing medium having recorded images and for index print sheets each of which has printed pictures that match the images on the image bearing medium in one of the cassettes, said storage assemblage comprising:

display containers each of which includes a flat transparent cover and a flat back dimensioned to snugly hold an index print sheet between them with the pictures on the index print sheet visible through said cover, said back having a nest open at an inner side of the back to receive a cassette and projecting from an outer side of the back to hold the cassette out of the way of the index print sheet; and

a storage box having at least two substantially parallel grooves each of which is configured to receive some of said nests of the respective containers in a line to arrange said covers and backs of the containers whose nests are in the same groove overlapping in an X-direction and to

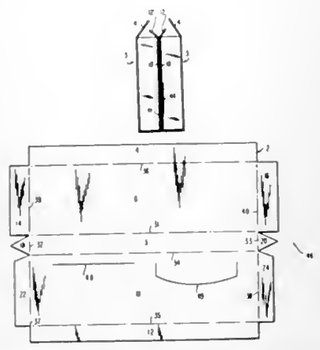
VOL
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arrange the covers and backs of the containers whose nests are in different grooves overlapping in a Y-direction substantially perpendicular to the X direction.

5,251,748
DUAL HALF-CARTON STRUCTURE AND METHOD OF FORMING SAME

John M. Adams, Mechanicsville; Christopher N. Chance, Richmond; James A. DeBlasio, Midlothian; Donald H. Evers, Richmond; Michael A. Kirby, Trevilians; Reginald W. Newsome, Richmond, and Robert E. Talley, Chester, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 774,529, Oct. 8, 1991, Pat. No. 5,141,106. This application Jun. 22, 1992, Ser. No. 901,682
Int. Cl.[5] B65D *85/10*
U.S. Cl. 206—256 13 Claims



7. A detachable dual container structure, comprising:
two substantially identical containers, each container having atop and a front wall, the front wall of the first container having at least one tab formed therein and hingedly attached thereto, and the front wall of the second container having at least one slit formed therein; wherein:
the two containers are positioned such that their front walls abut each other and the at least one tab on the first container is inserted through the at least one slot on the second container; whereby:
the tops of the two containers are capable of swinging away from each other about the place of hinged attachment; and
the two containers may be detached by lifting the second container relative to the first container.

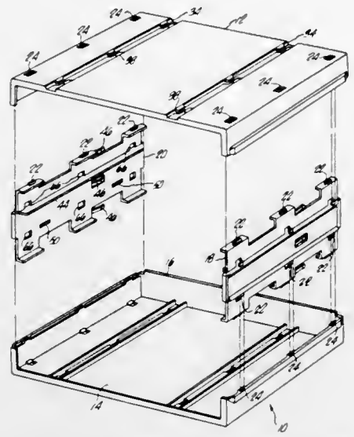
5,251,749
MULTIPLE MEDIA STORAGE CONTAINER AND SYSTEM

Eric A. Knight, 17154 Palisades Cir., Pacific Palisades, Calif. 90272

Filed Oct. 28, 1991, Ser. No. 783,375
Int. Cl.[5] B65D *85/57, 85/575*
U.S. Cl. 206—309 15 Claims

1. A multiple media storage container comprising a module for the compartmentalized storage of different recording media, including compact discs and audio cassettes and their respective packaging, and further comprised of right and left elements detachable from side walls of said module, said right and left elements comprising one or more pairs of opposing first or second biased spring means which releasably engage said different recording media to releasably secure said different recording media within said module.

13. A method for storage of multiple types of recording media in an interconnected system comprising the steps of:
(a) forming a module having a cap and a bottom forming a back wall and connected by interchangeable left and right side elements and defining a substantially rectangular front aperture;
(b) selecting the left and right side elements to compartmentalize the storage within said module of either one dual compact disc box and one single compact disc box, three single compact disc boxes or two standard audio cassette boxes;

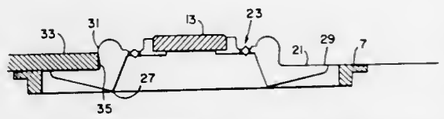


(c) providing said cap with a plurality of grooves and flanges interspaced thereon; and
(d) providing on said bottom a plurality of T-shaped projections corresponding to said grooves and flanges of an adjoining module, whereas numerous modules may be connected together in a vertical and horizontal direction to form a storage system.

5,251,750
MOLDED CD TRAY AND POP UP ROSETTE THEREFOR

Paul J. Gelardi, P.O. Box 127, Cape Porpoise, Me. 04014; John A. Gelardi, Kennebunkport, Me.; David A. Capotosto, Kennebunk, Me., and Anthony L. Gelardi, Kennebunkport, Me., assignors to Paul J. Gelardi, Kennebunkport, Me.

Filed Apr. 22, 1992, Ser. No. 872,124
Int. Cl.[5] B65D *85/57*
U.S. Cl. 206—310 10 Claims

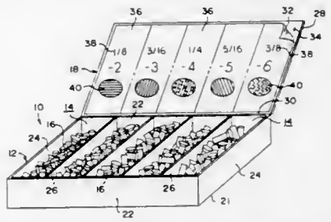


1. A CD tray comprising a tray molded of elastic material, incorporating a flat planar surface for nesting a compact disc, a central rosette molded into the planar surface for engaging an inner center hole of the CD, means for locking the rosette in CD-engaging or CD ejection positions, the rosette further having engagement arms integrally hinged to a center button, which is integrally hinged to ejection arms, the engagement arms being inwardly-extending tines of the planar surface having raised sections for engaging the CD and central ends integrally and livingly hinged to the center button, the ejection arms having sections extending downward towards the planar surface within the areas for fulcruming each of a plurality of distal ejection ends upwards through the areas upon depression of the center button.

5,251,751
COLOR CODED KIT OF RIVETS ACCORDING TO LENGTH

Ernest Prussen, 3842 Hudson Ave., Seaford, N.Y. 11783

Filed Nov. 2, 1992, Ser. No. 969,985
Int. Cl.[5] B65D *85/58*
U.S. Cl. 206—338 1 Claim



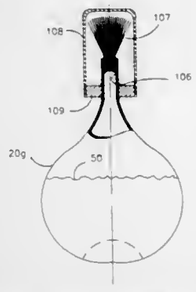
1. A color coded kit of rivets according to length which comprises:
a) a receptacle having a plurality of compartments, wherein said receptacle includes:
i) a bottom wall;
ii) a pair of upstanding side walls;
iii) a pair of upstanding end walls;
iv) a plurality of upstanding partition walls spaced apart and parallel to said end walls for dividing said receptacle into said plurality f compartments; and
v) a lid hinged to one of said side walls and being of a size to a completely cover said plurality of compartments in said receptacle;
b) a plurality of different sets of rivets, each said set of rivets being of a different length and color stored in one of said compartments; and
c) a chart for indicating the length and matching color of each said set of rivets within said receptacle, so that a person can immediately identify by color from said chart, the length of rivets required and remove them from said receptacle, whereby when the user is removing rivets for use therefrom, should any drop into an adjoining compartment the rivet can be easily seen by the user so that it will be obvious, that they are not in their proper place, wherein said chart includes:
i) an adhesive backing, so that said chart can be attached to the underside of said lid; and
ii) a plurality of spaced apart columns, each said column being of a width approximately of a width of each said compartment and having indicia thereon indicating the length and color of said respective set of rivets within said compartment, so that when said lid is opened the person can see all of said sets of rivets within all of said compartments and easily identify their lengths with the aid of said chart.

5,251,752
WET BLADE RAZOR STORAGE AND PRESERVATIVE APPARATUS

Ahnal A. Purohit, Darien, Ill., assignor to Anshal, Inc., Darien, Ill.

Continuation-in-part of Ser. No. 495,471, Mar. 19, 1990, Pat. No. 5,007,533. This application Apr. 12, 1991, Ser. No. 684,661
Int. Cl.[5] A46B *11/04, 17/04*
U.S. Cl. 206—352 2 Claims

1. Apparatus for preserving for storage during nonuse a wet razor having a cutting blade edge, comprising the combination of
a portable vessel containing only mineral oil and a hygroscopic material in the mineral oil;
means for exposing the razor blade edge to said mineral oil, and for moving the razor and the mineral oil relative to one another to provide that the blade edge is effectively and throughly coated with the mineral oil;
said means for exposing the razor blade to said mineral oil comprising said vessel having an outlet opening for the mineral oil and flexible brush bristles in and projecting beyond the vessel from said opening, said brush bristles being suited to be moved against and relative to the blade for coating it with the mineral oil;

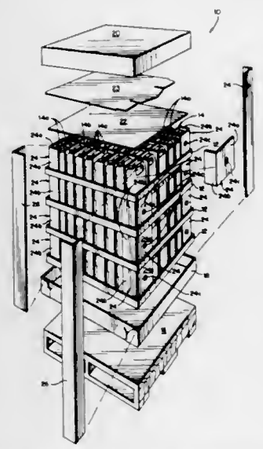


thereby providing a protective mineral oil coating on the razor to allow razor storage even when exposed to atmospheric air while preserving the razor sharpness from dulling chemical oxidation;
the portable vessel being comprised as a throw-away squeeze-bulb; and
a cover cooperating removably with the vessel and operable when in placed on the vessel for enclosing said flexible brush bristles, for when the apparatus in not being used.

5,251,753
COMBINED PRODUCT SHIPPING AND DISPLAY UNIT

Daniel Pigott, Andover, and John Davis, River Edge, both of N.J., assignors to BASF Corporation, Parsippany, N.J.

Filed Oct. 23, 1992, Ser. No. 965,453
Int. Cl.[5] B65D *19/00*
U.S. Cl. 206—386 10 Claims



1. A combined product shipping and display unit comprising:
a pallet;
a pallet skirt disposed on said pallet and having opposed pairs of side walls which are upwardly positioned when in a shipping condition so as to expose corresponding sides of said pallet, and which may be reverse folded so as to be

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downwardly positioned so as to hide said corresponding sides of said pallet when in a display condition;

a number of vertically stacked product container layers supported upon said pallet, each said product container layer including (i) a selected number of product containers arranged in a predetermined array, (ii) a horizontal tray defining an interior area for supporting the array of product containers therewithin, and (iii) a vertical divider assembly including interleaved lengthwise and widthwise extending divider boards for separating one product container from another and for establishing said predetermined array of said product containers supported within said interior area of said tray;

a cap structure covering an uppermost one of said product container layers, wherein a bottom-most one of said product container layers is nestably received within said pallet skirt when in a shipping condition; and

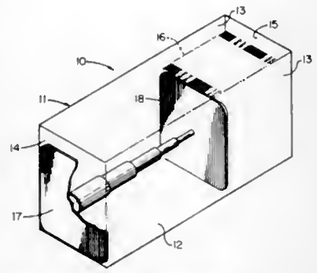
a corner protector assembly disposed at each corner of the shipping and display unit which includes (a) longitudinally folded right angle corner supports vertically extending between adjacent trays of said product container layers, and (b) an elongate longitudinally folded right angle corner post which is positioned exteriorly adjacent said corner supports and extends between said pallet skirt and said cap structure.

5,251,754

CARD SPACER APPARATUS

James S. Carter, 6632 Clybourn Ave. #141, N. Hollywood, Calif. 91606

Filed Nov. 24, 1992, Ser. No. 981,085
Int. Cl.[5] B65D *81/02*
U.S. Cl. 206—449 **5 Claims**



1. A card spacer apparatus, comprising,

a container, the container having a floor, spaced side walls, a first end wall spaced from a second end wall,

and

an abutment assembly positioned within the container, with the abutment assembly including a first abutment plate in communication with the first end wall within the container, and a second abutment plate arranged in a spaced orientation relative to the first abutment within the container,

and

biasing means mounted to the first abutment plate and the second abutment plate to bias the first abutment plate relative to the second abutment plate in a spaced relationship, and

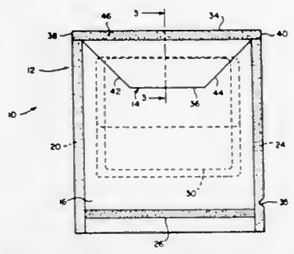
the biasing means includes a plurality of tube members, wherein the plurality of tube members includes a first tube fixedly and orthogonally mounted medially of the first abutment plate between the first abutment plate and the second abutment plate, and a second tube telescopingly received within the first tube, and a third tube telescopingly received within the second tube, a fourth tube telescopingly received within the third tube, and a fifth tube telescopingly received within the fourth tube, the fifth tube mounted medially and orthogonally of the second abutment plate.

5,251,755

PACKAGE HAVING A LEADER SECURED OVER A POUCH

Thomas J. Kausch, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 802,966, Dec. 6, 1991, abandoned. This application Oct. 30, 1992, Ser. No. 969,553
Int. Cl.[5] B65D *85/30*
U.S. Cl. 206—455 **6 Claims**



1. A package for enclosing a plurality of sheets of photosensitive material, the package comprising:

a pouch capable of receiving a plurality of sheets of a photosensitive material, the pouch having a first face and second face located in generally parallel planes, said first and second faces each having an inner surface and an outer surface, and means sealing the faces together so as to form a light tight space for receiving and completely surrounding and sealing a plurality of sheets of a photosensitive material placed within the pouch, the pouch having a leading edge, a bottom edge, and first and second side edges extending between the leading edge and bottom edge, and

a leader positioned entirely over the outer surface of the first face of the pouch, the leader having a first edge secured to the leading edge of the pouch and other portions of the leader being free from the first face of the pouch so that the other portions of the leader can be lifted from the pouch for removal of the sheets of a photosensitive material from the pouch through an opening provided in the pouch at the end opposite said leading edge by pulling the leader in a direction substantially parallel to the said planes in which the first and second faces lie and away from the bottom edge.

6. A package for enclosing a plurality of sheets of photosensitive material, the package comprising:

a pouch capable of receiving a plurality of sheets of a photosensitive material, the pouch having a first face and second face located in generally parallel planes, said first and second faces each having an inner surface and an outer surface, and means sealing the faces together so as to form a light tight space for receiving and completely surrounding and sealing a plurality of sheets of photosensitive material within the pouch, the pouch having a leading edge, a bottom edge, and first and second side edges extending between the leading edge and bottom edge, and

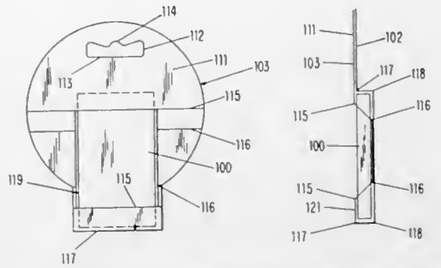
a leader positioned over the outer surface of the first face only of the pouch, the leader having a first edge secured to the leading edge of the pouch, the leader having two side edges substantially perpendicular to the first edge, the side edges of the leader being secured to the sides edges of the pouch and the other portions of the leader between the side edges being free from the first face of the pouch so that it can be lifted from the pouch for removal of the sheets of photosensitive material from the pouch through an opening provided in the pouch at the end opposite said leading edge by pulling the leader in a direction substantially parallel to the said planes in which the first and second faces lie and away from the bottom edge, the leader further comprising two rows of perforations between the side edges of the leader so that the leader can be pulled away from the pouch by tearing the leader along the row the perforations.

5,251,756

PACKAGING FOR PRESENTING PARALLELEPIPEDAL GOODS

Kenneth Grange, London, England, assignor to Wilkinson Sword Gesellschaft mit beschränkter Haftung, Solingen, Fed. Rep. of Germany

Filed Mar. 27, 1992, Ser. No. 858,673
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1991, 9103752[U]
Int. Cl.[5] B65D *73/00*
U.S. Cl. 206—461 **12 Claims**



1. A packaging for presenting goods of an essentially parallelepipedal shape, said packaging comprising:

a first cardboard strip having a front surface and a back surface;

a second cardboard strip having a front surface and a back surface, with said back surface of said second cardboard strip being connected to said front surface of said first cardboard strip, said second cardboard strip having a receiving means for holding at least one dispenser;

said second cardboard strip having a first and a second folded portion extending parallel to one another and spaced from one another in a direction transverse to a longitudinal direction of said second cardboard strip;

said receiving means being in the form of a first and a second opening, with said first opening being provided in said first folded portion and said second opening being provided in said second folded portion, said openings having two narrow sides; and

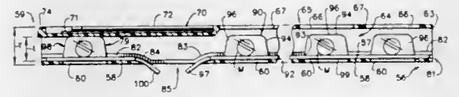
wherein said first cardboard strip has respective first and second folds to provide essentially a U-shaped cross-section to said first cardboard strip, and wherein said folded portions have respective first and second folds for providing an essentially U-shaped cross-section to said second cardboard strip, with said first and second folds of said folded portions being positioned in said first and second folds of sad first cardboard strip at said narrow sides of said openings, and further comprising cross-pieces attached to said first cardboard strip for forming longitudinal sides of said openings.

5,251,757

EXCHANGEABLE UNIT DOSE MEDICAMENT DOSING SYSTEM AND METHOD

Christopher M. Relyea, Columbus; Mark A. Relyea, Powell, and Michael S. Relyea, Grove City, all of Ohio, assignors to Drustar, Inc., Grove City, Ohio

Filed Jan. 15, 1992, Ser. No. 821,480
Int. Cl.[5] B65D *83/04*
U.S. Cl. 206—531 **20 Claims**



1. A medicament cartridge and blister package combination for use in a reusable multiple unit does dispensing assembly, said combination comprising:

a reusable dispensing cartridge comprising a medicament support surface with front and rear longitudinal edges, and a plurality of dispensing openings spaced along its longitudinal length, a pair of front and rear upstanding support walls attached to said support surface adjacent corresponding longitudinal edges and a front face attached to said support walls and defining a medicament support volume therewithin;

means for slidably receiving a blister package within said medicament support volume, said receiving means comprising a pair of oppositely disposed track flanges each extending inwardly from one of said support walls adjacent said support surface along a portion of said longitudinal length of said cartridge and having means for mechanically aligning the blister package relative to said dispensing openings; and

a blister package comprising a longitudinal strip having a plurality of spaced pockets for housing a predetermined number of units doses of medicament, each pocket comprising deformable means for facilitating physical removal of said medicament from said pocket in use, a seal of frangible material overlying a dispensing opening of said pocket, and means for providing visual access into said pocket from outside said package, and means for mechanically interacting with said aligning means of said dispensing cartridge within said support volume as said blister package is slidably inserted into said cartridge to align and retain said blister such that said pockets are aligned with corresponding dispensing openings, whereby said blister package is held within said medicament support volume and medicament doses within said pockets can be dispensed therefrom through said aligned dispensing openings.

5,251,758

FOOD CONTAINER WITH GRIPPABLE PORTION HAVING SENSE OF TOUCH INDICIA

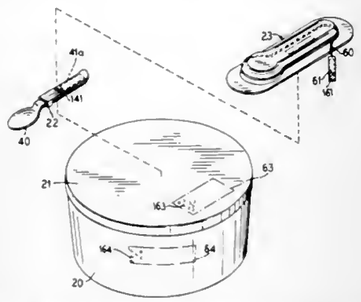
Ivo Kolacek, Cicero, Ill., assignor to Liblan & Co., Ltd., Cicero, Ill.

Continuation of Ser. No. 729,568, Jul. 15, 1991, abandoned. This application Oct. 8, 1992, Ser. No. 958,478
Int. Cl.[5] A45C *11/20*
U.S. Cl. 206—542 **18 Claims**

1. A combination food container and utensil, said combination comprising a container having a compartment for holding food and an opening, which is formed by an upper periphery of a side wall of the container and through which the compartment can be accessed; lid means covering the opening, said lid means having a generally flat upper surface; an elongated utensil having a length less than the cross dimensions of said opening and having a handle portion and a food portion; bubble means engaging the upper surface of the lid means and

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coacting therewith to form an enclosure for receiving and holding the utensil on said lid means entirely within an area being defined by the upper periphery of the side wall, said combination including indicating means for a visually impaired person to determine the contents of both the container and enclosure without utilizing visual senses, the indicating means including the bubble means being formed of a thin pliable sheet



of material, which enables determining the type of utensil by utilizing the sense of touch to feel the utensil through the bubble means, said bubble means including a tear-string molded in the material of the thin sheet forming the bubble means so that pulling said tear-string enables opening said bubble means, said tear-string having an end provided with an information surface readable by a sense of touch.

5,251,759

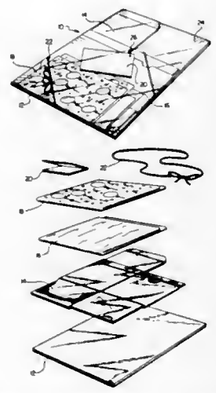
GIFT PACKAGING AND WRAPPING ENSEMBLE

James M. Gannon, and Germaine A. Gannon, both of 21 W. 542 22nd St., Glen Ellyn, Ill. 60137

Filed Mar. 24, 1993, Ser. No. 36,483

Int. Cl.[5] B65D *71/00*

U.S. Cl. 206—575 **7 Claims**



6. A packing and wrapping kit for gift merchandise comprising, in combination, the components of:

a. a backing member for supporting and protecting said kit;

b. a preformed, collapsible, erectable gift box;

c. interior wrapping material for at least partially surrounding a gift placed in said gift box;

d. exterior wrapping material for at least partially surrounding said gift box after being erected;

e. a greeting card for personalizing said packing and wrapping kit;

f. trimming means for further decorating said erected gift box, and;

g. content identification means substantially including material for enclosing said packing and wrapping kit components such that said components are easily identifiable to a prospective purchaser of said gift packing and wrapping kit.

5,251,760

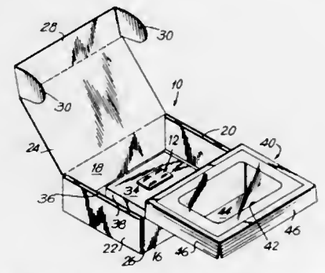
SHIPPING PACKAGE

Jeffrey A. Smith, Plainfield, and Herbert Aronowitz, Cranford, both of N.J., assignors to Squire Corrugated Container Corp., Linden, N.J.

Filed Feb. 16, 1993, Ser. No. 18,440

Int. Cl.[5] B65D *85/30*

U.S. Cl. 206—583 **10 Claims**



1. A package for protecting an article, comprising:

(a) a container having a base;

(b) a raised stationary platform within the container for stationarily supporting an article positioned on the platform, said platform lying in a plane elevated above the base and having a predetermined area;

(c) a generally planar frame having an opening larger than said predetermined area, and a resilient film stretched over the opening and attached to the frame, said frame being mounted for movement within the container to a guard position in which the frame surrounds, and is positioned below the plane of, the platform and in which the film resiliently contacts the article and resiliently urges the article against the platform; and

(d) means for holding the frame in the guard position.

5,251,761

METHOD OF COLLECTING RECYCLABLE MATERIALS

David Hansen, West Sand Lake, and Patrick F. Mahoney, Rensselear, both of N.Y., assignors to EAC Systems, Inc., Albany, N.Y.

Continuation-in-part of Ser. No. 350,085, May 10, 1989, Pat. No. 5,072,833. This application Dec. 10, 1991, Ser. No. 805,305

The portion of the term of this patent subsequent to Dec. 17, 2008, has been disclaimed.

Int. Cl.[5] B07C *5/02*

U.S. Cl. 209—3.3 **8 Claims**

1. A method of handling recyclable materials, comprising:

providing flexible bags to a community for filling with recyclable materials and subsequent closure of said bags;

collecting said bags within a compactor-type collection vehicle at a plurality of sites once said bags have been filled with substantially exclusively recyclable materials and then closed;

compacting said bags within said vehicles such that a high percentage of said bags survive the compaction without spilling the recyclable materials contained therein;

transporting said compacted, filled bags within said vehicle to a delivery point; and

emptying said bags.

5,251,762

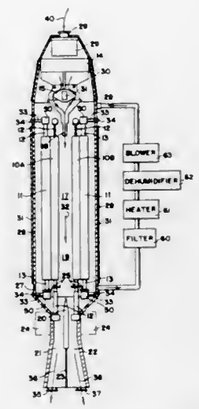
ELECTROSTATIC SEPARATION OF PARTICLES

Joseph B. Taylor, Neptune Beach, and Arnold H. Jackson, Jacksonville, both of Fla., assignors to Carpco, Inc., Jacksonville, Fla.

Filed Apr. 3, 1992, Ser. No. 863,064

Int. Cl.[5] B03C *7/00*

U.S. Cl. 209—127.4 **17 Claims**



1. An apparatus for electrostatically separating a feed mixture of two types of particles which comprises feeding the particles into the upper feed end of vertical free fall zone having an upper feed end and a lower discharge end between two horizontally spaced rows of a plurality of spaced rotating vertical axis elongated cylindrical electrodes, said lower discharge end having a splitter coextensive with said discharge end, and recovering two separated products each of different types of particles originally in said feed mixture, said rotating electrodes in each of said two rows being continuously cleaned by a plurality of vertically positioned, rotating, elongated cylindrical brushes contacting said electrodes in each of said two rows, and means for rotating said electrodes and said brushes, and means for applying an electric charge to each of said electrodes in each of said two rows, said electrodes and said brushes contacting said electrodes rotating in opposite directions with respect to each other.

5,251,763

CONVEYING APPARATUS AND SEPARATION APPARATUS

Christopher P. Morris, Carlton, England, assignor to Hambro Machinery Limited, United Kingdom

PCT No. PCT/GB88/01041, § 371 Date May 9, 1991, § 102(e) Date May 9, 1991, PCT Pub. No. WO89/04802, PCT Pub. Date Jun. 1, 1989

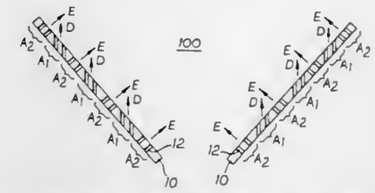
PCT Filed Nov. 28, 1988, Ser. No. 392,532

Claims priority, application United Kingdom, Nov. 26, 1987, 8727701

Int. Cl.[5] B07B *4/00*

U.S. Cl. 209—136 **3 Claims**

1. An elutriator for separating different grades of leaf material and comprising distribution means, an elutriation zone disposed above the distribution means, fluid supply means for supplying a fluid to said zone through the distribution means, said distribution means comprising two distribution plates which diverge in an upward direction, each distribution plate being operative to direct the fluid therethrough in a direction which has a component extending along a surface of the plate by way of having areas provided with apertures at angles relative to the surface of the plates, said areas comprising first and second areas each extending substantially entirely across the plate, said first and second areas being arranged alternately from one end of the plate to the other with the apertures in the first areas being of an angle relative to the surface of the plate different from the angle of the apertures in the second areas



relative to the surface of the plate, wherein, in use, the velocity of air delivered to the elutriation zone is greater than the terminal velocity of at least one grade of the material to be separated.

5,251,764

FLOTATION MACHINE

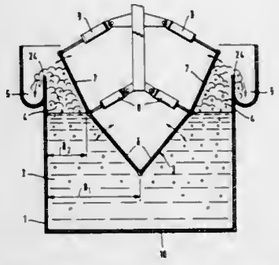
Timo U. Niitti, Vantaa, and Jouko O. Kallioinen, Hollola, both of Finland, assignors to Outomec Oy, Espoo, Finland

Filed Mar. 26, 1992, Ser. No. 858,106

Claims priority, application Finland, Mar. 27, 1991, 911486

Int. Cl.[5] B03D *1/14, 1/16*

U.S. Cl. 209—169 **6 Claims**



1. A flotation machine for removing mineral particles from a slurry containing such particles, comprising:

a wall means defining a flotation cell, a feed opening for introducing slurry into the cell and a foam outlet for discharging foam from the cell, said flotation cell having a bottom that is at a predetermined vertical distance from the foam outlet,

a mixing mechanism located inside the flotation cell,

an air supply means for supplying air to the cell, whereby a foam bed is formed in the cell, and

at least one baffle means disposed in said flotation cell for reducing the free horizontal cross-sectional area of the cell in the upward direction, said baffle means extending upwards from a position that is closer to the bottom of the flotation cell than to the foam outlet, wherein said baffle means comprises an upper baffle part and a lower baffle part, said lower baffle part being adjustably mounted in said cell and said upper baffle part being adjustably mounted to said lower baffle part, means to adjust the upper baffle part relative to the lower baffle part thereby changing the gradient of the free horizontal cross-sectional area of the flotation cell with respect to vertical position between the lower baffle part and the upper baffle part.

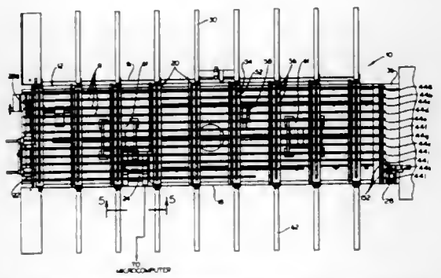
VOL 1155 ISS 2 OC 12 1993 UMI

5,251,765

APPARATUS AND METHOD FOR SEGREGATING RODS OF UNDESIRABLE ALLOY COMPOSITION

Stanley S. Patrick, Columbia, S.C., and Robert E. Shannon, Penn Township, Westmoreland County, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 13, 1990, Ser. No. 611,609
Int. Cl.[5] B07C *5/344*; G01N *27/14*
U.S. Cl. 209—520 16 Claims



1. An apparatus for segregating elongate cylindrical rods of undesirable alloy composition from rods having a desired alloy composition comprising,

a rod segregation table having an upper rod transport side and defining a rod entry side and rod discharge side, and including rod movement means for individually moving rods transversely in substantially parallel spaced relation across said upper rod transport side of said rod segregation table from said rod entry side, to an intermediate rod test position, and to said rod discharge side,

thermoelectric test means positioned at said rod test position, said thermoelectric test means having at least two spaced electrodes maintained at different temperatures and being adapted and arranged to engage a cylindrical rod to be tested as it is moved into said rod test position so as to induce a thermoelectric voltage at junctures of the rod and two spaced electrodes, and

means connected to said electrodes for receiving signals representative of said induced thermoelectric voltage and for comparing said signals to a predetermined value, and

means for moving the rod to an offset position on the rod segregation table when said signals differ from the predetermined value by a predetermined amount.

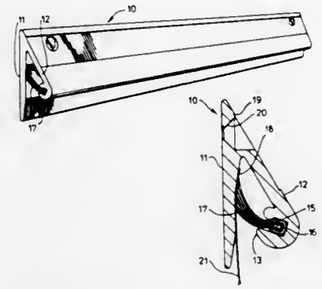
5,251,766

HOLDER FOR SHEET MATERIAL

James A. Barry, 1 Wellfield Cottages, Wellfield Lane, Timperley, Altrincham, Cheshire, England

Filed Mar. 11, 1992, Ser. No. 849,204
Int. Cl.[5] A47F *5/08*
U.S. Cl. 211—89 4 Claims

1. A holder for sheet material comprising an elongate structure having an upright elongate part adapted for attachment to a surface, a further elongated part attached to and extending at an angle to said upright elongate part and defined between opposed walls thereof a downwardly opening elongate slot for the introduction of a sheet of material; characterized by a portion of said upright elongate part being inclined upwardly and inwardly toward said further elongate part to define a concave portion on said upright elongate part; an inwardly facing elongate recess defined within and extending along said further elongate part; and an elongate brush strip retained within the elongate recess and having bristles of such a length as to extend across the elongate slot and to bear resiliently and be deformed upwardly against the concave portion of said upright elongate part, thus causing a substantially constant



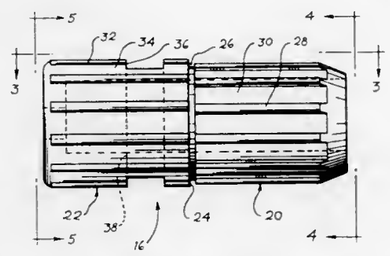
holding friction between each of the bristles and said concave portion.

5,251,767

END CAP FOR HANGER CADDY

Gregg E. Wiederer, Glenview, Ill., assignor to Hanger Tight, Northbrook, Ill.

Filed Nov. 27, 1991, Ser. No. 800,548
Int. Cl.[5] A47H *13/00*
U.S. Cl. 211—124 10 Claims



1. In a garment hanger caddy of the type comprising a tubular member, a retainer strip substantially coextensive with the tubular member, and a pair of latching members, each secured to a respective end of the retainer strip, the improvement comprising:

a pair of end caps, each positioned in a respective end of the tubular member, each end cap comprising:

an inner portion sized to fit into a respective end of the tubular member, said inner portion defining a plurality of splines in frictional contact with the tubular member and a plurality of planar flats, each flat positioned between a respective adjacent pair of splines;

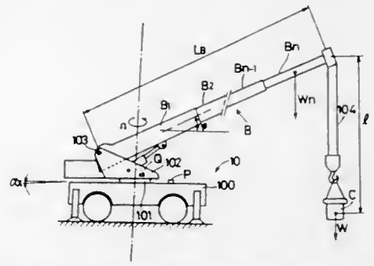
an outer portion which defines a stop surface sized to abut the respective end of the tubular member.

5,251,768

METHOD AND DEVICE FOR CONTROLLING BRAKING OF AN UPPER ROTARY BODY OF A CONSTRUCTION MACHINE AND A DEVICE FOR CALCULATING THE INCLINATION ANGLE OF THE UPPER ROTARY BODY

Hideaki Yoshimatsu, Akashi, and Kouichi Fukushima, Kobe, both of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

PCT No. PCT/JP90/01232, § 371 Date Nov. 25, 1991, § 102(e) Date Nov. 25, 1991, PCT Pub. No. WO91/14645, PCT Pub. Date Oct. 3, 1991
PCT Filed Sep. 25, 1990, Ser. No. 776,413
Claims priority, application Japan, Mar. 23, 1990, 2-75294; Aug. 20, 1990, 2-219689
Int. Cl.[5] B66C *13/50*
U.S. Cl. 212—154 17 Claims



1. A method for controlling rotation of an upper rotary body of a construction machine, the upper rotary body being rotatably mounted on a lower body of the construction machine for lifting a load from a predetermined position thereof, the method comprising the steps of:

determining, based on a radius of rotation of the lifted load, the weight of the lifted load, the inertia moment of the upper rotary body and a permissible weight of the upper rotary body, a permissible condition which does not generate a lateral bending force beyond the lateral bending strength of the upper rotary body;

braking the rotation of the upper rotary body at a rotational angular acceleration β defined by the following equation to stop the rotation of the upper rotary body;

$$\beta = -\omega \cdot \Omega o / 2n \cdot \pi$$

wherein n denotes a minimum one of natural numbers satisfying the permissible condition Ωo denotes the angular velocity of the upper rotary body before braking, and ω is represented as follows;

$$\omega = \sqrt{g/l}$$

wherein g denotes the acceleration of gravity, and l denotes the radius of swing of the lifted load.

5,251,769

TAMPERPROOF CLOSURE FOR BOTTLES AND THE LIKE

Piero Battegazzore, Alessandria, Italy, assignor to Guala S.p.A., Alessandria, Italy

Filed Oct. 2, 1992, Ser. No. 955,666
Claims priority, application Italy, Oct. 17, 1991, MI91A002754
Int. Cl.[5] B65D *41/34*
U.S. Cl. 215—252 13 Claims

1. A tamperproof closure for bottles comprising:

a cylindrical body adapted for association with a bottle;

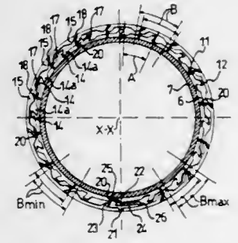
a cap;

thread means on the cylindrical body and the cap for removably screwing the cap to the cylindrical body;

a distortable band fixed circumferentially around the cap, the distortable band having a weakening line between the distortable band and the cap;

a plurality of teeth circumferentially arranged around the cylindrical body and raked rearwardly in a cap unscrewing direction;

a plurality of counter-teeth circumferentially arranged around the distortable band, each counter-tooth positioned a predetermined distance from a respective tooth of the cylindrical body, each counter-tooth raked forwardly



in the cap unscrewing direction, and each counter-tooth engaging a respective tooth of the cylindrical body during an unscrewing of the cap, such that each counter-tooth is drawn toward the distortable band for forming a depression in the distortable band when the cap is unscrewed in the unscrewing direction; and

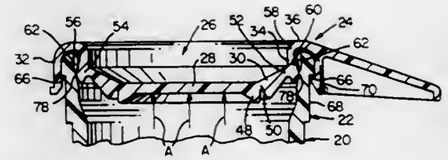
a plurality of cams circumferentially arranged around the distortable band, each cam positioned between a respective tooth and a respective counter-tooth such that when the cap is unscrewed in the unscrewing direction the cam engages the respective tooth displacing the cam outwardly from the distortable band and forming a projection in the distortable band.

5,251,770

CONTAINER AND PRESSURE SEALING CLOSURE COMBINATION

Harold D. Bartley, Springfield, and William R. Gaiser, Spring Valley, both of Ohio, assignors to Broadway Companies, Inc., Dayton, Ohio

Filed May 6, 1992, Ser. No. 879,768
Int. Cl.[5] B65D *53/00*
U.S. Cl. 215—270 27 Claims



1. A container and pressure-sealing closure combination comprising:

a container having an annular mouth; and

a closure shaped to cover said mouth;

said mouth having means for conducting pressurized gaseous contents of said container to the ambient between said closure and said container;

said closure having a rim portion engaging said mouth, a substantially rigid central portion, and an annular toggle portion pivotally connected to and interconnecting said rim portion and said central portion at distinct relatively thin hinge locations, whereby upward movement of said central portion in response to internal pressure from contents of said container pivots said toggle portion to urge

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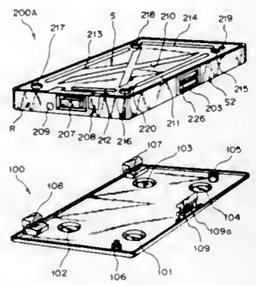
said rim portion substantially radially outwardly against said mouth, thereby effecting a seal.

5,251,771

STRUCTURE OF A CASING FOR A VEHICLE-MOUNTED RADIO COMMUNICATION APPARATUS

Minoru Hotsumi, Tokyo, and Hiroshi Yoshida, Saitama, both of Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Sep. 30, 1992, Ser. No. 953,245
Claims priority, application Japan, Oct. 1, 1991, 3-079631[U]
Int. Cl.[5] B65D *51/18*
U.S. Cl. 220—4.01 4 Claims



1. In a structure of a rectangular parallelepiped box-like casing to be removably affixed to a flat rectangular fixture, said fixture comprising:

at least first and second positioning means provided on a bottom of said fixture;

first and second locking means adjoining a first side edge of said fixture; and

third locking means adjoining a second side edge of said fixture facing said first side edge;

said casing comprising:

third and fourth positioning means provided on a surface of said casing and positioned by, respectively, said first and second positioning means of said fixture;

fifth and sixth positioning means provided on a back of said casing and positioned by, respectively, said first and second positioning means of said fixture;

third and fourth locking means provided on a first side of said casing and locked by, respectively, said first and second locking means of said fixture, when the rear of said casing is connected to said fixture; and

fifth and sixth locking means provided on the first side of said casing symmetrically with said third and fourth locking means with respect to a longitudinal center line of said first side and locked by, respectively, said first and second locking means of said fixture when the surface of said casing is connected to said fixture.

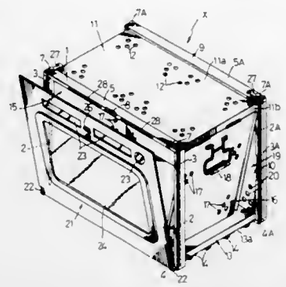
5,251,772

DOCUMENT FILING CASE

Yoshiaki Toguchi, 3-18-8 Makiminato, Urasoe-Shi, Okinawa-Ken, Japan

Filed Oct. 28, 1992, Ser. No. 967,497
Int. Cl.[5] B65D *6/18, 6/26*
U.S. Cl. 220—6 2 Claims

1. A document filing case comprising: opposite rectangular front and rear frame members; an upper wall member having a first end portion pivotally connected to the front frame member and a second end portion guided into a longitudinal groove formed in the rear frame member; a bottom wall member having a third end portion pivotally connected to the rear frame member so as to oppose the upper wall member and a fourth end portion is guided into a longitudinal groove formed in the front frame member; left and right side walls pivotally connected to the upper wall member so that said left and right side walls can rotate to a vertical position from a folded state when the bottom wall member and the upper wall member rotate about a hinge so that said bottom and upper wall members are opposite to each other and in a horizontal position; a rear wall attached on the rear frame member; and a front wall pivotally connected to the front frame member so that said front wall can be opened and closed when said document case is in an erected state; engagement holes respectively formed in



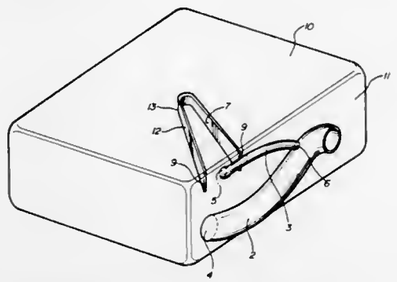
a bottom wall portion of each of said front and rear frame members; engagement projections formed in the upper wall portions of the front and rear frame members are adapted to be fitted into engagement holes of a front and rear frame member of another document filling case; and hook-shaped engagement pieces are rotatably attached to engagement projections of the front and rear frame members.

5,251,773

FUEL TANK ASSEMBLY

David T. Bowles, Chelmsford, and Ronald P. Pardy, Tiptree, both of England, assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 27, 1991, Ser. No. 766,536
Claims priority, application United Kingdom, Sep. 29, 1990, 9021247
Int. Cl.[5] B65D *25/00*
U.S. Cl. 220—86.2 2 Claims



1. A blow-molded plastic fuel tank having a top surface and a side surface, and further comprising:

a first aperture in said side surface;

a second aperture in said side surface below said first aperture;

a fuel filler pipe communicating with said second aperture;

a sensing tube communicating between said first aperture and said filler pipe; and

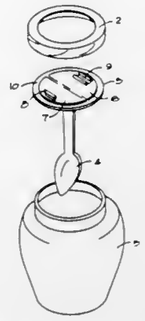
a U-shaped enclosure extending downwardly into said tank and formed integral with said top surface, said enclosure having a planar base extending from an ullage point to said side surface at or slightly above said second aperture, whereby said tank may be filled through said filler pipe to a level not exceeding said ullage point.

5,251,774

LID WITH UTENSIL AND HANDLE

Willis S. Engle, 18367 Manorwood West, Mt. Clemens, Mich. 48044

Filed Aug. 7, 1992, Ser. No. 926,753
Int. Cl.[5] B65D *51/24*
U.S. Cl. 220—212 7 Claims



1. A lid with utensil and handle for use with a container comprising:

a closure plate dimensioned to close the opening of the container;

a utensil attached to the underside of said closure plate adapted to extend into the container;

handle means attached to the upperside of said closure plate to facilitate use of said utensil, said handle means comprised of a plurality of handle sections flexibly attached to said closure plate in a manner which allows said flexibly attached handle sections to lie flat against said closure plate when not in use, and which further allows said flexibly attached handle sections to be rotated together whereby said flexibly attached handle sections together form said handle means;

securing means to removably secure said closure plate to the container; said handle sections comprising

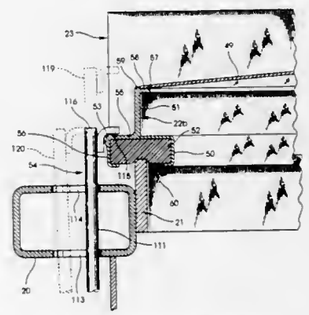
connecting means for removably connecting said flexibly attached handle sections to each other when said flexibly attached handle sections are rotated together to form said handle means.

5,251,775

WASTE HANDLING CONTAINER WITH SLIDING LID

Kent Kruzick, and Brooks Roudebush, both of Winamac, Ind., assignors to Galbreath Incorporated, Winamac, Ind.

Filed May 1, 1992, Ser. No. 877,401
Int. Cl.[5] B65D *43/18, 43/20*
U.S. Cl. 220—331 32 Claims



1. A waste handling container, comprising:

a container body with an upwardly facing opening and sides;

a lid sized to cover the opening;

lid controlling and supporting means connected with said container body and said lid for holding said lid for lateral sliding movement and pivoting movement between closed and open positions, the closed position including said lid being horizontally positioned directly over the container opening and the open position including said lid being vertically positioned along one side of said container body;

sealing means for providing a fluid tight seal between said lid and said container body when said lid is pulled from the closed position to a clamped position tightly covering and sealing the opening, said sealing means including at least one sealing channel mounted to said lid, the sealing channel containing resilient sealing gasket material adapted to engage with a sealing flange extending upwardly from said container body around the opening, wherein the sealing channel defines portions of bulbous clamping edges, and wherein the sealing channel has a substantially constant cross-section along its length, the cross-section including a lower, C-shaped channel portion which holds the gasket material therein and which defines a longitudinal gap for receiving the sealing flange therein and against the gasket material;

lid locking clamps mounted to said container body and adapted to engage with the portions of bulbous clamping edges to pull said lid from the closed position to the clamped position; and,

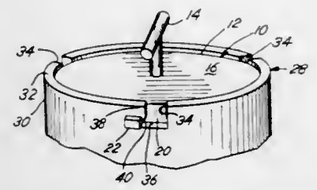
wherein the portions of bulbous clamping edges comprise one substantially continuous bulbous clamping edge along the outside of the sealing channel, and wherein the C-shaped channel portion defines a longitudinal outer side segment with a top, a longitudinal inner side segment opposite thereto and with a top, and a longitudinal upper segment connecting the tops of the inner and outer side segments, and wherein the longitudinal edge at the intersection between the outer side and upper segments is thickened relative to the entire channel, thereby forming the one continuous bulbous clamping edge.

5,251,776

PRESSURE VESSEL

H. William Morgan, Jr., P.O. Box 735, Michigan City, Ind. 46360, and James D. Hall, Cassopolis, Mich., assignors to H. William Morgan, Jr., Michigan City, Ind.

Filed Aug. 12, 1991, Ser. No. 743,673
Int. Cl.[5] B65D *51/16, 41/06*
U.S. Cl. 220—360 5 Claims



1. A pressure vessel having a housing with an opening defined by a side wall and a lid, said lid spanning the opening of said housing, locking means associated with said lid and housing for securing said lid to said housing, said lid being rotatably shiftable relative to said housing between a closed position for engaging said locking means to secure said lid to said housing and an open position for disengaging said locking means to release said lid from said housing, safety means associated with said locking means for preventing pressurization of said housing, wherein said safety means is inactive to allow pressurization of said housing as said lid is shifted into its closed position, said safety means including a vent opening through said side

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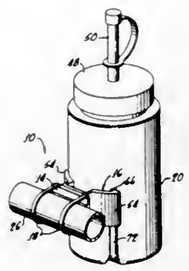
wall, said lid including a side edge, a portion of said side edge constituting means for covering and sealing said vent opening as said lid is shifted into its said closed position.

5,251,777

WATER BOTTLE AND MOUNTING BRACKET

Sean J. McMahon, Stockton, Calif., assignor to Great Relief Products, Inc., Stockton, Calif.

Filed Nov. 16, 1992, Ser. No. 977,061
Int. Cl.[5] F16M 13/02; B62J 11/00
U.S. Cl. 220—480 7 Claims



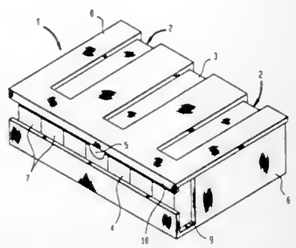
1. Bottle and bracket apparatus comprising:
a mounting plate;
means for fixing said mounting plate to a rail;
bracket means, rotatably mounted to said mounting plate, for supporting a bottle;
means for selectively fixing said bracket to said mounting plate at various angular positions, said means for selectively fixing said bracket means to said mounting plate further comprising a plurality of holes in said mounting plate, a plurality of protruding pins in said bracket means and arm means, outwardly extending from said bracket means, for enabling bending of the bracket means in order to remove said protruding pins from said holes, rotate the bracket means with respect to the mounting plate and reinsert the protruding pins into a different set of holes thereby fixing the bracket means at various angular relationships with said mounting plate; and
bottle means for both preventing selection of the various angular positions when the bottle is supported by said bracket means and for containing a liquid.

5,251,778

DISPENSER BOX FOR GRADUATED VESSELS

Wilfried Eggl, Lemgo, Fed. Rep. of Germany, assignor to Heinrich Amelung GmbH, Lemgo, Fed. Rep. of Germany

Filed Feb. 9, 1993, Ser. No. 15,558
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1992, 9202381
Int. Cl.[5] B65D 43/04
U.S. Cl. 220—526 8 Claims



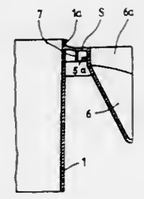
1. In a dispenser box for containment of graduated vessels of a type having an inlet opening for receiving fluids to be tested, the dispenser box having a broadside-defining top side provided with spaced and parallel elongated openings, with the inlet openings of the vessels facing the openings in the top side, and a longitudinal side provided with an ejection slot, the improvement comprising a sheet removably secured between the top side of the dispenser box and the vessels and covering the inlet openings of the vessels.

5,251,779

TRASH CONTAINER

Stefan Schmidt, Am Zollstock II, D-3565 Breidenbach-Achenbach, Fed. Rep. of Germany

Continuation of Ser. No. 470,989, Jan. 25, 1990, abandoned. This application Feb. 15, 1991, Ser. No. 657,339
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1989, 8900783
Int. Cl.[5] B65F 3/08
U.S. Cl. 220—656 16 Claims



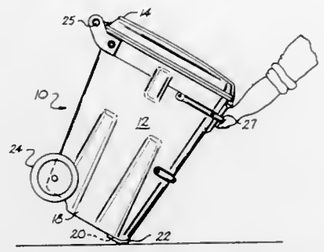
1. Trash container, comprising a body having a substantially rectangular cross section, a wall and a rim with opposite sides, a hinged lid supported on one of said opposite sides of said rim, the other of said opposite sides of said rim being formed as a receiving channel member having an open bottom and an outer wall, means for reinforcing said channel member so that the trash container is liftable thereby, and a guide device disposed on said outer wall of said receiving channel member for guiding a gripper of a hoisting and dumping apparatus into said receiving channel member, said guide device being formed of a guide tongue integral with said outer wall of said receiving channel and pointing downwardly away from said outer wall and away from said wall of said body.

5,251,780

REFUSE CONTAINER HAVING REMOVABLE WEAR-RESISTANT PADS

Norman C. Lee, Greensboro, N.C., assignor to Zarn, Inc., Reidsville, N.C.

Filed Nov. 24, 1992, Ser. No. 980,760
Int. Cl.[5] B65D 25/00
U.S. Cl. 220—630 3 Claims



1. An apparatus for collection of refuse comprising:
a container body which defines an interior receiving area;
a first end of said container body defining an access opening into said interior receiving area;
a second end of said container body being closed;

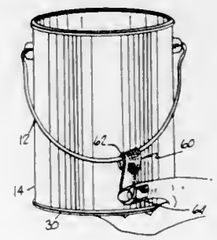
wheel means attached to one side of said container body adjacent said second end;
said second end of said container body having a resting surface opposite said wheel means, said resting surface having two corners at opposite sides of said container body which are subject to excessive wear during use;
a wear resistant element removably and replaceably attached to said container body adjacent each said corner to form a primary wear surface, thereby protecting said corners and extending the useful life of said apparatus; and
said container body being formed with at least one aperture adjacent each said corner and each said wear resistant element includes at least one complementary protrusion for engagement within a respective said aperture to secure said wear resistant element to said container body.

5,251,781

METHOD FOR STEADILY HOLDING A CONTAINER

Christopher R. Skelton, 2304 Lark Dr., Colorado Springs, Colo. 80909

Continuation of Ser. No. 718,637, Jun. 21, 1991, abandoned. This application Sep. 25, 1992, Ser. No. 952,697
Int. Cl.[5] B65D 25/28
U.S. Cl. 220—755 8 Claims



1. A method for steadily holding a container such as a paint can in one hand, said method comprising:
providing a container having a bottom, at least one side, and a swing handle with thumb engaging means for receiving a person's thumb so that the container can be steadily held in one hand when the thumb is engaging the thumb engaging means with the fingers and palm of the same hand located against the bottom of the container; and
engaging the thumb engaging means with at thumb of one hand and the bottom of the container with the fingers and palm of the same hand so that the container can be steadily held.

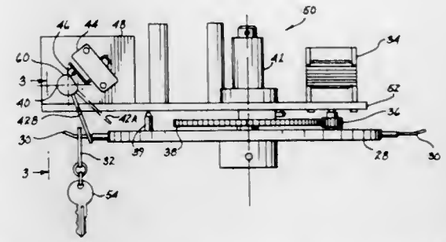
5,251,782

OBJECT DISPENSER APPARATUS AND METHOD

Kennith D. Crosby; William J. Tuten, both of Scottsdale, and Walter Luckeneder, Mesa, all of Ariz., assignors to Creative Technology, Inc., Scottsdale, Ariz.

Filed Aug. 16, 1991, Ser. No. 746,491
Int. Cl.[5] G07F 11/00
U.S. Cl. 221—2 43 Claims

1. A dispensing apparatus comprising, in combination:
an external housing;
a plurality of items to be dispensed one at a time located within said housing;
means coupled to said housing for verifying authorization to dispense said items;
a round carousel having a plurality of hooks located within said housing and upon which said items to be dispensed are placed one per hook;
dispensing means located within said housing for dispensing said items comprising:
a gear motor with shaft;
a hub fixedly attached to said shaft, said hub having a flat side normal to a plane of rotation;
a two-pronged fork fixedly attached to said hub;
activation means for turning said gear motor; and
switch means for stopping said activation means after said hub has accomplished one complete revolution;
access means for loading said items to be dispensed onto said carousel;
means for programming said means for verifying authorization to dispense when said items to be dispensed are placed on said carousel;



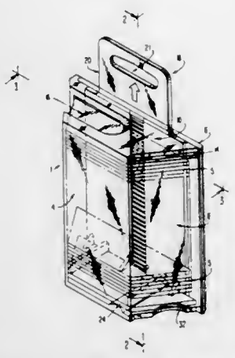
means for transferring said items to be dispensed from said carousel to a tray where the person desiring one of said items to be dispensed can remove said one item to be dispensed from said apparatus; and
rotation means for rotating said carousel until the one desired item of said items to be dispensed is disposed directly below said dispensing means and directly above said transferring means such that activating said dispensing means will cause the desired item to be dispensed to fall by the force of gravity into said transferring means, said rotation means allows for random selection of said items to be dispensed.

5,251,783

UTILITY BLADE DISPENSER

Donald Gringer, New York, N.Y., assignor to Allway Tools, Inc., Bronx, N.Y.

Filed Oct. 30, 1992, Ser. No. 969,045
Int. Cl.[5] A47F 1/00
U.S. Cl. 221—102 20 Claims



1. A blade dispenser for dispensing blades having a predetermined blade configuration comprising
a blade dispensing housing, said housing comprising a top wall, a bottom wall, a back wall extending between said top wall and said bottom wall, a front wall extending between said top and bottom walls and spaced from said back wall by a distance substantially corresponding to the width of said blade to be dispensed from said dispenser,

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and a pair of spaced apart side walls extending between said front and back walls and said top and bottom walls for defining an enclosed housing having a hollow interior substantially corresponding to said blade configuration, one of said side walls having a dispensing slot therein adjacent said top wall for dispensing said blades therefrom, said top wall having a guide slot in communication with said dispensing slot in said one side wall for guiding said blades out of said dispensing slot and

a substantially L-shaped blade carrier slidably mounted within said blade dispensing housing carrying said blades to be dispensed thereon, said blade carrier having a blade carrier platform extending between said back and front walls and an upstanding wall portion extending from said blade carrier platform, said top wall having a slot therein through which said upstanding wall portion extends for enabling said blade carrier to be lifted upwardly through said top wall slot for positioning one of said blades in a dispensing position adjacent said dispensing slot, said upstanding wall portion of said blade carrier comprising a first ratcheting member and said back wall comprising a second ratcheting member, said first and second ratcheting members engaging to form a ratchet for enabling said blade carrier to move upward and said housing to move downward with gravity to sequentially position said blades in a dispensing position adjacent said dispensing slot while preventing reverse movement of said blade carrier platform.

5,251,784

PACKAGED PRODUCTS DISPENSER DEVICE

Rafael I. Chacon Sevila, and Jose R. Garcia Rovira, both of Alicante, Spain, assignors to S. L. Assembler, Alicante, Spain

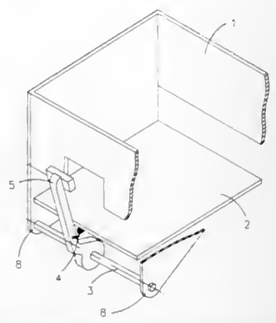
PCT No. PCT/ES90/00027, § 371 Date Feb. 14, 1992, § 102(e) Date Feb. 14, 1992, PCT Pub. No. WO91/19660, PCT Pub. Date Dec. 26, 1991

PCT Filed Aug. 2, 1990, Ser. No. 829,077

Claims priority, application Spain, Jun. 20, 1990, 9001712

Int. Cl.[5] G07F *11/24*

U.S. Cl. 221—220 **15 Claims**



1. Packaged products dispenser device, of such type used to sell products automatically, characterized in that it incorporates a compartment situated on the base of a vertical loader, which holds a pile of products by compartment walls and delivers one by one, the products piled up in the loader, delivering a product situated at a bottom and based on a down tilting movement of a base-plate incorporated in said compartment and a substantially simultaneous operation of a retaining element that, upon tilting of the base-plate is moved toward the compartment; also characterized by said base-plate supporting the pile of products, normally being perpendicular with respect to said compartment walls, and capable of rotating about an axis to release a lower product by expelling it downwards and towards a first side of the base-plate opposite said axis; and a retaining element rotatable independently of said base-plate, and activated by resilient means responsive to a tilting movement of the base-plate, to rotate said retaining element toward engagement with a product for holding the rest of the pile of products by immobilizing the product above the one being dispersed.

5,251,785

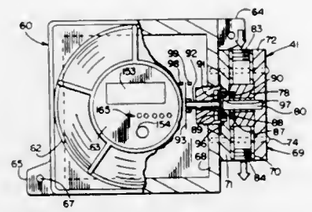
ADDITIVE INJECTION SYSTEM AND METHOD

Al P. Hayden, Norcross; Patrick L. Hayden, and Chuck Miller, both of Duluth, all of Ga., assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Feb. 6, 1992, Ser. No. 832,200

Int. Cl.[5] B67B *7/00*

U.S. Cl. 222—1 **23 Claims**



1. An additive injector system for injecting a controlled amount of a first fluid into a main stream of a second fluid, comprising:

an explosion-proof housing having a window through which can be transmitted electromagnetic energy encoded with information;

a first fluid flow line for passage of said first fluid to a flow passage for said second fluid;

a valve for controlling the flow of said first fluid through said first fluid flow line; and

electronic means for controlling said system, said electronic means being contained within said housing and comprising:

receiver means for receiving the information encoded electromagnetic energy when transmitted through said window;

signal processing means for decoding information included in said electromagnetic energy; and

control means for carrying out at least one predetermined function based on the decoded information.

5,251,786

BIOLOGICAL FLUID COLLECTION AND DELIVERY APPARATUS AND METHOD

Robert J. Sarrine, Beaumont, Tex., assignor to Helena Laboratories Corporation, Beaumont, Tex.

Filed Aug. 16, 1991, Ser. No. 746,410

Int. Cl.[5] B67D *5/00*

U.S. Cl. 222—82 **9 Claims**

1. Apparatus for drawing biological fluid from a patient into a test tube, the test tube being sealed with a puncturable closure, and for thereafter dispensing the biological fluid through the puncturable closure and from the test tube comprising:

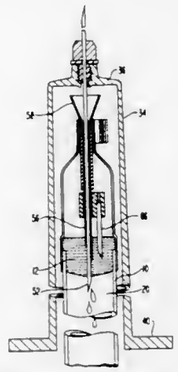
a flexible member adapted to be attached to said test tube;

cannula housing means positioned relative to said flexible member, said cannula housing means having first and second portions;

a first cannula supported by said cannula housing means second portion having a tip insertable through the puncturable closure;

said cannula housing means first portion for receiving a second cannula, whereby said second cannula is positioned within the bore of said first cannula, such that biological fluid from a patient flows through said cannula housing means and said first and second cannulas into the sealed test tube; and

said cannula housing means first portion being removable from said cannula housing means second portion whereby



upon flexing said flexible member, biological fluid flows from the sealed test tube through said first cannula.

5,251,787

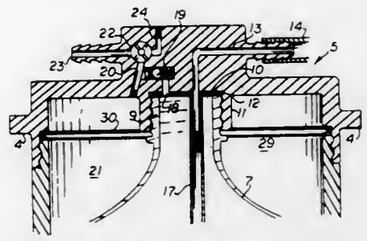
PRESSURIZED CONTAINER DISPENSER

Anton K. Simson, 13227 Aubrey, Poway, Calif. 92064

Filed Mar. 9, 1992, Ser. No. 848,323

Int. Cl.[5] B65D *35/28*

U.S. Cl. 222—95 **15 Claims**



1. A liquid dispenser which comprises:

a pressure chamber having an aperture;

means for sealing the aperture;

a liquid container inside the chamber, said container having collapsible walls and a spout terminating into an orifice;

a channel having an opening into the chamber and an exit port connected to said orifice;

a check-valve in the channel, said check-valve being biased to allow fluid flow from said opening towards said exit port when a selected differential pressure between the chamber and the container is exceeded;

a sealable conduit passing through said aperture and orifice and having an inlet in a region of the container opposite the spout, and an outlet outside the chamber; and

means for maintaining a certain pressure inside the chamber.

5,251,788

POUR SPOUT AND DISPENSER CLOSURE WITH DRAINAGE FEATURE

David N. Moore, Plainfield, Ill., assignor to Phoenix Closures, Inc., Naperville, Ill.

Filed Apr. 23, 1992, Ser. No. 872,044

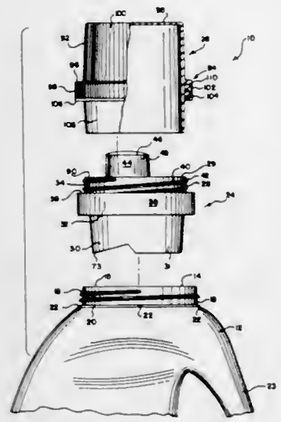
Int. Cl.[5] B67D *1/16*

U.S. Cl. 222—111 **8 Claims**

1. A dispenser closure for a container, the container having an interior being adapted to house fluid contents and having a threaded neck portion and a mouth portion terminating at an upper edge, the closure comprising:

a spout portion having an annular wall provided with a lower end, an interior surface, a central part and an upper end, said lower end dimensioned for insertion into said neck, said central part having a radially projecting peripheral shoulder with a depending skirt, said skirt being threaded on an interior surface, said threaded surface configured to threadably engage the neck of the container, said upper end of said annular wall having threads formed on an exterior surface;

a generally frusto-conically shaped spout being integral with said spout portion, said spout being generally non-concentrically disposed within said interior of said annular wall, said spout having an upper end and a lower end, said upper end terminating at an aperture, said aperture being



substantially the diameter of said upper end of said spout formation, said lower end terminating at an inclined floor disposed between said spout and said interior of said annular wall;

said inclined floor having an uppermost point and a lowermost point;

a drainage opening formed substantially through said lowermost point of said inclined floor adjacent to said interior of said annular wall, said drainage opening extending vertically through a portion of said lower end of said spout;

said spout being substantially closed from said upper end to said lower end, said spout having an inner channel in fluid communication with said aperture, said drainage opening and the interior of the container; and

a cap portion having means for threadably engaging said upper end of said annular wall.

5,251,789

IN-HOME DRINK DISPENSER

Edward L. Jeans, Lydart, Wales, assignor to Cadbury Schweppes, PLC, London, England

Division of Ser. No. 511,941, Apr. 16, 1990, Pat. No. 5,118,010, which is a cootinuation of Ser. No. 257,128, Oct. 7, 1988, abandoned, whicb is a continuation of Ser. No. 799,911, Nov. 20, 1985, abandoned. This application May 29, 1992, Ser. No. 890,428

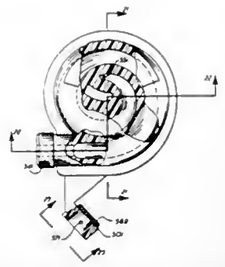
Int. Cl.[5] B67D *5/56*

U.S. Cl. 222—129.1 **47 Claims**

1. In a post mix drink dispenser including a source of diluent under pressure, a dispensing outlet having a cross section for dispensing said diluent and a dispensing valve between said dispensing outlet and said source, the improvement comprising, an expansion chamber having a curved path and being disposed between said source and said dispensing outlet and

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which has an inlet of narrow cross section and an outlet of a cross section sized similarly to said cross section of said dispensing outlet, the cross section of said expansion chamber gradually increasing between said inlet and said outlet.



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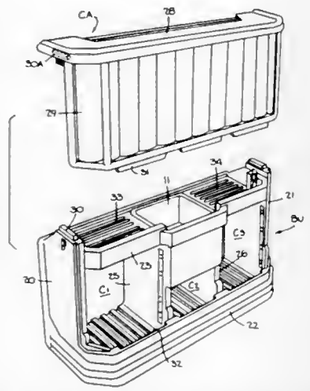
MOBILE BAR FOR DISPENSING COLD BEVERAGES

Robert J. Cohn, 61 Sterling Ave., Dallas, Pa. 18612, and Albert Kolvites, R.R. 3, Box 117A, Yeager Rd., Mountaintop, Pa. 18707

Filed Sep. 2, 1992, Ser. No. 939,693

Int. Cl.[5] A47B *96/18*; A47F *9/00*; B67D *5/62*

U.S. Cl. 222—146.6 **14 Claims**



1. A mobile bar having installed therein a beverage cooling and dispensing system including a cold plate having coils embedded therein intercoupled by a network of hoses to a dispensing gun, and beverage and other containers housed in the bar, said bar comprising:

(a) a generally rectangular base unit having open front and rear sides defined by a pair of vertical end walls bridged by upper and lower horizontal sections, the upper section being joined to the end walls below their upper edges, the space between the sections being divided into open cells in which the containers are received, said upper section being provided with a sink in which the cold plate is seated and is covered by ice in heat exchange relation with the coils, the network of hoses extending through a shallow region contiguous with the front side of the unit; and

(b) a serving counter/apron assembly detachable from the base unit, said assembly including a counter that is seated on the upper edges of the end walls and an apron that covers the open front side of the unit and conceals the network of hoses and the containers, whereby when said assembly is detached from the unit, the network of hoses and the containers are then exposed so that they may be cleaned as well as the interior of the base unit to maintain the bar in a sanitary condition.

5,251,791

CHILD-PROOF CLOSURE FOR A BOTTLE OR SIMILAR CONTAINER

Oscar J. van Leer, Eemnes, Netherlands, assignor to Docor B.V., Eemnes, Netherlands

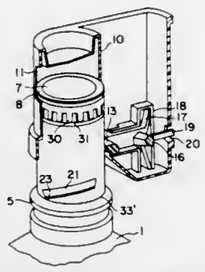
PCT No. PCT/NL89/00090, § 371 Date Mar. 26, 1991, § 102(e) Date Mar. 26, 1991, PCT Pub. No. WO90/06270, PCT Pub. Date Jun. 14, 1990

PCT Filed Nov. 28, 1989, Ser. No. 659,289

Claims priority, application Netherlands, Nov. 29, 1988, 8802942

Int. Cl.[5] B65D *55/12*

U.S. Cl. 222—153 **1 Claim**



1. In a child-proof closure for a container (**1**) having a neck (**2, 3**) having an external joining device (**4**) for a detachable closure cap, said neck (**2, 3**) having a radially projecting edge (**5**) situated beneath the joining device (**4**) which edge (**5**) is adapted to contact a ring of a said detachable closure cap, which ring grips under the said edge (**5**) and is joined to the removable closure cap by means of break strips which break upon a first unscrewing of the closure cap, a resilient locking device (**13**) which engages the neck (**2**) below said edge (**5**) and which has actuating means (**16, 29'**) for operating the locking device, means preventing access to said actuating means by fingers of a child, said locking device being located in a section of the closure which after removal of the detachable closure cap is placed over the neck (**2, 3**) and locked by said locking device (**13**), said locking device being unlocked by manipulation of said actuating means (**16, 29'**) by the finger of an adult; the improvement wherein a section of the child-proof closure has an internal screw thread by means of which said section can be placed on a part (**3**) of the said neck (**2**) provided with said joining device (**4**) instead of and only after removal of the detachable closure cap, said section having a tubular extension (**6**) above said internal screw thread, which extension (**6**) is in line with the neck (**2**) and has an outlet opening (**7**), a sliding valve (**10**) with a lateral outlet opening (**11**) mounted axially slidably on said extension (**6**), said sliding valve (**10**) closing the outlet opening (**7**) of the tubular extension (**6**) in a pushed-in closed position in which the sliding valve (**10**) is locked by the said locking device (**13**) under the said radially extending edge (**5**) of the neck (**2**), said sliding valve (**10**) after being unlocked by retracting said locking device (**13**) from below said radially extending edge (**5**) by said actuating means ()**16, 29'**), being adapted to be pushed upwardly into a position in which the outlet opening (**7**) of the tubular extension communicates with the lateral outlet opening (**11**) of the sliding valve (**10**).

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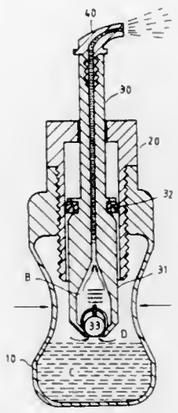
SPRAY BOTTLE WITH CONTROLLABLE SPRAY VOLUME

Chung-Shan Sheen, Suite 1, 11F, 95-8 Chang Ping Road, Sec. 1, Taichung, Taiwan

Filed Sep. 28, 1992, Ser. No. 951,821

Int. Cl.[5] B67D *5/06*

U.S. Cl. 222—205 **6 Claims**



1. A spray bottle comprising:

a resilient bottle substantially compressible under manual pressure for storing an ejective fluid in a lower portion thereof, wherein an air space is defined within said bottle above a surface layer of the fluid;

a top portion of said bottle having an elongate slide cavity therein being in communication with said air space in said bottle, and an aperture above said slide cavity in communication therewith;

an elongate spray tube with an enlarged chamber adjoined on a lower end thereof, said chamber being slidingly disposed in said slide cavity with said spray tube extending through said aperture and defining a gap therebetween;

a spray nozzle on the upper end of said spray tube;

a first unidirectional flow control means disposed around an outer periphery of an upper portion of said chamber for inhibiting the flow of air from said air space past said chamber into an upper portion of said slide cavity above said chamber upon a downward displacement thereof wherein air is drawn into the upper portion of said slide cavity through the gap between the aperture and said tube, and for enabling the flow of air from the upper portion of said slide cavity past said chamber into said air space upon an upward displacement of said chamber wherein air is expunged from the upper portion of said slide cavity through the gap;

a second unidirectional flow control means disposed in a lower end portion of said chamber for enabling the flow of air and said fluid into said chamber upon a downward displacement of said chamber through said air space into said fluid in the lower portion of said bottle, and for inhibiting the flow of said fluid from said chamber through said second unidirectional flow control means upon extraction of said chamber from said fluid;

whereby, said fluid is discharged through said nozzle by first downwardly displacing said tube so as to immerse said chamber into said fluid, raising said tube so as to sufficiently space said chamber from the surface layer of said fluid, and subsequently squeezing said bottle to force said fluid in said chamber upwards through said nozzle via said tube.

5,251,793

DISPENSING CLOSURE

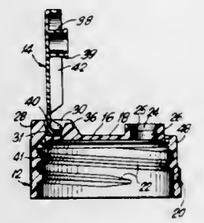
Robert J. Bolen, Jr., 10 Gwynne Ct., Closter, N.J. 07624, and Thomas R. Bolen, 312 Dayton St., Ridewood, N.J. 07450

Continuation of Ser. No. 493,828, Feb. 19, 1991, Pat. No. 4,993,606, which is a continuation of Ser. No. 214,676, Jul. 1, 1988, abandoned. This application Feb. 15, 1991, Ser. No. 656,309

The portion of the term of this patent subsequent to Feb. 19, 2008, has been disclaimed.

Int. Cl.[5] B65D *47/08*

U.S. Cl. 222—546 **7 Claims**



1. A two-piece dispensing closure for a container, the closure comprising:

a generally circular base having a top and a front section, the base comprising a cover portion at least partially spanning the top of the base and having a generally semi-circular forward top surface in the front section of the base, and an annular skirt depending downwardly from the cover portion;

a dispensing orifice in the generally semi-circular forward top surface of the cover portion, wherein the dispensing orifice has a rim and the top surface portion does not extend above the rim;

a lid having a plug on its underside for sealing the dispensing orifice; and

an elevated rear land extending upwardly from and above the annular skirt, contiguous with the generally semi-circular forward top surface of the cover portion and behind the dispensing orifice, the elevated rear land having a pivot recess spaced from its periphery for pivotally receiving the lid, the pivot recess being disposed to align the plug with the dispensing orifice and thereby allow mating of the plug and orifice when the lid is in the closed position.

5,251,794

REFRACTORY ASSEMBLY WITH METAL SHEATH TO PREVENT MOLTEN METAL BREAKTHROUGH

Walter Toaldo, Zug, Italy, assignor to Stopinc Aktiengesellschaft, Baar, Switzerland

Filed Jun. 23, 1992, Ser. No. 902,893

Claims priority, application Switzerland, Jul. 12, 1991, 02081/91

Int. Cl.[5] B22D *41/28*

U.S. Cl. 222—600 **39 Claims**

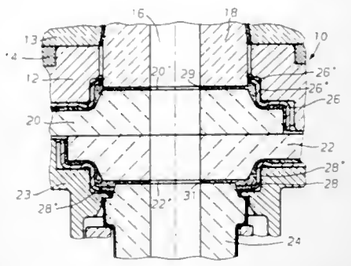
1. A refractory plate assembly for use as a stationary plate assembly or as a slidable plate assembly in a sliding closure unit for controlling the discharge of molten metal from a metallurgical vessel, said refractory plate assembly comprising:

a refractory plate having therethrough a discharge opening, a sliding surface, and an integral refractory continuation coaxial to said discharge opening and projecting from a surface of said refractory plate opposite said sliding surface, said continuation including a portion to confront a refractory sleeve of the sliding closure unit and to define therewith a joint; and

a metal sheath mounted exteriorly of said refractory plate, said sheath including a protruding collar surrounding said discharge opening, said protruding collar surrounding

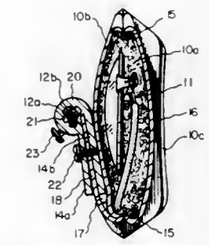
VOL 1155 ISS 2 OC 12 1993 UMI

said continuation coaxially and extending in a direction away from said sliding surface beyond said portion of said



refractory plate that is to confront the refractory sleeve of the sliding closure unit to define therewith the joint.

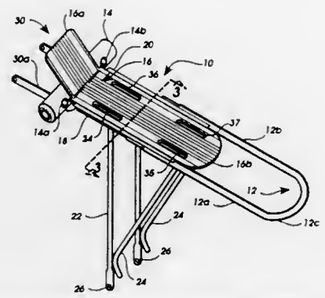
5,251,795
CLIP-ON CARRYING CASE
Bruce Jeppesen, 113 W. Main St., Tremonton, Utah 84337
Filed Dec. 16, 1991, Ser. No. 807,174
Int. Cl.[5] B62J 7/00
U.S. Cl. 224—34 6 Claims



1. A carrying case with a clip-on device enabling attachment of the case to a riding vehicle, comprising a carrying case having opposing broad panel walls and an exterior pocket formed on and extending transversely of one of said broad panel walls by a pocket panel member secured to said one of said broad panel walls of said carrying case externally thereof; a clip-on device of clamp formation having a pair of opposing legs extending from a gripping member of open loop formation adapted to receive a part of said vehicle in the loop thereof, one of said legs being adapted for insertion in said pocket with said pocket panel between said legs, whereby pressing of said legs toward each other and holding them as pressed will clamp said clip-on device to said vehicle and secure said carrying case to said clip-on device; and means for holding said legs of the clip-on device together as pressed, the inner surface of the open loop gripping member of the clip-on device being serrated.

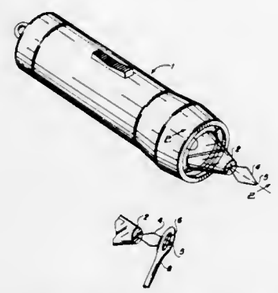
5,251,796
INTEGRATED LOCK AND STORAGE RACK FOR A BICYCLE
Michael Shelhart, 3503 W. 228th St., Torrance, Calif. 90505
Filed Feb. 7, 1992, Ser. No. 832,597
Int. Cl.[5] B62J 7/00
U.S. Cl. 224—39 19 Claims

1. A combination locking device/luggage rack for coupling to a bicycle, said apparatus comprising:
lock means including:
a U-shaped locking member having first and second arm portions and a bight portion;
a lock bar having aperture means therein for lockingly receiving free ends of said arm portions;
rack means including a load carrying platform portion having first and second ends and first and second generally parallel channels one each extending longitudinally along the length of a respective one of said opposite long sides thereof, the spacing between longitudinal centers of said channels corresponding to the spacing between centers of said arm portions for enabling mating coacting sliding of said arm portions therein whereby said bight portion



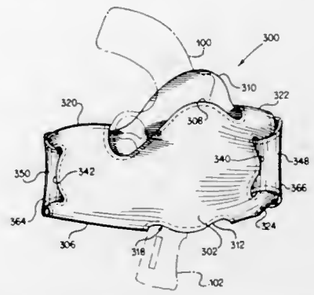
substantially abuts said first end of said platform portion to thereby form an outside frame about said platform portion, said second end being configured for enabling positioning of said lock bar into locking engagement with said U-shaped locking member, said lock means and said rack means being dimensioned, configured and coactively mated for enabling said lock means to provide structural support to said rack means; and
means coupled to said platform portion for enabling attachment of said rack means to the frame of a bicycle.

5,251,797
EYELET THREADING AID
Glenn A. Martin, 4623 W. Whitten St., Chandler, Ariz. 85226
Filed Jan. 22, 1992, Ser. No. 833,453
Int. Cl.[5] D05B 87/00; A01K 69/00; F21V 33/00
U.S. Cl. 223—99 18 Claims



7. Apparatus for threading an eyelet comprising lamp means carrying (a) a source of light and (b) means disposed in the path of said light and insertable into an eyelet for carrying thread through an eyelet, whereby said source of light illuminates the insertable means and the eyelet while threading.

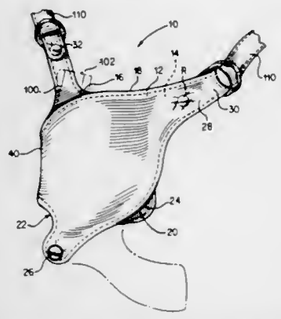
5,251,798
WEAPON HOLSTERS HAVING ONE-PIECE CONSTRUCTION
Paris Theodore, New York, N.Y., assignor to Thundercloud Corporation, Wilmington, Del.
Division of Ser. No. 837,968, Feb. 20, 1992, Pat. No. 5,209,383.
This application Dec. 3, 1992, Ser. No. 984,842
Int. Cl.[5] F41C 33/00
U.S. Cl. 224—193 10 Claims



1. A belt holster, comprising:
an outer face having outward and inward facing surfaces, and upper, lower and two side edges;
an inner face having outward and inward facing surfaces, and upper, lower and two side edges, said inner face being connected to said outer face, said outer and inner faces being spaced along portions thereof to form a gap therebetween for receipt of a weapon;
a first opening provided at said upper edges of said outer and inner faces, said first opening being adapted to receive the weapon;
a second opening provided at said lower edges of said outer and inner faces, said second opening being adapted to receive one of a revolver's barrel and a semi-automatic weapon's forwardmost slide portion;
two slots in said outer face, each of said outer face slots being provided adjacent to one of said outer face side edges;
two slots in said inner face, each of said inner face slots being provided adjacent to one of said inner face side edges;
said outer face slots and inner face slots cooperating to receive a belt passing in a belt direction through one of said two outer face slots and an adjacent one of said two inner face slots, said belt extending along the inward facing surface of said inner face and through the other of said two inner face slots and the adjacent other of said two outer face slots; and
attachment means by which said inner and outer faces are attached to one another, wherein
the gap between the inner and outer faces extends in the belt direction between the outer and inner face slots.

5,251,799
WEAPON HOLSTERS HAVING ONE-PIECE CONSTRUCTION
Paris Theodore, New York, N.Y., assignor to Thundercloud Corporation, Wilmington, Del.
Division of Ser. No. 837,968, Feb. 20, 1992, Pat. No. 5,209,383.
This application Dec. 3, 1992, Ser. No. 984,843
Int. Cl.[5] A45F 5/00
U.S. Cl. 224—206 9 Claims

1. A shoulder holster, comprising:
an outer face having an outward facing surface and an inward facing surface;
an inner face having an outward facing surface and an inward facing surface, said inner face being connected to said outer face, said outer and inner faces being urged toward each other but spaced along portions thereof to form a gap therebetween for receipt of a weapon;
a first opening formed by upper edge portions of said outer and inner faces, said first opening being sized to receive one of the weapon's barrel and the weapon's forwardmost slide portion;
a second opening formed by first areas of lower edge portions of said outer and inner faces, said lower edge portions being located opposite to said upper edge portions, said second opening being larger than said first opening, said second opening being sized to accommodate the weapon's grip;
a third opening formed by second areas of lower edge portions of said outer and inner faces, said third opening being sized to accommodate one of the weapon's hammer and firing pin housing areas; and
a spacer connecting said outer and inner faces at a first location between said second and third openings, said



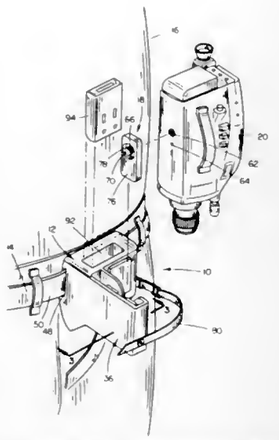
spacer being located such that one of the weapon's hammer and firing pin housing areas rests against said spacer, said outer and inner faces cooperating such that when said holster is worn adjacent to a wearer's body, said outer and inner faces are pressed towards one another to provide a gripping action on the weapon located therebetween, wherein when the weapon's grip is held and the one of the weapon's hammer and firing pin housing areas is pivoted about said spacer, said outer and inner faces remain connected by the spacer at the first location between said second and third openings, but are pried apart at a second location between the first and second openings by one of the weapon's barrel and the weapon's forwardmost slide portion, the prying apart of said outer and inner faces releasing the weapon for removal from the holster.

5,251,800
CAMERA HOLDER
Russell A. Leenders, 1385 Chautauqua Ave., Lincoln, Nebr. 68510
Filed Oct. 26, 1992, Ser. No. 966,304
Int. Cl.[5] A45F 5/00
U.S. Cl. 224—253 6 Claims

1. A camera holder, comprising:
a support member having a base portion with inward and outward sides, and forward and rearward ends;
means on said base portion for removably connecting said base portion to a generally horizontally oriented belt;
a support arm projecting outwardly from said base portion and having forward and rearward walls, an outward wall, and upper and lower ends;
an attachment block removably connected to said support arm;
means on said attachment block for removably connecting a camera thereto;
said attachment block including forward and rearward faces, side walls and upper and lower ends;
a bearing projecting forwardly from the forward face of said attachment block;

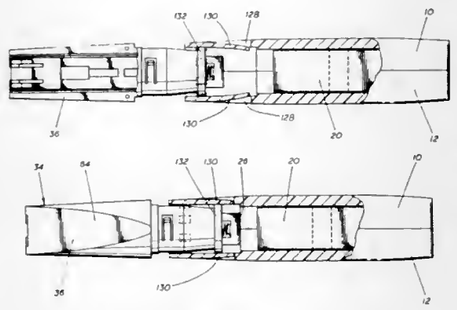
VOL 1155 ISS 2 OCT 12 1993 UMI

said means for removably connecting a camera having a portion projecting from said bearing;
a pocket formed in said support arm opening upwardly through the upper end thereof, for removably receiving said attachment block;



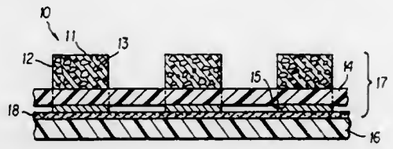
the forward wall of said support arm having a generally vertical slot therethrough extending downwardly from the upper end, for receipt of said attachment block bearing;
said attachment block being removably slidably mounted within said packet.

5,251,801
SURGICAL STAPLER
Thomas W. Ruckdeschel, Apex, and John C. Phillips, Holly Springs, both of N.C., assignors to Edward Weck Incorporated, Princetoo, N.J.
Continuation of Ser. No. 740,505, Aug. 5, 1991, Pat. No. 5,170,926. This application Aug. 3, 1992, Ser. No. 924,172
Int. Cl.[5] A61B *17/068*
U.S. Cl. 227—177 **4 Claims**



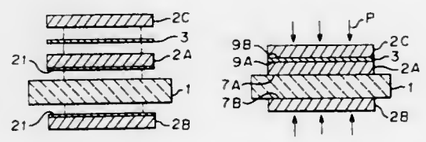
1. A surgical stapler, comprising:
a housing;
means for storing staples in said housing;
means, at least in part, in said housing for forming staples, said means further comprising a forming path;
said storing means further comprising a staple track;
said forming path communicating with said storing means;
a staple pusher operable along said staple track;
biasing means to selectively move said pusher along said track;
said biasing means having a proximal and distal end;
mounting means in said housing for selectively fixedly mounting at least one end of said biasing means to said housing in a plurality of locations;
said biasing means acting on said pusher, to selectively apply a variable preload force, resulting from the location of said mounting means that is selected, through said staple pusher to a variety of staple counts loaded into said staple track.

5,251,802
ABRASIVE ARTICLE AND PROCESSES FOR PRODUCING IT
Wesley J. Bruxvoort, Woodbury, and Robert N. Howard, Stillwater, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Division of Ser. No. 691,147, Apr. 25, 1991, Pat. No. 5,127,197. This application Jun. 12, 1992, Ser. No. 899,380
Int. Cl.[5] C23C *16/00*
U.S. Cl. 228—121 **10 Claims**



1. A process for preparing an abrasive article comprising:
a) providing a coated abrasive comprising:
i) a flexible backing having a front side and a back side;
ii) a plurality of abrasive composites bonded to the front side of the backing, wherein the composites comprises at least one binder and a plurality of abrasive grains; and
iii) a plurality of metal deposits accessible to metallic adhesive from the back side of the backing;
b) providing a substrate;
c) providing a metallic adhesive;
d) contacting the metallic adhesive, a surface of the substrate, and the metal deposits; and
e) heating to bond the metallic adhesive to the metal deposits and to the substrate, whereby the metallic adhesive serves to bond the coated abrasive to the substrate.

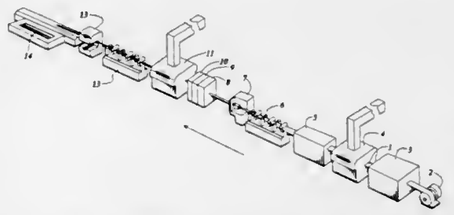
5,251,803
CERAMIC-METAL COMPOSITE SUBSTRATE AND METHOD FOR PRODUCING THE SAME
Yoshihiro Kashiba, and Masaru Okada, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 675,063, Mar. 26, 1991, Pat. No. 5,153,077, which is a continuation of Ser. No. 381,964, Jul. 19, 1989, abandoned. This application Nov. 7, 1991, Ser. No. 789,074
Claims priority, application Japan, Jul. 22, 1988, 63-184033; Dec. 28, 1988, 63-332253; Jul. 17, 1989, 1-185235
Int. Cl.[5] B23K *20/02*
U.S. Cl. 228—124.5 **12 Claims**



1. A method for producing a ceramic-metal composite substrate, which comprises integrally bonding together a ceramic base member, a copper based metal member and a constraining member which is to be bonded to said copper based metal member, wherein the improvement comprises:

bringing said copper based metal member into close contact with said ceramic base member through a thin film layer which is formed of an active metal, said copper based metal member and said active metal subsequently forming an alloy when heated, and bringing sand constraining member into contact with said copper based metal member; and
heating the combination of said ceramic base member, said copper based metal member and said constraining member in an atmosphere which is essentially inert to said active metal, to a temperature ranging from the melting point of said alloy to a temperature below the melting point of said copper based metal member, while applying a pressing force to said combination in the direction of its thickness, thereby achieving integral bonding of the members.

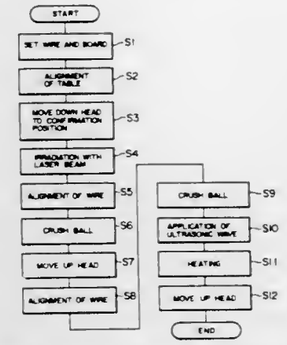
5,251,804
METHOD FOR THE CONTINUOUS MANUFACTURE OF METAL-PLATED STEEL TUBES BY MOLTEN PLATING TREATMENT
Matsuichi Nakamura, Ashiya, Japan, assignor to Daiwa Steel Tube Industries Co., Ltd., Osaka, Japan
Filed Jun. 24, 1992, Ser. No. 903,447
Int. Cl.[5] B23K *31/02*
U.S. Cl. 228—147 **7 Claims**



1. A method of manufacture of steel tubes from steel sheet having opposed surfaces which form inner and outer surface of the tubes, wherein both inner and outer surfaces of the steel tubes are treated by molten metal plating in a continuous manufacturing line, comprising the following steps: pretreating a single surface of a steel tube, plating this single surface by the application of molten metal by pouring, cold forming the steel sheet into tubular shape, seam-welding the joint in this tubular steel sheet to make a complete steel tube, dipping the outer surface of the steel tube in a molten metal plating bath after a pretreatment process, continuously cooling the plated steel tube, and finally, cutting the steel tube to a specified length.

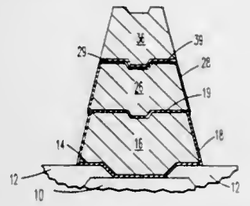
5,251,805
WIRE BONDING METHOD AND APPARATUS
Mitsukiyo Tani, Odawara; Akira Gotoh, Hadano; Hideaki Sasaki, Hadano; Hideo Shiraishi, Hadano; Tamotu Kirino, Oyama, and Hiroshi Hasegawa, Kanagawa, all of Japan, assignors to Hitachi, Ltd. and Hitachi Computer Electronics, Co., Tokyo, Japan
Filed Aug. 28, 1991, Ser. No. 751,143
Claims priority, application Japan, Sep. 10, 1990, 2-239549
Int. Cl.[5] B23K *31/02:* **H01L** *21/607*
U.S. Cl. 228—180.5 **7 Claims**

4. A wire bonding method of bonding a wire to a member to be bonded, comprising:
aligning an end of said wire with a desired position on said member to be bonded;
crushing the end of said wire between a bonding head for welding said wire to said member to be bonded and said member to be bonded to form a flat surface at the end of said wire; and
re-aligning said flat surface at the end of said wire with said desired position on said member to be bonded so that said flat surface is brought into contact with said desired position; and



abutting said bonding head against the end of said wire so that said end of said wire is welded to said member to be bonded.

5,251,806
METHOD OF FORMING DUAL HEIGHT SOLDER INTERCONNECTIONS
Birendra N. Agarwala; Aziz M. Ahsan, both of Hopewell Junction; Arthur Bross, Poughkeepsie, all of N.Y.; Mark F. Chadurjian, Essex Junction, Vt.; Nicholas G. Koopman, Hopewell Junction, N.Y.; Li-Chung Lee, Saratoga, Calif.; Karl J. Puttlitz; Sudipta K. Ray, both of Wappingers Falls, N.Y.; James G. Ryan, Essex Junction, Vt.; Joseph G. Schaefer, Berkshire, N.Y.; Kamalesh K. Srivastava, Wappingers Falls, N.Y.; Paul A. Totta, Poughkeepsie, N.Y.; Erick G. Walton, South Burlington, and Adolf E. Wirsing, South Hero, both of Vt., assignors to International Business machines Corporation, Armonk, N.Y.
Division of Ser. No. 540,256, Jun. 19, 1990, Pat. No. 5,130,779. This application Apr. 16, 1992, Ser. No. 870,647
Int. Cl.[5] H01L *21/283*
U.S. Cl. 228—180.22 **48 Claims**



1. A process for forming a solder interconnection comprising:
a) locating a site for a solder mass,
b) forming a solder mass, and
c) substantially encapsulating said solder mass with an electrically conductive material, wherein said electrically conductive material is a solder wettable material selected from the group comprising Co, Cu, Ni, Pd, Pt or Ru or alloys thereof, or a non-solder wettable material selected from a group comprising Be, Cr, Fe, Hf, Mo, Nb, Ta, Ti, V, W, Zr and alloys thereof.

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5,251,807

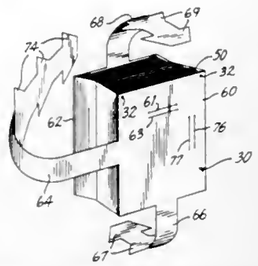
WRAPPER FOR BUNDLING NEWSPRINT FOR RECYCLING

Anthony C. Capaci, 1306 Faulkner Ct., Mahwah, N.J. 07430

Division of Ser. No. 896,653, Jun. 10, 1992, Pat. No. 5,195,304, which is a division of Ser. No. 746,567, Aug. 16, 1991, Pat. No. 5,154,038. This application Dec. 10, 1992, Ser. No. 988,457

Int. Cl.[5] B65B *13/18*

U.S. Cl. 229—40 7 Claims



1. A wrapper for holding newsprint sheets in a bundle, the bundle having a girth, the wrapper comprising:

a parallelepipedic shaped tubular member of flexible material having opposite sides, a front face, a back face integral with the front face at the opposite sides, and opposite open ends for receiving the newsprint sheets through one of the open ends to place the newsprint sheets between the front face and the back face of the tubular member and establish the bundle, with the girth extending along the opposite sides, the front face and the back face of the tubular member;

at least one strap having a predetermined length, a first end integral with the tubular member at the front face, and a second end, the second end being a free end; and

means for selectively affixing the free end of the strap to the front face of the tubular member, with the predetermined length of the strap extending around at least a portion of the girth of the bundle, along the opposite sides and the back face, to hold the newsprint sheets in place within the tubular member and secure the newsprint sheets in the bundle.

5,251,808

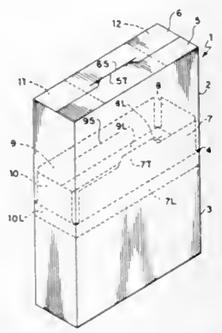
VARIABLE VOLUME BOX

Darryl J. Rudd, 227 Ravencrest Rd., Yorktown Heights, N.Y. 10598

Filed Dec. 29, 1992, Ser. No. 997,936

Int. Cl.[5] B65D *5/54, 5/56*

U.S. Cl. 229—101.2 18 Claims



1. A variable volume carton box having a front side, a back side, a right side, a left side, a top portion, and a bottom portion, said variable volume carton box comprising an upper closable lid located at the top portion thereof and at least one intermediate closable lid located within the box intermediate the top portion and the bottom portion;

wherein said at least one intermediate closable lid comprises:

a first intermediate elongated flap with a second slot located thereon;

a second intermediate elongated flap with a second tab located thereon, wherein said second tab cooperates with said second slot so as to securely close said intermediate closable lid; and

third and fourth intermediate side flaps located between said first and said second intermediate elongated flaps;

whereby, said first and said second intermediate elongated flaps and said third and said fourth intermediate side flaps each have lower portions attached thereto circumferentially securing said first and said second intermediate elongated flaps and said third and said fourth intermediate side flaps to an interior portion of said variable volume carton box.

5,251,809

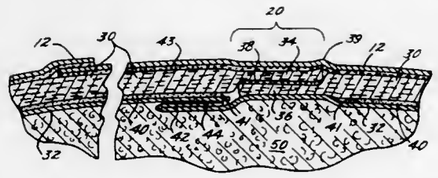
EASY-OPEN CONTAINER FOR REFRIGERATED DOUGH PRODUCTS AND THE LIKE

Michael T. Drummond; General Taylor, both of Florence, and W. Gerald Gainey, Darlington, all of S.C., assignors to Sonoco Products Company, Hartsville, S.C.

Continuation of Ser. No. 746,056, Aug. 12, 1991. This application Aug. 27, 1992, Ser. No. 936,603

Int. Cl.[5] B65D *85/00*

U.S. Cl. 229—202 32 Claims



1. An easy-open container comprising a spirally-wound body wall having overlapped edges and an adhesive means between said overlapped edges for providing bonding of said overlapped edges during manufacture of said container but which dries to a layer of low adhesive strength, said body wall defining a substantially cylindrical container having opposed ends, the overlapped edges of the body wall defining an easy-open seam extending helically between the ends of the container;

a flexible barrier sheet liner bonded to the inner surface of the cylindrical body wall comprising an expandable fold extending helically between the ends of the container, the fold being positioned adjacent or overlapping the interior of the easy-open seam of the body wall, wherein the marginal areas adjacent both sides of the easy-open seam on the interior of the body wall are free of bonding to the liner to assist in opening of the overlapped edges of the body wall.

5,251,810

RE-MAILABLE ENVELOPE WITH DOUBLE SIDE ADDRESSING WINDOW

Myun H. Kim, 885 9th Ave., Apt. 2G, New York, N.Y. 10019

Filed Feb. 21, 1992, Ser. No. 839,836

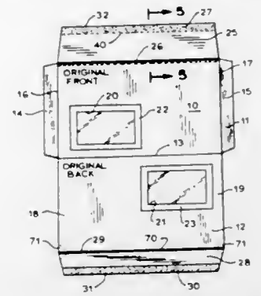
Int. Cl.[5] B65D *27/04, 27/06*

U.S. Cl. 229—303 2 Claims

1. A re-mailable envelope which comprises

(a) first and second panels, each having bottom, side and top edges and inside and outside surfaces,

(b) said first and second panels being joined at the bottom and side edges to form an envelope with an open top,



(c) the outside surface of each said first and second panels having an area for the presentation of a mailing address and an area near the top for affixing postage,

(c) a first sealing flap foldably connected to the top edge of said first panel along a first hinge line and a second sealing flap foldably connected to the top edge of said second panel along a second hinge line,

(d) said first and second sealing flaps each having a free edge spaced from the respective first and second hinge lines,

(e) said first sealing flap being of greater length than said second sealing flap whereby, when said first sealing flap is folded over against the outer surface of said second panel to close the top of said envelope, a predetermined free edge margin of said first sealing flap extends beyond the free edge of said second sealing flap,

(f) securing means on said free edge margin for securing said first sealing flap to the outside surface of said second panel to close and seal said envelope for mailing,

(g) said first sealing flap having tear line defining means adjacent said first hinge line to enable removal of said first sealing flap for opening of said envelope without damaging said panels or said second sealing flap,

(h) said tear line defining means including a tear strip secured to an inside surface of said first sealing flap immediately adjacent said first hinge line and means adjacent one edge of and cooperating with said tear strip to define a line of severance substantially at said first hinge line, and

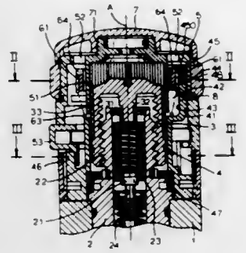
(i) securing means on said second sealing flap for securing said flap to the outside surface of said first panel to close and seal said envelope for a further mailing,

(j) said second sealing flap, when folded over and secured to said first panel, at least partially obscuring postage previously affixed to said first panel,

(k) said second panel having a window therein for the presentation of a mailing address,

(l) said first sealing flap being of sufficient length to cover said window.

8. In combination with a thermostatically regulated mixing valve having a housing extending along an axis and a stem in the housing axially displaceable to adjust the thermostatically regulated temperature of the valve, a control assembly comprising:



a nut threaded on the housing, axially linked to the valve stem, and rotatable about the axis in one direction to move axially inward and move the stem axially inward and rotatable in the opposite direction to move axially outward and move the stem axially outward;

an abutment sleeve fixed to the valve housing;

a sleevelike knob engaged over the nut and abutment sleeve and formed with an outwardly projecting stop;

interengaging formations on the knob and on the nut rotationally coupling same together but permitting relative axial movement, whereby the knob rotates with the nut but does not move axially therewith;

a stop ring between the knob and the sleeve having an inwardly projecting stop angularly engageable with the stop of the knob;

interengaging formations on the ring and on the sleeve rotationally coupling same together and permitting same to be fixed angularly relative to each other in any of a multiplicity of angularly offset positions, the formations on the sleeve being axially limited and the sleeve being formed adjacent its formations with a region free of such formations, the ring being displaceable axially in the sleeve between a set position level and engaged with the sleeve formations and an adjustment position level with the formation-free region and rotatable relative to the sleeve; and

a spring braced between the sleeve and the ring and urging the ring into the set position.

5,251,811

TEMPERATURE-SETTING SYSTEM FOR THERMOSTATIC MIXING VALVE

Christian Frankholz, Schwerte, Fed. Rep. of Germany, assignor to FriedrichGrohe Aktiengesellschaft, Hemer, Fed. Rep. of Germany

Filed Dec. 4, 1992, Ser. No. 987,112

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1991, 4141791

Int. Cl.[5] G05D *23/13*

U.S. Cl. 236—12.16 8 Claims

5,251,812

Patent Not Issued For This Number

5,251,813

INDICATION OF LOW BATTERY VOLTAGE CONDITION BY ALTERING OF TEMPERATURE SETPOINT

David I. Kniepkamp, Fairview Heights, Ill., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Mar. 25, 1993, Ser. No. 36,971

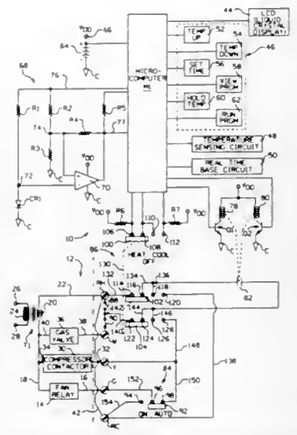
Int. Cl.[5] F23N *5/20*

U.S. Cl. 236—46 R 9 Claims

1. In a digital thermostat powered solely by battery means, means for establishing a desired temperature setpoint; means for detecting a low voltage condition of the battery

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means, which low voltage condition is adequate for enabling operation of the thermostat; and



means for establishing an altered temperature setpoint in response to said low voltage condition.

5,251,814

AIR CONDITIONING APPARATUS HAVING LOUVER FOR CHANGING THE DIRECTION OF AIR INTO ROOM

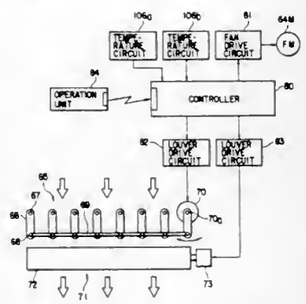
Yoshitaka Warashina; Kazuo Mochizuki, both of Fuji; Noboru Kumagai, Shizuoka; Keiichi Morita, Fujinomiya, and Atsushi Nagasawa, Mishima, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 16, 1992, Ser. No. 962,118

Claims priority, application Japan, Oct. 18, 1991, 3-271317; Oct. 18, 1991, 3-271318

Int. Cl.[5] F24F *7/00*

U.S. Cl. 236—49.3 **6 Claims**



1. An air conditioning apparatus having a louver for changing the direction of air into a room, comprising:

temperature sensing means for sensing temperatures at a plurality of locations in the room;

difference detection means for detecting a difference between sensed temperatures of the temperature sensing means;

swing means for swinging the louver;

control means for setting the center of swing of the louver at a position corresponding to the detection result of the difference detection means; and

control means for changing the angle of swing of the louver in accordance with the detection result of the difference detection means.

5,251,815

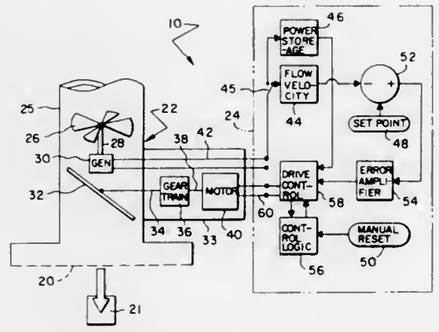
SELF POWERED AND BALANCING AIR DAMPER

David M. Foye, La Crosse, Wis., assignor to American Standard Inc., New York, N.Y.

Filed Dec. 18, 1992, Ser. No. 993,832

Int. Cl.[5] G05D *15/00*

U.S. Cl. 236—49.3 **13 Claims**



1. An automatic, self-balancing air damper assembly adapted for use with a building ventilation system, the ventilation system having a supply air source, a duct system connected to the supply air source at a first end and terminating in a plurality of terminals in the various spaces of the building and a fan for moving a volume of supply air from the air source through the duct system and out the terminals to the various spaces of the building, the air damper assembly comprising:

a supporting duct section adapted for air flow communication with said duct system;

damper means adjustable between an open position and closed position operably supported in the duct section for regulation of the volume of supply air flowing through the duct section;

sensor means operably coupled to the duct section for sensing actual air flow through the duct section, said sensor means including generator means responsive to the air flow through said duct section for generating an electrical signal;

control means operably coupled to the sensor means for comparing the actual air flow through the duct section to a predetermined design air flow and generating an error signal representative of the difference between the actual air flow and design air flow, said control means including actual air flow indicator means responsive to said electrical signal for providing an actual air flow signal and means for providing a design air flow signal representative of said design air flow, said error signal generation means comparing said actual error signal to said design air flow signal to provide said error signal, said control means including electrical energy storage means for accumulating and storing the energy of the electrical signal generated by said generator means, said actuation means including motor means selectively coupleable to said storage means for adjustable positioning of said damper; and

actuation means operably coupled to the control means and to the damper means for adjustably positioning said damper between said open and closed positions responsive to said error signal whereby said actual air flow is brought into registration with said design air flow.

5,251,816

HEATING INSTALLATION

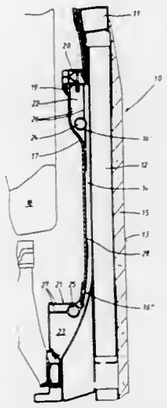
Hans-Peter Kalt, Schönaich; Michael Lüders, Gäufelden, and Markus Mattedi, Walddorfhäslach, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Jul. 31, 1992, Ser. No. 922,415

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1991, 4125286

Int. Cl.[5] B60H *1/02*

U.S. Cl. 237—12.3 B **24 Claims**



1. Heating installation for the passenger compartment of a bus, comprising:

radiant heating elements which are disposed on side walls under side windows of the bus; and

hot-water-carrying heating pipes which extend longitudinally continuously along the bus side walls and are coupled with a thermally conductive connection to said radiant heating elements;

said radiant heating elements having an upper wall surface which faces the passenger compartment and is formed by a continuous interior cladding bearer of the bus side wall;

said interior cladding bearer being formed in the armrest region of the passenger seats into a longitudinally continuous arm support; and

said heating pipe being arranged in the cavity of the arm support.

5,251,817

ORIFICE ASSEMBLY AND METHOD PROVIDING HIGHLY COHESIVE FLUID JET

Thomas A. Ursic, 12 Bedford Dr., West Trenton, N.J. 08628

Filed Sep. 16, 1991, Ser. No. 760,871

Int. Cl.[5] B05B *1/02*

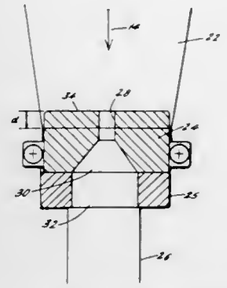
U.S. Cl. 239—11 **23 Claims**

13. A method for producing a highly cohesive fluid jet comprising:

receiving fluid under pressure through a supply tube;

providing a housing at the end of the supply tube having a passageway with an orifice formed by an opening in an orifice element in the passageway, the orifice element having an upstream surface;

providing a converging section in the passageway in the housing containing the orifice upstream of the orifice for reducing turbulence in the fluid near the orifice, the converging section extending to the upstream surface of the orifice element, thereby providing a more cohesive fluid



jet downstream of the orifice, and extending said upstream surface of the orifice element into said converging section.

5,251,818

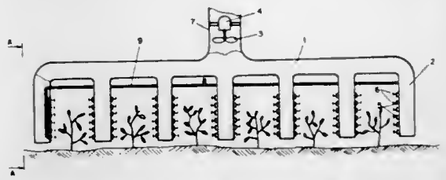
SPRAYING EQUIPMENT FOR PLANTS GROWN IN ROWS

Gedalyahu Manor, Haifa, and Amos Geva, Kiryat Tivon, both of Israel, assignors to Technion Research & Development Foundation, Ltd., Haifa, Israel

Filed Jun. 22, 1992, Ser. No. 902,593

Int. Cl.[5] A01C *23/00*

U.S. Cl. 239—77 **19 Claims**



1. An agricultural spraying equipment adapted to be attached to an agricultural traction vehicle and to be moved across a field in the direction of and between parallel rows of plants to be sprayed from top to bottom, the equipment comprising:

a source of pressurized air in the form of a blower,

a main air duct supplied air from said source of pressurized air and attached to said vehicle in substantially horizontal alignment perpendicular to the direction of travel and at a height removed from the tops of the plants to be sprayed,

several air duct branches extending downwardly from said main air duct in spaced relationship to the spacing of said rows of plants with a predetermined number of said air duct branches being forwardly disposed in the direction of travel, each said duct branch being provided on opposite sides with a plurality of spaced-apart air outlets directed towards the plants to be sprayed, each said air outlet being provided with means causing air to be ejected in alternating pulses in the direction of said rows of plants,

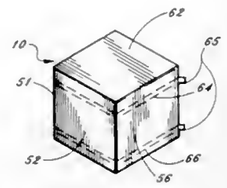
spray nozzles, one each positioned in concentric alignment with each air outlet designed to spray spraying material into said air stream emitted by each said air outlet,

means mounted on said tractor or vehicle for supplying liquid spraying material under pressure, and

piping for conveying said spraying material from said supply of liquid to said spray nozzles.

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5,251,819
COLLAPSIBLE CONTAINER FOR EASE OF DISPOSAL
Sandra McHugh, 3804 E. Lake Ter., Hollywood, Fla. 33023
Filed Mar. 3, 1992, Ser. No. 845,389
Int. Cl.[5] B65D *5/54*
U.S. Cl. 229—236 **15 Claims**



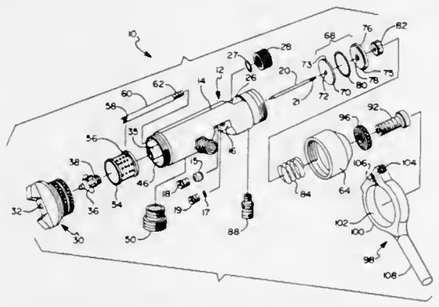
1. A collapsible container for disposal purposes, comprising:
a body member, said body member having an upper and lower edge;
a top member hingedly connected to said upper edge of said body member;
a bottom member hingedly connected to said lower edge of said body member;
means for opening said top member disposed near said upper edge of said body member, said means for opening said top member including a top tear strip along said upper edge of said body member, said top tear strip having a first end and a second end, said top tear strip having a top pull tab attached at said first end; and
means for opening in said bottom member disposed near said lower edge of said body member said means for opening said bottom member including a bottom tear strip along said lower edge of said body member, said bottom tear strip having a first end and a second end, said bottom tear strip having a bottom pull tab attached at said first end; and
means for collapsing said body member once said top member and said bottom member having been opened.

5,251,820
FLEXIBLE ANGLE SPRAY BOTTLE DEVICE
Tze H. Ho, 3101 Montezuma Ave., Alhambra, Calif. 91803
Filed Aug. 19, 1992, Ser. No. 932,420
Int. Cl.[5] B05B *15/08, 9/043*
U.S. Cl. 239—280.5 **3 Claims**



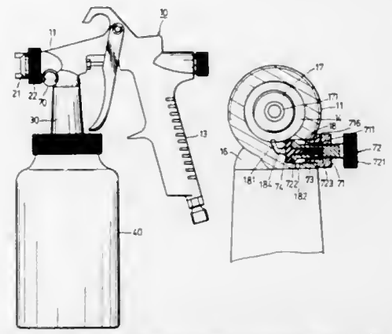
1. A portable spray apparatus comprising:
a bottle reservoir for holding fluid;
a manually actuatable pump secured to said bottle reservoir, said pump having an output;
a vertical flat support rack secured to said pump and containing a plurality of slots arcuately distributed about its periphery;
a pivoting arm pivotally secured to said vertical flat support rack and pivotally positionable adjacent any one of said slots;
locking means selectively engageable in one of said slots for maintaining the position of said pivoting arm relative to said support rack; and
a fluid conveying tube having one end connected to the output of said pump and having a flexible flexure loop section and an elongated output section, wherein said flexible loop section is between the end connected to the output of the pump and the elongated output section, said flexible flexure loop section being retained to be generally parallel to said support rack, and wherein the elongated output section is supported by said pivoting arm and extends beyond the perimeter of said flat support rack.

5,251,821
PAINT SPRAY GUN
Denis W. Toth, Pontiac, Mich., assignor to Can-Am Engineered Products, Inc., Livonia, Mich.
Filed Nov. 13, 1991, Ser. No. 792,468
Int. Cl.[5] B05B *1/28*
U.S. Cl. 239—297 **4 Claims**



1. In a paint spray gun of the type comprising:
a housing, and annular air cap mounted at the forward end of the housing and having a central air discharge opening extending coaxially therethrough;
a nozzle mounted on the housing which extends through the air discharge opening of the air cap, the nozzle having a paint discharge orifice formed at its forward end for discharging paint under pressure in a forwardly directed stream;
a first passage formed through the housing for supplying paint to the nozzle;
a second passage formed through the housing for supplying pressurized air to the air discharge opening to atomize paint discharged from the nozzle into a spray pattern; and
a third passage formed in the air cap which communicates with second passage for discharging air from opposite sides of the air cap to flatten the spray pattern, the housing having a cylindrical coaxial bore formed therein to receive a piston assembly, said piston assembly comprising a piston;
the improvements comprising:
(a) a needle which is slidably movable to control paint flow out of the nozzle and the piston which is slidably movable in the bore of the housing, the piston being fixedly attached to the needle for simultaneous movement therewith;
(b) an end cap which attaches to a back portion of the housing, the end cap, the bore of the housing, and the piston cooperating to define a closed chamber which is not vented, the housing having a fourth passage formed therein to admit air into the bore forward of the piston;
(c) a valve in the housing which is adjustably movable between open and closed positions for adjusting the flow of air from the second passage to the third passage;
(d) a cylindrical control wheel which is disposed in a recess in the housing and which is rotatable to adjust the position of the valve;
(e) a spring disposed in the bore behind the piston for biasing the piston and the needle forwardly in the gun;
(f) a mounting bracket for mountably supporting the housing, the bracket having a clamping section with a substantially circular opening formed therein to receive the housing, the bracket comprising means for clamping the housing within the circular opening, the bracket further having a shaft extending outwardly from the clamping section for mounting in a support; and
(g) a paint inlet channel and a paint outlet channel formed in the housing to allow continuous recirculation of paint through the gun, wherein both of said paint channels are in fluid communication with the first passage;
and wherein the housing has a flattened portion formed thereon which defines a plane parallel to the longitudinal axis of the housing to aid in the aiming of the gun.

5,251,822
SPRAY PAINT GUN
Hsing-Tzu Wang, No. 16, Industrial Dist., Chi Rd., Taichung City, Taiwan
Filed Dec. 31, 1992, Ser. No. 999,085
Int. Cl.[5] B05B *7/32*
U.S. Cl. 239—346 **2 Claims**



1. A spray paint gun having an elongated gun body with a front end, said gun body having a first air passage and a blind hole extending longitudinally and inwardly from said front end of said gun body, said first air passage being connected to a compressed air source, an air cap being mounted to said front end of said gun body, an air chamber formed between said air cap and said front end of said gun body, said air chamber being communicated with said first air passage, a nozzle having a first end threaded to an open end of said blind hole of said gun body and a tapered second end received in said air cap, said nozzle having a central through hole and a spray needle received therein for opening and closing said central through hole of said nozzle, a connecting portion with an externally threaded lower section depending from a lower portion of said gun body, said externally threaded section of said connecting portion being connected threadedly to a tubular member with a wall, a paint container being connected to said tubular member, said connecting portion having a throughbore communicated with said blind hole of said gun body and a pipe member with a first end inserted in said through bore of said connecting portion and a second end extending through said tubular member into the interior of said container, said gun body further having a second air passage interconnecting said air chamber and said interior of said container and a valve device for closing and opening said second air passage, whereby paint in said container can be directed to said blind hole of said gun body through said pipe member and can be dispersed into mist through said center through hole of said nozzle so as to be sprayed out of said nozzle with the aid of compressed air which comes from said compressed air source through said first air passage and said air chamber;
the improvements comprising:
said gun body having a blind bore with a flat bottom connected to said second air passage, said blind bore having an internal thread formed adjacent to an open end of said blind bore;
said second air passage having a first section extending from said air chamber to said bottom of said blind bore, a second section extending from said blind bore to the exterior of said connecting portion, and a third section formed in said wall of said tubular member, said third section of said second air passage intercommunicating said second section of said second air passage and the interior of said container; and
said valve device including a threaded bolt with a shank, a head connected to said shank and a central hole formed through said head and said shank of said threaded bolt so that an opening is formed at a free end of said shank, said threaded bolt being screwed to said internal thread of said blind bore with said free end of said shank being received in said blind hole and being spaced from said bottom of said blind hole at a predetermined distance, said central hole of said threaded bolt having a first section which is adjacent to said head of said threaded bolt and which is provided with an internal thread, and a second section which has a diameter that is larger than the diameter of said first section of said central hole, said threaded bolt having a vent hole interconnecting the exterior of said threaded bolt and said second section of said central hole of said threaded bolt, a threaded rod screwed to said first section of said central hole of said threaded bolt, said threaded rod having a first end connected with a knob and a second end extending out of said threaded bolt into said blind bore of said gun body, said second end of said threaded rod having a central receiving blind hole, a coiled spring member being received in said central receiving blind hole, a disc having a central shaft connected perpendicularly thereto, said central shaft being inserted into said central receiving blind hole of said threaded rod, said disc having a diameter that is smaller than the diameter of said blind bore of said gun body, said threaded rod being moved between a first position, wherein said second end of said threaded rod pushes said disc to abut said bottom of said blind bore in order to close said first section of said second air passage, and a second position, wherein said second end of said threaded rod abuts the free end of said shank of said threaded bolt in order to close said opening of said shank of said threaded bolt and wherein said disc abuts said bottom of said blind hole in order to close said first section of said second air passage by means of the biasing force of said coiled spring.

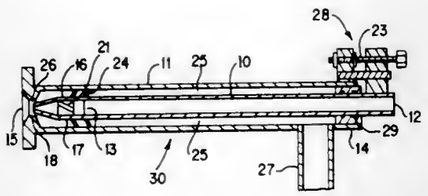
5,251,823
ADJUSTABLE ATOMIZING ORIFICE LIQUID FUEL BURNER
Mahendra L. Joshi, Altamonte Springs, and Paul O'Connor, Ocoee, both of Fla., assignors to Combustion Tec, Ioc., Apopka, Fla.
Filed Aug. 10, 1992, Ser. No. 927,331
Int. Cl.[5] B05B *7/10*
U.S. Cl. 239—401 **9 Claims**

1. An adjustable atomizing liquid fuel burner comprising:
a liquid fuel tubular member having a fuel inlet end and a fuel outlet end;
an atomizing fluid tubular member concentrically disposed around said liquid fuel tubular member forming an annular

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chamber around said liquid fuel tubular member, said atomizing fluid tubular member having an atomizing fluid inlet end and an atomizing fluid outlet end, said atomizing fluid outlet end forming a venturi;

a liquid fuel tip sealingly connected to said fuel outlet end, said liquid fuel tip disposed upstream of said atomizing fluid outlet end and having an internal convergence toward said atomizing fluid outlet end;



means for moving said liquid fuel tip in a direction along a longitudinal axis of said liquid fuel tubular member; and

a spinner disposed within said liquid fuel tip immediately upstream of said internal convergence, said liquid fuel tip forming a swirl chamber downstream of said spinner and a straight exit length downstream of said swirl chamber.

5,251,824

PROCESS FOR THE REMOVAL OF FOAMING AGENTS FROM FOAMED PLASTICS

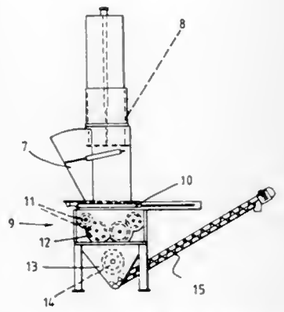
Waldemar Adelmann, Von-Bodelschwingh Str. 67, D-8782 Karlstadt, Fed. Rep. of Germany

Filed May 22, 1991, Ser. No. 703,925

Claims priority, application Fed. Rep. of Germany, May 22, 1990, 4016512

Int. Cl.[5] B09B *5/00*

U.S. Cl. 241—3 **12 Claims**



1. A process for the removal of a foaming agent from a foamed plastic, comprising the steps in the order of:

compressing a foamed plastic containing a foaming agent intended for removal from said foamed plastic; and,

comminuting said foamed plastic in a gas-tight unit for extracting said foaming agent from said foamed plastic.

5,251,825

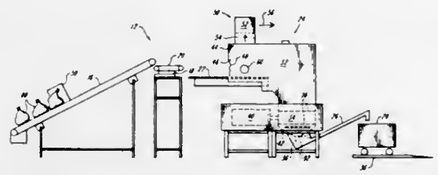
METHOD AND APPARATUS FOR COMMINUTING AND DECONTAMINATING WASTE MATERIAL

Thomas J. Dumaine, Nortb Attleboro, Mass.; John E. Kennett, North Kingstown, and Michael G. Kelly, East Greenwich, botb of R.I., assignors to Mediclean Technology, Inc., West Warwick, R.I.

Filed Oct. 19, 1992, Ser. No. 963,137

Int. Cl.[5] B02C *19/12, 23/18*

U.S. Cl. 241—16 **17 Claims**



1. A method of comminuting and decontaminating waste material comprising the steps of

dividing the material into discrete batches,

separately measuring the weight of a batch,

computing a dosage of a decontaminate fluid as a function of the weight of said batch, said dosage being of sufficient volume to decontaminate said batch,

loading said batch into a comminuting apparatus while substantially simultaneously applying said dosage to the material in said apparatus,

discharging the comminuted material from said apparatus, and

repeating the foregoing steps for said batches sequentially.

5,251,826

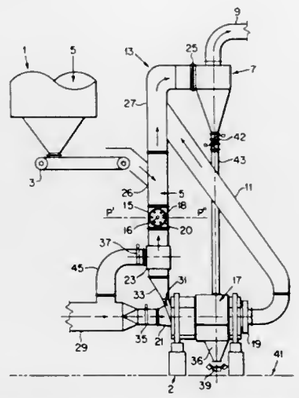
TUMBLING MEDIA MILL AND CONTROL SYSTEM

Bernard H. Schonbacb, Allentown, and Charles S. Fleishman, Wynnewood, both of Pa., assignors to Pennsylvania Crusber Corporation, Broomall, Pa.

Filed Mar. 13, 1992, Ser. No. 852,077

Int. Cl.[5] B02C *23/38*

U.S. Cl. 241—19 **42 Claims**



1. A method of operating a tumbling media mill, comprising:

A. creating a charge of particulate material in a tumbling media mill grinding chamber by introducing a continuing flow of particulate material into said chamber,

B. grinding said charge by rotating said chamber to cause tumbling action in a bed of grinding media in said chamber and thereby cause grinding action between said media and said charge in said bed,

C. bringing a feed containing clumps of adherent particles of relatively fine and coarse particle size into jarring contact with at least one moving member, prior to entry of the feed into said chamber and at a selected jarring intensity, for liberating fine particles from said clumps, and bringing the liberated fine particles into contact with a current of gas for removing a controlled proportion of the finer particles from the remainder of the feed outside the chamber,

D. directing all or a portion of the remainder of the feed into the grinding chamber and grinding the feed as a component of said charge in said bed,

E. sensing at least one indicator of a developing or existing over-fed or under-fed condition in said bed, and

F. increasing and decreasing the quantity of said finer particles removed from the remainder of the feed by adjusting at least:

1. the jarring intensity, or

2. the velocity of said gas current in response to said at least one indicator.

5,251,827

PROCESS FOR SEPARATING FIBRES FROM COMPOSITE MATERIALS

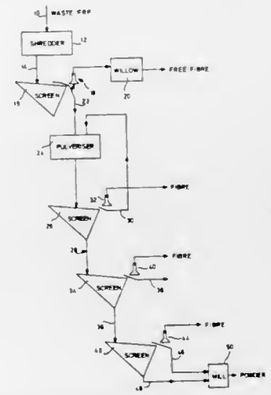
Bryan Sims, Oakville; Craig A. Booth, Acton, and V. 1. Lakshmanan, Mississauga, all of Canada, assignors to Phoenix Fibreglass Inc., Oakville, Canada

Filed Sep. 18, 1992, Ser. No. 947,351

Claims priority, application United Kingdom, Sep. 18, 1991, 9119944; Jun. 18, 1992, 9212920

Int. Cl.[5] B29B *17/00, 17/02;* **B03B** *9/06*

U.S. Cl. 241—24 **18 Claims**



1. A method of separating fibres from a fibre reinforced plastic material comprising the steps of shredding said material into a plurality of discrete pieces, feeding said pieces into a pulverizer to impact said pieces, and providing an unclassified output from said pulverizer, separating free fibres from said output and feeding at least a portion of the balance of said output to a pulverizer for further diminution thereof.

5,251,828

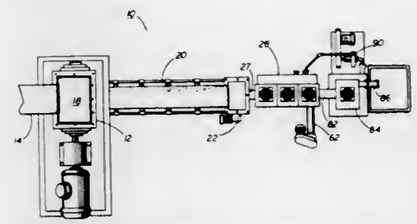
PROCESS AND APPARATUS FOR RECLAIMING CO-EXTRUDED CAR TRIM

James R. Jacobs, Thomaston, and Michael R. Twomey, Newnan, both of Ga., assignors to Mindis Metals, Inc., Atlanta, Ga.

Filed Oct. 28, 1992, Ser. No. 967,455

Int. Cl.[5] B02C *7/00*

U.S. Cl. 241—24 **25 Claims**



1. An apparatus for the thermal-mechanical separation of bonded material comprising:

(a) a first agitation chamber for receiving a heated liquid medium and the material to be separated;

(b) means for providing the heated liquid medium to said first agitation chamber;

(c) a first agitator in said first agitation chamber for submerging the material in the liquid medium and creating a flow of the liquid medium and material;

(d) a second agitation chamber;

(e) flow means, interconnecting said first and second agitation chambers, for permitting the heated liquid medium and the material to flow from said first agitation chamber into said second agitation chamber;

(f) a second agitator in said second agitation chamber for agitating the material and creating a flow of liquid medium and material, wherein the agitation of the material in the heated liquid medium causes separation of the bonded material;

(g) a third agitation chamber;

(h) flow means, interconnecting said second and third agitation chambers, for permitting the heated liquid medium and the material to flow from said second agitation chamber into said third agitation chamber;

(i) a third agitator in the third agitation chamber for agitating the material and creating a flow of liquid medium and material, wherein the agitation of the material in the heated liquid medium causes separation of the bonded material;

(j) means in fluid communication with the third agitation chamber for removing the separated material.

5,251,829

BONE COLLECTOR ASSEMBLY FOR A MEAT GRINDER

Nick J. Lesar, Palmyra, Wis., assignor to Weiler and Company, Inc., Whitewater, Wis.

Filed Feb. 13, 1991, Ser. No. 654,942

Int. Cl.[5] B02C *23/02*

U.S. Cl. 241—30 **48 Claims**

1. A method of grinding material such as meat, comprising the steps of:

mounting a primary orifice plate in the open end of a housing, with a rotating knife assembly being located within the housing adjacent the primary orifice plate;

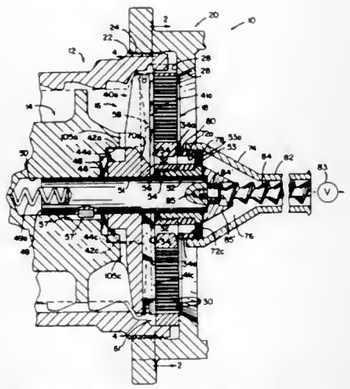
advancing the material through the housing toward the primary orifice plate while rotating the knife assembly, to grind the material by severing the material prior to passage of the material through the orifices formed in the primary orifice plate;

routing hard material contained within the material toward collection openings formed in the primary orifice plate by operation of the rotating knife assembly and discharging

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the collected hard material through the collection openings; and

mounting a recovery grinding structure downstream of the primary orifice plate for providing recovery grinding of

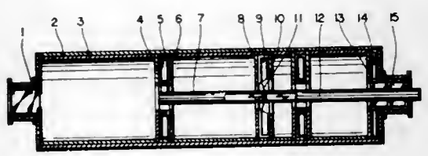


soft material passing through the collection openings along with the hard material, and for discharging the collected hard material therefrom after recovery of the soft material.

5,251,830
TUBE MILL

Yucan Jiang, Anhui, China, assignor to Hefei Cement Research & Design Institute Of State Administration Of Building Materials, Anhut, China

Filed Nov. 12, 1991, Ser. No. 795,186
Claims priority, application China, Nov. 13, 1990, 90109049.2
Int. Cl.[5] B02C *17/06*
U.S. Cl. 241—72 **14 Claims**

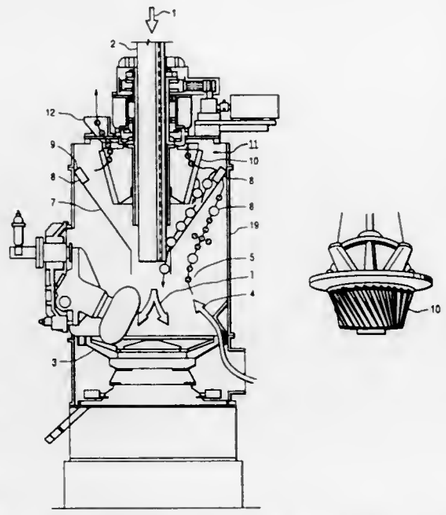


1. A one stage open circuit tube mill comprising a cylindrical body, a lining, grinding body, a feed port, an output port, a first partition means and a second partition means provided to separate the cylindrical body longitudinally into a coarse grinding compartment which is in communication with the feed port, a first fine grinding compartment being next to said first partition means, and a second fine grinding compartment which is in communication with the output port, wherein the operation of the first and second fine compartment is in parallel, a material shunting means comprising a plurality of lifters being provided in the first partition means which shunts the material from the coarse grinding compartment into two portions, one being directly conveyed into the first fine grinding compartment and the other being conveyed into the second fine grinding compartment via a first conveying means, the material from the second fine grinding compartment being discharged directly out of the mill, and a second conveying means being provided to convey and discharge the material from the first fine grinding compartment to outside of the mill without passing through the second fine grinding compartment.

5,251,831
ROLLER MILL

Hirohisa Yoshida; Tsugio Yamamoto; Masaaki Kinoshita; Hidenori Sakamoto, all of Nagasaki, and Takeshi Kunimoto, Tokyo, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 21, 1992, Ser. No. 823,361
Claims priority, application Japan, Jan. 21, 1991, 3-5330
Int. Cl.[5] B02C *23/08*
U.S. Cl. 241—79.001 **8 Claims**

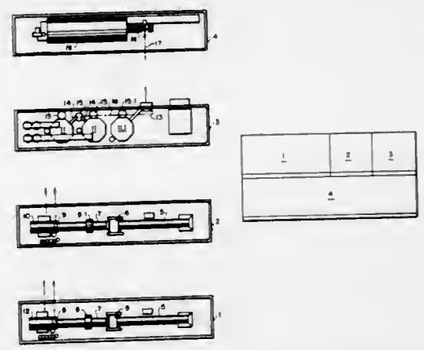


1. Classifier structure of a roller mill, said structure comprising: a mill casing including a vertically extending side wall and a top wall disposed over said side wall, the side wall of said mill casing having the shape of a right cylinder, a rotary classifier disposed within said mill casing, and an auxiliary classifier extending around said rotary classifier in the mill casing, said rotary classifier having a plurality of vanes and supported in the mill for rotation about a vertical axis in a rotary direction, each of said vanes being inclined relative to said vertical axis in said rotary direction and having an upper portion and a lower portion disposed such that the lower portion trails the upper portion when rotated in said rotary direction, and said auxiliary classifier including an auxiliary classifier cone including an upper portion having an inverted conic shape and terminating at an upper edge forming the periphery of the base of the conic shape thereof, and a plurality of deflector plates disposed in a spaced relation of said upper edge and around the entirety of the upper edge of said upper portion, a lower cylindrical portion extending from a lower end of said upper portion, and a ring attached to said deflector plates and extending in a horizontal plane between and securing said deflector plates and said side wall of the casing, said auxiliary classifier cone being attached direction to the side wall of said mill casing at said ring, and said auxiliary classifier cone defining a plurality of openings therethrough between said spaced deflector plates, whereby a stream forced upwardly between the auxiliary classifier cone and the side wall of said wall casing will flow through said plurality of openings and toward said rotary classifier in the vicinity of the upper edge of the upper portion of said auxiliary classifier cone.

5,251,832
TRANSPORTABLE FACILITY FOR RECYCLING WASTE PLASTICS

Martin Hentschel, Mainbernheim, Fed. Rep. of Germany, assignor to REAL GmbH, Mainbernheim, Fed. Rep. of Germany

Filed Feb. 27, 1992, Ser. No. 842,911
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1991, 4106942
Int. Cl.[5] B02C *21/02*
U.S. Cl. 241—101.7 **10 Claims**

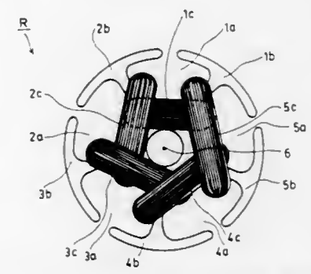


1. A transportable facility for recycling waste thermoplastics comprising at least one chipper, at least one storage hopper, and at least one extruder connected by constant-operation conveyors and integrated into components, wherein the components are individually transportable from site to site and combinable into an enclosed and modular production plant so as to be ready to operate at the site; wherein the edges along the length and width of a vertical projection of each component onto a horizontal surface extend substantially along the lines of a square grid, and wherein the components are of different sizes, there being a largest component and a smallest component, and wherein the vertical projection surface area occupied by the largest component is substantially a whole multiple of the vertical projection surface area occupied by the smallest component.

5,251,833
METHOD OF WINDING ARMATURE OF ELECTRIC ROTATING MACHINE

Yoshiyuki Furuhashi, and Toshiyuki Masuda, both of Toyohashi, Japan, assignors to ASMO Co., Ltd., Kosai, Japan

Filed Nov. 5, 1991, Ser. No. 787,889
Claims priority, application Japan, Nov. 8, 1990, 2-301093
Int. Cl.[5] H02K *15/09*
U.S. Cl. 242—7.03 **16 Claims**



1. A method of forming armature windings wound around a plurality of winding portions of an armature of an electric rotating machine, comprising the steps of:

composing vectors representing amounts of unbalance measured at the respective winding portions, thereby obtaining a basic resultant vector;

splitting said basic resultant vector into two components directed along two adjacent winding portions and calculating amounts of unbalance based on vector quantities of said two components;

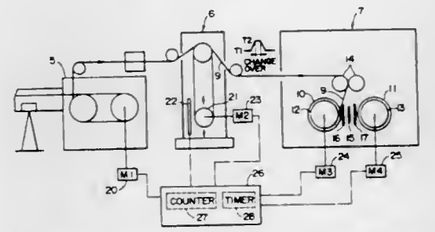
based on the results of said calculation, correcting the number of turns of two armature windings to be wound around said two adjacent winding portions so as to determine the number of turns of a plurality of armature windings to be wound around the respective winding portions; and

forming said armature windings around the respective winding portions based on said determined number of turns.

5,251,834
TRAVELING WIRE TAKE-UP METHOD AND ITS APPARATUS

Yoshio Ikegami; Tadashi Kouge; Hiroaki Aoyanagi, and Kaoru Morinaga, all of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed May 22, 1992, Ser. No. 886,847
Claims priority, application Japan, May 23, 1991, 3-149602
Int. Cl.[5] B65H *67/052*
U.S. Cl. 242—25 A **11 Claims**



1. A traveling wire take-up method comprising the steps of:

winding a wire on a current take-up bobbin;

shifting the traveling wire toward a snagger of a bobbin holder having an empty bobbin by engaging the wire with a shifting guide lever of a take-up machine in order to change over the wire from the current take-up bobbin to the empty bobbin;

increasing a take-up tension of the wire before the shifting step; and

reducing the take-up tension of the wire after the completion of the shifting step.

5,251,835
REEL-UP AND A METHOD OF REELING

Markku Kyytsönen, Numminen, Finland, assignor to Valmet Paper Machinery Inc., Helsinki, Finland

Filed Oct. 22, 1991, Ser. No. 781,490
Claims priority, application Finland, Oct. 26, 1990, 905284
Int. Cl.[5] B65H *18/16*
U.S. Cl. 242—65 **3 Claims**

1. A reel-up comprising:

a reeling cylinder,

means for supporting a reeling drum in a reeling position relative to the reeling cylinder so that the reeling cylinder and reeling drum form a nip for receiving a web being reeled onto said reeling drum,

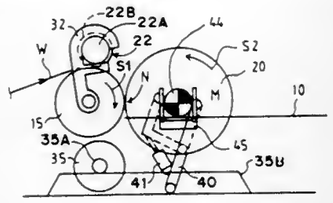
a first support and transfer device for supporting a first reeling drum at the reeling position and for transferring the first reeling drum to an exchange position, and

a second support and transfer device for receiving a second reeling drum when the first reeling drum is at the ex-

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change position and delivering the second reeling drum to the reeling position,

wherein the first support and transfer device comprises a first pair of forks, the two forks of the first pair being at opposite respective sides of the reel-up, and the second support and transfer device comprises a second pair of forks, the two forks of the second pair being at opposite



respective sides of the reel-up, and the two forks at each side of the reel-up are spaced apart from each other in a direction parallel to the central axis of the reeling cylinder, whereby one pair of forks can be used to transfer a reeling drum from the reeling position to the exchange position and the other pair of forks can be returned from the exchange position to the reeling position without interfering with each other.

5,251,836

WINDING MACHINE FOR THE SELECTIVE WINDING OF CORES IN OPPOSITE SENSES

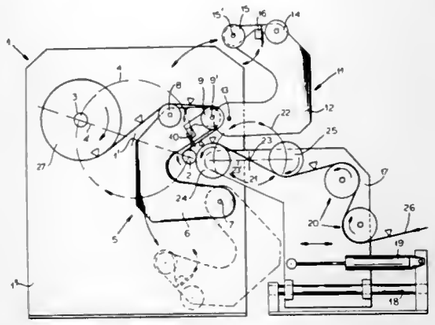
Klaus Pack, Wiehl, Fed. Rep. of Germany, assignor to Stahlkontor Maschinenbau GmbH, Hemeln, Fed. Rep. of Germany

Filed Feb. 7, 1992, Ser. No. 833,439

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1991, 4104082

Int. Cl.[5] B65H *19/26, 19/28*

U.S. Cl. 242—56 A **10 Claims**



1. A winding machine, comprising:

a core turret rotatable about a turret axis and provided with means for receiving a plurality of winding cores selectively positionable at a winding location and swingable along a swing circle away from and to said location;

a pair of roll-contact rollers driven in opposite senses and engageable selectively with opposite sides of a web to be wound on a winding core positioned at said location;

means for swinging said pair of rollers about a pivot axis common to said rollers and parallel to the turret axis to selectively position one and another of the rollers of said pair at said location in juxtaposition with an empty core and in contact with a roll wound thereon for wrapping said empty core with said web in one or an opposite sense for selectively applying a surface or said web inwardly or outwardly to said empty core for correspondingly winding a roll of said web on said core; and

swing arm means including at least one swing arm pivotable about a further axis parallel to said turret and said pivot axes and provided with cutter means for severing said web and at least one deflection roller engaging said web between said location and a wound roll along said swing circle swung away from said location from a respective side of said web to apply a cut end of said web to said empty core.

5,251,837

DEVICE FOR WINDING WEBS OF MATERIAL ONTO WINDING SHAFTS

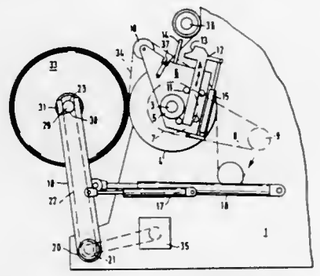
Rolf Kammann, Westerkappeln; Wolfgang Kamlage, Hasbergen, and Christoph Bauer, Ibbenbüren, all of Fed. Rep. of Germany, assignors to Windmöller & Hölscher, Lengerich, Fed. Rep. of Germany

Filed Sep. 10, 1992, Ser. No. 942,889

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1991, 4135163; Jan. 10, 1992, 4200478

Int. Cl.[5] B65H *18/16*

U.S. Cl. 242—65 **8 Claims**



1. A device for winding a web of material onto a winding shaft, comprising:

a movable bearing supporting a winding shaft during winding, by which a supply roll being formed on said winding shaft can be moved towards a contact roller and which can be moved in a position away therefrom for the removal of the completely wound supply roll, and

means for inserting into the movable bearing a new winding shaft which has been accelerated up to approximately the speed of the web and onto which the leading end of the web, formed by a severance cut, is wound,

wherein the movable bearing comprises two pairs of holding means, each pair of which can be moved synchronously with the other pair as well as independently of the other pair, and wherein the pairs are adapted for holding a supply roll together and each pair alone is adapted for holding a wound supply roll or a winding shaft with the leading end of the web wound thereon, respectively.

5,251,838

FILM CASSETTE WITH REMOVABLE END CAP

Dennis R. Zander, Penfield, and David G. Tomer, Hilton, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

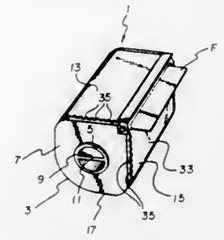
Filed Feb. 15, 1991, Ser. No. 655,609

Int. Cl.[5] G03B *17/26*

U.S. Cl. 242—71.1 **8 Claims**

1. A film cassette comprising a cassette shell, and a film spool located inside said shell and having one end accessible from outside the shell for engagement to rotate said spool, is characterized in that:

an end cap is sized and shaped to cover said one end of the spool and includes securement means for securing said end cap to said shell, with the end cap covering the one end,



and for permitting removal of the end cap from the shell to uncover the one end.

5,251,839

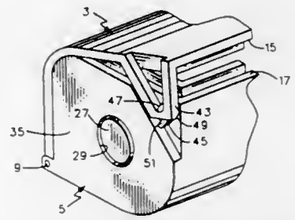
SNAP-OPEN FILM CARTRIDGE

Dennis R. Zander, Penfield, and Eugene Sisto, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 30, 1992, Ser. No. 859,799

Int. Cl.[5] G03B *17/26*

U.S. Cl. 242—71.1 **2 Claims**



1. A film cartridge comprising a shell-like enclosure, a film spool rotatably supported inside said enclosure, a lid connected to said enclosure for opening to allow film movement in and out of the enclosure and for closing to seal the enclosure, and respective latch means on said enclosure and said lid for engaging when the lid is closed to hold the lid closed and for disengaging to permit the lid to be opened, is characterized in that:

respective latch means on said enclosure and said lid engage when the lid is opened sufficiently to allow film movement in and out of the enclosure, but not to allow removal of said spool from the enclosure, for preventing the lid from being opened farther and disengage to permit the lid to be opened farther to remove the spool or to be closed.

5,251,840

FILM CASSETTE WITH NON-PROTRUDING FILM LEADER

John J. Niedospial, New York, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

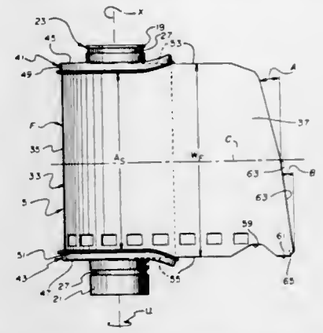
Filed May 26, 1992, Ser. No. 888,078

Int. Cl.[5] G03B *17/26*

U.S. Cl. 242—71.1 **4 Claims**

1. A film cassette comprising a spool supported for rotation in an unwinding direction inside a cassette shell, a filmstrip coiled about said spool to form a roll with an outermost film convolution that is a nonprotruding leader, and a stripper located substantially adjacent a passageway to the exterior of said shell for receipt between a leading edge of said leader and a next-inward film convolution of said roll to divert said leading edge into said passageway when said spool is rotated in the unwinding direction, is characterized in that:

said leading edge of the leader is inclined at one angle rearwardly from its center point on a longitudinal centerline of said filmstrip towards one longitudinal edge of the filmstrip relatively remove from said stripper and is inclined at another angle, different than the first mentioned



angle, forwardly from said centerpoint towards another longitudinal edge of the filmstrip relatively close to the stripper to facilitate movement of the leading edge into said passageway.

5,251,841

PHOTOGRAPHIC FILM CASSETTE

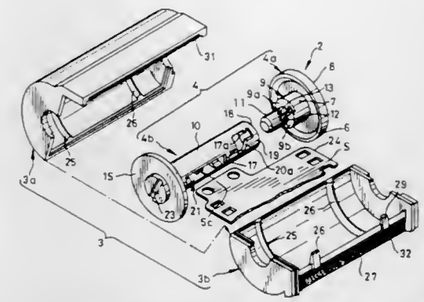
Tetsuya Takatori, and Toshiharu Naito, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 22, 1992, Ser. No. 901,841

Claims priority, application Japan, Jun. 20, 1991, 3-176164

Int. Cl.[5] G03B *17/26*

U.S. Cl. 242—71.1 **37 Claims**



1. A photographic film cassette having a spool with a photographic film wound in a roll thereon and a cassette shell for rotatably containing said spool, said spool being rotated in a film unwinding direction to cause a leader of said photographic film, rotating together with said spool, to advance to an outside of said cassette shell through a passage mouth formed in said cassette said spool including first and second spool pieces, said first spool piece including a first flange and a first core, a first end of said first core being supported by said cassette shell in a cantilever fashion, said second spool piece includes a second flange and a second core, a third end of said second core being supported by said cassette shell in a cantilever fashion, a fourth end of said second core, which is opposite to said third end, being associated with a second end of said first core, which is opposite said first end, said cassette comprising:

a guide shaft formed on said second end of said first core to be coaxial with said first core, said guide shaft having a

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crosswise diameter which is smaller than a crosswise diameter of said first core;

a sleeve formed on said fourth end of said second core, said guide shaft being inserted into said sleeve for allowing said spool to change between lengthened and shortened states by relative axial movement of said first and second spool pieces, lateral edges of said roll of said photographic film being clamped between said first and second flanges when said spool assumes said shortened state, said lateral edges being released from clamping by said first and second flanges when said spool assumes said lengthened state;

a cam follower projecting from said guide shaft;

a cam groove formed in said fourth end of said second core so as to receive said cam follower therein, said cam groove causing said spool to change from said lengthened state to said shortened state, by virtue of engagement with said cam follower, when said spool is rotated in said film unwinding direction, said first and second flanges clamp said lateral edges of said roll so as to advance said leader outward from said cassette shell when said spool is rotated in said film unwinding direction, said cam groove causing said spool to change from said shortened state to said lengthened state, by virtue of engagement with said cam follower, when said spool is rotated in a wind-up direction which is opposite to said film unwinding direction, said cam groove being closed to said fourth end; and

a recess formed inside said sleeve, said cam follower being inserted through said recess into said cam groove.

5,251,842

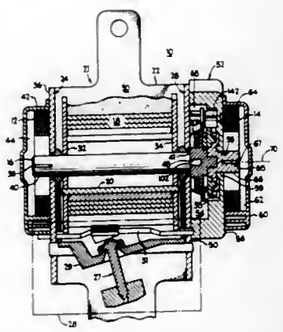
DUAL-SPRING RETRACTOR OPERABLE BY A SERIES OF DISCS

James L. Zygutis, Frankfort, Ill., and Gerald A. Doty, Crown Point, Ind., assignors to Takata Inc., Auburn Hills, Mich.

Filed Apr. 23, 1991, Ser. No. 689,985

Int. Cl.[5] B60R *22/44*

U.S. Cl. 242—107 **8 Claims**



1. A safety belt retractor system with a reel on a shaft and having a belt wound on said reel, which belt is protractible and retractable from said reel, said shaft having a longitudinal axis, first end and a second end,

first means for biasing said reel and belt to a rewound and retracted position, which first biasing means is mounted and operable at said first shaft end,

second means for biasing said reel and belt to a rewound and retracted position, said second biasing means mounted and operable at said second shaft end,

means for deactivating said second biasing means to reduce the rewind bias on said belt at a tension-ease position, said deactivating means comprising:

a housing having an enclosure, which housing is positioned over said second shaft end;

driving means positioned in said enclosure and mounted on said second shaft end and rotatable with said shaft;

a pawl pivotally mounted on said housing in said enclosure;

A cover on said housing defining a cavity for said second biasing means;

ratcheting means having at least one ratchet tooth, which ratcheting means is rotatably coupled to said driving means; said ratcheting means when engaged by said pawl activating said second biasing means to reduce the rewind bias on said belt at the tension-ease position;

said second biasing means positioned in said cavity and operably connected between said cover and said ratcheting means;

said ratcheting means tooth engageable by said pawl in the tension-ease position to secure said ratcheting means and disengage said second biasing means from biasing said reel and belt;

a block-out disc frictionally engaged with said driving means and rotatable between a pawl engaged position and disengaged position; said block-out disc when in said pawl disengaged position holds said pawl from engagement with said ratcheting means tooth during belt rewinding onto the reel to allow both first and second means for biasing to provide force to wind the belt onto the reel; and,

a release disc with at least one release-disc tooth, said release disc providing a lost motion connection between said driving means and said ratchet means to allow a limited belt protraction and retraction while the belt is in the tension ease mode;

said release disc having a tooth to shift the pawl from said one ratchet tooth on the ratcheting means to initiate a belt rewind.

5,251,843

NOISE-DAMPED SENSOR FOR A SAFETY BELT RETRACTOR

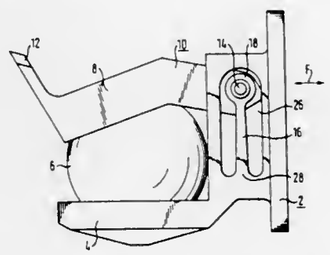
Thomas Kielwein, Eschach, and Johannes Schmid, Schwäbisch Gmünd-Hussenhofen, both of Fed. Rep. of Germany, assignors to TRW Repa GmbH, Alfdorf, Fed. Rep. of Germany

Filed Aug. 18, 1992, Ser. No. 931,838

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1991, 9110281[U]

Int. Cl.[5] B60R *22/40*

U.S. Cl. 242—107.4 A **13 Claims**



1. A sensor for use in a safety belt retractor equipped with a reel blocking mechanism, said sensor performing a vehicle-sensitive triggering of said blocking mechanism and comprising a sensor housing having a trough in which a sensor ball is received and a sensor lever which is pivotally mounted on said sensor housing and has a cap which bears on said ball, at least one of said cap and said trough having at least one portion connected via at least one elongated web to said sensor housing and elastically deflectable under the action of vibrations transmitted to the ball in use of said sensor.

5,251,844

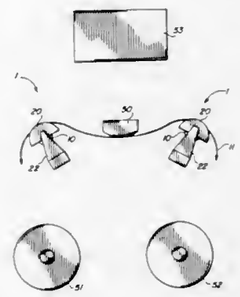
GIMBALED COMPLIANT GUIDE FOR TAPE DRIVERS

Thomas R. Albrecht, San Jose; Jaquelin K. Spong, Mt. View, and James H. Eaton, Morgan Hill, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 628,503, Dec. 17, 1990, abandoned. This application Aug. 31, 1992, Ser. No. 936,714

Int. Cl.[5] B65H *27/00*; **G03B** *1/04*

U.S. Cl. 242—179 **25 Claims**



21. A tape drive comprising:

a first and a second rotatable reel;

a flexible tape having its first end wound upon the first rotatable reel and its second end wound upon the second rotatable reel;

a read/write head adjacent the tape;

means coupled to the rotatable reels for controllably rotating the rotatable reels to advance the tape past the head;

means coupled to the head for controllably writing to and reading from the tape;

a first and a second guide, one guide on each side of the head along the length of the tape, the first guide comprising:

an arcuate tape bearing surface capable of bearing the tape thereon, the tape bearing surface having a first and a second edge, the tape having an edge forming an arc;

a first plate pivotably mounted adjacent the first edge of the tape bearing surface; and

means for applying force upon the first plate in a direction substantially perpendicular to the plane defined by the arc of the edge of the tape, the first plate mounted to pivot about a first pivot point on the means for applying force to first plate, the first pivot point moveable in a direction substantially perpendicular to the plane defined by the arc of the edge of the web but constrained from moving on a surface of the first plate in a direction substantially parallel to the first plate.

5,251,845

REEL DRIVING APPARATUS FOR TAPE RECORDER

Kye Y. Ryu, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 9, 1991, Ser. No. 803,554

Claims priority, application Rep. of Korea, Dec. 10, 1990, 19430/1990

Int. Cl.[5] G11B *15/30*

U.S. Cl. 242—201 **9 Claims**

1. A reel driving apparatus for use in a tape recorder, comprising:

driving means for supplying a driving force to said reel driving apparatus;

transmitting means for transmitting the driving force of said driving means to an intermediary gear;

a central shaft fixed on a base plate;

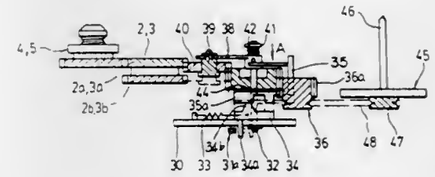
a function plate, responsive to an external signal, for movement between high speed and low speed function modes;

a rotary disk rotatably mounted on said central shaft and activated by movement of said function plate;

an up/down movement member interconnected with said rotary disk and movable up and down along with a capstan shaft in accordance with rotating movement of said rotary disk;

a connecting gear interlocked with said intermediary gear;

supporting means for supporting said connecting gear so as to be moved upward and downward together with the up/down movement member;



elastic means, inserted on the central shaft, for biasing said supporting means downwardly;

supply and take-up clutches each provided with upper and lower gears, respectively; and

an idler gear, rotatably mounted on said supporting means and interlocked with the connecting gear, for selectively engaging with said upper and lower gears of the supply and take-up clutches.

5,251,846

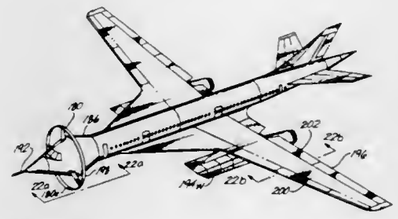
SUPERSONIC AIRCRAFT SHOCK WAVE ENERGY RECOVERY SYSTEM

Scott C. Rethorst, South Pasadena, Calif., assignor to Vehicle Research Corporation, South Pasadena, Calif.

Continuation-in-part of Ser. No. 557,418, Jul. 23, 1990, abandoned. This application Jan. 22, 1992, Ser. No. 825,289

Int. Cl.[5] B64C *15/00*

U.S. Cl. 244—15 **4 Claims**



1. In an aircraft having a wing, a nozzle, and a fuselage, a compression wave energy control device comprising:

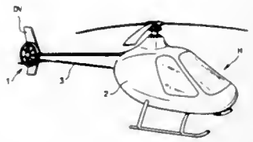
a forward bow introduced in said fuselage, and an aft tail, a bow ring mounted around at least a portion of said forward fuselage bow to intercept and reflect a shock wave from said fuselage bow aft onto a shoulder which is inwardly inclined toward a centerline of the fuselage on at least a portion of said fuselage which receives the reflected shock for pressure recovery into thrust and useful work.

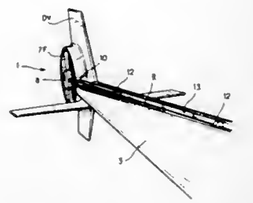
VOL 1155 ISS 2 OCT 12 1993 UMI

5,251,847
TAIL ROTOR ANTI-TORQUE SYSTEM FOR A HELICOPTER

Bruno Guimbal, les Milles, France, assignor to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Oct. 28, 1992, Ser. No. 969,714
Claims priority, application France, Nov. 7, 1991, 91 13742
Int. Cl.[5] B64C *27/82*
U.S. Cl. 244—17.19 **5 Claims**





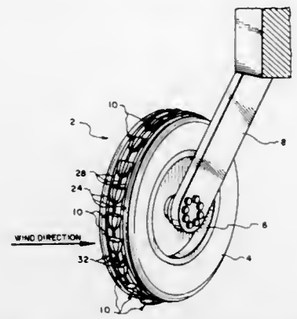
1. An anti-torque system (**1**) for a helicopter with a rearwards-elongated fuselage (**2**, **3**) comprising an engine (**4**) driving a main gearbox (**5**), said engine (**4**) and said main gearbox (**5**) being arranged in the central part (**2**) of said fuselage, and said anti-torque system (**1**) comprising:
- an anti-torque tail rotor (**6**) whose axis (**6A**) is transversal with respect to said fuselage (**2**, **3**) and which is situated at the rear end of said fuselage (**2**, **3**);
- a fairing (**7**) defining an aerodynamic tunnel (**7T**) in which said tail rotor (**6**) is housed coaxially, said tunnel (**7T**) comprising a trailing edge (**7F**) on the downstream side of the airflow blown by said tail rotor (**6**) in its main operating mode;
- a tail gearbox (**8**) arranged in said tunnel (**7T**) and able to rotationally drive said tail rotor (**6**); and
- a rotating transmission shaft (**9**) connecting the main gearbox (**5**) to the tail gearbox (**8**); wherein the said transmission shaft (**9**) passes through an indentation (**10**) formed in said trailing edge (**7F**) of the tunnel (**7T**) and open towards the outside, without passing through said fairing (**7**).

5,251,848
SPACE SHUTTLE WHEEL ACCELERATION SYSTEM

Joseph P. Gannatal, Camarillo, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 14, 1992, Ser. No. 882,720
Int. Cl.[5] B64C *25/32*
U.S. Cl. 244—103 S **8 Claims**

1. An expendable, flexible, strap-on tire prerotation apparatus for catching the wind and accelerating a tire of an aircraft prior to touchdown wherein the tire includes circumferential grooves comprising:
- a) attachment bands located in the circumferential grooves of said tire and extending around the circumference of said tire, each band having a first end and a second end;
- b) means for catching the wind, the wind catching means attached to the attachment bands;
- c) attachment means for attaching the first end of each said attachment band to the second end of each said attachment band, wherein said attachment means includes a

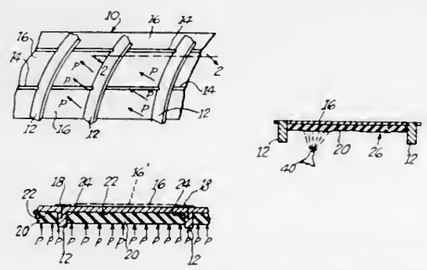


breakaway buckle to allow the attachment bands to separate from said tire upon touchdown of said aircraft.

5,251,849
STRAIN REDUCED AIRPLANE SKIN

Milton J. Torres, Miami, Fla., assignor to Florida International University for Board of Regents, Miami, Fla.

Filed Dec. 26, 1989, Ser. No. 456,533
Int. Cl.[5] B64C *1/40*
U.S. Cl. 244—117 R **20 Claims**



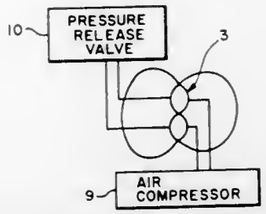
1. In an aircraft body formed by a thin metal material affixed to a plurality of bulkheads, the improvement of a non-flammable polymer foam material affixed to the interior side of said metal material and to said bulkheads.

5,251,850
DEVICE FOR ADJUSTMENT OF THE HEIGHT OF AN AIRSHIP

Torsten A. B. Norén, Hägersten, Sweden, assignor to Bruno Wintzell, Stockholm, Sweden

PCT No. PCT/SE89/00068, § 371 Date Sep. 17, 1991, § 102(e) Date Sep. 17, 1991, PCT Pub. No. WO90/09312, PCT Pub. Date Aug. 23, 1990
PCT Filed Feb. 16, 1989, Ser. No. 741,410
Int. Cl.[5] B64B *1/58, 1/60*
U.S. Cl. 244—128 **8 Claims**

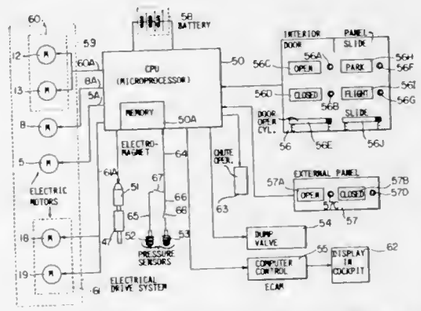
1. An adjustable-height airship, comprising:
- a plurality of horizontally, longitudinally elongated, closed tubular containers for supporting gas, each having an inside and an outside said containers being arranged side-by-side;
- at least one horizontally, longitudinally elongated, closed tubular air bag disposed entirely outside each said tubular container, each said air bag having at least one cell;
- each said air bag being interposed laterally between a respective at least two of said containers and connecting such containers to one another; and
- compressed air generating means operatively connected with each said air bag for selectively internally pressurizing each said air bag to an above-atmospheric pressure, by pressurizing atmospheric air drawn from externally of said airship, and valve means operatively connected with each said air bag for releasing such air from each said air bag.



5,251,851
DOOR OPERATING MECHANISM FOR OPENING AND CLOSING AN AIRCRAFT DOOR IN RESPONSE TO A STORED PROGRAM

Dieter Herrmann, Norderstedt, and Guenter Kallies, Hamburg, both of Fed. Rep. of Germany, assignors to Deutsche Aerospace Airbus GmbH, Hamburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 728,595, Jul. 11, 1991, Pat. No. 5,163,639. This application Nov. 13, 1992, Ser. No. 975,785
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1990, 4022067
Int. Cl.[5] B64C *1/14*
U.S. Cl. 244—129.5 **12 Claims**

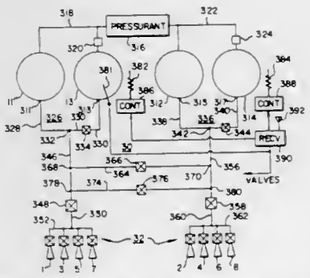


1. An operating system for an aircraft door having a door frame, comprising door supporting and guiding hinging means for securing said door frame to a body structure of the aircraft, a plurality of electric motor means for operating said door, operating means driven by said electric motor means for performing door opening and door closing functions and door locking and unlocking functions, emergency door opening pressurized drive means (**47**) for opening said door in an emergency, and a central computer processing unit (**50**) comprising an electronic memory having a computer program stored therein, said door operating system further comprising input means (**56**, **57**) connected to said central processing unit for providing operator initiated input signals to said central processing unit, emergency power supply means (**58**) as part of said central processing unit (**50**), electromagnet means (**51**) connected to said central processing unit for activating said emergency door opening pressurized drive means (**47**), a first pressure sensor (**52**) for sensing a pressure value for said emergency door opening pressurized drive means (**47**) and for providing a respective first pressure value signal to said central processing unit, dump valve means (**54**) connected to said central processing unit for preventing a door opening prior to a completion of a cabin depressurization, display means (**55**, **62**) connected to said central processing unit for displaying door status information on said display means, and conductor means connecting said electric motor means to said central processing unit (**50**) for operating said electric motor means in response to said computer program, whereby each of said electric motor means is controlled individually and in coordination with the control and operation of all of said electric motor means in accordance with said stored computer program.

5,251,852
THERMAL FUEL TRANSFER AND TANK ISOLATION TO REDUCE UNUSABLE FUEL

Joseph A. Pulkowski, Ringoes; Keith Davies, Robbinsville; Marc B. Young, Plainsboro, and Daniel A. Lichtin, West Windsor, all of N.J., assignors to General Electric Company, East Windsor, N.J.

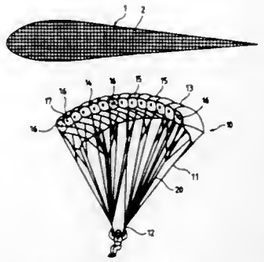
Filed Sep. 6, 1991, Ser. No. 755,723
Int. Cl.[5] B64G *1/22*
U.S. Cl. 244—135 C **1 Claim**



1. A method for operating a spacecraft, which spacecraft includes first and second propellant tanks, each with a gas port and a fluid port, a thruster connected to a propellant manifold, which propellant manifold includes a first branch coupled by way of a controllable valve to said fluid port of said first tank and a second branch coupled to said fluid port of said second tank, a source of pressurant gas, a gas manifold coupled to said source of pressurant gas, said gas manifold including a first branch coupled to said gas port of said second tank and a second branch coupled by way of a check valve to said gas port of said first tank in a manner permitting said first tank to have a higher pressure than said second tank, said method comprising the steps of:
- launching said spacecraft, with said first and second tanks loaded with the same type of propellant;
- from time to time, drawing substantially equal amounts of said propellant from said first and second tanks for operation of said thruster;
- before said propellant in said first tank is exhausted, raising the temperature of said first tank above that of said second tank to thereby raise the pressure in said first tank, thereby to close said check valve, and to drive propellant from said first tank through said manifold toward said second tank;
- during said step of raising the temperature, permanently closing said controllable valve, to thereby close off said first branch of said manifold, and thereby isolate said first tank from said thruster and said second tank;
- from time to time, after said closing step, drawing propellant from said second tank, and not from said first tank, for operating said thruster.

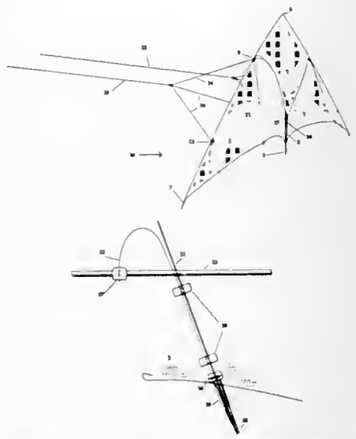
VOL 1155 ISS 2 OCT 12 1993 UMI

5,251,853
CANOPY FOR PARAGLIDER AND/OR PARACHUTE
Takahisa Ogawa, Saitama; Hideyuki Mori, Shiga, and Yasuhiro Matsuda, Osaka, all of Japan, assignors to Falhawk Co., Ltd., Tokyo and Ashimori Industry Co., Ltd., Osaka, both of Japan
Filed Sep. 3, 1991, Ser. No. 753,550
Claims priority, application Japan, Sep. 7, 1990, 2-94675[U]
Int. Cl.[5] B64D *17/02*
U.S. Cl. 244—145 24 Claims



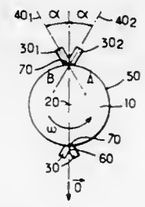
1. A canopy adapted for use with a paraglider and/or parachute, said canopy comprising:
an inflatable body defining a first chamber therein; and
a plurality of partition walls for dividing the first chamber into small second chambers, said plurality of partition walls being disposed within said inflatable body at predetermined intervals along a width thereof, each of said partition walls being in the form of a wing-shape and made of a screen mesh made by weaving or knitting synthetic fibers and having apertures provided therein so that adjacent second chambers communicate with each other wherein a ratio of the area of openings in said screen mesh of each of said partition walls to the total area of each of said partition walls is no less than 50%.

5,251,854
TWO-SAILED SPORT KITE
Tomoyo Iwamoto, 25165 Stewart Pl., Carmel, Calif. 93923
Filed Sep. 3, 1992, Ser. No. 940,307
Int. Cl.[5] A63H *27/08*; B64C *31/06*
U.S. Cl. 244—153 R 2 Claims



1. A sports kite for flying in variable winds, comprising:
a substantially delta-shaped frame including a central rod secured to a pair of diagonal frame members, said central rod having a front side and a rear side,
a first sail of flexible durable material secured to said frame having a tail section and a wing tip section,
a first perpendicular rod and a second perpendicular rod secured to said central rod, said first and said second perpendicular rod each having a plurality of adjustable batten rods secured thereto and to said sail by mechanical fastening means, and
a second sail positioned in back of said first sail and secured to said rear side of said central rod by connecting means.

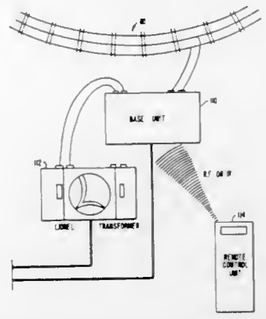
5,251,855
SPACECRAFT PROPULSION SYSTEM THRUSTER FIRING SYSTEM
Ingo Kaelsch, Leiden, Netherlands, assignor to Agence Spatiale Europeenne, France
Continuation of Ser. No. 697,400, May 9, 1991, abandoned. This application Dec. 22, 1992, Ser. No. 995,520
Claims priority, application France, May 9, 1990, 90 05769
Int. Cl.[5] B64G *1/26, 1/40*
U.S. Cl. 244—172 1 Claim



1. A method of firing thrusters in a propulsion system of a spacecraft spin stabilized by rotation about a spin axis to increase the orbital velocity of the spacecraft in a maneuver direction along the orbital velocity vector, the propulsion system comprising a pair of thrusters juxtaposed on a common support at the periphery of the spacecraft, the thrusters having thrust axes which lie in a plane, said plane being perpendicular to the spin axis, said thrust axes being offset relative to a transverse axis of the spacecraft by equal and opposite offset angles, in which method each thruster is fired separately and alternately when its thrust axis is substantially parallel to the maneuver direction while the spacecraft is rotating about its spin axis.

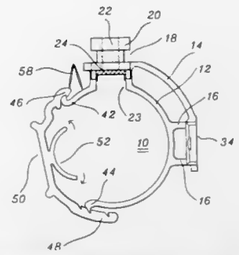
5,251,856
MODEL TRAIN CONTROLLER FOR REVERSING UNIT
Neil P. Young, 3240 Bear Gulch Rd., Redwood City, Calif. 94062, and Richard Davis, Palo Alto, both of Calif., assignors to Neil P. Young, Redwood City, Calif.
Filed Feb. 11, 1992, Ser. No. 833,869
Int. Cl.[5] B61L *7/08, 27/00*
U.S. Cl. 246—4 9 Claims

1. A control system for model trains on a train track system comprising:
a hand-held remote control unit for transmitting control signals;
a transformer for applying track power to said track;
a base unit, connected between said transformer and said track, for receiving said control signals, and combining said control signals with said power on said track;



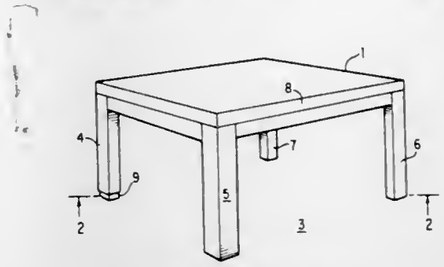
a train receiver unit, mounted in one of said model trains, for receiving said control signals, and directing the operation of said one model train in response to said control signals.

5,251,857
SUSPENDABLE CONDUIT BRACKET SYSTEM
Gordon J. Grice, One Parker Pl., Janesville, Wis. 53545, and Harry Travis, 1011 Elaine Dr., Beloit, Wis. 53511
Continuation-in-part of Ser. No. 665,549, Mar. 7, 1991, Pat. No. 5,133,523, which is a continuation-in-part of Ser. No. 480,912, Feb. 16, 1990, Pat. No. 5,044,583, which is a continuation-in-part of Ser. No. 354,860, May 22, 1989, Pat. No. 4,911,387, which is a continuation-in-part of Ser. No. 211,967, Jun. 27, 1988, Pat. No. 4,901,957. This application Jul. 1, 1992, Ser. No. 907,513
Int. Cl.[5] F16L *3/08*
U.S. Cl. 248—62 14 Claims



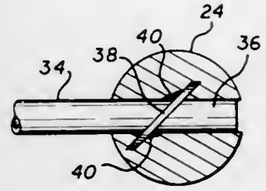
1. A suspendable conduit bracket system, comprising:
(a) a back bracket element defining, in transverse cross-section, an inner semicircle and an outer semicircle of greater radius than said inner semicircle, said inner and outer semicircles mutually integrally secured by ribbing means, said inner semicircle comprising nesting means proportioned to the cross-sectional geometry of a conduit to be suspended; and
(b) a radial portion protruding integrally externally from said semicircles of said back bracket element, passing through at least one of said semicircles and having (i) means for selectable lockable engagement with a hollow solid rectangular channel, (ii) a threaded radial channel extending through substantially the radial length of said radial portion, and (iii) proximal to an intersection of said radial portion with said outer semicircle of said back bracket element, a rigid insert having a deformable aperture therein, said insert secured transversely to said threaded channel, positioned at an axial center of said threaded channel and proportioned for snap-fittable receipt of a threaded rod advanced through said aperture of said insert.

5,251,858
WOBBLE-RESISTING FURNITURE
Arnoldus J. Ultee, 816 Gwynne Ave., Waynesboro, Va. 22980
Filed May 29, 1992, Ser. No. 890,231
Int. Cl.[5] A47B *9/00*
U.S. Cl. 248—188.3 3 Claims



1. Wobble-resistant furniture for placement on a floor, said furniture having four essentially vertically disposed legs, one being shorter than three other substantially equal length legs and having a vertically extending member, one being positioned diagonally in relation to said shorter leg, wherein said diagonally positioned leg weighs more than any of the other legs b virtue of an additional metal component.

5,251,859
SUPPORT MOUNT
Alexander Cyrell, Hollywood, and Garret E. Weyand, San Marino, both of Calif., assignors to Omnimount Systems, Tempe, Ariz.
Filed Mar. 6, 1992, Ser. No. 847,636
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—288.3 14 Claims

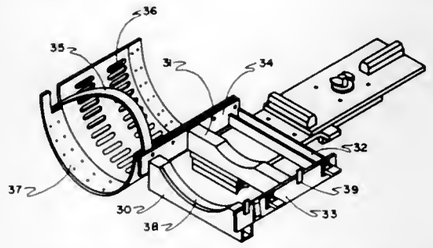


1. An adjustable support mount attachable to an object to be supported, comprising:
a shaft having first and second ends;
a ring encircling and attached to said shaft at said first end of said shaft, said ring being attached at said first end of said shaft at an angle departing from the perpendicular to a major axis of said shaft;
a ball at least partially enveloping said ring and said shaft at said first end;
a clamp plate attachable to the object to be supported, said clamp plate having a clamp plate extension with a concave circular toothed depression forming one half of a socket for said ball;
a jaw plate removably and hingably fitting onto said clamp plate, said jaw plate also having a concave circular toothed depressing forming another half of said socket for said ball;
attachment means for removably attaching said jaw plate to said clamp plate;
said ball-enveloped first shaft end fitted within said socket formed by said clamp plate and said jaw plate;
said attachment means for attaching said clamp plate and said jaw plate compressing said ball between said clamp

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plate and said jaw plate whereby said clamp plate attached to the object maintains a fixed position.

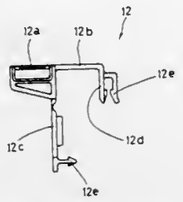
5,251,860
INTERFACE ADAPTER
Robert E. Nystrom, Woodbridge, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Feb. 28, 1992, Ser. No. 843,028
Int. Cl.[5] A47K *1/08*
U.S. Cl. 248—313 **1 Claim**



1. An interface adapter for adaptably mounting observation equipment and protecting the lens assembly thereof, comprising:
an adapter plate assembly including a top and bottom rectangular plate releasably coupled in offset relationship along longitudinal center axis, said top plate including mounting means on the top of said top plate to mate and couple the equipment being mounted, and whereby the bottom of said bottom plate is adapted to mate and couple the interface adapter to a mounting surface on a support structure;
a shield base assembly having a rectangular frame arrangement including two parallel longitudinal support members at least three yoke members connected to said rectangular frame arrangement between said longitudinal support members, said yoke members being in parallel with each other and in a perpendicular relationship to the two parallel longitudinal support members, whereby the rectangular frame arrangement is adapted to be coupled to the top side of the bottom plate such that the lens assembly is cradled in the yoke assembly for stability, and a hinged shield assembly coupled to said rectangular frame arrangement whereby the hinged shield assembly functions to protect the lens from a hostile environment;
a securing means releasably coupled to said longitudinal support members for releasably holding the equipment to be mounted against the shield base assembly whereby observation equipment is mounted with sufficient mechanical support and weight distribution such as to be freely movable and stay in a horizontal plane while adjusted for level and elevation, and sufficient protection achieved for the lens assembly from a hostile environment.

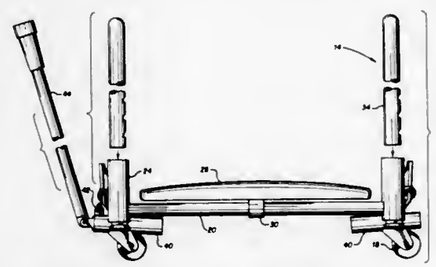
5,251,861
COUPLER FIXING STRUCTURE FOR MODULAR WIPER APPARATUS
Akira Hayashi, Kiryu, Japan, assignor to Mitsuba Electric Manufacturing Co., Ltd., Gunma, Japan
Filed Jun. 19, 1992, Ser. No. 901,104
Claims priority, application Japan, Jun. 21, 1991, 3-55727[U]
Int. Cl.[5] A47G *1/10*
U.S. Cl. 248—316.5 **7 Claims**

1. A coupler fixing structure in combination with modular wiper apparatus having a first bracket to which a wiper motor is mounted, a second bracket to which a wiper shaft is mounted, and a channel-type frame having a substantially U-shaped cross-section and linking said first and second brackets with each other, said coupler fixing structure allowing a coupler connected with leads led from said wiper motor to be mounted to said frame, said coupler fixing structure comprising:
a mounting bracket including a supporting portion and a surrounding portion, said supporting portion being provided for supporting said coupler thereon, said surrounding portion being slidably fixed to said frame; and



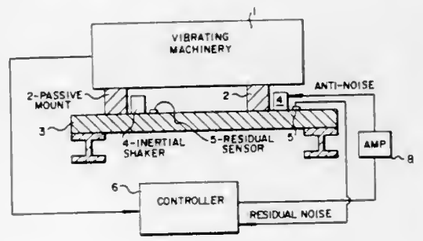
engagement projection means formed on said frame at a location at which said mounting bracket is to be mounted to said frame, said engagement projection means being engageable with said surrounding portion so as to restrain movement of said mounting bracket along the longitudinal axis of said frame.

5,251,862
TRANSPORTING AND LIFTING APPARATUS AND METHODS FOR AIDING HANDICAPPED INDIVIDUALS
Walter Raymond, 1440 Davenport St., Sturgis, S. Dak. 57785
Filed Dec. 6, 1991, Ser. No. 803,447
Int. Cl.[5] A45D *19/04*
U.S. Cl. 248—396 **15 Claims**



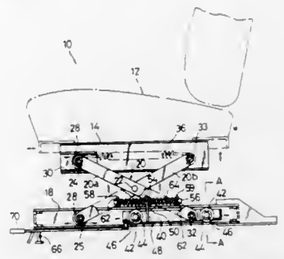
1. Apparatus for lifting a load, comprising:
a frame having a generally centrally disposed member for bearing a load and a plurality of elements spaced one from the other about the periphery of said frame, and first and second pairs of said elements lying on opposite sides of said frame;
first and second pairs of legs for disposition in slidable relation to said first and second pairs of elements, respectively;
cooperable means carried by said frame on said opposite sides thereof cooperable with said first and second pairs of legs, respectively, when said legs are disposed in slidable relation to said elements, for enabling movement of said frame relative to said legs in a first direction into selected adjusted positions relative to one another and for releasably precluding movement of said frame relative to said legs in a second direction opposite said first direction in each said selected adjusted position thereof;
said cooperable means on said opposite sides of said frame being independent of one another whereby one side of said frame is movable relative to the pair of legs on said one side thereof and in said first direction, while the other side of said frame and the other pair of legs on said other side of said frame remain immovable relative to one another; and
alternate moving means carried by said frame for alternately moving said opposite sides of said frame in said first direction relative to the pair of legs on the corresponding side of said frame for displacing the load carried by said centrally disposed member in said first direction, wherein said first and second pairs of legs are in slidable telescopic relation relative to said first and second pairs of elements, respectively, said cooperable means including ratchet teeth spaced along said legs and ratchet catches carried by said frame and engageable with said ratchet teeth at said selected adjusted relative positions of said frame and said legs.

5,251,863
ACTIVE FORCE CANCELLATION SYSTEM
William Gossman, Silver Spring, Md., and Steve Hildebrand, Arlington, Va., assignors to Noise Cancellation Technologies, Inc., Linthicum, Md.
Filed Aug. 12, 1992, Ser. No. 928,470
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—550 **15 Claims**



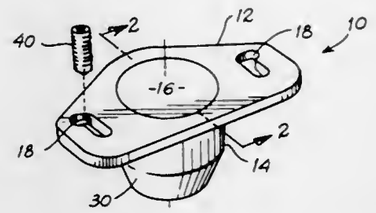
1. An active force cancellation system for controlling vibrations in flexible structures, said system comprising
a vibration sensing means located on said flexible structure
counter-vibration means located on said flexible structure
controller means operatively associated with said vibration sensing means and said counter-vibration means and adapted to cause the latter to vibrate in response to signals from the sensing means so as to eliminate vibrations in said flexible structure.

5,251,864
SUSPENSION DEVICE FOR VEHICLE SEAT
Kenichi Itou, Akishima, Japan, assignor to Tachi-S Co., Ltd., Akishima, Japan
Filed Apr. 21, 1992, Ser. No. 871,395
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—588 **8 Claims**



1. A suspension device for a vehicle seat, which includes an upper frame, on which is mounted said seat, a lower frame fixed on a floor of the vehicle, a pair of X-shaped links interposed between said upper and lower frames, each of said pair of X-shaped links being essentially composed of a first link member and a second link member which are pivotally connected together, cross-wise, at their respective central pivot points, and a vertically active elastic means for resiliently acting on said X-shaped links to produce a vertical elasticity to said pair of X-shaped links, wherein in said first and second link members, either one pair of ends of both first link members or one pair of ends of both second link members are pivotally fixed at one of said upper and lower frames, while all other ends of said first and second link members are movably fitted in the corresponding upper and lower frames, wherein at least one of said upper and lower frames includes a pair of lateral frame sections each having a channel cross-section, wherein a slide frame is interposed and movably fitted in said lateral frame sections, such that both lateral frame sections of said slide frame are fitted within the respective lateral frame sections, and provided with at least one pair of rollers which are free to roll in said respective lateral frame sections of said at least one of said upper and lower frames, thereby allowing said slide frame to be movable along a longitudinal direction of one of said upper and lower frames, wherein one pair of said all another ends of said first and second link members are pivotally connected to said slide frame, and wherein said lateral frame section of said one of said upper and lower frames is formed with a cut-away portion, wherein said slide frame has, provided at said lateral frame section thereof, a support plate whose one end extends through said cut-away portion to project above said one of said upper and lower frames, wherein there is provided a fore-and-aft active elastic means for resiliently acting on said slide frame to give the same an elasticity forwardly and backwardly in said longitudinal direction of said one of said upper and lower frames, said fore-and-aft active elastic means comprising a pair of first and second spring means and a rod fixed on said lateral frame section associated with said one of said upper and lower frames, wherein one end of said support plate is slidably connected to said rod, with such an arrangement that said first and second spring means are so attached around said rod that they are disposed symmetrically relative to said one end of said support plate, whereby said first spring means acts to give an elasticity to a forward movement of said slide frame, while said second spring means acts to give an elasticity to a backward movement of said slide frame, thereby urging said slide frame in the forward and backward directions.

5,251,865
MULTIPURPOSE AUTOMOTIVE TRANSMISSION MOUNT
H. L. Kelly, 1966 E. 1st St., Tempe, Ariz. 85281
Filed Apr. 9, 1992, Ser. No. 865,453
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—634 **7 Claims**



1. An automotive transmission mount for bracing a transmission to a supporting cross-arm of a vehicle's frame, comprising:
(a) a top plate having a main longitudinal axis and a minor transverse axis, and having two L-shaped slots, each consisting of a longer leg 1.203 inches long, disposed in parallel to the minor axis of the top plate, and of a shorter leg 0.726 inches long, disposed along the main axis of the top plate; wherein both of said legs are 0.453 inches wide, and

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the slots are separated by a distance of 3.298 inches and are positioned with the shorter leg facing outwardly;

(b) a cylinder attached to said top plate in orthogonal position thereto, said cylinder having an outside diameter of approximately 2.58 inches and a height between 1.400 and 1.460 inches;

(c) a U-channel shaped bottom plate having side portions facing toward the interior of mount, said bottom plate being sufficiently large to accommodate three vertical threaded bolt-holes; wherein said bolt-holes are in vertical alignment with the short legs of said L-shaped slots, are standard ⅜-16 bolt sizes with centers 0.758 inches apart, and wherein the center bolt-hole is in vertical alignment with the center of gravity of said top plate; and

(d) a core made of resilient material molded inside said cylinder attached to the top plate and around the side portions of said bottom plate, whereby the resilient material completely fills the interior of the cylinder, envelopes said two side portions and converges to the bottom plate in partly conical shape;

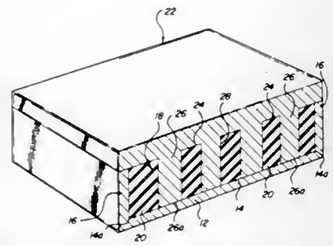
wherein the total height of the mount can vary between 1.937 and 1.960 inches.

5,251,866

FLEXIBLE COVERSTOCK SEMI-RIGID FOAM VOID TEST MOLD

Ellen Lord, S. Berwick, Me.; Brian VanBenschoten, East Rochester, N.H., and Daniel Durand, Berwick, Me., assignors to Davidson Textron Inc., Dover, N.H.

Filed Oct. 21, 1991, Ser. No. 779,813
Int. Cl.[5] B22D *19/00*
U.S. Cl. 249—64 **2 Claims**



1. A test mold assembly for evaluating the surface deformation tendency of a flexible coverstock bonded to a semi-rigid plastic formulation comprising:

a continuous sheet of flexible coverstock material;

a base member having a surface thereon supporting said continuous sheet of flexible coverstock material and defining a mold cavity for receiving foam precursors for bonding to said continuous sheet of flexible coverstock material;

a cover member connectible to said base member for closing said mold cavity; a plurality of rectangular blocks having first and second ends thereon; said first ends connected to said cover member and said second ends engaged with said continuous sheet of flexible coverstock material;

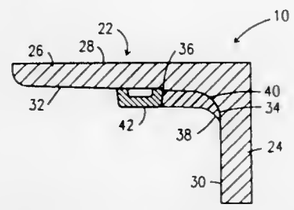
said cover member and said rectangular blocks being releasable from said base member and said flexible coverstock material following curing of said foam precursors for forming a plurality of spaced rectangular holes extending through said cured foam for creating voids in the cured foam at said flexible coverstock material having a shape that closely models the shape of foam voids created in the production of foam material having a flexible coverstock bonded thereto.

5,251,867

HEADER PALLET

Roger Beacom, 241 Sorrento Ranches Dr., Nokomis, Fla. 34275

Filed Apr. 9, 1992, Ser. No. 865,876
Int. Cl.[5] B28B *21/76*
U.S. Cl. 249—100 **1 Claim**



1. A convertible header pallet for the selective production of the spigot of a concrete pipe having either a single offset notch and "O" ring groove spigot or a dual offset notch spigot including an outer notch formed on the end of the spigot and an inner notch formed inwardly from the outer notch comprising an outer header ring including an end leg and a side leg including an end portion to cooperatively form a substantially L-shaped profile wherein the intersection of the inner surface of said end leg and the inner surface of said side leg comprises a concave surface and a shoulder is formed on the inner surface of said side leg portion in spaced relationship relative to said end leg portion, a removable intermediate ring having a substantially arcute profile and including a convex surface obverse to said concave surface of said intersection and a removable inner snap ring having a substantially rectilinear profile such that when said removable inner snap ring is placed to engage said shoulder in spaced relationship relative to said end leg said single offset notch is formed on the end portion of the spigot by said side leg and said "O" ring groove is formed in said single offset notch by said removable inner snap ring and when said removable inner snap ring is placed to engage said shoulder in spaced relationship relative to said end leg portion and said removable intermediate ring is press fitted between said inner snap ring and said end leg with said convex surface thereof mating with said concave surface of said intersection said outer notch is cooperatively formed on the outer end of the spigot by said removable intermediate ring and said removable inner snap ring and said inner notch is formed by said end portion of said side leg portion on the spigot inwardly of said outer notch.

5,251,868

CONNECTOR PIN ASSEMBLY FOR CONCRETE FORM PANEL UNITS

James E. Trimmer, and Dwight E. Hibbs, both of Kansas City, Mo., assignors to Precise Forms, Inc., Kansas City, Mo.

Filed Apr. 20, 1992, Ser. No. 871,198
Int. Cl.[5] E04G *17/04;* **F16B** *41/00*
U.S. Cl. 249—196 **9 Claims**

1. An assembly for releasably interconnecting a pair of structural form panels cooperatively presenting a pair of adjacent walls having respective aligned apertures therethrough, said assembly comprising:

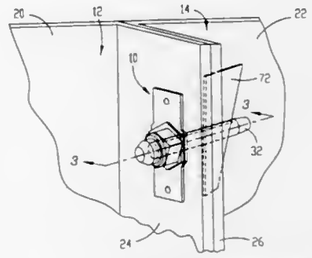
an elongated, axially tapered pin presenting a longitudinal axis, a rearward end and a forward end;

means for coupling said pin to one of said walls with said forward end adjacent the aperture through said one wall, for selective axial movement of the pin between an extended, connecting position wherein the pin extends through the apertures of both of said walls, and a retracted position wherein the pin clears the aperture through the other of said walls,

said coupling means including a resilient metallic retaining ring disposed about said tapered pin and operable for frictionally and compressively engaging the pin at all

axially shifted positions thereof in order to retain said pin at said connecting and retracted positions respectively in substantial alignment with said one wall aperture,

said pin having structure defining a bore therethrough proximal to said forward end, said bore extending completely



through said pin in a transverse orientation relative to the longitudinal axis of said pin; and

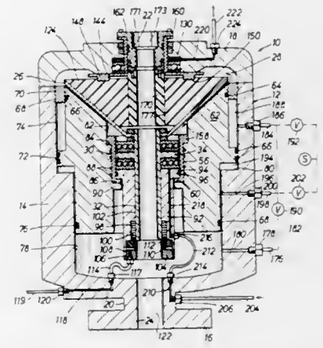
a wedge configured for receipt within said bore when said pin is in the extended connecting position thereof for preventing unintended shifting of the pin to said retracted position thereof.

5,251,869

ROTARY BLOWOUT PREVENTER

Benny M. Mason, 955 Dairy Ashford #218, Houston, Tex. 77059

Continuation-in-part of Ser. No. 915,929, Jul. 16, 1992, abandoned. This application Dec. 30, 1992, Ser. No. 998,939
Int. Cl.[5] E21B *33/06*
U.S. Cl. 251—1.2 **25 Claims**



25. A blowout preventer construction comprising:

(a) a pressure containing housing defining upper and lower openings through which a drill stem is adapted to extend;

(b) a primary packing element being located within said housing and defining a centrally oriented opening;

(c) a secondary packing element being located within said centrally oriented opening and defining a centrally oriented drill stem passage, said secondary packing element being accessible and removable from said central opening of said primary packing element without opening of said pressure containing housing to enable simple and quick replacement thereof; and

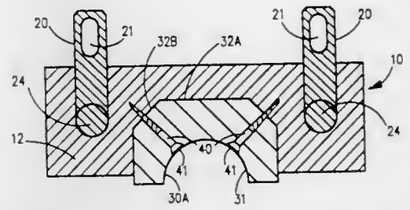
(d) a pressure responsive piston being located within said pressure containing housing and defining an annulus pressure chamber within said pressure responsive housing, said pressure responsive piston being linearly movable within said pressure containing housing upon communication of predetermined annulus pressure into said annulus pressure chamber and deforming said primary and secondary packing elements about said drill stem to establish an annulus pressure containing seal with said drill stem to prevent a well blowout.

5,251,870

BLOWOUT PREVENTER RAM PACKER AND WEAR INSERT

Michael W. Ward, Houston, Tex., assignor to H & H Rubber, Inc., Houston, Tex.

Filed May 26, 1992, Ser. No. 888,912
Int. Cl.[5] E21B *33/06*
U.S. Cl. 251—1.3 **20 Claims**



1. A wear insert for a ram packer of a blowout preventer comprising

(a) a sealing surface having a semi-circular face and

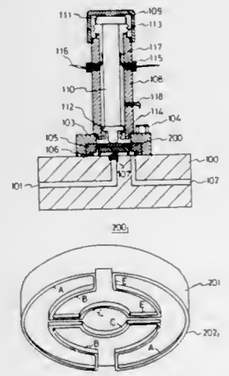
(b) a ram packer mounting surface having a multisided configuration for axially sideable engagement with a ram packer and having an absence of any projection thereon.

5,251,871

FLUID FLOW CONTROL VALVE AND VALVE DISK

Isao Suzuki, c/o Hachiuoji Technical Center Nippon Tylan Co., Ltd. Ishikawa-cho 2971-8, Hachiouji-shi, Tokyo, Japan

Continuation of Ser. No. 612,610, Nov. 13, 1990, abandoned. This application Jan. 25, 1993, Ser. No. 8,638
Claims priority, application Japan, Nov. 14, 1989, 1-293804
Int. Cl.[5] F16K *31/64, 1/36*
U.S. Cl. 251—127 **4 Claims**



1. A fluid control valve comprising

a base block and a valve base received on the base block, there being a diaphragm in the valve base which with the base block defines a valve chamber, a surface of the base block in the valve chamber presenting a valve seat,

a primary side passage in the base block, and a secondary side passage in the base block, a terminal end of the primary side passage and an initial end of the secondary

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passage being located at the valve seat presenting surface of the base block,

a valve disc in the valve chamber, the valve disc having a solid main body, a face of the main body confronting the valve seat, the terminal end of the primary side passage being positioned below a central part of the valve disc valve seat confronting face,

means normally urging the valve disc away from a valve seat engaging position wherein it covers the terminal end of the primary passage to a position wherein said primary passage terminal end is uncovered, the initial end of the secondary passage being located laterally beyond a perimeter expanse of the valve disc so that with the valve disc in that urged away position, an orifice gap exists between the valve disc and valve seat through which fluid flow from the primary passage can pass to the secondary passage, and

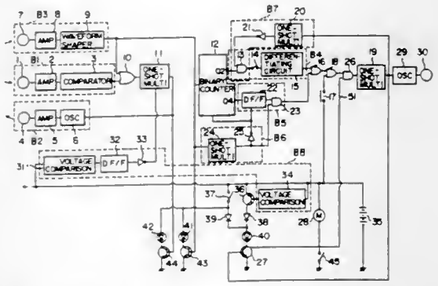
partition means carried on the valve disc valve seat confronting face and extending therefrom towards the valve seat, said partition means including first partition wall parts extending along perimeter lengths of the valve disc, and other partition wall parts extending inwardly of the valve disc perimeter and joined to first partition wall parts and each other such as to define closed wall shapes, a flow of the fluid through the orifice gap first reaching the valve disc confronting face central part and therefrom overflowing the partition wall parts to pass beyond the valve disc perimeter for accessing the secondary passage, said flow being controllable at a rate which is related to the wall lengths of the closed shapes.

5,251,872

AUTOMATIC CLEANER FOR MALE URINAL

Makoto Kodaira, Ota, Japan, assignor to Uro Denshi Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 2, 1992, Ser. No. 909,052
Claims priority, application Japan, Jul. 2, 1991, 3-50938[U]
Int. Cl.[5] E03D *13/00*
U.S. Cl. 251—129.04 27 Claims



1. An automatic cleaner for a male urinal comprising:

a sensor for detecting that a human body comes close to the urinal or away therefrom to output a first signal,

an one-shot multivibrator circuit of the retriggerable type triggered in response to the outputted first signal to output a second signal for a predetermined time,

an infrared ray emitting circuit adapted for emitting infrared rays in the form of pulses for a time period during which said one-shot multivibrator circuit is outputting said second signal,

an infrared ray receiving circuit adapted for detecting that the emitted infrared rays are reflected by the human body to output a third signal in the form of pulse,

a circuit responsive to the outputted third signal to trigger said one shot multivibrator circuit independently of said first signal,

a drive circuit adapted for counting the number of the outputted third signals to output a drive signal when the count value reaches a predetermined number of times, and there results the state where said third signal is not outputted, and

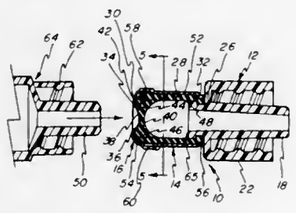
a cleaning water control unit responsive to said drive signal to allow cleaning water to flow out.

5,251,873

MEDICAL COUPLING SITE

Gordon E. Atkinson, Cedarville, and Dennis A. Boehmer, Beavercreek, both of Ohio, assignors to Vernay Laboratories, Inc., Yellow Springs, Ohio

Filed Jun. 4, 1992, Ser. No. 893,813
Int. Cl.[5] F16L *37/28*
U.S. Cl. 251—149.1 22 Claims



1. A medical coupling site comprising:

a base;

a retainer engaged with said base;

a valve element supported in contact with said base and retained in position on said base by said retainer; and

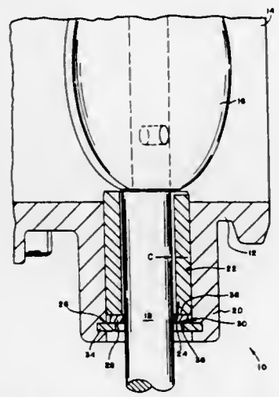
a lug supported on and extending radially outwardly from said retainer for threadably engaging threads on an internally threaded locking collar to hold said locking collar in engagement with said coupling site.

5,251,874

VALVE SHAFT SEAL

Steven W. Coleman, Lakewood; Rory Murphy, Long Beach, and Angus R. Lemon, Anaheim, all of Calif., assignors to Allied-Signal Inc., Morristown, N.J.

Filed Mar. 22, 1991, Ser. No. 673,625
Int. Cl.[5] F16K *41/00*
U.S. Cl. 251—214 10 Claims



1. Exhaust gas system comprising a conduit for transferring exhaust gas, valve means within said conduit for controlling communication of exhaust gas through said conduit, and control means for controlling said valve means, said control means including a shaft extending from said valve means, a shaft

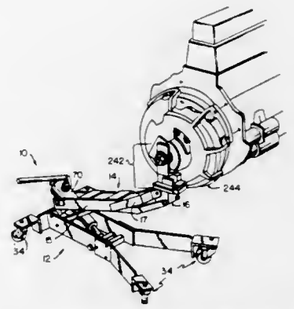
housing extending transversely from said conduit means and defining a bore therewithin receiving said shaft, a bushing in said bore rotatably supporting said shaft, projecting means projecting from said housing into said bore, said shaft extending through said projecting means, and a washer surrounding said shaft and freely slidable on said shaft, said washer being freely slidable in an axial direction toward and away from said projecting means and said bushing, said bushing being mounted in and supported by said bore, said bushing rotatably supporting said shaft with clearance sufficient to permit smooth rotation of said shaft with respect to said bushing, said clearance defining a leakage path from said conduit into said housing for said leaking exhaust gasses, said washer being responsive to the pressure of exhaust gasses leaking into said housing from said conduit around said shaft through said clearance to slide along said shaft and engage said projecting means to thereby inhibit escape of said leaked exhaust gasses from said housing.

5,251,875

LIFTING DEVICE FOR VEHICLE PARTS

John F. Craychee, St. Chalres, Ill., and Peter Symon, Munising, Mich., assignors to Kiene Diesel Accessories, Inc., Addison, Ill.

Continuation-in-part of Ser. No. 734,651, Jul. 23, 1991, abandoned, which is a division of Ser. No. 14,639, Feb. 13, 1987, Pat. No. 5,033,717. This application Jun. 12, 1992, Ser. No. 898,352
Int. Cl.[5] B60P *1/48*
U.S. Cl. 254—8 B 20 Claims



1. A clutch installation device for facilitating removal and installation of vehicle clutches comprising:

a base,

a boom having front and rear portions, said boom mounted at said front portion to said base for pivotal movement about a horizontal axis of rotation,

means mounted between said base and said boom for effecting pivotal movement of said boom about said first horizontal axis of rotation,

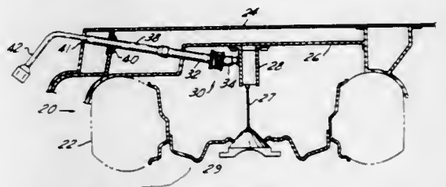
spline engagement means mounted to said rear portion of said boom for engaging a splined portion of said vehicle clutch, wherein said spline engagement means includes a longitudinal axis and means coupled to said boom for rotating said spline engagement means about said longitudinal axis thereby allowing said spline engagement means to be rotated about said longitudinal axis to engage said splined portion of said vehicle clutch.

5,251,876

DRIVE FOR A TIRE LIFT MECHANISM AND METHOD FOR ASSEMBLING SAME

Hulon D. Stallings, 8730 Sarah La., Grosse Isle, Mich. 48138

Filed Sep. 12, 1991, Ser. No. 758,797
Int. Cl.[5] B66D *1/00*
U.S. Cl. 254—323 10 Claims



1. A tire lift mechanism comprising:

a cable;

a drive tube adapted to be selectively rotated to cause said cable to be raised and lowered;

a driven shaft adapted to rotate structure for raising and lowering said cable, said driven shaft being selectively driven by said drive tube, said drive tube and said driven shaft being operably connected by a connection such that an axis of rotation of said drive tube may be non-parallel to an axis of rotation of said driven shaft, said connection including drainage spaces such that any fluids in the area of said connection may drain radially outwardly of said connection;

said drive tube including a plurality of circumferentially-spaced drive pins, said driven shaft including a plate having a plurality of notches at a radially outward position, said notches receiving said drive pins such that said drive pins may pivot within said notches but still transmit rotation, said drainage spaces being defined between said drive pins and extending radially outwardly of said connection such that fluids received in the area of said drive pins and said notices may drain outwardly; and

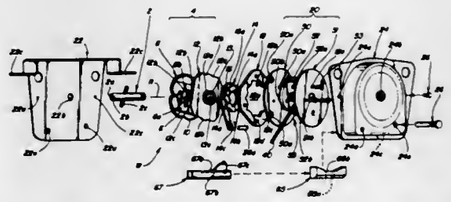
said drive pins are fixed in a first drive tube plate which is fixed to said drive tube, and a spring is disposed between said driven shaft plate, and said first drive tube plate, said spring surrounding said driven shaft, said spring eliminating rattling.

5,251,877

SHEAVE PLATE AND CABLE ASSEMBLY FOR A TIRE LIFT/CARRIER WINCH

Donald R. Rempinski, Grand Haven, and Donald R. Britt, Grand Rapids, both of Mich., assignors to Sparton Corporation, Jackson, Mich.

Continuation of Ser. No. 453,009, Dec. 20, 1989, Pat. No. 5,110,093, which is a continuation of Ser. No. 170,281, Mar. 18, 1988. This application Sep. 20, 1991, Ser. No. 764,501
The portion of the term of this patent subsequent to May 5, 2009, has been disclaimed.
Int. Cl.[5] B66D *1/34*
U.S. Cl. 254—323 3 Claims



1. A sheave plate and cable assembly for a winch comprising

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(a) a sheave plate having an axis of rotation and an outer, peripheral edge including an arcuate, cable-wrapping track thereon, and (b) a cable having a cable end extending into the sheave plate through the peripheral edge and captured in the sheave plate by a portion of said sheave plate molded about said cable end such that said cable end is embedded affixedly therein so as to anchor the cable end in the sheave plate against pull-out forces when the cable is under tension, said cable being wrapped on said track when the sheave plate is rotated about its axis of rotation.

5,251,878

DRIVE FOR LIFTING EQUIPMENT

Egon Mann, Friedrichshafen, and Erwin Meisinger, Hauzenberg, both of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Fed. Rep. of Germany

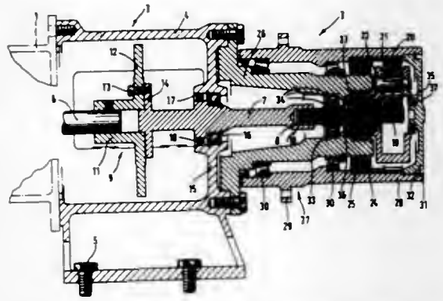
PCT No. PCT/EP89/00556, § 371 Date Nov. 27, 1990, § 102(e) Date Nov. 27, 1990, PCT Pub. No. WO89/11436, PCT Pub. Date Nov. 30, 1989

PCT Filed May 20, 1989, Ser. No. 623,959

Claims priority, application Fed. Rep. of Germany, May 28, 1988, 3818153

Int. Cl.[5] B66D *1/22*; F16H *1/46*

U.S. Cl. 254—344 **7 Claims**



1. A drive device for a lifting mechanism comprising:

an input planetary gear set comprising a sun gear, a planet carrier, carrying rotatable planet gears, and a ring gear;

a second planetary gear set comprising a sun gear, a planet carrier, carrying rotatable planet gears, and a ring gear;

an input shaft, having a brake mounted thereon, drivingly connected to the sun gear of said input planetary gear set, the planet carrier of said input planetary gear set being fixedly connected with the sun gear of said second planetary gear set, said ring gears of said input planetary gear set and of said second planetary gear set being connected with a rotatable housing case encasing said input and said second planetary gear sets, and the planet carrier of said second planetary gear set supporting two spaced bearings which, in turn, support said rotatable housing case,

wherein said input planetary gear set (**19, 20, 21**) is a helical cut gear set and said second planetary gear set (**23, 24 25**) is a straight cut gear set, said input shaft (**7, 8**), between the sun gear of said input planetary gear set (**19, 20 21**) and said brake (**2**), is formed from at least a central part (**7**) having first and second ends and an external part (**8**) which is connected to the sun gear, the first end of the central part is connected to the external part by a spline connection, and the external part (**8**) adjacent the sun gear is supported by the planet carrier (**26**) of the second planetary gear set via a bearing (**33**).

5,251,879

TOP SUBMERGED INJECTION WITH A SHROUDED LANCE

John M. Floyd, 70-72 Emerald Road, Upper Beconsfield, Victoria 3808, Australia

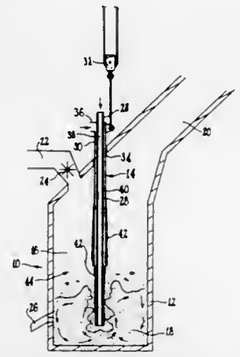
PCT No. PCT/AU90/00466, § 371 Date Mar. 20, 1992, § 102(e) Date Mar. 20, 1992, PCT Pub. No. WO91/05214, PCT Pub. Date Apr. 18, 1991

PCT Filed Sep. 26, 1990, Ser. No. 842,103

Claims priority, application Australia, Sep. 29, 1989, PJ6615

Int. Cl.[5] F27D *3/16*

U.S. Cl. 266—44 **11 Claims**



1. A lance, for top submerged injection of a liquid pyrometallurgical bath comprising slag or having a slag layer on its surface; the lance, relative to an in-use orientation, being of elongate form between an upper inlet end thereof and a lower discharge end for said fluid; the lance having a lower portion which terminates at said discharge end and which, in use, is submergible in said slag; the lance comprising:

(a) at least one first elongate tube which extends between said upper and discharge ends and which defines a duct for the flow of said fluid from the inlet end for discharge from the discharge end, the at least one first tube defining said lower portion;

(b) an elongate, tubular shroud which is mounted in relation to the first tube, and through which the first tube extends so that a coolant gas flow passage is defined within the shroud and around the first tube;

(c) first connector means, at said inlet end, connectable to a pressurized source of supply of said fluid for flow of said fluid through said duct; and

(d) second connector means, at said inlet end, connectable to a pressurized source of supply of said coolant gas for flow through said passage;

wherein the shroud extends from or adjacent to the inlet end and has a lower end thereof which is spaced above said lower end portion, and wherein the passage is open at the lower end of the shroud, whereby when said lower end portion is submerged in the slag, coolant gas supplied to said passage is able to discharge exteriorly of the lance, above the slag.

5,251,880

COOLING SYSTEM AND COOLING METHOD FOR HOT ISOSTATIC PRESSURIZING EQUIPMENT

Takahiko Ishii, and Tomomitsu Nakai, both of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

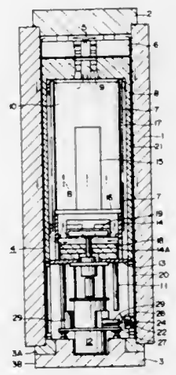
Filed Feb. 28, 1992, Ser. No. 842,990

Claims priority, application Japan, Mar. 4, 1991, 3-011028

Int. Cl.[5] C21D *1/06*

U.S. Cl. 266—44 **11 Claims**

1. A cooling system for the hot isostatic pressurizing equipment having a high-pressure vessel, a top closure fitted into an upper opening of the high-pressure vessel, a bottom closure fitted into a lower opening of the high-pressure vessel, the bottom closure consisting of an inner bottom closure and an outer bottom closure which are detachable from each other, an insulation mantle installed above the inner bottom closure and provided with a heater on the inside thereof, the insulation mantle being placed in a high-pressure chamber formed by the high-pressure vessel and the top and bottom closures, the insulation mantle forming a furnace in which a workpiece undergoes hot isostatic pressurizing by gas pressure, a workpiece holder supported in said furnace by said outer bottom closure for movement with said outer bottom closure independently of movement of said inner bottom closure, said cooling system comprising:



an upper vent hole formed in the upper part of the furnace,

a passage formed between the high-pressure chamber and the insulation mantle, a lower vent hole formed in the lower part of the furnace,

a valve attached to the lower vent hole, and an actuator for mechanically engaging and actuating the valve installed on the outer bottom closure, wherein the upper vent hole, the passage, the lower vent hole, and the furnace permit the circulation of gas, thereby cooling the workpiece after hot isostatic pressurizing.

5,251,881

METHODS AND DEVICES FOR THE THERMAL TREATMENT OF METAL WIRES UPON PASSING THEM OVER CAPSTANS

Andre Reiniche, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin - Michelin & Cie, Clermont-Ferrand, France

PCT No. PCT/FR90/00592, § 371 Date Mar. 9, 1992, § 102(e) Date Mar. 9, 1992, PCT Pub. No. WO91/04345, PCT Pub. Date Apr. 4, 1991

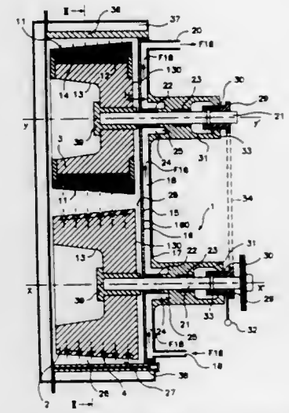
PCT Filed Sep. 7, 1990, Ser. No. 838,418

Int. Cl.[5] C21D *5/96*

U.S. Cl. 266—109 **22 Claims**

1. A method for the thermal treatment of at least one metal wire by means of capstans, in which the wire is passed over at least two heat-conducting capstans having grooves, the wire being reeved, crossed in these grooves, the width of the grooves being slightly greater than that of the wire, a heat transfer gas, within the grooves, being in contact with the wire and the capstans; this method comprising:

(a) heating or cooling the capstans by means of the gas interposed between the capstans and at least one heat conductive part, this gas being in contact with the capstans and the part, this part being separated from the capstans, by causing a heat-exchange fluid other than the gas to flow in contact with the part so that heat exchanges take place, on the one hand, between the gas and the part and, on the other hand, between the part and the fluid;



(b) adjusting the thickness of the layer of the gas between the capstans and the part as a function of the thermal treatment to be carried out.

5,251,882

LIQUID-CARRYING COOLING ELEMENT FOR SHAFT FURNACES

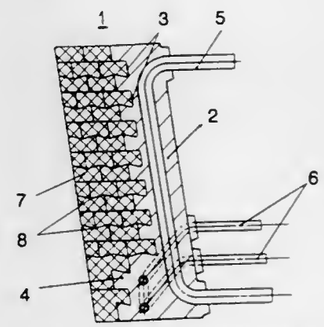
Bruno Kämmerling, Dinslaken; Karl Spickermann, Dorsten, and Urs-Peter Steiner, Viersen, all of Fed. Rep. of Germany, assignors to Man Gutehoffnungshütte AG, Oberhausen, Fed. Rep. of Germany

Filed Jul. 30, 1990, Ser. No. 559,839

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1989, 3925280

Int. Cl.[5] C21B *7/10*

U.S. Cl. 266—193 **11 Claims**

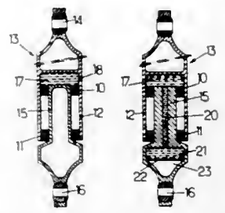


1. A liquid carrying cooling element for shaft furnace walls of a blast furnace, comprising; a plate body extending from a plate body upper end to a plate body lower end, said plate body being made of metal having a first side intended as a furnace heat facing hot side and an opposite second side and having an interior coolant carrying conduit extending inside said plate body substantially parallel to said first side and also having an exit on said second side, said plate body having a face on said first side, defining a brick work support formed integral with said plate body on said first side, said brick work support extending from said body plate upper end to said body plate lower end and said plate body defining a holding element extending said plate body outwardly on said first side beyond

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said face; a holding element cooling tube formed in said holding element adjacent said first side of said plate body; and, brick work secured to said plate body on said first side.

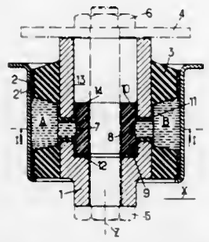
5,251,883
ELASTIC CONNECTING BAR FOR A SYSTEM FOR ACTIVE CONTROL OF VIBRATIONS
Jean-Michel Simon, Clamart, and André Gennesseaux, Paris, both of France, assignors to Hutchinson, France
Filed Apr. 17, 1992, Ser. No. 870,367
Claims priority, application France, Apr. 22, 1991, 91 04933
Int. Cl.[5] F16F *13/00*
U.S. Cl. 267—136 15 Claims



1. An elastic connecting bar for use in an active control system which system is used to control a transmission of vibrations along the bar, the bar comprising:
- a first end which is subjected to vibrational loads exerted along an axis of the bar;
- a second end linked to a structure which is to be isolated from vibrations created by the vibrational also using the active control system;
- a tubular part linked to one of said ends;
- a central part linked to the other of said ends which is surrounded by said tubular part;
- at least two axially spaced bearings which transversely link said tubular part and said central part;
- a leakproof chamber filled with hydraulic fluid which is bounded by said tubular part, said central part, and one of said elastic bearings;
- a compensating chamber having a diaphragm which divides said compensating chamber into a first volume filled with hydraulic fluid and a second volume filled with a pressurizing gas;
- a piston which is axially mounted in said tubular part and which separates said leakproof chamber and said first volume of said compensating chamber, said piston including an axial passage which fluidity connects said leakproof chamber and said first volume of said compensating chamber; and
- a motor means or controllingly displacing said piston in said tubular part so that displacements of said piston cause fluid transfers between said chambers and thus load compensating pressures in said leakproof chamber.

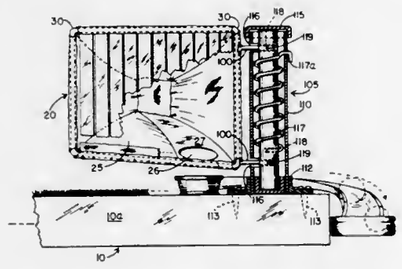
5,251,884
HYDRAULIC ANTIVIBRATION MOUNTS FOR DAMPING OSCILLATIONS IN RIGID PARTS
Bernard Bouhier, Vierzon, France, assignor to Hutchinson, France
Filed Apr. 8, 1992, Ser. No. 865,220
Claims priority, application France, Apr. 23, 1991, 91 04998
Int. Cl.[5] F16F *13/00*
U.S. Cl. 267—140.12 7 Claims

1. A hydraulic antivibration mount comprising two rigid tubular endpieces, one surrounding the other, the endpieces being connected together by an elastomer body shaped so as to form together therewith at least two diametrically opposite liquid-tight pockets (A, B) that communicate with each other via a narrow channel, said pockets and said channel being filled with a damping liquid, the narrow channel being delimited on the outside by the inside cylindrical face of the central portion of the inner tubular endpiece and being delimited on the inside by a groove formed in the outer cylindrical face of a ring received in and making contact with said central portion, said groove interconnecting two radial openings formed through



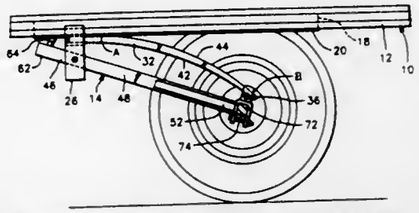
said inner tubular endpiece, said inner tubular endpiece having an axial inlet to enable insertion, removal and replacement of said ring even after the elastomer body has been molded and having a cylindrical housing therein for making contact with said outer cylindrical face of said ring by means of a force-fit.

5,251,885
GOLF BALL DRIVE PRACTICE DEVICE
Neil Logan, 9094 W. Pioneer Rd., West Palm Beach, Fla. 33402
Continuation of Ser. No. 589,996, Sep. 28, 1990, Pat. No. 5,108,102. This application Feb. 20, 1992, Ser. No. 839,569
The portion of the term of this patent subsequent to Apr. 28, 2009, has been disclaimed.
Int. Cl.[5] A63B *69/56*
U.S. Cl. 273—182 R 10 Claims



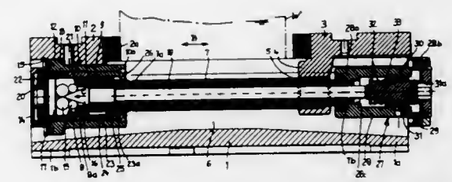
1. A golf practicing device for limiting the flight of driven golf balls, said device comprising:
- a support base;
- a ball receptacle having a ball inlet defined by a peripheral frame, said ball inlet facing in a front direction, said ball receptacle defined by a flexible bag-like structure extending rearwardly from said peripheral frame;
- a mount for mounting a golf ball, said ball receptacle being elevated above said support base for receiving golf balls driven in trajectories which intersect said ball inlet;
- means for elevating said ball receptacle above said support base, said elevating means being separate from and connected to the frame of said ball receptacle, said elevating means extending substantially vertically and laterally of said ball inlet relative to said front direction, said elevating means being pivotally connected to said support base for permitting said ball receptacle and said peripheral frame to pivot rearwardly relative to said support base under force of said golf ball received in said receptacle about a pivot axis located in a plane defined by said ball inlet when said ball receptacle is configured in an initial upright position.

5,251,886
SEMI-ELLIPTICAL SPRING SUSPENSION WITH AUTOMATIC SPRING RATE VARYING CAPACITY
Joseph S. Bursel, 3258 Southfield La., Sarasota, Fla. 34239
Filed May 14, 1992, Ser. No. 882,908
Int. Cl.[5] B60G *11/02*
U.S. Cl. 267—229 11 Claims



1. In combination, a generally elongated, straight abutment surface, an elongated arcuate and semi-elliptical spring including base and free end portions, said spring including oppositely facing convex and concave longitudinal sides, first mounting means mounting said base end portion stationarily relative to said surface with said convex side opposing and extending along said surface, the convex side of said base end portion being abutted against said surface and the free end portion of said convex side curving away from said surface, an elongated support member having first and second end portions, second mounting means pivotally mounting said first end portion relative to said surface for angular displacement about an axis fixed and extending transverse relative to said support member, abutment surface and spring and spaced outward of said base end portion from said surface with said support member generally paralleling and disposed outward of said concave longitudinal side, said second end portion being disposed totally on the side of said free end portion remote from said abutment surface and being swingable toward and away from said surface and including anti-friction abutment means engaged with said concave side only of said free end portion and movable in an anti-friction manner along said concave side of said free end portion toward said base end portion as said second end portion moves, and forces said fee end portion, toward said surface.

5,251,887
MACHINE VISE FOR CLAMPING A WORKPIECE
Franz Arnold, Spatzenweg 20, D-8960 Kempten, and Konrad Kreuzer, Dietmannsried, both of Fed. Rep. of Germany, assignors to Franz Arnold, Kempten, Fed. Rep. of Germany
Filed May 23, 1991, Ser. No. 704,557
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1990, 4018194; Apr. 16, 1991, 4112418
Int. Cl.[5] B25B *1/06*
U.S. Cl. 269—221 7 Claims



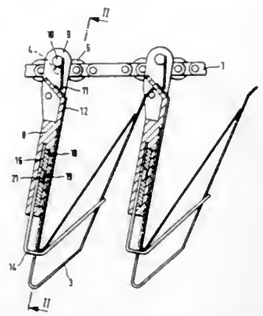
1. A machine vise for clamping a workpiece, comprising:
- an elongated body having a lengthwise extending recess of generally U-shaped cross section;
- a fixed jaw provided at one end of said body;
- a movable jaw arranged for sliding on guiding surfaces in an axial direction along sad body toward said fixed jaw and having formed thereon a projection extending into said recess and having a nut formed therein;
- moving means for said movable jaw arranged in said recess and extending in said axial direction thereof and including a hollow screw spindle engaging said nut and having arranged therein a pushing rod;
- a force amplifier means arranged in said body below said fixed jaw and operable by said pushing rod;
- driving means common to said screw spindle and said force amplifier means and acting against an end of said pushing rod opposite to said force amplifier for first moving said movable jaw into a preliminary clamping position by rotating said screw spindle and then activating said force amplifier means upon exceeding a predetermined clamping force, said driving means being arranged within said body below said movable jaw when in a fully retracted position; and
- connecting means arranged slidably in said axial direction and connecting an end of said screw spindle adjacent to said force amplifier and an end of said force amplifier opposite to said pushing rod for connecting said fixed jaw,
- wherein said force amplifier means is a mechanical means comprising a primary member and a secondary member both movable in said axial direction and supporting on abutment means fixedly arranged in said body between said force amplifier means and said end of said screw spindle adjacent to said force amplifier means, and
- wherein said common driving means comprises a threaded sleeve arranged within said body and connected to an end of said screw spindle opposite to said force amplifier means in a manner secured against rotation, but slidably in said axial direction, a driving spindle screwed through said threaded sleeve, rotatable for first moving said movable jaw into said clamping position and acting upon said adjacent end of said pushing rod, and a coupling means arranged between said driving spindle and said threaded sleeve and being decoupled upon exceeding of a predetermined clamping force for activating said force amplifier means through said pushing rod upon further rotation of said driving spindle, said connecting means being arranged around said force amplifier means and passed through said abutment means and being connected to said adjacent end of said screw spindle in an axially fixed but rotatable manner.

5,251,888
INSETTING MACHINE WITH POCKETS HAVING ADJUSTABLE STOPS
Albert Eugster, Strengelbach, Switzerland, assignor to Grapha-Holding AG, Hergiswil, Sweden
Filed Sep. 3, 1991, Ser. No. 753,976
Claims priority, application Switzerland, Sep. 12, 1990, 2965/90
Int. Cl.[5] B65H *39/02, 5/30, 31/20*
U.S. Cl. 270—55 8 Claims

1. An insetting machine having pockets to receive printed products, the pockets being arranged at regular intervals moveable along an endless path, wherein
- each pocket is provided with a pocket carrier and at least one vertically displaceable stop for one of the printed products, the stop being connected in a self-retaining manner with the pocket;
- the insetting machine comprises fixed displaceable control

VOL 1155 ISS 2 OC 12 1993 UMI

means for providing vertical adjustment of the stop of the pocket as the pocket is moved along the endless path; and



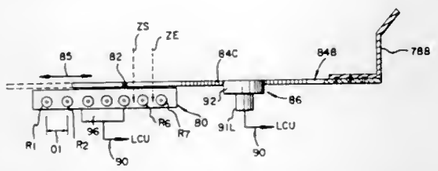
the stop is arranged displaceable in vertical direction in the pocket carrier.

5,251,889

SHEET HOLDING TRAY HAVING ADJUSTABLE SHEET EDGE GUIDES AND METHOD FOR ADJUSTING SHEET EDGE GUIDES

Christopher C. Spencer, Rochester; Raymond M. Quackenbush, Hilton, and Michael J. Wendell, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 24, 1992, Ser. No. 933,624
Int. Cl.[5] B65H *1/00*
U.S. Cl. 271—171 9 Claims



1. In a reproduction apparatus having a logic and control unit, and a sheet storage tray including selectable sheet size alignment positions and a movable sheet edge guide, a mechanism for automatically positioning the sheet edge guide at a selected one of the alignment positions, the mechanism comprising:

(a) magnetizable reed switches mounted fixedly one for each of the selectable sheet size alignment positions of the sheet storage tray;

(b) a magnetic member connected to said movable sheet edge guide for movement therewith relative to each of said magnetizable reed switches, said magnetic member having a zone of magnetic influence over each of said magnetizable reed switches;

(c) drive means connected to the logic and control unit and to said sheet edge guide for moving said sheet edge guide, and said magnetic member relative to said magnetizable reed switches; and

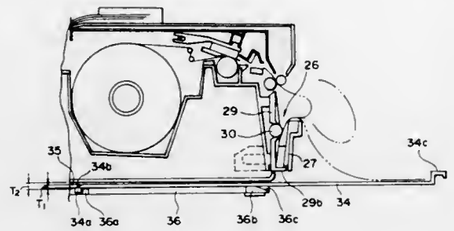
(d) control means for counting and moving said magnetic member at a particular speed for a first total number of counts through a first motion in a first direction, completely crossing a zone of magnetic influence thereof over a magnetizable reed switch for a selected sheet size alignment position, and for counting and moving said magnetic member at said particular speed for a second and different total number of counts through a second motion in a second and opposite direction partially back over said zone of magnetic influence.

5,251,890

EJECTED SHEET STACKING TRAY SYSTEM

Keizo Sasai, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 11, 1991, Ser. No. 667,578
Claims priority, application Japan, Mar. 14, 1990, 2-063342; Mar. 26, 1990, 2-075939; Mar. 26, 1990, 2-075940
Int. Cl.[5] B65H *31/22*
U.S. Cl. 271—176 17 Claims



1. An ejected sheet stacking tray apparatus comprising:

ejecting means for ejecting downward a sheet on which an image is formed;

first tray means, having a vertically extending portion, which pinches a leading end of the sheet ejected by said ejecting means, and having an outer side wall for supporting the sheet, wherein the trailing end of the sheet is suspended outwardly of said outer side wall while the leading edge is pinched by said first tray means; and

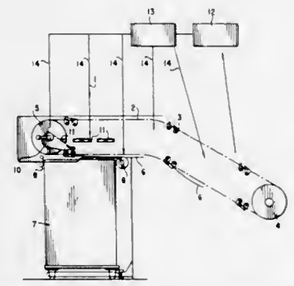
second tray means disposed below said first tray, said second tray means being shiftable between an operative position, where the trailing end of the sheet outwardly suspended can be stacked thereon, and an inoperative position, wherein said second tray means is contained within said tray apparatus.

5,251,891

ASSEMBLY AND METHOD FOR CONTROLLING INDIVIDUAL POSITIONING ELEMENTS IN A DELIVERY REGION OF A PRINTING MACHINE

Peter T. Blaser, Dielheim; Dieter Hauck, Eberbach; Karl-Hermann Miltner, Dossenheim, and Anton Rodi, Leimen, all of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Aug. 17, 1992, Ser. No. 930,174
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1991, 4127095; Jun. 24, 1992, 4220582
Int. Cl.[5] B65H *29/04*
U.S. Cl. 271—176 17 Claims



1. An assembly for controlling individual positioning elements in a delivery region of a sheet-fed printing machine, comprising at least one computer, at least one input device

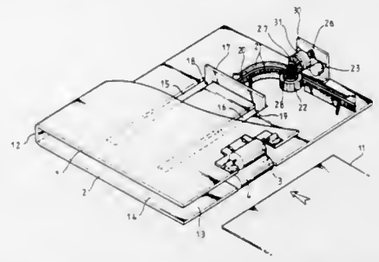
connected to said computer for inputting therein characteristic data specific to a sheet and/or to the printing machine, said computer having means for further processing said characteristic data, and a control device operatively connected to said computer and having individual positioning elements for causing a format-dependent adjustment in accordance with said inputted characteristic data, said computer having means for calculating, from said characteristic data, kinetic energy of the sheet oncoming to the delivery region and for calculating a frictional force for at least one individual positioning element in the delivery region so that frictional energy withdrawal by the individual positioning element is substantially equal to the kinetic energy of the oncoming sheet in the delivery region, said control device having means for actuating said individual positioning element in accordance with the calculated frictional force.

5,251,892

METHOD OF AND APPARATUS FOR EJECTING PAPER IN A PRINTING SYSTEM

Kwang-ho No, and Ki-sun Jang, both of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Rep. of Korea

Filed Jan. 29, 1992, Ser. No. 827,718
Claims priority, application Rep. of Korea, Jan. 29, 1991, 91-1515
Int. Cl.[5] B65H *29/00, 29/46*
U.S. Cl. 271—184 11 Claims



1. A paper ejecting apparatus, which includes upper and lower panels spaced apart from each other and feed rollers for transferring a sheet of paper into the space between said upper and lower panels, for outwardly ejecting the paper transferred between said panels, the apparatus comprising:

guide channels formed in said lower panel and extending in an ejecting direction;

a pusher having portions slidably engaged with said guide channels;

a flexible rack gear member connected to said pusher;

an arcuate guide support member for guiding movement of said rack gear member through an arcuate path; and

a driving source for rotatably driving said rack gear member together with said pusher so that the sheet of paper is ejected from the apparatus.

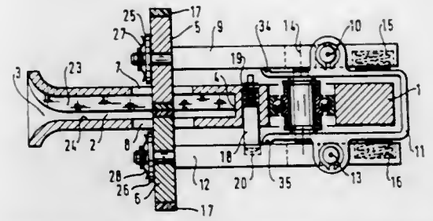
5,251,893

MECHANISM FOR INSERTING A FLAT OBJECT INTO A PROCESSING DEVICE FOR PROCESSING SAID OBJECT

Daniel Schoenhenz, Ballancourt, France, assignor to Societe Anonyme Dite, Bretigny-sur-Orge, France

Filed Dec. 22, 1992, Ser. No. 995,592
Claims priority, application France, Dec. 24, 1991, 91 16097
Int. Cl.[5] B65H *9/16*
U.S. Cl. 271—251 5 Claims

1. A mechanism for inserting a flat object into a processing device for processing said object, the processing device including a fixed frame having an insertion slot via which said object is inserted, said slot forming a passage having a wall which is perpendicular to a plane in which the flat object is inserted, and which serves as a reference abutment surface for one side of said flat object, wherein the mechanism includes two wheels, each of which penetrates into said slot via a respective aperture, at least one of the wheels being mounted at the end of a rocker arm whose other end is mounted in a cradle to pivot about a rocking axis that is parallel to the direction (F); in



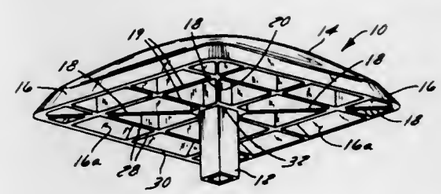
which said flat object is inserted, wherein said cradle is in turn mounted in said fixed frame to pivot about a swivel axis that is perpendicular to the plane of said insertion slot, wherein resilient means apply a certain pressure to press the wheels together, and wherein an abutment delimits the swivelling stroke of said cradle about said swivel axis.

5,251,894

BASEBALL BASE WITH FORCE ABSORBING SLIDE FEATURE

Jesse G. Boatman, Baxter, Tenn., assignor to Adams USA Inc., Cookeville, Tenn.

Filed Dec. 8, 1992, Ser. No. 988,289
Int. Cl.[5] A63B *71/00*
U.S. Cl. 273—25 14 Claims



1. A base for use in games where players slide into bases to avoid to be tagged comprising

a) a top member having

(i) inclined side walls with facing inner surfaces, said sidewalls being connected to define corners of a truncated frustrum of a pyramid,

(ii) a top wall integrally connected to said side walls and defining both a curved surface and an under surface,

(iii) a center member integrally connected to and descending from said under surface of said top wall,

(iv) a first plurality of spaced ribs extending from said under surface of said top wall and radially connecting said center member with said midpoint of said inner surfaces of said side walls and the corners defined by the sidewalls, and

(v) a second plurality of spaced ribs running substantially normal to and connecting the inner surfaces of opposing side walls at points intermediate said midpoints and said corners, said top member being comprised of resilient material and

b) an anchor post connected to said center member for fastening said base to a base anchor secured to a playing field.

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5,251,895

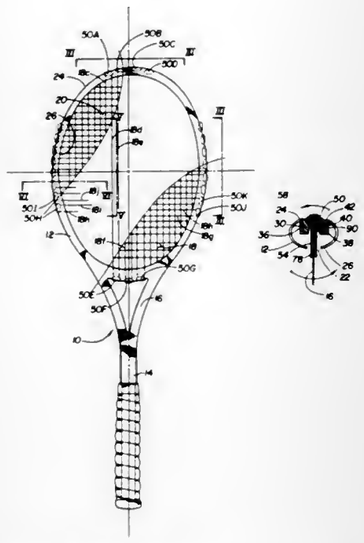
SPORTS RACQUET

James P. Darling, 3300 Irvine Ave., Suite 385, Newport Beach, Calif. 92660

Continuation of Ser. No. 694,893, May 2, 1991, abandoned. This application Feb. 5, 1993, Ser. No. 14,061

Int. Cl.[5] A63B *49/02*

U.S. Cl. 273—73 D 27 Claims



1. A sports racquet comprising:

(a) a handle and a frame attached to or integral with the handle, the frame having an inner perimeter and an outer perimeter, the frame having a plurality of spaced frame passages disposed in the frame and extending between the inner perimeter and the outer perimeter of the frame, and said frame having strings disposed within the frame in a generally cross-networked array to form a playing surface;

(b) a plurality of elements having passages, contacting and resting in a fixed location on the outer perimeter of the frame, each element having two ends located at a position aligned with adjacent frame passages wherein each element has a bottom portion on its outer surface that is closest to the center of said playing surface and a top portion on its outer surface that is further from the center of said playing surface, a rotational axis that is generally parallel to said playing surface and generally orthogonal to the string received in said element, being aligned with one of said frame passages such that each of said strings pass through said frame passage and said element passage so that said strings are prevented from contacting the frame, said elements being positioned such that, when a sufficient force is applied to said playing surface in a direction generally perpendicular to said playing surface, the axis of said element passage moves but the location of said element with respect to the frame does not change, the top portion of said element rotating about the rotational axis of said element toward a direction opposite to the direction of application of the force; and

(c) adjacent strings being aligned with adjacent frame passages and received in each element, the adjacent strings extending between the adjacent frame passages at an element.

5,251,896

GOLF CLUB SHAFT MADE FROM FIBRE-REINFORCED PLASTIC

Thomas K. Gerlach, Frankfurt am Main, Fed. Rep. of Germany, assignor to Sportex GmbH & Co., Neu-Ulm, Fed. Rep. of Germany

Filed Oct. 18, 1991, Ser. No. 778,528

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1990, 4033553

Int. Cl.[5] A63B *53/10*

U.S. Cl. 273—80 B 9 Claims



1. A golf club shaft comprising:

a first end portion for the attachment of a club head provided in a lower end region and a second end portion for the attachment of a grip provided on an upper end region, said shaft forming a hollow profile and having a cross-section which is not constant over the shaft length and having a symmetrical shaping with respect to a median plane passing through the longitudinal axis for said shaft in a golf club drive direction and also having a flex point in an area between said first and second end portions, wherein over said shaft length, said shaft has a cross-sectional configuration such that, starting from said flex point and passing in the direction of each of said first and second end portions, the resisting moment of a cross-sectional surface of said shaft at right angles to the median longitudinal axis and related to the axis passing through the longitudinal axis of said shaft and at right angles to said golf club driving direction, constantly decreases with increasing distance from said flex point until reaching a minimum resisting moment on entering a particular end portion or close to said particular end portion, said shaft being composed of a fiber-reinforced plastic.

5,251,897

METHOD OF PLAYING A POKER-TYPE GAME

Stanley E. Fulton, Las Vegas, Nev., assignor to D.D. Stud, Inc., Las Vegas, Nev.

Continuation of Ser. No. 784,696, Oct. 30, 1991, Pat. No. 5,167,413, which is a continuation-in-part of Ser. No. 605,443, Oct. 30, 1990, abandoned. This application Jul. 9, 1992, Ser. No. 911,018

The portion of the term of this patent subsequent to Mar. 31, 2009, has been disclaimed.

Int. Cl.[5] A63F *1/00*

U.S. Cl. 273—85 CP 16 Claims

1. A method of playing a card game between a dealer and at least one player comprising the steps of:

providing a playing apparatus comprising a display surface for displaying a plurality of playing cards and means for receiving a plurality of wagers;

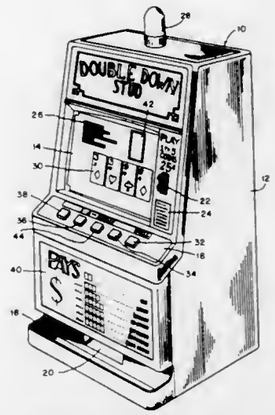
directing at least one player to place an initial wager;

providing at least one player with a plurality of (T-r) playing cards where

T=the total number of cards displayed and

r=the number of cards not displayed during the initial display and wherein r is at least 1;

allowing at least one player to place an additional optional wager thereby giving a player a chance to increase his winning payout after receiving an indication of success;



displaying (r) additional cards;

comparing the combination of (T) cards with a pre-selected plurality of winning card combinations; and

calculating and providing a winning payout based on the total wager if the displayed combination of (T) cards comprises at least one of said pre-selected plurality of winning card combinations.

5,251,898

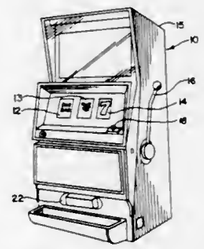
GAMING APPARATUS WITH BI-DIRECTIONAL REELS

Robert M. Dickenson, and Raymond Heidel, both of Henderson, Nev., assignors to Bally Gaming International, Inc., Las Vegas, Nev.

Filed Aug. 26, 1991, Ser. No. 749,845

Int. Cl.[5] A63F *5/04*

U.S. Cl. 273—143 R 14 Claims



1. A gaming apparatus, comprising:

a plurality or rotatable, symbol bearing reels;

means for generating a random event; and

means for selectively and independently rotating each of said reels in a clockwise or a counterclockwise direction in accordance with the outcome of said random event.

5,251,899

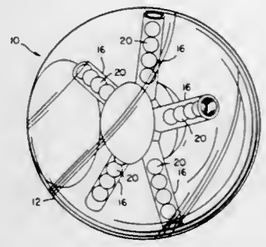
METHOD OF RESTORING GAME PIECES IN MULTI-CHANNEL GAME PUZZLE

Brian Reed, 8 Carlos Dr., Berkley, Mass. 02779

Division of Ser. No. 667,032, Mar. 29, 1991. This application Jul. 28, 1992, Ser. No. 901,371

Int. Cl.[5] A63F *9/12*

U.S. Cl. 273—153 S 1 Claim



1. A method of restoring game pieces in a preselected order from sets of game pieces which game pieces are contained within a clear spherical housing positioned within multiple equally spaced radially extending channels each channel constructed to contain a plurality of game pieces, the channels extending outwardly from the central pivotably mounted chamber having opaque walls comprising:

a) providing a transparent hollow sphere having a plurality of interior channels;

b) providing a central chamber having an opaque wall pivotably mounted along the vertical axis of the sphere for rotation about the axis and in communication with the interior ends of the channels;

c) providing a first set of at least two pieces each of said pieces characterized by a first color;

d) providing a second set of game pieces having at least two pieces each of said pieces characterized by a second color;

e) providing a third set of game pieces having at least two pieces each of said pieces characterized by a third color;

f) providing a fourth set of pieces having at least two pieces each of said pieces characterized by a fourth color;

g) providing a fifth set of game pieces having at least two pieces each of said pieces characterized by a fifth color;

h) providing a distinctive unitary piece characterized by the absence of color;

i) installing a plurality of pieces in the channels in a random order;

j) tilting the housing causing the rotation of the inner chamber such that the inner chamber accepts a piece into the central chamber; and

k) ejecting a piece from the central chamber.

5,251,900

THREE-DIMENSIONAL PUZZLE STRUCTURE

Paul Gallant, 568, de Beaucaire, Laval-des-Rapides, Canada H7N 4P3

Filed Jun. 22, 1992, Ser. No. 901,695

Claims priority, application Canada, Sep. 9, 1991, 2050969

Int. Cl.[5] A63F *9/12*

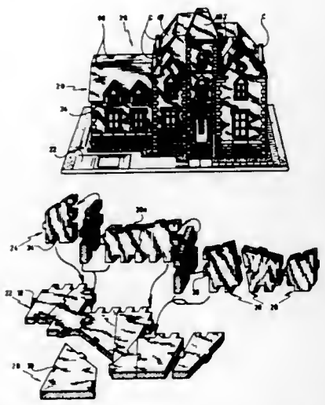
U.S. Cl. 273—157 R 5 Claims

1. A modular unit for use in a three dimensional, self-standing, continuous puzzle structure, consisting of a planar, polygonal block defining first and second, opposite, main, flat faces, and a peripheral edge joining said first and second faces orthogonally relative thereto, at least one of said first and second faces forming an image destined to face externally of said puzzle structure; said block edge comprising:

(a) first, dovetail joint means, for releasably anchoring complementary dovetail joint means of a second block edgewisely of the first-mentioned block within the plane of the second block; and

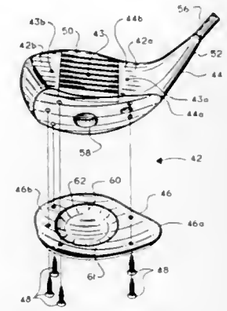
VOL 1155 ISS 2 OCT 12 1993 UMI

(b) second, straight tenon and mortise joint means, for frictionally securing complementary tenon and mortise joint means of a third block edgewisely of the first-mentioned block within a plane substantially orthogonal to the third



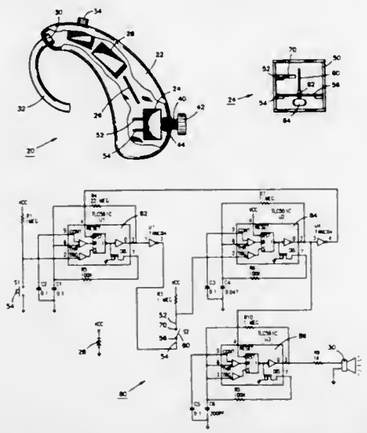
block; wherein said second joint means is characterized in that it specifically allows assemblage of a number of walls each made from a plurality of said modular units, and erection of a puzzle structure having a continuous external surface circumscribing an enclosure.

5,251,901
WOOD TYPE GOLF CLUBS
John A. Solheim, Phoenix, and Anthony D. Serrano, Glendale, both of Ariz., assignors to Karsten Manufacturing Corporation, Phoenix, Ariz.
Continuation of Ser. No. 839,953, Feb. 21, 1992, abandoned. This application Mar. 1, 1993, Ser. No. 24,791
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—167 A **8 Claims**



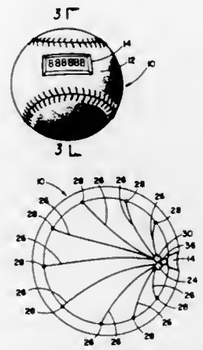
1. A wood type golf club comprising:
a shaft;
a head attached to one end of said shaft, said head including a heel, a toe, and a body having a face portion arranged for impacting a golf ball;
a sole plate attached to a bottom portion of said body, said sole plate having a weight and a substantially circular cavity formed in a center section thereof which decreases the sole plate weight in said center section while increasing the sole plate weight in perimeter sections thereof, said cavity having an outer edge extending in a generally circular path, said sole plate also having a ledge circumscribing said cavity and contacting said bottom portion of said body, said outer edge of said cavity defining an inner extremity of said ledge with said ledge extending outwardly in all directions from said outer edge of said cavity and having an upper surface which is elevated above a bottom surface of said cavity; and
said perimeter sections of said sole plate including a heel perimeter section located adjacent said heel of said head, a toe perimeter section located adjacent said toe of said head, a forward central perimeter section located forwardly of said cavity between said heel and toe sections, and a rearward perimeter central section located rearwardly of said cavity between said heel and toe sections, said ledge extending through all of said sole plate perimeter sections.

5,251,902
GOLFER'S HEAD ROTATION INDICATING MEANS AND METHOD
John Federowicz, 568 Browns Rd., Storrs, Conn. 06268; James E. Obenauf, 8457 E. Desert Steppes, and Thomas W. McCurnin, 8451 E. Desert Steppes, both of Tucson, Ariz. 85710
Filed Mar. 16, 1992, Ser. No. 853,413
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—187.2 **8 Claims**



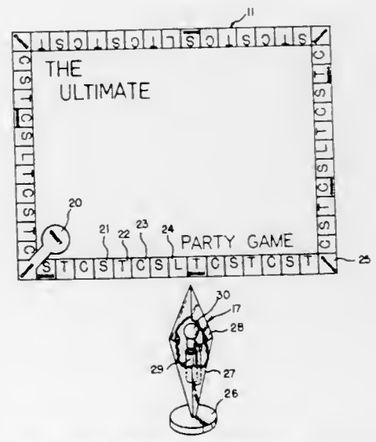
1. A device for indicating rotation of the head of a golfer during the process of hitting a golfball, comprising:
(a) a housing;
(b) sensor means disposed in said housing to sense the beginning of angular unidirectional rotation of said head from an initial position, generally about the axis of the spine of said golfer, and to produce an output signal thereupon;
(c) sound producing means activatable in response to said output signal to provide an audible signal to said golfer;
(d) adjusting means to adjust said sensor means so that said sensor means will not produce said output singal when said head is in a desired position, but will produce said output signal when said head begins to rotate in the direction said golfball will be hit;
(e) manual switch means to activate energizing means to which said sensor means is responsive to permit said sensor means to produce said output signal only during a selected period of time only after each closing of aid manual switch means; and
(f) said sensor means including a pendulum switch to close upon said angular unidirectional rotation of said head of said golfer.

5,251,903
BALL WITH GRIP PRESSURE INDICATOR
Dickie R. Bixler, and Matthew R. Bixler, both of Rte. 1, Box 33, Dacoma, Okla. 73731
Filed Oct. 19, 1992, Ser. No. 963,565
Int. Cl.[5] A63B *69/40*
U.S. Cl. 273—26 R **11 Claims**



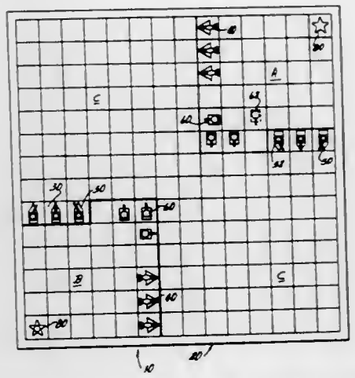
1. A pressure indicating ball for training a pitcher to throw the ball, comprising:
a ball having a flexible exterior surface;
the ball being provided with a multiplicity of pressure transducers, means for processing electrical impulses being connected electrically to the pressure transducers; and
the ball being provided with means for displaying pressure data, said means for displaying pressure data being electrically connected to the means for processing electrical impulses so that data received from the pressure transducers in the form of electrical impulses is displayed as pressure data by the means for displaying pressure data.

5,251,904
BOARD GAME APPARATUS
Jose A. Cruz, 540 McKnight St., Reading, Pa. 19601
Filed Aug. 24, 1992, Ser. No. 933,763
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—243 **1 Claim**



1. A board game apparatus, comprising,
a rigid game board, the rigid game board including a board top surface having a continuous game path, wherein the game path includes contiguous spaces, wherein the spaces include a plurality of categories to include a first category of spaces, a second category of spaces, a third category of spaces, a fourth category of spaces, and a fifth category of spaces, and
game tokens, wherein each player of a plurality of players is awarded a game token, and
a die member to direct progression of each game token about the game path, and
a plurality of directional cards, wherein each directional card includes a first direction associated with the first category of spaces, a second direction to cooperate with a second category of spaces, a third direction to cooperate with a third category of spaces, and
the fourth category of spaces directs a player to lose a turn, and the fifth category of spaces directs a player to choose between the first, second, and third category of spaces, and
each token includes a base plate, and the base plate includes an opaque housing mounted on the base plate, and a transparent dome removably mounted upon the opaque housing, a battery mounted within the opaque housing, and an illumination bulb in electrical communication with the battery, with a first electrical contact and a second electrical contact directed below a bottom surface of the base plate in communication with the game path, and wherein the first electrical contact is in communication with the illumination bulb, and wherein only the first, second, third, and fifth category of spaces include an electrical conductive metallic layer to effect electrical communication with the first electrical contact and second electrical contact for illumination of the illumination bulb.

5,251,905
METHOD FOR PLAYING WAR GAME
Angel Bombino, 235 S.W. LeJeune Rd., Miami, Fla. 33134
Division of Ser. No. 689,210, Apr. 22, 1991, abandoned. This application Mar. 6, 1992, Ser. No. 847,539
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—255 **4 Claims**



1. A method for playing a game with two players comprising the steps of:
A. providing a board member having a plurality of contiguous square spaces defining rows and columns, perpendicular to each other, and said square spaces further defining three areas, two of said areas being denominated as land areas and the third area being denominated as sea area that separates the first two;
B. providing each player with a set of a predetermined number of token means representing planes, battleships and tanks, and each player also being provided with one command center token;

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C. positioning on said board, at the outset, said token means representing command center, planes and tanks within said land area;

D. positioning on said board, at the outset, said token means representing battleships within said sea area adjacent to said land area;

E. designating movement capabilities for each one of said token means in conjunction with means for generating random numbers corresponding to spaces for the token means to be moved so that said token means that represent said command center and tanks are bound to move along the land areas, those that represent battleships are bound to the sea area and the ones that represent planes are not restricted in their movement along the entire board;

F. designating firing capabilities for each one of said token means in conjunction with means for generating random numbers corresponding to the spaces for said firing capabilities;

G. each player taking turns in operating said means for generating random numbers, moving said token means and firing them against the opposite player's token means; and

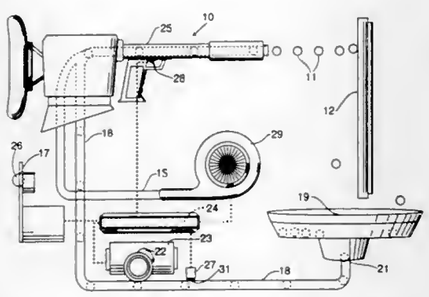
H. winning the game when one of said players hits the other player's command center.

5,251,906

FIREBALL AMUSEMENT GAME

Earl A. Heller, 16 Hopi Trail, R.D. 5, Box 17, Oak Ridge, N.J. 07438, and William Alter, 904 Apache Rd., Franklin Lakes, N.J. 07427

Filed Aug. 10, 1992, Ser. No. 926,710
Int. Cl.[5] F41B *11/02*; A63F *9/02*
U.S. Cl. 273—397 **7 Claims**



1. An amusement game for shooting projectiles at a target comprises

a gun having a stock including a first and second inlet, a barrel having an outlet aperture, and trigger means mounted thereto to activate the gun

a first hollow tube having one end extending through the first gun inlet to the outlet barrel aperture

a second hollow tube extending through the second gun inlet and being connected at one end to the first hollow tube within the gun

a rotatable turntable having an open recessed upper portion to receive projectiles from the target and a lower portion having an opening, the other end of the first hollow tube being connected thereto to receive projectiles from the opening,

a motor means and a pinch wheel driven thereby mounted in engagement with the first hollow tube to drive the projectiles through said tube to the gun,

a blower connected to the other end of the second hollow tube to drive the projectiles out of the gun outlet at high speed; and

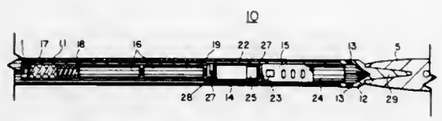
control means activated by the trigger to operate the motor means for the pinch wheel and the blower to drive projectiles in a rapid stream from the gun outlet.

5,251,907

SONIC ARCHERY BEACON

Daniel D. Ady, Rte. 3, Box 435, Caldwell, Id. 83605

Continuation-in-part of Ser. No. 741,808, Aug. 6, 1991, abandoned. This application Aug. 14, 1992, Ser. No. 931,026
Int. Cl.[5] F42B *6/04*
U.S. Cl. 273—416 **8 Claims**



2. A sonic archery beacon for use in locating a spent arrow within a given habitat, the arrow having a shaft including an arrowhead end and a hollow nock end and a nock, which comprises:

means for generating an audible, pulsed tone signal which mimics a sound indigenous to the habitat, said means being operably secured within the hollow nock end; and

inertia activation means being connected to the indigenous audible signal generating means for activating the audible signal generating means wherein the inertia activation means comprises:

an electrically conductive magnet of known outside dimensions;

a generally straight channel being positioned in collinear relation with the arrow shaft and having inside dimensions greater than the outside dimensions of the magnet to facilitate sliding of the magnet therein;

a ferromagnetic stop being fixed near an end of the channel which is closest to the nock end of the arrow;

a pair of ferromagnetic electrically conducting switch contact stops being fixed in spaced relation, one to the other, near an end of the channel closest to the arrowhead end of the arrow; and

the switch contact stops being positioned a spaced distance apart but capable of being bridged by the magnet when the magnet is positioned near the arrowhead end of the channel.

5,251,908

MULTI SURFACE BOUNCING OBJECT

Jeff D. Myers, P.O. Box 12485, Scottsdale, Ariz. 85267

Continuation-in-part of Ser. No. 749,330, Aug. 23, 1991, Pat. No. 5,131,665, which is a continuation-in-part of Ser. No. 617,545, Nov. 26, 1990, Pat. No. 5,078,408. This application Apr. 9, 1992, Ser. No. 865,465
The portion of the term of this patent subsequent to Jan. 7, 2009, has been disclaimed.
Int. Cl.[5] A63B *43/00*
U.S. Cl. 273—428 **14 Claims**

12. A cube that bounces and rebounds as a spherical ball comprising:

a spherical ball of relatively high density resilient material forming the center of the cube, and

a body of relatively low density material surrounding the spherical ball to form a cubical configuration,

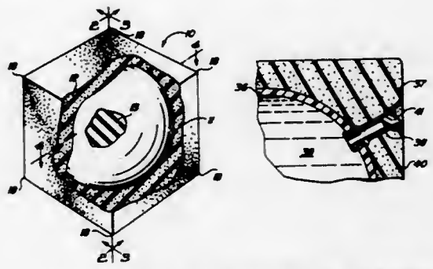
said relatively high density material comprising a material having a density of approximately 0.95 to 1.1 times the density of water,

said relatively low density material comprising a foam material having a density of approximately 0.04 to 0.15 times the density of water,

the thickness of said foam material between the center of the surface of each side of the cube and said high density material is approximately 1/16 to ½ of an inch,

said cube comprises identical sides between one and twelve inches in length and weighing from less than one pound to approximately three pounds in weight,

whereby the relatively low density material buckles under



impact causing the cube's spherical ball to react to said impact and respond as a ball.

14. An object set forth in claim 12 wherein:

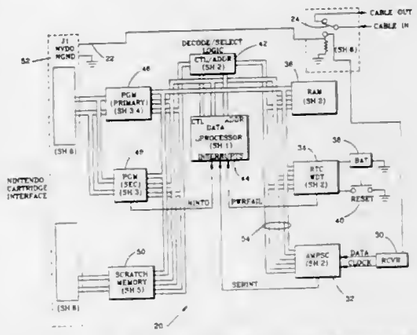
said spherical ball comprises an object filled with compressed air.

5,251,909

SECURED HIGH THROUGHPUT DATA CHANNEL FOR PUBLIC BROADCAST SYSTEM

Michael J. Reed, 2609 Aylesbury La., and Michael F. Lavery, 5610 Bayton Loop, both of Austin, Tex. 78745

Filed May 28, 1991, Ser. No. 706,222
Int. Cl.[5] A63F *9/22*; H04N *7/167*
U.S. Cl. 273—439 **13 Claims**



1. A home subscriber data bank and retrieval apparatus for receive only operation, comprising:

a data receiver for one-way receive only communication reception of computer data from a public broadcast medium;

data selection circuitry for accepting selected computer data and distinguishing and rejecting other computer data received by said data receiver and currently being broadcast over said public broadcast medium, said data selection circuitry responsive to an input device of a host computer for selecting specific computer data which is broadcast over said public broadcast system as selected with said input device from a menu displayed on a display screen of said host computer;

said home subscriber data bank and retrieval apparatus being physically located at the location of said host computer;

security control circuitry independent of said host computer for preventing unauthorized access to said broadcast computer data;

a storage medium;

routing circuitry for routing said selected computer data to said storage medium;

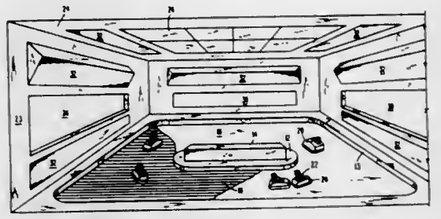
an interface regulated by said security control circuitry for allowing passage of said computer data from said data receiver to said host computer, said interface regulated by said security control circuitry also selectively permitting said host computer to interact with said data selection circuitry for determining which data is selected and which data is rejected from said public broadcast medium.

5,251,910

AMUSEMENT VEHICLE GAME

Egidio Lamanna, Thornhill, Canada, assignor to Bompo Corporation, Hockessin, Del.

Continuation of Ser. No. 622,582, Dec. 5, 1990, Pat. No. 5,100,155, which is a continuation of Ser. No. 452,481, Dec. 19, 1989, Pat. No. 4,991,835, which is a continuation of Ser. No. 367,074, Jun. 16, 1989, Pat. No. 4,898,382. This application Jan. 9, 1992, Ser. No. 818,571
The portion of the term of this patent subsequent to Feb. 6, 2007, has been disclaimed.
Int. Cl.[5] A63B *67/00*
U.S. Cl. 273—442 **3 Claims**



1. Game apparatus comprising:

a self-propelled vehicle capable of being steered;

bumper means on said vehicle for bumping contact with other objects;

said bumper means having front portions subject to bumping contact with other objects caused by relative movement of said vehicle and object;

said bumper means having rear portions subject to bumping contact with other objects caused by relative movement of said vehicle and object;

sensing means on said vehicle for producing signals in response to such bumping contact and capable of differentiating contact with said front bumper portions from contact with said rear bumper portions;

display means on said vehicle for displaying a score; and

processing means responsive to said signals for controlling said score to increase said score in response to bumping contact with said forward bumper portions and to decrease said score in response to target bumping contact with said rear bumper portions.

5,251,911

SAFETY CONSTRUCTION FOR PASSENGER VEHICLE

Carlton E. Blake, 6442 Sienna Ct., Falls Church, Va. 22043

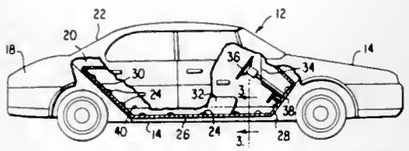
Filed Dec. 9, 1992, Ser. No. 988,326
Int. Cl.[5] B62D *27/04*
U.S. Cl. 296—35.1 **4 Claims**

1. In a safety construction for vehicles, the combination comprising:

a) a vehicle having a chassis, a fixed and separable body portion on said chassis and a means of propulsion, said separable body portion comprising a passenger compartment having a platform with passenger seats and detachable controls for operating said vehicle, said platform

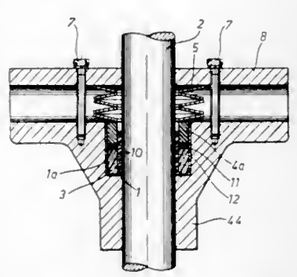
VOL 1155 ISS 2 OCT 12 1993 UMI

being of a construction considerably more resistant to damage from impact than the chassis of said vehicle, said compartment being movable from a first position wherein said movable compartment exterior contours are continuous with the exterior contours of the fixed body portion to a position projecting substantially away from the fixed body portion, and



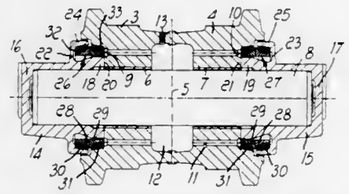
b) resilient release means operative between said platform and said chassis for permitting a small degree of relative movement therebetween if a minor force is exerted on said compartment when the vehicle collides with an external obstruction, said resilient release means having frangible fastening means to permit separation of part or all of said compartment relative to said chassis if a major force is exerted on said compartment when said vehicle collides with an external obstruction.

5,251,912
RADIALLY ENERGIZED SEAL
Erkki Rinne, Espoo, Finland, assignor to Unicraft Oy, Helsinki, Finland
Filed Mar. 21, 1991, Ser. No. 665,645
Claims priority, application Finland, Oct. 3, 1989, 894671; Jan. 18, 1991, 910261
Int. Cl.[5] F16J *15/20, 15/46*
U.S. Cl. 277—3 **17 Claims**



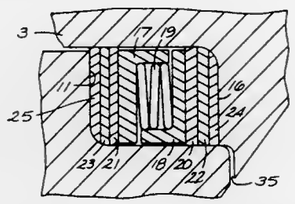
1. A radially energized steel assembly for sealing a gap between two surfaces, the seal assembly comprising: a packing member for sealing said gap; a body section for receiving said packing member, said body section being provided with a compression chamber communicating with a pressure medium space; a pressure medium comprising a pre-set silicone elastomer, the silicone elastomer being pressed into said pressure medium space for adjusting the sealing pressure of said packing member, wherein the silicone elastomer is at least substantially freely displaceable with respect to walls defining said chamber for allowing displacement of said silicone elastomer upon the application of pressure thereon by means of a pressure creating member; and means for compensating for thermal expansion of said packing member and said silicone elastomer.

5,251,913
TRACK ROLLER FOR TRACKED VEHICLES
Ivano Passini, Fanano, Italy, assignor to Sorefa S.p.A., Fanano, Italy
Filed Apr. 20, 1992, Ser. No. 870,844
Claims priority, application Italy, Apr. 26, 1991, B091U000073
Int. Cl.[5] F16C *15/34*
U.S. Cl. 277—92 **5 Claims**



1. Roller for tracked vehicles, comprising a supporting shaft which is inserted with a tight fit in respective blind bushes which are adapted for coupling to a support structure whereby said shaft is fixedly coupled to said blind bushes in a sealed connection for preventing lubricant leakage, said sealed connection being further sealed by said blind bushes.

5,251,914
SEALING ASSEMBLY FOR RELATIVELY MOVABLE MEMBERS
David M. Tatum, 9251 Burdine, No. 386, Houston, Tex. 77096
Continuation-in-part of Ser. No. 227,624, Aug. 3, 1988, Pat. No. 5,009,579, and a continuation-in-part of Ser. No. 55,126, May 28, 1987, Pat. No. 4,762,189. This application Apr. 23, 1991, Ser. No. 690,149
Int. Cl.[5] F16J *15/38;* **F16C** *33/76*
U.S. Cl. 277—123 **40 Claims**



1. A sealing assembly for a plurality of surfaces defining an annular space having a longitudinal axis, for sealing relatively movable members at temperatures up to about 1000° F., removably positionable in said space, comprising

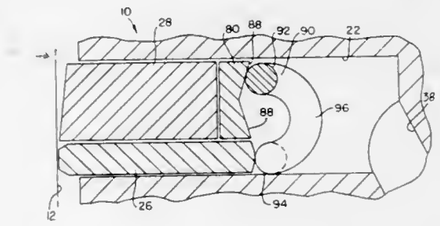
first and second annular shaped members of a hard, but elastically deformable material having low frictional properties,

said annular shaped members, when fitted together, having external surfaces facing longitudinally outward relative to said longitudinal axis and external surfaces facing outward and inward radially of said longitudinal axis adapted to fit and have frictionally slidable movement relative to the surfaces of said annular space and of the relatively movable members,

said annular members having surfaces facing inwardly toward each other when assembled, shaped to form an annular cavity, and

annular elastic metal spring means positioned in said annular cavity between and at least partially surrounded on all sides by said annular members and spaced from the surfaces of said annular space and said relatively movable members biasing said annular members apart in directions both radially and longitudinally of said longitudinal axis when installed with said annular members under compression toward each other.

5,251,915
PISTON AND RING ASSEMBLY
Paul R. Meernik, Redford, Mich., assignor to General Motors Corporation, Detroit, Mich.
Continuation-in-part of Ser. No. 478,867, Feb. 12, 1990, abandoned. This application Feb. 28, 1991, Ser. No. 665,526
Int. Cl.[5] F16J *9/16, 15/32*
U.S. Cl. 277—138 **20 Claims**



1. A piston and ring assembly comprising:

a piston for reciprocating movement in a cylinder between a lower crankcase and an upper compression head,

the piston having an annular groove for oil control, the groove defining an inner wall and an upper surface,

a single rail in the groove for slidably engaging the cylinder wall to inhibit oil passage across the rail and to spread a thin film of oil on the wall, the rail having spaced ends which potentially allow oil leakage,

spring means between the rail and the inner wall of the groove for biasing the rail against the cylinder with a desired tension to control the thickness of the oil film, and

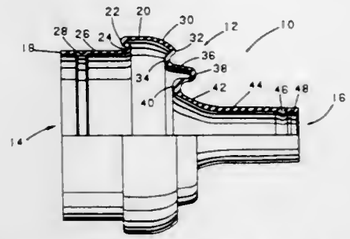
a blocker ring in the groove above the rail and contiguous with the rail adjacent the cylinder for blocking oil leakage past the ends of the rail, the blocker ring having sufficient tension to lightly contact the cylinder wall and ride on the oil film,

wherein the rail and the blocker ring comprise plural rings that substantially fill outer portions of the groove except for limited axial clearance and the space between the blocker ring and the inner wall of the groove includes trapping means adjacent the upper surface for trapping oil during the upper half of the piston movement, the piston having oil vent means coupled to a lower portion of the groove for draining the trapped oil.

5,251,916
FLEXIBLE BOOT FOR UNIVERSAL JOINT
Dieter Martin, Lakewood; Philip M. Patterson, Littleton, and Douglas J. Swanson, Castlerock, all of Colo., assignors to The Gates Rubber Company, Denver, Colo.
Filed Apr. 6, 1992, Ser. No. 863,617
Int. Cl.[5] F16J *15/32*
U.S. Cl. 277—212 FB **19 Claims**

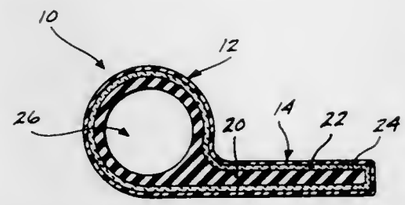
1. In a flexible boot of the polymeric type for use with a universal joint and having a corrugated sidewall oriented generally axially in relation to the boot intermediate a large diameter end and a small diameter end that position in angular misalignment relative to each other as the boot is flexed, the improvement comprising:

a radially outermost, first generally tubular wall portion having 1) an end portion interconnecting a first external peak, a first valley and a generally tubular portion of the large diameter end and 2) an opposite end portion interconnecting a second external peak, a second valley and a second radially inward, generally tubular portion extending toward the small diameter end, and



wherein the first peak and first valley are oppositely axially facing in relation to the second peak and second valley and the tubular wall portion is axially spaced from the small diameter end.

5,251,917
FIRE-RESISTANT SEAL
Wan T. Chee, Bellevue, and Eric L. Aspinall, Federal Way, both of Wash., assignors to The Boeing Company, Seattle, Wash.
Continuation-in-part of Ser. No. 363,308, Jun. 6, 1989, abandoned, which is a continuation of Ser. No. 64,666, Jun. 22, 1987, abandoned. This application Jan. 16, 1990, Ser. No. 465,023
Int. Cl.[5] F16J *15/02*
U.S. Cl. 277—228 **14 Claims**



14. An elastic seal for providing high temperature insulation, including an inner layer of elastomeric material, said inner layer defining an empty hollow central portion, and an outer layer of an elastic fabric, the improvement comprising:

(a) a middle layer bonded between the inner layer and the outer layer, the middle layer constructed of an elastic ceramic fiber; and

(b) a toroidal-shaped portion created from said layers, said toroidal-shaped portion being compressible without deterioration of the seal's elastic properties and without said second and third layers separating from said first layer, whereby said seal maintains a constant contact seal between structural members that experience large deflections relative to one another.

5,251,918
THREE JAW CHUCK STOP SYSTEM
William E. Morgan, 1640 Sumner St., Longmont, Colo. 80501
Filed Oct. 5, 1992, Ser. No. 956,118
Int. Cl.[5] B23B *13/12*
U.S. Cl. 279—156 **14 Claims**

1. A stop for a three jaw chuck having a proximal face, said stop comprising:

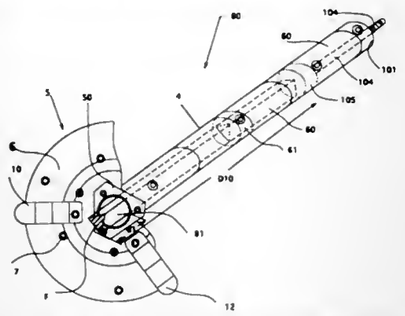
a stop guard;

said stop guard further comprising means for mounting on said proximal face;

a barrel having a distal end projecting distally from said stop guard;

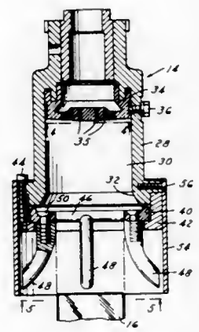
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a stop mount removably affixed to said distal end;
a threaded stop mount removably affixed to said stop mount



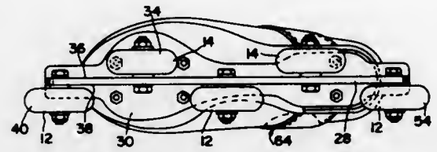
which may be mounted projecting toward said proximal face; and
a stop affixed to said threaded stop mount.

5,251,919
APPARATUS FOR HOLDING SQUARE ARTICLES
Charles E. Summers, Toledo, Ohio, assignor to Libbey Glass Inc., Toledo, Ohio
Filed Jul. 2, 1992, Ser. No. 907,948
Int. Cl.[5] B25B *11/00*
U.S. Cl. 279—3 **10 Claims**



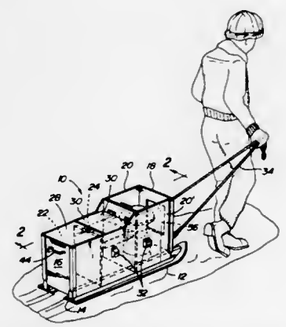
1. Apparatus for engaging and holding an article of square cross section that comprises:
a chuck having an open end for receiving an article of square cross section and internal means for abutment with an end of the article,
means for moving said chuck over the article,
first means rotatably mounted adjacent to said open end of said chuck and having a square opening contoured to be closely received over the square cross section of the article,
second means projecting from said first means for engaging the article as said chuck is moved over the article to rotate said first means relative to said chuck so that said opening is aligned with said square cross section of the article, and
means for applying a vacuum to said internal means for holding the article end against said internal means, close fit between said first means opening and said square cross section restricting flow of air through said opening.

5,251,920
BEAM OFF-SET ROLLER SKATE
Patrick McHale, Minneapolis, Minn., assignor to T-Beam, Inc., Minneapolis, Minn.
Filed Feb. 7, 1992, Ser. No. 832,399
Int. Cl.[5] A63C *17/00*
U.S. Cl. 280—11.19 **17 Claims**



11. A roller skate, comprising;
(a) means for holding a roller skate onto the foot of a user, and having an inside and an outside, respectively, corresponding to the inside and the outside of the respective foot of a user to which it is designed to be worn;
(b) a central support beam supporting said foot holding means and extending in longitudinal alignment therewith, said central support beam having a first side disposed to the outside of said foot holding means and a second side disposed to the inside of said foot holding means;
(c) a first group of wheels supported by said beam generally in longitudinal alignment with the roller skate and generally in rotatable alignment with each other, and
(d) a second group of wheels supported by said beam generally in longitudinal alignment with the roller skate and generally in rotatable alignment with each other, said first group of wheels being rotatably interconnected to said central support beam and disposed to the first side thereof, said second group of wheels being rotatably interconnected to said central support beam and disposed to the second side thereof, there being a greater number of wheels disposed on the second side as compared to the number of wheels disposed on the first side.

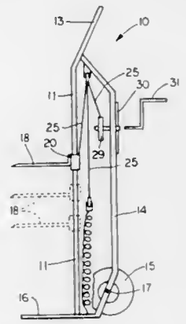
5,251,921
SPORTSMAN'S PORTABLE SUPPLY BOX SUITED FOR ICE FISHING
Robert R. Daniels, 8779 N. Christine Dr., Brighton, Mich. 48116
Filed Aug. 10, 1992, Ser. No. 926,936
Int. Cl.[5] B62B *13/00*
U.S. Cl. 280—28.12 **6 Claims**



1. A mobile holding unit for use in ice sports, said unit comprising:
a body, said body having a bottom side;

means for sliding, said means for sliding being provided on said bottom side of said body;
said body including an interior region;
said body being divided into a front section, a middle section, and a rear section;
said middle and rear sections each having a top side, said top sides of said middle and rear sections each including a door, each of said doors being movable from a closed position to an open position;
said front section including a lantern for generating heat and light, whereby said middle section is warmed by said lantern while said rear section remains unwarmed;
said front section including a front wall, said front wall including a light-passing transparent plate;
a partial wall disposed between said front section and said middle section, said partial wall having defined therein an aperture whereby heat generated by said lantern may be allowed to pass therethrough;
said front section including a top side, said top side having an opening defined therein, whereby said heat-generating device may warn regions of the user's body by placing them near said opening.

5,251,922
HAND TRUCK
Larry D. Mann, 805 Walnut, Rock Springs, Wyo. 82901
Filed Aug. 24, 1992, Ser. No. 933,726
Int. Cl.[5] B62B *1/12*
U.S. Cl. 280—47.29 **4 Claims**



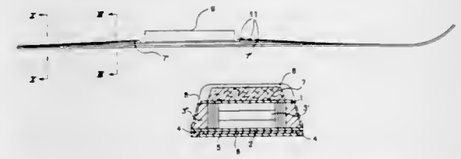
1. A hand truck comprising:
frame means having a top portion, a bottom portion, a central portion and opposite lateral sides bounding said central portion;
means for mobilizing said hand truck, said mobilizing means being functionally attached to said frame means at the bottom portion of said frame means;
lifting means movably attached to said frame means;
a first pulley and a third pulley located near the top portion of said frame means;
an elongate coil spring attached between said frame means and said lifting means for automatically adjusting the position of said lifting means on said frame means in response to a load placed on said lifting means;
said spring having a first end and a second end, said first end being attached to said bottom portion of said frame means, and said second end being attached to second pulley;
a cable, said cable having a one end attached to said lifting means, said cable extending upwardly from said lifting means, around said first pulley and downwardly to said second pulley, around said second pulley and upwardly to said third pulley, around said third pulley and downwardly to a take up reel which can be rotated to wind said cable on said reel.

5,251,923
SUPPORT PLATE FOR A SAFETY SKI BINDING
Premek Stepanek, Garmisch-Partenkirchen; Ludwig Wagner; Edwin Lehner, both of Farchant, all of Fed. Rep. of Germany, and Piero G. Ruffinengo, Salt Lake City, Utah, assignors to Marker Deutschland GmbH, Fed. Rep. of Germany
Filed Jun. 14, 1991, Ser. No. 715,598
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1990, 9017486[U]
Int. Cl.[5] A63C *5/07*
U.S. Cl. 280—602 **14 Claims**



1. A system for changing the stiffness of a ski, said system comprising:
a longitudinally extending member adapted to be attached to the top of a ski, said member having a first end portion and a second end portion;
means for fixably securing said first end portion to said ski;
holding means secured to said ski for slidably receiving and holding said second end portion next to said ski to permit longitudinal movement of said second end portion relative to said ski as the ski bends; and
impedance means secured to said ski, said impedance means including stop means operably engageable with said second end portion, and control means for moving said stop means relative to said ski and to said second end portion for controlling the movement of said second end portion relative to the ski as the ski bends.

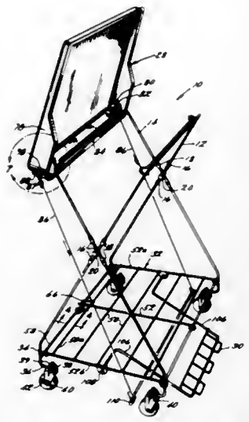
5,251,924
SKI CONSTRUCTION INCLUDING WEDGE-SHAPED ATTACHMENT PORTIONS
Wolfgang Nussbaumer, Dornbirn, Austria, assignor to Kastle Aktiengesellschaft, Hohenems, Austria
Continuation of Ser. No. 743,420, Aug. 22, 1991, abandoned. This application Jan. 28, 1993, Ser. No. 11,127
Claims priority, application Austria, Dec. 22, 1989, 2921/89
Int. Cl.[5] A63C *5/07*
U.S. Cl. 280—602 **14 Claims**



1. A ski comprising a ski body including a core interconnecting a lower strip and at least one upper strip, said lower strip and at least one upper strip extending substantially over the entire length of the ski, a running surface connected beneath said lower strip and running edges connected on lateral sides of said running surface, attached portions of lightweight material being arranged in front and behind a ski boot support region and standing up relative to said ski boot support region, said attached portions being glued to an uppermost of said at least one upper strip, said ski body and said attached portion being jointly encased by a molded integral sheath of plastic material, said sheath covering top, side and end surfaces of said attached portions and of said ski body.

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5,251,925
TRANSPORTABLE AND COLLAPSIBLE BAG CARRYING CART
Thomas S. Haley, Sr., 14 Hemlock Ct., Cromwell, Conn. 06416
Filed Apr. 16, 1991, Ser. No. 685,823
Int. Cl.[5] B62B *3/02*
U.S. Cl. 280—641 **11 Claims**



1. In a foldable bag holding cart having first and second frame means with said first frame means being pivotally connected to said second frame means and each of said first and second frame means having an inverted U-shape, said U-shape including two substantially vertical legs having a crosspiece member therebetween, and a base means being attachable between said first and second frame means, said first and second frame means including bag supporting means with the bag size determined by the lateral distance between the first and second frame means, wherein the improvement comprises:

adjusting means for adjusting the location of the pivotal connection between the first and second frame means, said adjusting means allowing for a selective change in the lateral distance between the first and second frame means, said adjusting means having a plurality of swedged areas at about the center of each of said vertical legs of each of said first and second frame means, each of said swedged areas having a mounting hole therethrough with one of said mounting holes from a first leg of said first frame means being aligned with and pivotally connected to a respective one of said mounting holes from a first leg of said second frame means, and one of said mounting holes from a second leg of said first frame means being aligned with and pivotally connected to a respective one of said mounting holes from a second leg of said second frame means.

5,251,926
RATCHET ASSEMBLY FOR AN ADJUSTABLE STABILIZER BAR
Jeffrey R. Aulerich, Eagle, and Michael A. Ferguson, Okemos, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Jul. 6, 1992, Ser. No. 909,333
Int. Cl.[5] B60G *11/20*
U.S. Cl. 280—665 **12 Claims**

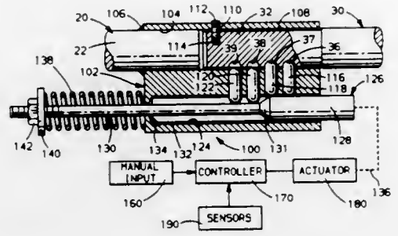
1. An adjustable stabilizer bar assembly for an automotive suspension, comprising:

(a) a housing;

(b) a first bore in the housing rotatably mounting stabilizer bar means;

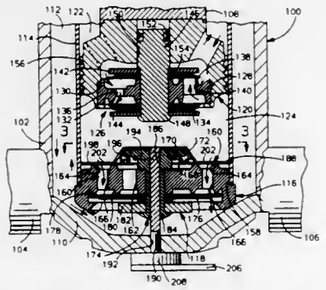
(c) a second bore in the housing slidably receiving actuator means; and

(d) a plurality of dowels slidably provided between the first and second bores,



whereby different ones of the dowels are received in complementary grooves on the stabilizer bar means as the actuator means is slid into the second bore.

5,251,927
STEER-SENSITIVE HYDRAULIC SHOCK ABSORBER AND METHOD
Harlan W. Charles, Harper Woods, and Larry D. Miller, Rochester Hills, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Mar. 20, 1992, Ser. No. 855,394
Int. Cl.[5] B60G *17/06*
U.S. Cl. 280—672 **13 Claims**



1. A hydraulic damper for controlling the compression and rebound of a vehicular suspension spring, the damper comprising:

(a) a reservoir tube;

(b) an inner cylinder fixedly mounted within the reservoir tube and cooperating therewith to form a reservoir for a damping fluid contained within the reservoir tube and the inner cylinder;

(c) base valve means operatively mounted at one end of the inner cylinder for controlling the flow of damping fluid between the inner cylinder and the reservoir tube;

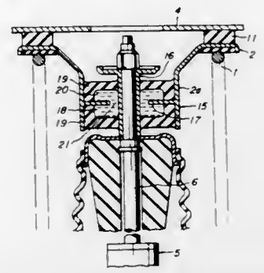
(d) a piston rod operatively mounted for reciprocating movement in the inner cylinder;

(e) a piston secured to an inner end of the piston rod and dividing the interior of the inner cylinder into upper and lower chambers;

(f) piston valving means in the piston establishing a restricted flow path through the piston the upper and lower chambers during compression and rebound of the damper; and

(g) control valving means establishing a variable flow from the lower chamber through the base valve means to the reservoir, the control valving means connected to and actuated by a steering linkage of the vehicle.

5,251,928
UPPER MOUNTING STRUCTURE FOR A STRUT-TYPE WHEEL SUSPENSION
Kazushige Maeda, Zushi, Japan, assignor to Nissan Motor Company, Ltd., Japan
Filed Apr. 13, 1992, Ser. No. 867,545
Claims priority, application Japan, May 31, 1991, 3-156131
Int. Cl.[5] B60G *11/42*
U.S. Cl. 280—688 **2 Claims**



1. an upper mounting structure for a strut-type wheel suspension for a vehicle, comprising:

(a) a strut assembly including an outer sleeve and a piston rod telescopically movable with respect to each other for suspension stroke, cooperating so that one of the sleeve and the piston rod supports a wheel rotatably and the other is to be connected with a vehicle body;

(b) a coil spring providing to act between said outer sleeve and said piston rod to energize the strut assembly in an extending direction;

(c) a spring support on which an upper end of said coil spring is seated;

(d) a hydraulic mount through which said spring support is coupled with one of the piston rod and the outer sleeve of the strut assembly to be connected with the vehicle body; and

(e) an upper support attached to said spring support through a strut mounting insulator, which is adapted to be fastened to the vehicle body.

5,251,929
HYDRAULIC SUPPLY ARRANGEMENT FOR USE WITH ACTIVE AUTOMOTIVE SUSPENSION OR THE LIKE
Kazunobu Kawabata, Yokohama, Japan, assignor to Nissan Motor Company, Ltd., Japan
Filed Sep. 11, 1991, Ser. No. 759,585
Claims priority, application Japan, Sep. 12, 1990, 2-241452
Int. Cl.[5] B60G *17/00*
U.S. Cl. 280—707 **11 Claims**

1. A vehicular hydraulic fluid supply arrangement comprising:

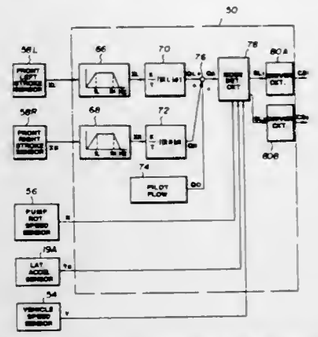
variable displacement pump means;

a lateral acceleration sensor;

a vehicle speed sensor;

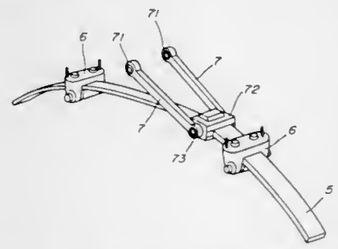
means for estimating the amount of hydraulic fluid which is required to be supplied to a predetermined servo arrangement;

means responsive to said vehicle speed sensor and said lateral acceleration sensor for correcting the hydraulic fluid amount estimate; and



means responsive to the corrected hydraulic fluid amount estimate for controlling the amount of hydraulic fluid discharged from said variable displacement pump means.

5,251,930
SUSPENSION SYSTEM WITH TRANSVERSE LEAF SPRING
Kaoru Kusaka; Yoshinobu Tada, and Hajime Kajiwara, all of Tochigi, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 16, 1992, Ser. No. 821,923
Claims priority, application Japan, Jan. 17, 1991, 3-16990
Int. Cl.[5] B60G *3/00*
U.S. Cl. 280—719 **12 Claims**



1. A suspension system on a motor vehicle having road wheels rotatably supported on a vehicle body, comprising:

a pair of knuckle members on which the road wheels are rotatably mounted;

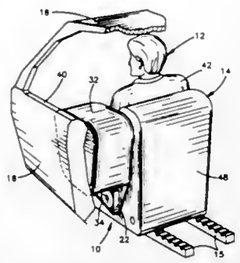
an elongate leaf spring which is vertically resilient and extends transversely with respect to the vehicle body, said leaf spring having opposite ends coupled to the knuckle members, respectively;

a support member supporting said leaf spring at two supporting points thereon which are spaced from each other transversely with respect to the vehicle body, for allowing said leaf spring to move transversely but limiting said leaf spring against vertical movement with respect to the vehicle body; and

a transverse movement limiting mechanism for allowing said leaf spring to move vertically but limiting said leaf spring against transverse movement with respect to the vehicle body, said transverse movement limiting mechanism comprising a link mechanism which couples a portion of said leaf spring between said two supporting points to the vehicle body.

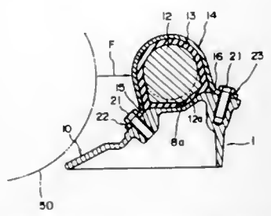
VOL 1155 ISS 2 OCT 12 1993 UMI

5,251,931
SAFETY APPARATUS
John H. Semchena, Royal Oak; Ernst M. Faigle, and Richard J. Thompson, both of Imlay, all of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio
Filed Mar. 9, 1992, Ser. No. 851,981
Int. Cl.[5] B60R *21/22*
U.S. Cl. 280—730 5 Claims



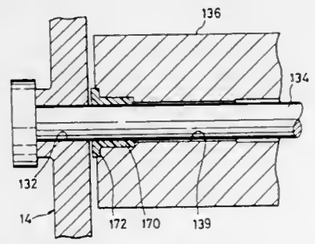
1. A safety apparatus for cushioning a person seated on a vehicle seat which is movable relative to a body of a vehicle, the vehicle seat having a back cushion portion and a bottom cushion portion, said safety apparatus comprising:
an air bas which is inflatable from a storage condition to an extended condition, said air bag having means for extending between a hip of the person seated on the vehicle seat and the door of the vehicle when said air bag is in its extended condition;
first inflator means for providing gas to inflate the air bag from the storage condition to the extended condition; and
means for mounting said air bag and said first inflator means on the vehicle seat and entirely beneath the bottom cushion portion of the vehicle seat for movement with the vehicle seat relative to the body of the vehicle.

5,251,932
FRONT BODY STRUCTURE OF AUTOMOTIVE VEHICLE
Yoshikazu Ide, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan
Filed Sep. 19, 1991, Ser. No. 762,340
Claims priority, application Japan, Sep. 26, 1990, 2-254319
Int. Cl.[5] B62D *21/15*
U.S. Cl. 280—784 7 Claims



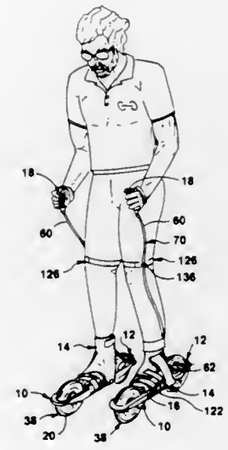
1. A front body structure of a vehicle comprising:
a power train;
a pair of front side frames extending on opposite sides of said power train in a lengthwise direction, from front to back, of said vehicle;
a suspension cross member extending, behind said power train, in a direction crosswise relative to said pair of front side frames for suspending front wheels; and
shock relieving means, integrally formed with said suspension cross member, for relieving shocks exerted on said suspension cross member by said power train during a collision of said vehicle, said shock relieving means comprising a recessed portion formed in said suspension cross member facing said power train, said recessed portion including a surface which is inclined upward in the lengthwise direction from a front edge of said suspension cross member.

5,251,933
SEAT BELT RETRACTOR
Yoshiichi Fujimura, Shiga, and Masahiro Tanabe, Nagahama, both of Japan, assignors to Takata Corporation, Tokyo, Japan
PCT No. PCT/JP91/00844, § 371 Date Jan. 23, 1992, § 102(e) Date Jan. 23, 1992, PCT Pub. No. WO92/00210, PCT Pub. Date Jan. 9, 1992
PCT Filed Jun. 21, 1991, Ser. No. 820,595
Claims priority, application Japan, Jun. 28, 1990, 2-171188
Int. Cl.[5] B60R *22/36*
U.S. Cl. 280—806 3 Claims



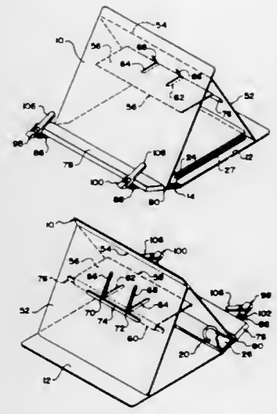
1. A seat belt retractor comprising:
a frame including a pair of opposite side walls and a rear wall extending between the side walls;
a seat belt take-up reel situated between the side walls of the frame and adapted to hold a seat belt therearound;
a first gripping member mounted on the rear wall of the frame;
a shaft extending between the side walls of the frame;
a second gripping member having a support hole at one side and a pusher at a side opposite to the support hole, said second gripping member being situated between the side walls and rotatably held by the shaft extending through the support hole, said second gripping member being rotatable between a first position where the pusher overlaps the first gripping member to hold the seat belt therebetween, and a second position where the pusher is located away from the first gripping member;
lock actuating means for moving the second gripping member to the first position upon detection of a predetermined deceleration of a vehicle; and
a sleeve made of synthetic resin and having a cylindrical portion and a flange extending radially outwardly from one end of the cylindrical portion, said cylindrical portion being located inside a part of the support hole and the flange projecting outwardly from an outer surface of the second gripping member in a direction coaxially with the support hole, said second gripping member being supported by the shaft through the sleeve when the predetermined deceleration of the vehicle is not detected so that the second gripping member does not directly contact the shaft and the frame to reduce noise thereagainst, said sleeve being resiliently deformed to allow the second gripping member to directly contact the shaft when the predetermined deceleration is detected so that the seat belt is securely retained between the first gripping member and the pusher.

5,251,934
PAIR OF WHEELED SKATE-SKIS WITH BRAKES USABLE ON MOST TERRAINS
Patrick G. Gates, 9716 122nd St., Puyallup, Wash. 98373
Filed Aug. 2, 1991, Ser. No. 739,910
Int. Cl.[5] A63C *17/06*
U.S. Cl. 280—842 12 Claims



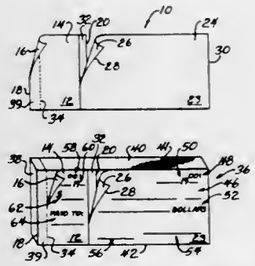
1. An improvement to a pair of wheeled skate-skis with hand operated brakes for use on most terrains, having: a body with depending sides, having in turn a platform to receive a sportsperson's foot already fitted into a selected sport shoe; wheel receiving openings located both fore and aft in the body to receive fore and aft wheels, transverse holes in the depending sides by the wheel receiving openings to receive fore and aft transverse wheel axles, and at one end of the body, a vertical hole to receive a fastener used in mounting to the body, a bicycle type spring return pivotal calipered braking unit; said fore and aft wheels mounted on said fore and aft transverse axles positioned in the transverse holes in the depending sides; and said bicycle type spring return pivotal calipered braking unit mounted at the end of the web by having a fastener extending through the vertical hole in the body, and hand controls extending from this braking unit up tot he waist height locales of sportspersons, who will be using the pair of wheeled skate-skis having hand operated brakes, the improvement comprising:
a multipiece wraparound binding having a principal ankle-leg supporting portion made of plastic material, and a toe supporting portion made of strap material, with the principal ankle-leg supporting portion having holes to receive bolt and nut fasteners, with holes arranged in the depending sides of the body to be arranged opposite the holes in the principal ankle-leg supporting portion, and bolt and nut fasteners to pass through these respective holes to join together the principal ankle-leg supporting portion and the body, and the strap materials having ends cut on a bias and sewn with angular slots sized to snugly fit dowels, longitudinal slots formed in the depending sides of the body to receive the ends of strap materials cut on a bias, and the dowels inserted into the angular slots to serve as positioning anchors for the strap materials, buckles are secured to portions of the strap materials, and the strap materials, are joined together, and then the foot and shoe restraining straps are connected, which are angularly positioned to match the contour of a person's shoe and a person's foot.

5,251,935
COMBINATION BINDER/BOOK REST
Peter Bottiglieri, 20841 Stoney Ave., Maple Ridge, British Columbia, Canada V2X 7T2
Filed May 5, 1992, Ser. No. 878,811
Int. Cl.[5] B42D *3/18*
U.S. Cl. 281—45 15 Claims



1. A combination binder/book rest, comprising:
(a) a spine;
(b) front and rear covers pivotally connected along opposed edges of said spine;
(c) cover support means pivotally connected to said front cover for supporting said front cover at a selected angle of inclination relative to said spine and rear cover;
(d) page retention means rotatably connected to said spine for bearing against pages of a book supported by said inclined front cover; and,
(e) a three-ring loose-leaf binding structure coupled to said spine.

5,251,936
OVERLAP CHECK CONSTRUCTION OR SIMILAR BUSINESS FORM
Gary W. Fitzgibbons, UARCO Incorporated, W. County Line Rd., Barrington, Ill. 60010
Filed Jun. 5, 1991, Ser. No. 710,682
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—58 24 Claims



1. A two-part sheet construction that may be separated into its individual parts without tearing comprising:
first and second sheet segments, each segment having a front and a back side and first and second opposed edges, the edges of both sheet segments being of substantially identical lengths;

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the first edge of the second sheet segment overlapping substantially the entirety of the second edge of the first sheet segment such that substantially the entirety of each of the front sides are exposed; and

a repeatedly releasable self-stick adhesive coating being on the first sheet segment where the second sheet segment overlaps the first sheet segment.

5,251,937

MULTILAYER DATA CARRIER AND A METHOD FOR PRODUCING IT

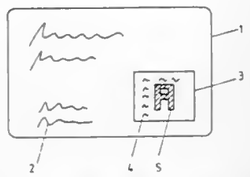
Albert Ojster, Munich, Fed. Rep. of Germany, assignor to GAO Gesellschaft fuer Automation und Organisation mbH, Munich, Fed. Rep. of Germany

Filed Sep. 25, 1991, Ser. No. 765,652

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1990, 4030493

Int. Cl.[5] **B42D** *15/00*

U.S. Cl. 283—91 **14 Claims**



1. A data carrier comprising an optically variable element exhibiting optical effects which are dependent on the angle from which the element is viewed and including a layer underneath the optically variable element, said layer having a surface roughness over at least part of its area which is beneath the optically variable element so that said roughness extends into the optically variable element and at least a portion of the optically variable element overlying said part of the area exhibits optical effects which are independent of the angle from which the element is viewed.

5,251,938

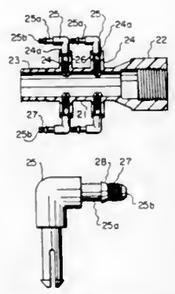
ADAPTER PIPE FITTING FOR SPRINKLER OR DRIP-TYPE IRRIGATION SYSTEMS

Kent C. Ericksen, Centerville, Utah, assignor to Pro-Mark, Inc., Bountiful, Utah

Filed Aug. 30, 1991, Ser. No. 752,845

Int. Cl.[5] **F16L** *55/00*

U.S. Cl. 285—5 **11 Claims**



1. An adapter pipe fitting for sprinkler or drip-type irrigation systems, comprising an adapter pipe body with a flow channel therethrough and having at least one offtake connector member with flow passage therethrough communicating with said flow channel, said offtake connector member or members each having a reentrant outlet end; a take-off swivel fitting snapped into each offtake connector member through said outlet end for swivel action therein, said take-off fitting having an elongate, resilient, snap-in portion at one end thereof of reduced outside diameter such as to be rotatably received by the flow passage through said offtake connector member, said snap-in portion being split longitudinally and having a headed end for engaging the inside surface of said adapter pipe body marginal to said flow passage when said snap-in portion is snapped into place, a greater diameter portion of said take-off fitting immediately adjacent to said elongate snap-in portion being rotatably received by said reentrant outlet end of said offtake connector member so as to swivel therein, the take-off swivel fitting having an opposite end portion terminating in a barbed outlet tip providing connection for flexible offtake tubing, and the barbed outlet tip having its tip end screw threaded and backed by a barb.

5,251,939

WATER INJECTOR SYSTEM AND METHOD FOR USING SAME

Lawrence J. Jordan, Newton, Iowa, assignor to Maytag Corporation, Newton, Iowa

Filed Jul. 19, 1991, Ser. No. 732,809

Int. Cl.[5] **F16L** *35/00*

U.S. Cl. 285—24 **23 Claims**



1. A water injector for interconnecting a water inlet hose to a fill opening in a wall of a dishwasher tub, said wall having an interior surface and an exterior surface; said water injector comprising:

an elongated hollow body member having first and second ends and forming an elongated chamber therein, said body member having a water ingress opening and a water egress opening adjacent said first and second ends respectively, and providing communication from outside said body member to said elongated chamber;

coupling means integral with said body member adjacent said egress opening for coupling said body member to said exterior surface of said tub wall with said egress opening in fluid communication with said fill opening in said tub wall;

conduit means having a hinged portion integrally formed with said body member and being sized to be connected to said water inlet hose, said conduit means being movable about said hinged portion into communication with said ingress opening of said body member for conducting water from said water inlet hose into said elongated chamber of said body member.

5,251,940

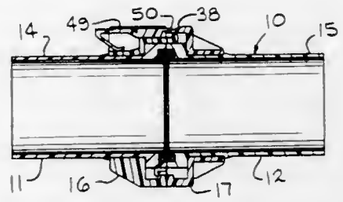
PIPE COUPLING WITH PIVOTING LOCKING MEMBER

Ronald D. DeMoss, and Paul J. E. Fournier, both of Jackson, Mich., assignors to Aeroquip Corporation, Maumee, Ohio

Filed Dec. 23, 1991, Ser. No. 812,049

Int. Cl.[5] **F16L** *15/00*

U.S. Cl. 285—87 **10 Claims**



1. A pipe coupling comprising, in combination, a pair of hub members, a pair of connecting members, each of said connecting members surrounding one of said hub members, each of said connecting members having a plurality of outwardly extending projections, said connecting members defining receiving recesses adjacent said projections, a circumferentially extending lock flange defined by said connecting member adjacent each of said receiving recesses, whereby said receiving recesses of each of said connecting members receive said projections of the other one of said connecting members and wherein relative rotation of said connecting members move said projections into a locking position adjacent respective ones of said lock flanges and locking means for releasably securing said pair of connecting members to one another, said locking means including a pivotally mounted locking lever mounted on each of said connecting members and axial locking recesses on the other one of said connecting members, said locking lever including spring means for urging said locking lever toward the locked position, whereby said locking lever is movable between a locked position and an unlocked position, said locking lever being received by a respective locking recess when in the locked position.

5,251,941

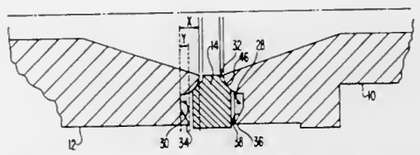
FAIL SAFE FITTING WITH FIRST AND SECOND FLANGE PROJECTIONS

Raymond McGarvey, Bethesda, Md., assignor to General Components, Inc., Rockville, Md.

Filed Oct. 11, 1991, Ser. No. 775,041

Int. Cl.[5] **F16L** *23/032*

U.S. Cl. 285—328 **18 Claims**



15. A fitting comprising two tubular elements, a gasket, and means to draw said tubular elements together to engage said gasket, said tubular members further having endwalls perpendicular to an axis defined by said tubular members, each said tubular member having a first end projection comprising an annular sealing bead concentric with a second end projection comprising an annular knife edge wherein said first end projection can form a resilient seal with said gasket which does not permanently deform the gasket.

5,251,942

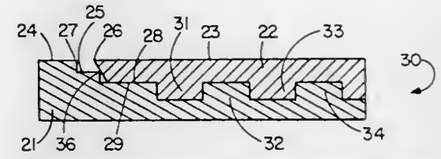
SELF-SEALING PIPE THREAD

Kent R. Whaley, R.R. #1, P.O. Box 6A, Wheaton, Minn. 56296

Filed Mar. 5, 1992, Ser. No. 846,060

Int. Cl.[5] **F16L** *19/00*

U.S. Cl. 285—355 **10 Claims**



1. A self-sealing pipe thread for use in joining two internally pressurized plastic pipes of equal threadable diameters comprising:

(a) an outside threaded pipe pin end having a thread base and a thread head, wherein said thread head terminates in an integral annular sealing surface which slopes rearwardly and radially outwardly from the inner surface of said pipe end;

(b) an inside threaded pipe box end having a thread base and a thread head and having an inwardly projecting annular line edge disposed on the inside surface of said pipe box end proximal to said thread base;

(c) said annular sealing surface of said pipe pin end extending radially substantially entirely outside the innermost surface area of said pipe box end;

(d) said annular sealing surface and said annular line edge intersecting only substantially tangentially whereby the internal pressure of the internally pressurized plastic pipe causes a pressurized fluid seal to be perfected between said pipe pin end and said pipe box end; and

(e) said pipe pin end and said box end being devoid of other sealing elements.

5,251,943

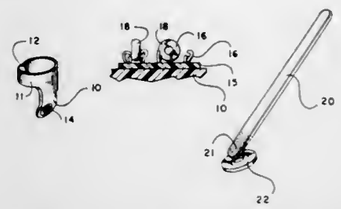
PICK-UP FOR HANDICRAFT ITEMS

Emil J. Dalbo, and Lorraine E. Dalbo, both of Atlanta, Ga., assignors to Dal-Craft, Inc., Tucker, Ga.

Filed Sep. 24, 1992, Ser. No. 951,175

Int. Cl.[5] **B25J** *15/00*

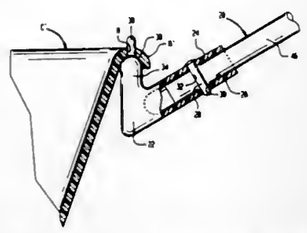
U.S. Cl. 294—1.1 **7 Claims**



1. A pick-up for retrieving at least one piece from a plurality of pieces consisting of a group of handicraft parts and accessories, said pick-up comprising a generally rigid elongated member having a first end adapted to be urged against said plurality of pieces, adhering means fixed to said first end of said elongated member for adhering to at least one piece of said plurality of pieces when said elongated member is urged against said plurality of pieces, said elongated member being receivable by a person's hand for retrieving said pieces, said adhering means comprising a base member carried by said first end of said elongated member, and a plurality of projections extending from said base member, said projections being so spaced that each piece of said plurality of pieces is receivable between adjacent projections of said plurality of projections.

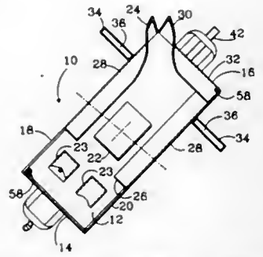
VOL 1155 ISS 2 OCT 12 1993 UMI

5,251,944
PULL HANDLE FOR RECYCLING BIN
David R. Truitt, P.O. Box 20794, Sarasota, Fla. 34276
Filed Aug. 19, 1992, Ser. No. 936,021
Int. Cl.[5] B65G 7/12
U.S. Cl. 294—15 3 Claims



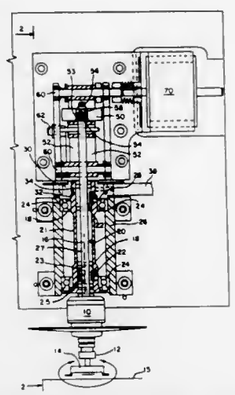
1. A portable pull handle attachable to a recyclin bin structured for dragging or sliding the bin across the ground, the bin having a generally rectangular bottom and upwardly extending side walls which define an open upper end of the bin, comprising:
a generally V-shaped hook having a first upright leg and a second elongated diagonally upwardly extending second leg;
said first leg having a generally rounded distal upper end sized to upwardly detachably engage into and to substantially conform to a curvature of a downwardly curved lifting rim connected to and outwardly extending from the side walls of the bin;
said second leg including extension means for hand grasping and pulling said hook in a direction generally in alignment with said second leg when said first leg distal end is engaged into the rim of the bin;
said first and second legs being oriented at an acute angle one to another;
an upright straight rim engagement pin smaller in transverse size than said first leg and coaxially connected and upwardly extending from said first leg;
said pin rounded at an upper distal end thereof and sized to matingly engage within a hole formed through an upper surface of the rim.

5,251,945
DEVICE FOR PROTECTING AND TRANSPORTING ARTICLES
Kevin R. Stoops, Springfield, Mo., assignor to Innovative Technologies, Inc., Springfield, Mo.
Filed Feb. 21, 1992, Ser. No. 839,849
Int. Cl.[5] B65D 37/00
U.S. Cl. 294—152 10 Claims



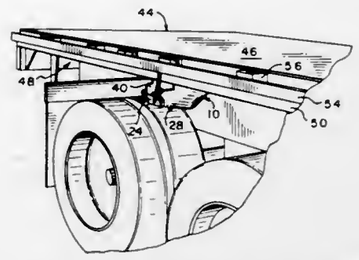
1. A device for aiding in manually transporting articles, comprising:
a main panel formed of at least substantially flaccid material and being elongated in a first direction to define a longitudinal axis, longitudinal ends and lateral side edges, whereby an article may be placed upon said main panel and said longitudinal ends brought upwardly to at least partially encompass the article;
a pair of at least substantially faccid side panels adapted to additionally partially encompass the article, said side panels being movably disposed in overlying relation on said main panel with each said side panel having a peripheral edge substantially aligned with an associated one of said lateral edges of said main panel and a face opposed to an inner face of said main panel, said respective faces of said side panels being connected to said inner face of said main panel along a line substantially parallel to, and in proximity to, said associated lateral edges of said main panel, whereby said side panels tend toward said overlying relation;
two main straps, each connected to said main panel at a point and having a free end extending beyond the periphery of said main panel;
means for releasably fixing each said strap to said main panel at a position spaced from said point, each said point and each said position being on an outer face of said main panel, and each said point being in proximity to a respective one of said lateral side edges; and
at least one handle connected to said main panel and adapted to be supported by a user.

5,251,946
COMPOUND TOOL DRIVE
Mark E. Rossmeisl, Beverly, and Arthur L. Gaudette, Ipswich, both of Mass., assignors to Emhart Inc., Newark, Del.
Filed Jan. 21, 1992, Ser. No. 823,196
Int. Cl.[5] B66C 1/02; H05K 3/00
U.S. Cl. 294—64.1 3 Claims



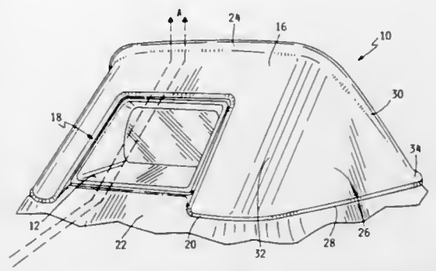
1. A machine for placing surface mount electronic components on a printed circuit board comprising
a tool holder for holding a vacuum tool and
means for supporting said tool holder for conjoint displacement along and around a selected axis including
a ball spine shaft secured at one end to said tool holder,
ball spline nut means operatively coupled to said ball spline shaft,
means for rotationally supporting said ball spline nut means,
means for selectively rotating said ball spline nut means, and
means for axially displacing said ball spline shaft including
a timing belt,
means for selectively displacing said timing belt means,
a clamp secured to said timing belt and including a rotary bearing for receiving the other end of said ball spline shaft.

5,251,947
CHAIN BOX
Gene E. Kirila, II, 7291 Oakwood Dr., Brookfield, Ohio 44403, and James S. Lapikas, 3554 Saranac Dr., Sharpsville, Pa. 16150
Filed Sep. 9, 1992, Ser. No. 942,452
Int. Cl.[5] B60R 9/02
U.S. Cl. 296—37.6 12 Claims



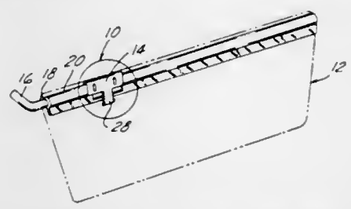
1. For use in the storage of a hold-down chain beneath a load bed, a storage box with a chain-receiving interior, said box comprising a bottom, a rear wall projecting upward from said bottom, opposed laterally spaced side walls projecting upward and diverging relative to each other from said bottom, said side walls extending forward and converging relative to each other from said rear wall, said rear and side walls having upper edges, mounting means for securing said box to an overlying support, a front wall projecting upward from said bottom in forwardly spaced relation to said rear wall and extending between said side walls, said front wall being of a height upward from said bottom less than the height of said rear wall, each side wall having a rear portion whereat said side wall upper edge is at generally equal height and defines a common plane with said rear wall upper edge, each side wall having a forward portion whereat said side wall upper edge is of generally equal height with said front wall, said front wall and said forward portions of said side walls defining an upwardly opening mouth to said box interior, said bottom diverging downward relative to said plane of said rear wall upper edge from said front wall to said rear wall, and said bottom being progressively wider from said front wall to said rear wall.

5,251,948
REPLACEMENT WINDSHIELD FOR SNOWMOBILE
Michael F. Parks, Rte. 1, Box 203A, Dresser, Wis. 54009
Filed Nov. 17, 1992, Ser. No. 977,617
Int. Cl.[5] B60J 1/02
U.S. Cl. 296—96.12 19 Claims



1. A replacement windshield device for a snowmobile having a hood, headlight housing, and dashboard, said windshield device comprising:
(a) a front face having a leading edge, a head lamp section, and a first lip portion;
(b) a pair of opposite exterior sides engaged to said front face, each of said opposite exterior sides having a second edge, first corner section, and second lip portion;
(c) an upper ridge engaged to said first and second lip portions and said first corner sections;
(d) a pair of interior opposite sides engaged to said upper ridge, each of said interior opposite sides having an interior lip portion engaged to said first corner sections, each of said interior opposite sides further having a third edge where each of said interior opposite sides is separated from said pair of opposite exterior sides;
(e) an interior top portion engaged to said upper ridge, said interior top portion depending from said upper ridge and separated from said front face, said interior top portion further engaged to said pair of interior opposite sides; and
(f) a rear face depending from said interior top portion, said rear face further engaged to said pair of interior opposite sides, said rear face having a fourth edge connected to each of said third edges of said pair of interior opposite sides, said fourth edge engaged to said dashboard of said snowmobile.

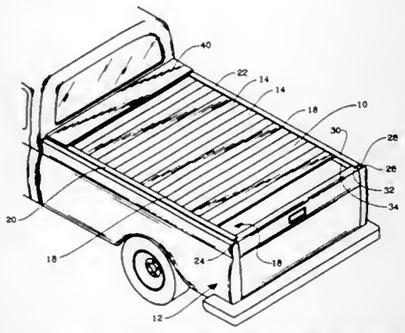
5,251,949
VISOR MOUNTING SYSTEM
Douglas C. Miller, Hersey, and Peter A. Franchino, West Branch, both of Mich., assignors to Plasta Fiber Industries, Inc., Marlette, Mich.
Filed Aug. 18, 1992, Ser. No. 931,875
Int. Cl.[5] B60J 3/00
U.S. Cl. 296—97.12 19 Claims



1. A mounting system in combination with a visor movable between a detented retracted position and an extended position, said system comprising:
a pivot shaft having a generally circular cross section, said shaft cooperating with said visor, and said shaft having a flat surface along one side of said shaft, said flat surface providing a detent position on said shaft for locating said visor when in said retracted position;
an annular groove formed on said shaft oriented in a plane generally perpendicular to a longitudinal axis of said shaft;
a clip cooperating with said shaft and said visor, said clip having a first leg and a second leg, one only of said first leg and said second leg having a protrusion cooperating with said annular groove preventing said one only of said first leg and said second leg from locating on said flat surface when said visor is in said extended position while allowing the other of said first leg and said second leg to locate on said flat surface to obtain said detent position when said visor is in said retracted position; and
fastening means for fastening said clip about said pivot shaft and to said visor.

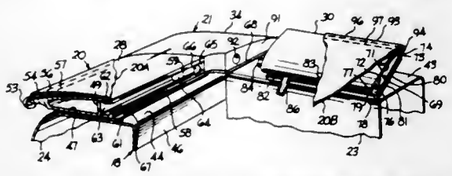
VOL 1155 ISS 2 OCT 12 1993 UMI

5,251,950
ROLLING COVER FOR A TRUCK UTILITY BED HAVING IMPROVED REEL SUPPORT HOUSING AND GUIDE TRACK CLAMPS
Richard G. Bernardo, 2350 NE. 29th St., Lighthouse Point, Fla. 33064
Filed Jul. 30, 1992, Ser. No. 922,745
Int. Cl.[5] B60J 7/10
U.S. Cl. 296—98 15 Claims



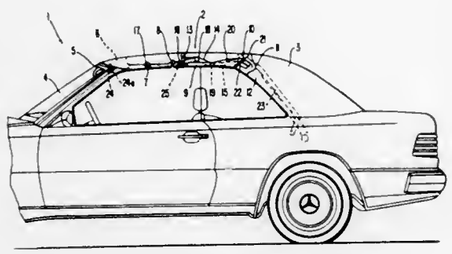
1. An apparatus for covering a conventional pickup truck utility bed having a truck bed rail on opposing sides of said utility bed, each of said truck bed rails including a substantially horizontal portion having an upper surface and a lower surface comprising: a pair of elongated guide tracks having slat end passages disposed in parallel relation to one another, each guide track for mounting to an opposing truck bed rail of said conventional pickup truck utility bed; means for adjustably clamping said guide tracks to the truck bed rails without modifying said bed rails; a cover body including a plurality of elongated slats hingedly interconnected longitudinally, each slat having a first end and a second end sized for slidable engagement within said guide tracks slat end passages and operatively associated therewith; and, an enclosure means including a cover body storage reel for receiving said cover body located in an operable position relative to said guide tracks, said cover body being stored in said enclosure means by winding about said storage reel, said adjustable clamping means including a means for removably coupling said clamping means to said truck bed rails mounted below said truck bed rail, and being inaccessible, whenever said cover body extends over said utility bed.

5,251,951
TONNEAU COVER AND SUPPORT MEANS
Donald G. Wheatley, 4451 Ford Rd., Ann Arbor, Mich. 48105
Continuation-in-part of Ser. No. 612,482, Nov. 14, 1990, Pat. No. 5,121,960, which is a continuation-in-part of Ser. No. 339,223, Apr. 17, 1989, Pat. No. 5,058,652, which is a continuation-in-part of Ser. No. 000,324, Jan. 5, 1987, abandoned, which is a continuation of Ser. No. 650,275, Sep. 14, 1984, abandoned. This application May 26, 1992, Ser. No. 888,019
Int. Cl.[5] B60P 7/04
U.S. Cl. 296—100 13 Claims



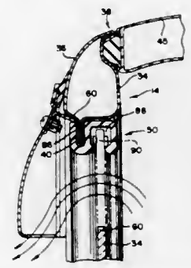
1. Tonneau cover means for covering the cargo carrier of a vehicle, the cargo carrier being bounded by first and second side walls extending in the longitudinal direction of the vehicle on opposite sides of the cargo carrier and having upper rims, a front wall extending transversely across a front end of the cargo carrier, and an openable tailgate having an upper rim substantially coplanar with adjacent parts of the upper rims of the side walls, the tonneau cover means comprising:
(a) flexible sheet means comprising front, side, and rear edges;
(b) an elongated rear rail positionable along the upper rim of the tailgate, said rear rail having a rear edge section thereof attachable to the rear edge of said flexible sheet means whereby said sheet means is anchored to the rear rail; said rear rail being coextensive with the tailgate rim;
(c) side rails extending along and directly above the upper rims of the side walls to anchor the side edges of said flexible sheet means;
(d) means at the rear end of each side rail forming a pivot hole, said pivot holes being aligned to form a transverse pivot axis located above the upper rim of the tailgate; and
(e) said rear rail having aligned hinge pins extending from its opposite ends for disposition in said pivot holes, whereby said rear rail can be pivoted downwardly around said pivot axis to tension the flexible sheet means in the longitudinal direction of the vehicle.

5,251,952
FOLDING HOOD FOR MOTOR VEHICLES
Martin Guckel, Wiernsheim, and Jürgen Schrader, Weil im Schönbuch, both of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany
Filed Jun. 25, 1992, Ser. No. 904,017
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1991, 4121226
Int. Cl.[5] B60J 7/00
U.S. Cl. 296—107 7 Claims



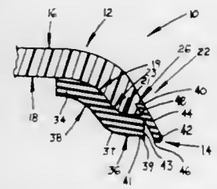
1. A folding hood for a motor vehicle, comprising:
a first roof frame part which rests on a frame portion of the motor vehicle when the hood is closed and is connected thereto via locks for securing a locking side of the hood,
a second roof frame part, pivot mounted to the first roof frame part on a side thereof opposite to the locking side about a bearing axis of which the first roof frame part can be swung up into a lift-off position after unlocking thereof,
an automatic pivot spring-loaded drive attached to the first roof frame part, and
a drive device for the spring-loaded drive configured to be regenerated during downward pivoting of the first roof frame part into a bearing position, and supported on mutually connected end regions of the roof frame parts at a moment distance from the bearing axis, wherein the drive device for the spring-loaded drive is configured as a supporting arrangement with limited longitudinal variability arranged below the bearing axis and is supported by opposite ends on the roof frame parts, with the supporting arrangement arranged to operate by enlargement of its regenerated supporting length.

5,251,953
VEHICLE WINDOW AIR DEFLECTOR
Barry A. Willey, Maywood, Ill., assignor to National Cycle, Inc., Maywood, Ill.
Filed Jan. 13, 1992, Ser. No. 821,381
Int. Cl.[5] B60J 1/20
U.S. Cl. 296—152 11 Claims



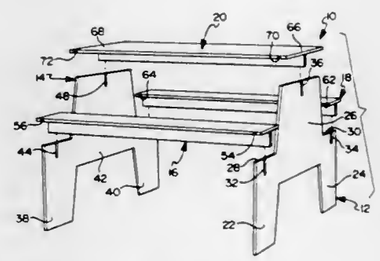
1. An air flow control device for attachment to the window frame portion of a vehicle door, said door including inner and outer window frame sections joined to each other along a continuous outer seam defining the profile of the door as a whole, and an insert-receiving inner seam defining the front, upper and rear portions of said window frame portion, said outer window frame section including an outer surface and a shoulder surface extending inwardly of said outer surface toward said inner seam, a composite, dual-channel insert removably received in snug-fitting relation over, and being carried by, said inner seam, one of said dual channels having an inwardly directed weatherstrip section for receiving the outer margins of a movable glass window received in said door and movable between open and closed positions, and the other of said channels being dimensioned so as to grip said inner seam for positioning said weatherstrip channel, said air flow control device comprising, in combination, a flow deflector element, plural, resilient mounting clips, and plural clip fasteners, said flow deflector element including an outer, contact margin for engagement with a portion of said outer surface of said window frame section, a free margin spaced from and lying generally parallel to said contact margin, and a contoured center body portion lying between said contact margin and said free margin and formed so that said free margin lies outwardly of the surfaces of said glass window and said frame outer surface, and with each of said mounting clips including a seam-engaging portion, an offsetting flange and a deflector element attaching section secured to said central body portion by said plural clip fasteners, with said offsetting flanges of said clips lying generally parallel to said shoulder surface, being free of contact with said outer window frame surface, and being spaced from portions of said shoulder surface so as to urge said deflector element contact margin into snug engagement with said outer surface of said window frame portion, said seam-engaging portion of said clip being positioned in use between said insert-receiving seam and said dual-channel insert.

5,251,954
PLASTIC VEHICLE COWLING WITH INTEGRALLY MOLDED SEAL
Richard Vande Kopple, Belmont; Ted W. Chittenden; Tokumi Toyota, both of Grand Rapids, and Gregory Allchin, Ada, all of Mich., assignors to StarCade, Inc., Grand Rapids, Mich.
Continuation of Ser. No. 828,412, Jan. 31, 1992, abandoned. This application Jan. 21, 1993, Ser. No. 6,720
Int. Cl.[5] B62D 25/10
U.S. Cl. 296—192 14 Claims



1. A cowling for use in a vehicle between a windshield and a hood of the vehicle, the cowling comprising:
a relatively rigid thermoplastic body comprising a top surface, a bottom surface, an elongated front edge, an elongated back edge, and side edges extending from the back edge to the front edge, wherein the body includes an elongated notch which extends along the back edge and is substantially L-shaped in cross section; and
a seal received in the elongated notch and integrally molded to the body, the seal extending outwardly beyond the back edge of the body and the notch, the seal being formed from a material which is soft relative to the body and adapted to provide an interface between the cowling and the vehicle windshield.

5,251,955
TRANSPORTABLE PICNIC TABLE
Hani N. Sarafa, 4756 Fairway Ridge South, West Bloomfield, Mich. 48323
Filed Mar. 20, 1992, Ser. No. 855,723
Int. Cl.[5] A47B 39/00
U.S. Cl. 297—157 11 Claims



1. A transportable picnic table comprising:
a pair of bases, each base having two side notches and a middle notch;
a pair of seats, each seat having a first end, a second end, and a pair of spaced apart grooves, each of the grooves being adapted to receive one of the bases so that the seats extend between the bases;
a tabletop having a first end, a second end, and a pair of spaced apart grooves, each of the grooves being adapted to receive one of the bases so that the tabletop extends between the bases;
a first rib attached to one of the seats;

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a second rib attached to the other of the seats; and a third rib attached to the tabletop;

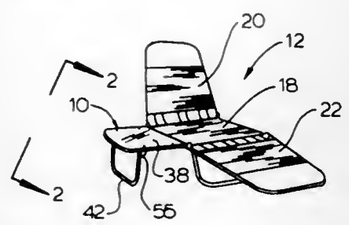
the first, second, and third ribs being pivotally attached to the seats and to the tabletop, respectively, and movable between a collapsed position where they lie substantially parallel to the seats and to the tabletop, respectively, and an assembled position whereby they are adapted to fit, respectively, into the side notches and the middle notch of the bases to stabilize the picnic table.

5,251,956

FOLDABLE TABLE ATTACHMENT FOR A COLLAPSIBLE CHAIR

Willis J. Hofmeyer, Sergeant Bluff, Iowa, assignor to Dawn Martinson, Sergeant Bluff, Iowa

Filed Nov. 19, 1990, Ser. No. 615,123
Int. Cl.[5] A47B *3/14*
U.S. Cl. 297—173 **6 Claims**



1. In combination:

a collapsible chair including a peripheral seat frame including opposite side bars, a flexible seat portion having top and bottom surfaces and spanning said side bars, leg and back support panels pivotally connected to opposite ends of said seat frame so as to be collapsible in generally stacked relation to top of said seat frame and a pair of folding leg structures pivotally connected to said seat frame and collapsible against the underside thereof,

a table top having a top side and underside;

connection means pivotally connecting said table top to a seat side bar of said collapsible chair for movement of said table top between a storage position in generally registered overlying engagement with one surface of said seat portion and a substantially horizontal use position extended transversely outwardly from the seat portion, said collapsible chair being free of arm members so that said table top is freely pivotable without obstruction between said storage position and said use position;

leg means operative to support said table top in the substantially horizontal use position; and

means connecting said leg means to said table top for pivotal movement of said leg means between a storage position in adjacent generally parallel relation to said table top and a use position extended downwardly from said table top.

5,251,957

POSTURE SUPPORT DEVICE

Thomas G. Lemens, Briarcliff Mansion, N.Y., assignor to Planar Support Systems, Inc., Katonah, N.Y.

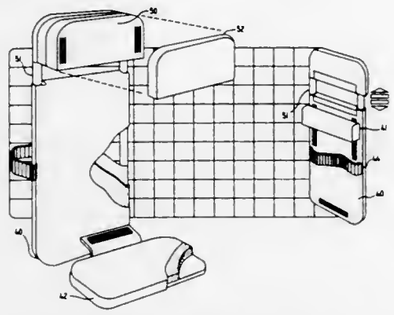
Filed Mar. 4, 1992, Ser. No. 845,895
Int. Cl.[5] A47C *7/02*
U.S. Cl. 297—230.1 **8 Claims**

1. A posture support device comprising

a longitudinally extending rigid planar back support member;

a bolster pad which in use is positioned between said back support member and a substrate upon which the posture support device is rested;

means for mounting said bolster pad on the rear and transversely of said back support member, and



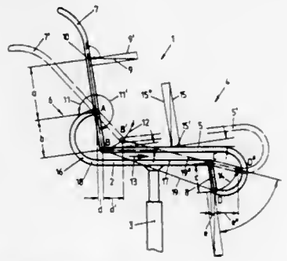
means for adjusting the longitudinal location of said bolster paid relative to said back support member.

5,251,958

SYNCHRONOUS ADJUSTING DEVICE FOR OFFICE CHAIRS OR THE LIKE

Hans Roericht, Ulm; Horst Fleischmann, München; Franz Biggel, Wangen, and Burkhard Schmitz, Ulm, all of Fed. Rep. of Germany, assignors to Wilkhahn Wilkening & Hahne GmbH & Co., Bad Münder, Fed. Rep. of Germany

PCT No. PCT/DE90/00994, § 371 Date Aug. 29, 1991, § 102(e) Date Aug. 29, 1991, PCT Pub. No. WO91/09554, PCT Pub. Date Jul. 11, 1991
PCT Filed Dec. 21, 1990, Ser. No. 752,503
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1989, 3943282
Int. Cl.[5] A47C *1/02*
U.S. Cl. 297—321 **7 Claims**



1. A chair comprising

(a) a carrier structure of fixed location; said carrier structure having front and rear regions;

(b) a back part having first and second locations of articulation; said first location of articulation being at a height level above said second location of articulation; said first and second locations of articulation defining a length portion of said back part; said first location of articulation of said back part being pivotally jointed to said rear region of said carrier structure, whereby upon pivotal movement of said back part, said second location of articulation moves along a circular path about said first location of articulation;

(c) a seat part having front and rear regions; said rear region of said seat part being pivotally jointed to said second location of articulation of said back part;

(d) a single coupling component connecting said front region of said seat part with said front region of said carrier structure such that the front regions of the seat part and the carrier structure are movable relative to one another; said single coupling component having an end; and

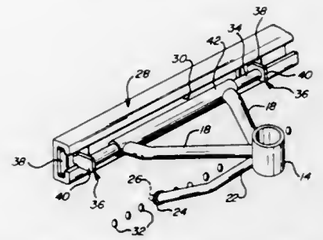
(e) means for compelling said end of said single coupling component to travel in a circularly arcuate path having a center of curvature being fixed relative to said carrier structure; said end of said single coupling component being situated at all times at a height level below the second location of articulation of said back part.

5,251,959

ADJUSTABLE WALL-MOUNTED LOCOMOTIVE SEAT SUPPORT

Allen M. De Braal, Downers Grove, and Harvey C. Boyd, Woodridge, all of Ill., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 15, 1991, Ser. No. 746,647
Int. Cl.[5] A61G *15/00*
U.S. Cl. 297—344.1 **16 Claims**



1. A seat support for attachment to a locomotive cab side wall having a series of apertures in the wall and adapted for fore and aft sliding adjustment, comprising:

wall bracket means;

a seat socket for holding a seat;

a diagonal brace extending from the seat socket to an aperture in the wall for holding the seat socket against sliding adjustment;

a lateral support coupled to the wall bracket means and extending from the wall bracket means to the seat socket, the support including a bar and sleeve means for sliding adjustment and for tilting to release the diagonal brace from the said aperture; and

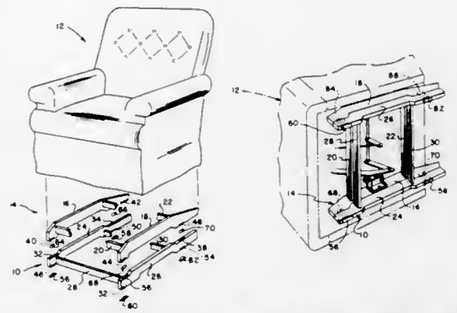
the lateral support including arm means extending from one of the bar and sleeve means to the seat socket.

5,251,960

BASE FOR ROCKER/RECLINER

Patsy E. Anderson, P.O. Box 1801, Kilgore, Tex. 75662

Filed Apr. 13, 1992, Ser. No. 867,753
Int. Cl.[5] A47C *1/02*
U.S. Cl. 297—344.12 **5 Claims**



1. A method of adding an auxiliary booster frame to a chair, the chair being of a type which has a platform base with platform sides and gliders which can be removed from platform slots in the bottom of said platform sides of said chair, said method comprising:

providing an auxiliary booster frame, said frame having side runners and having auxiliary crossbars attached to said runners, with said runners being shaped to fit under said platform sides and with said runners having topside slots alignable directly under platform slots in the bottom of said platform sides, and with said runners also having runner bottom slots;

removing said gliders from said chair and placing said gliders in said runner bottom slots of said runners;

placing key wedges in the topside slots of said runners, said key wedges extending above said topsides slots; and

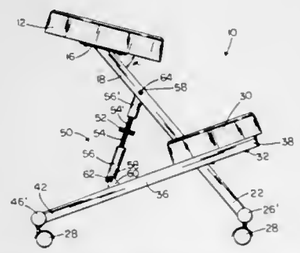
placing said chair on top of said auxiliary booster frame with said key wedges extending into said platform slots of said platform sides to elevate said chair using no moving parts or electrical connections, whereby said auxiliary booster frame provides an inexpensive and reliable way of raising the chair to make it easier for people to get into and out of the chair.

5,251,961

ADJUSTABLE COMPUTER CHAIR

Ronald I. Pass, Ladue, Mo., assignor to JDI Group Incorporated, St. Louis, Mo.

Filed Apr. 10, 1992, Ser. No. 866,565
Int. Cl.[5] A47C *7/50*
U.S. Cl. 297—423.1 **10 Claims**



1. A manually adjustable non-motorized chair for use at a work station, which chair permits distribution of the user's weight between the user's legs and back, said chair comprising:

a) a seat cushion;

b) first support means upon which said seat cushion is mounted;

c) a knee cushion;

d) second support means upon which said knee cushion is mounted; and

e) a manual non-motorized chair adjustment means which interconnects said first and second support means in such manner as to permit simultaneous, uniform adjustment of both said seat cushion and said knee cushion by said user, whereby the user may easily adjust the relative positions of said seat cushion and knee cushion in relation to each other as well as in relation to a support surface so as to provide an adjustable chair which is comfortable for long periods of use at a work station, the chair adjustment means comprising a non-motorized jackscrew extending between and terminating in first and second opposed ends, one of said first and second opposed ends being connected to said first support means and the other of said first and second opposed ends being connected to said second support means.

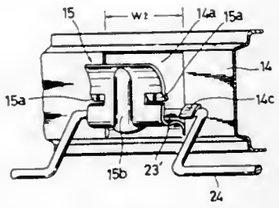
VOL 1155 ISS 2 OCT 12 1993 UMI

5,251,962

SEAT BACK STRUCTURE IN VEHICLE SEAT

Tetsuo Saito, Akishima, Japan, assignor to Tachi-S Co. Ltd, Akishima, Japan

Filed Nov. 19, 1991, Ser. No. 794,429
Int. Cl.[5] A47C 7/42
U.S. Cl. 297—440.15 4 Claims



1. A seat back structure in a vehicle seat, in which a separate mat member is fitted in a recessed area formed in a frontal surface of the seat back structure, said seat back structure comprising:

a plate frame provided in said recessed area of said seat back structure;

an outwardly extending male latch member which is formed by punching out a portion of said plate frame so as to project outwardly in a hook shape;

an opening which is defined in said plate frame at the location of said male latch member, wherein said opening has a width defined by the edges thereof;

a generally U-shaped female latch member provided at a rear wall of said separate mat member, said female latch member being latchingly engageable with said male latch member and having a width greater than said width of said opening,

whereby, when fitting said mat member into said recessed area of said seat back structure, said female latch member is latching engaged with said male latch member, said female latch member extending transversely over said opening to avoid contact of said female latch member with said edges of said opening.

5,251,963

VEHICULAR LONG CRUISING SEAT

Masatoshi Inayoshi, Atsugi; Kuniyoshi Date, and Shinya Iwasaki, both of Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Continuation of Ser. No. 622,101, Dec. 3, 1990, abandoned, which is a continuation-in-part of Ser. No. 252,337, Oct. 3, 1988, abandoned. This application Sep. 8, 1992, Ser. No. 941,854
Int. Cl.[5] A47C 7/18, 7/46
U.S. Cl. 297—460 1 Claim

1. A seat for supporting a seat occupant in a vehicle, comprising:

a seat back;

a seat cushion which said seat back extends from; and

a coccygeal vertebra movement restrainer which includes a plurality of fixed supports, each extending in a substantially continuous fashion laterally across a portion of either of said seat back and seat cushion so as to restrain movement of a coccygeal vertebra of the spine of the seat occupant relative to said seat cushion,

wherein said plurality of supports of said coccygeal vertebra movement restrainer include a first support, a second support, and a third support which are so constructed and arranged as to support a waist portion, a portion adjacent the coccygeal vertebra, and thighs of the seat occupant,

wherein said first support is arranged within said seat back and supports the seat occupant at a portion disposed within an area which, viewing in a vertical reference plane involving a hip point of the seat occupant, has a first closed boundary with a first corner, a second corner, a third corner, and a fourth corner,

said first corner being disposed rearward from a vertical reference line including said hip point by a distance 152 mm and upward from a horizontal reference line intersecting said vertical reference line at said hip point by a distance 54 mm,

said second corner being disposed rearward from said vertical reference line by a distance 161 mm and upward from said horizontal reference line by a distance 75 mm,

said third corner being disposed rearward from said vertical reference line by a distance 167 mm and upward from said horizontal reference line by a distance 73 mm,

said fourth corner being disposed rearward from said vertical reference line by a distance 158 mm and upward from said horizontal reference line by a distance 52 mm;

said second abutment is arranged in said seat cushion and supports the seat occupant at a portion disposed within an area which, viewing in said vertical reference plane, has a second closed boundary with a first corner, a second corner, a third corner, and a fourth corner,

said first corner of said second closed boundary being disposed rearward from said vertical reference line by a distance 88 mm and downward from said horizontal reference line by a distance 63 mm,

said second corner of said second closed boundary being disposed rearward from said vertical reference line by a



distance 100 mm and downward from said horizontal reference line by a distance 53 mm,

said third corner of said second closed boundary being disposed rearward from said vertical reference line by a distance 104 mm and downward from said horizontal reference line by a distance 57 mm,

said fourth corner of said second closed boundary being disposed rearward from said vertical reference line by a distance 92 mm and downward from said horizontal reference line by a distance 67 mm;

said third support is arranged in said seat cushion and supports the seat occupant at a portion within an area which, viewing in said vertical reference plane, has a third closed boundary with a first corner, a second corner, a third corner, and a fourth corner,

said first corner of said third closed boundary being disposed forward from said vertical reference line by a distance 7 mm and downward from said horizontal reference line by a distance 65 mm,

said second corner of said third closed boundary being disposed rearward from said vertical reference line by a distance 5 mm and downward from said horizontal reference line by a distance 67 mm,

said third corner of said third closed boundary being disposed rearward from said vertical reference line by a distance 4 mm and downward from said horizontal reference line by a distance 77 mm,

said fourth corner of said third closed boundary being disposed forward from said vertical reference line by a distance 7 mm and downward from said horizontal reference line by a distance 72 mm;

said first support supports the seat occupant at a portion disposed within a body extending laterally in the opposite directions from said vertical reference plane by a distance 80 mm and having a common cross sectional area which, viewing in said vertical reference plane, has a fourth closed boundary with a first corner, a second corner, a third corner, and a fourth corner,

said first corner of said fourth closed boundary being disposed rearward from said vertical reference line by a distance 143 mm and upward from said horizontal reference line by a distance 60 mm,

said second corner of said fourth closed boundary being disposed rearward from said vertical reference line by a distance 152 mm and upward from said horizontal reference line by a distance 79 mm,

said third corner of said fourth closed boundary being disposed rearward from said vertical reference line by a distance 158 mm and upward from said horizontal reference line by a distance 76 mm,

said fourth corner of said fourth closed boundary being disposed rearward from said vertical reference line by a distance 149 mm and upward from said horizontal reference line by a distance 56 mm;

said second support supports the seat occupant at a portion disposed within a body extending laterally in the opposite directions from said vertical reference plane by a distance 80 mm and having a common cross sectional area which, viewing in said vertical reference plane, has a fifth closed boundary with a first corner, a second corner, a third corner, and a fourth corner,

said first corner of said fifth closed boundary being disposed rearward from said vertical reference line by a distance 84 mm and downward from said horizontal reference line by a distance 59 mm,

said second corner of said fifth closed boundary being disposed rearward from said vertical reference line by a distance 95 mm and downward from said horizontal reference line by a distance 48 mm,

said third corner of said fifth closed boundary being disposed rearward from said vertical reference line by a distance 99 mm and downward form said horizontal reference line by a distance 52 mm,

said fourth corner of said fifth closed boundary being disposed rearward from said vertical reference line by a distance 88 mm and downward from said horizontal reference line by a distance 62 mm; and

said third support supports the seat occupant at a portion disposed within a body extending in the opposite directions from said vertical reference plane by a distance 80 mm and having a common cross sectional area which, viewing in said vertical reference plane, has substantially the same closed boundary as said third closed boundary.

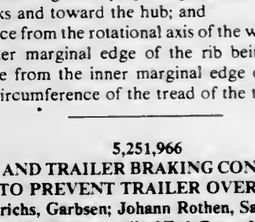
5,251,964

CUTTING BIT MOUNT HAVING CARBIDE INSERTS AND METHOD FOR MOUNTING THE SAME

Randall W. Ojanen, Bristol, Tenn., assignor to GTE Valenite Corporation, Troy, Mich.

Filed Aug. 3, 1992, Ser. No. 923,641
Int. Cl.[5] E21B 10/56; B23K 31/02
U.S. Cl. 299—91 7 Claims

1. In a bit mount having a forward surface for a shoulder of a cutting bit to rotatably bear against, the method of providing carbide inserts in said forward surface in order to reduce wear of said forward surface, said method comprising the steps of: providing insert holes in said forward surface into which carbide inserts can be inserted; providing smaller holes next to the insert holes, the smaller holes slightly overlapping the insert holes; inserting braze slugs into the smaller holes; forcing carbide inserts into the insert holes so that there is an interference fit between the braze slugs and the carbide inserts; and heating the braze slugs to a temperature at which the braze



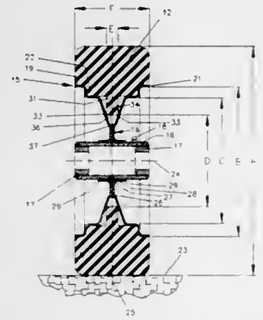
slugs melt, wet the carbide inserts and secure the carbide inserts in the insert holes by brazing.

5,251,965

WHEEL ASSEMBLY

Thomas J. Johnson, Evansville, Ind., assignor to Hoosier Stamping and Manufacturing Corp., Evansville, Ind.

Filed Mar. 11, 1992, Ser. No. 850,388
Int. Cl.[5] B60B 3/08
U.S. Cl. 301—64.3 8 Claims



1. A wheel assembly comprising:

first and second wheel disks having a central rotational axis;

a hub centered on said axis;

a tire mounted on the wheel disks and sandwiched between portions of the wheel disks facing each other;

the wheel disks being welded to the hub and to each other;

the tire including a rib projecting radially inward between the disks and toward the hub; and

the distance from the rotational axis of the wheel assembly to the inner marginal edge of the rib being less than the distance from the inner marginal edge of the rib to the outer circumference of the tread of the tire.

5,251,966

TRACTOR AND TRAILER BRAKING CONTROL SYSTEM TO PREVENT TRAILER OVERRUN

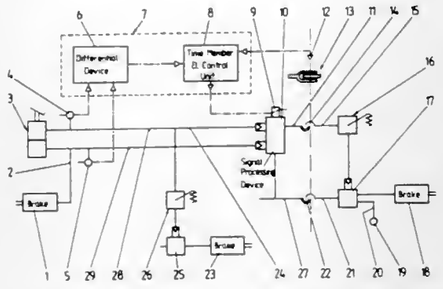
Otto Friederichs, Garbsen; Johann Rothen, Sarstedt, and Hartmut Rosendahl, Hanover, all of Fed. Rep. of Germany, assignors to WABCO Westinghouse Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Nov. 5, 1990, Ser. No. 609,364
Claims priority, application Fed. Rep. of Germany, Nov. 4, 1989, 3936726
Int. Cl.[5] B60T 8/00, 13/66
U.S. Cl. 303—7 34 Claims

1. A method for the braking of a vehicle train consisting of at least two rigid vehicles furnished with pressure-actuated brakes and force-transmittingly coupled by a coupler, said method comprising the steps of

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(a) in a preliminary step defining a tolerance width for a force signal;
(b) generating a brake-force-request signal in a first one of said rigid vehicles thereby initiating a brake application and a generation of a co-braking signal in said first vehicle;
(c) furnishing said co-braking signal to a second one of said rigid vehicles for at least a co-control of a braking pressure in said second rigid vehicle;
(d) detecting non-stationary braking phases of said brake application;



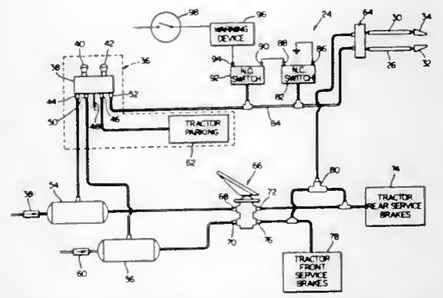
(e) generating in said non-stationary braking phases a force signal representative of a force occurring in said coupler;
(f) comparing said force signal with said tolerance width;
(g) in a repetition of steps (b), (c) and (d) altering said co-braking signal by a predetermined value in non-stationary braking phases if said force signal generated in step (e) has exceeded said tolerance width; and
(h) whilst repeating step (d) repeating steps (e) and (f).

5,251,967

FLUID PRESSURE BRAKING SYSTEM WITH LOW PRESSURE WARNING MECHANISM

Charles E. Eberling, Wellington, Ohio, assignor to Allied-Signal Inc., Morristown, N.J.

Filed Mar. 25, 1992, Ser. No. 857,219
Int. Cl.[5] B60T *13/00*
U.S. Cl. 303—7 **13 Claims**



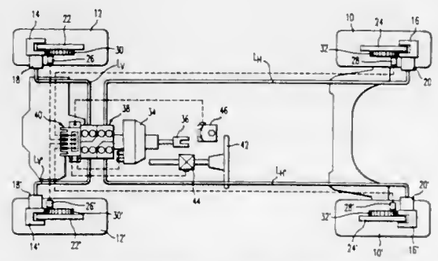
1. Fluid pressure braking system for a tractor-trailer vehicle comprising a fluid pressure source, a tractor braking system and a trailer braking system including trailer brakes, said trailer braking system including storage reservoirs and valve means responsive to a service control signal for supplying fluid pressure from said reservoirs to actuate said trailer brakes, a supply line connecting the tractor and trailer braking systems for supplying fluid pressure from said source to said storage reservoirs, a control line connecting the tractor and trailer braking systems for communicating said service control signal to said valve means, a warning device for warning the vehicle operator of a braking system malfunction, said tractor protection system including a supply control valve for controlling communication through said supply line, and pressure responsive switch means responsive to the pressure level in the supply line for actuating said warning device when the pressure level in the supply line drops below a predetermined pressure level during normal vehicle operation, said pressure responsive switch means being connected in said supply line between said supply control valve and said trailer braking system.

5,251,968

BRAKING APPARATUS FOR A TWO-AXLE VEHICLE

Heinrich-Bernhard Rath, Vallendar, Fed. Rep. of Germany, assignor to Lucas Industries public limited company, Birmingham, England

PCT No. PCT/EP90/01165, § 371 Date Mar. 19, 1991, § 102(e) Date Mar. 19, 1991, PCT Pub. No. WO91/01235, PCT Pub. Date Feb. 7, 1991
PCT Filed Jul. 17, 1990, Ser. No. 671,755
Claims priority, application Fed. Rep. of Germany, Jul. 19, 1989, 3923955; Nov. 7, 1989, 3937070
Int. Cl.[5] B60T *8/26, 8/32*
U.S. Cl. 303—9.62 **14 Claims**



1. In brake apparatus for a vehicle having front and rear wheels, rotational speed sensors at least at the rear wheels, circuit means for evaluating the rotational speeds and determining the rotational deceleration of said rear wheels, and means responsive to the determined deceleration of said rear wheels for controlling the braking forces at said front and rear wheels, the invention wherein said means for controlling said braking forces is responsive to deceleration of said rear wheels below a predetermined value to generate a braking force on the rear wheels which is greater than that on the front wheels so long as said deceleration remains below said predetermined value, said controlling means being responsive to deceleration of said rear wheels in excess of said predetermined value to cancel said greater braking force on said rear wheels and subject both the front and rear vehicle wheels to optimum braking force.

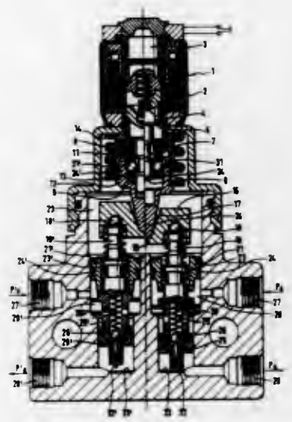
5,251,969

BRAKE POWER CONTROLLER WITH ELECTRICALLY ACTUATED LOCKING APPARATUS

Rudolf Cezanne, Graevenwiesbach, and Rudolph Heuer, Gifhorn/Wilsche, both of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

PCT No. PCT/EP91/01695, § 371 Date May 28, 1992, § 102(e) Date May 28, 1992, PCT Pub. No. WO92/05988, PCT Pub. Date Apr. 16, 1992
PCT Filed Sep. 6, 1991, Ser. No. 859,410
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1990, 4030686
Int. Cl.[5] B60T *8/26, 11/34*
U.S. Cl. 303—963 **10 Claims**

1. A brake pressure proportioning controller to proportionately reduce the pressure to the rear wheel brakes of an automotive vehicle equipped with an anti-locking control, said brake pressure controller being provided with a lockout control arrangement which prevents the brake pressure controller from performing a pressure reducing function as long as said anti-locking control is functioning, said lockout arrangement including an electromagnetic actuator having a magnetic coil, with an electrical current flowing to energize said drive coil as long said wheel brake anti-locking control is functioning, said lockout arrangement further including an actuating element axially slidable by energizing of said coil to a locking position,



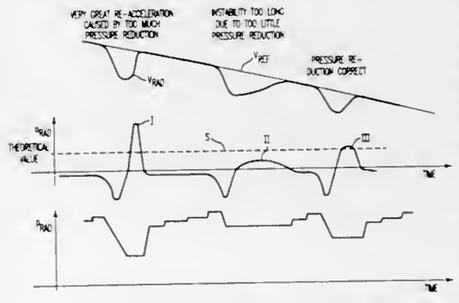
said braking pressure controller including an axially shiftable control element axially moved during operation of said braking pressure controller, said lockout arrangement further including radially movable interlocking elements radially positively fixed when said actuator element is in said locking position, and radially released when said actuator element is released for axial movement when said coil is deenergized, and locking means causing axial locking of said control element when said interlocking elements are radially positively fixed and axially released when said locking elements are radially released.

5,251,970

METHOD OF CONTROLLING THE BRAKE PRESSURE IN AN ANTI-LOCK VEHICLE BRAKE SYSTEM

Volker Braschel, and Dieter Seitz, both of Neuwied, Fed. Rep. of Germany, assignors to Lucas Industries public limited company, Birmingham, England

Filed Jun. 20, 1991, Ser. No. 688,539
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1989, 3936510
Int. Cl.[5] B60T *8/32*
U.S. Cl. 303—105 **8 Claims**



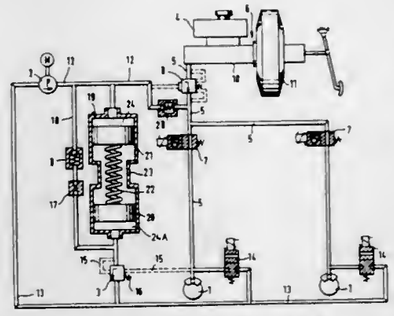
1. In an anti-lock vehicle brake system wherein the rotational behavior of a braked wheel is measured and, if a risk of locking exists, the brake pressure is decreased and then increased in a series of successive control cycles, a method of establishing the pressure reduction period t^n_{ab} of a current control cycle (n) and controlling the anti-lock vehicle brake system thereby, comprising the steps of:
storing the pressure reduction period (t^{n-1}_{ab}) for the immediately preceding control cycle,
establishing a first factor corresponding to said pressure reduction period,
storing the maximum reacceleration ($peak_{n-1}$) of said wheel in the immediately preceding control cycle,
establishing a second factor corresponding to said maximum reacceleration,
determining the pressure reduction period for said current cycle by mathematically combining said first and second factors, and
controlling the anti-lock vehicle brake system to lower the brake pressure on said wheel during said determined pressure reduction period.

5,251,971

ANTI-LOCK CONTROLLED BRAKE SYSTEM FOR AUTOMOTIVE VEHICLES

Hans-Dieter Reinartz, Frankfurt am Main, and Helmut Steffes, Hattersheim, both of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

PCT No. PCT/EP91/01467, § 371 Date Apr. 23, 1992, § 102(e) Date Apr. 23, 1992, PCT Pub. No. WO92/03317, PCT Pub. Date Mar. 5, 1992
PCT Filed Aug. 3, 1992, Ser. No. 849,051
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1990, 4026743
Int. Cl.[5] B60T *8/40, 8/42, 8/44*
U.S. Cl. 303—115.4 **9 Claims**

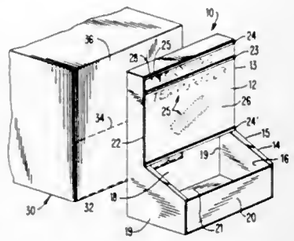


1. An anti-lock-controlled brake system for automotive vehicles with a pedal-operated braking pressure generator including a master cylinder, a wheel brake, at least one main pressure line, aid wheel brake being connected to said braking pressure generator by said main pressure line, an auxiliary hydraulic pressure pump having an inlet and an outlet, and an auxiliary pressure line connected to said pressure pump outlet and said main pressure line, a return line connecting said wheel brake to said inlet of said auxiliary hydraulic pressure pump, an electromagnetically actuatable inlet valve in said main pressure line, an electromagnetically controlled outlet valve in said return line, pressure limiting valve means, and means subjecting said pressure limiting valve means to the pressure of said auxiliary pressure pump in said auxiliary pressure line and to the pressure in said main pressure line acting on said wheel brake, and said pressure limiting valve means responsive to establish a hydraulic connection between said auxiliary pressure line and said return line when said pump pressure exceeds said wheel brake pressure by a predetermined amount, pres-

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sure medium accumulator means having an accumulator chamber expansible against a predetermined force and connected to said pressure pump outlet to be charged by expansion of said accumulator chamber by flow from said pressure pump, and, means varying said predetermined force in response to operation of said pressure limiting valve means for connecting said auxiliary pressure line to said return line whereby the pressure in said accumulator chamber is controlled in dependence on said hydraulic pressure at said wheel brake.

5,251,972
DEVICE FOR DISPLAYING AND DISPENSING CONSUMER PRODUCTS ON SHELVING
Michael Zurawin, 400 E. 56th St., New York, N.Y. 10022
Filed Dec. 31, 1991, Ser. No. 816,124
Int. Cl.[5] A47F *3/00*
U.S. Cl. 312—118 **16 Claims**



1. A device for displaying and dispensing products, said device being usable with a box containing said products and having a first opening in a front wall thereof sufficient to pass said products, said device comprising:

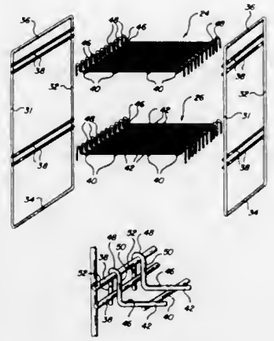
a frame removably matable to said box over said opening, said frame defining a rear opening communicating with said first opening in said box and including a lower front wall portion spaced from the front wall of said box and extending upward from the bottom of said frame for defining an open compartment between said front wall of said box and said lower front wall portion of said frame, said compartment being in communication with said rear opening in said frame whereby products from said box pass through said first opening and said rear opening into said open compartment for removal therefrom.

5,251,973
LOCKER ORGANIZER OR THE LIKE
Syd Hazan, Richmond Hill, Canada, assignor to Hillmar Inc., Montreal, Canada
Filed Mar. 9, 1992, Ser. No. 848,339
Int. Cl.[5] A47B *45/00*
U.S. Cl. 312—257.1 **4 Claims**

1. A shelf assembly for use within a storage locker of the type having a pair of opposed side walls, said assembly comprising:

a pair of side members, each adapted to be supported in abutment with one of said side walls of the locker, each side member including a pair of rods adapted to be supported vertically, one at the front and one at the back of a side of the locker, and at least one horizontal shelf supporting structure having each of its ends affixed to one of said pair of rods, said shelf supporting structure comprising a pair of horizontally aligned, vertically spaced rods; and

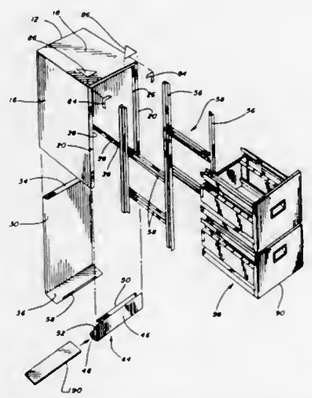
at least one shelf member having a substantially planar support structure and two sets of U-shaped hook members secured to opposite sides of said shelf member and projecting normally to the plane of the shelf member, said U-shaped hook members having depths greater than the vertical spacing between said pair of rods comprising said shelf supporting structure, each hook member being adapted to be arrayed over one of said horizontal shelf supporting structures forming part of one of the side members so that the U-shaped hook members have their open ends facing downwardly and engage both of said pair of rods comprising said shelf supporting structure, with the planar structure of said shelf member to which they are affixed being supported horizontally between said



pair of side members with the hook structures extending upwardly from said planar structure so that said hook members and said U-shaped supporting structures providing upstanding side edges to said shelf member;

whereby said shelf member supports the side members against said opposed storage locker side walls, to provide stability to the shelf assembly.

5,251,974
MULTI-DRAWER FILE CABINET
Ralph Beals, Muscatine, Iowa, assignor to Hon Industries Inc., Muscatine, Iowa
Continuation-in-part of Ser. No. 279,330, Dec. 2, 1988, Pat. No. 5,102,210, which is a continuation of Ser. No. 30,052, Mar. 24, 1987, abandoned. This application Feb. 12, 1991, Ser. No. 654,351
The portion of the term of this patent subsequent to Apr. 7, 2009, has been disclaimed.
Int. Cl.[5] A47B *88/00*
U.S. Cl. 312—330.1 **20 Claims**



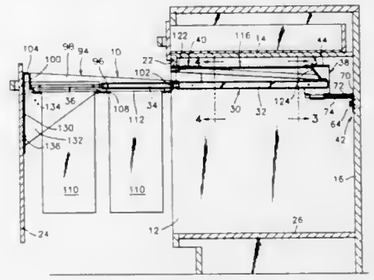
1. An upright rectangular cabinet for receiving at least two file drawers, said cabinet being of thin gauge sheet metal and having at least four vertical corners, said cabinet comprising:

a. an envelope formed of a top panel, side panels and reinforcing portions, said envelope defining an open front side with at least two drawer recesses for receiving drawers in the interior of said cabinet, said side panels and said reinforcing portions overlapping and coacting to form reinforced structural shapes adjacent each of said vertical corners of the cabinet, said reinforced structural shapes extending substantially the full vertical height of each of said vertical corners, each of said reinforced structural shapes including at least two adjoining sides in generally right angular relationship to one another, each of said two sides of each of said reinforced structural shapes comprising overlapped surface thicknesses of said sheet metal extending over substantially the full vertical height of each of said structural shapes;

b. an adhesive disposed substantially throughout the interface areas between said overlapped thicknesses of said sheet metal defining each of said reinforced structural shapes and bonding said overlapped thicknesses together substantially continuously throughout said interface areas over the vertical extent of said structural shapes to effect a laminated corner structure in each corner of said cabinet;

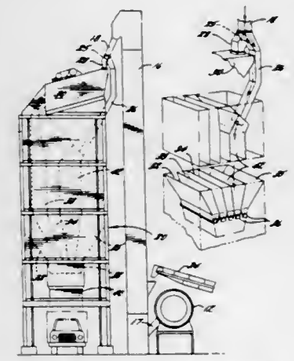
c. and at least one sheet metal web having a central portion spaced from said top panel and disposed between and segregating two adjacent drawer recesses and having at least a segment thereof substantially spanning the distance between said side panels, and said web having edge portions joined to said side panels.

5,251,975
EXTENDABLE AND RETRACTABLE UNDERCOUNTER CONTAINER ASSEMBLY FOR RECYCLABLE MATERIALS
Thomas F. Braun, and Manfred H. Braun, both of 250 Jackson Ave., Mineola, N.Y. 11501
Filed Mar. 13, 1992, Ser. No. 850,680
Int. Cl.[5] A47B *46/00*
U.S. Cl. 312—334.16 **9 Claims**



1. A container assembly for recyclable material comprising a pair of slide supports, means mounting said slide supports in a space defined by an inner rear wall and an outer front wall, each of said slide supports including a stationary component connected with the mounting means and a movable component to move through an opening in said front wall, container means supported from said movable component for movement between an extended position oriented outwardly of the front wall to a retracted position inwardly of the front wall, said container means including an open upper end through which recyclable material may be positioned when the movable component and container means are in extended position, said means mounting the slide supports in said space also including a rear mounting bracket rigidly attached to the slide supports and a front mounting bracket rigidly attached to the slide supports, means detachably and adjustably connecting the rear bracket to the rear wall and means detachably and adjustably connecting the front bracket to an upper edge of said opening in the front wall, said means connecting the rear bracket to the rear wall including a pair of horizontally disposed support members oriented in superimposed relation to each other with a lower support member being adjustably connected to the rear wall, an upper support member resting on the lower support member, said upper support member including a pair of guide rods rigidly connected therewith, said rear bracket including apertured lug means slidably receiving the guide rods, spring means on said guide rods between the lug means and the upper support member to bias the upper support member against the rear wall to retain the upper support member in overlying engagement with the lower support member.

5,251,976
ASPHALT PLANT ADAPTED FOR THE BATCH PRODUCTION OF ASPHALT MIX CONTAINING RECYCLE ASPHALT PAVING
John Milstead, Chattanooga, Tenn., assignor to Astec Industries, Inc., Chattanooga, Tenn.
Filed Apr. 6, 1992, Ser. No. 863,831
Int. Cl.[5] B28C *7/04*
U.S. Cl. 366—18 **5 Claims**



1. An asphalt production plant comprising

a rotary drum dryer for heating and drying stone aggregate,

elevator means for conveying the heated and dried aggregate from said rotary dryer upwardly to an elevated discharge chute,

means for delivering a second material into said elevator means so that the second material is also conveyed to said discharge chute,

gate means communicating with said discharge chute for selectively directing material conveyed to said discharge chute either into a first duct or into a second duct,

an upright tower positioned adjacent said elevator means,

a plurality of aggregate bins mounted in the upper portion of said tower and positioned in a laterally aligned relationship,

a recycle bin mounted in the upper portion of said tower so as to be laterally aligned with said aggregate bins and intermediate selected ones of said aggregate bins,

aggregate screen means mounted to said tower above said aggregate bins for receiving aggregate delivered through said second duct and for separating the aggregate into groups of varying average size and delivering the separated groups into respective ones of said aggregate bins,

said first duct communicating directly with an upper portion of said recycle bin and delivering the second material to the recycle bin without passing through said screening means,

weigh hopper means mounted in sad tower below said aggregate bins and said recycle bin for weighing out a se-

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lected amount of the material from each of said aggregate bins and said recycle bin, and

mixing means mounted in said tower below said weigh hopper means for selectively receiving material from said weigh hopper means and mixing the same with a predetermined amount of liquid asphalt, and for delivering the resulting asphalt mix into an underlying receiver.

5,251,977

APPARATUS FOR PRODUCING RUBBER MIXTURES

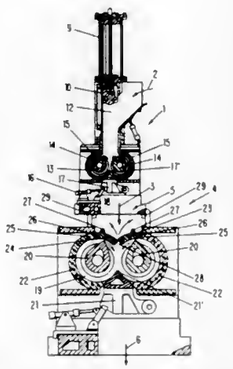
Julius Peter, Dommayergasse 7/13, A-1130 Vienna, Austria, and Günter Weckerle, Northeim, Fed. Rep. of Germany, assignors to Julius Peter, Vienna, Austria and Continential Aktiengesellschaft, Hanover, Fed. Rep. of Germany, a part interest

Filed Jul. 24, 1992, Ser. No. 919,205

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1991, 4124600

Int. Cl.[5] B19B *1/06*

U.S. Cl. 366—91 **11 Claims**



1. An apparatus for producing rubber mixtures, comprising:

for producing a master batch, a ram kneader that operates in a batch process;

disposed below said ram kneader, a ram-less kneader for producing a final mixture, with said ram-less kneader having two rotors with parallel axes of rotation; and

chute means disposed between said ram kneader and said ram-less kneader for supplying rubber mixture to said ram-less kneader via an inlet thereof, with said chute means having walls and with at least portions of said walls forming closure means that are pivotable between an upwardly pivoted position to expose said inlet of said ram-less kneader and a downwardly pivoted position to at least partially close off said inlet of said ram-less kneader, wherein in a downwardly pivoted state, said portions of said walls of said chute means extend into a space provided between said two rotors of said ram-less kneader, and wherein said portions of said walls of said chute means are pivotable about horizontal axes that extend parallel to said axes of rotation of said rotors of said ram-less kneader.

5,251,978

DRIVING DEVICE FOR A VORTEX MIXING APPARATUS

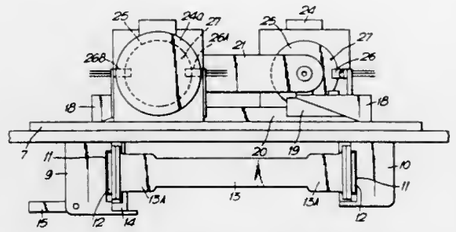
Richard C. Hall, and Marcus A. Lewis-Stevenson, both of Abingdon, United Kingdom, assignors to Bellhouse Technology Limited, Abingdon, United Kingdom

Filed Mar. 11, 1992, Ser. No. 838,457

Claims priority, application United Kingdom, Sep. 11, 1989, 8920545

Int. Cl.[5] B01F *11/00;* **B01D** *65/08*

U.S. Cl. 366—198 **20 Claims**



1. A driving device for a vortex mixing apparatus comprises means for holding a mixing unit of a type having at each opposite end a pumping diaphragm for imposing a pulsatile flow on a liquid passing through a primary channel in the unit; two pistons, each arranged to cooperate with a respective one of the diaphragms and reciprocatable between a retracted position clear of the unit and an extended position in which it extends into a housing of the unit and compresses the respective diaphragm; driving means normally arranged to reciprocate the pistons in phase at the same frequency such that when one piston is moving from its retracted position to its extended position the other is moving from its extended position to its retracted position and vice versa; and control means arranged, upon stopping of the driving means, to cause both pistons to adopt retracted positions so that the unit may be inserted into, and removed from the holding means without interference from the pistons.

5,251,979

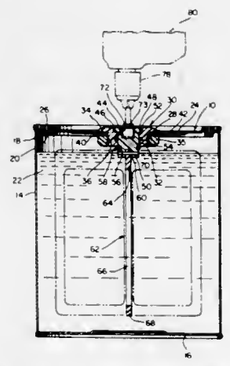
PAINT CAN COVER WITH MIXER

Paul R. Larsen, 2566 Highway F, Baileys Harbor, Wis. 54202

Filed Jul. 24, 1992, Ser. No. 918,004

Int. Cl.[5] B01F *7/32*

U.S. Cl. 366—248 **13 Claims**



1. A paint can cover with mixer comprising a circular member forming a cover for a paint can, a rotatable member extending through said circular member, means rotatably supporting the rotatable member and sealing the rotatable member in

relation to the circular member, said rotatable member having an upper end provided with means receiving rotational power from a power source to rotatably drive the rotatable member, and paddle means mounted on a lower end of said rotatable member and extending into a paint can for mixing paint in the can, said circular member including a central adapter portion having said bore formed therein, said adapter portion including a cylindrical body having a generally cylindrical vertical bore receiving said rotatable member with said rotatable member having a bottom extending below said body, said bore including first seal means mounted therein intermediate the ends in sealing engagement with the rotatable member and second seal means bridging the rotatable juncture between the rotatable member and a bottom end of said cylindrical body, each of said seal means being an O-ring seal, said first seal means being positioned in a groove in said body in communication with said bore and sealingly engaging the periphery of said rotatable member, said second seal means being positioned in a groove in the periphery of said rotatable member and sealingly engaging a lower end of said body, said body including a larger diameter bore at the upper end of said bore with the larger diameter bore defining an upwardly facing shoulder, said rotatable member including a peripheral, radially outwardly extending flange at an upper end thereof, said flange being received in the larger diameter bore and engaging said shoulder thereby limiting inward movement of the rotatable member into said body.

5,251,980

SENSING SYSTEM FOR MEASURING SPECIFIC VALUE OF SUBSTANCE TO BE MEASURED BY UTILIZING CHANGE IN THERMAL RESISTANCE

Jun Hiraoka; Setsuo Kodato, both of Atsugi, and Yoshinobu Naitoh, Odawara, all of Japan, assignors to Anritsu Corporation, Tokyo, Japan

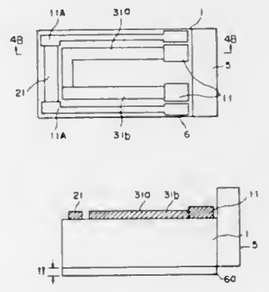
PCT No. PCT/JP91/01711, § 371 Date Aug. 10, 1992, § 102(e) Date Aug. 10, 1992, PCT Pub. No. WO92/10742, PCT Pub. Date Jun. 25, 1992

PCT Filed Dec. 13, 1991, Ser. No. 920,484

Claims priority, application Japan, Dec. 14, 1990, 2-410875; Apr. 23, 1991, 3-119261

Int. Cl.[5] G01N *25/00, 25/18*

U.S. Cl. 374—7 **20 Claims**



1. A sensor comprising:

a heat sink;

a substrate at least a portion of which can be thermally coupled to a substance to be measured, another portion of which is thermally coupled to said heat sink, and which is formed of a thermally poor conductor;

a temperature difference setting thin film formed on said substrate to provide a temperature difference to said substrate;

a temperature difference detection thin film formed on said substrate to detect a change in temperature difference provided by said temperature difference setting thin film;

first electrode means, formed on said substrate, for supplying a predetermined electrical power to said temperature difference setting thin film; and

second electrode means, formed on said substrate, for outputting an output from said temperature difference detection thin film, and

wherein a change in temperature difference provided to said substrate before and after the substance to be measured is thermally coupled to said substrate is converted into a change in thermal resistance of said substrate, and the change in thermal resistance of said substrate is output as a temperature difference information signal for calculating a desired specific value of the substance to be measured.

12. A sensing method comprising the steps of:

setting a temperature difference in a substrate at least a portion of which can be thermally coupled to a substance to be measured;

detecting a first temperature difference in said substrate in a state wherein the substance to be measured is not thermally coupled to said substrate;

thermally coupling said substrate to the substance to be measured;

detecting a second temperature difference in said substrate in a state wherein the substance to be measured is thermally coupled to said substrate;

converting the first and second temperature differences into a thermal resistance of said substrate; and

calculating a specific value of the substance to be measured according to the converted thermal resistance and known information of the substance to be measured.

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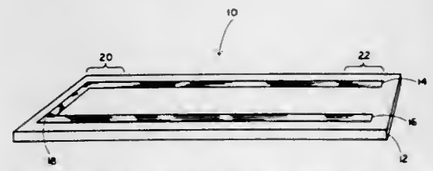
CORROSION RESISTANT THIN FILM THERMOCOUPLES AND METHOD

Kenneth G. Kreider, Potomac, Md., assignor to United States of America, as Represented by the Secretary of Commerce, Washington, D.C.

Filed Apr. 28, 1992, Ser. No. 874,684

Int. Cl.[5] G01K *7/02;* **H01L** *35/12*

U.S. Cl. 374—179 **15 Claims**



1. Thermocouples comprising a junction and thin film thermoelements of ruthenium oxide and iridium oxide.

9. A method of sensing the temperature of a corrosive environment comprising contacting the corrosive environment with a thermocouple formed of RuO_2—IrO_2 and using an electrical output of said thermocouple as an indication of the temperature of the corrosive environment.

5,251,982

DISCHARGING DEVICE FOR A PACKAGING CONTAINER

Stenstrom Lennart A., Trosa; Lennart S. Wahlstrom, Saltsjobeden, and Bert S. Wikholm, Tullinge, all of Sweden, assignors to AB Tetra Pak, Sweden

PCT No. PCT/SE89/00394, § 371 Date Mar. 6, 1991, § 102(e) Date Mar. 6, 1991, PCT Pub. No. WO90/00503, PCT Pub. Date Jan. 25, 1990

Continuation of Ser. No. 623,800, Mar. 6, 1991, abandoned. This PCT application Jul. 6, 1989, Ser. No. 967,555

Claims priority, application Sweden, Jul. 8, 1988, 8802557

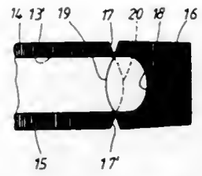
Int. Cl.[5] B65D *33/36*

U.S. Cl. 383—209 **4 Claims**

1. A dispensing package comprising a reservoir means for storing a flowable material and a dispensing means extending from said reservoir means to a free end for dispensing said

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flowable material from said reservoir means, said dispensing means including first and second confronting flexible panels sealed together along a pair of spaced edges to define a hollow channel between said confronting panels, said first panel including a first weakening extending arcuately from a first point on said first edge to a second point on said second edge, said second confronting panel having a second weakening extending arcuately from said first point on said first edge to said second point on said second edge, said first and second weakenings together defining a grip flap at said free end of said dispensing means, said first arcuate weakening being disposed further from said reservoir means than said second arcuate weakening such that, upon removal of said grip flap, an access opening is created at said free end of said dispensing means, wherein a portion of an inner wall of said channel defined by an inner surface of one of said confronting flexible panels protrudes from said access opening so as to act as an entering surface for a discharging device.

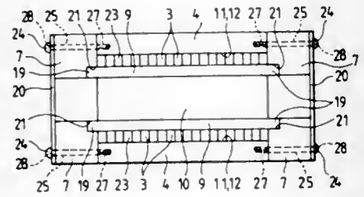


5,251,983

LINEAR MOTION ROLLING GUIDE UNIT

Katsuya Anada, and Yasumasa Ooya, both of Gifu, Japan, assignors to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Jan. 29, 1993, Ser. No. 10,865
Claims priority, application Japan, Jan. 31, 1992, 4-040719
Int. Cl.[5] F16C *29/06*
U.S. Cl. 384—45 **6 Claims**



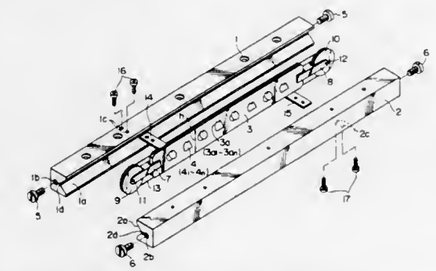
1. In a linear motion rolling guide unit which consists of:
a track rail having a pair of upper and lower raceway surfaces formed longitudinally extending on each side wall thereof;
a casing saddling the track rail and being able to slide relative to the track rail, the casing having a pair of upper and lower raceway surfaces formed therein at positions facing the rail raceway surfaces, the casing having a V-shaped groove formed between the upper and lower raceway surfaces;
end caps mounted to each longitudinal end of the casing;
raceways formed between the upper and lower raceway surfaces of the casing and the rail raceway surfaces of the track rail;
a number of rolling elements rolling and circulating through the raceways; and
a retainer secured to the casing and having an engagement projecting portion and rolling element support surfaces extending from the engagement projecting portion, the engagement projecting portion being adapted to engage with the V-shaped groove in the casing, the rolling element support surfaces holding the rolling elements in such a way as to prevent them from coming off the raceways with the retainer secured to the casing;
the linear motion rolling guide unit characterized in that:
the retainer is formed to have a predetermined overall length greater than that of the casing;
the end surfaces of the end caps on the casing side are formed with engagement grooves with which the ends of the retainer engage;
the engagement grooves are formed at such positions that the end caps can be set at a specified position on the casing; and
the ends of the retainer are engaged in the engagement grooves in the end caps to position the end caps with respect to the casing.

5,251,984

LINEAR MOTION GUIDE UNIT HAVING A SYNCHRONIZED RETAINER

Tatsuo Mottate, Saitama, Japan, assignor to Nippon Thompson Co., Ltd., Japan

Filed Dec. 20, 1991, Ser. No. 811,521
Int. Cl.[5] F16C *29/00*
U.S. Cl. 384—47 **5 Claims**



1. A linear motion guide unit, comprising:
a pair of elongated guide members, which are provided to be relatively movable in parallel with a longitudinal axis of said unit, each of said pair of guide members being formed with a guide groove having a predetermined cross sectional shape;
a plurality of rolling members disposed in a space defined by and in rolling contact with the guide grooves of said pair of guide members;
a retainer assembly movably disposed in said space for retaining said plurality of rolling members spaced apart from one another and in position, said retainer assembly including an elongated retainer member and a pair of grooved rotating members rotatably provided at opposite ends of said retainer member, a total length of said retainer assembly being less than each of said pair of guide members;
an endless wire extended around and between said pair of rotating members;
first connecting means for connecting a first point on said endless wire to one of said pair of guide members; and
second connecting means for connecting a second point on said endless wire to the other of said pair of guide members.

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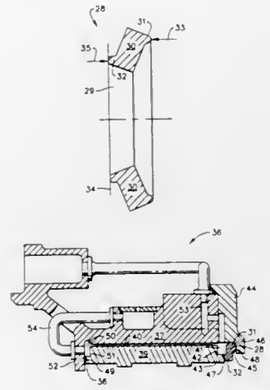
SQUEEZE FILM DAMPER SEAL

Fred J. Monzel, Loveland, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Sep. 26, 1991, Ser. No. 765,768
Int. Cl.[5] F16C *27/00*
U.S. Cl. 384—99 **3 Claims**

1. In a squeeze film shaft damper having a bearing housing

with an annular chamber therein and an annular bearing support member fitted in said chamber for limited radial motion and defining a thin annular squeeze film space between opposing circumferential planar surfaces of said bearing support member and said annular chamber, an improvement therefore comprising
(a) a part of said housing overlying and spaced from said bearing support on one side thereof to define an annular recess therewith, and



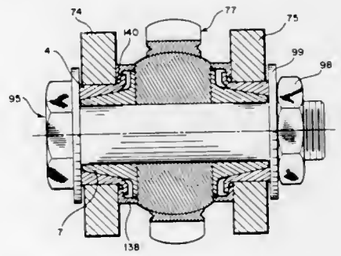
(b) an annular conical spring ring seal positioned compressingly in said recess to circumferentially seal said squeeze film space, and
(c) wherein a flexing action of said spring ring seal in said recess transfers an axial force acting on a radially outer rib of said spring ring seal to an axially opposing force acting on a radially inner rib of said spring ring seal.

5,251,986

BUSHING ASSEMBLY

Aldo Arena, Smithtown, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Aug. 10, 1992, Ser. No. 926,311
Int. Cl.[5] F16C *33/04*
U.S. Cl. 384—272 **13 Claims**



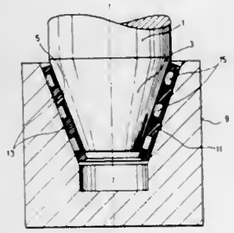
1. A bushing assembly for use in a joint connection comprising:
a first sleeve member having first and second ends, said first sleeve member having a geometrically uniform outer contour and an inner contour that tapers from said second end toward said first end, said first end including an outwardly projecting shoulder area;
a second sleeve member having first and second ends and an outer contour that tapers from said first end toward said second end, the outer contour of said second sleeve member having a geometry that conforms to the inner contour of said first sleeve member such that said second sleeve member can concentrically fit within said first sleeve member; and
a ring member extending from the first end of said second sleeve member and engaging said shoulder area for maintaining said second sleeve member within said first sleeve member after said first and second members are concentrically assembled.

5,251,987

PRESETTING DEVICE FOR TOOLS

Johannes Supanz, Hard, Austria, assignor to PWB AG, Altstätten, Switzerland

Filed Feb. 4, 1992, Ser. No. 830,696
Claims priority, application Switzerland, Feb. 4, 1991, 00333/91-8
Int. Cl.[5] F16C *33/58, 33/56*
U.S. Cl. 384—571 **9 Claims**



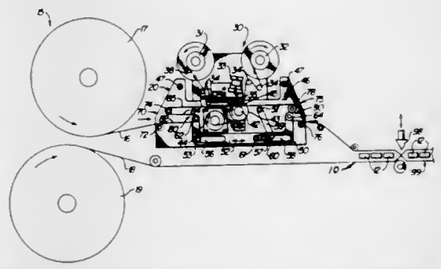
1. A presetting device for a tool having a conical bearing pin, the device comprising
an anti-friction bearing bushing for receiving the bearing pin of the too;
a bearing assembly disposed between an inner conical wall surface of said bushing and an outer conical surface of said pin upon insertion of said pin in said device, said bearing assembly comprising a bearing sleeve and a plurality of needle bearing rollers;
wherein said sleeve comprises a plurality of openings for enclosing and positioning respective ones of said rollers, each of said rollers extending beyond an outer surface of said sleeve to contact said bushing and extending beyond an inner surface of said sleeve to contact said pin upon insertion of sad pin in said device.

5,251,988

IN-LINE PRINTER FOR PACKAGING PROCESS

Jimmy R. Frazier, Norman, Okla., assignor to Burford Corporation, Maysville, Okla.

Filed Oct. 22, 1991, Ser. No. 780,770
Int. Cl.[5] B41J *3/02, 11/26;* **B65H** *20/24*
U.S. Cl. 400—120 **21 Claims**



1. A method of printing on a web of material comprising the steps of: moving a web along a serpentine path around rollers

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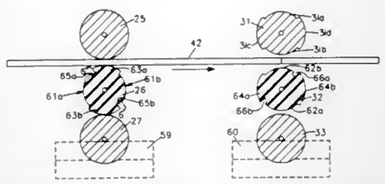
on a carriage to form an intermediate section in a middle portion of the web and a remaining portion of the web; forming first and second bights in the intermediate section of the web; moving the remaining portion of the web at a first surface speed; moving the intermediate section of the web at a second surface speed different from the first surface speed of the remaining portion of the web such that tension in the web moves the carriage for storing web material in the second bight and dispensing web material from the first bight; printing an image on the intermediate section of the web; and moving the intermediate section of the web at a third surface speed to store web material in the first bight.

5,251,989

APPARATUS FOR MAKING A MULTI-COLORED PRINTING RIBBON

Eugene Di Luco, 1760 Miriam St., North Brunswick, N.J. 08902

Filed Aug. 10, 1992, Ser. No. 927,461
Int. Cl.[5] B41J *31/09*
U.S. Cl. 400—240.3 **24 Claims**



1. Apparatus for making a two color impact printing ribbon which can transfer a color from said ribbon upon impact by a printing device hammer from a continuous web of base colored ribbon stock, said colors occurring in predetermined sequential segments of alternating colors, each segment of color extending across the entire width of said web transverse to the direction of advance of said web through said apparatus comprising:

a) a first color depositing station for depositing two spaced segments of a first color on said web, said first color permeating said web;

b) a second color depositing station for depositing two spaced segment of a second color on said web, said second color permeating said web;

c) means to advance said web sequentially through said first and said second color depositing stations; and

d) control means operatively connected to said first and said second color depositing stations to control the depositing of said segments of said second color on said web so that a first of said two spaced apart segments of said second color is between said two segments of said first color and the second of said segments of said second color follows the second of said segments of said first color, said first and said second color segments being adjacent to but not overlapping adjacent color segments.

5,251,990

METHOD OF APPLYING SKIN PRODUCTS USING AN ELONGATED STRIP

Elizabeth C. Vought; David I. Wood, both of 9141 W. 3rd St., Beverly Hills, Calif. 90210, and Albert J. Wood, 300 Orchard Way, Merion, Pa. 19066

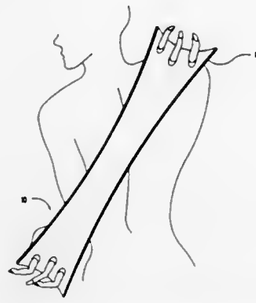
Continuation-in-part of Ser. No. 400,795, Aug. 30, 1989, abandoned. This application Aug. 24, 1990, Ser. No. 572,013
Int. Cl.[5] A45D *34/04*
U.S. Cl. 401—8 **2 Claims**

1. A method of applying lotion to the human body comprising the steps of

applying the lotion to a surface of an elongated strip of material having two ends;

grasping each of said ends with respective hands;

bulging the lotion receiving side of said strip by tensioning the strip;



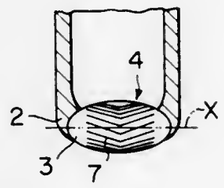
contacting the bulged portion with the lotion thereon to an area of said body.

5,251,991

ROLL-POINT PEN

Yoshibito Akutsu, 36, Minami 6-Jo 1-chome, Ashiyoro-cho, Ashiyoro-gun, Hokkaido, Japan

Continuation of Ser. No. 782,174, Oct. 24, 1991, abandoned. This application Sep. 18, 1992, Ser. No. 947,360
Claims priority, application Japan, Oct. 26, 1990, 2-289670
Int. Cl.[5] B43K *8/20*
U.S. Cl. 401—208 **3 Claims**



1. A roll-point pen comprising:

an ink reservoir having a tip portion, said tip portion having a spheroidally-shaped inner surface; and

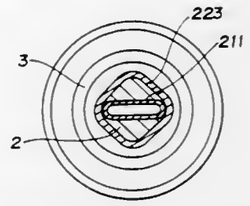
a roll having an ellipsoidal portion and spheroidal portions, said roll being rotatably held, along a longest axis thereof, at said tip portion of said ink reservoir, wherein said ellipsoidal portion includes a plurality of ridges formed on the circumferential surface thereof such that each of the ridges is oblique relative to the longest axis of said roll, wherein a substantial portion of said ellipsoidal portion of said roll along said longest axis of said roll directly communicates with ink contained within said ink reservoir, and wherein said spheroidally-shaped inner surface of said tip portion substantially abuts said spheroidal portions of said roll.

5,251,992

LIQUID CONTAINER WITH VARIABLE SHAPED TIP

Shigeo Iizuka, Funabashi, Japan, assignor to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Division of Ser. No. 794,666, Nov. 18, 1991, Pat. No. 5,180,245, which is a continuation of Ser. No. 651,010, Feb. 5, 1991, abandoned, which is a division of Ser. No. 400,884, Aug. 30, 1989, Pat. No. 5,007,757. This application Aug. 18, 1992, Ser. No. 931,318
Claims priority, application Japan, Sep. 2, 1988, 63-115833; Sep. 8, 1988, 63-118257
Int. Cl.[5] A46B *11/00, 9/10*
U.S. Cl. 401—268 **3 Claims**



1. A liquid container comprising:

a shaft;

a core extending upwardly from an upper end of the shaft;

a liquid supply means mounted on an upper end of said shaft, said liquid supply means comprising a cylinder, a tip keep and a tip, said core having formed on an upper portion thereof a flat tube comprised of a major axis and a short axis which projects upwardly from an upper end surface of a peripheral wall of the cylinder, said cylinder having a lower portion rotatably fitted to an upper portion of said shaft;

said tip keep having a lower portion unrotatably fitted in an inner surface of said cylinder; and

a flat cylinder comprised of a major axis and a short axis formed at an upper portion of a cylindrical wall of the tip keep and projected upwardly from an upper end surface of said cylinder,

said tip rotatably embracing said flat tube on an axis thereof on a lower portion of said tip,

said tip having a lower outer surface which is unrotatably gripped by said tip keep,

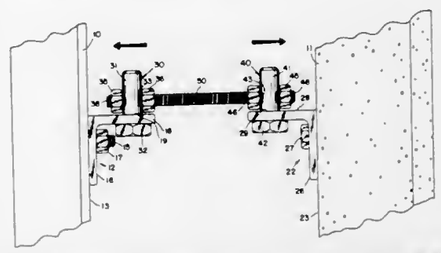
said major axis of said flat tube being larger than said short axis of said flat cylinder.

5,251,993

CONNECTING STRUCTURE

James W. Sigourney, 101 Loudoun St., SW., Leesburg, Va. 22075

Filed Aug. 25, 1992, Ser. No. 934,239
Int. Cl.[5] F16B *5/02*
U.S. Cl. 403—52 **11 Claims**



1. A structure for connecting a fixed support to a facing panel located in position to support or mask the face of an excavation while making allowance for Possible misalignment between the support and the panel, comprising

a first bracket having at least two legs extending in substantially perpendicular relationship to each other, one of said legs of said first bracket being positioned substantially contiguous with said excavation face and rotatable with respect thereto, and the other leg extending substantially outwardly therefrom in the direction of said facing panel,

a second bracket having at least two legs extending in substantially perpendicular relationship to each other, one of said legs of said second bracket being positioned substantially contiguous with said facing and rotatable with respect thereto, and the other leg of said second bracket extending outwardly in the direction of said excavation face,

each of said outwardly extending legs of said brackets having an aperture therethrough,

pins positioned in the apertures of the outwardly extending legs of each of said brackets, said pins each having head and shank portions, said shank portions being located in said apertures and extending therethrough and having a part protruding beyond the surface of said outwardly extending legs, each of said pins being formed with a bore extending through its respective shank portion at said protruding part thereof, and

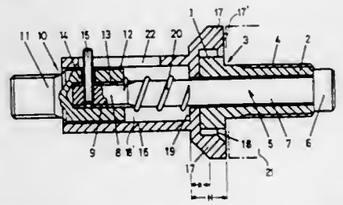
a rod extending between and mounted for rotary motion in said bores of said shank portions of said pins and thereby joining said pins and their respective brackets, whereby by varying the radial positions of said rod and said brackets fixed support and said facing panel may be joined despite misalignment between them.

5,251,994

DEVICE FOR A CONNECTION ELEMENT

Marcel Strässle, Kirchberg, Switzerland, assignor to Syma Intercontinental S.A., Kirchberg, Switzerland

PCT No. PCT/CH91/00040, § 371 Date Sep. 10, 1991, § 102(e) Date Sep. 10, 1991, PCT Pub. No. WO91/12384, PCT Pub. Date Aug. 22, 1991
PCT Filed Feb. 13, 1991, Ser. No. 752,490
Claims priority, application Switzerland, Feb. 16, 1990, 507/90-8
Int. Cl.[5] F16B *7/00*
U.S. Cl. 403—171 **11 Claims**



1. A device for connecting a rod (**21**) to a junction, the device comprising:

a bolt (**5**) having a threaded part (**11**) for fastening said bolt to the junction;

a sleeve insert (**3**) having a head (**1**) integral with a tubular part (**2**), said sleeve insert (**3**) rotatably fastening said bolt (**5**) to an end of the rod (**21**), thereby allowing axial movement of the bolt (**5**);

a guide sleeve (**16**, **16'**) having a front part and a rear part, said bolt (**5**) having a sliding means (**10**) for allowing said bolt to be connected, slidably axially, to the front part of said guide sleeve (**16**, **16'**) so that rotary movement of said guide sleeve is transmitted to said bolt (**5**);

an approximately bell-shaped flange (**17**) formed as one piece with said guide sleeve (**16**, **16'**) at a rear part thereof, said bell-shaped flange (**17**) defining an inside space (**18**) having a transverse dimension which is greater than that

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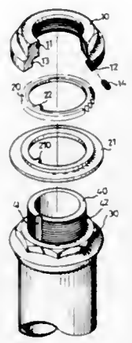
which would be necessary to accommodate the head (1) of said sleeve insert (3) therein, so that there is an open space (18) between external lateral surfaces of said head (1) and internal lateral surfaces of said flange delimiting said inside space (18), said guide sleeve and bell-shaped flange (17) being rotatable relative to the head (1) of said sleeve insert (3).

5,251,995

COUPLING OF A HEAD SET

Yi C. Chi, No. 139-5, An Mei Rd., Mei Shan Village, Hou Li Hsiang, Taichung Hsien, Taiwan

Filed Nov. 12, 1992, Ser. No. 975,623
Int. Cl.[5] B62K *21/00*
U.S. Cl. 403—320 **1 Claim**



1. A head set comprising a steerer tube including an outer thread formed in an upper and outer portion thereof and a groove longitudinally formed in said upper and outer portion thereof, a sleeve threadedly engaged on said steerer tube, a ratchet gear engaged on said steerer tube and including a key extended radially inwards for engagement with said groove of said steerer tube, and a compression nut threadedly engaged on said steerer tube and engaged on said ratchet gear in order to compress said ratchet gear in place when said compression nut is rotated in an active direction, said compression nut including an annular shoulder formed in an inner and lower portion thereof for accommodating said ratchet gear, and a screw hole formed therein and communicated with said annular shoulder, and a screw threaded in said screw hole of said compression nut for engagement with said ratchet gear received in said annular shoulder, whereby, said compression nut is prevented from rotating in a reverse direction relative to the steerer tube.

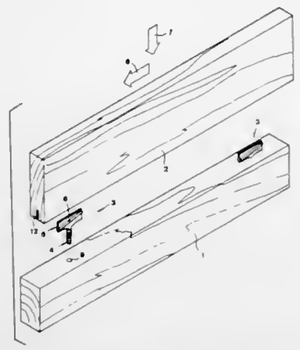
5,251,996

ELEMENT FOR CONNECTING TWO PARTS

Mats Hiller, P1 4010, and Leif Skogsberg, Box 3155, both of S-810 10 TorsÅker, Sweden

Filed Apr. 20, 1992, Ser. No. 870,940
Claims priority, application Sweden, Apr. 25, 1991, 9101249
Int. Cl.[5] B25G *3/26*
U.S. Cl. 403—406.1 **3 Claims**

1. A connecting element for connecting two parts (1, 2) at a general connection plane (P), said element comprising: first means (4) for connecting the element (3) relative to a first of the parts (1) and second means (5) for connecting the element (3) relative to a second of the parts (2), said second means (5) comprising actuation members (6) which on relative movement of the parts along the connection plane (P) move the parts toward each other, said actuation members (6) comprising ridges which are inclined relative to the connection plane (P), said ridges having a fluke-like design so as to present, on movement of the parts (1, 2) in a first direction toward each other, a relatively small resistance to pressing of the ridges into the second part (2) but, on the contrary, present a relatively great resistance to withdrawal of the ridges from the second part (2) in a second opposite direction, said first means (4) being shaped to connect the element (3) relative to the first part (1) sufficiently rigidly to avoid loosening of the element from the first part (1) under influence of forces occurring when the parts (1, 2) are moved relative to each other along the connection plane (P) in order to make the actuation members (6) operate to tighten the parts (1, 2) against each other, said



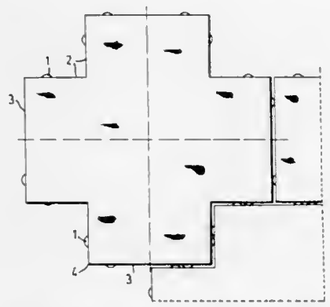
second means (5) comprising a plate portion (11), the actuation members comprising at least two of said ridges arranged and aligned with each other on the plate portion (11), on opposite flat sides of the plate portion, the second means (5) being shape to penetrate into a groove (12) in the second part (2), the actuation members (6) being adapted to grippingly cooperate with walls of the groove (12) in the second part (2), and the first means (4) comprising a pin adapted for reception in a hole (9) in the first part (1).

5,251,997

EMBEDDABLE PAVING BLOCK INTENDED FOR THE SURFACING OF ROADWAYS AND OTHER AREAS OF GROUND AND THE ROADWAYS OR OTHER AREAS OF GROUND WHICH ARE SURFACED WITH SUCH PAVING BLOCKS

Jean-Jacques Brock, Provedroux 12, B - 6690 Vielsalm, Belgium

Filed Nov. 14, 1991, Ser. No. 792,282
Claims priority, application Belgium, Nov. 16, 1990, 09001078
Int. Cl.[5] E01C *5/00*
U.S. Cl. 404—29 **5 Claims**



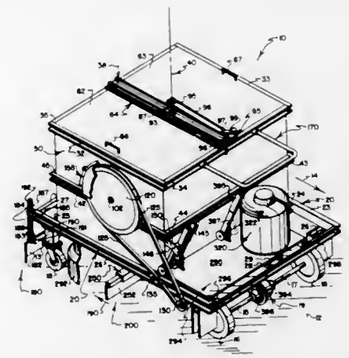
1. A paving block adapted for disposition in adjacent relationship to at least one identical block to form a paved surface overlying a surface to be paved, said paving block comprising:
a body having a cruciform shape and centered on a vertical axis, said body being formed with a top surface and a bottom surface and being provided with four rectilinear arms of the same length and width and angularly equispaced about said axis, each of said arms being formed with:
a respective pair of parallel identical lateral faces extending between said top and bottom surfaces,
a respective end face bridging the pair of lateral faces and extending between said top and bottom surfaces, said end face meeting said lateral faces along a respective pair of vertical edges, and
a plurality of ribs formed on said lateral and end faces and extending substantially parallel to said axis from said bottom surface and terminating short of said top surface, each of said faces being provided with at least one respective rib of said plurality of ribs spaced from a respective one of said vertical edges and protruding from the respective face of one of the paving blocks toward a corresponding face of an adjacent identical block formed with respective ribs so that ribs on the lateral faces of one block abut end faces of another block and said ribs of adjoining faces of said blocks are mutually offset and spaced from one another upon said blocks forming a single surface pattern.

5,251,998

METHODS AND APPARATUS FOR DISPENSING, MIXING AND APPLYING COATING CONSTITUENTS TO TRAFFIC SURFACES, AND TRAFFIC SURFACES COATED USING SUCH METHODS

Alexander Laditka, 4741 Dalebridge #C-10, Warrensville Hts., Ohio 44128

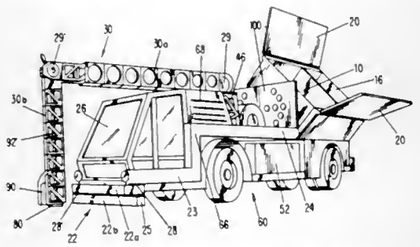
Continuation-in-part of Ser. No. 586,909, Sep. 24, 1990, Pat. No. 5,085,537, which is a continuation-in-part of Ser. No. 368,084, Jun. 19, 1989, Pat. No. 4,958,955, which is a continuation of Ser. No. 213,449, Jun. 28, 1988, abandoned, which is a continuation of Ser. No. 85,253, Aug. 11, 1987, abandoned, which is a continuation of Ser. No. 892,337, Aug. 1, 1986, abandoned, which is a continuation-in-part of Ser. No. 532,742, Sep. 16, 1983, Pat. No. 4,603,999, which is a continuation-in-part of Ser. No. 408,484, Aug. 16, 1982, Pat. No. 4,477,203. This application Feb. 3, 1992, Ser. No. 829,956
The portion of the term of this patent subsequent to Feb. 4, 2009, has been disclaimed.
Int. Cl.[5] E01C *7/06*
U.S. Cl. 404—75 **24 Claims**



1. A method of applying a substantially uniform coating composition to contiguous selected portions of a traffic surface by using a power-driven apparatus, wherein the method comprises the following steps that are performed substantially concurrently, including:
a) depositing a plurality of coating composition ingredients upon selected portions of a traffic surface to be coated;
b) moving at least one set of rotary tools along a forward path of travel at a controlled forward velocity to bring the set of rotary tools into contact with deposited coating composition ingredients, with the set of rotary tools including an associated rotary structure having 1) a plurality of associated depending blades that are arranged in an array about an associated center axis that extends substantially normal to the selected portions of the traffic surface, and 2) having connection means movably connecting at least selected ones of the associated blades to the associated rotary structure so that, when the set of rotary tools is rotated about the associated center axis, at least said selected ones of the associated blades are permitted to move a limited amount relative to the associated rotary structure to accommodate the character of said selected portions of the traffic surface to maintain relatively close, substantially parallel contact with such selected portions of the traffic surface as are engaged by the associated blades;
c) rotating the set of rotary tools about its associated center axis at a controlled rate of tool rotation with at least said selected associated blades being urged into substantially continuous contact with said selected portions of the traffic surface and into contact with coating composition ingredients deposited thereon to effect a relatively rapid mixng of the deposited ingredients to achieve a condition of substantially uniform coating consistency;
d) applying to said selected traffic surface portions a coating of substantially uniform consistency that results from said mixing of said deposited ingredients, with the application being effected by continuing to rotate the set of rotary tools about its associated center axis at said controlled rate of tool rotation, with at least said selected associated blades moving relative to their associated rotary structure as is needed to conform to the contour of and to substantially maintain contact with said selected traffic surface portions; and,
e) with the aforedescribed steps that are performed substantially concurrently including the steps of:
i) mixing within a fluid reservoir at least a fluid portion of the coating composition ingredients that are to be deposited onto the selected traffic surface portions, with said mixing within a fluid reservoir being effected at least in part by operating blender means within a fluid reservoir that is located atop the rotating set of rotary tools, and with the operation of the blender means serving to assist in maintaining the homogeneity of the fluid portion of the coating composition ingredients carried within the reservoir;
ii) ducting a regulated flow of said substantially homogenous fluid mixture of ingredients from the reservoir to and through a discharge station so as to deposit the flow of ingredients onto selected traffic surface portions that underlie the discharge station, with the discharge station being located substantially centrally with respect to the rotating, depending blades of said set of rotary tools; and,
iii) moving the center axis of said set of rotary tools along said forward path of travel and at said controlled forward velocity, with said movement along said forward path of travel and at said controlled forward velocity serving "in concert" with said "regulated" dispensing and flow of coating ingredients, and serving "in concert" with said controlled rate of rotation of said set of rotary tools to effect the application of a substantially uniform coating to the contiguous surface area of said selected traffic surface portions.

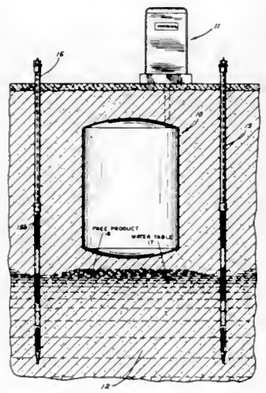
VOL 1155 ISS 2 OCT 12 1993 UMI

5,251,999
SELF-PROPELLED PAVEMENT REPAIR APPARATUS
Hilton G. McCracken, 8032 Edith, NE., Albuquerque, N. Mex. 87113
Filed Mar. 25, 1992, Ser. No. 866,897
Int. Cl.[5] E01C *19/06*
U.S. Cl. 404—109 35 Claims



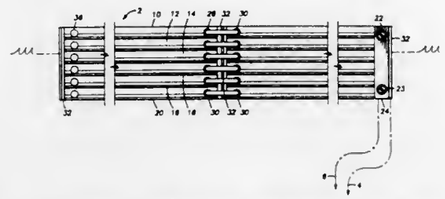
1. An apparatus for repairing an area of pavement comprising:
means comprising a wheeled chassis;
means comprising an articulated crane upon said chassis;
means for storing materials on said chassis; and
means for transporting said materials from said storing means to the pavement area to be repaired.

5,252,000
FREE PRODUCT COLLECTOR AND METHOD
Clifford E. Mohs, Minneapolis, Minn., assignor to Timothy E. Mohs, Minneapolis, Minn.
Filed Jun. 24, 1992, Ser. No. 903,340
Int. Cl.[5] E02B *15/04*; E21B *43/02*
U.S. Cl. 405—53 10 Claims



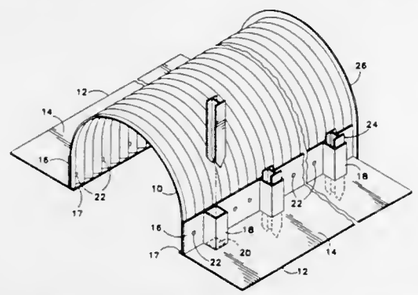
1. A passive free product collection structure in connection with a monitor well casing, comprising
a cylindrical member adapted to be suspended within a monitor well casing,
said cylindrical member having a slotted portion positioned to be at the interface of a water table and the free product,
a reservoir extending below said cylinder being releasably sealed thereto,
said cylindrical member and said reservoir respectively having top walls having vertically aligned openings,
a pipe disposed into said cylinder through said opening therein and extending to said opening of said reservoir,
said pipe being sealed to said top wall of said reservoir about said opening therein,
a tube disposed within said cylinder about said pipe being radially spaced therebetween and extending to said top wall of said reservoir, and
a continuous wick disposed over the sides of said tube, said wick repelling water and by capillary action selectively absorbing and collecting said free product from said water table, a siphoning action being established through said wick to drain said free product into said reservoir.

5,252,001
OIL SPILL INFLATABLE BARRIER
Kenneth Quinn, P.O. Box 784, Pearland, Tex. 77581
Filed Dec. 18, 1991, Ser. No. 808,889
Int. Cl.[5] E02B *15/04*
U.S. Cl. 405—68 2 Claims



1. An inflatable type barrier using an air and water supply for the containment of spills of contaminating liquids floating on the surface of a body of water, comprised of:
a. a plurality of longitudinal, adjacent cells;
b. a valued manifold providing a means to control the introduction of air or water to individual cells;
c. a quick connecting hose coupling apparatus having a means to connect said plurality of cells for providing the air and water supply to each cell;
d. said plurality of longitudinal cells attached to one another sufficiently to withstand current forces of the water; and
e. said valved manifold including means for introduction of air and water ballast through said coupling apparatus after said cells are in the water.

5,252,002
NATURAL BOTTOM CULVERT AND METHOD FOR INSTALLATION
Jesse C. Day, Rte. 1 Box 846, Astoria, Oreg. 97103
Filed Jul. 14, 1992, Ser. No. 914,706
Int. Cl.[5] E01F *5/00*
U.S. Cl. 405—126 24 Claims

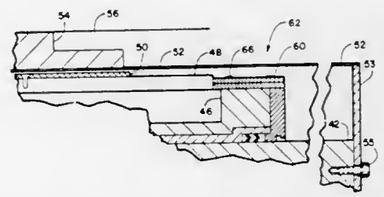


1. A stream culvert, comprising:
(a) an elongate arch-shaped member for placement over a stream with its longitudinal dimension co-directional with the stream;
(b) at least one elongate footing disposed along and connected to said arch-shaped member at one side of said arch-shaped member, said footing comprising a baseplate having a substantially-planar portion disposed so as to lie adjacent the surface of a bank of the stream when said arch-shaped member is placed over the stream, said footing having a plurality of apertures disposed therethrough and spaced along the elongate dimension of said arch-shaped member; and
(c) a plurality of elongate anchor posts adapted for placement through respective said apertures in said footing so that the respective longitudinal dimensions of said anchor posts are substantially perpendicular to said planar portion of said baseplate of said footing.

5,252,003
ATTENUATION OF ARSENIC LEACHING FROM PARTICULATE MATERIAL
John F. McGahan, Knoxville, Tenn., assignor to International Technology Corporation, Knoxville, Tenn.
Filed Oct. 29, 1990, Ser. No. 604,969
Int. Cl.[5] B09B *3/00*
U.S. Cl. 405—128 9 Claims

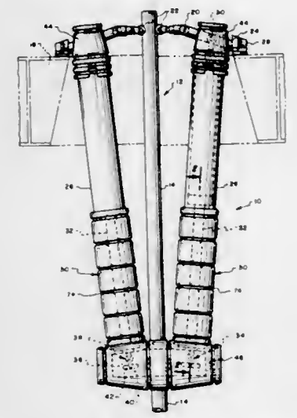
1. A method for the treatment of particulate materials containing arsenic compounds which comprises contacting the particulate material with a source of iron (III) ions and a source of magnesium (II) ions to stabilize the material against leaching of arsenic therefrom.

5,252,004
ROD ACCUMULATOR RISER TENSIONING CYLINDER ASSEMBLY
Bryan V. Butler, Irvine, and Jeffrey P. Taylor, Trabuco Canyon, both of Calif., assignors to Paul-Munroe Engineering, Orange, Calif.
Filed Jul. 13, 1992, Ser. No. 912,734
Int. Cl.[5] E21B *43/01*
U.S. Cl. 405—211 17 Claims



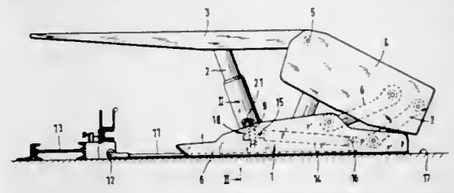
1. A riser tensioner cylinder assembly which comprises:
a tubular cylinder having an open first end and a closed second end;
a hollow piston rod positioned within said cylinder and adapted to slide inwardly and outwardly of said open first end;
said hollow rod adapted to contain a liquid and a gas under pressure;
the outer surface of said rod spaced from the inner surface of said cylinder to provide an annular space therebetween;
first seal means secured to the inner surface of said cylinder adjacent to said open end of said cylinder adapted to slidably seal against said outer surface of said rod;
second seal means secured to the outer surface of said rod extending into said cylinder, adapted to slidably seal against said inner surface of said cylinder; and
at least one opening through the hollow rod wall communicating between said annular space and the interior of said hollow rod adjacent to said second seal means;
whereby a pressurized fluid within said hollow rod will act to resist withdrawal of said rod from said cylinder and to move said rod toward a position fully inserted into said cylinder.

5,252,005
CYLINDER ROD FIRE PROTECTION SYSTEM
John D. Koos, The Woodlands, Tex., assignor to Paul-Munroe Hydraulics, Inc., Orange, Calif.
Filed Mar. 3, 1992, Ser. No. 845,271
Int. Cl.[5] E02D *5/62*
U.S. Cl. 405—224.4 9 Claims



8. A method of providing fire protection of the cylinder rod of a pneumatic-hydraulic cylinder comprising the steps of,
coating said cylinder with intumescent epoxy,
fitting a bearing tube over said intumescent epoxy,
providing a fire can of metallic material over said cylinder rods and telescoping over said epoxy and tube,
providing a jacket over said fire can comprising a thick interior blanket of ceramic fibrous materials and barrier films contained within woven ceramic cover means for heat and abrasion resistance.

5,252,006
MINE ROOF SUPPORT
Lubomir Plevak, Lunen, Fed. Rep. of Germany, assignor to Westfalia Becorit Industrietechnik GmbH, Fed. Rep. of Germany
Filed Feb. 9, 1993, Ser. No. 15,136
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1992, 4205940
Int. Cl.[5] E21D *23/04*
U.S. Cl. 405—297 16 Claims



1. In a mine roof support with a pair of spaced-apart floor-engageable skids, a roof-engageable structure, hydraulic prop means operably disposed between the skids and the roof-engageable structure, a shifting and guide means composed of a floor rail and a shifting ram disposed above the floor rail for advancing the support relative to a mineral face, a bridge member interconnecting front end regions of the skids relative to a mineral face, a lower surface of the bridge member being disposed above the floor rail and in confronting relationship thereto and a lifting mechanism comprising an upstanding piston and cylinder unit, the unit being extendible to engage on

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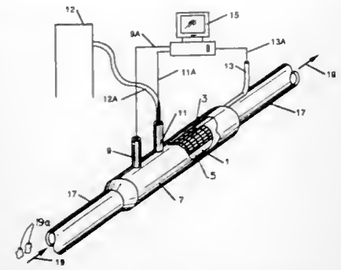
the floor rail to effect at least partially raising of the skids when the shifting ram is operated to advance the support, and means for detachably connecting the unit to the bridge member in a plurality of alternative height positions relative to the bridge member; the improvement comprising a stop member operably associated with the bridge member to provide a lower surface below that of the bridge member in confronting relationship to the floor rail to ensure when the unit is retracted it is maintained above the lower surface of the bridge member or the stop member in all the alternative positions of the unit.

5,252,007

APPARATUS FOR FACILITATING SOLIDS TRANSPORT IN A PNEUMATIC CONVEYING LINE AND ASSOCIATED METHOD

George E. Klinzing, Pittsburgh, Pa., and Shrikant Dhodapkar, Midland, Mich., assignors to University of Pittsburgh of the Commonwealth System of Higher Education, Pittsburgh, Pa.

Filed May 4, 1992, Ser. No. 878,400
Int. Cl.[5] B65G *53/66, 53/52*
U.S. Cl. 406—14 **25 Claims**



1. An apparatus for facilitating solids transport in a pneumatic conveying line, comprising:
an inner enclosure having a portion made of porous material and having a central passage and being spliced into said pneumatic conveying line so as to become part of said pneumatic conveying line;
an outer enclosure being of greater diameter than said inner enclosure and having a central passage which surrounds said inner enclosure to define a cavity therebetween;
gas purging means attached to and operatively associated with said outer enclosure for the controlled purging of gas from said pneumatic conveying line;
pressure measuring means attached to and operatively associated with said inner and outer enclosures for measuring pressure fluctuations across said porous material of said inner enclosure and
a control unit, operatively connected to said gas purging means and to said pressure measuring means, for controlling the purging of the gas from said pneumatic conveying line.

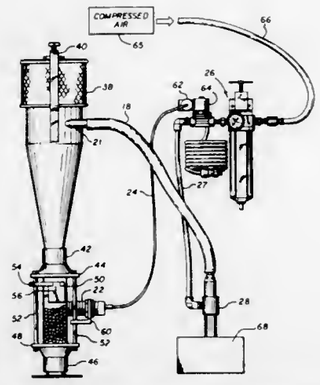
5,252,008

GRANULAR MATERIAL TRANSFER SYSTEM

Peter P. May, III, and Daniel T. Harnish, both of Carlsbad, Calif., assignors to Autoload, Inc., Carlsbad, Calif.

Filed Mar. 27, 1992, Ser. No. 859,147
Int. Cl.[5] B65G *53/66*
U.S. Cl. 406—23 **19 Claims**

1. A material transfer system for processing machine having an input chamber for receiving measured quantities of granular materials from a source of said materials comprising:
means mounted on said machine including a pressure relief chamber and a reservoir assembly, said reservoir assembly including a level sensor;
said pressure relief chamber including a conical section connected at its smaller end to said reservoir assembly, a filter at the opposite end of said chamber, an inlet conduit connected tangentially to said pressure relief chamber adjacent said opposite end, and an internal baffle deflecting flow from said inlet conduit toward said smaller and including an internal passage communicating said smaller end with said filter;
an accelerator tube and vortex unit connected to said conduit and to said source, a source of air under regulated pressure, and means supplying said air to said accelerator



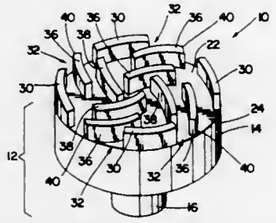
tube and vortex unit to cause said granular materials to flow through said conduit, said accelerator tube and vortex unit including a pipe with a venturi therein, a plurality of passages connecting said air supply means to the downstream side of said venturi and a smaller passageway connecting said air supply means to said venturi upstream of said plurality of passages; and
control means responsive to said sensor for controlling the flow of said air.

5,252,009

INDUSTRIAL AND ROADWAY IDENTIFICATION AND FLOOR SURFACE TREATMENT SYSTEM, AND DIAMOND SURFACE DRILL BIT FOR USE IN INSTALLING THE SYSTEM

Joseph Bossler, 78-625 Vista Del Sol, Indian Wells, Calif. 92210

Division of Ser. No. 644,901, Jan. 22, 1991, Pat. No. 5,158,393.
This application Sep. 3, 1992, Ser. No. 940,338
Int. Cl.[5] B23B *51/00*
U.S. Cl. 408—145 **9 Claims**



1. A rotary surface drill bit for forming a dry recess in a wearing surface, said drill bit comprising:
a base member including a rear portion having means for attachment to a rotary driver, and a generally planar forward portion having a circular periphery;
axially extending pilot means centered within said planar forward portion for engaging the surface to maintain the lateral position of said drill bit during operation;

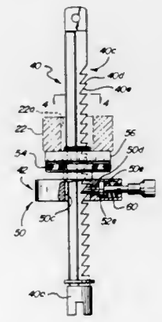
a plurality of diamond-impregnated peripheral gauge cutting element segments of arcuate configuration attached to said planar forward portion generally around the periphery thereof and spaced from each other so as to define a discontinuous circle with circumferential spaces between peripheral gauge cutting element segments; and
a plurality of diamond-impregnated inside cutting element segments of vane-like configuration attached to said planar forward portion and arranged in a generally radially extending pattern such that all areas of the surface within the peripheral extent of said drill bit at least up to said pilot means are cut away as said drill bit rotates during operation, and said inside cutting element segments promote airflow in a radially outward direction for cooling;
said peripheral gauge cutting element segments and said inside cutting element segments having generally flat cutting surfaces lying in a common plane.

5,252,010

ADJUSTABLE STOP ASSEMBLY FOR A PRESS

Robert Obrecht, Bloomfield Hills, and Carl Aiken, Southfield, both of Mich., assignors to Technical Manufacturing Corporation, Detroit, Mich.

Continuation of Ser. No. 673,371, Mar. 22, 1991, Pat. No. 5,106,242. This application Apr. 3, 1992, Ser. No. 863,411
The portion of the term of this patent subsequent to Apr. 21, 2009, has been disclaimed.
Int. Cl.[5] B23B *49/00*
U.S. Cl. 408—241 S **3 Claims**



1. An adjustable stop assembly for a press comprising:
a bar defining a plurality of indentations at spaced locations along the bar;
a slide mounted for axial sliding movement on said bar in surrounding relation to said bar and including an upper externally threaded barrel portion and a lower base portion;
a spring biased plunger mounted in said base portion for radial sliding movement and including a radially inner tip portion selectively engageable with said indentations and a radially outer handle portion positioned radially outwardly of said base portion for grasping by the press operator; and
a stop nut threaded on said threaded barrel portion.

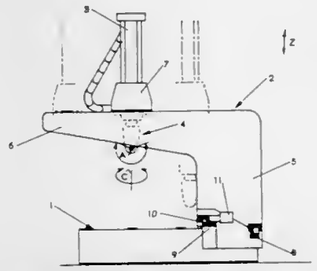
5,252,011

MOBILE-STRUCTURE MACHINE TOOL FOR RAPID MACHINING OF MODELS IN PARTICULAR

Armando Corsi, Piacenza, Italy, assignor to Jobs S.p.A., Piacenza, Italy

Filed Apr. 8, 1992, Ser. No. 865,199
Int. Cl.[5] B23C *1/06*
U.S. Cl. 409—235 **7 Claims**

1. A machine tool for rapid machining of models and used in conjunction with numerical control means for controlling movement of the machine tool, the machine tool comprising:
a base (1);
a structure (2) movably connected to the base along a first horizontal axis (x), the structure having a vertical upright (5) and a horizontal platform (6) integrally formed with the vertical upright to form the structure;
a support (7) movably mounted to the horizontal platform (6) along a second horizontal axis (y) which is transverse to the first horizontal axis;



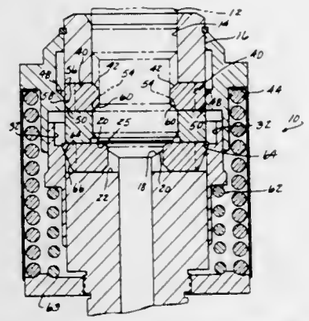
a sleeve (3) movably mounted to the support (7) along a third axis (z) which is vertical;
a toolhead (4) movably mounted to the sleeve, the movement of the toolhead, the structure, the support and the sleeve being controlled by the numerical control means; and
access between the base and the toolhead being open on three sides of the vertical upright.

5,252,012

POSITIVE LOCK BROACH PULLER

Joseph E. Suminski, Romeo, and James R. Uber, Pleasant Ridge, both of Mich., assignors to The Cross Company, Fraser, Mich.

Filed Sep. 3, 1992, Ser. No. 940,359
Int. Cl.[5] B23D *41/04*
U.S. Cl. 409—244 **10 Claims**



9. A method of clamping a broach puller assembly to a broach tool having an end section configured with a chamfered end face and an annular groove having a side adjacent said end face, including the steps of:
locating said broach tool end section in said puller body bore in a fully inserted position therein at which a clearance is established causing one set of jaw elements carried by said puller body to move radially into said annular groove with clearance between each of said one set of jaw elements and said one side of said annular groove;
initiating a broach tool pulling process to cause said one side

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of said annular groove to shift axially and against said set of jaw elements;

moving another set of jaw elements carried by said puller body radially inward to engage said chamfered end face of said shifted broach tool while said one side of said annular groove is held against said one set of jaw elements;

locking said another set of jaw elements in position against said chamfered end face to thereby clamp said broach tool to said puller body without any axial end play.

5,252,013

SELF-PLUGGING BLIND RIVET

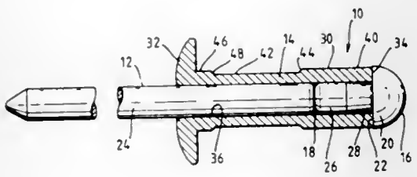
Laurence A. Browne, Welwyn Garden City; Keith Denham, Welwyn, and Raymond D. Lacey, Essendon, all of Great Britain, assignors to Avdel Systems Limited, Welwyn Garden City, England

Filed Jan. 17, 1992, Ser. No. 822,198

Claims priority, application United Kingdom, Jan. 18, 1991, 9101129.6

Int. Cl.[5] F16B *13/04, 13/06*

U.S. Cl. 411—43 **10 Claims**



1. A self-plugging blind rivet comprising an elongate, generally cylindrical, stem having a radially enlarged head at one of its ends, and a tubular body having a shank, and a radially enlarged pre-formed head at one end of the shank, the stem extending through an axial bore in the body and projecting from the head end of the body, and the head of the stem abutting the other end of the shank remote from the pre-formed head, the shank having a tail portion adjacent the said other end, and a waist portion intermediate between the tail portion and the pre-formed head, the external diameter of the waist portion being smaller than that of the tail portion, wherein the shank is uniformly hard throughout its length, and the relationship between the length of the tail portion and the external diameter of the tail portion is such as substantially to satisfy the expression:

$$B = mD + n$$

wherein:

B is the length, in millimeters, of the tail portion;

D is the external diameter, in millimeters, of the tail portion;

n is a length, in millimeters, of from 2.15 to 2.73 millimeters, and

m is a number from 0.373 to 0.527 inclusive.

5,252,014

HOLE FILLING BLIND RIVET

George A. Andrews, Anaheim Hills, Calif., assignor to Textron Inc., Providence, R.I.

Filed Dec. 9, 1992, Ser. No. 987,659

Int. Cl.[5] F16B *13/04, 13/06;* **B23P** *11/02*

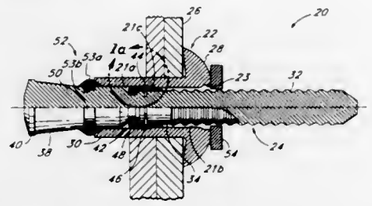
U.S. Cl. 411—43 **26 Claims**

1. A blind fastener for securing workpieces having aligned openings therein, comprising:

a tubular sleeve having a head for positioning on an accessible side of said workpieces, and a tail opposite said head for protruding beyond the blind side of said workpieces;

an elongated stem having a midsection extending through said sleeve, a bulbing portion at one end adjacent the sleeve tail, and a stem tail at the other end protruding beyond the sleeve head for gripping by an installation tool, said stem further having a shoulder interfere with an interior diameter of said sleeve to radially enlarge the sleeve to fill said openings and said shoulder having characteristics which will cause the shoulder to remove excess material from the interior of said sleeve as the shoulder is drawn into said sleeve;

a locking groove in said stem;



a locking groove in said sleeve;

a pre-formed lock element surrounding said stem adapted to be deformed in a manner such that portions of said element extend into said grooves to lock said stem to said sleeve; and

a reservoir movable with said stem and open to said shoulder to accept material extruded from the interior of said sleeve by said stem shoulder during its movement within said sleeve.

5,252,015

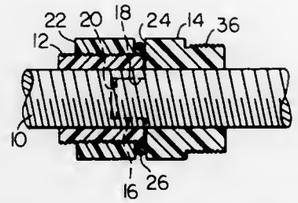
ADJUSTABLE PRE-LOAD SCREW AND NUT ASSEMBLY

Walter S. Davis, 7159 Echo Ridge Dr., San Jose, Calif. 95120

Filed Nov. 4, 1991, Ser. No. 787,119

Int. Cl.[5] F16B *39/12*

U.S. Cl. 411—231 **6 Claims**



1. An adjustable pre-load nut assembly arranged for translation movement along a screw, in response to rotation of the screw which comprises

a first nut portion having an internal thread complementary to the external thread of the screw, a second nut portion also having an internal thread complementary to the external thread of the screw,

and means interengaging said nut portions for relative axial adjustment, including an adjustment nut connected to one of said first and second nut portions for axial adjustment thereon,

and resilient means interposed between said adjustment nut and one of said nut portions to establish the only contact therebetween for urging said nut portions in axially opposite directions.

5,252,016

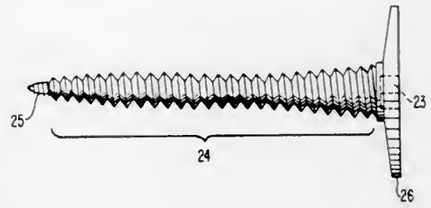
FIXING ELEMENT FOR LOW STRENGTH MATERIALS

Paul M. Schmid, Camarillo, Calif., and Richard L. Moore, Boston, Mass., assignors to Isolink Inc., Nassau, The Bahamas

Continuation-in-part of Ser. No. 515,404, Apr. 27, 1990, Pat. No. 5,059,077. This application Jul. 31, 1991, Ser. No. 738,811

Int. Cl.[5] F16B *25/00, 35/04*

U.S. Cl. 411—386 **20 Claims**



1. A fixing element for connecting to materials of relatively low strength, comprising a unitary, one piece plastic body having:

an external thread means formed on said one-piece plastic body for compressing and compacting a low strength material in the thread turns of said external thread means as said unitary one piece plastic body is threaded into the low strength material, said external thread means comprising deep, in comparison with the pitch thereof, external threads having a larger diameter end and a smaller diameter end;

An unthreaded conical tip unitary with said external threads at said smaller diameter end thereof for penetration of said unitary one piece plastic body into the low strength material, said external threads and said unthreaded conical tip having a common axis;

A stop collar unitary with said external threads at said larger diameter end thereof, said stop collar having a larger diameter than said larger diameter end of said external threads, wherein said unitary one piece plastic body has a central axis coincident with said common axis, said stop collar having a first surface facing said external threads and said unthreaded conical tip for engagement with the low strength material and a second surface facing away from said external threads and said unthreaded conical tip; and

turning means for turning said unitary one piece body to cause said external thread means to be engaged with the low strength material, said turning means being disposed substantially centrally of said stop collar and substantially symmetrically with respect to said central axis;

wherein said deep external threads comprise a first tapered portion adjacent said stop collar and a second tapered portion adjacent said unthreaded conical tip, and wherein said external thread means further comprises a deep external threads portion having no taper between said first and second tapered portions, whereby said first and second tapered portions can provide holding strength and pull-out resistance and said thread portion having no taper can provide straight substrate penetration.

5,252,017

SETBACK RETAINING WALL AND CONCRETE BLOCK AND OFFSET PIN THEREFOR

Gerald W. Hodel, Roanoke, Ill., assignor to Wedgerock Corporation, Roanoke, Ill.

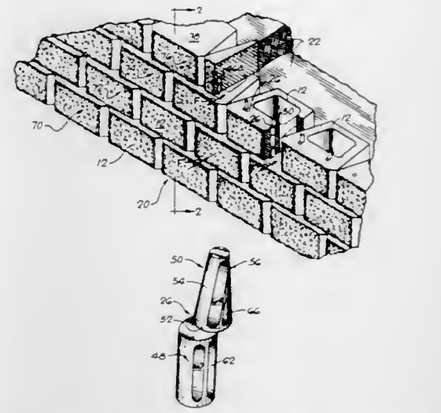
Division of Ser. No. 648,011, Jan. 30, 1991, Pat. No. 5,161,918. This application Sep. 30, 1991, Ser. No. 767,678

Int. Cl.[5] E02D *29/02;* **F16B** *15/06*

U.S. Cl. 411—446 **5 Claims**

1. An offset pin for engagement in a pair of laterally offset holes in adjacent, abutting upper and lower surfaces of a pair of blocks to interlock a plurality of such blocks when arranged side by side in lower and upper setback tiers to form a wall having a predetermined upward slope;

each said pin comprising a body with a pair of opposite end sections being laterally offset about a pair of spaced, parallel axes, at least part of each said end section having a circular cross section and engageable respectively in a



corresponding one of such laterally offset holes in adjacent, abutting, upper and lower surfaces of a pair of blocks;

said opposite end sections having oppositely facing laterally offset shoulders which are in a common plane normal to said axes for engagement with such abutting upper and lower surfaces of a pair of blocks.

5,252,018

SHEET BINDER

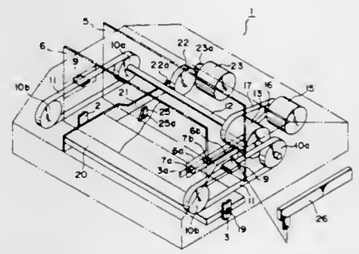
Makoto Kitahara, Tokyo; Kimiaki Hayakawa, Yokohama, and Shuichi Yabe, Tsukuba, all of Japan, assignors to Canon Kabushiki Kaisha and Canon Aptex Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 500,570, Mar. 28, 1990, abandoned. This application Jul. 16, 1992, Ser. No. 913,976

Claims priority, application Japan, Mar. 29, 1989, 1-076996; Jul. 14, 1989, 1-181930; Sep. 29, 1989, 1-076997

Int. Cl.[5] B42C *13/00*

U.S. Cl. 412—11 **18 Claims**



1. A sheet material binding apparatus for binding sheet materials with a covering material by a heat-adhesive bonding agent, comprising:

guiding means having an openable pair of guiding members for supporting the covering material and the sheet materials when said guiding members are in a closed position

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with the covering material and sheet materials sandwiched therebetween;

heating means for heating a bonding agent on a spine of the covering material supported on said guiding means;

guide driving means for providing driving power to move said guiding means in a direction of a thickness of a set of the sheet materials;

detecting means for detecting the setting of the covering material and the sheet materials between said guiding means; and

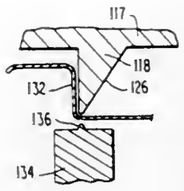
control means for controlling said guiding means to close said pair of guiding members when said detecting means detects insertion of the covering material and the sheet materials in said guiding means and to open said pair of guiding members when said detecting means detects removal of said covering material and sheet materials from said guiding means.

5,252,019

CONVENIENCE-FEATURE NON-CIRCULAR END CLOSURE WITH INTERRUPTED PANEL PROFILING

William T. Saunders, Weirton, W. Va., and Kevin Hanley, Cockeysville, Md., assignors to Weirton Steel Corporation, Weirton, W. Va.

Division of Ser. No. 823,295, Jan. 21, 1992, abandoned. This application Aug. 12, 1992, Ser. No. 928,418
Int. Cl.[5] B21D *22/06, 51/44*
U.S. Cl. 413—67 3 Claims



1. Scoring apparatus for forming a peripheral scoreline in a non-circular sheet metal endwall panel of a convenience-feature end closure for a non-circular can body providing for unobstructed removal of solid-pack contents of the can body, which panel is in recessed relationship to chime seam metal for the end closure, the endwall panel having an external-surface public side and an internal-surface product side with the peripheral scoreline being formed in the product side of the endwall panel, and in which the chime seam metal is located peripherally of the endwall panel with a chuck wall located about the periphery of the endwall panel joining the chime seam metal and recessed endwall panel, comprising:

scoring tooling for locating the scoreline for the endwall panel on the product side of the end closure for severance about the periphery of the endwall panel at a location contiguous to the chuck wall,

backing tooling for confronting the public side of the endwall panel to provide panel sheet metal backing support at a location contiguous to the chuck wall along the length of the peripheral scoreline as scoring is carried out on the product side of the end closure, the backing tooling including:

a pad portion

a back-up tool portion protruding from the pad portion toward the public-side surface of the end closure, with

the back-up tool portion protruding from the pad portion a dimension exceeding the combined height dimension of the chuck wall and chime seam metal above the recessed endwall panel,

the back-up tool portion having configurational and dimensional characteristics about the endwall panel periphery to enable the back-up tool portion to fit within, and in contiguous relationship to, the chuck wall,

the back-up tool portion having

a peripherally-outer side wall surface parallel to and abutting the chuck wall,

an inner periphery side wall surface disposed, when the back-up tool portion is viewed in cross section, in acute angled relationship with the outer side wall, and

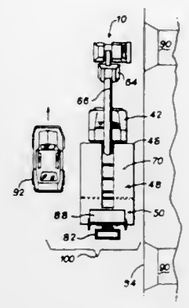
a narrow-width backing surface spaced from the pad portion between the inner and outer side wall surfaces of the protruding back-up tooling portion, such backing surface extending about the periphery of the endwall panel at a location contiguous to the chuck wall.

5,252,020

WASTE SEGREGATING COLLECTION APPARATUS

Russell C. Kinney; Donald C. Kinney, both of Hartland; Lyle Paullin, Oconomowoc; Richard Paullin, Hartland; Jeffrey W. Parrott, Pewaukee, and Donald Smith, Oconomowoc, all of Wis., assignors to Expert Disposal Service, Inc., Hartland, Wis.

Filed May 29, 1991, Ser. No. 706,921
Int. Cl.[5] B65F *3/02*
U.S. Cl. 414—346 8 Claims



1. A recyclable waste collection apparatus comprising:

a motorized truck with a longitudinal axis having a cab for a driver and a bed;

a partitioned container attached to the truck bed having a first volume and a second volume separated from the first volume;

a first waste receiving means communicating with the first volume and having a first opening sized to receive a first waste type into the first volume;

a second waste receiving means communicating with the second volume and having a second opening for receiving a second waste type into the second volume;

a motorized satellite vehicle having a passenger compartment for holding at least one occupant and having a supporting bed;

a first bin on the satellite vehicle having a smaller volume than the first volume of the partitioned container attached to the truck bed for carrying the first waste type to the first volume, the first bin having an opening and being pivotally mounted n the supporting bed of the satellite vehicle so that the first bin can be moved from a first collection position to a first rearwardly moveable dumping position;

a first actuator for moving the first bin from the first collection position to the first rearwardly movable dumping position so that the first waste type can be dumped from the first bin of the satellite vehicle into the first opening of the truck;

a second bin on the satellite vehicle having a smaller volume than the second volume of the partitioned container attached to the truck bed for carrying the second waste to the second volume, the second bin having an opening and being pivotally mounted on the supporting bed of the satellite vehicle so that the second bin can be moved from a second collection position to a second sidewardly movable dumping position; and

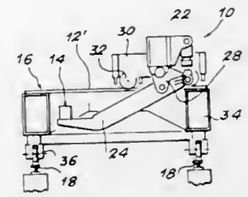
a second actuator for moving the second bin from the second collection position to the second sidewardly movable dumping position so that the second waste type can be dumped from the second bin of the satellite vehicle into the second opening of the truck.

5,252,021

HANDLING INSTALLATION FOR IRON AND STEEL PRODUCTS

Henry-Albert Thoor, Villeneuve Sur Yonne; Jean-Claude Audebert, Evry, and Yves Braud, Maurepas, all of France, assignors to Stein-Heurtey, Ris Orangis, France

Continuation of Ser. No. 621,884, Dec. 4, 1990, abandoned. This application Aug. 7, 1992, Ser. No. 926,193
Int. Cl.[5] B65G *65/00*
U.S. Cl. 414—589 5 Claims



1. A system for moving steel products in first and second intersecting directions comprising:

I first track means for moving said steel products in said first direction;

II second track means for moving said steel products in said second direction;

III steel product handling means for gripping and supporting said steel products, said handling means comprising:

(a) first and second spaced-apart side carriage means having wheels or rollers adapted for running on said first track means;

(b) main beam means for fixedly connecting said first and second side carriage means with each other;

(c) a plurality of parallel, spaced-apart laterally-extending fingers for supporting steel products, each of said fingers having a fixed end portion and a free end portion, said fixed end portions being horizontally offset from said free end portions;

(d) pivot means secured to said main beam and attached to said fingers for pivotally supporting said fingers at their fixed end portions on a common horizontal axis for movement of said free end portions when said fingers are caused to pivot, said common horizontal axis being located adjacent one end of said first and second carriage means, said fingers being cantilevered from said pivot means, whereby said free end portions move substantially vertically for gripping, raising, supporting, lowering and releasing said steel products when said fingers are caused to pivot about said horizontal axis; and,

(e) finger actuation means mounted between said fingers and said main beam for causing said fingers to pivot about said common axis and move said free end portions vertically; and,

IV transfer carriage means for supporting and moving said steel product handling means on said second track means in said second direction, said transfer carriage means comprising:

(a) frame means;

(b) wheel means supported by said frame means for rolling on said second track means; and,

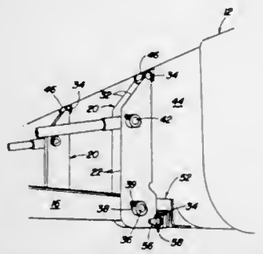
(c) third track means supported by an upper portion of said frame means for supporting said steel product handling means for movement thereby along said second track means, said third track means positioned for alignment with said first track means for moving said steel product handling means from support by said first track means to support by said third track means.

5,252,022

QUICK ATTACHMENT ASSEMBLY FOR LOADER IMPLEMENTS

Ralph N. Culp, Vineland; Gordon D. Hubbard, Beansville; James Cosby, Welland; John R. McMillan, Welland, and Daniel R. Fuzzen, Welland, all of Canada, assignors to Deere & Company, Moline, Ill.

Filed Oct. 30, 1991, Ser. No. 785,359
Int. Cl.[5] E02F *3/81*
U.S. Cl. 414—723 11 Claims



1. In an attachment assembly for facilitating attachment of an implement to a pair of loader lift arms wherein part of the assembly is embodied in a parallel pair of upright carriers having lower portions respectively connected to forward ends of the lift arms for pivotal movement in respective vertical planes by the action of a pair of hydraulic actuators connected between the lift arms and upper locations of the carriers, and wherein the remainder of the assembly is fixed to a back side of the implement, the improvement comprising: said assembly comprising a pair of downwardly opening hooks spaced transversely from each other at respective upper locations at the back side of the implement and a par of rearwardly projecting pins located on the back side of the implement in respective lower locations below the hooks; said pair of carriers each including an upper end shaped to conform to and being received in a respective one of the hooks and including a lower portion defining a mounting plate having a hole receiving a respective one of the pair of rearwardly projecting pins; and fastener means for capturing said pins within the holes to thereby secure the implement to the carriers.

5,252,023

LIFTING APPARATUS

Kevin M. Kelly, 2 Glen St., New Hartford, N.Y. 13413

Filed Feb. 10, 1992, Ser. No. 833,101
Int. Cl.[5] B65G *7/00*
U.S. Cl. 414—785 4 Claims

1. Apparatus for use in association with a fork lift truck for safely lifting and transporting stacked wooden loads that include

a pair of spaced-apart, L-shaped metal forks that are capable of supporting the stacked wooden load therebetween,

each fork including a vertical leg and a horizontal leg that are integrally joined at a knee,

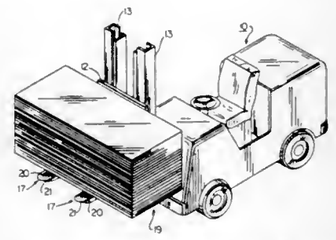
each vertical leg having means for attaching the fork to a lifting mechanism of said fork lift truck,

each horizontal leg having a contacting upper surface adapted to move into lifting contact against a bottom

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surface of said stacked wooden load whereby the load is suspended between said forks,

said load contacting, upper surface of each horizontal leg having a series of parallel grooves formed therein that extend from a distal tip of the horizontal leg rearwardly to about said knee, and



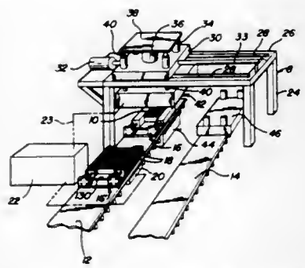
each groove being uninterrupted along an entire length thereof and having a substantially constant cross-section along its entire length so as to reduce the total load contacting surface area of the horizontal leg by at least forty percent thereby increasing a frictional holding force acting between the load and the fork.

5,252,024

TRANSFER METHOD FOR VARIOUS SIZES OF ASSEMBLIES

Michael A. Breda, East Amherst; George K. Snyder, and Peter A. Lyon, both of Lockport, all of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 4, 1991, Ser. No. 787,179
Int. Cl.[5] B65G *57/03*
U.S. Cl. 414—786 **1 Claim**



1. A method of transferring an assembly of unsecured parts in an apparatus for removing various sizes of assemblies of unsecured parts from pallets holding the parts at a transfer station and moving the parts to a receiving station; the method comprising the steps of:

providing machine readable information containing size data on the pallet carrying the assembly,

reading the information to determine the assembly size,

adjusting a clamp to fit the detected size,

moving the assembly from the pallet to the clamp and restraining the assembly during such moving to maintain its integrity,

closing the clamp against the assembly to hold the parts together, and

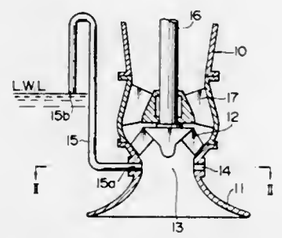
moving the clamp and the assembly to the receiving station.

5,252,025

DRAINAGE PUMP

Nobuo Kida; Kenji Kiyota; Akira Yonei, and Hiroshi Oya, all of Takasago, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 17, 1991, Ser. No. 776,779
Claims priority, application Japan, Feb. 25, 1991, 3-053474; Apr. 9, 1991, 3-031646[U]
Int. Cl.[5] F04B *11/00*
U.S. Cl. 415—24 **1 Claim**



1. A vertical shaft type axial flow liquid pump comprising:

a pump casing having a liquid intake suction tube section having an inlet end for immersion in said liquid, an impeller section adjacent said intake section and a discharge section downstream of said impeller section;

an impeller in said impeller section for pumping liquid through said casing;

a substantially vertical shaft connected to said impeller for driving said impeller;

a plurality of air intake holes through said suction tube section proximate said impeller; and

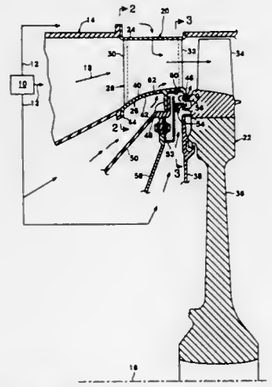
an air intake pipe having an outlet end connected to one of said holes and an inlet end positioned at a preset lowest suction liquid level of said liquid, so that when the level of said liquid drops below said holes air enters the other of said holes to provide air and liquid separation in said suction tube section for stable operation of said pump.

5,252,026

GAS TURBINE ENGINE NOZZLE

Andrew Shepherd, Fairfield, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Jan. 12, 1993, Ser. No. 3,338
Int. Cl.[5] F01D *11/02*
U.S. Cl. 415—115 **7 Claims**



1. A gas turbine engine nozzle having an axial centerline axis comprising:

a radially outer band;

a radially inner band;

a plurality of circumferentially spaced apart vanes having opposite ends fixedly joined to said outer and inner bands, each of said vanes having a leading edge for first receiving combustion gases, and a trailing edge over which said combustion gases are discharged from said nozzle;

said inner band having a radially outer surface facing said outer band over which is flowable said combustion gases, a radially inner surface facing radially inwardly toward said centerline axis, a forward edge disposed adjacent to said vane leading edges, and an aft edge disposed adjacent to said vane trailing edges; and

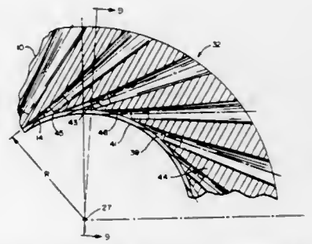
a plurality of circumferentially spaced apart turbulators joined to said inner band inner surface adjacent said vane trailing edges and facing radially inwardly without obstruction for increasing cooling of said inner band adjacent said vane trailing edges by cooling air channeled over said turbulators.

5,252,027

PIPE DIFFUSER STRUCTURE

Joost J. Brasz, Fayetteville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 605,619, Oct. 29, 1990, Pat. No. 5,131,142.
This application Apr. 14, 1992, Ser. No. 869,081
Int. Cl.[5] F01D *1/06*
U.S. Cl. 415—224.5 **6 Claims**



1. An improved diffuser of the type having a plurality of circumferentially spaced, generally radially extending, channels with wedge shaped islands therebetween, said channels having radial cross-sections which are round in form and having their axes aligned in tangential relationship to a tangency circle, and the leading edge of each of the islands coinciding with a leading edge circle located radially outwardly from said tangency circle; wherein a circumferentially extending groove is formed on an inner peripheral boundary coinciding with the leading edge circle, said groove being rectangular in radial cross-section such that the space between the tangency circle and the leading edge circle is fully vaneless.

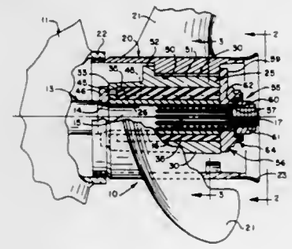
5,252,028

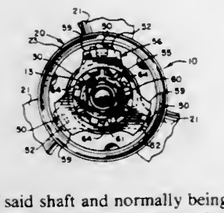
MARINE PROPELLER ASSEMBLY WITH SHOCK ABSORBING HUB AND EASILY REPLACEABLE PROPELLER HOUSING

Sam LoBosco, and John LoBosco, both of 702 S. Emerson Dr., Mt. Prospect, Ill. 60056

Filed Sep. 14, 1992, Ser. No. 944,360
Int. Cl.[5] B63H *1/20*
U.S. Cl. 416—93 A **13 Claims**

3. A marine propeller assembly adapted to be attached to a power-rotated shaft having an externally splined portion and having an externally threaded outer end portion located adjacent said splined portion, said assembly comprising a shock absorbing hub having (a) an internally splined tubular spindle adapted to be telescoped onto the splined portion of said shaft, (b) an outer sleeve telescoped over and spaced radially from said spindle, and (c) elastomeric material disposed between said spindle and said sleeve and transmitting torque from said spindle to said sleeve while absorbing torsional shock, said sleeve having an outer peripheral surface and an axially facing outer end, a plurality of angularly spaced and axially extending keyways formed in the outer surface of the sleeve and opening out of the outer end of the sleeve, a tubular propeller housing having a plurality of angularly spaced propeller blades, said housing having an inner peripheral surface with a plurality of angularly spaced, axially extending and radially inwardly projecting keys each having an axially facing outer end, said keys interfitting with said keyways to couple said housing for rotation with said sleeve, a retainer having an internally splined hole, said retainer normally being telescoped onto the splined





portion of said shaft and normally being disposed in an active position covering the outer ends of said keys and said keyways to captivate said housing axially on said sleeve, a nut on the threaded end portion of said shaft and normally tightened to hold said retainer in said active position, said nut being operable when turned in a loosening direction to move axially away from said retainer to permit said retainer to be slid off of the splined portion of said shaft and onto the threaded portion thereof and then turned on the threaded portion to a releasing position uncovering the outer ends of said keys and said keyways to enable said housing to be slipped axially off of said sleeve while said nut and said retainer remain on said shaft.

5,252,029

VERTICAL AXIS WIND TURBINE

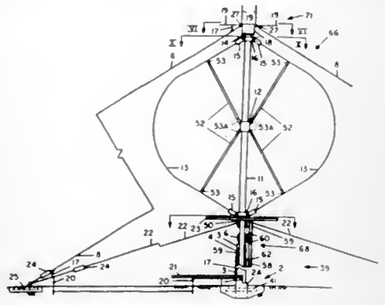
Robert J. Barnes, P.O. Box 341601, Milwaukee, Wis. 53234

Filed Sep. 13, 1991, Ser. No. 759,513
Int. Cl.[5] F03D *3/00, 11/00*
U.S. Cl. 416—142 **4 Claims**

1. A vertical axis wind turbine comprising; a rotor shaft in an overlapping stacked assembly, said overlapping stacked assembly including an upper rotor bearing assembly overlapping the upper end of said rotor shaft with a rotor lower bearing and a central support structure overlapping the lower end of said rotor shaft, said central support structure having a hinge connection to a ground embedded central support structure anchor, said central support structure also including an erection gin pole and a hold down gin pole, said upper rotor bearing assembly is attached to four guy cable anchors by four upper bearing assembly guy cables, said central support structure is

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attached to an additional four guy cable anchors by four central support structure guy cables, said rotor shaft having at-

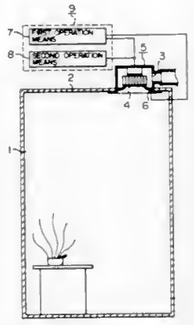


tached a wind responsive means causing said rotor shaft to rotate in response to wind energy.

5,252,030
AUTOMATIC OPERATION APPARATUS FOR VENTILATING FAN

Hirokazu Chikada, Komaki, Japan, assignor to Matsushita Seiko Co., Ltd., Osaka, Japan

Filed Oct. 14, 1992, Ser. No. 960,051
Claims priority, application Japan, Oct. 18, 1991, 3-270749; Oct. 18, 1991, 3-270750
Int. Cl.[5] F24F *7/013, 11/02*
U.S. Cl. 417—12 **5 Claims**



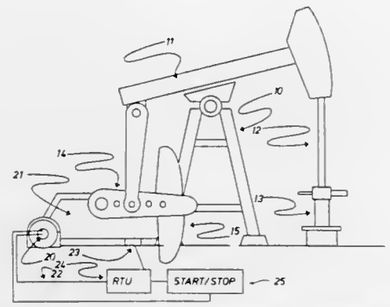
1. An automatic operation apparatus for a ventilating fan comprising:
- a smoke sensor for detecting a smoke density in a room,
- a first operation means for starting or stopping operation of said ventilating fan in accordance with a detection signal from said smoke sensor; and
- a second operation means for operating said ventilating fan for a predetermined time if said ventilating fan remains stopping for a predetermined time.

5,252,031
MONITORING AND PUMP-OFF CONTROL WITH DOWNHOLE PUMP CARDS

Sam G. Gibbs, 2826 Marmon Dr., Midland, Tex. 79705

Filed Apr. 21, 1992, Ser. No. 871,859
Int. Cl.[5] F04B *49/02;* **E21B** *47/00*
U.S. Cl. 417—53 **17 Claims**

1. A method for detecting a pumped off condition in a rod pumped well wherein the rod is reciprocated by a pumping unit located at the surface, said method comprising;
- measuring at the surface an operating characteristic of the pumping unit;
- determining from the measured operating characteristic the load on a polished rod and the position of the polished rod at a plurality of positions of the polished rod for a complete stroke of the pumping unit;
- selecting a cycle of the pumping unit to use as a reference and utilizing the load and position data during said selected cycle to calculate a downhole pump card;

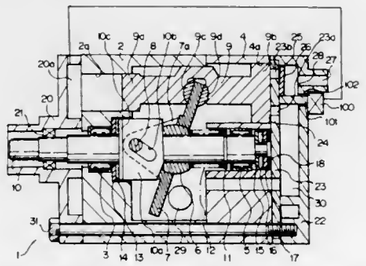


- determining the inside area of downhole pump card to establish a reference area;
- continuing to calculate and monitor the inside area of the downhole pump card;
- shutting down the pumping unit when the calculated area decreases by a predetermined amount below the reference area; and
- restarting the pumping unit after a predetermined shut down period.

5,252,032
VARIABLE CAPACITY SWASH PLATE TYPE COMPRESSOR

Shigeki Iwanami, and Mikio Matsuda, both of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jul. 9, 1992, Ser. No. 911,051
Claims priority, application Japan, Jul. 16, 1991, 3-175332
Int. Cl.[5] F04B *1/26*
U.S. Cl. 417—222.1 **11 Claims**

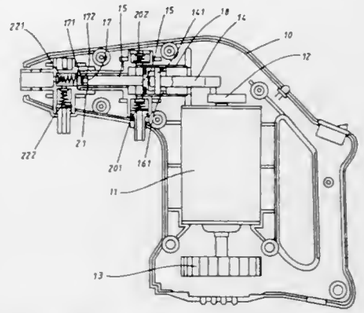


1. A variable capacity swash plate type compressor comprising:
- an axially extended cylinder block having a crank chamber formed therein and a plurality of axial cylinder bores disposed on the circumference of said crank chamber;
- a drive shaft rotatably held by said cylinder block such that an axis thereof is axially extended through said crank chamber;
- a variable inclination rotary swash plate installed on the drive shaft so that said swash plate is allowed to turn around an axis perpendicular to said drive shaft, to thereby vary an angle of inclination of said swash plate;
- a plurality of reciprocating plungers fitted in said cylinder bores of said cylinder block and slidably engaged with said swash plate, whereby a reciprocating motion of said plungers, in which the stroke of the plungers is determined by the angle of inclination of said swash plate, is generated when said swash plate is rotated with the drive shaft;
- compression chambers defined by first ends of said plungers and the walls of said cylinder bores, for drawing in and discharging a fluid to be compressed, by a reciprocation of said plungers; and,
- capacity control means comprising, control chambers defined by the walls of said cylinder bores and second ends of said plunger which are opposite to said first ends of the plungers defining said compression chambers, said second ends slidably and sealingly engaging the walls of the cylinder bores, and a pressure control means for controlling a pressure in said control chambers, said capacity control means controlling the capacity of the compressor by adjusting a pressure in said control chambers to thereby adjust a force urging said plungers toward said compression chambers, said control chambers being isolated from said crank chamber.

5,252,033
PORTABLE CAR-USED OIL EXTRACTING AND TIRE INFLATION APPARATUS

Yin-Hsien Lin, 2Fl., No. 133, Ming Hsiang Street, Pan Ch'iao City, Taipei Hsien, Taiwan

Filed Aug. 5, 1992, Ser. No. 924,913
Int. Cl.[5] F04B *21/00;* **F16C** *3/14*
U.S. Cl. 417—234 **5 Claims**



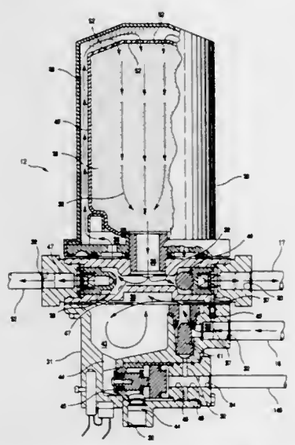
1. A portable car-used oil extracting and tire inflation apparatus, mainly comprising a casing, and an electrical motor outputing rotary power with a rotary shaft on the front end of which is pivoted a crank shaft by which the push rod with pistons is driven to perform reciprocating motion, forming an air pump and an oil pump; characterized in that on the push rod, there are mounted an air piston on the rear end, and a piston ring around the periphery of the front end, forming an oil piston; in that an air cylinder is installed behind an oil cylinder wherein two cylinders are separated by an oil seal arranged therebetween; and in that when the rotary motion of the motor shaft is converted into a reciprocating motion of the push rod, the air piston and the oil piston synchronously move, forming an air pump and an oil pump.

5,252,034
AIR DRYER WITH INTEGRAL ISOLATION VALVE

Roger L. Sweet, Deputy, Ind., assignor to Holset Engineering Company, Inc., Columbus, Ind.

Filed Sep. 4, 1992, Ser. No. 940,642
Int. Cl.[5] B01D *19/00*
U.S. Cl. 417—279 **12 Claims**

1. A gas dryer for use in cooperative arrangement with a gas compressor system having a gas compressor, a gas governor and a gas reservoir, the gas dryer comprising:
- a housing having a first port, a second port and an outlet, said housing also having a primary passageway from said first port to said second port and a secondary passageway from said first port to said second port;
- means, within said primary passageway, for removing moisture from a gas passing through said primary passageway;
- a first valve in said primary passageway between said second port and said means for removing moisture, said first valve being normally open but closing in response to a first signal from said gas governor;



- a second valve in said secondary passageway, said second valve allowing gas to flow in only one direction from said first port to said second port;
- a branch passageway from said primary passageway to said outlet, said branch passageway opening into said primary passageway between said first valve and said means for removing moisture; and
- a third valve in said branch passageway, said third valve being normally closed but opening in response to a second signal from said gas governor.

5,252,035
SUCTION STRUCTURE FOR ELECTRICALLY-DRIVEN HERMETIC COMPRESSOR

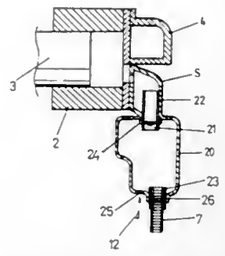
In S. Lee, Kyungki, Rep. of Korea, assignor to Goldstar Co., Ltd., Rep. of Korea

Filed Dec. 17, 1992, Ser. No. 992,144
Claims priority, application Rep. of Korea, Dec. 28, 1991, 24609/1991
Int. Cl.[5] F04B *39/00*
U.S. Cl. 417—312 **4 Claims**

1. A suction structure for electrically-driven hermetic compressor comprising:
- a suction muffler having an upper outlet and a lower inlet;
- first elastic means for adsorbing vibration occurring during operation of compressor and guiding suction gas into the suction muffler which is fitted in the lower inlet of the suction muffler;
- second elastic means for fixing the first elastic means to the inlet of the suction muffler which is interposed between

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the inlet and the first elastic means without a gap therebetween; and



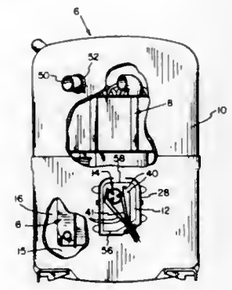
filtering means for preventing refrigerating oil from being introduced into a cylinder which is disposed to the inlet of the suction muffler.

5,252,036

NORMAL DIRECTION HEATER FOR COMPRESSOR CRANKCASE HEAT

Rick L. Bunch, Tecumseh; Robert L. Morse, Clayton, and Tara C. Kandpal, Tecumseh, all of Mich., assignors to Tecumseh Products Company, Tecumseh, Mich.

Filed Jun. 19, 1990, Ser. No. 540,477
Int. Cl.[5] F04B *21/00*; F25B *43/02*
U.S. Cl. 417—313 21 Claims



1. A compressor comprising:
an outer housing including an outer surface, said housing defining an interior region having an oil sump;
a motor-pump unit disposed within said interior region of said housing;
a terminal assembly on said housing, said terminal assembly including a terminal cluster;
a heater disposed over a portion of said outer surface of said housing directly adjacent said terminal cluster, said heater located in thermal proximity to liquid in said oil sump; and
a cover on said outer surface of said housing, said cover at least partially enclosing said terminal cluster and said heater.

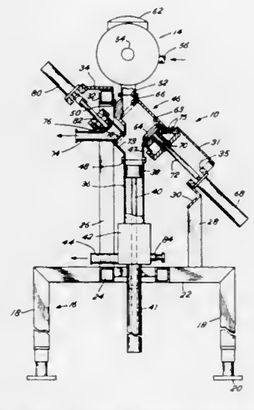
5,252,037

PISTON VALVED VERTICAL PUMP FOR PARTICULATE MATERIALS

V. R. Carlson, Marion, Iowa, assignor to Aseptic Technology Engineering Co., Cedar Rapids, Iowa

Filed Jul. 30, 1992, Ser. No. 922,674
Int. Cl.[5] F04B *7/04*, *17/00*; B67D *5/40*
U.S. Cl. 417—339 13 Claims

1. A high capacity piston pump for conveying slurries without damaging particulate material therein comprising:
a vertically-disposed cylindrical pumping chamber,
a cleaning fluid chamber communicating with said pumping chamber at the lower end thereof,
a discharge conduit connecting to the upper end of said pumping chamber at one side thereof,
a piston valve disposed in said discharge conduit,
a filler conduit connecting to and aligned with said pumping chamber above said discharge conduit,
a suction valve comprising a cylinder connecting to said pumping chamber at an acute angle to the axis of said



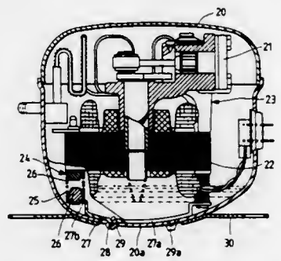
pumping chamber between said discharge conduit and said filler conduit,
a piston disposed in said suction valve which moves into and out of said filler conduit to close and open the conduit,
a piston within said pumping chamber and actuated by an hydraulic cylinder for movement between said discharge conduit and said cleaning fluid chamber, and
a supply tank connecting to said filler conduit.

5,252,038

HERMETIC MOTOR-DRIVEN COMPRESSOR

Masao Mangyo, Fujisawa; Takeshi Ohno, Chigasaki, and Ichirou Kita, Fujisawa. all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Jul. 2, 1992, Ser. No. 908,110
Claims priority, application Japan, Jul. 3, 1991, 3-162745
Int. Cl.[5] F04B *17/00*, *35/00*
U.S. Cl. 417—363 9 Claims



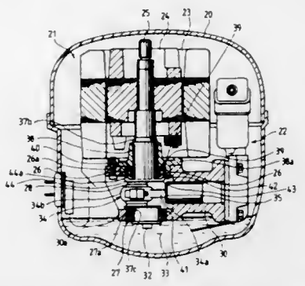
1. A hermetic motor-driven compressor comprising:
(a) a closed container having a spherical wall portion;
(b) a compressor and a motor coupled together to form a combined motor-and-compressor assembly; and
(c) suspension means, disposed in said closed container, for resiliently supporting said combined motor-and-compressor assembly within said closed container, said suspension means including
(i) a plurality of suspension springs,
(ii) a plurality of pairs of first and second snubbers corresponding in number to the number of said suspension springs and retaining opposite ends of the respective suspension springs, said first snubbers being secured to said combined motor-and-compressor assembly, and
(iii) at least one plate-like snubber stay having opposite end portions to which said second snubbers are attached, and a spherical central portion complementary in contour to the shape of said spherical wall portion of said closed container and welded to said spherical wall portion.

5,252,039

ENCLOSED MOTOR-DRIVEN COMPRESSOR

Masao Mangyo; Hideki Kawai; Satoshi Wada, all of Fujisawa, and Masahiko Osaka, Chigasaki, all of Japan, assignors to Matsushita Refrigeration Co., Osaka, Japan

Filed Dec. 2, 1991, Ser. No. 801,567
Claims priority, application Japan, Feb. 5, 1991, 3-014348; Apr. 22, 1991, 3-090511; Jul. 3, 1991, 3-162742
Int. Cl.[5] F04B *39/02*
U.S. Cl. 417—368 9 Claims



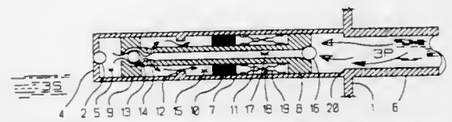
3. An enclosed motor-driven compressor according to claim 1, wherein said internal oil feed passage has a second outlet disposed immediately above said second ball bearing.

5,252,040

FLUID TRANSPORTING APPARATUS USING REFLEXIVE HYDRAULIC ACTUATION

William L. Vandergriff, 7780 E. Mary, Tucson, Ariz. 85730, and Donald W. Cole, 601 Crockett, Odessa, Tex. 79762

Filed Nov. 25, 1991, Ser. No. 796,866
Int. Cl.[5] F04B *9/08*, *43/10*
U.S. Cl. 417—378 1 Claim



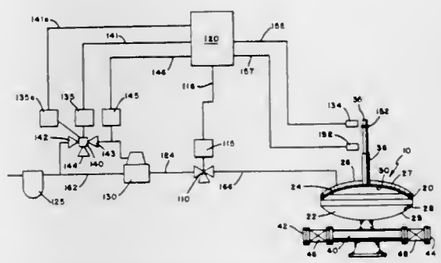
1. A pumping apparatus for transporting fluids from a reservoir to a point of use, comprising:
a housing defining a cylinder with a first end and a second end, wherein said first end is attached to a fluid pressure source and said second end defines an outlet;
a piston assembly including a top piston having an inner and outer face for sliding sealed motion along said cylinder, wherein said top piston and said bottom piston are connected by a hollow shaft;
a shoulder is defined on the inside of said cylinder between said top piston and said bottom piston for restricting the motion of said piston assembly;
a spring means and a tertiary piston are positioned between said top piston and said shoulder acting to return said piston assembly to said first end of said cylinder, wherein said spring means defines a spring chamber between said tertiary piston and said top piston, and an accumulation chamber is defined between said shoulder and said second piston;
a first vent means defined by said cylinder acting to accomodate fluid flow into and out of said spring chamber, and a second vent means on said hollow shaft acting to accomodate fluid flow into and out of said accumulation chamber;
check valve means positioned in said top piston, said bottom piston and said outlet, acting to allow for uni-directional flow.

5,252,041

AUTOMATIC CONTROL SYSTEM FOR DIAPHRAGM PUMPS

Russell Schumack, Shenandoah, Pa., assignor to Dorr-Oliver Incorporated, Milford, Conn.

Filed Apr. 30, 1992, Ser. No. 876,837
Int. Cl.[5] F04B *43/06*
U.S. Cl. 417—395 9 Claims



1. A control system for an air actuated diaphragm pump comprising:
a diaphragm pump including a pump housing, a diaphragm dividing the housing into a pumping chamber and a pump actuating chamber;
an air pressure supply source communicating with said pump actuating chamber to introduce air under pressure into the pump actuating chamber to force the diaphragm from a starting position to a finishing position;
a three-way supply valve for controlling the introduction of air pressure into the pump actuating chamber, said three-way supply valve capable of venting the pump actuating chamber to atmosphere;
a pressure regulator for limiting the air pressure;
stroke sensing means for sensing movement of the diaphragm between a starting position and a finishing position;
central control means for coordinating the operation of said valve and said pressure regulator in response to signals received from said stroke sensing means, wherein the central control means adjusts the pressure regulator in accordance with variations in the discharge time of the pump.

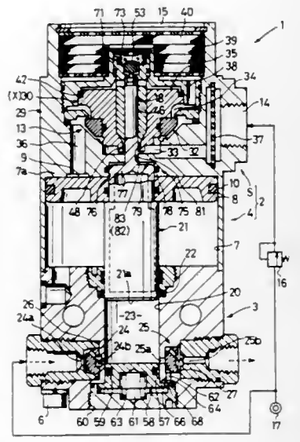
VOL 1155 ISS 2 OC 12 1993 UMI

5,252,042

GAS BOOSTER ASSEMBLY FOR FLUID PRESSURE PISTON DRIVING APPARATUS

Keitaro Yonezawa, Kobe, Japan, assignor to Kabushiki Kaisha KOSMEK, Hyogo, Japan

Filed Aug. 7, 1992, Ser. No. 925,919
Claims priority, application Japan, Aug. 9, 1991, 3-224857; Aug. 9, 1991, 3-224858; Aug. 23, 1991, 3-074611[U]
Int. Cl.[5] F04B *35/00*
U.S. Cl. 417—401 7 Claims



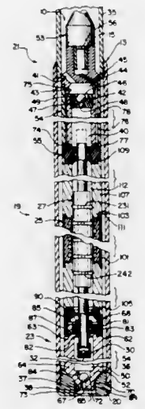
1. A gas booster having a fluid-pressure piston engine (2) provided on a first end side and a plunger type gas pump (3) provided on a second end side, comprising:
- a first cylinder bore (7) having a first end wall (7*a*), plunger bore (20) smaller in diameter than the first cylinder bore (7), and a second cylinder bore (57) having a second end wall (60), the bores being formed in this order from the first end side toward the second end side with the diameter of the plunger bore (20) being substantially equal to the diameter of the second cylinder bore (57);
- a first piston (8) inserted into the first cylinder bore (7), the first piston (8) having a first end portion and a second end portion;
- a plunger (21) inserted into the plunger bore (20) and coupled with the second end portion of the first piston (8), the plunger (21) being adapted to extend into the second cylinder bore (57);
- a second piston (58) inserted into the second cylinder bore (57);
- an engine chamber (9), formed between the first end wall (7*a*) and the first piston (8) to and from which a pressurized fluid is supplied and discharged by a supply/discharge switching means (5);
- a plunger chamber (23) defined by said plunger bore (20) and formed between the plunger (21) and the second piston (58);
- a cushion chamber (61) formed between the second end wall (60) and the second piston (58);
- a first check valve (24) for gas intake and a second check valve (25) for gas discharge having an outlet (25*b*), the check valves being connected internally to the plunger chamber (23) adjacent the second cylinder bore (57),
- a communicating passage (62) for connecting the cushion chamber (62) to the outlet (25*b*) of the second check valve (25); and
- a stopper (64) for preventing the second piston (58) from moving toward the first end side in excess of a set extent.

5,252,043

LINEAR MOTOR-PUMP ASSEMBLY AND METHOD OF USING SAME

Vance E. Bolding, Chino Hills, Calif.; John S. Stiebel, Washington, D.C., and Frank L. Unmack, La Mesa, Calif., assignors to Uniflo Oilcorp Ltd., La Mesa, Calif.

Continuation-in-part of Ser. No. 751,977, Aug. 29, 1991, Pat. No. 5,179,306, which is a continuation-in-part of Ser. No. 611,186, Nov. 9, 1990, Pat. No. 5,193,985, which is a division of Ser. No. 462,833, Jan. 10, 1990, Pat. No. 5,049,046. This application Sep. 16, 1991, Ser. No. 760,748
The portion of the term of this patent subsequent to Jan. 12, 2010, has been disclaimed.
Int. Cl.[5] F04B *17/04, 35/04*
U.S. Cl. 417—417 13 Claims



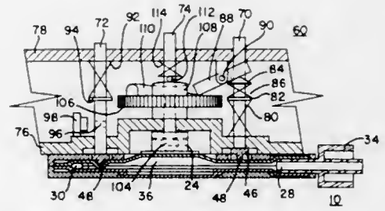
1. A linear motor-pump unit, comprising:
- elongated annular containment means for defining a path of travel;
- stator means surrounding said containment means for establishing a series of spaced apart electromagnetic fields along aid path of travel;
- said stator means having a very small transverse thickness to axial length ratio and including annular core means for defining a plurality of spaced-apart coil receiving slots, and coil means for producing said series of spaced apart electromagnetic fields, said fields extending at least partially in an axial direction when energized with an electric current;
- said coil means including a plurality of individual annular-shaped coils disposed individually within said slots;
- suction chamber means coupled to one terminal end of said stator means for defining a fluid receiving chamber having fluid inlet means for receiving fluids therein;
- discharge chamber means coupled to the other terminal end of said stator means for defining a fluid discharge chamber having outlet means for discharging fluids therefrom;
- mover means mounted telescopically within said stator means for interacting electromagnetically with said electromagnetic fields to urge said mover means reciprocatively along said path of travel;
- said mover means including a hollow elongated fluid receiving tube member extending between and into said fluid receiving chamber and said fluid discharge chamber for enabling said chambers to be in fluid communication;
- a plurality of annularly-shaped permanent magnets mounted externally on said tube member in an axially spaced apart manner for generating magnetic fields extending at least partially in an axial direction opposed to the fields produced by said coil means when individual ones of said magnets are disposed in opposition to corresponding individual ones of said coils to urge said mover means to produce relative movement between said stator means and said mover means;
- a plurality of thin annularly-shaped spacers mounted on said tube member interleaved with said magnets for shunting a portion of said magnetic fields produced by said magnets to reduce substantially core flux losses in said core means;
- valve means for establishing one-way flow of fluid into said tube member;
- said tube member including mounting means for receiving said valve means thereon to permit said valve means to travel within said fluid receiving chamber and to permit fluids received within said fluid receiving chamber to flow into said fluid discharge chamber as said mover means travels along said path of travel towards said fluid inlet; and
- wherein said mover means further includes a plurality of bearing means for engaging said containment means to help facilitate the unimpeded reciprocative movement of said mover means as it is urged along said path of travel.

5,252,044

PARENTERAL FLUID PUMP WITH DISPOSABLE CASSETTE

Aaron T. Raines, and Raymond Santo, both of Dallas, Tex., assignors to Medflow, Inc., Dallas, Tex.

Filed Oct. 20, 1992, Ser. No. 963,636
Int. Cl.[5] F04B *43/08*
U.S. Cl. 417—479 23 Claims



1. A parenteral fluid pump comprising:
- (a) a disposable pump chamber cassette including a flexible diaphragm defining a chamber having an inlet and an outlet;
- (b) a piston plate welded to the flexible diaphragm of the pump chamber, including an upstanding catch;
- (c) an instrument for receiving the disposable cassette in an operating position;
- (d) drive means carried by the instrument including means for engaging the piston plate catch and moving the piston plate back and forth to draw fluid into, and expel fluid from the pump chamber;
- (e) inlet valve closure means carried by the instrument for closing the inlet of the pump chamber at selected times;
- (f) pressure responsive normally-closing outlet valve means carried by the instrument for closing the outlet of the pump chamber except when the chamber is driven to an elevated pressure by the drive means.

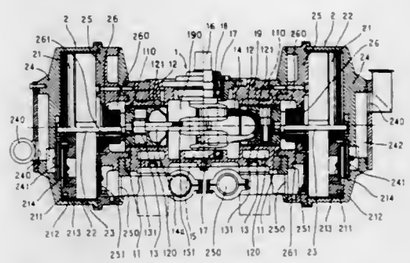
5,252,045

DUAL PISTON RECIPROCATING VACUUM PUMP

Hiroshi Shinoto, Hyogo, and Nobuhisa Okuyama, Chiba, both of Japan, assignors to Toyo Engineering Corporation, Tokyo and Mikuni Jukogyo Co., Ltd., Osaka, both of Japan

Filed Apr. 26, 1991, Ser. No. 692,369
Claims priority, application Japan, May 11, 1990, 2-122450; Sep. 3, 1990, 2-234090; Sep. 3, 1990, 2-234091
Int. Cl.[5] F04B *21/04*
U.S. Cl. 417—524 1 Claim

1. A reciprocating vacuum pump, comprising:
- a central, oil-free, crank-moving portion including a crank case, a rotatable crankshaft journalled in said crank case, said crankshaft having two crank pin means thereon on diametrically opposite sides thereof, a pair of cross heads slidably journalled in said crank case on diametrically opposite sides of said crank shaft, and a connecting rod extending between each of said cross heads and the adjacent one of said crank pin means;
- a pair of outer, oil-free, piston-moving portions each including a reciprocable piston rod carried by one of said cross heads and extending outwardly therefrom, a piston secured on each piston rod so that said pistons move in opposite directions in response to rotation of said crankshaft, a cylinder surrounding each piston so that each piston divides its associated cylinder into two separate chambers, a one-way suction exhaust valve means in each piston for permitting fluid flow between said chambers only in one direction, each cylinder having a one-way valve means connected to each of its respective chambers so that reciprocation of said pistons is effective to flow a working fluid unidirectionally through said cylinders, said cylinders each including a cylinder bottom cover at the inner end thereof and a cylinder head cover at the outer end thereof; and
- sealing means between said crank-moving portion and said two piston-moving portions for preventing fluid flow therebetween said sealing means comprising bellows glands having head flanges attached to said cylinder bottom covers, said bellows glands having bottom flanges which are attached to said cross heads, whereby the distance measured from said crank case to a cylinder head cover can be reduced to a great extent.



5,252,046

SELF-SEALING SCROLL COMPRESSOR

Tseng Wen-Ding, Tai-Chung City; Liu Da-Chuan, Taipei; Kuo Wen-Jen, Kao-Hsiung City; Chang Lung-Tsai, Taichung Hsien; Yang Chih-Cheng, Hsin Chu City; Tarng Guang-Der, Hsin Chu City; Lin Rui-Rung, Hsin Chu City; Lin Bao-Yuang, Hsin Chu Hsien, and Ho Jan-Shiew, Hsin Chu Hsien, all of Taiwan, assignors to Industrial Technology Research Institute, Hsin Chu Hsien, Taiwan

Filed Jul. 31, 1992, Ser. No. 923,227
Int. Cl.[5] F04C *18/04, 29/02*
U.S. Cl. 418—55.5 7 Claims

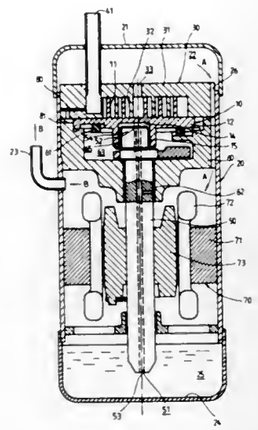
1. A scroll type compressor comprising a housing inside which a frame and a stationary scroll member, which includes an end plate with a wrap plate perpendicular mounted thereon, are securely fixed with the wrap plate of said stationary scroll member facing said frame to define therebetween a space for receiving therein an orbiting scroll member, which includes an end plate with a wrap plate of the same pitch with the wrap plate of the stationary scroll member extending therefrom into an inter-engagement with the wrap plate of said stationary scroll member so as to form at least a sealed compression chamber therebetween which is movable and size-changeable, said orbiting member being driven by a driving means to orbit around a center of the wrap plate of said stationary scroll member, a rotation preventive means being interposed be-

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tween said orbiting scroll member and said frame to guide the orbiting motion of said orbiting scroll member, a suction port being provided to conduct a first fluid to be compressed, which is in a low pressure, into said compression chamber, which moves with the orbiting motion of said orbiting scroll member from a low pressure region to a high pressure region, to be moved therewith to the high pressure region and thus compressed to be a high pressure, a discharge port being provided on said stationary scroll member to conduct the first fluid compressed in said compression chamber out thereof, wherein:

a back pressure chamber is formed between said orbiting scroll member and said frame to receive therein a high pressure second fluid from a second fluid source,

at least a slot is formed on said frame with an opening in communication with said back pressure chamber in such a manner that when said orbiting scroll member is driven by



said driving means to orbit around the center of said stationary wrap plate and reaches said opening, said opening is closed and when said orbiting scroll member leaves, said opening is re-opened to be in communication with said back pressure chamber again,

at least a capillary-like passage with a cross-sectional dimension smaller than said slot is formed on said stationary scroll member to connect said slot to said low pressure suction port, said capillary-like passage having such a small cross-sectional dimension so that when the opening is open to establish a fluid connection between said low pressure suction port and said back pressure chamber, a static fluid resistance is developed inside said capillary-like passage, which in combination with a dynamic fluid resistance established by the closing and re-opening of said opening serves to maintain said back pressure in an approximately constant pressure level.

5,252,047

GEAR PUMP WITH CONTROLLED CLAMPING FORCE

Theodore J. Joy, Mishawaka, Ind., assignor to Allied-Signal, Inc., Morristown, N.J.

Continuation-in-part of Ser. No. 946,264, Sep. 16, 1992, abandoned. This application Mar. 16, 1993, Ser. No. 33,708

Int. Cl.[5] **F04C** *2/18*

U.S. Cl. 418—132 **4 Claims**

1. In a pump having a pair of intermeshing gear members retained by first and second bushings in a cavity, said gear members being rotated by an input torque to sequentially increase the entrance pressure of a fluid received by an entrance chamber through an inlet port to an exit pressure when discharged from an exit chamber to an outlet port to an operational pressure, the improvement comprising:

a first bore extending from a first face to a second face in said first bushing, said first bore retaining a first end of a first shaft associated with said intermeshing gear members;

a second bore extending from said first face to said second face of said first bushing, said second bore retaining a first end of a second shaft associated with said intermeshing gear members;

a first recess located on said second face of said first bushing for receiving a first portion of an intermesh volume of fluid trapped by said intermeshing gears during rotation, said intermesh volume of fluid being at said operational pressure, said first recess communicating said first portion of said intermesh volume of fluid to said first bore for cooling and lubricating said first end of said first shaft;

a first chamfer located on said first face and concentric to said first bore;

a first passageway in said first bushing for connecting said first chamfer to said entrance chamber where said first portion of said intermesh volume of fluid is added to said fluid in said entrance chamber;

a second recess located on said second face of said first

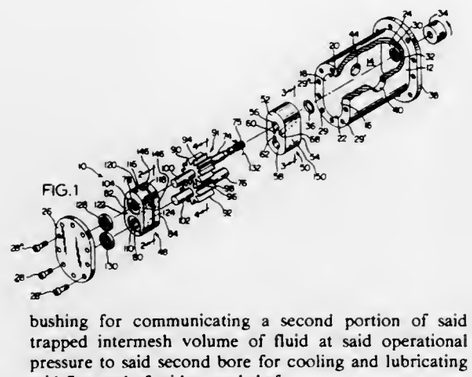


FIG.1

bushing for communicating a second portion of said trapped intermesh volume of fluid at said operational pressure to said second bore for cooling and lubricating said first end of said second shaft;

a second chamfer located on said first face and concentric to said second bore;

a second passageway in said first bushing for connecting said second chamfer with said exit chamber where said second portion of said intermesh volume of fluid is added to said fluid in said exit chamber;

passage means in said first bushing through which fluid at a selected fluid pressure less than said exit fluid pressure but greater than said entrance fluid pressure is communicated to act on an outer face to develop a force for urging a first inner face into engagement with the intermeshing gear members and the intermeshing gear members into engagement with a second inner face on said second bushing to seal said entrance chamber from said exit chamber; and

a peripheral surface having a seal located therein for preventing commingling of fluid at said exit fluid pressure with fluid at said selected fluid pressure.

5,252,048

FLUID COMPRESSOR HAVING IMPROVED OLDHAM MECHANISM

Takayoshi Fujiwara, Kawasaki; Hisanori Honma, and Yoshinori Sone, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 23, 1992, Ser. No. 903,133

Claims priority, application Japan, Jun. 25, 1991, 3-152107; Jun. 28, 1991, 3-183712

Int. Cl.[5] **F01C** *21/08*

U.S. Cl. 418—220 **12 Claims**

1. A fluid compressor comprising:

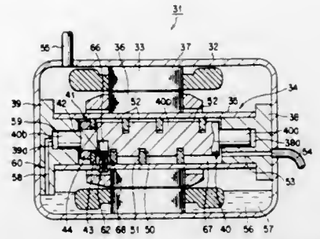
a cylinder;

a rotating member eccentrically arranged in said cylinder, said rotating member having a spiral groove formed in an outer surface thereof at a gradually decreasing pitch;

a spiral blade having a suction-side end portion and a delivery-side end portion and fitted in said groove to be retractable;

a plurality of operating chambers formed in said cylinder, partitioned by said blade, and gradually decreasing in volume, and allowing a working fluid to be supplied thereinto;

an Oldham mechanism for coupling said cylinder and said rotating member to each other and rotating said cylinder and said rotating member relative to each other, said Oldham mechanism having a rotating member Oldham portion arranged on said rotating member and having parallel slide contact surfaces;



a lubricant supplied into said cylinder and urged against an inner surface of said cylinder upon rotation of said cylinder; and

a lubricant retainer arranged in said cylinder and having a delivery hole for guiding the fluid, supplied into said cylinder, outside said cylinder, said lubricant retainer protruding into said cylinder to regulate a thickness of the lubricant,

wherein a protrusion size h of said lubricant retainer into said cylinder is set to satisfy

$$h > d/2 - (H/2 - e)$$

where d is an inner diameter of said cylinder, H is a distance between the slide contact surfaces of said rotating member Oldham portion, and e is an eccentricity of said rotating member.

5,252,049

LUBRICATING ARRANGEMENT FOR PLASTIC EXTRUDERS

Per Bøen, Vassholmen, Norway, assignor to Sonnichsen A.S., Oslo, Norway

PCT No. PCT/NO90/00190, § 371 Date Jun. 4, 1992, § 102(e) Date Jun. 4, 1992, PCT Pub. No. WO91/08891, PCT Pub. Date Jun. 27, 1991

PCT Filed Dec. 17, 1990, Ser. No. 852,205

Claims priority, application Norway, Dec. 19, 1989, 895125

Int. Cl.[5] **B29C** *47/02, 47/94*

U.S. Cl. 425—97 **1 Claim**

1. A lubricating arrangement for a plastic extruder (1) for the production of cylindrical plastic tubes with a smooth inner wall, said arrangement comprising;

a die core (6) which is a cylindrical coaxial extension of an extruder screw (2),

said die core rotating with said screw,

a stationary external die member (7) having an orifice,

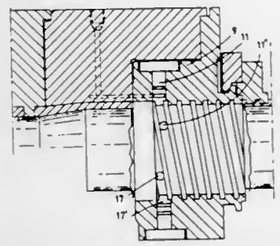
said die core extending through said orifice,

said lubricating arrangement being located in said external die member (7) for lubricating a die surface of said die member,

a plurality of radial directed bores (10) in said external die member (7),

wherein each of said plurality of radial directed bores (10) is provided with a plug (11, 11') with an inner end lying in said die surface,

a lubricant duct (13) extending to each of said plurality of radial directed bores (10) and connected with a source of lubricant which supplies lubricant under pressure,



said lubricant duct supplying lubricant under pressure to said die surface through communication with a slot between each of said plurality of radial directed bores and said plug and thereafter along a circumference of said plug to said die surface.

5,252,050

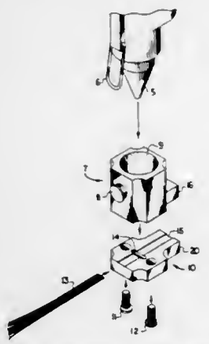
OPTICAL FIBER RIBBONIZER

Rainer M. Zimmer, Hickory, N.C., assignor to Siecor Corporation, Hickory, N.C.

Filed Jan. 31, 1992, Ser. No. 828,628

Int. Cl.[5] **B29C** *47/02*

U.S. Cl. 425—113 **4 Claims**



1. A light waveguide ribbonizer, comprising a portable melt adhesive gun having a heated nozzle; a light waveguide ribbon mold having (a) a nozzle port therein shaped to closely receive the gun nozzle and (b) a slot for the passage of light waveguides, said slot in communication with said port; and, means for removably attaching the portable melt adhesive gun to the light waveguide ribbon mold.

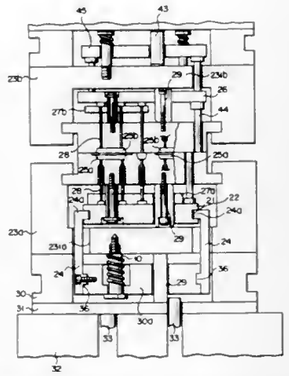
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5,252,051

RESIN-SEAL APPARATUS FOR SEMICONDUCTOR ELEMENT

Mitsugu Miyamoto; Minoru Togashi, both of Chigasaki; Fumio Takahashi, Yokohama, and Yutaka Fukuoka, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 25, 1991, Ser. No. 735,888
Claims priority, application Japan, Jul. 27, 1990, 2-200454
Int. Cl.[5] B29C *45/02, 45/14, 45/40, 45/73*
U.S. Cl. 425—116 6 Claims



1. A resin-seal apparatus for a semiconductor element, comprising:
at least two opposing cavity blocks for mounting a semiconductor element to be molded;
at least two ejector plates corresponding to said cavity blocks, said at least two cavity blocks being interposed between said at least two ejector plates;
an ejector pin and a support pin between said ejector plates and said cavity blocks;
a pair of first heat-plate molding die sets arranged to surround said cavity blocks and said ejector plates;
a second heat-plate molding die set below one of said ejector plates;
a plate holder below said second heat-plate molding die set wherein a gap exists between said plate holder and said second heat-plate molding die set;
an elastic member between said plate holder and said second heat-plate molding die set;
a connecting rod movable in said gap, said connecting rod having one end connected to one of said ejector plates and the other end connected to said plate holder; and
a push-up rod for pushing up said plate holder, wherein said cavity blocks are removably inserted into said first heat-plate molding die sets.

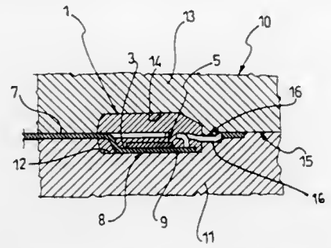
5,252,052

MOLD FOR MANUFACTURING PLASTIC INTEGRATED CIRCUITS INCORPORATING A HEAT SINK

Camillo Perego, Monza, Italy, assignor to SGS-Thomson Microelectronics S.r.l., Milan, Italy

Filed Dec. 23, 1991, Ser. No. 813,910
Claims priority, application Italy, Dec. 28, 1990, 22552 A/90
Int. Cl.[5] B29C *45/14*
U.S. Cl. 425—116 5 Claims

1. A mold for manufacturing plastic integrated circuit packages which incorporate a heat sink, comprising a first half-shell with a rest bottom for a heat sink constituting the central portion of a metal lead frame and carrying an integrated circuit chip and being held by braces on the frame, a second half-shell arranged to overlie the first such that a surface thereof mates with a corresponding surface of the first half-shell, said first half shell having along its mating surface recessed regions positioned to underlie the braces, said second half-shell having along its mating surface elevated portions opposite to the



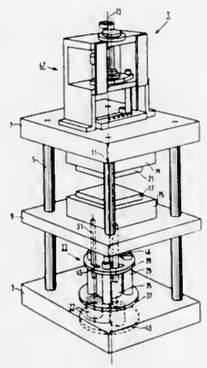
recessed regions and effective to compress said braces when the mold is closed with the metal frame inside so as to press the central portion tightly against the rest bottom.

5,252,053

APPARATUS FOR CLOSING A MOLD

Josephus J. M. Schraven, and Marinus B. J. de Kruijff, both of Nijmegen, Netherlands, assignors to Boschman Technologies B.V., Nijmegen, Netherlands

Filed Jun. 4, 1991, Ser. No. 710,264
Claims priority, application Netherlands, Feb. 26, 1991, 9100338
Int. Cl.[5] B29C *43/00;* B30B *1/00*
U.S. Cl. 425—127 18 Claims



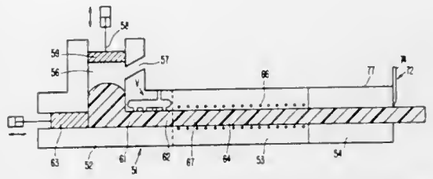
1. A mold press comprising:
first and second mold parts moveable relative to one another parallel to a central axis for forming a mold cavity and for receiving a solidifiable liquid in said cavity;
fluid operated displacement means; and
mechanical non-fluid operated drive means for displacing the first mold part parallel to said axis including a plurality of follower pins, said follower pins having centerlines extending parallel to said axis, said follower pins cooperating with the first mold part, and further including a plurality of drive pins coupled to the follower pins and responsive to the fluid operated displacement means for actuating said follower pins selectively, said drive pins being collectively rotatable about the central axis for alignment of the centerlines of the follower and drive pins.

5,252,054

APPARATUS FOR PRODUCING A DIMENSIONALLY STABLE THERMOPLASTIC SEMIFINISHED PRODUCT

Gerd Ehnert, Graben-Neudorf; Manfred Ehlers, Kraichtal-Unteröwisheim, and Rolf von Paumgartten, Wiesloch, all of Fed. Rep. of Germany, assignors to Menzolit GmbH, Kraichtal-Menzingen, Fed. Rep. of Germany

Continuation of Ser. No. 482,758, Feb. 21, 1990, abandoned, which is a division of Ser. No. 154,325, Feb. 10, 1988, Pat. No. 4,935,182. This application Nov. 12, 1991, Ser. No. 789,889
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1987, 3704037; Aug. 13, 1987, 3726921
Int. Cl.[5] B29C *47/78*
U.S. Cl. 425—297 12 Claims



3. Apparatus for producing dimensionally stable semifinished products of fibre-reinforced thermoplastic material from a pourable initial product made of heat-resistant fibres and binders containing thermoplastic material, the apparatus comprising:
a melting channel means for receiving the thermoplastic material;
a melting means surrounding the melting channel means for heating the thermoplastic material in the melting channel means to a temperature above a melting point of the thermoplastic material only in an outer marginal area of a strand of thermoplastic material so as to form a thin rigid outer covering;
means for forcing the thermoplastic material to be processed as an endless continuous strand through the melting channel means; and
cooling means surrounding said melting channel means and disposed in abutment with a discharge end of the melting channel means for receiving the thermoplastic material from the melting channel means and cooling the same so as to form the dimensionally stable semi-finished product having the thin rigid outer covering and a constant cross-sectional area.

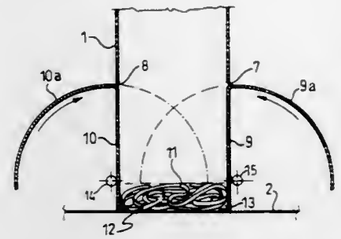
5,252,055

DEVICE FOR FORMING NESTS OF ELONGATE PASTA PRODUCTS SUCH AS NOODLES, FETTUCCINE, AND THE LIKE

Nicola Mangiavacca, Parma, Italy, assignor to Barilla G. E. R. F. LLI - Societa per Azioni, Parma, Italy

Filed Sep. 30, 1991, Ser. No. 767,776
Int. Cl.[5] A23L *1/16;* A23P *1/00*
U.S. Cl. 425—340 7 Claims

1. A device for forming nests of elongate pasta products, comprising a tubular duct extending vertically above a rest surface and compacting means guided for movement inside said tubular duct for applying pressure to a freshly formed nest of pasta in said tubular duct on said rest surface;
wherein said compacting means comprises at least one compacting plate guided for movement in said duct toward and away from a horizontal position a distance apart from said rest surface whereby said plate defines in said duct a nest shaping and confining chamber;
wherein said compacting plate is mounted cantilever-fashion to a horizontal powered drive shaft supported on an exterior of said duct and has dimensions and shape matching those of a cross-section of said duct; and



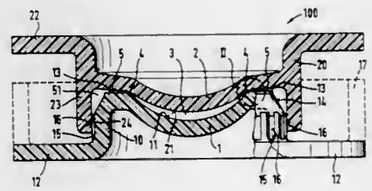
wherein a cylinder segment is attached to an edge of said compacting plate remote from said drive shaft with said cylinder segment being coaxial with said drive shaft.

5,252,056

CONTACT LENS CASTING MOULD

Wilhelm Hörner, Sulzbach/M; Peter Höfer, Aschaffenburg, and Peter Hagmann, Hösbach-Bahnhof, all of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 669,168, Mar. 14, 1991, abandoned. This application Aug. 6, 1992, Ser. No. 926,560
Claims priority, application Switzerland, Mar. 16, 1990, 00873/90
Int. Cl.[5] B29C *39/40;* B29D *11/00*
U.S. Cl. 425—555 11 Claims



1. A contact lens casting mould comprising two casting mould halves, a first of said mould halves being a female part having a concave shaping surface and a second of said mould halves being a male part having a convex shaping surface, wherein said shaping surfaces delimit a closed volume having a concave-convex and generally rotation symmetrical shape when the female part and the male part are joined together, said female part having a cylindrical body portion surrounding the concave shaping surface, a vertical outer wall of said cylindrical body portion having fixing elements thereon, and said male part being provided with a cylindrical projecting extension surrounding and projecting beyond said convex shaping surface, and wherein said female part and said male part are joined together, said fixing elements and said cylindrical projecting extension adhere to each other soley by frictional contact for assuring a tight fit of said male and female parts wherein said fixing elements are of vertical ribs.

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5,252,057

APPARATUS FOR EJECTING MOLDINGS FROM AN INJECTION MOLDING MACHINE

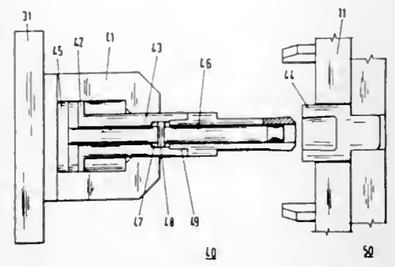
Hans Landstorfer, Nürnberg, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Jan. 31, 1992, Ser. No. 829,761

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1991, 4103446

Int. Cl.[5] B29C *45/40*

U.S. Cl. 425—556 5 Claims



1. An apparatus for ejecting a molding from an injection molding machine comprising:

a linearly movable ejector plate (**31**) and a reciprocating movable coupling device (**40**) for connecting said ejector plate (**31**) to a mold ejector plate (**50**), the coupling device (**40**) comprising a hydraulic cylinder (**41**) attached to said ejector plate (**31**), a coupling piston (**42**) movably disposed within said hydraulic cylinder (**41**), a coupling rod (**43**) attached to said coupling piston (**42**) in said hydraulic cylinder (**41**), a coupling sleeve (**44**) engaged with the mold ejector plate; said coupling rod (**43**) having a head end (**53**) for insertion into said coupling sleeve (**44**) and means for locking said head end (**53**) to said coupling sleeve (**44**) by radially widening said head end.

5,252,058

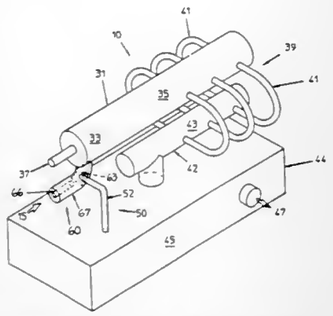
METHOD AND APPARATUS FOR RECIRCULATING FLUE GAS IN A PULSE COMBUSTOR

R. Bramley Palm, Jr., Oswego, N.Y., assignor to Fulton Thermatec Corporation, Pulaski, N.Y.

Continuation-in-part of Ser. No. 720,633, Jun. 25, 1991, Pat. No. 5,145,354. This application Sep. 4, 1992, Ser. No. 940,919

Int. Cl.[5] F23C *11/04*

U.S. Cl. 431—1 17 Claims



1. An apparatus for recirculating flue gas in a pulse combustor dedicated to deliberate one-stage pulse combustion, said apparatus comprising:

at least one combustion chamber wall defining a single stage combustion chamber having a single stage mixing zone and a single stage combustion zone in communication with each other;

fuel/air inlet means for introducing a fuel/air mixture into said single stage mixing zone;

valve means for preventing backflow within said fuel/air inlet means during pulse combustion within said single stage combustion chamber, said valve means in communication with said fuel/air inlet means;

ignition means for igniting said fuel/air mixture within said single stage combustion chamber;

exhaust means for discharging flue gas from said single stage combustion zone, said exhaust means in communication with said single stage combustion chamber; and

recirculation means for recirculating a portion of said flue gas from said exhaust means to said single stage mixing zone.

14. A method for recirculating flue gas in a pulse combustor dedicated to deliberate one-stage pulse combustion, said method comprising the steps of:

introducing a fuel/air mixture into a single stage mixing zone of a single stage combustion chamber of the pulse combustor;

generating pulse combustion in said single stage combustion chamber of the pulse combustor and thereby producing the flue gas;

exhausting the flue gas from the single stage combustion chamber; and

recirculating a portion of the flue gas from the single stage combustion chamber to the single stage mixing zone.

5,252,059

PROCESS FOR THE LOW-EMISSION COMBUSTION OF FUEL, AND BURNER FOR USE IN SAID PROCESS

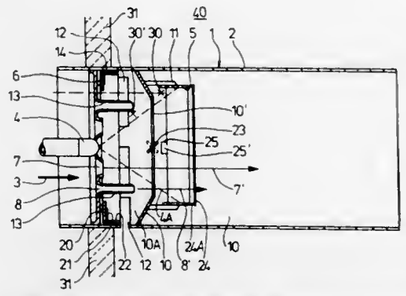
Michael G. May, Rte. de Gentéve, CH-1180 Rolle, Switzerland

Filed May 21, 1992, Ser. No. 886,781

Claims priority, application Switzerland, May 24, 1991, 01547/91-0

Int. Cl.[5] F23M *3/00*

U.S. Cl. 431—9 20 Claims



1. A process for the continuous combustion of fluid fuels by air in a blast burner tightly mounted in a wall of a combustion chamber, said burner having a burner head comprising a generally cylindrical fire tube having at least one opening in its upstream wall region for recirculating combustion gases from said combustion chamber into said fire tube, fuel supply means comprising an axially mounted fuel injection nozzle from which fuel is emitted into said fire tube to flow generally axially of the latter, and ignition means, at least a substantial portion of combustion air being supplied to said burner head in the form of air jets through a nozzle plate within said fire tube, which generates said air jets, at least one low-pressure region in said fire tube being capable of aspirating flue gases in the manner of an injector pump, said process comprising the steps of:

(a) providing a screen that is mounted in said fire tube with a free passage area at its center that is greater than the sum of all passage areas defined by said air jets and blocking the flow of gases between said free passage and said fire tube directing said air jets through said free passage and positioning said screen to stabilize said low pressure region;

(b) preventing fuel that is introduced into the fire tube from impinging directly upon surface portions of said screen that face upstream toward said nozzle plate; and

(c) aspirating flue gases from the space surrounding said fire tube into said fire tube at a location upstream of said screen.

5,252,060

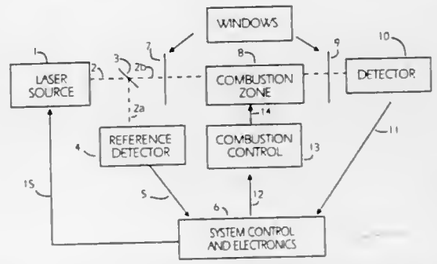
INFRARED LASER FAULT DETECTION METHOD FOR HAZARDOUS WASTE INCINERATION

J. Thomas McKinnon, 635 Dewey Ave., Boulder, Colo. 80304, and J. Houston Miller, P.O. Box 355, Barnesville, Md. 20838

Filed Mar. 27, 1992, Ser. No. 859,002

Int. Cl.[5] F23N *5/00*

U.S. Cl. 431—12 18 Claims



1. A method for monitoring combustion emissions in a combustion chamber comprising the steps of:

emitting a laser beam from a tunable diode laser source;

optically splitting said laser beam using optical splitting means;

directing a first portion of said split beam into a reference detector means where said first portion of said split beam is converted to an electronic reference signal;

directing a second portion of said split beam through a first window into said combustion chamber;

further directing said second portion of said split beam through a second window, opposite to said first window, out of said combustion chamber and to a sample detector means where said second portion of said split beam is converted to an electronic sample signal;

directing said electronic reference signal and said electronic sample signal to a system control and electronics means;

analyzing said electronic reference signal and said electronic sample signal in said system control and electronics means; and

directing an electronic feedback signal from said system control and electronics means to said tunable diode laser source.

5,252,061

PULSE COMBUSTION DRYING SYSTEM

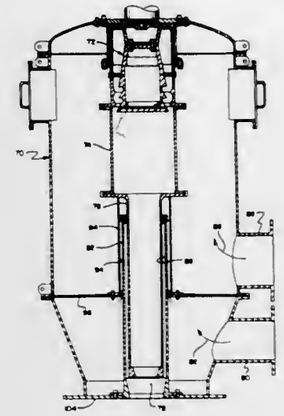
Richard W. Ozer, Golden Valley, Minn.; Hanford Lockwood, Jr., San Mateo, Calif.; Gregory J. Kimball, Robbinsdale, and Ilya Pikus, Plymouth, both of Minn., assignors to Bepex Corporation, Minneapolis, Minn.

Filed May 13, 1992, Ser. No. 882,048

Int. Cl.[5] F27D *7/00*

U.S. Cl. 432—25 47 Claims

1. Material drying equipment including a pulse combustor, an associated combustion chamber, means for introducing fuel and combustion air to the combustion chamber whereby the combination of the pulse combustor and combustion chamber generate a pulsating flow of hot gases, a tail pipe connected at that outlet of the combustion chamber for receiving the pulsating flow of hot gases, a material feed introduction chamber connected at the outlet of the tail pipe, a drying chamber connected to the introduction chamber, and cooling means for controlling the temperature of the hot gases issuing from the outlet of the tail pipe and entering the introduction chamber,



said cooling means comprising means for delivering a bypass air stream adjacent said introduction chamber, said bypass air stream being separate from the combustion air and issuing into said introduction chamber along with the hot gases for mixing with and cooling the hot gases.

5,252,062

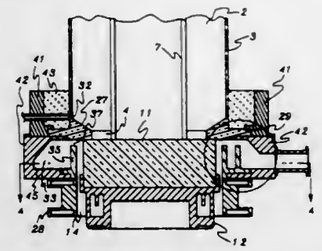
THERMAL PROCESSING FURNACE

Robert F. Groves, Fairfax; Lynda L. Eaton, St. Albans; David L. Gardell, Underhill, and Paul H. Boileau, Jericho Center, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 15, 1992, Ser. No. 961,290

Int. Cl.[5] F27B *5/04*

U.S. Cl. 432—205 21 Claims



1. A thermal processing furnace comprising:

an elongated cylindrical processing chamber for surrounding a tower assembly capable of receiving one or more articles to be processed, said cylindrical processing chamber having an opening at one end thereof;

a quartz door operatively engaged to the tower assembly thereon and being axially transportable relative to the processing chamber into an inserted position wherein the tower assembly is inserted into the processing chamber;

a quartz flange located along the perimeter of the opening of the processing chamber wherein the quartz flange contacts the quartz door when the quartz door is translated into the inserted position thereby forming a quartz seal; and

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a scavenger cavity located at the end of the chamber having said opening, the scavenger cavity being defined by an inner wall, said inner wall and quartz flange forming an entry slot therebetween, the entry slot leading into the scavenger cavity and being in fluid flow relationship with a contact area between the quartz flange and quartz door forming the quartz seal wherein gases from within the processing chamber which leak past the quartz seal are capable of being evacuated into the entry slot and through the scavenger cavity.

5,252,063

COOLING DEVICE FOR THE DISTRIBUTION CHUTE OF AN INSTALLATION FOR CHARGING A SHAFT FURNACE

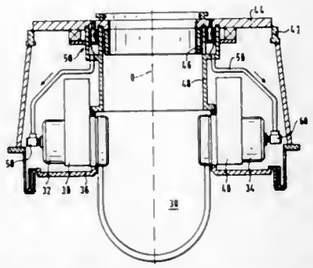
Guy Thillen, Diekirch; Radomir Andonov, Mamer, and Emile Lonardi, Bascharage, all of Luxembourg, assignors to Paul Wurth S.A., Luxembourg

Filed Jun. 12, 1992, Ser. No. 898,790

Claims priority, application Luxembourg, Jun. 12, 1991, 87948

Int. Cl.[5] F27D *1/12*

U.S. Cl. 432—235 19 Claims



1. A device for cooling a distribution chute of an installation for charging a shaft furnace comprising a fixed channel for introduction of a material disposed vertically in about the center of the head of the furnace, a rotary collar mounted coaxially around the feed channel, a fixed outer housing mounted coaxially on the outside of the collar and delimiting laterally with the latter a substantially annular chamber, this chamber being separated from the inside of the furnace by means of a cage securely attached to the rotary collar, a distribution chute mounted in a pivoting manner in the rotary cage, driving means for causing the collar and the cage to turn, as one, about the vertical axis of the furnace and of the channel, two driving casings arranged diametrically opposed in the chamber and rotating with the rotary cage about the vertical axis, these casings acting on the suspension shafts of the chute so as to cause the pivoting of the latter about a horizontal axis, an annular feed tank attached on the upper edge of the rotary collar and whose outer and inner concentric walls slide in an upper fixed plate through which passes at least one pipe for admission of a cooling fluid feeding the annular tank, the device comprising:

a circuit for cooling a lower surface of a body of the distribution chute;

at least one pipe for connecting said circuit for cooling to the annular tank, said at least one pipe passing axially through the suspension shafts of the distribution chute; and

rotary connectors having said at least one pipe passing therethrough.

5,252,064

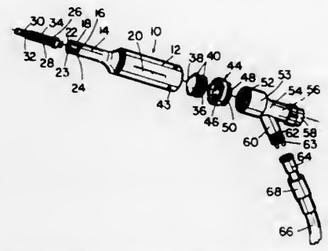
SUBGINGIVAL IRRIGATOR

John W. Baum; Len Haferman; JamesM. Jennings; Anna J. Russell, and Gary Thomas, all of Fort Collins, Colo., assignors to Teledyne Industries, Inc., Fort Collins, Colo.

Filed Feb. 19, 1991, Ser. No. 657,649

Int. Cl.[5] A61C *17/02, 1/10, 3/02, 1/12*

U.S. Cl. 433—80 14 Claims



1. A hand-held subgingival irrigator comprising:

a barrel in which a treatment fluid is to be contained;

a plunger slideable within said barrel;

a connector at one end of said barrel and receptive to attachment of a cannula;

a housing having a coupling attachable to the other end of said barrel and defining a space between said plunger and said housing;

a fitting on said housing detachably receptive of a hose which delivers air under pressure;

and an adjustable air pressure regulator in said housing in an air flow path between said fitting and said coupling to selectively control the flow of air in said air path and automatically maintain substantially constant the pressure in said space at a selected level as said plunger moves within said barrel.

5,252,065

CARTRIDGE TYPE DENTAL HANDPIECE

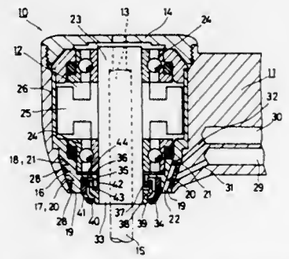
Takasuke Nakanishi, Kanuma, Japan, assignor to Nakanishi Deotal Mfg. Co., Ltd., Tochigi, Japan

Filed Aug. 7, 1992, Ser. No. 926,759

Claims priority, application Japan, Aug. 12, 1991, 3-201864

Int. Cl.[5] A61C *1/08, 1/10, 1/12, 1/05*

U.S. Cl. 433—126 6 Claims



1. A cartridge type dental handpiece comprising a handpiece main body, a head housing provided at a distal end of said handpiece main body, and a cartridge detachably adapted within said head housing, said cartridge having a cartridge casing and a rotatable sleeve rotatably mounted within said cartridge casing and adapted for detachably holding a dental burr, the dental handpiece further comprising a fluid passage defined between an inner surface of the head housing and an outer surface of the cartridge casing when the cartridge is mounted within said head housing, a fluid spraying port formed in a lower surface of said cartridge casing in communication with said fluid passage for spraying the fluid from said fluid passage onto a tooth being treated, and a communication port for supplying the fluid from a fluid supply duct within said handpiece main body into said fluid supply passage.

5,252,066

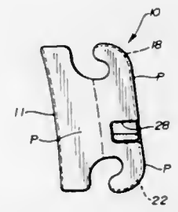
ORTHODONTIC BRACKET FORMED FROM PORCELAIN FUSED TO METALLIC MATERIAL

Carl W. Fairhurst, North Augusta, S.C., assignor to Johnson & Johnson Consumer Products, Inc., Skillman, N.J.

Filed Aug. 28, 1992, Ser. No. 936,977

Int. Cl.[5] A61C *3/00*

U.S. Cl. 433—8 15 Claims



1. A dental bracket formed from metal, and having a tooth facing surface, a pair of sides attached to said tooth facing surface, and a buccal surface attached to said pair of sides and forming an archwire slot between said sides, wherein said buccal surface has fused to it a coating of dental porcelain and said slot having an exposed metallic surface.

5,252,067

HANDPIECE FOR DENTAL MEDICAL TREATMENT

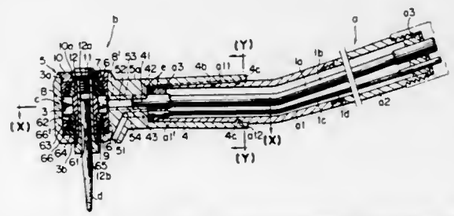
Yasuo Kakimoto, Aichi, Japan, assignor to Ushio Co., Ltd., Aichi, Japan

Filed Feb. 3, 1992, Ser. No. 829,249

Claims priority, application Japan, Dec. 3, 1991, 3-319072; Dec. 16, 1991, 3-332091

Int. Cl.[5] A61C *1/14*

U.S. Cl. 433—129 3 Claims



1. A handpiece for dental medical treatment in which an air turbine rotated at high speed by compressed air is encased in and a cooling water spray port is provided in a head portion at the extreme end of a handpiece body interiorly provided with a compressed air supply flow-passage and discharge flowpassage, a cooling water flow-passage and discharge flowpassage, a cooling water flowpassage and a cooling water spraying air flowpassage, and a cutting tool is inserted into a tubular rotary shaft of said air turbine, characterized in that a head portion is formed separately from a handpiece body, a tubular portion slopped over an extreme end of the handpiece body is provided at a rear end thereof, air supply and discharge ports through which air supply and discharge flowpassages and a turbine chamber for an air turbine are communicated and a cooling water port and a spray air port through which a cooling water flowpassage and an air flowpassage are communicated with a spray port are bored at an inner end of said tubular portion, and an anti-slip projection is provided on one of an inner periphery of the tubular portion of said head portion and an outer periphery at the extreme end of the handpiece while a recess with which said projection is disengageably and elastically engaged is provided on the other; and wherein said head portion is formed with a closed-end tubular receiving chamber an upper surface of which is opened, upper and lower bearings, a rotary shaft upper and lower ends of which are supported by said bearings, a turbine provided integral with the outer periphery of said rotary shaft, and an elastic member for urging said bearings and said turbine toward the upper surface of the receiving chamber are charged into said receiving chamber, and a lid member is fitted to an opening of the upper surface of the receiving chamber to form an air turbine; and

wherein a tapped hole is provided internally of an upper end of a collet inserted into the rotary shaft, and a stop screw engaged with said tapped hole is engaged at the end of the rotary shaft so that said collet is threadedly moved forward and backward by turning said stop screw to tightly hold a cutting tool inserted into a slotted mounting hole of the lower end of the collet.

5,252,068

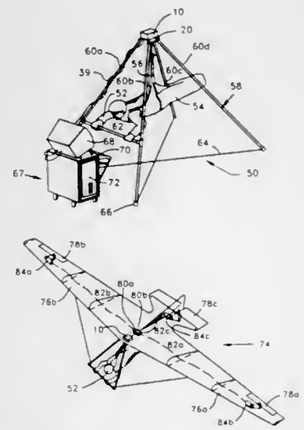
WEIGHT-SHIFT FLIGHT CONTROL TRANSDUCER AND COMPUTER CONTROLLED FLIGHT SIMULATOR, HANG GLIDERS AND ULTRALIGHT AIRCRAFT UTILIZING THE SAME

Bradley H. Gryder, Hiddenite, N.C., assignor to Flight Dynamics, Incorporated, Raleigh, N.C.

Filed Dec. 31, 1991, Ser. No. 816,650

Int. Cl.[5] B64C *31/02;* G09B *09/08*

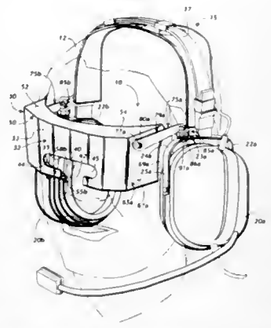
U.S. Cl. 434—30 19 Claims



1. In a suspended-pilot environment that includes a mechanical support structure for suspending a pilot so that the pilot is provided with freedom of weight-shift movement of the type used to control a hang glider or ultralight aircraft, a weight-shift flight control transducer associated with said mechanical support structure including means for transforming the weight-shift movements of the suspended pilot into electrical signals representative of the weight-shift movements.

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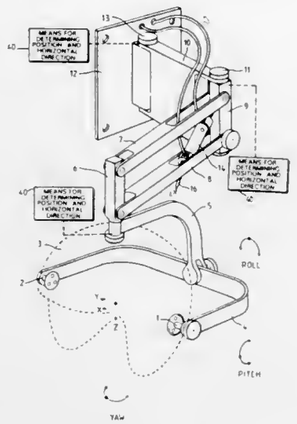
5,252,069
INSTRUMENT FLIGHT RULES (IFR) TRAINING DEVICE
Richard A. Lamb, P.O. Box 626, Hiram, Ga. 30141, and Jack J. Gilbert, Roswell, Ga., assignors to Richard A. Lamb, Dallas, Ga.
Filed Mar. 30, 1992, Ser. No. 859,883
Int. Cl.[5] G09B *9/08*
U.S. Cl. 434—35 8 Claims



1. Pilot vision restriction apparatus for use with a headset during piloting an aircraft, said apparatus comprising:
a mask means for partially occluding a pilot's vision by blocking pilot lines of sight which extend outside an aircraft and only permiting pilot lines of sight which extend to points within the aircraft, wherein said mask means includes, at least, a shield member defining a viewing aperture; and
a connection means for connecting said mask means to a headset.

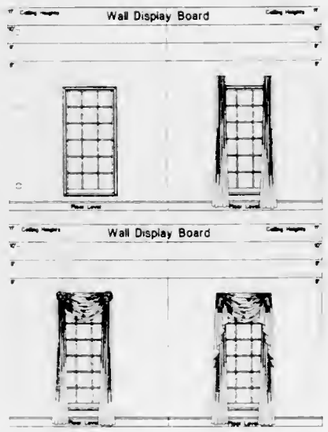
5,252,070
HELMET LOADER FOR FLIGHT SIMULATION
Donald N. Jarrett, Fleet, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England
Filed May 11, 1992, Ser. No. 890,278
Claims priority, application United Kingdom, Jul. 10, 1990, 9015177
Int. Cl.[5] G09B *9/10*
U.S. Cl. 434—59 10 Claims

1. An aircraft simulator including:
means for determining the g-force acting on the simulated aircraft in response to the operator's controls; and
means for applying to a helmet worn by the operator a vertical force dependent on said g-force, where said means for applying a vertical force to the helmet comprises:
a parallelogram linkage interconnecting the helmet with a fixed support, one side of said linkage being linked to said fixed support and maintained at a constant height whilst



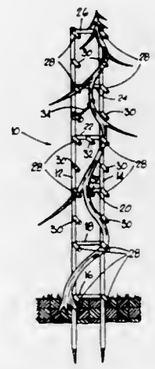
being free to move in a horizontal direction and the opposite side of the linkage being linked to the helmet; and means for applying a torque to said parallelogram linkage.

5,252,071
CUSTOM DRAPERY DESIGN SYSTEM
Rochelle T. Hansard, 2924 S. Cherokee La., Woodstock, Ga. 30188, assignor to Rochelle T. Hansard, Woodstock, Ga.
Filed Feb. 16, 1993, Ser. No. 17,768
Int. Cl.[5] G09B *25/00*
U.S. Cl. 434—75 6 Claims



1. A device for demonstrating a custom drapery design comprising:
A display board having a front laminated surface and a back surface, said front surface imprinted with a plurality of first horizontal lines representing ceiling heights and a second horizontal line member representing a baseboard;
A plurality of window members configured and dimensional scaled to represent windows, said window members attachable by static electric attraction to said display board;
A plurality of drapery component members configured and dimensional scaled to represent drapery components, said drapery component members attachable by static electric attraction to said display board and said window members; and
A plurality of colored storage sheets to which said window members and drapery components are attachable;
Wherein said window members and drapery components are indexed to a colored storage sheet.

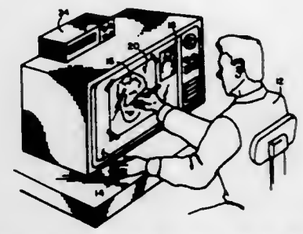
5,252,072
BONSAI PLANT TRAINING METHOD AND APPARATUS
Harold Sasaki, 12355 W. 34th Pl., Wheat Ridge, Colo. 80033
Filed Dec. 17, 1992, Ser. No. 991,744
Int. Cl.[5] A01B *79/00*
U.S. Cl. 434—81 18 Claims



1. A method for training a bonsai plant growing in soil, comprising the steps of:
(a) placing a training ladder next to the plant, the training ladder having a left vertical post and a right vertical post, a plurality of horizontal rungs connected to the left vertical post and the right vertical post, and a plurality of fixed pegs protruding from the ladder,
(b) inserting the vertical posts of the ladder into the soil until a horizontal rung of the ladder is at the level of the soil and a first fixed peg of the plurality of pegs is against the plant,
(c) using the first fixed peg as a fulcrum, bending the plant until it is against a second fixed peg of the plurality of pegs,
(d) using the second fixed peg as a fulcrum, bending the plant until it is against a third fixed peg of the plurality of pegs, and
(e) removing the training ladder after the plant is able to hold its shape.

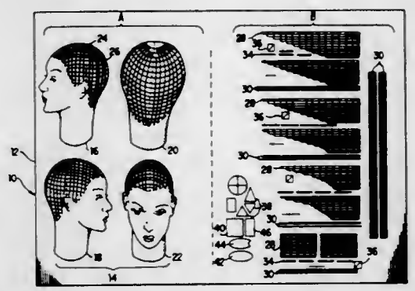
5,252,073
METHOD OF ART INSTRUCTION
Gregory R. Brotz, P.O. Box 1322, Sheboygan, Wis. 53081
Filed Jul. 7, 1992, Ser. No. 909,674
Int. Cl.[5] G09B *11/00*
U.S. Cl. 434—88 10 Claims

1. A method for teaching artistic methods and techniques, comprising the steps of:
providing a television set;
providing an image and instructions on the screen of said television;
providing a sheet of translucent material;
adhering said sheet of translucent material over the portion of said screen on which said image appears;
providing a marking instrument suitable for marking said sheet; and



copying said image on said sheet with said marking instrument.

5,252,074
MAGNETIC THREE-DIMENSIONAL ANALYSIS SYSTEM FOR HAIRDRESSING EDUCATION
Leo Passage, Evanston, and Robert Passage, Algonquin, both of Ill., assignors to Pivot Point International, Inc., Chicago, Ill.
Filed Oct. 25, 1991, Ser. No. 782,522
Int. Cl.[5] G09B *19/10*
U.S. Cl. 434—94 11 Claims



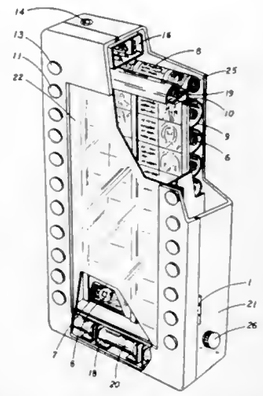
1. Three-dimensional magnetic partial head form means for use as a tool in the demonstration of hairdressing techniques by an instructor and to aid cosmetology students in learning and practicing such techniques, said three-dimensional magnetic partial head form means comprising:
a. a three dimensional magnetic head form representing a view of half of a human head, said head form having at least one flat surface parallel to the longitudinal axis of said head form, said flat surface having a flat magnetic means attached for the purpose of attaching said partial head form means to a magnetically attractive flat surface;
b. a plurality of markings on said magnetic head form for indication of a hairstyling technique, said markings forming a grid to aid the student in practicing hairdressing.

5,252,075
MEDICAL PERSONNEL AND PATIENT COMMUNICATION INDICATOR DEVICE
Di Heng, 39 Bowery #609, New York, N.Y. 10002
Filed Mar. 30, 1992, Ser. No. 860,133
Int. Cl.[5] G09B *21/00, 7/00*
U.S. Cl. 434—112 1 Claim

1. A device for displaying information for communication with handicapped, infirm, illiterate, or non-english speaking persons comprising:
a casing,
a plurality of removable and interchangeable information

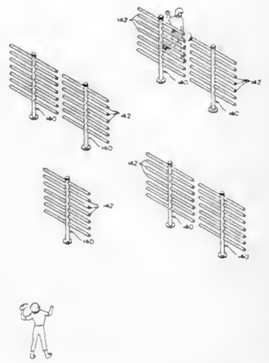
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screens made of transparent material and having a plurality of information cards thereon for insertion in the casing,
said information cards having imprinted thereon information that patients want to express, or information that service providers want to get across to patients,



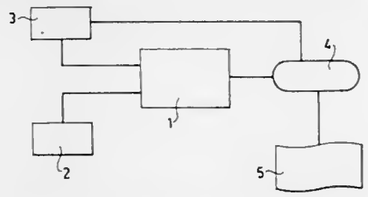
rollers attached to each end of said information screen for advancing the screen and for providing easy insertion and removal of the screen from the casing,
and highlighting means in said casing for highlighting an individual information card by illumination of the card.

5,252,076
METHOD AND APPARATUS FOR TRAINING ATHLETES
Daniel S. Kelleher, 201 E. 9th, Ellensburg, Wash. 98926
Filed Aug. 13, 1991, Ser. No. 745,064
Int. Cl.[5] A63B *69/00*
U.S. Cl. 434—251 **11 Claims**



1. An apparatus for training athletes to improve their ability to concentrate on, track, and handle or catch a ball in motion, wherein said apparatus comprises:
at least one central elongated body, said central elongated body having a length and two ends;
a plurality of barrier arms for each said central elongated body, said barrier arms extending out form and arrayed along said central elongated body, said barrier arms having a length and two ends, and further being made of a flexible material;
a mounting system for each said central elongated body, said mounting system being attached to said central elongated body and allowing said central elongated body to remain in a substantially vertical position without the use of external supports;
a first set and a second set of said barrier arms for each said central elongated body, said first set and said second set of said barrier arms being formed form said barrier arms making up said plurality to said barrier arms, said arms of each said set being substantially aligned with one another along said central elongated body, and substantially normal to said central elongated body; and
an arm attachment system for each said central elongated body, each said barrier arm being detachably attached to said central elongated body by said arm attachment system.

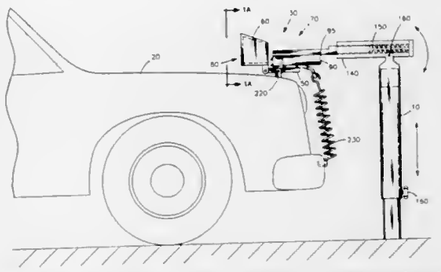
5,252,077
PROCESS FOR MATERIALIZING VIRTUAL INTERACTIVITY BETWEEN AN INDIVIDUAL AND A DATA SUPPORT
Michel Schott, Vendenheim, France, assignor to Info Telecom, France
Filed Oct. 4, 1991, Ser. No. 771,752
Claims priority, application France, Oct. 4, 1990, 90 12463; Apr. 12, 1991, 91 04763
Int. Cl.[5] G09B *19/00*
U.S. Cl. 434—335 **9 Claims**



1. A method of virtual interactive communication with a data support that proposes at least one query to a user, comprising the steps of:
seeding a pseudorandom number generator with at least one datum to generate a sequence of digits according to a logic that is inaccessible to the user;
suggesting at least one reply to said query;
introducing data to an electronic circuit means with a data input device, said introduced data being representative of the user's reply to said query, and being associated with predetermined members of said generated sequence;
transforming said introduced data in said electronic circuit means to yield a transformed sequence that is comparable to said generated sequence;
comparing said transformed sequence with said generated sequence; and
outputing a signal that is indicative of said comparison to a display.

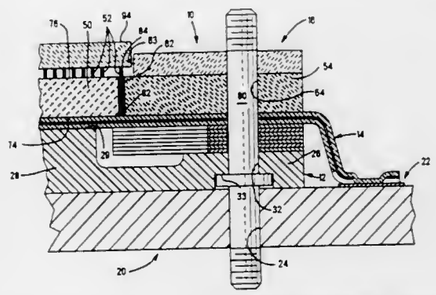
5,252,078
DRIVE-UP ELECTRIC RECEPTACLE
Albert Langenbahn, 704 S. Morgan, Mason City, Ill. 62664
Filed Feb. 23, 1993, Ser. No. 21,226
Int. Cl.[5] H01R *33/00*
U.S. Cl. 439—34 **8 Claims**

1. An apparatus for providing an electrical interconnection between a stationary fixture and a vehicle comprising:
a plug assembly providing a plurality of spaced apart plug electrodes, a standoff for holding the plug electrodes in mutually parallel, fixed positions extending horizontally and outwardly from the standoff, a base portion fixed to the vehicle for supporting the standoff, and a cover enclosing an interior space, the cover being hingably attached to the base portion such that the cover may be protectively positioned over the standoff and plug electrodes in a closed position of the cover, and may alternately be positioned to expose the standoff and plug electrodes in an open position of the cover;
a socket assembly adapted for use with the stationary fixture, providing upper and lower, horizontally disposed, parallel, spaced apart, protective plates, a plurality of socket electrodes positioned between the plates, the plates providing general electrical isolation of the socket electrodes from the environment; and
a support means positioned between the fixture and the socket assembly for holding the socket assembly in a preferred position for engaging the plug assembly;



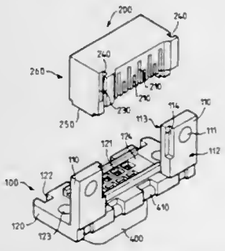
such that the vehicle may be moved to a position whereby the plug assembly engages the socket assembly, each one of the plug electrodes being forced into contact with one of the socket electrodes to establish a plurality of electrically conductive paths between the plug assembly and the socket assembly, the cover being forced by an engagement arm on the socket assembly to move from the closed position to the open position to expose the plug electrodes and as an indication that engagement has taken place between the plug assembly and the socket assembly.

5,252,079
METHOD OF MANUFACTURE OF A CONTACT GUIDE
Dimitry G. Grabbe, Middletown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Feb. 10, 1992, Ser. No. 833,284
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—70 **8 Claims**



1. An electrical connector assembly for electrically connecting a first substrate to a second substrate, the electrical connector comprising:
a frame positioned on the first substrate having a plurality of contacts extending therethrough;
a guide plate receiving opening positioned in the frame, the guide plate receiving opening has end portions of the contacts provided therein;
a chip receiving opening positioned in the frame, adjacent to the guide plate receiving opening;
a guide plate positioned in the guide plate receiving opening, the guide plate has side edges which have grooves provided therein, the grooves have silicone jelly provided therein;
contact pins positioned in the grooves of the guide plate, the contact pins have first ends which electrically engage the contacts and second ends which extend into the chip receiving opening;
whereby the silicone jelly provided in the grooves cooperates with the contact pins to maintain the contact pins in position to engage the second substrate when the second substrate is inserted into the chip receiving opening.

5,252,080
PRESS-FIT PRINTED CIRCUIT BOARD CONNECTOR
Michel Pesson, Sille le Philippe, France, assignor to Souriau et Cie, France
Filed Dec. 2, 1992, Ser. No. 985,481
Claims priority, application France, Dec. 10, 1991, 91 15295
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—79 **1 Claim**



1. Press-fit connector adapted to be fitted to a printed circuit board comprising an insulative body carrying a series of right-angled pins the proximal branches of which are substantially perpendicular to said board and have a profile enabling them to be force-fitted into through-plated holes of the printed circuit and the distal branches of which are substantially parallel to said board and configured as male or female connecting members, in which connector said insulative body comprises:
a part having the general shape of an angle-bracket with one flange substantially parallel to the board constituting a mounting flange whose outside surface is adapted to bear against the surface of the board and whose other flange is essentially perpendicular to said board and constitutes a connecting flange to which said distal branches of said pins are fastened, and
a part constituting a pressure block having:
first bearing surfaces adapted to bear against said distal branches of said pins so as to exert on the latter by virtue of application of a force urging the block in a direction perpendicular to the board a force forcing said pins into respective through-plated holes, and
second bearing surfaces adapted to bear against the lower surface of said mounting flange of said angle-bracket, the relative position of said first and second bearing surfaces being such that when said first bearing surfaces bear without clearance on said pins there remains a clearance between said second bearing surfaces and the inside surface of said mounting flange which is less than the elastic deformation under load perpendicular to said board of said pins when said force is applied whereby said mounting flange is urged against said board concomitantly with forcing of said pins into said through-plated holes, said clearance being greater than the permanent deformation perpendicular to said board of said pins and said insulative body after said pins are forced in completely and the load is removed, whereby the mounting side of said angle-bracket is held against said board.

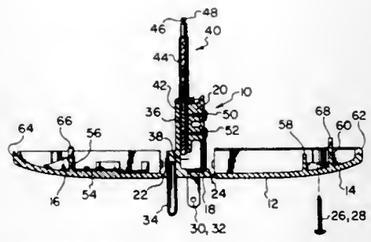
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5,252,081

PLUG FOR USE WITH SELF REGULATING CABLE

Robert E. Hart, Ontario, Canada, assignor to Heron Cable Industries Ltd., Waterloo, Canada

Filed Feb. 4, 1993, Ser. No. 103,363
Claims priority, application Canada, Nov. 19, 1992, 2083358
Int. Cl.[5] H01R *13/652, 19/08, 13/68*
U.S. Cl. 439—98 9 Claims



1. An electrical plug for use with self-regulating cable, comprising:

a housing means surrounding and mounting

a cable receiving member with integral conducting and grounding pins, and adapted to matingly receive the-outer surface of the insulator of a self-regulating cable in a fixed orientation;

piercing means integral with said cable receiving member adapted to pierce the outer surface of the insulator and make electrical contact between the individual conductors of the self-regulating cable and said conducting pins; and

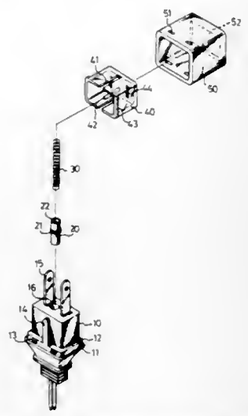
a grounding means mounted on said housing adapted to make electrical contact between an external grounding braid of said cable and the grounding pin.

5,252,082

SAFETY PLUG

Kuang N. Hsieh, No. 1058, Chien Cheng Rd., and Wen B. Hsieh, No. 1056, Chien Cheng Rd., both of Taichung, Taiwan

Continuation-in-part of Ser. No. 893,240, Jun. 3, 1992, abandoned. This application Oct. 21, 1992, Ser. No. 964,498
Int. Cl.[5] H01R *13/44*
U.S. Cl. 439—141 3 Claims



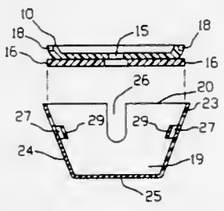
1. A plug comprising a body including a front portion having at least two prongs extended outward therefrom and solidly engaged therein, a hole formed in said body, a sleeve engaged in said hole of said body and having a hardness greater than that of said body, a spring received in said sleeve, a casing slidably engaged on said body of said plug and including a pin element extended inwards thereof for engagement with said spring, said casing being biased away from said body by said spring, and a housing engaged on said casing and coupled to said body, said housing including an opening formed therein for slidably engaging with said casing and arranged such that said casing is extendible outward of said housing via said opening, and a stop means for preventing said casing from disengaging from said housing, said body including at least one rib formed on an outer portion thereof, said casing including at least one slot for slidably engaging with said rib of said body, said rib having a thickness slightly greater than that of said casing, whereby, said prongs are shielded by said casing during plugging operation of said prongs, and said sleeve prevents said spring from electrically connecting with said prongs, said casing is guided to slide relative to said body by the engagement between the rib and the slot and said housing is preventing from contacting said casing when said housing is gripped by a user.

5,252,083

ELECTRICAL OUTLET SAFETY COVER

Giuseppe A. Correnti, 4 River St., Apt. 33, Little Ferry, N.J. 07643

Continuation-in-part of Ser. No. 769,407, Oct. 1, 1991, abandoned. This application Jun. 30, 1992, Ser. No. 906,488
Int. Cl.[5] H01R *13/44*
U.S. Cl. 439—147 5 Claims



1. A electrical wall plug outlet enclosure and safety device comprising:

(a) a face plate having at least one electrical plug receiving opening detachably mounted to an electrical wall plug outlet for detachably receiving a box-like cover;

(b) a plurality of tabs attached to said face plate at its approximate mid-point and extending horizontally outwardly from its vertical axis wherein said tabs are formed integral with said face plate;

(c) a generally rectangular shaped box-like cover having one open end for positioning over said face plate; and

(d) a longitudinal slot formed in each of two sides of said box-like cover, the two sides being adjacent said open end, whereby when said box-like cover is positioned over and pressed against said face plate said tabs engage said longitudinal slots holding said box-like cover in locking engagement with said face plate.

5,252,084

LEVER TYPE CONNECTOR

Shigekazu Wakata, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Mie, Japan

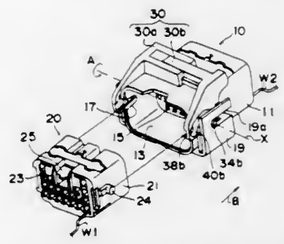
Filed Oct. 14, 1992, Ser. No. 960,808
Claims priority, application Japan, Oct. 14, 1991, 3-083064[U]
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—157 4 Claims

1. A lever type connector, which is used to connect at least one pair of first and second terminals, comprising:

a first connector member for accommodating said first terminal therein and provided with a first engaging means and a second engaging means;

a second connector member for accommodating said second terminal therein and provided with a third engaging means engageable with said first engaging means; and

a substantially U-shaped lever unit pivotally provided on said second connector member and having a center portion and two side portions connected to the opposite ends of said center portion, said center portion comprising length variable means for adjusting a length of said center



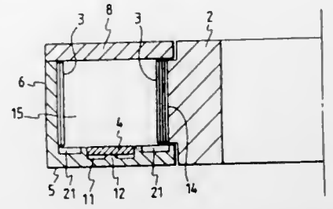
portion according to a width of said second connector, so that said lever unit is operative to accommodate connectors of varying widths, said side portions being provided with a fourth engaging means engageable with said second engaging means, whereby when said lever unit pivots, said second engaging means engages with said fourth engaging means to force said first and second connector members into a firmly engaged state.

5,252,085

CLOCK SPRING CONNECTOR

Hironori Kato, Sendai; Kunihiko Sasaki, Miyagi, and Hiroyuki Bannai, Furukawa, all of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Jan. 15, 1993, Ser. No. 4,817
Claims priority, application Japan, Jan. 27, 1992, 4-011990
Int. Cl.[5] H01R *35/04*
U.S. Cl. 439—164 12 Claims



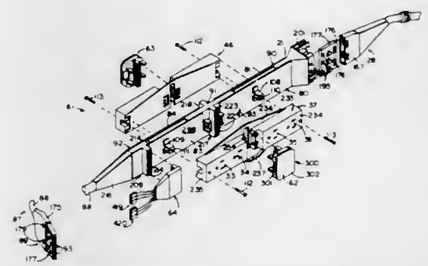
1. A clock spring connector comprising a stationary member, a movable member rotatably connected to said stationary member, a flexible cable stored in a space between an inner cylindrical portion provided on one of said stationary member and said movable member and an outer cylindrical portion provided on the other of said stationary member and said movable member, and a carrier member disposed in said space and having an opening, said flexible cable being reversely looped through said opening in opposite directions upon said inner cylindrical portion and said outer cylindrical portion, wherein a projection is provided between said carrier member and at least one of a top surface and a bottom surface of said space for making smaller a contact area between said carrier member and one of said top surface and said bottom surface.

5,252,086

MODULAR POWERWAY WITH SELECTABLE RECEPTACLE

Scott H. Russell, Kalamazoo; Craig M. Anderson, Kentwood; Steven C. Deer, Kentwood; Mark T. Slager, Kentwood; David A. VanDyke, Grand Rapids; Charles C. Ondrejka, Muskegon, and Jerry P. White, Kentwood, all of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Filed May 28, 1992, Ser. No. 889,665
Int. Cl.[5] H01R *13/74*
U.S. Cl. 439—215 31 Claims



1. A power distribution unit for office furniture of the type having a utility raceway, comprising:

a power block including a power block housing adapted to be assembled within the utility raceway of associated office furniture;

a plurality of power block conductors positioned in said power block housing;

a first outlet positioned adjacent said power block;

a second outlet positioned adjacent said power block;

a first connector associated with said first outlet and not associated with said second outlet;

a second connector associated with said second outlet and not associated with said first outlet; and

a jumper including at least one jumper conductor, said at least one said jumper conductor selectively connecting said first and second connectors to at least one of said power block conductors when said jumper is connected to said power block and said first and second connectors, whereby said jumper may be manipulated to select the power block conductors to which said first and second connectors and the outlets associated therewith are connected.

5,252,087

POLYGONAL SECTION CONNECTOR COMPRISING TWO CONNECTOR PORTIONS THAT ARE AUTOMATICALLY POSITIONABLE RELATIVE TO EACH OTHER DURING COUPLING

Gilbert Spinnato, Guyancourt, and Yves Dohan, Paris, both of France, assignors to Souriau et Cie, Versailles, France

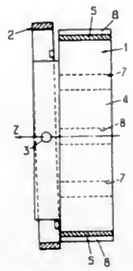
Filed Dec. 17, 1992, Ser. No. 992,015
Claims priority, application France, Dec. 17, 1991, 91 15646
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—247 12 Claims

1. A connector of polygonal section, the connector comprising a first or male connector portion (1) and a second or female connector portion (9), which portions can be releasably coupled to each other to establish a continuous link; said male and female portions being supported by respective supports, with at least one of said connector portions connected to its support via a floating mount; the connector portions being capable of being coupled together by moving their respective supports along a direction approximately parallel to the coupling direction of the two portions, and the female portion and/or the male portion being provided with alignment means (7, 16; 8, 17) for aligning the male portion in the female portion; one of the connector portions being fitted with centering means for

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centering it relative to the other portion, which means are suitable for prepositioning said portion even if it is presented with an offset and/or with an inclination relative to the other portion;

characterized in that said alignment means comprise prealignment means for prealigning the male portion in the



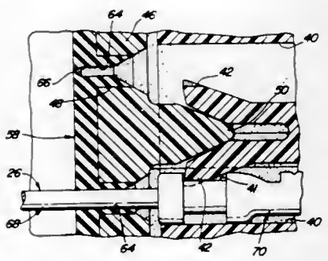
female portion and comprising a skirt (12) which is polygonal in section and which is designed to receive the male portion precentered by said centering means, said skirt (12) and the male portion (1) being fitted with complementary prealignment reliefs (7, 16) for prealigning the male portion in said skirt (12).

5,252,088

SEALED PASS THROUGH ELECTRICAL CONNECTOR

John R. Morello, Lake Milton; James A. Okrucky, Warren, and Frank T. Neale, Fowler, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 5, 1992, Ser. No. 956,217
Int. Cl.[5] H01R *13/52*
U.S. Cl. 439—271 **17 Claims**



1. A sealed pass-through electrical connector for a liquid filled housing comprising:

a thermoplastic connector body, an insert and a plurality of male terminals that are attached to electric cables;

the connector body having a mating end where a mating electrical connector is plugged onto the pass-through connector and a plurality of terminal cavities that extend through the connector body in the longitudinal direction from a cable receiving end to a mating end;

the insert having a thermoplastic body that is retained against the mating end of the connector body and that has a disk provided with a plurality of holes that align with the respective terminal cavities when the insert is so retained;

the insert further including a molded on seal of elastomeric material having a face seal for sealing around round solid pins of the male terminals that project through the holes when the male terminals are disposed in the terminal cavities;

the connector body has a plurality of resiliently deflectable, latch fingers that are located at the mating ends of the respective terminal cavities that snap over a portion of the terminals when the terminals are inserted into the terminal cavities through the cable end to retain the terminals in the cavities; and

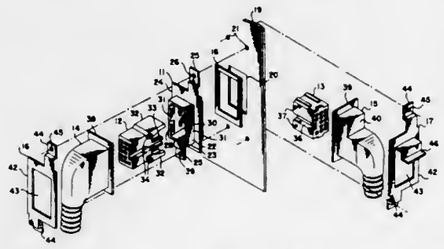
the disk has transverse rib means that engages the resiliently deflectable, latch fingers to hold the latch fingers in a terminal retaining position.

5,252,089

CONNECTOR APPARATUS

Yuji Hatagishi, and Tetsuaki Suzuki, both of Haibara, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Division of Ser. No. 629,962, Dec. 19, 1990, Pat. No. 5,104,333. This application Sep. 9, 1991, Ser. No. 756,689
Claims priority, application Japan, Dec. 20, 1989, 1-145919; Jan. 30, 1990, 2-7088
Int. Cl.[5] H01R *13/62*
U.S. Cl. 439—310 **1 Claim**



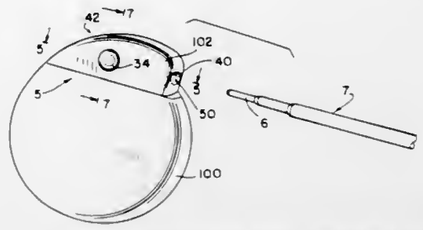
1. A connector apparatus comprising first and second connectors which are coupled to each other when moved toward each other, a fixing frame having a rectangular through-hole formed therein for receiving said first and second connectors for movement therein, said through-hole being defined by a pair of opposing side walls of said fixing frame along which said first and second connectors are movable in a first direction in which said first and second connectors are fitted with or removed from each other and in a second direction perpendicular to the first direction, said first and second connectors having a width substantially equal to an inner dimension of said through-hole between said pair of opposing side walls, one of said first and second connectors having an engaging rod while the other has an engaging recess formed thereon for engaging with said engaging rod, and guiding means for guiding said first and second connectors when said first connector is moved in the second direction together with said second connector after said first and second connectors are inserted into said through-hole of said fixing frame from the opposite ends in the first direction toward each other until said engaging rod is engaged with said engaging recess, said guiding means including a pair of pins provided on each of a pair of opposing side faces of each of said first and second connectors, first and second pairs of guideways formed on each of inner faces of said side walls of said fixing frame for cooperating with said pins of said first and second connectors, a first pair of guideways on each of said faces of said side walls of said fixing frame extending in an inclined relationship to said second direction, a second pair of guideways on each of said side walls of said fixing frame extending in said second direction, each of said first and second guideways extends to one of the opposite ends of said rectangular through-hole of said fixing frame in said first direction by an introducing groove which extends in said first direction, said pins are guided by said introducing grooves when said first and second connectors are first inserted into said through-hole of said fixing frame from opposite ends and moved toward each other until said engaging rod portion is engaged with said engaging recess, and said pins are then guided by said first and second pair of guideways, whereby said first and second connectors are caused to gradually approach and fit with each other.

5,252,090

SELF-LOCKING IMPLANTABLE STIMULATING LEAD CONNECTOR

Joel F. Giurtino, Engelwood, and Ian A. Adamson, Denver, both of Colo., assignors to Telectronics Pacing Systems, Inc., Englewood, Colo.

Filed Sep. 30, 1992, Ser. No. 954,122
Int. Cl.[5] H01R *4/24*
U.S. Cl. 439—441 **32 Claims**



1. A connector assembly for detachably connecting a terminal pin of an electrical lead to an electrical device, comprising:

a connector housing attached to said device, said connector housing having a lumen therein adapted to accept the terminal pin; and

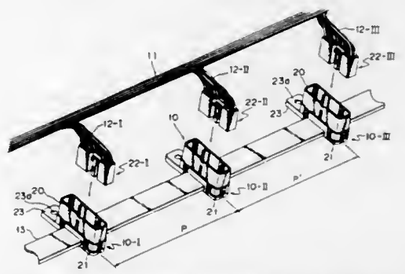
a resilient spring clip affixed within said connector housing and having a generally centrally located opening therethrough adapted to receive the terminal pin, said clip including at least two spring members and one pair of jaws bounding said opening, each jaw of said pair of jaws being positioned on an opposite side of said opening to its paired jaw, said jaws being adapted to fixably engage the terminal pin of the lead when the terminal pin is inserted into said opening, said jaws and said spring members being positioned within a plane perpendicular to a longitudinal axis of the lumen when in a relaxed condition, out of engagement with a terminal pin, said resilient spring clip further comprising two leg members extending distally from said jaws and bent to form a high angle with the plane of the jaws and the spring members, said leg members being adapted to translate a force to said jaws and spring members in response to an application of a transverse compressing force to said leg members to thereby release said jaws from the terminal pin of the lead.

5,252,091

BRANCH CONNECTOR

Yoshinori Fujita, and Yukimitsu Hattori, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Mie, Japan

Filed Jul. 15, 1992, Ser. No. 913,458
Claims priority, application Japan, Jul. 31, 1991, 3-191731
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—499 **5 Claims**



1. A branch connector comprising: at least a first wire harness composed of a flexible printed circuit, said first wire harness including a plurality of lead wire portions and a plurality of connector receivers; and a second wire harness having a single connector being mounted respectively at the tip ends of each of a plurality of branch line groups to be branched and taken out from optional positions along said second wire harness, wherein each of said connector receivers comprises:

a lower case for supporting said first wire harness and including a branching circuit secured therein;

an upper case which is detachably mounted on said lower case and is provided with a connector inserting portion into which a corresponding one of said single connectors is detachably inserted;

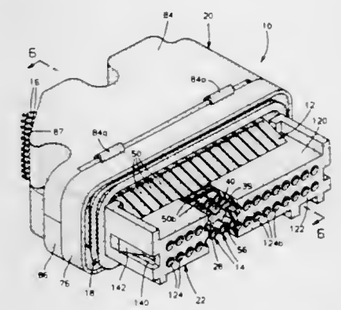
and a pressure contact terminal mounted on said upper case and having one portion thereof projecting into said connector inserting portion and connected with a corresponding one of said branch line groups of said second wire harness through said corresponding single connector, and an opposite portion thereof being connected with one of said lead wire portions of said first wire harness.

5,252,092

ELECTRICAL CONNECTOR ASSEMBLY

Christopher G. Reider, Youngstown, and William G. Strang, Warren, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 8, 1993, Ser. No. 1,962
Int. Cl.[5] H01R *13/40*
U.S. Cl. 439—595 **3 Claims**



1. An electrical connector assembly comprising a connector body molded from an electrically insulating material and having a plurality of terminal cavities extending axially through the connector body from a forward contact end to a rearward conductor end,

said terminal cavities along a rearward portion of said connector body being defined by side walls surrounding said cavities, said terminal cavities along a forward portion of said connector having rigid inner and side walls defining channels having open outer sides,

a first ramp terminating in a transversely extending first lock shoulder and being integral with each of said inner walls of said forward portion of said connector body defining said cavities at a location spaced axially rearwardly of said forward contact end,

a plurality of metal cylindrically shaped terminals which are attached to insulated electrical conductors and which are disposed in the respective terminal cavities with the insulated electrical conductors extending out of the rearward conductor end of the connector body,

said terminals including radially outwardly extending lands which ride over said first ramps and lock behind said first shoulders of said ramps when positioned within said terminal cavities, and

means overlying part of said forward portion of said connector body for retaining said terminals against said inner walls of their respective cavities, and an end cap for re-

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ceiving said forward portion and connected to said connector body to retain the terminals in position and prevent forward axial movement thereof,

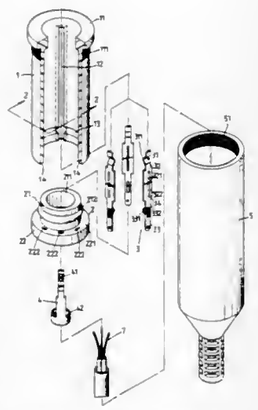
the improvement being that said means overlying part of said forward portion of said connector body comprises a plurality of individual, cantilevered, deflectable arms integral with the rearward portion, each of said deflectable arms lying over one of said channels and defining an outer wall for one of said cavities along said forward portion of said connector body, said arms each having a second ramp terminating in a radially extending second shoulder directly opposite said first ramp integral with said associated inner wall of said forward portion of said connector body, said deflectable arms being self biased toward a normal position in which said second shoulders are disposed behind said lands of said terminals, said arms being deflectable radially outwardly of their normal position by said lands of said terminals when the latter are being connected to the connector body by inserting the same from the rearward conductor end toward the forward contact end of the connector body until the lands on the terminals pass by said second ramps whereupon said arms due to their self-biasing forces snap inwardly with an audible click to apprise an assembler that the terminals have been inserted far enough to lock behind said first and second shoulders.

5,252,093

SIGNAL TRANSMITTING SOCKET

Lin Chien-Long, No. 12, Alley 8, Lane 33, An Ping Rd., Tainan City, Taiwan

Filed Dec. 4, 1992, Ser. No. 986,022
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—702 1 Claim



1. A signal transmitting socket comprising:

a cylindrical shell having upper and lower open ends, an axial bore, a plurality of spaced dovetail shaped grooves formed in an inner surface of said shell, a circumferential groove formed in said inner surface of said shell, a ledge extending outwardly from said upper open end of said shell, and threads formed within an upper exterior surface of said shell;

a cylindrical clamp having an upper end adapted to be received within said lower open end of said shell, a circumferential rim provided on said upper end of said clamp for engaging said circumferential groove of said shell, a lower end adapted to abut said open end of said shell, and a plurality of slots formed in said lower end of said clamp, said plurality of slots being spaced to correspond to said dovetail shaped grooves of said housing;

a plurality of conducting plates, each conducting plate having an arcuate shaped body adapted to be received within a dovetail shaped groove of said shell, and a lower end having means to lockingly secure said conducting plate within at least one slot formed within said clamp; and,

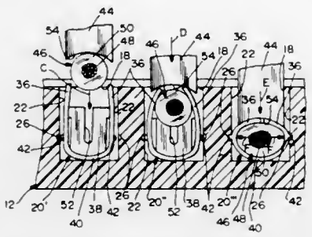
a cylindrical housing adapted to receive said shell, said clamp and said conducting plates therein, said cylindrical housing having threads formed within an upper outer surface for threadably engaging said threads of said shell.

5,252,094

ELECTRICAL CONNECTOR WITH IMPROVED TERMINAL RETENTION

Stephen A. Colleran, Lisle, and Lawrence E. Geib, Bartlett, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Nov. 30, 1992, Ser. No. 983,001
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—733 10 Claims



1. In an electrical connector for terminating a conductor, the connector including a dielectric housing having a terminal-receiving passage, a terminal received in the passage, the passage including opening means for access therethrough of a crimping tool, and the terminal including a crimp section aligned with the opening means for engagement by the crimping tool to deform the crimp section into crimping engagement with the conductor, wherein the improvement comprises cavity means in said passage aligned with the crimp section of the terminal and into which the crimp section can deformably expand to retain the crimped terminal in the passage as a function of crimping the crimp section onto the conductor.

5,252,095

ELECTRICAL CONNECTOR

Josef Breitschaft, Prien, and Artur Wohlfart, München, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

PCT No. PCT/DE90/00306, § 371 Date Mar. 17, 1992, § 102(e) Date Mar. 17, 1992, PCT Pub. No. WO91/06989, PCT Pub. Date May 16, 1991
PCT Filed Apr. 26, 1990, Ser. No. 838,760
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1989, 8912596[U]
Int. Cl.[5] H01R *13/514*
U.S. Cl. 439—752 6 Claims

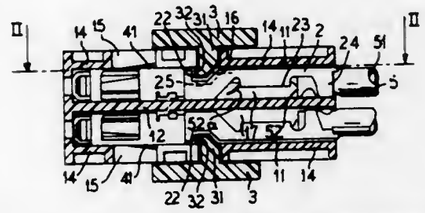
1. An electrical connector for a plurality of stranded conductors, comprising:

a row of adjacent contact chambers in a housing; one respective contact element of a plurality of contact elements insertable in a latching manner into each of the contact chambers;

each contact element, at least in partial zones thereof, having a tubular shape and a crimping zone for connection of a stranded conductor, and a locking edge which is formed by a recess that points in an opposite direction to an insertion direction of each contact element into a respective contact chamber; and

the housing having a slot which runs at right angles to the insertion direction of the contact elements and which is located above the recesses of the contact elements and into which a locking strip is inserted, engaging behind the locking edges of the contact elements;

respective recesses and respective locking edges of the contact elements, and respective open sides of respective crimping zones of the contact elements being located on mutually opposite sides of respective walls of the contact elements; and



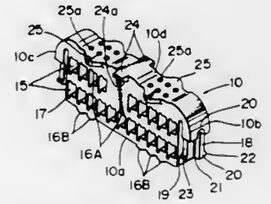
the housing having closed wall structures such that for each of the contact chambers an inserted contact element has the crimping zone thereof surrounded by a respective closed wall structure, the crimping zones of inserted contact elements thereby being completely isolated from one another.

5,252,096

CONNECTOR

Hajime Okada, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Mie, Japan

Filed May 7, 1992, Ser. No. 879,347
Claims priority, application Japan, May 13, 1991, 3-33105[U]
Int. Cl.[5] H01R *13/436*
U.S. Cl. 439—752 5 Claims



1. A connector comprising:

a connector housing having at least one terminal accommodating chamber formed therethrough, said connector housing further including an upper surface, a bottom surface and opposite lateral side surfaces;

a retainer inserting opening concaved at the upper surface of said connector housing from one lateral side surface thereof to the other lateral side surface thereof, said retainer inserting opening being perpendicular to said at least one terminal accommodating chamber;

a retainer, for locking at least one terminal within a corresponding terminal accommodating chamber, removably inserted into said retainer inserting opening; and

a flexible main locking plate and a flexible temporary locking plate, which is longer than said main locking plate, both disposed on at least one lateral side of said retainer, in which:

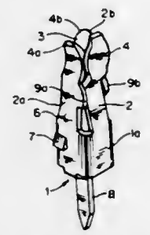
a temporary locking portion disposed at a lower end portion of said temporary locking plate is locked at a temporary locking position by one of two lower edges disposed on a lower front and a lower rear portion of said retainer inserting opening, and a main locking portion disposed at a lower end portion of said main locking plate is locked at a final locking position by the other lower edge of said retainer inserting opening by pressing said retainer into said connector housing.

5,252,097

FEMALE CONNECTOR WITH DUAL BEAM CONTACTS

Sven E. Lindeberg, Houilles, and Claude Causes, Clevilliers, both of France, assignors to Thomas & Betts Corporation, Bridgewater, N.J.

Filed Apr. 30, 1992, Ser. No. 876,559
Int. Cl.[5] H01R *11/22*
U.S. Cl. 439—856 5 Claims



1. A female connector having dual-beam contacts, adapted to be inserted in the body of a receiving female connection part, said connector (1) comprising:

a holding beam (2) forming guiding means for said connector (1) in the body of said connection part;

a pair of opposing resilient, flexible means (*2a, 2b*) each of said beams being disposed generally perpendicularly to the plane of the holding beam, and each opposing beam having a contact area (5) on the side of said connector (1) where three connecting means (2, *2a, 2b*) define together a free entry opening (3) of said connector; and

a bight (*1a*) on which are supported the three connector beams (2, *2a, 2b*), said bight including an output lead (8) of said connector;

each flexible contact beam (*2a, 2b*) including on an edge adjacent said holding beam (2) a protrusion (*9a, 9b*) which extends generally perpendicularly to said holding beam and which forms a rest surface on a corresponding edge of the holding beam, whereby said flexible contact beams (*2a, 2b*) are arranged in preconstrained resilient rest against the holding beam (2) so as to facilitate the handling of the connector and the positioning in its entry opening (3) of the plug of a male connector.

5,252,098

METHOD AND APPARATUS FOR HIGH VOLTAGE TREATMENT OF CATHODE RAY TUBE

Kinjiro Sano; Wataru Imanishi; Yoshihisa Nakajima, and Masaaki Kinoshita, all of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 672,869, Mar. 20, 1991, abandoned.
This application Jul. 9, 1992, Ser. No. 912,138
Claims priority, application Japan, Mar. 20, 1990, 2-71378; Mar. 27, 1990, 2-77571; Oct. 8, 1990, 2-270741
Int. Cl.[5] H01J *9/44*
U.S. Cl. 445—5 16 Claims

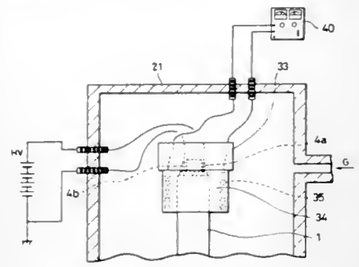
1. A method of high voltage treatment for a cathode ray tube, including a neck having one end closed with a stem, and housing an electron gun including at least first and second electrodes, and first and second stem pins, external to the cathode ray tube neck and housing, for the first and second electrodes, the method comprising the steps of:

establishing a high pressure gas atmosphere around the neck;

applying a voltage which is sufficiently higher than an operating voltage of the cathode ray tube between the first and second stem pins when the high pressure gas atmosphere is established; and

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externally heating, from a heating source external to the cathode ray tube neck and housing, the part of the stem containing the first and second stem pins, above a temper-



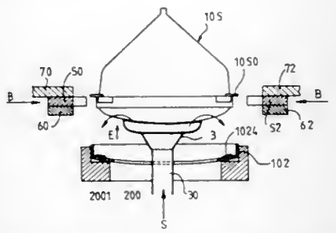
ature of the high pressure gas atmosphere, to thereby prevent a creeping discharge external to the cathode ray tube neck and housing due to the voltage applied to the first and second stem pins.

5,252,099

METHOD FOR ASSEMBLING A MONITOR TUBE ON A FRAME, THE MONITOR THUS OBTAINED, AND ASSEMBLY MACHINE

Jean-Michel Clain, Morangis; Eric Latte, Etampes, and Francois Piguillem, Bagneux, all of France, assignors to Bull, S.A., Paris, France

PCT No. PCT/FR91/00726, § 371 Date May 1, 1992, § 102(e) Date May 1, 1992, PCT Pub. No. WO92/05665, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 13, 1991, Ser. No. 855,006
Claims priority, application France, Sep. 14, 1990, 90 11408
Int. Cl.[5] H01J *9/34*
U.S. Cl. 445—23 **7 Claims**



1. A method of assembling a tube (**105**) of a monitor on a front frame (**102**) of the monitor, characterized in that it includes the following steps:

a) placement of a front frame (**102**) in a housing (**2001**) provided for that purpose;

b) blowing air through a nozzle to maintain the tube (**105**) in suspension;

c) centering the tube (**105**) by way of two V shaped support blocks (**501, 521**) displaced concentrically and simultaneously, while the tube (**105**) is in suspension;

d) reversing the air flow to place a suction on the tube (**105**) and opening of the V shaped support blocks (**501, 521**) with a delay period;

e) lowering of the tube (**105**) while connected to the suction system (**3**) inside the front face (**102**) to place it into contact with zones (**1024**) having a high coefficient of adhesion;

f) joining the tube solidly to the front face (**102**);

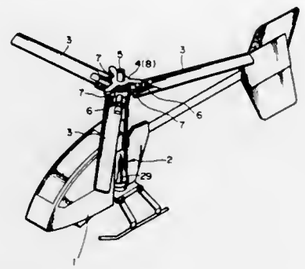
g) stopping the air flow to terminate the suction and release the assembled set.

5,252,100

VARIABLE ROTOR-BLADE-ATTACK ANGLE HELICOPTER TOY

Kenichi Osawa, and Takeshi Kishi, both of Tokyo, Japan, assignors to Wildgear Inc., Tokyo, Japan

Filed May 24, 1990, Ser. No. 527,917
Claims priority, application Japan, Jun. 6, 1989, 1-143477
Int. Cl.[5] A63H *27/127;* **B64C** *11/34*
U.S. Cl. 446—44 **19 Claims**



1. A helicopter toy comprising:

a flying body;

a plurality of rotor blades mounted to said flying body for rotation about a rotational axis and for angular movement about their respective pivotal axes extending perpendicularly to said rotational axis so that said rotor blades have their respective angles of attack which can be altered in pitch;

a power source for giving a rotational force to said rotor blades to rotate the same about said rotational axis thereby climbing said flying body; and

attack-angle altering means for altering the angles of attack of the respective rotor blades such that, when a power is transmitted to said rotor blades from said power source to rotate said rotor blades about the rotational axis, the angles of attack of the respective rotor blades are brought to their respective positive pitches to climb said flying body, while, when the transmission of the power from said power source to said rotor blades is released, the angles of attack of the respective rotor blades are brought to their respective negative pitches to cause said flying body to descend.

5,252,101

SIMULATED TOY COMMODE

Donald A. Rosenwinkel, Oak Park, and Richard B. Kuralt, Chicago, both of Ill., assignors to Breslow, Morrison, Terzian & Associates, Inc., Chicago, Ill.

Filed Jan. 24, 1992, Ser. No. 825,149
Int. Cl.[5] A63H *3/52, 33/00*
U.S. Cl. 446—130 **11 Claims**

1. A simulated toy commode comprising in combination:

a vessel having spaced apart clear walls defining an annular space of a first predetermined volume;

the annular space having opposed ends;

a first annular reservoir mounted in fluid communication with one of the opposed ends of the annular space;

a second annular reservoir mounted in fluid communication with the other of the opposed ends of the annular space;

a first valve associated with the first reservoir for controlling fluid communication between the annular space and the first reservoir;

a second valve associated with the second reservoir for controlling fluid communication between the annular space and the second reservoir;

the first reservoir having a second predetermined volume equal to or greater than the first predetermined volume;

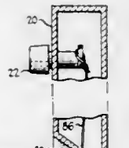
the second reservoir having a third predetermined volume equal to or greater than the first predetermined volume;

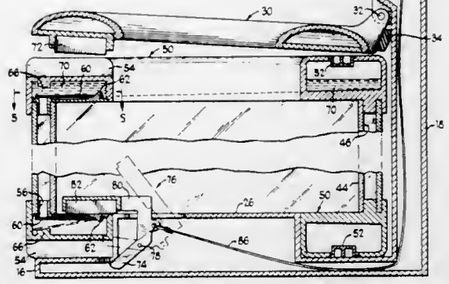
a volume of liquid less than or equal to the first predetermined volume contained in the vessel;

a housing removeably receiving the vessel with one of the first or second reservoirs in an upper position and the other of the first or second reservoirs in a lower position;

first means carried by the housing for selectively operating the one of the first or second valves associated with the reservoir in the upper position to effect fluid transfer of the liquid from the reservoir in the upper portion to the annular space;







means providing for closure of the one of the first or second valves associated with the reservoir in the lower position to prevent fluid transfer of the liquid from the annular space to the reservoir in the lower position; and

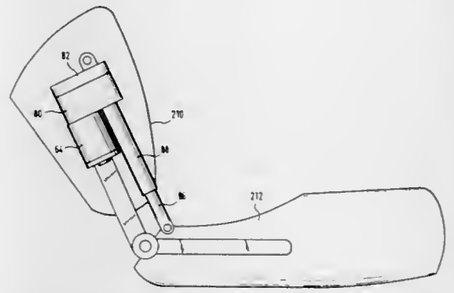
second means carried by the housing for selectively operating the other of the first or second valves associated with the reservoir in the lower position to effect fluid transfer of the liquid from the annular space to the reservoir in the lower position.

5,252,102

ELECTRONIC RANGE OF MOTION APPARATUS, FOR ORTHOSIS, PROSTHESIS, AND CPM MACHINE

Robert D. Singer, Clive, and Ernest A. Trickey, Des Moines, both of Iowa, assignors to ElectroBionics Corporation, Ankeny, Iowa

Continuation of Ser. No. 301,539, Jan. 24, 1989, abandoned. This application Aug. 5, 1992, Ser. No. 926,485
Int. Cl.[5] A61F *2/48*
U.S. Cl. 623—24 **12 Claims**



1. A portable therapeutic electronic range of motion apparatus to be worn and operated by a patient, comprising:

an upper brace and a lower brace positioned on a patient's upper joint area and lower joint area respectively, said areas being proximate to a joint;

a housing having an actuator sized and configured to be attached to said upper brace, said actuator having an extendable ram disposed in said housing, one end of said ram being connected to said lower brace for extending and flexing the joint, said actuator being responsive to a motor disposed in said housing, actuator movable over a range of positions;

an operator switching mechanism for generating a motion command;

a digital processor within said housing responsive to said operator switching mechanism for receiving and processing said motion command, said actuator movable under the control of said digital processor;

memory means within said housing, controlled by said digital processor for receiving and storing information representing selected discrete stopping positions of the actuator, said actuator movable among said stored selected stopping positions in response to said motion command generated by the operator switching mechanism;

calculator within said housing for determining instantaneous distance of the actuator to a selected stopping position by comparing said selected stopping position with actual position of the actuator; and

speed controller disposed within said housing and responsive to said calculator, said speed being a function of said instantaneous distance.

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5,252,103

PIGMENTING OF CELLULOSE TEXTILES: TREATMENT WITH CATIONIC COMPOUND AND IMMERSION IN AQUEOUS PIGMENT DISPERSION

Masayasu Kamata, Kusatsu; Osamu Sasaki; Shouzou Suefuku, both of Ohtsu, and Tatsuya Maeda, Kyoto, all of Japan, assignors to Matsui Shikiso Chemical Co, Ltd., Kyoto, Japan

Filed Feb. 5, 1992, Ser. No. 831,473
Claims priority, application Japan, Feb. 5, 1991, 3-36814
Int. Cl.[5] D06P *5/04, 5/20, 5/22*
U.S. Cl. 8—554 17 Claims

1. Pigmenting method comprising the steps of:

treating a cellulose fiber textile product with a nitrogenous cationic compound selected from the group consisting of quaternary ammonium salts, pyridinium salts, dicyandiamides, polyamines and poly-4-vinylpyridine hydrochloride, tertiary amine polymers, polymers of quaternary ammonium salts and copolymers of quaternary ammonium salts and vinyl monomers, in an aqueous treatment liquid for cationically treating the textile product, the cationic compound being capable of cationizing the cellulose fiber of the textile product and the treating being effected so that the cationic compound permeates the textile product and cationizes the cellulose fiber, and

treating the thus-treated textile product by immersing it in an aqueous dispersion liquid containing fine particles of a pigment and an anionic compound selected from the group consisting of anionic surfactants and anionic polymer compounds, the anionic compound being capable of dispersing and anionizing the fine particles of the pigment so that the fine particles of the pigment are taken up essentially completely into the cationically treated textile product and bind thereto, thus pigmenting the textile product therewith, the textile product being cationically modified by the cationic compound to render the surface of the textile product receptive to adsorption and adherence of the fine particles of the pigment in the presence of the anionic compound.

5,252,104

PRODUCTS OF REACTING AN ALKYLENE OXIDE WITH A CONDENSATE OF FORMALDE, AN ALKYLPHENOL AND AN AMINE

Hans-Peter Baumann, Ettingen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Sep. 3, 1991, Ser. No. 753,473
Claims priority, application Fed. Rep. of Germany, Sep. 5, 1990, 4028097
Int. Cl.[5] C08G *14/12;* D06P *1/60, 1/613, 3/60*
U.S. Cl. 8—554 47 Claims

1. A product (E) obtainable by reaction of a condensation product (K) of

(a) formaldehyde or a formaldehyde-yielding compound,

(b) at least one (C_{1-5}-alkyl)-phenol and

(c) at least one amine that contains at least two NH-groups that are reactive with formaldehyde,

with the proviso that there are employed 1 mole±5 mole % (c) and 1.6 to 2.4 moles of formaldehyde (a) or the corresponding amount of a formaldehyde-yielding compound (a) per mole of (C_{1-5}-alkyl)-phenol (b), with

(d) alkylene oxide and optionally styreneoxide

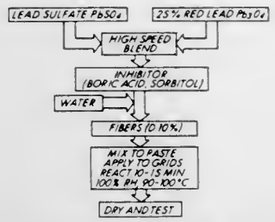
and optionally quaternization of the reaction product and/or modification thereof by introduction of at least one anionic group, or a mixture of products (E).

5,252,105

METHOD OF FORMING LEAD-ACID BATTERY ELECTRODE

Romeo R. Witherspoon, Shelby Township, Oceana County, and Gregory C. Garabedian, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 6, 1992, Ser. No. 957,303
Int. Cl.[5] H01M *10/38*
U.S. Cl. 29—623.1 21 Claims



1. A method of forming an electrode plate for a lead-acid battery comprising:

a) forming an oxide of lead having at least 10% by weight lead oxide in the form of Pb_3O_4 (red lead);

b) forming a wet mixture containing basic lead sulfate ($nPbO.PbSO_4$) predominantly in the monobasic form ($PbO.PbSO_4$) by reacting the oxide of step (a) with one or more acids containing a sulfate group in an amount sufficient to provide at least one mole equivalent of sulfate (SO_4) for every two moles equivalent of lead (Pb) in the oxide of step (a);

c) forming an oxide of lead having less than 1% by weight lead in the form of free lead;

d) intermingling the mixture formed in step (b), the oxide of step (c), and an inhibitor having at least one hydroxyl group;

e) applying the product of step (d) to grids; and

f) heating the applied product and at a temperature and at a humidity sufficient to react the monobasic lead sulfate to form at least one of tribasic lead sulfate ($3PbO.PbSO_4$) and tetrabasic lead sulfate ($4PbO.PbSO_4$).

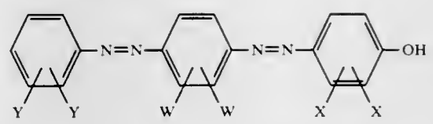
5,252,106

BASE EXTRACTABLE PETROLEUM MARKERS

Michael J. Hallisy, Woodstock, Ill., assignor to Morton International, Inc., Chicago, Ill.

Filed Jul. 29, 1992, Ser. No. 921,547
Int. Cl.[5] C10L *1/22*
U.S. Cl. 44—328 4 Claims

1. A method of marking a liquid petroleum product and identifying the petroleum product so marked comprising adding to said liquid petroleum product a detectable level of a marker having the formula:



where the Ws are selected from O—(C_1-C_3alkyl) and hydrogen, provided that at least one W is O—(C_1-C_3alkyl), the Xs and Ys are the same or different and are selected form hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, aryl, substituted aryl, fused aryl, substituted fused aryl, halogen, nitro, cyano, and alkoxy; extracting said marker from said petroleum product with an alkaline aqueous medium; and observing the color of said marker in said alkaline aqueous medium.

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5,252,107

IGNITION FLUID

Joe S. Wilkins, Jr., 1612 Southmore, Pasadena, Tex. 77502

Continuation-in-part of Ser. No. 698,486, May 8, 1991, abandoned. This application Aug. 23, 1991, Ser. No. 749,307

Int. Cl.[5] C10L *5/00, 9/02, 11/00*

U.S. Cl. 44—603 27 Claims

1. A composition for the ignition of carbonaceous solid fuel which emits less than 0.02 pounds per start of volatile organic compounds expressed as CH_2, comprising from about 10 to about 25 weight percent water, from about 15 to about 25 weight percent of a normally liquid terpene, from about 50 to about 70 weight percent of a normally liquid alcohol having from about 3 to about 10 carbon atoms, and about from about 0.1 to about 2.5 weight percent of a surfactant.

5,252,108

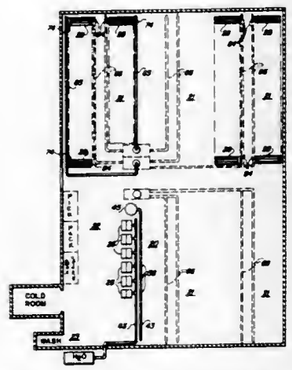
HYDROPONIC FARMING METHOD AND APPARATUS

Colin M. Banks, 1043 Miller Ave., Altamonte Springs, Fla. 32701

Continuation of Ser. No. 782,258, Oct. 25, 1991, abandoned, which is a continuation of Ser. No. 521,980, May 10, 1990, abandoned. This application Sep. 10, 1992, Ser. No. 943,467

Int. Cl.[5] A01G *31/00*

U.S. Cl. 47—58 19 Claims



1. A method for hydroponically farming plants, from seed germination through harvesting, in farm facilities providing a soilless environment, said method comprising:

a) placing blocks of cubes of fibrous material, respectively containing seeds of said plants, onto inclined surfaces of movable germination tables;

b) locating said germination tables in a seed germination area of said facilities, and flowing water from a first conduit along said inclined surfaces past said blocks, for a germination stage of a first number of days;

c) flowing nutrient solution from a second conduit along said inclined surfaces past said blocks, for a seedling growth stage of a second number of days following said germination stage;

d) removing said blocks from said germination tables, splitting said blocks into individual cubes, and placing said cubes into inclined channels of movable growing tables, said tables having means for shielding said channels from light;

e) locating said growing tables in a plant growth area of said facilities, and flowing nutrient from a third conduit along said inclined channels past said cubes, for a plant growth stage of a third number of days following said seedling growth stage; and

f) picking said plants after said plant growth stage.

5,252,109

GAS CHROMATOGRAPHIC INJECTOR

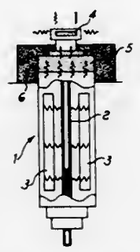
Fausto Munari, Milan, and Pier Albino Colombo, Castel Cerreto-Treviglio, both of Italy, assignors to Carlo Erba Strumentazione S.p.A., Milan, Italy

Filed Apr. 23, 1992, Ser. No. 872,430

Claims priority, application Italy, Apr. 24, 1991, M191 A 001140

Int. Cl.[5] B01D *15/08*

U.S. Cl. 95—87 15 Claims



1. A method for splitless vaporization injection of a sample in gas chromatographic equipment wherein an injector comprising a vaporizing chamber having an upper portion is provided with interchangeable internal liners, heating means to heat said vaporizing chamber, a needle pierceable septum sealingly closing said vaporizing chamber and spaced from said heating means, heat conducting means or thermal insulating means removably connectable to said gas chromatographic equipment between said septum and said heating means, and a plurality of elements provided adjacent to said septum, within said vaporizing chamber and in fluid communication with a source of carrier gas and a discharge outlet, said elements defining paths with forced run for washing said septum and for feeding said vaporizing chamber, respectively, the method comprising the steps of: heating said vaporizing chamber to a vaporizing temperature of the sample to be injected, connecting said heat conducting means or thermal insulating means to said gas chromatographic equipment between said septum and said heating means to heat the upper portion of said vaporizing chamber, feeding a carrier gas through said paths to wash said septum and feeding said carrier gas to the vaporizing chamber, and injecting said sample into said vaporizing chamber.

5,252,110

PREFERABLY VERTICAL AIR SEPARATOR

Roland Nied, Raiffeisenstrasse 10, D-8901 Bonstetten, Fed. Rep. of Germany

Filed Jul. 26, 1991, Ser. No. 736,209

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1990, 4024440; Aug. 9, 1990, 4025247

Int. Cl.[5] B01D *45/12*

U.S. Cl. 55—406 19 Claims

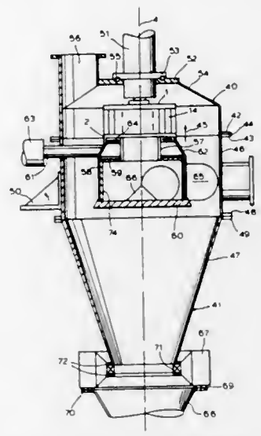
1. A preferably vertical air separator for separating course particles from fine particles in an air stream comprising

a housing having an inlet means for receiving said airstream and an outlet means for discharging said airstream,

a separator wheel rotatably mounted in said housing downstream of said inlet means for receiving said air stream, said separator wheel having first and second axially displaced cover plates and a plurality of blades disposed between the cover plates adjacent their peripheries,

means forming an outlet chamber including an upper cover plate, and

a vertical outlet connection pipe having one end adjacent said separator wheel and an opposite end inserted in the upper cover plate of said outlet chamber for guiding said air stream from said separator wheel into said outlet chamber in a straight vertical direction from said separator wheel into said outlet chamber so that the cross section of said outlet chamber adjacent the outlet connection pipe including said upper cover plate is at least twice the cross



sectional area of the portion of the outlet connection pipe adjacent the outlet chamber, said outlet means being downstream of said outlet chamber for discharging said airstream from said housing.

5,252,111

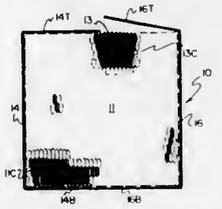
EXPANDABLE MULTI-PLY OBLIQUELY ORIENTED HONEYCOMB FILTER MEDIA

Victor V. Spencer, deceased, late of Tillsonburg; by Mary Spencer, executrix, 4 Highland Street, Tillsonburg, Ontario, Canada N4G 2E9, and Leonid A. Bagrin, 257 Burlington, Loudon, Ontario, Canada N5Z 3W3

Filed Sep. 1, 1992, Ser. No. 937,699

Int. Cl.[5] B01D *46/12*

U.S. Cl. 55—489 3 Claims



1. A multi-ply expandable filter media formed of obliquely oriented juxtaposed honeycomb cells defined by a ply or run of expandable honeycomb material, the run defining each of its juxtaposed cells with a longitudinal axis of each cell, parallel and oriented at a first acute angle relative to the axis of the run, with a next adjacent run arranged to define a relatively small inter-planar space between said adjacent runs and wherein the longitudinal cell axis of the cells of each adjacent run are respectively at a second acute angle and means for clasping the filter media into a closed, compressed, transportable state, and when ready for use as a filter media, means adapted to allow the same to be expanded and pulled out and to be constrained into a predetermined open, expanded position.

5,252,112

METHOD OF PRODUCING A GLASS FRONT-PANEL PROTECTED FROM COLORING BY ELECTRON RAYS

Kazuo Shibaoka, Itami; Toshio Akimoto, Yokkaichi, and Kouichi Suzuki, Nishinomiya, all of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Division of Ser. No. 757,340, Sep. 10, 1991. This application Apr. 16, 1992, Ser. No. 870,615

Claims priority, application Japan, Sep. 13, 1990, 2-243425

Int. Cl.[5] C03C *21/00*

U.S. Cl. 65—30.13 5 Claims



1. A method of producing a glass front-panel having resistance to coloring action of an electron beam, comprising the steps of:

heating and bending a glass plate to form a glass front-panel having an image displaying portion of a predetermined shape, a side wall portion which is contiguous to said image displaying portion and a flange portion which is contiguous to said side wall portion;

exchanging sodium ions in a whole surface layer of said shaped glass front-panel with potassium ions in a molten salt so as to make said surface layer contain more potassium ions than those in the interior of said shaped glass front-panel and, thereby, make said surface layer resistive to coloring action of the electron beam; and

substantially removing only the surface layer of said flange portion by means of immersing said flange portion into an etching liquid containing hydrofluoric acid or into an eluate of alkaline ions containing inorganic acid.

5,252,113

MOIL CRACK-OFF SYSTEM FOR A FUNNEL

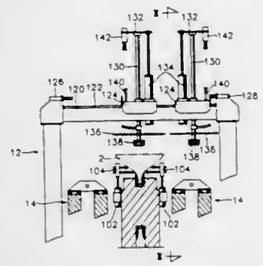
Woocheol Jung; Baekseok Seong; Heungsik Pan; Youngseob Lee, and Jaewon Lim, all of Hwasung, Rep. of Korea, assignors to Samsung Corning Co., Ltd., Kyunggi, Rep. of Korea

Filed Dec. 23, 1991, Ser. No. 812,759

Claims priority, application Rep. of Korea, Dec. 24, 1990, 90-21591[U]

Int. Cl.[5] C03B *33/09, 33/00, 29/00*

U.S. Cl. 65—160 13 Claims



1. A moil crack-off system for a funnel which comprises:

a pick-up apparatus, a conveyor, and a pair of parallel ware transfers arranged so that one said ware transfer is on each side of the conveyor, the pick-up apparatus being ar-

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ranged intersectionally above the conveyor, said conveyor being extended for a shaping process of the funnel, said pick-up apparatus having a pair of carriers and vacuum pads located upon said carriers, said ware transfers having scoring parts and two-step fire polishing parts, such that when the funnel is carried riding on the conveyor, the funnel is adsorbed at a predetermined position by the vacuum pads of the carriers of the pick-up apparatus and is moved to both ware transfers in a three-dimensional manner, the ware transfers carrying the funnel to the scoring parts and then the two-step fire polishing parts such that the moil of the funnel is cracked off.

5,252,114

GLASSWARE FORMING MACHINE HAVING A PIVOTALLY SUPPORTED MOLD MECHANISM WHICH FACILITATES REPLACEMENT THEREOF

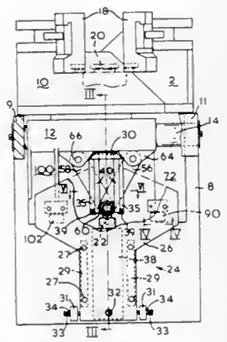
Werner Sidler, Esslingen, Switzerland, assignor to Emhart Glass Machinery Investments Inc., Wilmington, Del.

Filed Jan. 19, 1993, Ser. No. 5,995

Claims priority, application United Kingdom, Feb. 8, 1992, 9202706

Int. Cl.[5] C03B *9/353*

U.S. Cl. 65—229 **6 Claims**



1. A glassware forming machine having a mould mechanism comprising

a frame member,

horizontal shafts supported in the frame member,

first and second mould supports mounted for sliding movement along the horizontal shafts for displacement between a closed position and an open position,

means for moving the mould supports between such closed and open position comprising

a cage assembly pivotally supported in the frame member about a horizontal pivot.

a piston and cylinder device mounted in the cage assembly,

first and second links connecting the first and second mould supports respectively to the piston and cylinder device so that on operation of the piston and cylinder device the mould supports are moved between their open and their closed positions,

and means for adjust angular position of the cage assembly about said pivot.

5,252,115

DEVICE AND FORMING FINGER FOR FORMING A MOUTH AREA ON A GLASS VIAL

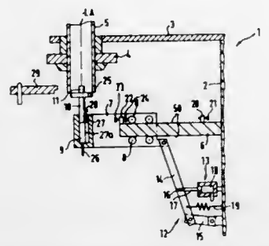
Reinhard Mannl, Mitterteich; Alfons Wolfrum, Tirshenreuth, and Franz Neumeier, Arzberg, all of Fed. Rep. of Germany, assignors to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Filed Sep. 10, 1991, Ser. No. 756,845

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1990, 4028823

Int. Cl.[5] C03B *23/09*

U.S. Cl. 65—296 **15 Claims**



1. A device for forming a mouth area of an open, heat-softened end of a glass tube having a longitudinal axis while the glass tube rotates about the longitudinal axis, the device comprising:

a rotatable carousel having means for mounting and rotating the glass tube about the longitudinal axis (LA) thereof;

a carriage mounted on said carousel for radial movement with respect to the longitudinal axis of the glass tube mounted on the carousel, and a forming finger mounted on said carriage for axial movement with respect to the longitudinal axis of the tube for supporting the heat-softened end of the glass tube mounted on the carousel, and

a forming roller for station located adjacent the carousel including a forming rolling the exterior surface of the end of the glass tube while the interior surface of the end of the glass tube is supported by the forming finger bearing there against in alignment with the forming roller opposite an area of the mouth engaged by the forming roller.

5,252,116

ORGANIC BASE FERTILIZER FROM MUNICIPAL SEWAGE SLUDGE

Earl R. Markham, Amherstburg; John T. Markham, Maidstone, and Edward G. Markham, Windsor, all of Canada, assignors to TRG International Waste Management, Ltd., Windsor, Canada

Filed Sep. 3, 1991, Ser. No. 753,513

Int. Cl.[5] C05F *7/00*

U.S. Cl. 71—13 **29 Claims**

1. A method for treatment of biological sludge to form a granulated organic base fertilizer, said method consisting essentially of the following steps:

(1) gently mixing the biological sludge with sufficient first lime-containing material calculated to raise the pH of the mixture to at least 11, wherein the mixing and the duration of mixing is such that the mixture is not converted into a slurry;

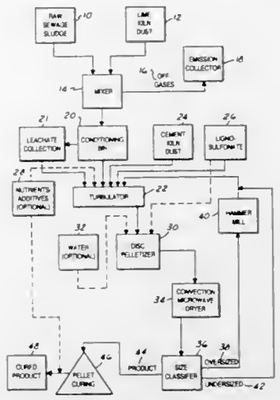
(2) holding the mixture formed in step (1) at a temperature of at least 180° F. and a pH of at least 11 for a time sufficient to destroy a significant amount of any pathogens present in the biological sludge;

(3) blending the mixture of step (2) with a second lime-containing material and a binder;

(4) agglomerating the mixture of step (3) to form a granulated organic base fertilizer;

(5) drying the granulated organic base fertilizer to a moisture content of less than about 15 weight percent; and

(6) storing the dried granulated organic base fertilizer for a time sufficient to allow the granulated organic base fertilizer to cure sufficiently to allow mechanical application of the organic base fertilizer to land.



5,252,117

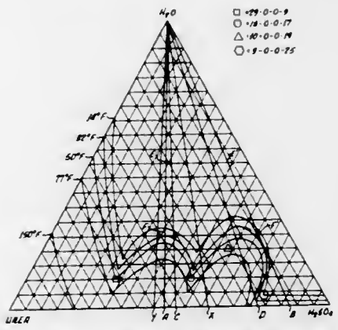
CELLULOSIC COMPOSITIONS

Donald C. Young, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 455,268, Jan. 3, 1983, Pat. No. 4,818,269, Continuation-in-part of Ser. No. 442,296, Nov. 17, 1982, abandoned, and Ser. No. 444,667, Nov. 26, 1982, abandoned, and Ser. No. 453,496, Dec. 27, 1982, Pat. No. 4,910,179. This application Feb. 21, 1989, Ser. No. 313,188

Int. Cl.[5] C05F *11/00*; C05C *9/00*

U.S. Cl. 71—23 **33 Claims**



1. The composition of matter comprising cellulosic material and the monourea adduct of sulfuric acid.

5,252,118

BIOLOGICAL-CHEMICAL FILM-COATING CRYOPROTECTANT FOR PLANTS

Paul W. Brown, P.O. Box 176, Charlton City, Mass. 01508

Filed Jun. 4, 1992, Ser. No. 893,574

Int. Cl.[5] C05G *3/00*

U.S. Cl. 71—23 **8 Claims**

1. A method for producing a cryoprotectant for plants, comprising the steps of:

a) mixing citrus pectin in boiling distilled water;

b) cooling the solution of said mixing step;

c) diluting phosphoric acid (H_3PO_4) in distilled water;

d) mixing the solution of said cooling step with the solution of said diluting step;

e) reacting the solution of said mixing step;

f) combining calcium phosphate ($CaH(PO_4)$ with the solution of said reacting step; and

g) adding calcium hydroxide to the solution of said combining step.

5,252,119

HIGH SPEED TOOL STEEL PRODUCED BY SINTERING POWDER AND METHOD OF PRODUCING SAME

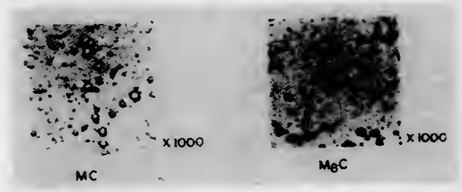
Junichi Nishida, Yasugi, and Norimasa Uchida, Yonago, both of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Oct. 29, 1991, Ser. No. 784,587

Claims priority, application Japan, Oct. 31, 1990, 2-294313; Mar. 5, 1991, 3-064097; Mar. 5, 1991, 3-064098

Int. Cl.[5] C22C *29/02*

U.S. Cl. 75—236 **11 Claims**



1. A sintered high speed tool steel produced by sintering powder, said powder consisting essentially, by weight, of more than 1.5% but not more than 2.2% C, not more than 1.0% Si, not more than 0.6% Mn, 3.0 to 6.0% Cr, an amount of W and Mo in which the content of W+2Mo is in the range of 20 to 30% and in which the ratio of W/2Mo is not less than 1, not more than 5.0% V, 2.0 to 7.0% Nb, the ratio of Nb/V being not less than 0.5, and the balance Fe and incidental impurities, the value of C-Ceq, while Ceq is defined by $0.24+0.033\times W+0.063\times Mo+0.2\times V+0.1\times Nb$, being in a range of -0.20 to 0.05, at least some of the C in said sintered steel being in the form of carbides of grain size 2 to 5 μm, said carbides in said sintered steel having a grain size of 2 to 5 μm being present in an amount in the range of 10,000 to 30,000 pieces/mm^2.

5,252,120

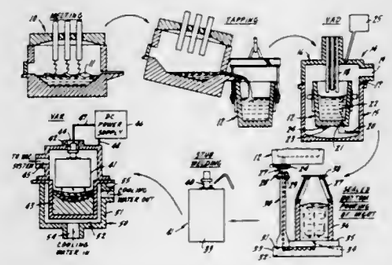
METHOD AND APPARATUS FOR DOUBLE VACUUM PRODUCTION OF STEEL

Charles W. Finkl, Evanston; Guy A. Brada, Chicago, and Algirdas A. Underys, Arlington Heights, all of Ill., assignors to A. Finkl & Sons Co., Chicago, Ill.

Filed Oct. 26, 1992, Ser. No. 966,862

Int. Cl.[5] C21C *7/00*

U.S. Cl. 75—508 **25 Claims**



1. In a method of producing high quality steel having low

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gas, sulphur and inclusion contents, the method comprising the steps of

subjecting a heat of steel in a container to the simultaneous application of a vacuum and a purging fluid which proceeds from a lower portion of the heat to an upper portion of the heat whereby portions of the heat remote from the surface are brought to the surface where they are exposed to the vacuum,

subjecting the heat to an electric heating arc under vacuum, solidifying the heat to form an electrode, and

remelting the electrode in a low absolute pressure environment to form an ingot in a cuprous crucible,

said ingot having low O,H,N contents and a very low sulphur content.

5,252,121

AMALGAM-GLASS IONOMER BONDING SYSTEM

Thomas J. Arnold, Winslow, Ind., assignor to Mion International Corporation, Winslow, Ind.

Continuation-in-part of Ser. No. 748,679, Aug. 22, 1991, abandoned. This application Apr. 23, 1992, Ser. No. 872,501

Int. Cl.[5] C09K *3/00;* **A61C** *5/00*

U.S. Cl. 106—35 **13 Claims**

1. A method of restoring lesions in a living tooth, comprising the steps of:

applying a wet glass ionomer cement to a lesion;

placing a wet improved amalgam restorative material directly on the wet glass ionomer cement, the improved amalgam comprising at least one additive selected from the group consisting of metal bases, metal salts and metal oxides; and

allowing the wet glass ionomer cement and the wet improved amalgam to harden, thereby bonding the improved amalgam restorative material to the tooth.

5,252,122

IONIC BOND BETWEEN AMALGAM AND GLASS IONOMER

Thomas J. Arnold, Winslow, Ind., assignor to Mion International Corporation, Winslow, Ind.

Continuation of Ser. No. 748,679, Aug. 22, 1991, abandoned. This application Sep. 9, 1992, Ser. No. 942,375

Int. Cl.[5] C09K *3/00;* **A61C** *5/00*

U.S. Cl. 106—35 **17 Claims**

1. A method of restoring lesions in a living tooth, comprising the steps of:

applying a wet glass ionomer cement to the lesion;

placing a wet dental amalgam directly on the wet glass ionomer cement enabling the glass ionomer cement to bond the amalgam to the tooth; and

allowing the wet glass ionomer cement and wet dental amalgam to harden, such that the glass ionomer cement is bonded to the amalgam.

5,252,123

GEL-FREE PAINT CONTAINING CUPROUS OXIDE PLUS 2,2'-DITHIOBIS (PYRIDINE-1-OXIDE) COMPOUND

Rahim Hani, Cheshire; Craig Waldron, Waterbury, and Douglas A. Farmer, Jr., Madison, all of Conn., assignors to Olin Corporation, Cheshire, Conn.

Continuation-in-part of Ser. No. 938,962, Sep. 1, 1992, Pat. No. 5,185,033. This application Jan. 4, 1993, Ser. No. 170

Int. Cl.[5] C09D *5/14*

U.S. Cl. 106—18.33 **21 Claims**

1. A paint or paint base composition characterized by enhanced biocidal efficacy and gellation resistance wherein the paint or paint base contains a biocide consisting essentially of cuprous oxide and 2,2'-dithiobis(pyridine-1-oxide) or a metal salt adduct thereof having the empirical formula $(C_5H_4NOS)2\ MY_n$ or a hydrate of said metal salt adduct, wherein M is an alkaline earth metal selected from the group consisting of calcium, magnesium, barium and strontium, Y is an anion selected from the group consisting of halides, sulfates, nitrates, chlorates and acetates and t is either 1 or 2.

5,252,124

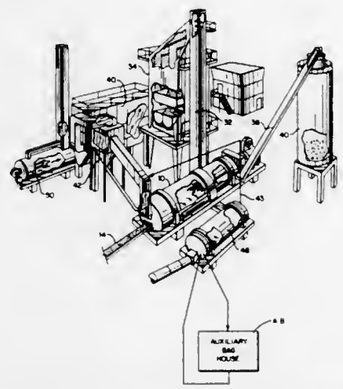
CONVERTIBLE ASPHALT AND SOIL REMEDIATION PLANT AND METHODS OF OPERATION

David F. Brashears, Belle Isle, and Edward D. Curtis, Lakeland, both of Fla., assignors to Thermotech Systems Corporation, Orlando, Fla.

Filed Jan. 21, 1992, Ser. No. 822,283

Int. Cl.[5] C09D *195/00*

U.S. Cl. 106—281.1 **4 Claims**



1. In a materials handling plant having a rotatable drum, a burner for flowing hot gases of combustion through the drum for drying material in the drum, a separator for separating out particulate material in gases exhausted from the drum, a thermal oxidizer for oxidizing residual contaminants in the gases exhausted from said separator, means for mixing material dried in the drum with asphalt to form an asphalt mix and a means for combining particles separated from said exhaust gases and material from said drum, a method of operating said plant for alternately producing an asphalt mix and remediating contaminated soil, comprising the steps of:

(a) when said plant is operated to produce an asphalt mix, (i) supplying material in the form of aggregate to the drum, (ii) drying the aggregate within the drum, (iii) flowing particulate-laden gases from the drum through the separator for separation into an exhaust gas stream and a particle stream; (iv) returning the particles of the particle stream to the aggregate, and (v) combining the aggregate with asphalt to produce an asphalt mix; and

(b) when said plant is operated to remediate contaminated soil, (i) supplying material in the form of contaminated soil to said drum, (ii) heating the soil in the drum to volatilize the contaminants, (iii) flowing particulate-laden gases from the drum through the particle separator for separation into a first exhaust gas stream and a first particle stream, (iv) subjecting the particles of said first particle stream to an elevated temperature sufficient to volatilize residual contaminants and provide contaminant-free particles, (v) combining the heated soil and contaminant-free particles and (vi) passing the first exhaust gas stream through a thermal oxidizer to destroy residual contaminants, leaving a substantially clean exhaust gas stream.

5,252,125

INCLUSION PIGMENTS OF ZIRCONIUM SILICATE FORMED WITH SPINEL INCLUSIONS, A PROCESS FOR THE PREPARATION AND USE THEREOF

Dietrich Speer, Hanau; Akos Kiss, Alzenau-Wasserlos; Peter Kleinschmit, Hanau, and Christel Zell, Rodenbach, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 12, 1992, Ser. No. 847,493

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1991, 4108623

The portion of the term of this patent subsequent to Jul. 30, 2008, has been disclaimed.

Int. Cl.[5] C08K *3/10;* **C09C** *1/34*

U.S. Cl. 106—450 **6 Claims**

1. An inclusion pigment, comprising: a zirconium silicate casing component and a spinel as a discrete included colored compound, wherein the spinels are cobalt-free.

5,252,126

NEUTRAL BLUE ZIRCONIUM-VANADIUM PIGMENTS

Dietrich Speer; Akos Kiss, and Jenny Horst, all of Hanau, Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed May 12, 1993, Ser. No. 59,581

Claims priority, application Fed. Rep. of Germany, May 15, 1992, 4216174

Int. Cl.[5] C08K *3/00*

U.S. Cl. 106—451 **28 Claims**

1. A neutral blue zirconium-vanadium pigment whose zirconium host lattice is also doped with phosphorus in addition to vanadium, said pigment represented by the formula $Zr(Si_{0.97-0.98}\ V_{0.01-0.02}\ P_{0.005-0.01})O_4$ and exhibiting the color values $L^*=35$ to less than 50, $a^*=0$ to $+4$ and $b^*=-25$ to -35 in 5% by weight staining in a transparent glaze.

5,252,127

PROCESS FOR THE INSOLUBILIZATION AND AGGREGATION OF SMOKE PURIFICATION WASTE MATERIALS

Philippe Pichat, 18 rue des Tournelles, 75004 Paris, France

Continuation-in-part of Ser. No. 498,082, Mar. 20, 1990, abandoned. This application Nov. 29, 1991, Ser. No. 799,835

Claims priority, application France, Mar. 20, 1989, 89 03587

Int. Cl.[5] C04B *18/06*

U.S. Cl. 106—705 **24 Claims**

1. A process for treating smoke purification waste materials obtained after clinker and fly ash have been removed, by reacting gasous smoke components with lime and then separating the lime-rich material from the smoke produced during the process of incineration of waste materials, to obtain solid compounds which are substantially insoluble in water and are non-polluting, consisting essentially of:

mixing the lime-rich smoke purification waste material with an additive containing at least 60% of a component selected from the group consisting of silica, alumina and a mixture thereof, to bring the pH to between 7 and 11.5, and a quantity of water between 15% and 160% of the weight of the smoke purification waste material and said additive.

5,252,128

ADDITIVE COMPOSITION FOR OIL WELL CEMENTING FORMULATIONS

Sridhar Gopalkrishnan, Woodhaven, Mich., assignor to BASF Corporation, Parsippany, N.J.

Filed Sep. 4, 1992, Ser. No. 940,581

Int. Cl.[5] C04B *7/02*

U.S. Cl. 106—724 **22 Claims**

1. An oil and gas well cementing composition, comprising:

a) cement;

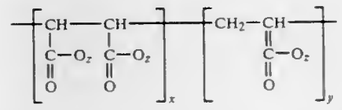
b) styrene/butadien copolymer latex in an amount of from about 5% to about 30% by weight of said cement;

c) from about 0.05% to about 2% by weight of a nonionic surfactant stabilizer additive alkylphenol ethoxylate of the following formula:

$$R—C_6H_5—[CH_2—CH_2—O]_n—H$$

wherein R is butyl, pentyl, hexyl, heptyl, octyl, nonyl or decyl, said alkylphenol ethoxylate having a molecular weight of from about 1000 to about 3000 such that n equals from about 25 to about 50;

d) from about 0.01% to about 2% by weight of at least one anionic surfactant stabilizer additive selected from the group consisting of maleic acid/acrylic acid copolymers having the following formula:



wherein z is an alkali metal or hydrogen, and x and y are numbers such that the molecular weight of said copolymer is from about 4000 to about 200,000;

e) water in an amount such that the total quantity of water is from about 30% to about 60% by weight of said cement.

5,252,129

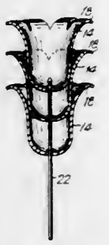
METHOD OF MAKING A PAPER DECORATION

Peter S. C. Cheng, 5 Ross St., Toronto, Ontario, Canada M5T 1Z8

Filed Apr. 28, 1992, Ser. No. 875,248

Int. Cl.[5] D21J *7/00*

U.S. Cl. 162—231 **11 Claims**



1. A method of making a paper decoration, comprising the successively performed steps of:

(a) shaping a perforated mold with a predetermined shape;

(b) positioning a sheet of graphic material on the mold;

(c) immersing the perforated mold and the sheet into a liquid pool containing paper fibers;

(d) removing the mold and the sheet from the pool to deposit the paper fibers on the mold and the sheet;

(e) drying the deposited fibers in situ on the mold to form a dried paper layer having said predetermined shape with the sheet integrated therein;

(f) detaching the dried paper layer and the integrated sheet from the mold; and

(g) forming the dried paper layer and the integrated sheet into the paper decoration.

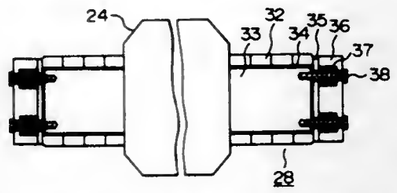
VOL 1155 ISS 2 OCT 12 1993 UMI

5,252,130

APPARATUS WHICH COMES IN CONTACT WITH MOLTEN METAL AND COMPOSITE MEMBER AND SLIDING STRUCTURE FOR USE IN THE SAME

Takahiko Ookouchi, Katsuta; Hiromi Kagohara, Hitachi; Hiromu Hama, Katsuta; Mitsuo Nakagawa, Mito; Hitoshi Okoshi, Hitachi, and Yoshitaka Nakayama, Hitachiota, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 17, 1990, Ser. No. 583,131
Claims priority, application Japan, Sep. 20, 1989, 1-242161
Int. Cl.[5] B05C *3/00*
U.S. Cl. 118—423 4 Claims



1. A molten metal plating apparatus comprising a roller rotatably supported by a bearing in a molten metal bath, said roller having a shaft sliding portion, said bearing having a bearing sliding portion, one of the shaft sliding portion or the bearing sliding portion being formed of ceramic sintered bodies, another of the shaft sliding portion or the bearing sliding portion being formed of a ceramic sintered body including a solid lubricating material, and

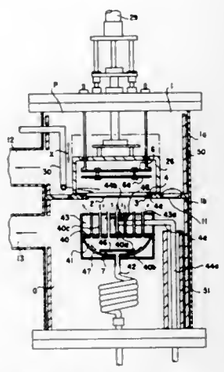
wherein the ceramic sintered body of the bearing sliding portion is disposed within dovetail grooves formed on an inner periphery of a metallic member having a least a semicircular inner periphery and being fixed in a direction toward the roller.

5,252,131

APPARATUS FOR GAS SOURCE MOLECULAR BEAM EPITAXY

Hiromi Kiyama; Kenji Okumura, and Hidehiko Oku, all of Osaka, Japan, assignors to Daidousanso Co., Ltd., Osaka, Japan

Filed Apr. 7, 1992, Ser. No. 864,764
Claims priority, application Japan, Feb. 27, 1992, 4-78243
Int. Cl.[5] C23C *14/00*
U.S. Cl. 118—719 4 Claims



1. An apparatus for gas source molecular beam epitaxy comprising:

a vacuum chamber capable of being set at high vacuum,

a substrate installed inside of the vacuum chamber,

means for heating the substrate by radiant heat from one side of the installed substrate,

means for supplying gas for formation of a crystal film on the opposite side of the substrate,

a separator set around the substrate which divides the interior of the vacuum chamber into two spaces, a first space for heating the substrate and a second space for crystal formation,

means for separate evacuation of said first and second spaces

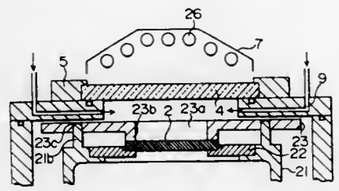
a heat shielding body for substantially enclosing the heating means and having an opening facing said one side of said substrate, and means for moving the heat shielding body toward or away from the substrate to regulate heating thereof.

5,252,132

APPARATUS FOR PRODUCING SEMICONDUCTOR FILM

Masao Oda; Yoshiyuki Goto; Toyomi Osige; Tatsuya Iwasa; Yoshimi Kinoshita; Katsuhisa Kitano, and Kazuo Yoshida, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 22, 1991, Ser. No. 796,618
Claims priority, application Japan, Nov. 22, 1990, 2-123396[U]; May 7, 1991, 3-101082
Int. Cl.[5] C23C *16/00*
U.S. Cl. 118—725 7 Claims



1. A semiconductor film production apparatus comprising:

a reaction vessel for containing a substrate and including a gas supply port for supplying a reaction gas to said reaction vessel, a gas discharge port for discharging the reaction gas from said reaction vessel after a reaction, and a light-transmitting glass window;

light irradiating means disposed outside said reaction vessel for irradiating a substrate in said reaction vessel through said light-transmitting glass window to heat the substrate;

a cylindrical substrate holder disposed in said reaction vessel for holding the substrate with a first surface facing said light irradiation means and a second surface, opposed to the first surface, exposed to the reaction gas;

a ring plate having a central opening with an area smaller than the substrate and an outside diameter dividing said reaction vessel into two compartments, said ring plate contacting the first surface of the substrate;

a carrier gas supply port for introducing a carrier gas between the substrate and said light-transmitting glass window; and

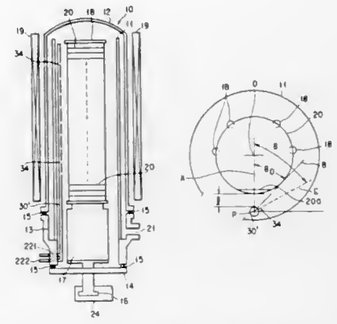
a reaction gas supply nozzle disposed in said substrate holder connected to said gas supply port and opposing the second surface of the substrate.

5,252,133

VERTICALLY ORIENTED CVD APPARATUS INCLUDING GAS INLET TUBE HAVING GAS INJECTION HOLES

Shinji Miyazaki, Yokohama; Yuichi Mikata, Kawasaki; Takahiko Moriya, Yokohama; Reiji Niino, Kofu, and Motohiko Nishimura, Yamanashi, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki and Tokyo Electron Limited, Tokyo, both of Japan

Filed Dec. 18, 1991, Ser. No. 809,122
Claims priority, application Japan, Dec. 19, 1990, 2-403943
Int. Cl.[5] C23C *16/00*
U.S. Cl. 118—725 10 Claims



1. A vertically oriented CVD apparatus for depositing a silicon nitride film on a plurality of semiconductor wafers comprising:

a reaction chamber including an inner tube having an opened distal end and an outer tube having an exhaust port at a lower portion thereof and covering the inner tube;

a boat means, having a top, vertically placed in the inner tube to horizontally support the plurality of semiconductor wafers as a stack; and

a gas inlet tube including a plurality of gas injection holes along a longitudinal axis thereof and extending along a longitudinal side of the boat means to introduce a reaction gas, adapted to deposit a silicon nitride film on each of the plurality of semiconductor wafers, into the reaction chamber; wherein

the reaction gas is exhausted from the opened distal end of the inner tube through the exhaust port, and

a direction of each of the gas injection holes is set at an angle θ with respect to a reference line given by a straight line connecting a center of the gas inlet tube to a center of one of the plurality of semiconductor wafers, the angle θ being defined by $\theta_0 \leqq \theta \leqq 90°$ where θ_0 is an angle between a line tangent to an outer edge of the one of the plurality of semiconductor wafers and passing through the center of the gas inlet tube and the reference line.

5,252,134

INTEGRATED DELIVERY SYSTEM FOR CHEMICAL VAPOR FROM NON-GASEOUS SOURCES FOR SEMICONDUCTOR PROCESSING

Craig M. Stauffer, 3066 Scott Blvd., Santa Clara, Calif. 95054

Filed May 31, 1991, Ser. No. 708,421
Int. Cl.[5] C23C *16/00*
U.S. Cl. 118—726 4 Claims

1. An integrated module for the delivery of chemical vapor from a liquid source through an inlet to a processing chamber of a processing unit for semicondcutor wafers, said module comprising

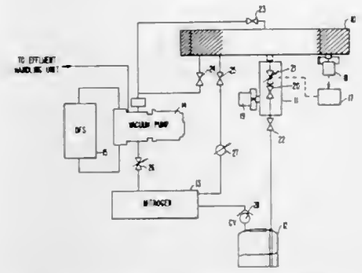
a housing defining a reservoir for holding a liquid from said source;

a supply channel connecting said reservoir to a supply inlet for connection to said source;

a gas channel connecting said reservoir to an outlet;

at least a second gas channel connecting said reservoir to said outlet;

means for mounting said housing to said processing unit such that said outlet is connected to said processing chamber inlet;



means in said housing for heating said reservoir so that liquid in said reservoir is transformed into vapor; and

means in said housing connected to said gas channel for controlling the delivery of said vapor from said reservoir to said processing chamber;

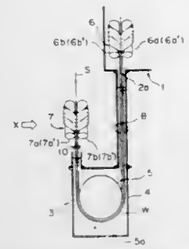
whereby said module controllably supplies vapor from said liquid supply to said processing chamber and each channel can operate under different conditions.

5,252,135

SEALING APPARATUS FOR CONTINUOUS VACUUM TREATING EQUIPMENT

Koji Murakami, Osaka, Japan, assignor to Chugai Ro Co., Ltd., Osaka, Japan

Filed Jul. 1, 1992, Ser. No. 907,111
Claims priority, application Japan, Jul. 2, 1991, 3-161598
Int. Cl.[5] C23C *14/56*
U.S. Cl. 118—733 8 Claims



1. A sealing apparatus installed in a charge opening and a discharge opening of a continuous vacuum treating equipment, comprising:

a substantially U-shaped sealing tank in which a sealing liquid consisting of liquid metal is accumulated, the one end of said sealing tank communicating with the vacuum and the other end of said sealing tank opening to the atmospheric air;

an intermediate roll immersed in said sealing liquid;

two pairs of first reversing rolls and second reversing rolls being located above the vacuum end of said sealing tank and being arranged in the lateral direction and inclined at 45 degrees so that upper ends thereof are disposed adjacent to each other;

two pairs of third reversing rolls and fourth reversing rolls being located above the open end of said sealing tank and

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being arranged and inclined in the same manner as said first reversing rolls and said second reversing rolls; and

two endless belts, which are of liquid repellent material, having means for separably joining both the side edges of said one endless belt to those of the other, said each endless belt being extended from said first reversing rolls to said second reversing rolls, and extended from said second reversing rolls to said third reversing rolls via one end of said intermediate roll, and extended from said third reversing rolls to said fourth reversing rolls, and returned to said first reversing rolls via the other end of said intermediate roll, so that said each endless belt comes into contact with each other in said sealing liquid, whereby a strip material is inserted into the gap between said endless belts at any one pair of said reversing rolls located in the upstream side of said sealing tank, and is released from any one pair of said reversing rolls located in the down stream side of said sealing tank.

5,252,136

SUGAR COMPOSITION COMPRISING SOLUBLE FIBRE

Malcolm Desforges, Near Stamford; Julian M. Cooper, Dereham, and Edward L. Williams, Norwich, all of Great Britain, assignors to British Sugar PLC, Peterborough, Great Britain

PCT No. PCT/GB90/00466, § 371 Date Nov. 18, 1991, § 102(e) Date Nov. 18, 1991, PCT Pub. No. WO90/12117, PCT Pub. Date Oct. 18, 1990

PCT Filed Mar. 29, 1990, Ser. No. 768,646

Claims priority, application United Kingdom, Mar. 31, 1989, 8907313

Int. Cl.[5] C13F *3/00;* **A23G** *3/00;* **A01N** *65/00;* **A61K** *31/70*

U.S. Cl. 127—29 **29 Claims**

1. A solid, particulate, sugar composition comprising crystalline sugar coated with a non-gelling water-soluble dietary fibre, the sugar composition comprising from about 90 to 99% by weight sugar and from about 10 to 1% by weight of non-gelling water-soluble dietary fibre.

5,252,137

SYSTEM AND METHOD FOR APPLYING A LIQUID

Kiyohisa Tateyama, Kumamoto, and Keizo Hasebe, Kofu, both of Japan, assignors to Tokyo Electron Limited, Tokyo; Electron Kyushu Limited, Kumamoto and Kabushiki Kaisha Toshiba, Kawasaki, all of Japan

Filed Sep. 12, 1991, Ser. No. 758,128

Claims priority, application Japan, Sep. 14, 1990, 2-245607

Int. Cl.[5] B08B *3/00*

U.S. Cl. 134—34 **14 Claims**

1. A system for applying a liquid to an object to be processed, comprising:

a liquid supply source; and

nozzle means communicating with said liquid supply source;

said nozzle means including:

a liquid storing portion for storing a liquid supplied from said liquid supply source;

a plurality of small passages communicating with said liquid storing portion, each of said small passages having a transverse section which is smaller than that of said liquid storing portion; and

a slit passage communicating with said small passages, in which liquids flowing from said small passages are mixed together and discharged from said slit passage toward said object to be processed.

5,252,138

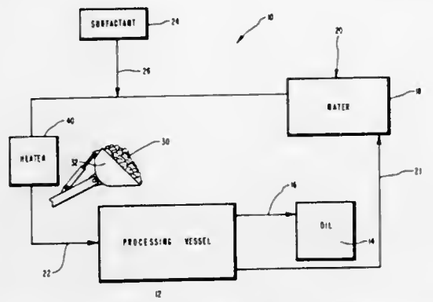
WATER/SURFACTANT PROCESS FOR RECOVERING HYDROCARBONS FORM SOIL IN THE ABSENCE OF EMULSIFYING THE OIL

E. Park Guymon, 4085 Eccles Ave., Ogden, Utah 84403

Continuation-in-part of Ser. No. 607,995, Nov. 1, 1990, abandoned, which is a continuation-in-part of Ser. No. 490,089, Mar. 7, 1990, Pat. No. 4,968,412, which is a continuation-in-part of Ser. No. 297,670, Jan. 17, 1989, abandoned. This application Feb. 13, 1992, Ser. No. 835,252

Int. Cl.[5] B01D *43/00;* **B08B** *3/08*

U.S. Cl. 134—42 **12 Claims**



1. A process for removing oil from soil contaminated with said oil in the absence of emulsifying said oil or suspending said soil in the wash water comprising:

obtaining soil contaminated with oil;

placing said soil contaminated with said oil in a vessel;

selecting a surfactant from the group consisting of a linear alcohol having carbon atoms within the range on the order of about eight to fifteen carbon atoms and ethylene oxide units on the carbon atoms within the range on the order of about two to eight ethylene oxide units;

preparing a wash water by mixing said surfactant with water;

introducing said wash water into said vessel;

washing said soil contaminated with said oil with said wash water, said wash water dislodging said oil from said soil, said water floating said oil away from said soil;

preventing an emulsion being formed between said oil and said wash water by limiting said surfactant to an amount less than 0.5 percent, by volume; and

removing said oil from said vessel.

5,252,139

PHOTOVOLTAIC THIN LAYERS PANEL STRUCTURE

Jacques Schmitt, La Ville du Bois; Alain Ricaud, Gif-sur-Yvette, and Jean-Marie Siefert, Arcueil, all of France, assignors to Solems S.A., Palaiseau, France

Filed Feb. 19, 1992, Ser. No. 836,820

Claims priority, application France, Feb. 21, 1991, 91 02073; Feb. 21, 1991, 91 02074

Int. Cl.[5] H01L *31/048*

U.S. Cl. 136—251 **17 Claims**

12. A solar module comprising several elementary photovoltaic cells connected electrically in series at the location of serial interconnection zones, these cells being formed on an electrically insulating transparent substrate, each cell comprising:

an opaque electrically conducting layer, forming a front electrode deposited over a first face of the substrate,

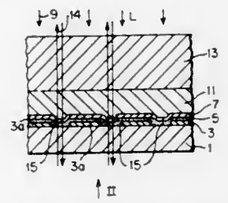
a semiconducting photoelectric conversion layer deposited over said front electrode,

a transparent electrically conducting layer, forming a rear electrode, deposited over said semiconducting layer,

an electrically insulating transparent potting layer disposed on said rear electrode,

an electrically insulating transparent protection plate covering said potting layer,

elongated grooves being formed through said opaque front



electrode to allow light to traverse the entire module, said grooves extending parallel to each other, the distance between two successive grooves being less than or equal to substantially 2.5 mm.

5,252,140

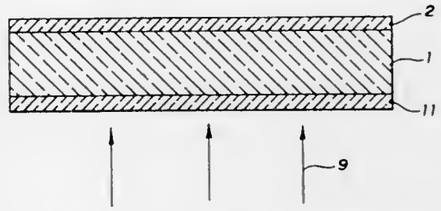
SOLAR CELL SUBSTRATE AND PROCESS FOR ITS PRODUCTION

Shigeyoshi Kobayashi, 2-209 Kosugicho, Nakahara-ku, Kawasaki-shi, Kanagawa-Pref.; Susumu Yaba, 543, Sanmaicho, Kanagawa-ku, Yokohama-shi, Kanagawa-Pref.; Shinya Kikugawa, 3-16, Sugita Isogo-ku, Yokohama-shi, Kanagawa-Pref., all of Japan; Stepheo Mubl, Paseo Del Pregonero 208-2, Colinas Del Sur, Mexico 01430 , and Arun Madan, 327 Lamb La., Golden, Colo. 80401

Continuation-in-part of Ser. No. 77,422, Jul. 24, 1987, abandoned. This application Mar. 29, 1990, Ser. No. 477,909

Int. Cl.[5] H01L *31/075, 31/18;* **C03B** *27/00*

U.S. Cl. 136—258 **11 Claims**



1. In a solar cell having a semiconductor layer disposed on a solar cell substrate, said solar cell substrate comprising:

a thermally glass plane having an incident and an opposing surface;

a thin film coating deposited on said incident surface of said glass plate producing first surface forces on said incident surface;

a transparent electrically conductive layer formed on said opposing surface of said glass plate, said electrically conductive layer producing second surface forces on said opposing surface counterbalanced by said first surface forces to prevent warping of said glass plate during thermal tempering; and

a semiconductor layer formed on said electrically conductive layer.

5. The solar cell substrate as in claim 1, wherein said semiconductor layer comprises: a P-type amorphous silicon layer, an I-type amorphous silicon layer, and an N-type amorphous silicon layer sequentially deposited on said transparent electrically conductive layer.

5,252,141

MODULAR SOLAR CELL WITH PROTECTIVE MEMBER

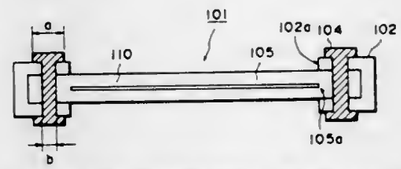
Yuji Inoue, and Hiroshi Yamamoto, both of Nagahama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 20, 1992, Ser. No. 837,876

Claims priority, application Japan, Feb. 20, 1991, 3-045584; May 16, 1991, 3-139476

Int. Cl.[5] H01L *31/048*

U.S. Cl. 136—251 **14 Claims**



1. A solar cell module comprising at least one photovoltaic device, covering material for covering said at least one photovoltaic device, and a frame for covering the end portions of said covering materials;

wherein said covering materials are provided, in the end portions thereof, with a recess or a penetrating hole, and said frame is provided with a projection adapted to engage with said recess or penetrating hole.

5,252,142

PIN JUNCTION PHOTOVOLTAIC ELEMENT HAVING AN I-TYPE SEMICONDUCTOR LAYER WITH A PLURALITY OF REGIONS HAVING DIFFERENT GRADED BAND GAPS

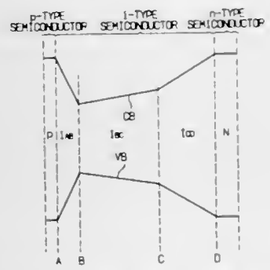
Jinsho Matsuyama; Tsutomu Murakami; Koichi Matsuda; Hiroshi Yamamoto, and Toshihiro Yamashita, all of Nagahama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 22, 1991, Ser. No. 796,394

Claims priority, application Japan, Nov. 22, 1990, 2-315924

Int. Cl.[5] H01L *31/075*

U.S. Cl. 136—255 **8 Claims**



1. A pin junction photovoltaic element having an i-type semiconductor layer formed of a variable band gap semiconductor material, said i-type semiconductor layer being positioned between a p-type semiconductor layer having a wider band gap than that of said i-type semiconductor layer and an n-type semiconductor layer having a wider band gap than that of said i-type semiconductor layer, characterized in that said i-type semiconductor layer contains a first region (a) which is positioned on the side of said p-type semiconductor layer and has a graded band gap, a second region (b) which is adjacent to said first region (a) and also has a graded band gap, and a third region (c) which is positioned on the side of said n-type semiconductor layer and also has a graded band gap; said i-type semiconductor layer having a minimum band gap at the boundary between said first region (a) and said second region (b); the thickness of said first region (a) being less than one-half of the total thickness of said i-type semiconductor layer; and the

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gradient of the band gap of said third region (c) being greater than that of said second region (b).

5,252,143

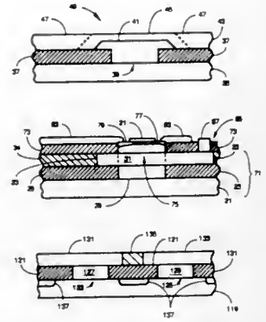
BIPOLAR TRANSISTOR STRUCTURE WITH REDUCED COLLECTOR-TO-SUBSTRATE CAPACITANCE

Shang-Yi Chiang, Walnut Creek, and Theodore I. Kamins, Palo Alto, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 597,615, Oct. 15, 1990, abandoned. This application Feb. 18, 1992, Ser. No. 837,683

Int. Cl.[5] H01L *29/00*

U.S. Cl. 148—33 **19 Claims**



1. A pre-processed substrate structure for a semiconductor device, the structure comprising:

a substrate of semiconductor material;

a dielectric for electrically insulating the substrate, the dielectric having a window therethrough;

a feed-through layer of epitaxial semiconductor material in and overfilling the window and extending laterally over a portion of the dielectric; and

a substantially planar continuous subcollector layer of semiconductor material that is physically separated from the substrate by the dielectric, the subcollector layer including an epitaxial portion distinct from the feedthrough layer that overlies the feed-through layer and a polycrystalline portion that overlies the dielectric.

5,252,144

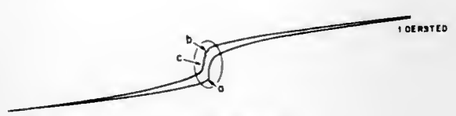
HEAT TREATMENT PROCESS AND SOFT MAGNETIC ALLOYS PRODUCED THEREBY

Ronald J. Martis, East Hanover, N.J., assignor to Allied Signal Inc., Morris Township, Morris County, N.J.

Filed Nov. 4, 1991, Ser. No. 787,495

Int. Cl.[5] H01F *1/00*

U.S. Cl. 148—121 **9 Claims**



1. A process comprising the steps of:

providing a metal strip of a positive magnetostrictive alloy having at least one crystallization temperature and an essentially surface crystalline phase defining a major surface of said strip and an amorphous phase contiguous with said crystalline phase and remote from said major surface;

heating said metal strip to a temperature between about 70% and about 99% of the first crystallization temperature; and cooling said heated metal strip at a rate greater than about 10° C./min.

5,252,145

METHOD OF NITRIDING NICKEL ALLOY

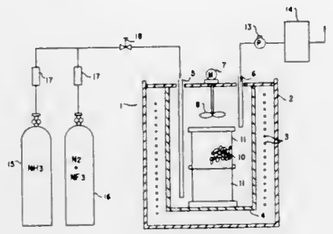
Masaaki Tahara; Haruo Senbokuya; Kenzo Kitano; Tadashi Hayashida, all of Osaka, and Teruo Minato, Wakayama, all of Japan, assignors to Daidousanso Co., Ltd., Osaka, Japan

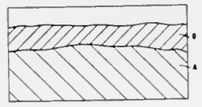
Continuation-in-part of Ser. No. 727,614, Jul. 10, 1991, which is a continuation-in-part of Ser. No. 688,217, Apr. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 479,013, Feb. 12, 1990, Pat. No. 5,013,371. This application Mar. 3, 1992, Ser. No. 845,080

Claims priority, application Japan, Jan. 14, 1992, 4-24763

Int. Cl.[5] C21D *1/00*

U.S. Cl. 148—206 **5 Claims**





1. A method of nitriding nickel alloy comprising steps of holding nickel alloy in a fluorine- or fluoride-containing gas atmosphere with heating and holding the fluorinated nickel alloy in a nitriding atmosphere with heating to form a nitrided layer in the surface layer of the nickel alloy.

5,252,146

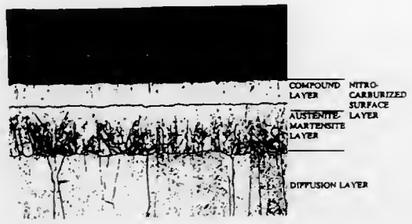
COAT-NITROCARBURIZING OF IRONS AND STEELS

Lianyu Wen; Jiwei Shi, and Reginald W. Smith, all of Kingston, Canada, assignors to Queen's University, Kingston, Canada

Filed Aug. 24, 1992, Ser. No. 933,634

Int. Cl.[5] C21D *1/06*

U.S. Cl. 148—219 **5 Claims**



1. A process for nitrocarburizing ferrous objects comprising:

(a) loading said objects into a container with a triazine polymer;

(b) sealing said container;

(c) heating said sealed container at a temperature in the range of 500°-900° C. for a period up to about 120 minutes;

(d) opening said container; and

(e) quenching said objects.

5,252,147

MODIFICATION OF SURFACE PROPERTIES OF COPPER-REFRACTORY METAL ALLOYS

John D. Verhoeven, and Edwin D. Gibson, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Continuation of Ser. No. 366,660, Jun. 15, 1989, abandoned. This application Feb. 11, 1991, Ser. No. 655,236

Int. Cl.[5] C23C *8/02, 26/00*

U.S. Cl. 148—237 **13 Claims**

2. A method of modifying the surface properties of a copper-refractory metal alloy body, said alloy body having a copper matrix with particles of the refractory metal (RF) dispersed therein, said RF being selected from the group consisting of niobium, vanadium, tantalum, chromium, molybdenum, and tungsten, or any combination of this group, comprising heating said body in an ambient atmosphere that is not reactive with the alloy and at a temperature effective for reducing the surface energy of said body to effect diffusion of the RF from inside the body to the surface of the body, including controlling the heating temperature above 600° C. and below the liquidus temperature of the Cu matrix for a time at temperature to purposefully and controllably coat a surface of said body with a layer of RF of at least 2 angstroms to impart chemical properties of the RF to the surface of said body, and further heating said body at a temperature above the liquidus temperature and below 1300° C. to increase the thickness of the RF layer.

5,252,148

SOFT MAGNETIC ALLOY, METHOD FOR MAKING, MAGNETIC CORE, MAGNETIC SHIELD AND COMPRESSED POWDER CORE USING THE SAME

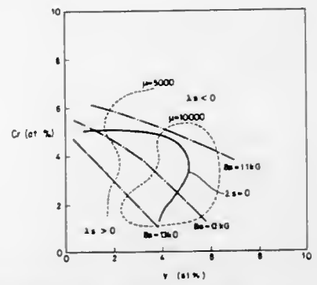
Masao Shigeta, Narashino; Asako Kajita, Abiko; Ippo Hirai, and Tsutomu Choh, both of Yachiyo, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Continuation of Ser. No. 528,827, May 25, 1990, abandoned. This application Aug. 10, 1992, Ser. No. 926,389

Claims priority, application Japan, May 27, 1989, 1-133540; Apr. 13, 1990, 2-98905; Apr. 13, 1990, 2-98906; May 11, 1990, 2-122299; May 11, 1990, 2-122300

Int. Cl.[5] H01F *1/04*

U.S. Cl. 148—307 **7 Claims**



1. A soft magnetic alloy having a composition in atomic ratio of general formula:

$$(Fe_{1-a}Ni_a)_{100-x-y-z-p-q}Cu_xSi_yB_zCr_pM^1{}_q \quad (I)$$

wherein

M^1 is V or Mn or a mixture of V and Mn, and

letters a, x, y, z, p, and q are in the following ranges:

$0 \leqq a \leqq 0.5$,

$0.1 \leqq x \leqq 5$,

$6 \leqq y \leqq 20$,

$6 \leqq z \leqq 20$,

$15 \leqq y+z \leqq 30$,

$0.5 \leqq p \leqq 10$, and

$0.5 \leqq q \leqq 10$,

said soft magnetic alloy having a fine crystalline phase.

5,252,149

FERROCHROMIUM ALLOY AND METHOD THEREOF

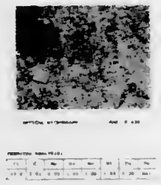
Kevin F. Dolman, Helena Valley, Australia, assignor to Warman International Ltd., Artarmon, Australia

Continuation of Ser. No. 671,885, Apr. 3, 1991, abandoned. This application Feb. 10, 1993, Ser. No. 15,878

Claims priority, application Australia, Aug. 4, 1989, PJ5628

Int. Cl.[5] C22C *38/36*; C21D *6/00*

U.S. Cl. 148—605 **12 Claims**



1. An erosion and corrosion resistant ferrochromium alloy comprising the following composition, in wt. %.

34–50 chromium

1.5–2.3 carbon

up to 5 manganese

up to 5 silicon

up to 5 molybdenum

up to 10 nickel

up to 5 copper

up to 1% of each of one or more micro-alloying elements selected from the group consisting of titanium, zirconium, niobium, boron, vanadium and tungsten, and

balance, iron and incidental impurities, with a microstructure comprising eutectic chromium carbides in a matrix comprising one or more of ferrite, retained austenite and martensite, as herein defined.

5,252,150

PROCESS FOR PRODUCING NITROGEN CONTAINING TI-AL ALLOY

Isamu Yuki, Toyota; Minoru Uozumi, Aichi, and Ryoji Nakamura, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaishi, Japan

Division of Ser. No. 698,096, May 10, 1991, Pat. No. 5,152,960. This application Jul. 2, 1992, Ser. No. 907,618

Claims priority, application Japan, May 18, 1990, 2-130093; Mar. 12, 1991, 3-73990

Int. Cl.[5] C22C *14/00*

U.S. Cl. 148—421 **8 Claims**



1. A process for producing a Ti—Al alloy, comprising the steps of:

(1) a solution heat treatment step of holding metallic titanium heated to from 800° C. or more to a melting point thereof or less in a nitrogen gas atmosphere, thereby enter-

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ing nitrogen into solid solution of said metallic titanium; and

(2) an alloying step of adding to and dissolving aluminum in an amount of 30 to 38% by weight in said metallic titanium whose solid solution includes said nitrogen entered thereinto in a vacuum or an inert gas atmosphere, thereby producing a Ti—Al alloy.

5,252,151

FE-NI ALLOY SHEET FOR SHADOW MASK HAVING A LOW SILICON SEGREGATION AND METHOD FOR MANUFACTURING SAME

Tadashi Inoue; Masayuki Kinoshita, and Tomoyoshi Okita, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

PCT No. PCT/JP91/00182, § 371 Date Oct. 1, 1991, § 102(e) Date Oct. 1, 1991, PCT Pub. No. WO91/12345, PCT Pub. Date Aug. 22, 1991

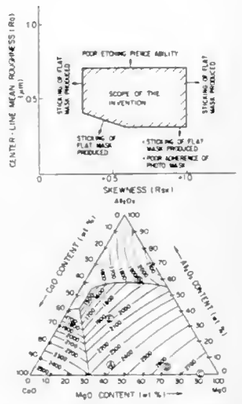
PCT Filed Feb. 15, 1991, Ser. No. 768,918

Claims priority, application Japan, Feb. 15, 1990, 2-32414; Aug. 10, 1990, 2-210242; Aug. 22, 1990, 2-218945

The portion of the term of this patent subsequent to Jul. 7, 2009, has been disclaimed.

Int. Cl.[5] **C12D** *8/00, 9/46*

U.S. Cl. 148—541 **10 Claims**



4. A method for manufacturing an Fe-Ni alloy sheet for a shadow mask, said Fe-Ni alloy sheet consisting essentially of:

nickel: from 34 to 38 wt. %,

silicon: from 0.01 to 0.15 wt. %,

manganese: from 0.01 to 1.00 wt. %, and

the balance being iron and incidental impurities;

the surface portion of said alloy sheet having a silicon (Si) segregation rate, as expressed by the following formula, of up to 10%:

$$\left|\left(\begin{array}{c}\text{Si concentration in}\\ \text{segregation region}\end{array}\right)-\left(\begin{array}{c}\text{average Si}\\ \text{concentration}\end{array}\right)\right/\left(\begin{array}{c}\text{Average Si}\\ \text{concentration}\end{array}\right)\Bigg|\times 100,$$

the method comprising

heating an alloy ingot or a continuously cast alloy slab to soak the alloy ingot or cast alloy slab, carrying out a primary slabbing-rolling at a sectional reduction rate of from 20 to 60%, heating the thus primary slabbed-rolled slab to soak the slab, carrying out a secondary slabbing-rolling at a sectional reduction rate of from 30 to 50% and slowly cooling the thus secondary slabbed-rolled slab to attain said silicon segregation rate and

finally rolling both surfaces of said alloy sheet by means of a pair of dull rolls so as to impart a center-line mean roughness (Ra), a skewness (Rsk), which is a deviation index in the height direction of the roughness curve, and an average peak interval (Sm) of the sectional curve, which satisfy the following formulae:

$0.3\ \mu m \leqq Ra \leqq 0.7\ \mu m$,

$0.3 \leqq Rsk \leqq 1.2$,

$Ra \geqq -\frac{1}{3}Rsk + 0.5$, and

$70\ \mu m \leqq Sm \leqq 160\ \mu m$.

5,252,152

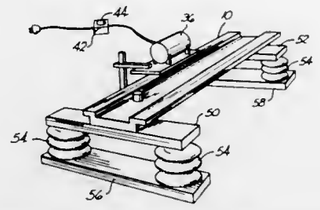
METHOD OF CONTROLLING WARPAGE IN WORKPIECE BY SELECTIVE FLAME-HARDENING AND VIBRATIONS

David J. Seror, 38200 Executive Dr. N., Westland, Mich. 48185, assignor to David J. Seror; Joseph Seror and Joseph P. Seror, all of Westland, Mich.

Filed Oct. 26, 1992, Ser. No. 966,536

Int. Cl.[5] **G01N** *29/00*

U.S. Cl. 148—558 **11 Claims**



1. A method for flame-hardening a metal workpiece comprising the steps of

measuring the workpiece to determine the existence of any warpage;

straightening the workpiece to remove such warpage;

applying a flame to certain surfaces of the workpiece so as to heat the metal adjacent such surfaces;

immediately quenching the heated workpiece surface to increase the hardness of such surface;

supporting the workpiece on cushion means;

vibrating the workpiece;

observing the vibrations of the workpiece and terminating the vibrations after a period of time;

measuring the workpiece to determine the existence of warpage thereof;

straightening the workpiece to remove the warpage; and then

repeating the vibration step.

5,252,153

PROCESS FOR PRODUCING STEEL BAR WIRE ROD FOR COLD WORKING

Tatsuro Ochi; Yoshiro Koyasu, both of Muroran, and Yukio Noguchi, Futtsu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jun. 10, 1992, Ser. No. 896,187

Claims priority, application Japan, Jun. 14, 1991, 3-143600

Int. Cl.[5] **C21D** *8/06*

U.S. Cl. 148—598 **16 Claims**

1. A process for producing a steel bar wire rod for cold working, comprising the steps of:

heating a steel having a composition consisting essentially of,

in terms of % by weight, 0.1 to 1.5% of C, 0.25 to 2.0% of Mn, 0.03 to 1.00% of Si, 0.015 to 0.05% of Al, 0.003 to 0.020% of N, 0.01 to 0.15% of S, balance Fe and unavoidable impurities to 900° to 1250° C.,

hot-rolling the heated steel at a temperature of from Ar_3 to (Ar_3+200)° C. with a total reduction of area of 30% or more,

cooling the hot-rolled steel to complete a ferrite/pearlite transformation or a pro-eutectoid cementite/pearlite transformation, and

subjecting the transformed material to finish hot rolling at a temperature in the range of from (Ac_1-400) to Ac_1° C. with a total reduction of area of 10 to 70%.

5,252,154

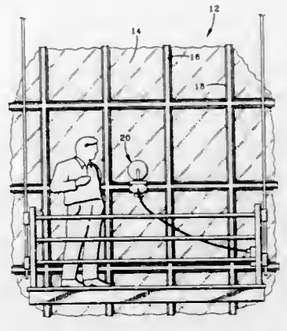
GASKET SYSTEM

Kenneth P. Hoffman, Chagrin Falls, Ohio, assignor to Tremco, Inc., Beachwood, Ohio

Filed Aug. 9, 1991, Ser. No. 743,000

Int. Cl.[5] **E04B** *2/00*

U.S. Cl. 156—71 **8 Claims**



1. A method of applying a gasket system, said method comprising the steps of:

securing a first gasket member having a first end portion to a structure,

securing a second gasket member to the structure adjacent to the first gasket member, said second gasket member having a second end portion in close proximity to said first end portion,

abutting the two end portions together while being clamped within a heating means,

applying heat with the heating means to thereby bond the two end portions together,

securing the heating means to the structure by attachment means when applying heat to the two end portions,

removing the heating means from the two end portions, and

securing the entire gasket assembly to the structure, wherein the first and second gasket members now form substantially one continuous gasket.

5,252,155

SHRINK FILM LABELING WITH POLYURETHANE HOT MELTS

James Nowicki, Hopewell, N.J.; Francis X. Brady, Bucks, United Kingdom, and James N. O'Leary, Hackettstown, N.J., assignors to National Starch and Chemical Investment Holding Corporation, Bridgewater, N.J.

Filed Mar. 10, 1992, Ser. No. 849,119

Int. Cl.[5] **B32B** *31/26*

U.S. Cl. 156—84 **10 Claims**

1. A process for applying heat shrink film to containers comprising the steps of:

a) coating at least a portion of a heat shrinkable but unshrunken film segment with a reactive hot melt polyurethane adhesive having a free isocyanate content greater than 2% and a viscosity less than 3000 cps at 225° F.;

b) applying the film to the longitudinal surface of the container;

c) subjecting the container to heat to shrink the film onto the container so as to permanently affix it thereto; and

d) subsequently subjecting the labelled container to a heating step.

5,252,156

METHOD OF MANUFACTURING TIRE INCLUDING WINDING WIDE AND NARROW CORD STRIPS TO COVER BELT

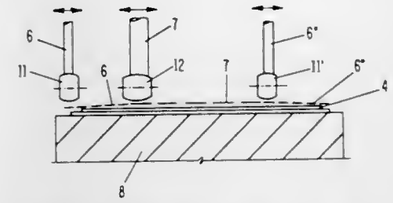
Michael Glinz, Neustadt, Fed. Rep. of Germany, assignor to Continental Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Jan. 17, 1992, Ser. No. 822,448

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1991, 4103232

Int. Cl.[5] **B29D** *30/38*

U.S. Cl. 156—117 **5 Claims**



1. A method for producing a pneumatic vehicle tire, comprising a radial carcass, tire beads with pull-resistant bead cores, with said radial carcass being anchored at said bead cores by being looped about said bead cores, a reinforcement belt connected radially outwardly to said radial carcass, a bandage comprising at least one layer and being arranged radially outwardly of said reinforcement belt, for covering said reinforcement belt, said bandage being comprised of strips of cord material coated with rubber being spirally wound onto said reinforcement belt in a circumferential direction of said vehicle tire; said method comprising the steps of:

providing at least two of said strips of cord material of varying width, with a first one of said strips of cord material being narrow and a second one of said strips of cord material being wide;

arranging said narrow strips of cord material in an area of edges of said reinforcement belt;

placing said wide strip of cord material on a center portion of said reinforcement strip; and

winding said narrow strip of cord material to form a plurality of adjacent windings of said narrow strip of cord material and simultaneously winding said wide strip of cord material to form a plurality of adjacent windings of said wide strip of cord material.

5,252,157

ELECTROTHERMAL FUSION OF LARGE DIAMETER PIPES BY ELECTRIC HEATING WIRE WRAPPING AND SLEEVE CONNECTOR

James A. Inhofe, Jr., Sapulpa, Okla. 74066, assignor to Central Plastics Company, Shawnee, Okla.

Continuation of Ser. No. 866,297, Apr. 13, 1992, abandoned, which is a continuation of Ser. No. 594,047, Nov. 1, 1990, abandoned, which is a division of Ser. No. 345,455, May 1, 1989, abandoned. This application Jan. 14, 1993, Ser. No. 4,789

Int. Cl.[5] **B32B** *31/00;* **F16L** *21/00*

U.S. Cl. 156—158 **7 Claims**

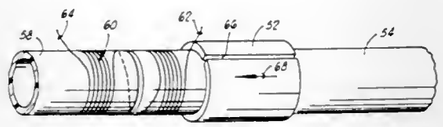
1. A method of sealingly connecting adjacent ends of a pair

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of large diameter thermoplastic pipe sections by electric fusion comprising:

(a) moving a thermoplastic sleeve connector of constant thickness having a large sleeve interior diameter and a large sleeve exterior diameter and having a linear, longitudinal split extending along the entire length of said sleeve and wherein said split is further characterized by a first substantially straight edge and a second substantially straight edge and wherein said first and second edges have substantially flat first and second faces which define said split over the end and a distance down the length of a first of said thermoplastic pipe sections and reducing said sleeve interior diameter to accommodate the external diameter of said thermoplastic pipe sections;

(b) placing the second of said pipe sections in alignment with said first pipe section whereby an end of said second pipe



section is positioned adjacent an end of said first pipe section;

(c) after step (b) helically winding an electric resistance heating wire around the external surfaces of said pipe sections next to the adjacent ends thereof so that said electric resistance heating wire is in direct contact with the external surfaces of said pipe sections;

(d) after step (c) moving said sleeve to a position over the adjacent ends of said pipe sections and over said electric resistance wire wound on said pipe sections and closing said sleeve so that said first flat face and said second flat face meet without overlap to form a substantially continuous sleeve outer surface; and

(e) applying an electric current to said electric resistance heating wire for a period of time such that the thermoplastic materials making up adjacent portions of said sleeve and pipe sections are sealingly fused together.

5,252,158

METHOD AND APPARATUS FOR PRODUCING NONWOVEN FABRICS

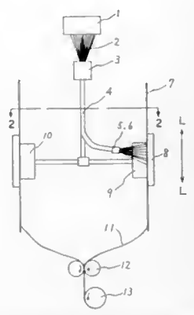
Hisao Shimizu, Otsu; Miyoshi Okamoto, Takatsuki, and Nobuo Kurata, Kouka, all of Japan, assignors to Toray Industries, Inc., Japan

PCT No. PCT/JP89/00480, § 371 Date Jan. 23, 1992, § 102(e) Date Jan. 23, 1992, PCT Pub. No. WO90/13696, PCT Pub. Date Nov. 15, 1990

PCT Filed May 10, 1989, Ser. No. 640,412

Int. Cl.[5] D04H *3/16*

U.S. Cl. 156—167 **37 Claims**



1. A method for producing nonwoven fabrics characterized in that a group of fibers entrained with a high-speed fluid is ejected from a nozzle rotating around an axis of a substantially stationary cylindrical support as its rotational axis onto an inner peripheral surface of said cylindrical support and is laminated thereon as a web and furthermore, said web which is under a heating condition is resiliently pressed via a roller revolving on the inner peripheral surface of the cylindrical support around a revolutional axis which is the same as the rotational axis of said rotating nozzle and then, said web is taken up from said cylindrical support as a nonwoven fabric while it is slipped.

24. An apparatus for producing nonwoven fabrics characterized in that said apparatus comprises:

(a) a substantially stationary cylindrical support collecting fibers as a web on its inner peripheral surface,

(b) means for ejecting a group of fibers entrained with a high-speed fluid onto the inner peripheral surface of said cylindrical support,

(c) means for performing a resilient pressing to a collected and laminated web under a heating condition on the inner peripheral surface of said cylindrical support, and

(d) means for taking up said web in the form of a nonwoven fabric from said cylindrical support substantially continuously.

5,252,159

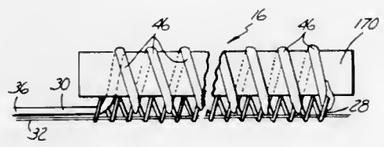
METHOD FOR MAKING COILED, PERFUSION BALLOON CATHETER

Michelle Arney, Minneapolis, Minn., assignor to SciMed Life Systems, Inc., Maple Grove, Minn.

Division of Ser. No. 782,518, Oct. 25, 1991. This application Jan. 4, 1993, Ser. No. 133

Int. Cl.[5] B29C *53/60, 65/48*

U.S. Cl. 156—169 **9 Claims**



1. A method for making a perfusion balloon catheter, the method comprising:

inserting a length of uninflated flexible tube into an end of a coiled support member;

threading the tube through a side of the coiled support member;

repeatedly wrapping the tube around the coiled support member and a support mandril, which is positioned adjacent to the coiled support member, to create a series of cooperative, side-by-side loops of the tube;

sealing a first end of the tube at a desired distance from a first loop of the tube;

inserting a retainer through a length of the coiled support member and between a portion of the coiled support member and each tube loop;

heating the tube and applying fluid pressure to a second end of the tube to inflate the loops;

cooling the tube;

removing the fluid pressure;

removing the support mandril; and

connecting the tube to a distal end of a catheter shaft.

5,252,160

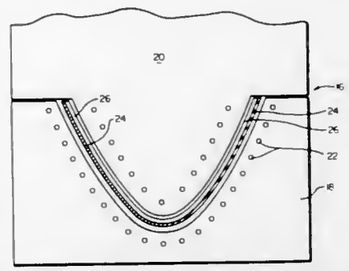
METHOD OF MANUFACTURING A METAL/COMPOSITE SPINNER CONE

John F. Scanlon, Okemos, and Gary Wigell, Lansing, both of Mich., assignors to Auto Air Composites, Inc., Lansing, Mich.

Filed Nov. 15, 1990, Ser. No. 614,289

Int. Cl.[5] B29C *43/04*

U.S. Cl. 156—196 **11 Claims**



1. A method of manufacturing a hybrid metal/thermoplastic composite structural member in a ceramic mold comprising the steps of:

applying a metal layer to the inside surface of the female portion of the ceramic mold

placing a predetermined amount of thermoplastic composite on top of the metal layer

aligning the male portion of the mold with the female portion of the mold and closing the ceramic mold,

heating the ceramic mold to a predetermined temperature for a preset time causing the thermoplastic composite to bond with the metal layer,

cooling the ceramic mold, and

removing the hybrid metal/thermoplastic composite structured member therefrom.

5,252,161

SOFT GUSSET, HARD-PANELED LUGGAGE AND METHOD OF MANUFACTURE

S. J. Chang, 13-3, Sanjung Dong Joon-Ku Burchun City, Kyungi-Do, Rep. of Korea, and Joseph J. Berman, 55 Mountain View Ter., Hillsdale, N.J. 07642

Continuation-in-part of Ser. No. 764,794, Sep. 24, 1991, which is a continuation-in-part of Ser. No. 702,950, May 20, 1991, abandoned. This application Sep. 23, 1992, Ser. No. 950,575

Claims priority, application Rep. of Korea, May 5, 1991, 91 7382

Int. Cl.[5] B29C *43/00*

U.S. Cl. 156—196 **11 Claims**

1. A method of manufacturing a formed panel for luggage comprising the steps of:

providing a sized fabric with adhesive on one side thereof;

heating the adhesive to provide flexibility to the sized fabric;

molding the sized fabric to form an outer formed fabric;

providing a second sized fabric with an adhesive on one side thereof;

heating the adhesive to provide flexibility to the second sized fabric;

molding the second sized fabric to form an inner formed fabric;

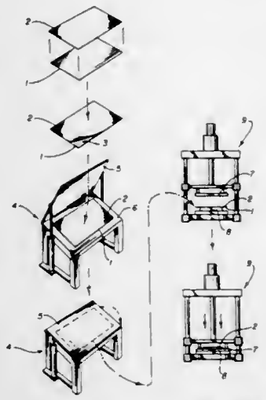
providing a sized substrate;

molding the sized substrate to a formed substrate;

applying adhesive to both surfaces of the formed substrate;

stacking the outer formed fabric, the formed substrate and the inner formed fabric; and

compressing the outer formed fabric, the formed substrate and the inner formed fabric together so that the surfaces containing adhesive contact and coact to laminate the



outer formed fabric, the formed substrate and the inner formed fabric together to form a formed panel.

5,252,162

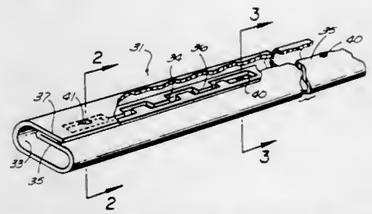
MULTIPLE CHAMBER DRIP IRRIGATION HOSE MADE FROM A SINGLE STRIP

Daniel W. C. Delmer, 17044 Bluewater La., Huntington Beach, Calif. 92649, assignor to William A. Delmer; Robert J. Delmer and Daniel W. C. Delmer, all of Huntington Beach, Calif.

Division of Ser. No. 784,737, Nov. 4, 1991, Pat. No. 5,118,042, which is a continuation of Ser. No. 659,446, Feb. 22, 1991, abandoned, which is a continuation of Ser. No. 371,101, Jun. 26, 1989, abandoned. This application Jan. 27, 1992, Ser. No. 826,462

Int. Cl.[5] B29C *53/08*

U.S. Cl. 156—203 **17 Claims**



1. A method of making a multiple chamber hose suitable for drip irrigation from a single strip material having opposing edge portions, including the steps of:

forming secondary chambers in the strip material by removing material from the strip material with said secondary chambers having a second axis;

forming inlet openings and outlet openings in the strip material;

folding the material to form a multiple layer section having a primary layer of the material, a mid layer of the material and a secondary layer of the material, and to form a primary chamber having a first axis parallel to said second axis for fluid flow therethrough along said first axis,

with the secondary chambers defining a circuitous path in the mid layer providing for restricted fluid flow therethrough, and with the primary layer positioned between the primary chamber and the mid layer and with the secondary layer positioned between the mid layer and the exterior, and

with the inlet openings providing for fluid flow from the

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primary chamber to the secondary chambers and with the outlet openings providing for fluid flow from the secondary chambers to the exterior; and

adhering the primary, mid an secondary layers together.

5,252,163

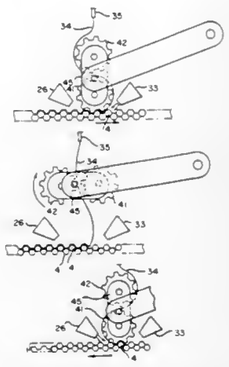
PROCESS FOR THE PREPARATION OF THERMOPLASTIC HONEYCOMB SHAPED STRUCTURES WITHOUT MACHINING

Barry M. Fell, Hummelstown, Pa., assignor to Hexcel Corporation, Pleasanton, Calif.

Continuation-in-part of Ser. No. 531,184, May 31, 1990, Pat. No. 5,139,596. This application Dec. 3, 1990, Ser. No. 620,880

Int. Cl.[5] B32B *31/20*

U.S. Cl. 156—205 12 Claims



1. A process for the continuous preparation of thermoplastic honeycomb core of predetermined shape, comprising:

a) disposing a first set of metal formers into the topmost cells of a honeycomb structure having at least one row of cells;

b) disposing a second set of metal formers, displaced by half the cell spatial frequency, in the antinode depressions in the topmost honeycomb surface;

c) supplying a web of thermoplastic to a slitting zone and slitting the web transverse to the cells of the honeycomb core along one or more predetermined paths such that following honeycomb preparation, the resulting honeycomb may be separated into a honeycomb part having a shape defined by said predetermined paths;

d) supplying said slit web of thermoplastic between the topmost row of formers and a corrugating roller having a width equal to the honeycomb thickness or a substantial fraction thereof, and having disposed radially from its surface along its length, projections adapted to contact the surface of the to-be-formed node-antinode demes;

e) heating the web surface most remote from the corrugating roller by anon-contacting heat source to a temperature such to allow corrugation and fusion o the web prior to the application of the web to the topmost former;

f) corrugating the heated web between the radially projecting surfaces of the corrugating roller and the topmost row of formers, the corrugating roller having a sufficiently low temperature such that resin transfer to the corrugating roller is avoided and substantially coincidentally fusing the nodes thus being formed to the antinodes of the cell layer through which the lowermost row of formers pass;

g) retracting the lowermost set of formers, raising said formers by an amount equal to the thickness of the fused node-antinode surface, and redisposing the rods in the antinode depressions in the topmost honeycomb surface becoming topmost formers by such movement;

h) repeating steps c)–g) until a honeycomb of the desired depth and shape is obtained; and,

i) separating the honeycomb structure thus formed in steps (a)–(h) along the surface(s) determined by the slit webs in successive layers into honeycomb parts of predetermined shape.

5,252,164

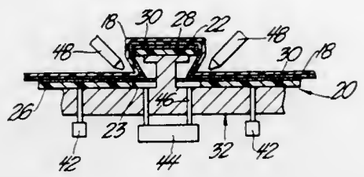
METHOD FOR MAKING A SUPPLEMENTAL IMPACT RESTRAINT DOOR AND INSTRUMENT PANEL SYSTEM FROM SINGLE, UNITARY COVER

Daniel H. Mills, Durham, N.H., assignor to Davidson Textron Inc., Dover, N.H.

Filed Dec. 21, 1992, Ser. No. 993,675

Int. Cl.[5] B29C *43/18*

U.S. Cl. 156—212 6 Claims



1. A method for forming a cover material over a preformed door insert and a preformed panel insert of an interior trim product for an automobile, the method including the steps of:

applying an adhesive over the panel insert and the door insert;

placing the panel insert having an opening therein on a support member;

extending a support tower of the support member through the opening;

placing the door insert on the support tower aligned with the opening of the panel insert;

placing a continuous unitary cover material over the panel insert and door insert; and

forming the cover material continuously over and around the door insert and continuously over the panel insert.

5,252,165

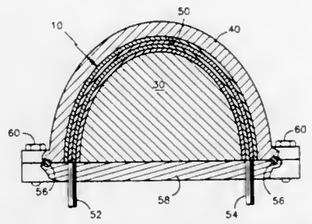
METHOD OF MAKING CONTOURED FIBER REINFORCED BODY

Marcia A. Fecto, North Canton, and John A. Violette, Granby, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 585,838, Sep. 20, 1990, abandoned. This application Jan. 27, 1992, Ser. No. 826,343

Int. Cl.[5] B32B *31/04*

U.S. Cl. 156—228 3 Claims



1. A method of manufacturing a fiber reinforced contoured article comprising the steps of:

a. providing an inner mold body having an outer surface;

b. fitting a plurality of preformed seamless fabric envelopes about said inner mold body one over another in a layered fashion thereby forming a fiber preform over said inner mold body;

c. placing an outer mold body having an inner surface which is contoured to the desired shape of the outer surface of the manufactured article over the fiber preform formed about said inner mold body; and

d. impregnating said fiber preform with a curable resin material whereby upon subsequent curing of the resin material the desired fiber reinforced contoured article is provided.

5,252,166

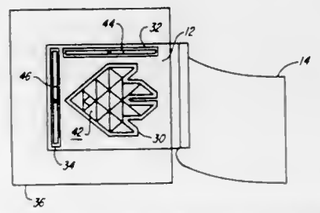
PACKAGING ARRANGEMENTS FOR ITEMS TO BE SUBSEQUENTLY MOUNTED

Margaret M. Krawczyk, 2380 N. Riverside Dr., Melbourne, Fla. 32903

Filed Jul. 9, 1990, Ser. No. 550,180

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—230 34 Claims



1. A method of producing mosaic designs on a surface comprising the steps of:

a. providing a packaged mosaic design including a plurality of loose elements which are formed in a mosaic design, the front sides of which are attached to an adhesive layer on one side of a first plastic sheet that is larger in size than the mosaic design, and a second thin plastic sheet that is larger in size than the mosaic design that adheres to portions of the adhesive layer of the first sheet not adhering to the elements, so that the mosaic design is captured between the two sheets,

b. detaching at least a portion of the second sheet from the first sheet,

c. urging a portion of the adhesive layer of the first sheet from which the second sheet was detached against the surface to adhere to the surface,

d. pivoting the unadhered portion of the first sheet and the mosaic design adhered thereto about the portion of the first sheet adhering to the surface,

e. applying a mounting adhesive to the back sides of the elements,

f. pivoting the unadhered portion of the first sheet and mosaic design adhered thereto about the portion of the first sheet adhering to the surface, to abut the surface,

g. urging the back sides of the elements and a portion of the adhesive layer not adhering to the elements against the surface, and

h. detaching the first sheet from the surface and the elements after the mounting adhesive hardens.

5,252,167

METHOD FOR APPLYING SIGNATURE TO IDENTIFY CARDS

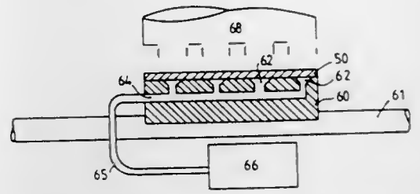
Joachim Hoppe; Yahya Haghiri-Tehrani, and Eugen Neumann, all of München, Fed. Rep. of Germany, assignors to Gao Gesellschaft fur Automation und Organisation mbH, Fed. Rep. of Germany

Filed Apr. 23, 1990, Ser. No. 513,000

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1989, 3913604

Int. Cl.[5] B32B *31/18*

U.S. Cl. 156—261 21 Claims



1. A method for applying a flat punched paper strip element in a desired position onto the surface of a plastic carrier material, comprising the steps of:

a) providing multiple copies of the paper strip element on a punching material sheet;

b) feeding the multiple copies and punching material sheet to a punching device comprising a punch bed and a die, and positioning them therein, said punch bed being removable from the location of the die;

c) punching a strip element from the punching material sheet on the punch bed;

d) locating the strip element at a predetermined position relative to the punch bed during and after the punching step;

e) moving the punch bed and strip element away from the die while the strip element is located at its position; and

f) bringing the strip element while retained on the punch bed in said predetermined position together with a plastic carrier material and bonding them together.

5,252,168

PREPARING POLYMERIC MATRIX COMPOSITES USING AN AQUEOUS SLURRY TECHNIQUE

Norman J. Johnston, Newport News, and Timothy W. Towell, Yorktown, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 6, 1991, Ser. No. 788,403

Int. Cl.[5] C09J *5/02*

U.S. Cl. 156—307.4 11 Claims

1. An aqueous process for preparing a consolidated composite laminate comprising:

(a) preparing an aqueous poly(amic acid) surfactant solution comprised of a poly(amic acid) powder and an aqueous ammonia solution;

(b) forming an aqueous slurry comprised of the poly(amic acid) surfactant solution and a polymeric powder;

(c) depositing the aqueous slurry on carbon fiber to form a prepreg;

(d) drying the prepreg;

(e) stacking the prepreg to form a composite laminate; and

(f) consolidating the composite laminate at pressures from about 300–1000 psi and heating at a temperature to imidize the poly(amic acid) and to impart melt flow in the polymeric powder.

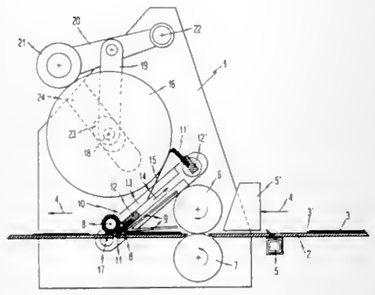
VOL 1155 ISS 2 OCT 12 1993 UMI

5,252,169

METHOD AND A DEVICE OF STRIPPING LAMINATED FOIL CUTTINGS

Peter Bechmann, Auweg 3, D-8114 Uffing/Staffelsee, Fed. Rep. of Germany

Filed Apr. 16, 1992, Ser. No. 869,665
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1991, 4112887
Int. Cl.[5] B32B *15/00*
U.S. Cl. 156—344 10 Claims



1. A method of stripping laminated foil cuttings formed with incisions in a cover foil which is adhered to a carrier paper by means of a self-adhesive bottom layer, said incisions forming an advertising print designed for being applied in a self-adhesive manner to an advertising space, said advertising print remaining on an upper surface of said carrier paper when a foil remainder of a said cover foil is removed from said carrier paper of the foil cuttings, the method comprising:

a transportation means for transporting said foil cuttings in a given transportation direction;

a cutting means being arranged along said given transportation direction and provided for cutting a forward edge of said foil cuttings with an obtuse angle as inclined in such a manner that an upper surface of said cover foil projects forwardly relative to a lower surface of said carrier paper of each foil cutting in said given transportation direction; and

a branch point downstream of said cutting means along said given transportation direction and formed with a deflection edge on which said foil remainder of said cover foil of each foil cutting is removed from said carrier paper, said foil remainder being further transported in a transfer direction which is branched off from said given transportation direction whereas said carrier paper of each foil cutting is continued in said given transportation direction together with said advertising print which remains on its upper surface at said branch point.

5,252,170

WEB SPLICING APPARATUS

Richard Schaupp, Modesto, Calif., assignor to Shibuya International, Inc., Modesto, Calif.

Filed Jul. 11, 1991, Ser. No. 728,290
Int. Cl.[5] B65H *21/00*
U.S. Cl. 156—350 23 Claims

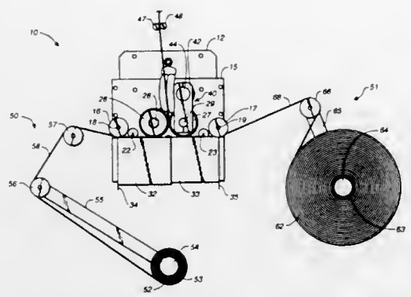
1. A web splicer for splicing the leading portion of web material from a fresh supply roll to the trailing portion of web material moving from an expiring supply roll to a takeup system, comprising:

first and second guide rollers normally positioned apart from each other;

holding means for gripping the leading portion of the fresh web so that the leading portion of the fresh web is held in contact with one of said first and second guide rollers;

joining means to press said first and second guide rollers together so that the leading portion of web material from the fresh supply roll can be joined by adhesive means to the trailing portion of web material moving from the expiring supply roll;

severing means for cutting the web material from the expiring supply roll moveable between a first cutting position upstream from said first guide roller and a second cutting



position upstream from said second guide roller, respectively; and

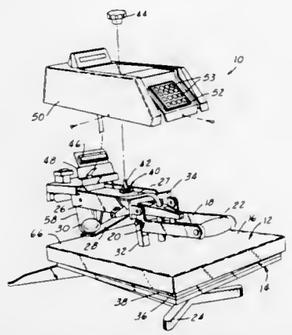
transmission means mechanically linked to said holding means, said joining means and said severing means operative to actuate the respective functions of said holding means, said joining means and said severing means in a predetermined sequence.

5,252,171

HEAT SEALING APPARATUS

Ronald C. Anderson, Connellsville, and David A. Myers, Mount Pleasant, both of Pa., assignors to Stahls', Inc., St. Clair Shores, Mich.

Continuation-in-part of Ser. No. 499,485, Jun. 18, 1990, abandoned. This application Dec. 30, 1991, Ser. No. 816,881
Int. Cl.[5] B30B *5/02*; B32B *3/00*
U.S. Cl. 156—358 25 Claims



1. A manually operated apparatus for thermally bonding indicia to fabric having relatively movable upper and lower platens with a heat source in one of the platens for heating it and mechanism for urging the platens together and for varying the pressure therebetween;

means for manually urging the platens into a closed position and automatically applying a predetermined, selectable pressure therebetween;

means for sensing pressure between the platens during closure;

means responsive to the temperature of the heated platen for controlling said heat source to regulate platen temperature;

means responsive to platen closure for timing the duration of closure; and

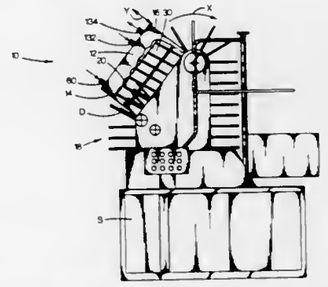
means for providing a visual read-out of pressure between the platens, duration of platen closure and temperature of the heated platen.

5,252,172

ELASTIC BAND HEAT ACTIVATION SYSTEM

Stanley A. Terada, Seattle, Wash., assignor to Paragon Trade Brands, Inc., Federal Way, Wash.

Division of Ser. No. 595,048, Oct. 9, 1990, Pat. No. 5,140,757.
This application Jun. 10, 1992, Ser. No. 896,332
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—359 11 Claims



1. An elastic band heat activation apparatus for activating a first heat-sensitive thermal film attached to a first edge of a body of an article to form a first elastic band along the first edge of the article, and apparatus comprising:

at least one chamber;

the chamber having a heating zone with an atmosphere at a first temperature sufficiently elevated to activate the first heat-sensitive thermal film to shrink the first film to form the first elastic band;

an article transporter for transporting the article through the heating zone to activate the first heat-sensitive thermal film; and

lateral compression means within the chamber for laterally compressing the body in a direction generally parallel to the first edge of the article while the article is transported by the article transporter through the heating zone to aid in formation of the first elastic band.

5,252,173

PROCESS FOR GROWING SEMICONDUCTOR LAYER ON SUBSTRATE

Toshikazu Inoue, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 22, 1991, Ser. No. 796,442
Claims priority, application Japan, Nov. 28, 1990, 2-322634
Int. Cl.[5] C30B *25/10*
U.S. Cl. 156—610 12 Claims

1. A process for growing a semiconductor layer on a substrate, said semiconductor having a lattice constant different from that of the material of said substrate, which comprises the steps of:

heating said substrate to a semiconductor growing temperature;

growing said semiconductor layer on said substrate; and

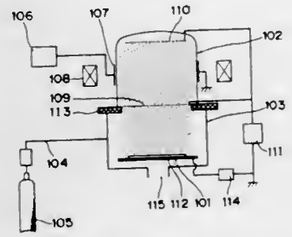
cooling said substrate including performing a plurality of reheating steps, the upper limits of the respective temperatures of said reheating steps being lowered step by step, and at least one of said upper limits of the respective temperatures of said reheating steps being lower than said semiconductor growing temperature.

5,252,174

METHOD FOR MANUFACTURING SUBSTRATES FOR DEPOSITING DIAMOND THIN FILMS

Masahiro Deguchi, Mukoh, and Takashi Hirao, Moriguchi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 540,621, Jun. 19, 1990, abandoned.
This application May 28, 1992, Ser. No. 888,430
Claims priority, application Japan, Jun. 19, 1989, 1-156540
Int. Cl.[5] C30B *25/08*
U.S. Cl. 156—612 5 Claims



1. A method for manufacturing substrates for depositing diamond thin films which comprises:

a. decomposing hydrocarbon gas,

b. accelerating products obtained in a. by a direct current electric field smaller than 10 kv,

c. implanting the accelerated products of b. into a single crystalline silicon substrate kept at a temperature ranging from 10° to 800° C. and, thereby,

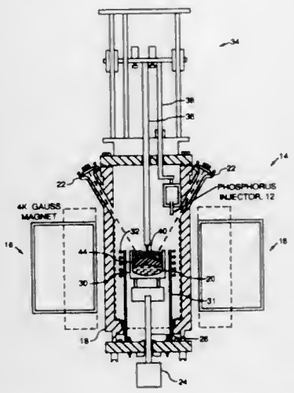
d. forming a carbonized surface layer substantially inside the substrate thereof, said carbonized surface layer containing Si-C bonds.

5,252,175

CAPILLARY PRESSURE RELIEF FOR MAGNETIC KRYOPOULOS GROWTH OF SEMICONDUCTOR CRYSTALS

Steven Bachowski, Woburn; Brian S. Ahern, Boxboro; Robert M. Hilton, Chelmsford, and Joseph A. Adamski, Framingham, all of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 29, 1990, Ser. No. 546,063
Int. Cl.[5] C30B *11/02*
U.S. Cl. 156—620.2 11 Claims



1. A process for growing single crystals using the liquid

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encapsulated Kyropoulos process, the improvement in said process comprising:

allowing a single crystal to grow from a melt under a liquid encapsulant, the crystal growing to contact a crucible;

allowing a liquid pressure of the melt under the growing crystal to be relieved;

allowing the crystal to solidify and cool in the crucible; and

removing the crystal from the crucible.

5,252,176

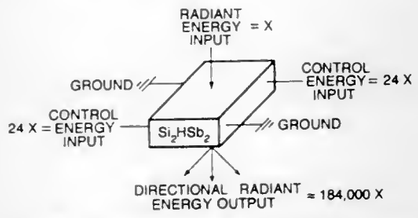
CRYSTALLINE Si_2HSB_2

Robert E. Henson, 3108 Apache Cir., Thousand Oaks, Calif. 91360

Filed Jan. 30, 1992, Ser. No. 828,781

Int. Cl.[5] C30B *7/00*

U.S. Cl. 156—621 **3 Claims**



1. Process for preparing crystalline Si_2HSb_2 comprising the following steps:

placing equal parts of Silicon and Antimony in a first mixture;

adding dilute aqueous solution of nitric acid to said Silicon-Antimony first mixture to form a first solution;

allowing SiNSb to precipitate from said first solution;

separating said SiNSb precipitate from said first solution;

heating said SiNSb precipitate at 490–510 degrees Celsius for a sufficient period until Si_2NSb_2 remains;

placing equal parts of Silicon and Antimony in a second mixture immersed in pure water;

heating said second mixture at 490–510 degrees Celsius until SiHSb precipitates;

extracting said SiHSb from said second mixture;

heating said SiHSb at 490–510 degrees Celsius until only noncrystalline Si_2HSb_2 remains after the other ingredients are boiled off;

placing equal parts of Si_2HSb_2 and Si_2NSb_2 in a third mixture;

heating said third mixture at 490–510 degrees Celsius until a Si_2Sb liquid forms on top of a Si_2HSb_3 solid;

extracting said Si_2HSb_3 solid from said third mixture by pouring off said Si_2Sb liquid;

heating said Si_2HSb_3 solid at 370–380 degrees Celsius for a sufficient period until Si_2HSb_2 liquid forms on the top of said solid Si_2HSb_3;

extracting said liquid Si_2HSb_2 by pouring it off said solid Si_2HSb_3.

5,252,177

METHOD FOR FORMING A MULTILAYER WIRING OF A SEMICONDUCTOR DEVICE

Jong-Seo Hong; Jin-Hong Kim, and Jung-In Hong, all of Suwon, Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jul. 29, 1991, Ser. No. 736,772

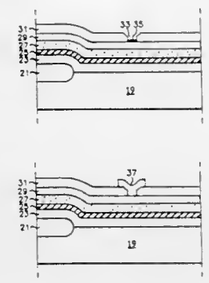
Claims priority, application Rep. of Korea, Apr. 15, 1991, 1991-6024

Int. Cl.[5] B44C *1/22*; C23F *7/00*

U.S. Cl. 156—643 **15 Claims**

1. A method for forming multilayer wiring in a semiconductor device, said semiconductor device comprising a semiconductor substrate and insulation layers and conductive layers formed over a top surface of said semiconductor substrate, said method comprising the steps of:

forming a contact hole by selectively etching out a region of an insulation layer disposed on a first conductive layer using a photoresist pattern to thereby expose a top surface of said first conductive layer;



removing said photoresist pattern positioned on said insulation layer by plasma etching simultaneously forming a protective oxide layer on the exposed top surface of said first conductive layer; and

removing said oxide layer before forming a second conductive layer on said exposed top surface of said first conductive layer.

5,252,178

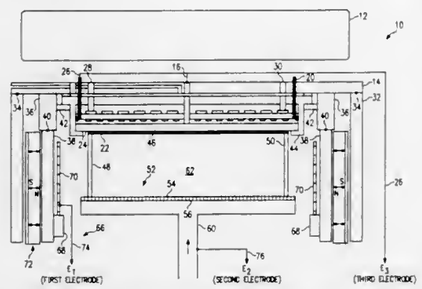
MULTI-ZONE PLASMA PROCESSING METHOD AND APPARATUS

Mehrdad M. Moslehi, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 24, 1992, Ser. No. 903,621

Int. Cl.[5] H01L *21/306*; B44C *1/22*

U.S. Cl. 156—643 **26 Claims**



1. A multi-zone multi-electrode plasma processing method for uniform plasma processing and effective in-situ fabrication reactor process chamber cleaning during a plasma deposition or etch process, comprising the steps of:

flowing a plasma process gas into the process chamber;

activating plasma electrode during said flow of said plasma process gas flow to generate a process plasma from said plasma process gas for performing a plasma-enhanced process on a semiconductor wafer;

flowing an in-situ cleaning gas into the process chamber;

activating a plasma electrode during said flow of said cleaning gas to generate cleaning plasma from said cleaning gas for performing an in-situ plasma-assisted chamber cleaning process.

5,252,179

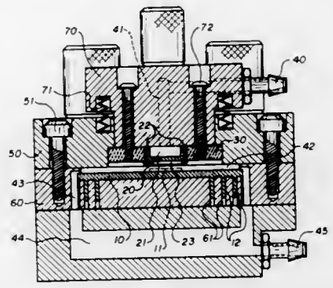
APPARATUS AND METHOD FOR SELECTIVELY ETCHING A PLASTIC ENCAPSULATING MATERIAL

James V. Ellerson, Endicott; Louis J. Konrad, III, Endwell; Ronald J. Moore, Binghamton, and Jack A. Varcoe, Endwell, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 28, 1992, Ser. No. 951,614

Int. Cl.[5] B44C *1/22*; B29C *37/00*

U.S. Cl. 156—655 **13 Claims**



10. A method of selectively etching a material which is encapsulating an electronic device having top and bottom surfaces and wherein the electronic device is attached to a substrate, comprising:

a. positioning a shielding fixture over the top surface of the electronic device;

b. directing a flow of etchant solution at the encapsulating material located alongside the electronic device to remove said encapsulation material;

c. lowering said shielding fixture to engage the top surface of said substrate subsequent to the removal of said encapsulating material located alongside the electronic device;

d. directing said flow of etchant solution at the encapsulating material located under the bottom surface of the electronic device to remove said encapsulating material; and

e. continuously removing the used etchant solution and removed encapsulating material from the area around the electronic device.

5,252,180

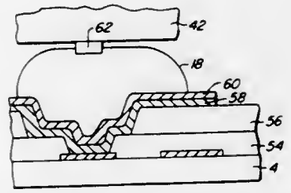
ELECTRICAL CONTACTS FOR AN ELECTRO-OPTIC MODULATOR

Henry W. Sang, Jr., Cupertino; Mark S. Bernstein, Belmont, and Michael A. Berkovitz, Sebastopol, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 525,280, May 17, 1990, Pat. No. 5,144,472. This application May 28, 1992, Ser. No. 889,863

Int. Cl.[5] C23F *1/00*

U.S. Cl. 156—664 **10 Claims**



1. A method of forming electrical contacts for an optical modulator crystal comprising the steps of:

a) on said modulator crystal, forming a plurality of high aspect ratio electrodes on a surface thereof;

b) forming a dielectric layer on said surface;

c) forming at least one aperture in said dielectric layer for each of said electrodes, said apertures having a width less than about a width of said electrodes where said apertures contact said electrodes;

d) forming a metal layer on said dielectric layer, said metal layer extending through said apertures to contact said electrodes; and

e) etching said metal layer to form a bonding pad associated with each of said apertures, said bonding pads extending along a surface of said dielectric layer over at least one adjacent electrode.

5,252,181

METHOD FOR CLEANING THE SURFACE OF A SUBSTRATE WITH PLASMA

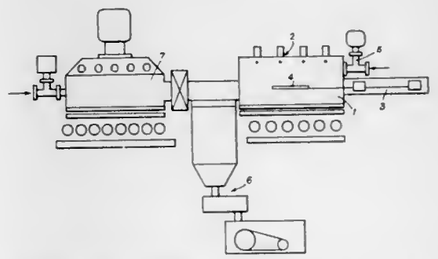
Didier Dutartre, Meylan; Daniel Bensahel, Grenoble, and Jorge L. Regolini, Meylan, all of France, assignors to Etablissement Autonome de Droit Public: France Telecom, France

Filed Dec. 17, 1991, Ser. No. 808,745

Claims priority, application France, Dec. 20, 1990, 90 16385

Int. Cl.[5] B44C *1/22*

U.S. Cl. 156—651 **7 Claims**



1. Method for cleaning, with plasma, the surface of a substrate before the application of a treatment, wherein said method consists:

in a first cleaning step, in polarizing negatively the substrate and in subjecting it to plasma, consisting of argon plasma and

in a second cleaning step, in subjecting the pretreated substrate to a hydrogen plasma, in order to ensure an efficient cleaning of the surface of the substrate.

5,252,182

METHOD FOR MANUFACTURING THERMAL RECORDING DEVICE

Eun-Tak Hong, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jul. 2, 1991, Ser. No. 724,807

Claims priority, application Rep. of Korea, Nov. 20, 1990, 1990-18793

Int. Cl.[5] G01D *15/10*

U.S. Cl. 156—655 **18 Claims**

1. A method for manufacturing a thermal recording device, comprising the steps of:

forming a glaze layer on a semiconductor substrate;

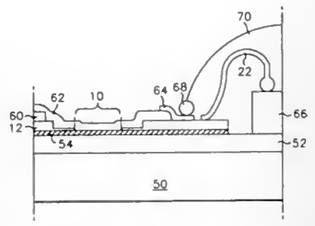
forming a heat-generating resistance film on said glaze layer;

forming a first wiring layer of a first thickness on said heat-generating resistance film;

forming a second wiring layer of a second thickness on said

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first wiring layer of the first thickness except of a predetermined area of said first wiring layer; and



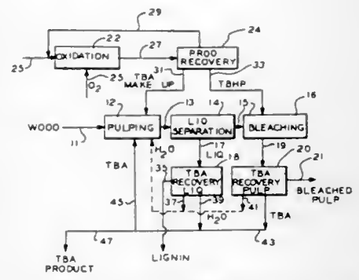
etching a selected portion of said predetermined area of said first wiring layer of the first thickness until said heat-generating resistance film is exposed.

5,252,183

PROCESS OF PULPING AND BLEACHING FIBROUS PLANT MATERIAL WITH TERT-BUTYL ALCOHOL AND TERT-BUTYL PEROXIDE

Atef Shaban, Manalapan, and George D. Suciu, Ridgewood, both of N.J., assignors to ABB Lummus Crest Inc., Bloomfield, N.J.

Filed Sep. 13, 1991, Ser. No. 760,057
Int. Cl.[5] D21C *3/20, 3/26, 9/16*
U.S. Cl. 162—77 **12 Claims**



1. A process for producing bleached pulp from a fibrous plant material, comprising:

(a) reacting isobutane with oxygen in an oxidation zone to produce tert-butyl alcohol and tert-butyl hydroperoxide;

(b) separating said tert-butyl alcohol from said tert-butyl hydroperoxide;

(c) passing said tert-butyl alcohol and said tert-butyl hydroperoxide to an integrated pulping and bleaching system, said integrated pulping and bleaching system including a pulping zone and a zone, wherein said tert-butyl alcohol is passed to said pulping zone and said tert-butyl hydroperoxide is passed to said bleaching zone;

(d) contacting said fibrous plant material with said tert-butyl alcohol in said pulping zone, wherein said fibrous plant material is delignified upon contacting of said fibrous plant with said tert-butyl alcohol, and pulp is formed from said fibrous plant material;

(e) contacting said pulp with said tert-butyl hydroperoxidie in said bleaching zone to effect bleaching thereof; and

(f) recovering from said bleaching zone bleached pulp and tert-butyl alcohol.

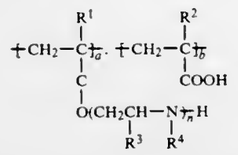
5,252,184

ADDITIVE FOR PRODUCTION OF PAPER

Yasumasa Tanaka, Suita; Koichi Yamamoto, Tokyo, and Kazutomo Takahashi, Yokohama, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Division of Ser. No. 561,931, Aug. 2, 1990, abandoned. This application Oct. 21, 1991, Ser. No. 779,852
Claims priority, application Japan, Aug. 3, 1989, 1-200342; Nov. 16, 1989, 1-296239
Int. Cl.[5] D21H *17/41*
U.S. Cl. 162—168.2 **10 Claims**

1. A pulp composition for paper production incorporating in said pulp composition 0.01 to 0.2% by weight, based on the amount of pulp, of an additive for paper production which comprises an amphoteric polymeric electrolyte having as an essential component thereof a structural unit represented by the following general formula I:



(I)

wherein n is an integer in the range of 1 to 5, R^1, R^2 and R^3 are independently a hydrogen atom or an alkyl group, R^4 is a hydrogen atom, an alkyl group, or a hydroxyalkyl group, and a and b are jointly relative numerals such that the a/b ratio is in the range of 0.2 to 45.0, having at least part of the amino group of said amphoteric polymeric electrolyte neutralized and possessing a cation equivalent amount (Cv) in the range of 1.0 to 15.0 meq/g, an anion equivalent amount (Av) in the range of 0.1 to 7.0 meq/g, and a Cv/Av ratio in the range of 0.2 to 45.0, said amphoteric polymer electrolyte being obtained by (A) allowing a vinyl carboxylic acid monomer to react with an alkylene imine to form an aminoalkyl ester monomer, copolymerizing a salt of said aminoalkyl ester monomer with a vinyl carboxylic acid monomer; or (B) polymerizing a vinyl carboxylic acid monomer, amino-alkylating the resulting vinyl carboxylic acid polymer with alkylene imine at a temperature of 65° C., and then, neutralizing the product with acid; or (C) allowing a vinyl carboxylic acid monomer with an alkylene imine, emulsifying as a water-in-oil type the resultant salt of aminoalkyl ester monomer and a vinyl carboxylic acid monomer emulsion in the presence of water, surfactant and hydrophobic organic solvent, and then, copolymerizing the product; or (D) emulsifying as a water-in-oil type emulsion a vinyl carboxylic acid in the presence of water, surfactant and hydrophobic organic solvent, polymerizing the resulting vinyl carboxylic acid emulsion, amino-alkylating the resulting vinyl carboxylic acid polymer emulsion with an alkylene imine at a temperature of not higher than 65° C., and then, neutralizing the product with acid.

5,252,185

METHOD AND APPARATUS FOR CALENDERING PAPER AND INTERNALLY HEATED ROLL

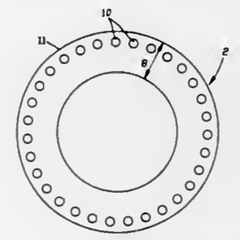
Eric R. Ellis, Westbrook, Me.; Fred J. Ferrari, Springfield, Pa.; Gregory H. Hale, Waterville, Me.; Joyce H. Anderson, Gray, Me.; Kenneth B. Jewett, Portland, Me.; John A. Mattor, Bar Mills, Me.; Abbott W. Mosher, Gorham, Me.; John O. H. Peterson, Standish, Me., and Douglas A. Quist, Kennebunk, Me., assignors to S. D. Warren Company, Westbrook, Me.

Division of Ser. No. 620,249, Nov. 30, 1990, Pat. No. 5,171,404. This application May 13, 1992, Ser. No. 882,219
Int. Cl.[5] D21G *1/00*
U.S. Cl. 162—206 **7 Claims**

1. An internally heated calendering roll capable of finishing paper satisfactorily at the temperatures, heat loads and pressures required for substrata thermal molding which rill comprises:

A. a metal calendering roll having a circumferential wall at least 4 inches thick, the roll being constructed of a first material of forged steel, cast steel, cast iron, or ductile iron with a thin circumferential surface layer of a second hard abrasive resistant material;

B. heating means to provide heat into the interior of the circumferential wall of the metal calendering roll to be conducted through the wall to the outer surface for heating the paper web being calendered by the roll, which heating means includes uniformly spaced fluid conducting conduits which are from 0.5 to 2 inches in diameter and are located totally within the first material of the calendering roll with the outer edge of the conduits being no more than 2 inches from the circumferential surface of the roll and are positioned equidistant form the center of the roll in accordance with the following formula: (hole diameter + hole spacing)/2 × hole depth) is less than 1.2, where hole spacing is the distance form outer edge of one hole to



the closest outer edge of the adjacent hole and hole depth is the distance from the outer edge of the hole to the surface of the roll; and

C. the thermal conductivity of the roll from the conduits to the surface is greater than 17 BTU/HR.FT.°F.

7. In a process for finishing paper to produce gloss and smoothness on the surface of the paper comprising the steps of:

A. providing a finishing apparatus comprising a finishing roll and a pressure roll pressed against said finishing roll at a force of at least 1000 pounds per lineal inch of calender width;

B. advancing a web of papermaking fibers through the nip; and

C. simultaneously with step B., heating the finishing roll to an internal temperature of at least 350° F. in the interior of the circumferential wall of the finishing roll to be conducted through the wall to the outer surface for heating the paper web passing through the nip, the improvement wherein the finishing roll is provided by the internally heated calender roll of claim 1.

5,252,186

WIRE OR FELT FORMING SECTION WITH BREAST ROLLERS SUPPORTED BY HYDROSTATIC BEARINGS

Hans-Peter Sollinger, and Christian Schiel, both of Heidenheim, Fed. Rep. of Germany, assignors to J.M. Voith GmbH, Fed. Rep. of Germany

Filed Feb. 20, 1992, Ser. No. 839,341
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1991, 4105215
Int. Cl.[5] D21F *1/36*
U.S. Cl. 162—273 **31 Claims**

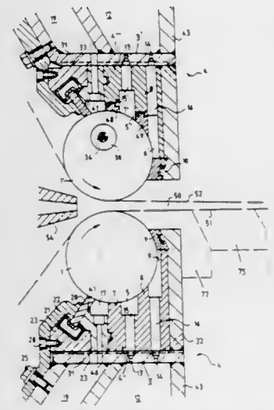
1. A wire or felt guiding arrangement for a web of fiber pulp suspension, comprising:

a first and a second breast roller above respective opposite sides of a pulp suspension outlet from a headbox and defining a pulp gap between the rollers generally where the rollers are closest together;

a respective taut wire or felt passing under tension partially around each roller and through the pulp gap so that the headbox suspension outlet ejects suspension between the wires or felts toward the pulp gap;

means defining a respective hydrostatic bearing engaging an outer surface of each of the rollers and extending longitudinally in a cross-machine direction of the rollers for supporting each of the rollers against the tension exerted thereon by the respective wire or felt;

each roller having a circumference and each hydrostatic bearing having along an arc of the circumference of the roller at least two circumferentially separated resiliency chambers which are each pressurized by liquid, each bearing having a first upstream end web generally engaging the roller where the circumference of the roller enters the region approaching the resiliency chambers and a



second downstream end web generally engaging the roller where the roller leaves the resiliency chambers to inhibit pressurizing liquid from flowing out of the region of the bearing;

and

further comprising a bearing liquid collection and reintroduction chamber disposed beyond the two resiliency chambers in the direction of roller rotation, a sealing strip along a side of the reintroduction chamber which is away from the resiliency chambers for sealing off the reintroduction chamber from the roller; and means for biasing the sealing strip against the surface of the roller;

each roller being biased against the hydrostatic bearing by at least one of gravity and the respective wire or felt under tension.

5,252,187

METHOD OF RECOVERING SOLVENT FROM MOTHER LIQUOR CONTAINING NON-VOLATILE MATTERS BY HEAT PUMP SYSTEM

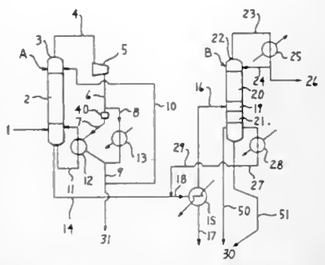
Jun Ohtsu, Tokyo; Kanji Abe, and Toshifumi Ida, both of Chiba, all of Japan, assignors to Toyo Engineering Corporation, Tokyo, Japan

Filed Jul. 22, 1992, Ser. No. 918,453
Claims priority, application Japan, Jul. 25, 1991, 3-186207; Sep. 11, 1991, 3-231714
Int. Cl.[5] B01D *1/28, 3/00*
U.S. Cl. 203—26 **2 Claims**

1. A method of recovering a solute and a solvent from a mixture which contains a volatile solute, a volatile solvent and non-volatile matter, and in which said solute and said non-volatile matter are present in low concentrations, comprising the steps of: feeding a mother liquor to the column bottom of a first distillation column so that said first distillation column operates only as a concentrating section of a distillation col-

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umn and said non-volatile matters are prevented from coming into contact with said concentrating section, flowing the column top vapor from said first distillation column through a compressor and thence through a reboiler, heating a portion of the column bottom liquid from said first distillation column in said reboiler and then returning said portion to said column bottom of said first distillation column, feeding the remainder of the column bottom liquid of said first distillation column to an evaporator and therein evaporating said solute and said solvent while maintaining said non-volatile matter in a non-vapor condition, separating said non-volatile matter in said evaporator, feeding the vapor from said evaporator to a second



distillation column, and withdrawing distillates of said first and second columns and the bottoms of said second distillation column as products, wherein the steps described above are carried out under operation conditions satisfying the following relations:

1. the compression ratio of said for the column top vapor of said first distillation column: Pd/Ps≦10, wherein Pd=compressor discharge pressure, Ps=compressor intake pressure, and
2. the temperature difference between the saturation condensation temperature (Tdb) of the vapor at the compressor discharge and the boiling point (Tbb) of the bottom liquid of said first distillation column: Tdb−Tbb≦30° C.

5,252,188

PROCESS FOR PRODUCING HYDROXYACETALDEHYDE

John A. Stradal, and Gary L. Underwood, both of Manitowoc, Wis., assignors to Red Arrow Products Company, Inc., Manitowoc, Wis.

Continuation-in-part of Ser. No. 675,145, Mar. 26, 1990, abandoned, which is a continuation-in-part of Ser. No. 535,735, Jun. 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 498,849, Mar. 26, 1990, abandoned. This application Apr. 10, 1992, Ser. No. 866,567

Int. Cl.[5] B01D *3/34*; C07C *47/19*

U.S. Cl. 203—43 **19 Claims**

1. A process for producing hydroxyacetaldehyde comprising the steps of:

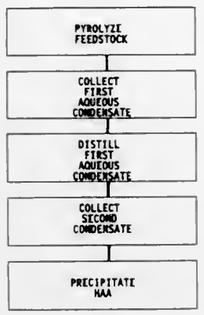
a) pyrolyzing a carbohydrate-containing feedstock to give condensible vaporous products;

b) condensing the condensible vaporous products to give a first aqueous condensate;

c) distilling the first aqueous condensate under reduced pressure to give as the distillate a second condensate having a water content of about 2% by weight or less;

d) combining the second condensate with an amount of an organic solvent to give a homogeneous solution containing at least about 2 wt. % hydroxyacetaldehyde;

e) precipitating hydroxyacetaldehyde from the solution; and



f) separating the precipitated hydroxyacetaldehyde from the solution.

5,252,189

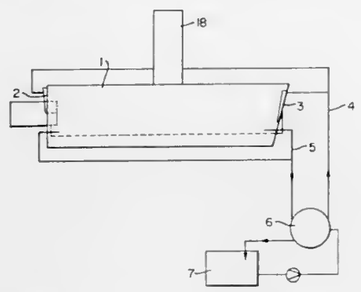
METHOD OF PROCESSING USED APPLIANCE BATTERIES

Antonio M. Celi, Im Engelsgarten 2, D-5466 Neustadt, Fed. Rep. of Germany

Filed Dec. 23, 1991, Ser. No. 812,702

Int. Cl.[5] C25B *1/22*; C25C *1/16*; H01M *6/50*

U.S. Cl. 204—104 **7 Claims**



1. A method of processing used appliance batteries including metal parts and synthetic plastics parts by a thermal-mechanical treatment, wherein the batteries are heated in a closed container to a temperature at which, with the assistance of one of mechanical pressure, impact action and a combination thereof, metal-plastics and metal-metal bonds are weakened or destroyed and then the metal parts are separated from the synthetic plastics parts by conventional physical methods of separation, wherein the thermal treatment of the batteries is performed in the container under an inert gas atmosphere and wherein heating of the appliance batteries is carried out by an inert gas which is passed through the container and, after the inert gas leaves the container, it is cooled and washed with sulphuric acid.

2. A method according to claim 1, wherein mercury sulphate formed in the gas washing is converted by electrolysis into mercury and sulphuric acid, and the sulphuric acid is re-used for washing.

5,252,190

METHOD FOR REMOVING A HARMFUL SUBSTANCE SELECTED FROM THE GROUP CONSISTING OF ETHYLENE, MERCAPTANS, AMINES, AND ALDEHYDES

Kenichi Sekiguchi, Hachioji; Tsunehisa Ueda, Zushi, and Tadao Natsuume, Yokosuka, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Mar. 1, 1991, Ser. No. 663,024

Claims priority, application Japan, Mar. 1, 1990, 2-50243; May 10, 1990, 2-120414

Int. Cl.[5] B01D *53/00*

U.S. Cl. 204—157.3 **10 Claims**

3. A method for removing a harmful substance selected from the group consisting of ethylene, mercaptans, amines and aldehydes, which comprises contacting said harmful substance with a harmful substance remover, for the removal of ethylene, mercaptans, amines and aldehydes, which is a solid product having a specific surface area of 100 m^2/g or more obtained by hydrolyzing a metal alkoxide in the presence or absence or a noble metal.

5,252,191

METHOD FOR THE PHOTOCHEMICAL ISOMERIZATION OF ORGANIC COMPOUNDS UNDER THE INFLUENCE OF A PHOTOSENSITIZER

Louis F. Pauli; Alphons Dufourny; Robert B. Koolstra, all of Weesp; Hans Wynberg, and Wolter Ten Hoeve, both of Groningen, all of Netherlands, assignors to Duphar International Research B.V., Weesp, Netherlands

Filed Apr. 24, 1991, Ser. No. 690,684

Claims priority, application European Pat. Off., Apr. 27, 1990, 90201071.9

Int. Cl.[5] C07C *401/00*; C07G *13/00*

U.S. Cl. 204—157.67 **3 Claims**

1. A method for the photochemical conversion of tachysterol compounds into previtamin D compounds and of transvitamin D compounds into cis-vitamin D compounds, under the influence of radiation, by exposing a solution of the organic compound to be converted in the presence of a non-polymeric photosensitizer to light with approx. 300–1,000 nm wavelength, and by then isolating the resulting product, said method being characterized in that a substituted thiophene derivative having a substantial absorption in said wavelength region is used as the photosensitizer.

5,252,192

ELECTROLYTIC PUMP

Frank A. Ludwig, Rancho Palos Verdes, Calif., assignor to Hughes Aircraft Company, Los Aogeles, Calif.

Filed Oct. 19, 1992, Ser. No. 963,185

Int. Cl.[5] C25B *11/03*

U.S. Cl. 204—228 **15 Claims**

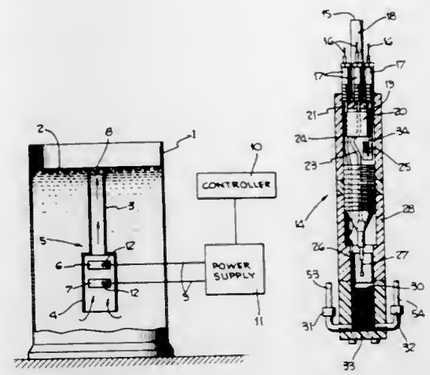
1. An electrolyte pump apparatus adapted for use with an in-tank electrochemical sensor wherein said sensor includes at least one sensing electrode, said electrolytic pump apparatus comprising:

an electrode chamber having a top end and a bottom end through which electrochemical fluid is passed from said bottom end to said top end;

at least two pumping electrodes located within said electrode chamber and above said sensing electrode; and

control means for applying sufficient voltage to said pumping electrodes such that at least one of said electrodes is positively charged relative to the electrochemical fluid while at least one of the other electrodes is negatively charged relative to the electrochemical fluid, wherein said charged pumping electrodes electrolyze the electrochemical fluid within said electrode chamber to produce a gaseous stream within said electrode chamber, said gaseous stream flowing toward said electrode chamber top end to thereby provide for movement of fluid through said electrode chamber while preventing said gaseous stream from interfering with the sensing electrode measurements.

4. The apparatus of claim 1 wherein said control means further includes current control means for varying the current



applied to said pumping electrodes to provide control of the amount of gas generated to form said gaseous stream to thereby control the velocity of electrochemical fluid flow through said electrode chamber.

5,252,193

CONTROLLED ROUGHENING OF REINFORCED CATION EXCHANGE MEMBRANE

John D. Powers, Fayetteville, N.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 4, 1991, Ser. No. 787,662

Int. Cl.[5] C25B *13/00*

U.S. Cl. 204—252 **6 Claims**

4. An electrolytic cell comprising an anolyte and a catholyte and a reinforced cation exchange membrane having one or more polymer layers, reinforced with fabric containing both sacrificial and permanent fibers in which at least some of the fabric is in a polymer layer facing said anolyte, said fabric having reinforcement crossover points and of the reinforcement crossover points involving at least one sacrificial fiber on the surface of said polymer layer facing said anolyte where said polymer layer facing said anolyte is abraided to at least a depth which is greater than the distance between said anolyte facing polymer layer and said fabric and where at least 25% of the crossover points are exposed.

5,252,194

ROTATING SPUTTERING APPARATUS FOR SELECTED EROSION

Richard E. Demaray, Oakland; John C. Helmer, Menlo Park; Robert L. Anderson, Palo Alto; Young H. Park, San Ramon; Ronald R. Cochran, Mountain View, and Vance E. Hoffman, Jr., Los Altos, all of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Continuatioo of Ser. No. 471,251, Jan. 26, 1990, abandoned. This application Jul. 23, 1992, Ser. No. 919,074

Int. Cl.[5] C23C *14/34*

U.S. Cl. 204—298.2 **28 Claims**

1. A magnetron apparatus comprising:

a vacuum chamber;

a first magnetron structure including an anode;

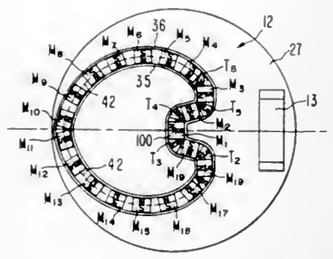
a cathode having a front surface in said vacuum chamber and a back surface;

closed loop magnetic means positioned behind said back surface for generating a magnetic field defining a closed loop magnetic tunnel on said front surface of said cathode in a region adjacent to said closed loop magnetic means;

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means for rotating said magnetic means about an axis normal to and passing through said front surface, and

wherein said closed loop magnetic means comprises first and second portions, all points on said first portion being located a distance greater than or equal to a predetermined distance from said axis, and all points on said second portion being located a distance less than said predetermined distance from said axis, wherein said first portion of the magnetic means produces a substantially constant magnetic field strength along the adjacent region of said magnetic tunnel and wherein said second portion of the magnetic means produces a magnetic field of less intensity along the adjacent region of said magnetic tunnel.



5,252,195

PROCESS FOR PRODUCING A PRINTED WIRING BOARD

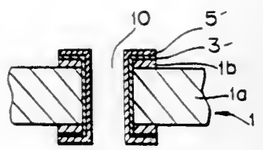
Tadashi Kobayashi; Hiroyuki Uchida; Hidetoshi Shimoda, and Toshio Takahashi, all of Kawasaki, Japan, assignors to Mitsubishi Rayon Company Ltd., Tokyo, Japan

Continuation of Ser. No. 746,987, Aug. 18, 1991, abandoned. This application Oct. 28, 1992, Ser. No. 980,313

Claims priority, application Japan, Aug. 20, 1990, 2-218335

Int. Cl.[5] C25D *5/02*

U.S. Cl. 205—126 **6 Claims**



1. A process for producing a printed wiring board, comprising the steps of:

preparing a copper-clad laminate comprising a substrate having two main surfaces and copper-clad foils on the surfaces of the insulating board, the copper-clad laminate having a through-hole;

forming a first resist pattern on the surfaces of the copper-clad laminate, the first resist pattern including an area of the through-hole and an area where a conductor pattern is to be formed;

etching the copper-clad composite with the first resist pattern as a resist to remove the copper-clad foils in an area not covered by the first resist pattern;

removing the first resist pattern from the copper-clad composite;

conducting an electroless plating to form an electroless plating copper layer on the surfaces of the copper-clad composite including the internal surface of the through-hole;

forming a second resist pattern on the surfaces of the copper-clad composite such that only an area of the through-hole, an area of a land portion and an area of a foot print portion for a surface mounting part, of the copper-clad composite, are not covered by the second resist pattern;

conducting an electroplating to form an electroplating copper layer on the surfaces of the copper-clad composite on areas not covered by the second resist pattern;

conducting an electroplating to form a metallic resist plating layer on the electroplating copper layer;

removing the second resist pattern from the copper-clad composite; and

removing the exposed electroless plating copper layer from the copper-clad composite.

5,252,196

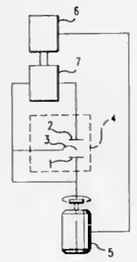
COPPER ELECTROPLATING SOLUTIONS AND PROCESSES

Wade Sonnenberg, Hull; Gordon Fisher, Sudbury; Roger F. Bernards, Wellesley, and Patrick Houle, Framingham, all of Mass., assignors to Shipley Company Inc., Newton, Mass.

Filed Dec. 5, 1991, Ser. No. 803,281

Int. Cl.[5] C25D *3/38*

U.S. Cl. 205—296 **46 Claims**



24. A process for electrodepositing copper on a substrate, comprising:

electrolytically depositing copper on the substrate from an aqueous electroplating solution, the solution comprising at least one soluble copper salt, an electrolyte, and one or more brightening agents of the formula HS—R—SO_3 wherein R is substituted or unsubstituted aryl or substituted or unsubstituted alkyl, and wherein the concentration of said brightening agents of formula HS—R—SO_3 is from about 1 ppb to 250 ppb based on total weight of the electroplating solution.

5,252,197

PROCESS FOR UPGRADING GASOLINES AND OTHER HYDROCARBON MIXTURES

Anatoly Alexander, Berkeley Heights; Chuen Y. Yeh, Edison, and George D. Suciu, Ridgewood, all of N.J., assignors to ABB Lummus Crest Inc., Bloomfield, N.J.

Filed Sep. 28, 1992, Ser. No. 952,352

Int. Cl.[5] C10G *35/04*

U.S. Cl. 208—134 **27 Claims**

1. A process for reducing the quantity of benzenes and n-paraffins present in a hydrocarbon mixture, comprising contacting the hydrocarbon mixture with a zeolite catalyst selected from the group consisting of zeolites having ten membered ring-type structures and zeolites having twelve membered ring-type structures, at conditions of temperature and pressure appropriate to crack n-paraffins to produce olefins and lower molecular weight n-paraffins, to induce reaction of olefins with benzene to form alkylbenzenes, and to promote isomerization of the n-paraffins to produce i-paraffins.

5,252,198

MULTI-STEP HYDRODESULPHURISATION PROCESS

George E. Harrison, Billericay; Donald H. McKinley, Radlett, and Alan J. Dennis, Acklam, all of United Kingdom, assignors to Davy McKee (London) Ltd., London, England

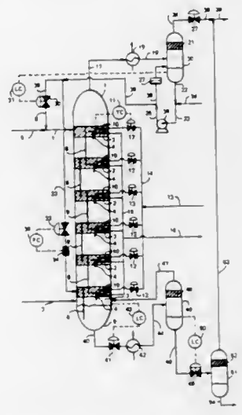
PCT No. PCT/GB90/00717, § 371 Date Dec. 11, 1991, § 102(e) Date Dec. 11, 1991, PCT Pub. No. WO90/13612, PCT Pub. Date Nov. 15, 1990

PCT Filed May 9, 1990, Ser. No. 781,172

Claims priority, application United Kingdom, May 10, 1989, 8910712

Int. Cl.[5] C10G *45/00, 45/04*

U.S. Cl. 208—208 R **6 Claims**



1. A hydrodesulphurisation process for continuously effecting hydrodesulphurisation of a liquid sulphur-containing hydrocarbon feedstock which comprises:

(a) providing a hydrodesulphurisation zone maintained under hydrodesulphurisation conditions including use of a pressure in the range of from about 20 bar to about 150 bar and of a temperature in the range of from about 240° to about 400° C., said hydrodesulfurization zone said zone comprising a column reactor having a plurality of reaction trays therein mounted one above another, each tray defining a respective reaction stage adapted to hold a predetermined liquid volume and a charge of a particulate sulphided solid hydrodesulphurisation catalyst suspended therein, and each reaction tray having a floor at least a part of which slopes at an angle equal to or greater than the angle of repose of the catalyst particles under the liquid, said column reactor further comprising liquid downcomer means associated with each reaction tray adapted to allow liquid to pass down the column reactor from that tray but to retain solid catalyst thereon, and gas upcomer means associated with each reaction tray adapted to allow gas to enter that tray from below and to agitate the mixture of liquid and catalyst on that tray, thereby maintaining the particulate catalyst in suspension in the liquid on the tray;

(b) supplying liquid sulphur-containing hydrocarbon feedstock to the uppermost one of said plurality of reaction trays;

(c) supplying hydrogen-containing gas below the lowermost one of said plurality of reaction trays;

(d) allowing liquid to pass downward through the column reactor from tray to tray;

(e) allowing hydrogen-containing gas to pass upward through the column reactor from tray to tray;

(f) recovering from the uppermost one of said plurality of reaction trays an off-gas containing H_2S produced by hydrodesulphurisation; and

(g) recovering from the lowermost one of said plurality of reaction trays a liquid hydrocarbon product of reduced sulphur content.

5,252,199

HYDROTREATING PROCESS USING NOVEL MULTIMETALLIC SULFIDE CATALYSTS

Gophal H. Singhal; Leo D. Brown; X. B. Cox, III, and Thomas R. Halbert, all of Baton Rouge, La., assignors to Exxon Research & Engineering Company, Florham Park, N.J.

Filed Oct. 1, 1990, Ser. No. 590,827

Int. Cl.[5] C10G *45/08*

U.S. Cl. 208—254 H **12 Claims**

1. Process for removing sulfur and nitrogen from a hydrocarbonaceous feedstock which process comprises treating the feedstock at hydrotreating conditions, and in the presence of hydrogen, with a non-supported catalyst composition which is highly dispersed in said feedstock, which catalyst is comprised of molybdenum sulfide promoted with a noble metal such that the noble metal is in an oxidation state greater than 0 and coordinated to S.

5,252,200

METHOD OF SEPARATING AN AROMATIC FROM A HYDROCARBON MIXTURE

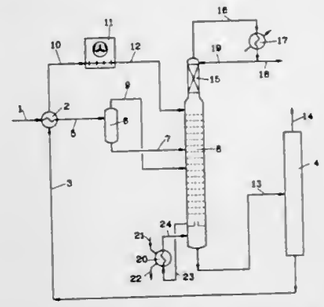
Luzian Skatulla, Mülheim/Ruhr; Hans-Christoph Schneider, Hattingen, and Hans-Jürgen Vollmer, Essen, all of Fed. Rep. of Germany, assignors to Krupp Koppers GmbH, Essen, Fed. Rep. of Germany

Filed Sep. 26, 1991, Ser. No. 766,445

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1990, 4040145

Int. Cl.[5] C10G *21/20, 21/12*

U.S. Cl. 208—313 **5 Claims**



1. In a process for separating an aromatic from an entry hydrocarbon mixture also containing nonaromatics, wherein said nonaromatics can include at least one member from the group consisting of paraffins, cycloparaffins, olefins, diolefins and organic sulfur-containing compounds, by an extractive distillation method using an extractive distillation column with a selective solvent, said selective solvent consisting essentially of an N-substituted Morpholine having substituents each of which contain no more than seven carbon atoms, said extractive distillation column having a top, a sump and a solvent connector pipe through which the selective solvent is fed, said extractive distillation method including distilling off the nonaromatics of the entry hydrocarbon mixture from the top of the extractive distillation column as a top product and drawing off the aromatic and the selective solvent together from the sump of the extractive distillation column and subsequently separating the selective solvent from the aromatic in a separator column connected to the extractive distillation column, the improvement comprising providing the extractive distillation column with an additional column portion for separation of a selective solvent residue from the top product containing the nonaromatics, performing an extractive distillation with the

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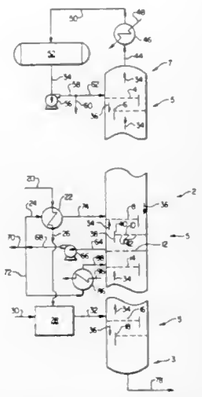
selective solvent and the separation of the selective solvent residue from the nonaromatics in a single common distillation column comprising the extractive distillation column and the additional column portion above the solvent connector pipe of the extractive distillation column, and heating the hydrocarbon entry mixture prior to admission to the extractive distillation column by an indirect heat exchange with the selective solvent drawn from the separator column and heated to a temperature of from 130° to 150° C. to form a heated entry hydrocarbon mixture.

5,252,201

FRACTIONATING PROCESS AND FRACTIONATOR

Vijay R. Sampath, Bellingham, Wash., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Aug. 13, 1991, Ser. No. 744,550
Int. Cl.[5] C10G *7/00*; B01D *3/16*
U.S. Cl. 208—355 **10 Claims**



1. A fractionating process for separating a feed mixture into a distillate product fraction, a residual liquid product fraction and a separation zone product fraction in a fractionating column comprising a bottoms zone, a separation zone and an overhead zone, wherein said separation zone comprises a draw tray, said process comprising:

a. withdrawing from said separation zone a draw liquid from said draw tray;

b. separating said draw liquid into a first portion and a second portion;

c. cooling said second portion of said draw liquid to form a cool draw;

d. separating said cool draw into a first cool part and a second cool part;

e. recycling at least a portion of said first cool part to said fractionating column at a point above said draw tray; and

f. recycling at least a portion of said second cool part to said fractionating column at a point below said draw tray.

5,252,202

MUDDY AND WASTE WATER TREATMENT DEVICE AND METHOD

Kaoru Hirose, Kochi, Japan, assignor to Daiyo Kiko Industry, Inc., Japan

Filed Mar. 3, 1992, Ser. No. 845,203
Claims priority, application Japan, Nov. 19, 1991, 3-331379; Dec. 13, 1991, 3-352057
Int. Cl.[5] C02F *1/38*
U.S. Cl. 210—86 **8 Claims**

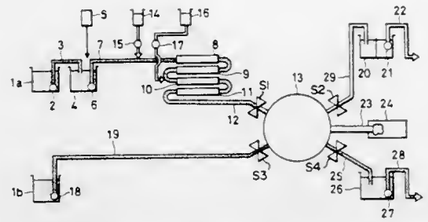
1. A water treatment device for waste muddy water from water excavation works and/or industrial waste water and used muddy water once used in water excavation works, comprising:

a first water reservoir for storing the waste water from the water excavation works and/or industrial works;

a second water reservoir for storing the used muddy water having a high density and which is enriched with muddy particles and other materials from the water excavation engineering;

a flocculating unit for adding flocculent into the waste water fed from said first water reservoir to flocculate fine particles contained in the waste water;

a centrifugal separator selectively operable in first and second operation modes, in said first operation mode the waste water fed from said flocculating unit is treated to separate the flocculated water into a solid part and a liquid



part, and in said second operation mode the used muddy water fed from said second reservoir is treated to remove the muddy particles from the used muddy water;

a liquid treatment unit to adjust the liquid part fed from said centrifugal separator operated in the first operation mode to a desired value of a selected parameter;

a third water reservoir for storing the treated water fed from said central separator operated in the second operation mode;

a solid part treatment unit for treating the solid part fed from said centrifugal separator operated in the first and second operation modes; and,

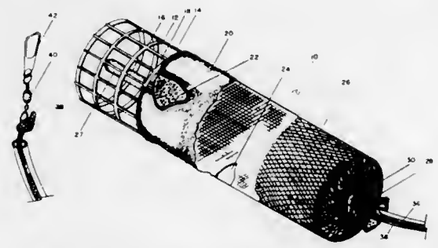
valve means operably associated with said centrifugal separator for positioning said separator into a selected one of said modes.

5,252,203

DEVICE FOR REMOVING WATER FROM FUEL TANKS

Samuel J. Lyda, Rte. 3, Box 360, Flat Rock, Ala. 35966

Continuation-in-part of Ser. No. 615,313, Nov. 19, 1990, abandoned. This application Sep. 25, 1992, Ser. No. 951,652
Int. Cl.[5] B01D *15/00*
U.S. Cl. 210—172 **12 Claims**



1. A device for removing water contained in a separate phase at the bottom of a hydrocarbon fuel tank comprising:

an elongated, generally tubular rigid frame having open spaces defined therein;

a substantially thick pad of non-woven hydrophilic fiber material disposed around the outside of said frame and in contact therewith;

particles of a highly water-absorbent polymeric material carried by said pad;

at least one layer of tightly woven, water-wettable fabric enclosing said pad and end regions of said frame;

a liquid permeable outer mesh screen layer restraining said fabric from radially outward expansion upon absorption of water and forcing such expansion to occur in a radially inward direction;

tethering means secured to said device and enabling removal of the same through a fuel introduction opening in said tank; and

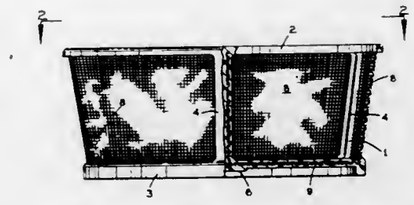
weighting means for retaining said device in position on said tank bottom.

5,252,204

UNIMOLD FILTER

Daniel J. Chiodo, Hialeah, Fla., assignor to Manufacturers Components, Inc., Hialeah, Fla.

Filed Aug. 20, 1992, Ser. No. 932,985
Int. Cl.[5] B01D *39/10*
U.S. Cl. 210—232 **10 Claims**



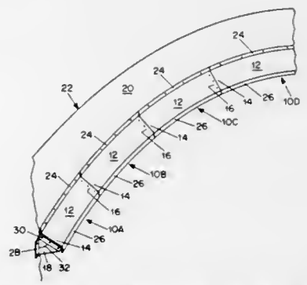
1. A filter for separating a fluid and particles immixed in the fluid, comprising a screen composed of a plurality of screen panels, said screen panels being made from a single piece of wire mesh, and wherein said screen panels are connected with each other by peripheral sections of said wire mesh, each screen panel defined by respective panel edges, and a molded filter frame including a plurality of molded frame members, wherein said panel edges are molded into said molded frame members.

5,252,205

UNITARY CLARIFIER BAFFLE AND INTEGRATED BAFFLE SYSTEM

Earle Schaller, 784 Windermere Way, Palm Beach Gardens, Fla. 33418

Filed Sep. 11, 1992, Ser. No. 943,739
Int. Cl.[5] B01D *21/00*
U.S. Cl. 210—232 **22 Claims**



1. A baffle system in a clarifier tank having a tank bottom and a periphery and a substantially vertical peripheral wall bounding the interior of the tank, said baffle system comprising:

a plurality of baffles mounted on the peripheral wall of the clarifier tank, each said baffle comprising:

a panel member downwardly sloping from the peripheral tank wall toward the interior of the tank and the tank bottom and terminating at a lower edge disposed in spaced relation to the tank bottom, said panel member having a first lateral side and a second lateral side; and

an end bracket unitarily depending from said first lateral side of said panel member for securing said panel member to the peripheral wall of the clarifier tank;

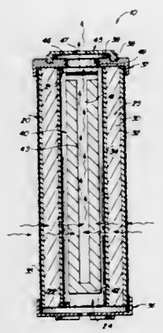
said plural baffles being secured together in end-to-end relation such that the second lateral side of the panel member of each of said plural baffles is secured to said end bracket of a next-adjacent one of said plural baffles to form a baffle system extending about the periphery of the clarifier tank.

5,252,206

FILTRATION CARTRIDGE

Carlos Gonzalez, 7962 NW. 66th St., Miami, Fla. 33166

Filed Jul. 16, 1992, Ser. No. 914,878
Int. Cl.[5] B01D *27/04*
U.S. Cl. 210—282 **6 Claims**



1. For use within an industry standard housing, a filtration cartridge comprising:

a generally cylindrical outer filter, said outer filter including an open proximal end, an open distal end, a surrounding side wall structure, and an axial bore extending therethrough,

said surrounding side wall structure including at least one filtration layer,

said filtration layer including a carbon block structured and disposed to allow the passage of fluid therethrough into said axial bore so as to remove chemical contaminants such as chlorine, chloroforms, and the like,

a removable inner filter structured and disposed for removable positioning within said axial bore of said outer filter so as to further filter the fluid passing into said axial bore through said surrounding side wall structure,

said inner filter including a cylindrical ceramic filter structured and disposed to remove bacteria and particulates from fluid passing therethrough, said ceramic filter including an open distal end, a closed proximal end, and an axial bore extending substantially therethrough,

said outer filter including a distal seal cap positioned over said open distal end, said distal seal cap including a central opening structured and disposed to enable the passage of said ceramic filter therethrough into said axial bore of said outer filter,

a molded end cap positioned over said open distal end of said ceramic filter, said end cap being structured and disposed to removably secure said ceramic filter within said axial bore of said outer filter and to allow the passage of filtered water emerging from said axial bore in said ceramic filter

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through said open distal end of said ceramic filter to pass therethrough out of the industry standard housing for use, and

said distal seal cap further including a retaining rim positioned on an exterior surface of said distal seal cap in substantially spaced apart, surrounding relation with said central opening of said distal seal cap, said retaining rim being structured and disposed to enable said end cap on said ceramic filter to lockingly and supportably engaged therein.

5,252,207

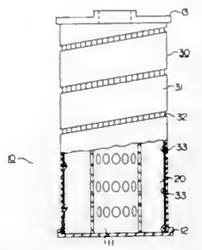
WRAP MEMBER HAVING OPENINGS

John D. Miller, Ithaca; Kenneth M. Williamson, LaFayette, and Joseph R. Swiezbin, Glen Head, all of N.Y., assignors to Pall Corporation, Glen Cove, N.Y.

Continuation-in-part of Ser. No. 559,335, Jul. 30, 1990, abandoned, which is a continuation-in-part of Ser. No. 323,217, Mar. 15, 1989, Pat. No. 5,084,178, which is a continuation of Ser. No. 206,676, Jun. 15, 1988, abandoned. This application Jul. 22, 1991, Ser. No. 733,625

Int. Cl.[5] B01D *29/56*

U.S. Cl. 210—335 **37 Claims**



1. A filter comprising:

a pleated filter element having a longitudinal axis ano including longitudinally extending pleats having peaks; and

a wrap member comprising one or more strips wrapped around the filter element at least once and joined to the peaks of the peats so as to restrain movement of the pleats and having unobstructed openings for increasing the dirt capacity of the filter element, the openings having a total area less than about one-half of the total area of a circumscribing surface defined by the peaks of the pleats.

12. A filter as claimed in claim **1** wherein the filter element comprises a composite including a filter layer, a support and drainage layer on the upstream side of the filter layer, and polymeric bead spacers on the downstream surfaces of the pleats.

5,252,208

REPLACEABLE WRAP FOR SCROLL HOUSING IN CENTRIFUGAL SEPARATOR

William D. Nemedi, Vicksburg, Mich., assignor to Inter-Source Recovery Systems, Inc., Kalamazoo, Mich.

Filed Feb. 5, 1992, Ser. No. 831,168

Int. Cl.[5] B04B *7/12*

U.S. Cl. 210—373 **4 Claims**

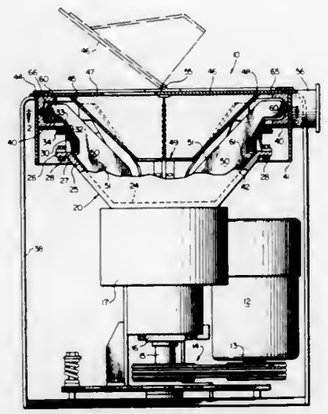
1. A centrifugal separator device for separating chips from fluids, said separator comprising a separator bowl having a plurality of spaced blade assemblies disposed therein, a discharge housing disposed above said bowl assembly and adapted to receive chips exiting from said bowl, said chips being adapted to travel through said discharge housing;

said spaced blade assemblies each including a blade having at least a portion thereof which is adapted to rotate in said discharge housing;

means for rotating said blade assemblies whereby said blade portions rotate in said discharge housing to cause chips in said housing to travel through said discharge housing;

said discharge housing comprising a wall and having at least one exit opening therein through which chips exit;

a flexible, compressible single-piece liner wrap releasably disposed within said discharge housing for contact with



chips traveling through said housing, said wrap being secured to said wall contiguous to said blade portions located within said discharge housing; and,

means for releasably installing and securing said wrap to said discharge housing wall without removing said blade assemblies.

5,252,209

SOLID BOWL WORM CENTRIFUGE WITH IMPROVED DISCHARGE OPENINGS

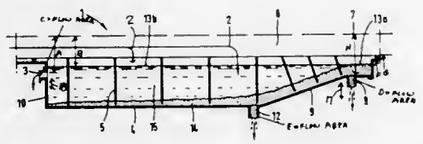
Eric Retter, Cologne, Fed. Rep. of Germany, assignor to Kloeckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Apr. 20, 1992, Ser. No. 871,046

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1991, 4112957

Int. Cl.[5] B04B *1/20*

U.S. Cl. 210—380.3 **14 Claims**



1. A solid bowl worm centrifuge for the continuous separation of a liquid slurry into a light phase fraction and a heavy phase fraction comprising in combination:

a rotary shell mounted for rotation about a center axis having a predetermined size and having an inlet for a slurry to be separated into a liquid light phase and a heavy phase with the light phase being at a distance from the axis to be at a first level in the shell and the heavy phase being at a distance from the axis to be at a second level;

a discharge opening from the shell for the heavy phase located further from the axis than said first level and being of a size relative to the size of the shell to throttle the flow of the heavy phase so that the opening is always submerged by the heavy phase;

and a discharge opening from the shell for the light phase, said light phase discharge opening having a cross-sectional area relative to the size of the shell to exert a throttling effect on the light phase liquid to be discharged so that the light phase opening is always submerged by the light phase so that a hydrostatic head develops aiding in the discharge of liquid through the light phase opening.

5,252,210

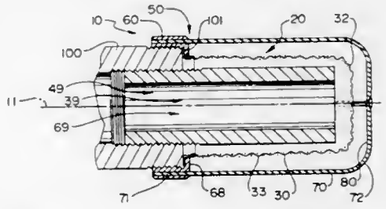
PAINT INTAKE FILTER GUARD

Kenneth C. Kessel, Plymouth, Minn., assignor to Wagner Spray Tech Corporation, Minneapolis, Minn.

Filed Sep. 15, 1992, Ser. No. 941,953

Int. Cl.[5] B01D *35/02*

U.S. Cl. 210—452 **20 Claims**



1. A filtration assembly for use upon the suction tube of paint spraying equipment comprising:

(a) a three-dimensional filter medium having an open end, a closed end, and a sidewall defining an internal chamber;

(b) a collar sealingly coupled to the open end of the filter medium which has an outer surface defining a periphery and an aperture defining an access port in fluid communication with the internal chamber; and

(c) protective columns extending along and spaced outwardly from the sidewall of the filter medium with a proximal end coupled to the collar and a distal end extending beyond the closed end of the filter medium for protecting the filter medium from physical damage; the columns spaced around the periphery of the collar so as to provide protection for substantially the entire filter medium without substantially interfering with flow of a paint into contact with the entire surface area of the filter medium.

5,252,211

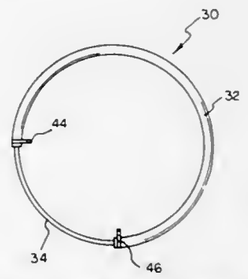
COFFEE FILTER SUPPORT ASSEMBLY

Robert T. Searfoss, Jr., 6048 E. Searfoss Dr., Syracuse, Ind. 46567

Filed Sep. 3, 1992, Ser. No. 940,358

Int. Cl.[5] B01D *29/05*

U.S. Cl. 210—474 **11 Claims**



1. A new and improved apparatus for supporting a coffee filter in the basket of an automatic coffee maker comprising:

an annular member, said annular member comprising first and second portions, said first portion being displaceable with respect to said second portion to reduce the transverse dimension of said annular member, and

resilient biasing means interposed between said first and second portions for urging said portions to return to their initial positions relative to each other prior to said relative displacement whereby positioning of said annular member concentrically within said filter after said displacement is effective to retain said filter against the inside wall of said basket,

wherein said first portion includes a tubular member and said second portion is adapted to telescopically displace relative to said first portion by slidable movement within at least a first portion of said tubular member.

5,252,212

SPRAY FORMING POLYMER MEMBRANES, COATINGS AND FILMS

Kevin M. McHugh, Idaho Falls; Lloyd D. Watson, Rigby; Richard E. McAtee, Idaho Falls, and Scott A. Ploger, Rigby, all of Id., assignors to FG&G Idaho Inc., Idaho Falls, Id.

Filed Aug. 21, 1991, Ser. No. 748,156

Int. Cl.[5] B01D *67/00*

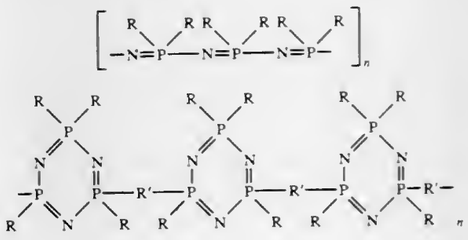
U.S. Cl. 210—490 **29 Claims**



1. A method of forming a polymer film having controlled chemical and physical characteristics, comprising forming a solution of a polymer or polymer precursor, directing a plume of nebulized droplets of the polymer or polymer precursor toward a substrate from a converging/diverging nozzle having a throat at which the polymer or a precursor thereof is introduced and an exit from which the nebulized droplets of the polymer or precursor thereof leave entrained in a carrier gas toward a substrate, and providing relative movement between the nozzle and the substrate to form a polymer film on the substrate.

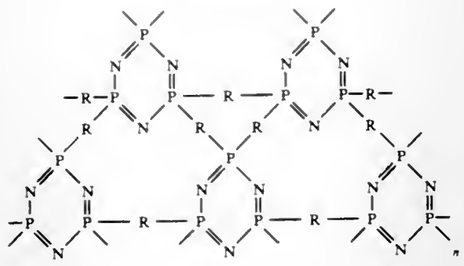
14. A method of spraying a copolymer formed from first and second polymers against a substrate comprising forming first and second solutions of polymers, directing a plume of nebulized polymer droplets toward a substrate from a converging/diverging nozzle having a throat at which at least one or the polymers is introduced from a reservoir therefor and an exit from which the nebulized polymer droplets leave entrained in a carrier gas to produce a copolymer at the substrate.

27. An asymmetric polymer membrane when manufactured according to claims **1** or **14** for use in separating components of a fluid, said asymmetric polymer membrane comprising a dense portion and a less dense portion on a backing member, wherein said polymer membrane is not more than about 25 microns thick and is selected from the group consisting of:



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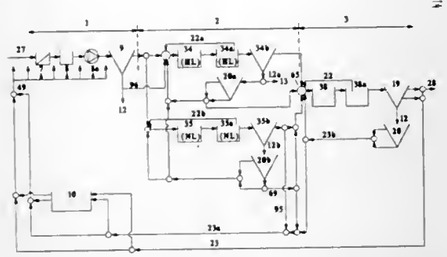
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5,252,213
DRY DIALYSATE COMPOSITION
Suhail Ahmad, Seattle; James J. Cole, Arlington, and William Jensen, Seattle, all of Wash., assignors to University of Washington, Seattle, Wash.
Division of Ser. No. 368,665, Jun. 20, 1989, abandoned. This application Nov. 9, 1990, Ser. No. 612,214
Int. Cl.[5] B01D *61/26*
U.S. Cl. 210—542 7 Claims

7. A dry dialysate composition comprising an acid, a base and a salt wherein the acid is selected from the group consisting of citric acid, ascorbic acid and combinations thereof, wherein the base is selected from the group consisting of bicarbonate, carbonate, lactate, citrate and combinations thereof, and where said composition upon mixing with water forms a solution comprising from about 2 to about 12 mEq/L of the acid, from about 25 to about 45 mEq/L of the base, and from about 1.5 to about 150 mEq/L of the salt.

5,252,214
BIOLOGICAL DEPHOSPHATIZATION AND (DE)NITRIFICATION
Gunter Lorenz, Am Rehlingsbach 25, W6382 Friedrichsdorf, and Jurgen Lorenz, Mozartstrasse 11, D-6804 Ilvesheim, both of Fed. Rep. of Germany
Continuatioo-in-part of Ser. No. 686,424, Apr. 16, 1991, abandoned, which is a continuation of Ser. No. 399,516, Aug. 28, 1989, abandoned. This application Jan. 31, 1992, Ser. No. 829,463
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1987, 3706405
Int. Cl.[5] C02F *3/30*
U.S. Cl. 210—605 15 Claims



1. An activated sludge system for the reclamation of wastewater, comprising the steps of:
(a) passing the influent wastewater through an influent line into a plurality of mechanical pretreatment zones;
(b) treating the wastewater from step (a) in an aerobic, sludge-activated treatment zone for BOD removal;
(c) passing the treated wastewater to at least a final separation zone to cause separation of activated sludge from purified supernatant;
(d) recycling at least a portion of the treated wastewater after step (c) to any of said mechanical pretreatment zones or to said influent line to effect nitrification; said portion of treated wastewater having a dissolved oxygen content of at least 0.7 mg/L and containing nitrifying bacteria; and said mechanical pretreatment zones not being operated anaerobically.

5,252,215
ADSORBENT MATERIALS AND USE THEREOF
Ian D. McFarlane, Christchurch; Maree A. Hamilton, and Garth A. Carnaby, both of Lincoln, all of New Zealand, assignors to Wool Research Organisation of New Zeland, Inc., Canterbury, New Zealand
PCT No. PCT/GB90/01358, § 371 Date Apr. 21, 1992, § 102(e) Date Apr. 21, 1992, PCT Pub. No. WO91/03428, PCT Pub. Date Mar. 21, 1991
PCT Filed Sep. 3, 1990, Ser. No. 835,465
Claims priority, application New Zealand, Sep. 1, 1989, 230541
Int. Cl.[5] E02B *15/04*
U.S. Cl. 210—69.1 14 Claims

13. A method of separating liquid hydrophobic substances floating on water from the water which comprises the steps of:
(a) providing a plurality of discrete, generally spherical knops of entangled fibrous adsorbent material which are floatable on water,
(b) placing said knops of step (a) in contact with said liquid hydrophobic substances such that said liquid hydrophobic substances become adsorbed on said knops, and
(c) removing said knops with liquid hydrophobic substances adsorbed thereon from contact with said water.

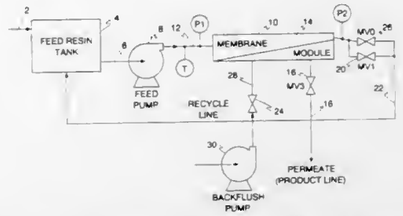
5,252,216
PROTEIN PURIFICATION
Gail Folena-Wasserman, Richboro; John H. O'Grady, King of Prussia; Thomas M. Smith, Drexel Hill, all of Pa., and John Lifter, Wellesley, Mass., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.
Filed Mar. 24, 1992, Ser. No. 857,022
Int. Cl.[5] B01D *15/08*
U.S. Cl. 210—635 49 Claims

35. A method for purifying a complement receptor protein from a conditioned cell medium comprising:
(a) concentrating the conditioned cell medium;
(b) absorbing the complement receptor protein onto a cationic chromatographic support;
(c) washing the adsorbed protein with at least one buffer;
(d) eluting the washed protein;
(e) precipitating the protein with ammonium sulfate;
(f) resolubilizing the precipitated protein
(g) adsorbing the solubilized protein from step (f) onto a hydrophobic interaction chromatographic support;
(h) selectively eluting the protein;
(i) adsorbing the eluate of step (h) onto an anionic exchange support;
(j) eluting the adsorbed protein;
(k) adsorbing the eluate from step (j) onto a cationic exchange support;
(l) eluting the adsorbed protein;
(m) subjecting the eluate from step (l) to size exclusion chromatography and
(n) recovering the protein therefrom.

5,252,217
BLOOD COAGULATION FACTOR XI CONCENTRATE HAVING HIGH SPECIFIC ACTIVITY, SUITABLE FOR THERAPEUTIC USE, AND PROCESS FOR PREPARING SAME
Miryana Burnouf-Radosevich, Wavrin, and Dominique Dernis, Marquette-lez-Lille, both of France, assignors to Association pour l'Essor de la Transfusion Sanguine dans la Region du Nord, Lille, France
Filed May 7, 1992, Ser. No. 879,273
Claims priority, application France, May 7, 1991, 91 05572
Int. Cl.[5] B01D *15/08*
U.S. Cl. 210—635 13 Claims

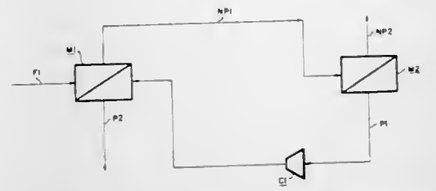
1. A process suitable for preparing a Factor XI concentrate on an industrial level having a specific activity at least equal to 100 U/mg of protein which comprises:
(a) contacting a cryoprecipitate supernatant with a filter capable of adsorbing Factor XI to get filter adsorbed Factor XI;
(b) desorbing said Factor XI from said filter to form a desorbed solution of Factor XI;
(c) running said Factor XI through a single step chromatography column of a cation exchange resin to load said column with Factor XI; and
(d) eluting said Factor XI to form said Factor XI concentrate.

5,252,218
PROCESS FOR SEPARATING SOLID PARTICULATES FROM A NONAQUEOUS SUSPENSION
Harapanahalli S. Muraldihara, Plymouth, and Aihua Song, New Hope, both of Minn., assignors to Cargill, Incorporated, Minneapolis, Minn.
Filed Jun. 2, 1992, Ser. No. 892,218
Int. Cl.[5] B01D *65/08*
U.S. Cl. 210—636 11 Claims



1. A method of littering a nonaqueous dispersion of a polymer selected from the group consisting of an alkyd polymer selected rom the group consisting of an alkyd polymer, a urethane polymer, a polyester polymer and mixtures thereof, the method comprising cross flow filtering at a cross flow rate in the range of from about 3.0 to 9.0 feet per second through a porous nonmetallic inorganic filter having a pore size in the range of from about 0.5 to about 10 microns, at a temperature in the range of from about 120° F. to about 200° F., the dispersion having a viscosity in e range of from about 10 cps to about 500 cps at about 140° F., the dispersion comprising particulates of the polymer having a size n the range of from bout one micron to about 200 microns, the method providing a recovery in a filtrate of at least about 95 weight percent of the polymer based upon the weight of the polymer dispersion flowing to the ceramic filter.

5,252,219
COMPRESSED PERMEATE SWEEP MEMBRANE SEPARATION PROCESS
Jianguo Xu, Fogelsville, Pa., assignor to Permea, Inc., St. Louis, Mo.
Filed Dec. 18, 1992, Ser. No. 993,152
Int. Cl.[5] B01D *61/36*
U.S. Cl. 210—640 3 Claims



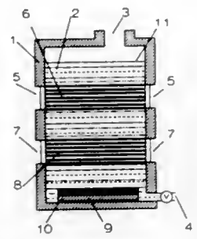
1. A process for the separation of one or more, more permeable components from one or more, less permeable components in a feed stream comprising:
recovering either or both permeable and non-permeable components at predetermined purity while using an optimum combination of power and membrane area by,
(a) introducing the feed stream into a first membrane separation module comprising a high pressure side separated from a low pressure side by a semi-permeable membrane which is selective for the permeation of the more permeable component(s) wherein the feed stream is more specifically introduced into the high pressure side of the first module;
(b) withdrawing from the high pressure side of the first module a first non-permeate stream enriched in the less permeable component(s);
(c) introducing the first non-permeate stream into a second membrane separation module comprising a high pressure side separated from a low pressure side by a semi-permeable membrane which is selective for the permeation of the more permeable component(s) wherein the first non-permeate stream is more specifically introduced into the high pressure side of the second module;
(d) withdrawing from the high pressure side of the second module a second non-permeate stream which is further enriched in the less permeable component(s);
(e) withdrawing from the low pressure side of the second module a first permeate stream enriched in the more permeable component(s);
(f) compressing the first permeate stream and introducing the compressed first permeate stream into the low pressure side of the first module; and
(g) withdrawing from the low pressure side of the first module a second permeate stream which is further enriched in the more permeable component(s).

5,252,220
PREPARATION OF ANALYTICAL SAMPLES BY LIQUID-LIQUID EXTRACTION USING MICROPOROUS HOLLOW-FIBER MEMBRANES
Robert W. Coughlin, Storrs, and Edward M. Davis, Cheshire, both of Conn., assignors to SymBiotech Incorporated, Wallingford, Conn.
Filed Sep. 25, 1989, Ser. No. 411,683
Int. Cl.[5] B01D *61/28*
U.S. Cl. 210—644 23 Claims

1. A method of extracting a solute from a sample liquid through at least one microporous hollow fiber membrane and into a solvent liquid that is immiscible with said sample liquid, each of the liquids being in contact with an opposite side of the membrane, wherein the extraction is conducted as a batch operation for preparing a small laboratory sample, as for assay, comprising the steps:

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(a) placing said sample liquid in contact with one side of said membrane and said solvent liquid on the other side of said membrane, or within the pores of said membrane, so as to form an interface between the two liquids at or within said membrane,
(b) mixing at least one of the liquids while it is in contact with said membrane,



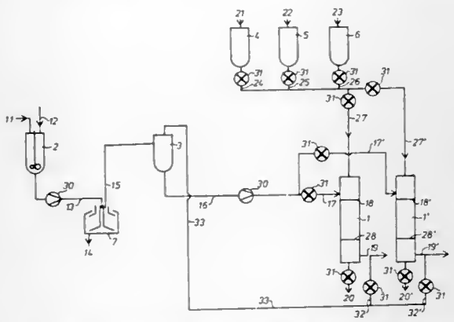
(c) extracting said solute from said sample liquid into said solvent liquid,
(d) conducting an additional step chosen from the group consisting of:
(i) back extracting said solute from said solvent liquid into a stripping liquid that is immiscible with said solvent liquid, and
(ii) evaporating at least a portion of said solvent liquid.

5,252,221

METHOD FOR PURIFYING BLOOD PLASMA

Frederik S. van Dommelen, Apeldoorn, and Hendrikus B. J. Roodink, Twello, both of Netherlands, assignors to Harimex-Ligos B.V., Netherlands

Filed May 7, 1991, Ser. No. 695,814
Claims priority, application Netherlands, May 7, 1990, 9001087
Int. Cl.[5] B01D *15/00, 61/00*
U.S. Cl. 210—645 **8 Claims**



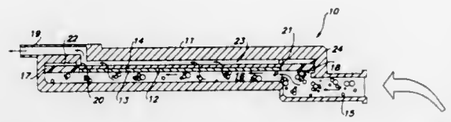
1. A method for purifying blood plasma employing the steps of obtaining a supply of blood plasma, pretreating the blood plasma supply to establish a blood pH level ranging from 2–5, passing the supply of pretreated blood plasma through a column filled with active carbon in which the particle size of the active carbon ranges from about 50 to about 500 μm, collecting purified blood plasma, periodically stopping the passing of the supply of blood plasma through the column and regenerating the active carbon column by successively washing the active carbon with an alkaline solution at a temperature of 45°–50° C. and then treating the column with an acid solution to bring the pH of the active carbon to at least neutral.

5,252,222

FILTER FOR PARENTERAL SYSTEMS AND METHOD OF USING THEREOF

Vlado I. Matkovich; Thomas C. Gsell, both of Glen Cove, and Thomas Bormann, Seaford, all of N.Y., assignors to Pall Corporation, Glen Cove, N.Y.

Filed Dec. 3, 1990, Ser. No. 620,775
Int. Cl.[5] B01D *61/00, 39/00*
U.S. Cl. 210—650 **26 Claims**



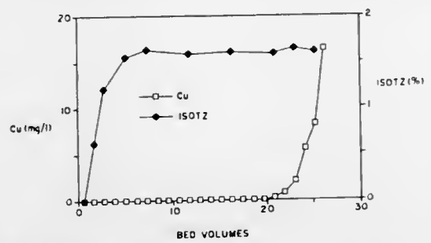
20. A method for treating parenteral nutrient fluid containing a lipid for administration comprising:
passing the parenteral fluid containing a lipid through a liquid filtration element comprising a synthetic polymeric microporous structure having a pore rating of less than 1.2 micrometers and administering the parenteral fluid.

5,252,223

REDUCTION OF COPPER DISCHARGE TO WASTE STREAMS CONTAMINATED WITH ISOTHIAZOLONE BIOCIDES

Walter H. Goodman, Lisle, and Nicholas J. Furibondo, Naperville, both of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Nov. 23, 1992, Ser. No. 980,029
Int. Cl.[5] C02F *1/42*
U.S. Cl. 210—688 **11 Claims**



10. A method for preventing the discharge of copper from isothiazolone biocides used to treat process waters into paper mill waste water streams which comprises the steps of:
contacting an aqueous solution of an isothiazolone biocide as it is withdrawn from a storage container with a styrene divinylbenzene iminodiacetate ion exchange resin to remove substantially all the copper;
and adding the treated isothiazolone biocide solution to the paper mill waste water streams.

5,252,224

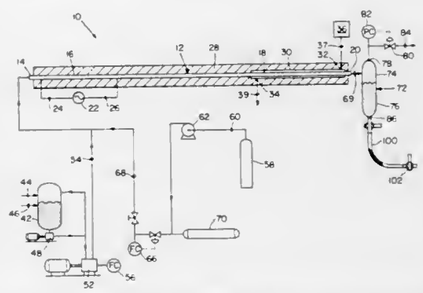
SUPERCRITICAL WATER OXIDATION PROCESS OF ORGANICS WITH INORGANICS

Michael Modell, Cambridge; Evan F. Kuharich, Holliston, and Michael R. Rooney, Upton, all of Mass., assignors to Modell Development Corporation, Framingham, Mass.

Filed Jun. 28, 1991, Ser. No. 722,979
Int. Cl.[5] C02F *11/08*
U.S. Cl. 210—695 **13 Claims**

1. A method for oxidizing organic materials, in the presence of an inorganic material and water, in an elongate tubular reactor having a substantially constant internal diameter from

an inlet, of an inlet end of the elongate tubular reactor, to an outlet, of an outlet end of the elongate tubular reactor, comprising the steps of:
a) forming a pressurized reaction mixture of organic material, inorganic material, water and a source of oxygen, said pressurized reaction mixture having a pressure which is supercritical for water;
b) passing the pressurized reaction mixture through said elongate tubular reactor at a velocity sufficient to prevent settling of a substantial portion of solid particles from the reaction mixture within the elongate tubular reactor;
c) introducing sufficient heat to the pressurized reaction



mixture in the elongate tubular reactor to cause a substantial portion of the organic material in the reaction mixture to oxidize, the temperature of the reaction mixture being elevated to at least the supercritical temperature for water;
d) cooling the reaction mixture within the elongate tubular reactor, but at the outlet end of said elongate tubular reactor, to a temperature sufficient to cause formation of gas and liquid phases in the reaction mixture, the liquid phase including solid particles; and
e) discharging the reaction mixture from the elongate tubular reactor at the outlet to thereby form an effluent mixture including solid particles, a liquid and a gas.

5,252,225

METHOD FOR PRECIPITATING AN ORGANIC RESIN FROM AN ALKALINE SOLUTION THEREOF

Gerald A. Krulik, El Toro, Calif., assignor to Morton International, Inc., Chicago, Ill.

Filed Nov. 25, 1991, Ser. No. 797,612
Int. Cl.[5] C02F *1/52*
U.S. Cl. 210—724 **16 Claims**

1. A method for separating a photoresist from an aqueous alkaline solution of the photoresist, said method consisting essentially of precipitating the photoresist by introducing a water-soluble salt of at least one metal selected from the group consisting of aluminum, calcium and magnesium into the alkaline solution, adjusting the pH of the mixture to a value of from about 2 to about 3, and separating the precipitate from the acidified solution.

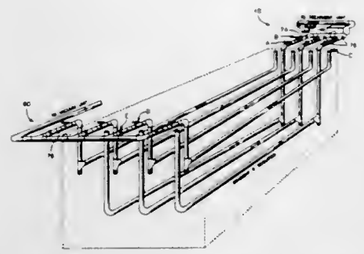
5,252,226

LINEAR CONTAMINATE REMEDIATION SYSTEM

Donald R. Justice, 5260 S. Landings Dr., Ft. Myers, Fla. 33919

Filed May 13, 1992, Ser. No. 882,228
Int. Cl.[5] B01D *19/00;* **E21B** *7/00*
U.S. Cl. 210—739 **17 Claims**

10. A method for removing a plume of contaminated liquid from the earth, said system comprising:
burying a plurality of horizontally extending perforated recovery pipes at a depth substantially at or below the depth to which the plume of contaminated liquid extends,
positioning a vapor recovery system above the recovery pipes and below ground level to recover vapors generated by the plume including substantially horizontal pipes with open perforations,
pumping liquid entering the recovery pipes to an above ground location, and



treating the liquid pumped to the above ground location to remove contaminants.
16. Method according to claim 10, wherein a volume of flow through the recovery pipes is varied dependent upon the degree of contamination passing through each recovery pipe.

5,252,227

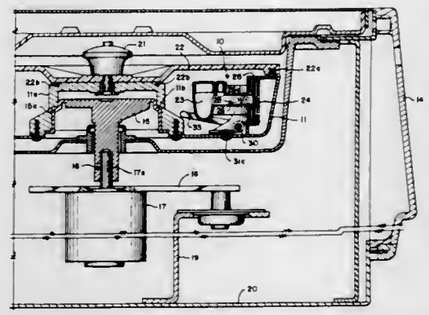
Patent Not Issued For This Number

5,252,228

CYTOCENTRIFUGATION DEVICE, APPARATUS, AND METHOD

Barry O. Stokes, and Carmelo G. Quirante, both of Logan, Utah, assignors to Wescor, Inc., Logan, Utah

Filed Nov. 5, 1991, Ser. No. 788,310
Int. Cl.[5] B01D *33/15*
U.S. Cl. 210—781 **14 Claims**



13. A cytocentrifugation method of depositing and adhering cells onto a microscope slide, comprising the steps of placing a cell-carrying liquid sample in a chamber of an in-line series of chambers extending along and opening into a conduit, in a cytocentrifugation device of cytocentrifuging apparatus, that leads to and terminates at filter-pad-holding means in which a filter pad is held circumferentially and marginally of an opening in said filter pad, through which opening said liquid sample is passed under centrifuging conditions; placing a filter-pad-prewetting liquid in a chamber of said series of chambers that is first in line toward said filter-pad-holding means and that precedes in line said chamber in which said cell-carrying liquid sample is placed; and operating said cytocentrifuging apparatus.

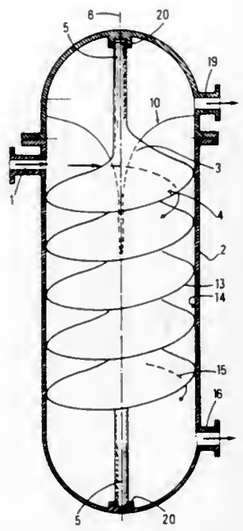
VOL 1155 ISS 2 OCT 12 1993 UMI

5,252,229

METHOD AND A DEVICE FOR SEPARATING A CONTINUOUS FLUID PHASE FROM A DISPERSED PHASE

Alexandre Rojey, Garches; Jean-Claude Collin, Marsinval-Verneuil, and Thierry Palermo, Paris, all of France, assignors to Institut Francais Du Petrole, Rueil-Malmaison, France

Filed Jun. 18, 1991, Ser. No. 717,001
Claims priority, application France, Jun. 18, 1990, 90 07622
Int. Cl.[5] B01D *21/26*
U.S. Cl. 210—787 31 Claims



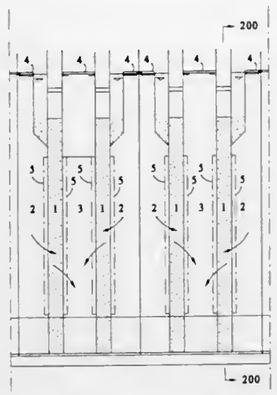
1. Method for separating a mixture comprising a continuous phase and at least one dispersed phase, both phases having different densities, with the dispersed phase being a light phase and the continuous phase being a heavy phase, wherein the mixture of the phases is supplied to a device formed by at least one substantially cylindrical-shaped chamber, said chamber having an axis, an internal cross section, and at least one internal helicoidal-shaped member having a peripheral diameter and at least one face provided with a helicoidal surface, said at least one helicoidal-shaped member defining, at least partly, a helicoidal passage, said at least one internal helicoidal-shaped member being arranged within the chamber so that a maximum distance of a path of a particle of the dispersed phase along a radial direction in a direction away from the axis prior to collision with the at least one internal helicoidal-shaped member is less than one quarter of a peripheral diameter of the at least one internal helicoidal-shaped member, said helicoidal surface having, as a projection on a plane perpendicular to the axis of said chamber, a surface equal to at least one-half an overall internal crosssection of the chamber, and wherein a flowing of the mixture of phases along said passage induces a movement of rotation of the mixture around the axis of the chamber resulting in a displacement of the lightest phase toward the axis of the chamber and the heaviest phase towards a periphery of the chamber during which the dispersed phase at least partly coalesces on walls of said passage, and then forms a continuous phase separated from the continuous phase by an interface, and wherein duct means are provided at a lower portion of the chamber for removing the heavy phase and duct means are provided at the upper portion of the chamber for removing the light phase.

5,252,230

GRANULATED FILTER FOR THE FILTRATION OF FINE GRADED SUSPENSIONS

Karl Dunkers, Hastskovagen 7, S-183 50 Taby, Sweden

Cootinuation of Ser. No. 802,182, Dec. 4, 1991, abandoned. This application Oct. 23, 1992, Ser. No. 965,529
Claims priority, application Sweden, Oct. 25, 1991, 9103118
Int. Cl.[5] B01D *24/46*
U.S. Cl. 210—792 8 Claims



1. A granulated filter element for the filtration of a suspension containing pollutants, comprising:

at least one inlet chamber for containing the suspension;

an outlet chamber for collecting a filtered solution;

a filter bed located between the inlet and outlet chambers for filtering the pollutants from the suspension entering the filter bed in a substantially horizontal flow direction from the inlet chamber and directing the filtered solution into the outlet chamber, the filter bed including granular filter media with particle sizes less than about 0.6 mm and a bed depth defined in the flow direction of less than about 12 cm; and

a filter media washer extending from a bottom portion of the filter bed toward a top portion of the filter bed for washing the granular filter media to remove the pollutants from the granular filter media, the washer having a base communicating with the filter bed at the bottom portion of the filter bed and having a first inlet for introducing a gas into the base and a second inlet for introducing washwater separate from the suspension into the base, the gas and washwater recirculating the granular filter media from the bottom portion of the filter bed to the top portion of the filter bed.

5,252,231

PROCESS AND REACTOR FOR WATER TREATMENT USING A GRANULAR BED ADAPTED TO FLOAT DURING CLEANING

Bernard Capdeville, Toulouse, France, assignor to Institut National Des Sciences Appliquees De Toulouse, Toulouse, France

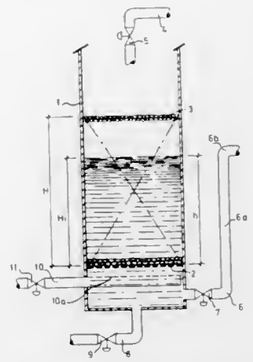
Filed Dec. 23, 1991, Ser. No. 812,119
Claims priority, application France, Dec. 21, 1990, 90 16588
Int. Cl.[5] B01D *41/02*
U.S. Cl. 210—794 20 Claims

1. A process for the treatment of water using a granular bed of granular materials (3) arranged in a reactor above a platform (2) in the reactor, the granular bed (3) being adapted to carry out a simple filtration treatment or filtration treatment in combination with an associated biological purification of water, said process comprising carrying out water treatment cycles through said granular bed (3) alternated with bed washing

cycles, each treatment cycle being carried out while feeding the water to be treated from above the granular bed (3) and withdrawing the treated water from beneath the granular bed, said granular bed (3) comprising granular support materials having a volumic mass less than that of the water to be treated,

each washing cycle comprising interrupting the withdrawal of treated water and stopping the feeding of treated water so that the granular bed (3) floats in a given volume of water VL,

admitting washing air into the reactor for assuring an agitation of the floating bed,



interrupting the admission of air for permitting a separation of the granular materials and the sediment (12) according to the difference in volumic mass, with settling of said sediment and flotation of said materials,

evacuating the sediment from the bottom of the reactor with the water contained in the reactor thereby emptying the granular bed (3) for a new treatment cycle.

7. A water treatment process as in claim 1, and including admitting treatment air during each treatment cycle, countercurrent to the flow of water to be treated.

5,252,232

STAIN AND SOIL RESISTANT COMPOSITIONS HAVING FREEZE-THAW STABILITY

Yashavant V. Vinod, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 20, 1991, Ser. No. 763,021
Int. Cl.[5] D06M *13/16, 15/41*
U.S. Cl. 252—8.6 4 Claims

1. In a process for preparing a composition capable of imparting stain and soil resistance to an installed nylon carpet, said process comprising forming an aqueous dispersion comprising a ratio by weight percent of an aqueous dispersion of perfluoroalkyl ester of citric acid to a solution of hydrolyzed styrene/maleic anhyride copolymer in the range of 10:1 to 1:1, the improvement comprising adjusting the pH level of the total dispersion to a final level of 4.2 to 4.6 to impart freeze-thaw stability to the dispersion.

5,252,233

SILICONE TEXTILE FINISHES

Anna M. Czech, Peekskill, N.Y., assignor to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Division of Ser. No. 851,128, Mar. 16, 1992, Pat. No. 5,158,575, which is a continuation of Ser. No. 683,342, Apr. 10, 1991, abandoned, which is a continuation-in-part of Ser. No. 567,163, Aug. 10, 1990, abandoned. This application Jun. 29, 1992, Ser. No. 905,378
Int. Cl.[5] D06M *11/00, 13/00, 23/00*
U.S. Cl. 252—8.6 8 Claims

1. A heat curable textile finishing agent for forming durable hydrophilic finishes on textiles formed at least partially of cellulosic fibers such finishes withstanding repeated washing in water, which finishing agent comprises: glyoxal, at least one glycol, at least one acidic catalyst, and at least one organomodified silicone copolymer having the formula:

$$R_3SiO\ldots\underset{\underset{R}{|}}{(SiO)_n}\underset{\underset{R^2}{|}}{(SiO)_m}\underset{\underset{R^6}{|}}{(SiO)_o}\ldots SiR_3$$

wherein R at each occurrence is a monovalent hydrocarbon radical; n is an integer equal to or greater than 1; and R^2 has the formula $-(CH_2)_x(OR^3)_y(OR^4)_zR^5$ wherein OR^3 and OR^4 are repeating units; R^3 and R^4 are the same or different and selected from the group consisting of C_2H_4 and C_3H_6; x, y, z are integers with the proviso that x and at least y or z are not zero; R^5 is alkoxy- or acetoxy; R^6 is a monovalent organic radical having a reactive group selected from the group consisting of an epoxide group, an amide group, and a thiol group; and n, m, o, x, y, and z are such that the silicone is soluble or dispersible in water at room temperature.

5,252,234

BORATE CROSS-LINKING SOLUTIONS

Sharif Sharif, Midland, Tex., assignor to Zirconium Technology Corporation, Midland, Tex.

Division of Ser. No. 705,605, May 24, 1991, Pat. No. 5,160,445. This application Aug. 11, 1992, Ser. No. 927,974
Int. Cl.[5] E21B *43/26*
U.S. Cl. 252—8.551 9 Claims

2. A method of preparing a boron cross-linking solution of aqueous treating fluids for treating oil and gas reservoirs comprising: reacting citric, lactic or tartaric acids in an aqueous solution of sodium hydroxide, potassium hydroxide, ammonium hydroxide, sodium carbonate, potassium carbonate, ammonium carbonate, sodium bicarbonate, potassium bicarbonate, ammonium bicarbonate, or water soluble amines to obtain as aqueous solution of the corresponding citric, lactic or tartaric acid salt; slurrying sufficient boric acid or borax in the aqueous solution of the corresponding citric, lactic or tartaric acid salt; slurrying sufficient boric acid or borax in the cross-linking solution, when mixed with said aqueous treating fluids, establishes a cationic boning site on the polymer in which the carboxyl group and the hydroxyl group of the polymer share the corresponding cation.

5,252,235

BORATE CROSS-LINKING SOLUTIONS

Sharif Sharif, Midland, Tex., assignor to Zirconium Technology Corporation, Midland, Tex.

Division of Ser. No. 705,605, May 24, 1991, Pat. No. 5,160,445. This application Aug. 11, 1992, Ser. No. 927,976
Int. Cl.[5] E21B *43/26*
U.S. Cl. 252—8.551 15 Claims

1. A water based fracturing fluid comprising:

water;

a hydratable polymer capable of gelling in the presence of a cross-linker, said polymer being selected from a group

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consisting of galactomannan guar polymer, hydroxypropyl guar, and carboxymethylhydroxypropyl guar polymers;

an aqueous solution of boron alpha hydroxy carboxylic acid salt in which the concentration of boron measured as boric acid is sufficient to establish a cationic electrostatic bonding site on the hydratable polymer with the carboxy group and hydroxyl group sharing the cation;

wherein said hydratable polymer is present in said water base fracturing fluid in the range of 20 pounds to 60 pounds per 1000 gallons of water, and said aqueous solution of boron alpha hydroxy carboxylic acid salt is present in said water base fracturing fluid in the range of from 0.5 gallon to 3 gallons per 1000 gallons of said fracturing fluid.

5,252,236

BORATE CROSS-LINKING SOLUTIONS

Sharif Sharif, Midland, Tex., assignor to Zirconium Technology Corporation, Midland, Tex.

Division of Ser. No. 705,605, May 24, 1991, Pat. No. 5,160,445. This application Aug. 11, 1992, Ser. No. 927,978

Int. Cl.[5] E21B *43/26*

U.S. Cl. 252—8.551 **13 Claims**

1. A method of preparing aqueous boron cross-linking solutions for gelling aqueous treating fluids containing hydratable polymers for dispersement in oil and gas reservoirs comprising dissolving an alpha hydroxy carboxylic acid in water; adding boron to establish a molar ratio of alpha hydroxy carboxylic acid to boron of from 0.1–10.0 to 1.0; and adjusting the pH of the boron crosslinking solution to at least 6.0; and thereafter adding an alkali metal hydroxide, ammonium hydroxide or water soluble amines sufficient to produce a pH of 6–8.

5,252,237

COMPLEX ALKOXY BORATES OF ALKYLATED PHENOLS AS LUBRICANT STABILIZERS

Harry J. Andress, Jr., Wenonah; Henry Ashjian, East Brunswick; William F. Olszewski, Cherry Hill, and Robert E. Ernhoffer, Sewell, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Aug. 3, 1992, Ser. No. 923,655

Int. Cl.[5] C10M *139/00*

U.S. Cl. 252—49.6 **19 Claims**

1. An improved lubricant composition comprising a major amount of an oil of lubricating vicosity or a grease prepared therefrom and containing a minor amount of from about 0.001 to about 10% by weight based on the total weight of the composition of a product of reaction prepared by reacting a hydrocarbyl or hydrocarbyloxy phenol with an alcohol and a boronating agent selected from the group consisting of boric acid, boric oxide, metaborate and an alkyl borate of the formula:

, $(R^2O)yB(OH)z$

wherein y is 1 to 3, z is 0 to 2, their sum being 3, and R^2 is an alkyl group having from 1 to about 6 carbon atoms and wherein the reaction is carried out at temperatures varying from ambient to about 250° C. under pressure varying from ambient or autogenous for a time sufficient to obtain the desired additive product of reaction and wherein the molar ratios of the various reactants vary from equimolar to more than equimolar to less than equimolar.

5,252,238

MULTIFUNCTIONAL VISCOSITY INDEX IMPROVER DERIVED FROM AMIDO-AMINE EXHIBITING IMPROVED LOW TEMPERATURE VISCOMETRIC PROPERTIES

David Y. Chung, Edison; Antonio Gutierrez, Mercerville; John E. Johnston, Westfield; Mark J. Struglinski, and Robert D. Lundberg, both of Bridgewater, all of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 359,058, May 30, 1989, Pat. No. 5,053,151. This application Jun. 27, 1991, Ser. No. 722,624

The portion of the term of this patent subsequent to Oct. 1, 2008, has been disclaimed.

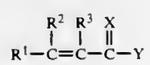
Int. Cl.[5] C10M *149/06*

U.S. Cl. 252—51.5 A **85 Claims**

1. Composition of matter comprising reaction product of:

(i) (a) copolymer of ethylene and at least one other alpha-olefin monomer, said copolymer comprising intramolecularly heterogeneous copolymer chains containing at least one crystallizable segment of methylene units and at least one low crystallinity ethylene-alpha-olefin copolymer segment, wherein said at lest one crystallizable segment comprises at least about 10 weight percent of said copolymer chain and contains at least about 57 weight percent ethylene, wherein said low crystallinity segment contains not greater than about 53 weight percent ethylene, and wherein said copolymer has a molecular weight distribution characterized by at least one of a ratio of $\overline{M}_w/\overline{M}_n$ of less than 2 and a ratio of $\overline{M}_z/\overline{M}_w$ of less than 1.8, and wherein at least two portions of an individual intramolecularly heterogeneous chain, each portion comprising at least 5 weight percent of said chain, differ in composition from one another by at least 7 weight percent ethylene, said copolymer grafted with (b) ethylenically monounsaturated carboxylic acid material having 1 to 2 carboxylic acid groups or anhydride group to form grafted ethylene copolymer; and

(ii) amido-amine comprising reaction product of (a) polyamine, and (b) alpha, beta-unsaturated compound represented by the formula



wherein X is oxygen, Y is —OR^4 or



, and R^1, R^2, R^3, R^4 and R^5 are independently selected from hydrogen, hydrocarbyl, and substituted hydrocarbyl

wherein from 1 to 5 moles of ethylene copolymer substituted monocarboxylic or dicarboxylic acid and moiety content resulting from the grafting of said ethylene copolymer with said carboxylic acid material are reacted per equivalent of said amido-amine reactant.

5,252,239

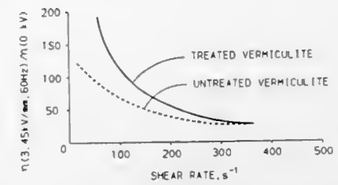
ER FLUIDS HAVING CHEMICALLY DEFOLIATED VERMICULITE TREATED WITH A ALKYL AMMONIUM HALIDE AND METHODS OF MAKING AND USING THE SAME

Elio Eusebi, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 684,748, Apr. 15, 1991, abandoned. This application Apr. 13, 1992, Ser. No. 870,193

Int. Cl.[5] C10M *169/04, 171/00;* C09K *3/00*

U.S. Cl. 252—75 **5 Claims**



1. A method of producing an electrorheological response in the presence of an electric field, comprising the steps of:

treating chemical defoliated vermiculite particles with an alkyl ammonium halide so that the cation exchange ranges from about 90 to about 95 percent;

drying the treated vermiculite at a temperature and pressure sufficient to produce substantially water free treated vermiculite; and

adding a sufficient amount of said substantially water free treated vermiculite to a substantially water free dielectric fluid so that said composition produces an electrorheological response in the presence of an electric field, and applying an electric field to said composition.

5,252,240

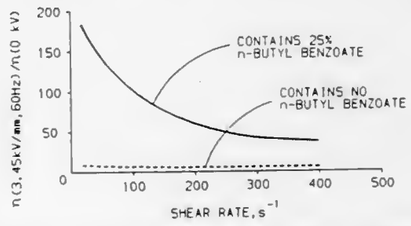
ELECTRORHEOLOGICAL FLUIDS INCLUDING ALKYL BENZOATES

Elio Eusebi, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 684,750, Apr. 15, 1991, abandoned. This application Apr. 24, 1992, Ser. No. 874,992

Int. Cl.[5] C10M *169/04, 171/00;* C09K *3/00*

U.S. Cl. 252—76 **7 Claims**



1. A method of producing an electrorheological response comprising providing a composition comprising chemically defoliated vermiculite particles treated with an alkyl ammonium halide and a liquid phase comprising n-butyl benzoate to increase the electrorheological response of said composition in the presence of an electric field, said particles being present in an amount ranging from about 5 to about 50 percent by weight of said composition, said n-butyl benzoate being present in an amount ranging from about 5 to about 35 percent by volume of said composition; and applying an electric field to said composition so said particles form chains and so that the viscosity of the composition is increased.

5,252,241

LINEAR VISCOELASTIC AQUEOUS LIQUID AUTOMATIC DISHWASHER DETERGENT COMPOSITION

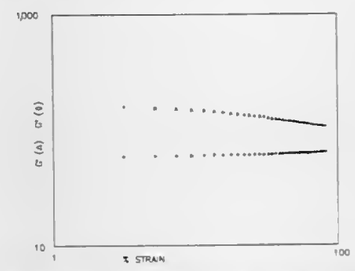
Nagaraj S. Dixit, Plainsboro; Makarand Shevade, Hamilton; Rhyta Rounds, Flemington, and Marta Delsignore, Fort Lee, all of N.J., assignors to Colgate-Palmolive Company, Piscataway, N.J.

Continuation-in-part of Ser. No. 353,712, May 18, 1989, Pat. No. 5,064,553. This application Jul. 5, 1991, Ser. No. 725,067

The portion of the term of this patent subsequent to Oct. 1, 2008, has been disclaimed.

Int. Cl.[5] C11D *3/00*

U.S. Cl. 252—94 **8 Claims**



1. A gel like viscoelastic dishwashing composition having a G''/G' ratio of less than one, which comprises approximately by weight:

(a) about 10 to about 60 percent of at least one alkali metal containing compound selected from the group consisting essentially of alkali metal hydroxides, alkali metal tripolyphosphates, alkali metal pyrophosphates, alkali metal carbonates, alkali metal citrates, alkali metal nitrilotriacetate and alkali metal silicates;

(b) about 0 to about 1.5 percent of a foam depressant;

(c) about 0 to about 5.0 percent of a chlorine bleach stable, water-dispersible, organic detergent active material;

(d) about 0.1 to about 2.0 percent of at least one hydrophilic crosslinked polymeric thickening agent;

(e) about 0.02 to about 2.0 percent of a long chain fatty acid or a metal salt of said fatty acid thereof, said fatty acid or said metal salt of said fatty acid being associated with said hydrophilic polymeric thickening agent to cause an increase in the apparent viscosity of said composition; and

(f) balance being water, wherein said water in said composition is tightly bound to said cross-linked hydrophilic polymeric thickening agent, said composition having a density of from about 1.28 grams/cm^3 to about 1.42 grams/cm^3, said composition does not exhibit phase separation and remains homogenous, when said composition is centrifuged at 1000 rpms for 30 minutes.

5,252,242

LINEAR VISOELASTIC AQUEOUS LIQUID DETERGENT COMPOSITION, ESPECIALLY FOR AUTOMATIC DISHWASHERS, OF IMPROVED HIGH TEMPERATURE STABILITY

Makarand Shevade, Plainsboro; Marta Delsignore, Fort Lee; Nagaraj S. Dixit, Plainsboro, and Divaker Kenkare, Asbury, all of N.J., assignors to Colgate-Palmolive Co., Piscataway, N.J.

Continuation-in-part of Ser. No. 353,712, May 18, 1989, Pat. No. 5,064,553. This application Jun. 7, 1991, Ser. No. 711,608

The portion of the term of this patent subsequent to Nov. 12, 2008, has been disclaimed.

Int. Cl.[5] C11D *3/37, 3/395, 1/04, 7/56*

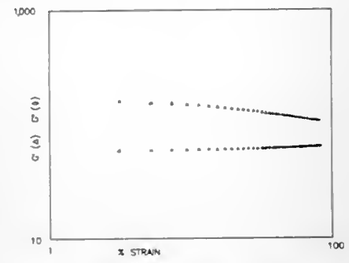
U.S. Cl. 252—97 **12 Claims**

1. A linear viscoelastic aqueous liquid automatic dishwasher detergent composition having a G' of at least 100 dynes/sq.

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cm. over a strain range of 0 to 50 percent comprising approximately by weight:

(a) 10 to 35% of at least one alkali metal detergent builder salt, said alkali metal detergent builder salt being selected from the group consisting essentially of alkali metal tripolyphosphate, alkali metal pyrophosphate, alkali metal metaphosphate, alkali metal carbonate, alkali metal citrate and alkali metal nitrilotriacetate and mixtures thereof;
(b) 5 to 15% alkali metal silicate;
(c) 0 to 3.0% chlorine bleach stable, water-dispersible, organic detergent active material selected from the group consisting of non-soap anionic surfactants, amine oxide surfactants, phosphine oxide surfactants, sulphoxide surfactants and betaine surfactants;
(e) 0 to 1.5% chlorine bleach stable foam depressant;
(f) chlorine bleach compound in an amount to provide 0.2 to 4% of available chlorine;
(g) 0.1 to 2.0% of a metal neutralized cross-linked polyacrylic acid thickening agent having a molecular weight of from about 1,000,000 to 4,000,000;
(h) 0.02 to 2% of a hydrogen bonding agent for said metal neutralized cross-linked polyacrylic acid thickening agent, said hydrogen bonding agent is a long chain fatty acid or a metal salt of a fatty acid;



(i) 0 to 15% of a non-cross-linked polyacrylate having a molecular weight of about 1,000 to 100,000; and
(j) balance being water, wherein said metal neutralized polyacrylic acid thickening agent is selected from the group consisting essentially of acrylic acid or methacrylic acid, water-dispersible or water-soluble salts, esters, or amides thereof, and water-soluble copolymers of these acids or their salts, ester, or amides with each other or with one or more other ethylenically unsaturated monomers, said metal neutralized polyacrylic acid thickening agent being cross-linked with 0.01 to 1.5 percent of a monomeric cross-linking agent, wherein substantially all of the normally solid components of the composition are present dissolved in the aqueous phase, and substantially all of the water in the composition is tightly bound to the metal neutralized cross-linked polyacrylic acid thickening agent, said composition having a bulk density of from 1.32 g/cm^3 to 1.42 g/cm^3 and said composition does not exhibit phase separation and remains homogeneous, when said composition is centrifuged at 1000 rpm for 30 minutes, said composition having a minimum G' value of at least about 100 dynes/sq. cm over a strain range of 0 to 50 percent and a G"/G' ratio of less than one.

5,252,243

CARPET CLEANING METHOD

Charles R. Minns, Williamsburg, Va., assignor to BASF Corporation, Williamsburg, Va.

Continuation-in-part of Ser. No. 206,531, Jun. 14, 1988, abandoned. This application Jan. 8, 1990, Ser. No. 462,919

Int. Cl.^{5} C09K *15/06*

U.S. Cl. 252—102 **8 Claims**

1. A method of spot cleaning coffee beverage stained or soiled portions of a synthetic polymer fiber carpet comprising: contacting said stained or soiled portion with an effective amount of an aqueous cleaning composition having a pH in the range of from about 9 to about 12.0 and consisting essentially of:
(a) an amount of water-soluble alcohol containing 1 to about 5 carbon atoms;
(b) an oxidizing agent present in an amount in the range of from about 3 to about 15 percent by weight of said aqueous cleaning composition and comprising a peroxyhydrate;
(c) a pH adjustment substance; and
(d) the balance water.

5,252,244

AQUEOUS ZEOLITE-CONTAINING LIQUID DETERGENT STABILIZED WITH AN ELECTROLYTE MIXTURE

Hans J. Beaujean, Hilden; Jens Bode, Duesseldorf; Stefan Paasch, Wolfenbuettel; Karl Schwadtke, Leverkusen; Eduard Smulders, Hilden, and Eric Sung, Monheim, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

PCT No. PCT/EP90/01435, § 371 Date Mar. 6, 1992, § 102(e) Date Mar. 6, 1992, PCT Pub. No. WO91/03541, PCT Pub. Date Mar. 21, 1991

PCT Filed Aug. 29, 1990, Ser. No. 838,443

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1989, 3929591

Int. Cl.^{5} C11D *3/04, 3/10, 3/12, 17/08*

U.S. Cl. 252—120 **16 Claims**

1. A phosphate-free liquid detergent composition which is stable toward sedimentation at room temperature for at least 3 months consisting essentially of from about 10 to about 30% by weight of anionic and nonionic surfactants, from about 10 to about 25% by weight of zeolite, from about 0.5 to about 2% by weight of sodium carbonate, from about 4 to about 6% by weight of sodium sulfate, and from about 0.8 to about 1.5% by weight of citrate, and from about 40 to about 60% by weight of water, all weights being based on the weight of said detergent composition.

2. A phosphate-free liquid detergent composition which is stable toward sedimentation at room temperature for at least 3 months consisting essentially of from about 10 to about 30% by weight of anionic and nonionic surfactants, from about 10 to about 25% by weight of zeolite, from about 0.5 to about 1% by weight of sodium carbonate, from about 3 to about 5.5% by weight of sodium sulfate, from about 0.5 to about 1.5% by weight of sodium chloride, and from about 0.5 to about 2.5% by weight of sodium acetate, and from about 40 to about 60% by weight of water, all weights being based on the weight of said detergent composition.

5,252,245

REDUCED RESIDUE HARD SURFACE CLEANER

Aram Garabedian, Jr., Fremont; Scott C. Mills, Livermore, and William P. Sibert, Stockton, all of Calif., assignors to The Clorox Company, Oakland, Calif.

Filed Feb. 7, 1992, Ser. No. 832,275

Int. Cl.^{5} C11D *1/50, 3/26, 1/75, 9/00*

U.S. Cl. 252—153 **18 Claims**

1. An aqueous, hard surface cleaner with significantly improved residue removal and substantially reduced filming/-streaking, said cleaner comprising:
(a) an effective amount of a solvent selected from C_{1-6} alkanol, C_{3-24} alkylene glycol ether, and mixtures thereof;
(b) an effective amount of a surfactant selected from amphoteric and anionic surfactants, and mixtures thereof, said effective amount being about 0.001–1% anionic surfactant and about 0.005–2% amphoteric surfactant, and, optionally, a further, nonionic surfactant in an effective amount of about 0–0.75%;
(c) about 0.01–2% of a buffering system which comprises a nitrogenous buffer selected from the group consisting of: ammonium or alkaline earth carbamates, guanidine salts, alkoxylalkylamines and alkyleneamines; and
(d) a fragrance oil and a 1-alkyl-2-pyrrolidone present in an amount sufficient to disperse said fragrance oil, said alkyl group of said pyrrolidone being C_{6-20} alkyl;
(e) the remainder as substantially all water.

5,252,246

NONIRRITATING NONIONIC SURFACTANT COMPOSITIONS

Shulin Ding, Irvine, and Thao T. Tran, Garden Grove, both of Calif., assignors to Allergan, Inc., Irvine, Calif.

Filed Jan. 10, 1992, Ser. No. 819,397

Int. Cl.^{5} C11D *1/66*

U.S. Cl. 252—174.21 **8 Claims**

1. A nonirritating detergent surfactant composition suitable for application to and cleaning of sensitive tissue, said nonirritating detergent surfactant composition comprising:
a principal nonionic surfactant comprising, Pluronic ® P85, and present in said nonirritating detergent surfactant composition in a sufficient amount to clean said sensitive tissue; and
two auxiliary nonionic surfactant present in said nonirritating detergent surfactant composition in sufficient amounts to increase the cleaning ability of the principal nonionic surfactant, a first auxiliary nonionic surfactant being Pluronic ® F87, and a second auxiliary nonionic surfactant being octoxynol 40.

5,252,247

METAL (DIALKYLAMINOALCOHOLATE) SOLUTIONS

Carl C. Greco, Garnerville, and Johst H. Burk, Mohegan Lake, both of N.Y., assignors to Akzo America Inc., Dobbs Ferry, N.Y.

Continuation of Ser. No. 270,570, Nov. 14, 1988, abandoned. This application Mar. 13, 1991, Ser. No. 668,533

Int. Cl.^{5} C09K *3/00*

U.S. Cl. 252—182.12 **4 Claims**

1. A solution which consists essentially of: (a) an organic solvent; and (b) a metal (dialkylaminoalcoholate) compound dissolved therein, the metal being a metal oxide superconductor precursor selected from the group consisting of yttrium, bismuth, and lanthanum.

5,252,248

PROCESS FOR PREPARING A BASE NITRIDABLE SILICON-CONTAINING MATERIAL

James P. Edler, and Bondan Lisowsky, both of Troy, Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jul. 24, 1990, Ser. No. 557,382

The portion of the term of this patent subsequent to Jul. 24, 2007, has been disclaimed.

Int. Cl.^{5} C09K *3/00*

U.S. Cl. 252—182.32 **13 Claims**

1. A process for preparing a nitridable silicon-containing material, comprising:
(a) forming an aqueous slurry of silicon powder and comminuting said silicon powder while suspended therein:
(b) said comminuting being performed in a comminution device to form fresh, non-oxidized surfaces on the silicon powder, whereby substantial evolution of hydrogen gas and frothing occurs due to a chemical reaction which takes place between the silicon and the water to form a nitradable silicon-containing material which contains at least silicon and a compound selected from the group consisting of silicon oxyhydrate and silicon-water reaction products; and
(c) venting the evolved hydrogen gas to prevent excessive pressure build-up.

6. A process for preparing a nitridable silicon-containing material, comprising:
(a) forming an aqueous slurry of silicon powder and at least one nitriding aid, and comminuting said silicon powder and said at least one nitriding aid while suspended therein;
(b) said comminuting being performed in a comminution device to form fresh, non-oxidized surfaces on the silicon powder, whereby substantial evolution of hydrogen gas and frothing occurs due to a chemical reaction which takes place between the silicon and the water; and
(c) venting the evolved hydrogen gas to prevent excessive pressure build-up.

5,252,249

POWDER AND ELECTRORHEOLOGICAL FLUID

Yasuo Kurachi, Tokyo; Tasuku Saito, Tokorozawa; Yoshiki Fukuyama, Kodaira, and Shigeki Endo, Tokorozawa, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Apr. 10, 1991, Ser. No. 682,946

Claims priority, application Japan, Apr. 26, 1990, 2-111467; May 14, 1990, 2-123870; May 14, 1990, 2-123871

Int. Cl.^{5} C10M *169/00, 169/04*

U.S. Cl. 252—71 **15 Claims**



1. An electrorheological fluid, comprising a powder dispersed in an electrically insulating oily medium, said powder comprising composite particles comprised of a matrix phase having minute particulates uniformly dispersed therein, wherein said matrix phase has an electrical conductivity of 10^{-10} to 10^2 Scm^{-1}, said dispersed particulates have an electrical conductivity of up to 10^{-2} Scm^{-1} and in the range of 1/10 to 1/10^{14} of the electrical conductivity of said matrix phase, and said dispersed particulates are present in an amount of 0.1 to 70% by weight based on the weight of each composite particle.

2. An electrorheological fluid, comprising a powder dispersed in an electrically insulating oily medium, said powder comprising composite particles comprised of a matrix phase having minute particulates non-uniformly dispersed therein such that either (1) more minute particulates are present near the surface than near the center of the composite particle or (2) more minute particulates are present near the center than near the surface of the composite particle; wherein said matrix phase has an electrical conductivity of 10^{-10} to 10^2 Scm^{-1}, said dispersed particulates have an electrical conductivity of up to 10^{-2} Scm^{-1} and in the range of 1/10 to 1/10^{14} of the electrical conductivity of said matrix phase, and said dispersed particulates are present in an amount of 0.01 to 40% by weight based on the weight of each composite particle.

3. An electrorheological fluid, comprising a powder dispersed in an electrically insulating oily medium, said powder comprising composite particles comprised of a matrix phase having minute particulates dispersed therein, wherein said matrix phase has an electrical conductivity of up to 10^{-2} Scm^{-1}, said dispersed particulates have an electrical conductivity of 10^{-10} to 10^2 Scm^{-1} and in the range of 10 to 10^{14} times the electrical conductivity of said matrix phase, and said dispersed particulates are present in an amount of 15 to 99.5% by weight based on the weight of each composite particle.

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5,252,250

ELECTRORHEOLOGICAL FLUIDS COMPRISING DIELECTRIC PARTICULATES DISPERSED IN A HIGHLY ELECTRICALLY INSULATING OILY MEDIUM

Shigeki Endo; Yuichi Ishino; Takayuki Maruyama, and Tasuku Saito, all of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

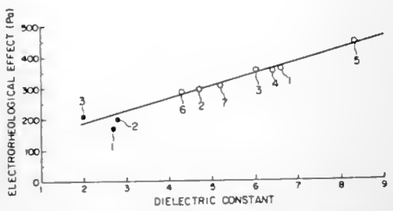
Filed Feb. 21, 1991, Ser. No. 658,709

Claims priority, application Japan, Feb. 21, 1990, 2-40668

The portion of the term of this patent subsequent to Feb. 11, 2009, has been disclaimed.

Int. Cl.[5] C10M *171/00, 169/04*

U.S. Cl. 252—73 **20 Claims**



1. An electrorheological fluid comprising 1-60 weight % of dielectric particulates dispersed in 99-40 weight % of a highly electrically insulating oily medium, in which the particulates are carbonaceous particulates having a atomic ratio of carbon atoms to hydrogen atoms (C/H) of 1.70-3.50 and an average particle size of from 0.01 to 100 μm, and the oily medium consisting essentially of an electrical insulating oil having a dielectric constant of not less than 4 and a volume resistivity of not less than 10^9 Ω-cm.

5,252,251

MESOMORPHIC POLYMER, MONOMERIC MESOMORPHIC COMPOUNDS, LIQUID CRYSTAL COMPOSITION AND LIQUID CRYSTAL DEVICE

Koichi Sato, Atsugi; Yutaka Kurabayashi, Yokohama; Kazuo Yoshinaga, Machida, and Yomishi Toshida, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

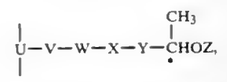
Filed Dec. 28, 1989, Ser. No. 458,448

Claims priority, application Japan, Dec. 30, 1988, 63-334235; Jul. 21, 1989, 1-187546; Dec. 25, 1989, 1-332696

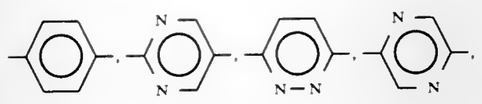
Int. Cl.[5] C09K *19/52;* **C08F** *26/00;* **C08G** *59/00;* **G02F** *1/13*

U.S. Cl. 252—299.01 **28 Claims**

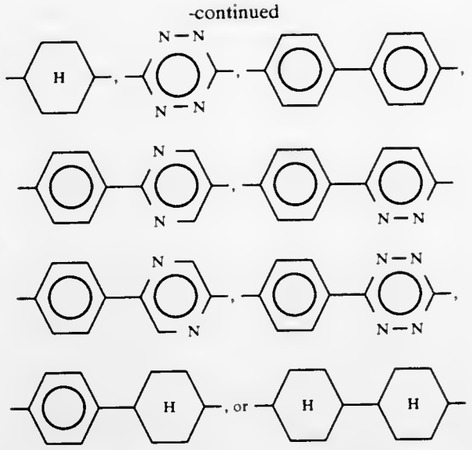
1. A mesomorphic polymer comprising recurring units of:



wherein U denotes a polymer main chain unit; V denotes $-(CH_2)_m-$ or $-((CH_2)_2-O)_m-$ each capable of having an alkyl group, halogen atom, amino group or carbonyl group substituting one or more of the hydrogen atoms wherein m is an integer of 0-30; W denotes a single bond, —O—, —OCO—, —COO—, —$CONR^1$—, —CO— or —NR^1— wherein R^1 denotes hydrogen atom or alkyl group; X denotes a mesogen unit comprising two ring structures which may be the same or different and are capable of having a substituent of F or CN, said ring structures being two of



-continued



connected to each other with a single bond, —O—, —OCO—, —COO—, $-(CH_2)_n-$, —N=N—, $-(CH=CH)_n-$, —CH=N—, —N=CH—, $-(C\equiv C)_n-$, —$CONR^1$, $-(CO)_n-$ or —NR^1— wherein n is an integer of 1-10; Y denotes —$COOCH_2$—, —OCH_2— or —OCO—; Z denotes —R^2 or —COR^2 wherein R^2 denotes hydrogen atom or alkyl group capable of having a substituent; and * denotes an asymmetric carbon atom.

5,252,252

ANISOTROPIC COMPOUNDS AND LIQUID CRYSTAL MIXTURES

Tuong Huynh-Ba, Pully, and Maged A. Osman, Zurich, both of Switzerland, assignors to Merck Patent Gesellschaft mit beschraenkter Haftuog, Darmstadt, Fed. Rep. of Germany

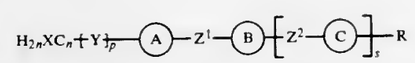
Division of Ser. No. 333,769, Apr. 6, 1989, Pat. No. 5,120,467, which is a continuation-in-part of Ser. No. 917,138, Oct. 9, 1986, abandoned, which is a division of Ser. No. 648,431, Sep. 10, 1984, Pat. No. 4,723,005. This application May 15, 1992, Ser. No. 883,432

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1983, 3332692

Int. Cl.[5] C09K *19/06, 19/34, 19/30, 19/12*

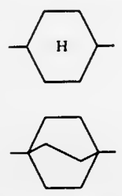
U.S. Cl. 252—299.6 **16 Claims**

1. In a nematic liquid crystalline mixture comprising at least two liquid crystalline components, the improvement wherein at least one of said components is an anisotropic compound of formula (1)



(1)

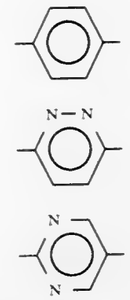
wherein the rings A, B and C are identical or different and each is a cycloaliphatic radical of the formula (1a) or (1b)



(1a)

(1b)

or an aromatic radical of the formula (1c), (1d) or (1e)



X is halogen in omega position;

Y is —O—, —C(O)O—, —O(O)C—, or —NH—;

Z^1 and Z^2 are identical or different and each is a covalent bond, —COO—, —OOC—, —CH_2O—, —OCH_2—, or —CH_2—CH_2—;

n is an integer from 2 to 12;

p and s are identical or different and each is 0 or 1; and

R is alkyl, alkoxy, alkoxycarbonyl, alkylcarbonyloxy or alkylamino, the alkyl part of which in each case contains 1 to 12 C atoms,

with the provisos that

(a) when an oxygen atom is bonded directly to one of the cycloaliphatic radicals of the formula (1a) or (1b) present in the molecule, then no other oxygen atom and no nitrogen atom or radical X is bonded directly to that cycloaliphatic radical of the formula (1a) or (1b) present in the molecule, at the same time; and

(b) no groups of the formulae —CH_2O— are bonded directly to any of the aromatic radicals of the formulae (1c), (1d) or (1e) present in the molecule.

5,252,253

PHENYL NAPHTHALENES HAVING LIQUID CRYSTALLINE PROPERTIES

George W. Gray, Wimborne; Kenneth J. Toyne, Hull; David Lacey, Hull, and Michael Hird, Hull, all of United Kingdom, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

PCT No. PCT/GB90/00069, § 371 Date Jul. 16, 1991, § 102(e) Date Jul. 16, 1991, PCT Pub. No. WO90/08119, PCT Pub. Date Jul. 26, 1990

PCT Filed Jan. 16, 1990, Ser. No. 721,440

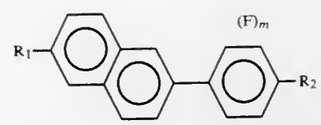
Claims priority, application United Kingdom, Jan. 16, 1989, 8900870.0; Nov. 10, 1989, 892541.8

Int. Cl.[5] C09K *19/32;* **C07C** *41/00, 255/00, 19/08*

U.S. Cl. 252—299.62 **17 Claims**

1. An optically inactive phenylnaphthalene of the formula 1:

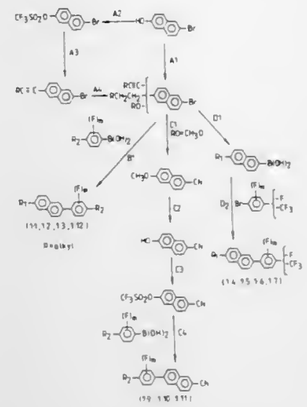
formula 1



wherein R_1 and R_2 are selected from C_{1-15} alkyl, alkoxyl, perfluoroalkyl, perfluoroalkoxyl and alkynyl, R_1 may also be CN and R_2 may also be fluorine, CN or NCS; m is 0, 1 or 2 provided that if R_1 is alkyl or alkoxyl and R_2 is alkyl, alkoxyl, perfluoroalkyl or CN than m is 1 or 2.

(1c)

(1d)



(1e)

5,252,254

NAPHTHENIC ACID CORROSION INHIBITOR

Elizabeth Babaian-Kibala, Fulshear, Tex., assignor to Nalco Chemical Company, Naperville, Ill.

Filed Dec. 30, 1992, Ser. No. 998,437

Int. Cl.[5] C23F *11/16*

U.S. Cl. 252—393 **8 Claims**

1. In a process comprising contacting a ferrous metal surface with a hydrocarbon fluid containing a corrosive amount of naphthenic acid, the improvement wherein the fluid contains a corrosion-inhibiting amount of sulfonated alkyl-substituted phenol.

4. A method of catalytically treating a hydrocarbon fluid, comprising:

adding a corrosion-inhibiting amount of sulfonated alkyl-substituted phenol to a hydrocarbon fluid containing a corrosive amount of naphthenic acid;

contacting metal surfaces of process piping with the corrosion-inhibited hydrocarbon fluid; and

contacting hydrocarbon-treating catalyst with the corrosion-inhibited hydrocarbon fluid downstream from said metal surfaces, wherein the hydrocarbon fluid is substantially free of catalyst-impairing amounts of iron corrosion products.

5,252,255

CONDUCTIVE METAL-FILLED SUBSTRATES VIA DEVELOPING AGENTS

Paul Y. Y. Moy, Des Plaines; William J. E. Parr; Dieter Frank, both of Naperville, all of Ill., and Ronald E. Hutton, Faversham, England, assignors to Akzo America Inc., Dobbs Ferry, N.Y.

Division of Ser. No. 204,137, Jun. 8, 1988, Pat. No. 4,961,879. This application Jun. 11, 1990, Ser. No. 521,772

Int. Cl.[5] H01B *1/00, 1/02, 1/20, 1/22*

U.S. Cl. 252—512 **20 Claims**

1. A conductive metal-filled substrate produced by a method comprising:

a. an intermingling step of intermingling metal particles in a deformable substrate, wherein the metal particles are selected from the group consisting of copper, nickel, and combinations thereof, and are intermingled in a quantity sufficient to achieve a conductive three-dimensional substrate;

b. a contacting step of contacting the metal particles with a

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developing agent comprising a long-chain aliphatic tertiary amine; and

c. a heating step of subjecting the metal particles and the developing agent to heat, in the substantial absence of oxygen, at a temperature and for a duration sufficient to improve the conductivity of the metal-filled substrate.

5,252,256

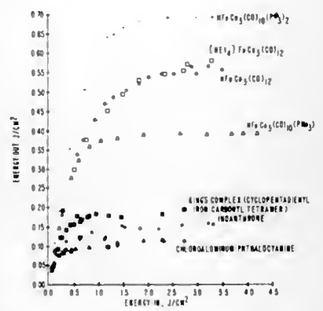
PASSIVE PROTECTION OF OPTICALLY SENSITIVE MATERIALS WITH TRANSITION METAL ORGANOMETALLIC CLUSTER COMPOUNDS

Lee W. Tutt, Thousand Oaks, and Stephen W. McCahon, Newbury Park, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 29, 1990, Ser. No. 502,076

Int. Cl.[5] **F21V** *9/00;* **G02B** *5/24*

U.S. Cl. 252—582 **1 Claim**



1. A passive optical protector comprising:

a shield for limiting the intensity of visible light passing through said shield, said shield comprising an absorber medium having reverse saturable absorption properties in the visible light spectrum, said absorber medium comprising an organometallic cluster compound selected from the group consisting of cyclopentadienyl iron carbonyl tetramer, cyclopentadienyl ruthenium carbonyl tetramer, mu-hydride-iron tricobalt dodecacarbonyl, tetra ethyl ammonium iron tricobalt dodecacarbonyl, mu-hydrido iron tricobalt decacarbonyl bistrimethyl phosphine, and mu-hydrido iron tricobalt decacarbonyl bistriphenyl, wherein the absorber medium further comprises a carrier for the organometallic cluster compound and the carrier is a solid polymer.

5,252,257

WATER-CONTAINING CONCENTRATE OF AT LEAST ONE ALKYL- OR ALKENYL-SUBSTITUTED AMMONIUM COMPOUND

Heinz Hoffmann, Bayreuth; Günther Hertel, and Hubert Seitz, both of Burgkirchen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Feb. 12, 1992, Ser. No. 834,414

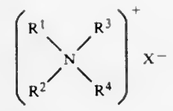
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1991, 4104618

Int. Cl.[5] **C11D** *1/62*

U.S. Cl. 252—547 **11 Claims**

1. A water-containing concentrate of at least one alkyl- or alkenyl-substituted ammonium compound consisting essentially of

a) 40 to 85% by weight of an ammonium compound of the formula



(I)

in which

R^1 is a straight-chain alkyl radical or a straight-chain alkenyl radical having 12, 14, 16, or 18 carbon atoms,

R^2 is a straight-chain alkyl radical or a straight-chain alkenyl radical (1) having 4, 5, or 6 carbon atoms wherein R^1 has 12 carbon atoms, (2) having 5 or 6 carbon atoms when R^1 has 14 carbon atoms, (3) having 6 or 7 carbon atoms when R^1 has 16 carbon atoms, or (4) having 7 or 8 carbon atoms when R^1 has 18 carbon atoms,

R^3 and R^4, which are identical or different, are a hydrogen atom or a methyl radical, and

X is a chloride, bromide, methylsulfate, phenylsulfonate, or methylphenylsulfonate anion,

or of a mixture of such ammonium compounds, and

(b) 15 to 60% by weight of water, percentages by weight being relative to the total mixture.

5,252,258

METHOD OF RECOVERING AND STORING RADIOACTIVE IODINE BY FREEZE VACUUM DRYING PROCESS

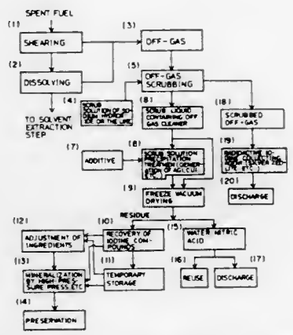
Katsuyuki Ohtsuka; Jin Ohuchi, and Toru Suzuki, all of Ibaraki, Japan, assignors to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan

Continuation of Ser. No. 411,147, Sep. 22, 1989, abandoned. This application Aug. 15, 1991, Ser. No. 746,818

Claims priority, application Japan, Sep. 26, 1988, 63-240069

Int. Cl.[5] **G21F** *9/16*

U.S. Cl. 252—628 **4 Claims**



1. A method for recovering radioactive iodine from an off-gas generated when spend nuclear fuel is being reprocessed, which comprises passing the off-gas through a scrubbing solution capable of dissolving the radioactive iodine to separate the radioactive iodine from the off-gas, adding a compound to the scrubbing solution which forms a precipitate with the radioactive iodine dissolved in the scrubbing solution, and freeze drying the scrubbing solution containing the precipitated radioactive iodine.

5,252,259

PURIFICATION OF SULFUR HEXAFLUORIDE

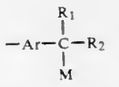
Steven J. Hardwick, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Apr. 22, 1991, Ser. No. 688,772

Int. Cl.[5] **C09K** *15/00;* **C08F** *14/00;* **C02F** *1/70*

U.S. Cl. 252—188.28 **3 Claims**

1. A macroreticulate polymer scavenger comprising the reaction product of (1) sulfur hexafluoride and (2) a metallated macroreticulate polymer having a plurality of pendant functional groups or mixtures of functional groups having the general formula:



where Ar is an aromatic hydrocarbon radical containing from one to three rings, R_1 and R_2 are the same or different and are selected from the group consisting of hydrogen and alkyl hydrocarbon radicals containing from 1 to 12 carbon atoms, and M is lithium, said metallated macroreticulate polymer having within its pores a compound selected from the group consisting of a 1–12 carbon alkyl compound of lithium, a hydride of lithium, and mixtures thereof.

5,252,260

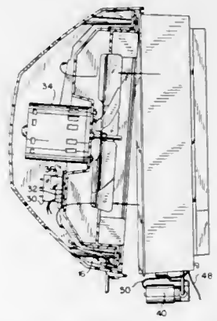
HUMIDIFIER ELECTRICAL CONTROL ASSEMBLY

Daniel C. Schuman, Oregon, Wis., assignor to Research Products Corporation, Madison, Wis.

Filed May 14, 1992, Ser. No. 882,891

Int. Cl.[5] **B01F** *3/04*

U.S. Cl. 261—26 **6 Claims**



1. An electrical control assembly for a humidistat controlled humidifier of the type having

a base connected to the furnace ductwork and in which is housed an evaporative pad and a water feed tube to supply water to a distribution tray for the pad with one end of the feed tube connected to a solenoid valve that controls the flow of water and

a cover removably connected to the base and in which is housed an electrically powered fan, said control assembly comprising:

a control circuit board mounted in the cover and having a primary circuit for operation of the fan and a secondary circuit for operation of the humidistat and solenoid valve,

means for providing electrical power to said circuit board and

a separable electrical connector disposed within the humidifier and having a connected state in which power is supplied to the humidistat and the solenoid valve and a disconnected state in which power to the humidistat and solenoid valve is cut off.

5,252,261

ADJUSTMENT SAFEGUARD FOR AN ADJUSTING SCREW

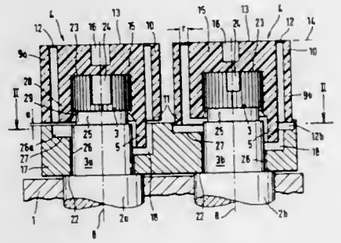
Reinhard Gerhardy, Korb, Fed. Rep. of Germany, assignor to Andreas Stihl, Waiblingen

Filed Mar. 11, 1993, Ser. No. 29,608

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1992, 4210553

Int. Cl.[5] **F02M** *3/08*

U.S. Cl. 261—71 **16 Claims**



1. An adjustment safeguard for an adjusting screw rotatably held in a housing, the adjusting screw having a head outside of the housing, the adjustment safeguard comprising:

a cap defining a longitudinal axis and being mounted on said head so as to be accessible to an operator for imparting a rotational movement thereto;

holding means for holding said cap on said head to prevent a rotation of said cap relative to said head and to permit said rotational movement to be transmitted to said adjusting screw;

said cap having an appendage formed thereon;

structure means disposed between said cap and said housing;

stop means fixedly provided on said structure means for coacting with said appendage of said cap to define and delimit a rotational range through which said adjusting screw can be rotated;

a sleeve connected to one of said structure means and said cap so as to be arranged approximately coaxially with said cap and in radial surrounding relationship thereto;

said sleeve and said cap being mutually separated by a small radial clearance (r);

said cap having a predetermined length measured along said axis; and,

said cap being disposed along said length thereof essentially entirely within said sleeve.

5,252,262

METHOD OF ATTACHING A HAPTIC TO AN OPTIC OF AN INTRAOCULAR LENS

Anilbhai S. Patel, Arlington, Tex., assignor to Nestle S.A., Vevey, Switzerland

Filed Feb. 11, 1992, Ser. No. 833,872

Int. Cl.[5] **B29D** *11/00*

U.S. Cl. 264—1.4 **55 Claims**

1. A method for attaching at least one colored haptic to an optic of an intraocular lens, comprising the steps of:

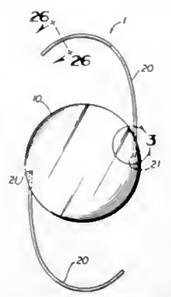
a. providing a peripheral edge of the optic with at least one hole;

b. inserting an end of the haptic into the hole;

c. aiming at a portion of the haptic within the hole a laser having a power level of less than 5 watts and emitting

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radiation within a visible spectrum that is matched to the radiation absorption spectrum of the colored haptic; and



d. firing the laser so that the radiation passes through the optic essentially without absorption and is absorbed by the haptic, thereby causing the haptic to fuse with the optic.

5,252,263

INDUCTION OF ASYMMETRY IN VESICLES

Michael J. Hope, and Pieter R. Cullis, both of Vancouver, Canada, assignors to The Liposome Company, Inc., Princeton, N.J.

Division of Ser. No. 61,837, Jun. 12, 1987, Pat. No. 5,204,112, which is a continuation-in-part of Ser. No. 874,575, Jun. 16, 1986, abandoned. This application Mar. 17, 1992, Ser. No. 854,107

Int. Cl.[5] B01J *13/00*; **A61K** *9/127*

U.S. Cl. 264—4.3 **42 Claims**

1. A method for obtaining asymmetric liposomes having an outer bilayer which comprises an ionizable lipid or an ionizable protein wherein the outer bilayer has an asymmetric distribution of the ionizable lipid or ionizable protein within the two monolayers which comprise the outer bilayer, wherein the method comprises the steps of:

(a) preparing liposomes with an internal aqueous buffer of between about pH 2.0 and about pH 7.5; and

(b) exposing the liposomes of step (a) to an external aqueous buffer of between about pH 8.0 and about pH 14.0 to obtain the asymmetric liposomes.

5,252,264

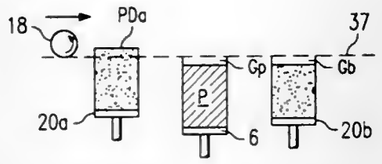
APPARATUS AND METHOD FOR PRODUCING PARTS WITH MULTI-DIRECTIONAL POWDER DELIVERY

Paul F. Forderhase, Austin; Carl R. Deckard, Round Rock, both of Tex., and Jack M. Klein, Downey, Calif., assignors to DTM Corporation, Austin, Tex.

Filed Nov. 8, 1991, Ser. No. 789,358

Int. Cl.[5] B23K *26/00*

U.S. Cl. 264—22 **26 Claims**



1. A method for delivering powder to a target area at a surface in an apparatus in the production of parts by an additive process, comprising:

lifting a first volume of powder above said surface at a first location on a first side of said target area;

moving a member across said target area from beyond said first location so that a first layer of powder is delivered across said target area;

performing said additive process to selected portions of said first layer of powder at said target area;

lifting a second volume of powder above said surface at a second location on a second side of said target area;

after said performing step, moving said member across said target area from beyond said second location so that a second layer of powder is delivered across said target area; and

performing said additive process to selected portions of said second layer of powder at said target area.

5,252,265

METHOD FOR THE PRODUCTION OF MANUFACTURED ARTICLES OF RESIN OR COMPOSITE MATERIAL WITH A POLYMERIZABLE RESIN MATRIX USING ELECTRON BEAMS

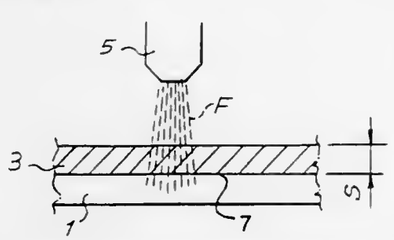
Gianfranco Cirri, Florence, Italy, assignor to Proel Tecnologie, S.p.A., Florence, Italy

Filed Apr. 24, 1992, Ser. No. 873,364

Claims priority, application Italy, May 6, 1991, FI91 A 000100

Int. Cl.[5] B29C *35/08*

U.S. Cl. 264—22 **3 Claims**



1. A method for the polymerization of resins using electron beams, comprising:

a) producing a first layer or a portion of a first layer of curable or polymerizable resin, said first layer having a thickness limited dependent upon power of an electron beam producing apparatus to be used;

b) completely curing or polymerizing said layer or portion of said layer by means of an electron beam produced by said electron beam producing apparatus;

c) applying on said already polymerized layer or portion of said layer, a further layer or a portion of a further layer of polymerizable resin, said further layer having a thickness limited dependent upon power of the electron beam producing apparatus;

d) completely curing or polymerizing said further layer or portion of said further layer applied on said already polymerized layer by the electron beam produced by said electron beam producing apparatus by directing the beam toward said further layer on the side of said further layer to form a substantially homogenous thicker layer or portion of a substantially homogenous thicker layer, said substantially homogenous thicker layer including said first and said further polymerized layers or portions of said first and further polymerized layers, molecular linking being obtained through the boundary surface between said first and said further layer or portion; and

e) repeating steps c and d above as necessary until a desired final thickness of a homogenous polymerized resin structure is obtained.

5,252,266

CONTROL OF THE HARDENING OF BINDERS AND CEMENTS

William N. Brabston, 109 Plantation Dr., and Philip G. Malone, 107 Fox Run La., both of Vicksburg, Miss. 39180

Filed Jul. 2, 1992, Ser. No. 908,280

Int. Cl.[5] H05B *7/00*

U.S. Cl. 264—22 **9 Claims**

1. A method of controlling the setting of a cement which is selected from the group consisting of alkali-activated cements and acid-activated cements, comprising the steps of:

mixing the selected cement with a solution of a salt which yields, under electrolysis, an activating agent for the selected cement, to thereby form a soft paste;

placing the soft paste in a mold;

providing a first electrode in a volume of the soft paste where it is desired that the paste remain soft;

providing a second electrode in a volume of the soft paste where setting of the cement in the paste is desired; and

passing a current having a direction of flow through the paste between the first and second electrodes, the direction of current flow being such as to cause formation of the activating agent at the second electrode to thus cause the setting of the cement in the volume of the paste at the second electrode while also allowing the volume of the paste at the first electrode to remain soft.

5,252,267

PROCESS FOR MICROWAVE SINTERING BORON CARBIDE

Cressie E. Holcombe, 440 Sugarwood Dr., Knoxville, Tenn. 37922, and Marvin S. Morrow, Rte. #3, Box 113, Kingston, Tenn. 37763

Filed Mar. 18, 1993, Ser. No. 33,931

Int. Cl.[5] C04B *35/56*

U.S. Cl. 264—26 **6 Claims**

1. A method of microwave sintering boron carbide comprising the following steps:

Step 1—leaching boron carbide powder with an aqueous solution of nitric acid to form a leached boron carbide powder;

Step 2—coating said leached boron carbide powder of Step 1 with a glassy carbon precursor to form a coated boron carbide powder;

Step 3—consolidating said coated boron carbide powder of Step 2 to form a consolidated powder and enclosing said consolidated powder in an enclosure of boron nitride particles coated with a of glassy carbon within a container for microwave heating to form consolidated and an enclosed coated boron carbide powder; and

Step 4—sintering said consolidated and enclosed coated boron carbide powder within said container for microwave heating with microwave energy.

5,252,268

METHOD OF CONTROLLING EXTRUSION OF MULTILAYER PARISON

Yoshitaka Ohno, Kanagawa, Japan, assignor to The Japan Steel Works, Ltd., Tokyo, Japan

Filed Mar. 24, 1992, Ser. No. 856,719

Claims priority, application Japan, Apr. 15, 1991, 3-109826

Int. Cl.[5] B29C *47/92*

U.S. Cl. 264—40.7 **6 Claims**

1. A method of controlling the extrusion of a multilayer parison using an apparatus including three extruders respectively communicating with a main resin accumulator, an auxiliary resin accumulator and an adhesive accumulator, said main resin accumulator communicating with innermost and outermost annular fluid passages, said auxiliary resin accumulator communicating with a central annular fluid passage through auxiliary passageways, and said adhesive resin accumulator communicating with inner and outer intermediate annular passages being respectively disposed between said central annular fluid passage and said innermost and said outermost fluid passages, said method comprising the following steps:

closing said auxiliary and intermediate fluid passageways;

accumulating said main resin, said auxiliary resin and said adhesive respectively into said main resin accumulator, said auxiliary resin accumulator and said adhesive accumulator;

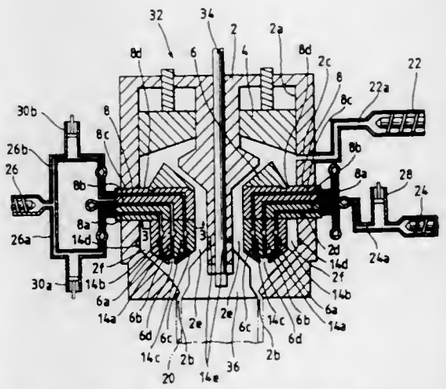
opening said auxiliary and intermediate passageways and injecting said main resin, said auxiliary resin and said adhesive from their respective accumulating chambers and into their respective fluid passages so that said main and auxiliary resins and said adhesive are extruded from their respective fluid passages;

determining the pressures of said resins and said adhesive in said fluid passages;

controlling the degree of opening of said auxiliary and adhesive passageways based on the determined pressures such that the pressure difference between said determined pressures is below a preset value; and

terminating the injection of said main resin from said main resin accumulator and closing said auxiliary and adhesive passageways so that the extrusion of said main resin, the auxiliary resin and the adhesive are terminated.

6. A multilayer parison extrusion apparatus, comprising:



three extruders respectively communicating with a main resin accumulator, an auxiliary resin accumulator and an adhesive accumulator, said main resin accumulator communicating with innermost and outermost annular fluid passages, said auxiliary resin accumulator communicating with a central annular fluid passage through an auxiliary passage, and said adhesive resin accumulator communicating through an adhesive passage with inner and outer intermediate annular fluid passages being respectively disposed between said central annular fluid passage and said innermost and said outermost fluid passages;

pressure detecting means respectively provided in said innermost annular fluid passage, said outermost annular fluid passage, said central annular fluid passage, and said intermediate annular passages for detecting pressures of a main resin, an auxiliary resin and an adhesive resin in respective annular fluid passages; and

valve means respectively provided in said auxiliary passage and said adhesive passage for opening and closing said auxiliary and adhesive passages, and controlling the degree of opening of said auxiliary and adhesive passageways based on the detected pressures such that the pressure difference between said detected pressures is below a present value.

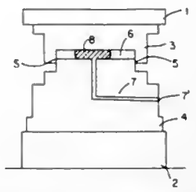
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5,252,269

METHOD FOR MOLDING POLYPROPYLENE RESIN

Takahisa Hara, Kawanishi; Masahito Matsumoto, Ibaraki; Nobuhiro Usui, Takatsuki, and Shigeyoshi Matubara, Osaka, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed Oct. 4, 1991, Ser. No. 770,924
Claims priority, application Japan, Oct. 5, 1990, 2-269203
Int. Cl.[5] B29C *67/22*
U.S. Cl. 264—45.3 **10 Claims**



1. A method for producing a foamed article of a polypropylene resin, which comprises steps of:
providing a pair of male and female molds (3,4) which are slidably moved at an engaged part (5) and in which a cavity clearance (t) is freely set,
starting supply of a melt of a polypropylene resin (8) containing a chemical blowing agent through a resin melt conduit (7) which is provided in one of said male and female molds when said cavity clearance (t) is 1.0 mm or less,
moving at least one of said male and female molds to increase said cavity clearance (t) during said supply of said polypropylene resin melt (8) so that a pressure on said resin melt in said mold cavity is adjusted in a range between 5 kg/cm^2 and 100 kg/cm^2,
forming a skin layer by applying a pressure of from 5 kg/cm^2 to 100 kg/cm^2 on said resin melt (8) as soon as said resin supply is finished,
further increasing said cavity clearance (t) to form a foamed core layer and
cooling a foamed article in said molds.

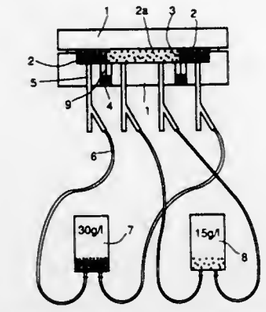
5,252,270

METHOD OF FORMING FOAM MOLDINGS HAVING VARIED DENSITY REGIONS

Udo Haardt, Biblis, and Hermann Tatzel, Weinheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 809,373, Dec. 18, 1991, Pat. No. 5,164,257. This application May 6, 1992, Ser. No. 879,431
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1990, 4040908
Int. Cl.[5] B29C *67/22*
U.S. Cl. 264—45.4 **4 Claims**

1. A process for the production of a molding having a mean density of from 0.015 to 0.100 g/cm^3 and having at least two different regions whose densities differ by from 0.005 to 0.030 g/cm^3, the transition zone between the different density regions having a thickness of not more than 25 mm, which process comprises introducing polyolefin foam particles having substantially the same density into individual chambers of a mold divided into at least two chambers by removable dividing walls, said chambers being filled at different pressures or applying different degrees of compression to the particles after the chambers have been filled, thereby providing regions of different density, removing the divided walls, and heating the particles by passing steam or hot air into the mold so that they soften, expand and weld to one another.

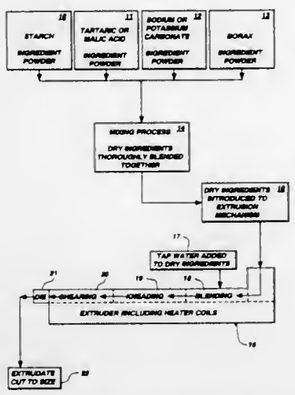


5,252,271

BIODEGRADABLE PACKAGING FOAM AND METHOD OF PREPARATION

Hyrum J. Jeffs, Lehi, Utah, assignor to Bio-Products International, Midvale, Utah

Filed Oct. 22, 1991, Ser. No. 781,509
Int. Cl.[5] B29C *67/22*
U.S. Cl. 264—54 **12 Claims**



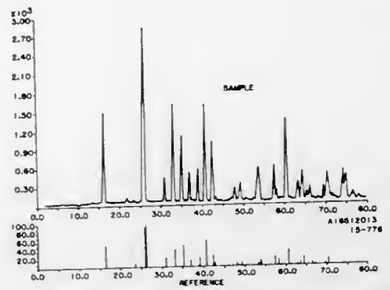
1. A method for producing a foamed packing material of biodegradable composition, comprising the steps of:
a) selecting a dry, powdered, starch material having no greater than 30% (w) water content;
b) admixing to the starch material a mild acid in dry, powdered form selected from the group consisting of malic acid, tartaric acid, citric acid, maleic acid and succinic acid, said acid being at a composition percentage of 0.2 to 7% (w) of the total starch composition;
c) admixing to the starch material a dry, powdered carbonate composition capable of reacting with acid to generate CO2 gas, said carbonate composition being at a composition percentage of 0.1 to 2% (w) of the total starch composition;
d) introducing the admixed dry materials of steps a), b) and c) within an initial stage of a screw impeller within an extrusion means;
e) adding sufficient water to the dry materials of step d) at the initial stage of the impeller to convert the dry materials to a gelatinous state when subjected to elevated temperatures and pressures within the extrusion means;
f) mixing and advancing the product of step e) within an extrusion barrel of the extrusion means to generate elevated heat and pressure for converting the material to the gelatinous state;
g) concurrently reacting the acid within the extrusion barrel (i) with the starch material for decreasing molecular weight of the starch material while disrupting the uniformity of hydrogen bonding within and between starch chains, and (ii) with the carbonate material to produce CO2 for expanding the starch at reduced molecular weight and increased structural randomness of the starch chains; and
h) discharging the product of step g) through a die opening to generate expansion of the CO2 to form a closed cellular structure having a density less than 0.032 grams per cubic centimeter and with resilient properties which enable substantial return of the compressed structure to its original, expanded shape with structural integrity.

5,252,272

THERMAL SHOCK AND CREEP RESISTANT POROUS MULLITE ARTICLES PREPARED FROM TOPAZ AND PROCESS FOR MANUFACTURE

Bulent O. Yavuz, Plainfield; Matthew P. Larkin, Phillipsburg, and Kenneth E. Voss, Somerville, all of N.J., assignors to Engelhard Corporation, Iselin, N.J.

Continuation-in-part of Ser. No. 567,995, Aug. 16, 1990, Pat. No. 5,173,349, and a continuation-in-part of Ser. No. 386,186, Jul. 28, 1989, abandoned. This application Jul. 9, 1991, Ser. No. 727,207
The portion of the term of this patent subsequent to Oct. 22, 2009, has been disclaimed.
Int. Cl.[5] C04B *35/10*
U.S. Cl. 264—62 **12 Claims**



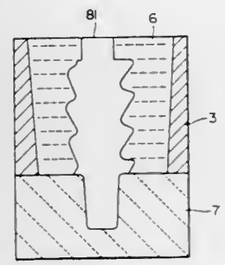
1. A process for forming a honeycomb-shaped article comprising interconnected mullite whiskers comprising the steps of:
a. preparing a mixture of a fugitive binder, hydrated aluminum fluoride and silicon dioxide, the proportions of aluminum fluoride and silicon dioxide being approximately stoichiometric to form topaz;
b. forming said mixture from Step (a) into a coherent green body;
c. firing said green body from Step (b) while removing volatiles until said body is converted substantially completely into interconnected bar-like topaz crystals;
d. recovering said interconnected bar-like topaz crystals and mixing them with a material selected from the group consisting of silicon dioxide; silicon dioxide and hydrated aluminum fluoride; and silicon dioxide, hydrated aluminum fluoride and alumina, together with a fugitive binder, said material being mixed with said topaz in proportion substantially stoichiometric for producing mullite;
e. forming the mixture from Step (d) into a honeycomb; and
f. firing said honeycomb at elevated temperature while removing volatiles, including silicon tetrafluoride, as said volatiles are formed until substantially complete conversion of said honeycomb to mullite whiskers occurs.

5,252,273

SLIP CASTING METHOD

Junji Sakai, Ibaraki; Masahisa Sobue, Mito, and Yoshiyuki Yasutomi, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 23, 1991, Ser. No. 704,925
Claims priority, application Japan, May 30, 1990, 2-138223
Int. Cl.[5] B28B *1/26, 7/20;* **B29C** *33/40, 33/76*
U.S. Cl. 264—86 **14 Claims**



1. A method of slip casting to form a molded object having a high level of dimensional accuracy, comprising the steps of:
setting a metal pattern in a mold;
pouring a solution of a flexible organic material into a cavity between said mold and said metal pattern, said solution gelling when cooled to form a flexible compressible gel and said gel becoming a liquid when heated to a temperature lower than a boiling point of water;
cooling said poured solution to form said flexible compressible gel, said flexible compressible gel maintaining a desired shape in a slurry to be cast;
removing said metal pattern from said mold to form a flexible compressible pattern from said flexible compressible gel, said flexible compressible pattern defining a space in said mold;
setting said flexible compressible pattern on a liquid absorbing mold to from a composite mold;
pouring said slurry comprising ceramic particles dispersed in water into said space;
absorbing said water of said slurry into said liquid absorbing mold of said composite mold until said slurry turns into a green body while said flexible compressible pattern maintains said desired shape, said flexible compressible pattern of said composite mold absorbing stresses caused by shrinkage of said green body during molding of said green body;
removing said flexible compressible pattern from said green body by liquefying said flexible compressible pattern; and
drying said green body from which said flexible compressible pattern has been removed to form said molded object with said high level of dimensional accuracy.

5,252,274

PROCESS FOR MANUFACTURE OF CONTAINERS FOR MATERIALS BEING HEATED

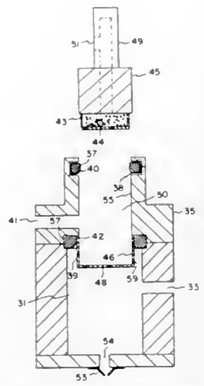
James E. Thomas, Monroe, N.C., assignor to CEM Corporation, Matthews, N.C.

Filed Apr. 13, 1992, Ser. No. 867,891
Int. Cl.[5] B28B *1/26*
U.S. Cl. 264—87 **8 Claims**

1. A process for manufacturing porous containers which comprises 1) making a dilute dispersion of microfibers in a liquid carrier, 2) depositing such microfibers on the interior of a female mold which is of a shape suitable to mold a container,

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which mold has an interior and an exterior and which includes a bottom and side wall or walls that are permeable to the liquid carrier but through which the microfibers do not pass, by feeding such dispersion to the female mold interior and subjecting it to a pressure differential between the mold interior and exterior so that the liquid of the dispersion passes through the mold bottom and side wall or walls, leaving the microfibers deposited on the interior thereof in the shape of a container, thereby forming an exterior of such container, which matches the female mold interior, 3) moving a male mold, which matches the female mold, with the container therein, and



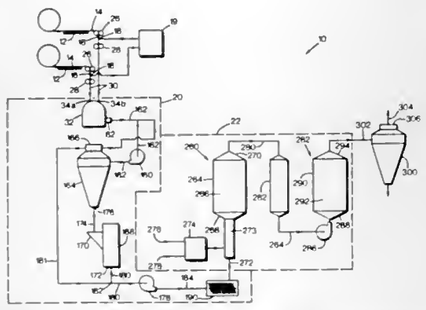
which has an interior and an exterior and which includes a bottom and side wall or walls that are permeable to liquid, into position inside the female mold and inside the container therein, 4) terminating the pressure differential between the female mold interior and exterior, 5) applying a pressure differential between the male mold exterior and interior so that the container is pressed against the exterior of the male mold and released from the interior of the female mold, 6) withdrawing the male mold from the female mold with the container being held to the male mold, and 7) releasing the container from the male mold.

5,252,275

METHOD OF DENSIFYING CROSSLINKED FIBERS

Rolland F. Sultze, Everett; Fred B. Howard, Gig Harbor, and Peter A. Graef, Tacoma, all of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed Mar. 7, 1991, Ser. No. 665,761
Int. Cl.[5] B29C *59/00*
U.S. Cl. 264—119 30 Claims



1. A method of forming densified absorbent web structures from crosslinked fiber, the method comprising:

forming a web of high-bulk crosslinked fiber having an absorbent capacity wherein the loading level of the crosslinking agent is from about 2.5 molar % to about 5.0 molar %; and

applying heat and pressure to the web to compress the web from a first density to a second density, the web remaining in a densified state following removal of the pressure and retaining a substantial majority of the absorbent capacity of the uncompressed web.

5,252,276

METHOD OF MAKING BOARD MADE OF LIGNITE ASH-SLAG, WOOD PARTICLES AND SYNTHETIC ADHESIVE

Sorin N. Marpozan, Staten Island, N.Y.; Delia G. Dimitriu, and Gherghina Ciobanu, both of Bucharest, Romania, assignors to Logic S.R.L. & Logic Systems International Ltd., New York, N.Y.

Filed Apr. 29, 1992, Ser. No. 875,473
Claims priority, application Romania, Dec. 9, 1991, 148923
Int. Cl.[5] B29C *43/14*
U.S. Cl. 264—120 7 Claims

1. A method of manufacturing a lignite ash-slag construction board comprising the steps of:

mixing lignite ash-slag with a synthetic adhesive;

separately mixing wood particles with said adhesive;

combining the lignite ash-slag mixture with the wood particle mixture;

forming the combined mixture into a blanket or a mat;

cold pressing the blanket of the combined mixture;

heat pressing the cold pressed blanket of the mixture and thereby forming said board.

5,252,277

PROCESS FOR SPINNING POLYPEPTIDE FIBERS FROM SOLUTIONS OF LITHIUM THIOCYANATE AND LIQUEFIED PHENOL

William C. Uy, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 23, 1992, Ser. No. 965,787
Int. Cl.[5] D01F *4/00, 4/02*
U.S. Cl. 264—129 11 Claims

1. A process for forming polypeptide fibers, comprising the steps of:

a) forming a spinnable solution comprising 5 to 40% by weight of polypeptide in a solvent comprising lithium thiocyanate dissolved in a liquified phenol selected from the group consisting of phenol, m-chlorophenol, m-fluorophenol, and m-bromophenol and mixtures thereof, and

b) extruding the solution through a spinneret to form polypeptide fibers.

5,252,278

METHOD OF MAKING A MATTRESS OVERLAY

Donald C. Spann; Daniel J. Schaefer, both of Greenville, S.C., and Thomas A. Krouskop, Stafford, Tex., assignors to Span-America Medical Systems, Inc., Greenville, S.C.

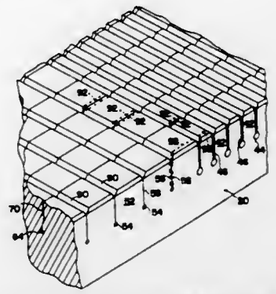
Division of Ser. No. 372,860, Jun. 28, 1989, Pat. No. 5,025,519, which is a continuation of Ser. No. 235,806, Aug. 23, 1988, Pat. No. 4,862,538, which is a continuation of Ser. No. 921,968, Oct. 22, 1986, abandoned. This application Jan. 10, 1991, Ser. No. 639,790
Int. Cl.[5] A47C *27/14*
U.S. Cl. 264—138 37 Claims

2. A method of making a mattress pad for providing systematized pressure dispersion for a person reclined thereon, comprising:

providing a main body of resilient material having a predetermined thickness and predetermined density; and an upper support surface, defined by said main body, for receipt of a person thereon;

making a plurality of parallel longitudinal and parallel transverse cuts in said main body to a given depth thereof, for defining a plurality of rectangular-shaped elements;

defining a plurality of sections in said body, with each respective section including at least two adjacent transverse rows of said rectangular-shaped elements, and having predetermined element cross-sections which are generally constant over the respective section but which differ among said sections; wherein



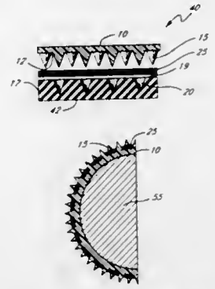
said cuts are made so as to form 25% ILD characteristics in respective sections in said body generally in a range from about 17 pounds to about 26 pounds, where 25% ILD stands for 25% indentation load deflection as defined by the number of pounds of pressure required to push a 50 square inch circular plate into said main body so as to compress same by 25% of its predetermined thickness, so as to form a support system for dispersing pressure in a desired manner for all parts of a person reclined thereon for optimized prevention of decubitus ulcers.

5,252,279

METHOD FOR MAKING PERFORATED ARTICLES

Gerald W. Gore, Placentia; Philip H. Milner, Jr., Newport Beach, and Gordon A. Petersen, Fountain Valley, all of Calif., assignors to Reinhold Industries, Santa Fe Springs, Calif.

Filed Jan. 17, 1991, Ser. No. 642,641
Int. Cl.[5] B29D *19/08;* B29C *67/14*
U.S. Cl. 264—154 19 Claims



1. A method of manufacturing a perforated article, comprising:

a. providing a woven material impregnated with a high flow curable resin, wherein portions of said material are desired to form part of said perforated article;

b. providing a flexible mold constructed from a plurality of mold sections, said flexible mold having a plurality of spaced studs projecting from a surface of said mold and a size and shape such that the flexible mold can completely cover the desired portions of said material;

c. providing a pressure transmitting pad having stud holes positioned and sized so as to permit said studs on said flexible mold to fit within said stud holes;

d. placing said woven material in contact with said pressure transmitting pad;

e. placing said flexible mold in contact with said woven material, aligning said studs in said flexible mold with said stud holes in said pressure transmitting pad, thereby forming a composite structure;

f. applying pressure to said composite structure so as to push said studs through said woven material into said stud holes;

g. removing said pressure transmitting pad;

h. forming said flexible mold having said woven material thereon to a desired contour by placing said flexible mold on a forming tool having said desired contour;

i. partially curing said high flow curable resin impregnated in said woven material for a time sufficient to provide a substantially rigid article such that the article may be removed from said flexible mold without causing a permanent deformation of said article;

j. removing the woven material from said flexible mold after the partial cure of the resin; and

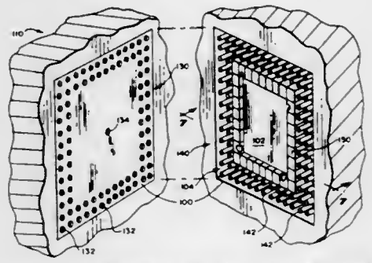
k. further curing said curable resin after removing the woven material from the mold.

5,252,280

METHOD FOR FILLING AN INJECTION MOLD

Stephen A. Motisl, 44W738 Littlewoods Trail, Hampshire, Ill. 60140

Filed Apr. 8, 1992, Ser. No. 865,187
Int. Cl.[5] B29C *45/40*
U.S. Cl. 264—161 13 Claims



1. A method for molding a moldable material comprising:

a) forming an injection mold with a center portion divided into an inner cavity and an outer cavity;

b) providing a wall to separate said center portion into said inner cavity and said outer cavity, said wall surrounding said inner cavity and including at least one repositionable subgate and at least one solid wall defining member combining to form said wall;

c) filling said inner cavity with said moldable material;

d) permitting said moldable material to pass from said inner cavity, through said at least one repositionable subgate into said outer cavity of said mold;

e) permitting said moldable material to be formed into a molded article having a center piece formed by said inner cavity, a connecting piece formed by said at least one subgate, and a finished product formed by said outer cavity, said connecting piece removably connecting said finished product to said center piece;

f) removing said center piece and said connecting piece from said finished product; and

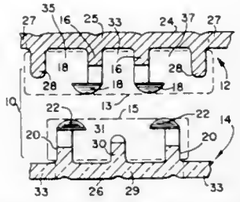
g) recovering said finished product.

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5,252,281
APPARATUS AND METHOD FOR MANUFACTURE OF A MULTI-COLORED CLOSURE MEMBER OF A CLOSURE PROFILE

Catherine Kettner; Mladomir Tomic, and Michael Kolosso, all of Appleton, Wis., assignors to Reynolds Consumer Products Inc., Appleton, Wis.

Filed Nov. 12, 1992, Ser. No. 974,767
Int. Cl.[5] B29C *47/04*
U.S. Cl. 264—171 8 Claims



1. An apparatus for producing a multi-colored closure member of a closure profile, comprising:
a die plate including an input face with an input port for receiving melted materials as separate streams, each of the melted materials having a different color, an output face with an output port for extruding the melted materials as a single stream in a form of the closure member of the closure profile, and a uniform channel extending from the input port to the output port for merging said separate streams into said single steam, both the input port and the output port being shaped in the form of the closure member; and
means for channeling each of the melted materials as a separate stream to a selected section of the input port, each of the selected sections producing a specific portion of the multi-colored closure member.

7. A method of producing a multi-colored closure member of a closure profile, comprising the steps of:
(a) providing a least two melted materials to an extrusion die as separate streams, each of the melted materials having a different color; and
(b) merging and extruding the separate streams of the melted materials along a uniform channel in said extrusion die to form a first closure member.

5,252,282
POLYESTERS WITH LOW CRYSTALLIZATION SPEED AND PROCESS FOR PRODUCING THEM

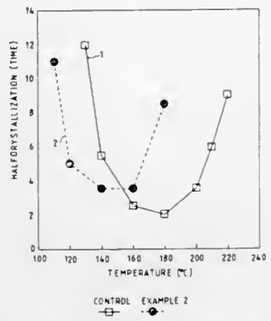
Riccardo Po', Via Rosmini 20; Ernesto Occhiello, Corso Cavallotti 13, and Fabio Garbassi, Via C. Porta 6, all of Novara, Italy

Filed Jul. 15, 1992, Ser. No. 915,349
Claims priority, application Italy, Jul. 18, 1991, MI91 A/001990
Int. Cl.[5] B29C *47/00*
U.S. Cl. 264—177.13 17 Claims

1. Low-crystallization-speed polyesters obtained by means of the polycondensation of at least one (C_2–C_{10})-alkylene or -cycloalkylene glycol with a mixture constituted by terephthalic acid, or a derivative thereof, and 2–50 mol %, relatively to total mols, of a reactant having the general formula:

ROOC-Ar-OOC-Ar'-COO-Ar-COOR (I)

wherein
Ar and Ar' which may be the same, or different from each other, represent aromatic radicals of from 6 to 20 carbon atoms, and



R represents a hydrogen atom or a (C_1–C_4)-alkyl radical, or the OR group is replaced by a halogen.

5,252,283
EXTRUSION METHOD

Edward J. Wenzel, Troy, and Donald L. Franck, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 31, 1992, Ser. No. 938,108
Int. Cl.[5] B29C *47/88*
U.S. Cl. 264—177.170 8 Claims



1. In a method of extruding plastic materials through a heated extrusion shaping die into an extrudate strip, said strip having an aesthetic surface and an opposing surface, the aesthetic surface having a surface finish susceptible to shock line defects caused by erratic downstream motions of said extrudate, the improvement comprises riding the opposing surface of said extrudate on a unidirectionally rotatable roller prior to entering a cooling station such that any downstream erratic motion is dampened and absorbed by said roller and the formation of any shock lines on said aesthetic surface is obviated.

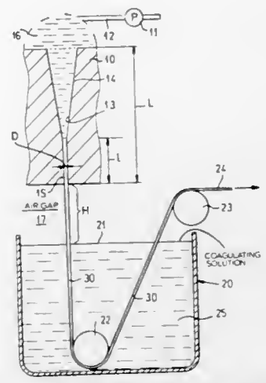
5,252,284
METHOD OF PRODUCING SHAPED CELLULOSIC ARTICLES

Raimund Jurkovic, Lenzing; Heinrich Firgo; Dieter Eichinger, both of Vöcklabruck, and Stefan Zikeli, Regau, all of Austria, assignors to Lenzing Aktiengesellschaft, Lenzing, Austria

Filed Jan. 8, 1992, Ser. No. 817,937
Claims priority, application Austria, Jan. 9, 1991, 32/91
Int. Cl.[5] D01F *2/00*
U.S. Cl. 264—187 7 Claims

1. A process for producing cellulosic filaments comprising the steps of:
(a) extruding under pressure a solution of cellulose in an amine oxide and water through a nozzle orifice having a length of at least 1000 /μm and a minimum diameter along said length of at most 150 /μm to produce a strand of said solution;

(b) conducting said strand of said solution across an air gap; and



(c) thereafter passing said strand into a coagulating bath thereby solidifying said strand into a cellulosic filament.

5,252,285
PROCESS FOR MAKING SILK FIBROIN FIBERS

Robert L. Lock, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

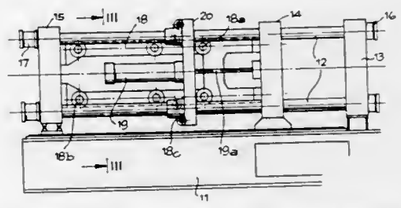
Filed Jan. 27, 1992, Ser. No. 827,141
Int. Cl.[5] D01F *4/02*
U.S. Cl. 264—202 8 Claims

1. A process for producing silk fibroin fibers, comprising the steps of:
a) forming a silk fibroin solution comprising silk fibroin in an aqueous salt solution;
b) removing the salt and water from the fibroin solution to form a silk fibroin material;
c) forming a fiber-spinnable solution comprising about 5 to 25% by weight of the silk fibroin material in hexafluoroisopropanol; and
d) extruding the fiber-spinnable solution through a spinneret to form silk fibroin fibers.

5,252,286
CLOSING UNIT FOR A DOUBLE TOGGLE MOLDING APPARATUS AND METHOD

Egidio Bugatti, Brescia, Italy, assignor to B.M.B. S.p.A., Brescia, Italy

Filed Jan. 30, 1992, Ser. No. 828,389
Claims priority, application Italy, Apr. 22, 1991, BS/91/A/000043
Int. Cl.[5] B29C *45/66*
U.S. Cl. 264—328.1 17 Claims



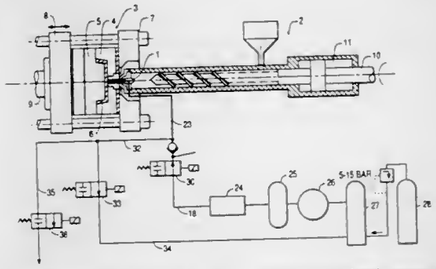
1. A method of opening and closing a molding machine, the method comprising the steps of:
providing a stationary die-holder;
providing a plurality of columns attached at one end to said stationary die-holder;
providing a closing plate attached to another end of said plurality of columns;
providing a movable die-holder being slidable on said plurality of columns;
providing a toggle mechanism connected to said closing plate and said movable die-holder;
providing a control ring positioned between said closing plate and said movable die-holder and being slidable on said plurality of columns;
providing a connecting rod pivotably attached to said control ring and said toggle mechanism; and
forcing said control ring toward and away from one of said movable die-holder and said closing plate to move said movable die-holder between said opening position and said closing position, thereby opening and closing the molding machine.

4. A closing apparatus for a molding machine, the apparatus comprising:
a base;
a stationary die-holder positioned on said base;
a closing plate positioned on said base and spaced from said stationary die-holder;
a plurality of columns attached to said stationary die-holder and said closing plate;
a movable die-holder positioned between said stationary die-holder and said closing plate, said movable die-holder being on said plurality of columns;
a toggle mechanism connected to said movable die-holder;
a control ring positioned between said closing plate and said movable die-holder and being slidable on said plurality of columns, said control ring defining a substantially center opening;
a connecting rod pivotably attached to said control ring and said toggle mechanism; and
a hydraulic means for applying force against said movable die-holder and said closing plate, and for moving said movable die-holder between a locking position and an unlocking position, portions of said toggle mechanism and said movable die plate moving through said substantially center opening of said control ring during said moving of said movable die-holder.

5,252,287
METHOD OF INJECTION MOLDING HOLLOW ARTICLES

Bernd Fries, Weissenburg, Fed. Rep. of Germany, assignor to Dynamit Nobel AG, Troisdorf, Fed. Rep. of Germany

Continuation of Ser. No. 680,366, Apr. 4, 1991, abandoned, which is a continuation of Ser. No. 431,450, Nov. 3, 1989, abandoned. This application Nov. 12, 1992, Ser. No. 974,667
Int. Cl.[5] B29C *45/00*; B29D *22/00*
U.S. Cl. 264—572 10 Claims



1. A method for injection molding of thermoplastic material to form a hollow article in a closed mold wherein a molten thermoplastic material is introduced through a nozzle orifice into a mold cavity through an opening in said mold; a pressurized gas at an elevated pressure is introduced together with said molten thermoplastic material through said opening so

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that the gas forms a hollow cavity under said elevated pressure within the thermoplastic material filling the mold; the thermoplastic material is solidified to form a hollow article within the closed mold while the gas pressure within said mold is maintained at said elevated pressure; and, thereafter, the pressure of the gas in the hollow cavity is reduced prior to opening the mold; said pressurized gas being introduced into said mold from a first gas source at the elevated pressure and the gas pressure being reduced by recycling at least a portion of the gas in the hollow cavity to another gas source at a gas pressure lower than the elevated pressure of the pressurized gas, said another gas source being connected to said first gas source via means for increasing pressure of the gas from the another gas source to said elevated pressure.

5,252,288

METHOD FOR PRODUCING AN ELONGATED SINTERED ARTICLE

Susumu Yamamoto; Teruyuki Murai; Nozomu Kawabe, and Masaaki Tobioka, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Inc., Osaka, Japan

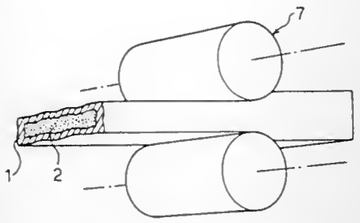
Division of Ser. No. 606,850, Oct. 31, 1990, Pat. No. 5,114,641, which is a continuation of Ser. No. 63,228, Jun. 17, 1987, Pat. No. 5,006,289. This application May 15, 1992, Ser. No. 883,368

Claims priority, application Japan, Jun. 17, 1986, 61-141566; Aug. 13, 1986, 61-190891; Sep. 10, 1986, 61-214487; Oct. 17, 1986, 61-246937; Dec. 5, 1986, 61-291216; Dec. 26, 1986, 61-312958; Jan. 9, 1987, 62-3060

The portion of the term of this patent subsequent to Apr. 9, 2008, has been disclaimed.

Int. Cl.[5] B22F *3/24;* C22F *1/00*

U.S. Cl. 419—28 **36 Claims**



1. Method for producing an elongated sintered article, characterized by the steps including filling powder material in a pipe, carrying out plastic deformation of the pipe filled with the powder material, and heating the pipe filled with the powder material to burn and/or sinter the powder material.

5,252,289

WATER SOLUBLE 1,2-DITHIO-3-THIONES

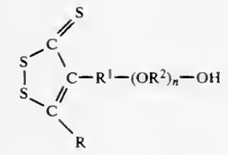
Bernardus A. Oude Alink, St. Louis, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Continuation of Ser. No. 678,850, Apr. 3, 1991, abandoned, which is a division of Ser. No. 558,020, Jul. 26, 1990, abandoned, which is a division of Ser. No. 399,728, Aug. 28, 1989, Pat. No. 4,973,710. This application Jan. 11, 1993, Ser. No. 2,532

Int. Cl.[5] C23F *11/12*

U.S. Cl. 422—14 **1 Claim**

1. A method of inhibiting corrosion in an aqueous system comprising adding to the aqueous system a corrosion inhibiting amount of a compound of the formula:



wherein R is H or a C_1 to C_{12} alkyl moiety; R^1 is a C_6 to C_{12} arylene moiety; R^2 is a C_1 to C_4 alkylene moiety; and n is 2 to 50.

5,252,290

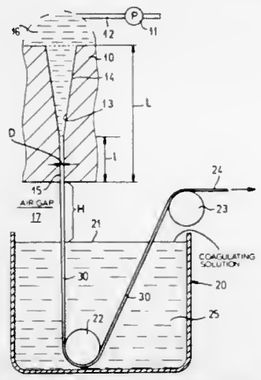
PROCESS FOR TREATMENT AND DISPOSAL OF MEDICAL WASTE MATERIALS

Jun Uesugi, c/o Pafco Co., Ltd. Gotanda City Heights No. 502, Nishi-Gotanda, 1-29-2, S-inagawa-ku, Tokyo, Japan

Filed Nov. 30, 1989, Ser. No. 443,136

Int. Cl.[5] A61L *2/00;* G05B *1/00;* G05D *20/00*

U.S. Cl. 422—22 **20 Claims**



1. A process for treatment and disposal of medical waste materials comprising:

providing a sealable, nonflammable carton constructed of a material pervious to long infrared radiation;

placing medical waste material in said carton and sealing the same;

subjecting the exterior of the carton with the medical waste material contained therein to long infrared radiation for a period of time until the medical waste material is sterilized; and

crushing the carton and the sterilized medical waste material to reduce the same to granular form.

5,252,291

MULTI-ELECTRODE CONTACT LENS DISINFECTION AND CLEANING DEVICE AND METHOD THEREFOR

Mark F. Tsao, Lawrenceville, Ga., assignor to Ciba Geigy Corporation, Ardsley, N.Y.

Filed Jul. 7, 1992, Ser. No. 909,672

Int. Cl.[5] A61L *2/02, 2/16*

U.S. Cl. 422—23 **25 Claims**

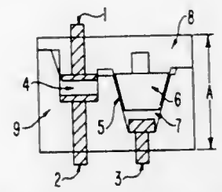
1. A contact lens care device for cleaning and disinfecting contact lenses, which comprises:

a housing;

a first well disposed within said housing defining a cavity for holding a halide-containing electrolytic buffer solution, said first well having two opposed electrodes disposed therewithin, said two opposed electrodes being spaced apart for receiving a contact lens therebetween;

a reservoir disposed within said housing defining a cavity for holding a halide-containing electrolytic buffer solution, said reservoir having an electrode disposed therewithin;

an ion permeable bridge connecting said first well and said reservoir; and



a control means operatively connected to said two opposed electrodes of said first well and said reservoir electrode for controlling a potential voltage applied to said electrodes and for generating an electrical field between said electrodes.

5,252,292

AMMONIA SENSOR

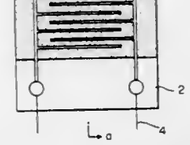
Mitsutoshi Hirata, 2-8-8-206, Narashinodai; Ryutoku Yosomiya, 270-27, Maekaizuka-cho, both of Funabashi-shi, Chiba-ken, and Soichiro Takenishi, 5-3-15, Nishiaraihoncho, Adachi-ku, Tokyo, all of Japan

Filed May 17, 1990, Ser. No. 524,562

Claims priority, application Japan, May 18, 1989, 1-122943; Jul. 4, 1989, 1-171168

Int. Cl.[5] G01N *27/04*

U.S. Cl. 422—98 **13 Claims**



1. An ammonia sensor consisting of at least one pair of electrodes and an ammonia-sensing material filling the space between the electrodes wherein the ammonia-sensing material comprises a matrix of a conductive polymer having a conductivity of 10^{-5} mho or higher and a polyaniline dispersed in the matrix.

5,252,293

ANALYTICAL SLIDE WITH POROUS FILTER MEMBRANE

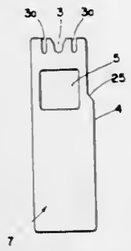
Vladimir Drbal, 400 Davey Glen Rd., #4810, Belmont, Calif. 94006; Calvin Chow, 45 Santa Maria, Portola Valley, Calif. 94025; Rick Smethers, 360 Boulder Dr., Milpitas, Calif. 95035; Debra A. Ross, 119 Montalvo Rd.; Gregory Kirk, 1060 Lakeview Way, both of Redwood City, Calif. 94062; Briggs, Jonathan, 12575 La Cresta Dr., Los Altos, Calif. 94022; Lev Leytes, 256 Ferne Ave., Palo Alto, Calif. 94306, and Suresh N. Mehta, 3543 Gresham Ct., Pleasanton, Calif. 94566

Filed Jan. 17, 1989, Ser. No. 297,767

Int. Cl.[5] G01N *33/53;* C12Q *1/00*

U.S. Cl. 422—101 **1 Claim**

1. A slide comprising a flat generally rectangular plastic sheet with a front and a rear end wherein the slide has a first and second means for aligning the slide both in a filter assembly and a slide reading assembly; wherein the first means for aligning the slide comprises a notch at the front end of the slide configured to fit a peg provided in a filter assembly and a peg provided in a reading assembly; the first means for aligning further comprises slits in the front end adjacent to the notch, the slits allowing resilient expansion of the notch; wherein the second means for aligning the slide is a portion at the front end which is narrower than the rear end; the rear end of the slide having an area for manually grasping the slide; the slide further defines an opening at the front end which is covered with a porous filter membrane having a hapten bound thereto; wherein the membrane has a pore size of about 0.25 μm to



about 12.0 μm and a thickness of about 50 μm to about 120 μm; wherein the alignment means provide for deposition of analyte or analyte complex onto predetermined locationso the porous filter membrane in the filter assembly and for detection of analyte or analyte complex at these same predetermined locations in a slide reading assembly; wherein the membrane has a hapten binding potential sufficient to capture the hapten on the membrane at a flow rate of about 100 μL/min. and sufficient to retain the hapten on the membrane at flow rates of about 6 mL/min.; and wherein the slide has a buffering capacity of 1–10 m mole per liter of compressed membrane volume.

5,252,294

MICROMECHANICAL STRUCTURE

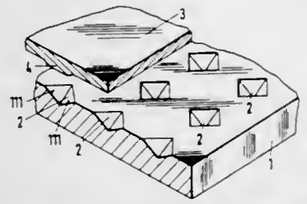
Walter Kroy, Ottobrunn; Helmut Seidel, Starnberg; Eduard Dette, Vagen; Max Koniger, Munich; Peter Deimel, Langenpreising; Florian Binder, Traunstein, and Reinhold Hilpert, Munich, all of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 359,713, May 31, 1989. This application Feb. 3, 1992, Ser. No. 830,755

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1988, 3818614; Japan, Jul. 29, 1988, 3825907

Int. Cl.[5] G01N *21/00;* C12M *1/00*

U.S. Cl. 422—102 **15 Claims**



1. A micromechanical structure for investigation of sample substances in a targeted manner, comprising a masked-formed, etched structure with a plurality of depressions formed in an array that is made of at least one of a group of semiconductive materials, glass, ceramic, diamond, and carbon, the masked-formed, etched structure including a bottom structure, which has a plurality of depressions formed in an array, and a lid structure, which has a plurality of humps formed in an array, the lid and bottom structures being formed so the plurality of depressions and humps are at corresponding positions and have

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a same geometry, and so that when the lid structure is combined with the bottom structure, the plurality of corresponding depressions and humps are in alignment and form a plurality of microcontainments for containing one or more sample substances for evaluation and/or documentation of possible changes in one or more properties of the sample substances.

5,252,295

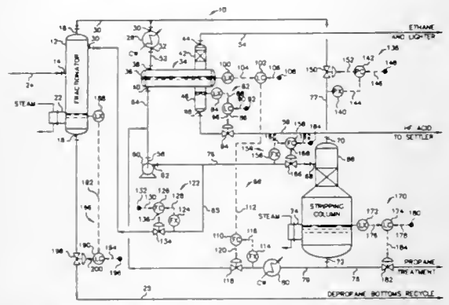
CONTROL OF HF ALKYLATION PROPANE STRIPPER

Keith W. Hovis; Henry K. Hachmuth, both of Bartlesville, Okla., and Michael L. Gray, Spartanburg, S.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 676,030, Mar. 27, 1991. This application Jun. 1, 1992, Ser. No. 891,146

Int. Cl.[5] G05D *9/00*

U.S. Cl. 422—106 **8 Claims**



1. An apparatus used in an HF alkylation process for the removal of HF acid from a hydrocarbon product comprising:

a fractionator having a feed inlet, an overhead outlet, a bottoms outlet and a reflux inlet;

first conduit means operably connected to said bottoms outlet, for conveying fractionator bottoms product from said fractionator;

second conduit means operably connected to said feed inlet;

condenser means, having a condenser inlet and a condenser outlet;

third conduit means operably connected between said overhead outlet and said condenser inlet;

an overhead accumulator, having a top section, a medial section, a bottom section, an inlet, a first outlet in fluid flow communication with said medial section, a second outlet in fluid flow communication with said bottom section and a third outlet in fluid flow communication with said top section;

fourth conduit means operably connected between said condenser outlet and said inlet of said overhead accumulator;

a stripping column having a stripper inlet, a stripper overhead outlet and a stripper bottoms outlet;

charging means, having a suction inlet and a discharge outlet;

fifth conduit means operably connected between said first outlet of said accumulator and said section inlet of said charging means;

sixth conduit means operably connected between said discharge outlet of said charging means and said stripper inlet;

seventh conduit means operably connected between said stripper overhead outlet and said condenser inlet;

eighth conduit means operably connected to said stripper bottoms outlet, for conveying' stripper bottoms product from said stripping column;

ninth conduit means operably connected between said eighth conduit means and said suction inlet of said charging means;

tenth conduit means operably connected to said second outlet of said accumulator, for conveying HF acid phase from said overhead accumulator; and

eleventh conduit means operably connected to said third outlet of said accumulator, for conveying ethane and lighter gases from said overhead accumulator.

5,252,296

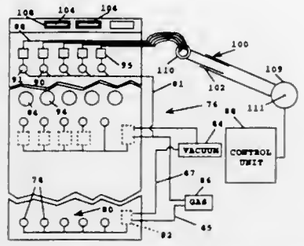
METHOD AND APPARATUS FOR BIOPOLYMER SYNTHESIS

Ronald N. Zuckermann, Berkeley; Verena D. Heubner, Benicia; Daniel V. Santi, San Francisco, and Michael A. Siani, Oakland, all of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Continuation-in-part of Ser. No. 523,791, May 15, 1990, Pat. No. 5,182,366. This application Feb. 6, 1991, Ser. No. 652,194

Int. Cl.[5] G05D *7/00*

U.S. Cl. 422—116 **6 Claims**



1. Apparatus for use in synthesizing different-sequence biopolymers by sequential addition of biopolymer subunits to immobilized subunits carried on solid phase particles in a particle suspension, said apparatus comprising, in operative condition,

(a) a mixing vessel,

(b) multiple reaction vessels,

(c) reagent vessels,

(d) transfer means for distributing a selected volume of particle suspension in the mixing vessel to each of the reaction vessels, for transferring a particle suspension from each reaction vessel to the mixing vessel, and for transferring selected reagents from the reagent vessels to the reaction vessels,

(e) means for coupling a selected free subunit to the terminal, particle bound subunits in each of the reaction vessels, and

(f) control means for controlling the transfer means and coupling means for (1) distributing a mixed particle suspension in the mixing vessel to selected reaction vessels, (2) coupling a selected subunit to terminal particle-bound subunits in each reaction vessels, and (3) transferring the particle suspensions in the reaction vessels to the mixing vessel.

5,252,297

PROCESS FOR PRODUCING CARBON BLACK AND APPARATUS THEREFOR

Kiyonari Nakai, Aichi, Japan, assignor to Tokai Carbon Co., Ltd., Tokyo, Japan

Filed Nov. 8, 1991, Ser. No. 789,497

Claims priority, application Japan, Nov. 13, 1990, 2-306532

Int. Cl.[5] C09C *1/48*

U.S. Cl. 422—150 **1 Claim**

1. A cylindrical reactor for producing carbon black, comprising:

a) a combustion chamber for forming a combustion gas stream, the combustion chamber having a diameter and an axis and including

a combustion burner disposed on the axis of the combustion chamber for burning fuel oil and

a duct disposed tangential to the combustion chamber for introducing combustion air into the combustion chamber;

b) a reaction chamber downstream from, and connected to the combustion chamber and having an axis coaxial with the axis of the combustion chamber, whereby the combustion gas stream flows into the reaction chamber to form a reaction gas stream, the reaction chamber comprising

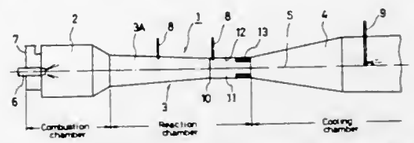
a throat having a larger diameter tapering to a smaller diameter at a downstream end, the larger diameter of the throat being smaller that the diameter of the combustion chamber, and

an extension coaxial with and connected to the downstream end of the throat, the extension having an inner surface and a diameter the same as the smaller diameter of the throat;

c) a plurality of ribs arranged on the inner surface of the extension to form a plurality of slits defined between adjacent ribs;

d) a means for introducing feedstock perpendicular to the axis of the reaction chamber into the combustion gas stream; and

e) a cooling chamber downstream from, coaxial with, and connected to the extension, the cooling chamber including a means for quenching the reaction gas stream and an outlet.



5,252,298

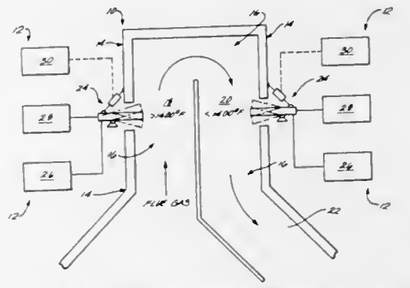
DEVICE FOR CLEANING GASES

Dale G. Jones, Visalia, Calif., assignor to Noell, Inc., Herndon, Va.

Division of Ser. No. 678,267, Apr. 23, 1991, abandoned. This application Apr. 22, 1992, Ser. No. 872,621

Int. Cl.[5] B01D *50/00*; **B05B** *7/06*; **C01B** *21/00*

U.S. Cl. 422—172 **24 Claims**



1. An apparatus for mixing fluids together and for injecting the resulting mixture through the walls of a gas duct into a combustion effluent gas stream, the system comprising:

(a) at least one nozzle, said nozzle comprising:

(i) a body section extending through a gas duct wall, the body section including:

a chamber having upstream and downstream ends, wherein the chamber is closed at its upstream end and is open at its downstream end for discharge of fluids;

an inlet extending into the chamber for entry of a first fluid at said upstream end; and

an injector assembly comprising an injector tube extending into the chamber for entry of a second fluid into the nozzle, the injector tube having an inlet end outside the chamber and a discharge end, wherein the injector tube discharge end is positioned downstream from the first fluid inlet;

(ii) a mixing section comprising a chamber having an interior surface and an exterior surface, the chamber configured to extend through the gas duct wall and having an outlet orifice configured to discharge an injection mixture into the combination effluent gas stream; and

(iii) means for removably coupling the discharge end of the body section to the inlet end of the mixing section, wherein said coupling means is outside the gas duct wall; and

(b) means for supplying an injection fluid mixture through the mixing section so that the outlet orifice flow rate is at least 0.4% of the combustion effluent gas flow rate and said outlet orifice discharge velocity is at least 0.6 times the speed of sound in the injection mixture.

5,252,299

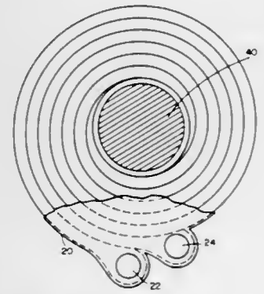
CATALYTIC AIR CLEANER

William B. Retallick, 1432 Johnny's Way, West Chester, Pa. 19382

Filed May 28, 1992, Ser. No. 889,250

Int. Cl.[5] F01N *3/20*

U.S. Cl. 422—174 **17 Claims**



1. A catalytic air cleaner comprising:

a) a double spiral formed from two metal strips wound together, the spiral defining two flow channels, the spiral having a core, one channel leading into the core of the spiral and the other channel leading out of the core, the strips being substantially free of any catalyst,

b) an electrically-heated catalytic heater disposed at the core of the spiral, and

c) closures on each end of the spiral, said closures being joined to the strips that form the spiral.

5,252,300

CORROSION INHIBITION PROCESS

Clement Hinchliffe, Pymble, Australia, assignor to Aquazon Pty. Ltd., Pymble, Australia

Filed May 5, 1992, Ser. No. 878,848

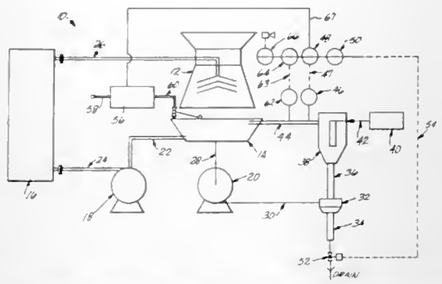
Int. Cl.[5] C23F *11/08*, *15/00*

U.S. Cl. 422—186.08 **6 Claims**

1. A method for reducing corrosion in a water recirculation system, the method comprising the steps of: ozonating recirculated water, monitoring the concentration of calcium bicarbonate in the recirculated water after the recirculated water has been ozonated, adjusting the concentration of calcium bicarbonate in the recirculated water in response to the monitoring so as to maintain the concentration of calcium bicarbonate in the ozonated water greater than a calcium bicarbonate concentration that would result in scaling in the recirculated water but for the presence of the ozone in the recirculated water.

4. An apparatus for reducing corrosion in a water recircula-

tion system, the apparatus comprising an ozone generator connected to the system in a manner such that ozone produced by the ozone generator is released into the water, sensor means for measuring the calcium bicarbonate concentration in the water or for measuring another characteristic of the water, being proportional to the calcium bicarbonate concentration,



and a control means connected to the system for maintaining the calcium bicarbonate concentration of the water at being a level above that which would cause scaling in the water under operating conditions of the system but for the presence of the ozone in the water, said control means being responsive to output from said sensor means.

5,252,301

APPARATUS FOR THE PREPARATION OF BONE CEMENT

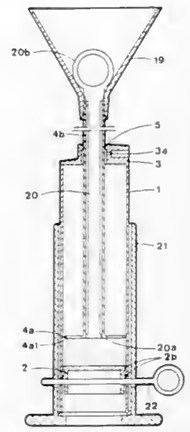
Thomas Nilson, Falkenberg; Jan Thorling, Falun; Staffan Smeds, and Sören Jonsson, both of Linköping, all of Sweden, assignors to Cemvac System AB, Falktenberg, Sweden

PCT No. PCT/SE90/00018, § 371 Date Oct. 30, 1991, § 102(e) Date Oct. 30, 1991, PCT Pub. No. WO90/13264, PCT Pub. Date Nov. 15, 1990

PCT Filed Jan. 11, 1990, Ser. No. 775,974

Int. Cl.[5] A61B *17/56;* A61L *25/00;* A61F *2/46*

U.S. Cl. 422—225 9 Claims



1. An apparatus for manufacturing bone cement by mixing a plurality of constituent components, said apparatus comprising:

a mixing cylinder having a bottom and a lid, said bottom being axially movable relative to said lid for expelling bone cement from said cylinder;

an agitator axially movably disposed in said cylinder, said agitator including a perforated member;

an elongated hollow tube connected to said agitator for guiding bone cement expelled from said cylinder, said tube axially slidably supported by said lid;

channel means in said cylinder for drawing gas from said cylinder whereby said constituent components can be drawn into said cylinder;

means for connecting said channel means to an evacuation source; and

means for introducing said plurality of constituent components into said cylinder.

5,252,302

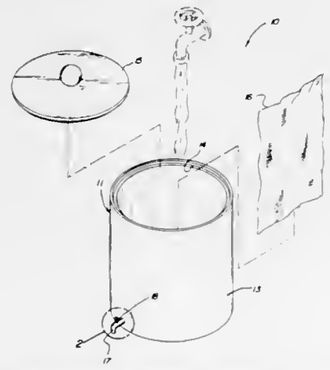
LIQUID FERTILIZER APPARATUS

George Schmidt, and Tammy L. Schmidt, both of P.O. Box 154 SR 4016, Preston Park, Pa. 18455

Filed Jul. 20, 1992, Ser. No. 915,327

Int. Cl.[5] B01D *12/00*

U.S. Cl. 422—261 1 Claim



1. A liquid fertilizer apparatus, comprising,

a container, the container having a container floor, and a container side wall of cylindrical construction, with an annular lid support flange mounted into the container side wall adjacent an upper end of the container side wall;

a circular lid arranged for positioning upon the support flange;

at least one porous sack received within the container, wherein the porous sack is arranged to contain various fertilizer components therewithin for leaching into the container when fluid is directed into the container;

an outlet conduit directed into the container adjacent the container floor, the outlet conduit including an outlet conduit valve to selectively direct fluid flow through the outlet conduit;

first and second cylindrical support members arranged for reception within the container, the first support member having a first diameter, the second support member having a second diameter, and a first annular support flange positioned within the container adjacent the floor having said first diameter for receiving the first support member thereon, and a second annular flange directed into the container side wall within the container spaced above the first annular flange having said second diameter, wherein the second diameter is greater than the first diameter,

the lid includes a plurality of sponge vent members formed of sponge material directed through the lid for metering and venting within said container; and

the first support member includes a first screen floor, the second support member includes a second screen floor to permit fluid flow through the first screen floor and the second screen floor, and at least one of said first screen floor and said second screen floor includes a support member sponge insert positioned thereon for containing a fluid additive.

5,252,303

APPARATUS FOR STERILIZING OBJECTS HAVING CHAMBER WALL AS HEATER

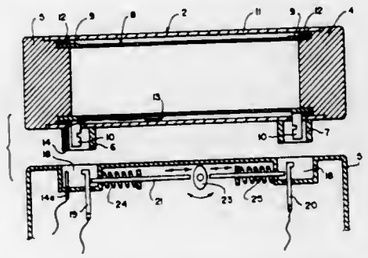
Sven K. L. Goof, 236A, Gl. Strandvej, DK-3050 Humlebaek, Denmark

Continuation of Ser. No. 360,053, Jun. 1, 1989, abandoned. This application Jun. 9, 1992, Ser. No. 896,742

Claims priority, application Denmark, Oct. 2, 1987, 5174/07

Int. Cl.[5] A61L *2/06, 2/24*

U.S. Cl. 422—292 4 Claims



1. Apparatus for sterilizing objects comprising a container part including a sterilization chamber having means for opening and closing said chamber for depositing and removing objects therefrom and for introducing a quantity of liquid therein, and means for controlled electrical heating of the interior of said chamber, wherein the improvement comprises

said sterilization chamber defined by a tubular electrically-conductive wall extending longitudinally with respect to said chamber and a pair of opposite end walls means at opposite ends of said electrically-conductive wall for connecting an electrical heat-generating current therethrough, and the material of said electrically-conductive wall forming an electrical resistance heating element of said means for electrical heating of the interior of said chamber.

5,252,304

FORMALIN STERILIZATION APPARATUS

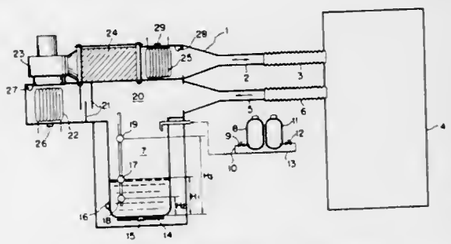
Tetsuo Miyoshi, Kamagaya, Japan, assignor to Mercian Corporation, Tokyo, Japan

Filed Oct. 23, 1991, Ser. No. 781,382

Claims priority, application Japan, Oct. 26, 1990, 2-289487

Int. Cl.[5] A61L *2/20*

U.S. Cl. 422—305 6 Claims



1. A formalin sterilization apparatus comprising:

a heating chamber capable of being connected to a room to be sterilized, said heating chamber including an inlet conduit and an outlet conduit,

a formalin container for storing formalin,

an aqueous ammonia container for storing aqueous ammonia,

supply means for selectively supplying formalin or aqueous ammonia from said formalin container or said aqueous ammonia container to said heating chamber.

first heating means for heating formalin or aqueous ammonia supplied from said formalin container or said aqueous ammonia container and contained in said heating chamber so as to generate formaldehyde or ammonia gas,

blower means for circulating said formaldehyde or said ammonia gas generated by said first heating means between said heating chamber and said room to be sterilized, said blower means being disposed between a second heating means and a filter means,

a reaction chamber defined at an upper portion of said heating chamber and adapted for causing the ammonia gas generated by said first heating means to react with the formaldehyde fed from said room to be sterilized via said inlet conduit,

said second heating means being disposed between said reaction chamber and said blower means and adapted for heating the formaldehyde or the ammonia gas,

said filter means being disposed between said blower means and said outlet conduit and adapted for capturing bacteria, products produced by neutralization between the formaldehyde and the ammonia gas and the like, and

third heating means disposed between said filter means and said outlet conduit and adapted to heat the formaldehyde or the ammonia gas.

5,252,305

PROCESS OF RECOVERING PLATINUM GROUP METAL

Nobuyasu Ezawa; Hiroshi Inoue, both of Tokyo; Shoei Takada, and Hitoshi Masuda, both of Akita, all of Japan, assignors to Tanaka Kikinzoku Kogyo K.K.; Dowa Mining Co., Ltd. and Kosaka Smelting & Refining Co., Ltd., all of Tokyo, Japan

Filed Apr. 9, 1992, Ser. No. 865,949

Claims priority, application Japan, Apr. 10, 1991, 3-104827

Int. Cl.[5] C01G *55/00;* C22B *11/00, 9/10*

U.S. Cl. 423—22 7 Claims

1. A process of recovering a platinum group metal from a catalyst comprising a catalyst support comprised mainly of at least one oxide of silicon, aluminum, magnesium and a rare earth metal, and said catalyst supports a platinum group metal; comprising:

(a) mixing said catalyst with (i) copper, copper oxide, or a mixture thereof (ii) a flux component and (iii) a reductant component to form a mixture, then heating and melting said mixture to form a first layer containing metal copper and said platinum group metal and a second layer containing slag, and then separating said first layer from said second layer; and

(b) then supplying air or oxygen as an oxidant to said first layer under heating and melting so as to oxidize a portion of said metal copper in an amount effective to form a third layer comprising oxidized metal copper and leaving a fourth layer containing unoxidized metal copper and said platinum group metal, and separating said fourth layer from said third layer.

5,252,306

SEMI-CONTINUOUS PROCESS FOR PREPARING PHOSPHORUS TRICHLORIDE

James L. Champion, Waterloo, Ill.; Chung Y. Shen, St. Louis, and Chen-Hsyong Yang, Chesterfield, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 2, 1992, Ser. No. 844,071

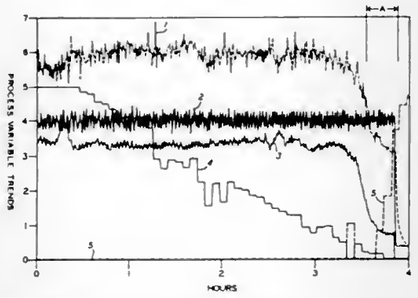
Int. Cl.[5] C01B *25/10*

U.S. Cl. 423—300 4 Claims

1. In a process for the semi-continuous production of phos-

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phorus trichloride by feeding and dissolving elemental phosphorus into a layer of liquid phosphorus trichloride in a reactor while feeding chlorine gas into said layer under pressure and at elevated temperature whereby phosphorus trichloride vapor produced is removed overhead and wherein the reaction is periodically terminated by discontinuing phosphorus feed thereby creating a heel containing residual phosphorus, the improvement which comprises chlorinating at a substantially constant feed rate of chlorine gas whereby the remaining



phosphorus and lower oxides of phosphorus in the heel are chlorinated, and continuing said chlorine feed rate until after observing at least one of the following:

a) a step-wise decrease in the pressure within the reactor; or

b) a step-wise decrease in the flow rate of phosphorus trichloride removed from said reactor; and then

terminating the chlorine feed when at least one of the pressure within the reactor or the flow rate of phosphorus trichloride removed from the reactor achieves a substantially steady state.

5,252,307

METHOD OF PROCESSING CHLOROSILANE DISTILLATION RESIDUES WITH STEAM

Klaus Ruff, Troisdorf, Fed. Rep. of Germany, assignor to Hüls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Sep. 14, 1992, Ser. No. 944,367

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1991, 4130880; Sep. 17, 1991, 4130881

Int. Cl.[5] C01B *33/08, 33/107*

U.S. Cl. 423—342 4 Claims

1. In a method of continuously processing a chlorosilane distillation residue by hydrolysis with steam, the improvement which comprises beginning the hydrolysis at a temperature of no more than 160° C. and terminating the hydrolysis at a temperature of at least 170° C.

5,252,308

TRANSPORTING UREA FOR QUANTITATIVE CONVERSION INTO AMMONIA

Donald C. Young, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Dec. 31, 1991, Ser. No. 816,406

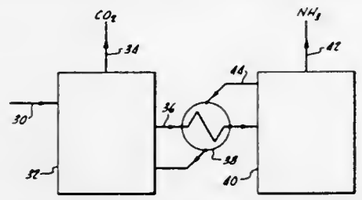
Int. Cl.[5] C01C *1/08*

U.S. Cl. 423—358 28 Claims

1. A method for producing ammonia at a location of use otherwise remote from a source of ammonia comprising:

transporting bulk urea to the location;

contacting the urea with water and a polyprotic acid at elevated temperature to produce gaseous ammonia; and



recovering the gaseous ammonia produced from the urea at the location.

5,252,309

AZINE SYNTHESIS IN THE ABSENCE OF CO_2

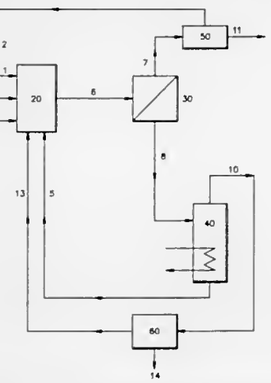
Gerard Krempf, Lyons; Bertrand Collier, La Barthe de Neste; Pierre Tellier, Lyons, and Jean-Pierre Schirmann, Paris, all of France, assignors to Elf Atochem S.A., Puteaux, France

Filed Jun. 12, 1992, Ser. No. 897,830

Claims priority, application France, Jun. 12, 1991, 91 07149

Int. Cl.[5] C01B *21/16;* C07C *241/00, 241/02*

U.S. Cl. 423—407 15 Claims



1. A process for the preparation of an azine in the absence of CO_2, comprising reacting ammonia, aqueous hydrogen peroxide and a carbonyl compound reactant in the presence of a catalytically effective amount of a catalyst medium therefor, wherein no CO_2 is introduced into the process, and purging CO_2 of reaction during the process.

5,252,310

REACTIVE DERIVATIVE OF ZIRCONIUM AND ITS PREPARATION

Joseph Recasens, Sorgues; Daniel Urffer, Morieres Les Avignon, and Pierre Ferlanda, Le Pontet, all of France, assignors to Societe Europeenne des Produits Refractaires, Courbevoie, France

Continuation of Ser. No. 751,579, Aug. 22, 1991, abandoned, which is a division of Ser. No. 324,647, Mar. 17, 1989, abandoned. This application Sep. 2, 1992, Ser. No. 938,523

Claims priority, application France, Mar. 22, 1989, 88 03679

Int. Cl.[5] C01B *7/00;* C01G *25/02*

U.S. Cl. 423—462 7 Claims

1. A process for preparing a halogen-containing zirconium hydrate in the form of a pulverulent white solid which is not crystallized and is dry in appearance, is soluble in acidic aqueous solutions, and consists of metazironic acid, $ZrO(OH)_2$, accompanied by free or weakly bound water, wherein the

OH^- ions have been partially replaced by halide ions, said hydrates containing, by weight, 60–92% of ZrO_2, 3–39.98% of water and 0.02–5% of halogen, said process comprising the steps of:

(a) preparing a product comprising a zirconia hydrate $ZrO_2 \cdot 2H_2O$ or zirconium hydroxide $Zr(OH)_4$ containing at least 45% by weight of free water plus bound water,

(b) washing said zirconia hydrate or zirconium hydroxide with an aqueous solution of an ammonium halide to partially substitute halide for OH^- ions in said product, and

(c) partially dehydrating the product of step (b) by heating to a temperature from 80° to 130° C. to obtain said halogen-containing zirconium hydrate.

5,252,311

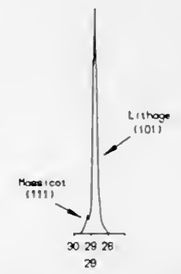
PHASE STABLE LEAD MONOXIDE AND PROCESS FOR THE PRODUCTION THEREOF

Richard E. Riman, 13 Whitehall Rd., East Brunswick, N.J. 08816, and Michael J. Munson, 2100 E. Highway 31, Apartment 306, Athens, Tex. 75751

Continuation of Ser. No. 512,243, Apr. 20, 1990, abandoned. This application Feb. 7, 1992, Ser. No. 833,565

Int. Cl.[5] C01G *21/06*

U.S. Cl. 423—619 26 Claims



1. A phase homogeneous crystalline lead monoxide powder comprising substantially free flowing massicot lead monoxide having (i) a substantially plate-like morphology, and (ii) an average particle size of about 0.1 to about 10 microns in diameter as determined by photosedimentation methods, which lead monoxide retains its massicot crystalline form under ambient temperature, pressure and humidity conditions for a period of at least about 6 months as evidenced by the failure to detect any significant peaks attributable to the litharge crystalline form in the powder X-ray diffraction pattern obtained for a sample of said lead monoxide which had been stored under said conditions for said period, and which lead monoxide is chemically stable under the influence of constant exposure to ultraviolet radiation as evidenced by the substantial retention of the original color of a sample of said lead monoxide which had been exposed to a uv lamp for 3 months, said lead monoxide powder has been produced by heating lead oxalate having a plate-like morphology at a temperature ranging from about 400° C. to about 600° C. for a period of time sufficient to convert said lead oxalate to said lead monoxide.

5,252,312

PACKAGE EFFERVESCIBLE COMPOSITION

James L. Gentile, Orange; David R. Williams, Monroe, and Alexander G. Ziemkiewicz, Shelton, all of Conn., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed Sep. 30, 1992, Ser. No. 954,848

Int. Cl.[5] B65D *35/22, 51/24;* A61K *9/46, 7/20*

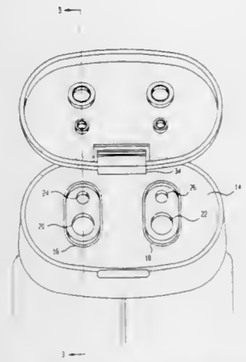
U.S. Cl. 424—44 9 Claims

1. A packaged effervescible mouthwash composition comprising a first liquid component including hydrogen peroxide as a functional ingredient and a second liquid component including sodium bicarbonate as a functional ingredient, said package comprising:

a container for the materials, said container having at least two discrete compartments each with an upper outlet end and

a closure system for closing the compartments over said outlet end comprising:

an inclined crown portion having a peripheral skirt portion depending downwardly from an outer edge of the crown, said skirt portion being of sufficient size to engage a surface of the container in a fluid tight manner;



at least two pouring spouts extending upwardly from the upper surface of the crown, toward the lower edge thereof;

each pouring spout being provided with a through opening which extends from the upper end of the spout, through the crown and into a compartment; and

a flat cover for securement to the crown portion toward an upper edge thereof,

said cover being provided with at least two downwardly depending plugs, receivable in corresponding through openings of the crown so as to close the container.

5,252,313

VISUALLY CLEAR GEL DENTIFRICE

Michael A. Collins, Keyport, and Joan M. Duckenfield, North Brunswick, both of N.J., assignors to Colgate-Palmolive Company, Piscataway, N.J.

Filed Dec. 20, 1991, Ser. No. 812,511

Int. Cl.[5] A61K *7/16*

U.S. Cl. 424—49 14 Claims

1. A visually clear gel dentifrice comprising about 5–50% by weight of a dentally acceptable dentifrice polishing agent having a refractive index in the range of about 1.41 to about 1.47, about 0.1%–10% by weight of a gelling agent to provide a gel consistency to said dentifrice, a liquid vehicle comprising an amount of at least 25% up to 30% by weight of said dentifrice of total water and about 30%–45% by weight of said dentifrice on a neat basis of sorbitol humectant material wherein sorbitol is present as the main or only humectant component in neat amount of at least about 30% by weight of said dentifrice and other humectant, if present, is in neat amount up to 15% by weight and about 1%–4% neat amount by weight of dentifrice of a water-swellable synthetic anionic polycarboxylate polymer, wherein the visual clarity of said gel dentifrice is and remains stable.

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5,252,314

METHOD FOR PRODUCING COPRECIPITATED MULTICOMPONENT OXIDE POWDER PRECURSORS USING GUANIDINE OXALATE AS PRECIPITATING AGENT

Mark R. DeGuire, Cleveland Heights, and Warren H. Philipp, Olmsted Township, Cuyahoga County, both of Ohio, assignors to Case Western Reserve University, Cleveland, Ohio

Filed Nov. 30, 1990, Ser. No. 620,019
Int. Cl.[5] C01G *1/02, 3/02;* H01L *39/00*
U.S. Cl. 423—593 3 Claims

1. A method for producing an intimate mixture of metal oxide powder suited for preparation of ceramics, comprising the steps of:

synthesizing guanidine oxalate;

providing a guanidine oxalate solution comprising stoichiometric guanidine oxalate, water, and a water soluble alcohol having 1-3 carbon atoms per molecule;

mixing the guanidine oxalate solution with a solution of at least two types of soluble metal salts to produce a resultant solution having a temperature less than approximately 5° C.;

reacting the guanidine oxalate with the soluble metal salts, resulting in a produce consisting essentially of quantitatively coprecipitated metal oxalates having a uniform composition; and

heating the coprecipitated metal oxalates to produce an intimate mixture of multicomponent metal oxide powder.

5,252,315

PROCESS FOR PRODUCING LITHIUM ALUMINATE POWDER HAVING LARGE SPECIFIC SURFACE AREA

Kazutoshi Higashiyama, Nagoya; Susumu Yoshioka, Kawasaki, and Tadayoshi Murakami, Hitachi, all of Japan, assignors to Hitachi, Ltd. and The Tokyo Electric Power Co., Inc., both of Tokyo, Japan

Filed Mar. 31, 1989, Ser. No. 331,301
Claims priority, application Japan, Apr. 1, 1988, 63-78037
Int. Cl.[5] C01F *1/00*
U.S. Cl. 423—593 9 Claims

1. A process for producing a lithium aluminate powder having a specific surface area of at least 30 m^2/g, which comprises contacting a γ-lithium aluminate powder having a specific surface area less than 30 m^2/g with water to form a hydrate, followed by heating the hydrate to decompose and remove the combined water.

5,252,316

ZIRCONIUM OXIDE POWDER, PROCESS FOR ITS PREPARATION AND ITS USE

Gangolf Kriechbaum, Freigericht; Peter Kleinschmit, Hanau, and Doris Peuckert, Hofheim, all of Fed. Rep. of Germany, assignors to Degussa Aktiengellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 369,514, Jun. 21, 1989, abandoned, which is a division of Ser. No. 264,585, Oct. 31, 1988, abandoned. This application Aug. 20, 1990, Ser. No. 569,576
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1987, 3737064
Int. Cl.[5] C01G *25/02;* C04B *35/48*
U.S. Cl. 423—608 8 Claims

1. A method of preparing a crystalline zirconium oxide powder which has a BET surface area in the range of 10 to 20 m^2/g, a primary particle size of 0.1 to 0.5 μm and having a monoclinic crystal structure, said powder consisting essentially of zirconium oxide and 0.1 to 10% of at least one member of the group consisting of Y_2O_3 and MgO coprecipitated with the zirconium oxide, said powder having a particle size distribution of 90% between 0.1 and 1 μm,

said method comprising adding, with agitation, an aqueous solution consisting essentially of water, zirconium salt and a member of the group consisting of yttrium and magnesium salts to an aqueous base solution containing at least 0.5 moles per liter excess of base, treating the resulting mixture hydrothermally at a temperature of 200° to 400° C., separating precipitated zirconium oxide powder and drying said powder.

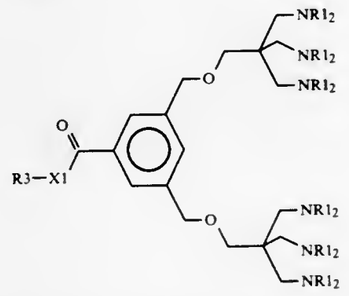
5,252,317

AMPLIFIER MOLECULES FOR DIAGNOSIS AND THERAPY DERIVED FROM 3,5-BIS[1-(3-AMINO-2,2-BIS (AMINOMETHYL)-PROPYL) OXYMETHYL] BENZOIC ACID

John F. W. Keana, Eugene, Oreg., assignor to The State of Oregon Acting by and through the State Board of Higher Education on Behalf of the University of Oregon, Eugene, Oreg.

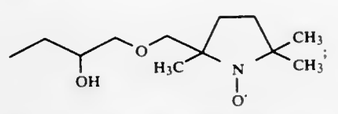
Division of Ser. No. 403,595, Sep. 5, 1989, Pat. No. 5,135,737, which is a continuation-in-part of Ser. No. 928,943, Nov. 10, 1986, Pat. No. 4,863,717. This application May 22, 1992, Ser. No. 887,542
Int. Cl.[5] C12N *9/96;* C07C *69/80;* C07D *207/38, 209/48*
U.S. Cl. 424—9 10 Claims

1. A compound of the formula:

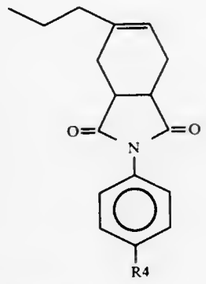


wherein

R1 is a nitroxide of the formula

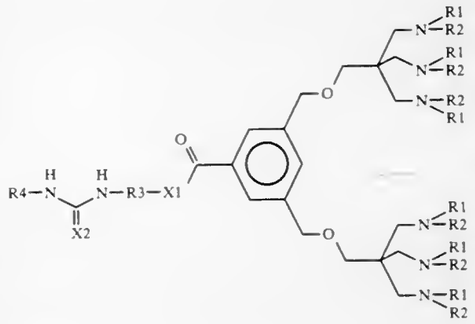


X1 is selected from a group consisting of O and N; and R3 has the formula



wherein R4 is selected from a group consisting of amino, nitro, azido, and isothiocyanato moieties.

2. A compound of the formula:



wherein

R1 and R2 are independently selected from a group consisting of H, nitroxides, and paramagnetic metal ion chelates, the chelates selected from a group consisting of Gd(III), Mn(II), MN(III), Fe(III), Cr(III), Cu(II), Co(II), Ni(II), Dy(III), Tb(III), and Nd(III) chelates;

X1 is selected from a group consisting of O and NH;

X2 is selected from a group consisting of O and S;

R3 is a maleimido group; and

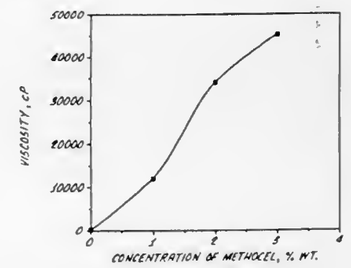
R4 is selected from a group consisting of polyamines, polylysines, polyethyleneimines, and liposomes possessing a multiplicity of exposed primary amines.

5,252,318

REVERSIBLE GELATION COMPOSITIONS AND METHODS OF USE

Abhay Joshi; Shulin Ding, and Kenneth J. Himmelstein, all of Irvine, Calif., assignors to Allergan, Inc., Irvine, Calif.

Filed Jun. 15, 1990, Ser. No. 539,061
Int. Cl.[5] A61K *31/19, 31/745, 47/38;* A01N *25/04*
U.S. Cl. 424—78.04 39 Claims



1. An aqueous pharmaceutical composition of matter exhibiting the property of reversible gelation in response to substantially simultaneous variations in both temperature and pH over predetermined ranges, said composition comprising:

an aqueous solution including approximately 0.1% to 30% by weight thermally-sensitive gelling polymer and approximately 0.01% to 10% by weight pH sensitive gelling polymer whereby said aqueous composition exhibits a reversible viscosity change ranging between approximately 200 to 1,000,000 cP in response to substantially simultaneous variations in both temperature and pH over respective ranges between approximately 0° C. to 60° C. and pH 2.5 to pH 7.5.

5,252,319

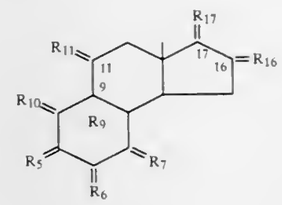
AMINOSTEROIDS FOR OPHTHALMIC USE

John C. Babcock, Olga, Wash.; Jon R. Polansky, Mill Valley, Calif.; Lyle M. Bowman, Pleasanton, Calif.; Sheng-Wan Tsao, San Carlos, Calif.; Erwin C.-C. Si, Almeda, Calif., and Santosh K. Chandrasekaran, Moraga, Calif., assignors to Insite Vision Incorporated, Alameda, Calif.

Division of Ser. No. 537,062, Jun. 12, 1990, Pat. No. 5,124,154. This application Feb. 19, 1992, Ser. No. 836,866
Int. Cl.[5] A61K *47/28, 31/58, 37/22*
U.S. Cl. 424—78.04 17 Claims

1. A method of arresting processes damaging to the eye, comprising:

administering, by intraocular injection, to the eye tissue of a human or other animal that is subject to intraocular damage, and in need of improved visual function or prevention of its loss from such damage, a formulation containing a therapeutically effective amount between .001 and 5% by weight of an amino-substituted steroid therapeutic agent selected from the C_{20} through C_{26} aminosteroids of the following formula XI:



(XI)

where:

(A-I) R_6 is α-R_{61}:β-R_{62}, R_{10} is α-R_{101}:β-R_{102} and R_7 is α-H:β-H, where one of R_{61} and R_{62} is —H, and the other is —H, —F, or C_1–C_3 alkyl, R_{102} is $-CH_3$, R_{101} and R_5 taken together are $-(CH_2)_2-C(-R_{33})-CH=$ or $-CH-CH-CO-CH=$, where R_{33} is =O or α-H:β-OR_{34} or α-OR_{34}:β-H, where R_{34} is —H, $-P(=O)(OH)_2$, $-CO-CH_3$, $-CO-C_2H_5$, $-CO-C_6H_5$, $-CO-O-CH_3$ or $-CO-O-C_2H_5$;

(A-II) R_5 is α-R_{53}:β-R_{54}, R_6 is α-R_{63}:β-R_{64}, R_{10} is α-R_{103}:β-R_{104} and R_7 is α-H:β-H, where one of R_{63} *and* R_{64} is —H, and the other taken together with one of R_{53} and R_{54} forms a second bond between C_5 and C_6, R_{104} is $-CH_3$, R_{103} and the other of R_{53} and R_{54} taken together are $-(CH_2)_2-C(H)(OH)-CH_2-$ or $-(CH_2)_2-C[H][OP(=O)-(OH)_2]-CH_2-$;

(A-III) R_{10} and R_5 taken together are $=CH-CH=C(OR_3)-CH=$ where R_3 is —H, $-P(=O)(OH)_2$, C_1–C_3 alkyl, —CO—H, C_2–C_4 alkanoyl or benzyl, R_6 is α-R_{65}:β-R_{66} where one of R_{65} and R_{66} is —H, and the other is —H, —F, or C_1–C_3 alkyl and R_7 is α-H:β-H;

(A-IV) R_5 is α-R_{57}:β-R_{58}, R_6 is α-R_{67}:β-R_{68}, R_7 is α-H:β-H and R_{10} is α-R_{107}:β-R_{108}, where one of R_{57} and R_{58} is —H, R_{107} and the other of R_{57} and R_{58} taken together are $-(CH_2)_2-C(=R_{33})-CH_2$, where R_{33} is as defined above, R_{108} is $-CH_3$, where one of R_{67} and R_{68} is —H and the other is —H, —F, or C_1–C_3 alkyl;

(A-V) R_6 is R_{69}:R_{610}, R_7 is R_{79}:R_{710}, R_{10} is α-R_{109}:R_{1010}, where one of R_{69} and R_{610} is —H and the other taken together with one of R_{79} and R_{710} forms a second bond between C_6 and C_7, and the other of R_{79} and R_{710} is —H, R_{1010} is $-CH_3$, R_{109} and R_5 taken together are $-(CH_2)_2-C(=R_{33})-CH=$ or $-CH=CH-CO-CH=$, where R_{33} is as defined above; where:

(C-I) R_{11} is α-R_{111}:β-R_{112}, where one of R_{111} and R_{112} is taken together with R_9 to form a second bond between C_9 and C_{11} and the other of R_{111} and R_{112} is —H;

(C-II) R_9 is —Cl and R_{11} is =O or α-H:β-R_{114} where R_{114} is —Cl or —OH;

(C-III) R_9 is —H or —F and R_{11} is =O or α-R_{115}:β-R_{116},

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where one of R_{115} and R_{116} is —H, and the other of R_{115} and R_{116} is —H, —OH or C_1–C_{12} alkoxy;

(C-IV) R_9 is —H or —F and R_{11} is α—O—CO—R_{117}:β-H, where R_{117} is

(A) C_1–C_3 alkyl,

(B) C_1–C_{12} alkoxy,

(C) furanyl,

(D) —$NR_{122}R_{123}$, where one of R_{122} and R_{123} is —H, methyl or ethyl and the other is —H, C_1–C_4 alkyl or phenyl,

(E) —X_3—X_1, where X_3 is —O— or a valence bond, where X_1 is phenyl optionally substituted with 1 through 2 —Cl, —Br, C_1–C_3 alkoxy, —COOH, —NH_2, C_1–C_3 alkylamino, di(C_1–C_3)alkylamino, where the alkyl groups are the same or different, 1-pyrrolidinyl-, 1-piperidinyl, 1-hexamethylenimino-, 1-heptamethylenimino-, C_2–C_4 acylamino and —NH—CHO or with 1 —F or —CF_3; where:

(D-I) R_{16} is R_{161}:R_{162} and R_{17} is R_{171}:R_{172}, where one of R_{161} and R_{162} is —H or —CH_3 and the other taken together with one of R_{171} and R_{172} forms a second bond between C_{16} and C_{17}, and the other of R_{171} and R_{172} is —C(=Z)—$(CH_2)_n$—$NR_{21}R_{210}$, where Z is =O, =CH_2 or R_{179}:—H where R_{179} is —H or —CH_3, where n is 0 through 6, where

(A) R_{21} is

(1) —$(CH_2)_m$—NR_{211}—X_2, where m is 2, 3 or 4, where R_{211} is —H or C_1–C_3 alkyl, where X_2 is:

(a) pyridin-2-, 3- or 4-yl or the N-oxide thereof optionally substituted by 1 or 2 R_{212}, being the same or different, where R_{212} is

(i) —F,

(ii) —Cl,

(iii) —Br,

(iv) C_1–C_5 alkyl,

(v) —CH_2—CH=CH_2,

(vi) —X_1, where X_1 is as defined above,

(vii) —$NR_{213}R_{213}$ where the R_{213}'s are the same or different and are —H, C_1–C_3 alkyl or —CH_2—CH=CH_2,

(viiiα) •CH_2—$(CH_2)_q$—CH_2—N•—where the atoms marked with an asterisk (•) are bonded to each other resulting in the formation of a ring, where q is 1 through 5,

(viiiβ) •CH_2—CH_2—$(CH_2)_c$—G—$(CH_2)_d$—CH_2—CH_2—N•—where the atoms marked with an asterisk (•) are bonded to each other resulting in the formation of a ring, where G is —O—, —S—, —SO—, —SO_2— or —NHR_{214}, where R_{214} is —H, C_1–C_3 alkyl, or X_1 as defined above, where c and d are the same or different and are 0 through 2 with the proviso that the total number of ring carbon atoms is 4, 5 or 6, [a]

(ix) 3-pyrrolin-1-yl, [b]

(x) pyrrol-1-yl optionally substituted with C_1–C_3 alkyl,

(xi) piperidin-1-yl optionally substituted with 1 or 2 C_1–C_3 alkyl,

(xii) 1,2,3,6-tetrahydropyridin-1-yl, [e]

(xiii) 1-hexamethyleneimino containing a 3- or 4-double bond or 3- and 5- double bonds, [f]

(xiv) 1,4-dihydro-1-pyridinyl substituted in the 4 position by two C_1–C_3 alkyl being the same or different,[g]

(xv) —OH,

(xvi) C_1–C_3 alkoxy,

(xvii) —NR_{217}—$(CH_2)_e$—Q where Q is 2-pyridinyl where R_{217} is —H or C_1–C_3 alkyl and e is 0 through 3 (1)

(xviii) pyridin-2-, 3- or 4-yl,

(b) 1,3,5-triazin-4-yl or the N-oxide thereof optionally substituted at the 2- and/or 6-position with R_{212} is as defined above, (4)

(c) pyrimidin-4-yl or the N-oxide thereof optionally substituted at the 2- and/or 6- position with R_{212} is as defined above, (5)

(d) pyrimidin-2-yl optionally substituted at 4- and/or 6-position with 1 or 2 R_{212} as is defined above, (6)

(e) pyrazin-2-yl optionally substituted with 1 or 2 R_{212} as is defined above, (7)

(f) imidazol-2-yl optionally substituted in the 1 position with C_1–C_3 alkyl or —X_1, where X_1 is as defined above, and further optionally substituted with 1 or 2 R_{212} as defined above, (8)

(g) 1,3,4-triazol-2-yl optionally substituted in the 1 position with C_1–C_3 alkyl or —X_1, where X_1 is as defined above, and further optionally substituted with R_{212} as defined above, (9)

(h) imidazol-4- or 5-yl optionally substituted in the 1 position with C_1–C_3 alkyl or —X_1, where X_1 is as defined above, and further optionally substituted with 1 or 2 R_{212} as defined above, (10)

(i) benzo[b][thien-2-yl, (12a)

(j) indol-2-yl, (12b)

(k) benzo[b]thiazol-2-yl, (12c)

(l) benzimidazol-2-yl, (12d)

(m) 4-[2-[4-[2,6-bis(1-pyrrolidinyl)-4-pyrimidinyl]-1-piperazinyl]ethyl]-piperazinyl, (13)

(n) 1,2,4-triazin-3-yl optionally substituted at the 5- and/or 6- position with R_{212} as is defined above, (14)

(2) (1-piperazinyl)(-C_2–C_4)alkyl optionally substituted in the 4- position with —X_1 or —X_2 as defined above,

(3) —X_2, as defined above,

(4) —$(CH_2)_m$—X_4 where m is as defined above and where X_4 is

(a) —O—CH_2CH_2—Y, where Y is C_1–C_3 alkylamino, di(C_1–C_3)alkylamino where the alkyl groups are the same or different, C_3–C_6 alkyleneimino, optionally substituted with 1 or 2 C_1–C_3 alkyl,

(b) —$NR_{220}CH_2CH_2$—Y, where R_{220} is —H or C_1–C_3 alkyl and Y is as defined above,

(c) —$(CH_2)_g$—N(R_{220})—X_2, where g is 2, 3 or 4, and where R_{220} and X_2 are as defined above, [H]

(5) —$(CH_2)_m$—$NR_{222}R_{223}$, where R_{222} is —H or C_1–C_3 alkyl and R_{223} is —X_1 or —X_2 as defined above, or R_{222} and R_{223} are taken together with the attached nitrogen atom to form a saturated mononitrogen C_3–C_6 heterocyclic ring and where m is as defined above, [I]

(6) —$(CHCH_3)_b$—$(CH_2)_f$—R_{224}, where b is 0 and f is 1 through 3 or b is one and f is 0 through 3, where R_{224} is phenyl substituted with 1 through 3 —OH, C_1–C_3 alkoxy, —$NR_{225}R_{226}$ where R_{225} and R_{226} are the same or different and are —H, C_1–C_3 alkyl or are taken together with the attached nitrogen atom to form a C_4–C_7 cyclicamino ring, [J]

(7) —$(CH_2)_i$—X_2, where i is 1 through 4 and X_2 is as defined above, [K]

(8) (1-piperazinyl)acetyl substituted in the 4-position by X_2 where X_2 is as defined above, [L]

(9) (1-piperazinyl)carbonylmethyl substituted in the 4-position by —X_2 where X_2 is as defined above, and [M]

(B) R_{210} is

(1) —H,

(2) C_1–C_3 alkyl,

(3) C_5–C_7 cycloalkyl,

(4) —$(CH_2)_m$—NR_{211}—X_2, where m, R_{211} and X_2 are as defined above, [A]

(5) (1-piperazinyl)-(C_2–C_4)alkyl optionally substituted in the 4-position with —X_1 or —X_2 as defined above, [B]

(6) —$(CH_2)_m$—X_4, where m and X_4 are as defined above, [H]

(7) —$(CH_2)_m$—$NR_{222}R_{223}$, where m, R_{222} and R_{223} are as defined above, [I]

(8) —$(CHCH_3)_b$—$(CH_2)_f$—R_{224}, where b, f and R_{224} are as defined above, [J]

(C) R_{21} and R_{210} are taken together with the attached nitrogen atom to form a heterocyclic ring selected from the group consisting of

(1) 2-(carboxy)-1-pyrrolidinyl optionally as the C_1–C_3 alkyl ester or as a pharmaceutically acceptable salt, [C-1]

(2) 2-(carboxy)-1-piperidinyl optionally as the C_1–C_3 alkyl ester or as a pharmaceutically acceptable salt [C-2]

(3) 2-(carboxy)-1-hexamethyleneimino optionally as the C_1–C_3 alkyl ester or as a pharmaceutically acceptable salt, [C-3]

(4) 2-(carboxy)-1-heptamethyleneimino optionally as the C_1–C_3 alkyl ester or as a pharmaceutically acceptable salt, [C-4]

(5) 1-piperazinyl substituted in the 4-position with R_{228}—CO—$(CH_2)_j$— where R_{228} is —X_1, —$NR_{229}X_1$ and 2-furanyl, where R_{229} is —H or C_1–C_3 alkyl, where j is 0 through 3 and X_1 is as defined above, [D]

(6) 1-piperazinyl substituted in the 4-position with X_2—$(CH_2)_j$—, where X_2 and j are as defined above, [E]

(7) 1-piperazinyl substituted in the 4-position with X_1—(CH_2)j—, where X_1 and j are as defined above, [F]

(8) 4-hydroxy-1-piperidinyl substituted in the 4-position with X_1 as defined above, [G]

(9) 1-piperazinyl substituted in the 4-position with X_2—NR_{229}—CO—$(CH_2)_i$—, where X_2, R_{229} and i are as defined above; [N]

(D-II) R_{16} is α-R_{163}:β-R_{164} where one of R_{163} and R_{164} is —H and the other is —H, —F, —CH_3 or —OH, and R_{17} is —CH—$(CH_2)_p$—$NR_{21}R_{210}$, where p is 1 or 2, where R_{21} and R_{210} are as defined above.

(D-III) R_{16} is α-R_{165}:β-R_{166} and R_{17} is α-R_{175}:β-R_{176}, where R_{165} is —H, —OH, —F or —CH_3 and R_{166} is —H, —OH, —F, or —CH_3, with the proviso that at least one of R_{165} and R_{166} is —H, where R_{175} is —H, —OH, —CH_3, —CH_2CH_3, C_2–C_7 alkanoyloxy or —O—CO—X_1, where X_1 is as defined above, and where R_{176} is —C(=Z)—(CH_2)n—$NR_{21}R_{210}$, where Z, n, R_{21} and $R_{210}$are as defined above;

(D—IV) the 16,17—acetonide of a compound where R_{165} is —OH, R_{166} is —H, R_{175} is —OH and R_{176} is —C(=Z)—$(CH_2)_n$—$NR_{21}R_{210}$, where Z, n, —R_{21} and R_{210} are as defined above;

and pharmaceutically acceptable salts thereof,

and hydrates and solvates thereof;

with the following overall provisos that:

(I) one of R_{161} or R_{162} is taken together with one of R_{171} or R_{172} to form a second bond between C_{16} and C_{17}, only when R_{10} is α-R_{101}:β-R_{102}, α-R_{103}:β-R_{104}, α-R_{107}:β-R_{108} or α-R_{109}:β-R_{1010},

(II) R_{17} is —CH—$(CH_2)_p$—$NR_{21}R_{210}$, only when R_{10} is α-R_{101}:β-R_{102}, a-R_{103}:β-R_{104}, α-R_{107}:β-R_{108} or α-R_{109}:β-R_{1010},

(III) R_5 and R_{10} taken together are =CH—CH=C(OR_3)—CH=, only when R_{17} is α-R_{175}:β-R_{176} or the 16,17-acetonide of a compound where R_{16} is α-OH:β-H and R_{17} is α-OH:β-C(=Z)—$(CH_2)_n$—$NR_{21}R_{210}$, and

(IV) R_5 is α-R_{57}:β-R_{58}, only when R_{17} is α-R_{175}:β-R_{176} or α-OH:β-C—(=Z)—$(CH_2)_n$—$NR_{21}R_{210}$, or the 16,17-acetonide thereof.

5,252,320

PVP-HI-I_2 COMPLEXES HAVING A PARTITION COEFFICIENT ABOVE 300, AND PROCESS FOR MAKING SAME

John J. Merianos, Middletown, N.J., assignor to ISP Investments Inc., Wilmington, Del.

Division of Ser. No. 361,073, Jun. 5, 1989, abandoned. This application Apr. 20, 1990, Ser. No. 512,288

Int. Cl.[5] A61K *31/79*

U.S. Cl. 424—78.25 **8 Claims**

1. A process for preparing dry powders of a PVP-HI-I_2 complex which comprises (a) contacting PVP as a dry powder, suspension or solution thereof with HI in the form of a gas, or as an aqueous or alcoholic solution, to form a PVP-HI complex, and (b) oxidizing said PVP-HI in air to form said desired complex, and isolating the desired complex as a dry powder.

5,252,321

BIOCIDAL POLYMERS AND POLYMER DISPERSIONS, PROCESSES FOR THEIR PREPARATION AND THEIR USE

Hans-Ullrich Hth, Egelsbach, and Wolfgang Lindner, Seelze, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

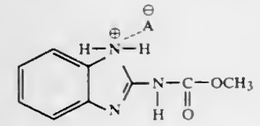
Filed Dec. 21, 1992, Ser. No. 994,138

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1991, 4142731

Int. Cl.[5] A61K *9/10*

U.S. Cl. 424—78.32 **5 Claims**

1. A biocidal polymer or copolymer based on free radical-polymerized or copolymerized ethylenically unsaturated monomers, wherein the polymer or copolymer contains monomer units composed of BCM salts of the formula I



(I)

in which $A^{\ominus}$ is an anionic ethylenically unsaturated carboxylic acid or sulfonic acid or phosphonic acid radical, and said monomer units are polymerized in the biocidal macromolecule via the ethylenic double bond of the radical $A^{\ominus}$, or a solution or aqueous dispersion of said polymer or copolymer.

5,252,322

SKIN TANNING COMPOSITIONS CONTAINING IMIDAZOLES

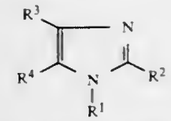
Karla L. Stoner, Frederick, Md., and Leon M. Wilkins, North Andover, Mass., assignors to The Gillette Company, Boston, Mass.

Continuation of Ser. No. 667,379, Mar. 12, 1991, abandoned, which is a continuation of Ser. No. 410,898, Sep. 22, 1989, abandoned. This application Jan. 3, 1992, Ser. No. 815,867

Int. Cl.[5] A61K *7/40, 7/42, 7/44, 7/48*

U.S. Cl. 424—59 **10 Claims**

1. A method of tanning the skin in the absence of exposure to ultraviolet radiation comprising application to the skin of a skin tanning effective amount of a compound of the formula:



wherein R^1 through R^4 can be the same or different and are hydrogen; phenyl; C_1–C_6 alkyl unsubstituted or substituted by

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phenyl, hydroxy, benzyloxy, amino, halogen, carboxylic acid, sulfonate or phosphate; or CH_2—CH(COOR') NR''R''' where R', R'', and R''' are the same or different and are hydrogen or C_1–C_4 alkyl; in a dermatologically acceptable vehicle.

5,252,323

S-TRIAZINE COMPOUNDS SUBSTITUTED BY BENZYLIDENECAMPHOR SUBSTITUENTS AND COSMETIC COMPOSITIONS CONTAINING THE S-TRIAZINE COMPOUNDS

Herve Richard; Madeleine Leduc, both of Paris, and Alex Junino, Livry-Gargan, all of France, assignors to L'Oreal, Paris, France

Filed Apr. 2, 1992, Ser. No. 862,356

Claims priority, application France, Apr. 4, 1991, 91 04123

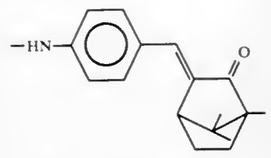
Int. Cl.[5] A61K *7/42, 7/44, 7/48;* **C07D** *251/54*

U.S. Cl. 424—59 **12 Claims**

1. A Compound of formula:

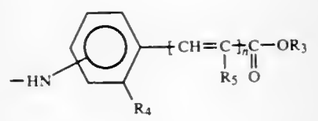
in which R_1 is of the formula:

(II)



and R_2 is a linear or branched alkoxy or mono- or dialkylamino group containing 8 to 20 carbon atoms or is of the formula (III):

(III)



in which n is equal to 0 or 1;

when n is equal to 0, R_3 is a linear or branched alkyl radical containing 8 to 20 carbon atoms; R_4 represents a hydrogen atom, the amino substituent being in position 4 with respect to the carboxyl group, or R_4 represents a hydroxyl, radical or a C_1–C_6 alkoxy radical, the amino substituent being in position 4 or 5 with respect to the carboxyl group;

when n is equal to 1, R_3 is a linear or branched alkyl radical containing 4 to 20 carbon atoms, R_5 is a hydrogen atom or a group $COOR_3$ where R_3 is a linear or branched alkyl radical which contains 4 to 20 carbon atoms; R_4 represents a hydrogen atom, the amino substituent being in position 4 with respect to the unsaturated group, provided that when R_5 is a hydrogen atom, R_3 contains 8 to 20 carbon atoms.

3. A Cosmetic composition which contains an effective amount of at least one compound of formula (I) according to claim 1, in a cosmetically acceptable carrier containing at least one fatty phase or one organic solvent.

5,252,324

CONDITIONING SHAMPOO HAIR CARE COMPOSITIONS

Carmen D. Bires, Hackettstown; Stephen L. Kopolow, Plainsboro; William J. Burlant, Wayne; Michael W. Helioff, Westfield; Robert B. Login, Oakland, all of N.J., and Mohammed Tazi, Marietta, Ga., assignors to ISP Investments Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 638,597, Jan. 8, 1991, Pat. No. 5,169,622, and a continuation-in-part of Ser. No. 638,598, Jan. 8, 1991, Pat. No. 5,169,623. This application Feb. 18, 1992, Ser. No. 836,570

The portion of the term of this patent subsequent to Dec. 17, 2008, has been disclaimed.

Int. Cl.[5] A61K *7/06, 7/075*

U.S. Cl. 424—70 **11 Claims**

1. A conditioning shampoo hair care composition comprising

(a) 0.25–25% by weight of a stabilized silicone product having a viscosity of about 3,000 to 100,000 obtained by in situ polymerization of a water-soluble vinyl monomer optionally with a water-soluble acryl comonomer in the presence of microdroplets of a silicone selected from a non-volatile polyalkyl siloxane, a polyaryl siloxane, a polyalkylaryl siloxane or a polyether siloxane in water, in a weight ratio of 95/5 to 5/95, respectively, wherein the microdroplets sizes of the stabilized microdroplets of silicone are in the range of about 0.1 to 450 microns in diameter,

(b) about 4–25% by weight of a surfactant,

(c) about 1.5–10% by weight of a foam stabilizer which is an ethanol amide of a fatty acid, and

(d) about 20–98% by weight of water.

5,252,325

CONDITIONING HAIR CARE COMPOSITIONS

Carmen D. Bires, Hackettstown; Stephen L. Kopolow, Plainsboro; William J. Burlant, Wayne; Michael W. Helioff, Westfield; Robert B. Login, Oakland, all of N.J., and Mohammed Tazi, Marietta, Ga., assignors to ISP Investments Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 638,597, Jan. 8, 1991, Pat. No. 5,169,622, and a continuation-in-part of Ser. No. 638,598, Jan. 8, 1991, Pat. No. 5,169,623. This application Mar. 25, 1992, Ser. No. 857,150

The portion of the term of this patent subsequent to Dec. 17, 2008, has been disclaimed.

Int. Cl.[5] A61K *7/11, 7/06*

U.S. Cl. 424—71 **8 Claims**

1. A conditioning hair care composition comprising

(a) about 0.5–10% by weight at 20% solids of a stabilized silicone product made by in situ polymerization of a water-soluble vinyl monomer which is vinylpyrrolidone or vinylpyrrolidone copolymerized with an acryl comonomer which is methacrylamidopropyl trimethylammonium chloride in the presence of microdroplets of 0.1 to 450 microns in diameters of a non-volatile silicone oil having a viscosity between about 100 and 100,000 cs, in water, wherein the weight ratio of the vinylpyrrolidone monomer to silicone oil in the polymerization mixture is about 95:5 to 5:95, respectively, on a weight basis,

(b) about 1–10% by weight of an emulsifying wax including glycerol stearate, and

(c) a thickener,

(d) up to 10% by weight of a cationic surfactant comprising a quaternary ammonium compound, and the balance being

(e) water.

5,252,326

FARNESENES AND RELATED SUBSTANCES FOR MOUSE CONTROL

Milos V. Novotny, Bloomington, Ind.; Scott D. Harvey, Richland, Wash., and Bozena Jemiolo, Bloomington, Ind., assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

Continuation of Ser. No. 735,971, Jul. 25, 1991, abandoned, which is a continuation of Ser. No. 435,868, Nov. 13, 1989, abandoned. This application Dec. 23, 1992, Ser. No. 996,374

Int. Cl.[5] A01N *25/00*

U.S. Cl. 424—54 **3 Claims**

1. A method for inhibiting colonization by a mouse population in a given area which comprises treating said area with a composition comprising an aversion signalling effective amount of an E,E-alpha-farnesene or an E-beta-farnesene or a derivative of said α-farnesene or said β-farnesene to discourage territorial and sexual investigation by male mice, said pheromone or derivative thereof being present in an amount from about 0.01% to about 95% of the total composition, said pheromone being used in a form other than male mouse urine.

5,252,327

SOLUTIONS CONTAINING ANTIGEN AND ZINC HYDROXIDE OR IRON HYDROXIDE AS AN ADJUVANT AND PROCESSES FOR PREPARING SUCH SOLUTIONS

Dieter Bernhardt, Cölbe, Fed. Rep. of Germany, assignor to Behringwerke Aktiengesellschaft, Marburg/Lahn, Fed. Rep. of Germany

Filed Oct. 10, 1989, Ser. No. 419,105

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1988, 3834729

Int. Cl.[5] A61K *39/00*

U.S. Cl. 424—88 **4 Claims**

1. A process for the preparation of a solution containing an antigen and an adjuvant for eliciting an immune response comprising adding to an antigen solution an immunological adjuvant comprising a member of the group consisting of 1–45 % V/V iron hydroxide gel and 1–45 % V/V zinc hydroxide gel in an amount sufficient to enhance the immune response elicited by the antigen.

5,252,328

MYCOPLASMA HYOPNEUMONIAE ANTIGEN AND USES THEREFOR

Daryl Faulds, Millbrae; Mimi Vishoot, San Francisco, and Emily Brooks, Pacifica, all of Calif., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Continuation-in-part of Ser. No. 30,130, Mar. 26, 1987, abandoned. This application Apr. 7, 1989, Ser. No. 335,726

The portion of the term of this patent subsequent to Aug. 31, 2010, has been disclaimed.

Int. Cl.[5] A61K *39/02*

U.S. Cl. 424—92 **6 Claims**

1. A composition comprising:

at least one protein; and a vehicle for said at least one protein, said at least one protein being an *M. hyopneumoniae* antigen, having a molecular weight of 74.5 Kda, said at least one protein being present in an amount effective for protection of swine against mycoplasmal pneumonia caused by *M. hyopneumoniae.*

5,252,329

BACTERIAL PREPARATION FOR USE IN POULTRY

Lasse O. Nuotio, Imatra; Matti A. Aho, and Esko V. Nurmi, both of Helsinki, all of Finland, assignors to Orion-Yhtyma OY, Turku, Finland

PCT No. PCT/FI90/00171, § 371 Date Dec. 9, 1991, § 102(e) Date Dec. 9, 1991, PCT Pub. No. WO91/00099, PCT Pub. Date Jan. 10, 1991

PCT Filed Jun. 27, 1990, Ser. No. 777,539

Claims priority, application United Kingdom, Jun. 30, 1989, 8915027

Int. Cl.[5] C12N *1/20*

U.S. Cl. 424—93 C **2 Claims**

1. A bacterial composition having a competitive exclusion effect on Campylobacteria and being useful for the prophylaxis of Campylobacter spp. infections in poultry, comprising a composition obtained by culturing bacteria, derived from the mucous layer of the caecum of an adult bird in a mucin broth under microaerophillic conditions and isolating spiral shaped motile bacteria from the mucin broth.

5,252,330

METHOD OF CONTROLLING ZEBRA MUSSELS WITH EXTRACT OF PHYTOLACCA DODECANDRA

Harold H. Lee, Lambertville, Mich.; Peter C. Fraleigh, Sylvania, Ohio, and Aklilu Lemma, Florence, Italy, assignors to University of Toledo, Toledo, Ohio

Filed Oct. 12, 1990, Ser. No. 596,879

Int. Cl.[5] A61K *35/78;* **C02F** *1/68, 1/76*

U.S. Cl. 424—195.1 **9 Claims**

1. A method of controlling zebra mussels (*Dreissena polymorpha*) comprising contacting said mussels with a treating medium comprising at least about 5 ppm and up to about 625 ppm of a powdered berry of a Phytolacca plant in water.

5,252,331

LESS IRRITATING SHAVING MATERIAL

Austin W. Curtis, Detroit, Mich., and Lorenzo Freeman, 4211 Avery, Detroit, Mich. 48208, assignors to Lorenzo Freeman, Detroit, Mich.

Filed Mar. 5, 1992, Ser. No. 847,699

Int. Cl.[5] A61K *7/15*

U.S. Cl. 424—401 **10 Claims**

1. A composition suitable for shaving whereby the incidence of ingrown hairs is significantly reduced, said composition comprising

1 to 25 parts by weight olive oil;

0.1 to 10 parts by weight aloe vera;

10 to 40 parts by weight mineral oil;

0.1 to 10 parts by weight self-emulsifying wax;

0.1 to 10 parts by weight petrolatum;

0.05 to 5 parts cetyl alcohol; and

100 parts by weight water.

5,252,332

PRE-MOISTENED FLUSHABLE TOWLETTE IMPREGNATED WITH POLYVINYL ALCOHOL CONTAINING BINDERS

Joel E. Goldstein, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jul. 24, 1992, Ser. No. 919,513

Int. Cl.[5] A01N *25/34*

U.S. Cl. 424—402 **12 Claims**

1. A packaged pre-moistened towelette comprising a web of nonwoven fibers bonded with a polyvinyl alcohol containing binder which is selected from the group consisting of a polyvinyl alcohol, an aqueous polyvinyl alcohol stabilized polymer emulsion, a blend of a polyvinyl alcohol and an aqueous polymer emulsion and a combination thereof, and in contact with an aqueous solution which consists essentially of 0.2 to 2 wt% borate ions and 0.2 to 3 wt% bicarbonate ions.

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5,252,333

LITHIUM SALT-CONTAINING PHARMACEUTICAL COMPOSITIONS

David F. Horrobin, Haslemere, United Kingdom, assignor to Scotia Holdings PLC, Surrey, United Kingdom

Continuation of Ser. No. 182,291, Apr. 15, 1988, abandoned. This application Mar. 28, 1989, Ser. No. 329,881

Claims priority, application United Kingdom, Apr. 27, 1987, 8709892; Aug. 25, 1987, 8719988; Jan. 29, 1988, 8802016

The portion of the term of this patent subsequent to Jun. 28, 2005, has been disclaimed.

Int. Cl.[5] A61F *13/00;* A61K *9/00, 31/20*

U.S. Cl. 424—422 24 Claims

1. A pharmaceutical composition comprising a lithium salt of a C_{18-22} polyunsaturated fatty acid having at least two unsaturated carbon-carbon bonds together with at least one physiologically acceptable excipient or carrier material, with the proviso that where said composition is in a solid form adapted for oral administration into the stomach in the treatment of Alzheimer's disease said lithium salt therein is provided with a gastric juice resistant release delaying coating.

5,252,334

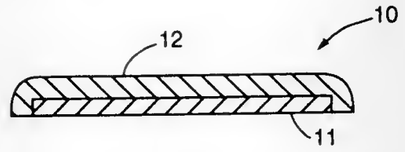
SOLID MATRIX SYSTEM FOR TRANSDERMAL DRUG DELIVERY

Chia-Ming Chiang, Foster City, and Renee A. Tenzel, Mountain View, both of Calif., assignors to Cygnus Therapeutic Systems, Redwood City, Calif.

Continuation of Ser. No. 405,630, Sep. 8, 1989, abandoned. This application Mar. 20, 1992, Ser. No. 857,094

Int. Cl.[5] A61F *13/02*

U.S. Cl. 424—448 25 Claims



1. A transdermal drug delivery device for administering at least one steroid drug to an area of skin or mucosa, wherein the device consists of a first layer laminated to a second layer, wherein

said first layer consists of a layer of a backing material which is substantially impermeable to the at least one steroid drug; and

said second layer consists essentially of a therapeutically effective amount of the at least one steroid drug, and an adhesive matrix wherein said second layer is essentially free of a skin penetration rate enhancer, and wherein the adhesive matrix comprises a copolymer of 2-ethylhexyl acrylate and at least one comonmer selected from the group consisting of vinyl acetate, acrylic acid, and methyl acrylate.

5,252,335

TRANSDERMAL ADMINISTRATION OF LISURIDE

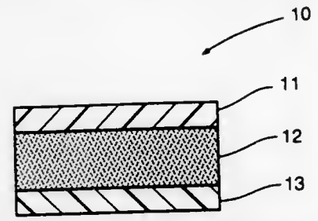
Chia-Ming Chiang, Foster City, Calif., assignor to Cygnus Therapeutic Systems, Redwood City, Calif.

Filed Jul. 12, 1989, Ser. No. 379,000

Int. Cl.[5] A61F *13/00*

U.S. Cl. 424—449 6 Claims

1. A method for providing lisuride therapy for a condition associated with serotonin excess to an individual in need of such therapy comprising administering a therapeutically effective amount of about 1 to 2 mg per day of lisuride in a nonaqueous vehicle formulation to the individual transdermally through a predetermined area of skin for at least about one day at a controlled rate said formulation containing a sufficient amount of a permeation enhancer to enable the lisuride to



permeate the area of skin at a rate in excess of about one microgram per cm^2 of skin per hour.

5,252,336

LIPOSOME COMPOSITION WHOSE LIPOSOME MEMBRANE CONTAINS A POLYOXYETHYLENE DERIVATIVE

Katsumi Iga, Suita; Kazuhiro Ohkouchi, Osaka, and Yasuaki Ogawa, Otokuni, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

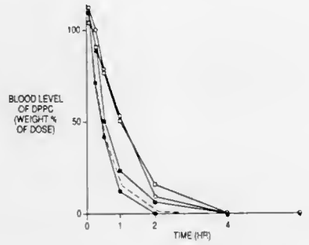
PCT No. PCT/JP91/00481, § 371 Date Jun. 5, 1991, § 102(e) Date Jun. 5, 1991, PCT Pub. No. WO91/16040, PCT Pub. Date Oct. 31, 1991

PCT Filed Apr. 12, 1991, Ser. No. 687,918

Claims priority, application Japan, Apr. 18, 1990, 2-103902

Int. Cl.[5] A61K *9/127*

U.S. Cl. 424—450 5 Claims



1. A liposome composition whose liposome membrane comprises a polyoxyethylene derivative represented by the general formula:

$$X—O—(CH_2CH_2O)_n—Y \quad (1)$$

wherein X represents an alkyl group, Y represents an anion-forming group, and n is an integer of 5 to 15, and a phospholipid selected from the group consisting of glycerophospholipid and sphingophospholipid, wherein the ratio of the phospholipid t the polyoxyethylene derivative is about 0.5 to 200 parts by weight of the polyoxyethylene derivative based on 100parts by weight of the phospholipid.

5,252,337

CONTROLLED RELEASE CALCIUM CHANNEL BLOCKER MICROCAPSULES

Thomas C. Powell, West Alexandria, Ohio, assignor to Eurand America, Inc., Ohio

Filed Jun. 25, 1991, Ser. No. 720,978

Int. Cl.[5] A61K *9/62, 9/64;* B01J *13/06*

U.S. Cl. 424—456 18 Claims

1. A process for the preparation of controlled release microencapsulated calcium channel blockers comprising:

a) loading a calcium channel blocker from solution onto pellets;

b) prilling the loaded pellets;

c) screening the pellets to obtain those from about 12 to about 50 mesh;

d) dispersing ethylcellulose in an organic solvent to form a dispersion;

e) adding the loaded pellets of step (c) to the dispersion of step d to form a mixture in which the phase ratio of the ethylcellulose to the loaded pellets is from about 1:5 to about 1:50;

f) heating the mixture with agitation until the ethylcellulose is in solution;

g) cooling the solution to solidify the ethylcellulose and achieve microencapsulation;

h) recovering the microcapsules from the solution;

i) drying the microcapsules;

j) screening the dried microcapsules to obtain dried microcapsules from about 10 to about 50 mesh.

9. The process of claim 1, wherein the pellets comprise crystals of the calcium channel blocker.

16. A controlled release formulation made according to the process of claim 9.

5,252,338

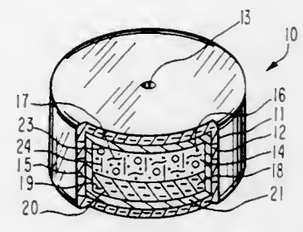
THERAPY DELAYED

Frank Jao, San Jose; Patrick S. L. Wong, Palo Alto; Hoa T. Huynh, Fremont; Kathy McChesney, Cupertino, and Pamela K. Wat, Santa Clara, all of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Continuation of Ser. No. 799,451, Nov. 26, 1991, Pat. No. 5,190,765, which is a continuation-in-part of Ser. No. 722,622, Jun. 27, 1991, Pat. No. 5,160,744. This application Nov. 2, 1992, Ser. No. 971,011

Int. Cl.[5] A61K *9/24*

U.S. Cl. 424—473 1 Claim



1. A method for producing a delayed therapeutic effect of thirty minutes to seven hours in a patient in need of therapy, wherein the method comprises:

(a) admitting into the gastrointestinal tract of a patient a dosage form comprising:

(1) a drug composition comprising 0.05 mg to 1.5 g of a drug, and a pharmaceutically acceptable polymer comprising a molecular weight up to 1,000,000;

(2) a push composition that imbibes fluid and expands, whereby the push composition pushes the drug composition from the dosage form;

(3) a wall that surrounds the drug and push compositions, said wall comprising a semipermeable polymer permeable to the passage of fluid and up to 85 wt. % of a different polymer comprising a molecular weight up to 4,000,000 molecular weight for slowing the rate of fluid passage through the semipermeable wall;

(4) at least one exit means in the semipermeable wall for delivering the drug from the dosage form; and wherein the dosage form is characterized by:

(5) a subcoat for the delayed-delivery of the drug, which subcoat comprises a hydroxyalkylcellulose polymer comprising a molecular weight up to 4,000,000 that surrounds the drug and the composition on the inside surface of the semipermeable wall;

(b) imbibing fluid into the dosage form to provide a delayed drug delivery of thirty minutes up to seven hours b the polymer in the drug composition, the polymer in the semipermeable wall and the polymer in the subcoat operation operating together for delaying the drug delivery; and,

(c) administering the drug at a delayed time to the patient in need of drug therapy.

5,252,339

PHARMACEUTICAL COMPOSITIONS CONTAINING ORALLY ABSORBABLE GLYCOSAMIMOGLYCANS

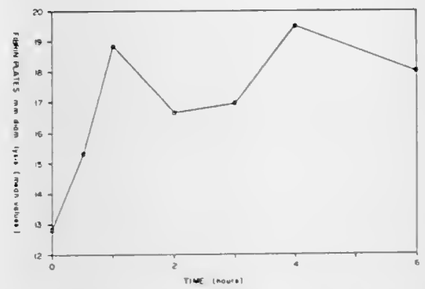
Manlio Cristofori, Bologna; Egidio Marchi, Casalecchio de Reno, and Leone G. Rotini, Bologna, all of Italy, assignors to ALFA Wasserman s.p.A., Alanno Scalo, Italy

Filed Jan. 15, 1992, Ser. No. 821,455

Claims priority, application Italy, Jan. 30, 1991, B091A000024

Int. Cl.[5] A61K *9/36*

U.S. Cl. 424—479 9 Claims



1. A pharmaceutical composition for oral use in unit dosage form which consists of a) a coating, b) a non-coated portion, and c) a non-protective first coating, said non-coated portion b) comprising a lyophilizate, said lyophilizate consisting of 25–500 mgs by weight of a glycosaminoglycan, 5–100 mgs by weight of at least one thickening agent, 25–500 mgs by weight of at least one surfactant, said glycosaminoglycan being a member selected from the group consisting of heparin of molecular weight between 6,000 and 30,000 Daltons and alkaline and alkali-earth salts thereof, fractions of low molecular weight heparin of molecular weight between 1,500 and 8,000 Daltons, low molecular weight fractions of dermatan sulfate of average molecular weight between 2,000 and 8,000 Daltons and glucuronylglycosaminoglycan sulfate known as sulodexide (INN), said coating a) consisting of a gastroresistant enterosoluble film in the amount of 2–10% by weight with respect to said non-coated portion b), said non-protective first coating c) being interposed between said lyophilizate and said gastroresistant enterosoluble film and being obtained by spraying a suspension of 3.5–21 mgs of hydroxypropylmethylcellulose, 0.2–1.2 mgs of polyethylene glycol 6000, 0.8–4.8 mgs of titanium dioxide and 0.8–4.8 mgs of talc in a 22:1 mixture of 95% ethyl alcohol and water, in such an amount that the weight of said non-protective first coating c) is between 1% and 5% as to the weight of said non-coated portion b).

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5,252,340
METHOD OF PRODUCING AN ABSORBENT COMPOSITION

Travis W. Honeycutt, Gainesville, Ga., assignor to Isolyser Company, Inc., Norcross, Ga.

Continuation-in-part of Ser. No. 669,363, Mar. 14, 1991, abandoned, which is a continuation-in-part of Ser. No. 450,579, Dec. 14, 1989, abandoned. This application Apr. 28, 1992, Ser. No. 875,237

Int. Cl.[5] A61K *9/14, 47/36;* A61F *13/15;* C08B *11/02*

U.S. Cl. 424—489 16 Claims

1. A method of producing a granular absorbent composition, said method comprising dry mixing a particulate carboxylated glucosidic polymeric material being characterized as having surface anionic reactive sites with a multi-valent metal ion forming surface ionic bridges between various ionic group polymer chains within each polymer particle while forming a hydrophobic coating on each particle and only after said dry mixing of said polymeric material and multi- valent metal ion, adding thereto a lower alkanol dispersant to form a wet slurry which is subsequently dried to a granular consistency.

5,252,341
TABLETS AND GRANULATES CONTAINING MESNA AS ACTIVE SUBSTANCE

Dieter Sauerbier, Werter; Jürgen Engel, Alzenau, and Eckhard Milsmann, Bielefeld, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 730,178, Jul. 16, 1991. This application Aug. 17, 1992, Ser. No. 930,783

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1990, 4022525

Int. Cl.[5] A61K *9/16*

U.S. Cl. 424—489 10 Claims

1. A granulate containing, as active ingredient mesna, in combination with, for each part by weight of mesna: 0.1–1 parts by weight of a binding agent.

5,252,342
ENHANCEMENT OF ANTI-NEOPLASTIC DRUG EFFICACY USING EGF

Stephen B. Howell, Del Mar; Randloph D. Christen, San Diego; Seiji Isonishi, San Diego, and Paul A. Andrews, San Diego, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Mar. 5, 1990, Ser. No. 488,199

Int. Cl.[5] A61K *33/24, 31/00*

U.S. Cl. 424—649 1 Claim

1. A method of enhancing the toxicity of cisplatin [(DPO)] in human ovarian carcinoma cells consisting of [administration of a sensitizing agent selected from the group consisting of EGF and TPA to an individual in need of treatment with the cisplatin] administering to individuals in need thereof an effective amount of cisplatin and an effective amount of epidermal growth factor.

5,252,343
METHOD AND COMPOSITION FOR PREVENTION AND TREATMENT OF BACTERIAL INFECTIONS

Robert D. Kross, Bellmore, N.Y., assignor to Alcide Corporation, Norwalk, Conn.

Filed Mar. 20, 1992, Ser. No. 854,286

Int. Cl.[5] A01N *59/00, 59/08*

U.S. Cl. 424—661 17 Claims

1. A method for treating or preventing a bacterial infection in at least a portion of a mammary gland of a non-human female mammal, comprising infusing into said mammary gland an effective amount of an isotonic composition comprising chlorine dioxide and a pharmaceutically acceptable carrier, wherein (1) the chlorine dioxide is present in the composition in an amount ranging from 5 ppm to 1000 ppm, (2) the molar ratio of chlorine dioxide to any residual chlorite in the composition is at least 5:1, and (3) the pH of the composition is compatible with said mammary gland.

5,252,344
HARDENING AGENT FOR AFFECTED TISSUES OF THE DIGESTIVE SYSTEM

Zhao-Qi Shi, Peking, China, assignor to Traditional Chinese Medicine Research Laboratory, Inc., Okinawa, Japan

Filed Apr. 24, 1991, Ser. No. 690,762

Claims priority, application Japan, Apr. 25, 1990, 2-109787; Apr. 19, 1991, 3-115319

Int. Cl.[5] A61K *33/06*

U.S. Cl. 424—682 5 Claims

1. A method of hardening the tissue of digestive organs in a mammal in need thereof, comprising injecting the tissue of digestive organs of said mammal with a tissue hardening-effective amount of a hardening agent comprising tannic acid and potassium aluminium sulfate as well as a stabilizing compound extracted from crude drugs of plants.

5,252,345
ZEOLITE COMPOSITIONS

Patrick C. Hu, Baton Rouge; James S. Staton, Pride, and Karl E. Wiegand, Baton Rouge, all of La., assignors to Ethyl Corporation, Richmond, Va.

Continuation of Ser. No. 153,456, Feb. 8, 1988, abandoned. This application Feb. 1, 1991, Ser. No. 649,417

Int. Cl.[5] A61K *33/06*

U.S. Cl. 424—684 20 Claims

1. An acid-modified zeolite A composition suitable for use as an agent in pharmaceutical preparation for the treatment, prevention or delay in onset of a bone disorder in an animal; said composition comprising a mixture of zeolite A and a pharmaceutically acceptable acidifying agent, the amount of said agent in said composition being sufficient to maintain a pH in the stomach of an animal ingesting said composition at less than 5 and substantially reduce the amount of gastric acid required to decompose said zeolite while said zeolite is present in the stomach of the animal to which said acid-modified composition has been administered, said composition being in unit dosage form and substantially free of adjuvant or excipient materials that will neutralize acid in gastric juice while said zeolite is in said gastric juice.

5,252,346
ANIMAL FEED SUPPLEMENT

Vernon E. Krause, Norfolk, Nebr., assignor to Harvest States Cooperatives, Norfolk, Nebr.

Filed Nov. 10, 1992, Ser. No. 974,239

Int. Cl.[5] A23K *1/00*

U.S. Cl. 426—74 3 Claims

1. A method for the preparation of a thixotropic animal feed suspension supplement consisting essentially of the steps of:

producing an ambient temperature liquid sugar solution containing approximately 14–31 weight percent lactose or sucrose sugars;

simple mixing 5–14 weight percent of an ambient temperature nongellatinized starch containing ingredient into the liquid sugar solution; and

simple mixing ambient temperature dry bulk calcium carbonate animal feed nutrients from 20–25 weight percent, into the ambient temperature sugar and starch mixture to form a thixotropic suspension without heating the mixture or its components;

said mixing steps all being accomplished at ambient temperatures, said supplement being stable for at least three weeks at temperatures as low as +10° F.

5,252,347
PROCESS FOR THE PREPARATION OF FROZEN VEGETABLES

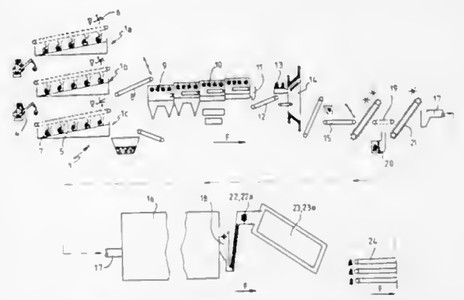
Luc Darbonne, Milly La Foret, France, assignor to Societe de developpement de l'industrie agro-alimentaire et de la pepiniere europeene - SODIAPE, France

Filed Aug. 7, 1991, Ser. No. 741,641

Claims priority, application France, Aug. 8, 1990, 90 10152

Int. Cl.[5] A23B *7/00;* B65B *55/00*

U.S. Cl. 426—393 11 Claims



1. A process for the preparation of frozen vegetables, of the type in which the vegetables are first frozen and then broken in the frozen state, defined in that it comprises, starting from a feed of fresh vegetables in bulk and from a feed of empty packs, the successive steps involving;

a) washing the fresh vegetables;

b) spin-drying the washed vegetables;

c) freezing the washed and dried vegetables rapidly and individually;

d) maintaining the vegetables thus frozen in this state;

e) exerting on them sufficient mechanical stresses to allow them to be broken into a plurality of fractions;

f) sorting them in order to separate uniform fractions from one another;

g) packaging at least one of the fractions to be used in the frozen state;

h) disposing of the sorted fraction or fractions intended not to be used.

5,252,348
ARTIFICIAL VIRAL ENVELOPES

Hans Schreier, Gainesville, Fla.; Ramesh Chander, Bombay, India, and Arlene A. Stecenko, Gainesville, Fla., assignors to Univ. of Florida Research Foundation, Inc., Gainesville, Fla.

Continuation of Ser. No. 600,641, Oct. 19, 1990, abandoned. This application Jul. 30, 1992, Ser. No. 923,016

Int. Cl.[5] A61K *9/127;* B01J *13/02*

U.S. Cl. 424—450 5 Claims

1. A two-step process for preparing lipid vesicles having a size of about 150 nm to about 300 nm and an approximately 1:1 cholesterol:phospholipid ratio characteristic of natural viruses and having antigenic or immunogenic proteins or peptides on the outer surface of said vesicle; said first step comprising solubilizing phospholipids and cholesterol in a sodium cholate detergent solution such that the molar ratio of detergent to total lipids is about 45:1, and the ratio of phospholipid to cholesterol is about 1:1, said first step further comprising the removal of said detergent by dialysis to obtain a rigid vesicle, said second step comprising insertion of proteins or peptides into the outer membrane of said vesicle, wherein the insertion of said proteins or peptides comprises mixing for about one hour said rigid vesicle from said first step with an aqueous solution of deoxycholate detergent, wherein the ratio of detergent to lipids is about 8:1, said process further comprising the addition of said proteins to said mixture of the deoxycholate detergent and the vesicle, followed by the removal of said detergent by dialysis.

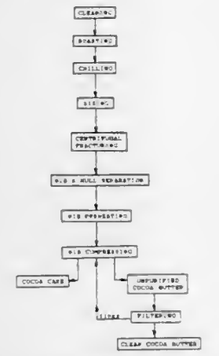
5,252,349
PROCESS FOR EXTRACTING COCOA BUTTER AND COCOA CAKE FROM COCOA BEANS

Charles F. Carter, Jr., P.O. Box 46, Ariton, Ala. 36311

Filed Apr. 30, 1992, Ser. No. 876,582

Int. Cl.[5] A23G *1/00*

U.S. Cl. 426—482 13 Claims



1. A process for extracting cocoa butter and cake from cocoa beans with each of said beans having an outer hull affixed around an inner portion, with said process comprising;

a. cleaning a predetermined volume of cocoa beans to remove undesirable foreign matter and lightweight immature beans entrained therewith during harvesting,

b. heating said beans to a temperature ranging from approximately 280° F. to 320° F. for a period of time ranging from approximately 5 minutes to 8 minutes,

c. cooling said beans immediately after heating for a period of time ranging from approximately 3 minutes to 7 minutes with chilled air at a temperature ranging from approximately 50° F. to 60° F. to thus reduce said beans to a temperature ranging from approximately ambient to 90° F.,

d. dividing said predetermined volume of beans into a plurality of groups of beans with the beans in each of said group being of a predetermined size,

e. fracturing each of said group of beans of a predetermined size along natural fracture lines of said inner portions by passing the beans of each said group under centrifugal force through a rotating assembly which divides the beans of each said group into fragmental segments and concomitantly directs the beans of each said fragmental segment to move at a predetermined speed from a central area within said assembly radially and outwardly in all 360° through a multiplicity of longitudinal paths and into contact with a generally annular shaped target area,

f. separating fractured inner portions from hull fragments and affixed hull fragments,

g. subjecting fractured inner portions free of affixed hull fragments to heat for a period of time sufficient to elevate the temperature of said inner portions to a temperature ranging from approximately 155° F. to 200° F.,

h. compressing said heated inner portions to extract cocoa cake and butter therefrom; and,

i. filtering said butter to extract cocoa butter therefrom.

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5,252,350

PROCESS FOR CLARIFYING LIQUIDS, PARTICULARLY RAW JUICE

Eduard Hartmann, Schneisingen, Switzerland, assignor to Bucher - Guyer AG Maschinenfabrik, Niederweningen, Switzerland

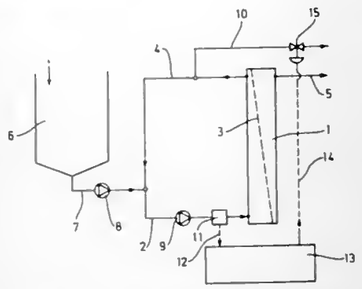
PCT No. PCT/CH88/00177, § 371 Date Jun. 2, 1989, § 102(e) Date Jun. 2, 1989, PCT Pub. No. WO89/02708, PCT Pub. Date Apr. 6, 1989

PCT Filed Sep. 30, 1988, Ser. No. 372,376

Claims priority, application Switzerland, Oct. 2, 1987, 3852/87

Int. Cl.[5] A23L *2/30*

U.S. Cl. 426—490 **5 Claims**



1. A process for clarifying liquids, particularly raw juice from grapes, berries or other fruits and vegetables by ultrafiltration or microfiltration comprising the steps of subjecting a raw juice to one of an ultrafiltration or microfiltration to obtain an initial filtration yield of permeate of a clear juice and a retentate having solids therein, continuing to subject the retentate to the ultrafiltration or microfiltration while introducing a small quantity of raw juice into the retentate to increase sharply the proportion of solids in the retentate where upon the filtration yield at first decreases and then increases with a continued increase in the proportion of solids, ascertaining the maximum filtration yield of permeate occurring during the increasing of the proportion of solids in the retentate, and maintaining constant the proportion of solids at which the maximum filtration yield occurs such that the maximum filtration yield remains constant.

5,252,351

COHESIVE VEGETABLE PRODUCTS AND PROCESS FOR MANUFACTURE

James P. Cox, and Jeanne M. Cox, both of 246 E. Bartlett Rd., Lynden, Wash. 98264

Continuation-in-part of Ser. No. 369,633, Feb. 21, 1989, abandoned, which is a division of Ser. No. 105,293, Sep. 11, 1987, Pat. No. 4,844,936, which is a continuation-in-part of Ser. No. 930,585, Nov. 13, 1986, abandoned, which is a continuation-in-part of Ser. No. 885,624, Jun. 19, 1986. This application Feb. 5, 1992, Ser. No. 831,459

Int. Cl.[5] A21D *13/00*

U.S. Cl. 426—549 **12 Claims**

1. A process for producing a food product which is adapted to be rendered edible merely by the addition of an edible liquid, said method consisting essentially of the steps of:

a. crushing or comminuting an edible seed, stalk, leaf, or root into a powder;

b. mixing the powder with algin and an edible liquid to produce a formable dough;

c. forming discrete synthesized bits or kernels from the dough;

d. applying a setting agent to the formed discrete synthesized bits or kernels;

e. heating the formed discrete synthesized bits or kernels;

f. physically stabilizing the heated formed discrete synthesized bits or kernels; and

g. so drying the stabilized, formed, discrete, synthesized bits or kernels as to reduce the moisture content thereof to 9–12 percent by weight.

5,252,352

PROCESS OF PREPARING AN EXTRA LOWFAT SPREAD

Gerald Banach, Columbia; Leendert H. Wesdorp, Ellicott City, and Frank S. Fiori, Elkridge, all of Md., assignors to Van den Bergh Foods Co., Division of Conopco, Inc., Lisle, Ill.

Filed Mar. 6, 1992, Ser. No. 847,974

Int. Cl.[5] A23D *7/00*

U.S. Cl. 426—580 **9 Claims**

1. A process of preparing a water-continuous margarine-like spread the process comprising

(i) preparing a mixture comprising fat at a level not greater than 5%, at least about 9% casein, and a gel-forming system including a gelling agent A and a gelling agent B wherein a gelling agent A is selected from the group consisting of gelatin, kappa-carrageenan, iota-carrageenan, alginate, agar, gellan, pectin, and mixtures thereof, a gelling agent B is selected from the group consisting of gelling starch, denatured whey protein, denatured bovine serum protein, denatured soy protein, microcrystalline cellulose and mixtures thereof, wherein the amount of gelling agent A is from about 0.5% to about 1.5%, and the amount of gelling agent B is from about 2% to about 12%;

(ii) homogenizing the mixture at a pressure in the range of from about 500 to about 14,000 psi to obtain a blend;

(iii) heating the blend to a temperature in the range of from about 160° F. to about 180° F.;

(iv) homogenizing the heated blend at a pressure in the range of from about 500 to about 14,000 psi to obtain the spread; and

(v) packing the spread at a temperature of at least 140° F.

5,252,353

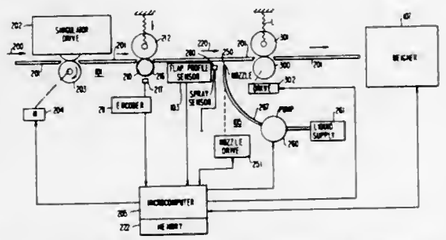
ENVELOPE FLAP MOISTENER HAVING APPLICATOR PRE-POSITIONING

Peter C. DiGiulio, Fairfield, and Edilberto I. Salazar, Brookfield, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Nov. 22, 1991, Ser. No. 796,501

Int. Cl.[5] B05D *1/02*

U.S. Cl. 427—8 **4 Claims**



1. A method for controlling movement of a nozzle in a moistener, said moistener being for moistening an envelope flap glue area of each envelope flap of a mixed succession of envelopes at a minimum time interval between envelopes, respective ones of said envelopes having envelope flaps of different height profiles randomly ordered, each of said envelope flaps having a first end and a second end, each of said height profiles having a terminal height adjacent said first and second ends, said moistener having said nozzle at a fixed lateral position, conveyer means for moving said envelope flaps in a downstream direction, a sensor upstream of said nozzle for measuring the heights of respective ones of said envelope flaps, means for moving said nozzle in the direction of said heights of said envelope flaps and means for measuring movement of said envelope flaps by said conveyer; said method comprising the steps of:

(a) moving an envelope flap past said sensor and measuring said height of said envelope flap at points laterally along said envelope flap;

(b) before a first point to be moistened on said envelope flap reaches said lateral position of said nozzle, moving said nozzle toward said height of said first point to be moistened;

(c) when said first point to be moistened reaches said nozzle, moistening said first point of said envelope flap;

(d) thereafter, until said second end reaches said nozzle, after moistening each point to be moistened, moving said nozzle to a height corresponding to a subsequent point to be moistened;

(e) after said second end passes said lateral position of said nozzle, and said nozzle is at a height corresponding to a point most recently moistened, said nozzle remains at said height corresponding to said point most recently moistened; and,

(f) repeating step (a) for a next of said envelopes and steps (b) through (f) only if said next of said envelope's flap height differs from the just moistened envelope's flap height, otherwise repeat steps (a) through (f) skipping step (b).

5,252,354

METHOD FOR DEPOSITING ELECTROCHROMIC LAYERS

John P. Cronin; Daniel J. Tarico; Anoop Agrawal, and Raymond L. Zhang, all of Tucson, Ariz., assignors to Donnelly Corporation, Holland, Mich.

Filed May 20, 1992, Ser. No. 886,505

Int. Cl.[5] C23C *26/00*

U.S. Cl. 427—58 **51 Claims**

1. A method for preparing an electrochromic coating on a substrate having an electrically conductive surface comprising:

providing a substrate having an electrically conductive surface;

reacting a transition metal with hydrogen peroxide and an organic acid to form a transition metal-peroxy acid product and reacting said transition metal-peroxy acid product with a lower carbon alcohol to form a peroxyester-transition metal derivative;

coating the conductive surface of said substrate with said peroxyester-transition metal derivative to give a coating of a desired thickness; and

converting said coating to an electrochromically active coating.

5,252,355

PROCESS FOR PRODUCING MULTILAYERED PRINTED BOARD

Kazuhiro Ando; Takamasa Kawakami; Yasuhiro Shouji, all of Ibaraki; Yasuo Tanaka, Tokyo; Takeo Kanaoka, Tokyo, and Norio Sayama, Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Co., Inc., Tokyo, Japan

Filed Jul. 30, 1991, Ser. No. 738,013

Claims priority, application Japan, Jul. 30, 1990, 2-199210; Oct. 18, 1990, 2-277884; Oct. 18, 1990, 2-277885; Oct. 24, 1990, 2-284203

Int. Cl.[5] C23C *26/00*

U.S. Cl. 427—98 **12 Claims**

1. A process for producing a multilayered printed circuit board which comprises using, as an intermediate layer, an inner-layer board obtained by chemically oxidizing the surface of a copper foil constituting an outermost layer of an inner-layer board having a printed circuit formed in the copper foil, thereby to form on the surface a finely roughened layer constituted by a copper oxide of a brown to black color, and then



reducing the copper oxide constituting the finely roughened layer in an atmosphere in which a reducing gas is present.

5,252,356

METHOD OF PRODUCING TRANSPARENT ZINC OXIDE FILMS

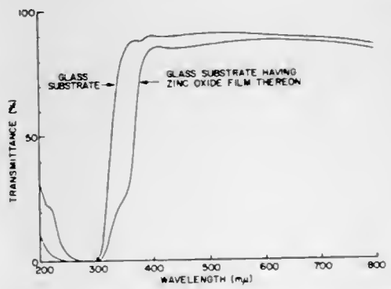
Gohei Yoshida, Nara, and Masao Kobayashi, Osaka, both of Japan, assignors to The Honjo Chemical Corporation, Osaka, Japan

Filed Feb. 24, 1992, Ser. No. 840,754

Claims priority, application Japan, Feb. 22, 1991, 3-028237; Mar. 29, 1991, 3-067178

Int. Cl.[5] B05D *5/12, 3/02*

U.S. Cl. 427—126.3 **10 Claims**



1. A method of producing a transparent zinc oxide film for use as an ultraviolet ray interceptor, which comprises applying a solution consisting essentially of a zinc salt of a fatty acid of 3–7 carbons and an organometallic compound of titanium in an organic solvent on a substrate, and then baking the resultant coating at temperatures of 300°–600° C.

5,252,357

PROCESS FOR THE MANUFACTURE OF A RIGID INSULATING REFRACTORY MATERIAL AND MATERIAL THUS OBTAINED

Alain G. De L'Eprevier, Le Brethon, France, assignor to Produits Cellulosiques Isolants-Procelis, France

PCT No. PCT/FR91/00616, § 371 Date Mar. 2, 1992, § 102(e) Date Mar. 2, 1992, PCT Pub. No. WO92/02472, PCT Pub. Date Feb. 20, 1992

PCT Filed Jul. 25, 1991, Ser. No. 836,273

Claims priority, application France, Aug. 3, 1990, 90 10160

Int. Cl.[5] B03D *3/02*

U.S. Cl. 427—226 **4 Claims**

1. A process for manufacturing a refractory material adapted for contact with a molten ferrous metal, comprising the steps of:

impregnating the base refractory material with a zirconium containing solution, said base refractory material having a porosity of not less than 85% and not more than 95%;

drying the impregnated base refractory material; and

pyrolyzing the impregnated base refractory material at a temperature of 800°–900° C. for two to six hours to form

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a zirconia protective layer covering walls of pores in the base refractory material.

5,252,358

METHOD FOR SURFACE-TREATING THE INNER WALL OF A FURNACE, WHICH IS LINED WITH CERAMIC FIBERS

Satoshi Taniguchi, Ichinomiya, and Koji Yamada, Handa, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Sep. 7, 1990, Ser. No. 578,382
Claims priority, application Japan, Sep. 18, 1989, 1-241510
Int. Cl.[5] B05D *7/22*
U.S. Cl. 427—237 14 Claims

1. A method for treating a surface of the inner wall of a furnace, said inner wall being lined with ceramic fibers, the method comprising:

placing a source for generating an alkali component into a furnace, at least the inner wall of the furnace being lined with at least one ceramic fiber body and said source being a solution of a compound containing at lest one metal selected from the group consisting of an alkaline metal and an alkaline earth metal, and

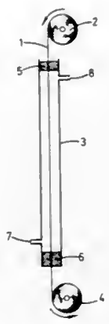
heating the interior of the furnace at a furnace heating rate, after the furnace temperature has reached 600° C., to increase the furnace temperature in an amount in the range of 50° to 150° C./hour so as to vaporize the source for generating the alkali component and to thereby impregnate a surface layer portion of the ceramic fiber body with the thus vaporized alkali component in an amount of 0.01 to 0.2 kg/m^2 with respect to the internal surface area of the furnace.

5,252,359

CVD PROCESS FOR THE MANUFACTURE OF CERAMIC FIBERS

Christopher J. Griffin, Middlesex, and Renny N. Moss, Surrey, both of England, assignors to The British Petroleum Company p.l.c., London, England

Continuation of Ser. No. 673,432, Mar. 22, 1991, abandoned. This application Oct. 13, 1992, Ser. No. 960,210
Claims priority, application United Kingdom, Mar. 31, 1990, 9007273
Int. Cl.[5] C23C *16/00*
U.S. Cl. 427—249 10 Claims



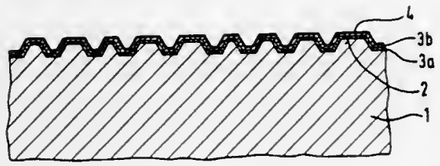
1. In a process for depositing a carbon coating on a filament, which comprises heating the filament and passing the heated filament through a deposition chamber containing gases which on contact with the heated filament deposit the coating; the improvement comprising that said gases comprise chloroform and a hydrocarbon having 1 to 6 carbon atoms.

5,252,360

PROCESS FOR THE PROTECTION OF AN ENGRAVED ROLL OR PLATE BY COATING AN ENGRAVED SURFACE WITH AN INTERLAYER AND THEREAFTER APPLYING A WEAR-RESISTANT LAYER TO THE INTERLAYER BY PVD

Wolfgang Hüttl, Am Brunnenberg 6, 5253 Lindlar, and Alois Vester, Niederkasseler Str. 11c, 5210 Troisdorf-Spich, both of Fed. Rep. of Germany

Continuation-in-part of Ser. No. 670,002, Mar. 15, 1991, abandoned. This application Jul. 10, 1992, Ser. No. 911,694
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1990, 4008254
Int. Cl.[5] C23C *16/00*
U.S. Cl. 427—255.2 13 Claims



1. A process for the protection of engraved rolls and plates for flexographic printing, intaglio printing or coating, wherein the rolls or plates each comprise a base member of metal, having a surface whereupon a gravure is engraved mechanically, electromechanically, or by etching, in correspondence with an embossed pattern, and wherein thenprotective layers for increasing corrosion resistance of a metal or metal component or ceramic component are applied on the engraved surface of the base member in order to increase the wear resistance and corrosion resistance, characterized in that

a) a dense interlayer of a metal-containing component or ceramic-containing component having a thickness of about 10–15 μm and a hardness of at least 850 HV according to Vickers hardness is applied to the surface of the base member provided with the gravure; thereby reproducing the engraved gravure of the surface of the base member to a surface of the interlayer

b) thereafter the surface of the interlayer applied on the engraved surface of the base member is polished and cleaned,

c) thereafter the engraved base member equipped with the interlayer is subjected to vacuum and while being kept under vacuum the engraved base member is continuously heated up for tempering purposes to a temperature of at least 240° C. to about 480° C. and is subjected to this temperature for a time period of at least 1 hour up to about 4 hours,

d) then at the end of the tempering period while the tempered engraved base member equipped with the interlayer is continuously subjected to vacuum and is kept in a heated up condition of a temperature between 200° and 480° C. there is applied to the surface of the interlayer applied on the surface of the base member provided with the gravure a wear-resistant layer of a metal compound having a hardness according to Vickers hardness of at least 2000 HV by physical vapor deposition in a thickness of about 4–8 μm, thereby reproducing the engraved gravure of the surface of the base member with applied interlayer to the surface of the vapor-deposited wear-resistent layer

e) then after removal of the vacuum, the surface of the vapor-deposited wear-resistant layer, is polished.

5,252,361

PROTECTIVE COATING FOR NON-OXIDE SINTERED FIBERS GENERATED BY IN SITU CHEMICAL REACTION

Francis J. Frechette, Tonawanda, and Wolfgang D. G. Boecker, Lewiston, both of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Jan. 19, 1990, Ser. No. 467,592
Int. Cl.[5] C23C *16/00*
U.S. Cl. 427—255.3 16 Claims

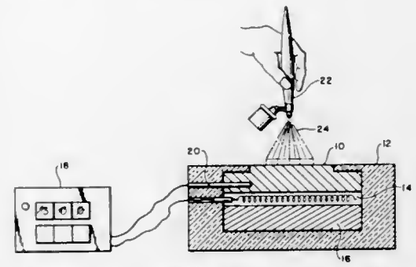
1. A process for coating a non-oxide sintered ceramic fiber comprising heating the sintered non-oxide ceramic fiber selected from the group consisting of a boride, carbide, nitride or silicide of a different element selected from the group consisting of aluminum, boron, chromium, hafnium, molybdenum, niobium, silicon, tantalum, titanium, tungsten, vanadium, zirconium and combinations thereof in the presence of boron, in an atmosphere containing oxygen and at a temperature in the range from about 600° C. to about 1600° C. for a time sufficient to generate a glassy coating by an oxidation chemical reaction.

5,252,362

METHOD FOR PROTECTING ARTICLES FROM HYDROGEN ABSORPTION BY APPLICATION OF AN ALUMINA COATING

Abdus S. Khan, 11966 Catalpha Ave., Palm Beach Gardens, Fla. 33410, and Robert J. Wright, 23 Willow Rd., Tequesta, Fla. 33469

Filed Jul. 19, 1991, Ser. No. 732,535
Int. Cl.[5] B05D *3/02*
U.S. Cl. 427—318 17 Claims



1. A method for protecting a metal substrate subject to hydrogen embrittlement from hydrogen absorption, said method consisting of heating said substrate to a temperature of 300°±10° F., spraying onto the surface of said substrate a colloidal alumina suspension in a vaporizable carrier selected from the group consisting of ethyl, methyl, butyl, and isopropyl alcohols, and further heating said substrate and applied alumina suspension at a temperature of from about 1000° to about 1800° F. to form an adherent protective alumina coating thereon wherein said alumina coating is doped with a dopant selected from the group consisting of sulfur, silicon, antimony, arsenic, phosphorous, bismuth, tin, germanium, and oxides and mixtures thereof.

5,252,363

METHOD TO PRODUCE UNIVERSTALLY PAINTABLE PASSIVATED GALVANIZED STEEL

Karl P. Anderson, Columbus, Ohio, assignor to Morton International, Inc., Chicago, Ill.

Filed Jun. 29, 1992, Ser. No. 905,970
Int. Cl.[5] B05D *3/02*; C23C *22/05*
U.S. Cl. 427—386 3 Claims

1. A coating process for forming an adherent, universally paintable, passivating coating on a metal substrate comprising

(A) forming a mixture consisting essentially of an alkyl ester, and optionally phosphoric acid of a dicarboxylic acid and a hexavalent chromium compound, and optionally phosphoric acid and holding it at a temperature and for a time sufficient to oxidize a substantial portion of the ester;

(B) mixing the oxidized ester and chromium compounds with an aqueous composition comprising at least one water-dispersible or emulsifiable epoxy resin having an epoxide equivalent of from about 1000 to about 3000;

(C) applying the mixture from (B) to a metal substrate; and

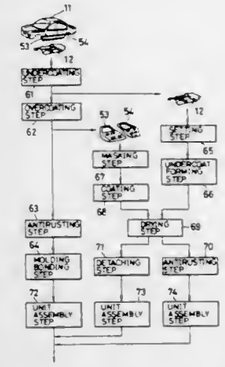
(D) drying the coated substrate at a temperature insufficient to cure the epoxy resin.

5,252,364

METHOD FOR COATING AUTOMOTIVE VEHICLE BODIES

Hiroaki Inoue, and Naoyuki Ikemizu, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jan. 22, 1992, Ser. No. 824,188
Claims priority, application Japan, Jan. 22, 1991, 3-5771; Jan. 28, 1991, 3-8544; Jan. 30, 1991, 3-9680
Int. Cl.[5] B05D *1/36, 1/02*; B05B *15/04, 13/02*
U.S. Cl. 427—409 23 Claims



1. A method for coating an automotive vehicle body composed of an upper vehicle body section and a floor member to be mounted to a lower bottom surface of the upper vehicle body section, comprising:

conveying the upper vehicle body section and the floor member simultaneously by means of a common conveying means at least up to completion of an undercoating step for coating the upper vehicle body section and the floor member with an undercoating paint; and

separating the floor member from the conveying means and conveying each of the upper vehicle body section and the floor member to a different step.

5,252,365

METHOD FOR STABILIZATION AND LUBRICATION OF ELASTOMERS

Gerald W. White, Dallas, Tex., assignor to White Engineering Corporation, Dallas, Tex.

Filed Jan. 28, 1992, Ser. No. 826,898
Int. Cl.[5] B05D *3/06*; C23C *16/00*; B23H *3/00*
U.S. Cl. 427—525 12 Claims

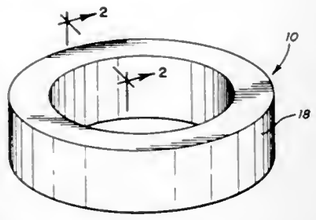
7. A method for stabilizing and lubricating elastomeric material having a characteristic of producing free carbon atoms as the elastomeric material degrades over time, such that carbon atoms are severed from polymer chains, the method comprising the steps of:

depositing a first material film layer of carbide forming material by vacuum plating onto the elastomeric material to thereby stabilize the free carbon atoms present in the elastomeric material;

depositing a second material film layer of nickel material by

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vacuum plating onto the first material film layer to thereby form a migration barrier; and



deposition a third material film layer by high energy level vacuum plating onto the second material film layer to thereby lubricate the elastomeric material.

5,252,366

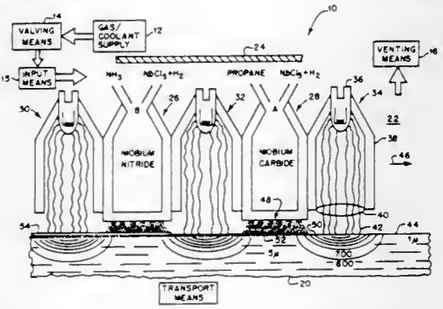
CHEMICAL VAPOR DEPOSITION METHOD USING AN ACTIVELY COOLED EFFUSER TO COAT A SUBSTRATE HAVING A HEATED SURFACE LAYER

Brian S. Ahern, Boxboro, and David W. Weyburne, Maynard, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation of Ser. No. 797,478, Nov. 22, 1991, abandoned, which is a division of Ser. No. 469,128, Jan. 24, 1990, Pat. No. 5,129,360. This application Dec. 16, 1992, Ser. No. 991,502

Int. Cl.[5] C23C *16/46*

U.S. Cl. 427—557 **3 Claims**



1. A process of vapor deposition, said process having a vapor deposition reactor with an actively cooled effuser, said process comprising the steps of:

heating only a surface layer of a substrate to a temperature at which a deposition material reacts to form a layer thereon, said heating being applied to an area of the surface layer where the deposition material is to be applied, said heating not being of the whole substrate;

transporting said surface layer after said heating past said actively cooled effuser, said surface layer being positioned within a distance from said actively cooled effuser, said actively cooled effuser having at least one gas directing plate therein for outputting at least one deposition material onto said heated surface layer;

depositing by way of said at least one gas directing plate a layer of said at least one deposition material onto the heated surface layer of said substrate;

cooling said actively cooled effuser to remove heat received from said substrate, said cooling being provided by flow channels placed less than about 100 microns from an output side of said at least one gas directing plate; and

repeating the above steps to place additional layers of said at least one deposition material onto said substrate.

5,252,367

METHOD OF MANUFACTURING A MAGNETIC RECORDING MEDIUM

Motobaru Sato; Kazuo Muramtasu; Yoshihiko Onishi, all of Kobe, Japan, and Hidetaka Hayashi, Saratoga, Calif., assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

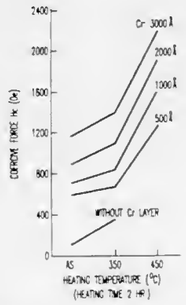
PCT No. PCT/JP90/01386, § 371 Date Jun. 26, 1991, § 102(e) Date Jun. 26, 1991, PCT Pub. No. WO91/06948, PCT Pub. Date May 16, 1991

PCT Filed Oct. 26, 1990, Ser. No. 688,555

Claims priority, application Japan, Oct. 27, 1989, 1-280480; Mar. 23, 1990, 2-73924; Mar. 23, 1990, 2-73925; Mar. 23, 1990, 2-73926

Int. Cl.[5] B05D *3/14*

U.S. Cl. 427—599 **20 Claims**



1. A method of manufacturing a magnetic recording medium in which a magnetic layer is formed on a carbon substrate, wherein a magnetic layer comprising a Co-based alloy and a protecting and lubricating layer are successively formed on the carbon substrate and then a heat treatment is applied at a temperature from 250° to 1450° C.

5,252,368

Patent Not Issued For This Number

5,252,369

CORE FOR WEB MATERIAL

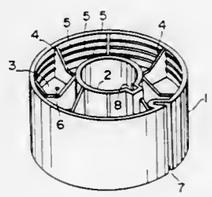
Mutsuo Akao, and Koji Inoue, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Division of Ser. No. 612,230, Nov. 13, 1990, abandoned, which is a division of Ser. No. 268,372, Nov. 7, 1988, Pat. No. 4,989,802. This application Aug. 10, 1992, Ser. No. 926,297

Claims priority, application Japan, Nov. 6, 1987, 62-169097; Dec. 9, 1987, 62-309403

Int. Cl.[5] B65H *81/00*

U.S. Cl. 428—34.9 **4 Claims**



1. A core for web material that is fabricated from a thermoplastic material and molded by injection molding through use of a mold core, comprising:

an outer cylinder;

an inner cylinder disposed coaxially with respect to the outer cylinder;

a ring plate positioned between and joining said inner and outer cylinders, said ring plate being disposed perpendicular to the longitudinal axes of the inner and outer cylinders and passing through the approximate axial centers of the inner and outer cylinders;

a plurality of substantially symmetrically and radially disposed ribs positioned between and joining the inner and outer cylinders; and

projection means formed on an inner surface of the outer cylinder for increasing the frictional resistance between the core and the core mold, wherein said thermoplastic material comprises 70 to 30 wt. % of polypropylene resin having a mean molecular weight ratio of 1.5 to 8, a melt index of 10 to 60 g/10 minutes, a bending elastic modulus of more than 8,000 kg/cm^2, an Izod impact strength of more than 2 kg.cm/cm and a Rockwell hardness of more than 70 R, 30 to 70 wt. % of linear low density polyethylene resin having a melt index of 3 to 50 g/10 minutes, a density of 0.910 to 0.935 g/cm^3, an Olsen rigidity of more than 1,500 kg/cm^2 and a Shore hardness of more than 40 D, more than 0.01 wt. % of a lubricant and more than 0.01 wt. % of an antioxidant.

5,252,370

OPTICAL RECORDING MEDIUM AND METHOD FOR MAKING

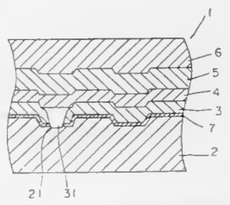
Junji Tominaga, and Hideki Dohi, both of Nagano, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Feb. 14, 1992, Ser. No. 835,685

Claims priority, application Japan, Apr. 23, 1991, 3-119474

Int. Cl.[5] B32B *3/00*

U.S. Cl. 428—64 **11 Claims**



1. An optical recording medium comprising a recording thin film, a dielectric film, and a reflective thin film stacked on a surface of a substrate in the described order, said recording thin film containing silver oxide or iron nitride which decomposes to release oxygen or nitrogen, respectively, upon heating.

5,252,371

REWRITABLE PHOTOCHROMIC OPTICAL DISK

Hitoshi Taniguchi; Fumio Matsui, both of Tsurugashima; Tsuneki Okazaki, and Masaaki Hayami, both of Okayama, all of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

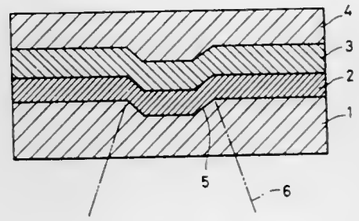
Filed Jun. 2, 1992, Ser. No. 892,128

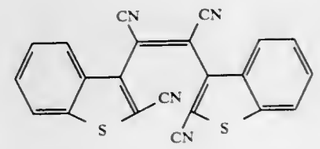
Claims priority, application Japan, Sep. 13, 1991, 3-235144

Int. Cl.[5] B32B *3/00*

U.S. Cl. 428—64 **4 Claims**

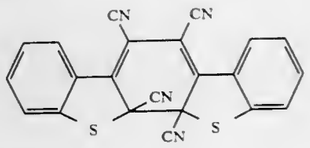
1. A rewritable photochromic optical disk comprising a photochromic recording layer made of a 1,2-di(2-cyano-3-benzothienyl)-1,2-dicyanoethene capable of assuming first and second states, the first state with a first absorption band transforming into the second state with a second absorption band by irradiating a first light beam of a first wavelength, and the second state transforming into the first state by irradiating a second light beam of a second wavelength in said second absorption band, wherein the dibenzothienyl ethene derivative in the first state is represented by the following formula 1





(1)

and the dibenzothienyl ethene derivative in the second state is represented by the following formula 2.



(2)

5,252,372

OPTICAL INFORMATION RECORDING MEDIUM

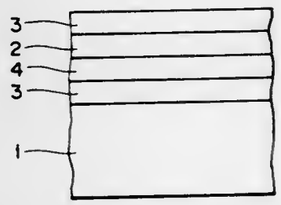
Toru Yashiro, Yokosuka, and Yutaka Ueda, Yokohama, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 1, 1991, Ser. No. 694,442

Claims priority, application Japan, May 1, 1990, 2-11703

Int. Cl.[5] B32B *9/00*

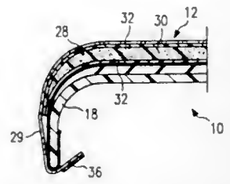
U.S. Cl. 428—64 **9 Claims**



1. An optical information recording medium comprising a substrate and a recording layer formed thereon comprising a composition comprising at least gold and sulfur, with the content of said gold being at least 50 atomic percent and less than 100 atomic percent in said composition.

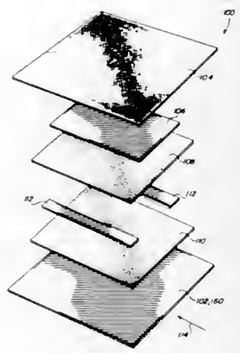
VOL 1155 ISS 2 OC 12 1993 UMI

5,252,373
SHOCK ABSORBING PAD
Jary M. Ganske, Waco, and Leon Ganske, Crawford, both of Tex., assignors to WRS Group, Inc., Waco, Tex.
Continuation of Ser. No. 673,647, Mar. 22, 1991, abandoned. This application Mar. 11, 1992, Ser. No. 850,250
Int. Cl.[5] B32B 1/04
U.S. Cl. 428—68 2 Claims



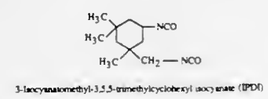
1. A pad assembly for use on a bicycle seat having a front, back and sides, the pad assembly including:
a pad constructed from a fused plastisol contained within an elastic, plastisol-impermeable film generally conforming to the configuration of the bicycle seat; and
a pad retainer constructed from an elastic material extending over said pad and over a portion of said bicycle seat to retain said pad thereon, said pad retainer includes a zipper fastener extending from the front toward the back of said seat to secure said pad retainer onto said seat.

5,252,374
UNDERPAD FOR INCONTINENT PATIENTS
Lionel M. Larsonneur, Pomona, Calif., assignor to Paper-Pak Products, Inc., La Verne, Calif.
Filed Feb. 18, 1992, Ser. No. 837,820
Int. Cl.[5] B32B 3/14
U.S. Cl. 428—77 24 Claims

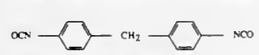


1. An incontinence protection absorbent underpad for use on a supporting surface of an article of bedding comprising:
a backing sheet which is impervious to liquid;
an upper facing sheet which is permeable to liquid;
means for adhering the upper facing sheet and the backing sheet together at the edges of the underpad;
a liquid absorbent pad between the facing sheet and backing sheet for absorbing liquid which may be deposited on the facing sheet; and
a transfer layer between the facing sheet and the liquid absorbent pad for transferring deposited liquid from the facing sheet to the pad while inhibiting the transfer of liquid in the opposite direction;
wherein the liquid absorbent pad comprises upper and lower tissue layers generally coextensive with the edges of the pad and a plurality of spatially separated superabsorbent barrier strips situated between the tissue layers and extending generally parallel to the side edges of the underpad between the top and bottom edges of the pad, said strips being displaced from the central region of the pad; wherein each of the upper and lower tissue layers comprises a plurality of individual plies of highly absorbent tissue and is formed with creped surface irregularities with the surface irregularities being oriented in a transverse direction.

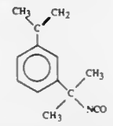
5,252,375
PERMANENT STAIN RESISTANT TREATMENT FOR POLYAMIDE FIBERS
Albin F. Turbak, Sandy Springs; Rodney A. Smith, Smyrna, and Chung-Hsien Zah, Kennesaw, all of Ga., assignors to Interface, Inc., Atlanta, Ga.
Continuation-in-part of Ser. No. 497,893, Mar. 22, 1990, abandoned. This application Feb. 27, 1991, Ser. No. 660,919
Int. Cl.[5] B32B 3/02
U.S. Cl. 428—96 38 Claims



3-Isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate (IPDI)



4,4'-Diphenylmethane diisocyanate (MDI)



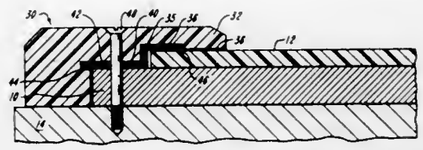
1,3-Dimethyl meta-isopropenyl benzyl isocyanate (TMI)

31. A stain resistant polyamide carpet or carpet tile prepared by:
contacting the dried carpet fiber with approximately 0.5 to 5% weight based on the weight of the fiber of isocyanate, and then
heating the fiber to a temperature of less than 140° C. for a time period of less than one hour, to react the isocyanate with terminal amine groups of the polyamide to form terminal urea groups, and without reacting the isocyanate with internal amide linkages of the polyamide fiber, wherein said minimum heating temperatures and times are sufficient to impart said desired stain resistance.

5,252,376
END CAP AND CORNER ASSEMBLY FOR FLUSH FITTING PROTECTIVE STRIP ASSEMBLY AND MEANS FOR SECURING STRIP
David A. Greenberg, Winchester; Joseph W. Manning, Peabody, both of Mass.; Charles M. Wheeler, Salem; Nancy W. Splaine, Derry, both of N.H.; Thomas A. Kell, Needham, Mass.; Cherilyn M. Santore, Marblehead, Mass., and George A. Ash, Revere, Mass., assignors to Boston Metal Products Corp., Medford, Mass.
Continuation of Ser. No. 657,049, Feb. 15, 1991, abandoned. This application Oct. 29, 1992, Ser. No. 968,254
Int. Cl.[5] E04F 19/02; B60J 11/00
U.S. Cl. 428—99 10 Claims

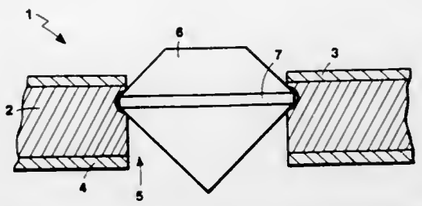
1. An end piece for use with a flush fitting strip bumper for protecting a substrate, the bumper having a resilient strip that partially surrounds a mounting member, said end piece comprising:
a. a shell having:

i. a clamping wall; and
ii. at least two side walls opposite each other and adjoining said clamping wall;
said walls defining a first cavity portion and a second cavity portion, said second cavity portion defining a volume less than that defined by said first cavity portion; and



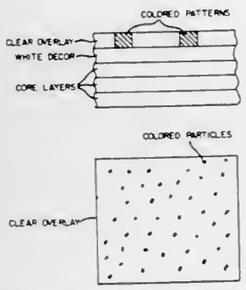
b. a rigid clip member fixedly attached to said clamping wall, extending from said second cavity portion of said first cavity portion, terminating at said first cavity portion in means for engaging the resilient strip, said engaging means including a projection arranged to extend into, and below an upper surface of, the resilient strip.

5,252,377
MAGAZINE STRIP FOR GEMS
Martin Pöll, Fritzens, Austria, assignor to D. Swarovski & Co., Wattens, Austria
Filed May 12, 1992, Ser. No. 882,077
Claims priority, application Fed. Rep. of Germany, May 23, 1991, 4116866
Int. Cl.[5] B32B 3/10, 3/28; B65D 73/00, 6/04
U.S. Cl. 428—137 9 Claims



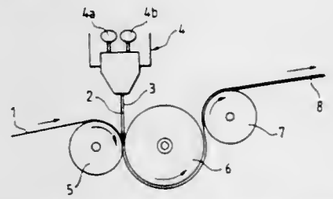
1. A magazine strip for holding gems in combination with a plurality of gems each having a major diameter, said magazine comprising:
a soft layer, and
a reversibly deformable upper layer disposed above said soft layer,
at least said reversibly deformable upper layer of said magazine strip defining apertures sized to receive said gems pressed therethrough into the soft layer,
each said aperture having a smaller diameter than a major diameter of a corresponding gem, and material of said reversibly deformable upper layer about said aperture being adapted to deflect in a manner to permit the major diameter of each gem pressed into a corresponding aperture to pass through said reversibly deformable upper layer, thereby to allow said gem to be inserted into said magazine strip, and,
upon passage of the major diameter of the gem through said reversibly deformable upper layer, said material of said reversibly deformable upper layer being further adapted to return to initial position, with said material extending over at least a portion of the major diameter of said gem, thereby, in cooperation with said soft layer, to retain the gem in said magazine strip in cushioning fashion.

5,252,378
METHOD OF PRODUCING DECORATIVE SHEETS HAVING LOCALIZED PATTERNS OF COLOR, DECORATIVE SHEETS PRODUCED BY SUCH METHOD, AND LAMINATES EMPLOYING SUCH DECORATIVE SHEETS
Mahendra Mehta, Pittsfield; William M. Stanard, Sheffield, and Richard D. Brownhill, Lee, all of Mass., assignors to The Mead Corporation, Dayton, Ohio
Filed May 13, 1992, Ser. No. 882,508
Int. Cl.[5] B32B 9/06
U.S. Cl. 428—195 7 Claims



1. A decorative sheet exhibiting 3-dimensionally, localized patterns of color and intensity comprising a sheet of fibrous material, said sheet containing about 0.1 to 25%, based on the weight of said fiber, of wax-encapsulated pigment beads of one or more distinct colors interspersed among said fibers, said beads having a particle size of about 0.05 to 2.0 millimeters, said decorative patterns extending from the top of said sheet to the bottom of said sheet.

5,252,379
EMBOSSED PROCESS PAPER AND PRODUCTION THEREOF
Takeshi Kuribayashi; Haruo Yoshikawa, and Yoshio Matsumoto, all of Toda, Japan, assignors to Sanyo Kakoshi Kabushiki Kaisha, Toda and Showa Denko Kabushiki Kaisha, Tokyo, both of Japan
Filed Nov. 21, 1991, Ser. No. 795,840
Claims priority, application Japan, Nov. 28, 1990, 2-322406
Int. Cl.[5] B32B 31/16
U.S. Cl. 428—141 3 Claims



1. An embossed process paper for transfer, adapted to be used for forming a dry type of synthetic leather, which includes a backing paper (1), a mixed resin (2) of polypropylene with polyethylene laminated on the surface of said backing paper (1) and a homopolypropylene resin (3) laminated on the surface of said mixed resin (2),
both said resins being laminated at a total resin coat thickness of 30 to 120 μm,
the thickness of said mixed resin (2) accounting for 50 to 20% of said total resin coat thickness and the thickness of said resin (3) accounting for 50 to 80% of said total resin coat thickness,

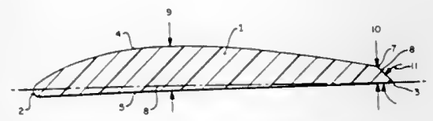
VOL 1155 ISS 2 OC 12 1993 UMI

both said resins having thereon a given embossed pattern having a depth of 20 to 150 μm, and
said backing paper (1) having a smooth back side.

5,252,380
ACICULAR ALLOY CONTAINING MAGNETIC RECORDING MEDIUM
Tetuya Nakazumi, Ikeda; Mikio Kishimoto, Osaka; Toshinobu Sueyoshi, Kyoto, and Seigi Kawarai, Ashiya, all of Japan, assignors to Hitachi Maxell, Ltd., Ibaraki, Japan
Continuation of Ser. No. 429,642, Oct. 31, 1989, abandoned. This application Jan. 24, 1992, Ser. No. 825,402
Claims priority, application Japan, Oct. 31, 1988, 63-275827; Feb. 6, 1989, 1-27263; Mar. 20, 1989, 1-68754; Apr. 12, 1989, 1-92437; Apr. 17, 1989, 1-96697
Int. Cl.[5] G11B *5/00*
U.S. Cl. 428—141 **12 Claims**

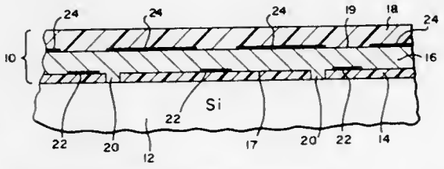
1. A magnetic recording medium comprising a support film and a magnetic layer containing acicular alloy bas magnetic powder particles comprising nickel, iron and cobalt in a binder, said magnetic powder having an average long axis particle size of not greater than 0.20 μm, such that a ratio of a half-width of an anisotropic magnetic field distribution to a coercive force is not larger than 3.2, an axial ratio of from 4 to 8, a cobalt content of from 5 to 50% by weight based on the wight of iron, a nickel content in an amount of at least 2% by weight based on the wight of iron, and a saturation magnetization of at least 120 emu/g after being kept standing at a temperature of 60° C. and relative humidity of 90% for a week, particle surfaces of which are covered with a ferrite film comprising iron and cobalt and further including a film comprising at least one of aluminum and silicon.

5,252,381
AIRFOIL WITH THICK TRAILING EDGE
Alan J. Adler, 752 La Para Ave., Palo Alto, Calif. 94306
Filed Jun. 18, 1992, Ser. No. 900,362
Int. Cl.[5] B32B *3/00;* **B64C** *1/00*
U.S. Cl. 428—156 **2 Claims**



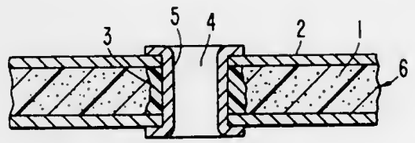
1. An airfoil with a cross-section comprising:
leading and trailing edges;
a chord line passing through said leading and trailing edges:
a non-divergent upper and lower surfaces;
a maximum thickness between said upper and lower surfaces;
a sloped rear surface joining said upper and lower surfaces;
a point of intersection between said upper surface and said rear surface, said point of intersection defining an abrupt change in slope between said upper surface and said rear surface;
a rear thickness measured from said point of intersection to said lower surface;
said rear thickness having a dimension of between 25% and 100% of said maximum thickness; and
said rear surface sloped such that the angle between said rear surface and said chord line is between 30 and 75 degrees.

5,252,382
INTERCONNECT STRUCTURES HAVING PATTERNED INTERFACES TO MINIMIZE STRESS MIGRATION AND RELATED ELECTROMIGRATION DAMAGES
Che-Yu Li, Ithaca, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.
Filed Sep. 3, 1991, Ser. No. 753,848
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—209 **15 Claims**



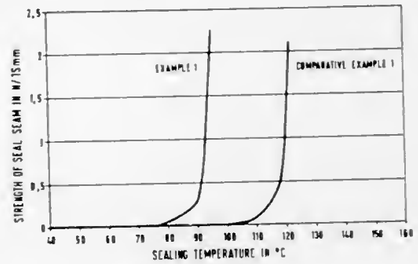
1. An interconnect structure comprising:
a) a first dielectric layer;
b) a metal interconnect formed over said first dielectric layer and forming a first interface therewith; and,
c) a second dielectric layer formed over said metal interconnect and forming a second interface therewith;
wherein, said first and second interfaces are patterned to have regions of good adhesion and regions of substantially no adhesion;
whereby, stress migration in said interconnect is reduced or eliminated.

5,252,383
CARRIER SHEET FOR PRINTED CIRCUITS AND SEMICONDUCTOR CHIPS
Sunao Fukutake; Kazuhiko Ohashi, and Takayuki Wani, all of Okayama, Japan, assignors to Japan Gore-Tex, Inc., Tokyo, Japan
Filed Jun. 29, 1992, Ser. No. 906,230
Claims priority, application Japan, Jul. 2, 1991, 3-188190
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—209 **5 Claims**



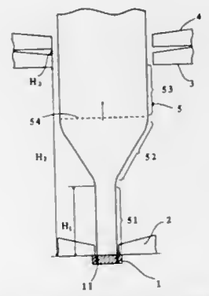
1. A sheet for an electronic circuit substrate and a semiconductor chip carrier comprising:
(a) a metallized fluororesin polymer sheet further comprising:
(i) a porous fluororesin polymer sheet;
(ii) a hydrophilic macromolecule film adhered to the interior pore surfaces and exterior surfaces of said fluororesin sheet;
(iii) at least one layer of metal film plated on the surface of said hydrophilic macromolecule film;
(b) at least one metal circuit pattern affixed to or metal-plated through-hole penetrating said metallized fluororesin polymer sheet.

5,252,384
HEAT-SEALABLE PACKAGING FILM
Lothar Bothe, Mainz-Gonsenheim; Volker Dolle; Andreas Winter, both of Kelkheim, and Thomas Wilhelm, Sulzfeld, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Nov. 4, 1991, Ser. No. 787,108
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1990, 4035343
Int. Cl.[5] B32B *5/16, 27/08*
U.S. Cl. 428—212 **25 Claims**



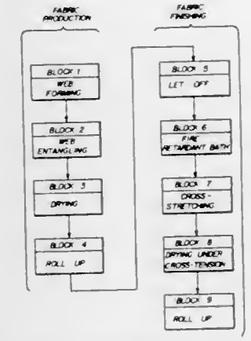
1. A multilayer film which comprises;
a) a base layer consisting essentially of an isotactic polypropylene, and
b) at least one additional layer comprising a copolymer of an α-olefin having 2 to 8 carbon atoms and a syndiotactic propylene, wherein the syndiotactic propylene content of said copolymer has an isotacticity of less than about 15%.

5,252,385
ELASTOMER FILM AND COMPOSITE CONTAINING SAME
Seiji Kagawa; Hideaki Toda, both of Yokohama, and Yoshibiro Uotome, Kaizuka, all of Japan, assignors to Tonen Sekiyukagaku Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 552,647, Jul. 16, 1990, abandoned. This application Nov. 30, 1992, Ser. No. 983,278
Claims priority, application Japan, Jul. 17, 1989, 1-183997; Jul. 17, 1989, 1-183998
Int. Cl.[5] B32B *27/32;* **C08L** *45/00, 33/04*
U.S. Cl. 428—220 **6 Claims**



1. An elastomer film produced from a thermoplastic elastomer composition comprising 50–60 weight % of an ethylene-propylene-diene copolymer and 50–40 weight % of an ethylene-vinyl acetate copolymer having a vinyl acetate content of 5–30 weight % and a melt index of 0.2–25 g/10 minutes by an air-cooled inflation method wherein said thermoplastic elastomer composition is extruded from an annular die at a temperature of 170° C. or lower, a bubble of said elastomer composition is taken up such that said bubble comprises a neck portion having a diameter 1.0–4.0 times as long as the diameter of said annular die, and said neck portion is cooled to a temperature of 120° C. or lower, said elastomer film having a thickness of 10–60 μm, a draw ratio expressed by a heat shrinkage ratio at 50° C. which is 5–35% in an MD direction and 5–25% in a TD direction, the ratio of said heat shrinkage ratio in an MD direction to said heat shrinkage ratio in a TD direction being 3 or less, and a strain within 10% after repeated 50% elongation.

5,252,386
FIRE RETARDANT ENTANGLED POLYESTER NONWOVEN FABRIC
Alfred J. Hughes, Princeton, N.J., and Douglas Van Oglesby, Benson, N.C., assignors to Chicopee, New Brunswick, N.J.
Filed Mar. 13, 1992, Ser. No. 850,538
Int. Cl.[5] D03D *3/00*
U.S. Cl. 428—224 **9 Claims**



1. A fire retardant hydroentangled nonwoven fabric comprising polyester fibers wherein said fabric has balanced machine direction and cross machine direction tensile strength properties and essentially balanced machine direction and cross machine direction fire retardant properties.

5,252,387
FABRICS WITH INSECT REPELLENT AND A BARRIER
Richard D. Samson; James M. McKinney, both of North Augusta, and John Russell, Aiken, all of S.C., assignors to Graniteville Company, Graniteville, S.C.
Continuation-in-part of Ser. No. 678,061, Apr. 1, 1991, Pat. No. 5,198,287. This application Feb. 1, 1993, Ser. No. 11,807
Int. Cl.[5] A01N *25/34;* **B32B** *33/00;* **E04H** *15/54*
U.S. Cl. 428—248 **9 Claims**

1. A coated tent fabric having a fabric substrate with a coated outer surface normally exposed to degrading elements of the atmosphere and a coated inner surface normally shielded by the fabric substrate from the degrading elements of the atmosphere, the coating on the outer and inner surfaces of said fabric substrate each containing a polymeric binder, flame retardant chemicals and water repellent chemicals and the coating on the inner surface of the fabric substrate containing permethrin as an insect repellent, wherein the improvement comprises a barrier over the coated outer surface of the fabric substrate, whereby the barrier protects the fabric substrate from ultraviolet light and oxygen and supplements the fabric substrate in protecting the permethrin from degradation.

6. A fabric for wearing apparel, said fabric having a coating containing permethrin and a polymeric binder, wherein the improvement comprises a barrier covering a surface of the fabric intended to be disposed adjacent to the wearer's skin to protect the skin of the wearer of the fabric from permethrin migration.

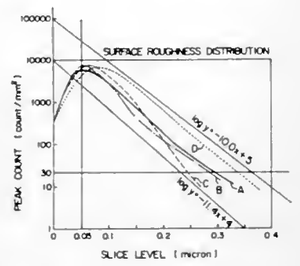
VOL 1155 ISS 2 OC 12 1993 UMI

5,252,388

BIAXIALLY ORIENTED POLYESTER FILM FOR MAGNETIC RECORDING MEDIA

Hirofumi Murooka, Sagamihara; Sumio Kato, Hachioji, and Masami Etchu, Yokohama, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Dec. 13, 1991, Ser. No. 806,288
Claims priority, application Japan, Dec. 13, 1990, 2-410167
Int. Cl.[5] G11B 5/00; B32B 27/06
U.S. Cl. 428—328 17 Claims



1. A biaxially oriented polyester film for magnetic recording media, which comprises:

(A) 0.05 to 1.0% by weight of θ-aluminum oxide having an average particle diameter in the range of from 0.02 to 0.3 μm and a specific surface area in the range of from 50 to 120 m^2/g, and

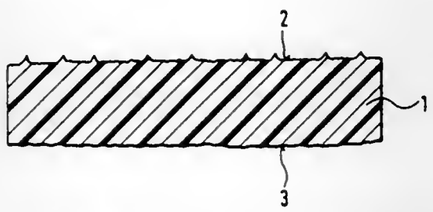
(B) 0.01 to 1.5% by weight of inert inorganic particles having an average particle diameter which is in the range of from 0.1 to 1.5 μm and greater than the average particle diameter of the θ-aluminum oxide.

5,252,389

BIAXIALLY STRETCHED POLYPROPYLENE MONOFILM

Robert Schmidt, Walluf; Peter Eiden, Bad Homburg; Gerhard Koch, Mandelbachtal, and Karl-Heinz Mueller, Schiffweiler, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 22, 1992, Ser. No. 824,230
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1991, 4101650
Int. Cl.[5] B32B 7/02
U.S. Cl. 428—334 21 Claims



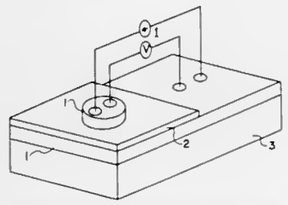
1. Abiaxially stretched polypropylene monofilm which is substantially free of inorganic or organic lubricants and ionogenic constituents, consisting essentially of a homopolymer of propylene having an ash content of less than 50 ppm, having two surfaces, wherein the two surfaces have different roughnesses, wherein the smoother of the two surfaces is substantially free from fibrils and pits.

5,252,390

LAMINATED FILM

Toshio Takada; Takahito Terashima; Kenji Iijima, all of Kyoto; Kazunuki Yamamoto, Yamaguchi; Kazuto Hirata, Kyoto, and Yoshichika Bando, Shiga, all of Japan, assignors to Ube Industries, Ltd., Ube; Kanegafuchi Chemical Industry Co., Ltd., Osaka; Nippon Steel Corporation, Ohte; TDK Corporation, Nihonbashi; Tosoh Corporation, Shinnanyo; Toyo Boseki Kabushiki Kaisha, Osaka; Nippon Mining Co., Ltd., Tokyo; NEC Corporation, Tokyo; Matsushita Electric Industrial Co., Ltd., Kadoma and Seisan Kaihatsu Kagaku Kenkyusho, Sakyo, all of Japan

Continuation-in-part of Ser. No. 578,302, Sep. 5, 1990, abandoned. This application Jun. 28, 1991, Ser. No. 726,688
Claims priority, application Japan, Sep. 5, 1989, 1-229884
Int. Cl.[5] B32B 9/00
U.S. Cl. 428—336 3 Claims



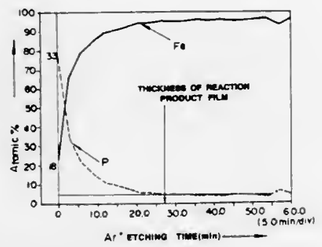
1. A laminated film comprising at least two thin films of single crystal $LnBa_2Cu_3O_{7-x}$ wherein Ln is Y or one of lanthanoids except Pr and Tb having the (001) plane in the direction parallel with the film surface and at least one continuous thin film of Y_2O_3 which has a thickness of not larger than 100 Å and the (001) plane in the direction parallel with the film surface and is interposed between a pair of said thin films of single crystal $LnBa_2Cu_3O_{7-x}$.

5,252,391

SURFACE TREATED SLIDING OR ROLLING CONTACT ELEMENT AND ROLLING BEARING

Masami Sasaki, Kawasaki, and Koichi Hachiya, Zama, both of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 444,750, Dec. 1, 1989, abandoned. This application Dec. 13, 1991, Ser. No. 807,419
Claims priority, application Japan, Dec. 1, 1988, 63-304645
Int. Cl.[5] B32B 15/04
U.S. Cl. 428—336 12 Claims



1. A surface modified sliding or rolling contact element, comprising:

a reaction product film having lubricating properties and having a 0.05 μm to 0.3 μm thickness formed in the surface of a metal sliding or rolling contact element wherein the reaction product film has been provided beforehand in the surface by a chemical reaction between a chemically active organic compound and the metal surface of the sliding or rolling contact element;

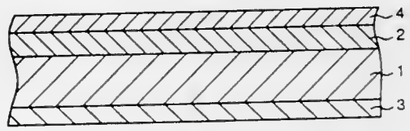
wherein the reaction product film comprises at least one of a phosphorus compound reaction product film, a sulfur compound reaction product film, and a chlorine compound reaction product film, which has been produced by a reaction between the sliding or rolling contact element and the corresponding one of an organophosphorus compound, an organosulfur compound, and an organochlorine compound.

5,252,392

MAGNETIC RECORDING MEDIUM COMPRISING MULTIPLE MAGNETIC LAYERS WITH SPECIFIED COMPOSITION AND PROPERTIES

Narito Goto, and Nobuyuki Sekiguchi, both of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jun. 24, 1992, Ser. No. 903,379
Claims priority, application Japan, Jul. 5, 1991, 3-190977
Int. Cl.[5] G11B 5/00
U.S. Cl. 428—336 8 Claims



1. A magnetic recording medium comprising a support and provided thereon, a plurality of magnetic layers each containing a magnetic powder and a binder, wherein an outermost magnetic layer of said magnetic layers comprises a ferromagnetic metal powder having an average major axis length of not more than 0.25 μm and a crystallite size of not more than 200 Å and carbon black having an average particle diameter of not less than 30 mμ in an amount of not more than 1% by weight, said outermost magnetic layer having a thickness of not more than 1 μm and a surface roughness R_{10z} of not more than 50 nm, and at least one magnetic layer other than said outermost layer comprises a cobalt-containing magnetic iron oxide powder having an average major axis length of not less than 0.25 μm and a crystallite size of not less than 250 Å, said at least one magnetic layer having a coercive force of from 500 to 1200 Oe.

5,252,393

THERMAL DELAYED-TACK ADHESIVE COMPOSITIONS AND THERMAL DELAYED-TACK ADHESIVE SHEETS

Nobuhiro Kagota, Takasago, and Hirokazu Tsukahara, Tokyo, both of Japan, assignors to Mitsubishi Paper Mills Ltd., Tokyo, Japan

Continuation of Ser. No. 207,581, Jun. 16, 1988, abandoned. This application May 5, 1992, Ser. No. 879,123
Claims priority, application Japan, Jun. 25, 1987, 62-159144
Int. Cl.[5] C09J 7/02
U.S. Cl. 428—349 20 Claims

1. Thermal delayed-tack adhesive compositions which comprise an aqueous resin dispersion, comprising in terms of parts by weights of solid:

(a) 100 parts by weight of a polymer resin;

(b) 10 to 120 parts by weight of a tackifier; and

(c) 50 to 300 parts by weight of a plasticizer which is solid at room temperature but which upon being heated and melted as a result of thermal activation, said plasticizer swells and dissolves said polymer resin and crystallizes slowly such that even after termination of said thermal activation, a tack state is sustained and retained for a substantial period of time;

wherein said polymer resin comprises a blend of a resin and at least 20% by weight of carboxylic acid-modified polyethylene,

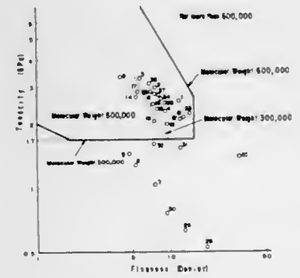
whereby enhanced tack strength and adhesive force with respect to plastic materials exhibiting low polarity, and relative to compositions which do not contain said carboxylic acid-modified polyethylene, is able to be achieved.

5,252,394

MOLECULAR ORIENTATION ARTICLES MOLDED FROM HIGH-MOLECULAR WEIGHT POLYETHYLENE AND PROCESSES FOR PREPARING SAME

Yasuo Kouno; Yuichi Itoh, and Kazuo Yagi, all of Kuga, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Sep. 21, 1990, Ser. No. 585,963
Claims priority, application Japan, Sep. 22, 1989, 1-247529; Nov. 29, 1989, 1-310024; Dec. 7, 1989, 1-318454; Feb. 8, 1990, 2-29055; Feb. 8, 1990, 2-29056
Int. Cl.[5] D02G 3/00; D01D 5/08
U.S. Cl. 428—364 5 Claims



1. In a filament formed from high molecular weight polyethylene having a weight average molecular weight of 300,000–600,000, the improvement which resides in that said filament has a fineness of not more than 15 deniers, a tensile strength of more than at least 1.7 GPa, and satisfies the tensile strength S (GPa)-weight average molecular weight M (g/mol)-fineness D (denier) relationship represented by the following formula [1].

$$\frac{M}{300{,}000} \times D^{-0.3} < S < \frac{M - 100{,}000}{10{,}000} \times D' - 1.08 \quad [1]$$

5,252,395

BLISTER RESISTANT PRESSURE SENSITIVE ADHESIVE SHEET

Shigenobu Maruoka, Kawasaki; Toshio Sugizaki; Kouji Irie, both of Urawa; Ichiro Tsuchida, Koshigaya, and Takanori Saito, Misato, all of Japan, assignors to Lintec Corporation, Tokyo, Japan

Filed Nov. 13, 1991, Ser. No. 792,013
Claims priority, application Japan, Dec. 17, 1990, 2-411182
Int. Cl.[5] C09J 7/02
U.S. Cl. 428—355 20 Claims

1. A blister resistant pressure sensitive adhesive sheet comprising a substrate and an adhesive composition which is coated on the surface of the substrate and comprises as the main component thereof a copolymer comprising (A) 30 to 93 weight percent of monomeric units of an acrylic ester, (B) 1 to 30 weight percent of monomeric units of a polar acrylic compound, (C) 5 to 40 weight percent of monomeric units of a high glass transition temperature macromonomer having a glass transition temperature of 20° C. or above, (D) 1 to 40 weight percent of monomeric units of a low Tg macromonomer hav-

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ing Tg of below 20° C. and (E) 0.1 to 20 weight percent of monomeric units of an oligomer having telechelic thiol functional groups wherein the sum of the content of the component (C) and the content of the component (D) is in the range from 6 to 50 weight percent.

5,252,396

REVERSIBLY COLOR-CHANGING SHAPED MATERIAL AND PROCESS FOR PRODUCING THE SAME

Yuichi Fukui; Hajime Itoh; Shigeki Hagura, and Itsumi Muraoka, all of Otake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

PCT No. PCT/JP91/00545, § 371 Date Dec. 19, 1991, § 102(e) Date Dec. 19, 1991, PCT Pub. No. WO91/16478, PCT Pub. Date Oct. 31, 1991

PCT Filed Apr. 24, 1991, Ser. No. 778,155

Claims priority, application Japan, Apr. 25, 1990, 2-107446

Int. Cl.[5] D02G *3/00*

U.S. Cl. 428—373 2 Claims

1. A conjugate fiber comprising a light-scattering sheath having open microvoids and a color-developing core having a hue different from the light-scattering sheath, wherein the light-scattering sheath is formed from a polymer comprising 50 mole % or more of acrylonitrile and 50 mole % or less of a hydrophobic co-monomer and the color-developing core is formed from an polymer comprising 80 mole % or more of acrylonitrile and 20 mole % or less of a hydrophilic co-monomer, wherein the conjugate fiber changes its color reversibly depending upon the moisture content of the light-scattering sheath.

5,252,397

MODIFIED POLYESTER RESIN AND HOT-MELT-ADHESIVE CONJUGATE FIBERS USING THE SAME

Fusao Hanzawa, Ichiharashi; Takayoshi Nakajima, Shigakeo; Masahiro Yokota, Ichiharashi; Kazuyoshi Kimura, Icbibarashi; Mamoru Fujita, Ichiharashi, and Seiji Ide, Ichiharashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Continuation of Ser. No. 757,806, Sep. 11, 1991, abandoned. This applicatioo Sep. 16, 1992, Ser. No. 945,710

Claims priority, application Japan, Sep. 28, 1990, 2-260272

Int. Cl.[5] D02G *3/00*

U.S. Cl. 428—373 5 Claims

1. Hot-melt-adhesive conjugate fibers consisting of a fiber-forming component and an adhesive component, at least one of said fiber-forming component and said adhesive component being a low-melting, modified polyester resin obtained by subjecting to polycondensation, a diol component consisting of 3 to 40 molar % of a 2,2-dialkyl-substituted-1,3-propanediol and 60 to 97 molar % of ethylene glycol and/or 1,4-butanediol, and an aromatic dicarboxylic acid, said low-melting, modified polyester resin having a melting point range between the melting point of polyethylene and a temperature at least 20° C. lower than the melting point of highly crystalline polyethylene terephthalate.

5,252,398

POLYOLEFINIC RESIN-COATED CARRIER WITH IRREGULAR SURFACE

Junji Ohtani, Kobe; Yoshihisa Terasaka, Settsu; Junji Machida, Toyonaka; Satoshi Asahi; Hiroshi Hayashi, both of Chiba, and Kouichi Matono, Ichihara, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka and Idemitsu Kosan Company Limited, Tokyo, both of Japan

Filed Jan. 10, 1991, Ser. No. 639,540

Claims priority, application Japan, Jan. 10, 1990, 2-3139

Int. Cl.[5] B32B *27/14;* G03G *9/00*

U.S. Cl. 428—403 22 Claims

1. A carrier of a two component developer for developing electrostatic latent images comprising;

a carrier core material comprising a magnetic particle, and a surface-coating layer formed on the core material having a coated area of about 70% or more by polymerizing an olefinic monomer on the surface of the core material so that the polyolefin has a weight average molecular weight of 5.0×10^3-5.0×10^5 and then heat treating, wherein the



carrier has a specific surface area of from 0.14–0.81 m^2/g, a true specific gravity of 3.5–7.5, a filling ratio of about 90% or more and an electrical resistance of 1×10^6-1×10^{14} ohm.cm.

5,252,399

ALUMINUM MEMBER PROVIDED WITH WEATHER-RESISTANT COAT

Seiji Hirata, Kumagaya; Nobuhiko Katagiri, Kohnosu, and Ryouji Iijima, Menuma, all of Japan, assignors to Hitachi Metal Ltd., Tokyo, Japan

Filed Dec. 18, 1992, Ser. No. 992,923

Claims priority, application Japan, Dec. 20, 1991, 3-355992; Dec. 20, 1991, 3-356010; Dec. 20, 1991, 3-356013

Int. Cl.[5] B32B *15/08, 27/38, 27/36, 27/08*

U.S. Cl. 428—416 19 Claims

1. A weather-resistant coat formed on an aluminum member comprising:

(a) a primer layer of an epoxy polyester-based, hybrid powder coating composition formed on an aluminum member;

(b) a base coat layer of a, metallic, acrylic coating composition formed on said primer layer; and

(c) a barrier coat layer of a high solid-type, clear, acrylic coating composition formed on said base coat layer.

5,252,400

FLUORINE-CONTAINING COMPOUNDS

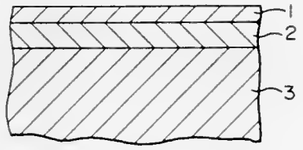
Naoko Mizuno; Yoshiaki Kai, both of Neyagawa, and Takashi Suzuki, Takatsuki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 12, 1991, Ser. No. 757,941

Claims priority, application Japan, Nov. 13, 1990, 2-307391; Nov. 21, 1990, 2-319004

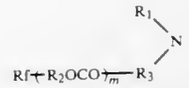
Int. Cl.[5] B32B *27/00*

U.S. Cl. 428—421 3 Claims



3. A magnetic recording medium comprising a non-magnetic support, a ferromagnetic metal film formed on the non-magnetic support, a lubricant layer formed on the ferromagnetic metal film, and a protective film formed between the ferromagnetic metal film and the lubricant layer,

the lubricant layer containing at least one fluorine-containing compound represented by the formula:



wherein Rf is a fluoroalkylether terminal group having 5–50 carbon atoms; R_1 is an aliphatic alkyl terminal group or an aliphatic alkenyl terminal group and has 10 or more carbon atoms; R_2 and R_3 are an alkenylene group; and m is 0 or 1.

5,252,401

BONDING OF PERFLUOROELASTOMERS

David P. Kitto, Newark, and Leo Ojakaar, Hockessin, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 8, 1992, Ser. No. 895,076

Int. Cl.[5] B32B *27/00*

U.S. Cl. 428—422 7 Claims

1. A process for bonding cured perfluoroelastomer to itself, the perfluoroelastomer being prepared from tetrafluoroethylene, perfluoroalkyl perfluoro (vinyl ether) and at least one cure site moiety which process comprises

(a) coating at least one surface to be joined with a thermoplastic perfluoropolymer bonding agent in a solvent or carrier,

(b) removing substantially all solvent or carrier from the bonding agent,

(c) bringing the surfaces to be joined into contact under sufficient pressure to maintain the contact of the surfaces,

(d) heating the surfaces to joined to a temperature above the melting point of the perfluoropolymer and below the decompositions of the perfluoroelastomer,

(e) cooling the surfaces to be joined to below the melting point of the perfluoropolymer,

(f) releasing the pressure from the surfaces to be joined.

5,252,402

MIRRORBACK COATING

Timothy J. Sanford, Randolph, N.Y., assignor to Lilly Industries, Inc., Indianapolis, Ind.

Division of Ser. No. 770,228, Oct. 2, 1991, Pat. No. 5,156,917, which is a division of Ser. No. 463,424, Jan. 11, 1990, Pat. No. 5,075,134. This application Jul. 2, 1992, Ser. No. 907,729

Int. Cl.[5] B32B *15/08, 17/06, 27/18, 33/00*

U.S. Cl. 428—425.8 43 Claims

1. A composition comprising a fluid organic resin-containing system which of itself, without the addition of dicyandiamide or metal or acid salts thereof, is capable of being fully hardened under heating conditions to form a cured coating over a metallic film which would provide relatively ineffective corrosion protection for that metallic film to which has been added dicyandiamide or metal or acid salts thereof to obtain a modified organic resin coating system providing a film capable of inhibiting corrosion of a metallic film layer on mirror backs.

38. A composition for providing a protective coating layer over a metallic surface comprising an essentially lead-free, cured organic resin coating system, said organic resin coating system being selected from the group consisting of alkyd resins, modified alkyd resins, acrylic resins, polyesters, urethane oils, vinyl halide polymers or copolymers, oleoresinous varnishes, nitrocellulose compositions, phenolformaldehyde resin varnishes, melamine formaldehyde resins, urea formaldehyde resins, and combinations thereof, and a corrosion inhibitor in an amount of about 0.01 to 20 weight percent selected from the group consisting of dicyandiamide and metal or acid salts thereof.

5,252,403

SOLUTIONS OF POLYCONDENSATES WHICH HAVE N-CONTAINING HETEROCYCLIC RING SYSTEMS AS STRUCTURAL UNITS, POSSESSING IMPROVED ADHESION TO INORGANIC SUBSTRATES

Rainer Blum, Ludwigshafen; Hans J. Heller, Hamburg; Hans-Joachim Haehnle, Ludwigshafen, and Klaus Lienert, Hamburg, all of Fed. Rep. of Germany, assignors to BASF Lacke+Farben Aktiengesellschaft, Munster, Fed. Rep. of Germany

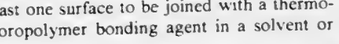
Filed Feb. 21, 1992, Ser. No. 838,945

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1991, 4107664

Int. Cl.[5] B32B *9/04;* B05D *3/02;* C08L *79/04;* C08G *77/26*

U.S. Cl. 428—447 5 Claims

1. A solution of polycondensate having heterocyclic repeating structural units comprising polybenzimidazoles, polybenzothiazoles, polybenzoxazoles, polyoxazinediones, polyquinazolinediones, polyisoindoloquinazolinediones, polyimides or intermediates thereof obtained by reacting tetracarboxylic dianhydrides with diamines or diisocyanates, or mixture thereof in an organic solvent, containing from 0.1 to 20% by weight, based on the polycondensate or the intermediate thereof, of one or more azidosilanes of the formula



I

where R^1 is C_1-C_3-alkyl, phenyl, benzyl or toluyl, R^2 is C_1-C_4-alkyl, C_2-C_4-alkoxyalkyl, phenyl or benzyl, R^3 is C_1-C_8-alkylene which may be interrupted by an oxygen atom, a sulfur atom or a —(N—R^4)-group, where R^4 is hydrogen, methyl, ethyl or phenyl, and n is 0. 1, or 2.

5,252,404

POLYESTER COATING COMPOSITIONS AND PRECOATED STEEL SHEET USING SAME

Ryoji Ishihara, Tanabe; Haruhiko Sawada, Neyagawa, and Koichi Kimura, Osaka, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Feb. 21, 1992, Ser. No. 838,659

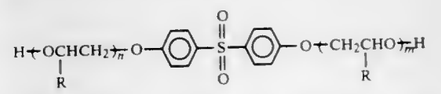
Claims priority, application Japan, Feb. 22, 1991, 3-050560; Feb. 22, 1991, 3-050561

Int. Cl.[5] C08G *18/80, 18/42, 65/28*

U.S. Cl. 428—458 19 Claims

1. A polyester coating composition comprising:

(A) 50 to 95 parts by weight as solids of a polyester resin produced by reacting a polybasic acid component consisting essentially of 20 to 80 mole % of the total acid component of an aromatic dicarboxylic acid and the balance of an aliphatic and/or alicyclic dicarboxylic acid, and a polyhydric alcohol component consisting essentially of 50 to 98 mole % of the total alcohol component of a bisphenol S-alkylene oxide adduct of the formula:



wherein R is H or methyl, n and m are each an integer from 1 to 8, 0 to 10 mole % of the total alcohol component of a branched chain-aliphatic glycol; and the balance of a straight chain-aliphatic and/or alicyclic diol;

(B) 50 to 5 parts by weight as solids of an aminoplast resin and/or a blocked polyisocyanate.

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5,252,405

RUBBER COMPOSITION FOR COATING STEEL CORDS AND RUBBER PRODUCT USING THE SAME

Hiroyuki Kaido; Kazuyoshi Kayama, both of Yokohama; Tetsuji Kawazura, Ninomiyamachi; Hideyuki Oisbi, Hiratsuka; Yoshihisa Ogihara, Sawara, and Humiaki Yoneyama, Kamisumachi, all of Japan, assignors to The Yokohama Rubber Co., Ltd. and Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Filed Mar. 20, 1992, Ser. No. 854,936
Claims priority, application Japan, Mar. 25, 1991, 3-60303
Int. Cl.[5] B32B *15/08*; C08C *19/00*
U.S. Cl. 428—462 11 Claims

1. A rubber product reinforced with rubber-coated steel cords comprising steel cords coated with a rubber composition comprising a raw material rubber and, compounded therein, a methylolmelamine derivative and a product of a reaction of a cobalt salt of an organic acid with a metaboric acid ester.

5,252,406

SUPPORT FOR TONER TRANSFER

Bernard A. Eid, Champagne sur Seine, and Jeannine Rigola, Chalon sur Saone, both of France, assignors to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/FR90/00416, § 371 Date Dec. 12, 1991, § 102(e) Date Dec. 12, 1991, PCT Pub. No. WO90/16016, PCT Pub. Date Dec. 27, 1990
PCT Filed Jun. 13, 1990, Ser. No. 778,080
Claims priority, application France, Jun. 13, 1989, 8908156
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—474.4 7 Claims

1. A support for the thermal transfer of electrostatic toner pigments which comprises a base and a receiving layer for the pigments wherein the receiving layer is formed of gelatin, as a hydrophilic binder, and a surface-active agent in which the concentration of the surface-active agent is at least 1 mg/dm^2 and is at least 2 times that of the hydrophilic binder and the thickness of the support is between 0.05 and 0.2 mm.

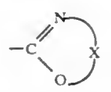
5,252,407

RUBBER COMPOSITE

Kiyosuke Kamiyama; Shuzo Sawada, both of Tsuruga; Kazuyuki Yabuki, Ootsu, and Yasuo Sano, Minoo, all of Japan, assignors to Takeda Chemical Industries, Ltd. and Toyo Boseki Kabushiki Kaisha, both of Osaka, Japan

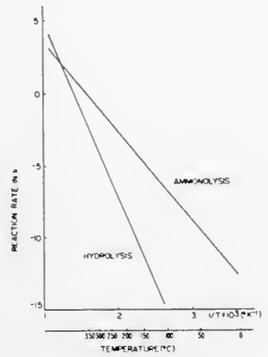
PCT No. PCT/JP88/00983, § 371 Date May 25, 1989, § 102(e) Date May 25, 1989, PCT Pub. No. WO89/02908, PCT Pub. Date Apr. 6, 1989
Division of Ser. No. 362,419, May 25, 1989, abandoned. This PCT application Sep. 28, 1988, Ser. No. 794,623
Claims priority, application Japan, Oct. 1, 1987, 62-248959
Int. Cl.[5] B32B *27/06*; C08K *5/34*
U.S. Cl. 428—480 1 Claim

1. A method of preventing degradation by amine-catalyzed hydrolysis of adhesive-treated polyester fiber cords in a rubber composite containing said cords as a reinforcing material and an amine, which comprises incorporating in said rubber composite excluding said adhesive-treated polyester fiber cords, an antidegradation effective amount, within the range of 0.01 to 20% by weight based on the weight of the rubber composite, of a compound containing in its molecule at least one cyclic iminoether group represented by the formula (I),



(I)

wherein X represents an ethylene group, substituted ethylene group, trimethylene group or substituted trimethylene group which makes the cyclic structure of the formula (I) a five-membered or six-membered ring.

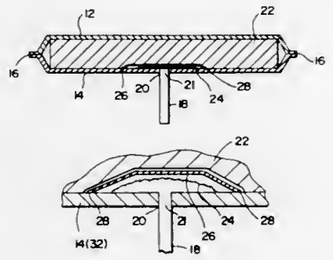


5,252,408

VACUUM INSULATED PANEL AND METHOD OF FORMING A VACUUM INSULATED PANEL

John A. Bridges, Nashville; Philip H. Neal, Donelson, and John E. Besser, Franklin, all of Tenn., assignors to Aladdin Industries, Inc., Nashville, Tex.

Filed Sep. 24, 1990, Ser. No. 587,344
Int. Cl.[5] B32B *1/06, 15/04, 15/16*
U.S. Cl. 428—621 37 Claims



1. A vacuum insulated panel comprising first and second all-metal wall members joined together to define a cavity, a getter positioned within said cavity, said getter positioned in contact with said metal wall members, said getter comprising a compressed cake of powder material which substantially fills said cavity and prevents said wall members from contacting each other, means for assisting in evacuating said cavity to establish a vacuum within said cavity, and means for preventing said getter from being evacuated by said means for assisting in evacuating said cavity, said preventing means comprising a gas-permeable getter-impermeable member.

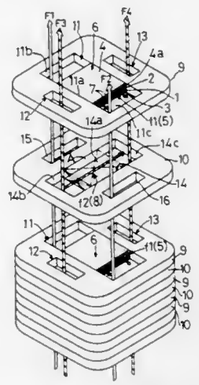
5,252,409

FUEL CELL

Kosuke Akagi, Ikoma, Japan, assignor to Osaka Gas Co., Ltd., Osaka, Japan

Filed Feb. 26, 1992, Ser. No. 841,837
Claims priority, application Japan, Mar. 1, 1991, 3-035786
Int. Cl.[5] H01M *8/04, 8/12*
U.S. Cl. 429—32 16 Claims

1. A fuel cell comprising:
a plurality of plate-like cells arranged side by side in a direction of thickness of the cell to provide inter-cell flow passages between adjacently disposed cells, each said cell including,
a three-layer plate assembly having a solid electrolyte layer, an oxygen electrode affixed to one side of the electrolyte layer and a fuel electrode affixed to the other side of the electrolyte layer, and
a separator attached to said three-layer assembly in such a manner as to provide an intra-cell flow passage in cooperation with one of said oxygen electrode and said fuel electrode;
a first plate member having a thickness substantially corresponding to a thickness of said cell;
a second plate member to be laid on said first plate member in an alternating stacking relationship relative thereto;
said first plate member forming a cell-insertion opening including a cell housing portion for housing the cell and first and second spaces for respectively communicating with opposed open ends of said intra-cell flow passage of the cell with the cell being housed at said cell housing portion, said first plate member further forming a first communication opening and a second communication opening;
said second plate member forming an inter-cell flow passage forming opening including an inter-cell flow passage forming portion facing said cell when said cell is housed at



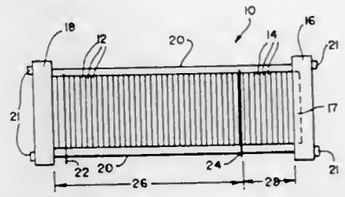
said first plate member, a third space communicating with said first communication opening at one terminal end of said inter-cell flow passage forming portion and a fourth space communicating with said second communication opening at the other terminal end of said inter-cell flow passage forming portion, said second plate member further forming a third communication opening communicating with said first space and a fourth communication opening communicating with said second space;
said inter-cell flow passage being formed between said respective adjacent cells by said inter-cell flow passage forming portions as said first plate member housing said cell and said second plate member are laid one on another;
said first communication opening in cooperation with said third space and said second communication opening in cooperation with said fourth space forming continuous flow passages which provide an air feed passage and an air exhaust passage for said inter-cell flow passage respectively; and
said first space in cooperation with said third communication opening and said second space in cooperation with said fourth communication opening forming further continuous flow passages which provide an air feed passage and an air exhaust passage for said intra-cell flow passage respectively.

5,252,410

LIGHTWEIGHT FUEL CELL MEMBRANE ELECTRODE ASSEMBLY WITH INTEGRAL REACTANT FLOW PASSAGES

David P. Wilkinson; Henry H. Voss, both of North Vancouver, and Keith B. Prater, Vancouver, all of Canada, assignors to Ballard Power Systems Inc., North Vancouver, Canada

Filed Sep. 13, 1991, Ser. No. 759,463
Int. Cl.[5] H01M *8/04*
U.S. Cl. 429—33 31 Claims



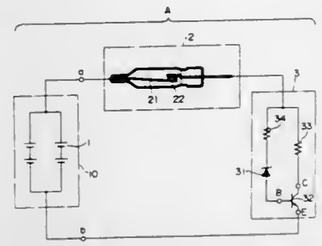
1. An electrochemical fuel cell for converting a fuel reactant stream and an oxidant reactant stream to a reaction product stream and electrical energy, said fuel cell comprising:
first and second separator layers, said separator layers formed of electrically conductive sheet material, said sheet material substantially impermeable to said fuel and oxidant reactant streams;
a membrane electrode assembly interposed between said first and second separator layers, said assembly comprising first and second electrode layers, said electrode layers formed of porous electrically conductive sheet material and having a catalyst associated therewith, and an ion exchange membrane interposed between said first and second electrode layers,
said first electrode layer comprising a fuel stream inlet, a fuel stream outlet, and means for flowing said fuel stream within the sheet material of said first electrode layer between said fuel stream inlet and said fuel stream outlet;
said second electrode layer comprising an oxidant stream inlet, an oxidant stream outlet, and means for flowing said oxidant stream within the sheet material of said second electrode layer between said oxidant stream inlet and said oxidant stream outlet.

5,252,411

PROTECTIVE APPARATUS FOR SECONDARY BATTERY

Masaaki Yokokawa, and Takayuki Aita, both of Fukushima, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 25, 1991, Ser. No. 765,259
Claims priority, application Japan, Sep. 26, 1990, 2-256487
Int. Cl.[5] H01M *10/48*
U.S. Cl. 429—62 6 Claims



1. A protective apparatus for a secondary battery, said apparatus comprising:
a temperature sensing means for allowing current flow when

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the ambient temperature around said secondary battery exceeds a temperature setting; and

a discharging circuit electrically connected via said temperature sensing means to said secondary battery, said discharging circuit discharging said secondary battery;

said discharging circuit further comprising:

a voltage sensing switching means being switched on substantially when the voltage applied to said discharging circuit exceeds a predetermined discharge starting voltage; and

a discharging resistor serially connected to said voltage sensing switching means, said discharging resistor setting the discharge current in effect at the time of discharging.

5,252,412

ACTIVATABLE LITHIUM/BROMINE TRIFLUORIDE ELECTROCHEMICAL CELL

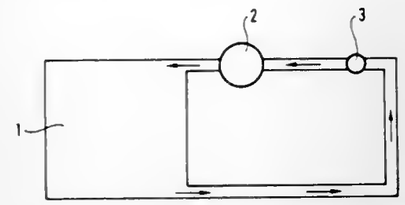
Gilles Crepy, Evry, and Jean-Pierre Buchel, Lisses, both of France, assignors to Alcatel Alsthom Compagnie Generale D' Electricite, Paris, France

Filed Mar. 25, 1992, Ser. No. 857,398

Claims priority, application France, Mar. 26, 1991, 91 03647

Int. Cl.[5] H01M *2/40*

U.S. Cl. 429—70 **4 Claims**



1. An activatable lithium/bromine trifluoride electrochemical cell comprising an anode of lithium or lithium alloy, a positive current collector based on carbon black, and an electrolyte based on bromine trifluoride, wherein the quantity of bromine trifluoride is not less than 200 ml per dm^2 of anode area, and that means are provided for causing the electrolyte to circulate through said cell at a linear speed of not less than 0.5 cm/second, thereby preventing anode reaction products from precipitating.

5,252,413

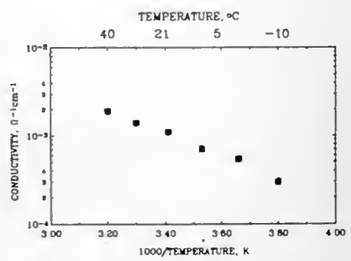
SOLID POLYMER ELECTROLYTE LITHIUM BATTERIES

Mohamed Alamgir, Dedham, and Kuzhikalail M. Abraham, Needham, both of Mass., assignors to EIC Laboratories, Inc., Norwood, Mass.

Filed Apr. 7, 1992, Ser. No. 864,723

Int. Cl.[5] H01M *8/12*

U.S. Cl. 429—192 **21 Claims**



1. A solid electrolyte comprising:

a polymer network comprising poly(vinyl chloride);

a solvate consisting of an alkali metal salt dissolved within one or more aprotic organic solvents; and

a low boiling solvent capable of evaporating off of the polymer/solvate mixture at about room temperature.

5,252,414

EVALUATION METHOD OF RESIST COATING

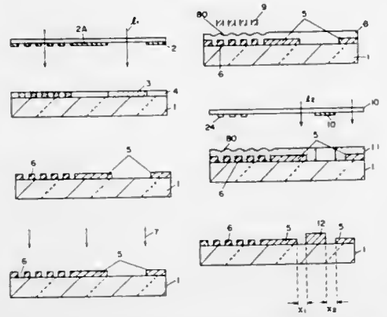
Kazuhiro Yamashita, Amagasaki; Hironao Iwai, Osaka, and Noboru Nomura, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 20, 1991, Ser. No. 747,619

Claims priority, application Japan, Aug. 20, 1990, 2-219254

Int. Cl.[5] G03F *9/00*

U.S. Cl. 430—22 **4 Claims**



1. A method for evaluating a resist coating comprising the steps of:

forming a first layer resist pattern and, a first layer resist alignment grating by applying a first resist on a semiconductor substrate, exposing said first resist with a first photomask and developing said first resist;

irradiating said first layer resist pattern with a deep ultraviolet ray;

applying, onto said irritated first layer resist pattern, a second resist having substantially the same refractive index as said first resist to form a second resist coating;

irradiating said first layer resist alignment grating simultaneously with light of a first frequency and light of a second frequency different from said first frequency to create an interference fringe pattern;

aligning a second photomask to said first alignment grating using said interference fringe pattern;

exposing said second resist with said second photomask and developing said second resist to form a second layer resist pattern; and

determining non-uniformity characteristics of said second resist coating by measuring misalignment between said first layer resist pattern and said second layer resist pattern.

5,252,415

DOT-IMAGE FORMING METHOD AND THE PHOTORECEPTOR THEREFOR

Hideo Yoshizawa, and Yoshihide Fujimaki, both of Hachioji, Japan, assignors to Konica Corporation, Japan

Filed Dec. 7, 1990, Ser. No. 624,394

Claims priority, application Japan, Dec. 11, 1989, 1-321856; Dec. 11, 1989, 1-321859; Dec. 28, 1989, 1-339744; Feb. 28, 1990, 2-45298

Int. Cl.[5] G03G *5/07*

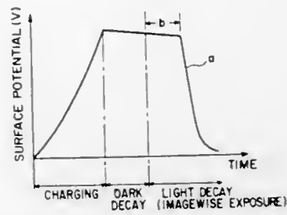
U.S. Cl. 430—31 **7 Claims**

1. A method of forming an image on a photoreceptor, comprising:

charging the surface of the photoreceptor;

forming a latent image on the surface of the photoreceptor by a dot-wise image exposure;

developing the latent image on the surface of the photoreceptor;



wherein the photoreceptor exhibits a peak in its differential coefficient to imagewise exposure curve, and the amount of dot-wise imagewise exposure per pixel for a solid image is greater than that for a thin line image.

5,252,416

PHOTOCONDUCTOR FOR ELECTROPHOTOGRAPHY

Masami Kuroda; Masayo Amano, and Noboru Furusho, all of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

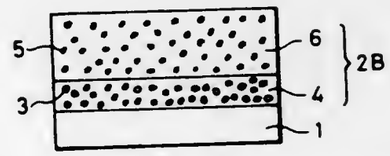
Division of Ser. No. 793,723, Nov. 20, 1991, Pat. No. 5,213,925.

This application Jul. 21, 1992, Ser. No. 915,655

Claims priority, application Japan, Nov. 22, 1990, 2-318299

Int. Cl.[5] G03G *5/47, 5/9*

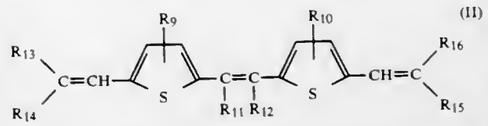
U.S. Cl. 430—58 **7 Claims**



1. A photoconductor for electrophotography, comprising:

an electroconductive substrate; and

a photosensitive layer formed on said electroconductive substrate including a charge generating substance and a charge transporting substance which is at least one compound represented by general formula (II):



(II)

wherein each of R_9, R_{10}, R_{11} and R_{12} is selected from the group consisting of a hydrogen atom, a halogen atom, an alkyl group and an aryl group, and each of R_{13}, R_{14}, R_{15} and R_{16} is selected from the group consisting of a hydrogen atom, a halogen atom, an alkyl group, and a substituted or unsubstituted aryl group and heterocyclic group.

5. The photoconductor as claimed in claim 1, wherein said photosensitive layer comprises a laminate of a charge generating layer including said charge generating substance and a charge transporting layer including said charge transporting substance.

5,252,417

TITANYL PHTHALOCYANINE CRYSTAL AND ELECTROPHOTOGRAPHIC PHOTORECEPTOR USING THE SAME

Akihiko Tokida; Yasuo Sakaguchi; Hidemi Nukada; Kohichi Yamamoto, and Katsumi Daimon, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 19, 1991, Ser. No. 670,788

Claims priority, application Japan, Mar. 20, 1990, 2-68089

Int. Cl.[5] G03G *5/06*

U.S. Cl. 430—59 **12 Claims**

1. A substantially α-free titanyl phthalocyanine crystal showing diffraction peaks at Bragg angles ($2\theta \pm 0.2$) of 27.2°, 24.0°, 18.0°, 14.3° and 9.5° in X-ray diffractometry.

5,252,418

ELECTROPHOTOGRAPHIC PHOTORECEPTOR WITH PROTRUDING INORGANIC INSULATOR PIECES AND AN ELECTROPHOTOGRAPHIC APPARATUS UTILIZING THE SAME

Fuminori Ishikawa, Hitachiota; Akira Sato, Takahagi; Kunihiro Tamahashi, Mito; Masatoshi Wakagi; Katsumi Tamura, both of Hitachi; Masanobu Hanazono, Mito; Mitsuyoshi Shoji, Ibaraki; Takayuki Nakakawaji, Hitachi; Yutaka Ito, Takahagi; Shigeki Komatsuzaki, Mito; Motoo Akagi, Tokyo, and Masaaki Imamura, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 14, 1990, Ser. No. 567,180

Claims priority, application Japan, Aug. 25, 1989, 1-217362; Mar. 19, 1990, 2-67108

Int. Cl.[5] G03G *5/14*

U.S. Cl. 430—67 **25 Claims**

1. An electrophotographic photoreceptor comprising a photoconductive layer including a photoconductor, a support for said photoconductive layer and a surface layer formed on said photoconductive layer, and comprising a curable resin film of 0.1 to 1 μm in thickness and inorganic insulator pieces having a size larger than the film thickness of said curable resin film, said inorganic insulator pieces being dispersed at an average interval of no more than about 2.8 μm in said resin film and protruded to a height of at least 0.1 μm from said resin film so that a toner forming an image is supported by the protruded inorganic insulator pieces on said surface layer.

5,252,419

ELECTROPHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL COMPRISING RESIN CONTAINING ACIDIC GROUPS AT RANDOM AND COMB-LIKE RESIN CONTAINING MACROMONOMER COMPRISING AB BLOCK COPOLYMER

Eiichi Kato; Seishi Kasai, and Kazuo Ishii, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 22, 1991, Ser. No. 704,248

Claims priority, application Japan, May 22, 1990, 2-130146

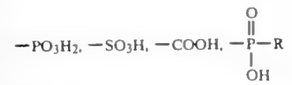
The portion of the term of this patent subsequent to Aug. 4, 2009, has been disclaimed.

Int. Cl.[5] G03G *5/087*

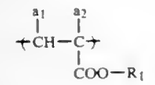
U.S. Cl. 430—96 **14 Claims**

1. An electrophotographic light-sensitive material comprising a support having provided thereon a photoconductive layer containing at least an inorganic photoconductive substance, a spectral sensitizer and a binder resin, wherein the binder resin contains (1) at least one resin (Resin (A)) having a weight average molecular weight of from 1×10^3 to 1×10^4 which contains at least 30% by weight of a polymer component represented by the general formula (I) described below and from 0.1 to 10% by weight of a polymer component containing at least one acidic group selected from

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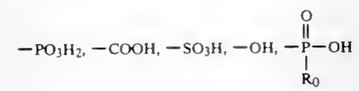


(wherein R represents a hydrocarbon group or —OR′ (wherein R′ represents a hydrocarbon group)) and a cyclic acid anhydride-containing group, and which has at least one acidic group selected from the above-described acidic groups at one terminal of the main chain of the copolymer;

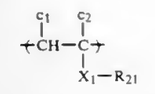


(I)

wherein a_1 and a_2 each represents a hydrogen atom, a halogen atom, a cyano group or a hydrocarbon group; and R_1 represents a hydrocarbon group; and (2) at least one graft type copolymer (Resin (B)) having a weight average molecular weight of from 3×10^4 to 1×10^6 and containing, as a copolymerizable component, at least one monofunctional macromonomer (M) having a weight average molecular weight of from 1×10^3 to 2×10^4 and comprising an AB block copolymer composed of an A block comprising at least one polymerizable component containing at least one acidic group selected from

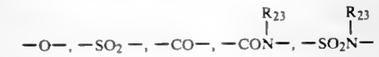


(wherein R_0 represents a hydrocarbon group or —OR_0' (wherein R_0' represents a hydrocarbon group)) and a cyclic acid anhydride-containing group, and a B block containing at least one polymerizable component represented by the general formula (III) described below and having a polymerizable double bond group bonded to the terminal of the main chain of the B block polymer.



(III)

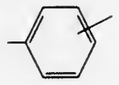
wherein c_1 and c_2 each represents a hydrogen atom, a halogen atom, a cyano group, a hydrocarbon group, —$COOR_{24}$ or —$COOR_{24}$ bonded via a hydrocarbon group (wherein R_{24} represents a hydrocarbon group); X_1 represents —COO—, —OCO—, —$CH_2)_{l1}$OCO—, —$CH_2)_{l2}$COO— (wherein l_1 and l_2 each represents an integer of from 1 to 3),



(wherein R_{23} represents a hydrogen atom or a hydrocarbon group),



and R_{21} represents a hydrocarbon group, provided that, when X_1 represents

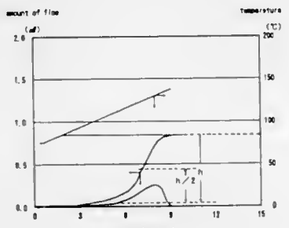


R_{21} represents a hydrogen atom or a hydrocarbon group.

5,252,420
DEVELOPER COMPOSITION FOR ELECTROPHOTOGRAPHY

Shingo Tanaka, Kainan; Tetsuya Ueno, and Koji Nishibuchi, both of Wakayama, all of Japan, assignors to KAO Corporation, Tokyo, Japan

Filed Jun. 27, 1991, Ser. No. 722,311
Claims priority, application Japan, Jul. 6, 1990, 2-179822
Int. Cl.[5] G03G *9/08*
U.S. Cl. 430—109 **11 Claims**

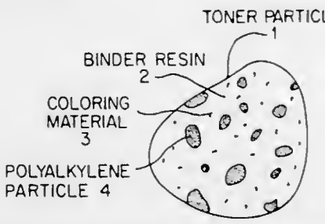


1. A developer composition for electrophotography containing a binder resin consisting essentially of a polyester resin, a colorant and a bisphenol A alkylene oxide adduct, wherein said bisphenol A alkylene oxide adduct is an unreacted monomer in a ratio of not less than 1.0 part by weight and not more than 10.0 parts by weight based on 100 parts by weight of the binder resin.

5,252,421
ELECTROPHOTOGRAPHIC TONER

Masanori Ichimura; Toru Murakami, and Koichi Oyamada, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 376,516, Jul. 7, 1989, abandoned. This application Feb. 13, 1991, Ser. No. 655,189
Claims priority, application Japan, Jul. 18, 1988, 63-176944
Int. Cl.[5] G03G *9/00, 5/00;* **C08L** *91/08;* **C08K** *5/01*
U.S. Cl. 430—110 **9 Claims**



1. A method for preparing an electrophotographic toner comprising a binder resin, a coloring material, and a polyalkylene, which comprises the steps of:

(1) melt-kneading a mixture comprising the polyalkylene, the binder resin and the coloring material, wherein the average particle volume of the polyalkylene is adjusted to 0.05 μm^3 or more by controlling the kneading temperature to a temperature in the range of from about 130° to about 250° C., and control of the kneading temperature is effected by controlling the amount of water added for kneading and the heating temperature of the kneading chamber;

(2) cooling the melt-kneaded mixture to solidify; and

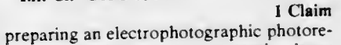
(3) reducing the solidified mixture to powder or small fragments.

5,252,422
METHOD FOR PREPARING AN ELECTROPHOTOGRAPHIC PHOTORECEPTOR

Sadao Okano; Takahiro Suzuki; Masanori Murase; Koji Bando, and Seiji Ashiya, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 757,028, Sep. 9, 1991, Pat. No. 5,188,916. This application Jan. 31, 1992, Ser. No. 829,618
Claims priority, application Japan, Oct. 8, 1990, 2-268315; Oct. 26, 1990, 2-287232; Feb. 1, 1991, 3-31412
Int. Cl.[5] G03G *5/14*
U.S. Cl. 430—131 **1 Claim**

1. A method for preparing an electrophotographic photoreceptor which comprises laminating a charge generating layer and a charge transporting layer in this order on an electrically conductive substrate via an undercoating layer, wherein the coating solution for said undercoating layer contains an alkoxide coupling agent represented by formula (I), an aliphatic alcohol solvent containing at least the same number of carbon atoms as in the alkoxy group in said alkoxide coupling agent, and at least one compound selected from the group consisting of aromatic solvents, ethylene glycols and propylene glycols:



(I)

wherein R_1 represents an alkyl group having 1 to 5 carbon atoms; M represents Si, Ti, Zr or Al; X represents an organic group; m represents an integer of 0, 1 or 2; and n represents an integer of 1 to 4; provided that when M is Si, Ti or Zr, n is an integer of 1 to 4 and m is an integer of (4 − n) and when M is Al, n is an integer of 1 to 3 and m is an integer of (3 − n).

5,252,423
LIGHT-SENSITIVE MATERIAL CONTAINING SILVER HALIDE REDUCING AGENT, POLYMERIZABLE COMPOUND, COLOR IMAGE FORMING SUBSTANCE, BASE PRECURSOR AND POLAR COMPOUND

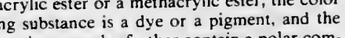
Fujio Kakimi, and Makoto Yamada, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 596,663, Oct. 11, 1990, abandoned. This application Jun. 30, 1992, Ser. No. 908,558
Claims priority, application Japan, Oct. 11, 1989, 1-264780; Apr. 13, 1990, 2-98388
Int. Cl.[5] G03C *1/72*
U.S. Cl. 430—138 **8 Claims**

1. A light-sensitive material comprising a support and a light-sensitive layer provided thereon which contains silver halide, a reducing agent, an ethylenically unsaturated polymerizable compound, a color image forming substance and a base precursor composed of a salt of an organic base with a carboxylic acid,

wherein said silver halide, said reducing agent, said polymerizable compound, said color image forming substance and said base precursor are contained together in light-sensitive microcapsules which are dispersed in the light-sensitive layer,

wherein the ethylenically unsaturated polymerizable compound is an acrylic ester or a methacrylic ester, the color image forming substance is a dye or a pigment, and the light-sensitive microcapsules further contain a polar compound represented by formula (I) or (II):



(I)

wherein L is a divalent linking group; each of M and Q independently is an aliphatic hydrocarbon residue; each of G and G′ independently is —OR^1, —$SO_2NR^1R^2$, —$CONR^1R^2$, —$NR^2SO_2R^1$, —NR^2COR^1, —N(—CO—NR^1R^2 or —NH—$COOR^1$, wherein each of R^1 and R^2 independently is hydrogen or an alkyl group having 1-3 carbon atoms; l is 0 or 1; and each of m and n independently is 0 or an integer of 1-10, with the condition that m+n is 1-10;

(II)

wherein R^5 is a monovalent group selected from the group consisting of a hydroxy group, an alkoxy group, a polyalkoxy group consisting of alkoxy groups each of which has 3 or more carbon atoms, an aryloxy group, an amino group, an acylamino group and an acyloxy group, and q is an integer of not less than 2, and

wherein the amount of silver salt contained in the light-sensitive layer is in the range of 1 mg/m^2 to 10 mg/m^2, the amount of the reducing agent is in the range of 0.1 to 1,500 mole % based on the amount of the silver salt, the amount of the dye or the pigment is 10 to 60 parts by weight based on 100 parts by weight of the polymerizable compound, the amount of the base precursor is not more than 50 weight % of the light-sensitive layer, the amount of the polar compound is in the range of 0.5 to 50 weight % based on the amount of the polymerizable compound, and the polar compound is attached to the surface of particles of the base precursor.

5,252,424
PHOTOGRAPHIC PAPER

Erika M. Sato, Rochester, N.Y., and Peter D. Marsden, North Harrow, England, assignors to Eastman Kodak Company, Rochester, N.Y.

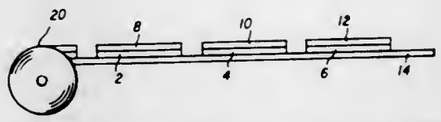
Filed Sep. 4, 1992, Ser. No. 941,333
Int. Cl.[5] G03C *1/52*
U.S. Cl. 430—138 **15 Claims**

1. A photographic element comprising a paper substrate with a polyolefin coating provided on at least one surface, a hydrophilic colloid layer on the polyolefin coating, and at least one light sensitive silver halide emulsion above the hydrophilic colloid layer, wherein said hydrophilic colloid layer comprises a removable antihalation material and from about 20 to 80 percent by weight of a white pigment, and from about 5 to 35 percent by weight of hollow microspheres having a diameter of from about 0.1 to about 1 micrometer.

5,252,425
HARD COPY IMAGING SYSTEM

Pranab Bagchi, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 19, 1991, Ser. No. 746,544
Int. Cl.[5] G03C *5/54, 1/68*
U.S. Cl. 430—201 **10 Claims**



1. A method of making a full color copy of an original which comprises providing a first, second and third imaging element, on a support, the first imaging element comprising a first primary color light sensitive layer of a photoresist material over a first color dye donor layer containing a first color dye or dye precursor complementary to the first primary color, the second imaging element comprising a second primary color light sensitive layer of a photoresist material over a second color dye donor layer containing a second color dye or dye precursor complementary to the second primary color and the third

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imaging element comprising a third primary color light sensitive layer of a photoresist material over a third color dye donor layer containing a third color dye or dye precursor complementary to the third primary color, all of the dye donor layers being intermediate the light sensitive layers and the support, exposing said first imaging element to light of the first primary color to alter the permeability of the first primary color light sensitive layer to the first color dye or dye precursor in the areas upon which the light of said first primary color impinges, contacting said first imaging element with the receiver sheet and thermally transferring a first color dye image onto the receiver sheet, exposing the second imaging element to light of the second primary color to alter the permeability of the second primary color light sensitive layer to the second color dye or dye precursor in the areas upon which the light of the second primary color impinges, contacting said second imaging element with the receiver sheet and thermally transferring a second color dye image onto the receiver sheet in registry with the first color dye image, exposing the third imaging element to light of the third primary color to alter the permeability of the third light sensitive layer to the third color dye or dye precursor in the areas upon which the light of the third primary color impinges, contacting said third imaging element with the receiver sheet and thermally transferring a third color dye image onto the receiver sheet in registry with said first and second color images.

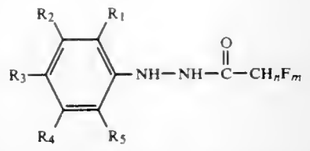
5,252,426

MONO-AND DIFLUOROACETYLPHENYL HYDRAZINE COMPOUNDS AS SILVER HALIDE ADJUVANTS

Dominic M. Chan, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 29, 1991, Ser. No. 737,150
Int. Cl.[5] G03C *1/06*
U.S. Cl. 430—264 5 Claims

1. A silver halide element capable of producing images with ultra-high contrast comprising at least one gelatin silver halide layer and containing within the element or on a surface portion a fluorophenyl hydrazine of the following structure:



wherein R_1 to R_5 independently of the other are hydrogen, halogen, alkyl, alkoxy, hydroxyalkyl, halogenated alkyl, alkyl amino, aliphatic acylamino, with, in each case, 1 to 20 carbon atoms, cycloalkyl with 5 to 7 carbon atoms, aryl, aryloxy, or aromatic acylamino with, in each case, 6 to 10 carbon atoms, aralkyl or aralkoxy with 1 to 3 carbon atoms in the alkylene chain, an aliphatic acyl amino radical with 1 to 4 carbon atoms and substituted with a phenoxy radical or a phenoxy radical substituted with one or more alkyl radicals with 1 to 10 carbon atoms, a five-member or six-member heterocyclic ring with at least one of nitrogen and sulfur as heteroatoms, which ring can also be condensed on a benzene ring, or an alkyl or phenyl sulfonamido radical, whereby, in place of two substituents, a saturated or unsaturated ring can also be condensed onto the hydrazine, n and m are 1 or 2, and where n+m=3.

5,252,427

POSITIVE PHOTORESIST COMPOSITIONS

Richard D. Bauer, Kennett Square, Pa.; Gwendyline Y. Y. Chen, Wilmington, Del., and William L. Hamilton, Chesapeake City, Md., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 508,023, Apr. 10, 1990, abandoned.
This application Jul. 21, 1992, Ser. No. 917,924
Int. Cl.[5] G03C *1/492*
U.S. Cl. 430—270 12 Claims

1. An aqueous-processable, positive-working, photoresist composition consisting essentially of

a) a polymeric material having

(1) pendant acid labile groups selected from the group consisting of isobornyl ester, alpha-alkoxy alkyl ester, secondary or tertiary alkyl ester and silyl ester and

(2) free acid groups having a pKa of at least 2 wherein the free acid groups consist essentially of carboxylic acid groups, wherein the polymeric materials has an acid number of from 25 to 300 and an adherent coating of said material in a thickness within a range of 0.00025 to 0.005 inch on a substrate takes at least 1 minute to be removed when sprayed at 25 to 30 p.s.i. with 1% by weight aqueous sodium carbonate solution at 30° C., and

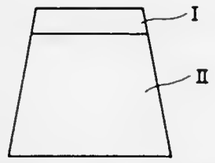
b) a substance comprising 0.1 to 10 weight present of the photoresist composition that forms an acid having a pKa equal to or less than 2 upon exposure to actinic radiation.

5,252,428

PHOTORESIN RELIEF PRINTING PLATE

Tadashi Kawamoto, and Yuji Aoki, both of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 727,360, Jul. 9, 1991, abandoned, which is a continuation of Ser. No. 331,400, Mar. 31, 1989, abandoned.
This application Apr. 23, 1992, Ser. No. 873,653
Claims priority, application Japan, Mar. 31, 1988, 63-75928
Int. Cl.[5] G03C *1/492*
U.S. Cl. 430—271 10 Claims



1. A photoresin relief printing plate comprising:

a support and a photoresin relief portion disposed thereon,

said relief portion having a thickness of not greater than 8 mm and comprising an upper photoresin layer and a lower photoresin layer, said upper and lower photoresin layers being provided, on said support in the order from said support, of said lower photoresin layer and said upper photoresin layer,

said upper photoresin layer having a thickness of at least 2 μm and a Young's modulus of not greater than 650 kg/cm^2,

said lower photoresin layer having a thickness which is at least 4 times the thickness of said upper photoresin layer and being composed of a single layer or two different layers, wherein said single layer of said lower photoresin layer has a Young's modulus which is greater than the Young's modulus of said upper photoresin layer, and said two different layers of said lower photoresin layer has an average Young's modulus which is greater than the Young's modulus of said upper photoresin layer.

5,252,429

PROCESS OF COLOR DEVELOPMENT USING PEARLESCENT TONERS HAVING REDUCED STAIN CHARACTERISTICS

Eugene L. Grubb, Colts Neck, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 695,825, May 6, 1991, Pat. No. 5,194,366.
This application Jan. 8, 1993, Ser. No. 2,246
Int. Cl.[5] G03C *5/00*
U.S. Cl. 430—291 11 Claims

1. A process for color development of a surface having imagewise tacky and non-tacky areas comprising the steps of:

(a) applying to said surface a dry non-electroscopic pearlescent toner having a stain value less than approximately 0.5, said toner consisting essentially of a mixture containing:

(1) up to approximately 99.9% of pearlescent pigment particles surface-coated with a slip agent, and

(2) approximately 0.1% to 10% of inert, substantially spherical particles having a particle size of approximately 0.3 to 42 microns,

(b) distributing the toner particles over the image surface whereby the distributed toner particles become embedded solely in the tacky image areas, and

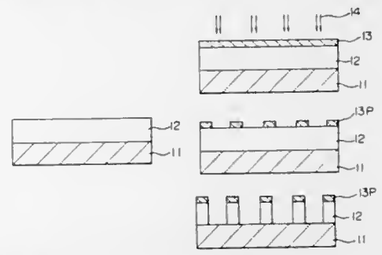
(b) physically removing toner particles from the non-tacky areas to leave the non-tacky areas substantially free of the toner particles.

5,252,430

FINE PATTERN FORMING METHOD

Kazuhiko Hashimoto, Moriguchi, and Noboru Nomura, Kyoto, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 599,822, Oct. 19, 1990, abandoned.
This application Dec. 20, 1991, Ser. No. 812,839
Claims priority, application Japan, Oct. 25, 1989, 1-278840
Int. Cl.[5] G03C *5/00*
U.S. Cl. 430—296 8 Claims



1. A fine pattern forming method comprising the steps of:

applying an organic polymer film on a semiconductor substrate and heat treating the same;

applying a resin solution comprising an acid degradation polymer, an acid generator capable of generating an acid by irradiation with an electric charged beam, and an alkaline soluble silicone resin on said organic polymer layer and heat treating the same;

writing a pattern on said resin with said electric charged beam to generate the acid from said acid generator;

heat treating said resin to react the acid generated from said acid generator with said acid degradation polymer to convert the acid degradation polymer into a substance having alkaline solubility;

carrying out a development in an alkaline solution to form a resist pattern; and

etching said organic polymer layer using said resist pattern as a mask.

5,252,431

METHOD FOR PREPARING LITHOGRAPHIC PRINTING PLATES NOT REQUIRING DAMPENING WITH WATER

Susumu Yoshida; Seizi Shigetaka, and Koji Furukawa, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara, Japan

Filed Sep. 10, 1991, Ser. No. 757,295
Claims priority, application Japan, Sep. 12, 1990, 2-241445
Int. Cl.[5] G03F *7/30*
U.S. Cl. 430—303 14 Claims

1. A method for preparing a lithographic printing plate not requiring dampening with water comprising the steps of imagewise exposing to light a presensitized plate for use in preparing a lithographic printing plate not requiring dampening with water which comprises a substrate provided thereon with a light-sensitive layer and a silicone rubber layer in that order and then spraying a pressurized liquid on the plate surface to remove the silicone rubber layer while maintaining the light-sensitive layer of the image areas said pressurized liquid having a pressure ranging from 10 to 200 Kg/cm^2.

5,252,432

PRODUCTION OF PHOTOPOLYMERIC FLEXOGRAPHIC RELIEF PRINTING PLATES

Helmut Bach, Bad Durkheim; Thomas Telser, Weinheim, and Gernot Dietz, Eisenberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 719,906, Jun. 24, 1991, abandoned.
This application Jan. 14, 1993, Ser. No. 4,673
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1990, 4020372
Int. Cl.[5] G03F *7/00*
U.S. Cl. 430—306 5 Claims

1. A process for the production of a photopolymeric flexographic relief printing plate from a photosensitive recording element which comprises

A) a dimensionally stable substrate and

B) at least one photopolymerizable recording layer having

b_1) at least one elastomeric polymer as a binder,

b_2) at least one photopolymerizable monomer which is compatible with the binder (b_1) and

b_3) at least one photopolymerization initiator,

by

(1) imagewise exposure of the photopolymerizable recording layer (B) to actinic light and

(2) washout (development) of the unexposed and therefore nonphotopolymerized parts of the imagewise exposed recording layer (B) with an organic developer with formation of a relief layer,

wherein the organic developer consists essentially of 3-methoxy-n-butyl acetate or n-butyl glycolate or a mixture of n-butyl glycolate and 3-methoxy-n-butyl acetate.

5,252,433

METHOD OF FORMING AND REMOVING RESIST PATTERN

Hirofumi Fujioka; Yasuhiro Yoshida; Hiroyuki Nakajima, all of Amagasaki; Hitoshi Nagata, and Shinji Kishimura, both of Itami, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 12, 1991, Ser. No. 667,986
Claims priority, application Japan, Mar. 19, 1990, 2-70495; Mar. 19, 1990, 2-70498; May 16, 1990, 2-124217; Nov. 21, 1990, 2-318332
Int. Cl.[5] G03C *5/00, 5/16*
U.S. Cl. 430—323 6 Claims

1. A method of forming and removing a resist pattern, comprising

a step of forming a resist layer on a substrate,

a step of selectively exposing said resist layer to light and

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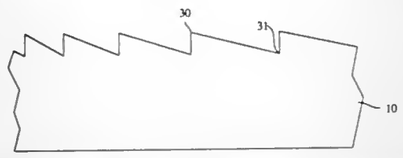
introducing a germanium compound into exposed portions,
a step of subjecting the resist layer to an anisotropic oxygen etching to remove nonexposed portions of said resist layer, thereby forming a resist pattern, and
a step of removing said resist pattern by the use of an acid having an oxidizing power.

5,252,434

METHOD FOR FORMING A SLOPED SURFACE HAVING A PREDETERMINED SLOPE

Greg E. Blonder, Summit, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 658,145, Feb. 20, 1992, abandoned.
This application Aug. 26, 1992, Ser. No. 936,051
Int. Cl.[5] G03C *5/00;* **G02B** *5/00*
U.S. Cl. 430—323 **3 Claims**



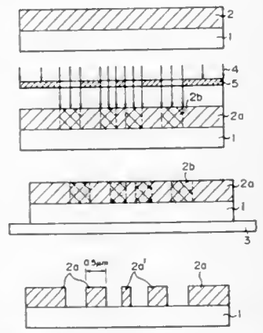
1. A method for providing a workpiece with a sloped surface of predetermined slope in a predetermined direction comprising the steps of:
coating the workpiece with resist;
exposing the coated workpiece to activating radiation which passes through an exposure mask having a design consisting essentially of opaque triangular sections having aligned bases and aligned apices for causing said radiation intensity to vary linearly in the direction of the predetermined slope;
developing the exposed resist to produce a pattern of resist which slopes in the predetermined direction; and
etching the resulting structure to produce the predetermined slope on said workpiece.

5,252,435

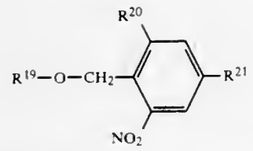
METHOD FOR FORMING PATTERN

Yoshiyuki Tani, Neyagawa, and Masaru Sasago, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

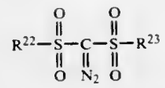
Filed Jan. 28, 1991, Ser. No. 646,920
Claims priority, application Japan, Jan. 30, 1990, 2-019529; Jan. 30, 1990, 2-019530
Int. Cl.[5] G03F *7/20, 7/40;* **G03C** *5/16*
U.S. Cl. 430—325 **6 Claims**



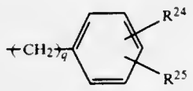
1. A process for forming a pattern which comprises forming on a substrate a film of pattern forming material comprising:
(a) a resin containing both hydrophilic groups and functional groups which are convertible to alkaline soluble groups by reaction with a photogenerated acid, which resin has a backbone of repeating ethylene units;
(b) a photoacid generator being able to generate an acid by exposure to light, which is selected from the group consisting of compounds represented by the formulae:



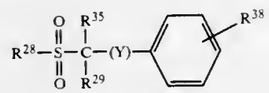
wherein R^{19} is a trichloroacetyl group, a p-toluenesulfonyl group, a p-trifluoromethylbenzenesulfonyl group, a methanesulfonyl group or a trifluoromethanesulfonyl group; and R^{20} and R^{21} are independently a hydrogen atom, a halogen atom or a nitro group;



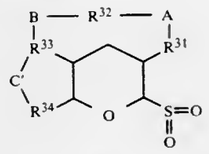
wherein R^{22} and R^{23} are independently an unsubstituted straight-chain, branched or cyclic alkyl group, a haloalkyl group, or a group of the formula:



wherein q is zero or an integer of 1 or more; R^{24} and R^{25} are independently a hydrogen atom, a halogen atom, an unsubstituted straight-chain, branched or cyclic alkyl group, a haloalkyl group, an alkoxy group, a nitro group or a cyano group;



wherein Y is a carbonyl group, a sulfonyl group or a sulfinyl group; R^{28} is a lower alkyl group, a trifluoromethyl group, an unsubstituted phenyl group or an alkyl-substituted phenyl group; R^{29} and R^{35} are independently a lower alkyl group, a halogen atom or a hydrogen atom; and R^{38} is a hydrogen atom, a halogen atom, a lower alkyl group, an alkoxy group or an alkylthio group; and



wherein R^{31}, R^{32}, R^{33} and R^{34} are independently an unsubstituted straight-chain, branched or cyclic alkyl group, a haloalkyl group, an alkoxy group, a substituted phenyl group, an unsubstituted phenyl group, a nitro group or a cyano group; and R^{31}–R^{32}, R^{32}–R^{33} and R^{33}–R^{34} independently form respectively an aliphatic ring, a heteroaliphatic ring, an aromatic ring or a hetero aromatic ring via A, B, and C^1, respectively, wherein each of said A, B and C^1 respectively comprises 5 to 8 carbon atoms, and
(c) a solvent for dissolving both the components (a) and (b),
exposing the film selectively to deep ultraviolet light,
heating the exposed film, and
developing the resulting film to form the desired pattern.

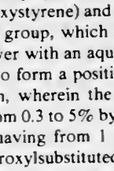
5,252,436

PROCESS FOR DEVELOPING A POSITIVE-WORKING PHOTORESIST CONTAINING POLY(P-HYDROXYSTYRENE) AND SULFONIUM SALT WITH AN AQUEOUS DEVELOPER CONTAINING BASIC ORGANIC COMPOUNDS

Horst Binder, Lampertheim, and Reinhold Schwalm, Wachenheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 615,845, Nov. 20, 1990, abandoned.
This application Nov. 13, 1992, Ser. No. 976,004
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1989, 3941394
Int. Cl.[5] G03F *7/30, 7/32*
U.S. Cl. 430—326 **5 Claims**

1. A process for developing a positive-working photoresist which contains as a radiation-sensitive layer a mixture of at least one poly(p-hydroxystyrene) or an acid-labile group substituted poly(p-hydroxystyrene) and at least one sulfonium salt having an acid-labile group, which comprises developing the radiation-sensitive layer with an aqueous developer with basic organic compounds to form a positive resist image, following imagewise irradiation, wherein the basic organic compound content comprises from 0.3 to 5% by weight of a tetraalkylammonium hydroxide having from 1 to 3 carbon atoms in the unsubstituted or hydroxylsubstituted alkyl groups and from 3 to 30% by weight of at least one amine of the formula (I)



(I)

where R^1, R^2 and R^3 are identical or different and each is hydrogen, alkyl of from 1 to 3 carbon atoms, hydroxyalkyl of 2 or 3 carbon atoms, or aminoalkyl of 2 or 3 carbon atoms, or two of R^1 to R^3 combine to form a 5-, 6- or 7-membered N-containing ring, with the proviso that at least one of R^1 to R^3 is hydroxyalkyl or aminoalkyl.

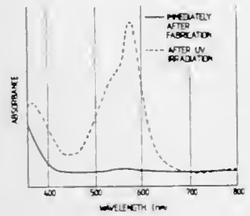
5,252,437

PHOTOCHROMIC MATERIALS HAVING A THIN PHOTOCHROMIC FILM AND A METHOD FOR FABRICATING THE SAME

Masaaki Suzuki; Kumiko Moriyama, and Eiji Ando, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Aug. 2, 1990, Ser. No. 561,632
Claims priority, application Japan, Aug. 3, 1989, 1-201589; Mar. 29, 1990, 2-82437
Int. Cl.[5] G03C *1/72*
U.S. Cl. 430—345 **31 Claims**

1. A photochromic material which comprises a support and a photochromic thin film formed on the support, the photochromic thin film being made of an ion complex of (a) a photochromic water soluble spiropyran compound of having an anionic group and (b) a cationic surface active agent which is a member selected from the group consisting of a primary, secondary, and tertiary amine having from 8 to 30 carbon atoms and quaternary ammonium compound having at least



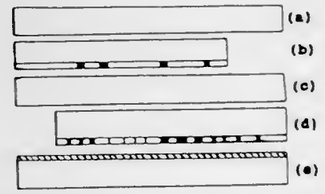
one linear saturated hydrocarbon group having from 8 to 30 carbon atoms.

5,252,438

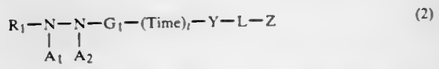
SILVER HALIDE PHOTOGRAPHIC MATERIALS

Kazumi Nii; Hisashi Okamura, and Kazunobu Katoh, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 23, 1991, Ser. No. 763,688
Claims priority, application Japan, Sep. 28, 1990, 2-258928
Int. Cl.[5] G03C *1/06, 1/42*
U.S. Cl. 430—264 **11 Claims**

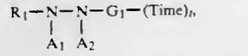


1. A silver halide photographic material comprising a compound of general formula (2):

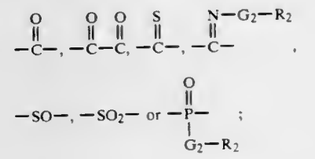


(2)

wherein time is a divalent linking group; t represents 0 or 1; Y-L-Z is a development inhibitor, wherein Y is a divalent group comprising a hetero atom through which Y bonds to the moiety



L is a divalent group which is capable of being cleaved by a component of a developer and Z is a functional group that expresses a development inhibiting effect wherein, after cleavage of L, a resulting compound of Y-L-Z has a small development inhibiting activity; R_1 is an aliphatic group or an aromatic group; G_1 is

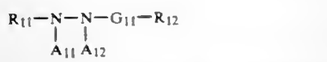


VOL 1155 ISS 2 OC 12 1993

G_2 is a mere bond, —O—, —S— or

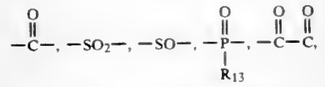


R_2 has the same meaning as R_1 or is a hydrogen atom; when said compound has plural R_2's they are the same or different; and one of A_1 and A_2 is a hydrogen atom and the other is a hydrogen atom, an acyl group, an alkylsulfonyl group or an arylsulfonyl group; and a hydrazine compound represented by the formula (I):



(I)

wherein R_{11} is an aliphatic group or an aromatic group; R_{12} is a hydrogen atom, an alkyl group, an aryl group, an alkoxy group, an aryloxy group, an amino group or a hydrazino group; G_{11} is



a thiocarbonyl group or an iminomethylene group; A_{11} and A_{12} are both hydrogen atoms, or one is a hydrogen atom, and the other is an alkylsulfonyl group, an arylsulfonyl group or an acyl group; and R_{13} has the same meaning as R_{12}, and R_{13} is the same as or different from R_{12}.

5,252,439

METHOD OF REPLENISHING DEVELOPING SOLUTION WITH REPLENISHER

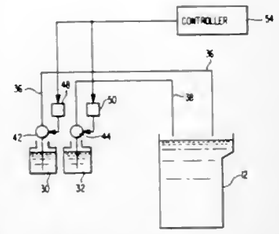
Koichi Nakamura, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 3, 1992, Ser. No. 893,003

Claims priority, application Japan, Jun. 5, 1991, 3-159903

Int. Cl.[5] G03C *5/30, 5/305, 5/31;* **G03D** *3/06*

U.S. Cl. 430—399 **17 Claims**



1. A method for processing an imagewise exposed color photographic material comprising a support having thereon at least one light-sensitive silver halide emulsion layer comprising a silver halide emulsion containing at least 90 mol % silver chloride, comprising the steps of:

(a) developing in a color developing bath;

(b) bleaching in a bath having a bleaching ability and fixing in a bath having a fixing ability or bleach-fixing in a bath having a bleaching and fixing ability; and

(c) independently supplying a low pH replenisher and a high pH replenisher to the developing bath each in an amount depending on the quantity of photographic material processed, said low pH replenisher having a pH of from 2 to 6 and mainly containing a color developing agent and said high pH replenisher containing one or more components of the developing bath, wherein the components of each replenisher are sufficiently diluted upon addition to the developing bath to avoid formation of a precipitate by mixing with the components of the unlike replenisher, and wherein the low pH replenisher and the high pH replenisher are added to the color developing bath in a total amount of 60 ml/m^2 or less of the photographic material processed.

5,252,440

METHACRYLIC RESIN COMPOSITION FOR OPTICAL DISCS

Fumio Sato, Otake; Yasunori Shimomura, Toyama, and Masaaki Kishimura, Iwakuni, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 526,523, May 22, 1990, abandoned, which is a continuation of Ser. No. 147,659, Jan. 25, 1988, abandoned, which is a continuation of Ser. No. 916,692, Oct. 8, 1986, abandoned. This application Apr. 13, 1992, Ser. No. 866,303

Claims priority, application Japan, Oct. 11, 1985, 60-226179

Int. Cl.[5] G03C *1/00*

U.S. Cl. 430—495 **7 Claims**

1. An optical information recording material comprising 100 parts by weight of a copolymer composed of from 95 to 99.7% by weight of methyl methacrylate (A) and from 0.3 to 5% by weight of at least one monomer (B) selected from the group consisting of methyl acrylate, ethyl acrylate and butyl acrylate, and having a heat distortion temperature of at least 95° C., a melt flow rate of from 1.0 to 10.0 g/10 min and a tensile strength of at least 660 kg/cm^2, and from 0.05 to 2.0 parts by weight of at least one releasing agent (C) selected from the group consisting of an alkyl stearate and monoglycerol stearate.

5,252,441

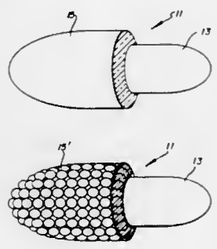
TRANSPARENT MAGNETIC RECORDING LAYERS AND PHOTOGRAPHIC ELEMENTS CONTAINING THE SAME

Robert O. James; Sidney J. Bertucci, and George L. Oltean, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 6, 1990, Ser. No. 609,672

Int. Cl.[5] G03C *1/00*

U.S. Cl. 430—496 **25 Claims**



1. A transparent magnetic film comprising magnetic particles in a transparent binder, said magnetic particles being cobalt surface treated gamma Fe_2O_3 having a specific surface area of at least 30 m^2/g and exhibiting powder coercivities greater than 450 Oe, said magnetic particles being coated with from about 10 to about 50 percent by weight of a material having a refractive index less than that of said binder, the concentration of the coated magnetic particles in the film being from about 1 to about 10 mg/1000 cm^2.

5,252,442

RADIOGRAPHIC ELEMENTS WITH IMPROVED DETECTIVE QUANTUM EFFICIENCIES

Robert E. Dickerson, Rochester, and Allen K. Tsaur, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 699,840, May 14, 1991, abandoned. This application Mar. 12, 1992, Ser. No. 849,917

Int. Cl.[5] G03C *1/035, 1/46*

U.S. Cl. 430—502 **27 Claims**

1. A radiographic element comprised of

a film support capable of transmitting radiation to which said radiographic element is responsive having opposed major surfaces, and, coated on said opposed major surfaces,

emulsion layer units comprised of spectrally sensitized silver halide tabular grains having an average tabularity of greater than 25, where the tabularity of each tabular grain is the ratio of its equivalent circular diameter in micrometers divided by the square of its thickness in micrometers, and,

interposed between each of said emulsion layer units and said support, means for absorbing radiation to which said emulsion layer units are responsive,

CHARACTERIZED IN THAT each of said emulsion layer units exhibit a coefficient of variation of less than 15 percent, based on their total grain population having an equivalent circular diameter of greater than 0.1 μm, greater than 97 percent of the projected area of the grain population having an equivalent circular diameter of greater than 0.1 μm being accounted for by tabular grains having a mean thickness of less than 0.3 μm and a halide content of from 0 to 5 mole percent chloride, from 0 to 5 mole percent iodide, and from 90 to 100 mole percent bromide, based on total silver.

5,252,443

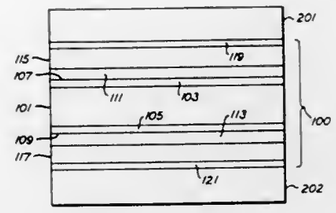
MEANS FOR ASSURING PROPER ORIENTATION OF THE FILM IN AN ASYMMETRICAL RADIOGRAPHIC ASSEMBLY

Robert E. Dickerson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 3, 1992, Ser. No. 830,156

Int. Cl.[5] G03C *1/46*

U.S. Cl. 430—502 **10 Claims**



1. A radiographic element comprised of

a) a transparent film support;

b) first and second tabular grain silver halide emulsion layer units coated on opposite sides of the film support and spectrally sensitized with at least one dye having an absorption peak in the green portion of the spectrum at 550 nm;

c) means for reducing to less than 10 per cent crossover of electromagnetic radiation of wavelengths longer than 300 nm forming a latent image in the silver halide emulsion layer units;

d) said first and second silver halide emulsion layer units exhibiting significantly different sensitometric characteristics, and

e) orienting means for ascertaining which of said first and second emulsion layer units are positioned nearest a source of X-radiation during exposure,

CHARACTERIZED IN THAT said orienting means overlies only one of said emulsion layer units and contains a red absorbing, processing solution decolorizable pentamethineoxonol dye having bis(2-pyrazolin-5-one) nuclei substituted with

(a) acyl groups in the 3- and 3'-positions,

(b) aryl groups in the 1- and 1'-positions, and

(c) bearing from 4 to 6 acidic substituents, each of which are capable of forming a monovalent anion provided that at least two of such substituents are other than carboxyl.

5,252,444

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL OFFERING EXCELLENT HUE REPRODUCTION

Yoshitaka Yamada, Hino; Hiroshi Shimazaki, Hachioji, and Satoru Shimba, Kanagawa, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jan. 22, 1992, Ser. No. 823,463

Claims priority, application Japan, Jan. 25, 1991, 3-7776

Int. Cl.[5] G03C *1/08, 7/20*

U.S. Cl. 430—503 **8 Claims**

1. A silver halide color photographic light-sensitive material comprising at least one blue-sensitive silver halide emulsion layer, at least one green-sensitive silver halide emulsion layer and at least one red-sensitive silver halide emulsion layer on a support, wherein the maximum sensitivity wavelength, λ_B, of the spectral sensitivity distribution in said blue-sensitive silver halide emulsion layer is in the range of 400 nm$\leqq\lambda_B\leqq$470 nm, the sensitivity of said blue-sensitive silver halide emulsion layer at 480 nm does not exceed 20% of the sensitivity at the maximum sensitivity wavelength, λ_B, and the relationship of the gradient of said blue-sensitive silver halide emulsion layer after blue light separation exposure, γ_{SB}, and of the gradient of said blue-sensitive silver halide emulsion layer after white light exposure, $\gamma_{W\cdot B}$, defined by the ratio of $\gamma_{SB}/\gamma_{W\cdot B}$ is $\leqq$1.25.

5,252,445

ELEMENT CONTAINING SOLVENT-RESISTANT POLYMER BEADS

Daniel M. Timmerman, Mortsel; Etienne A. Van Thillo, Essen, and Bavo A. Muys, Mortsel, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Jul. 16, 1991, Ser. No. 730,479

Claims priority, application European Pat. Off., Jul. 20, 1990, 90202019.7

Int. Cl.[5] G03C *1/85*

U.S. Cl. 430—529 **8 Claims**

1. Sheet or web material comprising a subbed or unsubbed hydrophobic resin support or paper support coated with at least one hydrophobic resin layer and on at least one side thereof a transparent surface laser or covering layer at a dry coverage in the range of 0.01 to 2 g/m2 and containing at least 50 % by weight of a water-insoluble synthetic polymer and dispersed therein finely divided solid polymer beads obtained by the steps of

A) dissolving in an aqueous solvent mixture of water and at least one water-miscible polar organic solvent

1) at least one Alpha,Beta-ethylenically unsaturated monomer (1) capable of forming a polymer that is soluble in the monomer(s) present in said aqueous solvent mixture but that is insoluble in said aqueous solvent mixture,

2) at least one monomer (2) carrying at least one carboxy group in free acid form,

3) at least one monomer (3) carrying at least one halogen atom,

4) at least one free radical-forming polymerization initiator that is soluble in the aqueous solvent mixture, and

5) a graft-polymerizable polymer containing hydrophilic

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groups and capable of forming a graft polymer that remains soluble in said aqueous solvent mixture,

the weight ratio of said graft-polymerizable polymer to said monomer(s) (1) being in the range from 1.5 : 100 to 8 : 100, the ratio between said monomers (1), (2), and (3) being 80 to 98 mol% of (1), 1 to 10 mol% of (2), and 1 to 10 mol% of (3), and the weight ratio of polymerization initiator to said monomers (1), (2), and (3) together being from 0.1 : 100 to 5 : 100, and

B) heating the solution obtained to a temperature from 50° C. to the reflux temperature thereof, with continuous stirring to initiate by polymerization the simultaneous massive formation of copolymer from said monomer(s) and precipitation thereof, and the formation of a small proportion of graft polymer,

C) converting in the polymer beads obtained the carboxy groups in free acid form into carboxylic acid salt groups, and

D) causing reaction in said polymer beads of said carboxylic acid salt groups with the halogen atoms to form ester cross-linkages, thus rendering said polymer beads insoluble in water, in organic solvents or in a mixture of water and organic solvents.

5,252,446

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL COMPRISING A 1-PENTACHLORINATED PHENYL-5-PYRAZOLONE COUPLER AND SPECIFIC RED SENSITIZING DYES

Shigeto Hirabayashi, Hachioji; Shuichi Sugita, Kunitachi, and Katsumasa Yamazaki, Hachioji, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Sep. 9, 1992, Ser. No. 942,465

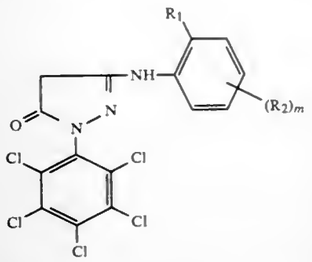
Claims priority, application Japan, Sep. 25, 1991, 3-273425

Int. Cl.[5] G03C *1/08*

U.S. Cl. 430—508 **6 Claims**

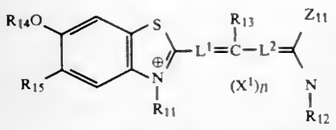
1. A silver halide color photographic light sensitive material comprising a support having thereon photographic component layers including a blue-sensitive silver halide emulsion layer, a green-sensitive silver halide emulsion layer and a red-sensitive silver halide emulsion layer, wherein said green-sensitive silver halide emulsion layer contains a magenta coupler represented by Formula [M-I] and said red-sensitive silver halide emulsion layer contains a compound represented by Formula [S-I];

Formula M-I



wherein R_1 represents a halogen atom or an alkoxy group; R_2 represents an acylamino group, a sulfonamido group, an imido group, a carbamoyl group, a sulfamoyl group, an alkoxycarbonyl group, an alkoxycarbonylamino group or an alkoxy group; and m represents an integer of 0 to 4;

Formula S-I



wherein R_{11} and R_{12} independently represent an alkyl group having 1 to 10 carbon atoms or an alkenyl group having 3 to 10 carbon atoms; R_{13} represents a hydrogen atom, a heterocyclic group, an aryl group or an alkyl group; R_{14} and R_{15} independently represent an alkyl group; Z_{11} represents a non-metallic atoms necessary to form a 5-membered nitrogen-containing heterocyclic ring, which may have a condensed ring as bonded thereto; L^1 and L^2 independently represent a methine group; R_{11} and L^1 or R_{12} and L^2 may bind together to form a 5- or 6-membered heterocyclic ring; X^1 represents an ion; l^1 represents the number of ions necessary to neutralize the charge in the molecule; provided that the compound forms an intramolecular salt, l^1 is 0.

5,252,447

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Shigeaki Ohtani, and Shigeru Ohno, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 609,509, Nov. 6, 1990, abandoned. This application Mar. 5, 1993, Ser. No. 27,576

Claims priority, application Japan, Nov. 7, 1989, 1-289309; Nov. 14, 1989, 1-297219

Int. Cl.[5] G03C *1/84, 1/87, 7/16, 7/20*

U.S. Cl. 430—522 **9 Claims**

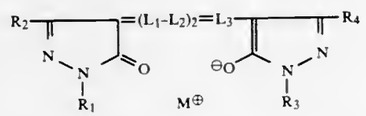
1. A silver halide color photographic material comprising:

a reflective support having thereon at least one light-sensitive silver halide emulsion layer,

wherein the reflective support comprises a support substrate covered with a water resistant resin layer,

wherein the water resistant resin layer, on the side of said silver halide light-sensitive layer, contains titanium oxide grains in an amount of 14 wt % or more,

wherein the photographic material contains at least one dye of formula (I-a)':



wherein R_1 and R_3 each represents a phenyl group containing at least two sulfo groups; R_2 and R_4 each represents an aliphatic group, an aromatic group, —OR_5, —$COOR_5$, —NR_5R_6, —$CONR_5R_6$, —$NR_5CONHR_5R_6$, —SO_2R_7, —COR_7, NR_6COR_7, —$NR_6SO_2R_7$, or a cyano group (wherein R_5 and R_6 each represents a hydrogen atom, or an aliphatic or aromatic group; R_7 represents an liphatic or aromatic group; and further, R_5 and R_6, or R_6 and R_7 maybe combined with each other to complete a 5- or 6-membered ring); and L_1, L_2 and L_3 each represents a methine group; and $M^{\oplus}$ represents a hydrogen ion, or another monovalent cation, so that the photographic material has an optical reflection density of 0.70 or above at 680 nm, and

wherein the light-sensitive silver halide emulsion layer contains at least one non-diffusible oil-soluble coupler, which forms a dye on coupling with the oxidation product of an aromatic primary amine color developing agent, dispersed therein together with at least one water-insoluble homopolymer or copolymer,

wherein the water-insoluble homopolymer or copolymer is water-insoluble, organic solvent-soluble homopolymer or copolymer which has a repeating unit containing a



linking in the main chain or in a side chain, and

wherein the light-sensitive silver halide emulsion layer containing the water-insoluble homopolymer or copolymer comprises a silver halide emulsion having a chloride content of 90 mol % or more.

5,252,448

SILVER HALIDE PHOTOGRAPHIC LIGHT SENSITIVE MATERIAL COMPRISING AT LEAST ONE PROTECTIVE LAYER CONTAINING BORON NITRIDE PARTICLES

Shiyouji Nishio; Noriyasu Kita, and Takashi Shinkai, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Aug. 20, 1992, Ser. No. 932,894

Claims priority, application Japan, Sep. 25, 1991, 3-245913

Int. Cl.[5] G03C *1/76*

U.S. Cl. 430—523 **15 Claims**

1. A silver halide photographic light-sensitive material comprising a support having, on a side of said support, a silver halide emulsion layer and a protective layer provided on said silver halide emulsion layer, and on the other side of said support, a backing layer and a protective layer provided on said backing layer, and at least one of said protective layer of said silver halide emulsion layer and said protective layer of said backing layer contains particles comprising boron nitride.

5,252,449

PHOTOGRAPHIC SILVER HALIDE EMULSINS WITH IMPROVED BRIGHT ROOM TOLERANCE

John R. Shock, Princeton Junction, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 25, 1992, Ser. No. 951,609

Int. Cl.[5] G03C *1/005, 1/494*

U.S. Cl. 430—566 **17 Claims**

1. A photographic silver halide emulsion having improved bright room tolerance comprising silver halide grains having a chloride content of at least 90 mole percent and a rhodium salt, wherein said silver halide grains have been sensitized with a black and white developing agent.

5,252,450

CAPPED PHOTOCHROMIC SILVER HALIDES FOR INCORPORATION INTO A PLASTIC MATRIX

Robert E. Schwerzel, Columbus, and Kevin B. Spahr, Worthington, both of Ohio, assignors to Battelle Memorial Institute, Columbus, Ohio

Filed Feb. 6, 1991, Ser. No. 651,323

Int. Cl.[5] G03C *1/005*

U.S. Cl. 430—567 **25 Claims**

1. A photochromic composition for incorporation into a light-transmitting polymer consisting essentially of:

a. silver halide crystallites;

b. an organic capping group; and

c. multivalent metal ions

1) integrated into the surface of said silver halide crystallite; and

2) of a sufficient number to provide surface sites on each of said silver halide crystallites so as to be bonded to said organic capping group so that said organic capping group forms a capping layer covering each of said silver halide crystallites to give capped silver halide crystallites that:

a) have a size that is less than the minimum Rayleigh scattering size; and

b) are isolated as a free-flowing powder that is soluble in organic solvents.

5,252,451

PHOTOGRAPHIC EMULSIONS CONTAINING INTERNALLY AND EXTERNALLY MODIFIED SILVER HALIDE GRAINS

Eric L. Bell, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 12, 1993, Ser. No. 3,182

Int. Cl.[5] G03C *1/035, 1/09*

U.S. Cl. 430—567 **19 Claims**

1. A photographic silver halide emulsion comprising silver halide grains, a dopant, and a grain surface modifier; wherein said dopant is a transition metal complex containing a transition metal selected from Group VIII of the periodic table; and said grain surface modifier is a transition metal complex comprising a nitrosyl or thionitrosyl ligand with a transition metal selected from the Groups V to X of the periodic table.

5,252,452

PROCESS FOR THE PREPARATION OF HIGH CHLORIDE TABULAR GRAIN EMULSIONS

Yun C. Chang, and Joe E. Maskasky, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 2, 1992, Ser. No. 864,820

Int. Cl.[5] G03C *1/005*

U.S. Cl. 430—569 **17 Claims**

1. A process of preparing a radiation sensitive high aspect ratio tabular grain emulsion, wherein tabular grains of less than 0.35 μm in thickness and an average aspect ratio of greater than 8:1 account for greater than 50 percent of the total grain projected area, said tabular grains containing at least 50 mole percent chloride, based on silver, comprising introducing silver ions into a high methionine gelatino-peptizer dispersing medium containing during grain nucleation and growth

a stoichiometric excess of chloride ions with respect to the silver ions, the concentration of the stoichiometric excess of chloride ions being greater than 0.5 molar,

a pH of at least 4.5, and

a 4,6-di (hydroamino)-5-aminopyrimidine grain growth modifier present in a molar concentration of at least 2×10^{-4}.

5,252,453

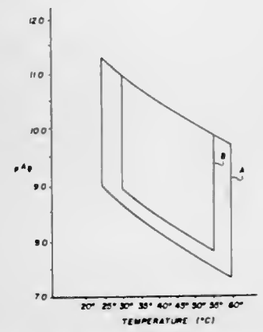
PROCESS FOR ACCELERATING THE PRECIPITATION OF A LOW COEFFICIENT OF VARIATION EMULSION

Allen K. Tsaur; Mamie Kam-Ng, both of Fairport, and Sang H. Kim, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 4, 1992, Ser. No. 971,126

Int. Cl.[5] G03C *1/015*

U.S. Cl. 430—569 **18 Claims**



1. A process of accelerating the preparation of a photographic emulsion containing tabular silver halide grains exhibiting a reduced degree of total grain dispersity comprising

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providing a dispersing medium containing halide ions consisting essentially of bromide ions,
forming in the dispersing medium a population of silver halide grain nuclei containing parallel twin planes,
ripening out a portion of the grain nuclei, and
growing the remaining silver halide grain nuclei containing parallel twin planes to form tabular silver halide grains,
WHEREIN
the twin planes are formed in the silver halide grain nuclei within the pAg and temperature boundaries of Curve A in FIG. 1 and
a polyalkylene oxide block copolymer surfactant is introduced into the emulsion, introduction being delayed until after the silver halide nuclei containing twin planes have been formed, but introduction occurring before 25 percent of the total silver used to form the emulsion has been introduced, the surfactant being chosen from the class consisting of
(a) polyalkylene oxide block copolymer surfactants comprised of at least two terminal lipophilic alkylene oxide block units linked by a hydrophilic alkylene oxide block unit accounting for from 4 to 96 percent of the molecular weight of the copolymer and
(b) polyalkylene oxide block copolymer surfactants comprised of at least two terminal hydrophilic alkylene oxide block units linked by a lipophilic alkylene oxide block unit accounting for from 4 to 96 percent of the molecular weight of the copolymer.

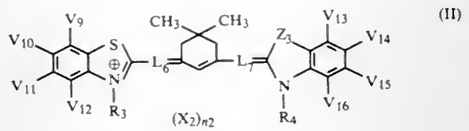
5,252,454

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Takeshi Suzumoto; Takanori Hioki, and Naoto Ohshima, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 259,631, Oct. 19, 1988, abandoned. This application Jun. 4, 1991, Ser. No. 710,259
Claims priority, application Japan, Oct. 19, 1987, 62-263319; Mar. 31, 1988, 63-78465
The portion of the term of this patent subsequent to Aug. 6, 2008, has been disclaimed.
Int. Cl.[5] G03C *1/20, 1/28*
U.S. Cl. 430—576 **16 Claims**

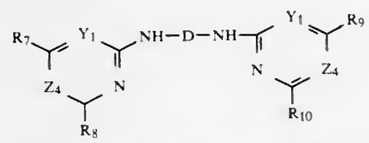
1. A silver halide photographic material having, on a support, at least one red sensitive emulsion layer which comprises (a) a silver halide emulsion comprising silver halide grains wherein the silver halide grains are silver chloride, or silver bromochloride containing substantially no silver iodide in which 95 mol % or more of the entire silver halide constituting the silver halide grains is silver chloride, and spectrally sensitized by a red sensitizing dye having a reduction potential at a value of −1.27 (V vs SCE) or more negative and having the general formula:



(II)

wherein
Z_3 represent an oxygen or sulfur atom;
L_6 and L_7 each represents a methine group;
R_3 and R_4 each represent an alkyl group, provided that R_3 and L_6 and/or R_4 and L_7 may be bonded to each other to form a 5- or 6-membered carbocyclic ring;
V_9, V_{10}, V_{11}, V_{12}, V_{13}, V_{14}, V_{15} and V_{16}, each represents a hydrogen atom, a halogen atom, an alkyl group, an acyl group, an acyloxy group, an alkoxycarbonyl group, a carbamoyl group, a sulfamoyl group, a carboxy group, a cyano group, a hydroxy group, an amino group, an acylamino group, an alkoxy group, an alkylthio group, an alkylsulfonyl group, a sulfonic acid group, an aryloxy group, or an aryl group, wherein the respective Hammett's values of V_9–V_{16} have a sum of −0.08 or more negative when Z_3 is an oxygen atom and the sum is −0.15 or more negative when Z_3 is a sulfur atom; and
(X_2) represents a charged ion; and
n_2 represents a value of 0 or greater required to neutralize an electric charge of said dye,
and (b) an azole compound containing a mercapto group.

15. A silver halide photographic material according to claim **1**, wherein the silver halide emulsion is spectrally sensitized by the red sensitizing dye and a compound represented by formula (VII), with said compound being present in an amount required for supersensitization:



(VII)

wherein D represents a divalent aromatic residue, R_7, R_8, R_9 and R_{10} each represents a hydrogen atom, a hydroxy group, an alkoxy group, an aryloxy group, a halogen atom, a heterocyclic group, a mercapto group, an alkylthio group, an arylthio group, a heterocyclicthio group, an amino group, an alkylamino group, a cyclohexylamino group, an arylamino group, a heterocyclic amino group, an aralkylamino group or an aryl group, and Y_1 and Z_4 each represents —N= or —CH= provided that at least one of them is —N= .

5,252,455

PHOTOGRAPHIC SILVER HALIDE MATERIAL COMPRISING GOLD (I) COMPLEXES COMPRISING SULFUR- AND/OR SELENIUM-SUBSTITUTED MACROCYCLIC POLYETHER LIGANDS

Joseph C. Deaton, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 4, 1992, Ser. No. 845,897
Int. Cl.[5] G03C *1/06*
U.S. Cl. 430—605 **17 Claims**

1. A photographic silver halide emulsion chemically sensitized with a gold(I) compound having the formula:

$$[AuL]^+X^- \text{ or } [AuL]_2^{2+}2X^-$$

wherein L is a macrocyclic compound containing at least two thioether and/or selenoether groups within the ring and which comprises from about 12 to about 30 atoms in the ring structure, and wherein X^- is an anion.

5,252,456

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Naoto Ohshima; Seiji Yamashita, and Akira Kase, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 25, 1991, Ser. No. 691,293
Claims priority, application Japan, Apr. 26, 1990, 2-111177; Apr. 26, 1990, 2-111179
Int. Cl.[5] G03C *1/09*
U.S. Cl. 430—605 **4 Claims**

1. A silver halide photographic material having at least one light-sensitive emulsion layer containing a silver halide emulsion on a support, wherein the light-sensitive emulsion layer comprises silver halide grains which contain at least one complex selected from the group consisting of Ir and Pt metal complexes having at least two cyano ligands, which have a silver chloride content of 80 mol % or more and which are gold-sensitized.

5,252,457

WASH COMPOSITION CONTAINING SIGNAL STOP REAGENT, TEST KIT AND METHOD OF USE WITH PEROXIDASE-LABELED SPECIFIC BINDING LIGAND

Gary L. Snodgrass, Batavia; Lisa D. Sprague, Holcomb; Harold C. Warren, III, Rush; Douglas R. Jones, Fairport, and Thomas R. Kissel, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 8, 1991, Ser. No. 773,065
Int. Cl.[5] G01N *33/535, 33/543, 33/569*
U.S. Cl. 435—5 **9 Claims**

1. A method for the determination of a specific binding ligand comprising:
A. reacting a specific binding ligand from a biological specimen with a water-soluble receptor specific for said ligand, said receptor being labeled with peroxidase,
to form a peroxidase-labeled specific binding complex between said ligand and receptor,
B. prior to, simultaneously with or subsequently to step A, insolubilizing said specific binding ligand so as to provide a water-insoluble specific binding complex,
C. washing said complex with a buffered composition to remove uncomplexed materials,
said buffered composition comprising a nonionic or anionic surfactant and at least about 0.001 weight percent of a compound having the structure (I):

R—CO—NH—R'

wherein R is aryl of 6 or 10 carbon atoms in the aromatic nucleus, alkyl of 1 to 7 carbon atoms, or cycloalkyl of 5 to 10 carbon atoms in the ring, and R' is hydroxy or amino,
D. contacting said washed complex with a composition for providing a colorimetric, fluorescent or chemiluminescent signal in response to peroxidase in said complex, and
E. detecting said signal as a determination of the presence or absence of said specific binding ligand.

5,252,458

METHOD FOR VISUALLY DETECTING THE PRESENCE OF A VIRUS IN A CLINICAL SPECIMEN

Avraham Liav, Denver, Colo.; James F. Maher, Broken Arrow, Okla.; Craig D. Shimasaki, Tulsa, Okla.; C. Worth Clinkscales, Tulsa, Okla., and Michael D. Roark, Owasso, Okla., assignors to Symex Corp., Broken Arrow, Okla.

Continuation of Ser. No. 635,849, Dec. 31, 1990, abandoned. This application Oct. 16, 1992, Ser. No. 963,505
Int. Cl.[5] C12Q *1/34, 1/70;* **C12N** *9/26;* **G01N** *21/03, 21/75*
U.S. Cl. 435—5 **13 Claims**

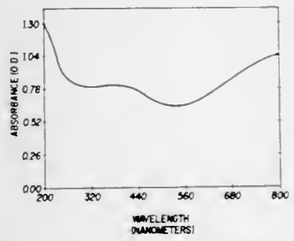
1. In a method for detecting the presence of a virus that comprises a characteristic enzyme in a clinical sample suspected of containing the virus comprising
incubating the clinical sample with a solution of a chromogenic substrate for the enzyme and a precipitating agent, the chromogenic group of the substrate exhibiting a characteristic color when liberated from the substrate, said incubation being carried out under conditions that permit the enzyme to react with the substrate to liberate the chromogen and the liberated chromogen to be precipitated by the precipitating agent;
the improvement comprising concentrating the precipitated chromogen sufficiently to provide a distinct colored spot when the virus is present and
visually observing the concentrate for the presence of said colored spot.

5,252,459

INDICATOR REAGENTS, DIAGNOSTIC ASSAYS AND TEST KITS EMPLOYING ORGANIC POLYMER LATEX PARTICLES

Peter J. Tarcha, Lake Villa; James J. Donovan, Waukegan, and Martin Wong, Grayslake, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Sep. 23, 1988, Ser. No. 248,858
Int. Cl.[5] G01N *33/546, 33/577*
U.S. Cl. 435—6 **40 Claims**



1. An indicator reagent, useful for determining the presence or amount of an analyte in a test sample, comprising:
a. an organic polymer latex particle prepared from the polymerization of a plurality of nonchromophoric monomers, said particle selected from the group consisting of poly(pyrrole), polyphenylene, poly(aniline), poly(thiophene), poly(naphthalene), poly(thiophenol), polyacetylene and derivatives thereof, said particle having light absorbance characteristics resulting from a conjugated structure from the polymerization of said monomers wherein said polymer latex particle exhibits increased absorbance in the visible spectrum compared to the absorbance in the visible spectrum of the aggregate of nonchromophoric monomers from which it is prepared, and
b. a specific binding member directly or indirectly attached to said particle.

14. A method for determining the presence or amount of an analyte in a test sample, comprising:
a. contacting the test sample sequentially or simultaneously with an indicator reagent and a capture reagent, directly or indirectly attached to a specific binding member, said indicator reagent comprising an organic polymer latex particle prepared from the polymerization of a plurality of nonchromophoric monomers, said particle having light absorbance characteristics resulting from a conjugated structure from the polymerization of said monomers wherein said polymer latex particle exhibits increased absorbance in the visible spectrum compared to the absorbance in the visible spectrum of the aggregate of nonchromophoric monomers from which it is prepared; and
b. allowing said indicator reagent to bind to the analyte in the test sample or to said capture reagent;
c. detecting said indicator reagent; and
d. determining thereby the presence or amount of analyte in the test sample.

5,252,460

IN VITRO DETECTION OF OVA, PARASITES, AND OTHER FORMED ELEMENTS IN STOOL

Paul N. Fiedler, 200 Hemlock Rd., New Haven, Conn. 06515; Stephen C. Wardlaw, 191 N. Cove Rd., Old Saybrook, Conn. 06475, and Robert A. Levine, 31 Pilgrim La., Guilford, Conn. 06437

Filed Oct. 28, 1991, Ser. No. 783,397
Int. Cl.[5] G01N *33/537, 33/538*
U.S. Cl. 435—7.22 **8 Claims**

1. A method for in vitro testing of patients' stool samples for the presence or absence of parasites or their ova or cysts which

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are indicative of parasite infestation in the patient, said method comprising the steps of:

a) providing a transparent sample-receiving tube containing a volume-restricting generally cylindrical insert positioned substantially coaxially with the tube axis, said insert being operable to produce a restricted volume annulus in the tube adjacent the tube side wall and a highlighting reagent for visually differentiating the parasites, ova, or cysts from remaining constituents of the sample;



b) forming a homogeneous mixture of the stool sample and a liquid dispersant;

c) substantially filling said tube with said mixture;

d) centrifuging said filled tube to gravimetrically separate any parasites, ova or cysts from other formed components in the mixture; and

e) examining said annulus under magnification to determine the presence or absence of parasites, ova or cysts in said annulus.

5,252,461

MIXED IMMUNOGLOBULINS FOR DETECTION OF RHEUMATOID FACTORS

Richard Weisbart, Los Angeles, Calif., assignor to The Regents of the Univ. of California, Oakland, Calif.

Continuation-in-part of Ser. No. 772,434, Oct. 7, 1991, Pat. No. 5,238,851, which is a continuation-in-part of Ser. No. 517,246, May 1, 1990, abandoned. This application Jan. 28, 1992, Ser. No. 826,894

The portion of the term of this patent subsequent to Aug. 24, 2010, has been disclaimed.

Int. Cl.[5] C12Q *1/00*; G01N *33/53*, *33/566*

U.S. Cl. 435—7.92 **9 Claims**

1. A method for detecting the presence of rheumatoid factor in a human host suspected of having rheumatoid arthritis, said method comprising:

combining a physiological sample from said host with a predetermined amount of a labeled peptide comprising a fragment of rheumatoid factor capable of binding to normal ovine IgG immunoglobulin and normal human IgG immunoglobulin, wherein one of said immunoglobulins is bound to a support in limited amount in relation to the amount of labeled peptide and the other is dispersed in solution, wherein said dispersed immunoglobulin is labeled with a second label; and

determining the amount of said labeled peptide and said labeled dispersed immunoglobulin bound to said support, as compared to the amount of labeled peptide and labeled dispersed immunoglobulin bound to said support in the absence of sample, wherein the amount of labeled peptide and dispersed labeled immunoglobulin bound to the support is indicative of the presence of human rheumatoid factor in said sample.

5,252,462

ENZYME ACTIVITY DETERMINATIONS METHOD CHARACTERIZED BY THE USING OF SUBSTRATES WHOSE FLUORESCENT PROPERTIES DIFFERS THOSE OF THE CONVERTED PRODUCTS

Hakan Drevin; Anna T. Martio; Jan Carlsson, all of Uppsala; Sven O. Oscarsson, Orbyhus, all of Sweden; Timo Lovgren; Ilkka Hemmila, both of Turku, Finland, and Marek Kwiatkowski, Uppsala, Sweden, assignors to Pharmacia AB, Uppsala, Sweden and Wallac OY, Abo, Finland

PCT No. PCT/SE89/00241, § 371 Date Jan. 5, 1990, § 102(e) Date Jan. 5, 1990, PCT Pub. No. WO89/10975, PCT Pub. Date Nov. 16, 1989

PCT Filed Apr. 28, 1989, Ser. No. 457,691

Claims priority, application Sweden, May 5, 1988, 8801702-5

Int. Cl.[5] C12Q *1/34*

U.S. Cl. 435—018 **9 Claims**

1. In the method for demonstrating the presence of an activity of an enzyme by

(a) incubating said enzyme with a fluorogenic substrate A which is converted by the enzyme to a product B differing from A in respect to its fluorescent properties and with standardized amounts of remaining substances necessary for the activity, and

(b) measuring the change in fluorescence caused by said enzyme, the improvement being that at least one of (1) said substrate A and (2) said product B is provided with a chromophore which is a triplet sensitizer having a triple energy level above the excitation energy level of a lanthanide ion selected from the group consisting of Eu^{3+}, Tb^{3+}, Dy^{3+} and Sm^{3+} and which is can chelate said lanthanide ion by means of an oxygen or nitrogen atom in said chromophore, and that B differs from A either by

(i) carrying a different chromophore, or

(ii) having a different chelating activity.

5,252,463

CLIPSIN, A CHYMOTRYPSIN-LIKE PROTEASE AND METHOD OF USING SAME

Robert B. Nelson, No. Chelmsford, Mass., and Robert G. Siman, Wilmington, Del., assignors to The Du Pont Merck Pharmaceutical Company, Wilmington, Del.

Filed Jun. 22, 1990, Ser. No. 543,618

Int. Cl.[5] C12Q *1/37*

U.S. Cl. 435—23 **5 Claims**

1. A method of evaluating compounds for an ability to inhibit protease activity of a selected protein, comprising:

(a) providing in a container a solution containing: a known quantity of said selected protein; a known quantity of a peptide substrate comprising a cleavage site for said selected protein wherein said cleavage site comprises an amino acid selected from the group consisting of tyrosine, tryptophan, phenylalanine, methionine and leucine; and a known quantity of a compound to be evaluated as an inhibitor of the protease activity of said selected protein under conditions which permit the cleaving of said cleavage site by said selected protein and which permit the binding of the compound to said selected protein;

wherein said protease activity of said selected protein is exhibited by the cleavage of said cleavage site on the carboxyl side of said amino acid;

wherein said selected protein has an apparent molecular weight of between 23,800 and 26,200 daltons as measured by polyacrylamide gel electrophoresis in the presence of sodium dodecyl sulfate, is capable of binding with α-1-antichymotrypsin in a sodium dodecyl sulfate-resistant manner, is capable of extraction from the particulate fraction of a homogenate of a rat brain, and said protease activity of said selected protein is capable of being inhibited by the serine protease inhibitor phenylmethylsulfonyl fluoride, and where said selected protein is capable of proteolysis of a β-amyloid percursor protein;

(b) incubating the selected protein, the peptide substrate containing said cleavage site and the compound to be evaluated; and

(c) measuring the extent to which the compound to be evaluated inhibits said protease activity of said protein.

5,252,464

PROCESS FOR PRODUCING PENTAPEPTIDES AND INTERMEDIATES FOR USE IN THE SYNTHESIS

Anders J. Andersen, Kokkedal, Denmark, assignor to Carlsberg Biotechnology Ltd. A/S, Copenhagen, Denmark

Continuation of Ser. No. 493,508, Mar. 14, 1990, abandoned. This application Sep. 4, 1992, Ser. No. 940,772

Claims priority, application Denmark, Mar. 14, 1989, 1224/89

Int. Cl.[5] C12P *21/00*; C07K *7/00*

U.S. Cl. 435—68.1 **11 Claims**

1. A process for producing pentapeptides having the formula

H-Asp-Ser-X-Pro-Arg-OH

wherein X is Asp or Asn in L- or D-configuration, and each of Asp, Ser, Pro and Arg may independently have L- or D-configuration,

said process comprising:

1) a. reacting Y_2-Pro-OH with Arg-R_o to form Y_2-Pro-Arg-R_o, wherein Y_2 is an amino protective group, and R_o is —OH or is as defined below for R_1,

b. the resulting Y_2-Pro-Arg-R_o then being deprotected to form Pro-Arg-R_o, and, when R_o is —OH, also converted to a carboxyl substituted derivative, Pro-Arg-R_1, wherein R_1, is an enzymatically cleavable α-carboxyl substituting group capable of resisting catalytic hydrogenation, R_1 being selected from the group consisting of: i) esters —OR, where R denotes C_1–C_7 alkyl, aralkyl or substituted aralkyl: ii) amides or anilides $-NR_3R_4$, where R_3 and R_4 independently denote H, C_1–C_5 alkyl, aryl, $CONH_2$; and iii) amino acid residues in L-configuration, Gly and their amides and esters,

2) a. reacting Y_3-X(Z_3)-OH with Pro-Arg-R_1 in the presence of an activation agent so as to form Y_3-X(Z_3)-Pro-Arg-R_1, wherein: Y_3 is an amino protective group removable by hydrogenation; and, when X is Asp, Z_3 is a side-chain protective group removable by hydrogenation, and, when X is Asn, Z_3 is either a side-chain protective group removable by hydrogenation or Z_3 is hydrogen,

b. the resulting Y_3-X(Z_3)-Pro-Arg-R_1 then being deprotected so as to form X-Pro-Arg-R_1,

3) reacting Y_4-Ser-OH with X-Pro-Arg-R_1 to form Y_4-Ser-X-Pro-Arg-R_1, wherein Y_4 is a protective group being removable by hydrogenation, Y_4-Ser-X-Pro-Arg-R_1 being deprotected so as to form Ser-X-Pro-Arg-R_1, and

either,

4A) reacting Y_5-Asp-(Z_5)-OH with Ser-X-Pro-Arg-R_1 so as to form Y_5Asp(Z_5)-Ser-X-Pro-Arg-R_1, wherein Y_5 is a protective group removable by hydrogenation or an enzymatically cleavable protective group, and Z_5 is a protective group removable by hydrogenation, the resulting Y_5-Asp(Z_5)-Ser-X-Pro-Arg-R_1 then being deprotected so as to form Asp-Ser-X-Pro-Arg-R_1, and then,

5A) removing the group R_1 by treatment with an enzyme capable of cleaving α-carboxyl substituting groups from positively charged amino acids, to form the desired Asp-Ser-X-Pro-Arg-OH,

or

4B) reacting Y_5-Asp(Z_5)-OH with Ser-X-Arg-R_1 to form Y_5-Asp(Z_5)-Ser-X-Pro-Arg-R_1, wherein Y_5 is a protective group being removable by hydrogenation or an enzymatically cleavable protective group, and Z_5 is a protective group removable by hydrogenation, the group R_1 being removed from the resulting Y_5-Asp(Z_5)-Ser-X-Pro-Arg-R_1 by treatment with an enzyme capable of cleaving α-carboxyl substituting groups from positively charged amino acids, to form Y_5-Asp-(Z_5)-Ser-X-Pro-Arg-OH, and then

5B) removing the groups Y_5 and Z_5 so as to form the desired Asp-Ser-X-Pro-Arg-OH,

said process being further characterized in that the protective groups Y_3, Z_3, Y_4, and Z_5 are removed by hydrogenation.

5,252,465

AVIAN ERYTHROBLASTOSIS VIRUS VECTORS FOR INTEGRATION AND EXPRESSION OF HETEROLOGOUS GENES IN AVIAN CELLS

Victor-Marc Nigon; Gérard Verdier; Yahia Cheboune, all of Villeurbanne; Francois-Loïc Cosset, Lyons; Catherine Legras, Vaulx-en-Vexin; Astrid Reyss-Brion, Serres; Mustapha Belakebi; Francois Mallet, both of Villeurbanne; Pierre Savatier, Lyons; Pierrick Thoraval; Jacques Samarut, both of Villeurbanne; Didier Poncet, Guyancourt; Claude Bagnis, Romans, and Miloud Benchaibi, Villeurbanne, all of France, assignors to Institut National de la Recherche Agronomique (IMPA), Paris, France

PCT No. PCT/FR88/00487, § 371 Date Jun. 25, 1990, § 102(e) Date Jun. 25, 1990

PCT Filed Oct. 3, 1988, Ser. No. 477,833

Claims priority, application France, Oct. 21, 1987, 87 14547

Int. Cl.[5] C12N *15/86*, *5/10*, *7/01*; C12P *21/00*

U.S. Cl. 435—69.1 **19 Claims**

1. A viral vector for the integration and expression of at least one heterologous gene in avian cells, which consists wholly or in part of the proviral genome of avian erythroblastosis virus in which said heterologous genes replace the v-erbA gene and the v-erbB gene, and wherein said genes are

either controlled by an LTR promoter of the same virus, in which case a first, heterologous marker gene is in the v-erbA position and a different second, useful heterologous gene is in the v-erbB position, the heterologous genes being in the same reading frame as the genes they replace,

or said second gene is controlled by the heterologous promoter, in which case an additional att sequence is situated upstream from said heterologous promoter and between the two LTR sequences.

5,252,466

FUSION PROTEINS HAVING A SITE FOR IN VIVO POST-TRANSLATION MODIFICATION AND METHODS OF MAKING AND PURIFYING THEM

John E. Cronan, Jr., Urbana, Ill., assignor to Biotechnology Research and Development Corporation, Peoria and Board Of Trustees Of The University Of Illinois, Champaign, both of Ill.

Continuation-in-part of Ser. No. 354,266, May 19, 1989, abandoned. This application May 18, 1990, Ser. No. 525,568

Int. Cl.[5] C12N *15/62*, *15/63*

U.S. Cl. 435—69.7 **9 Claims**

1. A transformed host cell into which DNA has been introduced, or progeny of said transformed host cell, the introduced DNA comprising:

(a) DNA coding for a fusion protein comprising:

(i) a first DNA sequence which codes for a protein or polypeptide having an amino acid sequence that allows for post-translation biotination of the fusion protein; and

(ii) a second DNA sequences joined end to end with the first DNA sequence and in the same reading frame, the second DNA sequence encoding a selected protein or polypeptide; and

(b) DNA coding for biotin ligase;

the DNA coding for the fusion protein and the DNA coding for biotin ligase being operatively linked to expression control sequences.

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5,252,467

METHOD OF MAKING ANTIBODIES TO ANTIGENIC EPITOPES OF IGE PRESENT ON B CELLS BUT NOT BASOPHIL CELL SURFACE OR SECRETED, SOLUBLE IGE

Tse W. Chang, Houston, Tex., assignor to Tanox Biosystems, Inc., Houston, Tex.

Division of Ser. No. 272,243, Nov. 16, 1988, Pat. No. 5,091,313, which is a continuation-in-part of Ser. No. 229,178, Aug. 5, 1988, abandoned, which is a continuation-in-part of Ser. No. 226,421, Jul. 29, 1988, which is a continuation-in-part of Ser. No. 140,036, Dec. 31, 1987, abandoned. This application Jan. 6, 1992, Ser. No. 817,916

Int. Cl.[5] **C12P** *21/08;* **C12N** *15/02, 5/12;* **C07K** *15/28*

U.S. Cl. 435—70.21 **8 Claims**

1. A method of producing a hybridoma which produces a monoclonal antibody that specifically binds to the extracellular segment of the membrane-bound domain of membrane-bound IgE on IgE-bearing B cells, but does not bind to basophils or secreted, soluble IgE, comprising the steps of:

a. immunizing an animal with a peptide having an amino acid sequence corresponding to or including the extracellular segment of the membrane-bound domain of IgE on the surface of B cells;

b. obtaining cells that produce antibodies specific for the peptide from the immunized animal;

c. fusing the cells with a myeloma cell line to create hybridomas secreting said antibodies;

d. screening said hybridomas and selecting a hybridoma producing an antibody that specifically binds to the extracellular segment of the membrane-bound domain of membrane-bound IgE on IgE-bearing B cells, but does not bind to basophils or secreted, soluble IgE;

e. cloning the hybridoma selected in step d.

5,252,468

PROCESS FOR PRODUCING DEACETYLASE FROM *VIBRIO CHOLEREA* IFO 15429

Shizu Fujishima, Ikeda; Fumiko Yaku, Suita; Ryutarou Tanaka, Osaka; Einosuke Muraki, Osaka, and Naoko Yamano, Osaka, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Feb. 26, 1992, Ser. No. 842,304

Claims priority, application Japan, May 27, 1991, 3-152595

Int. Cl.[5] **C12N** *9/06, 9/00;* **C12P** *19/26, 21/04*

U.S. Cl. 435—71.1 **1 Claim**

1. A process for producing deacetylase, which comprises incubating deacetylase-producing cells of *Vibrio cholerae* IFO-15429 in a culture medium containing a carbon source, a nitrogen source, an inorganic salt and an inducer selected from the group consisting of chitin, chitin-containing materials, N-acetylglucosamine and N-acetylglucosamine oligomers, separating said Vibrio cells from the culture medium and isolating the deacetylase from the cells separated from said culture medium.

5,252,469

PROCESS FOR PRODUCING A TRANSGLUTAMINASE DERIVED FROM STREPTOMYCES

Hiroyasu Andou; Akira Matsuura, and Susumu Hirose, all of Aichi, Japan, assignors to Amano Pharmaceutical Co., Ltd., Aichi, Japan

Filed Aug. 26, 1991, Ser. No. 750,160

Claims priority, application Japan, Aug. 27, 1990, 2-226076

Int. Cl.[5] **C12P** *21/04;* **C12N** *9/10, 9/78*

U.S. Cl. 435—71.2 **4 Claims**

1. A process for producing a transglutaminase comprising the steps of:

(1) culturing a microorganism having all of the identifying characteristics of the microorganism, Streptomyces sp. No. 83, deposited as FERM BP-3505, and mutants thereof, which produces a transglutaminase; and

(2) recovering said transglutaminase from the culture obtained,

wherein said transglutaminase is an enzyme which catalyzes an acyl transfer reaction of a γ-carboxyamide group of a glutamine residue in a peptide or protein chain in the presence or absence of Ca^{++}, and wherein said transglutaminase has an isoelectric point of 10, and is inhibited by Pb ions.

5,252,470

D-AMIDASE AND PROCESS FOR PRODUCING D-α-ALANINE AND/OR L-α-ALANINEAMIDE

Akio Ozaki; Hideki Kawasaki; Yukio Hashimoto; Keishiro Tamura, all of Hofu; Keiko Ochiai, Sagamihara, and Isao Kawamoto, Hiratsuka, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 808,647, Dec. 17, 1991, abandoned, which is a division of Ser. No. 711,355, Jun. 4, 1991, Pat. No. 5,130,240, which is a continuation of Ser. No. 327,000, Mar. 22, 1989, abandoned. This application Jul. 22, 1992, Ser. No. 917,744

Claims priority, application Japan, Mar. 24, 1988, 63-70217

Int. Cl.[5] **C12P** *13/06;* **C12N** *9/78, 9/80*

U.S. Cl. 435—116 **6 Claims**

1. A D-amidase capable of specifically hydrolyzing D-α-alanineamide into D-α-alanine, with no substantial hydrolysis of D-α-alanineamide, having an optimum pH of 7 to 8 at 30° C.; an optimum temperature of 40° to 45° C. at pH of 7.5; a molecular weight of 50,000±5,000 as determined by SDS-polyacrylamide electrophoresis; and an isoelectric point at pH 5.2±0.3, wherein said D-amidase is stable within a range of pH 6.5 to 10 at 30° C.; is inactivated when allowed to stand at a temperature above 60° C. for 10 minutes and further requires no coenzyme for activation.

5,252,471

DIRECTED BIOSYNTHESIS OF CHOLESTEROL LOWERING COMPOUNDS

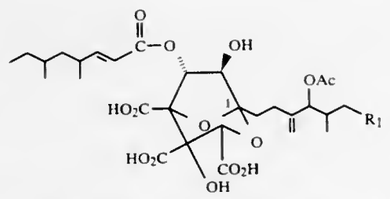
Kevin M. Byrne, West Trenton, N.J.; Louis Kaplan, New York City, N.Y., and Mary N. Omstead, Gladstone, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 9, 1992, Ser. No. 848,573

Int. Cl.[5] **C12P** *17/18;* **C12N** *1/14*

U.S. Cl. 435—119 **8 Claims**

1. A process for the preparation of a compound of formula (I)



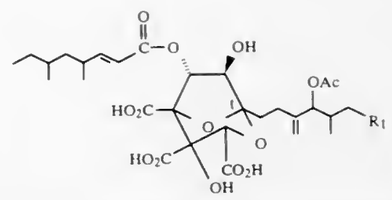
(I)

comprising adding a compound selected from the group consisting of:

(II) $R_1—CO_2H$; and

(III) $R_1—CH_2—CHNH_2CO_2H$;

wherein R_1 is selected from:



and wherein X and Y are selected from the group consisting of:

(a) H;

(b) halogen (F, Cl, Br, I);

(c) OH; and

(d) CH_3;

at a concentration of 0.01 nM to 100 nM

(a) MF5453; to a zaragozic acid A producing culture selected from the group consisting of:

(a) MF5453;

(b) *Exserohilum rostratum* (MF5565)

(c) *Curvularia lunata* var. *aeria* (MF5599)

(d) *Curvularia lunata* var. *aeria* (MF5572)

(e) *Curvularia lunata* var. *aeria* (MF5573)

or a mutant thereof and incubating for 48 to 120 hours at 20° to 30° C. at a pH less than 8 and isolating the product of formula (I) from the culture broth.

5,252,472

PROCESS FOR THE PRODUCTION OF FURANS AND LACTONES FROM STREPTOMYCES

Susanne Grabley, Königstein; Joachim Wink, Offenbach; Klaus Kühlein, Kelkheim; Gerhard Seibert, Darmstadt; Klaus Hütter, Bad Soden am Taunus; Hermann Uhr, Leverkusen, and Axel Zeeck, Göttingen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

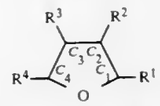
Division of Ser. No. 325,810, Mar. 20, 1989, Pat. No. 5,128,370. This application Feb. 7, 1992, Ser. No. 832,314

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1988, 3809562

Int. Cl.[5] **C12P** *17/04, 19/44*

U.S. Cl. 435—126 **5 Claims**

1. A process for the preparation of the compound of the formula I



I

in which, independently of one another,

R^1 denotes hydrogen or an oxo group,

R^2 methyl or 1-hydroxyethyl,

R^3 denotes hydrogen, methyl or rhamnosyloxy-carbonyl, and

R^4 denotes hydrogen, 2-hydroxypropyl, acetoxy or methyl, it being possible for the bonds between C_1 and C_2, and C_3 and C_4, to be double bonds,

which comprises cultivating Streptomyces spec. DSM 4349, DSM 4355, DSM 4200 or DSM 4211 or mutants thereof which are capable of synthesizing a compound of the formula I, individually or combined in mixed culture, in a nutrient medium until the compound accumulates in the culture and recovering said compounds.

5,252,473

PRODUCTION OF ESTERS OF LACTIC ACID, ESTERS OF ACRYLIC ACID, LACTIC ACID, AND ACRYLIC ACID

Paul C. Walkup, Richland; Charles A. Rohrmann, Kennewick; Richard T. Hallen, Richland, and David E. Eakin, Kennewick, all of Wash., assignors to Battelle Memorial Institute, Richland, Wash.

Continuation of Ser. No. 468,704, Jan. 23, 1990, Pat. No. 5,071,754. This application Sep. 23, 1991, Ser. No. 764,355

The portion of the term of this patent subsequent to Dec. 10, 2008, has been disclaimed.

Int. Cl.[5] **C12P** *7/62, 7/40, 7/56;* **C07C** *69/66*

U.S. Cl. 435—135 **23 Claims**

1. A method of producing esters of acrylic acid from fermentable carbohydrate materials comprising the following steps:

a) fermenting the carbohydrate material with a lactic-acid-forming organism in the presence of NH_3 to produce ammonium lactate;

b) combining the ammonium lactate with an alcohol;

c) esterifying the ammonium lactate and alcohol into a lactic acid ester; and

d) catalyzing conversion of the lactic acid ester by vaporizing the lactic acid ester and passing the vaporized lactic acid ester through a solid catalyst bed, the solid catalyst bed comprising an effective catalyzing amount of crystalline hydrated and partially calcined calcium sulfate hemihydrate to catalytically convert lactic acid ester into an acrylic acid ester.

5,252,474

CLONING GENES FROM STREPTOMYCES AVERMITILIS FOR AVERMECTIN BIOSYNTHESIS AND THE METHODS FOR THEIR USE

Keith M. Gewain, Middelsex; Douglas J. MacNeil; Tanya MacNeil, both of Westfield; Philip S. paress, Maplewood; Carolyn L. Ruby, Montclair, and Stanley L. Streicher, Verona, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 390,576, Aug. 7, 1989, abandoned, which is a continuation-in-part of Ser. No. 331,146, Mar. 31, 1989, abandoned. This application Mar. 14, 1990, Ser. No. 490,723

Int. Cl.[5] **C12N** *15/00, 15/11;* **C12P** *17/18*

U.S. Cl. 435—172.3 **46 Claims**

24. A process for the isolation of avermectin genes from *Streptomyces avermitilis* which comprises the complementation of *Streptomyces avermitilis* mutants with cloned *Streptomyces avermitilis* DNA wherein the cloned Streptomyces avermitilis DNA is contained on a plasmid selected from the group consisting of pVE650, pAT1 (44.05 kb), pVE923, pVE924, pVE855, pVE859, and pVE1446.

5,252,475

METHODS AND VECTORS FOR SELECTIVELY CLONING EXONS

Michael Reth, Freiburg, Fed. Rep. of Germany, assignor to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V., Gottingen, Fed. Rep. of Germany

Filed Jul. 3, 1991, Ser. No. 725,608

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1990, 4021458

Int. Cl.[5] **C12N** *15/10, 15/85, 5/10;* **C07H** *21/04*

U.S. Cl. 435—172.3 **26 Claims**

1. A method for selectively cloning exons comprising the following steps:

(a) cloning a genomic DNA fragment to be assayed for exons into a cloning site of a vector having the following features:

(aa) said vector is a shuttle vector for prokaryotic and eukaryotic host cells which may contain selective marker genes,

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(ab) said vector contains a DNA fragment comprising the following elements arranged in the 5'-3' direction:
a eukaryotic promoter,
a 5' exon of a gene, and
at least the 3'-terminal exon of a gene, said arrangement of elements permitting the synthesis of a functional transcript, with a cloning site being located in an intron following the 5' exon,
thereby constructing a recombinant vector;
(b) transfecting eukaryotic host cells with the recombinant vector;
(c) expressing the recombinant vector in the transfected host cells;
(d) isolating the total RNA from the host cells in (c);
(e) producing cDNA with the RNA indicated in (d), using a primer for the synthesis with reverse transcriptase, which primer is complementary to a region of an exon located downstream from the cloning site;
(f) carrying out a PCR reaction with the cDNA indicated in (e) and a primer pair, the first primer being complementary to a region of the exon located upstream from the cloning site and the second primer being complementary to a region of an exon located downstream from the cloning site;
(g) cloning in a vector the DNA fragment containing the additional exon(s) and obtained in the PCR reaction in (f).

5,252,476

SUPEROXIDE DISMUTASE CLONING AND EXPRESSION IN MICROORGANISMS

Robert A. Hallewell, San Francisco, and Guy T. Mullenbach, Oakland, both of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Continuation of Ser. No. 931,920, Nov. 14, 1986, abandoned, which is a continuation of Ser. No. 609,412, May 11, 1984, abandoned, which is a continuation-in-part of Ser. No. 538,607, Oct. 3, 1983, abandoned. This application Jul. 20, 1988, Ser. No. 222,352

Int. Cl.[5] C12N *21/02, 1/19, 15/53, 15/81*

U.S. Cl. 435—189 **12 Claims**

5. A method for preparing an acetylated human cytoplasmic Cu/Zn superoxide dismutase, said method comprising:
growing transformed yeast in a nutrient medium, wherein said yeast comprises a DNA construct, said DNA construct comprising a functional vector for expression in yeast, said vector comprising a promoter operable in yeast operably linked to a DNA segment encoding human cytoplasmic Cu/Zn superoxide dismutase polypeptide, wherein said polypeptide comprises an acetylation signal sequence operable in yeast that enables N-terminal acetylation of said polypeptide by said yeast, and
isolating said polypeptide.

5,252,477

HUMAN IMMUNODEFICIENCY VIRUS SPECIFIC PROTEOLYTIC ENZYME AND A METHOD FOR ITS SYNTHESIS AND RENATURATION

Stephen Oroszlan, Potomac, and Terry D. Copeland, Frederick, both of Md., assignors to The United States of America as represeoted by the United States Department of Health and Human Services, Bethesda, Md.

Filed Jun. 1, 1987, Ser. No. 57,183

Int. Cl.[5] C12N *9/50, 7/04, 15/84*

U.S. Cl. 435—219 **6 Claims**

1. An isolated proteolytic enzyme comprising the amino acid sequence:

ProGlnIleThrLeuTrpGln	7
ArgProLeuValThrIleLysIleGlyGlyGlnLeuLysGluAla	22
LeuLeuAspThrGlyAlaAspAspThrValLeuGluGluMetSer	37
LeuProGlyArgTrpLysProLysMetIleGlyGlyIleGlyGly	52
PheIleLysValArgGlnTyrAspGlnIleLeuIleGluIleCys	67

-continued

GlyHisLysAlaIleGlyThrValLeuValGlyProThrProVal	82
AsnIleIleGlyArgAsnLeuLeuThrGlnIleGlyCysThrLeu	97
AsnPhe	

5,252,478

THERMOSTABLE MUTANTS OF NEUTRAL PROTEASE AND MEANS FOR THEIR PREPARATION

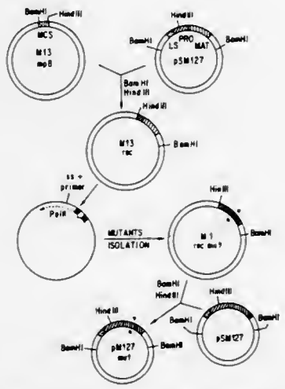
Immaculada Margarit Y Ros, San Donato Mil.; Susanna Campagnoli, Codogno; Roberto Gianna, Rome; Salvatore Toma, Milan, and Guido Grandi, Segrate, all of Italy, assignors to Eniricerche S.p.A., Milan, Italy

Filed Feb. 22, 1991, Ser. No. 658,908

Claims priority, application Italy, Feb. 23, 1990, 19474 A/90

Int. Cl.[5] C12N *15/00, 15/57, 9/56, 15/75*

U.S. Cl. 435—222 **6 Claims**



1. A substantially pure mutant neutral protease, wherein said mutant neutral protease is a mutant of wild-type neutral protease which is endogenous to *Bacillus subtilis,* wherein said mutant neutral protease retains enzymatic activity at temperature at which said wild-type neutral protease becomes inactive, wherein in said mutant neutral protease, at least one of the amino acid residues Gly 189 and Gly 147 of the amino acid sequence of said wild-type neutral protease each is replaced by Ala.

5,252,479

SAFE VECTOR FOR GENE THERAPY

Arun Srivastava, Indianapolis, Ind., assignor to Research Corporation Technologies, Inc., Tucson, Ariz.

Filed Nov. 8, 1991, Ser. No. 789,917

Int. Cl.[5] C12N *7/01, 15/86*

U.S. Cl. 435—235.1 **16 Claims**

1. An expression vector for site-specific integration and cell-specific expression comprising two inverted terminal repeats of adeno-associated virus 2 and at least one cassette comprising a promoter capable of effecting cell-specific expression wherein said promoter is a B19 parvovirus promoter and wherein said promoter is operably linked to a heterologous gene, and wherein said cassette resides between said inverted terminal repeats.

5,252,480

HUMAN MONOCLONAL ANTIBODY AND HYDRIDOMA PRODUCING THE SAME

Shinichi Yokota, Takarazuka; Hiroshi Ohtsuka, Nishinomiya; Hiroshi Ochi, Toyonaka; Hiroshi Noguchi, Kawanishi; Masazumi Terashima, Ibaraki, and Masuhrio Kato, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited and Sumitomo Pharmaceuticals Company, Limited, Osaka, Japan

Filed May 10, 1989, Ser. No. 349,643

Claims priority, application Japan, May 10, 1988, 63-114473

Int. Cl.[5] C12N *5/22, 15/02;* **C07K** *15/28;* **C12P** *21/08*

U.S. Cl. 435—240.27 **2 Claims**

1. Human monoclonal antibody MH-4H7, secreted by the hybridoma deposited as FERM BP-2402.

5,252,481

MUTANT OF BACTERIUM *CLOSTRIDIUM HISTOLYTICUM,* A PROCESS FOR THE OBTAINING THEREOF, AND ITS USE IN THE PRODUCTION OF CLOSTRIPAIN-FREE COLLAGENASE

Milan Holjevac; Ivan Udovicic; Sonja Cizmek; Vlasta Sojak-Derkos; Stjepan Gamulin, and Vladimir Delic, all of Zagreb, Yugoslavia, assignors to Pliva Farmaceutska, Kemijska, Yugoslavia

Filed Jul. 23, 1991, Ser. No. 733,764

Claims priority, application Yugoslavia, Jul. 23, 1990, 1440/90

Int. Cl.[5] C12N *1/20, 9/00, 9/52*

U.S. Cl. 435—252.7 **7 Claims**

3. A process for the production of clostripain-free collagenase, which comprises cultivating *Clostridium histolyticum* NCAIM B(P) 001145 in a liquid nutrient medium containing proteose-peptone, enzymatically hydrolyzed proteins of casein and soy, a vitamin solution, a reducing agent, and nitrogen, for 10 to 24 hours at a temperature ranging from 28 degrees celsius to 37 degrees celsius and a pH of 7.2 to 8.9, under anaerobic submersed conditions, and with a combination of precipitants isolating purified clostripain-free collagenase.

5,252,482

PRECURSOR OF A C-TERMINAL AMIDATED CALCITONIN

Shoji Tanaka; Kazuhiro Ohsuye; Ichiro Kubota; Norio Ohnuma, all of Osaka, and Teruhisa Noguchi, Kanagawa, all of Japan, assignors to Suntory Limited, Osaka, Japan

Continuation of Ser. No. 281,910, Dec. 7, 1988, abandoned, which is a continuation of Ser. No. 834,159, Feb. 27, 1986, abandoned, which is a continuation of Ser. No. 496,475, May 20, 1983, abandoned. This application Nov. 5, 1990, Ser. No. 610,312

Claims priority, application Japan, May 20, 1982, 57-86181

Int. Cl.[5] C12N *15/16, 15/70, 1/21*

U.S. Cl. 435—252.33 **19 Claims**

1. A chemically synthesized gene encoding a pharmacologically active calcitonin precursor comprising a chemically synthesized polynucleotide which codes on expression for the amino acid sequence:

Cys—Gly—Asn—Leu—Ser—Thr—Cys—Val—Leu—
Gly—Thr—Tyr—Thr—Gln—Asp—Phe—Asn—Lys—
Phe—His—Thr—Phe—Pro—Gln—Thr—Ala—Ile—
Gly—Val—Gly—Ala—Pro—Gly—Lys—Lys—Arg.

5,252,483

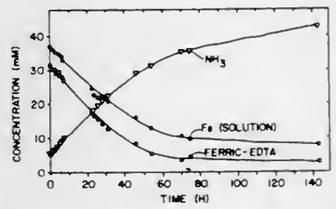
DEGRADATION OF FERRIC CHELATES BY A PURE CULTURE OF AGROBACTERIUM SP.

John Lauff; James Breitfeller, both of Rochester, N.Y.; D. Bernie Steele, Auburn, Ala., and Louise Coogan, Hilton, N.Y., assignors to Genencor International, Inc., Rochester, N.Y.

Continuation-in-part of Ser. No. 507,931, Apr. 11, 1990, abandoned. This application Oct. 26, 1990, Ser. No. 603,381

Int. Cl.[5] C12S *1/00;* **B09B** *3/00;* **C12N** *1/20;* **C12P** *3/00*

U.S. Cl. 435—262 **12 Claims**



4. The method of claim 3 wherein said at least one other source of carbon and/or nitrogen is selected from the group consisting of sucrose and yeast extract.

5,252,484

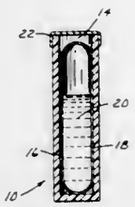
RAPID READ-OUT BIOLOGICAL INDICATOR

Richard R. Matner, St. Paul; William E. Foltz, Cottage Grove, and Lewis P. Woodson, Eagan, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 277,305, Nov. 29, 1988, Pat. No. 5,073,488. This application Aug. 21, 1991, Ser. No. 748,327

Int. Cl.[5] C12M *1/00, 1/34*

U.S. Cl. 435—288 **10 Claims**



1. A sterility indicator comprising
a) an outer container having liquid impermeable and substantially gas non-absorptive walls, said container having at least one opening therein; and
b) a gas-transmissive, bacterial impermeable means covering said opening; and
c) contained within said outer container, a detectable amount of active enzyme isolated from an appropriate microorganism, said enzyme having sufficient activity following a sterilization cycle which is sublethal to at least one test microorganism commonly used to monitor sterilization, to react with an effective amount of a substrate system for said enzyme to produce a detectable enzyme-modified product within less tan twenty-four hours, yet said enzyme having activity which is reduced to "background" following a sterilization cycle which is lethal to said test microorganisms.

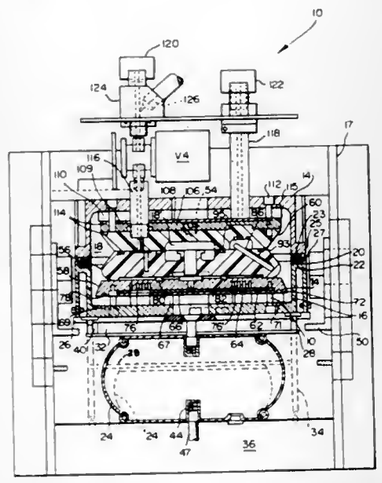
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5,252,485

UNIT FOR HYDROLYZING AMINO-ACID CONTAINING SPECIMENS

Yury Zlobinsky, Massapequa, and Jules S. Lux, Valley Stream, both of N.Y., assignors to Savant Instruments, Inc., Farmingdale, N.Y.

Filed Aug. 10, 1990, Ser. No. 565,467
Int. Cl.[5] C12M *1/02, 1/36*
U.S. Cl. 435—316 41 Claims



1. Hydrolysis unit for hydrolyzing amino acid-containing specimens in an operation that involves heating the specimens while same are in contact with a hydrolyzing agent so as to break down the specimens into their amino acid components, said hydrolysis unit comprising:

a specimen holder having an upper face and at least one specimen receiving compartment formed in said upper face,

a cover engageable with said specimen holder upper face for sealing the at least one specimen receiving compartment and therewith defining a sample chamber,

a lower casing part, said specimen holder being removably receivable in said lower casing part,

an upper casing part, said cover being carried in said upper casing part,

means including a frame for supporting said lower and upper casing parts such that one of said upper and said lower casing parts is mounted fixed to said frame and the other casing part is movably mounted on said frame so that it can move relative to the fixed casing part between a position wherein the movably mounted casing part is remote from the fixed casing part to a second position in which the movably mounted casing part is mated to the fixed casing part and defines therewith a casing enclosing a vacuum-tight sealed space in which said specimen holder and cover are disposed, said cover when said lower and upper casing parts are mated tightly engaging the specimen holder upper face thereby isolating said at least one specimen receiving compartment from the casing enclosed space, and

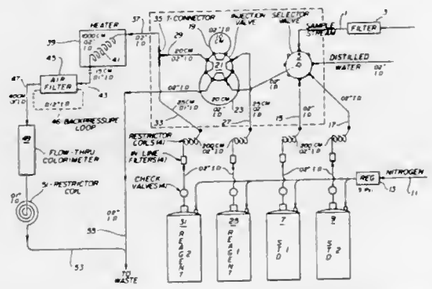
means for introducing heat into said at least one specimen receiving compartment whereby a specimen present therein is heated to hydrolyzing temperature, said means maintaining said at least specimen receiving compartment heated until a predetermined hydrolysis of the specimens has taken place.

5,252,486

FLOW INJECTION ANALYSIS OF TOTAL INORGANIC PHOSPHATE

Christina O'Lear, Hickory, and Keith J. Salamony, Clairton, both of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 597,650, Oct. 15, 1990, abandoned. This application Aug. 15, 1991, Ser. No. 745,638
Int. Cl.[5] G01N *31/22, 35/00*
U.S. Cl. 436—52 18 Claims



1. A flow injection analysis method for determination by a molybdenum blue complex colorimetric reaction of total inorganic phosphate concentration in an aqueous system containing dissolved inorganic polyphosphate as well as orthophosphate, comprising the steps of (1) establishing a filtered sample stream from said aqueous system from which sample units may be selected at designated intervals; (2) bringing together and admixing on a continuous basis two reagent composition streams which then form a basic flow injection analysis stream the two reagent composition streams comprising: (a) a color-forming reagent comprising an inorganic-acid and molybdenum (V and-VI), and (b) a reducing agent and preservative composition therefor; (3) interrupting the flow of reagent composition stream (b): the reducing agent and preservative composition therefor, and substituting therefor the filtered sample stream of step (1) for sufficient time to select a sample unit, which then becomes admixed with reagent composition stream (a): the color-forming reagent comprising the inorganic acid and molybdenum (V and VI) forming a reaction mixture; (4) restoring the flow of reagent composition stream (b); (5) heating the reaction mixture to 60°–95° C. for a sufficient time to effect conversion of substantially all of the polyphosphate contained in the sample unit to orthophosphate, said time also being sufficient to effect the reaction of said orthophosphate with the molybdenum (V and VI) to form a color complex; and thereafter allowing said reducing agent to partially reduce the molybdenum (V and VI) so that it has an average oxidation state between 5 and 6; (6) passing the reaction mixture containing the color complex through a colorimeter having a 600–850 nm filter and reading a signal produced thereby; and (7) from the signal and previously available standardization data, calculating the concentration of dissolved inorganic phosphates in the aqueous stream; wherein all of the above steps are carried out under a pressure of from 2–10 psi.

5,252,487

METHOD AND APPARATUS FOR DETERMINING THE AMOUNT OF ONCOGENE PROTEIN PRODUCT IN A CELL SAMPLE

James W. Bacus, and Sarah S. Bacus, both of Hinsdale, Ill., assignors to Cell Analysis Systems, Inc., Lombard, Ill.

Continuation of Ser. No. 354,660, May 19, 1989, abandoned. This application Jan. 27, 1993, Ser. No. 9,378
Int. Cl.[5] G01N *21/59, 33/50*
U.S. Cl. 436—63 6 Claims

1. A method for determining an amount of an oncogene protein product per cell in a cell sample from which a tissue section and whole cell preparation are prepared, comprising the steps of:

measuring an amount of DNA in a DNA calibration sample of cells having a known amount of DNA in each of the cells of the DNA calibration sample;

producing a measured DNA calibration signal in response to said measured amount of DNA;

producing a DNA calibration signal relating the amount of DNA to the measured DNA calibration signal;

measuring an amount of an oncogene protein product in an oncogene protein product calibration sample of cells having a known amount of said oncogene protein product in the cells of the oncogene protein product calibration sample;

producing a measured oncogene protein product signal in response to said measured amount of said oncogene protein product;

determining the optical density of portions of said whole cell preparation and said tissue section prepared from said cell sample stained with a first stain specific for DNA;

producing a DNA cell sample signal in response to the determination of the optical density of said first stain for said whole cell preparation and said tissue section prepared from said cell sample;

producing a cell count signal for said whole cell preparation in response to said DNA cell sample signal for said whole cell preparation;

determining the optical density of portions of said tissue section prepared from said cell sample stained with a second stain specifically related to said oncogene protein product;

producing an oncogene protein product cell sample signal in response to the determination of the optical density of said second stain;

producing a DNA cell sample amount signal in response to said DNA calibration signal and to said DNA cell sample signal for said whole cell preparation and said tissue section prepared from said cell sample;

producing an average DNA per cell signal in response to said DNA cell sample amount signal for said whole cell preparation and said cell count signal for said whole cell preparation;

producing a total cell number for said tissue section in response to said average DNA per cell signal and said DNA cell sample amount signal for said tissue section;

producing an oncogene protein product copy amount signal in response to said total cell number for said tissue section and in response to said oncogene protein product cell sample signal; and

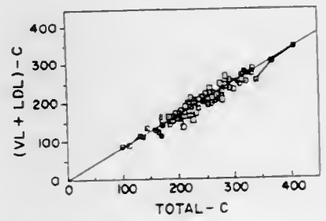
producing an output signal in response to said oncogene protein product copy amount signal indicative of the amount of said oncogene protein product per cell in said cell sample.

5,252,488

CIRCULAR DICHROISM AND SPECTROPHOTOMETRIC ABSORPTION DETECTION METHODS AND APPARATUS

Neil Purdie, Stillwater, Okla., assignor to Research Corporation Technologies, Inc., Tucson, Ariz.

Continuation-in-part of Ser. No. 639,222, Jan. 9, 1991, which is a continuation-in-part of Ser. No. 463,473, Jan. 11, 1990, abandoned. This application Oct. 31, 1991, Ser. No. 785,998
The portion of the term of this patent subsequent to Sep. 21, 2010, has been disclaimed.
Int. Cl.[5] G01N *21/19, 33/52, 33/92*
U.S. Cl. 436—71 27 Claims



19. A detection method for determining the levels of VLDL-C, LDL-C, HDL-C and total cholesterol present in a test sample, the method comprising:

forming a colored reaction product with said cholesterols by reacting a Chugaev reagent with said test sample, and measuring the spectrophotometric absorption of said reaction product at three or more distinct wavelengths within the range of about 150 nm to 700 nm, and thereafter calculating the amount of the VLDL-C, LDL-C, HDL-C and total cholesterol present in the test sample based on the reaction product's measured spectrophotometric absorption at the distinct wavelengths.

5,252,489

DOWN SYNDROME SCREENING METHOD UTILIZING DRIED BLOOD SAMPLES

James N. Macri, 170 Sidney St., Oyster Bay, N.Y. 11771

Continuation-in-part of Ser. No. 868,160, Apr. 14, 1992, which is a continuation-in-part of Ser. No. 420,775, Oct. 12, 1989, which is a continuation-in-part of Ser. No. 360,603, Jun. 1, 1989, abandoned, which is a continuation-in-part of Ser. No. 349,373, May 8, 1989, abandoned, which is a continuation-in-part of Ser. No. 311,808, Feb. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 297,481, Jan. 17, 1989, abandoned. This application Aug. 7, 1992, Ser. No. 925,683
Int. Cl.[5] G01N *33/49, 33/493*
U.S. Cl. 436—87 13 Claims

1. A screening method for determining a pregnant woman's risk of carrying a fetus with Down syndrome comprising:

obtaining a blood sample from the pregnant woman during a time period selected from the group consisting of: the first trimester of pregnancy; the second trimester of pregnancy and the third trimester of pregnancy; on filter paper and allowing the blood sample to dry to form a dried blood spot;

determining said pregnant woman's maternal blood level of free beta (human chorionic gonadotropin (HCG)) from the dried blood spot and comparing said level of free beta (HCG) to reference values of the level for free beta (HCG) during the time period in: (1) pregnant women carrying a fetus with Down syndrome and (2) pregnant women carrying normal fetuses, said comparison being indicative of said pregnant woman's risk of carrying a fetus with Down syndrome, wherein a higher level of free beta (HCG) is indicative of a higher probability of carrying a fetus with Down syndrome.

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5,252,490

METHOD OF IDENTIFYING COUNTRY OF ORIGIN OF CANNABIS

Mahmoud A. ElSohly, Oxford, Miss., and Rudolf M. Brenneisen, Berne, Switzerland, assignors to University of Mississippi, University, Miss.

Filed Oct. 31, 1989, Ser. No. 429,767
Int. Cl.[5] G01N *33/00*
U.S. Cl. 436—93 10 Claims

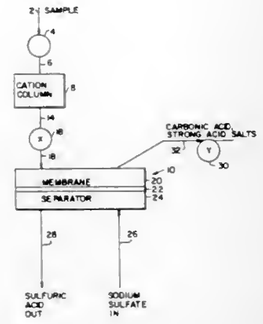
1. A method for determining country or location or contraband marijuana comprising the development of location profiles for Cannabis plant material samples from different countries or various geographical locations using capillary gas chromatographic analysis of extracts of the multiple plant material samples followed by detection and quantitation of the chromatographic peaks relative to an internal standard, composition of a "mean" profile and the use of the generated location profiles to compare with the profile of an unknown sample for source identification.

5,252,491

AQUEOUS CARBON DIOXIDE MONITOR

Dennis J. Connolly, Alliance, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Continuation-in-part of Ser. No. 499,142, Mar. 26, 1990, Pat. No. 5,068,090. This application Mar. 7, 1991, Ser. No. 666,272
Int. Cl.[5] G01N *27/06*
U.S. Cl. 436—133 4 Claims



1. A method for measuring low levels of carbon dioxide in a sample, comprising the steps of:
passing a sample through a cation exchange resin;
measuring the conductivity of the sample passed through the cation exchange resin for a first conductivity measurement indicative of a cation conductivity;
supplying the sample passed through the cation exchange resin to a membrane separator, said membrane separator having a first compartment for receiving the sample and a second compartment separated by a membrane that allows for an exchange of ions between the compartments;
supplying a weak base to said second compartment which ions cross the membrane to react with any strong acid in the sample and leave unreacted carbonic acid in the sample;
taking a conductivity measurement of the sample exiting the first compartment of the membrane separator for a second conductivity measurement; and
determining carbon dioxide concentration from a difference in the first and second conductivity measurements taken of the sample after it is passed through the cation exchange resin and after the sample exits the membrane separator.

5,252,492

FLUORESCENCE ASSAY FOR LIGAND OR RECEPTOR UTILIZING SIZE EXCLUSION

Doju Yoshikami, Salt Lake City, Utah, assignor to University of Utah Research Foundation, Salt Lake City, Utah

Filed Mar. 12, 1991, Ser. No. 668,237
Int. Cl.[5] G01N *33/50, 33/53*
U.S. Cl. 436—501 11 Claims

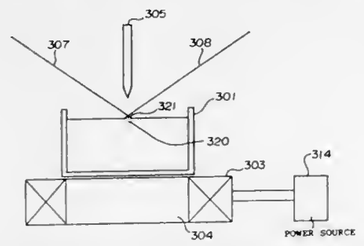
1. A method for studying the interaction of two molecules in solution, said method comprises
(a) preparing an aliquot of a solution containing one of the molecules;
(b) adding the other of the two molecules to said aliquot, wherein the other molecule is capable of binding with said one molecule;
(c) adding a fluorescently labeled molecule to said aliquot, wherein the fluorescently labeled molecule is capable of binding with said other molecule;
(d) immersing a porous matrix that is initially transparent into said aliquot containing the two molecules and the fluorescently labeled molecule, said matrix consisting of a material that (i) has pores or openings therein which are of a microscopic size that is smaller than the size of said other of the molecules, and (ii) is substantially inert and does not react chemically or immunlogically with any of the molecules being studies, wherein said other molecule and any fluorescently labeled molecule bound thereto in said aliquot are sterically hindered from permeating the porous, optically transparent matrix, while any unbound fluorescently labeled molecule permeates the matrix; and
(e) viewing the matrix while the matrix is in fluid contact with said aliquot with means for determining the amount of fluorescence emitted from the matrix.

5,252,493

LASER MAGNETIC IMMUNOASSAY METHOD AND APPARATUS THEREFOR

Koichi Fujiwara; Juichi Noda, both of Mito; Hiromichi Mizutani, and Hiroko Mizutani, both of Tokyo, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

PCT No. PCT/JP87/00694, § 371 Date Jul. 22, 1988, § 102(e) Date Jul. 22, 1988, PCT Pub. No. WO88/02118, PCT Pub. Date Mar. 24, 1988
PCT Filed Sep. 22, 1987, Ser. No. 221,248
Claims priority, application Japan, Sep. 22, 1986, 61-224567; Oct. 23, 1986, 61-252427; Oct. 25, 1986, 61-254164; Feb. 2, 1987, 62-22062; Feb. 2, 1987, 62-22063; Jun. 19, 1987, 62-152791; Jun. 19, 1987, 62-152792; Jul. 24, 1987, 62-184902
Int. Cl.[5] G01N *33/553*
U.S. Cl. 436—526 7 Claims



1. A laser magnetic immunoassay method comprising:
(a) subjecting magnetic-labeled bodies to an immunoreaction with a specimen containing a target analyte to form magnetic-labeled immunocomplexes, wherein each of said magnetic-labeled bodies consists essentially of an antigen or an antibody, which specifically binds to the target analyte, attached to a microparticle of a magnetic substance;

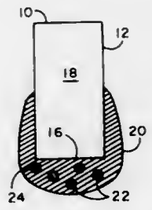
(b) collecting, separating and removing unreacted magnetic-labeled bodies from said magnetic-labeled immunocomplexes;
(c) dispersing said magnetic-labeled immunocomplexes in a liquid contained in a specimen container having an upward opening;
(d) applying an oscillating magnetic field to said liquid using an electromagnet and a magnetic pole piece so as to periodically concentrate said magnetic-labeled immunocomplexes to a predetermined position of concentration immediately below the surface of the liquid, wherein a core of said electromagnet is positioned below the container and an end of said magnetic pole piece is positioned immediately above the surface of the liquid;
(e) radiating a laser beam on said predetermined position of concentration;
(f) detecting and measuring reflected light from said predetermined position when said magnetic-labeled immunocomplexes are concentrated in said predetermined position so as to determine a quantity of said target analyte, said detecting and measuring being in synchronization with the oscillating magnetic field.

5,252,494

FIBER OPTIC SENSORS, APPARATUS, AND DETECTION METHODS USING CONTROLLED RELEASE POLYMERS AND REAGENT FORMULATIONS HELD WITHIN A POLYMERIC REACTION MATRIX

David R. Walt, Lexington, Mass., assignor to Trustees of Tufts College, Medford, Mass.

Continuation-in-part of Ser. No. 409,462, Sep. 19, 1989, Pat. No. 5,114,864, which is a continuation-in-part of Ser. No. 294,175, Jan. 6, 1989, abandoned, which is a continuation-in-part of Ser. No. 878,128, Jun. 25, 1986, Pat. No. 4,822,746, and Ser. No. 305,176, Feb. 2, 1989, Pat. No. 5,143,853, which is a continuation of Ser. No. 878,128, Jun. 25, 1986, Pat. No. 4,822,746. This application Mar. 30, 1992, Ser. No. 859,869
Int. Cl.[5] G01N *33/544, 33/545, 33/549*
U.S. Cl. 436—528 13 Claims



1. A fiber optic sensor for performing optical determinations of a plurality of test fluids believed to contain an analyte of interest, said fiber optic sensor comprising:
a optical fiber strand able to convey light energy of a determinable wavelength, said optical fiber strand having a proximal end, a distal end, and a strand length;
a discrete, porous polymeric reaction matrix immobilized at the distal end of said optical fiber strand, said analyte of interest to be detected being able to permeate and react within said polymeric reaction matrix; and
at least one preformed controlled release polymer carrier contained within said immobilized porous polymeric reaction matrix, each of said preformed controlled release polymer carrier comprising at least one controlled release polymer material and at least one reagent formation controllably releasable from said polymer material in mobile form for reaction with such analyte of interest as is present within said polymeric reaction matrix, the reaction between said analyte of interest and said released reagent formulation forming a diffusible and optically detectable product within said polymeric reaction matrix.

5,252,495

IMMUNOASSAY FOR PHYSOSTIGMINE

Russell L. Miller, Jr., Washington, D.C., and Pritam S. Verma, Adelphi, Md., assignors to Howard University, Washington, D.C.

Continuation of Ser. No. 372,691, Jun. 26, 1989, abandoned.
This application Mar. 19, 1992, Ser. No. 853,850
Int. Cl.[5] G01N *33/531, 33/534, 33/53;* A61K *35/14*
U.S. Cl. 436—542 8 Claims

1. A process for determining concentrations of physostigmine in a sample of biological fluid which comprises
a. mixing said sample with an antibody for physostigmine, said antibody being formed in response to a physostigmine-containing antigen,
b. determining the extent of binding between said antibody and physostigmine in said sample, and
c. comparing the measured extent of binding between said antibody and physostigmine in said sample with a known quantitative relationship between an extent of binding and a specific concentration of physostigmine.

5,252,496

CARBON BLACK IMMUNOCHEMICAL LABEL

Jemo Kang, Princeton; Byungwoo Youn, Wyckoff, and Young H. Oh, Edison, all of N.J., assignors to Princeton Biomeditech Corporation, Somerset, N.J.

Filed Dec. 18, 1989, Ser. No. 456,982
Int. Cl.[5] G01N *33/544, 33/53, 33/566, 33/558, 33/543, 33/549, 33/546;* C12Q *1/70, 1/68, 1/00*
U.S. Cl. 436—529 12 Claims

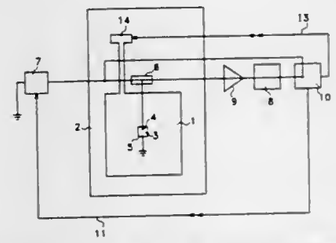
1. An immunochemical label comprising finely particulate carbon black and an immunological ligand or ligand binding molecule covalently linked to a linking reagent, said carbon black being pretreated with dextran and said linking reagent being absorbed on the surface of said dextran-treated carbon black, and wherein the linking reagent is fluorescein isothiocyanate.

5,252,497

METHOD OF CHARACTERIZING OPTICAL PARAMETERS OF OPTO-ELECTRONIC COMPONENTS AND APPARATUS FOR CARRYING OUT THE METHOD, PARTICULARLY DURING A COATING OPERATION

Wilfried Idler, Asperg, Fed. Rep. of Germany, assignor to Alcatel N.V., Amsterdam, Netherlands

Continuation-in-part of Ser. No. 304,168, Jan. 31, 1989, abandoned. This application Aug. 1, 1991, Ser. No. 739,803
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1991, 4109727
Int. Cl.[5] H01L *21/66*
U.S. Cl. 437—8 4 Claims



1. Method of coating an optoelectronic component having terminals with a dielectric layer, comprising the steps:

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supplying a direct current through the terminals to the component during the coating process,
determining an electrical parameter of an electrical noise spectrum which is superimposed on the direct current by the component,
feeding the electrical parameter to a control computer for deriving a control signal corresponding to an optical parameter of the device, and
coating the component with a dielectric layer whose thickness is controlled by the control signal.

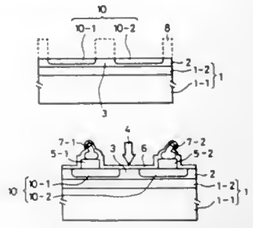
4. Arrangement for coating an optoelectronic component having terminals with a dielectric layer, said arrangement comprising a reaction chamber, for containing the component,
a branching circuit,
a direct-current source coupled to a common terminal of said component via said branching circuit, for supplying a direct current through the terminals to the component during the coating process,
a spectrum analyzer also coupled to said common terminal via said branching circuit, for determining noise power of an electrical noise spectrum which is superimposed on the direct current by the component,
a control computer responsive to said noise power, for deriving a control signal corresponding to an optical parameter of the device, and
a coating apparatus responsive to said control signal, for applying a controlled thickness of said dielectric to the component while the component is inside the reaction chamber and is connected to the direct-current source.

5,252,498

METHOD OF FORMING ELECTRONIC DEVICES UTILIZING DIAMOND

Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Division of Ser. No. 571,265, Aug. 23, 1990, Pat. No. 5,089,802. This application Oct. 15, 1991, Ser. No. 775,498
Claims priority, application Japan, Aug. 28, 1989, 1-221216; Aug. 28, 1989, 1-221215;
The portion of the term of this patent subsequent to Feb. 18, 2009, has been disclaimed.
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—20 **22 Claims**



1. A method of forming an impurity region in a diamond, comprising the steps of:
providing a diamond having a substantially intrinsic conductivity type;
forming, by adding an ionized impurity, an impurity region within said intrinsic diamond.

5,252,499

WIDE BAND-GAP SEMICONDUCTORS HAVING LOW BIPOLAR RESISTIVITY AND METHOD OF FORMATION

G. F. Neumark Rothschild, 153 Old Colony Rd., Hartsdale, N.Y. 10530

Filed Aug. 15, 1988, Ser. No. 232,405
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—22 **22 Claims**

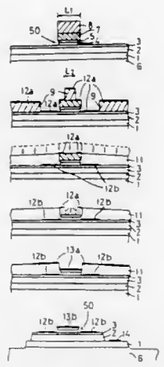
1. A method of forming a p-n junction from a wide band-gap semiconductor, comprising forming an n-type side and a p-type side of a semiconductor by doping the n-type side to form an n-type semiconductor and doping the p-type side to form a p-type semiconductor, then introducing at least a sufficient quantity of atomic hydrogen into at least one side of the doped semiconductor to neutralize a portion of the compensators of at least that side to reduce the resistivity of at least that side to yield a wide band-gap semiconductor having reduced resistivity on at least that side.

5,252,500

METHOD OF FABRICATING A SEMICONDUCTOR DEVICE

Hiroya Sato, Tenri, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 28, 1992, Ser. No. 843,346
Claims priority, application Japan, Mar. 4, 1991, 3-37271
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—31 **6 Claims**



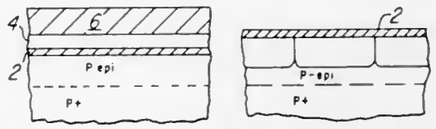
1. A method of fabricating a semiconductor device, comprising the steps of:
forming a collector layer of a first conductivity type over a semiconductor substrate;
forming a base layer of a second conductivity type on said collector layer;
forming an emitter layer of the second conductivity type on said base layer;
forming a dummy layer on said emitter layer;
patterning said dummy layer and said emitter layer into a mesa structure which is formed on said base layer;
forming a base electrode on said base layer in self-alignment to said mesa structure, and simultaneously forming a base electrode material on said dummy layer of said mesa structure, said base electrode material having an opening for exposing a portion of a top surface of said dummy layer;
forming a surface planarization film on said base layer to cover sides of said mesa structure;
removing said base electrode material and said dummy layer of said mesa structure by subjecting said dummy layer to an etchant through said opening, thereby exposing a top surface of said emitter layer; and
forming an emitter electrode on said top surface of said emitter layer by lift-off technique using said surface planarization film.

5,252,501

SELF-ALIGNED SINGLE-MASK CMOS/BICMOS TWIN-WELL FORMATION WITH FLAT SURFACE TOPOGRAPHY

Mehrdad M. Moslehi, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 30, 1991, Ser. No. 814,547
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—34 **20 Claims**



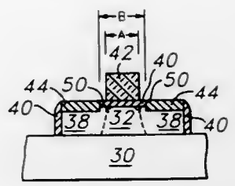
11. A single-mask self-aligned process for forming n-wells and p-wells comprising:
forming a first dielectric/semiconductor/second dielectric stack over a substrate, said first dielectric being thicker than said second dielectric;
etching away a portion of said first dielectric from said stack;
implanting a dopant of a selected conductivity type into said substrate using said remaining first dielectric as an implant mask;
selectively depositing a layer;
removing the remaining first dielectric; and
implanting a dopant of an opposite conductivity type from said selected conductivity type using said selectively deposited layer as an implantation mask.

5,252,502

METHOD OF MAKING MOS VLSI SEMICONDUCTOR DEVICE WITH METAL GATE

Robert H. Havemann, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 3, 1992, Ser. No. 924,209
Int. Cl.[5] H01L *21/265, 21/44*
U.S. Cl. 437—41 **15 Claims**



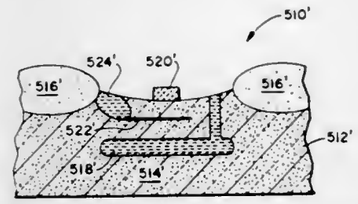
1. A method of fabricating a transistor on a wafer comprising:
a. forming an oxide layer on a doped silicon layer;
b. depositing a first resist over said oxide and patterning said resist with a gate oxide configuration having a predetermined gate oxide length;
c. etching to remove portions of said oxide layer to expose portions of said silicon layer using said first resist as a mask;
d. depositing a metal layer over remaining portions of said oxide layer and exposed portions of said silicon layer;
e. annealing said wafer to react portions of said metal layer with exposed portions of said silicon layer to form a metal silicide;
f. depositing a second resist over said metal layer and patterning said second resist with a gate configuration having a gate length smaller than said gate oxide length;
g. etching said metal layer to form a metal gate and exposing portions of gate oxide; and
h. implanting dopant adjacent said gate through said exposed gate oxide to provide source/drain regions aligned to edges of said gate, utilizing said metal gate as a mask to substantially prevent doping underneath said gate, whereby said gate need not be precisely centered on said gate oxide and thus difficulties in alignment are substantially eliminated.

5,252,503

TECHNIQUES FOR FORMING ISOLATION STRUCTURES

Nicholas F. Pasch, Pacifica, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Division of Ser. No. 748,853, Aug. 22, 1991, which is a continuation-in-part of Ser. No. 711,624, Jun. 6, 1991. This application Nov. 20, 1992, Ser. No. 979,305
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—33 **2 Claims**



1. A method of forming a bipolar transistor structure, comprising:
on a silicon wafer, thermally forming at least one isolation structure adjacent at least one diffusion area, wherein the diffusion region is substantially at wafer level and the isolation structure extends above wafer level;
polishing back the isolation structure, and permitting the diffusion area to become gouged and exhibit a depressed top surface topography;
forming a collector within the diffusion area;
forming an emitter atop the center of the diffusion area;
forming an intrinsic base within the diffusion area between the emitter structure and the collector structure;
forming an extrinsic base just within the top peripheral edge of the diffusion area;
wherein:
the spacing between the intrinsic base and collector is reduced without proportionally reducing the spacing between the extrinsic base and the collector.

5,252,504

REVERSE POLYSILICON CMOS FABRICATION

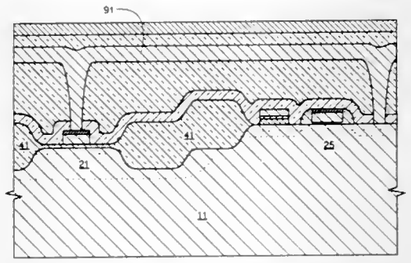
Tyler A. Lowrey; Fernando Gonzalez, and Ruojia Lee, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 485,007, Feb. 26, 1990, abandoned, which is a continuation-in-part of Ser. No. 189,411, May 2, 1988, Pat. No. 4,957,878, and a continuation-in-part of Ser. No. 189,414, May 2, 1988. This application Feb. 11, 1992, Ser. No. 835,003
Int. Cl.[5] H01L *21/336, 27/108*
U.S. Cl. 437—34 **20 Claims**

1. Method of forming DRAM semiconductor circuit devices which include, as a part of each device, a plurality of memory cells and access devices to control signals, the cells and access devices forming a repeating pattern on the device, the method comprising:
a) preparing a silicon substrate which will be of a first conductivity type;
b) applying a protective layer on the substrate;
c) using a photomask to define a region on the substrate to be implanted with an impurity in order to create a well region of semiconductor material of a second conductivity type;

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d) using a photomask to define active areas for devices of both channel types;
e) growing field oxide;
f) removing said photomask which was used to define active areas;
g) forming a polysilicon film, as a first polysilicon layer;
h) implanting transistor sources and drains subsequent to said removal of the photomask which was used to define active areas;
i) substantially etching said first polysilicon layer in the region of the substrate which is outside of the well region, to define a pattern of transistor gates and lines to access devices from polysilicon in said region;
j) forming a capacitor dielectric layer over the substrate;
k) depositing a second layer of polysilicon over the capacitor dielectric layer subsequent to said etching of said first polysilicon layer;



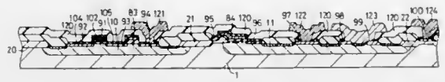
l) etching said second layer of polysilicon in the region of the substrate which is outside of the well region subsequent to said deposition of the second layer of polysilicon, thereby forming capacitor plates over the capacitor dielectric layer in said region, so that each of said capacitor plates extend over at least one of said transistor sources and drains;
m) applying a photomask over the region of the substrate which is outside of the well region, said photomask also defining devices in the well region;
n) etching the polysilicon in the well region through said photomask after the etching of the second layer of polysilicon outside of the well region and after the implanting step to form sources and drains outside of the well region; and
o) applying an impurity of the first conductivity type to the etched polysilicon in the well region.

5,252,505
METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE

Yuji Yatsuda, Hachiohji, Japan; Takaaki Hagiwara, Stanford, Calif.; Ryuji Kondo, Kodaira, Japan; Shinichi Minami, Kokubunji, Japan, and Yokichi Itoh, Hachiohji, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 351,847, May 15, 1989, Pat. No. 5,114,870, which is a division of Ser. No. 850,037, Apr. 10, 1986, Pat. No. 4,851,364, which is a continuation of Ser. No. 487,085, Apr. 21, 1983, Pat. No. 4,586,238, which is a division of Ser. No. 148,481, May 9, 1980, Pat. No. 4,823,776. This application Jan. 15, 1992, Ser. No. 820,933
Claims priority, application Japan, May 25, 1979, 54-63941
The portion of the term of this patent subsequent to May 6, 2003, has been disclaimed.
Int. Cl.[5] H01L *21/336, 27/088, 27/112, 27/115*
U.S. Cl. 437—40 **21 Claims**

1. A method of manufacturing semiconductor devices formed at a major surface of a semiconductor substrate, comprising:
(a) forming an anti-oxidation film on said major surface of said semiconductor substrate;
(b) locally forming a mask layer on said anti-oxidation film;
(c) etching said anti-oxidation film by using said mask layer as a mask, so as to form a patterned anti-oxidation film;
(d) introducing impurities of a first type of conductivity into said major surface of said semiconductor substrate not covered with said patterned anti-oxidation film, in self-aligned manner with said patterned anti-oxidation film, in order to form a semiconductor region of said first type of conductivity;
(e) oxidizing said major surface of said semiconductor substrate, using said patterned anti-oxidation film as a mask, so as to form an oxide film;

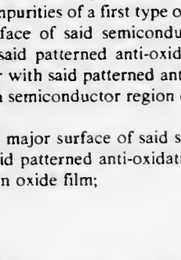


(f) introducing impurities of a second type of conductivity into said major surface of said semiconductor substrate not covered with said oxide film, in self-aligned manner with said oxide film; and
(g) forming an insulated gate field effect transistor in said semiconductor region, said forming of said transistor including steps of providing a gate electrode on said semiconductor region, and providing a source or a drain region of said second type of conductivity in said semiconductor region at a side of said gate electrode.

5,252,506
METHOD TO ELIMINATE GATE FILAMENTS ON FIELD PLATE ISOLATED DEVICES

Duane E. Carter; William R. McKee, both of Plano; Gishi Chung, Dallas, and Fred D. Fishburn, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 633,587, Dec. 20, 1990, abandoned.
This application May 5, 1992, Ser. No. 879,697
Int. Cl.[5] H01L *21/306*
U.S. Cl. 437—47 **19 Claims**

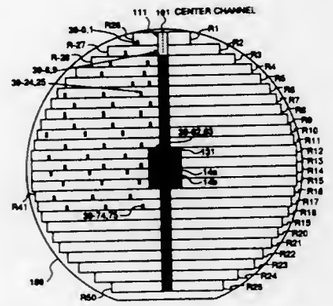


1. A method to prevent formation of polysilicon word line filaments along the edges of field plate openings in field plate isolated integrated circuit devices, comprising the steps of:
forming an oxide layer in the field plate openings beneath a sidewall of nitride along the edges of the field plate openings so that the oxide layer partially f ills an undercut beneath a dip out of the sidewall of nitride; and
removing the dip out of the sidewall of nitride.

5,252,507
VERY HIGH DENSITY WAFER SCALE DEVICE ARCHITECTURE

James W. Hively, Sunnyvale; Mammen Thomas, San Jose, and Richard L. Bechtel, Sunnyvale, all of Calif., assignors to Tactical Fabs, Inc., San Jose, Calif.

Filed Mar. 30, 1990, Ser. No. 502,898
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—51 **11 Claims**



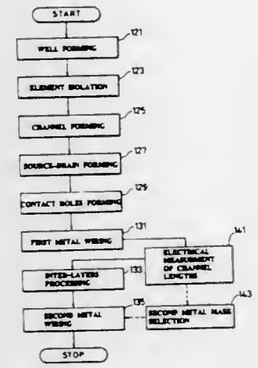
1. A method for forming an integrated circuit structure comprising the steps of:
forming an patterning a plurality of layers of semiconductive, conductive, and insulating material to comprise blocks of logic elements electrically isolated from each other and segments of control logic electrically isolated from each other and from said blocks of logic elements;
testing said blocks of logic elements and said segments of control logic for proper operation;
forming upon said plurality of layers a discretionary via layer;
forming upon said discretionary via layer a bus conductive layer and patterning said bus conductive layer to form a bus structure extending above said blocks of logic elements and said segments of control logic; and
opening vias in said discretionary via layer to selectively connect said blocks of logic elements and said segments of control logic to said bus structure.

5,252,508
APPARATUS AND METHOD FOR THE FABRICATION OF SEMICONDUCTOR CIRCUITS

Eiji Masuda, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 20, 1991, Ser. No. 747,672
Claims priority, application Japan, Aug. 21, 1990, 2-218100
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—51 **11 Claims**

1. A method for fabrication of semiconductor circuits by forming semiconductor elements on a semiconductor substrate and by wiring and connecting said semiconductor elements, the method comprising the steps of:
(a) forming a plurality of semiconductor elements on said substrate, each semiconductor element of said plurality of semiconductor elements having a different specific dimension;
(b) measuring the specific dimension of each of said semiconductor elements which is formed on said substrate; and
(c) wiring and connecting said semiconductor elements selectively according to data based on the specific dimension of each of the semiconductor elements obtained by said measuring step;
wherein the specific dimension is a gate length or channel length and each of the plurality of semiconductor elements has

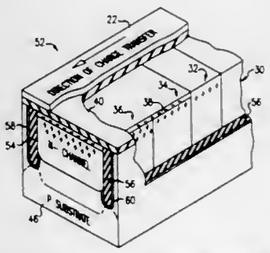


a different gate length or channel length formed in said forming step (a).

5,252,509
CCD IMAGER RESPONSIVE TO LONG WAVELENGTH RADIATION

Harold H. Hosack, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 168,214, Mar. 15, 1980, Pat. No. 5,159,419.
This application May 29, 1992, Ser. No. 891,375
Int. Cl.[5] H01L *21/70, 27/00*
U.S. Cl. 437—53 **15 Claims**



11. A method for fabricating a virtual phase CCD image array, comprising the steps of:
forming an array of CCD cells in a semiconductor substrate;
isolating said cells into rows by forming elongate trenches between said cell rows;
diffusing an impurity into the sidewalls of said trenches to provide a vertical conductor for carrying electrical charges from the substrate to electrodes of said cells; and
filling the trenches with a material.

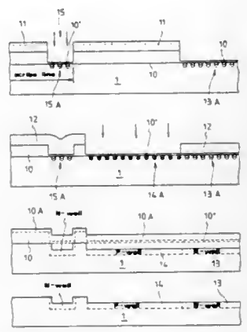
VOL 1155 ISS 2 OC 12 1993 UMI

5,252,510

METHOD FOR MANUFACTURING A CMOS DEVICE HAVING TWIN WELLS AND AN ALIGNMENT KEY REGION

Dai H. Lee, Seoul, and Hyung L. Ji, Kyoungki, both of Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyoung Ki, Rep. of Korea

Filed Apr. 29, 1992, Ser. No. 874,920
Claims priority, application Rep. of Korea, May 3, 1991, 91-7187
Int. Cl.[5] H01L 21/76
U.S. Cl. 437—57 5 Claims



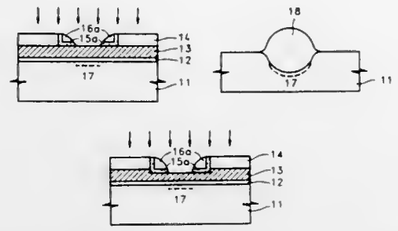
1. A method for manufacturing a CMOS device, having twin wells, which method comprises:
providing a silicon substrate;
sequentially depositing a thick oxide layer and coating a first photoresist layer on the silicon substrate;
forming an N-well mask pattern by removing a portion of the first photoresist layer to expose portions of the thick oxide layer thereunder and etching into those portions of the thick oxide layer until same is reduced to the desired depth, thereby defining an alignment-key region and N-well region which are formed simultaneously via a one-step process and forming a thin oxide layer on such regions;
performing an N-type impurity implantation process through the exposed portions of the thin oxide layer into the portions of the silicon substrate positioned at the defined alignment-key region and N-well region, by utilizing the N-well mask pattern;
removing the first photoresist layer portions remaining on the thick oxide layer, to thereby expose the entire surface of the thick oxide layer;
coating a second photoresist layer on the entire structure;
forming a P-well mask pattern by removing portions of the second photoresist layer, except for those portions of the second photoresist layer positioned above the defined alignment-key region and N-well region, to expose a portion of the thick oxide layer and then etching into said layer until same is reduced to the desired depth, thereby defining a P-well region and forming a thin oxide layer on such region;
performing a P-type impurity implantation process through the exposed portions of the thin oxide layer into the portions of the silicon substrate positioned at the defined P-well region, by utilizing the P-well mask pattern;
removing the remaining portions of the second photoresist layer;
forming an N-well region and P-well region in the substrate by further diffusing the N-type impurity and P-type impurity into the substrate via a drive-in process; and
removing two oxide layers respectively grown on and beneath the thin oxide layer and grown on the remaining thick oxide layer.

5,252,511

ISOLATION METHOD IN A SEMICONDUCTOR DEVICE

Cheon-su Bhan, Seoul; Yun-gi Kim, Kangweon, and Byeong-yeol Kim, Kyunggi, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyunggi, Rep. of Korea

Filed Jan. 17, 1992, Ser. No. 822,139
Claims priority, application Rep. of Korea, Mar. 4, 1991, 91-3482
Int. Cl.[5] H01L 21/76
U.S. Cl. 437—70 10 Claims



1. An isolation method in a semiconductor device comprising the sequentially performed steps of:
(a) growing a pad oxide layer on a semiconductor substrate, and depositing a polysilicon layer and a first silicon nitride layer on said pad oxide layer;
(b) patterning said first silicon nitride layer to define an active region and a field region;
(c) depositing a thin second silicon nitride layer followed by a thick oxide layer;
(d) etching said thin second silicon nitride layer and said thick oxide layer to form spacers laterally bordering said field region comprising the remaining portions of said thin second silicon nitride layer and said thick oxide layer, and then ion implanting impurities into the field region;
(e) removing said oxide spacers, and then growing a field oxide layer in the field region; and
(f) removing said first silicon nitride layer, said nitride spacers, said polysilicon layer, and said pad oxide layer.

6. An isolation method in a semiconductor device comprising the sequentially performed steps of:
(a) growing a pad oxide layer on a semiconductor substrate, and depositing a polysilicon layer and a first silicon nitride layer on said pad oxide layer;
(b) patterning said first silicon nitride layer and a portion of said polysilicon layer to define an active region and a field region;
(c) depositing a thin second silicon nitride layer followed by a thick oxide layer;
(d) etching said thin second silicon nitride layer and said thick oxide layer to form spacers laterally bordering said field region comprising the remaining portions of said thin second silicon nitride layer and said thick oxide layer, and then ion implanting impurities into the field region;
(e) removing said oxide spacers, and then growing a field oxide layer in the field region; and
(f) removing said first silicon nitride layer, said nitride spacers, said polysilicon layer, and said pad oxide layer.

5,252,512

TEOV DOPING OF GALLIUM ARSENIDE

Alexander J. Shuskus, West Hartford, Conn., and Melvyn E. Cowher, East Brookfield, Mass., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 431,492, Nov. 3, 1989, abandoned. This application Oct. 19, 1992, Ser. No. 963,234
Int. Cl.[5] H01L 21/205
U.S. Cl. 437—81 12 Claims

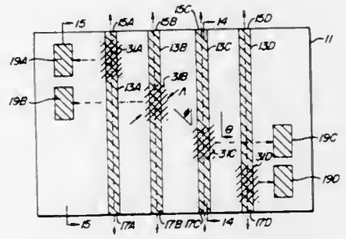
1. A method of growing an epitaxial layer of GaAs on a GaAs substrate in a reactor in an MOCVD process comprising the steps of:
heating said GaAs substrate to a predetermined growth temperature while flowing arsine over said substrate at a predetermined arsine heating flow rate sufficient to prevent decomposition of the surface of said GaAs substrate; and
flowing TMG at a TMG growth flow rate and an arsine mixture of arsine and hydrogen at an arsine growth flow rate into said reactor through a TMG entry point and an arsine entry point along a gas path having a downstream direction into said reactor and over said GaAs substrate at a predetermined As/Ga ratio while said substrate is maintained at said growth temperature, characterized in that:
said arsine heating flow rate is substantially equal to the minimum flow rate required to prevent thermal decomposition of said GaAs substrate, being such that the partial pressure of As in the reactor ambient is substantially equal to the vapor pressure of As above said GaAs substrate, and is substantially less than said arsine growth flow rate, whereby said arsine heating flow rate increases the adherence of As deposits on walls of said reactor; and
said As/Ga ratio is substantially 20:1,
whereby said epitaxial layer of GaAs is grown to a thickness of at least about 100 μm on said GaAs substrate such that said epitaxial layer of GaAs is substantially defect free.

5,252,513

METHOD FOR FORMING A LASER AND LIGHT DETECTOR ON A SEMICONDUCTOR SUBSTRATE

Thomas L. Paoli, Los Altos; G. A. N. Connell, Cupertino; Donald R. Scifres, Los Altos Hills, and Robert L. Thornton, East Palo Alto, all of Calif., assignors to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 500,814, Mar. 28, 1990, Pat. No. 5,136,604. This application Jun. 12, 1991, Ser. No. 714,287
Int. Cl.[5] H01L 21/20
U.S. Cl. 437—129 31 Claims



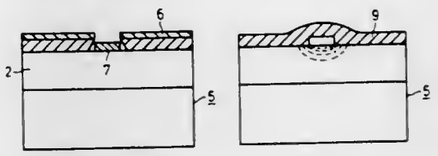
16. A method for forming a laser and a light detector on a semiconductor substrate, having a plurality of semiconductor heterostructure layers disposed over a substrate comprising the steps of:
forming upon the semiconductor substrate heterostructure layers including an active layer for light amplification and propagation under lasing conditions;
fabricating simultaneously first and second regions in said active layer, said first and second regions having bandgap characteristics that are less than adjacent heterostructure layers, said first region including a main segment having first and second substantially parallel opposite sides defining an elongated generally rectangular area with a centrally disposed longitudinal axis, and a perturbation segment disposed within said main segment having a first side nonparallel to the longitudinal axis, and said second region being coplanar with, lateral to, and detached from said first region;
biasing said first region in a forward direction until said first region acts as a laser; and
biasing said second region in a reverse direction until said second region acts as a light detector.

5,252,514

PROCESS FOR PRODUCING A LOW-LOSS OPTICAL WAVEGUIDE IN AN EPITAXIAL SILICON FILM

Bernd Schüppert, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

PCT No. PCT/DE90/00497, § 371 Date Mar. 2, 1992, § 102(e) Date Mar. 2, 1992, PCT Pub. No. WO91/00534, PCT Pub. Date Jan. 10, 1991
PCT Filed Jun. 29, 1990, Ser. No. 781,249
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1989, 3922009
Int. Cl.[5] H01L 21/20
U.S. Cl. 437—131 6 Claims



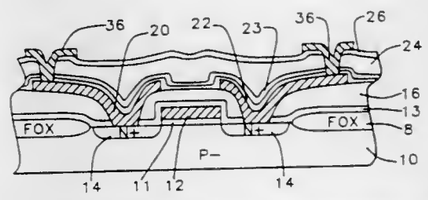
1. A method for manufacturing a low-loss optical waveguide in a lightly doped epitaxial silicon film that forms a silicon structural element having integrated electronic components, said method comprising the steps of:
applying the lightly doped epitaxial film to a silicon substrate;
applying a substance to the epitaxial film, said substance including germanium and having its refractive index greater than that of silicon; and
diffusing said substance into said epitaxial film under the influence of heat.

5,252,515

METHOD FOR FIELD INVERSION FREE MULTIPLE LAYER METALLURGY VLSI PROCESSING

Lih-Sbyng Tsai; Jiunn-Jyi Lin; Kwang-Ming Lin, all of Hsin-Chu, and Shu-Lan Ying, Pan-Chiau, all of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Hsinchu, Taiwan

Filed Aug. 12, 1991, Ser. No. 743,779
Int. Cl.[5] H01L 21/441, 21/469
U.S. Cl. 437—195 20 Claims



1. A method for forming multiple metal, spin-on-glass multilayer metallurgy for a one micrometer or less feature size integrated circuit with substantially free field inversion comprising:
providing a semiconductor substrate having a pattern of field effect device source/drain regions therein with a pattern of gate dielectric and gate electrode structures associated therewith and a pattern of field isolation structures at least partially within said semiconductor substrate electrically separating certain of these source/drain regions from one another;

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forming a passivation layer over the surfaces of said patterns; and

forming said multilayer metallurgy thereover by

opening a pattern of openings through said passivation layer to at least some of said source/drain regions,

depositing and patterning a first metallurgy layer in contact with said pattern of openings;

forming a first silicon oxide via dielectric layer over said pattern of first metallurgy layer;

forming a silicon-rich barrier dielectric layer over said first via dielectric layer;

forming a spin-on-glass layer over said barrier layer and curing the layer;

forming a second silicon oxide via dielectric layer over said spin-on-glass layer;

forming a pattern of openings in said second via layer, said spin-on-glass layer, said barrier layer and said first via layer; and

depositing and patterning a second metallurgy layer in contact with said pattern of openings to make electrical contact with said first metallurgy layer wherein said multilevel metallurgy integrated circuit with substantially free field inversion is completed.

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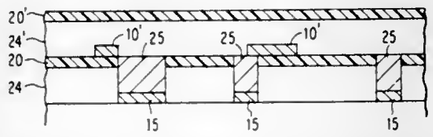
METHOD FOR PRODUCING INTERLEVEL STUD VIAS

Du B. Nguyen, Danbury, Conn., and Hazara S. Rathore, Stormville, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 20, 1992, Ser. No. 839,451

Int. Cl.[5] H01L *21/441*

U.S. Cl. 437—195 **6 Claims**



I. A method of making multilayer, interconnected conductor patterns for a semiconductor device comprising the steps:

(a) depositing a thick layer of silicone oxide by a non-conformal process over a conductive pattern that is raised above a insulating substrate to which it is secured;

(b) depositing a layer that is thin relative to said thick layer of silicone oxide of an oxide resistant to reactive ion etching on the upper surface of said thick layer of silicone oxide;

(c) removing said oxide from the surface of said silicone oxide in a pattern of desired via openings;

(d) next reactive ion etching via openings that extend through said thick layer of silicone oxide;

(e) depositing via metallization by a conformal process, covering the upper surface of said oxide and filling said via openings;

(f) removing said via metallization back to the upper surface of said oxide layer by a chemical-machine process forming a planar surface with said oxide layer and the metallization in said via openings; and

(g) forming a raised conductive pattern on said planar surface.

5,252,517

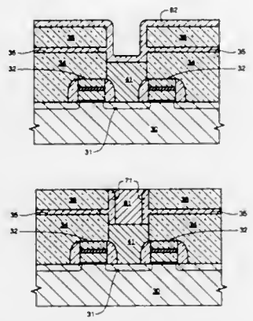
METHOD OF CONDUCTOR ISOLATION FROM A CONDUCTIVE CONTACT PLUG

Guy T. Blalock, and David S. Becker, both of Boise, Id., assignors to Micron Semiconductor, Inc., Boise, Id.

Filed Dec. 10, 1992, Ser. No. 988,626

Int. Cl.[5] H01L *21/28*

U.S. Cl. 437—195 **21 Claims**



1. A method for providing conductor isolation from a conductive contact plug in a semiconductor fabrication process, said method comprising the steps of:

a) providing a contact opening through a first insulating layer, a conductive layer, and a second insulating layer, thereby producing contact side walls and exposing patterned edges of said conductive layer and providing access to an underlying contactable material;

b) filling said contact opening with a first conductive material;

c) removing an upper portion of said first conductive material and a portion of the edges of said conductive layer, said removing step continues until the top surface of said first conductive material is recessed below the bottom surface of said conductive layer and said conductive layer is recessed in from the contact side walls;

d) insulating said conductive layer's patterned edges and said top surface of said first conductive material;

e) removing said insulation from the top surface of said first conductive material while retaining a major portion of the insulation on said conductive layer's patterned edges; and

f) refilling said contact opening with a second conductive material and forming said conductive contact plug therein.

5,252,518

METHOD FOR FORMING A MIXED PHASE TIN/TISI FILM FOR SEMICONDUCTOR MANUFACTURE USING METAL ORGANOMETALLIC PRECURSORS AND ORGANIC SILANE

Gurtej S. Sandhu, and Trung T. Doan, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Mar. 3, 1992, Ser. No. 845,215

Int. Cl.[5] H01L *21/441*

U.S. Cl. 437—200 **18 Claims**

I. A method of forming a mixed phase $TiN/TiSi_x$ layer in the fabrication of a semiconductor device, comprising the steps of:

a. providing a semiconductor device under fabrication;

b. placing the device in a vacuum chamber;

c. applying a stream of a titanium source gas formed of an organometallic precursor within the vacuum chamber; and

d. applying a stream of an organic silane reactive gas within the vacuum chamber;

such that the titanium source gas and the silane reactive gas combine and deposit a film of mixed phase $TiN + TiSi_x$ on the semiconductor device.

5,252,519

MULTILAYERED CERAMIC SUBSTRATE AND METHOD OF MANUFACTURING THE SAME

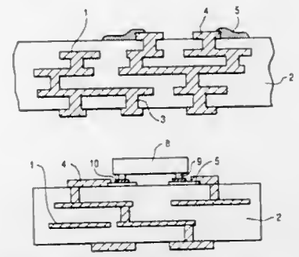
Seiichi Nakatani, Hirakata; Tsutomu Nishimura, Uji; Satoru Yuhaku, Osaka, and Yasuhiko Hakotani, Nishinomiya, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 31, 1991, Ser. No. 785,750

Claims priority, application Japan, Nov. 1, 1990, 2-297969

Int. Cl.[5] H01L *21/60*

U.S. Cl. 437—209 **4 Claims**



1. A method of manufacturing a multilayered ceramic substrate comprising the steps of:

preparing a CuO paste comprising an inorganic component which comprises CuO powder, and an organic vehicle which comprises an organic binder and a solvent;

preparing an Au paste comprising an inorganic component which comprises 90.0 to 99.5 wt. % of Au powder and 0.5 to 10.0 wt. % of at least one of Ni powder, Pt powder and Pd powder, and an organic vehicle which comprises an organic binder and a solvent;

preparing a plurality of glass-ceramic green sheets each having via holes;

forming a pattern of said CuO paste on a surface of each of the plurality of glass-ceramic green sheets and a pattern of said Au paste on a surface of one glass-ceramic green sheet among the plurality of glass-ceramic green sheets such that the pattern of said Au paste is in contact with a part of the pattern of said CuO paste on said surface of said one glass-ceramic green sheet and filling the via holes of the plurality of glass-ceramic green sheets with said CuO paste;

laminating the plurality of glass-ceramic green sheets having formed thereon the patterns of said CuO paste and said Au paste so as to form a multilayer body such that said surface having formed thereon both the patterns of said Au paste and the pattern of said CuO paste becomes an outermost surface of said multilayer body;

heating said multilayer body in air so as to burn out the organic binder in each of said CuO paste and said Au paste;

heat treating said multilayer body in a reducing atmosphere containing hydrogen so as to reduce CuO in said CuO paste to a metal Cu; and

sintering said multilayer body in nitrogen to thereby form a multilayered ceramic substrate having inner Cu electrode patterns and on its outermost surface a Cu electrode pattern and an Au electrode pattern which is in contact with a part of the Cu electrode pattern.

5,252,520

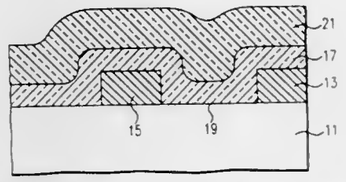
INTEGRATED CIRCUIT INTERLEVEL DIELECTRIC WHEREIN THE FIRST AND SECOND DIELECTRIC LAYERS ARE FORMED WITH DIFFERENT DENSITIES

Karl H. Kocmanek, and Leonard J. Olmer, both of Orlando, Fla., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 31, 1991, Ser. No. 786,230

Int. Cl.[5] H01L *21/00, 21/02, 21/302, 21/463*

U.S. Cl. 437—235 **6 Claims**



1. A method of semiconductor integrated circuit fabrication comprising:

forming a first dielectric layer, said first dielectric layer having a first density;

forming a second dielectric layer upon said first dielectric layer, said second dielectric layer having a second density proximate said first dielectric layer which is not less than said first density, said second dielectric layer being formed by a deposition process utilizing a precursor gas in a plasma;

the flow of said precursor gas being a first value to form that portion of said second dielectric proximate said first dielectric layer and a second value to form the remainder of said second dielectric, said first value being less than said second value.

5,252,521

BISMUTH-CONTAINING LEAD-FREE GLASS ENAMELS AND GLAZES OF LOW SILICA CONTENT

Gordon J. Roberts, Parma, Ohio, assignor to Ferro Corporation, Cleveland, Ohio

Filed Oct. 19, 1992, Ser. No. 963,410

Int. Cl.[5] C03C *3/066, 8/04, 8/14*

U.S. Cl. 501—17 **13 Claims**

1. A glass-coating composition made by firing a glass enamel or glaze including a glass frit comprising in weight percent from about 35% to about 77% of bismuth oxide, from about 10% to about 33% of boron oxide, from about 10% to about 32% of zinc oxide and less than about 0.75% PbO at a temperature sufficient to fuse and cure the glass composition.

5,252,522

PURPLE PIGMENTS, A PROCESS FOR THEIR PRODUCTION AND USE THEREOF

Bernd Dorbath, Alzenau; Karl A. Starz, Rodenbach; Werner Voelker, Bad Vilbel; Wilan Jerke, Niederdorfelden, and Kai Dorer, Heusenstamm, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 28, 1992, Ser. No. 843,255

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1991, 4106520

Int. Cl.[5] C03C *8/18*

U.S. Cl. 501—19 **16 Claims**

1. A purple pigment comprising a glass frit having a particle diameter (D_{50} value) in the range from 0.5 to 50 μm, and a coating on said glass frit, said coating consisting essentially of colloidal gold in a quantity of 0.05 to 5% by weight, based on the pigment, and optionally, one or more color-modifying metals selected from the group consisting of Ag, Cu, Co, Ni, Sn, Ru, Rh, Pd, Os, Ir and Pt wherein the total quantity of said

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metal is below the quantity of said gold, said coating being directly applied to the surface of said glass frit.

5,252,523

BIOABSORBABLE CHLOROPHOSPHATE GLASSES AND BIOABSORBABLE GLASS-POLYMER BLENDS MADE THEREFROM

George H. Beall, Big Flats; Beth C. Monahan, Painted Post, and Candace J. Quinn, Corning, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Continuation-in-part of Ser. No. 773,499, Oct. 9, 1991, abandoned. This application Apr. 2, 1992, Ser. No. 862,310
Int. Cl.[5] C03C *3/16, 3/23*
U.S. Cl. 501—43 4 Claims

1. A bioabsorbable glass exhibiting a working temperature below about 350° C., a transition temperature no higher than about 250° C., and which exhibits a dissolution weight loss rate such that, when the glass is exposed to an isotonic solution at 37° C. for 14 days, the percentage weight remaining of the glass ranges from 20% to 99%, wherein the glass consists essentially, expressed in terms of weight percent on the oxide basis, of at least 85% total of 30–55% P_2O_5, 12–35% ZnO, 10–30% Cl, and 15–40% R_2O, wherein R_2O consists of at least one alkali metal oxide in the indicated proportion selected from the group consisting 5–25% Na_2O, 0–25% K_2O, and 0–7% Li_2O, and up to 15% total of optional ingredients in the indicated proportions selected from the group consisting of 0–10% CaO, 0–10% MgO, 0–10% MnO, 0–10% B_2O_3, 0–5% Al_2O_3, 0–10% Fe_2O_3 and 0–5% F.

5,252,524

POLARIZING GLASSES

Nicholas F. Borrelli, Elmira; Josef C. Lapp, and David W. Morgan, both of Corning, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Oct. 16, 1992, Ser. No. 962,111
Int. Cl.[5] C03C *3/11, 4/00, 3/095*
U.S. Cl. 501—56 5 Claims

1. A glass containing elongated silver halide crystals selected from the group consisting of AgCl, AgBr, AgI, and mixtures thereof which is capable of polarizing radiation in the visible portion of the radiation spectrum and which does not exhibit photochromism when exposed to radiation in the ultraviolet/visible portions of the radiation spectrum, wherein the composition of the glass is essentially free of copper and includes an amount of CeO_2 effective to retain the silver in the glass composition in the oxidized state.

5,252,525

COMPOSITIONS FOR FORMING HIGH TEMPERATURE CERAMIC PARTICULATE FILTERS

Sandra Gonzales, Blacksburg; Nancy Brown, and Jesse J. Brown, both of Christiansburg, all of Va., assignors to Virginia Tech Intellectual Properties, Inc., Blacksburg and Center for Innovative Technology, Herndon, both of Va.

Division of Ser. No. 676,813, Mar. 28, 1991, Pat. No. 5,087,277.
This application Feb. 10, 1992, Ser. No. 833,497
Int. Cl.[5] C04B *38/06*
U.S. Cl. 501—124 5 Claims

1. A composition, comprising:
calcium aluminate cement;
ceramic aggregate granules;
toughness enhancing materials selected from the group consisting of ceramic materials, metal reinforcing screen, graphite fibers, and alumina fibers; and
pore forming additives in the form of organic fibers or powders which disintegrate to leave voids in a mixture of said calcium aluminate cement, said ceramic aggregate granules, and said toughness enhancing materials.

5,252,526

INSULATING REFRACTORY

Dwight S. Whittemore, Bethel Park, Pa., assignor to Indresco Inc., Dallas, Tex.

Continuation of Ser. No. 174,938, Mar. 30, 1988, abandoned. This application Sep. 30, 1991, Ser. No. 768,472
Int. Cl.[5] C04B *35/10*
U.S. Cl. 501—127 6 Claims

1. The refractory mix for forming high strength, low thermal conductivity brick consisting, for each 100% by weight thereof, of 40 to 75% by weight of a dense refractory aggregate which is a calcined clay, calcined bauxite, calcined bauxitic kaolin, kyanite or mixture thereof, 10 to 30% by weight of a bonding agent which is a ball clay, bentonite or mixtures thereof 5 to 25% by weight of hollow ceramic microspheres consisting of hollow silica-alumina microspheres having a diameter of about 30 to 300 microns, and 5 to 15% by weight of a lightweight aggregate which is a bubble alumina, perlite, vermiculite, diatomite, expanded shale, clay, or mixtures thereof.

5,252,527

ZEOLITE SSZ-32

Stacey I. Zones, San Francisco, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.

Continuation of Ser. No. 433,382, Oct. 24, 1989, Pat. No. 5,053,373, which is a continuation of Ser. No. 172,730, Mar. 23, 1988, abandoned. This application Jun. 28, 1991, Ser. No. 723,236
The portion of the term of this patent subsequent to Oct. 1, 2008, has been disclaimed.
Int. Cl.[5] B01J *29/06, 29/14*
U.S. Cl. 502—64 21 Claims

1. A zeolite having a mole ratio of silicon oxide to aluminum oxide greater than about 20:1 to less than 40:1, and having the X-ray diffraction lines of Table 1.

5,252,528

HOT GAS, REGENERATIVE, SUPPORTED H_2S SORBENTS

Gerald E. Voecks, La Crescenta, and Pramod K. Sharma, Pasadena, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Continuation of Ser. No. 123,036, Nov. 19, 1987, abandoned. This application Mar. 26, 1990, Ser. No. 489,315
Int. Cl.[5] B01J *20/18*
U.S. Cl. 502—74 14 Claims

1. A sorbent for removing H_2S from gas streams consisting essentially of a porous, crystalline, Group I or II metal zeolite molecular sieve support, having 1 to 20 weight percent of mixed binary metal oxides contained within the pores of said support, the binary oxides being consisting essentially of a first metal oxide selected from a Group VB, or a VIB metal oxide and a second metal oxide selected from a Group IB, IIB or VII metal oxide.

2. A sorbent according to claim 1 in which the surface area of the zeolite support is from 10 to 500 m^2/g without the binary metal oxide and the surface area of the zeolite support containing the binary metal oxides is from 0.1 m^2/g to 300 m^2/g.

10. A sorbent according to claim 1 in which the binary metal oxides are selected from V-Zn-O, V-Cu-O, Cu-Mo-O, Zn-Mo-O or Fe-Mo-O.

5,252,529

OLEFIN POLYMERIZATION CATALYST AND OLEFIN POLYMERIZATION

Takashi Ueda, and Kazunori Okawa, both of Waki, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed May 20, 1992, Ser. No. 885,986
Claims priority, application Japan, May 20, 1991, 3-114450; May 20, 1991, 3-114451; Jan. 16, 1992, 4-005962; Jan. 16, 1992, 4-005963
Int. Cl.[5] C08F *4/02, 4/62, 4/64*
U.S. Cl. 502—113 9 Claims

1. A solid catalyst for olefin polymerization [A] comprising particulate carrier composed of (i) an oxide of at least one element selected from among those belonging to the groups of II, III and IV of the periodic table, and containing (ii) at least 1.0% by weight of water,

[B] an organoaluminum oxy compound, and

[C] a transition metal compound of a metal belonging to the group IV B of the periodic table containing a ligand having a cyclopentadienyl skeleton,

wherein the organoaluminum oxy compound [B] and the transition metal compound [C] are supported on the particulate carrier [A].

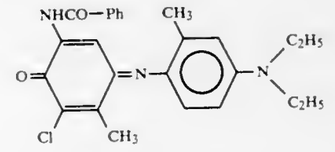
5,252,530

HEAT TRANSFER SHEETS

Masayuki Nakamura, Tokyo, Japan, assignor to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Continuation of Ser. No. 404,408, Sep. 8, 1989, Pat. No. 4,990,484. This application Nov. 16, 1990, Ser. No. 614,266
Claims priority, application Japan, Sep. 12, 1988, 63-226426
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 1 Claim

1. A heat transfer sheet comprising:
a base sheet; and
a dye carrier layer formed on said base sheet, said dye carrier layer comprising a binder and a dye represented by the following formula:



wherein Ph is a phenyl group.

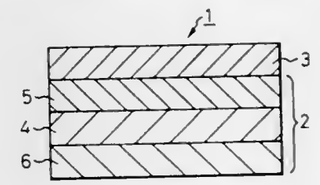
5,252,531

THERMAL TRANSFER IMAGE-RECEIVING SHEET

Kenji Yasuda, Yachiyo; Toshihiro Minato, and Masaru Kato, both of Tokyo, all of Japan, assignors to Oji Paper Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1991, Ser. No. 683,160
Claims priority, application Japan, Apr. 11, 1990, 2-93923
The portion of the term of this patent subsequent to Nov. 20, 2007, has been disclaimed.
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 14 Claims

1. A thermal transfer image-receiving sheet comprising:
(A) a substrate sheet comprising
(a) a core sheet having a thickness of 10 to 300 μm, and
(b) at least one film coating layer formed on at least a front surface of the core sheet, comprising as a principal component, a mixture of a polyolefin resin with an inorganic pigment and having a porosity of 33% or more and a thickness of 20 μm or more; and
(B) at least one image-receiving resinous layer formed on at least the front film coating layer of the substrate sheet, comprising a polymeric material capable of being dyed with dyes and having a thickness of 10 μm or less.



5,252,532

HEAT TRANSFER SHEET

Noritaka Egashira; Masashi Narita; Hideo Fujimura, and Yoshinori Nakamura, all of Tokyo, Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Filed Mar. 12, 1991, Ser. No. 667,315
Claims priority, application Japan, Mar. 15, 1990, 2-62721; Jan. 18, 1991, 3-016862
The portion of the term of this patent subsequent to Jun. 2, 2009, has been disclaimed.
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 3 Claims

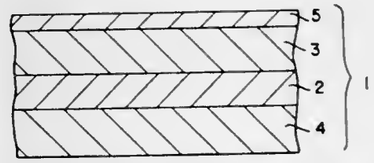
1. A heat transfer sheet comprising a substrate film and a dye layer formed on said substrate film, said dye layer comprising:
(i) a binder comprising an organic-solvent-soluble polymer having ester moieties and/or urethane moieties prepared by modifying a water-soluble polymer by esterifying and/or urethanating an inner hydroxyl group thereof; and
(ii) a dye comprising a sublimable dye homogeneously dissolved in said binder.

5,252,533

THERMAL TRANSFER DYE IMAGE-RECEIVING SHEET

Kenji Yasuda, Yachiyo; Toshihiro Minato, Tokyo; Masaru Kato, Tokyo; Toshikazu Nagura, Tokyo, and Hiroshi Arakawa, Tokyo, all of Japan, assignors to Oji Paper Co., Ltd., Tokyn, Japan

Continuation-in-part of Ser. No. 553,301, Jul. 17, 1990, abandoned. This application Mar. 24, 1992, Ser. No. 856,796
Claims priority, application Japan, Jul. 18, 1989, 1-183634; Jul. 25, 1989, 1-190634; Aug. 10, 1989, 1-205718; Nov. 15, 1989, 1-295090; Nov. 16, 1989, 1-296050; Nov. 28, 1989, 1-306410
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 6 Claims



1. A thermal transfer dye image-receiving sheet comprising:
(A) a substrate sheet composed of:
(a) a core sheet comprising a thermoplastic resin,
(b) a front coated film layer formed on a front surface of the core sheet, and comprising a mixture of a polyester resin and an inorganic pigment, and
(c) a back coated film layer formed on a back surface of the core sheet, and having a multilayered structure composed of a plurality of mono- or bi-axially oriented

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film layers and comprising a mixture of a polyolefin resin with an organic pigment; and

(B) a dye image-receiving layer formed on the front coated film layer of the substrate sheet and comprising a synthetic resin capable of being dyed with dyes;

said core sheet and front and back coated film layers satisfying the following relationships (1) and (2):

$$T_2 \geqq T_1 \quad (1)$$

and

$$E_3 \geqq 2E_1 \geqq 2E_2 \quad (2)$$

wherein T_1 represents a thickness of the front coated film layer, T_2 represents a thickness of the back coating film layer, E_1 represents a Young's modulus of the front coated film layer, E_2 represents a Young's modulus of the back coated film layer, and E_3 represents a Young's modulus of the core sheet, the Young's moduli E_1, E_2, and E_3 being determined in accordance with ASTM D882-64T.

5,252,534

SLIPPING LAYER OF POLYIMIDE-SILOXANE FOR DYE-DONOR ELEMENT USED IN THERMAL DYE TRANSFER

Vito A. DePalma, Rochester; Ravi Sharma, Fairport; Scott E. Tunney, Ontario, and David P. Brust, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 29, 1992, Ser. No. 890,457
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 19 Claims

1. In a dye-donor element for thermal dye transfer comprising a support having on one side thereof a dye layer and on the other side a slipping layer comprising a lubricating material, the improvement wherein said lubricating material comprises a polyimide-siloxane copolymer, said polysiloxane component comprising more than 3 weight % of said copolymer and said polysiloxane component having a molecular weight of greater than 3900.

5,252,535

THERMAL DYE TRANSFER RECEIVING ELEMENT WITH ANTISTAT BACKING LAYER

Thomas W. Martin, Rochester, and Wayne A. Bowman, Walworth, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 23, 1992, Ser. No. 995,450
Int. Cl.[5] B41M *5/035*
U.S. Cl. 503—227 20 Claims

1. In a dye-receiving element for thermal dye transfer comprising a support having on one side thereof a polymeric dye image-receiving layer and on the other side thereof a backing layer, the improvement wherein the backing layer comprises a mixture of an ionic polymer as a polymeric binder comprising an addition product of from about 0 to 98 mol percent of an alkyl methacrylate wherein the alkyl group has from 1 to 12 carbon atoms, from about 0 to 98 mol percent of a vinylbenzene, and from about 2 to 12 mol percent of an alkali metal salt of an ethylenically unsaturated sulfonic or carboxylic acid, the polymer components being selected to achieve a glass transition temperature of at least about 30° C. for the resulting polymer; submicron colloidal inorganic particles; and polymeric particles of a size larger than the inorganic particles.

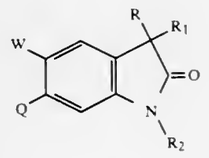
5,252,536

SUBSTITUTED INDOLINONES USEFUL AS HERBICIDAL AGENTS

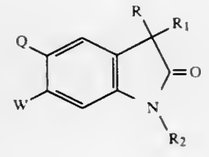
Michael E. Condon, Lawrenceville, and Gary M. Karp, Princeton Junction, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 31, 1991, Ser. No. 815,674
Int. Cl.[5] A01N *43/36;* C07D *209/34*
U.S. Cl. 504—100 20 Claims

1. A compound having the structure



or



wherein

r is hydrogen or C_1-C_6 alkyl optionally substituted with hydroxy, C_1-C_4 alkoxy, mercapto, C_1-C_4 alkylthio, amino, carboxy or carb(C_1-C_4)alkyloxy;

R_1 is C_1-C_6alkylthio; and when R and R_1 are taken together with the carbon to which they are attached they represent saturated or unsaturated C_3-C_7 cycloalkyl;

R_2 is hydrogen;

C_1-C_4 alkyl optionally substituted with C_1-C_4 alkoxy, C_1-C_4 alkylthio, carboxy or carb(C_1-C_4)alkyloxy,

C_3-C_4 cycloalkyl optionally substituted with C_1-C_4 alkoxy,

C_1-C_4 alkylthio, carboxy or carb(C_1-C_4) alkyloxy,

C_3-C_4 alkenyl,

C_3-C_4 alkynyl, or

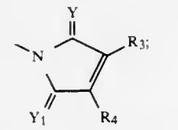
cyclopropylmethyl;

W is hydrogen, halogen;

C_1-C_3 alkoxy optionally substituted with one or more halogen atoms, or

C_1-C_3 alkyl optionally substituted with one or more halogen atoms;

Q is



R_3 and R_4 are taken together with the atoms to which they are attached to form a four- to seven-membered saturated or unsaturated carbocyclic ring optionally substituted with one to three methyl groups or one or more halogen atoms; and Y and Y_1 are each independently O or S.

5,252,537

LONG-LIFE CUT FLOWERS AND METHOD OF TREATMENT FOR OBTAINING SUCH FLOWERS

Nadine De Winter-Scailteur, Brussels, Belgium, assignor to SARL Compagnie Du Nord, Wormhout, France

PCT No. PCT/BE90/00051, § 371 Date May 2, 1991, § 102(e) Date May 2, 1991, PCT Pub. No. WO91/03160, PCT Pub. Date Mar. 21, 1991
PCT Filed Sep. 6, 1990, Ser. No. 659,300
Claims priority, application France, Sep. 11, 1989, 89 12201
Int. Cl.[5] A01N *3/02*
U.S. Cl. 504—114 6 Claims

1. Method of treatment of cut flowers, either fresh or dried according to a known treatment, with a view to replacing their tissue water with a substance which is inappropriate to the metabolism of the saprophytic agents, which comprises a dehydration stage when starting with the fresh flowers, followed by an infiltration stage wherein the dehydration stage takes place by adsorption of the molecules of tissue water by means of a molecular sieve having a medium composed of organic solvents in which the flowers to be treated are immersed and wherein after the optional dehydration stage the dehydrated or dried flowers undergo a treatment of infiltration by means of a molecular sieve with a mixture of an anhydrous solvent and of a polymer of low molecular weight, wherein the anhydrous solvent comprises a mixture of cellosolve or monomethylene glycol monomethyl ether with acetone and wherein the polymer comprises a mixture of PEG 1000 and PEG 400.

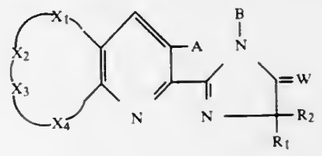
5,252,538

(2-IMIDAZOLIN-2-YL) FUSED HETEROPYRIDINE COMPOUNDS, INTERMEDIATES FOR THE PREPARATION OF AND USE OF SAID COMPOUNDS AS HERBICIDAL AGENTS

Barrington Cross, Rocky Hill; Marinus Los, Pennington; Robert F. Doehner, Jr., East Windsor; David W. Ladner, Hamilton Square; Jerry L. Johnson, Lawrenceville, all of N.J.; Michael E. Jung, Los Angeles, Calif.; Victor M. Kamhi, Hamilton Square, N.J.; Shin-Shyong Tseng, Bridgewater, N.J.; John M. Finn, Plainsboro, N.J., and Peter J. Wepplo, Princeton, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 178,408, Apr. 6, 1988, abandoned, which is a continuation of Ser. No. 876,599, Jun. 19, 1986, abandoned, which is a continuation of Ser. No. 612,531, May 21, 1984, abandoned, which is a continuation of Ser. No. 808,578, Dec. 13, 1985, abandoned. This application Jan. 16, 1990, Ser. No. 465,569
Claims priority, application Brazil, May 20, 1985, P18502364
Int. Cl.[5] A01N *43/36, 43/40;* **C07D** *471/04, 491/04*
U.S. Cl. 504—156 27 Claims

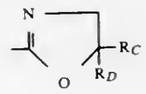
1. (2-Imidazolin-2-yl) fused heteropyridine compounds having the structured formula:



(I)

wherein

A is $COOR_8$, CHO, CH_2OH, $COCH_2OH$, $CONH_2$, CH_2CH_2OH, CONHOH or



R_C and R_D are each hydrogen or C_1-C_4 alkyl;

R_8 is hydrogen, C_1-C_4 alkyl, which may be interrupted by O or S, or is optionally substituted with C_1-C_4 alkoxy, halogen, hydroxy, C_3-C_6 cycloalkyl, benzyloxy, furyl, phenyl, furfuryl, halophenyl, C_1C_4 alkylphenyl, C_1-C_4 alkoxyphenyl, nitrophenyl, carboxyl, C_1-C_4 alkoxycarbonyl, cyano or C_1-C_4 trialkylammonium; C_3-C_6 alkenyl, optionally substituted with one or two C_1-C_3 alkoxy, phenyl or halogen groups; C_3-C_6 cycloalkyl, optionally substituted with one or two C_1-C_3 alkyl groups; C_3-C_{10} alkynyl, optionally substituted with phenyl, halogen, loweralkoxy; or a cation selected from the group consisting of alkali metals, alkaline earth metals, manganese, copper, iron, ammonium and organic ammonium;

B is H, COR_9 or SO_2R_{10}, R_9 is C_1-C_{11} alkyl, chloromethyl, C_1-C_4 loweralkoxyl or phenyl optionally substituted with one chloro, one nitro, one methyl, or one methoxy group; R_{10} is C_1-C_5 alkyl, phenyl, or phenyl optionally substituted within one methyl, halogen, nitro, or C_1-C_4 alkoxy;

R_1 is C_1-C_4 alkyl;

R_2 is C_1-C_4 alkyl or C_3-C_6 cycloalkyl;

and when taken together with the carbon to which they are attached, R_1 and R_2 may represent C_3-C_6 cycloalkyl, optionally substituted with methyl;

represents a single or double bond;

W is O or S;

one of X_1, X_2, X_3, or X_4 is N, NR_3, O, or S and the remainder are CR_4 or CR_5R_6 groups with the provisos that (1) when one of X_1, X_2, X_3, or X_4 is N, the remainder are three CR_4 groups or one CR_4 group and two CR_5R_6 groups, and (2) when one of X_1, X_2, X_3, or X_4 is NR_3, O, or S, the remainder are three CR_5R_6 groups or one CR_5R_6 group and two CR_4 groups;

R_3 is C_1-C_4 alkyl, which may be optionally substituted with phenyl or one or more halogens; C_3-C_6 alkenyl, optionally substituted with phenyl or one or more halogens; C_3-C_6 alkynyl, optionally substituted with phenyl or halogen; C_1-C_4 alkoxy, optionally substituted with phenyl or one or more halogens; C_3-C_6 alkenyloxy, optionally substituted with phenyl or one or more halogens; C_3-C_6 alkynyloxy optionally substituted with halogen or phenyl; or C_2-C_6 alkanoyloxy, optionally substituted with halogen or phenyl;

R_4 is hydrogen, halogen, C_1-C_6 alkyl; C_1-C_4 alkoxy, C_2-C_6 alkanoyloxy; C_1-C_4 alkylthio; phenoxy; C_1-C_4 haloalkyl; C_1-C_4 haloalkoxy; nitro, C_1-C_4 alkoxycarbonyl; C_1-C_4 dialkylamino; C_1-C_4 alkylsulfonyl; or phenyl, optionally substituted with one or two C_1-C_4 alkyl, C_1-C_4 alkoxy, halogen or haloalkyl;

R_5 and R_6 are each hydrogen, C_1-C_4 alkyl; C_1-C_4 alkoxy; C_1-C_4 haloalkoxy; nitro; C_1-C_4 alkylsulfonyl; or phenyl, optionally substituted with one or two C_1-C_4 alkyl, C_1-C_4 alkoxy, halogen or haloalkyl; or any combination of these groups except when R_5 and R_6 are the same group, they are either both hydrogen or both C_1-C_4 alkyl; and when taken together, R_5 and R_6 may form a ring in which R_5R_6 are represented by the structure $-(CH_2)_n-$ where n is an integer of 4 or 5, or when taken together, R_5 and R_6 may form a group $=O$ or $=NR_7$ wherein R_7 is phenyl, C_1-C_4 alkyl, C_1-C_4 alkoxy or C_1-C_4 alkylamino;

R_3, R_4, R_5 or R_6 when present on adjacent positions may, along with the atoms to which they are attached, form a ring and such R_3-R_6 pairs can be represented by the structure $-(CH_2)_m-$ or $-(CH)_m-$ where m is an integer of 3 or 4;

with the provisos that represents a single bond between:

X_1 and X_2 when either X_1 or X_2 is S, O, NR_3 or CR_5R_6;

X_2 and X_3 when either X_2 or X_3 is O, S, NR_3 or CR_5R_6;

X_3 and X_4 when either X_3 or X_4 is O, S, NR_3 or CR_5R_6;

when B is COR_9 or SO_2R_{10}, A is $COOR_8$,

and R_8 is hydrogen, then represents a single aromatic bond, R_3 is C_1-C_4 alkyl, and R_4, R_5 and R_6 may not be halogen; and

tautomers thereof, agriculturally acceptable acid addition

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salts and other addition compounds thereof, the N-oxides thereof when A is $COOR_8$; and when R_1 and R_2 are not the same, the optical isomers thereof.

5,252,539

BENZENESULFONYL CARBOXAMIDE COMPOUNDS INTERMEDIATE COMPOUNDS AND METHOD OF PREPARATION THEREOF AND USE OF SAID COMPOUNDS AND INTERMEDIATE COMPOUNDS AS HERBICIDAL AGENTS

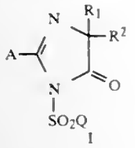
Sergio I. Alvarado, Princeton; Alvin D. Crews, Jr., Plainsboro; Peter J. Wepplo, Princeton; Robert F. Doehner, Jr., East Windsor; Thomas E. Brady, Whitehouse Station; David M. Gange, Princeton, and Desiree L. Little, Burlington, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 611,626, Nov. 13, 1990, Pat. No. 5,120,854, which is a division of Ser. No. 417,400, Oct. 5, 1989, Pat. No. 4,992,094, which is a division of Ser. No. 214,507, Jul. 7, 1988, Pat. No. 4,883,914, Continuation-in-part of Ser. No. 86,416, Aug. 17, 1987, abandoned. This application Mar. 23, 1992, Ser. No. 856,262

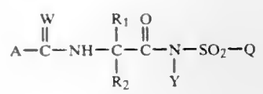
Int. Cl.[5] A01N *43/50, 31/02*

U.S. Cl. 504—277 **13 Claims**

1. A method for the control of monocotyledonous, or dicotyledonous annual or perennial plant species comprising: applying to the foliage of said plant or to soil or water containing seeds or other propagating organs thereof, a herbicidally effective amount of a compound having a structure:



I



II

wherein

A in both formula (I) and (II) is hydrogen;

straight or branched C_1–C_4 alkyl, optionally substituted with one to three halogens, C_1–C_4 alkoxy, C_1–C_4 alkylthio, C_1–C_4 alkylsulfinyl, C_1–C_4 alkylsulfonyl, carboalkoxy, phenyl, or oxo;

straight or branched C_2–C_4 alkenyl, optionally substituted with one to three halogens or phenyl;

C_2–C_4 alkynyl, optionally substituted with one to three halogens;

and additionally in formula (II) A is amino, optionally substituted with straight or branched C_2–C_6 alkyl, C_3–C_6 cycloalkyl, C_1–C_4 haloalkyl, straight or branched C_2–C_6 alkenyl, C_3–C_6 cycloalkenyl, phenyl, benzyl, (di)alkylamino, or C_1–C_4 alkoxy;

C_1–C_4 alkoxy; or

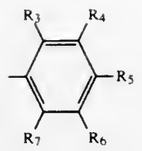
C_1–C_4 alkylthio;

R_1 is C_1–C_4 alkyl;

R_2 is C_1–C_4 alkyl or C_3–C_6 cycloalkyl; and when R_1 and R_2 are taken together with the carbon to which they are attached, they may be C_3–C_6 cycloalkyl optionally substituted with methyl;

and when R_1 and R_2 are not the same, thus creating an asymmetric center, an optical isomer thereof;

Q is represented by formula (III)



III

wherein

R_3–R_7 are each hydrogen; halogen; nitro; cyano; straight or branched C_1–C_4 alkyl, optionally substituted with one or more halogens or phenyl;

straight or branched C_2–C_4 alkenyl, optionally substituted with one to three halogens;

OR_8 where R_8 is hydrogen; C_1–C_4 alkyl, optionally substituted with halogen(s), C_1–C_4 alkoxy, or phenyl; or

C_2–C_4 alkenyl optionally substituted with one to three halogens or phenyl;

phenyl, optionally substituted with one to three halogens, one to three C_1–C_4 alkyl, one to three C_1–C_4 alkoxy, or one to two nitro;

C_1–C_4 alkylcarbonyl, optionally substituted with halogen(s);

C_1–C_4 alkylthio, optionally substituted with halogen(s);

C_1–C_4 alkylsulfinyl, optionally substituted with halogen(s);

C_1–C_4 alkylsulfonyl, optionally substituted with halogen(s);

amino, optionally substituted with C_1–C_4 alkyl;

CO_2R_9 where R_9 is hydrogen or C_1–C_4 alkyl, optionally substituted with one to three halogens; or

R_3–R_4, R_4–R_5, R_5–R_6 and R_6–R_7 may also be —(CH=CH—CH=CH)—, optionally substituted with up to three of the substituents described for R_3–R_7 above;

with the proviso that no more than three of R_3–R_7 can be: cyano, nitro, (substituted)phenyl, alkylcarbonyl, alkylthio, alkylsulfinyl, alkylsulfonyl, amino or CO_2R_9;

W is O or S; and

Y is hydrogen, or a salt thereof, wherein Y is a cation.

5,252,540

SULFONAMIDES

Elisabeth Heistracher, Ludwigshafen; Klaus Fischer, Speyer; Horst Mayer, Ludwigshafen; Thomas Saupe, Sandhausen; Gerhard Hamprecht, Weinheim; Klaus Ditrich, Bad Duerkheim; Thomas Kuekenhoehner, Frankenthal; Matthias Gerber, Mutterstadt; Helmut Walter, Obrigheim, and Karl-Otto Westphalen, Speyer, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

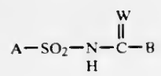
Filed Sep. 16, 1991, Ser. No. 760,156

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1990, 4029753

Int. Cl.[5] A01N *43/56;* **C07D** *231/14*

U.S. Cl. 504—280 **8 Claims**

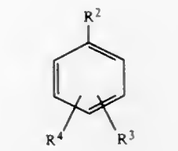
1. A sulfonamide of the formula I



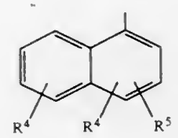
(I)

where

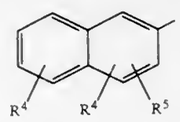
A is



(A1)



(A9)



(A10)

W is oxygen or sulfur;

B is 3-, 4- or 5-pyrazol disubstituted on carbon by R^8 and monosubstituted on nitrogen by R^9;

R^2 is halogen; cyano; thiocyano;

C_1–C_6-alkyl which is unsubstituted or substituted by at least one of the following: one to five halogens, or one of the following: C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio, phenyl, phenoxy or phenylthio, where each of the phenyls is unsubstituted or substituted by at least one of the following: one to five halogens, or one to three of the following: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio or C_1–C_4-haloalkylthio; C_3–C_6-cycloalkyl, C_3–C_8-cycloalkoxy, C_3–C_6-cycloalkylthio, C_5–C_6-cycloalkenyl, C_5–C_8-cycloalkenyloxy or C_5–C_8-cycloalkenylthio, each of which is unsubstituted or substituted by at least one of the following: one to five halogens, or one to three of the following: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio or C_1–C_4-haloalkylthio;

phenyl, phenoxy, benzyloxy or benzylthio, each of which is unsubstituted or substituted by at least one of the following: one to five halogens, or one to three of the following: cyano, nitro, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, haloalkoxy, C_1–C_4-alkylthio or C_1–C_4-haloalkylthio;

saturated, or unsaturated 5–7-membered heterocycle, said unsaturated 5–7 membered heterocycle having one or two double bonds, said saturated or unsaturated 5–7 membered heterocycle having one or two heteroatoms selected from nitrogen, oxygen and sulfur and which is unsubstituted or substituted by one or two of the following: halogen, cyano, nitro, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy or C_1–C_4-haloalkylthio;

C_1–C_4-alkoxy or C_1–C_4-alkylthio, C_2–C_6-alkenyl or C_2–C_6-alkenyloxy or C_2–C_6-alkenylthio, C_2–C_6-alkynyl, C_2–C_6-alkynyloxy or C_2–C_6-alkynylthio, where the said alkoxy, alkylthio, alkenyl, alkynyl, alkenyloxy(thio) and alkynyloxy(thio) is unsubstituted or substituted by at least one of the following: one to five halogens, or one of the following: C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio; phenyl, phenoxy, phenylthio, benzyloxy or benzylthio; COR^{12}; $COQR^{13}$; $SO_2NR^{15}R^{16}$; SO_2OR^{17}; OSO_2R^{18}; $S(O)_nR^{19}$;

R^3 is R^6; $COQR^{13}$; $SO_2NR^{15}R^{16}$; SO_2OR^{17}; OSO_2R^{18}; $S(O)_nR^{19}$;

R^4 is hydrogen; halogen; cyano;

C_1–C_4-alkyl or C_1–C_4-alkyl substituted by one to five halogens; C_1–C_4-alkoxy; C_1–C_4-haloalkoxy; C_1–C_4-alkylthio; C_1–C_4-haloalkylthio;

R^5 is hydrogen; nitro or R^2;

R^6 is hydrogen; halogen; cyano;

C_1–C_4-alkyl, C_1–C_4-alkyl substituted by at least one of the following: one to five halogens, or one of the following: C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio, OH, SH or cyano;

C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkoxy or C_1–C_4-haloalkylthio, each of which is unsubstituted or substituted by the following: C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio or C_1–C_4-haloalkylthio;

R^8 is hydrogen; nitro; or R^2, or two vicinal R^2 together form a C_3 chain or a C_4–C_6 chain unsubstituted or in which one methylene is replaced by oxygen or C_1–C_4-alkylimino;

R^9 is C_1–C_6-alkyl which is unsubstituted or substituted by at least one of the following: one to five halogens, or one of the following: C_1–C_4-alkoxy; C_1–C_4-haloalkoxy; C_1–C_4-alkylthio;

C_1–C_4-haloalkylthio, phenyl, phenoxy or phenylthio, wherein cyclic groups are unsubstituted or substituted by at least one of the following: one to five halogens, or one to three of the following: cyano, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio or C_1–C_4-haloalkylthio;

C_3–C_6-cycloalkyl or C_5–C_6-cycloalkenyl, each of which is unsubstituted or substituted by at least one of the following: one to five halogens, or one to three of the following: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, or C_1–C_4-haloalkylthio;

phenyl which is unsubstituted or substituted by at least one of the following: one to five halogens, or one to three of the following: cyano, nitro, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio or C_1–C_4-haloalkylthio;

C_2–C_6-alkenyl or C_2–C_6-alkynyl, each of which is unsubstituted or substituted by at least one of the following: one to five halogens, or one of the following: C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio or C_1–C_4-haloalkylthio, phenyl, phenoxy, phenylthio, benzyloxy or benzylthio;

COR^{21};

R^{10} is phenyl, benzyl, phenoxy, benzyloxy, phenylthio or benzylthio, each of which is unsubstituted or substituted by at least one of the following: one to five halogens, or one to three of the following: cyano, nitro, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio or C_1–C_4-haloalkylthio;

R^{11} is hydrogen; phenyl or benzyl, each of which is unsubstituted or substituted by at least one of the following: one to five halogens, or one to three of the following: cyano, nitro, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio or C_1–C_4-haloalkylthio;

R^{12} is C_1–C_4-alkyl which is unsubstituted or substituted by halogen or methoxy; C_3–C_5-cycloalkyl which is unsubstituted or substituted by chlorine or fluorine; C_3–C_4-alkenyl;

Q is oxygen or NR^{14};

R^{13} is hydrogen;

C_1–C_6-alkyl, C_1–C_6-alkyl substituted by one to three of the following: halogen, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkoxy, C_1–C_4-alkoxy-C_1–C_2-alkoxy, C_3–C_6-cycloalkyl, or phenyl;

C_3–C_6-cycloalkyl, which is substituted one to three times by C_1–C_4-alkyl; C_3–C_6-alkenyl; C_3–C_6-alkynyl;

phenyl, phenyl substituted by at least one of the following: one to five halogens, or one to three of the following: cyano, nitro, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio or C_1–C_4-haloalkylthio;

R^{14} is OR^{20}; R^{13} or forms together with another R^{13} a C_4–C_6-alkylene chain or a C_4–C_6-alkylene chain in which

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one methylene is replaced by oxygen or C_1–C_4-alkylimino;
R^{15} is C_1–C_4-alkyl; C_3–C_4-alkenyl; C_3–C_4-alkynyl; cyclopropylmethyl; C_3–C_4-cycloalkyl;
R^{16} is hydrogen; C_1–C_4-alkyl; C_3–C_4-alkenyl; or forms together with R^{15} a C_4–C_6-alkylene chain in which one methylene can be replaced by oxygen;
R^{17} is C_1–C_4-alkyl; C_1–C_4-haloalkyl;
R^{18} is C_1–C_4-alkyl; N,N-dimethylamino;
R^{19} is C_1–C_4-alkyl; C_1–C_4-haloalkyl; C_2–C_4-alkoxyalkyl; C_3–C_4-alkenyl; C_3–C_4-alkynyl; C_3–C_4-haloalkenyl; phenyl; phenyl substituted by fluorine, chlorine, bromine, methyl or methoxy;
n is 1 or 2;
R^{20} is hydrogen or C_1–C_4-alkyl;
R^{21} is R^{12}; phenyl or benzyl, each of which is unsubstituted or substituted by at least one of the following: one to five halogens, or one to three of the following: cyano, nitro, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio or C_1–C_4-haloalkylthio;
and the environmentally compatible salts thereof.

5,252,541

MARIJUANA ERADICATION USING FLUORESCEIN DYES

Fred W. Putsche, Jr., 517 La Claire Ave., Linthicum, Md. 21090

Filed Jan. 15, 1992, Ser. No. 820,764
Int. Cl.[5] A01N *43/16*
U.S. Cl. 504—297 **7 Claims**

1. A method of eradicating marijuana plants comprising the steps of:
preparing a predetermined concentration of a regenerative fluorescein dye, said dye being a photodynamic pigment which in the presence of oxygen acts as a sensitizer for photo-oxidation in the vegetation, and
applying a charge of said concentration of dye, using dispersement means, to soil in the vicinity of the roots of said vegetation for subsequent absorption thereby, so as to initiate a reaction between said concentration of dye and proteins, fatty acids, and lipids at a cellular membrane of the vegetation, which thereby causes membrane lipid peroxidation, resulting in the destruction of cell fibers in said vegetation and the subsequent death thereof.

5,252,542

CONTROLLED RELEASE COMPOSITION AND METHOD FOR USING

George G. Allan, Seattle, Wash., assignor to University of Washington, Seattle, Wash.

Continuation of Ser. No. 266,247, Oct. 28, 1988, abandoned, which is a continuation of Ser. No. 868,664, May 29, 1986, abandoned, which is a continuation of Ser. No. 282,803, Jul. 13, 1981, abandoned. This application Apr. 12, 1991, Ser. No. 686,015
Int. Cl.[5] A01N *37/10, 37/38;* B01J *13/02*
U.S. Cl. 504—323 **32 Claims**

1. A controlled release plant-growth stimulant composition comprising a never-dried cellulose pulp carrier having a multilamellar cellulose structure and a plant-growth stimulant impregnant, wherein the impregnant is trapped within the never-dried cellulose carrier.

2. The controlled release plant-growth stimulant composition of claim 1 wherein the impregnant is 2,4-dichlorophenoxyacetic acid.

5,252,543

SUPERCONDUCTING THIN FILM AND WIRE ON A SMOOTH SUBSTRATE

Saburo Tanaka; Hideo Itozaki; Kenjiro Higaki; Shuji Yazu, and Tetsuji Jodai, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 286,860, Dec. 20, 1988, Pat. No. 5,028,583. This application Jan. 31, 1991, Ser. No. 648,964
Claims priority, application Japan, Dec. 20, 1987, 62-322380; Dec. 22, 1987, 62-324701; Dec. 22, 1987, 62-324702; Dec. 22, 1987, 62-324703; Dec. 22, 1987, 62-324704; Dec. 22, 1987, 62-324705; Dec. 22, 1987, 62-324706; Dec. 22, 1987, 62-324707; Dec. 22, 1987, 62-324708; Dec. 22, 1987, 62-324709; Dec. 22, 1987, 62-324710; Dec. 29, 1987, 62-332304; Jan. 22, 1988, 63-12331; Jan. 22, 1988, 63-12332; Jan. 22, 1988, 63-12333; Jan. 22, 1988, 63-12334; Jan. 22, 1988, 63-12335
Int. Cl.[5] B32B *9/00*
U.S. Cl. 505—1 **8 Claims**

1. A superconducting wire comprising a core and a superconducting film wherein said core is made of a material selected from the group consisting of Pt, Ag, Au, MgO, $SrTiO_3$, ZrO_2, alloys of Pt, alloys of Ag, and alloys of Au; and wherein said superconducting film consists essentially of a compound oxide selected from the group consisting of:
a) a compound oxide represented by the general formula $Ln_1Ba_2Cu_3O_{7-\delta}$, in which Ln stands for at least one element selected from the group consisting of La, Nd, Sm, Eu, Gd, Dy, Ho, Y, Er, Yb, Tm, and Lu and wherein δ is in the range $0 \leqq \delta < 1$; and
b) a compound oxide represented by the general formula $(La_{1-x}\alpha_x)_2CuO_4$, in which α stands for Ba or Sr and wherein $0 < x < 1$;
and said superconducting wire further comprising a ceramic film layer deposited on said core, said superconducting film being deposited on said ceramic film layer by physical vapour deposition technique, wherein a substantial portion of a surface of said superconducting film is smooth, wherein the surface roughness R_{max} (datum length = 1,000 μm) of said superconducting film is less than 0.2 μm, and wherein said ceramic film layer is made of a single crystal of MgO, $SrTiO_3$, or ZrO_2.

5,252,544

OXIDE SUPERCONDUCTOR HAVING THE FORMULA $PB_a(M_{1-x-y}CE_xSR_y)_4CU_{3-a}O_z$ WHERE M IS AT LEAST ONE RARE EARTH ELEMENT

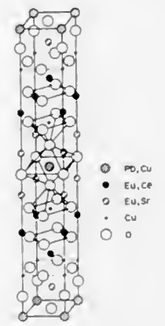
Toshihiko Maeda, Tokyo; Kazuhiro Sakuyama, Ichikawa; Shinichi Koriyama, Urayasu; Ataru Ichinose, Yokosuka; Hisao Yamauchi, Urayasu, and Shoji Tanaka, Tokyo, all of Japan, assignors to International Superconductivity Technology Center, Tokyo; Tohoku Electric Power Company, Incorporated, Sendai; Kyocera Corporation, Kyoto; Central Research Institute of Electric Power Industry and The Furukawa Electric Co., Ltd., both of Tokyo, all of Japan

Filed Jun. 7, 1991, Ser. No. 712,264
Claims priority, application Japan, Jun. 14, 1990, 2-157026
Int. Cl.[5] C01F *11/02, 17/00;* C01G *3/02;* H01L *39/12*
U.S. Cl. 505—1 **11 Claims**

1. An oxide superconductor comprising a composition expressed by the following formula (I) and whose crystal structure is a 1222-phase structure:

$$Pb_a(M_{1-x-y}Ce_xSr_y)_4Cu_{3-a}O_z \quad (I)$$

where M represents at least one element selected from the group consisting of Y, La, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Yb and Lu, and a, x, y, and z denote numerals which satisfy the



following relationships: $0.3 \leqq a \leqq 0.7$, $0 < x \leqq 0.25$, $0.3 \leqq y < 0.5$ and $8.5 \leqq z \leqq 9.5$.

5,252,545

DENSE HIGH TEMPERATURE CERAMIC OXIDE SUPERCONDUCTORS

Richard L. Landingham, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 14, 1987, Ser. No. 73,241
Int. Cl.[5] H01B *12/06*
U.S. Cl. 505—1 **34 Claims**

1. A method of fabricating dense superconducting ceramic oxide articles of manufacture, which comprises the steps:
a) treating a superconducting ceramic oxide powder with sufficient heat and sufficient pressure above atmospheric pressure to form a composite body of a density of greater than 90% which is not a superconducting structure but has nearly the composition of a superconductor, and
b) introducing sufficient atoms selected from the group consisting of oxygen and fluorine into the structure of said composite body to transform at least the outer surface of said composite body into a superconducting state.

5,252,546

PROCESS FOR PRODUCING AN ORGANIC SUPERCONDUCTIVE MATERIAL

Yoshinobu Ueba, Osaka, Japan, and Yoshiyuki Okamoto, Brooklyn, N.Y., assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Oct. 4, 1989, Ser. No. 417,103
Claims priority, application Japan, Oct. 5, 1988, 63-252745
Int. Cl.[5] H01L *39/24*
U.S. Cl. 505—1 **6 Claims**

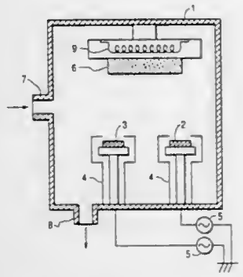
1. A process for producing an organic superconductive material comprising subjecting a solution of an electron-donating material selected from the group consisting of an organic electron-donating material having a tetrathiafulvalene structure and an organic electron-donating material having an anthraquinone structure and an electron-accepting material selecting from the group consisting of a halogen ion, a metal halide, a metal thiocyanate, a perchlorate, a metal oxide, a metal dimercaptoisotrithione complex and FSO_3^- in a solvent to electrochemical oxidation-reduction to synthesize an organic superconductive substance and removing the solvent, wherein said oxidation-reduction and removal of the solvent and unreacted electron-donating material and electron-accepting material are carried out in the presence of a polymer.

5,252,547

METHOD OF FORMING AN INORGANIC PROTECTIVE LAYER ON AN OXIDE SUPERCONDUCTING FILM

Hideo Itozaki; Saburo Tanaka; Nobuhiko Fujita; Shuji Yazu, and Tetsuji Jodai, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 215,497, Jul. 6, 1988. This application Oct. 9, 1990, Ser. No. 593,990
Claims priority, application Japan, Jul. 6, 1987, 62-168357; Jul. 6, 1987, 62-172696; Jul. 10, 1987, 62-168356; Jul. 10, 1987, 62-172697; Jul. 10, 1987, 62-172698; Jul. 17, 1987, 62-178600
Int. Cl.[5] B05D *5/12*
U.S. Cl. 505—1 **22 Claims**



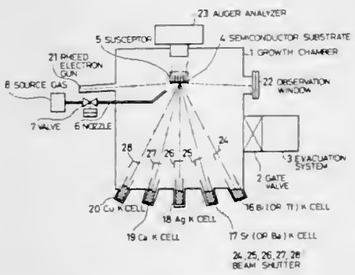
1. A method for preparing an oxide superconducting film on a substrate, which comprises that an outer surface of the superconducting film is covered with a non-amorphous protective layer containing no halogen, but which is composed of a material selected from the group consisting of:
(i) an oxide of Mg, Ca, Sr, Cd, Hg, Ga, In, Tl and mixtures thereof;
(ii) SiC and TiC; and
(iii) BN and TiN;
said protective layer having a density and being applied under conditions such that oxygen is prevented from escaping from said superconducting film; said oxide superconducting film and said protective layer being prepared by a physical vapour deposition method.

5,252,548

METHOD OF FORMING AN OXIDE SUPERCONDUCTOR/SEMICONDUCTOR JUNCTION

Hitoshi Abe, and Tomoyuki Yamada, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 532,205, Jun. 1, 1990, abandoned. This application Dec. 26, 1991, Ser. No. 815,562
Claims priority, application Japan, Jun. 9, 1989, 1-145066
Int. Cl.[5] B23B *9/00*
U.S. Cl. 505—1 **22 Claims**



1. A method of forming an oxide superconductor/semiconductor comprising bismuth or thallium junction between an

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oxide superconductor comprising bismuth or thallium and a semiconductor containing bismuth or thallium, comprising the steps of:

forming an atomic layer of silver of no more than 3 atoms thickness by vapor deposition of silver on the surface of said semiconductor;

forming an atomic layer of bismuth or thallium of no more than 3 atoms thickness by vapor deposition of bismuth or thallium on said silver layer;

heating the double atomic layer consisting of said silver and bismuth or of said silver and thallium to form a layer wherein the atoms of said silver and bismuth or silver and thallium are arranged regularly on the surface of said semiconductor; and

forming said oxide superconductor to a specified thickness on said regularly arranged layer.

5,252,549

SUPERCONDUCTIVE CERAMIC WIRE AND METHOD FOR MAKING SAME

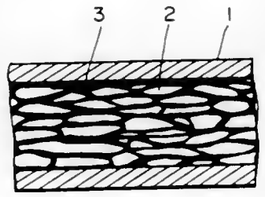
Tetsuro Yamaguchi, Urawa; Takuo Takeshita, Omiya, and Sadaaki Hagino, Urawa, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 559,379, Jul. 25, 1990, Pat. No. 5,110,789, which is a continuation of Ser. No. 237,580, Aug. 29, 1988, abandoned. This application Jul. 22, 1991, Ser. No. 733,709

Claims priority, application Japan, Aug. 27, 1987, 62-213775

Int. Cl.[5] **H01L** *39/24*

U.S. Cl. 505—1 **9 Claims**



1. A method for making a superconductive ceramic wire, the method comprising the steps of:

(a) preparing a superconductive porous ceramic body;

(b) depositing an affinity coating in pores of said ceramic body; then

(c) depositing lead in pores of said ceramic body in the amount of between 5% and 40% by volume of the superconductive porous ceramic body by soaking said ceramics in molten lead, thereby producing a ceramic product;

(d) covering the ceramic product of step (c) with a metal, thereby forming a metal-clad ceramic product; and

(e) extending said metal-clad ceramic product into a wire.

5,252,550

METHOD OF PRODUCING A COMPOSITE OXIDE SUPERCONDUCTIVE WIRE

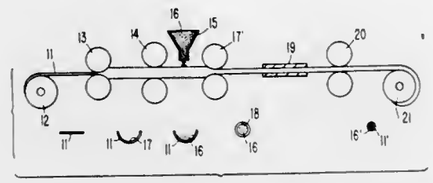
Kazuhisa Yamauchi; Kazuya Obmatsu, both c/o Osaka Works of Sumitomo Electric Industries, Ltd., 1-3, Shimaya 1-chome, Konohana-ku, Osaka-City, Osaka Pref.; Tetsuya Ishida, c/o Itami Works of Sumitomo Electric Industries, Ltd., 1-1, Koyakita 1-chome, Itami-City, Hyogo Pref.; Tomoji Gotoh, c/o Itami Works of Sumitomo Electric Industries, Ltd., 1-1, Koyakita 1-chome, Itami-City, Hyogo Pref.; Syuji Yazu, c/o Itami Works of Sumitomo Electric Industries, Ltd., 1-1, Koyakita 1-chome, Itami-City, Hyogo Pref., and Tetsuji Jodai, c/o Itami Works of Sumitomo Electric Industries, Ltd., 1-1, Koyakita 1-chome, Itami-City, Hyogo Pref., all of Japan

Continuation of Ser. No. 399,198, Aug. 28, 1989, abandoned, which is a continuation of Ser. No. 175,794, Mar. 31, 1988, Pat. No. 4,906,609. This application Jul. 26, 1991, Ser. No. 737,572

Claims priority, application Japan, Mar. 31, 1987, 62-80028; Oct. 9, 1987, 62-254969

Int. Cl.[5] **505** *704;* **427** *62;* **29** *599, 33 F, 33 D;* **H01L** *39/24;* **H01B** *5/02*

U.S. Cl. 505—1 **1 Claim**



1. A method of producing a superconducting composite wire comprising the steps of:

forming a continuously supplied metal or metal alloy strip into a flume-shaped strip;

filling the interior of said flume-shaped strip with copper oxide superconducting powder material;

rolling said flume-shaped strip such that a first edge of said strip approaches a second edge of said strip to form a tubing having a gap between said first and second edges of said strip, said tubing having said powder material enveloped therein;

sintering said powder material enveloped in said tubing having said gap at a temperature between 0° and 100° C. less than the lowest melting point of any constituent of said sintered material, wherein said gap allows free access of oxygen to said powder material during said sintering step;

deforming said tubing having said gap to a reduced cross-section; and

heat treating the deformed tubing.

5,252,551

SUPERCONDUCTING COMPOSITE WITH MULTILAYER PATTERNS AND MULTIPLE BUFFER LAYERS

Xin D. Wu, Greenbelt, Md., and Ross E. Muenchausen, Espanola, N. Mex., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Dec. 27, 1991, Ser. No. 814,355

Int. Cl.[5] **B32B** *9/00*

U.S. Cl. 505—1 **5 Claims**

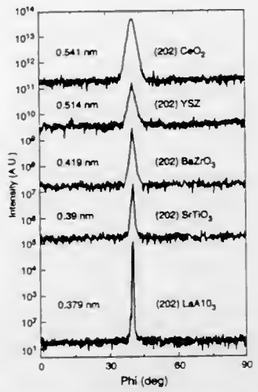
1. An article of manufacture comprising:

a substrate;

a patterned interlayer of a material selected from the group consisting of magnesium oxide, barium-titanium oxide and barium-zirconium oxide upon the surface of the substrate thereby characterizable as an intermediate article having an exposed surface of both the patterned interlayer material and the substrate;

a secondary interlayer material of yttria-stabilized zirconia or magnesium-aluminum oxide overcoating the exposed surfaces of the patterned interlayer thereby characterizing a second intermediate article having an exposed surface of both the secondary interlayer material and the substrate;

a coating of a buffer layer selected from the group consisting of cerium oxide, curium oxide, dysprosium oxide, erbium oxide, eruopium oxide, iron oxide, gadolinium oxide, holmium oxide, indium oxide, manganese oxide, lanthanum oxide, lutetium oxide, neodymium oxide, praseodymium oxide, plutonium oxide, samarium oxide, terbium oxide, thallium oxide, thulium oxide, yttrium oxide and



ytterbium oxide over at least the entire exposed surface of the secondary interlayer material; and,

a ceramic high temperature superconductive material layer of a material selected from the group consisting of yttrium-barium-copper oxide, thallium-barium-calcium-copper oxide, neogymium-cerium-copper oxide and bismuth-potassium-barium oxide as an overcoat upon the buffer layer whereby the ceramic high temperature superconductive material situated directly above the substrate has a in-plane orientation of crystal structure substantially different than the ceramic high temperature superconductive material situated above the patterned interlayer material.

5,252,552

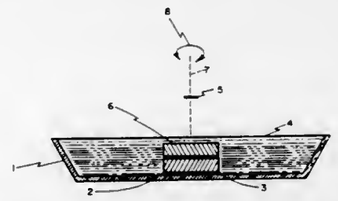
SUPERCONDUCTIVE DEVICE AND METHOD FOR DEMONSTRATING AUTOROTATION

Tin B. Yee, 719 Erskine Dr., Huntsville, Ala. 35805

Continuation-in-part of Ser. No. 571,451, Aug. 23, 1990. This application Feb. 27, 1992, Ser. No. 843,910

Int. Cl.[5] **H01L** *39/12*

U.S. Cl. 505—1 **12 Claims**



1. An apparatus for demonstrating autorotation using principles of superconductivity comprising:

a container;

at least two discrete, stacked units constructed of superconductive oxides and generally centered in said container;

a permanent magnet generally centered on said stacked units; and

a coolant in said container and of a temperature suitable for lowering a temperature of said stacked units to below a temperature for effecting superconductivity therein, wherein said magnet is levitated over said stacked units and is rotated solely by said stacked units in an absence of any externally applied force, thereby demonstrating autorotation.

7. A method for demonstrating autorotation comprising the steps of:

placing at least two stacked units constructed of superconductive oxides generally centered on a bottom surface of a container,

placing a permanent magnet generally centered on said stacked units,

filling said container with a coolant having a temperature sufficient to lower a temperature of said stacked units to a temperature to effect superconductivity therein, wherein said magnet is levitated over said stacked units and is rotated solely by said stacked units in an absence of any externally applied force, thereby demonstrating autorotation.

5,252,553

PROCESS FOR PREPARING A SUPERCONDUCTING THIN FILM OF COMPOUND OXIDE

Hidenori Nakanishi; Sbinichi Shikata, and Hideo Itozaki, all of Hideo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed May 20, 1992, Ser. No. 885,848

Claims priority, application Japan, May 20, 1991, 3-144022

Int. Cl.[5] **H01L** *39/00;* **C23C** *14/34*

U.S. Cl. 505—1 **6 Claims**

1. A process for preparing a thin film of compound oxide superconductor on a silicon wafer substrate, characterized by a first step of heating said silicon wafer at a temperature of higher than 900° C. in a high vaccum of less than 10^{-6} Torr, a second step of depositing a thin film of ZrO_2 on said silicon wafer, a third step of annealing said thin film of ZrO_2 deposited on said silicon wafer in air at a temperature of 800° to 850° C., and a final step of depositing said thin film of compound oxide superconductor on said silicon wafer.

6. The process set forth in claim 1, wherein said thin film of compound oxide superconductor is deposited by a sputtering method.

5,252,554

DRILLING FLUIDS AND MUDS CONTAINING SELECTED ESTER OILS

Heinz Mueller, Monheim; Claus-Peter Herold, Mettmann; Stephan von Tapavicza, Erkrath, all of Fed. Rep. of Germany; Douglas J. Grimes, Beaconsfield, England; Jean-Marc Braun, Celle, Fed. Rep. of Germany, and Stuart P. T. Smith, Kincardineshire, Scotland, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf, Fed. Rep. of Germany and Baroid Limited, Aberdeen, Scotland

Continuation of Ser. No. 452,988, Dec. 19, 1989, abandoned. This application Jan. 21, 1992, Ser. No. 825,431

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1988, 3842703

The portion of the term of this patent subsequent to Aug. 3, 2010, has been disclaimed.

Int. Cl.[5] **C09K** *7/02, 7/06*

U.S. Cl. 507—138 **38 Claims**

1. An invert emulsion drilling mud free of mineral oil and substantially free from highly hydrophilic basic materials selected from the group consisting of alkali metal hydroxides and amines selected from diethanolamine and triethanolamine, consisting essentially of

A. a continuous oil phase composed predominantly of at least one monocarboxylic acid ester of a C_2–C_{12} monofunctional alkanol wherein the monocarboxylic acid contains from 12 to 16 carbon atoms and is aliphatically saturated,

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B. a disperse aqueous phase,
C. at least one emulsifier,
D. at least one weighting agent,
E. a viscosifier,
F. at least one fluid loss additive, and
G. a mildly alkaline alkali reserve component consisting of lime in a quantity not exceeding about 2 lb/bbl of said drilling mud.

5,252,555

MICROEMULSION CONTAINING A PERFUMING CONCENTRATE AND CORRESPONDING PRODUCT

Nathalie Dartnell, Paris, and Bernard Breda, Bougival, both of France, assignors to Yves Saint Laurent Parfumes, Neuilly sur Seine, France

Filed May 28, 1992, Ser. No. 889,277
Claims priority, application France, May 31, 1991, 91 06592
Int. Cl.[5] A61K *7/46*
U.S. Cl. 512—4 **12 Claims**

1. A cosmetic microemulsion comprising a mixture of:
a perfume, on a weight basis of about 5% to 50% of the microemulsion;
polyethylene glycol, on a weight basis of about 10% to 50% of the microemulsion;
polyglycerol, on a weight basis of about 1% to 20% of the microemulsion;
ether phosphate, on a weight basis of about 0.5% to 15% of the microemulsion;
at least one lipophilic compound; and
at least one hydrophilic compound, qs 100.

5,252,556

FRAGMENT CAPABLE OF BINDING ANTI-CD43 AUTOANTIBODIES

Blair Ardman, Brookline, Mass., assignor to New England Medical Center Hospitals, Inc., Boston, Mass.

Filed Mar. 30, 1990, Ser. No. 503,458
Int. Cl.[5] A61K *39/00*
U.S. Cl. 514—8 **5 Claims**

1. A method of treating a human patient infected with HIV-1 comprising administering to said patient a soluble CD43-antigen capable of binding to an anti-CD43 autoantibody produced by said patient, wherein said CD43-antigen is a soluble glycosylated CD43 fragment comprising an amino acid sequence homologous to amino acids 20-254 CD43.

5,252,557

ADMINISTRATION METHOD OF ANTITHROMBIN

Kiyoshi Kita, Tokyo, and Fumiaki Yoshitomi, Fukuoka, both of Japan, assignors to Kiyoshi Kita, Tokyo, Japan

Continuation-in-part of Ser. No. 391,323, Jul. 25, 1989, Pat. No. 5,182,259. This application Jan. 2, 1991, Ser. No. 636,710
Claims priority, applicatioo Japan, Jan. 19, 1990, 2-8230
Int. Cl.[5] A61K *37/02, 31/735;* **A61F** *2/30;* **C07K** *15/14*
U.S. Cl. 514—8 **9 Claims**

1. A surgical method, comprising the following steps:
(a) performing intracorporeal surgery to a region of a mammal by dissecting the mammal's skin to expose tissue;
(b) administering an antithrombin solution, including antithrombin at a concentration of more than 0.5 U/ml and not more than 250 U/ml and sodium hyaluronate having an average molecular weight between 50,000 and 13,000,000 with a weight concentration of at least 0.1% and not more than 3% dissolved in a physiological buffer solution, to the surgery region by coating the exposed tissue of the internal surgical region with the solution,
wherein viscosity and elasticity of the solution is maintained through inhibition of fibrin formation with the antithrombin as fibrin binds to the sodium hyaluronate, thus inhibiting postoperative adhesion of the surgically traumatized organs; and
(c) closing the surgery region without the removal of the antithrombin solution from the surgical region.

5,252,558

PENTAPEPTIDE HAVING SPECIFIC INHIBITING EFFECT ON EPIDERMAL CELL PROLIFERATION, THE SALTS THEREOF, PHARMACEUTICAL COMPOSITIONS COMPRISING THE SAME AND A PROCESS FOR THE PREPARATION OF THE PENTAPEPTIDE AND THE PHARMACEUTICAL COMPOSITIONS

András Balazs; Tamás Szirtes; Istvá Schon, all of Budapest, Hungary, and Lajos Kisfaludy, deceased, late of Budapest, Hungary by András Kisfaludy, Márta Kisfaludy Maria Kisfaludy nee Makovitz, heirs , assignors to Richter Gedeon Vegyeszeti Gyar RT, Budapest, Hungary

Filed Aug. 27, 1991, Ser. No. 750,330
Claims priority, application Hungary, Sep. 3, 1990, 5744/90
Int. Cl.[5] A61K *37/02;* **C07K** *7/06*
U.S. Cl. 514—17 **3 Claims**

3. Process for the treatment of inhibiting tumorous HeLaS3 the epidermal cell proliferation of mammals which comprises administering to mammals, including humans an effective dose of

Xaa Glu Asp Ser Gly seq. No.1

wherein Xaa is pyro-alpha-aminoadipic acid, or the pharmaceutically acceptable salt thereof per se or in the form of a pharmaceutical composition.

5,252,559

HIS-GLY-GLY PEPTIDE AND DERIVATIVES THEREOF FOR HAIR GROWTH

Kurt G. Kronholm, Oxford; Richard J. Schwen, Cincinnati; Mark R. Sine, Morrow; Raphael Warren, and Cynthia J. Wawrzyniak, both of Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 20, 1991, Ser. No. 747,811
Int. Cl.[5] A61K *37/02;* **C07K** *5/08*
U.S. Cl. 514—18 **7 Claims**

1. A composition for regulating hair growth comprising
a) from about 0.001% to about 20% His-Gly-Gly; and
b) a pharmaceutically acceptable carrier.

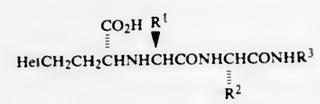
5,252,560

CYCLIC IMIDE DERIVATIVES, COMPOSITIONS AND USE

Peter L. Myers, Chapel Hill; Andrew B. McElroy, Durham, both of N.C.; Michael Gregson, Greenford, Great Britain; Peter J. Brown, Chapel Hill, N.C.; Howard G. Davies, Greenford, Great Britain; David H. Drewry, Durham, and Michael A. Foley, Chapel Hill, both of N.C., assignors to Glaxo Inc., Research Triangle Park, N.C.

Filed Jun. 29, 1992, Ser. No. 905,933
Claims priority, application United Kingdom, Jun. 27, 1991, 9113844.6; Jun. 27, 1991, 9113930.3; Apr. 30, 1992, 9209402.8; May 14, 1992, 9210343.1
Int. Cl.[5] A61K *37/02;* **C07D** *209/66, 413/12*
U.S. Cl. 514—19 **11 Claims**

1. A compound of general formula (I)

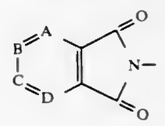


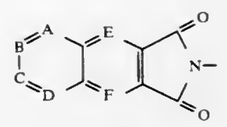
(I)

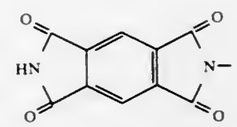
wherein:
R^1 is C_{3-6}alkyl or C_{1-3}alkylthioC_{1-3}alkyl;
R^2 is an optionally substituted C_{1-6}alkyl or C_{1-6}alkoxy

group, aryl, heteroaryl, arylC_{1-4}alkyl, heteroarylC_{1-4}alkyl or a side-chain of a natural α-amino acid;
R^3 is hydrogen, C_{1-6}alkyl, CHR^4COR^5 (where R^4 is a side-chain of a natural α-amino acid and R^5 is hydroxyl, C_{1-6}alkoxy or NHR^6 where R^6 represents a hydrogen atom or a C_{1-6}alkyl group) or a group $(CH_2)_nX$ (where n is 1 to 6 and X is hydroxyl, C_{1-4}alkoxy, heteroaryl or a group NR^7R^8 where R^7 and R^8 are each hydrogen or C_{1-6}alkyl or the group NR^7R^8 forms a 5 to 7 membered cyclic amine); and
Het is an optionally substituted cyclic imide where the cyclic imide ring system has the formula (i), (ii) or (iii)

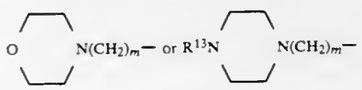
(i)







in which A, B, C and D are each CH and E and F each represent CH and where the optional substituents in formula (i) are a halogen atom or a group selected from hydroxyl, C_{1-6}alkyl (e.g. t-butyl), nitro, C_{1-6}alkoxy, $R^{11}CONH(CH_2)_m-$, $R^{12}NHCO(CH_2)_m-$,



(where m is zero, 1, 2 or 3, R^{11} is C_{1-6}alkyl, R^{12} is hydrogen or C_{1-6}alkyl and R^{13} is hydrogen or C_{1-3}alkyl) and the optional substituents in formula (ii) or formula (iii) are a halogen atom or a group selected from hydroxyl, C_{1-3} alkyl and C_{1-3} alkoxy;
and physiologically acceptable salts and solvates thereof.

5,252,561

PREPARATION FOR THE CONTROLLED RELEASE OF ACTIVE SUBSTANCES WHICH ARE SUITABLE AS A THERAPEUTCS OR FOR IMPROVING GROWTH AND FEED UTILIZATION IN RUMINANTS

Theophil Hornykiewytsch, Frankfurt am Main, and Dieter Düwel, Hofheim am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 24, 1992, Ser. No. 824,933
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1991, 4102395; Apr. 23, 1991, 4113146
Int. Cl.[5] A61K *31/70, 31/715, 31/685*
U.S. Cl. 514—23 **41 Claims**

1. A composition of fused granules for oral administration in ruminants, containing 0.001 to 75% by weight of at least one therapeutically active substance, 3 to 75% by weight of wax, 25 to 90% by weight of powdered weighting agent and 0 to 30% by weight of at least one physiologically tolerable sugar, sugar alcohol, water-soluble cellulose ether or polyethylene glycol.

5,252,562

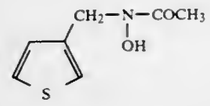
ACETOHYDROXAMIC COMPOUND AND COMPLEXES PHARMACEUTICAL COMPOSITIONS CONTAINING THEM AND PROCESSES OF PREPARATION AND USE

Ulrich Seipp, Aachen; Werner Englberger, Stolberg; Michael Haurand, Stolberg, and Johannes Schneider, Stolberg, all of Fed. Rep. of Germany, assignors to Gruenenthal GmbH, Aachen, Fed. Rep. of Germany

Filed Jul. 10, 1992, Ser. No. 911,623
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1991, 4123613
Int. Cl.[5] A61K *31/70, 31/38;* **C07D** *33/70*
U.S. Cl. 514—58 **13 Claims**

1. An acetohydroxamic acid compound corresponding to the formula I

(ii)



or a complex thereof with β-cyclodextrin or hydroxypropyl-
(iii) β-cyclodextrin.

5,252,563

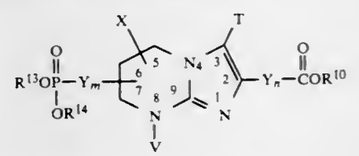
5,6,7,8-TETRAHYDRO-IMIDAZO[1,2-A]PYRIMIDINE COMPOUNDS FOR TREATMENT OF NEUROTOXIC INJURY

Alexis A. Cordi, St. Cloud, France, and Eric T. Sun, Buffalo Grove, Ill., assignors to G. D. Searle & Company, Del.

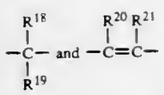
Filed Dec. 19, 1991, Ser. No. 812,242
Int. Cl.[5] C07D *487/04;* **C07F** *9/6521;* **A61K** *31/675, 31/505*
U.S. Cl. 514—81 **36 Claims**

1. A method for treating neurotoxid injury resulting from ischemia, which method comprises treating a subject susceptible to neurotoxic injury with a therapeutically-effective amount of a compound of Formula XI

(XI)



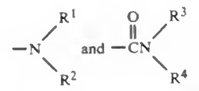
wherein each of Y_m and Y_n is a spacer group independently selected from one or more groups of the formula



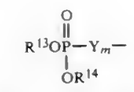
with the proviso that the total number of carbon atoms in each of Y_m and Y_n cannot exceed ten carbon atoms; wherein each of R^{18} and R^{19} is independently selected from hydrido, alkyl, cycloalkyl, halo, haloalkyl, hydroxy, hydroxyalkyl, alkoxy, alkoxyalkyl and alkanoyl; wherein R^{18} and R^{19} may be taken together to form oxo or exomethylene; wherein each of R^{20} and R^{21} is independently selected from hydrido, alkyl, haloalkyl, phenyl, hydroxyalkyl and alkoxyalkyl; wherein m is a number selected from one to three, inclusive; wherein n is a number selected from zero to three, inclusive;
wherein X is one or more groups attachable at one or more of the 5-, 6- and 7-ring positions of the tetrahydro-imidazo[1,2-

VOL 1155 ISS 2 OC 12 1993 UMI

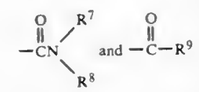
a]pyrimidine ring system; wherein alkyl, cycloalkyl, cycloalkylalkyl, haloalkyl, alenyl, alkynyl, phenyl, benzyl, hydroxy, hydroxyalkyl, alkoxy, phenoxy, alkoxyalkyl, benzyloxy, cyano, alkanoyl, alkylthio and arylthio,



wherein each of R^1, R^2, R^3 and R^4 is independently selected from hydrido, alkyl and phenyl; wherein T may be further selected from halo;
with the further proviso that the acidic moiety of the formula



is attached at one of the 5-, 6- and 7-ring positions of Formula XI and that X is one or more groups attached at one or more of the 5-, 6- and 7-ring positions not occupied by said acidic moiety;
wherein V is selected from hydrido, alkyl, cycloalkyl, cycloalkylalkyl, hydroxyalkyl, alkoxyalkyl, aralkyl,



wherein each of R^7, R^8 and R^9 is independently selected from hydrido, alkyl, cycloalkyl, hydroxyalkyl, cycloalkylalkyl, alkoxyalkyl and aryl; wherein R^9 is further selected from alkoxy, benzoyl and benzyloxy;
wherein each of R^{10}, R^{13} and R^{14} is independently selected from hydrido, alkyl, allyl, cycloalkyl, cycloalkylalkyl, phenyl and benzyl;
or a pharmaceutically-acceptable salt thereof.

5,252,564

METHOD TO DECREASE CORTISOL SECRETION BY FEEDING MELENGESTEROL ACETATE

Michael T. Zavy, El Reno, Okla., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Mar. 29, 1991, Ser. No. 677,716
Int. Cl.[5] A61K *31/56*
U.S. Cl. 514—170 **12 Claims**

1. A method for decreasing hypersecretion of glucocorticoids in male livestock and/or decreasing basal levels of glucocorticoids in male castrated livestock selected from the group of bovine and sheep, without impairing immune response comprising:

a. administering melengesterol acetate or derivatives thereof to said male livestock at a dosage effective to substantially decrease the secretion of cortisol without substantially suppressing immune response.

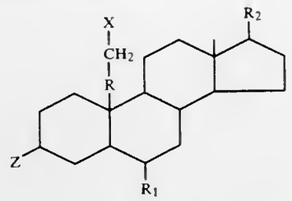
5,252,565

HALOETHYL-SUBSTITUTED STEROID ENZYME INHIBITORS

Norton P. Peet, Cincinnati; J. O'Neal Johnston, Milford, and Joseph P. Burkhart, West Chester, all of Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

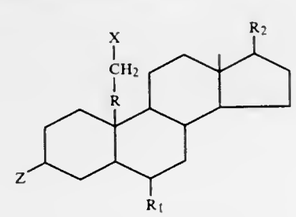
Continuation-in-part of Ser. No. 503,191, Apr. 2, 1990, abandoned. This application Sep. 6, 1991, Ser. No. 755,710
Claims priority, application Canada, Mar. 25, 1991, 2038985
Int. Cl.[5] A61K *31/56;* **C07J** *1/00*
U.S. Cl. 514—177 **12 Claims**

1. A compound of the formula:



wherein
represents a single or double bond;
X=Br, or I;
R=CHOH or C=O;
R_1=H, $C_{1\text{-}4}$ alkyl, =O, or —OH;
R_2==O, —OH, or —O—($C_{1\text{-}4}$ alkanoyl); and
Z==O, =CH_2, —OH, or —O—($C_{1\text{-}4}$ alkanoyl).

2. A compound of the formula:



wherein
represents a single or double bond;
X=Br, Cl, or I;
R=CHOH;
R_1=H, $C_{1\text{-}4}$ alkyl, =O, or —OH;
R_2==O, —OH, or —O—($C_{1\text{-}4}$ alkanoyl); and
Z==O, =CH_2, —OH, or —O—($C_{1\text{-}4}$ alkanoyl).

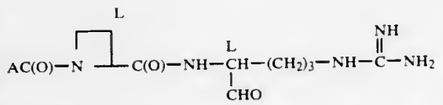
5,252,566

ANTITHROMBOTIC AGENTS

Robert T. Shuman, Greenwood, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 790,885, Nov. 12, 1991. This application Oct. 16, 1992, Ser. No. 962,421
Int. Cl.[5] A61K *31/47, 31/395;* **C07D** *227/04, 205/04*
U.S. Cl. 514—210 **24 Claims**

1. A compound of the formula

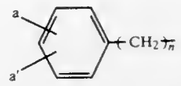


I

wherein A is 1) a group of the formula



wherein R is a phenyl group of the formula



wherein a and a' independently are hydrogen, lower alkyl, lower alkoxy, halogen, trifluoromethyl, hydroxy, hydroxymethyl, amino, or aminomethyl; and n is 0 or 1; or R is thienyl, furyl, naphthyl, or naphthyl mono- or disubstituted by lower alkyl, lower alkoxy, halogen, amino, mono- or di(lower alkyl-)amino, or hydroxy; or R is cyclohexadienyl, cyclohexenyl, cyclohexyl or cyclopentyl;
R_1 is hydrogen, methyl or ethyl;
B is lower alkyl, lower alkoxy, hydroxy, or an amino group of the formula

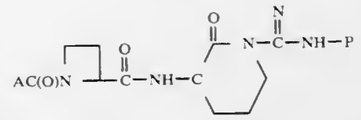
—N(R_2) (R_3)

wherein R_2 and R_3 independently are hydrogen or lower alkyl, or R_2 is hydrogen, and R_3 is C_1–C_6 alkanoyl, halo substituted C_2–C_6 alkanoyl, or an oxycarbonyl group of the formula

R_4—OC(O)—

wherein R_4 is C_1–C_6 alkyl, C_2–C_6 alkenyl, C_3–C_7 cycloalkyl, benzyl, nitrobenzyl, diphenylmethyl, or a phenyl group as defined above; provided, that when R_1 is methyl or ethyl, B is other than methyl or ethyl
and the pharmaceutically acceptable, non-toxic salts thereof.

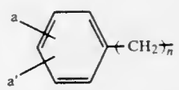
23. An intermediate of the formula



wherein A is 1) a group of the formula



wherein R is a phenyl group of the formula



wherein a and a' independently are hydrogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, halogen, trifluoromethyl, hydroxy, hydroxymethyl, amino, or aminoethyl; and n is 0 or 1; or R is thienyl, furyl, naphthyl, or naphthyl mono- or disubstituted by lower alkyl, lower alkoxy, halogen, amino, mono- or di-(C_1–C_4 alkyl-)amino, or hydroxy; or R is cyclohexadienyl, cyclohexenyl, cyclohexyl or cyclopentyl;
R_1 is hydrogen, methyl or ethyl;
B is C_1–C_4 alkyl, C_1–C_4 alkoxy, hydroxy, or an amino group of the formula

—N(R_2) (R_3)

wherein R_2 and R_3 independently are hydrogen or C_1–C_4 alkyl, or R_2 is hydrogen, and R_3 is C_1–C_6 alkanoyl, halo substituted C_2–C_6 alkanoyl, or an oxycarbonyl group of the formula

R_4—OC(O)—

wherein R_4 is C_1–C_6 alkyl, C_2–C_6 alkenyl, C_3–C_7 cycloalkyl, benzyl, nitrobenzyl, diphenylmethyl, or a phenyl group as defined above; provided, that when R_1 is methyl or ethyl, B is other than methyl or ethyl and
wherein P is an amino protecting group.

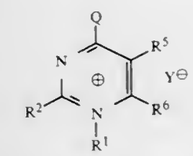
5,252,567

DIAZINE DERIVATIVES

Stuart D. Mills, Macclesfield; Rodney B. Hargreaves, Poynton, and Bernard J. McLoughlin, Macclesfield, all of Great Britain, assignors to Imperial Chemical Industries PLC, United Kingdom

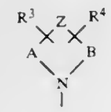
Filed Dec. 18, 1990, Ser. No. 629,502
Claims priority, application United Kingdom, Dec. 22, 1989, 8929022
Int. Cl.[5] A61K *31/505, 31/55;* **C07D** *247/02, 401/04*
U.S. Cl. 514—211 **14 Claims**

1. An amino pyrimidine derivative of formula I



(I)

wherein R^1 is (1–10C)alkyl, (3–8C)cycloalkyl, (3–8C)cycloalkyl-(1–4C)alkyl, phenyl or phenyl(1–4C)alkyl, the phenyl moiety of the latter two optionally bearing one or more substituents independently selected from halogeno, (1–4C)alkyl, (3–6C)alkenyl, (1–4C)alkoxy, cyano, trifluoromethyl, nitro, amino, hydroxy, (1–4C)alkylamino, dialkylamino of up to six carbon atoms, (1–4C)alkylthio, (1–4C)alkylsulphinyl, (1–4C)alkylsulphonyl and (1–4C)alkylenedioxy; R^2 is hydrogen, (1–4C)alkyl, amino or (1–4C)alkylamino; R^6 is (1–4C)alkyl, amino or (1–4C)alkylamino; Q is a group of formula II,



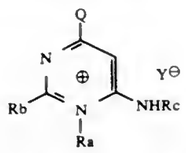
(II)

in which case R^3 and R^4 are independently hydrogen, (1–4C)alkyl, phenyl or benzyl, the phenyl moiety of the latter two optionally bearing one or two substituents selected from (1–4C)alkyl, (1–4C)alkoxy and halogeno; R^5 is hydrogen, (1–4C)alkyl or (2–4C)alkenyl; A and B are independently ethylene or trimethylene; Z is a direct bond between A and B, or an oxy, thio, carbonyl, methylene, ethylenedioxymethylene, ethylidene, or isopropylidene link, or Z is a group of the formula =NM in which M is hydrogen, (1–6C)alkyl, phenyl or benzyl, the phenyl moiety of the latter two optionally bearing one or two substituents selected from (1–4C)alkyl, (1–4C)alkoxy and halogeno; or Q represents a fully saturated 9- or 10-membered bicyclic ring system containing one nitrogen as the only heteroatom, Q being attached through said nitrogen to the remainder of said amino pyrimidine derivative, which Q is unsubsti-

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tuted or is substituted by one or two substituents selected from (1–4C)alkyl, phenyl or benzyl, the phenyl moiety of the latter two optionally bearing one or two substituents selected from (1–4C)alkyl, (1–4C)alkoxy and halogeno; and Y is a physiologically acceptable anion.

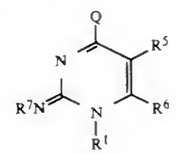
5. A compound of the formula IV



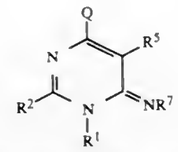
(IV)

wherein: Ra is (1–4C)alkyl; Rb is (1–4C)alkyl; Rc is (1–4C)alkyl; Q is a group of formula II selected from 4-phenylpiperazino, 4-(p-chlorophenyl)piperazino, piperidino, 3-methylpiperidino, 4-phenylpiperidino, 3,3-dimethylpiperidino, morpholino, hexamethyleneimino, 3-ethylpiperidino, 3,5-dimethylpiperidino, 3-n-propylpiperidino, 2-methylpiperidino, (4,4-ethylenedioxy)piperidino and 4-p-methylphenylpiperidino; or Q is a fully saturated 9- or 10-membered bicyclic group selected from perhydroindolyl, perhydroquinolyl and perhydroisoquinolyl, any of which groups may itself optionally bear one or two substituents independently selected from methyl, ethyl, phenyl, benzyl and halogenophenyl; and Y is a physiologically acceptable anion.

9. A compound as defined by formula IIIa or IIIb



(IIIa)



(IIIb)

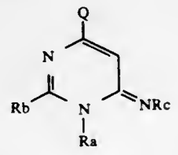
(or a tautomeric form thereof), in which R^1 is (1–10C)alkyl, (3–8C)cycloalkyl, (3–8C)cycloalkyl(1–4C)alkyl, phenyl or phenyl(1–4C)alkyl, the phenyl moiety of the latter two optionally bearing one or more substituents independently selected from halogeno, (1–4C)alkyl, (3–6C)alkenyl, (1–4C)alkoxy, cyano, trifluoromethyl, nitro, amino, hydroxy, (1–4C)alkylamino, dialkylamino of up to six carbon atoms, (1–4C)alkylthio, (1–4C)alkylsulphinyl, (1–4C)alkylsulphonyl and (1–4C)alkylenedioxy; R^2 is hydrogen, (1–4C)alkyl, amino or (1–4C)alkylamino; R^6 is (1–4C)alkyl, amino or (1–4C)alkylamino; Q is a group of formula II,



(II)

in which case R^3 and R^4 are independently hydrogen, (1–4C)alkyl, phenyl or benzyl, the phenyl moiety of the latter two optionally bearing one or two substituents selected from (1–4C)alkyl, (1–4C)alkoxy and halogeno; R^5 is hydrogen, (1–4C)alkyl or (2–4C)alkenyl; A and B are independently ethylene or trimethylene; Z is a direct bond between A and B, or an oxy, thio, carbonyl, methylene, ethylenedioxymethylene, ethylidene, or isopropylidene link, or Z is a group of the formula =NM in which M is hydrogen, (1–6C)alkyl, phenyl or benzyl, the phenyl moiety of the latter two optionally bearing one or two substituents selected from (1–4C)alkyl, (1–4C)alkoxy and halogeno; or Q represents a fully saturated 9- or 10-membered bicyclic ring system containing one nitrogen as the only heteroatom, Q being attached through said nitrogen to the remainder of said amino pyrimidine derivative, which Q is unsubstituted or is substituted by one or two substituents selected from (1–4C)alkyl, phenyl or benzyl, the phenyl moiety of the latter two optionally bearing one or two substituents selected from (1–4C)alkyl, (1–4C)alkoxy and halogeno; and R^7 stands for (1–4C)alkyl or hydrogen.

10. A compound of formula IVa



(IVa)

(or a tautomeric form thereof), in which Ra is (1–4C)alkyl; Rb is (1–4C)alkyl; Rc is (1–4C)alkyl; Q is a group of formula II selected from 4-phenyl-piperazino, 4-(p-chlorophenyl)-piperazino, piperidino, 3-methylpiperidino, 4-phenyl-piperidino, 3,3-dimethylpiperidino, morpholino, hexamethyleneimino, 3-ethylpiperidino, 3,5-dimethylpiperidino, 3-n-propylpiperidino, 2-methylpiperidino, (4,4-ethylenedioxy)-piperidino and 4-p-methylphenylpiperidino or Q is a fully saturated 9- or 10-membered bicyclic group selected from perhydroindolyl, perhydroquinolyl and perhydroisoquinolyl, any of which groups may itself optionally bear one or two substituents independently selected from methyl, ethyl, phenyl, benzyl and halogenophenyl.

5,252,568

TREATMENT OF LOW PRESSURE GLAUCOMA AND ISCHEMIC RETINAL DEGENERATION WITH LOXAPINE

George C. Y. Chiou, College Station, Tex., assignor to Texas A&M University System, College Station, Tex.

Filed Jan. 24, 1992, Ser. No. 825,663
Int. Cl.[5] A61K *31/55*
U.S. Cl. 514—211 **16 Claims**

1. A method to increase blood flow to the retina or choroid which method comprises administering a therapeutically effective amount of loxapine to a subject having decreased retinal or choroidal blood flow.

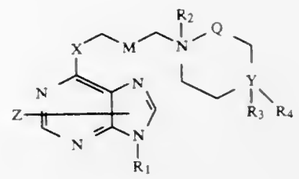
5,252,569

6-SUBSTITUTED PURINYL PIPERAZINE DERIVATIVES

Zoltan G. Hajos, Princeton, and Jeffery B. Press, Rocky Hill, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Continuation of Ser. No. 527,625, May 23, 1990, abandoned. This application Mar. 23, 1992, Ser. No. 859,597
Int. Cl.[5] C07D *245/02, 295/08, 241/02, 239/70*
U.S. Cl. 514—212 **21 Claims**

1. A compound of the formula:



and optically active isomers thereof;

wherein:

R_1 represents hydrogen, C_{1-4}alkyl, cyclopentyl, cyclohexyl, benzyl, C_{2-6}alkenyl, C_{2-6}alkynyl, tetrahydropyranyl, or tetrahydrofuranyl;

R_2 and R_3 individually represent oxygen or no substituent;

R_4 represents naphthyl, pyridyl, thienyl, CHR_5R_6, or CR_5R_6 when Y represents C=, phenyl or substituted phenyl wherein the substituent is C_{1-4}alkyl, C_{1-4}alkoxy, CF_3, halo, perhalo, NO_2, or CN;

R_5 and R_6 individually represent naphthyl, pyridyl, thienyl, phenyl or substituted phenyl wherein the substituent is C_{1-4}alkyl, C_{1-4}alkoxy, CF_3, halo, perhalo, NO_2, or CN;

Z represents hydrogen, CN, C_{1-4}alkyl, halo, hydroxy, amino, or CO_2R_7 wherein R_7 represents hydrogen, C_{1-4}alkyl, NO_2, halo, CN, or CF_3;

X represents S, O, NH, or NR_8 wherein R_8 represents C_{1-4}alkyl;

M represents CH_2, CHOH, $CHOCOR_9$, or $CHOR_9$ wherein R_9 represents straight or branched chain C_{1-4}alkyl, SO_3H, phenyl, or substituted phenyl wherein the substituent on the phenyl is C_{1-4}alkoxy, NO_2, or CN;

Q represents CH_2 or $(CH_2)_2$; and

Y represents nitrogen or a carbon atom having a double bond (C=) when R_4 is CR_5R_6;

with the provisos that:

(a) when Y is N and R_4 is any substituent other than CR_5R_6, X is S or O;

(b) When R_4 is CHR_5R_6 or CR_5R_6, at least one of R_2 and R_3 must be oxygen; or

(c) when R_4 is CHR_5R_6 or CR_5R_6, at least one of R_5 and R_6 is an aromatic group; and

(d) R_3 can be oxygen only when Y is nitrogen.

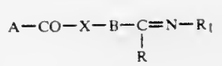
5,252,570

AMIDINO AND GUANIDINO DERIVATIVES

Arturo Donetti, Milan; Marco Turconi, Voghera; Massimo Nicola, Pavia, and Rosamaria Micheletti, Milan, all of Italy, assignors to B.I. Italia, Milan, Italy

Division of Ser. No. 378,958, Jul. 12, 1989, Pat. No. 5,047,410. This application May 30, 1991, Ser. No. 707,528
Claims priority, application Italy, Jul. 12, 1988, 21330 A/88
Int. Cl.[5] A61K *31/435*; C07D *221/02*
U.S. Cl. 514—214 **9 Claims**

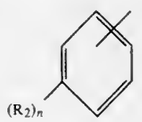
1. A compound of formula (I)



(I)

wherein

A is a group selected from substituted benzene



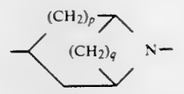
(a)

wherein R_2 is H, C_{1-6} alkyl, C_{1-6} alkoxy optionally substituted by halogen, hydroxy, acetyl, or R_2 is C_{1-6} alkeniloxy, C_{1-6} alkyniloxy, halogen, amino, C_{1-6} alkylamino, nitro, sulphonylamino

n is 0–4

X is —O— or —NH—

B is



wherein

p is 0, 1, 2,

q is 0, 1, 2, 3

R is H, C_{1-6} alkyl optionally substituted by halogen, NR_6R_7 in which R_6 is H, C_{1-6} alkyl, NO_2, CN and R_7 is H, C_{1-6} alkyl;

R_1 is H, C_{1-6} alkyl optionally substituted by halogen, CN,

tautomers thereof, optical isomers thereof and acid addition salts thereof.

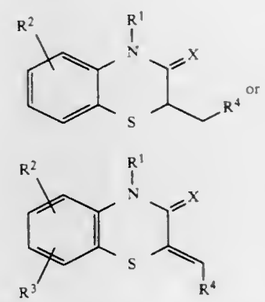
5,252,571

1,4-BENZOTHIAZINE-2-ACETIC ACID DERIVATIVES

Tomoji Aotsuka, Yaizu; Hiroshi Hosono, Shizuoka; Toshio Kurihara, Shizuoka; Yoshiyuki Nakamura, Shizuoka; Tetsuo Matsui, Shizuoka, and Fujio Kobayashi, Shizuoka, all of Japan, assignors to Sapporo Breweries Limited, Tokyo, Japan

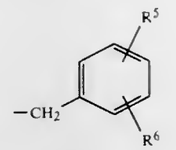
Filed Dec. 24, 1991, Ser. No. 813,182
Claims priority, application Japan, Dec. 27, 1990, 2-415316; Aug. 6, 1991, 3-219346
Int. Cl.[5] A61K *31/54*; C07D *279/16*
U.S. Cl. 514—224.2 **11 Claims**

1. A 1,4-benzothiazine-2-acetic acid derivative represented by formula (I) below:



(I)

wherein R^1 represents a group shown by formula (II) or (III):



(II)

wherein R^5 and R^6, which may be the same or different, each represents hydrogen or halogen or an alkyl having 1–6 carbon atoms, an alkoxy having 1–6 carbon atoms, trifluoromethyl or cyano; and wherein R^7, R^8, R^9 and R^{10}, which may be the same or different, each represents hydrogen, a halogen, alkyl having 1 to 6 carbon atoms, alkoxy having 1 to 6 carbon atoms or trifluoromethyl; R^2 and R^3, which may be the same or different, each represents hydrogen, a halogen, an alkyl having

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1 to 6 carbon atoms, alkoxy having 1 to 6 carbon atoms, alkylthio having 1 to 6 carbon atoms, trifluoromethyl or trifluoromethoxy; R^4 represents carboxyl, or alkoxy carbonyl having 2 to 7 carbon atoms; and X represents oxygen or sulfur, or its pharmaceutically suitable salt.

5,252,572

PYRIDOPYRIMIDINE DERIVATIVES, PHARMACEUTICAL COMPOSITIONS CONTAINING THEM AND PROCESS FOR PREPARING SAME

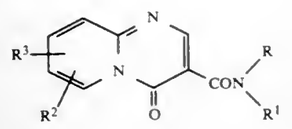
István Hermecz; József Knoll; Lelle Vasvári, née Debreczy; Klára Gyires; Judit Sipos; Agnes Horvath; László Tardos, all of Budapest, and Mária Blaogh, Dunakeszi, all of Hungary, assignors to Chinoin Gyogyszer- Es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

Continuation of Ser. No. 307,665, Feb. 6, 1989, Pat. No. 5,158,951. This application Jun. 23, 1992, Ser. No. 903,246

Int. Cl.[5] A61K *31/505;* **C07D** *471/04*

U.S. Cl. 514—258 **7 Claims**

1. A compound of the Formula (I)



(I)

wherein

R is a C_1 to C_{12} alkyl group substituted by C_1 to C_4 alkoxycarbonyl, a C_3 to C_9 cycloalkyl group, an adamantyl group, or a phenyl group substituted by halogen, C_1 to C_4 alkyl, C_2 to C_5 alkoxy, hydroxy, trifluoromethyl, cyano, C_1 to C_4 alkoxycarbonyl, carboxy or methylenedioxy;

R^1 is hydrogen or a C_1 to C_4 alkyl group; or R and R^1 together form a $—(CH_2)_n—$ chain, wherein n is 4,5 or 6;

R^2 is hydrogen, a C_1 to C_4 alkyl group or halogen; and

R^3 is hydrogen or a C_1 to C_4 alkyl group;

or a pharmaceutically acceptable acid addition salt thereof.

5,252,573

ANTI-TUMOR AGENTS

Andrew J. Barker; Leslie R. Hughes, both of Macclesfield; Peter R. Marsham, Poynton; John Oldfield, Handworth, and Stephen J. Pegg, Macclesfield, all of United Kingdom, assignors to Imperial Chemical Industries plc and National Research Development Corporation, both of London, England

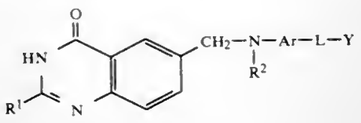
Division of Ser. No. 450,670, Dec. 14, 1989, Pat. No. 5,089,499. This application Nov. 18, 1991, Ser. No. 793,183

Claims priority, application United Kingdom, Dec. 15, 1988, 8829296.6

Int. Cl.[5] C07D *239/96, 239/72;* **A61K** *31/505;* **A01N** *43/54*

U.S. Cl. 514—259 **11 Claims**

1. A quinazoline of the formula I



I

wherein R′ is hydrogen or amino, or alkyl or alkoxy each of up to 6 carbon atoms;

or R′ is alkyl of up to 3 carbon atoms which bears a hydroxy substituent, or which bears one, two or three fluoro substituents;

or R^1 is hydroxyalkoxy of up to 3 carbon atoms or alkoxyalkoxy of up to 6 carbon atoms;

wherein the quinazoline ring may bear no further substituents or may bear one further substituent selected from halogeno and from alkyl and alkoxy each of up to 3 carbon atoms;

wherein R^2 is hydrogen, alkyl, alkenyl, alkynyl, hydroxyalkyl, halogenoalkyl or cyanoalkyl each of up to 6 carbon atoms;

wherein Ar is thienylene or pyridylene which may be unsubstituted or may bear one or two substituents selected from halogeno, hydroxy, amino and nitro, and from alkyl, alkoxy and halogenoalkyl each of up to 3 carbon atoms;

wherein L is a group of the formula —CO.NH—, —CO.N-R^3— or —CO.O—, wherein R^3 is alkyl of up to 6 carbon atoms; and wherein Y is aryl or a hydrogenated derivative thereof each of up to 10 carbon atoms, or

Y is a group of the formula —A—Y^1 in which A is alkylene of up to 6 carbon atoms, and Y^1 is aryl or a hydrogenated derivative thereof each of up to 10 carbon atoms, and wherein Y or Y^1 when it is aryl or a hydrogenated derivative thereof is selected from the group consisting of phenyl, naphthyl, tetrahydronaphthyl, indenyl and indanyl;

wherein one constituent methylene group in A may be replaced by an oxy, thio, sulphinyl, sulphonyl or imino group or an alkylimino group of up to 6 carbon atoms; and

wherein each of said aryl groups, or hydrogenated derivatives thereof, may be unsubstituted or may bear up to three substituents selected from hydroxy, oxo, amino, nitro, cyano, carbamoyl, sulphamoyl, carboxy and halogeno, from alkyl, alkylamino, dialkylamino, N-alkylcarbamoyl, N,N-dialkylcarbamoyl, alkoxycarbonyl, alkanoyloxyalkyl, alkylthio, alkylsulphinyl, alkysulphonyl, alkoxy, halogenoalkyl, hydroxyalkyl, aminoalkyl, alkylaminoalkyl, dialkylaminoalkyl, carboxyalkyl, alkoxycarbonylalkyl, carbamoylalkyl, N-alkylcarbamoylalkyl and N,N-dialkylcarbamoylalkyl each of up to 6 carbon atoms and from phenyl, pyridyl and phenylalkyl of up to 10 carbon atoms, and wherein each of said phenyl or phenylalkyl groups may bear a substituent selected from halogen and nitro, and from alkyl and alkoxy each of up to 3 carbon atoms; or a pharmaceutically-acceptable salt thereof.

5,252,574

ANGIOTENSIN II ANTAGONISTS INCORPORATING A SUBSTITUTED THIOPHENE OR FURAN

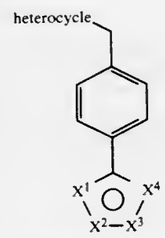
Eric E. Allen, Somerset; Nancy Kevin, Clifton; Tomasz W. Glinka, Scotch Plains, and Ralph A. Rivero, Tinton Falls, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 691,911, Apr. 26, 1991, abandoned. This application Mar. 11, 1992, Ser. No. 846,152

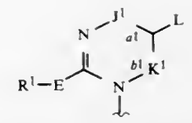
Int. Cl.[5] A61K *31/505;* **C07D** *239/95, 239/88, 239/93*

U.S. Cl. 514—259 **11 Claims**

1. A compound of structural formula I or its pharmaceutically acceptable salt



wherein the heterocycle is defined as:



Ia

R^1 is:

(a) (C_1–C_6)-alkyl, (C_2–C_6)-alkenyl or (C_2–C_6)-alkynyl each of which is unsubstituted or substituted with a substituent selected from the group consisting of:
i) aryl as defined below,
ii) C_3–C_7)-cycloalkyl,
iii) Cl, Br, I, F,
iv) OH,
v) NH_2,
vi) NH(C_1–C_4)-alkyl,
vii) N[(C_1–C_4)-alkyl]$_2$,
viii) $NHSO_2R^2$,
ix) CF_3,
x) $COOR^2$, or
xi) SO_2NHR^{2a};

(b) aryl, wherein aryl is defined as phenyl or naphthyl, unsubstituted or substituted with 1 or 2 substituents selected from the group consisting of:
i) Br, I, Cl, F,
ii) (C_1–C_4)-alkyl,
iii) (C_1–C_4)-alkoxy,
iv) NO_2
v) CF_3
vi) $SO_2NR^{2a}R^{2a}$,
vii) (C_1–C_4)-alkylthio,
viii) hydroxy,
ix) amino,
x) (C_3–C_7)-cycloalkyl, or
xi) (C_3–C_{10})-alkenyl;

(c) heteroaryl, wherein heteroaryl is defined as a 5- or 6-membered heteroaromatic moiety, which can contain one or two members selected from the group consisting of N, O, S and wherein the heteroaryl is unsubstituted, monosubstituted or disubstituted with substituents selected from the group consisting of:
i) Cl, Br, I, or F,
ii) OH,
iii) SH,
iv) NO_2,
v) (C_1–C_4)-alkyl,
vi) (C_2–C_4)-alkenyl,
vii) (C_2–C_4)-alkynyl,
viii) (C_1–C_4)-alkoxy, or
xi) CF_3, or

(d) (C_1–C_4)-polyfluoroalkyl;

E is:
(a) a single bond,
(b) $—S(O)_n(CH_2)_s—$, or
(c) —O—;

n is 0 to 2;

s is 0 to 5;

J^1 is (a)—C(=M)—, (b) J^1 and L are connected together to form a 6-carbon aromatic ring substituted with R^{7a}, R^{7b}, R^{8a} and R^{8b} or (c) J^1 and L are connected together to form a 6-membered aromatic ring containing one nitrogen atom not at J^1, substituted with R^{7a}, R^{8a} and R^{8b};

K^1 is (a)—C(=M)—, (b) K^1 and L are connected together to form a 6-carbon aromatic ring substituted with R^{7a}, R^{7b}, R^{8a} and R^{8b}, or (c) $K^1$and L are connected together to form a 6-membered aromatic ring containing one nitrogen atom, substituted on the carbon atoms with R^{7a}, R^{8a} and R^{8b};

one of a^1 or b^1 is a double bond in structures Ia provided that when J^1 is —C(=M)— then b^1 is a double bond and when K^1 is —C(=M)— then a^1 is a double bond;

L is the point of attachment of the 6-membered fused aromatic ring optionally containing one nitrogen atom;

M is O, S or NR^{15};

R^2 is:
(a) H, or
(b) (C_1–C_6)-alkyl;

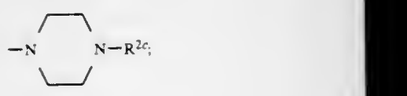
R^{2a} is:
(a) R^2,
(b) CH_2-aryl, or
(c) aryl;

R^{2b} is:
(a) R^{2a}, or
(b) C_3–C_7 cycloalkyl;

R^{2c} is:
(a) $—SO_2$-(C_1–C_6)-alkyl;
(b) —CO-(C_1–C_6)-alkyl;
(c) $—SO_2$-(C_3–C_6)-cycloalkyl,
(d) —CO-(C_3–C_6)-cycloalkyl,
(e) $—SO_2$-(C_1–C_4)-polyfluoroalkyl,
(f) —CO-aryl,
(g) —CO-polyfluoroaryl,
(h) —CO-(2- or 3-thienyl),
(i) $—SO_2$—(2-or 3-thienyl),
(j) —CO-(2-, 3- or 4-pyridyl),
(k) —CONH-(C_1–C_6)-alkyl,
(l) —CON[(C_1–C_6)alkyl]$_2$,
(m) $—CO_2$-(C_1–C_6)-alkyl, or
(n) $—CO_2$-(C_3–C_6)cycloalkyl;

R^{7a} and R^{7b} are independently
(a) H,
(b) (C_1–C_6)-alkyl, (C_2–C_6-alkenyl or (C_2–C_6)-alkynyl,
(c) Cl, Br, I, F,
(d) CF_3, or
(e) when R^{7a} and R^{7b} are bonded to adjacent carbon atoms, they can be joined to form a phenyl ring;

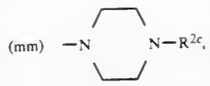
R^{8a} and R^{8b} are independently
(a) H,
(b) aryl-(C_1–C_4)-alkyl,
(c) heteroaryl-(C_1–C_4)-alkyl,
(d) (C_1–C_6)-alkyl, which is unsubstituted or substituted with a substituent selected from the group consisting of: $—CON(R^{2a})_2$, —heteroaryl, $—S(O)_n$-R^{21}, -tetrazol-5-yl, $—CONSHO_2R^{21}$, $—SO_2NH$-heteroaryl, $—SO_2NHCOR^{21}$, $—PO(OR^2)_2$, $—PO(OR^{2a})_2$, $—SO_2NH$-CN, $—NR^{2a}COOR^{21}$, —OH, $—NH_2$, guanidino, (C_1–C_4)-alkoxy, (C_1–C_4)-alkylthio, (C_1–C_4)-alkylamino, (C_1–C_4)-dialkylamino, $—COOR^{2a}$, $—CONHR^{2a}$, —O—COR^{2a}, aryl, or

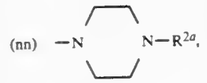


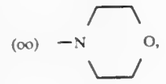
(e) —CO-aryl,
(f) (C_3–C_7)-cycloalkyl,
(g) Cl, Br, I, F,
(h) —OH,
(i) $—OR^{21}$,
(j) —SH,
(k) $—S(O)_n$-(C_1–C_4)-alkyl,
(l) $—COR^{2a}$,
(m) $—CO_2H$,
(n) $—SO_3H$,
(o) $—NR^{2a}R^{21}$,
(p) $—NR^{2a}COR^{21}$,
(q) $—NR^{2a}COOR^{21}$,
(r) $—SO_2NHR^{2a}$,
(s) $—SO_2NR^2R^{2a}$,
(t) $—NO_2$,
(u) $—NHSO_2CF_3$,
(v) $—CONR^{2a}R^{21}$,
(w) —(C_1–C_4)-polyfluoroalkyl,

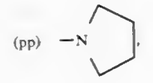
VOL 1155 ISS 2 OCT 12 1993 UMI

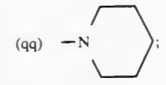
(x) —$COOR^2$,
(y) —SO_3H,
(z) —$N(R^{2a})SO_2R^{21}$,
(aa) —$NR^{2a}CONR^{2b}R^{21}$,
(bb) —$OC(=O)NR^{21}R^{2a}$,
(cc) —aryl,
(dd) —$NHSO_2CF_3$,
(ee) —SO_2NH-heteroaryl,
(ff) —SO_2NHCOR^{21},
(gg) —$CONHSO_2R^{21}$,
(hh) —$PO(OR^2)_2$,
(ii) —tetrazol-5-yl,
(jj) —CONH(tetrazol-5-yl),
(kk) —SO_2NHCN, or
(ll) —heteroaryl;

(mm)  ,

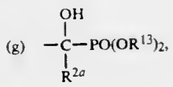
(nn)  ,

(oo)  ,

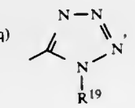
(pp)  , or

(qq)  ;

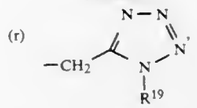
$—X^1—X^2—X^3—X^4—$ is:
(a) —Y—CR^{11}—CR^{12}—CZ—,
(b) —CR^{11}—Y—CR^{12}—CZ—,
(c) —CR^{11}—CR^{12}—Y—CZ—,
(d) —Y—CR^{11}—CZ—CR^{12}—,
(e) —CR^{11}—Y—CZ—CR^{12}—, or
(f) —CR^{11}—CR^{12}—CZ—Y—;
Y is: O, S, SO, or SO_2;
R^9 and R^{10} are each independently:
(a) H,
(b) Cl, Br, I, F,
(c) NO_2,
(d) (C_1–C_6)-alkyl,
(e) (C_1–C_6)-acyloxy,
(f) (C_3–C_6)-cycloalkyl,
(g) (C_1–C_6)-alkoxy,
(h) —$NHSO_2R^{2a}$,
(i) hydroxy-(C_1–C_4)-alkyl,
(j) (C_1–C_4)-alkyl-aryl,
(k) $S(O)_n$-(C_1–C_4)-alkyl,
(n) $NR^{2a}R^{2a}$,
(q) CF_3,
(r) —SO_2NHR^{2a},
(s) furyl,
(t) aryl, wherein aryl is phenyl or naphthyl, unsubstituted or substituted with one or two substituents selected from the group consisting of: Cl, Br, I, F, (C_1–C_4)-alkyl, (C_1–C_4)-alkoxy, NO_2, CF_3, (C_1–C_4)-alkylthio, OH, NH_2, —NH[(C_1–C_4)-alkyl], —N[(C_1–C_4)-alkyl]$_2$, —CO_2H, or —CO_2-(C_1–C_4)-alkyl, or
(u) when R^9 and R^{10} are bonded to adjacent carbon atoms, they can be joined to form an aryl ring;
R^{11} and R^{12} are independently:
(a) H,
(b) Cl, Br, I, F,
(c) NO_2,
(d) NH_2,
(e) NH[(C_1–C_4)-alkyl],
(f) N[(C_1–C_4)-alkyl]$_2$,
(g) SO_2NHR^{2a},
(h) CF_3,
(i) (C_1–C_7)-alkyl,
(j) (C_1–C_6)-alkoxy, or
(k) (C_3–C_7)-cycloalkyl,
(l) when R^{11} and R^{12} are bonded to adjacent carbon atoms, they can be joined to form an aryl ring;
(m) $O(CH_2)_{n+1}O(CH_2)_sCH_3$,
(n) $(C_2)_{n+1}O(CH_2)_sCH_3$,
(o) $(CH_2)N(R^{2a})_2$,
(p) CH_2-$N[CH_2CH_2]_2O$,
(q) $(CH_2)_nN[CH_2CH_2]_2CH_2$,
(r) $CH(OR^{2a})$[(C_1–C_7)-alkyl].
(s) CHO,
(t) CO_2R^{2a},
(u) CH=CH—R^{2a},
(v) CH_2CR^{2a}=$C(R^{2a})_2$,
(w) $(CH_2)_nNCOR^{2a}$,
(x) $(CH_2)_n$aryl, or
(y) $CH(R^{2a})_2$;
Z is:
(a) —CO_2R^{2a},
(b) —SO_3R^{13},
(c) —$NHSO_2CF_3$,
(d) —$PO(OR^{13})_2$,
(e) —SO_2NHR^{2a},
(f) —$CONHOR^{13}$,

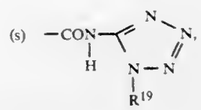
(g)  ,

(h) —CN,
(i) —SO_2NH-heteroaryl, wherein heteroaryl is an unsubstituted, monosubstituted or disubstituted five or six membered aromatic ring which can contain from 1 to 3 heteroatoms selected from the group consisting of O, N or S and wherein the substituents are members selected from the group consisting of: —OH, —SH, —(C_1–C_4)-alkyl, —(C_1–C_4)-alkoxy, —CF_3, Cl, Br, F, I, —NO_2, —CO_2H, —CO_2—(C_1–C_4)-alkyl, —NH_2, NH[(C_1–C_4)-alkyl] and —N[(C_1–C_4)-alkyl]$_2$,
(j) —CH_2SO_2NH-heteroaryl,
(k) —SO_2NH—CO—R^{14},
(l) —CH_2SO_2NH—CO—R^{14},
(m) —CONH—SO_2R^{14},
(n) —CH_2CONH—SO_2R^{14},
(o) —$NHSO_2NHCO$—R^{14},
(p) —$NHCONHSO_2$—R^{14},

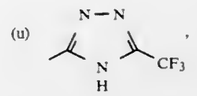
(q) 

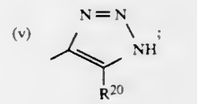
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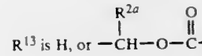
(r) 

(s) 

(t) —$CONHNHSO_2CF_3$,

(u)  , or

(v)  ;

R^{13} is H, or  ;

R^{14} is
(a) aryl,
(b) heteroaryl,
(c) (C_3–C_7)-cycloalkyl, or
(d) (C_1–C_7)-alkyl, unsubstituted or substituted with a substituent selected from the group consisting of; aryl, heteroaryl, —OH, —SN, (C_1–C_4)-alkyl, —(C_1–C_4)-alkoxy, —S(C_1–C_4)-alkyl, —CF_3, Cl, Br, F, I, —NO_2, —CO_2H, CO_2—(C_1–C_4)-alkyl, —NH_2, —N[(C_1–C_4)-alkyl]$_2$, —PO_3H or PO(OH)(O-(C_1–C_4)-alkyl);
(e) (C_1–C_7)-alkoxy,
(f) $O(CH_2)_{n+1}O(CH_2)_sCH_3$,
(g) $(CH_2)_{n+1}O(CH_2)_sCH_3$,
(h) $CH(R^{2a})_2$.
(i) (C_1–C_6)-polyfluoroalkyl, or
(j) NH(C_1–C_6)-alkyl;
R^{15} is
(a) H,
(b) aryl, which is unsubstituted or substituted with 1 or 2 substituents selected from the group consisting of: Cl, Br, I, F —O—(C_1–C_4)-alkyl, (C_1–C_4)-alkyl, —NO_2, —CF_3, —$SO_2NR^2R^{2a}$, —S—(C_1–C_4)—alkyl, —OH, —NH_2, (C_3–C_7)-cycloalkyl, (C_3–C_{10})-alkenyl;
(c) (C_1–C_6)-alkyl, (C_2–C_6)-alkenyl or (C_2–C_6)-alkynyl each of which is unsubstituted or substituted with one or more substituents selected from the group consisting of: aryl, (C_3–C_7)-cycloalkyl, Cl, Br, I, F, —OH, —NH_2, —NH[(C_1–C_4)-alkyl], —N[(C_1–C_4)-alkyl]$_2$, —NH—SO_2R^{2a}, —$COOR^{2a}$, —SO_2NHR^{2a}; or
(d) an unsubstituted, monosubstituted or disubstituted aromatic 5 to 6 membered ring which can contain one or two heteroatoms selected from the group consisting of N, O, S, and wherein the substituents are members selected from the group consisting of —OH, —SH, (C_1–C_4)-alkyl, (C_1–C_4)-alkyloxy, —CF_3, Cl, Br, I, F, or NO_2;
R^{19} is:
(a) H,
(b) (C_1–C_6)-alkyl,
(c) (C_2–C_4)-alkenyl,
(d) (C_1–C_4)-alkoxy, or
(e) benzyl, wherein the phenyl is unsubstituted or substituted with a substituent selected from the group consisting of: —NO_2, —NH_2, —OH or —OCH_3;
R^{20} is —CN, —NO_2, —CO_2R^{2a}, or —CF_3; and
R^{21} is:
(a) aryl, unsubstituted or substituted with a substituent selected from Cl, Br, F or I, or
(b) (C_1–C_4)-alkyl, is unsubstituted or substituted with:
i) NH_2,
ii) NH[(C_1–C_4)-alkyl],
iii) N[(C_1–C_4)-alkyl]$_2$,
iv) CO_2H,
v) CO_2(C_1–C_4)-alkyl,
vi) OH,
vii) SO_3H, or
viii) SO_2NH_2;
(c) heteroaryl
(d) C_3–C_7 cycloalkyl.
or a pharmaceutically acceptable salt thereof.

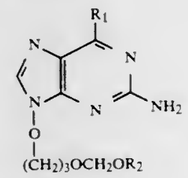
5,252,575

ANTIVIRAL PURINE DERIVATIVES WITH IMPROVED GASTROINTESTINAL ABSORPTION

Michael R. Harnden, Epsom; Paul G. Wyatt, Surrey, and Leslie J. A. Jennings, Epsom, all of England, assignors to Beecham Group p.l.c., Brentford, England

Continuation-in-part of Ser. No. 564,731, Aug. 8, 1990, abandoned. This application May 21, 1992, Ser. No. 886,710
Int. Cl.[5] **A61K** *31/52;* **C07D** *473/18, 473/26*
U.S. Cl. 514—261 **7 Claims**

1. A compound of formula (1) or a pharmaceutically acceptable salt thereof:

(I) 

wherein
R_1 is hydrogen or hydroxy; and
R_2 is C_{1-6} alkyl.

5,252,576

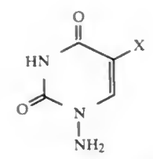
1-AMINO-5-HALOGENOURACILS, PROCESS FOR THEIR PREPARATION, AND CENTRAL NERVOUS SYSTEM DEPRESSANTS CONTAINING SAME AS ACTIVE INGREDIENT

Shinji Sakata, and Masahiro Imaizumi, both of Choshi, Japan, assignors to Yamasa Shoyu Kabushiki Kaisha, Japan

PCT No. PCT/JP89/00708, § 371 Date Jan. 17, 1991, § 102(e) Date Jan. 17, 1991, PCT Pub. No. WO90/01027, PCT Pub. Date Feb. 8, 1990
PCT Filed Jul. 14, 1989, Ser. No. 640,413
Claims priority, application Japan, Jul. 18, 1988, 63-178345; Jul. 18, 1988, 63-178346; Jul. 18, 1988, 63-178347
Int. Cl.[5] **A61K** *31/505;* **C07D** *239/02*
U.S. Cl. 514—269 **14 Claims**

1. A central nervous system depressant which comprises an effective amount of a 1-amino-5-halogenouracil represented by the formula

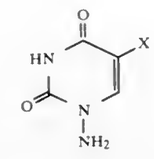
VOL 1155 ISS 2 OCT 12 1993 UMI



[I]

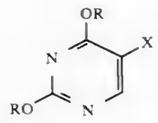
wherein X represents a halogen atom selected from the group consisting of chlorine, bromine and iodine, or a pharmaceutically acceptable salt thereof as an active ingredient and a pharmaceutically acceptable carrier.

3. A process for preparing a 1-amino-5-halogenouracil represented by the formula



[I]

wherein X represents a halogen atom, which comprises reacting a pyrimidine derivative represented by the formula



[II]

wherein X represents a halogen atom and R represents a protective group selected from the group consisting of a silyl group and an alkyl group,

with a hydroxylamine to aminate the 1-position of the pyrimidine derivative, and removing the protective groups.

5,252,577

METHODS OF DESENSITIZING TEETH

Miklos M. Breuer, Brookline, and Samuel S. Turesky, Chestnut Hill, both of Mass., assignors to Gillette Canada, Inc., Kirkland, Canada

Filed Mar. 6, 1992, Ser. No. 847,922
Int. Cl.[5] A61K *31/515, 6/00, 7/16*
U.S. Cl. 514—270 **5 Claims**

1. A method of desensitizing a hypersensitive tooth comprising topically applying to the tooth a composition comprising an amount of a barbiturate effective to desensitize the hypersensitive tooth.

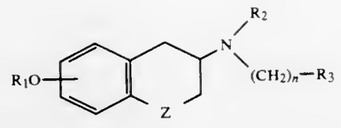
5,252,578

NEW 3-AMINOCHROMAN COMPOUNDS

Gérald Guillaumet, Orleans, and Béatrice Guardiola, Neuilly sur Seine, both of France, assignors to Adir et Compagnie, Courbevoie, France

Filed Mar. 29, 1991, Ser. No. 677,136
Claims priority, application France, Apr. 9, 1990, 90 04481
Int. Cl.[5] A61K *31/35;* **C07D** *311/58*
U.S. Cl. 514—278 **10 Claims**

1. A compound selected from formula (I):



(1)

in which:

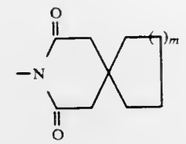
Z represents oxygen or sulfur,

R_1 represents hydrogen or (C_1–C_6) alkyl,

R_2 represents or (C_1–C_6) alkyl,

n is an integer of 1 to 6, inclusive, and

R_3 represents



in which:

m is 1 or 2;

and the nitrogen of the pyridine ring is situated in α, β, γ- or δ-position with respect to the ring-junction,

its enantiomers, diastereoisomers and epimers and its pharmaceutically, acceptable acid addition salts.

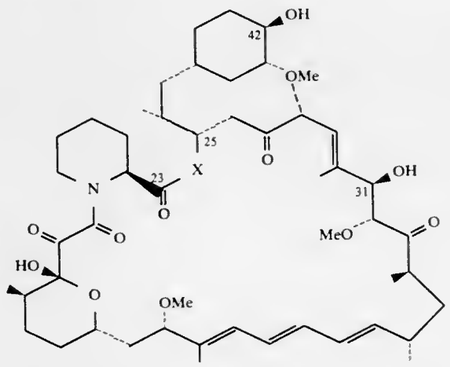
5,252,579

MACROCYCLIC IMMUNOMODULATORS

Jerauld S. Skotnicki, Allentown; Amedeo A. Failli, Princeton Junction; Robert J. Steffan, Langhorne, and Robert M. Kearney, Lawrenceville, all of N.J., assignors to American Home Products Corporation, New York, N.Y.

Filed Feb. 16, 1993, Ser. No. 17,586
Int. Cl.[5] C07D *491/16;* **A61K** *31/345*
U.S. Cl. 514—291 **13 Claims**

1. A compound of the structure



wherein

X is selected from the group consisting of —$NR^1CR^2R^3(CR^4R^5)_mS$—, —$NR^1CR^2R^3(CR^4R^5)_mO$—, —$OCR^2R^3(CR^4R^5)_mO$—, —$NR^1CR^2R^3(CR^4R^5)_p$—, —$OCR^2R^3(CR^4R^5)_p$—, —$NR^1CR^2R^3(CR^4R^5)_mNR^6$—, —$OCR^2R^3(CR^4R^5)_mNR^6$—, —$SCR^2R^3(CR^4R^5)_mNR^6$—, —$SCR^2R^3(CR^4R^5)_mS$—, —$NOR^1$—, and —$NR^1$—;

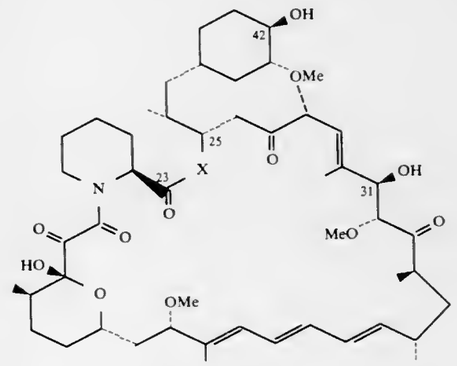
R^1, R^2, R^3, R^4, R^5, and R^6 are each, independently, hydrogen, alkyl of 1-6 carbon atoms, fluorine, trifluoromethyl, aryl, arylalkyl or 7-10 carbon atoms, or any pair taken together to form a 3-6 membered ring, wherein the aryl moiety of the aryl and arylalkyl groups is selected from the group consisting of phenyl, naphthyl, pyridyl, quinolyl, isoquinolyl, quinoxalyl, thienyl, thionaphthyl, furyl, benzofuryl, benzodioxyl, benzoxazolyl, benzoisoxazolyl, and benzodioxolyl which may be optionally mono-, di-, or tri-substituted with a group selected from alkyl of 1-6 carbon atoms, arylalkyl of 7-10 carbon atoms, alkoxy of 1-6 carbon atoms, cyano, halo, nitro, carbalkoxy of 2-7 carbon atoms, trifluoromethyl, amino, dialkylamino of 1-6 carbon atoms per alkyl group, alkylthio of 1-6 carbon atoms, —SO_3H, —PO_3H, and —CO_2H;

m=1-6; and

p=0-6

or a pharmaceutically acceptable salt thereof.

5. A method of inducing immunosuppression in a mammal in need thereof which comprises, administering to said mammal an immunosuppressive amount of a compound of the structure



wherein

X is selected from the group consisting of —$NR^1CR^2R^3(CR^4R^5)_mS$—, —$NR^1CR^2R^3(CR^4R^5)_mO$—, —$OCR^2R^3(CR^4R^5)_mO$—, —$NR^1CR^2R^3(CR^4R^5)_p$—, —$OCR^2R^3(CR^4R^5)_p$—, —$NR^1CR^2R^3(CR^4R^5)_mNR^6$—, —$OCR^2R^3(CR^4R^5)_mNR^6$—, —$SCR^2R^3(CR^4R^5)_mNR^6$—, —$SCR^2R^3(CR^4R^5)_mS$—, —$NOR^1$—, and —$NR^1$—;

R^1, R^2, R^3, R^4, R^5, and R^6 are each, independently, hydrogen, alkyl of 1-6 carbon atoms, fluorine, trifluoromethyl, aryl, arylalkyl or 7-10 carbon atoms, or any pair taken together to form a 3-6 membered ring, wherein the aryl moiety of the aryl and arylalkyl groups is selected from the group consisting of phenyl, naphthyl, pyridyl, quinolyl, isoquinolyl, quinoxalyl, thienyl, thionaphthyl, furyl, benzofuryl, benzodioxyl, benzoxazolyl, benzoisoxazolyl, and benzodioxolyl which may be optionally mono-, di-, or tri-substituted with a group selected from alkyl of 1-6 carbon atoms, arylalkyl of 7-10 carbon atoms, alkoxy of 1-6 carbon atoms, cyano, halo, nitro, carbalkoxy of 2-7 carbon atoms, trifluoromethyl, amino, dialkylamino of 1-6 carbon atoms per alkyl group, alkylthio of 1-6 carbon atoms, —SO_3H, —PO_3H, and —CO_2H;

m=1-6; and

p=0-6

or a pharmaceutically acceptable salt thereof.

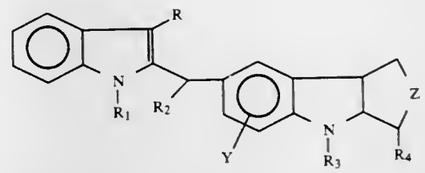
5,252,580

INDOLE DERIVATIVES AND ANTI-ULCER COMPOSITIONS THEREOF

Toshihiro Takahashi; Hitoshi Inoue, both of Saitama; Masato Horigome, Tokyo; Kenichi Momose, Saitama; Masanori Sugita, Saitama; Kouichi Katsuyama, Saitama; Chikako Suzuki, Saitama; Shinji Nagai, Saitama; Masao Nagase, Saitama, and Koichi Nakamaru, Saitama, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

Filed Sep. 18, 1992, Ser. No. 947,169
Claims priority, application Japan, Sep. 30, 1991, 3-276333
Int. Cl.[5] A61K *31/445;* **C07D** *401/06*
U.S. Cl. 514—292 **10 Claims**

1. A compound of formula (I)



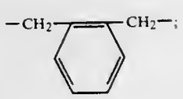
(I)

wherein

Y represents H, C_1–C_6 alkyl, C_1–C_6 alkoxy or halogen;

Z represents —$CH_2N(R_5)$—;

R represents H or —CH_2CH_2X where X represents pyridyl, aralkyloxy or substituted amino of NR_6R_7 where R_6 represents H, C_1–C_6 alkyl, aralkyl, C_1–C_6 alkoxycarbonyl, aralkyloxycarbonyl or halogenated C_1–C_6 alkoxycarbonyl and R_7 represents H, C_1–C_6 alkyl or aralkyl, or together with R_2 may form a ring of —$(CH_2)_n$— (n is 1-4) or



R_1 represents H, C_1–C_6 alkyl, aralkyl or arylsulfonyl;

R_2 represents C_1–C_6 alkyl, hydroxy, C_1–C_6 alkoxy or aralkyloxy;

R_3 represents H, C_1–C_6 alkyl, aralkyl or halogenated C_1–C_6 alkyl;

R_4 and R_5 may be the same or different and each represents H, C_1–C_6 alkyl or aralkyl or both may together form a ring of —$(CH_2)_m$— (m is 3 or 4);

or a pharmaceutically acceptable acid addition salt thereof.

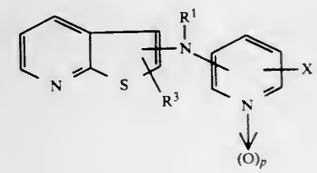
5,252,581

SUBSTITUTED AMINOTHIENOPYRIDINES, PHARMACEUTICAL COMPOSITION AND USE

Richard C. Effland; Joseph T. Klein, both of Bridgewater, and Lawrence L. Martin, Lebanon, all of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Filed Jul. 20, 1992, Ser. No. 917,247
Int. Cl.[5] A61K *31/44;* **C07D** *213/28*
U.S. Cl. 514—301 **12 Claims**

1. A compound of the formula



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where
R^1 is hydrogen, (C_1-C_6)alkyl, (C_3-C_6)alkenyl, (C_3-C_6)alkynyl,
aryl(C_1-C_6)alkyl, aryl(C_1-C_6)alkoxycarbonyl, (C_1-C_6)alkylcarbonyl,
formyl, (C_1-C_6)alkoxycarbonyl,
(C_1-C_6)alkoxycarbonylamino(C_1-C_{18})alkylcarbonyl,
aryl(C_1-C_6)alkoxycarbonylamino, (C_1-C_{18})alkylcarbonyl, (C_1-C_6)alkylamino(C_1-C_6)alkylcarbonyl, amino(C_1-C_18)alkylcarbonyl,
(C_1-C_6)dialkylamino(C_1-C_6)alkylcarbonyl, amino(C_1-C_6)alkyl,
(C_1-C_6)alkylamino(C_1-C_6)alkyl, or (C_1-C_6)dialkylamino(C_1-C_6)alkyl;
R^3 hydrogen, (C_1-C_6)alkyl or (C_1-C_6)alkoxycarbonyl;
X is hydrogen, (C_1-C_6)alkyl, halo, (C_1-C_6)alkoxy or nitro;
p is 0 or 1; and
pharmaceutically acceptable addition salts thereof and optical or geometrical isomers or racemic mixtures thereof.

5,252,582

MICROBIOCIDAL TRIAZOLO-PYRIDINE DERIVATIVES

Manfred Jautelat, Burscheid; Stefan Dutzmann, Hilden, and Heinz-Wilhelm Dehne, Monheim, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

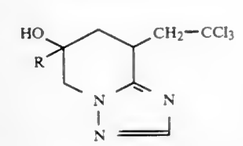
Filed Feb. 9, 1993, Ser. No. 15,701

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1992, 4204816

Int. Cl.[5] A01N *43/90;* **C07D** *471/04*

U.S. Cl. 514—303 **10 Claims**

1. A triazolo-pyridine derivative of the formula



in which
R is alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, aryl and substituted aryl,
or an addition product thereof with an acid or metal salt.

5,252,583

ISOQUINOLINE DERIVATIVES FOR THE TREATMENT OF GLAUCOMA OR OCULAR HYPERTENSION

Toyohiro Tadokoro; Kiyoshi Sato; Shigeki Hatakeyama; Shigeo Kawase, and Masao Ueno, all of Saitama, Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

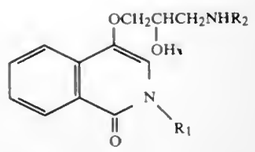
Division of Ser. No. 495,386, Mar. 16, 1990, abandoned. This application Apr. 30, 1992, Ser. No. 876,411

Claims priority, application Japan, Mar. 28, 1989, 1-73866; Sep. 20, 1989, 1-242303

Int. Cl.[5] A61K *31/47*

U.S. Cl. 514—309 **1 Claim**

1. A method for the treatment of glaucoma or ocular hypertension by contacting the eye with a composition containing an effective introcular pressure reducing amount of a compound of formula I



wherein R_1 is a hydrogen atom or a C_1-C_6 alkyl group and R_2 is a C_1-C_6 alkyl group and the pharmaceutically acceptable salt and an ophthalmologically compatible carrier.

5,252,584

HYDROXYQUINOLONE DERIVATIVES

William R. Carling, Bishops Stortford; Paul D. Leeson, Cambridge, and Kevin W. Moore, Buntingford, all of England, assignors to Merck Sharp & Dohme Limited, Hoddesdon, England

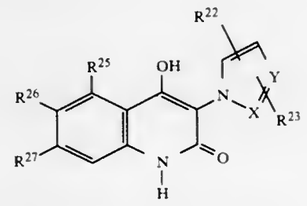
Filed Dec. 3, 1991, Ser. No. 801,998

Claims priority, application United Kingdom, Dec. 5, 1990, 9026389

Int. Cl.[5] C07D *215/56*

U.S. Cl. 514—312 **3 Claims**

1. A compound represented by formula IIA:



(IIA)

or a pharmaceutically acceptable salt thereof,
wherein
X and Y independently represent carbon or nitrogen;
R^{22} and R^{23} are attached to ring carbons and are independently selected from the group consisting of hydrogen, halogen, cyano, trifluoromethyl, nitro, hydroxy, amino, di(C_{1-6})alkylamino, carboxy, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, phenyl, naphthyl, benzyl, phenyl (C_{2-6}) alkynyl, C_{1-6} alkoxy, phenoxy, naphthyloxy, phenyl (C_{1-6}) alkoxy, naphthyl (C_{1-6}) alkoxy, C_{1-6} alkylthio and C_{2-7} alkoxycarbonyl; and
R^{25} represents hydrogen, nitro, methyl, ethyl, vinyl or halogen;
R^{26} represents hydrogen or chlorine;
R^{27} represents hydrogen, cyano, trifluoromethyl, nitro or halogen.

5,252,585

FLUORINATED QUINOLINE INDOLES AS INHIBITORS OF THE BIOSYNTHESIS OF LEUKOTRIENES

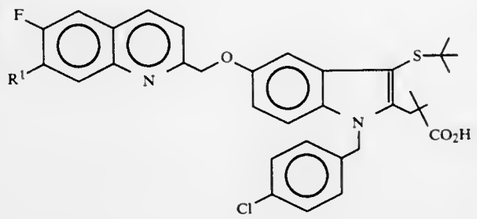
Richard Frenette, Laval, and John Hutchinson, Montreal, both of Canada, assignors to Merck Frosst Canada, Inc., Kirkland, Canada

Filed Jun. 22, 1992, Ser. No. 903,051

Int. Cl.[5] C07D *401/12;* **A61K** *31/475*

U.S. Cl. 514—314 **6 Claims**

1. A compound of the Formula I:



wherein:
R^1 is H, F or MeO;
or a pharmaceutically acceptable salt thereof.

4. A method of preventing the synthesis, the action, or the release of SRS-A or leukotrienes in a mammal which comprises administering to said mammal an effective amount of a compound of claim **1**.

5,252,586

ETHER DERIVATIVES OF ALKYL PIPERIDINES AND PYRROLIDINES AS ANTIPSYCHOTIC AGENTS

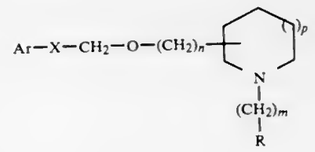
Gary A. Cain, New Castle, Del.; Thomas E. Christos, Oxford, Pa., and Sang W. Tam, Hockessin, Del., assignors to The Du Pont Merck Pharmaceutical Company, Wilmington, Del.

Filed Sep. 28, 1990, Ser. No. 589,863

Int. Cl.[5] C07D *211/06;* **A01N** *43/40*

U.S. Cl. 514—317 **24 Claims**

1. A compound having the formula:



(I)

wherein:
n is 0, 1, or 2;
p is 0 or 1;
m is 1, 2, or 3;
X is —C≡C— or $R^1C{=}CR^2$
R^1 and R^2 independently are H, alkyl of 1–4 carbon atoms, or phenyl;
Ar is naphthyl or phenyl, optionally substituted with 1-5-substituents individually selected from NO_2, halogen, CF_3, SH, alkyl of 1–4 carbon atoms, alkoxy of 1–4 carbon atoms, hydroxy alkyl of 1–4 carbon atoms



or $S(O)_qR^5$ where q is 0, 1, or 2; R^3 and R^4 independently are H, alkyl of 1–4 carbon atoms, or phenyl;
R^5 is alkyl of 1–4 carbon atoms or phenyl;
R is H, alkyl of 1–5 carbon atoms, cycloalkyl of 3–6 carbon atoms, Ar^1 where Ar^1 is phenyl or naphthyl, or $-CH{=}CR^6R^7$; and
R^6 and R^7 independently are H or alkyl of 1–4 carbon atoms, provided that when n=0 the side chain is not located at the 2-position of the ring; or
a pharmaceutically acceptable salt thereof.

5,252,587

N-DERIVATIVES OF 1-DEOXY NOJIRIMYCIN

Brigitte Lesur, Strasbourg; Jean-Bernard Ducep, Sundhoffen, and Charles Danzin, Strasbourg, all of France, assignors to Merrell Dow Pharmaceuticals, Inc., Cincinnati, Ohio

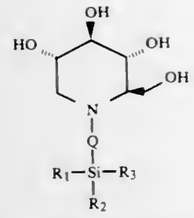
Continuation-in-part of Ser. No. 691,189, Apr. 25, 1991, abandoned. This application Jun. 15, 1992, Ser. No. 898,992

Claims priority, application European Pat. Off., Apr. 27, 1990, 90401169.9

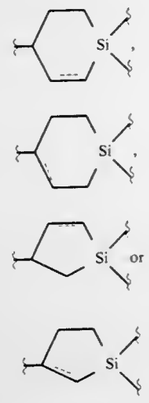
Int. Cl.[5] A61K *31/435;* **C07F** *7/02*

U.S. Cl. 514—317 **35 Claims**

1. A compound of the formula



geometric isomeric forms, and the pharmaceutically acceptable salts thereof wherein
Q is C_{1-7} alkylene, $(CH_2)_mCH{=}CH(CH_2)_n$, $(CH_2)_mC{\equiv}C(CH_2)_n$, $(CH_2)_m(CH{=}C{=}CH(CH_2)_n$, $(CH_2)_p$ phenylene, $(CH_2)_m$ cyclopentenylene, $(CH_2)_m$ cyclohexenylene, $(CH_2)_pT$, where T is a trivalent hydrocarbyl moiety which, together with the depicted silicon atom, forms a 5- or 6-atom cyclic silicane having the partial structure of the formula



wherein the ---- (dotted line) means an optional double bond with m being 1, 2 and 3, n being 0, 1 or 2, p being 0, 1, 2, 3 or 4,
R_1 is C_{1-7} alkyl, C_{1-7} alkoxy, $-C_{1-6}$ alkylene$-(OH)_m$, $-C_{1-6}$ alkylene$-(C_{1-6}$ alkoxy$)_m$, chloro C_{1-6} alkyl,
R_2 and R_3 are C_{1-10} alkyl, $(CH_2)_p-X,Y$-substituted phenyl with X and Y each being H, OH, halogen, C_{1-6} alkyl, C_{1-6} alkoxy, CF_3, CN, NO_2, SH or —S— C_{1-6} alkyl, with the proviso that when Q is $(CH_2)_pT$, then one of R_1, R_2 or R_3 is deleted.

5,252,588

PERCUTANEOUSLY ABSORBABLE CROSSLINKED POLYVINYLPYRROLIDONE EPERISONE OR TOLPERISONE PREPARATION

Masato Azuma; Tsutomu Negama, both of Osaka; Mitsuhiro Yosbida, and Hiroyuki Fujimori, both of Saitama, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka; Sansho Co., Ltd. and Eisai Co., Ltd., both of Tokyo, all of Japan

Continuation of Ser. No. 683,281, Apr. 10, 1991, abandoned. This application Feb. 2, 1993, Ser. No. 13,018

Claims priority, application Japan, Apr. 27, 1990, 2-112792

Int. Cl.[5] A61K *31/445, 9/70*

U.S. Cl. 514—317 **8 Claims**

1. A pharmacological composition to administer percutaneously, which comprises a pharmacologically effective amount of eperisone, a salt thereof, tolperisone or a salt thereof, a

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water-swellable crosslinked polyvinylpyrrolidone and a base carrier.

5,252,589

BENZOCYCLOHEPTENE DERIVATIVE AND PROCESS FOR PREPARATION THEREOF

Masakatsu Ozeki, Kawagoe; Kōsuke Yasuda, Kounosu; Masamichi Morimoto, Tokyo; Tohru Ishizuka, Kitamoto, and Kunio Nosaka, Kasukabe, all of Japan, assignors to Tanabe Seikayu Co., Ltd., Osaka, Japan

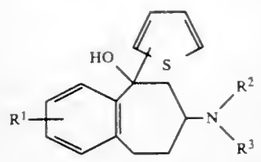
Filed Dec. 14, 1992, Ser. No. 990,239

Int. Cl.[5] A61K *31/38, 31/445*

U.S. Cl. 514—319 9 Claims

1. A benzocycloheptene compound of the formula [I]:

[I]



wherein R^1 is hydrogen atom, a halogen atom or a lower alkoxy group, R^2 and R^3 combine together with adjacent nitrogen atom to form a heteromonocyclic group, or a pharmaceutically acceptable salt thereof.

5,252,590

1-PYRIDYLIMIDAZOLE DERIVATIVE

Hiroki Tomioka, Tokyo; Noriyasu Sakamoto, Nishinomiya; Kimitoshi Umeda; Hiroaki Fujimoto, both of Toyonaka; Takao Ishiwatari, Minoo, and Hirosi Kisida, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jun. 24, 1992, Ser. No. 903,135

Claims priority, application Japan, Jun. 28, 1991, 3-185735

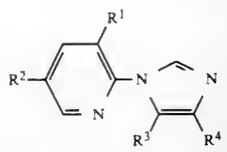
The portion of the term of this patent subsequent to Jun. 16, 2009, has been disclaimed.

Int. Cl.[5] A61K *31/44;* C07D *401/04*

U.S. Cl. 514—341 9 Claims

1. A pyridylimidazole derivative having the formula:

(I)



wherein R^1 is a halogen atom, a nitro group or a trifluoromethyl group; R^2 is a C_1–C_3 haloalkyl group or a C_1–C_3 haloalkoxy group; R^3 is a C_1–C_3 alkyl group; R^4 is a tert-butyl group or a C_1–C_4 haloalkyl group.

5,252,591

PYRIDINYL-TERMINATED ALKYLAMINO ETHYNYL ALANINE AMINO DIOL COMPOUNDS FOR TREATMENT OF HYPERTENSION

Gunnar J. Hanson, Skokie, Ill., and Robert E. Manning, St. Louis, Mo., assignors to G. D. Searle & Company

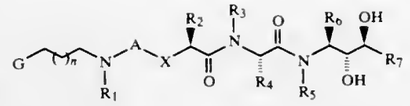
Filed Aug. 14, 1992, Ser. No. 930,068

Int. Cl.[5] C07D *233/65;* A61K *31/44*

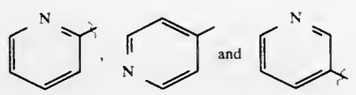
U.S. Cl. 514—357 35 Claims

1. A compound of Formula I:

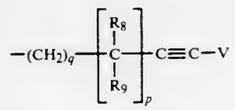
(I)



wherein A is selected from CO and SO_2; wherein X is selected from oxygen atom and methylene; wherein R_1 is selected from hydrido and alkyl; wherein G is a pyridinyl group selected from



and wherein any substitutable position of G may be optionally substituted with one or more radicals selected from alkyl, alkoxy, alkenyl, alkynyl, halo, trifluoromethyl, oxo, cyano and phenyl, and wherein the ring nitrogen atom of G may be combined with oxygen to form an N-oxide; wherein R_2 is selected from alkyl, cycloalkylalkyl, acylaminoalkyl wherein the acyl moiety contains one to about 15 carbon atoms, phenylalkyl and naphthylalkyl, and wherein the cyclic portion of any of said phenylalkyl, cycloalkylalkyl and naphthylalkyl groups may be substituted by one or more radicals selected from halo, hydroxy, alkoxy and alkyl; wherein each of R_3 and R_5 is independently selected from hydrido and alkyl; wherein R_4 is selected from



wherein V is selected from hydrido, alkyl, benzyl and phenyl; wherein each of R_8 and R_9 is a radical independently selected from hydrido, alkyl, alkenyl and phenyl; wherein R_6 is selected from alkyl, cycloalkylalkyl and phenylalkyl, any one of which may be substituted with one or more groups selected from alkyl, hydroxy and alkoxy; wherein R_7 is selected from hydrido, alkyl, cycloalkyl, cycloalkylalkyl, hydroxyalkyl and alkenyl; wherein p is a number selected from zero through five, inclusive; wherein q is a number selected from zero through five, inclusive; and wherein n is a number selected from zero through five, inclusive; or a pharmaceutically-acceptable salt thereof.

5,252,592

TETRAZOLEACETIC ACID DERIVATIVES HAVING ALDOSE REDUCTASE INHIBITORY ACTIVITY

Sinji Inukai, Hatano; Mitsuzi Agata, Kanagawa; Kiyoshi Akiba, Kanagawa; Takeo Ohmura, Kanagawa; Yoshihiro Horio, Hatano; Yasuhiro Ootake, Minami-ashigara; Shohei Sawaki, Kanagawa, and Masayoshi Goto, Isehara, all of Japan, assignors to Wakamoto Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Jan. 16, 1992, Ser. No. 821,456

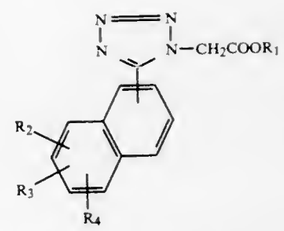
Claims priority, application Japan, Jan. 18, 1991, 3-16889

Int. Cl.[5] A61K *31/41;* C07D *257/04*

U.S. Cl. 514—381 17 Claims

1. A tetrazoleacetic acid derivative represented by the following formula (I):

[I]



wherein R_1 represents a hydrogen atom or a lower alkyl group, R_2, R_3 and R_4 are the same or different and are selected from the group consisting of hydrogen, lower alkyl, halogen, lower haloalkyl, hydroxy and lower alkoxy, the tetrazole group being substituted at the 1- or 2-position of the naphthyl group with the proviso that said derivative is exclusive of [5-(1-naphthyl)tetrazol-1-yl]acetic acid and the ethyl ester thereof, or a salt thereof.

5,252,593

PYAZOLE CONTAINING BENZOFURAN DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS

Barry C. Ross; David Middlemiss; David I. C. Scopes; Torquil I. M. Jack; Kevin S. Cardwell; Michael D. Dowle; Colin D. Eldred; John G. Montana; Pritom Shah, and Stephen P. Watson, all of Ware, Great Britain, assignors to Glaxo Group Limited, Greenford, United Kingdom

Filed May 15, 1992, Ser. No. 883,380

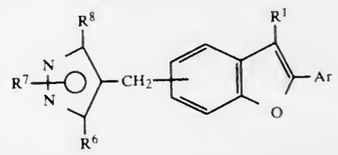
Claims priority, application United Kingdom, May 16, 1991, 9110623

Int. Cl.[5] A61K *31/41, 31/415;* C07D *405/02, 405/14*

U.S. Cl. 514—382 20 Claims

1. A compound of formula (1):

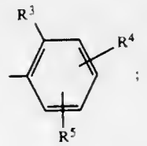
(I)



or a physiologically acceptable salt, solvate or metabolically labile ester thereof wherein

R^1 represents a hydrogen atom or a halogen atom or a group selected from C_{1-6}alkyl, C_{2-6}alkenyl, fluoroC_{1-6}alkyl, C_{1-6}alkoxy —CHO, $—CO_2H$ or $—COR^2$;

Ar represents the group



;

R^2 represents a group selected from C_{1-6}alkyl, C_{2-6}alkenyl, C_{1-6}alkoxy or the group $—NR^{14}R^{15}$;

R^3 represents a group selected from $—CO_2H$, $—NHSO_2CF_3$ or a C-linked tetrazolyl group;

R^4 and R^5 which may be the same or different each independently represent a hydrogen atom or a halogen atom or a C_{1-6}alkyl group;

R^6 represents a hydrogen atom or a group selected from C_{1-6}alkyl or C_{2-6}alkenyl, C_{1-6}alkylthio, C_{1-6}alkoxy, C_{3-7}cycloalkyl or C_{3-7}cycloalkylC_{1-4}alkyl;

R^7 represents a hydrogen atom or a group selected from C_{1-6}alkyl, C_{3-7}cycloalkyl, C_{3-7}cycloalkylC_{1-4}alkyl, C_{3-6}alkenyl, fluoroC_{1-6}alkyl, fluoroC_{3-6}alkenyl, phenyl, $—(CH_2)_kCOR^9$ or $—(CH_2)_kSO_2R^9$;

R^8 represents a hydrogen atom or a group selected from C_{1-6}alkyl optionally substituted by a hydroxy or C_{1-6}alkoxy group, C_{2-6}alkenyl, fluoroC_{1-6}alkyl, $—(CH_2)_mR^{10}$, $—(CH_2)_nCOR^{11}$ or $—(CH_2)_pNR^{12}COR^{13}$;

R^9 represents a group selected from C_{1-6}alkyl, C_{2-6}alkenyl, C_{1-6}alkoxy or the group $—NR^{14}R^{15}$;

R^{10} represents a phenoxy or benzyloxy group;

R^{11} represents a hydrogen atom or a group selected from hydroxy, C_{1-6}alkyl, C_{1-6}alkoxy, phenyl, phenoxy or the group $—NR^{14}R^{15}$;

R^{12} represents a hydrogen atom or a C_{1-6}alkyl group;

R^{13} represents a hydrogen atom or a group selected from C_{1-6}alkyl, C_{1-6}alkoxy, phenyl, benzyl, phenoxy or the group $—NR^{14}R^{15}$;

R^{14} and R^{15}, which may be the same or different, each independently represent a hydrogen atom or a C_{1-4}alkyl group or $—NR^{14}R^{15}$ forms a saturated heterocyclic ring which has 5 or 6 ring members and may optionally contain in the ring one oxygen atom;

k represents zero or an integer from 1 to 4;

m represents an integer from 1 to 4;

n represents zero or an integer from 1 to 4; and

p represents an integer from 1 to 4.

5,252,594

FUNGICIDAL (2-ARYL-2-SUBSTITUTED)ETHYL-1,2,4-TRIAZOLES

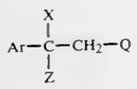
Steven H. Shaber, Horsham, Pa., and Katherine E. Flynn, Loveland, Ohio, assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Jun. 17, 1992, Ser. No. 900,047

Int. Cl.[5] A01N *43/653;* C07D *249/08*

U.S. Cl. 514—383 10 Claims

1. A compound of the formula



wherein

Ar is phenyl, naphthyl, or phenyl or naphthyl each independently substituted with up to three substituents independently selected from the group consisting of halogen, trihalomethyl, cyano, phenyl, phenoxy, $(C_1$–$C_4)$alkyl, halo$(C_1$–$C_4)$alkyl, $(C_1$–$C_4)$alkoxy and halo$(C_1$–$C_4)$alkoxy;

Z is $(C_2$–$C_{12})$alkyl, halo$(C_1$–$C_{12})$alkyl, cyclo$(C_3$–$C_8)$alkyl, cyclo$(C_3$–$C_8)$alkyl$(C_1$–$C_5)$alkyl, $(C_6$–$C_{10})$aryl, $(C_6$–$C_{10})$ar$(C_1$–$C_5)$alkyl, or $(C_6$–$C_{10})$aryl or $(C_6$–$C_{10})$ar$(C_1$–$C_5)$alkyl each independently substituted with up to three substituents independently selected from the group consisting of halogen, trihalomethyl, cyano, phenyl, phenoxy, $(C_1$–$C_4)$alkyl, halo$(C_1$–$C_4)$alkyl, $(C_1$–$C_4)$alkoxy and halo$(C_1$–$C_4)$alkoxy;

Q is a 1-(1,2,4-triazolyl) or a 4-(1,2,4-triazolyl); and

X is —NC, $—CH_2N{\equiv}C$, $—CH_2NHCHO$, —NHCHO, $—NHCOCH_3$, $—NHCO_2R$, —NHCONHR, $—NH_2$, $—N{=}C(R)_2$, —NCO or $—NO_2$ wherein R is H or $(C_1$–$C_5)$alkyl; or the agronomically acceptable enantiomorphs, acid addition salts, or metal salt complexes thereof.

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5,252,595

METHOD FOR REDUCING OR MAINTAINING INTRAOCULAR PRESSURE IN THE MAMMALIAN EYE BY ADMINISTERING PHARMACEUTICAL COMPOSITIONS CONTAINING 2-(2-ALKYLPHENYLAMINO)-OXAZOLINES, 2-(2-ALKYLPHENYL-AMINO)-THIAZOLINES AND 2-(2-ALKYLPHENYLAMINO)-IMIDAZOLINES

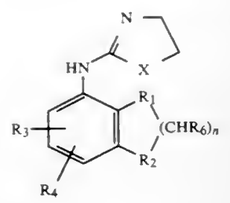
Charles Gluchowski, Mission Viejo, Calif., assignor to Allergan, Inc., Irvine, Calif.

Division of Ser. No. 486,381, Feb. 28, 1990, Pat. No. 5,151,440. This application Aug. 5, 1992, Ser. No. 926,252

Int. Cl.[5] A61K *31/415, 31/425*

U.S. Cl. 514—392 **15 Claims**

1. A method of treating animals of the mammalian species, including humans, for the purpose of reducing or maintaining intraocular pressure in the eye of the mammal, the method of treatment comprising the steps of administering to the mammal a pharmaceutical composition which comprises as its active ingredient one or more compounds of the formula



where

X is S or NH;

n is an integer with the values of 0, 1 or 2; R_3 and R_4 independently are H or lower alkyl having 1 to 6 carbons;

R_5 is H or lower alkyl of 1 to 6 carbons, with the proviso that when n is 0 then R_1 is lower alkyl having 1 to 6 carbon atoms and R_2 is H or lower alkyl having 1 to 6 carbon atoms, when n is 1 or 2, then R_1 and R_2 both are CHR_5, where R_5 independently is H or lower alkyl of 1 t 6 carbons, or salts of compounds of said formula, the active ingredient being present in the pharmaceutical composition in approximately 0.0001 to 1.0 percent weight by volume concentration.

5,252,596

PHENOXYALKYLAMINE DERIVATIVE AND METHOD FOR CONTROLLING NOXIOUS ORGANISMS CONTAINING THE SAME

Tokio Obata; Katsutoshi Fujii; Akira Ooka, and Shoji Shikita, all of Ube, Japan, assignors to UBE Industries, Ltd., Yamaguchi, Japan

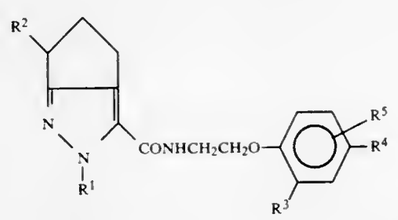
Filed Jun. 26, 1992, Ser. No. 903,940

Claims priority, application Japan, Jun. 28, 1991, 3-252717; Aug. 30, 1991, 3-298592; Nov. 26, 1991, 3-355387

Int. Cl.[5] A61K *43/56;* **C07D** *231/54*

U.S. Cl. 514—403 **8 Claims**

1. A phenoxyalkylamine compound represented by the following formula:



(I)

wherein R^1 represents a lower alkyl group; R^2 represents hydrogen atom or a lower alkyl group; R^3 represents hydrogen atom or a lower alkyl group; R^4 represents —A—O—R^6 where A represents a lower alkylene group and R^6 represents a lower alkyl group, a lower alkenyl group or a lower alkynyl group; and R^5 represents hydrogen atom or a lower alkyl group.

5,252,597

ANTIHYPERTENSIVE BENZOPYRAN DERIVATIVES

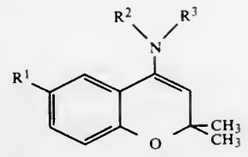
Dominick A. Quagliato, Edison, N.J., assignor to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 773,186, Oct. 8, 1991, Pat. No. 5,171,857, which is a continuation-in-part of Ser. No. 753,256, Aug. 30, 1991, abandoned, which is a continuation of Ser. No. 502,084, Mar. 29, 1990, abandoned. This application Aug. 26, 1992, Ser. No. 936,143

Int. Cl.[5] C07D *407/04;* **A61K** *31/40*

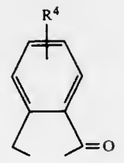
U.S. Cl. 514—414 **4 Claims**

1. A compound of formula (I)



(I)

wherein R^1 is trifluoromethoxy or β,β,β-trifluoroethoxy; R^2 and R^3 are joined together to form



wherein R^4 is selected from the group consisting of hydrogen, alkoxy containing 1 to 5 carbon atoms, amino or mono- or disubstituted alkyl amino wherein said alkyl groups contain 1 to 5 carbon atoms and the pharmaceutically acceptable salts and solvates thereof.

4. A method of treatment of hypertension in mammals which comprises administering to the mammal in need thereof an effective antihypertensive amount of a compound of claim **1**.

5,252,598

LABDANE DERIVATIVES, A PROCESS FOR THEIR PREPARATION, AND THEIR USE AS MEDICAMENTS

Yatendra Khandelwal; Greta Moraes; Bansi Lal; Vijay A. Aroskar; Alibussein N. Dohadwalla, all of Bombay, India, and Richard H. Rupp, Königstein/Taunus, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

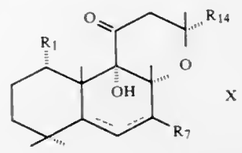
Continuation of Ser. No. 579,193, Sep. 7, 1990, abandoned, which is a continuation of Ser. No. 277,174, Nov. 29, 1988, abandoned. This application May 4, 1992, Ser. No. 879,108

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1987, 3740625

Int. Cl.[5] A61K *31/35;* **C07D** *311/92*

U.S. Cl. 514—455 **11 Claims**

1. A compound of the formula I:

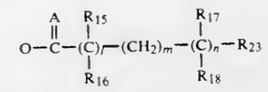


I

in which

R_1 represents hydroxyl or C_1-C_{18}-alkanoyloxy,

R_7 is a radical of the formula II:



II

in which

l represents 0 or an integer from 1 to 4,

m and n represent 0,

A represents oxygen or sulfur,

R_{15} to R_{18} are each hydrogen,

R_{23} is a group of the formula $NR_{24}R_{25}$,

in which R_{24} and R_{25} represent,

when they are identical, hydrogen, C_1-C_6-alkyl, hydroxy-C_1-C_6-alkyl, carboxy-C_1-C_6-alkyl, carb-C_1-C_6-alkoxy-C_1-C_6-alkyl, phenyl unsubstituted or substituted by halogen, C_1-C_3-alkyl, C_1-C_3-alkoxy, nitro or trifluoromethyl, phenyl-C_1-C_6-alkyl unsubstituted or substituted in the phenyl moiety by halogen, C_1-C_3-alkyl, C_1-C_3-alkoxy, nitro or trifluoromethyl, or,

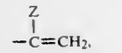
when they are not identical, R_{24} represents hydrogen or C_1-C_6-alkyl,

when R_{24} represents hydrogen, R_{25} represents C_1-C_6-alkyl, hydroxy-C_1-C_6-alkyl, C_3-C_7-cycloalkyl, phenyl-C_1-C_6-alkyl unsubstituted or substituted in the phenyl moiety by halogen, C_1-C_3-alkyl, C_1-C_3-alkoxy, nitro or trifluoromethyl, phenyl unsubstituted or substituted by halogen, C_1-C_3-alkyl, C_1-C_3-alkoxy, nitro or trifluoromethyl, amino, di-C_1-C_6-alkylamino, C_1-C_6-alkylamino, phenylamino unsubstituted or substituted in the phenyl moiety by halogen, C_1-C_3-alkyl, C_1-C_3-alkoxy, nitro or trifluoromethyl, phenylamino-C_1-C_6-alkyl unsubstituted or substituted in the phenyl moiety by halogen, C_1-C_3-alkyl, C_1-C_3-alkoxy, nitro or trifluoromethyl, hydroxyl, mercapto, C_1-C_6-alkanoyloxy, C_2-C_6-alkenoyloxy, C_3-C_6-alkynoyloxy, benzoyloxy unsubstituted or substituted in the phenyl moiety by halogen, C_1-C_3-alkyl, C_1-C_3-alkoxy, nitro or trifluoromethyl, phenyl-C_1-C_6-alkanoyloxy unsubstituted or substituted in the phenyl moiety by halogen, C_1-C_3-alkyl, C_1-C_3-alkoxy, nitro or trifluoromethyl, pyridine-3-carbonyloxy unsubstituted or substituted in the pyridine moiety by halogen, C_1-C_3-alkyl, C_1-C_3-alkoxy, nitro or trifluoromethyl, C_1-C_6-alkanoyl, C_2-C_6-alkenoyl, C_3-C_6-alkynoyl, benzoyl unsubstituted or substituted in the phenyl moiety by halogen, C_1-C_3-alkyl, C_1-C_3-alkoxy, nitro or trifluoromethyl, phenyl-C_1-C_6-alkanoyl unsubstituted or substituted in the phenyl moiety by halogen, C_1-C_3-alkyl, C_1-C_3-alkoxy, nitro or trifluoromethyl, pyridine-3-carbonyl unsubstituted or substituted in the pyridine moiety by halogen, C_1-C_3-alkyl, C_1-C_3-alkoxy, nitro or trifluoromethyl, carbamoyl, carboxy-C_1-C_6-alkyl, carb-C_1-C_6-alkoxy-C_1-C_6-alkyl, di-C_1-C_6-alkylamino-C_1-C_6-alkyl, or

when R_{24} represents C_1-C_6-alkyl, R_{25} represents hydroxy-C_1-C_6-alkyl, carboxy-C_1-C_6-alkyl, carb-C_1-C_6-alkoxy-C_1-C_6-alkyl, C_3-C_7-cycloalkyl, phenyl unsubstituted or substituted by halogen, C_1-C_3-alkyl, C_1-C_3-alkoxy, nitro or trifluoromethyl, phenyl-C_1-C_6-alkyl unsubstituted or substituted in the phenyl moiety by halogen, C_1-C_3-alkyl, C_1-C_3-alkoxy, nitro or trifluoromethyl, di-C_1-C_6-alkylamino-C_1-C_6-alkyl, or

R_{24} and R_{25} together represent with the nitrogen atom to which they are attached a piperidine, homopiperidine, pyrrolidine, morpholine, piperazine, thiomorpholine, imidazole or theophylline radical which can be substituted by C_1-C_6-alkyl, phenyl unsubstituted or substituted by halogen, C_1-C_3-alkyl, C_1-C_3-alkoxy, nitro or trifluoromethyl,

R_{14} represents vinyl, ethyl, cyclopropyl, —CH(OH)—CH_2OH, CH_2OH or



in which Z represents chlorine, bromine, or fluorine,

X is present or absent, and when X is present, the formula I represents a pharmacologically utilizable salt, and the dotted lines represent a double bond present in either the 5,6- or the 6,7-position.

5,252,599

HETEROARYLNAPHTHALENE HYDROXY ACIDS AS INHIBITORS OF LEUKOTRIENE BIOSYNTHESIS

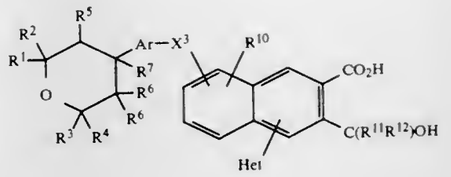
Yves Girard, Ile Bizard; Rejean Fortin, Montreal-Nord; Daniel Delorme; Daniel Dube, both of St. Lazare; Pierre Hamel, Vimont; Yves Ducharme, Montreal, and John W. Gillard, Raie d'Urfe, all of Canada, assignors to Merck Frosst Canada, Inc., Quebec, Canada

Filed Aug. 27, 1992, Ser. No. 936,810

Int. Cl.[5] A61K *31/35;* **C07D** *309/10*

U.S. Cl. 514—456 **10 Claims**

1. A compound of the formula:



wherein:

R^1, R^5, and R^{11} is each independently H, OH, lower alkyl, or lower alkoxy;

R^2 is H, lower alkyl or together with R^1 forms a double bonded oxygen (=O);

R^3 is H, lower alkyl, hydroxy lower alkyl, lower alkoxy lower alkyl, or is joined to R^1 to form a carbon bridge of 2 or 3 carbon atoms or a mono-oxa carbon bridge of 1 or 2 carbon atoms, said bridge optionally containing a double bond;

R^4, R^{12}, and R^{14} is each independently H or lower alkyl;

R^6 is H or lower alkyl, or two R^6 groups on the same carbon can form a saturated ring of 3 to 8 members;

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R^7 is H, OH, lower alkyl, lower alkoxy, lower alkylthio, or lower alkylcarbonyloxy;
R^8 is H, halogen, lower alkyl, lower alkoxy, CF_3, CN, or COR^{14};
R^9 and R^{10} is each independently H, lower alkyl, lower alkoxy, hydroxy lower alkyl, lower alkoxy lower alkyl, lower alkylthio lower alkyl, lower alkylthio lower alkylcarbonyl, $(R^8)_2$-phenylthio lower alkyl, halogen, CN, NO_2, CF_3, N_3, $N(R^{13})_2$, $NR^{13}COR^{14}$, $NR^{13}CON(R^{13})_2$, SR^{15}, $S(O)R^{15}$, $S(O)_2R^{15}$, $S(O)_2N(R^{13})_2$, COR^{14}, $CON(R^{13})_2$, CO_2R^{14}, $C(R^{14})_2OC(R^{14})_2—CO_2R^{14}$, or $C(R^{14})_2CN$;
R^{10} is attached to either ring of the naphthalene ring system;
R^{13} is H or lower alkyl, or two R^{13} groups attached to the same nitrogen may form a saturated ring of 5 or 6 members, optionally containing a second heteroatom chosen from O, S, or NR^4;
R^{15} is lower alkyl, phenyl-$(R^8)_2$, or CF_3;
X^3 is $C(R^6)_2O$ or $OC(R^6)_2$;
Ar is arylene$(R^8)_2$ wherein arylene is a 5-membered aromatic ring containing one O; a 6-membered aromatic ring; or 2- or 4-pyranone;
Het is heteroaryl$(R^9)_2$ wherein heteroaryl is a 5-membered aromatic ring containing one O; 2- or 4-pyranone; or a bicyclic 8- or 9-membered aromatic ring containing 1–2 O;
Het is attached to either ring of the naphthalene ring system; or a pharmaceutically acceptable salt thereof.

5,252,600

SYNERGISTIC COMPOSITIONS FOR THE TREATMENT OF CORONARY INSUFFICIENCY AND METHODS OF USE THEREOF

Soorianarain Baligadoo, Center of Research Medicales, SSR, University de Maurice, Moka, Mauritius

Division of Ser. No. 401,869, Mar. 6, 1989, Pat. No. 5,751,187. This application Jul. 27, 1992, Ser. No. 919,279
Claims priority, application France, Jan. 25, 1988, 88 00787
Int. Cl.[5] A61V *1/36*
U.S. Cl. 514—464 **8 Claims**

1. A method of reducing arrythmia and preventing sudden death in a patient suffering from coronary insufficiency which comprises administering to such patient an anti arrythmically effective amount of amiodarone in conjunction with a coronary vasodilator having at least one nitro group, wherein the ratio by weight of amiodarone to the nitro containing coronary vasodilator is between 10 and 40 to 1.

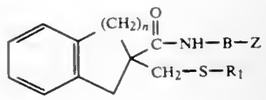
5,252,601

2-MERCAPTOMETHYLENE-TETRAHYDRONAPHTHALENE AND INDANE-2-CARBOXAMIDE DERIVATIVES AS ENKEPHALINASE INHIBITORS

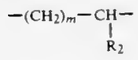
Gary A. Flynn, and Douglas W. Beight, both of Cincinnati, Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 695,635, May 3, 1991, abandoned. This application Apr. 3, 1992, Ser. No. 860,572
Int. Cl.[5] A61K *31/36, 31/195;* **C07D** *321/00;* **C07C** *321/06, 233/58*
U.S. Cl. 514—465 **25 Claims**

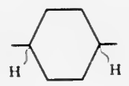
1. A compound of the formula



wherein
n is an integer 2,
Z is the radical —C(O)OR, or a phenyl group unsubstituted or substituted with from 1 to 3 substituents selected from the group consisting of OH, C_1–C_4 alkoxy, and methylenedioxy,
R is H, C_1–C_4 alkyl, or benzyl,
R_1 is H or —C(O)—A, wherein A is C_1–C_4 alkyl, or phenyl, and
B is a radical of the formula



or



wherein
m is an integer 0 to 5, and
R_2 is H, C_1–C_4 alkyl, —CH_2—OH, —CH(OH)—CH_3, —$CH_2CH_2SCH_3$, phenylmethyl, 4-hydroxy-phenylmethyl or OH, with the proviso that R_2 cannot be OH when m is 0.

5,252,602

EFFECTS OF MISOPROSTOL ON ALLERGIC RESPONSES

Rafeul Alam, 14910 Wilderness Cliff, Houston, Tex. 77062, and J. Andrew Grant, 2914 Beluche St., Galveston, Tex. 77551

Filed Oct. 11, 1991, Ser. No. 774,664
Int. Cl.[5] A61K *31/215*
U.S. Cl. 514—530 **23 Claims**

1. A method for inhibiting late-phase allergic response to an allergen in an animal comprising identifying an animal having or at risk of having a late-phase allergic reaction; and inhibiting the late-phase allergic reaction by administering a preparation comprising a pharmacologically effective dose of misoprostol in a pharmaceutically acceptable excipient.

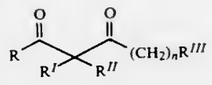
5,252,603

IMMUNOSUPPRESSIVE ANALOGUES AND DERIVATIVES OF SUCCINYLACETONE

Danute E. Nitecki, Berkeley; Lois Aldwin, San Mateo; Corey H. Levenson, Oakland; Margaret Moreland, Berkeley; Irwin Braude; David F. Mark, both of Danville, and Henry Rapoport, Berkeley, all of Calif., assignors to Cetus Corporation, Emeryville, Calif.

Division of Ser. No. 434,870, Nov. 13, 1989, abandoned, which is a division of Ser. No. 324,360, Mar. 15, 1989, Pat. No. 4,895,872. This application Dec. 6, 1990, Ser. No. 623,096
Int. Cl.[5] A61K *31/22, 31/205, 31/19*
U.S. Cl. 514—546 **12 Claims**

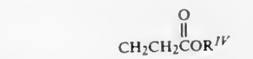
1. A method of suppressing the effectiveness of a patient's immune system comprising: administering to the patient a therapeutically effective amount of an analogue or derivative of succinylacetone, wherein said analogue or derivative of succinylacetone comprises the formula



wherein
n = 1–6
R = CH_3, CF_3, $—CO_2R^{IV}$,



R^I, R^{II}=H, F, CH_3, or



R^{III}=H
R^{IV}=H, or alkyl.

5,252,604

COMPOSITIONS OF RETINOIC ACIDS AND TOCOPHEROL FOR PREVENTION OF DERMATITIS

Christa F. Nagy, Wyckoff; Timothy W. Quick, Clifton, and Stanley S. Shapiro, Livingston, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jul. 10, 1992, Ser. No. 911,606
Int. Cl.[5] A61K *31/20*
U.S. Cl. 514—559 **8 Claims**

1. A liquid composition suitable for topical administration which comprises an amount of retinoic acid effective for treating dermatological disorders and an amount of alpha tocopherol sufficient to reduce the skin irritation caused by said retinoic acid.

5,252,605

PROMOTION OF WOUND-HEALING WITH 15-KETO-PROSTAGLANDIN COMPOUNDS

Ryuji Ueno, Hyogo, Japan, assignor to R-Tech Ueno Ltd., Osaka, Japan

Filed Mar. 12, 1992, Ser. No. 851,283
Claims priority, application Japan, Mar. 14, 1991, 3-074702
Int. Cl.[5] A61K *31/19, 31/215*
U.S. Cl. 514—573 **16 Claims**

1. A method for promoting healing of wound which comprises administering, to a subject in need of such promotion, a wound-healingly effective amount of a 15-keto-prostaglandin compound.

5,252,606

FORTIFIED GLUTARALDEHYDE DISINFECTANT

Howard Martin, 909 Pershing Dr., Silver Spring, Md. 20910

Filed Jan. 22, 1990, Ser. No. 468,186
Int. Cl.[5] A61K *31/19, 31/14, 31/11, 31/05*
U.S. Cl. 514—574 **1 Claim**

1. A high fortified glutaraldehyde, comprising, a basic formulation of chemical ingredients, said formulation of chemical ingredients consisting of the following optimal quantities of formation of chemical ingredients, said formulation of said chemical ingredients being used to form a base stock solution, said optimal quantities being by weight of the total weight of said basic formulation of chemical ingredients: dual quaternary ammonium chloride 12.5 grams, glutaraldehyde 25.0 grams, para tertiary amylphenol 1.0 gram, citric acid 0.25 grams, isopropyl alcohol 14.0 grams, and water 46.25 grams, wherein said formulation of chemical ingredients includes glutaraldehyde which has an initial concentration between 25.0 grams glutaraldehyde and 0.05 grams glutaraldehyde per 100 grams solution.

5,252,607

TREATMENT OF LOW PRESSURE GLAUCOMA AND ISCHEMIC RETINAL DEGENERATION

George C. Y. Chiou, College Station, Tex., assignor to Texas A&M University System, College Station, Tex.

Filed Jan. 24, 1992, Ser. No. 825,662
Int. Cl.[5] A61K *31/165*
U.S. Cl. 514—619 **16 Claims**

1. A method to increase blood flow to the retina or choroid which method comprises administering a therapeutically effective amount of metoclopramide to a subject having decreased retinal or choroidal blood flow.

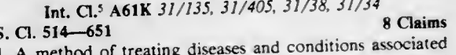
5,252,608

INHIBITORS OF LYSYL OXIDASE

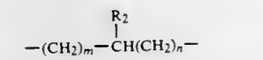
Michael G. Palfreyman; Philippe Bey, both of Cincinnati, and Ian A. McDonald, Loveland, all of Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Division of Ser. No. 665,502, Mar. 6, 1991, Pat. No. 5,182,297, which is a division of Ser. No. 519,084, May 4, 1990, Pat. No. 5,021,456, which is a division of Ser. No. 409,195, Sep. 19, 1989, Pat. No. 4,943,593, which is a division of Ser. No. 160,364, Feb. 25, 1988, abandoned. This application Jun. 10, 1992, Ser. No. 896,264
Int. Cl.[5] A61K *31/135, 31/405, 31/38, 31/34*
U.S. Cl. 514—651 **8 Claims**

1. A method of treating diseases and conditions associated with the abnormal deposition of collagen in a patient in need thereof which comprises administering to the patient an effective amount of a compound of the formula



wherein
X and Y are identical and are each either a fluoro, chloro, or bromo group or one of X and Y is a hydrogen and the other is a fluoro, chloro, or bromo group;
R_1 is a hydrogen or a (C_1–C_4)alkyl group;
A is a divalent radical group selected from



wherein
R_2 is hydrogen, methyl, or ethyl, and m and n, independently, are an integer from 0 to 16, provided that m+n cannot be greater than 17;

$—(CH_2)_p—D—(CH_2)_q—$

wherein
D is oxygen or sulfur, p is an integer of from 0 to 16, and q is an integer of from 1 to 16, provided that m+n cannot be greater than 17; and

$—(CH_2)_r—CH=CH—(CH_2)_s—$

wherein
s is an integer of from 1 to 16 and r is an integer of from 0 to 16, provided that r+s cannot be greater than 16; and
R id 1- or 2-naphthyl; or 1-, 2-, 3-indenyl; or a pharmaceutically acceptable salt thereof.

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5,252,609

SYNTHESIS GAS PRODUCTION

Alwyn Pinto, Cleveland, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Jun. 30, 1992, Ser. No. 906,307

Claims priority, application United Kingdom, Jul. 9, 1991, 9114838; Sep. 9, 1991, 9119212; Oct. 11, 1991, 9121671; Oct. 30, 1991, 9122987

Int. Cl.[5] C07C *27/06;* C01B *33/02, 3/36*

U.S. Cl. 518—703 10 Claims

1. A process for the production of a hydrogen-containing synthesis gas from a desulphurised hydrocarbon feedstock comprising a) subjecting a first stream of said desulphurised feedstock to primary catalytic steam reforming, and then cooling of the resultant reformed first stream; b) subjecting a second stream of said desulphurised feedstock to a pre-reforming step of adiabatic low temperature steam reforming, followed by partial oxidation of the resultant pre-reformed second stream using an oxygen-containing gas, to form a reformed second stream, cooling the reformed second stream; and c) mixing the cooled reformed first and second streams.

5,252,610

AROMATIC COMPOUNDS AND THEIR COMPOSITIONS FOR THE CONTROL OF INSECT PESTS

Noriyasu Sakamoto, Nishinomiya; Akira Shuto; Hiroshi Kisida, both of Takarazuka; Hiroaki Fujimoto, and Kimitoshi Umeda, both of Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Feb. 28, 1992, Ser. No. 843,016

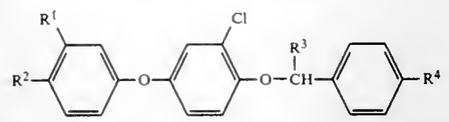
Claims priority, application Japan, Mar. 25, 1991, 3-086079

The portion of the term of this patent subsequent to Oct. 5, 2010, has been disclaimed.

Int. Cl.[5] C01C *43/225;* A01N *31/14*

U.S. Cl. 514—718 19 Claims

1. An aromatic compound of the formula:



wherein R^1 and R^2 are the same or different and are each a hydrogen atom, a halogen atom or a methyl group, with the proviso that either one of R^1 or R^2 is a hydrogen atom; R^3 is a hydrogen atom or a methyl group; and R^4 is a halogen atom, a C_1-C_2 alkyl group or a C_1-C_2 haloalkyl group.

5,252,611

CONTROLLED RELEASE TABLETS INCLUDING STRONGLY SWELLABLE, MODERATELY CROSSLINKED POLYVINYLPYRROLIDONE

Jenn S. Shih, Paramus; Jui-Chang Chuang, Wayne, and Rama K. Haldar, Randolph, all of N.J., assignors to ISP Investments Inc., Wilmington, Del.

Filed Jul. 20, 1992, Ser. No. 915,500

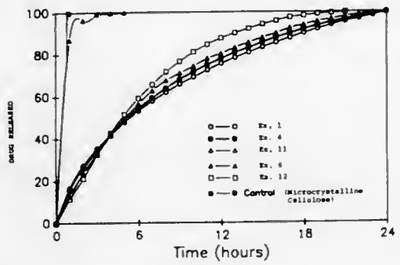
The portion of the term of this patent subsequent to Dec. 17, 2008, has been disclaimed.

Int. Cl.[5] C08F *2/18;* A61K *47/32*

U.S. Cl. 514—772.5 2 Claims

1. A controlled-release, drug-delivery composition comprising:

(A) a strongly swellable, moderately crosslinked polymer consisting essentially of vinylpyrrolidone and a vinyl crosslinking agent in the form of fine, white powders characterized by (a) an aqueous gel volume of about 15 to 150 ml/g of polymer, and (b) a Brookfield viscosity in 5% aqueous solution of at least about 1,000 cps, which (c) is prepared directly by precipitation polymerization of vinylpyrrolidone in the presence of a vinyl crosslinking



agent in the amount of about 0.1 to about 1% by weight of vinylpyrrolidone; and

(B) an effective amount of a pharmaceutical medicament.

5,252,612

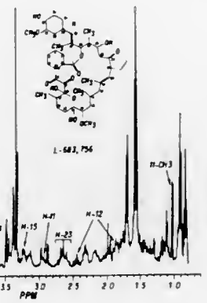
MICROBIAL IMMUNOSOPPRESSANT AGENT

Byron H. Arison, Watchung; Edward S. Inamine, Rahway; Shieh-Shung T. Chen, Morganville, and Linda S. Wicker, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 806,863, Dec. 9, 1991, abandoned, which is a continuation of Ser. No. 701,613, May 14, 1991, abandoned, which is a continuation of Ser. No. 297,630, Jan. 13, 1989, abandoned. This application Jun. 24, 1992, Ser. No. 905,075

Int. Cl.[5] A61K *35/00*

U.S. Cl. 514—885 3 Claims



1. An immunosuppressant, which exhibits: positive inhibition of T-cell activation by the T-cell proliferation assay, a proton nuclear magnetic spectrogram as depicted in FIG. 1, and a molecular weight of 763 as determined by FAB mass spectroscopy.

5,252,613

ENHANCED CATALYST MIXING IN SLURRY BUBBLE COLUMNS (OP-3723)

Min Chang, Warren, and Constantine A. Coulaloglou, Mendham, both of N.J., assignors to Exxon Research & Engineering Company, Florham Park, N.J.

Filed Dec. 18, 1992, Ser. No. 992,983

Int. Cl.[5] C07C *1/04*

U.S. Cl. 518—700 5 Claims

1. A method for improving the axial distribution of catalyst in a hydrocarbon synthesis slurry bubble column which uses rising synthesis gas introduced by means of synthesis gas distribution means located at the bottom of said column to provide the majority of the energy used in distributing catalyst in said column, the improvement in axial distribution of catalyst being achieved by using a secondary fluid introduction means in said slurry bubble column at a location above the synthesis gas distribution means located at the bottom of said column to introduce a secondary fluid stream into said column.

5,252,614

PROCESS FOR SEPARATING POLYETHYLENE TEREPHTHALATE FROM POLYVINYL CHLORIDE

Edwin A. Sisson, Fairlawn, Ohio, assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 697,857, May 9, 1991, Pat. No. 5,120,768. This application Dec. 11, 1991, Ser. No. 805,172

The portion of the term of this patent subsequent to Jun. 9, 2009, has been disclaimed.

Int. Cl.[5] B03B *1/00*

U.S. Cl. 521—46.5 18 Claims

1. A process for recovering polyethylene terephthalate flakes from a recycle stream containing polyethylene terephthalate flakes and polyvinyl chloride flakes which comprises: (1) washing the recycle stream with an aqueous solution of at least one base; (2) recovering the washed recycle stream from the aqueous solution; (3) treating the recovered recycle stream with at least one nonionic surfactant under conditions and for a time sufficient to decrease the contact angle of the polyethylene terephthalate flakes below a value of 25° while maintaining the contact angle of the polyvinyl chloride flakes above a value of about 45° to form an aqueous mixture containing the treated polyethylene terephthalate flakes and treated polyvinyl chloride flakes; (4) agitating the aqueous mixture to allow the polyvinyl chloride flakes to come in contact with air; (5) allowing the polyvinyl chloride flakes to float to the surface of the aqueous mixture and allowing the polyethylene terephthalate flakes to sink to the bottom of the aqueous mixture; and (6) removing the polyvinyl chloride flakes from the surface of the aqueous mixture and removing the polyethylene terephthalate flakes from the bottom of the aqueous mixture.

5,252,615

AQUEOUS COATING COMPOSITIONS FROM POLYETHYLENE TEREPHTHALATE

Madhukar Rao, Brecksville; Richard F. Tomko, North Olmsted; Daniel R. Sayre, Lakewood, all of Ohio, and William B. Lesney, Westchester, Ill., assignors to The Sherwin-Williams Company, Cleveland, Ohio

Filed Jan. 23, 1992, Ser. No. 824,615

Int. Cl.[5] C08J *11/04;* C08G *63/00, 67/00, 69/00*

U.S. Cl. 521—48.5 17 Claims

1. An aqueous coating composition comprising the reaction product of:

a. polyethylene terephthalate with an alcohol in the presence of a catalyst;

b. followed by the reaction of the product of step a with a member selected from the group consisting of acid- and anhydride- functional materials; wherein the resultant composition has an acid value greater than about 30; and wherein subsequent to the reaction of step b the resultant composition is neutralized with a weak base and added to water.

5,252,616

PROCESS FOR THE MANUFACTURE OF FILLER-MODIFIED POLYURETHANE FOAM SUPPORTS FOR BIOCONVERSION PROCESSES

Edmund Giez, Leichlingen; Imre Pascik, Monheim, and Joachim Priemer, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 9, 1993, Ser. No. 15,720

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1992, 4238126

Int. Cl.[5] C08J *9/40, 9/36*

U.S. Cl. 521—54 12 Claims

1. A process for the manufacture of a polymer-bound support containing fillers, for microorganisms, by the impregnation of a polyurethane foam, characterized in that a polyurethane foam web with a thickness of 5 mm to 30 mm is passed continuously through a dipping bath and is thereby impregnated with 10% to 1000% by weight of a polymer dispersion consisting of the components A) and B) defined below:

A) 30% to 65% by weight of a cationic styrene/butadiene copolymer latex containing about 50% of dry substance, or of an anionic butadiene/acrylonitrile copolymer latex, and

B) 10% to 50% by weight of an inorganic and/or organic pulverulent filler,

and in that the foam web treated in this way is compressed to remove excess liquid and then dried in a drying oven at temperatures of 80° C. to 120° C.

5,252,617

EXPANDABLE POLYURETHANE POWDER PREPARATIONS CONTAINING BLOWING AGENTS AND THEIR USE FOR THE PRODUCTION OF FOAMED POLYURETHANE MOLDINGS

Joachim Werner, Dormagen; Walter Meckel, Neuss, and Dirk Wegener, Monheim, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 19, 1993, Ser. No. 33,527

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1992, 4209711

Int. Cl.[5] C08J *9/16, 9/20*

U.S. Cl. 521—56 10 Claims

1. A process for the production of an expandable polyurethane powder preparation containing a blowing agent comprising the steps of

a) producing an emulsion of fine droplets of a component IA which contains free NCO groups or of a component IB which contains groups which are reactive towards NCO groups, with the addition of a surface-active compound to stabilize the emulsion;

b) reacting said stabilized emulsion of component IA with a component IIA which contains an average of two hydrogen atoms which are reactive towards NCO groups per molecule, or said stabilized emulsion of component IB with a component IIB which contains an average of two NCO groups per molecule, in an inert, organic liquid carrier phase in which components IA, IB, and the resultant reaction product are insoluble or immiscible, thereby forming spherical particles of powder which are protected against agglomeration by the surface-active compound; and

c) separating the powder from said inert, organic carrier phase; characterized in that a powdered blowing agent which is solid at room temperature (25° C.) and insoluble in said carrier phase, is added to said inert organic carrier phase either before or after said reaction step b).

5,252,618

ENDOTHERMIC BLOWING AGENTS FOR STRENGTHENING WELD LINES IN MOLDED THERMOPLASTIC RESINS AND PRODUCTS

Rod A. Garcia, Orange, Tex.; John A. Kosin, Bel Air, Md.; Gerry Mooney, West Ajax, Canada, and Michael E. Tarquini, Havre de Grace, Md., assignors to J. M. Huber Corporation, Rumson, N.J.

Division of Ser. No. 467,587, Jan. 19, 1990, Pat. No. 5,037,580, and a continuation-in-part of Ser. No. 352,307, May 16, 1989, Pat. No. 5,009,810. This application Apr. 22, 1991, Ser. No. 688,226

The portion of the term of this patent subsequent to Apr. 23, 2008, has been disclaimed.

Int. Cl.[5] C08J *9/08*

U.S. Cl. 521—57 11 Claims

1. A method for producing a molded foamed product having superior weld line strength which comprises:

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(a) selecting a polymer component to be injection molded;
(b) adding an additive selected from the group consisting of fillers, pigments and mixtures thereof to said polymer component in combination with a blowing agent capable of enhancing weld lines produced during molding to form a resulting polymer mixture, said blowing agent comprising a mixture of a polycarboxylic acid and sodium aluminum hydroxy carbonate, said polycarboxylic acid and said sodium aluminum hydroxy carbonate having been separately surface treated with a coating member selected form the group consisting of mono-glycerides, stearic acid, silane coupling agents, fatty acids, titanates, oleates and mixtures thereof, each of said surface treatments being carried out by separately contacting said polycarboxylic acid and said sodium aluminum hydroxy carbonate with about 0.1 to 10 wt. % of said coating member at a temperature of about 72° C. to 135° C. under mixing conditions for a sufficient period to form a coating on said polycarboxylic aid and said sodium aluminum hydroxy carbonate which will avoid premature reaction caused by moisture or water absorption, and blending the coated polycarboxylic acid and coated sodium aluminum hydroxy carbonate in a weight ration of from 0.25:1 to about 10:1, respectively to form said blowing agent; and
(c) subjecting said polymer mixtures in step (b) to molding to produce a foamed product having weld lines.

5,252,619

PROCESS FOR PREPARING LOW DENSITY POROUS CROSSLINKED POLYMERIC MATERIALS

Thomas F. Brownscombe, and Ronald M. Bass, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 891,322, May 29, 1992, Pat. No. 5,189,070. This application Feb. 16, 1993, Ser. No. 17,544

Int. Cl.[5] **C08J** *9/28*

U.S. Cl. 521—64 **13 Claims**

1. A process for the preparation of a porous crosslinked polymeric material comprising:
(a) providing a water-in-oil high internal phase emulsion comprising i) a mixture of polymerizable monomers comprising at least one vinyl monomer and from about 2 to about 70 weight percent, based on the mixture, of a difunctional unsaturated crosslinking monomer, ii) at least 90 weight percent, based on the emulsion, of water as the internal phase iii) an effective amount of a surfactant to form a water-in-oil high internal phase emulsion, and iv) an effective amount of a polymerization catalyst to cure the polymerizable monomers; and
(b) subjecting the water-in-oil high internal phase emulsion to a temperature of greater than 90° C. and a pressure within the range of from about atmospheric pressure to about 150 psig for a time sufficient to cure the monomers and to produce a porous crosslinked polymeric material having less than about 5% of free monomers.

5,252,620

MICROCELLULAR FOAMS

Jarrell R. Elliott, Jr., Northfield Center; Gokul Srinivasan, Akron; Manish Dhanuka, Akron, and Ranjan Akhaury, Akron, all of Ohio, assignors to University of Akron, Akron, Ohio

Division of Ser. No. 794,124, Nov. 15, 1991, Pat. No. 5,128,382. This application Apr. 2, 1992, Ser. No. 862,521

Int. Cl.[5] **C08J** *9/28*

U.S. Cl. 521—149 **9 Claims**

1. A microcellular crosslinked copolymer bulk foam comprising a matrix of 0.01 to 0.5 μm diameter cell size in the foam, the foam being selected from the group consisting of
(a) a polymer selected from the condensation polymerization reaction product of bisphenol-A and epichlorohydrin, forming a bisphenol-A, glycidyl ether terminated resin cured with tetraethylpentamine as a during agent and
(b) a polymer selected from the free-radical copolymerization reaction of methyl methacrylate and ethyleneglycol dimethacrylate with substantial crosslinking from the difunctional ethyleneglycol dimethacrylate in a diluent at a temperature and a time sufficient to effect a synthesis of primary particles in the diluent, a rate of an interaction between the primary particles and the diluent effecting a separation of the primary particles just before a gelation occurs, thereby forming a three-dimensional microcellular crosslinked copolymer foam.

5,252,621

SUPPORTS FOR ACTIVE ENTITIES

John C. W. Hodge, Richmond, England, assignor to Tioxide Group Services Limited, London, England

Filed Jul. 1, 1991, Ser. No. 723,917

Claims priority, application United Kingdom, Jul. 2, 1990, 9014689

Int. Cl.[5] **C08J** *9/26, 9/28;* **C08K** *7/22;* **C08L** *67/06*

U.S. Cl. 521—65 **15 Claims**

1. A product suitable for use as a carrier for an active entity comprising a vesiculated polymer bead formed of a polymer selected from the group consisting of a polyester, polyester amide, polyurethane, urea-aldehyde resin, and cellulosic ester, each having a volume mean diameter of up to 250 microns and having a surface with surface pores which form 20% to 70% by area of the surface and at least one-third of the total area of said surface pores being contributed by surface pores having a largest size of at least 0.4 micron.

5,252,622

CELLULAR CONTACT ADHESIVE FILMS HAVING IMPROVED BOND STRENGTH

Frank V. DiStefano, Macungie, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation of Ser. No. 490,171, Mar. 8, 1990, Pat. No. 4,960,802. This application Nov. 12, 1991, Ser. No. 791,756

The portion of the term of this patent subsequent to Oct. 2, 2007, has been disclaimed.

Int. Cl.[5] **C08J** *9/30*

U.S. Cl. 521—65 **14 Claims**

1. In an aqueous contact adhesive composition comprising an aqueous polymer emulsion, the improvement which comprises an adhesive component, which consists essentially of an emulsion polymer having a durometer hardness measured on the type A scale by ASTM D 2240 of at least 20, and 1–30 wt % (based on dry adhesive component) of a thermally activated physical blowing agent having a heat of vaporization of <300 Joules/q, a swell index of $<500\%$ in the polymer, and a boiling point of $<50°$ C.

5,252,623

EXPANDABLE VINYL CHLORIDE RESIN COMPOSITION

Satoru Sugino, Yokkaichi, and Hisaharu Hotta, Yokohama, both of Japan, assignors to Mitsubishi Kasei Vinyl Company and Mitsubishi Kasei Corporation, both of Tokyo, Japan

Filed Jan. 21, 1993, Ser. No. 6,495

Claims priority, application Japan, Jan. 21, 1992, 4-8538

Int. Cl.[5] **C08J** *9/04*

U.S. Cl. 521—73 **12 Claims**

1. An expandable vinyl chloride resin composition comprising, as main components, a vinyl chloride polymer composed mainly of vinyl chloride obtained by emulsion polymerization or fine suspension polymerization of a vinyl chloride monomer and a vinyl comonomer having a hydroxyl group or a carboxyl group, a plasticizer, a chemical blowing agent and a crosslinking agent, wherein said crosslinking agent is:
(1) a combination of an alkylphenol-blocked polyisocyanate and an ε-caprolactam-blocked polyisocyanate, or
(2) a polyisocyanate randomly blocked by an alkyl phenol and ε-caprolactam.

5,252,624

SYSTEM FOR THE PRODUCTION OF TOLUENE DIISOCYANATE BASED FLEXIBLE FOAMS AND THE FLEXIBLE FOAMS PRODUCED THEREFROM

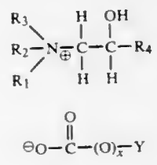
Charles M. Milliren, Coraopolis, and James R. Gricar, Washington, both of Pa., assignors to Miles Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 609,674, Nov. 6, 1990. This application Dec. 16, 1991, Ser. No. 808,417

Int. Cl.[5] **C08J** *9/08;* **C08G** *18/08*

U.S. Cl. 321—117 **22 Claims**

1. A flexible foam prepared by reacting:
A) a polyol consisting of
1) from 20 to 100% by weight of a polyol selected from the group consisting of:
a) a dispersion of a polyurea and/or a polyhydrazodicarbonamide in a relatively high molecular weight organic compound containing at least two hydroxyl groups,
b) a polymer polyol prepared by polymerizing an ethylenically unsaturated monomer or monomers in a relatively high molecular weight organic compound containing at least two hydroxyl groups, and,
c) mixtures thereof, and
2) from 0 to 80% by weight of one or more polyether polyols having hydroxyl functionalities of from 2 to 3, said percents by weight being based on the combined weight of components 1) and 2) and totalling 100%,
B) water, in an amount of from about 1.5 to about 7 parts by weight per 100 parts by weight component A), and
C) toluene diisocyanate, at an isocyanate index of from about 80 to about 120, in the presence of
D) a catalytic amount of a catalyst which will catalyze the reaction between an isocyanate group and an hydroxyl group, excluding
1) 4-(2-dimethylaminoethyl)morpholine, and/or
2) N,N,N',N'-tetramethyl-1,2-diamino-2-methyl propane, as catalysts, and
E) from about 0.05 to about 2.0 parts by weight per 100 parts by weight of component A) of an N-hydroxyalkyl quaternary ammonium salt corresponding to the following general formula:



wherein x is 0 or 1,
R_1, R_2, and R_3 are independently C_1 to C_{20} alkyl or hydroxyalkyl groups, C_3 to C_8cycloalkyl groups, C_7 to C_{20} aralkyl groups, C_6 to C_{20} aryl groups, C_2 to C_{20} alkenyl groups, or C_2 to C_6 alkynyl groups, or, R_1, R_2, and R_3 together constitute a heterocyclic structure from the group consisting of triethylene diamine, methyl triethylene diamine, quinuclidine, N-methyl morpholine, N-ethyl morpholine, and N'N'-di-methyl piperazine,
R_4 is H, phenyl, a C_1 to C_{15} alkyl group, a C_2 to C_{15} alkenyl group, a C_2 to C_6 alkynyl group, a C_1 to C_9 hydroxyalkyl group, a keto alkyl group having a total of 3 to 15 carbon atoms, or an alkoxylalkyl group having a total of 2 to 20 carbon atoms,
Y is H, a C_1 to C_{20} alkyl group, a C_2 to C_{15} alkenyl group, a C_3 to C_6 cycloalkyl group, phenyl, an alkyl phenyl having 1 to 9 carbon atoms in the alkyl group, benzyl, an alkyl benzyl having 1 to 9 carbon atoms in the alkyl group, or a $CH_{(3-n)}Z_{(n)}$ group,
wherein n is 1, 2, or 3, and Z is OH, CN, Cl, a C_1 to C_5 alkoxy group, a phenyl group or a methoxyphenyl group, or Z is $(CH_2)_dCOOR$ where d = 0 to 4, and R is H or a C_1 to C_{20} alkyl group.

5,252,625

METHOD FOR PRODUCING RIGID FOAMS AND PRODUCTS PRODUCED THEREFROM

Andy I. McLaughlin; Richard L. Donald; Robert H. Blanpied, and Robert J. Butkus, all of Meridian, Miss., assignors to Atlas Roofing Corporation, Meridian, Miss.

Continuation-in-part of Ser. No. 495,616, Mar. 19, 1990, abandoned. This application Jun. 25, 1991, Ser. No. 720,735

Int. Cl.[5] **C08G** *18/18, 18/22;* **C08J** *9/08*

U.S. Cl. 521—125 **47 Claims**

1. A method of producing a rigid thermosetting foam, the method comprising the steps of:
(1) preparing a first of two foam forming blends using polymeric polymethylene polyphenylisocyanate;
(2) preparing a second of two foam forming blends by mixing together;
(a) a polyol;
(b) water in an amount less than 1% by weight of the total foam;
(c) a tertiary amine catalyst having at least one ethyl ($-CH_2-CH_2-$) linkage between two heteroatoms, the heteroatoms being chosen from the group consisting of Nitrogen and Oxygen;
(d) an alkali metal organo-salt catalyst;
(3) mixing a first blowing agent with one of the two foam forming blends;
(4) mixing together the first and second foam forming blends whereby the following occurs:
(a) the tertiary amine catalyst initiates a reaction between the water and the polymeric polyethylene polyphenylisocyanate whereby prior to a gel point of the foam:
i) a second blowing agent is produced for forming closed cells in the blends and for causing expansion in the liquid blends;
ii) sufficient exothermic heat is produced to initiate boiling of the first blowing agent; followed by
(b) the alkali metal organo-salt catalyst induces rapid vaporizing of the first blowing agent due to a high level of exothermic heat, whereby expansion of the mixed blends is substantially completed prior to the effective conversion of the mixed liquid blends to a rigid solid, the alkali metal organo-salt catalyst being present in an amount sufficient to cause a sufficiently complete trimerization reaction.

5,252,626

METHOD FOR TREATING THE SURFACE OF A THIN POROUS FILM MATERIAL

Katsuya Yamada; Koichi Okita; Shin-ichi Toyo-oka, and Shigeru Asako, all of Osaka, Japan, assignors to Sumitomo Electric Industries Inc., Osaka, Japan

Division of Ser. No. 951,890, Sep. 28, 1992, which is a division of Ser. No. 515,778, Apr. 26, 1990, which is a continuation of Ser. No. 811,805, Dec. 20, 1985. This application Jan. 4, 1993, Ser. No. 97

Claims priority, application Japan, Dec. 25, 1984, 59-279281

The portion of the term of this patent subsequent to Jun. 15, 2010, has been disclaimed.

Int. Cl.[5] **C08J** *9/36, 9/38*

U.S. Cl. 521—145 **1 Claim**

1. A thin porous film material of tetrafluoroethylene resin having enhanced adhesive properties, which has been treated by heating the surface thereof to a temperature of about 400° C. or more in a controlled manner effective to decompose and remove a desired part of said surface, thus providing the thin porous film material with an adhesive surface without adversely affecting other properties of the thin porous film material.

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5,252,627

APPARATUS AND METHOD FOR BLENDING AND DISPENSING FOAMABLE, CURABLE ORGANOSILOXANE COMPOSITIONS

Therese M. Bauman, White Lake Twp., and Todd S. Klenk, Fenton, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jan. 4, 1993, Ser. No. 174
Int. Cl.[5] C08J 9/02
U.S. Cl. 521—154 5 Claims

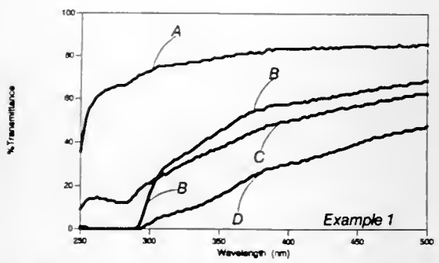
1. A method for blending and dispensing a foamable organosiloxane composition comprising an organohydrogensiloxane, a reactant selected from the group consisting of curable polyorganosiloxanes containing silanol groups, water and liquid alcohols, and a curing catalyst, the method comprising transporting said composition under pressure first through a mixing zone consisting essentially of a channel having an inlet and an outlet and containing a plurality of static mixing elements positioned within the channel, where the ratio of the length of said channel to its diameter is at least 11, and second through an exit zone communicating with the outlet of said channel and comprising a nozzle containing an exit orifice where the diameter of said exit orifice does not exceed 1.50 mm.

5,252,628

METHOD OF MAKING PHOTOPROTECTIVE HYDROPHILIC POLYMERS AND OCULAR DEVICES THEREOF

Traian V. Chirila, Hillarys; Ian J. Constable, Mosman Park, and Richard L. Cooper, Mount Claremont, all of Australia, assignors to Lions Eye Institute of Western Australia, Inc.

Filed Dec. 7, 1989, Ser. No. 447,885
Int. Cl.[5] B29D 11/00; C08F 20/28; F21V 9/00
U.S. Cl. 523—106 16 Claims



1. A method of making photoprotective soft hydrophilic polymers which absorb radiation in the range of 250 to 700 nanometers to the same extent as the natural lens in the human eye, comprising:

(a) preparing a hydrophilic polymer specimen substantially based on 2-hydroxyethyl methacrylate;

(b) preparing an aqueous solution of 4-hydroxyphenylethylamine or forms of 4-hydroxyphenylethylamine having substituents comprising alkyl, hydroxyl, hydroxyalkyl, alkoxy, carboxyl and alkyl esters thereof, or their salts, of 0.01% to 0.5% by weight concentration, having a pH value between 5 and 8;

(c) Immersing said hydrophilic polymer specimen either in a dry, or a hydrated state, into said solution, using 1 to 5 ml solution for 1 g polymer;

(d) adding to the said solution, containing the polymer specimen, catalytic amounts of tyrosinase and allowing the process of oxidative polymerization of the 4-hydroxyphenylethylamine-based compound identified in part (b) within the polymer network to take place in the presence of oxygen (air) and light, at room temperature, for durations between 6 hours and 20 days;

(e) removing said hydrophilic polymer specimen from solution at the end of said process and extracting said polymer specimen in water until the steady state with respect to extractables is achieved.

5,252,629

ADHESIVES FOR DENTIN

Yohji Imai, Chiba, and Shigenobu Kusakai, Tokyo, both of Japan, assignors to GC Corporation, Tokyo, Japan

Filed Apr. 17, 1992, Ser. No. 870,594
Claims priority, application Japan, Jun. 19, 1991, 3-173407
Int. Cl.[5] C08K 3/10
U.S. Cl. 523—118 6 Claims

1. An adhesive for dentin, prepared by a process comprising:

(A) coating a surface with a primer comprising (i) a water-miscible monomer selected from the group consisting of 2-hydroxyethyl methacrylate, hydroxypropyl methacrylate, 2,3-dihydroxypropyl methacrylate, N-vinyl pyrrolidone and mixtures thereof, (ii) a metal salt selected from chlorides, nitrates, sulfates, acetates, acrylates, methacrylates or acetylacetonates of copper, iron or cobalt, wherein said salt of copper is present in an amount of from 0.0005 to 0.05% by weight of said primer, and said salt of iron or cobalt is present in an amount of from 0.005 to 0.5% by weight of said primer; and

(B) applying a curing composition to said surface coated with said primer, said curing composition comprising (i) a methacrylate monomer, (ii) (thio)barbituric acid, which may be substituted with from 1 to 3 substituents selected from a methyl group, an ethyl group, a propyl group, a butyl group, a benzyl group, a phenyl group and a cyclohexyl group.

5,252,630

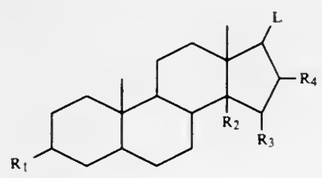
ANTIFOULING COATING AND METHOD FOR USING SAME

Donald J. Gerhart, Hillsborough; Dan Rittschof, Morehead City, and Joseph Bonaventura, Beaufort, all of N.C., assignors to Duke University, Durham, N.C.

Filed Oct. 15, 1992, Ser. No. 961,158
Int. Cl.[5] C09D 5/14; C07J 43/00
U.S. Cl. 523—122 19 Claims

1. An antifouling coating for an underwater surface which controls the attachment of organisms to that surface, said coating comprising

(a) a compound of Formula I:



(I)

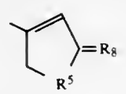
wherein

R_1 is hydrogen, hydroxyl, C_1-C_{20} alkyl, C_1-C_{20} alkoxy, C_1-C_{20} aryl, C_1-C_{20} alkyl, aryl, or carbohydrate;

R_2 is hydrogen or hydroxyl, and R_3 is hydrogen, or R_2 and R_3 together form an epoxide;

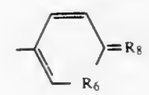
R_4 is hydrogen, hydroxyl, C_1-C_4 alkoxy, or C_1-C_4 carboxylic acid; and

L is selected from the group consisting of a moiety of Formula II, a moiety of Formula III, and a moiety of Formula IV

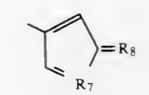


(II)

-continued



(III)



(IV)

wherein R_5 is CH_2, Nh, O or S, R_6 is CH_2, CH, O or S, R_7 is N or CH, and R_8 is NH or O, and wherein said compound is optionally substituted from 1 to five times with halogen, hydroxyl, C_1-C_3 alkyl, or C_1-C_3 alkoxy groups at positions 1, 2, 4, 5, 6, 7, 8, 9, 10, 11, and 12; and

(b) a film-forming component.

5,252,631

METHOD FOR ENHANCED DIELECTRIC CURING

John N. Owens, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 12, 1991, Ser. No. 743,626
Int. Cl.[5] C08J 3/28; C08K 3/04, 5/19; C08L 63/02
U.S. Cl. 523—137 4 Claims

1. A heat-curable epoxy resin composition having a high dielectric loss factor for dielectric curing consisting essentially of a liquid diglycidyl ether of bisphenol A, a liquid amine curing agent for said bisphenol A, 0.25 percent to 1 percent by weight of the total composition of one or more quaternary ammonium salts selected from the group consisting of tetraalkylammonium halide salts and tetraalkylammonium tetrafluoroborate salts, and 0.25 percent to 1 percent by weight of the total composition of carbon black, said composition having a maximum viscosity of 1000 cp at the temperature from which the resin will be dielectrically heated for curing.

5,252,632

LOW COST CATHODIC AND CONDUCTIVE COATING COMPOSITIONS COMPRISING LIGHTWEIGHT HOLLOW GLASS MICROSPHERES AND A CONDUCTIVE PHASE

Ronald R. Savin, 11001 Muirfield Dr., Rancho Mirage, Calif. 92270

Filed Nov. 19, 1992, Ser. No. 978,621
Int. Cl.[5] C08K 3/32, 3/08, 7/28
U.S. Cl. 523—137 46 Claims

1. A coating composition for use in protecting metallic substrates from corrosion and in protecting metallic and non-metallic substrates from EMI and RFI interference, said composition resulting in a coating having a minimum conductivity, when dry, of 5 ohms/cm^2, comprising in volume percent, based on the total volatile-component-free volume of the composition:

from about 20% to 60% of film-forming polymer;

from about 10% to 50% of a conductive phase, said conductive phase having a minimum relative conductivity with respect to copper of 0.2, said conductive phase being present in said coating composition in a form designed to increase the solids volume of said coating composition without reducing the conductivity of said coating composition, and said conductive phase having a more negative electrode potential than said substrate; and

from about 2% to 40% of non-coated hollow glass microspheres having diameters ranging from 1 to about 150 microns and a specific gravity of 0.3 to 1.2.

5,252,633

POLYARYLENE SULFIDE RESIN COMPOSITION

Shinji Ohara; Okihiro Morimoto, and Nobumasa Suemura, all of Ube, Japan, assignors to Ube Industries, Ltd., Ube, Japan

Division of Ser. No. 613,941, Nov. 8, 1990, Pat. No. 5,021,497, which is a continuation of Ser. No. 358,686, May 30, 1989, abandoned. This application Mar. 21, 1991, Ser. No. 672,949
Claims priority, application Japan, Jun. 17, 1988, 63-148022; Aug. 30, 1988, 63-213727
Int. Cl.[5] C08K 9/10
U.S. Cl. 523—210 14 Claims

1. A resin composition comprising 100 parts by weight of a polyarylene sulfide resin and 10 to 100 parts by weight of at least one metal hydroxide containing 50% by weight or more of magnesium hydroxide, wherein said composition further comprises 20 to 120 parts by weight of glass fibers and 30 to 80 parts by weight of talc.

5,252,634

LOW VOC (VOLATILE ORGANIC COMPOUNDS), SOLVENT-BASED THERMOPLASTIC PIPE ADHESIVES WHICH MAINTAIN JOINT ADHESIVE PERFORMANCE

Naresh D. Patel, 9223 Paso Robles, Northbridge, Calif. 91325, and Mark W. Brown, 9216 Tweedy La., Downey, Calif. 90240

Filed Feb. 18, 1992, Ser. No. 837,810
Int. Cl.[5] C08J 9/32; C08K 5/34, 5/15, 5/20
U.S. Cl. 523—218 21 Claims

1. A thermoplastic pipe adhesive mixture comprising:

a) at least one resin either (1) selected from the group consisting of polyvinylchloride, chlorinated polyvinylchloride, and acrylic or (2) consisting essentially of acrylonitrile-butadiene-styrene;

b) a solvent blend comprising either (i) a primary solvent consisting essentially of tetrahydrofuran and at least one secondary solvent of lesser amount selected from the group consisting of 1,1,1-trichloroethane, methylene chloride, cyclohexanone, N-methyl-2-pyrrolidone, methyl ethyl ketone, acetone, and dimethyl formamide for use with the group (1) resin or (ii) a primary solvent consisting essentially of methyl ethyl ketone and optionally at least one secondary solvent of lesser amount selected from the group consisting of 1,1,1-trichloroethane, methylene chloride, cyclohexanone, N-methyl-2-pyrrolidone, and acetone for use with the group (2) resin;

c) a low specific gravity filler consisting essentially of hollow ceramic spheres; and

d) a thixotropic agent for maintaining the homogeneous nature of the mixture.

5,252,635

POLYMER ACTIVATION METHOD USING TWO SEPARATE MIXING ZONES

Carl L. Brazelton, Kankakee; Troy C. Litherland, Bradley, both of Ill., and J. Derek Green, Wellington, England, assignors to Stranco, Inc., Bradley, Ill.

Division of Ser. No. 595,313, Oct. 10, 1990, which is a division of Ser. No. 89,344, Aug. 25, 1987, both abandoned. This application Feb. 19, 1991, Ser. No. 657,829
Int. Cl.[5] C08L 1/08, 33/26
U.S. Cl. 523—313 1 Claim

1. A method for activating and diluting polymer with water comprising

supplying the polymer to a first processing zone of a mixing vessel,

supplying the water to the first processing zone of the mixing vessel,

retaining the polymer in the first processing zone for a short contact time,

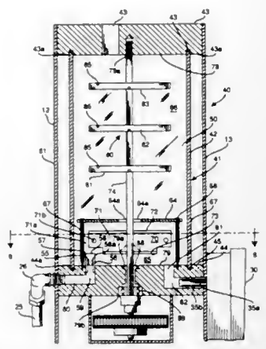
subjecting the polymer in the first processing zone to a high shear rate while it is retained in the first processing zone by rotating a first impeller means in the first processing zone to initiate dissolution and activation of the polymer

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in the water by moving the polymer in a direction away from an outlet of the first processing zone,

moving the diluted polymer through the first processing zone and the outlet, and into a second processing zone of the mixing vessel, the second processing zone being isolated from the first processing zone by baffle means which includes the outlet,

retaining the diluted polymer in the second processing zone for a longer contact time,



subjecting the polymer in the second processing zone to a lower shear rate while it is retained in the second processing zone by rotating a second impeller means in the second processing zone to further dissolve and activate the polymer, and

discharging the diluted polymer from the second processing zone.

5,252,636

DRY MIXTURE FOR EPOXY CEMENT CONCRETE

Peter Ellenberger, Feldmeilen, and Qiwei Yang, Zürich, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 556,602, Jul. 20, 1990, abandoned. This application Dec. 5, 1991, Ser. No. 803,247

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1989, 3923972

Int. Cl.[5] C08L *63/00*

U.S. Cl. 523—401 **13 Claims**

1. A process for the production of a storage stable dry mixture for cement compositions comprising hydraulic binder, aggregate, reactive resin and hardener, characterised by the step of contacting the reactive resin and the hardener with a finely divided, solid adsorbent having a surface area of at least 0.2 m^2/g, being of an amorphous nature and being produced by a pyrogenic method, before mixing these components with the hydraulic binder.

5,252,637

LOW VOC, HIGH MOLECULAR WEIGHT EPOXY EMULSION COATINGS

Gary P. Craun, Berea, and Daniel Bode, Cleveland, both of Ohio, assignors to The Glidden Company, Cleveland, Ohio

Filed Jun. 12, 1992, Ser. No. 900,924

Int. Cl.[5] C08K *3/20*

U.S. Cl. 523—406 **8 Claims**

1. A process for producing a coating composition containing a stable aqueous emulsion binder of high molecular weight epoxy resin and addition copolymer produced by the steps comprising:

dispersing into water low molecular weight epoxy resin having a number of average molecular weight between about 360 and 2,000 in the presence of ionic and anionic surfactants to provide an aqueous dispersion containing between about 10% and 30% by weight of said low molecular weight epoxy resin; and

advancing the molecular weight of the low molecular weight epoxy resin by reacting the epoxy resin with a coreactive diphenol at temperatures above about 150° C. and at pressures above about 5 psig to provide an aqueous dispersed high molecular weight epoxy resin having a number of average molecular weight between about 2,000 and 20,000; and

copolymerizing ethylenically unsaturated monomers in the aqueous dispersed high molecular weight epoxy resin by in-situ emulsion copolymerization to provide a stable aqueous emulsion binder of high molecular weight of epoxy resin and addition copolymer.

5,252,638

CASTING RESIN COMPOSITION

Toshio Sugimoto; Sadahiko Kawaguchi, and Hiroshige Mori, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Aug. 21, 1991, Ser. No. 747,966

Int. Cl.[5] C08L *63/04*

U.S. Cl. 523—427 **3 Claims**

1. A casting resin composition curable with an epoxy resin curing agent, consisting of at least one kind of an epoxy resin selected from the group consisting of bisphenol A diglycidyl ether and bisphenol F diglycidyl ether, a tri-functional or tetra-functional liquid epoxy resin which is at least one kind of an epoxy resin selected from the group consisting of triglycidylaminophenol, tetraglycidylxylenediamine, tetraglycidylaminodiphenylmethane, and 1,3-bis(N,N'-diglycidylaminomethyl)cyclohexane, and an iron powder, the ratio of the iron powder being from 60 to 80% by weight of the amount of total epoxy resins and iron powder, and the amount of the tri-functional or tetra-functional liquid epoxy resin being from 5 to 50% by weight of the total epoxy resins, said curing agent comprising a polyamide resin in an amount of from 50 to 150 parts by weight per 100 parts by weight of epoxy resin.

5,252,639

MOLDING RESIN COMPOSITION AND MOLDED ELECTRONIC COMPONENT

Shinetsu Fujieda, Kawasaki; Akira Yoshizumi; Kazutaka Matsumoto, both of Yokohama, and Hisayuki Hirai, Chiba, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 590,042, Sep. 28, 1990, abandoned, which is a continuation of Ser. No. 349,971, May 8, 1989, abandoned, which is a continuation of Ser. No. 122,745, Nov. 19, 1987, abandoned. This application Nov. 25, 1991, Ser. No. 796,896

Claims priority, application Japan, Nov. 21, 1986, 61-276635

Int. Cl.[5] C08K *5/09*

U.S. Cl. 523—455 **12 Claims**

1. A molding resin composition, comprising a resin base, a release agent and a zirconium chelate compound, wherein the release agent and the zirconium chelate compound are precombined.

5,252,640

WOOD COATING COMPOSITION AND PROCESS OF USE THEREOF

Carroll W. Cope, Marion, Va., assignor to Marley Mouldings Inc., Marion, Va.

Continuation-in-part of Ser. No. 481,500, Feb. 16, 1990, abandoned, which is a division of Ser. No. 308,970, Feb. 9, 1989, Pat. No. 4,921,891, which is a continuation of Ser. No. 940,904, Dec. 10, 1986, abandoned. This application Feb. 7, 1992, Ser. No. 832,631

Int. Cl.[5] C08K *11/00*

U.S. Cl. 524—15 **2 Claims**

1. A method for forming a coated wood product characterized by a printed wood grain pattern, comprising the steps of:

(a) applying a liquid coating onto a wood product, said coating comprising

	% volume
alkyd resins	5.18
anti-mar agent	4.21
tripentaerythritol	4.72
absorption pigments	12.50
wetting agent	0.27
deodorant	0.28
thickener	8.96
pecan shell flour	1.12
toluene	1.41
butylated urea resins	6.36
flow agent	0.05
suspension agents	5.30
white pigment	1.30
methyl ethyl ketone	4.94
acetone	3.57
lacquer diluent	5.40
vinyl resins	1.47
cellulose acetate	1.07
dioctyl phthalate	0.71
yellow pigment	0.11
inert pigment	0.07
other solvents	30.85
vehicle resins	0.16
	100.00;

(b) evaporating volatile solvents to form a solid coating;

(c) applying an ink composition in a wood grain pattern onto said solid coating, said ink composition comprising

	% volume
acrylic resins	52.24
latex resins	1.93
ethylene glycol	2.32
DMAE	0.58
water	5.15
glycol ether	6.41
yellow pigment	6.22
tint paste	4.90
burnt umber pigment	16.77
red oxide pigment	0.79
iridescent pigment	0.22
absorption pigment	2.45
	100.00.

5,252,641

PROCESS FOR PRODUCTION OF BITUMINOUS COMPOSITIONS CONTAINING POLYMERIC RESIDUES

Francois Dawans, Bougival, France, assignor to Institut Francais du Petrole, Rueil Malmaison, France

Continuation of Ser. No. 658,627, Feb. 21, 1991, abandoned. This application Jul. 21, 1992, Ser. No. 918,900

Claims priority, application France, Feb. 21, 1990, 90 02137

Int. Cl.[5] C08L *95/001*

U.S. Cl. 524—59 **23 Claims**

1. A process for obtaining a bituminous composition containing waste polymer, comprising the steps of:

(a) grinding a mixture of waste polymers comprising thermoplastics and thermally cross-linked materials to a powder having a size below 10 mm;

(b) washing said powder with water;

(c) drying the washed powder;

(d) mixing the dried powder with pulverulent bitumen having a size below 10 mm; and

(e) shaping the mixture obtained by heating and extruding the mixture at a temperature suitable extrusion or by compressing the mixture under a pressure of from 20–50 MPa.

5,252,642

DEGRADABLE IMPACT MODIFIED POLYACTIC ACID

Richard G. Sinclair, Columbus, and Joseph Preston, Radnor, both of Ohio, assignors to BioPak Technology, Ltd., Golden, Colo.

Continuation-in-part of Ser. No. 386,744, Jul. 31, 1989, abandoned, which is a continuation-in-part of Ser. No. 317,391, Mar. 1, 1989, abandoned. This application Sep. 6, 1990, Ser. No. 579,460

Int. Cl.[5] C08L *7/00, 9/00, 67/02, 67/04*

U.S. Cl. 524—108 **31 Claims**

1. A degradable composition comprising: blends of a physical mixture of:

a. a poly(lactic acid); and

b. a blend compatible polymer that provides improved impact resistance to the poly(lactic acid), wherein the polymer is selected from the group consisting of a block copolymer of hard crystalline segments of poly(butylene terephthalate) and soft long chain segments of poly(ether glycols), natural rubber, styrene-butadiene copolymers, and mixtures thereof; and

wherein said poly(lactic acid) and said blend compatible polymer are present as discrete heterogeneous phases.

5,252,643

THIOMETHYLATED BENZOFURAN-2-ONES

Peter Nesvadba, Marly, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

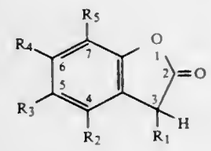
Filed Jun. 24, 1992, Ser. No. 903,647

Claims priority, application Switzerland, Jul. 1, 1991, 1934/91

Int. Cl.[5] C07D *307/83;* **C08K** *5/15*

U.S. Cl. 524—111 **12 Claims**

1. A compound of formula (1)



(1)

wherein

R_1 is phenyl or phenyl which is substituted by C_1-C_{18}alkyl, C_1-C_{18}alkoxy, C_3-C_{18}alkenyloxy, benzyloxy, C_1-C_{18}alkanoyloxy, hydroxy or halogen,

R_2 and R_4 are each independently of the other hydrogen or

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C_1-C_4alkyl, or R_4 and R_5, together with the linking carbon atoms, form a phenyl ring, and

R_3 and R_5 are each independently of the other a radical of formula $—CH_2—S—R_6$, wherein R_6 is C_1-C_{18}alkyl, C_5-C_8cycloalkyl, benzyl, phenyl or a radical of formula $—CH_2—CO_2R_7$ or $—C_2H_4—O—R_8$, wherein R_7 is hydrogen or C_1-C_{18}alkyl and R_8 is hydrogen or C_2-C_{19}alkanoyl.

6. A composition comprising

α) an organic material which is subject to oxidative, thermal or light-induced degradation, and

β) at least one compound of formula (1) according to claim 1.

5,252,644

ACRYLIC RESIN COMPOSITION

Bill R. Edwards, 809 E. Jackson, Broken Arrow, Okla. 74012

Continuation of Ser. No. 720,009, Jun. 24, 1991, Pat. No. 5,134,210, which is a continuation-in-part of Ser. No. 568,194, Aug. 15, 1990, Pat. No. 5,045,613, which is a continuation-in-part of Ser. No. 528,728, May 23, 1990, Pat. No. 5,023,313, which is a division of Ser. No. 386,501, Jul. 27, 1989, Pat. No. 4,945,122. This application Jul. 27, 1992, Ser. No. 920,829

The portion of the term of this patent subsequent to Jun. 11, 2008, has been disclaimed.

Int. Cl.[5] C08K *5/42;* **C08F** *2/38*

U.S. Cl. 524—166 **15 Claims**

1. A method for producing a polymerization syrup having an improved shelf life comprising:

admixing an acrylic monomer represented by the formula

$$CH_2=C(CH_3)-COOR$$

wherein R is an alkyl moiety containing 1 to about 18 carbon atoms, with an effective amounts of a non-peroxide oxygen donator 2,2-bis(allyloxymethyl)-butan-1-ol or diallylphthalate, a mercaptan and a crosslinking agent compatible with the acrylic monomer to form an intimate blend containing from about 300 to about 100 parts by volume of the acrylic monomer, from about 0.1 to about 1000 parts by volume of the non-peroxide oxygen donator, from about 0.5 to about 5 parts by volume of the mercaptan and from about 0.3 to about 40 parts by volume of the crosslinking agent; and

heating the blend at a temperature of from about 80 degrees Centigrade to about 110 degrees Centigrade for a period of time effective to provide the blend with a desired viscosity as determined by the end use for the polymerization syrup.

5,252,645

ANTISTATIC, THERMALLY STABILIZED HALOGEN-CONTAINING RESIN COMPOSITION

Tsutomu Nosu, and Yoshiyuki Nagae, both of Kagawa, Japan, assignors to Kyowa Chemical Industry Co., Ltd., Kagawa, Japan

Filed Dec. 4, 1991, Ser. No. 802,280

Claims priority, application Japan, Dec. 5, 1990, 2-405390

Int. Cl.[5] C08K *5/57, 5/09, 5/07*

U.S. Cl. 524—180 **8 Claims**

1. An antistatic, thermally stabilized halogen-containing resin composition containing 100 parts by weight of a halogen-containing resin, 0.01 to 10 parts by weight of a hydrotalcite compound having the formula

$$M^{2+}{}_{(1-x)}Al_x(OH)_2CO_{3(x/2)}\cdot mH_2O$$

wherein M^{2+} is Mg^{2+} and/or Zn^{2+}, x is defined by $0.1<x-<0.5$ and m is defined by $0\leqq m<1$, 0.01 to 10 parts by weight of a perchloric acid ion-containing hydrotalcite, and 0.01 to 5 parts by weight of at least one member selected from a β-diketone compound, an organic acid metal salt and an organic tin compound.

5,252,646

POLYLACTIDE CONTAINING HOT MELT ADHESIVE

Carmine P. Iovine, Bridgewater, N.J.; Thomas F. Kauffman, Easton, Pa.; Jules E. Schoenberg, Bridgewater, and Paul P. Puletti, Pittstown, both of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Bridgewater, N.J.

Filed Oct. 29, 1992, Ser. No. 968,564

Int. Cl.[5] C08L *93/04*

U.S. Cl. 524—270 **20 Claims**

1. A hot melt adhesive composition comprising 20 to 98% by weight of a polylactide mono- or copolymer containing at least 20 molar percent of the lactide component; 2 to 80% by weight of a polar tackifier having a Ring and Ball softening point, as described by ASTM E-26, greater than about 60° C.; 0 to 50% by weight of a plasticizer; 0 to 30% by weight of a wax diluent and 0–3% by weight of a stabilizer.

5,252,647

THERMOPLASTIC MOULDING MATERIALS BASED ON POLYPHENYLENE ETHERS AND POLYAMIDES

Joachim Mügge, Haltern; Udo Kowalczik, Bochum, and Friedrich G. Schmidt, Haltern, all of Fed. Rep. of Germany, assignors to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Nov. 18, 1991, Ser. No. 793,534

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1990, 4036561

Int. Cl.[5] C08K *5/10;* **C08L** *51/04*

U.S. Cl. 524—280 **10 Claims**

1. A thermoplastic moulding material which comprises:

a) 3 to 80 parts by weight of a polyphenylene ether,

b) 20 to 97 parts by weight of a polyamide, wherein the sum of a) and b) equals 100 parts by weight,

c) 0.1 to 10 parts by weight of a carbonate of the formula

$$X—O—\overset{O}{\overset{\|}{C}}—OY$$

in which X and Y independent of one another denote an alkyl, cycloalkyl, aryl or substituted aryl radical, each having up to 12 C atoms, and

d) 0 to 30 parts by weight of an impact modifier.

5,252,648

COMPOSITIONS CONTAINING OCTADIENYL ETHERS AS REACTIVE THINNERS

Peter Höhlein, Kempen; Jürgen Meixner, Krefeld, and Josef Pedain, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 4, 1992, Ser. No. 985,977

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1991, 4141190

Int. Cl.[5] C08L *75/04*

U.S. Cl. 524—306 **16 Claims**

1. A composition which is suitable for the preparation of coatings, sealants and/or fillers and comprises one or more binder components and as reactive thinner an octadienyl ether which may contain ester groups and which has a viscosity at 23° C. of at most 5,000 mPas and a content of 1 to 80% by weight of octadienyl groups,. $—C_8H_{13}$, 0 to 35% weight of hydroxyl groups and 0 to 30% by weight of carboxyl groups.

5,252,649

PNEUMATIC TIRE WITH TREAD CONTAINING PLASTICIZER, PLASTICIZER MIXTURE FOR PNEUMATIC TIRE, AND METHOD OF PRODUCING SUCH PLASTICIZER MIXTURE

Bernadette Hausmann, Puchberg, Austria, assignor to Semperit Reifen AG, Traiskirchen, Austria

Filed Jul. 13, 1992, Ser. No. 912,681

Claims priority, application Austria, Jul. 18, 1991, 1441/91

Int. Cl.[5] C08K *5/10*

U.S. Cl. 524—313 **22 Claims**

1. A pneumatic vehicle tire comprising:

a tread member comprising a tread member rubber mixture including a plasticizer;

said plasticizer comprising at least one fatty acid triglyceride; and

said fatty acid triglyceride comprising oleic acid in a amount of more than 50% of the total fatty acids.

5,252,650

RUBBER COMPOUNDS CONTAINING ALKYL (C12-C22) ESTERS OF A MIXTURE OF FATTY ACIDS

Lawson G. Wideman; Paul H. Sandstrom, both of Tallmadge, and Denise J. Keith, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 24, 1992, Ser. No. 934,201

Int. Cl.[5] C08K *5/11*

U.S. Cl. 524—318 **10 Claims**

1. A process for preparing rubber compounds which comprises admixing a rubber selected from the group consisting of natural rubber, homopolymers of conjugated diolefins copolymers of conjugated diolefins and ethylenically unsaturated monomers or mixtures thereof with alkyl esters of a mixture of fatty acids wherein the alkyl contains 18 carbon atoms and said mixture of fatty acids contains from about 2 to 67 percent by weight of stearic acid, 0.3 to 48 percent by weight of oleic acid and 0.1 to 49 percent by weight of palmitic acid.

5,252,651

RIGID COMPOSITIONS BASED ON POLYVINYL CHLORIDE COMPRISING AN ALIPHATIC POLYOL AS A VISCOSITY REDUCER AND USE OF THESE COMPOSITIONS FOR MANUFACTURING RIGID ARTICLES BY INJECTION MOULDING

Jean Criquilion, Brussels, Belgium, assignor to Solvay S.A., Brussels, Belgium

Filed May 30, 1990, Ser. No. 530,805

Claims priority, application Belgium, Jun. 2, 1989, 08900603

Int. Cl.[5] C08J *5/05*

U.S. Cl. 524—388 **6 Claims**

1. A rigid composition comprising a) polyvinyl chloride, b) an inorganic lead compound as a primary heat stabilizer, c) ditrimethylolpropane present as a viscosity reducer in a proportion of 6 to 9 parts by weight per 100 parts by weight of said polyvinyl chloride, and d) a neutral lead carboxylate derived from a fatty acid containing 8 to 30 carbon atoms as a lubricant.

5,252,652

SOLID GOLF BALL

Yoshinori Egashira, Saitama; Kazuyuki Takahashi, Yokobama, and Seisuke Tomita, Tokorozawa, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

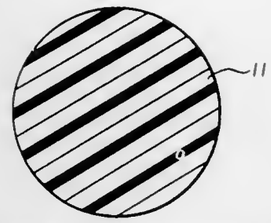
Filed May 10, 1990, Ser. No. 521,618

Claims priority, application Japan, Nov. 5, 1989, 1-118460

Int. Cl.[5] C08K *5/09, 5/36;* **A63B** *37/00*

U.S. Cl. 524—392 **13 Claims**

1. A solid golf ball, having an improved rebound property and initial velocity, comprising a rubber composition containing 100 parts by weight of a base rubber selected from the group consisting of polybutadiene rubber, natural rubber, polyisoprene rubber and styrene-butadiene rubber, about 25 to about 40 parts by weight of a zinc or magnesium salt of an unsaturated fatty acid having 3 to 8 carbon atoms, about 0.05 to about 2 parts by weight of a sulfur compound selected from the group consisting of pentachlorothiophenol, 4-t-tubyl-o-thiocresol, 4-t-butyl-p-thiocresol, 2-benzamidothiophenol, thiobenzoic acid, and zinc salts thereof, and about 0.5 to about 3 parts by weight of an organic peroxide.



5,252,653

POLYMER MIXTURE AND ARTICLES FORMED THEREFROM

Johannes van Helmond, Bergen op Zoom, Netherlands, assignor to General Electric Company, Pittsfield, Mass.

Filed Nov. 23, 1992, Ser. No. 979,947

Int. Cl.[5] C08K *3/32;* **C08L** *69/00, 67/02*

U.S. Cl. 524—409 **10 Claims**

1. A polymer mixture which comprises

(A) a polyalkylene phthalate

(B) a non-brominated aromatic polycarbonate or a brominated aromatic carbonate oligomer, polymer or copolymer or a mixture of a brominated aromatic carbonate oligomer, polymer or copolymer and a non-brominated aromatic polycarbonate and

(C) a transesterification inhibitor, in which the polymer mixture comprises a hydrogen phosphate of zinc or calcium as a transesterification inhibitor.

5,252,654

ORGANIC-INORGANIC POLYMERIC COMPOSITES

Israel A. David; Mark A. Harmer; Jeffrey S. Meth, and George W. Scherer, all of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 3, 1991, Ser. No. 725,168

Int. Cl.[5] C08K *3/32*

U.S. Cl. 524—414 **29 Claims**

1. A polymeric composite comprising an interpermeating network of a) from about 15 to about 90% by volume of an inorganic glassy polymer component, and b) from about 10 to about 85 percent by volume of an organic polymer component,

wherein the organic component is unextractable from the composite, and a glass transition point or a cystalline melting point for the organic component is undetectable in the composite,

provided that when the organic component is nylon-6, the maximum amount present is 45 percent by volume of the composite.

5,252,655

DENSIFIED CERAMIC GREEN SHEET AND STACK HAVING CONDUCTORS THEREIN

Anthony A. Parker, Pittsburgh; Todd T. Stanzione, Sarver; George H. Armstrong, New Kensington; Frankie E. Phelps, Apollo, and Susanne M. Opalka, Pittsburgh, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Mar. 16, 1992, Ser. No. 851,610

Int. Cl.[5] C08K *3/22*

U.S. Cl. 524—430 **20 Claims**

1. A castable slip of ceramic powder consisting essentially of a mixture of a major portion by weight of oxide ceramic parti-

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cles in the size range from 3–10 μm and a minor portion by wt of oxide ceramic particles in the size range from about 0.5–3 μm, in an essentially anhydrous volatile solvent which forms a solution with a matrix polymer and from 0–40% by weight of plasticizer, said matrix polymer and plasticizer being present in a minor proportion by weight of said slip, wherein said matrix polymer is selected from the group consisting of polyvinyl alcohol copolymers, vinyl polymers and polyvinylpyrrolidone copolymers; said solution containing from 0.05–0.5% by weight of a polysiloxanol oligomer of a trialkoxysiloxane monomer having the structure

$$R''Si(OR')_3$$

wherein

R' represents a lower C_1–C_4 alkoxy group selected from the group consisting of methoxy, ethoxy, isopropoxy and n-butoxy; and,

R'' represents an organofunctional group unreactive with said matrix polymer and plasticizer, and selected from the group consisting of vinyl, C_6–C_{20} alkyl, haloalkyl, epoxy, methacrylate, a primary C_3–C_8 amine, a C_4–C_{10} diamine, mercapto C_2–C_8 alkyl; and cationic styryl; and,

wherein said oligomer has chains having a number average distribution with a number average degree of polymerization X_n in the range above 2 but below that near the gel point.

5,252,656

POLYARYLENE SULFIDE RESIN MOLDING COMPOSITION

Toshifumi Nonaka, Urayasu, and Katsutoshi Suzuki, Fuji, both of Japan, assignors to Polyplastics Co., Ltd., Osaka, Japan

Filed Jul. 10, 1991, Ser. No. 727,947

Claims priority, application Japan, Jul. 12, 1990, 2-184878

Int. Cl.[5] C08K *3/00*

U.S. Cl. 524—449 **13 Claims**

1. A polyarylene sulfide resin molding composition comprising

(A) 100 parts by weight of a polyarylene sulfide resin and

(B) 5 to 150 parts by weight of white mica which has a mean particle diameter of 2 to 65 microns and a mean aspect ratio of 10 to 60.

5,252,657

MODIFIED LATEX POLYMER COMPOSITION

Lawrence S. Frankel, Jenkintown, Pa.; Gerald L. Jones, Norfolk, Mass., and Donald A. Winey, Warminster, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 294,224, Jan. 9, 1989, Pat. No. 5,093,405, which is a division of Ser. No. 92,816, Sep. 3, 1987, Pat. No. 4,814,373, which is a continuation of Ser. No. 683,902, Dec. 20, 1984, abandoned. This application Feb. 2, 1993, Ser. No. 12,174

Int. Cl.[5] C08F *2/16*

U.S. Cl. 524—460 **3 Claims**

1. A process for producing an improved thermoplastic elastomer or semi-elastomer comprising coagulating the improved aqueous dispersion prepared by

a. emulsion polymerizing an initial aqueous dispersion of an initial water-insoluble latex polymer of at least one ethylenically unsaturated monomer, wherein said ethylenically unsaturated monomer comprises no more than about two percent by weight, based on the total weight of said ethylenically unsaturated monomer, of multi-alpha, beta-ethylenically unsaturated monomer and wherein said initial water-insoluble latex polymer otherwise contains essentially no sites of ethylenic unsaturation, and wherein the glass transition temperature of said initial polymer is less than −10° C.,

b. dispersing in said initial aqueous dispersion of initial water-insoluble latex polymer additional ethylenically unsaturated monomer comprising at least one monomer having at least two sites of alpha, beta-ethylenic unsaturation, whereby said additional monomer-swells said initial latex polymer, and

c. polymerizing said additional monomer within said monomer-swollen initial latex polymer, and dewatering the coagulated latex polymer.

5,252,658

PIGMENT-CONTAINING PREMIXTURE OF TITANIUM DIOXIDE WITH OLEFIN POLYMER

Ralf-Burkhard Dethlefs, Bissendorf; Bernd Scholz, Osnabrück, and Wolfram Wysk, Belm, all of Fed. Rep. of Germany, assignors to Felix Schoeller jr GmbH & Co. KG, Osnabruck, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 185,869, Apr. 25, 1988, Pat. No. 4,935,298. This application Nov. 22, 1989, Ser. No. 440,902

Claims priority, application Fed. Rep. of Germany, May 15, 1987, 3716269

Int. Cl.[5] C08K *3/22*

U.S. Cl. 524—492 **19 Claims**

1. A premixture composition for the production of water-resistant support materials coated with polyolefin resin for light-sensitive materials of polyolefin resin and light-reflecting white pigment comprising

a polyolefin resin having hydrocarbon side chains formed as a copolymer of ethylene and an α-olefin;

a light-reflecting titanium dioxide pigment intimately mixed with the said polyolefin resin;

wherein hydrocarbon side chains derived of an α-olefin in the copolymer comprise C1 to C16 carbon atoms, and wherein

the content of α-olefin forming hydrocarbon side chains in the copolymer amounts to from about 0.1 to 20 mole-percent relating to the mole sum of ethylene derived and α-olefin derived elements contained in the copolymer.

5,252,659

MOLDED POLYPROPYLENE-α-OLEFIN PRODUCT HAVING LOW COEFFICIENT OF LINEAR EXPANSION

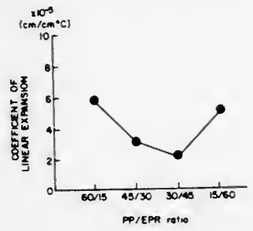
Junji Koizumi, Nagoya, and Junji Takeuchi, Inazawa, both of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Continuation of Ser. No. 690,281, Apr. 24, 1991, abandoned. This application Aug. 21, 1992, Ser. No. 931,458

Claims priority, application Japan, Apr. 26, 1990, 2-111316

Int. Cl.[5] C08J *5/10;* **C08K** *3/04;* **C08L** *23/12*

U.S. Cl. 524—496 **20 Claims**



1. A molded product having a low coefficient of linear expansion, comprising:

(I) 60–85% by weight of a polymer mixture comprising, per 100 parts by weight of said mixture:

(A) 30–70 parts by weight of a polypropylene and, correspondingly,

(B) 70–30 parts by weight of ethylene-α-olefin copolymer particles wherein the copolymer has substantially no crystalline regions formed therein and has a Mooney viscosity lower than 70;

(II) 2–10% by weight of a fibrous filler; and

(III) 5–38% by weight of an extender; wherein the ethylene-α-olefin copolymer is combined with the fibrous filler to form particles having an aspect ratio of at least 5 dispersed in the molded product as an elongated disperse phase.

5,252,660

COATING COMPRISING SOLUTION ORGANOSILANE POLYMER AND SILANE FUNCTIONAL DISPERSED POLYMER

Isidor Hazan, Clementon, and Mitzie K. Rummel, Mt. Laurel, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 17, 1990, Ser. No. 627,998

The portion of the term of this patent subsequent to Sep. 14, 2010, has been disclaimed.

Int. Cl.[5] C08J *3/00;* **C08K** *5/00;* **C08L** *51/00;* **C08G** *63/48*

U.S. Cl. 524—504 **23 Claims**

1. A composition useful for coating a substrate, which composition comprises:

(a) from about 20 to 90% by weight, based on the weight of the binder solids, of a film-forming alkoxysilane-functional polymer having a weight average molecular weight of about 500–30,000 comprising from about 30 to 95% by weight, based on the weight of the alkoxysilane-functional polymer, of ethylenically unsaturated monomers which do not contain an alkoxysilane functionality and about 5 to 70% by weight ethylenically unsaturated monomers which contain an alkoxysilane functionality; and

(b) from about 10 to 60%, based on the weight of the binder solids, of a dispersed polymer having an average particle siae of at least about 1.0 microns, comprising:

(i) a macromolecular core; and

(ii) a plurality of essentially epoxy free macromonomer chains, attached to the macromolecular core, having a weight average molecular weight of about 1,000 to 30,000 comprising 5 to 30% by weight, based on the weight of the macromonomer, of polymerized ethylenically unsaturated monomers which comprise an alkoxysilane functionality capable of crosslinking with alkoxysilane functionalities in said alkoxysilane-functional polymer; and 70 to 95% by weight, based on the weight of the macromonomer, of at least one other polymerized ethylenically unsaturated monomer not containing an alkoxysilane functionality; and

(c) from about 25 to 50% by weight, based on the weight of the composition, of a liquid organic carrier.

5,252,661

IMPACT MODIFYING RUBBER AND PARTLY AROMATIC COPOLYAMIDES

Horst Reimann, Worms; Gunter Pipper, Bad Durkheim; Hans-Peter Weiss, Mutterstadt; Christoph Plachetta, Limburgerhof; Eckhard M. Koch, Fussgoenheim; Gerd Blinne, Bobenheim; Walter Goetz, Kaiserslautern, and Peter Steiert, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 747,417, Aug. 19, 1991, which is a continuation of Ser. No. 362,303, Jun. 6, 1989, abandoned. This application Apr. 6, 1992, Ser. No. 864,132

Int. Cl.[5] C08G *69/32, 69/28, 69/14;* **C08K** *3/40*

U.S. Cl. 524—514 **14 Claims**

1. A thermoplastic molding composition containing as essential components

A) 40–95% by weight of a partly aromatic copolyamide consisting essentially of

A_1) 20–90% by weight of units derived from terephthalic acid and hexamethylenediamine,

A_2) 0–50% by weight of units derived from ε-caprolactam and

A_3) 0–80% by weight of units derived from adipic acid and hexamethylenediamine,

B) 5–60% by weight of an impact modifying rubber, and in addition

C) 0–50% by weight of fibrous or particulate fillers or mixtures thereof, and wherein the triamine content of the partly aromatic copolyamide A) is less than 0.5% by weight.

5,252,662

LOW VISCOSITY ACRYLIC HOT MELT ADHESIVES

Shiaonung Su, Buena Park, Calif.; Yebuda Ozari, Greenwich, Conn.; Richard R. Vargas, Southgate, and Henry Lum, Jr., Whittier, both of Calif., assignors to Avery Dennison Corporation, Pasadena, Calif.

Filed Sep. 25, 1992, Ser. No. 952,074

Int. Cl.[5] C08F *222/06*

U.S. Cl. 524—549 **39 Claims**

25. A low viscosity hot melt acrylic pressure-sensitive adhesive polymer composition having thermally reversible crosslinks formed with a metal cation having a valence of from 2 to 4, said polymer formed by bulk polymerization ad comprising, on a polymerized basis, at least one alkyl acrylate containing from 4 to about 8 carbon atoms in the alkyl group and present in an amount of from about 60 to about 95% by weight of the polymer, about 1 to about 10% by weight of the polymer of a copolymerizable amide, about 1 to about 10% by weight of at least one copolymerizable carboxylic acid and a positive amount up to about 6% by weight of a copolymerizable anhydride, said composition containing from 1 to about 15% by weight of a metal cation having a valence of from 2 to 4.

5,252,663

FORMALDEHYDE-FREE CROSSLINKING EMULSION POLYMER SYSTEMS BASED ON VINYL ESTER DIALKOXYHYDROXYETHYL ACRYLAMIDE CO- AND TERPOLYMERS

Rama S. Chandran, South Bound Brook; Carmine P. Iovine, Bridgewater; Paul R. Mudge, Belle Mead; John C. Leighton, Flanders, and Malcolm F. Hallam, Branchburg, all of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed May 22, 1991, Ser. No. 703,931

Int. Cl.[5] C08K *5/00*

U.S. Cl. 524—813 **10 Claims**

1. A binder composition for nonwovens prepared from an emulsion polymer comprising more than 50% vinyl ester, 1 to 15% by weight of N-(2,2-dialkoxy-1-hydroxy)ethyl acrylamide wherein the alkoxy group contains 1 to 4 carbon atoms, and 5 to 35% by weight ethylene.

5,252,664

TRANSPARENT TOUGHENED THERMOPLASTICS

Ronald J. Thompson, Enniskillen Township; James Lunt, Bright's Grove, both of Canada; John C. Lamont, Westminster, and John C. Kwok, Holden, both of Mass., assignors to Polysar Limited, Sarnia, Canada

Division of Ser. No. 382,896, Jul. 21, 1989, Pat. No. 5,079,296. This application Jun. 27, 1991, Ser. No. 722,312

Int. Cl.[5] C08L *51/06, 33/02, 33/08, 33/10*

U.S. Cl. 525—64 **4 Claims**

1. An impact modified thermoplastic polymer blend having a transparency of not less than 90% as measured using sheet material 0.040 inches, comprising:

(i) from 59 to 39.9 weight % of a transparent block copolymer comprising:

(a) from 70 to 80 weight % of at least one block of at least one C_{8-12} vinyl aromatic monomer which is unsubstituted or substituted by a C_{1-4} alkyl radical; and

(b) from 30 to 20 weight % of at least one C_{4-6} conjugated diolefin,

which transparent block copolymer when blended with one or more clear glassy polymers gives a transparent blend;

(ii) from 0.1 to 1 weight % of a rubbery polymer comprising:

(a) from 100 to 600 weight % of a C_{4-6} conjugated diolefin; and

(b) from 0 to 40 weight % of one or more monomers

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selected from the group consisting of C_{2-6} alkenyl nitrile monomers and styrene,

in a particulate form having a volume moment average particle diameter from 0.1 to 3 microns, said rubbery polymer being introduced into the blend in the form of an impact modified polymer selected from the group consisting of:

(i) impact polymers comprising from 5 to 10 weight % of said rubbery polymer to which is grafted from 95 to 90 weight % of a matrix of a polymer selected from the group consisting of polymers comprising a homopolymer of a C_{8-12} vinyl aromatic monomer which is unsubstituted or substituted by a C_{1-4} alkyl radical; and

(ii) impact polymers comprising from 0.1 to 10 weight % of said rubbery polymer to which is grafted from 99.9 to 90 weight % of a matrix of a copolymer comprising:

(a) from 10 to 50 weight % of one or more acrylate or methacrylate esters which form homopolymers having a Tg greater than 35° C.;

(b) from 40 to 90 weight % of one or more C_{8-12} vinyl aromatic monomers which are unsubstituted or substituted by a C_{1-4} alkyl radical; and

(c) from 0 to 9.9 weight % of one or more acrylate or methacrylate esters which form homopolymers having a Tg greater than 20° C.; and

(iii) the balance a clear glassy styrene acrylic polymer comprising:

(a) from 50 to 90 weight % of one or more C_{8-12} vinyl aromatic monomers which are unsubstituted or substituted by a C_{1-4} alkyl radical; and

(b) from 10 to 50 wight % of one or more C_{1-4} alkyl esters of acrylic or methacrylic acid.

5,252,665

POLYESTER BASED SHOCK RESISTANT COMPOSITIONS AND PROCESS FOR THEIR PREPARATION

Antonio Chiolle, Ferrara, and Gaetano Andreoli, Rovigo, both of Italy, assignors to Ausimont S.p.A., Italy

Continuation of Ser. No. 563,854, Aug. 7, 1990, abandoned, which is a continuation of Ser. No. 378,481, Jul. 11, 1989, abandoned, which is a continuation of Ser. No. 55,078, May 28, 1987, abandooed. This application Jan. 2, 1992, Ser. No. 815,915

Claims priority, application Italy, May 29, 1986, 20606 A/86

Int. Cl.[5] C08L *67/02*

U.S. Cl. 525—64 **9 Claims**

1. A shock resistant polymeric composition comprising:

(a) from 55 to 98% by weight of polybutyleneterephthalate having an intrinsic viscosity of at least 0.4 dl/g;

(b) from 1 to 35% by weight of butadiene/styrene/methyl methacrylate terpolymer rubber containing 58 from to 62% by weight polybutadiene, from 12 to 18% by weight styrene and from 24 to 26% by weight methylmethacrylate and having a cross-linking degree (gel content) of 94–99% by weight with a Tg less than 0° C.; and

(c) from 1 to 10% by weight of a block-copolyester having a melting point lower than 150° C., and obtained by polycondensation or transesterification of an aromatic dicarboxylic acid with a diol having the formula (I)

$$HO—R—OH \quad (I)$$

wherein R is a linear or branched alkylene radical containing from 2 to 20 carbon atoms, or an arylene or cycloalkylene radical containing from 6 to 20 carbon atoms, and with a polyetherglycol having the formula:

$$HO—(R_1—O)_m—H \quad (II)$$

wherein R_1 is a linear or branched alkylene radical containing from 2 to 20 carbon atoms, and m is an integer greater than 2, and such that the molecular weight of the polyetherglycol is within the range of from 300 to 10,000.

5,252,666

PARTICULATE GRAFT POLYMER WITH IMPROVED ADHESION BETWEEN GRAFTING BASE AND GRAFT SHEATH

Friedrich Seitz, Friedelsheim; Karl Ruppmich, Ludwigshafen, and Josef Schwaab, Maikammer, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 1, 1991, Ser. No. 663,171

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1990, 4006643

Int. Cl.[5] C08L *51/04;* **C08F** *265/04, 265/06*

U.S. Cl. 525—80 **4 Claims**

1. A thermoplastic molding material consisting essentially of 1–40% by weight of a particulate graft polymer comprising

A: from 30 to 90% by weight of at least one elastomeric polymer A having a $T_g<0°$ C. and having a median particle size of from 30 to 100 nm comprising—based on A—

A1: from 85 to 99.8% by weight of at least one alkyl acrylate A1 having from 1 to 8 carbon atoms in the alkyl moiety,

A2: from 0.1 to 5% by weight of at least one polyfunctional, crosslinking monomer A2 having at least two double bonds capable of copolymerization which are not conjugated in the 1,3-position and

A3: from 0.1 to 10% by weight of a hydroxyalkyl acrylate or methacrylate, as grafting base, and

B: from 10 to 780% by weight, grafted onto the elastomeric polymer A, of a sheath B consisting essentially of —based on B—

B1: from 50 to 90% by weight of at least one aromatic vinyl monomer B1 and

B2: from 10 to 50% by weight of at least one polar, copolymerizable, ethylenically unsaturated monomer B2 selected from the group consisting of acrylonitrile and methyl methacrylate; as obtained by graft copolymerizing in aqueous emulsion the elastomeric polymer A and the monomers B1 and B2,

and 50 to 99% by weight of at least one matrix polymer selected from the group consisting of styrene acrylonitrile and α-methylstyrene acrylonitrile copolymers having a glass transition temperature of more than 25° C. and optionally minor amounts of customary additives and assistants.

4. A thermoplastic molding material as claimed in claim **1**, wherein the matrix is a mixture of a styrene acrylonitrile copolymer and an α-methylstyrene acrylonitrile copolymer, both of which have a glass transition temperature of more than 25° C.

5,252,667

POLYMER BLENDS INCLUDING IONOMERS

Hsing-Yeh Parker, Holland, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 505,081, Apr. 4, 1990, Pat. No. 5,202,381. This application Dec. 7, 1992, Ser. No. 986,179

Int. Cl.[5] C08L *33/04, 51/06*

U.S. Cl. 525—85 **13 Claims**

1. A composition comprising:

a. a polymer of vinyl chloride;

b. an additive polymer containing at least 30 weight percent of units derived from at least one alkyl acrylate or alkyl methacrylate, wherein the alkyl group contains from 1 to 12 carbon atoms, from 0 to about 70 parts of units derived from at least one other vinyl or vinylidene monomer, and from about 0.5 to about 10 parts, per 100 parts of all other units of the additive polymer, of units derived from an alkali metal salt of an unsaturated acid, wherein the additive polymer is one non-grafted stage of a multi-stage polymer, the one non-grafted stage comprising at least about 50 weight percent of the multi-stage polymer.

5,252,668

ONE-PACK CHLOROPRENE ADHESIVE

Masahito Mori, Takatsuki, and Masaaki So, Ibaraki, both of Japan, assignors to Sunstar Giken Kabushiki Kaisha, Takatsuki, Japan

Filed May 30, 1989, Ser. No. 358,209

Claims priority, application Japan, May 30, 1988, 63-134062

Int. Cl.[5] C08F *8/32;* **C08L** *9/00*

U.S. Cl. 525—102 **3 Claims**

1. A one-pack chloroprene adhesive comprising:

a chloroprene rubber modified with an aminosilane which is the reaction product of a chloroprene rubber and an aminosilane;

a petroleum resin; and

an organic solvent,

wherein said aminosilane is a member selected from the group consisting of aminomethyltriethoxysilane, N-(β-aminoethyl) aminomethyltrimethoxysilane, aminomethylmethyldiethoxysilane, N-(β-aminoethyl) aminomethyltributoxysilane, γ-aminopropyltriethoxysilane, γ-aminopropylmethyldiethoxysilane, γ-aminoisobutyltrimethoxysilane, N-(β-aminoethyl)-γ-aminopropylmethyldimethoxysilane, and N-(βaminoethyl)-γ-amino-γ-methylpropyltrimethoxysilane.

5,252,669

GRAFTED, THERMOPLASTIC, WATERBORNE POLYMER AND COATING COMPOSITION

Rudolf Maska, Indiana Township, Allegheny County, Pa.; Marvin T. Tetenbaum, Melbourne, Fla.; James R. Bodwell, West Chester, and David C. Kapp, Richland Township, Allegheny County, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 19, 1991, Ser. No. 810,060

Int. Cl.[5] C08L *63/10*

U.S. Cl. 525—112 **11 Claims**

1. A resin adapted for use in a waterborne coating composition comprising a mixture of:

(a) a thermosetting polymer having at least 5 percent by weight acid groups, and

(b) a phosphatized epoxy polymer; both of which have grafted thereon a polymeric segment that is essentially thermoplastic in nature in that it is essentially free of thermosetting curing sites.

5,252,670

POWDER COATING MATERIAL AND A RECOAT STEEL PLATE

Chiaki Sagawa, Tokyo; Eiji Shimada, Yokohama, and Shingo Okamoto, Fujisawa, all of Japan, assignors to NOF Corporation, Tokyo, Japan

Filed Nov. 12, 1992, Ser. No. 974,770

Claims priority, application Japan, Nov. 15, 1991, 3-300789

Int. Cl.[5] C08G *18/80*

U.S. Cl. 525—124 **13 Claims**

1. A powder coating composition comprising 100 weight parts of the total of a polyester resin having a hydroxyl value in the range from 20 to 100 KOH mg/g and a blocked polyisocyanate compound, 0.01 to 3 weight parts of an organotin compound and 0.01 to 10 weight parts of a carboxylic acid compound having an acid value of 1000 KOH mg/g or less which can form a complex compound by reaction with the organotin compound, the amount of the polyester resin being in the range from 95 to 50 weight % and the amount of the blocked polyisocyanate compound being in the range from 5 to 50 weight % respectively based on the total of the polyester resin and the blocked polyisocyanate compound.

5,252,671

COATING COMPOSITIONS FOR COATINGS THAT ARE PERMEABLE TO WATER VAPOR AND A PROCESS FOR THEIR PREPARATION

Josef Pedain; Klaus Noll, both of Cologne; Wilhelm Thoma, Leverkusen, and Detlef-Ingo Schütze, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 21, 1992, Ser. No. 887,213

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1991, 4118053

Int. Cl.[5] C08F *8/30*

U.S. Cl. 525—124 **7 Claims**

1. A process for the preparation of coating compositions comprising preparing a mixture of

(A) 70 to 98% by weight, based on the sum of components (A) and (B), of

(a) one or more polymers selected from the group consisting of

(1) a polymer of ethylenically unsaturated monomers and

(2) a polyurethane or blocked isocyanate prepolymer, and

(b) optionally, an organic solvent, wherein component (A) contains no free isocyanate groups and no significant quantities of groups capable of reacting with component (B) or with starting materials of component (B) and has a viscosity (determined at 23° C.) of 2000 to 100,000 mPa.s, and wherein the ratio by weight of (a):(b) is from 100:0 to 5:95;

(B) 2 to 30% by weight, based on the sum of components (A) and (B), of a polyaddition product prepared in and dispersed in component (A), wherein said polyaddition product is a polyurethane, a polyurethane urea, or a polyurea, or a mixture thereof, containing hydrophilic groups selected from ionic groups and potentially ionic groups in a quantity corresponding to from 0.5 to 20 milliequivalents per 100 g of component (B) but containing substantially no free isocyanate, hydroxyl, or amino groups, and

(C) optionally, a cross-linking agent;

by forming component (B) in situ in component (A).

5,252,672

POLYMER BLENDS OF POLYAMIDES AND POLYMERS CONTAINING SULFONAMIDE STRUCTURAL UNITS

Georg Heger, Krefeld; Holger Lütjens, Cologne; Gerd Fengler, Krefeld-Traar, and Christian Lindner, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 3, 1991, Ser. No. 801,044

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1990, 4040025

Int. Cl.[5] C08L *77/00*

U.S. Cl. 525—178 **4 Claims**

1. A polymer blend comprising:

A) 70–99% by weight of a thermoplastic polyamide; and

B) 30–1% by weight of a polymer or copolymer prepared by radical polymerization of vinyl monomers containing sulfonamide units, the sulfonamide units having the formula $—SO_2—NH—$.

VOL 1155 ISS 2 OC 12 1993 UMI

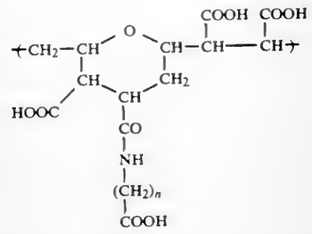
5,252,673

MACROMOLECULAR MITOMYCIN C DERIVATIVE AND METHOD FOR PRODUCTION THEREOF

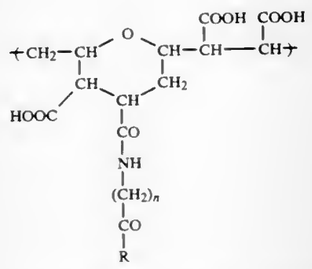
Takashi Hirano; Takeshi Todoroki, and Shinichi Ohashi, all of Tsukuba, Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, Tokyo, Japan

Filed Mar. 12, 1992, Ser. No. 850,988
Claims priority, application Japan, Mar. 18, 1991, 3-77195
Int. Cl.[5] C08L *77/00*
U.S. Cl. 525—183 4 Claims

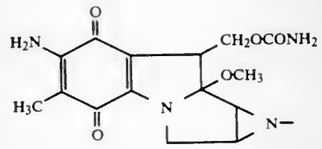
1. A macromolecular mitomycin derivative having first repeating units represented by the formula:



wherein n stands for an integer in the range of from 1 to 11 and second repeating units represented by the formula:



wherein R stands for a mitomycin C residue represented by the formula,



and n for an integer in the range of from 1 to 11, the total number of said first and second repeating units being not less than 10 and not more than 500, and the molar ratio of the first repeating units to the second repeating units being in the range of from 0:100 to 90:10.

5,252,674

THERMOPLASTIC GRAFT POLYMERS CONTAINING OXETANYL GROUPS

Karl-Erwin Piejko, Bergisch Gladbach; Christian Lindner, Cologne; Gerd Fengler, Krefeld; Hans-Eberhard Braese, and Jürgen Kirsch, both of Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

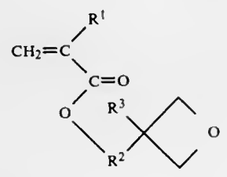
Filed Jan. 2, 1990, Ser. No. 459,982
Claims priority, application Fed. Rep. of Germany, Jan. 14, 1989, 3901031
The portion of the term of this patent subsequent to Oct. 13, 2009, has been disclaimed.
Int. Cl.[5] C08F *224/00, 265/04, 279/02;* C08L *51/04*
U.S. Cl. 525—284 5 Claims

1. A thermoplastic molding composition comprising a graft polymer, the graft polymer comprising:

A.1 a graft shell copolymer of A.1.1 and A.1.2 wherein:

A.1.1 is styrene, α-methyl styrene, acrylonitrile, C_1–C_4 vinyl carboxylic acid, C_1–C_8 alkyl acrylate, alkyl methacrylate, maleic acid derivatives, vinyl(idene) chloride or mixtures thereof, and

A.1.2 is selected from monomers corresponding to formula I



(I)

in which

R^1=H, CH_3,

R^2=C_1–C_8 alkylene,

R^3=C_1–C_4 alkyl; and

A.2 a graft base of particulate diene or acrylate rubber having particle diameters (d_{50}) of from 80 to 800 nm.

5,252,675

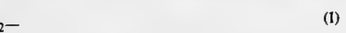
CURED PRODUCT OF A MODIFIED MULTIPLEX ETHYLENE COPOLYMER

Yoshihiro Moteki; Toshiyuki Iwashita; Hitoshi Funada, all of Oita, and Naotoshi Watanabe, Kawasaki, all of Japan, assignors to Showa Denko K.K., Tokyo, Japan

Division of Ser. No. 480,382, Feb. 15, 1990, Pat. No. 5,093,429, which is a continuation of Ser. No. 98,767, Sep. 17, 1987, abandoned, which is a continuation of Ser. No. 824,686, Jan. 21, 1986, abandoned. This application Nov. 26, 1991, Ser. No. 797,986
Claims priority, application Japan, May 21, 1984, 59-100391
Int. Cl.[5] C08F *8/00*
U.S. Cl. 525—298 9 Claims

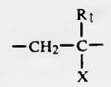
1. A cured product of a modified multiplex ethylene copolymer which is prepared by modifying a multiplex ethylene copolymer comprising:

(a) 50 to 94.8 mole % of units represented by formula (I):



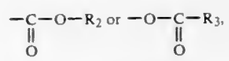
(I)

(b) 5 to 45 mole % of units represented by formula (II):



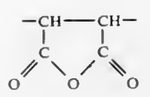
(II)

wherein R_1 represents a hydrogen atom or a methyl group, and X is

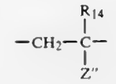


in which R_2 and R_3 represent an alkyl group having 1 to 10 carbon atoms, and

(c) 0.2 to 5 mole % of units represented by at least one formula selected from the group consisting of the following formulae (XIII) and (XV):

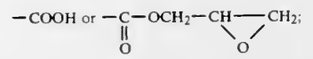


(XIII)



(XV)

R_{14} represents a hydrogen atom or a methyl group, and Z" represents



with at least one low molecular weight modifier selected from the group consisting of unsaturated amines and unsaturated alcohols having at least one carbon-to-carbon double bond different from a double bond of an aromatic nucleus, with the proviso that, when the units (c) include an epoxy group, the low molecular weight modifier may be an unsaturated carboxylic acid having at least one carbon-to-carbon double bond different from a double bond of an aromatic nucleus;

and curing the multiplex ethylene copolymer as so modified with at least one curing agent selected from the group consisting of sulfur, sulfur donors and peroxides.

5,252,676

ETHYLENE POLYMER CROSSLINKING COMPOSITION

Shuji Suyama; Hideyo Ishigaki, both of Aichi, and Hiroshi Okada, Tokoname, all of Japan, assignors to Nippon Oil & Fats Co., Ltd., Tokyo, Japan

Filed Jun. 24, 1992, Ser. No. 903,259
Claims priority, application Japan, Jun. 24, 1991, 3-177723; Apr. 28, 1992, 4-134472
Int. Cl.[5] C08F *255/02*
U.S. Cl. 525—320 5 Claims

1. An ethylene polymer crosslinking composition consisting essentially of:

an ethylene polymer;

0.1 to 3 parts by weight, based on 100 parts by weight of said ethylene polymer, of m-diisopropenyl benzene; and

0.3 to 5 parts by weight, based on 100 parts by weight of said ethylene polymer, of one crosslinking agent selected from the group consisting of dicumyl peroxide and bis(t-butyl peroxy isopropyl)benzene.

5,252,677

FUNCTIONALIZED OLEFIN POLYMERS

Masayuki Tomita; Hiroshi Nakano; Hideshi Uchino; Toshihiko Sugano, and Mitsutoshi Aritomi, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Continuation of Ser. No. 794,940, Nov. 20, 1991, abandoned. This application Jan. 4, 1993, Ser. No. 553
Claims priority, application Japan, Nov. 20, 1990, 2-314630; Nov. 20, 1990, 2-314631; Nov. 28, 1990, 2-326442
Int. Cl.[5] C08F *8/08, 8/34, 10/06, 110/06*
U.S. Cl. 525—333.9 17 Claims

1. A functionalized olefin polymer, comprising:

an α-olefin polymer comprised of at least one α-olefin of 3 to 20 carbon atoms prepared by polymerizing said α-olefin in the presence of a catalyst comprising a combination of a metallocene compound and an alumoxane, which polymer is functionalized at the termini of the polymer chains with a functional group selected from the group consisting of an epoxy group, a hydroxyl group and a sulfonic acid group, said α-olefin polymer having a triad fraction [rr] of at least 0.7 as determined from measurement of the ^{13}C-NMR spectrum of the polymer and, prior to functionalization, having terminal sites of olefinic unsaturation, which terminal sites are functionalized, and said functional groups being present in the polymer in an amount of 10% or more to the total number of olefinic unsaturated bonds in the mass of the unfunctionalized polymer.

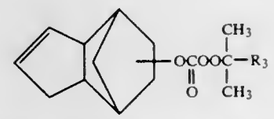
5,252,678

PROCESS FOR PRODUCING ACRYLIC ELASTOMER

Yuichi Yamamoto, Kitaibaraki; Kazuma Yokoi, Takahagi, and Haruyoshi Tatsu, Hitachi, all of Japan, assignors to Nippon Mektron Limited, Tokyo, Japan

Division of Ser. No. 728,892, Jul. 11, 1991, Pat. No. 5,194,540, which is a continuation of Ser. No. 489,975, Mar. 7, 1990, abandoned. This application Oct. 27, 1992, Ser. No. 966,845
Claims priority, application Japan, Apr. 11, 1989, 1-91083
Int. Cl.[5] C08F *8/08, 2/38, 4/34*
U.S. Cl. 525—387 11 Claims

1. A process which comprises polymerizing an alkyl acrylate having an alkyl group of 1 to 8 carbon atoms and an alkoxyalkyl acrylate having an alkoxylalkyl group of 2 to 8 carbon atoms as polymerizable monomers with an organic peroxide having a non-conjugated double bond as a polymerization initiator, which peroxide is a compound represented by the formula



wherein R_3 is a hydrogen atom or an alkyl group having 1 to 12 carbon atoms.

5,252,679

POLYARYLENE SULFIDE RESIN COMPOSITION

Hajime Serizawa; Hiroyuki Sano; Masaru Kubota; Katsumi Uota, and Toshifumi Nonaka, all of Shizuoka, Japan, assignors to Polyplastics Co., Ltd., Osaka, Japan

Filed Dec. 6, 1990, Ser. No. 623,028
Claims priority, application Japan, Dec. 7, 1989, 1-320140; Feb. 23, 1990, 2-44140
The portion of the term of this patent subsequent to Sep. 22, 2009, has been disclaimed.
Int. Cl.[5] C08F *283/04*
U.S. Cl. 525—420 11 Claims

1. A polyarylene sulfide composition comprising (A) 95 to 40 parts by weight of polyarylene sulfide, (B) 5 to 60 parts by

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weight of a polyamide block copolymer elastomer made of polyamide hard segments and soft segments, said elastomer having a Young's flexural modulus of up to 10,000 kgf/cm^2 at 50% relative humidity and 23° C., (B') 0 to 35 parts by weight of a polyamide and (C) 0.01 to 5 parts by weight, based on 100 parts by weight of (A), (B) and (B') and total, of an alkoxysilane.

5,252,680

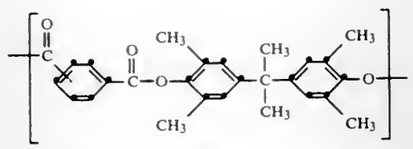
BLEND OF A POLYESTER AND A POLYCARBONATE

Hsinjin Yang, Fairport, and Daniel Y. Paul, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

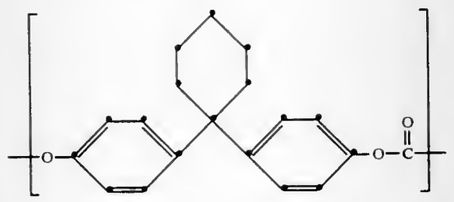
Filed Aug. 22, 1991, Ser. No. 748,371
Int. Cl.^{5} C08L *69/00, 67/03*
U.S. Cl. 525—439 6 Claims

1. A polymeric blend that is a single-phase solid solution of different compatible polymers comprising a polyester and a polycarbonate, wherein:

the polyester consists of recurring units having the structure



and the polycarbonate consists of recurring units having the structure



5,252,681

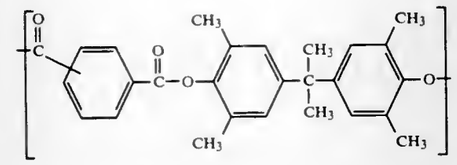
BLEND OF A POLYESTER AND A POLYCARBONATE

Hsinjin Yang, Fairport, and Paul D. Yacobuccu, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

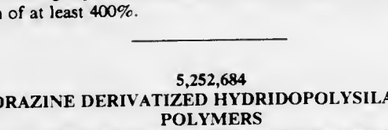
Filed Aug. 22, 1991, Ser. No. 748,372
Int. Cl.^{5} C08L *67/03, 69/00*
U.S. Cl. 525—439 6 Claims

1. A polymeric blend that is a single-phase solid solution of different compatible polymers comprising a polyester and a polycarbonate, wherein:

the polyester consists of recurring units having the structure



and the polycarbonate consists of recurring units having the structure



5,252,682

CATIONICALLY INITIATED CURABLE RESIN SYSTEM

Charles E. Bayha, Collierville, Tenn., assignor to Zircon Corporation, Collierville, Tenn.

Filed Dec. 17, 1992, Ser. No. 992,537
Int. Cl.^{5} C08F *20/00*
U.S. Cl. 525—445 8 Claims

1. A cationically initiated resin composition comprising:

a) a polyester dicyclopentadiene oligomer,

b) a monomer based on divinyl ether, and

c) a cationic initiator.

5,252,683

COATING COMPOSITION FOR THE PREVENTION OF SCATTERING OF GLASS FRAGMENTS

Hiroshi Murata; Masami Oka, both of Ootsu, and Hiroshi Fujimoto, Shiga, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Mar. 29, 1991, Ser. No. 677,327
Claims priority, application Japan, Apr. 10, 1990, 2-95942
Int. Cl.^{5} C08G *18/06, 18/42;* B32B *27/18*
U.S. Cl. 525—458 6 Claims

1. A shatterproofing coating composition for use on glass, comprising 100 parts by weight of (A) a polyurethane compound obtained by the reaction of (a) a polycarbonate diol not containing polyetherpolyol and/or (b) an aliphatic polyester diol, (c) an organic diisocyanate, and (d) a chain extender possessing an active hydrogen-containing group in amounts to give an isocyanate group/active hydrogen-containing group equivalent ratio not exceeding 1.0, 0.5 to 40 parts by weight of (B) an organic polyisocyanate compound per 100 parts by weight of the polyurethane compound (A), and (C) 0.1–10 parts by weight of a reactive silicone oil per 100 parts by weight of the polyurethane compound (A), the coating composition being capable of forming a film which allows an elongation of at least 400%.

5,252,684

BORAZINE DERIVATIZED HYDRIDOPOLYSILAZANE POLYMERS

Gregg A. Zank, 500 Sylvan La., Midland, Mich. 48640; Larry G. Sneddon, 813 Briarwood Rd., Newtown Square, Pa. 19073, and Kai Su, 4315 Larchwood Ave., Third Floor, Philadelphia, Pa. 19104

Filed Nov. 2, 1992, Ser. No. 970,505
Int. Cl.^{5} C08F *283/00*
U.S. Cl. 525—474 15 Claims

1. A method of forming a borazine modified hydridopolysilazane polymer comprising:

reacting a material comprising at least one borazine ring having a hydrogen atom attached to at least one nitrogen or boron thereof, with a three dimensional hydridopolysilazane polymer having R^3SiNH- and $HSi(NH)_3$ units at a temperature below about 300° C. for a time sufficient to form the borazine modified hydridopolysilazane polymer, wherein R^3 are independently selected from the group consisting of hydrogen radicals, phenyl radicals, vinyl radicals and alkyl radicals containing 1 to 3 carbon atoms.

5,252,685

RTV ORGANOPOLYSILOXANE COMPOSITIONS FOR USE AS CORK CHIP BINDERS AND BONDED CORK CHIP ARTICLES

Masatoshi Arai; Tsuneo Kimura, both of Annaka; Kazuyuki Suzuki, Usui, and Norihide Matsuyama, Toyonaka, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jul. 12, 1991, Ser. No. 729,297
Claims priority, application Japan, Jul. 13, 1990, 2-186890
Int. Cl.^{5} C08G *77/38*
U.S. Cl. 525—477 20 Claims

1. A room temperature vulcanizable organopolysiloxane composition comprising:

(1) 100 parts by weight of a diorganopolysiloxane blocked with an alkoxysilyl group at both ends of its backbone;

(2) 1–25 parts by weight of an alkoxysilane of the formula:

$$R^1{}_{4-n}Si(OR^2)_n$$

wherein R^1 and R^2 are each independently selected from substituted or unsubstituted monovalent hydrocarbon groups, and n is equal to 3 or 4, or a partial hydrolysate thereof;

(3) 0.01–10 parts by weight of an organic titanate ester;

(4) 0.1–50 parts by weight of a network polysiloxane comprising triorganosiloxy and SiO_2 units and having a terminal SiOH group blocked with an alkoxysilyl group; and

(5) 0.1–10 parts by weight of an epoxy-modified alkoxysilane or a partial hydrolysate thereof.

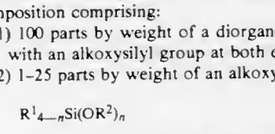
5,252,686

SILOXANE POLYMERS AND POSITIVE WORKING LIGHT-SENSITIVE COMPOSITIONS COMPRISING THE SAME

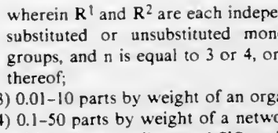
Toshiaki Aoai, and Kazuyoshi Mizutani, both of Shizuoka, Japan, assignors to Fuji Photo Film Co.,Ltd., Minami-ashigara, Japan

Division of Ser. No. 550,446, Jul. 10, 1990, Pat. No. 5,216,105.
This application Aug. 28, 1992, Ser. No. 936,644
Claims priority, application Japan, Jul. 12, 1989, 1-179784; Jul. 13, 1989, 1-180738; Jul. 14, 1989, 1-181878; Jul. 14, 1989, 1-181879; Jul. 14, 1989, 1-181880; Jan. 9, 1990, 2-1795; Jan. 9, 1990, 2-1796
Int. Cl.^{5} C08F *283/00*
U.S. Cl. 525—480 19 Claims

1. A siloxane polymer having at least 1 mol% of a repeating unit obtained by hydrolysis or alkoxylation followed by condensation of a cyclic heat addition product between a diene compound of formulae (I) or (II) and an olefin compound of formula (V'):

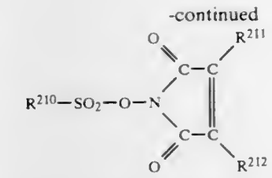


(I)



(II)

-continued



(V')

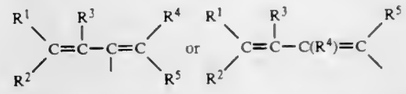
wherein

R^1 to R^5 may be same or different and repeat hydrogen atoms, alkyl, aryl or alkoxy groups;

R^{210} represents an alkyl or aryl group;

R^{211} and R^{212} represent hydrogen atoms, alkyl or aryl groups;

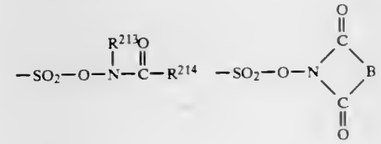
X^1, X^2 and X^3 may be same or different and represent halogen atoms, hydroxy, carboxy, oxime, amide, ureido, amino, alkyl, aryl, aralkyl, alkoxy, aryloxy, -Y-A,

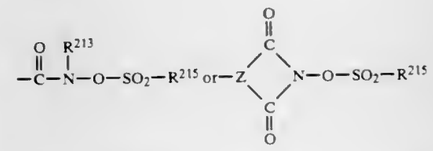


provided that at least two of X^1, X^2 and X^3 are halogen atoms, hydroxy, carboxy, oxime, amide, ureido, amino, alkoxy or aryloxy groups and R^{211} to R^{212} may combine to form a ring;

Y represents a single bond, a divalent aromatic or aliphatic hydrocarbon group;

A represents





wherein R^{213} to R^{215} may be same or different and represent alkyl or aryl groups, B represent a divalent alkylene or arylene group, and Z represents a trivalent alkylene or arylene group.

5,252,687

THERMOSETTING RESIN COMPOSITION AND USE THEREOF FOR AN ELECTRONIC PART

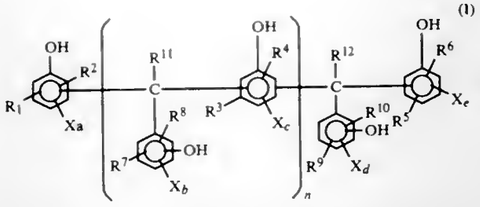
Yutaka Shiomi; Shigeki Naitoh; Yasubiro Hirano, and Kazuo Takebe, all of Ibaraki, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Mar. 29, 1991, Ser. No. 677,451
Claims priority, application Japan, Mar. 29, 1990, 2-84528
Int. Cl.^{5} C08F *283/04*
U.S. Cl. 525—502 2 Claims

1. A thermosetting resin composition comprising

(A) an allyl etherified compound obtained by allyl etherification of the hydroxyl groups of a polyvalent phenol represented by the following formula (I):

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(I)

wherein substituents R^1–R^6 each represent a hydrogen atom or a saturated alkyl group having 1 to 6 carbon atoms, substituents R^7–R^{12} each represent a hydrogen atom, a saturated alkyl group having 1 to 4 carbon atoms or an alkoxy group having 1 to 4 carbon atoms, X_a–X_e each represent a hydrogen atom, a chlorine atom or a bromine atom, and the average repeating unit number n denotes a numeral from 0 to 5, which has an allyl etherification rate of the phenolic hydroxyl group in the range of 20–100% and

(B) a polymaleimide compound containing two or more malemide groups in the molecule.

5,252,688

PROCESS FOR PREPARING A ZIEGLER-NATTA TYPE CATALYST

Jean-Claude A. Bailly, Martigues, and Patrick Behue, Istres, both of France, assignors to BP Chemicals Limited, London, England

Division of Ser. No. 628,220, Dec. 17, 1990, Pat. No. 5,098,875. This application Dec. 23, 1991, Ser. No. 811,954

Claims priority, application France, Jan. 3, 1990, 90 00136

Int. Cl.[5] C08F *4/68, 210/06*

U.S. Cl. 526—125 **17 Claims**

1. A process for manufacturing elastomeric copolymers of propylene with ethylene and/or 1-butene having a propylene content by weight of 30 to 70% by copolymerising in a gas phase two or more of said monomers in the presence of a spheroidal catalyst based on vanadium and a cocatalyst selected from the organometallic compounds of a metal belonging to Group I to III of the Periodic Classification of the elements, the preparation of said spheroidal catalyst comprising the following steps:

(1) bringing into contact within a liquid hydrocarbon a support consisting of spheroidal particles and comprising (i) from 80 to 99.5 mol % of magnesium dichloride substantially free from any product containing a Mg-C bond and (ii) from 0.5 to 20 mol % of at least one organic electron-donor compound (D1) free from labile hydrogen, successively with at least one electron-donor compound (D2) containing labile hydrogen in a quantity of from 0.1 to less than 2 moles per mole of magnesium of the support to form a solid product, and then with at least one organometallic compound capable of reducing a vanadium compound,

(2) washing the solid product resulting from the step (1) with a liquid hydrocarbon, and

(3) bringing the washed solid product resulting from the step (2) into contact with at least one vanadium compound soluble in the liquid hydrocarbon and containing halogen atom and an alkoxy radical bonded to the same or different vanadium atom.

5,252,689

N-HYDROXYSUCCINIMIDE-BLOCKED ISOPROPENYL-ALPHA, ALPHA-DIMETHYLBENZYL ISOCYANATE AND SELF-CROSS LINKING COPOLYMERS THEREOF

Howard R. Lucas, Danbury; Kuang-Jong Wu, Shelton, and William F. Jacobs, Bethel, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Oct. 20, 1992, Ser. No. 963,778

Int. Cl.[5] C08G *18/80*

U.S. Cl. 526—227 **31 Claims**

1. An N-hydroxyimide-blocked isopropenyl-alpha, alpha-dimethylbenzyl isocyanate.

5,252,690

SUPERABSORBENT POLYMERS

Iqbal Ahmed, Bartlesville, Okla., and Henry L. Hsieh, Pittsboro, N.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 873,259, Apr. 24, 1992. This application Feb. 1, 1993, Ser. No. 11,598

Int. Cl.[5] C08F *226/06, 228/02, 222/38, 220/06, 220/10, 220/44, 271/02*

U.S. Cl. 526—258 **27 Claims**

1. A process for absorbing an aqueous electrolyte solution comprising contacting a superabsorbent polymer selected from the group consisting of: (A) an absorbent polymer which is prepared by copolymerization of (a) an ampholytic monomer having the formula of:



where one and only one of the substituted groups R_1, R_2, R_3 and R_4 must be a vinyl group, the rest can be the same or different and can be hydrogen or a C_1–C_3 alkyl group; R_5 is a phenyl group; n is $\geqq 1$ and $\leqq 6$; and q is 0 or 1; (b) at least one olefinic monomer; and (c) at least one crosslinking agent which has at least two polymerizable olefinic functionalities wherein the olefinic functionalities are suitable for crosslinking; (B) a graft copolymer which is prepared by contacting a main polymer selected from the group consisting of polysaccharides, polyolefins, and mixtures thereof; under graft polymerization with (a) at least one olefinic monomer; and (b) copolymerizing therewith an ampholytic monomer having the formula of:

where one and only one of the substituted groups R_1, R_2, R_3 and R_4 must be a vinyl group, the rest can be the same or different and can be hydrogen or a C_1–C_3 alkyl group; R_5 is a phenyl group; n is $\geqq 1$ and $\leqq 6$; and q is 0 or 1; and (C) mixtures of (A) and (B); with an aqueous electrolyte solution.

5,252,691

P-VINYLPHENOXYDIMETHYLPHENYLCARBYLDIMETHYLSILANE HOMPOLYMER

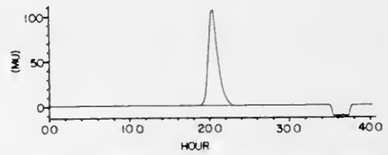
Osamu Watanabe, Yokohama; Motoyuki Yamada, Kawasaki; Fujio Yagihashi, Yokohama, and Minoru Takamizawa, Tokyo, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jan. 13, 1992, Ser. No. 819,239

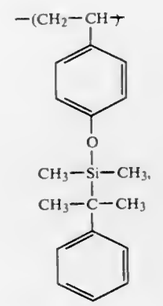
Claims priority, application Japan, Jan. 11, 1991, 3-13899

Int. Cl.[5] C08F *130/08*

U.S. Cl. 526—279 **1 Claim**



1. A p-vinylphenoxydimethylphenylcarbyldimethylsilane homopolymer, the repeating units of which consist of units represented by formula (I):



(I)

wherein said homopolymer has a ratio of weight average molecular weight to number average molecular weight of 1.05–1.50.

5,252,692

HYDROPHILIC ACRYLIC COPOLYMERS AND METHOD OF PREPARATION

Jan Lovy, Plainsboro, Township, Middlesex County, and Vladimir A. Stoy, Princeton, both of N.J., assignors to Kingston Technologies, Inc., Dayton, N.J.

Filed Nov. 23, 1990, Ser. No. 617,177

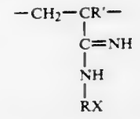
The portion of the term of this patent subsequent to Jul. 24, 2007, has been disclaimed.

Int. Cl.[5] C08F *220/52, 8/32*

U.S. Cl. 526—342 **11 Claims**

1. A block copolymer, which comprises:

A hydrophilic amphoteric block copolymer having a block polymer backbone selected from N-substituted acryloamides, N-substituted methacryloamidines, N-substituted acryloamidines, N-substituted methacryloamidines, and mixtures of these, and having cationic groups and anionic groups attached to said backbone, wherein the cationic groups are of the general formula:



wherein R′ is H or an alkyl groups; R is an organic substituent with at least one carbon atom and X is H, and further wherein said polymer backbone has pendant nitrile groups formed in sequences in mutual 1, 3 positions.

5,252,693

SYNDIOTACTIC STYRENE POLYMERS

Nobuhide Ishihara, Sodegaura; Masahiko Kuramoto, and Michitake Uoi, both of Ichibara, all of Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

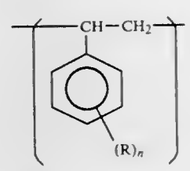
Continuation-in-part of Ser. No. 416,914, Oct. 4, 1989, which is a continuation-in-part of Ser. No. 175,581, Mar. 28, 1988, abandoned, which is a continuation of Ser. No. 888,153, Jul. 18, 1986, abandoned, said Ser. No. 416,914, is a continuation-in-part of Ser. No. 138,914, Dec. 28, 1987, abandoned. This application Apr. 30, 1991, Ser. No. 693,375

Claims priority, application Japan, Jan. 28, 1987, 62-17973

Int. Cl.[5] C08F *12/08, 212/08*

U.S. Cl. 526—347 **5 Claims**

1. A syndiotactic styrene polymer having a repeating unit represented by the general formula (I):



(I)

wherein R is selected from the group consisting of hydrogen, halogen, C_1–C_{20} alkyl, halogen substituted C_1–C_{20} alkyl and C_1–C_{10} alkoxy, n is an integer of 1 to 3, wherein said styrene polymer has a degree of polymerization of not less than 5, and mainly syndiotactic stereoregularity.

5,252,694

ENERGY-POLYMERIZATION ADHESIVE, COATING, FILM AND PROCESS FOR MAKING THE SAME

Peggy S. Willett, Stillwater; Janis Robins, St. Paul; Kent S. Tarbutton, Lake Elmo, and Michael A. Kropp, Cottage Grove, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 22, 1992, Ser. No. 823,819

Int. Cl.[5] C08F *283/06, 4/42*

U.S. Cl. 525—404 **12 Claims**

1. A polymerizable epoxy-acrylate composition comprising:

(1) at least one free radically polymerizable monomer;

(2) at least one cationically polymerizable monomer;

(3) a catalyst system comprising:

(a) at least one organometallic complex salt,

(b) a thermally decomposable ester reaction product of a tertiary alkyl alcohol and an acid that forms a chelation complex with the metal ion of the organometallic complex salt,

(c) optionally, peroxide, and

(d) optionally, at least one free radical initiator;

(4) optionally, a buffer compound; and

(5) optionally, a mono- or polyfunctional alcohol.

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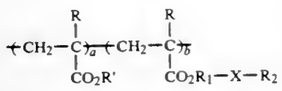
5,252,695

FAST SWITCHING FERROELECTRIC LIQUID CRYSTALLINE POLYMERS

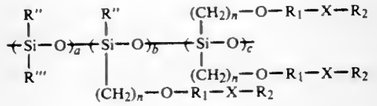
Jawad Niciri, Falls Church; Joel M. Schnur, Burke, and Ranganathan Shashidhar, Springfield, all of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C. and Geo-Centers, Inc., Newton Centre, Mass.

Filed Jun. 3, 1992, Ser. No. 892,951
Int. Cl.[5] C08G *77/22*
U.S. Cl. 528—30 **20 Claims**

1. A liquid crystal polymer, having the formula (I) or (II):

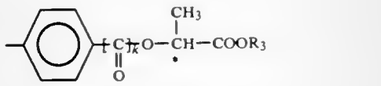


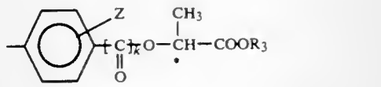
(I)

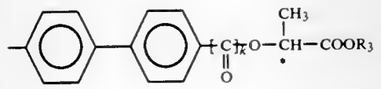


(II)

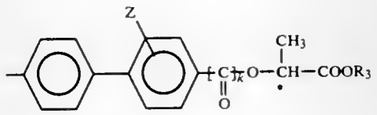
wherein the ratio b/(a+b) is any fraction between 0.1 and 0.9 for the polymer of formula (I);
the ratio (b+c)/(a+b+c) is between 0.1 and 0.9 for the polymer of formula (II);
R is H or C_{1-4}-alkyl; R′ is H or C_{1-4}-alkyl; R″ is C_{1-4}-alkyl; and R‴ is C_{1-4}-alkyl;
R_1 is 1,4-phenylene or 4,4′-biphenylene;
X is —COO— or —OCO—;
R_2 is







or



wherein k is 0 or 1,
* indicates an optically active center;
Z is NO_2, F, or Cl;
R_3 is C_tH_{2t+1}, —*$CH(CH_3)C_pH_{2p+1}$, $-CH_2C_qF_{2q+1}$, or —*$CH(CH_3)COOC_tH_{2t+1}$ (wherein l and p are each independently an integer of from 1 to 10 and q and t are each independently an integer of from 1 to 6); and
n is an integer of 4 to 12.

5,252,696

WATER-DISPERSIBLE POLYISOCYANATE MIXTURES, A PROCESS FOR THEIR PREPARATION AND THEIR USE IN TWO-COMPONENT AQUEOUS COMPOSITIONS

Hans J. Laas; Tillmann Hassel, both of Cologne; Werner Kubitza, Leverkusen; Reinhard Halpaap, Odenthal-Gleobusch, and Klaus Noll, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 4, 1992, Ser. No. 971,491
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1991, 4136618
Int. Cl.[5] C08G *18/30*
U.S. Cl. 528—49 **5 Claims**

1. A water-dispersible polyisocyanate mixture which
a) has an average isocyanate functionality of 1.8 to 4.2,
b) contains 12.0 to 21.5% by weight of (cyclo)aliphatically bound isocyanate groups (calculated as NCO, molecular weight=42),
c) contains 2 to 20% by weight of ethylene oxide units (calculated as C_2H_4O, molecular weight=44) arranged within polyether chains, the polyether chains containing, on average, 5.0 to 9.9 ethylene oxide units and
d) is not prepared from and does not contain 1,6-hexamethylene diisocyanate.

5,252,697

TOOTH RESTORATION COMPOSITION, STRUCTURES AND METHODS

Richard Jacobs, 14822 Florwood Ave., Hawthorne, Calif. 90250, and Don D. Porteous, 2794 Moraga Dr., Los Angeles, Calif. 90077

Division of Ser. No. 739,827, May 31, 1988, Pat. No. 5,160,072. This application Aug. 28, 1989, Ser. No. 399,591
Int. Cl.[5] C08G *18/10*
U.S. Cl. 528—60 **54 Claims**

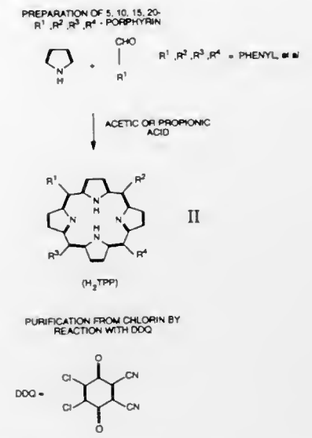
1. Method for preparing a urethane composition restorative tooth structure, including forming a mixture of a first side comprising an isocyanato reagent under urethane polymer forming conditions simultaneously with a second side comprising a premix of an hydroxylated tertiary amine reagent and another differentially reactive polyol reagent, shaping into a tooth restoration by condensing said mixture against a natural tooth, and reacting to form a polymeric urethane composition restorative tooth structure.

5,252,698

METAL ION PORPHYRIN-CONTAINING POLY(AZINE)

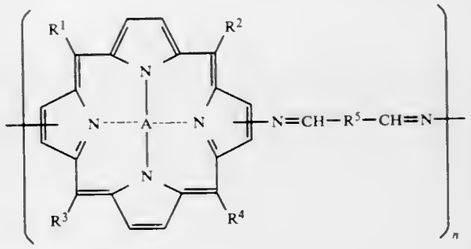
Tilak R. Bhardwaj, Chandigarh, India; Susanna C. Ventura, Mountain View, and Subhash C. Narang, Redwood City, both of Calif., assignors to SRI International, Menlo Park, Calif.

Filed Oct. 9, 1992, Ser. No. 960,487
Int. Cl.[5] C08G *10/02*
U.S. Cl. 528—230 **20 Claims**

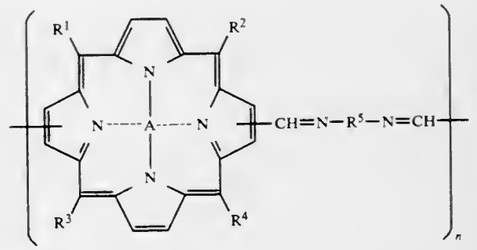


II

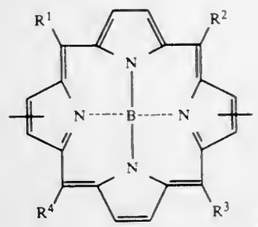
1. A polyporphyrin-containing polymer of the structure:



or



wherein
R^1, R^2, R^3 and R^4 are each independently selected from H, alkyl having 1 to 6 carbon atoms, phenyl or phenyl substituted with 1 to 3 alkyl groups each having 1 to 6 carbon atoms or with 1 to 3 halogen atoms;
R^5 is independently selected from a direct bond, alkylene having 1 to 15 carbon atoms, alicyclic, alkylene alicyclic, aryl, substituted aryl, alkylenearyl, alkylene substituted aryl, or
A is independently selected from two hydrogen groups or a metal atom;



B is independently selected from A; and
n is an integer between 3 and 10,000.

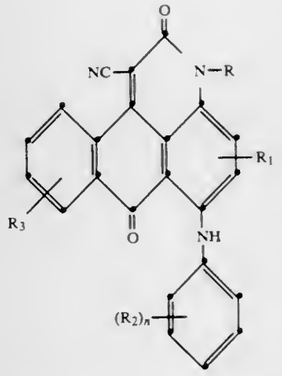
5,252,699

PROCESS FOR PREPARING 1-CYANO-3H-DIBENZ[F,IJ] ISOQUINOLINE-2,7-DIONES AND THEIR USE AS TONERS FOR POLYESTERS

Kim S. Chamberlin, and Max A. Weaver, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 15, 1992, Ser. No. 883,506
Int. Cl.[5] C08G *75/14*; C07D *221/18*
U.S. Cl. 528—289 **6 Claims**

1. A process for preparing a blue toner compound of the formula



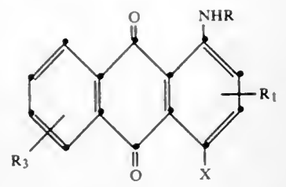
wherein
R is hydrogen, cycloalkyl, allyl, alkyl, aralkyl, alkoxyalkyl or cycloalkylalkylene;
R_1 is hydrogen, halogen, alkyl, alkoxy, aryloxy, alkylthio, or arylthio;
R_2 is hydrogen, alkyl, aryl, alkoxy, arylalkoxy, alkylthio, arylthio, carbalkoxy, carbaralkoxy, carboxy, sulfamoyl, alkylsulfamoyl, dialkylsulfamoyl, alkylarylsulfamoyl, cycloalkylsulfamoyl, arylsulfamoyl, carbamoyl, alkylcarbamoyl, dialkylcarbamoyl, alkylarylcarbamoyl, cycloalkylcarbamoyl, arylcarbamoyl, 2-pyrrolidono, acylamido or N-alkylacylamido;
R_3 is one or more substituents selected from hydrogen, halo, alkyl, or alkoxy; and
n is an integer of 1 to 5;
wherein one or more of said alkyl, alkoxy, aryl, aryloxy, alkylthio, arylthio or aralkyl groups optionally contain one or more reactive groups selected from the group consisting of carboxy,

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carbalkoxy, carbaryloxy, N-alkylcarbamoyloxy, carbamoyloxy, acyloxy, chlorocarbonyl, hydroxyl, cycloalkylcarbonyloxy, N-arylcarbamoyloxy and N,N-dialkylcarbonyloxy, wherein said alkyl and aryl groups optionally contains one or more alkoxy, acyloxy, halo, cyano, hydroxy, or arylamido groups;

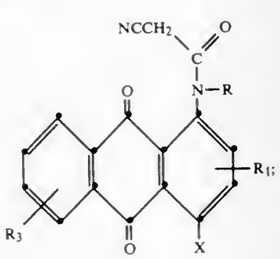
which comprises the steps

(a) reacting a compound of the formula



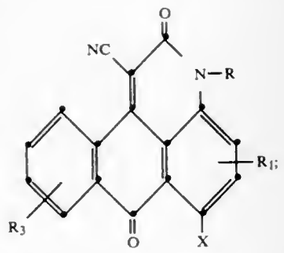
wherein X is chloro, bromo, or iodo, With a compound of the formula

wherein X' is halo; or reaction with an in situ reactant formed from the reaction of cyanoacetic acid with phosphorus oxychloride; to form a compound of the formula



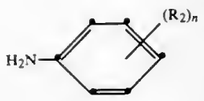
followed by

(b) treatment with a base to provide a compound of the formula



followed by

(c) reaction with a compound of the formula



in the presence of a copper salt and a base.

5,252,700

HEAT-RESISTANT ADHESIVE AND METHOD OF ADHESION BY USING ADHESIVE

Hideaki Okikawa; Shoji Tamai; Katsuaki Iiyama; Saburo Kawashima; Akihiro Yamaguchi, and Tadashi Asanuma, all of Kanagawa, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

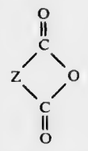
Filed Apr. 21, 1992, Ser. No. 871,517

Claims priority, application Japan, Apr. 30, 1991, 3-98647; Mar. 3, 1992, 4-45248

Int. Cl.[5] C08G *69/26, 73/10, 63/00*

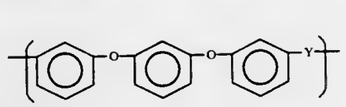
U.S. Cl. 528—353 **9 Claims**

1. A heat-resistant adhesive comprising polyamic acid and/or polyimide which are blocked at the polymer chain end with an aromatic dicarboxylic anhydride represented by the formula (1):



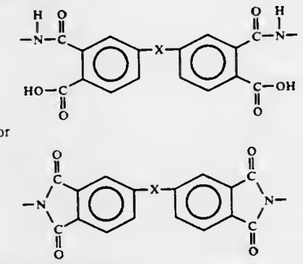
(1)

wherein Z is a divalent radical selected from the group consisting of a monoaromatic radical, condensed polyaromatic radical and noncondensed aromatic radical connected to each other with a direct bond or a bridge member, and essentially consist of recurring structural units represented by the formula (2):



(2)

wherien Y is:



wherein X is a direct bond or a divalent radical of —CO— or —O—.

5,252,701

SEGMENTED ABSORBABLE COPOLYMER

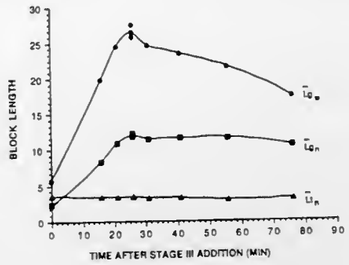
Peter K. Jarrett, Southbury; Louis Rosati, Norwalk, both of Conn., and Donald J. Casey, Mars, Pa., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jul. 6, 1990, Ser. No. 548,801

Int. Cl.[5] C08L *71/02*

U.S. Cl. 528—354 **40 Claims**

1. A copolymer comprising a bioabsorbable, segmented molecular architecture having at least two different ester linkages, the segmented molecular architecture comprising a plurality of fast transesterifying linkages having a segment length distribution of greater than 1.3, and a plurality of slow transesterifying linkages, with the proviso that for said fast transesterifying linkages consisting essentially of glycolate linkages and the slow transesterifying linkages selected from the group consisting of trimethylene carbonate and caproate linkages, the segment length distribution of said fast transesterifying linkages is up to 2.0 and the number average segment length of said slow transesterifying linkages is greater that 2.5 linkages per segment and with the further proviso that for said fast transesterifying linkages consisting essentially of lactate linkages and



the slow transesterifying linkages selected from the group consisting of trimethylene carbonate linkages, the lactate linkages comprise greater than 60 to less than 80 mole percent of the copolymer.

5,252,702

Patent Not Issued For This Number

5,252,703

POLYIMIDOSILOXANE RESIN AND COMPOSITION THEREOF AND METHOD OF APPLYING SAME

Kohei Nakajima; Hiroshi Yasuno, and Mitsushi Taguchi, all of Ichihara, Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

Filed May 29, 1991, Ser. No. 706,688

Claims priority, application Japan, Jun. 1, 1990, 2-141516; Mar. 26, 1991, 3-132371

Int. Cl.[5] C08G *69/48;* **C08L** *63/00, 79/08*

U.S. Cl. 525—423 **18 Claims**

1. A polyimidosiloxane resin composition comprising:

(I) a polyimidosiloxane resin comprising a polymerization-imidization product of:

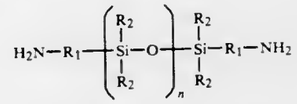
(A) an aromatic tetracarboxylic acid component comprising:

(a) 80 to 100 molar % of a principal acid ingredient consisting of at least one member selected from the group consisting of 2,3,3',4'-biphenyltetracarboxylic acid and dianhydrides and esters thereof; and

(b) 0 to 20 molar % of an additional acid ingredient consisting of at least one member selected from the group consisting of aromatic tetracarboxylic acids different from 2,3,3',4'-biphenyltetracarboxylic acid and dianhydrides and esters thereof; and

(B) a diamine component comprising:

(c) 45 to 90 molar % of a principal diamine ingredient consisting of at least one diaminopolysiloxane compound of the formula (I):



wherein R_1 represents a divalent hydrocarbon residue, R_2 represents a member selected from alkyl groups having 1 to 3 carbon atoms and a phenyl group, and n represents an integer of from 3 to 30; and

(d) 10 to 55 molar % of an additional diamine ingredient comprising 55 to 99.5 molar % of at least one aromatic diamine compound having a plurality of benzene ring structures and different from the diaminopolysiloxane compound of formula (I), and 0.5 to 45 molar % of at least one diaminobenzoic acid, based on the total molar amount of the additional diamine ingredient (d);

and

(II) an epoxy resin having an epoxy equivalent of 100 to 1000 and a molecular weight of 400 to 5000, in an amount of 1 to 50 parts by weight per 100 parts by weight of the polyimidosiloxane resin, the polyimidosiloxane resin and the epoxy resin being dissolved or dispersed in an organic solvent having a boiling point of from 100° C. to 300° C.

5,252,704

REDISPERSIBLE POLYMER POWDERS USING POLYVINYL PYRROLIDONE AS A DISPERSING AID

Randall P. Bright, Allentown, and Jayson C. Vassallo, Northampton, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jun. 5, 1992, Ser. No. 894,410

Int. Cl.[5] C08F *6/00;* **C08J** *3/00*

U.S. Cl. 528—501 **11 Claims**

1. In a method for preparing a polymer powder which is redispersible in water by atomizing an aqueous polymer dispersion containing a dispersing aid, the improvement which comprises employing an aqueous polymer dispersion consisting of a non-polyvinyl alcohol stabilized polymer dispersion and an effective amount of a dispersing aid consisting of vinyl pyrrolidone homopolymer.

5,252,705

PEPTIDE DERIVATIVES

Tatsuhiko Kanmera, Yokohama; Akihisa Mori; Yoshihide Nakao, both of Machida, and Kenichiro Nakao, Tama, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

PCT No. PCT/JP90/00513, § 371 Date Dec. 11, 1991, § 102(e) Date Dec. 11, 1991, PCT Pub. No. WO91/16341, PCT Pub. Date Oct. 31, 1991

PCT Filed Apr. 19, 1990, Ser. No. 778,926

Claims priority, application Japan, Apr. 12, 1990, 2-96951

Int. Cl.[5] A61K *37/02;* **C07K** *7/10*

U.S. Cl. 530—324 **1 Claim**

1. Peptides consisting of 28–32 amino acid residues and comprising the following peptide sequence:

X-Leu-Met-His-Asn-Leu-Gly-Lys-Ser-Ile-Gln-Asp-Leu-Arg-Arg-Arg-Phe-Phe-Leu-His-His-Leu-Ile-Ala-Glu-Ile-His-Thr-Ala (I)

wherein X represents H, H-Gln, H-A-Gln-, H-Glu-A-Gln, or Ser-Glu-A-Gln-, wherein A is Ile, Thr, Val, or Leu, and amides and salts thereof.

5,252,706

PEPTIDE DERIVATIVE AMPHIPHATIC COMPOUND, INTERMEDIATE THEREOF AND LIPOSOME AND FILM COMPRISING PEPTIDE DERIVATIVE AMPHIPHATIC COMPOUND

Hiroshi Kitaguchi, and Ryoichi Nemori, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 8, 1991, Ser. No. 681,301

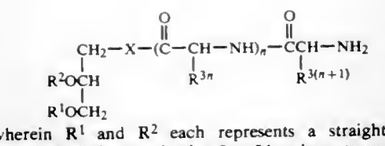
Claims priority, application Japan, Apr. 9, 1990, 2-93482; Jul. 31, 1990, 2-203218

Int. Cl.[5] C07K *7/06;* **C07C** *233/00, 237/12*

U.S. Cl. 530—329 **1 Claim**

1. A peptide derivative amphiphatic compound or N-terminal salt thereof represented by formula (I):

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(I)

wherein R^1 and R^2 each represents a straight-chain or branched alkyl group having 8 to 24 carbon atoms optionally having a substituent or an unsaturated group, wherein each of said R^1O moiety and R^2O moiety in formula (I) form an ether linkage in said compound; X represents —O— or —NH—; R^{3n} and $R^{3(n+1)}$ each represents an α-amino acid side chain; n is an integer of from 0 to 5; said compound may be a racemic compound or an optically active compound when said compound has an asymmetric carbon atom; and said N-terminal salt of said compound optionally forms with an acid component.

5,252,707

INOSITOL DERIVATIVE AND METHOD FOR PREPARING SAME

Shoichiro Ozaki; Yutaka Watanabe, both of Matsuyama; Masato Hirata, Fukuoka, and Akira Awaya, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals Incorporated, Tokyo, Japan

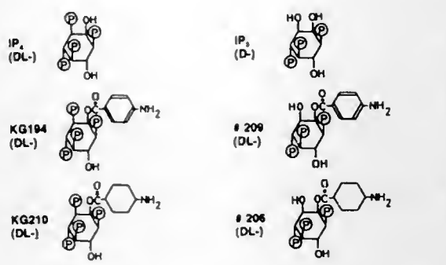
PCT No. PCT/JP90/01228, § 371 Date May 15, 1991, § 102(e) Date May 15, 1991, PCT Pub. No. WO91/04258, PCT Pub. Date Apr. 4, 1991

PCT Filed Sep. 25, 1990, Ser. No. 700,152

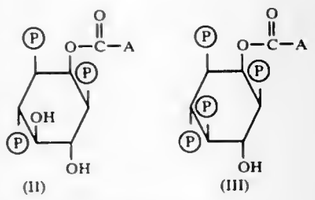
Claims priority, application Japan, Sep. 22, 1989, 1-245161; Aug. 10, 1990, 2-210263

Int. Cl.[5] A61K *37/02;* **C07F** *9/117;* **C07K** *17/02;* **C12N** *9/00*

U.S. Cl. 530—345 **7 Claims**

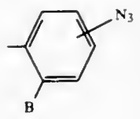


1. An inositol derivative represented by formula (II) or (III)

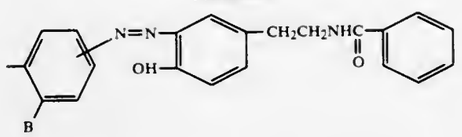


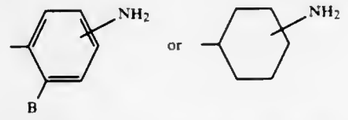
(II) (III)

wherein A is $(CH_2)_nCH(R')NH_2$,



-continued





R′ is a hydrogen atom, a lower alkyl group having 1 to 5 carbon atoms, a lower hydroxyalkyl group, a lower aminoalkyl group, a phenyl group, a p-hydroxyphenyl group, a benzyl group, a p-hydroxybenzyl group, a 3-methylindole group, or a 5-methylimidazole group; n is from 0 to 5; each of R^1 to R^5 is a hydrogen atom, an alkyl group, an alkenyl group, an alkynyl group or a phenyl group, a phenyl group mono- or tetra substituted by an alkyl group having 1 to 4 carbon atoms or a halogen atom, a cyclohexyl group or a cyclohexyl group mono- or tetra-substituted by an alkyl group having 1 to 4 carbon atoms or a halogen atom; B is a hydrogen atom, NH_2 or $NHCOCFH_3$; Ⓟ is a phosphoric acid group which is free or protected by a protective group or a pharmaceutically acceptable salt of the inositol derivative.

5,252,708

PREPARATION PROCESS FOR A PROTEIN CONTAINING AT LEAST ONE INTRAMOLECULAR DISULPHIDE BRIDGE BY OXIDATION, AT A PH OF LESS THAN 5.0 OF CORRESPONDING REDUCED RECOMBINANT PROTEIN

Pierre Y. Abecassis, Charenton; Jacques Leclaire, Massy, and Philippe Riberon, Nogent sur Marne, all of France, assignors to Roussel Uclaf, Paris, France

PCT No. PCT/FR90/00843, § 371 Date May 6, 1992, § 102(e) Date May 6, 1992, PCT Pub. No. WO92/09623, PCT Pub. Date Jun. 11, 1992

PCT Filed Nov. 23, 1990, Ser. No. 856,042

Int. Cl.[5] A61K *45/02;* **C07K** *3/08;* **C12N** *15/26;* **C12P** *21/02*

U.S. Cl. 530—351 **11 Claims**

9. The process of claim **2** wherein the protein is recombinant IL2.

5,252,709

CHROMATOGRAPHIC SEPARATION OF PLASMA PROTEINS

Thierry Burnouf, and Miryana Burnouf-Radosevich, both of Wavrin, France, assignors to Centre Regional de Transfusion Sanguine de Lille, Lille, France

PCT No. PCT/FR89/00050, § 371 Date Apr. 6, 1990, § 102(e) Date Apr. 6, 1990, PCT Pub. No. WO89/12065, PCT Pub. Date Dec. 14, 1989

PCT Filed Feb. 8, 1989, Ser. No. 460,972

Claims priority, application France, Jun. 7, 1988, 88 07530

Int. Cl.[5] C07K *3/22, 15/06*

U.S. Cl. 530—382 **15 Claims**

1. A process for the separation and concentration of Factor VIII, von Willebrand's factor, fibronectin and fibrinogen from plasma containing Factor VIII, von Willebrand's factor, fibronectin and fibrinogen which comprises:

a) chromatographing with a buffer a solubilized fraction of cryoprecipitated plasma on an exchange resin having DEAE groups fixed on a vinyl polymer-type gel which adsorbs Factor VIII, von Willebrand's factor, and fibronectin, and which allows fibrinogen to pass into a first eluate wherein said exchange resin is a Fractogel TSK;

b) increasing the ionic strength of said buffer which allows said fibronectin and said von Willebrand's factor to pass into a second elutate; and further

c) increasing the ionic strength of said buffer which allows said Factor VIII to pass into a third eluate.

5,252,710

PROCESS FOR MANUFACTURING VON WILLEBRAND FACTOR

Bernard Dazey; Mohamed Hamsany, both of Bordeaux, and Gérard Vezon, Cursan, all of France, assignors to Association d'Aquitaine pour le Developpment de la Transfusion Sanguine et des Recberches Hermatologiques, France

Filed Aug. 2, 1991, Ser. No. 739,452

Claims priority, application France, Aug. 2, 1990, 90 09917

Int. Cl.[5] C07K *3/22, 15/06*

U.S. Cl. 530—383 **10 Claims**

1. A process for the manufacture of von Willebrand factor having a specific activity of at least 50 expressed as von Willebrand : RCO units per milligram of proteins, and having a concentration of antihaemophilic factor (FVIIIc) of less than 2%, comprising the following steps:

(a) preparing a first buffered eluting solution having an ionic strength capable of separating factor VIIIc from a major part of the von Willebrand factor and main plasma contaminants, said first buffered eluting solution having a composition of:

NaCl	250 mM,
Tris	20 mM,
$CaCl_2.2H_2O$	10 mM,
pH	6.6.

(b) preparing a crude solution of the factor VIIIc and von Willebrand factor from a cryoprecipitate having a substantially identical ionic strength to that of said first buffered eluting solution;

(c) equilibrating a first anionic exchange gel based on cross-linked agarose of a quaternary amine type in a first chromatography column with said first buffered eluting solution;

(d) selectively adsorbing the factor VIIIc on said first gel of said first column by passing said crude solution through said first gel of said first chromatography column and eluting said crude solution with said first buffered eluting solution, thereby having said factor VIIIc selectively adsorbed on the first gel of the first column, whereas the major portion of the von Willebrand factor is not adsorbed by said first gel in said first column;

(e) collecting the non retained fraction containing the major portion of the von Willebrand factor;

(f) treating the non retained fraction containing the von Willebrand factor to decrease the ioinic strength of said non retained fraction until an ionic strength, corresponding to that of a 0.10 to 0.15 M NaCl solution, is obtained;

(g) adsorbing said non retained fraction containing the von Willebrand factor with decreased ionic strength on a second anionic exchange get based on cross-linked agarose of a quaternary amine type in a second chromatography column, which has been equilibrated with a second eluting solution having the same decreased ionic strength as said non-retained fraction in step (f), thereby having said von Willebrand factor selectively adsorbed on the second gel of the second column, whereas the major portion of the contaminant proteins is not adsorbed;

(h) desorbing said adsorbed von Willebrand factor by eluting said second gel of said second column by using a third buffered eluting solution of ionic strength higher than that of said second buffered eluting solution; and

(i) collecting the von Willebrand factor desorbed with said third buffered eluting solution, said von Willebrand factor having a concentration of factor VIIIc of less than 2%.

5,252,711

MONOCLONAL ANTIBODIES USEFUL IN DEODORIZING SKIN AND ANTIBODY FRAGMENTS THEREOF

Brian Rogers, Mt. Airy, Md., and Anne Maczulak, Arlington, Va., assignors to The Gillette Company, Boston, Mass.

Division of Ser. No. 360,154, Jun. 1, 1989, Pat. No. 5,069,896. This application Sep. 27, 1991, Ser. No. 766,521

Int. Cl.[5] A61K *7/32, 39/395;* **C07K** *15/28;* **C12N** *5/12*

U.S. Cl. 530—388.2 **10 Claims**

1. A murine monoclonal antibody produced by a hybridoma formed by fusion of cells from mouse myeloma cells and spleen cells, wherein said antibody specifically binds with the 50,000 dalton carrier or transfer proteins of a malodor producing bacterial cell to prevent malodor formation, said bacterial cell being a coryneform bacteria or of the genus Staphylococcus.

5,252,712

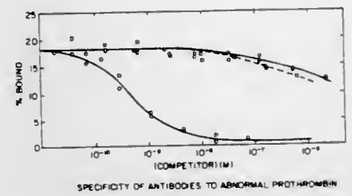
PURIFIED ANTIBODIES WHICH SPECIFICALLY BIND HUMAN ABNORMAL PROTHROMBIN

Bruce E. Furie; Barbara C. Furie, both of Wellesley, and Rita A. Blanchard, Newton, all of Mass., assignors to New England Medical Center Hospitals, Inc., Boston, Mass.

Division of Ser. No. 661,187, Oct. 15, 1984, which is a continuation-in-part of Ser. No. 402,318, Jul. 27, 1982, abandoned, which is a continuation-in-part of Ser. No. 198,444, Oct. 20, 1980, abandoned. This application Aug. 3, 1988, Ser. No. 227,829

Int. Cl.[5] C07K *15/28;* **C12N** *5/18*

U.S. Cl. 530—389.3 **3 Claims**



SPECIFICITY OF ANTIBODIES TO ABNORMAL PROTHROMBIN

1. Isolated and purified antibodies which specifically bind to human abnormal prothrombin which form an antibody antigen complex with said human abnormal prothrombin in the presence or absence of calcium (II) and which are nonreactive with human native prothrombin.

5,252,713

POLYMERIC CARRIERS FOR NON-COVALENT DRUG CONJUGATION

Alton C. Morgan, Jr., Edmonds, and David C. Anderson, Seattle, both of Wash., assignors to NeoRx Corporation, Seattle, Wash.

Filed Sep. 23, 1988, Ser. No. 248,456

Int. Cl.[5] A61K *37/02, 39/44;* **C07K** *3/08*

U.S. Cl. 530—391.7 **18 Claims**

1. A targeting protein/polymeric carrier/drug conjugate comprising a targeting protein covalently bound to a polymeric carrier that comprises a drug-binding domain derived from a drug-binding protein, and a drug non-covalently bound to the polymeric carrier, wherein the polymeric carrier does not comprise an entire drug-binding protein, but is derived from a drug-binding domain of said drug-binding protein, wherein the molecular weight of the polymeric carrier is less than about 60,000 daltons, and wherein said drug is an anti-cancer anthracycline antibiotic, cis-platinum, methotrexate, vinblastine, mitoxantrone, ARA-C, 6-mercaptopurine, 6-mercaptoguanosine, mitomycin C or a steroid.

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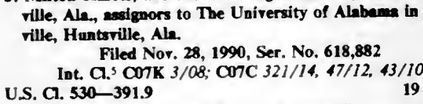
5,252,714

PREPARATION AND USE OF POLYETHYLENE GLYCOL PROPIONALDEHYDE

J. Milton Harris, and M. R. Sedaghat-Herati, both of Huntsville, Ala., assignors to The University of Alabama in Huntsville, Huntsville, Ala.

Filed Nov. 28, 1990, Ser. No. 618,882
Int. Cl.[5] C07K *3/08;* C07C *321/14, 47/12, 43/10*
U.S. Cl. 530—391.9 19 Claims

1. A compound, as described by formula (I):



wherein R_1 and R_3 each independently consist of an element selected from the group consisting of



R_4—N=CH, and R_4—NH—CH_2, wherein R_4 is an antibody; and wherein X is selected from elements of the group consisting of O, and S; and wherein R_2 is a C_1 to C_6 alkyl, or H, and;

wherein n is an integer, and n less than 10,000, and m is an integer selected from the group consisting of 2, 3, 4, 5, or 6.

5,252,715

PROCESS FOR THE PREPARATION OF A PASTEURIZED AND IRON-FREE HUMAN TRANSFERRIN AND THE USE THEREOF

Heinz Haupt, Marburg, Fed. Rep. of Germany, assignor to Behringwerke Aktiengesellschaft, Marburg, Fed. Rep. of Germany

Filed Dec. 11, 1991, Ser. No. 804,927
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1990, 4039721
Int. Cl.[5] C07K *3/00*
U.S. Cl. 530—394 2 Claims

1. A process for preparing pasteurized and iron-free human transferrin, comprising pasteurizing a solution containing human transferrin and a complexing agent that binds iron, and then removing the complexing agent and the iron bound thereto from the transferrin.

5,252,716

MAREK'S DISEASE HERPESVIRUS DNA SEGMENTS ENCODING GLYCOPROTEINS, GD, GI AND GE

Leland F. Velicer; Peter Brunovskis, both of East Lansing, and Paul M. Coussens, DeWitt, all of Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Division of Ser. No. 572,711, Aug. 24, 1990, Pat. No. 5,138,030.
This application Mar. 4, 1992, Ser. No. 845,957
Int. Cl.[5] C07K *13/00*
U.S. Cl. 530—395 1 Claim

1. A substantially pure polypeptide glycoprotein gD precursor which comprises:

Met Asn Arg Tyr Arg Tyr Glu Ser Ile Phe Phe Arg Tyr Ile Ser Ser
−30 −25 −20 −15
Thr Arg Met Ile Leu Ile Ile Cys Leu Leu Leu Gly Thr Gly Asp Met
−10 −5 1
Ser Ala Met Gly Leu Lys Lys Asp Asn Ser Pro Ile Ile Pro Thr Leu
5 10 15
His Pro Lys Gly Asn Glu Asn Leu Arg Ala Thr Leu Asn Glu Tyr Lys
20 25 30
Ile Pro Ser Pro Leu Phe Asp Thr Leu Asp Asn Ser Tyr Glu Thr Lys
35 40 45 50

-continued

His Val Ile Tyr Thr Asp Asn Cys Ser Phe Ala Val Leu Asn Pro Phe
55 60 65
Gly Asp Pro Lys Tyr Thr Leu Leu Ser Leu Leu Leu Met Gly Arg Arg
70 75 80
Lys Tyr Asp Ala Leu Val Ala Trp Phe Val Leu Gly Arg Ala Cys Gly
85 90 95
Arg Pro Ile Tyr Leu Arg Glu Tyr Ala Asn Cys Ser Thr Asn Glu Pro
100 105 110
Phe Gly Thr Cys Lys Leu Lys Ser Leu Gly Trp Trp Asp Arg Arg Tyr
115 120 125 130
Ala Met Thr Ser Tyr Ile Asp Arg Asp Glu Leu Lys Leu Ile Ile Ala
135 140 145
Ala Pro Ser Arg Glu Leu Ser Gly Leu Tyr Thr Arg Leu Ile Ile Ile
150 155 160
Asn Gly Glu Pro Ile Ser Ser Asp Ile Leu Leu Thr Val Lys Gly Thr
165 170 175
Cys Ser Phe Ser Arg Arg Gly Ile Lys Asp Asn Lys Leu Cys Lys Pro
180 185 190
Phe Ser Phe Phe Val Asn Gly Thr Thr Arg Leu Leu Asp Met Val Arg
195 200 205 210
Thr Gly Thr Pro Arg Ala His Glu Glu Asn Val Lys Gln Trp Leu Glu
215 220 225
Arg Asn Gly Gly Lys His Leu Pro Ile Val Val Glu Thr Ser Met Gln
230 235 240
Gln Val Ser Asn Leu Pro Arg Ser Phe Arg Asp Ser Tyr Leu Lys Ser
245 250 255
Pro Asp Asp Asp Lys Tyr Asn Asp Val Lys Met Thr Ser Ala Thr Thr
260 265 270
Asn Asn Ile Thr Thr Ser Val Asp Gly Tyr Thr Gly Leu Thr Asn Arg
275 280 285 290
Pro Glu Asp Phe Glu Lys Ala Pro Tyr Ile Thr Lys Arg Pro Ile Ile
295 300 305
Ser Val Glu Glu Ala Ser Ser Gln Ser Pro Lys Ile Ser Thr Glu Lys
310 315 320
Lys Ser Arg Thr Gln Ile Ile Ile Ser Leu Val Val Leu Cys Val Met
325 330 335
Phe Cys Phe Ile Val Ile Gly Ser Gly Ile Trp Ile Leu Arg Lys His
340 345 350
Arg Lys Thr Val Met Tyr Asp Arg Arg Arg Pro Ser Arg Arg Ala Tyr
355 360 365 370
Ser Arg Leu.

5,252,717

MAREK'S DISEASE HERPESVIRUS DNA SEGMENTS ENCODING GLYCOPROTEINS, GD, GI AND GE

Leland F. Velicer; Peter Brunovskis, both of East Lansing, and Paul M. Coussens, DeWitt, all of Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Division of Ser. No. 572,711, Aug. 24, 1990, Pat. No. 5,138,033.
This application Mar. 9, 1992, Ser. No. 848,697
Int. Cl.[5] C07K *13/00*
U.S. Cl. 530—395 1 Claim

1. A substantially pure glycoprotein gI precursor polypeptide which comprises:

Met Tyr Val Leu Gln Leu Leu Phe Trp Ile Arg Leu Phe Arg Gly Ile
−15 −10 −5
Trp Ser Ile Val Tyr Thr Gly Thr Ser Val Thr Leu Ser Thr Asp Gln
1 5 10
Ser Ala Leu Val Ala Phe Arg Gly Leu Asp Lys Met Val Asn Val Arg
15 20 25 30
Gly Gln Leu Leu Phe Leu Gly Asp Gln Thr Arg Thr Ser Ser Tyr Thr
35 40 45
Gly Thr Thr Glu Ile Leu Lys Trp Asp Glu Glu Tyr Lys Cys Tyr Ser
50 55 60
Val Leu His Ala Thr Ser Tyr Met Asp Cys Pro Ala Ile Asp Ala Thr
65 70 75
Val Phe Arg Gly Cys Arg Asp Ala Val Val Tyr Ala Gln Pro His Gly
80 85 90

-continued

Arg Val Gln Pro Phe Pro Glu Lys Gly Thr Leu Leu Arg Ile Val Glu
95 100 105 110
Pro Arg Val Ser Asp Thr Gly Ser Tyr Tyr Ile Arg Val Ser Leu Ala
115 120 125
Gly Arg Asn Met Ser Asp Ile Phe Arg Met Val Val Ile Ile Arg Ser
130 135 140
Ser Lys Ser Trp Ala Cys Asn His Ser Ala Ser Ser Phe Gln Ala His
145 150 155
Lys Cys Ile Arg Tyr Val Asp Arg Met Ala Phe Glu Asn Tyr Leu Ile
160 165 170
Gly His Val Gly Asn Leu Leu Asp Ser Asp Ser Glu Leu His Ala Ile
175 180 185 190
Tyr Asn Ile Thr Pro Gln Ser Ile Ser Thr Asp Ile Asn Ile Val Thr
195 200 205
Thr Pro Phe Tyr Asp Asn Ser Gly Thr Ile Tyr Ser Pro Thr Val Phe
210 215 220
Asn Leu Phe Asn Asn Asn Ser His Val Asp Ala Met Asn Ser Thr Gly
225 230 235
Met Trp Asn Thr Val Leu Lys Tyr Thr Leu Pro Arg Leu Ile Tyr Phe
240 245 250
Ser Thr Met Ile Val Leu Cys Ile Ile Ala Leu Ala Ile Tyr Leu Val
255 260 265 270
Cys Glu Arg Cys Arg Ser Pro His Arg Arg Ile Tyr Ile Gly Glu Pro
275 280 285
Arg Ser Asp Glu Ala Pro Leu Ile Thr Ser Ala Val Asn Glu Ser Phe
290 295 300
Gln Tyr Asp Tyr Asn Val Lys Glu Thr Pro Ser Asp Val Ile Glu Lys
305 310 315
Glu Leu Met Glu Lys Leu Lys Lys Lys Val Glu Leu Leu Glu Arg Glu
320 325 330
Glu Cys Val.
335

5,252,718

FIBROBLAST GROWTH FACTOR ANTAGONISTS

J. Andrew Baird, and Nicholas C. Ling, both of San Diego, Calif., assignors to The Salk Institute for Biological Studies, San Diego, Calif.

Division of Ser. No. 270,225, Nov. 14, 1988, Pat. No. 5,132,408, which is a continuation-in-part of Ser. No. 854,843, Apr. 22, 1986, abandoned. This application Apr. 27, 1992, Ser. No. 873,773
Int. Cl.[5] C07K *13/00, 7/08, 7/10, 7/06*
U.S. Cl. 530—399 8 Claims

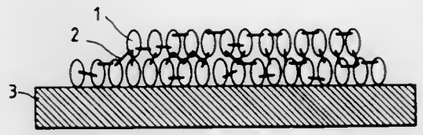
1. A peptide having the following formula: H-Phe-Phe-Phe-Glu-Arg-Leu-Glu-Ser-Asn-Asn-Tyr-Asn-Thr-Tyr-Arg-Ser-Arg-Lys-Tyr-Ser-Ser-Trp-Tyr-Tyr-Val-Ala-Leu-Lys-Arg-Thr-Gly-Cln-Tyr-Lys-Leu Gly-Pro-Lys-Thr-Gly-Pro-Gly-Gln-Lys-Y, wherein Y is OH or NH_2, or a biologically active C-terminally shortened fragment thereof, which fragment contains the sequence Tyr-Arg-Ser-Arg-Lys-Tyr-Ser-Ser-Trp-Tyr.

5,252,719

PROCESS FOR PREPARING PROTEIN-ORIENTED MEMBRANE

Kazuo Takeda, Kokubunji; Yoshinori Harada, Saitama; Hiromichi Shimizu, Hoya, and Chusuke Munakata, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 27, 1990, Ser. No. 572,595
Claims priority, application Japan, Aug. 28, 1989, 1-218583
Int. Cl.[5] C07K *3/08;* B05D *5/12;* H01L *31/0344*
U.S. Cl. 530—409 9 Claims



1. A process for producing a protein-oriented membrane comprising the steps of:

orienting photoreceptive protein molecules that are capable of having a non-uniform charge distribution;

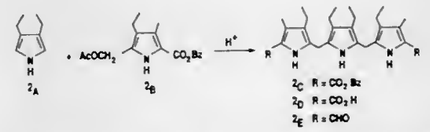
cross linking the oriented protein molecules together to form said protein-oriented membrane.

5,252,720

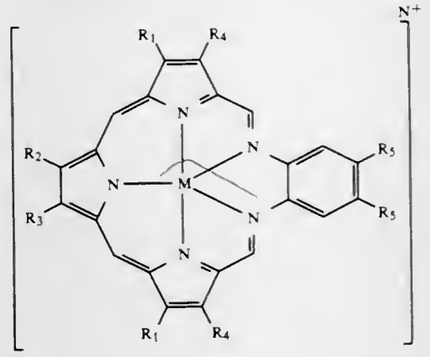
METAL COMPLEXES OF WATER SOLUBLE TEXAPHYRINS

Jonathan L. Sessler; Gregory W. Hemmi, and Tarak D. Mody, all of Austin, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation-in-part of Ser. No. 771,393, Sep. 30, 1991, abandoned, which is a continuation-in-part of Ser. No. 539,975, Jun. 18, 1990, Pat. No. 5,162,509, which is a division of Ser. No. 320,293, Mar. 6, 1989, Pat. No. 4,935,498. This application Jan. 21, 1992, Ser. No. 822,964
Int. Cl.[5] C07D *487/22;* C07F *19/00;* C07H *23/00*
U.S. Cl. 534—11 35 Claims



2. A water soluble compound retaining lipophilicity and having the structure:



wherein:

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M is H, or a trivalent metal cation selected from the group consisting of Mn^{+3}, Co^{+3}, Ni^{+3}, Fe^{+3}, Ho^{+3}, Ce^{+3}, Y^{+3}, In^{+3}, Pr^{+3}, Nd^{+3}, Sm^{+3}, Eu^{+3}, Gd^{+3}, Tb^{+3}, Dy^{+3}, Er^{+3}, Tm^{+3}, Yb^{+3}, Lu^{+3}, La^{+3}, and U^{+3};

R_1, R_2, R_3, R_4, and R_5 are independently hydrogen, hydroxyl, alkyl, hydroxyalkyl, oxyalkyl, oxyhydroxyalkyl, saccharide, carboxyalkyl or carboxyamidealkyl where at least one of R_1, R_2, R_3, R_4, and R_5 is oxyhydroxyalkyl, saccharide, oxyalkyl, carboxyalkyl, carboxyamidealkyl or hydroxyalkyl having at least one hydroxy substituent;

the molecular weight of any one of R_1, R_2, R_3, R_4, or R_5 is less than or equal to about 1000 daltons; and

N is 0 or +2.

5,252,721

S_3N CHELATING COMPOUNDS

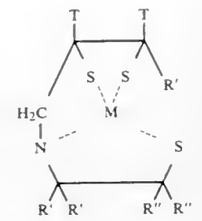
Sudhakar Kasina, and Ananthachari Srinivasan, both of Kirkland, Wash., assignors to NeoRx Corporation, Seattle, Wash.

Filed Sep. 28, 1990, Ser. No. 591,104

Int. Cl.[5] C07F *5/00*

U.S. Cl. 534—14 8 Claims

1. A radionuclide metal chelate of the formula:



wherein:

M represents a radionuclide metal or oxide thereof selected from the group consisting of Cu, Tc, Re, Pb, Bi, Pd, and Rh;

each T is independently selected from the group consisting of hydrogen, lower alkyl groups of from 1 to about 6 carbon atoms, electron withdrawing groups, and lower alkyl groups of from 1 to about 6 carbon atoms substituted with electron withdrawing group(s);

each R' is independently selected from the group consisting of:

$-(CH_2)_n-COOH$ with n=0 to about 4,

$-(CH_2)_n-Z$, wherein Z represents a conjugation group and n is 0 to about 4,

hydrogen, and

a lower alkyl group of from 1 to about 6 carbon atoms;

each R'' is independently selected from the group consisting of:

$-(CH_2)_n-COOH$, with n=0 to about 4,

hydrogen, and

a lower alkyl group of from 1 to about 6 carbon atoms; and

the compound comprises at least one $-(CH_2)_n-Z$ substituent.

5,252,722

5-O-α-D-GLUCOPYRANOSYL-L-ASCORBIC ACID

Takahiko Mandai; Masaru Yoneyama, and Shuzo Sakai, all of Okayama, Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Filed Oct. 21, 1992, Ser. No. 964,037

Claims priority, application Japan, Oct. 21, 1991, 3-336399

Int. Cl.[5] C07H *15/00;* C07D *307/62;* C12P *19/60*

U.S. Cl. 536—4.1 1 Claim

1. 5-O-α-D-Glucopyranosyl-L-ascorbic acid.

5,252,723

METHOD AND REAGENT FOR SULFURIZATION OF ORGANOPHOSPHOROUS COMPOUNDS

Ram S. Bhatt, San Diego, Calif., assignor to Gen-Probe, Inc., San Diego, Calif.

Division of Ser. No. 319,570, Mar. 6, 1989. This application Nov. 27, 1990, Ser. No. 618,629

Int. Cl.[5] C07H *1/00*

U.S. Cl. 536—25.3 22 Claims

1. A method of sulfurizing an organic compound selected from a nucleoside phosphite and a nucleoside phosphonite, wherein said organic compound comprises a trivalent phosphorus able to be sulfurized, to produce a nucleotide multimer with at least two nucleosides linked together to form a phosphorothioate or phosphonothioate group, said method comprising the steps of: providing a nucleoside phosphite or nucleoside phosphonite attached to a solid-phase support, contacting said nucleoside phosphite or nucleoside phosphonite with a solution of sulfur, a non-aromatic tertiary amine sized to allow the sulfurization, and a solvent able to solubilize sulfur so as to sulfurize the internucleotide phosphite or phosphonite to produce the corresponding internucleotide phosphorothioate or phosphonothioate group, wherein the sulfurization occurs on a nucleotide multimer synthesizer, and wherein the sulfurization occurs within about 45 seconds without heating.

5,252,724

METHOD OF EXTRACTING PARTICULAR NUCLEIC ACID FRAGMENT

Toshihiko Kishimoto; Shin-Ichiro Niwa, and Atsushi Uno, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed May 16, 1991, Ser. No. 700,694

Claims priority, application Japan, May 17, 1990, 2-127702

Int. Cl.[5] C12N *15/10*

U.S. Cl. 536—25.4 11 Claims

1. A method of extracting a particular nucleic acid fragment containing a nucleic acid sequence of interest from a nucleic acid or nucleic acids mixture, comprising the steps of:

(1) digesting the nucleic acid or nucleic acids mixture with restriction enzymes to obtain a mixture of nucleic acid fragments, said restriction enzymes consisting of (A) two different enzymes capable of producing the particular nucleic acid fragment bearing predetermined and distinct restriction ends on its 5' and 3' terminals and (B) one or more restriction enzymes different from (A), for which the particular nucleic acid fragment contains no relevant restriction sites;

(2) preparing two distinct DNA linkers capable of binding to the respective restriction ends of the particular nucleic acid fragment;

(3) contacting the linkers and nucleic acid fragments under conditions sufficient to ligate complementary ends of the linkers and nucleic acid fragments;

(4) subjecting the resulting reaction mixture to a first hybridization with an immobilized probe complementary to one of the linkers;

(5) isolating the hybridized nucleic acid fragment from the probe;

(6) subjecting the isolated nucleic acid fragment to a second hybridization with an immobilized probe complementary to the other linker; and

(7) isolating the hybridized nucleic acid fragment from the probe.

5,252,725

α-1-ANTICHYMOTRYPSIN, ANALOGUES AND METHODS OF PRODUCTION

Harvey Rubin, and Zhi M. Wang, both of Philadelphia, Pa., assignors to The Trustees of the University of Pennsylvania, Philadelphia, Pa.

Division of Ser. No. 370,704, Jun. 23, 1989, Pat. No. 5,079,336. This application Jul. 24, 1991, Ser. No. 735,335

Int. Cl.[5] C07H *21/00;* C07K *3/00;* C12N *15/09;* A61K *45/05*

U.S. Cl. 536—23.5 4 Claims

1. An isolated nucleic acid sequence coding for an analogue of human α-1-antichymotrypsin wherein the amino acid corresponding to the leucine at amino acid position 358 of wild-type α-1-antichymotrypsin is substituted with arginine.

5,252,726

PROMOTERS FOR USE IN ASPERGILLUS

Helle F. Wöldike, Lynge, Denmark, assignor to Novo Nordisk A/S, Bagsvaerd, Denmark

Continuation of Ser. No. 469,509, Mar. 13, 1990, abandoned. This application Mar. 23, 1992, Ser. No. 859,596

Claims priority, application Denmark, Sep. 4, 1987, 4609/87; Sep. 29, 1987, 5126/87

Int. Cl.[5] C12N *15/56, 15/11*

U.S. Cl. 536—24.1 2 Claims

1. A promoter and upstream activating sequence derived from an *Aspergillus niger* neutral alpha-amylase gene having the following sequence.

```
TCTAAACGTC    GTCAAAGGTC    TGTCTTCTTT
                            CCGTATTGTC    ATCTTGTAAT

ACGCTTCCTC    AATGTCGTAT    TTCGAAAAGA
                            AACGGGCTTT    CTTTATCCAA

TCCCTGTGGT    AAGATTGATC    GTCAGGAGAT
                            TATCTGCAGG    AAACATCATG

GTGGGGTAAC    CAAGGTTGTG    TCTGTATAAT
                            ATATACATGT    AAAATACATG

AGCTTCGGTG    ATATAATACA    GAAGTACCAT
                            ACAGTACCGC    GTTATGAAAA

CACATTAATC    CGGATCCTTT    CCTATAATAG
                            ACTAGCGTGC    TTGGCATTAG

GGTTCGAAAA    ACAATCGAAG    AGTATAAGGG
                            GATGACAGCA    GTAACGACTC

CAACTGTACG    CCTCCGGGTA    GTAGTCCGAG
                            CAGCCGAGCC    AGCTCAGCGC

CTAAAACGCC    TTATACAATT    AAGCAGTTAA
                            AGAAGTTAGA    ATCTACGCTT

AAAAAGCTAC    TTAAAAATCG    ATCTCGCAGT
                            CCCGATTCGC    CTATCAAAAC

CAGTTTAAAT    CAACTGATTA    AAGGTGCCGA
                            ACGAGCTATA    AATGATATAA

CAATATTAAA    GCATTAATTA    AAGGTGCCGA
                            ACGAGCTATA    AATGATATAA

CAATATTAAA    GCATTAATTA    GAGCAATATC
                            AGGCCGCGCA    CGAAAGGCAA

CTTAAAAGCG    AAAGCGCTCT    ACTAAACAGA
                            TTACTTTTGA    AAAAGGCACA

TCAGTATTTA    AAGCCCGAAT    CCTTATTAAG
                            CGCCGAAATC    AGGCAGATAA

AGCCATACAG    GCAGATAGAC    CTCTACCTAT
                            TAAATCGGCT    TCTAGGCGCG

CTCCATCTAA    ATGTTCTGGC    TGTGGTGTAC
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-continued

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                            AGGGGCATAA    AATTACGCAC

TACCCGAATC    GATAGAACTA    CTCATTTTTA
                            TATAGAAGTC    AGAATTCATG

GTGTTTTGAT    CATTTTAAAT    TTTTATATGG
                            CGGGTGGTGG    GCAACTCGCT

TGCGCGGCAA    CTCGCTTACC    GATTACGTTA
                            GGGCTGATAT    TTACGTAAAA

ATCGTCAAGG    GATGCAAGAC    CAAAGTAGTA
                            AAACCCCGGA    GTCAACAGCA

TCCAAGCCCA    AGTCCTTCAC    GGAGAAACCC
                            CAGCGTCCAC    ATCACGAGCG

AAGGACCACC    TCTAGGCATC    GGACGCACCA
                            TCCAATTAGA    AGCAGCAAAG

CGAAACAGCC    CAAGAAAAAG    GTCGGCCCGT
                            CGGCCTTTTC    TGCAACGCTG

ATCACGGGCA    GCGATCCAAC    CAACACCCTC
                            CAGAGTGACT    AGGGGCGGAA

ATTTAAAGGG    ATTAATTTCC    ACTCAACCAC
                            AAATCACAGT    CGTCCCCGGT

ATTGTCCTGC    AGAATGCAAT    TTAAACTCTT
                            CTGCGAATCG    CTTGGATTCC

CCGCCCCTAG    CGTAGAGCTT    AAAGTATGTC
                            CCTTGTCGAT    GCGATGTATC

ACAACATATA    AATACTAGCA    AGGGATGCCA
                            TGCTTGGAGG    ATAGCAACCG

ACAACATCAC    ATCAAGCTCT    CCCTTCTCTG
                            AACAATAAAC    CCCACAGAAG

GCATTT
```

or a fragment thereof having substantially the same promoter activity as said sequence.

5,252,727

HETEROPOLYSACCHARIDE BM07

Gabriel Ullmann, Ruffec, and Alain Jarry, Poitiers, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Jul. 13, 1989, Ser. No. 379,478

Claims priority, application France, Jul. 13, 1988, 88 09529

Int. Cl.[5] C07G *17/00*

U.S. Cl. 536—123 22 Claims

1. Heteropolysaccharide BM07, produced by fermentation of a medium comprising at least one source of assimilable carbon, by a strain of *Agrobacterium tumefaciens* I-736, or one of the mutants thereof.

5,252,728

PROCESS FOR OBTAINING POLYMERS WITH ANTIVIRAL ACTIVITY

Juan P. P. Ranieri; Antonio F. G. Gomez-Pamo; Luis C. Llamas, all of Madrid; Jesus A. Armendariz, Tres Cantos; Juan A. Leal Ojeda, Madrid, and Carmen G. Benito, Segovia, all of Spain, assignors to Laboratorios Andromaco S.A., Madrid, Spain

Filed Dec. 13, 1991, Ser. No. 806,669

Claims priority, application Spain, Dec. 17, 1990, 9003222

Int. Cl.[5] A61K *31/715;* C08B *37/00;* C07H *1/00, 3/00*

U.S. Cl. 536—124 15 Claims

1. A process for obtaining polymers with antiviral activity, comprising the steps of:

suspending or dissolving in a solvent an oligo/polysaccha-

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ride, hereafter referred to as molecule (1), and cleansing the suspension or solution of any interfering substances by ultrafiltration;

oxidizing the molecule (1) with an oxidizing agent to generate carbonyl groups and thereafter removing the oxidizing agent thereby providing an oxidized molecule (1);

preparing a reaction mixture comprising the oxidized molecule (1) and a molecule carrying amino and sulfonated groups, hereafter referred to as molecule (2), and thereafter heating and incubating the reaction mixture to decrease the concentration of the molecule (2); and

purifying the reaction mixture to provide a sulfonated polymer.

5,252,729

EXTRACTION OF COMPOUNDS FROM PLANT MATERIALS USING SUPERCRITICAL FLUIDS

Michelle A. De Crosta, Bethlehem, Pa.; Peter Kabasakalian, Bloomfield, and Frederick J. F. Honold, Sr., Fanwood, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Oct. 23, 1991, Ser. No. 781,469

Int. Cl.[5] **C07J** *75/00, 9/00, 21/00;* **C07C** *51/09*

U.S. Cl. 540—18 **19 Claims**

1. A process for extracting a compound from plant material, comprising

a) contacting acid-hydrolyzed plant material with a supercritical fluid, optionally with a co-solvent, and

b) recovering the compound from the supercritical fluid.

5,252,730

POLYMER COMPOSITION HAVING INTENSE MAGNETIC PROPERTIES AND METHOD FOR PREPARATION THEREOF

Jack D. Mackey, Hawthorne, Calif., assignor to Northrop Corporation, Hawthorne, Calif.

Filed Apr. 10, 1992, Ser. No. 866,913

Int. Cl.[5] **G07D** *487/22;* **C08F** *12/100;* **G03G** *19/00*

U.S. Cl. 540—140 **15 Claims**

1. A process for producing a polymer composition having intense magnetic properties, comprising the steps of:

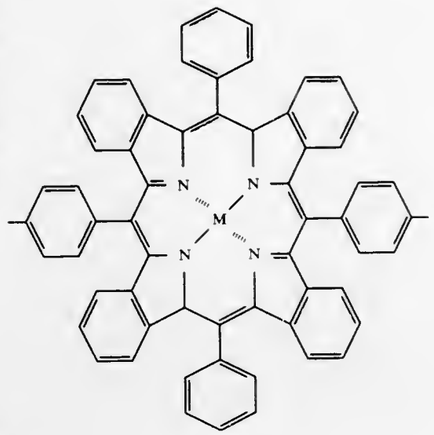
reacting a phthalimide compound with an aromatic dialiphatic acid, in a proportion of about two molar amount of the phthalimide compound to about one molar amount of the aromatic dialiphatic acid, in the presence of a monovalent metal catalyst at a temperature of between about 200° to about 260° C. for about 1 to 3 hours, whereby a 1,4-phenylenebis diphtalimidine compound is formed;

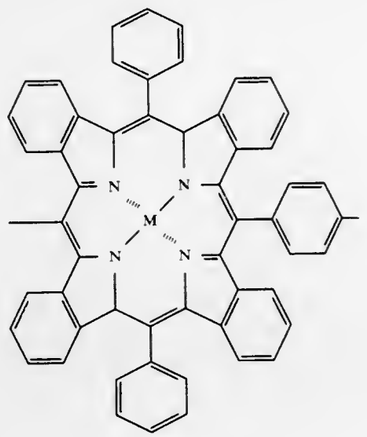
cooling, solidifying, and extracting the 1,4-phenylenebis diphthalimidine compound;

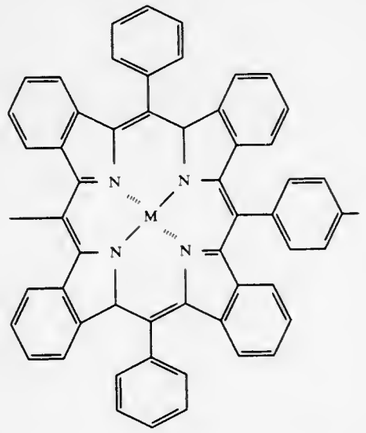
pulverizing, filtering, and washing the extracted 1,4-phenylenebis diphthalimidine compound;

reacting the extracted 1,4-phenylenebis diphthalimidine compound, a metal salt of an alliphatic acid, and 3-benzylidine phthalimidine at a temperature of between about 300° and about 380° C. under an inert gas atmosphere, whereby the polymer composition having intense magnetic properties is formed.

14. A polymer composition having the recurring structure







wherein M is a metal selected from the group consisting of divalent metals and trivalent metals.

5,252,731

CEPHALOSPORIN INTERMEDIATES

Takao Takaya, Kawanishi; Hisashi Takasugi, Osaka; Takashi Masugi, Ikeda; Hideaki Yamanaka, Hirakata, and Kohji Kawabata, Osaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

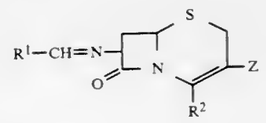
Division of Ser. No. 583,304, Sep. 17, 1990, Pat. No. 5,110,921, which is a division of Ser. No. 462,347, Jan. 3, 1990, Pat. No. 4,960,889, which is a continuation of Ser. No. 127,929, Dec. 2, 1987, abandoned, which is a division of Ser. No. 889,189, Jul. 24, 1986, Pat. No. 4,731,443, which is a division of Ser. No. 653,041, Sep. 21, 1984, abandoned, which is a division of Ser. No. 341,621, Jan. 22, 1982, Pat. No. 4,487,927, which is a continuation-in-part of Ser. No. 261,618, May 7, 1981, Pat. No. 4,423,213, which is a continuation-in-part of Ser. No. 205,334, Nov. 10, 1980, Pat. No. 4,409,214. This application Feb. 5, 1992, Ser. No. 831,504

Claims priority, application United Kingdom, Nov. 19, 1979, 7939985; Feb. 8, 1980, 8004335; Apr. 21, 1980, 8012991; Jul. 14, 1980, 8022920

Int. Cl.[5] **C07D** *501/18*

U.S. Cl. 540—215 **3 Claims**

1. A compound of the formula:



in which

R^2 is carboxy or a protected carboxy group,

R^8 is aryl and

Z is a group of the formula:

$-CH=CH_2$, $-CH_2-X^2$, $-CH_2{}^{\oplus}P(R^7)_3 \cdot X^{3\ominus}$ or

$-CH=P(R^7)_3$,

wherein X^2 and X^3 are each halogen and

R^7 is aryl,

or a salt thereof.

5,252,732

D-HETEROARYL, O-ALKYLHETEROARYL, O-ALKENYLHETEROARYL AND O-ALKYNYLHETEROARYLMACROLIDES HAVING IMMUNOSUPPRESSIVE ACTIVITY

Peter J. Sinclair, Highland Park; Joung Goulet, Westfield; Frederick Wong, Glen Ridge; Mark Goulet, Westfield; William H. Parsons, Rahway, and Matthew J. Wyvratt, Mountainside, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 756,946, Sep. 9, 1991, abandoned. This application Aug. 5, 1992, Ser. No. 921,851

Int. Cl.[5] **A61K** *31/395;* **C07D** *491/16*

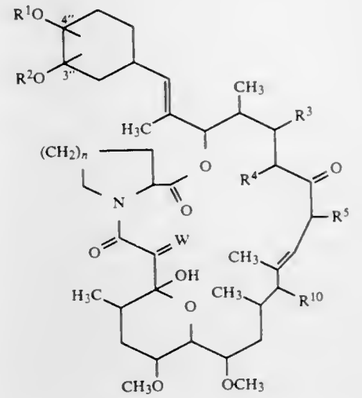
U.S. Cl. 540—456 **17 Claims**

1. A compound of Formula I:

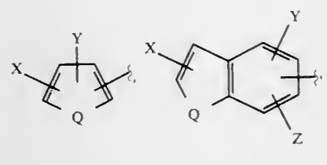
or a pharmaceutically acceptable salt thereof, wherein:

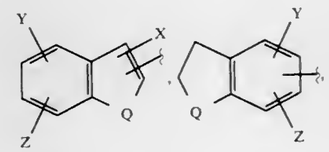
R^1 is selected from:

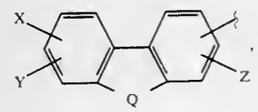
I

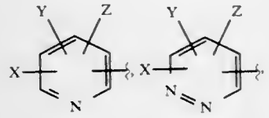


(1) heteroaryl, wherein heteroaryl is selected from the group consisting of:





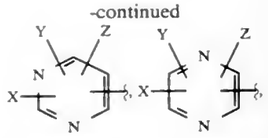




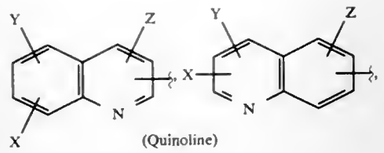
(Pyridine) (Pyridazine)

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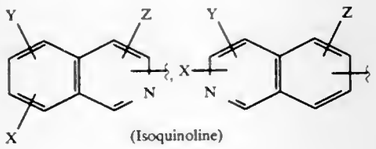
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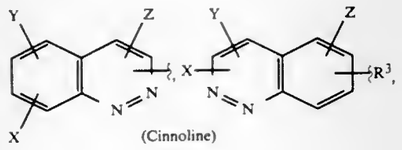
(Pyrimidine) (Pyrazine)



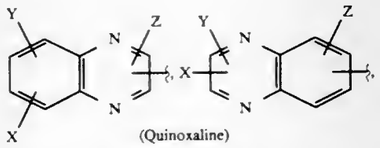
(Quinoline)



(Isoquinoline)



(Cinnoline)



(Quinoxaline)

wherein Q is —N(X)—, —O—, or —S—;

(2) substituted heteroaryl, wherein heteroaryl is as defined above, and in which the substituents are X, Y and Z;

(3) heteroaryl-C_{1-10}alkyl, wherein heteoaryl is as defined above;

(4) substituted heteroaryl-C_{1-10}alkyl, wherein heteroaryl is as defined above and in which the heteroaryl group is substituted by X, Y and Z and the alkyl portion may be substituted with one or more of the substituent(s) selected from:

(a) hydroxy,

(b) oxo,

(c) C_{1-6}-alkoxy,

(d) aryl-C_{1-3}alkoxy, wherein aryl is selected from the group consisting of phenyl and naphthyl,

(e) substituted aryl-C_{1-3}alkoxy, wherein aryl is as defined above and in which the substituents on aryl are X, Y and Z,

(f) unsubstituted or substituted aryloxy, in which the substituents on aryl are X, Y and Z,

(g) —OCO—C_{1-6}alkyl,

(h) $—NR^6R^7$, wherein R^6 and R^7 are independently selected from

(i) hydrogen,

(ii) C_{1-10}alkyl unsubstituted or substituted with one or more of the substituent(s) selected from:

(a') aryl, wherein aryl is as defined above and which is unsubstituted or substituted with X, Y and Z,

(b') heteroaryl, wherein heteroaryl is as defined above and which is unsubstituted or substituted with X, Y and Z,

(c') —OH,

(d') C_{1-6}alkoxy,

(e') $—CO_2H$,

(f') $—CO_2—C_{1-6}$alkyl,

(g') $—C_{3-7}$cycloalkyl, and

(h') $—OR^{11}$,

(iii) C_{3-10}alkenyl unsubstituted or substituted with one or more of the substituent(s) selected from:

(a') aryl, wherein aryl is as defined above and which is unsubstituted or substituted with X, Y and Z,

(b') heteroaryl, wherein heteroaryl is as defined above and which is unsubstituted or substituted with X, Y and Z,

(c') —OH,

(d') C_{1-6}alkoxy,

(e') $—CO_2H$,

(f') $—CO_2—C_{1-6}$alkyl,

(g') $—C_{3-7}$cycloalkyl, and

(h') $—OR^{11}$,

(iv) or where R^6 and R^7 and the N to which they are attached may form a heterocyclic ring selected from the group consisting of: morpholine, thiomorpholine, piperidine, and piperazine,

(i) $—NR^6CO—C_{1-6}$alkyl-R^7, wherein R^6 and R^7 are as defined above,

(j) $—NR^6CO_2—C_{1-6}$alkyl-R^7,

(k) $—NR^6CONR^6R^7$,

(l) $—OCONR^6R^7$,

(m) $—COOR^6$,

(n) —CHO,

(o) aryl, wherein aryl is as defined above,

(p) substituted aryl wherein aryl is as defined above and in which the substituents are X, Y and Z,

(q) $—OR^{11}$, and

(r) $—S(O)_p—C_{1-6}$alkyl;

(5) heteroaryl-C_{1-10}alkyl wherein heteroaryl is as defined above and one or more of the alkyl carbons is replaced by a group selected from: $—NR^6—$, —O—, $—S(O)_p—$, $—CO_2—$, $—O_2C—$, $—CONR^6—$, $—NR^6CO—$, $—NR^6CONR^7—$;

(6) substituted heteroaryl-C_{1-10}alkyl wherein heteroaryl is as defined above and one or more of the alkyl carbons is replaced by a group selected from: $—NR^6—$, —O—, $—S(O)_p—$, $—CO_2—$, $—O_2C—$, $—CONR^6—$, $—NR^6CO—$, and $—NR^6CONR^7—$, the heteroaryl group is substituted with X, Y, and Z, and the alkyl group may be substituted with one or more of the substituent(s) selected from:

(a) hydroxy,

(b) oxo,

(c) C_{1-6}alkoxy,

(d) aryl-C_{1-3}alkoxy, wherein aryl is as defined above,

(e) substituted aryl-C_{1-3}alkoxy, wherein aryl is as defined above and in which the substituents on aryl are X, Y and Z,

(f) unsubstituted or substituted aryloxy, wherein aryl is as defined above and in which the substituents on aryl are X, Y and Z,

(g) —OCO—C_{1-6}alkyl,

(h) $—NR^6R^7$, wherein R^6 and R^7 are as defined above,

(i) $—NR^6CO—C_{1-6}$alkyl-R^7,

(j) $—NR^6CO_2—C_{1-6}$alkyl-R^7,

(k) $—NR^6CONR^6R^7$,

(l) $—OCONR^6R^7$,

(m) $—COOR^6$,

(n) —CHO,

(o) aryl, wherein aryl is as defined above,

(p) substituted aryl wherein aryl is as defined above in which the substituents are X, Y and Z,

(q) $—OR^{11}$, and

(r) $—S(O)_p—C_{1-6}$alkyl;

(7) heteroaryl-C_{3-10}alkenyl wherein heteroaryl is as defined above and alkenyl contains one to four double bonds;

(8) heteroaryl-C_{3-10}alkenyl wherein heteroaryl is as defined above and alkenyl contains one to four double bonds and wherein one or more of the alkyl carbons is replaced by a group selected from: $—NR^6—$, —O—, $—S(O)_p—$, $—CO_2—$, $—O_2C—$, $—CONR^6—$, $—NR^6CO—$, and $—NR^6CONR^7—$;

(9) substituted heteroaryl-C_{3-10}alkenyl wherein heteroaryl is as defined above and alkenyl contains one to four double bonds and wherein one or more of the alkyl carbons may be replaced by a group selected from: $—NR^6—$, —O—, $—S(O)_p—$, $—CO_2—$, $—O_2C—$, $—CONR^6—$, $—NR^6CO—$, and $—NR^6CONR^7$, the heteroaryl group is substituted with X, Y, and Z, and the alkyl group may be substituted with one or more of the substitutent(s) selected from:

(a) hydroxy,

(b) oxo,

(c) C_{1-6}alkoxy,

(d) aryl-C_{1-3}alkoxy, wherein aryl is as defined above,

(e) substituted aryl-C_{1-3}alkoxy, wherein aryl is as defined above and in which the substituents on aryl are X, Y and Z,

(f) unsubstituted or substituted aryloxy, wherein aryl is defined above and in which the substituents on aryl are X, Y and Z,

(g) —OCO—C_{1-6}alkyl,

(h) $—NR^6R^7$, wherein R^6 and R^7 as defined above,

(i) $—NR^6CO—C_{1-6}$alkyl, wherein R^6 is as defined above,

(j) $—NR^6CO_2—C_{1-6}$alkyl,

(k) $—NR^6CONR^6R^7$,

(l) $—OCONR^6R^7$,

(m) $—COOR^6$,

(n) —CHO,

(o) aryl, wherein aryl is as defined above,

(p) substituted aryl wherein aryl is as defined above and in which the substituents are X, Y and Z, and

(q) $—OR^{11}$, and

(r) $—S(O)_p—C_{1-6}$alkyl;

R^2 is selected from:

(1) the definitions of R^1;

(2) hydrogen;

(3) phenyl;

(4) substituted phenyl in which the substituents are X, Y and Z;

(5) 1- or 2-naphthyl;

(6) substituted 1- or 2-naphthyl in which the substituents are X, Y and Z;

(7) biphenyl;

(8) substituted biphenyl in which the substituents are X, Y and Z;

(9) C_{1-10}alkyl;

(10) substituted-C_{1-10}alkyl in which one or more substituent(s) is(are) selected from:

(a) hydroxy,

(b) oxo,

(c) C_{1-6}alkoxy,

(d) aryl-C_{1-3}alkoxy, wherein aryl is as defined above,

(e) substituted aryl-C_{1-3}alkoxy, wherein aryl is as defined above and in which the substituents on aryl are X, Y and Z,

(f) unsubstituted or substituted aryloxy, in which the substituents on aryl are X, Y and Z,

(g) —OCO—C_{1-6}alkyl,

(h) $—NR^6R^7$, wherein R^6 and R^7 are as defined above

(i) $—NR^6CO—C_{1-6}$alkyl-R^7, wherein R^6 and R^7 is as defined above,

(j) $—COOR^6$, wherein R^6 is as defined above,

(k) —CHO,

(l) phenyl,

(m) substituted phenyl in which the substituents are X, Y and Z,

(n) 1- or 2-naphthyl,

(o) substituted 1- or 2-naphthyl in which the substituents are X, Y and Z,

(p) biphenyl,

(q) substituted biphenyl in which the substituents are X, Y and Z,

(r) $—OR^{11}$, and

(s) $—S(O)_p—C_{1-6}$alkyl;

(11) C_{3-10}alkenyl;

(12) substituted C_{3-10}alkenyl in which one or more substituent(s) is(are) selected from:

(a) hydroxy,

(b) oxo,

(c) C_{1-6}alkoxy,

(d) phenyl-C_{1-3}alkoxy,

(e) substituted phenyl-C_{1-3}alkoxy, in which the substituents on phenyl are X, Y and Z,

(f) —OCO—C_{1-6}alkyl,

(g) $—NR^6R^7$, wherein R^6 and R^7 are as defined above

(h) $—NR^6CO—C_{1-6}$alkyl, wherein R^6 is as defined above,

(i) $—COOR^6$, wherein R^6 is as defined above,

(j) —CHO,

(k) phenyl,

(l) substituted phenyl in which the substituents are X, Y and Z,

(m) 1- or 2-naphthyl,

(n) substituted 1- or 2-naphthyl in which the substituents are X, Y and Z,

(o) biphenyl,

(p) substituted biphenyl in which the substituents are X, Y and Z,

(q) $—OR^{11}$, and

(r) $—S(O)_p—C_{1-6}$alkyl;

(13) C_{3-10}alkynyl;

(14) substituted C_{3-10}alkynyl in which one or more substituent(s) is(are) selected from:

(a) hydroxy,

(b) oxo,

(c) C_{1-6}alkoxy,

(d) phenyl-C_{1-3}alkoxy,

(e) substituted phenyl-C_{1-3}alkoxy, in which the substituents on phenyl are X, Y and Z,

(f) —OCO—C_{1-6}alkyl,

(g) $—NR^6R^7$, wherein R^6 and R^7 are as defined above,

(h) $—NR^6CO—C_{1-6}$alkyl, wherein R^6 is as defined above,

(i) $—COOR^6$, wherein R^6 is as defined above,

(j) —CHO,

(k) phenyl,

(l) substituted phenyl in which the substituents are X, Y and Z,

(m) 1- or 2-naphthyl,

(n) substituted 1- or 2-naphthyl in which the substituents are X, Y and Z,

(o) biphenyl,

(p) substituted biphenyl in which the substituents are X, Y and Z,

(q) $—OR^{11}$; and

(15) $—R^{11}$;

R^3 is hydrogen, hydroxy, $—OR^{11}$, or C_{1-6}alkoxy;

R^4 is hydrogen, or R^3 and R^4 taken together form a double bond;

R^5 is methyl, ethyl, propyl or allyl;

R^{10} is hydrogen, hydroxy, $—OR^{11}$ or fluoro;

R^{11} is selected from:

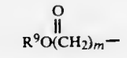
(a) $—PO(OH)O^-M^+$, wherein M^+ is a positively charged inorganic or organic counterion selected from the group consisting of: ammonium, sodium, lithium, potassium,

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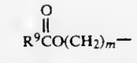
calcium, magnesium, dicyclohexylamine, N-methyl-D-glucamine, arginine and lysine,
(b) $—SO_3^-M^+$,
(c) $—CO(CH_2)_qCO_2^-M^+$, wherein q is 1–3, and
(d) $—CO—C_{1-6}$alkyl-NR^6R^7, wherein R^6 and R^7 are as defined above and the alkyl is unsubstituted or substituted with one or more substituents selected from:
(i) hydroxy,
(ii) C_{1-6}alkoxy,
(iii) $—NR^{16}R^{17}$, wherein R^{16} and R^{17} are independently selected from:
(a') hydrogen, and
(b') C_{1-6}alkyl,
(iv) $—COOR^6$, wherein R^6 is as defined above,
(v) phenyl,
(iv) substituted phenyl in which the substituents are X, Y and Z,
(vii) heteroaryl, wherein heteroaryl is as defined above,
(viii) —SH, and
(ix) $—S—C_{1-6}$alkyl;
W is O or (H, OH);
X, Y and Z independently are selected from:
(a) hydrogen,
(b) C_{1-10}alkyl, unsubstituted or substituted with one or more substituents selected from:
(i) aryl, wherein aryl is as defined above,
(ii) substituted aryl wherein aryl is as defined above and in which the substituents are X', Y' and Z',
(iii) heteroaryl, wherein heteroaryl is as defined above,
(iv) substituted heteroaryl wherein heteroaryl is as defined above and in which the substituents are X', Y', and Z',
(v) unsubstituted or substituted aryloxy, wherein aryl is as defined above and in which the substituents on aryl are X', Y' and Z',
(vi) $—OR^6$,
(vii) $—OR^{11}$,
(viii) $—OCOR^6$,
(ix) $—OCO_2R^6$,
(x) $—NR^6R^7$,
(xi) —CHO,
(xii) $—NR^6COC_{1-6}$alkyl-R^7,
(xiii) $—NR^6CO_2C_{1-6}$alkyl-R^7,
(xiv) $—NR^6CONR^6R^7$,
(xv) $—OCONR^6R^7$,
(xvi) $—CONR^6R^7$,
(c) C_{1-10}alkyl wherein one or more of the alkyl carbons is replaced by a group selected from $—NR^6—$, —O—, $—S—(O)_p—$, $—CO_2—$, $—O_2C—$, $—CONR^6—$, $—NR^6CO—$, $—NR^6CONR^7—$, —CO—, —CH(OH)—, alkenyl or alkynyl and the alkyl may be unsubstituted or substituted with one or more substituents selected from:
(i) aryl, wherein aryl is as defined above,
(ii) substituted aryl wherein aryl is as defined above and in which the substituents are X', Y' and Z',
(iii) heteroaryl, wherein heteroaryl is as defined above,
(iv) substituted heteroaryl wherein heteroaryl is as defined above and in which the substituents are X', Y', and Z',
(v) unsubstituted or substituted aryloxy, wherein aryl is as defined above and in which the substituents on aryl are X', Y', and Z',
(vi) $—OR^6$,
(vii) $—OR^{11}$,
(viii) $—OCOR^6$,
(ix) $—OCO_2R^6$,
(x) $—NR^6R^7$,
(xi) —CHO
(xii) $—NR^6COC_{1-6}$alkyl-R^7,
(xiii) $—NR^6CO_2C_{1-6}$alkyl-R^7,
(xiv) $—NR^6CONR^6R^7$,
(xv) $—OCONR^6R^7$,
(xvi) $—CONR^6R^7$,
(d) halogen,
(e) $—NR^6R^7$,
(f) —CN,
(g) —CHO,
(h) $—CF_3$,
(i) $—SR^8$, wherein R^8 is hydrogen, C_{1-6}alkyl, trifluoromethyl, or phenyl,
(j) $—SOR^8$,
(k) $—SO_2R^8$,
(l) $—CONR^6R^7$,
(m) $R^9O(CH_2)_m—$wherein R^9 is hydrogen, C_{1-6}alkyl, hydroxy-C_{2-3}alkyl, $—CF_3$, phenyl, R^{11} or naphthyl and m is 0, 1, 2, or 3,
(n) $—CH(OR^{12})(OR^{13})$, wherein R^{12} and R^{13} are C_{1-3}alkyl or taken together form an ethyl or propyl bridge,
(o)



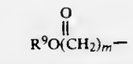
wherein R^9 and m are as defined above,
(p)



wherein R^9 and m are as defined above, and
(q) $—R^{11}$;
or any two of X, Y and Z may be joined to form a saturated ring having 5, 6 or 7 ring atoms, said ring atoms comprising 1 or 2 oxygen atoms, the remaining ring atoms being carbon,
X', Y' and Z' independently are selected from:
(a) hydrogen,
(b) C_{1-7}alkyl,
(c) C_{2-6}alkenyl,
(d) halogen,
(e) $—(CH_2)_m—NR^6R^7$, wherein R^6, R^7 and m are as defined above,
(f) —CN,
(g) —CHO,
(h) $—CF_3$,
(i) $—SR^8$, wherein R^8 is hydrogen, C_{1-6}alkyl, trifluoromethyl, or phenyl,
(j) $—SOR^8$, wherein R^8 is as defined above,
(k) $—SO_2R^8$, wherein R^8 is as defined above,
(l) $—CONR^6R^7$, wherein R^6 and R^7 are as defined above,
(m) $R^9O(CH_2)_m—$wherein R^9 and m are as defined above,
(n) $—CH(OR^{12})(OR^{13})$, wherein R^{12} and R^{13} are as defined above,
(o)



wherein R^9 and m are as defined above,
(p)



wherein R^9 and m are as defined above, and
(q) $—R^{11}$;
n is 1 or 2.

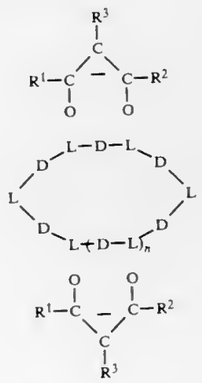
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VOLATILE CROWN LIGAND BETA-DIKETONATE ALKALINE EARTH METAL COMPLEXES

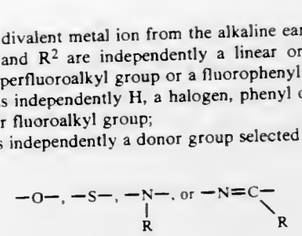
John A. T. Norman, Whitehall, and Guido P. Pez, Allentown, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jun. 5, 1990, Ser. No. 534,811
Int. Cl.[5] **C07D** *225/00, 323/00*
U.S. Cl. 540—465 **11 Claims**

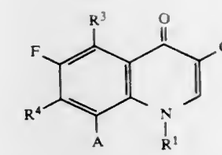
1. A volatile, divalent metal β-diketonate complex represented by the structural formula:



wherein:
M^{+2} is a divalent metal ion from the alkaline earth series;
each R^1 and R^2 are independently a linear or branched C_1–C_4 perfluoroalkyl group or a fluorophenyl group;
each R^3 is independently H, a halogen, phenyl or a C_1–C_4 alkyl or fluoroalkyl group;
each D is independently a donor group selected from

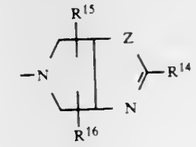


wherein R is H or C_1–C_4 alkyl;
L is $(CR_2)_x$ wherein each R is independently H or C_1–C_4 alkyl and x is an integer from 1 to 4, or L is part of a cyclic aromatic or aliphatic ring; and
n is an integer from 1 to 3.

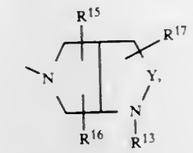


(I)

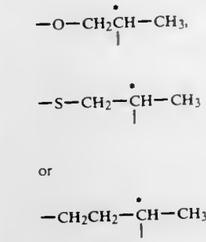
in which
R^1 represents straight-chain or branched C_1–C_4-alkyl which is optionally substituted by hydroxyl, halogen, C_1–C_3-alkoxy or C_1–C_3-alkylthio, C_3–C_6-cycloalkyl which is optionally substituted by halogen or C_1–C_3-alkyl, C_2–C_4 alkenyl, and in addition C_1–C_3-alkoxy, amino, monoalkylamino having 1–3 C atoms, dialkylamino having 2–6 C atoms or phenyl which is optionally substituted by halogen,
R^2 represents hydrogen, alkyl having 1 to 4 carbon atoms or (5-methyl-2-oxo-1,3-dioxol-4-yl)-methyl,
R^3 denotes C_1–C_4-alkyl,
R^4 denotes a radical of the structure



or



in which
R^{13} represents H, or C_1–C_3-alkyl, hydroxyethyl, phenyl, benzyl, C_1–C_4-alkoxycarbonyl, C_1–C_4-acyl or (5-methyl-2-oxo-1,3-dioxol-4-yl)-methyl,
R^{14} represents H or C_1–C_4-alkyl,
R^{15} represents H or CH_3 or phenyl,
R^{16} represents H or CH_3 or phenyl,
R^{17} represents H or CH_3,
Y represents O, CH_2, CH_2CH_2 or CH_2—O, where the linking of the CH_2—O group to the nitrogen is via O or via CH_2,
Z represents O or S, and
A represents hydrogen, halogen, methyl, cyano or nitro or, together with R^1, also forms a bridge of the structure



having the R- or S-configuration,
with the exception of the compound 1-cyclopropyl-7-(2,7-

5,252,734

ANTIBACTERIAL 5-ALKYLQUINOLONECARBOXYLIC ACIDS

Michael Schriewer; Klaus Grohe; Andreas Krebs, all of Odenthal; Uwe Petersen, Leverkusen; Thomas Schenke, Bergisch Gladbach; Ingo Haller, Wuppertal; Karl G. Metzger, Wuppertal; Rainer Endermann, Wuppertal, and Hans-Joachim Zeiler, Velbert, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 590,990, Oct. 1, 1990, Pat. No. 5,140,033, which is a continuation-in-part of Ser. No. 499,873, Mar. 27, 1990, abandoned. This application Feb. 5, 1992, Ser. No. 831,778
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1989, 3910663
The portion of the term of this patent subsequent to Aug. 18, 2009, has been disclaimed.
Int. Cl.[5] **C07D** *498/06, 471/04, 513/06;* **C07F** *1/10*
U.S. Cl. 544—64 **3 Claims**

1. A quinolonecarboxylic acid derivative of the formula

VOL 1155 ISS 2 OCT 12 1993 UMI

diazabicyclo-[3.3.0]oct-7-yl)-6-fluoro-1,4-dihydro-5-methyl-4-oxo-3-quinolone carboxylic acid,
or a pharmaceutically utilizable hydrate or acid addition salt or an alkali metal, alkaline earth metal, silver or guanidinium salt of the carboxylic acid.

5,252,735

ANTIATHEROSCLEROTIC AND ANTITHROMBOTIC 2-AMINO-6-PHENYL-4H-PYRAN-4-ONES

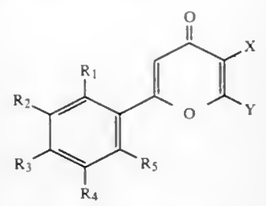
Joel Morris, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 545,935, Jun. 29, 1990, abandoned. This application Feb. 25, 1992, Ser. No. 842,020

Int. Cl.[5] **C07D** *309/38, 405/04*

U.S. Cl. 544—121 **7 Claims**

1. A compound of Formula I



I

or pharmaceutically acceptable salt thereof,
wherein:
X is hydrogen, C_1-C_5 alkyl, or a halogen atom;
Y is selected from the group consisting of
—$(CH_2)_nNR_9R_{10}$ wherein R_9 and R_{10}, are independently selected from the group consisting of
(a) hydrogen;
(b) C_1-C_{12} alkyl;
(c) phenyl optionally substituted with one, 2 or 3 C_1-C_4 alkyl, C_1-C_4 alkoxy, halo, OH, trifluoromethyl or —CO_2(C_1-C_4 alkyl);
(d)—$(CH_2)_q$phenyl wherein phenyl is optionally substituted with one, 2 or 3 C_1-C_4 alkyl, C_1-C_4 alkoxy, halo, OH, trifluoromethyl or —CO_2(C_1-C_4alkyl);
(e) —$(CH_2)_n$pyridinyl; or
(f) wherein R_9 and R_{10}, taken together with N, form a saturated or unsaturated heterocyclic amine ring selected from the group consisting of
(aa) 4-morpholine optionally substituted with one or two members selected from the group consisting of C_1-C_4 alkyl, C_1-C_4 alkoxy, halo or trifluoromethyl,
(bb) 4-thiomorpholine optionally substituted with one or two members selected from the group consisting of C_1-C_4 alkyl, C_1-C_4alkoxy, halo or trifluoromethyl,
(cc) 3-amino-1-pyrrolidine,
(dd) 1-pyrrolidine optionally substituted with one or two members selected from the group consisting of C_1-C_4 alkyl, C_1-C_4 alkyl, halo, OH, —CH_2OH, or trifluoromethyl,
(ee) 1-piperidine optionally substituted with one or two members selected from the group consisting of C_1-C_4 alkyl, C_1-C_4 alkoxy, halo, trifluoromethyl, —(CH_2)qOH, —CO_2H, —CO_2CH_3, —$CO_2CH_2CH_3$ or phenyl (wherein phenyl is optionally substituted with one, 2 or 3 C_1-C_4 alkyl, C_1-C_4 alkoxy, halo or trifluoromethyl),
(ff) 1-piperazine, 4-methyl-1-piperazine, 4-(cycloC_3-C_6alkyl)-1-piperazine, 4-phenyl-1-piperazine (wherein phenyl is optionally substituted with one, 2 or 3 C_1-C_4 alkyl, C_1-C_4 alkoxy, halo or trifluoromethyl) or 4-pyridinyl-1-piperazine optionally substituted with one or two members selected from the group consisting of C_1-C_4 alkyl, C_1-C_4 alkoxy, halo, OH, trifluoromethyl, —CH_2OH, —CO_2H, —CO_2CH_3 or —$CO_2CH_2CH_3$, and
(gg) thiazolidine, thiazolidine-4-carboxylic acid, pipecolinic acid, p-piperazinacetophenone, 1-piperazine, 1-methylpiperazine, 4-phenyl-1,2,-3,6-tetrahydropyridine, proline, tetrahydrofurylamine, 1-(3-hydroxy)pyrrolidine, nipecotamide, 1,2,3,4-tetrahydroisoquinoline or imidazole;
R_1, R_2, R_3, R_4 and R_5 are independently selected from the group consisting of: hydrogen,
C_1-C_8 alkyl,
—$(CH_2)_n$phenyl (wherein phenyl is optionally substituted with one, 2 or 3 C_1-C_4 alkyl, C_1-C_4 alkoxy, halo, OH, trifluoromethyl or —CO_2(C_1-C_4alkyl)),
—$(CH_2)_n$naphthyl,
—$(CH_2)_n$pyridinyl,
—$(CH_2)_qNR_9R_{10}$,
—CH=CH-phenyl (wherein phenyl is optionally substituted with one, 2 or 3 C_1-C_4 alkyl, C_1-C_4 alkoxy, halo, OH, trifluoromethyl or —CO_2(C_1-C_4alkyl)),
—CH_2—CH=CH_2,
—CH=CH—CH_3,
—O—CH_2—CH=CH_2,
—C≡C-phenyl (wherein phenyl is optionally substituted with one, 2 or 3 C_1-C_4 alkyl, C_1-C_4 alkoxy, halo, OH, trifluoromethyl or —CO_2(C_1-C_4alkyl)),
—O(CH_2)p(N-methylpiperdin-3-yl),
—O—(CH_2)pNR_9R_{10},
—O—$CH_2CH(0CH_3)_2$,
—O—(CH_2)pOR_{15} (wherein R_{15} is selected from C_1-C_5 alkyl, —$(CH_2)_n$phenyl (phenyl optionally substituted with one, 2 or 3 C_1-C_4 alkyl, C_1-C_4 alkoxy, halo, OH, trifluoromethyl or —CO_2(C_1-C_4alkyl)),
—$(CH_2)_n$pyridin-yl or —$(CH_2)_p$piperidin-1-yl,
—$(CH_2)_nC(O)$—$(CH_2)_nR_9$,
—$(CH_2)_nC(O)O$—$(CH_2)_nR_9$,
—$(CH)_nC(O)O$—$(CH_2)_pNR_9R_{10}$,
—$(CH_2)_nC(O)(CH_2)_nNR_9R_{10}$,
NO_2,
—O—$(CH_2)_nC(O)$—$(CH_2)_nR_9$,
—O—$(CH_2)_nC(O)O$—$(CH_2)_nR_9$,
—O—$(CH_2)_nC(O)$—$(CH_2)_nNR_9R_{10}$,
—NR_9R_{10},
—$N(R_9)(CH_2)_nC(O)$—$(CH_2)_nR_{10}$,
—$N(R_9)$—$(CH_2)_nC(O)O$—$(CH_2)_nR_{10}$,
$N(R_9)(CH_2)_nC(O)$—$(CH_2)_nNR_9R_{10}$,
—$OCH(C_4H_9)$phenyl,
—O—$(CH_2)_n$phenyl (wherein phenyl is optionally substituted with one, 2 or 3 C_1-C_4 alkyl, C_1-C_4 alkoxy, halo, OH, trifluoromethyl or —CO_2(C_1-C_4alkyl)),
—O—$(CH_2)_n$pyridine,
—O$(CH_2)_nC(O)$—$(CH_2)_n$pyridine,
—O—$(CH_2)_nC(O)O$—$(CH_2)_n$pyridine,
—O$(CH_2)_nC(O)$—$N(R_9)(CH_2)_n$pyridine,
—O—$(CH_2)_n$quinoxalinyl,
—O—$(CH_2)_n$quinolinyl,
—O—$(CH_2)_n$pyrazinyl,
—O—$(CH_2)_n$naphthyl,
—O—$(CH_2)_nC(O)$—$(CH_2)_n$naphthyl,
—O—$(CH_2)_nC(O)O$—$(CH_2)_n$naphthyl,
—O—$(CH_2)_nC(O)NR_9$—$(CH_2)_n$naphthyl,
halo,
OH,
—$(CH_2)_q$—OH,
$(CH_2)_qOC(O)R_9$,
—$(CH_2)_qOC(O)$—NR_9R_{10},
-(1-cyclohexyl-1H-tetrazol-5-yl)C_1-C_4 alkoxy,
-(1-(C_1-C_5alkyl)-1H-tetrazol-5-yl)C_1-C_4 alkoxy,
-(1-(phenyl)-1H-tetrazol-5-yl) C_1-C_4 alkoxy (wherein phenyl is optionally substituted with one, 2 or 3 C_1-C_4 alkyl, C_1-C_4 alkoxy, halo, OH, trifluoromethyl or —CO_2(C_1-C_4alkyl)),
-(1-(pyridinyl)-1H-tetrazol-5-yl)C_1-C_4 alkoxy,
-(1-(1-phenylethyl)-1H-tetrazol-5-yl)C_1-C_4 alkoxy,
-C_1-C_4 alkoxyl;
n is 0–5;
p is 2–5; and
q is 1–5.

5,252,736

SUBSTITUTED IMIDAZOLYL-ALKYL-PIPERAZINE AND -DIAZEPINE DERIVATIVES

Jean C. Pascal, Cachan, France; Chi-Ho Lee, Palo Alto, Calif.; Brian J. Alps, Linlithgow, Scotland; Henri Pinhas, Paris, France, and Roger L. Whiting, Los Altos, Calif., assignors to Syntex Pharmaceuticals, Ltd., Maidenhead, England

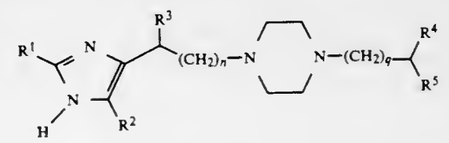
Continuation of Ser. No. 652,141, Feb. 7, 1991, Pat. No. 5,091,428, which is a division of Ser. No. 505,379, Apr. 6, 1990, Pat. No. 5,010,075, which is a division of Ser. No. 313,656, Feb. 21, 1989, Pat. No. 4,935,417, which is a division of Ser. No. 42,181, Apr. 24, 1987, Pat. No. 4,829,065. This application Nov. 7, 1991, Ser. No. 789,230

The portion of the term of this patent subsequent to Feb. 25, 2009, has been disclaimed.

Int. Cl.[5] **A61K** *31/495;* **C07D** *403/02*

U.S. Cl. 544—370 **7 Claims**

1. A compound of the formula:



wherein:
R^1 is aryl;
R^2 is methyl;
R^3 is hydrogen;
R^4 and R^5 are independently aryl or hydrogen; and
n and q are 0;
where aryl is phenyl, optionally mono-, di-, or tri-substituted with lower alkyl, lower alkoxy, hydroxy, trifluoromethyl, or halo;
or a pharmaceutically acceptable salt thereof.

5,252,737

PROCESS FOR PREPARING N-ALIPHATIC SUBSTITUTED P-PHENYLENEDIAMINES

Michael K. Stern, University City, and Brian K-M. Cheng, St. Charles, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed May 22, 1992, Ser. No. 887,981

Int. Cl.[5] **C07C** *209/00, 209/36*

U.S. Cl. 544—392 **66 Claims**

1. A process for preparing N-aliphatic substituted p-phenylenediamine intermediates comprising:
(a) contacting an aliphatic amine or substituted aliphatic amine derivative and nitrobenzene in the presence of a suitable solvent system, and
(b) reacting the aliphatic amine or substituted aliphatic amine derivative and nitrobenzene in the presence of a suitable base and a controlled amount of protic material at a suitable temperature in a confined reaction zone.

5,252,738

PROCESS FOR THE PREPARATION OF RACEMIC AND OPTICALLY ACTIVE 1,2,3,4-TETRAHYDROISOQUINOLINE-3-CARBOXYLIC ACID AND ITS PRECURSORS

Berahard Kammermeier, Frankfurt am Main, and Ulrich Lerch, Hofheim am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

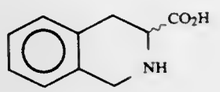
Filed Jan. 21, 1992, Ser. No. 822,930

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1991, 4102017

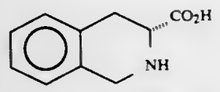
Int. Cl.[5] **C07D** *217/26*

U.S. Cl. 546—147 **4 Claims**

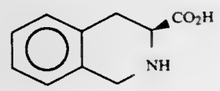
1. A process for the preparation of a compound of the formula I, Ia or Ib



I

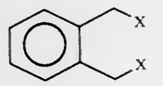


Ia



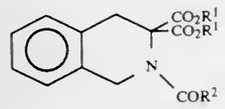
Ib

which comprises
a_1) cyclizing a compound of the formula IVa or IVb



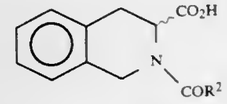
IVa: X = Cl
IVb: X = Br

with dialkyl N-acylamidomalonates of the formula $(CO_2R^1)_2CHNHCOR^2$ in which
R^1 is (C_1-C_4)-alkyl, and
R^2 is H, (C_1-C_4)-alkyl or (C_6-C_{12})-aryl,
in basic medium to give compounds of the formula II



II

in which R^1 and R^2 are as defined above,
decarboxylating the compounds of the formula II thus obtained by basic hydrolysis and subsequent acid work-up to give compounds of the formula III



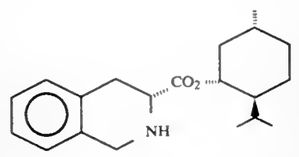
III

and then reacting in acid medium to give the compound of the formula I, or
if desired reacting the racemic compounds of the formula I

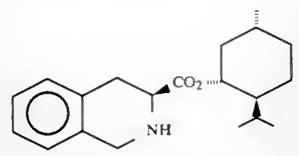
VOL 1155 ISS 2 OC 12 1993 UMI

b_1) with (−)menthol and p-toluenesulfonic acid to give a diastereomer pair of the formulae Va and Vb

Va



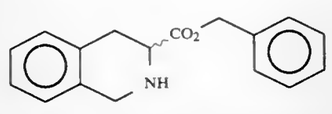
Vb



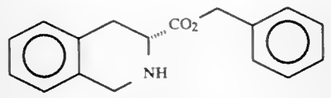
then separating the diastereomers by column chromatography and hydrolyzing by means of a base to give the compounds of the formulae Ia and Ib or

b_2) esterifying the compound of the formula I by means of benzyl alcohol and p-toluenesulfonic acid to give the compound of the formula VI

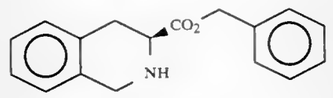
VI



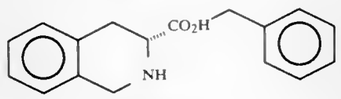
reacting the compound of the formula VI with D(−)mandelic acid to give the compounds of the formulae VIIa and VIIb or with L(+)mandelic acid to give the compounds of the formulae VIIIa and VIIIb



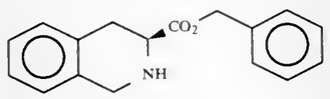
•D(−) mandelic acid



•D(−) mandelic acid



•L(+) mandelic acid



•L(+) mandelic acid

then separating the compounds of the formulae VIIa and VIIb or VIIIa and VIIIb into optical antipodes by fractional crystallization in an inert solvent, and liberating the compounds of the formulae Ia and Ib by basic hydrolysis, the chiral mandelic acid being recovered.

5,252,739

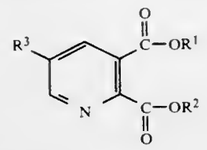
PROCESS FOR PREPARING PYRIDINE-2,3-DICARBOXYLIC ACID COMPOUNDS

Takaharu Yamashita, and Mitsubiro Kodama, both of Wakayama, Japan, assignors to Sugai Chemical Ind. Co., Ltd., Japan

Division of Ser. No. 646,958, Jan. 9, 1991, Pat. No. 5,175,300, which is a continuation of Ser. No. 445,621, Dec. 29, 1989, abandoned. This application Feb. 3, 1992, Ser. No. 829,260
Claims priority, application Japan, Mar. 18, 1988, 63-66772
Int. Cl.[5] C07D *213/08, 213/80*
U.S. Cl. 546—250 **6 Claims**

I. A process for preparing pyridine-2,3-dicarboxylic acid compounds of the formula (I):

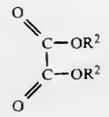
(1)



wherein R^1 and R^2 are, identical or different, each a lower alkyl group, and R^3 is a hydrogen atom or a lower alkyl group, which comprises, reacting a compound of the formula (5):

(5)

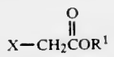
VIIa



wherein R^2 is the same as defined above, with a compound of the formula (6):

VIIb

(6)

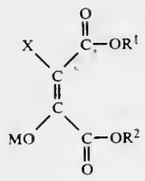


wherein R^1 is the same as defined above, and X is a halogen atom, in an aprotic solvent, in the presence of an alkali metal or

VIIIa a basic alkali metallic salt and at a temperature of from room temperature to about 60° C. to give a compound of the formula (7):

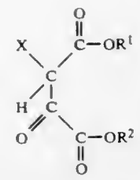
(7)

VIIIb



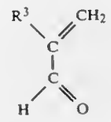
wherein R^1, R^2 and X are the same as defined above and M is an alkali metal, then reacting the compound of formula (7) with an acid at room temperature to give a compound of the formula (3):

(3)



wherein R^1, R^2 and X are the same as defined above, and then, reacting, at a temperature of from about 10° C. to 200° C., the compound of formula (3) with a compound of the formula (4):

(4)



wherein R^3 is the same as defined above, and ammonia.

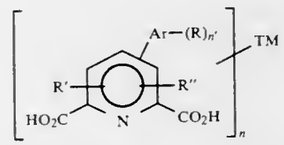
5,252,740

FLUORESCENT POLY(ARYLPYRIDINE) RARE EARTH CHELATES

Ron L. Hale, Woodside, and Dennis W. Solas, San Francisco, both of Calif., assignors to Baxter Diagnostics Inc., Deerfield, Ill.

Continuation of Ser. No. 339,287, May 19, 1989, Pat. No. 5,116,989, which is a division of Ser. No. 118,292, Nov. 6, 1987, Pat. No. 5,032,677. This application Oct. 2, 1991, Ser. No. 769,971
Int. Cl.[5] C07D *213/79, 213/02*
U.S. Cl. 546—263 **9 Claims**

I. A poly (arylpyridine) ligand comprising a plurality of substituted arylpyridine diacid units covalently attached to a central template structure having the structural formula:



wherein Ar is an aryl; TM is the central template structure, said central template structure having a plurality of attachment sites for covalently attaching the plurality of substituted arylpyridine diacid units and wherein TM is selected from the group consisting of 1) a covalently bonded organic molecule containing hydrocarbons and optionally containing a heteroatom selected from the group consisting of oxygen, nitrogen and sulfur and having at least one aromatic unit and 2) a covalently bonded organic aliphatic molecule containing hydrocarbons and optionally containing a heteroatom selected from the group consisting of oxygen, nitrogen and sulfur; n is an integer from 2 to 6 inclusive, n′ is an integer equal to the number of available covalent bonding sites in Ar; and R, R′ and R″ are independently selected from hydrogen and electron-releasing groups selected from the group of electron-releasing groups consisting of lower alkoxy, lower alkyl amino, di lower alkyl amino, aryl and aryloxy, and wherein TM provides at least three total and up to about twenty total atoms between adjacent substituted arylpyridine diacid units.

5,252,741

PROCESSES FOR THE SYNTHESIS OF IMINES, ALDEHYDES, AND UNSYMMETRICAL SECONDARY AMINES

Gerald L. Goe, Greenwood; James G. Keay, Indianapolis; Eric F. V. Scriven, Greenwood, all of Ind.; Michael L. Prunier, Vernon, Ill., and Steven J. Quimby, Carmel, Ind., assignors to Reilly Industries, Inc., Indianapolis, Ind.

Continuation of Ser. No. 565,956, Aug. 10, 1990, abandoned. This application Apr. 20, 1992, Ser. No. 871,084
Int. Cl.[5] C07D *213/24*
U.S. Cl. 546—329 **12 Claims**

1. A process for preparing an imine composition comprising the step of:

hydrogenating a mixture of a 3-cyanopyridine and a primary amine in the presence of a rhodium-loaded hydrogenation catalyst.

5,252,742

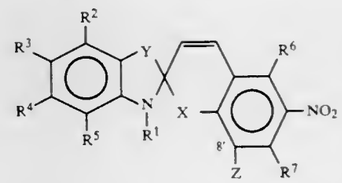
SPIROPYRAN COMPOUNDS

Akira Miyashita, Ageo, Japan, assignor to Otsuka Kagaku Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 602,234, Oct. 26, 1990, abandoned. This application Jan. 29, 1993, Ser. No. 13,171
Claims priority, application Japan, Feb. 28, 1989, 1-48944; Feb. 28, 1989, 1-48945
Int. Cl.[5] C07D *293/10, 209/96*
U.S. Cl. 548—121 **12 Claims**

1. A spiropyran compound represented by the formula

(I)



wherein R^1 is alkyl having 1 to 20 carbon atoms or aralkyl, R^2, R^3, R^4 and R^5 are the same or different and are each a hydrogen atom, alkyl having 1 to 6 carbon atoms, aryl or aralkyl, alkoxyl having 1 to 5 carbon atoms, halogen atom, cyano, trichloromethyl, trifluoromethyl or nitro, R^6 and R^7 are the same or different and are each a hydrogen atom, alkyl having 1 to 6 carbon atoms, aryl or aralkyl, halogen atom, cyano or nitro, X is an oxygen atom or sulfur atom, Y is Se or $(CH_3)_2C<$, Z is

$$-CH_2OC(=O)C(CH_3)=CH_2,$$

and X is a sulfur atom when Y is $(CH_3)_2C<$.

5,252,743

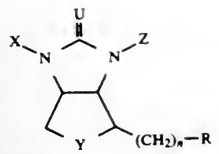
SPATIALLY-ADDRESSABLE IMMOBILIZATION OF ANTI-LIGANDS ON SURFACES

Ronald W. Barrett, Sunnyvale, Calif.; Michael C. Pirrung, Durham, N.C.; Lubert Stryer, Stanford, Calif.; Christopher P. Holmes, Sunnyvale, Calif., and Steven A. Sundberg, San Francisco, Calif., assignors to Affymax Technologies N.V., Netherlands

Continuation-in-part of Ser. No. 435,316, Nov. 13, 1989, abandoned. This application Nov. 13, 1990, Ser. No. 612,671
Int. Cl.[5] C07D *495/04, 491/048, 235/02*
U.S. Cl. 548—303.7 **15 Claims**

1. A caged binding member compound having the formula:

VOL 1155 ISS 2 OCT 12 1993 UMI



wherein X and Z are selected from the group consisting of hydrogen and oxycarbonyls of lower alkyl, aryl, and benzyl groups, provided that when X is hydrogen, Z is not hydrogen or methyloxycarbonyl, and provided that when Z is hydrogen, X is not hydrogen or methyloxycarbonyl; R is selected from the group consisting of hydrogen, lower alkyl, aryl, lower alkyl formate, aryl formate, formamide, N-alkylformamide, N-succinimidyl, hydroxyl, alkoxyl, thiol, thioether, disulfide, hydrazide and amine groups, provided that when X or Z is methyloxycarbonyl, R is not methyl formate; U is O, S, or NH; Y is selected from the group consisting of sulfur oxygen, methylene, carbonyl, sulfinyl and sulfonyl groups or Y represents two hydrogen atoms attached to the respective carbons; n=1–7; and acid addition salts of the compound.

5,252,744

PROCESS FOR PREPARING METHYLOLHYDANTOINS

Thomas E. Farina, Flemington, N.J., and Douglas A. Burg, Easton, Pa., assignors to Lonza Inc., Annandale, N.J.

Filed May 21, 1992, Ser. No. 887,356

Int. Cl.[5] **C07D** *233/74, 233/78*

U.S. Cl. 548—317.1 **23 Claims**

1. A method for producing solid anhydrous methylolhydantoin comprising:

(a) dehydrating and heating an aqueous stirrable medium to yield a substantially anhydrous stirrable melt, said aqueous stirrable medium comprising:

(A) a solute selected from the group consisting of

(i) dimethyloldimethylhydantoin,

(ii) a hydantoin reactant,

(iii) a formaldehyde source reactant, or

(iv) a combination of any of the foregoing; and

(B) optionally a catalyst;

(b) providing a molten system by adding to said stirrable melt, a reactant mixture comprising:

(A) (i) the same or a different hydantoin reactant,

(ii) a substantially anhydrous formaldehyde source reactant which may be the same as or different than said formaldehyde source reactant, or

(iii) a combination thereof; and

(B) optionally, the same or a different catalyst;

wherein said molten system includes (i) at least one hydantoin reactant and (ii) at least one dehydrated formaldehyde source reactant or substantially anhydrous formaldehyde source reactant;

(c) reacting (i) said at least one hydantoin reactant and (ii) said at least one dehydrated formaldehyde source reactant or substantially anhydrous formaldehyde source reactant in said molten system, while removing reaction water, to yield anhydrous molten methylolhydantoin; and

(d) solidifying said molten methylolhydantoin.

5,252,745

PREPARATION AND USE OF IODOPROPARGYL ESTERS OF α-AMINO ACID DERIVATIVES AS ANTIMICROBIAL AGENTS

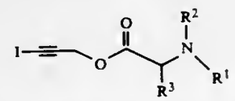
Margaret M. Bowers-Daines, Blue Bell, and Barry C. Lange, Lansdale, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 398,867, Aug. 25, 1989, abandoned. This application May 21, 1991, Ser. No. 704,906

Int. Cl.[5] **C07C** *229/00*

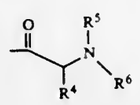
U.S. Cl. 548—479 **3 Claims**

1. Compounds of the formula



(I)

wherein R^1 is a radical which forms an amide, carbamate, enamine, or aminoacetal with the nitrogen to which it is attached or is selected from the group consisting of H, an amine protective group selected from the group consisting of amide, carbamate, imine, enamine, aminoacetal, alkyl, benzyl, sulfenyl, sulfonyl, and a moiety of the formula



(II)

wherein

R^2, R^5, and R^6 are independently selected from H, and an amine protective group selected from the group consisting of amide, carbamate, imine, enamine, aminoacetal, alkyl, benzyl, sulfenyl, sulfonyl, or a radical which forms an amide, carbamate, enamine, or aminoocetal with the nitrogen to which it is attached

R^3 and R^4 are independently selected from H, lower alkyl, aryl, arylalkyl, CH_2OR, CH_2SR and $CH(CH_3)OR$;

R=H, propargyl, lower alkyl, arylalkyl or aryl;

wherein R^1 and R^2 or R^5 and R^6 can be joined to form a ring; and wherein when R^1 and R^2 or R^5 and R^6 are both H, the compound is either in free base form or in salt form said compound is selected from the group consisting of N-t-butoxycarbonyl glycine iodopropargyl ester; N-t-butoxycarbonyl-L-alanine iodopropargyl ester; N-t-butoxycarbonyl-O-benzyl-L-serine iodopropargyl ester; N-t-butoxycarbonyl-S-benzyl-L-cysteine iodopropargyl ester; N-t-butoxycarbonyl-O-benzyl-L-threonine iodopropargyl ester; N-t-butoxycarbonyl-S-propargyl-L-cysteine iodopropargyl ester; glycine iodopropargyl ester trifluoroacetate; L-alanine iodopropargyl ester trifluoroacetate; O-benzyl-L-serine iodopropargyl ester trifluoroacetate; S-benzyl-L-cysteine iodopropargyl ester trifluoroacetate; O-benzyl-L-threonine iodopropargyl ester trifluoroacetate; N-t-butoxycarbonyl-L-alanylglycine iodopropargyl ester; N-t-butoxycarbonyl-L-alanyl-L-alanine iodopropargyl ester; N-t-butoxycarbonyl-L-alanyl-O-benzyl-L-serine iodopropargyl ester; N-t-butoxycarbonyl-L-alanyl-S-benzyl-L-cysteine iodopropargyl ester; N-t-butoxycarbonyl-L-alanyl-O-benzyl-L-threonine iodopropargyl ester; L-alanylglycine iodopropargyl ester trifluoroacetate; L-alanyl-L-alanine iodopropargyl ester trifluoroacetate; L-alanyl-O-benzyl-L-serine iodopropargyl ester trifluoroacetate; L-alanyl-S-benzyl-L-cysteine iodopropargyl ester trifluoroacetate; L-alanyl-O-benzyl-L-threonine iodopropargyl ester trifluoroacetate; L-alanine iodopropargyl ester; L-cysteine trifluoroacetate; N-t-butoxycarbonyl-D-alanine iodopropargyl ester; D-alanine iodopropargyl ester trifluoroacetate; N-t-butoxycarbonyl-D-alanyl-D-alanine iodopropargyl ester; N-t-butoxycarbonyl-D-alanyl-L-alanine iodopropargyl ester; N-t-butoxycarbonylglycyl-L-alanine iodopropargyl ester; N-acetylglycine iodopropargyl ester; N-benzoylglycine iodopropargyl ester; N-phthaloylglycine iodopropargyl ester; N-benzyloxycarbonylglycine iodopropargyl ester; N-formylglycine iodopropargyl ester; N-propionylglycine iodopropargyl ester; N-octanoylglycine iodopropargyl ester; N-sorboylglycine iodopropargyl ester.

5,252,746

PROCESS FOR THE PREPARATION OF INSECTICIDAL, NEMATICIDAL AND ACARICIDAL 2-HALO-3-SUBSTITUTED-5-ARYLPYRROLE COMPOUNDS

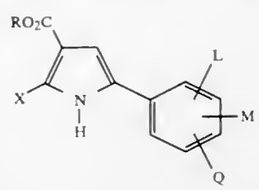
Gregory T. Lowen, Durham, N.C., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 783,739, Oct. 28, 1991, Pat. No. 5,122,615, which is a division of Ser. No. 625,738, Dec. 11, 1990, Pat. No. 5,101,042. This application Mar. 30, 1992, Ser. No. 859,796

Int. Cl.[5] **C07D** *207/30*

U.S. Cl. 548—531 **2 Claims**

1. A compound having the structural formula



wherein

X is Cl or Br;

R is hydrogen or C_1–C_4 alkyl;

L is hydrogen, F, Cl or Br;

M and Q are each independently hydrogen, F, Cl, Br, I, CN, NO_2, CF_3, C_1–C_3 alkyl, C_1–C_3 alkoxy, C_1–C_3 alkylsulfonyl, C_1–C_3 alkylsulfinyl, C_1–C_3 alkylthio or R^2CF_2Z;

Z is S(O)n or O;

n is an integer of 1 or 2; and

R^2 is hydrogen, F, CHF_2, CHFCl or CF_3.

5,252,747

CHIRAL QUINOLONE INTERMEDIATES

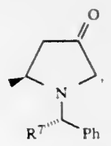
Daniel T. Chu, Downers Grove, and Qun Li, Gurnee, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Sep. 11, 1992, Ser. No. 943,946

Int. Cl.[5] **C07C** *101/04, 121/43;* **C07D** *207/24, 207/14, 207/12*

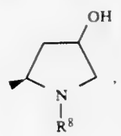
U.S. Cl. 548—541 **11 Claims**

3. A compound having the formula



wherein Ph is phenyl and R^7 is selected from the group consisting of hydrogen and methyl.

4. A compound having the formula



wherein R^8 is selected from the group consisting of $-CH_2C_6H_5$ and $-CH(CH_3)C_6H_5$.

5,252,748

RADIOACTIVE IODINE COMPOUND FOR LABELING AN ANTIBODY

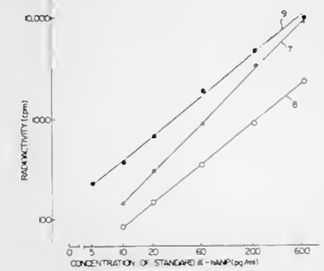
Akira Yamauchi, Minoh; Akira Ueda, Osaka; Masao Kono, Ibaraki; Kenichi Igano, Nara, and Ken Inouye, Kobe, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Dec. 2, 1991, Ser. No. 801,810

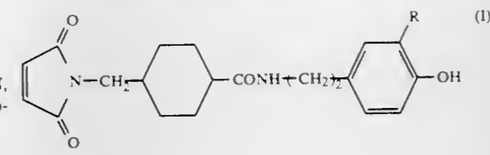
Claims priority, application Japan, Nov. 30, 1990, 2-338871

Int. Cl.[5] **C07D** *207/448;* **C07K** *3/08;* **C12Q** *1/66;* **C12N** *9/96*

U.S. Cl. 548—546 **4 Claims**



1. A compound represented by the following formula (I):



(I)

wherein R is H or ^{125}I.

5,252,749

ETHERS OF THIENOCYCLOPENTANONE OXIMES, THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Alain Badorc; Jean Courregelongue, both of Portet; Daniel Ducros, St. Orens de Gameville; Daniel Frehel, Toulouse, all of France; Antonina Giudice, Milan, Italy, and Claudine Serradeil-Legal, Toulosan, France, assignors to Elf Sanofi, Paris, France

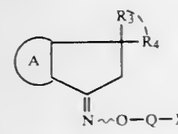
Filed Sep. 23, 1992, Ser. No. 954,530

Claims priority, application France, Sep. 25, 1991, 91 11822

Int. Cl.[5] **C07D** *333/78;* **A61K** *31/15, 31/38*

U.S. Cl. 549—51 **16 Claims**

1. A compound of formula



I

in which A, which is a ring condensed with cyclopentane, represents a thiophene ring, unsubstituted or substituted with one or more groups chosen from (C_1–C_4) alkyl, (C_1–C_4) alkoxy, halo, nitro, hydroxyl and trifluoromethyl,

Q represents a (C_2–C_4) alkylene

R_1 and R_2, which are identical or different, represent H, (C_1–C_4) alkyl, pyridylethyl, or form, with the nitrogen

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atom to which they are bound, a saturated nitrogenous heterocyclic ring containing 5 to 7 atoms, optionally containing a heteroatom O, S or N, substituted or unsubstituted with (C_1-C_4) alkyl or phenyl,

R_3 and R_4, which are identical or different, represent H, (C_1-C_4) alkyl, (C_4-C_8) cycloalkyl, trifluoromethyl or a phenyl, thienyl or furyl aromatic group, optionally carrying one or more substituents chosen from (C_1-C_4) alkyl, (C_1-C_4) alkoxy, halo, nitro, hydroxyl, trifluoromethyl, trifluoromethoxy, cyano, carboxyl, carbamoyl, N-(C_1-C_4)alkyl or N,N-(C_1-C_4)dialkylcarbamoyl and (C_1-C_4) alkoxycarbonyl, or R_3 and R_4, together with the carbon atom to which they are bound, form a (C_5-C_8) cycloalkyl, and their addition salts with an acid, and their quaternary ammonium derivatives, wherein the formula I represents each geometric isomer of the oxime group and each enantiomer due to the asymmetric carbon atoms or their mixtures in any proportion.

5,252,750

POLYOLEFIN AMINO DERIVATIVES

Mitsuru Hashimoto; Tomoyuki Shimada, both of Numazu; Nobuo Suzuki, Kouriyama; Takayuki Sakai, Tokyo; Susumu Suzuka, Yono, and Masaomi Sasaki, Susono, all of Japan, assignors to Ricoh Company, Ltd. and Hodogaya Chemical Company, Ltd., both of Tokyo, Japan

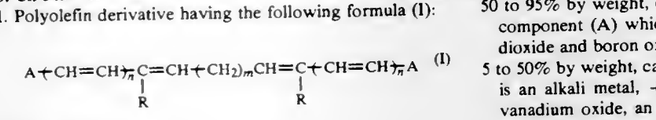
Division of Ser. No. 562,623, Aug. 3, 1990, Pat. No. 5,068,350, which is a division of Ser. No. 245,288, Sep. 16, 1988, Pat. No. 4,965,157. This application Jun. 3, 1991, Ser. No. 709,294

Claims priority, application Japan, Sep. 17, 1987, 62-232894; Sep. 17, 1987, 62-232895; May 27, 1988, 63-131247; May 27, 1988, 63-131248

Int. Cl.[5] C07C *211/54*

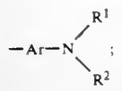
U.S. Cl. 549—59 **13 Claims**

1. Polyolefin derivative having the following formula (I):

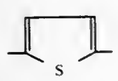


(I)

wherein A represents



wherein Ar represents an arylene group or a divalent thiophene group of the formula



and R^1 represents an alkyl group, an aralkyl group or an aryl group, R^2 represents an aralkyl group or an aryl group, R represents hydrogen, alkyl group, an aralkyl group or an aryl group; m is an integer of 2 to 8; and n is an integer of 0 or 1.

5,252,751

DIPHOSPHINES CONTAINING SILANE GROUPS, IMMOBILISED DIPHOSPHINES AND THE USE THEREOF AS HYDROGENATION CATALYSTS

Benoit Pugin, Münchenstein; Felix Spindler, Starrkirch-Wil, and Manfred Müller, Dagmersellen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

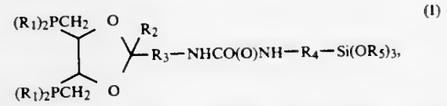
Filed Jan. 21, 1992, Ser. No. 823,516

Claims priority, application Switzerland, Jan. 25, 1991, 218/91

Int. Cl.[5] C07F *7/08, 9/28*

U.S. Cl. 549—214 **8 Claims**

1. A compound of formula



(I)

wherein R_1 denotes identical or different radicals and is linear or branched C_1-C_{12}alkyl, unsubstituted C_5-C_6cycloalkyl or C_5-C_6cycloalkyl which is substituted by C_1-C_4alkyl or C_1-C_4alkoxy, or is phenyl or benzyl, or both substituents R_1 of a group $(R_1)_2P$ are o,o'-diphenylene, R_2 is hydrogen, linear or branched C_1-C_{12}alkyl, phenyl or benzyl, R_3 is C_1-C_{12}alkylene, R_4 is C_2-C_{18}alkylene, phenylene or benzylene, and R_5 is C_1-C_6alkyl or phenyl.

5,252,752

PROCESS FOR THE PRODUCTION OF CARBOXYLIC ANHYDRIDES

Toshinao Aono, Chiba; Yukio Asami; Noboru Hirooka, both of Tokyo; Yusaku Arima, Onga, and Susumu Fujii, Kitakyushu, all of Japan, assignors to Kawasaki Steel Corporation, Japan

Continuation-in-part of Ser. No. 673,962, Mar. 22, 1991, Pat. No. 5,185,309. This application Oct. 16, 1992, Ser. No. 962,982

Claims priority, application Japan, Mar. 27, 1990, 2-77233

Int. Cl.[5] C07D *307/89, 307/60, 493/02;* **B01J** *22/02*

U.S. Cl. 549—249 **3 Claims**

1. A process for producing a carboxylic acid anhydride comprising performing gas phase oxidation of an aromatic hydrocarbon in the presence of a fluid catalyst consisting essentially of:

50 to 95% by weight, calculated as $TiO_2+SiO_2+B_2O_3$, of component (A) which comprises titanium oxide, silicon dioxide and boron oxide and

5 to 50% by weight, calculated as $V_2O_5-M_2O$, wherein M is an alkali metal, $+SO_3$ of component (B) comprising vanadium oxide, an alkali metal oxide and sulfuric acid anhydride, wherein the weight ratios of B_2O_3 to TiO_2 and SiO_2 to TiO_2 in said component (A) are in the range of 0.02 to 0.5 and 0.25 to 1.0, respectively, and wherein the weight ratios of SO_3 to M_2O and M_2O to V_2O_5 in said component (B) are in the range of 0.1 to 6.0 and 0.1 to 5.0, respectively,

wherein said V_2O_5 in the catalyst is in the range of from 1 to 30% by weight,

and wherein said catalyst is prepared by using a titanium oxide source capable of forming titanium oxide having a crystallite diameter of not more than 30 nm when dried at a temperature of about 300° C.,

and wherein said catalyst is prepared by a process which comprises the steps of

(a) mixing compounds as respective sources of titanium oxide, silicon dioxide, boron oxide, vanadium oxide, alkali metal oxide and sulfuric acid anhydride, simultaneously or at an optional timing,

(b) spray drying the resulting mixture of step (a) and

(c) calcinating the spray dried powder of step (b).

5,252,753

PROCESS FOR THE PREPARATION OF CERTAIN SUBSTITUTED BIPHENYL TETRAZOLES AND COMPOUNDS THEREOF

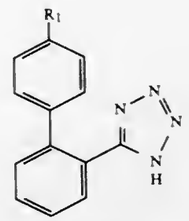
Ronald Russell, Titusville, and William V. Murray, Belle Mead, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Nov. 1, 1991, Ser. No. 786,666

Int. Cl.[5] C07D *257/04*

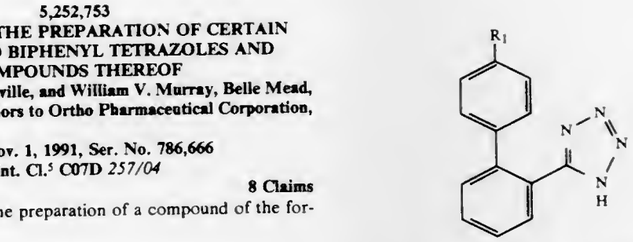
U.S. Cl. 548—252 **8 Claims**

1. A process for the preparation of a compound of the formula I:



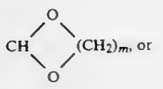
I

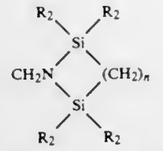
wherein R_1 is any of $CH(OR_2)_2$, CH_2OR_2, $CH_2N[Si(R_2)_3]_2$, $CH-C(R_2)_2$, $C=CR_2$, C_1-C_4 alkyl,



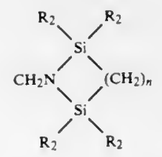
I

wherein R_1 is any of $CH(OR_2)_2$, CH_2OR_2, $CH_2N[Si(R_2)_3]_2$, $CH=C(R_2)_2$, $C=CR_2$,

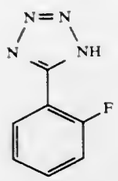




wherein R_2 is C_1-C_3 alkyl, n is 1-3 and m is 2-4.

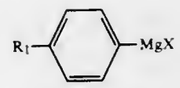


comprising reacting a compound of the formula V:



V

with a reagent of the formula:



wherein X is any of Cl, Br or I, thereby producing the compound of formula I.

6. A compound of the formula I:

5,252,754

FLUORINATED ALDOKETENE DIMER STRUCTURES AND THEIR USE AS COMBINATION OIL AND WATER RESISTANT SIZES FOR CELLULOSIC MATERIALS

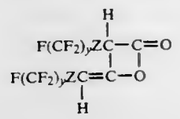
Kyle J. Bottorff, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Nov. 18, 1991, Ser. No. 794,087

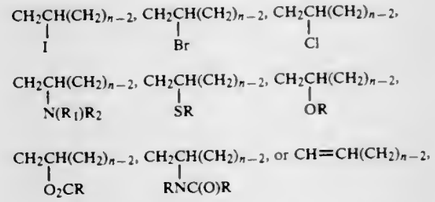
Int. Cl.[5] C07D *305/12*

U.S. Cl. 549—328 **2 Claims**

1. An aldoketene dimer having the structure:



in which y=1-18, $Z=(CH_2)_n$,



in which R, R_1 and R_2 are any alkyl radical, and n is an integer from 3 to 18 inclusive.

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5,252,755

PREPARATION OF 4-HYDROXYMETHYLTETRAHYDROPYRANS

Jochem Henkelmann; Thomas Ruehl, both of Ludwigshafen; Horst Zimmermann, Mannheim; Norbert Goetz; Wolfgang Spiegler, both of Worms, and Thomas Kuekenhoehner, Boehl-Iggelheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

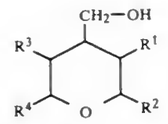
Filed Dec. 14, 1992, Ser. No. 990,268

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1991, 4141222

Int. Cl.[5] **C07D** *309/06*

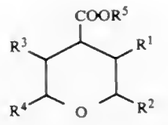
U.S. Cl. 549—427 **3 Claims**

1. A process for the preparation of 4-hydroxymethyltetrahydropyrans of the formula I



(I)

where R^1, R^2, R^3 and R^4 are hydrogen, C_1- to C_{12}-alkyl C_3- to C_8-cycloalkyl, aryl or C_7- to C_{20}-aralkyl, which comprises reacting a tetrahydropyrancarboxylic ester of the formula II



(II)

where R^1, R^2, R^3 and R^4 are as defined above, and R^5 is hydrogen or C_1- to C_{12}-alkyl, at from 50° to 400° C. and at from 1 to 400 bar in the presence of hydrogen and a hydrogenation catalyst.

5,252,756

PROCESS FOR PREPARING BETA-ANOMER ENRICHED 2-DEOXY-2,2-DIFLUORO-D-RIBOFURANOSYL-ARYL-SULFONATES

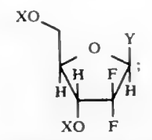
Ta-Sen Chou, and Charles D. Jones, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 22, 1992, Ser. No. 902,143

Int. Cl.[5] **C07D** *307/20*

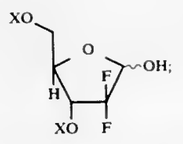
U.S. Cl. 549—476 **11 Claims**

1. A stereoselective process for preparing a beta-anomer enriched ribofuranosyl derivative of the formula



(I)

wherein X each is independently selected from hydroxy protecting groups and Y is selected from the group consisting of arylsulfonate and substituted arylsulfonate; comprising contacting a lactol of the formula



(II)

wherein X is as defined above, with an acid scavenger and a sulfonating reagent in an inert solvent.

5,252,757

DICYANOAZULENYL AND DICYANOVINYL SUBSTITUTED FURAN

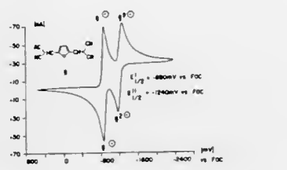
Jorg Daub, Regensburg; Knut M. Rapp, Offstein; Petra Seitz, Straubing; Rainer Wild, Obrigheim, and Josef Salbeck, Regensburg, all of Fed. Rep. of Germany, assignors to Suddeutscbe Zucker-Aktiengesellschaft, Mannheim, Fed. Rep. of Germany

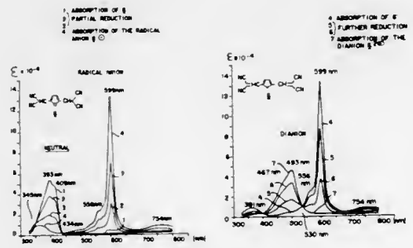
Division of Ser. No. 445,092, Dec. 5, 1989, Pat. No. 5,091,538, which is a continuation-in-part of Ser. No. 195,754, May 19, 1988. This application Jul. 26, 1991, Ser. No. 736,545

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1987, 3718917

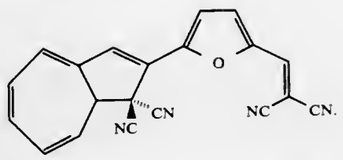
Int. Cl.[5] **C07D** *307/14, 307/42, 307/54*

U.S. Cl. 549—491 **2 Claims**

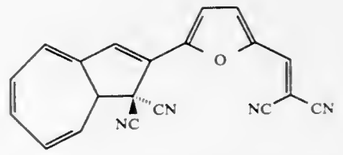




1. A cycloadduct of the formula



2. A process for preparing a cycloadduct of the formula



which comprises reacting 2,2'-(2,5-furandiyldimethylidyne)-bis-propanedinitrile with 8-methoxyheptafulvene in the absence of air to form a tetrahydrozulene, and heating a solution of the tetrahydroazulene in a boiling solvent to eliminate methanol.

5,252,758

PROCESS FOR OXIDIZING ORGANIC COMPOUNDS

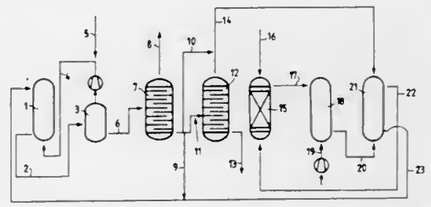
Mario G. Clerici, Via Europa 34, and Patrizia Ingallina, Via Kennedy 26, both of San Donato Milanese Milan, Italy

Filed Nov. 25, 1992, Ser. No. 981,595

Claims priority, application Italy, Nov. 26, 1991, M19-1A003149; Nov. 26, 1991, MI91A003153

Int. Cl.[5] **C07D** *301/12, 303/04;* **C07C** *29/48, 45/27*

U.S. Cl. 549—531 **7 Claims**



1. Process for the oxidation of organic compounds with hydrogen peroxide, said H_2O_2 being produced by means of the redox process with anthraquinone or with its alkyl-derivatives, in the presence of titanium-silicalite, and using, as the solvent, a water-alcohol mixture, in that:

such a water-alcohol mixture, after the preliminary separation of the oxidation product and of the water formed during the reaction, is used again in order to extract the hydrogen peroxide produced in the redox process, and is fed again to the oxidation reaction.

6. Process according to claim 1, which comprises of the oxidation of olefins in order to yield epoxides.

5,252,759

PROCESS FOR PRODUCING OPTICALLY ACTIVE EPOXY ALCOHOL DERIVATIVES

Wilfred P. Shum, West Chester, Pa., assignor to Arco Chemical Technology, L.P., Wilmington, Del.

Filed Jan. 29, 1993, Ser. No. 10,976

Int. Cl.[5] **C07D** *301/00, 301/32, 303/08, 303/16*

U.S. Cl. 549—541 **20 Claims**

1. A process for producing an organic sulfonate derivative of a water-soluble optically active epoxy alcohol comprising contacting an aqueous solution of the water-soluble optically active epoxy alcohol with an organic sulfonyl halide in the presence of a tertiary amine for a time and at a temperature effective to form the organic sulfonate derivative.

2. The process of claim 1 additionally comprising extracting the organic sulfonate derivative into an organic phase.

5,252,760

METHOD OF USING COLORED PHOSPHORYLATING REAGENTS

Michael S. Urdea, Alamo, and Thomas Horn, Berkeley, both of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Continuation-in-part of Ser. No. 891,789, Jul. 30, 1986, abandoned, which is a continuation-in-part of Ser. No. 845,290, Mar. 28, 1986, abandoned, which is a continuation-in-part of Ser. No. 717,206, Mar. 28, 1985, abandoned. This application Aug. 18, 1987, Ser. No. 87,158

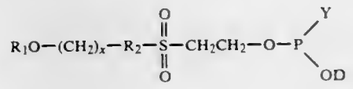
Claims priority, application Japan, Mar. 24, 1986, 61-007385; Canada, Mar. 27, 1986, 504420; European Pat. Off., Mar. 27, 1986, 861042505

Int. Cl.[5] **C07F** *9/09, 9/141, 9/22;* **C07H** *11/04*

U.S. Cl. 552—105 **21 Claims**

1. A method of phosphorylating a nucleoside or an aligonucleotide chain having a free 2', 3' or 5'hydroxyl moiety, and wherein the nucleoside or oligonucleotide chain may be represented as Nu—OH, comprising:

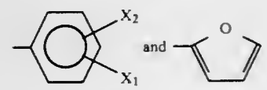
(a) providing a phosphorylating agent having the structure of Formula I



Formula I

wherein

R_1 is a colorimetrically detectable species selected from the group consisting of trityloxyacetyl, substituted or unsubstituted phenoxyacetyl, and RR'R''C— wherein the R, R' and R'' are independently selected from



wherein X_1 and X_2 are selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, halogen, nitro, phenyl, sulfonate, amino substituted with from 0 to 2 lower alkyl or lower akkoxy substituents, and carbon atoms which represent part of an aromatic system having from one to five rings;

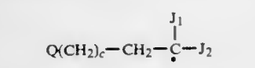
R_2 is selected from the group consisting of methylene, methylene that is mono-substituted with lower alkyl, methylene that is di-substituted with lower alkyl, phenyl, phenyl substituted with lower alkyl, and phenyl substituted with nitro;

Y is selected from the group consisting of amino substituted with from 0 to 2 alkyl groups having from 1 to 6 carbon atoms, halogen and trialkylsilyl of from 3 to 12 carbon atoms;

x is an integer in the range of 1 to 50 inclusive; and

D is selected from the group consisting of

(i) the compound given by the structure



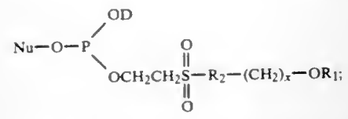
in which J_1 and J_2 are independently selected from the group consisting of hydrogen and alkyl of 1 to 3 carbon atoms, c is 0 or 1, Q is selected from the group consisting of hydrogen, alkyl of from 1 to 9 carbon atoms, nitro, lower alkylsulfonyl, cyano, p-nitrophenyl, lower alkylthio, arylthio and trihalomethyl, and wherein the * represents the point of connection to the remainder of the molecule, and

(ii) phenyl, β-naphthyl, 9-fluorenyl and 2-anthraquinonyl;

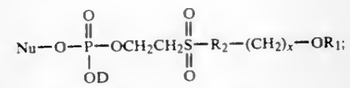
(b) admixing the nucleoside or oligonucleotide chain

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Nu—OH with the phosphorylating agent under conditions effective to convert the free hydroxyl moiety to a phosphite triester having the structural formula



(c) oxidizing the phsophate triester provided in step (b) with an oxidizing agent, to provide a phsophate triester having the structural formula



(d) treating said phosphate triester with an acidic reagent effective to remove said colorimetrically detectable R_1 species; and

(e) colorimetrically evaluating the extent of reaction by monitoring R_1 release.

19. The method of claim **1**, wherein the phosphorylating reagent is (2-cyanoethoxy)-2-(2'-4,4-dimethoxytrityloxyethylsulfonyl)ethoxy-N, N-diisopropylaminophosphine.

5,252,761

SILICONE-DISSOLVING AND SOLUBILIZING AGENTS

Tadashiro Hirose; Yoshihiro Ueda, both of Yokohama, and Yoshiaki Takagi, Kanagawa, all of Japan, assignors to The Nisshin Oil Mills, Ltd., Tokyo, Japan

Filed Dec. 27, 1990, Ser. No. 634,527

Claims priority, application Japan, Jan. 10, 1990, 2-4249

Int. Cl.[5] C07F *7/02*

U.S. Cl. 554—77 **13 Claims**

1. A solution comprising:

at least one branched monoester represented by the general formula:

$$R^1OOR^2 \quad (I)$$

where R^1 is an isoalkyl group having 4 to 17 carbon atoms, and R^2 is an isoalkyl group having 3 to 18 carbon atoms; and

a linear silicone having a viscosity of 100 centistokes or more dissolved in said monoester.

5,252,762

USE OF BASE-TREATED INORGANIC POROUS ADSORBENTS FOR REMOVAL OF CONTAMINANTS

Dean A. Denton, Baltimore, Md., assignor to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Apr. 3, 1991, Ser. No. 679,787

Int. Cl.[5] C11B *7/00*

U.S. Cl. 554—196 **15 Claims**

1. A process for the removal of contaminants, said contaminants being selected from the group consisting of free fatty acids, soaps, phosphorous, metal ions and color bodies from glyceride oil comprising:

(a) selecting a glyceride oil with a free fatty acid content of greater than about 0.01% by weight;

(b) selecting a porous amorphous silica hydrogel support;

(c) treating said support with a base in such a manner that at least a portion of said base is retained in at least some of the pores of the support to yield a base-treated hydrogel adsorbent containing about 30–80 wt. % water;

(d) contacting the glyceride oil of step (a) with the base-treated adsorbent of step (c) for a time sufficient for at least a portion of said free fatty acids to be converted to soaps and for at least a portion of said contaminants to be removed from said glyceride oil; and

(e) separating the contaminant-depleted glyceride oil from the adsorbent.

5,252,763

PROCESS FOR PREPARING PROSTAGLANDIN ANALOGS

Kevin A. Babiak, Evanston; James R. Behling, Lindenhurst; John H. Dygos, Northbrook, and John S. Ng, Chicago, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Continuation of Ser. No. 738,056, Jul. 30, 1991, abandoned, which is a division of Ser. No. 510,349, Apr. 17, 1990, Pat. No. 5,055,604. This application Jul. 8, 1992, Ser. No. 911,334

Int. Cl.[5] C07F *7/18*; **C07C** *61/20*

U.S. Cl. 556—110 **4 Claims**

1. A process for preparing a higher order cuprate complex comprising:

reacting an alkyne with zirconocene chloride hydride to produce an E-alkenyl zirconium intermediate;

reacting the E-alkenyl zirconium intermediate with an alkyllithium and a lower order cuprate reagent selected from $R^2Cu(CN)Li$ or the mixture CUCN and R^2Li to produce a higher order cuprate complex.

5,252,764

PREPARATION OF GOLD (I) MERCAPTIDES

Marion Lotze, Hammersbach, and Margit Bauer, Bunderspulik, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellscbaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 807,231, Dec. 16, 1991, abandoned. This application Dec. 4, 1992, Ser. No. 984,723

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1990, 4040447

Int. Cl.[5] C07C *321/04, 321/00*

U.S. Cl. 556—113 **22 Claims**

1. A method for the preparation of gold(I) mercaptides of the formula Au—S—R, in which R is an organic group and the sulfur atom is bound to an aliphatic, cycloapliphatic or aromatic carbon atom of the organic group, comprising:

(a) reacting a gold(III) halogenide or gold(III) halogen complex with a sulfide in a molar ratio of 1:2 to 1:3 in the presence of an amount of water at least equivalent to the Au(III) compound at −20° to 40° C. to form a gold(I) halogenide- sulfide complex and a sulfoxide of said sulfide,

(b) reacting said gold(I) halogenide sulfide complex at −20° to 40° C., optionally in the presence of an organic solvent or solvent mixture, with a mercaptan of the formula RSH, in which R has the same meaning as in said gold(I) mercaptides, to form a gold(I) mercaptide, and

(c) isolating said gold(I) mercaptide; wherein said sulfide is water soluble and is a (C_1- to C_8-) alkyl mercapto-(C_3- to C_6-) amino acid in which the alkyl mercapto- and the amino group are bound to different C atoms, or a water-soluble salt thereof.

5,252,765

PROCESS FOR PREPARING SULFOPHENYLALKYLSILOXANE OR SULFONAPHTHYLALKYLSILOXANE

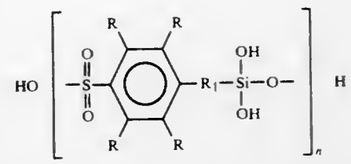
Rudolph E. Lisa, Grosse Ile, Mich.; Klaus Hilligardt, Limburgerhof, and Ulrich M. Kalck, Neuhofen, both of Fed. Rep. of Germany, assignors to BASF Corporation, Parsippany, N.J.

Filed Oct. 29, 1992, Ser. No. 968,030

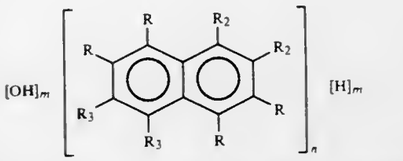
Int. Cl.[5] C07F *7/08, 7/18*

U.S. Cl. 556—428 **10 Claims**

1. A process for preparing a sulfophenylalkylsiloxane or a sulfonaphthylalkylsiloxane having either of the following formulae:



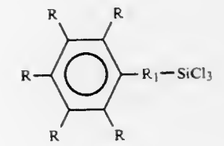
(I)



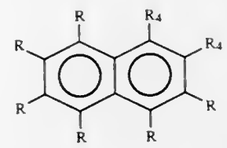
(II)

in a reactor containing a self-cleaning agitator, comprising:

a) adding an essentially equimolar ratio of chlorosulfonic acid to a phenylalkyltrichlorosilane or a naphthylalkyltrichlorosilane having either of the following formulae:

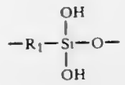


(III)

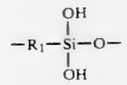


(IV)

wherein R of formulae I,II,III, and IV is individually hydrogen halogen, or an alkyl radical having 1 to 4 carbon atoms; R_1 is an alkylene radical having 2 to 5 carbon atoms; R_2 is R or



with the proviso that at least one R_2 be



R_3 is—H or



with the proviso that at least one R_3 be



R_4 is R or—R_1SiCl_3 with the proviso that at least one R_4 be—R_1SiCl_3 and

n is at least 1,

m is 1 or 2

in said reactor under agitation at a temperature of from about 20° to about 80° C. and at a rate sufficient to control formation of HCl;

b) raising the temperature up to about 80° to about 150° C. until HCl formation stops and a solid intermediate is formed;

c) optionally reducing the pressure in the reactor to about 300 to about 20 mbar;

d) hydrolyzing the intermediate by adding water at normal pressure in the reactor and at a temperature of from about 20° C. to about 50° C., to form said sulfophenylalkylsiloxane or a sulfonaphthylalkylsiloxane and HCl;

e) reducing the pressure in the reactor to about 300 mbar to about 20 mbar at a temperature of from about 20° C. to about 95° C. until excess water and HCl is removed; and

f) removing the dry sulfophenylalkylsiloxane or sulfonaphthylalkylsiloxane from the reactor.

5,252,766

METHOD FOR PRODUCING POLYSILANES

Toshiyasu Sakakura; Masato Tanaka, and Toshiaki Kobayashi, all of Tsukuba, Japan, assignors to Director-General of Agency of Industrial Science, Tokyo, Japan

Filed Sep. 13, 1991, Ser. No. 759,908

Claims priority, application Japan, Sep. 14, 1990, 2-245122

Int. Cl.[5] C07F *7/08*

U.S. Cl. 556—430 **12 Claims**

1. A method for producing a polysilane, which comprises reacting a hydrosilane compound in the presence of a lanthanoid complex, wherein the central metal of said lanthanoid complex is neodymium.

5,252,767

PROCESS FOR THE PREPARATION OF ORGANOSILOXANES

Günther Maass, Gladbach, and Manfred Schulze, Leichlingen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 16, 1992, Ser. No. 915,160

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1991, 4124802

Int. Cl.[5] C07F *7/08*

U.S. Cl. 556—450 **9 Claims**

1. A process for the preparation of organosiloxanes and gaseous hydrogen chloride by the hydrolysis of organochlorosilanes in a hydrolysis reactor and separation of the product organosiloxane from the hydrolysis liquid by phase separation, characterised in that hydrolysis is carried out in the presence of methanol.

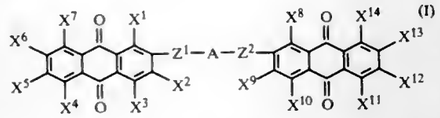
VOL 1155 ISS 2 OCT 12 1993 UMI

5,252,768
PROCESS FOR PREPARING A DIMETHYLCHLOROSILANE
Gilbert Geisberger, Altoetting, and Bernd Pachaly, Burghausen, both of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany
Filed Feb. 25, 1993, Ser. No. 23,449
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1992, 4208152
Int. Cl.[5] C07F *7/08*
U.S. Cl. 556—469 **2 Claims**

1. A process for preparing dimethylchlorosilane by the redistribution reaction which comprises reacting a dimethyldichlorosilane with at least one silane having Si-bonded methyl groups, hydrogen atoms and/or chlorine atoms in the presence of a catalyst, in which the silane is a methylchlorosilane and/or a methylsilane and the catalyst is a support which is insoluble in the reaction medium and NR_2R^1 groups or $\ominus X \oplus NR_3R^1$ groups are covalently bonded thereto, where R represents a hydrogen atom or a monovalent hydrocarbon radical having from 1 to 20 carbon atoms per radical, or two R radicals together represent a divalent hydrocarbon radical having from 4 to 11 carbon atoms, which may optionally be interrupted by a hetero atom, R^1 represents a divalent hydrocarbon radical having from 1 to 20 carbon atoms per radical and $X\ominus$ represents a chloride ion, bromide ion or iodide ion.

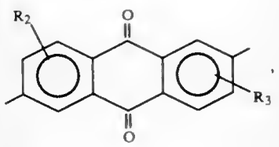
5,252,769
ANTHRAQUINONIC COLORANT AND POLARIZING FILM CONTAINING THE COLORANT
Tsutami Misawa; Hisato Itoh; Tsutomu Nishizawa, all of Yokohama; Masami Nakano, and Hiroyuki Katayama, both of Nagoya, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan
Continuation of Ser. No. 635,427, Jan. 4, 1991, which is a continuation of Ser. No. 221,216, Jul. 19, 1988. This applicatioo Jun. 26, 1992, Ser. No. 905,505
Claims priority, application Japan, Jul. 22, 1987, 62-181253
Int. Cl.[5] C09B *1/51*
U.S. Cl. 552—218 **2 Claims**

1. An arthraquinonic colorant represented by the formula (I):

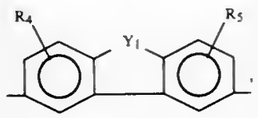


(I)

where X^1 is a hydroxyl group, amino group or lower alkylamino group: X^2 to X^{14} are each independently a hydrogen atom, halogen atom, hydroxyl group, amino group or lower alkylamino group; Z^1 and Z^2 are each independently —N=CH—, —CH=CH— or —COO—; and A is an aromatic divalent group shown as follows:

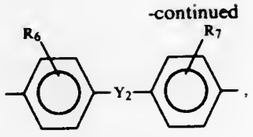


(IIa)

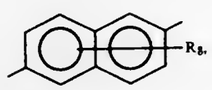


(IIb)

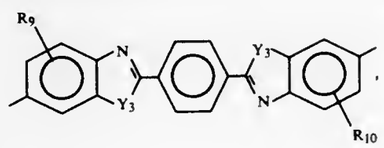
-continued



(IIc)

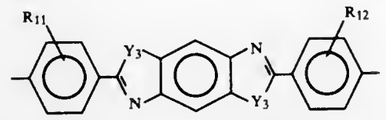


(IId)



(IIe)

or



(IIf)

wherein R_2 to R_{12} are independently a hydrogen atom, halogen atom, methyl group, hydroxyl group or methoxy group, Y_1 is —CO— or —O—, Y_2 is —NHCO—, —O—, —S—, $—SO_2—$ or —CO—, and Y_3 is —O— or —S—.

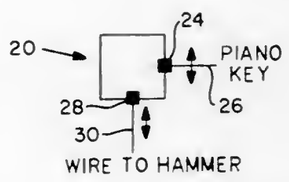
5,252,770
PROCESS FOR THE PRODUCTION OF CARBONATE ESTERS
William Vanderlinde, Creve Coeur, and Donald E. Morris, Kirkwood, both of Mo., assignors to Monsanto Company, St. Louis, Mo.
Filed Jun. 5, 1989, Ser. No. 361,158
Int. Cl.[5] C07C *69/96*
U.S. Cl. 558—271 **14 Claims**

1. In a process for synthesizing a non-skin sensitizing sulfophenyl alkyl carbonate having a straight or branched chain alkyl group containing from about 6 to about 12 carbon atoms or a cycloalkyl group containing from about 6 to about 9 carbon atoms wherein an alkyl chloroformate is reacted with a phenolsulfonate in an aqueous alkaline medium, the improvement which comprises adding to said alkaline medium a water-miscible organic solvent whereby a separate organic phase is formed after the initiation of said reaction and whereby the sulfophenyl alkyl carbonate product is removed from said alkaline medium and enters into the organic phase upon its formation thereby avoiding formation of skin sensitizing amounts of dialkylcarbonate.

5,252,771
ALUMINUM TRIFLUORIDE CATALYST FOR PRODUCTION OF DIARYL CARBONATES
A. Dale Harley, and Jose Puga, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed May 28, 1991, Ser. No. 706,426
Int. Cl.[5] C07C *69/96*
U.S. Cl. 558—274 **13 Claims**

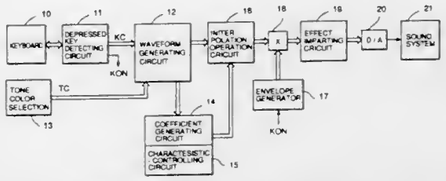
1. In a catalyzed process for the production of an aromatic carbonate by contacting an aromatic hydroxy compound with a carbonyl halide or aryl haloformate under conditions sufficient for the formation of an aromatic carbonate, the improvement which comprises utilizing aluminum trifluoride as the catalyst.

5,252,772
PIANO TEACHING COMPUTER SYSTEM
Martin J. Wright, 184 Ninth Ave., #3A, New York, N.Y. 10011
Filed Dec. 2, 1991, Ser. No. 801,401
Int. Cl.[5] G10F *1/02*
U.S. Cl. 84—18 **16 Claims**



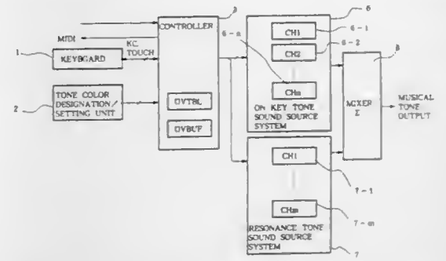
1. A control system for a keyboard piano having manually operable mechanical means for sounding a plurality of discrete notes simultaneously or in sequence including a movable key for each note and hammer means connected with and responsive to movement of each key for sounding the note, said control system being adapted to assist a student, comprising:
a) a first means for storing in digital format data indicative of a plurality of notes to be played by said piano;
b) a microprocessor connected with said first means for receiving said data and producing a plurality of digital control signals indicative of said plurality of notes;
c) controller means including a digital-to-analog converter and a multiplexer receiving said digital signals and producing therefrom a plurality of analog signals representing the notes to be played;
d) a plurality of actuator means, one of which is connected with the mechanical means for sounding each note of said piano and adapted to affect a condition of operation of said mechanical means when actuated;
e) means for connecting individual ones of said plurality of analog signals to the appropriate actuator means for producing actuation of said actuator means to produce said plurality of notes; and
f) means connected with each said actuator means for causing said key to be selectively connected and disconnected from its associated hammer.

5,252,773
TONE SIGNAL GENERATING DEVICE FOR INTERPOLATING AND FILTERING STORED WAVEFORM DATA
Koichi Kozuki; Tetsuji Ichiki, and Kazuhisa Okamura, all of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan
Filed Sep. 4, 1991, Ser. No. 755,040
Claims priority, application Japan, Sep. 5, 1990, 2-233104
Int. Cl.[5] G10H *7/00;* G11C *zz/zz;* H03M *zz/zz*
U.S. Cl. 84—607 **8 Claims**



1. A tone signal generating device which comprises:
pitch designating means for designating a pitch of a tone to be generated;
waveform generating means for generating digital waveform sample data to provide a waveform having a frequency corresponding to the pitch designated by the pitch designating means;
waveform interpolation coefficient generating means for generating plural waveform interpolation coefficients to be used for interpolating between values of the digital waveform sample data;
characteristic-controlling means for controlling the waveform interpolation coefficient generating means so as to vary the values of waveform interpolation coefficients generated by said coefficient generating means in correspondence with the pitch designated by the pitch designating means so as to variably control an interpolation characteristic; and
interpolation operation means for performing an operation between the coefficients and plural digital waveform sample data generated sequentially from the waveform generating means to provide interpolated waveform sample data as a tone signal having a characteristic controlled in accordance with said interpolation characteristic.

5,252,774
ELECTRONIC MUSICAL INSTRUMENT HAVING RESONANCE TONE GENERATION
Masahiko Hasebe, Hamamatsu; Takeshi Adachi, Hamakita, and Yoshihiro Inagaki, Hamamatsu, all of Japan, assignors to Yamaha Corporation, Hamamatsu, Japan
Filed Oct. 30, 1991, Ser. No. 785,510
Claims priority, application Japan, Oct. 31, 1990, 2-291874; Oct. 31, 1990, 2-291875
Int. Cl.[5] G10H *1/057, 1/06, 1/22, 1/46*
U.S. Cl. 84—618 **9 Claims**



9. An electronic musical instrument comprising:
pitch designation means for designating a pitch of a musical tone signal;
detection means operative when a plurality of pitches are designated by said pitch designation means, for detecting an interval between any two of the plurality of pitches; and
musical tone output means for outputting a musical tone which has a pitch designated by said pitch designation means, and for also outputting a resonance tone which has a pitch dependent upon the interval between designations detected by said detection means and corresponding to said two pitches.

5,252,775
AUTOMATICALLY UP-DATED APPARATUS FOR GENERATING MUSIC
Takayoshi Urano, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Continuation of Ser. No. 656,944, Feb. 19, 1991, abandoned. This application Sep. 17, 1992, Ser. No. 946,168
Claims priority, application Japan, Feb. 17, 1990, 2-36600
Int. Cl.[5] G10H *7/00;* G10K *11/18*
U.S. Cl. 84—645 **22 Claims**

1. In a music-generating system comprising a host unit and a plurality of music-generating terminal units connectable to the

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host unit, the improvement for reducing the effort of providing newly available music at the plurality of music-generating terminal units comprising:

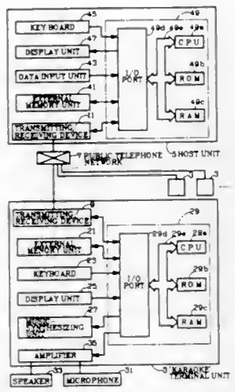
a) each of the plurality of music generating terminal units comprising,

a1) musical accompaniment selection means for generating selection signals indicative of a desired musical accompaniment selection,

a2) memory means for storing a plurality of music data corresponding to a plurality of musical accompaniment selections,

a3) reproducing means for reading out specified previously stored music data corresponding to the desired musical accompaniment selection from said memory means according to the selection signals and reproducing music corresponding to said music data;

a4) receiving means for receiving newly available music data transmitted from the host unit, said receiving means comprising means for interfacing with a telephonic network,



a5) writing means for writing music data received by said receiving means into said memory means, and

a6) terminal identification means for generating terminal identification data corresponding to each of the plurality of music-generating terminal units; and,

b) the host unit having music data supply means comprising,

b1) input means for inputting the newly available music data,

b2) transmitting means for transmitting the newly available music data input through said input means to each of the plurality of music-generating terminal units, said transmitting means comprising means for interfacing with said telephonic network, and

b3) checking means for checking if there is any newly available music data to be transmitted to the music-generating terminal unit corresponding to the terminal identification data generated by said terminal identification means upon connection with the music-generating terminal unit through said telephonic network.

5,252,776

MUSICAL TONE SYNTHESIZING APPARATUS

Takaaki Mutoh, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Nov. 19, 1990, Ser. No. 615,807

Claims priority, applicatioo Japan, Nov. 22, 1989, 1-303681

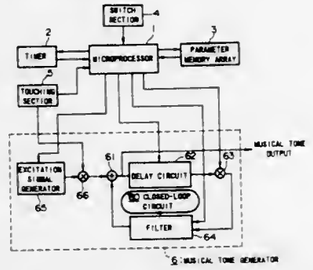
Int. Cl.[5] G10H *5/02*

U.S. Cl. 84—659 **8 Claims**

1. A musical tone synthesizing apparatus comprising:

(a) excitation signal generating means for generating an excitation signal;

(b) closed loop circuit means for receiving said excitation signal from said excitation means, said circuit means including a closed loop circulating path having delay means for delaying a signal circulating in the closed loop, the closed loop circuit means having a delay interval corresponding to the pitch of a musical tone to be generated, wherein a tone signal is obtained from said closed loop circuit means; and



(c) loop gain controlling means for controlling gain of said closed loop circuit means independent of the value of the excitation signal according to a lapse of time, said controlling for modifying the envelope of the signal circulating in the closed loop circuit depending on a period of time elapsed from the initiation of tone generation.

5,252,777

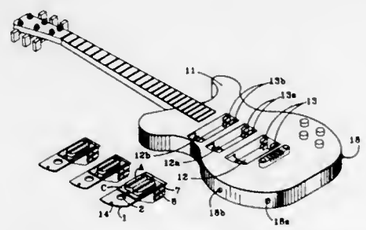
ELECTRIC GUITAR WITH TRANSDUCER CRADLES

Michael J. Allen, 161 Woodlawn Rd., Burlington, Vt. 05401, assignor to Michael J. Allen and June E. Casazza, Burlington, Vt.

Filed Aug. 10, 1992, Ser. No. 926,272

Int. Cl.[5] G10H *3/18, 3/00, 1/32*

U.S. Cl. 84—726 **13 Claims**



1. A method for rapidly and readily frontwise inserting and/or removing an electric guitar single coil transducer directly from an opening in the front of the body of an electric guitar component below the level of intact guitar strings and for coupling said single coil transducer to internal electrical wiring within said electric guitar body and in turn to an amplifier; comprising the steps of: forming an opening in the body of said electric guitar extending from the front of said body and partially into said body; but not through to the back of said body; and, providing for connection between the wiring of said single coil transducer individually and permanently mounted on a single coil transducer cradle component to the internal electrical wiring within said electric guitar component, by way of contact rods on said single coil transducer cradle component when said single coil transducer cradle component is inserted into said opening which said contact rods are then simultaneously in contact with the wiring of said single coil transducer and contact points in the front wall of said opening that in turn contact said internal electrical wiring.

5,252,778

GAS-INSULATED ELECTRIC APPARATUS

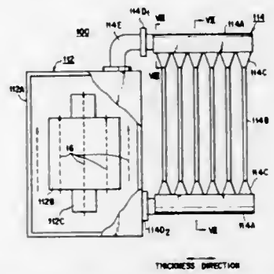
Naoya Ogawa, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 21, 1992, Ser. No. 838,928

Claims priority, application Japan, Feb. 22, 1991, 3-50813; Sep. 10, 1991, 3-230198

Int. Cl.[5] H05K *7/20;* **H01F** *27/08;* **F28D** *15/00*

U.S. Cl. 174—16.1 **22 Claims**



1. A gas-insulated electric apparatus comprising:

an electric apparatus body including

a storing space,

an electric element to be insulated, the electric element housed in the storing space, and

a high withstand voltage insulating gas filled in the storing space; and

a radiator for cooling the high withstand voltage insulating gas, including

at least one gas introducing header connected to the electric apparatus body, for introducing the high withstand voltage insulating gas from the electric apparatus body,

at least one gas discharging header connected to the electric apparatus body, for discharging the high withstand voltage insulating gas to the electric apparatus body,

at least one gas radiation member having a panel shape, having one open end portion directly or indirectly connected to the at least one gas introducing header, having the other open end portion directly or indirectly connected to the at least one gas discharging header, and having a gas passageway having a plurality of passageways formed along a longitudinal axis of the at least one gas radiation member, and separated from each other along the transverse axis of the gas radiation member, the at least one gas radiation member receiving the high withstand voltage insulating gas from the at least one gas introducing header, cooling the received high withstand voltage insulating gas by radiation, and discharging the cooled high withstand voltage insulating gas to the at least one gas discharging header, and

at least one coupler interposed in at least one of a first connection portion between one end portion of the at least one gas radiation member and the at least one gas introducing header and at least another coupler interposed in at least one of a second connecting portion between the other end portion of the at least one gas radiation member and the at least one gas discharging header, said one and other couplers passing the high withstand voltage insulating gas through, said one and other couplers having a passageway with a shape of cross section area gradually varying from said one and other portions of the at least one gas radiation member towards the at least one of the first and second connecting portion, each passageway with a thickness gradually increasing from said one and other end portions of the at least one gas radiation member towards the at least one of the first and second connecting portion.

5,252,779

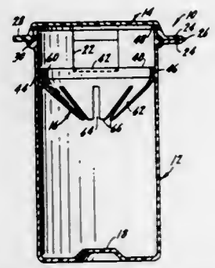
ELECTRICAL SPLICE ENCLOSURE

Orlando N. DiRienzo, P.O. Box 49, Pottersville, N.J. 07979

Continuation-in-part of Ser. No. 726,918, Jul. 8, 1991. This application Jun. 29, 1992, Ser. No. 905,329

Int. Cl.[5] H02G *15/08*

U.S. Cl. 174—87 **9 Claims**



1. Electrical splice enclosure comprising an elongated hollow tube closed at one end and having an opposed open end enabling insulation-covered electrical conducting wires to be positioned within the tube along with a connector which conductively joins the wire ends when bare;

a closure cap for closing the open end of the tube;

a lock insertable into the open end of the tube, said lock being a hollow truncated cone having a sloping side depending from an wide base nested inside the open end of the tube;

the sloped side of said cone being defined by a plurality of separate flexible fingers projecting from the cone base in the direction of the closed end of the tube, said fingers being inclined inwardly toward the longitudinal axis of the tube and terminating in free ends which define the narrow end of the truncated cone whereby the fingers will flex outwardly to allow insertion of a connector into the tube but will oppose removal of the connector in the opposite direction.

5,252,780

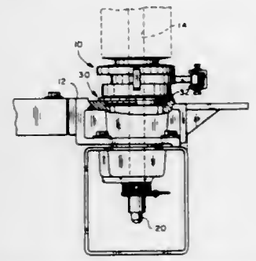
SUPPORT ARRANGEMENT FOR A ROTATABLE INSULATOR

Joel A. Ramos, Chicago; Leonard V. Chabala, Maywood; Peter J. Meyer, Chicago, and Thomas J. Tobin, Northbrook, all of Ill., assignors to S&C Electric Company, Chicago, Ill.

Continuation-in-part of Ser. No. 331,216, Mar. 30, 1989, and a continuation-in-part of Ser. No. 487,356, Mar. 1, 1990. This application Oct. 1, 1990, Ser. No. 590,727

Int. Cl.[5] H01B *17/16*

U.S. Cl. 174—161 R **10 Claims**



1. In high-voltage apparatus, the combination of:

an insulator being maintained at a first potential at a predetermined point thereof;

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a conductive support mounting being maintained at a second potential; and

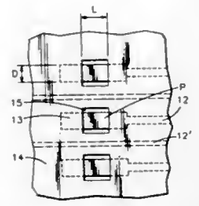
non-metallic means carried by and in engagement with said conductive support mounting for engagement with and for supporting said insulator, said non-metallic means being a bearing member of predetermined electrical conductivity so as to define a sufficiently conductive path from said insulator to said conductive support mounting to permit the flow of leakage current and capacitive charging current through said bearing member such that the buildup of voltage across said bearing member that could cause deterioration of or tracking across said bearing member is avoided.

5,252,781

SUBSTRATE MEMBER HAVING ELECTRIC LINES AND APERTURED INSULATING FILM

Masaharu Shirai, Ohtsu, and Kimihiro Yamanaka, Shiga, both of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 30, 1992, Ser. No. 859,750
Claims priority, application Japan, May 31, 1991, 3-156123
Int. Cl.[5] H05K *1/00*
U.S. Cl. 174—261 **6 Claims**



1. A substrate member including electric lines, said substrate member comprising:

a dielectric substrate;

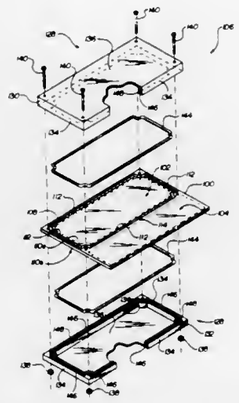
electric lines, formed on said substrate, selected ones of said electric lines having a contact pad located at one end thereof or forming a part thereof; and an insulating film covering said electric lines and including a plurality of openings therein, each of said openings exposing respective designated parts of said contact pads, sand contact pads having a first length dimension greater that the corresponding dimension of said openings within said insulating film and a second width dimension less than the corresponding dimension of said openings such that substantially the entire width and at least a portion of the length of each of said contact pads will remain exposed through respective ones of said openings, the total area of each of said exposed parts of said contact pads through said respective openings in said insulating film being defined by said second width dimension of said contact pad and said corresponding dimension of said opening in said film to said first length dimension of said pad, whereby said total area of each of said designated parts of said pads will be so exposed despite positional deviations between said film and said electric lines on said substrate during the manufacture of said substrate member, said dimension of said opening in said insulating film corresponding to said width dimension of said contact pad being such that said opening will never expose an adjacent one or more of said electric lines on said substrate.

5,252,782

APPARATUS FOR PROVIDING RFI/EMI ISOLATION BETWEEN ADJACENT CIRCUIT AREAS ON A SINGLE CIRCUIT BOARD

Gregory A. Cantrell, Mesquire; Paul V. Marshall, Garland, and David L. Parks, Dallas, all of Tex., assignors to E-Systems, Inc., Dallas, Tex.

Filed Jun. 29, 1992, Ser. No. 905,305
Int. Cl.[5] H05K *9/00*
U.S. Cl. 174—35 R **22 Claims**



1. Apparatus for isolating a first circuit area from an adjacent second circuit area on a circuit board having a top surface and a bottom surface, comprising:

a first ground plane substantially covering the top surface surrounding the first circuit area;

a second ground plane substantially covering the bottom surface opposite from and aligned with the first ground plane surrounding the first circuit area;

means for electrically connecting the first ground plane to the second ground plane, the electrically connected first and second ground planes inhibiting the propagation of interference energy through the circuit board between the first and second circuit areas; and

a conductive clam shell shield for inhibiting airborne propagation of interference energy between the first and second circuit areas, the shield mounted above and below the circuit board to enclose the first circuit area.

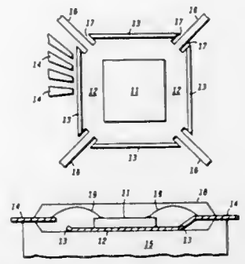
5,252,783

SEMICONDUCTOR PACKAGE

John Baird, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 10, 1992, Ser. No. 833,223
Int. Cl.[5] H01L *23/28*
U.S. Cl. 174—52.2 **12 Claims**

1. A semiconductor package comprising: a die attach flag, wherein the die attach flag has an upper surface and a lower surface; a plurality of leads which are electrically isolated from the die attach flag; a number of tie bars which are coupled to the die attach flag; upward angled flanges formed at edges of the die attach flag between each of the tie bars; a semiconductor chip mounted on the upper surface of the die attach flag; means for electrically coupling the plurality of leads to selected locations of the semiconductor chip; and a plastic encapsulation covering the semiconductor chip, the means for electrical coupling, the upper surface of the die attach flag, the flange, and portions of the leads, wherein the lower surface of



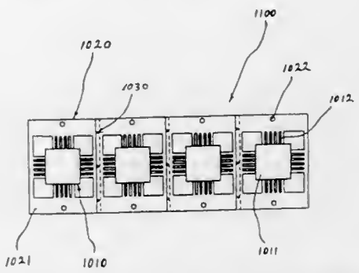
the die attach flag is exposed and forms a lower surface of the semiconductor package.

5,252,784

ELECTRONIC-PARTS MOUNTING BOARD AND ELECTRONIC-PARTS MOUNTING BOARD FRAME

Takuji Asai; Mitsuhiro Kondo; Atsushi Hiroi, and Kinya Ohshima, all of Gifu, Japan, assignors to Ibiden Co., Ltd., Japan

Continuation-in-part of Ser. No. 797,032, Nov. 25, 1991. This application May 27, 1992, Ser. No. 888,812
Claims priority, application Japan, Nov. 27, 1990, 2-327457; Feb. 19, 1991, 3-24662; Dec. 26, 1991, 3-344752
Int. Cl.[5] H05K *1/00*
U.S. Cl. 174—267 **8 Claims**



1. In an electronic-parts mounting board frame sheet having a plurality of electronic-parts mounting board frames, each frame including an electronic-parts mounting board with an insulating substrate, grouped leads protruding from said insulating substrate, an outer frame, and means including pilot holes located in said outer frame, for indicating positions of said grouped leads on said electronic-parts mounting board, the improvement wherein said plurality of electronic-parts mounting board frames are serially coupled into a single sheet.

5,252,785

BROAD BAND SEISMIC VIBRATOR

Elmo W. Christensen, Tulsa, Okla., assignor to Industrial Vehicles International, Tulsa, Okla.

Filed Jan. 7, 1992, Ser. No. 817,881
Int. Cl.[5] G01V *1/02*
U.S. Cl. 181—113 **11 Claims**

1. A broad band seismic vibrator for exploration of a subsurface comprising:

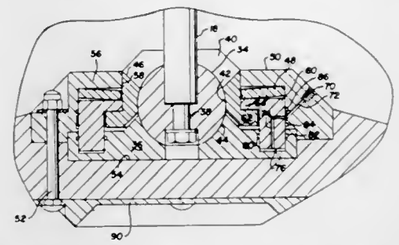
a. a hydraulically operated actuator including a piston shaft depending from said actuator,

b. a spherical member secured to an end of said shaft,

c. an anvil for receiving at least a portion of said spherical member,

d. means for securely clamping said spherical member to said anvil whereby said clamped spherical member affords the sole support for said actuator,

e. a base plate for transmitting the output from said actuator via said spherical member and said anvil to a ground surface, and



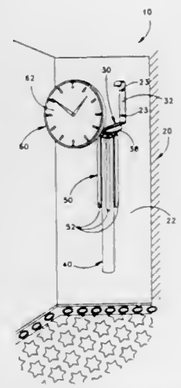
f. fluid means for releasing said clamping between said spherical member and said anvil to permit manual adjustment to the position of said actuator in both azimuth and inclination.

5,252,786

MULTI-FUNCTION EARTHQUAKE ALERTING APPARATUS

Ernest W. Rinard, 5199 Pacific Coast Hwy., No. 332N, Long Beach, Calif. 90804

Filed Oct. 23, 1992, Ser. No. 965,765
Int. Cl.[5] G01V *1/16*
U.S. Cl. 181—122 **24 Claims**



1. A multi-function earthquake alerting apparatus, comprising:

a) a suspending frame made of metal material having a vertical portion for attachment with an interior wall of one's house, a transverse portion having a forward end and a rearward end which is integrally connected to the vertical portion, and a forward end portion integrally connected to the forward end of the transverse portion;

b) means for mounting said vertical portion of said suspending frame to an elevated position on said interior wall;

c) a hollow cylindrical shaped pendulum made of metal material;

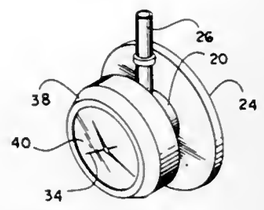
d) a multiplicity of identical hollow cylindrical shaped chimes also made of metal material, the weight and dimensions of each chime being substantially less than the weight and dimensions of said pendulum;

e) said transverse portion of said suspending frame further comprising a widened disc-shaped section between its said

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forward and rearward ends which has an underneath surface for suspending said pendulum and said chimes;
f) means for suspending said pendulum to the center of said underneath surface of said widened disc-shaped section of said transverse portion of said suspending frame such that said pendulum can swing freely;
g) means for suspending said multiplicity of chimes to said underneath surface of said widened disc-shaped section of said transverse portion of said suspending frame such that said multiplicity of chimes can swing freely, where said multiplicity of chimes are closely positioned symmetrically around and parallel to said pendulum;
h) a timepiece having a front display surface and a rear surface; and
i) means for attaching said rear surface of said timepiece to said forward end portion of said suspending frame;
j) whereby upon the occurrence of an earthquake, said multiplicity of chimes will swing and collide with said pendulum for providing an auditory alarm to signal the earthquake, including small warning shocks and aftershocks, said pendulum will swing which indicates the direction of the epicenter of the earthquake, and said timepiece will provide information on the exact time of the earthquake.

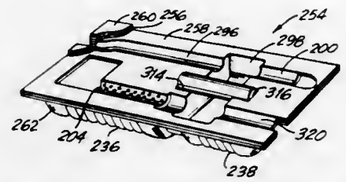
5,252,787
STETHOSCOPE
Jerome Moore; Gwendolyn Moore, both of 3233 Wesley Chapel Rd., Decatur, Ga. 30034, and Sidney L. Harley, 5470 Memorial Dr., Suite B, Stone Mountain, Ga. 30083
Filed May 9, 1991, Ser. No. 697,784
Int. Cl.[5] A61B *7/02*
U.S. Cl. 181—131 **4 Claims**



1. A stethoscope head comprising:
a pickup head;
means for attaching a sound conveyance tube to said pickup head;
a watch having a face with a sweeping second hand;
means for attaching said watch having a face with a sweeping second hand to said pickup head; and
sound-insulation means interposed between said watch having a face with a sweeping second hand and said pickup head.

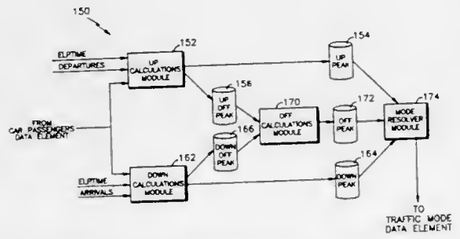
5,252,788
STAMP FORMED MUFFLER WITH IN-LINE EXPANSION CHAMBER AND ARCUATELY FORMED EFFECTIVE FLOW TUBES
James W. Emrick, and Bruno A. Rosa, both of Toledo, Ohio, assignors to AP Parts Manufacturing Co., Ohio
Filed Apr. 10, 1992, Ser. No. 866,753
Int. Cl.[5] F01N *7/18*
U.S. Cl. 181—282 **14 Claims**

1. An exhaust muffler for a vehicle comprising:
first and second plates secured in face-to-face relationship and formed to define an array of tubes and an in-line chamber, said chamber being defined by a plurality of converging arcuate surfaces formed in the plates, said array of tubes comprising an inlet tube extending from a peripheral location on the plates to the chamber, an outlet tube extending from said chamber to a second peripheral location on said plates, communication means formed through the first plate for permitting expansion of exhaust gas from the array of tubes;
an external shell formed to define a peripheral flange secured to the first plate, the external shell being formed to define at least one external chamber surrounding the in-line expansion chamber and the communication means in the first plate; and



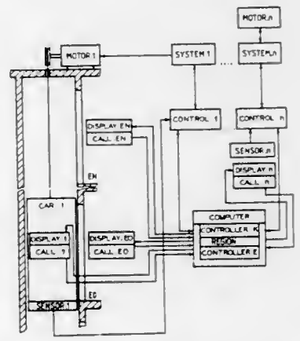
an unperforated pipe of arcuate cross-section disposed between the plates and extending across the in-line expansion chamber such that exhaust gas flowing through the chamber passes on opposed sides of the unperforated pipe, whereby the converging arcuate surfaces of the internal chamber define effective flow tubes in the in-line expansion chamber and adjacent the unperforated pipe for enabling efficient expansion of exhaust gas and low back pressure in the in-line expansion chamber.

5,252,789
USING FUZZY LOGIC TO DETERMINE THE TRAFFIC MODE OF AN ELEVATOR SYSTEM
David J. Sirag, Jr., and Paul T. Weisser, Jr., both of South Windsor, Conn., assignors to Otis Elevator Company, Farmington, Conn.
Continuation of Ser. No. 693,169, Apr. 29, 1991, abandoned.
This application May 4, 1992, Ser. No. 879,558
Int. Cl.[5] B66B *1/20, 1/18*
U.S. Cl. 187—124 **6 Claims**



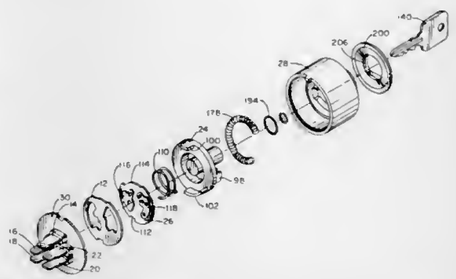
4. A method of dispatching a plurality of elevator cars in a building, comprising the steps of:
providing a plurality of empirically predetermined fuzzy sets of signals having values indicative of the correlation between the suitability of establishing either an up-peak or a down-peak traffic mode of dispatching and the elapsed time since an elevator car departed from or arrived at the lobby, the number of passengers in a departing or arriving car, and the number of cars departing from or arriving at the lobby;
storing, for each car departing from or arriving at the lobby a signal manifestation of the number of passengers in said car and a signal manifestation of the time of departure or arrival of said car, and retaining said signal manifestations for departing cars until N additional cars depart from the lobby, and retaining said signal manifestations for arriving cars until n additional cars arrive at the lobby, where N and n are arbitrary numbers about equal to the number of said elevator cars;
for each car which has just departed from the lobby and for the remaining of the N cars for which said signal manifestations are stored, providing, from said fuzzy sets of signals, an up signal equal to the lowest likelihood of the suitability of establishing an up-peak traffic mode of dispatching in dependence on the elapsed time between the departure of said car and the departure of the next preceding one of said cars, the number of passengers in said car and the others of said N cars which departed before said car, and the number which said car bears in the inverse order of departure from the lobby;
providing an up-peak variable signal having a value equal to the maximum value of said lowest up signals;
for each car which has just arrived at the lobby and for the remaining of the n cars for which said signal manifestations are stored, providing, from said fuzzy sets of signals, a down signal equal to the lowest likelihood of the suitability of establishing a down-peak traffic mode of dispatching in dependence on the elapsed time between the arrival of said car and the arrival of the next preceding one of said cars, the number of passengers in said car and the others of said n cars which arrived before said car, and the number which said car bears in the inverse order of arrival at the lobby;
providing a down-peak variable signal having a value equal to the maximum value of said lowest down signals; and
dispatching elevators to provide service in said building using said up-peak, variable signal and said down-peak variable signal to provide indications of the suitability of establishing either an up-peak or a down-peak traffic mode of dispatching.

5,252,790
METHOD AND APPARATUS FOR PROCESSING CALLS ENTERED IN ELEVATOR CARS
Michel Aime, Elancourt, France, assignor to Inventio AG, Hergiswil, Switzerland
Filed Sep. 17, 1990, Ser. No. 583,870
Claims priority, application Switzerland, Sep. 27, 1989, 3498/89
Int. Cl.[5] B66B *1/18*
U.S. Cl. 187—127 **16 Claims**



1. A method for processing car calls for destination floors entered in elevator cars having elevator controls with the immediate allocation of floor calls entered on the floors served by the cars comprising the steps of:
a. performing a preliminary processing of each car call upon entry thereof in an elevator car by comparing an associated destination floor of each said car call with predetermined destination floors of allocated calls, allocating each said car call having an associated destination floor matching one said predetermined destination floor and registering each said car call not having an associated destination floor matching any said predetermined destination floor;
b. controlling the elevator car to travel to and stop at said predetermined destination floors; and
c. performing a final processing of each said registered car call before the elevator car reaches a destination floor associated with said registered car call and allocating each said registered car call.

5,252,791
IGNITION SWITCH
Thomas D. Williams, Mentor, Ohio, assignor to Delta Systems, Inc., Streetsboro, Ohio
Filed Oct. 2, 1991, Ser. No. 771,059
Int. Cl.[5] H01H *21/62*
U.S. Cl. 200—11 C **8 Claims**



1. A switch comprising:
a) a disc-shaped electrically-conductive switch contact having a generally planar contact surface;
b) a shaft coupled to said switch contact and having a key hole for receiving a key and transferring rotary motion from such a key to said switch contact and cause the switch contact to rotate back and forth about a rotation axis as the key is rotated;
c) a housing for enclosing the switch contact, rotatably supporting said shaft, and positioning said key-hole for insertion of such a key;
d) terminals of identical structure, each comprising a prong extending through a housing wall for engagement with an external circuit, a head extending perpendicularly away from said prong into the housing and a dome mounted on said head for contact with said switch contact;
e) said switch contact including at least one arcuate cut-out concentric with said axis such that at least two of said terminals are bridged in one angular orientation of said switch contact and one of those two terminals is isolated from the switch contact by the cut-out in another angular orientation of said switch contact;
f) a pair of diametrically-opposed detents fixed on said shaft and a pair of reliefs fixed on an inner surface of said housing, said reliefs being positioned so that said detents abut one side of each relief when said switch contact is in said one angular orientation and an opposite side of each relief when said switch contact is rotated to said other angular orientation; and
g) a spring for biasing said diametrically opposed detents on the shaft toward said inner surface of said housing and said generally planar contact surface of the switch contact toward said terminals, whereby said switch contact is stabilized by engagement between the detents and reliefs when in said one angular orientation and in said other angular orientation.

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5,252,792

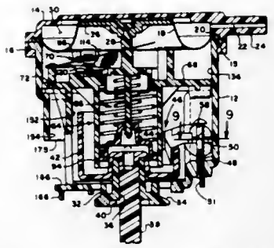
SUBASSEMBLY FOR A PRESSURE SWITCH

Ronald S. Joyce, Palatine, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 561,414, Aug. 1, 1990, abandoned, which is a division of Ser. No. 350,883, May 12, 1989, Pat. No. 4,990,728. This application Sep. 6, 1991, Ser. No. 758,520

Int. Cl.[5] H01H *35/34*

U.S. Cl. 200—83 P 5 Claims



1. In a pressure switch of the type having a first cupped housing shell (**12**) with a fluid pressure sensing chamber (**30**) and a pressure responsive diaphragm (**18**) disposed therein and movable in response to changes in chamber pressure for actuating a switch, a sub-assembly removable from said first shell comprising:

(a) a support deck structure (**68**) having an aperture therethrough (**100**) and having a snap-acting switch (**70**) mounted on one side thereof, said switch having an actuator member (**102**) extending over said aperture; and,

(b) a spring capsule (**66**) removably assembled to said support deck structure including a preload spring (**82**) and a spring retaining cup member (**88**) registered against one end of said spring with the opposite end of said spring registered against a first portion (**76**) of an operating rod (**28**), said rod including other portions (**78**) thereof operative to limit movement of said rod in one direction with respect to said retaining cup member, said capsule being disposed on said deck on the side opposite said switch with said rod extending through said aperture and in registration with said switch actuator member, wherein said spring retaining cup member (**88**) is guided for sliding movement on said deck structure and retained thereon to preload said spring, said support deck with said spring capsule mounted thereon comprising a unit adapted for sliding assembly in said pressure switch first housing shell.

5,252,793

MICROWAVE CONTAINER ASSEMBLY

Kenneth D. Woods, Keighley, England, assignor to Waddington Cartons Limited, Leeds, England

PCT No. PCT/GB90/01464, § 371 Date May 15, 1992, § 102(e) Date May 15, 1992, PCT Pub. No. WO91/05448, PCT Pub. Date Apr. 18, 1991

PCT Filed Sep. 21, 1990, Ser. No. 842,126

Claims priority, application United Kingdom, Sep. 27, 1989, 8921754

Int. Cl.[5] H05B *6/80*

U.S. Cl. 219—10.55 E 8 Claims

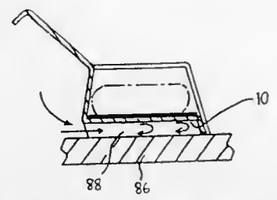
1. A microwave foodstuff container of cut and creased sheet material comprising:

a casing have a top wall, side walls and a base panel formed from a single blank of said sheet material;

said top and side walls each having an upper edge, a lower edge, side edges, an inner side, and an outer side;

said base panel having a food support portion and a plurality of base panel edges, one of said base panel edges being hinged to said lower edge of one of said side walls, the other of said base panel edges each being formed into a flange section hinged to said food support portion;

each of said flange sections being operatively secured to one of said lower edges of one of said side walls in such a manner as to support said food support portion above said lower edges of said side walls; and



receptor material carried by said base panel for heating foodstuffs carried by said food support portion in response to exposure to microwaves.

5,252,794

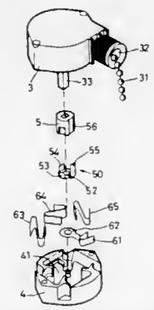
CONDUCTIVE SPINDLE ASSEMBLY OF PULL SWITCH

Tien-Fu Tseng, 9F-3, No. 218 Kuo Kuang Rd., Taichung, Taiwan

Filed Jul. 29, 1992, Ser. No. 921,101

Int. Cl.[5] H01H *17/06*

U.S. Cl. 200—51.15 2 Claims



1. A conductive spindle assembly for a pull switch comprising:

(a) an insulation spindle having three vertically extending recesses formed within a periphery thereof; and,

(b) a conductive collar for matingly engaging said insulation spindle, said conductive collar having a conductive base portion and first, second, and third vertically extending conductive contact tabs extending therefrom, said first and second conductive contact tabs being angularly spaced each from the other and having a first vertical extension above said base portion, said third conductive contact tab being angularly spaced from said first and second conductive contact tabs and having a second vertical extension above said base portion greater than said first vertical extension of said first and second conductive contact tabs, each of said conductive contact tabs insertable into a respective recess formed in said insulation spindle to form a combined structure having a substantially continuous cylindrical surface.

5,252,795

TILT SWITCH

Su Su, Hsintien, Taiwan, assignor to Shin Jiuh Corp., Taipei, Taiwan

Filed Apr. 30, 1992, Ser. No. 876,514

Int. Cl.[5] H01H *35/02*

U.S. Cl. 200—61.52 1 Claim

1. A tilt switch comprising:

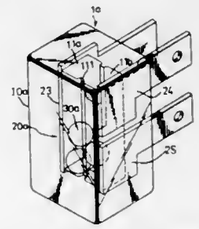
a switch casing having an elongated chamber means therein, formed by a first inner wall, a second inner wall opposite to said first inner wall, and a pair of opposite third inner walls respectively adjoining said first and second inner walls, at least one of said third inner walls having an intermediate portion which is provided with a longitudinally and inwardly projecting strip, said strip forming a predetermined clearance with the other of said third inner walls and partitioning said chamber means into two parallel communicated chambers;

a first conductive terminal provided on said first inner wall and extending along the full length of said chamber means;

a second conductive terminal provided on said second inner wall;

a third conductive terminal provided on said second inner wall and located adjacent to and spaced from said second conductive terminal; and

a movable conductor means inside said chamber means, said movable conductor means including three ball members, first and second of said ball members being movable in one



of said chambers, a third of said ball members being movable in the other of said chambers and being provided between said first and second ball members, said three ball members extending into said clearance so as to permit contact between said third ball member and said first and second ball members;

said switch casing being turnable between a first switch position, wherein gravity acts on said movable conductor means so as to place said movable conductor means between said first and second conductive terminals to make an electrical connection between said first and second conductive terminals and to break electrical connection between said first and third conductive terminals, and a second switch position, wherein gravity acts on said movable conductor means so as to place said movable conductor means between said first and third conductive terminals to make electrical connection between said first and third conductive terminals and to break electrical connection between said first and second conductive terminals.

5,252,796

SIGNAL TUBE OPERATED SWITCHES

John T. Hedger, Lot 15, Symington Road, Melton, Australia 3337

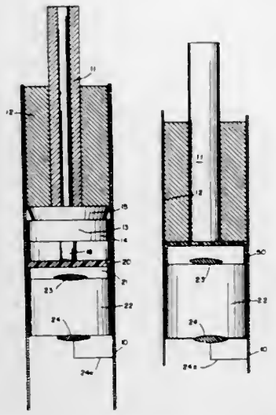
Continuation of Ser. No. 620,201, Nov. 30, 1990, abandoned. This application Feb. 24, 1992, Ser. No. 840,562

Claims priority, application Australia, Dec. 1, 1989, PJ7653

Int. Cl.[5] H01H *35/24*

U.S. Cl. 200—82 R 15 Claims

1. A switch having a body, an explosive signal tube in connection therewith, at least one contact arrangement for contacting a power source placed within the body, the contact arrangement including a first conductive movable contact means being in conductive contact with the body and further having a second conductive movable integrally formed contact means for effecting an electrical connection with the power source, the contact arrangement being movable when a pressure pulse is received from the signal tube thereby making



the electrical connection between the contact arrangement and the power source.

5,252,797

MICROWAVE OVEN WITH COOKING POT

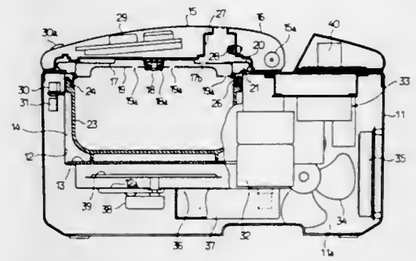
Morimasa Komatsu, Ichinomiya, Japan, assignor to Kabusbiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 8, 1992, Ser. No. 910,659

Claims priority, application Japan, Aug. 9, 1991, 3-200269

Int. Cl.[5] H05B *6/76*

U.S. Cl. 219—10.55 E 5 Claims



1. A heating apparatus by means of microwaves comprising:

a) a casing having an upper casing;

b) a cooking chamber defined by a metal wall in the casing, the cooking chamber having an upper opening;

c) an outer lid mounted on the casing for closing and opening the upper opening of the cooking chamber, the outer lid having microwave shielding means in contact with the upper circumferential edge of the casing to thereby cover the upper opening of the casing, at a closing position of the outer lid;

d) a microwave supply port formed in a bottom portion of the metal wall of the cooking chamber so as to face the interior of the cooking chamber, the microwave supply port being closed by a member formed from a microwave-penetrable material;

e) a magnetron provided in the casing and having a member delivering microwaves to the microwave supply port, the member being disposed below the microwave supply port;

f) a lid switch allowing the magnetron to be energized when the outer lid is closed and disallowing the magnetron to be energized when the outer lid is opened;

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g) a pot detachably provided in the cooking chamber via the upper opening thereof, the pot having an upper open end and being formed from a microwave-penetrable material; and

h) an inner lid detachably mounted on the inside of the outer lid of the cooking chamber for closing the upper opening of the cooking chamber when the upper opening of the casing is closed by the outer lid.

5,252,798

ILLUMINATED SWITCH APPARATUS

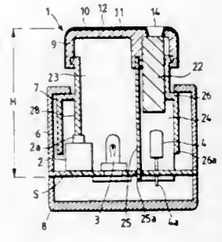
Soetsu Kamada, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Nov. 5, 1991, Ser. No. 788,327

Claims priority, application Japan, Nov. 15, 1990, 2-118862[U]

Int. Cl.[5] H01H 9/00

U.S. Cl. 200—314 4 Claims



1. An illuminated switch apparatus, comprising a casing, a printed circuit board mounted on said casing, a switch element mounted on said printed circuit board, a light source mounted on said printed circuit board, a light intercepting slide member having a switch actuation portion and mounted for sliding movement in said casing, and a light transmitting key top mounted on said slide member and having an indicating portion thereon, said printed circuit board having a slot formed therein in such a manner as to substantially surround said light source, said slide member having an end portion adapted to substantially surround said light source and is complementarily received in said slot of said printed circuit board for movement in a perpendicular direction to said printed circuit board whereby when said key top is depressed said end portion slides through said slot and said actuation portion actuates said switch element.

5,252,799

WIRE CUT ELECTRIC DISCHARGE MACHINE

Yasuo Arakawa, Oshino, Japan, assignor to Fanuc Ltd, Minamitsuru, Japan

PCT No. PCT/JP91/01749, § 371 Date Aug. 24, 1992, § 102(e) Date Aug. 24, 1992, PCT Pub. No. WO92/11969, PCT Pub. Date Jul. 23, 1992

PCT Filed Dec. 21, 1991, Ser. No. 920,478

Claims priority, application Japan, Dec. 26, 1990, 2-413878

Int. Cl.[5] B23H 7/10

U.S. Cl. 219—69.12 3 Claims

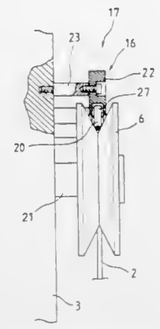
1. A wire cut electric discharge machine, having a wire traction means disposed on one side of a path of a wire which functions as electrodes with respect to a workpiece, a wire brake means disposed on another side of the wire path and a wire guide means disposed at a bent portion, located between the workpiece and the wire brake means, of the wire path, and characterized in that:

said wire guide means comprises a wire guide roller which is rotatably attached to a body of the wire cut electric discharge machine and a wire deviation preventive member whose one end is fixed to the body;

said wire guide roller has a wire fitting groove on its circumferential face, while said wire deviation preventive member including a retaining member disposed at its another end opposite to said one end;

said retaining member extends along the wire fitting groove over an angular range where the wire is applied around the groove, said retaining member having an upwardly opening retaining groove in a face opposite to a bottom of the wire fitting groove;

said retaining groove is formed all the way through said



retaining member from a starting end to a terminal end of the member along the wire fitting groove, said retaining groove having an inner surface made of a material having a high coefficient of friction to the wire; and

said wire deviation preventive member is arranged in such a manner that a clearance is defined between said retaining member and a wall of the wire guide roller, the clearance having a dimension slightly greater than a diameter of the wire.

5,252,800

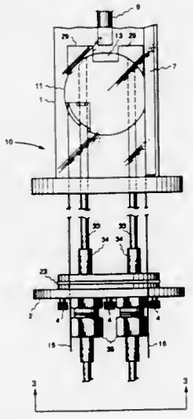
APPARATUS FOR PREPARING SUPERCONDUCTING JOINTS

Philip G. Kosky, Schenectady, and Herbert C. Peters, Ballston Spa, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 5, 1991, Ser. No. 804,318

Int. Cl.[5] B23K 1/012

U.S. Cl. 219—85.1 11 Claims



1. Apparatus for forming a superconductive joint, said apparatus comprising:

a closable vessel resistant to metal halides in the vapor state, comprising a housing and a top plate;

feed means in said vessel for reactive and inert gases;

exhaust means in said vessel for venting by-product gases;

base means adapted for sealable mounting to form the closure of said vessel;

entry slots in said base means to accommodate an internal length of an elongated superconductor, said entry slots being adapted to sealably contact said superconductor when said base means is mounted in said vessel;

forming means for forming a superconductive joint in said superconductor, said forming means comprising a chemically inert, electrically insulating and heat-resistant curved mount for said superconductor with a gap in the surface thereof;

heat-resistant securing means for securing said superconductor to said forming means; and

current passage means for passing an electric current through said superconductor when in contact with said forming means.

5,252,801

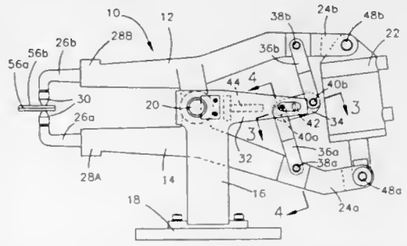
FIXED POINT WELDING GUN

Jeffrey R. Angel, Oxford, and LeRoy R. Boza, Metamora, both of Mich., assignors to Progressive Tool & Industries Co., Southfield, Mich.

Filed Jun. 12, 1992, Ser. No. 897,832

Int. Cl.[5] B23K 11/10

U.S. Cl. 219—86.61 9 Claims



1. A welding device for contacting opposite sides of a workpiece for welding said workpiece, said welding device comprising:

a base;

a pair of arms pivotably mounted to said base and positioned along side each other, each arm of said pair of arms having a working end;

an electrode disposed at each said working end of each arm of said pair of arms;

stroking means operatively engaged with said pair of arms for moving said working ends together and apart;

means operatively engaged with said pair of arms for equalizing movement of said electrodes toward said workpiece and for equalizing pressure imposed by said electrodes on said opposite sides of said workpiece when said stroking means strokes said working ends together, said equalizing means comprising a pair of rotatably interconnected linkages mounted to said base and connected to said pair of arms and said pair of rotatably interconnected linkages further defining an axis of rotation intermediate between and normal to said pair of arms; and

whereby said equalizing means substantially prevents unilateral contacting and asymmetric loading and impacting by said electrodes upon said workpiece while said electrodes are being moved into position by said stroking means.

5,252,802

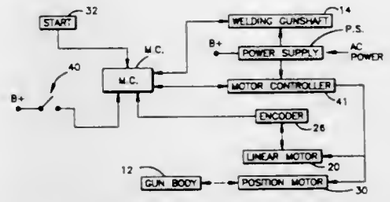
APPARATUS FOR WELDING A STUD TO A WORKPIECE

Robert J. Raycher, Amherst, Ohio, assignor to TRW Inc., Lyndhurst, Ohio

Filed Jan. 27, 1993, Ser. No. 9,864

Int. Cl.[5] B23K 9/20

U.S. Cl. 219—98 13 Claims



1. Apparatus for welding a stud to a workpiece, comprising:

a stud welding gun having a gun body and a gun shaft mounted to said body so as to permit reciprocal movement of said shaft relative to said body, said shaft having a distal end having means for carrying said stud;

linear motor means carried by said gun for directly driving said shaft in forward and reverse directions between respective fully extended and fully retracted positions relative to said gun body; and

control means for controlling said linear motor means for driving said shaft in a reverse direction to a retracted lift position away from said workpiece and in a forward plunging direction to a plunge position causing said stud to engage said workpiece.

5,252,803

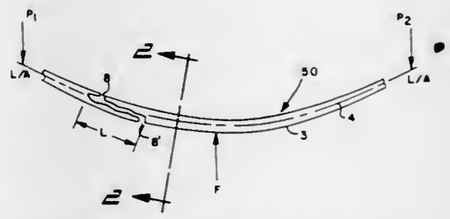
VEHICLE SUSPENSION MEMBER AND METHOD FOR MAKING

Bohdan Lisowsky, Troy, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Division of Ser. No. 666,967, Mar. 11, 1991. This application Jun. 22, 1992, Ser. No. 903,254

Int. Cl.[5] B23K 15/00

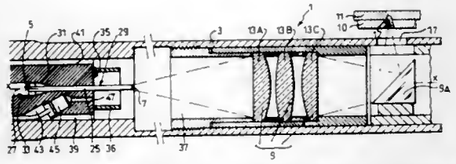
U.S. Cl. 219—121.12 14 Claims



1. A vehicle suspension member comprising at least one metal member having a longitudinal axis extending therealong between opposite ends thereof, said member having an irradiation exposed region therein that is disposed in general parallel relationship to the longitudinal axis and operative to provide a metallurgical discontinuity therein effective to divert crack propagation in a direction generally parallel thereto.

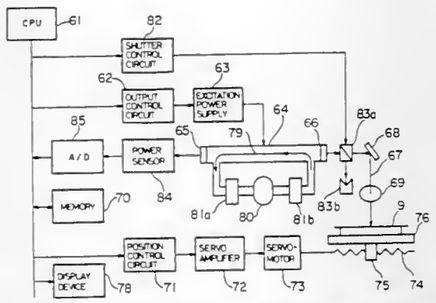
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5,252,804
LASER BEAM WELDING CANE, PARTICULARLY FOR THE SEALING OF TUBES
Jacques Griffaton, Chalon sur Saone, France, assignor to Framatome, Courbevoie, France
Filed May 15, 1992, Ser. No. 883,765
Claims priority, application France, May 15, 1991, 91 05903
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.63 5 Claims



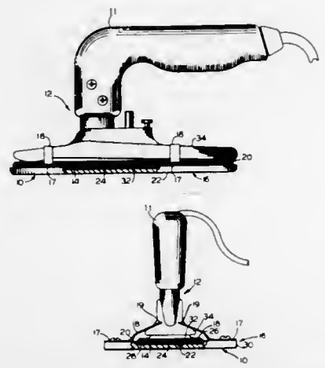
1. Welding cane having a laser beam conducted by an optical fiber to a welding head of said cane, said welding head comprising an optical device for focusing said laser beam and a mirror reflecting said laser beam toward a welding site external to said welding head, wherein said welding head comprises a photoelectric cell for measuring an intensity of radiation scattered inside said welding head, around a distal end portion of said optical fiber, said photoelectric cell being disposed in the vicinity of the optical fiber and set back in relation to said distal end portion of said optical fiber.

5,252,805
LASER BEAM MACHINING METHOD
Yoshinori Nakata, Minamitsuru; Etsuo Yamazaki, Kitatsuru; Norio Karube, Machida, and Tsuyoshi Nagamine, Hachioji, all of Japan, assignors to Fanuc Ltd, Minamitsuru, Japan
PCT No. PCT/JP91/01371, § 371 Date May 29, 1992, § 102(e) Date May 29, 1992, PCT Pub. No. WO92/06815, PCT Pub. Date Apr. 30, 1992
PCT Filed Oct. 5, 1991, Ser. No. 852,184
Claims priority, application Japan, Oct. 18, 1990, 2-280010
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.72 7 Claims



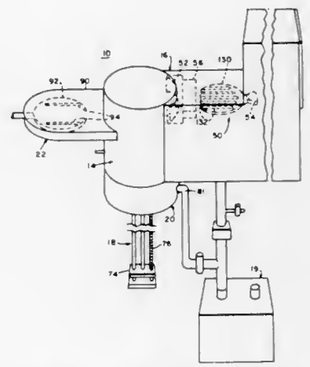
1. A laser beam machining method for cutting a workpiece in accordance with a machining program composed of a succession of move commands and laser output commands, comprising the steps of:
calculating an angle of a machining path in accordance with a move command under execution and a subsequent read out move command;
comparing the angle of the machining path with a preset angle;
decelerating and stopping a movement for a machining based on the move command under execution, when the angle of the machining path is more acute than the preset angle;
changing the laser output command from a cutting condition to a piercing condition in accordance with the deceleration and stoppage of the movement for machining;
restarting the movement for machining in accordance with the subsequent move command when a piercing operation according to the piercing condition is completed; and
changing the laser output command from the piercing condition to the cutting condition in accordance with the movement for machining, when the movement for machining is restarted.

5,252,806
ADAPTER PLATE FOR INCREASING THE EFFECTIVE WIDTH OF A CARPET IRON
David A. Hudson, 2325 Highway 60 West, Lake Wales, Fla. 33853
Filed Nov. 11, 1991, Ser. No. 792,151
Int. Cl.[5] H05B *1/00*; D06F *75/38, 75/30*
U.S. Cl. 219—245 8 Claims



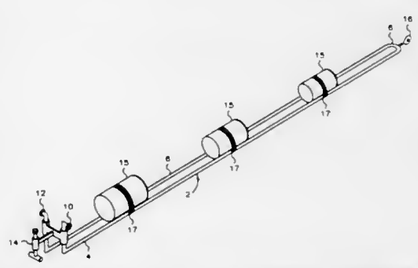
1. A carpet iron adapter plate of the type primarily intended for attachment to the bottom surface of the sole plate of a carpet iron, said adapter plate comprising:
a base having a top surface, a bottom surface, and four edges, said top surface including a recessed portion formed therein, said recessed portion being dimensioned and configured to receive at least a portion of the sole plate of a carpet iron therein; and
at least two arms, each having a first and a second end, said first end of one of said at least two arms being attached to said top surface of said base proximal to one of said four edges of said base and another of said at least two arms being attached to said top surface of said base proximal to an opposing one of said four edges, said second ends of each of said at least two arms extending upwardly and inwardly in relation to said base such that when at least a portion of the sole plate of the carpet iron is inserted in said recess of said adapter plate, portions of said at least two arms overlie and are spaced apart from a top surface of the carpet iron, and said second ends of said at least two arms engage a top surface of the carpet iron for removably attaching said adapter plate to the carpet iron.

5,252,807
HEATED PLATE RAPID THERMAL PROCESSOR
George Chizinsky, 143 West St., Beverly Farms, Mass. 01915
Continuation-in-part of Ser. No. 547,805, Jul. 2, 1990, Pat. No. 5,060,354. This application Oct. 23, 1991, Ser. No. 781,813
Int. Cl.[5] F27D *3/00*; H01L *21/22*
U.S. Cl. 219—390 14 Claims



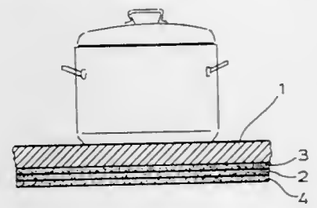
1. A rapid thermal processor with two discrete temperature zones, in which a semiconductor wafer is sequentially processed by moving the wafer longitudinally from proximity to a hot surface followed by proximity to a cold surface, comprising:
a heated plate arranged within one end of an elongated vertically disposed enclosed chamber;
a cooled, heat-absorbing surface in the other end of said chamber opposite the heated plate;
a means for vertically transporting a wafer to close proximity to the heated plate in order to rapidly and uniformly heat the wafer;
a means of rapidly transporting a wafer away from close proximity to the heated plate to a region opposite the heated surface where the wafer is in proximity to said cooled, heat-absorbing surface in order to rapidly and uniformly cool the workpiece; and
a means for rotating a wafer in proximity to said heated plate located at the top of the chamber.

5,252,808
METHOD AND APPARATUS FOR RECOVERING PETROLEUM RESIDUES FROM STORAGE SITES
Thomas A. Morgan, Pampa, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Nov. 22, 1991, Ser. No. 796,202
Int. Cl.[5] F27B *14/00*; E01C *19/45*; G01F *11/00*
U.S. Cl. 219—421 21 Claims



1. An apparatus for removing petroleum residue from a storage site at a withdrawing point which comprises:
a heating wand having a first end and a second end, said first end of said heating wand supported at a first point in close proximity to said withdrawing point and said second end of said heating wand extending out from said first point and in heat transfer relation with a portion of the surface of said petroleum residue;
means for heating said heating wand, so that said portion of the surface of said petroleum residue that is in heat transfer relation with said heating wand, is heated to form a liquid heated petroleum residue;
means for withdrawing said heated liquid petroleum residue from said storage site, said means for withdrawing being in fluid flow communication with said withdrawing point; and
means operatively related to said heating wand for moving said second end of said heating wand so that said heating wand travels across said storage site in an arc, said first end of said heating wand being at substantially the center of said arc.

5,252,809
PANEL HEATING ELEMENT AND PROCESS FOR ITS PRODUCTION
Oleg Demin, Moskau, U.S.S.R., assignor to Lapin-Demin GmbH, Sechsbelden, Fed. Rep. of Germany
Filed Sep. 30, 1991, Ser. No. 767,322
Claims priority, application European Pat. Off., Feb. 26, 1991, 91/102.800.9
Int. Cl.[5] H05B *3/16, 3/68*
U.S. Cl. 219—543 16 Claims



1. Panel heating element, especially for thermal home appliances, with a laminar support element for supporting an item to be heated and an electrically conductive heating layer applied laminarly to the support element, the heating layer being formed of a material which is a heat treated mixture of a powdered molybdenum boride, two different types of powdered glass and an organic substance; wherein the heating layer consists of 4.0 to 80.0% of molybdenum boride, 9.0 to 48.0% of the first type of glass, 1.0 to 23.0% of the second type of glass and 10.0 to 25.0% of the organic substance; and wherein the first type of glass has softening temperature not exceeding 700° C.

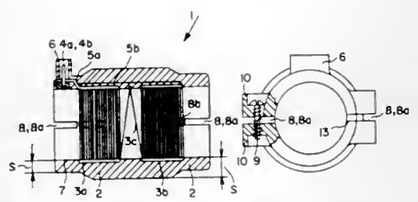
5,252,810
PART MOLDED FROM THERMOPLASTIC MATERIAL
Paul Trösch; Erasmo Porfido, both of Schaffhausen, and Kurt Schnetzler, Neunkirch, all of Switzerland, assignors to Georg Fischer Rohrleitungssysteme AG, Schaffhausen, Switzerland
Filed Jul. 21, 1992, Ser. No. 918,335
Claims priority, application Switzerland, Jul. 22, 1991, 02189/91
Int. Cl.[5] B29C *65/00*; F16L *47/02*
U.S. Cl. 219—544 9 Claims

1. A molded part from thermoplastic material, comprising:
at least one welding bush portion;
an electrical heating coil on said welding bush portion for connecting the molded part with a tubularly-shaped part;
a first incision in an insertion end of said welding bush portion;
a clamping device for radial pre-clamping of the bush portion;

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at least one screw for clamping the parts together, wherein said screw is in the region of the incision in the molded-on flanges at an outer circumference of the bush portion;

a clamping portion at an internal circumference of the welding bush portion, wherein said heating coil is a spiral winding adjoining said clamping portion; and



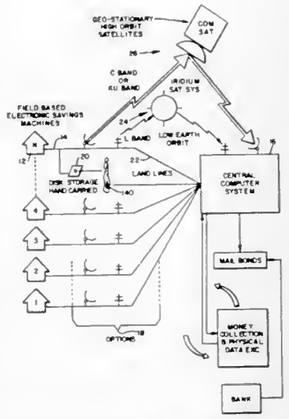
wherein each incision is configured as a slot continuous up to the internal circumference and extends axially from the bush end until shortly before the beginning of the heating coil.

5,252,811

DEVICE, SYSTEM AND METHOD FOR INCREASING SAVING ACCOUNT PARTICIPATION AND INVESTMENT BY SMALL INVESTORS

Lucien Henochowicz, Los Angeles, Calif., and James E. Humphrey, Dallas, Tex., assignors to U.S.A. Save Corporation, Dallas, Tex.

Filed Aug. 9, 1991, Ser. No. 743,266
Int. Cl.[5] G06F *15/30*
U.S. Cl. 235—379 **10 Claims**



1. An automated electronic cash saving system for encouraging savings by periodic depositors of small cash amounts, said system comprising:

(a) means at a plurality of remote local sites for determining the identification of a saving account for a periodic depositor of small cash amounts in the form of coins, bills, or both;

(b) means for receiving cash deposited at said plurality of remote local sites in the form of bills and in the form of coins for said identified depositor savings account;

(c) means for determining value of cash deposited whether coins, bills or both for said identified small depositor savings account;

(d) a central computer processor;

(e) means for electronically transmitting said savings account identification and the value of cash deposited at said remote local sites, from said local sites to said central computer processor;

(f) means in said central processor for calculating the accumulated sum for the value of cash deposited in said identified savings account;

(g) means for notifying said savings account depositor when said accumulated sum reaches a minimum amount corresponding to the cost of purchasing a selected security instrument;

(h) means for purchasing said selected security instrument on behalf of said small depositor; and

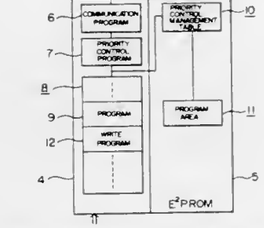
(i) means for reducing the accumulated sum in said identified savings account by the cost of purchasing said selected security instrument on behalf of said small depositor.

5,252,812

PROGRAM CONTROL SYSTEM FOR PORTABLE DATA STORAGE DEVICE

Takashi Nakamura, Ibaraki, Japan, assignor to Hitachi Maxell, Ltd., Osaka, Japan

Filed Feb. 6, 1991, Ser. No. 651,545
Claims priority, application Japan, Feb. 17, 1990, 2-35096
Int. Cl.[5] G06K *19/06*; **G06F** *9/00*
U.S. Cl. 235—380 **17 Claims**



1. A program control system for a portable data storage device comprising:

a main processing unit (MPU) for starting an internal program on the basis of an input/output requesting signal from a predetermined external device;

a first memory which is a fixed memory for storing non-rewritable fixed programs to be accessed from said MPU;

a second memory for which read/write for any program can be carried out by means of said MPU; and

said second memory comprising a priority control management table for storing index information of several kinds of programs relative to said fixed programs stored in said first memory, and a program area for storing programs corresponding to said index information on said priority control management table,

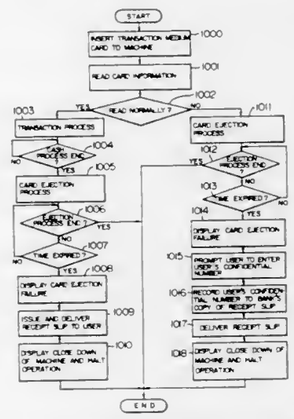
so that when a prescribed program is accessed by said MPU on the basis of the input/output requesting signal from said predetermined external device, said priority management table is searched, and if the index information of said relative program is present on said priority management table, the program in said program area designated by said index information will be executed and if the index information of said relative program fails to be present on said priority management table, the pertinent program in said first memory will be executed.

5,252,813

METHOD AND APPARATUS FOR AUTOMATIC TRANSACTION HAVING CARD RECEIPT AND/OR TRANSACTION RECEIPT SLIP ISSUING MECHANISM

Yasunori Hamada, Tsuchiura, and Masuo Furutono, Ibaraki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 9, 1991, Ser. No. 682,540
Claims priority, application Japan, Apr. 9, 1990, 2-092217
Int. Cl.[5] G06F *15/30*
U.S. Cl. 235—380 **9 Claims**



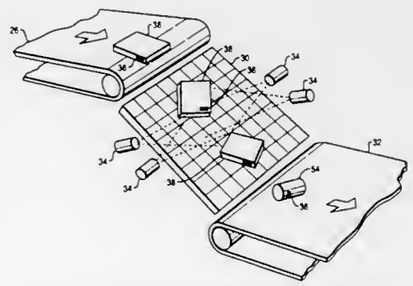
7. An automatic transaction apparatus operating in response to being accessed through insertion of a transaction medium card therein, said apparatus comprising a receipt slip issuing means for issuing a receipt slip for the card to the user who inserts the card in the event of failure of card ejection, said receipt slip being printed with user specific information selected from information recorded on the card when the card information has been read successfully, or selected from information entered by the user through an input means of said automatic transaction apparatus when the card information has not been read successfully.

5,252,814

MULTI-SCANNER CHECKOUT COUNTER USING DIGITIZER PANEL TO DETERMINE X-Y LOCATION OF SCANED ITEMS

Thomas P. Tooley, Alpharetta, Ga., assignor to NCR Corporation, Dayton, Ohio

Filed Aug. 17, 1992, Ser. No. 930,963
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—383 **5 Claims**



1. An apparatus for scanning bar code indicia comprising:

a support member having a front supporting surface and a rear supporting surface for supporting a merchandise item having bar code indicia located thereon;

a digitizer mounted between the front supporting surface and the rear supporting surface for generating first signals representing the location of a merchandise item on the surface of the digitizer, said digitizer oriented in a slanted position so that a merchandise item positioned on the surface of the digitizer will move across the digitizer to a position on the rear supporting surface;

an optical bar code reader positioned adjacent the digitizer for projecting scanning light beams along the surface of the digitizer for scanning a bar code label positioned on a merchandise item located on the digitizer, said bar code reader generating second signals representing the data contained in the bar code label; and

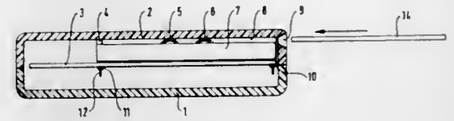
processing means coupled to said bar code reader and said digitizer for identifying the bar code label being scanned by the bar code reader when more than one merchandise item is located on the digitizer at the same time.

5,252,815

COMPACT SMART CARD READER WITH UNITARY CASE AND CONNECTOR COVER

Michel Pernet, Doubs, France, assignor to Alcatel Cit, Paris, France

Filed Oct. 8, 1991, Ser. No. 772,800
Claims priority, application France, Oct. 8, 1990, 90 12356
Int. Cl.[5] G06K *17/06*
U.S. Cl. 235—441 **5 Claims**



1. Smart card reader comprising:

a case enclosing other parts of the reader;

a printed circuit board;

means for fixing the printed circuit board interiorly to the case; and

a smart card connector comprising:

an insulative frame carrying spring contacts;

a cover integral with said case for exerting pressure on a smart card; and

means for fixing said frame directly to said case interiorly of the case and facing an internal wall of the case with said frame extending parallel to said internal wall, and a slot opening through said case, and wherein said spring contacts project from said frame on a side thereof facing the internal wall of the case and in the path of a smart card insertable through said slot, whereby the reader is of simplified construction, of reduced overall dimension and positioning of the card is conditioned only by the assembly tolerances of the frame relative to the internal wall of the case and thereby eliminates the need for an intermediate part for fixing of the frame to the case which acts as a connector cover.

5,252,816

OPTICAL INFORMATION READING APPARATUS

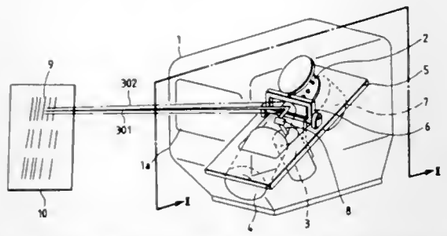
Sadhisa Onimaru, Okazaki; Atsuo Ishizuka, Nishio; Atsushi Hashikawa, Okazaki, and Yasuhiko Koike, Handa, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Nippon Soken, Inc., Aichi, both of Japan

Filed Jun. 10, 1991, Ser. No. 711,536
Claims priority, application Japan, Jun. 8, 1990, 2-151354
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—467 **21 Claims**

1. An apparatus for reading optical information on an object, comprising:

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a light source for irradiating a scanning light beam;
means, rotatable about a first axis and a second axis perpendicular to said first axis, for reflecting said scanning light beam irradiated from said light source onto said object bearing said optical information;
a rotatable drive unit for oscillating said reflecting means simultaneously in a first direction about said first axis and a second direction about said second axis such that movement of said reflecting means along said first direction



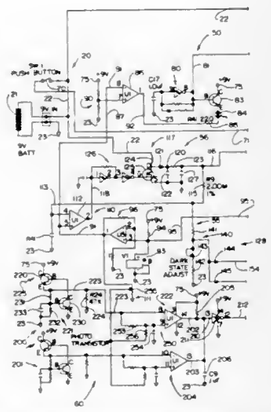
caused by said drive unit is mechanically dependent on movement of said reflecting means along said second direction caused by said drive unit to cause said scanning light beam to be irradiated on said object in a raster scanning pattern;
drive means for rotating said drive unit to oscillate said reflecting means; and
means for receiving light reflected from said object and reading said optical information on said object in accordance therewith.

5,252,817

DETECTOR SYSTEM FOR DETECTING THE OCCURRENCE OF WELDING USING DETECTOR FEEDBACK

John D. Fergason, Sunnyvale, and Jeffrey K. Fergason, Menlo Park, both of Calif., assignors to OSD Envizion Company, Menlo Park, Calif.

Filed Mar. 25, 1991, Ser. No. 674,850
Int. Cl.[5] G01J *1/32*
U.S. Cl. 250—205 **15 Claims**



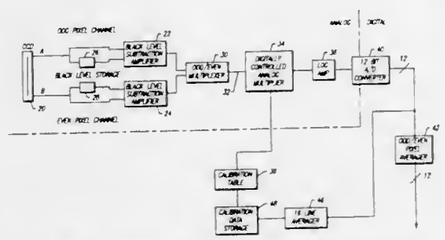
1. A detector system for detecting the occurrence of welding, comprising detector means for receiving a light input and producing an output representative thereof;
feedback means coupled with respect to said detector means for tending to maintain substantially constant such output of said detector means as the intensity of said light input varies, said feedback means having a relatively slow time constant,
comparator means for producing a comparison output, said comparator means including means for comparing such output with respect to a threshold signal and for producing said comparison output representative of the result of such comparison, and
tracking means for causing the value of such threshold signal to track the value of such output relatively slowly, whereby relatively rapid transitions in such output of at least a prescribed magnitude will cause one comparison output and relatively slow variations in such output will result in a different comparison output.

5,252,818

METHOD AND APPARATUS FOR IMPROVED SCANNER ACCURACY USING A LINEAR SENSOR ARRAY

Richard K. Gerlach, Rolling Hills Estates, and James O. Bass, Torrance, both of Calif., assignors to Vision Ten, Inc., Torrance, Calif.

Filed Aug. 22, 1991, Ser. No. 748,657
Int. Cl.[5] H01J *40/14*; H04N *3/14*
U.S. Cl. 250—208.1 **8 Claims**



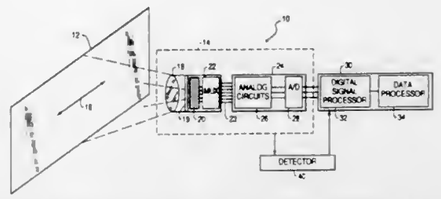
1. For use in a scanner having a scanner illumination system and a linear array of image sensor elements with a pair of sensor output channels A and B for processing the output of a first plurality of interleaved sensor elements 1 through N and having output signals A1, B2, A3, B4, . . . AN−1, BN for each reading of the sensor elements, wherein the two sensor output channels may not track each other perfectly throughout the range of sensitivity of the linear image sensor, a method of providing improved sensor output signals during the scanning of an article comprising the steps of:
(a) turning on the scanner illumination system and reading each of the output signals A1, B2, A3, B4, . . . AN−1, BN a second plurality of times without the article to be scanned in a scanning position;
(b) averaging the second plurality of each of a first plurality of signals A1, B2, A3, B4, . . . AN−1, BN so as to be able to provide therefrom a first plurality of reference signals A1r, B2r, A3r, B4r, . . . A(N−1)r, BNr each inversely proportional to the respective average;
(c) scanning the article to be scanned to provide a first plurality of image scan signals A1s, B2s, A3s, B4s, . . . A(N−1)s, BNs for each line of the article scanned;
(d) for each of the first plurality of image scan signals A1s, B2s, A3s, B4s, . . . A(N−1)s, BNs for each line of the article scanned, providing a first plurality of calibrated scan signals A1cs, B2cs, A3cs, B4cs, . . . A(N−1)cs, BNcs, each proportional to a respective value of the products AnsAnr (n odd) or BnsBnr (n even), where n ranges from 1 to N; and
(e) for each line output of the sensor, combining with substantially equal weighting the output of each adjacent pair of sensor elements to provide a plurality of improved sensor outputs proportional to A1cs+B2cs, B2cs+A3cs, . . . A(N−1)cs+BNcs, respectively, as the improved sensor output signals.

5,252,819

SCANNING SENSOR PROCESSING APPARATUS AND METHOD FOR PROVIDING CORRECTION OF OUTPUT SIGNAL DISTORTION

Keith H. Norsworthy, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 791,221, Nov. 13, 1991, abandoned.
This application Dec. 23, 1992, Ser. No. 995,526
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—208.2 **21 Claims**



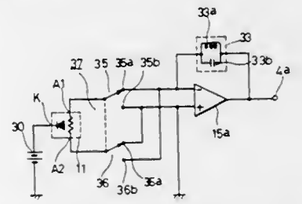
1. A scanning sensor system for simultaneously correcting time varying view angle errors and suppressing sensor noise, comprising:
a scanning sensor producing a sensor output signal corresponding to an actual view angle which differs from a desired view angle by a jitter angle error;
means for detecting the jitter angle error and for generating a jitter error signal corresponding to the detected jitter angle error;
data memory means for sequentially storing data samples of the sensor output signal;
coefficient memory means for storing a plurality of sets of weighting coefficients, each weighting coefficient set being defined by a noise suppression filter impulse response;
means for selecting one of the plurality of weighting coefficient sets in accordance with the jitter error signal;
means for multiplying each of the sequentially stored data samples by a respective weighting coefficient from the selected set of weighting coefficients; and
means for generating a corrected sensor output signal by summing results from the multiplying means.

5,252,820

PHOTOELECTRIC CONVERSION CIRCUIT HAVING A TUNING CIRCUIT AND CHANGEOVER SWITCHER

Kohji Shinomiya, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 18, 1992, Ser. No. 835,852
Claims priority, application Japan, Mar. 11, 1991, 3-72465; Apr. 26, 1991, 3-96603; Aug. 29, 1991, 3-218507; Oct. 14, 1991, 3-264661
Int. Cl.[5] H01J *40/14*; G01J *1/20*; G03B *3/00*
U.S. Cl. 250—214 R **10 Claims**



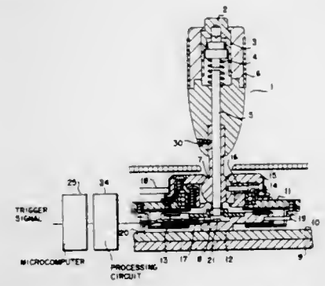
1. A photoelectric conversion circuit comprising:
first and second prescribed potentials;
a single semiconductor position sensing device comprising first and second electrodes and a third electrode being connected to said first prescribed potential, for receiving incident light including signal light being modulated in intensity at a prescribed frequency, converting said incident light to first current and second current, and detecting position of said incident light by comparing said first current and said second current, wherein said first current flows between said first and third electrodes, and said second current flows between said second and third electrodes;
a resonator electrically resonating with said prescribed frequency;
a differential amplifier having an output end being connected to an end of said resonator, an inverting input being connected to the other end of said resonator, and a non-inverting input being connected to said second prescribed potential;
a first changeover switch having a common terminal being connected to said first electrode, a first terminal being connected to said inverting input, and a second terminal being connected to said non-inverting input; and
a second changeover switch having a common terminal being connected to said second electrode, a first terminal being connected to said non-inverting input, and a second terminal being connected to said inverting input,
said first and second changeover switches changing in association with each other.

5,252,821

TOY STICK MECHANISM WITH AN OPTICAL SYSTEM

Masahiro Sugimura, Aichi, Japan, assignor to Nidek Co., Ltd., Gamagori, Japan

Filed Jul. 8, 1992, Ser. No. 910,060
Claims priority, application Japan, Jul. 31, 1991, 3-215817
Int. Cl.[5] G01V *9/02*; G09G *3/02*
U.S. Cl. 250—22 **4 Claims**



1. A joy stick mechanism for alignment of an ophthalmic apparatus with an eye to be examined, said joy stick mechanism comprising:
a) moving means for moving an optical system of said ophthalmic apparatus on a horizontal plane and in a vertical direction, said moving means including
i) a supporting structure having friction resistance on an upper surface thereof;
ii) a base plate mounting said ophthalmic apparatus and moving by a slidable board sliding against said supporting structure;
iii) a sliding plate provided between the slidable board and the base plate for adjusting friction therebetween and for helping the base plate sliding against the slidable board;
iv) a joy stick bar provided with first and second spherical portions at lower portions thereof, said first spherical portion being rotatably held by said base plate; and
v) transferring means for transferring a rotational force of said joy stick bar through said first spherical portion to a vertically moving mechanism of the optical system of

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the ophthalmic apparatus; said joy stick mechanism further comprising

b) switching means for switching in a non-contacting manner, said switching means including

i) switch button means located at a top portion of the joy stick bar, said switch button means for initiating a generation of a trigger signal;

ii) a movable shaft positioned coaxially with the joy stick bar, said movable shaft being movable in an axial direction of said joy stick bar by a movement of the switch button means; and

iii) detecting means located on said slidable plate for detecting the movement of said movable shaft; said joy stick mechanism also comprising

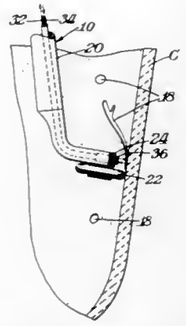
c) input means for inputting a detected result from said detecting means to signal generating means in said ophthalmic apparatus, thereby generating the trigger signal.

5,252,822

CONTACT WHEEL AUTOMATED DIGITIZER WITH VISIBLE SENSING OF MARKED REFERENCE POINTS

David G. Firth, Seattle, Wash., assignor to Pruvel Corporation, Seattle, Wash.

Filed Sep. 28, 1992, Ser. No. 951,907
Int. Cl.[5] H01J *5/16*
U.S. Cl. 250—227.11 **8 Claims**



1. In a contact wheel digitizer for use in computer aided design and manufacturing (CAD/CAM) systems for making orthotic and/or prosthetic devices wherein the digitizer includes a movably mounted pendent arm having a free end with a contact wheel mounted to the free end for making rolling contact with the surface of a three dimensional shape for creating reference points for the CAD/CAM to accurately create an orthotic or prosthetic device, the improvement being in that a sensor tip is mounted to said free end of said pendent arm for automatically visibly sensing marked reference points on the surface of the shape.

5,252,823

COMBINED LIGHT SOURCE AND READOUT FOR FIBER-OPTIC SENSORS WITH REDUCED BACK-REFLECTIONS

James H. Doty, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Sep. 28, 1992, Ser. No. 952,431
Int. Cl.[5] H01J *5/16*
U.S. Cl. 250—227.24 **7 Claims**

1. An apparatus comprising:

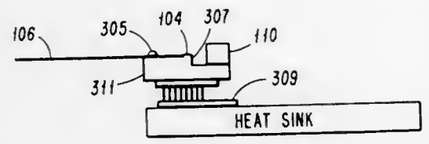
a light emission and amplification means, having a front output and a back output;

means for reducing reflections from said front output and said back output;

an optical fiber;

a fiber coupling means for optically coupling the optical fiber to the front output, so that, back-reflections into the fiber are reduced;

a light reception means optically coupled to the back ouput of the light emission means; and,



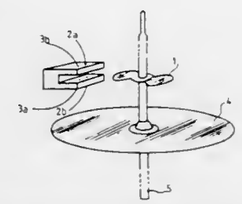
said light reception means positioned such that reflection into the back output of said light emission and amplification means is reduced.

5,252,824

ANALOG TRANSMITTER OF POSITION AND DIRECTION OF ROTATION HAVING A SIGNAL AMPLITUDE VARIES ON EACH CHANGE OF STATE OF SENSORS

Josep Picanyol, Caldes de Montbui, Spain, assignor to Schlumberger Industries, S.A., Montornes Del Valles, Spain

Filed Jul. 14, 1992, Ser. No. 913,098
Claims priority, application France, Jul. 24, 1991, 91 09380
Int. Cl.[5] G01D *5/34*
U.S. Cl. 250—231.13 **8 Claims**



1. A device enabling the position and the direction of rotation of a rotary element to be detected, the device comprising a modulator connected to rotate with the rotary element and two sensors, each of which is suitable for adopting a first state or a second state depending on whether or not it is being influenced by the modulator, said two sensors changing state at least twice per complete revolution of the rotary element, and at different positions thereof, wherein the device further includes an encoder for producing an analog output signal on an output having an amplitude that varies on each change of state of each sensor, the amount by which the amplitude of the analog signal changes being dependant on which sensor is changing state and being different for each sensor.

5,252,825

ABSOLUTE ENCODER USING INTERPOLATION TO OBTAIN HIGH RESOLUTION

Motokatsu Imai, Yokohama; Koh Ohno, Zama, and Tsuyoshi Matsumoto, Tokyo, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

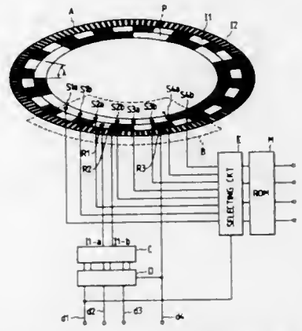
Filed Jul. 11, 1991, Ser. No. 728,269
Claims priority, application Japan, Jul. 18, 1990, 2-187988
Int. Cl.[5] G01D *5/34*
U.S. Cl. 250—231.18 **1 Claim**

1. An absolute encoder comprising:

a code plate having a 1-track type absolute pattern whose minimum read unit length is λ, a first incremental pattern with a pitch λ, and a second incremental pattern with a pitch $2^{-n}\lambda$, each of which patterns is formed on said code plate;

a detector section including means for detecting the absolute pattern and thereby obtain an absolute pattern signal, means for detecting said first incremental pattern and thereby obtain a first incremental signal, and means for detecting said second incremental pattern and thereby obtain a second incremental signal, said detector section being movable relative to said code plate;

first interpolation means for producing, by interpolating said first incremental signal, an absolute position signal indicating an absolute position within one pitch of said first



incremental signal, minimum read unit of said absolute position signal being shorter than the pitch $2^{-n}\lambda$ of said second incremental signal; and

synchronization means for synchronizing said absolute position signal obtained by said first interpolation means to said second incremental signal and thereby obtain a synchronized absolute position signal;

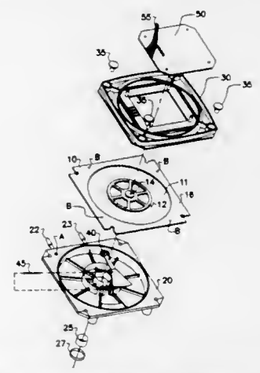
wherein said absolute pattern signal, said second incremental signal and said synchronized absolute position signal indicate a relative positional relationship between said code plate and said detector section.

5,252,826

DIFFERENTIAL PRESSURE UTILIZING OPTO-REFLECTIVE SENSOR

Stephen J. Kemp, St. Paul, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 30, 1991, Ser. No. 816,016
Int. Cl.[5] G01D *5/34*
U.S. Cl. 250—231.19 **20 Claims**



1. A differential pressure sensor comprising:

a diaphragm with a top and a bottom, said diaphragm having an optical reflector mounted on said diaphragm;

a housing containing said diaphragm, said housing having first and second inlet ports, said first inlet port providing a first pressure to said bottom of said diaphragm, said second inlet port providing a second pressure to said top of said diaphragm; and

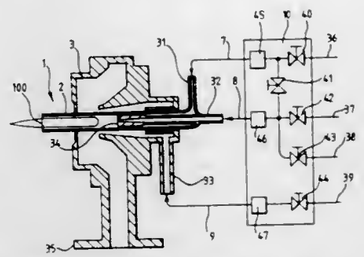
an opto-reflective sensor, said opto-reflective sensor providing an optical signal to said optical reflector, said optical reflector reflecting said optical signal back to said opto-reflective sensor, a relative intensity of said reflected optical signal being dependent upon a distance of said optical reflector from said opto-reflective sensor, whereby said diaphragm moves toward a lesser of said first pressure and said second pressure, thereby increasing or decreasing said distance, said differential pressure determining a differential of said first and said second pressure from said relative intensity.

5,252,827

METHOD AND APPARATUS FOR ANALYSIS OF GASES USING PLASMA

Masataka Koga; Toyoharu Okumoto; Hiromi Yamashita; Katuo Kawachi, all of Katsuta, and Yukio Okamoto, Sagamihara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 30, 1991, Ser. No. 753,633
Claims priority, application Japan, Aug. 31, 1990, 2-228134
Int. Cl.[5] B01D *59/44;* **H01J** *49/00*
U.S. Cl. 250—281 **27 Claims**



25. Apparatus for analyzing an impurity in a gas, comprising

(a) means for forming a plasma at a zone therein including a multiple tube structure for delivering at least two different gases simultaneously to the plasma zone, said tube structure comprising an inner tube and at least one outer tube around said inner tube,

(b) means for analyzing said plasma for said impurity,

(c) gas conduits having flow regulating means connected to said inner and outer tubes and arranged for supplying said two different gases thereto selectively from at least two gas sources including a source of said gas having said impurity to be analyzed,

(d) control means for said flow regulating means and arranged to cause a sequence of gases to flow to said plasma through at least said inner tube while said plasma is maintained continuously, said sequence of gases including feeding said gas having said impurity to be analyzed in undiluted form.

5,252,828

MOBILE EXHAUST TRACKING SYSTEM

John Kert, Hermosa Beach, and Nelson W. Sorbo, Canoga Park, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 7, 1992, Ser. No. 864,832
Int. Cl.[5] G01N *21/01;* **G01J** *3/00*
U.S. Cl. 250—339 **7 Claims**

1. A mobile, exhaust analyzing apparatus comprising:

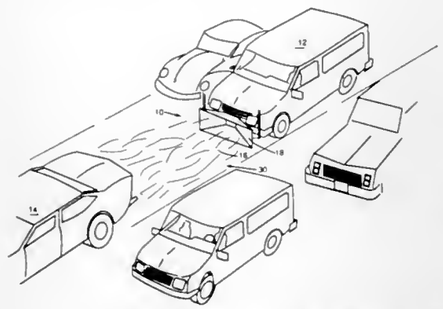
(a) a first vehicle;

(b) a funneling member attached to said first vehicle for concentrating exhaust gases discharged by a moving, second vehicle, said funneling member concentrating said

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exhaust gases as said gases pass through said funneling member;

(c) sampling means, connected to the funneling member, for extracting a sample of said exhaust gases; and



(d) a specrophotometer for analyzing said sample of said exhaust gases to determine whether the exhaust from the second vehicle exceeds environmental regulation standards.

5,252,829

METHOD OF DETERMINING UREA IN MILK

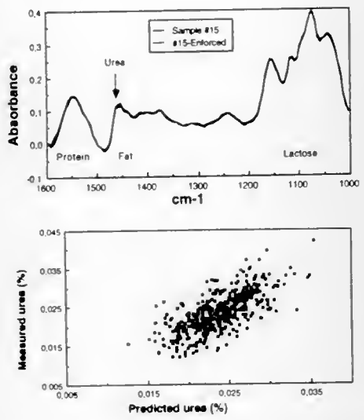
Lars Nygaard, Græsted; Torben Lapp, Birkenrod, and Bökur Arnvidarson, Nivå, all of Denmark, assignors to A/S Foss Electric, Hillerod, Denmark

Filed May 19, 1992, Ser. No. 885,642

Claims priority, application Denmark, Mar. 25, 1992, 397/92

Int. Cl.[5] G01N *33/04, 21/35*

U.S. Cl. 250—339 **27 Claims**



1. A method for determining, with an accuracy better than 0.007%, expressed as Standard Error of Prediction, the concentration of urea in a concentration range of 0–0.1% in a milk sample containing at least 1% fat, at least 1% dissolved lactose, and at least 1% protein, by an infrared absorption measuring technique, said method comprising the steps of:

(a) determining absorption in an infrared radiation waveband from 1000 cm^{-1} (10.0 μm) to 4000 cm^{-1} (2.50 μm) of the milk sample, wherein at least one determination is made in a waveband from 1000 cm^{-1} (10.0 μm) to 1800 cm^{-1} (5.56 μm) in which urea absorbs, wherein at least one determination is made in a waveband in which fat absorbs, wherein at least one determination is made in a waveband where lactose absorbs, and at least one determination is made in a waveband where protein absorbs;

(b) determining, on the basis of said absorption determinations and predetermined parameters established by multivariate calibration, a contribution from fat, lactose, and protein in said waveband where urea absorbs, and

(c) quantitatively assessing the concentration of urea in the milk sample on the basis of the absorption in the waveband where urea absorbs and on the basis of the determined contribution from fat, lactose, and protein in said waveband.

5,252,830

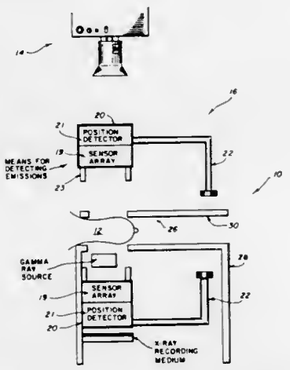
DEDICATED APPARATUS AND METHOD FOR EMISSION MAMMOGRAPHY

Irving Weinberg, 9754 Whiskey Run, Laurel, Md. 20723, assignor to Irving Weinberg, Laurel, Md.; Frederick M. Mako, Fairfax Station, Va. and Ansel M. Schwartz, Pittsburgh, Pa.

Filed Jan. 22, 1992, Ser. No. 824,804

Int. Cl.[5] G01T *1/161*

U.S. Cl. 250—363.02 **24 Claims**



1. An apparatus for examining a body part comprising:

means for immobilizing and compressing the body part;

means for providing an internal anatomical image of the body part; and

means for providing a physiological image of the body part in an adjacent relationship with said means for providing an internal anatomic image such that the body part remains in the same position during and between anatomic and radiotracer physiological imaging.

5,252,831

REDIRECTING LIGHT FROM A FLUORESCENT COATING BY A MIRROR LAYER

Armin K. Weiss, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 4, 1991, Ser. No. 787,275

Int. Cl.[5] G01J *5/20*

U.S. Cl. 250—370.11 **4 Claims**

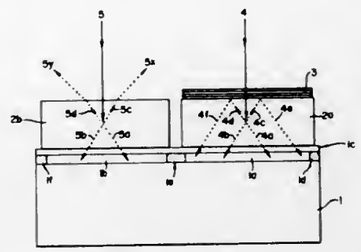
1. In a semiconductor light detector which is substantially more responsive to light in the green-red spectral region of from about 510 nm to about 750 nm than to light in the ultraviolet-blue spectral region of from about 300 nm to about 500 nm, the improvement comprising:

(a) a semiconductor light detector substrate;

(b) a plurality of light sensitive domains formed in the semiconductor light detector substrate;

(c) a fluorescent coating photolithographically patterned registratively over selected light sensitive domains while other domains are not covered by the fluorescent coating; and

(d) a dichroic mirror layer positioned over said selected light sensitive domains having said patterned fluorescent coat-



ing thereon, said dichroic mirror layer substantially transmitting light in the ultraviolet-blue spectral region and reflecting light in the green-red spectral region.

5,252,832

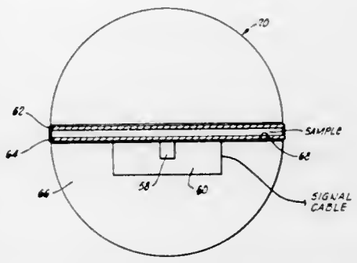
METHOD OF USING THERMAL NEUTRONS TO EVALUATE GRAVEL PACK SLURRY

Philip D. Nguyen; Ronnie J. Buchanan, and Jimmie D. Weaver, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Mar. 6, 1992, Ser. No. 847,507

Int. Cl.[5] G01N *23/00*

U.S. Cl. 250—390.01 **8 Claims**



1. A method of evaluating a gravel pack slurry, comprising:

placing the gravel pack slurry in a channel:

emitting fast neutrons at the placed slurry from outside the channel so that fast neutrons are thermalized in response to the gravel pack slurry;

detecting from outside the channel neutrons which have been thermalized in the gravel pack slurry in the channel;

providing a count representative of the detected neutrons; and

determining a characteristic of the gravel pack slurry in response to the count;

wherein said emitting includes emitting fast neutrons from a plurality of sources of fast neutrons disposed at respective discrete fixed locations relative to the channel, and wherein said detecting includes detecting thermalized neutrons with a plurality of thermalized neutron detectors, each disposed with a respective one of the sources of fast neutrons at a respective one of the discrete fixed locations; and

wherein the discrete fixed locations are around a circumference of the channel.

5,252,833

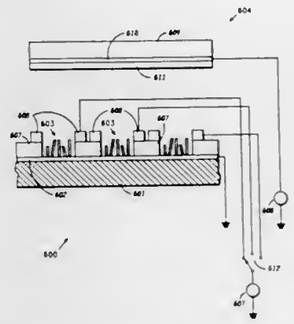
ELECTRON SOURCE FOR DEPLETION MODE ELECTRON EMISSION APPARATUS

Robert C. Kane, and James E. Jaskie, both of Scottsdale, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 5, 1992, Ser. No. 831,703

Int. Cl.[5] H01J *37/073*

U.S. Cl. 250—423 F **13 Claims**



1. An electron source comprising:

a supporting substrate having a major surface; and

a plurality of diamond crystallites, each having a surface, and at least some of which diamond crystallites are preferentially crystallographically oriented, the diamond crystallites being individually disposed on the major surface of the supporting substrate such that an electric field induced at a surface of at least some of the plurality of diamond crystallites induces electron emission from at least some of the diamond crystallites.

5,252,834

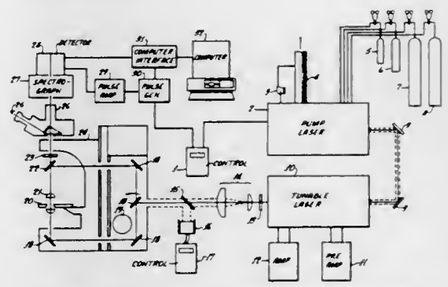
PULSED AND GATED MULTI-MODE MICROSPECTROPHOTOMETRY DEVICE AND METHOD

Rui Lin, Corona, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Nov. 13, 1990, Ser. No. 614,080

Int. Cl.[5] G01N *21/64*

U.S. Cl. 250—458.1 **24 Claims**



1. A method for detecting emissions from a microscopic portion of a solid sample, which method comprises:

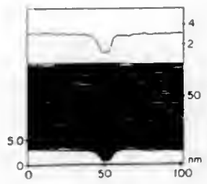
optically viewing said microscopic portion through a microscope apparatus;

irradiating the microscopically viewed portion with an excitation pulse of radiation wherein said pulse passes through at least a portion of said microscope apparatus, said pulse essentially focused on said microscopic portion and said pulse beginning at an initial time t_o and ending after a pulse width time t_{pw};

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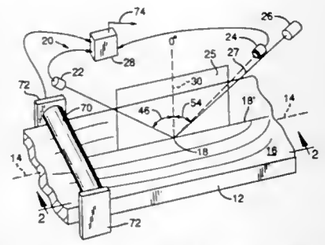
detecting a radiative emission spectrum from the irradiated sample portion within a gate controlled time window, said time window beginning at a window start time t_{ws} and ending after a window width time t_{ww} measured from said t_{ws};
wherein said t_{ws} occurs after aid t_o; and
wherein spectral changes over time may be detected.

5,252,835
MACHINING OXIDE THIN-FILMS WITH AN ATOMIC FORCE MICROSCOPE: PATTERN AND OBJECT FORMATION ON THE NANOMETER SCALE
Charles M. Lieber, Lexington, and Yun Kim, Cambridge, both of Mass., assignors to President and Trustees of Harvard College, Cambridge, Mass.
Filed Jul. 17, 1992, Ser. No. 916,215
Int. Cl.[5] G21K *5/10*
U.S. Cl. 250—492.1 **1 Claim**



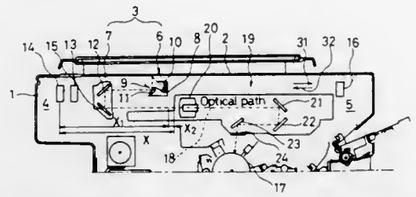
1. A method for machining oxide thin-films, comprising the steps of:
a) employing an atomic force microscope to pattern lines on the oxide thin film; and
b) imaging a resulting structure by controlling an applied load of a tip of the atomic force microscope.

5,252,836
REFLECTIVE GRAIN DEFECT SCANNING
Peter C. Matthews, Poole; Barry G. Wilson, Broadstone, both of United Kingdom, and Jon F. Soest, Sumner, Wash., assignors to U.S. Natural Resources, Inc., Vancouver, Wash.
Continuation-in-part of Ser. No. 666,133, Mar. 7, 1991, abandoned. This application Jun. 30, 1992, Ser. No. 906,537
Int. Cl.[5] G01N *21/86*
U.S. Cl. 250—571 **24 Claims**



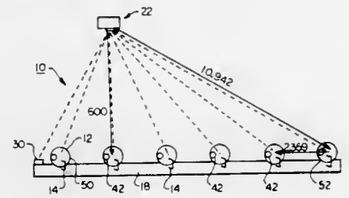
1. A method of characterizing an energy reflective wood grain surface structure defining a longitudinal axis thereof, said method comprising:
directing an energy source along a line of incidence to an inspection point of said wood grain surface structure, said line of incidence being substantially co-planar with said longitudinal axis of said wood grain surface structure;
monitoring first reflective energy emanating from said inspection point along a line of reflection corresponding to a specular angle of reflection relative to said line of incidence and said inspection point;
monitoring diffuse second reflective energy emanating from said inspection point along a line other than said line of reflection; and
calculating a ratio of said first and second reflective energy to characterize said wood grain surface structure at said inspection point.

5,252,837
COLLISION PREVENTIVE DRIVE DEVICE FOR OPTICAL SYSTEM
Naruyuki Miyamoto, Osaka, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan
Filed Oct. 15, 1992, Ser. No. 961,440
Claims priority, application Japan, Oct. 16, 1991, 3-267332; Oct. 21, 1991, 3-272393
Int. Cl.[5] G01N *21/86*
U.S. Cl. 250—561 **6 Claims**



1. A drive device for optical system for reciprocating the optical system within a specified area on rails by means of a motor controlled for drive and stop with availability and unavailability of power supply, comprising;
position sensing means for sensing a position of the optical system on the rails;
stop command sensing means for sensing a signal of stop command of the power supply; and
stop control means for controlling for reversal braking of the motor according to the position of the optical system sensed by the position sensing means when a signal of the stop command is sensed, for returning the optical system within the specified area and for stopping it.

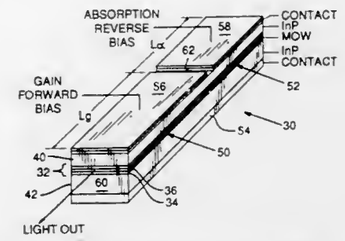
5,252,838
OPTICAL DEVICE PROVIDES A CORRECT ALIGNMENT FOR PRINTING SCREEN WITH REFLECTIVE MARKERS AND ORIENTATION SENSORS
Stanley W. Timblin, Greensboro, N.C., assignor to Innovative Automation, Inc., Greensboro, N.C.
Continuation of Ser. No. 883,624, May 14, 1992, abandoned. This application Jan. 15, 1993, Ser. No. 5,876
Int. Cl.[5] G01V *9/04*
U.S. Cl. 250—561 **34 Claims**



1. An apparatus for assuring correct alignment of a plurality of cylindrical, patterned textile printing screens on heads rotated by a drive comprising
orientation sensors operatively associated with said heads to indicate the orientations of said heads as they rotate,
reflective markers located on each of said screens in a predetermined relationship to the pattern to be printed by the screen,

an overhead light source aligned to scan said reflective markers on the screens,
a light sensor to sense light reflected from said reflective markers as scanned from said overhead light source, and
a computer receiving signals from said orientation sensors and said light sensor and adapted to ascertain from said received signals misalignments of the screens from one another and to output an error signal indicative of such misalignment.

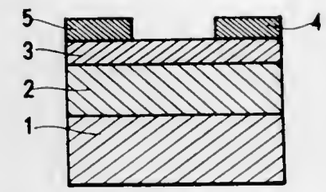
5,252,839
SUPERLUMINESCENT LIGHT-EMITTING DIODE WITH REVERSE BIASED ABSORBER
Julie E. Fouquet, San Carlos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Jun. 10, 1992, Ser. No. 896,276
Int. Cl.[5] H01L *33/00*
U.S. Cl. 257—13 **13 Claims**



1. A non-lasing edge-emitting LED comprising:
a semiconductor heterostructure body including a stack of parallel layers forming a vertically-confining waveguide and a PN junction to define an elongate optical cavity containing an active region;
the cavity including a gain region of a length L_g and an optical absorber region in series with the gain region, the optical absorber region having an absorption spectrum; and
contact means for biasing the PN junction, including a gain contact for forward biasing the gain region so as to produce light emission including stimulated emission from the active region along an edge of the stack, and an absorber contact for reverse biasing the optical absorber region to reduce the optical absorber region band edge photon energy below the zero bias band photon energy;
the optical absorber region, under reverse bias, having a length L_α sufficient to preclude regenerative oscillation of light in the cavity during light emission.

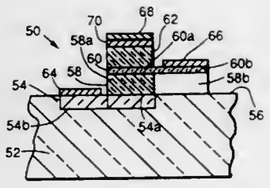
5,252,840
SEMICONDUCTOR DEVICE HAVING DIFFERENTLY DOPED DIAMOND LAYERS
Hiromu Shiomi; Yoshiki Nishihayashi, and Naoji Fujimori, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed May 9, 1991, Ser. No. 697,438
Claims priority, application Japan, May 17, 1990, 2-128563
The portion of the term of this patent subsequent to Jul. 21, 2009, has been disclaimed.
Int. Cl.[5] H01L *29/161, 29/20*
U.S. Cl. 257—77 **21 Claims**

1. A semiconductor device comprising:
a monocrystalline diamond substrate,
a p^+-type diamond layer with 10^{18} cm^{-3} to 10^{22} cm^{-3} of dopant atoms deposited on the substrate,
a non-doped diamond layer deposited on the p^+-type diamond layer,
an ohmic contact electrode deposited on the non-doped diamond layer, and



Schottky contact electrode deposited on the non-doped diamond layer.

5,252,841
HETEROJUNCTION BIPOLAR TRANSISTOR STRUCTURE HAVING LOW BASE-COLLECTOR CAPACITANCE, AND METHOD OF FABRICATING THE SAME
Cheng P. Wen, Mission Viejo; Chan S. Wu, Torrance, and Peter Chu, Hawthorne, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Continuation of Ser. No. 697,379, May 9, 1991, abandoned. This application Jan. 19, 1993, Ser. No. 6,189
Int. Cl.[5] H01L *29/161, 29/205, 29/72*
U.S. Cl. 257—197 **25 Claims**



1. A heterojunction bipolar transistor, comprising:
a semi-insulating substrate;
a doped, semiconductive, collector contact layer formed in the surface of said semi insulating substrate;
a doped, collector layer including a semiconductive, electrically active region formed over and in contact with said doped, semiconductive, collector contact layer, and a semi-insulative, electrically inactive region abutting said electrically active region of said doped, collector layer said semi-insulative electrically inactive region of said collector layer, formed over and in contact with an undoped region of the semi-insulating substrate;
a collector electrode formed over and in contact with said collector contact layer;
a semiconductive base layer including; a first electrically active region formed over said electrically active region of said collector layer, and a second electrically active region abutting said first electrically active region of said semiconductive base layer formed over and in contact with said semi-insulative electrically inactive region of said collector layer;
a semiconductive emitter layer formed over and in contact with said first electrically active region of said base layer;
a base electrode formed over and in contact with said second electrically active region of said base layer; and
an emitter electrode formed over and in contact with said semiconductive emitter layer.

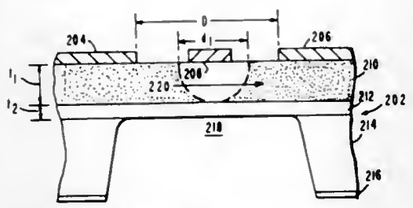
VOL 1155 ISS 2 OC 12 1993 UMI

5,252,842

LOW-LOSS SEMICONDUCTOR DEVICE AND BACKSIDE ETCHING METHOD FOR MANUFACTURING SAME

Daniel C. Buck, Hanover; James E. Degenford, Dayton, both of Md.; Soong H. Lee, Seoul, Rep. of Korea; Scott A. Imhoff, Pasadena, and Dale E. Dawson, Glen Burnie, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 26, 1991, Ser. No. 736,670
Int. Cl.[5] H01L *29/80, 29/64, 29/205, 29/06*
U.S. Cl. 257—280 24 Claims



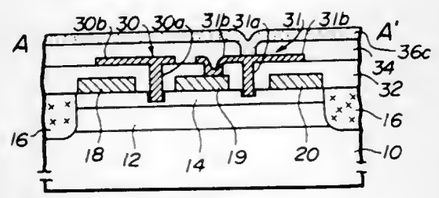
1. A semiconductor device comprising:
a substrate of semi-insulating material having a thickness, an active side, and a back side opposed said active side;
an active layer disposed on the active side of the substrate, said active layer further comprising a functional semiconductor device having a portion exhibiting sensitivity to capacitive effects of the substrate material;
at least one removal area in the substrate defined by a region devoid of substrate material and located proximate said portion of the active layer exhibiting sensitivity to capacitive effects, with said removal area containing matter having a lower dielectric constant than the material of the substrate; and
wherein the matter in the removal area includes a polyimide.

5,252,843

SEMICONDUCTOR DEVICE HAVING OVERLAPPING CONDUCTOR LAYERS

Masahisa Suzuki, Tokyo, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 573,758, Aug. 28, 1990, abandoned. This application Dec. 16, 1991, Ser. No. 809,041
Claims priority, application Japan, Sep. 1, 1989, 1-227214; Jan. 17, 1990, 2-7868
Int. Cl.[5] H01L *29/80, 31/112*
U.S. Cl. 257—284 12 Claims



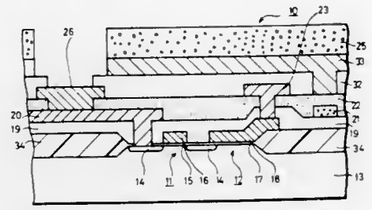
1. A semiconductor device comprising:
a semiconductor substrate having a top surface;
an active layer formed on the top surface of said semiconductor substrate;
a source electrode and a drain electrode respectively formed on said active layer;
a gate electrode formed on said active layer between said source and drain electrodes, said gate electrode including a) a gate contact portion which makes contact with said active layer and has a thickness greater than thicknesses of said source and drain electrodes, said gate contact portion extending in a direction approximately perpendicular to the top surface of said semiconductor substrate, said gate contact portion having an upper part and b) an overgate portion which is integrally formed on an entire length of said upper part of said gate contact portion without the use of a contact hole and said overgate portion extends laterally to overlie at least a portion of one of said source and drain electrodes, said overgate portion extending in a direction approximately parallel to the top surface of said semiconductor substrate; and
a first insulator layer formed on said active layer and covering said source and drain electrodes and surrounding said gate contact portion of the gate electrode, said overgate portion being formed on said first insulator layer, said first insulator layer having a first contact hole through which said overgate portion connects said gate contact portion to said one of the source and drain electrodes.

5,252,844

SEMICONDUCTOR DEVICE HAVING A REDUNDANT CIRCUIT AND METHOD OF MANUFACTURING THEREOF

Hiroshi Takagi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 435,001, Nov. 9, 1989, abandoned. This application Apr. 6, 1992, Ser. No. 863,541
Claims priority, application Japan, Nov. 17, 1988, 63-292975; Nov. 9, 1989, 1-293217
Int. Cl.[5] H01L *27/02*
U.S. Cl. 257—296 9 Claims



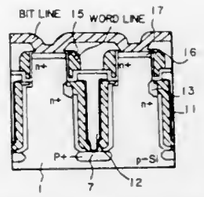
3. A semiconductor device including a redundant circuit, comprising:
a semiconductor substrate (**13**);
a transistor including a source/drain region in a major surface of said substrate and a gate electrode over a channel adjacent the source/drain region;
a first insulating layer (**19**) formed on said substrate;
a second insulating layer (**22**) formed on said first insulating layer;
an internal wiring layer (**20**) formed on said first insulating layer and contacting said source/drain region;
said first insulating layer separating said internal wiring layer from said gate electrode;
a second wiring layer (**23**) formed on said second insulating layer;
a first protective layer (**32**) formed on said second insulating layer and overlying said second wiring layer;
a second protective layer (**33**) formed on said first protective layer;
a test pad (**26**) formed on said second insulating layer, said test pad connected to said second wiring layer, said first and second protective layers having respective offset openings therethrough for exposing said test pad;
said first and second protective layers having a stepped offset configuration over said test pad and preventing said second protective layer from contacting said test pad; and
a fuse element (**21**) formed on said first insulating layer, said second protective layer extending through an opening formed in said first protective layer above said fuse element.

5,252,845

TRENCH DRAM CELL WITH VERTICAL TRANSISTOR

Cheon S. Kim, Seo; Jin H. Lee, Jung; Kyu H. Lee, Yusong, and Dae Y. Kim, Jung, all of Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Rep. of Korea

Continuation of Ser. No. 678,124, Apr. 1, 1991, abandoned. This application May 5, 1992, Ser. No. 880,300
Claims priority, application Rep. of Korea, Apr. 2, 1990, 4603-1990
Int. Cl.[5] H01L *29/68, 29/78, 29/92*
U.S. Cl. 257—302 10 Claims



1. A trench DRAM cell with a vertical transistor in a semiconductor device, comprising:
a silicon pillar having an outside four surfaces and a top surface;
a storage capacitor composed of a storage node with a stacked trench structure formed on the outside four surfaces of the silicon pillar in a p-type silicon wafer except for an upside and a bottom of the stacked trench;
a capacitor dielectric formed on the storage node, and a plate formed in the stacked trench and formed on the capacitor dielectric except for an upside of the stacked trench, wherein said plate is isolated from said storage node and the bottom of said trench by said capacitor dielectric, so that said plate is isolated from a substrate of said cell;
an isolation region formed at the bottom of the stacked trench; and
a transfer transistor with a vertical structure composed of a source connected to the storage node in a part of the upside of the storage node, a gate oxide formed on the outside four surfaces of the upper part of the silicon pillar, a word line which is a gate electrode, formed on the gate oxide, and a drain formed on the top surface of the silicon pillar in regions between the trenches.

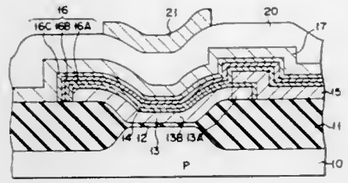
5,252,846

SEMICONDUCTOR MEMORY DEVICE WITH AN IMPROVED ERRONEOUS WRITE CHARACTERISTIC AND ERASURE CHARACTERISTIC

Shinichi Tanaka, Tokyo; Masayuki Hori, Kawasaki; Kazuoori Kanebako, Tokyo, and Noriyoshi Tozawa, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 611,432, Nov. 13, 1990, abandoned, which is a continuation of Ser. No. 166,422, Mar. 10, 1988, abandoned. This application Jul. 7, 1992, Ser. No. 908,871
Claims priority, application Japan, Mar. 13, 1987, 62-58109
The portion of the term of this patent subsequent to Feb. 26, 1991, has been disclaimed.
Int. Cl.[5] H01L *29/788, 29/792*
U.S. Cl. 257—317 8 Claims

1. A semiconductor memory device comprising:
a semiconductor substrate of a first conductivity type;
a floating gate containing an impurity at a predetermined concentration and layered on a first insulating film which is also layered on said substrate;
an erase gate layered above said flowing gate, with a second insulating film interlaid therebetween, a part of said erase gate overlapping with said floating gate, and said erase gate containing impurity at a predetermined concentration; and
a control gate layered above said floating gate and said erase gate, including said part of said erase gate overlapping



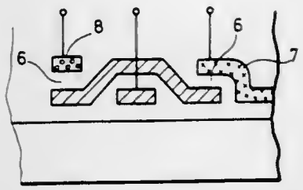
with said floating gate, with a third insulating film interlaid therebetween;
wherein an impurity concentration in at least a part of said floating gate overlapping with the erase gate is lower than that of said erase gate.

5,252,847

ELECTRICAL ERASABLE AND PROGRAMMABLE READ-ONLY MEMORY AND MANUFACTURING METHOD THEREFOR

Eiichi Arima; Akira Nishimoto; Shinichi Jintate; Kazuo Sudo, and Kazutoshi Oku, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 8, 1988, Ser. No. 241,887
Claims priority, application Japan, Sep. 9, 1987, 62-225910
Int. Cl.[5] H01L *29/68, 29/78*
U.S. Cl. 257—320 3 Claims



1. A low break-down voltage semiconductor memory device, comprising
a semiconductor substrate having a major surface and a predetermined impurity concentration of a particular conductivity type;
an insulating layer formed on the major surface of the semiconductor substrate;
a first gate electrode formed on the insulating layer, the first gate electrode comprising polysilicon subjected in the presence of an organic compound selected from the group consisting of ethyl acetate and tetrahydrofuran to conditions effective to form a low break-down voltage polysilicon; and
a second gate electrode covering at least a part of the first gate electrode and being insulated therefrom, the second gate electrode comprising polysilicon subjected in the presence of an organic compound selected from the group consisting of ethyl acetate and tetrahydrofuran to conditions effective to form a low break-down polysilicon.

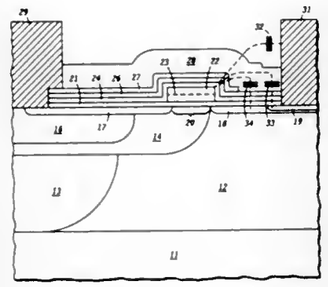
VOL 1155 ISS 2 OC 12 1993 UMI

5,252,848

LOW ON RESISTANCE FIELD EFFECT TRANSISTOR

Steven J. Adler; Robert B. Davies, both of Tempe; Stephen J. Nugent, Phoenix, and Hassan Pirastehfar, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 3, 1992, Ser. No. 829,190
Int. Cl.[5] H01L 29/78, 29/10
U.S. Cl. 257—328 13 Claims



1. A low on resistance field effect transistor comprising:
a semiconductor substrate having a first surface;
a high voltage breakdown tub on the first surface wherein the high voltage breakdown tub is of a first conductivity type;
a drain breakdown tub on the first surface and adjacent to the high voltage breakdown tub wherein the drain breakdown tub is of a second conductivity type;
a source of the second conductivity type wherein the source is within the high voltage breakdown tub and is a predetermined distance from the drain breakdown tub and wherein the predetermined distance forms a channel;
a drain within the drain breakdown tub wherein the drain is a heavily doped portion of the drain breakdown tub and is less than approximately 2 microns from the channel;
a gate oxide that is on the first surface and overlays the channel, a portion of the source, and a portion of the drain breakdown tub;
a gate electrode that is on the gate oxide and overlays the channel;
a dopant within the high voltage breakdown tub wherein the dopant has a doping concentration that gradually decreases laterally across a portion of the high voltage breakdown tub underlying the gate electrode and a peak doping concentration in a portion of the high voltage breakdown tub underlying the source;
a silicon dioxide stress relief layer that covers the gate electrode and a portion of the gate oxide that overlays the drain breakdown tub;
a silicon nitride layer covering the stress relief layer; and
a conductor on the silicon nitride layer with the conductor overlying the gate electrode and a portion of the drain breakdown tub wherein the conductor minimizes capacitive coupling between the drain and the gate.

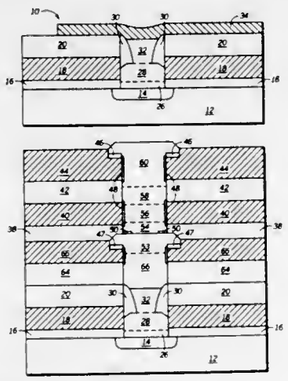
5,252,849

TRANSISTOR USEFUL FOR FURTHER VERTICAL INTEGRATION AND METHOD OF FORMATION

Jon T. Fitch; Carlos A. Mazuré; Keith E. Witek, and James D. Hayden, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 2, 1992, Ser. No. 844,037
Int. Cl.[5] H01L 29/10, 29/72
U.S. Cl. 257—329 10 Claims

1. A transistor device useful for further vertical integration comprising:
a base layer having a surface;
a diffusion formed within the base layer, the diffusion being exposed at the surface of the base layer;
a first dielectric layer overlying the base layer and being partially etched to form a first portion of a device opening;
a control electrode conductive layer overlying the first dielectric layer and being partially etched to form a second portion of the device opening which is horizontally aligned to the first portion of the device opening, the second portion of the device opening forming a sidewall of the control electrode conductive layer;
a second dielectric layer overlying the control electrode conductive layer and being partially etched to form a third portion of the device opening horizontally aligned to the second portion of the device opening;
a dielectric sidewall spacer formed laterally adjacent the second dielectric layer and within the device opening;
a first epitaxial current electrode of a first conductivity type formed within the device opening, the first epitaxial current electrode being laterally adjacent the first dielectric layer, and overlying the base layer, the first epitaxial current electrode contacting the diffusion;
an epitaxial control electrode of a second conductivity type formed within the device opening, the epitaxial control electrode overlying the first epitaxial current electrode



and being laterally adjacent and physically connected to a portion of said sidewall of the control electrode conductive layer; and
a second epitaxial current electrode of the first conductivity type formed within the device opening, adjacent the dielectric sidewall spacer, and overlying the epitaxial control electrode.

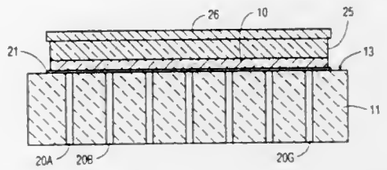
6. A vertically integrated structure comprising:
a first transistor with a first current electrode that underlies a second current electrode thereof;
a second transistor overlying the first transistor, the second transistor having a first current electrode that underlies a second current electrode thereof; and
an isolation region overlying the second current electrode of the first transistor, the isolation region separating the first and second transistors wherein the first transistor is a bipolar transistor and the second transistor is an MOS transistor, the first current electrode and second current electrode of the first transistor are respectively either an emitter electrode and a collector electrode or a collector electrode and an emitter electrode, and the first current electrode and second current electrode of the second transistor are respectively either a source electrode and a drain electrode or a drain electrode and a source electrode.

5,252,850

APPARATUS FOR CONTOURING A SEMICONDUCTOR, LIGHT RESPONSIVE ARRAY WITH A PRESCRIBED PHYSICAL PROFILE

William V. Schempp, Tucson, Ariz., assignor to Photometrics Ltd., Tucson, Ariz.

Filed Jan. 27, 1992, Ser. No. 826,028
Int. Cl.[5] H01L 39/02
U.S. Cl. 257—433 5 Claims



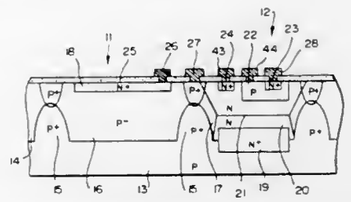
1. Apparatus for mounting a semiconductor chip having an array of imaging cells for capturing an image incident thereto, said apparatus comprising a mounting assembly having a surface for juxtaposition with said chip, said mounting assembly including holes extending therethrough and communicating with said surface for permitting the formation of a vacuum therethrough for conforming a non planar chip to said surface.

5,252,851

SEMICONDUCTOR INTEGRATED CIRCUIT WITH PHOTO DIODE

Keizi Mita; Tsuyoshi Takahashi; Toshiyuki Ohkoda, all of Oizumimachi, and Tadayoshi Takada, Fukayashi, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Jan. 28, 1992, Ser. No. 827,254
Int. Cl.[5] H01L 27/14, 31/00
U.S. Cl. 257—446 9 Claims



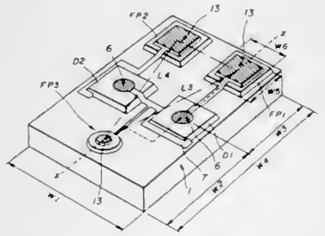
1. An integrated circuit having a photo diode comprising:
a substrate of a first conductivity type;
an epitaxial layer of said first conductivity type epitaxially grown on a surface of said substrate;
said epitaxial layer having a resistivity which is substantially higher than a resistivity of the substrate;
a separating area of said first conductivity type extending from a surface of said epitaxial layer to said substrate;
said separating area defining a first island area for forming a photo diode and a second island area for forming a transistor;
said separating area isolating said first island area from said second island area;
a buried layer of a second conductivity type formed in said second island area;
a diffusion area of a second conductivity type formed on a surface of said first island area;
said diffusion area having a resistivity which is substantially lower than a resistivity of said epitaxial layer;
an inverted region of said second conductivity type in said second island area extending from an upper surface thereof to said substrate;
said inverted region forming a collector of said transistor;
a base area of said first conductivity type formed on a surface of said collector area;
an emitter area of said first reverse conductivity type formed on a surface of said base area;
said diffusion area is comprised of the same material and formed in the same process as said emitter area in said second island area; and
a depletion layer located between a border of said diffusion area and said first island.

5,252,852

SEMICONDUCTOR DEVICE HAVING FLIP CHIP BONDING PADS MATCHED WITH PIN PHOTODIODES IN A SYMMETRICAL LAYOUT CONFIGURATION

Masao Makiuchi, Yamato; Tatsuyuki Sanada, Yokohama, and Osamu Wada, Isehara, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 693,077, Apr. 29, 1991, abandoned, which is a continuation of Ser. No. 622,284, Dec. 7, 1990, abandoned, which is a continuation of Ser. No. 490,912, Mar. 9, 1990, abandoned. This application Dec. 11, 1992, Ser. No. 989,877
Claims priority, application Japan, Mar. 14, 1989, 1-61544; May 20, 1989, 1-125585
Int. Cl.[5] H01L 29/161, 29/205, 29/225, 33/00
U.S. Cl. 257—458 19 Claims



1. A semiconductor device comprising:
a substrate;
spaced first and second semiconductor light receiving elements monolithically integrated on said substrate, said elements each being capable of producing a respective electrical output dependent upon light thereto, and each having first and second terminals;
a first flip-chip bonding pad formed on a surface of said device;
a conductor element electrically interconnecting the first terminals of said light receiving elements in series, said conductor element including a centrally disposed portion electrically connected to said first flip-chip bonding pad;
a second flip-chip bonding pad formed on a surface of said device;
a first elongated electrode electrically interconnecting the second terminal of the first semiconductor light receiving element and said second flip-chip bonding pad;
a third flip-chip bonding pad formed on a surface of said device; and
a second elongated electrode electrically interconnecting the second terminal of the second semiconductor light receiving element and said third flip-chip bonding pad,
the lengths of said first and second electrodes being substantially the same.

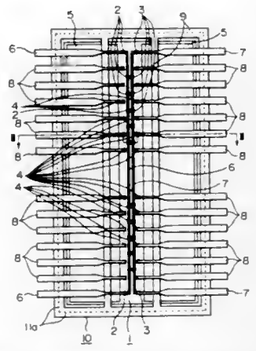
VOL 1155 ISS 2 OC 12 1993 UMI

5,252,853

PACKAGED SEMICONDUCTOR DEVICE HAVING TAB TAPE AND PARTICULAR POWER DISTRIBUTION LEAD STRUCTURE

Kazunari Michii, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 14, 1992, Ser. No. 944,242
Claims priority, application Japan, Sep. 19, 1991, 3-239516
Int. Cl.[5] H01L 23/48
U.S. Cl. 257—666 5 Claims



1. A packaged semiconductor device comprising:
a semiconductor chip having at least one main surface;
a first group of bonding pads including a plurality of bonding pads arranged in a row along a central portion of said main surface of said semiconductor chip;
a second group of bonding pads disposed on the main surface and including a plurality of signal pads arranged in two rows on opposite sides of said first group of bonding pads;
two spaced apart insulating thin films covering respective portions of the main surface with said second group of bonding pads therebetween;
a TAB tape including at least one shared lead having two ends, extending along and directly electrically connected to the row of said first group of bonding pads and including outside terminal portions at both ends, a plurality of signal leads, each having an outside terminal portion and an inside terminal portion, said inside terminal portion being directly electrically connected to a corresponding signal pad of said second group of bonding pads, and an insulating tape on which said shared lead and said signal leads are mounted at predetermined positions; and
a sealing resin encapsulating said semiconductor chip, said first and second groups of bonding pads, and said TAB tape except said outside terminal portions of said shared lead and said signal leads.

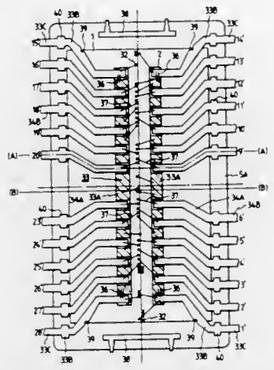
5,252,854

SEMICONDUCTOR DEVICE HAVING STACKED LEAD STRUCTURE

Junichi Arita, Musashino; Akihiko Iwaya, Fuchuu; Tomoo Matsuzawa, Tokyo, and Masahiro Ichitani, Kodaira, both of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Microcomputer, Kodaira, both of Japan

Filed Jun. 18, 1991, Ser. No. 717,262
Claims priority, application Japan, Jun. 20, 1990, 2-163928; May 10, 1991, 3-105622
Int. Cl.[5] H01L 23/02
U.S. Cl. 257—676 44 Claims

1. A semiconductor device comprising:
a semiconductor chip having on a principal surface thereof a plurality of external terminals;
leads comprising first leads for providing voltages and second leads for providing signals, each of said first and second leads comprising an inner lead portion having a first part and a second part and an outer lead portion connected to said second part and extending in a direction away from said first part;
a metal layer interposed between the principal surface of the semiconductor chip and the first part of said inner lead portion of the leads, said first part of said inner lead portion of the leads overlying said metal layer, the metal layer being connected electrically to the first leads; and



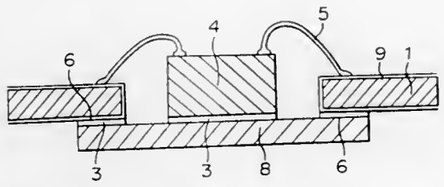
a plurality of wires comprising first wires and second wires, said first wires electrically connecting the first part of said inner lead portion of the second leads with a first group of said plurality of the external terminals, said second wires electrically connecting said metal layer with a second group of said plurality of the external terminals.

5,252,855

LEAD FRAME HAVING AN ANODIC OXIDE FILM COATING

Yoshiaki Ogawa, and Hiroyuki Noguchi, both of Sagamihara, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 15, 1991, Ser. No. 775,549
Claims priority, application Japan, Oct. 25, 1990, 2-285942
Int. Cl.[5] H01L 23/48, 29/44, 39/02, 29/46
U.S. Cl. 257—676 6 Claims



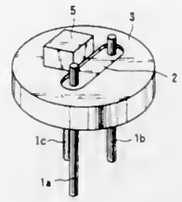
1. A lead frame, comprising:
(1) a metal member, wherein a portion of a surface of said metal member has an anodic oxide film of a metal selected from the group consisting of copper and a copper alloy; and
(2) a member selected from the group consisting of a resin film and a resin plate;
wherein said member is connected to said portion of said surface having an anodic oxide film by a process selected from the group consisting of gluing and pressing under heat.

5,252,856

OPTICAL SEMICONDUCTOR DEVICE

Nobuhiro Murai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 762,589, Sep. 19, 1991, abandoned. This application Feb. 10, 1993, Ser. No. 17,311
Claims priority, application Japan, Sep. 26, 1990, 2-255601
Int. Cl.[5] H01L 23/02, 23/12
U.S. Cl. 257—678 4 Claims



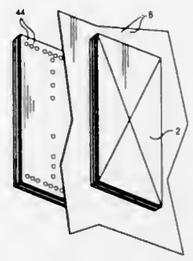
1. An optical semiconductor device comprising:
a flat metal plate base member having a single through hole extending in a direction of a thickness of said flat metal plate;
a glass member buried in and sealed to wall of the through hole;
a plurality of lead wires hermetically insulated from each other by being fixed to and passing through said glass member in said single through hole whereby no part of said metal plate base member is located between said lead wires;
an optical semiconductor element electrically connected to said lead wires; and
a cap member fixed to said flat metal base plate for housing said optical semiconductor element therein.

5,252,857

STACKED DCA MEMORY CHIPS

Milburn H. Kane, Austin; John G. Roby, Cedar Park, and Gustav Schrottke, Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 5, 1991, Ser. No. 740,344
Int. Cl.[5] H01L 23/02, 23/12
U.S. Cl. 257—686 4 Claims



1. A high density memory package comprising:
a flexible single layer circuitized carrier;
plural pairs of identical memory chips having complentarily located defects, each pair having chips disposed on opposite sides of said carrier;
interconnect circuitry on said carrier adapted for connecting pads on chips within each of said plural pairs of chips, said circuitry connecting said pads independent of their physical location on said chips for making memory capacity of said pair equivalent to a single, defect free memory chip, or two defect free memory chips when no defects are present in said memory chips; and
edge connectors on said flexible carrier, in electrical contact with said interconnect circuitry memory chip pads, said flexible single layer carrier having said plural pairs of chips mounted thereon being bent into a configuration for bringing said edge connectors into position for assembly to a backplane.

5,252,858

REFRACTORY COVERCOAT FOR SEMICONDUCTOR DEVICES

Carl W. Berlin, Bringhurst, and John K. Isenberg, Rossville, both of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Nov. 18, 1991, Ser. No. 793,896
Int. Cl.[5] H01L 23/28, 23/29
U.S. Cl. 257—702 2 Claims

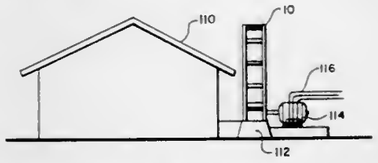
1. A semiconductor device comprising a substrate having first and second faces; a printed and fired circuit on each of said faces, a fired refractory covercoat on each of said faces and said printed and fired circuit; and wherein said refractory covercoat is formed from firing a composition comprising a glass frit, a filler material comprising at least one selected from the group consisting of ZrO_2, Al_2O_3, SiO_2, BaO, CaO, MgO and La_2O_3, and an organic binder wherein said glass frit and filler material are present in a weight ratio ranging from 60/40 to 70/30 respectively in said composition, said organic binder is present in 25 to 35 weight percent of the composition and said filler having a particle size of about 1 to 3 microns.

5,252,859

JOGGING ELECTRIC CURRENT GENERATOR

Lee Tagney, Jr., 1626 N. Wilcox Ave., Los Angeles, Calif. 90028

Continuation of Ser. No. 829,434, Feb. 3, 1992, which is a continuation-in-part of Ser. No. 521,842, May 9, 1990, Pat. No. 5,087,033. This application Dec. 21, 1992, Ser. No. 993,694
The portion of the term of this patent subsequent to Feb. 11, 2009, has been disclaimed.
Int. Cl.[5] F03G 5/02; A63B 19/04, 22/02
U.S. Cl. 290—1 R 13 Claims



1. A jogging-generator for use by a person to jog therein and generate an electrical current during a jogging activity, and which is immediately accessible from and to a dwelling structure, said jogging generator comprising:
a) support means located immediately adjacent the dwelling structure;
b) a drum-shaped exercise unit housing supported by said support means and sized so that a jogger can run therein;
c) bearing means associated within said drumshaped exercise unit housing;
d) an electrical generator;
e) means connected to said drum-shaped exercise unit housing for operating said generator during the running of the jogger within said drum-shaped exercise unit housing so as to produce electrical current from said generator; and
f) access entrance and exit means on said drumshaped exercise unit housing affording immediately access to the exercise unit housing from the dwelling structure and to the dwelling structure from the exercise unit housing.

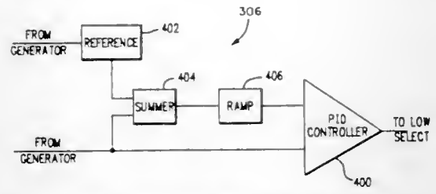
VOL 1155 ISS 2 OCT 12 1993 UMI

5,252,860

GAS TURBINE CONTROL SYSTEM HAVING MAXIMUM INSTANTANEOUS LOAD-PICKUP LIMITER

William L. McCarty, West Chester, and Kermit R. Wescott, Winter Springs, both of Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 448,382, Dec. 11, 1989, abandoned.
This application May 21, 1992, Ser. No. 886,294
Int. Cl.[5] F02C *9/16, 9/28*
U.S. Cl. 290—40 R 20 Claims



1. Apparatus for controlling fuel flow in a combustion turbine during a load transient, wherein a load signal representative of the load on said combustion turbine is given and a load transient is defined as the period of a sudden increase in load demand on said combustion turbine, said apparatus comprising,

fuel flow means for regulating the flow of fuel in said combustion turbine in response to a control signal;

controller means for generating a control signal representative of the difference between said load signal and a limit signal and for providing said control signal to said fuel flow means; and

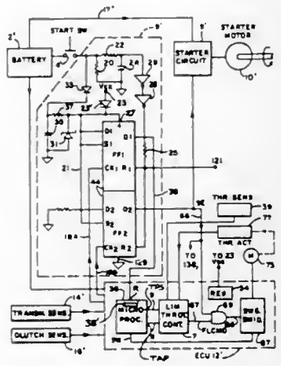
limiting means for summing said load signal and a maximum instantaneous load value thereby generating a sum and for generating said limit signal by varying said sum over time from a first value to said sum.

5,252,861

STARTER INTERLOCK FOR ELECTRONICALLY CONTROLLED VEHICLE

Jon A. Steeby, Schoolcraft, and Steven H. LaPointe, Portage, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jul. 18, 1991, Ser. No. 732,015
Int. Cl.[5] F02N *17/00*; F02P *9/00*
U.S. Cl. 307—10.6 5 Claims



1. A method for starting an engine of a vehicle, said vehicle having: a transmission; a source of electrical power (2'); an electronic control unit (ECU); starter equipment including a start switch (4'), a starter motor (10') electrically connectable (8') with said source of electrical power, said starter equipment being responsive to a crank command (at Q2) to connect said starter motor with said source of electrical power; comprising the steps of:

actuating said start switch (4') to produce a start-switch signal (at R1, R2);

sensing (14') when said transmission is in neutral and providing a transmission-status signal accordingly;

receiving said transmission-status signal is said ECU (12'), and providing in response thereto a first safety signal (at 18A);

receiving said start-switch signal (at R1) and said first safety signal (at CK1) in a first interlock device (FF1) and responding thereto by latching said first interlock device so as to provide therefrom a first output signal (at Q1);

receiving said first output signal at said ECU (at R) and responding thereto by resetting said ECU to a disabled condition, said disabled condition being characterized by including a second safety signal (at 18B);

receiving said second safety signal (at CK2) in a second interlock device (FF2) and responding thereto by latching said second interlock device so as to provide therefrom a second output signal (at Q2) to serve as a crank command;

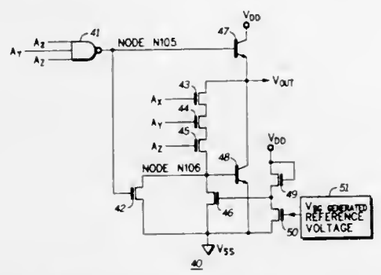
receiving said crank command (Q2) at said starter equipment (8', 10'), whereby to start said engine.

5,252,862

BICMOS LOGIC GATE

John W. Eagan, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 30, 1992, Ser. No. 876,253
Int. Cl.[5] H03K *19/02*
U.S. Cl. 307—446 15 Claims



1. A BICMOS logic gate, comprising:

a first power supply voltage terminal for receiving a first power supply voltage having an upper and a lower limit;

a second power supply voltage terminal for receiving a second power supply voltage;

logic means for receiving a plurality of input signals and providing an internal logic signal in response thereto;

a first bipolar transistor having a collector coupled to said first power supply voltage terminal, a base for receiving said internal logic signal, and an emitter for providing an output signal;

a second bipolar transistor having a collector coupled to said emitter of said first bipolar transistor, a base, and an emitter coupled to a second power supply voltage terminal;

controllable conduction means, responsive to said plurality of input signals, for providing a conductive path between said collector and said base of said second bipolar transistor;

discharge means, responsive to said internal logic signal, for providing a conductive discharge path between said base and said emitter of said second bipolar transistor when said first bipolar transistor is conductive; and

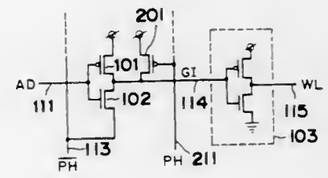
shunting means, responsive to a reference voltage proportional to said first power supply voltage, for providing a conductive path between said base of said second bipolar transistor and said second power supply voltage terminal when said first power supply voltage is at said upper limit, and being substantially non-conductive when said first power supply voltage is at said lower limit.

5,252,863

DRIVE CIRCUIT FOR USE IN A SEMICONDUCTOR INTEGRATED CIRCUIT

Tsuguyasu Hatsuda, Neyagawa, and Seiji Yamaguchi, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 9, 1992, Ser. No. 848,372
Claims priority, application Japan, Mar. 11, 1991, 3-44786
Int. Cl.[5] H03K *19/20*
U.S. Cl. 307—452 4 Claims



1. In a drive circuit suited for use in a semiconductor integrated circuit, said drive circuit capable of performing a high-speed switching in compliance with a synchronizing signal and comprising a number of drive circuit elements, each of said drive circuit elements comprising:

a first P-channel MOSFET having a gate connected to an input line of a first input signal and a source connected to a power supply line;

an N-channel MOSFET having a gate connected to the input line of said first input signal, a source connected to an input line of an inverted logic signal of a second input signal, and a drain connected to a drain of said first P-channel MOSFET;

a second P-channel MOSFET having a gate connected to an input line of said second input signal, a source connected to the power supply line, and a drain connected to the drain of said first P-channel MOSFET; and

an inverter circuit having an input connected to the drain of said first P-channel MOSFET,

whereby an output signal is generated in synchronization with said second input signal.

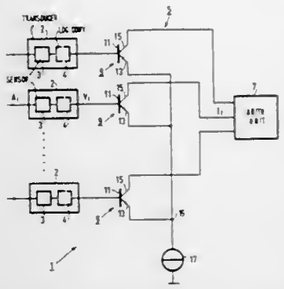
5,252,864

NORMALIZATION CIRCUIT FOR A MEASURING DEVICE

Cornelis S. Kooijman, Eindhoven, Netherlands, assignor to U. S. Philips Corporation, New York, N.Y.

Filed Oct. 17, 1991, Ser. No. 777,990
Claims priority, application Netherlands, Oct. 19, 1990, 9002279
Int. Cl.[5] G06F *7/556*; G01R *7/00*
U.S. Cl. 307—492 19 Claims

1. A measuring device comprising; at least two transducer units provided with a sensor for sensing an input quantity and for producing a signal which is dependent on the input quantity, a normalization circuit which determines the ratio of a linear combination of a number of input quantities to the sum of the input quantities, characterized in that each transducer unit comprises converter means for converting the input quantities into signals which are proportional to the logarithm of the input quantities, the normalization circuit comprising a number of first identical bipolar transistors which correspond to the number of input quantities, said transistors comprising a base, an emitter and a collector, means for applying an output signal of the converter means to the base of a first transistor, and



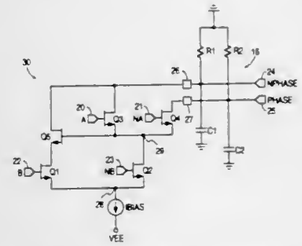
wherein the emitters of the first transistors are collectively connected to a constant current source via an emitter junction.

5,252,865

INTEGRATING PHASE DETECTOR

William H. Davenport, Hillsboro, and Gary D. McCormack, Aloha, both of Oreg., assignors to TriQuint Semiconductor, Inc., Beaverton, Oreg.

Filed Aug. 22, 1991, Ser. No. 748,799
Int. Cl.[5] H03K *5/26, 9/06*
U.S. Cl. 307—514 10 Claims



1. An integrating phase detector comprising:

a logic gate having first and second inputs for receiving first and second input signals, the logic gate further having a current output for providing a current pulse proportional to the phase difference between the first and second input signals, the current output having a minimum pulsewidth substantially limited only by the f_T of devices comprising the logic gate; and

integrating loads means directly connected to the current output of the logic gate for integrating the current pulse to provide a DC voltage proportional to the phase difference between the first and second input signals;

wherein the logic gate comprises a differential OR gate having first and second differential inputs and a differential current output including a noninverting and an inverting single-ended output; and

wherein the differential OR gate comprises:

a first differential pair of transistors having a differential input for receiving the first differential input signal, a differential output forming the differential current output, and a first bias node; and

a second differential pair of transistors having a differential input for receiving the second differential input signal, an output coupled between one of the single-ended outputs and the first bias node, and a second bias node for receiving a bias current.

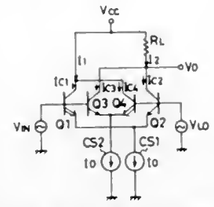
VOL 1155 ISS 2 OCT 12 1993 UMI

5,252,866

FREQUENCY MIXING CIRCUIT

Katsuji Kimura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 23, 1992, Ser. No. 965,426
Claims priority, application Japan, Oct. 25, 1991, 3-307036
Int. Cl.[5] H03K 5/26
U.S. Cl. 307—529 6 Claims



1. A frequency mixing circuit, comprising:
a first differential pair of two bipolar transistors whose emitter areas are different from each other;
a first constant current source for driving said first differential pair;
a second differential pair of two bipolar transistors whose emitter areas are different from each other; and
a second constant current source for driving said second differential pair;
wherein the collectors of said respective transistors having a large emitter area of said first and second differential pairs are connected in common and the collectors of said respective transistors having a small emitter area of said first and second differential pairs are connected in common;
the base of said transistor having a large emitter area of said first differential pair and the base of said transistor having a small emitter area of said second differential pair are connected in common, and the base of said transistor having a large emitter area of said second differential pair and the base of said transistor having a small emitter area of said first differential pair are connected in common; and
a first alternating current signal to be mixed is applied to one of two sets of said commonly connected bases and a second alternating current signal to be mixed is applied to the other set thereof.

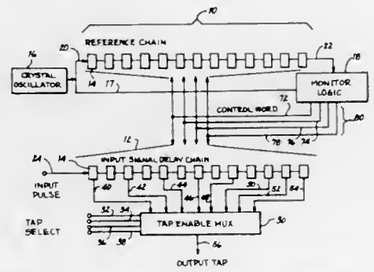
5,252,867

SELF-COMPENSATING DIGITAL DELAY SEMICONDUCTOR DEVICE WITH SELECTABLE OUTPUT DELAYS AND METHOD THEREFOR

Peter H. Sorrells, Chandler, and Ned D. Garinger, Tempe, both of Ariz., assignors to VLSI Technology, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 836,078, Feb. 14, 1992. This application Feb. 28, 1992, Ser. No. 843,488
Int. Cl.[5] H03K 5/13
U.S. Cl. 307—606 3 Claims

1. A self-compensated digital delay semiconductor device comprising, in combination:
a first delay chain having a plurality of delay element means each of which is for providing a digitally-selectable delay from input to output, said delay element means being configured with said output of each of said plurality of delay element means connected to said input of the successive delay element means in serial fashion;
crystal-controlled oscillator means for providing an oscillating digital input to the first of said plurality of delay element means of said first delay chain, said oscillating digital input being substantially a square wave in shape;
a monitor logic unit having a plurality of outputs comprising control words which are driven in response to the time a first digital signal edge arrives at a first input of said monitor logic unit when compared to the time a second digital signal edge arrives at a second input of said monitor logic unit, said first input being electrically coupled to the output of said first delay chain, and said second input being electrically coupled to said oscillating digital input of said crystal-controlled oscillator means;
a second delay chain having a configuration of a plurality of delay element means each of which is for providing a digitally-selectable delay from input to output and each of which is identical in number to each of said plurality of delay element means of said first delay chain, having an input coupled to the digital signal to be delayed, and physically located adjacent to said first delay chain on a semiconductor die such that variations will affect said first delay chain and said second delay chain in the same manner;



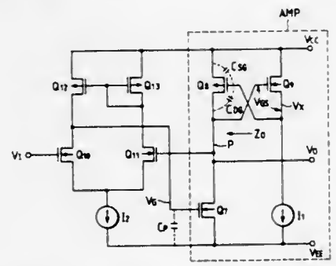
said plurality of delay element means of said first delay chain and said plurality of delay element means of said second delay chain each having a digitally-selectable delay from said input to said output provided by driving said control words of said monitor logic unit to a plurality of inputs comprising delay control inputs on each of said plurality of delay element means; and
tap enable multiplexer means coupled to a plurality of the outputs of said plurality of delay element means in said second delay chain, having output taps and a plurality of tap select lines for selecting one of said outputs of said plurality of delay element means in said second delay chain to be electrically coupled to said output taps, said plurality of tap select lines being input lines to said tap enable multiplexer means.

5,252,868

CMOS AMPLIFIER CIRCUIT AND CCD DELAY LINE WITH CMOS AMPLIFIER CIRCUIT

Takashi Miida; Tatsuya Hagiwara, and Yasumasa Hasegawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 20, 1991, Ser. No. 764,512
Claims priority, application Japan, Sep. 25, 1990, 2-251851
Int. Cl.[5] H03K 5/13, 5/153
U.S. Cl. 307—607 20 Claims



1. An analog CCD amplifier circuit, comprising:
an active load type source-grounded inverting amplifier circuit comprising:

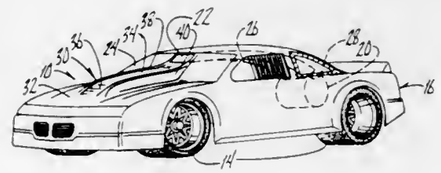
a driving MOS transistor having a gate electrode connected to receive an input, and
an active load MOS transistor, connected to said driving MOS transistor at a connecting point, for inverting and amplifying the input signal at the connecting point; and
a control circuit for applying a control signal to a gate electrode of said active load MOS transistor, said control circuit having a low output impedance and the control signal being substantially inversely proportional to a drain-source voltage of said active load MOS transistor and being level-shifted by a predetermined voltage.

5,252,869

MEANS AND METHOD FOR COOLING RADIO-CONTROLLED VEHICLE MOTORS

Patrick D. Gordin, Oskaloosa, Iowa, assignor to S & K Racing Products, Inc., Oskaloosa, Iowa

Filed Mar. 12, 1992, Ser. No. 849,944
Int. Cl.[5] H02K 9/00; A63H 30/04, 29/22
U.S. Cl. 310—58 1 Claim



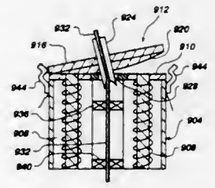
1. An apparatus for cooling an electrical motor for radio-controlled, scale-model vehicle having a body shell and a forward-facing portion of the body shell comprising:
a means for receiving air associated with the forward-facing portion of the body shell, the means for receiving air including an aperture in the forward-facing portion of the body shell;
a means for distributing air on or near the motor; and an air conduit means for communicating the means for receiving air with the means for distributing air extending substantially through the body shell;
the body including a hood and a windshield, the means for receiving air being defined by an aperture in the windshield, a raised portion extending forwardly from the aperture in the windshield, and side walls extending above the raised portion on opposite sides of the raised portion.

5,252,870

MAGNETIC ECCENTRIC MOTION MOTOR

Stephen C. Jacobsen, 274 S. 12th East, Salt Lake City, Utah 84102, and Clark C. Davis, 4564 Wallace La., Salt Lake City, Utah 84117

Filed Mar. 1, 1991, Ser. No. 663,444
Int. Cl.[5] H02K 7/06; F01C 1/02
U.S. Cl. 310—82 12 Claims



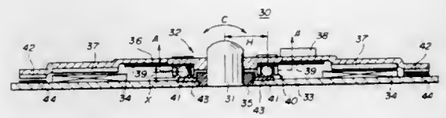
1. An eccentric-motion motor comprising
a stator defining a generally circular pathway,
an armature made of a ferromagnetic material, having a generally conical surface area, and being disposed on the stator with the conical surface area located above the pathway,
a plurality of electromagnets disposed in the stator in sequence under the pathway about a stator axis,
an elongate drive shaft disposed in general alignment with the stator axis and coupled to the armature to rotate as the armature rolls,
means for successively energizing the electromagnets to attract the armature and cause it to roll on its conical surface over the pathway in a precession motion, to thereby cause the shaft to rotate,
wherein said conical surface area is concave, wherein said armature is formed generally in the shape of a disk having a central opening and an upper surface which faces away from the conical surface area, wherein said drive shaft is rotatably disposed in a stator so that one end thereof extends through the central opening in the armature, said motor further including a coupling disk made of a flexible material joined at its center to said one end of the drive shaft, and at its perimeter to the upper surface of the armature near its perimeter so that as the armature rolls in the pathway, the coupling disk and thus the drive shaft are caused to rotate.

5,252,871

ROLLER THRUST BEARING STRUCTURE FOR SPINDLE SHAFT

Kazuhiko Inoue, Houya, Japan, assignor to TEAC Corporation, Tokyo, Japan

Filed Aug. 8, 1991, Ser. No. 742,836
Claims priority, application Japan, Aug. 11, 1990, 2-212093
Int. Cl.[5] H02K 7/08, 1/22
U.S. Cl. 310—90 2 Claims



1. A bearing structure adapted to rotatably support a spindle shaft on a frame, said bearing structure comprising:
a generally circular table which is fixed to the spindle shaft in a form of a flange;
a radial bearing, fixed on the frame, for rotatably supporting the spindle shaft in a radial direction of the spindle shaft;
a support member, located between said table and the frame, for rotatably supporting said table on the frame so as to support the spindle shaft in a thrust direction of the spindle shaft, said thrust direction being perpendicular to the radial direction of the spindle shaft, wherein said support member includes a plurality of rolling elements and a retainer for maintaining a predetermined gap between the rolling elements;
a ring-shaped plate provided on a top surface of the frame at a position at least confronting said rolling elements of said support member, said rolling elements making contact with the ring-shaped plate; and
a chuck spring which is provided on a bottom surface of said table, said rolling elements making contact with said chuck spring.

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5,252,872

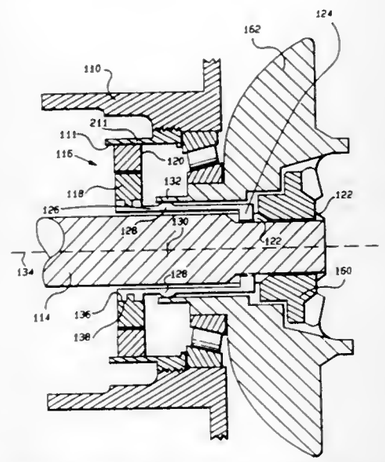
DIAMETRAL RUNOUT REDUCER FOR DRIVING A ROTARY SENSOR

David E. Peck, Rochester Hills, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 590,994, Oct. 1, 1990, Pat. No. 5,107,158. This application Jul. 25, 1991, Ser. No. 735,591

Int. Cl.[5] H02K *5/16*; F16C *25/04*

U.S. Cl. 310—90 6 Claims



1. A rotary portion for exciting a respective sationary portion of a speed sensor disposed within a differential including a rotatable differential case bearingly supported in said carrier, an axle shaft driven by a side gear of said differential contained within said differential case, said differential case including a rotatable axially extending flange member and said carrier including a nonrotatable adjusting ring arranged coaxially with respect to said flange member providing axial adjustment of the position of the differential case relative to said carrier wherein the improvement comprises;

an annular axially extending member coaxially disposed about said axle shaft having a first end drivingly engaged therewith;

a second opposing end of said annular member drivingly engaging said rotary portion;

said annular member having a radially extending portion disposed proximate said second end defining a peripheral surface which extends equidistantly from a central point;

said rotatable axially extending flange member defining a bore having a central axis which is maintained coincident with a preferred axis of rotation;

said bore having a dimensional interrelationship with said radially extending portion which facilitates a sliding relation therebetween, thereby maintaining said central point coincident with said central axis wherein diametral runout of said second end with respect to said first end is reduced by a factor which may be determined by calculating the distance between the central point and the first end divided by the distance between the central point and the second end; and

a stationary portion disposed within an axial flange disposed on said adjusting ring and extending in a direction opposite said differential case, said stationary portion being thereby maintained proximate said rotary portion for producing an electrical signal indicative of the relative rotational speed of said flange member and said drivingly engaged annular axially extending member.

5,252,873

DC BRUSHLESS MOTOR

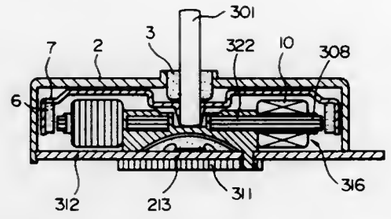
Syougo Hamamoto; Kouji Kuyama, and Makoto Hasegawa, all of Yonago, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 7, 1992, Ser. No. 925,746

Claims priority, application Japan, Sep. 6, 1991, 3-226974; Sep. 9, 1991, 3-227760

Int. Cl.[5] H02K *11/00, 7/08*

U.S. Cl. 310—90 13 Claims



1. A DC brushless motor comprising:

a rotor portion including a rotating shaft and a multipolar permanent magnet which is carried by said rotating shaft so as to be rotated with it;

a means for rotatably supporting said rotating shaft; and

a stator portion including an armature which is provided with coils on its peripheries, a circuit board above which said armature is fixed to be opposite to said rotary permanent magnet, and an integrated circuit device for drive control of the motor, said integrated circuit device being provided on said circuit board at a location where it faces a central part of said armature, said rotating shaft terminating substantially at the middle of the height of said motor so as to leave a space between the end of said rotating shaft and said circuit board, and said motor further including a means for receiving thrust exerted on said rotating shaft, and said armature including an iron core formed by laminating a plurality of plates, and a bottom portion of a hole bored in said iron core constituting said thrust receiving means.

5,252,874

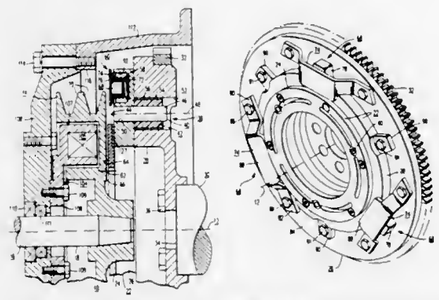
ELECTROMAGNETIC CLUTCH WITH TORQUE ISOLATION FOR RETURN SPRINGS

Herman H. Viegas, Bloomington, Minn., assignor to Thermo King Corporation, Minneapolis, Minn.

Filed Nov. 20, 1992, Ser. No. 980,415

Int. Cl.[5] H02K *49/00*; F16D *19/00*

U.S. Cl. 310—103 6 Claims



1. An electromagnetic clutch having first rotatable means adapted for connection to driven means; contact plate means; first mounting means for mounting said contact plate means to

second rotatable means associated with an external driving source; the first mounting means including a plurality of compression springs for biasing the contact plate means away from the first rotatable means; and electromagnetic means for overcoming the bias of the compression springs when energized, for causing said contact plate means to engage said first rotatable means, the improvement comprising:

said first mounting means for mounting said contact plate means to said second rotatable means including resilient means which allow the contact plate means to oscillate circumferentially relative to the second rotatable means, in response to torsional oscillations in the external driving source,

and second mounting means for mounting each of said compression springs between said second rotatable means and said contact plate means, with said second mounting means isolating said compression springs from damaging effects of circumferential oscillation of the contact plate means relative to the second rotatable means.

5,252,875

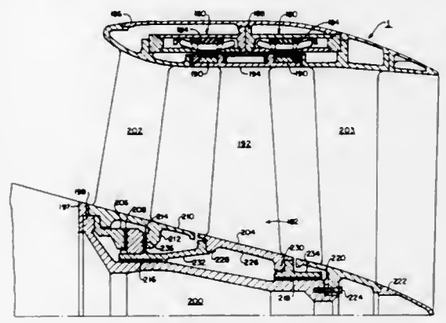
INTEGRAL MOTOR PROPULSOR UNIT FOR WATER VEHICLES WITH PLURAL ELECTRIC MOTORS DRIVING A SINGLE PROPELLER

Luciano Veronesi, and James A. Drake, both of O'Hara Township, Allegheny County, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 571,970, Aug. 23, 1990, Pat. No. 5,220,231. This application Mar. 28, 1991, Ser. No. 676,400

Int. Cl.[5] H02K *16/00, 7/14, 7/08*

U.S. Cl. 310—114 17 Claims



1. A submersible propulsor unit, comprising:

a shroud having a water inlet and a water outlet;

a propeller means having a unitary hub and a single blade assembly rotatably mounted within said shroud on a shaft;

at least two independently operable electric motors for driving said propeller means, each electric motor including a rotor mounted around the periphery of the single blade assembly of said propeller means and a stator mounted within said shroud and spaced away from but magnetically coupled to said rotor; and

a bearing assembly having at least one bearing surface disposed between the hub of said propeller means and said shaft.

5,252,876

FREQUENCY GENERATOR AND A D.C. MOTOR EQUIPPED WITH SAME

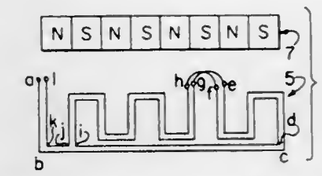
Motoyoshi Kawai, Yonago; Yoshifumi Shimogaki, Tottori, and Hideki Shimada, Yonago, all of Japan, assignors to Matshushita Electric Industrial Co., Ltd., Japan

Filed Sep. 8, 1992, Ser. No. 941,895

Claims priority, application Japan, Sep. 9, 1991, 3-071901[U]

Int. Cl.[5] H02K *3/00*

U.S. Cl. 310—184 8 Claims



1. A frequency generator comprising a circular frequency generating magnet, a plurality of generating coils, the generating coils being arranged adjacent a polar periphery of the frequency generating magnet, the coils each comprising line elements, the line elements of each coil being arranged to detect simultaneously like magnetic signals from the frequency generating magnet, the coils being crossed with each other, and a plurality of canceling coils provided on one radial side of the generating coils, the canceling coils and the generating coils being alternately connected in series.

5,252,877

SLOT INSULATING MAGNETIC WEDGES

Takao Sawa; Yasuo Sakata, both of Kanagawa; Sadayoshi Hibino; Tadayuki Sato, both of Mie; Motoyasu Mochizuki, Aichi; Tadatomo Kimura, and Shigeo Ozawa, both of Mie, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

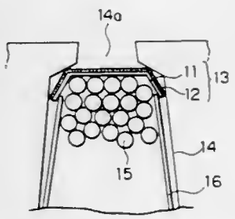
PCT No. PCT/JP91/00865, § 371 Date Dec. 13, 1991, § 102(e) Date Dec. 13, 1991, PCT Pub. No. WO92/00625, PCT Pub. Date Jan. 9, 1992

PCT Filed Jun. 27, 1991, Ser. No. 781,200

Claims priority, application Japan, Jun. 29, 1990, 2-068492[U]; Nov. 13, 1990, 2-117739[U]; Nov. 13, 1990, 2-117740[U]

Int. Cl.[5] H02K *3/48*

U.S. Cl. 310—214 11 Claims



1. A slot insulating magnetic wedge inserted into a vicinity of a center of an opening portion of a stator slot, said slot insulating magnetic wedge being in contact with an inner surface of said stator slot of a motor, said slot insulating magnetic wedge comprising:

a non-magnetic insulating thin leaf shaped material, and

a magnetic material layer laminated on at least one surface of said non-magnetic insulating thin leaf shaped material, said magnetic material layer comprising a Co-based amorphous magnetic alloy thin ribbon with a composition substantially represented with the following general formula:

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$(Co_{1-a-b}M_aM'_b)_{100-c}X_c$

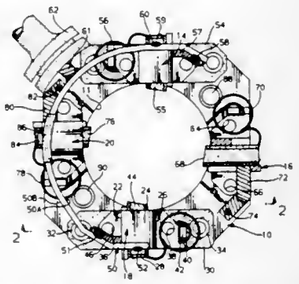
where M is at least one element selected from Fe, Ni, and Mn; M′ is at least one element selected from V, Nb, Ta, Cr, Mo, and W; X is at least one element selected from Si, B, P, and C; a, b and c are values which satisfy the relations of $0.01 \leqq a \leqq 0.2$, $0 \leqq b \leqq 0.1$, and 8 atomic $\% \leqq c \leqq 32$ atomic %, respectively.

5,252,878

BRUSH HOLDER ASSEMBLY

James A. Spellman, Noblesville; Jeffrey L. Mummert, Anderson, and Frank D. Sorg, Middletown, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 17, 1992, Ser. No. 991,886
Int. Cl.[5] H02K *13/00*
U.S. Cl. 310—239 **3 Claims**



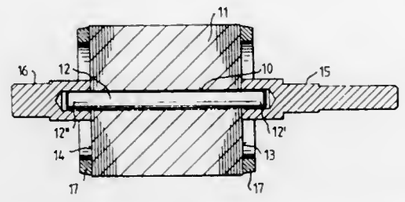
1. A brush holder assembly for a dynamoelectric machine comprising, a support plate defining a central opening, a first brush holder formed of metallic material carried by said support plate having an end portion that is spaced from said support plate, said first brush holder having a first integral tang that extends axially from said end portion of said first brush holder, said first tang being located normal to said support plate, a first brush slidably supported by said first brush holder for radial inward movement, a second brush holder formed of metallic material carried by said support plate having an end portion that is spaced from said support plate, said second brush holder having a second integral tang that extends axially from said end portion of said second brush holder, said second tang located normal to said support plate, said second brush holder being circumferentially spaced from said first brush holder, a second brush slidably supported by said second brush holder for radial inward movement, a bus bar formed of electrically conductive metallic material extending between said first tang and said second tang, said bus bar having a predetermined width and a predetermined thickness, said width being larger than said thickness, said bus bar being positioned such that its width extends substantially normal to said support plate, said first tang being welded to said bus bar at first weld area, said second tang being welded to said bus bar at a second weld area, a first conductor connected to said first brush, said first conductor being welded to said bus bar, a second conductor being welded to said bus bar and a third conductor welded to said bus bar for feeding current to said bus bar.

5,252,879

MULTI-PART ROTOR SHAFT FOR SMALL ELECTRIC MOTORS

Lothar Romberg, and Jürgen Henke, both of Oldenburg, Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 26, 1992, Ser. No. 841,531
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1991, 4106131
Int. Cl.[5] H02K *1/22*
U.S. Cl. 310—261 **5 Claims**



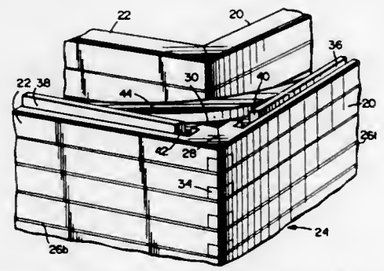
1. An electric-motor rotor comprising
(a) a rotor lamina stack defining a throughgoing opening and having opposite end faces; and
(b) a rotor shaft including
(1) a central shaft portion received in said opening and having first and second shaft ends projecting from said rotor lamina stack beyond the opposite end faces;
(2) first and second separate shaft stubs each having a blind bore; the blind bore of said first separate shaft stub receiving said first shaft end and the blind bore of said second separate shaft stub receiving said second shaft end; and
(3) means for bonding said first and second shaft ends in the blind bores to said first and second separate shaft stubs.

5,252,880

DYNAMOELECTRIC MACHINE ROTOR ENDWINDINGS WITH COOLING PASSAGES

Edmund E. Kazmierczak, and Victor R. Abate, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 24, 1992, Ser. No. 980,732
Int. Cl.[5] H02K *3/46, 9/10, 3/04*
U.S. Cl. 310—270 **20 Claims**



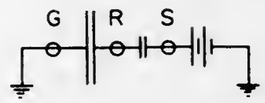
1. In a dynamoelectric machine having endwindings including at least one conductor bar and at least one end turn having ends forming a junction, a joint including said junction of said conductor bar and said end turn for facilitating passage of cooling gas therebetween, comprising:
a gusset secured to the ends of said conductor bar and said end turn for strengthening said joint;
said one conductor bar and said one end turn each having a passage for passing cooling gas therealong and a port for passing cooling gas therethrough, said port in said conductor bar opening through a side thereof and said port in said end turn opening through a side thereof, said ports being located short of said junction and opening toward one side of said joint;
said gusset having a portion extending to said one side of said joint beyond said conductor bar and said end turn and a barrier spaced from said junction and projecting from said gusset portion on said one side of said joint to define at least a portion of a cooling gas channel extending between said ports and along said gusset portion and said barrier whereby cooling gas may pass through said passages, said ports and said channel.

5,252,881

MICRO MOTORS AND METHOD FOR THEIR FABRICATION

Richard S. Muller, Kensington; Longsheng Fan, Berkeley, and Yu C. Tai, Albany, all of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Dec. 14, 1988, Ser. No. 284,084
Int. Cl.[5] H02N *1/00*
U.S. Cl. 310—309 **10 Claims**



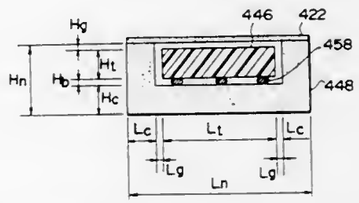
1. A microminiature electric motor comprising:
a substrate base covered with a first layer of silicon dioxide and a second layer of silicon nitride;
a hub member fixed to and extending above said base;
a rotor having a plurality of poles and rotatable in a circular path on said hub member;
a fixed stator including a series of poles surrounding the circular path of said rotor poles, said hub member, said rotor and said stator all being comprised of sequentially deposited and etched film materials on said substrate base; and
a plurality of conductive lead members on said base connected to said stator poles and adapted for connection with a power source.

5,252,882

SURFACE ACOUSTIC WAVE DEVICE AND ITS MANUFACTURING METHOD

Hiromi Yatsuda, Mitaka, Japan, assignor to Japan Radio Co., Ltd., Tokyo, Japan

Filed Jun. 27, 1991, Ser. No. 721,823
Claims priority, application Japan, Jul. 2, 1990, 2-175015
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—313 R **16 Claims**



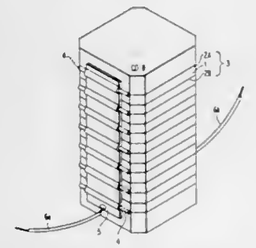
1. A surface acoustic device comprising:
a surface acoustic wave element having an input electrode, an output electrode and an earth electrode, formed on one of the surfaces; when a signal of a designated frequency range is applied between the input electrode and the earth electrode, surface acoustic wave is generated; the surface acoustic wave is received by the output electrode and an electric signal is generated between the output electrode and the earth electrode;
a surface mount package having an input pad, an output pad and an earth pad, formed on the surface, the input pad, the output pad and the earth pad are placed on the surface of the surface mount package so that they face the input electrode, the output electrode and the earth electrode, respectively, and wherein the earth pad is formed on a predetermined area of the surface of the surface mount package except gap areas, along the border of the input pad and the output pad;
a connection means that electrically connects the input pad, the output pad and the earth pad with the input electrode, the output electrode, and the earth electrode, respectively, said connecting means comprising metal bumps provided on said input electrode, output electrode and earth electrode for electrically connecting said pads and electrodes when at least one of heat, pressure and supersonic wave is applied to said metal bumps; and
said surface mount package including positioning means for positioning the metal bumps formed on the input electrode, the output electrode and the earth electrode to the input pad, the output pad and the earth pad, respectively.

5,252,883

LAMINATED TYPE PIEZOELECTRIC ACTUATOR

Masahiro Kondo, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 30, 1992, Ser. No. 828,221
Claims priority, application Japan, Jan. 30, 1991, 3-10242
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—328 **4 Claims**



1. A laminated type piezoelectric actuator comprising:
a laminated body of piezoelectric ceramic layers and internal electrode layers, each of said layers having substantially the same cross sectional area;
insulator films respectively covering exposed portions of odd numbered and even numbered layers of said internal electrode layers at one and the other of a mutually opposing pair of side faces running in parallel with the lamination direction of said laminated body; and
external electrode films provided on the respective side faces covering said insulator films and the exposed portions of said internal electrode layers for electrical connection therebetween,
wherein said laminated body has edges extending in parallel to the lamination direction, and said edges are machined to form one of a convex, arcuate shape or an angled, planar shape, thereby reducing the formation of microcracks at said edges.

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5,252,884

TRANSLATION DEVICE

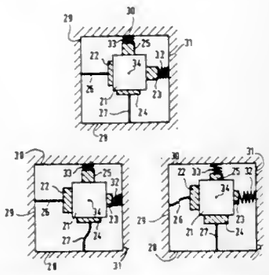
Marinus J. J. Dona, Eindhoven, Netherlands, assignor to U.S. Philips Corp., New York, N.Y.

Filed Apr. 28, 1992, Ser. No. 875,904

Claims priority, application European Pat. Off., Apr. 29, 1991, 91201023.8

Int. Cl.[5] H01L *41/04, 41/08, 41/18*

U.S. Cl. 310—328 10 Claims



1. A translation device comprising an actuator body and a coupling member which mechanically contacts the actuator body, said actuator body having at least one body of a solid electrolyte which is disposed between a pair of supporting surfaces and which comprises at least one pair of electrode having dimensions between which mass transport takes place by said electrolyte when an electric potential difference is applied to said electrodes, said mass transport causing the dimensions of the electrodes to change so that the coupling member is subject to a translation in a first direction relative to a reference.

2. A translation device as claimed in claim 1, characterized in that the actuator body also comprises a second body of solid electrolyte having a second pair of electrodes and a second pair of supporting surfaces, enabling a translation in a second coordination direction transversely to the first coordination direction, and in that the actuator body further comprises a third body of solid electrolyte having a third pair of electrodes and a third pair of supporting surfaces, enabling a translation in a third coordination direction transversely to the first and the second coordination directions.

5,252,885

METAL HALIDE ARC DISCHARGE LAMP ASSEMBLY

Martin E. Muzeroll, Merrimack; Simone P. Bazin, Bedford; Norman A. Mathieu, Durham; Ronald C. Lekebusch, Goffstown, and Edward H. Nortrup, Bedford, all of N.H., assignors to GTE Products Corporation, Danvers, Mass.

Continuation of Ser. No. 539,752, Jun. 18, 1990, Pat. No. 5,136,204, which is a continuation-in-part of Ser. No. 449,024, Dec. 11, 1989, abandoned. This application Sep. 10, 1991, Ser. No. 757,084

The portion of the term of this patent subsequent to Aug. 4, 2009, has been disclaimed.

Int. Cl.[5] H01J *17/16, 61/30*

U.S. Cl. 313—25 14 Claims

1. An electric lamp assembly comprising:

a sealed light-transmissive lamp envelope enclosing an interior;

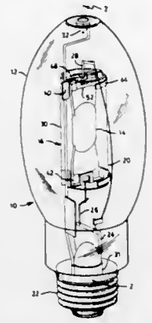
a lamp capsule having at least one end located within said interior for generating light upon application of electrical energy, said capsule having a central axis and a press seal formed in said end;

means for coupling electrical energy through said envelope to said capsule;

a light-transmissive shroud located within said interior, said shroud surrounding said capsule and having at least one open end;

a frame within said interior for supporting said capsule and said shroud, said frame being mechanically mounted on said envelope;

capsule mounting means for mounting said capsule securely on said frame, said capsule mounting means including a



strap with projections thereon, said strap and projections being adapted to receive and grasp said press seal of said capsule; and

shroud mounting means for mounting said shroud securely on said frame.

5,252,886

HIGH-PRESSURE DISCHARGE LAMP WITH CERAMIC VESSEL

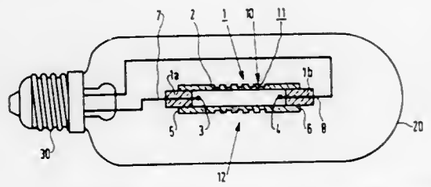
Max L. P. Renardus; Theodorus P. P. Kandelaars, both of Eindhoven, Netherlands; Samuel A. Carleton, and Cornelis A. J. Jacobs, both of Turnhout, Belgium, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 9, 1992, Ser. No. 865,530

Claims priority, application European Pat. Off., Apr. 16, 1991, 91200890.1

Int. Cl.[5] H01J *5/02, 61/30, 61/52*

U.S. Cl. 313—44 20 Claims



1. A high-pressure discharge lamp comprising an elongate discharge vessel sealed in a vacuumtight manner and having a tubular wall of ceramic material, said wall including a smoothly extending cylindrical inner surface and an outer surface, an ionizable filling within the discharge vessel, first and second discharge electrodes arranged at respective ends of the discharge vessel and between which an arc discharge is maintained during lamp operation, a respective current supply conductor connected to each discharge electrode which issues through the wall of the discharge vessel to the exterior, and cooling means for cooling the discharge vessel, characterized in that:

the cooling means include recesses in the outer surface of the discharge vessel which form a substantially regular external relief in the wall of the discharge vessel, and in that this relief is situated at least at a portion of the discharge vessel wall located between the electrodes and extends over the entire circumference of the discharge vessel.

5,252,887

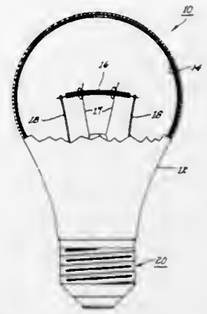
ENVIRONMENTALLY SAFE PINK LAMP

Juliana P. Reisman, Lyndhurst, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 21, 1992, Ser. No. 823,275

Int. Cl.[5] H01J *61/40*

U.S. Cl. 313—112 8 Claims



1. An electric lamp which exhibits a pink color when energized and which comprises a light transmissive envelope enclosing an electric light source within with a pink coating on the surface of said envelope, said coating containing a chrome tin pink sphene pigment.

5,252,888

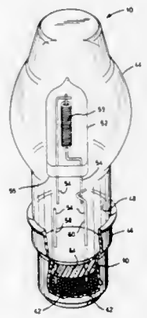
LAMP CAPSULE SUPPORT BASE

A. Charles Topel, Boston, and Lewis H. Palmer, III, Marblehead, both of Mass., assignors to GTE Products Corporation, Danvers, Mass.

Filed Dec. 30, 1991, Ser. No. 814,857

Int. Cl.[5] H01J *61/36;* H01K *1/36*

U.S. Cl. 313—318 15 Claims



1. A lamp comprising:

a light-transmissive outer envelope;

a lamp capsule;

a base;

a pair of leads extending from the base to the capsule and electrically connecting the base to the capsule, the base including a support structure including a layer of granular particles filling the base to a predetermined depth and surrounding the leads and a layer of solidified resin of predetermined thickness that covers the layer of granular particles, whereby the leads are supported along portions of their lengths in the base by each layer.

5,252,889

COLOR CRT WITH MEANS FOR CORRECTING MISLANDING OF ELECTRON BEAMS

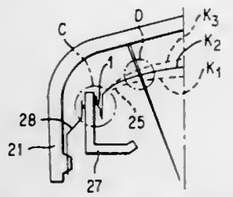
Woong B. Choi, Seoul, Rep. of Korea, assignor to GoldStar Co., Ltd., Rep. of Korea

Filed Nov. 27, 1991, Ser. No. 799,250

Claims priority, application Rep. of Korea, Nov. 29, 1990, 90-18517

Int. Cl.[5] H01J *29/07*

U.S. Cl. 313—404 2 Claims



1. A color cathode-ray tube comprising a screen panel, a fluorescent layer adjacent to an inner wall of said screen panel, a shadow mask positioned between an electron gun of the cathode ray tube and the fluorescent layer and further including a means for correcting the mislanding of electron beams, said shadow mask, being supported on a mask frame, selectively passing the electron beams emitted from an electron gun to form beam spots;

said correcting means including: (1) a first correcting means positioned between the shadow mask frame and an inner sidewall of the screen panel for changing the position of said shadow mask by being thermally expanded due to the heat transferred from said shadow mask; and (2) a second correcting means positioned between a skirt of the shadow mask and the mask frame for compensating a deviated position of said shadow mask by being expanded due to the heat transferred thereto, wherein said second correcting means moves said shadow mask away from said fluorescent layer.

5,252,890

COMPACT TYPE FLUORESCENT LAMP DEVICE HAVING CROOKED ARC PATH

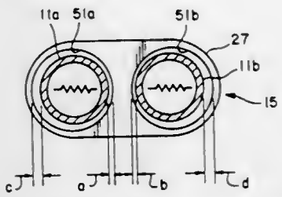
Takeo Yasuda, Yokohama, Japan, assignor to Toshiba Lighting and Technology Corporation, Tokyo, Japan

Continuation of Ser. No. 581,216, Sep. 11, 1990, abandoned. This application Aug. 10, 1992, Ser. No. 925,429

Claims priority, application Japan, Sep. 12, 1989, 1-234656

Int. Cl.[5] H01J *5/48*

U.S. Cl. 313—493 7 Claims



1. A compact type fluorescent lamp device comprising:

a bulb defining a crooked arc path therein, the bulb having first and second sealed ends which move outward so as to separate from each other at a variable moving distance during operation of the lamp;

a pair of electrode means, including a first electrode means disposed in the first sealed end, and a second electrode means disposed in the second sealed end, said electrode

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means for producing an arc between said first and second electrode means along the crooked arc path; and

base means for supporting the first and second sealed ends of the bulb, the base means having first and second surface defining first and second holes for respectively receiving the first and second ends of the bulb, the first and second ends of the bulb each having inner side surfaces respectively facing each other, and outer side surfaces opposite to the inner side surfaces, said first surface having a first part which faces and is adjacent to said inner side surface of the bulb and a second part which faces and is adjacent to said outer side surface of the bulb, and said second surface also having a first part which faces and is adjacent to said inner side surface of the bulb, and a second part which faces and is adjacent to said outer side surface, said first parts being portions of said surfaces which are closest to said inner side surfaces and said second parts being portion of said surfaces which are closest to said outer side surfaces, the inner side surface of the first end of the bulb separated from said first part of said first surface by a first inner distance A, the outer side surface of the first end of the bulb separated from said second part of said first surface by a first outer distance C, the inner side surface of the second end of the bulb separated from said first part of said second surface by a second inner distance B, the outer side surface of the second end separated from said second part of said second surface by a second outer distance D, the first and second inner distances A and B and the first and second outer distances C and D satisfying the following relationship:

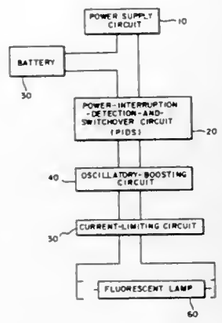
$$A+B<C+D.$$

5,252,891

UNINTERRUPTIBLE FLUORESCENT LAMP CIRCUIT AVAILABLE FOR EMERGENCY LIGHTING

Ching L. Huang, 4F, 168, San Yuan St., Taipei, Taiwan

Filed May 6, 1992, Ser. No. 878,925
Int. Cl.[5] H05B *41/29*
U.S. Cl. 315—86 **9 Claims**



1. An uninterruptible fluorescent lamp circuit available for emergency lighting comprising in sequence

a power supply circuit and a battery connected in parallel to each other,

a power-interruption-detection-and-switchover (PIDS) circuit,

an oscillatory boosting circuit,

a current-limiting circuit, and

a fluorescent lamp;

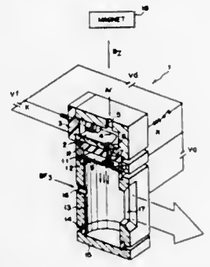
said oscillatory boosting circuit transforming the input power to it into a high-frequency, high-voltage power which passes through said current-limiting circuit before being outputted to energize said fluorescent lamp.

5,252,892

PLASMA PROCESSING APPARATUS

Akira Koshiishi, Kofu; Kohei Kawamura, Nirasaki; Masahiko Matsudo, and Naoki Takayama, both of Kofu, all of Japan, assignors to Tokyo Electron Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 480,765, Feb. 16, 1990, Pat. No. 5,089,747. This application Oct. 31, 1991, Ser. No. 786,009
Claims priority, application Japan, Feb. 16, 1989, 1-39016; Feb. 16, 1989, 1-39017; Feb. 28, 1989, 1-46888; Nov. 20, 1990, 2-314884
The portion of the term of this patent subsequent to Mar. 31, 2009, has been disclaimed.
Int. Cl.[5] H05H *1/02*
U.S. Cl. 315—111.81 **12 Claims**



1. A plasma processing apparatus comprising: a container having a plasma generation region;

means for introducing a processing gas into the plasma generation region;

at least one electrode having a surface directly exposed in the plasma generation region and formed of conductive ceramic;

means for applying a voltage to the conductive ceramic surface of the electrode; and

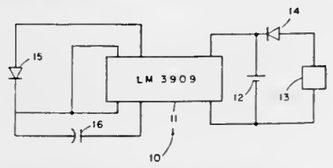
means for generating plasma of the processing gas in the plasma generation region in cooperation with the conductive ceramic surface of the electrode.

5,252,893

LIGHT FLASHER APPARATUS

Chaim Chacham, Rishon Lezion; Roni Friedman, Petach Tikva, and Uri Amir, Givat Savyon, all of Israel, assignors to Interplex Solar Corporation, Flushing, N.Y.

Filed Oct. 3, 1991, Ser. No. 770,558
Claims priority, application Israel, Jul. 8, 1991, 098755
Int. Cl.[5] H05B *37/00*
U.S. Cl. 315—200 A **19 Claims**



1. An electrical flasher circuit, comprising:

a rechargeable battery having a nominal voltage no greater than 1.2 V,

a solar panel having a nominal current rating of about 70 mA and a nominal voltage of about 3.6 V coupled to the rechargeable battery,

an oscillator circuit coupled to the rechargeable battery and to the solar panel having a nominal current drain under 0.5 mA and operative from a supply voltage in the range of about 0.8 V to at least said nominal voltage of said solar panel for producing an output voltage which oscillates at a predetermined frequency, and

at least one LED having a nominal drive current of about 0.5 mA coupled to the oscillator circuit for flashing in response to the oscillating output voltage;

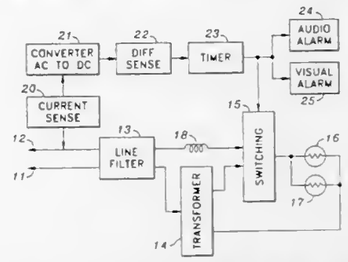
whereby the solar panel provides sufficient power to energize the oscillator circuit and to recharge the rechargeable battery when at least a predetermined threshold of light acts on the solar panel, and the rechargeable battery alone energizes the oscillator circuit for at least a first predetermined time period in the absence of said light.

5,252,894

ENERGY SAVING FLOURESCENT LAMP CONTROLLER

Abraham H. Bank, Loog Beach, Calif., and Ralph E. Hearn, Chehalis, Wash., assignors to T.T.I. Corporation, Signal Hill, Calif.

Filed Apr. 2, 1992, Ser. No. 862,455
Int. Cl.[5] H05B *41/36*
U.S. Cl. 315—307 **5 Claims**



1. For use in controlling a plurality of fluorescent lamps operated by an alternating current electrical supply, control means comprising:

sensing means for sensing the current applied to said fluorescent lamps;

converting means for converting said sensed current to a control signal;

differential sensing means for producting an output signal in response to increases of said control signal, said differential sensing means comprising:

a comparator having first and second inputs and an output;

a first coupling network coupling said first input to said converting means;

a second coupling network coupling said second input to said converting means; and

said first and second coupling networks having different time constants;

timing means producing a fixed duration signal in response to the occurrence of said output signal; and

power coupling means responsive to said timing means to apply an increased voltage to said fluorescent lamps when said fied duration signal is presenr and a reduced voltage in the absence of said fixed duration signal.

5,252,895

TFEL EDGE EMITTER STRUCTURE WITH LIGHT EMITTING FACE AT ANGLE GREATER THAN NINETY DEGREES TO SUBSTRATE STREET

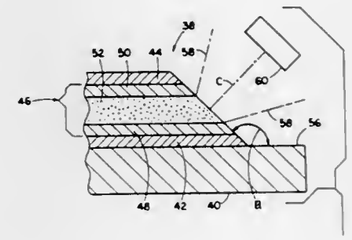
David Leksell, Oakmont; Norman J. Phillips, and Zoltan K. Kun, both of Pittsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 9, 1991, Ser. No. 697,371
Int. Cl.[5] G09G *3/30*
U.S. Cl. 313—506 **7 Claims**

1. A thin film electroluminescent (TFEL) edge emitter structure, comprising:

(a) a bottom substrate layer;

(b) an electroluminescent (EL) light-energy generating stack mounted on said bottom substrate layer and having a front edge;



(c) a street defined on a front edge portion of said bottom substrate layer extending forwardly from said front edge of said EL stack; and

(d) an inclined light emitting face which emits a divergent zone of light formed on said front edge of said EL stack adjacent to said substrate layer street and being disposed at an angle relative to said substrate layer street that is sufficiently enough greater than ninety degrees so that divergent zone of light emitted by said face is not obstructed by said street.

5,252,896

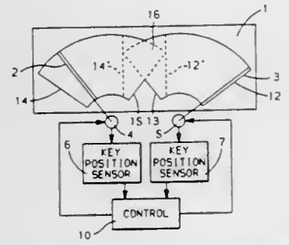
Patent Not Issued For This Number

5,252,897

DUAL MOTOR WIPER CONTROL

Eugene B. Porter, Beavercreek, and Thomas W. Holmes, Centerville, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 13, 1992, Ser. No. 867,554
Int. Cl.[5] B60S *1/08*
U.S. Cl. 318—443 **7 Claims**



1. A motor vehicle glass wiper system comprising, in combination:

first and second wiper blade systems, each wiper blade system having a wiper blade and a motor assembly, each wiper blade having a wipe pattern when its respective motor assembly is energized that is bounded by an outboard direction reversing position and an inboard direction reversing position, the wipe patterns of the first and second wiper blades each having a first zone adjacent its

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inboard direction reversing position and a second zone adjacent its outboard direction reversing position;

a respective sensing means for each wiper blade for indicating the transition of the wiper blade between the zones of its wipe pattern;

wiper motor control means for energizing each one of the wiper motors to move its respective wiper blade to the inboard direction reversing position and back to the outboard direction reversing position each time the sensing means of the other one of the wiper blades indicates a transition from the first zone to the second zone of its wipe pattern, whereby each one of the wiper blades is at the outboard direction reversing position of its wipe pattern while the other one of the wiper blades is moving toward or is in the first zone of its wipe pattern so that interference between the wiper blades is inhibited.

5,252,898

METHOD OF OPERATING A WINDSHIELD WIPER

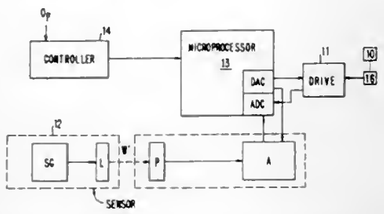
Peter Nolting, Buehlertal, and Juergen Mangler, Kuppenheim, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 710,355, May 31, 1991, abandoned. This application Sep. 30, 1992, Ser. No. 954,917

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1990, 4018903

Int. Cl.[5] **B60S** *1/08*

U.S. Cl. 318—444 **19 Claims**



1. Method of operating a windshield wiper intermittently to clean a windshield using an apparatus including at least one sensor (12), a signal processing device (13) connected to said sensor so as to receive signals therefrom and a control unit for said windshield wiper connected to said signal processing device (13), comprising the steps of:

a. generating in said sensor a plurality of signals (S) with time intervals (D) between successive signals for controlling the windshield wiper (10) according to an amount of rain on the windshield,

b. inputting to said signal processing device (13) predetermined weighting factors for the time intervals (I_{-1},I_{-2}, . . . I_{-n}) between successive past wiping processes; and

c. operating the windshield wiper (10) with said signal processing device at least partially according to said signals (S) to provide a plurality of wiping processes (W) so that the time interval (I) between successive current wiping processes depends, at least partly, on at least one of the time intervals (I_{-1}, I_{-2}, . . . I_{-n}) between past wiping processes (W_{-1}, W_{-2}, . . . W_{-n}) and at least one of the predetermined weighting factors.

11. Method of operating a windshield wiper intermittently to clean a windshield using an apparatus including at least one sensor (12), a signal processing device (13) connected to said sensor so as to receive signals therefrom and a control unit for said windshield wiper connected to said signal processing device (13), comprising the steps of:

a. generating in said sensor a plurality of signals (S) for controlling the windshield wiper (10) depending on an amount of rain on the windshield, and

b. operating the windshield wiper (10) with said signal processing device at least partially according to said signals (S) to provide a plurality of wiping processes (W) so that a time interval (I) between successive current ones of the wiping processes, in part, depends on a duration (T_{-1}, T_{-2}, . . . , T_{-n}) of at least one past wiping process (W_{-1}, W_{-2}, . . . W_{-n}), and, in part, depends on a number of signals (S) received from the sensor (12) in a certain time interval, and in part, depends on at least one of two intervals (I_{-1}, I_{-2}, . . . ,I_{-n}) between past wiping processes (W_{-1}, W_{-2}, . . . ,W_{-n}) and, in part, depends on at least one time interval (D_0,D_{-1}, . . . D_{-n}) between successive ones of said signals (S_0,S_{-1};S_{-1},S_{-2}; . . . S_{-n+1},S_{-n}).

5,252,899

NUMERICAL CONTROL SYSTEM

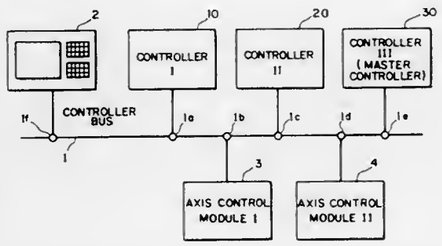
Hideaki Kawamura, Hachioji; Kentaro Fujibayashi, Musashino, and Morimasa Sato, Hachioji, all of Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

Continuation of Ser. No. 427,847, Oct. 18, 1989, abandoned. This application Apr. 30, 1992, Ser. No. 877,394

Claims priority, application Japan, Mar. 9, 1988, 63-55758

Int. Cl.[5] **G05B** *19/18, 19/10*

U.S. Cl. 318—568.1 **13 Claims**



1. A numerical control system for controlling a plurality of axes of a numerically controlled machine, comprising:

a controller bus;

a plurality of controllers, coupled to said controller bus, each of which can read, decode, and execute a numerical control command for a respective group of the plurality of axes in accordance with a selected one of a plurality of functional arrangements, each of the plurality of functional arrangements indicating particular groupings of the plurality of axes and corresponding controllers which are to control each particular grouping of the plurality of axes, a first one of the plurality of controllers capable of determining whether the first one of the plurality of controllers needs access to data which a second one of the plurality of controllers holds, the first one of the plurality of controllers being capable of alerting the second one of the plurality of controllers that the first one of the plurality of controllers needs access to the data which the second one of the plurality of controllers holds, and the second one of the plurality of controllers being capable of providing the first one of the plurality of controllers with the data in response to the alerting; and

an axis control module connected to said controller bus, for controlling the plurality of axes in response to the numerical control command.

5,252,900

HARMONIZATION CONTROL SYSTEM FOR PLURAL SHAFTS

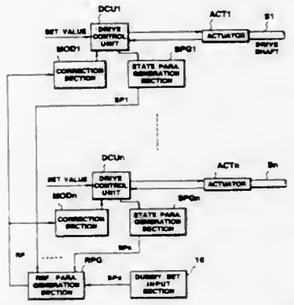
Shinichiro Uehara, and Yasuhiro Yuasa, both of Tokyo, Japan, assignors to Kabushiki Kaisha SG, Tokyo, Japan

Filed Dec. 27, 1990, Ser. No. 634,691

Claims priority, application Japan, Dec. 31, 1989, 1-341299

Int. Cl.[5] **G05B** *19/02*

U.S. Cl. 318—568.11 **27 Claims**



1. A harmonization control system for plural shafts comprising:

plural drive shafts;

drive control units each provided for one of the drive shafts for controlling driving of the drive shaft in response to an individually imparted set value;

state parameter generation means for generating, for each of the drive shafts, a parameter representing a state concerning a predetermined object of harmonization control among drive control states of the respective shafts produced by the drive control units;

reference parameter generation means for generating, responsive to the parameter representing the drive control state of each drive shaft generated by the state parameter generation means, a reference parameter to be used as a reference of the harmonization control; and

correction means for correcting the drive control state of each drive shaft in each of the drive control units in response to the reference parameter,

the respective drive shafts being harmoniously controlled in response to the reference parameter owing to this correction.

5,252,901

SYSTEM FOR CONTROLLING LOCOMOTION OF LEGGED WALKING ROBOT

Nobuaki Ozawa, and Toru Takenaka, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 27, 1991, Ser. No. 800,646

Claims priority, application Japan, Nov. 30, 1990, 2-336421

Int. Cl.[5] **G05B** *19/00*

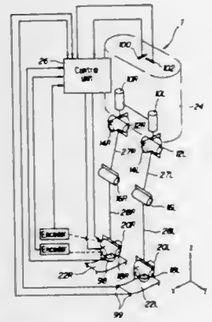
U.S. Cl. 318—568.12 **5 Claims**

1. A system for controlling the locomotion of a legged walking robot having a body link and a plurality of leg linkages each connected to the body link by a first drive joint and each including at least a second drive joint connecting an upper link and a lower link thereof, comprising:

a servo motor for driving the individual joints;

first digital closed-loop positional control means for calculating a deviation between a target joint angle and a real joint angle and for multiplying the deviation by a gain to determine a first velocity command to be applied to an inner analog velocity closed loop; and

second digital open-loop velocity control means for outputting a second velocity command to be added to the first



velocity command in response to a change rate of the target joint angle.

5,252,902

SERVO CONTROL SYSTEM

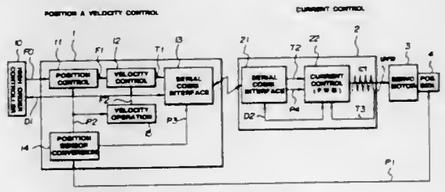
Shinichiro Uehara; Wataru Ichikawa, and Manabu Takei, all of Tokyo, Japan, assignors to Kabushiki Kaisha SG, Tokyo, Japan

Filed Mar. 1, 1990, Ser. No. 663,747

Claims priority, application Japan, Mar. 2, 1990, 2-49639

Int. Cl.[5] **G05B** *19/29*

U.S. Cl. 318—599 **13 Claims**



1. A servo control system comprising:

a servo motor;

current control means responsive to a velocity command signal for supplying a drive current to said servo motor;

position and velocity control means, physically separated from said current control means, responsive to a position command signal and a signal representing a current position and velocity of said servo motor for supplying the velocity command signal to the current control means; and

communication means provided between said current control means and said position and velocity control means for transmitting data between said current control means and said position and velocity control means by means of a bidirectional data communication line, said communication means including a first bidirectional communication interface provided in said position and velocity control means and a second bidirectional communication interface provided in said current control means.

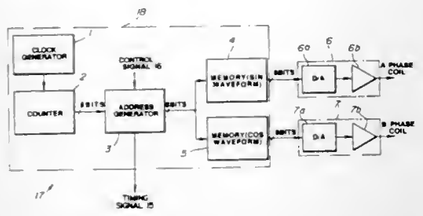
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5,252,903

MOTOR CONTROL CIRCUIT FOR AUTOFOCUS UNIT

Shigehisa Maruyama, Saitama, Japan, assignor to Sony Corporation, Japan

Filed Apr. 8, 1991, Ser. No. 681,733
Claims priority, applicatioo Japan, Apr. 13, 1990, 2-98592
Int. Cl.[5] H02P 8/00
U.S. Cl. 318—696 7 Claims



1. A motor control circuit for an autofocus unit which has a stepping motor which turns a rotor by passing as alternating current to coils of a plurality of phases of the stepping motor thus to operate said motor in a micro-stepping mode, and which displaces a focus lens in accordance with the turning of the rotor,

said motor control circuit for said autofocus unit comprising:

a memory which stores data on current values to the coils of the plurality of phases at rotation-stopping positions of the rotor;

a drive circuit which energizes the coils of the phases based on the current value data output by the memory; and

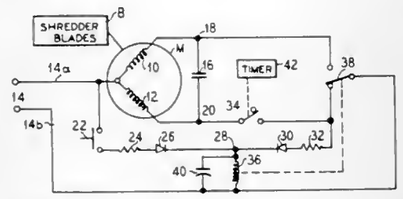
an address generator which generates an address for reading out the current value data of the memory, the address generator generating an address which with said memory and said drive circuit defines means for making an inclination of a path of a rotational angle with respect to a time axis smooth and continuous at a switching point of direction of rotation of the rotor.

5,252,904

AUTO REVERSE CIRCUIT

Nicholas M. Nanos, Morton Grove, Ill., assignor to General Binding Corporation, Northbrook, Ill.

Filed Nov. 2, 1992, Ser. No. 970,070
Int. Cl.[5] H02P 3/20
U.S. Cl. 318—739 9 Claims



1. An automatic reverse system for connection to an AC power source, comprising:

a motor having a main winding and an auxiliary winding and a capacitor connected between said main winding and said auxiliary winding;

a circuit node at a connection between said auxiliary winding and said capacitor, said circuit node being at a voltage indicative of load on said motor when said motor is operating in a forward direction;

a relay having a winding and a contact arrangement, said winding being connected to receive a voltage from said circuit node when said motor is operating in a forward direction, said contact arrangement being connected to permit current flow through said capacitor in a forward direction in a first contact position and to reverse current flow through said capacitor when in a second contact position so that said motor is reversed when said contact arrangement is switched from said first contact position to said second contact position;

a selectively operable start switch connected to supply AC power to said winding of said relay and thereby cause switching of said contact arrangement of said relay to said first position to start said motor operating in said forward direction; and

means for limiting reverse operation of said motor.

5. An automatic reversing control for a split capacitor motor having a main winding and an auxiliary winding and a phase shifting capacitor, the motor being connectable to a supply and ground of AC power, comprising:

a first circuit branch connected from the supply to a first node and including:

a first switch in said first circuit branch,

a first diode connected in series with said first switch, said first diode being biased in a first direction,

a second circuit branch connected between said first circuit branch at said node and the auxiliary winding of the motor and including:

a second diode biased in a direction opposite said first direction of said first diode, and

a third circuit branch connected between said node and ground and including:

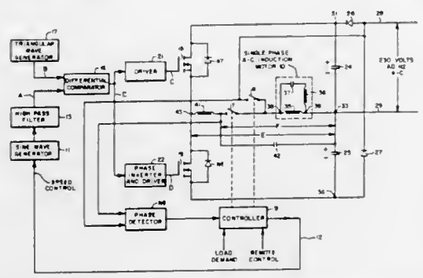
a winding of a relay, said relay having contacts alternately connecting ground to the main winding and the auxiliary winding.

5,252,905

DRIVING SYSTEM FOR SINGLE PHASE A-C INDUCTION MOTOR

Frank E. Wills, and Jacob E. Shaffer, Jr., both of York, Pa., assignors to York International Corporation, York, Pa.

Continuation of Ser. No. 812,571, Dec. 23, 1985, abandoned.
This application Dec. 10, 1987, Ser. No. 132,614
The portion of the term of this patent subsequent to Mar. 17, 2004, has been disclaimed.
Int. Cl.[5] H02P 7/00
U.S. Cl. 318—807 13 Claims



1. A driving system for driving a single phase A-C induction motor at selected, variable speeds comprising:

a positive D-C voltage of fixed magnitude;

a negative D-C voltage of the same fixed magnitude;

means for developing both a sinusoidally weighted pulse width modulated switching signal having a high frequency and a selectively adjustable single phase sine wave modulation signal representative of the desired A-C signal to be applied to the motor, the switching frequency of said switching signal being very high relative to that of the sine wave modulation signal;

means for selectively adjusting at least the frequency of said single phase sine wave modulation signal, as desired, to thereby adjust the speed of the motor;

a low pass filter having an inductance coil, connected in series with the motor, and a capacitor, connected in parallel with the motor, said low pass filter having the capability of filtering out the high frequency components associated with the switching signal and passing along to the motor only the components associated with the sine wave modulation component of the switching signal;

means, including a first power switch, for coupling the motor and low pass filter across the positive D-C voltage;

means, including a second power switch, for coupling the motor and low pass filter across the negative D-C voltage;

means, coupled with said means for developing a switching signal and responsive to said switching signal, for turning said power switch means on in alternation in order to couple the motor and low pass filter alternately to the positive and negative D-C voltages; and

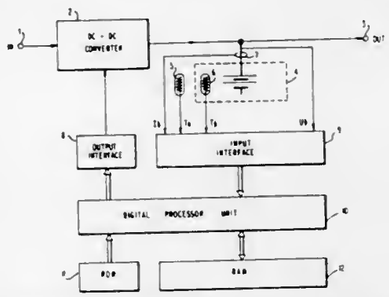
said low pass filter filtering out all high frequency signal components and applying to the motor a selectively adjustable single phase sinusoidal voltage having a frequency equal at a given time to the then selected frequency of the sine wave modulation signal, whereby the speed of the motor is controlled by the adjusting means.

5,252,906

METHOD OF OPTIMIZING THE CHARGING OF A BATTERY OF STORAGE CELLS, AND APPARATUS FOR PERFORMING THE METHOD

Guy Busson, Athee Sur Cher, France, assignor to SAFT, Romainville, France

Filed Feb. 7, 1992, Ser. No. 832,586
Claims priority, application France, Feb. 8, 1991, 91 01468
Int. Cl.[5] H02J 7/00
U.S. Cl. 320—22 11 Claims



7. Apparatus for optimizing the charging of a battery of storage cells by charging said battery at a first rate in charging mode for compensating for discharging of said battery to an external circuit, and charging said battery at a lower second rate in a maintenance mode for compensating for self-discharging of the battery, said battery being characterized by a charge balance corresponding to a difference between an amount of charge supplied to said battery and an amount of discharge from said battery to said external circuit, said charging being optimized by calculating a threshold value corresponding to a charge that the battery can store without manifesting overcharging phenomena, the calculated value being referred to as the "charging capacity" of the battery and being calculated as a function of (1) a "reference" capacity which is the charging capacity of said battery at a reference temperature, (2) a difference between a temperature (Tb) of the battery at the moment in question and the reference temperature, and (3) a predetermined relationship for variation in charging capacity as a function of temperature (Tb) for the battery, comparing said charge balance with said threshold value, and switching between said maintenance mode and said charging mode as a function of the result of said comparison, said apparatus comprising:

first means responsive to a charge signal and a maintain signal, respectively, for supplying the battery either with a charging current for said charging mode or with a maintenance current for said maintenance mode;

second means for determining said charge balance and for multiplying said charge balance by a predetermined weighting coefficient; and

third means for generating a threshold value comprising an estimate of the charge that the battery can store without manifesting any overcharging phenomena, the value being referred to as the "charging capacity" of the battery, and being estimated as a function of:

a "reference" capacity which is the charging capacity at a reference temperature;

the difference between the temperature (Tb) of the battery at the moment in question and the reference temperature; and

a predetermined relationship for the variation in charging capacity as a function of temperature (Tb) for the battery;

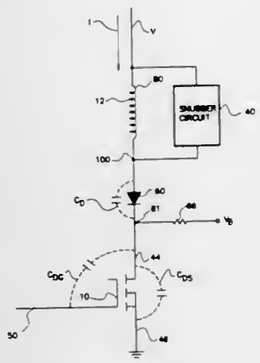
fourth means for comparing the charge balance with said threshold value and for supplying either a charge signal or a maintain signal as a function of the result of the comparison.

5,252,907

CIRCUIT ARRANGEMENT FOR MITIGRATING POWER SWITCH CAPACITANCE

William A. Harris, Coon Rapids, and Arthur N. J. Pearman, St. Paul, both of Minn., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed Apr. 20, 1992, Ser. No. 870,852
Int. Cl.[5] H02P 5/40; G05F 1/40; H03K 3/26
U.S. Cl. 323—285 16 Claims



1. A circuit arrangement, comprising:

an inductive component;

a switch connected in series with sad inductive component;

a capacitive component connected in series with said inductive component and said switch, said capacitive component being a diode; and

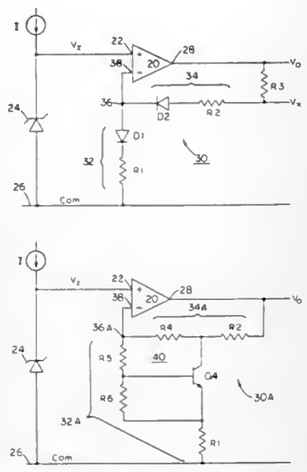
means for raising the voltage potential at the cathode of said diode above the voltage potential of the anode of said diode when said switch is nonconducting.

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5,252,908
APPARATUS AND METHOD FOR TEMPERATURE-COMPENSATING ZENER DIODES HAVING EITHER POSITIVE OR NEGATIVE TEMPERATURE COEFFICIENTS

Adrian P. Brokaw, Burlington, Mass., assignor to Analog Devices, Incorporated, Norwood, Mass.

Continuation of Ser. No. 748,087, Aug. 21, 1991, abandoned. This application Dec. 9, 1992, Ser. No. 988,179
Int. Cl.[5] G05F *3/18, 3/20*
U.S. Cl. 323—313 18 Claims

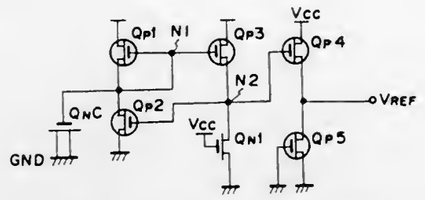


1. A temperature-compensated Zener-diode voltage reference for a class of Zener diodes having temperature characteristics with a common intersection at particular temperature and voltage levels, said reference comprising:
an amplifier having input means and an output circuit for producing a reference voltage;
a Zener diode producing a temperature-responsive voltage;
means connecting one terminal of said Zener diode to said amplifier input means and the other diode terminal to circuit common;
a feedback network coupled between said output circuit and said circuit common, said network carrying a feedback current derived at least substantially from said output circuit;
said feedback network comprising first and second serial segments;
means connecting an intermediate point between said serial segments to said input means to furnish thereto a feedback signal representing voltage across said first serial segment, said feedback signal being made equal to the Zener diode voltage supplied to said input means;
each of said segments including at least one resistive means;
said first segment further including means to produce a temperature-responsive voltage;
said temperature-responsive voltage and said Zener diode voltage at said intermediate point together controlling the magnitude of feedback current through the resistive means of said first segment;
said feedback current flowing also through the resistive means of said second segment;
the values of said resistive elements being set to effect temperature compensation of the voltage produced by said output circuit so as to reduce changes in said reference voltage resulting from variations in said Zener voltage with temperature.

5,252,909
CONSTANT-VOLTAGE GENERATING CIRCUIT

Shingo Aizaki, Kanagawa, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 23, 1992, Ser. No. 824,063
Claims priority, application Japan, Jan. 25, 1991, 3-025507
Int. Cl.[5] G05F *3/16*
U.S. Cl. 323—313 8 Claims

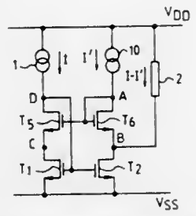


1. A constant-voltage generating circuit comprising:
a first P-channel MOS transistor (Qp1) having a source connected to a power source line (Vcc) and a gate and a drain both connected to a first node (N1);
a second P-channel MOS transistor (Qp2) having a source connected to said first node, a gate connected to a second node, and a drain connected to a ground line;
a third P-channel MOS transistor (Qp3) having a source connected to said power source line, a gate connected to said first node, and a drain connected to said second node;
a fourth P-channel MOS transistor (Qp4) having a source connected to said power source line, a gate connected to said second node, and a drain connected to an output terminal (V_{REF});
a current source element (Q_N1) connected between said second node and said ground line; and
an impedance element (Q_P5) connected between said output node and said ground line; and
a first capacitive element (Q_NC) connected between said first node and said ground line for increasing capacitance therebetween
wherein the total capacitance between the first node and the power source line divided by the total capacitance between the first node and the ground line is substantially equal to the power source voltage minus an absolute value of a threshold voltage of the P-channel MOS transistor divided by the absolute value of the threshold voltage of the P-channel MOS transistor.

5,252,910
CURRENT MIRROR OPERATING UNDER LOW VOLTAGE

Jean-Francois Agaesse, Voreppe, France, assignor to Thomson Composants Militaries et Spatiaux, Courbevoie, France

Filed Jun. 26, 1992, Ser. No. 904,569
Claims priority, application France, Jun. 27, 1991, 91 08007
Int. Cl.[5] G05F *3/24*
U.S. Cl. 323—315 5 Claims



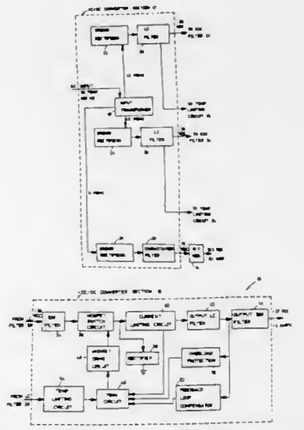
1. A current mirror circuit for operating under low voltage conditions, comprising:

a reference branch comprising a first current source and a first transistor;
an output branch comprising a load and a second transistor;
wherein gates of the first and second transistors are connected to each other and controlled from the first current source;
a feedback branch for causing a drain of the first transistor to track a voltage on a drain of the second transistor, the feedback branch comprising a third transistor inserted between the first current source and the first transistor and a fourth transistor inserted between a second auxiliary current source and the second transistor;
wherein gates of the third and fourth transistors are connected to each other and controlled from the second auxiliary current source.

5,252,911
AC TO DC POWER CONVERTER WITH REGULATED BI-POLAR OUTPUTS

George A. Banura, Ridgecrest, Calif.

Continuation of Ser. No. 618,323, Nov. 19, 1990, Pat. No. 5,068,596, which is a division of Ser. No. 518,621, May 3, 1990, Pat. No. 5,023,542, which is a division of Ser. No. 389,245, Aug. 3, 1989, Pat. No. 4,961,048. This application Jul. 22, 1991, Ser. No. 733,488
The portion of the term of this patent subsequent to Oct. 2, 2007, has been disclaimed.
Int. Cl.[5] G05F *1/585*
U.S. Cl. 323—351 1 Claim

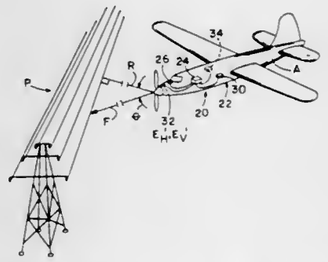


1. An AC to DC power converter, comprising:
an AC/DC converter section operable to convert an AC input into a plurality of unregulated internal DC outputs; and
a pair of positive and negative switching DC/DC converter sections connected to said AC/DC converter section and receiving a pair of positive and negative unregulated internal DC outputs therefrom being of a first voltage level and generating a pair of dual positive and negative regulated external DC outputs being of a second voltage level different from said first voltage level,
wherein each of said positive and negative switching DC/DC converter sections has a current limiting arrangement which includes:
means connected between an input and an output of said switching DC/DC converter section for receiving a flow of current and sensing the voltage between the converter section input and output;
means coupled to ground voltage and connected between said voltage sensing means and the converter output for establishing a reference threshold voltage;
a control device operable for shutting down said switching DC/DC converter; and
a comparator connected to said control device and coupled to said established means and said sensing means, said comparator being operable for comparing the sensed voltage and reference threshold voltage and activating said control device to shut down said switching DC/DC converter when said sensed voltage exceeds said reference threshold voltage.

5,252,912
SYSTEM FOR WARNING AIRCRAFT PILOT OF POTENTIAL IMPACT WITH A POWER LINE AND GENERATING TIME-TO-TIME IMPACT SIGNAL

William E. Merritt, 1431 SE. Knight, Portland, Oreg. 97202, and Joel Johnson, Lake Oswego, Oreg., assignors to William E. Merritt, Portland, Oreg.

Continuation of Ser. No. 478,547, Feb. 12, 1990, abandoned, which is a continuation-in-part of Ser. No. 373,805, Jun. 28, 1989, abandoned. This application Jun. 6, 1991, Ser. No. 711,921
Int. Cl.[5] G01R *31/02*
U.S. Cl. 324—72 8 Claims



1. A detector for use on board a vehicle traveling along a path of movement to detect an object having an electric field associated therewith, comprising:
a first antenna for sensing the horizontal component of the electric field associated with the object and producing a horizontal component electric field signal,
a second antenna for sensing the vertical component of the electric field associated with the object and producing a vertical component electric field signal, and
signal processing means for receiving at least one of said electric field signals and generating a time-to-impact signal representative of the time for the vehicle to reach the object if it continues on its path of movement.

5,252,913
LINE SENSOR WITH CORONA SHIELD

Paul P. Falkowski, Clearwater; Peter H. Forest, Oldsmar, and Donald W. Selby, Niceville, all of Fla., assignors to Square D Company, Palatine, Ill.

Continuation-in-part of Ser. No. 108,389, Oct. 14, 1987. This application Apr. 28, 1989, Ser. No. 345,071
The portion of the term of this patent subsequent to Oct. 12, 2009, has been disclaimed.
Int. Cl.[5] G01R *1/22*
U.S. Cl. 324—127 17 Claims

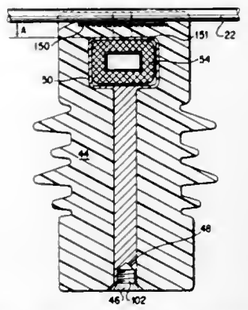
1. A transducer standoff for supporting a power line conductor at a conductor voltage and carrying a conductor current, said transducer standoff measuring a power parameter of the conductor with transducer means, said transducer standoff comprising:
an elongate conductive support having a support axis extending between a support top and a support bottom, said support having support sides which are regularly spaced

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from said support axis, said support having a large potential difference from that of the conductor;

a power transducer affixed to said support top, said transducer including conductive components and having a transducer top, a transducer bottom and transducer sides extending between said transducer top and said transducer bottom, said conductive components having a large potential difference from that of the conductor;

an elongate body fabricated from insulative epoxy resin, said body having a body top, and a body bottom and a central axis, about which body sides are generally symmetrical, extending between the body top and body bottom, said body sides including skirts extending beyond the mean width of the body and side grooves which do not extend



to the mean width of said body, said body completely surrounding said power transducer and slidably surrounding said support from the support top to very near said support bottom, but not covering a substantial portion of said support bottom, so that said support may slide relative to said body without inducing major stresses in said body, said body top located adjacent said transducer top;

a corona shield interposed between and spaced from said body top and said transducer top, and fully encapsulated within said epoxy body; and

detachable conductive conductor restraining means for securing the conductor to the body top, said conductor restraining means electrically connected to said corona shield.

5,252,914

METHOD OF CONSTRUCTING AND TESTING A CIRCUIT BOARD DESIGNED FOR EARLY DIAGNOSTICS

Donald W. Bobbitt, and David C. Bing, both of Forest, Va., assignors to Ericsson GE Mobile Communications Inc., Del. Division of Ser. No. 562,846, Aug. 6, 1990. This application May 7, 1992, Ser. No. 879,799

Int. Cl.[5] G01R *31/02*

U.S. Cl. 324—158 F **6 Claims**

1. A method of constructing and testing a printed circuit board for a radio communication transceiver having electronic components secured to the board, comprising the steps of:

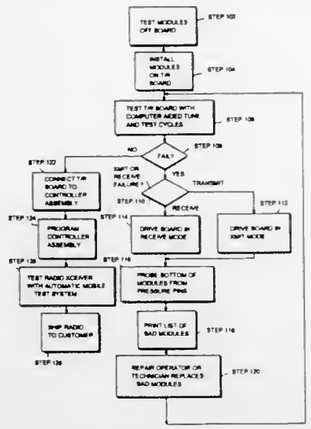
separating substantially all of the circuitry of said transceiver used to perform the major functions of said transceiver into a plurality of electrically and mechanically separate modules, each said module including circuitry for performing one of said major functions;

performing a first series of diagnostic tests upon each said module to detect non-faulty modules as tested;

mounting non-faulty as tested modules on said printed circuit board at predetermined physical locations to form an assembled transceiver circuit board;

forming interconnections among the mounted modules on said printed circuit board such that the electrical testing of the function of each mounted module can be performed independently of the remaining modules;

performing a second series of diagnostic tests on said assembled transceiver circuit board to determine whether said circuit board meets acceptable specifications;



performing a third series of diagnostic tests on each mounted module to uniquely detect individual failed modules if said second series of diagnostic tests determine that said board fails to meet acceptable specifications; and

reassembling said transceiver circuit by replacing each failed module on said printed circuit board with a replacement module.

5,252,915

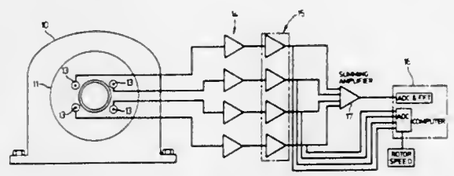
METHOD AND APPARATUS FOR DETECTING STATOR FAULTS IN ROTARY DYNAMOELECTRIC MACHINES

Howard G. Sedding, Toronto; Blake A. Lloyd, Mississauga, both of Canada, and James Penman, Montrose, United Kingdom, assignors to Ontario Hydro, Toronto, Canada

Filed Jan. 23, 1992, Ser. No. 824,392

Int. Cl.[5] G01R *31/02*

U.S. Cl. 324—158 MG **5 Claims**



1. A method of detecting and locating stator faults in a dynamoelectric machine having a rotor and a stator with multiturn stator coils by monitoring changes in axial leakage flux during operation of the machine, comprising

identifying the frequencies of selected harmonic components of axial leakage flux that are to be significantly affected by the occurrence of a stator fault,

detecting the axial leakage flux at each of a plurality of positions, including a datum position, distributed symmetrically around the axis of the rotor adjacent to an end winding of the stator,

deriving from the detected flux at each of said positions a first signal having a value corresponding to the magnitude of the detected flux,

storing the values of said first signals derived prior to the occurrence of a stator fault,

deriving from the detected axial leakage flux a further signal having a value corresponding to the magnitude of said selected harmonic components,

monitoring said further signal and detecting a change therein thereby detecting the occurrence of a stator fault,

storing the values of said first signals derived after the occurrence of the stator fault,

comparing the values of said first signals stored before and after the occurrence of a stator fault and storing the differences therebetween, and determining from said comparison a value representing the angular position of the stator fault with respect to the datum position.

5,252,916

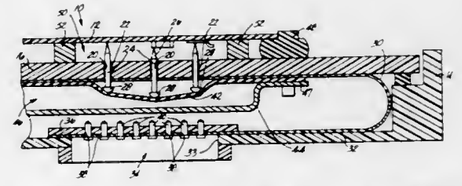
PNEUMATIC TEST FIXTURE WITH SPRINGLESS TEST PROBES

Mark A. Swart, Upland, Calif., assignor to Everett Charles Technologies, Inc., Pomona, Calif.

Filed Jan. 27, 1992, Ser. No. 827,023

Int. Cl.[5] G01R *1/073, 31/02*

U.S. Cl. 324—158 P **26 Claims**



1. Apparatus for testing a circuit board having a plurality of spaced apart test points, the apparatus comprising:

a rigid support plate disposed adjacent and substantially parallel to a circuit board for holding the board in a testing position;

a plurality of elongated and spaced apart test probes each extending through respective bores in the support plate to support the probes in a pattern corresponding to that of the test points on the printed circuit board;

means for supporting the circuit board and the support plate to be mutually spaced apart and substantially parallel, and so that a first end of each supported test probe is aligned for contact with a respective test point on the printed circuit board, and so that an opposite second end of each supported test probe faces away from the support plate and away from the circuit board;

a flexible elastic diaphragm having a first face and a second face, the diaphragm mounted on the support plate so the first face of the diaphragm is normally held in contact with a side of the support plate opposite from the circuit board, the diaphragm thereby contacting the second ends of the test probes, and in which the second face of the diaphragm faces toward a void space into which the diaphragm is elastically movable away from the support plate in response to axial pressure contact from the second ends of the test probes; and

means for moving the printed circuit board toward the support plate for forcing the printed circuit board into pressure contact with the test probes and thereby stretching the flexible diaphragm away from the support plate and holding the stretched diaphragm under tension and in spring-biased pressure contact with said second ends of the test probes in unison to resiliently force each test probe axially against a respective test point on the circuit board.

5,252,917

SCANNING CIRCUIT APPARATUS FOR TEST

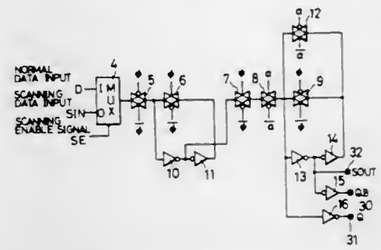
Yukio Kadowaki, Minoo, Japan, assignor to Ricoh Company Ltd., Tokyo, Japan

Filed Apr. 24, 1991, Ser. No. 691,065

Claims priority, application Japan, May 15, 1990, 2-124658; Sep. 4, 1990, 2-234956

Int. Cl.[5] G06F *11/00*

U.S. Cl. 324—158 R **8 Claims**



8. A scanning circuit apparatus for test, comprising:

a first selecting means for selecting one of a normal data signal and a scanning data signal as a selected data signal according to a first control signal supplied thereto and for transmitting a first data signal corresponding to the selected data signal;

a second selecting means for selecting one of a normal clock signal and a scanning clock signal as a selected clock signal according to a second control signal supplied thereto and for transmitting a first clock signal corresponding to the selected clock signal;

a data transferring clock signal generating means for transmitting a second clock signal corresponding to a clock signal for transferring data;

a first latch circuit connected to said first selecting means and said second selecting means for receiving the first data signal transmitted from said first selecting means and holding the first data signal based on the first clock signal; and

a second latch circuit connected to said first latch circuit, said second selecting means and said data transferring clock signal generating means for receiving the first data signal from said first latch circuit and outputting a signal corresponding to the first data signal according to a logical combination of the first clock signal and the second clock signal,

said first selecting means comprising a first multiplexer for receiving said normal data signal, said scanning data signal and said first control signal, and for selecting one of said normal data signal and said scanning data signal as said selected data signal according to said first control signal, and for transmitting said first data signal corresponding to said selected one data signal,

said second selecting means comprising a second multiplexer for receiving said normal clock signal, said scanning clock signal and said second control signal, for selecting one of said normal clock signal and said scanning clock signal as said selected clock signal according to said second control signal, and for transmitting said first clock signal corresponding to said selected clock signal; said second selecting means further comprising a third inverter connected to said second multiplexer for receiving said first clock signal and for transmitting an inverted signal of said first clock signal, and a fourth inverter connected to said third inverter for receiving said inverted signal of said first clock signal and for transmitting said first clock signal,

said data transferring clock signal generating means comprising a first inverter for receiving said clock signal for transferring data and for transmitting an inverted signal of said clock signal for transferring data, and a second inverter connected to said first inverter for receiving said

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inverted signal and for transmitting the second clock signal,

said first latch circuit comprising a first transmission gate, connected to said first selecting means and said second selecting means, for receiving the first data signal based on said first clock signal, and a second transmission gate, connected to said first transmission gate, for holding said first data signal based on said first clock signal,

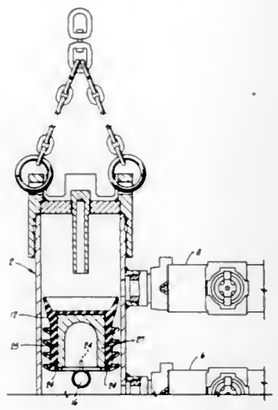
said second latch circuit comprising a third transmission gate, connected to said first latch circuit and said second selecting means, for receiving said first data signal from said first latch circuit based on the first clock signal from said second selecting means, and a fourth transmission gate, connected to said third transmission gate and said data transferring clock signal generating means, for outputting said signal corresponding to said first data signal received by said third transmission gate based on said transmitted second clock signal from said data transferring clock signal generating means.

5,252,918

APPARATUS AND METHOD FOR ELECTROMAGNETICALLY DETECTING THE PASSING OF A PLUG RELEASED INTO A WELL BY A BRIDGE CIRCUIT

Charles F. VanBerg, Duncan, and James L. Davis, Marlow, both of Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Dec. 20, 1991, Ser. No. 812,199
Int. Cl.[5] G01B *7/14;* **G01R** *33/12*
U.S. Cl. 324—207.19 **32 Claims**



1. An apparatus for detecting the passing of a plug released into a well, comprising:

an electrical bridge circuit including a first electrical coil and a second electrical coil spaced at fixed locations along a course through which the plug passes in a single direction from an initial position above both said coils; and

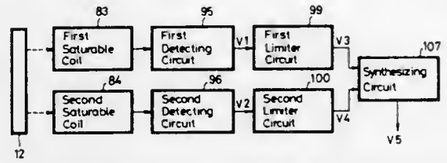
at least one metallic member mounted on the plug so that said at least one metallic member passes in effective proximity to both said first and second electrical coils as the plug passes both said first and second electrical coils in said single direction, wherein said at least one metallic member changes an electrical response of said electrical bridge circuit to an electrical response identifiable with said at least one metallic member when the plug passes both said first and second coils.

5,252,919

APPARATUS PRODUCING TRAPEZOIDAL WAVEFORMS FROM A PAIR OF MAGNETIC SENSORS FOR DETECTING THE ROTATING ANGLE OF AN OBJECT

Saburo Uemura, Yokohama, Japan, assignor to Macome Corporation, Tokyo, Japan

Filed Aug. 19, 1991, Ser. No. 747,292
Claims priority, application Japan, Mar. 4, 1990, 2-37470; Aug. 31, 1990, 2-231269; Apr. 25, 1991, 3-95620
Int. Cl.[5] G01B *7/30;* **B25J** *19/02;* **G01R** *33/04*
U.S. Cl. 324—207.25 **4 Claims**



1. Apparatus for detecting the angle of a rotating object comprising:

(1) magnetic field generating means fixed to said object;

(2) first and second magnetic sensor means located in the magnetic field generated by said magnetic field generating means for respectively generating first and second outputs corresponding to the rotation of said object, said first and second magnetic sensor means being located separate from each other and directed to intersect at a predetermined angle;

(3) first and second detecting means for generating first and second sine wave signals in response to the outputs respectively from said first and second magnetic sensor means, said first and second sine wave signals being different in phase;

(4) first and second limiter means for respectively limiting said first and second sine wave signals from said first and second detecting means so that said first and second sine wave signals have portions which are increased and decreased linearly to provide first and second trapezoidal waves; and

(5) synthesizing means for synthesizing the outputs from said first and second limiter means to obtain a third trapezoidal wave output indicative of the rotation angle of said object relative to said first and second magnetic sensor means, the angular range of each of the linearly increasing and decreasing portions of said third trapezoidal wave output being substantially twice that of each of said first and second trapezoidal waves.

5,252,920

MAGNETIC CHARACTERISTICS MEASURING APPARATUS WITH A BALANCING MECHANISM

Muneyuki Date, 813 Pastrorale-Heim-Toyonaka, 7-16, Uenonishi 4-chome, Toyonaka-shi, Osaka, and Akio Yamagishi, 2-710 Minoo-Sun-Royal, 8, Makiochi 5-chome, Minoo-shi, Osaka, both of Japan

Filed May 20, 1992, Ser. No. 886,328
Claims priority, application Japan, May 24, 1991, 3-120316
Int. Cl.[5] G01R *33/12, 33/16;* **G01N** *27/72*
U.S. Cl. 324—228 **20 Claims**

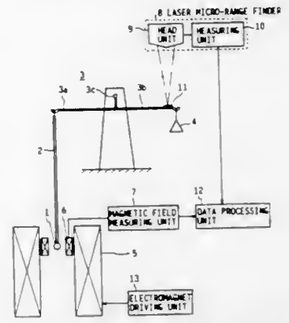
1. A magnetic characteristics measuring apparatus for measuring magnetic parameters of a specimen, comprising:

mechanical balancing means for supporting and balancing a specimen in a measuring region;

magnetic field generating means for applying a magnetic force generated electro-magnetically for a predetermined period of time to the specimen in said measuring region;

displacement detecting means for detecting displacement of said mechanical balancing means responsive to a motion of the specimen caused by said magnetic force and for outputting displacement data corresponding to the displacement of said mechanical balancing means;

magnetic field detecting means for detecting a magnetic field in a vicinity of the specimen in said measuring region and for outputting magnetic field data corresponding to the magnetic field applied to the specimen; and



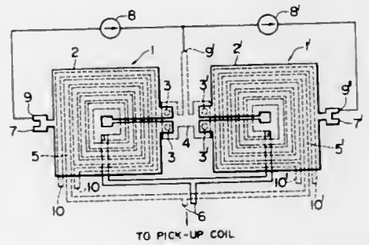
data processing means responsive to said displacement data and said magnetic field data for ascertaining the magnetic parameters of the specimen corresponding to said displacement data and said magnetic field data.

5,252,921

NOISE CANCELING HIGH-SENSITIVE MAGNETOMETER

Hideaki Nakane, 617-152, Yokokawa-cho, Hachioji-shi, Tokyo; Juan C. Cubillos, Kokubunji, and Eiichi Goto, Fujisawa, all of Japan, assignors to Research Development Corporation of Japan and Hideaki Nakane, both of Tokyo, Japan, a part ioterest

Filed Mar. 14, 1991, Ser. No. 669,633
Claims priority, application Japan, Mar. 15, 1990, 2-65060
Int. Cl.[5] G01R *33/16, 33/35*
U.S. Cl. 324—248 **6 Claims**



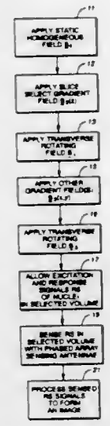
1. A high-sensitive magnetometer which has two SQUIDs disposed in a single plane each comprising a superconducting loop with one or more Josephson junctions, said magnetometer also having a coil in the form of a continuous loop connected to an input terminal, said coil branching into two oppositely wound portions, wherein said two oppositely wound portions are provided to respective SQUIDs for supplying magnetic flux input signals to said two SQUIDs, said magnet flux input signals being supplied to said input terminal in opposite directions, whereby flux noises inside of each of the two SQUIDs cancel each other and the magnetic flux input signals supplied to said two SQUIDs are detected as constructive addition of voltages of the two SQUIDs.

5,252,922

RADIOFREQUENCY FOCUSING OF MAGNETIC RESONANCE IMAGES

John D. Larson, III, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 30, 1991, Ser. No. 694,514
Int. Cl.[5] G01B *33/20*
U.S. Cl. 324—309 **24 Claims**



1. Apparatus for producing a time dependent magnetic field in a human or animal body for purposes of magnetic resonance imaging of tissue within an interrogation volume of reduced size no larger than 3,000 cm^3 in the body, and for sensing response signals issued by the tissue in response to receipt by the tissue of magnetic resonance excitation signals, the apparatus comprising:

a phased array of antennae, having at least first and second antennae, positioned outside and adjacent to the body in a first coronal plane, that produces a radiofrequency magnetic field $\underline{B}_1$ with a field vector that rotates in a second coronal plane, approximately parallel to the first coronal plane, within the body with approximately constant angular frequency, the phased array being positioned (1) to selectively focus the magnetic field $\underline{B}_1$ within a selected interrogation volume of size no larger than 3,000 cm^3 within the body and (2) to selectively and preferentially receive response signals from the selected interrogation volume that are issued in response to magnetic resonance excitation of nuclei in the selected interrogation volume;

a first coil or other structure for producing a primary magnetic field $\underline{B}_0$ of approximately constant amplitude whose field vector is perpendicular to the second coronal plane;

a second coil or other structure for producing a gradient magnetic field $\underline{B}_2$, parallel to the primary magnetic field whose amplitude is no larger than the amplitude of the magnetic field $\underline{B}_1$, where the gradient field distinguishes between changes of position within the body in at least two mutually orthogonal directions;

signal processing means for accepting the response signals received at each of the antennae as a function of time and for introducing a predetermined phase shift into each such response signal relative to the phases of response signals received at each of the other antennae;

a first switched power supply, connected to the second coil or magnetic field structure, to selectively activate and deactivate the gradient magnetic field at predetermined times; and

a second switched power supply to selectively activate and deactivate the signal processing means at predetermined times.

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5,252,923

NUCLEAR MAGNETIC RESONANCE IMAGING METHODS

Stephen P. Cottrell, Taunton; Morley R. Halse, Herne Bay, and John H. Strange, Canterbury, all of England, assignors to British Technology Group Limited, London, England

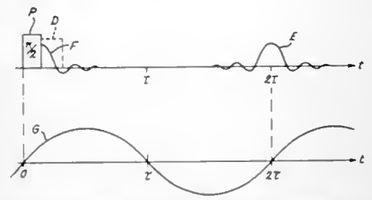
PCT No. PCT/GB90/01007, § 371 Date Dec. 27, 1991, § 102(e) Date Dec. 27, 1991, PCT Pub. No. WO91/00514, PCT Pub. Date Jan. 10, 1991

PCT Filed Jun. 29, 1990, Ser. No. 781,135

Claims priority, application United Kingdom, Jun. 30, 1989, 8915090

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—309 11 Claims



1. A method of obtaining NMR imaging information from a solid object comprising the steps of:

applying a static magnetic field and a sinusoidally varying magnetic gradient field to an object;

applying a single 90° rf excitation pulse, having an rf phase, to the object at a time when the sinusoidally varying magnetic gradient field is already being applied to the object to cause gradient echoes of a free induction signal to be formed by successive reversals of the sinusoidally varying magnetic gradient field; and

detecting the formed gradient echoes.

5,252,924

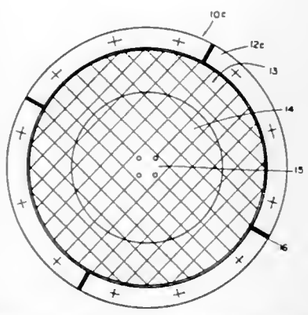
MAGNETIC FIELD GENERATING APPARATUS FOR MRI

Hideya Sakurai, Mishima; Junji Uzuki, Suita; Hirotaka Takeshima, Ryugasaki, and Shigeru Sato, Fujishiro, all of Japan, assignors to Sumitomo Special Metals Co., Ltd., Osaka and Hitachi Medical Corp., Tokyo, both of Japan

Filed Nov. 18, 1991, Ser. No. 793,466

Int. Cl.[5] G01V *3/00*

U.S. Cl. 324—320 11 Claims



1. A magnetic field generating apparatus for MRI, comprising:

a plurality of pairs of magnet bodies arranged to form an air gap;

yokes for supporting and magnetically connecting the plurality of paired magnet bodies;

base members, each made of soft iron material and disposed on the surface of the plurality of pairs of magnet bodies to confront the air gap;

annular projections, each deposited around the circumference of each of the base members; and

a plurality of soft ferrite segments made of Mn-Zn series soft ferrite and deposited to be closely adjacent to one another on the surface of each of the base members except each of the annular projections, and forming a substantially circular convex portion around a center of the base member and a thickness t of the base member and a thickness T of the ferrite segments have a thickness ratio of 0.25 to 2.

5,252,925

DETECTOR ASSEMBLY FOR AN ELECTROMAGNETIC INDUCTION-TYPE CONDUCTIVITY METER

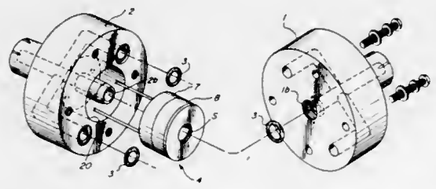
Hiroo Matsumoto, and Shigeyuki Akiyama, both of Kyoto, Japan, assignors to Horiba, Ltd., Kyoto, Japan

Filed Oct. 22, 1991, Ser. No. 781,712

Claims priority, application Japan, Oct. 22, 1990, 2-285098

Int. Cl.[5] G01R *27/26;* G01N *27/06*

U.S. Cl. 324—445 17 Claims



1. An improved detector assembly of an electromagnetic induction-type conductivity meter comprising:

a plastic material housing member having a first liquid sample flow path extending therethrough, the housing member being bifurcated into a first component and a second component, the first component having a central hollow protrusion forming a portion of the first liquid sample flow path, and the second component having a through passage with a cavity for receiving the central hollow protrusion;

an excitation coil extending about the first liquid sample flow path;

a detection coil extending about the first liquid sample flow path, and

means for providing a second liquid sample flow path that interconnects with the first liquid sample flow path both upstream and downstream of the respective coils, whereby the excitation coil enables an induction current to be generated in the liquid sample and the detection coil measures the induction current as representative of the conductivity of the liquid sample.

5,252,926

APPARATUS AND METHOD FOR DISTINGUISHING BETWEEN FAULTS DUE TO ALTERNATOR FAILURE AND INTERRUPTION OF STATOR PHASE SIGNALS IN AUTOMOTIVE BATTERY CHARGING SYSTEMS

Paolo Menegoli, Phoenix, Ariz., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Apr. 30, 1992, Ser. No. 876,878

Int. Cl.[5] G01R *31/00;* H02P *9/00*

U.S. Cl. 324—545 20 Claims

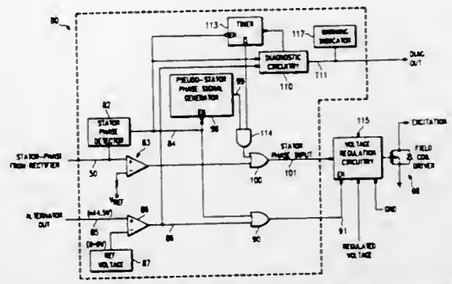
1. A circuit for detecting faults in a vehicular charging circuit, comprising:

a pseudo stator-phase signal generator receiving a stator-phase signal from the vehicular charging circuit for detecting an absence of the stator-phase signal and providing a pseudo stator-phase signal in response to the detected absence of the stator-phase signal;

a stator-phase existence circuit receiving the stator-phase signal from the vehicular charging circuit for determining if the stator-phase signal is above a predetermined threshold;

a pseudo stator-phase signal control circuit connected to outputs of said pseudo stator-phase signal generator and said stator-phase existence circuit for selectively replacing said stator-phase signal with said pseudo stator-phase signal when said stator-phase existence circuit determines that said stator-phase signal is below the predetermined threshold; and

a voltage detector circuit for continuing the application of the output from said pseudo stator-phase signal control circuit to a voltage regulator if a charging voltage from the vehicular charging circuit is above a predetermined minimum value.



5,252,927

DEVICE FOR MONITORING CORONA DISCHARGE IN A DYNAMOELECTRIC MACHINE WITH DETECTION PROBE MOVABLE IN LONGITUDINAL AND CIRCUMFERENTIAL DIRECTION

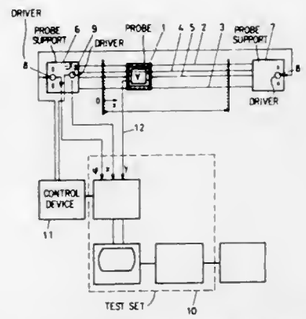
Paul Brühlmeier, Wettingen; Jitka Fuhr, Dübendorf; Martin Hässig, Rümlang; René Kohler, Schinznach-Bad, and Albert Kopp, Windisch, all of Switzerland, assignors to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Oct. 18, 1991, Ser. No. 778,665

Claims priority, application European Pat. Off., Oct. 22, 1990, 90120260

Int. Cl.[5] G01R *31/34, 31/06*

U.S. Cl. 324—546 9 Claims



1. A corona discharge monitor system for a dynamoelectric machine having a rotor and a stator, said stator having a bore and slots therein with insulated conductors in said slots, antenna means mounted on a probe for receiving radio frequency signals resulting from corona discharge in said slots as said antenna means moves along said sots in the longitudinal direction of said slots and past said slots in succession, means for transferring said radio frequency signals received by said antenna means to a place externally of said dynamoelectric machine, said system comprising:

first means for moving the probe in the longitudinal direction of said slots, comprising a probe support at one of the ends of said stator and externally of said stator bore;

second means for moving the probe in the circumferential direction of said stator bore incorporated into said probe support;

means for detecting a longitudinal and a rotational position of said probe relative to said slots for providing a positional signal representing the position of the probe,

wherein the probe support is mounted on a part of the rotor of the dynamoelectric machine, said part being rotationally symmetrical with respect to the rotor axis.

5,252,928

CHARGE AMPLIFIER CIRCUIT

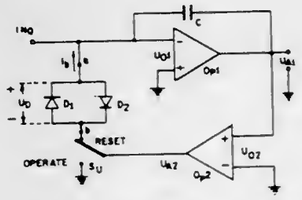
Mario Giorgetta, Winterthur, Switzerland, assignor to Kistler Instrumente AG, Winterthur, Switzerland

Filed Mar. 19, 1992, Ser. No. 853,820

Claims priority, application Switzerland, Apr. 2, 1991, 00969/91

Int. Cl.[5] H03F *1/14*

U.S. Cl. 330—51 14 Claims



1. A charge amplifier integrated circuit comprising:

an operational amplifier having a feedback capacitor connected between an input and output of said operational amplifier;

a pair of diodes connected to said input of said operational amplifier; and

a reset switch means connected in series with said pair of diodes between said input and output of said operational amplifier for forming a resetting feedback through said pair of diodes for resetting said operational amplifier when activated.

5,252,929

RF POWER AMPLIFIER

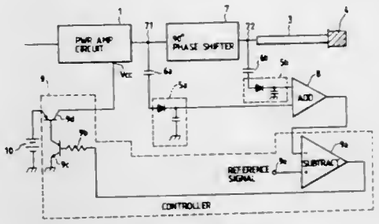
Makoto Taroumaru, Fukuoka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 28, 1992, Ser. No. 889,566

Claims priority, application Japan, May 30, 1991, 3-126310

Int. Cl.[5] H03G *3/30*

U.S. Cl. 330—129 28 Claims



21. An RF power amplifier comprising:

an RF power amplifying section having a variable amplification gain;

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a phase shifter connected to the RF power amplifying section for shifting a phase of an output signal of the RF power amplifying section, the phase shifter having an input terminal subjected to the output signal of the RF power amplifying section and an output terminal subjected to a signal which results from shifting the phase of the output signal of the RF power amplifying section;

generating means for generating a control signal on the basis of the signals at the input terminal and the output terminal of the phase shifter, the control signal representing a power of the output signal of the RF power amplifying section; and

means for controlling the amplification gain of the RF power amplifying section in response to the control signal, wherein said generating means comprises first and second linear detecting means respectively connected to said input and output terminals of said phase shifter and adding means for adding output signals of said first and second linear detecting means and for producing an output signal proportional to a sum of amplitudes of said output signal of the RF power amplifying section and the signal shifted by said phase shifter.

5,252,930

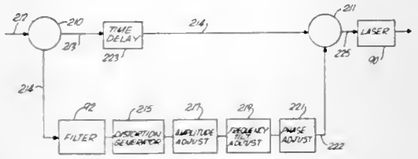
PREDISTORTER FOR LINEARIZATION OF ELECTRONIC AND OPTICAL SIGNALS

Henry A. Blauvelt, San Marino, Calif., assignor to Ortel Corporation, Alhambra, Calif.

Continuation-in-part of Ser. No. 653,003, Feb. 8, 1991, Pat. No. 5,132,639, which is a continuation-in-part of Ser. No. 404,186, Sep. 7, 1989, Pat. No. 4,992,754. This application Jul. 21, 1992, Ser. No. 918,623

Int. Cl.[5] H03F *1/32*

U.S. Cl. 330—149 **10 Claims**



1. A predistortion circuit comprising:

means for splitting an input modulation signal into a primary electrical path and at least one secondary electrical path; a distortion generator in the secondary electrical path for producing even order intermodulation products of the input frequencies and suppressing the fundamental frequencies;

means for combining signals on the primary and secondary signal paths into a single signal for modulating a nonlinear device with predictable distortion characteristics;

means in the secondary electrical path for adjusting the relative amplitude and phase of the signal from the distortion generator; and

filter means before the distortion generator for altering the input signal to the distortion generator as a function of frequency such that the dependence of the intermodulation distortion generated by the predistortion circuit on the frequencies of the input signal matches the frequency dependent distortion of the nonlinear device.

5,252,931

WIDE BAND FREQUENCY AMPLIFIERS

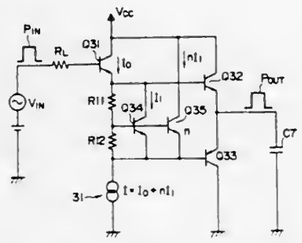
Seiichi Nishiyama, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 17, 1992, Ser. No. 913,967

Claims priority, application Japan, Jul. 17, 1991, 3-203799; Sep. 30, 1991, 63-87493[U]

Int. Cl.[5] H03F *3/30*

U.S. Cl. 330—263 **4 Claims**



4. A wide band push-pull amplifier comprising:

an output push-pull circuit containing a second NPN transistor and a third PNP transistor;

a first transistor provided in an input stage in order to drive said second NPN transistor, said first transistor coupled to said second NPN transistor in Darlington connection;

bias circuit means provided between an emitter of said first transistor and a current source, for supplying a bias current to a base of said second NPN transistor and to a base of said third PNP transistor; and

a fourth transistor connected between said base of said third PNP transistor and a power source.

5,252,932

WAVEFORM EQUALIZING FILTER UNIT

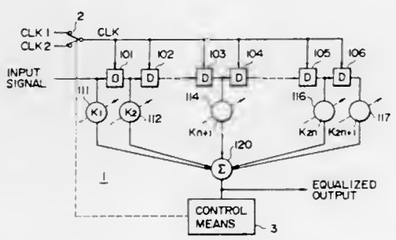
Ikuo Someya, Tokyo, and Masahiro Komoda, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 3, 1991, Ser. No. 725,448

Claims priority, application Japan, Jul. 9, 1990, 2-179696

Int. Cl.[5] H03H *15/00;* **H04B** *3/14*

U.S. Cl. 333—18 **2 Claims**



1. A waveform equalizing filter unit for producing an equalized output signal from an input signal to be equalized, comprising:

a waveform equalizing filter realized by a plurality of unitary delay elements connected in series and having a plurality of taps connected respectively to a plurality of coefficient multipliers, the input signal to be equalized is applied to a first one of said plurality of unitary delay elements, each coefficient multiplier having a respective tap coefficient associated therewith, and an adder connected to said plurality of coefficient multipliers for combining outputs thereof to realize the equalized output signal;

a clock switching circuit having two clock signals of different respective frequencies input thereto for selecting one of said clock signals and outputting the selected clock signal to each of the unitary delay elements of said waveform equalizing filter; and

control means for determining an error in said equalized output signal relative to a predetermined ideal impulse response characteristic stored in said control means, for controlling said clock switching circuit to select one of said two clock frequencies to minimize said error, and for controlling the respective tap coefficients of said plurality of coefficient multipliers in said waveform equalizing filter upon selection of one of said two clock frequencies by said clock switching circuit and further including, in a stage situated before said waveform equalizing filter, a signal timing adjuster having an input receiving the input signal to be equalized and an output connected to said first one of said plurality of unitary delay elements for adjusting the timing of the input signal to be equalized and being controlled by said control means in synchronism with the operation of said clock switching circuit.

5,252,933

CIRCUIT BREAKER INCLUDING FORCED CONTACT PARTING MECHANISM CAPABLE OF SELF-RETAINING UNDER SHORT CIRCUIT CONDITION

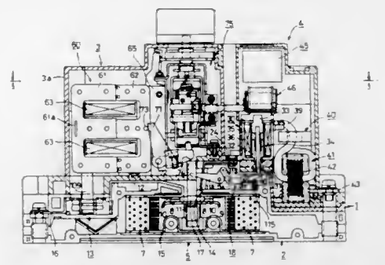
Toshihide Kamino, Kishiwada, and Takeshi Yura, Habikino, all of Japan, assignors to Terasaki Denki Sangyo Kabushiki Kaisha, Osaka, Japan

Filed Jul. 11, 1991, Ser. No. 728,416

Claims priority, application Japan, Jul. 16, 1990, 2-188497; Nov. 30, 1990, 2-338541

Int. Cl.[5] H01H *9/00*

U.S. Cl. 335—172 **10 Claims**



1. A circuit breaker, comprising:

fixed contacts provided for a main current path from a power supply side circuit terminal to a load side circuit terminal;

a moving contact means including moving contacts for closing/opening a circuit by moving said moving contacts in relation to said fixed contacts;

first linking means in contact with said moving contact means for enabling the operation of said moving contact means;

second linking means for operating said first linking means;

circuit switching means including a voltage-operated electromagnet having a moving portion, a fixed portion and a spring, wherein the moving portion is moved by said spring in a non-excitation state and moves said second linking means to a position in which said moving contacts are parted;

forced contact parting means including a current-operated electromagnet provided in said main current path and operative in response to an excessive flow of current beyond a prescribed value and a link mechanism engaged between said current-operated electromagnet and said first linking means for parting said moving contacts by moving said first linking means in response to the operation of said current-operated electromagnet;

means for maintaining a parted state of said moving contacts by holding an engagement state of said forced contact parting means to said first linking means when said current-operated electromagnet returns to a non-operation state; and

means for returning the breaker to a waiting state, wherein said forced contact parting means is released from engagement to said first linking means when said voltage-operated electromagnet attains a non-excitation state and said first linking means is further moved by said second linking means.

5,252,934

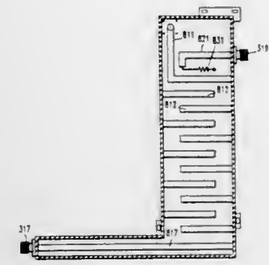
MICROWAVE DELAY ASSEMBLY

Robert E. Myer, Denville, N.J., assignor to AT&T Bell Laboratoris, Murray Hill, N.J.

Filed Aug. 25, 1992, Ser. No. 935,493

Int. Cl.[5] H01P *1/18, 9/04*

U.S. Cl. 333—156 **5 Claims**



1. In an amplifier system including a feedforward system incorporating a signal delay line;

a delay line assembly, comprising:

a housing member constructed of conductive metallic material forming an enclosed microwave cavity;

a plurality of resonator rods affixed to sidewalls of the housing member, the plurality of resonator rods extending along a longitudinal dimension of the housing and being dimensioned in separation between rods and rod dimensions to be operative as a signal delay within a defined band of signal frequency;

first and second transformer rods located at opposite ends of the housing member;

an input co-axial connector mounted at a first end of the housing member and electrically connected to the first transformer rod;

a first directional coupler mounted at the first end of the housing member including a first conductive line proximate to and electrically interactive with the first transformer rod for extracting electrical signals supplied at the input at the input co-axial connector at a specified dB level from the first transformer rod, and a first directional co-axial connector connected to the first conductive line for connecting to electrical apparatus external to the housing member;

an output co-axial connector mounted at a second end of the housing member and electrically connected to the second transformer rod;

a second directional coupler mounted at a second end of the housing member substantially opposite the first end and including a second directional co-axial connector for connecting to electrical apparatus external to the housing member and a second conductive line internal to the housing member connected to the second directional co-axial connector and the second conductive line positioned to be electrically interactive at a specified dB level with the second transformer rod for superimposing elec-

VOL 1155 ISS 2 OCT 12 1993 UMI

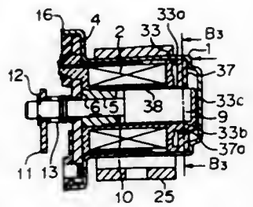
trical signals onto the second transformer rod, and in turn supplying it to the output connector.

5,252,935

ELECTROMAGNETIC SWITCH

Kyohei Yamamoto, and Katsunori Yagi, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 16, 1992, Ser. No. 991,272
Claims priority, application Japan, Jan. 31, 1992, 4-045899
Int. Cl.[5] H01H *67/02*
U.S. Cl. 335—126 **1 Claim**



1. An electromagnetic switch comprising:
an excitation coil wound around a bobbin made of a synthetic resin material;
a yoke accommodating said excitation coil;
a fixed core fixed inside of a first end side of said yoke;
a magnetic path plate contacting an outer end of a flange at a second end side opposite to said first end side of said bobbin and fixed inside of said second end side of the yoke;
a bush made of a nonmagnetic material and fixed in an inner periphery of the bobbin;
a movable core movably supported in said bush in the axial direction thereof; and
terminal means closed by urging to press said terminal means by a magnetic suction of said movable core to said fixed core; wherein
a plurality of arms are extended in the axial direction from an inner peripheral portion of the bobbin at the second end side thereof;
a receiving portion is formed at end portions of said respective arms integrally therewith;
cut-off portions are provided for passing the respective arms therethrough at an inner peripheral portion of said magnetic path plate; and
the retracted movable core is received by an inner end face of said receiving portion.

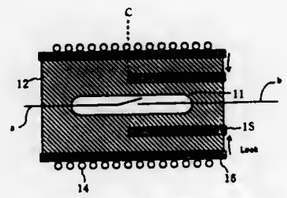
5,252,936

REED RELAY AND SWITCH MATRIX DEVICE USING THE SAME

Hideyuki Norimatsu, Hachiojishi, Japan, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 25, 1992, Ser. No. 951,718
Claims priority, application Japan, Sep. 27, 1991, 3-087098[U]
Int. Cl.[5] H01H *1/66*
U.S. Cl. 335—151 **4 Claims**

1. A reed relay comprising:
a reed switch having a contact point therein;
a first guard pipe covering a first region from one end of the reed switch to a position adjacent to the contact point of the reed switch; and
a second guard pipe placed outside of the first guard pipe for covering a second region extending from the other end of the reed switch to at least one end of the first region, the



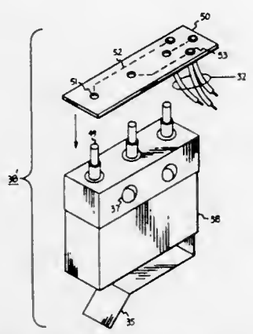
second guard pipe being insulated from the first guard pipe.

5,252,937

MOLDED CASE CIRCUIT BREAKER MODULAR BELL ALARM UNIT

Richard E. Bernier, Southington; Joseph G. Nagy, Plainville, and Ira B. Goldman, Waterbury, all of Conn., assignors to General Electric Company, New York, N.Y.

Filed Aug. 9, 1990, Ser. No. 564,901
Int. Cl.[5] H01H *9/02*
U.S. Cl. 335—202 **4 Claims**



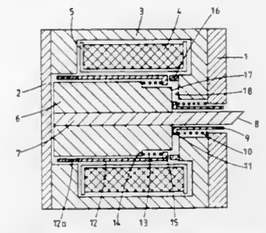
1. A modular bell alarm switch comprising:
a microswitch having an external plunger extending from one surface operating a pair of internal contacts;
a pair of pin connectors extending from an opposite surface connecting with said contacts;
a printed wire board having electrically connected first and second apertures, said pin connectors being within said first apertures; and
electrical wire conductors electrically connected with said second apertures to thereby provide electrical connection between said wire conductors and said pin connectors, said wire conductors providing means for electrical connection with said microswitch from a remote location, said microswitch, said printed wire board and a part of said wire conductors being encapsulated in a plastic composition to form a modular assembly.

5,252,938

SOLENOID WITH ARMATURE BIASED TOWARDS THE REST POSITION WITH TWO SPRINGS

Frederick J. Bishop, Wolverhampton, England, assignor to Lucas Industries public limited company, West Midlands, England

Filed Feb. 24, 1992, Ser. No. 840,014
Claims priority, application United Kingdom, Feb. 27, 1991, 9104047
Int. Cl.[5] H01F *7/08, 7/13*
U.S. Cl. 338—274 **11 Claims**



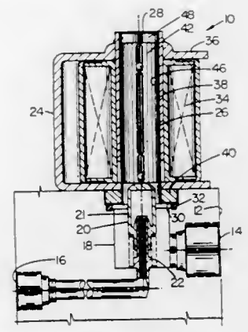
1. A solenoid comprising a stator, an armature, a first return means, a second return means, a first sleeve movable with respect to said stator and said armature and a second sleeve movable with respect to said armature and said stator, said stator comprising an electromagnetic coil, said armature being movable with respect to said stator from a rest position to an energised position when said coil is energised, said first return means being arranged to act between said stator and said first sleeve to urge said first sleeve against said armature and thereby to urge said armature towards the rest position and said second return means being arranged to act between said armature and said second sleeve to urge said second sleeve against said stator and thereby urge said armature towards the rest position.

5,252,939

LOW FRICTION SOLENOID ACTUATOR AND VALVE

Roger G. Riefler, Brandon, and Kenton L. Durham, Canton, both of Miss., assignors to Parker Hannifin Corporation, Cleveland, Ohio

Filed Sep. 25, 1992, Ser. No. 951,259
Int. Cl.[5] H01F *3/08, 3/00, 7/08*
U.S. Cl. 335—280 **11 Claims**



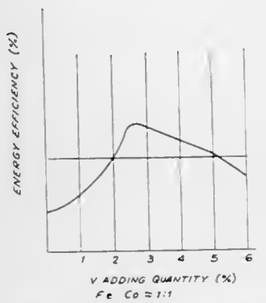
9. A solenoid actuator comprising:
a housing tube, said housing tube having an inner wall bounding an internal cavity;
magnetic coil means adjacent said tube for producing a magnetic field in response to electrical energization of said coil means; and
a plunger mounted for longitudinal movement in said tube, said plunger bounded by an outer surface extending generally adjacent the inner wall of said tube, said plunger comprises of magnetic material and longitudinally movable in said tube responsive to said magnetic field produced by said coil means, a plurality of longitudinally extending slots in the outer surface of said plunger;
a plurality of rollable bodies mounted for movement along said slots, said rollable bodies disposed longitudinally always separated from each other and in supporting contact with said plunger and sad housing tube.

5,252,940

SOFT MAGNETIC MATERIAL

Minoru Tanaka, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 400,596, Aug. 30, 1989. This application Mar. 22, 1991, Ser. No. 673,610
Claims priority, application Japan, Aug. 30, 1989, 1-215640
Int. Cl.[5] H01F *1/14*
U.S. Cl. 335—302 **12 Claims**



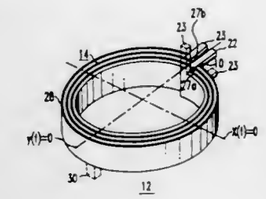
1. A soft magnetic material having a composition consisting essentially of Fe, Co and V and formulated with substantially equal amounts of Fe and Co by weight with the balance from 2.4 to 2.8 weight percent vanadium.

5,252,941

SPIRAL, SELF-TERMINATING COIL AND METHOD OF MAKING THE SAME

Lennart D. Pitzele, Rockwall, and Matthew A. Wilkowski, Mesquite, both of Tex., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 11, 1992, Ser. No. 989,393
Int. Cl.[5] H01F *15/10, 27/28*
U.S. Cl. 336—192 **11 Claims**



1. A spiral coil comprising:
an elongated metallic member having first and second ends lying along a first axis;
first and second tabs, each extending out from a separate one of the first and second ends of the member parallel to the other tab and perpendicular to the first axis;
at least one notch provided in the member between the first and second ends parallel to each tab;
the member being wound in a spiral having at least one turn such that the first tab lies inside the spiral;

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each notch being spaced along the member such that when the member is wound in a spiral, each notch is aligned with the first tab; and

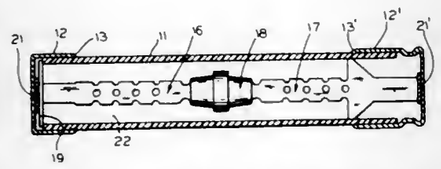
the first tab being oriented so as extend radially outward from the spiral, through each notch, in a direction generally orthogonal to each turn of the spiral.

5,252,942

FUSE LINKS AND DUAL ELEMENT FUSE

Leon Garevich, St. Louis, Mo., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Jan. 8, 1992, Ser. No. 817,759
Int. Cl.[5] H01H *85/04*
U.S. Cl. 337—163 **71 Claims**



1. A dual element fuse link comprising a first fuse link section, said first fuse link section having a first end and a second end;

a second fuse link section, said second fuse link section having a first end and a second end;

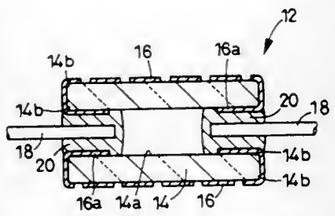
a third fuse link, said third fuse link section, having a proximal end and a distal end, and said third fuse link having a hollow body defining an interior chamber, said body and said chamber of said third fuse link defining at least one weak spot; said first fuse link section first end being electrically connected to said third fuse link proximal end; and said second fuse link section first end being electrically connected to said third fuse link section distal end.

5,252,943

RESISTOR ELEMENT WHOSE ELECTRICALLY RESISTIVE LAYER HAS EXTENSION INTO OPENINGS IN CYLINDRICAL CERAMIC SUPPORT

Motoi Kitabayashi, Nagano; Soya Miyajima, Ina; Yasuhito Yajima, and Takayuki Ogasawara, both of Nagoya, all of Japan, assignors to NGK Insulators, Ltd. and KOA Corporation, both of Japan

Filed Sep. 9, 1991, Ser. No. 756,877
Claims priority, application Japan, Sep. 13, 1990, 2-245676
Int. Cl.[5] H01C *1/02*
U.S. Cl. 338—273 **9 Claims**



1. A resistor element for determining a parameter, comprising:

a cylindrical ceramic support having a central bore formed therethrough with two opposite openings which are open on longitudinally opposite end faces of the ceramic support, respectively;

and electrically resistive layer consisting essentially of a platinum thin-film formed on said ceramic support, said electrically resistive layer being formed principally on an outer circumferential surface of said ceramic support, and formed integrally with two extensions which respectively cover said opposite end faces of said ceramic support, and corresponding end portions of an inner wall of said central bore;

a pair of electrical conductors for connecting said electrically resistive layer to an external circuit, each of said electrical conductors having an end portion which is inserted into a corresponding one of said opposite openings of said ceramic support; and

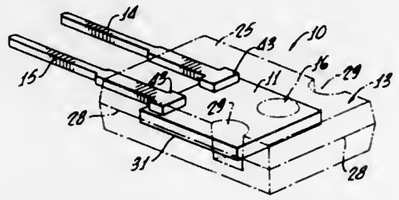
an electrically conductive adhesive filling each of said opposite openings of said ceramic support, for securing said end portion of a corresponding one of said electrical conductors to said ceramic support, said electrically conductive adhesive electrically connecting each of said electrical conductors to a corresponding one of said two extensions of said electrically resistive layer.

5,252,944

FILM-TYPE ELECTRICAL RESISTOR COMBINATION

Richard B. Caddock, Jr., Winchester, Oreg., assignor to Caddock Electronics, Inc., Riverside, Calif.

Continuation-in-part of Ser. No. 758,596, Sep. 12, 1991. This application Apr. 6, 1992, Ser. No. 863,834
Int. Cl.[5] H01C *1/034*
U.S. Cl. 338—275 **20 Claims**



1. A film-type electrical power resistor, which comprises:

(a) a flat chip formed of a substance that is electrically insulating and has substantial thermal conductivity, said chip having an upper side and a lower side,

(b) a resistive film applied to said upper side of said chip,

(c) leads bonded to said upper side of said chip and electrically connected to said film on said upper side of said chip, said leads being adapted to cantilever said chip with said film thereon in a mold cavity, during manufacture of the power resistor, prior to introduction of synthetic resin into said mold cavity, with said lower chip side spaced above the bottom wall of said cavity, and

(d) a molded body molded in said mold cavity and substantially fully encapsulating said chip, said film, and the inner ends of said leads,

said molded body having a flat bottom surface, said molded body not having any mold cup therearound,

said molded body being formed of a high thermal-conductivity synthetic resin, said molded body having a bolt-hole therethrough for clamping of said resistor in effective heat-transfer relationship to a flat surface of a chassis or heatsink,

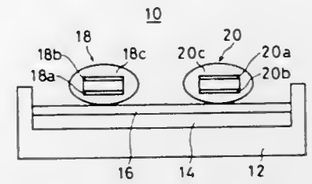
the space between said lower side of said chip and said flat bottom surface of said molded body being a heat-sinking volume formed of said high thermal-conductivity resin, the bottom surface of said volume of resin being the bottom surface of the resistor, said volume not containing any metal layer that is either in an electric circuit or projects outwardly relative to the edges of said chip.

5,252,945

HIGH-VOLTAGE ELECTRONIC PARTS

Kiyoyuki Dohnishi, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Jun. 29, 1992, Ser. No. 905,806
Claims priority, application Japan, Jun. 28, 1991, 3-185268
Int. Cl.[5] H01C *13/00*
U.S. Cl. 338—334 **7 Claims**



1. A high-voltage electronic part comprising:

a case;

a voltage-dividing resistor stored in said case and having a voltage gradient formed therein when said voltage-dividing resistor is connected to a voltage source; and

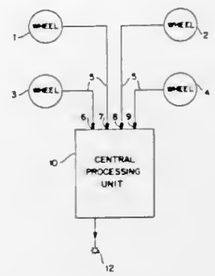
a first capacitor stored in said case and including an electrode connected to said voltage-dividing resistor, wherein said first capacitor is located in said case at a position so that said electrode is arranged adjacent to a portion of said voltage-dividing resistor, and the potential of said electrode of said first capacitor is equal to the potential of said portion of said voltage-dividing resistor adjacent to which said first capacitor is arranged.

5,252,946

METHOD OF DETECTING A DEFLATED TIRE ON A VEHICLE

John C. Walker, Coldfield, and Lavinder S. Rehal, Coventry, both of Great Britain, assignors to Sumitomo Rubber Industries Limited, Hyogo, Japan

Filed Dec. 4, 1991, Ser. No. 802,215
Claims priority, application United Kingdom, Dec. 6, 1990, 9026558
Int. Cl.[5] B60C *23/00*
U.S. Cl. 340—444 **8 Claims**



1. A method of detecting a deflated tire on a vehicle comprising the steps of:

rotating tires of the vehicle, a front left-hand, a front right-hand, a rear left-hand and a rear right-hand wheel being provided;

providing one wheel sensor for each of the tires;

detecting angular velocity speed of the tires by the wheel sensors;

calculating factors

$$\frac{C1 + C2}{C3 + C4} \quad \frac{C1 + C3}{C2 + C4} \quad \frac{C1 + C4}{C2 + C3}$$

where C1, C2, C3 and C4 are signals for the speeds of the front left-hand, front right-hand, rear left-hand and rear right-hand wheels of the vehicle;

monitoring the factors; and

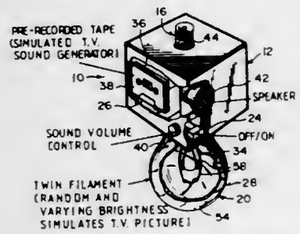
if the value of one or more factor becomes greater than 1.0005 or less than 0.9995, producing a warning signal to indicate that a tire has become at least partially deflated.

5,252,947

HOME SECURITY DEVICE SIMULATING A TELEVISION RECEIVER

Michael Marciano, 2728 Beatrice La., Bellmore, N.Y. 11710

Filed Feb. 10, 1992, Ser. No. 833,080
Int. Cl.[5] G08B *29/00, 25/08*
U.S. Cl. 340—515 **7 Claims**



1. A home security electronic device simulating a person at home watching a simulated television receiver, which comprises:

a) a housing having an electrical circuit therein;

b) means for electrically connecting said electrical circuit in said housing to a power source; and

c) means electrically connected to said electrical circuit in said housing for projecting an illusion of a television receiver, said illusion is random, simulates action on said simulated television receiver, changes scenes on said simulated television and changes channels and programs, so that a potential burglar will think someone is home watching said television receiver and will therefore prevent a break in by acting as a deterrent not an alarm and is in effect operative before a break in is tried said housing electrically connected means includes a threaded base member on said housing electrically connected to said electrical circuit in said housing, so that said threaded base member can be screwed into a threaded socket in electrical receptacle in the home which is electrically connected to the power source, said sound simulating means includes a tape player built into said housing, a pre-recorded tape played within said tape player, a volume control on said housing electrically connected to said tape player, at least one speaker built into said housing electrically connected to said tape player, said on and off turning means is a switch, said picture simulating means includes a light source for producing a blue color therefrom, means for electrically connecting said light source to said electrical circuit in said housing, means electrically connected to said electrical circuit in said housing for varying the brightness of said light source;

d. means electrically connected to said electrical circuit in said housing for simulating the sound of the television receiver, whereby said on and off turning means will also turn said sound simulating means on and off; and

e. means electrically connected between said electrical circuit in said housing and the power source for turning picture simulating means on and off.

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5,252,948

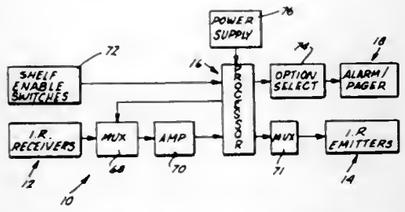
SECURITY SYSTEM FOR CIGARETTE DISPLAY CASE

Donald L. Goris, Grand Rapids, and David A. Noorman, Jenison, both of Mich., assignors to Miquest Corporation, Grand Rapids, Mich.

Continuation of Ser. No. 673,183, Mar. 20, 1991, Pat. No. 5,150,101, which is a continuation of Ser. No. 575,909, Aug. 31, 1990, abandoned. This application Mar. 20, 1992, Ser. No. 855,097

Int. Cl.[5] G08B *21/00*

U.S. Cl. 340—568 11 Claims



1. A cigarette display case having a plurality of shelves each having an exit through which a single carton of a vertical stack may pass, comprising:

detector means for optically detecting the presence of a carton within any one of said exits;

control means responsive to said detector means for emitting an alarm signal when either (1) a predetermined number of cartons have passed through said exits within a first predetermined period of time, or (2) a carton remains within one of said exits for a second predetermined period of time; and

alarm means responsive to said control means for emitting an alarm when said control means emits the alarm signal.

5,252,949

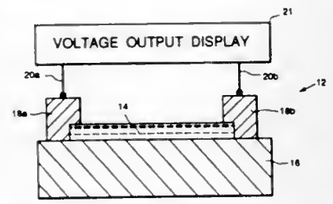
CHEMICAL SENSOR FOR CARBON MONOXIDE DETECTION

Kevin W. Kirby, Malibu; Hiroshi Kimura, Northridge, and Ricardo C. Pastor, Manhattan Beach, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 28, 1991, Ser. No. 751,029

Int. Cl.[5] G08B *17/10*

U.S. Cl. 340—632 11 Claims



1. A sensor for detecting CO in a flowing gas stream comprising:

(a) a surface layer comprising $Cu_{1+x}Mn_{2-x}O_{4-y}$, said surface layer having a surface layer resistance which changes as a function of CO concentration;

(b) means for measuring said surface layer resistance on said surface layer;

(c) means for determining any difference between said measured surface layer resistance in the absence of said flowing gas stream at said surface layer and in the presence of said flowing gas stream at said surface layer; and

(d) means for relating said difference to CO concentration in said flowing gas stream.

5,252,950

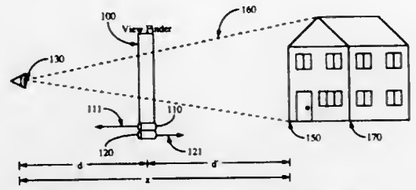
DISPLAY WITH RANGEFINDER

Steven E. Saunders, Cupertino, and Harry Vertelney, San Carlos, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Dec. 20, 1991, Ser. No. 811,082

Int. Cl.[5] G09G *1/28*

U.S. Cl. 345—9 15 Claims



1. An apparatus for displaying images comprising:

a. a display for displaying rendered imagery said display being substantially transparent to a viewer of the display;

b. an automatic rangefinder coupled to the display for determining the distance from a viewer to the display, said distance which may vary between a minimum distance and a maximum distance; and

c. a means for displaying an image upon the display, the image having a perspective such that the display is a projection plane of a perspective volume, and a distance from the projection plane to a center of the projection is proportional to the distance from the display to the viewer, the distance from the center of the projection to the projection plane being dynamically modifiable depending on the distance detected by the rangefinder.

5,252,951

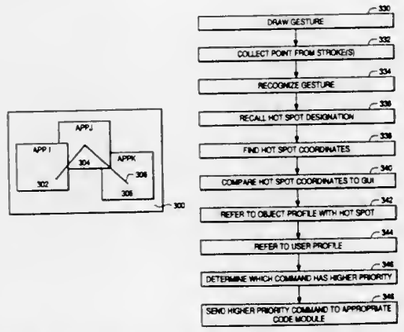
GRAPHICAL USER INTERFACE WITH GESTURE RECOGNITION IN A MULTIAPPLICATION ENVIRONMENT

Alan R. Tannenbaum, Washington Grove, Md.; John M. Zetts, Falls Church; Yu L. An, Vienna, both of Va.; Gordon W. Arbeitman, Gaithersburg, Md.; Evon C. Greanias, Boca Raton, Fla., and Guy F. Verrier, Reston, Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 344,879, Apr. 28, 1989. This application Oct. 21, 1991, Ser. No. 779,702

Int. Cl.[5] G09G *5/00*

U.S. Cl. 345—156 45 Claims



1. An advanced user interface, for use with an integrated operating environment and an operating system capable of running a plurality of application programs simultaneously on a computer system, only one of which is active at a given time, the computer system having a central processor, a random access memory, a display and at least one input device which transmits input signals to the advanced user interface in response to actions performed by a user, comprising:

interface profiles which contain mappings of input messages representative of the input signals against corresponding commands useable by at least one of the plurality of application programs; and,

an environment link module coupled to the interface profiles, the integrated operating environment and the operating system, the environment link module receiving the input messages, determining a first window of a plurality of windows belonging to one of the plurality of application programs in which a key feature of a gesture was made by pointing device, matching the input messages against the corresponding commands contained in the interface profiles according to the application program which owns the first window, and sending the corresponding commands to an appropriate computer module in the random access memory;

the computer system performing a given action in response to user actions different from those user actions for which the owning application program was originally written without change to the owning application program.

5,252,952

CURSOR DEVICE WITH ZERO-POINT RESETTING

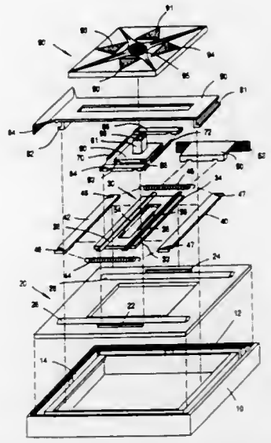
Manfred Frank, Grosshadersdorf, and Gunter Murmann, Pegnitz, both of Fed. Rep. of Germany, assignors to The Cherry Corporation, Waukegan, Ill.

Filed Aug. 13, 1991, Ser. No. 744,363

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1990, 4034166

Int. Cl.[5] G09G *1/00*

U.S. Cl. 345—157 12 Claims



3. An improved cursor control device of a type wherein, in response to an actuating force, a positioning element is moved from a zero rest position relative to coordinate axes of a base plate to define a relative change of position of the cursor of a display screen, and wherein the positioning element is automatically returned to its zero rest position when the actuating force is removed, a coordinate generator for each axis of movement providing signals indicative of the position of the positioning element and the cursor in each axis of movement, the improvement comprising:

first and second carriage means movable in orthogonal directions with respect to said base plate;

an actuating pin for moving said positioning element;

first rail means disposed on said base plate for guiding linear sliding movement of said first carriage means;

grooves formed on said first carriage means for allowing the first carriage means to slide along said first rail means;

second rail means disposed on said first carriage means for guiding linear sliding movement of said positioning element in a direction orthogonal to the direction of sliding movement of the first carriage means;

grooves formed on said positioning element for allowing the positioning element to slide along said second rail means of said first carriage means;

first and second zero stop means, each stop means including two separate movable webs, separate barrier surfaces and a spring means for connecting and biasing said webs against said barrier surfaces;

the webs of said first zero stop means disposed in the plane of said first carriage means on opposite sides thereof and having grooves for engaging and sliding along said first rail means of said base plate;

the webs of said second zero stop means disposed in the plane of said positioning element on opposite sides thereof and having grooves for engaging and sliding along said second rail means of said first carriage means; and

said second carriage means having a cutout and being positioned above said positioning element with said actuating pin passing through said cutout and supporting a control element.

5,252,953

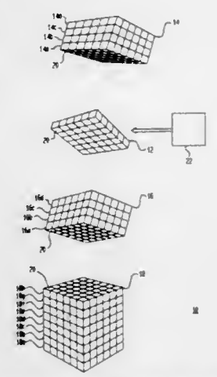
COMPUTERGRAPHIC ANIMATION SYSTEM

Barry B. Sandrew, and David Hamby, both of Encinitas, Calif., assignors to American Film Technologies, Inc., Wayne, Pa.

Filed May 22, 1990, Ser. No. 526,977

Int. Cl.[5] G09G *1/06*

U.S. Cl. 345—122 17 Claims



1. A computerized animation system, comprising means for creating a series of images, each image defined by a set of vector values and means for storing said series of images in a memory structure for storing image information, means for displaying said images as a plurality of pixels and said memory structure comprising a plurality of bit planes and sub-divided into at least two storage structures, a first storage structure in which is temporarily stored operator-modified image information as a set of vector values and a second storage structure comprised of at least one bit plane, in which is stored a raster representation of said operator-modified image information in said at least one bit plane of said second storage structure.

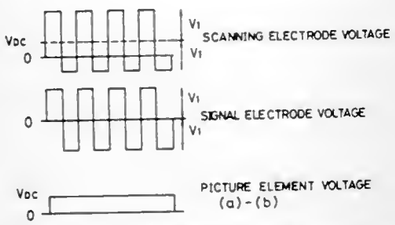
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5,252,954

MULTIPLEXED DRIVING METHOD FOR AN ELECTROOPTICAL DEVICE, AND CIRCUIT THEREFOR

Tetsuya Nagata, Hitachi; Takao Umeda, Mito, and Tatsuo Igawa, Kita Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 13, 1990, Ser. No. 492,588
Claims priority, application Japan, Mar. 13, 1989, 1-60093
Int. Cl.[5] G09G *3/36*
U.S. Cl. 345—95 **8 Claims**



1. A driving method for an electrooptical device including one or more cells which comprises an electrooptical material showing different responsive states, depending upon a direction of an electric field applied thereto and a pair of electrodes for applying a voltage to the electrooptical material, which method comprises:

setting the electrooptical material to a desired responsive state,

said setting of the electrooptical material including

applying, to one of the electrode pair, a high-frequency AC voltage on which DC voltage pulses of polarities corresponding to said different responsive states, respectively, are superposed during a first half of a period for setting the responsive states and a latter half of the period, respectively, and

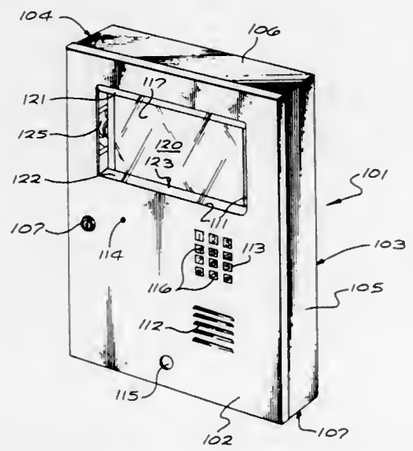
applying, to another of the electrode pair, a high-frequency AC voltage which cancels all the high-frequency AC voltage applied to said one of the electrode pair, or a voltage containing multiplexedly a high-frequency AC voltage and a DC voltage which cancel part of the high-frequency AC voltage and part of the DC voltage applied to said one of the electrode pair, corresponding to the first half and latter half of the setting period, respectively, thereby to set said electrooptical material to a desired responsive state.

5,252,955

LIQUID-CRYSTAL DISPLAY UNIT FOR ELECTRONIC DIRECTORY

William R. Davis, 536 California Ter., Pasadena, Calif. 91105; Dennis W. Mowers, 5833 Penfield, Woodland Hills, Calif. 91367; Richard P. Greenthal, 2329 El Contento Dr., Los Angeles, Calif. 90068; Paul Szymanski, 714 Appleton Rd., Simi Valley, Calif. 93065; Ronald A. Wray, 11801 Wyandotte St. #3, North Hollywood, Calif. 91605, and Richard A. Davidson, 20440 Kinzie St., Chatsworth, Calif. 91311

Continuation of Ser. No. 215,992, Jul. 7, 1988, Pat. No. 5,027,111. This application May 24, 1991, Ser. No. 705,346
The portion of the term of this patent subsequent to Jun. 25, 2008, has been disclaimed.
Int. Cl.[5] G09G *3/36*
U.S. Cl. 345—87 **31 Claims**



1. A vandalism-resistant and weather-resistant display unit for an outdoor-installed electronic directory, comprising:

a substantially vandalism-resistant and weather-resistant case for outdoor installation, said case including a front wall, side-wall structure, and a bottom wall;

a liquid-crystal display, mounted within the case, and having a display medium and a structure for containing the display medium;

the liquid-crystal display structure comprising a face disposed in front of the medium, for displaying directory information outdoors in the form of a directory;

means, at least partially mounted within the case, for protecting the liquid-crystal display against vandalism and rainwater and for maintaining the temperature of the liquid-crystal display medium and structure between practical operating limits for the display, notwithstanding ambient temperature and humidity variations over generally normal ranges for at least the temperature zones, and even if the display unit is placed to receive direct sunlight when the sun is out; the protecting and temperature-maintaining means comprising:

an external window mounted to the case in the front wall and generally spaced away from the liquid-crystal display structure face, along a viewing direction, to protect the liquid-crystal display and to define an air-circulation region immediately adjacent to the face;

means for establishing ambient air circulation at the liquid-crystal display, said circulation-establishing means comprising:

(1) ventilation-plenum means for conducting air between the outside of the case and the air-circulation region, said ventilation-plenum means being integrated into said side-wall structure, and including at least one vertical panel facing toward the liquid-crystal display; the ventilation-plenum means being long and narrow enough to substantially deter manual access to the liquid-crystal display through the ventilation-plenum means,

(2) orifice means, defined in said panel, for conducting air between the air-circulation region and the ventilation-plenum means, and

(3) at least one fan or blower, disposed at an opening in said panel to circulate outdoors ambient air therethrough, and through the ventilation-plenum means and the air-circulation region, and to return such air to the outside of the case, to reduce heating by the sun; and

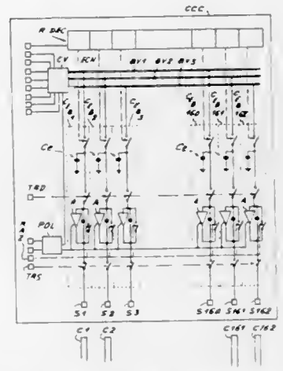
solid-state digital electronic circuitry, electrically interconnected with the liquid-crystal display, for electronically storing directory information and for controlling the liquid-crystal display unit to automatically exhibit stored directory information in the form of a directory having multiple listings in an alphabetical order or in classified groupings.

5,252,956

SAMPLE AND HOLD CIRCUIT FOR A LIQUID CRYSTAL DISPLAY SCREEN

Patrice Senn; Alan Lelah, both of Grenoble, and Gilbert Martel, Meylan, all of France, assignors to France Telecom Etablissement Autonome de Droit Public (Center National D'Etudes des Telecommunications), Moulineaux, France

Filed Sep. 23, 1991, Ser. No. 764,196
Claims priority, application France, Sep. 21, 1990, 90 11682
Int. Cl.[5] G09G *3/36, 3/00;* **H03K** *5/159*
U.S. Cl. 345—100 **2 Claims**



1. A sample and hold circuit for controlling a liquid crystal display screen, said display screen comprising a plurality of addressing lines and columns so as to be controlled in a line-by-line sequential manner, wherein said sample and hold circuit comprises:

a sampling stage comprising a sampling capacitor and an input terminal for receiving a video signal supplied to one of said addressing lines, said sampling capacitor being connected to said input terminal through a first electronic switch;

a holding stage comprising an output connected to one of said columns of the display screen and further comprising an amplifier with a nonreversing input, a reversing input, and an output, wherein said output is connected to a reversing input through a storage capacitor and a second electronic switch connected in parallel to said storage capacitor, said inputs to the amplifier being connected to said sampling capacitor by a pair of third electronic switches;

means for controlling sampling of a first video signal supplied to a selected one of said addressing lines, said sampling being executed in the sampling stage;

means for controlling holding of a second video signal supplied to an addressing line immediately preceding said selected addressing line, said holding being executed in the holding stage;

means for transferring said sampled first video signal from the sampling stage to the holding stage,

wherein the output of said amplifier is connected to a general output terminal through a fourth switch, and said general output terminal is connected to said one of said columns of the display screen; and

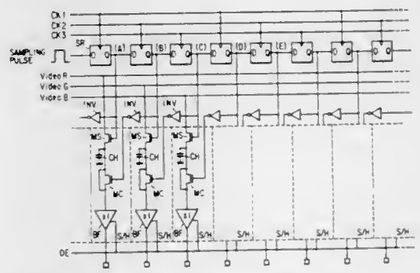
an offset correction capacitor having a first plate, connected to said input terminal of said sampling stage through a fifth electronic switch controlled by said first transfer control signal, and also connected through a sixth electronic switch to a first point in said sample and hold circuit with a charge potential set to an average of polarization voltages of the source and drain of a transistor which forms said sample and hold circuit, and wherein said offset correction capacitor has a second plate connected to said sampling capacitor and to a second point in said sample and hold circuit through a seventh electronic switch, said second point being set to said average of said polarization voltages, said seventh electronic switch being controlled by said sampling control signal and being used to establish connection with said reversing input of said amplifier through one of said third switches via an element which supplies said average of said polarization voltages to the inputs of said amplifier while said first transfer control signal is being supplied.

5,252,957

SAMPLE-AND-HOLD CIRCUIT AND LIQUID CRYSTAL DISPLAY APPARATUS

Tetsuro Itakura, Fujisawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 14, 1991, Ser. No. 791,546
Claims priority, application Japan, Nov. 15, 1990, 2-307309
Int. Cl.[5] G09G *3/36;* **G11C** *27/02*
U.S. Cl. 345—98 **12 Claims**



7. A liquid crystal display apparatus comprising:

a liquid crystal display having a plurality of picture elements, a plurality of signal lines for selectively supplying image signals to said picture elements and a plurality of scanning lines arranged to intersect said signal lines;

a driving circuit including a plurality of sample-and-hold circuits arranged for said respective signal lines to sample and supply image signals to said signal lines and sampling pulse transferring means for sequentially applying sampling pulses to said sample-and-hold circuits, and

a scanning line selection circuit for selectively driving said scanning lines;

wherein each of said sample-and-hold circuits includes:

a first field effect transistors for sampling the input signal in response to a corresponding one of the sampling pulses;

a charge-holding capacitor for holding signal charges of the input signal sampled by said first field effect transistor;

a second field effect transistor having a gate and a source and drain which are shorted and connected to said charge-holding circuit, for releasing excess charges accumulatively stored together with the signal charges in said charge-holding capacitor; and

pulse applying means for applying a sampling pulse having a time delay corresponding to a time period required for transferring the sampling pulse by at least one stage of sample-and-hold circuit with respect to a sampling pulse applied to said first field effect transistor to the gate of said second field effect transistor.

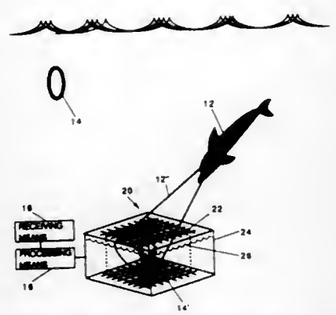
VOL 1155 ISS 2 OCT 12 1993 UMI

5,252,958

METHOD AND APPARATUS FOR INTERSPECIES COMMUNICATION

John J. Daniels, 350 Bristol St., Unit A-1, Waterbury, Conn. 06708

Filed Sep. 5, 1991, Ser. No. 755,057
Int. Cl.[5] G09G *3/34*
U.S. Cl. 345—107 **10 Claims**



2. An apparatus for interspecies communication, comprising:
displaying means for displaying communicable symbols comprising an electrical rheological fluid having at least an on state having a viscosity and an off state having a different viscosity dependent on an electric potential applied therethrough, and a three dimensional grid of intersecting electrodes, forming a plurality of pixels submerged in the electrical rheological fluid, the displaying means receptive of display driving signals for displaying communicable symbols by selectively applying an electric potential to the electrodes so as to form an image comprised of portions of the electrical rheological fluid selectively disposed in either the on state or the off state so that a dolphin having an echolocation system is able to perceive the difference in the on state and off state between the pixels to perceive the image;
receiving means for receiving acoustic communication signals from a dolphin;
processing means for processing the acoustic communication signals to produce the display driving signals in response thereto; and
controlling means receptive of the display driving signals for controlling the displaying means in response thereto.

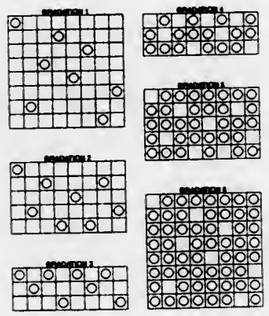
5,252,959

METHOD AND APPARATUS FOR CONTROLLING A MULTIGRADATION DISPLAY

Masaru Kono, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 481,971, Feb. 16, 1990, abandoned.
This application Jul. 27, 1992, Ser. No. 921,443
Claims priority, application Japan, Feb. 20, 1989, 1-39725; Apr. 19, 1989, 1-99114; Nov. 17, 1989, 1-298842
Int. Cl.[5] G09G *3/00*
U.S. Cl. 345—147 **36 Claims**

1. A multi-gradation display comprising:
display means comprising a field of dots formed in a matrix for displaying an image,
a plurality of parallel signal electrodes and a plurality of scan electrodes formed in orthogonal directions relative to each other, the cross points of said electrodes defining said field of dots,
scan electrode driving means having a plurality of scan signal output terminals for sequentially supplying scan signals to respective scan electrodes,
signal electrode driving means for selectively supplying data signals to respective signal electrodes,
electrode driving means for activating selected dots to form said image across said matrix field of dots,
said matrix field of dots divided into a plurality of defined virtual submatrices of different two dimensional size and forming a predetermined gradation pattern of N activated or nonactivated dots distributed within each of said defined virtual submatrices, each of said virtual submatrices having at least a different number of rows of dots in one of said orthogonal directions compared with other of said virtual submatrices,
said electrode driving means comprising:



gradation data encoder means for designating a particular gradation for the display of the image,
dot submatrix generating means comprising a plurality of submatrix generating circuits for respectively generating one of said virtual submatrices with said predetermined gradation pattern of N activated or nonactivated dots,
output gate means for applying data signals for creating an activated dot gradation per respective submatrix addressed by said electrode driving means based upon on outputs of said gradation data encoder means and said dot submatrix generating means.

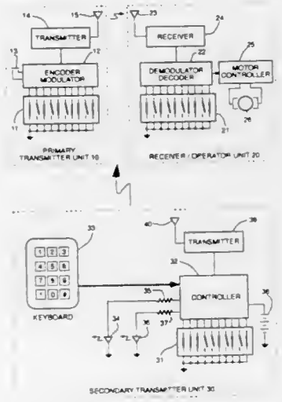
5,252,960

SECURE KEYLESS ENTRY SYSTEM FOR AUTOMATIC GARAGE DOOR OPERATOR

Dean C. Duhame, Roseville, Mich., assignor to Stanley Home Automation, Novi, Mich.

Filed Aug. 26, 1991, Ser. No. 749,987
Int. Cl.[5] H03K *17/967, 7/94;* **G06F** *7/04;* **H03M** *11/00*
U.S. Cl. 340—825.56 **22 Claims**

10. A secure keyless entry system for operation of a door comprising:
an automatic door operator including
a manually operable receiver code setting device for setting a digital identification code word having a predetermined number of bits;
a radio frequency receiver for receiving radio frequency transmissions encoded with digital identification codes,
a demodulator/decoder connected to said receiver code setting device and said radio frequency receiver for generating an operation signal if said radio frequency receiver receives a radio frequency transmission encoded with a digital identification code matching said digital identification code word set by said receiver code setting device,
a motor coupled for movement of the door between a fully open position and a fully closed position, and
a motor controller connected to said demodulator/decoder and said motor for controlling said motor for movement of the door between said fully open position and said fully closed position upon receipt of said operation signal;
a secure keyless transmitter unit including
a manually operable transmitter code setting device for setting a base digital code having said predetermined number of bits and corresponding to said predetermined digital identification code word with predetermined bits inverted,
means for selecting bits of the base digital code for inversion comprising a keyboard including a plurality of manually operable code keys, each key corresponding one-to-one to a respective bit of the base digital code;



a controller connected to said transmitter code setting device and said keyboard operative to form an altered code corresponding to the base digital code set by said transmitter code setting device with selected bits corresponding to operated code keys inverted, and
a radio frequency transmitter connected to said controller for transmitting a radio frequency signal encoded with said altered code;
whereby upon setting of said transmitter code setting device having predetermined bits inverted with respect to the corresponding bits of said receiver code setting device and operation of code keys corresponding to said predetermined bits, said altered code equals said digital identification code word.

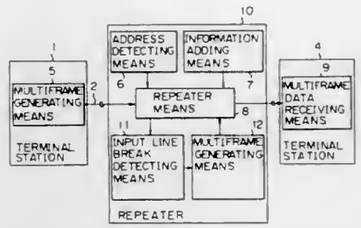
5,252,961

SYSTEM FOR MONITORING STATUS OF PLURALITY OF REPEATERS

Daiichiro Yamauchi, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 309,151, Feb. 13, 1989, abandoned.
This application Nov. 21, 1991, Ser. No. 794,853
Claims priority, application Japan, Feb. 12, 1988, 63-31354
Int. Cl.[5] H04Q *3/00*
U.S. Cl. 340—825.07 **10 Claims**

1. A system for monitoring status of a plurality of repeaters located along a transmission line connecting two terminal stations, wherein at least one of said terminal stations and at least one of said repeaters comprises:
multiframe generating means for cyclically generating multiframe data including a plurality of frames containing addresses of all the repeaters, each frame comprising an address of a corresponding repeater along the transmission line, data and status of the repeater;
and wherein each of said repeaters comprises:
address detecting means for detecting an address of repeater from the multiframe data and for determining a receipt of the multiframe data;
information adding means for writing current status of the repeater in the multiframe data;
input line break detecting means for detecting a break in the transmission line; and



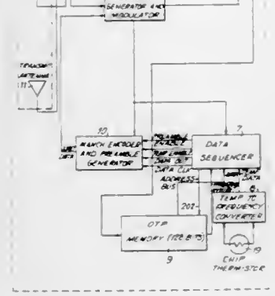
said multiframe generating means for cyclically generating second multiframe data in response to said input line break detecting means detecting a break in the transmission line.

5,252,962

SYSTEM MONITORING PROGRAMMABLE IMPLANTABLE TRANSPONDER

Donald J. Urbas, Evergreen, and David Ellwood, Golden, both of Colo., assignors to Bio Medic Data Systems, Maywood, N.J.

Filed Aug. 3, 1990, Ser. No. 562,300
Int. Cl.[5] G08C *19/16*
U.S. Cl. 340—870.17 **23 Claims**



1. A passive transponder comprising encapsulation means including therein receive antenna means for receiving an input signal, transmit antenna means for transmitting an output signal to said signal source, programmable memory means for storing data received by said transponder from said signal source, said programmable memory means being programmed in response to said input signal after completion of manufacture of said transponder, said output signal including said data stored by said programmable memory means, and said output signal being generated in response to said input signal, said transponder transmitting the output signal at either one of a first baud rate allowing programming of said programmable memory means or a second baud rate preventing further programming of the programmable memory means dependent upon the status of said programmable memory means.

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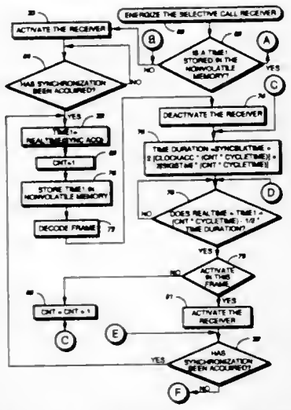
"SELECTIVE CALL RECEIVER"

Gregory O. Snowden; Michael J. DeLuca, both of Boca Raton; Morris A. Moore, North Lauderdale; Robert J. Schwendeman, Pompano Beach, and David F. Willard, Plantation, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 460,699, Jan. 4, 1990. This application Mar. 16, 1992, Ser. No. 851,113

Int. Cl.[5] H04B *5/04;* **H04Q** *7/00;* **G08B** *5/22*

U.S. Cl. 340—825.44 **3 Claims**



1. In a selective call receiver including a real time clock, a nonvolatile memory, and a receiver circuit for receiving a synchronous signal having a cycle time and a system signal stability, a method comprising the steps of:

acquiring synchronization at a first time with the synchronous signal;

storing said first time as a stored value in said nonvolatile memory;

de-energizing said selective call receiver;

energizing said selective call receiver at a second time without activating said receiver circuit; and

activating said receiver circuit to search for said synchronous signal at a third time later than said second time, said third time determined in response to said real time clock, said stored value, said cycle time and said system signal stability.

5,252,964

NON-CONTACT PAGER PROGRAMMING SYSTEM AND A PAGER FOR USE THEREWITH

William W. L. Tan; Pha C. Nguyen; Pamela A. Rakolta, all of Lake Worth; Silvia M. Viteri, Lantana, and Gary Lee Pace, Boca Raton, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 410,562, Sep. 20, 1989, abandoned. This application Aug. 13, 1992, Ser. No. 928,164

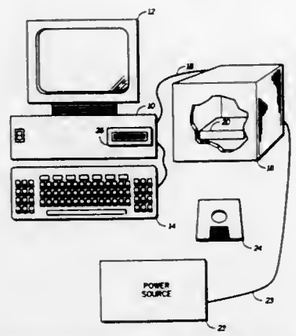
Int. Cl.[5] G08B *5/22*

U.S. Cl. 340—825.48 **46 Claims**

1. A non-contact pager programming system governed by command and data words generated by a user interactive central controller to program and read a programmable nonvolatile memory of a pager, said programmable non-volatile memory having registers for storing a plurality of data words which characterize at least one operation of said pager, said system comprising:

controller means for communicating with said central controller to receive and transmit command and data words between said pager and said central controller, said controller means responsive to command and data words received from said central controller to generate first signals for governing transmission of said command and data words to the pager being programmed in a format based on a reception protocol of said pager and to generate at least one second signal for governing reception of data words from said pager for reading selected storage registers of the non-volatile memory thereof;

transmitting means governed by said first signals to select a carrier frequency corresponding to the pager being programmed and to transmit over the air a programming signal at said carrier frequency digitally modulated in accordance with said pager's reception protocol and said command and data words; and



receiving means governed by said at least one second signal to receive over the air signals generated by the pager being programmed in response to said programming signal, said pager generated signals being representative of the data words of said selected storage registers, to convert said received signals to digital signals representing said data words and to conduct said digital signals to said controller means.

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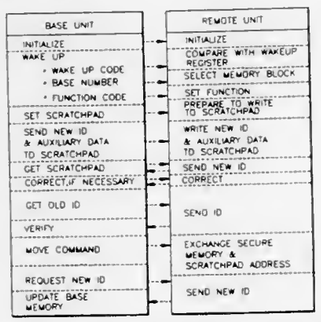
CHANGING ONE OF MANY ACCESS CODES UPON REMOVAL OF IGNITION KEY

Sachal B. Gidwani, Carmel; Kenneth R. Campbell, Kokomo, and Eric L. Slone, Indianapolis, all of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Mar. 15, 1991, Ser. No. 669,708

Int. Cl.[5] H04Q *1/00*

U.S. Cl. 340—825.56 **2 Claims**



1. A system for secure entry to a plurality of vehicles, each vehicle having an ignition system activated by an ignition key coupled therewith, the system comprising:

a plurality of base units, one for each vehicle, for controlling a vehicle function and at least one remote unit coupled to the base units for communication therewith,

each base unit storing a unique base number and a secure remote ID,

the remote unit having a memory partitioned into assigned memory blocks, one for each base unit, and an additional temporary memory block, each assigned memory block containing a secure ID,

the remote unit further having logic means for selectively assigning a base number to each memory block, for writing an ID to each memory block and for accessing a memory block when a corresponding base number is communicated to the remote unit to read out the secure ID from the memory block for transmission to the base unit,

each base unit having means for automatically initiating an update of an ID, in response to a withdrawal of the ignition key from the ignition system, by transmitting a new ID from the base unit to the remote, and

wherein the logic means is effective, upon receipt of a new ID from a base unit, to write the new ID to the temporary memory block, to reassign the corresponding base number to the temporary memory block, and to reassign the memory block formerly containing the ID for the corresponding base number as a new temporary memory block.

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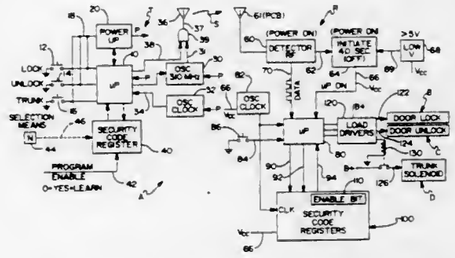
TRANSMITTER FOR REMOTE CONTROL SYSTEM FOR DOOR LOCKS

George Lambropoulos, Grosse Pointe Woods; Robert A. Hair, Pontiac, and Kenneth R. Pitera, Warren, all of Mich., assignors to TRW Inc., Cleveland, Ohio

Continuation of Ser. No. 336,841, Apr. 12, 1989, Pat. No. 5,109,221, which is a division of Ser. No. 262,206, Oct. 19, 1988, Pat. No. 4,881,148, which is a continuation of Ser. No. 52,469, May 21, 1987, abandoned. This application Sep. 26, 1991, Ser. No. 767,034

Int. Cl.[5] H04Q *7/00*

U.S. Cl. 340—825.69 **5 Claims**



1. A transmitter for transmitting a remote binary control signal to a vehicle-mounted receiver having a stored unique security code, a security code comparator for comparing the security code in a received signal with the stored unique security code, means for powering up and activating the code comparator upon receipt of a signal including an integral power up initiation code, and means for outputting a vehicle function command corresponding to the function code portion of a received signal having the matching unique security code, the transmitter comprising means for storing a unique security code comprising a sequence of binary bits, and means for transmitting an integral three-part signal comprising a sequence of binary bits including the power up initiation code, the unique security code, and a selected one of a plurality of function codes.

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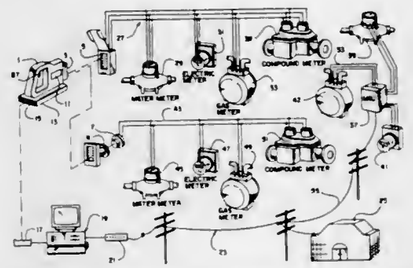
READER/PROGRAMMER FOR TWO AND THREE WIRE UTILITY DATA COMMUNICATIONS SYSTEM

Jr. Brennan, Montgomery; David R. Hamilton, Auburn, and Warren C. Wynn, Jr., Montgomery, all of Ala., assignors to Schlumberger Industries, Inc., Atlanta, Ga.

Division of Ser. No. 528,391, May 25, 1990, Pat. No. 5,155,481. This application Jun. 23, 1992, Ser. No. 903,203

Int. Cl.[5] G08B *19/02;* **H04Q** *9/00*

U.S. Cl. 340—870.02 **27 Claims**



1. A reader/programmer for communicating with a utility meter over at least two wire lines, comprising:

means for generating an interrogate signal;

first means for demodulating a data signal received from the utility meter over the wire lines, the data signal consisting of a current in the wire lines which varies in accordance with data being transmitted from the utility meter when the reader/programmer is connected via two wire lines; and

second means for demodulating the data signal received from the utility meter over the wire lines, the data signal having characteristics which vary in accordance with data being transmitted from the utility meter when the reader/programmer is connected via at least three wire lines.

5,252,968

APPARATUS AND METHOD FOR OPTICAL ENCODING AND CURSOR CONTROL TRACKBALL

Paul M. Donovan, Menlo Park, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 664,480, Mar. 4, 1991, abandoned, which is a continuation of Ser. No. 357,419, May 24, 1989, abandoned. This application Dec. 17, 1991, Ser. No. 809,837

The portion of the term of this patent subsequent to Jun. 25, 2008, has been disclaimed.

Int. Cl.[5] G01D *5/34;* **G08C** *17/00*

U.S. Cl. 390—870.28 **8 Claims**

1. An apparatus for optical encoding with respect to a first axis and a second axis, comprising:

(a) a first axis assembly that includes:

(1) first axis electrical input means for providing a first axis pulsed electrical signal;

(2) a first light emitting device having a first path a light emission and having a first terminal coupled to the first axis electrical input means;

(3) a second light emitting device coupled in series with the first light emitting device, wherein the second light emitting device has a second path of light emission and has a first terminal coupled to a second terminal of the first light emitting device;

(4) a first photodetector residing in the first path of light emission and having a first terminal coupled to the first axis electrical input means such that when said first light emitting device goes to zero volts said first photodetector goes to zero volts in response to the first axis pulsed electrical signal;

(5) a second photodetector residing in the second path of

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light emission and having a first terminal coupled to the first axis electrical input means such that when said second light emitting device goes to zero volts said second photodetector goes to zero volts in response to the first axis pulsed electrical signal;

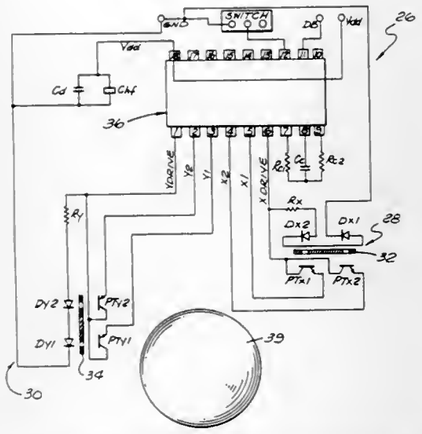
(6) first axis positionable light blocking means for blocking and unblocking the first path of light emission and for blocking and unblocking the second path of light emission;

(b) a second axis assembly that includes:

(1) second axis electrical input means for providing a second axis pulsed electrical signal, wherein the second axis pulsed electrical signal is substantially 180° out of phase with the first axis pulsed electrical signal;

(2) a third light emitting device having a third path of light emission and having a first terminal coupled to the second axis electrical input means;

(3) a fourth light emitting device coupled in series with the third light emitting device, wherein the fourth light emitting device has a fourth path of light emission and has a first terminal coupled to a second terminal of the third light emitting device;



(4) a third photodetector residing in the third path of light emission and having a first terminal coupled to the second axis electrical input means such that when said third light emitting device goes to zero volts said third photodetector goes to zero volts in response to the second axis pulsed electrical signal;

(5) a fourth photodetector residing in the fourth path of light emission and having a first terminal coupled to the second axis electrical input means such that when said fourth light emitting device goes to zero volts said fourth photodetector goes to zero volts in response to the second axis pulsed electrical signal;

(6) second axis positionable light blocking means for blocking and unblocking the third path of light emission and for blocking and unblocking the fourth path of light emission;

(b) encoding means having

(1) a first input coupled to a second terminal of the first photodetector and a second terminal of the third photodetector and

(2) a second input coupled to a second terminal of the second photodetector and a second terminal of the fourth photodetector.

5,252,969

TEMPORARY SIGNAL SYSTEM

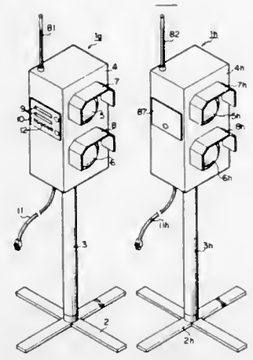
Mitsuhiro Kishi, Tochigi, Japan, assignor to Japanic Corporation, Ashikaga, Japan

Filed Jun. 18, 1991, Ser. No. 717,100

Claims priority, application Japan, Jun. 21, 1990, 2-163085; Jun. 21, 1990, 2-163086

Int. Cl.[5] G08G *1/095*

U.S. Cl. 340—908 **19 Claims**



1. A temporary signal system comprising:

two signal stands installed at spaced locations adjacent a traffic restriction area and each having at least red and green lights which light for predetermined time periods so as to control vehicle traffic passing the traffic restriction area, each of said two signal stands including:

(a) timer means for counting actual time and providing a time signal indicative of the actual time,

(b) controller means operable in response to the time signal for producing lighting control signals for controlling operation of said red and green lights in sequence, and

(c) lighting driving means responsive to lighting control signals from said controller means for causing said red and green lights to light or extinguish in sequence;

separate operation starting mans in each of said two signal stands and connected to said controller means thereof for separately initiating operation of said controller means of both of said signal stands at the same time, there being no control cable connecting said two signal stands to each other; and

time correction means connected to each said controller means for periodically and simultaneously supplying correction signals to said controller means of said two signal stands so that said controller means of said tow signal stands operate in timed synchronism with each other, each said time correction means comprising a radio receiver for receiving a time signal from a broadcast station.

5,252,970

ERGONOMIC MULTI-AXIS CONTROLLER

David Baronowsky, 33 Florence Ave., Massapequa, N.Y. 11758

Filed Jan. 30, 1991, Ser. No. 648,150

Int. Cl.[5] G05G *9/047*

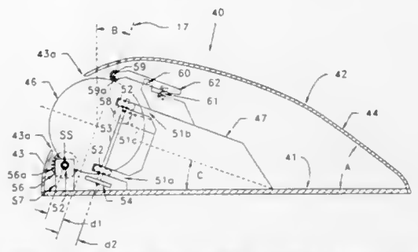
U.S. Cl. 341—20 **19 Claims**

1. A manually operable multi-axis controller, which comprises:

a housing having a base, and an upper portion having a forward access face and a top surface for supporting the hand of a user;

a primary actuator for generating spatial coordinate information with respect to at least X and Y coordinate axes, and having a presentation angle for operation access of from about 0° to about 70°, said presentation angle being

the angle at which a Z-coordinate axis is inclined from the horizontal, said Z-coordinate axis being orthogonal to both said X and Y axes, wherein said primary actuator is actuatable by a single user contact point;



means for retaining said primary actuator at said forward access face at said presentation angle; and

pick up means for generating and transmitting at least one signal in response to actuation of said primary actuator.

5,252,971

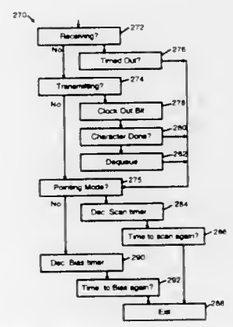
DATA ACQUISITION IN A MULTI-FUNCTION KEYBOARD SYSTEM WHICH CORRECTS FOR PRELOADING OF FORCE SENSORS

Patrick J. Franz, Portland, and Philip D. Biehl, Tigard, both of Oreg., assignors to Home Row, Inc., Clackamas, Oreg.

Continuation-in-part of Ser. No. 557,546, Jul. 24, 1990, and a continuation-in-part of Ser. No. 649,711, Feb. 1, 1991, Pat. No. 5,189,403, and a continuation-in-part of Ser. No. 412,680, Sep. 26, 1989, Pat. No. 5,124,689. This application Mar. 18, 1991, Ser. No. 672,641

Int. Cl.[5] H03K *17/967;* **H03M** *11/06, 11/20;* **H01H** *25/04*

U.S. Cl. 341—26 **18 Claims**



17. An integrated keyboard for acquiring both typing and pointing data, the keyboard comprising:

an array of keyswitches, one of the keyswitches being designated as a pointing key for both typing and pointing operations;

a plurality of force sensors coupled to the pointing key to sense forces applied to the pointing key by a user;

microcontroller means in the keyboard for both typing and pointing data acquisition, the microcontroller means having a built-in A/D converter and A/D input for receiving an input voltage for conversion to digital data;

the microcontroller means further including a plurality of scan lines coupled to the array for scanning the array;

means coupling a predetermined one of the keyboard scan lines to each of the force sensors for selectively enabling the force sensors, one at a time, under control of the microcontroller means, so as to provide a corresponding input voltage to the A/D input during the pointing mode of operation;

memory means coupled to the microcontroller means for storing a respective force sensor bias value for each one of the force sensors;

software means for controlling the keyboard microcontroller means so as to periodically scan the force sensors and read the A/D converter to acquire corresponding force sensor values during the typing mode of operation, thereby acquiring bias values for each of the force sensors; and means for writing the bias values into the memory means as stored bias values.

5,252,972

CODEC HAVING CONTROLLABLE FRAME SYNCHRONIZING AND CLOCKING SIGNALS

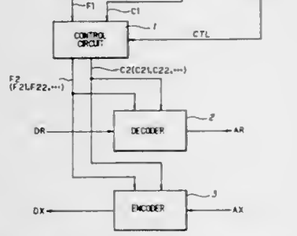
Satoshi Kanbara, Kanagawa, Japan, assignor to NEC Corporation, Japan

Filed Jan. 21, 1992, Ser. No. 823,284

Claims priority, application Japan, Jan. 22, 1991, 3-022761

Int. Cl.[5] H03M *1/02*

U.S. Cl. 341—108 **2 Claims**



1. A codec having controllable frame synchronizing and clocking signals, comprising;

a decoder for converting a received digital signal to a received analog signal in synchronism with a frame synchronous signal and a clock signal;

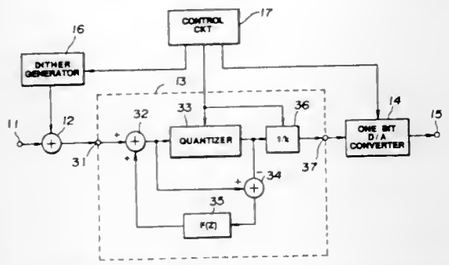
an encoder for converting a transmitting analog signal to a transmitting digital signal in synchronism with said frame synchronous signal and said clock signal; and

means for controlling said decoder and said encoder to carry out conversion between digital and analog signals by supplying said frame synchronous signal and said clock signal thereto;

wherein said controlling means is supplied with an external frame synchronous signal, an external clock signal, and a control signal to generate a frame synchronous signal and a clock signal to be supplied to said decoder and said encoder, said control signal representing a timing and/or a frame length of data carried on said received and transmitting digital signals, whereby at least one of said frame synchronous signal and said clock signal are controlled to comply with said timing and/or said frame length.

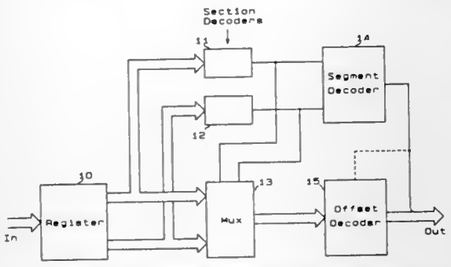
VOL 1155 ISS 2 OCT 12 1993 UMI

5,252,973
APPARATUS FOR DIGITAL-TO-ANALOGUE CONVERSION
Toshishiko Masuda, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jun. 23, 1992, Ser. No. 902,643
Claims priority, application Japan, Jul. 3, 1991, 3-188249
Int. Cl.[5] H03M 1/20
U.S. Cl. 341—131 15 Claims



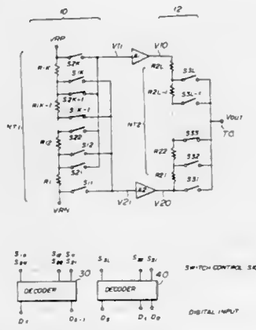
1. Apparatus for digital-to-analogue conversion comprising:
a dither generator;
an adder for adding dither from said dither generator to a digital input signal to produce an added output;
a noise shaping circuit having an output, for performing noise shaping on said added output;
said noise shaping circuit including a quantizer with certain threshold levels;
a digital-to-analogue (D/A) converter converting said output from said noise shaping circuit to an analog signal; and
control means for widening said threshold levels as a level of said digital input signal becomes zero, and for attenuating an input signal to said digital-to-analogue converter by substantially 1K times when said threshold levels are increased by K times, where K is a number.

5,252,974
ENCODER WITH ERROR CORRECTION PARTICULARLY FOR FLASH ANALOG-TO-DIGITAL CONVERTERS
Zdzislaw Gulczynski, P.O. Box 11633, Costa Mesa, Calif. 92627
Continuation-in-part of Ser. No. 946,598, Dec. 24, 1986, abandoned. This application Jul. 28, 1988, Ser. No. 225,240
Int. Cl.[5] H03M 13/00
U.S. Cl. 341—141 8 Claims



1. Encoder for converting input code into output code, comprising:
a register means for sampling and interim storage of the input code, and providing a plurality of section codes;
a plurality of section decoders for converting the section codes into a first portion of the output code; and
a selective means for selecting one of the section codes in response to the first portion of the output code and converting the selected section code into a second portion of the output code.

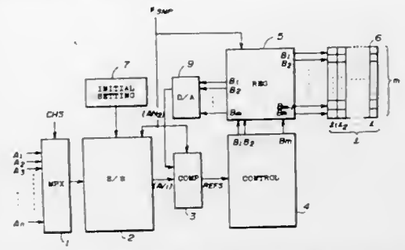
5,252,975
DIGITAL-TO-ANALOG CONVERTER HAVING RESISTOR NETWORKS
Tachio Yuasa; Osamu Kobayashi, and Kunihiko Gotoh, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan
Filed Jun. 17, 1992, Ser. No. 899,963
Claims priority, application Japan, Jun. 18, 1991, 3-145105
Int. Cl.[5] H03M 1/68
U.S. Cl. 341—145 16 Claims



1. A D/A converter comprising:
a first resistor network including K resistors each having a resistance, where K is an integer;
a second resistor network including L resistors connected in series where L is an integer, a sum of resistances of the L resistors being approximately equal to the resistance of each of the K resistors;
first switching means, coupled to the K resistors, for selecting (K−1) resistors among the K resistors in accordance with a digital input signal and for forming a series circuit including the (K−1) resistors and said second resistor network connected in series, first and second voltages being applied to respective ends of said series circuit; and
second switching means, coupled to said second series circuit, for connecting one of the L resistors to an output terminal of the D/A converter.

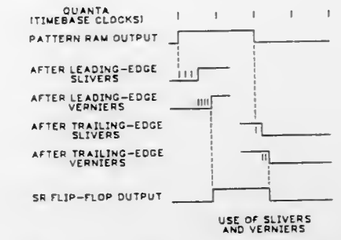
5,252,976
SEQUENTIAL COMPARISON TYPE ANALOG-TO-DIGITAL CONVERTER
Akira Miho, Yokohama; Tatsuya Akiyama, and Hideki Isobe, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan
Filed Jul. 25, 1991, Ser. No. 735,605
Claims priority, application Japan, Jul. 26, 1990, 2-200648
Int. Cl.[5] H03M 1/40
U.S. Cl. 341—163 33 Claims

1. An analog-to-digital converter comprising:
sample and hold means for sampling and holding an analog input signal;
comparator means for comparing the analog input signal held by said sample and hold means and an input signal and for generating an output signal;
control means for generating a digital signal based on the output signal of said comparator means;
digital-to-analog converter means for converting the digital signal generated from said control means into an analog signal and for supplying the analog signal to said comparator means as said input signal; and
initial setting means for initializing the analog input signal held by said sample and hold means and the input signal which is output from said digital-to-analog converter means to a reference voltage, said initial setting means including a presettable storage means for storing initializing data and outputting the initializing data which has been stored;
a switching means coupled to said initial setting means, said



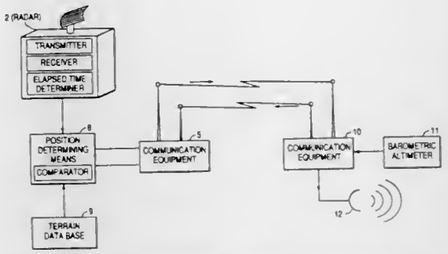
control means, and said digital-to-analog converter means, said switching means supplying the initializing data to said digital-to-analog converter means before start of the analog-to-digital conversion; and
the held voltage of said sample and hold means is initialized by the voltage output from said digital-to-analog converter means in response to the initializing data.

5,252,977
DIGITAL PULSE GENERATOR USING DIGITAL SLIVERS AND ANALOG VERNIER INCREMENTS
Jonathan Lueker, Portland; John Hengeveld, Aloha; Brad Needham, Hillsboro; Burt Price, Portland; Jim Schlegel, and Mehrab Sedeh, both of Beaverton, all of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.
Division of Ser. No. 606,387, Oct. 31, 1990, Pat. No. 5,208,598.
This application Mar. 9, 1992, Ser. No. 848,609
Int. Cl.[5] H03K 5/04, 5/13
U.S. Cl. 341—182 10 Claims



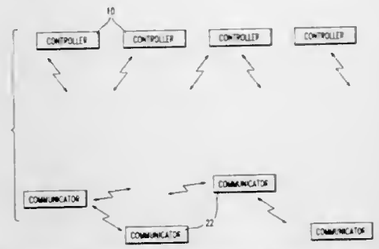
1. A method for accurately controlling a time relationship between a generated output pulse and a reference time, the method comprising the steps of:
deriving time quanta from a controllable timebase to produce a coarse time relationship between the generated output pulse and the reference time;
adding digital slivers to modify the coarse time relationship to produce a modified time relationship; and
adjusting the modified time relationship by analog vernier increments to produce an accurately controlled time relationship between the generated output pulse and the reference time.

5,252,978
COLLISION WARNING SYSTEM
Roger N. Priestley, Fife, United Kingdom, assignor to GEC Ferranti Defence Systems Limited, Stanmore, United Kingdom
Filed Jul. 16, 1992, Ser. No. 913,665
Claims priority, application United Kingdom, Jul. 27, 1991, 9116294
Int. Cl.[5] G01S 13/93
U.S. Cl. 342—29 14 Claims



1. A method of providing a collision warning signal for at least one vehicle, comprising the steps of:
(a) transmitting from the surface of the earth a radio signal;
(b) receiving at the surface of the earth, a radio signal returned by a vehicle in response to the radio signal transmitted in step (a);
(c) determining an elapsed time between the transmitting of the radio signal and the receiving of the corresponding returned radio signal;
(d) determining the position of the vehicle at least in part in dependence upon the elapsed time determined in step (c);
(e) comparing the position of the vehicle determined in step (d) with terrain data stored in a data base; and
(f) generating a warning signal based on the comparing in step (e) if predetermined parameters are satisfied.

5,252,979
UNIVERSAL COMMUNICATION SYSTEM
Paul A. Nysen, Randwick, Australia, assignor to Lanen Holdings Pty. Ltd., Randwick, Australia
Filed Nov. 23, 1992, Ser. No. 979,968
Int. Cl.[5] G01S 13/08; H04Q 11/00; H04B 1/38, 7/14
U.S. Cl. 342—50 4 Claims



1. In apparatus for two-way communication between a first transmitter/receiver unit, called a controller, and a plurality of second transmitter/receiver units, called communicators, said controller comprising:
(a) first means for generating a first carrier signal;
(b) second means for modulating said first carrier signal with a first informational signal to produce a first modulated carrier signal;
(c) third means including a first antenna for transmitting

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said first modulated carrier signal as a first electromagnetic wave signal to said communicator;

(d) fourth means including said first antenna for receiving a second electromagnetic wave signal transmitted by said communicator to reproduce a second modulated carrier signal; and

(e) fifth means for demodulating said second modulated carrier signal to reproduce a second informational signal;

each of said communicators comprising:

(f) sixth means including a second antenna for receiving said first electromagnetic wave signal transmitted by said controller to reproduce said first modulated carrier signal;

(g) seventh means for demodulating said first modulated carrier signal to reproduce said first informational signal;

(h) eighth means for backscatter modulating said first modulated carrier signal with a second informational signal to produce said second modulated carrier signal; and

(i) ninth means including said second antenna for transmitting said second modulated carrier signal as said second electromagnetic wave signal;

the improvement wherein each of said communicators further comprises:

(j) tenth means for generating a second carrier signal at substantially the same frequency as said first carrier signal;

(k) eleventh means, coupled to said ninth means, for modulating said second carrier signal with a third informational signal to produce a third modulated carrier signal for transmission by said ninth means as a third electromagnetic wave signal; and

(l) twelfth means for controlling the operation of at least one of said tenth and eleventh means to enable the transmission of said third modulated carrier signal;

wherein said sixth means and said seventh means in each of said communicators are operative to receive said third modulated carrier signal and to reproduce said third informational signal.

5,252,980

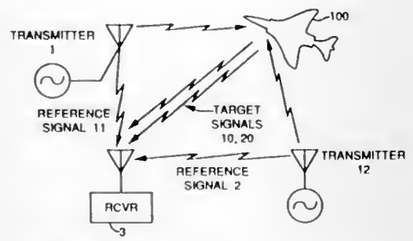
TARGET LOCATION SYSTEM

Clifford M. Gray, Owego, N.Y., and James L. Johnson, Frederick, Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 23, 1992, Ser. No. 918,184

Int. Cl.[5] G01S *3/02*

U.S. Cl. 342—59 **9 Claims**



1. A tristatic target location system for tracking a target, said tristatic target location system comprising:

a first transmitter which emits a first radar tracking signal;

a second transmitter which is physically separated from said first transmitter, and which emits a second radar tracking signal; and

a means for passively receiving signals, said passive receiving means receiving said first and second radar tracking signals directly from said first and second transmitters and respectively using them as first and second reference signals, said passive receiving means receiving first and second target echo return signals at a determined angle of arrival from said target when the target reflects the first and second radar tracking signals, said passive receiving means determining said target's azimuth and elevation from said angle of arrival, and said target's range and velocity by comparing said first and second target echo return signals respectively with first and second reference signals.

5,252,981

FMCW RADAR SYSTEM WITH LINEAR FREQUENCY MODULATION

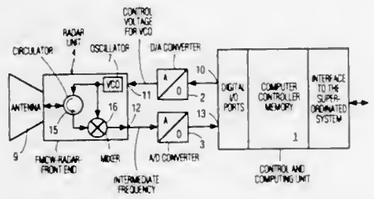
Nicolas Grein, and Hermann Winner, both of Karlsruhe, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 12, 1992, Ser. No. 834,403

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1991, 4104792

Int. Cl.[5] G01S *13/34*

U.S. Cl. 342—200 **2 Claims**



1. A frequency-modulated continuous-wave (FMCW) radar system, having

a radar unit (4) with a millimeter-wave voltage controlled oscillator (7) (VCO) adapted to generate a periodically ramp-shaped, linearly modulated oscillator frequency output signal;

said oscillator (7) having an input, defining an input of said radar unit (4), and an output connected to an antenna (9);

circulator means (15) connected between said oscillator (7) and said antenna (9), said circulator means (15) also receiving any radar signal reflected back from a reflecting object;

mixing means (16), having inputs connected respectively to outputs of said oscillator (7) and of said circulator means (15), for mixing said oscillator signal and said reflected signal to obtain a lower-frequency signal;

means (3), connected to an output of said mixing means, for sampling and digitizing said lower-frequency signal; and

computing means (1), having an input(13) connected to an output of said sampling and digitizing means (3), for applying a control signal to an input (11) of said oscillator (7) in order to assure linearity of ramp portions of said linearly-modulated output signal;

said computer means comprising means for detecting any deviation from linearity appearing in said output signal of said sampling and digitizing means (3), and generating a series of corresponding correction signals by

generating a set of n sampling values a (j), where n is an integer and j represents a value of the output signal from said sampling and digitizing means (3);

performing a Hilbert transform on said set to obtain a set of n calculated values a'(j) which represent instantaneous frequency values of said lower-frequency signal;

obtaining a set of n further calculated values of the form

$$O(j)=\arctan(a'(j)/a(j));$$

obtaining an average value of said set of further calculated values; and

obtaining a difference values, each representing the difference between said average value and a respective one of said further calculated values, said difference values defining instantaneous correction signals to be applied to said voltage-controlled oscillator (7); and

further comprising

means (2) for applying each correction signal, as an analog control voltage, to said oscillator (7).

5,252,982

METHOD OF PRECISE POSITION DETERMINATION

Erwin Frei, Widnau, Switzerland, assignor to Leica Heerbrugg A.G., Heerbrugg, Switzerland

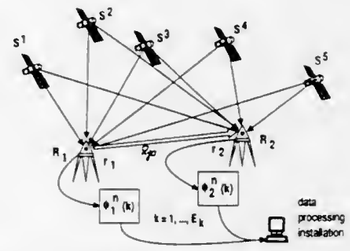
PCT No. PCT/EP91/01504, § 371 Date Apr. 23, 1992, § 102(e) Date Apr. 23, 1992, PCT Pub. No. WO92/03747, PCT Pub. Date Mar. 5, 1992

PCT Filed Aug. 7, 1991, Ser. No. 849,065

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1990, 4026740

Int. Cl.[5] G01S *5/08;* **H04B** *7/185*

U.S. Cl. 342—357 **7 Claims**



1. A method of precise position determination

a) of a first receiver (R_1) at a measurement location (r_1) relative to

b) a second receiver (R_2) at a reference location (r_2),

c) using a number of transmitters (S^n) of electromagnetic radiation, which is received by the receivers (R_1, R_2) and whose position is known relative to one another and relative to the two receives (R_1, R_2) at a time of a measurement with a certain accuracy,

d) each receiver (R_1, R_2) producing a measured phase value (ϕ_i^n (k)) per transmitter (S^n) for a number of time epochs (E_k), which measured phase value, except for an additive complete phase ambiguity (n_j^n(k)), determines quotients of a transmitter-receiver distance ($|r_i^n|$) and a wavelength (λ_f) of the electromagnetic radiation precisely and

e) the measured phase values (ϕ^n(k)) and the position of the transmitters (S^n) stored for each epoch (E_k) and supplied to an automatic data processing installation wherein they are processed in a program-controlled manner,

f) an initial solution produced using a compensation calculation unit by forming a double difference ($\Delta\phi_{12}^{nm}$(k)) of measured phase values (ϕ_i^n(k)) for each pair of transmitters (S^n, S^m),

fa) a solution vector (x_j) of which initial solution contains as components (x_{ji}) approximate values for 3 components of the position vector to be determined (x_{jC}) and actual approximate values of all phase ambiguities (x_{jN}) and which, at the same time, provides

fb) a corresponding cofactor matrix (Q_{xxj}) and

fc) an a posteriori rms error (m_{0j});

g) according to which, integer alternative phase ambiguities (x_{jAi}) are formed within an interval characterized by the a posteriori rms error (m_0) around each actual phase ambiguity (x_{jNi}) and

h) various combinations (x_{jA}) of alternative phase ambiguities (x_{jAi}) are used as known variables to determine alternative position vectors (x_{jAc}) and associated rms errors (m_{0j}),

i) the alternative position vector (x_{sAc}) with the minimum rms error (m_{0s}) is determined; wherein

j) combinations (x_{jA}) of alternative phase ambiguities (x_{jAi}) formed are subjected to a statistical selection test which takes into account a correlation of the phase ambiguities (x_{jAi}), which is characterized by a corresponding cofactor matrix (Q_{xxj}) and a posteriori rms error (m_0, and

k) only the combinations (x_{jA}) of alternative phase ambiguities (x_{jAi}) which have passed the selection test are used as known variables to determine alternative position vectors (x_{jAc}) and associated rms errors (m_{0j});

l) the minimum rms error (m_{0s}) is tested to determine whether

la) the associated alternative position vector (x_{sAc}) can be statistically combined with the position vector ($\hat{x}_{jC}$) of the initial solution and

lb) the minimum rms error (m_{os}) can be statistically combined with an a priori variance (σ_0) of the initial solution, and

lc) the difference with respect to the second smallest rms error ($m_{0s'}$) is statistically significant,

m) in the presence of these conditions for the minimum rms error (m_{0s}), the alternative position vector (x_{sAC}) having the minimum rms error (m_{0s}) is produced as the measured value of the precise position determination.

5,252,983

METHOD FOR REDUCING SIDE LOBES IN ANTENNA PATTERNS

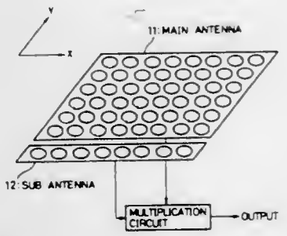
Toshihiro Sezai, Tokyo, Japan, assignor to National Space Development Agency of Japan, Tokyo, Japan

Filed Aug. 24, 1992, Ser. No. 933,673

Claims priority, application Japan, Sep. 11, 1991, 3-258772

Int. Cl.[5] G01S *3/16, 3/28*

U.S. Cl. 342—382 **6 Claims**



1. A method for reducing side lobes in an antenna pattern, comprising the steps of:

(a) providing an antenna system which includes:

a main antenna for receiving radio waves; and

at least one sub antenna which does not have an isotropic antenna pattern in a first direction coinciding with the orientation of a side lobe of said main antenna to be reduced, said at least one sub antenna being arranged such that said at least one sub antenna adjoins said main antenna in a second direction perpendicular to said first direction and a beam axis of each said at least one sub antenna coincides with a beam axis of said main antenna;

(b) scanning an antenna beam in said first direction with said antenna system; and

(c) multiplying a signal received with said main antenna by signals received with said at least one sub antenna as long as phases of each of these signals coincide with each other.

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5,252,984

MULTIBAND COAXIAL ROD AND SLEEVE ANTENNA

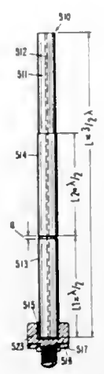
Horst Dorrie; Uwe Militz, and Heinrich Wilken, all of Berlin, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 657,079, Feb. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 545,347, Jun. 27, 1990, abandoned. This application Jun. 9, 1992, Ser. No. 896,741

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1989, 3922042; Feb. 21, 1990, 9002022[U]

Int. Cl.[5] H01Q *9/22, 1/38, 5/00*

U.S. Cl. 343—791 **9 Claims**



1. Vehicular multi-range rod antenna for combined use in the broadcast or radio frequency band ranges for amplitude-modulated (AM) broadcast radio reception and for frequency-modulated (FM) broadcast radio reception, and the mobile radio telephone frequency range of about 450 MHz to 470 MHz,

wherein said mobile radio telephone range defines a medium wave length λ,

said antenna essentially consisting of

an elongated rod (**511**) of dielectric material,

said elongated rod of dielectric material having a physical length L=3/2 λ and defining three contiguous one-third length portions (L1, L2, L3), each physically of λ/2 length;

a coaxial conductor (**512**) extending within the entire length of the rod, and having a physical length within said rod of 3/2 λ;

a first conductive outer layer (**514, 618, 721, 825**) surrounding said elongated rod of dielectric material (**511**),

said first conductive outer layer having a physical length L2=λ/2 and being located in the middle third length portion (L2) of said elongated rod; and

an additional conductive outer layer (**513, 619, 722; 828**) located at the lower third length portion (**L1**) of said elongated rod of dielectric material,

said additional conductive outer layer having a physical length of about λ/2, being electrically connected to said coaxial conductor (**512**) and being electrically insulated with respect to said first conductive outer layer.

5,252,985

WHIP TILT ADAPTER

Alan S. Christinsin, 1201 Dawn Dr., Belleville, Ill. 62220

Continuation-in-part of Ser. No. 612,384, Nov. 14, 1990, Pat. No. 5,144,326. This application Jan. 7, 1992, Ser. No. 817,497

The portion of the term of this patent subsequent to Sep. 1, 2009, has been disclaimed.

Int. Cl.[5] H01Q *3/02, 1/32, 1/12*

U.S. Cl. 343—880 **23 Claims**

1. An adapter for connecting a whip antenna to an antenna base, wherein the whip antenna is designed for use in the 2-30 MHz HF radio band, said adapter comprising:

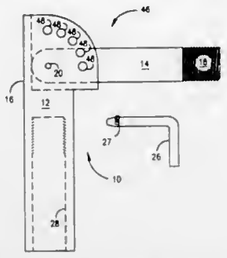
a) a first shaft having a lower end and an upper end;

b) a second shaft extending distally from said upper end of said first shaft, said second shaft having a first end distal from said first shaft;

c) means for securing said first shaft to said second shaft;

d) means for securing said lower end of said first shaft to the antenna base;

e) a first antenna port located at said distal end of said second shaft, said first antenna port including means for securing



the whip antenna to said distal end of said second shaft, and wherein said means for securing said lower end of said first shaft to the antenna base is compatible with said means for securing the whip antenna to said distal end of said second shaft, whereby the whip antenna is securable directly to the antenna base;

f) means for establishing electrical connectivity between said port and the antenna base; and

g) means for positioning said second shaft relative to said first shaft, said positioning means being located at said upper end of said first shaft.

5,252,986

IMAGE PROCESSING METHOD FOR SUPERPOSING PLURAL DOTS ON A RECORDING MEDIUM AT A PREDETERMINED INTERVAL AND APPARATUS UTILIZING SAME

Makoto Takaoka, Tokyo; Susumu Sugiura, Atsugi; Kentaro Matsumoto, Kurume; Toyokazu Uda, Ohmiya, and Masami Fukumoto, Sagamihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 519,323, May 7, 1990, abandoned, which is a continuation of Ser. No. 195,648, May 18, 1988, abandoned. This application Apr. 15, 1991, Ser. No. 684,498

Claims priority, application Japan, May 20, 1987, 62-121148; May 20, 1987, 62-121149

Int. Cl.[5] B41J *2/205*

U.S. Cl. 346—1.1 **26 Claims**



1. A recording apparatus comprising:

depositing means for depositing a recording agent on a medium; and

control means for controlling said depositing means such that said recording agent is deposited at substantially the same position on said medium a plurality of times and a time interval between each deposition of said recording agent at the same position is changed to control a concentration of said recording agent deposited at said same position a plurality of times.

5,252,987

PROCESS AND APPARATUS TO FORM ON A MAGNETIC TAPE A LATENT IMAGE BY MEANS OF RECORDING AND ERASING MAGNETIC HEADS

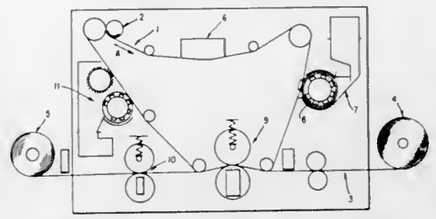
Bernard Eid, Champagne sur Seine, and Jean-Marie Vau, Gueret, both of France, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 26, 1991, Ser. No. 585,160

Int. Cl.[5] G11B *9/00*

U.S. Cl. 346—74.2 **6 Claims**





1. A process to form on a magnetic web a latent image comprising two areas of information, overlapping each other, by means of an assembly of erasing and recording magnetic heads, said process being characterized in that it comprises the following stages:

a) the registration of a first type of information on a defined area of the magnetic web;

b) a partial erasing of the said information registered during stage a); and

c) the registration of a second type of information, a part of which, at least, being in the area erased during stage b).

5,252,988

THERMAL HEAD FOR THERMAL RECORDING MACHINE

Hiroyuki Katayama, Fujiidera; Hiroshi Suzuki, Nara; Masato Kawanishi, Habikino; Mitsuhiko Yoshikawa, Ikoma; Toshitaka Tamura, Kashihara; Takatoshi Mizoguchi, Gojo; Hiromi Nishino; Akiyoshi Fujii, both of Nara; Takayuki Taminaga, Yamatokoriyama, and Katsuyasu Deguchi, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 11, 1990, Ser. No. 628,845

Claims priority, application Japan, Dec. 15, 1989, 1-326739; Dec. 29, 1989, 1-342255; Apr. 18, 1990, 2-104278; May 10, 1990, 2-120794

Int. Cl.[5] B41J *2/325*

U.S. Cl. 346—76 PH **7 Claims**

1. A thermal head for a thermal recording machine comprising:

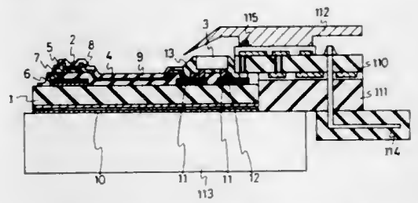
an insulating substrate which is composed of a printed circuit board made of a heat resistant resin and covered with a copper film on a rear surface thereof wherein the copper film is a heat releasing metal layer;

a plurality of thermal resistors disposed on a front surface of said insulating substrate in a direction corresponding to scanning;

a plurality of discrete electrodes electrically connecting first ends of said plurality of thermal resistors to a control element;

a common electrode electrically connecting second ends of said plurality of thermal resistors together;

a heat releasing layer formed of copper film on the front



surface of said insulating substrate beneath each of said plurality of thermal resistors; and

a thermal accumulating layer of a polyimide resin covering said heat releasing layer.

5,252,989

APPARATUS FOR FORMING A SECONDARY IMAGE ON A PHOTOGRAPHIC PRINTED PAPER

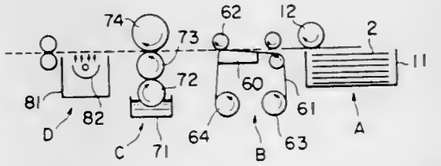
Sota Kawakami, Shiroyama; Takahiro Ogawa; Takayuki Sugaiwa, both of Hachioji, and Tatsuichi Maehashi, Hino, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Filed May 21, 1991, Ser. No. 703,737

Claims priority, application Japan, May 23, 1990, 2-132944; May 25, 1990, 2-138679; May 30, 1990, 2-141017; May 30, 1990, 2-141019

Int. Cl.[5] G01D *15/10*

U.S. Cl. 346—76 PH **9 Claims**



1. An apparatus for forming a secondary image on a photographic print paper wherein a primary image has been developed, the apparatus comprising:

editing means for determining a secondary image position to be formed on the developed photographic paper;

means of inputting the secondary image to the editing means; and

transfer means for transferring the secondary image from a thermal ink transfer ribbon onto the developed photographic paper by a thermal print-head according to the determination of the editing means.

5,252,990

OPTICAL PRINTER HEAD EMPLOYING A PHOSPHOR FOR EMITTING LIGHT

Akihiro Suzuki, Nishio, and Makoto Suzuki, Nagoya, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Dec. 31, 1991, Ser. No. 814,798

Claims priority, application Japan, Jan. 9, 1991, 3-013025

Int. Cl.[5] G01D *15/14;* **H01J** *5/16*

U.S. Cl. 346—107 R **12 Claims**

10. An optical printer head comprising:

a light transmissive substrate having two surfaces;

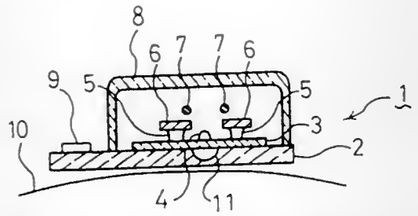
electron emitting means for emitting electrons toward the light transmissive substrate;

means disposed on the substrate for attracting the electrons emitted from the electron emitting means, said electron

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attracting means having a plurality of anodes each of which is formed of a light transmitting conductive material;

a plurality of phosphors each of which is provided on one of such anodes and receives the electrons emitted from the electron emitting means toward the electron attracting means, so that said phosphors emit light as a result of impingement of said electrons passing through said phosphor; and



a plurality of microlens portions integrally formed in only one surface of said light transmissive substrate by an ion exchange process, each of said microlens portions having a refractive index higher than an adjacent portion of said light transmissive substrate and being located beneath one of said anodes whereby the emitted light from said phosphors is transmitted through both said anodes and sand microlens portions of said light transmissive substrate.

5,252,991

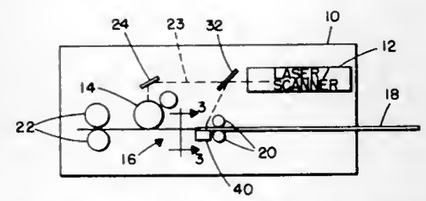
MEDIA EDGE SENSOR UTILIZING A LASER BEAM SCANNER

Chris A. Storlie, and Edwin Hirahara, both of Boise, Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 17, 1991, Ser. No. 811,763

Int. Cl.[5] G03G *21/00*; G01D *9/42*

U.S. Cl. 346—108 **8 Claims**



1. A system for providing positional information regarding a sheet having opposed edges, said system comprising:

a light source providing a moving beam of light;

plural beam sensor means, each said beam sensor means positioned so as to be partially shaded by opposed edges of a said sheet;

scanning means for moving said beam across said sheet and past the opposed edges thereof, said beam falling on each said beam sensor means where said sheet is not shading a said beam sensor means; and

circuitry means responsive to outputs from said beam sensor means for determining said positional information from a difference of exposure times of said beam of light on said plural beam sensor means, said circuitry means further determining a width of said sheet based upon said time said moving beam of light falls on said plural beam sensor means.

5,252,992

INK JET RECORDING APPARATUS

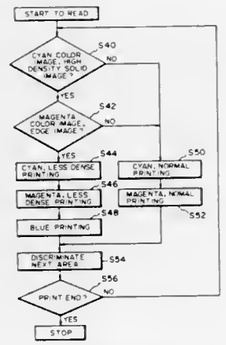
Hisashi Fukushima; Nobuhiko Takekoshi, and Akio Suzuki, all of Yokohama, Japan, assignors to Canon Kaubushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 498,959, Mar. 26, 1990, abandoned. This application Jan. 31, 1991, Ser. No. 649,259

Claims priority, application Japan, Mar. 29, 1989, 1-74916

Int. Cl.[5] B41J *2/21*; H04N *1/46*

U.S. Cl. 346—140 R **3 Claims**



1. A color ink jet recording apparatus for forming an image on a recording material by ejection of coloring agents having different colors form a recording head, said apparatus comprising:

discriminating means for discriminating whether an image having an edge and an image having a high image density are to be overlaid or not overlaid and for outputting a result of the discrimination; and

exchanging means for exchanging a primary coloring agent recording operation with a secondary coloring agent recording operation when the result of the discrimination by said discriminating means is affirmative.

5,252,993

CAPPING APPARATUS FOR AN INK JET PRINTER

Tsuyoshi Tomii, and Katsuhiko Iida, both of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 403,435, Sep. 6, 1989, Pat. No. 5,055,856. This application Aug. 21, 1991, Ser. No. 748,217

Claims priority, application Japan, Sep. 7, 1988, 63-224078; Nov. 2, 1988, 63-277909; Nov. 5, 1988, 63-279676

The portion of the term of this patent subsequent to Oct. 8, 2008, has been disclaimed.

Int. Cl.[5] B41J *2/165*

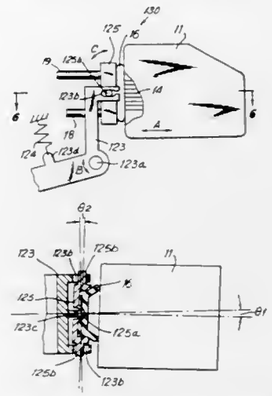
U.S. Cl. 346—140 R **14 Claims**

1. A capping device for sealing an ink jet printer having an ink nozzle exposed to the atmosphere at the front surface thereof, comprising:

a cap including deformable material for forming an air tight seal around an ink nozzle; an

support means for supporting the cap and permitting the cap

to move towards and away from the front surface of the nozzle and to pivot in at least two additional degrees of



freedom with respect to the front surface of an ink jet printer.

5,252,994

INK-JET RECORDING HEAD

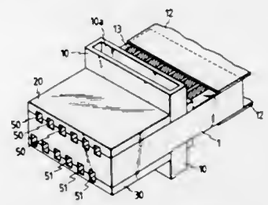
Toshio Narita; Shinri Sakai; Masaru Hoshino, and Yoshiko Tatsuzawa, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Nov. 8, 1991, Ser. No. 789,641

Claims priority, application Japan, Nov. 9, 1990, 2-305076; Mar. 18, 1991, 3-052086; Aug. 2, 1991, 3-194061

Int. Cl.[5] B41J *2/045*

U.S. Cl. 346—140 R **36 Claims**



1. An ink-jet recording head comprising:

a plurality of piezoelectric substrates each polarized in a direction of thickness thereof and having a plurality of spaced grooves disposed at a predetermined pitch and being separated by diaphragm; and

electrodes formed in said grooves in an electrically isolated manner,

each of said grooves comprising a first portion having a sufficient depth to form an ink reservoir, a second portion communicating with one side of the head and having a sufficient depth, shallower than the depth of said first portion, to provide an orifice that is adapted to squirt ink drops, and a third portion having a depth appropriate for receiving an externally supplied ink,

said piezoelectric substrates being fixed together onto a unitary assembly such that respective surfaces of the substrates in which each said orifice is provided are in registry and that the directions of polarization in said substrates are opposite to each other,

said recording head further including an ink supply means provided on a side opposite to a side where said orifice is to be provided.

5,252,995

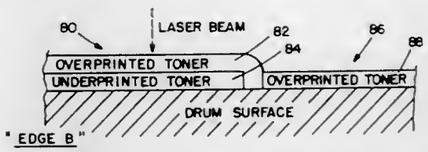
COLOR BOUNDARY ENHANCEMENT IN A MULTI-COLOR ELECTROSTATIC PRINTER

Jeffrey L. Trask, and Gary L. Vondran, Jr., both of Boise, Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 3, 1992, Ser. No. 939,814

Int. Cl.[5] G01D *15/06*

U.S. Cl. 346—157 **6 Claims**



1. A method for enhancing color representations at boundaries between pixels of different colors in a multicolor electrostatic layer printing system, said system employing a charged electrostatic surface that is selectively discharged by application of a modulated laser beam, said method comprising the steps of:

identifying a secondary color pixel that bounds a pixel of another color;

decreasing applied laser power to said electrostatic surface at said secondary color pixel in a process of applying a primary color underprint toner and a primary color overprint toner to said electrostatic surface to produce said secondary color; and

inhibiting said decrease of applied laser power in the process of applying said overprint toner when said pixel of said another color is a primary color and is identical in color to said overprint toner.

5,252,996

ELECTROPHOTOGRAPHIC RECORDING APPARATUS AND METHOD CAPABLE OF RECORDING BOTH CHARACTERS AND SOLID BLACK PICTURE IMAGES

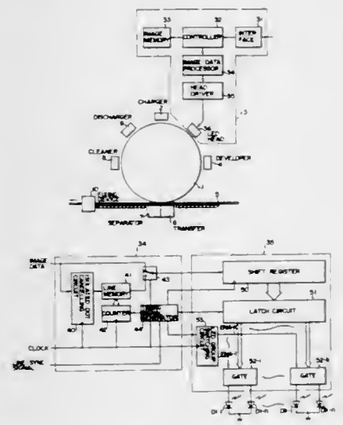
Yukio Tsuda, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 13, 1991, Ser. No. 760,016

Claims priority, application Japan, Sep. 18, 1990, 2-246049

Int. Cl.[5] G01D *15/14*; H04N *1/23*; G03G *15/04*

U.S. Cl. 346—160 **12 Claims**



1. An electrophotographic recording apparatus comprising:

a photosensitive member;

exposing means for exposing said photosensitive member

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according to image data to create an electrostatic latent image corresponding to the image data on said photosensitive member;

developing means for developing the electrostatic latent image on said exposed photosensitive member to a developed image; and

fixing means for fixing the developed image;

wherein said exposing means includes:

input means for receiving the image data constructed by a plurality of pixels selectively including pixels of a first signal level and pixels of a second signal level, lower than the first signal level,

image data processing means for converting discontinuous pixels of the first signal level included in the pixels of the image data to the second signal level to create processed image data; and

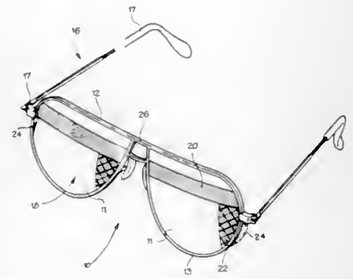
a line scanner for line-scanning the same line of said photosensitive member a plurality of times according to the image data and the processed imaged data each time a one-line electrostatic latent image corresponding to a combination of the image data and the processed image data is formed on said photosensitive member.

5,252,997

VISUAL AID FOR NIGHT DRIVING

Charles R. Christenbery, Harpoon La., St. James City, Fla. 33956

Filed May 15, 1991, Ser. No. 700,484
Int. Cl.[5] G02C *7/16*
U.S. Cl. 351—49 **17 Claims**



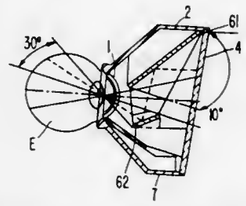
1. A visual aid for nighttime driving of automobiles having an exterior side-mounted rear vision mirror wherein a driver tends to be subjected to headlight glare directly from oncoming automobiles and headlight glare reflected by the mirror from following automobiles, said visual aid comprising a frame, glare reduction means supported by said frame, and means for supporting said frame forwardly of a driver's face with said glare reduction means disposed forwardly of the driver's eyes within the driver's overall viewing field of sight, said glare reduction means including a first portion disposed to extend laterally across an intermediate region of the driver's viewing field directly forwardly of the driver's eyes when said visual aid is worn for reduction of headlight glare directly from oncoming automobiles and a second portion separate and distinct from said first portion disposed to extend only within a peripheral portion of the driver's viewing field when said visual aid is worn and being opaque for totally blocking light transmission therethrough of mirror-reflected glare from following automobiles, said glare reduction means being arranged to cover only a portion of the driver's overall viewing field without substantially affecting light transmission through the remainder of the viewing field.

5,252,998

CONTACT EYEGLASS

Werner Reis; Andreas Plesch, both of München, and Karl-Heinz Wilms, Emmering, all of Fed. Rep. of Germany, assignors to G. Rodenstock Instruments GmbH, Riemerling

PCT No. PCT/DE90/00461, § 371 Date Feb. 19, 1991, § 102(e) Date Feb. 19, 1991, PCT Pub. No. WO90/15570, PCT Pub. Date Dec. 27, 1990
PCT Filed Jun. 19, 1990, Ser. No. 654,636
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1989, 3919985
Int. Cl.[5] G02C *7/04*
U.S. Cl. 351—160 R **20 Claims**



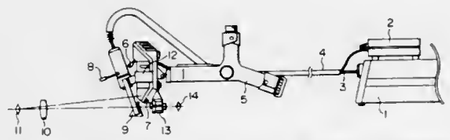
1. An instrument for the examination and/or treatment of the eye having an examination device designed for the examination of the fundus oculi and having a contact eyeglass, which is provided with a lens which can be placed on the eye, the eye-facing surface of said lens being adapted to the curvature of the cornea, wherein said lens which is placed on the eye has no spherical power at least in the region of the optical axis.

5,252,999

LASER APPARATUS INCLUDING BINOCULAR INDIRECT OPHTHALMOSCOPE

Yasutaka Sukigara, Aichi; Nobuyuki Yano, Okazaki, and Yasuo Ota, Gamagori, all of Japan, assignors to Nidek Co., Ltd., Aichi, Japan

Filed Oct. 22, 1991, Ser. No. 780,507
Claims priority, application Japan, Oct. 26, 1990, 2-290223
Int. Cl.[5] A61B *3/10*
U.S. Cl. 351—221 **15 Claims**



1. A laser apparatus including a binocul indirect opthalmoscope for irradiating a treatment laser beam on an eye to be treated comprising:

an optical fiber for guiding the treatment laser beam to the binocular indirect opthalmoscope;

an optical element, which reflects the treatment laser beam while transmitting a pair of observation beams of the binocular indirect opthalmoscope, provided in the object side of an opthalmoscope lens;

an illumination optical system providing an illumination beam at a predetermined angle to a plane defined by optical axes of said pair of observation beams; and

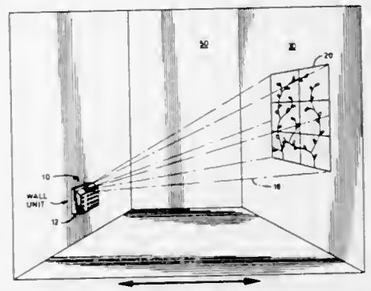
an optical system which directs the treatment laser beam to said optical element so that the optical axis of the treatment laser beam coincides with the substantial center of said optical axes of said pair of observation beams.

5,253,000

DEVICE FOR PROJECTING A MOVING IMAGE FORMED OF LIGHT, SHADOW, AND COLOR

Ursula Stoeckner, P.O. Box 2042, Seabrook, N.H. 03874

Filed Aug. 1, 1991, Ser. No. 738,871
Int. Cl.[5] G03B *21/00*
U.S. Cl. 353—46 **14 Claims**



11. A device for simulating an image formed of light and shadow and cast on an interior surface by sunlight shining through an exterior window, the device comprising

a mask having a substantially opaque portion, means for shining light through said mask to generate a discernible shadow corresponding to said substantially opaque portion, the light and shadow forming the image, and

means for moving the image as if it were created by natural sunlight over a period of time, wherein said means for moving comprises means for moving said mask synchronously with, and in the same direction as, said means for shining light through said mask,

wherein said means for shining light through said mask includes a light source and a focusing lens, and

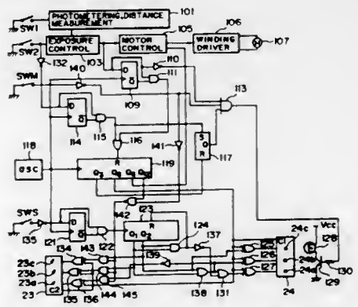
wherein said substantially opaque portion of said mask depicts a window sash and mullion arrangement.

5,253,001

CAMERA HAVING MODE FOR MULTIPLE EXPOSURE PSEUDO-TELESCOPIC PHOTOGRAPHY

Kiyoshi Alyfuku, Yokohama; Yuichiro Konishi, Tokyo, and Shuichi Tamura, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 681,644, Apr. 8, 1991, Pat. No. 5,095,324. This application Jan. 6, 1992, Ser. No. 817,348
Claims priority, application Japan, May 29, 1987, 62-133702; Jul. 20, 1987, 62-180637; Jul. 22, 1987, 62-182718
Int. Cl.[5] G03B *17/24*
U.S. Cl. 354—106 **14 Claims**



13. A recording device for a camera having a mode selecting means for selecting a multiple exposure photography mode, comprising:

(a) recording means for recording data on a film;

(b) data setting means for setting the data to be recorded;

(c) varying means for varying the data set by said data setting means;

(d) first inhibition means for inhibiting said varying means from varying the data set by said data setting means; and

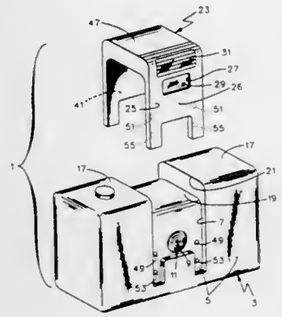
(e) second inhibition means for inhibiting said varying means from varying the data set by said data setting means in response to an operation of a release member.

5,253,002

COMPACT CAMERA WITH DEPLOYABLE FLASH UNIT

Debby H. Kwak, Cerritos, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 23, 1992, Ser. No. 917,656
Int. Cl.[5] G03B *15/02*
U.S. Cl. 354—126 **7 Claims**



1. A compact camera comprising a flash unit, conveyance means supporting said flash unit for movement to separate storage and operative positions, and a viewfinder airspace, is characterized in that:

said flash unit and said viewfinder airspace are relatively sized to fit the flash unit into the viewfinder airspace; and

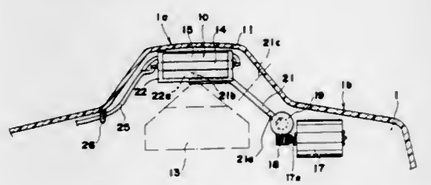
said conveyance means is adapted to support said flash unit for movement into said viewfinder airspace to locate the flash unit in its storage position and for movement out of the viewfinder airspace to locate the flash unit in its operative position.

5,253,003

FLASH-INTEGRATED CAMERA

Hidehiko Fujii; Yoshiyuki Inoue, and Takahiro Iimori, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 526,836, May 22, 1990, abandoned. This application Oct. 31, 1991, Ser. No. 785,151
Claims priority, application Japan, May 24, 1989, 1-131747
Int. Cl.[5] G03B *15/03*
U.S. Cl. 354—149.1 **4 Claims**



2. A camera equipped with an image erection optical arrangement in an upper part thereof, the optical arrangement having an inclined top surface extending downward from the center portion to the side end portion of the optical arrangement, said camera comprising:

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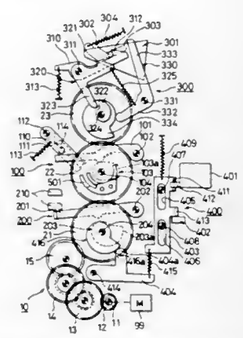
(a) an upper cover housing the upper part of the camera and having a sloped portion for covering the inclined top surface of said optical arrangement;
(b) a flash light emitting portion disposed above said optical arrangement;
(c) a driving force generator disposed inside said upper cover and beside said optical arrangement for generating a driving force, and
(d) driving force transmitting means mounted between said flash light emitting portion and said driving force generator for transmitting the driving force generated by said driving force generator to the flash light emitting portion for moving said flash light emitting portion, said driving force transmitting means having an arm member which is extended between and along said inclined top surface of said optical arrangement and said sloped portion of said upper cover.

5,253,004

CONTROL DEVICE FOR CAMERA

Junji Umetsu, Tokyo, and Fuminori Ueno, Hachioji, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 556,375, Jul. 23, 1990, abandoned. This application Nov. 26, 1991, Ser. No. 797,161
Claims priority, application Japan, Jul. 28, 1989, 1-195887
The portion of the term of this patent subsequent to Jan. 7, 2009, has been disclaimed.
Int. Cl.[5] G03B *15/03*
U.S. Cl. 354—149.11 **24 Claims**



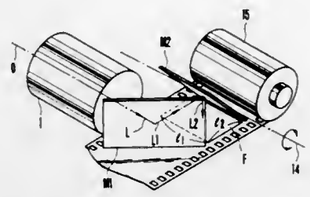
1. A control device for controlling mechanisms installed in a camera, comprising;
a single drive source;
means for changing a position of a built-in electronic flash between a projected position and a retracted position;
means for driving a mechanism other than said built-in electronic flash, said other mechanism being provided for a photographing operation of said camera; and
means for connecting said drive source to said position changing means and said drive means, said connecting means being able to control at least said drive means when said drive source is rotated in a first direction, and being able to control said position changing means to move said built-in electronic flash to said projected position when said drive source is rotated in a second direction opposite to said first direction, wherein said drive means controls a photographing operation which is independent of movement of said electronic flash.

5,253,005

SMALL-SIZED CAMERA

Takeshi Koyama; Sadatoshi Takahashi; Nozomu Kitagishi, all of Tokyo, and Kouji Oizumi, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 352,729, May 16, 1989, abandoned. This application Dec. 12, 1991, Ser. No. 806,786
Claims priority, application Japan, May 18, 1988, 63-122452; May 23, 1988, 63-126612; May 23, 1988, 63-126613; May 23, 1988, 63-126614; May 23, 1988, 63-126615; May 23, 1988, 63-126616; Jun. 24, 1988, 63-157677; Jun. 24, 1988, 63-157678; Aug. 10, 1988, 63-199580; Aug. 24, 1988, 63-210162; Oct. 27, 1988, 63-272674
Int. Cl.[5] G03B *19/12*
U.S. Cl. 354—152 **21 Claims**



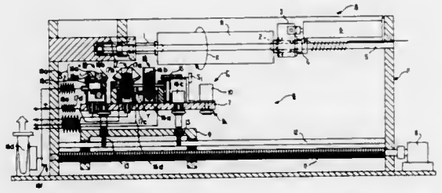
1. A single-lens reflex camera comprising:
a first reflection member for reflecting light emerging from a photographic lens;
a second reflection member for conducting the light reflected from said first reflection member to a photosensitive plane;
an eyepiece lens; and
means for driving said second reflection member to conduct the light reflected from said first reflection member to said eyepiece lens, wherein an optical axis of the photographic lens is parallel to the photosensitive plane.

5,253,006

MOVING-UNIT TYPE DEVELOPING METHOD AND A MOVING-UNIT TYPE DEVELOPING APPARATUS

Kouichi Takakura, Chiba, Japan, assignor to Think Laboratory Co., Ltd., Chiba, Japan

Filed May 20, 1991, Ser. No. 702,946
Claims priority, application Japan, May 24, 1990, 2-136494
Int. Cl.[5] G03D *5/00, 3/04*
U.S. Cl. 354—317 **4 Claims**



1. A moving-unit type developing method characterized in that:
a plate roll, which is to be made into a printing plate on which desired information has been exposed after coating surface of said roll with a photosensitive film, is chucked at both ends in a horizontal position and then caused to rotate at a predetermined speed; and
a developing unit that comprises a roll brush contact type developing means, a roll brush contact type washing means, and a sponge roll contact vacuum type drying means, which are arranged in the order of treatment said developing unit performs, is moved from one end to the other of the under side of said plate roll, wherein

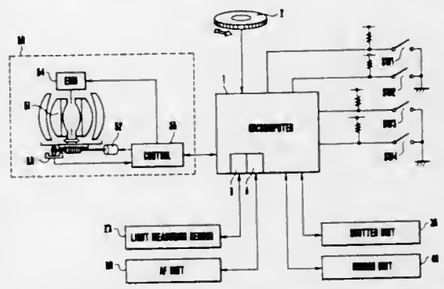
an alkali developing treatment is performed by causing a first roll brush provided in said roll brush contact type developing means and immersed in an alkali developing solution to rotate in contact with said plate roll, said first roll brush being made of fine bristles of a predetermined softness implanted at a predetermined high density, and said rotation of said first roll brush being opposite in direction from rotation of said plate roll;
washing treatment for washing said alkali developing solution and dissolved resist adhering to said plate roll is performed by causing a second roll brush provided in said roll brush contact type washing means and immersed in wash water to rotate in contact with said plate roll, said second roll brush being made of fine bristles of a predetermined softness implanted at a predetermined high density, and rotation of said second roll brush being opposite in direction from rotation of said plate roll; and
vacuum-removal treatment of wash water is performed by bringing a sponge roll provided in said sponge roll contact vacuum type drying means into contact with said plate roll so as to be rotated and vacuuming inside of said sponge roll to suction-remove said wash water adhering on said plate roll.

5,253,007

CAMERA HAVING SPECIAL PHOTOGRAPHY FUNCTION

Go Tokura; Akira Karasawa; Shoji Kaihara; Etsuro Furutsu, and Nobuyuki Inoue, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 26, 1992, Ser. No. 935,831
Claims priority, application Japan, Aug. 30, 1991, 3-220059; Nov. 22, 1991, 3-332867; Dec. 26, 1991, 3-356784; Dec. 26, 1991, 3-356785; Dec. 26, 1991, 3-356786; Dec. 26, 1991, 3-356787
Int. Cl.[5] G03B *13/36, 17/00, 17/24, 15/03*
U.S. Cl. 354—400 **6 Claims**



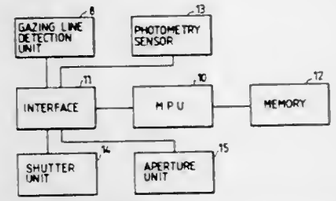
1. A camera having a special photography function, comprising:
focus detecting means for detecting a state of focus of a subject;
focus-position altering means for altering a focus position of a photographic optical system in response to a detection result provided by said focus detecting means; and
special-photography executing means for executing special photography utilizing multiple exposure, said special-photography executing means being arranged to control said focus-position altering means in response to a release operation to shoot one exposure on a photosensitive portion with said photographic optical system placed in an in-focus position and continuously shoot at least one exposure on the same photosensitive portion with said photographic optical system placed in a defocused position on a closest-distance side, thereby effecting the multiple exposure.

5,253,008

CAMERA

Kazuki Konishi, Hino; Akihiko Nagano, Kawasaki, and Tokuichi Tsunekawa, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 584,896, Sep. 19, 1990, abandoned. This application Oct. 8, 1992, Ser. No. 958,482
Claims priority, application Japan, Sep. 22, 1989, 1-247335; Sep. 22, 1989, 1-247575; Sep. 22, 1989, 1-247576
Int. Cl.[5] G03B *13/02, 13/36, 7/08*
U.S. Cl. 354—402 **26 Claims**



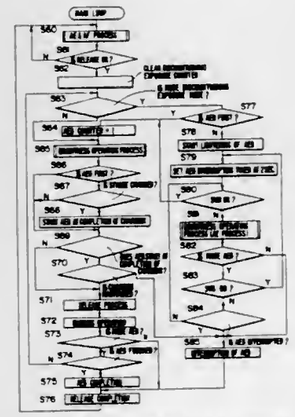
1. A camera, comprising:
(a) gazing line position detection means for detecting one or more gazing lines of a user gazing a finder, said detecting means determining the gazing line from information of a plurality of visual lines;
(b) photometry means for performing photometry of an object and
(c) control means for changing a photometry value obtained by said photometry means in accordance with information about said gazing line obtained by said detection means, said control means changing, when a plurality of gazing lines are detected by said detection means, said photometry value in response to an information of said plural gazing lines.

5,253,009

EXPOSURE CONTROL APPARATUS OF CAMERA HAVING AN AUTO-EXPOSURE BRACKET MODE

Osamu Satou; Isamu Hashimoto, and Takao Nishida, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 409,156, Sep. 19, 1989, Pat. No. 5,099,267. This application Nov. 19, 1991, Ser. No. 795,184
Claims priority, application Japan, Sep. 19, 1988, 63-234394
Int. Cl.[5] G03B *7/00, 7/26, 17/20, 17/38*
U.S. Cl. 354—412 **10 Claims**



1. An exposure control apparatus of a camera comprising:

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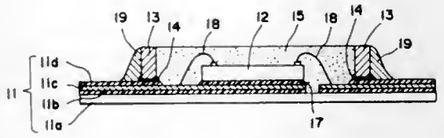
a photometer for measuring brightness of an object to be photographed;
photographing mode setting means for setting a desired photographing mode;
drive mode selecting means for selecting a drive mode of a plurality of drive modes;
exposure factor setting means for setting an exposure factor;
film sensitivity setting means for setting sensitivity of a film;
photometer switch means for actuating said photometer;
release switch means for starting a releasing operation of a photographing operation;
exposure operating means for arithmetically calculating exposure to obtain exposure control factors, based on the brightness detected by said photometer, the film sensitivity set by said film sensitivity setting means, the exposure factor set by said exposure factor setting means and the drive mode selected by said drive mode selecting means;
photographing control means for performing photographing operations in accordance with the mode set by said photographing mode setting means and the exposure control factors obtained by said exposure operating means;
wherein said drive modes include an auto-exposure bracket mode (AEB mode) which can be selected by said drive mode selecting means, and said photographing control means comprising means for associating a time interval between successive photographing operations in the AEB mode with release operations of said release switch means, wherein said photographing control means stops the photographing when the release switch means is turned OFF during photographing in the AEB mode, photographing being commenced by the releasing operation of said release switch means, after the photographing is stopped at the time when said release switch means is turned OFF, so that when the release operation is commenced again by said release switch means, the photographing in the AEB mode is continued.

5,253,010

PRINTED CIRCUIT BOARD

Shunji Oku; Kiyoshi Seigenji; Masao Naito, and Yoshiyuki Mizumo, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Japan

Continuation of Ser. No. 622,162, Nov. 30, 1990, abandoned, which is a continuation of Ser. No. 350,771, May 11, 1989, abandoned. This application Jun. 8, 1992, Ser. No. 895,260
Claims priority, application Japan, May 13, 1988, 63-117556; May 14, 1988, 63-117863; May 16, 1988, 63-64570
Int. Cl.[5] G03B *7/00*; H05K *1/00*; H01L *23/02*
U.S. Cl. 354—485 15 Claims



1. A flexible printed circuit board comprising:
a flexible substrate with a printed circuit pattern;
a die of an integrated circuit chip, mounted on said flexible substrate, including a plurality of connecting terminals;
a plurality of wires for bonding said connecting terminals of the integrated circuit chip to respective portions of said printed circuit pattern;
a frame for encircling said integrated circuit chip;
a water repellent adhesive for gluing said frame to said flexible substrate;
a second type of adhesive sticking to the outside wall of said frame and said flexible substrate for strengthening the adhesion of said frame to said flexible substrate, and
a resin sealant to be filled inside said frame for covering said integrated circuit chip.

6. A flexible printed circuit board comprising:
a flexible substrate with a printed circuit pattern comprised of an array of first terminals;
a die of an integrated circuit chip mounted on said substrate, including a plurality of second connecting terminals;
a cover film on said circuit pattern for isolating said circuit pattern from unnecessary electrical contact with the outside, said cover film being removed from the underlying substrate around said integrated circuit chip so as to establish a template by which the cover film aligns with the circuit pattern below and thereby allows electrical interaction by partially exposing the circuit pattern below including the first terminals along the array thereof, a geometry of the first terminals resulting in at least some of the exposed first terminals extending inward from an edge of a remaining portion of said cover film;
a plurality of wires for bonding said second connecting terminals of the integrated circuit chip to the first terminals of the printed circuit pattern, respectively; and
a resin sealant for covering said second terminals of said integrated circuit chip, said wires, said first terminals, and a part of said cover film around said integrated circuit chip, wherein the geometry of the first terminals and the manner of removal of said cover film at said terminals addresses the opposing constraints of reducing substrate area while simultaneously providing adequate bonding length by maintaining a sufficient match of the template with the circuit pattern to ensure proper bonding of contacts and still permit errors in the manufacturing process by fulfilling the following conditions:

$X < 2$ mm

$L > 0.4$ mm

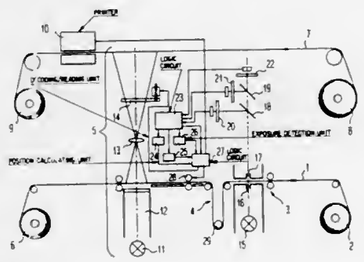
wherein:
X represents the width of the array of the terminals of said circuit pattern with said cover film removed, and
L represents the length of each of said terminals of the circuit pattern not covered by said cover film.

5,253,011

COPYING METHOD AND COPIER FOR FILM

Wolfgang Zahn; Wilhelm Nitsch, both of Munich; Günther Schnall, Eching, and Gerhard Benker, Pullach, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 11, 1992, Ser. No. 834,693
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1991, 4108815
Int. Cl.[5] G03B *27/52*
U.S. Cl. 355—41 28 Claims



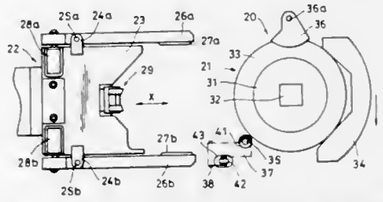
1. A method of treating a length of exposed and developed photosensitive material having a plurality of exposures and exposure identification numbers, said method comprising the steps of sensing said length to obtain a series of measurements for said exposures and said numbers; processing said measurements to derive first values each of which represents a respective number and second values each of which represents the position of a respective exposure on said length; forming a data set having a plurality of data groups each of which includes a first value and a second value; and assigning a final, unique second value to each of said first values following completion of said set, the assigning step being performed using said set.

5,253,012

SUBSTRATE HOLDING APPARATUS FOR VERTICALLY HOLDING A SUBSTRATE IN AN EXPOSURE APPARATUS

Yuji Chiba, Isehara, and Hidehiko Fujioka, Yamato, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 2, 1991, Ser. No. 769,974
Claims priority, application Japan, Oct. 5, 1990, 2-266344; Oct. 24, 1990, 2-284299
Int. Cl.[5] G03B *27/42*
U.S. Cl. 355—53 16 Claims



1. A substrate holding apparatus for vertically holding a substrate to be exposed by radiation, which is transported by a substrate transporting apparatus having two finger portions for holding the substrate, said apparatus comprising:
a substrate holding surface for attracting a substrate;
a drop preventing pin biased so as to project above said substrate holding surface to prevent dropping of the substrate, said pin being depressed below said substrate holding surface by one of the finger portions of the substrate transporting apparatus when the substrate transporting apparatus moves onto said substrate holding surface; and
a drop preventing plate, movably supported at and biased toward a home position in which said plate overlaps an upper portion of the substrate attracted by said substrate holding surface, for receiving the substrate when leaning to a side opposite to the substrate holding surface, said plate being retracted from said substrate holding surface by the other one of the finger portions of the substrate transporting apparatus when the substrate transporting apparatus moves onto said substrate holding surface.

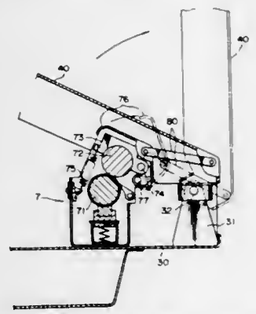
5,253,013

IMAGE RECORDING APPARATUS HAVING RELEASABLE FIXING DEVICE

Masatoshi Takano, Tokyo; Kazubiro Ichinokawa, Kawagoe, and Satoshi Hokamura, Niza, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 17, 1989, Ser. No. 422,507
Claims priority, application Japan, Oct. 17, 1988, 63-135258[U]; Oct. 28, 1988, 63-141416[U]; Oct. 28, 1988, 63-141418[U]
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—200 3 Claims

1. An image recording apparatus employing an electrophotographic process to form a toner image on a recording medium, which comprises:
a body and a clamshell, one end of said clamshell pivoted to said body while the other end of said clamshell is movable away from said body;
a pair of fixing rollers for fixing said toner image onto said recording medium, said rollers in contact with each other under pressure;
release means for releasing at least one of said pair of fixing rollers away from the other of said pair of rollers;
wherein said release means is operated to release said at least one of said fixing rollers away from the other of said rollers in response to movement of said clamshell relative to said body;
said apparatus further comprising a support member for supporting said at-least-one of the fixing rollers, said support member being swingable in the direction that said at least one of said fixing rollers is removed away from the other said roller, said support member being biased so at least one of said fixing rollers has a neutral position located away from the other said roller;



wherein said support member has an end which is biased toward said other roller to cause said support member to swing in a direction that said at least one of said fixing rollers is moved away from said other roller;
a contact member swingable between an operative position, where a swing movement of said support member in the direction away from said other roller is prevented, and an inoperative position where said swing movement of said support member is allowed; and
an operating member provided to set said clamshell so as to swing said contact member to its inoperative position when said other end of the clamshell is moved away from said body, wherein said operating member is a link member interconnected between said clam shell and said contact member.

5,253,014

IMAGE FORMING APPARATUS INCLUDING A CONTROLLER FOR CONTROLLING IMAGE FORMING CONDITIONS IN ACCORDANCE WITH NORMALIZED DIFFERENCES IN DETECTED DENSITIES

Hiroshi Matsumoto, Fujisawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 6, 1991, Ser. No. 711,098
Claims priority, application Japan, Jun. 8, 1990, 2-148481
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—208 7 Claims

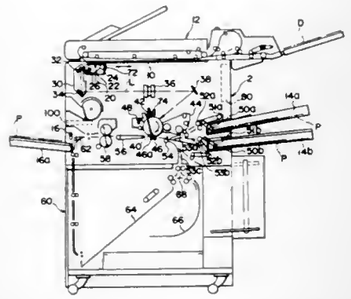
2. An image forming apparatus comprising:
means for reading an original image which is on an original document, the original having a first area having a predetermined first bright and second dark density range and a second area having a predetermined first bright and second dark density range;
means for forming an image on an image bearing member in accordance with the original image read by the reading means;
means for detecting a first density corresponding to the first area including upper and lower limits of first bright and second dark density ranges and a second density corresponding to the second area including upper and lower

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limits of first bright and second dark density ranges in the original image;

first judging means for judging an operation condition in which the image forming means is to form an image of the first area of the original, from the difference between the first area's upper and lower limit of the first density range's bright area and the difference between the first area's upper and lower limit of the second density range's dark area;

second judging means for judging an operation condition in which the image forming means is to form an image of the second area of the original, from the difference between a



second area's first density value and the second area's upper limit of the first density range's dark area and the difference between a second area's second density value and the second areas upper limit of the second density ranges' bright area;

determining means for determining an operating condition in which said image forming means is to be operated, from the operating condition judged by the first judging means and the operation condition judged by the second judging means; and

means for controlling the image forming means in accordance with the operating condition determined by the determining means.

5,253,015

SHEET LOAD SYSTEM FOR IMAGE FORMING APPARATUS

Shizuo Morita; Masakazu Fukuchi; Shunji Matsuo, and Satoshi Haneda, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 672,023, Mar. 19, 1991, abandoned. This application Jun. 4, 1992, Ser. No. 893,893

Claims priority, application Japan, Mar. 22, 1990, 2-72705; Mar. 22, 1990, 2-72706

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—210 **6 Claims**

1. An image forming apparatus comprising:

(a) a main body;

(b) an image former for forming an image, said image former being disposed in said main body;

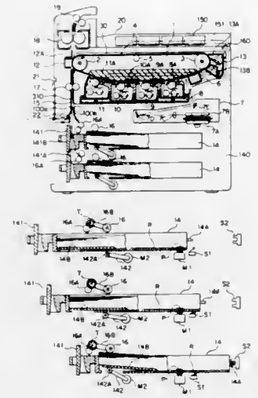
(c) a storer for storing recording sheets therein, said storer being loaded into said main body in a first direction;

(d) a feeder for feeding said recording sheets from said storer to said image former in a second direction, wherein said second direction is opposite to said first direction;

(e) a first detector for detecting a predetermined position of said storer wherein, based upon a signal from said first detector, said storer is either engaged and automatically loaded into said main body after manual placement of said storer at said predetermined position, or disengaged and automatically unloaded from said main body;

(f) a second detector for detecting a fully loaded position of said storer; and

(g) a conveyor for conveying said storer, during loading, into said main body from said predetermined position to said fully loaded position detected by said second detector, and for conveying said storer to said predetermined position when said storer is being unloaded.



5,253,016

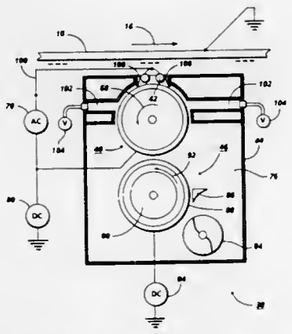
CONTAMINANT CONTROL FOR SCAVENGELESS DEVELOPMENT IN A XEROGRAPHIC APPARATUS

Thomas J. Behe, Webster; Daniel M. Bray; Jeffrey J. Folkins, both of Rochester; Gerald M. Kryk, Webster; Joseph G. Schram, Liverpool, and Cyril Edmunds, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 18, 1992, Ser. No. 884,975

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—215 **26 Claims**



1. A development apparatus for conveying toner to a latent image recorded on a charge retentive surface, comprising:

a donor structure spaced from the surface, for conveying toner to a development zone adjacent the surface;

an electrode structure disposed in a development zone between the donor structure and the surface; and

means for creating a flow of air from the charge retentive surface generally away from the development zone over at least a portion of the donor structure, the creating means forming a flow of air over the donor structure to remove contaminants therefrom with a stagnant boundary layer of air being formed around a surface of the donor structure to prevent removal of toner therefrom.

5,253,017

IMAGE FORMING APPARATUS

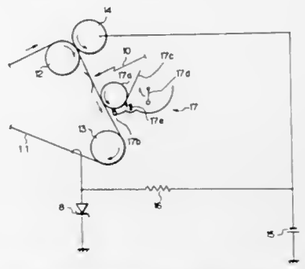
Fuchio Takeda, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 13, 1992, Ser. No. 976,424

Claims priority, application Japan, Nov. 13, 1991, 3-297382

Int. Cl.[5] G03G *15/02, 21/00*

U.S. Cl. 355—219 **3 Claims**



1. An image forming apparatus comprising:

a movable image carrier for forming a latent image thereon;

a charging unit comprising a charging roller for charging said image carrier in contact with said image carrier, and a charge power source for contact charging;

a developing unit for developing the latent image formed on said image carrier by contact reverse development; and

a constant voltage generation circuit connected to said image carrier and ground and supplied with a current from said charge power source of said charging unit.

5,253,018

TONER IMAGE DENSITY DETECTING MECHANISM FOR IMAGE FORMING APPARATUS

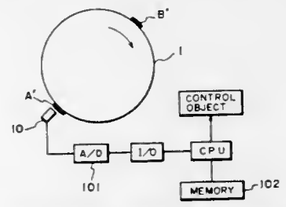
Tatsuo Takeuchi, Kawasaki; Koji Amemiya, Tokyo; Takao Ogata, Yokohama, and Nobuatsu Sasanuma, Yamato, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 21, 1992, Ser. No. 839,366

Claims priority, application Japan, Feb. 22, 1991, 3-028612

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—246 **9 Claims**



1. A toner image density detecting mechanism for an image forming apparatus, the mechanism comprising:

an image bearing layer supported on a rotatable cylindrical member;

means for forming a reference pattern image with a toner on said image bearing layer;

detecting means for detecting an image density of the toner image of the reference pattern; and

means for controlling an image forming condition in accordance with an output of said detecting means;

wherein an even number of such reference patterns are formed at respective positions which equally divide a circumference of the cylindrical member, and an average thereof is determined for use in a control operation of said control means, and

wherein, in accordance with toner type, a reflection or absorption rate of the toner is not less than 1.5 times that of said image bearing layer.

5,253,019

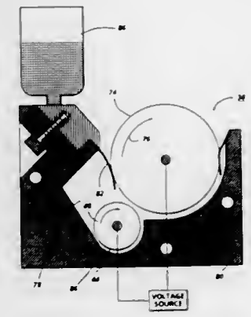
DEVELOPER MATERIAL TRANSPORT

Grace T. Brewington, Fairport, and William H. Wayman, Ontario, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 30, 1989, Ser. No. 428,726

Int. Cl.[5] G03G *15/06*

U.S. Cl. 355—259 **4 Claims**



1. An electrophotographic printing machine of the type having an electrostatic latent image recorded on a photoconductive member; wherein the improvement includes:

a housing defining a chamber storing a supply of developer material therein, said housing comprises an arcuate portion;

a roller, disposed at least partially in the chamber of said housing and mounted rotatably therein, for transporting developer material into contact with the latent image recorded on the photoconductive member;

a blade having the free end region thereof resiliently urged into engagement with said roller, said blade electrically charging the developer material being advanced into contact with the latent image by said roller and metering the quantity of developer material being advanced by said roller to the latent image;

means, disposed in the chamber of said housing, for fluidizing the developer material, said fluidizing means comprises a rotatably mounted elongated member disposed interiorly of the chamber of said housing in the region of and closely adjacent to the arcuate portion of said housing, said elongated member being made from an electrically conductive material having an insulating coating thereon, said elongated member includes a cylindrical body having a plurality of saw tooth shaped paddles extending radially outwardly therefrom;

means for discharging additional developer material into the chamber of said housing with the developer material being discharged into the chamber exerting a pressure on the fluidized developer material to move the fluidized developer material from one end of said housing to the other end thereof; and

means for applying an electrical bias between said elongated member and said roller so that fluidized developer material is attracted to said roller.

VOL 1155 ISS 2 OCT 12 1993 UMI

5,253,020

IMAGE FORMING APPARATUS IMPROVED IN TONER SUPPLY OPERATION

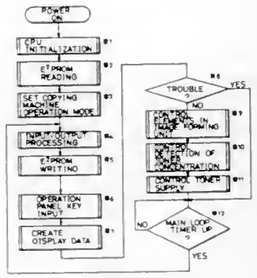
Tetsuo Matsushita, Shinshiro; Shoji Kashiwagi, Okazaki, and Tsuneo Kitagawa, Toyohashi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 592,677, Oct. 4, 1990, abandoned. This application Apr. 16, 1992, Ser. No. 870,790

Claims priority, application Japan, Oct. 5, 1989, 1-260779

Int. Cl.[5] G03G *15/06*

U.S. Cl. 355—260 12 Claims



1. An image forming apparatus provided with a developing unit for developing an electrostatic latent image formed on an electrostatic latent image holding member, comprising:

measuring means for measuring toner concentration in the developing unit;

a toner container for storing toner;

first supply means for supplying a predetermined amount of toner from said toner container to said developing unit when it is determined that the toner concentration measured by said measuring means is lower than a first predetermined concentration;

second supply means for supplying from said toner container to said developing unit toner of a larger amount than said first supply;

storage means for storing predetermined information related to concentration when it is determined that the toner concentration measured by said measuring means is below a second predetermined concentration lower than said first predetermined concentration; and

actuating means for actuating said second supply means when power to said apparatus is turned on after being off if said predetermined information has been stored in said storage means prior to the time that said power is turned on.

5,253,021

METHOD AND APPARATUS OF TRANSFERRING TONER IMAGES MADE UP OF SMALL DRY PARTICLES

Muhammad Aslam; Lawrence P. DeMejo; Alec N. Mutz, all of Rochester, and John M. McCabe, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 28, 1992, Ser. No. 843,664

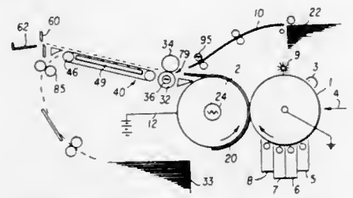
Int. Cl.[5] G03G *15/16*

U.S. Cl. 355—271 35 Claims

1. A method of forming a toner image made up of small toner particles, said method comprising:

forming a toner image on an image member, and

transferring said toner image to a transfer surface of a thermally and electrically conductive intermediate member by heating said transfer surface while pressure contacting said transfer surface with said toner image on said image member with pressure between the transfer surface and the image member of not more than 300 pounds per square inch in the presence of an electric field of a direction urging said toner image to transfer to said transfer surface, said transfer surface being heated to a temperature sufficient to sinter the toner particles at least where they touch the transfer surface and touch each other but insufficient



to damage the image member or cause the toner to stick to the image member.

5,253,022

IMAGE FORMING APPARATUS

Akihiko Takeuchi; Takayasu Yuminamochi, both of Yokohama; Hiroto Hasegawa, Kawasaki; Koichi Tanigawa, Tokyo; Yasumasa Ohtsuka, Yokohama, and Hiroki Kisu, Ichikawa, all of Japan, assignors to Canon Kabushiki Kiasha, Tokyo, Japan

Filed May 15, 1990, Ser. No. 524,024

Claims priority, application Japan, May 18, 1989, 1-122868; Aug. 10, 1989, 1-205696

Int. Cl.[5] G03G *15/16*

U.S. Cl. 355—274 40 Claims

1. An image forming apparatus comprising:

a movable image bearing member;

image forming means for forming a toner image having a plurality on said image bearing member; and

image transfer means for transferring the toner image onto a transfer material at a transfer position, said transfer means including a rotatable member contactable to such a side of the transfer material as is opposite from a side contactable to said image bearing member and electric field forming means for forming an electric field between said image bearing member and said rotatable member,

wherein said electric field forming means forms a first electric field effective to transfer toner having the same polarity as the polarity of the toner image on said image bearing member from said rotatable member to said image bearing member and a second electric field which is opposite in direction from the first electric field during a period in which the transfer material is absent at the transfer position, and

wherein the period in which the first electric field is formed and the period in which the second electric field is formed are adjacent to each other, each of said first and second electric fields is formed at least for a period required for substantially the entire circumferential surface of said rotatable member to pass through the transfer position.

5,253,023

ELECTROSTATOGRAPHIC APPARATUS WITHOUT CLEANER

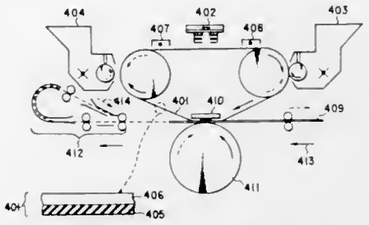
Yasuo Hosaka, Tokyo; Hitoshi Nagato, Kawasaki; Yuzo Koike, Yokohama; Toshikazu Matsui, Tokyo, and Shuzo Hirahara, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 12, 1992, Ser. No. 834,653

Claims priority, application Japan, Feb. 15, 1991, 3-42786; Aug. 30, 1991, 3-244187

Int. Cl.[5] G03G *15/14*

U.S. Cl. 355—279 10 Claims



1. An electrostatographic apparatus comprising:

a belt-like recording medium composed of a conducting layer to which a specified voltage is applied and an insulating layer adjacent to this layer;

electrostatic image forming means for forming an electrostatic image on said recording medium from a side of said insulating layer;

at least one developing means for forming a toner image by developing the electrostatic image;

heating mean for simultaneously transferring and fixing the toner image onto a transfer material on which the toner image is to be recorded, by heating said recording medium from a side of said conducting layer;

conveying means for selectively conveying said recording medium in a first direction and a second direction opposite to the first direction;

conveying means for selectively conveying said transfer material in the first and second directions in synchronization with the conveying of said recording medium;

reversing means for turning over said transfer material alternately between conveyance in the first direction and the second direction; and

driving means for driving selectively said recording medium in a first wise and a second wise.

5,253,024

FIXING APPARATUS WITH RECTIFIER ELEMENT

Koichi Okuda, Tokyo; Yoji Tomoyuki, Yokohama; Toshio Miyamoto, Tokyo; Junji Araya, Yokohama; Yukihiro Obzeki, Kashiwa; Masanobu Saito, Yokohama; Shunji Nakamura, Yokohama; Yasumasa Ohtsuka, Yokohama; Tatsunori Isbiyama, Yokohama; Katsuhiko Nishimura, Yokohama; Akira Hayakawa, Machida; Yasushi Sato, Kawasaki, and Kimio Nakahata, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 446,426, Dec. 5, 1989, abandoned. This application Dec. 10, 1991, Ser. No. 804,516

Claims priority, application Japan, Dec. 7, 1988, 63-307929; Mar. 28, 1989, 1-73795; Oct. 31, 1989, 1-285899; Oct. 31, 1989, 1-285900

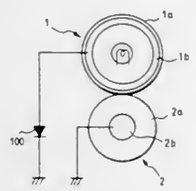
Int. Cl.[5] G03G *15/20*

U.S. Cl. 355—282 24 Claims

1. A fixing apparatus comprising:

a fixing member having a voltage produced primarily by frictional contact, said fixing member contacting a non-fixed toner image having an electrical charge;

a pressure member for pinching therebetween and conveying a supporting material bearing the non-fixed toner image thereon, cooperating with said fixing member to thereby fix the non-fixed toner image on said supporting material; and



a diode means connected between said fixing member and a ground for maintaining the voltage produced by the frictional contact of said fixing member at a polarity same as the non-fixed image without generating a voltage of polarity reverse thereto.

5,253,025

APPARATUS FOR FIXING A TONER IMAGE, FIXING METHOD AND ELECTROPHOTOGRAPHIC RECORDING EQUIPMENT

Teruaki Mitsuya; Takashi Suzuki, and Kazuo Uno, all of Katsuta, Japan, assignors to Hitachi, Ltd. and Hitachi Koki Co., Ltd., both of Tokyo, Japan

Filed Nov. 22, 1991, Ser. No. 796,013

Claims priority, application Japan, Nov. 28, 1990, 2-322701

Int. Cl.[5] G03G *13/20*

U.S. Cl. 355—285 32 Claims

1. An apparatus for fixing a toner image formed on a recording medium having a first fixing roller which is rotatable wherein said first fixing roller is heated and said toner image is fixed on said recording medium being in pressed contact with said first fixing roller, wherein offset toner particles can form on said first fixing roller when said toner image is fixed on said recording medium; said apparatus further comprising a particle decomposer adapted to decompose said offset toner particles.

5,253,026

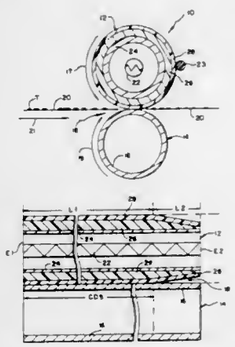
FUSING APPARATUS HAVING VARIABLE SHAPE FUSER ROLLER

Ernest J. Tamary, Brighton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 23, 1991, Ser. No. 812,308

Int. Cl.[5] G03G *15/20*

U.S. Cl. 355—289 7 Claims



1. A fuser roller for use in a heat and pressure roller-type

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fusing apparatus to fuse toner images to a substrate, the fuser roller having first and second ends and comprising:

(a) a first length portion for contacting the substrate, said first length portion having a cylindrical outer shape; and

(b) a second length portion for preventing contact of the fuser roller with a cylindrical pressure roller forming a fusing nip with the fuser roller, said second length portion having a conical outer shape and an elastomeric layer decreasing in thickness towards one end of the first and second ends of the fuser roller, and said second length portion adjoining said first length portion as well as said one end of the first and second ends of the fuser roller.

5,253,027

IMAGE FIXING ROTATABLE MEMBER AND IMAGE FIXING APPARATUS WITH SAME

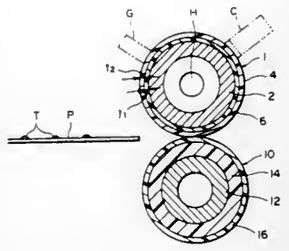
Masahiro Goto, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 504,081, Apr. 4, 1990, abandoned, which is a continuation of Ser. No. 229,659, Aug. 8, 1988, abandoned. This application Jul. 22, 1991, Ser. No. 733,957

Claims priority, application Japan, Aug. 7, 1987, 62-196332; Sep. 14, 1987, 62-228268

Int. Cl.[5] G03G *15/20*

U.S. Cl. 355—290 **19 Claims**



1. A rotatable member for fixing an image, comprising:

a rubber layer; and

a fluorine resin layer on said rubber layer,

wherein resin particles having a particle size of not more than 1 micron are dispersed in said rubber layer.

5,253,028

IMAGE FORMING APPARATUS HAVING A PLURALITY OF VERTICALLY STACKED IMAGE FORMING UNITS AND PROVIDING EASILY CONDUCTED JAM CLEARING AND MAINTENANCE

Takashi Gonda, Aichi; Hirofumi Hasegawa, Hadano; Motohiro Yamada, Okazaki, and Takayuki Ariyama, Toyokawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 12, 1991, Ser. No. 729,078

Claims priority, application Japan, Jul. 12, 1990, 2-186835

Int. Cl.[5] G03G *21/00*

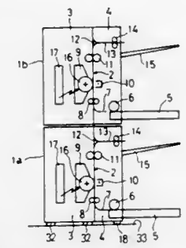
U.S. Cl. 355—309 **20 Claims**

1. An image forming apparatus which is provided with an image forming unit wherein the image forming unit comprises:

a substantially vertical paper feed path provided along a substantially vertical plane, at least one end of the substantially vertical paper feed path being open to an upper or lower surface of the image forming unit;

image forming means provided in a midway location in the paper feed path for forming an image on a sheet being transported through the paper feed path; and

an opening and closing portion which constitutes a portion facing the substantially vertical paper feed path of the image forming unit for opening and closing the paper feed



path within a range it faces the path in relative movement of one side of the paper feed path about its vertical axis.

5,253,029

VIDEO COLOR PRINTER WITH PAPER TRAY EJECTION DEVICE AND METHOD THEREFORE

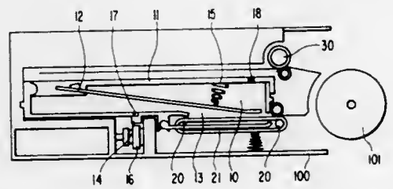
Dong H. Kang, Suweon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Rep. of Korea

Filed Jun. 26, 1992, Ser. No. 903,956

Claims priority, application Rep. of Korea, Jun. 26, 1991, 91-10683

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—321 **10 Claims**



1. A video color printer having a tray for accommodating recording paper, a paper feeding device for supplying said recording paper from said tray to a drum, a printing device for printing an image on said recording, and a paper discharge device for ejecting said paper after completion of the printing by said printing device, said printer comprising:

a recording paper loading state sensor disposed in said tray so as to sense the presence or absence of said recording paper in said tray;

a printing completion sensor disposed on said tray so as to sense complete printing of said recording paper; and

a tray driving device coupled to said tray, said loading state sensor and said printing completion sensor so as to move said tray to be automatically ejected if an absence of said recording paper is sensed in said tray or a predetermined number of sheets of said recording paper have been printed upon.

5,253,030

IMAGE FORMING APPARATUS

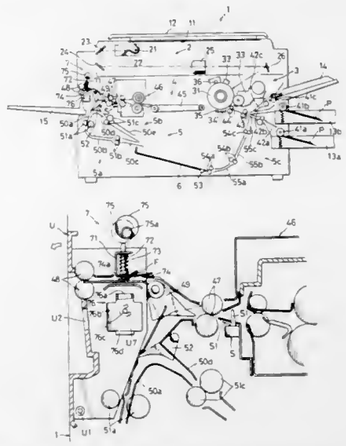
Yutaka Shigemura, Takarazuka; Takashi Kondo, Sakai; Hideo Umezawa, Amagasaki; Junichi Oura, Hirakata; Mitsuharu Yoshimoto, Kitakatsuragi; Satoshi Yano, Takatsuki; Yukihiro Ito, Osaka; Yoshifumi Okauchi, Sakai; Yoshitake Miyoshi, Soraku; Takashi Miyake, Hirakata, and Kiyoshi Hayashi, Takatsuki, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jul. 17, 1990, Ser. No. 553,378

Claims priority, application Japan, Jul. 18, 1989, 1-185610; Jul. 18, 1989, 1-185611; Jul. 18, 1989, 1-185612; Aug. 12, 1989, 1-208605; Nov. 16, 1989, 1-298594; Mar. 20, 1990, 2-71045

Int. Cl.[5] G03G *21/00, 15/00*

U.S. Cl. 355—324 **53 Claims**



1. A hole punch for punching holes in paper delivered from an image forming apparatus said hole punch comprising:

punching means including a plurality of punching cutters disposed at a predetermined interval in the width direction of the paper, a punching die for receiving said punching cutters, and pushing means for pushing said punching cutters toward said punching die; and

a plurality of paper holders formed of a thin elastic plate and having leading edges elastically pressed on said punching die to guide the paper to said punching die.

5,253,031

METHOD OF FORMING A REFERENCE PATTERN FOR ADJUSTING IMAGE DENSITY IN COPYING MACHINES

Naoyoshi Kinoshita, Aichi; Keiji Kusumoto, Toyokawa; Katsuhiko Takeda, Okazaki; Hiroyuki Ideyama, and Shizuo Yuge, both of Toyokawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 30, 1991, Ser. No. 707,682

Claims priority, application Japan, May 31, 1990, 2-143319; Jun. 7, 1990, 2-149329

Int. Cl.[5] G03G *15/01*

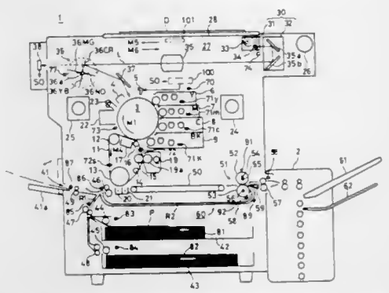
U.S. Cl. 355—327 **12 Claims**

1. An image forming apparatus comprising:

a photosensitive member;

an illumination system for illuminating an image of an original; and

filter device including a rotatable filter holder holding a plurality of filter mirrors for color-separating the light



reflected from the original image and reflecting the light to the photosensitive member.

5,253,032

ACTIVE DISTANCE MEASURING APPARATUS

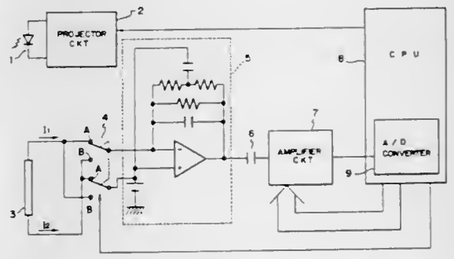
Riichi Higaki, Kawasaki, and Yoshikazu Iida, Chigasaki, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Oct. 3, 1991, Ser. No. 770,364

Claims priority, application Japan, Oct. 22, 1990, 2-282018

Int. Cl.[5] G01C *3/00*

U.S. Cl. 356—1 **2 Claims**



1. An active distance measuring apparatus comprising:

a projector for projecting modulated light to an object;

a photo-sensor for sensing the modulated light reflected by the object to produce a pair of alternating current signals in accordance with a distance to the object; and

a signal processor for producing a distance signal in accordance with the pair of alternating current signals;

said signal processor including detection means for detecting, first, a voltage corresponding to one of the pair of alternating current signals a plurality of times and adding the results of the first detecting, and then for detecting, second, a voltage corresponding to the other of the pair of alternating current signals a plurality of times and adding the results of the second detecting, and for repeating the first detecting and adding alternately with the second detecting and adding a plurality of times, and calculation means for calculating the distance signal based on the repeated detecting and adding by said detection means.

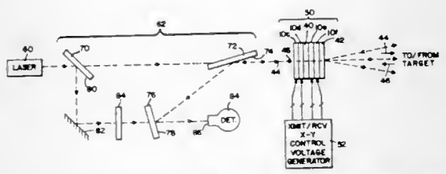
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5,253,033

LASER RADAR SYSTEM WITH PHASED-ARRAY BEAM STEERER

W. M. Lipchak, Sterling, and Terry A. Dorschner, Newton Centre, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Division of Ser. No. 621,706, Dec. 3, 1990, Pat. No. 5,126,869.
This application Apr. 9, 1992, Ser. No. 865,609
The portion of the term of this patent subsequent to Jun. 30, 2009, has been disclaimed.
Int. Cl.[5] G01C *3/08;* G01B *11/26;* G01J *1/20;* G02F *1/13*
U.S. Cl. 356—5 8 Claims



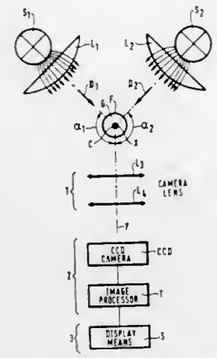
1. A laser radar system for transmitting an optical beam toward a target and for detecting a target-reflected portion of said beam, said system including:
- a laser for producing a beam of optical energy along a first path;
- a beamsplitter in said first path for transmitting a first portion of said beam along said first path and for reflecting a second portion of said beam along a second path;
- means in said first path for steering said transmitted beam toward said target and for steering said target-reflected portion of said beam within said system, said steering means comprises:
- first deflector means, responsive to beams of coherent optical radiation of first and second linear, orthogonally related polarizations, for deflecting said beams in first and second substantially orthogonally related directions;
- means for altering the linear polarization of a coherent beam of optical radiation by ninety degrees;
- second deflector means substantially identical to said first deflector means; and
- means for transforming the polarization of a coherent beam of optical radiation between linear and circular polarizations,
- all of the above-mentioned elements of said steering means being arranged in the recited order along a common optical path;
- means in said first path responsive to the polarization of said first beam portion for transmitting said first beam portion therethrough, and responsive to the polarization of said target-reflected beam portion altered by said altering means for reflecting said target-reflected portion along a fourth path;
- a beam combiner for providing a combined beam from said second beam portion and said target-reflected portion on said fourth path, and for directing said combined beam along a fifth path; and
- detector means responsive to said combined beam on said fifth path.

5,253,034

DEVICE FOR DISPLAYING THE CORE OF AN OPTICAL FIBER

Roland Hakoun, Domont; Philippe Robert, Herblay; Michel Reslinger, Bondoufle, and Joan Galopin, Saint Leger En Yvelines, all of France, assignors to Alcatel Fibres Optiques, Bezons Cedex, France

Filed Mar. 11, 1992, Ser. No. 849,185
Claims priority, application France, Mar. 12, 1991, 91 02956
Int. Cl.[5] G01N *21/84;* G01B *11/12*
U.S. Cl. 356—73.1 7 Claims



1. A device for displaying the core (C) of an optical fiber (F) in two directions that are transverse to said fiber (F), the device comprising:
- two light sources illuminating said fiber, each emitting a beam of light, said beams having different directions D_1 and D_2, said directions lying in a plane that is orthogonal to the longitudinal axis (X) of said fiber (F);
- an objective lens (L_3; L_4); and
- reception (2) and display (3) means for receiving and displaying images of said fiber (F) produced by said beams;
- the device being characterized in that said objective lens is focused in a plane (P) that intercepts the beams from said fiber (F) inside said fiber (F), and in that the angle (α_1, α_2) between either of said directions (D_1, D_2) and the focal axis (Y) of said objective lens (L_3, L_4) is such that said objective lens (L_3, L_4) directly receives the two beams from said fiber (F) with sufficient light intensity to enable reception means (2) to operate.

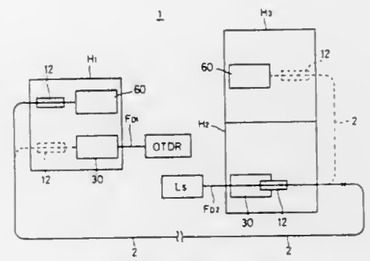
5,253,035

AUTOMATIC OPTICAL MEASURING APPARATUS FOR OPTICAL FIBERS

Satoshi Fukuoka; Shizuka Yamaguchi; Koji Sasaki, and Tsuyoshi Fumeno, all of Ichihara, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Apr. 8, 1992, Ser. No. 866,801
Claims priority, application Japan, Apr. 12, 1991, 3-080156; Apr. 12, 1991, 3-080157; Jun. 28, 1991, 3-158643; Jul. 18, 1991, 3-177930
Int. Cl.[5] G01N *21/84*
U.S. Cl. 356—73.1 10 Claims

1. An automatic optical measuring apparatus for optical fibers which is designed to automatically perform a series of steps from a processing of tips to an optical measurement of a plurality of jacketed optical fibers each comprising at least one optical fiber provided with a jacket, which apparatus comprising:
- first and second array units wherein a plurality of first and second holders are arranged, each holder holding an end of the jacketed optical fiber to be subjected to optical measurement in such a manner that the jacketed optical fiber protrudes by a specified length, and a third array unit wherein a plurality of third holders are arranged;
- first through third tip processing units for processing the ends of said individual jacketed optical fibers;
- a first optical measuring unit to which one end of the jacketed optical fiber, held by the first holder, with its end processed is connected;
- a first connecting unit for connecting the one end of said jacketed optical fiber held by the first holder to the optical measuring apparatus;
- a second connecting unit which connects the other end of said jacketed optical fiber, held by the second holder, with its end processed to a light source;
- a first carrying unit which carries said first holder from said first array unit to said first tip processing unit, the first optical measuring unit, and the first connecting unit, then returns it to said first array unit;
- a haul-in unit which hauls in and cuts a specified length of the jacketed optical fiber held in said second holder on said first holder side;
- a second carrying unit which carries said second holder from said second array unit to said second tip processing unit and the second connecting unit, then returns it to said second array unit;
- a hand-over unit which hands over the cut end of said jacketed optical fiber on the second holder side, which was cut by said haul-in unit, onto said third holder with a specified length of the cut end jutting out;
- a second optical measuring unit to which the cut end of said jacketed optical fiber, which has been transferred onto said third holder, on said second holder side is connected;
- a third carrying unit which carries said third holder from said third array unit to said third tip processing unit and the second optical measuring unit, the returns it to said third array unit; and
- a controlling unit which controls the operations of all the aforementioned component units.



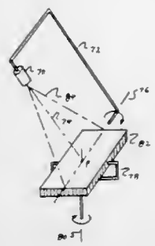
5,253,036

NEAR-FIELD PHOTOMETRIC METHOD AND APPARATUS

Ian E. Ashdown, West Vancouver, Canada, assignor to Ledalite Architectural Products Inc., Richmond, Canada

Filed Sep. 6, 1991, Ser. No. 755,700
Int. Cl.[5] G01J *1/00*
U.S. Cl. 356—121 6 Claims

1. A method of measuring the photic field surrounding a light source, said method comprising the steps of:
- (a) enclosing said light source within a notional volume;
- (b) locating a helios meter having a narrow field of view F(i,j) at a position on the surface of said volume to collect flux through said field of view;
- (c) setting "i"=1;
- (d) setting "j"=1;
- (e) orienting said helios meter in a direction such that said field of view includes a portion of said light source;
- (f) measuring the helios H(i,j) at said position and in said direction;
- (g) reorienting said helios meter in a direction such that said field of view includes a portion of said light source different from said previously selected portion;
- (h) incrementing "j" by 1;
- (i) measuring the helios H(i,j) at said position and in said reoriented direction; and,
- (j) repeating steps (g) through (i) for a selected number of said portions;



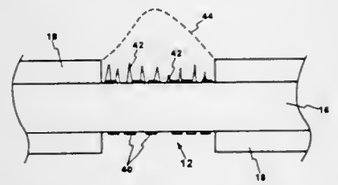
- (k) relocating said helios meter to a position on said volume surface different from said previous position(s);
- (l) incrementing "i" by 1; and,
- (m) repeating steps (d) through (l) for a selected number of positions on said surface of said volume.

5,253,037

OPTIMAL LENGTH FOR REFRACTIVE INDEX SENSORS

Stanley M. Klainer, and Devinder P. S. Saini, both of Henderson, Nev., assignors to FCI-FiberChem, Inc., Las Vegas, Nev.

Filed Aug. 4, 1992, Ser. No. 925,560
Int. Cl.[5] G01N *21/41;* G02B *6/16*
U.S. Cl. 356—133 20 Claims



1. A refractive index optical sensor, comprising:
- light guiding means through which an optical beam propagates by total internal reflection;
- a thin film metal clad segment formed on the light guiding means, the metal clad segment having an effective thickness and light transmissivity which in combination with a surrounding medium produces a localized refractive index and a controlled leakage of light which modulates the transmission of light through the light guiding means as a function of the refractive index of the surrounding medium;
- the metal clad segment having a length such that light leakage occurs substantially along the entire length of the segment.

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5,253,038

INTERFEROMETRIC DEVICE FOR DETECTING A CENTERING ERROR

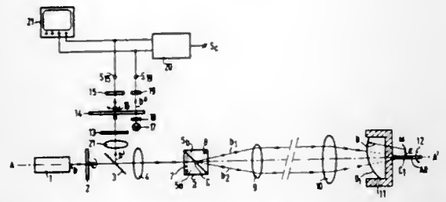
Gijsbertus Bouwhuis, and Josephus J. M. Braat, both of Eindhoven, Netherlands, assignors to U.S. Philips Corp., New York, N.Y.

Continuation of Ser. No. 21,275, Mar. 3, 1987, abandoned. This application Oct. 22, 1990, Ser. No. 607,776

Claims priority, application Netherlands, Mar. 3, 1986, 8600526

Int. Cl.[5] G01B 9/02

U.S. Cl. 356—351 13 Claims



1. A device for detecting a centering error of a rotationally symmetrical surface of an object, which device comprises a radiation source supplying a radiation beam for exposing a portion of the surface, a rotatable holder for the object, a radiation-sensitive detection system for supplying on output signal arranged in the path of a beam reflected from the surface of the object and the output signal being a measure of the centering error with respect to the rotational axis of the holder, a beam splitter for splitting the radiation beam into two measuring sub-beams and for combining the two sub-beams after they have been reflected by the surface arranged between the radiation source and the surface to be centered, and a lens system directing the sub-beams at angles of approximately 90° onto the surface arranged between the beam splitter and the surface, the output signal supplied by the radiation-sensitive detection system showing upon occurrence of a centering error a variation synchronously with the object rotation, which output signal variation represents a variation in phase difference ,caused by a centering error, between the two sub-beams, wherein the improvement comprises that:

the beam splitter is a polarization-sensitive beam splitter which forms two mutually perpendicularly polarized sub-beams, and a λ/4 plate, wherein λ is the wavelength of the radiation beam, is arranged between the beam splitter and the radiation-sensitive detection system, the optical axis of said λ/4 plate extending at an angle of 45° to the directions of polarization of the sub-beams and a polarization analyzer is disposed between the λ/4 plate and the detection system.

5,253,039

PROCESS AND APPARATUS FOR MEASURING SIZES OF STEEL SECTIONS

Yoji Fujimoto; Yoshimi Fukutaka; Takanori Okui; Kazushi Baba; Eiji Nakashima; Atsushi Hatanaka, all of Kurashiki; Yasunori Kuroda, Kobe; Hidenobu Adachi, Kobe, and Toshiaki Mori, Kobe, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Oct. 15, 1991, Ser. No. 775,753

Claims priority, application Japan, Oct. 19, 1990, 2-278930; Dec. 6, 1990, 2-400592; Dec. 28, 1990, 2-418091; Feb. 27, 1991, 3-53644

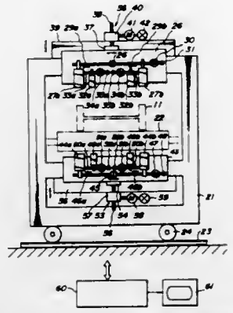
Int. Cl.[5] G01B 11/08

U.S. Cl. 356—372 9 Claims

1. A process for measuring sizes of steel sections along a manufacturing line of a hot rolling mill, comprising the steps of:

arranging at least a pair of two-dimensional rangefinders and at least a pair of one-dimensional rangefinders on opposite sides of a steel section at an on-line state, said steel section comprising a pair of flange portions connected by a web portion;

measuring a distance from each of the two-dimensional rangefinders to at least one of the flange portions and a distance from each of the one-dimensional rangefinders to



the web portion, respectively, said measuring step occurring in an on-line state while the steel section is moving along the manufacturing line; and

calculating a deviation at a center portion of said steel sections, a flange width and a web thickness from the above measured values.

5,253,040

PROJECTION ALIGNER

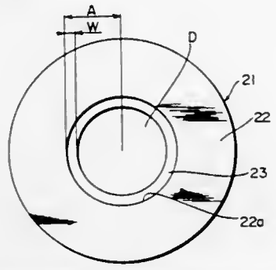
Kazuya Kamon, Itami; Yasuhito Myoi, Amagasaki; Teruo Miyamoto, Amagasaki; Yoshie Noguchi, Amagaski, and Masaaki Tanaka, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 5, 1991, Ser. No. 788,235

Claims priority, application Japan, Nov. 9, 1990, 2-302780; Jan. 8, 1991, 3-11540

Int. Cl.[5] G01B 11/00

U.S. Cl. 356—399 14 Claims



1. A projection aligner comprising:

a light source for producing light;

a condenser lens system for directing light from said light source onto a mask on which a circuit pattern is formed;

a projecting lens system for collecting on the surface of a wafer the light transmitted through said mask; and

an aperture member disposed between said light source and said condenser lens system wherein said aperture member includes a transmitting zone for transmitting light from said light source and a phase shift member for producing a predetermined phase difference between light transmitted through the transmitting zone and light transmitted through a region surrounding the transmitting zone.

5,253,041

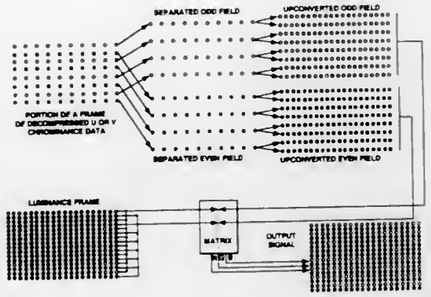
DIGITAL TELEVISION SIGNAL COMPRESSION APPARATUS

Charles M. Wine, Princeton; Glenn A. Reitmeier, West Trenton, and Kamil M. Uz, Plainsboro, all of N.J., assignors to General Electric Company, Princeton, N.J.

Filed May 26, 1992, Ser. No. 888,581

Int. Cl.[5] H04N 11/04, 11/20

U.S. Cl. 358—11 12 Claims



1. A video signal preprocessor for generating non-interlace-scan video signals from interlace-scan video signals and providing said non-interlace-scan video signals to a frame based compression apparatus, comprising:

a frame based video signal compression apparatus for compressing component video signals;

a source of interlace-scan luminance component and chrominance component signals occurring as respective sequences of fields of data;

means for combining successive fields of luminance component data into corresponding frames of luminance component data, and providing said frames of luminance component data to said compression apparatus;

means, responsive to fields of chrominance component data, for interpolating, on a mutually exclusive odd or even field basis, the chrominance component data to provide signal samples representing image points different from image points represented by said chrominance component data, and for providing processed chrominance component data which is at least vertically subsampled; and

means for providing interleaved fields of interpolated/subsampled odd and even fields of chrominance component data to said compression apparatus.

5,253,042

BURST PHASE DETECTION CIRCUIT

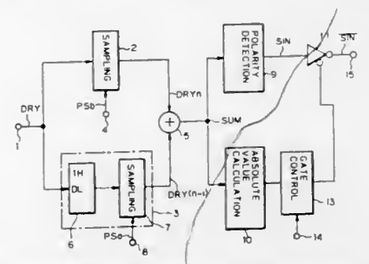
Yoshihiro Yasuda, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 12, 1991, Ser. No. 805,628

Claims priority, application Japan, Dec. 19, 1990, 2-412166

Int. Cl.[5] H04N 9/455

U.S. Cl. 358—19 5 Claims



1. A burst phase detection circuit for detecting a phase difference between an input burst signal having a predetermined phase relation with a carrier of a modulated color signal and a sampling pulse, based upon a digital signal obtained by demodulating the color signal in accordance with a demodulated axis of one of first and second color difference signals of said color signal, comprising:

first sampling means for sampling a value of said digital signal during an interval of said burst signal within a first horizontal line period of said color signal;

second sampling means for sampling a value of said digital signal during an interval of said burst signal within a second horizontal line period of said color signal;

digital addition means for adding the values of said digital signal sampled by said first sampling means and said second sampling means to produce an addition signal; and

detection means for digitally detecting a direction and an amount of a phase difference between said sampling pulse and said burst signal based on said addition signal and producing a detection signal representing the direction and amount of said phase difference.

5,253,043

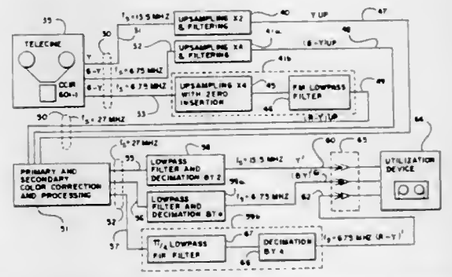
UPSAMPLED INTERPOLATIVE PROCESSING OF DIGITAL VIDEO SIGNALS

Joel D. Gibson, Jacksonville, Fla., assignor to da Vinci Systems, Inc., Ft. Lauderdale, Fla.

Filed Oct. 24, 1991, Ser. No. 781,894

Int. Cl.[5] H04N 11/02

U.S. Cl. 358—21 R 11 Claims



1. A digital video signal processor for processing an output from a digitizing video signal source that provides a predetermined set of sampled signals to provide a corresponding predetermined set of processed output signals to a utilization device connector, said predetermined set of sampled signals comprising a first sampled signal that is a first baseband algebraic combination signal sampled at a J megahertz sampling rate, a second sampled signal that is a second baseband algebraic combination signal sampled at an I megahertz sampling rate, and a third sampled signal that is a third baseband algebraic combination signal sampled at said I megahertz sampling rate, the ratio J/I being an integer, comprising in combination:

first upsampling and filtering means connected to said digitizing video signal source for interpolating said first sampled signal by upsampling by a factor of K to provide a first upsampled signal, K being an integer greater than one;

second upsampling and filtering means connected to said digitizing video signal source for interpolating said second sampled signal by upsampling by a factor of L to provide a second upsampled signal, L being an integer greater than or equal to K;

third upsampling and filtering means connected to said digitizing video signal source for interpolating said third sampled signal by upsampling by said factor of L to provide a third upsampled signal;

a digital video signal processor having an input connected to

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said first, second, and third upsampling and filtering means for operating on said first, second, and third upsampled signals to provide respective first, second, and third processed upsampled signals at a processor output;

first, second, and third lowpass digital filters connected to said processor output to provide respective first, second, and third filtered processed upsampled signals;

decimating means for decimating said first filtered processed upsampled signal by passing every Kth sample thereof and for decimating said second and third filtered processed upsampled signals by passing every Lth sample thereof to provide said predetermined set of processed output signals to said utilization device connector.

8. A method of processing digital video signals output from a digitizing video signal source that provides a predetermined set of sampled signals, said predetermined set of sampled signals comprising a first sampled signal that is a first baseband algebraic combination signal sampled at a J megahertz sampling rate, a second sampled signal that is a second baseband algebraic combination signal sampled at an I megahertz sampling rate, and a third sampled signal that is a third baseband algebraic combination signal sampled at said I megahertz sampling rate, the ratio J/I being an integer, comprising the steps of:

providing a first upsampled signal by upsampling said first sampled signal by a factor of K, K being an integer greater than one, by providing a sample of said first sampled signal as each Kth sample of said first upsampled signal and providing zero valued samples for all other samples of said first upsampled signal;

lowpass filtering said first upsampled signal to provide a first interpolated signal;

providing a second upsampled signal by upsampling said second sampled signal by a factor of L, L being an integer greater than or equal to K, by providing a sample of said second sampled signal as each Lth sample of said second upsampled signal and providing zero valued samples for all other samples of said second upsampled signal;

lowpass filtering said second upsampled signal to provide a second interpolated signal;

providing a third upsampled signal by upsampling said third sampled signal by said factor of L, L being an integer greater than or equal to K, by providing a sample of said third sampled signal as each Lth sample of said third upsampled signal and providing zero valued samples for all other samples of said third upsampled signal;

lowpass filtering said third upsampled signal to provide a third interpolated signal;

operating on said first, second, and third interpolated signals by modifying at least some samples of at least one of said first, second, and third interpolated signals to provide respective first, second, and third processed interpolated signals;

lowpass filtering said first processed interpolated signal to provide a first filtered processed interpolated signal;

lowpass filtering said second processed interpolated signal to provide a second filtered processed interpolated signal;

lowpass filtering said third processed interpolated signal to provide a third filtered processed interpolated signal;

decimating said first filtered processed interpolated signal by passing every Kth sample to provide a first processed output signal at said J megahertz sampling rate;

decimating said second filtered processed interpolated signal by passing every Lth sample to provide a second processed output signal at said I megahertz sampling rate; and

decimating said third filtered processed interpolated signal by passing every Lth sample to provide a third processed output signal at said I megahertz sampling rate.

5,253,044

TELEVISION APPARATUS WITH AUTOMATIC SELECTION AND PROCESSING OF VIDEO INPUT SIGNALS OF COMPOSITE AND NON-COMPOSITE FORM

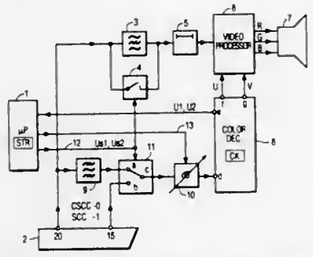
Christophe Lamy, VS-Villingen, Fed. Rep. of Germany, assignor to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

Filed Dec. 20, 1991, Ser. No. 812,590

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1989, 3920590

Int. Cl.[5] H04N *9/64*

U.S. Cl. 358—21 R **6 Claims**



1. Television apparatus for alternately processing a composite video (CSCC) signal or separated luminance (SCC) and chrominance (C) signals, comprising:

a first input terminal (20) for providing said composite video (CSCC) signal or said separated luminance (SCC) signal;

a second input terminal (15) for providing said separated chrominance (C) signal;

a color decoder (8) for decoding a color subcarrier if it is present in an input signal coupled to an input (d) of said color decoder (11) to produce at least one color representative signal (U or V) at an output (f or g, respectively) of said color decoder;

a color sub-carrier filter (9);

a change-over switch (11) having a first input (a) coupled to said first input terminal (20), a second input (b) coupled to said second input terminal, and an output (c) coupled to said input (d) of said color decoder (8); said change-over switch in a first position (a) coupling said input (d) of said color decoder (8) to said first input terminal (20) through a path including said color sub-carrier filter (9), and in a second position (b) coupling said input (d) of said color decoder (8) to said second input terminal (15) through a path not including said color sub-carrier filter (9);

detector means (CK) coupled to said output (c) of said change-over switch (11) for detecting the presence or absence of a color sub-carrier at said output (c) of said change-over switch (11); and

control means (1) coupled to said detector means (CK) for controlling said change-over switch in response to the presence or absence of a color sub-carrier at said output (c) of said change-over switch (11); said control means initially causing said change-over switch (11) to be in said first position (a) and thereafter causing said change-over switch (11) to remain in said first position (a) if a color sub-carrier is present at said output (c) of said change-over switch (11), but causing said change-over switch (11) to be in said second position (b) if a color sub-carrier is not present at said output (c) of said change-over switch (11); and once said change-over switch (11) is in said second position (b), said control means (1) causing said change-over switch (11) to be switched back to said first position (a) from said second position (b) if a color sub-carrier is still not present at said output (c) of said change over switch (11).

5,253,045

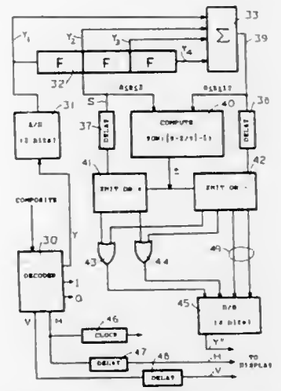
INTERPOLATING FINER INTENSITY LEVELS IN DITHER-QUANTIZED TELEVISION PICTURES

Bernard Lippel, West Long Branch Borough, N.J., assignor to Quanticon Inc., West Long Branch, N.J.

Continuation-in-part of Ser. No. 461,009, Jan. 4, 1990, Pat. No. 5,148,273, and Ser. No. 282,471, Dec. 9, 1988, abandoned, and Ser. No. 180,344, Apr. 11, 1988, abandoned, and Ser. No. 779,254, Sep. 23, 1985, Pat. No. 4,758,893. This application May 23, 1990, Ser. No. 527,275

Int. Cl.[5] H04N *9/64, 5/213*

U.S. Cl. 358—37 **24 Claims**



1. A method for modifying a dither-quantized video signal comprising steps of:

a) providing a dither-quantized video signal represented by a series of video samples restricted to a specific number of sample amplitudes;

b) corresponding to a particular video sample, providing an other video sample having amplitude equivalent to an arithmetic mean amplitude of a plurality of video samples of said series;

c) comparing the amplitudes of said particular and said other video samples; and

d) substituting said other video sample for said particular video sample whenever their respective amplitudes differ by less than a predetermined amount.

5,253,046

COLOR IMAGE PICKUP APPARATUS FOR OBJECT IMAGE CONVERSION

Akihiko Shiraishi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 5, 1992, Ser. No. 846,174

Claims priority, application Japan, Mar. 7, 1991, 3-041639; Mar. 7, 1991, 3-041640; Mar. 7, 1991, 3-041641; May 1, 1991, 3-100032; May 1, 1991, 3-100033; May 1, 1991, 3-100034

Int. Cl.[5] H04N *9/07*

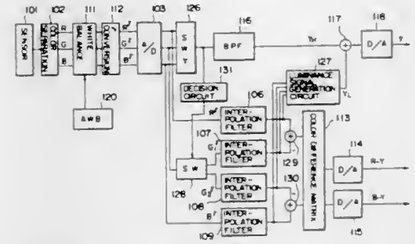
U.S. Cl. 358—43 **8 Claims**

1. A color image pickup apparatus for converting an object image into an electrical signal having luminance information and color information, comprising:

a. an image pickup element arranged in a rectangular matrix having pixels arranged at a horizontal pitch P_H and a vertical pitch P_V;

b. a color filter array having first color filters arranged in correspondence with the pixels and having an offset sampling structure having a horizotal pitch $2P_H$ and a vertical pitch P_V and offset by P_H in a horizontal direction, and second and third color filters each having a rectangular matrix sampling structure having a horizontal pitch $2P_H$ and a vertical pitch $2P_V$; and

c. color information forming means having first color signal forming means for forming the color information in accordance with a difference signal between a second color signal and a coincidence signal obtained by causing only a first color signal which is output from a pixel belonging to the same column as that of the second color signal to coincide therewith and a difference signal between a third color signal and a coincidence signal obtained by causing only a first color signal which is output from a pixel belonging to the same column as that of the third color signal to coincide therewith, and second color signal forming means for forming the color information in accordance with a difference signal between a second color signal and a coincidence signal obtained by causing only a first color signal which is output from a pixel belonging to



the same row as that of the second color signal to coincide therewith and a difference signal between a third color signal and a coincidence signal obtained by causing only a first color signal which is output from a pixel belonging to the same row as that of the third color signal to coincide therewith, said first and second color signal forming means operating on the basis of the first, second, and third color signals output from pixels corresponding to the first, second, and third color filters, and said color information forming means switching between said first and second color signal forming means in accordance with a frequency component in a scanning direction of the object image or a direction perpendicular to the scanning direction.

5,253,047

COLOR CCD IMAGER HAVING A SYSTEM FOR PREVENTING REPRODUCIBILITY DEGRADATION OF CHROMATIC COLORS

Eiji Machishima, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 16, 1991, Ser. No. 760,503

Claims priority, application Japan, Sep. 14, 1990, 2-245463

Int. Cl.[5] H04N *9/07*

U.S. Cl. 358—44 **12 Claims**

1. A color video camera, comprising:

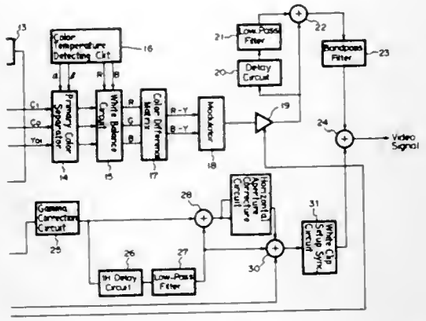
(a) a color imager including a color sensing device means for producing a plurality of different chrominance signals line-by-line and means for producing a luminance signal;

(b) a luminance/chrominance (Y/C) signal processor means supplied with the luminance signal and the plurality of different chrominance signals for producing first, second and third primary color signals, said Y/C signal processor means having a matrix circuit with predetermined matrix coefficients;

(c) means for detecting a color temperature of a video source;

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(d) control means for controlling the matrix coefficients in response to the output of said detecting means; and



(e) means connected to receive said first, second, and third primary color signals and for outputting a video signal.

5,253,048

COLOR IMAGE PROCESSING APPARATUS

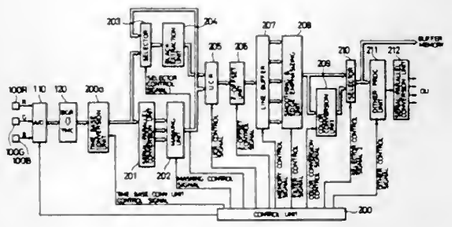
Tetsuzo Mori, Hiratsuka; Takashi Sugino, Atsugi; Makoto Takaoka, Atsugi; Susumu Sugiura, Atsugi, and Hiroyuki Ichikawa, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 738,092, Jul. 30, 1991, Pat. No. 5,117,284, which is a division of Ser. No. 372,172, Jun. 27, 1989, Pat. No. 5,060,059, which is a continuation of Ser. No. 900,604, Aug. 26, 1986, abandoned. This application Feb. 27, 1992, Ser. No. 842,636

Claims priority, application Japan, Jan. 14, 1986, 61-4161; Jan. 14, 1986, 61-4163; Jul. 26, 1986, 61-176161

Int. Cl.[5] H04N *1/46*

U.S. Cl. 358—524 **14 Claims**



1. An image processing apparatus for sequentially processing plural color components, comprising:

input means for inputting plural sequential digital color components;

process means for performing a process on the plural sequential digital color components by converting the plural sequential digital color components to parallel signals;

output means for outputting the parallel plural color components processed by said process means, as plural sequential digital color components; and

clock input means for inputting a common clock such that said input means, said process means and said output means are synchronously operated.

5,253,049

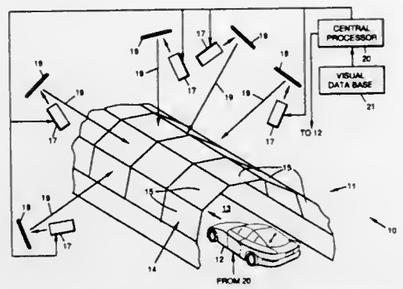
TUNNEL VISION VIDEO DISPLAY SYSTEM

Kenneth R. Brooke, Arlington, Tex., assignor to Hughes Training, Inc., Arlington, Tex.

Filed Feb. 24, 1992, Ser. No. 840,222

Int. Cl.[5] H04N *5/74*

U.S. Cl. 358—87 **5 Claims**



1. A video graphics display system that may be employed in a moving vehicle entertainment system employing a plurality of vehicles that are adapted to move through the entertainment system, said video display system comprising:

a flat faceted serpentine tunnel having an interior and an exterior, and wherein the tunnel comprises a plurality of conterminous facet sections, each section comprising a plurality of flat rear projection screens;

a plurality of video projectors disposed adjacent the exterior of the plurality of projection screens of each facet section that are adapted to provide video imagery corresponding to image scenes that are viewable by participants that ride in the moving vehicles that move through the interior of the tunnel;

a plurality of reflecting mirrors disposed on the exterior of the projection screens of each section that are adapted to relay the video imagery from predetermined ones of the video projectors onto corresponding ones of the plurality of rear projection screens of each section.

5,253,050

DISTANCE MEASURING DEVICE FOR MEASURING THE DISTANCE BETWEEN VEHICLES

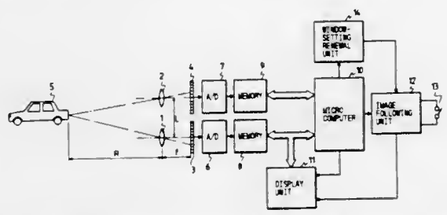
Keiko Karasudani, Hyogo, Japan, assignor to Mitsubishi Denki K.K., Tokyo, Japan

Filed Mar. 3, 1992, Ser. No. 845,269

Claims priority, application Japan, Mar. 20, 1991, 3-055415

Int. Cl.[5] H04N *7/18*

U.S. Cl. 358—103 **5 Claims**



1. A distance detecting device for measuring a distance from a follow object by trigonometrical measurement, by use of a pair of image signals representing a pair of object images of said follow object on image sensors through respective optical systems having parallel optical axes, said distance detecting device comprising:

display means for displaying said object image based on an object image signal picked up by one of said image sensors;

following means for setting a following window in a part including said object image on said display means so as to continuously follow said object image by said following window, at least one subwindow being adjacent to said following window and including another object image on said display means;

first distance detecting means for detecting a deviation between an image signal of said follow object from another one of said image sensors and said object image signal provided in said following window thus set as a reference, so as to calculate a distance to said follow object from said optical systems by said trigonometrical measurement;

second distance detecting means for detecting a deviation between an image signal of another object from said another image sensor and an another object image signal provided in each subwindow thus set as a reference, so as to calculate each distance to said another object included in said each subwindow from said optical systems by said trigonometrical measurement;

image-following-condition detecting means for detecting a condition following said object image in said following window, on the basis of the image signal data within said following window; and

window-setting renewal means for calculating a change of the movement of said follow object on the basis of the image-following-condition detecting means and the distance data from said first and second distance detecting means, to determine whether or not to renew the position of said following window and subwindow to follow said another object on said display means according to the calculated change.

5,253,051

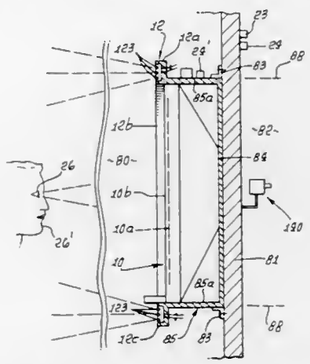
VIDEO ARTIFICIAL WINDOW APPARATUS

Paul G. McManigal, 16 Inverness La., Newport Beach, Calif. 92660

Filed Mar. 5, 1991, Ser. No. 664,800

Int. Cl.[5] H04N *7/18*

U.S. Cl. 358—104 **5 Claims**



1. An artificial window comprising, in combination:

a) a frame having room window configuration to be supported within a room,

b) video means including a display encompassed by the frame,

c) and control means for said video means to effect video presentation at the display, and to a viewer within the room, of a selected scene outside the room, and characterized as having an associated window size boundary as viewed by the viewer,

d) and including sensor means for sensing the position of the viewer in the room relative to said frame and operatively connected to said video means to modify said selected scene as a function of said position of the viewer.

5,253,052

APPARATUS FOR DETECTING RELATIVE MOTION BETWEEN CONTENTS OF SUCCESSIVE FIELDS OF A VIDEO SIGNAL

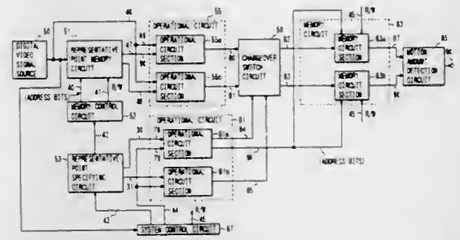
Yoshiaki Hanashiro; Taro Watanabe; Michihiro Aso, and Kenji Matsuoka, all of Yokohama, Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Apr. 13, 1992, Ser. No. 867,546

Claims priority, application Japan, Apr. 12, 1991, 3-108886; Apr. 23, 1991, 3-119398

Int. Cl.[5] H04N *7/18*

U.S. Cl. 358—105 **9 Claims**



1. A motion amount detection apparatus for operating on successive picture element values of an input digital video signal to detect amounts of relative motion between picture contents of sequentially occurring fields of said input digital video signal, comprising:

representative point specifying means (**53**, **52**) for specifying respective positions of a plurality of representative points within each field of said input digital video signal;

a first memory circuit (**51**) controlled by said representative point specifying means for operating during a current field of said input digital video signal to store respective picture element values of said plurality of representative points of said current field while outputting each representative point value of a preceding field during a corresponding comparison interval, said corresponding comparison interval extending prior to and subsequent to the corresponding representative point;

first operational circuit means (**55**) operating during each said corresponding comparison interval for comparing successive picture element values of the input digital video signal with the preceding field representative point value corresponding to said each corresponding comparison interval, to obtain respective sets of operational result values in each said corresponding comparison interval;

second operational circuit means (**61**) for deriving, for each of said sets of operational result values, a corresponding set of relative distance values, wherein each relative distance value is a binary number representing a relative distance between a picture element corresponding to an operational result value and the corresponding representative point;

a second memory circuit (**63**) formed of a plurality of memory circuit sections each having an identical number of addresses and each functioning to cumulatively store successive operational result values supplied thereto in respective addresses, each address for storing a result value being specified by a fixed set of low-order bits of the relative distance value corresponding to said result value;

selector circuit means (**59**) for transferring each of said operational result values to one of said plurality of memory circuit sections selected in accordance with a combination of states of a set of high-order bits of a corresponding one of said corresponding set of relative distance values, said

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set of high-order bits comprising at least the most significant bit of said corresponding one of the corresponding set of relative distance values; and

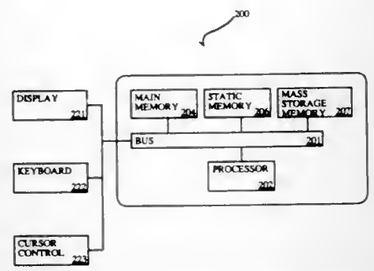
motion amount detection circuit means (**65**) for periodically deriving an amount of relative picture motion, based on cumulative stored values contained in said second memory circuit.

5,253,053

VARIABLE LENGTH DECODING USING LOOKUP TABLES

Ke-Chiang Chu, Saratoga; James O. Normile, Sunnyvale; Chia L. Yeh, Saratoga, and Daniel W. Wright, Sunnyvale, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Dec. 31, 1990, Ser. No. 636,498
Int. Cl.[5] H04N *7/12*
U.S. Cl. 358—133 **26 Claims**



1. In a data processing apparatus, a method for decoding a variable length codeword (VLC), said VLC being a portion of an encoded bitstream in said data processing apparatus comprising the following steps:

a. reading a VLC from said encoded bitstream, the VLC having a maximum length of X bits;

b. using the VLC as an index into a first table, the first table containing decoded values for all possible VLC's with first Y bits not equal to any value in a first set of values, wherein Y is less than X, and if the first Y bits of the VLC are not equal to any value in the first set of values then returning a second decoded value from the first table; and

c. if the first Y bits of the VLC are equal to any value in the first set of values, then returning a pointer to a second table from the first table, using the VLC as an index into the second table, and returning a third decoded value from the second table.

5,253,054

FRAME SKIP ENCODING APPARATUS FOR MOVING IMAGES

Hiroshi Fujiwara; Hiroo Uwabu; Masanori Maruyama, and Eiji Kakii, all of Tokyo, Japan, assignors to Graphics Communication Technologies Ltd., Tokyo, Japan

Filed Aug. 29, 1991, Ser. No. 752,095
Claims priority, application Japan, Jan. 31, 1991, 3-032002
Int. Cl.[5] H04N *7/12*
U.S. Cl. 358—133 **3 Claims**

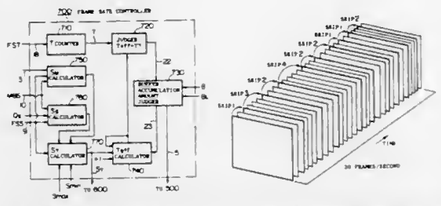
1. A moving image encoding apparatus which, after converting each frame of an inputted moving image signal into a digital signal, conducts orthogonal transformation and quantization on each block into which a screen is divided, and transmits digital data which have been quantized as variable length code through the medium of a transmission buffer, a moving image encoding apparatus which is provided with:

a movement detection means for detecting movement of inputted moving images;

a step size control means for determining a step width of said quantization by referring to a total frame skip number which was set at the time of an immediately preceding frame transmission;

a first skip number calculation means for setting a value of a first skip number so that the greater the movement detected by said movement detection means at the time when one frame is transmitted, the smaller a value of said first skip number;

a second skip number calculation means for setting a value of a second skip number so that the smaller said step size set by means of said step size control means at the time when



a frame is transmitted, the smaller a value of said second skip number;

a third skip number calculation means for outputting a smaller of a sum of an independently determined minimum skip number, said first skip number and said second skip number, and an independently determined maximum skip number as a total frame skip number; and

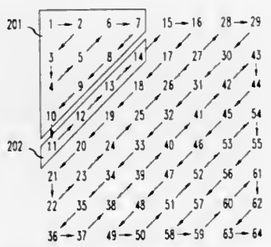
a skip judgment means for controlling transmission so that a number of frames corresponding to said total frame skip number after a frame has been transmitted is not transmitted.

5,253,055

EFFICIENT FREQUENCY SCALABLE VIDEO ENCODING WITH COEFFICIENT SELECTION

Mehmet R. Civanlar, Red Bank, N.J., and Atul Puri, Riverdale, N.Y., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 2, 1992, Ser. No. 908,134
Int. Cl.[5] H04N *7/133, 7/137*
U.S. Cl. 358—133 **9 Claims**



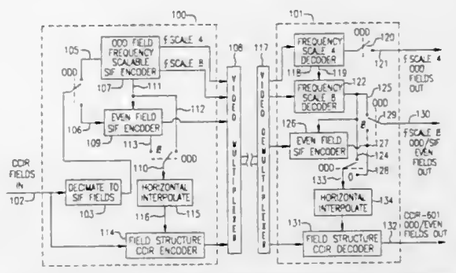
1. Method for encoding a digital video signal as at least two sets of coefficients, each of said sets containing a selectable number of coefficients and a code indicative of said selectable number, wherein said coefficients within each of said sets comprise a layer corresponding to a particular image resolution scale, and wherein said encoding is performed so that if a last coefficient within any given set of coefficients is zero, and either initiates or falls within a sequence of zero coefficients, representations of the sequence of zero coefficients, and of a first non-zero coefficient following the sequence of zero coefficients, are included in the given set of coefficients.

5,253,056

SPATIAL/FREQUENCY HYBRID VIDEO CODING FACILITATING THE DERIVATIVES OF VARIABLE-RESOLUTION IMAGES

Atul Puri, Riverdale, N.Y., and Andria H. Wong, Morristown, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 2, 1992, Ser. No. 908,135
Int. Cl.[5] H04N *7/133, 7/137*
U.S. Cl. 358—133 **52 Claims**



1. Apparatus for encoding digital video signals, comprising:

means for receiving a digital video input signal including a succession of digital representations related to picture elements of a video image;

means for coding a reduced resolution digital signal related to the picture elements of said video image by frequency scaling said received digital video input signal;

means for producing a temporal prediction of said video image from said reduced resolution digital signal;

means for producing a spatial prediction of said first video image based upon said temporal prediction produced from said reduced resolution digital signal; and

means for coding a second digital signal related to the picture elements of said video image, adaptively employing an estimate based upon said temporal or said spatial predictions of said video image.

5,253,057

MULTIPLEXED TRANSMISSION SYSTEM OF IMAGE DATA FROM TWO OR MORE SOURCES WHEREIN THINNING RATES ARE ADAPTIVELY ALLOCATED TO RESPECTIVE SOURCES

Yuichi Terui; Mitunori Ono; Toshihiro Yamanaka, and Kenji Rikimaru, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 20, 1991, Ser. No. 811,363
Claims priority, application Japan, Dec. 20, 1990, 2-411922
Int. Cl.[5] H04N *7/18, 7/13*
U.S. Cl. 358—136 **17 Claims**

1. A transmission system comprising:

a sender side apparatus, a receiver side apparatus, and a transmission line connecting said sender side apparatus and said receiver side apparatus;

said sender side apparatus comprising,

selector means for receiving image data signals of a plurality of channels in parallel and frame by frame, selecting an image data signal of one of the plurality of channels for each frame, and discarding the image data signals of the other plurality of channels,

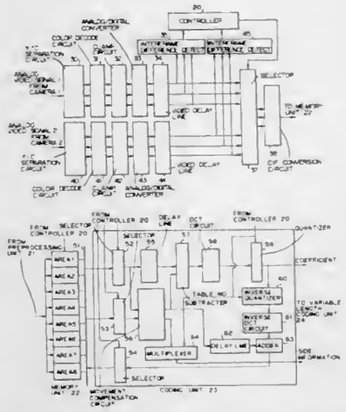
interframe difference coding means for coding the image data signal selected for each frame by said selector means, by interframe difference coding,

interframe difference monitoring means for monitoring data amounts of interframe differences in the image data signals of the respective channels,

selection channel control means for determining which one of said plurality of channels is to be selected by said selector means, based on said data amounts of interframe differences in the image data signals of the respective channels, and adaptively controlling the selector means in accordance with said determination,

selected channel information generating means for generating channel information indicating said one of the channels determined by said selection channel control means for each frame, and

transmitting means for transmitting frame by frame the image data signal coded by said interframe difference



coding means, together with said channel information corresponding to the coded image data signal; and

said receiver side apparatus comprising,

receiving means for receiving frame by frame said image data signal which is transmitted from said sender side apparatus, together with said channel information corresponding to the image data signal, and

decoding means for decoding said image data signal received by said receiving means for each frame.

5,253,058

EFFICIENT CODING SCHEME FOR MULTILEVEL VIDEO TRANSMISSION

Hamid Gharavi, Middletown Township, Monmouth County, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Filed Apr. 1, 1992, Ser. No. 861,627
Int. Cl.[5] H04N *7/13, 7/137*
U.S. Cl. 358—136 **15 Claims**

1. A signal coder for coding an input video signal into a basic layer signal and at least one contribution layer signal, a video signal having a spatial resolution lower than the spatial resolution of the input video signal being reconstructible from the basic layer signal, and a video signal having a spatial resolution higher than the lower spatial resolution and up to the resolution of the input video signal being reconstructible from the combination of the basic layer signal and the at least one contribution layer signal, the signal coder comprising:

means for receiving an input signal consisting of pel values of a scanned video signal, said video signal consisting of sequential video frames,

means for filtering the video signal to produce a baseband sequence of filtered pel values for each video frame,

interframe hybrid transform/differential pulse code modulation coding means for coding the baseband sequence of filtered pel values for each video frame to form the basic layer signal,

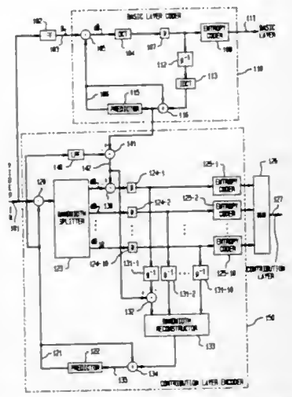
means for forming a differential video signal of each frame from the difference between the pel values in a current video frame and predicted pel values derived from the pel values in a previous coded video frame,

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means for decomposing the differential video signal of each frame into plural subband sequences of filtered differential pel values,

means for separately quantizing and entropy coding the



plural subband sequences of filtered differential pel values, and

means for combining at least some of the quantized and encoded subband sequences of filtered differential pel values to form the at least one contribution layer signal.

5,253,059

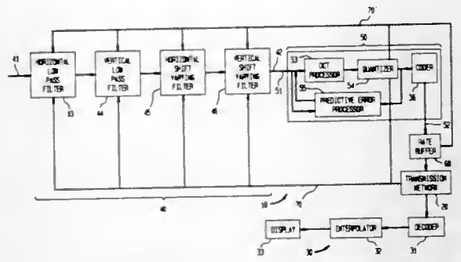
METHOD AND CIRCUIT FOR ADJUSTING THE SIZE OF A VIDEO FRAME

Rashid Ansari, Hillsborough, N.J., and Christine M. Guillemot, Cesson-Sevigné , France, assignors to Bell Communications Research, Inc., Livingston, N.J. and France Telecom and Telediffusion de France, Montrouge, France

Filed May 15, 1992, Ser. No. 884,730

Int. Cl.[5] H04N *7/13*

U.S. Cl. 358—138 **11 Claims**



1. A bit rate control method for controlling the number of bits generated by a video coding circuit for transmission from the coding circuit in response to a sequence of full size video frames comprising the steps of

processing each full size video frame by low pass and shift varying filters in the horizontal and vertical directions, the shift varying filters reducing the number of samples to generate reduced size video frames,

coding said reduced size video frames to generate the code bits for transmission from the coding circuit, and

responsive to the output from the coding circuit, feeding signals back to the low pass filters to determine the cut-off frequency of the low pass filters and to the shift varying filters to determine the selected horizontal and vertical reduction factors for the reduced size frames.

5,253,060

VIDEO SIGNAL PROCESSING SYSTEM WITH NETWORKED CONTROL OF ASPECT RATIO CONVERSION WITHIN THE SYSTEM

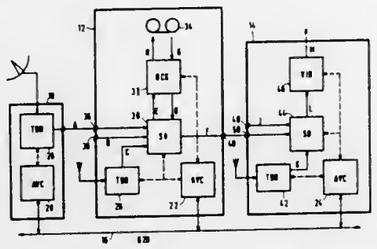
Harm J. Welmer, Sutton, Netherlands, and Bernard van Steenbrugge, Redhill, England, assignors to D2B Systems Company Limited, Redhill, United Kingdom

Filed Dec. 10, 1991, Ser. No. 804,578

Claims priority, application United Kingdom, Dec. 21, 1990, 9027840.9

Int. Cl.[5] H04N *5/46, 7/01*

U.S. Cl. 358—140 **20 Claims**



1. A video signal processing system comprising a plurality of video signal processing apparatuses, at least one of the apparatuses including a facility for conversion of the aspect ratio of video signals, the apparatuses being connected so as to provide a video signal path from a source one of the apparatuses to a destination one of the apparatuses, characterized in that the system further comprises control means for systematically interrogating each apparatus in the signal path to determine whether aspect ratio conversion is necessary in the signal path and for selectively enabling or disabling the or each aspect ratio conversion facility in the signal path to effect such necessary conversion.

2. A system as claimed in claim 1 wherein the control means eliminates unnecessary conversion of aspect ratio in the signal path.

5,253,061

METHOD AND APPARATUS FOR CONTROLLING TELEVISION IMAGE PROCESSING BASED UPON TELEVISION PROGRAM DETECTION

Kengo Takahama, Nara, and Yasukuni Yamane, Shiki, botb of Japan, assignors to Sharp Kabushiki Kaisha, Japan

Filed May 9, 1991, Ser. No. 697,334

Claims priority, application Japan, May 16, 1990, 2-125914

Int. Cl.[5] H04N *5/14, 9/79*

U.S. Cl. 358—160 **13 Claims**

1. A television frame image detecting apparatus for detecting television signals representative of a predetermined frame image, said apparatus comprising:

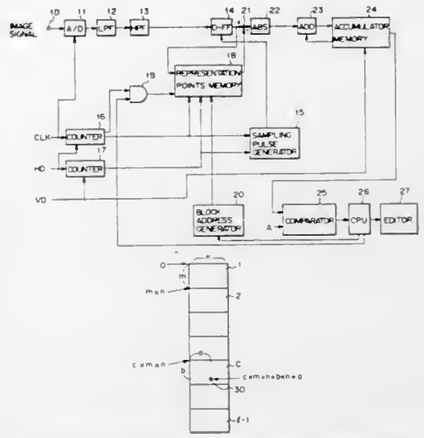
a memory means storing television signals with respect to a predetermined frame image at a representation point in each of divided areas of a screen for image;

a sampling means for sampling television signals of each frame image applied thereto in real time at said representation point in each of said divided areas of said screen;

an arithmetic correlation means for calculating correlation quantity between sampled television signals of each frame image and television signals of the predetermined frame image stored in said memory means; and

a control means for generating a control signal to be used for

controlling at least one of recording start and recording stop in a video recorder when the correlation quantity



calculated by said arithmetic correlation means exceeds a predetermined value.

5,253,062

IMAGE DISPLAYING APPARATUS FOR READING AND WRITING GRAPHIC DATA AT SUBSTANTIALLY THE SAME TIME

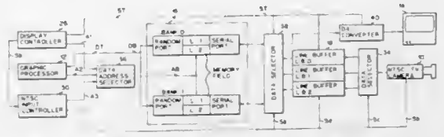
Takeshi Ohta, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 19, 1991, Ser. No. 762,605

Claims priority, application Japan, Sep. 28, 1990, 2-257371; Aug. 8, 1991, 3-222441

Int. Cl.[5] H04N *5/14*

U.S. Cl. 358—160 **10 Claims**



1. An apparatus for transferring video data fed from an image pick-up device and displaying the video data on a video monitor, comprising:

video memory means comprising at least two memory fields, each of said memory fields having serial inputting/outputting means for selectively inputting or outputting data serially and random inputting/outputting means for selectively inputting or outputting data randomly, said memory fields each having a capacity great enough to store video data constituting at least one scanning line of a video frame to be displayed on the video monitor;

selecting means for selectively applying the video data from the image pick-up device to either one of said serial inputting/outputting means of said memory fields of said video memory means; and

control means for controlling said video memory means and said selecting means such that the video data fed from the image pick-up device via said selecting means are sequentially inputted to each of said serial inputting/outputting means of said video memory means during each horizontal scanning line, and another kind of data from said random inputting/outputting means of said video memory means is stored in said memory fields, whereby each said horizontal scanning line of the video data of said video frame to be displayed on the video monitor is sequentially stored in each of said memory fields, and each said horizontal scanning line of the video data stored in each of said memory fields is sequentially transferred to the video monitor via said serial inputting/outputting means.

5,253,063

APPARATUS WHICH EMPLOYS THE VARIABLE WEIGHING COEFFICIENTS FOR A TRANSVERSAL FILTER AND A SINGULAR LINE MEMORY TO COMPENSATE FOR GHOST IN IMAGE SIGNALS

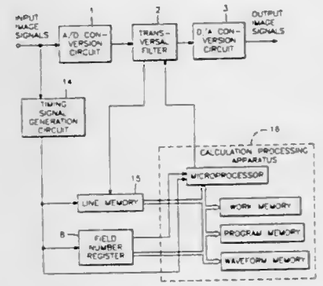
Kazuyuki Ebihara; Tatsushi Koguchi; Yuji Nishi, and Shigehiro Ito, all of Ibaraki, Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Mar. 13, 1992, Ser. No. 850,795

Claims priority, application Japan, Mar. 14, 1991, 2-74807

Int. Cl.[5] H04N *5/213*

U.S. Cl. 358—167 **6 Claims**



1. An apparatus for cancelling ghost which occurs in a screen of an imaging device by using ghost cancel reference (GCR) signals for a ghost cancel reference, which have been inserted in image signals, comprising:

an A/D conversion circuit for converting input analog image signals into digital image signals;

a timing signal generation circuit for generating GCR field numbers, write enable signals, and read enable signals, respectively, in response to said input analog image signals;

a one-line memory for extracting predetermined period data of a constant time period including said GCR signals from said digital image signals, corresponding to said write enable signals which are supplied from said timing signal generation circuit, and for storing said predetermined period data.

a field number register for storing said GCR field number which is supplied from said timing signal generation circuit;

a calculation processing apparatus for generating compensation signals for removing ghost from said digital image signals by calculation after respectively reading said predetermined period data from said one-line memory and said GCR field numbers from said field number register, in response to said read enable signals which are supplied from said timing signal generation circuit;

a transversal filter for removing ghost in said digital image signals by means of predetermined weighing to said digital image signals by said compensation signals which are supplied from said calculation processing apparatus;

a D/A conversion circuit for converting said digital image signals after removing ghost, which are outputted from said transversal filter, to analog image signals; and

wherein said timing signal generation circuit comprises:

a sync separation circuit for separating said analog signals into vertical sync signals and horizontal sync signals;

a vertical sync counter for counting said vertical sync signals which are separated and output from said sync separation

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circuit, and for supplying counted vertical sync signals as said GCR field number to said field number register;

a horizontal sync counter for counting said horizontal sync signals in a predetermined time period by using as reset signals said vertical sync signals which are output from said sync separation circuit, so as to generate period judgment signals; and

a signal sample period judgment circuit for judging a signal sample period in response to said period judgment signals which are supplied from said horizontal sync counter, so as to output said write enable signals to said one-line memory and to output said read enable signals to said calculation processing apparatus.

5,253,064

VIDEO CAMERA APPARATUS WITH ELECTRONIC ZOOM CONTROL AND METHOD THEREFOR

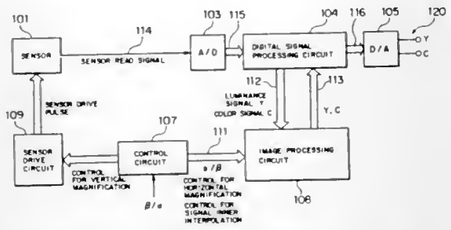
Naoki Yamamoto; Takuya Imaide, and Hiroyuki Komatsu, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Video Engineering, Kanagawa, both of Japan

Filed Apr. 23, 1991, Ser. No. 689,557

Claims priority, application Japan, Apr. 27, 1990, 2-110294

Int. Cl.[5] H04N *3/223, 5/232*

U.S. Cl. 358—180 **12 Claims**



1. A video camera apparatus comprising:

a control circuit for producing a control signal which is an integer and a function of $n \times \alpha/\beta$ where n is a number which increases by one for every horizontal period of the video camera apparatus and α/β is an inverse number of a selected zooming ratio β/α;

a sensor having imaging surface;

a sensor drive circuit for driving said sensor according to said control signal from said control circuit so as to output a sensor read signal when the integer which is a function of $n \times \alpha/\beta$ increases;

a digital signal processing circuit for separating the sensor read signal derived from said imaging surface into a luminance signal and a color signal to be outputted therefrom; and,

an image processing circuit for receiving both the luminance signal and the color signal from said digital signal processing circuit and for performing interpolation in vertical and horizontal directions and also an enlargement in the horizontal direction of said luminance signal and said color according to a fraction which is a function of $n \times \alpha/\beta$.

5,253,065

DIGITAL VIDEO EFFECTS SYSTEM FOR REPRODUCING MOVING EFFECTS

John W. Richards, Stockbridge, and Howard J. Teece, Basingstoke, both of England, assignors to Sony United Kingdom Limited, Middlesex, United Kingdom

Filed Feb. 27, 1992, Ser. No. 842,424

Claims priority, application United Kingdom, Apr. 30, 1991, 9109392

Int. Cl.[5] H04N *5/272*

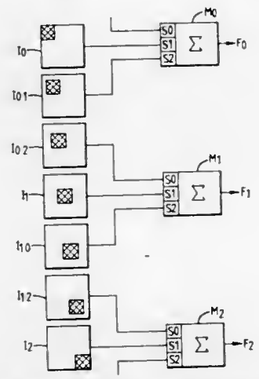
U.S. Cl. 358—182 **18 Claims**

1. An apparatus for providing digital video effects comprising:

means for inputting a sequence of input video images;

control means for generating a control signal;

digital video effects generating means for receiving and manipulating said sequence of input video images in response to said control signal so as to generate a sequence of constituent images at respective constituent image timings in which different image manipulations are performed on successive ones of said constituent images, and in which said digital video effects generating means in



response to said control signal, applies on intensity weighting factor to each of the constituent images such that a set of intensity weighting factors having a summed value of substantially unity is applied to each of said sets of said constituent images; and

combining means for combining sets of said constituent images generated by said digital video effects generator means into respective output images for producing video effects which change with time.

5,253,066

TV RECORDING AND VIEWING CONTROL SYSTEM

Peter S. Vogel, 608 N. Sierra Dr., Beverly Hills, Calif. 90210

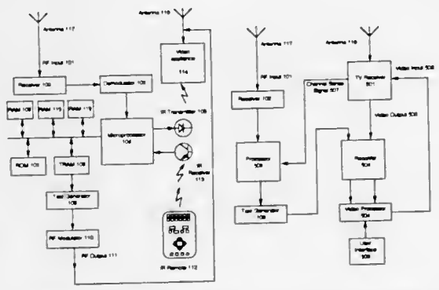
PCT No. PCT/AU90/00226, § 371 Date Nov. 5, 1991, § 102(e) Date Nov. 5, 1991, PCT Pub. No. WO90/15507, PCT Pub. Date Dec. 13, 1990

PCT Filed May 30, 1990, Ser. No. 793,436

Claims priority, application Australia, Jun. 1, 1990, PJ4500

Int. Cl.[5] H04N *7/087*

U.S. Cl. 358—188 **21 Claims**



1. A method of controlling a video appliance comprising the steps of:

receiving a first signal representative of a television program schedule, a second signal indicating which television program is currently being received and a third signal indicating the class of program being received;

converting said first signal into a display of text representative of said television program schedule;

nominating a subset of items of said displayed text as items to be permitted and

selecting a set of classifications which are to be prohibited;

and, if said second signal indicates that a television program currently being received corresponds to one of said items to be permitted;

activating a video appliance;

comparing said third signal to said set of prohibited classifications, and, if said classification signal indicates that a received program is a member of the set of prohibited classifications;

causing the video appliance to be temporarily deactivated until said classification signal indicates that a received program is no longer a member of the set of prohibited classifications.

18. A television receiver comprising:

a television program signal receiver;

means for determining the channel to which said receiver is tuned;

means for receiving identifying signals representative of the names of a plurality of television programs currently available for reception and the channel on which each said program can be received;

means for processing said identifying signals to find the name of the television program currently available for reception that is associated with said determined channel; and

display means adapted to display said found name on command from a user.

21. A video program recorder comprising:

a television program signal receiver;

means for determining the channel to which said receiver is tuned;

means for receiving identifying signals representative of the names of a plurality of television programs currently available for reception and the channel on which each said program can be received;

means for processing said identifying signals to find the name of the television program currently available for reception that is associated with said determined channel;

means for forming a name signal representative of said found name;

means for printing text corresponding to said found name.

5,253,067

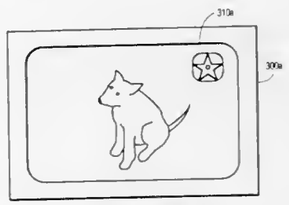
CHANNEL LABELING APPARATUS FOR A TELEVISION RECEIVER WHEREIN GRAPHICS AND TEXT LABELS MAY BE SELECTED FROM A PREPROGRAMMED LIST

John W. Chaney, and James E. Hailey, both of Indianapolis, Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Dec. 16, 1991, Ser. No. 807,469

Int. Cl.[5] H04N *9/74, 5/50*

U.S. Cl. 358—191.1 **4 Claims**



1. A television receiver, comprising:

means for entering data in response to operation by a user;

memory means for storing data representative of a preprogrammed label;

control means coupled to said memory means for reading said data from said memory means; and

on-screen display and graphics generator means coupled to said control means for producing text character video signals and graphics video signals for display, said text character and graphics video signals corresponding to said stored data;

said control means associating said stored data representative of a preprogrammed label with a television channel in response to data input by a user.

5,253,068

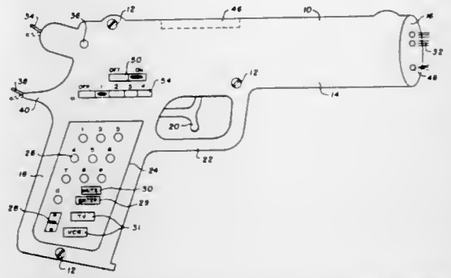
GUN SHAPED REMOTE CONTROL UNIT FOR A TELEVISION

Michael W. Crook, 827 Union Street, Vancouver, B.C., Canada V6A 2G5 , and Sheldon L. Silverman, #308-2040 York Avenue, Vancouver, B.C., Canada V6J 1E7

Filed Jan. 31, 1992, Ser. No. 830,006

Int. Cl.[5] H04N *5/44*

U.S. Cl. 358—194.1 **9 Claims**



1. Remote control unit for operating television channel selection in association with a television set having an infrared beam receiver means comprising:

simulated hand gun having a barrel shaped portion with a muzzle end and a hand grip portion with a trigger means;

infrared beam emitter means located at the muzzle end for producing a signal beam to engage the infrared beam receiver of the television set and provide channel selection;

channel selection switch in the remote control unit connected to the trigger means, such that depression of the trigger means produces the signal beam from the infrared beam emitter means to change a television channel;

channel direction switch on the remote control unit associated with the channel selection switch to select between the signal beam changing the television channel up and changing the television channel down,

sound effect means on the remote control unit, the sound effect means activated by depression of the trigger means, and

power source in the remote control unit to produce the signal beam, and power the sound effect means.

5,253,069

PHOTOGRAPHIC SLIDE-TO-VIDEO TAPE CONVERTER

William A. Zeyer, 6797 Glencoe Ave., Brooklyn, Ohio 44144

Filed Nov. 25, 1991, Ser. No. 796,773

Int. Cl.[5] H04N *5/30*

U.S. Cl. 358—209 **6 Claims**

1. A photographic slide-to-video tape converter comprising:

an elongated supporting base;

video camera mounting means for detachably securing a video camera to the base with its lens in a predetermined position;

support structure projecting from said base;

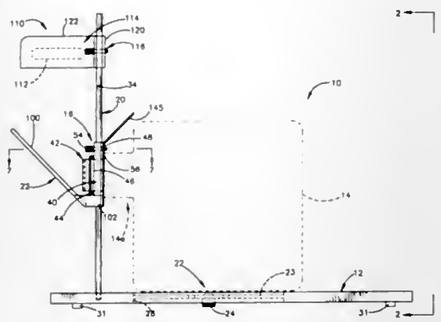
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photographic slide carrier structure supporting a slide for imaging by the camera comprising:

a slide positioner connected to said support structure;

slide engaging means for receiving and supporting a slide at a predetermined position with respect to the camera lens position;

position adjustment means for detachably securing said photographic slide positioner to said support structure to enable adjustment of said photographic slide carrier structure toward and away from said base relative to a video camera secured thereto; and,



light directing means for directing light from a light source through a slide supported by said photographic slide carrier structure into the lens of a video camera secured to said base, said light directing means comprising a light reflecting member supported by said photographic slide carrier structure for reflecting light from the source toward the lens, said photographic slide positioner interposed between said light reflecting member and a video camera location on said base.

5,253,070

SYSTEM AND METHOD FOR AUTOMATICALLY DETECTING A VARIATION OF VIDEO INFORMATION

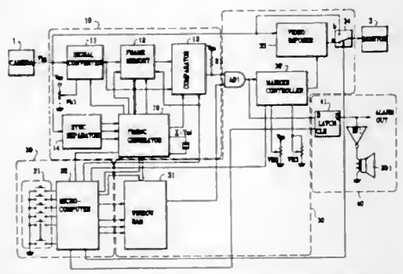
Sam P. Hong, Kyungsangbook, Rep. of Korea, assignor to Goldstar Co., Ltd., Rep. of Korea

Filed Dec. 23, 1991, Ser. No. 812,429

Claims priority, application Rep. of Korea, Dec. 31, 1990, 23063/1990

Int. Cl.[5] **H04N** *5/30*

U.S. Cl. 358—209 **5 Claims**



1. A system for automatically detecting a variation of video information in a video signal, comprising:

a monitoring camera for picking up an image in a place to be monitored and outputting a video signal;

video information variation detecting means for converting the video signal outputted from said monitoring camera into digital video data, storing the digital video data by one frame and comparing the current inputted video data with the stored video data to detect a portion wherein said current and stored video data are different from each other, as the variation of video information;

system control means including a key input unit for inputting a plurality of key signals for a monitoring operation and a microcomputer for scanning the key signals from said key input unit and controlling the system operation in accordance with the scanned result;

video output control means for setting a window area on a monitor and, if said video information variation detecting means detects the variation of video information on the set window area, outputting an alarm control signal and generating a variation indicating marker signal corresponding to the portion in the set window area where the variation was detected, such that the marker signal is overlap-displayed on the current picture on the monitor corresponding to the variation-detected portion in the window area;

alarm output means for giving an alarm in accordance with the alarm control signal from said video output control means; and

the monitor displaying a variation-detected video signal under control of said video output control means;

wherein said video output control means includes:

a window RAM for storing a screen window address in accordance with window setting data from said microcomputer in said system control means;

an AND gate for combining the window address data from said window RAM with output data from said video information variation detecting means to output the alarm control signal;

a marker controller for outputting the variation indicating marker signal corresponding to the variation detected portion on the screen in response to an output signal from said AND gate and under control of said microcomputer in said system control means;

a video imposer for imposing the variation indicating marker signal from said marker controller on the video signal from said monitoring camera; and

a switch for selecting the video signal from said monitoring camera or an output signal from said video imposer and outputting the selected signal to said monitor under automatic monitoring function control of said microcomputer in said system control means.

5,253,071

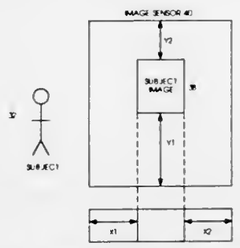
METHOD AND APPARATUS FOR STABILIZING AN IMAGE PRODUCED IN A VIDEO CAMERA

Michael P. MacKay, Vallejo, Calif., assignor to Sony Corporation of America, Park Ridge, N.J.

Filed Dec. 20, 1991, Ser. No. 811,089

Int. Cl.[5] **M04N** *5/228, 7/18*

U.S. Cl. 358--222 **16 Claims**



1. An electronic image stabilization apparatus for stabilizing a video image generated from a source image input to a video camera, said electronic image stabilization apparatus comprising:

image sensor means for recording said source image, said image sensor means comprising;

a plurality of photosensitive cells, each of said plurality of photosensitive cells having a surface area and generating a cell value proportional to light intensity incident upon said surface area of said photosensitive cell, and

transferring means for shifting said cell values out of said image sensor;

focusing means for projecting said source image upon said image sensor so as to generate a first image area, said first image area comprising each surface area of said plurality of photosensitive cells illuminated by said source image, said first image area having a total surface area less than said image sensor total surface area by at least one of said cell surface areas;

floating means coupled to said focusing means for moving said first image area within said image sensor such that physical jitter of said video camera results in said source image being projected onto a second image area, said second image area being equal in surface area to said first image area, and said second image area illuminating at least one different photosensitive cell than said first image area in said image sensor, said floating means comprises an outer gimbaled ring and a helical mount, said outer gimbaled ring being coupled to said helical mount, and said helical mount being coupled to said focusing means so as to provide free angular movement for said focusing means in both a horizontal direction and vertical direction with respect to a plane parallel to said image sensor;

scanning means coupled to each of said plurality of photosensitive cells for reading cell values of each of said plurality of photosensitive cells, said scanning means selecting one of said plurality of photosensitive cells and reading a cell value corresponding to said photosensitive cell selected;

threshold means coupled to said scanning means for determining whether said cell value selected is within said second image area, said threshold means having a threshold value and a flagging means wherein said flagging means generates a flag signal when said cell value selected is greater than said threshold value; and

control means coupled to said threshold means and said image sensor means for allowing said transferring means of said image sensor, when said flag signal is present, to transfer out of said image sensor only said cell values within said second image area.

5,253,072

DEVICE FOR FIXING A MICROPHONE ON A VIDEO CAMERA

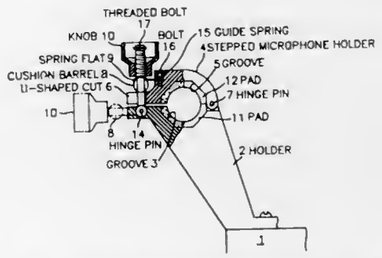
Byoung-Il Kwon, Kyounggi, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Oct. 28, 1991, Ser. No. 783,162

Claims priority, application Rep. of Korea, Dec. 6, 1990, 1990-19173[U]

Int. Cl.[5] **H04N** *5/30*

U.S. Cl. 358—229 **6 Claims**



1. A device for securing a microphone on a video camera, comprising:

a fixed holder having a circumferential groove adapted to secure said microphone, said fixed holder being attachable to a body of said video camera;

a stepped microphone holder having a circumferential complementary groove adapted to secure said microphone, said stepped microphone holder being pivotally mounted at one end of said fixed holder by a first hinge pin for enabling said stepped microphone holder to rotate about said first hinge pin;

an U-shaped recess formed on a stepped portion at a second end of said stepped microphone holder;

locking means for locking said stepped microphone holder with said fixed holder, said locking means having a knob, a threaded shaft and a cushion barrel, said threaded shaft being pivotally mounted at a second end of said fixed holder by a second hinge pin enabling said locking means to rotate about said second hinge pin;

a spring flat for resiliently supporting said knob;

a guide spring being connected to one end of said spring flat in an upper portion of said second end of said stepped microphone holder; and

means for securing said one end of the spring flat in said upper portion of said stepped microphone holder.

5,253,073

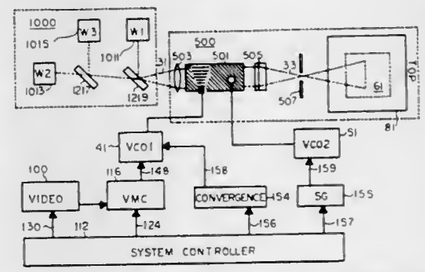
ELECTRONIC DATA MULTIPLEXING IN A FULL COLOR PULSED LASER PROJECTOR AND METHOD

Ronald P. Crowley, Salem, Mass., assignor to Corporation for Laser Optics Research, Wellesley, Mass.

Filed Apr. 1, 1992, Ser. No. 861,915

Int. Cl.[5] **H04N** *5/74*

U.S. Cl. 358—231 **27 Claims**



1. A multiplexed, multicolored video imaging system, which system comprises:

a) a light source which comprises a plurality of pulsed lasers to provide a plurality of multichromatic input light beams;

b) a single acoustic-optical cell having an inlet face to receive the input light beam thereon and an outlet face to transmit a multichromatic, modulated light beam;

c) an electrical signal to sound wave transducer mounted on a face other than the inlet and outlet faces of the cell to provide a modulated, multichromatic outlet light beam from the outlet face of the cell;

d) signal means to drive said transducer to produce sound waves within the cell to correspond to the electrical signals used for a line of image;

e) compression means to decrease the propagation time of the sound waves in the cell to less than the input video scan line time divided by the number of separate, different wavelengths of the input light beam;

f) multiplexing electronic means to provide an electrical signal selected to correspond to each individual wavelength, which wavelengths are separately and sequentially modulated in the cell to multiplex the video signals, with the compressed time of the modulated, multichromatic output beam shorter than the input video time of the multichromatic input beam and to provide a multiplexed, modulated output light beam;

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g) a projection surface to display on the surface a multicolored video image; and

h) plane projector means to provide for each line of the multicolored, multiplexed, modulated output light beam to be produced at a different physical location.

5,253,074

TEMPERATURE COMPENSATED COLOR LCD PROJECTOR

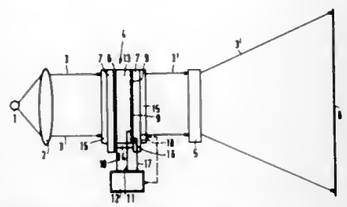
Franciscus J. M. Wortel; Ingrid E. J. R. Heynderickx, and Peter E. Wierenga, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 18, 1991, Ser. No. 810,748

Claims priority, application Netherlands, Dec. 19, 1990, 9002808

Int. Cl.[5] H04N *5/74*

U.S. Cl. 358—236 **14 Claims**



1. A projection display device comprising at least one liquid crystal display device having a layer of liquid crystalline material between two supporting plates provided with electrodes which define at least one pixel, via which electrodes a voltage can be applied across the pixel, characterized in that in at least one of the extreme transmission states the product $d.\Delta n$ of the thickness d of the layer of liquid crystalline material and the difference in refractive index Δn is chosen to be such that $d.\Delta n$ at the maximum temperature of use is 0.45–0.50 μm, the device being also provided with means for correcting the value of an applied voltage in dependence on the temperature.

5,253,075

IMAGE SIGNAL CODING/DECODING SYSTEM USING ADAPTIVE QUANTIZATION

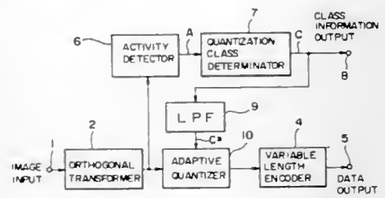
Kenji Sugiyama, Yokosuka, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Sep. 30, 1991, Ser. No. 766,950

Claims priority, application Japan, Sep. 29, 1990, 2-262389; Aug. 30, 1991, 3-245008

Int. Cl.[5] G06K *9/36*

U.S. Cl. 358—261.2 **11 Claims**



1. An encoder for dividing an image signal into several blocks having a predetermined number of pixels, for detecting an activity of each block in which activities indicate changes in said image signal in said block, for determining a class which directs a quantization step width in order to quantize said image signal in accordance with detection result, and for adaptively quantizing said image signal in accordance with a determination result; said encoder comprising:

class determination means for determining a class which directs a quantization step width that is determined in every block, in accordance with the detection results of said activities;

filter means for filtering said class values and class values in the peripheral blocks which are adjacent in upper, lower, right, left and oblique directions to an objective block;

quantization step determination means for determining a quantization step width for every block which are values obtained by filtering; and

wherein said encoder outputs an encoded image signal which is quantized by a quantization step width determined by said quantization step determination means, and outputs information expressing the condition of said quantization, as supplemental information in order that a decoder may perform an inverse-quantization of said encoded image signal output therefrom.

5,253,076

VIDEO SIGNAL RECORDING-REPRODUCTION DEVICE

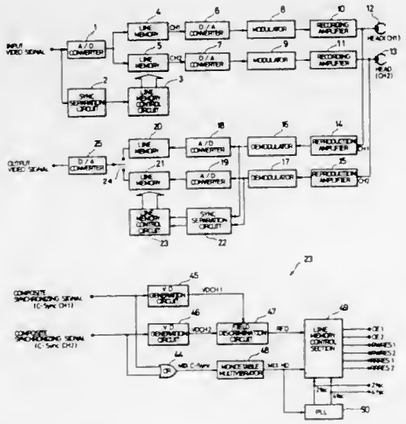
Makoto Adachi, Nikko, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 4, 1991, Ser. No. 638,566

Claims priority, application Japan, Apr. 6, 1990, 2-92576

Int. Cl.[5] H04N *5/95*

U.S. Cl. 358—339 **13 Claims**



1. A video signal recording-reproduction device comprising:

recording system means for recording an input video signal onto a recording medium;

said recording system means subjecting the input video signal to time base extension of N-times to form a recording signal;

said recording system means dividing the recording signal into N or integral multiples of N channels before recording onto the recording medium;

said recording system means recording a separate sync signal for each channel;

said recording system means including phase changing means for shifting a phase of the recording signal such that the phase shift between adjacent channels is a 1/N horizontal scanning period; and

reproduction system means for reproducing each channel of the signals record on the recording medium to form an output video signal by combining the signal from each channel to produce the output video signal;

said reproduction system means conforming phases of separated sync signals of respective recording signals to a phase of a horizontal synchronizing signal of the input video signal;

said reproduction system means conducting a logical OR operation upon the separated sync signals of the recording signals for each reproduced channel to restore the phase shifted sync signals so that the sync signals can be properly utilized in the forming of the output video signal.

5,253,077

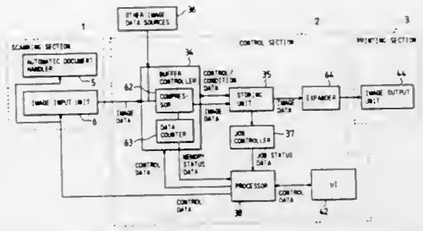
METHOD OF CONTROLLING DIGITAL COPYING MACHINE

Ken Hasegawa, and Hiroshi Takayanagi, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 10, 1990, Ser. No. 595,805

Int. Cl.[5] H04N *1/10*

U.S. Cl. 358—404 **16 Claims**



1. A method of controlling a digital copying machine in which image data corresponding to a copy job is obtained by reading an image of a document with an image input unit, wherein said image data is temporarily stored in a storing unit and read therefrom to be printed by an image output unit, said method comprising the steps of:

at a time when said image data corresponding to the copy job is being stored in said storing unit, judging whether there is available memory area in said storing unit;

if there is no available memory area, temporarily suspending reading of said job;

resuming reading of said job when memory areas occupied by previously stored jobs become at least partially available upon completion of a portion of said stored jobs by printing on said image output unit; and

terminating a current job by discharging all nonread pages of said current job and freeing memory areas occupied by previously read pages of said current job is if there is no available memory area in said storing unit.

5,253,078

SYSTEM FOR COMPRESSION AND DECOMPRESSION OF VIDEO DATA USING DISCRETE COSINE TRANSFORM AND CODING TECHNIQUES

Alexandre Balkanski, Palo Alto; Stephen C. Purcell, Mountain View; James W. Kirkpatrick, Jr., San Jose; Mauro Bonomi, Palo Alto, and Wen-Chang Hsu, Saratoga, all of Calif., assignors to C-Cube Microsystems, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 494,242, Mar. 14, 1990. This application Aug. 23, 1990, Ser. No. 572,198

Int. Cl.[5] H04N *5/32, 7/12*

U.S. Cl. 358—426 **13 Claims**

1. A system for data compression and decompression, comprising:

video interface means for receiving and transmitting digitized images as a stream of composite pixels, each composite pixel being represented by data of a plurality of chrominance and luminance component types;

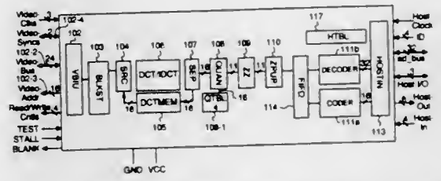
block memory means for receiving and sorting, during data compression, said stream of composite pixels from said video interface means into single-component type data blocks, and for receiving and reconstituting, during data decompression, single-component type data blocks into said stream of composite pixels;

discrete cosine transform means for performing, during data compression, a 2-dimensional discrete cosine transform on single-component type data blocks received from said block memory, and providing coefficients of said 2-dimensional discrete cosine transform, and for performing, during data decompression, a 2-dimensional inverse discrete cosine transform, and providing as output data said coefficients of said 2-dimensional inverse discrete cosine transform to said block memory means as single-component type data blocks;

quantization means for attenuating, during data compression, higher frequency coefficients of said 2-dimensional discrete cosine transform, and for partially restoring, during data decompression, said higher frequency coefficients of said 2-dimensional discrete cosine transform, in preparation for said 2-dimensional inverse discrete cosine transform;

zig-zag means for rearranging, during data compression, said coefficients of said 2-dimensional discrete cosine transform from "sequential" order into "zig-zag" order, and for rearranging, during data decompression, said zig-zag ordered coefficients of said 2-dimensional discrete cosine transform from a "zig-zag" order to a "sequential" order;

data packing and unpacking means for packing, during data



compression, said "zig-zag" ordered coefficients of said 2-dimensional discrete cosine transform as run length-represented coefficients of said 2-dimensional discrete cosine transform, and for unpacking, during data compression, said run length-represented coefficients of said 2-dimensional discrete cosine transform to said "zig-zag" ordered coefficients of said 2-dimensional discrete cosine transform;

Huffman coding/decoding means for coding, during data compression, said run length-represented coefficients of said 2-dimensional discrete cosine transform into Huffman Codes, and for decoding, during data compression, said Huffman codes into said run length-represented coefficients of said 2-dimensional discrete cosine transform;

first-in first-out memory means for temporary storage of said run length represented coefficients of said 2-dimensional discrete cosine transform such that said Huffman coding/decoding means operates asynchronously and independent of said data packing and unpacking means; and

host interface means for transmitting, during data compression, said Huffman codes to a host computer, and for retrieving, during data decompression, said Huffman codes from a host computer.

5,253,079

FACSIMILE APPARATUS HAVING IMPROVED ERROR CHECK FUNCTION OF RECEPTION DATA

Munehiro Nakatani, Toyokawa; Shigenobu Fukushima, Yao, both of Japan, and Toshio Tsuboi, N.J., assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 5, 1991, Ser. No. 740,448

Claims priority, application Japan, Aug. 8, 1990, 2-210735

Int. Cl.[5] H04N *1/417*

U.S. Cl. 358—426 **10 Claims**

7. A facsimile apparatus comprising:

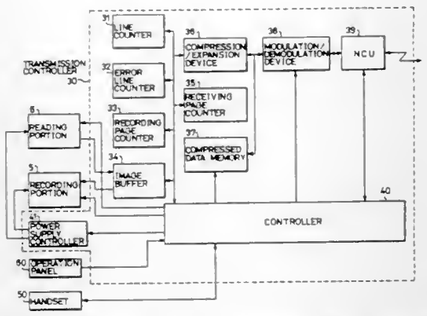
reception means for receiving compressed image data transmitted from another facsimile apparatus,

storing means for storing a plurality of pages of compressed image data received by said reception means,

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first expanding means for expanding said stored compressed image data after said storing means completes storage of said plurality of pages of compressed image data,

image formation means for forming an image on a paper sheet according to the image data expanded by said first expanding means,



second expanding means for expanding said compressed image data in parallel with the storing operation of said compressed image data by said storing means, and

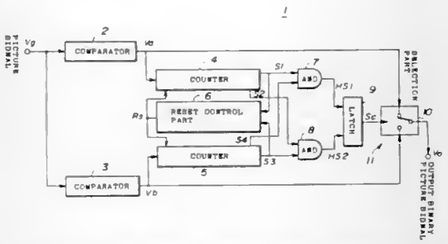
detecting means for detecting whether said image data is received properly or not according to the image data expanded by said second expanding means.

5,253,080

PICTURE SIGNAL BINARIZATION APPARATUS AVOIDING A NEED FOR MEMORY DEVICES OR SHIFT REGISTERS FOR STORING BINARY PICTURE SIGNALS BEFORE OUTPUT

Shinichi Nishimura, Atsugi; Hiroyuki Kudose, Isehara, and Shingo Yamaguchi, Atsugi, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 26, 1991, Ser. No. 749,433
Claims priority, application Japan, Aug. 28, 1990, 2-227530
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—445 **8 Claims**



1. A picture signal binarization apparatus comprising:

a plurality of comparators for converting a picture signal into a binary signal by comparing said picture signal with a plurality of different threshold values;

a plurality of counters for counting inversions of the binary signal from each of said comparators and supplying a count signal indicative of whether the number of inversions of the binary signal from each of said comparators reaches a predetermined value; and

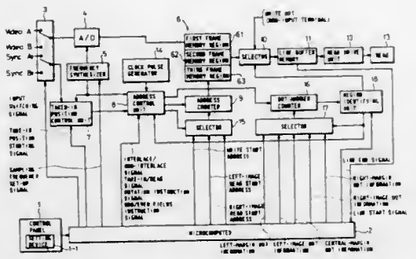
means for selecting a binary signal from one of the comparators in response to the count signal supplied from one of the counters so that said selected binary signal is outputted as a subsequent output binary signal, the number of inversions indicated by the count signal from said one of the counters first reaching said predetermined value.

5,253,081

IMAGE RECORDING DEVICE

Tsuyoshi Shoji, Tokyo; Toshiharu Yumoto, and Takashi Sakata, both of Nagano, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 18, 1991, Ser. No. 808,929
Claims priority, application Japan, Dec. 20, 1990, 2-404570
Int. Cl.[5] H04N *1/21, 1/387*
U.S. Cl. 358—450 **4 Claims**



1. An image recording device for receiving successively-input image data therein so as to record a plurality of images based on said received image data on a single recording medium, said image recording device comprising:

a frame memory for storing said input image data therein;

specifying means for specifying information about attributes of said image data and image arrangement information on the recording medium;

a line buffer memory for storing therein image data read from said frame memory;

a dot-number counter for counting down a read clock of said frame memory in response to the number of margin dots preset thereto based on said attribute information and said image arrangement information specified by said specifying means before image data corresponding to each line with respect to an image specified at the leftmost position on the recording medium is read from said frame memory and/or after image data of said read image data, which corresponds to each line with respect to each image, has been written into said line buffer memory;

white image data storing means for storing white image data in said line buffer memory in synchronism with the read clock of said frame memory until the count of said dot-number counter reaches zero after said dot-number counter has started counting; and

an address counter for counting up the read clock in response to an image read start address preset thereto when the count of said dot-number counter has reached zero, so as to specify an address for reading the image data corresponding to each line with respect to each image from said frame memory.

5,253,082

IMAGE FORMING APPARATUS

Kimiyoshi Hayashi, Souka; Hitoshi Arai, Tsuchiura, and Kazuhiko Hirooka, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 320,538, Mar. 8, 1989, abandoned. This application Apr. 17, 1991, Ser. No. 686,884
Claims priority, application Japan, Mar. 10, 1988, 63-054812; Mar. 10, 1988, 63-054813; Mar. 10, 1988, 63-054815; Jul. 27, 1988, 63-185478
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—456 **29 Claims**

1. An image forming apparatus comprising:

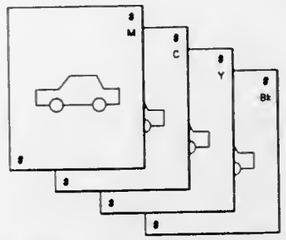
input means for inputting color component data;

density converting means for converting pixel density of said color component data in each predetermined block in

accordance with predetermined screen half-toning information;

binary coding means for converting the color component data, which has been density-converted by said density converting means, into a binary-coded signal conforming to the density;

memory means for storing indicium information representing a kind of the color component data input by said input means, the indicium information being other than the predetermined screen half-toning information;



combining means for combining the indicium information with a predetermined portion of input color component data input by said input means to produce a combined image including an image which visualizes the indicium information and an image represented by the input color component data so that the combined image can clearly show the kind of the color component data; and

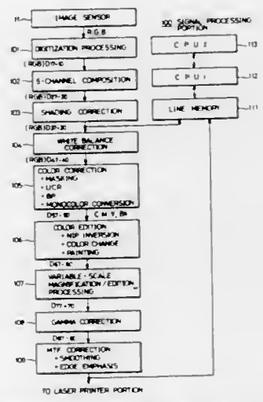
image forming means for forming an output image in accordance with the signal output by said combining means.

5,253,083

IMAGE READING APPARATUS HAVING IMPROVED SHADING CORRECTION

Yoshihiko Hirota, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 12, 1991, Ser. No. 758,553
Claims priority, application Japan, Sep. 28, 1990, 2-262911
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—461 **3 Claims**



1. An image reading apparatus, comprising:

image reading means including a plurality of image reading elements;

reference image reading means for reading a reference image by using said image reading means;

smoothing means for smoothing reference image data read by said reference image reading means;

processing means for processing said smoothed reference image data;

original image reading means for reading an original image by using said image reading means;

correction means for subjecting original data read by said original image reading means and the reference image data processed by said processing means to a predetermined arithmetic operation, thereby correcting the original data; and

illuminating means for illuminating an original, wherein

said reference image reading means includes first means for operating said image reading means with said illuminating means turned off, and second means for reading a white plate by using said image reading means;

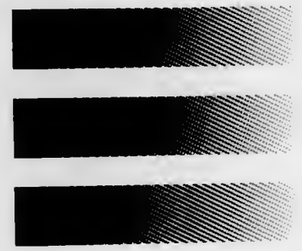
wherein said processing means includes means for subtracting image data obtained by said first means from image data obtained by second means.

5,253,084

GENERAL KERNEL FUNCTION FOR ELECTRONIC HALFTONE GENERATION

Richard L. Rylander, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 14, 1990, Ser. No. 582,524
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—465 **11 Claims**



1. A method of producing a halftone representation of a continuous-tone or multi-level image from a set of spatial frequencies by the calculation of a threshold value within a halftone cell to determine if a particular point should be "on" or "off", comprising the steps of:

choosing halftone dot patterns in terms of directly specifying spatial frequency components, rather than in terms of dot pitch and rotation angle, by selecting a plurality of spatial frequency components and combining said plurality of spatial frequency components to direct the generation of a pattern by a bilevel printing device; and

using said bilevel printing device to address discrete points in a Cartesian grid at the direction of said pattern formed by said plurality of spatial frequency components to provide a black and white halftone image.

5,253,085

VARIABLE SCANNING SPEED OPTICAL SCANNING DEVICE

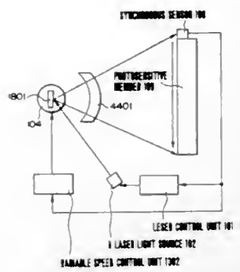
Seizi Maruo, Hitachi; Yasuro Hori, Katsuta, and Yasuaki Suzuki, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 25, 1991, Ser. No. 765,521
Claims priority, application Japan, Sep. 25, 1990, 2-251870
Int. Cl.[5] G05B *19/10*
U.S. Cl. 358—481 **4 Claims**

1. An optical scanning device wherein a part of an optical path from a light source to a scanning face is deflected by rotating a scanning rotary mirror so as to linearly scan the scanning face with a light spot, the optical scanning device comprising angular velocity control means for controlling a

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rotary angular speed of the scanning rotary mirror in accordance with a scanning position on the scanning face, the rotating angular velocity control means including correcting means for generating at least one of magnetic power and friction



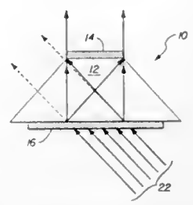
power, the correcting means adding at least one of a positive and a negative driving force changing in accordance with the scanning position on the scanning face to a predetermined rotary driving source supplied to a rotary shaft of the scanning rotary mirror.

5,253,086

HOLOGRAPHIC DEVICE FOR COMBINING LASER BEAMS

Arnold W. Lungershausen, West Henrietta, and Stephen C. Arnold, Honeoye Falls, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 29, 1992, Ser. No. 827,651
Int. Cl.[5] G02B *5/32, 27/10, 5/04*
U.S. Cl. 359—10 12 Claims



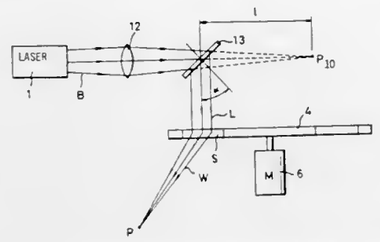
1. A holographic device for combining a plurality of laser beams, comprising:
a) a light transmissive support substrate having entrance and exit faces and comprising a monolithic block;
b) means providing a diffusion surface on the entrance face;
c) means providing a holographic recording on the exit face, the recording comprising a holographic recording made on a light sensitive recording medium of an interference pattern of an object laser beam propagated through the diffusion surface and the substrate onto the medium, combined with a reference laser beam directed at an angle into the substrate onto the medium, the diffusion surface being configured so that each point of the diffusion surface acts to spread the object beam to all parts of the medium; and
d) means for directing a plurality of input laser beams, which are conjugates of the reference laser beam, onto the holographic recording and into the substrate, for reconstructing a single output laser beam which is a conjugate of the object beam and has an amplitude corresponding to the combined amplitudes of the plurality of input beams.

5,253,087

HOLOGRAPHIC LASER BEAM SCANNING APPARATUS

Keun Y. Yang, Seoul, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 13, 1991, Ser. No. 806,253
Claims priority, application Rep. of Korea, Dec. 22, 1990, 20560/1990
Int. Cl.[5] G02B *5/32, 26/10*
U.S. Cl. 359—16 3 Claims



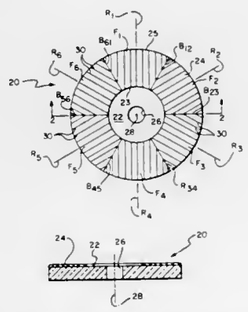
1. A holographic laser beam scanning apparatus comprising:
a laser generator for outputting a laser beam;
a focusing lens for focusing the laser beam;
a first hologram formed by directing thereto a first parallel light beam and a spherical wave focused on a given point, said first hologram collimating the laser beam focused by said focusing lens to convert it into a second parallel light beam parallel to said first parallel light beam; and
a second hologram comprising a hologram disc receiving said second parallel beam and irradiating a diffracted beam having a given angle of diffraction.

5,253,088

METHOD TO REDUCE CROSS SCAN ERROR VISIBILITY DURING MANUFACTURE OF A HOLOGON

Badhri Narayan, and James E. Roddy, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 27, 1992, Ser. No. 874,777
Int. Cl.[5] G02B *5/32*
U.S. Cl. 359—18 11 Claims



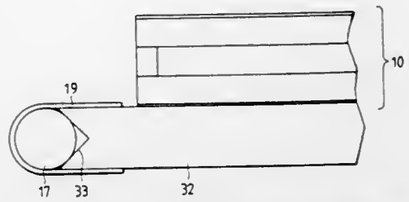
2. A method of manufacturing a hologon to reduce cross scan error, said hologon having an axis of rotation and a number "n" greater than one, of generally sector-shaped facets uniformly disposed about said axis, the hologon being intended to have incident upon a substrate having a photosensitive layer receiving beams of radiation directed to said photosensitive layer to create an interference pattern on said layer in said sector-shaped facet, said method comprising:
rotating the hologon through angular steps of (360/n)°; and
exposing said sector-shaped facets to said beams of radiation in the sequence of 1, n, 2, n-1, 3, n-2 . . . .

5,253,089

BACKLIGHTED LIQUID CRYSTAL DISPLAY UNIT

Satoshi Imai, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Jun. 5, 1992, Ser. No. 894,095
Claims priority, application Japan, Nov. 7, 1991, 3-321085
Int. Cl.[5] G02F *1/133*
U.S. Cl. 359—49 2 Claims



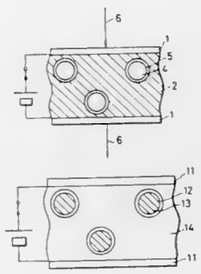
1. A backlighted liquid crystal display comprising transmission-type liquid crystal display means having opposed surfaces, a light-conducting plate adjacent to one surface of the display means made of light-conducting material and having a light-receiving portion, and light source means in direct physical contact with the light-conducting material in the light-receiving portion of the light-conducting plate in at least two contact regions.

5,253,090

LIQUID CRYSTAL ELECTRO-OPTIC DEVICE WITH TWO MATERIALS DIFFERENT IN REFRACTIVE INDEX DISPERSED IN THE LIQUID CRYSTAL

Shunpei Yamazaki, Tokyo, and Akira Mase, Kanagawa, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Filed Sep. 27, 1991, Ser. No. 766,284
Claims priority, application Japan, Oct. 1, 1990, 2-264634
Int. Cl.[5] G02F *1/13, 1/1339*
U.S. Cl. 359—52 20 Claims



11. A liquid crystal electo-optic device comprising:
a pair of substrates provided with electrodes thereon, and spaced with a predetermined spacing, at least one of said substrates being transparent; and
a liquid crystal electro-optic layer provided between said substrates and comprising liquid crystal and transparent regions dispersed in said liquid crystal, said regions comprising first transparent substances and second transparent substances covered with said first transparent substances;
wherein said first transparent substances have a refractive index different from that of said liquid crystal and that of said second transparent substances, a diameter of said regions is less than said spacing between said substrates, and the regions are uniformly dispersed in the liquid crystal.

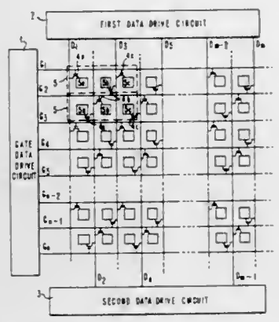
18. A liquid crystal electro-optic device comprising:
a pair of substrates provided with electrodes thereon, at least one of said substrates being transparent; and
a light modulating layer disposed between said pair of substrates and comprising a first transparent substance, a liquid crystal material dispersed in the form of plural particles in said substance, and a second transparent substance disposed between said first transparent substance and said liquid crystal material;
wherein refractive indices of said first and second transparent substances are different from each other and a refractive index synthesized by the first and second transparent substances is approximately the same as the refractive index of said liquid crystal material when an electric field is applied thereto.

5,253,091

LIQUID CRYSTAL DISPLAY HAVING REDUCED FLICKER

Shinichi Kimura, Sagamihara; Hiroshi Suzuki, and Hidefumi Yamaguchi, both of Fujisawa, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 9, 1991, Ser. No. 727,199
Claims priority, application Japan, Jul. 9, 1990, 2-179728
Int. Cl.[5] G02F *1/133;* G09G *3/36*
U.S. Cl. 359—55 8 Claims



3. A liquid crystal display comprising:
a plurality of row conductors;
a plurality of column conductors;
a plurality of pixels arranged in a matrix of rows and columns;
a driver means for applying a first data signal to first column conductors and for applying a second data signal to second column conductors, said first column conductors and said second column conductors being adjacent alternate column conductors in a row direction of said matrix, polarity of said first and second data signals being opposite to each other; pixels in each row being alternately connected to one of two adjacent row conductors; and pixels in each column being alternately connected respectively to one column conductor to which said first data signal is applied and to one column conductor to which said second data signal is applied.

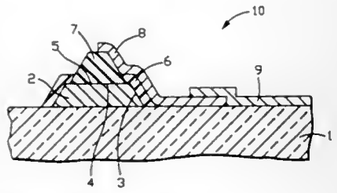
VOL 1155 ISS 2 OCT 12 1993 UMI

5,253,092

LATERAL MIM DEVICE AND METHOD OF PRODUCTION

Kotoyoshi Takahashi, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Jan. 22, 1992, Ser. No. 823,923
Claims priority, application Japan, Jan. 25, 1991, 3-25355
Int. Cl.[5] G02F *1/133*
U.S. Cl. 359—58 18 Claims



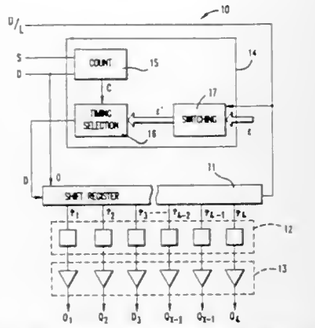
1. A lateral MIM device comprising:
a first conductor;
an electrically contoured insulator formed on said first conductor having a first resistance value where it covers at least one side surface and top edge to allow MIM electrical interactions and a second higher resistance where it covers the remaining top surface so as to substantially prevent electrical interactions over this surface; and
a second conductor disposed on top of said first insulator.

5,253,093

ROW ELECTRODE DRIVING CIRCUIT FOR A DISPLAY APPARATUS

Shiro Takeda; Takafumi Kawaguchi, both of Tenri, and Makoto Takeda, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 29, 1991, Ser. No. 783,890
Claims priority, application Japan, Oct. 31, 1990, 2-296164
Int. Cl.[5] G02F *1/13;* G09G *1/10*
U.S. Cl. 359—85 5 Claims



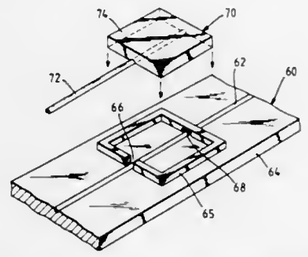
1. In a row electrode driving circuit for a display apparatus, comprising a plurality of partial row electrode driving circuits which respectively drive groups of row electrodes of said display apparatus,
each of said partial row electrode driving circuits is allocated with a number, and comprises:
shift register means for shifting a pulse signal to sequentially output said pulse signal from a plurality of outputs, the shifting direction being changeable in accordance with a shift direction control signal;
count means for counting clock pulses, and for producing a count signal at each time when a predetermined number of clock pulses have been counted;
switch means for, when said shift direction is set to a first direction, producing a signal indicating said allocated number, and for, when said shift direction is set to a second direction which is opposite to said first direction, producing a signal indicating a number which is obtained by subtracting said allocated number from a specified number; and
pulse signal output means for, when said number output from said switch means and the number of said count signals satisfy a predetermined relationship, outputting said pulse signal.

5,253,094

OPTICAL INTERCONNECTION NETWORK

David W. Smith, Woodbridge; Stephen A. Cassidy, and Peter Healey, both of Ipswich, all of United Kingdom, assignors to British Telecommunications public limited company, London, England

PCT No. PCT/GB90/00169, § 371 Date Sep. 17, 1991, § 102(e) Date Sep. 17, 1991, PCT Pub. No. WO90/09708, PCT Pub. Date Aug. 23, 1990
PCT Filed Feb. 5, 1990, Ser. No. 762,025
Claims priority, application United Kingdom, Feb. 8, 1989, 8902745
Int. Cl.[5] H04J *14/02;* H04B *10/12;* G02B *6/28*
U.S. Cl. 359—124 22 Claims



1. An optical interconnection network comprising:
an optical signal bus having a first substrate supporting a plurality of optical waveguides, the waveguides each having a flat surface substantially co-planar with a surface of the substrate,
at least one connector module for connection to the bus, the module comprising a second substrate supporting at least one optical waveguide having a flat surface substantially co-planar with a surface of the second substrate over the length of the module, and
means for releasably coupling the module to the signal bus in a face-to-face relationship such that an evanescent coupling is formed between a waveguide of the module and a waveguide of the bus.

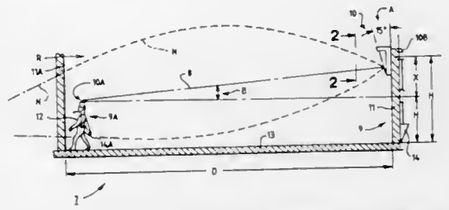
5,253,095

FULL DUPLEX COMMUNICATION SYSTEM AND METHOD OF USING SAME

Michael A. Menadier, Vista, and Michael A. Williams, San Diego, both of Calif., assignors to H. M. Electronics, Inc., San Diego, Calif.

Continuation of Ser. No. 427,690, Oct. 27, 1989, abandoned, and a continuation-in-part of Ser. No. 427,650, Oct. 27, 1989, Pat. No. 5,027,433, and a continuation-in-part of Ser. No. 326,225, Mar. 20, 1989, abandoned, which is a continuation-in-part of Ser. No. 132,345, Dec. 14, 1987, Pat. No. 4,882,770. This application Jun. 25, 1992, Ser. No. 904,201
Int. Cl.[5] H04B *10/02*
U.S. Cl. 359—174 9 Claims

1. An optical communication system for facilitating full duplex communication between remote transceivers comprising:
a base station transceiver for receiving optical communications from one of the remote transceivers and for repeating the optical communications to at least another one of the remote transceivers;
said base station transceiver having an antenna assembly and a stationary transceiver unit connected electrically to said antenna assembly; and



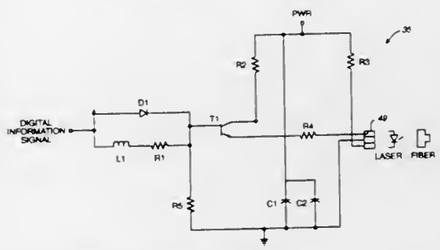
means for mounting said antenna assembly at a height H above a floor at one end of a room and inclined from the vertical by an angle A to enable the base station transceiver unit to direct a peak power axis of optical radiation downwardly at an angle B form the horizontal toward a wall at the opposite end of said room, said axis intersecting said wall at a distance D from said base station transceiver unit, and at a height H_T above the floor, the height H_T being equal to the height of the remote transceiver within the same room.

5,253,096

DIGITAL PULSE OPTICAL TRANSMITTER AND RECEIVER FOR LOCAL AREA NETWORK APPLICATIONS

William R. Freeman, Richmond, and Bhavesh Patel, Fremont, both of Calif., assignors to Raylan Corporation, Palo Alto, Calif.

Filed Nov. 7, 1991, Ser. No. 788,848
Int. Cl.[5] H04B *10/00, 10/04*
U.S. Cl. 359—184 5 Claims



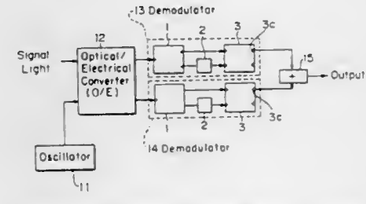
1. An optical transmitter comprising:
an input terminal;
pulse conditioning means DC-coupled to said input terminal for receiving from said input terminal pulse energy of an input pulse to be transmitted, quickly passing a portion of the pulse energy, storing a portion of the pulse energy, and releasing a stored portion of the pulse energy as input pulse energy subsides; and
optical source means connected to the pulse conditioning means for, after a turn-on delay, beginning to emit light following initiation of said input pulse in response to the portion of the pulse energy that is quickly passed, and for, during a turn-off delay substantially equal to said turn-on delay, continuing to emit light after the subsidence of said input in response to the stored portion of the pulse energy released by the pulse conditioning means, thereby reducing pulse width distortion.

5,253,097

DEMODULATOR AND A POLARIZATION DIVERSITY RECEIVER FOR COHERENT OPTICAL COMMUNICATION PROVIDED WITH THE DEMODULATOR

Takao Naito, Kawasaki; Terumi Chikama, Tokyo; Shigeki Watanabe, Kawasaki; Tetsuya Kiyonaga, Kawasaki; Hiroshi Nakamoto, Kawasaki, and George Ishikawa, Yokohama, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Jul. 15, 1991, Ser. No. 730,002
Claims priority, application Japan, Jul. 18, 1990, 2-187997
Int. Cl.[5] H04B *10/06*
U.S. Cl. 359—192 20 Claims



5. A polarization diversity receiver for coherent optical communication comprising:
an optical local oscillator outputting local light;
an optical-electrical converter for performing optical-electrical conversion of received signal light and said local light for each of polarization components, of which planes of polarization are orthogonal to each other, thereby outputting two intermediate-frequency signals having the frequency corresponding to the difference between the frequency of said signal light and the frequency of said local light, for each of said polarization components;
a first and a second demodulator respectively supplied with said intermediate-frequency signals; and
a combining circuit for combining demodulated signals from said first and second demodulators; wherein each of said first and second demodulators comprises:
an OR/NOR circuit having an input port supplied with the intermediate-frequency signal and a first and a second output port and adapted such that, when the input level at said input port is at a low level, output levels at said first and second output ports are respectively brought to a low level and a high level and, when the input level at said input port is at a high level, output levels at said first and second output ports are respectively brought to a high level and a low level;
a delay circuit for delaying the output signal from the second output port of said OR/NOR circuit by a predetermined delay time τ and outputting the delayed signal; and
an exclusive OR/NOR circuit having a first input port supplied with the output signal from the first output port of said OR/NOR circuit, a second input port supplied with the output signal from said delay circuit, and a first and a second output port outputting demodulated signals, and adapted such that, when the input levels at said first and second input ports are in phase, output levels at said first and second output ports are respectively brought to a low level and a high level and, when the input levels at said first and second input ports are in antiphase, output levels at said first and second output ports are respectively brought to a high level and a low level.

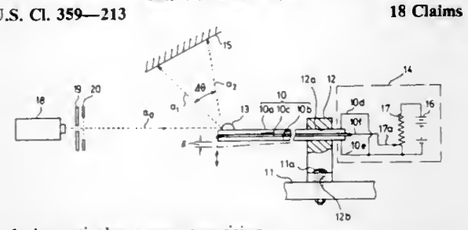
VOL 1155 ISS 2 OCT 12 1993 UMI

5,253,098

OPTICAL SCANNER

Kazuyasu Hikita; Hiroyuki Iizuka, and Yoshiaki Tanaka, all of Saitama, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed May 14, 1992, Ser. No. 883,600
Claims priority, application Japan, May 23, 1991, 3-147983
Int. Cl.[5] G02B *26/08*
U.S. Cl. 359—213 18 Claims



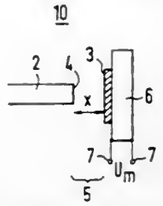
1. An optical scanner comprising:
an electrostrictive element having one end thereof attached to a base body;
a convex mirror fixed to the other end of said electrostrictive element, said other end moving in a modified direction upon the application of a voltage;
a driving circuit for applying and changing a voltage to said electrostrictive element; and
means for emitting a light beam and directing said light beam onto the surface of said convex mirror in a direction perpendicular to the direction of the modified direction of said electrostrictive element so that, by changing the voltage applied to said electrostrictive element, said convex mirror surface reflects said beam in a direction corresponding to the voltage applied.

5,253,099

REFLECTIVE OPTICAL MODULATOR

Rolf Heidemann, Tamm, Fed. Rep. of Germany, assignor to Alcatel N.V., Amsterdam, Netherlands

Filed Sep. 16, 1991, Ser. No. 760,469
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1990, 40319
Int. Cl.[5] G02F *1/035;* H01L *33/07*
U.S. Cl. 359—260 8 Claims



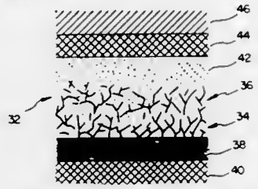
1. A reflective modulator including:
an optical waveguide;
a reflecting surface arranged opposite an end face of the optical waveguide; and
modulation means for modulating, with a modulation signal, light exiting from the end face of the optical waveguide and coupled back into the optical waveguide by the reflecting surface;
wherein the modulation means comprises a detunable optical resonator having first and second reflective surfaces disposed opposite one another, the first reflective surface of the resonator being said reflecting surface and the second reflective surface of the resonator being the end face of the optical waveguide;
wherein the modulation signal controls detuning of the optical resonator to thereby effect modulation of the light; and
wherein at least one of the first and second reflective surfaces is tiltable with respect to the other reflective surface under control of the modulation signal.

5,253,100

SOLID ELECTROLYTES FOR CONDUCTING POLYMER-BASED COLOR SWITCHABLE WINDOWS AND ELECTRONIC DISPLAY SERVICES

Sze Cheng Yang, Kingston, R.I., and Jyun-Hwei Hwang, Taipei, Taiwan, assignors to The Board of Governors for Higher Education, State of Rhode Island and Providence Plantations, Providence, R.I.

Continuation-in-part of Ser. No. 203,270, Jun. 7, 1988, Pat. No. 4,842,383, which is a continuation-in-part of Ser. No. 858,384, May 1, 1986, Pat. No. 4,749,260. This application Jun. 27, 1989, Ser. No. 373,195
Int. Cl.[5] G02F *1/01*
U.S. Cl. 359—266 47 Claims



1. An electrochromic composition which comprises:
an electroconductive polyaniline/polyelectrolyte matrix, the matrix characterized by interstices, the polyaniline having incorporated therein the polymeric electrolyte, said electrolyte in ion transfer relationship with said polyaniline.

5,253,101

ELECTROCHROMIC MATERIAL AND METHOD OF MAKING AN ELECTROCHROMIC MATERIAL

Hulya Demiryont, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 138,234, Dec. 28, 1987. This application Nov. 7, 1988, Ser. No. 267,858
Int. Cl.[5] G02F *1/01*
U.S. Cl. 359—373 4 Claims

1. A method which comprises depositing amorphous reduced tungsten oxide electrochromic material on a support of an electrochromic device, the oxidation number of the tungsten of the material as deposited on said support in a stable bleached condition being on average, less than +5.99 and greater than +5.90, wherein said reduced tungsten oxide electrochromic material is made by reacting fully oxidized tungsten oxide with a reducing agent in a non-oxidizing atmosphere, said reducing agent being a metal oxide used in an amount less than about 10% by weight based on the total weight of said fully oxidized tungsten oxide and said reducing agent.

2. The method of Claim 1, wherein said reduced tungsten oxide electrochromic material has said oxidation number, on average, [between] less than or equal to +5.96 and greater than +5.90.

5,253,102

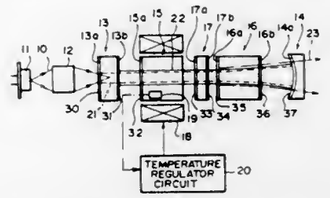
OPTICAL WAVELENGTH CONVERTER SYSTEM

Yoji Okazaki, Kanagawa, Japan, assignor to Fuji Photo Film Co. Ltd., Kanagawa, Japan

Filed Dec. 2, 1992, Ser. No. 984,354
Claims priority, application Japan, Dec. 2, 1991, 3-317883; Mar. 25, 1992, 4-67050
Int. Cl.[5] G02F *1/37*
U.S. Cl. 359—328 6 Claims

1. An optical wavelength converter system, in which a second harmonic wave is produced by the introduction of a linear polarized laser beam into the crystal of a first non-linear optical material, and in which a sum frequency is generated by the introduction, into the crystal of a second non-linear optical material, of the second harmonic wave together with the laser beam, the improvement comprising:
a phase comparator means being disposed in the optical path

of the laser beam and the second harmonic wave, both of which enter the crystal of the second non-linear optical



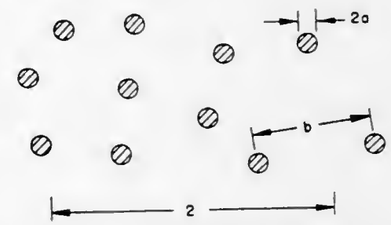
material, so that the laser beam and the second harmonic wave are aligned substantially in the same direction of plane polarization.

5,253,103

NONLINEAR OPTICS UTILIZING COMPOSITE OPTICAL MATERIAL ARCHITECTURES FOR PROVIDING ENHANCED NONLINEAR SUSCEPTIBILITY

Robert W. Boyd, Rochester, N.Y., and John E. Sipe, Toronto, Canada, assignors to The University of Rochester, Rochester, N.Y.

Filed Jan. 29, 1992, Ser. No. 827,675
Int. Cl.[5] G02F *1/37*
U.S. Cl. 359—329 78 Claims



1. A system for processing optical radiation to provide nonlinear response which is a function of the intensity of said radiation which comprises a body of composite material having a host material component and an inclusion material component, at least said host having an optical response which varies nonlinearly with the amplitude of an optical field applied to said body, and means for applying an optical field to said body of sufficient intensity to induce said nonlinear response, said nonlinear response of said body to said field being defined by a nonlinear susceptibility greater than the susceptibility of either of said components thereof.

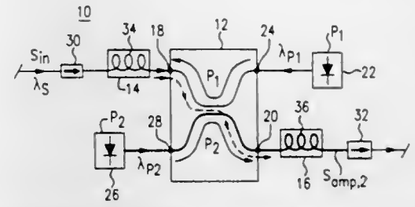
5,253,104

BALANCED OPTICAL AMPLIFIER

Jean-Marc P. Delavaux, Wescosville, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 15, 1992, Ser. No. 945,308
Int. Cl.[5] H01S *3/00;* G02B *6/26*
U.S. Cl. 359—341 21 Claims

1. An arrangement for amplifying an optical communication signal (S_{in}) operating at a predetermined wavelength (λ_s), the arrangement comprising:
a first doped optical fiber amplifier having first predetermined parameters;
a second doped optical fiber amplifier having second predetermined parameters;
a source of an optical pump signal (P) operating at a predetermined wavelength (λ_P) known to provide amplification of said communication signal within said doped fiber amplifiers; and
a wavelength division multiplexer including a first port coupled to said first doped optical fiber amplifier, a second port coupled to said second doped optical fiber amplifier, and third and forth ports coupled to said pump signal source in a manner whereby a first pump signal (P_1) enters



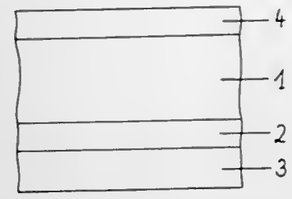
said third port and propagates through said multiplexer so as to be coupled into said first doped fiber amplifier, and a second pump signal (P_2) enters said fourth port and propagates through said multiplexer so as to coupled into said second doped fiber amplifier.

5,253,105

SOLAR MIRROR, PROCESS FOR ITS MANUFACTURE AND ITS USE

Thomas Paul, Herne, and Ingo Susemihl, Niederkassel, both of Fed. Rep. of Germany, assignors to Flachglas Aktiengesellschaft, Fuerth, Fed. Rep. of Germany

Filed Aug. 28, 1992, Ser. No. 938,030
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1991, 4128645
Int. Cl.[5] G02B *5/28, 1/10*
U.S. Cl. 359—359 22 Claims



18. A process for making a mirror for gathering and reflecting solar energy in a system for being powered by solar energy, said process comprising the steps of:
forming a glass substrate through which solar energy is transmitted having a first side for gathering solar energy and a second side opposite side first side:
forming a reflective layer for reflecting the solar energy gathered by said first side being transmitted through said glass substrate to said second side on said second side of said glass substrate for reflecting solar energy back through said glass substrate and out said first side of said glass substrate;
forming an interference layer, on said first side of said glass substrate, being configured for reflecting near ultraviolet radiation to interfere with near ultraviolet radiation falling on said mirror to substantially reduce near ultraviolet radiation transmitted to the glass substrate and to be substantially transparent to visible light and infrared radiation and substantially enhance reflection of near ultraviolet radiation from the mirror.

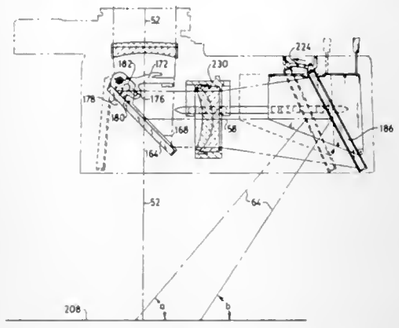
VOL 1155 ISS 2 OCT 12 1993 UMI

5,253,106

OBLIQUE VIEWING SYSTEM FOR MICROSCOPES

Edwin A. Hazard, Rochester, N.Y., assignor to Amarel Precision Instruments, Inc., Fairport, N.Y.

Filed Mar. 20, 1992, Ser. No. 855,986
Int. Cl.[5] G02B *21/00, 21/18*
U.S. Cl. 359—368 14 Claims



1. A system for viewing the surface of an object with a microscope along a first axis and a second axis which are at different angles to said surface which comprises a first mirror, a second mirror, means holding said first mirror on a pivot in either a first position or a second position, said first mirror being displaced from said first axis in said first position to present said surface to said microscope for viewing along said first axis, said first mirror being disposed across said first axis in said second position to define a third axis transverse to said first axis between said first mirror and said second mirror, said second mirror being spaced from said first mirror along said third axis, said second mirror facing said surface along said second axis so that said surface is viewed along said second axis when said first mirror is in said second position, wherein one of said different angles is between said surface and said second axis, and further comprising means for tilting said second mirror to vary the one of said different angles between said second axis and said surface, and further comprising a lens disposed between said first and second mirrors and moveable along said third axis for adjusting the focus of said surface at said microscope to accommodate displacements of said surface along said first axis.

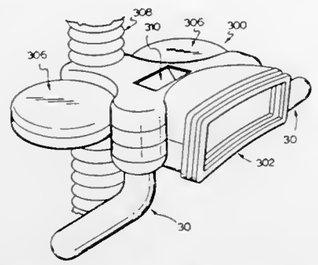
5,253,107

PANORAMIC INTERACTIVE SYSTEM INCLUDING COORDINATED MOVEMENT OF A FILM RECORD WITHIN A VIEWING HEAD

Graham T. Smith, 36 Robinson Street, Toronto, Ontario, Canada

Continuation-in-part of Ser. No. 737,148, Jul. 29, 1991, Pat. No. 5,153,716, which is a continuation-in-part of Ser. No. 601,232, Oct. 22, 1990, Pat. No. 5,040,055, which is a continuation-in-part of Ser. No. 448,263, Dec. 11, 1989, Pat. No. 4,985,762. This application Oct. 2, 1991, Ser. No. 770,105
Int. Cl.[5] G02B *27/22;* G03B *37/00*
U.S. Cl. 359—469 9 Claims

1. An image viewing system for viewing images recorded on a film record in a particular known angular relationship, said viewing system comprising a rotatable viewing head for selective viewing of portions of the film record as a function of the angular position of the viewing head and means for mounting the film record within the viewing head and coordinating the film record with the angular position of the viewing head such that the viewing head selectively directly scans, by angular movement of the viewing head, portions of the film record having an angular relationship corresponding to the angular



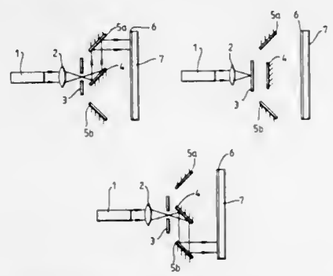
relation produced by the angular movement of the viewing head.

5,253,108

HELMET-MOUNTED DISPLAY

Philip Latham, London, England, assignor to British Aerospace Public Limited Company, London, England

Filed Sep. 3, 1991, Ser. No. 754,496
Claims priority, application United Kingdom, Sep. 8, 1990, 9019698
Int. Cl.[5] G02B *27/24*
U.S. Cl. 359—482 6 Claims



1. An optical arrangement for a helmet mounted display including:
a first fixed reflecting element having a reflecting surface;
a second fixed reflecting element having a reflecting surface;
a scanning reflecting element for alternately presenting a reflecting surface thereof to said reflecting surface of said first fixed reflecting element and then to said reflecting surface of said second fixed reflecting element; and
iris means for opening and closing in synchronism with the scanning action of said scanning reflecting element so that a light path is provided only from a source of light to a display via said scanning reflecting element and a respective one of said first or second fixed reflecting elements whenever their reflecting surfaces are substantially presented to each other.

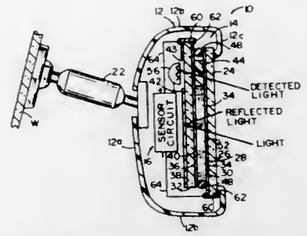
5,253,109

ELECTRO-OPTIC DEVICE WITH CONSTANT LIGHT TRANSMITTING AREA

Desmond J. O'Farrell, and Richard J. Gahan, both of Holland, Mich., assignors to Donnelly Corporation, Holland, Mich.

Filed Apr. 27, 1992, Ser. No. 874,635
Int. Cl.[5] G02B *5/08*
U.S. Cl. 359—604 22 Claims

1. An electro-optic device having at least one light transmitting window therein, comprising:
first and second spaced, optically transparent elements, each having a front and rear surface and defining a space between said rear surface of said first element and said front surface of said second element;
at least one optically transparent interlayer sandwiched between said first and second spaced optically transparent elements and in intimate contact therewith, said interlayer having an area less than said first and second spaced optically transparent elements;



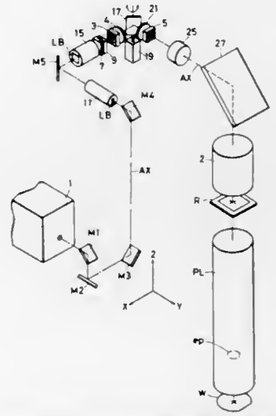
an electro-optic medium confined in said space between said rear surface of said first element and said front surface of said second element and not occupied by said optically transparent interlayer;
means for sealing said electro-optic medium within said space; and
means for applying an electric field to said electro-optic medium to cause variation in the light transmittance of said medium.

5,253,110

ILLUMINATION OPTICAL ARRANGEMENT

Yutaka Ichibara, and Yuji Kudo, both of Yokohama, Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 830,507, Jan. 31, 1992, abandoned, which is a continuation of Ser. No. 630,870, Dec. 20, 1990, abandoned. This application Nov. 24, 1992, Ser. No. 981,946
Claims priority, application Japan, Dec. 22, 1988, 63-322190; Dec. 21, 1989, 1-329690; Mar. 5, 1990, 2-51900
Int. Cl.[5] G02B *27/00*
U.S. Cl. 359—619 18 Claims



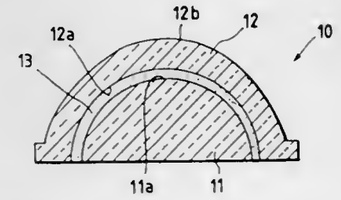
1. An illumination optical arrangement comprising:
(a) light source means for emitting a coherent light beam;
(b) optical illuminance distribution uniformizing means for making substantially uniform an intensity distribution in a beam cross-section of illumination by said coherent light beam in a plane to be illuminated; and
(c) optical polarizing means for producing from said coherent light beam a plurality of polarized light components which are different in polarization direction from each other in such a manner that wave fronts of incident light beams of said polarized light components to said optical illuminance distribution uniformizing means are respectively inclined relative to each other whereby interference patterns produced by said polarized light components are relatively shifted in position in said illuminated plane, thus said polarized light components do not interfere with each other.

5,253,111

CEMENTED PLASTIC LENS

Toru Chiba; Athuro Sekiyama, and Mitsuo Gacho, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo K.K., Tokyo, Japan

Filed Oct. 24, 1991, Ser. No. 781,903
Claims priority, application Japan, Nov. 2, 1990, 2-298503
Int. Cl.[5] G02B *25/00, 3/00;* G02C *7/02*
U.S. Cl. 359—647 9 Claims



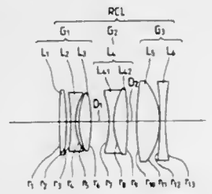
1. A cemented plastic lens, comprising:
a first plastic lens made of first synthetic resin material;
a second plastic lens made of second synthetic resin material being different from said first resin material and having coefficient of thermal expansion different from that of said first resin material, said first and second lenses having mating surfaces that have macroscopically the same curvature; and
a soft adhesive, said mating surfaces being bonded together with said soft adhesive that is capable of elastic deformation by itself in a hardened state and that has the ability to attenuate the stress that will develop at said mating surfaces due to the thermal expansion mismatch.

5,253,112

REAR CONVERSION LENS

Kenzaburo Suzuki, Tokyo, and Yoshinari Hamanishi, Wako, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Nov. 12, 1992, Ser. No. 974,482
Claims priority, application Japan, Nov. 18, 1991, 3-329497
Int. Cl.[5] G02B *15/08*
U.S. Cl. 359—675 13 Claims



1. A rear conversion lens adapted to be mounted on the image side of an objective lens and having negative refractive power for enlarging the combined focal length of itself and said objective lens, said rear conversion lens including, in succession from said objective lens side, a first lens unit having a positive lens component most adjacent to the object side and

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having positive or negative refractive power as a whole, a second lens unit having negative refractive power, and a third lens unit having positive refractive power, said rear conversion lens, when the air gap between said first lens unit and said second lens unit is D_1 and the air gap between said second lens unit and said third lens unit is D_2, being designed to satisfy the following conditions:

$$0.13 < D_1/\Sigma d < 0.25$$

$$0.005 < |D_2/f_R| < 0.05,$$

where

Σd: the on-axis lens thickness from the first surface to the last surface of the entire rear conversion lens;

f_R: the focal length of the entire rear conversion lens.

5,253,113

WIDE-ANGLE ZOOM LENS HAVING FIVE LENS UNITS

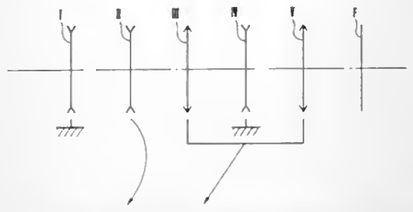
Makoto Sekita, Tokyo, and Akihiro Nishio, Kanagawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 3, 1991, Ser. No. 754,033

Claims priority, application Japan, Sep. 7, 1990, 2-238188

Int. Cl.[5] G02B *9/60, 13/04, 15/14, 15/20*

U.S. Cl. 359—680 **11 Claims**



1. A wide-angle zoom lens comprising: from an object side to an image side, a first lens unit of negative refractive power, a second lens unit of negative refractive power, a third lens unit of positive refractive power, a fourth lens unit of negative refractive power and a fifth lens unit of positive refractive power, variation of the magnification from a wide-angle end to a telephoto end being performed by moving said second lens unit so as to have a locus of convex shape toward the image side and by moving said third lens unit and said fifth lens unit toward the object side, wherein said first and fourth lens units each remain stationary during zooming.

5,253,114

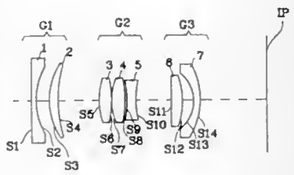
ZOOM LENS SYSTEM

Hung-Te Lee, Taipei, and Yi-Yen Laio, Hsinchu, both of Taiwan, assignors to Industrial Technology Research Institute, Chutung, Taiwan

Filed Feb. 9, 1993, Ser. No. 15,399

Int. Cl.[5] G02B *15/14*

U.S. Cl. 359—689 **3 Claims**



1. A zoom lens system is arranged in three lens groups, in the order from object side to image plane side, the first lens group having negative refractive power, the second lens group having positive refractive power and the third lens group having negative refractive power, during zooming operation from wide angle position to telephoto position, the first, second, and third lens groups varying their respective separations and together moving toward the object side of the lens system, the zoom lens system being designed to satisfy the following condition:

$$1 < |f3|/|f1| < 4.8$$

$$1 < |f1|/|fw| < 1.5$$

$$0.9 < \beta_{3T}/\beta_{3W} < 1.7$$

where the β_{3T} represents the magnification of the third lens group at wide angle position; the β_{3W} represents the magnification of the third lens group G3 at telephoto position; f1 represents the focal length of the first lens group; the f3 represents the focal length of the third lens group; and the fw represents the focal length of the lens system at wide angle position.

5,253,115

REARVIEW MIRROR WITH AN OPERATING CONDITION DISPLAY

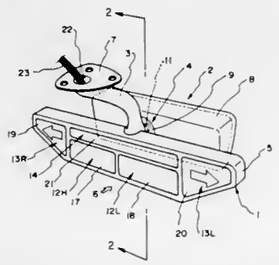
Yasushi Ueno, 2-34-2, Hino, Kohnan-Ku, Yokohama, Japan

Filed Apr. 24, 1991, Ser. No. 690,464

Claims priority, application Japan, Feb. 21, 1991, 3-15115

Int. Cl.[5] G02B *7/18;* **G60R** *1/04, 1/12;* **B60Q** *1/26*

U.S. Cl. 359—838 **28 Claims**



1. In combination, a rearview mirror and operating condition display system for a vehicle, comprising:

support means non-movably fixed within said vehicle;

an operating condition display non-movably fixed directly upon said support means disposed within said vehicle so as to render said operating condition display visible through a front windshield of said vehicle;

first pivotable support means fixedly mounted upon a rear surface portion of said operating condition display;

a rearview mirror having a mirror component thereof disposed rearwardly so as to provide a driver of said vehicle with a view of the environment disposed behind said vehicle; and

second pivotable support means fixedly mounted upon a front surface portion of said rearview mirror for pivotable mating engagement with said first pivotable support means of said operating condition display so as to render said rearview mirror pivotably adjustable with respect to and independent of said operating condition display in a plurality of directions while said operating condition display remains non-movably fixed within said vehicle so as to constantly display the operating conditions of said vehicle through said front windshield of said vehicle.

5,253,116

COLLIMATED VIEWING DEVICE WITH OFF-AXIS SPHERICAL MIRROR FOR SIMULATOR

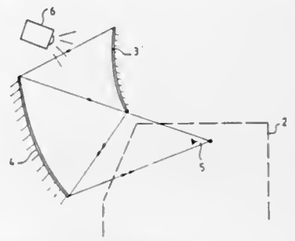
Michel Lacroix, Bois d'Arcy, France, assignor to Thomson-CSF, Puteaux, France

Filed Nov. 21, 1991, Ser. No. 795,815

Claims priority, application France, Nov. 23, 1990, 90 14618

Int. Cl.[5] G02B *17/06, 23/06, 9/08*

U.S. Cl. 359—858 **5 Claims**



1. A viewing device, comprising:

a spherical screen having a convex side;

a projector disposed on said convex side of said spherical screen, said projector for projecting directly onto said convex side of said spherical screen;

a spherical mirror having a concave side facing said convex side of said spherical screen, said spherical mirror for directly receiving light from said convex side of said spherical screen, said concave side of said spherical screen for being viewed by a user of the viewing device.

5,253,117

REFLECTING OBJECTIVE SYSTEM

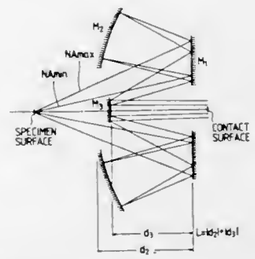
Shingo Kashima, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Division of Ser. No. 553,639, Jul. 18, 1990, Pat. No. 5,144,496. This application Aug. 31, 1992, Ser. No. 937,551

Claims priority, application Japan, Jul. 19, 1989, 1-184561; Jul. 19, 1989, 1-184562; Jul. 27, 1989, 1-192747; Jul. 27, 1989, 1-192748

Int. Cl.[5] G02B *17/06, 5/10*

U.S. Cl. 359—859 **4 Claims**



1. A reflecting objective system comprising, in the travelling order of light incident from the object side:

a first spherical reflecting mirror;

a second spherical reflecting mirror; and

a third spherical reflecting mirror disposed symmetrically with respect to an optical axis common thereto;

said first spherical reflecting mirror and said second spherical reflecting mirror having positive optical powers;

said third spherical reflecting mirror having a negative optical power;

said reflecting objective system satisfying the following condition (1):

$$7 \leqq |r_2/r_3| \cdot (f/L_{23}) \leqq 9 \quad (1)$$

wherein the reference symbol r_2 represents the radius of curvature on said second spherical reflecting mirror, the reference symbol r_3 designates the radius of curvature on said third spherical reflecting mirror, the reference symbol f denotes the focal length of the reflecting objective system and the reference symbol L_{23} represents the optical distance between the second reflecting mirror and the third reflecting mirror.

5,253,118

DISK SPEED CONTROLLER USING FIELD MEMORY READ/WRITE CYCLE WITH ADAPTIVE LOCK

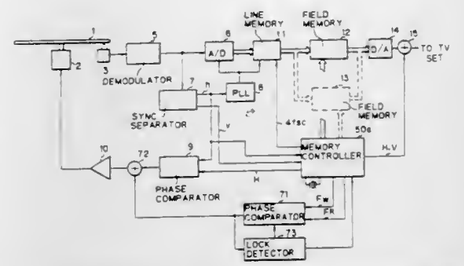
Yoshikiyo Konno, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 538,940, Jun. 15, 1990, abandoned. This application Jan. 8, 1993, Ser. No. 3,812

Claims priority, application Japan, Jul. 11, 1989, 1-179657

Int. Cl.[5] H04N *5/95*

U.S. Cl. 360—10.1 **2 Claims**



1. An information record medium playback apparatus comprising:

drive means for driving an information record medium with a record signal bearing video information recorded;

read means for reading said record signal from said information record medium;

demodulation means for demodulating a video signal from the read signal by said read means;

sync separation means for separating a sync signal from said demodulated video signal;

drive control means for supplying a first phase difference signal between said sync signal and a reference signal with a predetermined frequency to said drive means, said drive control means including means for generating said reference signal and first phase difference detection means for generating said first phase difference signal by comparing phases of said sync signal and said reference signal;

signal generation means for generating a write timing signal based on said sync signal;

write means for having said demodulated video signal stored in a memory in synchronism with said write timing signal;

read timing generation means for generating a read timing signal;

read means for reading the demodulated video signal written in said memory in accordance with said read timing signal;

field discrimination means for generating a field discrimination signal indicative of the positions on the time base of the odd and even fields of the demodulated video signal written in said memory;

read field signal generation means for generating a read field signal indicative of the positions on the time base of the odd and even fields of the demodulated video signal to be read out of said memory in accordance with said read timing signal; and

time base adjustment means for performing time base adjustment of said demodulated video signal, said time base

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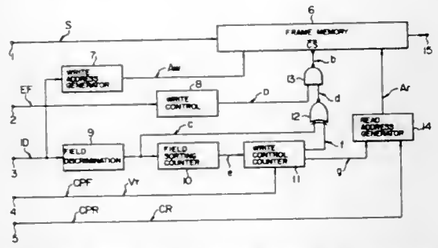
adjustment means including second phase difference detection means for detecting a phase difference between said position on the time base indicated by said field discrimination signal and said position on the time base indicated by said read field signal and generating a second phase difference signal, and means, responsive to said second phase difference signal, for accelerating or decelerating a driving speed of said information record medium by said drive means when the phase difference between positions on the time base indicated by said field discrimination signal and said read field signal is not in a predetermined phase difference range, wherein said field discrimination signal has levels respectively corresponding to the periods during which the odd and even fields remain in existence and said read field signal has levels respectively corresponding to the periods during which the odd and even fields remain being read, and wherein said means for accelerating or decelerating driving speed included in said time base adjustment means comprises an adder for superposing said second phase difference signal on said first phase difference signal generated by said first phase difference detection means of said drive control means.

5,253,119

DIGITAL IMAGE REPRODUCTION APPARATUS AND METHOD

Kazuyuki Takeshita, Hachioji, and Kenji Nakano, Fuchu, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 29, 1990, Ser. No. 545,639
Claims priority, application Japan, Jul. 3, 1989, 1-169979
Int. Cl.[5] H04N *5/78*
U.S. Cl. 360—10.3 **5 Claims**



1. A digital image reproduction apparatus for writing reproduced signals obtained from a traveling magnetic tape, at a speed different from that of a recording operation of said signals, into a memory as digital image signals, and simultaneously reading them from said memory, digital image signals being so recorded on said magnetic tape as to extend over n tracks in one field interval, n being a positive integer, said digital image reproduction apparatus comprising:

said memory including a first storage area corresponding to alternate fields or frames of said image signals recorded on said magnetic tape aid a second storage area corresponding to remaining alternate fields of frames;

first means for discriminating a field or frame to which said reproduced signals belong;

second means for selecting either said alternate fields or frames or said remaining alternate fields or frames on the basis of the discrimination result of said first means obtained during each of successive field or frame intervals; and

third means for only writing said reproduced signals belonging to a selected field or frame into a specified writing area of said memory to write all of the reproduced signals belonging to said selected field or frame in said specified writing area;

wherein said reproduced signals are divided into unit blocks each provided with an identification signal representing a field or frame to which the unit block belongs; and

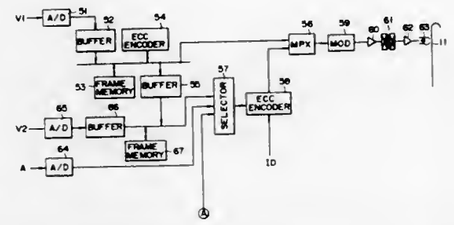
wherein said second means detects an increase or decrease in the number of said identification signals representing the alternate fields or frames and the remaining alternate fields or frames existing in successive field or frame intervals, and said second means generates a signal which sets a timing for changing over the selection of fields or frames on the basis of change points of said increase or decrease.

5,253,120

RECORDING/REPRODUCING APPARATUS FOR MORE EFFICIENT RECORDING AND REPRODUCTION OF AUDIO AND VIDEO SIGNALS

Naoki Endoh, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 30, 1990, Ser. No. 501,717
Claims priority, application Japan, Mar. 31, 1989, 1-83595
Int. Cl.[5] H04N *5/78*
U.S. Cl. 360—19.1 **15 Claims**



1. A recording and reproducing apparatus for recording and reproducing data with respect to a recording medium having first and second tracks having a plurality of channels, comprising:

a video memory having a capacity of at least one frame;

data receiving means for receiving movie image data;

digital data output means for outputting digital audio data and digital still image data different from the movie image data;

means for selectively outputting first and second mode signals, the first mode signal being used for designating recording and reproducing of the movie image data and digital audio data, and the second mode signal being used for designating the recording and reproducing of the movie image data, digital audio data and digital still image data;

first recording means for recording the movie image data onto the first track of said recording medium via said video memory, and the digital audio data onto the channels of the second track in response to the first mode signal in a recording mode;

first reproducing means for producing the movie image data recorded onto the first track of said recording medium via said video memory, and the digital audio data recorded onto the channels of the second track in response to the first mode signal in a reproducing mode;

second recording means for recording the digital audio data and the digital still image data input from said digital data output means onto the channels of said second track of said recording medium, and for recording the movie image data onto the first track in response to the second mode signal in the recording mode, the digital audio data being data input to said digital data output means;

second reproducing means for reproducing the digital audio data and the digital still image data recorded onto the channels of said second track, and for reproducing the movie image data from the first track in response to the second mode signal in the reproducing mode; and

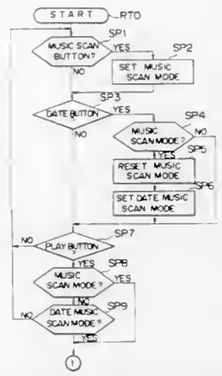
means for writing the digital still image data reproduced from said second track of said recording medium into said video memory.

5,253,121

RECORDING AND/OR REPRODUCING APPARATUS

Hisashi Asano, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 25, 1991, Ser. No. 735,870
Claims priority, application Japan, Jul. 31, 1990, 2-204573
Int. Cl.[5] G11B *5/02*
U.S. Cl. 360—19.1 **6 Claims**



1. A recording and/or reproducing apparatus utilizing a recording medium on which signals representing a plurality of music portions are recorded along with respective start information, the music portions being arranged in at least first and second program areas and having respective first and second date information, said first and second date information being representative of recording points of time when said first and second program areas are recorded on said recording medium, characterized int hat said recording and/or reproducing apparatus comprises:

playback means for reproducing signals recorded on said recording medium;

means for selecting a music scan operation or a date music scan operation;

means for processing said second program area corresponding to said second date information during a predetermined period upon selecting said date music scan operation, in response to detecting that said first and second date information detected by sequentially searching said recording medium differ from each other by at least a predetermined amount.

5,253,122

RECORDING OF DIGITAL VIDEO SIGNALS ON A MAGNETIC MEDIUM HAVING A PARTICULAR ENERGY PRODUCT AND SURFACE ROUGHNESS

Kazunobu Chiba; Kenichi Sato, and Yuichi Arisaka, all of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 768,871, filed as PCT/JP91/00755, Jun. 5, 1991. This application Oct. 30, 1991, Ser. No. 784,751
Claims priority, application Japan, Oct. 31, 1990, 2-294676
Int. Cl.[5] H04N *5/783*
U.S. Cl. 360—33.1 **4 Claims**

1. A method for magnetically recording digital video signals comprising the steps of:

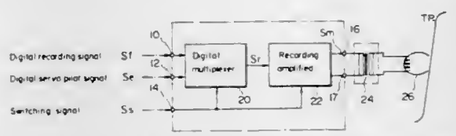
converting input digital video signals into data segmented into blocks each composed of a plurality of pixel data; compression-coding s id blocks of pixel data block-by-block; converting the compression-coded data into channel-encoded data; and supplying said channel-encoded data to magnetic heads on a rotary drum for recording by such heads on a magnetic recording medium constituted by a nonmagnetic base having thereon a magnetic layer of at least one thin magnetic metal film which has an energy product of at least 100 G.cm.Oe, and with the surface roughness of said magnetic recording medium being at most 0.003 μm in center line average height.

5,253,123

APPARATUS FOR DIGITALLY RECORDING TIME-MULTIPLEXED DIGITAL INFORMATION AND PILOT SIGNALS WITH DIFFERENT RECORDING CURRENT LEVELS

Keiji Kanota, and Takahito Seki, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 29, 1991, Ser. No. 692,993
Claims priority, application Japan, May 7, 1990, 2-117153
Int. Cl.[5] G11B *5/09*
U.S. Cl. 360—46 **3 Claims**



1. A digital recording apparatus for recording a digital information signal and a digital pilot signal on a recording medium, said apparatus comprising:

digital multiplexing means receiving said digital information and pilot signals and a switching signal for time-multiplexing said digital information signal and said digital pilot signal into a composite digital recording signal having information and pilot signal portions in a time-multiplexed relation determined by said switching signal;

variable gain amplifier means for variably amplifying the current of said composite digital recording signal so as to provide an amplified digital recording signal;

transducer means current-driven by said amplified digital recording signal for recording the latter on a record medium; and

means for controlling the gain of said variable gain amplifier means in response to said switching signal so that, in said amplified digital recording signal which current-drives the transducer means, said pilot signal portion has a current level substantially larger than the current level of said information signal portion.

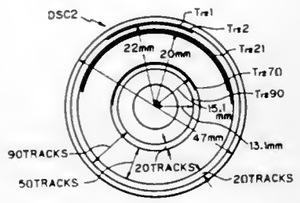
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5,253,124

APPARATUS FOR FORMING RECORDING TRACKS ON DISKS WITH DIFFERENT TRACK-NUMBER FORMATS

Tsuyoshi Kondo; Yasunori Maeshima, and Takashi Fukushima, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 31, 1991, Ser. No. 648,878
Claims priority, application Japan, Jan. 31, 1990, 2-020958
Int. Cl.[5] G11B *27/32*
U.S. Cl. 360—48 8 Claims



4. A disk format for a disk recording apparatus that records/reproduces disks having first normal-density track numbers and disk having second high-density track numbers compatibly, wherein

a first recording mode for forming a first plurality of recording tracks and assigning linear first type track numbers from one end of the disk to the other end of the disk in a radial direction in turn to said first plurality of tracks to be recorded on the disk type recording medium, and

a second recording mode for forming a second plurality of recording tracks on at least on an outer peripheral area in the radial direction of the disk beyond recording tracks of said first recording mode and assigning a second type track numbers including said linear track numbers with an offset to said second plurality of tracks greater than said first plurality of tracks.

5,253,125

METHOD AND APPARATUS FOR DATA FILL IN FAILING READ CHANNEL IN PARALLEL TRANSFER DRIVES

Wallace J. Erikson, Eden Prairie; Edward L. Grivna, Brooklyn Park, and Herman T. Todd, South St. Paul, all of Minn., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 456,117, Dec. 22, 1989, abandoned.
This application Jan. 19, 1993, Ser. No. 6,180
Int. Cl.[5] G11B *5/09*
U.S. Cl. 360—51 7 Claims

6. A data recovery system in a multiple platter parallel transfer disc drive, wherein at least one data transfer channel is associated with each platter, the system comprising:

a multiple platter simultaneous parallel transfer disc drive:

means connected in parallel to all data transfer channels in the parallel transfer disc drive for initiating a read operation, the read operation having a beginning, a middle, and an end;

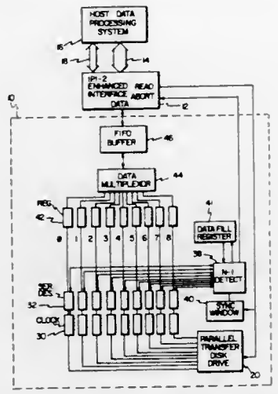
means connected to each data transfer channel for recovering clock signals associated with each of a plurality of data records on each platter of the disc drive;

means connected to each data transfer channel for generating a clock time window associated with the beginning of the read operation;

means for monitoring the clock time window and the recovery of the clock signals, and giving indication if a clock signal for a channel is not received within the clock time window; and

means connected in parallel to all data transfer channels for filling the channel for which the clock signal was not recovered within the clock time window with a predetermined data pattern; and

data regeneration means connected in parallel to all data transfer channels and adapted to recognize the predetermined data fill pattern, the predetermined data fill pattern



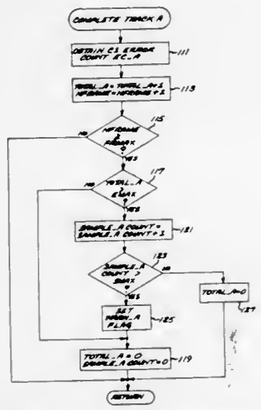
being created independently of information stored on the disc drive, and to reconstruct a data stream from a data transfer channel and insert the data stream into a data transfer channel if the predetermined data fill pattern is received from that channel.

5,253,126

RAW ERROR MONITORING AND REPORTING

Robert C. Richmond, Laguna Hills, Calif., assignor to Archive Corporation, Costa Mesa, Calif.

Filed Apr. 3, 1991, Ser. No. 679,668
Int. Cl.[5] G11B *5/09*
U.S. Cl. 360—53 8 Claims



1. A method for monitoring the performance of a DAT drive, comprising the steps of:

reading successive groups of frames from a tape, each group of frames having the same number of frames;

determining for each group of frames read from the tape respective A track and B track reference error counts representative of the A track and B track C1 error counts in such group of frames; and

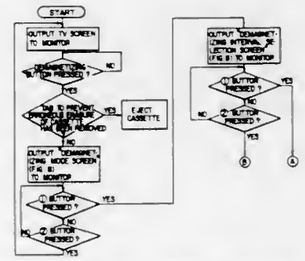
providing a warning signal indicative of degraded performance if (i) the A track reference count for each group of S consecutive frame groups exceeds a predetermined threshold or the B track reference count for each group of S consecutive frame groups exceeds the predetermined threshold, or (ii) both the A track and B track reference counts for each group of S consecutive frame groups exceed the predetermined threshold.

5,253,127

VIDEO TAPE RECORDER HAVING A SPECIAL DEMAGNETIZING FUNCTION

Yukihiko Ozaki; Eiji Moro; Susumu Ohtsuka, and Takeo Ohkouchi, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 15, 1991, Ser. No. 730,077
Claims priority, application Japan, Jul. 18, 1990, 2-188071
Int. Cl.[5] G11B *5/02*
U.S. Cl. 360—57 10 Claims



1. A home use video tape recorder comprising:

means for effecting a special demagnetizing function so as to execute a demagnetizing operation of a magnetic tape without carrying out a recording operation;

selecting means for designating an interval of the magnetic tape to be demagnetized including a first interval to be demagnetized from a beginning to an end of an entire area of the magnetic tape, a second interval to be demagnetized from the beginning to a present position of the magnetic tape, and a third interval to be demagnetized from the present position of the magnetic tape to the end of the magnetic tape; and

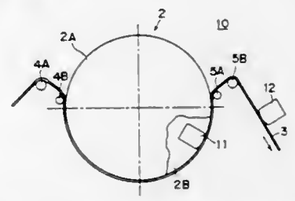
control means responsive to the selecting means for controlling the special demagnetizing function means to demagnetize a selected interval of the magnetic tape selected by the selecting means.

5,253,128

SIGNAL RECORDING AND REPRODUCING APPARATUS WITH REDUNDANT CONTROL SIGNAL HEADS

Kasuo Ike, Kanagawa, and Seiichi Sakai, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 26, 1991, Ser. No. 798,206
Claims priority, application Japan, Nov. 30, 1990, 2-339776
Int. Cl.[5] G11B *15/14*
U.S. Cl. 360—64 8 Claims



1. A signal recording and reproducing apparatus wherein a magnetic tape extending in a longitudinal direction is wound on a drum unit, recording tracks are sequentially formed by an information recording/reproducing rotary magnetic head mounted on said drum unit, and the information is recorded thereon and read by reproducing said information from said recording tracks, comprising:

a first recording/reproducing control head for sequentially recording or reproducing control signals on or from said magnetic tape;

a circuit for detecting said control signals reproduced from or recorded by said first recording/reproducing control head and for generating a switch signal;

a second recording/reproducing control head, disposed within a running path of said magnetic tape, for recording or reproducing said control signals; and

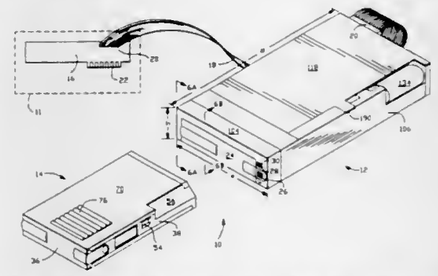
a changeover circuit for selecting one of said first and second recording/reproducing control heads for recording or reproducing said control signals in response to said switch signal.

5,253,129

REMOVABLE AND TRANSPORTABLE HARD DISK SUBSYSTEM

Richard J. Blackborow, Cupertino; Peter S. Hahn, Fremont; Claude E. Camp, Milpitas; Donald C. Westwood, Cupertino; Rodica Florea, San Jose; Eric J. Botto, Palo Alto; Scott E. Richmond, San Jose, and David B. Jeppson, Sunnyvale, all of Calif., assignors to Quantum Corporation, Milpitas, Calif.

Continuation of Ser. No. 585,949, Sep. 21, 1990, Pat. No. 5,065,262, which is a division of Ser. No. 278,006, Nov. 30, 1988, Pat. No. 5,041,924. This application Nov. 12, 1991, Ser. No. 791,792
Int. Cl.[5] G11B *19/02, 17/00*
U.S. Cl. 360—69 18 Claims



18. A base unit for use within a removable and transportable hard disk system including a removable and transportable fixed disk drive module and interconnection means for interconnecting the base unit and the module with a host computer system, the base until sized to be received within a height-compressed disk drive bay of the computing system and including:

frame means for defining an interior space for receiving the fixed disk module and having a front opening,

module engagement and moving means formed substantially entirely in a sidewall of the base housing means for engaging a load latch recess means as the fixed disk module and moving the fixed disk module further into the interior space, the module engagement and moving means including an elongated electric motor means having a worm gear in a driving relationship with spur gear means, wherein the spur gear means drives a moveable rack means, and module latch means mounted to and moved by the moveable rack means, the module latch means for engaging and moving the fixed disk module within the interior space.

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5,253,130

HEAD TRACK ALIGNMENT ARRANGEMENT IN A MAGNETIC TAPE RECORDER

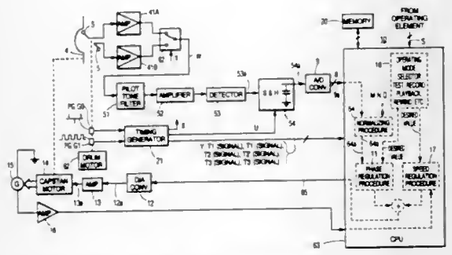
Jürgen Kaaden; Franz Bigge, both of Villingen, Fed. Rep. of Germany, and Paul A. Gillot, Fran Fontainebleau, France, assignors to Deutsche Thomson-Brandt GmbH, Villingen, Fed. Rep. of Germany

Filed Apr. 25, 1991, Ser. No. 692,390

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1988, 3840630

Int. Cl.[5] G11B *5/58*

U.S. Cl. 360—77.15 22 Claims



1. A magnetic tape recorder, comprising:

a magnetic tape having a plurality of recording tracks in which a pilot signal is recorded, each of said tracks being slanted with respect to a length direction of said tape;

first means, including a first magnetic head, for reproducing via said first magnetic head, said pilot signal that is recorded in adjacent tracks with respect to said first magnetic head to produce a first crosstalk signal;

second means, including a second magnetic head, for reproducing, via said second magnetic head, said pilot signal that is recorded in adjacent tracks with respect to said second magnetic head to produce a second crosstalk signal;

means responsive to a signal produced via said first magnetic head and to a signal produced via said second magnetic head for generating a third signal prior to a normal playback mode of operation in accordance with a difference therebetween, said third signal containing a first corrective value that is determined by said difference;

memory means for storing, prior to said normal playback mode of operation, said third signal;

means responsive to said crosstalk signals and to said stored, third signal that is read out from said memory, for generating first and second portions of an output signal that is indicative of a head-track misalignment error, during normal playback mode of operation, such that said first portion of said output signal is compensated, in accordance with said first corrective value, relative to said second portion of said output signal; and

means responsive to said output signal for controlling a head-track misalignment in a manner to reduce said error.

5,253,131

SERVO PATTERN FOR LOCATION AND POSITIONING OF INFORMATION ON A DISK DRIVE

David Chevalier, Santa Clara, Calif., assignor to Maxtor Corporation, San Jose, Calif.

Filed Mar. 6, 1990, Ser. No. 489,481

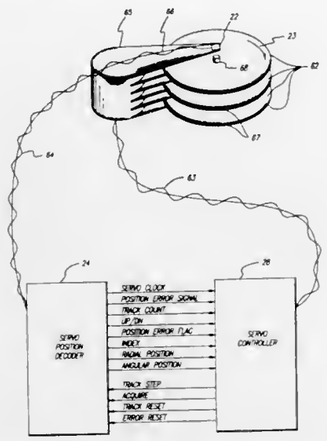
Int. Cl.[5] G11B *27/32, 27/30*

U.S. Cl. 360—78.14 5 Claims

1. A method of determining radial and angular position of a detection means disposed over a disk having a plurality of data tracks comprising the steps of:

forming a plurality of servo tracks on a surface of said disk, each of said servo tracks comprising one of a plurality of binary sequences such that a first number of consecutive bits of said binary sequence is unique anywhere on a track;

said plurality of servo tracks formed in a pattern on said surface such that a second number of consecutive servo tracks comprise a unique combination of said plurality of binary sequences;



determining angular position of said detection means by sequentially comparing said first number of consecutive bits with a generated stream of bits corresponding to said one of said plurality of binary sequences;

determining radial position of said detection means by sequentially comparing said second number of consecutive tracks with said pattern of servo tracks.

5,253,132

CASSETTE TAPE CAPSTAN DRIVE WITH ROCKER ABOVE CAPSTAN FOR SWINGING PRESSURE ROLLER OUT OF AND INTO READY POSITION AND WITH MAGNET-FORCE FOR PRESSURE

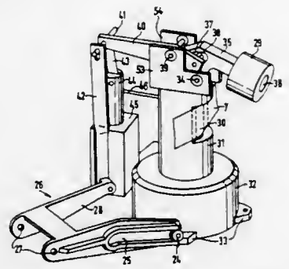
Dieter Gause, Weiterstadt; Rainer Kaus, Hochheim; Werner Maack, Seeheim-Jugenheim, and Reinhard Weber, Reinheim, all of Fed. Rep. of Germany, assignors to BTS Broadcast Television Systems GmbH, Darmstadt, Fed. Rep. of Germany

Filed Nov. 1, 1991, Ser. No. 786,505

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1990, 4035863

Int. Cl.[5] G11B *15/29, 15/61*

U.S. Cl. 360—85 15 Claims



1. A tape transport mechanism for a magnetic tape apparatus for reading from and/or writing onto a tape supplied in a cassette and having

a tape loading device for pulling out the tape stored in the cassette and disposing it around a drum-shaped tape-scanning device,

a drive shaft having an axis in a vertical direction for moving the pulled out tape lengthwise of the tape,

a shaft bearing which supports said drive shaft;

a press-on roller swingable between a quiescent position in which it is spaced away from said drive shaft and a driving position in which it presses against said drive shaft,

characterized in that

a press-on roller axle (**36**) for said press-on roller (**29**) is disposed at one end of a press-on lever (**35**); and

in that the press-on lever (**35**) is pivotally mounted on the shaft bearing (**31**) which supports the drive shaft (**30**) so that the press-on lever is variably inclined by means for swinging said lever (**35**) in such a way that prior to the tape (**7**) being pulled out of the cassette, the press-on roller (**29**) is swung out of a tape-threading path so that its axis is at approximately 90° to said axis direction of said drive shaft (**30**)and after the tape (**7**)is completely threaded in said mechanism, said press-on roller (**29**) is swung into a tape-driving position in which its axis is parallel to said axis of said drive shaft (**30**).

5,253,133

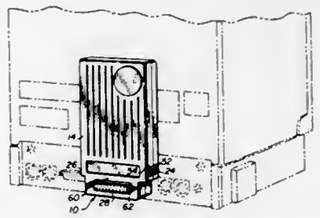
PORTABLE MODULAR HARD DISK DRIVE

David C. Guo, Sunnyvale, Calif., assignor to CCT Inc., Palo Alto, Calif.

Filed Jan. 3, 1992, Ser. No. 817,471

Int. Cl.[5] G11B *17/02*

U.S. Cl. 360—97.01 7 Claims



1. A portable, modular hard disk drive assembly (**10**) for mounting to a host computer, comprising:

a hard disk drive (**12**) packaged within a casing (**14**, **36**) and electrically joined with a first electrical connector (**20**) positioned adjacent an interior surface (**16**) of said casing (**14**);

a second electrical connector (**18**) mating with said first electrical connector (**20**);

a circuit board (**22**) connected to the second electrical connector (**18**) and containing connector means for transferring electrical power to, input data to and output data from the hard disk drive;

a first joining connector (**30**) connected electronically to a front surface of the circuit board and for connection to a mating connector of a host computer to link the circuit board (**22**) to said host computer;

a second joining connector (**28**) connected electronically to a back surface of the circuit board (**22**) and for connection to a mating connector of a portable modular hard disk assembly to link an additional portable modular had disk assembly;

a plurality of hollow support posts (**33**; **34**) rigidly connecting the first joining connector (**30**) to the second joining connector (**28**);

a plurality of attachment screws (**60**, **62**) passing through the hollow support posts (**32**, **34**) and for attachment to a host computer;

a back case half (**36**);

a front case half (**42**), the front case half (**42**) being fit to the back case half (**36**) to contain the hard disk drive (**12**);

a plurality of fasteners (**48**, **50**) rigidly connecting the back case half (**36**) to the front case half (**42**); and

a retention fastener (**40**) rigidly connecting the hard disk drive (**12**) and the back case half (**36**).

5,253,134

THIN-FILM MAGNETIC HEAD

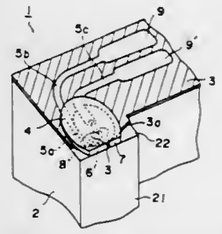
Yoshiaki Kato, and Noboru Komori, both of Minami Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 8, 1991, Ser. No. 697,162

Claims priority, application Japan, May 9, 1990, 2-117706; Jul. 20, 1990, 2-190628

Int. Cl.[5] G11B *5/47*

U.S. Cl. 360—126 9 Claims



1. A thin-film magnetic head comprising an upper magnetic film and a lower magnetic film, both formed on a substrate, and a coil conductor layer and insulating layers, both formed between said upper magnetic film and said lower magnetic film, said upper and lower magnetic films defining a magnetic gap communicating with an end face of said magnetic head which opposes a recording medium, wherein said lower magnetic film is formed as a uniform flat surface extending over at least a region where the coil conductor layer is formed, said lower magnetic film including a first portion which extends to said end face proximate said gap and a second portion on opposite sides of said gap which is receded from the end face, and wherein said insulating layers are formed of an inorganic material and contact receded end surfaces of said second portion such that interference associated with magnetic flux generated from neighboring tracks is suppressed.

5,253,135

MAGNETIC HEAD HAVING A TAPE SLIDING SURFACE AND PROJECTIONS FORMED ON THE TAPE SLIDING SURFACE

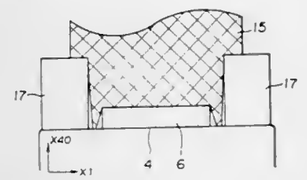
Junji Hamana, Hanno, Japan, assignor to Canon Denshi Kabushiki Kaisha, Chichibu, Japan

Filed Mar. 12, 1991, Ser. No. 667,314

Claims priority, application Japan, Mar. 13, 1990, 2-63892; Apr. 24, 1990, 2-109660; Aug. 31, 1990, 2-230272

Int. Cl.[5] G11B *15/60, 5/105*

U.S. Cl. 360—130.21 22 Claims



1. A magnetic head for use with a magnetic tape which slides relative to said magnetic head and which is pressed by a pad against a tape sliding surface of said magnetic head to perform

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magnetic recording or reproduction of information, said magnetic tape having parallel edges and said pad having a pair of end portions which extend beyond said edges of said magnetic tape, said magnetic head comprising:

magnetic cores; and

a pair of projections which are formed on said tape sliding surface of said magnetic head having said magnetic cores, said projections being disposed at locations where they make contact with both end portions of said pad, said projections having traces of fine meshes of a screen plate on the surfaces thereof.

5,253,136

TAPE CASSETTE HAVING AN INFORMATION INDICATING PORTION FOR INDICATING INFORMATION RELATING TO PREDETERMINED CHARACTERISTICS OF THE TAPE CASSETTE

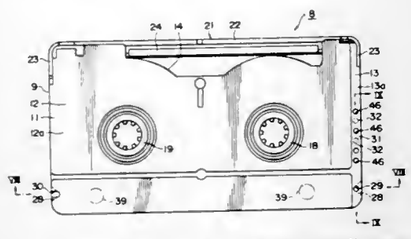
Kazuyoshi Suzuki, and Hiroshi Fujii, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 22, 1991, Ser. No. 748,520

Claims priority, application Japan, Aug. 30, 1990, 2-26467

Int. Cl.[5] G71B *23/02*

U.S. Cl. 360—132 **10 Claims**



2. A tape cassette comprising a magnetic recording tape for recording video signals of a first recording format; a cassette case for accommodating said magnetic recording tape; said cassette case having a main portion with an external size which is substantially the same as that of a cassette case accommodating magnetic recording tape for recording video signals of a second recording format and said cassette case having an additional portion which extends from one side of said main portion and which has a thickness slightly smaller than that of said main portion; and information indicating means provided at a lower surface of said additional portion which includes a plurality of substantially in-line holes for indicating information related to predetermined characteristics of said tape cassette wherein the presence or absence of each of said holes indicates one of said predetermined characteristics of said tape cassette.

5,253,137

INTEGRATED CIRCUIT HAVING A SENSE AMPLIFIER

Evert Seevinck, Eindhoven, Netherlands, assignor to U.S. Philips Corp., New York, N.Y.

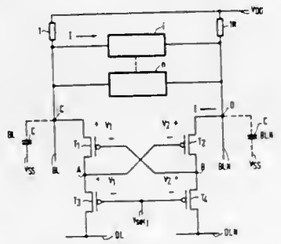
Continuation-in-part of Ser. No. 532,468, May 31, 1990. This application May 30, 1991, Ser. No. 707,556

Claims priority, application Netherlands, May 31, 1989, 8901376

Int. Cl.[5] G11C *13/00*

U.S. Cl. 365—230.01 **10 Claims**

1. An integrated field-effect transistor memory circuit comprising memory cells which are arranged in rows and columns, each column of memory cells being connected to a bit line and a non-bit line by way of selection means, and also comprising at least one sense amplifier which comprises a first and a second input for coupling respectively to a bit line and an associated non-bit line of a column, each of which is coupled to a supply terminal via a load, which sense amplifier performs a current measurement on the first and the second input during the reading of information on the first and the second input, and which sense amplifier comprises a parallel connection of a first and a second current branch, each current branch comprising a control transistor having a gate, a source and a drain, the source of the control transistor in the first and the second current branch being connected to the first and the second input, respectively, characterized in that the sense amplifier also equalizes the voltages on the first and the second input during the current measurement, the gate of the control transistor in each current branch being connected to the drain of the control transistor in the other current branch, the channel of a load transistor, comprising a gate, a source and a drain, being connected between the drain of the relevant control transistor and a supply terminal in each current branch, said load transistor being of the same conductivity type as the control transistor in the relevant current branch, the coupled gates of said load transistors receiving a selection signal for the selective activation of the sense amplifier.



5,253,138

SIMPLIFIED SUPPLYING SYSTEM OF THE POSITION IDENTIFICATION POTENTIOMETERS OF ELECTRONIC MEMORY MECHANISMS OF A MOTOR FOR SETTING AUTOMOBILE VEHICLE SEATS AND THE LIKE

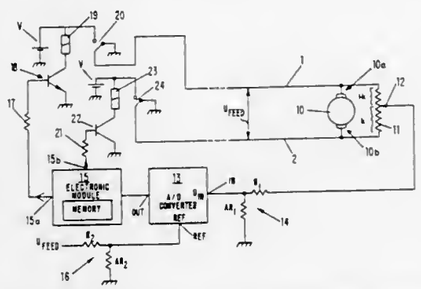
Georges Droulon; Yannick Leroy, and Philippe Lhomer, all of Flers, France, assignors to ETS Cousin Freres, Orne, France

Continuation-in-part of Ser. No. 547,599, Jul. 2, 1990, abandoned. This application Jan. 24, 1992, Ser. No. 825,744

Claims priority, application France, Jul. 4, 1989, 89 08952

Int. Cl.[5] G05B *19/42*

U.S. Cl. 361—245 **1 Claim**



1. A simplified supplying system for potentiometers usable in an electronic memorization of position of a motor, said supplying system comprising:

an electronic module; and

an identification potentiometer for setting an adjusted position connected directly in parallel to terminals of said motor, said terminals of said motor being supplied with a first voltage that is variable and switchable between two reverse polarity states according to a rotation direction of said motor, wherein a reversal of one of said polarity states results in a reversal of voltage applied to said potentiometer, with said potentiometer having a slider that is connected via a first dividing bridge, which includes a first resistor connected to said slider of said potentiometer and a second resistor connected to a ground of a supplying system, to an input of an analog-digital converter that is subjected to a further reference voltage connected to said first voltage via a second dividing bridge, which includes a third resistor connected to said first voltage and a fourth resistor connected to a ground of a supplying system of said first voltage, with an output of said analog-digital converter being connected to said electronic module, and with a resistor value of said second and fourth resistors of said first and second dividing bridges being equal to a product of a resistor value of said respective first and third resistors multiplied by a same coefficient A.

5,253,139

PORTABLE ELECTRONIC APPARATUS HAVING A DETACHABLE DISPLAY UNIT AND A SOCKET LID

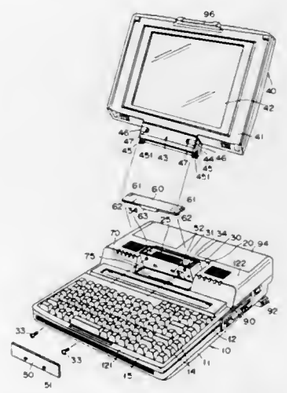
Youji Satou, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 853,861, Mar. 20, 1992, abandoned, which is a continuation of Ser. No. 577,544, Sep. 5, 1990, abandoned. This application Oct. 23, 1992, Ser. No. 965,528

Claims priority, application Japan, Oct. 31, 1989, 1-283721

Int. Cl.[5] H05K *5/02, 7/10;* **H01R** *13/447*

U.S. Cl. 361—681 **7 Claims**



1. A portable electronic apparatus, comprising:

a casing comprising a base body housing electronic parts and having a rotatable socket portion defining an opening, and a display unit detachably mounted in the opening of the socket portion, said casing including a recess spaced from said socket portion and electrically isolated from the electronic parts;

a display mounted in said display unit;

a plug mounted to the display unit and detachably fitted into the socket portion;

electrical connecting means, mounted in the socket portion, for electrically connecting said display unit to the electronic parts housed in the base body by fitting the plug into the socket portion;

a detachable lid configurated to removably cover the opening of the socket portion when the display unit is detached from the base body, said lid being further configurated to fit into said recess when the lid is removed from the opening in the socket portion;

mechanical connecting means, disposed in the opening of said socket portion and said lid, for detachably connecting said lid to cover the opening of said socket portion; and

joining means, located on the base body, for joining the lid to the base body so as to prevent rotation of the socket relative to the base body, at times when the lid covers the opening of the socket portion.

5,253,140

CONNECTOR UNIT FOR INPUT/OUTPUT MODULE OF PROGRAMMABLE CONTROLLER HHAVING DISENGAGEMENT LEVER

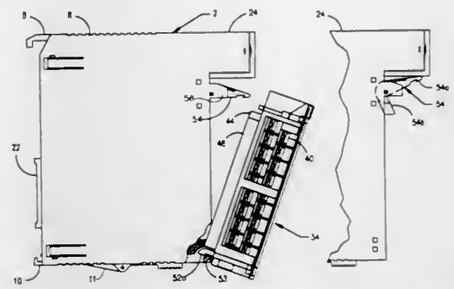
Michiya Inoue, Hachioji, and Takashi Yamauchi, Yamanashi, both of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

Continuation-in-part of Ser. No. 432,739, Oct. 19, 1989, abandoned. This application Oct. 8, 1991, Ser. No. 774,523

Claims priority, application Japan, Mar. 12, 1988, 63-059163

Int. Cl.[5] H05K *7/10;* **H01R** *13/629, 4/50*

U.S. Cl. 361—728 **1 Claim**



1. An I/O module for a programmable control device, comprising:

a housing having a first end, a second end, and two parallel opposite sides;

a circuit board disposed inside the housing;

first electrical connector means, disposed at the first end of the housing, for electrically connecting the programmable control device to the circuit board;

a mounting/dismounting unit having a hinge and a grip on opposite sides of the mounting/dismounting unit and a terminal block to which signal wires are to be connected; and

second electrical connector means, disposed at the second end of the housing, for electrically connecting the circuit board to the terminal block;

a pivot pin disposed on the second end of the housing adjacent one of the sides thereof and being engaged with the hinge when the mounting/dismounting unit is mounted on the housing, whereby a force exerted outwardly from said housing on the grip on the mounting/dismounting imparts pivotal movement about said pivot pin and away from the housing until the hinge and said pivot pin disengage from each other after pivoting through a predetermined arc;

mounting means for mounting said mounting/dismounting unit on said housing, said mounting means including latch means disposed at the second end of the housing opposite said pivot pin, for holding the mounting/dismounting unit in the mounted position, said latch means including an L-shaped lever, having a first arm engaging the mounting-/dismounting unit in the mounted position, a second arm forcing the mounting/dismounting unit outwards from the housing when the first arm is raised to release the mounting/dismounting unit and a pivot point where the first and second arms meet.

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5,253,141

MODULAR MAINFRAME COMPUTER SYSTEM HAVING AN INTERCONNECTION PORTION IN ASSEMBLY WITH A CPU AND EXTENDING FROM A CABINET

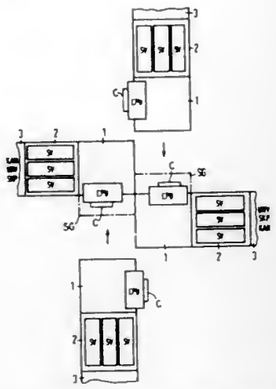
Bernard-Edmund Hellwig, Germering, and Dieter Schmalzl, Augsburg, both of Fed. Rep. of Germany, assignors to Siemens Nixdorf Informationssysteme Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 24, 1992, Ser. No. 840,163

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1991, 9103503

Int. Cl.[5] **H05K** *7/10, 5/00;* **G06F** *1/16*

U.S. Cl. 361—683 **6 Claims**



1. A modular mainframe computer system having functional units separately housed in respective cabinets aligned in at least one row to form one central unit, the central unit having a central processor unit cabinet at one end of the row in which is housed at least one central processor unit, the central processor unit having an interconnection portion in assembly therewith, the central processor unit being so positioned at the backside of the central processor unit cabinet that the interconnection portion thereof projects outwardly from the central processor unit cabinet perpendicularly to the row thereby leaving a free space within a front interior section of the central processor unit cabinet within which can be received the interconnection portion of another central processor unit of another central unit oriented perpendicularly to the central unit of concern.

5,253,142

BODY STRUCTURE FOR A POCKET COMPUTER HAVING A FASTENER WITH MULTIPLE SPACED APART ELEMENTS

Phil Weng, Taipei, Taiwan, assignor to Cal-Comp Electronics, Inc., Taipei, Taiwan

Filed Sep. 19, 1991, Ser. No. 762,339

Int. Cl.[5] **H05K** *5/02;* **G06F** *1/16;* **E05C** *19/06;* **H01H** *13/70*

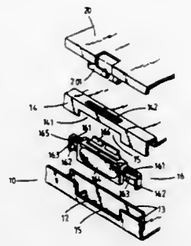
U.S. Cl. 361—680 **55 Claims**

1. A body structure for a pocket computer comprising

a main body housing,

a cover body,

fastening means having an elastic fastening element accommodated in an insertion space located at a front edge of the main body housing for fastening said main body housing and said cover body, with multiple elements of said elastic fastening element being spaced apart and being coupled with one another by a support piece, said fastening means further including a hook retaining piece located on the



main body housing to hook a hooked piece located correspondingly on the cover body.

5,253,143

HOUSING FOR AN ELECTRONIC CIRCUIT WITH TWO SEPARABLE HOUSING PARTS

Herbert Klinger, Nürnberg; Gerhard Thomas, Fürth, and Karl Wutz, Sengenthal, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

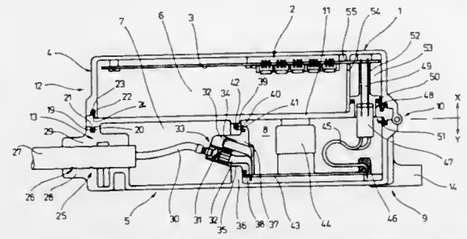
PCT No. PCT/DE90/00749, § 371 Date Feb. 5, 1992, § 102(e) Date Feb. 5, 1992, PCT Pub. No. WO91/07865, PCT Pub. Date May 30, 1991

PCT Filed Oct. 4, 1990, Ser. No. 828,945

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1989, 3937190

Int. Cl.[5] **H05K** *5/06*

U.S. Cl. 361—736 **14 Claims**



1. A housing for an electronic circuit, in particular for an electronic control circuit of a motor vehicle internal combustion engine having a circuit accommodation area and a connection device for a separable electrical connection of information and supply leads, the housing comprising two housing parts which are separable from one another and include a first housing part having an accommodation area and a second housing part having a connection area for the connection device and a distribution area, said first housing part having a base wall which in a closed condition of the housing closes said second housing part; a dividing part which separates said connection area from said distribution area and is provided with contact connections for the connection device; and a board which is arranged in said distribution area, said contact connections being directly connected to said board.

5,253,144

DEVICE HOUSING HAVING AN INTEGRATED CIRCUIT BOARD

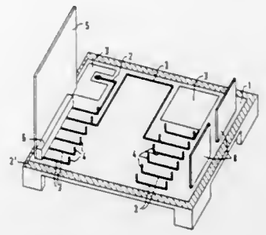
Eduard Schönberger; Hermann Kasowski, both of Amberg, and Heinz Schmidt, Kümmersbruck, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 725,576, Jul. 3, 1991, abandoned. This application Aug. 6, 1992, Ser. No. 925,884

Claims priority, application European Pat. Off., Jul. 9, 1990, 90113079.9

Int. Cl.[5] **H05K** *7/20*

U.S. Cl. 361—736 **6 Claims**



1. A device housing receiving at least two printed circuit boards, said device housing being formed as one part and comprising:

a rear wall having an interior side and made of plastic and serving as a backplane for electrically coupling printed circuit boards inserted in said housing;

a plurality of metallized strip conductors coupled to the interior side of said rear wall;

at least one metallized conducting surface having a greater surface area than each of the plurality of metallized strip conductors coupled to the interior side of said rear wall and at least one of said metallized strip conductors; and

a plurality of metallized protruding connectors injection molded onto the interior side of said rear wall, said metallized protruding connectors coupled to said printed circuit boards and ones of said plurality of metallized strip conductors and at least one metallized conducting surface.

5,253,145

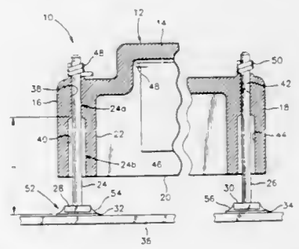
COMPLIANT CANTILEVER SURFACE MOUNT LEAD

James D. Lint, San Diego, Calif., assignor to Pulse Engineering, Inc., San Diego, Calif.

Filed Jan. 24, 1992, Ser. No. 824,985

Int. Cl.[5] **H05K** *7/14*

U.S. Cl. 361—400 **20 Claims**



1. A compliant lead structure for mounting a circuit element to a PC board, comprising:

a three dimensional support body supporting a circuit element for mounting on a PC board, said support body having a surface mounting side and a remote side; and having sidewalls extending from said remote side to said mounting side;

an elongated compliant combined support and conductive lead member secured at an inner end to said remote side of said support body and extending outward from said support body to an outer end at a position outside said support body and beyond said mounting side for surface bonding to a PC board externally of said support body for connecting to the PC board and for supporting said support body in spaced relation to the PC board, said lead member having an elongated unrestricted intermediate section between said inner end and said outer end protectively confined within said sidewalls of said support body for enabling relative movement between said support body and a PC board to which said lead member is bonded; and

a lead wire extending from a circuit element on said support body and connected to said lead member.

5,253,146

EARTHED INTERMEDIATE FRAME FOR CIRCUIT BOARDS

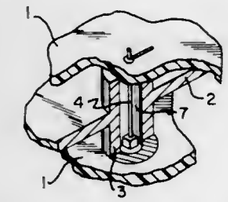
Mikko Halttunen, Oulu, and Petteri Vanhanen, Jääli, both of Finland, assignors to Nokia Mobile Phones Ltd., Salo, Finland

Filed Dec. 5, 1991, Ser. No. 804,226

Claims priority, application Finland, Dec. 13, 1990, 906149

Int. Cl.[5] **H05K** *1/14*

U.S. Cl. 361—784 **8 Claims**



1. An interference shield comprising a grounded intermediate frame for fitting between circuit boards, said grounded intermediate frame having at least one of

(a) through apertures for connectors connecting said circuit boards,

(b) substantially transverse sleeves surrounding the through apertures for connectors connecting the circuit boards, and

(c) grooves for registering with signal runs on at least one surface of said circuit boards, said grooves being located on a surface of the grounded intermediate frame, which intermediate frame surface is for placement against said at least one surface of the circuit board.

5,253,147

SHOCK AND VIBRATION ISOLATION MOUNTING DEVICE HAVING SUSPENSION VIBRATION DAMPENING

Andre V. Kleyner, Indianapolis, Ind., assignor to Delco Electronics Corporation, Kokomo, Ind.

Filed Oct. 1, 1992, Ser. No. 955,389

Int. Cl.[5] **H05K** *7/02*

U.S. Cl. 361—807 **21 Claims**

1. A mounting device for mounting an object to an article, the object having a first end and an opposite second end, the article having a first surface and an opposite second surface parallel with said first surface and spaced a predetermined distance from said first surface, said mounting device comprising:

first T-bracket means for providing connection to a first end of the object and for providing a first base;

second T-bracket means for providing connection to a sec-

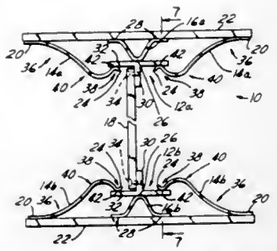
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ond end of the object opposite said first end thereof and for providing a second base;

first S-spring means connected to the first surface for resiliently biasing against said first base toward the first surface, wherein said first T-bracket means is slidable relative to said first S-spring means;

second S-spring means connected to the second surface for resiliently biasing against said second base toward the second surface, wherein said second T-bracket means is slidable relative to said second S-spring means;

first V-spring means connected with said first T-bracket means for providing resilient contact between said first T-bracket means and the first surface, wherein said first



V-spring means slides relative to the first surface when compressed between said first T-bracket means and the first surface; and

second V-spring means connected with said second T-bracket means for providing resilient contact between said second T-bracket means and the second surface, wherein said second V-spring means slides relative to the second surface when compressed between said second T-bracket means and the second surface;

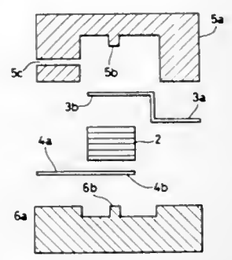
wherein the predetermined distance is such that said first V-spring means resiliently biases against the first surface and simultaneously said second V-spring means resiliently biases against the second surface.

5,253,148

ELECTRIC DOUBLE LAYER CAPACITOR

Keitaro Katsu, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Feb. 18, 1992, Ser. No. 837,801
Claims priority, application Japan, Mar. 1, 1991, 3-034901
Int. Cl.[5] H01G *9/00, 3/06*
U.S. Cl. 361—539 **7 Claims**



1. A method for producing a chip type electric double layer capacitor comprising the steps of:

positioning an upper electrode which comprises an electrode plate and a lead terminal portion comprising a first portion downwardly extending from one side of the electrode plate and a second portion outwardly and horizontally extending from the edge of the first portion, and a lower electrode which comprises an electrode plate and a lead terminal portion outwardly and horizontally extending from one side of the electrode plate on upper and lower sides of an electric double layer capacitor element so that the lead terminal portions are outwardly directed in the opposite directions;

introducing the resulting assembly into a lower part of an injection mold provided with a pressure pin, then putting, on the lower part of the mold, an upper part of the injection mold having a pressure pin and an opening for injecting a resin;

packing a molten heat-resistant resin into the injection mold through the resin injection-opening while applying a pressure to the assembly; and

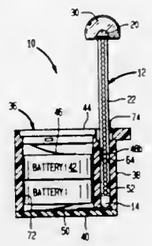
hardening and molding the resin while maintaining parts of the lead terminal portions of the electrode plates outside the resin.

5,253,149

ILLUMINATED JEWELRY

Loren D. Ostema, 2349 Wells Ave., Sarasota, Fla. 34232-3961, and Jonathan L. Kaye, 2815 Marshall Dr., Sarasota, Fla. 34239

Filed Jan. 21, 1993, Ser. No. 7,110
Int. Cl.[5] F21L *15/08*
U.S. Cl. 362—104 **12 Claims**



1. Illuminated jewelry comprising:

a light emitting diode (LED) connected at an end of an elongated slender stem;

said stem defined by an electrically conductive central inner shaft and an electrically conductive outer shaft, said inner an outer shafts electrically isolated one from another;

said inner shaft coextensive with said stem and defining a distal end thereof, an opposite end of said inner shaft connected to a terminal of said LED;

said outer shaft extending along said stem from a second terminal of said LED toward but not to said inner shaft distal end;

a miniature battery housing defining a compartment for receiving and holding a miniature battery therein;

said battery housing including an elongated stem cavity positioned immediately adjacent, parallel to, and generally coextensive with said compartment, said stem cavity sized to supportively receive and closely mate around a distal portion of said stem therein, said stem being in electrical contact with a battery held within said compartment when fully inserted into said stem cavity;

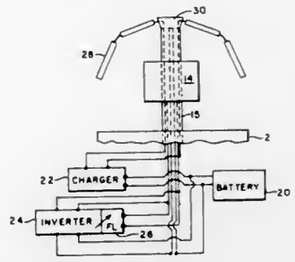
said stem being longer than the length of said stem cavity whereby, when said stem is fully within said cavity, a gap is defined between said LED and said battery housing generally equal to the thickness of a wearer's earlobe or article of clothing.

5,253,150

WARNING LIGHT

Robert R. Vanni, 701 Tuxedo Ave., Brooklyn Hts., Ohio 44131

Filed Jul. 1, 1992, Ser. No. 907,123
Int. Cl.[5] F21L *11/00*
U.S. Cl. 362—183 **3 Claims**



1. A warning light comprising:

a base member having a pair of electroluminescent panels mounted thereon such that, upon illumination, light is emitted in opposite directions respectively therefrom,

a rechargeable battery power source and associated circuitry contained within the base member and connected to the electroluminescent panels in a manner operative to effect the illumination thereof in response to a command signal,

a light sensor mounted on the light and operative to provide the command signal when the energy of exterior light sensed thereby falls below a preselected minimum value and ceases to provide said signal when the energy of exterior light sensed thereby rises above the preselected minimum value,

an inverter included in the circuitry and operative to alternately reverse the battery potential polarity to provide an alternating electrical field effective to illuminate the electroluminescent panels,

an interrupter included in the circuitry and operative to interrupt illumination of the electroluminescent panels to create a flashing effect,

a charging circuit and at least one solar cell connected to the battery thereby, said solar cell operative to receive and convert solar energy incident thereupon to electrical energy and to store and charge the battery through the charging circuit therewith, and

an upper housing positioned about the electroluminescent panels and secured to the base member, said upper housing having a pair of panel sections respectively disposed on opposite sides thereof and respectively illuminable by one of the electroluminescent panels, said panel sections each containing a fluorescent material that fluoresces upon exposure to light emitted by the respective electroluminescent panels incident thereupon, and said panel sections each including at least one score mark in the surface thereof operative to enhance brightness of incident exterior light reflected thereby.

5,253,151

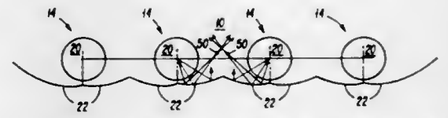
LUMINAIRE FOR USE IN BACKLIGHTING A LIQUID CRYSTAL DISPLAY MATRIX

Thomas A. Mepham, Hiawatha; Roger D. Eller, Cedar Rapids, and Gerald L. Vick, Mt. Vernon, all of Iowa, assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Sep. 30, 1991, Ser. No. 767,735
Int. Cl.[5] F21V *7/09*
U.S. Cl. 362—216 **9 Claims**

3. A reflector for use in forwardly projecting and partially collimating light from a fluorescent tube, comprising:

a first inner section designed to reflect substantially all of the diffuse light emitted from the backside of said tube through a single point laterally outward of said tube and forward of the center of said tube; and



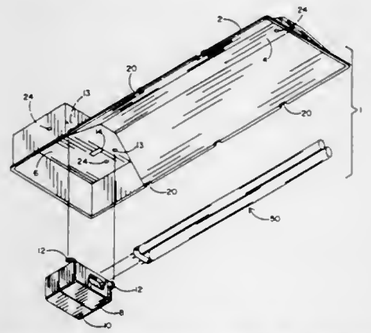
a second outer section having a parabolic shape with respect to said tube which is designed to partially collimate the light emitted by said tube.

5,253,152

LIGHTWEIGHT PLUG-IN FLUORESCENT LAMP ASSEMBLY

Thien S. Yang, 292 Connells Point Road, Connells Point, Australia 2221, and Gin P. So, 1 Tsing Yung St., Cafeterial Beach N.T., Hong Kong

Filed Aug. 12, 1991, Ser. No. 766,190
Int. Cl.[5] F21V *23/00*
U.S. Cl. 362—221 **20 Claims**



1. A lighting assembly including at least one fluorescent tube and comprising:

an electrical receptacle having a socket in which to detachably receive the pins of the fluorescent tube and first electrical terminal means, said receptacle also having a first set of electrical conductors extending between said first terminal means and said socket; and

an electronic ballast having electrical terminal means which is detachably connected to the first terminal means of said electrical receptacle for completing an electrical path by way of the first set of electrical conductors of said receptacle for driving the fluorescent tube,

said electrical receptacle also having second terminal means connected to power lines from a source of power and a second set of electrical conductors extending between the first and second terminal means of said receptacle to complete an electrical path from said source to energize said electronic ballast when the terminal means of said ballast is detachably connected to the first terminal means of said receptacle, the second terminal means of said electrical receptacle including contact means to which said second set of electrical conductors are fixedly connected, said contact means having pivotable gripping jaws at which the power lines from the power source are detachably connected.

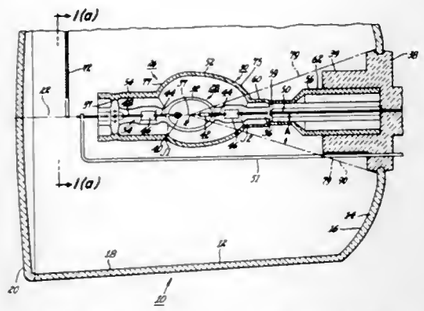
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5,253,153

VEHICLE HEADLAMP COMPRISING A METAL-HALIDE DISCHARGE LAMP INCLUDING AN INNER ENVELOPE AND A SURROUNDING SHROUD

Paul G. Mathews, and Gary R. Allen, both of Chesterland, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 16, 1992, Ser. No. 945,543
Int. Cl.[5] F21V 7/09
U.S. Cl. 362—310 34 Claims



33. A lamp having an optical axis and comprising:

(a) an inner envelope comprising a hollow bulbous portion of vitreous light-transmitting material surrounding said optical axis,

(b) means for developing a source of light substantially on said optical axis when the lamp is operated,

(c) a tubular shroud of vitreous material surrounding said inner envelope and comprising a light-transmitting bulbous portion surrounding said bulbous portion of the inner envelope, and in which:

(d) the bulbous portion of the shroud has an outer wall including a front zone surrounding said optical axis and located at the front of the bulbous portion of the shroud and a back zone surrounding said optical axis and located at the back of the bulbous portion of the shroud, and

(e) said front zone has a configuration different from said back zone

(f) said front zone has a configuration substantially conforming to a portion of the surface of a sphere having its center near said optical axis, and said back zone has a configuration substantially conforming to a portion of the surface of an ellipsoid having its center near said optical axis.

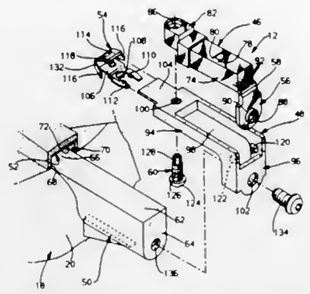
5,253,154

HEADLAMP LEVELING ARRANGEMENT

David R. McMahan; William E. Nagengast, both of Anderson; Terry L. Coombs, Pendleton; Bradley A. Merrill, Thorntown; Ronald A. Wheat, Alexandria, and Jan A. Wisler, Anderson, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 12, 1992, Ser. No. 897,637
Int. Cl.[5] B60Q 1/00
U.S. Cl. 362—66 8 Claims

1. A leveling and aiming arrangement for a vehicle headlamp having a reflector member provided with a reflector cavity for projecting a light beam substantially parallel to an optical axis of the reflector cavity, a support portion integrally formed with the reflector housing, a spirit level member carried by said support portion and having a main body portion made of a clear, transparent plastic material provided with a first end and a second end, the first end of said spirit level member including a portion provided with a threaded bore, the second end of said main body portion being provided with an outwardly projecting member which is fastened to the said support portion a living hinge serving to connect said projecting member to said second end of said main body portion of the spirit level member, screw means located in said threaded bore and engaging said support portion whereby rotation of said screw means causes the main body portion of the spirit level member to be pivotably adjusted about the living hinge and thereby allows the spirit level to be calibrated relative to the optical axis of the reflector cavity, and light directing means



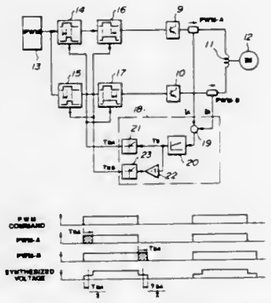
formed in a bottom surface of the main body portion adjacent to said support portion so when said support portion is dark colored, the light rays passing through said main body portion are reflected upwardly from said bottom surface to permit the gas bubble of the spirit level member to be readily visible to an observer.

5,253,155

CIRCUIT AND METHOD FOR CONTROLLING OUTPUT CURRENT BALANCE BETWEEN PARALLEL DRIVEN PWM-TYPE POWER INVERTING UNITS

Yasuhiro Yamamoto, Tokyo, Japan, assignor to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed May 22, 1992, Ser. No. 887,141
Claims priority, application Japan, Jul. 23, 1991, 3-182170
Int. Cl.[5] H02M 7/5395
U.S. Cl. 363—71 15 Claims



1. A current balance control circuit for parallel driven PWM-type power inverting units which are connected to each other to supply power to a load, comprising:

a) a PWM pulse generator which generates a PWM pulse train signal and outputs the PWM pulse train signal to each main circuit of the power inverting units, each main circuit thereof outputting a current to the load via an interphase reactor;

b) a pair of series connected retard correction circuits interposed between the PWM pulse generator and each main circuit of the power inverting units, for independently retarding rising edges and falling edges of the PWM pulse supplied to a corresponding one of the main circuits by predetermined retardation times, respectively, in response to each retardation correction signal; and

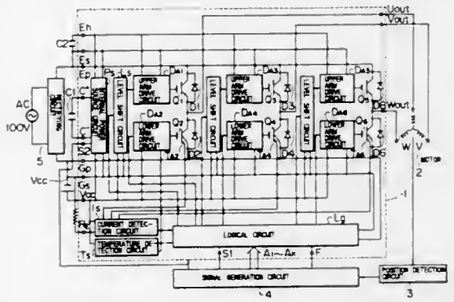
c) a retardation correction signal generator which calculates a proportion and integration of a difference in magnitude between each output current from the main circuits of the power inverting units and generates and outputs one of the retardation correction signals to one of the pair of retard correction circuits so that, when the PWM pulse train signal from the PWM pulse generator to be supplied to the main circuits of the power inverting units rises, a rising edge of the PWM pulse train signal supplied to one of the main circuits of the respective power inverting units which output the current having a value larger than that of the other power inverting unit is retarded by the predetermined retardation time with respect to the rising edge of the PWM pulse train signal to be supplied to the other main circuit of the other inverting unit which outputs the current which is smaller than that of the one power inverting unit and a falling edge of the PWM pulse train signal supplied to the other main circuit of the other power inverting unit which output the current having a value smaller than that of the one power inverting unit is, in turn, retarded by the predetermined retardation time with respect to the falling edge of the PWM pulse train signal to be supplied to the one main circuit of the one inverting unit which outputs the current which is larger than that of the other power inverting unit.

5,253,156

SEMICONDUCTOR INTEGRATED CIRCUIT UNIT

Naoki Sakurai; Mutsuhiro Mori, both of Hitachi; Hidetoshi Arakawa, Kitaibaraki; Kenichi Onda, Hitachi; Hideki Miyazaki, Hitachi, and Akihiko Kanouda, Hitachi, all of Japan, assignors to Hitachi, Ltd., Hitachi and Hitachi Haramachi Semi-Conductor, Ltd., Tokyo, both of Japan

Filed Jan. 29, 1991, Ser. No. 647,415
Claims priority, application Japan, Jan. 31, 1990, 2-019070
Int. Cl.[5] H02M 3/335, 7/521
U.S. Cl. 363—98 5 Claims



1. A semiconductor integrated circuit characterized in that there are integrally formed within the same semiconductor substrate:

a pair of DC terminals;

a plurality of AC terminals equal in number to the number of phase of an AC power supply;

a pair of auxiliary DC terminals;

a control terminal;

an inverter circuit including a plurality of inverter units connected in parallel to each other between said pair of DC terminals, said inverter units being equal in number to the number of phases of the AC power supply, each of said inverter units having two serially connected circuit element pairs each circuit element pair having an inverse-parallel-connected switching element and a diode, a middle point of said each inverter unit being connected to a corresponding one of said plurality of AC terminals;

a first plurality of driving circuit for respectively driving the switching elements at one side of the inverter units of said inverter circuits;

a second plurality of driving circuit receiving a power supply from said pair of auxiliary DC terminals, for respectively driving the switching elements at the other side of the inverter units of said inverter circuit;

a logical circuit connected to receive a control signal from said control terminal, for transmitting the control signal to said first plurality of driving circuits and to said second plurality of driving circuits;

a plurality of level shift circuits respectively interposed between said first plurality of driving circuits and said logical circuit; and

an internal power supply circuit connected to said pair of auxiliary DC terminals for supplying power to said first plurality of driving circuits,

wherein said semiconductor substrate has a rectangular main surface enclosed by first and second sides extending in parallel to each other and third and fourth sides extending in parallel to each other and intersecting said first and second side orthogonally,

wherein said switching elements are arranged apart from said first side of said rectangular main surface and in a same direction as said first side,

wherein said diodes are arranged between said first side of said rectangular main surface and a row of said switching elements, and arranged in a same direction as said first side,

wherein said first plurality of driving circuits, said second plurality of driving circuits, and said plurality of level shift circuits are arranged between said second side of said rectangular main surface and the row of said switching elements, and arranged in a same direction as said second side, and

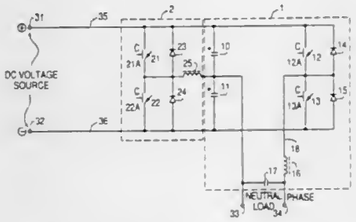
wherein said logical circuit and said internal power supply circuit are arranged between said second side of said rectangular main surface and a row of said driving circuits, and arranged in a same direction as said second side.

5,253,157

HALF-BRIDGE INVERTER WITH CAPACITIVE VOLTAGE EQUALIZER

Alex J. Severinsky, Silver Spring, Md., assignor to Premier Power, Inc., McLean, Va.

Filed Feb. 6, 1992, Ser. No. 831,918
Int. Cl.[5] H02M 7/515
U.S. Cl. 363—98 28 Claims



1. A half-bridge inverter circuit adapted for converting a DC voltage source to an AC voltage waveform and supplying said AC voltage waveform to a load, wherein said half-bridge inverter circuit includes an inverter means comprising a first capacitor for supplying a positive output voltage relative to a ground voltage during the positive portion of said AC voltage waveform and a second capacitor for supplying a negative output voltage relative to said ground voltage during the negative portion of said AC voltage waveform, said half-bridge inverter circuit comprising:

a first control means responsive to the level of said positive output voltage, said negative output voltage, and said ground voltage for selectively charging said first capacitor and said second capacitor, and

an equalizer means responsive to said first control means for equalizing said positive output voltage supplied by said

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first capacitor and said negative output voltage supplied by said second capacitor.

5,253,158

APPARATUS FOR SUPPORTING THE DEVELOPMENT OF SEQUENCE SOFTWARE TO BE USED IN AUTOMATED EQUIPMENTS, AND METHOD THEREOF

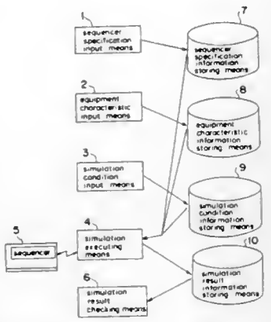
Kenichiro Suzuki, Hirakata; Katsutoshi Ohnishi, Osaka; Kenji Sajima, Amagasaki, and Masanobu Miyata, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 23, 1991, Ser. No. 690,251

Claims priority, application Japan, Apr. 23, 1990, 2-107223

Int. Cl.[5] G05B *19/00;* **G06F** *9/455*

U.S. Cl. 364—140 **5 Claims**



2. An apparatus for supporting the development of a sequence software to be used for controlling the operation of an automated equipment, comprising:

a computer for reproducing contents of a simulated operation of a subject equipment to be controlled, the contents including a software program for controlling the subject equipment; and

a sequencer provided with a sequential program for controlling the subject equipment and output and input terminals connected with the computer for establishing an electrical communication therebetween, the state of the output terminal depending on the sequential program to be actuated depending on the state of the input terminal, while the state of the input terminal is changed depending on the output terminal after the lapse of a give time, wherein the computer has a function for simulating the sequential program of the sequencer through the addresses of the computer connected with the terminals of the sequencer.

5,253,159

ELECTRICAL DISTRIBUTION SYSTEM HAVING CONTROLLER RESPONSIVE TO MULTIPLE COMMAND PATHS

Ronald J. Bilas, and Drew A. Reid, both of Cedar Rapids, Iowa, assignors to Square D Company, Palatine, Ill.

Filed Jun. 28, 1991, Ser. No. 723,352

Int. Cl.[5] G06F *15/46*

U.S. Cl. 364—140 **10 Claims**

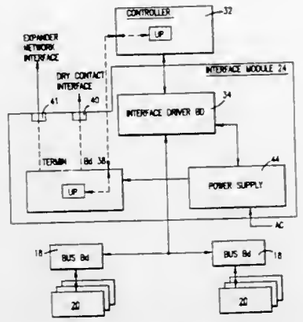
1. For use within an electrical distribution system, a loadcenter circuit arrangement comprising:

a loadcenter enclosure;

a plurality of electrical switching means, at least one of which is operable by remote control in at least open and closed circuit positions, which control associated current paths, said plurality of electrical switching means installed within said loadcenter enclosure; and

a control circuit installed within said loadcenter enclosure and coupled to said at least one electrical switching means, said control circuit including a plurality of reception paths for receiving commands associated with the control of said at least one electrical switching means, such that the control circuit responds to the received commands according to a prioritization scheme;

said control circuit including means responsive to one of the received commands associated with the control of said at least one electrical switching means, for executing the



command by commanding at least one electrical switching means to change between its open and closed circuit positions;

said control circuit further including means responsive to said command execution for validating the execution by checking the position of said at least one electrical switching means.

5,253,160

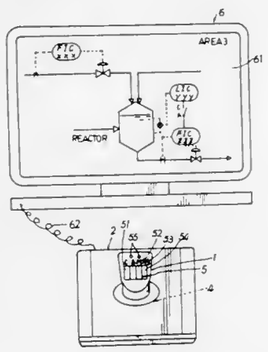
CENTRALIZED CONTROL MEANS FOR MANIPULATING PLANT CONTROL SYSTEMS

Cheng S. Lin, c/o Hung Hsing Patent Service Center, P.O. Box 55-1670, Taipei, Taiwan

Filed Dec. 2, 1991, Ser. No. 801,496

Int. Cl.[5] G06F *3/033*

U.S. Cl. 364—188 **1 Claim**



1. A centralized control means comprising:

a control rod means pivotally mounted on a rod holding board adapted to be manipulated by an operator's single hand, including a longitudinal rod having a knob portion formed on an upper portion of the rod and a coupling base generally spherical shaped formed on a bottom portion of the rod universally pivotally mounted in the rod holding board, said coupling base of the control rod means universally pivotally mounted in the rod holding board by universally engaging a spherically-shaped socket recessed in the holding board having a plurality of spring retaining

means formed in said board for resiliently retaining the coupling base of the control rod means on the board, each said spring retaining means including a coupling retainer resiliently held in a spring recess recessed in the socket and slidably engageable with a spherical surface portion of the coupling base, and a tensioning spring held in the spring recess normally urging the coupling retainer outwardly for resiliently holding the coupling base of the control rod means in said board;

a plurality of functional buttons of a screen page activating means, a cursor positioning means and a control changing means mounted on said control rod means;

a cathode-ray-tube or CRT display means having a screen and a transmission cable connected between said control rod means and said display means;

said screen page activating means operatively accessing and changing a screen page currently shown on said display means to a new screen page stored in a display access architecture comprised of a plurality of pages;

said cursor positioning means operatively moving and positioning a cursor on said screen of said display means for selecting a particular controller and selecting a specific page, said cursor positioning means including: a coordinate grid generally partially spherical shaped positioned under the coupling base of the control rod means showing matrix address formed by a X-axis and a Y-axis corresponding to an address shown on said screen page and said display means, and an addressing probe secured to the coupling base of the control rod means movably touching on the coordinate grid for operatively moving and positioning a cursor on the screen of the CRT display means for selecting a particular controller and for selecting a specific page by transmitting signals from the cursor positioning means towards the CRT display means through said transmission cable connected between said cursor positioning means and said CRT display means; and

said control changing means operatively selecting a plurality of control modes and manipulating control variable changes, said control changing means mounted on the knob portion of the control rod means including a computer control button for manipulating a computer control mode, a local automatic control button for manipulating a local automatic control mode, a manual control button for manipulating a manual control mode, a ramping rate selection button for adjusting a fast or slow ramping speed for selected control variable to be changed, two on-off control buttons for manipulating on-off control, a variable-increasing command button for setting increased value of a controlled variable and a variable-decreasing command button for setting decreased value of a controlled variable.

5,253,161

METHOD FOR ROUTING DATA IN A NEAR-OPTIMAL MANNER IN A DISTRIBUTED DATA COMMUNICATIONS NETWORK

Paul Nemirovsky, 3 Bouldercrest Ct., Rockville, Md. 20850; Michael Ball, 1012 S. Mansion Dr., Silver Spring, Md. 20770, and Michael Post, 24 Lexington Rd., New York, N.Y. 10956

Filed Feb. 6, 1990, Ser. No. 475,872

Int. Cl.[5] G06F *15/20;* **H04J** *3/24;* **H04Q** *11/04, 11/00*

U.S. Cl. 364—402 **14 Claims**

1. A method for constructing a data communication network having:

a) a backbone including

i) backbone nodes for routing data traffic within sad backbone, and

ii) a plurality of first links for connecting said backbone nodes,

b) terminals;

c) concentrators;

d) a plurality of second links for connecting said terminals with said concentrators; and

e) a plurality of third links for connecting said concentrators with said backbone nodes, wherein each of said first, second, and third links has an associated traffic delay time and data flow,

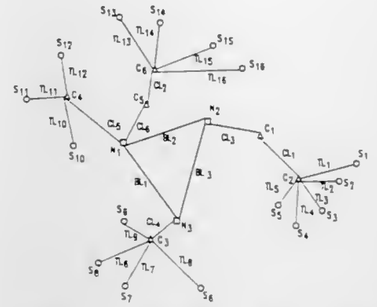
comprising the steps of:

1) assigning a length of each of said plurality of first links based on a derivative of traffic delay time with respect to the data flow;

2) determining the shortest routes between each pair of said backbone nodes;

3) placing requirements corresponding to a current data flow pattern onto said shortest routes;

4) storing said shortest routes;



5) determining an approximation of a second derivative of traffic delay time with respect to data flow;

6) determining an amount of slack on each of said shortest routes;

7) rerouting said data flow from all other routes onto said shortest routes based on said first derivative, said second derivative, and said slack;

8) determining an updated data flow of the network; and

9) determining an updated traffic delay time for the updated data flow of the network.

5,253,162

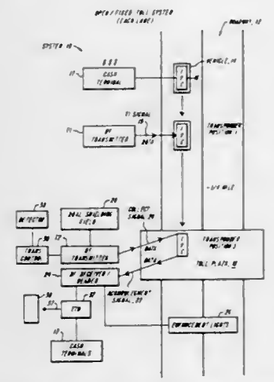
SHIELDING FIELD METHOD AND APPARATUS

John J. Hassett, Marblehead, Mass., and John M. Harrison, Concord, N.H. assignor to AT/COMM, Incorporated, Marblehead, Mass.

Filed May 17, 1990, Ser. No. 525,864

Int. Cl.[5] G07G *1/12;* **G08G** *1/00, 1/065*

U.S. Cl. 364—405 **12 Claims**



1. A method for selective communication between a stationary transmitting device and at least a selected one of a plurality

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of mobile responding device, the method comprising the steps of

generating from said stationary transmitting device a first field of radiated electromagnetic energy, said generating step including the step of encoding said first field with a first signal intelligible to said responding devices, said first signal being representative of a request to execute a selected operation,

directing said first field at said at least one selected responding device,

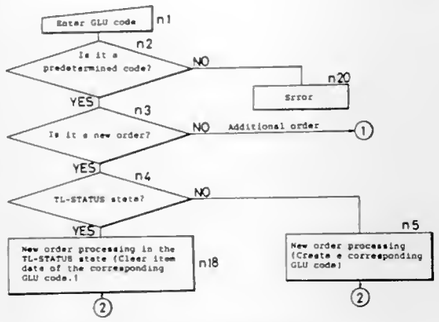
generating from said stationary transmitter a second field of radiated electromagnetic energy, said second field being effective at any responding device within said second field to blank out said first signal, and directing said second field at others of said plurality of responding devices, whereby said others of said plurality of responding devices are prevented from receiving said first instruction.

5,253,163

ELECTRONIC CASH REGISTER

Eiji Yoshida, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 30, 1990, Ser. No. 530,828
Claims priority, application Japan, May 31, 1989, 1-140124
Int. Cl.[5] G07G *1/12*
U.S. Cl. 364—405 **4 Claims**



1. An electronic cash register comprising:

input means for entering monetary transaction information for each guest;

a first memory to store transaction information for each guest;

a second memory to store a total amount of money for each guest;

first specifying means for specifying a totalizing operation;

second specifying means for specifying that the process is to be kept in a temporary totalization state;

third specifying means for specifying an additional registration of monetary transaction information;

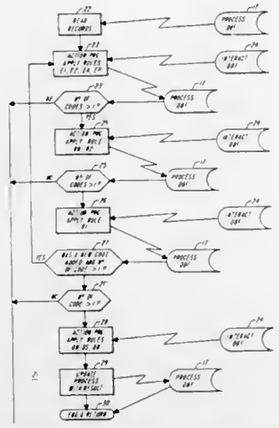
and control means which (a) makes a monetary transaction processing by summing an amount of money stored in the first memory for one guest in response to output of the first specifying means, adds the sum to the data in the second memory, and then clears contents stored i the first memory, (b) makes a monetary transaction processing by summing an amount of money stored in the first memory for one guest in response to output of the second specifying means, adds the sum to the data in the second memory and keeps the data stored in the first memory, and (c) subtracts the sum obtained from the processing in the first memory for one guest rom the value stored in the second memory for the one guest in response to output of the third specifying means and makes an additional registration of transaction information from the input means on the first memory.

5,253,164

SYSTEM AND METHOD FOR DETECTING FRAUDULENT MEDICAL CLAIMS VIA EXAMINATION OF SERVICE CODES

Donald C. Holloway, Menlo Park, Calif.; Robert D. Hertenstein, Morton, Ill.; George A. Goldberg, Newton, and Kelli A. Dugan, South Natick, both of Mass., assignors to HPR, Inc., Boston, Mass.

Continuation of Ser. No. 566,841, Aug. 14, 1990, abandoned, which is a continuation of Ser. No. 252,307, Sep. 30, 1988, abandoned. This application Jan. 29, 1991, Ser. No. 648,314
Int. Cl.[5] G06F *15/21*
U.S. Cl. 364—406 **16 Claims**



1. In a computer system having means for operating on a predetermined database containing medical service codes and a set of relationships among the medical service codes defining whether selected ones of the medical service codes are valid when input with other selected ones of the medical service codes, a method for processing input claims containing at least one medical service code, comprising the steps of:

receiving at least one claim;

determining whether any medical service code contained in the at least one claim is not present in the predetermined database; and

informing a user that a medical service code is not contained in the predetermined database.

5,253,165

COMPUTERIZED RESERVATIONS AND SCHEDULING SYSTEM

Eduardo Leiseca, 5132 SW. 127th Ct., Miami, Fla. 33175, and Ramon F. Aguero, 1125 Coral Way, Coral Gables, Fla. 33134

Continuation-in-part of Ser. No. 449,057, Dec. 18, 1989, abandoned. This application Dec. 12, 1990, Ser. No. 625,993
Int. Cl.[5] G06F *15/24*
U.S. Cl. 364—407 **1 Claim**

1. A method of negotiating and contracting for unscheduled space suitable for a particular need using a computerized data base comprising the steps of:

accessing the computerized data base on a terminal unit connected thereto via telecommunication lines;

browsing, at the terminal unit, a screen of displayed information detailing several entries of scheduled available transportation space which have been stored in the computerized data base;

determining whether scheduled transportation space suitable for the particular need exists based on the information displayed on the scheduled transportation space screen;

entering an appropriate key stroke or key stroke sequence on a keyboard of the terminal unit when suitable transportation space for the particular need is determined not to exist based on the scheduled transportation space screen information, thereby causing the computerized data base to output to the terminal unit a screen of displayed information detailing several entries of available unscheduled transportation space;

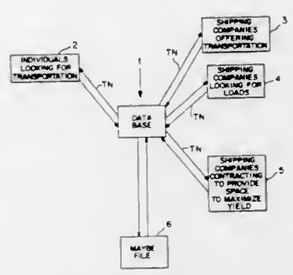
browsing, at the terminal unit, the screen detailing the several entries of the available unscheduled transportation space, said available unscheduled transportation space comprising restrictions and conditions;

determining whether available unscheduled transportation space suitable for the particular need exists based on the information displayed on the available unscheduled transportation space screen;

entering an appropriate key stroke or key stroke sequence on the keyboard of the terminal unit when suitable transportation space for the particular need is determined to exist based on the available unscheduled transportation space screen information, thereby causing the computerized data base to output to the terminal unit a contract screen means for facilitating contracting for the suitable transportation space;

contracting for the suitable transportation space through the computerized data base by entering a keystroke or key stroke sequence on the keyboard of the terminal unit to fill in the contract screen means;

entering an appropriate key stroke or key stroke sequence on the keyboard of the terminal unit, when suitable transportation space for the particular need is determined not to exist based on the available unscheduled transportation space screen information, to store consumer needs in said computer data base, said consumer needs comprising restrictions and conditions acceptable to the consumer;



browsing, at the terminal unit, a screen detailing the consumer needs stored in said computer data base;

entering an appropriate key stroke or key stroke sequence on the keyboard of the terminal unit to negotiate the restrictions and conditions of the consumer needs and the available unscheduled transportation space stored in the computer data base; wherein a compromise regarding the restrictions and conditions may be reached resulting in a negotiated transportation space, thereby causing the computerized data base to output to the terminal unit a contract screen for facilitating contracting for the negotiated transportation space;

contracting for the negotiated transportation space through the computerized data base by entering a keystroke or key stroke sequence on the keyboard of the terminal unit to fill in the contract screen means;

wherein, after this step, the computerized data base is programmed to perform the steps of:

outputting and providing each of the parties to the contract with a copy of the contract which has been concluded for the suitable or negotiated transportation space, and

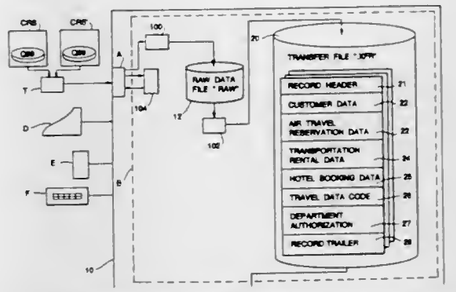
updating the information stored in the computerized data base which details the entries of the available unscheduled transportation space so as to delete from this information the entry which comprised the suitable or negotiated transportation space so that, upon the next occurrence of negotiating and contracting for which the computerized data base is employed, when the computerized data base outputs to the terminal unit the screen of information detailing available unscheduled transportation space, the entry which comprised the suitable or negotiated transportation space will not appear.

5,253,166

PRE-TICKET TRAVEL RESERVATION RECORD KEEPING SYSTEM

Susan S. Dettelbach, and Kenneth Dettelbach, both of Mayfield Heights, Obio, assignors to Disc Corporation, Willoughby, Obio

Filed Mar. 29, 1991, Ser. No. 677,556
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—407 **7 Claims**



1. A pre-travel reservation analyzing method in an information processing system comprising the steps of:

receiving a first plurality of travel reservation data sets comprising scheduled travel itineraries from a first computer reservation system, each of the first plurality of data sets having a plurality of first travel itinerary data items corresponding to a first set of individual travelers;

storing the first plurality of data sets in a memory of the system;

receiving a second plurality of travel reservation data sets from a second computer reservation system, each of the second plurality of data sets having a plurality of second travel itinerary data items corresponding to a second set of individual travelers;

storing the second plurality of data sets in the memory of the system;

selecting predetermined travel itinerary data items from the first and second plurality of travel reservation data sets;

arranging the selected items within the memory for ready importation into a relational database;

importing the arranged items into the relational database;

storing the imported items in a plurality of tables, each for storing portions of the travel reservation data sets corresponding to selected single travel components including tables for air, hotel, or automobile travel reservations;

generating a report from the relational database; and,

determining from the generated report a travel compliance of the first and second sets of individual travelers with respect to a predefined travel policy.

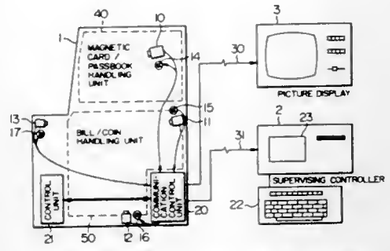
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5,253,167

REMOTE MAINTENANCE/SUPERVISORY SYSTEM AND METHOD FOR AUTOMATED TELLER MACHINES

Yasuhisa Yoshida, and Hiroaki Nakamura, both of Owariasahi, Japan, assignors to Hitachi, Ltd., Tokyo and Chubu Hitachi Electric Co., Ltd., Aichi, both of Japan

Filed Jun. 12, 1990, Ser. No. 536,468
Claims priority, application Japan, Jun. 15, 1989, 1-153508
Int. Cl.[5] G06F *15/20, 15/30;* H04N *7/18*
U.S. Cl. 364—408 12 Claims



1. A remote maintenance system for an automated teller machine comprising:

an automated teller machine for performing automatic transaction of cash; and

a supervisory arrangement for remotely supervising said automated teller machine,

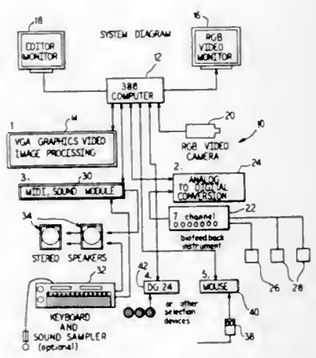
said automated teller machine including imaging means for imaging the operational state inside said automated teller machine, and said supervisory arrangement including means for displaying information indicative of a picture imaged by said imaging means, and command means for commanding said automated teller machine to perform a fault removing operation.

5,253,168

SYSTEM FOR CREATIVE EXPRESSION BASED ON BIOFEEDBACK

Jacqueline L. Berg, 930 Judson 2W, Evanston, Ill. 60202

Filed Dec. 6, 1991, Ser. No. 804,073
Int. Cl.[5] G06F *15/00;* A61B *5/08, 5/05*
U.S. Cl. 364—413.01 3 Claims



1. A system for allowing an individual to express themself in a creative manner by employing physiologic feedback signals, comprising:

a programmable digital processor with a memory attached thereto;

at least one physiologic sensor operatively configured to sense at least one physiological event and to generate a physiological signal relating thereto

a video camera operatively coupled to the digital processor to provide thereto a real time video signal;

a video monitor operatively coupled to the digital processor;

a data input device operatively coupled to the digital processor; and

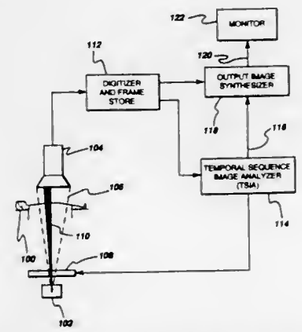
means included in said programmable digital processor for processing the video signal, the at lest one physiological signal, and data from the data input device to produce a real time video image on the video monitor whose character changes under the control of the physiological event, said means for processing being programmed to include a plurality of selectable special effects which change the character of the video image.

5,253,169

METHOD AND APPARATUS FOR REDUCING X-RAY DOSAGE DURING FLUOROSCOPIC EXAMINATIONS

Nelson R. Corby, Jr., Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 29, 1991, Ser. No. 800,379
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—413.13 16 Claims



1. A method for reducing the X-ray dosage during a fluoroscopic examination utilizing a fluoroscope with an image digitizer with storage capability and a detection screen comprising the steps of:

exposing on the detection screen of said fluoroscope an area with an approximate shape and location of the image of a catheter tip within a patient undergoing an interventional radiological procedure;

storing a time-sequence of digitized fluoroscopic images obtained by said exposing step wherein at least one of said images is a full field of view image; and

combining said stored images into an output image.

5,253,170

APPARATUS FOR COMPUTERIZED TOMOGRAPHY, METHOD OF SAME, AND APPARATUS FOR COMPUTERIZED TOMOGRAPHY SCANNING

Takahiro Kanamori, Katsuta, and Shinichi Itoh, Kawasaki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 14, 1991, Ser. No. 669,623
Claims priority, application Japan, Mar. 14, 1990, 2-60975
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—413.16 21 Claims

1. A computerized tomography apparatus comprising:

a radiation source for emitting radiation;

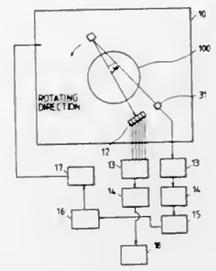
a detector disposed facing the radiation source with a space therebetween, an object being disposed in the space such that the radiation from the radiation source passes through the object and is incident to the detector, the detector outputting penetration data indicative of a penetration strength of the radiation through the object;

means for rotating at least one of the radiation source and the

detector to a plurality of rotary positions relative to the object;

means for scanning at least one of the radiation source and the detector at each of the rotary positions such that the detector outputs a plurality of penetration data at each of the rotary positions, the plurality of penetration data output by the detector at two or more of the rotary positions constituting translational data;

means for detecting a sudden change in penetration data in



the plurality of penetration data output by the detector at each of the rotary positions;

means for temporarily increasing a number of translational data before and after one of the rotary positions at which the detecting means detects a sudden change in penetration data; and

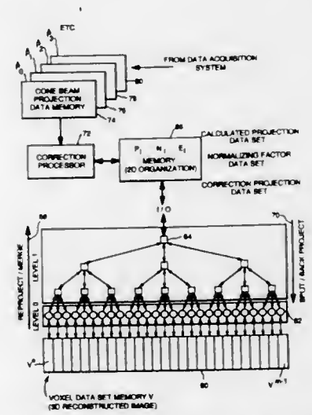
means for processing translational data constituting the plurality of penetration data output by the detector at all of the rotary positions to reconstruct a sliced image of the object.

5,253,171

PARALLEL PROCESSING METHOD AND APPARATUS BASED ON THE ALGEBRA RECONSTRUCTION TECHNIQUE FOR RECONSTRUCTING A THREE-DIMENSIONAL COMPUTERIZED TOMOGRAPHY (CT) IMAGE FROM CONE BEAM PROJECTION DATA

Meng-Ling Hsiao; Wayne J. Eberhard, both of Schenectady, N.Y., and Yves L. Trousset, Palaiseau, France, assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 21, 1990, Ser. No. 586,163
Int. Cl.[5] G06F *15/00;* A61B *6/00*
U.S. Cl. 364—413.19 22 Claims



1. A parallel processing method based on the Algebra Reconstruction Technique (ART) for iteratively reconstructing from cone beam projection data a 3D voxel data set V representing an image of an object, said method comprising:

irradiating the object using a cone beam x-ray source to obtain cone beam projection data on a two-dimensional array detector by scanning the object along a source scanning trajectory to obtain, at each of a plurality of discrete source positions θ_i on the source scanning trajectory, a 2D measured cone beam pixel data set P_i;

organizing the voxel data set V as a plurality m of independent voxel subcubes V^o through V^{m-1}, each voxel subcube including a plurality of voxels;

initializing the voxel data set V; and

performing successive iterations to correct values of at least selected voxels of the 3D voxel data set based on the measured cone beam data sets P_i, during each iteration correcting the values of at least the selected voxels for each of the discrete source positions θi on the source scanning trajectory by

reprojecting each voxel subcube V^o through V^{m-1} to calculate pixel values for a corresponding 2D calculated projection data subset from a group of calculated projection data sets i^{P0} through i^{Pm-1} of a 2D calculated projection data set P_i including a plurality of pixels, the projection data subsets i^{P0} through i^{Pm-1} overlapping in part

merging the calculated projection data subsets i^{P0} through i^{Pm-1} to calculate pixel values of the 2D calculated projection data set P_i, the step of merging including adding pixel values in any overlapping regions of the calculated projection data subsets i^{P0} through P_i^{m-1},

calculating a 2D correction projection data set E_i including a plurality of pixels by determining the normalized difference between the value of each pixel of the measured projection data set P_i and the value of the corresponding pixel of the calculated projection data set P_i,

splitting the 2D correction projection data set E_i into a plurality of 2D correction projection data subsets i^{E0} through i^{Em-1} corresponding to the voxel subcubes V^o through V^{m-1}, the 2D correction projection data subsets i^{E0} through i^{Em-1} overlapping in part, and the step of splitting including duplicating element values for any overlapping regions of the correction projection data subsets i^{E0} through i^{Em-1}, and

backprojecting each correction projection data subsets i^{E0} through i^{Em-1} to correct voxel values in the corresponding voxel subcube of the plurality of voxel subcubes V^o through V^{m-1}.

5,253,172

METHOD AND APPARATUS FOR LEARNING NEUTRAL POSITION OF VEHICLE STEERING ANGLE

Masayoshi Ito, Okazaki; Kiichi Yamada; Katsunori Otake, both of Nagoya; Yasunobu Miyata, Komaki, and Masayuki Hashiguchi, Obu, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 23, 1991, Ser. No. 645,043
Claims priority, application Japan, Jan. 25, 1990, 2-13553; Jan. 30, 1990, 2-17821; Jan. 30, 1990, 2-17838; May 16, 1990, 2-124289; May 16, 1990, 2-124293; May 18, 1990, 2-127016
Int. Cl.[5] B62B *6/00, 15/00*
U.S. Cl. 364—424.05 12 Claims

1. A method of learning a neutral position of a vehicle steering angle, comprising:

detecting a reference position of a steering shaft by a steering shaft reference position sensor;

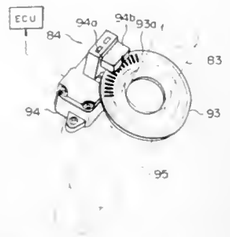
detecting a turning angle of said steering shaft by a steering angle detection means;

detecting the peripheral speeds of right and left driven wheels of the vehicle and a running speed of the vehicle by running speed detection means; and

deciding said neutral position of said steering angle by first neutral position decision means, said first neutral position decision means deciding said neutral position of said steer-

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ing angle wherein the following four criteria are satisfied, first, when said vehicle running speed is not less than a first predetermined threshold value, second, when a difference in peripheral speed between said right and left driven wheels is smaller than a second predetermined



threshold value; third, when said steering shaft reference position sensor continues to detect said reference position of said steering shaft within a predetermined range for at least a first count time and fourth, when said steering angle detection means continues to detect substantially the same turning angle for at least said first count time.

5,253,173

METHOD FOR EVALUATING A SENSOR SIGNAL

Wolfgang Drohny, Besigheim; Werner Nitschke, Ditzingen, and Peter Taufer, Renningen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

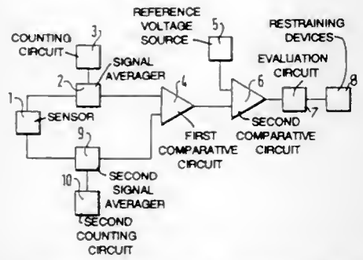
PCT No. PCT/DE89/00737, § 371 Date Jun. 5, 1991, § 102(e) Date Jun. 5, 1991, PCT Pub. No. WO90/06492, PCT Pub. Date Jun. 14, 1990

PCT Filed Nov. 25, 1989, Ser. No. 690,977

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1988, 3841089

Int. Cl.[5] B60R *21/08*

U.S. Cl. 364—424.05 **16 Claims**



1. An apparatus for controlling a passenger restraint device in a motor vehicle, comprising:

a sensor for generating output signals indicative of the acceleration of the motor vehicle;

first means coupled to the sensor for generating first averaging signals indicative of the average value of a first predetermined number of successively measured output signals of the sensor;

second means coupled to the first means and to the sensor for comparing the sensor output signals to the first averaging signals and generating first differential signals indicative of the difference between the sensor output signals and first averaging signals;

third means coupled to the second means for comparing the first differential signals to a threshold signal value, and if a first differential signal is less than the threshold signal value, the corresponding first averaging signal is set as an updated first averaging signal to be generated by the first means; and

an evaluation circuit coupled to the third means and responsive to the first differential signals for controlling the release of the passenger restraint device based thereon.

5,253,174

ACTIVE SUSPENSION WITH VARIABLE ROLL RIGIDITY DISTRIBUTION RATIO

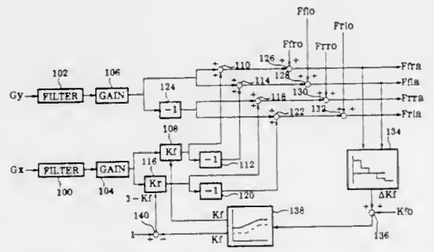
Shoji Inagaki, Susono, and Kouichi Kokubo, Nagoya, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha and Aisin Seiko Kabushiki Kaisha, both of Aichi, Japan

Filed Dec. 11, 1991, Ser. No. 804,755

Claims priority, application Japan, Dec. 27, 1990, 2-414873

Int. Cl.[5] B60G *17/015*

U.S. Cl. 364—424.05 **5 Claims**



1. An active suspension comprising a plurality of actuators such that a corresponding one of said actuators is provided to each vehicle wheel so as to support a corresponding part of vehicle load according to a target load value determined therefor, a transverse acceleration detection means for detecting transverse acceleration of a vehicle body, a means for dividing said vehicle load to be imposed on each vehicle wheel based upon the transverse acceleration detected by said transverse acceleration detection means through adjustment of said target load values, and a control means for controlling each of said plurality of actuators in accordance with said target load value therefor, wherein said vehicle load dividing means is adapted to provide a greater share of the vehicle load due to the transverse acceleration to be born on a rear vehicle wheel as said target load value on a front vehicle wheel at the outside of the turn increases.

5,253,175

METHOD FOR PRELIMINARILY PRINTING BLANK FOR TAPERED DRAW-FORMED BODY

Akihiko Machii, Yokohama, and Masao Ishinabe, Atsugi, both of Japan, assignors to Toyo Seikan Kaisha Ltd., Tokyo, Japan

Filed Sep. 12, 1990, Ser. No. 580,995

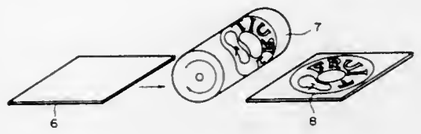
Claims priority, application Japan, Sep. 12, 1989, 1-234696

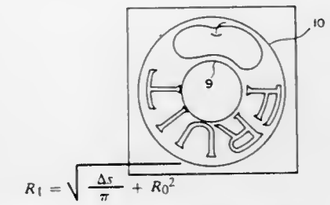
Int. Cl.[5] G06F *15/46;* **H04H** *1/00*

U.S. Cl. 364—468 **5 Claims**

1. A method for preliminarily printing a blank for a tapered draw-formed body, which comprises converting an image on an original to be printed, to a picture element signal on digital rectangular coordinates corresponding to picture elements, transforming the rectangular coordinates to annular coordinates so that he height of the rectangular coordinates is made to correspond to the height of a tapered plane on which the printed image is to be manifested and the change of the area of the tapered plane by a minute change of the height of the tapered plane is made equal to the change of the area of the annular plane, photoelectrically making a printing plate based on picture element signals on the transformed coordinates, and printing the blank by using the obtained printing plate, wherein the transformation of the rectangular coordinates to annular coordinates is carried out so that the following relation is established:

wherein R_0 is a standard radius int he annular coordinates, ΔS is an increase of the area of the tapered plane due to a





$$R_1 = \sqrt{\frac{\Delta s}{\pi} + R_0^2}$$

minute change of the height of the tapered plane, and R_1 is a radius in the annular coordinates when the area of the tapered plan is increased by ΔS.

5,253,176

APPARATUS AND METHOD FOR PRODUCING VARIABLE CONFIGURATION DIE

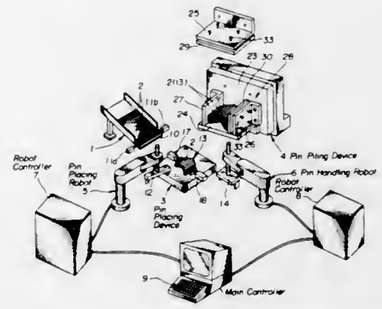
Masaaki Todoroki, Machida; Hidetoshi Imazu, Sagamihara; Hideo Nomura; Nobuyuki Yamaguchi, both of Yokohama; Junichi Asano, Zama; Kenji Ishibashi, Yamato, and Koichi Yamamoto, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 19, 1991, Ser. No. 687,483

Claims priority, application Japan, Apr. 19, 1990, 2-103631; May 18, 1990, 2-128692; May 21, 1990, 2-131030; May 23, 1990, 2-132899

Int. Cl.[5] G06F *15/46;* **B21K** *5/20*

U.S. Cl. 364—468 **27 Claims**



1. An apparatus for producing a variable configuration die by using a plurality of pins, comprising:

a pin storing device for storing said pins therein;

a pin piling device in which said variable configuration die is to be produced;

robot means for transferring said pins from said pin storing device to said pin piling device for making up said variable configuration die; and

a computer-aided control device for controlling said robot means in such a manner is that the pins carried by the robot means are placed onto given positions of said pin piling device to cause the variable configuration die thus made of the piled pins in the pin piling device to have a layered structure, said variable configuration die thus made up having a recessed die surface which is defined by one ends of the piled pins.

5,253,177

PHOTO-SOLIDIFICATION MODELING DEVICE

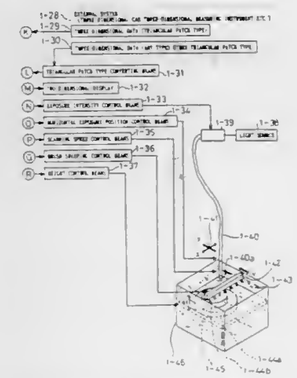
Naoichiro Saito, and Seiji Hayano, both of Tokyo, Japan, assignors to Mitsubishi Corporation, Tokyo, Japan

Filed May 1, 1991, Ser. No. 694,333

Claims priority, application Japan, May 2, 1990, 2-115271; Nov. 2, 1990, 2-297536

Int. Cl.[5] G06G *7/48*

U.S. Cl. 364—468 **4 Claims**



1. A photo-solidification modeling device for forming a solidified model having a desired model shape by exposing to a light a liquid capable of being solidified on receipt of the light, the photo-solidification modeling device comprising:

means for generating data indicative of said desired model shape;

means for generating data indicative of regularly spaced regions independent of the generation of said data indicative of said desired model shape;

means for combining said data indicative of said desired model shape and said data indicative of said regularly spaced regions to provide exposure region data; and

means for exposing the light to the liquid in accordance with said exposure region data.

5,253,178

WIRE-TYPE ELECTRICAL DISCHARGE MACHINING METHOD AND APPARATUS

Yoshiro Nakayama, Aichi, Japan, assignor to Mitsubishi Denki K.K., Tokyo, Japan

Filed Mar. 7, 1990, Ser. No. 489,632

Claims priority, application Japan, Aug. 25, 1989, 1-219837

Int. Cl.[5] G06F *15/46;* **B23P** *1/08*

U.S. Cl. 364—474.04 **4 Claims**

1. A method of achieving continuous discharge-type machining, comprising the steps of:

determining a machining contour to be cut within a workpiece, said contour defining a core;

dividing said contour into a plurality of subcontours, each defining a subcore of smaller size than said core;

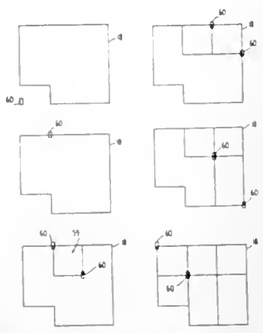
automatically generating a machining route for each of said subcontours;

machining said workpiece by generating an electrical discharge in a gap maintained between said workpiece and said core in a subcontour-by-subcontour manner; and

automatically removing each subcore as the machining of

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the associated subcontour is completed, wherein said step of generating a machining route for each of said subcontours further includes the step of generating NC data relating to the machining of each of said subcontours.

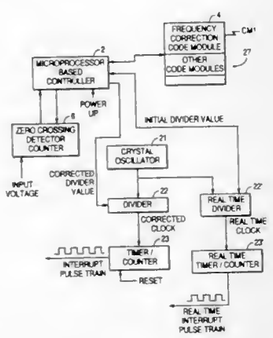


5,253,179

COMPENSATION FOR LINE FREQUENCY VARIATION

Barry Rickett, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 24, 1990, Ser. No. 632,969
Int. Cl.[5] H03K *5/19*
U.S. Cl. 364—484 **11 Claims**



1. A method of compensating for variations in the line frequency from a nominal line frequency in a synchronous AC driven system comprising the steps of:

setting a timer with a predetermined time;

counting the number of zero crossings of the input line frequency for the predetermined time;

calculating the difference between the number of zero crossings and a predetermined constant representing the expected number of zero crossings at the nominal line frequency; and

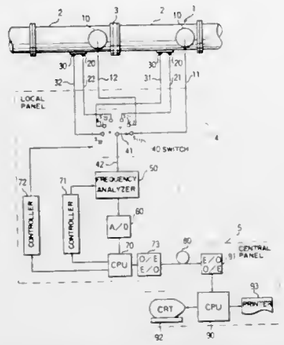
using the calculated difference to generate a clock signal for synchronizing timing related operations of the system affected if the actual line frequency is different from the nominal line frequency.

5,253,180

APPARATUS AND METHOD FOR DIAGNOSIS OF POWER APPLIANCES

Tokio Yamagiwa; Kiyoshi Okumura, and Yoshinori Tagawa, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 16, 1990, Ser. No. 524,455
Claims priority, application Japan, Jun. 2, 1989, 1-139056
Int. Cl.[5] G01R *31/08*
U.S. Cl. 364—485 **21 Claims**



1. An apparatus for performing diagnosis of a power appliance, the power appliance including current conduction appliances housed in gas-insulated casings, the apparatus comprising:

a plurality of detectors disposed on one gas-insulated casing of the power appliance for respectively detecting a plurality of mutually different phenomena respectively indicative of a plurality of mutually different conditions of the power appliance, and for respectively outputting a plurality of detection signals indicative of the respective detected phenomena;

switching means for receiving the detection signals from the detectors, and for sequentially outputting each of the detection signals in response to a switching control signal;

control means for generating a switching control signal for controlling the switching means to sequentially output each of the detections signals, and for supplying the switching control signal to the switching means;

a frequency analyzer for sequentially performing frequency analysis of the detection signals sequentially output from the switching means and for sequentially outputting frequency-analyzed signals indicative of respective results of the frequency analysis of the detection signals sequentially output from the switching means; and

means for diagnosing the mutually different conditions of the power appliance based on the frequency-analyzed signals sequentially output from the frequency analyzer.

5,253,181

PROGRAMMABLE ONE-BOARD COMPUTER, AND METHODS OF VERIFICATION OF LOGIC CIRCUIT AND ALTERATION TO ACTUAL CIRCUIT USING THE PROGRAMMABLE ONE-BOARD COMPUTER

Tomohiro Marui, Fuchuu; Yoshihiro Ishida, and Hiroyuki Oka, both of Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

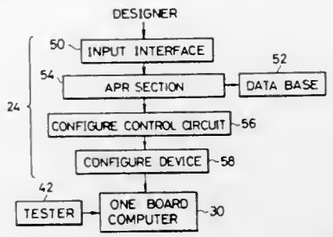
Filed Apr. 24, 1990, Ser. No. 513,625
Claims priority, application Japan, Apr. 27, 1989, 1-110493; May 1, 1989, 1-112587; May 1, 1989, 1-112588
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—489 **14 Claims**

1. A programmable one-board computer comprising:

(a) a system board having a plurality of wirings;

(b) at least one microprocessor chip disposed substantially at the center of said system board; and

(c) a plurality of programmable logic devices substantially surrounding said microprocessor chip, said plurality of wirings interconnecting at least one of said plurality of programmable logic devices to said at least one microprocessor chip.

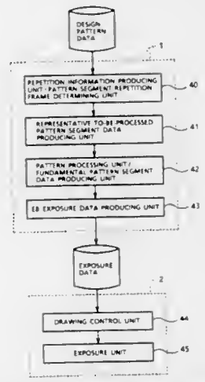


5,253,182

METHOD OF AND APPARATUS FOR CONVERTING DESIGN PATTERN DATA TO EXPOSURE DATA

Toshio Suzuki, Iruma, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 11, 1991, Ser. No. 653,310
Claims priority, application Japan, Feb. 20, 1990, 2-039283
Int. Cl.[5] G06F *15/60, 15/20*
U.S. Cl. 364—489 **12 Claims**



1. A method of generating an exposure data for an exposure apparatus from a circuit design pattern data including at least data for defining repetitive pattern segments, comprising:

producing repetition information which defines a plurality of unit regions, respectively having the repetitive pattern segments, without any overlap between adjacent unit regions, in a repetition region including the repetitive pattern segments in the circuit design pattern data;

producing fundamental pattern segment data which defines one of the repetitive pattern segments for one of the unit regions, on the basis of the repetition information, while holding continuous regularity of the repetitive pattern segments in the unit regions; and

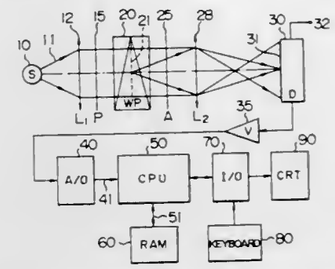
producing the exposure data for the repetition region including the repetitive pattern segments, on the basis of the fundamental pattern segment data and repetition information.

5,253,183

OBTAINING A SPECTROGRAM FROM A SINGLE SCANNING OF INTERFERENCE FRINGES

Masaru Inoue, Mito, and Shigeru Matsui, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 292,347, Dec. 30, 1988, abandoned.
This application Dec. 9, 1991, Ser. No. 803,894
Claims priority, application Japan, Jan. 6, 1988, 63-391
Int. Cl.[5] G01J *3/453*
U.S. Cl. 364—525 **36 Claims**



7. A device for obtaining a spectrogram of a light source, comprising:

means for receiving light from a light source;

means responsive to the receiving means for producing interference fringes from the received light;

means responsive to the producing means for imaging the produced interference fringes;

means responsive to the imaging means for transforming the imaged interference fringes into a single set of electric signals; and

means responsive to the transforming means for processing only the single set of electric signals to obtain a spectrogram of the light source;

wherein the processing means includes:

means responsive to said transforming means for digitizing said single set of electric signals and for storing the digitized single set of electric signals as a group of consecutive data points;

means responsive to said digitizing and storing means for obtaining moving average values of said data points, wherein said moving average values represent a DC component of said data points;

means responsive to said moving average values obtaining means for obtaining differences between said moving average values and values of said data points; and

means responsive to said differences obtaining means for Fourier-transforming said differences to obtain said spectrogram of said light source.

5,253,184

FAILURE AND PERFORMANCE TRACKING SYSTEM

Donald Kleinschnitz, Melbourne, Fla., assignor to Storage Technology Corporation, Louisville, Colo.

Filed Jun. 19, 1991, Ser. No. 718,491
Int. Cl.[5] G06F *11/00*
U.S. Cl. 364—550 **26 Claims**

1. In an electronic system which includes a plurality of field replaceable units, each of which includes at least one memory element, maintenance apparatus for providing each one of said field replaceable units with failure data comprising:

means for generating data indicative of the unique identity of said electronic system;

means for storing said generated data in said memory element;

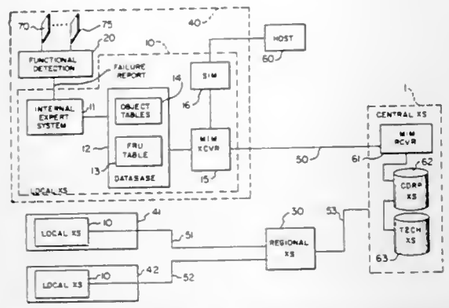
means for detecting the presence of a failure in said electronic system;

means for generating a failure report which contains data relevant to said detected failure, including an identifica-

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tion of the failure mode and all operational elements on all field replaceable units that were cooperatively operative during said detected failure, comprising:

means for maintaining a failure analysis history containing data identifying each of said field replaceable units and associated composite failure data representative of known field replaceable unit failures;



means for comparing said stored failure report with said failure analysis history; and

means for identifying at least one failed field replaceable unit based on said comparison; and

means for storing said failure report in said memory element.

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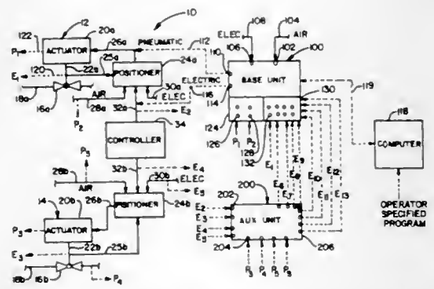
VALVE DIAGNOSTIC SYSTEM INCLUDING AUXILIARY TRANSDUCER BOX

John H. Mutchler, Wethersfield, and William D. Marriott, Ellington, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Jan. 30, 1991, Ser. No. 647,915

Int. Cl.[5] G06F *15/20*; G08B *21/00*

U.S. Cl. 364—551.01 **23 Claims**



1. In a system for acquiring data from valves in process plant flow lines, wherein each valve has a flow bore, means for sealing the flow bore against flow, stem means connected to the means for sealing, and a fluidly driven actuator for selectively moving the stem means between open and closed positions whereby the means for sealing opens and closes the flow bore respectively, the system includes a portable data acquition unit locatable in the vicinity of one of the valves and having a plurality of electrical input ports for receiving diagnostic signals associated with said one valve, and wherein the improvement comprises:

an auxiliary unit that is physically distinct from the acquisition unit and located at another valve, the auxiliary unit having a pressure input port that is sensitive to variations in fluid pressure, the input port being fluidly connected at the other valve so as to experience a variation in fluid pressure during actuation of the other valve, and first output means connected to the input port of the data acquisition unit, for converting variations in presssure at the auxiliary unit input port to a commensurate electrical output signal for delivery as a diagnostic signal to the input port of the data acquisition unit.

5,253,186

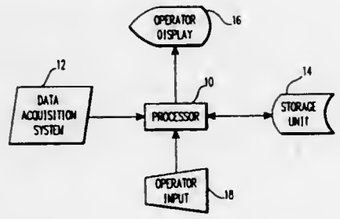
PROCESS FACILITY MONITORING METHOD INCLUDING TRANSFORMATION OF SEQUENTIAL CONDITIONS INTO CONSTRAINING CONDITIONS

Melvin H. Lipner, Monroeville, and Albert J. Impink, Jr., Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 7, 1991, Ser. No. 772,826

Int. Cl.[5] G21C *7/36*

U.S. Cl. 364—551.01 **9 Claims**



1. A method of monitoring operation of a process facility, comprising the steps of:

(a) storing in machine readable form a procedure defining steps for operating the process facility with conditions associated with the steps, each of the conditions defined as one of initial conditions, sequential conditions and constraining conditions;

(b) automatically monitoring execution of each of the steps of the procedure by comparing sensor readings in the process facility with the sequential conditions corresponding to an associated step and displaying, during execution of the associated step, indications of whether the sequential conditions are met;

(c) automatically comparing the sensor readings in the process facility with the constraining conditions during execution of the steps in the procedure and generating first warning indications for any violated constraining conditions; and

(d) automatically comparing the sensor readings with transformed conditions, selected from among the sequential conditions, during the steps following the associated step corresponding to each of the transformed conditions and generating second warning indications for any violated transformed conditions.

5,253,187

COORDINATE INPUT APPARATUS

Kiyoshi Kaneko, Yokohama; Katsuyuki Kobayashi, Tokyo; Takeshi Kamono, Yokohama; Ryozo Yanagisawa, Matsudo; Shinnosuke Tanishi, Kawasaki; Yuichiro Yoshimura, Yokohama, and Atsushi Tanaka, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 433,348, Nov. 8, 1989, abandoned. This application Feb. 19, 1992, Ser. No. 837,695

Claims priority, application Japan, Nov. 11, 1988, 63-283861; Nov. 11, 1988, 63-283862; Nov. 11, 1988, 63-283863; Jul. 11, 1989, 1-177011

Int. Cl.[5] G06F *15/20*

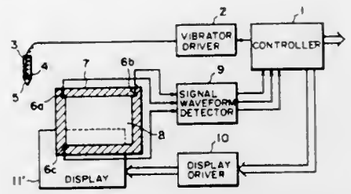
U.S. Cl. 364—560 **37 Claims**

1. A coordinate input apparatus in which a vibration which was input by a vibration input pen is detected by vibration sensors attached to a vibration propagating plate and coordinates of the vibration input pen on the vibration propagating plate are detected, comprising:

envelope output means comprising a filter for outputting an envelope signal of the detected signals for each of the vibration sensors;

gate signal output means for detecting a portion, exceeding a predetermined threshold value, of said envelope signal which is output from said filter and for outputting a gate signal;

first detecting means for detecting a peak of said envelope signal which is output from said envelope output means and for detecting a signal based on a group velocity by using said peak as a reference;



second detecting means for detecting, before the signal based on the group velocity is detected by said first detecting means, a signal based on a phase velocity by using a leading edge of said detection signal of one of the vibration sensors as a reference in the period of time during which the gate signal is output from the gate signal output means; and

deriving means for deriving the position coordinates of the vibration input pen on the basis of a propagation time of the signal based on the group velocity detected by said first detecting means and a propagation time of the signal based on the phase velocity detected by said second detecting means.

5,253,188

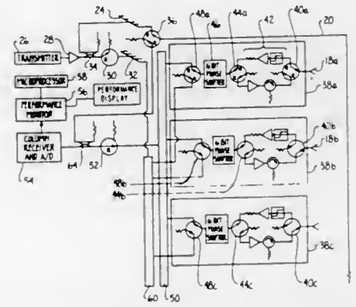
BUILT-IN SYSTEM FOR ANTENNA CALIBRATION, PERFORMANCE MONITORING AND FAULT ISOLATION OF PHASED ARRAY ANTENNA USING SIGNAL INJECTIONS AND RF SWITCHES

Kuan M. Lee, Brea; Ruey S. Chu, Cerritos, and Sien-Chang C. Liu, Brea, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 19, 1991, Ser. No. 688,651

Int. Cl.[5] G01R *35/00*

U.S. Cl. 364—571.02 **13 Claims**



1. An apparatus for monitoring a microwave antenna array having a plurality of radiating elements and a plurality of transmit/receive modules, each transmit/receive module being coupled with one of said radiating elements; which comprises:

a transmitter for generating a test signal;

a performance monitor for testing said antenna array

a transmission line for coupling with said radiating elements;

switch means coupled between said transmitter and said transmission line and said transmit/receive modules for alternately coupling said test signal to said transmission line or to said transmit/receive modules; and

switching means coupled between said transmit/receive modules and said performance monitor for selecting one of said transmit/receive modules and selectively passing said test signal, in sequence, either through said transmit/-receive module and said transmission line to said performance monitor to test the transmit operation of said radiating element and selected transmit/receive module, or through said transmission line and said transmit/receive module to said performance monitor, to test to receive operation of said radiating element and said selected transmit/receive module.

5,253,189

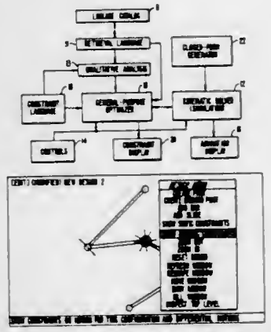
QUALITATIVE KINEMATICS

Glenn A. Kramer, Austin, Tex., assignor to Schlumberger Technologies, Inc., San Jose, Calif.

Filed Jun. 13, 1989, Ser. No. 365,586

Int. Cl.[5] G06G *7/48*

U.S. Cl. 364—578 **35 Claims**



1. A method of simulating motion of a linkage to trace a path of said linkage with a digital computer comprising the steps of:

a) storing a set of propagation rules for a member of said linkage, said propagation rules defining a range of allowed movement in response to a qualitative directional representation of a force applied to an adjacent joint;

b) based on said propagation rules, determining a direction of movement of said linkage in response to said qualitative directional representation of a force; and

c) displaying said path of said linkage in a video display.

5,253,190

WEIGHTED TEMPERATURE MEASUREMENT USING MULTIPLE SENSORS

Jagannathan S. Srinivasan, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 1, 1992, Ser. No. 906,994

Int. Cl.[5] G06G *7/12*

U.S. Cl. 364—581 **6 Claims**

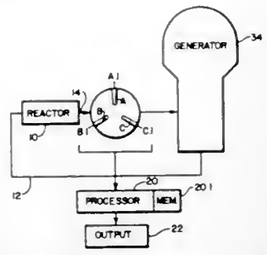
1. A method for indicating the temperature of fluid in the hotleg of steam supply system using at least three fast response resistance temperature sensors spaced 120 degrees apart on a circular normal to fluid flow, each sensor producing a temperature signal, characterized by the steps:

determining a first sensor temperature for each sensor from a temperature signal produced by the sensor;

assigning each sensor with a weighting factor between zero and one hundred percent in proportion to the relative

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magnitude of said temperatures, a sensor with the highest first sensor temperature receiving the highest weighting factor and a sensor with the lowest first sensor temperature receiving the lowest factor, the sum of the factors for all sensors being one hundred percent;



multiplying each first sensor temperature by the weighting factor assigned to the sensor to produce a second sensor temperature for each sensor; and

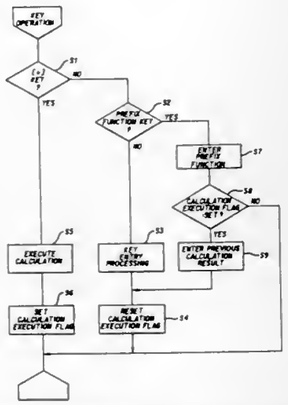
summing said second sensor temperatures.

5,253,191

ELECTRONIC COMPUTER CAPABLE OF ENTERING UNARY OPERATOR USING PREFIX NOTATION

Hideyasu Koumo, Yamatokoriyama, and Fumiaki Kawawaki, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 7, 1992, Ser. No. 816,977
Claims priority, application Japan, Jan. 9, 1991, 3-000913
Int. Cl.[5] G06F *3/00*
U.S. Cl. 364—709.16 **4 Claims**



1. An electronic computer which receives an operator and also an operand entered before or after said operator depending on which kind of said operator and comprises calculation execution means for, when a key operation making a signal for the start of calculation is performed, performing the calculation of an entered expression, and in which one or more unary operators are set as prefix unary operators to be entered before an operand, said electronic computer further comprising:

calculation identification means which includes a status indicative of the completion of the calculation performed by said calculation execution means;

first judgment means for judging whether one or more of said prefix unary operators is entered into said calculation execution means or not;

second judgment means responsive to said calculation identification means for judging whether said completion status of said calculation identification means is set or not;

operand entry means for, when said calculation identification means is in said status and said prefix unary operator is entered into said calculation execution means, entering the immediately preceding calculation result into said calculation execution means as the operand for said prefix unary operator; and

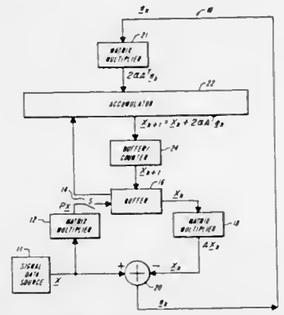
reset means for, when any entry is performed into said calculation execution means, resetting said status of said calculation identification means.

5,253,192

SIGNAL PROCESSING APPARATUS AND METHOD FOR ITERATIVELY DETERMINING ARITHMETIC FOURIER TRANSFORM

Donald W. Tufts, Greenwich, R.I., assignor to The Board of Governors for Higher Education, State of Rhode Island and Providence Plantations, Providence, R.I.

Filed Nov. 14, 1991, Ser. No. 792,348
Int. Cl.[5] G06F *15/332*
U.S. Cl. 364—726 **8 Claims**



1. A signal processing method for converting an input signal, which represents Fourier coefficients of a function that varies in relation to an independent variable, into a set of output signals respectively representing the values of a Fourier series associated with said input signal, said method comprising the steps of:

(a) generating from a signal data source a data signal vector comprising plural sets of samples of an input signal received within an analysis period of said independent variable;

(b) generating from a first matrix multiplier means a frequency domain signal vector representative of an approximation of said frequency domain signal vector by multiplying said data signal vector by a predetermined transform signal matrix, wherein said first matrix multiplier means performs a predetermined number of computational iterations, and said frequency domain signal vector comprises plural sets of frequency samples of said input signal;

(c) performing via a second matrix multiplier means an inverse transformation on said frequency domain signal vector by multiplying said frequency domain signal vector by an Arithmetic Fourier Transform signal matrix to produce a synthesized data signal vector representative of an approximation of said data signal vector;

(d) generating from a subtractor an error signal vector by determining the difference between said generated data signal vector and said synthesized data signal vector;

(e) converting via a third matrix multiplier means said error signal vector into a frequency domain improvement signal vector by multiplying said error signal vector by the transpose of said Arithmetic Fourier Transform signal matrix, and by a predetermined scaling value;

(f) generating from an accumulator an updated frequency domain signal vector by adding said frequency domain improvement signal vector to said frequency domain signal vector;

(g) utilizing said updated frequency domain signal vector as a replacement signal vector for said frequency domain signal vector, repeating steps (c) through (f) for said predetermined number of computational iterations; and

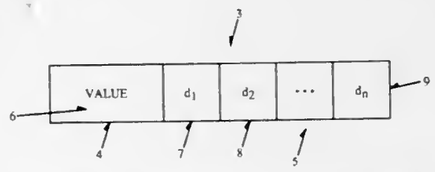
(h) producing said output signals representative of said calculated frequency domain signal vector.

5,253,193

COMPUTER METHOD AND APPARATUS FOR STORING A DATUM REPRESENTING A PHYSICAL UNIT

John Walker, Sausalito, Calif., assignor to Autodesk, Inc., Sausalito, Calif.

Continuation of Ser. No. 582,554, Sep. 14, 1990, abandoned. This application Oct. 8, 1992, Ser. No. 958,536
Int. Cl.[5] G06F *7/38*
U.S. Cl. 364—748 **17 Claims**



1. A computer controlled method for storing a datum in a computer system to associate a value with a physical unit, comprising the steps of:

said computer system storing a first signed value in a single magnitude register that represents a signed magnitude of said datum represented in said physical unit;

said computer system storing a plurality of second values in a plurality of dimension fields of a single dimension register associated with said magnitude register, wherein said plurality of second values represent signed magnitudes of exponents of a plurality of base physical units for different base units of measure in the international (SI) system of measurement, wherein said plurality of dimension fields each comprise eight bits of information, including a single sign bit, wherein at least two of said second plurality of values are non-zero values representing said physical unit, said physical unit being a combination of at least two of said base units of measure in said SI system of measurement, each of said at least two base units of measure having a magnitude according to respective values stored in each of said at least two of said plurality of dimension fields.

5,253,194

DIGITAL MULTIPLIER

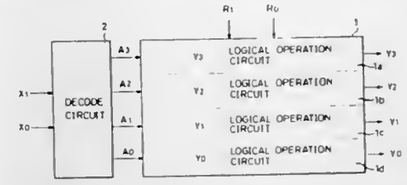
Sumitaka Takeuchi, and Keisuke Okada, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 10, 1992, Ser. No. 866,708
Claims priority, application Japan, Apr. 16, 1991, 3-084192
Int. Cl.[5] G06F *7/52*
U.S. Cl. 364—757 **5 Claims**

1. A digital multiplier in which a coded first digital signal of multiple bits is multiplied by a coded second digital signal of multiple bits to output a coded third digital signal of multiple bits as a multiplication result without a full adder, comprising:

decoding means for decoding said second digital signal; and

logical operation means for performing independent operations for obtaining logical values of respective bits of said third digital signal, based on said first digital signal and an output of said decoding means.

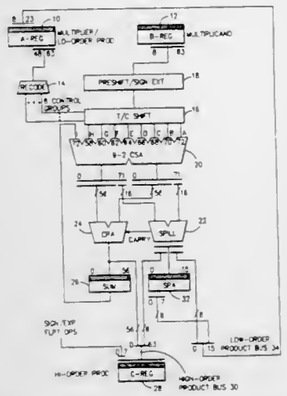


5,253,195

HIGH SPEED MULTIPLIER

Harold J. Broker, Ulster Park; Russell S. Cook, Poughkeepsie; James O'Connor, Ulster Park, and Nelson S. Xu, Hyde Park, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 765,859, Sep. 26, 1991, abandoned. This application Feb. 4, 1993, Ser. No. 13,541
Int. Cl.[5] G06F *7/52, 11/00*
U.S. Cl. 364—759 **12 Claims**



1. A high speed multiplier circuit for performing multiplication of a multiplier and a multiplicand stored in first and second registers, respectively, and storing a product result in a third register for fixed-point data and in said third and first registers for floating-point data, comprising:

recording means connected to said first register for recoding a multiplier stored in said first register to generate control signal outputs;

preshift/sign circuitry connected to said second register for shifting said multiplicand left for fixed-point data and providing a sign signal during a fixed point multiplication cycle;

shift gate means connected to outputs of said preshift means and controlled by control signal outputs of said recoding means to output selected groups of bits of the multiplicand;

carry-save adder means connected to outputs of said shift gate means for adding a group of multiples of said multiplicand to generate carry and sum output signals;

spill adder means connected to low order outputs of said carry-save adder means for generating a low order portion of a final result of said multiplication;

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storage means for temporarily storing said low order portion of said final result;

low-order bus means for transferring said low order portion of said final result to said first register during floating-point operations;

carry-propagate adder means for generating a high order portion of said final result from high order carry and said sum output signals of said carry-save adder means; and

high order product bus means for transferring said high order portion of said final result to said third register.

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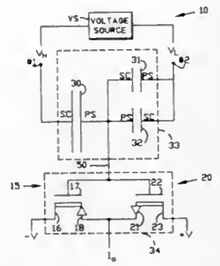
MOS ANALOG MEMORY WITH INJECTION CAPACITORS

Randy L. Shimabukuro, San Diego; Michael E. Stewart, La Jolla; Patrick A. Shoemaker, Lemon Grove, and Graham A. Garcia, San Diego, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 9, 1991, Ser. No. 639,500

Int. Cl.[5] G11C *27/00, 11/40, 11/56*

U.S. Cl. 365—45 **20 Claims**



1. A dual-writing-polarity non-volatile MOS analog memory cell having a floating gate structure, an improvement therefor is provided comprising:

injection capacitor means, including as part thereof said floating gate structure, for permitting the modification of analog information stored in the form of charge on said floating gate structure by the use of hot-carrier injection onto and off of said floating gate structure, said injection capacitor means includes a pair of interconnected injection capacitors coupled to a bias capacitor, said bias capacitor being used to bias said floating gate during writing;

a first terminal capacitively coupled by said bias capacitor of said injection capacitor means to said floating gate structure to allow a bias of said floating gate structure; and

a second terminal capacitively coupled by both said injection capacitors of said injection capacitor means to said floating gate structure to allow injection of charge onto and off of said floating gate structure, one of said injection capacitors of said injection capacitor means includes a first region of p-type crystalline silicon capacitively coupled to said second terminal from which first region electrons may be injected off of said floating gate structure, and the other of said injection capacitors of said injection capacitor means includes a second region of p-type crystalline silicon electrically connected to said second terminal from which second region electrons may be injected onto said floating gate structure.

5,253,197

SEMICONDUCTOR ASSOCIATIVE MEMORY DEVICE WITH CURRENT SENSING

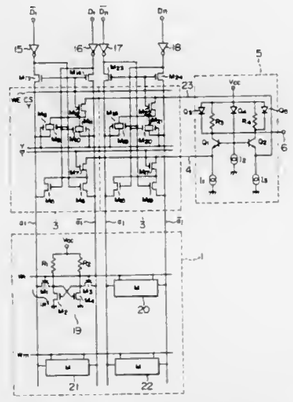
Makoto Suzuki, Niiza; Suguru Tachibana, Hachioji; Hisayuki Higuchi, Kokubunji; Katsuhiro Shimohigashi, Musashimurayama; Takehisa Hayashi, Kodaira; Makoto Hanawa, Kokubunji, and Tadahiko Nishimukai, Sagamihara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 11, 1990, Ser. No. 580,464

Claims priority, application Japan, Sep. 14, 1989, 1-237044; Jan. 19, 1990, 2-008253

Int. Cl.[5] G11C *15/04*

U.S. Cl. 365—49 **13 Claims**



1. A semiconductor memory device, comprising:

a plurality of memory cells for storing information; and

a plurality of comparator circuits each of which being coupled for respectively comparing units of information stored in ones of said plurality of memory cells with comparison input information, corresponding to each unit of the information, and outputting a result of each comparison,

wherein readout currents from ones of said plurality of memory cells being read out are respectively supplied to corresponding ones of said plurality of comparator circuits without first being converted into a voltage,

wherein each one of said plurality of comparator circuits provides a comparison operation of readout current from a selected one of corresponding ones of said plurality of memory cells with comparison input information supplied thereto, and

wherein each of the comparator circuits includes a MOSFET having a source-drain path which is supplied with the readout current from the selected memory cell and having a gate which is supplied with the comparison input information.

5,253,198

THREE-DIMENSIONAL OPTICAL MEMORY

Robert R. Birge, Fayetteville, and Deshan S. K. Govender, Skaneateles, both of N.Y., assignors to Syracuse University, Syracuse, N.Y.

Filed Dec. 20, 1991, Ser. No. 811,065

Int. Cl.[5] G11C *13/00;* **G11B** *7/00*

U.S. Cl. 365—106 **8 Claims**

1. Two-photon three dimensional optical data storage device comprising:

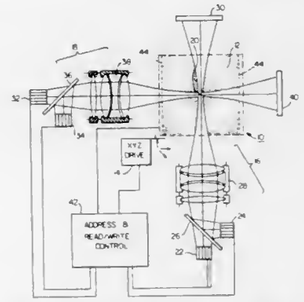
a volume of a field-oriented bacteriorhodopsin disposed in a carrier medium, confining means holding said volume, and translating means for moving said confining means in each of a plurality of orthogonal directions;

first means for generating a beam of radiation at one or both of two predetermined wavelengths, along one predetermined axis and converging the radiation at a predetermined bit cell access location in the volume;

second means for generating another beam of radiation at one or both of said wavelengths along another predetermined axis and converging the radiation at said predetermined bit cell access location;

wherein illumination by one of said wavelengths is operative to place the bacteriorhodopsin in the bit cell to a "1" state; while illumination by the other of said wavelengths is operative to place the bacteriorhodopsin in the bit cell access location to a complementary "0" state;

transport electrode means disposed on walls of said confining means for sensing an electrical response of said bacteriorhodopsin to stimulation by illumination from said first means and said second means;



and control means coupled to said first means, said second means, and said electrode means for actuating a write sequence wherein when said volume is disposed with an addressed bit cell at said predetermined bit cell access location, said first and second means are both simultaneously actuated to inject radiation at one of said wavelengths into said access location, and then conducting a cleaning sequence in which said first and second means are actuated sequentially to inject radiation at the other of said wavelengths separately along their respective axes to reverse the state of some of the bacteriorhodopsin in the bit cells adjacent to said bit cell access location.

5,253,199

JJ-MOS READ ACCESS CIRCUIT FOR MOS MEMORY

David A. Gibson, Austin, Tex., assignor to Microelectronics and Computer Technology Corporation, Austin, Tex.

Filed Jun. 17, 1991, Ser. No. 717,302

Int. Cl.[5] G11C *11/44*

U.S. Cl. 365—162 **24 Claims**

1. An electrical circuit for selecting memory cells in a memory array and reading data contained in a selected memory cell, said memory cells selected by a memory array row and a memory array column, said electrical circuit using superconducing junction devices that are switched between a superconducting and voltage gap mode, said memory cells not using such superconducting junction devices, said circuit comprising:

a first superconducting junction device for selecting a memory array row;

a second superconducting device for selecting a memory array column;

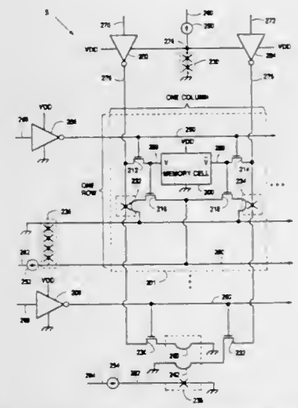
third and fourth superconducting devices each having a control loop for modifying the amount of critical current required to switch modes;

a fifth superconducting device having first and second control loops, wherein the difference between the currents in said first and second control loops controls the amount of critical current required to switch modes in said fifth junction device;

first clock means connected to said first junction, said first clock means having a current signal that switches said first junction into the voltage gap mode thereby generating a memory array row select signal;

means for providing the row select signal to said third junction device control loop when the memory cell contains a logic one and to said fourth junction device control loop when the memory cell contains a logic zero;

means for providing the output voltage of said third and fourth devices as an input control signal to said first and second control loops of said fifth junction device, respectively;



second clock means connected to said second junction, said second clock means having a current signal that switches said second junction into the voltage gap mode thereby generating a memory array column select signal;

means for providing the column select signal to said third and fourth junction devices, wherein the column select signal switches said third or fourth junction into the voltage gap mode when the respective control loop is connected to the row select signal; and

third clock means connected to said fifth junction, said third clock means having a current signal that switches said fifth junction into the voltage gap mode when the current resulting from the column select signal is less in the first control loop than in the second control loop of said fifth junction, causing the data contents of the memory cell to be presented at the fifth junction mode.

5,253,200

ELECTRICALLY ERASABLE AND PROGRAMMABLE READ ONLY MEMORY USING STACKED-GATE CELL

Hideki Arakawa, Kanagawa, Japan, assignor to Sony Corporation, Japan

Continuation of Ser. No. 283,795, Dec. 13, 1988, Pat. No. 5,136,541. This application Dec. 30, 1991, Ser. No. 814,582

Claims priority, application Japan, Dec. 15, 1987, 61-318172

Int. Cl.[5] G11C *8/00, 11/34*

U.S. Cl. 365—185 **5 Claims**

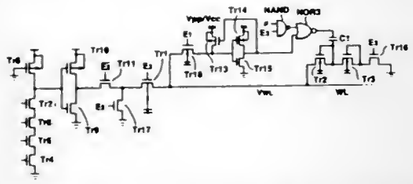
1. An erasable programmable nonvolatile memory device comprising:

a plurality of memory cells, each memory cell including a semiconductor region; source and drain regions formed in said semiconductor region; a channel region formed between said source and drain regions; a floating gate formed above said channel region; a first insulating layer disposed between said channel region and said floating gate; a control gate formed above said floating gate; and a

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second insulating layer disposed between said floating gate and said control gate;

means for applying a positive voltage to said control gate for injecting electrons in said floating gate for injecting holes in said floating gate for erasure of said memory cells, wherein said means is connected to said control gate of



said memory cells via a word line which is connected to a word line decoder via a transferring MOS transistor, said transferring MOS transistor being formed in a well region of said semiconductor region; and

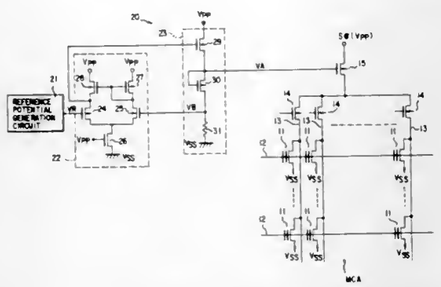
wherein said well region is biased at a level equal to or reversely to a source region of said transferring MOS transistor.

5,253,201

WRITING CONTROL CIRCUIT EMPLOYED IN NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE

Shigeru Atsumi, Tokyo, and Hironori Banba, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 24, 1992, Ser. No. 917,953
Claims priority, application Japan, Jul. 25, 1991, 3-186440
Int. Cl.[5] G11C *7/00, 16/06*
U.S. Cl. 365—185 14 Claims



1. A non-volatile semiconductor memory device comprising:

a memory cell array having non-volatile memory cells arranged in rows and columns, each memory cell having a control gate, a floating gate, a source, and a drain;

word lines each connected to the control gates of those memory cells of the memory cell array which are arranged in the same row;

bit lines being perpendicular to the word lines, and each connected to the drains of those memory cells of the memory cell array which are arranged in the same column;

column-selecting transistors each having a current path, which has one end connected to a corresponding one of the bit lines and the other end connected in common to one another;

an n-channel enhancement-type writing transistor having a current path, which has an end thereof connected to the other end of each of the column-selecting transistors, and the other end thereof connected to a writing voltage source; and

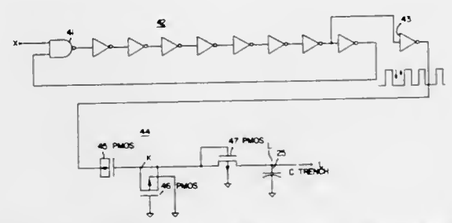
a write control circuit for supplying the gate of the writing transistor with a voltage corresponding to data when the data is written, the write control circuit having reference potential-generation means for generating a reference potential, differential amplifier means to be supplied with a write voltage serving as an operation voltage, from the writing voltage source, the differential amplifier means having an input terminal to be supplied with the reference potential from the reference potential-generation means, and feedback means connected between the other input terminal and output terminal of the differential amplifier means, the feedback means generating, under the control of the differential amplifier means, a write control voltage higher than the reference potential by the threshold voltage of the n-channel enhancement-type writing transistor, and applying the write control voltage to the gate of the n-channel enhancement-type writing transistor, the feedback means feeding a voltage obtained by reducing the write control voltage, back to the other input terminal of the differential amplifier means.

5,253,202

WORD LINE DRIVER CIRCUIT FOR DYNAMIC RANDOM ACCESS MEMORIES

Gary B. Bronner, Mount Kisco; Sang H. Dhong, Mahopac, and Wei Hwang, Armonk, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 5, 1991, Ser. No. 651,070
Int. Cl.[5] H01L *29/78;* G11C *7/00*
U.S. Cl. 365—189.01 6 Claims



1. A wordline driver for a CMOS dynamic random access memory comprising:

a PMOS transistor having a source connected to a positive terminal of a voltage source serially connected with an NMOS transistor, said PMOS and NMOS transistor having a common gate connection for receiving a decoder logic signal, and having a common series connection for driving the word line of a row of memory cells;

a trench capacitor connected at one end to said NMOS transistor drain and connected at a second end to a common substrate which is connected to a negative terminal of said voltage source; and,

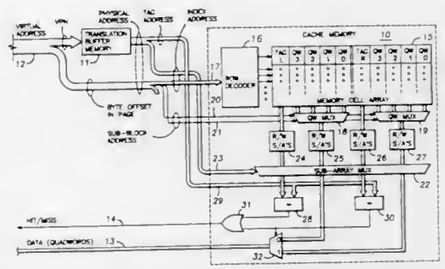
an on-chip voltage generator connected to said one end of said trench capacitor and said substrate for charging said trench capacitor to a potential below the potential of said substrate, whereby said wordline is driven between a positive potential applied to said PMOS transistor source and a negative voltage supplied by said trench capacitor in response to said decoder logic signal.

5,253,203

SUBARRAY ARCHITECTURE WITH PARTIAL ADDRESS TRANSLATION

Hamid Partovi, Westboro, and Michael A. Case, Grafton, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 508,082, Apr. 11, 1990, abandoned.
This application Jan. 11, 1993, Ser. No. 2,689
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.02 10 Claims



1. An integrated circuit cache memory system on a semiconductor substrate, said cache memory system having an array of rows and columns of memory cells, word lines extending along the rows of memory cells, bit lines extending along the columns of memory cells, and an address decoder decoding row addresses to assert select signals on addressed ones of said word lines, each memory cell including means for asserting a stored information signal on the bit line along the column of said each memory cell when said address decoder asserts a select signal on the word line along the row of said each memory cell, said cache memory system having one set of outputs from some of said bit liens, and column multiplexing others of said bit lines to another set of outputs, wherein the improvement comprises

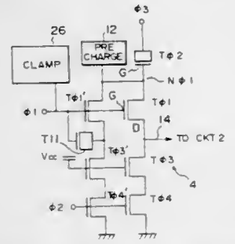
said array being physically subdivided into a plurality of sub-arrays of neighboring rows of memory cells, the sub-arrays each having rows addressed by said row addresses, each bit line being discontinuous between the sub-arrays so that each bit line has a bit line segment extending along a column in each of the sub-arrays, and each of said memory cells in each column of each sub-array has a connection to the bit line segment extending along said each column of said each sub-array, and said memory system further including data lines for conveying information signals from said bit line segments to said outputs, said data lines extending over regions of said semiconductor substrate allocated to said memory cells without connections to said memory cells in the array, and said memory system further includes sub-array multiplexing means responsive to a sub-array address for multiplexing information signals on said bit line segments of an addressed one of said sub-arrays to said data liens, wherein said data lines include one data line connected to each output of said one set of outputs, said one data line connected to each output of said one set of outputs is multiplexed by said sub-array multiplexing means to the bit line segments of a corresponding one of said bit lines, said one data line connected to each output of said one set of outputs is parallel to and adjacent to said corresponding one of said bit liens, said data lines include one data line connected to each output of said another set of outputs, said one data line connected to each output of said another set of outputs is multiplexed by said sub-array multiplexing means to the bit line segments of a corresponding group o a plurality of neighboring ones of said bit lines, and said one data line connected to each output of said another set of outputs is parallel to and adjacent to one bit line in said corresponding group of a plurality of neighboring ones of said bit lines.

5,253,204

SEMICONDUCTOR MEMORY DEVICE HAVING A BOOST CIRCUIT

Atsushi Hatakeyama, and Masao Nakano, both of Kawasaki, Japan, assignors to Hatakeyama et al., Kanagawa, Japan

Filed Aug. 19, 1991, Ser. No. 747,049
Claims priority, application Japan, Aug. 20, 1990, 2-218731
Int. Cl.[5] G11C *11/407*
U.S. Cl. 365—189.06 12 Claims



1. A semiconductor memory device including an array of memory cell transistors connected to a plurality of word lines and bit lines, comprising:

a node to which a voltage boosted above a supply voltage is supplied;

first means for producing a first voltage that is larger than said supply voltage;

a MOS transistor connected between said first means and said node for selectively transferring electric charges from said first means to said node, said MOS transistor producing said voltage boosted above said supply voltage at said node;

second means for supplying a second voltage larger than said supply voltage to a gate of said MOS transistor; and

means for preventing said second voltage from rising above a predetermined voltage.

5,253,205

BIT LINE AND CELL PLATE CLAMP CIRCUIT FOR A DRAM

S. Sheffield Eaton, Jr., Colorado Springs, Colo., assignor to Nippon Steel Semiconductor Corporation, Chiba, Japan and United Memories, Inc., Colorado Springs, Colo.

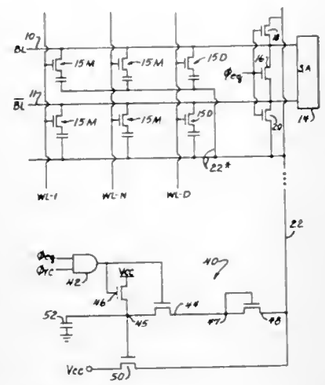
Filed Sep. 5, 1991, Ser. No. 755,111
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.06 48 Claims

1. In an integrated circuit memory having a plurality of conductor lines in a memory array, with a plurality of memory cells disposed along each of said conductor lines, and a set of sense amplifiers for the array coupled to said lines, the conductor lines being equilibrated and precharged via equilibration/-precharge circuitry coupled between the bit lines and a hold line, the hold line being coupled to a holding voltage circuit, an improved holding voltage circuit for delivering a target holding voltage to the hold line, comprising:

first circuitry for developing a first voltage related to the target holding voltage at a first node;

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storing circuitry coupled to the first node for storing the first voltage; and



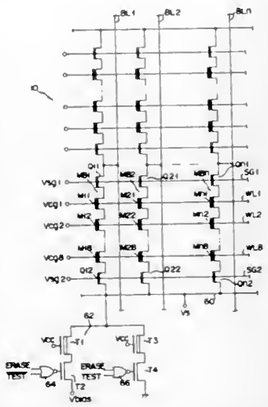
second circuitry responsively coupled to the storing circuitry for developing the target holding voltage.

5,253,206

ELECTRICALLY ERASABLE PROGRAMMABLE READ-ONLY MEMORY WITH THRESHOLD VALUE MEASUREMENT CIRCUIT

Yoshiyuki Tanaka, Tokyo; Masaki Momodomi, and Fujio Masuoka, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 28, 1991, Ser. No. 676,568
Claims priority, application Japan, Mar. 30, 1990, 2-84636
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—189.09 **12 Claims**



1. An electrically erasable nonvolatile semiconductor memory device comprising:

a semiconductive substrate;

parallel data transfer lines arranged on said substrate;

parallel control gate lines transverse to said data transfer lines to define intersections therebetween on said substrate;

metal insulator semiconductor field effect transistors with threshold voltages which are arranged at said intersections as memory cell transistors, each of said transistors having a control gate and a charge storage portion, and being connected at its control gate electrode to a corresponding one of said control gate lines,

said memory cell transistors defining a plurality of cell units each of which has a predetermined number of series-connected memory cell transistors having a first end connected to a corresponding one of said data transfer lines and a second end connected to a common source line together with the others of said series-connected memory cell transistors; and

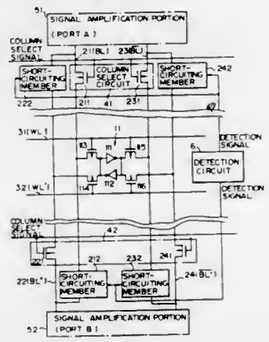
bias means for raising a presently applied voltage on said common source line by a previously selected bias potential, and for permitting a measurement of distribution of the threshold voltages of said memory cell transistors in the erasing state while inhibiting use of a negative voltage.

5,253,207

SEMICONDUCTOR MEMORY DEVICE HAVING DUAL PORTS

Junichi Shikatani, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Nov. 18, 1991, Ser. No. 793,968
Claims priority, application Japan, Nov. 20, 1990, 2-312784
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.04 **3 Claims**



1. A semiconductor memory device in which dual ports are provided for selecting a specific memory cell from a memory cell matrix, and word lines and bit lines in the ports of the dual ports are driven independently for each port to write data into or read data from the memory cell, said device comprising:

a driving state detection means for detecting a state of driving word lines of the two ports and delivering a detection signal based on the detection, where one of the ports is in the writing state with regard to the memory cell; and

bit line short-circuiting means responsive to said detection signal from said driving state detection means for realizing a short-circuit between predetermined bit lines.

5,253,208

IDENTIFICATION CIRCUIT FOR INDICATING REDUNDANT ROW OR COLUMN SUBSTITUTION

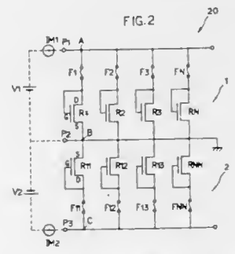
Young J. Kang, Seoul, Rep. of Korea, assignor to Hyundai Electronics Industries, Co., Ltd., Kyungki, Rep. of Korea

Filed Apr. 10, 1992, Ser. No. 866,513
Claims priority, application Rep. of Korea, Apr. 12, 1991, 91-5829
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—200 **10 Claims**

1. An identification circuit for redundant row or column for identifying the number of redundant row or column which has been substituted for an normal row or column of cells on a single chip within a packaged memory device, wherein the identification circuit comprises:

a column identifying circuit (**1**) for identifying the number of said redundant column which has been substituted, said column identifying circuit (**1**) further comprising a fuse (**F1**) and an active resistive element (**R1**) connected, in series, to said fuse (**F1**), with said fuse (**F1**) having a connection A, and said active resistive element having a common connection B column identifying circuit (**1**) further including a plurality of fuses (**F2**, **F3**, ... FN) and a plurality of active resistive elements (**R2**, **R3**, ... RN) connected, in series, to said plurality of fuses, respectively, with said each plurality of fuses and active resistive elements connected, in series, relative to each other being connected, in parallel, at across said connections (A) and (B), respectively;

a row identifying circuit (**2**) for identifying the number of said redundant row which has been substituted, said column identifying circuit (**2**) further comprising an active resistive element (**R11**) connected to said common connection (B)and a fuse (**F11**) connected, in series, to said active resistive element (**R11**) with said fuse (**F11**) having



a connection (C), said identifying circuit (**2**) further including a plurality of active resistive elements (**R12**, **R13**, ... RN) and a plurality of fuses (**F12**, **F13**, ... FNN) connected, in series, to said plurality of active resistive elements, with said each plurality of active resistive elements and fuses connected, in series, relative to each other being connected, in parallel, at across said connection (B) and (C), respectively; and external pins (**P1**), (**P2**) and (**P3**) for applying a predetermined voltage thereto from the external, with said each external pin (**P1**), (**P2**) and (**P3**) being connected to said each connection (A), (B) and (C) so as to be withdrawn from the internal when the resulting memory device have been molded into the package, such that in use it is identified as to whether how many number of said redundant row or column have been substituted by applying the predetermined voltage both to said external pins (**P1**) and (**P2**) and to said external pins (**P2**) and (**P3**), measuring the current values flowing through said each column and row identifying circuit, and comparing said each measured current value with a predetermined reference current value.

5,253,209

INTEGRATED SEMICONDUCTOR MEMORY

Kurt Hoffmann, Taufkirchen; Oskar Kowarik, Grafing; Rainer Kraus; Bernhard Lustig, both of München, and Hans D. Oberle, Puchheim, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 26, 1991, Ser. No. 736,468
Int. Cl.[5] G11C *29/00*
U.S. Cl. 365—201 **13 Claims**

1. An integrated semiconductor memory, comprising:

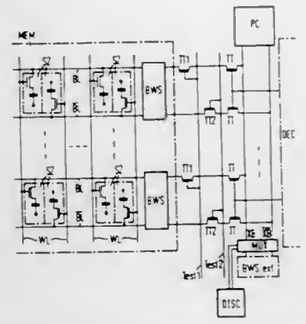
a memory cell field having memory cells disposed in matrix form, internal bit lines forming pairs of internal bit lines and word lines for addressing said memory cells, internal weighting circuits each being assigned to a respective one of said internal bit line pairs,

an external pair of bit lines being commonly assigned to said internal bit lines,

pairs of separation transistors each being assigned to a respective one of said internal bit line pairs for electrical separation of said respective internal bit line pair from said external pair of bit lines,

a bit line decoder for addressing said pairs of separation transistors,

an external weighting circuit assigned to said external bit line pair,



a discriminator device and a precharging device connected to said external bit line pair,

addressing means for addressing said internal bit lines of each pair of internal bit lines separately from one another, and

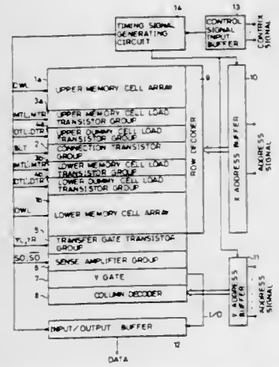
means for connecting said internal bit lines of each pair of internal bit lines to said external bit line pair separately from one another.

5,253,210

PARITIONED BIT LINE STRUCTURE OF EEPROM AND METHOD OF READING DATA THEREFROM

Yasushi Terada, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 2, 1991, Ser. No. 679,301
Claims priority, application Japan, Apr. 4, 1990, 2-90924
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—207 **20 Claims**



1. A semiconductor memory device reading out information by differential amplification, comprising:

a first pair of bit lines formed by first and second bit lines,

a second pair of bit lines formed by third and fourth bit lines provided in correspondence to said first bit line pair,

a plurality of memory cells each connected to one of said

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first to forth bit lines and respectively set to one of first and second states,

memory cell selecting means for selecting one of said plurality of memory cells,

read potential setting means for setting the potential of the bit line of said first to fourth bit lines belonging to the memory cell selected by said memory cell selecting means to a first or second read potential in response to a set state of the selected memory cell,

intermediate potential setting means for setting the potential of said fourth bit line when the memory cell belonging to said first bit line is selected, the potential of said third bit line when the memory cell belonging to said second bit line is selected, the potential of said second bit line when the memory cell belonging to said third bit line is selected, and the potential of said first bit line when the memory cell belonging to said fourth bit line is selected, by said memory cell selecting means, respectively to an intermediate potential between said first read potential and said second read potential,

bit line connecting means for electrically connecting said first bit line to said third bit line, and said second bit line to said fourth bit line, after the setting of the potentials by said read potential setting means and said intermediate potential setting means, and

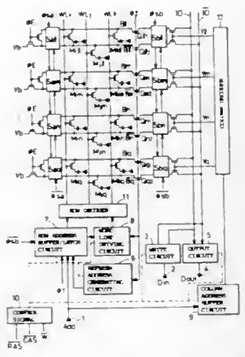
at least one differential amplifying type sense amplifier for detecting and amplifying the differences between the potential of said first and third bit line connected by said bit line connecting means and the potential of said second and fourth bit lines connected by said bit line connecting means and the potential of said second and fourth bit lines connected by said bit line connecting means.

5,253,211

SEMICONDUCTOR MEMORY DEVICE CAPABLE OF PERFORMING REFRESH OPERATION IN READING OR WRITING

Tomio Suzuki, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 9, 1992, Ser. No. 866,048
Claims priority, application Japan, Apr. 16, 1991, 3-084245
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—222 **21 Claims**



1. A semiconductor memory device comprising:

a plurality of memory cells each for storing information charge arranged in a matrix of rows and columns,

a plurality of bit line pairs each provided corresponding to each of the rows of said memory cells and connected to the memory cells of the corresponding row,

a plurality of word lines each provided corresponding to each of the columns of said memory cells in a direction crossing said bit line pairs and connected to the corresponding memory cells,

reading means for selecting one of said word lines and reading the information charges of each memory cell connected to the selected word line onto one of the bit lines of each of said bit line pairs,

a plurality of sense amplifiers each provided corresponding to each of said bit line pairs for amplifying a potential difference appearing between the bit lines of each of said bit line pairs when said reading means reads the information charge of each memory cell,

a plurality of holding means each provided corresponding to each of bit line pairs, to be connected to the corresponding bit line to hold said amplified potential difference between each of the bit lines of the bit line pair,

a plurality of disconnecting means for disconnecting said holding means from said bit line pairs with said holding means each holding each potential difference between the bit lines of the corresponding bit line pair,

refreshing means for refreshing said memory cells with said disconnecting means being activated, and

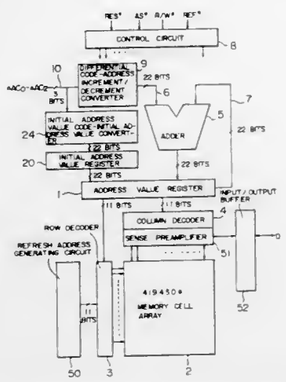
outputting means for outputting the potential difference held by one of said holding means corresponding to a selected column.

5,253,212

SEMICONDUCTOR MEMORY IC AND SEMICONDUCTOR MEMORY DEVICE

Atsuo Kawaguchi, and Hiroshi Motoda, both of Saitama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 2, 1991, Ser. No. 801,351
Claims priority, application Japan, Dec. 1, 1990, 2-400077
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—230.01 **16 Claims**



1. A semiconductor memory IC having timing signal pins and address signal pins, comprising:

a memory cell array;

an address value register for specifying an address to read/-write data from/in said memory cell array, said address value register serving to hold a current address value; and

an adder-substrater having inputs and an output, said output being coupled to said address value register, and said inputs being coupled to receive an increment/decrement signal supplied from said address signal pins and said current address value from said address value register,

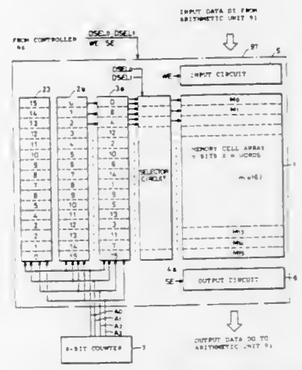
wherein said adder-subtracter in response to said increment-/decrement signal and said current address value provides a new address value to be stored in said address value register, said new address value corresponds to an updated current address value in said address value register.

5,253,213

SEMICONDUCTOR MEMORY USED FOR CHANGING SEQUENCE OF DATA

Tetsuya Matsumura, and Shinichi Uramoto, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 1, 1991, Ser. No. 768,042
Claims priority, application Japan, Oct. 9, 1990, 2-272728
Int. Cl.[5] G11C *8/00, 13/00*
U.S. Cl. 365—230.09 **15 Claims**



1. A semiconductor memory device, comprising:

an array of memory cells arranged in a matrix of rows and columns and identified by row address and column address;

address input means for successively generating addresses of said memory cells to be accessed;

first designation means for designating a first sequence of accessing memory cells of said array in response to addresses generated by said address input means; and

second designation means for designating a second sequence of accessing memory cells of said array in response to addresses generated by said address input means,

said first sequence and said second sequence having a predetermined relationship.

5,253,214

HIGH-PERFORMANCE MEMORY CONTROLLER WITH APPLICATION-PROGRAMMABLE OPTIMIZATION

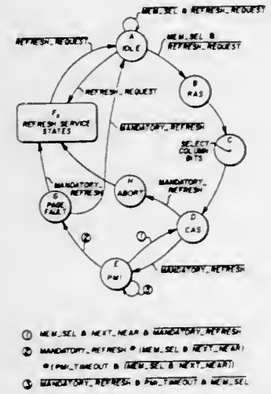
James F. Herrmann, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 27, 1991, Ser. No. 766,302
Int. Cl.[5] G11C *7/00, 8/00*
U.S. Cl. 365—233 **2 Claims**

1. A memory controller, adapted to receive access signals from a memory-access device, for responding thereto by controlling a page-mode multiplexed-address memory adapted for reception of memory-address, row-address-strobe, and column-address-strobe signals, the memory keeping a row address latched therein in response to a first, hold state of the row-address-strobe signal and precharging in response to a second, precharge state of the row-address-strobe signal, the memory controller comprising:

A) a programmable timer responsive to a program signal to store a duration value set thereby and generate a timeout signal when the controller, has been idle, along with the row-address-strobe signal in the hold state, for a time interval the duration of which stored duration value represents; and

B) a memory operator connected to receive the timeout signal and being responsive to the access signals to access the memory by applying address, row-address-strobe, and column-address-strobe signals thereto, the memory operator keeping the row-address-strobe signal in the hold state during idle periods after an access until it receives the



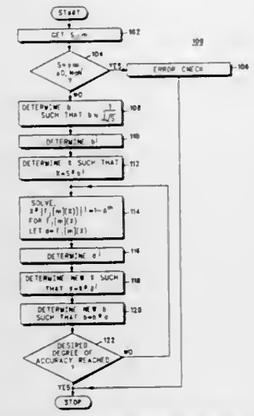
timeout signal and then switching the row-address-strobe signal to its precharge level.

5,253,215

METHOD AND APPARATUS FOR HIGH SPEED DETERMINATION OF Jth ROOTS AND RECIPROCALS OF Jth ROOTS

Brett L. Lindsley, Highwood, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 459,041, Dec. 29, 1989, abandoned.
This application Jun. 13, 1991, Ser. No. 715,002
Int. Cl.[5] G06F *7/38*
U.S. Cl. 364—752 **12 Claims**



9. A method for utilizing electrical signals to allocate data storage means and data manipulation means of a computer program stored within a computer storage medium so as to expedite and improve a process of determining a reciprocal of a desired jth root of an input value S other than $S=\pm\infty$, ± 0, or Not-a-Number (NaN), based on an input value m reflecting a desired convergence rate m and an input value j reflecting a magnitude of j for a desired j^{th} root that substantially determine a convergence factor d, comprising the steps of:

A) allocating at least a first data and manipulation input device for selecting and storing an input value S other than $S=\pm\infty$, ± 0, or NaN;

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B) allocating at least a first data input device for storing a desired value of j;
C) allocating at least a first data input device for storing a desired value of m;
D) allocating at least a first data manipulation and storage device that includes a read-only memory storage unit for determining b such that $b \approx$ reciprocal of the jth root of S;
E) allocating at least a first manipulation and storage device for determining b^j such that b is raised to the power of j;
F) allocating at least a first data manipulation device for determining x such that $x = S \cdot b^j$;
G) allocating at least a first data manipulation and storage device for determining d such that $d = f_j[m](x)$ wherein:
$f_j[m](x) = 1 + A_1x + A_2x^2 + A_3x^3 \ldots + A_{m-1}x^{m-1}$ represents a $m-1^{th}$ polynomial that is an approximate solution of an error equation $x \cdot \{f_j[m](x)\}^j = 1 - \Delta^m$;
$\Delta = 1 - x$, where $0 < x < 2$;
upon substitution of $1 - \Delta$ in place of x, expansion of $f_j[m](x)$, now represented as $f_j[m](\Delta)$, multiplication by $(1 - \Delta)$, elimination of all terms that contain Δ^p such that $p < m$ to obtain an equation of the form

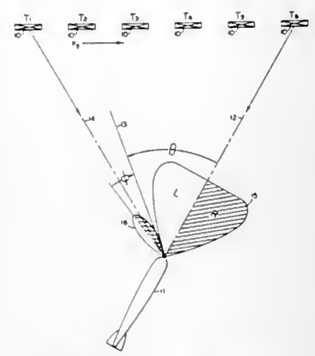
$$1 + g_1\Delta^1 + g_2\Delta^2 + g_3\Delta^3 \ldots + g_m\Delta^m = 1 - k\Delta^m$$

where $g_1, g_2, g_3 \ldots g_m$ are expressions for the coefficients of the $\Delta, \Delta^2, \Delta^3, \ldots \Delta^m$ terms, setting the coefficients g_1 through and including g_{m-1} equal to zero to obtain solutions for A_1 through and including A_{m-1}, substituting $(1 - x)$ in place of Δ to obtain an equation of the form

$$f_j[m](x) = 1 + K_1x + K_2x^2 + K_3x^3 \ldots + K_{m-1}x^{m-1},$$

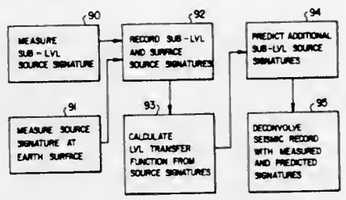
such that convergence factor $d = f_j[m](x)$;
H) allocating at least a first data input and manipulation device for determining d^j such that d is raised to the power of j;
I) allocating at least a first data input and manipulation device for determining a new x such that $x = x \cdot d^j$; and
J) allocating at least a first data input and manipulation device for determining a new b such that $b = b \cdot d$ that appears as an output electrical signal.

5,253,216
SONAR COUNTERMEASURE
Rudolph M. Haisfield, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Dec. 28, 1962, Ser. No. 248,165
Int. Cl.[5] H04K *3/00*
U.S. Cl. 367—1 **3 Claims**



1. A countermeasure for acoustic homing torpedoes comprising:
a plurality of underwater sound transducers transversely arrayed across the attack path of said torpedo,
switching means for energizing said transducers in time sequence to simulate relative transducer movement in one direction across said path, and receiver means coupled to at least one of said transducers for converting underwater vibrations in the proximity of said sound transducers to electrical signals, the output of said receiver means being coupled to said switching means.

5,253,217
METHOD FOR SEISMIC EXPLORATION INCLUDING COMPENSATION FOR NEAR SURFACE EFFECTS
Mahlon G. Justice, Jr., and Tom P. Airhart, both of Plano, Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.
Filed Apr. 14, 1989, Ser. No. 339,341
Int. Cl.[5] G01V *1/36*
U.S. Cl. 367—46 **5 Claims**

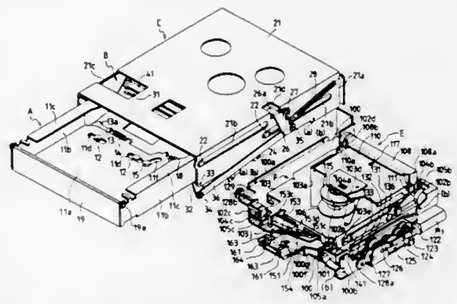


1. A method of seismic exploration comprising the steps of:
(a) activating a seismic source sequentially at a series of spaced apart shot points on the surface of the earth along a seismic line so as to generate a like series of down-going seismic signals in the earth;
(b) receiving the upgoing reflections of such signals at the surface of the earth remote from said shot points to provide a seismic record;
(c) receiving each of said signals on the surface of the earth adjacent the shot point at which each said signal was generated;
(d) receiving one of said signals beneath the shot point at which said one signal was generated at a depth wherein the signature of said one signal is substantially modified by the filtering effect of a near surface low-velocity layer through which said one signal passes;
(e) deconvolving said one signal as received at said depth with said one signal as received on the surface of the earth so as to derive a transfer function characteristic of said filtering effect of said low velocity layer;
(f) convolving said transfer function with each of the other of said signals as received on the surface of the earth in order to predict a value of each of said other signals at said depth; and
(g) deconvolving said seismic record with said received and predicted signals at said depth on a shot-by-shot basis.

5,253,218
COMPACT MAGAZINE LOADED DISK PLAYER
Shoji Suzuki, Iwaki, Japan, assignor to Apline Electronics, Inc., Tokyo, Japan
Filed Aug. 16, 1991, Ser. No. 746,522
Claims priority, application Japan, Sep. 4, 1990, 2-234061; Sep. 4, 1990, 2-234062; Sep. 4, 1990, 2-234064; Sep. 12, 1990, 2-241493; Sep. 13, 1990, 2-245691; Sep. 13, 1990, 2-245693
Int. Cl.[5] G11B *17/04, 17/22*
U.S. Cl. 369—75.1 **19 Claims**

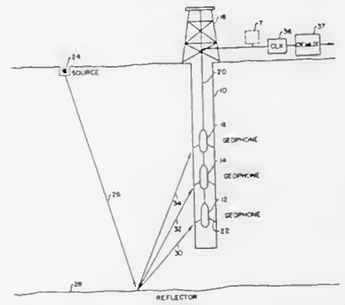
1. A magazine loaded disk player comprising:
a disk playback unit comprising a rotation mechanism for rotating a disk and a pickup positioned to face the disk;
a storage area for storing a disk magazine located in overlapping relation with said disk playback unit;

a movement mechanism for moving said disk magazine out of said storage area when the disk is to be drawn out of said magazine; and



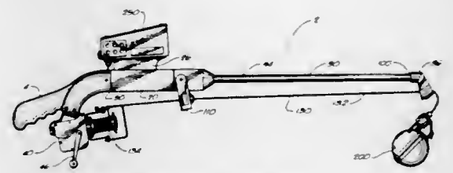
a taking-out/setting mechanism for taking out the disk from said disk magazine and setting the disk in said disk playback unit while said disk magazine is moved out of said storage area.

5,253,219
HIGH COUNT SEISMIC DATA COLLECTION AND TRANSMISSION THROUGH ANALOG TIME MULTIPLEXING
Louis M. Houston; Dennis E. Willen; James A. Rice, all of Houston, and Roel Arevalo, Stafford, all of Tex., assignors to Exxon Production Research Company, Houston, Tex.
Filed Jan. 16, 1990, Ser. No. 465,919
Int. Cl.[5] G01V *1/22*
U.S. Cl. 367—79 **31 Claims**



1. Apparatus for collecting seismic data, comprising at least one seismic source for generating one or more seismic pulses,
a borehole support and transmission cable,
a receiver means suspended form said cable for being lowered into a borehole,
said receiver means including a plurality of receivers for receiving said seismic pulses at their relative positions in the borehole, each receiver generating an analog signal proportional thereto,
clock controller means for supplying coordinated timing and reset pulses to each of said receivers, said timing and reset pulses synchronizing said receivers, each of said receivers including
a switch connected to said cable, said switch transmitting the generated analog data from its respective one of said receivers when its respective receiver is enabled and otherwise transmitting generated analog data signals from other of said receivers and
a counter connected to said switch and to said clock controller means, each reset pulse initiating operation of said counter for counting subsequent timing pulses and, following a predetermined number of timing pulses, enabling its respective one of said receivers to transmit on said cable its generated analog signal during a non-overlapping predetermined subperiod of time of transmission with the analog signals from the other of said receivers, thereby time multiplexing the signals from said receivers, and
processing means including analog-to-digital converter means connected to said cable for subsequent data conversion and handling of the time multiplexed signals from said receivers.

5,253,220
FISH FINDER
John E. Wilson, Sr., 809 Skyline Dr., Willis, Tex. 77378
Filed May 26, 1992, Ser. No. 887,801
Int. Cl.[5] G01S *15/96*
U.S. Cl. 367—107 **9 Claims**



1. A hand-held fish finder comprising:
a rod portion;
a handle portion;
a reel portion medially interconnected with said rod portion and said handle portion;
said reel portion adapted to receive display means and reel means having replaceable wiper means adapted to be releasably received by said reel portion;
said display means electrically connected with a power source and cable means;
said cable means windably received at one end thereof by said reel means after being purged of debris and excessive water by said wiper means;
said cable means when unwound from said reel means disposed longitudinally of said rod portion and another end of said cable means, opposite said one end thereof, insertably received by a remote free end of said rod portion by guide means fixedly attached to said rod portion;
sensor float means electrically connected to said other end of said cable means at said remote free end of said rod portion for transmitting a signal along said cable means to said display means;
said wiper means comprising a flexible member configured to abuttably and insertably receive said cable means through an axial hole in said wiper means; and
said flexible member of said wiper means comprising:
a substantially conical cross section for enabling uninhibited axial movement of said cable means through said wiper means and toward said sensor float means and also for enabling inhibited axial movement of said cable means through said wiper means and toward said reel means, and
slit means for enabling replacement of said flexible member with said cable means being disposed through said wiper means.

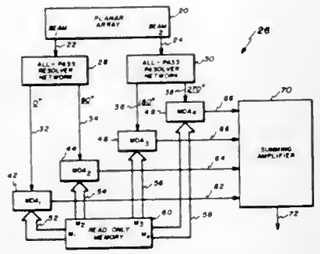
VOL 1155 ISS 2 OCT 12 1993 UMI

5,253,221

NULL STEERING DEVICE

Dixon W. Coulbourn, Austin, Tex., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 17, 1977, Ser. No. 808,845
Int. Cl.[5] H04B *1/06*; F42B *19/00*
U.S. Cl. 367—135 8 Claims



1. In combination with a sonar system including a receiving transducer array providing first and second analog signals representative of acoustic energy reception of a beam pattern having a receiving null therein, a null steering device for causing said null to be positioned at a predetermined null angle relative to the principal axis of said array, said device comprising:

resolver means, connected to said array, for resolving said first and second analog signals into quadrature component signals;

a source of null angle determining amplitude multiplier factor signals;

multiplier means, connected to said resolver means and to said source, for providing a plurality of amplitude product signals representative of products of said quadrature component signals and said amplitude multiplier factor signals; and

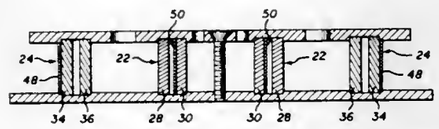
summing means, for summing said plurality of amplitude product signals to provide an analog output signal representative of acoustic energy received by said beam pattern with said null at said predetermined null angle.

5,253,222

OMNIDIRECTIONAL FIBER OPTIC HYDROPHONE

Bruce A. Danver, Tarzana, and A. Douglas Meyer, West Hills, both of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Continuation-in-part of Ser. No. 826,897, Jan. 28, 1992, abandoned. This application Feb. 9, 1993, Ser. No. 15,310
Int. Cl.[5] G01B *9/02*
U.S. Cl. 367—149 16 Claims



1. An omnidirectional hydrophone comprising, in combination:

a) at least one mandrel, said mandrel including a first ring and a second ring, said rings being of substantially equal axial length and the diameter of said first ring exceeding the diameter of said second ring;

b) a planar base member;

c) said first and second rings being sealably mounted concentrically upon said base member;

d) each of said first and second rings comprising an inner annulus and an outer annulus, said inner and outer annulus in each instance being mounted concentrically upon said base member in spaced relationship defining in each case an annular void space of of equal height therebetween;

e) a planar upper member in spaced relationship to said base member;

f) the upper portions of said rings being sealably fixed tot he underside of said upper member;

g) a first optical fiber having an intermediate portion wound about the outer circumference of the outer annulus of said first ring;

h) a second optical fiber having an intermediate portion wound about the outer circumference of the inner annulus of said second ring; and

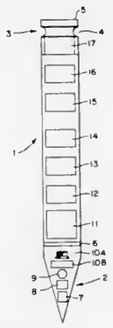
i) the end portions of said optical fibers being in optical communication with a source of optical energy and a photodetector.

5,253,223

SEISMIC DEVICE

Bjornar Svenning, Trondheim, and Eivind Berg, Ranheim, both of Norway, assignors to Den Norske Stats Oljeselskap A.S., Stavanger, Norway

PCT No. PCT/NO90/00158, § 371 Date Apr. 27, 1992, § 102(e) Date Apr. 27, 1992, PCT Pub. No. WO91/06878, PCT Pub. Date May 16, 1991
PCT Filed Oct. 22, 1990, Ser. No. 848,010
Claims priority, application Norway, Oct. 26, 1989, 894262
Int. Cl.[5] G01V *1/16, 1/38*
U.S. Cl. 367—178 4 Claims



1. A device including instruments for use on a sea bed for the collection and recording of first signals during offshore seismic exploration, said device comprising:

first, second and third geophones arranged in x, y and z directions, respectively, which produce geophone signals;

an electronic angle gauge;

a compass;

a top portion having means for allowing said device to be handled;

an intermediate portion being substantially cylindrical in shape and having a first end connected to said top portion;

a pointed end, connected to a second end of said intermediate portion, said pointed end housing said geophones, said electronic angle gauge, and said compass;

a hydrophone for recording pressure waves being disposed proximate said top portion;

a battery;

a processor which processes said geophone signals;

a memory unit which stores information;

an acoustic communications system for receiving and transmitting second and third signals, respectfully;

an optical reader which reads collected measurements; and

a power supply which supplies power to said processor, and said memory unit;

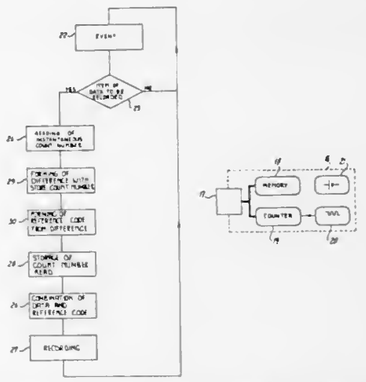
wherein said battery, said processor, said memory unit, said communication system, said optical reader, said power supply and said hydrophone are disposed in said intermediate portion.

5,253,224

METHOD AND ELECTRICAL SYSTEM FOR RECORDING AND PROCESSING TIME-RELATED DATE

Evert J. Van Doesburg, Sleewijk, Netherlands, assignor to Industrial Control Systems B.V., Hardinxeld-Giessendam, Netherlands

PCT No. PCT/NL89/00065, § 371 Date Mar. 5, 1991, § 102(e) Date Mar. 5, 1991, PCT Pub. No. WO90/03017, PCT Pub. Date Mar. 22, 1990
PCT Filed Sep. 4, 1989, Ser. No. 635,124
Claims priority, application Netherlands, Sep. 6, 1988, 8802199
Int. Cl.[5] G04B *47/00*; G04F *8/00*; B60Q *1/00*
U.S. Cl. 368—10 15 Claims



1. A method of electronically recording time-related data, in particular data relating to the operation and driving of vehicles having a plurality of data sensors, using a system comprising data collecting means, data recording means and means for generating reference code signals representative of time data, comprising the steps of:

collecting data from the sensors using the data collecting means;

generating reference code signals using the generating means;

associating to collected data to be processed reference code signals generated time-related to said data, and

storing the collected data to be processed and the associated reference code signals in the data recording means, wherein said generating step comprises:

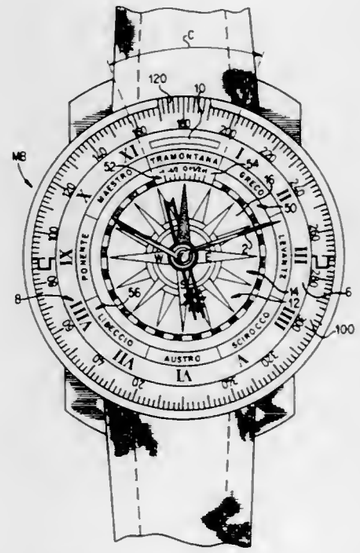
generating completely autonomously said reference code signals based on a relative time unit, said reference code signals being not adjustable by means external to the system.

5,253,225

COMPASS WATCH OF THE MECHANICALLY OR ELECTROMECHANICALLY DRIVEN TYPE AND BEZEL SPECIFICALLY INTENDED FOR SUCH A WATCH

Frank Vaucher, Cormoret, Switzerland, assignor to Compagnie des Montres Longines, Francillon S.A., St-Imier, Switzerland

Filed Apr. 18, 1991, Ser. No. 686,925
Claims priority, application Switzerland, Apr. 18, 1990, 01308/90
Int. Cl.[5] G04B *19/26*
U.S. Cl. 368—20 21 Claims



1. A compass watch comprising:

an horometric movement;

time indicating elements cooperating with said horometric movement to provide time information, and

orientation means to determine the orientation of cardinal points with respect to the position of a watch user, said orientation means comprising:

a solar hand kinematically rotatably driven by said horometric movement at the rate of one complete revolution every twenty-four hours, said solar hand being intended to be pointed towards the sun,

direction indicating means for indicating the direction of the cardinal points, said direction indicating means being independent of the rotation of the solar hand and arranged on the watch to determine the orientation of the watch user with respect to the cardinal points when the solar hand is pointed towards the sun,

correcting means for correcting the position of the direction indicating means with respect to the solar hand, said correcting means comprising time difference indicating means which indicates a variation of time between a true solar time and a local time of day,

driving means arranged to enable the direction indicating means to be rotated when a correction is desired, so as to bring the cardinal points into a corrected position with respect to the time difference indicating means, said corrected position corresponding to a known variation between said true solar time and said local time of day, and

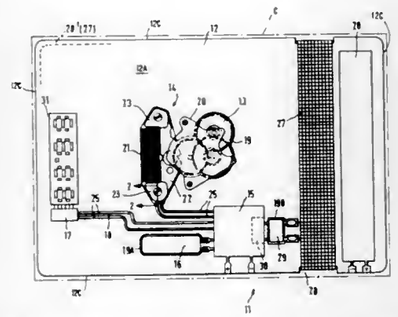
fixing means for maintaining the direction indicating means in its corrected position irrespective of the position of the solar hand.

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5,253,226
RADIO-CONTROLLED TIMEPIECE WITH ANTENNA COIL

Wolfgang Ganter, Schramberg, Fed. Rep. of Germany, assignor to Junghans Uhren GmbH, Schramberg, Fed. Rep. of Germany

Filed Aug. 28, 1992, Ser. No. 936,303
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1991, 9111096[U]
Int. Cl.[5] G04C *11/02*
U.S. Cl. 368—47 **13 Claims**

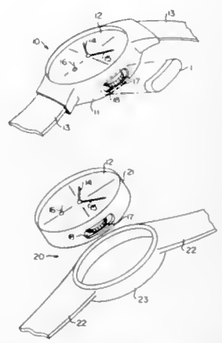


1. In a radio controlled timepiece having an outer casing for containing clockworks components, including a time display, an antenna for receiving radio signals to control said time display, and a receiver interconnecting said antenna and said time display, said timepiece further comprising a ferrite plate disposed within said outer casing and including at least one recess for receiving a clockworks component, said plate including antenna-receiving means for receiving said antenna, said antenna comprising an antenna coil disposed in said antenna-receiving means such that said ferrite plate constitutes a core for said antenna coil.

5,253,227
TIME-PIECE

Tak-Hoi Wong, Room 6, 2nd Floor, Kai Fuk Industrial Centre, 1 Wang Tung Street, Kowloon Bay, Kowloon, Hong Kong

Filed Mar. 10, 1992, Ser. No. 848,912
Claims priority, application United Kingdom, Mar. 11, 1991, 9105097
Int. Cl.[5] G04C *17/00*
U.S. Cl. 368—69 **15 Claims**

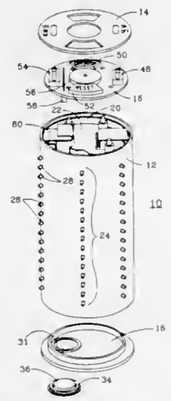


1. A time-piece in the form of a wrist-watch comprising a casing including a dial and a side wall having a slot, hour and minute hands, mechanical drive means located within the casing and supporting the hands on the dial for mechanically rotating the hands relative to the dial to indicate time, and a manual operating member located substantially within the casing for gearingly engaging said drive means for rotating the hands relative to the dial in response to rotation of said operating member, the hands and said operating member rotating about corresponding substantially parallel axes, said operating member having a peripheral edge portion, only a part of the peripheral edge portion being exposed through the slot in the side wall of the casing.

5,253,228
INTERVAL TIMER

Brett B. Truett, 1908 Briar Ave., Utica, N.Y. 13501

Filed Feb. 10, 1992, Ser. No. 833,554
Int. Cl.[5] G04C *19/00;* **G04F** *8/00*
U.S. Cl. 368—82 **10 Claims**

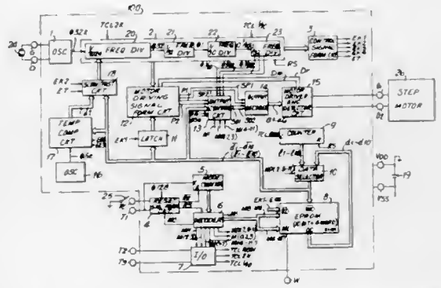


1. An interval timer for indicating passage of a preselected time period for use in timing activities to be accomplished within a designated interval which comprises:
a cylindrical outer housing having a plurality of vertical rows of spaced apart small holes, and a top and bottom;
a cylindrical inner housing sized to fit within said outer housing;
a thin flexible printed circuit board adapted to be rolled into a cylinder to fit between said inner and outer housing;
a plurality of rows of spaced apart LED's mounted on said thin flexible PCB to correspond to said holes in said outer housing so that they will project through said holes when assembled between said inner and outer housings; and
said printed circuit board being rolled into a cylinder and positioned inside said outer housing with said LED's extending through said holes and said cylindrical inner housing being positioned within said cylindrical printed circuit board to secure it within said outer housing;
circuit and control means mounted in said inner housing and operatively connected to said thin flexible PCB for generating a selected time interval and actuating sequentially selected LEDs in said plurality of rows of LEDs;
so as to visually indicate the time remaining in a selected time interval upon actuation of the timer.

5,253,229
ELECTRONIC TIMEPIECE INCLUDING INTEGRATED CIRCUITRY

Tatsuo Moriya, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 333,512, Apr. 5, 1989, Pat. No. 5,195,063. This application Sep. 1, 1992, Ser. No. 938,986
Claims priority, application Japan, Apr. 6, 1988, 63-46520
Int. Cl.[5] G04C *19/00;* **G04F** *5/00;* **G04B** *17/12*
U.S. Cl. 368—87 **16 Claims**

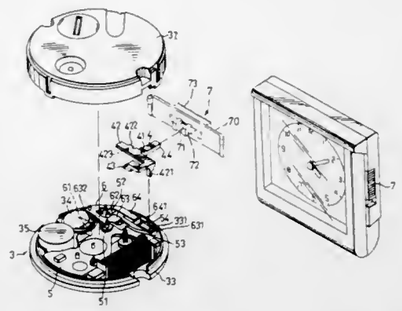


1. An integrated circuit for an electronic timepiece, comprising:
reference data holding means for holding reference data for use in controlling more than one function of said timepiece;
memory means for storing control data for use in controlling said more than one function of said timepiece; and
output means for receiving the control data and at least the reference data to confirm its acceptability for use in driving the timepiece.

5,253,230
ALARM CLOCK WITH AN SWITCH BUTTON ASSEMBLY

Davis Kuo, No. 4, Shin-Ho Rd., Tainan City, Taiwan

Filed Aug. 5, 1992, Ser. No. 924,975
Int. Cl.[5] G04B *23/00*
U.S. Cl. 368—263 **4 Claims**



1. An alarm clock comprising:
a casing including a lower half with a bottom and an upper half which cooperates with said lower half to form said casing, said casing having a peripheral wall with an elongated opening formed therethrough and extending in a predetermined direction, said bottom of said lower half having an elongated groove formed therein adjacent to said elongated opening and extending in a direction parallel to said predetermined direction;
a battery means mounted in said casing and having a first and second pole;
an alarm generating means having a first terminal connected to said second pole of said battery means and a second terminal;
a circuit board having a time setting wheel rotatably mounted thereon, a snooze circuit means including a first terminal electrically connected to said second pole of said battery means and a second terminal, a first contact point connected to said second terminal of said alarm generating means, a second contact point connected to said second terminal of said snooze circuit means, said time setting wheel moving downwardly relative to said circuit board upon being rotated to a preset position which corresponds to a preset alarm time;
a conductive plate mounted in said lower half of said casing and having a first end connected to said first pole of said battery means, a second end abutting said time setting wheel, a third end connected to said first contact point of said circuit board so as to enable said alarm generating means to generate an alarm when said time setting wheel has rotated to said preset position, and a fourth end formed adjacent to said second contact point of said circuit board;
a lever made from a resilient, insulative material and having a first end and a second end transversely passing through said elongated opening, said lever having a pivot member formed adjacent to said first end of said lever with a thickness substantially equal to a width of said elongated opening to keep said lever generally parallel to said bottom of said lower half, said first end of said lever moving toward said bottom of said lower half when said second end of said lever is moved upward, said first end of said lever having an elongated depressing portion connected thereto and generally paralleled to said predetermined direction of said elongated opening, said depressing portion having a front portion extending above said fourth end of said conductive plate, and a rear portion opposite to said front portion and a positioning member depending from said depressing portion and which being inserted slidably into said elongated groove of said lower half, said depressing portion having an elongated insertion portion with an end parallely connected to said depressing portion, said lever moving transversely in said elongated opening of said casing between a first position where said front portion of said depressing portion is located above said fourth end of said conductive plate and said end of said insertion portion is located between said third end of said conductive plate and said first contact point of said circuit board to prevent said third end of said conductive plate and said first contact point of said circuit board from being electrically connected to one another, and a second position, wherein said end of said insertion portion is moved away from said third end of said conductive plate, and when said lever is at said second position, lifting of said second end of said lever enabling said elongated depressing portion to move downward and depress said fourth end of said conductive plate so as to depress said second contact point of said circuit board to actuate said snooze circuit means to stop said alarm for a predetermined time interval, said elongated depressing portion of said lever moving upward by a resilient means of said lever after said second end of said lever is released.

5,253,231
BRAKING ARRANGEMENT FOR A GEAR WHEEL

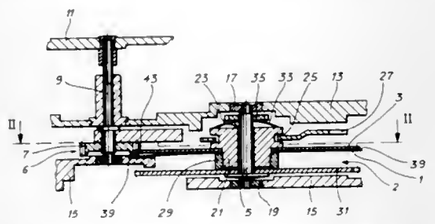
Cyril Vuilleumier, Bienne, Switzerland, assignor to Eta SA Fabriques d'Ebauches, Granges, Switzerland

Filed Oct. 11, 1991, Ser. No. 775,269
Claims priority, application Switzerland, Oct. 22, 1990, 03363/90
Int. Cl.[5] G04B *29/00*
U.S. Cl. 368—322 **15 Claims**

1. In a braking arrangement for a gear wheel in a gear train comprising at least first and second wheel sets, said first wheel

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set comprising a first shaft having an axis and a toothed wheel pivoting around said first shaft and meshing with said second wheel set, said second wheel set comprising a second shaft having an axis parallel to the first shaft and a second toothed wheel having a face and pivoting around said second shaft, the improvement comprising an elastic element forming a brake mounted coaxial to said first shaft, such brake forming element



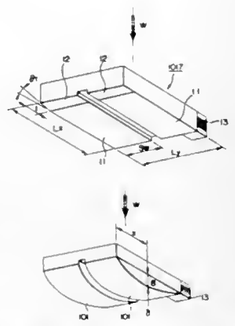
being associated with said first wheel set in a manner to be driven in rotation thereby, said elastic element having proximate its periphery a friction surface, the axial position of said brake forming element relative to said first shaft being chosen relative to the axial position of the second toothed wheel in a manner such that said friction surface bears elastically against said face of said second toothed wheel so as to brake said second toothed wheel.

5,253,232

MAGNETO-OPTICAL RECORDING APPARATUS HAVING A MAGNETIC SLIDER WITH INCREASED RAIL WIDTH

Kyo Akagi, Fuchu; Takeshi Nakao, Sagamihara, and Masahiro Ojima, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 153,094, Feb. 8, 1988, Pat. No. 5,020,041. This application Mar. 30, 1990, Ser. No. 501,545
Claims priority, application Japan, Mar. 31, 1989, 1-78235
Int. Cl.[5] G11B *17/32, 13/04, 21/21, 5/60*
U.S. Cl. 369—13 **28 Claims**



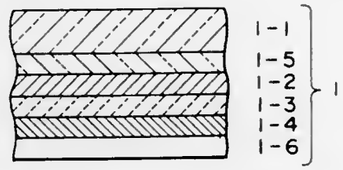
22. A magnetic head slider for carrying a magnetic head used to record a signal on a magneto-optical disk, said magnetic head slider comprising means for producing lift for causing sufficient magnetic head movement to prevent head crash including a plurality of slider rails each having a width not smaller than at least 2 mm along a length thereof and a tapered portion having a taper angle θt, wherein $0 < \theta t \leqq 1°$, so as to provide lift for causing floating movement of said magnetic head and a spacing from a surface of the magnetic-optical disk of at least 10 μm.

5,253,233

METHOD OF MAKING A MAGNETO-OPTICAL RECORDING MEDIUM THAT INCLUDES A LIGHT INTERFERENCE LAYER HAVING SPECIFIED CHARACTERISTICS

Eiichi Fujii, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 391,643, Aug. 7, 1989, abandoned, which is a continuation of Ser. No. 940,344, Dec. 11, 1986, abandoned. This application Aug. 28, 1991, Ser. No. 758,283
Claims priority, application Japan, Dec. 17, 1985, 60-281928
Int. Cl.[5] G11B *13/04*
U.S. Cl. 369—13 **12 Claims**



1. A method of making a magneto-optical recording medium for having information magnetically recorded on its recording layer read out by magneto-optical effect by applying a reproducing light beam emitted from a semiconductor laser thereto and detecting the reflected light beam thereof by means of a photodetector having no self-multiplication characteristic, said method comprising the steps of:

selecting a recording layer comprising a magnetic film;

selecting a light interference layer comprising a dielectric;

defining the thickness of the light interference layer by:

$$d = \frac{\lambda}{2N}\left(\frac{X}{8} + Y\right)$$

where d is the film thickness of said light interference layer, N is the refractive index of said interference layer, and λ is the wavelength of the reproducing light, wherein $1 \leqq X \leqq 3$ or $5 \leqq X \leqq 7$, and Y is selected from 0, 1 and 2;

selecting a light reflecting layer; and

arranging the recording layer, the light interference layer and the light reflecting layer in succession along one direction to form the magneto-optical recording medium.

7. A method of making a magneto-optical recording medium for having information magnetically recorded on its recording layer read out by magneto-optical effect by applying a reproducing light beam emitted from a semiconductor layer thereto and detecting the reflected light beam thereof by a photodetector having a self-multiplication characteristic, said method comprising the steps of:

selecting a recording layer comprising a magnetic film;

selecting a light interference layer comprising a dielectric;

defining the thickness of the light interference layer by:

$$d = \frac{\lambda}{2N}\left(\frac{X}{8} + Y\right)$$

where d is the film thickness of said light interference layer, N is the refractive index of said light interference layer, and λ is the wavelength of the reproducing light, wherein $2 \leqq X \leqq 3.9$ or $4.1 \leqq X \leqq 6$, and Y is selected from 0, 1 and 2;

selecting a light reflecting layer; and

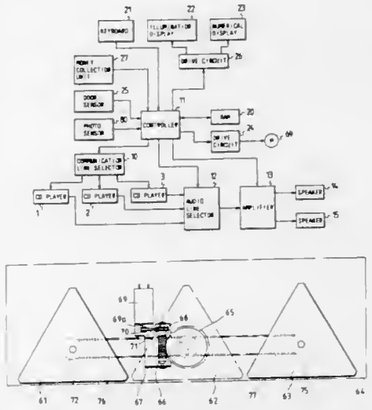
arranging the recording layer, the light interference layer and the light reflecting layer in succession along one direction to form the magneto-optical recording medium.

5,253,234

DISK STORAGE/SELECT PLAYER

Masaya Ogawa; Norihiko Shibano, and Norio Kawagishi, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 545,217, Jun. 28, 1990, abandoned. This application Feb. 24, 1992, Ser. No. 839,720
Claims priority, application Japan, Sep. 11, 1989, 1-234948
Int. Cl.[5] G11B *17/22*
U.S. Cl. 369—36 **18 Claims**



15. A disk storage/select player having means for containing a plurality of disks, and means for playing back a selected item recorded on one of the disks, the player comprising:

a plurality of rotatable menu boards each of which has a polyhedron shape, and each side surface of said menu boards containing information relating to the items recorded on the disks;

drive means for rotating one of said plurality of menu boards;

transfer means, coupled to said drive means, for transferring the rotation of said one menu board to the remaining at least one menu board so that all of said menu boards rotate in synchronism with each other;

a plurality of magazine-type disk players, each of said disk players having a plurality of magazines, each of said magazines containing a plurality of disks, and the plurality of disks contained in each of magazines having items recorded thereon which correspond to the item information contained on said rotatable menu boards; and

controller means for enabling that one of said plurality of magazine-type disk players which contains the disk having the selected item recorded thereon;

wherein said each of said menu boards includes a shaft, said menu boards being rotatable about their respective shaft, and wherein said transfer means comprises a plurality of pulleys and belts.

5,253,235

DISK PLAYER WHEREIN A PLURALITY OF COMPACT DISKS AND A LASER DISK ARE ROTATED WITH A SINGLE MOTOR

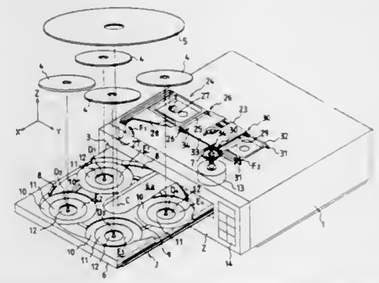
Nobuyuki Isobe; Shigeharu Furusawa; Masao Abe; Toshiyasu Iida, and Kenjirou Ooizumi, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 2, 1991, Ser. No. 769,696
Claims priority, application Japan, Feb. 26, 1991, 3-030755
Int. Cl.[5] G11B *17/00, 25/04*
U.S. Cl. 369—37 **3 Claims**

1. A disk player for playing selectively one of a plurality of first disks and a second disk, said second disk having a larger diameter than each of said first disks, said disk player comprising:

a player housing having a disk supplying opening formed therein;

a tray operative to move back and forth through said disk supplying opening between an ejecting position outside of said player housing and an accommodating position inside said player housing, said tray having a plurality of disk receiving sections on which said plurality of first disks are laid in such a manner that the centers of said disk receiving sections are on the circumference of a circle having a center C, said tray further including at least one large



diameter recess having a center which coincides with the center C and for receiving said second disk, said second disk being aligned with a disk playing position when said tray is in said accommodating position inside said player housing;

disk holding means for detachably holding a selected one of said plurality of first disks; and

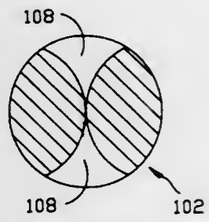
swinging arm means, rotatable around said disk playing portion while supporting said disk holding means for reciprocating said disk holding means between any one of said disk receiving sections and said disk playing position, such that said tray remains stationary during operation of said swinging arm means.

5,253,236

OPTICAL BEAM FOCUSING AND TRACKING SYSTEM FOR AN OPTICAL DISK INFORMATION STORAGE DEVICE

Milton R. Latta; Timothy C. Strand, and James M. Zavislan, all of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 3, 1991, Ser. No. 770,560
Int. Cl.[5] G11B *21/00*
U.S. Cl. 369—44.24 **14 Claims**



1. An optical disk drive, comprising:

means for supporting and rotating an optical disk including an optical medium with a plurality of grooved data tracks having information encoded therein;

means for generating a beam of light;

means for focusing the beam of light into a spot on the optical medium including a focus servo circuit;

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means for directing the spot to follow a pre-selected grooved data track including a tracking servo circuit;
a first optical sensor connected to the focus servo circuit;
a second optical sensor connected to the tracking servo circuit;
means for directing a first portion of the beam after it has been reflected by the optical medium to the first optical sensor and for directing a second portion of the reflected beam to the second optical sensor, including mask means for permitting only undiffracted components of the reflected beam to be received by the first optical sensor; and
data recovery signal processing means for generating output signals representative of the encoded information based on the reflected beam.

5,253,237

OPTICAL HEAD DEVICE

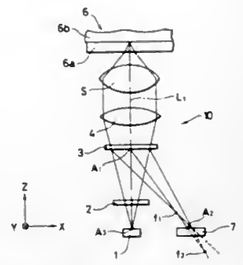
Takahiro Miyake; Yoshio Yoshida; Yukio Kurata; Yasuo Nakata, all of Tenri, and Katsuhiro Kubo, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 5, 1990, Ser. No. 533,401

Claims priority, application Japan, Jun. 6, 1989, 1-143851; Jun. 22, 1989, 1-160403; Jul. 11, 1989, 1-180011; Jul. 21, 1989, 1-189638; Jul. 28, 1989, 1-197230

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—44.37 **55 Claims**



1. An optical head device comprising:
a light source for emitting a light beam;
a diffraction grating element divided into a first diffraction grating and a second diffraction grating by a plane including an optical axis that connects a light emitting point on the light source from which a light beam is emitted, to a focal point on a recording medium on which the light beam is converged, the first and second diffraction gratings having different focal distances of first order diffracted light; and
photo-detecting means disposed substantially at a mid-position between a focal point of a first order diffracted light produced in the first diffraction grating and a focal point of a first order diffracted light produced in the second diffraction grating when there occurs no focusing error, the photo-detecting means comprising a plurality of photo-detecting parts juxtaposed in a direction substantially orthogonal to an average diffracting direction of the diffraction grating element;
wherein the first diffraction grating and second diffraction grating are designed such that lights diffracted at the first diffraction grating and second diffraction grating are guided into the photo-detecting means to form light spots that are aligned in a direction substantially orthogonal to the average diffracting direction of the diffraction grating element, one of either the first diffraction grating or second diffraction grating has a light-converging property while the other has a light-diverging property, and thereby the focal distance of a first order diffracted light produced in the first diffraction grating differs from the focal distance of a first order diffracted light produced in the second diffraction grating, the first diffraction grating and second diffraction grating have a substantially identical profile, and thereby said diffraction gratings have a substantially equal optical utilization efficiency.

5,253,238

ARRANGEMENT FOR PRODUCING PRECISE TRACKING ERROR SIGNAL FOR OPTICAL DISK DEVICE

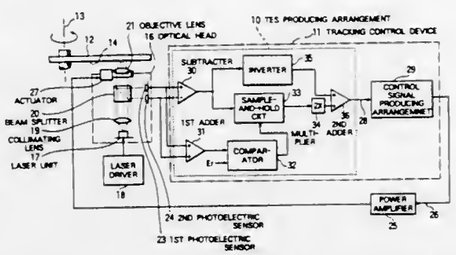
Shigeru Shimonou, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 17, 1992, Ser. No. 914,455

Claims priority, application Japan, Jul. 17, 1991, 3-175645; Aug. 30, 1991, 3-220549

Int. Cl.[5] G11B *7/13*

U.S. Cl. 369—44.25 **5 Claims**



1. A tracking error signal producing arrangement for use in a tracking control device for controlling an optical disk device which comprises: an optical information recording disk having a principal surface and grooves formed on said principal surface for defining information recording tracks extended across a radius of said optical information recording disk; an irradiating unit for irradiating a part of said principal surface by an optical beam to make said part reflect said optical beam as a reflected light beam having first and second partial light beams, said first and said second partial light beams resulting from first and second fractions of said part, said first and said second fractions appearing by dividing said part radially of said optical information recording disk; first and second photoelectric sensors for receiving said first and said second partial light beams to produce first and second electric output signals, respectively; and an actuating arrangement for actuating said irradiating unit in compliance with a control signal to move said irradiating unit radially of said optical information recording disk; said tracking error signal producing arrangement being connected to said first and said second photoelectric sensors for producing, in response to said first and said second electric output signals, a tracking error signal indicating a positioning error of said optical beam with respect to a particular one of said information recording tracks in a radial direction of said optical information recording disk; said tracking control device comprising: a control signal producing arrangement connected to said tracking error signal producing arrangement for producing said control signal in compliance with said tracking error signal to make said actuating arrangement actuate said irradiating unit so that said tracking error signal becomes to indicate the positioning error equal to zero; said tracking error signal producing arrangement comprising:
a subtracter connected to said first and said second photoelectric sensors for subtracting said second electric output signal from said first electric output signal to produce a subtracted signal;
a first adder connected to said first and said second photoelectric sensors for adding said second electric output signal to said first electric output signal to produce a first added signal;
a comparator connected to said first adder for comparing said first added signal with a predetermined reference

level to produce a compared result signal having high and low levels when said first added signal is greater than said predetermined reference level and when said first added signal is not greater than said predetermined reference level, respectively;
a sample-and-hold circuit connected to said subtracter and to said comparator for passing said subtracted signal therethrough as a circuit output signal while said compared result signal has said high level, said sample-and-hold circuit being for sampling said subtracted signal into a sampled signal when a level of said compared result signal turns from said high level to said low level and for holding said sampled signal to produce said sampled signal as said circuit output signal while said compared result signal has said low level;
a multiplier connected to said sample-and-hold circuit for multiplying said circuit output signal by two to produce a multiplied signal;
an inverter connected to said subtracter for inverting said subtracted signal into an inverted signal; and
a second adder connected to said multiplier and to said inverter for adding said multiplied signal to said inverted signal to produce a second added signal which is for use as said tracking error signal.

5,253,239

CONTROL APPARATUS FOR TRACKNG A LIGHT BEAM ON A TRACK OF AN OPTICAL RECORDING MEDIUM

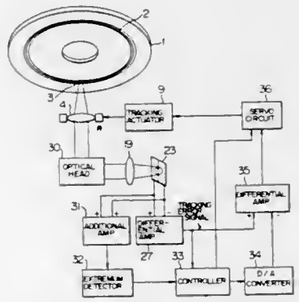
Yasuaki Edahiro, Hirakata; Katsuya Watanabe, Suita, and Mitsuro Moriya, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 16, 1990, Ser. No. 614,496

Claims priority, application Japan, Nov. 24, 1989, 1-305419; Apr. 18, 1990, 2-101960

Int. Cl.[5] G11B *7/095*

U.S. Cl. 369—44.28 **18 Claims**



1. A tracking control apparatus comprising:
tracking error signal detection means for detecting a positional deviation of a light spot from an information recording and reproducing track formed on an optical recording medium and producing a tracking error signal representing said positional deviation, the light spot being formed by focusing a light beam emitted from a light source on the optical recording medium;
extremum detection means for detecting an extremum of total reflected light from a portion of the optical recording medium which is irradiated by the light spot and producing an output signal including a timing signal indicating a timing of detection of said extremum of the total reflected light;
desired tracking position changing means for changing a desired tracking position signal for tracking servo control;
control means receiving said output signal of the extremum detection means and said tracking error signal from said tracking error signal detection means for instructing said desired tracking position changing means with respect to changing of said desired tracking position signal; and
light spot moving means for causing one of (a) movement of the light spot at a substantially constant speed in a direction substantially perpendicular to the track and (b) vibration of the light spot in a direction substantially perpendicular to the information recording and reproducing track in accordance with a command from said control means,
wherein said control means, while said light spot moving means moves said light spot at a substantially constant speed in the direction substantially perpendicular to the track or vibrates said light spot in the direction substantially perpendicular to the track in accordance with said command from said control means, detects the tracking error signal from said tracking error signal detection means at a timing when said control means detects the timing signal indicative of the timing of detection of the extremum of the total reflected light from said extremum detection means and instructs said desired tracking position changing means to change the desired tracking position for the tracking servo control in accordance with the tracking error signal from said tracking error signal detection means in correspondence with the timing signal.

5,253,240

TRACKING ERROR DETECTING SYSTEM FOR REMOVING AN OFFSET IN AN OPTICAL DISK PLAYER

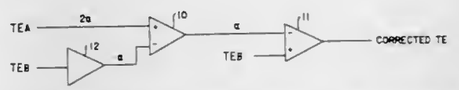
Naoharu Yanagawa, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Apr. 23, 1991, Ser. No. 689,580

Claims priority, application Japan, Nov. 29, 1990, 2-332125

Int. Cl.[5] G11B *7/095*

U.S. Cl. 369—44.32 **3 Claims**



1. A tracking error detecting system for an optical disk player comprising:
a first photodetector including a pair of first segments for producing first outputs, a total area of the first segments being larger than an area of a spot reflected from an optical disk onto said first segments;
a second photodetector comprising a pair of second segments for producing second outputs, a total area of said second segments being smaller than said spot;
an offset detecting circuit for detecting an offset from said first outputs of said first photodetector and said second outputs of said second photodetector; and
a tracking error detecting circuit for producing a tracking error signal a) from one of said first outputs and second outputs and b) from the detected offset, by removing the detected offset.

5,253,241

OPTICAL RECORDING APPARATUS FOR RECORDING AUXILLARY SIGNALS USED FOR FOCUS CONTROL

Toru Sekiguchi, and Yoshihiro Sasaki, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Aug. 30, 1991, Ser. No. 753,137

Claims priority, application Japan, Aug. 30, 1990, 2-229759; Oct. 25, 1990, 2-289709

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—44.39 **3 Claims**

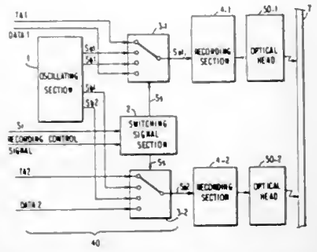
1. An optical recording apparatus for recording an information signal by irradiating a laser beam onto an optical disk, comprising:
means for generating a plurality of auxiliary signals differing

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from one another in a frequency domain, said auxiliary signals being used for focus control of said laser beam onto said optical disk;

means for generating a rotational synchronism signal indicating a reference point on said optical disk;

means for generating a selecting signal in response to said rotational synchronism signal;



means for sequentially selecting each of said plurality of auxiliary signals and an information signal in response to said selecting signal; and

means for sequentially recording each of said plurality of auxiliary signals and said information signal delivered from said selecting means in a recording track on said optical disk, said plurality of auxiliary signals being recorded before said information signal in said recording track.

5,253,242

DOUBLE-SIDED OPTICAL DISC PLAYER

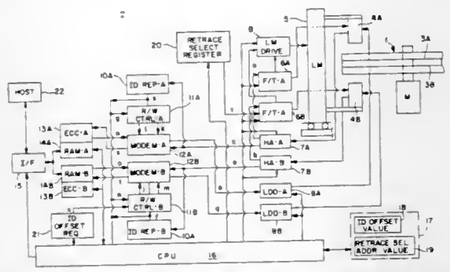
Isao Satoh, Neyagawa; Yoshihisa Fukushima, Osaka; Yuji Takagi, Hirakata; Yasushi Azumatani, Neyagawa, and Hiroshi Hamasaka, Nishinomiya, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 4, 1992, Ser. No. 878,343

Claims priority, application Japan, May 10, 1991, 3-105469

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—47 **6 Claims**



1. A double-sided optical disc player operable with a double-sided optical disc, which comprises:

first and second optical heads for irradiating laser beams to tracks on respective opposite sides of the double-sided optical disc;

first and second servo means for focusing and tracking the laser beams towards predetermined tracks on the opposite sides of the optical disc, respectively;

at least one retrieval means for sending the first and second optical heads towards the predetermined tracks;

first and second ID read-out means for reading respective sector addresses out from associated sector identifiers on the respective opposite sides of the optical disc;

an ID offset detecting means for calculating, in response to outputs from the ID read-out means, an ID offset value descriptive of an angular displacement in sector position between the opposite sides of the optical disc traced by the associated optical heads;

an ID offset retaining means for retaining the ID offset value;

a first sector recording and/or production control means for detecting a target sector when a sector address output from the first ID read-out means coincide with the target sector on one of the sides of the optical disc and for activating a recording or reproduction of information;

an adder means for adding the ID offset value to an output from the second ID read-out means;

a second sector recording and/or reproduction control means for detecting a target object when a corrected sector address outputted from the adder means coincides with the target sector on the other of the sides of the optical disc and for activating a recording or reproduction of the information; and

an information recording and/or reproducing means for recording or reproducing information on or from the target sectors on the respective sides of the optical disc by means of the first and second sector recording and/or reproduction control means.

5,253,243

RECORDING AND REPRODUCING TIMING GENERATING APPARATUS

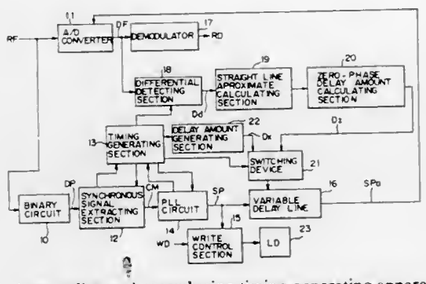
Mikiyoshi Suzuki, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 5, 1991, Ser. No. 740,433

Claims priority, application Japan, Aug. 7, 1990, 2-207689; Feb. 1, 1991, 3-031426; Mar. 18, 1991, 3-077289; Jul. 5, 1991, 3-191137; Jul. 26, 1991, 3-209973

Int. Cl.[5] G11B *20/10*

U.S. Cl. 369—48 **13 Claims**



1. A recording and reproducing timing generating apparatus for controlling the phase of a sampling clock signal of reproducing data by a sampling servo system in which a servo pattern including a clock mark is recorded to a memory medium at a constant interval, said generating apparatus controlling a delay time of the sampling clock signal based on a level of a reproducing signal sampled by the sampling clock signal;

said generating apparatus comprising:

delay data generating means for outputting a set value of the delay time of the sampling clock signal;

differential data detecting means for detecting a difference in signal level between the reproducing data obtained at timings of sampling clock signals before and after a recording pit of the servo pattern; and

control means for controlling the delay time of the sampling clock signal generated from said delay data generating means such that a detecting value of the differential data detecting means is set to a local minimum value.

5,253,244

SYSTEM FOR RECORDING DIGITAL INFORMATION IN A PULSE-LENGTH MODULATION FORMAT

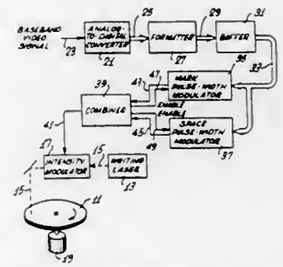
Jack H. Bailey, Villa Park, Calif., assignor to Discovision Associates, Irvine, Calif.

Continuation of Ser. No. 825,640, Jan. 24, 1992, abandoned, which is a continuation of Ser. No. 645,638, Jan. 25, 1991, Pat. No. 5,084,852, which is a continuation of Ser. No. 499,217, Mar. 16, 1990, Pat. No. 5,003,526, which is a continuation of Ser. No. 782,156, Oct. 2, 1985, abandoned, which is a continuation of Ser. No. 169,238, Jul. 16, 1980, abandoned. This application Sep. 21, 1992, Ser. No. 948,267

The portion of the term of this patent subsequent to Jan. 28, 2009, has been disclaimed.

Int. Cl.[5] H04N *5/76;* **G11B** *7/00*

U.S. Cl. 369—59 **7 Claims**



1. A method for recovering digital information stored on a record medium, the information being stored in a succession of spaced marks, each mark and each space between successive marks having variable length representative of a separate segment of binary code bits, the method comprising the steps of:

scanning the record medium to produce a playback signal that varies in accordance with the stored pattern of spaced marks; and

providing output signal portions representative of the particular segments of binary code bits corresponding to the length of the successive marks and spaces in the playback signal.

5,253,245

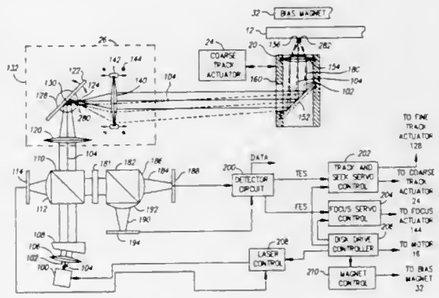
OPTICAL DATA STORAGE TRACKING SYSTEM

Melbourne E. Rabedeau, Saratoga, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 21, 1992, Ser. No. 823,520

Int. Cl.[5] G11B *7/095, 7/135*

U.S. Cl. 369—119 **14 Claims**



1. An optical data storage system comprising:

an optical medium;

a means for generating a radiation beam;

a first focus means for focussing the radiation beam to a first focus point;

a second focus means for focussing the radiation beam from the first focus point to a second focus point on the optical medium;

a mirror rotatable about a pivot line located between the first focus means and the first focus point, the rotatable mirror for displacing the second focus point on the optical medium;

a rotation means attached to the mirror for rotating the mirror about the pivot line; and

an imaging means located between the rotatable mirror and the second focus means for imaging radiation from a first image point proximate the pivot line to a second image point proximate the aperture of the second focus means, such that the beam passes through the second focus means aperture as the second focus point on the medium is displaced.

5,253,246

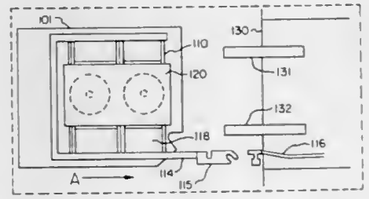
UNIVERSAL DATA STORAGE ELEMENT FOR PROVIDING VARIOUS DATA STORAGE MEDIA IN A STANDARD EXTERIOR HOUSING

Michael L. Leonhardt, Longmont, and Charles A. Milligan, Golden, both of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Continuation of Ser. No. 620,275, Nov. 30, 1990. This application Feb. 12, 1992, Ser. No. 834,665

Int. Cl.[5] G11B *23/02, 17/22, 15/68*

U.S. Cl. 369—291 **13 Claims**



1. A data storage element capable of housing a plurality of types of data storage media, each said type of data storage media being of predefined form factor and requiring a corresponding media drive unit that accepts only the predefined form factor, said data storage element being inserted into an interface unit that extracts the data storage media from said data storage element for a media drive unit connected to the interface unit for reading/writing data on said data storage media, to enable the uniform handling in a data storage and retrieval system of a plurality of different types of data storage media, said data storage element comprising:

exterior housing means, having predetermined exterior dimensions, to present uniform physical data storage element exterior dimensions to a data storage and retrieval system, and having an opening in one end thereof;

data storage media, stored in said exterior housing, being one of said plurality of types of data storage media and having a predefined form factor, said form factor requiring the use of a media drive unit that is not necessarily directly compatible with said data storage element;

carrier means, attached to the interior of said exterior housing means, for transporting said data storage media having predetermined form factor, in said exterior housing means to at least partially extract said data storage media from said exterior housing means through said opening when said data storage element is inserted into an interface unit that receives said data storage element and presents said one predetermined form factor data storage media to said media drive unit capable of accepting said predetermined form factor data storage media.

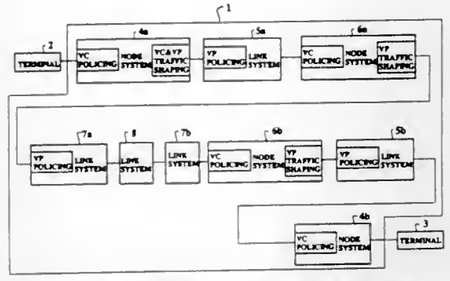
VOL 1155 ISS 2 OCT 12 1993 UMI

5,253,247

TRAFFIC CONTROL METHOD AND TRAFFIC CONTROL SYSTEM FOR CONTROLLING CELL TRAFFIC IN AN ASYNCHRONOUS TRANSFER MODE COMMUNICATION NETWORK

Tsuguhiro Hirose; Toshikazu Kodama, and Takashi Kamitake, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Aug. 19, 1991, Ser. No. 746,973
Claims priority, application Japan, Aug. 20, 1990, 2-217083
Int. Cl.[5] H04J 3/14; H04Q 11/00
U.S. Cl. 370—14 9 Claims



7. A traffic control system for controlling traffic characteristics of fixed-length information units and transmitting the information units one after another in an asynchronous transfer mode communication network, comprising:

a plurality of divided systems, arranged in series in the asynchronous transfer mode communication network, for relaying the information units;

a plurality of information flow regulating sections, respectively arranged at an inlet of each of the divided systems, for respectively monitoring information units provided to each of the divided systems to determine whether the information units are transmitted while maintaining traffic characteristics imposed on a flow of information units and rejecting information units which violate the traffic characteristics; and

a plurality of information flow shaping sections, respectively arranged at an outlet of each of the divided systems, for respectively monitoring the information units provided from each of the divided systems to determine whether or not the information units are transmitted while keeping traffic characteristics imposed on a flow of the information units and storing information units which violate the traffic characteristics until the flow of the information units maintains the traffic characteristics.

5,253,248

CONGESTION CONTROL FOR CONNECTIONLESS TRAFFIC IN DATA NETWORKS VIA ALTERNATE ROUTING

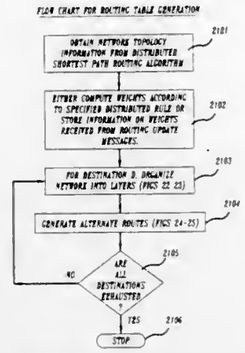
Subrahmanyam Dravida, Toms River, and P. Harshavardhana, Freehold, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 3, 1990, Ser. No. 548,457
Int. Cl.[5] H04L 12/56
U.S. Cl. 370—16 24 Claims

14. A method of determining an alternate route for traffic in a network of nodes when the primary route between said nodes is congested, comprising the steps of

for each destination, forming groups of said nodes as a function of the distance of each of said nodes from said destination;

assigning a first weighting factor to each path between a node in one of said groups and each connected node in the same group, and a second weighting factor to each path between each of said connected nodes in the same group and other connected nodes in another of said groups; and



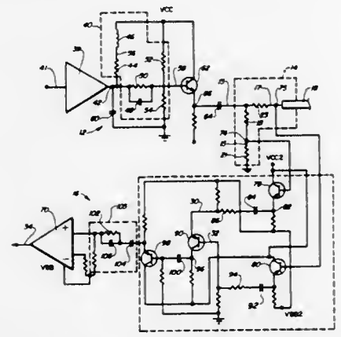
responsive to congestion in said network of nodes, selecting said alternate route as a function of said first and second weighting factors.

5,253,249

BIDIRECTIONAL TRANSCEIVER FOR HIGH SPEED DATA SYSTEM

John J. Fitzgerald, Leominster, and Donald G. Shuda, Chelmsford, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 29, 1989, Ser. No. 374,046
Int. Cl.[5] H04B 1/56
U.S. Cl. 370—24 4 Claims



1. A transceiver circuit connecting a fiber optic medium and a short data link comprising a coaxial conductor in a high speed data transmission network for simultaneously receiving and transmitting data over said coaxial conductor comprising:

a transmitter section for receiving data from said fiber optic medium and for supplying a transmitted data signal;

an impedance network coupled to said transmitter section and having first second and third output terminals, said impedance network receiving said transmitted data signal and providing a component of said transmitted data signal at said first output terminal connected to said coaxial conductor and providing a cancelling signal output having a component of said transmitted data signal at said second output terminal:

said impedance network receiving a data signal over said coaxial conductor and providing a combined signal output having a component of said transmitted data signal and said received data signal at said third output terminal;

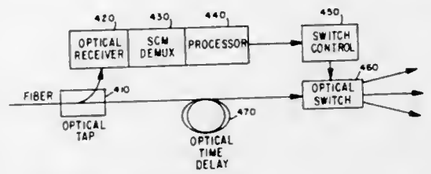
a receiver section comprising a high speed subtracting circuit having a single stage subtracting transistor means with a first input terminal coupled with said second output terminal of said impedance network for receiving said cancelling signal output and a second input terminal coupled with said third output terminal of said impedance network for receiving said combined signal output and providing said received data signal as an output.

5,253,250

ROUTING AND SWITCHING OF HIGH-SPEED OPTICAL DATA WITH THE HEADER TRANSMITTED ON A SUBCARRIER FREQUENCY

John Schlafer, Wayland; Elliot Eichen, Arlington, and Robert Olshansky, Wayland, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 31, 1991, Ser. No. 815,681
Int. Cl.[5] H04L 12/56
U.S. Cl. 370—60 11 Claims



1. A method of signaling a switch for routing a data packet to the data packet's target destination, the data packet consisting of a header for specifying a target destination of the data packet and an information frame for holding data, the method comprising the steps of:

a) receiving a multiplexed signal composed of a data packet signal and a separate header signal;

b) tapping the received multiplexed signal and recovering the header signal;

c) optically delaying the multiplexed signal composed of the data packet signal and the header signal;

d) presenting a signal derived from the header to the switch;

e) presenting the multiplexed data packet signal and header signal to the switch.

5,253,251

SWITCHING SYSTEM WITH TIME-STAMPED PACKET DISTRIBUTION INPUT STAGE AND PACKET SEQUENCING OUTPUT STAGE

Toshiya Aramaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

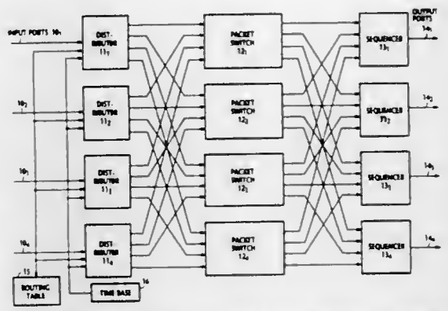
Filed Jan. 8, 1992, Ser. No. 817,893
Claims priority, application Japan, Jan. 8, 1991, 3-529; Feb. 27, 1991, 3-57971; Apr. 5, 1991, 3-72822
Int. Cl.[5] H04L 12/56
U.S. Cl. 370—60 14 Claims

1. A packet switching system having a plurality of input ports and a plurality of output ports, comprising:

a plurality of packet distributors associated respectively with the input ports for receiving successive packets therefrom at a data rate V, each of said packet distributors attaching a timeslot number to each of the received packets, and uniformly distributing the packets to a plurality of output terminals thereof, so that the packets appear at each of the output terminals at a data rate V/N, where N is the number of said output terminals of each of the packet distributors;

a plurality of packet switches corresponding in number to the output terminals of each of the packet distributors, each of the packet switches having a plurality of input terminals corresponding in number to the packet distributors and a plurality of output terminals corresponding in number to said output ports, the input terminals of each of the packet switches being coupled to respective output terminals of said packet distributors for switching a packet from one of the input terminals thereof to one of the output terminals thereof in accordance with a destination address contained in the packet; and

a plurality of packet sequencers associated respectively with



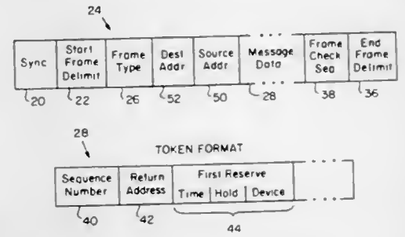
said output ports, each of the packet sequencers having a plurality of input terminals coupled to respective output terminals of the packet switches for examining the timeslot numbers attached to the packets from the input terminals thereof and delivering the packets to the associated output port in accordance with the examined timeslot numbers.

5,253,252

TOKEN DEVICE FOR DISTRIBUTED TIME SCHEDULING IN A DATA PROCESSING SYSTEM

Nathan Tobol, Wrentham, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Continuation of Ser. No. 295,453, Jan. 10, 1989, abandoned. This application Mar. 12, 1991, Ser. No. 668,363
Int. Cl.[5] H04J 3/06
U.S. Cl. 370—85.5 17 Claims



1. A data processing system comprising:

a communication bus; and

a multiplicity of data handling devices connected to the bus, each device communicating to the other devices through the bus by means of an encoded bus token signal passed on the communication bus from one device to another in an established logical order, the device currently in possession of the bus token signal being allowed to transmit over the bus, for each of certain devices of the data handling devices the bus token signal providing an indication of a time at which each certain device is to temporarily gain possession of the bus token signal out of the established order and perform a respective time critical operation, each indication of time on the bus token signal referencing the time of the respective time critical operation.

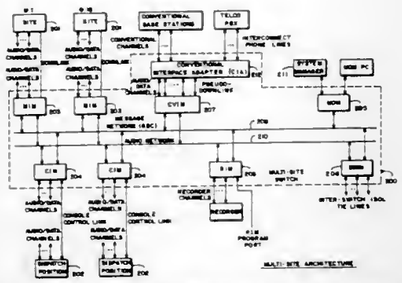
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5,253,253

MESSAGE BUS SLOT UPDATE/IDLE CONTROL IN RF TRUNKING MULTISITE SWITCH

Charles P. Brame; Timothy F. Cree; Philip C. Gulliford; Wim A. Imron, all of Forest; Satish Kappagantula, Lynchburg, and James L. Teel, Jr., Goode, all of Va., assignors to Ericsson GE Mobile Communications Inc., Lynchburg, Va.

Filed Feb. 22, 1991, Ser. No. 658,640
Int. Cl.[5] H04J *3/16*
U.S. Cl. 370—85.11 **5 Claims**



1. A method for processing audio slot status messages in a switch having a distributed architecture of nodes including at least one primary node, and said nodes operatively coupled to a message bus and one or more audio buses, and wherein each node comprises a controller and an associated memory unit having a bit map of a plurality of audio slots on said one or more audio buses, said method comprising the steps of:

a. broadcasting on the message bus a slot assignment message when said primary node assigns a slot from said plurality of audio slots to an audio communication, the slot assignment message identifying the slot being assigned;

b. each node receiving the slot assignment message modifying its bit map to indicate the assignment of the slot identified in the slot assignment message;

c. broadcasting on the message bus one or more slot update messages identifying the assigned slot;

d. each node, upon receiving the slot update message, accessing its bit map and determining whether the bit corresponding to the assigned slot indicates that the slot is assigned;

e. each node having a bit map that indicates the slot is assigned discarding the slot update message,

f. each node having a bit map that indicates the bus/slot is not assigned, modifying its bit map to indicate the assignment of the slot identified in the slot assignment message.

5,253,254

TELECOMMUNICATIONS SYSTEM WITH ARBITRARY ALIGNMENT PARALLEL FRAMER

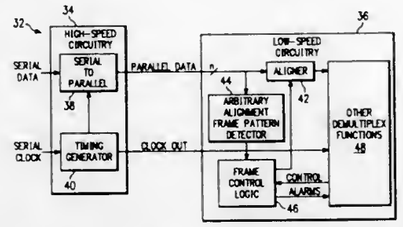
Martin Roberts, Rohnert Park, and David L. Manley, Cotati, both of Calif., assignors to DSC Communications Corporation, Plano, Tex.

Filed Sep. 18, 1991, Ser. No. 761,492
Int. Cl.[5] H04J *3/06*
U.S. Cl. 370—100.1 **24 Claims**

1. A high speed communication system comprising:

a serial-to-parallel converter for receiving a stream of serial data and converting the stream of serial data to a stream of arbitrarily aligned parallel data;

a pattern detector coupled to said serial to parallel converter for detecting a predetermined pattern from said stream of arbitrarily aligned parallel data and generating a phase signal responsive to detecting said pattern; and



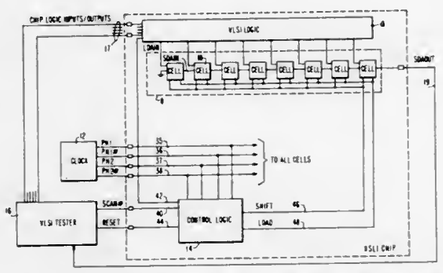
an aligner coupled to said pattern detector for generating a stream of parallel data aligned to said predetermined pattern responsive to said phase signal.

5,253,255

SCAN MECHANISM FOR MONITORING THE STATE OF INTERNAL SIGNALS OF A VLSI MICROPROCESSOR CHIP

Adrian Carbine, Portland, Wash., assignor to Intel Corporation, Santa Clara, Calif.

Filed Nov. 2, 1990, Ser. No. 612,401
Int. Cl.[5] G01R *31/28*
U.S. Cl. 371—22.6 **8 Claims**



1. An apparatus for testing the operation of an integrated circuit chip, said chip having internal test points which produce parallel data, comprising:

shift register means (8) for taking a snapshot of an internal state of said integrated circuit chip at a desired clock cycle by loading said shift register in parallel with said parallel data from said internal test points;

said shift register having a serial output (19);

control logic means (14) connected to said shift register means (8) for shifting said data out of said shift register serially at said serial output (19), one bit per clock cycle; and,

tester means (16) connected to said serial output (19) of said shift register means (8) for displaying said data in a useable form on a computer display;

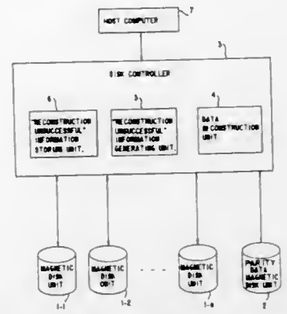
said tester means including a SCAN# signal means (40) connected to said control logic means (14) for placing said control logic (14) in a debug mode or a production testing mode, depending upon the state of said SCAN# signal means (40).

5,253,256

ARRAY DISK APPARATUS WITH UNSUCCESSFUL RECONSTRUCTION INDICATING FUNCTION

Tomobisa Oyama, Sagamihara, and Yumiko Obizumi, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 15, 1991, Ser. No. 655,694
Claims priority, application Japan, Feb. 16, 1990, 2-33930
Int. Cl.[5] H03M *13/00*
U.S. Cl. 371—40.1 **7 Claims**



1. An array disk apparatus comprising:

means for dividing serial data into a plurality of divided data sections;

a plurality of data disk units for storing said plurality of divided data sections, each data disk unit accommodating a respective divided data section;

means for generating parity data for said plurality of divided data sections;

a parity data disk unit for storing said parity data;

means for composing said plurality of divided data sections into said serial data;

means for reconstructing a first data section of said plurality of divided data sections when a first one of said plurality of data disk units develops an error and becomes inoperable at least in part;

means for storing said reconstructed first data section into said first inoperable data disk unit after a repair thereof;

means for generating information indicating unsuccessful reconstruction of a part of said first data section of said plurality of divided data sections when a second data disk unit becomes inoperable at least in part during said reconstruction of said first data section; and

means for writing said information indicating unsuccessful reconstruction of a part of said first data section to said first inoperable data disk unit during data reconstruction of said first data section.

5,253,257

RECORDING ERROR DETECTOR CIRCUIT AND RECORDING REPRODUCING APPARATUS

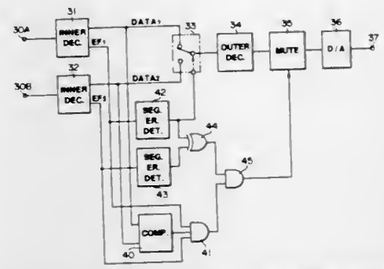
Yoshihiro Murakami, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 419,390, Oct. 10, 1989, abandoned.
This application Sep. 23, 1991, Ser. No. 764,109
Claims priority, application Japan, Oct. 17, 1988, 63-259597
Int. Cl.[5] G11B *20/18*
U.S. Cl. 371—40.1 **6 Claims**

1. An error detection circuit for a digital signal recording and reproducing apparatus wherein a digital signal having an error correction code is recorded on a record medium and reproduced therefrom and an error correction is effected on the basis of the error correction code so that an erroneous reproduced digital signal can be identified by an error flag signal and corrected, said circuit comprising:

checking means responsive to a digital signal prior to being recorded and the same digital signal as reproduced and corrected in order to determine whether or not there is an identity therebetween,

means for generating a first recording error signal when neither the identity nor the error flag signal is detected,



means for counting the error flag signals and generating a second recording error signal when a predetermined number of error flag signals is counted,

an error monitoring device, and

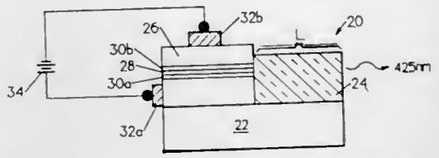
means for providing said first and second recording error signals to the error monitoring device.

5,253,258

OPTICALLY ENCODED PHASE MATCHED SECOND HARMONIC GENERATION DEVICE AND SELF FREQUENCY DOUBLING LASER MATERIAL USING SEMICONDUCTOR MICROCRYSTALLITE DOPED GLASSES

Nabil M. Lawandy, Providence, R.I., assignor to Intellectual Property Development Associates of Connecticut, Inc., Trumbull, Conn.

Filed Oct. 17, 1991, Ser. No. 778,593
Int. Cl.[5] H01S *3/10;* **H03F** *7/00;* **G02B** *1/00*
U.S. Cl. 372—22 **15 Claims**



1. A method of preparing a material so as to exhibit second harmonic generation for optical radiation incident on the material, comprising the steps of:

providing a glass host having semiconductor microcrystallites contained within; and

irradiating the glass host with radiation having a first wavelength and a second wavelength that is one-half of the first wavelength, the glass host being irradiated for a period of time sufficient to obtain a desired value of conversion efficiency of the first wavelength into the second wavelength.

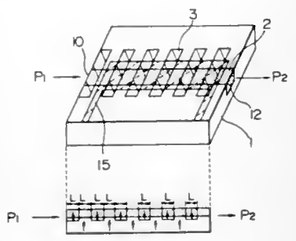
VOL 1155 ISS 2 OCT 12 1993 UMI

5,253,259

FREQUENCY DOUBLER AND VISIBLE LASER SOURCE HAVING A HEATER

Kazuhisa Yamamoto, Settsu; Tetsuo Taniuchi, Kobe, and Kiminori Mizuuchi, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 24, 1992, Ser. No. 825,124
Claims priority, application Japan, Feb. 7, 1991, 3-016199
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—22 22 Claims



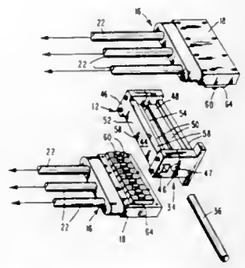
1. A frequency doubler comprising:
a non-linear crystal substrate;
a waveguide formed on said substrate;
a plurality of discrete domain inverted regions disposed on said substrate along said waveguide; and
a thin-film heater disposed on said waveguide for controlling a temperature of said frequency doubler.

5,253,260

APPARATUS AND METHOD FOR PASSIVE HEAT PIPE COOLING OF SOLID STATE LASER HEADS

Mario P. Palombo, Manhattan Beach, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 20, 1991, Ser. No. 812,505
Int. Cl.[5] H01S *3/04*
U.S. Cl. 372—34 15 Claims



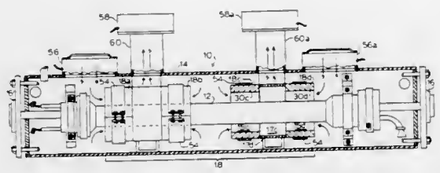
1. A solid state laser head and passive cooling means therefor, comprising:
a laser rod assembly;
a laser pump cavity including a housing of thermally conductive material in physical support of said laser rod assembly and in thermal contact therewith;
pumping means positioned adjacent to said laser rod assembly and disposed to stimulate laser emission therein;
a heat pipe assembly having evaporative means thermally coupled to both said pumping means and said housing; and
heat spreader and mounting block means in physical support of said pumping means and in thermal contact therewith, wherein said laser pump cavity includes an elongated U-shaped channel which is bounded by ends terminating in interfaces and in which both said pumping means and said mounting block means are positioned and said heat pipe evaporative means being physically and thermally secured both to said heat spreader mounting block means and to said interfaces for removing heat respectively from said pumping means and from said laser rod assembly.
13. A method for passively cooling solid state laser heads comprising the steps of:
positioning pumping means including two diode array assemblies adjacent to a laser rod assembly for enabling stimulated emission thereof;
supporting the laser rod assembly in a laser pump cavity;
configuring the laser pump cavity as an I-beam having two pairs of terminal interfaces respectively bounding a pair of elongated U-shaped channels;
physically and thermally securing each of the heat pipe assemblies at their evaporator sections to respective ones of both the diode array assemblies and the pairs of the terminal interfaces;
physically and thermally supporting each of the diode array assemblies of mounting blocks for spreading heat therefrom to the evaporator sections; and
thermally coupling at least one heat pipe assembly to both the pumping means and the laser rod assembly for removing heat from both the pumping means and the laser rod assembly.

5,253,261

GAS LASER SOLENOID AND COOLING APPARATUS

Edwin G. Chaffee, Salt Lake City, Utah, assignor to American Laser Corporation, Salt Lake City, Utah

Continuation-in-part of Ser. No. 871,925, Apr. 21, 1992, abandoned. This application Sep. 16, 1992, Ser. No. 945,385
Int. Cl.[5] H01S *3/04*
U.S. Cl. 372—34 8 Claims



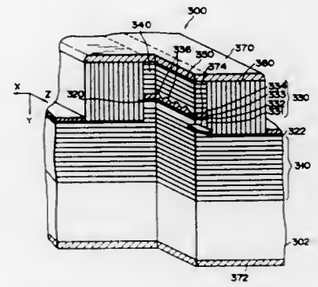
1. In a laser having a laser tube and a concentrically mounted solenoid capable of withstanding elevated temperatures, said solenoid comprising;
(a) a wire receiving bobbin having a hollow, cylindrical core and a pair of opposed parallel flanges formed integral with the core and located at opposite ends thereof and made of a rigid heat conductive material;
(b) an inner high temperature resistant, electrically and thermally insulating film wrapped around said core of said bobbin;
(c) high temperature resistant electrically and thermally insulating means mounted adjacent to each flange and between said pair of flanges of said bobbin;
(d) a length of wire coiled circumferentially around said bobbin core upon said insulating film and having a beginning lead and an ending lead; and
(e) an outer high temperature resistant, electrically and thermally insulating film wrapped around said wound length of wire.

5,253,262

SEMICONDUCTOR LASER DEVICE WITH MULTI-DIRECTIONAL REFLECTOR ARRANGED THEREIN

Atsushi Kurobe; Tsutomu Tezuka, both of Yokohama; Tetsuo Sadamasa, Chigasaki; Mitsuhiro Kushibe, Tokyo, and Yoshito Kawakyu, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 30, 1991, Ser. No. 784,711
Claims priority, application Japan, Oct. 31, 1990, 2-293914; Feb. 4, 1991, 3-013552; Feb. 28, 1991, 3-055448
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—45 5 Claims



1. A semiconductor laser device comprising:
a semiconductive substrate having a surface;
a first distributed reflector section having two kinds of semiconductor layers which are different in refractive index from each other and are alternately laminated;
a double-heterostructure section including a first or lower semiconductive cladding layer and a second or upper cladding semiconductive layer separated by an intermediate active layer;
a second distributed reflector section on said double-heterostructure section with two kinds of semiconductor layers which are different in refractive index from each other and are alternately laminated;
said first reflector section, said double-heterostructure section, and said second reflector section having a projected structure with a side wall; and
a third distributed reflector section surrounding said side wall of said projected structure on said substrate and including two kinds of semiconductor layers which are different in refractive index from each other and are alternately laminated along a certain direction parallel with the surface of said substrate.

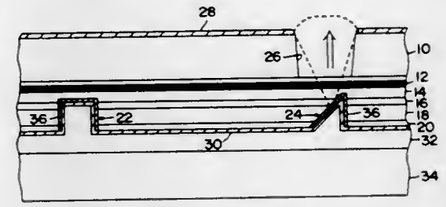
5,253,263

HIGH-POWER SURFACE-EMITTING SEMICONDUCTOR INJECTION LASER WITH ETCHED INTERNAL 45 DEGREE AND 90 DEGREE MICROMIRRORS

Michael Jansen; Jane J. Yang, both of Los Angeles; Szutsun S. Ou, Manhattan Beach, and Thomas J. Roth, Redondo Beach, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Mar. 12, 1992, Ser. No. 850,083
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—45 16 Claims

1. A surface-emitting semiconductor injection laser, comprising:
a substrate;
an active layer and a pair of cladding layers formed on the substrate; and
a folded resonator cavity that is formed by highly-reflective 45° and 90° micromirrors etched at either end of the active layer and by a partially-reflective reflector positioned between the 45° micromirror and the substrate;
wherein the semiconductor injection laser is mounted junction down on a heat sink for good heat dissipation and



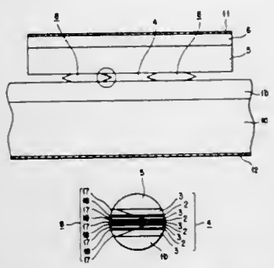
laser light is outcoupled from the resonator cavity through the partially-reflective reflector.

5,253,264

OPTICAL SEMICONDUCTOR DEVICE

Nobuo Suzuki, Tokyo; Yuzo Hirayama, Yokohama, and Masaaki Onomura, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 29, 1991, Ser. No. 800,250
Claims priority, application Japan, Nov. 29, 1990, 2-325208; Mar. 28, 1991, 3-90007
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—46 20 Claims



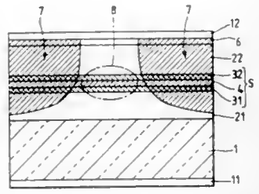
1. An optical semiconductor device comprising:
a stripe-form optical waveguide layer formed on a main surface of a semiconductor substrate and having a strained quantum well constituted by first semiconductor layers which each have a thickness of less than the de Broglie wavelength of electrons and which do not lattice-match with said substrate, and second semiconductor layers which each have a forbidden bandwidth larger than that of said first semiconductor layers and which are respectively disposed on both sides of a corresponding one of said first semiconductor layers; and
a blocking layer formed of semiconductor having a forbidden bandwidth larger than that of said second semiconductor layer and formed at the sides of said optical waveguide layer;
wherein a non-parallel interface which lies between said blocking layer and said first and second semiconductor layers and which is not parallel to the main surface of said substrate makes an angle of not less than 45 degrees with respect to the normal of said substrate.

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5,253,265
SEMICONDUCTOR LASER DEVICE

Yasuji Seko; Kiichi Ueyanagi; Hideo Nakayama; Hideki Fukunaga, and Nobuaki Ueki, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Feb. 6, 1992, Ser. No. 832,053
Claims priority, application Japan, Feb. 7, 1991, 3-036540
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—46 8 Claims

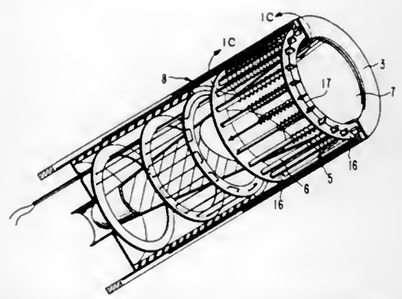


1. A semiconductor laser device, comprising:
an active layer including a quantum well layer made of a mixed crystal material and barrier layers provided on both sides of said quantum well layer; and
cladding layers provided on both sides of said active layer so as to sandwich said active layer;
said active layer having a region containing Ge, and said quantum well layer and said barrier layers in said region being disordered by said Ge.

5,253,266
MBE EFFUSION SOURCE WITH ASYMMETRICAL HEATERS

Walter S. Knodle, III; Paul E. Luscher, both of Sunnyvale, Calif., and Barry K. Caffee, Mt. Pleasant, Mich., assignors to Intevac, Inc., Santa Clara, Calif.

Filed Jul. 20, 1992, Ser. No. 916,381
Int. Cl.[5] B05C *11/00*; C23C *16/00*; H01L *21/203*
U.S. Cl. 373—10 21 Claims

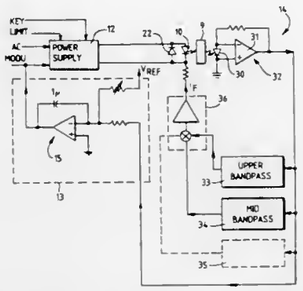


1. In a source for the generation of molecular beams comprising a mounting flange, support means for said source, a source body comprising a crucible heater, thermal shield means, heat sink means, a thermocouple and a crucible to contain material for the generation of molecular beams, said support means for said source adapted to position the axis of said source body at an angle to the horizontal, the improvement comprising, a crucible heater having elements arranged in an asymmetric pattern around the source body axis to create substantially uniform temperature planes in said crucible substantially parallel to the horizontal when in position on said support means.

5,253,267
LASER MULTIPLE FEEDBACK CONTROL CIRCUIT AND METHOD

Keith Johnson, Orland Park, Ill., assignor to Amoco Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 708,501, May 31, 1991, Pat. No. 5,177,755. This application Jul. 6, 1992, Ser. No. 909,164
Int. Cl.[5] H01S *3/00*
U.S. Cl. 372—38 20 Claims



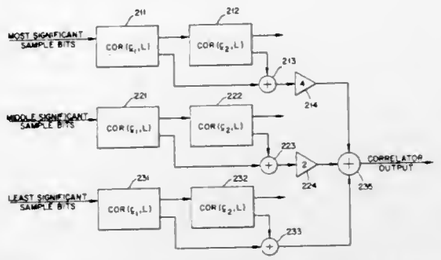
1. In a laser system that, in response to a flow of electrical current through a laser diode, produces a laser light output which is characterized by intensity noise that is a function of frequency, a feedback circuit comprising:
a) conversion means, using the laser light output of a laser system that produces light in response to the flow of current through a laser diode, for producing an electrical input signal that is representative of the intensity noise in the laser light output;
b) first feedback means for using said electrical input signal and producing a first feedback signal, said first feedback means having a gain curve that has a first maximum located intermediate the ends of a predetermined frequency band, said predetermined frequency band including that portion of said intensity noise due to the relaxation oscillation frequency of the laser diode;
c) second feedback means for using said electrical input signal and producing a second feedback signal, said second feedback means having a gain curve that has a second maximum located intermediate the ends of said predetermined frequency band and that is separated from said first maximum of said first feedback means; and
d) output means, using said first feedback signal and said second feedback signal, for producing a current gain signal and superimposing said current gain signal on the electrical current flowing through the laser diode to reduce intensity noise generally due to said relaxation oscillation of said laser diode.

5,253,268
METHOD AND APPARATUS FOR THE CORRELATION OF SAMPLE BITS OF SPREAD SPECTRUM RADIO SIGNALS

Jimmy K. Omura, Cupertino; Dan Avidor, Sunnyvale, and Mark Heising, Palo Alto, all of Calif., assignors to Cylink Corporation, Sunnyvale, Calif.

Division of Ser. No. 528,020, May 20, 1990, Pat. No. 5,166,952. This application Jun. 24, 1991, Ser. No. 721,842
Int. Cl.[5] H04K *1/00*
U.S. Cl. 375—1 6 Claims

1. A 2-bit correlator comprising:
first correlating means responsive to when a plurality of most-significant 1-bit samples are identical with a first plurality of 1-bit code chips for generating a first correlation signal;
second correlating means responsive to when a plurality of least-significant 1-bit samples are identical with a second plurality of 1-bit code chips for generating a second correlation signal;
means coupled to said first correlating means for multiplying the first correlation signal by two; and

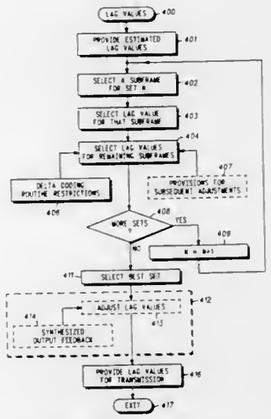


means coupled to said multiplying means and said second correlating means for adding the output from said multiplying means with the second correlation signal.

5,253,269
DELTA-CODED LAG INFORMATION FOR USE IN A SPEECH CODER

Ira A. Gerson, Hoffman Estates, and Mark A. Jasiuk, Chicago, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 5, 1991, Ser. No. 755,265
Int. Cl.[5] H04B *14/06*
U.S. Cl. 375—28 19 Claims

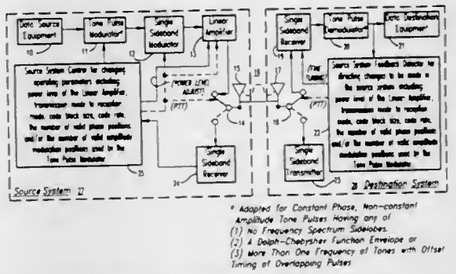


1. A method for providing long term predictor delay information, comprising the steps of:
A) representing a digitized audible sample in a predetermined number of subframes of representational information;
B) providing estimated lag factors for each subframe based on the digitized audible sample;
C) providing a delta-coding routine such that lag factor information for a selected one of the subframes can be any of a predetermined plurality of values within a first predetermined range, and with each other subframe being restrained to a value that is within a second predetermined range of an immediately adjacent subframe, wherein the second predetermined range is smaller than the first predetermined range;
D) developing sets of candidate revised lag factors by:
i) initially providing for a selected one of the subframes a lag factor value that closely corresponds to an estimated lag factor for the selected subframe;
ii) subsequently providing for subframes other than the selected one subframe lag factor values while:
a) simultaneously remaining compatible with the delta-coding routine;
iii) repeating steps D(i) and D(ii) to thereby provide sets of candidate revised lag factors;
E) selecting a particular set of candidate revised lag factors that most closely corresponds to a predetermined acceptance criterion to provide a set of revised lag factors.

5,253,270
APPARATUS USEFUL IN RADIO COMMUNICATION OF DIGITAL DATA USING MINIMAL BANDWIDTH

Raymond C. Petit, Oak Harbor, Wash., assignor to Hal Communications, Urbana, Ill.

Filed Jul. 8, 1991, Ser. No. 726,842
Int. Cl.[5] H04L *27/02*; H04J *3/12*
U.S. Cl. 375—43 60 Claims



* Adapted for Constant Phase, Non-constant Amplitude Tone Pulses Having any of (1) no Frequency Spectrum Sidelobes, (2) a Dolph-Chebyshev Function Envelope or (3) more Than One Frequency of Tones with Offset Timing of Overlapping Pulses

1. Apparatus for transmission of digital data using tone pulses which apparatus is operable over marginal signal paths at high ratios of bit rate per occupied bandwidth comprising:
(a) means for producing a series of tone pulses with each pulse having a constant phase selected in response to received said digital data and a smooth-shaped, non-constant-pulse-amplitude envelope and one or more of:
(1) no sidelobe energy in the frequency spectrum,
(2) a pulse envelope corresponding to a Dolph-Chebyshev function, or
(3) more than one frequency of tones with offset timing of overlapping tone pulses so that their envelopes go to zero at different times; and
(b) means for modulating a radio frequency with the series of tone pulses produced by said means for producing.

5,253,271
METHOD AND APPARATUS FOR QUADRATURE AMPLITUDE MODULATION OF DIGITAL DATA USING A FINITE STATE MACHINE

Michael A. Montgomery, Cedar Park, Tex., assignor to Schlumberger Technology Corporation, Austin, Tex.

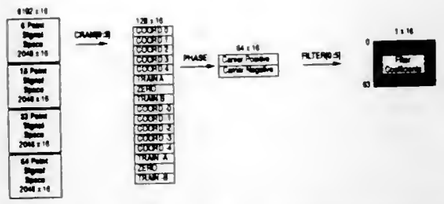
Filed Feb. 15, 1991, Ser. No. 657,224
Int. Cl.[5] H04L *5/12, 23/02, 27/20*
U.S. Cl. 375—59 12 Claims

1. A transmitter for acquiring digital input data and modulating the data onto an analog transmission carrier signal, comprising:
means for acquiring the digital input data;
mapping means coupled to the acquiring means for mapping the digital input data into a series of symbols representing points in signal space, and for outputting the location of the points as two digital coordinate streams representing the x and y coordinates of the points;
modulation means for quadrature amplitude modulating the x and y digital coordinate streams to orthogonal carrier

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signals and combining the orthogonal carrier signals, the modulation means being a finite state implementation without microprocessors and including

table means for storing product values where the multiplication factors in the product values are said digital coordinate stream value multiplied by said digital sample value of the respective orthogonal carrier signal,



the product values of the table means being the product of the respective coordinate stream value, a digital sample value of an orthogonal carrier signal, and a pulse shaping filter coefficient, and

means for adding the x and y product values to form digital sampled waveform sums; and

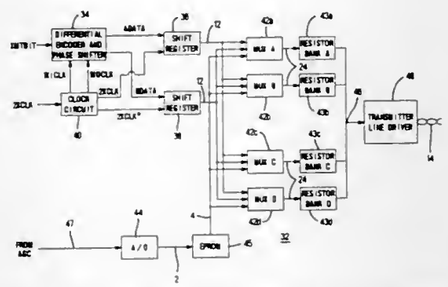
digital to analog converter means, for converting the digital sampled waveform sums into an analog transmission carrier signal.

5,253,272

DIGITAL DATA TRANSMISSION SYSTEM WITH ADAPTIVE PREDISTORTION OF TRANSMITTED PULSES

Kevin A. Jaeger, Glen Ellen, and Gerald L. Somer, Sebastopol, both of Calif., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 1, 1991, Ser. No. 632,434
Int. Cl.[5] H04K *25/03*; H04H *25/49*
U.S. Cl. 375—60 **21 Claims**



1. In a digital data transmission system of the type comprising a digital data transmitter connected to at least one receiver by a metallic transmission medium, said receiver configured to receive a signal comprising a plurality of pulses, each characterized by a predetermined pulse shape, the improvement comprising:

means, associated with the transmitter, for monitoring a transmission characteristic of the medium and automatically classifying the metallic transmission medium into one of a plurality of categories in accordance with the monitored transmission characteristic;

means, included in the transmitter, for shaping a data signal comprising a string of pulses to one of a plurality of alternative pulse shapes, at least some of which deviate from the predetermined pulse shape in a manner effective to predistort the transmitted pulses to enhance correspondence between (1) the transmitted pulse as received by the receiver after distortion by the transmission medium and (2) the predetermined pulse shape;

means, responsive to the classifying means and connected to the shaping means, for automatically controlling the shaping mean to select one of the plurality of alternative pulse shapes to correspond to the category in which the transmission medium is classified by the classifying means; and

means, included in the transmitter, for transmitting on the metallic transmission medium the data signal as shaped by the shaping means;

wherein the shaping means comprises:

a delay line having at least one data input terminal coupled to receive the data signal and a plurality of output terminals, said delay line operative to apply the data signal with a respective delay as a respective output signal at each of the output terminals of the delay line;

a plurality of banks of resistors, each resistor within a bank connectable to a respective one of the output terminals to weight the respective output signal by a respective weighting factor, each bank associated with a respective one of the alternate pulse shapes; and

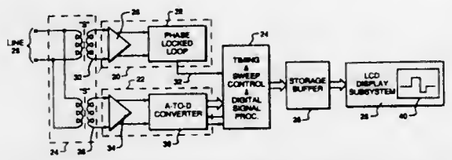
means for summing the weighted output signals to synthesize a summed output signal characterized by the selected one of the plurality of alternative pulse shapes.

5,253,273

ISDN "S" SIGNAL DETECTION AND DISPLAY APPARATUS

Edwin E. Klingman, 3000 Highway 84, San Gregorio, Calif. 94074

Filed Sep. 18, 1991, Ser. No. 761,665
Int. Cl.[5] H04L *7/04*
U.S. Cl. 375—114 **20 Claims**



11. Apparatus for monitoring the frame sync bit of data within selected data frames included in ISDN communication data signals, comprising:

clock signal generating means adapted to connect to an "S" interface of an ISDN communication network to receive communicated data signals and adapted to generate a clock signal corresponding to the frame sync bit of the data within each communicated data frame;

signal converter means for receiving the communicated data signals and for digitally sampling portions thereof;

processor means responsive to said clock signal and operative to cause said converter means to select and digitally sample a portion of the data within selected data frames of the received data signals at predetermined time intervals less than the duration of said frame sync bit and to output a plurality of data point signals corresponding to the amplitude of each sample of the sampled portion;

buffer means for temporarily storing said data point signals; and

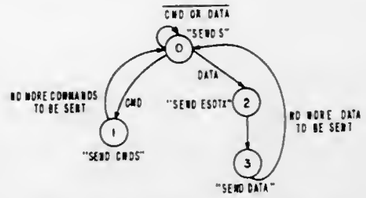
display means for using the stored data point signals to provide a visual display of the selected portion.

5,253,274

MEANS TO DIFFERENTIATE BETWEEN COMMANDS AND DATA ON A COMMUNICATIONS LINK

Frank J. Janniello, Stamford, Conn.; Rajiv Ramaswami, East White Plains, N.Y., and David G. Steinberg, Stamford, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 15, 1992, Ser. No. 869,557
Int. Cl.[5] H04B *25/49*
U.S. Cl. 375—121 **2 Claims**



1. In a communications link of a communications system, a method of transmitting a stream of information symbols, some of which are commands and some of which symbols are data, where said commands can be distinguished from said data, said method comprising:

(a) mapping each symbol d belonging to a set D of information symbols, into a unique representation e belonging to a larger set E of code symbols;

(b) defining a unique code symbol S in E such that no symbol in D is mapped to S;

(c) defining a code symbol ESOTX in E wherein ESOTX is mapped from a data symbol SOTX in D;

(d) transmitting on said link a sequence of code symbols in E mapped from data information symbols in D as in step (a) only after transmitting a combination of said S immediately followed by ESOTX, where ESOTX is interpreted as an encoded data symbol if it is not immediately preceded by S;

(e) transmitting on said link immediately after transmission of S a sequence of code symbols in E mapped from command information symbols in D as in step (a);

(f) upon receiving from said link a code symbol S followed by a code symbol X, which is mapped from the set of information symbols D:

if X≠ESOTX, interpreting X and subsequent mapped code symbols as mapped commands until S is received;

if X=ESOTX, interpreting subsequent mapped code symbols as mapped data information symbols until S is received.

5,253,275

AUDIO AND VIDEO TRANSMISSION AND RECEIVING SYSTEM

Paul Yurt, Scottsdale, Ariz., and H. Lee Browne, Two Soundview Dr., Greenwich, Conn. 06830, assignors to H. Lee Browne, Greenwich, Conn.

Continuation of Ser. No. 637,562, Jan. 7, 1991, Pat. No. 5,132,992. This application Apr. 2, 1992, Ser. No. 862,508
The portion of the term of this patent subsequent to Jul. 21, 2009, has been disclaimed.
Int. Cl.[5] H04B *1/66*
U.S. Cl. 375—122 **7 Claims**

1. A transmission system for providing information to be transmitted to remote locations, the transmission system comprising:

library means for storing items containing information;

identification encoding means for retrieving the information in the items from the library means and for assigning a unique identification code to the retrieved information;

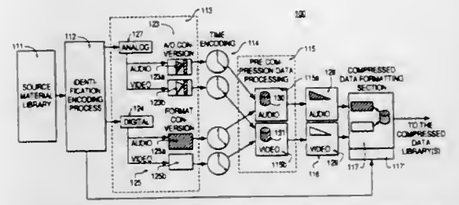
conversion means, coupled to the identification encoding means, for placing the retrieved information into a predetermined format as formatted data;

ordering means, coupled to the conversion means, for placing the formatted data into a sequence of addressable data blocks;

compression means, coupled to the ordering means, for compressing the formatted and sequenced data blocks;

compressed data storing means, coupled to the data compression means, for storing as files the compressed, sequenced data blocks received from the data compression means with the unique identification code assigned by the identification encoding means; and

transmitter means, coupled to the compressed data storing means, for sending at least a portion of one of the files to a reception system at a head end of a cable television system for subsequent transmission to one of the remote locations.

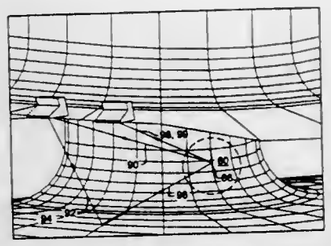


5,253,276

DUAL-LONGITUDINAL-MODE ULTRASONIC TESTING

Steven C. Mortenson, San Jose, Calif., and Brad M. Dummer, Roswell, Ga., assignors to General Electric Company, San Jose, Calif.

Continuation of Ser. No. 771,373, Oct. 2, 1991, abandoned. This application Dec. 4, 1992, Ser. No. 985,744
Int. Cl.[5] G21C *17/003*
U.S. Cl. 376—249 **6 Claims**



1. A method for ultrasonic detection of a defect in an inspection volume of a material body, said method comprising the steps of:

positioning and orienting transducer means including emitter means and receiver means so as to define

a first path within said body, said first path consisting of

a first leg from said emitter means to said defect, and

a second leg from said defect to said receiver means, and

a second path within said body, said second path consisting of

a first leg from said emitter means to a surface,

a second leg from said surface to said defect, and

a third leg from said defect to said receiver means,

activating said emitter means so as to produce

a primary longitudinal wave along said first leg of said first path, and

a transverse wave along said first leg of said second path

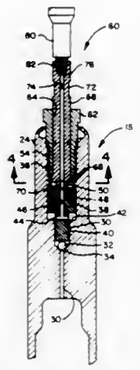
VOL 1155 ISS 2 OCT 12 1993 UMI

that is mode converted by said surface so as to yield a secondary longitudinal wave along said second leg of said second path;

detecting at said receiver means a primary reflection, said primary reflection being a reflection of said primary longitudinal wave and traveling along said second leg of said first path; and

detecting at said receiver means a secondary reflection, said secondary reflection being a reflection of said secondary longitudinal wave and traveling along said third leg of said second path.

5,253,277
VENT ASSEMBLY
Bruce F. Allen, Granby, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Nov. 6, 1991, Ser. No. 788,706
Int. Cl.[5] G21C *19/00*
U.S. Cl. 376—265 **6 Claims**



1. A vent assembly for mounting in a nuclear reactor vessel control element drive mechanism upper pressure housing to vent air during filling and pressurization of the vessel, which housing includes a central passageway containing a flow blocking ball and seat therefor, an internally threaded passageway portion downstream and outwardly therefrom into which a vent stem with a mating externally threaded hollow stem body and with torquing pads on a downstream end thereof is threadedly assembled to hold the ball in the seat of the housing, and an externally threaded housing closure for closing the downstream portion and enclosing the downstream stem end, said vent assembly characterized in that:

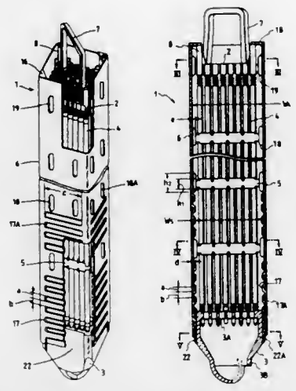
the externally threaded housing closure is a vent assembly which comprises:

a hollow housing nut threadedly received in the upper downstream pressure housing central passageway;

a vent tube mounted in a central passageway of the hollow housing nut;

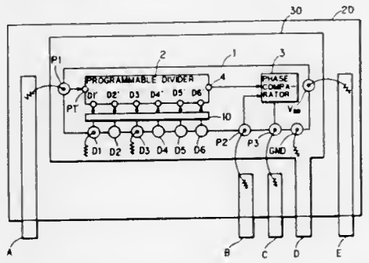
a shutoff valve connector in communication with the vent tube downstream from the vent stem hollow body which is in communication with flow between the ball and seat, said shutoff valve connector being normally closed to flow but automatically open to flow upon connection of an elongated conduit thereto.

5,253,278
FUEL ASSEMBLY, CHANNEL BOX, PRODUCTION METHOD OF CHANNEL BOX, AND CORE OF NUCLEAR REACTOR
Toru Kanazawa, Hitachi; Osamu Yokomizo, Ibaraki; Shin-ichi Kashiwai, Hitachi; Akihito Orii, Hitachi; Koji Nishida, Hitachi; Tatsuo Hayashi, Hitachi, and Junjiro Nakajima, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed May 24, 1991, Ser. No. 705,723
Claims priority, application Japan, May 25, 1990, 2-133791
Int. Cl.[5] G21C *3/32*
U.S. Cl. 376—434 **33 Claims**



1. A fuel assembly including a lower tie plate, a plurality of fuel rods having the lower end thereof supported by said lower tie plate, fuel spacers for maintaining gaps between said fuel rods, and a channel box having creep deformation inhibition portions formed on the sidewalls thereof and encompassing said fuel spacers, characterized in that said channel box has fuel spacer support means projecting inwardly from an inner surface of said channel box and supporting said fuel spacers in a direction transverse to an axial direction of the fuel assembly.

5,253,279
SEMICONDUCTOR INTEGRATED CIRCUIT HAVING A BUILT-IN PROGRAMMABLE DIVIDER
Fumio Satoh, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 30, 1991, Ser. No. 767,430
Claims priority, application Japan, Oct. 9, 1990, 2-272633
Int. Cl.[5] H03K *21/02, 21/38*
U.S. Cl. 377—110 **12 Claims**



1. A semiconductor integrated circuit, comprising:

a die pad on which said semiconductor integrated circuit is mounted, said die pad having an external lead connection which supplies a predetermined source potential to said die pad;

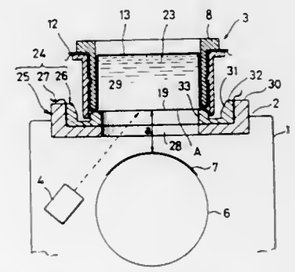
a first input terminal formed on a semiconductor chip for receiving an external signal to be frequency-divided;

a plurality of second input terminals formed on said semiconductor chip for use in externally determining a frequency dividing ratio;

a single input circuit connected to each of said second input terminals on said semiconductor chip so as to be provided in a one-to-one correspondence with each of said second input terminals for providing either one of "HIGH" and "LOW" as a frequency dividing ratio setting signal when a corresponding one of said second input terminals is "HIGH" or "LOW" in level but providing another one of "HIGH" and "LOW" as said frequency dividing ratio setting signal when said corresponding second input terminal is in an open state;

a programmable divider formed on said semiconductor chip for dividing a frequency of said external signal received from said first input terminal with a frequency dividing ratio in accordance with said frequency dividing ratio setting signal received from said input circuit, wherein a predetermined number of said second input terminals are connected to said die pad by wire bonding and a remainder of said second input terminals are left in an open state without connection to said die pad or any external terminals.

5,253,280
SAMPLE CELL SUPPORT ASSEMBLY FOR FLUORESCENT X-RAY ANALYSIS
Masao Mizuta, Kyoto, Japan, assignor to Horiba, Ltd., Kyoto, Japan
Filed Apr. 30, 1992, Ser. No. 877,969
Claims priority, application Japan, May 3, 1991, 3-130635
Int. Cl.[5] G01N *23/223*
U.S. Cl. 378—45 **16 Claims**

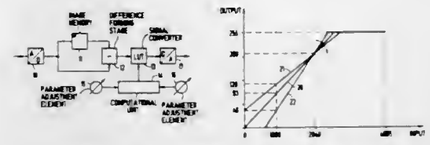


1. In a fluorescent X-ray analyzer having means for providing X-rays and means for detecting fluorescent X-rays emitted from an irradiated sample, the improvement comprising:

a sample cell having an inner and outer cell frame with central apertures and a first X-ray transmissive member extending between the inner and outer cell frames and across the apertures to define a sample measuring surface, the inner cell frame having a lower surface co-planar with the sample measuring surface, and

a sample cell stand assembly including an outer stand frame member and an inner stand frame member with respective central apertures and a second X-ray transmissive member extending across the central apertures, the sample cell stand assembly mounting the sample cell to receive X-rays and to provide a determined fixed distance relationship between the detecting means and the sample measuring surface.

5,253,281
X-RAY DIAGNOSTICS INSTALLATION FOR SUBTRACTION ANGIOGRAPHY
Peter Krauss, Bubenreuth, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Jul. 30, 1991, Ser. No. 737,474
Int. Cl.[5] H05G *1/64*
U.S. Cl. 378—99 **6 Claims**



1. An x-ray diagnostics installation for subtraction angiography comprising:

means for generating an x-ray beam for penetrating an examination subject;

means for generating an x-ray image of said examination subject from x-rays in said x-ray beam attenuated by said examination subject;

means for converting said x-ray image into a sequence of video signals;

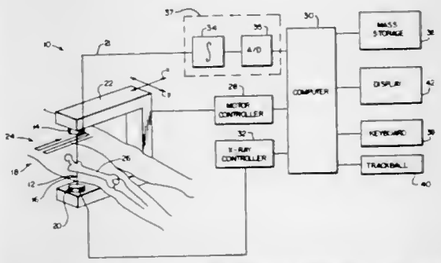
an image memory for storing a set of said video signals forming an image of said examination subject;

subtraction means for subtracting said set of video signals forming said stored image from a subsequent set of video signals forming a current image of said examination subject, said subtraction means forming difference video signals;

reproduction means for generating a visually displayable image from said difference video signals, including a plurality of individually operable adjustment means for respectively setting parameters of said visually displayable image independently of each other; and

said reproduction means including signal converter means for converting said difference video signals into output signals based on straight-line characteristic relationship between the difference video signals and the output signals, with the conversion in said signal converter means controlled by said parameters set by said adjustment means.

5,253,282
SYSTEM FOR SELECTIVE MATERIAL IMAGING
Norbert J. Pelc, Los Altos, Calif., assignor to Lunar Corporation, Madison, Wis.
Filed Apr. 27, 1992, Ser. No. 874,146
Int. Cl.[5] H05G *1/64*
U.S. Cl. 378—99 **5 Claims**



1. An apparatus for selective material imaging of an object including at least a first and second material comprising:

an x-ray tube for receiving a voltage and for producing x-ray

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radiation having spectral characteristics related to the voltage;

a timing control for defining a first state having a first duration and second state having a second duration different than the first duration;

an x-ray tube controller for supplying the x-ray tube with a high voltage during the first state and a low voltage during the second state;

a detector for receiving x-ray radiation from the x-ray tube as attenuated by the object and producing an electrical signal proportional to the intensity of the x-ray radiation;

a data acquisition system for receiving the electrical signal from the detector and for generating a first output channel signal related to the value of the electrical signal during the first state and for generating a second output channel signal related to the value of the electrical signal during the second state; and

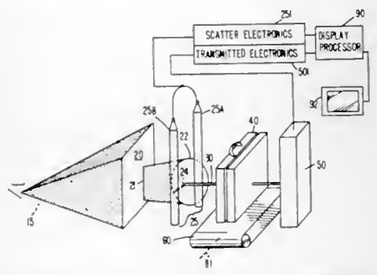
means for combining the first and second output channel signals to produce and image indicating substantially only the first material, wherein the first duration and second duration are selected to maximize the signal-to-noise ratio of the image.

5,253,283

INSEPCTION METHOD AND APPARATUS WITH SINGLE COLOR PIXEL IMAGING

Martin Annis, Cambridge, Mass., and Gerard P. Riley, Chester, N.H., assignors to American Science and Engineering, Inc., Cambridge, Mass.

Filed Dec. 23, 1991, Ser. No. 811,685
Int. Cl.[5] H05G *1/64*
U.S. Cl. 378—100 **12 Claims**



1. A method of displaying information resulting from the inspection of an object with penetrating radiation, comprising the steps of,

after an object has been illuminated with penetrating radiation, receiving radiation which corresponds to a first type of interaction with said object and radiation which corresponds to a second type of interaction with said object,

displaying pixels which correspond to at least a first presettable level of said first type of interaction in a first predetermined single color, and

displaying pixels which correspond to at least a second presettable level of said second type of interaction in a second, predetermined single color.

5,253,284

X-RAY TUBE NOISE REDUCTION USING NON-GLASS INSERTS

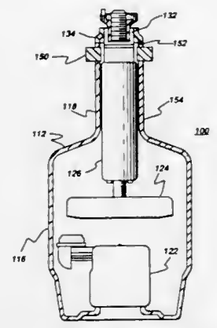
Jeung T. Kim, Daejon, Rep. of Korea, assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 1, 1992, Ser. No. 891,007
Int. Cl.[5] H01J *5/00*
U.S. Cl. 378—121 **22 Claims**

7. A vacuum tube for an X-ray tube comprising:

first and second sections; and

an insert member connecting said first and second sections, said insert member having an impedance significantly different than the impedance of either of said first and



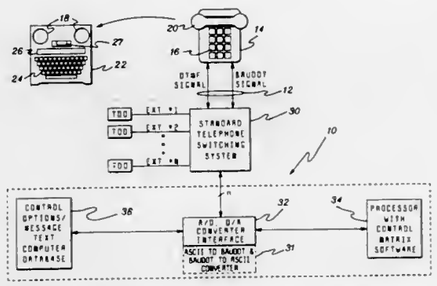
second sections to inhibit transmission of vibration energy between said sections.

5,253,285

AUTOMATED INTERACTIVE TELEPHONE COMMUNICATION SYSTEM FOR TDD USERS

Curtis C. Alheim, 4 Anne Dr., Schenectady, N.Y. 12303

Continuation-in-part of Ser. No. 626,753, Dec. 13, 1990, Pat. No. 5,121,421. This application May 22, 1992. Ser. No. 887,677
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—52 **19 Claims**



1. An automated interactive telephone communication system for connection to a two-way telephone subscriber network for automated processing of communication signals from an individual caller communicating therewith over a telephone subscriber network with a TDD (telecommunications device for the deaf) device coupled to said network, said system comprising:

means for receiving communication signals from said caller's TDD;

a computer database containing a plurality of separately addressed, digitally encoded TDD displayable messages, at least one of said messages having an associated TDD mode character;

means for processing a received communication signal according to a predefined control matrix, said processing means including means for retrieving one of said separately addressed TDD displayable messages for transmission to said caller's TDD; and

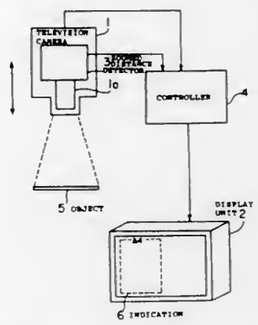
means for transmitting said retrieved TDD displayable message to said caller's TDD for display, wherein when said retrieved TDD displayable message comprises said at least one message having said associated TDD mode character, said associated TDD mode character precedes said at least one message and places said caller's TDD in a proper receiving mode for said at least one message to be displayed.

5,253,286

APPARATUS FOR FOCUSING IMAGE IN TELEVISION CAMERA FOR VIDEO TELEPHONE

Shoichi Sano, and Syogo Nakamura, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 21, 1992, Ser. No. 839,903
Claims priority, application Japan, Mar. 8, 1991, 3-043814
Int. Cl.[5] H04N *7/14*; H04M *11/00*
U.S. Cl. 379—53 **20 Claims**



9. An apparatus for focusing an image for a video telephone set, comprising:

a television camera for imaging an object, said television camera having a lens;

a display unit for displaying the image of the object imaged by said television camera;

zooming means for varying the distance to which the lens of the television camera is zoomed;

zoomed distance detecting means for detecting the distance to which the lens of the television camera is zoomed by said zooming means;

control means for determining an indication corresponding to a predetermined portion of the object, based on said detected distance, and displaying the determined indication on the display unit; and

transmitting means for transmitting the image of the object as a focused image to another video telephone set when said predetermined portion of the object is aligned with said indication on the display unit as a result of movement of the television camera with respect to the object.

5,253,287

METHOD OF OPERATING CORDLESS TELEPHONE SYSTEM

Yoshisuke Hasegawa, Higashihiroshima, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 23, 1991, Ser. No. 764,234
Claims priority, application Japan, Sep. 25, 1990, 2-255728
Int. Cl.[5] H04M *11/00, 1/64*; H04B *1/00*
U.S. Cl. 379—61 **30 Claims**

1. A method of operating a cordless telephone system, the cordless telephone system including a main telephone terminal device including a telephone line administration means connectable to a telephone line for voice communicating with another terminal through said telephone line, radio communication means for transmitting voice communications held by said telephone line administration means with another terminal by radiowaves, receiving radiowaves, and supplying a voice information contained in the received radiowaves on said telephone line through said telephone line administration means, and automatic answering means for automatically answering an incoming call from another terminal through said telephone line, and a plurality of portable telephone terminal devices including voice receiving means each for receiving and converting the radiowaves from said main telephone terminal device to voice and outputting the same, voice transmitting means for converting the voices to radiowaves and transmitting the same, and frequency switching means for switching the radio frequencies of said voice receiving means and said voice transmitting means, said method comprising the steps of:

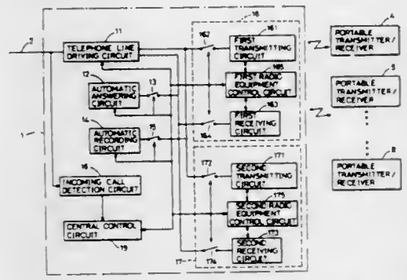
waiting until the telephone line administration means detects an incoming call from another terminal through said telephone line;

initiating monitoring by starting communications with a calling party by automatically answering by the use of the automatic answering means and simultaneously setting the cordless telephone system to a monitoring mode in response to the detection of the incoming call;

confirming the establishment of radio connection between only a single one of the portable telephone terminal devices and the main telephone terminal device and holding said cordless telephone system to said monitoring mode as far as it is confirmed;

detecting the terminal of the voice communications; and

restoring the cordless telephone system to said waiting step from said monitoring mode in response to the detection of the termination of said voice communications.

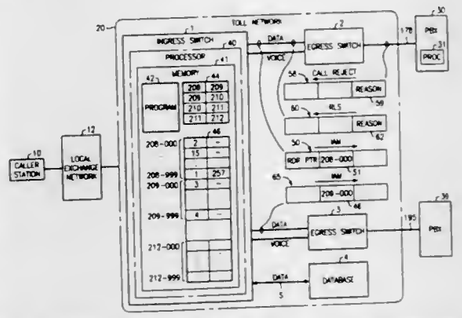


5,253,288

ALTERNATE DESTINATION CALL REDIRECTION FOR TELECOMMUNICATIONS SYSTEMS

Alan E. Frey, Naperville, Ill.; Josbua H. Rosenbluth, Middletown, N.J., and Susan J. Sobel, Brooklyn, N.Y., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 500,649, Mar. 28, 1990, abandoned. This application Sep. 23, 1991, Ser. No. 763,489
Int. Cl.[5] H04M *3/42*
U.S. Cl. 379—221 **22 Claims**



1. A method for routing a call through a public switched network, comprising a plurality of switching systems intercon-

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nected in said network, to one of a plurality of destinations, containing:

responsive to receiving said call in an ingress switching system of said public switched network, querying a data base shared by a plurality of switching systems of said network to obtain a routing indication;

responsive to receiving a routing indication from said data base, extending said call via another switching system of said network and via an egress switching system of said network toward one of said destinations;

after extending said call to said another switching system and in the absence of receipt of an answer indication on said call, determining in said another switching system whether said call can be further extended toward said one destination;

responsive to a determination that said call can be so extended, further extending said call toward said one destination;

responsive to a determination that said call cannot be so extended, generating and transmitting from said another switching system to said ingress switching system a message comprising an indicating that said call cannot be completed to said one destination; and

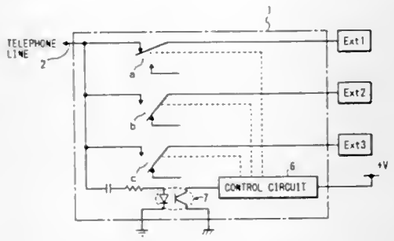
responsive to receiving said message in said ingress switching system, accessing, in said ingress switching system, alternative routing data related to said routing indication for extending said call from said ingress switching system toward another of said destinations.

5,253,289

TERMINAL CONNECTION DEVICE

Masao Tanaka, Plano, Tex., assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Jul. 1, 1991, Ser. No. 723,801
Claims priority, application Japan, Jul. 4, 1990, 2-177955
Int. Cl.[5] H04M *13/00*
U.S. Cl. 379—373 **5 Claims**



1. A device for selectively connecting a telephone line and a plurality of terminals in accordance with ringing signal sequences sent through the telephone line, the device comprising:

determining means for determining whether a ringing signal sent through the telephone line corresponds to previously stored ringing signal sequence data; and

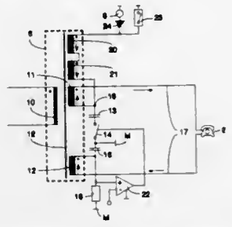
control means for storing the ringing signal sequence sent through the telephone line as ringing signal sequence data when the ringing signal sequence sent through the telephone line does not correspond to the previously stored ringing signal sequence data, and for assigning the ringing signal sequence sent through the telephone line to a terminal which does not have a ringing signal sequence assigned thereto.

5,253,290

CIRCUIT ARRANGEMENT FOR THE TRANSMISSION OF TELECOMMUNICATION SIGNALS

Martin Brahms, Hanover, Fed. Rep. of Germany, assignor to Ke Kommunications Elektronik, Hanover, Fed. Rep. of Germany

Filed Mar. 1, 1991, Ser. No. 662,918
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1990, 4006739
Int. Cl.[5] H04M *1/74*
U.S. Cl. 379—399 **3 Claims**



1. A circuit arrangement for the transmission of telecommunication signals between a switching center of a telecommunication network and a subscriber, who is connected to the switching center by means of a connecting line, in which, at the subscriber's end of the connecting line, there is connected a device in which, there is arranged a direct-current source and a transformer with a core, an input winding, and an output winding, whose output winding is connected to the connecting line via internal circuit elements of the device, and to whose output winding the subscriber is connected with a connecting line, in which the output winding of the transformer is subdivided into two partial windings of identical size, between which are connected a first capacitor and a switch arranged in series, said switch to be actuated by a component for detecting the loop current, in which the transformer is equipped with at least one additional winding, having a number of turns equal to the total of the turns of the two partial windings, and through which the current flows in a direction opposite to that in the partial windings, and in which the direct-current source is connected with one of the partial windings at the connection point of the first capacitor, characterized in that:

a second capacitor (**15**) is inserted in series with the first capacitor (**13**) and the switch (**14**), so that the switch (**14**) is located between the two capacitors (**13, 15**) and the connecting line connecting the two capacitors (**13, 15**) via the switch (**14**) is connected with the reference potential (M) of the circuit arrangement between the switch (**14**) and the second capacitor (**15**).

5,253,291

HYBRID BALANCE AND COMBINATION CODEC FILTER CIRCUIT

Absar Naseer, Mesa; Michael Warner, Phoenix, and Lalit O. Patel, Mesa, all of Ariz., assignors to AG Communication Systems Corporation, Phoenix, Ariz.

Filed Oct. 18, 1990, Ser. No. 599,533
Int. Cl.[5] H04B *3/20*
U.S. Cl. 379—406 **11 Claims**

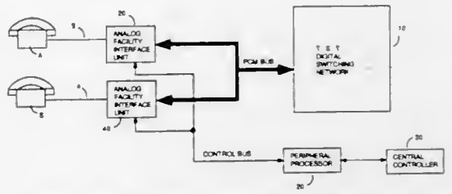
1. A hybrid balance and combination codec filter circuit connected in a subscriber line interface circuit, said subscriber line interface circuit connected to a subscriber instrument via a tip lead and a ring lead of a subscriber loop across which a subscriber loop impedance exists and to a digital switching network via a PCM bus, said hybrid balance and combination codec filter circuit comprising:

a transmit section for converting differential voltage audio transmit signals representing voice transmissions from said subscriber instrument into Pulse Code Modulated (PCM) encoded digital data for transmission to said digital switching network;

a receive section for converting PCM encoded digital data representing voice signals switched through said digital switching network to differential voltage audio receive signals for transmission to said subscriber instrument;

said subscriber loop and subscriber instrument being operable to reflect said digital voltage audio signals to said transmit section;

a hybrid balance and echo cancellation section connected between said transmit section and said receive section arranged to reshape the differential voltage audio receive



signals output by said receive section and to apply said reshaped differential voltage audio receive signals to said transmit section, canceling any reflected differential voltage audio receive signals not completely transferred to the subscriber loop; and

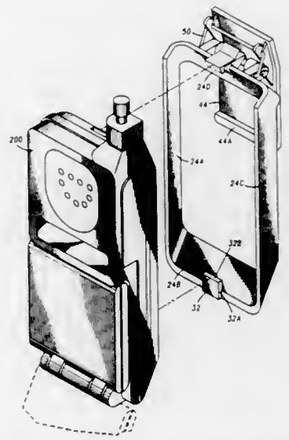
an impedance section connected between the transmit section and said receive section disposed to provide an audio band feedback signal between said transmit section and said receive section for synthesizing a source impedance for said subscriber line circuit that matches said subscriber loop impedance.

5,253,292

PORTABLE RADIOTELEPHONE SUPPORT ASSEMBLY

Ernest R. Fluder, Hoffman Estates, and Terrence E. Derdzinski, Fox River Grove, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 28, 1991, Ser. No. 751,450
Int. Cl.[5] H04M *1/00*
U.S. Cl. 379—426 **14 Claims**



1. A support apparatus for a telephonic handset having an elongated face surface and latching surfaces formed at opposing ends of the elongated face surface, said support apparatus comprising:

means for bracketing formed of first and second, longitudinally-extending panels and first and second, transversely-extending panels connected theretogether to form a rectangular-shaped frame defining a perimeter of dimensions corresponding to, but slightly greater than, dimensions of the elongated face surface of the telephonic handset, wherein surfaces of the transversely-extending panels are oriented to form seating surfaces for receiving the face surface of the telephonic handset in supportive engagement thereagainst;

a first latch having a first side thereof fixedly connected to a first of the transversely-extending panels of the frame formed of said means for bracketing and a second side thereof for generating a latching force for latching against the latching surface formed at the top end of the elongated face surface of the telephonic handset;

a second latch integrally formed with a second of the transversely-extending panels of the frame formed of the means for bracketing for latching against the latching surface formed at the bottom end of the elongated face surface of the telephonic handset;

means forming a support arm pivotally coupled to the first of the transversely-extending panels of the frame and having pivotal movement between a clip position and a table-support position;

means forming a spring for generating a bias force for maintaining the support arm normally in the clip position; and

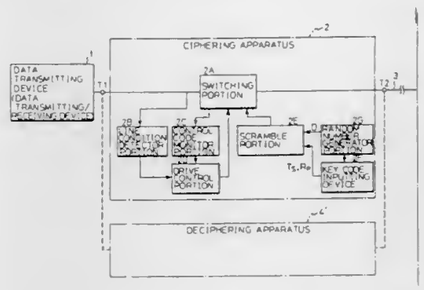
means forming a stay for maintaining the support arm at the table-support position subsequent to the pivotal movement of the support arm into the table-support position.

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ADAPTIVE DATA CIPHERING/DECIPHERING APPARATUSES AND DATA COMMUNICATION SYSTEM USING THESE APPARATUSES

Mineo Shigemitsu; Toshikazu Miyasaka, and Kenichi Matsumoto, all of Mitaka, Japan, assignors to Secom Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 499,337, Jun. 18, 1990, abandoned. This application Jan. 5, 1993, Ser. No. 828
Claims priority, application Japan, Jan. 23, 1988, 63-11858; Nov. 16, 1988, 63-287639
Int. Cl.[5] H04L *9/28, 9/30*
U.S. Cl. 380—9 **5 Claims**



5. A data communication system adaptable to a ciphered data communication comprising:

a data transmission line for transmitting ciphered or non-ciphered data between a data transmitting device and a data receiving device;

a data transmitting device for transmitting data;

a data receiving device for receiving data transmitted through said data transmitting device;

a data ciphering apparatus on the side of said data transmitting device; and

a data deciphering apparatus on the side of said data receiving device;

said data ciphering apparatus comprising: .

switching means between said data transmitting device and said data transmission line for switching the connection between said data transmitting device and said

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transmission line to enable an insertion of said ciphering apparatus between said data transmitting device and said transmission line;

line condition detector means connected with said switching means for detecting a call from said data transmitting device;

control code monitor means connected with said switching means for monitoring communication control codes from said data transmitting means;

scrambling means connected with said switching means for scrambling the data transmitted from said data transmitting device after the detection of the communication control codes by said control code monitor means; and

drive control means, connected with said switching means and associated with said switching means, said line condition detector means, said control code monitor means, and said scrambling means, for supplying said transmission line through said switching means with scrambled data of the data from said data transmitting device;

said data deciphering apparatus comprising:

switching means adapted to be connected between said transmission line and said data receiving device for switching the connection between said transmission line and said data receiving device to enable an insertion of said deciphering apparatus between said transmission line and said data receiving device;

line condition detector means connected with said switching means for detecting a call transmitted through said transmission line;

control code monitor means connected with said switching means for monitoring communication control codes through said transmission line;

descramble means connected with said switching means for descrambling scrambled data transmitted through said transmission line after the detection of the communication control codes by said control code monitor means; and

drive control means, connected with said switching means and associated with said switching means, said line condition detector means, said control code monitor means, and said descrambling means, for receiving data and supplying said data receiving device through said switching means with descrambled data of received data transmitted through said transmission line.

5,253,294

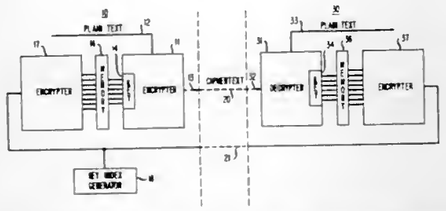
SECURE TRANSMISSION SYSTEM

Robert E. Maurer, North Andover, Mass., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 468,505, Feb. 22, 1983, abandoned. This application Apr. 18, 1983, Ser. No. 485,491

Int. Cl.[5] H04K *9/00*

U.S. Cl. 380—21 **14 Claims**



4. Apparatus (**110,130**) for reversibly translating a message signal between clear text and cypher text comprising,

means for generating a first pseudorandom bit stream (**144,244**),

first encryption means (**111,211**) for encrypting said first pseudorandom bit stream according to a predetermined algorithm and a key,

key library memory means (**116,216**) for storing possible key elements,

key selection means for selecting said key from the contents of said key library memory according to an accessible key index, and

modulo-two addition means (**148,248**) for adding said encrypted bit stream to said message signal to translate clear text into cypher text and cypher text into clear text,

CHARACTERIZED IN THAT

said apparatus further comprises key index encryption means (**117,217**) inaccessibly connected to said key library memory, said key being selected according to said encrypted key index.

5,253,295

PROCESS FOR AUTHENTICATION, BY AN OUTSIDE MEDIUM, OF A PORTABLE OBJECT CONNECTED TO THAT MEDIUM VIA A TRANSMISSION LINE AND SYSTEM FOR CARRYING OUT THE PROCESS

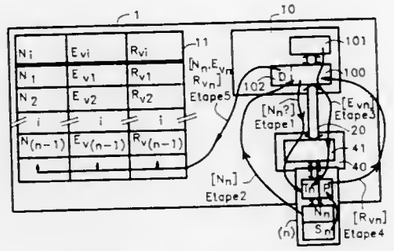
Charles Saada; André Oisel, and Francois Lasnier, all of Louveciennes, France, assignors to Bull S.A., Paris, France

Filed Dec. 16, 1992, Ser. No. 991,198

Claims priority, application France, Dec. 19, 1991, 91 15813

Int. Cl.[5] H04K *1/06*

U.S. Cl. 380—23 **15 Claims**



1. A process for authentication of a portable object (**7**) by an outside medium (**1**), in which the portable object is connected to a terminal (**4,5**) linked to the outside medium (**1**) via a transmission line (**2,3**), and the portable object contains processing circuits and a memory with at least one secret piece of data (S_i, S_n, S_7); and one non-secret piece of data (N_i, N_n, N_7) specific to that object, comprising the steps of:

having that object transmit the non-secret piece of data specific to that object to the outside medium;

having the processing circuits (**10**) in the medium use that piece of data and look in a control table (**11**) managed by the outside medium to find the result (Ra) of a calculation made during the last authentication of that object and a first parameter (Ea) taken into account to make that calculation;

having this first parameter (Ea) transmitted to the object;

having a second parameter (Eb) generated by a generator (**101**) of the outside medium and transmitted to the object;

having the processing circuits of the object calculate a first result (R'a) taking into account at least the first parameter (Ea) and the secret piece of data contained in the object;

having those same processing circuits calculate a second result (Rb) taking into account at least the second parameter (Eb) and the secret piece of data;

transmitting the first and second results to the terminal,

coding the unit composed of the first and second results in the terminal, so as to obtain a third result and transmitting this third result to the outside medium via the transmission line (**2,3**);

decoding this third result in the outside medium to find the first and second results;

comparing the first result of the decoding in the outside medium with the result of the calculation made during the last authentication of this object and stored in the control table (**11**); and

considering the object authentic if it matches and, in that case, replacing the result of the calculation made during the preceding authentication in the control table with the second result decoded by the outside medium, and replacing the first parameter with the second parameter generated during the authentication in progress.

5,253,296

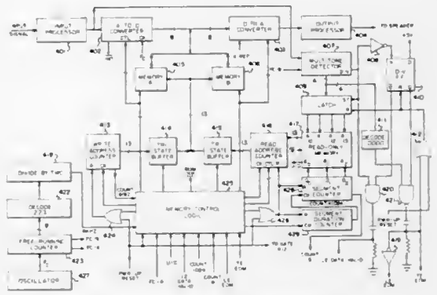
SYSTEM FOR RESISTING INTERCEPTION OF INFORMATION

John Castleberry, Jr., Cherry Hill, and John D. Cavett, Pennsauken, both of N.J., assignors to Communication Electronics, Cherry Hill, N.J.

Filed Nov. 26, 1991, Ser. No. 798,189

Int. Cl.[5] H04K *1/04*

U.S. Cl. 380—36 **17 Claims**



1. A privacy signalling system comprising:

means for supplying input signals to be transmitted from a first point to a receiving point,

means for sampling a version of said input signals into recurrent series of successive samples of predetermined time durations,

means for interposing different amounts of time-shift of the successive samples of a series whereby reception and reproduction at a receiving point of a duplicate version of said input signals as supplied at said first point necessitates the interposition of complementary time-shifts of the signal samples as received at said receiving point,

means for transmitting said time-shifted signals from said first point to at least one receiving point,

means for receiving the signals transmitted to said one receiving point,

means included in said signal receiving means for interposing different amounts of time-shift in the samples of each series,

coordinatable respective means at said first point and at said one receiving point each including a selectably addressable memory for complementarily changing the amount of time-shift interposed in the transmission of successive signal samples and the reproduction of the received versions thereof in accordance with a predetermined sequence of different time-shifts called for at an addressed location in the respective memories at said first point and said one receiving point,

means including a first reference frequency source at said first point and a further reference frequency source at said one receiving point of equal reference frequency,

means responsive to said first reference frequency source for recurrently counting through a plurality of successive different counts,

means coupled to said counting means for latching onto and retaining one of said counts until released,

means responsive to said latching and retaining means for providing at least one tone representative of the count retained therein,

tone transmitting means for providing duplication at said receiving point of the count-representative output of said tone-providing means,

and means including respective tone-detection means at said first point and said one receiving point for supplying to the respective ones of said memories coordinate addresses for the sequences of complementary time-shifts for recovery at said receiving point of the restored-sequence signal samples and therefore intelligible reproductions of the original signals.

5,253,297

DATA PROCESSING SYSTEM WITH CRYPTOGRAPHIC FACILITY

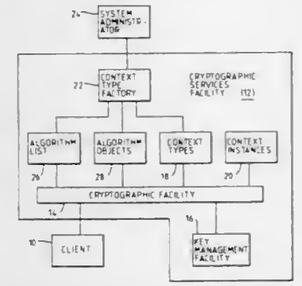
James Press, Biggleswade, Great Britain, assignor to International Computers Limited, London, England

Filed Apr. 27, 1992, Ser. No. 874,734

Claims priority, application United Kingdom, Jun. 12, 1991, 9112644.1

Int. Cl.[5] H04L *9/00*

U.S. Cl. 380—49 **5 Claims**



1. A data processing system comprising a plurality of client units, and a cryptographic services facility for providing cryptographic services to the client units, wherein the cryptographic services facility comprises:

a) means for storing a plurality of context types, each of which specifies attributes for performing a particular class of cryptographic operation, and

b) means for creating a context instance as an instance of a specified context type, in response to a request from a client unit, and for returning an identifier for this context instance to the client unit.

5,253,298

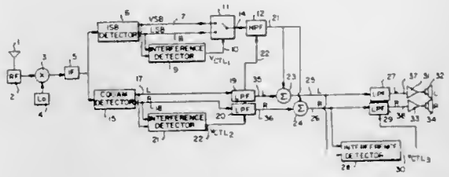
REDUCING AUDIBLE NOISE IN STEREO RECEIVING

Robert P. Parker, Westboro, and William R. Short, Ashland, both of Mass., assignors to Bose Corporation, Framingham, Mass.

Filed Apr. 18, 1991, Ser. No. 687,290

Int. Cl.[5] H04H *5/00*

U.S. Cl. 381—13 **37 Claims**



1. A receiver for receiving a stereophonic signal with upper

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and lower sidebands carrying a modulating audio signal, said receiver comprising,

independent sideband circuitry for providing upper and lower sideband signals,

selector circuitry responsive to the level of audible noise in each said upper and lower sideband signal for selecting that one of said sideband signals having a lower level of audible noise relative to the other,

an ISB highpass filter for filtering said that one of said sideband signals and producing a highpass filtered sideband signal,

stereo detector circuity for providing left and right stereophonic audio signals,

at least one audio lowpass filter for filtering each said left and right stereophonic audio signals and producing corresponding lowpass filtered left and right stereophonic audio signals, and

at least one signal combiner for combining said highpass filtered sideband signal with each said lowpass filtered left and right stereophonic audio signals to produce corresponding composite left and right audio signals.

5,253,299

NOISE REDUCTION APPARATUS IN AN FM STEREO TUNER

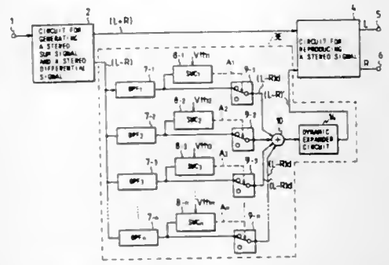
Kohji Ishida; Yasushi Nishimura, and Shigeru Yamaguchi, all of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 716,495, Jun. 17, 1991, which is a continuation of Ser. No. 442,770, Nov. 29, 1989, Pat. No. 5,067,157. This application Jul. 20, 1992, Ser. No. 915,868

Claims priority, application Japan, Feb. 3, 1989, 1-25296; Feb. 3, 1989, 1-25297

Int. Cl.[5] **H04H** *5/00*

U.S. Cl. 381—13 **9 Claims**



1. A noise reduction apparatus in an FM stereo tuner comprising:

a circuit for generating a stereo sum signal and a stereo differential signal;

a noise eliminating circuit comprising dividing means for dividing, in accordance with a plurality of frequency bands corresponding to a broad band, said stereo differential signal into a plurality of divisional stereo differential signals;

switch control means for outputting control signals in accordance with signal levels respectively corresponding to the plurality of frequency bands;

switching means for passing said plurality of divisional stereo differential signals in response to said control signals, respectively;

adding means for adding said divisional stereo differential signals outputted from said switching means to each other;

means for reproducing a stereo signal from said stereo sum signal and an output from said adding means; and

a dynamic expander circuit interposed between said noise eliminating circuit and said stereo signal reproducing means.

5,253,300

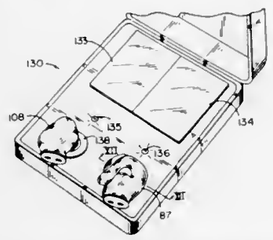
SOLAR POWERED HEARING AID

Herbert C. Knapp, Grand Rapids, Mich., assignor to H. C. Knapp Sound Technology Inc., Grand Rapids, Mich.

Continuation-in-part of Ser. No. 673,931, Mar. 22, 1991. This application Jun. 25, 1991, Ser. No. 720,654

Int. Cl.[5] **H04R** *25/00*

U.S. Cl. 381—68.6 **8 Claims**



1. In combination, a charger for a hearing aid and a hearing aid including a battery, comprising:

a charger box, said box including contacts carried on a surface of said casing, said contacts coupled to a source of charging energy; and

terminals on said hearing aid coupled to said hearing aid battery, said terminals on said hearing aid adapted to connect with said contacts;

wherein said contacts and said terminals are magnetic and one of said contacts and said terminals has a magnetic force which magnetically attracts the other one of said contacts and said terminals whereby said hearing aid is attracted to a position where the hearing aid terminals are connected to the contacts such that energy from said source of charging energy is input to said battery and said battery is charged when said contacts on said box and said hearing aid terminals are interconnected, and said charger box further includes a recess and said hearing aid further includes a volume control, whereby said volume control is received in said recess when said hearing aid terminals are connected to said contacts to insure the polarity of the hearing aid batteries is the same as the polarity of the charger contacts.

5,253,301

NONDIRECTIONAL ACOUSTIC GENERATOR AND SPEAKER SYSTEM

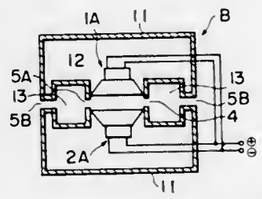
Masakatsu Sakamoto; Shiro Iwakura, and Kaoru Yamazaki, all of Tokyo, Japan, assignors to Kabushiki Kaisha Kenwood, Tokyo, Japan

Filed Mar. 27, 1990, Ser. No. 499,705

Claims priority, application Japan, Mar. 31, 1989, 1-78373

Int. Cl.[5] **H04R** *1/02*

U.S. Cl. 381—89 **9 Claims**



1. A nondirectional speaker system comprising:

a first acoustic generator unit including a first diaphragm and a first acoustic enclosure;

a second acoustic generator unit including a second diaphragm and a second acoustic enclosure;

support means for arranging said first and second acoustic generator units so that said first and second diaphragms face each other with a predetermined gap approximately equal to an allowable maximum diaphragm traveling distance and a sound path which communicates with an environmental free space to radiate sound from said gap is formed between outer surfaces of said first and second acoustic enclosures; and

electric circuit means for driving said first and second diaphragms by the same acoustic electrical signal so that said first and second diaphragms are respectively driven in opposite directions to other,

wherein said sound path is configured with an air chamber and a port an aperture of which is narrower than the cross sectional size of said air chamber to constitute an acoustic filter with a resonance frequency.

5,253,302

METHOD AND ARRANGEMENT FOR AUTOMATIC OPTICAL CLASSIFICATION OF PLANTS

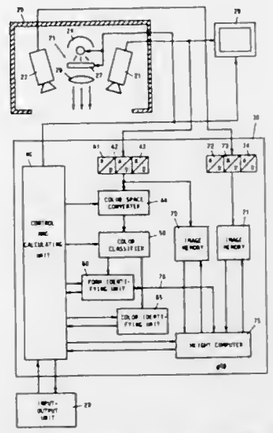
Robert Massen, Kämpfenstrasse 39, 7760 Radolfzell, Fed. Rep. of Germany

Continuation of Ser. No. 601,770, Oct. 26, 1990, abandoned. This application Dec. 30, 1992, Ser. No. 998,760

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1989, 3906215

Int. Cl.[5] **G06K** *9/00, 9/34;* **H04N** *13/00*

U.S. Cl. 382—1 **22 Claims**



1. A method for automatic optical classification of plants comprising the steps of:

(a) obtaining an image of a plant with a color video camera;

(b) digitizing pixelwise the color video signals obtained by the color video camera;

(c) classifying pixelwise the digitized color video signals in accordance with predetermined color classes, said color classes comprising sets of arbitrarily arranged color vectors to which a respective class code is attributed to under supervised learning on the basis of their belonging to the same meaningful regions;

(d) segmenting the image of the plant from at least one of the image of the background and the images of different parts of the plant from one another on the basis of the allocation of the pixels of the stored image to the predetermined color classes;

(e) determining at least one of geometrical form features and color features from at least one of the segmented image of the plant and the segmented images of the plant parts; and

(f) evaluating at least one of the determined form features and color features for deriving a quality measure.

12. A method for automatic optical classification of plants characterized in that:

(a) a stereo image of each plant is captured by means of two color video cameras;

(b) the video signals furnished by each of said two color video cameras and corresponding to the image captured by said color video cameras are digitized pixelwise;

(c) the digitized color video signals corresponding to the image captured by one of said two color video cameras are classified pixelwise in accordance with predetermined color classes which are assigned on the one hand to the image of the plant and on the other to the image of the background;

(d) the segmentation of the image of the plant from the image of the background is effected on the basis of the allocation of the pixels to the predetermined color classes;

(e) from the segmented image of the plant geometrical form features are determined;

(f) each of the digitized stereo images represented by said digitized color video signals are stored in an image memory;

(g) a search is performed in said stored digitized stereo image for associated pixel pairs in search regions which correspond to plant parts which have been segmented by means of said color classification;

(h) the height of said plant parts is determined from the pixels of each pair ascertained by the search; and

(i) a quality measure is derived from both said geometrical form features and the heights of said plant parts.

5,253,303

CHARACTER RECOGNIZING METHOD AND APPARATUS THEREOF

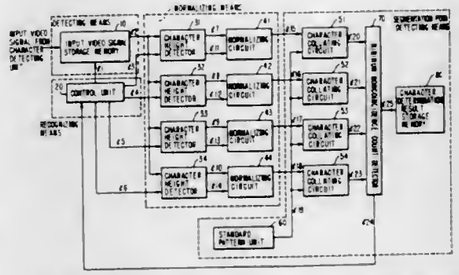
Yasud Nishijama, and Ichiro Kaneko, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Continuation of Ser. No. 554,178, Jul. 16, 1990, abandoned, which is a continuation of Ser. No. 308,768, Feb. 9, 1989, abandoned. This application Nov. 22, 1991, Ser. No. 799,744

Claims priority, application Japan, Feb. 15, 1988, 63-30997

Int. Cl.[5] **G06K** *9/36*

U.S. Cl. 382—9 **7 Claims**



1. An apparatus for recognizing contiguous characters arranged in character lines defining a main scanning direction, each of said lines constituting a plurality of characters, at least some of said characters touching each other whereby there is no blank space between characters to identify a segmentation position, said apparatus comprising:

input means for inputting said character lines as 1st, —i-th, —n-th(icn) input video signals in a subscanning direction which is substantially perpendicular to said main scanning direction, each of said characters producing a plurality of said input video signals; each of said input video signals being obtained by scanning at a pitch representing a minimum recognization unit;

detecting means for detecting a plurality of images included within a range extending in order from a starting point of said character line to said i-th to n-th input video signals

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corresponding to the scanning pitches in order to output 1st to (n-i+1) image signals;

normalizing means for normalizing said 1st to (n−i+1)th image signals in order to output 1st to (n−1+1)th normalized signals;

comparing means for comparing said n normalized signals with a predetermined standard pattern in order to output 1st to (n−1+1)th difference signals representing differences from said standard pattern; and

segmentation point detecting means for detecting a minimum difference signal, which is a minimum value, out of said 1st to (n−i+1)th minimum difference signals, and for detecting one of said i-th to n-th input video signals corresponding to said minimum deviation from standard pattern as a segmentation line in order to segment said plurality of characters which touch each other into separate discrete characters.

5,253,304

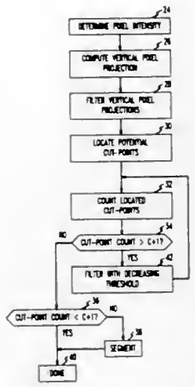
METHOD AND APPARATUS FOR IMAGE SEGMENTATION

Yann A. LeCun, Lincroft, N.J.; Ofer Matan, Escondido Village, Calif.; William D. Satterfield, Keyport, and Timothy J. Thompson, Howell, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 27, 1991, Ser. No. 800,653

Int. Cl.[5] G06K *9/34, 9/46*

U.S. Cl. 382—9 **12 Claims**



1. A method of segmenting a character-containing image formed of a plurality of individual picture elements (pixels) to partition each character into a separate field, comprises the steps of:

(a) establishing a vertical pixel projection for each column of pixels in the image in accordance with the sum of the intensities of the pixels in said column;

(b) filtering the vertical pixel projections such that the smaller the amount of character contained in each pixel column, the greater that column's vertical pixel projection;

(c) locating a plurality of potential cut-points in the image (points of image segmentation), each potential cut-point coinciding with a respective one of the pixel columns whose filtered vertical pixel projection has a local maxima and exceeds a predetermined threshold;

(d) counting the number of potential cut-points;

(e) segmenting the image at each potential cut-point if the number of potential cut-points approximates a prescribed number; otherwise

(f) filtering the vertical pixel projection of each pixel column coinciding with a respective one of the potential cut-points with a decreasing threshold to reduce the number of potential cut-points; and

(g) repeating steps (d) and (f) until the number of potential cut-points approximates said prescribed number.

5,253,305

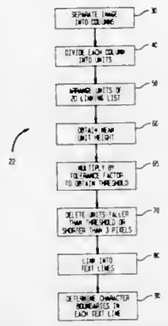
CHARACTER BOUNDARY IDENTIFICATION METHOD AND SYSTEM

Yeong-Shuenn Lin, Hsinchu, Taiwan, assignor to Industrial Technology Research Institute, Chutung Hsinchu, Taiwan

Filed Jun. 25, 1991, Ser. No. 720,235

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—9 **4 Claims**



1. An electronic image processing system comprising

scanning means for forming a digital image representative of a document,

a recognition engine for receiving said digital image, said recognition engine comprising means for identifying lines of text in said digital image and means for identifying character boundaries in said lines of text.

said means for identifying character boundaries comprising memory means for storing at least a first table comprising memory means for storing at least a first table comprising a plurality of entries, means for forming a shadow of each line of text, means for dividing said shadow into groups of bits each of which forms an address for said memory, means for retrieving one entry from said table for each group of bits in said shadow, each retrieved entry from said table containing information for determining the location of character boundaries in a corresponding portion of a line of test,

wherein said memory stores first and second tables and wherein a group of bits from said shadow having a predetermined pattern of transitions is utilized to retrieve a first entry from said first table and the first entry retrieved from the first table is used to retrieve a second entry from the second table to identify character boundaries.

5,253,306

METHOD OF MATCHING PATTERNS AND APPARATUS THEREFOR

Masami Nishio, Kagawa, Japan, assignor to Futec Inc., Takamatsu, Japan

Filed Dec. 31, 1990, Ser. No. 636,127

Claims priority, application Japan, Jan. 12, 1990, 2-5632

Int. Cl.[5] G06K *9/48*

U.S. Cl. 382—22 **16 Claims**

1. A method of matching patterns, which is used for detecting a defect in a printed pattern on printed matter, comprising the steps of:

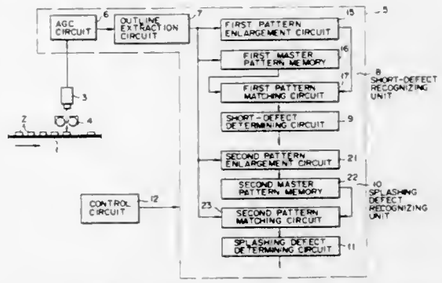
a step of optically scanning a reference printed pattern having an outline and a to-be-recognized printed pattern having an outline to obtain first and second pattern data corresponding respectively to the reference printed pattern and the to-be-recognized printed pattern;

a step of extracting master first outline data representing the outline of the reference printed pattern from the first pattern data;

a step of extracting second outline data representing the outline of the to-be-recognized image from the second pattern data;

a step of subjecting the second outline data to an enlargement process, for enlarging the outline of the to-be-recognized printed pattern, and for forming third outline data corresponding to an enlarged to-be-recognized outline; and

a step of collating the first outline data with the third outline data, to output defect information indicating that the to-be-recognized printed pattern contains a defect when the outline of the reference printed pattern mismatches with the outline of the enlarged to-be-recognized printed pattern.



5,253,307

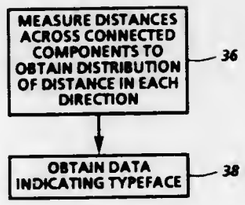
IMAGE ANALYSIS TO OBTAIN TYPEFACE INFORMATION

Peter C. Wayner, and Daniel P. Huttenlocher, both of Ithaca, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 30, 1991, Ser. No. 737,948

Int. Cl.[5] G06R *9/48*

U.S. Cl. 382—22 **33 Claims**



1. A method of performing image processing on an image that includes text with characters having a dominant typeface, the image including connected components that form the text; the method comprising steps of:

measuring distances across connected components in each of a plurality of directions and using the measured distances to obtain, for each direction, distribution data indicating a distribution of distances across connected components in the direction for the image; the step of measuring distances comprising measuring distances across a plurality of connected components, each distance being measured across one of the connected components; the plurality of connected components being in a plurality of the characters in the text; and

using the distribution data for the plurality of directions to obtain typeface data indicating the dominant typeface.

5,253,308

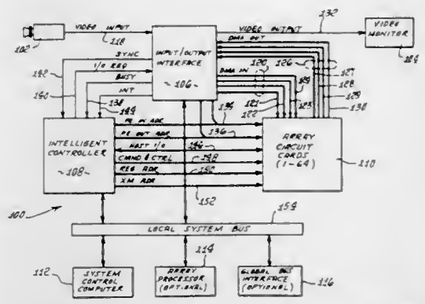
MASSIVELY PARALLEL DIGITAL IMAGE DATA PROCESSOR USING PIXEL-MAPPED INPUT/OUTPUT AND RELATIVE INDEXED ADDRESSING

William K. Johnson, Goleta, Calif., assignor to Amber Engineering, Inc., Goleta, Calif.

Filed Jun. 21, 1989, Ser. No. 369,257

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—49 **45 Claims**



1. An image processing system for processing image data provided by an external image sensor which provides digital image data having a predetermined number of bits of data corresponding to a predetermined number of pixels, said processing system comprising:

a plurality of interconnected processing elements for receiving and processing said digital image data, each of said processing elements comprising:

storage means for storing received and processed digital image data;

arithmetic-logic means, coupled to said storage means and receiving data therefrom, for performing arithmetic and logical binary operations upon said data received from said storage means and for outputting results of said arithmetic and logical binary operations to said storage means as processed digital image data;

first bussing means, coupled to said processing elements for receiving said digital image data from said sensor and routing said digital image data to said processing elements;

second bussing means, coupled to aid processing elements for routing said processed digital image data from said processing elements;

controller means for controlling said routing of said digital image data to and from said processing elements along said first and second bussing means and for controlling said processing elements; and

image to processing element correspondence means for coordinating the routing of said image data between said controller means and said plurality of processing elements and for coordination of the processing of said image data so as to provide a virtual correspondence between said pixels and said processing elements independently of the relative number of said pixels and said processing elements.

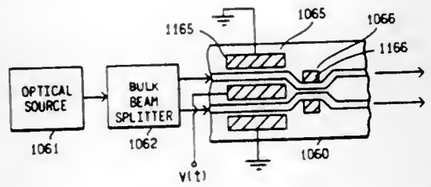
VOL 1155 ISS 2 OCT 12 1993 UMI

5,253,309

OPTICAL DISTRIBUTION OF ANALOG AND DIGITAL SIGNALS USING OPTICAL MODULATORS WITH COMPLEMENTARY OUTPUTS

Moshe Nazarathy, Palo Alto, and Josef Berger, Santa Clara, both of Calif., assignors to Harmonic Lightwaves, Inc., Santa Clara, Calif.

Filed Jun. 23, 1989, Ser. No. 370,711
Int. Cl.[5] G02B 6/12
U.S. Cl. 385—4 46 Claims



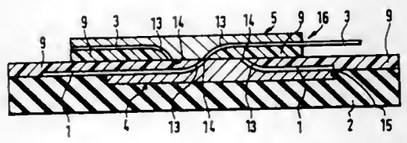
1. An optical transmission or distribution system comprising:
a transmitter comprising:
an optical source; and
an optical modulating means having at least one optical input port coupled to said optical source, a modulation port for receiving a modulating signal carrying information to be distributed within said system, and complementary output ports for providing complementary modulated optical output signals in response to said modulating signal,
wherein said optical modulating means, in response to said modulating signal, extracts power from one of said optical output signals and applies the extracted power to the other optical output signal, on an instantaneous basis, thereby maintaining the sum of the power contained in said complementary output signals substantially constant;
one or more optical receivers located at a distance from said transmitter, wherein each of said receivers includes means for extracting said information from one of said output signals; and
at least two optical transmission channels comprising one or more optical fibers serving to couple each of said complementary optical output ports of said optical transmitter to associated ones of said one or more optical receivers so as to provide at least one of said output signals to each of said receivers.

5,253,310

OPTICAL COUPLING STRUCTURE AND METHOD

Wim J. R. Delbare, Gent-St. Amandsberg; Louis J. Vandam, Brasschaat, and Jan A. O. Vandewege, Wondelgem, all of Belgium, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Jul. 29, 1992, Ser. No. 920,332
Claims priority, application Belgium, Aug. 9, 1991, 9100733
Int. Cl.[5] G02B 6/28, 6/42, 6/38; H05K 7/00
U.S. Cl. 385—14 15 Claims



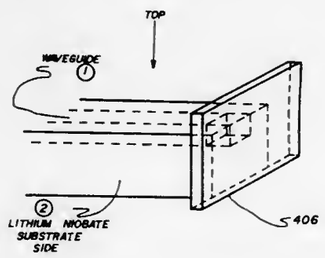
1. A structure for optically coupling at least one optical conductor to an optical input or output of an optical device, said structure comprising:
a carrier, having the optical conductor embedded therein such that the optical conductor has at least one locally bent portion reaching an outer surface of the carrier and forming there at least one optical contact point to which the optical input or output of the device may be coupled;
conductor positioning means, disposed in said carrier, for accurately positioning said conductor in the carrier; and
cooperating positioning means, disposed on said carrier at the surface reached by the bent portion of said conductor, for co-operating with corresponding complimentary positioning means of the optical device;
wherein said carrier includes a substrate onto which the optical conductor is arranged and an embedding layer covering the conductor completely except at the location of said optical contact; and
wherein the conductor positioning means for positioning said optical conductor in the carrier comprises a groove in the substrate.

5,253,311

DEVICE AND METHOD FOR PERFORMING OPTICAL COUPLING WITHOUT PIGTAILS

Albert K. Killen, Athens, and Cassie M. Lofts, Harvest, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 2, 1992, Ser. No. 970,460
Int. Cl.[5] G02B 6/42
U.S. Cl. 385—14 1 Claim



1. A device for coupling light into and out of a waveguide, said device comprising:
a lithium crystal substrate having a depression on one surface thereof, said substrate further having a waveguide embedded therein, said waveguide terminating at said depression such that the terminating end of said waveguide shares a common side with said depression; and a mating unit, said unit being suitable for coupling with said substrate and comprising a semiconductor housing, at least optical component, said component being affixed on said housing and being adapted for insertion into said depression to be aligned with said waveguide such that a radiant communication exists between said waveguide and said component and a cap, said cap being affixed to said housing and extending above said component to protect said component from external damage and assist in the insertion of the same into said depression.

5,253,312

OPTICAL FIBER TIP FOR USE IN A LASER DELIVERY SYSTEM AND A METHOD FOR FORMING SAME

Errol Payne, Newport Beach, and Paul Mikus, Laguna Niguel, both of Calif., assignors to Cytocare, Inc., Irvine, Calif.

Filed Jun. 26, 1992, Ser. No. 904,824
Int. Cl.[5] G02B 6/02; B05D 5/06; B24B 1/00
U.S. Cl. 385—31 2 Claims

1. A method of modifying an optical fiber for use in laser delivery systems, said optical fiber comprising a cylindrical core, a cladding layer surrounding said cylindrical core, and a buffer coating surrounding said cladding layer, said method comprising the steps of:
removing a first length of said buffer coating from a distal end of said optical fiber to expose a distal end of said cylindrical core and said cladding layer,
positioning said optical fiber in a holding tube,
positioning said holding tube in a staging fixture, said holding tube and said optical fiber forming a predetermined angle with a surface of said staging fixture, and a distal portion of said holding tube, said cladding layer, and said cylindrical core extending past said surface of said staging fixture,
securing said optical fiber in said holding tube and securing said holding tube in said staging fixture by injecting a liquid metal alloy into said staging fixture and said holding tube, and allowing said metal alloy to solidify,



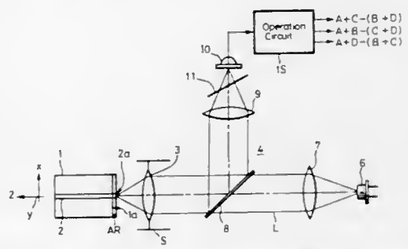
mounting said staging fixture in a grinder,
grinding said holding tube, said cladding layer, said cylindrical core, and said metal alloy until said distal portion of said holding tube, said cladding layer, and said cylindrical core is flush with said surface of said staging fixture, said grinding forming a flat elliptical surface across a distal end of said core,
removing said staging fixture from said grinder,
removing said holding tube from said staging fixture and removing said optical fiber from said tube,
depositing a reflective coating on said flat elliptical surface, and
removing a portion of said cladding layer opposite to said flat elliptical surface.

5,253,313

OPTICAL GUIDE APPARATUS

Koichiro Kishima, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 21, 1992, Ser. No. 871,479
Claims priority, application Japan, Apr. 26, 1991, 3-097738
Int. Cl.[5] G02B 6/32
U.S. Cl. 385—38 4 Claims



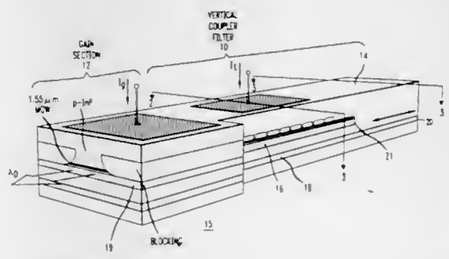
1. An optical guide end-fire coupling apparatus including a light source section having a condenser lens system for converging a laser beam to be incident on a first light incident end facet of an optical guide type secondary harmonic generator which is embedded in a substrate having a second light incident end facet which is coplanar with the first light incident end facet, comprising:
an actuator for finely adjusting the position of the condenser lens system with respect to an optical, i.e., a z axis of the condenser lens system, an x axis and a y axis, which axes are all orthogonal with each other; and
means for detecting a light intensity of a return beam which is reflected by the first light incident end facet or the second light incident end facet, and for controlling the actuator in accordance with the detected light intensity so that the position of the actuator is adjusted with respect to the x, y and z axes until the laser light beam is focussed on the first light incident end facet.

5,253,314

TUNABLE OPTICAL WAVEGUIDE COUPLER

Rodney C. Alferness, Holmdel; Lawrence L. Buhl, New Monmouth; Thomas L. Koch, Holmdel, and Uziel Koren, Fair Haven, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 31, 1992, Ser. No. 830,092
Int. Cl.[5] G02B 6/26
U.S. Cl. 385—40 25 Claims



1. An optical coupler
comprising a monolithic planar structure supporting
upper and lower aligned asynchronous waveguides each having a first and a second end,
optical coupling means positioned to provide optical coupling between the upper and lower asynchronous waveguides at a wavelength where said upper and lower waveguides are substantially transparent to optical energy at said wavelength,
the first end of said upper waveguide being terminated to prevent optical energy not coupled to the lower waveguide by the optical coupling means from reentering said upper waveguide,
the corresponding first end of said lower waveguide terminating at a first facet, and
the second end of said upper waveguide terminating at a second facet for passing an optical signal.

5,253,315

METHOD AND APPARATUS FOR INSTALLING A FIBER OPTIC CABLE BY CAPTURE OF A COUPLING NUT OR COUPLING NUT ASSEMBLY

Vernon A. Fentress, 10 Marjorie Rd., Burlington, Mass. 01803

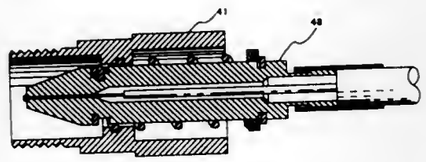
Continuation-in-part of Ser. No. 633,149, Dec. 24, 1990, abandoned. This application Nov. 29, 1991, Ser. No. 800,745
Int. Cl.[5] G02B 6/36
U.S. Cl. 385—78 30 Claims

1. An apparatus for terminating cables for connection to communications or data devices or other cables comprising:
A cable having a channel for passing signals;
an elongated, generally cylindrical, body having means for receiving said cable and means for securely affixing said cable to a first end of said body so that said channel is exposed at a second end, said body further having first

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retaining means disposed on the cylindrical surface approximately about the mid-section of said body;

a coil spring having a predetermined pitch with an inner diameter slightly larger than the outer diameter of said body, being placed over said body, said spring having a first coil end fixed to said body at said second end and having a second coil end disposed near the midsection of said body for acting as a second retaining means;



a coupling nut having a first portion with an inner diameter larger than the outer diameter of said coil spring and a threaded portion having said predetermined pitch with an inner diameter slightly larger than the outer diameter of said body, said coupling nut being screwed onto said coil spring wherein said threaded portion engages said coil spring thereby moving said nut towards said first end until said spring is compressed and until said threaded portion is captured between said first retaining means and said second retaining means.

5,253,316

OPTICAL CONTACT UNIT AND OPTICAL CONNECTOR USING THE OPTICAL CONTACT UNIT

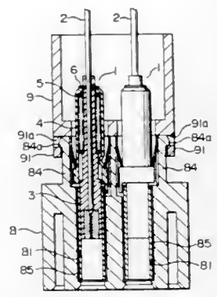
Michitomo Shibutani; Tsuyotake Sawano; Yoshitaro Sato, and Masaru Kurisaka, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Sep. 22, 1992, Ser. No. 949,075

Claims priority, application Japan, Sep. 24, 1991, 3-084956[U]

Int. Cl.[5] G02B *6/36*

U.S. Cl. 385—78 **7 Claims**



1. An optical connector comprising an optical contact unit, an optical contact holding member having a receiving hole for receiving said optical contact unit, and clip means fixed in said receiving hole for locking said optical contact unit to said optical contact holding member, said optical contact unit comprising an optical fiber element with an end portion, a ferrule fitted onto said end portion of said optical fiber element, a sleeve containing and supporting said ferrule so that said ferrule is movable in an axial direction thereof, biasing means contained in said sleeve for biasing said ferrule to make said ferrule project from said sleeve in said axial direction, and stopper means for limiting the movement of said ferrule which is forced by said biasing means to move in said axial direction with respect to said sleeve.

5,253,317

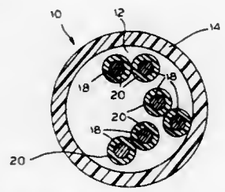
NON-HALOGENATED PLENUM CABLE

Richard C. Allen, Liberty, and James P. Graf, Richmond, both of Ind., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Nov. 21, 1991, Ser. No. 795,708

Int. Cl.[5] G02B *6/44*

U.S. Cl. 385—109 **7 Claims**



1. A non-halogenated cable for use in an electronic system comprising

a core which comprises a transmission medium, said transmission medium being a metallic or optical fiber conductor having in contact with said metallic or optical fiber conductor an insulating layer of non-halogenated polyethersulfone polymer composition, and

a non-halogenated jacket which encloses said core and said transmission medium, said non-halogenated jacket being a single layer of insulating material.

5,253,318

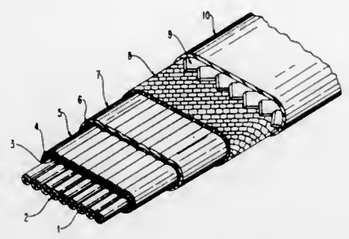
OPTICAL FIBER RIBBON CABLE

Emile G. Sayegh, and Alfredo L. Cedrone, both of Austin, Tex., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Continuation-in-part of Ser. No. 837,465, Feb. 14, 1992, Pat. No. 5,189,721. This application Sep. 11, 1992, Ser. No. 943,665

Int. Cl.[5] G02B *6/44*

U.S. Cl. 385—114 **11 Claims**



1. An optical fiber ribbon cable comprising in order from inside to outside:

(a) a multiplicity of parallel polymer-coated optical fibers arranged at controlled fixed distances apart and from a datum edge of the cable;

(b) said fibers surrounded as a unit on at least the top and bottom sides of the unit by a first layer of tape comprising porous expanded polytetrafluoroethylene having each side coated by an adhesive;

(c) said first layer of tape surrounded by a second layer of polyester tape optionally coated on its inner side with an adhesive layer;

(d) said second tape layer surrounded by a layer of tape-wrapped binder tape;

(e) said binder tape layer surrounded by a braided sheath of strong polymer fibers; and

(f) said braided sheath surrounded by an extruded flame-resistant thermoplastic polymer layer.

5,253,319

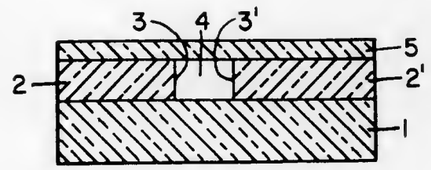
PLANAR OPTICAL WAVEGUIDES WITH PLANAR OPTICAL ELEMENTS

Venkata A. Bhagavatula, Big Flats, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Feb. 24, 1992, Ser. No. 840,749

Int. Cl.[5] G02B *6/10*

U.S. Cl. 385—129 **15 Claims**



1. A planar optical waveguide, comprising

(a) a substrate,

(b) at least one region of optically transmitting core material combined with said substrate to form a planar structure,

(c) at least one planar optical element formed in said of optically transmitting core material, wherein said at least one planar optical element comprises at least one optically functional interface and a cavity in said region of optically transmitting core material, said at least/one optically functional interface being adjacent to said cavity, said cavity containing air or being evacuated such that the refractive index of said cavity is substantially different than the refractive index of said at least one region of optically transmitting core material, and

(d) a region of overclad material applied over said at least one region of optically transmitting core material and said at least one planar optical element.

5,253,320

OPTICAL FIBER CABLE LEAD-IN STRUCTURE

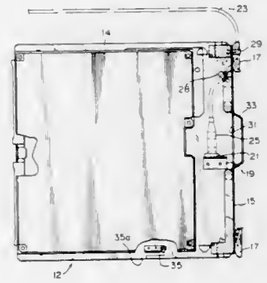
Tetsuya Takahashi; Sataroh Sawano; Hiroshi Yamaji; Tomoyuki Hongoh, and Hiroshi Kadoya, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Nov. 23, 1992, Ser. No. 980,178

Claims priority, application Japan, Nov. 29, 1991, 3-316155

Int. Cl.[5] G02B *6/36*

U.S. Cl. 385—135 **4 Claims**



1. An optical fiber cable lead-in structure for a shelf having a space for receiving a remaining portion of the optical fiber cable, and an electronic circuit unit mounted thereon having a board and a surface plate; such surface plate is provided perpendicular to the board and at one side of the board; such surface plate covering the front side of the shelf when mounting, comprising:

an optical connection for connection between the optical fiber cable and the electronic circuit unit, which is provided on the board adjacent to the backside of the surface plate;

an outwardly protruding portion that is provided in the surface plate so as to correspond to the optical connection, such that attaching and detaching operation of the optical connection may be easily effected; and

an opening that is provided in the surface plate such that the optical fiber cable extending from the remaining fiber cable receiving space is wired so as to extend along the surface plate until the cable passes through the opening of the surface plate while describing a slight arch, and in turn to extend along the backside of the surface plate while describing another slight arch until the cable reaches the optical connection on the board of the electronic circuit unit.

5,253,321

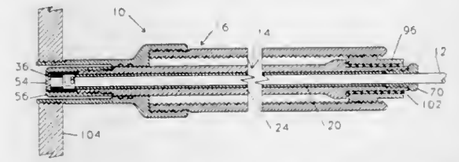
MEANS FOR INSERTING FIBER OPTIC PROBES INTO PRESSURIZED VESSELS

Stephen L. Long; David L. Gebert; Frank M. Rexach; Gregory A. Winslow, all of Houston, and Dale F. Brost, Sugarland, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed May 18, 1992, Ser. No. 884,820

Int. Cl.[5] G02B *6/44*

U.S. Cl. 385—138 **17 Claims**



1. A device for inserting a probe into a pressure vessel to adjustable depths in order to measure characteristics of fluid contained within said vessel, said device comprising:

an outer mounting assembly of generally cylindrical configuration having

a body sleeve with internal threads running substantially the entire length thereof and exterior threads on at least a first end for mounting said device on said pressure vessel;

an inner probe securing assembly received coaxially within said outer mounting assembly and movable axially relative thereto; and

adjusting nut means engaging in said internal threads of said body sleeve and bearing against said inner probe securing assembly whereby the inner probe is axially adjusted relative to the body sleeve.

5,253,322

OPTICAL FUNCTIONING GLASS AND FIBER AMPLIFIER

Masashi Onishi; Yoshiki Chigusa; Koji Nakazato; Minoru Watanabe, all of Yokohama; Yoshiaki Miyajima, and Tomoki Sugawa, both of Mito, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jun. 20, 1991, Ser. No. 716,801

Claims priority, application Japan, Jun. 20, 1990, 2-161785; Jun. 20, 1990, 2-161786; Jun. 26, 1990, 2-167408; Aug. 22, 1990, 2-220619

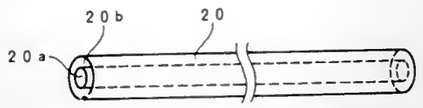
Int. Cl.[5] G02B *6/16*

U.S. Cl. 385—142 **10 Claims**

1. An optical functioning single glass doped with Nd^{+3} as an

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active ion and codoped with at least one rare earth ion selected from the group consisting of Pr^{3+}, Yb^{3+}, Sm^{3+} and Ho^{3+},



said at least one codoped rare earth ion functioning as an absorbent for light at and near 1 μm band.

5,253,323

METHOD OF MANUFACTURING A GRADED OPTICAL TRANSMISSION MEDIUM MADE OF SYNTHETIC RESIN

Yasuhiro Koike, Meguro, and Eisuke Nihei, Kawasaki, both of Japan, assignors to Yasuhiro Koike and Nippon Petrochemicals Company, Limited, Tokyo, Japan

PCT No. PCT/JP91/01092, § 371 Date Apr. 15, 1992, § 102(e) Date Apr. 15, 1992, PCT Pub. No. WO92/03750, PCT Pub. Date Mar. 5, 1992

PCT Filed Aug. 16, 1991, Ser. No. 847,031

Claims priority, application Japan, Aug. 16, 1990, 2-216359

Int. Cl.[5] G02B *6/18*

U.S. Cl. 385—143 **5 Claims**

1. A method of manufacturing a plastics-made graded index type optical transmission medium having a distribution of refractive index varying continuously in the direction of progress of polymerization comprising the steps of:

feeding at least two radically copolymerizable monomers into a reaction vessel whereby a liquid mixture is formed, said monomers separately polymerizable into homopolymers having refractive indexes which differ from each other by at least 0.005;

subjecting said monomers to radical polymerization initiated at an optional position in said reaction vessel whereby said monomers are polymerized through a gel condition into a polymer;

polymerizing said monomers wherein the ratio of the concentration of unreacted monomer in the gel to the concentration of unreacted monomer in the liquid reaction mixture differs from the corresponding ratios of the other monomers fed into the reaction vessel; and

lowering the monomeric concentration of the monomer having the highest ratio of unreacted monomer concentration in the gel to unreacted monomer concentration in the liquid mixture, in the direction of progress of polymerization.

5,253,324

CONICAL RAPID THERMAL PROCESSING APPARATUS

Jamie J. Wortman, Chapel Hill; Furman Y. Sorrell, Cary; John R. Hauser, Raleigh, and Mark J. Fordham, Durham, all of N.C., assignors to North Carolina State University, Raleigh, N.C.

Filed Sep. 29, 1992, Ser. No. 953,568

Int. Cl.[5] A21B *2/00;* **F26B** *3/30;* **F27B** *9/04, 9/06*

U.S. Cl. 392—416 **31 Claims**

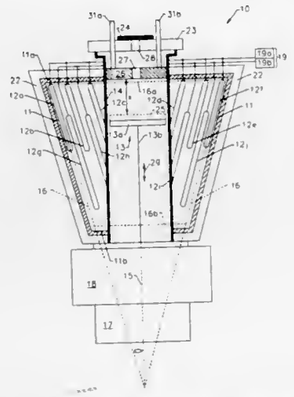
1. An apparatus for thermally processing a wafer comprising:

conical thermal radiation reflecting means;

radiant heating means within said conical thermal radiation reflecting means;

a cylindrical thermal processing chamber surrounding said wafer holding means, said cylindrical thermal processing chamber having an imaginary axis which is coincident with the imaginary axis of said conical thermal radiation reflecting means, and wherein said conical thermal radiation reflecting means and said radiant heating means are outside said thermal processing chamber; and

wafer holding means within said cylindrical thermal processing chamber, said wafer holding means comprising:



a wafer support extending transverse to the imaginary axis of said cylindrical thermal processing chamber, for supporting a wafer face transverse to the imaginary axis of said cylindrical thermal processing chamber; and

means for moving said wafer support along the imaginary axis of said thermal processing chamber.

5,253,325

DATA COMPRESSION WITH DYNAMICALLY COMPILED DICTIONARY

Alan D. Clark, Ipswich, England, assignor to British Telecommunications public limited company, London, England

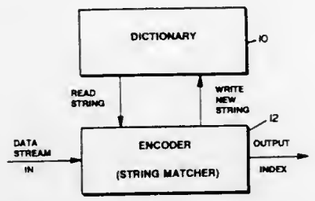
PCT No. PCT/GB89/01469, § 371 Date Jun. 25, 1991, § 102(e) Date Jun. 25, 1991, PCT Pub. No. WO90/06560, PCT Pub. Date Jun. 14, 1990

PCT Filed Dec. 8, 1989, Ser. No. 688,552

Claims priority, application United Kingdom, Dec. 9, 1988, 8828796

Int. Cl.[5] G10L *9/04*

U.S. Cl. 395—2 **5 Claims**



1. A data compression system comprising:

a dictionary arranged to store strings of characters with an index for each of said strings, and

means for matching strings of characters of a data stream with strings of characters stored in the dictionary and for outputting the index of a dictionary entry of a matched string when a following character of the data stream does not match with the stored strings,

said means for matching including means for determining, for a matched string having at least three characters, a sequence of characters from said at least three characters, said sequence including at least a first and a second of said at least three characters, but not including all of said at least three characters, to update the dictionary by extending an immediately- preceding string by said sequence.

5,253,326

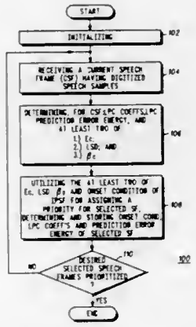
PRIORITIZATION METHOD AND DEVICE FOR SPEECH FRAMES CODED BY A LINEAR PREDICTIVE CODER

Mei Yong, Canton, Mass., assignor to Codex Corporation, Mansfield, Mass.

Filed Nov. 26, 1991, Ser. No. 797,881

Int. Cl.[5] G10L *9/14*

U.S. Cl. 395—2 **22 Claims**



1. A method for assigning a priority to each of selected speech frames generated by a linear predictive speech coder in a packet-switched communication network, comprising the steps of:

A) initializing a memory unit to desired settings for at least an onset condition for an immediately preceding speech frame (IPSF) and linear predictive coding (LPC) coefficients and prediction error energy for the IPSF;

B) receiving at least a first selected current speech frame (CSF) having digitized speech samples;

C) determining for the CSF: LPC coefficients, a prediction error energy, and at least two of: an energy (E_c); a log spectral distance (LSD) between the CSF and the CSF's IPSF; and a pitch predictor coefficient (β_c);

D) utilizing at least two of: E_c, LSD, and β_c, together with the onset condition of the IPSF for assigning a priority for the CSF and for determining an onset condition of the CSF, where an onset condition of the CSF is used for determining the priority of a next frame;

and updating the IPSF onset condition of the memory unit and the IPSF LPC coefficients and prediction error energy of the memory unit by the CSF onset condition and CSF LPC coefficients and prediction error energy; and

E) reiterating steps 1(B) through 1(D) until desired selected speech frames have been prioritized.

5,253,327

OPTIMIZATION APPARATUS

Takafumi Yoshihara, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 9, 1991, Ser. No. 756,467

Claims priority, application Japan, Sep. 28, 1990, 2-257106

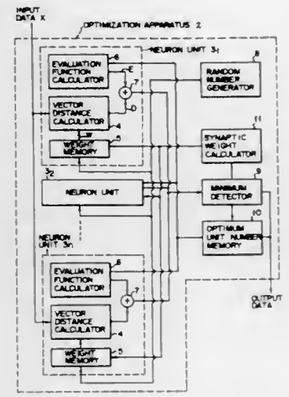
Int. Cl.[5] G06F *15/18, 15/16*

U.S. Cl. 395—22 **10 Claims**

1. An optimization apparatus having a layered neural network including an input layer formed of input units and supplied with input data and an output layer formed of output units connected to the individual input units with specified synaptic weights, comprising:

calculating means for calculating, for each output unit, a sum of a degree of similarity between the input data and the synaptic weight and a given evaluation function value for an optimization problem;

detecting means for detecting an optimum output unit on the basis of the sum of the degree of similarity and the given evaluation function value output from said calculating means; and



self-organization means for changing the synaptic weights of a predetermined group of the output units which are in the vicinity of the optimum output unit detected by said detecting means.

5,253,328

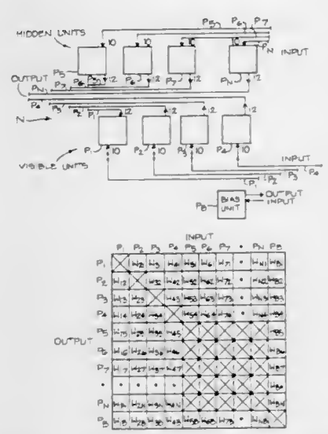
NEURAL-NETWORK CONTENT-ADDRESSABLE MEMORY

Eric J. Hartman, Austin, Tex., assignor to Microelectronics & Computer Technology Corp., Austin, Tex.

Filed Nov. 17, 1989, Ser. No. 439,124

Int. Cl.[5] G06F *15/46*

U.S. Cl. 395—24 **14 Claims**



7. A method of operating a neural-network content-addressable error-correcting memory system of the type used to provide an error-corrected output signal in response to an error-containing input signal, wherein said network comprises:

(a) a set of visible processors adapted to provide an output signal V_i in response to input signal conditions, each processor having an input terminal and an output terminal;

(b) a set of hidden processors adapted to provide an output signal V_i in response to input signal conditions, each pro-

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cessor having an input terminal and an output terminal; and

(c) a network interconnection matrix comprised of linear connection elements connecting the output and input terminals of selected processors to the input and output terminal of other selected processors, each linear connection element having an impedance value selected to facilitate storing of a prescribed set of error-free codewords, said interconnection matrix being constructed in accordance with the following network architecture, wherein the symbol W_{ij} represents the conductance of the linear connection elements connecting the output of processor j to the input of processor i;

(i) substantially all $W_{ii}=0$;

(ii) substantially all $W_{ij}=W_{ji}$;

(iii) substantially all visible processors are interconnected;

(iv) substantially all visible processors are interconnected to each hidden processor;

(v) substantially all hidden processor to hidden processor connections are absent;

said method of operating comprising the steps of:

(1) providing a learning algorithm to select the impedance value of the particular linear connection elements and to thereby store the bit patterns representative of the codewords, wherein the learning algorithm comprises the steps of:

(a) selecting an initial value for each connection element W_{ij},

(b) clamping the output signal values V_i of the visible processors to a particular bit pattern representing one of the codewords to be stored;

(c) providing an updated output signal value V_i for each of the unclamped processors according to the following equation:

$$V_i=\sigma(_j\Sigma W_{ij}V_j/T)$$

wherein the symbol σ represents the transfer function of the processor, the parameter T is an arbitrarily selected scalar, and V_j is the output of all processors to which processor i has connections;

(d) gradually reducing the value of parameter T and calculating an updated value for each unclamped V_i for each value of T;

(e) unclamping a portion of the visible processors and repeating steps (c) and (d) for each unclamped processor to arrive at a final output signal value V_i^f for each unclamped processor; and

(f) revising the values W_{ij} in accordance with the following equation:

$$\Delta W_{ij}=\eta(V_iV_j-V_i^fV_j^f)$$

wherein the value of parameter η is a constant, prescribed learning rate value; and

(2) providing a retrieval algorithm to facilitate retrieval of a prescribed stored codeword in response to an error-containing input condition.

5,253,329

NEURAL NETWORK FOR PROCESSING BOTH SPATIAL AND TEMPORAL DATA WITH TIME BASED BACK-PROPAGATION

James A. Villarreal, Friendswood, and Robert O. Shelton, Houston, both of Tex., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

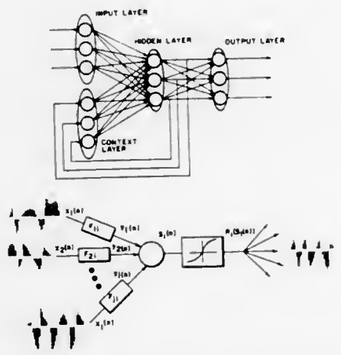
Filed Dec. 26, 1991, Ser. No. 813,556

Int. Cl.[5] **G06F** *15/18*

U.S. Cl. 395—24 **42 Claims**

1. A processing element (i) for use in a space-time neural network for processing both spacial and temporal data, wherein the neural network comprises a plurality of layers of said processing elements, the plurality of layers comprising a first layer and at least one additional layer, the network further comprising connections between processing elements of the first layer and processing elements of an additional layer: each said processing element adapted to receive a sequence of signal inputs X(n), X(n−1), X(n−2) . . . , each input X(n) comprising K signal components $x_1(n)$, $x_2(n)$, . . . $x_f(n)$, . . . $x_k(n)$, each said processing element comprising, in combination:

(a) a plurality K of adaptable filters (F_{1i}, F_{2i}, . . . F_{ji}, . . . F_{ki}) each filter F_{ji} having an input for receiving a respective component $x_f(n)$, $x_f(n-1)$, $x_f(n-2)$, . . . , of said sequence of inputs, where $x_f(n)$ is the most current input component, and providing a filter output $y_f(n)$ in response to the input $x_f(n)$ which is given by:



$$y_f(n)=f(a_{mj}Y_f(n-m),\ b_{kj}X_f(n-k)),$$

where a_{mj} and b_{kj} are coefficients of the filter F_{ji} and f denotes the operation of the filter;

(b) a junction, coupled to each of said adaptive filters, providing a non-linear output $p_f(S_f(n))$ in response to the filter outputs $y_f(n)$ which is given by:

$$p_f(S_f(n))=f(y_f(n)),$$

where $S_f(n)$ is the sum of the filter outputs,

whereby said junction presents a sequence of output signals, $p_f(S_f(n))$, $p_f(S_f(n-1))$, $p_f(S_f(n-2))$.

5,253,330

NETWORK ARCHITECTURE FOR THE PROGRAMMABLE EMULATION OF ARTIFICIAL NEURAL NETWORKS HAVING DIGITAL OPERATION

Ulrich Ramacher, Munich; Juergen Pandel, Feldkirchen-Westerham, and Karl Knauer, Grafing, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 3, 1989, Ser. No. 374,742

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1988, 3822758

Int. Cl.[5] **G06F** *15/18*

U.S. Cl. 395—27 **2 Claims**

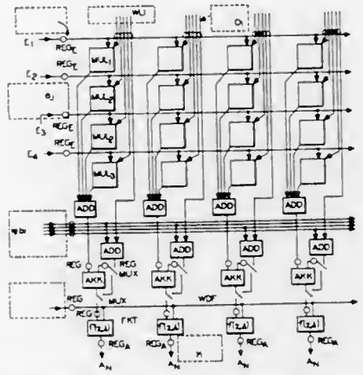
1. A network architecture for programmable emulation of artificial neural networks (ANN) having digital operation, characterized by

a plurality L of neuron units of an identical structure, each of said units being equipped with m neurons, said neuron units having neuron inputs (E) which are connected to output lines (E_N) branching via individual output registers (REG_E),

said registers having outputs (A) which are selectively switchable by network outputs (A_N) via individual multiplexers (MUX) and individual output registers (REG_A), and

a plurality of individual auxiliary inputs via which signals can be supplied that represent weighting values (W) for weighting said neuron inputs;

and further characterized in that the m mutually identical neurons each comprise four inputs to each of which a respective digital multiplier (MUL) is allocated, said multipliers having plural inputs, one multiplier input of said plural inputs being connected to the said neuron inputs and another multiplier input thereof being connected to one of the individual auxiliary inputs; each said multiplier having a result output, the result outputs of the multipliers (MUL) are each respectively connected to an individual input of a digital adder (ADD) allocated to the appertaining neuron; the result output of the adder (ADD) is connected via a register (REG) to a first input of a digital accumulator having a result output, the result output of the accumulator (AKK) is connected to a signal input of a function element (FKT) individually allocated to the appertaining neuron, being connected thereto via a multiplier (MUX) individually allocated to the appertaining neuron and via a further register (REG), the signal output of said function element (FKT) being connected via a further register (REG) to the appertaining network output (A_N); a second input of the accumulator (AKK) is connected via a further register (REG) to a further output of the multiplexer (MUX); and a selection line for the selection of a discriminator function (WDF) is connected to a selection input of each of the function elements (FKT), being connected thereto via a register (REG);



and further characterized in that the nonmultiplied or nonbranching inputs are provided for the neurons, and including four neurons, whereby a first of these inputs is connected to a first adder input of a further adder (ADD) that is allocated to a first neuron, a second of these inputs is connected to a first adder input of a second adder (ADD) that is allocated to a second neuron, a third of these inputs that is allocated to a first adder input of a second adder (ADD) of a third neuron and a fourth of these inputs is allocated to a first adder input of a second adder (ADD) that is allocated to a fourth neuron, and whereby every neuron has an individual auxiliary input allocated to it to which a signal can be supplied that represents a weighting value and that is connected via a register to a second adder input of the second adder (ADD); and a further multiplexer (MUX) is provided for each of the individual accumulators (AKK) to receive the output therefrom, the one output of said further multiplexer being connected to receive the output of the second adder (ADD) and the output of said further multiplexer being connected to the one output of the first multiplexer (MUX) for the formation of an accumulator path.

5,253,331

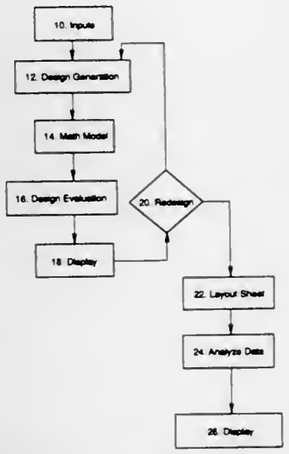
EXPERT SYSTEM FOR STATISTICAL DESIGN OF EXPERIMENTS

Thomas J. Lorenzen, Rochester Hills; William S. Spangler; William T. Corpus, both of Warren, and Lynn T. Truss, Royal Oak, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 3, 1991, Ser. No. 725,123

Int. Cl.[5] **G06F** *15/18*

U.S. Cl. 395—50 **4 Claims**



1. A computer implemented method of designing a robust experiment to be carried out by a user, the method comprising the steps of:

a. inputting information to the computer, the information including:

i. a response variable,

ii. factors to be varied in the experiment,

iii. factor properties including indications representing which of the factors are noise factors and which of the factors are control factors;

b. generating an experiment design in accordance with the information input to the computer in step a.;

c. constructing two mathematical models, the first mathematical model containing terms representing hypothetical effects of all of the factors and the factor interactions on the response variable, the second mathematical model containing terms representing hypothetical effects of the control factors and control factor interactions on the response variable;

d. evaluating the experiment design generated in step b. by utilizing the information input in step a. and the two mathematical models constructed in step c. to compute values of statistical properties for terms in each of the two mathematical models;

e. communicating the values computed in step d. to the user;

f. generating a redesigned experiment by performing steps b. through e. using user changes to the information originally input in step a., until the user is satisfied with the values communicated in step e.;

g. creating a layout sheet specifying individual trials of the redesigned experiment to be performed by the user;

h. performing an analysis of experimental data obtained by the user performing the trials of the redesigned experiment specified by the layout sheet created in step g.; and

i. communicating a summary of the analysis performed in step h. to the user.

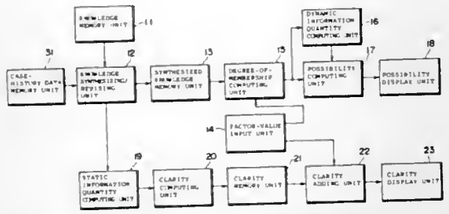
VOL 1155 ISS 2 OCT 12 1993 UMI

5,253,332

APPROXIMATE REASONING APPARATUS WITH KNOWLEDGE SYNTHESIZING/REVISING AND CLARITY COMPUTING

Hiroshi Kumamoto, Kyoto, Japan, assignor to Omron Corporation, Kyoto, Japan

Filed Jun. 24, 1991, Ser. No. 719,995
Claims priority, application Japan, Jul. 27, 1990, 2-197763
Int. Cl.[5] G06F *15/18*
U.S. Cl. 395—51 11 Claims



1. An approximate reasoning apparatus comprising:
a knowledge memory storing knowledge which represents relationships between factors and conclusions already established;
a synthesized knowledge memory storing knowledge synthesized with regard to the same factors and conclusions;
a case-history data memory storing data representing relationships between factors and conclusions which actually have occurred;
a knowledge synthesizing/revising unit which accesses said knowledge memory, said synthesized knowledge memory and said case history data memory, and which synthesizes knowledge that concerns the same factors and conclusions as the knowledge stored in said knowledge memory, and which by using the data stored in said case-history data memory, re-synthesizes the synthesized knowledge stored in said synthesized knowledge memory, wherein the knowledge re-synthesized by said knowledge synthesizing/revising unit is used to update the synthesized knowledge stored in said synthesized knowledge memory; and
approximate reasoning means for accessing said synthesized knowledge memory and computing the possibility of a conclusion by applying factor-input data to the synthesized knowledge stored in said synthesized knowledge memory.

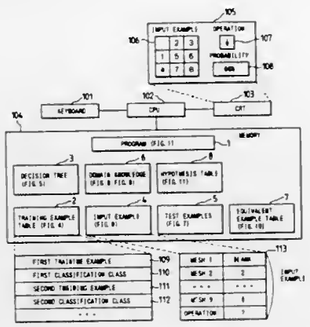
5,253,333

ATTRIBUTE VALUE PREDICTING METHOD AND SYSTEM IN THE LEARNING SYSTEM

Masabiro Abe, Sayama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 24, 1990, Ser. No. 469,241
Claims priority, application Japan, Jan. 25, 1989, 1-13904
Int. Cl.[5] G06F *15/18, 15/46*
U.S. Cl. 395—62 6 Claims

1. A system of predicting attribute value in a learning system, comprising:
first memory means for storing a plural number of training examples, each of which contains at least one attribute, an attribute value corresponding to said attribute, and a classification class assigned to each training example;
second memory means for storing domain knowledge for generating second examples, each having a classification class, from first examples, each having a classification class; and
processing means including;
means for generating test examples being supplemented with candidates of a plural number of attribute values from inputted examples inputted by input/output means, said examples having at least a lacked attribute value, said candidates being expected by consulting said domain knowledge stored in said second memory means,
means for generating equivalent examples each having a pair of expected value and a classification class, by consulting said domain knowledge stored in said second memory



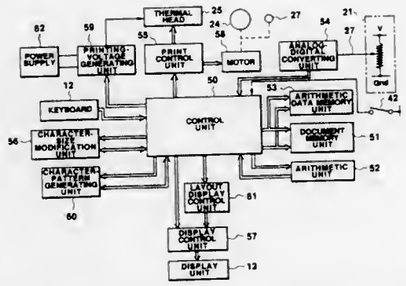
means, said equivalent examples being expected to be equivalent to said example of the lacked attribute value, and
means for predicting the lacked attribute value of the above test example by use of the expected value and the classification class of the above equivalent example and said training examples stores in said first memory means.

5,253,334

TAPE PRINTER

Satoshi Kimura, Ome, and Nobuyuki Mochinaga, Hachiouji, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 820,574, Jan. 14, 1992. This application Feb. 5, 1993, Ser. No. 14,097
Claims priority, application Japan, Jan. 31, 1991, 3-029080; Aug. 30, 1991, 3-069501[U]; Aug. 30, 1991, 3-220189
Int. Cl.[5] G06K *15/00*
U.S. Cl. 395—102 15 Claims



1. A tape printer on which at least one of a plurality of tapes each having a different tape-width is selectively installed, comprising:
a printer housing;
data input means for inputting character data representative of characters to be printed, said character data including printing-width data for relating the characters proportionally in size to a tape width, but not including any specific printing size;
a tape member adapted to be installed on said printer housing and having a tape width selected from among the plurality of tapes each having a different tape-width;

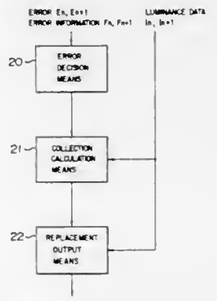
printing means provided in said printer housing, for printing on said tape member the characters represented by said character data input from said data input means;
tape-width detecting means provided in said printer housing, for detecting the selected tape-width of said tape member installed on said housing; and
printing control means for controlling the printing size of the characters to be printed by said printing means based on the selected tape-width detected by said tape-width detecting means combined with the printing-width data of said character data, so that said printing means prints said characters in an area corresponding to the width of said tape member installed on said printer housing.

5,253,335

HIDDEN-SURFACE PROCESSING DEVICE, ANTI-ALIASING METHOD AND THREE-DIMENSIONAL GRAPHICS PROCESSING APPARATUS

Yoshiyuki Mochizuki, Hirakata, and Takeru Ohgi, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 20, 1990, Ser. No. 569,443
Claims priority, application Japan, Aug. 25, 1989, 1-218797
Int. Cl.[5] G06F *15/72*
U.S. Cl. 395—122 6 Claims



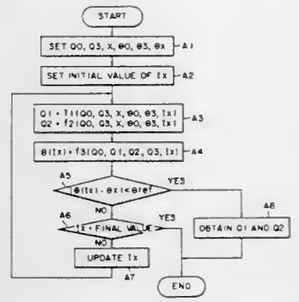
3. In a graphics display device for displaying a three-dimensional polyhedral object, comprising at least one polygon having boundaries, on a two-dimensional screen, a three-dimensional graphics processing apparatus comprising:
a hidden-surface processing device including means for obtaining information relating to a plurality of pixels in a line segment by intersecting a polygon of said object with a scan line plane for each scan line, the information including elements of a position of a head pixel of said plurality of pixels, a number of successive ones of said plurality of pixels, a depth corresponding to the head pixel, a depth displacement for each of said successive ones of said plurality of pixels relative to said head pixel, a luminance displacement for each of said successive ones of said plurality of pixels relative to said head pixel, error data corresponding to the head pixel and error data corresponding to an end pixel of said plurality of pixels, and means for performing hidden-surface processing and smooth shading on said plane segment to obtain pixel data for each pixel n of said plurality of pixels, said pixel data comprising a luminance value In, a coordinate round-off error En, and an item of error information Fn, wherein said error information of item Fn indicates whether said error En is due to a right boundary of a line segment, a left boundary of a line segment or an area other than boundaries;
a first correction calculation device for receiving said pixel data for two successive pixels n, n+1 of said plurality of pixels and for identifying a combination of items of error information Fn, Fn+1 corresponding to errors Fn, Fn+1 and for selecting (i) En if the combination is that of a right boundary followed by an area other than boundaries or that of a right boundary followed by a right boundary, (ii) En+1 if the combination is that of an area other than boundaries followed by a left boundary, or that of a left boundary followed by a left boundary, and (iii) a not smaller one of En and En+1 if the combination is that of a right boundary followed by a left boundary;
a second correction calculation device for calculating, on the basis of the error En or En+1 selected by said first correction calculation device for said two successive pixels, a calculation result $I=\{(In+In+1)+Ex(In-In+1)\}/2$, where x=n or n+1 and where In and In+1 (n:integer≧0) are the luminance data of said two successive pixels n,n+1; and
a replacement output device for receiving the combination identified by said first correction calculation device, the calculation result I, and the luminance data In, In+1, and outputting (i) the luminance data In replaced by the calculation result I if the combination of Fn and Fn+1 is that of right boundary followed by an area other than boundaries, or that of a right boundary followed by a right boundary, (ii) the luminance data In+1 replaced by I if the combination is that of an area other than boundaries followed by a left boundary, or that of a left boundary followed by a left boundary, (iii) both luminance data In and In+1 replaced by a left boundary, and (iv) the luminance data In and In+1 without being replaced by I in other cases.

5,253,336

METHOD FOR FITTING THIRD-DEGREE BEZIER CURVES TO SERIES OF DATA POINTS

Keiichi Yamada, Oome, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 20, 1990, Ser. No. 511,727
Claims priority, application Japan, Apr. 20, 1989, 1-100536
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—142 6 Claims



1. A method of generating and displaying a curved image, comprising the steps of:
receiving a curve segment of an image in the form of a series of data points;
fitting a third-degree Bezier curve to said series of data points; and
thereby generating a curved image in the form of said third-degree Benzier curve;
wherein said third-degree Bezier curve fitting step includes the steps of:
setting parameters representing said curve segment, one parameter being a passing point, said passing point being a data point in the middle of said series of data points;
calculating two control parameters, for representing said third-degree Bezier curve, from said set parameters;
calculating a gradient of said third-degree Bezier curve from said set parameters and said calculated two control parameters;

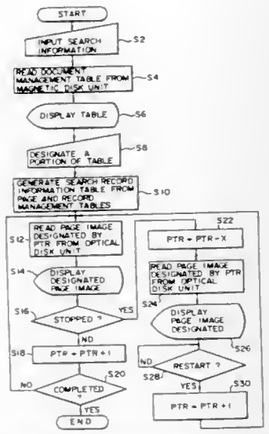
VOL 1155 ISS 2 OCT 12 1993 UMI

setting a gradient of said passing point;
comparing said calculated gradient with said set gradient of said passing point;
thereby determining whether or not said two control parameters represent said third-degree Bezier curve for said data points; and
fitting said third-degree Bezier curve to said data points when it is determined that said two control parameters represent said third-degree Bezier curve.

5,253,337
METHOD AND APPARATUS FOR SEARCHING IMAGE INFORMATION

Kenji Hirose, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 24, 1989, Ser. No. 425,965
Claims priority, application Japan, Oct. 31, 1988, 63-275589
Int. Cl.[5] G06F *15/106*
U.S. Cl. 395—161 **23 Claims**

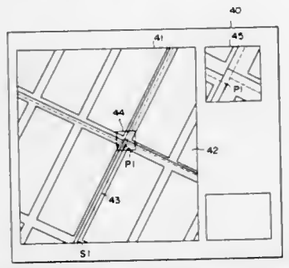


1. An image information searching apparatus, comprising:
optical disk means for optically storing image information;
management storage means for storing management data corresponding to the image information, including a plurality of corresponding document numbers, page numbers, record numbers, and logical addresses;
means for generating, from the management data, a search record information table including sorted management data that is ordered in accordance with the corresponding logical addresses;
means for inputting a desired search record;
means for retrieving, using the search record information table, a logical address corresponding to the desired search record;
readout means for sequentially reading, using the search record information table and beginning at the logical address corresponding to the desired search record, current image information from said optical disk means;
display means for continuously displaying a screen image including the current image information that is sequentially read out by the readout means; and
means for stopping the display of the current image information, and for causing the display means to display a previously read image information, wherein the previously read image information was read by the readout means and displayed by the display means a predetermined number of screen images before screen image corresponding to the current image information.

5,253,338
SEMI-AUTOMATIC IMAGE TRACING METHOD

Yutaka Tanaka, Yokohama, Japan, assignor to Hitachi Software Engineering Co., Ltd., Yokohama, Japan

Filed Nov. 7, 1990, Ser. No. 610,153
Claims priority, application Japan, Nov. 8, 1989, 1-291750
Int. Cl.[5] G06F *15/42*
U.S. Cl. 395—161 **6 Claims**



1. A semi-automatic image tracing method for a graphics processing device having an image data storing unit for storing image data, a graphic data storing unit for storing graphic data, a display unit for displaying the image data and the graphic data, a trace designation inputting unit for inputting a designation for tracing, and a semi-automatic image trace processing unit disposed so as to trace image points of the image data according to the designation for tracing, further comprising a parameter table for providing control data on a condition for tracing the image points of the image data and for providing control data on correction processing by the result of tracing and further comprising a branch-point neighborhood display processing unit for enlarging and displaying the image in the neighborhood of a branch point for tracing; which comprises:
tracing the image points of the image data according to the control data of the parameter table in response to the designation for tracing;
interrupting trace processing at each branch point in the tracing path at which a designation affecting continued tracing by the operator is required;
enlarging a display of the image data in the neighborhood of said each branch point;
waiting for the designation affecting continued tracing to be input by the operator following the interrupting; and
continuing the trace processing in response to the designation affecting continued tracing input by the operator.

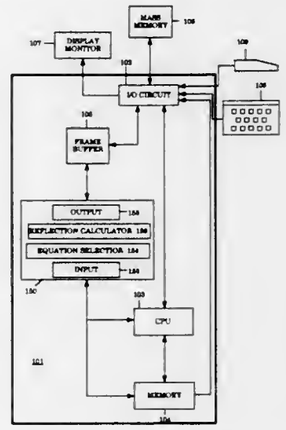
5,253,339
METHOD AND APPARATUS FOR ADAPTIVE PHONG SHADING

Stuart Wells, Sunnyvale; James Van Loo, Los Altos; Jack R. McKeown, Cupertino, and Mukund Bhakta, San Jose, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jul. 26, 1990, Ser. No. 560,869
Int. Cl.[5] G06F *15/72*
U.S. Cl. 395—126 **73 Claims**

1. An apparatus for generating shaded images of a graphic image for display on a graphics display device, said graphics display device comprising a matrix of pixels, said graphic image shaded according to a light source, said shaded image generated being of a quality specified by a user, said apparatus comprising a central processing unit (CPU), memory, a frame buffer connected to the graphics display device, said shaded image defined by a plurality of pixel data, said pixel data being stored in the frame buffer, each pixel data comprising a pixel location on the graphics display device and a pixel color, said shaded image being displayed on the graphics display device according to the pixel data stored in the frame buffer, said apparatus further comprising:

a) adaptive shading means coupled to the CPU and the frame buffer, said adaptive shading means comprising;
1) input means coupled to said CPU to receive a plurality of polygons from said CPU which define the graphic image, each of said polygons having a plurality of vertices, each of said vertices having a location, each of said polygons being defined by the location of the polygon's vertices and a normal vector at each vertex, said normal vector at each vertex being a normal vector to a surface of the polygon at the vertex;
2) selection means for selecting an ordered reflection equation from a set of at least three ordered reflection equations, said ordered reflection equation to be employed to determine a reflection across each polygon, wherein an ordered reflection equation of a highest order generates the reflection of a highest quality across the polygon, said selection means comprising;
i) variation determining means for determining an amount of variation of a predetermined graphic criteria in said polygons and;
ii) comparison means for comparing the determined amount of variation to a graphic criteria threshold value indicative of a large amount of variation, if the amount of variation exceeds the threshold value, a

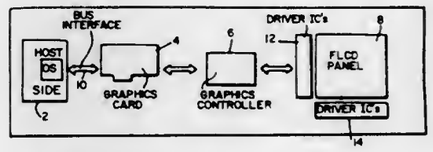


control means selects a predetermined high order reflection equation;
3) reflection determination means for determining a reflection across the polygon, said reflection determination means receiving the ordered reflection equation determined by the selection means and employing the ordered reflection equation to determined the reflection across the polygon and generate a plurality of modified pixel data representative of a shaded polygon image;
4) output means connected to the frame buffer to output the plurality of modified pixel data representative of the shaded polygon to the frame buffer; and
b) display control means connected to the frame buffer and the graphics display device to read the plurality of modified pixel data stored in the frame buffer and enable corresponding pixels on the graphics display at a color specified by the plurality of modified pixel data to generate the shaded polygon image on the display;
whereby the apparatus selects the order of the reflection equation for each polygon of the graphic image according to graphic criteria variation and a use of costly, time consuming higher order reflection equations is minimized and higher order equations are used only when measurements indicate that a variation of measurements across a polygon is great enough to warrant use of a higher order equation.

5,253,340
DATA PROCESSING APPARATUS HAVING A GRAPHICS DEVICE WITH PRIORITY SCHEDULING OF DRAWING REQUESTS

Hiroshi Inoue, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Shimomaruko, Japan

Continuation of Ser. No. 468,605, Jan. 19, 1990. This application Feb. 18, 1992, Ser. No. 836,518
Int. Cl.[5] G06F *3/14*
U.S. Cl. 395—163 **13 Claims**

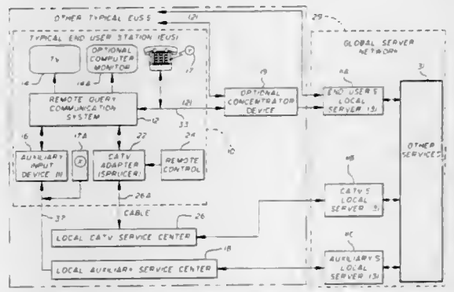


1. A data processing apparatus comprising:
a host processor including multitasking means for executing a plurality of processes in a time sharing manner,
scheduling means for scheduling drawing requests generated in parallel from the plurality of processes and forming the drawing requests into a single sequence of drawing commands, said multitasking means and said scheduling means being connected to interact logically, and
a graphics device for controlling a display device to draw a picture in accordance with a predetermined unit of drawing commands transferred from the single sequence in said scheduling means,
wherein said scheduling means monitors an execution status of the predetermined unit of drawing commands at the graphics device, and reserves the scheduling of the drawing request from each of the processes until the execution status advances to a predetermined stage, and wherein said drawing requests from the plurality of processes include a drawing request related to a hardware event and said scheduling means schedules the hardware event-related drawing request with priority over other requests.

5,253,341
REMOTE QUERY COMMUNICATION SYSTEM

Anthony I. Rozmanith, 118 W. Riding Dr., and Neil Berinson, P.O. Box 595, both of, Cherry Hill, N.J. 08003

Continuation-in-part of Ser. No. 665,528, Mar. 4, 1991, abandoned. This application Apr. 11, 1991, Ser. No. 683,972
Int. Cl.[5] G06F *13/14*
U.S. Cl. 395—200 **16 Claims**



1. A method for downloading responsive data from a remote server comprising the following steps:
identifying a query via a data input means and inputting said query to remote query and data retrieval means;
transmitting said query from said remote query and data

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retrieval means to a remote host via an input/output means;

receiving a compressed or non-compressed response to said query at said remote query and data retrieval system from said remote host via said input/output means; and

displaying a presentation corresponding to said query response on output means.

5,253,342

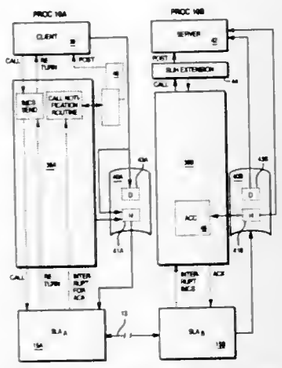
INTERMACHINE COMMUNICATION SERVICES

Marion L. Blount, Mahopac; Stephen P. Morgan, Hartsdale, both of N.Y.; Katalin A. V. Rader, Austin, Tex.; Robert K. Rader, Austin, Tex., and Amal A. Shaheen-Gouda, Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 298,398, Jan. 18, 1989, abandoned. This application Jun. 18, 1992, Ser. No. 900,545

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—200 **26 Claims**



1. A system for determining sufficiency of buffer space when communicating between a plurality of processors, including a receiving processor and a sending processor, connected in a network, comprising:

means for sending a message, intended for a receiving component of said receiving processor, from a component of said sending processor to said receiving processor;

means for receiving said message, by said receiving processor, into a preprocess buffer of said receiving processor;

means for dynamically determining by a preprocess component of the receiving processor, upon receipt or said message at aid preprocess buffer in the receiving processor, whether said receiving component has buffer space available for said message; and

means for acknowledging, by the receiving processor to the sending processor that the message was received by the receiving processor, said means for acknowledging further comprising

means for notifying the sending processor of the determination made by the means for dynamically determining.

5,253,343

METHOD FOR THE MANAGEMENT OF A MEMORY OF MESSAGES IN A STATION OF A DATA TRANSMISSION NETWORK, AND STATION DESIGNED FOR THE IMPLEMENTATION OF THE METHOD

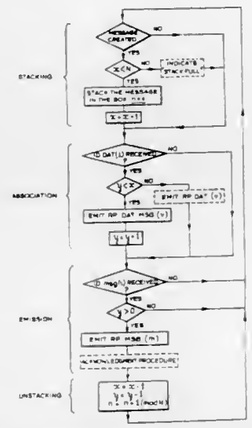
Jean-Marie Grave, Mareil Marly, France, assignor to La Telemecanique Electric, France

Continuation of Ser. No. 395,612, Aug. 18, 1989. This application Jul. 15, 1992, Ser. No. 914,020

Claims priority, application France, Aug. 18, 1988, 88 10992

Int. Cl.[5] G06F *13/14, 13/362*

U.S. Cl. 395—200 **6 Claims**



1. In a data transmission network comprising a plurality of stations, a bus connecting the stations to each other and a separate bus arbitrator governing access to the bus by each station, the network being of a type wherein the transmission of at least one type of elementary information from one station to another through the bus requires that said one station first transmits to the arbitrator, through the bus, a corresponding request, the arbitrator storing in an arbitrator memory all the requests successively received in the order of their reception, the arbitrator subsequently transmitting through the bus, to said one station, a permission to transmit information for which a request has been stored by said arbitrator, and each station comprising a station memory including a plurality of locations for storing a plurality of said elementary information of said at least one type until they are transmitted, a method for the management of each station memory comprising in each station the following steps:

(a) storing in successive ones of said plurality of locations in said station memory successive ones of said elementary information to be transmitted, with their order being preserved, and each time one elementary information is stored in one location of said station memory, modifying by one unit a first index x indicative of the location of said elementary information in said station memory;

(b) each time one request has been transmitted to the arbitrator by said station, modifying by one unit a second index y indicating that one more elementary information stored in one location of said station memory has a request associated therewith;

(c) each time said station receives from the arbitrator a permission to transmit, transmitting one elementary information having a request associated therewith and then modifying said first and second indexes by one unit in a direction opposite to the direction of index modification in steps (a) and (b);

(d) the preservation of the order of the requests in said arbitrator memory and of the elementary information in said station memory locations, together with the modification of the indexes being sufficient to establish a correspondence between each request and each elementary information to be transmitted.

5,253,344

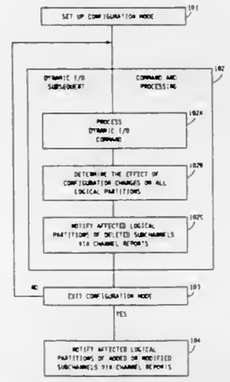
METHOD AND APPARATUS FOR DYNAMICALLY CHANGING THE CONFIGURATION OF A LOGICALLY PARTITIONED DATA PROCESSING SYSTEM

James E. Bostick, Poughkeepsie; Roger E. Hough, Highland; Suzanne M. John, Poughkeepsie; Jeffrey P. Kubala, Poughquag; Karen M. Noonan; Norman E. Shafa, both of Poughkeepsie, and Ira G. Siegel, New Paltz, all of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Sep. 5, 1991, Ser. No. 755,246

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—275 **12 Claims**



1. A method for performing a global function in a logically partitioned data processing system managed by a hypervisor, said method comprising the steps of:

a) establishing a first system in a first partition and a second system in a second partition;

b) intercepting a request by said first system in said first partition for said global function, said global function characterized by potential affecting said second system in said second partition;

c) verifying that the first system in said first partition is authorized to initiate said global function;

d) initiating execution of said global function by a global function execution means, without first determining whether said global function affects said second partition; and

e) determining, after completion of said global function, an impact of said global function on said second partition, and notifying said second system of the impact.

5,253,345

POINT OF SALE REGISTER SYSTEM

Anthony J. Fernandes, Villa Park, and William P. Smead, Palatine, both of Ill., assignors to Sears, Roebuck & Co., Hoffman Estates, Ill.

Continuation of Ser. No. 711,577, May 31, 1991, abandoned, which is a continuation of Ser. No. 216,131, Jul. 7, 1988, abandoned. This application Jul. 31, 1992, Ser. No. 924,360

Int. Cl.[5] G07G *1/12;* **G06F** *15/00, 13/00*

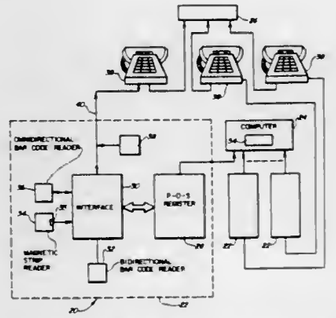
U.S. Cl. 395—275 **18 Claims**

1. In a point of sale terminal for implementing customer transactions and including a point of sale register having a processor with a single input/output (I/O) port, an interface circuit for facilitating transfer of customer transaction data messages between said point of sale register and a peripheral device, said data messages comprising a plurality of sequential characters of data related to a customer transaction, the interface circuit comprising:

electronic circuit memory means for providing temporary storage of characters of data to be transferred between said register and said peripheral device;

first data transferring means operatively coupled between said register single I/O port and said electronic circuit memory means for transferring characters of data between said register and said electronic circuit memory means;

second data transferring means operatively coupled between said electronic circuit memory mans and said peripheral device for transferring characters of data between said electronic circuit memory means and said peripheral device;



message determining mans for determining if a complete customer transaction data message has been received by said electronic circuit memory means; and

a programmed processing circuit including a programmed microprocessor operating a control means operatively coupled to said first and second data transferring means and said message determining means for controlling said first and said second data transferring means to begin transferring characters of data for a selected customer transaction data message from said electronic circuit memory means to one of said register or peripheral device virtually immediately after said message determining means determines that a complete data message has been received from the other of said register or peripheral device.

5,253,346

METHOD AND APPARATUS FOR DATA TRANSFER BETWEEN PROCESSOR ELEMENTS

Ichiro Okabayashi; Hiroshi Kadota, and Katsuyuki Kanekn, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 23, 1990, Ser. No. 556,076

Claims priority, application Japan, Jul. 21, 1989, 1-189698

Int. Cl.[5] G06F *13/38*

U.S. Cl. 395—325 **8 Claims**

1. A method of data transfer from a first to a second processing element over an external data bus, said first processing element including a processor, a memory and a data transfer controller, such data transfer controller connected to said external data bus, said processor, memory and data transfer controller mutually coupled to an internal data bus, the method comprising:

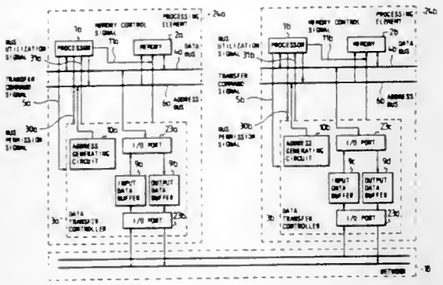
(a) supplying a transfer command signal from said processor to the data transfer controller, for designating that a datum is to be transferred from the first to the second processing element;

(b) concurrent with step (a), supplying the datum from one of either the processor and the memory to the internal

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data bus in response to a control signal from the processor; and

(c) initiating the transfer of the datum from said internal data



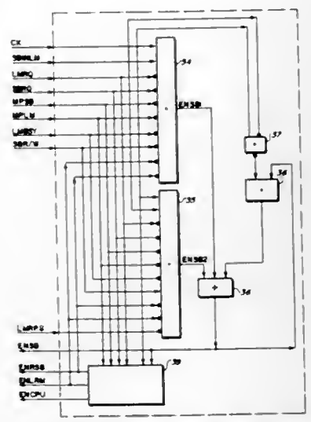
bus to said second processing element on said external data bus, under the control of the data transfer controller of said first processing element, in response to the transfer command signal.

5,253,347

CENTRALIZED ARBITRATION SYSTEM USING THE STATUS OF TARGET RESOURCES TO SELECTIVELY MASK REQUESTS FROM MASTER UNITS

Carlo Bagnoli, Milan; Guido Perrella, Pescara, and Tommaso Majo, Paderno Dugnano, all of Italy, assignors to Bull HN Information Systems Italia S.p.A.

Division of Ser. No. 424,378, Oct. 20, 1989, Pat. No. 5,182,808.
This application Aug. 13, 1992, Ser. No. 929,605
Claims priority, application Italy, Nov. 18, 1988, 22651 A/88
Int. Cl.[5] G06F *13/14, 13/36, 13/362*
U.S. Cl. 395—325 **4 Claims**



1. A data processing system comprising: a plurality of masters and a plurality of shared resources to which said masters have access through communication means:

an arbitration unit coupled to said masters and to said resources through said communication means; and

first means in each one of said masters for generating and inputting to said arbitration unit, through said communication means, access request signals indicating that said masters need to direct, through said communication means, a resource selected among said resources to perform an operation, said selected resource being indicated by at least one of said access request signals;

said arbitration unit receiving said access request signals and arbitrating among competing access request signals, concurrently received from a plurality of masters, according to predetermined priority criteria, said arbitration unit including:

prevention means responsive to a previous arbitration of said arbitration unit having granted access to one of said masters, through said communication means, for directing an indicated resource to perform an operation, said prevention means serving to prevent said arbitration unit from removing access by said master to said resource, through said communication means, when an operation is currently in execution;

masking means responsive to a signal generated by at least one of said resources and received through said communication means indicating that said resource is ready to perform an operation or not;

said masking means masking access request signals indicating a resource which is not ready to perform an operation; and

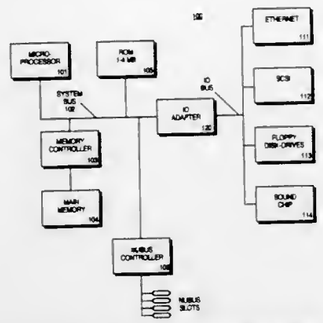
said arbitration unit generating an access grant signal granting access to one of said masters based on arbitration performed among unmasked competing access request signals received through said communication means.

5,253,348

METHOD OF ARBITRATION FOR BUSES OPERATING AT DIFFERENT SPEEDS

Albert M. Scalise, Campbell, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 635,257, Dec. 28, 1990, abandoned.
This application Sep. 25, 1992, Ser. No. 951,937
Int. Cl.[5] G06F *13/364*
U.S. Cl. 395—325 **11 Claims**



1. In a bus adapter coupling a first bus and a second bus, said first bus and said second bus operating at first and second speeds respectively, said first speed being faster than said second speed, wherein at least one data handling device is coupled to each of said buses, each of said at least one device having an assigned priority number and wherein each of a plurality of devices is capable of requesting ownership of said buses, a method by which an arbiter in said bus adapter runs an arbitration contest to resolve contention between each of said plurality of devices when more than one of said plurality of devices requests ownership of said buses at the same time, said method comprising the steps of:

(a) sampling the bus requests of each of said plurality of devices requesting ownership of said buses, and ignoring said one of said plurality of devices which currently has ownership of said buses, wherein said step of sampling includes the step of synchronizing said bus requests to the speed of said arbiter if the speed of said bus requests are not that of the speed of said arbiter;

(b) asserting a bus grant to a second of said plurality of devices on one of said buses based on said assigned priority number of said one of said second plurality of devices, wherein said step of asserting includes the step of synchronizing said bus grant to the speed of said one bus of said second of said plurality of devices if the speed of said one bus is not that of the speed of said arbiter; and

(c) waiting for said one of said plurality of devices to negate an acknowledge signal and for said second device receiving said bus grant to send said acknowledge signal to confirm ownership of said buses, such that said arbiter sees both said acknowledge signal negated by said one of said plurality of devices and then said acknowledge signal asserted by said second device to insure said second device assumes said buses before resampling;

(d) resampling each of said devices requesting ownership of said buses and

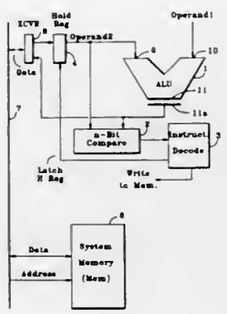
(e) asserting a second bus grant to another of said requesting devices, wherein said arbiter waits for each of said devices coupled to the other of said buses to see said acknowledge signal, such that said steps of sampling, asserting and waiting are repeated by said arbiter after each of said devices coupled to the other of said buses sees said acknowledge signal, wherein the arbiter runs another arbitration contest while said second device owns said buses, such that said another arbitration contest occurs while said second device owns said buses.

5,253,349

DECREASING PROCESSING TIME FOR TYPE 1 DYADIC INSTRUCTIONS

Stuart S. Kreitzer, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 30, 1991, Ser. No. 647,966
Int. Cl.[5] G06F *7/02, 9/30, 9/22, 9/34*
U.S. Cl. 395—375 **6 Claims**



1. In a data processing system including processing and memory subsystems, said processing subsystem containing instruction decode logic and operand processing logic, said operand processing logic performing operations defined by program instructions stored in said memory subsystem and interpreted by said instructions decode logic, said instructions including type 1 dyadic instructions designating performance of logical operations on pairs of first and second information operands stored in said memory subsystem, and writing into a destination address location in the memory subsystem of information representing results of respective said logical operations, wherein each said destination location corresponds to a memory location from which one of said operands of each said pair of operands is retrieved prior to a respective said logical operation, an enhanced processing subsystem comprising:

comparison circuit means for producing a comparison result indicating signal by comparing operand and result information handled during execution of each said type 1 dyadic instruction, said result indicating signal being set to states denoting equality and inequality when said compared operand and result are respectively equal and unequal, each said compared operand being retrieved from a memory location that is defined in the respective said type 1 dyadic instruction as a memory destination location into which the respectively compared result should be written; and

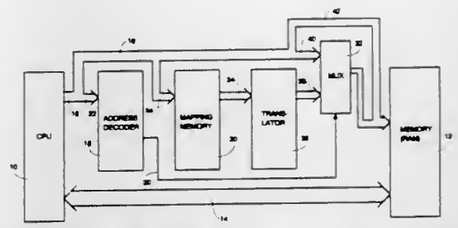
means responsive to each said comparison result indicating signal for conditioning said instruction decode logic to selectively skip a memory writing operation pre-defined by the respective type 1 dyadic instruction then being decoded when the respective comparison result indication is set to indicate equality, each said memory writing operation designating writing of a respectively compared said result at a respective said destination location.

5,253,350

METHOD OF COMBINING LOWER ORDER AND TRANSLATED UPPER ORDER BITS TO ADDRESS ROM WITHIN A RANGE RESERVED FOR OTHER DEVICES

Mark J. Foster, Stevensville; Babu Rajaram, St. Joseph, and Anthony M. Olson, Stevensville, all of Mich., assignors to Zenith Data Systems Corporation, Buffalo Grove, Ill.

Continuation of Ser. No. 114,781, Oct. 30, 1987, abandoned.
This application Jul. 19, 1990, Ser. No. 555,778
Int. Cl.[5] G06F *12/00, 12/02, 12/06*
U.S. Cl. 395—400 **7 Claims**



1. A method of accessing random access memory physically located within a range of addresses reserved for other devices, said method comprising the steps of:

generating an address within a predetermined address window, said address having upper order information and lower order information;

retrieving mapping information previously stored in a mapping memory, said mapping information corresponding to available random access memory within said range reserved for other devices;

translating said mapping information by converting the binary bits of said mapping information to a form in accordance with inverting said bits and then offsetting said inverted bits by a selected offset value, said translated mapping information comprising replacement upper order address information for addressing the physical location of said available random access memory within said reserved range;

combining said translated mapping information with said lower order information to form a combination address; and

addressing said random access memory with said combination address.

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5,253,351

MEMORY CONTROLLER WITH A CACHE MEMORY AND CONTROL METHOD OF CACHE MEMORY INCLUDING STEPS OF DETERMINING MEMORY ACCESS THRESHOLD VALUES

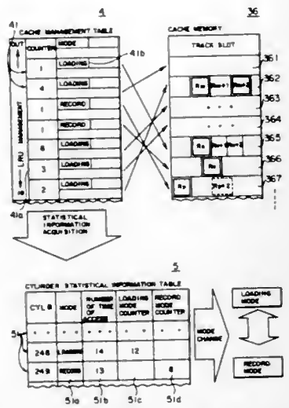
Akira Yamamoto, Ebina; Toshiaki Tsuboi, Kawasaki; Shigeo Honma, Odawara; Hiroyuki Kitajima, Yokohama; Akira Kurano, Odawara; Masafumi Nozawa, Odawara; Katsunori Nakamura, Odawara; Kosaku Kambayashi, Odawara; Toshio Nakano, Odawara, and Yoshiro Shiroyanagi, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo and Microcomputer Engineering Ltd., Kodaira, both of Japan

Filed Aug. 8, 1989, Ser. No. 390,832

Claims priority, application Japan, Aug. 11, 1988, 63-200877; Sep. 30, 1988, 63-244128; Nov. 11, 1988, 63-284992

Int. Cl.[5] G06F *12/02*

U.S. Cl. 395—425 **31 Claims**



1. A method for controlling a cache memory by a control unit having the cache memory, comprising the steps of:

controlling said cache memory in one of a plurality of cache control modes, including a loading mode and a record mode, which control modes determine a type of data transfer between said cache memory and a memory device connected to said control unit;

dividing a memory area of said memory device connected to the control unit into a plurality of memory areas; and

switching from one to another of the cache control modes for each memory area in accordance with an access status of each of the respective memory areas based on statistical information which represents a history of accesses to the memory areas in the memory device.

5,253,352

METHOD AND APPARATUS FOR PIPELINING CACHE ACCESSES USING ANTICIPATORY INITIATION OF CACHE READ

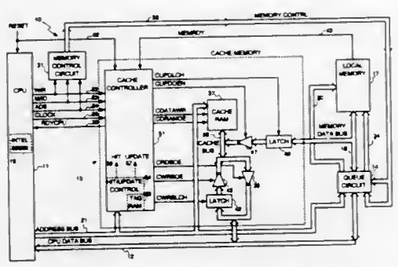
Anthony M. Olson, Stevensville, Mich., assignor to Zenith Data Systems Corporation, Buffalo Grove, Ill.

Filed Nov. 13, 1989, Ser. No. 435,880

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—425 **10 Claims**

1. An apparatus comprising: a high speed memory component having a bidirectional data line and having a control line which, when respectively set to first and second electrical states, causes said memory component to respectively output data onto and accept data from said bidirectional data line; first means for initiating writes of data to and reads of data from said memory component on said bidirectional data line, said first means producing by a first point in time a valid indication signal indicating that one of a data read and a data write is being initiated; and second means for setting said control line to said first electrical state at a second point in time prior to said first point in time and for maintaining said control line in



said first electrical state independently of said indication signal from said second point in time to said first point in time.

5,253,353

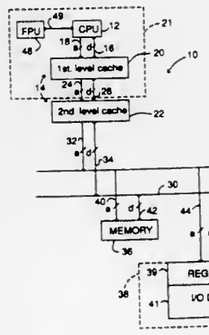
SYSTEM AND METHOD FOR EFFICIENTLY SUPPORTING ACCESS TO I/O DEVICES THROUGH LARGE DIRECT-MAPPED DATA CACHES

Jeffrey C. Mogul, Menlo Park, Calif., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jan. 2, 1990, Ser. No. 459,445

Int. Cl.[5] G06F *12/08, 13/00*

U.S. Cl. 395—425 **19 Claims**



1. A data processing system, which comprises:

a central processing unit;

a main memory;

at least one input/output device;

a direct-mapped cache connected between said central processing unit and said main memory and between said central processing unit and said at least one input/output device;

wherein said at least one input/output device having at least one register being addressed by a first address and a second address; both the first and second addresses being chosen to collide in said direct-mapped cache; said direct-mapped cache, said main memory and said at least one input/output device being addressed by means of addresses having a common format; and said central processing unit operates under control of an input/output program to address said at least one input/output device by alternately addressing the first and second addresses, with the first and second addresses chosen to collide in said direct-mapped cache.

5,253,354

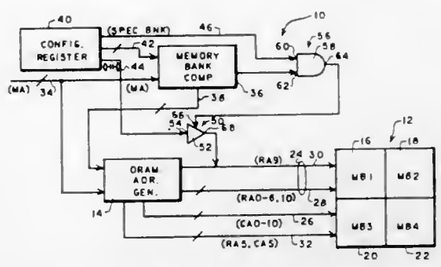
ROW ADDRESS GENERATOR FOR DEFECTIVE DRAMS INCLUDING AN UPPER AND LOWER MEMORY DEVICE

James R. MacDonald, and Romi Bose, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Aug. 31, 1990, Ser. No. 576,008

Int. Cl.[5] G06F *12/02*

U.S. Cl. 395—425 **18 Claims**



1. A row address generator for use in a memory system including a main address generator for generating row and column address for accessing a memory device in response to said memory system receiving a memory address, said row and column addresses each including N bits, and where in said memory device includes an upper half and a lower half, wherein one of said halves is operative and the other said half is inoperative, said row address generator being arranged to cause only said operative half of said memory device to be accessed; said row address generator comprising:

control means for generating a configuration control signal indicative of the half of said memory device which is operative; and

row address control means coupled to said control means and responsive to said configuration control signal, coupled to said memory device being accessed, and coupled to receive said memory address and responsive to said memory address for forcing the most-significant bit of said N-bit row address to a valid state in response to said control signal indicating said lower half of said memory device to be inoperative and for forcing said most-significant bit of said N-bit row address to an invalid state in response to said control signal indicating said upper half of said memory device to be inoperative to assure that only said operative half of said memory device is accessed.

5,253,355

APPARATUS AND METHOD FOR DEVELOPING WAIT STATES DURING ADDRESSING OPERATION BY USING UNUSED ADDRESS BITS

Thomas W. Grieff, Spring, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Nov. 13, 1990, Ser. No. 612,132

Int. Cl.[5] G06F *12/06*

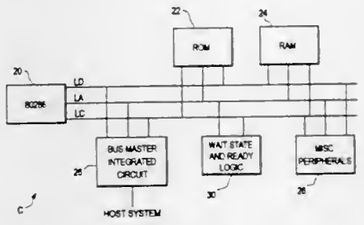
U.S. Cl. 395—425 **4 Claims**

1. A method for developing wait states during addressing operations to a series of devices attached to a bus, each of the devices requiring a plurality of bits defining an address value range for decoding purposes to identify the device, the method comprising:

providing an address value on the bus having a plurality of bits, the number of said bits being greater than the number of bits required to decode each of the devices;

decoding said provided address value to enable one of the attached devices using the plurality of bits required for decoding purposes to identify the attached device;

decoding a plurality of bits in said address value other than the plurality of bits required for decoding purposes to identify the attached device to indicate a desired number of wait states; and



providing wait states in the addressing operation based on the indicated desired number.

5,253,356

DIRECT MEMORY ACCESS (DMA) REQUEST CONTROLLING ARRANGEMENT INCLUDING SAMPLE AND HOLD CIRCUITS AND CAPABLE OF HANDLING IMMEDIATELY SUCCESSIVE DMA REQUESTS

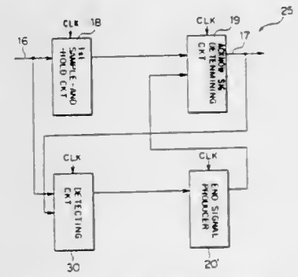
Makoto Yamadate, and Yoshihito Takahashi, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jan. 29, 1991, Ser. No. 647,100

Claims priority, application Japan, Jan. 29, 1990, 2-19793

Int. Cl.[5] G06F *13/28, 13/42*

U.S. Cl. 395—425 **1 Claim**



1. A direct memory access (DMA) request controlling arrangement in a DMA controller which controls direct transfer of data between a peripheral device and a memory in synchronism with a sequence of clock pulses of a common clock pulse period, said peripheral device comprising a DMA request signal producing means for producing a DMA request signal which has request and nonrequest levels representing generation and nongeneration of a DMA request, respectively, said DMA request controlling arrangement for controlling said DMA request signal to produce a DMA acknowledgment signal and to deliver said DMA acknowledgment signal to said peripheral device, said DMA acknowledgement signal having acknowledged and nonacknowledged levels representing generation and nongeneration of a DMA acknowledgement for said DMA request, respectively, said DMA request controlling arrangement comprising:

first sample-and-hold means supplied with said DMA request signal and with said sequence of clock pulses for sampling said DMA request signal into a first sampled signal in synchronism with said sequence of clock pulses and for holding said first sampled signal as a first held signal;

second sample-and-hold means connected to said first sample-and-hold means and supplied with said sequence of clock pulses for sampling said first held signal into a second sampled signal in synchronism with said sequence of clock pulses and for holding said second sampled signal as

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a second held signal which serves as said DMA acknowledgment signal;

detecting means supplied with said DMA acknowledgment signal from said second sample-and-hold means and with said DMA request signal for detecting a time instant at which said DMA request signal attains said nonrequest level after said DMA acknowledgment signal attains said acknowledged level, and for thereby producing a detection signal; and

end signal producing means supplied with said detection DMA signal from said detecting means and with said sequence of clock pulses for producing an end signal representative of an end of said direct transfer of data in response to one of said clock pulses that is generated immediately after reception of said detection signal;

said second sample-and-hold means also being connected to said end signal producing means to make said DMA acknowledgment signal have said nonacknowledged level in response to a different one of said clock pulses that is generated immediately after reception of said end signal.

5,253,357

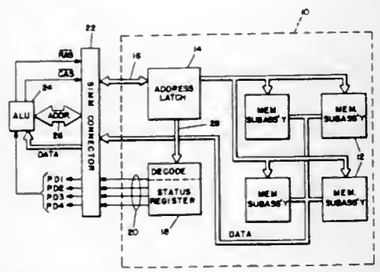
SYSTEM FOR DETERMINING PLUGGABLE MEMORY CHARACTERISTICS EMPLOYING A STATUS REGISTER TO PROVIDE INFORMATION IN RESPONSE TO A PRESET FIELD OF AN ADDRESS

Greg L. Allen; Jae-Hu Kim, and Lynn R. Watson, all of Boise, Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 13, 1991, Ser. No. 715,077

Int. Cl.[5] G06F *12/06*

U.S. Cl. 395—425 **6 Claims**



1. In a system wherein an arithmetic logic unit senses the presence of a pluggable memory module in a connector, said pluggable memory module, if present, adapted to provide a set of signals on a predetermined pin set of said connector indicating characteristics of said pluggable memory module, said pluggable memory module including means resident thereon for providing said set of signals, said means comprising:

latch means for storing an address for said memory module that is received from said arithmetic logic unit and causing data resident at said address in said pluggable memory module to be accessed for said arithmetic logic unit;

circuit means for transmitting a predetermined field of bits in said received stored address, which predetermined field identifies a storage field in a status means; and

said status means storing n fields of information concerning said pluggable memory module, and responsive to a said transmitted predetermined field of bits from said circuit means to provide a set of signals on said predetermined pin set indicating said information, said arithmetic logic unit ignoring said accessed data, but employing said set of signals on said predetermined pin set as indicators of characteristics of said pluggable memory module.

5,253,358

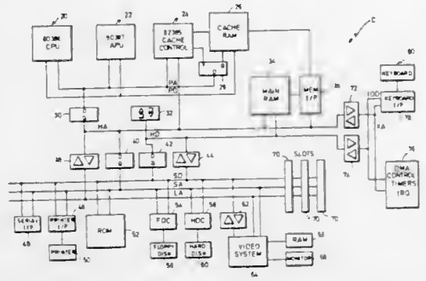
CACHE MEMORY EXPANSION AND TRANSPARENT INTERCONNECTION

Roy E. Thoma, III; Joseph P. Miller, both of Houston; Bill Skelton, Cypress; Mark Taylor, Houston, and Randy M. Bonella, Cypress, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Continuation of Ser. No. 354,349, May 19, 1989, abandoned. This application May 7, 1992, Ser. No. 883,049

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—500 **14 Claims**



1. A computer system, comprising:

a processor organized to transfer data n bits wide and providing m bits of addressing;

a first address bus having a plurality of address lines coupled to said processor to allow transfer of address values;

a first data bus coupled to said processor to allow transfer of data values;

cache memory coupled to said first address bus and said first data bus and organized as n bits wide;

a second address bus having a plurality of address lines to allow transfer of address values;

means coupled to said first and second address buses to allow transfer of address values from said first address bus to said second address bus;

a cache memory controller designed to determine whether a read miss has occurred wherein said cache memory controller utilizes an n bit line size and expects a single data transfer cycle n bits wide on a read miss line fill, wherein said cache memory controller is coupled to said cache memory, to said address lines of said first address bus to produce a 2n bit line size, and to said first address bus to second address bus transfer means, wherein said cache memory controller includes next address and ready to complete data transfer inputs, so that said cache memory controller controls the transfer of address values from said first address bus to said second address bus based on values of said next address and said ready to complete data transfer inputs to produce a single data transfer cycle on a read miss line fill;

main memory coupled to said second address bus and organized as 2n bits wide;

a second data bus, said second data bus being n bits wide;

means coupled to said main memory and said second data bus for providing a selected n bits of said 2n bits of said main memory to said second data bus; and

read miss transfer control means for controlling the transfer of said 2n bits of data from said main memory to said cache memory after said cache memory controller determines that a read miss has occurred and causing each of said selected n bits to be written to said cache memory, said read miss transfer control means being coupled to said cache memory controller, to said cache memory and to said means for providing selected n bits to said second data bus.

5,253,359

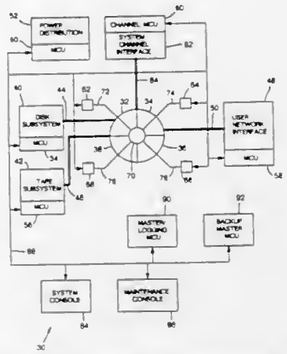
CONTROL AND MAINTENANCE SUBSYSTEM NETWORK FOR USE WITH A MULTIPROCESSOR COMPUTER SYSTEM

George A. Spix; Glen L. Collier; G. Joseph Throop, all of Eau Claire; David L. Clounch, Chippewa Falls; Cris J. Rhea, Eau Claire, and Douglas R. Beard, Eleva, all of Wis., assignors to Supercomputer Systems Limited Partnership, Eau Claire, Wis.

Filed Jun. 11, 1990, Ser. No. 535,901

Int. Cl.[5] G06F *11/00*

U.S. Cl. 395—575 **4 Claims**



1. A control and maintenance subsystem for use with a shared memory multiprocessor computer system, comprising:

two or more computer processors tightly coupled to form said shared memory multiprocessor computer system including at least a first and second maintenance and control unit, each maintenance and control unit operably connected to one or more of said computer processors;

one or more peripheral devices connected to said computer processors, and including a third maintenance and control unit;

a maintenance and control network, connected to said first, second and third maintenance and control units and separate from any connections among said two or more computer processors that form said multiprocessor computer system, each maintenance and control unit including;

a processor means for performing a plurality of maintenance and control operations on one or more devices connected to said maintenance and control unit;

for each of said one or more devices, a scan path logic means for reading and writing scan path chains of information to and from one or more ports accessing internal logic in said device; and

an interface means for electronically interfacing said processor means with said scan path logic means for said one or more devices connected to said maintenance and control unit and with said scan path logic means for one or more devices connected to another of said maintenance and control units, such that the scan path logic means for each device is connected to at least two separate maintenance and control units;

a single maintenance console means for interfacing with an operator, wherein said first, second and third maintenance control units and said maintenance console means are all connected to said maintenance and control network to allow communication of maintenance and control information among said first, second and third maintenance control units and said maintenance console means,

wherein said internal logic in one or more of said devices is divided into multiple maintenance partitions, each maintenance partition being provided with a clock control circuit for controlling operation of a clock signal for said internal logic of said maintenance partition which is independent from said clock control circuit in any other of said maintenance partitions, such that said processor means can control the operation of said clock signal in each of said maintenance partitions independently from the operation of said clock signal in any other of said maintenance partitions.

5,253,360

FACSIMILE DEVICE HAVING CONTINUOUS OPERATING CAPABILITIES IMMEDIATELY AFTER RECOVERY FROM TROUBLE AND RELATED METHOD

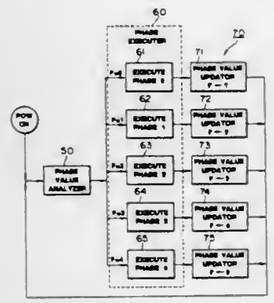
Katsuhiko Hayashi, Tachikawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 810,456, Dec. 12, 1991, abandoned, which is a continuation of Ser. No. 450,262, Dec. 13, 1989, abandoned. This application Jun. 24, 1992, Ser. No. 902,797

Claims priority, application Japan, Dec. 16, 1988, 63-316148

Int. Cl.[5] G06F *11/34, 11/00*

U.S. Cl. 395—575 **8 Claims**



1. A method of executing an application program in a facsimile device having a main controller for controlling an execution of the application program and a first non-volatile memory for storing the application program, wherein the application program has a predetermined set of operations to be executed and is divided into a predetermined plurality of subprograms, the plurality of subprograms corresponding to a plurality of application program phases, wherein each one of the plurality of application program phases is assigned a phase value by the main controller and wherein a predetermined phase value is stored in a second non-volatile memory, the method performed by the main controller and comprising the steps of:

specifying an application program phase to be executed, in accordance with the predetermined phase value stored in the second non-volatile memory;

executing one of the plurality of subprograms corresponding to the specified application program phase;

updating the phase value stored in the second non-volatile memory with a phase value of an application program phase corresponding to a subprogram to be next executed, in response to termination of the execution of the subprogram executed in the executing step; and

repeating the specifying step, executing step, and updating step sequentially during execution of the application program, said phase values being continually stored in the second non-volatile memory corresponding to the application program phase being executed, wherein the repeating step, at times when an operation is stopped, allows an automatic restarting of the operation from a same or a similar condition which existed immediate prior to the stoppage of the operation, thereby restoring and continuing the operation.

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5,253,361

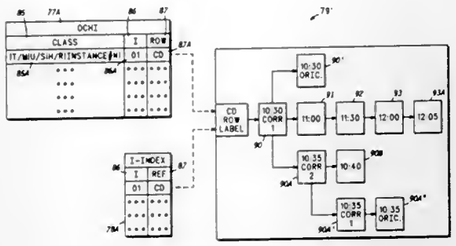
SYSTEM FOR ACCESSING A ROW OF TIME-DEPENDENT DATA BY REFERRING TO A COMPOSITE INDEX TABLE INDICATING PAGE LOCATIONS OF LINKED ROW LABELS

Audree Thurman, Phoenix; Stanley Person, Mesa; Ronald Norden-Paul, Mesa, and Richard Shelton, Mesa, all of Ariz., assignors to Emtek Health Care Systems, Inc., Tempe, Ariz.

Filed Sep. 15, 1989, Ser. No. 408,178

Int. Cl.[5] G06F *12/00*

U.S. Cl. 395—600 **2 Claims**



2. A method executed by a computer system as part of a computer program for storing a data in a database, said database comprising a plurality of data pages, each of said data pages having associated therewith one of a plurality of time occurrences which specifies how often said data is monitored, each of said data pages comprising a plurality of data rows and a page index table which stores pointers to each of said data rows, each of said data rows comprising a row label and a plurality of data cells, one of said data cells being linked to said row label and said other data cells being linked sequentially therefrom, said method comprising the steps of:

(a) determining a time occurrence of said data;

(b) assigning said data to one of said data pages having said time occurrence;

(c) creating a data row in said one of said data pages;

(d) creating a row label in said one of said data rows;

(e) making an entry in a page index table of said one of said data pages for pointing to said row label of said one of said data rows;

(f) creating and linking a data cell of to said row label of said one of said data rows if no other data cells is linked to said row label; and

(g) linking said data cell to another data cell in said one of said data rows if said another data cell is linked to said row label.

5,253,362

METHOD FOR STORING, RETRIEVING, AND INDICATING A PLURALITY OF ANNOTATIONS IN A DATA CELL

Lorene S. Nolan, San Pedro, Calif.; Ronald E. Norden-Paul; Richard E. Shelton, both of Mesa, Ariz., and Sandra L. Stewart, Phoenix, Ariz., assignors to Emtek Health Care Systems, Inc., Tempe, Ariz.

Filed Jan. 29, 1990, Ser. No. 471,445

Int. Cl.[5] G06F *15/40*

U.S. Cl. 395—600 **3 Claims**

1. A method executed by a computer as directed by a computer program for annotating data in a database, a display being coupled to said computer and displaying a spreadsheet comprising a plurality of data cells, said method comprising the steps of:

(a) selecting a first data to be annotated;

(b) annotating said selected first data by entering a first annotation text into said computer;

(c) storing said first annotation text in said database;

(d) assigning a first notational designator to said first annotation text;

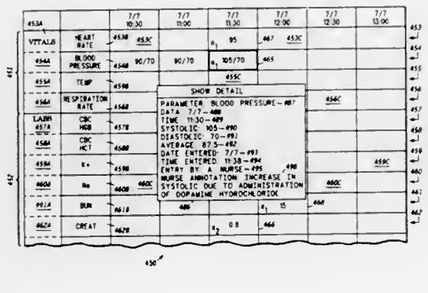
(e) assigning a first notational designator in said first selected data cell to indicate that annotation text is associated with said selected first data cell;

(f) selecting a second data cell to be annotated;

(g) annotating said selected second data cell by entering a second annotation text into said computer;

(h) storing said second annotation text in said database;

(i) comparing said second annotation text with said first annotation text, if said first annotation text is associated with said selected second data cell;



(j) assigning said first notational designator to said second annotation text if said second annotation text is similar to said first annotation text, otherwise assigning a second notational designator to said second annotation text, said second notational designator indicating the existence of said first annotation text; and

(k) displaying said second notational designator in said second data cell to indicate that annotation text is available with said selected second data cell.

5,253,363

METHOD AND APPARATUS FOR COMPILING AND IMPLEMENTING STATE-MACHINE STATES AND OUTPUTS FOR A UNIVERSAL CELLULAR SEQUENTIAL LOCAL ARRAY

Edward Hyman, 1644 Curtis Ave., Manhattan Beach, Calif. 90266

Continuation of Ser. No. 168,376, Mar. 15, 1988, abandoned. This application Nov. 15, 1990, Ser. No. 614,686

Int. Cl.[5] H03K *19/177*

U.S. Cl. 395—800 **13 Claims**

1. A method for operating a computing element to compile a set of internal states of a state-machine into a set of cellular array states for a cellular array and for implementing the state-machine in the cellular array; the state-machine having an input alphabet of input characters and at least one output function; the cellular array comprising (i) cells in a plurality of columns and rows wherein each cell along a main diagonal of the cellular array is a memory cell for storing information and each cell removed from the main diagonal is a function cell for transferring information between the memory cells, (ii) at least one output column of cells for providing an output value of the cellular array, and (iii) a control memory and selector means; the method comprising the steps of:

(a) generating a plurality of sequences of the input characters;

(b) applying the sequences of step (a) to the state-machine to derive a new internal state for each internal state of the state-machine and testing the sequences for equal effect on the internal states of the state-machine;

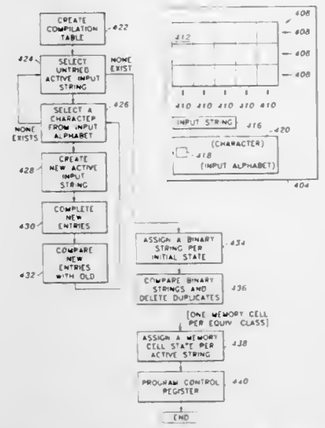
(c) selecting a set of binary values for substitution for each internal state so that the output value of the cellular array conforms to the at least one output function of the state-machine;

(d) substituting the selected set of binary values of step (c) for each new internal state derived in step (b) and testing the sequences for equal effect on the internal states with the substituted set of binary values; and

(e) implementing the state-machine in the cellular array by:

(e)(i) assigning a memory cell to each sequence of characters found to have a unique effect in step (d) and storing the substituted binary values of step (d) in the memory cells as cellular array states; and

(e)(ii) using the control memory and selector means for transferring information among the memory cells and



for transferring information from the memory cells to the at least one output column of cells.

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DESIGN PATENTS

GRANTED OCT. 12, 1993

ERRATA

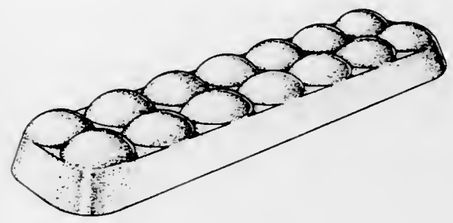
For CLASS	See PATENT NO.
013-146	D 340,241

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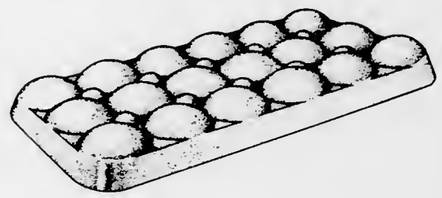
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OCTOBER 12, 1993

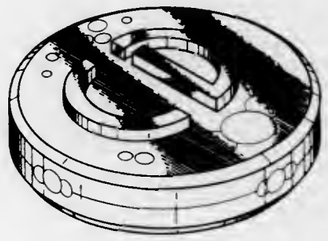
340,118
FOOD PRODUCT
Gordon S. Lane, Baldwinsville, N.Y., assignor to Nestec S.A., Vevey, Switzerland
Filed Mar. 12, 1992, Ser. No. 850,438
Term of patent 14 years
U.S. Cl. D1—121



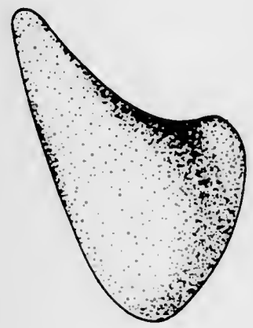
340,119
FOOD PRODUCT
Gordon S. Lane, Baldwinsville, N.Y., assignor to Nestec S.A., Vevey, Switzerland
Filed Mar. 12, 1992, Ser. No. 851,346
Term of patent 14 years
U.S. Cl. D1—121



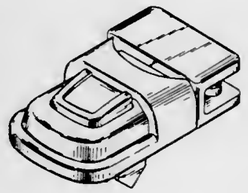
340,120
TABLET FOR MAKING A COFFEE BEVERAGE
Howard Rosenstein, 401 SE. 4th St., Cape Coral, Fla. 33990
Filed Apr. 11, 1991, Ser. No. 683,657
Term of patent 14 years
U.S. Cl. D1—199



340,121
ANIMAL BISCUIT
David Russell, Upper Broughton, United Kingdom, assignor to Mars G.B. Limited, Berkshire, England
Filed May 20, 1991, Ser. No. 702,686
Claims priority, application United Kingdom, Nov. 21, 1990, 2011184
Term of patent 14 years
U.S. Cl. D1—199

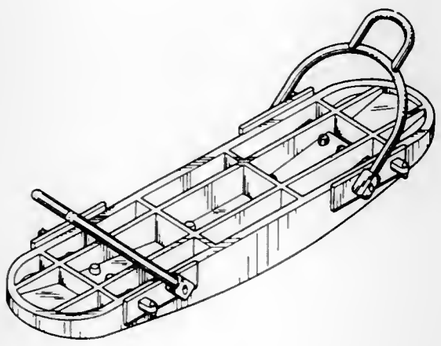


340,122
BUCKLE
Masao Wakabayashi, Toyama, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan
Filed Jan. 31, 1992, Ser. No. 829,155
Claims priority, application Japan, Jul. 31, 1991, 3-22994
Term of patent 14 years
U.S. Cl. D11—218



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340,123
WALKING ASSISTANCE ATTACHMENT FOR SNOW SKI BOOTS
Wade H. Howey, Jr., 2312 Potter Road South, Waxhaw, N.C. 28173
Filed Sep. 10, 1991, Ser. No. 757,263
Term of patent 14 years
U.S. Cl. D2—314



340,124
SHOULDER BIB FOR INFANT CARE
Lori L. Paxton, 3265 Fair Oaks Ave., Redwood City, Calif. 94063
Filed Mar. 22, 1991, Ser. No. 673,499
Term of patent 14 years
U.S. Cl. D2—227



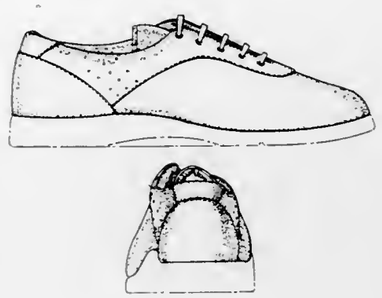
340,125
SHOE
Robert K. Johnson, Blaine, Minn., and Michael D. Arney, Needham, Mass., assignors to Rollerblade, Inc., Minnetonka, Minn.
Filed Jan. 14, 1992, Ser. No. 820,400
Term of patent 14 years
U.S. Cl. D2—275



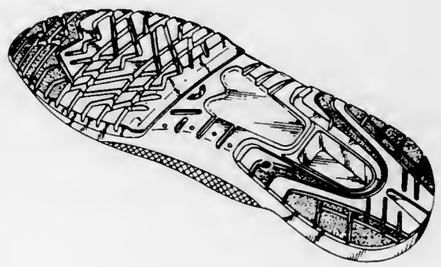
340,126
SHOE UPPER
James Agnew, Lakeview Terrace, and Robert Byrne, Hermosa Beach, both of Calif., assignors to L. A. Gear, Inc., Santa Monica, Calif.
Filed Oct. 4, 1991, Ser. No. 770,947
Term of patent 14 years
U.S. Cl. D2—314



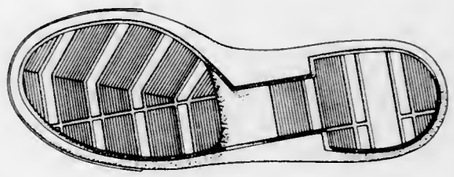
340,127
SHOE UPPER
Robert M. Dyer, Glendale, Mo., and David A. Towndrow, London, England, assignors to Brown Group, Inc., St. Louis, Mo.
Filed Jun. 1, 1992, Ser. No. 890,812
Term of patent 14 years
U.S. Cl. D2—314



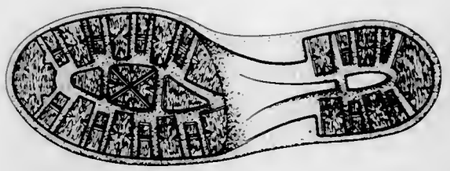
340,128
SHOE SOLE
Shigeyuki Mitsui, Kobe, Japan, assignor to Asics Corporation, Hyogo, Japan
Filed Jan. 22, 1992, Ser. No. 825,197
Claims priority, application Japan, Jul. 26, 1991, 3-22502
Term of patent 14 years
U.S. Cl. D2—320



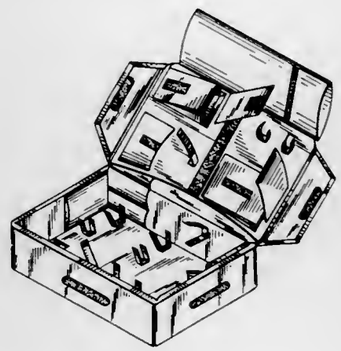
340,129
SPORTS SHOE SOLE
Malcolm G. Blissett, Grand Rapids, Mich., assignor to Wolverine World Wide, Inc., Rockford, Mich.
Filed Apr. 15, 1992, Ser. No. 868,786
Term of patent 14 years
U.S. Cl. D2—320



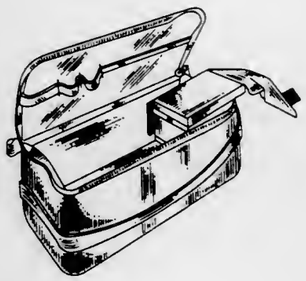
340,130
FOOTWEAR SOLE
Malcolm G. Blissett, Grand Rapids, Mich., assignor to Wolverine World Wide, Inc., Rockford, Mich.
Filed Apr. 15, 1992, Ser. No. 869,638
Term of patent 14 years
U.S. Cl. D2—320



340,131
COMBINED SCUBA REPAIR KIT CASE AND CAN HOLDER
Edward J. Cassidy, IV, 184 Bellevue Ave., Upper Montclair, N.J. 07043
Filed Mar. 4, 1991, Ser. No. 663,698
Term of patent 14 years
U.S. Cl. D3—74

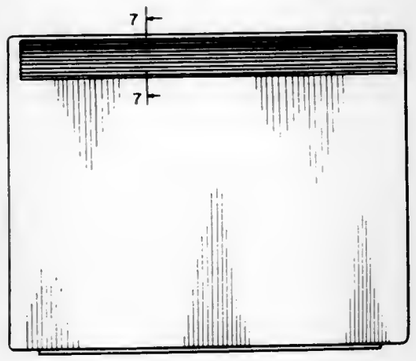


340,132
DIABETIC'S BAG
Rodman A. Coyle, and Judy T. Coyle, both of 131 Dellwood Ave., Swannanoa, N.C. 28778
Filed Jan. 21, 1992, Ser. No. 823,551
Term of patent 14 years
U.S. Cl. D3—74

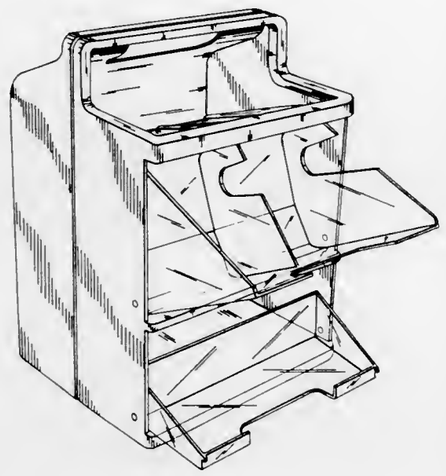


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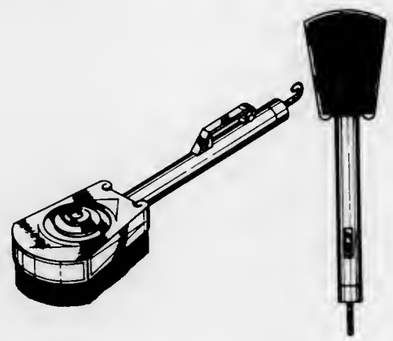
340,133
CASE FOR FILING PAPERS
Richard P. Hayes-Pankhurst, and Paul J. Fearis, both of London, United Kingdom, assignors to I.P. Innovations Ltd., London, England
Filed Jul. 17, 1991, Ser. No. 731,082
Claims priority, application United Kingdom, Jan. 18, 1991, 2012414
Term of patent 14 years
U.S. Cl. D3—76



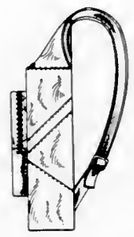
340,135
STORAGE CONTAINER
Todd J. Olson, Loveland, Ohio, assignor to Fisher-Price, Inc., East Aurora, N.Y.
Filed Mar. 20, 1991, Ser. No. 672,609
Term of patent 14 years
U.S. Cl. D3—73



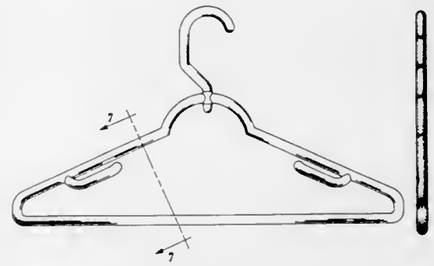
340,136
FOUNTAIN BACK BRUSH
Walter Woods, 2415 Fairburn Rd. SW., Atlanta, Ga. 30331; Miahcel Pitts, and Gena J. Pitts, both of 3747 Coldstream La., Duluth, Ga. 30136
Filed Feb. 12, 1991, Ser. No. 654,568
Term of patent 14 years
U.S. Cl. D4—114



340,134
BACKPACK
Peggy L. Pollack, Los Angeles, Calif., assignor to Angel-Etts of California, Los Angeles, Calif.
Filed Aug. 31, 1992, Ser. No. 939,622
Term of patent 14 years
U.S. Cl. D3—32



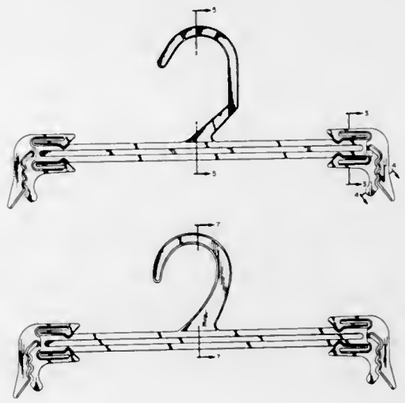
340,137
GARMENT HANGER
Richard M. Tocci, c/o Tamor Plastics Corp., 106 Carter St., Leominster, Mass. 01453
Filed Aug. 13, 1990, Ser. No. 566,061
Term of patent 14 years
U.S. Cl. D6—317



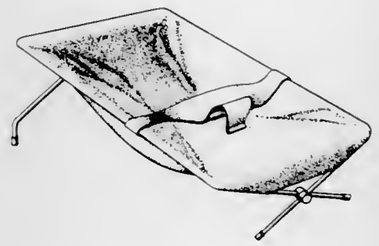
340,139
INFANT SEAT FOR USE ON A PEW
Connie L. McCaskill, 754 Riggins Rd., Tallahassee, Fla. 32308
Filed Oct. 9, 1991, Ser. No. 773,283
Term of patent 14 years
U.S. Cl. D6—333



340,138
GARMENT HANGER
Stanley F. Gouldson, Northport, N.Y., assignor to Plasti-form Enterprises, Inc., Deer Park, N.Y.
Filed Oct. 1, 1991, Ser. No. 769,677
Term of patent 14 years
U.S. Cl. D6—326

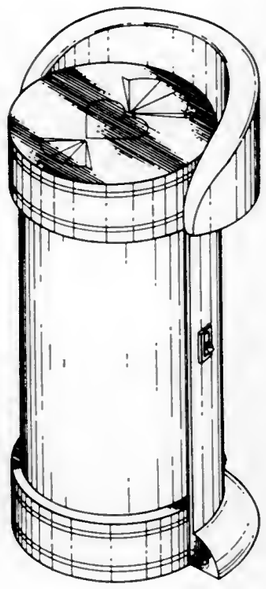


340,140
PORTABLE AND COLLAPSIBLE INFANT SEAT
Jocelyn P. Cunningham, 3517 Herschel View Way, Cincinnati, Ohio 45208, and Thomas J. Schmidlin, Jr., Cincinnati, Ohio, assignors to Jocelyn P. Cunningham, Cincinnati, Ohio
Filed Jan. 7, 1992, Ser. No. 817,826
Term of patent 14 years
U.S. Cl. D6—333

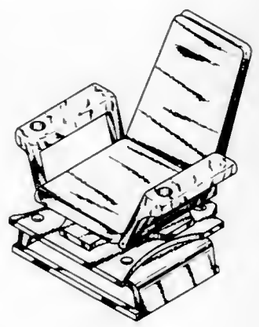


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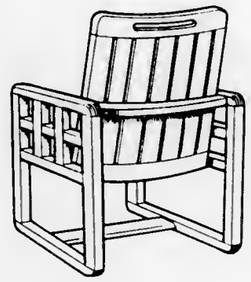
340,141
INFLATABLE BATH LIFT DEVICE
Larry Chapman, 1508 Layton, Fort Worth, Tex. 76117
Filed Jul. 25, 1990, Ser. No. 556,988
Term of patent 14 years
U.S. Cl. D6—364



340,142
ROTATABLE BEACH CHAIR
Joseph P. Totoro, 24 Polaris Rd., Turnersville, N.J. 08012
Filed Sep. 4, 1991, Ser. No. 754,724
Term of patent 14 years
U.S. Cl. D6—367



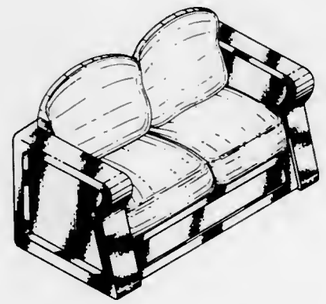
340,143
CHAIR
John Caldwell, 1829 Warwick Rd., San Marino, Calif. 91108
Filed May 23, 1991, Ser. No. 705,163
Term of patent 14 years
U.S. Cl. D6—370



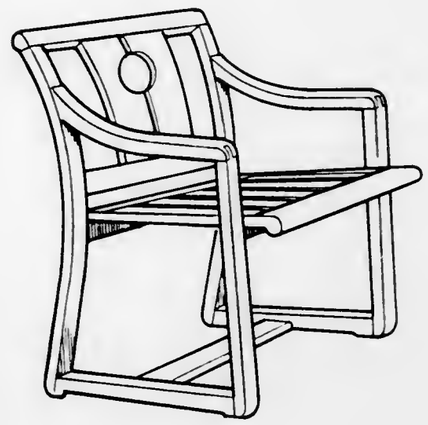
340,144
WOOD FRAME STACKING CHAIR
Mike T. Claman, P.O. Box 502, Taylorsville, N.C. 28681
Filed Oct. 21, 1991, Ser. No. 780,024
Term of patent 14 years
U.S. Cl. D6—379



340,145
WATER FILLED SOFA
Brian S. Smart, and William Smart, both of 1797 Farmview Dr., Lexington, Ky. 40515
Filed Sep. 12, 1991, Ser. No. 758,078
Term of patent 14 years
U.S. Cl. D6—381



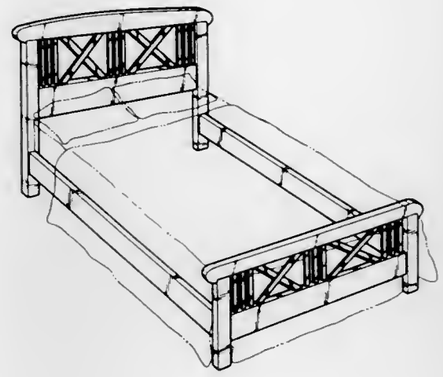
340,146
CHAIR
John Caldwell, 1829 Warwick Rd., San Marino, Calif. 91108
Filed May 23, 1991, Ser. No. 705,164
Term of patent 14 years
U.S. Cl. D6—370



340,147
BED
Gerald M. Black, High Point, N.C., assignor to Lexington Furniture Industries, Inc., Lexington, N.C.
Filed Sep. 6, 1991, Ser. No. 756,111
Term of patent 14 years
U.S. Cl. D6—393



340,148
BED
Edwin L. Ball, Thomasville, N.C., assignor to Lexington Furniture Industries, Inc., Lexington, N.C.
Filed Mar. 18, 1992, Ser. No. 854,461
Term of patent 14 years
U.S. Cl. D6—393

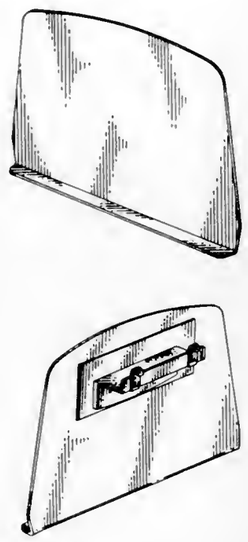


340,149
CHILDREN'S CLOTHES ORGANIZER
Frederick W. Granoff, 195 Belvedere Dr., Cranston, R.I. 02920
Filed Dec. 17, 1992, Ser. No. 2,570
Term of patent 14 years
U.S. Cl. D6—412

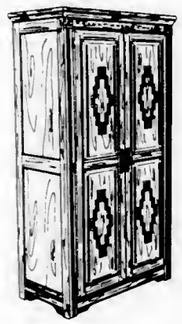


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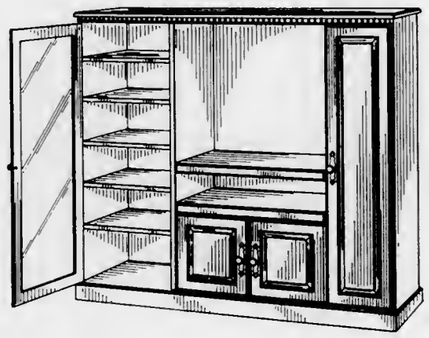
340,150
AUXILIARY MUSIC STAND FOR A PIANO
Sumi Tanaka, 39-10, Higashi-Tamagawa 1-chome, Setagaya-ku, Tokyo, Japan
Filed Sep. 20, 1990, Ser. No. 585,367
Claims priority, application Japan, Mar. 29, 1990, 2-10601
Term of patent 14 years
U.S. Cl. D6—419



340,151
ENTERTAINMENT CENTER
H. Thomas Keller, High Point, N.C., assignor to Vaughan Furniture Company, Inc., Galay, Va.
Filed Apr. 10, 1992, Ser. No. 867,803
Term of patent 14 years
U.S. Cl. D6—434



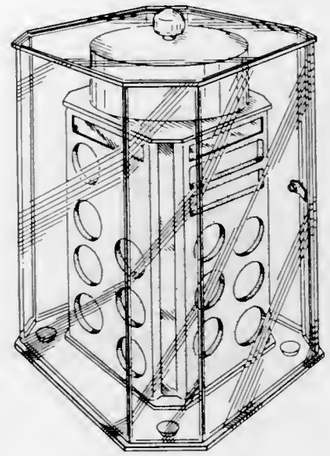
340,152
ENTERTAINMENT CENTER
Michael K. Short, Archbold, Ohio, assignor to Sauder Woodworking Co., Archbold, Ohio
Filed Feb. 11, 1991, Ser. No. 654,804
Term of patent 14 years
U.S. Cl. D6—436



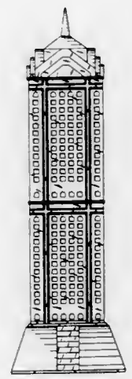
340,153
CHEST WITH DOOR
H. Thomas Keller, High Point, N.C., assignor to Vaughan Furniture Company, Inc., Galax, Va.
Filed Apr. 10, 1992, Ser. No. 867,809
Term of patent 14 years
U.S. Cl. D6—434



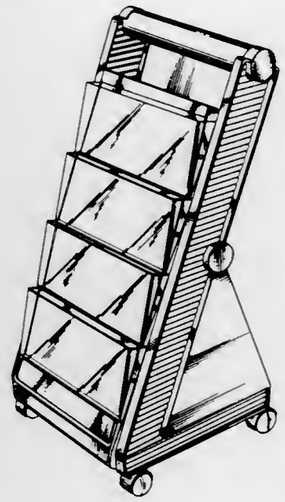
340,154
ROTATABLE DISPLAY STAND
Michael J. Endelman, Montclair, N.J., assignor to Baby Gold Jewelry, Inc., Bloomfield, N.J.
Continuation-in-part of Ser. No. 415,188, Sep. 29, 1989, Pat. No. D. 331,676. This application Apr. 27, 1991, Ser. No. 767,095
Term of patent 14 years
U.S. Cl. D6—470



340,155
STORAGE STAND FOR COMPACT DISCS
Stephan Koziol, Erbach/Odenwald, Fed. Rep. of Germany, assignor to Koziol Geschenkartikel GmbH, Erbach/Odenwald, Fed. Rep. of Germany
Filed Jan. 27, 1992, Ser. No. 825,860
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1991, M9105223
Term of patent 14 years
U.S. Cl. D6—450



340,156
MAGAZINE ORGANIZER
Claudio Bonazza, Mission Viejo, and Massimo Pizzoleo, Los Angeles, both of Calif., assignors to Venice Trading Co., Inc., Costa Mesa, Calif.
Filed Oct. 24, 1991, Ser. No. 782,264
Term of patent 14 years
U.S. Cl. D6—476

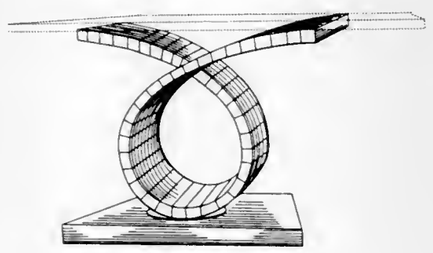


340,157
SHELF STRUCTURE
Judy Von Gunten, and Lee Von Gunten, both of 64 Newtown Dr., Buffalo Grove, Ill. 60089
Filed Apr. 16, 1990, Ser. No. 509,624
The portion of the term of this patent subsequent to Oct. 5, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—491

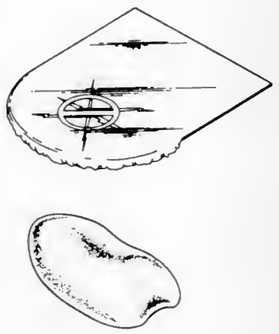


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340,158
MARBLE BASE FOR TABLE TOPS
Luciano Clonini, Lavorazione Artigiana Onice, Via Sarzanese Valdera, 1, 56030 Selvatelle (Pisa), Italy
Filed Aug. 7, 1991, Ser. No. 741,811
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1991, M9101366
Term of patent 14 years
U.S. Cl. D6—495



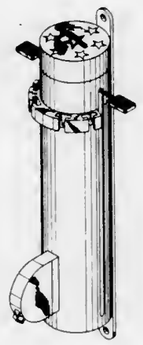
340,159
GEL FILLED NECK REST
Barbara A. Leighton, 11837 16th Ave. South, Seattle, Wash. 98168
Filed Oct. 23, 1991, Ser. No. 781,272
Term of patent 14 years
U.S. Cl. D6—501



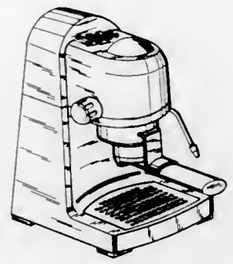
340,160
BED BOARD
Donald A. Graham, 515 P St. #906, Sacramento, Calif. 95814
Filed Jan. 21, 1992, Ser. No. 826,158
Term of patent 14 years
U.S. Cl. D6—503



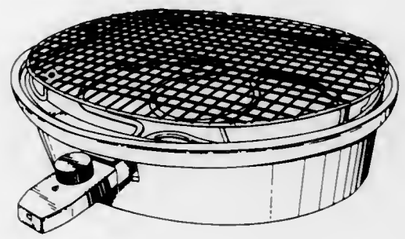
340,161
DENTAL CADDY
Rosaline M. Regidor, 909 University Ave. #304, Honolulu, Hi. 96826
Filed Jul. 27, 1990, Ser. No. 558,403
Term of patent 14 years
U.S. Cl. D6—528



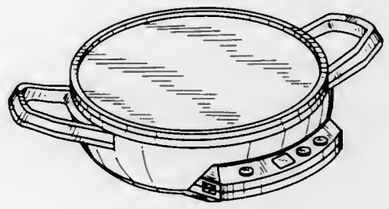
340,162
ESPRESSO MACHINE
Günter Storsberg, Solingen, Fed. Rep. of Germany, assignor to Robert Krups GmbH & Co. KG, Solingen, Fed. Rep. of Germany
Filed Oct. 31, 1991, Ser. No. 785,696
Claims priority, application World Int. Prop. O., May 16, 1991, DM019629
Term of patent 14 years
U.S. Cl. D7—309



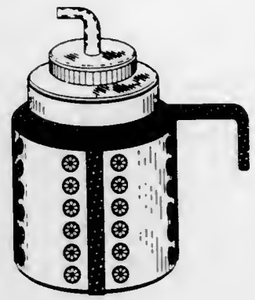
340,163
BROILING GRILL
Jay L. Howard, and Lewis A. Mendelson, both of Overland Park, Kans., assignors to Dazey Corporation, Industrial Airport, Kans.
Filed Jun. 25, 1992, Ser. No. 903,194
Term of patent 14 years
U.S. Cl. D7—363



340,164
GRILL
Karl-Erich Koch, Cham, Switzerland, assignor to AMC International Alfa Metalcraft Corporation AG, Switzerland
Filed Jul. 9, 1992, Ser. No. 911,178
Claims priority, application Int'l Pat. Institute, Feb. 19, 1992, DM/022055
Term of patent 14 years
U.S. Cl. D7—363



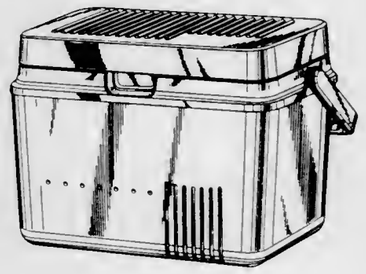
340,165
COMBINED SQUEEZE BOTTLE AND CARRIER
Charles E. Blake, 9632 E St., Oakland, Calif. 94603
Filed Mar. 14, 1991, Ser. No. 669,344
Term of patent 14 years
U.S. Cl. D7—510



340,166
SPORT CUP
Charles E. Blake, 9632 E St., Oakland, Calif. 94603
Filed Jan. 24, 1992, Ser. No. 825,178
Term of patent 14 years
U.S. Cl. D7—533

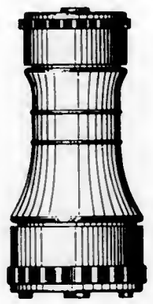


340,167
ICE CHEST
W. Henry Kahl, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Dec. 26, 1991, Ser. No. 813,430
Term of patent 14 years
U.S. Cl. D7—605

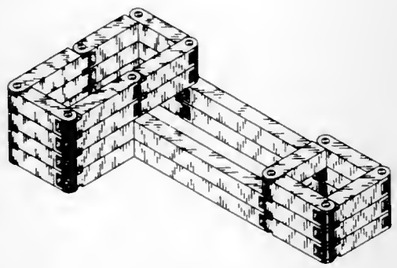


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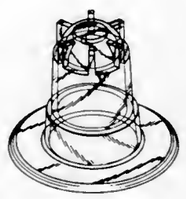
340,168
GRANULE DISPENSER
Steven Goldsmith, 10958 El Paraiso Pl., Delray Beach, Fla. 33446
Filed Jun. 1, 1990, Ser. No. 532,077
The portion of the term of this patent subsequent to Nov. 12, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—679



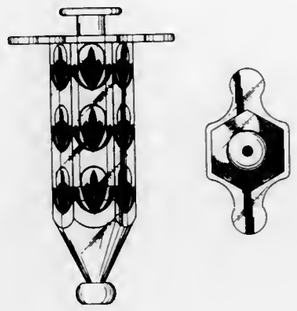
340,169
SECTIONAL PLANTER
Harry W. Scott, Jr., Dover; Randall W. Britt, and Kenneth L. Renfroe, both of Russellville, all of Ark., assignors to Thompson Industries, Inc., Russellville, Ark.
Filed Nov. 4, 1991, Ser. No. 786,992
Term of patent 14 years
U.S. Cl. D8—1



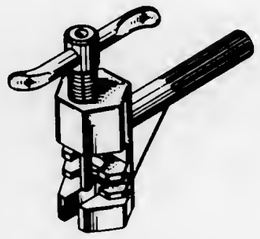
340,170
COAXIAL CABLE CONNECTOR INSTALLATION TOOL
Corey McMills, Los Altos, and John Mattis, Sunnyvale, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.
Filed Jun. 6, 1990, Ser. No. 534,204
Term of patent 14 years
U.S. Cl. D8—14



340,171
WINDSHIELD REPAIR KIT
Michael S. Vigil, P.O. Box 4381, Highlands Ranch, Colo. 81026
Continuation-in-part of Ser. No. 608,847, Nov. 5, 1990, abandoned. This application Dec. 9, 1991, Ser. No. 802,761
Term of patent 14 years
U.S. Cl. D8—30



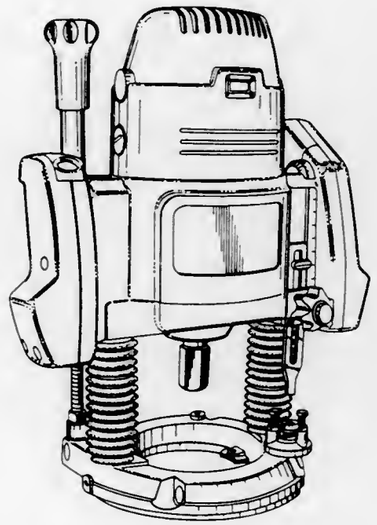
340,172
CHAIN DISASSEMBLING TOOL
Jern-Shong Her, Changhua, Taiwan, assignor to Yu Chou Enterprise Corporation, Changhua, Taiwan
Filed May 7, 1992, Ser. No. 879,371
Term of patent 14 years
U.S. Cl. D8—51



340,173
INTEGRATED CIRCUIT EXTRACTION TOOL
Yee-Chang Feng, 2F, 166-5 Shi Twen Rd., Sec. 3, Taichung, Taiwan
Filed Jan. 29, 1992, Ser. No. 827,960
Term of patent 14 years
U.S. Cl. D8—52



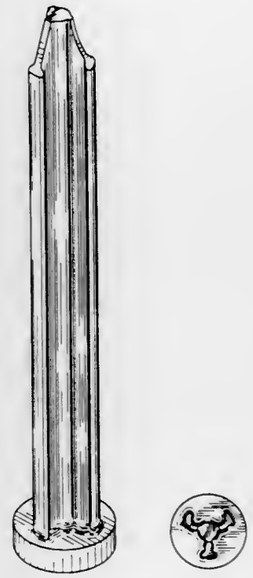
340,174
PLUNGE ROUTER
Kiyo Hoshino, Clemson, and Ronald C. McCurry, West Union, both of S.C., assignors to Ryobi Motor Products Corp., Easley, S.C.
Filed Jan. 2, 1992, Ser. No. 818,710
Term of patent 14 years
U.S. Cl. D8—67



340,175
POWER DRIVEN SOCKET WRENCH
Dennis L. Mann, 2239 N. Broad St., Colmar, Pa. 18915
Filed Nov. 6, 1991, Ser. No. 789,153
Term of patent 14 years
U.S. Cl. D8—70



340,176
FRICTION ROCK STABILIZER
Thomas J. Landsberg, 21-G Andover Cir., Princeton, N.J. 08540
Filed Dec. 9, 1991, Ser. No. 805,709
Term of patent 14 years
U.S. Cl. D8—70

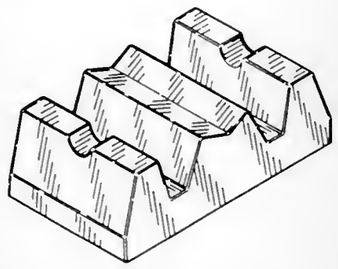


340,177
MULTIPURPOSE COMBINATION WELDER AND MILLWRIGHT HAMMER
Cecil Key, P.O. Box 141, Sparkman, Ark. 71763
Filed Sep. 17, 1991, Ser. No. 761,028
Term of patent 14 years
U.S. Cl. D8—75

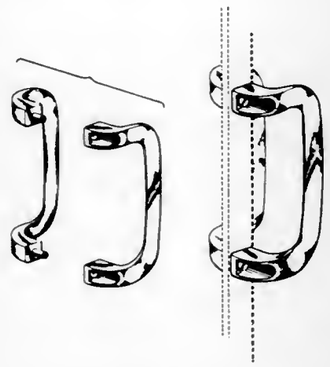


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340,178
HOUSING FOR A MAGNETIC BLADE SHARPENER
Hooshang Kashani, San Juan Capistrano, Calif., assignor to Cashew Consulting, Inc., Irvine, Calif.
Filed Nov. 1, 1991, Ser. No. 786,401
Term of patent 14 years
U.S. Cl. D8—91



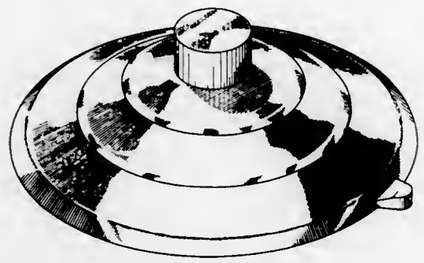
340,179
SHOWER DOOR HANDLE UNIT
Larry T. Mirick, 324 28th Pl., Manhattan Beach, Calif. 90266, and John Tendeland, 15040 Edmonds Dr., Reno, Nev. 89511
Filed Aug. 13, 1990, Ser. No. 567,327
Term of patent 14 years
U.S. Cl. D8—301



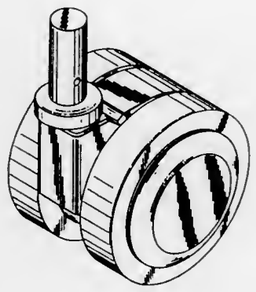
340,180
TOGGLE SWITCH LOCKING DEVICE
Ronald L. Stellfox, Fayetteville, N.C., assignor to Monsanto Company, St. Louis, Mo.
Filed Sep. 23, 1991, Ser. No. 763,757
Term of patent 14 years
U.S. Cl. D8—346



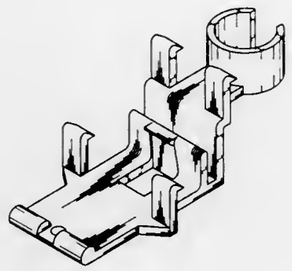
340,181
SUCTION CUP
William E. Adams, and Marc Peoples, both of Portersville, Pa., assignors to Adams Mfg. Corp., Portersville, Pa.
Filed Sep. 3, 1991, Ser. No. 754,125
Term of patent 14 years
U.S. Cl. D8—354



340,182
DOUBLE WHEEL CASTER
Sohrab Soltani, Charleston, S.C., assignor to SSI Medical Services, Inc., Charleston, S.C.
Filed Nov. 21, 1990, Ser. No. 617,064
Term of patent 14 years
U.S. Cl. D8—375



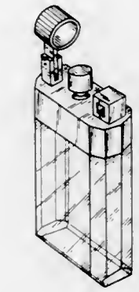
340,183
CHRISTMAS LIGHT CLIP
Donald Rumpel, Smelterville, Id., assignor to Kellogg Plastics, Ltd., Smelterville, Id.
Continuation-in-part of Ser. No. 816,073, Dec. 26, 1991. This application Nov. 16, 1992, Ser. No. 1,594
Term of patent 14 years
U.S. Cl. D8—395



340,184
TOOL FOR EXTRACTING BROKEN BOLTS
Donald J. Desaulniers, Wolcott, Conn., assignor to Alden Corporation, Wolcott, Conn.
Filed Nov. 27, 1991, Ser. No. 798,795
Term of patent 14 years
U.S. Cl. D8—14



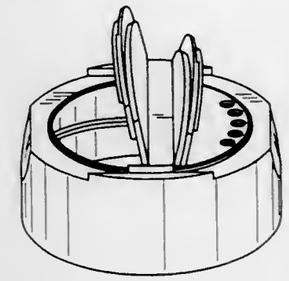
340,185
PERFUME ATOMIZER
Roberto Martone, Milan, Italy, assignor to I.C.R. Diffusion S.p.A., Italy
Filed May 20, 1991, Ser. No. 703,122
Claims priority, application Italy, Dec. 19, 1990, 22335 B/90
Term of patent 14 years
U.S. Cl. D9—300



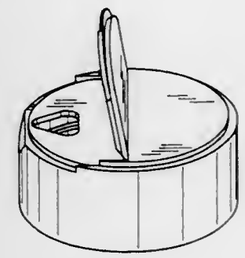
340,186
COMBINED NASAL ADAPTOR AND CAP
Paul K. Rand, and Philip M. Regan, both of Herts, England, assignors to Glaxo Group Limited, London, England
Filed Sep. 28, 1990, Ser. No. 589,670
Claims priority, application United Kingdom, Apr. 2, 1990, 2005833; Apr. 2, 1990, 2005834; Apr. 2, 1990, 2005835
Term of patent 14 years
U.S. Cl. D9—337



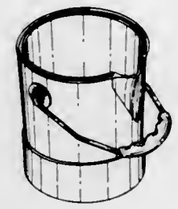
340,187
TWO FLAP CLOSURE
Michael J. Forsyth, Stow, Ohio, assignor to Weatherchem Corporation, Twinsburg, Ohio
Filed Aug. 5, 1991, Ser. No. 740,479
Term of patent 14 years
U.S. Cl. D9—449



340,188
SINGLE FLAP CONTAINER CAP
Michael J. Forsyth, Stow, Ohio, assignor to Weatherchem Corporation, Twinsburg, Ohio
Filed Aug. 23, 1991, Ser. No. 749,422
Term of patent 14 years
U.S. Cl. D9—449

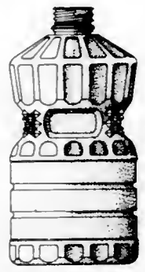


340,189
PAINT CAN WITH SPOUT
Rose M. Fletcher, 209 Elwood, Forsyth, Ill. 62535
Filed Mar. 4, 1991, Ser. No. 663,650
Term of patent 14 years
U.S. Cl. D9—527

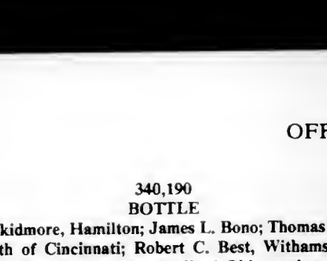


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340,190
BOTTLE
John E. Skidmore, Hamilton; James L. Bono; Thomas E. Dierking, both of Cincinnati; Robert C. Best, Withamsville, and Louis Y. Gutting, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Feb. 7, 1992, Ser. No. 832,492
Term of patent 14 years
U.S. Cl. D9—542



340,191
COMBINED PERFUME BOTTLE AND STOPPER
Charles Boussiquet, Paris, France, assignor to Lancome Parfums et Beaute & Cie, Paris, France
Filed Jun. 10, 1991, Ser. No. 713,346
The portion of the term of this patent subsequent to Feb. 23, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—546



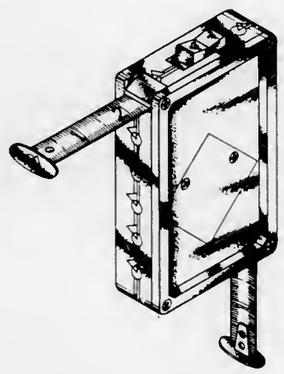
340,192
COMBINED WRISTWATCH AND BRACELET
Gilles Robert-Tissot, Geneva, Switzerland, assignor to Gilles Robert, SA, Geneva, Switzerland
Filed Feb. 8, 1991, Ser. No. 653,799
Term of patent 14 years
U.S. Cl. D10—32



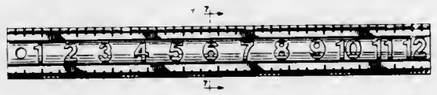
340,193
QUOIN CORNER GUIDE
Rande D. McClain, R.D. #1, Box 170, Stahlstown, Pa. 15687
Filed Oct. 18, 1991, Ser. No. 778,633
Term of patent 14 years
U.S. Cl. D10—64



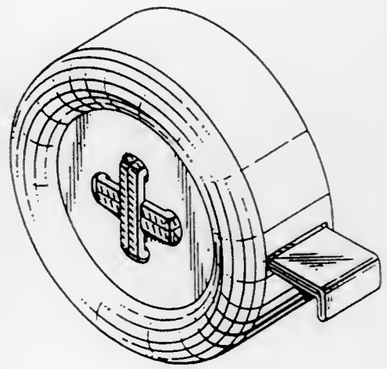
340,194
ELECTRICAL OUTLET MARKER
Dennis J. White, 17 Abbey Ct., Brooklyn, N.Y. 11229
Filed Nov. 15, 1990, Ser. No. 614,108
Term of patent 14 years
U.S. Cl. D10—65



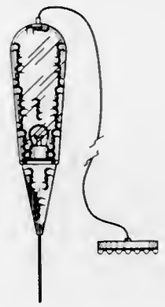
340,195
RULER
Bruce Shapiro, Northbrook, Ill., assignor to Creative Works, Inc., Northbrook, Ill.
Filed Jan. 27, 1992, Ser. No. 825,862
Term of patent 14 years
U.S. Cl. D10—71



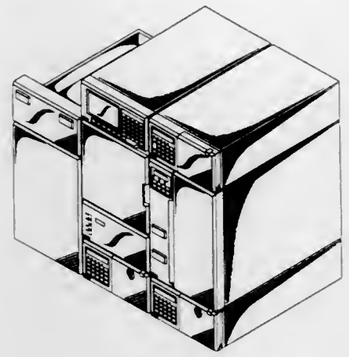
340,196
MEASURING TAPE AND REEL
Wing K. Tong, 201 Alexmuir Blvd., Unit 78, Scarborough, Canada M1B IS5
Filed Jan. 22, 1992, Ser. No. 824,177
Claims priority, application United Kingdom, Aug. 9, 1991, 2016607
Term of patent 14 years
U.S. Cl. D10—72



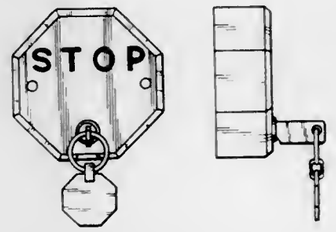
340,197
SURE GROUND TEST LIGHT
Perry S. Esposito, 47 Ivanhoe Pl., Valley Stream, N.Y. 11580
Filed Feb. 5, 1992, Ser. No. 831,382
Term of patent 14 years
U.S. Cl. D10—78



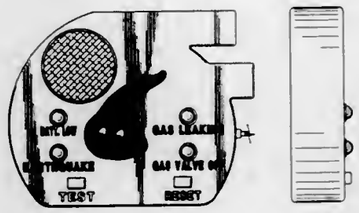
340,198
CHROMATOGRAPH
Akira Nakamoto, Osaka, and Nobuyuki Tatsumi, Kyoto, both of Japan, assignors to Shimadzu Corporation, Kyoto, Japan
Filed Aug. 14, 1991, Ser. No. 744,790
Claims priority, application Japan, Apr. 30, 1991, 3-12886
Term of patent 14 years
U.S. Cl. D10—81



340,199
ALARM FOR SIGNALING UNAUTHORIZED DOOR EXIT AND ENTRY
John D. Taylor, Waterford, Mich., assignor to Safety Technology International, Inc., Waterford, Mich.
Filed Nov. 13, 1989, Ser. No. 396,003
Term of patent 14 years
U.S. Cl. D10—106

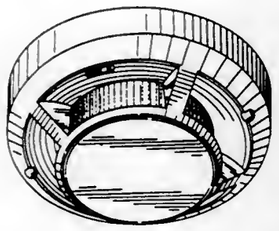


340,200
AUDIBLE ALARM FOR DETECTING EARTHQUAKES AND GAS LEAKAGE
David Carmi, 33 Goldenrod St., Irvine, Calif. 92714
Filed Dec. 16, 1991, Ser. No. 807,388
Term of patent 14 years
U.S. Cl. D10—106

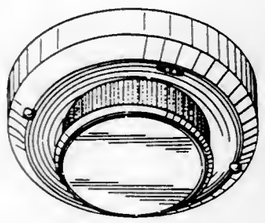


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340,201
SMOKE DETECTOR
Kenneth R. Fenne, Glen Ellyn, and Lee Tice, Bartlett, both of Ill., assignors to Pittway Corporation, Chicago, Ill.
Filed Sep. 9, 1992, Ser. No. 942,522
Term of patent 14 years
U.S. Cl. D10—106



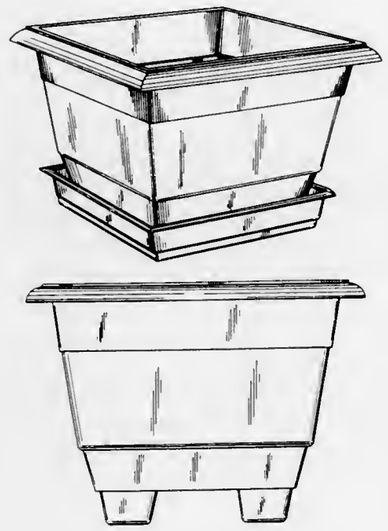
340,202
SMOKE DETECTOR
Kenneth R. Fenne, Glen Ellyn, and Lee Tice, Bartlett, both of Ill., assignors to Pittway Corporation, Chicago, Ill.
Filed Sep. 9, 1992, Ser. No. 942,526
Term of patent 14 years
U.S. Cl. D10—106



340,203
EMERGENCY SIGNAL FLAG
Albert T. Popp, and Michael M. Popp, both of 7325 Lattimore Dr., Las Vegas, Nev. 89128
Filed Nov. 12, 1991, Ser. No. 790,711
Term of patent 14 years
U.S. Cl. D10—109



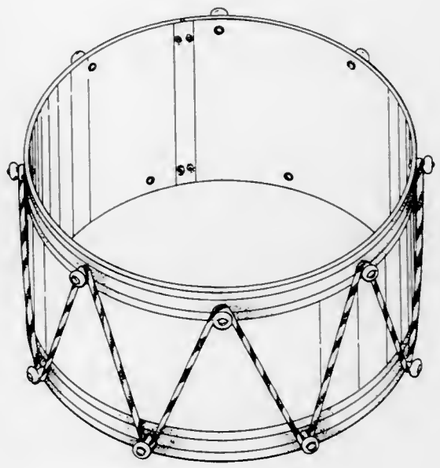
340,204
COMBINED PLANTER AND TRAY
Raymond Grosfillex, Oyonnax, France, assignor to Grosfillex Sarl, Oyonnax, France
Filed Oct. 31, 1990, Ser. No. 607,058
Claims priority, application World Int. Prop. O., May 15, 1990, DMA/001237
The portion of the term of this patent subsequent to Aug. 17, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D11—155



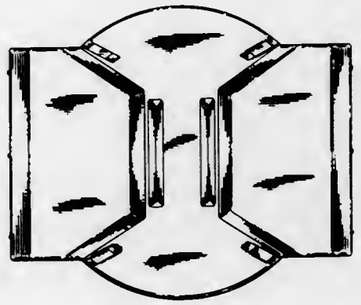
340,205
EAGLE AND FLAG PLAQUE
Peter V. Ilaria, East Hanover, and William Macowski, Caldwell, both of N.J., assignors to Tropar Manufacturing Co., Inc., Florham Park, N.J.
Filed Oct. 17, 1991, Ser. No. 782,275
Term of patent 14 years
U.S. Cl. D11—137



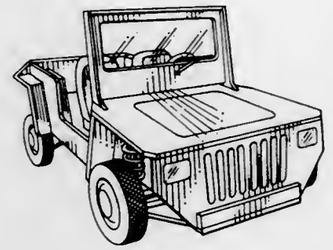
340,206
CHRISTMAS TREE BASE COVER
Billy M. Bonney, 1902 N. Carrier Pkwy., Grand Prairie, Tex. 75050
Filed May 14, 1992, Ser. No. 883,710
Term of patent 14 years
U.S. Cl. D11—130.1



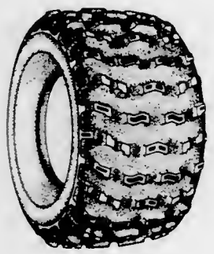
340,207
EXTERIOR SURFACE OF A DOUBLE VENTED HATCH COVER
Francis R. Schultz, Woodridge, Ill., assignor to Salco Products, Inc., Romeoville, Ill.
Filed Mar. 8, 1990, Ser. No. 490,945
Term of patent 14 years
U.S. Cl. D12—43



340,208
AUTOMOTIVE VEHICLE
John M. Wolfe, 1600 S.Eads St., Apt. 115 N, Arlington, Va. 22202, and Patrick L. Bouta, 91-229 Kuhela St., Ewa Beach, Hi. 96707
Filed May 6, 1991, Ser. No. 696,347
Term of patent 14 years
U.S. Cl. D12—87



340,209
AUTOMOBILE TIRE
Kazutaka Kimura; Takao Kouchi, both of Wako, and Kohtaroh Tsutsumi, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo and The Ohtsu Tire & Rubber Co., Ltd., Osaka, both of Japan
Filed Mar. 10, 1992, Ser. No. 849,123
Claims priority, application Japan, Sep. 26, 1991, 3-28928
Term of patent 14 years
U.S. Cl. D12—136

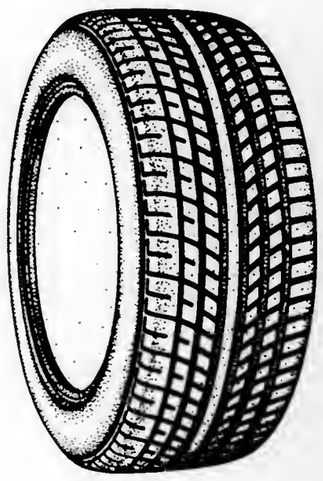


340,210
INFLATABLE INFANT WALKER
Betsy Veness, East Aurora, N.Y., assignor to Century Products Company, Macedonia, Ohio
Filed Mar. 19, 1992, Ser. No. 853,327
Term of patent 14 years
U.S. Cl. D12—130

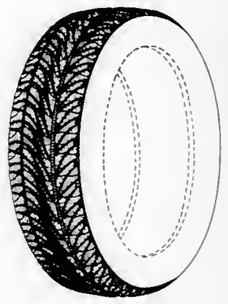


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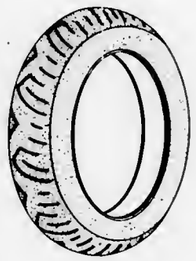
340,211
AUTOMOBILE TIRE
Yasuo Himuro, and Ichiro Takahashi, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed May 7, 1991, Ser. No. 696,549
Claims priority, application Japan, Nov. 20, 1990, 2-38595
Term of patent 14 years
U.S. Cl. D12—147



340,212
TIRE TREAD
Sean D. Montag, Cuyahoga Falls, Ohio, and Billy J. Ratliff, Inkster, Mich., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jan. 9, 1992, Ser. No. 818,707
Term of patent 14 years
U.S. Cl. D12—147

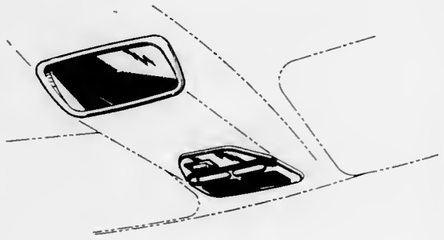


340,213
MOTORCYCLE
Wolfgang Bende, Allendorf; Josef Jauernik, Korbach; Rolf Mahling, Korbach, and Dieter Schulz, Korbach, all of Fed. Rep. of Germany, assignors to Continental Aktiengesellschaft, Hannover, Fed. Rep. of Germany
Filed Feb. 21, 1991, Ser. No. 660,572
Term of patent 14 years
U.S. Cl. D12—151

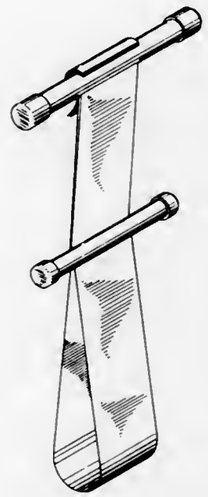


340,214
TANDEM WHEEL TRUCK FENDER
Franklin B. Lawrence, Saratoga, Calif., assignor to Ultimate Products Corporation, Campbell, Calif.
Filed Jun. 12, 1991, Ser. No. 714,052
The portion of the term of this patent subsequent to Oct. 5, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D12—184

340,215
SET OF ACCESSORY PANELS FOR AN OVERHEAD CONSOLE
Monte L. Falcoff, Southfield, Mich., assignor to United Technologies Automotive, Inc., Dearborn, Mich.
Filed Oct. 2, 1991, Ser. No. 770,943
Term of patent 14 years
U.S. Cl. D12—155



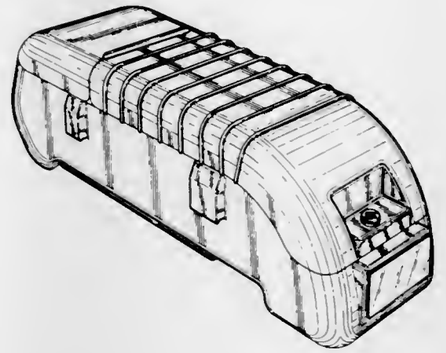
340,216
UNIVERSAL CARRIER FOR AUTOMOBILES
Charles W. Moores, 176 Cornfield Rd., Milford, Conn. 06460
Filed Jul. 15, 1991, Ser. No. 730,283
Term of patent 14 years
U.S. Cl. D12—157



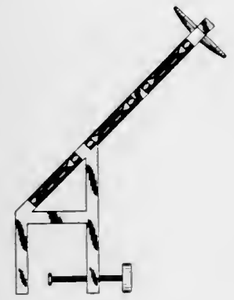
340,217
BICYCLE WATER BOTTLE
Alain Delage, Montreal, and Richard Lamoureux, L'Assomption, both of Canada, assignors to Plastiques Anchor Ltee, L'Assomption, Canada
Filed Mar. 13, 1992, Ser. No. 850,774
Claims priority, application Canada, Dec. 17, 1991, 17-12-91-8
Term of patent 14 years
U.S. Cl. D12—158



340,218
TOP TRUNK FOR BICYCLE
Alain Delage, Montreal, and Richard Lamoureux, L'Assomption, both of Canada, assignors to Plastiques Anchor Ltee, L'Assomption, Canada
Filed Mar. 13, 1992, Ser. No. 850,776
Claims priority, application Canada, Dec. 17, 1991, 17-12-91-5
Term of patent 14 years
U.S. Cl. D12—158

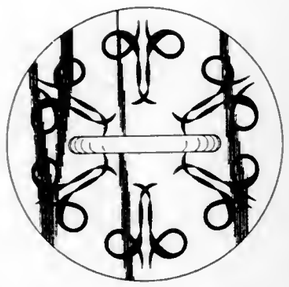


340,219
TRAILER HITCH MIRROR
Sol J. Moon, 65 General longstreet Lloe, Newman, Ga. 30265
Filed May 11, 1992, Ser. No. 880,984
Term of patent 14 years
U.S. Cl. D12—187



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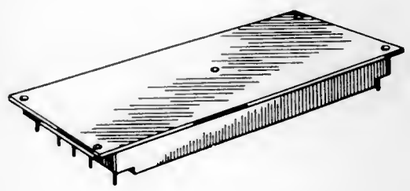
340,220
WHEEL PROTECTOR
Richard A. Rocamora, and Tracey A. Escolano, both of 510 Alvin Dr., Salinas, Calif. 93906
Filed Sep. 14, 1992, Ser. No. 948,753
Term of patent 14 years
U.S. Cl. D12—213



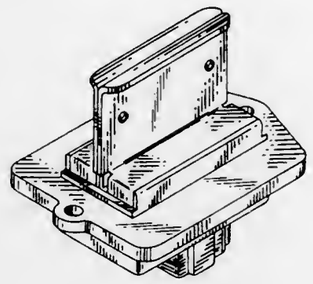
340,221
PERSONAL WATERCRAFT
John Krieger, Los Angeles, Calif.; John Lundberg, Pequet Lakes, Minn.; Jack Olson, Roseau, Minn.; Arlyn Saagge, Badger, Minn.; Donald Monsrud, Roseau, Minn.; JoMar Bernat, Roseau, Minn., and Danny Gausen, Roseau, Minn., assignors to Polaris Industries L.P., Minneapolis, Minn.
Filed Sep. 23, 1991, Ser. No. 763,747
Term of patent 14 years
U.S. Cl. D12—307



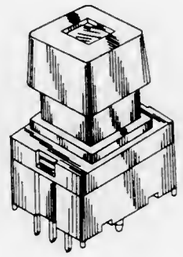
340,222
POWER CONVERTER
Joel T. Bedell, Merrimack, N.H., assignor to ATC Power Systems, Inc., Merrimack, N.H.
Filed Dec. 4, 1992, Ser. No. 2,210
Term of patent 14 years
U.S. Cl. D13—110



340,223
CONTROL RESISTOR FOR AN AUTOMOBILE BLOWER MOTOR
Katsumi Nitta, Yorii, and Yutaka Maeda, Chichibu, both of Japan, assignors to Taisei Co., Ltd., Japan
Filed Nov. 20, 1990, Ser. No. 616,110
Claims priority, application Japan, May 21, 1990, 2-16980
Term of patent 14 years
U.S. Cl. D13—125

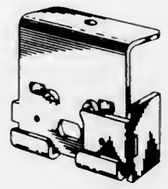


340,224
PUSH BUTTON SWITCH
Joseph J. Gierut, Glenview, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.
Filed Jun. 9, 1992, Ser. No. 895,869
Term of patent 14 years
U.S. Cl. D13—171

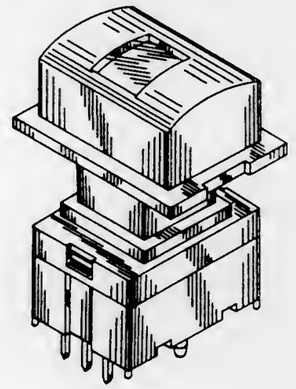


340,225
Patent Not Issued For This Number

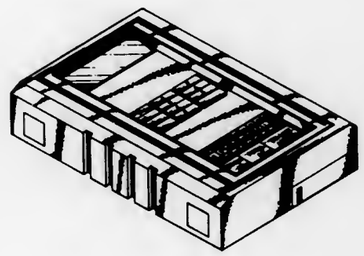
340,226
ELECTRICAL GROUND CLIP
Isaac Sachs, 283 Newton, Dollard-des-Ormeaux, Quebec, Canada H9A 3G1
Filed Feb. 20, 1992, Ser. No. 837,427
Term of patent 14 years
U.S. Cl. D13—154



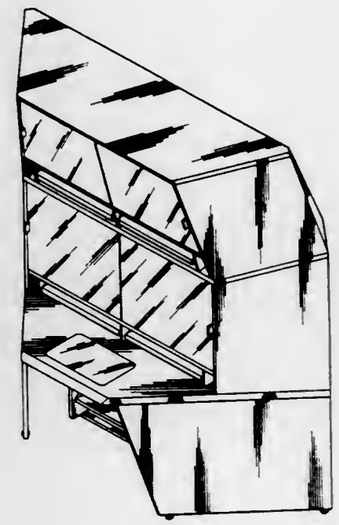
340,227
PUSH BUTTON SWITCH
Joseph J. Gierut, Glenview, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.
Filed Jun. 9, 1992, Ser. No. 895,870
Term of patent 14 years
U.S. Cl. D13—171



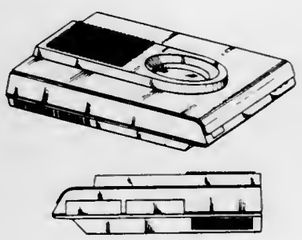
340,228
ELECTRONIC DATABASE DIRECTORY FOR FACSIMILIE NUMBERS
Virginia L. Clark, 151 Harris Ave., Freeport, N.Y. 11520
Filed Jun. 18, 1991, Ser. No. 717,115
Term of patent 14 years
U.S. Cl. D14—100



340,229
MODULAR CORNER CONSOLE COMMAND CENTER WORKSTATION
Matthew P. Drabczyk, Westminster, and Daniel C. Starkey, Englewood, both of Colo., assignors to Engineered Data Products, Inc., Broomfield, Colo.
Filed Nov. 6, 1991, Ser. No. 788,712
Term of patent 14 years
U.S. Cl. D14—103

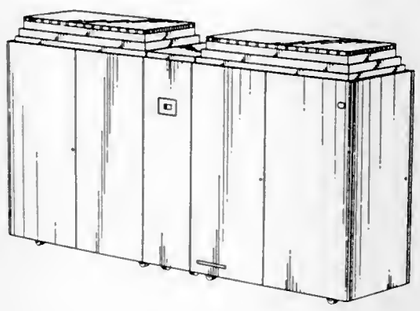


340,230
CASING FOR COMPUTER
Gianfranco Sforni, Verona, Italy, assignor to Intercomp S.P.A., Verona, Italy
Filed Jul. 15, 1991, Ser. No. 732,330
Claims priority, application Italy, Jan. 18, 1991, VR910000002B91
Term of patent 14 years
U.S. Cl. D14—100

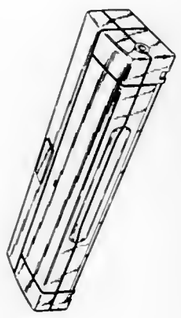


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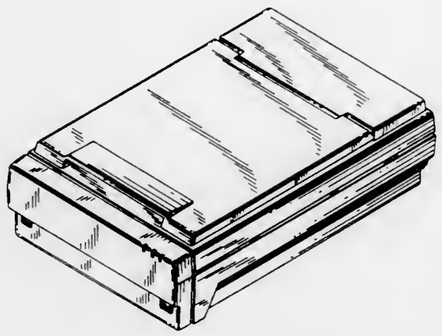
340,231
MAINFRAME MULTIPROCESSOR
Robert V. Jones, Woodstock; Susan S. Moffatt, Clinton Corners, and John D. Swansey, Tivoli, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 12, 1991, Ser. No. 792,056
Term of patent 14 years
U.S. Cl. D14—102



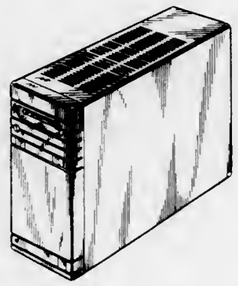
340,232
IMAGE SCANNER
Kazuo Yoshida, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Nov. 20, 1991, Ser. No. 795,024
Claims priority, application Japan, Jul. 19, 1991, 3-21456
Term of patent 14 years
U.S. Cl. D14—107



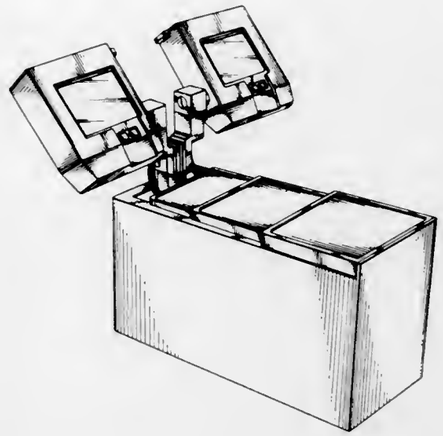
340,233
IMAGE SCANNER
Hiromitsu Takahashi, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan
Filed Dec. 31, 1991, Ser. No. 815,230
Claims priority, application Japan, Jul. 12, 1991, 3-21027
Term of patent 14 years
U.S. Cl. D14—107



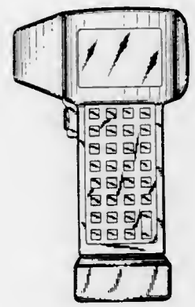
340,234
MEMORY CARD PLAYER
Noriko Katayama, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Jul. 18, 1991, Ser. No. 732,304
Claims priority, application Japan, Feb. 1, 1991, 3-2499
Term of patent 14 years
U.S. Cl. D14—109



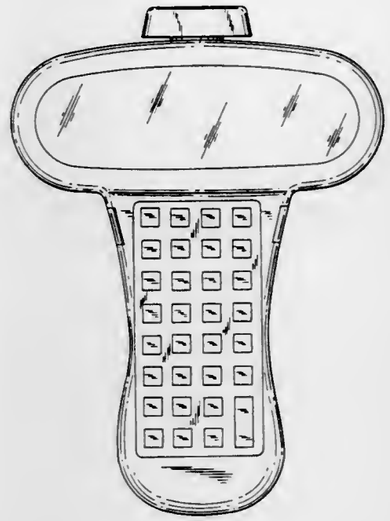
340,235
MONITOR POP-UP DISPLAY UNIT FOR A SEAT IN THE PASSENGER COMPARTMENT OF AN AIRCRAFT
Edward Robak, Orange, and Carter K. Reh, Santa Ana, both of Calif., assignors to Sony Trans Com, Inc., Irvine, Calif.
Filed Feb. 21, 1991, Ser. No. 660,092
Term of patent 14 years
U.S. Cl. D14—113



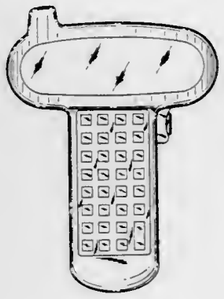
340,236
ELECTRO-OPTICAL SCANNER
Joseph Sandor, Balboa Island, Calif., assignor to Symbol Technologies, Inc., Bohemia, N.Y.
Filed Dec. 16, 1991, Ser. No. 807,909
Term of patent 14 years
U.S. Cl. D14—116



340,237
OPTICAL SCANNER
Jerome Swartz, Old Field, N.Y., assignor to Symbol Technologies, Inc., Bohemia, N.Y.
Filed Feb. 14, 1992, Ser. No. 836,455
Term of patent 14 years
U.S. Cl. D14—116

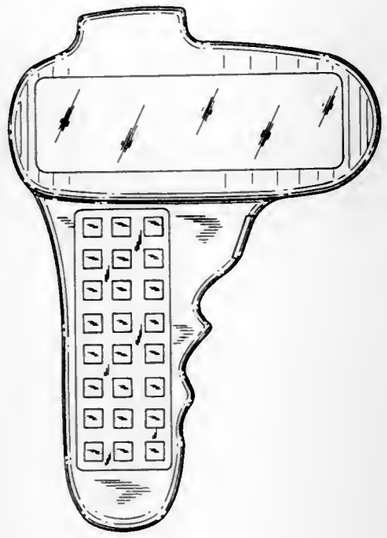


340,238
OPTICAL SCANNER
Jerome Swartz, Old Field, N.Y., assignor to Symbol Technologies, Inc., Bohemia, N.Y.
Filed Jan. 16, 1992, Ser. No. 821,468
Term of patent 14 years
U.S. Cl. D14—116

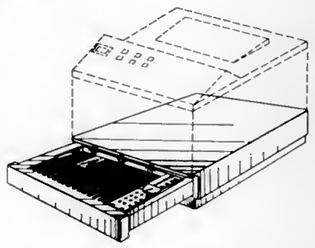


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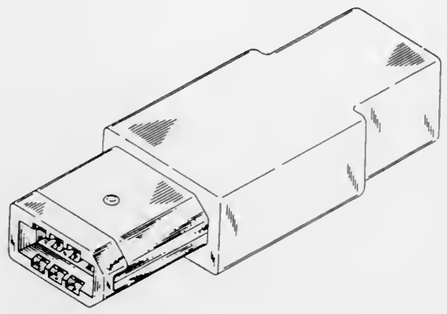
340,239
OPTICAL SCANNER
Jerome Swartz, Olf Field, N.Y., assignor to Symbol Technologies, Inc., Bohemia, N.Y.
Filed Feb. 14, 1992, Ser. No. 835,570
Term of patent 14 years
U.S. Cl. D14—116



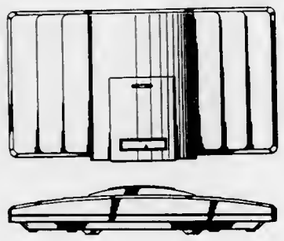
340,240
RETRACTABLE DRAWER-TYPE FACSIMILE MACHINE MODULE
James C. Dow, and Modest Khovaylo, both of Fort Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Feb. 5, 1991, Ser. No. 653,449
Term of patent 14 years
U.S. Cl. D14—118



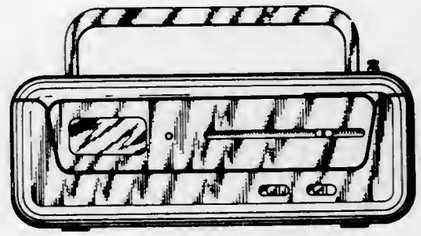
340,241
ELECTRICAL CONNECTING PLUG
Masahiko Nakamura, Yao, Japan, assignor to Hosiden Corporation, Yao, Japan
Filed Apr. 6, 1992, Ser. No. 864,020
Claims priority, application Japan, Oct. 15, 1991, 3-31248
Term of patent 14 years
U.S. Cl. D13—146



340,242
WIRELESS BASESTATION
Michael Kurtz, #2-385 Chapel Street, Ottawa, Ontario, Canada K1N 7Z5
Filed Jul. 6, 1992, Ser. No. 909,441
Term of patent 14 years
U.S. Cl. D14—142



340,243
LCD CLOCK RADIO
John Se-Kit Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Oct. 30, 1991, Ser. No. 784,790
Claims priority, application United Kingdom, May 3, 1991, 2014575
Term of patent 14 years
U.S. Cl. D14—171

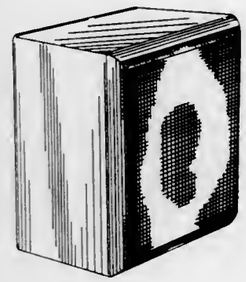




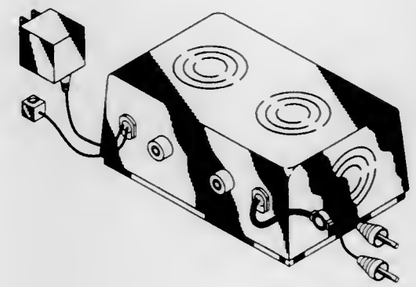
340,244
SPEAKER
Cary L. Christie, Bell Canyon, Calif., assignor to Infinity Systems Inc., Chatsworth, Calif.
Filed Jun. 4, 1990, Ser. No. 532,999
Term of patent 14 years
U.S. Cl. D14—214



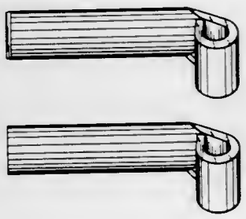
340,245
SPEAKER
Cary L. Christie, Bell Canyon, Calif., assignor to Infinity Systems Inc., Chatsworth, Calif.
Filed Jun. 4, 1990, Ser. No. 533,000
Term of patent 14 years
U.S. Cl. D14—214



340,246
TELEPHONE TRIGGERED STEREO VOLUME REDUCER
Paul F. Newman, 4523 Eastbrook Ave., Lakewood, Calif. 90713
Filed Apr. 2, 1991, Ser. No. 679,334
Term of patent 14 years
U.S. Cl. D14—240



340,247
CROP CONDITIONER FLAIL
Gilbert W. Linde, and John K. Hale, both of New Holland, Pa., assignors to Ford New Holland, Inc., New Holland, Pa.
Filed Aug. 5, 1991, Ser. No. 740,212
Term of patent 14 years
U.S. Cl. D15—29

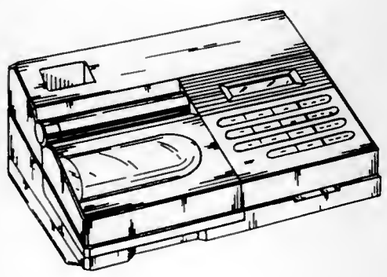


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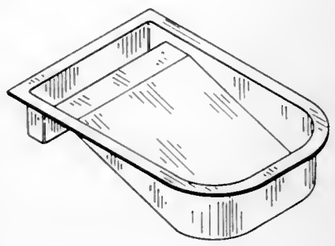
340,248
ROOF DRILL BIT FOR MINING
William J. Brady, 1767 Wishingwell Dr., Creve Coeur, Mo. 63141
Filed May 23, 1991, Ser. No. 706,113
Term of patent 14 years
U.S. Cl. D15—139



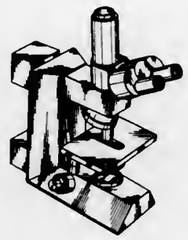
340,249
AUTOMATIC CAPSULE MIXING DEVICE
Charles E. Steele, Canton, Mich., assignor to Kerr Manufacturing Company, Romulus, Mich.
Filed Feb. 14, 1992, Ser. No. 837,410
Term of patent 14 years
U.S. Cl. D15—147



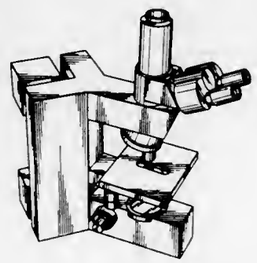
340,250
RAIL SPILL CONTAINMENT PAN
Robert J. Lux, Jr., Broken Arrow, Okla., assignor to Armin Thermodynamics Corporation, Broken Arrow, Okla.
Filed Jun. 26, 1992, Ser. No. 905,854
Term of patent 14 years
U.S. Cl. D15—150



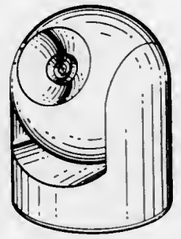
340,251
MICROSCOPE
Friedrich K. Frenkler, Tokyo, and Norikatsu Morita, Tatebayashi, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Jun. 19, 1991, Ser. No. 717,721
Claims priority, application Japan, Dec. 26, 1990, 2-42849
Term of patent 14 years
U.S. Cl. D16—131



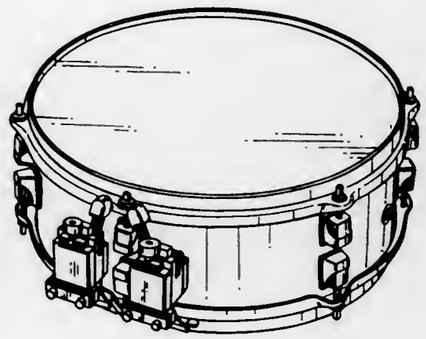
340,252
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Friedrich K. Frenkler, Tokyo, and Norikatsu Morita, Tatebayashi, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
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Claims priority, application Japan, Dec. 26, 1990, 2-42848
Term of patent 14 years
U.S. Cl. D16—131



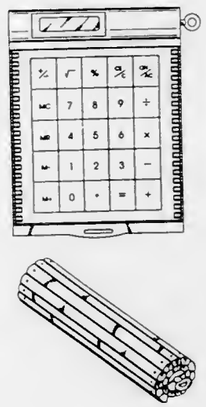
340,253
SURVEILLANCE CAMERA
Christian Fedorczak, Franconville, France, assignor to Thomson Surveillance Video, Puteaux, France
Filed Apr. 4, 1991, Ser. No. 680,288
Claims priority, application France, Oct. 5, 1990, 906208
Term of patent 14 years
U.S. Cl. D16—203



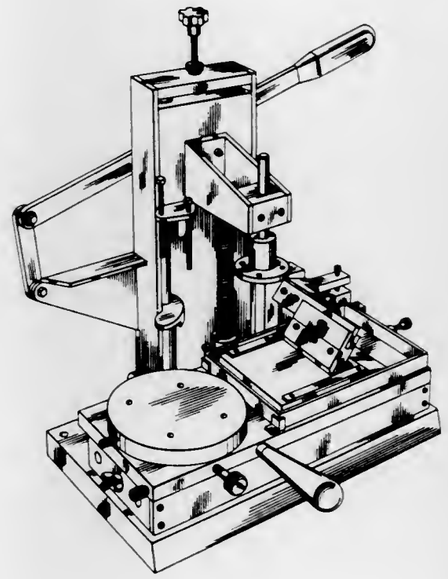
340,254
SNARE DRUM
Toshinori Yamashita, Hamamatsu, Japan, assignor to Yamaha Corporation, Shuzuoka, Japan
Filed Nov. 20, 1991, Ser. No. 797,081
Claims priority, application Japan, May 22, 1991, 3-14824
Term of patent 14 years
U.S. Cl. D17—22



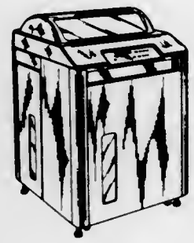
340,255
CALCULATOR
Chi-Wing A. Yip, 1702 Yue Shing Comm. Bldg., 15-16 Queen Victoria St., Central, Hong Kong
Filed Jan. 15, 1992, Ser. No. 820,958
Claims priority, application United Kingdom, Jul. 15, 1991, 2016005
Term of patent 14 years
U.S. Cl. D18—6



340,256
PAD PRINTER
Hin-Chung Ng, New Territories, Hong Kong, assignor to Tai Chung Metal Factory, Tuen Mun, Hong Kong
Filed Jul. 9, 1991, Ser. No. 727,143
Claims priority, application United Kingdom, Jan. 9, 1991, 2012213
Term of patent 14 years
U.S. Cl. D18—14

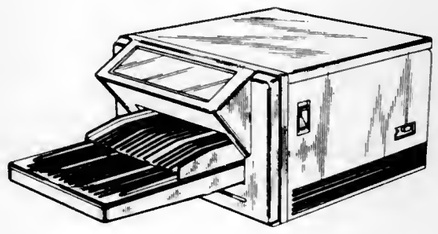


340,257
LINE PRINTER FOR ELECTRONIC COMPUTER
Hideki Ishida; Hideaki Hasegawa; Toshiaki Fujieda; Yoshikane Matsumoto; Toshiyuki Ito, and Fukuji Neya, all of Katsuta, Japan, assignors to Hitachi Koki Co. Ltd., Tokyo, Japan
Filed Aug. 30, 1991, Ser. No. 752,314
Claims priority, application Japan, Mar. 1, 1991, 3-5639
Term of patent 14 years
U.S. Cl. D18—53

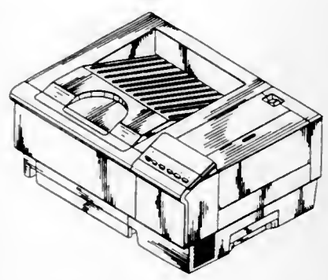


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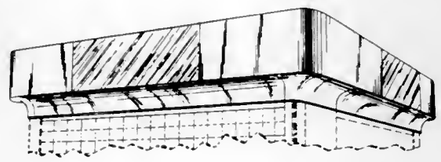
340,258
PRINTER
Koji Asakura; Midori Yonezawa; Masaharu Sawatani, all of Kanagawa, and Yoshio Hanasaki, Hiroshima, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 7, 1991, Ser. No. 788,750
Claims priority, application Japan, May 7, 1991, 3-13113
Term of patent 14 years
U.S. Cl. D18—55



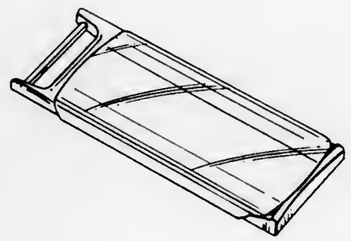
340,259
COMPUTER OUTPUT PRINTER
Masayoshi Etou; Hiroshi Hidaka; Hisanao Yunoki, and Yukio Terauchi, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Nov. 8, 1991, Ser. No. 789,466
Claims priority, application Japan, May 9, 1991, 3-13608
Term of patent 14 years
U.S. Cl. D18—55



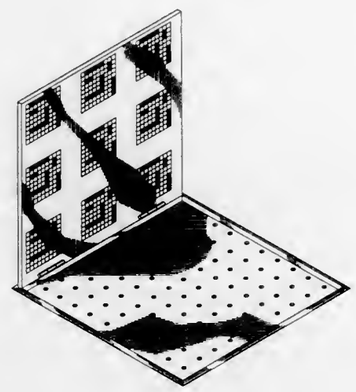
340,260
COMBINED HEADER AND SIGN SUPPORT HOUSING FOR ADVERTISING
Thomas F. Parker, Grand Haven, and Daniel J. Yenglin, Spring Lake, both of Mich., assignors to Thomas F. Parker & Associates, Inc., Grand Haven, Mich.
Filed Oct. 18, 1991, Ser. No. 779,565
Term of patent 14 years
U.S. Cl. D20—19



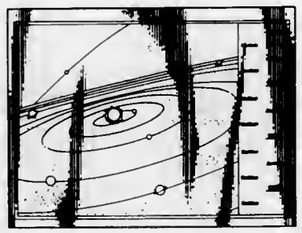
340,261
IDENTIFICATION TAG
Dana Franklin, Denver, Colo., assignor to Samsonite Corporation, Denver, Colo.
Filed Mar. 19, 1992, Ser. No. 854,512
Term of patent 14 years
U.S. Cl. D20—22



340,262
CROSS WORD PUZZLE GAME APPARATUS
Paul W. Van Akin, 612 Brookhill Dr., Paso Robles, Calif. 93446
Filed Mar. 14, 1991, Ser. No. 669,294
Term of patent 14 years
U.S. Cl. D21—20



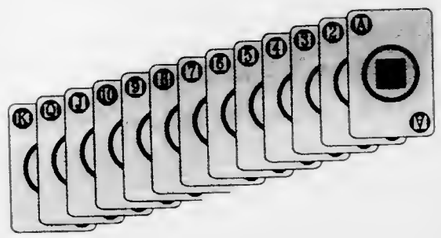
340,263
BOARD GAME
Carlos A. Seales, 435 Alabama Ave., #2C, Brooklyn, N.Y. 11207
Filed Jun. 21, 1991, Ser. No. 718,864
Term of patent 14 years
U.S. Cl. D21—25



340,264
LOTTERY SCRATCHER
Staci D. Anthony, 4937 W. 118th Pl. #3E, Hawthorne, Calif. 90250
Filed Jun. 14, 1991, Ser. No. 716,378
Term of patent 14 years
U.S. Cl. D21—37



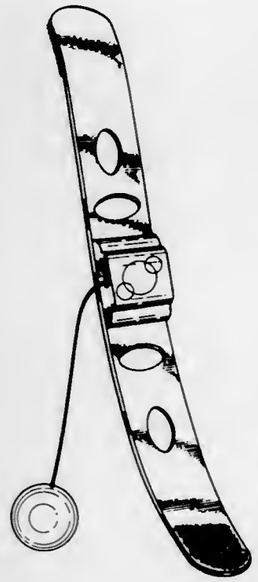
340,265
SET OF PLAYING CARDS
Ronald G. St. Pierre, College Variety 88 Russell St., Lewiston, Me. 04240
Filed Apr. 22, 1991, Ser. No. 689,690
Term of patent 14 years
U.S. Cl. D21—44



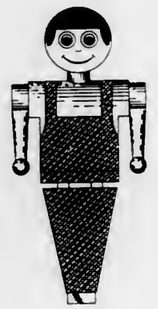
340,266
SET OF CHESSMEN
A. M. Bloomer, W2487 Short Rd., Chilton, Wis. 53014
Filed Jan. 17, 1989, Ser. No. 297,240
Term of patent 14 years
U.S. Cl. D21—52



340,267
TETHERED BALL TOY
Umberto L. Robles, 594 Farmington Ave. A-2, Hartford, Conn. 06105
Filed Jul. 25, 1991, Ser. No. 735,458
Term of patent 14 years
U.S. Cl. D21—62



340,268
TOY FIGURE
Richard M. Poteet, 3714 Ady Rd., Street, Md. 21154
Filed Aug. 19, 1991, Ser. No. 747,252
Term of patent 14 years
U.S. Cl. D21—150

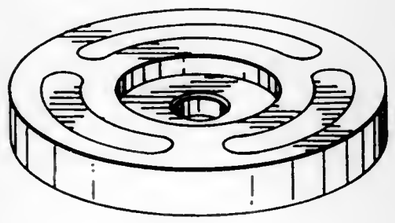


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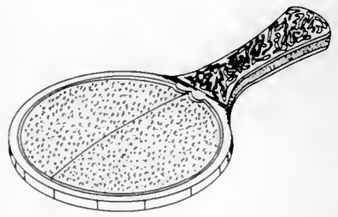
340,269
COMBINED RELAXATION AND EXERCISE CHAIR
Edward P. Stevens, 1304 - 10th Ave., Menomonie, Wis. 54751
Filed Feb. 3, 1992, Ser. No. 829,163
Term of patent 14 years
U.S. Cl. D21—191



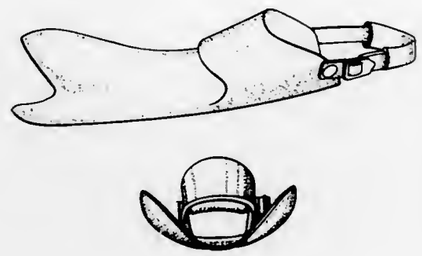
340,270
GOLF TEE HOLDER
Jay E. Jones, P.O. Box 470, North Lima, Ohio 44452
Filed Jul. 23, 1991, Ser. No. 734,816
Term of patent 14 years
U.S. Cl. D21—208



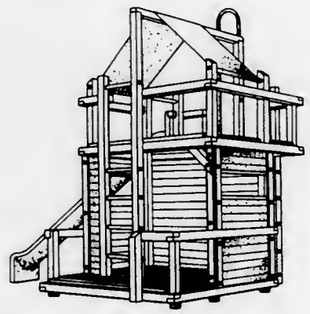
340,271
RACKET
Sen-Shiou Chou, 4 Fl., No. 41, Tung Pei St., Feng Yuan City, Taichung Hsien
Filed Dec. 12, 1991, Ser. No. 806,135
Term of patent 14 years
U.S. Cl. D21—213



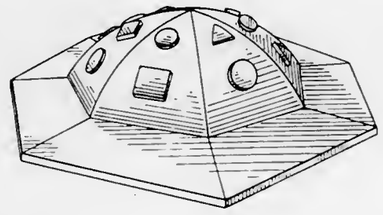
340,272
SWIMMING FIN
Robert B. Evans, 28 Anacapa St., Santa Barbara, Calif. 93101
Filed Aug. 19, 1991, Ser. No. 746,575
Term of patent 14 years
U.S. Cl. D21—239



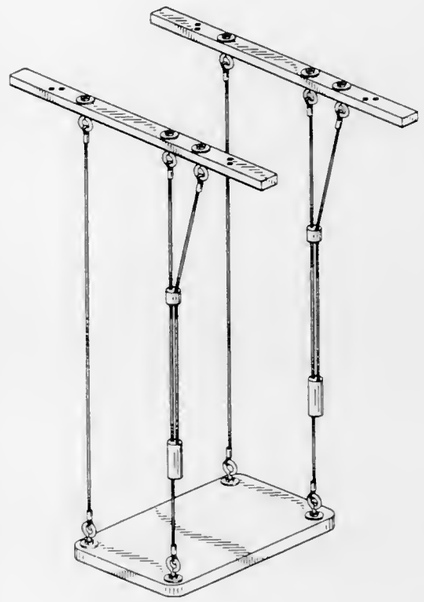
340,273
COMBINATION PLAYHOUSE, DECK AND SLIDE
James D. Ezell, Franklinton, N.C., assignor to Woodplay, Inc., Raleigh, N.C.
Filed Jul. 16, 1992, Ser. No. 914,093
Term of patent 14 years
U.S. Cl. D21—244



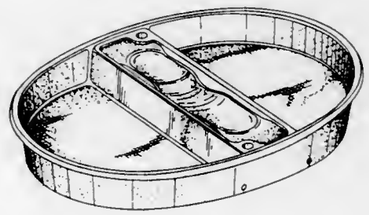
340,274
CLIMBER
James F. Gleeson, and Richard J. Petersheim, both of Charlotte, N.C., assignors to Restaurant Technology, Inc., Oak Brook, Ill.
Filed Jan. 30, 1992, Ser. No. 828,595
Term of patent 14 years
U.S. Cl. D21—245



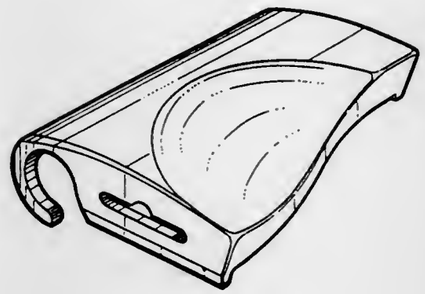
340,275
HAND PROPELLED SWING
Fred V. Haun, 6813 Commonwealth Blvd., Parma Heights, Ohio 44130
Filed Aug. 3, 1992, Ser. No. 923,170
Term of patent 14 years
U.S. Cl. D21—246



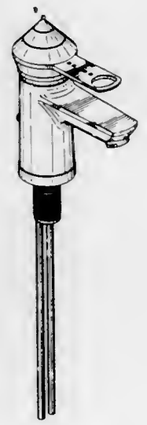
340,276
PORTABLE SWIMMING POOL
Myra L. Van Ausdall, 6770 NW. Beaver Dr., Johnston, Iowa 50131
Filed Sep. 13, 1991, Ser. No. 759,075
Term of patent 14 years
U.S. Cl. D21—252



340,277
THUMBREST FOR MOUNTING ON A FISHING REEL
Bengt-Ake Henriksson, Svangsta, Sweden, assignor to Abu Garcia Produktion AB, Svangsta, Sweden
Filed Jun. 24, 1991, Ser. No. 721,370
Term of patent 14 years
U.S. Cl. D22—139

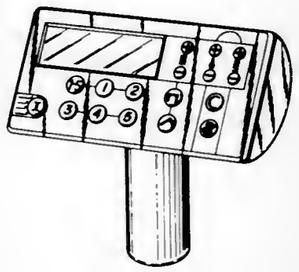


340,278
FAUCET
Andreas Haug, and Thomas Schoenherr, both of Stuttgart, Fed. Rep. of Germany, assignors to Hans Grohe GmbH & Co. KG, Schiltach, Fed. Rep. of Germany
Filed Apr. 3, 1991, Ser. No. 679,600
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1990, 9006679
Term of patent 14 years
U.S. Cl. D23—238

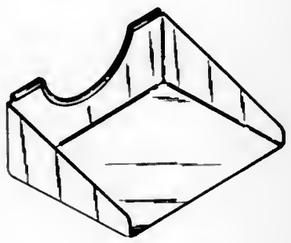


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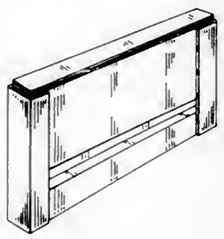
340,279
CONTROLLER FOR BATHROOM FIXTURES
Hans-Werner Mattis, Darmstadt, Fed. Rep. of Germany, assignor to Knebel & Rottger GmbH & Co., Iserlohn, Fed. Rep. of Germany
Filed Mar. 7, 1991, Ser. No. 666,402
Claims priority, application World Int. Prop. O., Oct. 2, 1990, DM/017765
Term of patent 14 years
U.S. Cl. D23—246



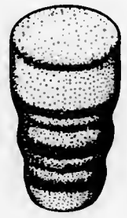
340,280
TRAY FOR WASHING THE MALE GENITALIA AT A SINK
Charles H. Junca, 4932 La. 83, Frankline, La. 70538
Filed Oct. 4, 1991, Ser. No. 771,934
Term of patent 14 years
U.S. Cl. D23—284



340,281
AIR DIFFUSER GUARD
Mike T. Callas, 5701 Camelback Dr., Edina, Minn. 55436
Filed Sep. 30, 1992, Ser. No. 954,923
Term of patent 14 years
U.S. Cl. D23—386



340,282
EARPLUG
Howard S. Leight, 4061 Glencoe Ave., Marina Del Rey, Calif. 90292
Filed Apr. 9, 1991, Ser. No. 682,705
Term of patent 14 years
U.S. Cl. D24—106

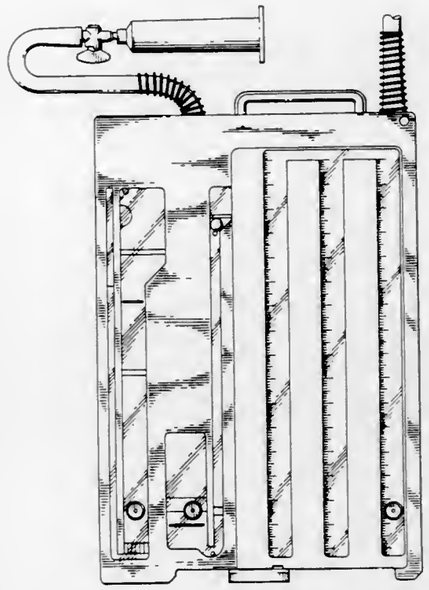


340,283
DIAPER PANTS
Takamitsu Igaue; Tohru Sasaki, both of Kawanoe; Hiromi Manabe, Ehime; Hironori Nomura, Iyomishima, and Taiji Shimakawa, Kanonji, all of Japan, assignors to Uni-Charm Corporation, Ehime, Japan
Filed Aug. 31, 1990, Ser. No. 575,881
The portion of the term of this patent subsequent to May 18, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—126

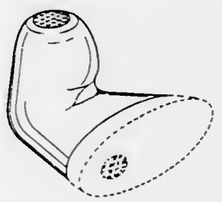
340,284
BIODEGRADABLE SURGICAL STAPLE
Lanny L. Johnson, 3800 S. Hagadorn Rd., Okemos, Mich. 48864
Continuation-in-part of Ser. No. 275,551, Nov. 23, 1988, Pat. No. D. 320,081. This application Jul. 29, 1991, Ser. No. 736,809
The portion of the term of this patent subsequent to Sep. 17, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—145



340,285
CHEST DRAIN
Steve A. Herweck, Nashua; Theodore Karwoski, Hollis, and Stephen M. Vail, Nashua, all of N.H., assignors to Atrium Medical Corporation, Hollis, N.H.
Filed Nov. 8, 1990, Ser. No. 611,341
Term of patent 14 years
U.S. Cl. D24—169



340,286
SHELL FOR HEARING AID
Jinseong Seo, 245-2 Nung-dong, Soongdong-Ku, Seoul, Rep. of Korea
Filed Jan. 29, 1991, Ser. No. 647,002
Term of patent 14 years
U.S. Cl. D24—174



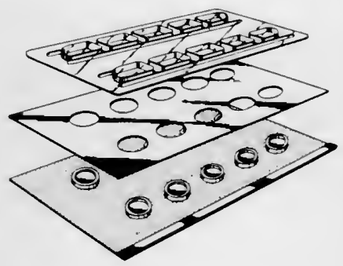
340,287
COMBINED PACIFIER AND PROTECTOR
Darlene C. Hines, 1323 22nd St., Newport News, Va. 23607
Filed Apr. 15, 1991, Ser. No. 685,499
Term of patent 14 years
U.S. Cl. D24—194



340,288
TEETHER
Tom Reinertsen, Rehoboth, and Bonnie Zacherle, Norwood, both of Mass., assignors to Kiddie Products, Inc., Avon, Mass.
Filed Sep. 30, 1991, Ser. No. 769,013
Term of patent 14 years
U.S. Cl. D24—195

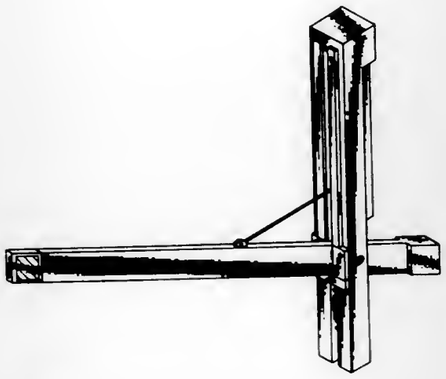


340,289
DIAGNOSTIC TESTING MATERIAL
Jan Gerber, 23, Bartokhof, NL-2402 GC, Alphen ad/Rijn, Netherlands
Filed Jul. 7, 1992, Ser. No. 909,992
Claims priority, application World Int. Prop. O., Jan. 30, 1992, DM/021839
Term of patent 14 years
U.S. Cl. D24—223



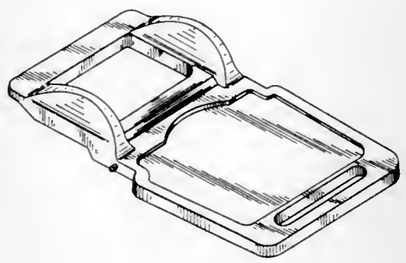
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340,290
GATE
Frederick P. Rossiter, 342 Amsterdam Rd., Scotia, N.Y. 12302
Filed Jul. 19, 1991, Ser. No. 732,702
Term of patent 14 years
U.S. Cl. D25—50

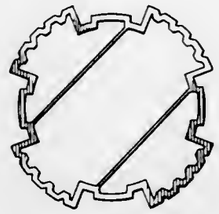




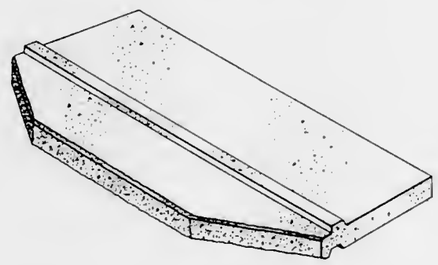
340,291
LADDER PAIL SHELF
Frederick J. Bartnicki, Greenville; Robert D. Beggs, Fredonia, both of Pa.; Francis W. MacGregor, Simshury, Conn., and Donald M. Werner, Hermitage, Pa., assignors to R. D. Werner Co., Inc., Greenville, Pa.
Filed Jul. 12, 1991, Ser. No. 729,005
Term of patent 14 years
U.S. Cl. D25—68



340,292
DECORATIVE EXTRUSION
Peter M. Stagl, Morris Plains, N.J., assignor to Avnet, Inc., Great Neck, N.Y.
Filed Mar. 15, 1991, Ser. No. 670,154
The portion of the term of this patent subsequent to Oct. 27, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D25—122



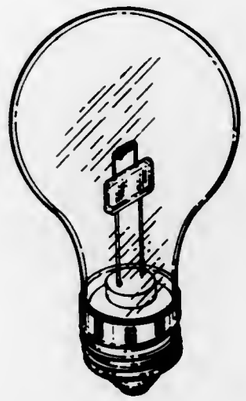
340,293
MODULAR BLOCK
Angelo Risi, and Antonio Risi, both of Richmond Hill, Canada, assignors to Rothbury Investments Limited, Thornhill, Canada
Filed Mar. 30, 1992, Ser. No. 860,062
Claims priority, application Canada, Sep. 30, 1991, 30-09-91-3
Term of patent 14 years
U.S. Cl. D25—113



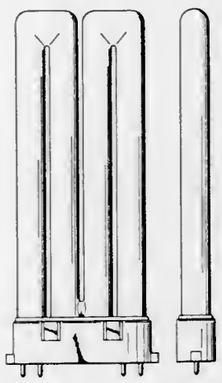
340,294
DESIGN FOR A TAB PORTION OF A SHINGLE
Marcia G. Hannah, Wayne; George W. Mehrer, Jenkintown; Michael J. Noone, Wayne; Kermit E. Stahl, North Wales, and Joseph Quaranta, Yardley, all of Pa., assignors to CertainTeed Corporation, Valley Forge, Pa.
Continuation-in-part of Ser. No. 110,801, Oct. 20, 1987, Pat. No. Des. 314,628, and a continuation-in-part of Ser. No. 174,023, Mar. 28, 1988. This application Apr. 27, 1990, Ser. No. 515,253
Term of patent 14 years
U.S. Cl. D25—139



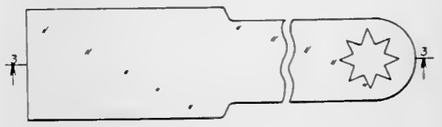
340,295
LAMP BULB WITH INTERNAL SOUND EMITTER ACTUATED BY ENERGIZED LAMP
Edgar O. Beauchamp, Oviedo St. #63 Belmonte, Mayaguez, P.R. 00708
Filed Oct. 18, 1991, Ser. No. 778,618
Term of patent 14 years
U.S. Cl. D26—2



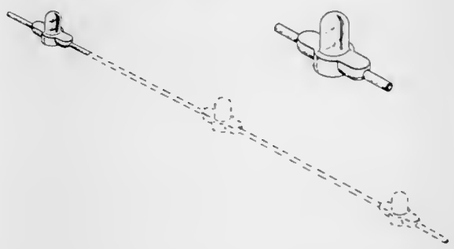
340,296
FLAT MULTI-TUBE COMPACT FLUORESCENT LAMP
Bruno Bachetzky, Augsburg; Michael Kappler, Friedberg; Lothar Haendler, Gernlinden, and Horst Porembski, Munich, all of Fed. Rep. of Germany, assignors to Osram GmbH, Munich, Fed. Rep. of Germany
Filed Sep. 11, 1991, Ser. No. 757,498
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1991, 9102429
Term of patent 14 years
U.S. Cl. D26—3



340,297
CHRISTMAS CANDLE HOLDER
William J. Hanson, 376 Wataquadock Hill Rd., Bolton, Mass. 01740
Filed Apr. 1, 1983, Ser. No. 481,348
Term of patent 14 years
U.S. Cl. D26—9

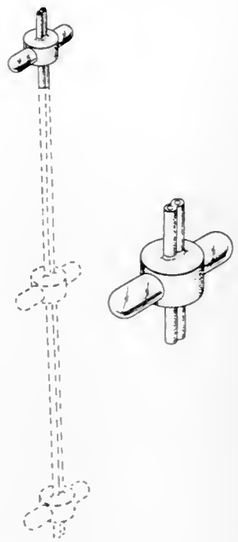


340,298
DECORATIVE LAMP FOR A LIGHT STRING
Kazuaki Murata, Tokyo, Japan, assignor to Moriyama Sangyo Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 16, 1991, Ser. No. 731,021
The portion of the term of this patent subsequent to Jun. 15, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D26—25

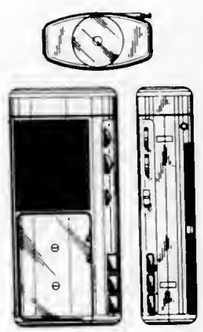


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340,299
DECORATIVE LAMP FOR A LIGHT STRING
Kazuaki Murata, Tokyo, Japan, assignor to Moriyama Sangyo Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 16, 1991, Ser. No. 731,028
The portion of the term of this patent subsequent to Jun. 15, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D26—25



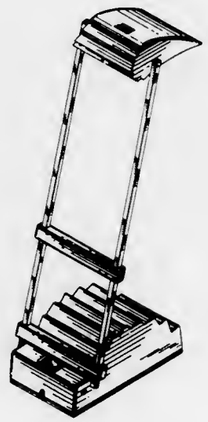
340,300
COMBINED EMERGENCY LANTERN, AM/FM RADIO AND CASSETTE PLAYER
John Se-Kit Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Feb. 3, 1992, Ser. No. 829,333
Claims priority, application United Kingdom, Sep. 25, 1991, 2017719
Term of patent 14 years
U.S. Cl. D26—38



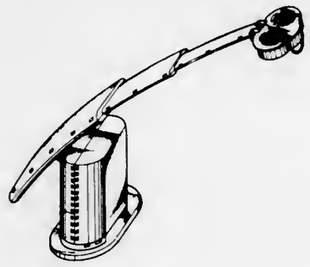
340,301
TRANSLUCENT-TOP LIGHT TABLE
Marjorie L. Evans, and John R. Evans, both of 25725 N. Player Dr., Valencia, Calif. 91355
Filed Dec. 20, 1991, Ser. No. 810,919
Term of patent 14 years
U.S. Cl. D26—58



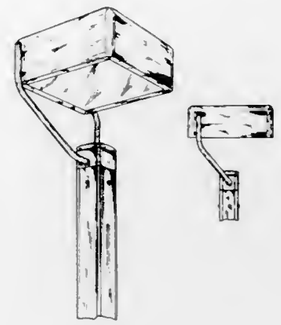
340,302
ADJUSTABLE LAMP
Rockwood T. Roberts, III, Midland Park, N.J., assignor to C. N. Burman Co., Paterson, N.J.
Filed May 28, 1992, Ser. No. 889,318
Term of patent 14 years
U.S. Cl. D26—61



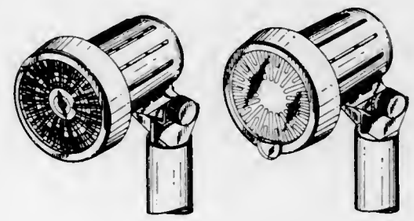
340,303
ADJUSTABLE TABLE LAMP
James C. S. Huang, No. 19, Lane 111, Ho Ping Rd., Luchou, Taipei Hsien, Taiwan
Filed Jan. 2, 1992, Ser. No. 817,425
Term of patent 14 years
U.S. Cl. D26—66



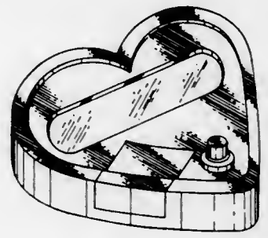
340,304
FLOODLIGHT
Kent A. Solberg, Racine, Wis., assignor to Ruud Lighting, Inc., Racine, Wis.
Filed Feb. 8, 1991, Ser. No. 652,909
The portion of the term of this patent subsequent to Feb. 2, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D26—68



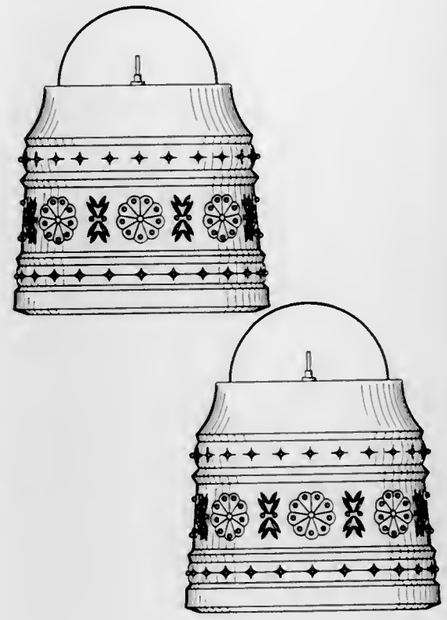
340,305
OUTDOOR LIGHT FIXTURE
Milly S. Hall, Dallas, Tex.; Donald L. Robrs, Overland Park, Kans., and Kung C. Hung, New Territories, Hong Kong, assignors to The Brinkmann Corporation, Dallas, Tex.
Filed May 7, 1991, Ser. No. 696,530
Term of patent 14 years
U.S. Cl. D26—68



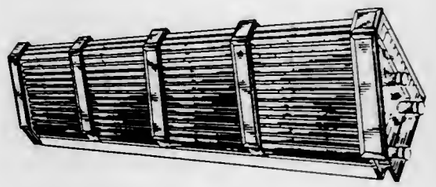
340,306
BATTERY POWERED NIGHT LIGHT
Damian C. Friend, 1185 Bellaire St. Apt. 11, and Kimberly J. Carter, 1190 Clermont St. Apt. 5, both of Denver, Colo. 80220
Filed Nov. 22, 1991, Ser. No. 796,218
Term of patent 14 years
U.S. Cl. D26—73



340,307
INDOOR/OUTDOOR LAMP
Philip G. Zimmerman, 3031 Centennial Ave., Radcliff, Ky. 40160
Filed Dec. 16, 1991, Ser. No. 808,289
Term of patent 14 years
U.S. Cl. D26—81

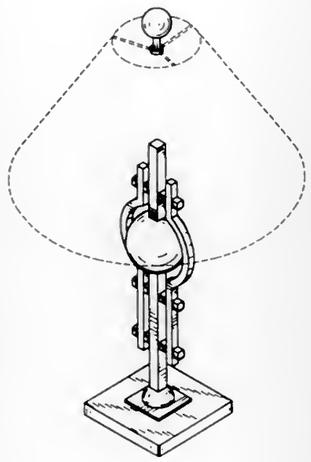


340,308
WALL MOUNTED LIGHTING FIXTURE
Pasquale Miranda, Yonkers, N.Y., assignor to Murray Feiss Import Corp., Bronx, N.Y.
Filed Apr. 26, 1991, Ser. No. 699,292
Term of patent 14 years
U.S. Cl. D26—86

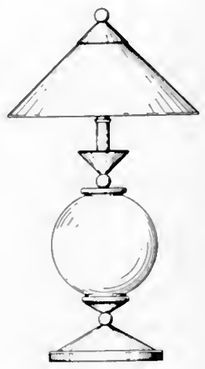


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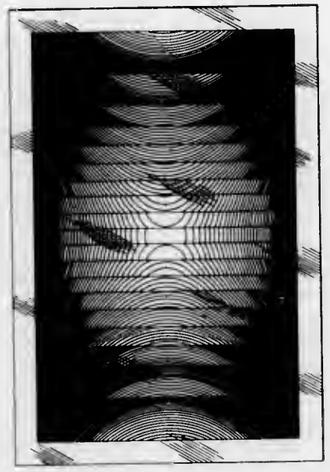
340,309
TABLE LAMP
David H. Porter, Chagrin Falls, Ohio, assignor to The L. D. Kichler Co., Cleveland, Ohio
Filed Apr. 2, 1992, Ser. No. 862,270
Term of patent 14 years
U.S. Cl. D26—106



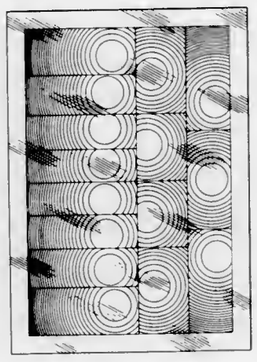
340,310
TABLE LAMP
William Segill, Newton; Mark E. Segill, Framingham; Michael Dangelo, Seekonk, and Jeffrey H. Pocock, Medfield, all of Mass., assignors to American Lighting Fixture Corp., Taunton, Mass.
Filed Feb. 19, 1992, Ser. No. 836,948
Term of patent 14 years
U.S. Cl. D26—110



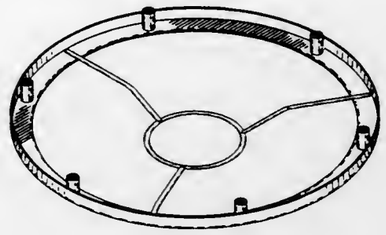
340,311
FRESNEL LENS ARRAY FOR INFRARED MOTION DETECTOR
Richard N. Claytor, Arlington, Tex., assignor to Fresnel Technologies, Inc., Fort Worth, Tex.
Filed Jan. 24, 1991, Ser. No. 645,674
The portion of the term of this patent subsequent to Mar. 26, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D26—122



340,312
WIDE ANGLE FRESNEL LENS ARRAY FOR INFRARED MOTION DETECTOR
Richard N. Claytor, Arlington, Tex., assignor to Fresnel Technologies, Inc., Fort Worth, Tex.
Filed Jan. 24, 1991, Ser. No. 645,675
The portion of the term of this patent subsequent to Mar. 12, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D26—122



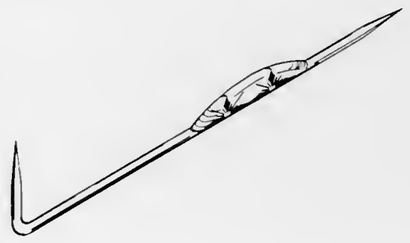
340,313
SOCKET ASSEMBLY FOR AN ELECTRIC LAMP FIXTURE
Frank L. Husted, 147 Barton Dr., Spring City, Pa. 19475
Filed Apr. 1, 1991, Ser. No. 677,855
Term of patent 14 years
U.S. Cl. D26—144



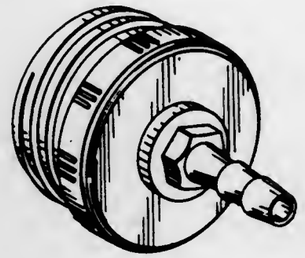
340,314
DENTAL FLOSSER
Curtis A. Woodyard, 200 Byrd St., Suffolk, Va. 23434
Filed Jan. 18, 1991, Ser. No. 643,675
Term of patent 14 years
U.S. Cl. D28—64



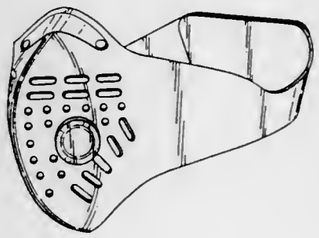
340,315
TOOTHPICK
Richard J. Morin, 264 Dover Point Rd., Dover, N.H. 03820
Filed Feb. 3, 1992, Ser. No. 829,682
Term of patent 14 years
U.S. Cl. D28—64



340,316
TEST PROBE FOR FACEPIECE RESPIRATORS
Joseph Z. Zdrok, Webster, Mass., assignor to Cabot Safety Corporation, Southbridge, Mass.
Filed Mar. 28, 1991, Ser. No. 676,732
Term of patent 14 years
U.S. Cl. D29—7



340,317
RESPIRATORY PROTECTION MASK
Harry Cole, Unit 1, 29 South Island Place, London SW9 0DX, Great Britain
Filed Jun. 6, 1991, Ser. No. 711,669
Term of patent 14 years
U.S. Cl. D29—7



340,318
CYCLING HELMET HAVING AIR FILTERING AND BREATHING MEANS
Russell D. McCloud, 15 Pine La., St. Rose, La. 70087
Filed Apr. 8, 1991, Ser. No. 681,392
Term of patent 14 years
U.S. Cl. D29—13



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340,319
HELMET
Eitaro Kamata, Tokyo, Japan, assignor to Shoei Kako Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 1, 1991, Ser. No. 662,898
Claims priority, application Japan, Sep. 5, 1990, 2-29861
Term of patent 14 years
U.S. Cl. D29—15



340,320
HELMET
Eitaro Kamata, Tokyo, Japan, assignor to Shoei Kako Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 1, 1991, Ser. No. 662,899
Claims priority, application Japan, Sep. 5, 1990, 2-29862
Term of patent 14 years
U.S. Cl. D29—15



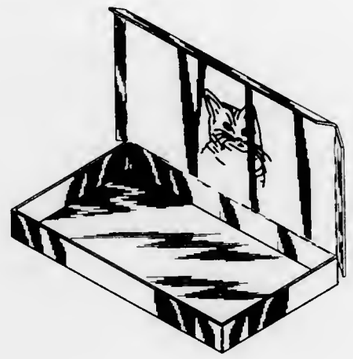
340,321
AVIARY
Terreace Boon, 111 Clinton St., North East, Pa. 16428
Filed Dec. 13, 1991, Ser. No. 806,421
Term of patent 14 years
U.S. Cl. D30—114



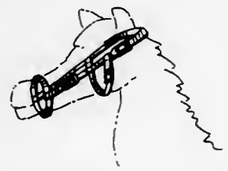
340,322
DOG BED
Pearl O. Merritt, 4390 Bartow Carver Rd., Acworth, Ga. 30101
Filed Apr. 1, 1992, Ser. No. 862,244
Term of patent 14 years
U.S. Cl. D30—118



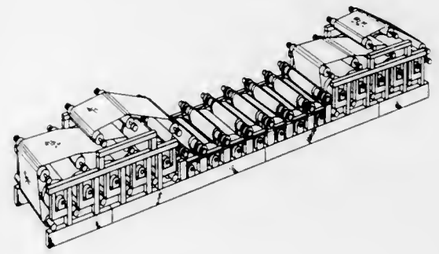
340,323
PORTABLE CAT LITTER CONTAINER
Linda D. Wagner, 507 Smith Market Rd., Columbia, S.C. 29212
Filed Feb. 22, 1991, Ser. No. 659,174
Term of patent 14 years
U.S. Cl. D30—161



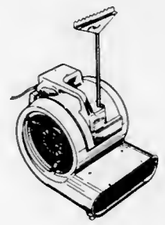
340,324
ADJUSTABLE HORSE HALTER
Dianne C. Lashoones, Water Tower Farm, P.O. Box 225; Cheryl A. Bell, 371 New Discovery Rd., and Melody C. Nunn, R.R. #1, Box 761, all of Marshfield, Vt. 05658
Filed Jan. 30, 1992, Ser. No. 828,487
Term of patent 14 years
U.S. Cl. D30—134



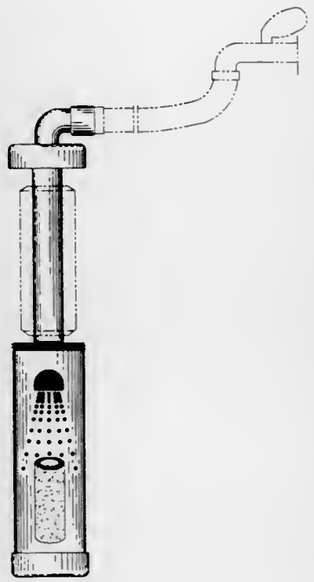
340,325
WEB DRYING SECTION
Borgeir Skaugen, and Gregory L. Wedel, both of Beloit, Wis., assignors to Beloit Technologies, Inc., Wilmington, Del.
Division of Ser. No. 784,811, Oct. 29, 1991, Pat. No. Des. 333,710, which is a division of Ser. No. 540,075, Jun. 19, 1990, Pat. No. Des. 321,269, which is a division of Ser. No. 14,569, Feb. 13, 1987, Pat. No. 4,934,067. This application Nov. 25, 1991, Ser. No. 797,597
The portion of the term of this patent subsequent to Sep. 17, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D32—1



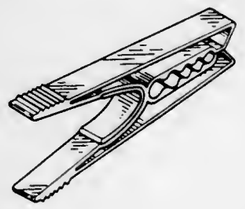
340,326
CARPET DRYER
Vincent P. Genovese, Fort Worth, Tex., assignor to Southwest Manufacturers & Distributors, Inc., Forth Worth, Tex.
Filed Jul. 26, 1991, Ser. No. 736,757
Term of patent 14 years
U.S. Cl. D32—15



340,327
PAINT ROLLER CLEANER FOR ATTACHMENT TO A HOSE
Saul Alderete, 912 B.E. Walnut St., Taylor, Tex. 76574
Filed Sep. 3, 1991, Ser. No. 754,418
Term of patent 14 years
U.S. Cl. D32—35

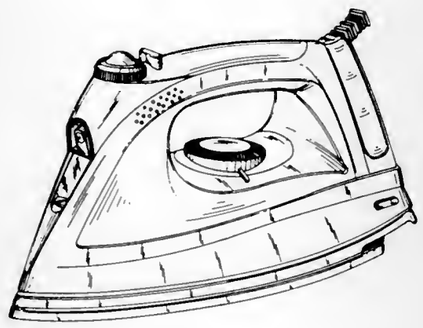


340,328
CLOTHESPIN
Demosthenes Dragoneas, and Gregorios Pagonis, both of Killarney, South Africa, assignors to Demogreg CC, Johannesburg, South Africa
Filed Feb. 26, 1990, Ser. No. 484,663
Term of patent 14 years
U.S. Cl. D32—61

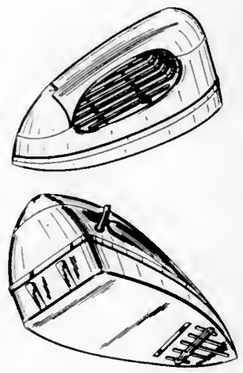


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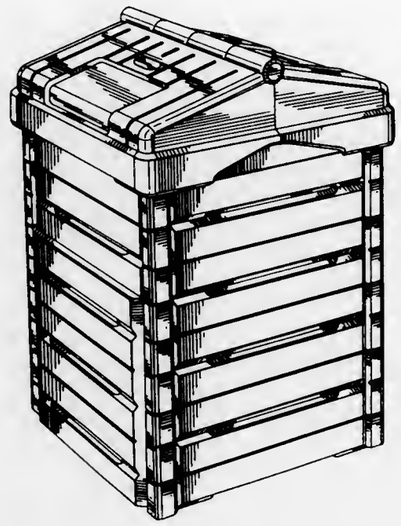
340,329
ELECTRIC STEAM IRON
Jean-Louis Barrault, Boulogne Billancourt, France, assignor to Moulinex (Societe Anonyme), Bagnolet, France
Filed Jan. 7, 1991, Ser. No. 638,455
Claims priority, application France, Jul. 13, 1990, 904489
Term of patent 14 years
U.S. Cl. D32—70



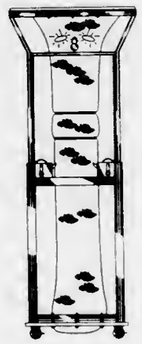
340,330
STEAM IRON
Nicole M. Seguljic, 307 E. 6th St., New York, N.Y. 10003
Filed Nov. 25, 1991, Ser. No. 797,107
Term of patent 14 years
U.S. Cl. D32—70



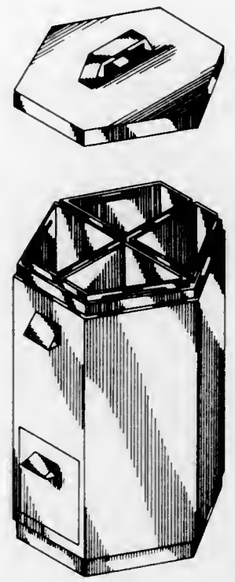
340,331
COMPOSTER
Paul T. Arato, Willowdale, and Kenneth E. Cummings, Mississanga, both of Canada, assignors to Arato Design Associates, Inc., Canada
Filed Aug. 30, 1991, Ser. No. 752,312
Term of patent 14 years
U.S. Cl. D34—1



340,332
MOBILE REFUSE RECEPTACLE FOR ASBESTOS
Donald D. Davis, 1900 S. Hemlock, Borger, Tex. 79007; Glenna A. Nuttall Trout, Rte. 2, Box 25-7, Fritch, Tex. 79036, and Randall A. Heston, P.O. Box 896, Stinnett, Tex. 79083
Filed Jan. 30, 1991, Ser. No. 648,404
Term of patent 14 years
U.S. Cl. D34—5



340,333
COMPARTMENTED RECYCLING STORAGE CABINET
Richard S. Duran, and Miguel Trujillo, both of 3525 Smith Ave. SE., Albuquerque, N. Mex. 87106
Filed Jun. 18, 1991, Ser. No. 717,112
Term of patent 14 years
U.S. Cl. D34—7



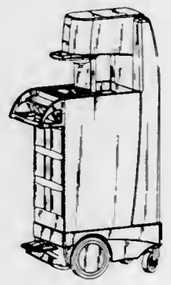
340,334
NESTING HANDTRUCK
J. H. B. Kean, Marina Del Rey, Calif.; Everette A. Brumbelow; Henry C. Grimes, both of Rome, Ga.; Dennis Schultz, Cartersville, Ga., and Mickey Watson, Rome, Ga., assignors to The Fairbanks Company, Rome, Ga.
Filed Apr. 20, 1992, Ser. No. 871,213
Term of patent 14 years
U.S. Cl. D34—17



340,335
CONVERTIBLE HANDTRUCK
J. H. B. Kean, Marina Del Ray, Calif.; Everette A. Brumbelow; Henry C. Grimes, both of Rome, Ga.; Dennis Schultz, Cartersville, Ga., and Mickey Watson, Rome, Ga., assignors to The Fairbanks Company, Rome, Ga.
Filed Apr. 20, 1992, Ser. No. 871,214
Term of patent 14 years
U.S. Cl. D34—17



340,336
MOBILE BAR
Alexander Groenewege, Delft, and Alfred H. van Elk, Den Haag, both of Netherlands, assignors to Compagnie Internationale Des Wagon-Lits et du Tourisme, Belgium
Filed Oct. 21, 1991, Ser. No. 782,279
Claims priority, application Benelux, Apr. 19, 1991, 66483-00
Term of patent 14 years
U.S. Cl. D34—20

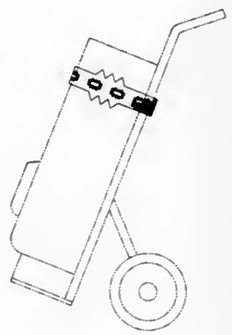


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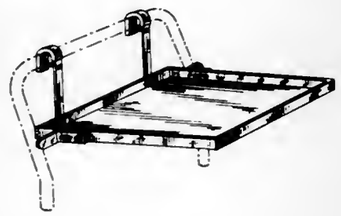
340,337
DOLLY FOR MOVING DOORS
David L. Beasley, 25122 Manzanita Dr., Dana Point, Calif. 92629
Filed Feb. 4, 1992, Ser. No. 830,278
Term of patent 14 years
U.S. Cl. D34—23



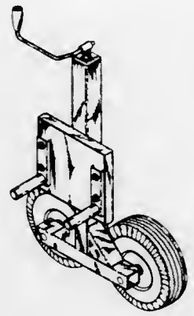
340,338
GOLF BAG STRAP
Scott C. Van Buren, 717 Beekman St., Waupun, Wis. 53963
Filed Dec. 9, 1991, Ser. No. 802,753
Term of patent 14 years
U.S. Cl. D34—27



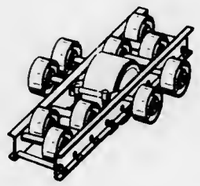
340,339
UTILITY SHELF FOR HANDTRUCK
J. H. B. Kean, Marina Del Rey, Calif.; Everette A. Brumbelow; Henry C. Grimes, both of Rome, Ga.; Dennis Schultz, Cartersville, Ga., and Mickey Watson, Rome, Ga., assignors to The Fairbanks Company, Rome, Ga.
Filed Apr. 20, 1992, Ser. No. 871,212
Term of patent 14 years
U.S. Cl. D34—27



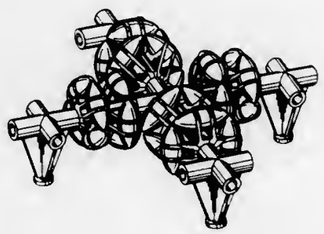
340,340
RIDING TROWEL CRANKING DOLLY WHEEL ASSEMBLY
J. Dewayne Allen, Paragould, Ark., assignor to Allen Engineering Corporation, Paragould, Ark.
Filed Oct. 18, 1991, Ser. No. 778,614
Term of patent 14 years
U.S. Cl. D34—28



340,341
PALLET BRAKE TRACK ASSEMBLY
Robert J. Lawless, Marietta; Brian J. Hudock, Atlanta, and Samuel N. Bacon, III, Smyrna, all of Ga., assignors to Creative Storage Systems, Inc., Marietta, Ga.
Filed Sep. 17, 1991, Ser. No. 761,031
Term of patent 14 years
U.S. Cl. D34—29



340,342
MULTIDIRECTIONAL CONVEYOR CONSTRUCTION
Leena Nummelin, Kaarina; Hannu Eriksson, Sauvo; Erkki Hiekkanen, Turku, and Jorma Nieminen, Karstula, all of Finland, assignors to Okartek KY, Kaarina, Finland
Filed Nov. 8, 1991, Ser. No. 792,077
Claims priority, application Finland, May 8, 1991, 415/91
Term of patent 14 years
U.S. Cl. D34—29



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF OCTOBER, 1993

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. E. Bishop & Associates Pty. Limited: *See—*
Bishop, Arthur E., 5,251,669, Cl. 137-625.230.
A. Finkl & Sons Co.: *See—*
Finkl, Charles W.; Brada, Guy A.; and Underys, Algirdas A., 5,252,120, Cl. 75-508.000.
A/S Foss Electric: *See—*
Nygaard, Lars; Lapp, Torben; and Arnvidarson, Bokur, 5,252,829, Cl. 250-339.000.
AB Tetra Pak: *See—*
Stenstrom Lennart A.; Wahlstrom, Lennart S.; and Wikholm, Bert S., 5,251,982, Cl. 383-209.000.
Abate, Victor R.: *See—*
Kazmierczak, Edmund E.; and Abate, Victor R., 5,252,880, Cl. 310-270.000.
ABB Lummus Crest Inc.: *See—*
Alexander, Anatoly; Yeh, Chuen Y.; and Suciu, George D., 5,252,197, Cl. 208-134.000.
Shaban, Atef; and Suciu, George D., 5,252,183, Cl. 162-77.000.
Abbott Laboratories: *See—*
Chu, Daniel T.; and Li, Qun, 5,252,747, Cl. 548-541.000.
Tarcha, Peter J.; Donovan, James J.; and Wong, Martin, 5,252,459, Cl. 435-6.000.
Abe, Hitoshi; and Yamada, Tomoyuki, to Oki Electric Industry Co., Ltd. Method of forming an oxide superconductor/semiconductor junction. 5,252,548, Cl. 505-1.000.
Abe, Kanji: *See—*
Ohtsu, Jun; Abe, Kanji; and Ida, Toshifumi, 5,252,187, Cl. 203-26.000.
Abe, Masahiro, to Hitachi, Ltd. Attribute value predicting method and system in the learning system. 5,253,333, Cl. 395-62.000.
Abe, Masao: *See—*
Isobe, Nobuyuki; Furusawa, Shigeharu; Abe, Masao; Iida, Toshiyasu; and Ooizumi, Kenjirou, 5,253,235, Cl. 369-37.000.
Abe, Shizuo: *See—*
Kawauchi, Masato; Nakanishi, Kiyoshi; Tokoro, Masayoshi; and Abe, Shizuo, 5,251,578, Cl. 123-41.840.
Abe, Tsuyoshi; and Kobayashi, Jun, to Jujo Paper Co., Ltd. Calendering apparatus for paper making process. 5,251,551, Cl. 100-93.0RP.
Abecassis, Pierre Y.; Leclaire, Jacques; and Riberon, Philippe, to Roussel Uclaf. Preparation process for a protein containing at least one intramolecular disulphide bridge by oxidation, at a pH of less than 5.0 of corresponding reduced recombinant protein. 5,252,708, Cl. 530-351.000.
Abraham, Kuzhikalail M.: *See—*
Alamgir, Mohamed; and Abraham, Kuzhikalail M., 5,252,413, Cl. 429-192.000.
Abrams, Jack S., to Signode Corporation. Chute mounting and biasing mechanism for strapping machine. 5,251,544, Cl. 100-26.000.
Ace Tank & Equipment Company: *See—*
Reese, R. Allan, 5,251,473, Cl. 73-49.200.
Ackermann, Norbert; and Beck, Hubert, to Boge Aktiengesellschaft. Adjustable vibration damper. 5,251,730, Cl. 188-299.000.
Adachi, Hidenobu: *See—*
Fujimoto, Yoji; Fukutaka, Yoshimi; Okui, Takanori; Baba, Kazushi; Nakashima, Eiji; Hatanaka, Atsushi; Kuroda, Yasunori; Adachi, Hidenobu; and Mori, Toshiaki, 5,253,039, Cl. 356-372.000.
Adachi, Makoto, to Sharp Kabushiki Kaisha. Video signal recording-reproduction device. 5,253,076, Cl. 358-339.000.
Adachi, Masahiro; Shizuka, Keizo; and Shigeyoshi, Eiji, to Nissan Motor Co., Ltd. Weft sensing imaging system for weaving machine. 5,251,673, Cl. 139-370.100.
Adachi, Takeshi: *See—*
Hasebe, Masahiko; Adachi, Takeshi; and Inagaki, Yoshihiro, 5,252,774, Cl. 84-618.000.
Adair, Edwin L. Method of cervical videoscope with detachable camera. 5,251,613, Cl. 128-6.000.
Adams, John M.; Chance, Christopher N.; DeBlasio, James A.; Evers, Donald H.; Kirby, Michael A.; Newsome, Reginald W.; and Talley, Robert E., to Philip Morris Incorporated. Dual half-carton structure and method of forming same. 5,251,748, Cl. 206-256.000.
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Lowrey, Tyler A.; Gonzalez, Fernando; and Lee, Ruojia, to Micron Technology, Inc. Reverse polysilicon CMOS fabrication. 5,252,504, Cl. 437-34.000.

LSI Logic Corporation: *See—*
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Lucas, Howard R.; Wu, Kuang-Jong; and Jacobs, William F., to American Cyanamid Company. N-hydroxysuccinimide-blocked isopropenyl-alpha, alpha-dimethylbenzyl isocyanate and self-cross linking copolymers thereof. 5,252,689, Cl. 526-227.000.

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Braschel, Volker; and Seitz, Dieter, 5,251,970, Cl. 303-105.000.
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Lueker, Jonathan; Hengeveld, John; Needham, Brad; Price, Burt; Schlegel, Jim; and Sedeh, Mehrab, to Tektronix, Inc. Digital pulse generator using digital slivers and analog vernier increments. 5,252,977, Cl. 341-182.000.

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Lum, Henry, Jr.: *See—*
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Lungershausen, Arnold W.; and Arnold, Stephen C., to Eastman Kodak Company. Holographic device for combining laser beams. 5,253,086, Cl. 359-10.000.

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Lyda, Samuel J. Device for removing water from fuel tanks. 5,252,203, Cl. 210-172.000.

Lyon, Peter A.: *See—*
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Maass, Gunther; and Schulze, Manfred, to Bayer Aktiengesellschaft. Process for the preparation of organosiloxanes. 5,252,767, Cl. 556-450.000.

MacDonald, James R.; and Bose, Romi, to Advanced Micro Devices, Inc. Row address generator for defective DRAMS including an upper and lower memory device. 5,253,354, Cl. 395-425.000.

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Machishima, Eiji, to Sony Corporation. Color CCD imager having a system for preventing reproducibility degradation of chromatic colors. 5,253,047, Cl. 358-44.000.

MacKay, Michael T., to Sony Corporation of America. Method and apparatus for stabilizing an image produced in a video camera. 5,253,071, Cl. 358-222.000.

Mackey, Jack D., to Northrop Corporation. Polymer composition having intense magnetic properties and method for preparation thereof. 5,252,730, Cl. 540-140.000.

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Mangiavacca, Nicola, to Barilla G. E. R. F. LLI - Societa per Azioni. Device for forming nests of elongate pasta products such as noodles, fettuccine, and the like. 5,252,055, Cl. 425-340.000.

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Martin, Dieter; Patterson, Philip M.; and Swanson, Douglas J., to Gates Rubber Company, The. Flexible boot for universal joint. 5,251,916, Cl. 277-212.0FB.

Martin, Glenn A. Eyelet threading aid. 5,251,797, Cl. 223-99.000.

Martin, Howard. Fortified glutaraldehyde disinfectant. 5,252,606, Cl. 514-574.000.

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Martis, Ronald J., to Allied Signal Inc. Heat treatment process and soft magnetic alloys produced thereby. 5,252,144, Cl. 148-121.000.

Marui, Tomohiro; Ishida, Yoshihiro; and Oka, Hiroyuki, to Kawasaki Steel Corporation. Programmable one-board computer, and methods of verification of logic circuit and alteration to actual circuit using the programmable one-board computer. 5,253,181, Cl. 364-489.000.

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Matsumoto, Hiroshi, to Kabushiki Kaisha Toshiba. Image forming apparatus including a controller for controlling image forming conditions in accordance with normalized differences in detected densities. 5,253,014, Cl. 355-208.000.

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Yasuda, Kenji; Minato, Toshihiro; Kato, Masaru; Nagura, Toshikazu; and Arakawa, Hiroshi, 5,252,533, Cl. 503-227.000.

Mindis Metals, Inc.: *See*—
Jacobs, James R.; and Twomey, Michael R., 5,251,828, Cl. 241-24.000.

Mineo, Shigeharu: *See*—
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Mineur, Thomas L.: *See*—
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Minezawa, Yukihiro; Kawamoto, Mutsumi; and Inagaki, Hidemitsu, to Aisin AW Co., Ltd. Collison-preventing apparatus for electric motor vehicle. 5,251,680, Cl. 180-169.000.

Ministry of International Trade & Industry: *See*—
Hirano, Takashi; Todoroki, Takeshi; and Ohashi, Shinichi, 5,252,673, Cl. 525-183.000.

Minnesota Mining and Manufacturing Company: *See*—
Bruxvoort, Wesley J.; and Howard, Robert N., 5,251,802, Cl. 228-121.000.
Matner, Richard R.; Foltz, William E.; and Woodson, Lewis P., 5,252,484, Cl. 435-288.000.
Rylander, Richard L., 5,253,084, Cl. 358-465.000.
Willett, Peggy S.; Robins, Janis; Tarbutton, Kent S.; and Kropp, Michael A., 5,252,694, Cl. 525-404.000.

Minns, Charles R., to BASF Corporation. Carpet cleaning method. 5,252,243, Cl. 252-102.000.

Minolta Camera Kabushiki Kaisha: *See*—
Fujii, Hidehiko; Inoue, Yoshiyuki; and Iimori, Takahiro, 5,253,003, Cl. 354-149.100.
Gonda, Takashi; Hasegawa, Hirofumi; Yamada, Motohiro; and Ariyama, Takayuki, 5,253,028, Cl. 355-309.000.
Hirota, Yoshihiko, 5,253,083, Cl. 358-461.000.
Kinoshita, Naoyoshi; Kusumoto, Keiji; Takeda, Katsuhiko; Ideyama, Hiroyuki; and Yuge, Shizuo, 5,253,031, Cl. 355-327.000.
Nakatani, Munehiro; Fukushima, Shigenobu; and Tsuboi, Toshio, 5,253,079, Cl. 358-426.000.
Obtani, Junji; Terasaka, Yoshihisa; Machida, Junji; Asahi, Satoshi; Hayashi, Hiroshi; and Matono, Kouichi, 5,252,398, Cl. 428-403.000.
Oku, Shunji; Seigenji, Kiyoshi; Naito, Masao; and Mizumo, Yoshiyuki, 5,253,010, Cl. 354-485.000.

Minolta Camera Kabushiki Kaisha: *See*—
Matsushita, Tetsuo; Kashiwagi, Shoji; and Kitagawa, Tsuneo, 5,253,020, Cl. 355-260.000.

Minten, Joseph C. Device to test the bellows of a stern drive motor for leakage. 5,251,471, Cl. 73-40.000.

Mion International Corporation: *See*—
Arnold, Thomas J., 5,252,121, Cl. 106-35.000.
Arnold, Thomas J., 5,252,122, Cl. 106-35.000.

Miquest Corporation: *See*—
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Mirto, Albert V., Jr.: *See*—
Summerville, Andrew G., Jr.; and Mirto, Albert V., Jr., 5,251,504, Cl. 74-368.000.

Misawa, Tsutami; Itoh, Hisato; Nishizawa, Tsutomu; Nakano, Masami; and Katayama, Hiroyuki, to Mitsui Toatsu Chemicals, Incorporated. Anthraquinonic colorant and polarizing film containing the colorant. 5,252,769, Cl. 552-218.000.

Mita Industrial Co., Ltd.: *See*—
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Shigemura, Yutaka; Kondo, Takashi; Umezawa, Hideo; Oura, Junichi; Yoshimoto, Mitsuharu; Yano, Satoshi; Ito, Yukihiro; Okauchi, Yoshifumi; Miyoshi, Yoshitake; Miyake, Takashi; and Hayashi, Kiyoshi, 5,253,030, Cl. 355-324.000.

Mita, Keizi; Takahashi, Tsuyoshi; Ohkoda, Toshiyuki; and Takada, Tadayoshi, to Sanyo Electric Co., Ltd. Semiconductor integrated circuit with photo diode. 5,252,851, Cl. 257-446.000.

Mitsuba Electric Manufacturing Co., Ltd.: *See*—
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Mitsubishi Corporation: *See*—
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Mitsubishi Denki K.K.: *See*—
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Karasudani, Keiko, 5,253,050, Cl. 358-103.000.
Nakayama, Yoshiro, 5,253,178, Cl. 364-474.040.
Ohuchi, Hirofumi; and Kanno, Yoshiaki, 5,251,599, Cl. 123-339.000.
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Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See*—
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Mitsuya, Teruaki; Suzuki, Takashi; and Uno, Kazuo, to Hitachi, Ltd.; and Hitachi Koki Co., Ltd. Apparatus for fixing a toner image, fixing method and electrophotographic recording equipment. 5,253,025, Cl. 355-285.000.

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Miyake, Takahiro; Yoshida, Yoshio; Kurata, Yukio; Nakata, Yasuo; and Kubo, Katsuhiro, to Sharp Kabushiki Kaisha. Optical head device. 5,253,237, Cl. 369-44.370.

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Miyamoto, Mitsugu; Togashi, Minoru; Takahashi, Fumio; and Fukuoka, Yutaka, to Kabushiki Kaisha Toshiba. Resin-seal apparatus for semiconductor element. 5,252,051, Cl. 425-116.000.

Miyamoto, Naruyuki, to Mita Industrial Co., Ltd. Collision preventive drive device for optical system. 5,252,837, Cl. 250-561.000.

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Miyazaki, Shinji; Mikata, Yuichi; Moriya, Takahiko; Niino, Reiji; and Nishimura, Motohiko, to Kabushiki Kaisha Toshiba; and Tokyo Electron Limited. Vertically oriented CVD apparatus including gas inlet tube having gas injection holes. 5,252,133, Cl. 118-725.000.

Miyoshi, Tetsuo, to Mercian Corporation. Formalin sterilization apparatus. 5,252,304, Cl. 422-305.000.

Miyoshi, Yoshitake: *See*—
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Mizumo, Yoshiyuki: *See*—
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Mizuno, Naoko; Kai, Yoshiaki; and Suzuki, Takashi, to Matsushita Electric Industrial Co., Ltd. Fluorine-containing compounds. 5,252,400, Cl. 428-421.000.

Mizuta, Masao, to Horiba, Ltd. Sample cell support assembly for fluorescent X-ray analysis. 5,253,280, Cl. 378-45.000.

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Mochizuki, Norihisa, to Yamaha Hatsudoki Kabushiki Kaisha. Starting fuel system for engine. 5,251,582, Cl. 123-73.00A.

Mochizuki, Yoshiyuki; and Ohgi, Takeru, to Matsushita Electric Industrial Co., Ltd. Hidden-surface processing device, anti-aliasing method and three-dimensional graphics processing apparatus. 5,253,335, Cl. 395-122.000.

Modell Development Corporation: *See*—
Modell, Michael; Kuharich, Evan F.; and Rooney, Michael R., 5,252,224, Cl. 210-695.000.

Modell, Michael; Kuharich, Evan F.; and Rooney, Michael R., to Modell Development Corporation. Supercritical water oxidation process of organics with inorganics. 5,252,224, Cl. 210-695.000.

Mody, Tarak D.: *See*—
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Mogul, Jeffrey C., to Digital Equipment Corporation. System and method for efficiently supporting access to I/O devices through large direct-mapped data caches. 5,253,353, Cl. 395-425.000.

Mohs, Clifford E., to Mohs, Timothy E. Free product collector and method. 5,252,000, Cl. 405-53.000.

Mohs, Timothy E.: *See*—
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Montgomery, Michael A., to Schlumberger Technology Corporation. Method and apparatus for quadrature amplitude modulation of digital data using a finite state machine. 5,253,271, Cl. 375-59.000.

Monzel, Fred J., to General Electric Company. Squeeze film damper seal. 5,251,985, Cl. 384-99.000.

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Moore, David N., to Phoenix Closures, Inc. Pour spout and dispenser closure with drainage feature. 5,251,788, Cl. 222-111.000.

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Moore, Jerome; Moore, Gwendolyn; and Harley, Sidney L. Stethoscope. 5,252,787, Cl. 181-131.000.

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Moore, Morris A.: *See*—
Snowden, Gregory O.; DeLuca, Michael J.; Moore, Morris A.; Schwendeman, Robert J.; and Willard, David F., 5,252,963, Cl. 340-825.440.

Moore, Richard L.: *See*—
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Moore, Ronald J.: *See*—
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Morello, John R.; Okrucky, James A.; and Neale, Frank T., to General Motors Corporation. Sealed pass through electrical connector. 5,252,088, Cl. 439-271.000.

Morgan, Alton C., Jr.; and Anderson, David C., to NeoRx Corporation. Polymeric carriers for non-covalent drug conjugation. 5,252,713, Cl. 530-391.700.

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Morgan, H. William, Jr.; and Hall, James D., to Morgan, H. William, Jr. Pressure vessel. 5,251,776, Cl. 220-360.000.

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Mori, Kazuaki, to Yamaha Hatsudoki Kabushiki Kaisha. Valve lifter for engine. 5,251,587, Cl. 123-90.510.
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Mori, Masahito; and So, Masaaki, to Sunstar Giken Kabushiki Kaisha. One-pack chloroprene adhesive. 5,252,668, Cl. 525-102.000.
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Jansen, Michael; Yang, Jane J.; Ou, Szutsun S.; and Roth, Thomas J., 5,253,263, Cl. 372-45.000.

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Rothschild, G. F. Neumark. Wide band-gap semiconductors having low bipolar resistivity and method of formation. 5,252,499, Cl. 437-22.000.

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Rottmann, Dietrich, to Linde Aktiengesellschaft. Process and apparatus for air fractionation by rectification. 5,251,449, Cl. 62-22.000.

Roudebush, Brooks: *See*—
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Ruby, Carolyn L.: *See*—
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Rudd, Darryl J. Variable volume box. 5,251,808, Cl. 229-101.200.

Ruehl, Thomas: *See*—
Henkelmann, Jochem; Ruehl, Thomas; Zimmermann, Horst; Goetz, Norbert; Spiegler, Wolfgang; and Kuekenhoehner, Thomas, 5,252,755, Cl. 549-427.000.

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Rui-Rung, Lin: *See*—
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Rupp, Richard H.: *See*—
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Samson, Richard D.; McKinney, James M.; and Russell, John, 5,252,387, Cl. 428-248.000.

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Rylander, Richard L., to Minnesota Mining and Manufacturing Company. General kernel function for electronic halftone generation. 5,253,084, Cl. 358-465.000.

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S. A. Day Manufacturing Company Inc.: *See*—
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S&C Electric Company: *See*—
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Foster, Mark J.; Rajaram, Babu; and Olson, Anthony M., 5,253,350, Cl. 395-400.000.
Olson, Anthony M., 5,253,352, Cl. 395-425.000.

Zetts, John M.: *See—*
Tannenbaum, Alan R.; Zetts, John M.; An, Yu L.; Arbeitman, Gordon W.; Greanias, Evon C.; and Verrier, Guy F., 5,252,951, Cl. 345-156.000.

Zeyer, William A. Photographic slide-to-video tape converter. 5,253,069, Cl. 358-209.000.

Zhang, Raymond L.: *See—*
Cronin, John P.; Tarico, Daniel J.; Agrawal, Anoop; and Zhang, Raymond L., 5,252,354, Cl. 427-58.000.

Ziemkiewicz, Alexander G.: *See—*
Gentile, James L.; Williams, David R.; and Ziemkiewicz, Alexander G., 5,252,312, Cl. 424-44.000.

Zifferer, Lothar R. Tube-in-shell heat exchanger with linearly corrugated tubing. 5,251,693, Cl. 165-160.000.

Zikeli, Stefan: *See—*
Jurkovic, Raimund; Firgo, Heinrich; Eichinger, Dieter; and Zikeli, Stefan, 5,252,284, Cl. 264-187.000.

Zimmer, Inc.: *See—*
Lin, Steve T.; Hawkins, Mike; and Krebs, Steve, 5,251,468, Cl. 72-53.000.

Zimmer, Rainer M., to Siecor Corporation. Optical fiber ribbonizer. 5,252,050, Cl. 425-113.000.

Zimmermann, Horst: *See—*
Henkelmann, Jochem; Ruehl, Thomas; Zimmermann, Horst; Goetz, Norbert; Spiegler, Wolfgang; and Kuekenhoehner, Thomas, 5,252,755, Cl. 549-427.000.

Zink, Donald L., to Montana Sulphur & Chemical Co. Fluid apparatus with at least one tube well. 5,251,658, Cl. 137-347.000.

Zircon Corporation: *See—*
Bayha, Charles E., 5,252,682, Cl. 525-445.000.

Zirconium Technology Corporation: *See—*
Sharif, Sharif, 5,252,234, Cl. 252-8.551.
Sharif, Sharif, 5,252,235, Cl. 252-8.551.
Sharif, Sharif, 5,252,236, Cl. 252-8.551.

Zlobinsky, Yury; and Lux, Jules S., to Savant Instruments, Inc. Unit for hydrolyzing amino-acid containing specimens. 5,252,485, Cl. 435-316.000.

Zones, Stacey I., to Chevron Research and Technology Company. Zeolite SSZ-32. 5,252,527, Cl. 502-64.000.

Zuckermann, Ronald N.; Heubner, Verena D.; Santi, Daniel V.; and Siani, Michael A., to Chiron Corporation. Method and apparatus for biopolymer synthesis. 5,252,296, Cl. 422-116.000.

Zurawin, Michael. Device for displaying and dispensing consumer products on shelving. 5,251,972, Cl. 312-118.000.

Zygutis, James L.; and Doty, Gerald A., to Takata Inc. Dual-spring retractor operable by a series of discs. 5,251,842, Cl. 242-107.000.

174805 Canada Inc.: *See—*
Robbins, Steven E., 5,251,508, Cl. 74-594.600.

314613 B.C. Ltd.: *See—*
Groux, Paul D.; and Burgess, Marvin A., 5,251,623, Cl. 607-50.000.

501 Baklund-Hellar, Inc.: *See—*
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NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Abbott Laboratories: *See—*
Gould, Dennis R.; and Zuk, Robert F., Re. 34,405, Cl. 435-7.100.

Arai, Nobukatsu; Sekine, Yoshihito; Osawa, Tadao; Tokuda, Hiroatsu; Usui, Toshifumi; and Tsutsui, Mitsukuni, to Hitachi, Ltd. Hot-wire type air flow meter and an internal combustion engine with the same. Re. 34,403, Cl. 123-494.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Negishi, Kiyoshi; Negoro, Ikuo; and Kita, Masahiro, Re. 34,406, Cl. 346-160.000.

Baba, Masatoshi: *See—*
Tanaka, Norio; Kakuta, Takuya; Oya, Eiichi; and Baba, Masatoshi, Re. 34,408, Cl. 548-369.400.

Dupont, Andre G.: *See—*
Dupont, Gaston L.; and Dupont, Andre G., Re. 34,404, Cl. 182-146.000.

Dupont, Gaston L.; and Dupont, Andre G. Mobile platform with power operated platform elevation. Re. 34,404, Cl. 182-146.000.

Frenzl, Otto, to Light Wave, Ltd. Water sports apparatus. Re. 34,407, Cl. 472-113.000.

Gould, Dennis R.; and Zuk, Robert F., to Abbott Laboratories. Determination of analytes in particle-containing medium. Re. 34,405, Cl. 435-7.100.

Hitachi, Ltd.: *See—*
Arai, Nobukatsu; Sekine, Yoshihito; Osawa, Tadao; Tokuda, Hiroatsu; Usui, Toshifumi; and Tsutsui, Mitsukuni, Re. 34,403, Cl. 123-494.000.

Kakuta, Takuya: *See—*
Tanaka, Norio; Kakuta, Takuya; Oya, Eiichi; and Baba, Masatoshi, Re. 34,408, Cl. 548-369.400.

Kita, Masahiro: *See—*
Negishi, Kiyoshi; Negoro, Ikuo; and Kita, Masahiro, Re. 34,406, Cl. 346-160.000.

Light Wave, Ltd.: *See—*
Frenzl, Otto, Re. 34,407, Cl. 472-113.000.

Negishi, Kiyoshi; Negoro, Ikuo; and Kita, Masahiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Printer for continuous form with justification control. Re. 34,406, Cl. 346-160.000.

Negoro, Ikuo: *See—*
Negishi, Kiyoshi; Negoro, Ikuo; and Kita, Masahiro, Re. 34,406, Cl. 346-160.000.

Nissan Chemical Industries Ltd.: *See—*
Tanaka, Norio; Kakuta, Takuya; Oya, Eiichi; and Baba, Masatoshi, Re. 34,408, Cl. 548-369.400.

Osawa, Tadao: *See—*
Arai, Nobukatsu; Sekine, Yoshihito; Osawa, Tadao; Tokuda, Hiroatsu; Usui, Toshifumi; and Tsutsui, Mitsukuni, Re. 34,403, Cl. 123-494.000.

Oya, Eiichi: *See—*
Tanaka, Norio; Kakuta, Takuya; Oya, Eiichi; and Baba, Masatoshi, Re. 34,408, Cl. 548-369.400.

Sekine, Yoshihito: *See—*
Arai, Nobukatsu; Sekine, Yoshihito; Osawa, Tadao; Tokuda, Hiroatsu; Usui, Toshifumi; and Tsutsui, Mitsukuni, Re. 34,403, Cl. 123-494.000.

Tanaka, Norio; Kakuta, Takuya; Oya, Eiichi; and Baba, Masatoshi, to Nissan Chemical Industries Ltd. Process for producing 4-benzoyl-5-hydroxypyrazoles. Re. 34,408, Cl. 548-369.400.

Tokuda, Hiroatsu: *See—*
Arai, Nobukatsu; Sekine, Yoshihito; Osawa, Tadao; Tokuda, Hiroatsu; Usui, Toshifumi; and Tsutsui, Mitsukuni, Re. 34,403, Cl. 123-494.000.

Tsutsui, Mitsukuni: *See—*
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Usui, Toshifumi: *See—*
Arai, Nobukatsu; Sekine, Yoshihito; Osawa, Tadao; Tokuda, Hiroatsu; Usui, Toshifumi; and Tsutsui, Mitsukuni, Re. 34,403, Cl. 123-494.000.

Williams, Clarence O. Flea trap utilizing night-light. Re. 34,402, Cl. 43-113.000.

Zuk, Robert F.: *See—*
Gould, Dennis R.; and Zuk, Robert F., Re. 34,405, Cl. 435-7.100.

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CERTIFICATES WERE ISSUED

Ad-Teck Limited: *See—*
Spargo, Robert M., Sr., B1 4,980,942, Cl. 7-158.000.

Aerovironment Inc.: *See—*
Balser, Martin; and Ambler, Frank E., B1 4,558,594, Cl. 73-170.160.

Agar Corporation Ltd.: *See—*
Agar, Joram, B1 4,774,680, Cl. 364-550.000.

Agar, Joram, to Agar Corporation Ltd. Method and apparatus for net oil measurement. B1 4,774,680, 10-12-93, Cl. 364-550.000.

Ambler, Frank E.: *See—*
Balser, Martin; and Ambler, Frank E., B1 4,558,594, Cl. 73-170.160.

Balser, Martin; and Ambler, Frank E., to Aerovironment Inc. Phased array acoustic antenna. B1 4,558,594, 10-12-93, Cl. 73-170.160.

Bankers Trust Company: *See—*
Paul, Richard L.; and Morse, Ronald W., B1 4,789,360, Cl. 439-620.000.

CDI Technologies, Inc.: *See—*
Falk, Edward K., B1 4,888,713, Cl. 395-125.000.

Falk, Edward K., to CDI Technologies, Inc. Surface detail mapping system. B1 4,888,713, 10-12-93, Cl. 395-125.000.

Heckel, Paul C., to Quickview Partners. Display system for the suppression and regeneration of characters in a series of fields in a stored record. B1 4,486,857, 10-12-93, Cl. 395-100.000.

Herman, Thomas: *See—*
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Insul-Therm Co.: *See—*
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Jenkins, Kenneth: *See—*
Rawles, William T.; and Jenkins, Kenneth, B1 4,217,462, Cl. 373-62.000.

Lidow, Alexander; and Herman, Thomas. High power MOSFET with low on-resistance and high breakdown voltage. B1 4,959,699, 10-12-93, Cl. 257-328.000.

Morse, Ronald W.: *See—*
Paul, Richard L.; and Morse, Ronald W., B1 4,789,360, Cl. 439-620.000.

Nicholson, James. Method of bonding orthodontic brackets. B1 4,952,142, 10-12-93, Cl. 433-9.000.

Paul, Richard L.; and Morse, Ronald W., to Bankers Trust Company. Electrical connector with rear removable contacts. B1 4,789,360, 10-12-93, Cl. 439-620.000.

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Rawles, William T.; and Jenkins, Kenneth, to Insul-Therm Co. Rotary furnace for the fusion of mineral bearing substances, apparatus and method. B1 4,217,462, 10-12-93, Cl. 373-62.000.

Sharp Kabushiki Kaisha: *See—*
Yoshida, Toshihiko; and Yamamoto, Osamu, B1 5,033,812, Cl. 385-37.000.

Spargo, Robert M., Sr., to Ad-Teck Limited. Shredder/curling device. B1 4,980,942, 10-12-93, Cl. 7-158.000.

Yamamoto, Osamu: *See—*
Yoshida, Toshihiko; and Yamamoto, Osamu, B1 5,033,812, Cl. 385-37.000.

Yoshida, Toshihiko; and Yamamoto, Osamu, to Sharp Kabushiki Kaisha. Grating coupler with a tapering waveguide for changing a coupling coefficient. B1 5,033,812, 10-12-93, Cl. 385-37.000.

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Adams, William E.; and Peoples, Marc, to Adams Mfg. Corp. Suction cup. 340,181, 10-12-93, Cl. D8-354.000.

Agnew, James; and Byrne, Robert, to L. A. Gear, Inc. Shoe upper. 340,126, 10-12-93, Cl. D2-314.000.

Alden Corporation: *See—*
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Alderete, Saul. Paint roller cleaner for attachment to a hose. 340,327, 10-12-93, Cl. D32-35.000.

Allen Engineering Corporation: *See—*
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AMC International Alfa Metalcraft Corporation AG: *See—*
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Arato, Paul T.; and Cummings, Kenneth E., to Arato Design Associates, Inc. Composter. 340,331, 10-12-93, Cl. D34-1.000.

Armin Thermodynamics Corporation: *See—*
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Barrault, Jean-Louis, to Moulinex (Societe Anonyme). Electric steam iron. 340,329, 10-12-93, Cl. D32-70.000.

Bartnicki, Frederick J.; Beggs, Robert D.; MacGregor, Francis W.; and Werner, Donald M., to R. D. Werner Co., Inc. Ladder pail shelf. 340,291, 10-12-93, Cl. D25-68.000.

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Beauchamp, Edgar O. Lamp bulb with internal sound emitter actuated by energized lamp. 340,295, 10-12-93, Cl. D26-2.000.

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Blissett, Malcolm G., to Wolverine World Wide, Inc. Footwear sole. 340,130, 10-12-93, Cl. D2-320.000.

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Christie, Cary L., to Infinity Systems Inc. Speaker. 340,245, 10-12-93, Cl. D14-214.000.

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DeVor Nurseries, Inc.: *See*—
Twomey, Jerry, 8,413, Cl. 20.000.
Gardner, Leith M.: *See*—
Zaiger, Chris F.; Zaiger, Gary N.; Gardner, Leith M.; and Zaiger, Grant G., 8,415, Cl. 42.100.
Jessel, Walter H., Jr., to California Florida Plant Co., L.P. Carnation plant named 'CFPC tisket'. 8,416, 10-12-93, Cl. 70.200.
Jessel, Walter H., Jr., to California Florida Plant Co., L.P. Carnation plant named CFPC Festive. 8,417, 10-12-93, Cl. 70.200.
Jessel, Walter H., Jr., to California Florida Plant Co., L.P. Carnation plant named CFPC Dainty. 8,418, 10-12-93, Cl. 70.500.
Jessel, Walter H., Jr., to California Florida Plant Co., L.P. Carnation plant named CFPC Cupid. 8,419, 10-12-93, Cl. 70.600.
Jessel, Walter H., Jr., to California Florida Plant Co., L. P. Carnation plant named CFPC Stanza. 8,420, 10-12-93, Cl. 71.100.
Kientzler, Ludwig, to Paul Ecke Ranch, Inc. Impatiens plant named Bora Bora. 8,421, 10-12-93, Cl. 87.600.
Kientzler, Ludwig, to Paul Ecke Ranch, Inc. Impatiens plant named Samoa. 8,422, 10-12-93, Cl. 87.600.
Nor'East Miniagure Roses, Inc.: *See*—
Saville, F. Harmon, 8,412, Cl. 7.100.
Nor'East Miniature Roses, Inc.: *See*—
Saville, F. Harmon, 8,411, Cl. 3.000.
Paul Ecke Ranch, Inc.: *See*—
Kientzler, Ludwig, 8,421, Cl. 87.600.
Kientzler, Ludwig, 8,422, Cl. 87.600.
Saville, F. Harmon, to Nor'East Miniature Roses, Inc. Miniature rose plant named Savaklim. 8,411, 10-12-93, Cl. 3.000.
Saville, F. Harmon, to Nor'East Miniagure Roses, Inc. Miniature rose plant named Savajinks. 8,412, 10-12-93, Cl. 7.100.
Twomey, Jerry, to DeVor Nurseries, Inc. Grandiflora rose plant named Twoetern. 8,413, 10-12-93, Cl. 20.000.
Weeks Wholesale Rose Grower, Inc.: *See*—
Winchel, Joseph, 8,414, Cl. 11.000.
Winchel, Joseph, to Weeks Wholesale Rose Grower, Inc. Hybrid tea rose plant named Wekmar. 8,414, 10-12-93, Cl. 11.000.
Zaiger, Chris F.; Zaiger, Gary N.; Gardner, Leith M.; and Zaiger, Grant G. Peach tree "Snow King". 8,415, 10-12-93, Cl. 42.100.
Zaiger, Gary N.: *See*—
Zaiger, Chris F.; Zaiger, Gary N.; Gardner, Leith M.; and Zaiger, Grant G., 8,415, Cl. 42.100.
Zaiger, Grant G.: *See*—
Zaiger, Chris F.; Zaiger, Gary N.; Gardner, Leith M.; and Zaiger, Grant G., 8,415, Cl. 42.100.

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CLASSIFICATION OF PATENTS

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NOTE.—First number, class; second number, subclass; third number, patent number

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302 5,252,845
317 5,252,846
320 5,252,847
328 5,252,848
B1 4,959,699
329 5,252,849
433 5,252,850
446 5,252,851
458 5,252,852
666 5,252,853
676 5,252,854
5,252,855
678 5,252,856
686 5,252,857
702 5,252,858

CLASS 261

26 5,252,260
71 5,252,261

CLASS 264

1.4 5,252,262
4.3 5,252,263
22 5,252,264
5,252,265
5,252,266
26 5,252,267
40.7 5,252,268
45.3 5,252,269
45.4 5,252,270
54 5,252,271
62 5,252,272
86 5,252,273
87 5,252,274
119 5,252,275
120 5,252,276
129 5,252,277
138 5,252,278
154 5,252,279
161 5,252,280
171 5,252,281
177.13 5,252,282
177.170 5,252,283
187 5,252,284
202 5,252,285
328.1 5,252,286
572 5,252,287

CLASS 266

44 5,251,879
5,251,880
109 5,251,881
193 5,251,882

CLASS 267

136 5,251,883
140.12 5,251,884
229 5,251,886

CLASS 269

221 5,251,887

CLASS 270

55 5,251,888

CLASS 271

171 5,251,889
176 5,251,890
5,251,891
184 5,251,892
251 5,251,893

CLASS 273

25 5,251,894
26 R 5,251,903
73 D 5,251,895
80 B 5,251,896
85 CP 5,251,897
143 R 5,251,898
153 S 5,251,899
157 R 5,251,900
167 A 5,251,901
182 R 5,251,885
187.2 5,251,902
243 5,251,904
255 5,251,905
397 5,251,906
416 5,251,907
428 5,251,908
439 5,251,909
442 5,251,910

CLASS 277

3 5,251,912
92 5,251,913
123 5,251,914
138 5,251,915
212 FB 5,251,916
228 5,251,917

CLASS 279

3 5,251,919
156 5,251,918

CLASS 280

11.19 5,251,920
28.12 5,251,921
47.29 5,251,922
602 5,251,923
5,251,924
641 5,251,925
665 5,251,926
672 5,251,927
688 5,251,928
707 5,251,929
719 5,251,930
730 5,251,931
784 5,251,932
806 5,251,933
842 5,251,934

CLASS 281

45 5,251,935

CLASS 283

58 5,251,936
91 5,251,937

CLASS 285

5 5,251,938
24 5,251,939
87 5,251,940
328 5,251,941
355 5,251,942

CLASS 290

1 R 5,252,859
40 R 5,252,860

CLASS 294

1.1 5,251,943
15 5,251,944
64.1 5,251,946
152 5,251,945

CLASS 296

35.1 5,251,911
37.6 5,251,947
96.12 5,251,948
97.12 5,251,949
98 5,251,950
100 5,251,951
107 5,251,952
152 5,251,953
192 5,251,954

CLASS 297

157 5,251,955
173 5,251,956
230.1 5,251,957
321 5,251,958
344.1 5,251,959
344.12 5,251,960
423.1 5,251,961
440.15 5,251,962
460 5,251,963

CLASS 299

91 5,251,964

CLASS 301

64.3 5,251,965

CLASS 303

7 5,251,966
5,251,967
9.62 5,251,968
105 5,251,970
115.4 5,251,971
963 5,251,969

CLASS 307

10.6 5,252,861
446 5,252,862
452 5,252,863
492 5,252,864
514 5,252,865
529 5,252,866
606 5,252,867
607 5,252,868

CLASS 310

58 5,252,869
82 5,252,870
90 5,252,871
5,252,872
5,252,873
103 5,252,874
114 5,252,875
184 5,252,876
214 5,252,877
239 5,252,878
261 5,252,879
270 5,252,880
309 5,252,881
313 R 5,252,882
328 5,252,883
5,252,884

CLASS 312

118 5,251,972
257.1 5,251,973
330.1 5,251,974
334.16 5,251,975

CLASS 313

25 5,252,885
44 5,252,886
112 5,252,887
318 5,252,888
404 5,252,889
493 5,252,890
506 5,252,895

CLASS 315

86 5,252,891
111.81 5,252,892
200 A 5,252,893
307 5,252,894

CLASS 318

443 5,252,897
444 5,252,898
568.1 5,252,899
568.11 5,252,900
568.12 5,252,901
599 5,252,902
696 5,252,903
739 5,252,904
807 5,252,905

CLASS 320

22 5,252,906

CLASS 321

117 5,252,624

CLASS 323

285 5,252,907
313 5,252,908
5,252,909
315 5,252,910
351 5,252,911

CLASS 324

72 5,252,912
127 5,252,913
158 F 5,252,914
158 MG 5,252,915
158 P 5,252,916
158 R 5,252,917
207.19 5,252,918
207.25 5,252,919
228 5,252,920
248 5,252,921
309 5,252,922
5,252,923
320 5,252,924
445 5,252,925
545 5,252,926
546 5,252,927

CLASS 330

51 5,252,928
129 5,252,929
149 5,252,930
263 5,252,931

CLASS 333

18 5,252,932
156 5,252,934

CLASS 335

126 5,252,935
151 5,252,936
172 5,252,933
202 5,252,937
280 5,252,939
302 5,252,940

CLASS 336

192 5,252,941

CLASS 337

163 5,252,942

CLASS 338

273 5,252,943
274 5,252,938
275 5,252,944
334 5,252,945

CLASS 340

444 5,252,946
515 5,252,947
568 5,252,948
632 5,252,949
825.07 5,252,961
825.44 5,252,963
825.48 5,252,964
825.56 5,252,960
5,252,965
825.69 5,252,966
870.02 5,252,967
870.17 5,252,962
908 5,252,969

CLASS 341

20 5,252,970
26 5,252,971
108 5,252,972
131 5,252,973
141 5,252,974
145 5,252,975
163 5,252,976
182 5,252,977

CLASS 342

29 5,252,978
50 5,252,979
59 5,252,980
200 5,252,981
357 5,252,982
382 5,252,983

CLASS 343

791 5,252,984
880 5,252,985

CLASS 345

9 5,252,950
87 5,252,955
95 5,252,954
98 5,252,957
100 5,252,956
107 5,252,958
122 5,252,953
147 5,252,959
156 5,252,951
157 5,252,952

CLASS 346

1.1 5,252,986
74.2 5,252,987
76 PH 5,252,988
5,252,989
107 R 5,252,990
108 5,252,991
140 R 5,252,992
5,252,993
5,252,994
157 5,252,995
160 Re.34,406
5,252,996

CLASS 351

49 5,252,997
160 R 5,252,998
221 5,252,999

CLASS 353

46 5,253,000

CLASS 354

106 5,253,001
126 5,253,002
149.1 5,253,003
149.11 5,253,004
152 5,253,005
317 5,253,006
400 5,253,007
402 5,253,008
412 5,253,009
485 5,253,010

CLASS 355

41 5,253,011
53 5,253,012
200 5,253,013
208 5,253,014
210 5,253,015
215 5,253,016
219 5,253,017
246 5,253,018
259 5,253,019
260 5,253,020
271 5,253,021
274 5,253,022
279 5,253,023
282 5,253,024
285 5,253,025
289 5,253,026
290 5,253,027
309 5,253,028
321 5,253,029
324 5,253,030
327 5,253,031

CLASS 356

1 5,253,032
5 5,253,033
73.1 5,253,034
5,253,035
121 5,253,036
133 5,253,037
351 5,253,038
372 5,253,039
399 5,253,040

CLASS 358

11 5,253,041
19 5,253,042
21 R 5,253,043
5,253,044
37 5,253,045
43 5,253,046
44 5,253,047
87 5,253,049
103 5,253,050
104 5,253,051
105 5,253,052
133 5,253,053
5,253,054
5,253,055
136 5,253,056
5,253,057
5,253,058
138 5,253,059
140 5,253,060
160 5,253,061
5,253,062
167 5,253,063
180 5,253,064
182 5,253,065
188 5,253,066
191.1 5,253,067
194.1 5,253,068
209 5,253,069
5,253,070
222 5,253,071
229 5,253,072
231 5,253,073
236 5,253,074
261.2 5,253,075
339 5,253,076
404 5,253,077
426 5,253,078
5,253,079
445 5,253,080
450 5,253,081
456 5,253,082
461 5,253,083
465 5,253,084
481 5,253,085
524 5,253,048

CLASS 359

10 5,253,086
16 5,253,087
18 5,253,088
49 5,253,089
52 5,253,090
55 5,253,091
58 5,253,092
85 5,253,093
124 5,253,094
174 5,253,095
184 5,253,096
192 5,253,097
213 5,253,098
260 5,253,099
266 5,253,100
328 5,253,102
329 5,253,103
341 5,253,104
359 5,253,105
368 5,253,106
373 5,253,101
469 5,253,107
482 5,253,108
604 5,253,109
619 5,253,110
647 5,253,111
675 5,253,112
680 5,253,113
689 5,253,114
838 5,253,115
858 5,253,116
859 5,253,117

CLASS 360

10.1 5,253,118
10.3 5,253,119
19.1 5,253,120
5,253,121
33.1 5,253,122
46 5,253,123
48 5,253,124
51 5,253,125
53 5,253,126
57 5,253,127
64 5,253,128
69 5,253,129
77.15 5,253,130
78.14 5,253,131
85 5,253,132
97.01 5,253,133
126 5,253,134
130.21 5,253,135
132 5,253,136

CLASS 361

245 5,253,138
400 5,253,145
539 5,253,148
680 5,253,142
681 5,253,139
683 5,253,141
728 5,253,140
736 5,253,143
5,253,144
784 5,253,146
807 5,253,147

CLASS 362

66 5,253,154
104 5,253,149
183 5,253,150
216 5,253,151
221 5,253,152
310 5,253,153

CLASS 363

71 5,253,155
98 5,253,156
5,253,157

CLASS 364

140 5,253,158
5,253,159
5,253,160
5,253,161
405 5,253,162
5,253,163
406 5,253,164
407 5,253,165
5,253,166
408 5,253,167
413.01 5,253,168
413.13 5,253,169
413.16 5,253,170
413.19 5,253,171
424.05 5,253,172
5,253,173
5,253,174
468 5,253,175
5,253,176
5,253,177
5,253,178
474.04 5,253,179
484 5,253,180
485 5,253,181
489 5,253,182
525 5,253,183
550 5,253,184
B1 4,774,680
551.01 5,253,185
5,253,186
560 5,253,187
571.02 5,253,188
578 5,253,189
581 5,253,190
709.16 5,253,191
726 5,253,192
748 5,253,193
752 5,253,215
757 5,253,194
759 5,253,195

CLASS 365

45 5,253,196
49 5,253,197
106 5,253,198
162 5,253,199
185 5,253,200
5,253,201
189.01 5,253,202
189.02 5,253,203
189.04 5,253,207
189.06 5,253,204
5,253,205
189.09 5,253,206
200 5,253,208
201 5,253,209
207 5,253,210
222 5,253,211
230.01 5,253,137
5,253,212
230.09 5,253,213
233 5,253,214

CLASS 366

18 5,251,976
91 5,251,977
198 5,251,978
248 5,251,979

CLASS 367

1 5,253,216
46 5,253,217
79 5,253,219
107 5,253,220
135 5,253,221
149 5,253,222
178 5,253,223

CLASS 368

10 5,253,224
20 5,253,225
47 5,253,226
69 5,253,227
82 5,253,228
87 5,253,229
263 5,253,230
322 5,253,231

CLASS 369

13 5,253,232
5,253,233
36 5,253,234
37 5,253,235
44.24 5,253,236
44.25 5,253,238
44.28 5,253,239
44.32 5,253,240
44.37 5,253,237
44.39 5,253,241
47 5,253,242
48 5,253,243
59 5,253,244
75.1 5,253,218
119 5,253,245
291 5,253,246

CLASS 370

14 5,253,247
16 5,253,248
24 5,253,249
60 5,253,250
5,253,251
85.11 5,253,253
85.5 5,253,252
100.1 5,253,254

CLASS 371

22.6 5,253,255
40.1 5,253,256
5,253,257

CLASS 372

22 5,253,258
5,253,259
34 5,253,260
5,253,261
38 5,253,267
45 5,253,262
5,253,263
46 5,253,264
5,253,265

CLASS 373

10 5,253,266
62 B1 4,217,462

CLASS 374

7 5,251,980
179 5,251,981

CLASS 375

1 5,253,268
28 5,253,269
43 5,253,270
59 5,253,271
60 5,253,272
114 5,253,273
121 5,253,274
122 5,253,275

CLASS 376

249 5,253,276
265 5,253,277
434 5,253,278

CLASS 377

110 5,253,279

CLASS 378

45 5,253,280
99 5,253,281
5,253,282
5,253,283
121 5,253,284

CLASS 379

52 5,253,285
53 5,253,286
61 5,253,287
221 5,253,288
373 5,253,289
399 5,253,290
406 5,253,291
426 5,253,292

CLASS 380

9 5,253,293
21 5,253,294
23 5,253,295
36 5,253,296
49 5,253,297

CLASS 381

13 5,253,298
5,253,299
68.6 5,253,300
89 5,253,301

CLASS 382

1 5,253,302
9 5,253,303
5,253,304
5,253,305
22 5,253,306
5,253,307
49 5,253,308

CLASS 383

209 5,251,982

CLASS 384

45 5,251,983
47 5,251,984
99 5,251,985
272 5,251,986
571 5,251,987

CLASS 385

4 5,253,309
14 5,253,310
5,253,311
31 5,253,312
37 B1 5,033,812
38 5,253,313
40 5,253,314
78 5,253,315
5,253,316
109 5,253,317
114 5,253,318
129 5,253,319
135 5,253,320
138 5,253,321
142 5,253,322
143 5,253,323

CLASS 390

870.28 5,252,968

CLASS 392

416 5,253,324

CLASS 395

2 5,253,325
5,253,326
22 5,253,327
24 5,253,328
5,253,329
27 5,253,330
50 5,253,331
51 5,253,332
62 5,253,333
100 B1 4,486,857
102 5,253,334
122 5,253,335
125 B1 4,888,713
126 5,253,339
142 5,253,336
161 5,253,337
5,253,338
163 5,253,340
200 5,253,341
5,253,342
5,253,343
275 5,253,344
5,253,345
325 5,253,346
5,253,347
5,253,348
375 5,253,349
400 5,253,350
425 5,253,351
5,253,352
5,253,353
5,253,354
5,253,355
5,253,356
5,253,357
500 5,253,358
575 5,253,359
5,253,360
600 5,253,361
5,253,362
800 5,253,363

CLASS 400

120 5,251,988
240.3 5,251,989

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CLASS 401

8 5,251,990
208 5,251,991
268 5,251,992

CLASS 403

52 5,251,993
171 5,251,994
320 5,251,995
406.1 5,251,996

CLASS 404

29 5,251,997
75 5,251,998
109 5,251,999

CLASS 405

53 5,252,000
68 5,252,001
126 5,252,002
128 5,252,003
211 5,252,004
224.4 5,252,005
297 5,252,006

CLASS 406

14 5,252,007
23 5,252,008

CLASS 408

145 5,252,009
241 S 5,252,010

CLASS 409

235 5,252,011
244 5,252,012

CLASS 411

43 5,252,013
5,252,014
231 5,252,015
386 5,252,016
446 5,252,017

CLASS 412

11 5,252,018

CLASS 413

67 5,252,019

CLASS 414

346 5,252,020
589 5,252,021
723 5,252,022
785 5,252,023
786 5,252,024

CLASS 415

24 5,252,025
115 5,252,026
224.5 5,252,027

CLASS 416

93 A 5,252,028
142 5,252,029

CLASS 417

12 5,252,030
53 5,252,031
222.1 5,252,032
234 5,252,033
279 5,252,034
312 5,252,035
313 5,252,036
339 5,252,037
363 5,252,038
368 5,252,039
378 5,252,040
395 5,252,041
401 5,252,042
417 5,252,043
479 5,252,044
524 5,252,045

CLASS 418

55.5 5,252,046
132 5,252,047
220 5,252,048

CLASS 419

28 5,252,288

CLASS 422

14 5,252,289
22 5,252,290
23 5,252,291
98 5,252,292
101 5,252,293
102 5,252,294
106 5,252,295
116 5,252,296
150 5,252,297
172 5,252,298
174 5,252,299
186.08 5,252,300
225 5,252,301
261 5,252,302
292 5,252,303
305 5,252,304

CLASS 423

22 5,252,305
300 5,252,306
342 5,252,307
358 5,252,308
407 5,252,309
462 5,252,310
593 5,252,314
5,252,315
608 5,252,316
619 5,252,311

CLASS 424

9 5,252,317
44 5,252,312
49 5,252,313
54 5,252,326
59 5,252,322
5,252,323
70 5,252,324
71 5,252,325
78.04 5,252,318
5,252,319
78.25 5,252,320
78.32 5,252,321
88 5,252,327
92 5,252,328
93 C 5,252,329
195.1 5,252,330
401 5,252,331
402 5,252,332
422 5,252,333
448 5,252,334
449 5,252,335
450 5,252,336
5,252,348
456 5,252,337
473 5,252,338
479 5,252,339
489 5,252,340
5,252,341
649 5,252,342
661 5,252,343
682 5,252,344
684 5,252,345

CLASS 425

97 5,252,049
113 5,252,050
116 5,252,051
5,252,052
127 5,252,053
297 5,252,054
340 5,252,055
555 5,252,056
556 5,252,057

CLASS 426

74 5,252,346
393 5,252,347
482 5,252,349
490 5,252,350
549 5,252,351
580 5,252,352

CLASS 427

8 5,252,353
58 5,252,354
98 5,252,355
126.3 5,252,356
226 5,252,357
237 5,252,358
249 5,252,359
255.2 5,252,360
255.3 5,252,361
318 5,252,362
386 5,252,363
409 5,252,364
525 5,252,365
557 5,252,366
599 5,252,367

CLASS 428

34.9 5,252,369
64 5,252,370
5,252,371
5,252,372
68 5,252,373
77 5,252,374
96 5,252,375
99 5,252,376
137 5,252,377
141 5,252,379
5,252,380
156 5,252,381
195 5,252,378
209 5,252,382
5,252,383
212 5,252,384
220 5,252,385
224 5,252,386
248 5,252,387
328 5,252,388
334 5,252,389
336 5,252,390
5,252,391
5,252,392
349 5,252,393
355 5,252,395
364 5,252,394
373 5,252,396
5,252,397
403 5,252,398
416 5,252,399
421 5,252,400
422 5,252,401
425.8 5,252,402
447 5,252,403
458 5,252,404
462 5,252,405
474.4 5,252,406
480 5,252,407
621 5,252,408

CLASS 429

32 5,252,409
33 5,252,410
62 5,252,411
70 5,252,412
192 5,252,413

CLASS 430

5,252,414
22 5,252,415
31 5,252,416
58 5,252,417
59 5,252,418
67 5,252,419
96 5,252,420
109 5,252,421
110 5,252,422
131 5,252,423
138 5,252,424
5,252,425
201 5,252,426
264 5,252,438
270 5,252,427
271 5,252,428
291 5,252,429
296 5,252,430
303 5,252,431
306 5,252,432
323 5,252,433
5,252,434
325 5,252,435
326 5,252,436
345 5,252,437
399 5,252,439
495 5,252,440
496 5,252,441
502 5,252,442
5,252,443
503 5,252,444
508 5,252,446
522 5,252,447
523 5,252,448
529 5,252,445
566 5,252,449
567 5,252,450
5,252,451
569 5,252,452
5,252,453
576 5,252,454
605 5,252,455
5,252,456

CLASS 431

1 5,252,058
9 5,252,059
12 5,252,060

CLASS 432

25 5,252,061
205 5,252,062
235 5,252,063

CLASS 433

8 5,252,066
9 B1 4,952,142
80 5,252,064
126 5,252,065
129 5,252,067

CLASS 434

30 5,252,068
35 5,252,069
59 5,252,070
75 5,252,071
81 5,252,072
88 5,252,073
94 5,252,074
112 5,252,075
251 5,252,076
335 5,252,077

CLASS 435

5 5,252,457
5,252,458
6 5,252,459
7.1 Re.34,405
7.22 5,252,460
7.92 5,252,461
23 5,252,463
68.1 5,252,464
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	5,252,203	5,251,651	5,252,476	5,253,188	5,251,745	5,252,520
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For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1153 O.G. 3, on Aug. 3, 1993.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1993, due to changes in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1154 O.G. 25, on Sept. 14, 1993.

International fees were changed, effective on May 1, 1993, due to changes in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1992, and were announced in the *Official Gazette* at 1141 O.G. 68, on Aug. 25, 1992.

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—Additional examination fee, per additional invention (payable only upon invitation	140.00
—USPTO was not ISA in PCT Chapter I	670.00
—Additional examination fee, per additional invention (payable only upon invitation	230.00

U.S. National Stage fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
All claims presented satisfied provisions of PCT Article 33(2) to (4)	45.00	90.00
All claims presented did not satisfy provisons of PCT Article 33(2) to (4)	320.00	640.00
USPTO was ISA but not IPEA	355.00	710.00
USPTO was neither ISA nor IPEA		
Filed without a search report from the European Patent Office or the Japanese Patent Office	475.00	950.00
Filed with a search report from the European Patent Office or the Japanese Patent Office	415.00	830.00
Other National Fees		
—For each independent claim in excess of 3	37.00	74.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	115.00	230.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Sept. 13, 1993

BRUCE A. LEHMAN,
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d) provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on October 16, 1990 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,962,546 through 4,964,170
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on October 14, 1986 for which maintenance fees due at 7 years and

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six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,616,365 through 4,617,683
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on October 12, 1982 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,353,133 through 4,354,278
Reissue patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after December 12, 1980, but before August 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months and 7 years and six months and 11 years and six months are set forth in 37 CFR 1.20(e) - (g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 , in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9f) $465.00
By other than a small entity $930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9f) $935.00
By other than a small entity $1,870.00

(g) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity(§ 1.9(f)) $1,410.00
By other than a small entity $2,820.00

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(h), and (i), which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980

By a small entity (§ 1.9f) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been

(1) unavoidable $620.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED AUGUST 1, 1993
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re, 33,002	07/110,549	8/01/89
(4,531,289)	(06/461,853)	(7/30/85)
4,531,241	06/657,573	7/30/85
4,531,247	06/425,375	7/30/85
4,531,249	06/539,877	7/30/85
4,531,254	06/514,528	7/30/85
4,531,255	06/648,342	7/30/85
4,531,258	06/613,076	7/30/85
4,531,260	06/511,520	7/30/85
4,531,264	06/517,727	7/30/85
4,531,277	06/599,294	7/30/85
4,531,285	06/477,692	7/30/85
4,531,286	06/465,001	7/30/85
4,531,288	06/517,327	7/30/85
4,531,290	06/617,469	7/30/85
4,531,291	06/444,867	7/30/85
4,531,292	06/466,060	7/30/85
4,531,294	06/539,421	7/30/85
4,531,295	06/568,832	7/30/85
4,531,297	06/545,927	7/30/85
4,531,299	06/592,038	7/30/85
4,531,304	06/333,622	7/30/85
4,531,312	06/271,474	7/30/85
4,531,314	06/600,900	7/30/85
4,531,320	06/547,043	7/30/85
4,531,324	06/540,020	7/30/85
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4,531,337	06/468,046	7/30/85
4,531,339	06/603,256	7/30/85
4,531,341	06/398,887	7/30/85
4,531,342	06/416,431	7/30/85
4,531,344	06/449,169	7/30/85
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4,531,348	06/612,512	7/30/85
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4,531,351	06/419,482	7/30/85
4,531,352	06/602,823	7/30/85
4,531,354	06/578,435	7/30/85
4,531,357	06/494,634	7/30/85
4,531,358	06/305,706	7/30/85
4,531,371	06/660,246	7/30/85
4,531,377	06/520,174	7/30/85
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4,531,380	06/569,614	7/30/85
4,531,385	06/420,224	7/30/85
4,531,391	06/361,142	7/30/85
4,531,396	06/498,240	7/30/85
4,531,398	06/515,034	7/30/85
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4,531,454	06/640,657	7/30/85
4,531,456	06/654,448	7/30/85
4,531,457	06/616,401	7/30/85
4,531,462	06/584,302	7/30/85
4,531,463	06/544,977	7/30/85
4,531,471	06/537,430	7/30/85
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4,531,576	06/610,135	7/30/85
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4,531,479	06/590,178	7/30/85
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4,531,482	06/475,307	7/30/85
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4,531,556	06/544,501	7/30/85
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4,531,561	06/550,877	7/30/85
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4,531,617	06/550,503	7/30/85
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4,531,813	06/463,441	7/30/85
4,531,814	06/435,062	7/30/85
4,531,817	06/539,290	7/30/85
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4,531,852	06/471,784	7/30/85
4,531,862	06/493,772	7/30/85
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4,531,897	06/570,174	7/30/85
4,531,907	06/657,249	7/30/85
4,531,914	06/524,336	7/30/85
4,531,917	06/595,984	7/30/85
4,531,920	06/516,216	7/30/85
4,531,923	06/430,768	7/30/85
4,531,925	06/395,092	7/30/85
4,531,927	06/532,910	7/30/85
4,531,930	06/530,637	7/30/85
4,531,944	06/489,691	7/30/85
4,531,946	06/473,550	7/30/85
4,531,948	06/619,978	7/30/85
4,531,950	06/562,708	7/30/85
4,531,956	06/433,810	7/30/85
4,531,961	06/518,529	7/30/85
4,531,962	06/616,879	7/30/85
4,531,967	06/541,769	7/30/85
4,531,970	06/555,096	7/30/85
4,531,972	06/548,212	7/30/85
4,531,973	06/510,926	7/30/85
4,531,974	06/540,649	7/30/85
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4,531,983	06/514,353	7/30/85
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4,531,994	06/647,096	7/30/85
4,531,997	06/561,684	7/30/85
4,532,007	06/498,199	7/30/85
4,532,009	06/481,287	7/30/85
4,532,015	06/409,792	7/30/85
4,532,021	06/606,527	7/30/85
4,532,023	06/585,431	7/30/85
4,532,024	06/677,648	7/30/85
4,532,025	06/618,508	7/30/85
4,532,027	06/567,565	7/30/85
4,532,029	06/603,031	7/30/85
4,532,036	06/550,948	7/30/85
4,532,038	06/492,156	7/30/85
4,532,044	06/595,323	7/30/85
4,532,046	06/526,026	7/30/85
4,532,056	06/528,358	7/30/85
4,532,058	06/345,861	7/30/85
4,532,063	06/523,316	7/30/85
4,532,065	06/270,772	7/30/85
4,532,068	06/474,078	7/30/85
4,532,069	06/564,865	7/30/85
4,532,070	06/691,322	7/30/85
4,532,072	06/551,204	7/30/85
4,532,076	06/543,672	7/30/85
4,532,078	06/599,949	7/30/85
4,532,085	06/511,072	7/30/85
4,532,092	06/496,557	7/30/85
4,532,093	06/485,062	7/30/85
4,532,097	06/334,674	7/30/85
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4,532,111	06/632,182	7/30/85
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4,532,142	06/551,867	7/30/85
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4,532,171	06/557,814	7/30/85
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4,532,181	06/481,864	7/30/85
4,532,183	06/541,409	7/30/85
4,532,184	06/554,503	7/30/85
4,532,185	06/608,388	7/30/85
4,532,186	06/505,126	7/30/85
4,532,187	06/650,589	7/30/85
4,532,188	06/504,723	7/30/85
4,532,191	06/625,038	7/30/85
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4,532,201	06/603,074	7/30/85
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4,532,212	06/624,570	7/30/85
4,532,214	06/384,766	7/30/85
4,532,217	06/599,596	7/30/85
4,532,220	06/361,061	7/30/85
4,532,222	06/477,552	7/30/85
4,532,224	06/562,725	7/30/85
4,532,226	06/568,461	7/30/85
4,532,229	06/561,221	7/30/85
4,532,231	06/579,645	7/30/85
4,532,236	06/531,898	7/30/85
4,532,237	06/635,954	7/30/85
4,532,239	06/563,538	7/30/85
4,532,242	06/490,842	7/30/85
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4,532,261	06/666,802	7/30/85
4,532,262	06/591,953	7/30/85
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4,532,272	06/625,750	7/30/85
4,532,278	06/373,346	7/30/85
4,532,287	06/609,483	7/30/85
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4,532,305	06/637,697	7/30/85
4,532,308	06/633,925	7/30/85
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4,853,716	07/262,091	8/01/89
4,853,726	06/882,363	8/01/89
4,853,754	07/021,938	8/01/89
4,853,770	07/162,646	8/01/89
4,853,776	07/176,540	8/01/89
4,853,780	07/154,881	8/01/89
4,853,785	07/197,353	8/01/89
4,853,790	07/190,371	8/01/89
4,853,800	07/121,701	8/01/89
4,853,807	07/082,639	8/01/89
4,853,815	06/806,770	8/01/89
4,853,818	07/211,541	8/01/89
4,853,824	07/199,710	8/01/89
4,853,825	07/147,883	8/01/89
4,853,827	07/291,520	8/01/89
4,853,834	07/084,412	8/01/89
4,853,837	07/229,915	8/01/89
4,853,838	07/165,215	8/01/89
4,853,841	06/920,454	8/01/89
4,853,851	06/942,307	8/01/89
4,853,854	06/813,401	8/01/89
4,853,856	06/803,531	8/01/89
4,853,863	07/039,172	8/01/89
4,853,879	07/033,656	8/01/89
4,853,900	07/111,844	8/01/89
4,853,905	07/152,513	8/01/89
4,853,912	07/131,327	8/01/89
4,853,927	07/130,820	8/01/89
4,853,942	07/081,838	8/01/89
4,853,948	07/202,816	8/01/89
4,853,951	07/133,700	8/01/89
4,853,963	07/042,690	8/01/89
4,853,964	07/142,671	8/01/89
4,853,965	07/152,742	8/01/89
4,853,966	07/114,047	8/01/89

Erratum

In the list of patents which expired on June 20, 1993, due to failure to pay maintenance fees, in the O.G. of Sept. 7, 1993, patent number 4,840,189 was identified with the incorrect serial number. The correct serial number for patent number 4,840,189 is 07/150,151.

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(c); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,619,047	06/698,826	10/28/86	1/31/85	8/25/93
4,666,154	06/698,431	5/19/87	2/05/85	8/25/93
4,675,466	06/859,504	6/23/87	4/05/86	8/23/93
4,679,236	06/684,918	7/07/87	12/21/84	7/15/93
4,725,977	06/834,665	2/16/88	2/28/86	8/24/93
4,812,961	07/050,896	3/14/89	5/15/87	8/23/93
4,832,946	07/132,821	5/23/89	12/14/87	8/16/93

Reissue Applications Filed

Notice under 37 CFR 1.11 (b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21 (b)).

5,031,791, Re. S.N. 08/089,884, Filed July 12, 1993, Cl. 220/281, ELECTRONIC ENCLOSURE CASE, Donald Serio, Jr.,

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Owner of Record: *Serco Mold, Inc., Covina, Calif.*, Attorney or Agent: Robert J. Schaap, Ex. Gp.: 2401

5,045,704, Re. S.N. 08/111,298, Filed Aug. 23, 1993, Cl. 250/372, METHOD FOR DETERMINING ABSOLUTE REFLECTANCE OF A MATERIAL IN THE ULTRAVIOLET RANGE, Vincent J. Coates, Owner of Record: *Inventor (Nanometrics Inc.), Sunnyvale, Calif.*, Attorney or Agent: Linval B. Castle, Ex. Gp.: 2506

5,052,427, Re. S.N. 08/113,210, Filed Aug. 27, 1993, Cl. 137/15, METHOD AND APPARATUS TO FACILITATE THE INJECTION OF SEALANT INTO A PRESSURIZED FLUID MEMBER, Johnny L. Butler, et. al., Owner of Record: *Spinsafe, Inc.*, Highland, Tex., Attorney or Agent: Terry D. Morgan, Ex. Gp.: 3407

5,057,934, Re. S.N. 08/047,505, Filed Apr. 16, 1993, Cl. 358/335, CIRCUIT FOR TAPE DUPLICATION IN A VIDEO TAPE RECORDER, Jong-Kyung Yun, et. al., Owner of Record: *Samsung Electronics Co., Ltd., Suweon-City, Korea*, Attorney or Agent: Robert E. Bushell, Ex. Gp.: 2615

5,078,244, Re. S.N. 08/112,296, Filed Aug. 27, 1993, Cl. 192/53E, SELF-ENERGIZING SYNCHRONIZER, Otis J. Olson, Owner of Record: *Eaton Corp., Cleveland, Ohio*, Attorney or Agent: Paul S. Rulon, Ex. Gp.: 3502

5,112,626, Re. S.N. 08/097,819. Filed July 27, 1993, Cl. 426/43, AERATED FROZEN DESSERT COMPOSITIONS AND PRODUCTS, Victor Huang, et. al., Owner of Record: *Haagen-Dazs Co., Inc., Teaneck, N.J.*, Attorney or Agent: John J. Gresens, Ex. Gp.: 1302

5,145,312, Re. S.N. 08/112,470, Filed Aug. 27, 1993, Cl. 414/719, INDUSTRIAL ROBOT, Akikazu Sonoda, et. al., Owner of Record: *Toyota Jidosha Kabushiki Kaisha, Aichi-Ken, Japan, Kawasaki Jukogyo, Kabushiki Kaisha, Hyogo-Ken, Japna*, Attorney or Agent: James A. Oliff, Ex. Gp.: 3107

5,160,139, Re. S.N. 08/067,941, Filed May 27, 1993, Cl. 273/81R, HANDLE DEVICE FOR SPORTS EQUIPMENT SHAFTS, Tsai C. Soong, Owner of Record: *Inventor*, Attorney or Agent: Bernard A. Chiama, Ex. Gp.: 3304

Requests for Reexamination Filed

Notice under 37 CFR 1.11 (c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19 (a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

Re. 33,054, Reexam. No. 90/003,175, Requested Aug. 26, 1993, Cl. 235/385, INVENTORY CONTROL AND REPORTING SYSTEM FOR DRYCLEANING STORES, Herbert Markham, Owner of Record: *Inventor, Wynnewood, Pa.*, Attorney or Agent: Stephan P. Gribok, Eckert, Seamans, Cherin & Mellott, Philadelphia, Pa., Ex. Gp.: 2514, Requester: Core Image Systems, Inc., Los Angeles, Calif.

Re. 34,079, Reexam. No. 90/003,177, Requested Sept. 1, 1993, Cl. 123/632, METHOD AND APPARATUS FOR CONSERVING BATTERY POWER IN A SNOWMOBILE ELECTRICAL SYSTEM, Ward K. Gatza, et. al., Owner of Record: *Pacer Industries, Inc., Colorado Springs, Colo.*, Attorney or Agent: Richard W. Hanes, Hanes & Schutz, Colorado Springs, Colo., Ex. Gp.: 3402, Requester: Polaris Industries, James W. Miller, Minneapolis, Minn.

4,816,177, Reexam. No. 90/003,172, Requested Aug. 25, 1993, Cl. 252/181, TREATING AGENT FOR LIQUID MEDIA, Bonnie I, Nelson, et. al., Owner of Record: *Eltech Systems Corp., Fairport Harbor, Ohio*, Attorney or Agent: John J. Freer, Fairport Harbor, Ohio, Ex. Gp.: 1111, Requester: Jet, Inc., Cleveland, Ohio

5,049,402, Reexam. No. 90/003,176, Requested Aug. 27, 1993, Cl. 426/599, PROCESS FOR MINIMIZING BITTERNESS IN CITRUS FRUIT JUICE, Yoji Tamaki, et. al., Owner of Record: *Pokka Corp., Nagoya-Shi, Japan*, Attorney or Agent: Roger L. Browdy, Browdy & Neimark, Washington, D.C., Ex. Gp.: 1302, Requester: Owner

5,105,730, Reexam. No. 90/003,174, Requested Aug. 26, 1993, Cl. 454/161, AIR DISTRIBUTION APPARATUS FOR AN AUTOMOTIVE DEVICE, Calvin G. Smith, Owner of Record: Ford Motor Co., Dearborn, Mich., Attorney or Agent: Charles H. Ellerbrock, Ford Motor Co., Dearborn, Mich., Ex. Gp.: 3404, Requester: Cushman, Darby & Cushman, Washington, D.C.

5,156,594, Reexam. No. 90/003,171, Requested Aug. 9, 1993, Cl. 604/096, BALLOON CATHETER WITH DISTAL GUIDE WIRE LUMEN, Peter T. Keith, Owner of Record: *Scimed Life Systems, Inc., Maple Grove, Minn.*, Attorney or Agent: John L. Rooney, Nawrocki, Rooney & Silverston, Minneapolis, Minn., Ex. Gp.: 3306, Requester: Owner

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Notice of Expiration of Trademark Registrations Due to Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED AUGUST 30, 1993
DUE TO FAILURE TO RENEW

Reg. No.	Serial Number	Reg. Date
299,048	71/329,029	11/22/1932
299,055	71/315,657	11/22/1932
299,067	71/326,615	11/22/1932
299,084	71/327,174	11/22/1932
299,090	71/321,563	11/22/1932
299,100	71/325,796	11/22/1932
299,130	71/328,362	11/22/1932
299,131	71/328,361	11/22/1932
299,142	71/328,474	11/22/1932
299,169	71/328,757	11/22/1932
299,170	71/328,735	11/22/1932
299,190	71/320,226	11/22/1932
299,210	71/328,230	11/22/1932
299,211	71/328,245	11/22/1932
299,228	71/327,697	11/22/1932
299,231	71/327,781	11/22/1932
299,232	71/327,802	11/22/1932
567,049	71/574,768	11/25/1952
567,050	71/574,781	11/25/1952
567,052	71/577,953	11/25/1952
567,063	71/587,640	11/25/1952
567,066	71/591,629	11/25/1952
567,081	71/601,068	11/25/1952
567,089	71/604,053	11/25/1952
567,098	71/608,930	11/25/1952
567,105	71/610,372	11/25/1952
567,118	72/612,929	11/25/1952
567,129	71/614,790	11/25/1952
567,134	71/615,683	11/25/1952
567,138	71/616,268	11/25/1952
567,152	71/618,913	11/25/1952

Reg Number	Serial Number	Reg. Date
567,159	71/620,155	11/25/1952
567,160	71/620,402	11/25/1952
567,161	71/620,936	11/25/1952
567,167	71/621,911	11/25/1952
567,172	71/622,215	11/25/1952
567,176	71/622,922	11/25/1952
567,177	71/623,024	11/25/1952
567,178	71/623,096	11/25/1952
567,179	71/623,132	11/25/1952
567,183	71/623,436	11/25/1952
567,185	71/623,705	11/25/1952
567,191	71/624,081	11/25/1952
567,193	71/624,126	11/25/1952
567,197	71/624,214	11/25/1952
567,199	71/624,443	11/25/1952
567,202	71/624,877	11/25/1952
567,203	71/624,893	11/25/1952
567,241	71/603,734	11/25/1952
567,246	71/609,561	11/25/1952
567,250	71/613,830	11/25/1952
567,263	71/620,397	11/25/1952
567,264	71/621,216	11/25/1952
567,266	71/623,832	11/25/1952
567,268	71/628,082	11/25/1952
567,269	71/631,320	11/25/1952
934,761	72/388,480	5/30/1972
934,762	72/388,686	5/30/1972
935,532	72/388,476	6/13/1972
935,534	72/388,782	6/13/1972
947,261	72/400,893	11/14/1972
947,469	72/400,527	11/21/1972
947,474	72/374,900	11/21/1972
947,476	72/398,303	11/21/1972
947,478	72/398,539	11/21/1972
947,484	72/400,052	11/21/1972
947,490	72/421,057	11/21/1972
947,492	72/343,201	11/21/1972
947,494	72/399,202	11/21/1972
947,500	72/381,738	11/21/1972
947,506	72/406,164	11/21/1972
947,512	72/386,294	11/21/1972
947,518	72/371,786	11/21/1972
947,523	72/397,095	11/21/1972
947,526	72/327,424	11/21/1972
947,527	72/363,343	11/21/1972
947,528	72/363,344	11/21/1972
947,529	72/365,443	11/21/1972
947,533	72/385,047	11/21/1972
947,534	72/387,708	11/21/1972
947,541	72/407,717	11/21/1972
947,545	72/414,291	11/21/1972
947,552	72/344,209	11/21/1972
947,556	72/378,716	11/21/1972
947,561	72/386,292	11/21/1972
947,565	72/399,798	11/21/1972
947,568	72/386,227	11/21/1972
947,572	72/375,076	11/21/1972
947,575	72/398,615	11/21/1972
947,576	72/398,858	11/21/1972
947,577	72/398,997	11/21/1972
947,579	72/402,343	11/21/1972
947,586	72/419,077	11/21/1972
947,588	72/342,099	11/21/1972
947,593	72/409,782	11/21/1972
947,601	72/402,351	11/21/1972
947,604	72/326,094	11/21/1972
947,607	72/379,886	11/21/1972
947,608	72/361,022	11/21/1972
947,609	72/384,228	11/21/1972
947,611	72/391,394	11/21/1972
947,614	72/404,793	11/21/1972
947,620	72/387,191	11/21/1972
947,621	72/387,192	11/21/1972
947,622	72/395,721	11/21/1972
947,623	72/395,895	11/21/1972
947,624	72/400,427	11/21/1972
947,629	72/384,986	11/21/1972
947,630	72/391,720	11/21/1972
947,632	72/399,912	11/21/1972
947,639	72/406,141	11/21/1972
947,640	72/406,208	11/21/1972
947,642	72/406,778	11/21/1972
947,643	72/406,779	11/21/1972
947,644	72/407,507	11/21/1972
947,647	72/376,687	11/21/1972
947,648	72/325,122	11/21/1972
947,652	72/392,284	11/21/1972
947,653	72/392,512	11/21/1972
947,655	72/398,104	11/21/1972
947,658	72/397,650	11/21/1972
947,663	72/375,859	11/21/1972
947,666	72/393,306	11/21/1972
947,671	72/401,274	11/21/1972
947,673	72/401,392	11/21/1972
947,674	72/401,973	11/21/1972
947,677	72/410,296	11/21/1972
947,678	72/411,401	11/21/1972
947,688	72/411,656	11/21/1972
947,690	72/411,959	11/21/1972
947,691	72/301,406	11/21/1972
947,692	72/302,301	11/21/1972
947,693	72/363,213	11/21/1972
947,698	72/387,544	11/21/1972
947,700	72/394,764	11/21/1972
947,701	72/396,371	11/21/1972
947,702	72/396,373	11/21/1972
947,703	72/339,307	11/21/1972
947,705	72/336,369	11/21/1972
947,707	72/368,645	11/21/1972
947,715	72/374,501	11/21/1972
947,718	72/380,227	11/21/1972
947,728	72/364,036	11/21/1972
947,733	72/394,026	11/21/1972
947,734	72/394,027	11/21/1972
947,735	72/394,028	11/21/1972
947,736	72/394,646	11/21/1972
947,742	72/376,470	11/21/1972
947,745	72/400,354	11/21/1972
947,747	72/393,625	11/21/1972
947,749	72/399,265	11/21/1972
947,750	72/410,630	11/21/1972
947,752	72/390,224	11/21/1972
947,757	72/386,207	11/21/1972
947,758	72/391,294	11/21/1972
947,759	72/409,981	11/21/1972
947,760	72/386,830	11/21/1972
947,762	72/399,108	11/21/1972
947,766	72/416,708	11/21/1972
947,767	72/384,961	11/21/1972
947,768	72/397,453	11/21/1972
947,769	72/372,302	11/21/1972

Department of Commerce
Patent and Trademark Office
37 CFR Part 1
[Docket No. 921118-3184]
RIN: 0651-AA63

Patent Interference Practice Burden of Proof

Agency: Patent and Trademark Office, Commerce
Action: Final Rule
Summary: The Patent and Trademark Office (PTO) is amending its rules of practice in patent interference cases. The amended rules specify that a party filing a motion has the burden of proof for that motion. The amended rules also more clearly state the nature of expert-witness and fact-witness evidence that must accompany a preliminary motion. Moreover, a definition of "interlocutory order," as contrasted with a final decision, is added to clarify the meaning of "interlocutory order."
Effective Date: Oct. 25, 1993. These rules will apply to all papers filed with the PTO on or after the effective date.
For Further Information Contact: Fred E. McKelvey by telephone at (703) 305-9035 or by mail marked to his attention and

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addressed to Box 8, Commissioner of Patents and Trademarks, Washington D.C. 20231.

Supplementary Information: A Notice of Proposed Rulemaking was published in the *Federal Register* (58 FR 528) on Jan. 6, 1993, and in the *Official Gazette* of the PTO (1147 Off. Gaz. 11) on Feb. 2, 1993. Comments were due Mar. 8, 1993. Four comments were received.

The PTO proposed moving the presumption of correctness of an interlocutory order, which is presently in 37 CFR §1.655(a), to a proposed new subsection 1.601(q). The PTO also proposed to make explicit in 37 CFR §1.637(a) that a party filing a motion has the burden of proving why it is entitled to the relief sought in the motion.

The PTO proposed to amend 37 CFR §1.639 to incorporate guidance provided in *Hanagan v. Kimura*, 16 USPQ2d 1791, 1794 (Comm'r Pat. 1990). Subsection (c) of §1.639 was proposed to be amended to refer to "additional evidence in the form of testimony" so as to distinguish the evidence needed under subsection (c) from evidence submitted under subsections (a) and (b). Subsection (d) to 37 CFR §1.639 was proposed to be added to specify that the nature of evidence that must be submitted when an opinion of an expert is needed. Subsection (e) was proposed to be added to specify the nature of evidence that must be submitted when a statement of a fact witness is to be relied upon. Subsection (f) was proposed to be added to specify the nature of a showing that should be made when a statement of an opponent is needed or evidence in possession of an opponent is needed. Subsection (g) was proposed to be added to specify the nature of evidence that must be supplied if inter partes tests are to be conducted.

Present 37 CFR 1.655(a) was proposed to be amended by deleting the last sentence, which would be moved to and be included in the proposed definition of interlocutory order in proposed subsection 1.601(g).

The PTO received one comment that endorsed the proposed rulemaking, but was otherwise directed to an earlier rulemaking.

The PTO received two comments regarding proposed subsection 1.601(q). One comment suggested that procedural rules should not be placed in a definition. The comment suggested that the last two sentences of proposed subsection 1.601(q), which deal with the presumed correctness of interlocutory orders, be in a new subsection of section 1.655. This suggestion is adopted in part. The last two sentences of subsection 1.601(q) will be moved to the end of subsection 1.655(a).

A second comment challenged the sufficiency of the notice in the proposed rulemaking. The comment noted that the word "manifest" was omitted from the portion of existing subsection 1.655(a) that was moved to new subsection 1.601(q) and that the word "manifestly" was omitted from the remainder of subsection 1.655(a). The comment argued that the Notice of Proposed Rulemaking did not provide sufficient notice of these omissions, which the comment characterized as substantive changes, and thus violates the requirements of 5 U.S.C. §553. This comment is not adopted.

The Notice of Proposed Rulemaking gave specific notice of the actual terms of the proposed rule. *Cf.* §553(b) (requiring "[g]eneral notice" of "either the terms or substance of the proposed rule or a description of the subjects and issues involved.") In any case, no change actually occurs because the omitted words, "manifest" and "manifestly", in 37 CFR §1.655(a) are unnecessary. No board decision is known to have relied on the distinction between "error", "clear error", and "manifest error". In appellate courts, manifest error is an extremely deferential standard of review that is closely tied to the abuse-of-discretion standard. *See e.g., Datascope Corp. v. SMEC, Inc.*, 879 F.2d 820, 827-28, 11 USPQ2d 1321, 1326 (Fed. Cir. 1989) (finding no manifest error). Board review of an examiner-in-chief's interlocutory orders is not an independent review of a final decision by a lower tribunal. The board is the only entity that may decide interferences, 35 U.S.C. §135(a), and the examiner-in-chief, who is a member of the board, 35 U.S.C. §7(a), is almost always a member of the panel that ultimately decides the interference. Thus, an extremely deferential standard of appeal in this context is inappropriate.

The PTO received one comment regarding proposed subsection 1.637(a). The comment noted that subsection 1.637(a) had been misprinted so that the text "a statement of the precise relief requested, (2)" had been omitted following the "(1)". The comment is correct, the omission was a misprint, and the omitted text has been restored.

The PTO received one comment regarding 37 CFR §1.639(b). The comment suggested that all proofs introduced under subsection 1.639(b) remain in the record after the decision on the preliminary motions unless the proofs are expressly withdrawn. The opposing party could treat such proofs as subsection 1.672(b) declarations and request an opportunity to cross examine the declarants. The suggestion is not adopted because it is beyond the scope of the present rulemaking.

The PTO received one comment regarding subsection 1.639(c). The comment assumed that the word "needed" had been intentionally deleted from the end of the first sentence of subsection 1.639(c), but noted that the deletion was not mentioned in the summary. The assumption is correct. This deletion is grammatically required after the addition of the text amending subsection 1.639(c).

The PTO received two comments regarding codification of the *Hanagan* guidelines in subsections 1.639(d)-(g). One comment endorsed codification of the *Hanagan* guidelines, but suggested that the codification be reformulated to increase flexibility. In particular, the comment pointed to the unusual case described in the Notice of Proposed Rulemaking where an opponent to a preliminary motion was overwhelmed with evidence. The comment suggested that the mandatory requirements of subsection 1.639, as amended, be revised to state that the information required under the *Hanagan* guidelines "should ordinarily" be provided. The comment is not adopted.

When necessary, a party opposing a preliminary motion should request an extension of time to submit the information described in subsections 1.639(d) through (g), which do not require the submission of the actual testimony or evidence. In contrast, in the example discussed in the Notice of Proposed Rulemaking, the examiner-in-chief deferred consideration of the preliminary motion until the final hearing to allow the opponent time to prepare a full opposition, which included the actual evidence the opponent relied upon to support the opposition. As the Notice of Proposed Rulemaking pointed out, examiners-in-chief have, and should exercise, discretion to extend time or otherwise remedy problems that may arise when applying the requirements of section 1.639 in specific cases.

A second comment suggested that the requirements of subsections 1.639(d) and (e) duplicate the declarations submitted under 37 CFR §1.672(b). The comment recommends that the rules be revised to require a subsection 1.672(b) declaration be submitted once, during the motions period, in support of an opposition to a preliminary motion. The recommendation is not adopted.

Subsection 1.672(b) is directed to the technical requirements for submitting affidavits or depositions for testimony that will not be compelled. Subsection 1.639(c), which invokes the requirements of subsections 1.639(d) and (e), requires a description of the proposed testimony, not an affidavit or deposition of the testimony itself. A request under subsection 1.639(c) must describe the nature of the testimony being sought so the examiner-in-chief can determine whether the testimony is actually needed. *Hanagan*, 16 USPQ2d at 1794. Subsection 1.639(c) is intended to address the situation where evidence in the form of testimony is not available to the party asserting a need for the evidence. The *Hanagan* guidelines require such a party to justify the delay and inconvenience that may result by explaining what the party expects the testimony to prove. To this end, subsection 1.639(c) is revised to clarify that it only applies to testimony that is unavailable to the party seeking the testimony.

OTHER CONSIDERATION

The rule changes are in conformity with the requirements of the Regulatory Flexibility Act (5 U.S.C.601 et seq.), Executive Orders 12291 and 12612, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et. seq.

The General Counsel of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that these rule changes will not have a significant economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 605(b)). The principle impact of these changes would be to clarify procedure in patent interferences and thereby eliminate ambiguity that may exist in current rules.

The Office has determined that these rule changes are not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers; individuals; industries; Federal, state or local government agencies; or geographic regions. There will be no significant effects on competition, employment, investment, productivity, innovation, or on the ability of the United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The Office has also determined that this notice has no Federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

These rule changes will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*, since no recordkeeping or reporting requirements within the coverage of the Act are placed upon the public.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Courts, Inventions and patents.

PART 1 - RULES OF PRACTICE IN PATENT CASES

1. The authority citation for 37 CFR Part 1 would continue to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.

2. Section 1.601 is amended by adding paragraph (q) to read as follows:

§1.601 Scope of rules, definitions.

* * * * *

(q) A *final decision* is a decision awarding judgement as to all counts. An *interlocutory order* is any other action taken by an examiner-in-chief or a panel of the Board in an interference, including the notice declaring an interference.

3. Section 1.637 is amended by revising paragraph (a) to read as follows:

§1.637 Content of motions.

(a) A party filing a motion has the burden of proof to show that it is entitled to the relief sought in the motion. Every motion shall include (1) a statement of the precise relief requested, (2) a statement of the material facts in support of the motion, and (3) a full statement of the reasons why the relief requested should be granted.

* * * * *

4. Section 1.639 is amended by revising paragraph (c) and by adding paragraphs (d) through (g) as follows:

§1.639 Evidence in support of motion, opposition, or reply.

* * * * *

(c) If a party believes that additional evidence in the form of testimony that is unavailable to the party is necessary to support or oppose a preliminary motion under §1.633 or a motion to correct inventorship under §1.634, the party shall describe the nature of any proposed testimony as specified in paragraphs (d) through (g) of this section. If the examiner-in-chief finds that testimony is needed to decide the motion, the examiner-in-chief finds that testimony is needed to decide the motion, the examiner-in-chief may grant appropriate interlocutory relief and enter an order authorizing the taking of testimony and deferring a decision on the motion to final hearing.

(d) When additional evidence in the form of expert-witness testimony is needed in support of or opposition to a preliminary motion, the moving party or opponent should:

(1) identify the person whom it expects to call as an expert;

(2) state the field in which the person is alleged to be an expert; and

(3) state:

(i) the subject matter on which the person is expected to testify;

(ii) the facts and opinions to which the person is expected to testify; and

(iii) a summary of the grounds and basis for each opinion.

(e) When additional evidence in the form of fact-witness testimony is necessary, state the facts to which the witness is expected to testify.

(f) If the opponent is to be called, or if evidence in the possession of the opponent is necessary, explain the evidence sought, what it will show, and why it is needed.

(g) When inter partes tests are to be performed, describe the tests stating what they will be expected to show.

5. Section 1.655 is amended by revising paragraph (a) to read as follows:

§1.655 Matters considered in rendering a final decision.

(a) In rendering a final decision, the Board may consider any properly raised issue including (1) priority of invention, (2) derivation by an opponent from a party who filed a preliminary statement under §1.625, (3) patentability of the invention, (4) admissibility of evidence, (5) any interlocutory matter deferred to final hearing, and (6) any other matter necessary to resolve the interference. The Board may also consider whether any interlocutory order was erroneous or an abuse of discretion. All interlocutory orders shall be presumed to have been correct and the burden of showing error or an abuse of discretion shall be on the party attacking the order. When two or more interlocutory orders involve the same issue, the last entered order shall be presumed to have been correct.

* * * * *

Sept. 16, 1993

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Adverse Decision in Interference

In the designated interferences involving the following patents, final decisions have been rendered that the respective patentees are not entitled to patents containing the claims listed.

Patent No. 4,420,942, *Warren E. David, Donald W. Granger*, NITROGEN LIQUID TO GAS CONVERTER EMPLOYING WATER HEAT EXCHANGERS, Interference No. 101,352, final judgment adverse to the patentee rendered Dec. 23, 1991, as to claims 1-5 and 41-43.

Patent No. 4,513,299, *Francis Chee-Shuen Lee, Ross N. Mills, Robert N. Payne, Frank E. Talke*, SPOT SIZE MODULATION USING MULTIPLE PULSE RESONANCE DROP EJECTION, Interference No. 102,583, final judgment adverse to the patentee rendered Apr. 23, 1993, as to claims 1-5.

Patent No. 4,638,310, *Peter J. Ayliffe*, METHOD OF ADDRESSING LIQUID CRYSTAL DISPLAYS, Interference No. 102,092, final judgment adverse to the patentee rendered July 31, 1992, as to claims 1-14.

Patent No. 4,659,699, *Daniel L. Francis*, PROCESS FOR FREEZE DRYING CYCLOPHOSPHAMIDE, Interference No. 103,122, final judgment adverse to the patentee rendered Aug. 25, 1993, claims 1-21.

Patent No. 4,715,688, *Takamasa Harada, Masaaki Tagushi, Koji Iwasa*, FERROELECTRIC LIQUID CRYSTAL DISPLAY DEVICE HAVING AN A.C. HOLDING VOLTAGE, Interference No. 102,092, final judgment adverse to the patentee rendered July 31, 1992, claims 1-41.

Patent No. 4,743,498, *Thomas J. Kedrowski, Nicholas C. Lehman*, ELMULSION ADHESIVE, Interference No., 102,550, final judgment adverse to the patentees was rendered July 30, 1993, claims 1-13.

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Patent No. 4,760,128, *Wolfgang Ebert, Karsten Idel, Rudiger Schubart*, PROCESS FOR THE PREPARATION OF HIGH MOLECULAR WEIGHT, OPTIONALLY BRANCHED POLYARYLENE SULPHIDE WITH MONOMERCAPTAN COMPOUND, Interference No. 102,108, final judgment adverse to the patentee rendered May 25, 1993, claims 1-7.

Patent No. 4,775,590, *Teruo Sakagami, Naohiro Murayama*, OPTICAL FIBER, Interference No. 102,469, final judgment adverse to the patentee rendered Apr. 14, 1993, claims 1-4.

Patent No. 4,872,219, *Karen Duncan*, SELF-SUPPORTING EAR PROTECTOR, Interference No. 103,021, final judgment adverse to the patentee rendered Aug. 30, 1993, claims 1-7.

Patent No. 4,880,611, *Roland Von Ballmoos, Cynthia T-W. Chu, Michael E. Landis, Eric G. Derouane*, CRYSTALLINE COMPOSITION, Interference no. 102,640, final judgment adverse to the patentee rendered Aug. 26, 1993, claims 1-15.

Patent No. 4,926,200, *Mineo Ohyama, Shigenobu Katagiri, Hiroomi Kozawa, Koutaro Yamada*, ELECTROPHOTOGRAPHIC PRINTER, Interference No. 102,988, final judgment adverse to the patentee rendered Sept. 2, 1993, claims 1-4.

Patent No. 4,963,533, *Erik Desire A. DeClercq, Piet A. M. M. Herdewijn, Samuel Broder, Jan M. R. Balzarini*, THERAPEUTIC APPLICATION OF DIDEOXYCYTIDINENE, Interference No. 102,999, final judgment adverse to the patentee rendered Aug. 11, 1993, claims 1-6.

Patent No. 4,981,792, *Edward S. Inamine, Byron H. Arison, Shieh-Shung T. Chen, Linda S. Wicker*, IMMUNOSUPPRESSANT COMPOUND, Interference No. 102,845, final judgment adverse to the patentee rendered Aug. 27, 1993, claims 5-10.

Patent No. 4,997,706, *Guido F. Smirts, Johan A. Thoen*, FOAMING SYSTEM FOR CLOSED-CELL RIGID POLYMER FOAM, Interference No. 103,079, final judgment adverse to the patentee rendered Sept. 1, 1993, claims 1-12.

Patent No. 4,971,619, *Toyohiko Kume, Toshio Goto, Atsumi Kamochi, Akihiko Yanagi, Shigeki Yagi, Hiroshi Miyauchi*, BENZOTHIAZOLONE, Interference No. 102,656, final judgment adverse to the patentee rendered Sept. 3, 1993, claims 1-13.

Patent No. 5,060,987, *Robert Miller*, TORSION ISOLATION FITTING, Interference No. 103,013, final judgment adverse to the patentee rendered Aug. 2, 1993, claims 1-10.

Patent No. 5,064,720, *Tsutomu Kempo, Atsuko Matsuda, Narita Goto*, MAGNETIC RECORDING MEDIUM CONTAINING A POLYURETHANE BINDER RESIN HAVING A BETAINE GROUP IN THE FORM OF AN INTERMOLECULAR SALT, Interference No. 103,136, final judgment adverse to the patentee rendered Aug. 5, 1993, claims 1-22.

Patent No. 5,124,425, *Toshihiko Higuchi, Sigeyuki Kozawa, Nobuaki Kunii*, CURABLE POLYURETHANE COMPOSITION EXCELLENT IN FLEXIBILITY, Interference No. 103,048, final judgment adverse to the patentee rendered Aug. 2, 1993, claims 1-10.

Patent No. 5,140,084, *Hiroyuki Mikuni, Toshiyuki Chikusa*, SILICON-CONTAINING ALPHA-CYANOACRYLATES, Interference No. 103,060, final judgment adverse to the patentee rendered Aug. 11, 1993, claims 1-4.

NANNIE B. HENRY, *Deputy Clerk*
Board of Patent Appeals & Interferences
(703) 557-4005

Registration To Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before Dec. 3, 1993.

Fagan, Matthew C.,353 Kiely Blvd., San Jose, Calif. 95129
MacGegeor, George M., 5985 Frank Kenny Rd., Vars., Ont., K0A 3H0, Canada
Olsen, Arlen., 9 Linden Ct., Clifton Park, N.Y. 12065
Poliutta, Mark O., 1403 Confederate Ave., Columbia, S.C. 29201
Yost, Frank T., 12407 Melling Ln., Bowie, Md. 20715

Sept. 20, 1993 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Registration To Practice

The following person successfully passed the registration examination that was held Oct. 14, 1992. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before Dec. 3, 1992.

Henn, David E., 494 Winspear Ave., Buffalo, N.Y. 14215

Sept. 21, 1993 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Performance Review Board

Agency: Department of Commerce, Patent and Trademark Office.
Action: Announcement of Membership of the Patent and Trademark Office Performance Review Board.
Summary: In conformance with the Civil Service Reform Act of 1978, 5 U.S.C. 4314(c)(4), the Patent and Trademark Office is modifying the composition of its Performance Review Board to achieve the maximum possible degree of fairness and equity in the process of appraising, rating and rewarding the performance of senior executives and employees in the Senior-Level and Administratively-Determined pay catagories.

This notice (1) announces the appointments of four new members of the Performance Review Board; and (2) establishes rotational term limits for each member to assure consistency, stability and objectivity in the performance appraisal process.
Address: Comments should be addressed to Personnel Officer, Patent and Trademark Office, Office of Personnel, One Crystal Park, suite 700, Washington, D.C. 20231.
For Further Information contact: Colleen Woodard at the above address or telephone (703) 305-8062.
Supplementary Information: The Patent and Trademark Office Performance Review Board is comprised of the following individuals:

Bradford R. Huther, Chairperson
Assistant Commissioner for Finance and Planning
Patent and Trademark Office
Washington, D.C. 20231
Term - expires Sept. 30, 1994

John F. Terapane, Jr.
Director, Patent Examining Group 1200
Patent and Trademark Office
Washington, D.C. 20231
Term - expires Sept. 30, 1994

Carol C. Darr (New Member)
Acting General Counsel
Department of Commerce
Washington, D.C. 20230
Term - expires Sept. 30, 1995

J. David Sams
Chairman, Trademark Trial and Appeal Board
Patent and Trademark Office
Washington, D.C. 20231
Term - expires Sept. 30, 1994

Kathleen J. Charles
Deputy Assistant Secretary
for Resource Management
Bureau of Diplomatic Security
U.S. Department of State
Washington, D.C. 20520
Term - expires Sept. 30, 1994

J. O. Thomas (New Member)
Director, Patent Examining Group 1500
Patent and Trademark Office
Washington, D.C. 20231
Term - expires Sept. 30, 1995

Karl E. Bell (New Member)
Deputy Director of Administration
National Institute of Standards and Technology
Gaithersburg, Md. 20899
Term - expires Sept. 30, 1995

Belkis Leong-Hong (New Member)
Director, Information Engineering Directorate
Defense Information Systems Agency
Center for Information Management
Vienna, Va. 22182
Term - expires Sept. 30, 1996

Gerald R. Lucas (New Member)
Director, Office of Civil Rights
Department of Commerce
Washington, D.C. 20520
Term - expires Sept. 30, 1996

BRUCE A LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Certificates of Correction for Week of Oct. 12, 1993

Des. 326,083	4,820,399	4,977,329	5,026,033
Des. 326,092	4,828,744	4,979,099	5,026,723
Des. 329,633	4,829,770	4,981,087	5,026,860
Des. 331,319	4,835,952	4,991,627	5,027,264
Des. 331,464	4,859,519	4,993,915	5,027,290
Des. 332,059	4,879,016	4,994,101	5,027,682
Re. 33,507	4,883,438	4,999,330	5,027,840
Re. 34,012	4,887,936	5,000,990	5,029,009
Re. 34,015	4,890,299	5,001,004	5,029,264
Re. 34,070	4,894,724	5,001,099	5,031,465
Re. 34,100	4,896,121	5,004,257	5,035,759
Re. 34,110	4,925,552	5,008,182	5,040,438
PP. 7,978	4,932,758	5,010,183	5,042,792
PP. 7,980	4,934,624	5,010,662	5,045,412
PP. 7,981	4,937,539	5,013,453	5,045,467
PP. 8,057	4,944,409	5,013,850	5,045,517
PP. 8,067	4,956,698	5,015,746	5,047,327
PP. 8,068	4,957,810	5,017,503	5,049,147
4,326,358	4,960,450	5,018,535	5,049,861
4,509,511	4,963,700	5,019,168	5,050,115
4,750,690	4,970,021	5,019,409	5,052,539
4,782,061	4,970,440	5,019,887	5,053,334
4,797,189	4,973,288	5,020,288	5,053,503
4,808,279	4,974,340	5,021,903	5,055,310
4,819,587	4,976,619	5,023,111	5,055,604
5,055,837	5,099,012	5,121,411	5,135,775
5,057,154	5,099,122	5,121,550	5,135,902
5,057,481	5,099,182	5,121,626	5,136,003
5,057,708	5,099,348	5,122,537	5,136,282
5,059,110	5,099,482	5,123,012	5,136,309
5,059,481	5,100,046	5,123,225	5,137,080
5,061,311	5,100,452	5,123,722	5,137,096
5,061,674	5,100,533	5,124,012	5,137,108
5,062,981	5,101,284	5,124,178	5,137,220
5,065,035	5,102,693	5,124,296	5,137,266
5,065,503	5,102,774	5,124,489	5,137,303
5,065,845	5,102,826	5,124,574	5,137,370
5,065,903	5,102,877	5,124,666	5,137,576
5,066,492	5,103,174	5,124,936	5,137,586
5,066,897	5,103,554	5,124,985	5,137,644
5,070,286	5,103,755	5,125,179	5,137,711
5,070,722	5,104,099	5,125,189	5,137,759
5,072,760	5,105,089	5,125,978	5,137,778
5,073,014	5,105,219	5,125,983	5,137,819
5,073,380	5,105,310	5,126,066	5,138,063
5,075,176	5,105,332	5,126,169	5,138,087
5,076,165	5,105,408	5,126,410	5,138,289
5,076,655	5,105,431	5,126,440	5,138,359
5,077,060	5,105,703	5,126,499	5,138,390
5,077,281	5,106,070	5,126,765	5,138,940
5,077,803	5,106,738	5,126,850	5,138,942
5,079,464	5,106,752	5,126,858	5,139,170
5,079,878	5,107,009	5,126,865	5,139,593
5,080,254	5,107,220	5,126,875	5,139,805
5,080,294	5,107,312	5,126,948	5,140,168
5,080,492	5,108,185	5,127,254	5,140,269
5,081,053	5,108,457	5,127,294	5,140,731
5,081,539	5,109,356	5,128,089	5,140,776
5,081,651	5,109,574	5,128,445	5,141,317
5,082,030	5,109,870	5,128,567	5,141,340
5,082,566	5,110,374	5,128,717	5,141,398
5,082,587	5,110,616	5,128,789	5,141,424
5,082,775	5,111,416	5,128,804	5,141,628
5,083,072	5,111,597	5,129,150	5,141,718
5,084,468	5,111,675	5,129,169	5,141,836
5,085,138	5,111,808	5,129,353	5,141,924
5,087,121	5,111,963	5,129,387	5,141,949
5,087,429	5,112,040	5,129,452	5,142,053
5,089,132	5,112,357	5,129,518	5,142,074
5,090,694	5,112,639	5,129,689	5,142,099
5,091,190	5,112,795	5,129,725	5,142,411
5,091,207	5,113,368	5,129,727	5,142,496
5,091,209	5,113,599	5,129,808	5,142,776
5,091,367	5,113807	5,129,817	5,142,851
5,091,483	5,113,925	5,129,975	5,142,922
5,091,521	5,113,980	5,130,023	5,143,222
5,091,527	5,114,447	5,130,301	5,143,316
5,091,831	5,114,609	5,103,421	5,143,370
5,091,845	5,114,646	5,130,581	5,143,475
5,091,946	5,115,064	5,130,813	5,143,552
5,092,626	5,115,226	5,130,726	5,143,600
5,092,733	5,115,255	5,130,813	5,143,650
5,093,187	5,115,634	5,130,883	5,143,774
5,093,258	5,116,353	5,130,960	5,143,813
5,093,341	5,116,530	5,131,024	5,143,879
5,093,343	5,116,729	5,131,128	5,143,959
5,093,406	5,116,750	5,131,815	5,144,227
5,093,535	5,116,995	5,131,881	5,144,235
5,093,682	5,117,342	5,132,173	5,144,256
5,093,843	5,118,098	5,132,230	5,144,313
5,094,761	5,118,207	5,132,423	5,144,368
5,094,812	5,118,314	5,133,016	5,144,510
5,094,886	5,118,321	5,133,073	5,144,608
5,095,092	5,118,351	5,133,074	5,144,618
5,095,111	5,118,734	5,133,137	5,144,891
5,095,351	5,118,816	5,133,156	5,144,922
5,095,442	5,119,554	5,133,355	5,144,941
5,096,131	5,119,632	5,133,746	5,145,075
5,096,574	5,119,752	5,134,382	5,145,215
5,096,862	5,120,482	5,134,743	5,145,313
5,097,138	5,120,555	5,135,139	5,145,322
5,098,225	5,120,661	5,135,570	5,145,426
5,098,774	5,120,777	5,135,623	5,145,449
5,098,977	5,120,830	5,135,673	5,145,499

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5,145,646	5,153,635	5,162,449	5,170,257
5,145,729	5,153,670	5,162,469	5,170,303
5,145,772	5,153,713	5,162,476	5,170,561
5,146,129	5,153,809	5,162,523	5,170,663
5,146,365	5,154,094	5,162,597	5,170,769
5,146,366	5,154,454	5,162,725	5,171,128
5,146,386	5,154,482	5,162,743	5,171,235
5,146,481	5,154,508	5,162,746	5,171,352
5,146,512	5,154,584	5,162,797	5,171,402
5,146,738	5,154,672	5,162,899	5,171,444
5,146,801	5,154,774	5,162,929	5,171,595
5,146,886	5,154,820	5,163,028	5,171,647
5,146,992	5,154,851	5,163,083	5,171,816
5,146,976	5,155,493	5,163,143	5,171,952
5,147,027	5,155,503	5,163,376	5,171,958
5,147,062	5,155,815	5,163,421	5,172,094
5,147,066	5,155,821	5,163,613	5,172,298
5,147,222	5,156,095	5,163,747	5,172,332
5,147,383	5,156,521	5,164,212	5,172,752
5,147,590	5,156,765	5,164,266	5,172,788
5,147,617	5,156,768	5,164,292	5,172,800
5,147,739	5,156,846	5,164,424	5,172,980
5,147,871	5,156,885	5,164,434	5,173,019
5,147,883	5,157,066	5,164,896	5,173,382
5,148,035	5,157,239	5,164,990	5,173,462
5,148,037	5,157,715	5,165,037	5,173,555
5,148,202	5,158,126	5,165,212	5,173,650
5,148,226	5,158,241	5,165,278	5,173,984
5,148,494	5,158,322	5,165,471	5,174,035
5,148,520	5,158,381	5,165,514	5,174,223
5,148,611	5,158,389	5,166,118	5,174,352
5,148,615	5,158,534	5,166,131	5,174,544
5,148,666	5,158,535	5,166,433	5,174,677
5,149,080	5,158,678	5,166,511	5,174,963
5,149,121	5,158,757	5,166,550	5,175,062
5,149,208	5,158,974	5,166,756	5,175,362
5,149,309	5,159,240	5,166,936	5,175,795
5,149,469	5,159,372	5,167,106	5,175,811
5,149,588	5,159,388	5,167,135	5,176,058
5,149,875	5,159,698	5,167,153	5,176,402
5,150,173	5,159,712	5,167,159	5,176,523
5,150,183	5,159,939	5,167,185	5,176,615
5,150,314	5,160,426	5,167,262	5,176,722
5,150,358	5,160,505	5,167,536	5,176,930
5,150,504	5,160,522	5,167,988	5,176,952
5,150,735	5,160,626	5,168,162	5,177,267
5,151,207	5,160,673	5,168,233	5,177,326
5,151,367	5,160,710	5,168,445	5,177,383
5,151,444	5,160,810	5,168,562	5,177,594
5,151,621	5,160,876	5,168,734	5,177,751
5,151,639	5,161,129	5,168,788	5,177,757
5,151,640	5,161,257	5,168,794	5,178,358
5,151,809	5,161,335	5,168,867	5,179,210
5,152,224	5,161,417	5,168,878	5,179,643
5,152,228	5,161,480	5,168,897	5,181,186
5,152,554	5,161,481	5,169,049	5,201,591
5,152,696	5,161,505	5,169,306	5,203,500
5,152,819	5,161,766	5,169,405	5,203,781
5,152,882	5,161,776	5,169,459	5,213,815
5,153,246	5,161,927	5,169,461	5,233,673
5,153,402	5,162,000	5,169,613	
5,153,497	5,162,010	5,169,831	
5,153,578	5,162,353	5,170,190	

Disclaimers

4,457,393—*Hirohide Tamaki*, Hamamatsu; *Manabu Suzuki*, Shizuoka, both of Japan. SUSPENSION DEVICE FOR MOTORCYCLE. Patent dated July 3, 1984. Disclaimer filed June 2, 1992, by the assignee, Donald G. Richardson.

Hereby enters this disclaimer to claim 9 of said patent.

4,495,586—*Roland E. Andrews*, Portland, Oreg. WAVEFORM AQUISITION APPARATUS AND METHOD. Patent dated Jan. 22, 1985. Disclaimer filed Aug. 9, 1993, by the assignee, Tektronix, Inc.

Hereby enters this disclaimer to all claims of said patent.

4,669,630—*Maynard A. Kenyon II*, Mercerville, N.J. CONTAINER AND CAP ASSEMBLY. Patent dated June 2, 1987. Disclaimer filed July 21, 1993, by the assignee, Kraft General Foods, Inc.

The term of this patent subsequent to July 15, 1993, has been disclaimed.

4,798,208—*Adrian L. Faasse, Jr.*, Middleville, Mich. DIAGNOSTIC ELECTRODE. Patent dated Jan. 17, 1989. Disclaimer filed Aug. 16, 1993, by the inventor.

Hereby enters this disclaimer to claim 4 of said patent.

Disclaimer and Dedications

4,927,476—*Richard L. T. Watkins*, Bellingham, Wash. METHOD FOR MAKING A REINFORCED THERMOSETTING RESIN STRUCTURE WITH INTEGRAL FLANGED NOZZLE. Patent dated May 22, 1990. Disclaimer and Dedication filed Aug. 24, 1993, by the inventor.

Hereby disclaims and dedicates to the Pubic claims 1-80 of said patent.

4,931,119—*Richard L. T. Watkins*, Bellingham, Wash. METHOD FOR MAKING A REINFORCED THERMOSETTING RESIN STRUCTURE WITH INTEGRAL UNFLANGED NOZZLE. Patent dated June 5, 1990. Disclaimer and Dedication filed Aug. 24, 1993, by the inventor.

Hereby disclaims and dedicates to the Public claims 1-58 of said patent.

5,040,173—*Gaylord W. Richards*, Naperville, Ill. NETWORK CONTROL ARRANGEMENT BASED ON TOPOLOGICAL EQUIVALENCE. Patent dated Aug. 13, 1991. Disclaimer and Dedication filed on July 29, 1993, by the assignee, American Telephone and Telegraph Co.

Hereby disclaims and dedicates to the Public claims 1-18 of said patent.

5,079,056—*Richard L. T. Watkins*, Bellingham, Wash. REINFORCED THERMOSETTING RESIN STRUCTURE WITH INTEGRAL UNFLANGED NOZZLE AND METHOD. Patent dated Jan. 7, 1992. Disclaimer and Dedication filed Aug. 24, 1993, by the inventor.

Hereby disclaims and dedicates to the Public claim 1-20 of said patent.

Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

September 6-10, 1993

Date Issued	Type of Proceeding[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods of Registration Cited by Examining Atty.	Recommended for Publication
9-10	OPP	84,918	Spa-Monopole, Compagnie Fermiere de Spa v. ASL	2(d)	Opposition Dismissed	"SPA" et al. [bottled water]	"SPA-FAST SOLUTION" [vitamin food supplements for use in weight reduction programs]		No
9-10	EX	74/174,469	Sparta Foods, Inc.	2(d)	Refusal Affirmed		"MUCHO NACHO" [tortilla chips]	"MUCHO BURRITO" "MUCHO CHALUPA" and "MUCHO TACO" [all three marks registered for Mexican food items]	No

(1) EX = EX PARTE APPEAL; OPP = OPPOSITION; C = CANCELLATION; CU = CONCURRENT USE; (R) = REQ. FOR RECONSIDERATION

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Box TRADEMARK APPLICATION	New trademark application and associated papers and application fees.
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All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

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Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 654-0069
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	Detroit Public Library	(313) 833-1450
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	St. Louis Public Library	(314) 241-2288 Ext. 390
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Nevada	Reno: University of Nevada, Reno Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 932-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 474-5355
	Buffalo and Erie County Public Library	(716) 858-7101
	New York Public Library (The Research Libraries)	(212) 714-8529
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	Pittsburgh, Carnegie Library of	(412) 622-3138
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Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
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Wisconsin	Milwaukee Public Library	(414) 278-3247

PATENT EXAMINING CORPS

BRUCE LEHMAN, Commissioner
STEPHEN G. KUNIN, Acting Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone Number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100 — EDWARD E. KUBASIEWICZ, Director	308-0661	10/10/92
ORGANIC CHEMISTRY, GROUP 1200 — JOHN F. TERAPANE, JR., Director	308-1235	10/29/92
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300 —RICHARD V. FISHER, Director	308-0651	8/28/92
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 1500 — J. O. THOMAS, Director	308-2351	8/28/92
BIOTECHNOLOGY, GROUP 1800 — BARRY S. RICHMAN, Director	308-0196	6/27/92
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100 — D. G. KELLY, Director	308-1782	3/17/92
SPECIAL LAWS ADMINISTRATION, GROUP 2200 — ROBERT E. GARRETT, Director	308-0511	2/29/92
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300 — GERALD GOLDBERG, Director	305-9600	6/05/91
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400 — CARLTON CROYLE, Director	308-0771	11/21/91
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500 — JOSEPH J. ROLLA, Director	308-0956	7/24/92
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600 — BOBBY R. GRAY, Director	305-4700	2/22/92
DESIGN, GROUP 2900 — ROBERT E. GARRETT, Director	308-0511	5/19/91
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100 — F. R. SCHMIDT, Director	308-1113	8/15/92
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200 — N. GODICI, Director	308-1148	9/15/92
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300 — J. J. LOVE, Director	308-0858	10/06/92
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400 — JOHN KITTLE, Director	308-0861	8/13/92
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500 — A.L. SMITH, Director	308-1021	9/18/992

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during Sept. 1993 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151

Patents ..... Numbers 3,978,525 to 3,983,579 inclusive
Plant Patents ..... 3,949 to 3,952

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TRADEMARK OPERATION

Bruce Lehman, Commissioner
Robert M. Anderson, Acting Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of September 1, 1993

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308-9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/19/93	8/18/93
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308-9104 Scientific Equipment. Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/17/93	6/28/93
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308-9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/19/93	6/03/93
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308-9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/14/93	7/19/93
Law Office 7—David Shallant, Managing Attorney, (703) 308-9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/10/93	6/21/93
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308-9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/27/93	6/21/93
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308-9109 Lubricants, Industrial Equipment, Materials & Musical Instruments-Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	4/13/93	7/09/93
Law Office 10—Jean Logan, Managing Attorney, (703) 308-9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Covering-Int. Classes 22, 23, 24, 25, 26, 27 Services-Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/24/93	7/16/93
Law Office-11—Thomas Howell, Managing Attorney, (703) 308-9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	4/23/93	5/14/93
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308-9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/24/93	8/17/93
Law Office 13—Craig Morris, Managing Attorney, (703) 308-9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/12/93	7/29/93
Law Office 14—Ron Williams, Managing Attorney, (703) 308-9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/14/93	7/27/93
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308-9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/24/93	5/17/93
** Collective Marks—Class 200		
** Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308-9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308-9500		
Affidavits Under Sections 8 & 15 (All Classes)	5/13/92	—0—
Renewals (All Classes)	12/29/92	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

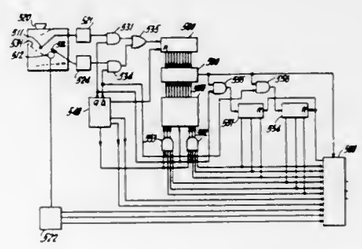
1. ** Assigned to each law office
2. Applicants with inquiries concerning the status of their applications and a touch tone telephone should call (703) 305-8747 from 6:30 A.M. to Midnight Est, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure*.
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

REEXAMINATIONS

OCTOBER 19, 1993

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,918,565 (2109th)
METHOD AND APPARATUS FOR COIN SELECTION UTILIZING A PROGRAMMABLE MEMORY
Guy L. Fougere, Arlington, Mass.; Walter J. Greene, Sunnyvale, Calif., and Dennis C. Jeffreys, Bedford, Mass., assignors to Mars, Incorporated, McLean, Va.
Reexamination Request No. 90/002,685, Mar. 30, 1992.
Reexamination Certificate for Patent No. 3,918,565, issued Nov. 11, 1975, Ser. No. 405,927, Oct. 12, 1973.
Claims priority, application United Kingdom, Oct. 12, 1972, 47161/72; Ireland, Oct. 8, 1973, 1786/73
Int. Cl.[5] G07F *3/02*
U.S. Cl. 194—317

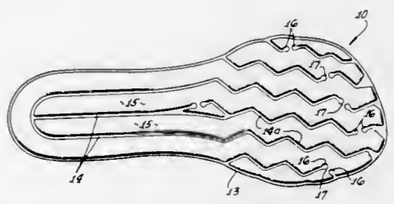


AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–63** is confirmed.

20. Apparatus for examining coins with respect to authenticity comprising means for examining a coin by making a measurement with respect to a first characteristic and producing a first electrical signal having a quality representative of the first characteristic, a programmable memory, and means for comparing a first value of the quality of the first signal with one or more values stored in the programmable memory.

B1 4,219,945 (2110th)
FOOTWEAR
Marion F. Rudy, Northridge, Calif., assignor to Robert C. Bogert, Woodland Hills, Calif.
Reexamination Request No. 90/002,627, Jan. 29, 1992.
Reexamination Certificate for Patent No. 4,219,945, issued Sep. 2, 1980, Ser. No. 918,790, Jun. 26, 1978.
Continuation-in-part of Ser. No. 830,589, Sep. 6, 1977, Pat. No. 4,183,156
Int. Cl.[5] A43B *13/20*
U.S. Cl. 36—29



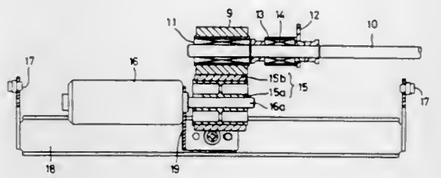
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1**, **14**, **15**, **21**, **24** and **25** are determined to be patentable as amended.

Claims **2**, **5**, **6**, **11**, **16**, **17**, **18**, **22** and **23**, dependent on an amended claim, are determined to be patentable.

1. A structure to form part of a shoe, comprising a sealed sole member of elastomeric material providing a plurality of chambers, said chambers being inflatable with a gaseous medium under pressure to a desired initial value *and in fluid communication with one another*, and an elastomeric yieldable outer member encapsulating said sole member, said sole member *extending generally along a plane and* having peaks and valleys in its upper and lower surfaces, *said valleys including an uninflated region formed of said elastomeric material between chambers substantially parallel to said plane in which said sole member generally extends*, the upper surface of said outer member being spaced above said peaks, said outer member extending downwardly from its upper surface to fill the space between said upper surface and said peaks and also to fill at least said valleys in said upper surface of said sole member, whereby the downward load of the wearer's foot is transmitted from said upper surface of said outer member through said outer member to the inflated chambers of said sole member.

B1 5,050,854 (2111th)
PAPER FEEDER
Akio Tajima, Tokyo, Japan, assignor to Seikosha Co., Ltd., Tokyo, Japan
Reexamination Request No. 90/002,796, Jul. 24, 1992.
Reexamination Certificate for Patent No. 5,050,854, issued Sep. 24, 1991, Ser. No. 509,101, Apr. 13, 1990.
Claims priority, application Japan, Apr. 28, 1989, 1-110114; Jun. 9, 1989, 1-146973
Int. Cl.[5] B65H *3/52*
U.S. Cl. 271—122



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **2**, **18–20**, **24** and **30–34** are cancelled.

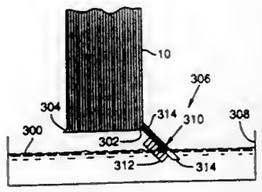
Claims **3–5**, **7**, **13**, **21**, **22**, **25**, **26** and **35** are determined to be patentable as amended.

Claims **6**, **8–12**, **14–17**, **23** and **27–29**, dependent on an amended claim, are determined to be patentable.

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13. A paper feeder comprising a rotatable feed roller means and a retard roller means biasingly urged toward one another, said feed roller means being rotatable in a feed direction for feeding a paper sheet between said feed roller means and said retard roller means, a pivot arm means *for* pivotably supporting said retard roller means *about a first axis*, and motor means mounted on *for movement with* said pivot arm means [and operable to apply] *for applying* a turning torque to said retard roller means in a direction opposite to said direction of feed of said roller means, *said motor means including a motor and a motor mounting means for pivotably mounting said motor about a second axis parallel to and spaced from said first axis.*

B1 5,154,447 (2112th)
BINDING FOR SOFT COVER BOOKS
John C. Tooker, P.O. Box 1165, Medford, Oreg. 97501
Reexamination Request No. 90/002,949, Feb. 5, 1993.
Reexamination Certificate for Patent No. 5,154,447, issued Oct. 13, 1992, Ser. No. 756,985, Sep. 9, 1991.
Continuation-in-part of Ser. No. 724,176, Jul. 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 618,721, Nov. 27, 1990, abandoned
Int. Cl.[5] B42D *1/04, 1/06*
U.S. Cl. 281—21.1



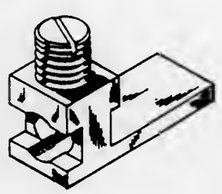
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim **2** is confirmed.

Claim **1** is determined to be patentable as amended.

1. A book comprising;
a book block, a soft book cover, and a crepe secured to the book block and soft book cover to secure the book cover to the book block;
said book block including multiple pages bound together along a common edge and the combined edges of the bound pages forming a block back having a defined width *and defined side edges* and at least one of said side edges being uneven resulting from the formation of the book block;
said soft book cover including an integral sheet formed into a back cover, a front cover and an intermediate spine cover having a width accommodating the width of the block back with the book in closed condition;
said crepe having designated sections across its width including a center section coinciding in width to the block back, end sections spaced from the center sections, and intermediate sections between the end sections and center section; and
a first adhesive bonding said center section of the crepe only to the block back and forming an uneven line of adhesive at the uneven edge of said block back which appears unfinished, a second adhesive bonding said end sections only to the respective front and back covers, and said intermediate sections being free of any attachment to the book cover, and a third adhesive applied along said uneven [said] *side* edge of said block back to cover the uneven line of the first adhesive and thereby provide a finished appearance.

B1 Des. 309,129 (2108th)
L-SHAPED ELECTRICAL CONNECTOR
David M. Ottmann, Mississauga, Canada, assignor to Connector Manufacturing Co., Cincinnati, Ohio
Reexamination Request No. 90/002,325, Apr. 22, 1991.
Reexamination Certificate for Patent No. Des. 309,129, issued Jul. 10, 1990, Ser. No. 857,608, Apr. 24, 1986.
U.S. Cl. D13—149



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

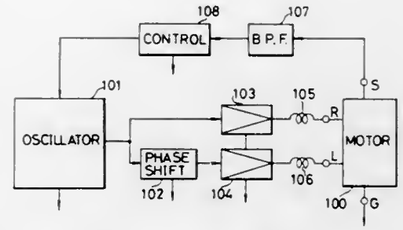
The single claim is cancelled.
[The ornamental design for an L-shaped electrical connector, as shown and described.]

REISSUES

OCTOBER 19, 1993

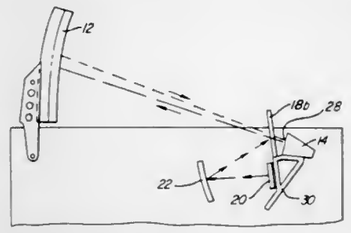
Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,409
DRIVE CIRCUIT FOR SURFACE-WAVE DRIVEN MOTOR UTILIZING ULTRASONIC VIBRATION
Kazuo Hakamata, Kawasaki; Tadao Takagi, Yokohama, and Yukio Hyodo, Hiratsuka, all of Japan, assignors to Nikon Corporation, Tokyo, Japan
Original No. 4,510,411, dated Apr. 9, 1985, Ser. No. 605,693, Apr. 30, 1984. Continuation of Ser. No. 83,443, Aug. 10, 1987, abandoned. Application for reissue Sep. 17, 1991, Ser. No. 759,958
Claims priority, application Japan, May 4, 1983, 58-77380
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—316 **27 Claims**



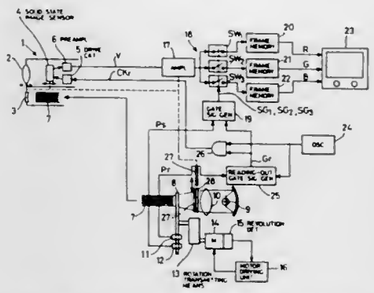
33. A surface-wave driven motor comprising:
a moving member for being displaced;
a resilient member having a surface urged against said moving member;
a piezo-electric member provided in contact with said resilient member to impart vibration to said resilient member and create an elastic vibration wave in said surface that is propagated along said surface;
means having electrode means provided on said piezo-electric member and applying an AC voltage to said piezo-electric member through said electrode means;
means for detecting an electrical output produced in said piezo-electric member from an area on said piezo-electric member which is electrically insulated from said electrode means; and
means for determining the frequency of said AC voltage on the basis of the detected electrical output;
wherein said means having electrode means includes first and second groups of electrodes provided on one side of said piezo-electric member, and an electrode member provided on the opposite side of said piezo-electric member between said piezo-electric member and said resilient member, each of said electrodes has a length of ½ wavelength of said vibration wave and said electrode member as a length longer than said each electrode, and means for applying first and second AC voltages which are out of phase with each other between said first group of electrodes and said electrode member and between said second group of electrodes and said electrode member, respectively.

Re. 34,410
ANTENNA SYSTEM FOR HYBRID COMMUNICATION SATELLITE
Harold A. Rosen, Santa Monica, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Original No. 4,792,813, dated Dec. 20, 1988, Ser. No. 896,533, Aug. 14, 1986. Application for reissue Oct. 4, 1991, Ser. No. 771,905
Int. Cl.[5] H01Q *19/14*
U.S. Cl. 343—781 P **23 Claims**



1. An antenna reflector system, comprising:
a first reflector for reflecting radio frequency signals having a first linear polarization; and
a second reflector for reflecting radio frequency signals having a second linear polarization [different than] orthogonal to said first linear polarization;
said first and second reflectors intersecting each other along a common axis and being angularly offset relative to each other about said common axis;
the direction of said first linear polarization being parallel to said common axis, the direction of said second linear polarization being perpendicular to said common axis.

Re. 34,411
ELECTRONIC IMAGE PICKUP DEVICE FOR ENDOSCOPES
Kimihiko Nishioka, and Hisao Yabe, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Original No. 4,807,026, dated Feb. 21, 1989, Ser. No. 28,195, Mar. 19, 1987. Application for reissue Feb. 21, 1991, Ser. No. 658,854
Claims priority, application Japan, Mar. 19, 1986, 61-61462
Int. Cl.[5] H04N *7/18;* **A61B** *1/06*
U.S. Cl. 358—98 **48 Claims**



1. An electronic image pickup device for endoscopes, comprising:

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an illuminating system including:
light source means,
light-transmitting means having a light-incidence end face abutting said light source means and a light-emitting end face directed to an object under observation to irradiate a light coming from said light source means onto said object,
a first filter disc rotatably disposed between said light source means and said light-incidence end face of said light-transmitting means and having light-transmitting areas arranged on a same circumference of said disc via a light-removing area intervening between the respective light-transmitting areas for removing the light coming from said light source means for transmitting at least three different color lights one after another in succession through said light-transmitting areas as said first filter disc is rotated; and
an image pickup system disposed in association with said illuminating system and including:
an objective lens,
image pickup means for receiving an image of said object formed by said objective lens, and
color image display means connected to said image pickup means for producing a color image of said object based on an electric signal supplied from said image pickup means,
wherein:
a plurality of filters having mutually different transmitting wavelength ranges are disposed for alternative insertion into an optical path of either one of said illuminating system and said image pickup system, thereby making it possible to obtain a color image by rays of a plurality of wavelength ranges.

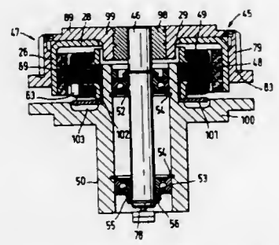
40. An imaging apparatus comprising:
an illuminating means for emitting illuminating light of a wavelength range including a visible range and another range other than the visible range;
an image forming optical system, disposed in association with said illuminating means, for forming the image of an object to be imaged;
an imaging means having a sensitivity to a wavelength range ranging from a visible range to another range than the visible range and converting the image formed by said image forming optical system to an electric signal;
a wavelength range dividing means dividing the wavelength range into the visible range and another range than the visible range to provide a plurality of wavelength ranges;
a selecting means selecting at least one wavelength range from among the wavelength ranges divided by said wavelength range dividing means; and
signal processing means processing the output signals of said imaging means, in response to said selected wavelength ranges, into video signals.

Re. 34,412
DISK STORAGE DRIVE HAVING MOTOR DRIVE WITH NON-CORRODIBLE HUB

Dieter Elsaesser, St. Georgen, and Johann von der Heide, Schramberg, both of Fed. Rep. of Germany, assignors to Papst-Motoren GmbH & Co. KG, St. Georgen, Fed. Rep. of Germany

Original No. 4,779,165, dated Oct. 18, 1988, Ser. No. 32,954, Mar. 31, 1987. Continuation of Ser. No. 733,231, May 10, 1985, abandoned, which is a continuation-in-part of Ser. No. 412,093, Aug. 27, 1982, abandoned. Application for reissue Oct. 18, 1990, Ser. No. 599,516
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1981, 3135385; Switzerland, Jun. 1, 1984, 2680/84; Mar. 30, 1985, 01374/85
Int. Cl.[5] G11B *17/08, 17/02;* H02K *21/12*
U.S. Cl. 360—99.08 **69 Claims**

50. A disk storage drive comprising:
a clean chamber for housing a storage disk;
a brushless drive motor having a stator and a winding on the stator, the stator having an axial longitudinal dimension;
an external rotor having a rotation axis and coaxially surrounding the stator, the rotor being fixed to a shaft rotatably supported axially in a bearing system that is at least partly housed within the stator, an inner wall of said rotor being spaced from said stator by a substantiolly cylindrical oir gap, said rotor having a permanent magnet with an axial longitudinal dimension and a soft magnetic annular yoke with an axially extending wall portion, said permanent magnet forming the inner wall of said rotor adjacent the air gap;
a hub held fast on the rotor for rotation therewith and being coaxial to the yoke, said hub having a machinoble outer surface and being made of a non-ferromagnetic, non-corrodible material suitable for use in a clean chamber following machining of the outer surface;

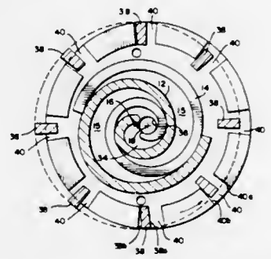


an outer peripheral cylindrical surface on said hub dimensioned to pass through a standardized central opening of a storage disk for receiving and mounting the storage disk for rotation therewith in said clean chamber, said outer peripheral cylindrical surface radially enclosing said soft magnetic annular yoke of said rotor and said stator for a substantial part of the axial extensions thereof, and at least half of the axial longitudinal dimension of the stator winding and of the rotor magnet interacting magnetically therewith being housed within said outer peripheral cylindrical surface of the storage disk mounting portion of the hub, and
a magnetic shield ring located in the hub and extending substantially from the soft magnetic annulor yoke radially inwardly and substantially from one axial end of the soft magnetic annular yoke.

Re. 34,413
SYNCHRONIZER AND UNLOADING SYSTEM FOR SCROLL FLUID DEVICE

John E. McCullough, Carlisle, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Original No. 4,927,340, dated May 22, 1990, Ser. No. 234,098, Aug. 19, 1988. Application for reissue May 22, 1992, Ser. No. 886,807
Int. Cl.[5] F01C *1/04;* F16D *3/04*
U.S. Cl. 418—55.3 **10 Claims**



5. A scroll fluid device comprising, in combination:

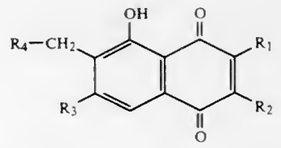
at least one pair of meshed axially extending involute spiral wraps having involute centers and defining at least one chamber between them that moves radially between an inlet zone and an output zone when one wrap is orbited by translation along a curvilineor path about an orbit center relative to the other wrap;
wrap support means secured to and supporting each wrap;
means for mounting said wrap support means for enabling relative orbital motion of the wraps relative to each other about an orbit radius;
synchronizer means arranged to prevent relative rotation of one wrap relative to the other notwithstanding the orbital motion of one wrap relative to the other;
said synchronizer means comprising axially extending teeth associated with one wrap support means and axially extending grooves associated with the other wrap support means, said teeth and grooves being interdigited;
said teeth comprising radially and circumferentially extending elements having flat circumferentially spaced teeth side wall surfaces, said grooves defined by generally radially extending flat groove side wall surfaces;
each of said teeth side wall surfaces being separated by a tooth width and each of said groove side wall surfaces being separated by a groove width, and wherein said groove width corresponds to the maximum orbital excursion of the teeth side wall surfaces, said teeth and groove side wall surfaces cooperating to prevent relotive rotation between the scroll support means while accommodating their relative orbital motion.

Re. 34,414
PHYSIOLOGICALLY ACTIVE SUBSTANCE P-23924, ITS PRODUCTION AND USE

Hisayoshi Okazaki, Kyoto; Kazuhiko Ohta, Ikeda, and Takenori Ishimaru, Toyonaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Original No. 4,569,943, dated Feb. 11, 1986, Ser. No. 543,943, Oct. 19, 1983. Application for reissue Apr. 22, 1991, Ser. No. 693,107
Claims priority, application Japan, Oct. 20, 1982, 57-185043; Aug. 2, 1983, 58-142347
Int. Cl.[5] C07C *50/16, 147/107;* A01N *37/12*
U.S. Cl. 514—562 **12 Claims**

15. A compound represented by the formula:



wherein R_1 is hydrogen, methyl or hydroxymethyl, R_2 is hydrogen or methoxy, R_3 is hydroxy or methoxy and R_4 is a group



Re. 34,415
METHOD FOR PREPARING CARBOXY FUNCTIONAL SILICONES

Frank J. Traver, Troy, N.Y., assignor to General Electric Company, Waterford, N.Y.

Original No. 4,990,643, dated Feb. 5, 1991, Ser. No. 542,272, Jun. 22, 1990. Application for reissue Aug. 26, 1991, Ser. No. 750,845
Int. Cl.[5] C07F *7/08*
U.S. Cl. 556—439 **8 Claims**

1. A method of preparing carboxy functional silicones, comprising the steps of:
(1) addition reacting a mixture of ingredients comprising:
(A) an organoacyloxysilane having the general formula:

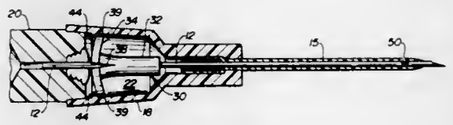
(I) $R_3SiOOC(R^1)_xCH{=}CH_2$

wherein R [and $R^1$are] *is a* monovalent hydrocarbon [radicals] *radical* free of aliphatic unsaturation, R^1 *is a divalent hydrocarbon free of aliphatic unsaturotion* and "x" is a number from about 0 to about 30.
(B) an organohydrogenpolysiloxane having a hydride concentration of 0.01 to about 100 mole percent and a viscosity of about 2 to about 1 million centipoise at 25° C.; and
(C) an amount of a precious metal or a precious metal-containing catalyst effective for promoting an addition reaction between components (1) and (2);
wherein components are present in a molar ratio of about 1:1; and
(2) hydrolyzing the addition reaction product formed in step (1).

Re. 34,416
I.V. CATHETER WITH SELF-LOCATING NEEDLE GUARD

Francis P. Lemieux, Palm Harbor, Fla., assignor to Critikon, Inc., Tampa, Fla.

Original No. 4,952,207, dated Aug. 28, 1990, Ser. No. 217,246, Jul. 11, 1988. Application for reissue Dec. 5, 1991, Ser. No. 803,277
Int. Cl.[5] A61M *5/18*
U.S. Cl. 604—164 **64 Claims**



21. A catheter assembly comprising:
a catheter hub;
a catheter attached to said catheter hub;
a needle hub;
a needle comprising:
a distal tip, a proximal end, said needle affixed near its proximal end to said needle hub, and first means for engoging a needle guard;
a needle guard comprising:
a proximal portion having second means for engaging said first means, and a distal portion for extending over said needle distal tip when said second means is engaged with said first means;
attachment means for attaching said catheter hub to said needle guard prior to engagement of said first means and said second means; and
wherein said needle is insertable into said needle guard and said catheter with said needle guard placed between said needle hub and said catheter hub, said needle slidable relative to said catheter and said needle guard such that said first means engages said second means.

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PLANT PATENTS

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Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,423

BLACKBERRY-DOUGLASS CULTIVAR

Bernard S. Douglass, 27825 NW. Truitt Rd., Hillsboro, Oreg. 97124

Filed Oct. 11, 1991, Ser. No. 775,019
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—46.1 **1 Claim**

1. A new and distinct trailing type blackberry as substantially illustrated and described which is characterized by husky, thornless canes and a vigorous growth habit, and high mid-season fruit yields of medium large glossy black fruit with small seeds, excellent dessert qualities and high potential for jams, jellies, and juice.

8,424

CARNATION PLANT NAMED CFPC TYMPANI

Walter H. Jessel, Jr., Salinas, Calif., assignor to California Florida Plant Co., L.P., Salinas, Calif.

Filed Nov. 10, 1992, Ser. No. 976,137
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—70.1 **1 Claim**

1. A new and distinct variety of carnation plant, substantially as shown and described.

8,425

CARNATION PLANT NAMED CFPC CHAPARRAL

Walter H. Jessel, Jr., Salinas, Calif., assignor to California Florida Plant Co., L.P., Salinas, Calif.

Filed Sep. 24, 1992, Ser. No. 950,306
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—70.2 **1 Claim**

1. A new and distinct variety of carnation plant, substantially as shown and described.

8,426

CARNATION PLANT NAMED CFPC SCORE

Walter H. Jessel, Jr., Salinas, Calif., assignor to California Florida Plant Co., L.P., Salinas, Calif.

Filed Nov. 10, 1992, Ser. No. 976,136
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—70.2 **1 Claim**

1. A new and distinct variety of carnation plant, substantially as shown and described.

8,427

CARNATION PLANT NAMED CFPC PRISTINE

Walter H. Jessel, Jr., Salinas, Calif., assignor to California Florida Plant Co., L.P., Salinas, Calif.

Filed Sep. 24, 1992, Ser. No. 950,307
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—70.3 **1 Claim**

1. A new and distinct variety of carnation plant, substantially as shown and described.

8,428

CARNATION PLANT NAMED CFPC SARABANDE

Walter H. Jessel, Jr., Salinas, Calif., assignor to California Florida Plant Co., L.P., Salinas, Calif.

Filed Sep. 24, 1992, Ser. No. 950,468
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—70.7 **1 Claim**

1. A new and distinct variety of carnation plant, substantially as shown and described.

8,429

IMPATIENS PLANT NAMED APOLLON

Ludwig Kientzler, Gensingen, Fed. Rep. of Germany, assignor to Paul Ecke Ranch, Inc., Encinitas, Calif.

Filed Jul. 30, 1992, Ser. No. 921,718
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.6 **1 Claim**

1. A new and distinct cultivar of Impatiens plant named Apollon, as illustrated and described.

8,430

IMPATIENS PLANT NAMED OCTAVIA

Ludwig Kientzler, Gensingen, Fed. Rep. of Germany, assignor to Paul Ecke Ranch, Inc., Encinitas, Calif.

Filed Jul. 30, 1992, Ser. No. 921,835
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.6 **1 Claim**

1. A new and distinct cultivar of Impatiens plant named Octavia, as illustrated and described.

8,431

IMPATIENS PLANT NAMED CELSIA

Ludwig Kientzler, Gensingen, Fed. Rep. of Germany, assignor to Paul Ecke Ranch, Inc., Encinitas, Calif.

Filed Jul. 30, 1992, Ser. No. 921,836
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.6 **1 Claim**

1. A new and distinct cultivar of Impatiens plant named Celsia, as illustrated and described.

8,432

CACTUS PLANT 'HOLIDAY SPLENDOR'

Barnell L. Cobia, P.O. Box 771369, Winter Garden, Fla. 34777-1369

Filed Aug. 24, 1992, Ser. No. 933,818
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—88.5 **1 Claim**

1. A new and distnact plant variety of the Cactaceae family as shown and described and which is mainly distinguished from its antecedents and known related varieties by growth characteristics that are similar to those of the "Christmas Charm" variety but as modified by the combination of the following characteristics:

(1) A more erect posture at maturity than the "Christmas Charm" variety;
(2) Phylloclades which, in comparison to the "Christmas Charm" variety have (a) midribs with generally greater length and thickness dimensions, (b) wings with generally greater thickness dimensions, and (c) teeth with generally greater length dimensions;
(3) Flowers which, in comparison to the "Christmas Charm" variety, have (a) a perianth tube with generally greater length and major axis dimensions, (b) a tube attached group of stamen that generally have greater length dimensions, and (c) a basally united group of stamen that generally have greater length dimensions.

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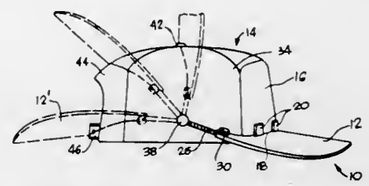
PATENTS

GRANTED OCTOBER 19, 1993

GENERAL AND MECHANICAL

5,253,364
BASEBALL-STYLE CAP HAVING A ROTATABLE BILL
Case J. Robinson, 420 S. Third St., Apt. 34, San Jose, Calif. 95112

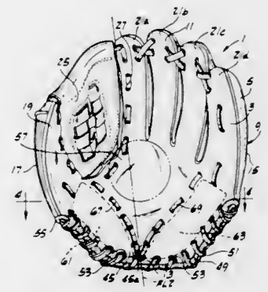
Filed Jul. 20, 1992, Ser. No. 918,206
Int. Cl.[5] A61F *9/00*
U.S. Cl. 2—10 **13 Claims**



1. A baseball-style cap comprising,
a crown portion to fit an individual's head, the crown portion having an outer periphery and a lower rim, the crown portion having forward and rearward sides,
a bill extending outwardly from the crown portion, the bill having an inner edge in contact with the outer periphery of the crown portion and having an eye-shading position in which the inner edge is adjacent to the lower rim at the forward side of the crown portion, the bill being generally horizontal when in the eye-shading position,
locking means for releasably fixing the bill in the eye-shading position, release of the locking means permitting movement of the bill from said eye-shading position,
fastening means for resiliently coupling the inner edge of the bill to the crown portion such that the bill is secured to the crown portion while allowing rotation of the bill about a generally horizontal axis, the resilient coupling having a radially inwardly directed force to securely fix the inner edge of the bill at any position along the outer periphery of the crown portion, thereby permitting selection of the angle of the bill relative to the horizontal from the eye-shading position to a neck-shading position.

5,253,365
BASEBALL OR SOFTBALL GLOVE CONSTRUCTED TO FACILITATE CLOSURE OF THE GLOVE
Robert L. Clevenhagen, Ava, Mo., assignor to Figgie International Inc., Willoughby, Ohio

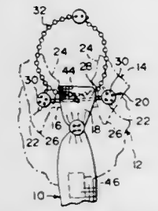
Filed May 20, 1992, Ser. No. 886,426
Int. Cl.[5] A41D *13/10*
U.S. Cl. 2—19 **7 Claims**



1. A baseball or softball glove constructed to facilitate closure of the glove, comprising a front panel forming the front wall of the glove and a back panel forming the back wall of the glove, said front and back panels being secured together at peripheral margins of the glove to form a glove shell having a top, bottom and opposite sides, a thumb stall for receiving the thumb of the hand, and finger stall means for receiving the fingers of the hand, a web located between the thumb stall and said finger stall means, means for securing the web to the thumb stall and said finger stall means, said front panel having an outside face forming the front surface of the glove and an inside face, a liner in the shell comprising a palm liner panel on the inside face of the front panel of the glove, said front panel and said palm liner panel having lower edge margins generally in registry with one another to form a heel of the glove extending between opposite sides of the glove at the bottom of the glove, the outside face of the front panel of the glove having a central portion forming a ball-catching pocket located above the heel of the glove and below the web and said finger stall means, and flex means enabling the glove readily to flex along a flex line extending up from the heel of the glove, generally midway between the sides of the glove, and through the ball-catching pocket, said heel having little or no padding at said flex line to facilitate closure of the glove along said flex line, wherein said flex means comprises two lines of lacing extending up from the heel of the glove, said lacing being stitched through the front panel and palm liner panel of the glove, said lines of lacing diverging as they extend upwardly from the heel of the glove in a generally V-shaped formation with the apex of the V generally at the center of the heel and the legs of the V generally on opposite sides of said ball-catching pocket.

5,253,366
NECKTIE AND SHIRT COMBINATION
Maria Marlo, 12 W. 68th St. #5-D, New York, N.Y. 10023, and George Spector, 233 Broadway Rm. 3815, New York, N.Y. 10007

Filed Jul. 6, 1992, Ser. No. 908,384
Int. Cl.[5] A41D *25/04*
U.S. Cl. 2—145 **1 Claim**



1. A pre-knotted necktie for a shirt front in combination with a collar with ends and a neck band which comprises:
a) said necktie having a front display portion with a knot formed thereon; and
b) means for retaining said knot of said necktie between said collar ends on said shirt front; wherein said retaining means includes:
c) a pair of buttonholes in said collar each located in a front side near an upper fold line above a point of said collar;
d) an elastic cord to extend through said knot of said necktie; and
e) a pair of ornaments each attached to an opposite end of said elastic cord, so that said ornaments extends through said buttonholes for retaining said knot to said collar; and further including an neck collar chain extending through said knot of said necktie and about said neck band of said shirt under said collar to help retain said knot thereto.

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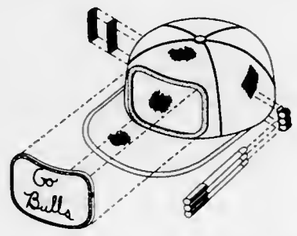
5,253,367
GOLF GLOVE
Gerald H. Lappley, 1244 El Camino Dr., NW., Grand Rapids, Mich. 49504-2451
Filed Jun. 5, 1992, Ser. No. 897,944
Int. Cl.[5] A41D 19/00; A63B 71/14
U.S. Cl. 2—161.3 4 Claims



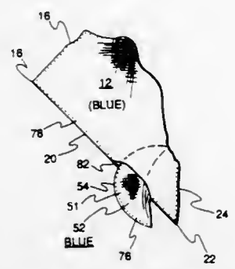
1. A golf glove that enhances the grip of a golfer's upper hand on the distal end of a golf club grip comprising:
a glove portion including fingers that at least partially cover the golfer's fingers and a palm portion that covers the palm of the golfer's hand; and
an elongated padded hump on the palm portion of the glove, the hump extending inwardly from an outer end at an outer side of the glove toward an inner end at an inner side of the glove but not extending to the knuckle of the first finger of the glove, the hump extending substantially parallel to a line extending through the intersection of the bases of the third and fourth fingers of the glove but being spaced away from said line by a distance such that when a golf club is properly gripped by a golfer's third and fourth fingers, the hump fits at least partially over the golf club and urges the golf club grip inwardly toward the knuckles of the third and fourth fingers, the hump comprising a pocket of flexible sheet material on the palm of the glove, with the pocket being filled with a compressible filler comprising non-woven fibrous materials, the hump having substantially parallel longitudinal sides that extend the length of the hump and having a width sufficiently narrow that the outer end of the hump does not extend over the heel of the hand, the hump being non-elastically compressible to a substantial extent and deformable such that gripping the golf club grip with the glove causes the hump to non-elastically conform with the shape of the grip, with the padding being urged toward the wrist of the glove so that it tends to wrap around the grip with an enlarged portion on the wrist side of the grip that guides the grip toward the knuckles of the hand and restrains the grip from slipping toward the heel of the glove, the hump being shaped such that it serves to enhance the grip of the hand against the golf grip, the hump being positioned opposite the third and fourth fingers of the glove such that the grip is selectively enhanced for the third and fourth fingers and not the first finger, the overall effect being that the glove urges the grip to remain adjacent the knuckles of the hand and enhances the gripping force of the third and fourth fingers, thereby urging a proper grip on the golf grip.

5,253,368
CAP WITH ERASABLE BILLBOARD
David A. Blake, 207 W. Ohio St., #3-R, Chicago, Ill. 60610
Filed Jul. 22, 1992, Ser. No. 918,464
Int. Cl.[5] A42B 1/24
U.S. Cl. 2—209.13 6 Claims

1. A cap comprising:
a crown portion having at least a front panel, a rear panel opposing said front panel, a first side panel and a second side panel opposing said first side panel, said panels configured and arranged so as to form a substantially unitary interior surface and an exterior surface for said crown portion;
at least one writing surface, said writing surface having a first side and a second side, said first side configured to erasably receive writing thereon, and said second side of said writing surface for attachment to said exterior surface of said crown;
means for erasably marking said writing surface to communicate a desired expression or design inscribed by a user, said marking means being removably attached to said crown portion; and
means for erasably marking said writing surface to communicate a desired expression or design inscribed by a user, said marking means being removably attached to said crown portion; and
an eraser being formed of a first strip of material having a first surface which consists of a multitude of loops and a second surface consisting of a multitude of hooks, said first or said second surface being releasably, matingly attachable to a second strip of material which consists of a plurality of hooks or loops, said second strip being fixedly secured to said exterior surface of said crown portion, said eraser utilizing said hooks of said first surface of said first strip or said loops of said second surface of said first strip to erase said expression or design when said eraser is drawn across said writing surface.



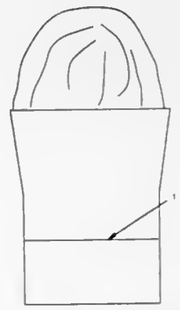
5,253,369
METHOD OF MAKING A REVERSIBLE SCARF WITH VISOR
William H. Patterson, Jr., P.O. Box 446, Watkins, Colo. 80137-0146
Filed Nov. 10, 1992, Ser. No. 974,154
Int. Cl.[5] A42B 5/00
U.S. Cl. 2—207 20 Claims



1. A method of making a scarf with visor, comprising the steps of:
(1) providing two visor body fabric pieces;
(2) providing a stiffener;
(3) placing said two visor body fabric pieces in substantially overlying relation;

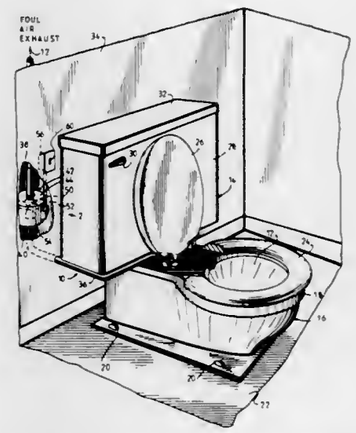
(4) securing said two visor body fabric pieces together along a portion of their peripheral edges to form an envelope;
(5) inserting said stiffener into said envelope;
(6) providing two scarf body fabric pieces;
(7) placing said two scarf body fabric pieces in substantially overlying relation;
(8) placing said visor between said scarf body fabric pieces, with an edge portion of said visor disposed adjacent substantially overlying peripheral edges of said scarf body fabric pieces;
(9) securing peripheral edges of said substantially overlying scarf body fabric pieces and said edge portion of said visor to form a scarf, leaving a peripheral gap; and
(10) turning said scarf right-side-out by pulling said visor through said gap.

5,253,370
DUAL PURPOSE ADJUSTABLE BASE FOR MOUNTING PREFOLDED "POCKET SILK" HANKERCHIEFS
Charles B. Mead, P.O. Box 503, Chelmsford, Mass. 01824-0503
Filed Jul. 3, 1991, Ser. No. 691,716
Int. Cl.[5] A41B 15/00
U.S. Cl. 2—279 1 Claim



1. A combination decorative pocket handkerchief and business card holder comprising:
a base having a front and a back and an upper and lower section; said upper section is constructed of a rigid and predominately rectangular piece of material having a side edge, top end, bottom end front and a back surface; said upper section front surface is covered with a vinyl material and the upper section back surface is covered with loop fastener material and wherein a pre-folded handkerchief portion is placed at the top and attached between the rigid material and the loop fastener material, while at the bottom of the upper section across its width is added a short length of taffeta having side edge; said lower section has a side edge front and rear surface, a lower edge and an upper portion, wherein said lower section front surface is constructed of pliable vinyl and said lower section rear surface is of decorative fabric; an opening of a pocket is formed when the upper portion of the lower section is superimposed over a lower portion of the upper section and the two sections are attached along their side edges including the side edges of the added taffeta length which is also stitched horizontally to establish the maximum depth of the pocket; said lower edge of the lower section is covered with a strip of hook material and wherein said lower edge is folded back and attached to the aforesaid loop backing of the upper section, whereby the effective depth of the pocket is variable so that business cards inserted into the pocket provide additional rigidity when required as the length of the base is increased and varied by shifting the interfacing of the hook and the loop.

5,253,371
DEVICE FOR EXHAUSTING FOUL AIR FROM A TOILET
Henry G. Slawinski, 240 Mineola Ave., Carle Place, N.Y. 11514
Filed Feb. 10, 1992, Ser. No. 833,079
Int. Cl.[5] E03D 9/04; A47K 13/10
U.S. Cl. 4—213 2 Claims



1. A device for exhausting foul air from a toilet of the type having a bowl with a rim, bolt caps for mounting the bowl to a floor, a seat with a hinged cover and a tank with a flush handle and tank lid placed adjacent a wall, said device including an intake hose extending from the rear portion of the rim of the bowl below the seat and hinged cover, bottom of the tank and through the wall, an exhaust hose extending upwardly within the wall, means coupled between said intake hose and said exhaust hose within the wall, for driving a current of air therethrough, so that the foul air within the bowl will be exhausted into the wall, said air driving means in a blower which includes a casing having an inlet port and an outlet port wherein said inlet port is coupled to one end of said intake hose within the wall, while said outlet port is coupled to one end of said exhaust hose within the wall, a fan within said casing, having an electric motor to rotate a plurality of thin rigid vanes in order to drive the current of air therethrough, to carry the foul air in from said inlet port and out from said outlet port, means for opening and closing an electrical circuit between a power supply and the electric motor of said fan in said blower, said electrical circuit opening and closing means is an on/off switch mounted into the wall and electrically connected between the electric motor of said fan in said blower and the power supply so that a person can manually operate said on/-off switch to remove the foul air from the bowl of the toilet, said electrical circuit opening and closing means is a pressure switch mounted into the rim of the bowl below the seat for connecting an electric current from a power supply to the electric motor of said fan in said blower to begin operation of said fan when a person sits upon the seat and for disconnecting the electric current to the electric motor of said fan in said blower to cease operation of said fan when the person get off the seat, said pressure switch includes flexible housing extending upwardly between the rim and the seat, a first stationary electric contact within said flexible housing electrically connected to the power supply within the wall, and a second movable electric contact within said flexible housing electrically connected to the electric motor of said fan in said blower and normally spaced away from said first stationary electric contact, whereby when said flexible housing is compressed by the weight of the person sitting on the seat, said second movable electric contact will engage said first stationary electric contact for connecting the electric current from the power supply to the electric motor of said fan in said blower.

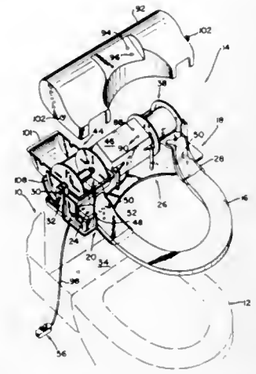
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5,253,372

APPARATUS FOR DISPENSING MEASURED LENGTHS OF TUBULAR FILMS ONTO AN ARMATURE

Samuel J. Boker, Ridge, N.Y., assignor to Sani-Tech Industries, Inc., Hicksville, N.Y.

Filed Feb. 12, 1992, Ser. No. 834,642
Int. Cl.[5] A47K *13/14*
U.S. Cl. 4—243.2 18 Claims



10. Apparatus for supplying a cover on a toilet seat comprising:

a toilet seat in a generally ring-like configuration having first and second ends;

a cover supply and takeup assembly comprising a cover source comprising a continuous length of tubular cover material having a plurality of marks thereon dividing the length thereof into equal segments located proximate said first end for supplying fresh cover material to be arranged along the length of the seat and about its surface and a cover collector located proximate said second end for the take-up of used cover material from the seat;

drive means operatively connected to said cover supply and takeup assembly for dispensing fresh cover material onto said seat and used cover material into said collector;

sensor means for sensing the passage of each of said marks past a fixed point along said seat and generating a sensor signal in response thereto; and

control means connected to said sensor and drive means for operating said drive means in response to a start signal for a period associated with a count of the signals generated by said sensor means to provide fresh cover material along the length of the seat.

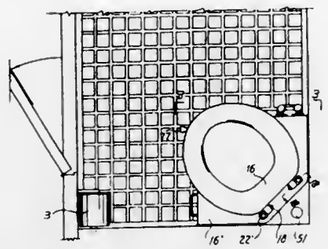
5,253,373

TOILET

Mikhail Tsipov, 30-26 Brighton 14 St. Apt. C5, Brooklyn, N.Y. 11235

Filed May 11, 1992, Ser. No. 881,355
Int. Cl.[5] E03D *1/33*
U.S. Cl. 4—343 4 Claims

1. A toilet unit, comprising a toilet room having a plurality of walls which define at least one corner intersected by a central vertical plane; and a toilet arranged in said corner of said toilet room and including an upper water tank for supplying water, a lavatory basin-bidet, a seat associated with said basin-bidet, and a spraying device associated with said seat of said basin-bidet, said water tank having a diagonal plane of symmetry which coincides with said central vertical plane of said corner of said toilet room, said water tank having an outlet connected to said basin-bidet, a float rotatably mounted in said tank, a first valve for supplying water into said water tank which has a valve member responsive to movement of said float for actuating said first valve, a second valve for discharging water into said outlet and provided with a cable arranged on a pulley for actuating said second valve, said float, said



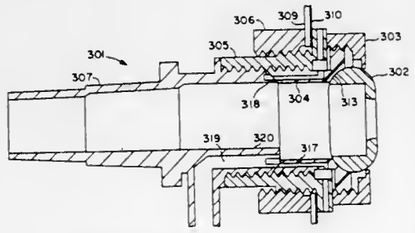
valve member, and said pulley being rotatably mounted in said tank about a single axis which extends perpendicular to said diagonal plane of symmetry of said water tank.

5,253,374

METHOD AND APPARATUS FOR MAINTAINING LEVEL OF WATER IN ABOVE-GROUND SWIMMING POOLS

Edwin R. Langill, 162 Nashua Rd., Pepperell, Mass. 01463

Division of Ser. No. 816,216, Jan. 3, 1992, Pat. No. 5,154,205.
This application Oct. 2, 1992, Ser. No. 956,905
Int. Cl.[5] E04H *4/12*
U.S. Cl. 4—508 1 Claim



1. A Y-connection comprising in combination:

a Y-component having a cylindrical stem portion, a cylindrical first arm portion, and a cylindrical second arm portion;

said stem portion having a threaded exterior, the longitudinal axis of said stem portion being aligned with the longitudinal axis of said first arm portion, said stem portion having a terminal end with a circumferential groove facing parallel with the longitudinal axis thereof and also having a single passageway extending within a wall thereof parallel to the longitudinal axis thereof and having one end terminating in said circumferential groove, and a second end in fluid communication with said second arm portion;

a main flanged housing having a cylindrical body with a threaded exterior and a threaded interior with a first end portion threadably received on said threaded exterior of said stem portion and a second end portion having a radially extending flange with discrete radially extending apertures therethrough which terminate in an inner circumferential recess;

a cylindrical eye housing having a threaded exterior threadably engaged in said threaded interior of said main flanged housing so that a first end thereof abuts against the terminal end of said stem portion;

said eye housing further comprising apertures extending within wall thereof and communicating said circumferential groove with said circumferential recess;

said eye housing having a radially extending flange on a second end thereof with a threaded exterior surface and a seat defined by an interior surface thereof;

an eye received in said seat;

an eye cap adapted to retain said eye in said seat and having a threaded interior threadably received on said threaded exterior of said eye housing flange; and

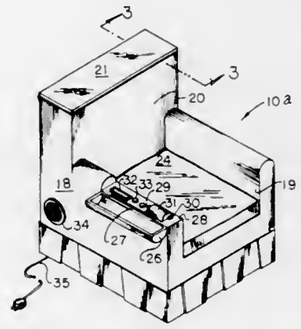
a nut having a threaded interior threadably engaged on said threaded exterior of said main flanged housing to sandwich a mounting surface between said nut and radially extending flange of said main flanged housing.

5,253,375

COMMODE COVER

Ricardo Prosper, R.F.D. Buzon 266, Anasco, P.R. 00610

Filed Jun. 29, 1992, Ser. No. 905,667
Int. Cl.[5] E03D *1/00*
U.S. Cl. 4—661 2 Claims



1. A commode cover arranged for receiving a commode therewith, wherein the commode includes a commode bowl, the commode bowl including a bowl upper end, and a commode tank projecting upwardly of the commode bowl, wherein the commode cover comprises,

a seat plate, the seat plate having a seat plate opening medially of the seat plate, with the seat plate opening including an annular channel arranged for receiving the bowl upper end therewithin, the annular channel arranged in a peripheral continuous relationship about the seat plate opening, and

the seat plate including a front wall orthogonally mounted to a forward end of the seat plate extending downwardly therefrom,

and

a first rear wall orthogonally mounted to a second end of the seat plate extending upwardly thereof and oriented parallel relative to the front wall, and the seat plate further including a first side wall spaced from and parallel to a second side wall;

and

a second rear wall spaced from and parallel rearwardly of the first rear wall,

and

a rear wall top plate,

and

a hinge, with the hinge mounted to the rear wall top plate and to the second rear wall for hingedly mounting the rear wall top plate over the second rear wall and the first rear wall,

and

a cushion member, the cushion member removably mounted between the first side wall and the second side wall, the first rear wall and the front wall, and

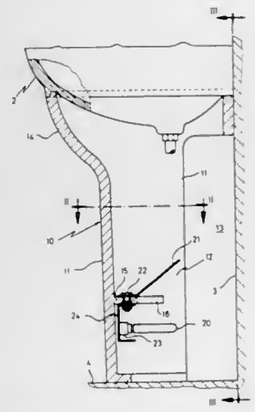
the first side wall includes a cap plate at an upper end of the first side wall, and a first side wall cap, and a first side wall cap hinge, with the first side wall cap hinge secured to the first side wall and to the first side wall, with the first side wall cap arranged in a coextensive relationship over the cap plate, with the cap plate including a first cavity having a mandrel, with the mandrel arranged for rotatably mounting a tissue roll within the first cavity, and a radio directed through the cap plate, with the radio having control knobs mounted onto the cap plate for effecting operation of the radio, and each side wall including a speaker in operative communication with the radio.

5,253,376

ILLUMINATED SANITARY APPLIANCE

Claudio Fait, Milan, Italy, assignor to Ideal Standard S.p.A., Milan, Italy

Filed Sep. 25, 1992, Ser. No. 950,669
Claims priority, application Italy, Sep. 26, 1991, RE91U00069
Int. Cl.[5] E03C *1/322, 1/326*
U.S. Cl. 4—643 5 Claims



1. A support element for use with a sanitary appliance of the type comprising a bowl (2) mounted adjacent a vertical wall (3), and above a floor (4) said support element (10) comprising a shell having at least one concave portion (11) with its concavity positioned to face the wall (3) and the shell being arranged to define an enclosed chamber (12) when the shell is mounted to an undersurface of the bowl and against the wall (3), an electric lamp (20) being mounted to an interior surface of said shell within said chamber (12), said shell comprising at least one opening (13) therethrough which enables the light produced by the electric lamp (20) to escape from said chamber (12).

5,253,377

WATERBED MATTRESS WITH BELLOWS SPRING INSERT

Lynn D. Larson, 1052 N. Lakeshore Dr., Lincoln, Nebr. 68528

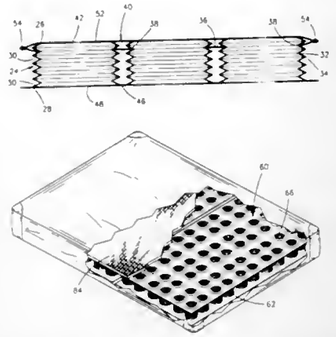
Filed Mar. 11, 1992, Ser. No. 849,515
The portion of the term of this patent subsequent to Oct. 29, 2008, has been disclaimed.
Int. Cl.[5] A47C *27/08, 27/04, 27/06, 27/07*
U.S. Cl. 5—451 22 Claims

1. In a waterbed mattress including a top wall, bottom wall and a peripheral sidewall, all interconnected to define a fluid tight chamber, the improvement comprising,

a plurality of bellows spring units within said chamber, each unit having a generally pleated upright peripheral sidewall and opposite top and bottom open ends, each unit being collapsible from a normal expanded height to a shortened compressed height wherein the internal volume of the unit is substantially reduced, and each unit being spring biased to the normal expanded height thereof, and

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spacer means for supporting said bellows spring units in positional relation to one another within said chamber



whereby downward force exerted on said mattress top wall tends to collapse the adjacent units against the spring action of the sidewalls thereof.

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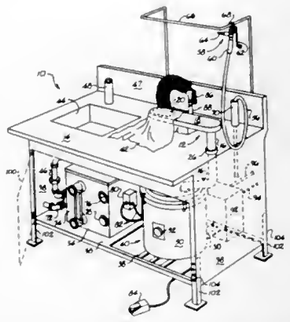
SPOT CLEANING SYSTEM AND METHOD

Herbert C. Jung, Jr., Spartanburg, S.C., assignor to Cherokee Products, Inc., Gaffney, S.C.

Continuation of Ser. No. 775,637, Sep. 9, 1991, Pat. No. 5,203,044. This application Apr. 30, 1992, Ser. No. 876,489

Int. Cl.[5] D06F *43/00*; D06B *5/24*

U.S. Cl. 8—149.1 **23 Claims**



1. A method of commercially spot cleaning soiled garments without the use of chlorinated solvents, said method comprising:

pretreating spots on the soiled garment to be cleaned by the application of nonchlorinated cleaners thereto; and

applying a relatively high vacuum force to the pretreated spots so as to flush both soil and pretreatment cleaner therefrom and for drying the garment being cleaned;

further including providing a substantially self-contained workstation having an upper work surface on which a user may work a soiled garment to be cleaned for pretreating same, a self-contained vacuum means for generating said relatively high vacuum force, a stand-up vacuum arm connected to said vacuum means and adapted for receiving a soiled garment thereon, and vacuum waste collector means carried on said workstation and associated with said vacuum means for collecting waste materials vacuumed through said vacuum arm under said vacuum force; and

further including providing said substantially self-contained workstation with a self-contained steam generator means and associated steam spray gun and interconnecting hose for selectively applying steam to the soiled garment.

12. A system for commercially spot cleaning soiled garments without the use of chlorinated solvents, said system comprising:

a user workstation;

means for pretreating spots on the soiled garment to be cleaned by the application of nonchlorinated cleaners thereto; and

vacuum means for selectively applying a relatively high vacuum force to the pretreated spots, so as to flush both soil and pretreatment cleaner therefrom as such garment is drying with said vacuum force;

wherein said workstation includes a substantially self-contained workstation having an upper work surface on which a user may work a soiled garment to be cleaned for pretreating same, a self-contained vacuum means for generating said relatively high vacuum force, a stand-up vacuum arm connected to said vacuum means and adapted for receiving a soiled garment thereon, and vacuum waste collector means carried on said workstation and associated with said vacuum means for collecting waste materials vacuumed through said vacuum arm under said vacuum force; and

means for spraying steam including a self-contained steam generator means and associated steam spray gun and interconnecting hose for spraying said steam on the soiled garment.

5,253,379

WASHING PROCESS

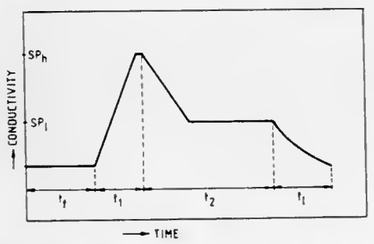
Marcellus G. Dusamos; Stefan E. Frick, both of Maarssen; Wilhelmus K. Van der Kinderen, Wilnis, and Wijnand Ploeg, Maarssen, all of Netherlands, assignors to Unilever Patent Holdings B.V., Vlaardingen, Netherlands

Filed Apr. 20, 1992, Ser. No. 871,167

Claims priority, application United Kingdom, Apr. 19, 1991, 9108387

Int. Cl.[5] D06F *39/02*

U.S. Cl. 8—158 **4 Claims**



1. Washing process in an industrial washing machine, which comprises contacting a solid load during a wash cycle with a wash liquid which is an aqueous dilution of a detergent product, measuring a property of the wash liquor which is dependent on concentration of detergent product therein, and adding detergent product to the wash liquor, dependent on said property, and wherein the wash cycle comprises a first period (t_1) in which detergent product is added during a fixed time period to obtain a high concentration in the wash liquor or until the measured property reaches a high set point where it is maintained by gradually adding detergent product, and a second period (t2) in which said property is kept at a low set point.

5,253,380

WASHING MACHINE WITH A BUBBLE GENERATOR AND METHOD OF LAUNDERING WITH USE OF AIR BUBBLES

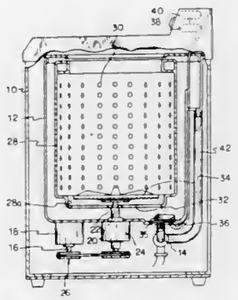
Moo-Seang Lim, Seoul; Seung-Ki Min, Inchon; Soon-Chur Se, Inchon; Hae-Sang You, Inchon, and Jang-Sub Han, Seoul, all of Rep. of Korea, assignors to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Oct. 31, 1991, Ser. No. 785,546

Claims priority, application Rep. of Korea, Jan. 12, 1991, 91-409; Aug. 14, 1991, 91-14066

Int. Cl.[5] D06F *17/12*

U.S. Cl. 8—158 **4 Claims**



1. An improved method of washing a laundry article in a washing machine having a washer tub capable of containing a level of washing fluid, and a pulsator disposed on a bottom of said washer tub wherein said improvement comprises the steps of:

(A) supplying a predetermined amount of air bubbles into said washer tub, wherein said predetermined amount of air bubbles, y*, is determined by the equation:

$$y^* = \beta - \alpha x$$

wherein α is a coefficient of bubble supply, β is a reference bubble quantity with respect to a given volume of the washing fluid, and x is the weight of the laundry article;

(B) ceasing a further supply of air bubbles for a time period sufficient to allow said supplied air bubbles to be substantially collapsed: and

(C) repeating steps (A) and (B) for a sufficient number of times until the laundry article becomes cleaned to a desired degree of detergency.

5,253,381

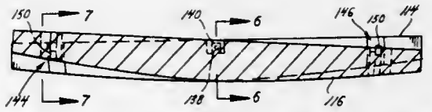
HINGED CARGO RAMP

Blaine K. Rawdon, Rancho Palos Verdes, and Myles A. Rohrlick, Oceanside, both of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Jan. 31, 1991, Ser. No. 648,279

Int. Cl.[5] B65G *67/00, 49/00*; E01D *15/00*

U.S. Cl. 14—71.5 **15 Claims**



1. A ramp, having a length and a width, for conveying articles between two surfaces, said ramp having first and second pitch axes oriented generally across said width and a roll axis oriented generally along said length and comprising:

a first ramp section having a forward end and an aft end;

a second ramp section having a forward end and an aft end;

a first hinge means attaching said first ramp section aft end to said second ramp section forward end and permitting relative motion of said ramp sections substantially about the first pitch axis in pitch and substantially about the roll axis in roll;

a second hinge means on said forward end of said first ramp section which is adapted for hingedly attaching said first ramp section to a first of said two surfaces;

said aft end of said second ramp section being adapted for substantial abutment with a second of said two surfaces;

said second hinge means having a hinge-line which comprises the second pitch axis, said second pitch axis being substantially parallel to said first pitch axis, the second having means permitting relative motion of said first ramp section and said first surface substantially about said hinge-line in pitch.

5,253,382

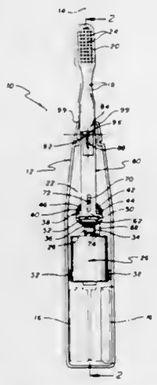
POWER OPERATED TOOTHBRUSH

Janos Beny, 1886 Maya Ct., Vista, Calif. 92083

Filed Aug. 31, 1992, Ser. No. 938,290

Int. Cl.[5] A61C *17/34*

U.S. Cl. 15—22.1 **25 Claims**



1. A power operated toothbrush comprising:

a hollow housing having a longitudinal axis;

a power means;

a toothbrush extending from the housing and having a bristled toothbrush head;

a means for driving the toothbrush head in a figure-eight motion.

5,253,383

SCRATCH SURFACE REMOVER

Rodney D. Clark, 212 Second Ave. E., Egan, S. Dak. 57024-9701

Filed Apr. 7, 1992, Ser. No. 864,936

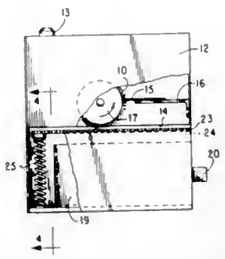
Int. Cl.[5] A46B *13/02*

U.S. Cl. 15—88.3 **2 Claims**

1. A device for brushing a plastic surface from a lottery card or the like comprising a housing, a rotary brush mounted in said housing motive means operably connected to said brush to drive the brush, said housing formed with a slot to receive said

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card, floor means movably mounted in said housing below said slot on which said card is slidably moved beneath said brush,



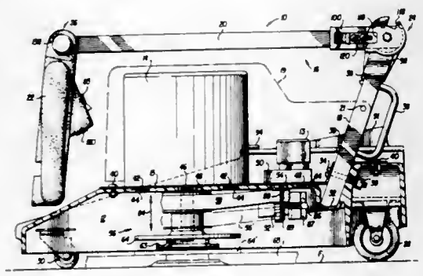
and spring means beneath said floor means adapted to press said card against said brush.

5,253,384

FLOOR BUFFING MACHINE WITH AUTOMATIC PAD PRESSURE ADJUSTMENT

Charles W. Joines, Sparta, N.C., and W. Darrell Ward, Independence, Va., assignors to Pioneer/Eclipse Corporation, Sparta, N.C.

Filed Apr. 16, 1992, Ser. No. 869,187
Int. Cl.[5] A47L *11/14*
U.S. Cl. 15—98 **30 Claims**



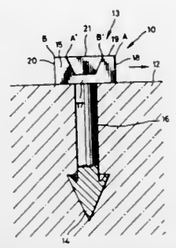
1. Apparatus for treating a floor comprising:
a housing;
wheel means mounted to said housing for rollably supporting said housing on the floor;
handle means connected to the housing for moving the housing over the floor on said wheel means;
a first electric motor mounted on said housing;
holder means mounted for rotational movement to said first motor for supporting a floor treatment element in confronting relation to the floor, said first motor being operative to rotate said holder means and said floor treatment element;
means mounting the holder means to said first motor for vertical movement relative to the floor;
lifter means connected to said holder means for supporting said holder means on said mounting means; and
a second electric motor mounted to said housing and connected to said lifter means for raising and lowering said lifter means relative to the floor so as to engage and disengage the floor with the rotating floor treatment element.

5,253,385

PIPELINE PIG SWEEPER AND SWEEPER PIN

Shizuo Sagawa, 12-8, Minamikugahara 1-chome, Ota-Ku, Tokyo, Japan

Division of Ser. No. 564,085, Aug. 7, 1990. This application Jun. 23, 1992, Ser. No. 902,741
Claims priority, application Japan, Sep. 14, 1989, 1-107275
Int. Cl.[5] B08B *9/04;* **F16L** *55/26*
U.S. Cl. 15—104.061 **2 Claims**



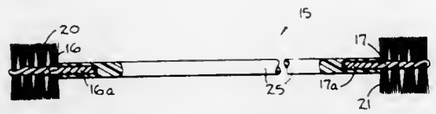
1. A sweeper for cleaning the interior surface of a pipe by passing the sweeper in a longitudinal direction through the pipe, said sweeper comprising a generally cylindrical shaped body of a resilient material having an outer peripheral surface and a plurality of pins that project radially outward from said surface of said body, each of said pins comprising a head portion located outwardly of said body and a shank portion embedded in the body having anchor means for holding said pin in said body, said head portion having a base side adjacent the peripheral surface of said body and a top side radially remote therefrom and comprising a pair of spaced and opposed upright end walls extending from said base side to said top side and connected to each other by a intermediate wall to form a substantially H-shaped configuration on the top side of the head portion, the intermediate wall extending in the direction of movement of said sweeper in said pipe when said pins are embedded in said body.

5,253,386

BRUSH FOR CLEANING INTERIOR OF A TUBE OR THE LIKE

Anthony F. LaLonde, 2469 Klein Rd., San Jose, Calif. 95148

Continuation of Ser. No. 545,699, Jun. 28, 1990, abandoned. This application Jul. 22, 1991, Ser. No. 733,372
Int. Cl.[5] A46B *3/18*
U.S. Cl. 15—206 **4 Claims**



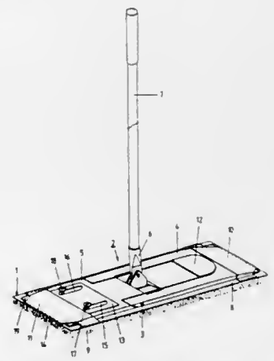
1. A brush for cleaning the interior of an open-ended hollow member comprising:
(a) wire means having a section for the securement of brush bristles and a section thereof free of brush bristles;
(b) a group of brush bristles secured to said wire means at the section thereof for the securement of brush bristles; and
(c) a solid, flexible, non-abrasive, plastic cylindrical body surrounding and embracing said section of said wire means free of brush bristles along substantially the entire length thereof to protect the interior of an open-ended hollow member against marring by the brush and secured to said wire means for forming a handle for said brush, said solid cylindrical body being pierced and penetrated along the center line thereof at one end thereof by the section of said wire means free of brush bristles, said solid cylindrical body being flexible along substantially the entire length thereof.

5,253,387

MOP HEAD WITH TWO POUCHES AND A STRAP

Franz Kresse, Hilden; Rainer Osberghaus, Duesseldorf; Bernfried Scheller, Pulheim, and Roland Schunter, Lorch-Waldhausen, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf-Holthausen, Fed. Rep. of Germany

PCT No. PCT/EP90/01833, § 371 Date Jul. 13, 1992, § 102(e) Date Jul. 13, 1992, PCT Pub. No. WO91/07130, PCT Pub. Date May 30, 1991
PCT Filed Nov. 2, 1990, Ser. No. 856,213
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1989, 3937717
Int. Cl.[5] A47L *13/10, 13/16, 13/255*
U.S. Cl. 15—228 **10 Claims**



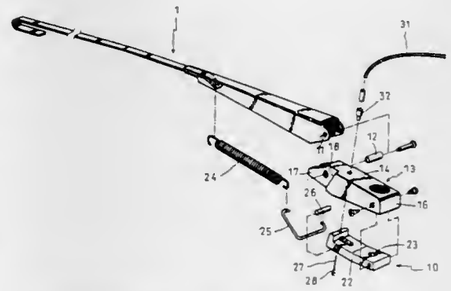
1. A mop for wet or damp wiping of floors, comprising:
a mop holder including:
first and second flaps of substantially rectangular shape, and having a top surface and a bottom surface, respectively, and outer and inner ends, respectively;
handle receptacle means located between said inner ends of said first and second flaps, for securing an end of a handle to said mop;
means for mounting said first and second flaps with respective inner ends juxtaposed below said handle receptacle means, for providing both a working position in which said first and second flaps lie in substantially the same horizontal plane, and a non-working position in which said first and second flaps fold together with respective bottom surfaces in opposition to one another, with said mop held above a floor; and
fastening means on said top surface of said first flap, and for securing a mop head thereto; and
a mop head including:
a rectangular fabric layer having a top surface and a bottom surface, being dimensioned to be slightly larger than a rectangular configuration of said first and second flaps of said mop holder in the working position, also having mop fringes attached to said bottom surface, first and second pockets formed on its top surface at opposing first and second horizontal ends, respectively, said first and second pockets having openings facing inward toward an opposing second and first ends, respectively;
a rigid mounting plate dimensioned at one end portion to fit within said first pocket, with a leading edge of this portion being rigidly secured together with and between leading edges of said first pocket and said first longitudinal end of said fabric layer, another end portion of said mounting plate being free and extending away from said first pocket a predetermined distance, with a pair of longitudinal open slots through said mounting plate, spaced apart from and parallel to one another, proximate associated side edges of said mounting plate, said slots being adapted for mating with said fastening means;
whereby said mop head is installed into said mop holder by first placing said mop holder in its non-working condition, next inserting said first flap of said mop holder into said first pocket of said mop head between said mounting plate and the top surface of said mop head, with said fastening means coacting with said slots for both securing said plate to said mop holder while allowing longitudinal movement therebetween in a range predetermined by the lengths of said slots, thereby permitting the outer end of said second flap to be inserted into said second pocket as said mop is lowered toward a floor causing said first and second flaps to move towards their said working position and said fastening means to move along said slots toward said first pocket, until said mop holder is placed in its working condition with said second flap in said second pocket, and said fastening means positioned substantially at ends of slots, respectively, closest to said first pocket.

5,253,388

WINDSHIELD WIPER SYSTEM WITH REMOTELY ADJUSTABLE CONTACT FORCE

Raymond Bacconnier, 6, rue Colbert, Bourg Les Valence, France 26500

PCT No. PCT/FR90/00624, § 371 Date Feb. 28, 1992, § 102(e) Date Feb. 28, 1992, PCT Pub. No. WO91/03394, PCT Pub. Date Mar. 21, 1991
PCT Filed Aug. 23, 1990, Ser. No. 836,271
Claims priority, application France, Aug. 28, 1989, 8911469
Int. Cl.[5] B60S *1/32*
U.S. Cl. 15—250.20 **9 Claims**



1. A windshield wiper system comprising:
a wiper arm having first and second ends, said arm being adapted to support a windshield wiper at said first end;
a connection assembly including an elongated lever member and a connection block, said lever member having first and second end portions, said connection block having means for fixedly securing said connection block with a drive shaft for oscillating said connection assembly;
means for pivotally connecting the second end portion of said lever member to said connection block, said connecting means defining a pivot axis;
means for pivotally attaching the second end of said wiper arm to the first end portion of said lever member, said attaching means including a carrier shaft that extends substantially parallel to said pivot axis, said wiper arm, lever member and attaching means constituting a toggle joint with said carrier shaft permitting relative articulation of said lever member and said wiper arm;
biasing means interconnected between said wiper arm, intermediate said first and second ends thereof, and said connection block, said biasing means being adapted to pro-

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duce a contact force of a windshield wiper attached to said wiper arm against a surface to be wiped; and

means for adjusting the contact force produced by said biasing means, said adjusting means extending between said lever member and said connection block for controlling the movement of said lever member and said connection block relative to each other about said pivot axis.

5,253,389

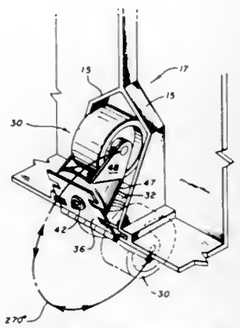
FOLDABLE CASTER

George M. Colin, South Laguna, Calif., assignor to Odyssey Systems, Ltd., San Clemente, Calif.

Filed Sep. 21, 1992, Ser. No. 949,027

Int. Cl.[5] B60B *33/00, 33/06*

U.S. Cl. 16—30 **15 Claims**



8. A foldable caster and caster housing comprising:

a) a caster housing;

b) a caster base plate slidably received in a pair of opposed grooves in said housing;

c) a caster support plate, said support plate being hingedly connected along a first axis to said base plate for movement of at least 180° around said first axis, said first axis being perpendicular to the direction of movement of said base plate into said housing grooves;

d) a caster swivel affixed to said caster support plate for rotary movement relative thereto about a second axis perpendicular to said first axis, said swivel having means for rotatably supporting a caster wheel thereon;

e) a caster wheel rotatably mounted on said swivel for rotation about a third axis which is substantially perpendicular to said second axis;

f) means for securing said caster support plate to said base plate on a first side of said base plate with said caster wheel operatively positioned outside of said housing; and

g) means for securing said swivel and caster wheel for storage in said housing with said swivel on the side of said base plate opposite said first side of said base plate.

5,253,390

FURNITURE HINGE

Jürgen Gross, Enger; Günter Sundermeier; Ulrich Beneke, both of Bünde; Dieter Waltemate, Hillhorst, and Detlev Uthoff, Löhne, all of Fed. Rep. of Germany, assignors to Paul Hettich GmbH & Co., Kirchlengern, Fed. Rep. of Germany

PCT No. PCT/DE91/00417, § 371 Date Mar. 21, 1992, § 102(e) Date Mar. 21, 1992, PCT Pub. No. WO91/18173, PCT Pub. Date Nov. 28, 1991

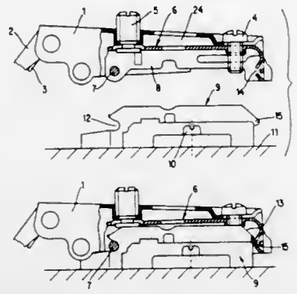
PCT Filed May 16, 1991, Ser. No. 820,602

Claims priority, application Fed. Rep. of Germany, May 22, 1990, 9005813[U]

Int. Cl.[5] E05D *7/12*

U.S. Cl. 16—257 **17 Claims**

1. A hinge, particularly a furniture hinge, comprising a mount; and a hinge unit releasably connectible to said mount and having a hinge axis, said hinge unit being provided with a resilient tongue-like element constituting a sole resilient tongue-like element of said hinge unit, and said tongue-like element and said mount having cooperating coupling portions for releasably connecting said hinge unit to said mount, said



hinge unit further being provided with disengaging means arranged to bear against is tongue-like element from the side an to elastically deform said tongue-like element so as to disengage said tongue-like element coupling portion from said mount coupling portion.

5,253,391

HINGE DEVICE

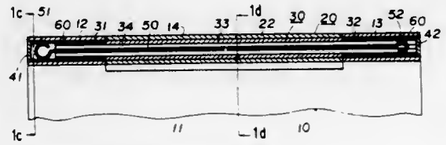
Juji Ojima, Aikawa, Japan, assignor to NHK Spring Co., Ltd., Kanagawa, Japan

Filed Jul. 8, 1991, Ser. No. 726,820

Claims priority, application Japan, Jul. 7, 1990, 2-179751

Int. Cl.[5] E05F *1/08, 5/00*

U.S. Cl. 16—289 **8 Claims**



1. A hinged device comprising:

a stationary component integrally fastened to a base,

a rotatable component, pivotally supported by said stationary component, integrally fastened to a lid of said base, and

a damper element inserted into both said components, wherein said damper element comprises:

a shaft, having a center portion fastened to one of said stationary component and said rotatable component and two end portions pivotally supporting the other of said components, and a through hole extending longitudinally through said shaft,

caps positioned on respective end portions of said shaft fastened to one of said stationary component and said rotatable component,

a torsion bar bridging said components through said shaft extending along said through hole, a first end of said torsion bar retained in a slot in said one of said caps fastened to said non-rotatable component and a second end of said torsion bar retained in said through hole of said shaft, wherein torque is developed when said rotatable component is rotated, and

viscous grease sealed between said shaft and said caps to dampen pivotal movement of the rotatable component caused by the torsion bar.

5,253,392

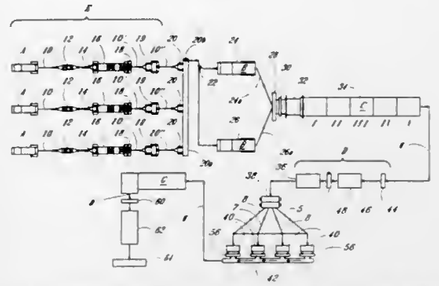
SYSTEM AND METHOD FOR PRODUCING A BLEACHED COTTON, NONWOVEN WEB

William G. Ripley, 4218 88th, Lubbock, Tex. 79452

Continuation-in-part of Ser. No. 612,558, Nov. 13, 1990, Pat. No. 5,199,134. This application Sep. 24, 1992, Ser. No. 950,272

Int. Cl.[5] D01G *21/00*

U.S. Cl. 19—66 CC **23 Claims**



1. A continuous fiber processing system for producing a bleached and blended cotton fibers comprising:

bale opening means for opening bales of cotton fibers;

a plurality of fiber feed lines receiving fibers from said bale opening means;

each of said fiber feed lines including a first fiber opening means for individualizing and cleaning said fibers to produce cleaned opened fibers; and

first blender means comprising a common conveyor for collecting said opened and cleaned fibers from said plurality of fiber delivery lines and conveying said opened and cleaned fibers to a common point so that said opened fibers may be fed to second fiber blending means;

said second fiber blending means for further mixing said cleaned and opened fibers to produce cleaned and multi-blended fibers;

distributor means receiving said twice blended fibers and delivering said blended fibers to feeder means;

said distributer means acting to further blend said fibers;

web forming means receiving said cleaned and twice blended fibers from said feeder means and forming a stable fiber web;

continuous flow bleaching means for receiving said web of cleaned and multi-blended fibers and producing a web of bleached cotton fibers;

a first dryer system for drying said web of bleached fibers;

slitter means receiving said bleached and dried web and slitting same into a plurality of slivers;

additional blending means including carding machines receiving said slivers of bleached fibers from said web slitting means and producing a plurality of carded webs;

common conveyor means receiving said carded webs of bleached fibers in stacked overlaying fashion, said common conveyor delivering said stacked bleached web to web stabilizing means;

said web stabilizing means acting to produce a stable web of bleached and entangled fibers;

a second dryer system receiving and drying said stabilized bleached web; and

roll forming means receiving said dried, bleached web and forming a rolled web for use in further fiber processes.

5,253,393

SPOTTER STRAP

Norman D. Levin, P.O. Box 1867, Pompano Beach, Fla. 33061

Filed Dec. 19, 1991, Ser. No. 810,492

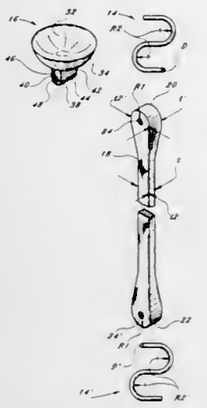
Int. Cl.[5] A44B *21/00;* **A63B** *69/00*

U.S. Cl. 24—301 **13 Claims**

1. A spotter apparatus for restricting the dynamic motion of a heavy bag having a top end and a bottom end, when said bag is hangingly supported on a frame at said top end above a reference plane surface, comprising:

first and second hook members;

a resilient cup having a concave surface on its first side and a convex outer surface on its second side, said concave surface being rigidly securable to said heavy bag bottom end, said convex outer surface having means for securing said first hook member thereto, said means for securing



including a protrusion extending outwardly from, and integral with, said convex outer surface, said protrusion having an aperture therethrough, defining a central axis means for receiving said hook therethrough, whereby said aperture extends through said central axis of said protrusion; and

a stretchable strap member having first and second ends when said strap first end is attached to said cup by said first hook member, said strap second end is attached to said reference plane surface by said second hook member.

5,253,394

MAGNETIC FASTENER

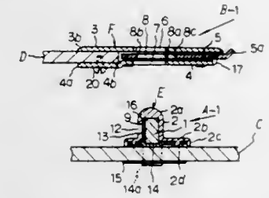
Tamao Morita, Tokyo, Japan, assignor to Tarmo Co., Ltd., Tokyo, Japan

Filed Jun. 15, 1992, Ser. No. 898,608

Claims priority, application Japan, Jun. 14, 1991, 3-169239

Int. Cl.[5] A44B *11/26*

U.S. Cl. 24—303 **14 Claims**



1. A fastener means comprising

a male member provided with a projection, said projection including a permanent magnet, and

a female member which includes a female frame comprising a first and a second plate member, and a slide plate which is made of a ferromagnetic material, slideably inserted between said first and the second plate members and having a manual contact surface exposed so as to be manipulatable between a first and a second position rom the outside of the female frame, said first and the second plate

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members and the slide plate having communicating openings through which said projection of the male member is inserted, said projection to be inserted in the female member having a means for engaging said slide plate when said slide plate is in said first position, said means disengaging said slide plate when in said second position, said first position being urged by attraction between a peripheral edge of the opening of the slide plate and the projection, wherein

one from among said first and second plates of the female frame includes deformable catches on each of two opposing sides of said one plate, and the other from among said first and second plates has on side edges thereof indented portions which receive said catches, and wherein

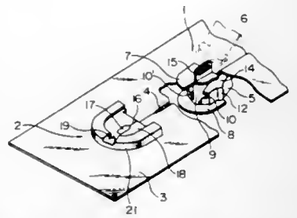
said first plate and the second plate are firmly engaged by a deformation of said catches.

5,253,395

WATERTIGHT SLIDE FASTENER

Humihiro Yano, Toyama, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Jun. 26, 1992, Ser. No. 904,568
Int. Cl.[5] A44B *19/32*
U.S. Cl. 24—387 **3 Claims**



1. A watertight slide fastener wherein a slider has a first locking means on an outer surface of a slider body, and a seal portion of a top stop for tightly fitting with said slider has second locking means engageable with said first locking means;

wherein said first locking means is a pair of projections extending outwardly in opposite directions from a guide flange of said slider body, and said second locking means is a pair of recesses in confronting inner surfaces of said seal portion of said top stop for receiving the respective projections.

5,253,396

SNAP HOOK ASSEMBLY

Richard J. Rekuc, Pattenburg, and James O'Shea, Jr., Annadale, both of N.J., assignors to Royalox International Inc., Phillipsburg, N.J.

Filed Jan. 22, 1993, Ser. No. 7,592
Int. Cl.[5] A44B *13/00*
U.S. Cl. 24—600.9 **10 Claims**

1. A snap hook assembly comprising:

an elongated web loop;

a swivel extending generally transverse from a central location of said web loop, said swivel having a formation at a free end thereof;

a snap hook body having a hook portion, a split portion extending from said hook portion and having a first half unitary with said hook portion and a first planar inner surface formed thereon;

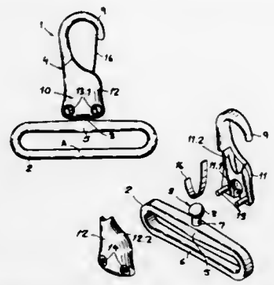
a cover member defining a second half of said split portion and formed with a second planar inner surface abutting said first inner surface;

a leaf spring coacting with said hook portion;

a first recess formed in said first half of said split portion at said first inner surface thereof and adapted to receive at least a first portion of said leaf spring;

a second recess formed in said second half of said split portion at said second surface thereof and in registration with said first recess and adapted to receive at least a second portion of said leaf spring;

a first cavity formed in said first half of said split portion at said first inner surface thereof and adapted to receive at least a first portion of said formation of said web loop swivel;



a second cavity formed in said second half of said split portion at said second inner surface thereof and in registration with said first cavity and adapted to receive at least a second portion of said formation of said web loop swivel; and

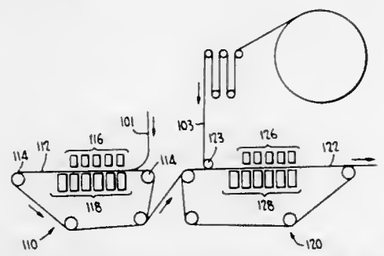
means for fastening said cover member and said first half together.

5,253,397

HYDROENTANGLING MANUFACTURING METHOD FOR HYDROPHILIC NON-WOVENS COMPRISING NATURAL FIBERS, IN PARTICULAR OF UNBLEACHED COTTON

Jean-Loup Neveu, Lery, and Bernard Louis Dit Picard, St Nicolas du Bosc, both of France, assignors to Kaysersberg, S.A., France

PCT No. PCT/FR90/00861, § 371 Date Jul. 26, 1991, § 102(e) Date Jul. 26, 1991, PCT Pub. No. WO91/08333, PCT Pub. Date Jun. 13, 1991
PCT Filed Nov. 28, 1990, Ser. No. 730,828
Claims priority, application France, Dec. 1, 1989, 89 15892; Jun. 1, 1990, 90 06838
Int. Cl.[5] D04H *1/46*
U.S. Cl. 28—105 **10 Claims**



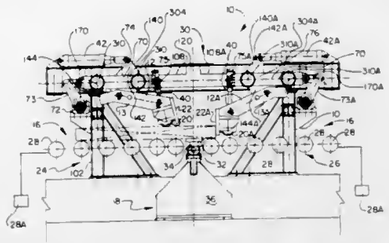
8. A method for making a non-woven material capable of absorbing liquid comprising placing fibers, of which 70% are from unbleached cotton or other natural ligno-cellulose fibers wherein the fibers have a surface coating of a substance which renders the fibers essentially non-wetting and as having an immersion time in excess of 300 seconds, on a water-permeable support member moving in a pre-determined direction so as to form a sheet of unbound fibers; entangling the fibers forming the sheet by subjecting a first surface of said sheet to a plurality of water jets issuing from a first set of injectors positioned transverse to the pre-determined direction of movement of the support member, such that the water jets impart a kinetic energy to said fibers sufficient to detach said surface coating of said fibers and increase the wettability of the sheet so that the sheet has an immersion time of less than 30 seconds; depositing on a second surface of said sheet at least one sheet of cellulose wadding; and subjecting the second surface of said sheet to entangling by subjecting said second surface having said at least one sheet of cellulose wadding deposited thereon to a plurality of water jets issuing from a second set of injectors.

5,253,398

DEBURRING SHEAR

James S. Markiewicz, Schererville, Ind., assignor to Capital Engineering, Inc., Hammond, Ind.

Filed Mar. 6, 1992, Ser. No. 847,931
Int. Cl.[5] B23D *1/22*
U.S. Cl. 29—33 A **25 Claims**



1. A device for deburring opposite ends of a slab of steel, said device comprising;

a table assembly having at least one table;

a knife assembly disposed within the table assembly and having at least one knife; and

means for consecutively deburring the opposite ends of the slab comprising first and second arms, said first arm adapted to push the first end of said slab in a first direction past said at least one knife to debur the first end of the slab and said second arm adapted to push the second end of the slab in a reverse direction past said at least one knife to debur the second end;

said first arm having a first pinch roller connected thereto;

said second arm having a second pinch roller connected thereto, the second pinch roller being in contact with the slab of steel when said first arm is pushing said first end, and the first pinch roller being in contact with said slab of steel when said second arm is pushing said second end.

19. A method of deburring opposite ends of a slab of steel comprising the steps of:

traversing the slab of steel in a forward direction to a first position on a table assembly;

lowering toward the table first and second arms each having a pinch roller and means adapted to function as a pusher;

raising at least one shearing knife to the level of said table assembly;

positioning said slab with said first arm;

shearing a first edge of the slab by pushing said slab in the reverse direction with said second arm across said at least one shearing knife;

raising said first and second arms and lowering said at least one knife;

traversing said slab of steel to a second position on said table assembly;

lowering said first and second arms and raising said at least one knife to the level of said table;

positioning said slab with said second arm; and

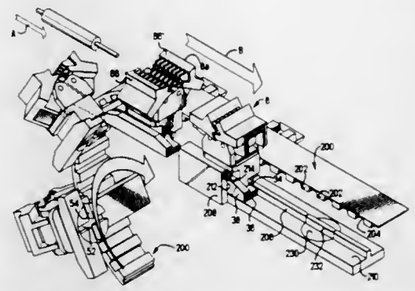
shearing a second edge of said slab by pushing said slab in the first direction with said first arm across said at least one shearing knife.

5,253,399

METHOD AND APPARATUS FOR PROCESSING A PLURALITY OF WIRE LEADS

Karl-Heinz Gloe, Reichelsheim; Michael Gerst, Worms, and Lothar Bauer, Wiesbaden-Nordenstadt, all of Fed. Rep. of Germany, assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 10, 1991, Ser. No. 727,720
Claims priority, application United Kingdom, Jul. 20, 1990, 9016000
Int. Cl.[5] B23P *19/00*
U.S. Cl. 29—33 M **9 Claims**



1. A lead making apparatus for the production of a plurality of leads from a wire, the lead making apparatus comprising:

a plurality of wire gripping devices which are movable between an open position and a closed position, each of the wire gripping devices has a channel which is provided therein, the channel being dimensioned to allow the wire to be positioned and maintained therein;

wire feed means positioned proximate to the wire gripping devices, the wire feed means cooperates with the wire to advance the wire into the wire gripping devices;

drive means provided adjacent to the wire gripping devices, the drive means cooperate with the wire gripping devices to move the wire gripping devices;

a first cutting means is mounted on the lead making apparatus, the first cutting means can move in the same direction as the wire gripping devices to allow the first cutting means to sever the wire as the wire and the wire gripping means are moved,

whereby the drive means moves the wire gripping devices in the same direction as the wire feed means advances the wire, such that as the wire gripping devices are moved, the wire will be advanced into the channels of the wire gripping devices.

5,253,400

MOTORIZED GUIDE FOR GROUTING AND SAWING WINDOW SASHES

James A. Conachen, 12 Meadow Rd., Sharon, Mass. 02067

Filed Aug. 24, 1992, Ser. No. 934,857
Int. Cl.[5] B23P *6/00*; B26D *1/18*; G05G *11/00*; B23C *3/00*
U.S. Cl. 29—55 **23 Claims**

1. A motorized guide device for cutting tools to reglaze and weatherize a window sash, the device comprising:

an adjustable rectangular frame including

first and second vertical frame members, and

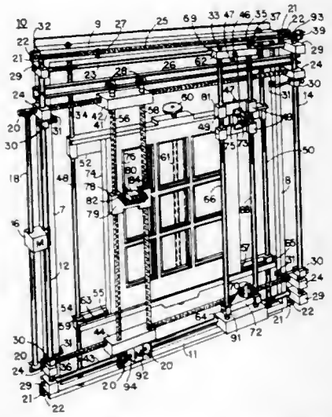
first and second horizontal frame members positioned between and substantially perpendicular to the first and second vertical frame members thereby forming the adjustable rectangular frame;

connecting means rotatably connecting the vertical frame members to the horizontal frame members at each of four

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corners formed by intersection of the vertical and horizontal members;

a guide means movably mounted between two opposing frame members parallel to the plane of the rectangular frame; wherein the guide means is mounted in a vertical orientation between the two horizontal frame members and the motorized guide device further comprises a C-shaped rigid beam rigidly secured to the tops of the two vertical frame members to form a track along the top of the motorized guide device, and at least one roller securely attached to a top end of the guide means, which roller fits into the track formed by the C-shaped rigid beam thereby supporting the weight of the guide means as it moves along the track;



a first motorized means which provides the power for moving the guide means reversibly along the two opposing frame members;

a cutting tool holding member movably mounted to the guide means to provide motion along the guide means;

a cutting tool mounting means on the cutting tool holding member that enables adjustable movement of the cutting tool in a direction perpendicular to the plane of the adjustable rectangular frame;

secured to the adjustable rectangular frame, a rigid vertical rectangular frame having a window sash clamping means;

a securing means attached to the frame at each of four corners of the adjustable rectangular frame for removably and vertically securing the adjustable rectangular frame reversibly to a window frame on a building and to the rigid vertical rectangular frame.

5,253,401

APPARATUS FOR INVERTING SEAT COVERS

Gerald A. Coon, Cridersville; Douglas A. Reinhart, Tiffin, and Lawrence D. Ray, North Baltimore, all of Ohio, assignors to Findlay Industries, Findlay, Ohio

Continuatioo-in-part of Ser. No. 791,020, Nov. 12, 1991, Pat. No. 5,180,460. This application Sep. 28, 1992, Ser. No. 951,912

Int. Cl.[5] **B68G** *7/05*

U.S. Cl. 29—91 **12 Claims**

1. Apparatus for inverting a sewn seat cover comprising,

a pair of elongated arms mounted on a support, one end of each arm being attached to said support with the other end of each arm being unattached, the locations of said attachments to the support being spaced apart,

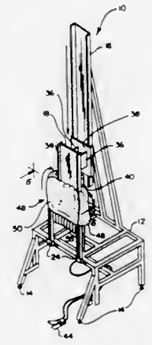
rollers with substantially parallel axes secured to each end of each arm,

two endless belts, one said belt being mounted over the rollers of each arm, each said belt being of a width to cover all of its arm surface as viewed from the other arm, said arms extending in the same direction from their support attachment,

a plate mounted to reciprocate from a position remote from said arms to a position intermediate said arms,

a piston and cylinder combination connected between said support and said plate, means for activating said piston and cylinder combination to move said plate between its two positions,

a seat cover in the form of a pocket sewn along three edges mountable over said arms with the open end of the pocket receiving said arms, the closed end of the pocket being mounted nearest to said plate, said seat cover being inside-out as sewn with the sewn edges on the exterior of the



cover as it is mounted on said arms, said pocket containing padding secured to the cover in a volume to fill a large portion of said pocket as it is mounted over said arms,

said plate including a blunt edge for engaging said closed end of said pocket upon reciprocation by said plate to a position between said arms while said seat cover is mounted on said arms, said blunt edge being configured to push said closed end of said seat cover between said arms while said endless belts engage the interior surface of said pocket as the surface of said belt rides up the outside of its associated arm and around to the inside of its associated arm over the associated roller on the unattached end of said arm.

5,253,402

METHOD OF MANUFACTURING A LEAF SPRING MECHANISM

Akihiro Kasahara, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 557,644, Jul. 25, 1990, Pat. No. 5,157,825. This application May 20, 1992, Ser. No. 885,982

Claims priority, application Japan, Jul. 25, 1989, 1-190531; Aug. 28, 1989, 1-218513; Apr. 27, 1990, 2-110419

Int. Cl.[5] **B21F** *35/00*; **G02B** *7/00*

U.S. Cl. 29—173 **8 Claims**

1. A method of making a leaf spring assembly, which comprises the steps of:

providing first and second thin metal frames, each having cutout sections and a leaf spring section, the leaf spring section having first and second end portions and a surface region between the first and second portions;

providing a reinforcing thin metal frame which has first and second reinforcing sections and a cutout section between the first and second reinforcing sections;

coating at least one of the surface regions of the first and second thin metal frames with a viscoelastic layer;

arranging the reinforcing thin metal frame between the first and second thin metal frames and aligning the first, second and reinforcing thin metal frames such that the surface regions of the first and second thin metal frames face each

other through the cutout section of the reinforcing thin metal frame and such that a gap filled with the viscoelastic layer is formed between the surface regions of the first and second thin metal frames in the cutout section of the reinforcing thin metal frame;

fixing the first and second reinforcing sections of the reinforcing thin metal frame to the first and second end portions of the first and second thin metal frames;

pinching and molding the reinforced first and second end portions of each of the first and second thin metal frames, keeping them parallel to each other; and

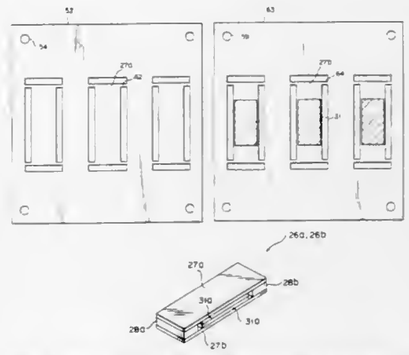
cutting the first, second and reinforcing thin metal frames to remove the leaf spring section and the reinforcing sections from the first, second and reinforcing thin metal frames, thereby forming the leaf spring assembly.

5. A method of making a leaf spring assembly having a pair of spring structures, which comprises the steps of:

providing first, second, third and fourth thin metal frames, each having cutout sections and a leaf spring section, the leaf spring section having first and second end portions and a surface region between the first and second portions;

providing first and second reinforcing thin metal frames, each having first and second reinforcing sections and a cutout section between the first and second reinforcing sections;

coating at least one of the surface regions of the first and second thin metal frames with a first viscoelastic layer and



also at least one of the surface regions of the third and fourth thin metal frames with a second viscoelastic layer;

arranging the first reinforcing thin metal frame between the first and second thin metal frames and aligning the first and second thin metal frames and first reinforcing thin metal frame such that the surface regions of the first and second thin metal frames face each other through the cutout section of the first reinforcing thin metal frame and such that a first gap filled with the first viscoelastic layer is formed between the surface regions of the first and second thin metal frames in the cutout section of the first reinforcing thin metal frame;

arranging the second reinforcing thin metal frame between the third and fourth thin metal frames and aligning the third, and fourth thin metal frames and the second reinforcing thin metal frame such that the surface regions of the third and fourth thin metal frames face each other through the cutout section of the second reinforcing thin metal frame and such that a second gap filled with the second viscoelastic layer is formed between the surface regions of the third and fourth thin metal frames in the cutout section of the second reinforcing thin metal frame;

fixing the first and second reinforcing sections of the first reinforcing thin metal frame to the first and second end portions of the first and second thin metal frames to form a first leaf spring structure;

fixing the first and second reinforcing sections of the second reinforcing thin metal frame to the first and second end portions of the third and fourth thin metal frames to form a second leaf spring structure;

pinching the reinforced first and second end portions of each of the first leaf spring structure and also pinching the reinforced first and second end portions of the second leaf spring structure and molding the pinched first and second end portions of the first and second leaf spring structures, keeping them parallel to each other; and

cutting the first, second, third and fourth thin metal frames and the first and second reinforcing thin metal frames to remove the leaf spring sections and the reinforcing sections from the first, second, third and fourth thin metal frames and the first and second reinforcing thin metal frames, thereby forming the leaf spring assembly.

5,253,403

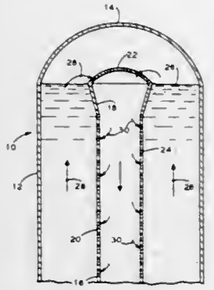
ON-STREAM TIME FOR EBULLATING BED REACTOR

David E. Hookham, Houston, Tex., assignor to McDermott International, Inc., New Orleans, La.

Continuation of Ser. No. 878,208, May 4, 1992, Pat. No. 5,211,917. This application Feb. 1, 1993, Ser. No. 13,262

Int. Cl.[5] **B23P** *5/16*

U.S. Cl. 29—163.6 **2 Claims**



1. In a method of making an ebullating bed reactor comprising providing a reactor vessel, an ebullating means and a downcomer means defined by an elongated return line of uniform diameter located within the reactor vessel, wherein the improvement comprises the steps of:

(a) perforating the elongated return line along its length with a plurality of perforations and spacing a greater number of said perforations at an upper region of the elongated return line than at a lower region of the elongated return line;

(b) securing an unperforated, upwardly and outwardly flared top cup assembly atop said upper region of the elongated return line;

(c) perforating a cover secured over said unperforated, upwardly and outwardly flared top cup assembly;

(d) constructing and arranging said perforations in the elongated return line so as to permit a liquid slurry in the reactor vessel to pass therethrough;

(e) constructing and arranging said perforations in the elongated return line so as to prevent a majority of solid catalyst particles outside the elongated return line from passing therethrough into the elongated return line, said perforations being uncovered and unblocked;

(f) constructing and arranging said perforations so that when a liquid level within the reactor vessel falls below a level of said unperforated, upwardly and outwardly flared top cup assembly, a predetermined minimum quantity of said liquid slurry is permitted to flow out of the reactor vessel into the elongated return line, whereby, when said liquid level within the reactor vessel is equal with or above said level of said unperforated, upwardly and outwardly flared top cup assembly, said liquid slurry flows from the elon-

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gated return line into the reactor vessel through said perforations, and whereby when said liquid level within the reactor vessel falls below a level of said solid catalyst particles within the reactor vessel, said liquid slurry flows from the reactor vessel into the elongated return line through said perforations.

5,253,404

APPARATUS FOR DRAWING WARP YARNS INTO A WEAVING REED

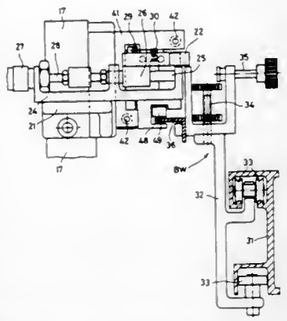
Stefan Weber, and Daniel Morgenthaler, both of Sargans, Switzerland, assignors to Zellweger Uster AG, Uster, Switzerland

Filed Feb. 19, 1992, Ser. No. 836,886

Claims priority, application Switzerland, Feb. 22, 1991, 00545/91

Int. Cl.[5] D03J *1/14*

U.S. Cl. 28—204 17 Claims



5. In apparatus for sequentially opening the gaps between the teeth of a weaving reed and drawing warp yarns into such gaps, transport means for the stepwise transport of the weaving reed in its longitudinal direction with the length of the individual transport steps corresponding at least approximately to the division of the reed teeth, and a drawing-in member movable back and forth transversely to the lengthwise direction of the reed for drawing warp yarns into gaps between the teeth of the reed, said transport means comprising first transport means (BW) extending over the length of the weaving reed and coupled to such reed in the operating state, and a second transport means including a clamp gripper (45) for intermittent engagement with the first transport means.

5,253,405

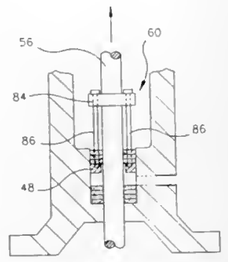
LANTERN RING REMOVAL TOOL

James L. Carroll, 5 E. Yacht Dr., Long Beach, N.C. 28456

Filed Aug. 28, 1992, Ser. No. 936,670

Int. Cl.[5] B23P *19/00*

U.S. Cl. 29—213.1 15 Claims



1. A tool for removing a stuck lantern ring from the packing chamber of a valve assembly including a valve stem, comprising:

(a) a guide ring;

(b) means for mounting the guide ring to the valve stem at a position above the packing chamber, the means for mounting the guide ring includes an adapter ring insertable inside the guide ring, wherein the outside diameter of the adapter ring is approximately equal to the inside diameter of the guide ring, and wherein the inside diameter of the adapter ring is approximately equal to the outside diameter of the valve stem;

(c) a plurality of guide holes formed in the guide ring for guiding a drilling instrument used to form threaded openings in the lantern ring; and

(d) a plurality of lifting rods insertable through the guide holes in the guide ring and extending generally parallel to the valve stem, said lifting rods being engageable with the stuck lantern ring for lifting the stuck lantern ring from the packing chamber when the valve stem is raised.

5,253,406

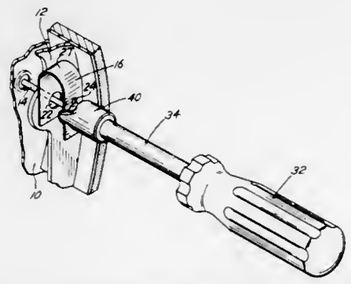
BRAKE CLIP TOOL

Marty R. Shere, Omaha, Nebr.; Eugene R. Ross, Omaha, and Randall J. Ploeger, Clarinda, both of Iowa, assignors to Lisle Corporation, Clarinda, Iowa

Filed Nov. 17, 1992, Ser. No. 977,566

Int. Cl.[5] B23P *19/06*

U.S. Cl. 29—240 3 Claims



1. A tool for attachment and removal of a brake spring clip of the type having a U-shaped spring member with legs having generally aligned slots and a groove in one of the legs, said groove unaligned with the slots, said slots adapted to receive a headed pin, said pin rotatable in the groove to permit locking engagement of the head of the pin, and the clip, said tool comprising, in combination:

a screw driver handle defining an axis;

a shaft projecting along the axis from the handle, said shaft terminating with a slot for engaging and axially twisting the head of the pin;

a tubular collar rotatably mounted on the end of the shaft, said collar including first and second axially projecting prongs for cooperatively engaging the groove in the spring leg, whereby the prongs may be inserted into the groove simultaneously with engagement of the slot with the head of the pin, and the head may be rotated by rotation of the shaft relative to the clip to release the head through the slot and thus release the spring clip and a brake shoe held thereby.

5,253,407

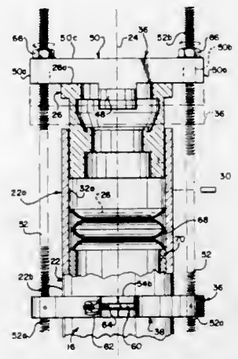
CONTROL ROD DRIVE ENDCAP TOOL

Kenneth J. Jamrus, San Jose, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Aug. 23, 1991, Ser. No. 749,349

Int. Cl.[5] B23P *19/04*

U.S. Cl. 29—266 11 Claims



1. A tool for translating an endcap inside a receptacle of an elongate housing including a distal end, an intermediate portion extending integrally from said distal end, and said receptacle being disposed in said distal end, said endcap including a bore and a pair of arcuate flanges at a distal end thereof spaced circumferentially apart to define a pair of access slots, said tool comprising:

a hook removably joinable to said endcap, said hook including a first cross member having an integral pair of spaced apart flanges positionable through said endcap access slots and under said endcap flanges for applying thereagainst force from said jacking means for withdrawing said endcap from said receptacle;

a clamp removably joinable to said housing intermediate portion, and including:

a first arcuate half-clamp having a first proximal end, a first distal end, and a first aperture disposed between said first proximal and distal ends; and

a second arcuate half-clamp having a second proximal end pivotally joined to said first proximal end, a second distal end releasably joinable to said first distal end for clamping said first and second half-clamps around said housing, and a second aperture disposed between said second proximal and distal ends; and

means for jacking said hook relative to said clamp for translating said endcap relative to said receptacle including a pair of jacking rods joined between said clamp and said hook, with a first one of said jacking rods having a proximal end fixedly joined to said first half-clamp first aperture, and a second one of said jacking rods having a proximal end fixedly joined to said second half-clamp second aperture.

5,253,408

EXTRACTION TOOL

William C. Wright, 1279 Briarwood Rd., Atlanta, Ga. 30219

Filed Aug. 3, 1992, Ser. No. 923,823

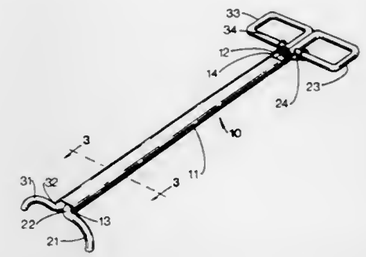
Int. Cl.[5] B25B *27/14*

U.S. Cl. 29—280 10 Claims

1. An extraction tool, comprising:

(a) two gripping members, each gripping member including an elongated rod, a jaw, and a handle, the jaw extending perpendicularly from the elongated rod, the handle protruding laterally from the elongated rod in substantially the same direction as the jaw; and

(b) a sleeve for retaining the elongated rods in side by side position longitudinally while allowing each of the elongated rods to be rotated a fraction of a turn about its longitudinal axis, the jaws having concave inner surfaces



which face generally toward each other when the handles have been moved as far as possible together, the sleeve extending longitudinally from points proximate with each of the handles to points proximate with each of the jaws.

5,253,409

METHOD OF MANUFACTURING A PLASTIC ARTICLE HAVING MICRO-OPENINGS DEFINED THEREIN

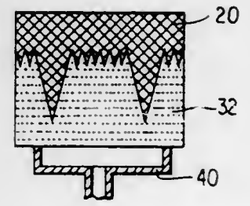
Wilhelm Bier, Eggenstein-Leopoldshafen; Thomas Schaller, Weingarten, and Klaus Schubert, Karlsruhe, all of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Oct. 21, 1992, Ser. No. 964,026

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1991, 4135676

Int. Cl.[5] B23P *17/00*

U.S. Cl. 29—424 10 Claims



1. A method of manufacturing a plastic article having micro-openings defined therein by working a semi-finished plastic structure having microrecesses defined on one side thereof, the method comprising, in the order recited:

(a) providing a semi-finished plastic structure having opposing first and second sides, wherein the first side of the opposing sides has microrecesses defined therein;

(b) filling the semi-finished plastic structure to cover the microrecesses with a substance which is hardenable and selectively removable;

(c) hardening the substance;

(d) machining the surface of the hardened substance to smooth it;

(e) positioning the smoothed surface of the hardened substance in contact with a vacuum tensioning device whereby the semi-finished plastic structure is held in place by applying a vacuum thereto;

(f) machining the second side of the opposing sides of the semi-finished plastic structure until the microrecesses of the first side are at least partially exposed thereby defining micro-openings in the structure; and

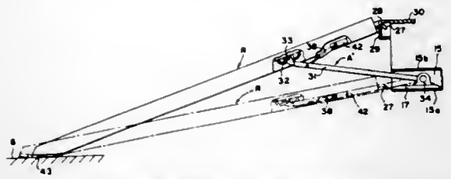
(g) removing the hardened substance selectively from the microrecesses.

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5,253,410
RETRACTABLE UNDERBODY TRUCK RAMP AND METHOD OF MAKING

Carl N. Mortenson, Midland, Mich., assignor to Magline, Inc., Pinconning, Mich.

Division of Ser. No. 681,977, Apr. 8, 1991, Pat. No. 5,199,150.
This application Nov. 3, 1992, Ser. No. 971,519
Int. Cl.[5] B23P *11/00*; E01D *1/00*; B65G *11/12*
U.S. Cl. 29—436 17 Claims



1. The method of assembling a retractable ramp of the type which is stowed within a rearwardly open storage chamber within a vehicle frame below a vehicle floor provided in a vehicle for carrying cargo, and which in an operative deployed position is extended from the vehicle frame, tilted downwardly, and selectively connected to the vehicle frame to serve as a loading or unloading platform for the vehicle frame, the ramp being one of a series of ramps of differing length having a range of weights, each of the ramps having a rear end adapted to engage the ground surface on which the vehicle is deployed and a front end adapted to be releasably connected to the vehicle adjacent the rear end of the vehicle floor, the retractable ramp including an arm means pivotally connected to the ramp floor assembly near the front end thereof and extending forwardly into the storage chamber to couple thereto, each of the ramps and the arm means having a plurality of attachment positions provided thereon, the steps of:

a. selecting one of said series of ramps;

b. pivotally connecting, between the ramp and arm means, force exerting means to one of said attachment positions such that it will exert a force, through a moment arm of increasing length as the front end of the ramp is manually raised about the pivotal connection of the arm means to the ramp as a fulcrum, which maintains the front end of the ramp in a position substantially opposite the vehicle floor without the required imposition of upward or downward manual force; and

c. removing the upward pressure exerted manually on the front end of the ramp floor assembly, pulling it manually forewardly to a location of attachment to the rear end of the vehicle adjacent the vehicle floor, and attaching it to the rear end of the vehicle adjacent the vehicle floor.

5,253,411
METHOD OF SECURING SEMI-CONDUCTOR WAFER USING RETENTION CLIP

Antonio DiNapoli; Gerald L. Goff, and Roger A. Sikes, all of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Division of Ser. No. 617,008, Nov. 21, 1990, Pat. No. 5,183,245.
This application Aug. 14, 1992, Ser. No. 929,938
Int. Cl.[5] B25B *1/00*; B23Q *7/00*
U.S. Cl. 29—559 5 Claims

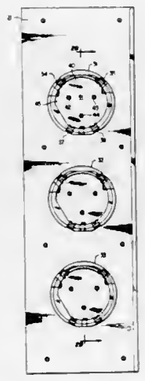
1. An improved method for securing a semi-conductor wafer to a treatment surface of a wafer processing pedestal using a clip head that is resiliently mounted relative to said pedestal for facilitating the installation and removal of said wafer therefrom, said improvement comprising the steps of:

forming said clip head with a relatively wide, rearwardly extending notch defining a pair of spaced apart, relatively narrow, forwardly extending tines having underside surfaces adapted to slopingly overlie and engage only relatively small, spaced apart peripheral edge portions of said wafer, and, configuring said clip head to substantially reduce the amount of wafer contamination attributable to said clip;

depressing a rear portion of said clip head to flex said resilient mounting to allow movement of said tines of said clip head away from said treatment surface of said pedestal;

positioning said wafer on said treatment surface with said peripheral edge portions of said wafer aligned under said underside surfaces of said tines; and

releasing said rear portion of said clip head to allow said



resilient mounting to move said clip head until said underside surfaces of said tines engage said peripheral edge portions of said wafer thereby securing said wafer against said treatment surface of said pedestal and whereby the presence of said notch, the relative narrowness of said tines, and the resultant limited contact between said clip head and the supported wafer combining to reduce both the available contaminant receiving surface area of said clip head and the amount of contaminant matter transferred from said clip head to the supported wafer.

5,253,412
TIP PROCESSING APPARATUS FOR JACKETED OPTICAL FIBERS

Satoshi Fukuoka; Shizuka Yamaguchi; Koji Sasaki, and Tsuyoshi Fumeno, all of Ichihara, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Apr. 8, 1992, Ser. No. 866,795
Claims priority, application Japan, Apr. 12, 1991, 3-080153; Apr. 12, 1991, 3-080154; Apr. 12, 1991, 3-080155
Int. Cl.[5] B26F *3/00*
U.S. Cl. 29—566.3 7 Claims

1. A tip processing apparatus for processing a tip of a jacketed optical fiber, the tip processing apparatus comprising:

a holder holding unit including fixing means for fixing a holder, which holder extends a tip of a jacketed optical fiber comprising at least one optical fiber with a jacket therearound, and which holder holds the jacketed optical fiber in a specified position in a manner that allows release of the holder from the holder holding unit;

a jacket removing unit for clamping the tip of the jacketed optical fiber, and for leaving the jacket on the tip of the jacketed optical fiber hold by the holder in cooperation with said holder holding unit, thus peeling the jacket off of the jacketed optical fiber by a desired length;

a cleaning unit for cleaning the optical fiber exposed by the jacket peeling carried out by said jacket removing unit, said cleaning unit being located between said holder holding unit and said jacket removing unit;

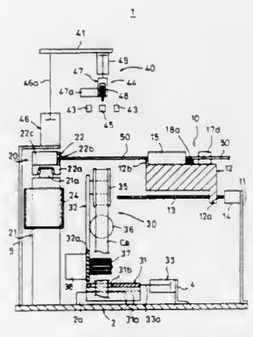
said cleaning unit comprising:

a wiping material for cleaning the optical fiber;

a slide table which is movable toward and away from said jacket removing unit; and

a lifting plate which is movable up and down by a driving means mounted on said slide table; and

on said lifting plate are mounted winder drums wrapped with said wiping material, a pair of gears which roll in said wiping material and which mesh with each other to unreel said wiping material from said winder drums, guide assemblies which guide the wiping material unwound from said winder drums, and a clamping means for pressing sideways the unwound wiping material and for clamping the optical fiber through said wiping material; and



a cutting unit for performing cut processing on the optical fiber to trim the optical fiber cleaned by said cleaning unit, said cutting unit comprising:

clamping means, arranged adjacent to said cleaning unit, for clamping the optical fiber at two points in a manner that allows release of the optical fiber;

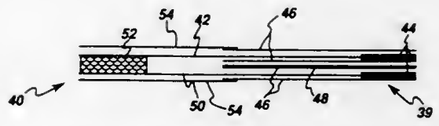
processing means for cutting a notch in the optical fiber at a point between the two points clamped by the clamping means; and

processing means for pressing the optical fiber at the point notched by said processing means from a direction that orthogonally intersects with an axis extending along the optical fiber.

5,253,413
METHOD FOR MAKING A SUPERCONDUCTING JOINT FOR A SUPERCONDUCTING MAGNET WHICH IMAGES HUMAN LIMBS

Bizhan Dorri, Clifton Park; Evangelos T. Laskaris; Kenneth G. Herd, both of Schenectady, and Richard A. Ranze, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 4, 1993, Ser. No. 347
Int. Cl.[5] H01L *39/24*
U.S. Cl. 29—599 8 Claims



1. A method for making a superconducting joint for a superconducting magnet including first and second conductors having copper lamination, a first and second sets of stainless steel pieces, an insulation means, a soldering means and a welding means, wherein said method is comprised of the steps of:

delaminating a portion of said first and second conductors;

laminating said first set of stainless steel pieces to said portion of delaminated first and second conductors;

insulating said laminated first and second conductors with said insulation means;

soldering together said insulated first and second conductors with said soldering means to create a solder joint between said first and second conductors;

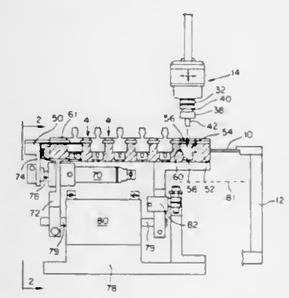
welding said soldered first and second conductors with said welding means; and

trimming said welded first and second conductors to create said superconducting joint.

5,253,414
TOOL BANK FOR SURFACE MOUNT MACHINE

Arthur L. Gaudette, Ipswich, and Mark E. Rossmeisl, Beverly, both of Mass., assignors to Emhart Inc., Newark, Del.

Filed Jan. 21, 1992, Ser. No. 823,668
Int. Cl.[5] H05K *3/30*
U.S. Cl. 29—740 3 Claims



1. A machine for placing surface mount electronic components on a printed circuit board comprising

tool holder means selectively displaceable vertically and horizontally to deposit surface mount components on the supported printed circuit board, and

a table for supporting a printed circuit board for displacement so that surface mount components can be populated thereon, the printed circuit board having a front edge which will move forwardly when the placement process is complete and the printed circuit board is to be removed from the table, said table including

tool bank means for holding a plurality of tools for use in said tool holder means,

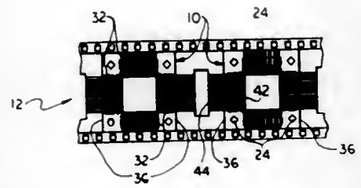
means for supporting said tool bank means so that it can be displaced from a first location adjacent the front edge of a supported printed circuit board so that held tools will project upwardly above the underboard clearance line of the printed circuit board to a lowered position whereat said tool bank means and the held tools will be below the underboard clearance line,

means for displacing said tool bank means from said location adjacent the front edge of a supported printed circuit board to said lowered position whereat said tool bank means and the held tools will be below the underboard clearance line of the printed circuit board, and

means for releasably securing the tools in said tool bank means.

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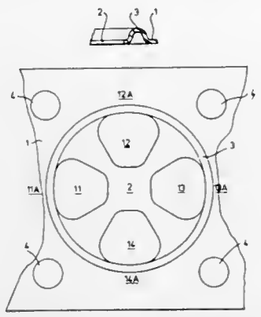
5,253,415
METHOD OF MAKING AN INTEGRATED CIRCUIT SUBSTRATE LEAD ASSEMBLY
Richard K. Dennis, Etters, Pa., assignor to Die Tech, Inc., York Haven, Pa.
Division of Ser. No. 496,215, Mar. 20, 1990, abandoned. This application Sep. 14, 1992, Ser. No. 944,347
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—827 **19 Claims**



1. The method of manufacturing a lead assembly for forming electrical connections between contact pads on a board and closely spaced contact pads on an integrated circuit chip comprising the steps of:
a. stringing a plurality of individual conductive wire filaments in generally parallel side-by-side relation to form an array of parallel filaments remote from the tape segments;
b. providing first and second tape segments remote from the array of parallel conductive wire filaments;
c. adhering portions of the filament array to the first and second tape segments so that each segment carries an array of generally parallel wire filaments extending across the segment;
d. positioning one segment on top of the other segment with the filaments in the respective arrays on the segments oriented at approximately 90 degrees to each other and adhering the two tape segments to each other; and
f. forming a series of chip contact ends on the filaments of each segment array, such ends being located at a chip location on the tape segments and forming board contact ends on the filaments of each segment array, such ends being located away from the chip location.

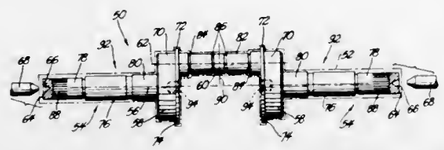
5,253,416
METHOD OF MANUFACTURING A GASKET
Christopher R. Harland, Cawston House, Cawston, Rugby, Warwickshire, England
Filed Jun. 22, 1992, Ser. No. 861,891
Claims priority, application United Kingdom, Oct. 9, 1990, 9021977
Int. Cl.[5] B21D *53/84*
U.S. Cl. 29—888.3 **7 Claims**

1. A method of manufacturing a gasket having at least one finally configured aperture surrounded by a peripheral corrugation comprising the steps of:
a) forming at least one preliminary aperture in a predetermined location in a metal plate, within an area which will be surrounded by the finally configured aperture, the shape and configuration of said preliminary aperture chosen as a function of the proximity of said finally configured aperture to edges of the plate and to a location of any other aperture in the plate;
b) forming the finally configured aperture;
c) forming a peripheral corrugation in said metal plate in a marginal area of said finally configured aperture so that said peripheral corrugation exhibits controlled geometry



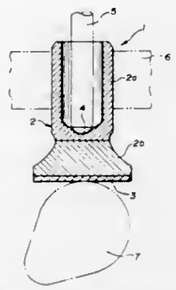
and plastic deformation when subjected to compression; and
d) forming said any other aperture in the plate.

5,253,417
METHOD OF MANUFACTURING CRANKSHAFTS
Dwayne L. Johnson, La Crescent, Minn., assignor to General Motors Corporation, Detroit, Mich.
Filed Jun. 22, 1992, Ser. No. 902,154
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—888.08 **1 Claim**



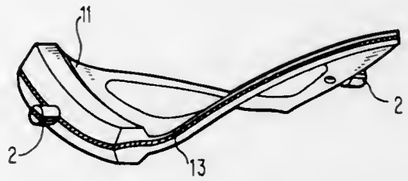
1. A method of manufacturing crankshafts, including the steps of;
forging a double crank with two main shaft sections with a common crankshaft axis, a crank web integral with each main shaft section and a drive stud integral with both crank webs and having a drive stud axis that is parallel to and spaced from the crankshaft axis;
machining recesses for machining centers in each end of the double crank;
machining splines on each end of the double crank;
machining a seal engaging surface of each main shaft section;
machining a bearing engaging surface on each main shaft section;
machining a bearing engaging surface and an axial locating surface on each crank web;
machining a surface on the drive stud that is concentric with the drive stud axis;
severing the drive stud between the two crank webs to form two single cranks from the double crank;
machining a bore in each crank web with an axis that is parallel to the common crankshaft axis; and
machining a threaded bore in a free end of each main shaft section.

5,253,418
METHOD OF FORMING TAPPET OF THE KIND HAVING CERAMIC SEAT PLATE
Masato Taniguchi, and Masaya Ito, both of Aichi, Japan, assignors to NGK Spark Plug Co, Ltd., Nagoya, Japan
Filed Jan. 31, 1992, Ser. No. 830,340
Claims priority, application Japan, Mar. 18, 1991, 3-080714
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—888.43 **14 Claims**



1. A method of producing a tappet comprising:
a first step of forming a first part of a tappet main body from low carbon steel and carburizing said first part;
a second step of forming a second part of said tappet main body from metal and welding said first part and said second part together to constitute said tappet main body; and
a third step of brazing a ceramic seat plate to an end of said second part;
in which said low carbon steel forming said first part has such a property that when carburized it is hardened by making use of heat for said brazing of said third step;
in which said metal forming said second part has such a property that it is hardened by making use of heat for said brazing of said third step.

5,253,419
METHOD OF MANUFACTURING A HOLLOW BLADE FOR A TURBOSHAFT ENGINE
André C. F. Collot, Mennecy; Bernard P. C. Sohier, Savigny Le Temple, and Danilo Varela, Sevres, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A.", Paris, France
Continuation of Ser. No. 837,958, Feb. 20, 1992, abandoned. This application Jan. 4, 1993, Ser. No. 581
Claims priority, application France, Feb. 20, 1991, 91 02007
Int. Cl.[5] B23D *15/00*
U.S. Cl. 29—889.72 **8 Claims**



1. A method of manufacturing a hollow blade for a turboshaft engine, particularly a fan rotor blade of large chord, said method comprising the following steps:
(a) providing primary components comprising two outer metal sheets and at least one intermediate metal sheet;
(b) hot forming said primary components wherein said components are curved and twisted to a desired shape;
(c) putting in place diffusion barriers at selected positions on said at least one intermediate sheet;
(d) assembling and putting said components in place on suitable process tooling;
(e) diffusion welding said assembled components together at said selected positions of said diffusion barriers, wherein said diffusion welding step is performed after said hot forming step such that the diffusion welding is performed upon components which have been curved and twisted to a desired shape during said hot forming step;
(f) internally gas pressurizing selected areas of the welded assembly of said primary components to inflate and superplastically deform said assembly in said selected areas to form a hollow assembly; and
(g) carrying out finishing operations on said hollow assembly to obtain said hollow blade.

5,253,420
RAZOR HEAD, ESPECIALLY RAZOR BLADE UNIT OF A WET RAZOR
Wolfgang Althaus, Wuppertal, and Michael Schwarz, Herne, both of Fed. Rep. of Germany, assignors to Wilkinson Sword Gesellschaft mit beschränker Haftung, Solingen, Fed. Rep. of Germany
Filed Jun. 25, 1992, Ser. No. 906,218
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1991, 9108213[U]
Int. Cl.[5] B26B *21/00*
U.S. Cl. 30—50 **13 Claims**



1. A razor head, especially a razor blade unit of a wet razor, with said razor head being disposed at an end of a handle and comprising:
a plastic housing having a rear wall;
a blade member to which razor blade means are secured, with said blade member being displaceably and yieldingly mounted in said plastic housing, and with said blade member having two oppositely disposed end, each of which is provided with a respective guide piece disposed in a corresponding recess in said plastic housing such as to permit said displacement of said blade member; and
spring means disposed in said plastic housing for effecting said yielding mounting of said blade member, with said blade member being displaceable in a direction toward said rear wall of said plastic housing and parallel to a plane of said razor blade means against a spring force of said spring means.

5,253,421
CIRCLE DRAWING KIT APPARATUS
Ake Landmark, Gamla Vagen 13, Hallsberg, Sweden 69400
Filed Oct. 31, 1991, Ser. No. 786,918
Int. Cl.[5] B43L *9/04*
U.S. Cl. 33—27.03 **1 Claim**

1. A circle drawing kit apparatus, comprising,
a first cylindrical base formed of a ferromagnetic material, and

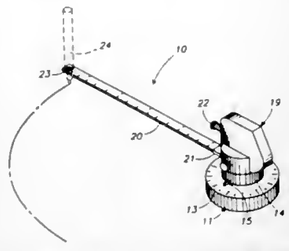
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the cylindrical base including a planar top wall, and

the planar top wall including indicia formed on the planar top wall about the periphery of the top wall, and

a cylindrical mount rotatably and coaxially mounted to the planar top wall, with the cylindrical mount including a support reel housing fixedly mounted to the cylindrical mount, the support reel housing including an extensible and retractable measuring web mounted retractably relative to the support reel housing, and including scribing means mounted adjacent a forward distal end of the measuring web for permitting scribing of a circular array to an underlying support surface, and

the cylindrical mount includes a rigid pointer arm radially projecting exteriorly of the cylindrical mount adjacent the planar top wall and the indicia, and a bifurcated mount head fixedly secured to a top surface of the cylindrical mount, wherein the mount head includes a diametrically



aligned slot including a floor directed through the mount head, with the slot defined at a predetermined width, and the support reel housing defined by a further width equal to the predetermined width contained within the slot, and a lock pin directed orthogonally through the slot and support reel housing to secure the support reel housing within the slot, and a feed conduit mounted to the support reel housing, wherein the feed conduit is longitudinally aligned relative to the slot to align the measuring web orthogonally relative to the lock pin, and a reel lock mounted to the support reel housing to permit selective securement of the web in a desired extended orientation relative to the housing, and

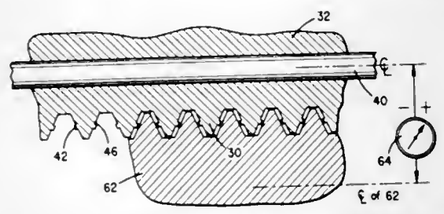
the scribing means includes an aperture orthogonally directed through the web adjacent the forward distal end and including a writing instrument mounted within the aperture projecting below the web.

5,253,422

THREAD GAGING TOOL AND METHOD

Alexander A. Zaveruha, Stratford, Conn., assignor to McMellon Bros, Inc., Stratford, Conn.

Filed Nov. 18, 1991, Ser. No. 793,808
Int. Cl.[5] G01B *3/36*
U.S. Cl. 33—199 R **11 Claims**



8. A tool for determining if the threads of a screw have shrink lead, each of the grooves of said thread having two flanks extending upwardly and outwardly from a relatively narrow root portion to a relatively wide addendum portion, said screw having a major axis, said tool comprising:

(a) a gage roll having at least first and second ribs engagable with at least first and second grooves, respectively, said first and second ribs being spaced apart on either side of an axially central portion of said gage roll, each of said ribs having first and second flanks, said first flank of said first rib facing away from said central portion, said second flank of said first rib facing toward said central portion, said first flank of said second rib facing said central portion, and said second flank of said second rib facing away from said central portion, and said gage roll being radially and axially moveable with respect to said major axis of said thread;

(b) means to measure radial position of said gage roll rib relative to major axis of said screw;

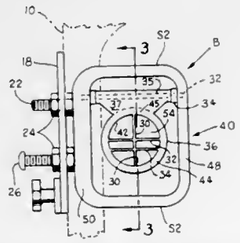
(c) said first flank of said first rib and said second flank of said second rib having outwardly facing bosses thereon, such that, if said thread has shrink lead, said first and second ribs can be inserted into said first and second grooves a lesser radial distance than if said thread does not have shrink lead.

5,253,423

CROSS HAIR PENDULUM BOW SIGHT

James H. Sullivan, Jr., Ware Shoals, and Harvey L. Loudermilk, Waterloo, both of S.C., assignors to James Sullivan, Jr., Ware Shoals, S.C.

Filed Oct. 8, 1992, Ser. No. 958,080
Int. Cl.[5] F41G *1/467*
U.S. Cl. 33—265 **18 Claims**



1. A sighting arrangement for an archer's bow having a handle, a pair of limbs, an arrow seat, a ballistic string system including cams mounted at an end of each limb and a peep sight incorporated in the string system, said sighting arrangement including;

a sight housing having spaced parallel outer horizontal and vertical sides, one of said vertical sides including means mounting said sight housing with said handle in position so that said vertical sides are substantially coplanar with a longitudinal axis of said handle;

each of said vertical sides includes a bearing formed in its inner edge;

a sighting member having a shaft formed integral therewith and arranged substantially along its upper edge, opposite ends of said shaft are pivotally mounted by said bearings so that said sighting member is pivotable relative to said sight housing and capable of always extending along true vertical regardless of the vertical angle of said bow when in shooting position;

an annular reference surface formed around said sighting member remote from said shaft, said annular reference surface having traversing vertical and horizontal cross hairs arranged therein;

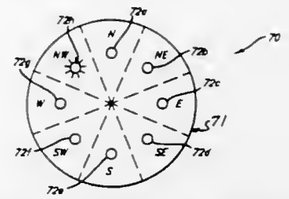
said annular reference surface being of a size that when said bow is in shooting position with said string system drawn taught and an arrow engaged therewith, only said cross hairs and said annular reference surface are visible through said peep sight when said bow is properly aimed regardless of the angle of said bow relative to true vertical.

5,253,424

FLUX-GATE SENSOR MOUNTING AND METHOD

Jeffrey M. Kendall, Detroit, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 27, 1991, Ser. No. 815,265
Int. Cl.[5] G01C *17/30, 17/38, 17/10*
U.S. Cl. 33—361 **12 Claims**



1. In an electronic compass system, including a flux-gate sensor having first and second orthogonal sense coils, said electronic compass using the arctangent function to calculate headings and displaying n sectors having n boundaries separated by a fixed number of degrees, wherein said boundaries are offset with respect to actual magnetic directions, a method of orienting a flux-gate sensor relative to actual magnetic directions to minimize display jitter between the boundaries, said method comprising:

(a) orienting the display with actual magnetic directions; and

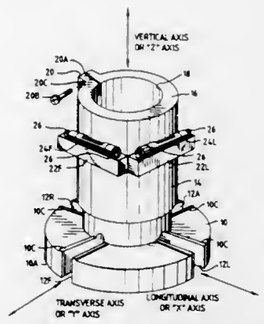
(b) orienting the first and second sense coils along four of said boundaries.

5,253,425

CYLINDRICAL SQUARING COLLET LEVELER FOR VERTICAL MILLING MACHINES

Gerard S. Wozniak, 3550 McCormick Ave., Brookfield, Ill. 60513, assignor to Gerard S. Wozniak, Brookfield, Ill.

Filed Dec. 30, 1991, Ser. No. 816,622
Int. Cl.[5] G01C *9/28;* **B23B** *49/00;* **B23Q** *17/22*
U.S. Cl. 33—373 **3 Claims**



1. A squaring device for locating perpendicular alignment between a spindle assembly of a machine tool and its work surface, comprising: an elongated collet, having a top and a bottom, and a bore for accepting said spindle assembly of said machine tool, a slit extending through said collet extending downwards from said top of said collet, means for closing said slit to secure said collet around said spindle assembly, a pair of horizontal level vial platforms located on the outside of said collet perpendicular to each other in a horizontal plane,

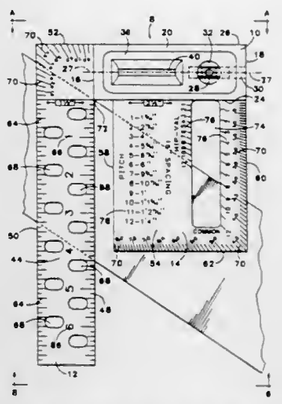
a flanged base at the bottom of said collet in precise perpendicular alignment to said bore of said collet, said flanged base having a plurality of bolt inlets equally spaced around the circumference of said base to actuate holding said collet and said spindle assembly to said work surface, and a pair of precision level vials, one mounted on top of each of said level vial platforms.

5,253,426

MULTI-PURPOSE SQUARE

Gregory A. Mosbrucker, 2150 NE. 137th St., Portland, Oreg. 97230

Filed Apr. 23, 1992, Ser. No. 872,801
Int. Cl.[5] B43L *7/027*
U.S. Cl. 33—429 **15 Claims**



1. A multi-purpose square for use in marking locations at which to position dimensional lumber, sheathing materials, plywoods or other construction materials according to the predetermined width or thickness dimensions of the dimensional lumber, sheathing materials, plywoods or other construction materials, comprising.

(a) an elongate handle having a first end and a second end and at least one substantially planar face therebetween;

(b) a substantially planar tongue attached to said handle and having an axis perpendicular to said planar face so that said tongue extends away from said face, said tongue having a first edge and a second edge, both said edges being parallel to said axis of said tongue and spaced a first predetermined distance apart corresponding to a dimension of the dimensional lumber, sheathing materials, plywoods or other construction materials;

(c) a substantially planar body attached to said handle and having an axis perpendicular to said planar face so that said body extends away from said face and parallel to said axis of said tongue, said body having a first edge, a second edge and a third edge, both said first edge and said second edge being parallel to said axis of said body and spaced a second predetermined distance apart corresponding to the sum of one or more of the dimensions of the dimensional lumber, sheathing materials, plywoods and other construction materials, said second edge of said tongue being spaced from said first edge of said body a third predetermined distance, there being a clear space therebetween, said third predetermined distance corresponding to the sum of one or more dimensions of the dimensional lumber, sheathing materials, plywoods or other construction materials so that the distance between any two of said edges of said tongue and said body corresponds to the sum of one or more of the dimensions of the dimensional lumber, sheathing materials, plywoods or other construction materials, whereby any combination of two of said first and second edges of said tongue and said body may be used independently of any other combination of two of said first and second edges of said tongue and said body to mark locations at which to position the dimensional lum-

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ber, sheathing materials, plywoods or other construction materials, said locations being entirely user-selectable alone or relative to each other, said third edge of said body being substantially parallel to said planar face of said handle, the thickness of said tongue and said body being substantially equal and the height of said planar face being greater than said thickness;

(d) pivot means, formed by the intersection of said second edge of said tongue and said planar face of said handle for measuring angles along said second edge and said third edge of said body, a portion of said handle terminating at said intersection so as to provide a pivot axis;

(e) markings along at least one edge of said body comprising segments of lines passing through said intersection, said markings being spaced from one another at predetermined angular intervals, thereby serving as pitch indicators; and

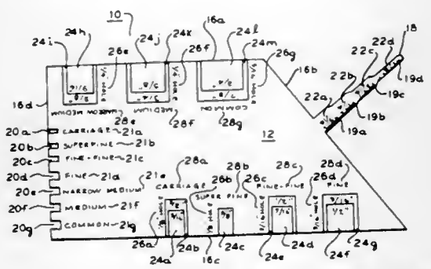
(f) leveling means, disposed in said square, for aligning said square with respect to a level reference so that said angles can be selectively measured relative to level when said square is pivoted about said pivot axis.

5,253,427

MEASURING DEVICE FOR USE IN FURNITURE CONSTRUCTION

Elizabeth Bartlett, 64 Melrose Pl., Montclair, N.J. 07042

Filed Apr. 13, 1992, Ser. No. 867,351
Int. Cl.[5] G01B *3/30, 3/38, 3/46*
U.S. Cl. 33—501.08 **4 Claims**



1. A measuring device for use in the construction of furniture, comprising:

a top face portion;

a bottom face portion;

at least three side face portions;

at least one protrusion extending distally from one of said at least three side face portions, said at least one protrusion having a first segment immediately adjacent said side face portion and at least two additional segments, wherein the first segment has a width greater than that of the at least two additional segments, and wherein the width of each of said at least two additional segments decreases as said at least two additional segments progress from proximal to distal in relation to said side face portion, each of said first segment and said at least two additional segments capable of fitting within an opening of a corresponding width and shape, each of said first segment and said at least two additional segments including an indicia of the width of said first segment and said at least two additional segments;

at least two indentations in at least one of said at least three side face portions, each of said at least two indentations having a specified width and capable of receiving a strand of cane having said specified width;

at least two indicia located on at least one of said top face portion and said bottom face portion, and each of said at least indicia being adjacent one of said at least two indentations, each of said at least two indicia being indicative of the size of a strand of cane received by one of said at least two indentations;

at least one indicia means located on at least one said top face portion and said bottom face portion for determining a distance range between two points of reference;

at least one indicia means indicative of the size of an opening, said at least one indicia means indicative of the size of an opening being adjacent to one of said at least one indicia for determining a distance range between two points of reference; and

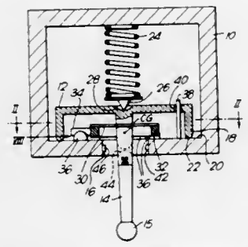
at least one indicia means indicative of the size of a strand of cane, said at least one indicia means indicative of the size of a strand of cane being adjacent to one of said at least one indicia for determining a distance range between two points of reference, and wherein each of said at least one indicia means indicative of the size of a strand of cane corresponds to a corresponding indicia means indicative of the size of an opening and corresponds to a corresponding indicia means for determining a distance range between two points of reference.

5,253,428

TOUCH PROBE

David R. McMurtry, Wotton-Under-Edge, United Kingdom, assignor to Renishaw plc, Gloucestershire, England

Continuation of Ser. No. 660,048, Feb. 25, 1991, Pat. No. 5,146,691. This application Sep. 14, 1992, Ser. No. 944,341
Claims priority, application United Kingdom, Feb. 23, 1990, 9004117
Int. Cl.[5] G01B *5/20*
U.S. Cl. 33—559 **28 Claims**



1. A touch probe or position determining apparatus, comprising:

a fixed member having an axis;

a movable member for carrying a workpiece-contacting stylus;

bias means for biasing the movable member into a rest position relative to the fixed member, the movable member being movable out of the rest position against the action of the bias means when a force is applied to the stylus;

means for providing a signal when said stylus contacts a workpiece; and

constraining means between the fixed and movable members for constraining movement of the movable member when it is biased into the rest position; the constraining means including:

an intermediate member which is movable relative to the fixed an movable members;

a kinematic support between the intermediate member and the fixed member, comprising elements on one of the intermediate and fixed members which are engageable with corresponding surfaces on the other one of the intermediate and fixed members, thereby to constrain movement of the intermediate member relative to the fixed member when said elements and surfaces are engaged, the intermediate and fixed members being relatively rotatable when said elements and surfaces are disengaged; and

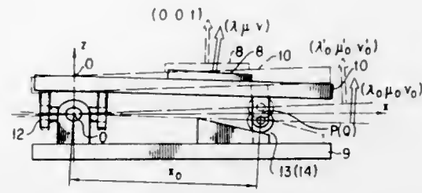
a planar spring between the intermediate member and the movable member, for preventing relative rotation therebetween, but permitting axial and tilting movements therebetween while said elements and surfaces of the kinematic support remain engaged.

5,253,429

LEVELLING METHOD AND APPARATUS

Yoshishige Konno; Yooichi Toita, and Chihiro Marumo, all of Kawasaki, Japan, assignors to Mitutoyo Corporation, Tokyo, Japan

Filed Mar. 3, 1992, Ser. No. 845,198
Claims priority, application Japan, Mar. 7, 1991, 3-068005
Int. Cl.[5] B23Q *3/04, 15/26*
U.S. Cl. 33—568 **5 Claims**



1. A levelling apparatus comprising:

a mounting member for mounting an object thereon;

a supporting means for supporting said mounting member in such a manner as to have a variable inclination with respect to a base, wherein said supporting means includes three supporting portions which are disposed between said base and said mounting member and not on the same straight line;

a first supporting portion supporting said base and said mounting member with a substantially constant space therebetween and allowing the spatial rotation of said mounting member without rotation around an axis which is vertical to said base; and

second and third supporting portions supporting said base and said mounting member with a variable space therebetween; and

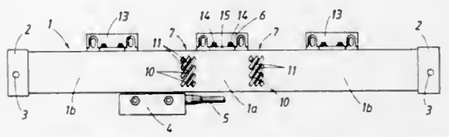
a control means for obtaining the average plane of a surface of said object placed on said mounting member from the coordinates of at least three points in a specified area of the object which are not on the same straight line and for issuing signals to said supporting means to control said average plane so as to have a desired attitude.

5,253,430

LENGTH MEASURING SYSTEM

Heinz Rieder, Oberndorf, and Max Schwaiger, Ostermiething, both of Austria, assignors to RSF-Elektronik Gesellschaft m.b.H., Tarsdorf, Austria

Filed Sep. 26, 1991, Ser. No. 766,804
Claims priority, application Austria, Oct. 2, 1990, 1981/90
Int. Cl.[5] G01B *7/02*
U.S. Cl. 33—702 **5 Claims**



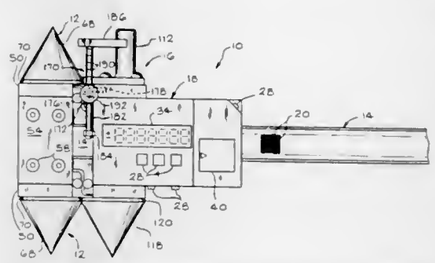
1. A tubular protective carrier housing for a length measuring system encased in the carrier housing, the housing having a longitudinal axis and comprising two end parts extending from respective sides of a center part, fastening devices at the center and end parts for rigidly affixing the carrier housing to an object, the housing and the object being subject to thermal expansion, and a length equalizing means for compensating for differences in the thermal expansion of the housing and object only at the center part, the carrier housing and the length equalizing means for compensating for differences in the thermal expansion of the housing and object being of one-piece construction.

5,253,431

LINEAR MEASUREMENT DEVICE

Quintin R. Smith, 531 E. Second St., Port Clinton, Ohio 43452

Filed Sep. 22, 1992, Ser. No. 948,497
Int. Cl.[5] G01B *3/20, 5/14, 7/14*
U.S. Cl. 33—810 **22 Claims**



1. A linear measurement device comprising, in combination,

an elongate beam,

an endpiece coupled to said elongate beam,

a slider disposed on said beam for bi-directional translation therealong,

means on said slider for providing a distance measurement related to movement of said slider along said beam, and

a plurality of paired means for engaging a workpiece including

first paired means including two cones for measuring center-to-center distances,

second paired means including a cone and a pin for measuring center-to-edge distances and

third paired means including two pairs of parallel, spaced-apart pins for measuring edge-to-edge distances,

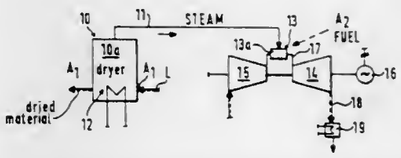
one half of each of said paired means disposed on said endpiece and the other half of each of said paired means disposed on said slider.

5,253,432

DRYING METHOD IN A POWER-PLANT PROCESS AND DRYER USED IN THE METHOD

Markku Raiko, Espoo; Martti Aijala, Helsinki, and Ilkka Huttunen, Vantaa, all of Finland, assignors to Imatran Voima Oy, Finland

Continuation of Ser. No. 466,406, Feb. 22, 1990, abandoned. This application Mar. 19, 1992, Ser. No. 854,316
Claims priority, application Finland, Jun. 30, 1988, 883125; Jun. 30, 1988, 883126
Int. Cl.[5] F26B *3/00*
U.S. Cl. 34—35 **19 Claims**



1. Method for drying a water-containing material in a power-plant process, comprising

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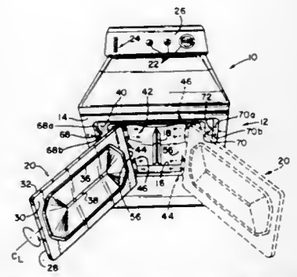
introducing a water-containing material to be dried into a pressurized space within a dryer,
supplying thermal energy to the pressurized dryer to dry the water-containing material,
drying the water-containing material substantially in a steam atmosphere,
connecting the dryer to a combustion unit of a gas turbine by means of a connecting duct,
generating injection steam in the dryer by pressurizing at least part of the steam, and
passing only the injection steam directly from the dryer through said connecting duct into the combustion unit.

5,253,433

SELF-ALIGNING REVERSIBLE DOOR MOUNTING ARRANGEMENT FOR AN APPLIANCE

Barry J. Frey, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jan. 4, 1993, Ser. No. 364
Int. Cl.[5] F26B *11/02*
U.S. Cl. 34—133 H **4 Claims**



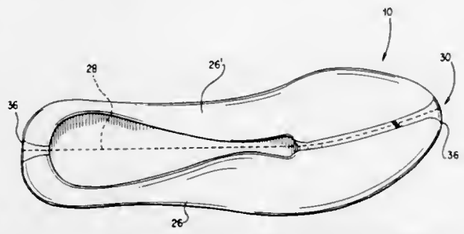
1. In an appliance of the type having a cabinet including a wall with an access opening formed therein and a door for covering the opening attached to the wall by a door hinge assembly, an improved reversible self-aligning door mounting arrangement for selectively pivotally mounting the door to the cabinet for left-handed or right-handed opening including a fixed hinge leaf for attachment to the door and a detachable hinge leaf for attachment to the cabinet, and at least two mounting screws for removably attaching the detachable leaf to the cabinet wall, each screw comprising a head and a thread bearing shank extending therefrom, the improvement wherein:
the detachable hinge leaf has formed therein a pair of vertically aligned keyhole openings each opening having a reduced portion of lesser width than the diameter of said head of said mounting screws, and extending from an adjoining enlarged portion of width sufficient to permit said head of said mounting screws to pass therethrough, the reduced portion of the upper one of said vertically aligned keyhole openings extending upwardly from the enlarged portion of the opening, and the reduced portion of the lower one of said keyhole openings extending downwardly from the enlarged portion of the opening;
the cabinet wall having formed therein first and second pairs of vertically spaced openings relatively spaced for registration with said reduced portions of said keyhole openings in the detachable leaf to receive the mounting screws, said first pair being disposed along the right side of the door opening and said second pair being disposed along the left side of the door opening, the detachable leaf being removably attached to the cabinet wall by the mounting screws which pass through said reduced portions of said keyhole openings into said first or said second pair of screw receiving openings in the cabinet wall for mounting the door to the right or left side of the door opening, respectively, the door, when mounted to said right side for left-hand opening, being inverted relative to its position when mounted to the left side for right-hand opening.

5,253,434

WATERPROOF ARTICLE OF MANUFACTURE AND METHOD OF MANUFACTURING THE SAME

John J. Curley, Jr., Dunstable, and Jon L. Bemis, Middleboro, both of Mass., assignors to Reebok International Ltd., Stoughton, Mass.

Continuation of Ser. No. 612,669, Nov. 14, 1990. This application Mar. 9, 1993, Ser. No. 29,968
Int. Cl.[5] A43B *23/07, 10/00*
U.S. Cl. 36—55 **20 Claims**



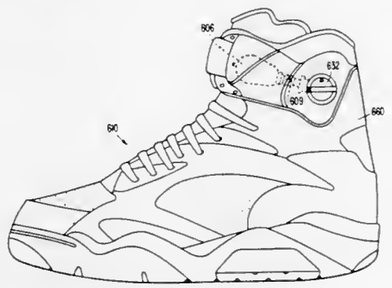
1. A method of manufacturing a water proof article of manufacture, said method comprising the steps of:
a. selecting a pattern for said article;
b. seaming said pattern to form a shell;
c. providing said shell on a support;
d. providing a bath of aqueous waterproof sealant;
e. dipping said shell on said support into said bath to coat said seam;
f. allowing said sealant to cure;
g. removing said shell from said support; and
h. assembling said shell into an article of manufacture.

5,253,435

PRESSURE-ADJUSTABLE SHOE BLADDER ASSEMBLY

Perry W. Auger; Daniel R. Potter, both of Tigard; Michael A. Aveni, and Bruce J. Kilgore, both of Lake Oswego, all of Oreg., assignors to Nike, Inc., Beaverton, Oreg.

Continuation of Ser. No. 558,335, Jul. 27, 1990, which is a continuation-in-part of Ser. No. 521,011, May 9, 1990, abandoned, which is a continuation-in-part of Ser. No. 324,705, Mar. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 416,262, Oct. 3, 1989, abandoned, which is a continuation-in-part of Ser. No. 480,586, Feb. 15, 1990, abandoned. This application Aug. 19, 1991, Ser. No. 747,414
Int. Cl.[5] A43B *7/06, 7/14*
U.S. Cl. 36—88 **20 Claims**



7. An adjustable fit shoe, comprising:
a shoe upper having an opening;
a ring at said shoe upper opening, secured to said shoe upper and having a ring opening;
a bladder disposed generally within said shoe upper, said bladder including first and second generally separate bladder chambers;

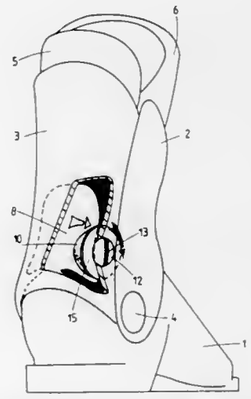
plunger means for controllably deflating said bladder;
a housing assembly in which said plunger means is at least partially disposed;
snap fit means for holding said housing assembly in said ring opening and allowing said housing assembly to rotate relative to said bladder, said housing assembly when in a first position communicates said plunger means with said first chamber and when in a different second rotation position communicates said plunger means with said second chamber; and
securing means for securing said housing assembly to said bladder.

5,253,436

SKI BOOT WITH FOOT WEDGING MEANS

Mario Mattiuzzo, Treviso, and Guido Robazza, Falze, both of Italy, assignors to Lange International S.A., Fribourg, Switzerland

Continuation of Ser. No. 399,864, Aug. 29, 1989, abandoned. This application Dec. 14, 1990, Ser. No. 629,069
Claims priority, application Switzerland, Oct. 11, 1988, 3790/88
Int. Cl.[5] A43B *5/04*
U.S. Cl. 36—119 **8 Claims**



1. A ski boot having an inner comfort liner (6) and auxiliary means for wedging at least a part of the foot, these means being adjustable from the outside, wherein the auxiliary wedging means are formed by at least a pair of independent cams oppositely mounted on both lateral sides of the feet, said cams mounted to rotate axially between the boot and the liner and fixed to a pivot (11) passing through the boot and provided on the outside with a means (13) permitting it to be driven in rotation.

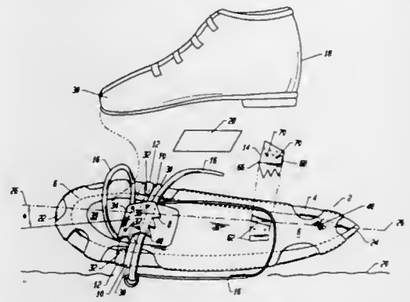
5,253,437

SNOWSHOE AND SNOWSHOE ACCESSORY

Perry A. Klebahn, 2633 Steiner St., and James D. Klingbeil, 2808 Broadway St., both of San Francisco, Calif. 94115

Filed Aug. 22, 1991, Ser. No. 748,425
Int. Cl.[5] A63C *13/00*; A43B *5/04*
U.S. Cl. 36—122 **8 Claims**

1. A snowshoe comprising:
a frame having front and back ends and defining a neutral plane;
a membrane covering at least part of said frame;
a front claw including a terrain facing surface and spaced apart sidewalls each defining a slot inclined with respect to said terrain facing surface;
a resilient strap, passing through the inclined slots in said front claw sidewalls and attaching to said frame, wherein said resilient strap pivotally attaches said front claw to said frame at an offset relative to said neutral plane whereby in an unloaded state said frame front end lies above a frontmost portion of said front claw, and urging said front claw to maintain said offset in a loaded state; and
means for attaching the snowshoe to a user's foot;



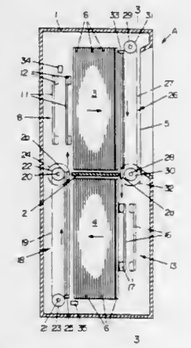
wherein said resilient strap permits the user's foot to pivot said front claw downward to increase friction between the snowshoe and underlying terrain, and upon lifting the snowshoe from the underlying terrain, said resilient strap urges the snowshoe and said claw to restore said offset.

5,253,438

DISPLAY APPARATUS AND DISPLAY METHOD USING THE SAME

Katsuji Norizuki, 2-7-17 Heiwa, and Hideo Kudoh, 2-12-23 Kusanagi, both of Shizuoka, Japan

Filed Jun. 3, 1991, Ser. No. 709,281
Claims priority, application Japan, Jun. 22, 1990, 2-165078; May 16, 1991, 3-111437
Int. Cl.[5] G09F *11/30*
U.S. Cl. 40—511 **6 Claims**



1. A display apparatus comprising:
a frame having an internal space;
first and second accommodation chambers formed in the internal space and defined by means of a partition plate;
a plurality of circulating members having display members with display portions facing in one direction, said circulating members being divided into two groups and stacked in the first and second accommodation chambers,
a display window formed in one side wall of the first accommodation chamber and having a size substantially equal to that of the circulating member,
first feed means situated in the first accommodation chamber and having a motor with a shaft, means comprising a cam attached to the shaft and a press-feed member contacting

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the cam for advancing the stack of circulating members in the first accommodation chamber toward the display window,

second feed means situated in the second accommodation chamber and having a motor with a shaft, means comprising a cam attached to the shaft and a press-feed member contacting the cam for advancing the stack of circulating members in the second accommodation chamber in a direction away from the display window,

first transport means for transporting one of the circulating members in the second accommodation chamber located away from the second feed means to the first accommodation chamber adjacent the first feed means, said first transport means having an endless belt extending parallel to a surface of the circulating member, an engagement piece attached to the endless belt for engaging with the circulating member, and a motor for rotating the endless belt,

second transport means for transporting one of the circulating members in the first accommodation chamber located adjacent the display window to the second accommodation chamber adjacent the second feed means, said second transport means having an endless belt extending parallel to a surface of the circulating member, an engagement piece attached to the endless belt for engaging with the circulating member, and a motor for rotating the endless belt,

first detection means situated near the first feed means, said first detection means detecting one movement of the circulating member in the first accommodation chamber by the first feed means and actuating the first and second transport means, and

second detection means situated near the first transport means, said second detection means detecting one movement of the circulating member in the second accommodation chamber by the first transport means and actuating the first and second feed means.

5,253,439

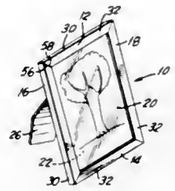
PICTURE FRAME AND METHOD OF FORMING SAME

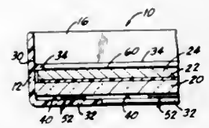
Victor Shanok, and Jesse P. Shanok, both of New York, N.Y., assignors to Silvatrim Associates, South Plainfield, N.J.

Filed Apr. 6, 1992, Ser. No. 863,788

Int. Cl.[5] G09F *1/12*

U.S. Cl. 40—152 **15 Claims**





1. A picture frame comprising:

an extruded plastic strip having an L-shaped construction to provide first and second legs perpendicular to each other, said second leg being notched at spaced apart intervals to permit said extruded plastic strip to be perpendicularly bent at said intervals to provide an upper frame portion, a lower frame portion and side frame portions connected together by said first leg in a rectangular configuration;

a picture frame glass;

first means for securing said picture frame glass to inner surfaces of said second leg to maintain said rectangular configuration, to prevent said frame portions from being pulled apart, and to prevent said picture frame glass from being separated from said frame portions;

said first means including a double-sided adhesive tape material disposed along said inner surfaces of said second leg of each of said frame portions and against associated portions of said picture frame glass;

a back plate; and

second means provided on said first leg for engaging said back plate to removably lock said back plate in place against a picture disposed on an inner surface of said picture frame glass to maintain the picture in a preselected position.

5,253,440

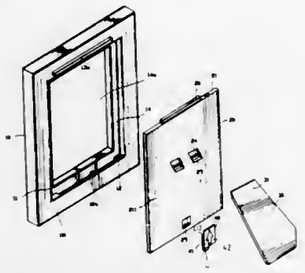
STRUCTURE OF A PICTURE FRAME

Thomas Chang, Suite 1, 11F, 95-8 Chang Ping Road, Sec. 1, Taichung, Taiwan

Filed Sep. 14, 1992, Ser. No. 944,392

Int. Cl.[5] G09F *1/12*

U.S. Cl. 40—152.1 **1 Claim**



1. A picture frame, comprising:

an injection molded frame member having a generally planar rear surface with a rectangular recess of predetermined dimensions formed thereon for housing a transparent window cover and print, said rectangular recess defining an inner land and surrounding lateral and longitudinal peripheral walls, the land having an inner peripheral edge circumscribing a viewing aperture of said picture frame, and each longitudinal peripheral wall having a groove formed therein;

an injection molded rectangular backing plate of predetermined thickness and similar rectangular dimensions with said rectangular recess, said backing plate having a projecting fin on a first longitudinal edge thereof parallel with and spaced from a rear surface of said backing plate, a slide aperture proximate a second longitudinal edge of said backing plate including an elongated recess on a front side of said backing plate extending from the second longitudinal edge thereof to the slide aperture, and at least a rectangular aperture on a central portion of said backing plate having a transverse axis rod offset so as to protrude from the rear surface of said backing plate;

an injection molded elongate support having at least a lateral member extending from a first side of a first end portion thereof and being spaced from a terminal edge on the first end portion, each lateral member having a resilient socket of C-shaped section on the terminal end thereof snap engaged with said corresponding axis rod on said backing plate to hingedly attach said support therewith, wherein the terminal edge of said support abuts the rear surface of said backing plate to limit the maximum angle of separation therebetween; and

a resilient catch member slidingly disposed in said slide aperture having a slide plate riding on the rear surface of said backing plate, and a L-shaped bolt element which has a depending arm slidingly retained in said elongated recess

of said slide aperture and a cross element adjoining said depending arm with said slide plate through said slide aperture, wherein said backing plate is releasably secured in said rectangular recess by inserting said fin thereon into one of said grooves in said rectangular recess and subsequently manipulating said slide plate of said catch member so as to engage said depending arm thereon with the other opposing groove in said rectangular recess.

5,253,441

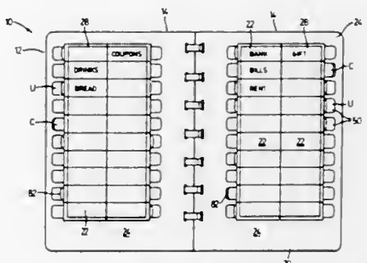
DEVICE FOR LISTING AND MARKING ITEMS AND ERRANDS

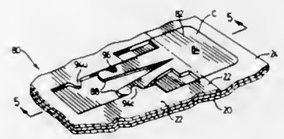
Fred Rachiele, 1 Automatic Road, Brampton, Ontario, L6S 4K6, and Ray Anderson, Vancouver, both of Canada, assignors to Fred Rachiele, Ontario, Canada

Filed May 4, 1992, Ser. No. 878,077

Int. Cl.[5] G09F *7/00*

U.S. Cl. 40—488 **5 Claims**





1. A device for presenting a list of items and for marking items in the list, comprising:

a) a plate having indicia on one side thereof;

b) indicator means located in adjacent relation to said indicia on said plate;

c) a plurality of slidable tab means for selectively covering said adjacent indicator means, each tab means having a cover tab and a pair of resilient legs;

d) a support member having a plurality of spaced, parallel guide channels, the pair of resilient legs of the slidable tab means being located in said parallel guide channels, each said slidable tab means being slidably movable between a covering position in which said cover tab is substantially covering said indicator means and an uncovering position in which said portion of said indicator means is not covered by said cover tab; and

e) locking means for locking said tab means in the covering or uncovering positions, wherein the locking means for each of said plurality of guide channels and the associated tab means comprises a pair of boss members protruding into the guide channel from opposed guide channel walls and an indentation located on a surface of each of said pair of resilient legs adjacent to the guide channel walls of said guide channel, the indentations for receiving therein a boss member in order to lock the tab means in the covering or uncovering position.

5,253,442

RIFLES WITH MULTI-MAGAZINE HOLDERS

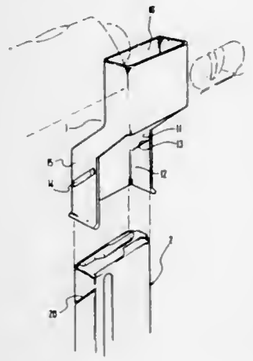
Jin-Taek Kim, 71-1 Uopnae-Li, Uljin-Uop, Uljin-Kun, Kyongsangbuk-Do, Rep. of Korea

Filed Jul. 24, 1992, Ser. No. 917,172

Claims priority, application Rep. of Korea, May 7, 1992, 92-7830

Int. Cl.[5] F41A *9/68*

U.S. Cl. 42—50 **4 Claims**



1. A rifle comprising:

a multi-magazine holder having:

a main magazine holder for receiving a main magazine being charged with bullets which are to be fed to a cartridge chamber of the rifle, said main magazine holder integrally extending from a main body of the rifle;

a subsidiary magazine holder for receiving a reserve magazine, said subsidiary magazine holder being integrally formed with said main magazine holder and parallel thereto and having an inclined snap bolt member which projects from an inner surface of the subsidiary magazine holder; and

a guide part for integrally connecting the main magazine holder to the subsidiary magazine holder and guiding said reserve magazine from the subsidiary magazine holder to the main magazine holder, said guide part integrally extending from a lowermost end of the main magazine holder to an uppermost end of the subsidiary magazine holder and being inclined with respect to the main magazine holder at an inclination angle; and

said reserve magazine being provided with a snap groove corresponding to said inclined snap blot member of the subsidiary magazine holder.

5,253,443

LASER-BEAM AIMING DEVICE

Michel Baikrich, 42 Xhierfomont, 4086 Stoumont, Belgium

PCT No. PCT/BE90/00059, § 371 Date Mar. 9, 1992, § 102(e) Date Mar. 9, 1992, PCT Pub. No. WO91/19157, PCT Pub. Date Dec. 12, 1991

PCT Filed Oct. 16, 1990, Ser. No. 838,414

Claims priority, application Belgium, Jun. 6, 1990, 9000571

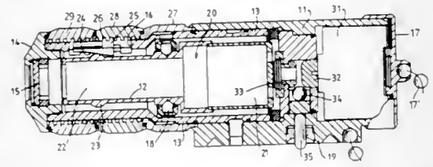
Int. Cl.[5] F41G *1/35*

U.S. Cl. 42—103 **23 Claims**

1. A laser-beam aiming appliance, comprising a sleeve (13) which contains a laser generator (20) having a gun (22) held by three bearing members arranged in angular positions spaced from one another, a first bearing member being arranged in a radial position located in a vertical axial plane, whilst a second bearing member is arranged in a radial position located in a horizontal axial plane, wherein each of the first and second bearing members consists of a slide (25, 25') having a bearing face (24, 24') which extends in a plane oblique relative to the

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axial plane perpendicular to the radial direction of the bearing member under consideration, the oblique bearing face (**24, 24'**) of each slide co-operating with a rib (**23**) projecting on the outer surface of the gun (**22**) of the laser generator (**20**), the face of the slide (**25, 25'**) which is opposite the abovementioned bearing face having a thread (**26, 26'**) meshing in a thread



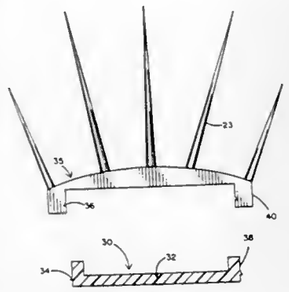
formed in the inner surface of a ring (**28, 29**), in such a way that the rotation of said ring (**28, 29**) causes the displacement of the slide (**25, 25'**) parallel to the axis of the sleeve (**13**), whilst the abovementioned oblique bearing face (**24, 24'**) displaces the axis of the gun (**22**) of the laser generator parallel to the radial direction under consideration.

5,253,444

BIRD REPELLENT APPARATUS FOR WINDOW SILLS AND THE LIKE

Bruce A. Donoho, 24362 Via Madrugada, Mission Viejo, Calif. 92692, and Richard V. Wells, 28242 San Marcos, Mission Viejo, Calif. 92691

Filed Aug. 31, 1992, Ser. No. 937,304
Int. Cl.[5] A01M *29/00*
U.S. Cl. 43—1 **1 Claim**



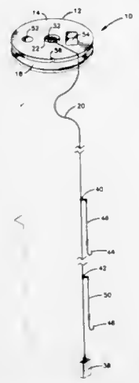
1. A bird repellent apparatus comprising:
a base member of elongated generally rectangular C-shaped cross-section terminating in opposing side members having elongated oppositely facing ridges at least one said ridge extending along the outer surface of each of said side members;
at least one top member having a top surface from which a plurality of point-tipped prongs extend for repelling birds, and having a bottom surface of C-shaped configuration including side flanges separated for extending over the expanse of said side members; the inner surface of each of said side flanges being in contiguous engagement with the respective outer surfaces of said side members; said inner surfaces of said side flanges of said top member having elongated recesses for receiving said oppositely facing ridges of said side members of said base member for locking said base member to each said top member.

5,253,445

DISCOIDAL FISHING FLOAT

Bert Spoonemore, Rte. 10, Box 22, Moore, Okla. 73165

Filed Sep. 24, 1992, Ser. No. 950,289
Int. Cl.[5] A01K *85/01*
U.S. Cl. 43—17 **13 Claims**



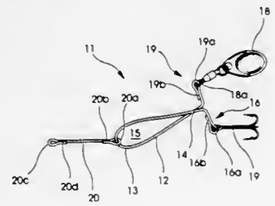
1. A fishing device comprising:
a discoidal float constructed of a buoyant material and having opposite first and second substantially flat surfaces which are visually distinct, said float being constructed to float on the water surface in a stable condition with said first surface facing upwardly in a visible position;
an elongated fishing line having opposite first and second ends and carrying fish hook means between said ends;
a generally circular periphery on said float presenting a groove in which said line can be wound in a stored condition;
a first recess in said first surface of the float for receiving said weight in a storage condition;
a second recess in said first surface of the float spaced from said first recess, said second recess being located to receive the thumb while fingers are received in said first recess to facilitate gripping and holding the float while said line is being wound in said groove;
a weight on said first end of the fishing line; and
means for connecting said second end of the fishing line to said float in a manner to effect inversion of the float in response to downward pulling of the fishing line when a fish strikes on said hook means, thereby making said second surface visible to provide a visual indication of a strike.

5,253,446

FLOW-THROUGH FISHING LURE

Donald E. Ogle, 906 N. Webster, Kokomo, Ind. 46901

Filed Mar. 9, 1992, Ser. No. 848,104
Int. Cl.[5] A01K *85/00*
U.S. Cl. 43—42.13 **18 Claims**



1. A fishing lure comprising:

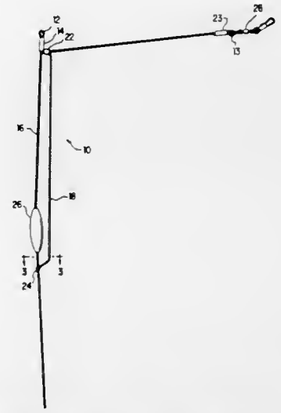
a substantially elliptical ring having a center opening, said ring corresponding generally in profile and size to a fishing bait, and wherein said ring allows fluid to flow transversely through said center opening as said ring is drawn through a body of water in a direction perpendicular to fluid flow in the body of water, wherein said ring includes a first projection and a second projection extending out from said ring;
a fishing hook mounted to said first projection of said ring;
a link attached to and slidably engaging said ring, said link including a loop therein for receiving a fishing line;
means for attracting fish attached to said second projection of said ring; and
wherein the attitude of said lure is substantially stable as it is drawn through water.

5,253,447

BOTTOM BOUNCER JIG FOR WALLEYES

Lavern R. Rhinehart, 408 ½- 9th Ave. NE., Mandan, N. Dak. 58554

Filed Jul. 24, 1992, Ser. No. 918,227
Int. Cl.[5] A01K *95/00*
U.S. Cl. 43—42.74 **2 Claims**



1. A fishing jig for trolling or bottom fishing comprising:
a continuous metal wire bent into a configuration of two depending legs of unequal length and a loop formed at the juncture of said legs,
a trailing arm,
a sleeve proximate said loop and surrounding said two depending legs and one end of said trailing arm,
the shorter of said two legs being provided with a wound eye,
the longer of said two legs being substantially linear from said loop to a distal end thereof and being captured by said wound eye of said shorter leg,
the other end of said trailing arm being provided with a loop.

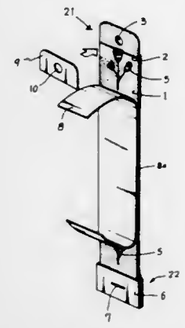
5,253,448

ADHESIVE RIBBON FOR CATCHING FLIES

Gilgyu Byom, 375-1, Dokchon 1 dong, Buk-ku, Pusan, Rep. of Korea

Filed Oct. 13, 1992, Ser. No. 960,552
Claims priority, application Rep. of Korea, Mar. 17, 1992, 92-4415
Int. Cl.[5] A01M *1/14*
U.S. Cl. 43—114 **4 Claims**

1. An adhesive ribbon for catching flies comprising:
a band-shaped adhesive paper having two sides and an upper part and a lower part, the upper part having a groove thereon for folding the upper part and the upper part also having a vent therethrough;
a floral design printed on each side of the paper;
a transparent adhesive agent coated on both sides of the adhesive paper except for the upper part;



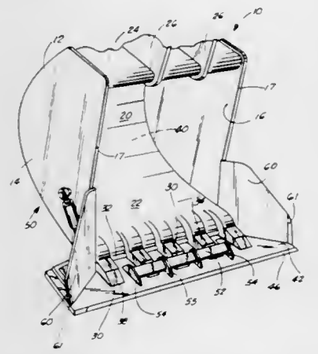
a millboard attached to the lower part of the adhesive paper; and
an oiled paper removably attached to both sides and the upper part of the adhesive paper.

5,253,449

DETACHABLE FINISHING BLADE FOR EXCAVATING BUCKET

Kenneth W. Webb, 5609 N. Heatherstone, Shreveport, La. 71129, and Steven W. Pohl, 10038 Gordord Rd., Bethany, La. 71007

Filed Sep. 28, 1992, Ser. No. 952,057
Int. Cl.[5] E02F *3/76*
U.S. Cl. 37—446 **9 Claims**

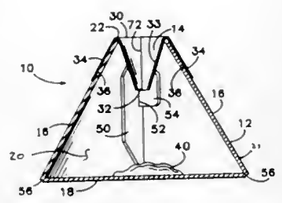


1. An improved excavating bucket, comprising:
a) a pair of sidewalls, a rear wall, a floor portion and an open front portion for receiving material thereinto;
b) a plurality of teeth members secured to the floor portion for digging into material to be excavated;
c) a finishing blade mounted to the bucket, the blade extending across a width greater than a width of the bucket opening, and having a forward edge for scraping;
d) a raised channel formed on an upper face of the blade for engaging a plurality of the teeth members;
e) means extending from outer edges of the blade for engaging a wall of the bucket, for defining an uninterrupted travelling space for material into the bucket; and
f) adjustable mounting means extending between the bucket

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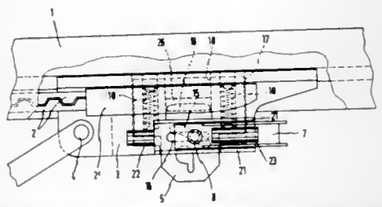
wall and the blade for allowing swivelling of the blade mounting means.

5,253,450
INSECT TRAP
Scott Muramatsu, 13311 SE. Beech, Milwaukie, Oreg. 97222
Filed Aug. 3, 1992, Ser. No. 923,824
Int. Cl.[5] A01M *1/10*
U.S. Cl. 43—122 7 Claims



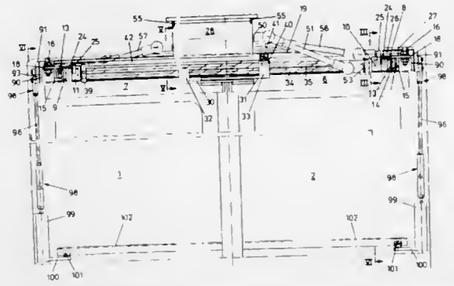
1. An insect trap, comprising:
(a) a first blank of pliable material having fold lines;
(b) a second blank of pliable material; and
(c) said first blank and said fold lines being arranged such that said first blank can be manipulated along said fold lines into a multifaceted chamber having an interior cavity and an exterior surface defining a port open to said cavity and said second blank can be manipulated revolutely into a tubular surface that can be suspended within said cavity through said port in a manner to produce an inlet into said interior cavity and said tubular surface can be attached to said exterior surface in a manner to join together the facets of said multifaceted chamber.

5,253,451
DRIVING APPARATUS
Michael Hörmann, Marienfeld, Fed. Rep. of Germany, assignor to Marantec Antriebs - und Steuerungstechnik Gmbh & Co. Produktions oHG, Marienfeld, Fed. Rep. of Germany
Filed Feb. 24, 1992, Ser. No. 840,742
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1991, 4105872
Int. Cl.[5] E05F *15/00*
U.S. Cl. 49—139 11 Claims



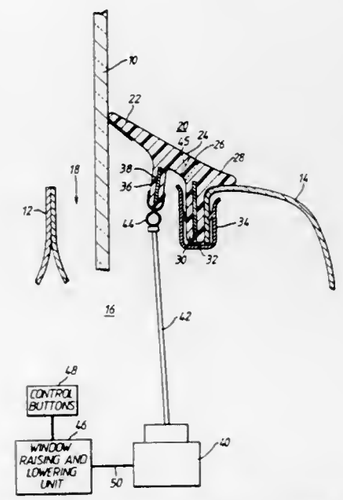
1. A drive for a member moving back-and-forth between a closed position and an open position particularly building or terrain closures in form of at least a one-part door, sliding door, shutter, weather shield, or overhead movable door, said drive comprising: a guide block on a guide rail; motor means for driving said guide block along said rail, said guide block being connected to said member; a manually-actuated locking system between a driving element moved along said guide rail by said motor means and said member for connecting and disconnecting said member from said driving element when said motor means fails; said locking system having a guide block component movable along said guide rail and a coupling element engaging drivingly said driving element when in a coupled state; said guide block component having a guide recess for holding movably said coupling element substantially vertically with respect to a direction of motion of said guide block component; spring means having a force acting on said coupling element to slide said coupling element between a coupling position and an uncoupling position, said force of said spring means urging said coupling element towards said coupling position; an actuating element slidable on said guide block component and operatively connected to said coupling element through a bolt stationary with said actuating element; said coupling element having sliding edge means formed in said coupling element and engaged by said bolt; said sliding edge means having a rest section extending substantially perpendicular to a direction of said force of said spring means, and having an actuating section extending inclined to said direction of said force at an angle between 90° and 180°, said locking system being a two-part system of said coupling element and said actuating element connected together by said bolt and sliding edge.

5,253,452
SWIVEL-SLIDING DOOR SYSTEM FOR A VEHICLE
Horst Goldbach, Ratingen, Fed. Rep. of Germany, assignor to T.B.L. Beheer B.V., Leeuwarden, Netherlands
Filed Aug. 14, 1992, Ser. No. 931,035
Int. Cl.[5] E05D *15/10*
U.S. Cl. 49—212 30 Claims



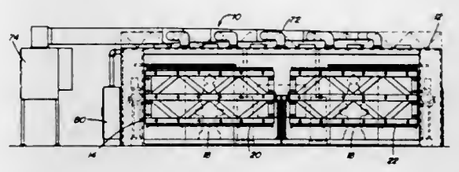
1. Swivel-sliding door system for a vehicle having at least one door leaf situated in the vehicle wall in the closed state, and situated on the outside in front of the vehicle wall in the open state and leaving the door opening free under these circumstances, drive means, and transverse guide means and longitudinal guide means being provided which make possible a movement of at least one door leaf transversely with respect to the vehicle wall and along the vehicle wall, wherein the longitudinal guide means comprise a bearing rail (4) which extends over essentially the entire width of the door opening and is coupled to drive members which can cause the bearing rail to execute a movement transversely to the vehicle wall (3), the bearing rail being provided with a first set of rollers (62,63) which run in the bearing rail and are supported on spindles which are mounted on a coupling member extending beyond the bottom of the bearing rail, which coupling member is provided with a second set of rollers (66,67) which are situated in a lower position and interact with a door rail (6) situated under the bearing rail and attached to the top of the door leaf (1,2).

5,253,453
SEALING ARRANGEMENTS
Klaus P. Maass, and Peter Frommen, both of Viersen, Fed. Rep. of Germany, assignors to Draftex Industries Limited, Edinburgh, Scotland
Filed Nov. 13, 1991, Ser. No. 792,014
Claims priority, application United Kingdom, Dec. 12, 1990, 9026961.4; Dec. 18, 1990, 9027383.0
Int. Cl.[5] E05F *11/38*
U.S. Cl. 49—377 15 Claims



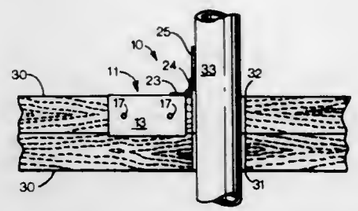
1. A sealing arrangement for controllably sealing against a window glass slidable in a predetermined path, comprising
a sealing lip made of flexible material and defined by a first portion of the material,
a support positioned alongside the predetermined path,
means connecting the sealing lip to the support for mounting the sealing lip adjacent the predetermined path,
a second portion of the flexible material depending transversely from the first portion thereof,
a reinforcing member embedded in the second portion of the flexible material so as to render it relatively rigid,
controllable mechanical force-producing means in contact with the second portion of the flexible material and operative when activated to apply a mechanical force to the second portion of the flexible material which force to the second portion of the flexible material which force is transmitted by the second portion to the first portion of the flexible material such as to move the sealing lip between first and second positions in which it is respectively out of and in sealing contact with the window glass, the flexible material having inherent resilience which biases the sealing lip into one of the first and second positions, the mechanical force moving the sealing lip into the other of the first and second positions,
the mechanical force-producing means being capable when additionally activated to produce a further mechanical force on the second portion of the flexible material so as to move the sealing lip past the said second position into a third position in which it is in enhanced contact with the window glass, whereby to wipe the latter as the glass slides, and
sealing lip control means operable independently of sliding movement of the window glass to activate the mechanical force-producing means.

5,253,454
METAL SKIN BUFFING FIXTURE AND STRUCTURE
Don F. Carlson, Bloomfield Hills, and Richard Koch, Mt. Clemens, both of Mich., assignors to Acme Manufacturing Company, Madison Heights, Mich.
Division of Ser. No. 677,457, Mar. 29, 1991, Pat. No. 5,203,120. This application Dec. 23, 1992, Ser. No. 996,040
Int. Cl.[5] B24B *41/06*
U.S. Cl. 51—240 R 13 Claims



1. A structure for supporting a plurality of large and thin metal skins to permit said metal skins to be subjected to a finishing operation, comprising:
a plurality of individual fixtures, each of said fixtures having form means for removably supporting substantially an entire side of at least one of said metal skins;
at least one trunnion table mounted for rotation along a horizontally disposed axis, said trunnion table having positioning means for removably securing at least one of said fixtures; and
motive power means for rotating said trunnion table.

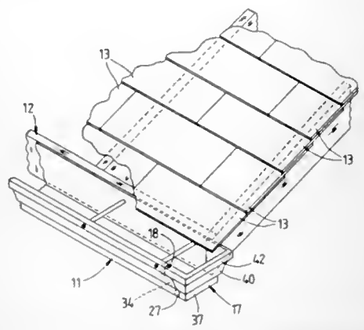
5,253,455
FIRE DAMPER
Jeffery M. Cross, 122 Hickory Trail, Cumming, Ga. 30130
Continuation-in-part of Ser. No. 535,464, Jun. 8, 1990, abandoned. This application May 20, 1991, Ser. No. 702,182
Int. Cl.[5] E04B *1/00*
U.S. Cl. 52—1 8 Claims



1. A fire damper for closing off an opening to a passageway in a building structure, comprising:
(a) mounting means adapted to be secured to a portion of the building structure, said portion being situated on only one side of the opening;
(b) a single gate with at least one face;
(c) at least one torsion spring having a coil and first and second arms extending thereform, the first arm being fixedly attached to said face of the gate; and
(d) a spring support which is fixedly attached to the mounting means, a section of the spring support being spaced apart from the mounting means; the coil having a through passageway for receiving said spaced apart section of the spring support; only the spring and the spring support pivotally connecting the gate and the mounting means; the second arm of the torsion spring being disposed between the gate and the mounting means, the second arm abutting the mounting means, the first and second arms of the spring urging the gate away from the mounting means.

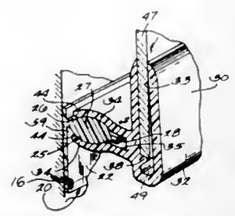
VOL 1155 ISS 3 OCT 19 1993 UMI

5,253,456
ENDCAP FOR RAIN GUTTERS
James A. Todd, Gadsden, Ala., assignor to RainGard of Alabama, Inc., Rainbow City, Ala.
Filed Mar. 16, 1992, Ser. No. 851,965
Int. Cl.[5] E04D *13/06*
U.S. Cl. 52—11 8 Claims



1. A trough type rain gutter having a substantially vertical U-shape defining an end thereof, said rain gutter connected to a fascia board defining a lower portion of a shingle support structure said fascia board having an end, said shingle support structure having a plurality of shingles extending laterally beyond said lower portion and longitudinally beyond said end of said fascia board and said U-shaped end, the improvement comprising:
(a) a flat bottom mounted to a lower portion of said U-shaped end and extending horizontally therefrom adjacent to said end of said fascia board;
(b) a first end wall attached to said bottom opposite said U-shaped end and extending diagonally upwardly and outwardly from said bottom beyond said end of said fascia board and past said longitudinal extension of said plurality of shingles to capture runoff water falling from said plurality of shingles beyond said end of said fascia board;
(c) a second wall integrally connected to said first wall and to said bottom, said second wall extending within said rain gutter at said U-shaped end; and
(d) a third wall integrally connected to said first end wall and to said bottom, said third wall extending within rain gutter adjacent to said U-shaped end.

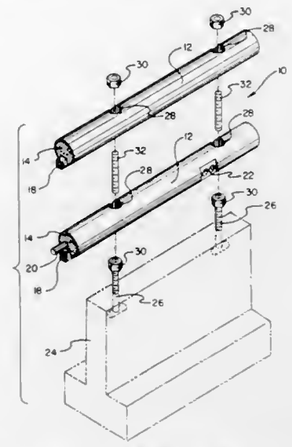
5,253,457
MOUNTING FOR STORM WINDOWS
Robert W. Orth, 1073 Burns Ave., St. Paul, Minn. 55106
Division of Ser. No. 611,486, Sep. 24, 1990, Pat. No. 5,086,604, which is a continuation of Ser. No. 392,805, Sep. 20, 1990, abandoned. This application Dec. 13, 1991, Ser. No. 807,072
Int. Cl.[5] E06B *3/26*
U.S. Cl. 52—202 2 Claims



1. A storm window and decorative cover assembly for mounting to a window casing so that the storm window and the decorative cover can be interchanged comprising:
an extruded male retainer for positioning around a window casing, the extruder male retainer having an enlarged bulb with a convex outer surface having a tip extending therefrom in a first direction to limit movement thereabout the extruded male retainer having a ridge extending an entire length of said male retainer entire length, said ridge extending in a second direction opposite from said first direction, the ridge having a relatively narrow neck adjacent the enlarged bulb to allow the enlarged bulb to flex with respect to the male retainer, said neck having an outwardly projecting integral strip for receiving permanent attachment means for attaching the male retainer to the window casing;
a storm window having first flanges for mounting in a pivoting relationship on the male retainer with the tip limiting the amount of pivoting, the first flanges having engagement means for engaging only the enlarged bulb with a convex outer surface to thereby permit the storm window to pivot and flex to a limited extent with respect to the male retainer to facilitate application of the storm window and the male retainer as an assembled unit to the window casing while the male retainer remains engaged with the storm window; and
a decorative cover for covering the enlarged bulb, the decorative cover having first flanges projecting outward from the decorative cover, the decorative cover having second flanges extending outward from said decorative cover for mounting in a pivoting relationship on the male retainer, the second flanges located between said first flanges and having engagement means for engaging only the enlarged bulb with a convex outer surface to thereby permit the storm window to pivot and flex to a limited extent with respect to the male retainer, the decorative cover having no means for supporting a storm window to the male retainer, the decorative cover projecting outward so that the decorative cover hides from view the enlarged bulb and the engagement means when the storm window is replaced with the decorative cover to add a finished look to the male retainer and protect the enlarged bulb and the ridge from exposure to the sunlight when the storm window is not in place on the male retainer.

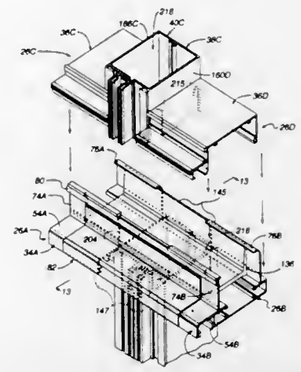
5,253,458
SIMULATED LOG AND PANEL PREFABRICATED HOUSE STRUCTURE
Dean Christian, 310 Dolph Rd., Mankato, Minn. 56001
Filed Feb. 21, 1992, Ser. No. 838,861
Int. Cl.[5] E04B *1/10*
U.S. Cl. 52—233 1 Claim

1. A simulated log structure comprising:
at least one hollow plastic tube having an external simulated wood grain surface;
an insulation core positionable within said tube;
an electrical conduit positionable within said insulation core and at least one electrical outlet in the side of said hollow tube connected to said electrical conduit,
a horizontally extending groove molded along a complete axial length of said tube;
a rubber seal retained within said groove, thereby to provide a sealing function between a pair of said tubes when said tubes are juxtaposed together
a steel reinforcing rod member positionable within said insulation core,
said simulated log structure further comprising a plurality of cross-extending through-directed apertures for facilitating an interconnection of a plurality of said plastic tubes.
said simulated log structure further including threaded fastening rods positionable within said cross-extending apertures, said rods adapted to be connectable together through a use of double ended nuts and T-bolts adapted to be selectively positionable within a concrete foundation, said T-bolts forming an initial connection of said plastic tubes in said structure,
said simulated log structure further including at least one additional hollow plastic tube having an external simulated wood grain surface to serve as a roof truss, said roof truss hollow plastic tube having an insulation core positionable therein and a steel reinforcing rod member positionable within said insulation core, and



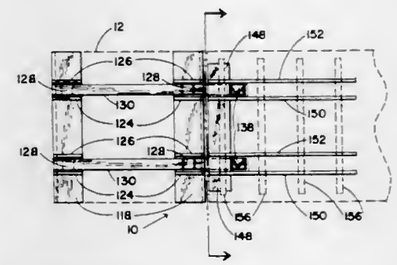
an end cap adapted to be affixed to said roof truss hollow plastic tube, said end cap having a simulated wood grain surface appearance.

5,253,459
CURTAIN WALL STURCTURE
Benigno N. Parinas, Whitby; Elio P. Toffoli, Don Mills, and Jesse G. Vokey, Scarborough, all of Canada, assignors to Robertson-Ceco Corporation, Boston, Mass.
Filed Jun. 24, 1991, Ser. No. 720,281
Int. Cl.[5] E06B *3/54*
U.S. Cl. 52—235 9 Claims



1. A four corner joint between first and second lower modular frame assemblies and third and fourth upper modular frame assemblies of a curtain wall structure comprising:
each modular frame assembly comprising a head rail and a sill rail extending in parallel, a first mullion section and a second mullion section extending in parallel and secured to opposite ends of said head rail and said sill rail;
the first and second mullion sections having mating structure such that the first mullion section of one modular frame assembly slidingly interlocks with the second mullion section of an adjacent modular frame assembly in side-by-side relation; the head and sill rails having mating structure such that the sill rail of an upper modular frame assembly slidingly interlocks with the head rail of a lower modular frame assembly in top-to-bottom relation;
the head rails of adjacent interlocked modular frame assemblies being separated by interlocked first and second mullion sections and having a gap therebetween;
alignment means spanning across said gap and between adjacent head rails of said first and second lower modular frame assemblies, structurally connecting the adjacent head rails in axially aligned relation;
said adjacent head rails each presenting spaced-apart outboard and inboard upstanding walls defining an alignment channel extending parallel with said head rails;
said alignment means having opposite ends captively retained in the alignment channels of said adjacent first and second lower modular frame assemblies;
filler strip means disposed between said alignment means and said lap strip means, and comprising a continuity of said outboard upstanding walls;
the adjacent head rails of said first and second lower modular frame assemblies presenting spaced-apart panel receiving structure projecting outwardly of said alignment means and having a space therebetween; and
lap strip means spanning across said space and overlying said spaced-apart panel receiving structures of said first and second lower modular frame assemblies;
said alignment means and said lap strip means cooperating to preclude ingress of wind driven rain and moisture through said four corner joint.

5,253,460
COLUMN ASSEMBLY
George Simenoff, 191 King Street, Weston, Ontario M9N 1L8, Canada
Continuation-in-part of Ser. No. 642,069, Jan. 16, 1991, Pat. No. 5,123,220. This application Jun. 22, 1992, Ser. No. 902,709
The portion of the term of this patent subsequent to Jun. 23, 2009, has been disclaimed.
Int. Cl.[5] E04B *1/00*
U.S. Cl. 52—252 12 Claims



1. A column assembly, comprising in combination:
a first column having a first end and a second end;
at least one first threaded rod extending from said second end of said first column;
a second column having a first end and a second end;
at least one second threaded rod extending from said first end of said second column in axial and contiguous alignment with said first threaded rod defining a space between said second end of said first column and said first end of said second column;
a threaded sleeve threadably interconnecting said first threaded rod and said second threaded rod;
a column anchor positioned in a side of said first column adjacent to said second end of said first column;
beam means.
a beam anchor connected relative to said beam means; and

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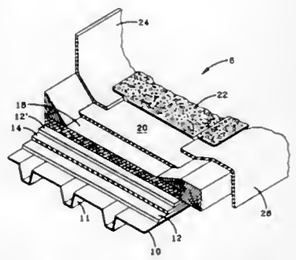
a bracket for interconnecting said column anchor and said beam anchor.

5,253,461

FASTENER-FREE ROOFING SYSTEM AND METHOD

Ronald J. Janoski, Chagrin Falls; Gregory Rudolph, Novelty; Rick J. Gibson, North Olmsted, and Donald C. Portfolio, Solon, all of Ohio, assignors to Tremco, Inc., Beachwood, Ohio

Filed Dec. 21, 1990, Ser. No. 633,561
Int. Cl.[5] E04B *1/74*; E04D *11/02*; E04G *23/00*
U.S. Cl. 52—408 18 Claims



1. A roofing system, said system comprising:

a roof deck comprising a metal, concrete, gypsum or wood substrate, and rigid panel roofing insulation including prefabricated boards and poured insulating concrete fills having adequate shear strength to distribute tensile stresses in a membrane to prevent it splitting, compressive strength to withstand traffic, and adhesive and cohesive strength to resist delamination due to wind uplift forces up to 90 lb/ft^2, secured thereto with a dispersion of asphalt which is liquid or semi-liquid at room temperature, suspended within a liquid isocyanate end-capped polyurethane prepolymer as an adhesive;

wherein said roof deck has a slope less than 25° C. relative to the horizontal, said adhesive in its uncured state is substantially flowable, comprising asphalt and a compatibilizer and optionally a filler or a non-reactive diluent, dispersed in at least about 20 weight percent of a curable polyisocyanate prepolymer,

wherein said compatibilizer has a non-polar component and a polar organic component, and is a polymeric material consisting essentially of a polymer unit, or two such units being either identical or different and linked together by an ester, carbon or ether bond, said unit having the following formula:

$$CH_3—(C_nH_{2n})—R_1$$

wherein: n is 4 or more, and

R_1 is COOH, COO^-M^+, $COOR_2$ or R_2,

wherein: M is a metal, and

R_2 is a saturated organic chain having a backbone comprising carbon-carbon, carbon-oxygen, or carbon-nitrogen linkages, or combinations thereof, wherein the backbone's pendent constituents are either —H or —OH and wherein at least one pendent constituent is —OH, and

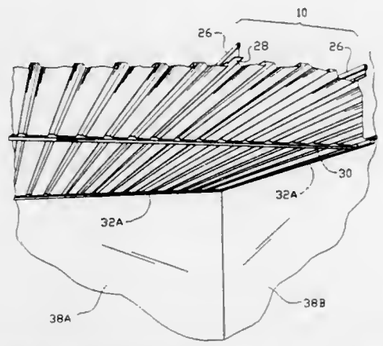
said adhesive cures within 10 hr to secure said insulation to said roof deck without mechanical fasteners.

5,253,462

FLUTED METAL LAY-IN SUBCEILING PANEL

Jacob H. Blitzer, 400 S. Saltair, Los Angeles, Calif. 90049, and Richard M. O'Toole, 4495 Huntley Ave., Culver City, Calif. 90302

Filed Jan. 24, 1992, Ser. No. 824,944
Int. Cl.[5] E04B *9/00*
U.S. Cl. 52—484 12 Claims



1. A panel system for a subceiling of the type having panels supported on a grid system of inverted T-bar framework of main runners and cross runners suspended from building structure above, said panel system comprising:

a plurality of like rectangular panels formed from sheet metal, each panel having a pair of end edges at opposite ends thereof and a pair of side edges at opposite sides thereof, each said panel being formed to define an array of like adjacent parallel flutes each having a bottom portion flanked by a pair of opposed sidewall portions formed integrally therewith from the sheet metal, adjacent pairs of flutes being joined at upper edges thereof via a generally horizontal top spacer strip formed integrally therewith from the sheet metal;

side support means comprising a pair of flat horizontal side support strips extending one along each of the two side edges thereof so as to form a continuation from the upper edge of each of a pair of opposed outermost sidewall portions, said side support strips having a width less than half that of the top spacer strips, said side support strips being adapted to support said panel along side edges thereof upon upper surfaces of T-bar flanges extending horizontally at a low extremity of adjacent pairs of inverted T-bar subceiling support cross runners in a manner to dispose the top spacer strips at an elevation approximating that of the T-bar flanges, and to dispose the upper edges of each of a pair of opposed outermost sidewall portions immediately adjacent to a corresponding T-bar flange edge, thus causing a lower surface of the flange to be exposed downwardly, the top spacer strips being formed to simulate, as viewed from beneath, the exposed lower surface of the flange; and

end support means comprising a plurality of flat horizontal extensions in an upper plane of said panels at opposite ends thereof, extending over outer edges of corresponding ones of the main runner flanges so as to provide support of said panels thereupon;

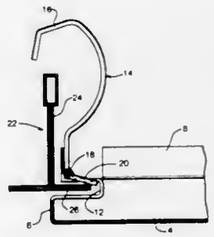
whereby said plurality of panels, placed side by side in the subceiling grid system, is enabled to form a continuous pattern of adjacent parallel flute shapes, as viewed from beneath, such that the presence of the cross runners between the panels is caused to be substantially disguised by similarity between the lower surfaces of the top spacer strips and the exposed lower surfaces of T-bar flanges.

5,253,463

SAFETY MECHANISM FOR A KERFED CEILING PANEL

Brian E. Witmyer, Lititz, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Nov. 25, 1992, Ser. No. 981,380
Int. Cl.[5] E06B *3/54*
U.S. Cl. 52—484 5 Claims



1. A safety mechanism for a kerfed ceiling panel comprising:

(a) a ceiling panel having a front face, four sides and a back with at least a partially open area, two opposed sides each having a kerf extending along the length of the side;

(b) the improvement being at least one hook shaped element positioned on at least one of the opposed sides, said hook shaped element having a J-shaped open end, a mid-region pivot point and activator flange on the other end;

(c) said hook being pivotally fastened to a side of the coiling panel with a kerf, the activator flange being positioned in the kerf and the J-shaped open end being positioned in the partially open area in the back of the ceiling panel in a first position; and

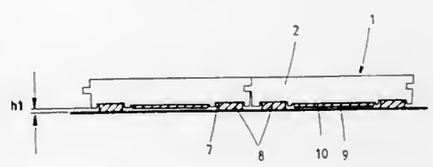
(d) means inserted in the kerf moving the activator flange around the pivot point to move the J-shaped end to a second position with the inverted J-shaped open end positioned above and over and just beyond the side of the coiling panel.

5,253,464

RESILIENT SPORTS FLOOR

Bjarne Nilsen, Kristiansand S, Norway, assignor to Boen Bruk A/S, Tveit, Norway

Filed Apr. 19, 1991, Ser. No. 688,639
Claims priority, application Norway, May 2, 1990, 901951
Int. Cl.[5] E04B *5/02*
U.S. Cl. 52—508 2 Claims



1. A resilient floor for installation over a sub-floor comprising:

a top layer having an underside and comprised of a plurality of boards which engage each other to form a coherent sheet, each of said boards having first and second parallel recesses, said sheet defining spaced apart recessed in the underside each of a given width and depth;

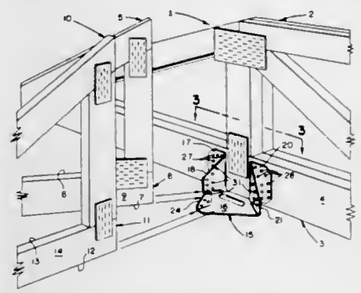
a resilient strip in each recess having a lesser width and a greater height than the recess width and depth so that the resilient strip supports said top layer on said sub-floor when no load is applied to said top layer, whereby the application of a load on the top layer compresses said resilient strips and said strips thereby resiliently support the top layer on the sub-floor until the load is sufficiently large to compress the strips so that their height equals said depth of the recess and their width is still less than said recess width when the underside of said top layer contacts said subfloor.

5,253,465

MULTIPLE FRAMING MEMBER CONNECTION

Tyrell T. Gilb, Berkeley, Calif., assignor to Simpson Strong-Tie Company, Inc., San Leandro, Calif.

Filed Feb. 26, 1992, Ser. No. 841,422
Int. Cl.[5] C04C *3/02*
U.S. Cl. 52—643 8 Claims



1. A multiple truss connection comprising:

a. a support girder including a wood bottom chord having a front face;

b. a first truss including a wood bottom chord having a bottom edge, an end edge face, and parallel first and second sides;

c. a second truss including a wood bottom chord having a bottom edge, an end edge face and parallel first and second sides;

d. a sheet metal hanger including:

(1) a seat member for receiving said bottom edges of said first truss and said second truss,

(2) a first backwall member in registration with said front face of said wood bottom chord of said support girder and clear of said end edge faces of said first and second truss,

(3) a first side member integrally connected to said first backwall member at an acute angle and integrally connected to said seat member,

(4) a second backwall member laterally spaced from said first backwall member in registration with said front face of said wood bottom chord of said support girder and clear of said end edge faces of said first and second truss,

(5) a second side member integrally connected to said second backwall member at an acute angle and at an obtuse angle with said first side member and integrally connected to said seat member,

(6) a flange member having first and second faces integrally connected to said seat member and extending upwardly therefrom and disposed at a right angle to said first and second back backwall members,

e. said end edge face of said first truss is mounted in abutment with said front face of said support girder;

f. said end edge face of said second truss is mounted in abutment with said front face of said support girder;

g. first nail or screw fasteners inserted through said first backwall member into said wood bottom chord of said support girder;

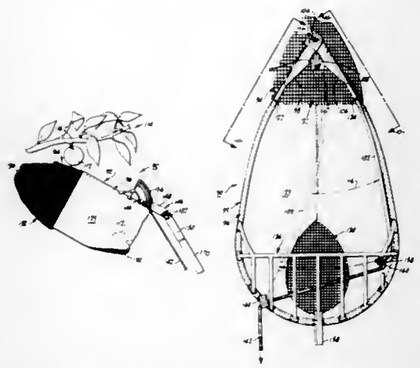
h. second nail or screw fasteners inserted through said second backwall member into said wood bottom chord of said support girder;

i. third fasteners inserted through said sheet metal hanger into said first truss; and

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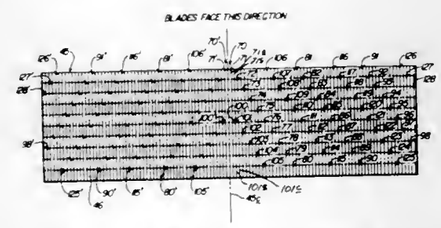
j. fourth fasteners inserted through said sheet metal hanger into said second truss.

5,253,466
FRUIT HARVESTING DEVICE
Jose A. Chua, 3915 Fruitvale Ave., Oakland, Calif. 94602
Continuation-in-part of Ser. No. 678,739, Apr. 1, 1991, Pat. No. 5,142,854. This application Feb. 28, 1992, Ser. No. 843,251
Int. Cl.[5] A01D *46/22, 46/24*
U.S. Cl. 56—335 10 Claims



1. A fruit harvesting device comprising:
a. a frame member including a first cutting edge portion;
b. a second cutting edge portion linked to said frame member and positioned adjacent said first cutting edge portion, said first and second cutting edge portions forming a converging channel for severing attachment of the fruit to the biological entity; and
c. handle means connected to said frame member for permitting the user to grip said frame member, said converging channel positioned at said frame member opposite to said connection of said handle to said frame member; and
d. a bag connected to said frame member, said bag including a portion extending outwardly transversely from said frame member in the immediate vicinity of said converging channel, and at a position on said frame member opposite to said connection of said handle to said frame member.

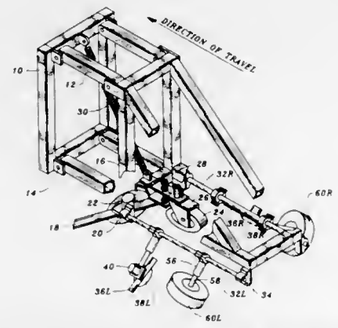
5,253,467
COMPOSTING APPARATUS
Fletcher Sims, Jr., Rte. 1, Box 202, Canyon, Tex. 79015
Filed Feb. 20, 1992, Ser. No. 839,399
Int. Cl.[5] A01D *43/02, 43/04*
U.S. Cl. 56—372 20 Claims



1. A method of aerating compost comprising the steps of: moving a first blade upwardly along a first path through a central portion of a pile of compost to form a first swath; moving a second blade upwardly along a second path overlapping a portion of the first path to form a second swath while moving material transversely of the first and second paths such that material moved by the second blade to form the second swath is deposited in the first swath to aerate material in the compose pile.

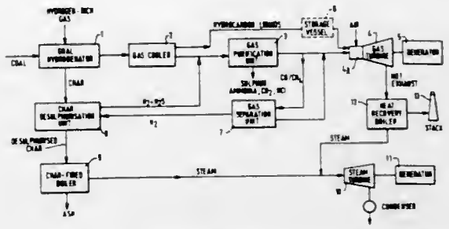
8. Composting apparatus comprising: a cylindrical drum; a plurality of blade holders on said drum, said blade holders being arranged in a first array along a first helical path around the circumference of one end of said drum and in a second array along a second helical path around the circumference of said one end of said drum, said blade holders in said second array being spaced substantially midway between blade holders of said first array, measured longitudinally of said drum; and blades carried by said blade holders, said blades having a width which causes central portions of a pair of swaths traced by a pair of blades in the first array to be retraced by the swath of a blade of the second array.

5,253,468
CROP CHOPPING MACHINE
Robert Raymond, 4775 Greenholme Dr., Sacramento, Calif. 95842
Filed Sep. 3, 1991, Ser. No. 753,431
Int. Cl.[5] A01D *34/66, 34/86*
U.S. Cl. 56—503 2 Claims



1. A cutting device for cutting plant material grown on raised beds, said raised beds having a material forming a surface underlying said plant material, in a field of row crops comprising:
(a) said raised beds each including a top surface forming a top plane, and two sloped side surfaces forming two sloped side planes, and
(b) a first rotating cutting means, the rotation of which describes a plane approximately parallel to the plane of the top surface, and
(c) a generally circular spacer rigidly attached to the side of said rotating cutting means nearest to the material being cut, said spacer being rounded on the side opposite said rotating cutting means, whereby said cutting means is prevented from contacting said material underlying the material being cut, and
(d) two or more additional rotating cutting means, including two or more additional generally circular spacers, said additional rotating cutting means being positioned with their described planes being approximately parallel to the planes of the sloping side surfaces, whereby said additional rotating cutting means cut the plant material hanging down the sloping side surfaces.

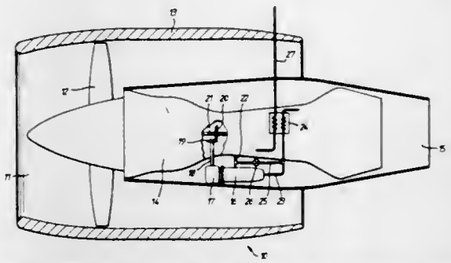
5,253,469
ELECTRICAL POWER GENERATION
Ronald C. Hodrien, Solihill, and Keith R. Wild, Tamworth, both of United Kingdom, assignors to British Gas PLC, London, United Kingdom
Filed Feb. 26, 1992, Ser. No. 841,509
Claims priority, application United Kingdom, Mar. 6, 1991, 9104716
Int. Cl.[5] F02B *43/00*
U.S. Cl. 60—39.02 5 Claims



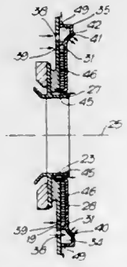
1. A method for combined cycle electrical power generation comprising
(i) introducing into a coal hydrogenerator coal and a hydrogen-rich gas at an elevated temperature suitable for initiating and maintaining coal hydrogeneration reaction, hydrogenating the coal with a hydrogen-rich gas in the hydrogenerator to form a char and a first gaseous product; removing the char and removing the first gaseous product from the hydrogenerator;
(ii) cooling the first gaseous product to form a condensed liquid hydrocarbon product and a remaining gaseous product; separating the liquid hydrocarbon product from the remaining gaseous product;
(iii) removing impurities from the remaining gaseous product;
(iv) feeding at least a portion of the purified remaining gaseous product to the combustion chamber of a gas turbine to form gaseous combustion products to drive the turbine whereby the gas turbine drives a first electrical generator to produce electrical power;
(v) and introducing at least some of the char into a boiler and combusting the char therein with air to produce steam to drive a steam turbine whereby the steam turbine drives a second electrical generator to produce electrical power,
wherein a portion of the purified remaining gaseous product is separated into a first separated gas, which is a hydrogen-rich gas, and a second separated gas, which comprises methane and carbon monoxide, and wherein, prior to the char being introduced into the boiler, the char is contacted with the first separated hydrogen-rich gas to cause desulphurisation of the char.

5,253,470
GAS TURBINE ENGINE STARTING
Arnold C. Newton, Derby, England, assignor to Rolls-Royce PLC, London, England
Filed Jul. 22, 1992, Ser. No. 916,669
Claims priority, application United Kingdom, Oct. 16, 1991, 9121994
Int. Cl.[5] F02C *7/06*
U.S. Cl. 60—39.08 6 Claims

1. A gas turbine engine provided with an electric starter unit, said starter unit being adapted to provide rotation by direct drive of at least one of the rotatable parts of said gas turbine engine to facilitate engine starting, said gas turbine engine having an oil-based lubrication system, means being provided to place the oil in said lubrication system in heat exchange relationship with said electric motor starter unit, at least during engine starting, to provide an increase in temperature, end consequent decrease in viscosity, of said lubrication system oil.



5,253,471
GAS TURBINE ENGINE COMBUSTOR
John S. Richardson, Alvaston, England, assignor to Rolls-Royce plc, London, England
Filed Jul. 12, 1991, Ser. No. 729,167
Claims priority, application United Kingdom, Aug. 16, 1990, 9018013
Int. Cl.[5] F02C *3/06*
U.S. Cl. 60—39.36 15 Claims



1. A gas turbine engine annular combustor including a bulkhead at its upstream end, said bulkhead having a plurality of apertures therein, each aperture being adapted to receive a fuel burner, the longitudinal axes of said apertures all lying on a virtual surface if rotation, the axis of which is coaxial with the longitudinal axis of said combustor, and a plurality of heat shields located on the downstream face of said bulkhead so as to provide thermal shielding thereof, each heat shield being associated with a corresponding one of said fuel burner apertures and having a corresponding fuel burner aperture therein, means being provided to space apart each of said heat shields and said bulkhead so that corresponding chambers are defined therebetween, each said heat shield having an outer and an inner periphery, said bulkhead having a plurality of further apertures adjacent said outer peripheries of each said heat shield for the direction therethrough of cooling air into said chambers at positions adjacent said outer peripheries of each of said heat shields, means being provided to subdivide each of said chambers so that a portion of said cooling air directed into each chamber flows generally towards a plane extending parallel to and containing both the longitudinal axis of its associated fuel burner aperture and the longitudinal axis of said combustor, and the remainder flows generally toward said virtual surface, means being provided adjacent said inner peripheries to subsequently exhaust said cooling air from each of said chambers.

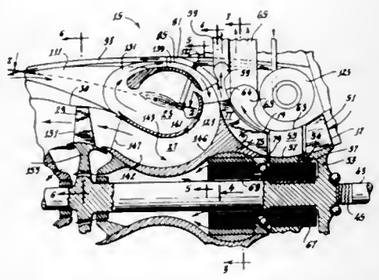
VOL 1155 ISS 3 OCT 19 1993 UMI

5,253,472

SMALL GAS TURBINE HAVING ENHANCED FUEL ECONOMY

Sudarshan P. Dev, 5B Daisy Dr., Seymour, Conn. 06483

Filed Feb. 28, 1990, Ser. No. 486,360
Int. Cl.[5] F02C 3/05
U.S. Cl. 60—39.161 5 Claims



1. A core gas turbine engine having enhanced efficiency relative to its weight said engine including

an inlet compressor, an outlet turbine, gas ducting means running between said inlet compressor and said outlet turbine,

an outwardly centrifugal compressor, burners, and an inwardly radial turbine positioned in said gas ducting means between said inlet compressor and said outlet turbine,

said outwardly centrifugal compressor and said inwardly radial turbine being mounted on a common hub such that their faces form an integral interface, whereby said inwardly radial turbine will drive said outwardly centrifugal compressor at a common speed of rotation, said hub being rotatable independently of said inlet compressor and said outlet turbine, and

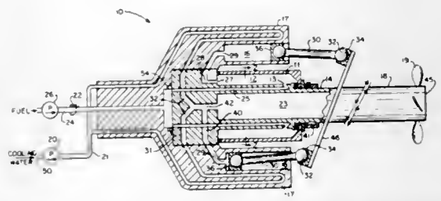
said hub being made of porous material whereby air in the boundary layer of said centrifugal compressor can seep from said centrifugal compressor to said inwardly radial turbine and cool same.

5,253,473

HEAT REGENERATIVE EXTERNAL COMBUSTION ENGINE

Anthony W. Duva, Middletown, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 23, 1993, Ser. No. 35,867
Int. Cl.[5] F02G 3/02
U.S. Cl. 60—39.462 7 Claims



1. A heat regenerative external combustion engine, comprising:

a combustion chamber for combusting a monopropellant fuel to form an energized gas;

at least one cylinder fluidly connected to the combustion chamber and having a reciprocating piston disposed therein, the energized gas being expanded in the cylinder to move the piston;

a drive shaft connected to and driven by the piston;

an elongated exhaust passage fluidly connected to each of the at least one cylinder through which expanded gas is expelled from the engine;

a rotary valve for transferring the energized gas from the combustion chamber to the cylinder and for transferring the expanded gas from the cylinder to the exhaust passage;

fuel inlet means for supplying a monopropellant fuel to the combustion chamber, the fuel inlet means extending along a portion of at least one of the exhaust passage and the combustion chamber in order that the gas in the at least one of the exhaust passage and the combustion chamber preheats the fuel; and

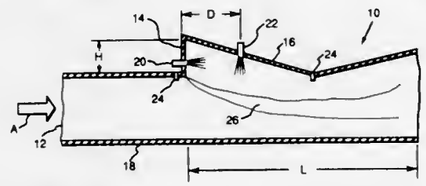
said combustion chamber being annular and formed around the exhaust passage.

5,253,474

APPARATUS FOR SUPERSONIC COMBUSTION IN A RESTRICTED LENGTH

Sanjay M. Correa, and Richard E. Warren, Jr., both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 30, 1991, Ser. No. 753,139
Int. Cl.[5] F02K 7/08
U.S. Cl. 60—270.1 12 Claims



1. A supersonic combustor comprising:

a combustion cavity defined by at least one wall, said cavity having a front inlet and a rear outlet so that air flows from front to rear;

a backward-facing step formed in said at least one wall of said cavity;

a forward-facing ramp formed in said at least one wall downstream from said step, said ramp being inclined toward the center of said cavity;

at least one axial fuel injector disposed in said step; and

at least one normal fuel injector disposed in said ramp.

5,253,475

COMBUSTION DETECTION

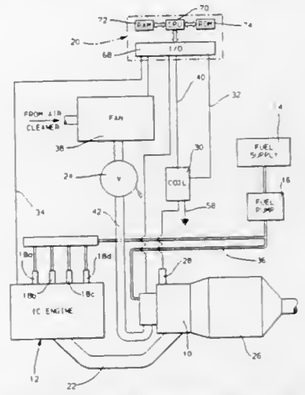
Daniel F. Kabasin, Rochester, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 22, 1992, Ser. No. 902,249
Int. Cl.[5] F01N 3/28; F23N 5/00
U.S. Cl. 60—274 8 Claims

1. An apparatus for detecting the presence of flame in a burner for an automotive catalytic converter, the burner having spark means with spaced electrodes, a supply of air and fuel, and energizing voltage providing means for providing an energizing voltage across the spaced electrodes of the spark means at a level to induce a current between the spaced electrodes, comprising:

estimating means for estimating the level of the energizing voltage provided across the spaced electrodes of the spark means;

means for comparing the estimated level of the energizing voltage to a predetermined reference voltage; and



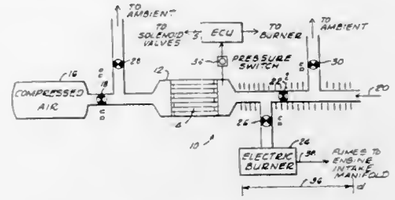
flame detecting means for detecting flame in the burner when the estimated level of the energizing voltage does not exceed the predetermined reference voltage.

5,253,476

PULSED, REVERSE-FLOW, REGENERATED DIESEL TRAP CAPTURING SOOT, ASH AND PAH'S

Yiannis A. Levendis, Boston, and Najib Kahlil, Quincy, both of Mass., assignors to Northeastern University, Boston, Mass.

Filed Feb. 21, 1992, Ser. No. 839,171
Int. Cl.[5] F01N 3/02
U.S. Cl. 60—279 27 Claims



1. A diesel soot, ash and PAH trap, comprising:

a stationary trap having walls defining pores that capture soot, ash and PAH particles therewithin that are generated by diesel exhaust;

a filtered diesel exhaust output port;

an unfiltered diesel exhaust inlet port;

a forward flow path along which said trap is disposed between said unfiltered diesel exhaust inlet port and said filtered diesel exhaust output port;

a carbon soot, PAH and ash particulate disposal unit;

a reverse flow path along which said trap is disposed defining upstream and downstream portions along said reverse flow path oppositely directed to and coincident with at least a portion of said forward flow path, and with said disposal unit disposed downstream of said trap with respect to said reverse flow path;

an air compressor upstream of said trap along said reverse flow path and a valve assembly coupled between said air compressor and said trap upstream of said trap along said reverse flow path; and

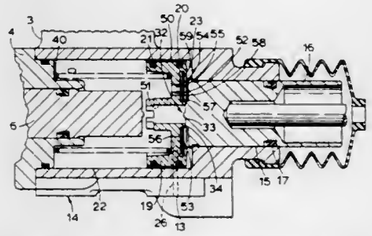
a controller operative at comparatively-high duty cycle in a filtration mode for coupling diesel exhaust input at said unfiltered diesel exhaust input port through said trap along said forward flow path and out said filtered diesel exhaust output port and operative at comparatively-low duty cycle in a reverse-regeneration mode for gating said valve assembly to close said filtered diesel exhaust outlet port and to provide at least one pulse of high-pressure and low-velocity air from said air compressor that flows through said trap along said reverse flow path in a direction that dislodges the soot (laden with PAH) and ash particles that are lodged within the pores of said trap during operation in said filtration mode and that moves the soot (laden with PAH) and ash particles into said disposal unit.

5,253,477

MASTER CYLINDER AND BOOSTER ASSEMBLIES

Michael Williamson, Glamorgan, and Michael A. Taylor, Gwent, both of Wales, assignors to Lucas Industries Public Limited Company, Solihull, England

Filed May 1, 1992, Ser. No. 877,291
Claims priority, application United Kingdom, May 3, 1991, 9109615
Int. Cl.[5] B60T 7/00; F15B 7/10
U.S. Cl. 60—567 12 Claims



1. A master cylinder and booster assembly for a vehicle hydraulic system, wherein said booster has a booster housing, said housing being provided with a booster bore, an inlet for connection to a source of hydraulic pressure, an outlet for connection to a reservoir for fluid, with an input member and a boost piston working in said booster bore, a boost chamber defined in said booster bore behind said boost piston, and valve means operative in response to an input load applied to said input member, operation of said valve means controlling pressurisation of said boost chamber by fluid from said source, said pressurisation of said boost chamber acting to advance said boost piston to generate an output load, said booster having a permanent connection between said boost chamber and said outlet and a connection means between said boost chamber and said source, said connection means being closed when said booster is inoperative and open during operation of said booster; and wherein said master cylinder has a master cylinder housing provided with a master cylinder bore, and piston means working in said master cylinder bore, said piston means being operating in response to said output load from said booster to pressurise pressure space means to operate fluid-pressure operated means; and wherein said assembly includes a fluid reservoir for said master cylinder, feed passage means connecting said booster bore to said master cylinder reservoir and overflow passage means connecting said master cylinder reservoir to said booster outlet, and partition means separates said master cylinder reservoir into an active part containing the discharge from said feed passage means and the inlet to said overflow passage means, and a passive part containing an outlet port or ports for connection to said master cylinder, said partition means including passage means allowing limited fluid flow between said active and passive parts.

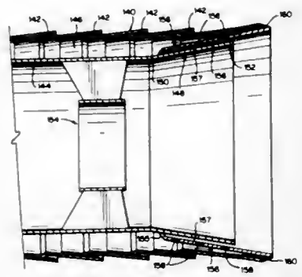
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5,253,478

FLAME HOLDING DIVERGING CENTERBODY CUP CONSTRUCTION FOR A DRY LOW NOX COMBUSTOR

Bernard A. Thibault, Jr., Clifton Park, and Elizabeth B. Beaudoin, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 30, 1991, Ser. No. 813,745
Int. Cl.[5] F02C *3/00*; F23R *3/08*
U.S. Cl. 60—733 20 Claims



1. In a gas turbine including a plurality of dry low NOx combustors, each combustor having a primary combustion chamber and a secondary combustion chamber, with a plurality of primary fuel nozzles for providing fuel to the primary combustion chamber arranged about a centrally located secondary nozzle for providing fuel to said secondary combustion chamber, the improvement comprising a flame holding diverging centerbody cup located radially between said primary fuel nozzles and said secondary fuel nozzle, said centerbody cup comprising a pair of inner and outer substantially cylindrical members, the inner substantially cylindrical member having a diverging cup portion attached to its forward end extending toward said outer cylindrical member, and a coolant manifold arranged radially between and connected to said outer cylindrical member and said diverging cup portion, said manifold having a portion extending substantially parallel to said diverging cup portion and provided with a plurality of coolant apertures, thereby forming an annular cooling chamber between said manifold and said diverging cup portion.

5,253,479

METHOD AND APPARATUS FOR RECOVERY OF ETHYLENE AND PROPYLENE FROM GAS PRODUCED BY THE PYROLYSIS OF HYDROCARBONS

Roberto Di Cintio; Marcello Picciotti, both of Rome, Italy; Victor Kaiser, Maisons Lahihe, France, and Carlo A. Pocini, Rome, Italy, assignors to TPL S.p.A., Rome, Italy

Filed Jul. 5, 1991, Ser. No. 726,341
Claims priority, application Italy, Jul. 6, 1990, 48124 A/90
Int. Cl.[5] F25J *3/02*
U.S. Cl. 62—24 8 Claims

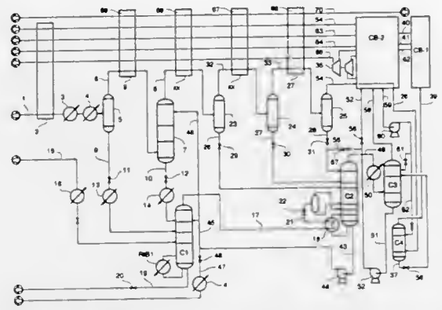
1. A method for recovery of ethylene and propylene from a raw gas produced by a pyrolysis or hydrocarbons and for splitting said gas into first and second depurated current flows, the first containing almost all ethylene and the second containing almost all propylene, comprising the steps of:

providing a fractional condensation of the raw gas from compression, caustic washing, and drying sections in a separation system with progressive plural cooling stages;

feeding a first condensate liquid of the first cooling stage and any mixture of liquid hydrocarbons from the compression section at a predetermined temperature to a deethanizer column to obtain as a bottom produce a depurated current containing almost all propylene;

feeding a second condensate liquid of the following cooling stages at lower temperatures to a demethanator column to obtain as a bottom produce a depurated current containing almost all the ethylene;

feeding a deethanizer overhead vapor stream to a heat exchanger employed as a demethanator reboiler, wherein said deethanizer overhead vapor stream is partially condensed;



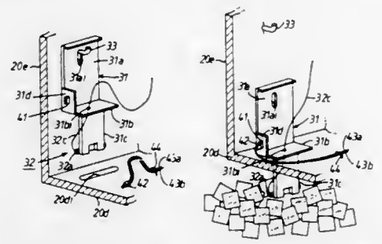
supplying said partially condensed overhead vapour from the deethanizer to the demethanator.

5,253,480

AUTOMATIC ICE MAKING MACHINE

Tadashi Sakai, Toyoake, Japan, assignor to Hoshizaki Denki Kabushiki Kaisha, Toyoake, Japan

Filed Aug. 20, 1992, Ser. No. 932,183
Claims priority, application Japan, Aug. 21, 1991, 3-73780[U]
Int. Cl.[5] F25C *5/18*
U.S. Cl. 62—78 3 Claims



3. A method for assembling an automatic ice making machine, comprising the steps of:

providing an ice making unit having an electric control apparatus for an ice making mechanism contained therein;

providing an ice storage bin to store therein an amount of ice cubes or chips formed by an operation of the ice making mechanism;

providing an ice detection element wholly contained within said ice making unit;

providing a connector in said ice making unit for connecting and disconnecting the electric control apparatus from a source of electricity, said connector being attached to conductive wires having a predetermined length;

installing said ice making unit on said ice storage bin;

moving said ice detection element from a first position wholly contained within said ice making unit to a second position wherein said ice detection element is inserted into an interior of said ice storage bin; and

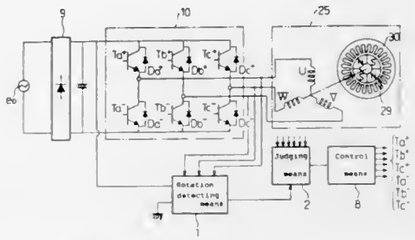
connecting said connector from said source of electricity to said electric control apparatus, thereby enabling operation of said ice making machine, wherein said connector means is prohibited by the length of the conductor wires from being attached to said electric control apparatus until said ice detection element is inserted into an interior of the ice storage bin.

5,253,481

CONTROL UNIT FOR ACTIVATING COMPRESSOR

Nobukazu Takagi; Osamu Takahashi, both of Higashimatsuyama; Akihito Uetake, and Osamu Shinkawa, both of Hino, all of Japan, assignors to Zexel Corporation and Seiko Epson Corp., both of Tokyo, Japan

Filed Aug. 27, 1992, Ser. No. 935,972
Claims priority, application Japan, Aug. 29, 1991, 3-218748
Int. Cl.[5] F25B *1/00*
U.S. Cl. 62—126 8 Claims



1. A control unit for activating a compressor having a compressing part for compressing a refrigerant, a motor for driving the compressing part, and a drive circuit for driving the motor, comprising:

a rotation detecting means for detecting whether or not the motor is normally activated when the compressor is activated,

a judging means for judging that the compressor interior is filled with a liquid refrigerant when the motor is not judged to be in a normal activating condition by the rotation detecting means, and

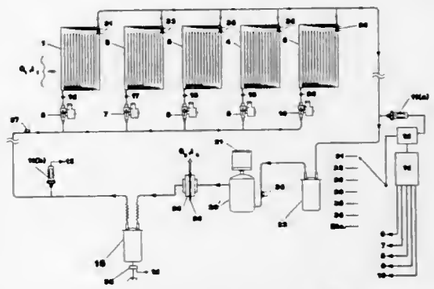
a control means for step-driving the motor at a speed of no more than one rotation per second through the driving circuit when the compressor interior is judged to have been filled with the liquid refrigerant by the judging means.

5,253,482

HEAT PUMP CONTROL SYSTEM

Edi Murway, 7741 Alabama Ave. - #8, Canoga Park, Calif. 91304

Filed Jun. 26, 1992, Ser. No. 904,683
Int. Cl.[5] F25B *7/00*
U.S. Cl. 62—175 3 Claims



1. A heat pump assembly of improved efficiency which utilizes the the evaporation of a refrigerant to absorb heat at a lower temperature and the recompression and liquefying of the refrigerant to provide heat at higher temperature comprising:

a. a continuous circulating system for the refrigerant;

b. a number of evaporators connected in parallel and controlled by individual modulating valves;

c. means for controlling the total amount of refrigerant evaporating into each evaporator according to pressure and temperature sensing devices in the refrigerant vapor in order to maintain said vapor in saturated equilibrium;

d. compressing mean for the expanded vapor produced by refrigerant evaporation;

e. heat exchanging mean for cooling and liquefying the refrigerant vapor, said exchanging means serving also to recover heat from the system;

f. computing means for maintaining heat recovery at a constant amount even when temperatures around the evaporators change by varying the number of evaporators open to refrigerant flow as a function of indications provided by said pressure and temperature sensing devices

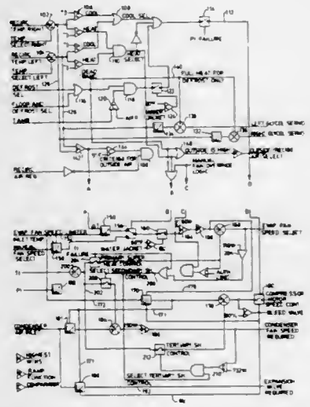
g. and weighing means in the liquified refrigerant line to permit estimation of system leakage at all times, to signal if refrigerant is low and to aid in accurate filling of the system.

5,253,483

ENVIRONMENTAL CONTROL SYSTEM

James W. Powell, Hartland; Mark G. Voss, Brighton, both of Mich.; John F. Hurley, Easton, and Edward O. Hartel, Orange, both of Conn., assignors to Nartron Corporation, Reed City, Mich.

Division of Ser. No. 583,233, Sep. 14, 1990, abandoned. This application Jul. 8, 1992, Ser. No. 910,206
Int. Cl.[5] F25B *39/00*
U.S. Cl. 62—181 9 Claims



1. An environmental control system comprising:

a refrigeration loop including a variable speed compressor having an inlet and an outlet, a condenser having an inlet connected with said compressor outlet and an outlet, and an evaporator having an inlet connected with said condenser outlet and an outlet connected with said compressor outlet;

a variable speed evaporator fan for moving air across said evaporator;

compressor speed control means for controlling the speed of said compressor to produce a particular amount of cooling;

monitor means for monitoring the superheat condition at the inlet of said compressor; and

primary superheat control means responsive to said monitor means for establishing at least in part the speed of said evaporator fan in a manner that will tend to maintain a predetermined superheat condition.

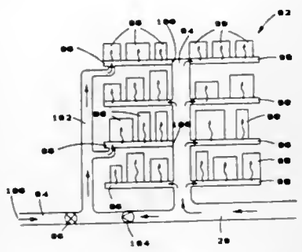
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5,253,484

HIGH RELIABILITY AVIONIC COOLING SYSTEM

Randal A. Corman, Renton, and Terry R. Waldron, Maple Valley, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Aug. 22, 1991, Ser. No. 748,429
Int. Cl.[5] B60H 3/06
U.S. Cl. 62—239 13 Claims



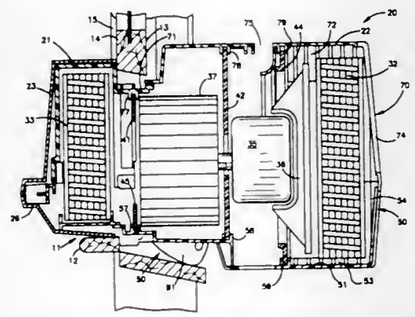
1. In an aircraft having a plurality of compartments to be cooled, a cooling system, comprising:
a first source of cooling airflow directed through a first duct to a first compartment;
a second source of cooling airflow directed through a second duct to a second compartment;
a check valve in said first duct permitting flow from said first source of cooling airflow to said first compartment and preventing a back-flow of air therethrough;
an interconnecting duct between said first and second ducts, said interconnecting duct connecting to said first duct at a location between said check valve and said first compartment; and
a shutoff valve in said interconnecting duct operable to open or close airflow therethrough;
wherein said first and second sources of airflow are isolated each from each other.

5,253,485

LOW PROFILE ROOM AIR CONDITIONER

Robert W. Kennedy, Dublin, Ohio, and Richard F. Stewart, North Brunswick, N.J., assignors to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Mar. 27, 1992, Ser. No. 859,161
Int. Cl.[5] F25D 23/12
U.S. Cl. 62—262 10 Claims



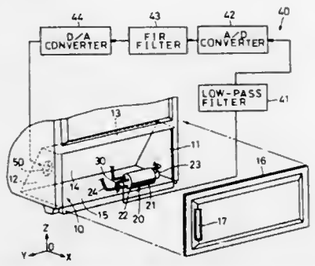
1. A room air conditioner adapted to be sealingly mounted in an opening defied by a window assembly with a vertically sliding lower sash, the opening being defined by the window sill, the bottom rail of the lower sash and the opposed jambs, comprising:
an enclosure having front and rear portions separated by the plane of said opening, said enclosure having a horizontal channel formed therein extending across the top thereof laterally from side to side, said channel separating said front portion from said rear portion and being adapted to receive therein the bottom rail of said lower sash.
a compressor and a condenser heat exchanger mounted in said rear portion,
an evaporator heat exchanger mounted in said front portion,
a motor drivingly connected to an axial flow fan at one end and to a coaxial centrifugal blower at the other, said axial flow fan and said centrifugal blower having a common horizontal axis perpendicular to the plane of said opening,
said motor, axial flow fan and centrifugal blower being located in said rear portion and said axial-flow fan and centrifugal blower being operatively associated with said condenser heat exchanger and said evaporator heat exchanger respectively,
said front enclosure portion and said evaporator heat exchanger extending above the bottom of sad lower sash and said rear enclosure portion and said condenser heat exchanger extending above the bottom of said lower sash and substantially below said sill.

5,253,486

SILENCER ATTENUATING A NOISE FROM A NOISE SOURCE TO BE VENTILATED AND A METHOD FOR ACTIVE CONTROL OF ITS NOISE ATTENUATION SYSTEM

Masanori Sugahara; Keiji Nakanishi, and Yasuyuki Sekiguchi, all of c/o Intellectual Property Division, Toshiba Corporation, 1-1, Shibaura 1-Chome, Minato-Ku, Tokyo, Japan

Filed Apr. 26, 1991, Ser. No. 692,359
Claims priority, application Japan, May 1, 1990, 2-116259
Int. Cl.[5] F01N 1/06; A61F 11/06
U.S. Cl. 62—296 14 Claims



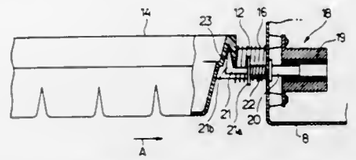
1. A silencer attenuating noise from a noise source requiring ventilation, the silencer comprising:
a machine compartment with a one-dimensional duct configuration whose sectional dimension is sufficiently small in comparison with wavelength of the noise to be reduced, the noise source being disposed therein;
an opening for dissipation of heat as disposed in a wall of the machine compartment and opening in a direction generally perpendicular to the direction of advance of the noise within the machine compartment;
a vibration pickup means for detecting vibrations of the noise source, the vibration pickup means being attached to the noise source;
a control circuit for processing signal outputs of the vibration pickup means; and
a sound generator, such as a speaker, which is driven by output signals from the control circuit to output a controlling sound in the machine compartment and to cancel thereby the noise which is about to emerge from the opening.

5,253,487

AUTOMATIC ICE MAKER AND HOUSEHOLD REFRIGERATOR EQUIPPED THEREWITH

Hiroshi Oike, Osaka, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 612,448, Nov. 14, 1990, Pat. No. 5,172,556.
This application Aug. 10, 1992, Ser. No. 926,420
Claims priority, application Japan, Nov. 15, 1989, 1-296892
Int. Cl.[5] F25C 1/20
U.S. Cl. 62—353 2 Claims



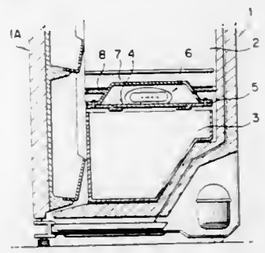
1. An ice maker having a frame member and a support member, comprising:
a) an ice making compartment;
b) an ice tray disposed between the frame member and the support member, the ice tray having opposite ends supported by the frame member and the support member respectively enabling the ice tray to be rotated and axially movable;
c) spring means for axially imparting a spring force to the ice tray so as to urge it toward one of the frame member and the support member;
d) water supply means for supplying the ice tray with water;
e) chilled air supply means for supplying chilled air to the interior of the ice making compartment to freeze water in the ice tray;
f) means for vibrating the ice try in an axial direction thereof against the spring force of the spring means during freezing so that air bubbles contained in the water in the ice tray are caused to promptly escape therefrom before the water is frozen; and
g) a drive mechanism for rotatively moving the ice tray after freezing of the water therein and twisting the ice tray.

5,253,488

VEGETABLE STORAGE DRAWER OF A REFRIGERATOR

Kyong M. Kim, Anyang, and Tae K. Seok, Suwon, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 15, 1992, Ser. No. 898,328
Claims priority, application Rep. of Korea, Jun. 13, 1991, 91-9762
Int. Cl.[5] F25D 25/02
U.S. Cl. 62—382 10 Claims



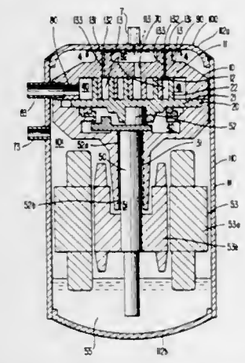
1. A refrigerator comprising:
a refrigerator body forming a refrigerating compartment,
a vegetable storage drawer slidably mounted in said body so as to be capable of being pulled out from and pushed into said refrigerating compartment, said drawer being open at its top, and
gas absorbing means mounted in said body above said drawer such that said drawer can be pulled out and pushed in relative to said gas absorbing means, said gas absorbing means comprising:
a gas-absorbing member disposed above said drawer and communicating directly with the inside of said drawer through said open top thereof when said drawer has been pushed in for absorbing noxious gas generated by vegetables, said gas-absorbing member formed of a material capable of being regenerated when illuminated with a regenerating amount of radiation, and
an illuminating member positioned above said gas-absorbing member for illuminating said gas-absorbing member and directing a regenerating amount of radiation thereagainst.

5,253,489

SCROLL TYPE COMPRESSOR WITH INJECTION MECHANISM

Yuji Yoshii, Isesaki, Japan, assignor to Sanden Corporation, Gunma, Japan

Filed Apr. 2, 1992, Ser. No. 862,511
Claims priority, application Japan, Apr. 2, 1991, 3-021148[U]
Int. Cl.[5] F04C 18/04, 29/02
U.S. Cl. 62—505 34 Claims

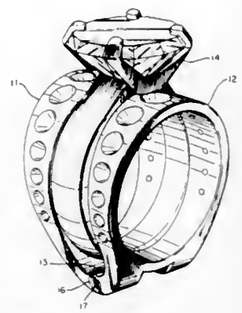


24. A scroll type fluid displacement apparatus comprising:
a housing having a front end plate;
a fixed scroll attached to said housing and having a first end plate from which a first wrap extends into an interior of said housing;
an orbiting scroll having a second end plate from which a second wrap extends, said first and second wraps interfitting at an angular and radial offset to form a plurality of linear contacts defining at least one pair of sealed-off fluid pockets;
a driving mechanism including a rotatable drive shaft connected to said orbiting scroll to drive said orbiting scroll in orbital motion;
a rotation preventing mechanism connected to said orbiting scroll for preventing the rotation of said orbiting scroll during orbital motion;
a fluid inlet connected to said front end plate of said housing;
an inner surface of said front end plate of said housing facing said first end plate of said fixed scroll and fitted in contact with an end surface of said first end plate that is opposite to an end surface from which said first wrap extends; and
a fluid communication path formed through said front end plate of said housing and said first end plate of said fixed scroll where said front end plate of said housing and said first end plate of said fixed scroll are in fitted contact such

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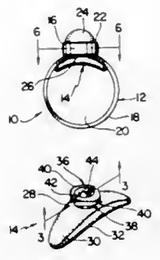
that said fluid inlet and at least one of said sealed-off fluid pockets are joined in fluid communication.

5,253,490
HINGED INSERT RING
Mark Doganay, 47-19 39th Pl., Sunnyside, N.Y. 11104
Filed May 4, 1992, Ser. No. 878,238
Int. Cl.[5] A44C *9/00*
U.S. Cl. 63—15.4 **4 Claims**



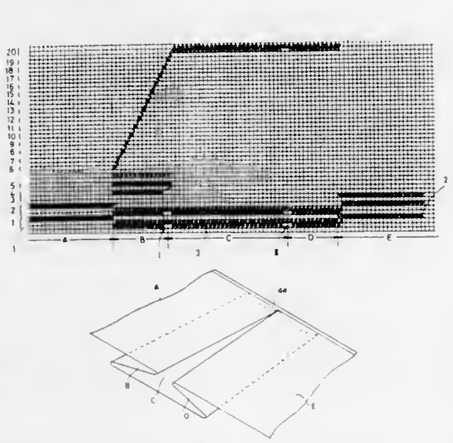
1. A hinged insert ring comprising:
a ring body having two single protrusions circumferentally spaced along its bottom shank with a pin opening passing through said protrusions;
a second ring body having two U-shaped protrusion circumferentally spaced along its bottom shank with a pin opening passing through said protrusions;
each of said single protrusions being positioned within one of said U-shaped protrusions such that the pin openings thru the single protrusions of the first ring body being axially alligned with the pin openings of the U-shaped protrusions of the second ring body;
two hinge pins, whereby each of said hinge pins is passed thru one of said single protrusions and each of the U-shaped protrusions to form
an operable hinge means; said operable hinge means allows the first and second bodies a stable movement about the hinge pin so that said ring bodies can be closed about the hinge so that each ring body is aligned adjacent to the other and can worn this way to appear as a single completed two band ring.

5,253,491
FINGER RING AND SIZE ADJUSTMENT INSERT
Rudolph Buontempo, 121 Sherwood St., Providence, R.I. 02908, and Marek R. Zamojski, North Providence, R.I., assignors to Rudolph Buontempo, Providence, R.I.
Filed Aug. 28, 1992, Ser. No. 936,274
Int. Cl.[5] A44C *9/02*
U.S. Cl. 63—15.6 **4 Claims**



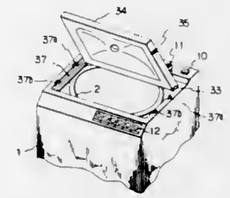
1. In combination,
a finger ring comprising a decorative head and a ring shank which cooperate to define a finger-receiving opening of a predetermined size, said decorative head including an outwardly facing decorative side and an inwardly facing back side, and
a resilient insert for reducing the size of said finger-receiving opening comprising a substantially arcuate body portion having a generally convex upper surface, a generally concave lower surface, and a male protrusion projecting outwardly from said upper surface,
said male protrusion comprising a pedestal portion projecting upwardly from said upper surface, and pair of wing portions extending outwardly therefrom,
said back side of said finger ring having a complementary female opening formed therein for receiving said male protrusion, said female opening including a pair of recessed portions at the sides thereof for receiving said wing portions, said insert being rotatable relative to said ring wherein said wing portions rotate relative to said recessed portions and frictionally engage with said female opening,
said pedestal portion being circular in configuration, said wing portions extending outwardly therefrom in diametrically opposing directions.

5,253,492
METHOD OF KNITTING IN PLEATS AND KNITTED TEXTURE HAVING KNITTED PLEATS
Shigenobu Mitsumoto, Wakayama, Japan, assignor to Shima Seiki Mfg., Ltd., Wakayama, Japan
Filed Apr. 25, 1991, Ser. No. 691,261
Claims priority, application Japan, May 2, 1990, 2-116636
Int. Cl.[5] D04B *7/24*
U.S. Cl. 66—69 **3 Claims**



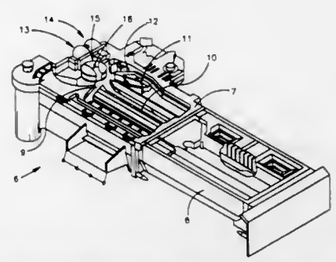
1. A method of knitting pleats in knitwear comprising the steps of: knitting surface knitted sections of jersey knit structure, fold-back knitted section of jersey knit structure, and overlap knitted sections of rib knit structure in succession with knitting needles mounted on at least a pair of front and rear needle beds of a flat bed knitting machine, binding off loops that form ends of the fold-back knitted sections one-by-one in order to remove the fold-back knitted sections from the knitting needles; removing the fold back knitted sections from the knitting needles, fastening the loops that form ends of the fold-back knitted sections after removing the loops from the knitting needles; transferring only the surface knitted sections to vacant needles from which the fold-back knitted sections were previously removed, so that the ends of the surface knitted sections and the overlap knitted sections are located adjacent to each other; loading in succession the overlap and surface knitted sections onto needles on one of the two needle beds; racking the other needle bed in one direction so that the surface knitted sections and the overlap knitted sections are spaced apart; loading either the overlap knitted sections or one of the surface knitted sections on the knitting needles of the other needle bed; racking the other needle bed in the opposite direction so that one of the surface knitted sections and the overlap knitted sections form overlapping regions; transferring the loops at the end of the overlap knitted sections to the knitting needles holding the loops at the end of the surface knitted sections; and binding the overlapped regions in pleats.

5,253,493
WASHING MACHINE HAVING A SINK
Shigeo Ohashi, 5-20 Okusawa 1-chome, Setgaya-ku, Tokyo, Japan
Filed Feb. 18, 1992, Ser. No. 836,232
Int. Cl.[5] D06F *35/00*
U.S. Cl. 68—4 **7 Claims**



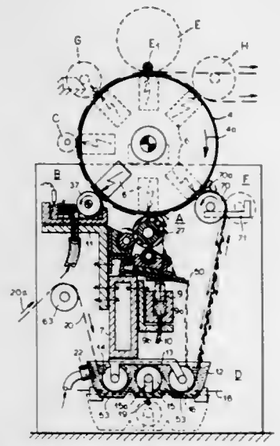
3. A washing machine comprising:
a cylindrical rotary basket provided within a casing of said washing machine;
a lid member having a concave face defining a sink on one major surface thereof and a corresponding convex face on an opposing major surface thereof, said lid member being removably fitted to an opening portion of said casing above the rotary basket;
a drain formed within said lid member; and
a turnover mechanism connected to both said lid member and said casing for turning said lid member over for alignment of either of the concave face or the convex face with said cylindrical rotary basket.

5,253,494
ARRANGEMENT FOR CONTROLLING DETERGENT ADDITION IN WASHING MACHINES
Giuseppe Frucco, and Fernando Russo, both of Pordenone, Italy, assignors to Zanussi Elettrodomestici S.P.A., Italy
Filed Feb. 7, 1992, Ser. No. 832,427
Claims priority, application Italy, Feb. 27, 1991, 000012 A/91
Int. Cl.[5] D06F *39/02*
U.S. Cl. 68—12.18 **3 Claims**



1. A control arrangement for washing machines, in particular clothes washing machines or combination clothes washing and drying machines having a wash tub, a detergent dispenser means provided with a plurality of separate compartments for containing various wash products and rinse aids to be added into the wash tub, a rotating compartment selector means, and driving means to displace the selector into various operational positions so as to enable in-flowing supply water to selectively flow through each one of said dispenser compartments into the wash tub, said clothes washing machine also having a plurality of operational component parts that are adapted to be energized and de-energized under the control of a electronic microprocessor means for controlling sequences of selected washing steps, said control arrangement comprising switching means (**17, 18, 19, 20**) operable by said rotating compartment selector means (**15**) each associated with a corresponding control position of said rotating compartment selector means, and electrical circuit elements (**48, 49, 50, 51**) connected to respective operational component parts and respective switching means (**17, 18, 19, 20**), wherein at least one of said operational component parts (**42, 43, 44, 45**) is associated with a respective one of the switching means and its corresponding circuit element so as to be selectively switchable on and off by said microprocessor means (**40**).

5,253,495
APPARATUS FOR THE MULTIPLE PROCESING OF A WEB
Johannes Zimmer, Ebentaler Strasse 133, A-9020 Klagenfurt, Austria
Filed Sep. 23, 1992, Ser. No. 949,697
Claims priority, application Austria, Sep. 23, 1991, 1912/91
Int. Cl.[5] D06B *1/14*
U.S. Cl. 68—43 **17 Claims**



1. An apparatus for selective processing of a web with a plurality of individual devices and a combination thereof, said apparatus comprising:
a drum rotatable about an axis and forming a counter surface; and
a plurality of processing devices arrayed around said drum for effecting respective processing operations upon a web lying against said surface and including rollers urged against said web while said web is supported by said surface,
one of said devices being a squeezing device pressing said web to a dosed residual moisture content and optionally operable as a liquid-substance applier, said one of said devices including:
a squeegee working roller engageable with said web,
support means extending over a length of said squeegee working roller and engageable therewith over a length thereof in contact with said web and selected from at least one slide-bearing bed, at least one pressing roller, at least one pressing bar and at least one cylindrical pressing body, and

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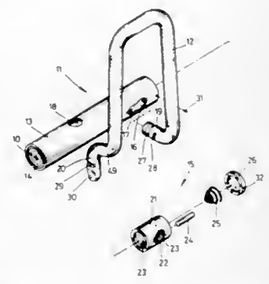
a pressing-force generator selected from a hydraulic, pneumatic or mechanical driver fixedly positioned relative to said drum and bearing upon said support means for urging said squeegee working roller against said web and said surface.

5,253,496

SIMPLE BICYCLE LOCK STRUCTURE

Teng-Yun Wang, P.O. Box 96-405, Taipei 10098, Taiwan

Filed Apr. 10, 1992, Ser. No. 866,859
Int. Cl.[5] E05B *67/12*
U.S. Cl. 70—38 R **3 Claims**



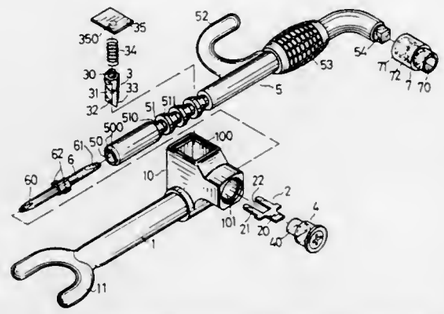
1. A simple bicycle lock structure comprising:
a shackle being a U-shaped member to be mounted on a rear fork of a bicycle, and opening ends of said shackle including a rotary section and a locking section respectively; said rotary section being a 90° elbow-shaped member to be inserted in a hole of a movable sleeve in an outer-cylinder-positioning assembly fitted in an outer cylinder; said locking section of said shackle facing a round hole in an upper side of said outer cylinder; said shackle and said locking section being not on a same plane, but being connected together by means of an inner portion; and said locking section including a bevel facet and a locking groove to facilitate said locking section to enter a locking assembly through said round hole on the upper side of said outer cylinder;
said outer cylinder including said outer-cylinder-positioning-assembly in one end thereof and said locking assembly in the other end thereof; said outer-cylinder-positioning assembly having said movable sleeve with said hole on one side thereof, which being in communication with a round hole on one side of said outer cylinder, and one side of said round hole on said outer cylinder having a position-displacement slot;
said locking assembly including a lock cylinder and a rotary cylinder with an inner portion which is mounted with a locking collar by means of a pin; said locking collar having a guide groove for said pin; and a spring being mounted between said locking collar and said lock cylinder; said locking collar having an unlocking recess;
said through hole of said movable sleeve being perpendicular to a pin hole for receiving a fixing pin, and said fixing pin to be engaged with a circular groove on said rotary section; said movable sleeve being in contact with a spring which is retained in place with an end plug to be fixed in said outer cylinder with a pin.

5,253,497

MULTI-FUNCTION AUTOMOBILE STEERING LOCK

Ta-Young Hsieh, No. Alley 13, Lane 54, Sec. 2, Hsing-Nan Rd., Jung-Heh,, Taipei Hsien, Taiwan

Filed Feb. 13, 1992, Ser. No. 837,633
Int. Cl.[5] B60R *25/02*
U.S. Cl. 70—209 **6 Claims**



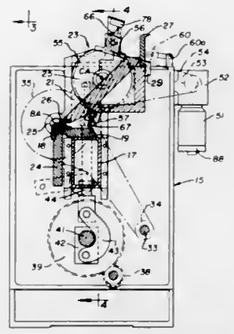
1. A multi-function automobile steering lock comprising:
an elongated body tubular member having an inner end, an outer end and an elongated passageway extending along its axis therethrough, said tubular member having a first U-shaped hook extending from the outer end adapted to engage a steering wheel from the inside thereof;
an elongated rod member adapted to extend in a telescopic fashion within said passageway of said body tubular member and having a second U-shaped hook secured sidewise near a rear portion of the rod member, said second hook having an opening facing opposite to the first hook and adapted to engage said steering wheel from the inside thereof;
a plurality of spaced annular grooves defined by the elongated rod member, each of which has a vertical-side wall relatively close to the second hook and a sloped side wall relatively far from the second U-shaped hook, circumferentially formed in a portion of the rod member;
a housing firmly attached to the inner end portion of said body tubular member with the passageway of said tubular member extending therethrough, said housing having a vertical bore for positioning a bearing, a biasing spring and capped with a cap and a horizontal bore for positioning a locking means and an actuating plate;
a locking means having a key lock and a locking member;
an actuating plate having a pressing plate and two feet defining an opening therebetween for a bearing to pass through and to move up and down therein, said actuating plate adapted to be pressed down to force the bearing to move up to disengage from an annular groove in the rod member;
a bearing positioned in the vertical bore in the housing and having a tenon bottom end and a top surface to be pushed down by a biasing means between a locking position with the tenon end protruding into an annular groove in the rod member and an unlocking position with the tenon end withdrawn from said annular groove;
a biasing spring disposed between said bearing and said cap so as to bias said bearing towards the passageway in said body tubular member; and,
a central hollow lengthwise cavity defined in an inner end portion of the elongated rod member and a threaded fastener driver having at least a portion located in the central hollow cavity, said driver having two opposite lengthwise projections at the longitudinal center adapted to fit in two opposite notches defined around the central hollow cavity in the rod member.

5,253,498

BENDING BRAKE WITH MULTIPLE SELECTIVELY OPERATIVE CLAMP JAWS

Roger J. Benedict, Rockford, Ill., assignor to Roper Whitney Company, Rockford, Ill.

Filed Aug. 24, 1992, Ser. No. 933,776
Int. Cl.[5] B21D *5/04*
U.S. Cl. 72—25 **14 Claims**



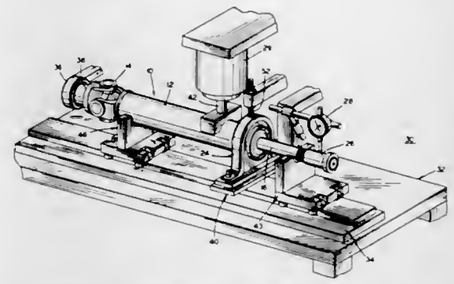
1. In bending brake comprising, rigid frame means including first and second end frames, stationary lower jaw means mounted on the frame means and having a horizontal bending edge intermediate the end frames, a bending beam mounted on the frame means for pivotal movement about a horizontal bending beam axis parallel to an adjacent the bending edge of the lower jaw means, power-operated beam operating means for pivoting the bending beam about the bending beam axis, first and second carrier support means mounted on the frame means adjacent the first and second end frames respectively for up and down movement relative thereto, upper jaw carrier means having first and second ends respectively mounted on the first and second carrier support means for up and down movement therewith and for turning movement relative thereto about a carrier axis paralleling said bending beam axis, at least two upper clamp jaws mounted on the jaw carrier means at locations angularly spaced apart about the carrier axis, power-operated support moving means for moving the carrier support means downwardly to a lower clamp position and upwardly away from the lower clamp position, power-operated carrier turning means for turning the upper jaw carrier means about the carrier axis, and means for securing the carrier means to the carrier support means in different angular positions each corresponding to an operative position for one of the clamp jaws, the improvement wherein the securing means comprises first and second power-operated carrier lock means for locking the first and second ends of the upper jaw carrier means to the respective first and second carrier support means, the first and second power-operated carrier lock means each being operable to a carrier lock condition and to a carrier unlock condition, and carrier position control means for controlling operation of the power-operated carrier lock means and the power-operated carrier turning means, the carrier position control means including carrier support sensing means for sensing when the carrier support means is above a preselected raised position spaced above the lower clamp position a distance sufficient to allow turning of the upper jaw carrier means from one operative position to another operative position, lock condition sensing means for sensing when the power-operated lock means is in an unlock condition, and carrier index control means actuatable when the carrier support means is above the preselected raised position and the power-operated carrier lock means is in the unlock condition for operating said power-operated carrier turning means to turn the carrier means from one operative position to another operative position.

5,253,499

METHOD FOR STRAIGHTENING COUPLING SHAFTS

Kenneth H. Knipp, Ortonville, Mich., and Margot L. Hoffman, Pemberville, Ohio, assignors to Dana Corporation, Toledo, Ohio

Filed Jun. 11, 1992, Ser. No. 896,828
Int. Cl.[5] B21D *7/06*
U.S. Cl. 72—34 **4 Claims**



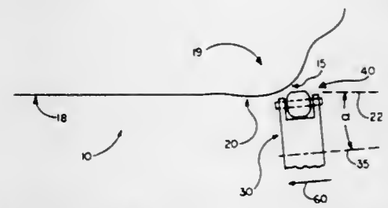
1. A method of straightening a coupling shaft comprising a tubular member having a midship tube shaft affixed at one end thereof, the midship tube shaft being mounted in a center shaft support bearing assembly, comprising the steps of:
a) rotatably supporting the coupling shaft at the end of the coupling shaft opposite the midship tube shaft;
b) supporting the coupling shaft at the center shaft support bearing which rotatably supports the midship tube shaft of the coupling shaft;
c) rotating the coupling shaft about its longitudinal axis relative to a means for measuring radial misalignment thereof;
d) measuring the radial misalignment at a location along the midship tube shaft; and
e) applying a force to the coupling shaft to permanently deflect the same to thereby reduce any observed radial misalignment.

5,253,500

METHOD OF REFORMING A METAL CONTAINER TO INCREASE CONTAINER STRENGTH

Otis H. Willoughby, Boulder, Colo., assignor to Ball Corporation, Muncie, Ind.

Filed Mar. 3, 1992, Ser. No. 845,089
Int. Cl.[5] B21D *51/26*
U.S. Cl. 72—84 **25 Claims**



1. A method of reforming a metal container having a laterally bulging area disposed circumferentially about a lower portion of the container, said method comprising reworking the bulging area to remove a substantial portion thereof by deforming said bulging area generally radially inwardly toward a central axis of said container.

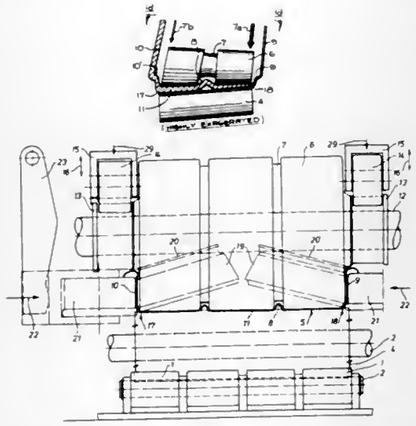
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5,253,501

MECHANISM AND METHOD FOR BENDING SHEET METAL

Walter E. Spath, Hardstrasse 8, D-7705 Steisslinger, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 174,248, Mar. 28, 1988, abandoned. This application Oct. 29, 1991, Ser. No. 783,988
Claims priority, application Fed. Rep. of Germany, Apr. 1, 1987, 3710931; Nov. 17, 1987, 3738566
Int. Cl.[5] B21D *5/14*; B21B *1/08*
U.S. Cl. 72—167 16 Claims



7. A method of curve bending a shaped sheet metal article, especially of either a line pressed thin aluminum profile or of a roll re-formed thin aluminum or steel with a web and side flanges, on a feeder table having a top surface extending longitudinally and oriented relative to an axis extending perpendicular to said top surface,

said method including the steps,

rolling the web (**11**) of the sheet metal article (**5**) with the web (**11**) between two horizontal press rollers (**4, 6**), by applying maximum roll pressure of the press rollers against the web at a first side of the article, while maintaining the press rollers pressureless against the web at a second side of the article, and thereby thinning and stretching the web at said first side and thinning and stretching it less, progressively, toward said second side, and consequently curving the web on a radius extending from said axis, and

utilizing two flanking press rollers (**19, 21**) separate from and downstream of the horizontal press rollers and applying pressure thereby to opposed surfaces of the side flanges (**9**) at said first side and thereby thinning and stretching that flange and thereby curving it on said radius and complementary to the curve of the web.

5,253,502

APPARATUS AND METHOD FOR BENDING AND FORMING SHEET MATERIAL

Joseph W. Poletti, Millstadt, Ill., assignor to Alco Industries, Inc., Valley Forge, Pa.

Filed Dec. 24, 1991, Ser. No. 815,519
Int. Cl.[5] B21D *9/10*
U.S. Cl. 72—213 11 Claims

1. A method of bending and forming sheet material in a forming press of a type comprising a base supporting a reciprocable support block, a reciprocable centering frame having a pair of centering cams thereon, and a pair of linearly movable centering blocks, the method comprising:

providing a movable anvil on the centering frame for movement with the centering frame and linear reciprocating movement relative to the centering frame;

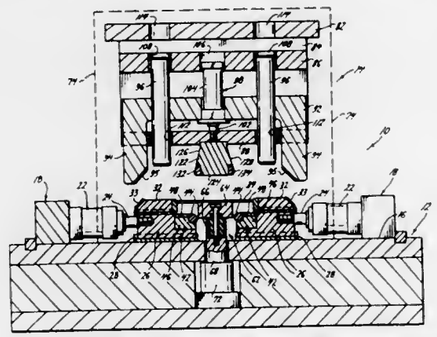
providing a pair of spaced movable rollers on the base for linear movement toward and away from each other, reach roller having a center axis and each roller being rotatable about its center axis relative to the base;

positioning a sheet of material on the support block between the pair of centering blocks;

moving the centering frame toward the base causing the pair of centering cams to engage the centering blocks and move the centering blocks linearly toward the sheet material and engage and exert centering forces on opposite sides of the sheet material and center the sheet material on the support block;

continuing to move the centering frame toward the base causing the anvil to engage the sheet material and secure the sheet material between the anvil and the support block;

moving the centering frame away from the base and the



anvil, causing the pair of centering cams to disengage from the centering blocks while maintaining the sheet material secured between the anvil and the support block;

moving the anvil, the support block and the sheet material secured therebetween toward the base and the spaced pair of rollers on the base until the spaced pair of rollers engage opposite ends of the sheet material on opposite sides of the support block and the anvil;

continuing to move the anvil, the support block and the sheet material secured therebetween toward the base causing the spaced pair of rollers to exert forces on the opposite ends of the sheet material that cause the opposite ends of the sheet material to bend and form around opposite side surfaces of the anvil;

moving the anvil, the support block and the sheet material secured therebetween away from the base causing the spaced pair of centering rollers to disengage from the opposite ends of the sheet material; and,

continuing to move the anvil away from the base causing the anvil to disengage from the sheet material.

5,253,503

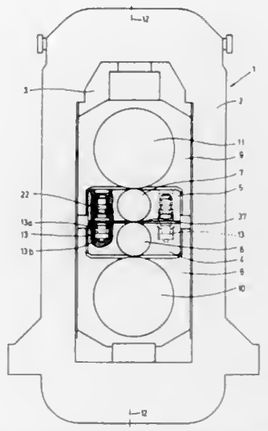
APPARATUS FOR COUNTERBALANCING AND VERTICAL BENDING OF THE WORK ROLLS OF A FOUR-HIGH ROLLING MILL STAND

Axel Barten, Siegen-Sohlbach, and Werner Moritz, Siegen, both of Fed. Rep. of Germany, assignors to Achenbach Buschhütten GmbH, Kreuztal, Fed. Rep. of Germany

Filed Dec. 17, 1991, Ser. No. 808,769
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1990, 4041290
Int. Cl.[5] B21B *29/00*
U.S. Cl. 72—239 4 Claims

1. In an apparatus for counterbalancing and vertical bending of work rolls of a four-high rolling mill stand whose work rolls

have axes lying in a common plane adjusting cylinders installed in upper and lower chocks in which said rolls are removably mounted, said chocks being arranged symmetrically to said plane, said cylinders being located symmetrically to said plane and having piston rods which project, during a rolling operation, from the lower work roll chock into the upper work roll chock, and means for releasably connecting the piston rods to the upper work roll chock; the improvement comprising, for each said piston rod, a shaft (**22**) having an upper end articulatedly connected to the upper chock and extending downwardly



through the upper chock to a coupling device (**16**), and means on the coupling device and an upper end of said piston rod for releasably interconnecting said shaft and said piston rod, there being annular segments (**29**) with an outer thread (**30**) arranged on said upper end of each said piston rod, an axially fixed coupling sleeve (**31**) rotatably mounted on said lower end of said shaft (**22**), said sleeve projecting beyond said lower shaft end and comprising annular segments (**32**) with an internal thread (**33**) matching said outer thread (**30**), and a rotary drive mechanism in said upper chock for rotating said coupling sleeve (**31**).

5,253,504

APPARATUS FOR THE SIMULATIVE OPTIMALIZATION OF THE SUPPORTING OF A SHEET METAL BLANK ON THE SUPPORT FRAME OF A DEEP-DRAWING TOOL

Klaus Siegert, Sindelfingen, and Stefan Kienzle, Leinfelden-Echterdingen, both of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Oct. 28, 1992, Ser. No. 967,708
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1991, 4137453
Int. Cl.[5] B21D *22/22*
U.S. Cl. 72—350 11 Claims

1. An apparatus for simulating an optimization of the support of a sheet metal blank on a support frame of a deep drawing tool, comprising:

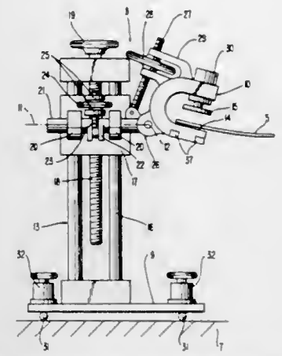
a flat, horizontally aligned base plate having a length and breadth larger than said sheet metal blank being studied;

a plurality of stands freely translatable and rotatable about a vertical axis, and capable of being fixed on said base plate in any desired position in respect of translation and rotation;

a mouth like clamp, carried on each of said plurality of stands, which can be turned and fastened about two horizontal pivot axis perpendicular to one another via mounting devices, said clamp being vertically adjusted and fastened on the stand via a fastenable vertical guide device;

wherein each clamp having a mouth opening comprises:

a support part surface, forming a partial region of a support surface to be simulated for said sheet metal blank, located on a bottom inside face of the mouth opening;



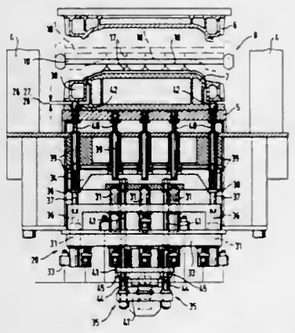
a clamp jaw, arranged opposite said support part surface in the mouth opening, translatable in parallel transversely to the support part surface and capable of being pressed with a defined force against said support part surface.

5,253,505

PRESS WITH A DRAWING APPARATUS

Siegfried Baur, Göppingen, Fed. Rep. of Germany, assignor to L. Schuler Pressen GmbH, Fed. Rep. of Germany

Filed May 22, 1992, Ser. No. 887,059
Claims priority, application Fed. Rep. of Germany, May 25, 1991, 4117102
Int. Cl.[5] B21D *43/05*
U.S. Cl. 72—361 1 Claim



1. A method of operating a press having a press frame, at least one slide and a press bed for top and bottom parts of tools, with the press bed having a tool-side sheet metal holder, a transfer device for transporting of sheet metal parts through the press, a drawing device, a liftable and lowerable console through which piston rods of drawing cylinders act on the sheet metal holder to eject the sheet metal parts, the console being operatively connected to a stop that is fixed to the press, and a lifting-lowering drive for the transfer device that lifts and lowers the transfer device, the method comprising:

adjustably controlling a stop position of the console;

moving the console upwardly after passing through a lower dead center of the slide and the drawing device;

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temporarily stopping the upward movement of the console as a function of a slide path or an angle of rotation at a height determined by the stop;

controlling movements of the transfer device via the lifting-lowering drive in coordination with the movement of the console as a function of the slide path or the angle of rotation until the sheet metal parts are gripped by the transfer device in the temporarily stopped upward movement of the console.

5,253,506

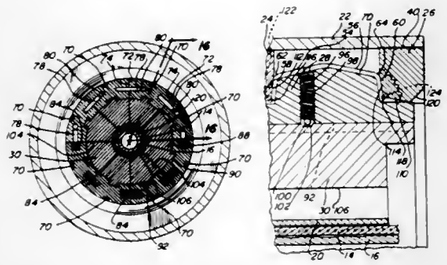
CRIMPING APPARATUS

Edward H. Davis; Gerard F. Klaes; Jack Harris, all of Denver, and Paul Douglass, Littleton, all of Colo., assignors to The Gates Rubber Company, Denver, Colo.

Division of Ser. No. 447,305, Dec. 7, 1989, which is a division of Ser. No. 145,445, Jan. 19, 1988. This application Jun. 28, 1990, Ser. No. 547,579

Int. Cl.[5] B21D *41/04*

U.S. Cl. 72—402 **19 Claims**



1. In a crimping apparatus with:

a pair of first and second, axially spaced apart, coaxial annular rings that each have concave force reactive surfaces that face those of the other ring and where at least one ring is axially moveable toward and away from the other ring; actuating means for axially moving at least one ring; and

a plurality of circumjacently spaced and radially arranged crimping members positioned intermediate the rings and each having first and second convex force reactive surfaces that slidably engage with the concave force reactive surfaces of the first and second rings, respectively, the engaging force reactive surfaces defining means for radially moving the crimping members toward and away from the annular ring axis between an open position and a radially inward crimping position, the radial movement being in response to axial movement of at least one of the annular rings; the improvement which comprises:

the first and second rings having concave force reactive surfaces consisting essentially of a single pair of adjoining steep and shallow concave frustoconical surfaces, the steep surfaces being inclined at a greater angle from the ring axis than the shallow surfaces wherein the steep surfaces of the rings and crimping members are inclined at an angle between about 70° to 86° as measured from the ring axis and wherein the shallow surfaces of the rings and crimping members are inclined at an angle between about 6° to 20° as measured from the ring axis;

the crimping members having first and second convex force reactive surfaces each of which includes a pair of steep and shallow convex frustoconical surfaces that slidably engage with the steep and shallow concave frustoconical surfaces of the inner and outer rings, the steep convex surfaces being inclined at a greater angle from the ring axis than the shallow convex frustoconical surfaces; and

means for maintaining the crimping members in alignment while moving between the open position and the crimping position.

5,253,507

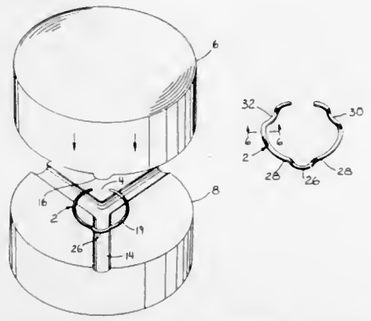
METHOD OF FORMING A SPACER USED TO SPACE END TO END PIPING

Goodwin A. Lycan, Stevensville, Mich., assignor to G.A.L. Gage Co., Stevensville, Mich.

Filed Jul. 13, 1992, Ser. No. 912,266

Int. Cl.[5] B21F *37/00*

U.S. Cl. 72—414 **3 Claims**



1. A method of forming an annular split ring pipe spacer having a plurality of undulate protrusions thereon comprising the steps of:

a) providing a split ring of wire having spaced ends;

b) first compressing said ring at a center portion of the ring to form one of said protrusions in the ring generally equally spaced from its sized ends; and

c) thereafter compressing said ring spacedly between said first formed protrusion and each of said ring ends to form another of said protrusions between and separated spacedly from the first formed protrusion and each ring end.

5,253,508

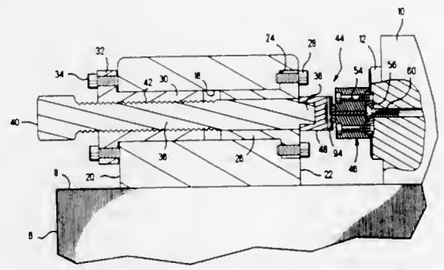
FORCE TRANSMITTING COUPLING FOR STAMPING AND FORMING MACHINE

Johannes C. W. Bakermans, Harrisburg, Pa., assignor to Whitaker Corporation, Wilmington, Del.

Filed Aug. 12, 1992, Ser. No. 929,255

Int. Cl.[5] B21J *13/04, 9/18*

U.S. Cl. 72—431 **20 Claims**



1. A stamping and forming machine comprising a pair of ram assemblies which are movable towards and away from each other along paths of reciprocation between forward and retracted positions, the ram assemblies having stamping tooling on their opposed ends, strip feeding means for feeding strip material along a strip feed path which extends between the ram assemblies, an actuator for each of the ram assemblies, each actuator being movable to-and-fro along an arcuate path, and force transmitting couplings which couple each of the actuators to its associated ram assembly, the machine being characterized in that:

each of the couplings comprises a flexible member which extends between the actuator and the ram assembly, the flexible member having first and second ends, the first end being connected to the ram assembly, the second end being connected to the actuator,

the coupling has supporting surfaces which extend beside the flexible member, the supporting surfaces permitting flexure of the flexible member by a limited amount and supporting the flexible member against flexure by an amount greater than the limited amount whereby,

during movement of the ram assembly from its retracted position to its forward position, the ram assembly is pushed by the actuator, the flexible member functions as a compression member, and the flexible member is flexed by the limited amount, and during movement of the ram assembly form its forward position to its retracted position, the ram assembly is pulled by the actuator and the flexible member functions as a tension member.

5,253,509

STRAIGHTENING DEVICE FOR A CAR BODY

Olavi Venäläinen, Kuopio, Finland, assignor to Autorobot Finland KY, Finland

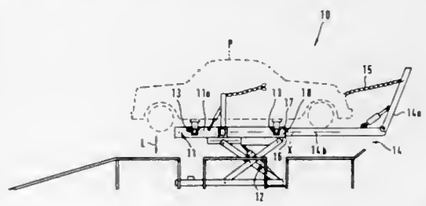
PCT No. PCT/FI91/00262, § 371 Date May 5, 1992, § 102(e) Date May 5, 1992, PCT Pub. No. WO92/04140, PCT Pub. Date Apr. 19, 1992

PCT Filed Aug. 26, 1991, Ser. No. 855,708

Claims priority, application Finland, Sep. 10, 1990, 904458

Int. Cl.[5] B21D *1/12*

U.S. Cl. 72—457 **12 Claims**



1. A straightening device for a car body comprising:

a straightening table having a beam and sill fasteners for fixing a vehicle to said straightening table,

lifting means for lifting said straightening table into a desired position,

a straightening unit comprising concentrating means for concentrating a force on an object to be straightened, and an extension beam having a first beam section and a second beam section, said extension beam being displaceable within said beam of said straightening table such that said straightening unit contacts said beam of straightening table,

said second beam section being movable in relation to said first beam section, said first and second beam sections having corresponding surfaces in a diagonal relationship to a center axis of said extension beam, and

displacement means for displacing an upper surface of said second beam section into contact with an inner surface of said beam of said straightening table such that said upper surface of said second beam section aligns said straightening unit in the same direction as said straightening table.

5,253,510

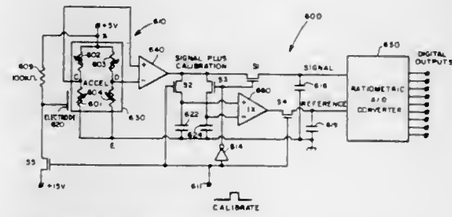
SELF-TESTABLE MICRO-ACCELEROMETER

Henry V. Allen, Freemont; Stephen C. Terry, Palo Alto, and Diederik W. De Bruin, Santa Clara, all of Calif., assignors to I C Sensors, Milpitas, Calif.

Continuation of Ser. No. 668,180, Mar. 12, 1991, abandoned, which is a division of Ser. No. 370,364, Jun. 22, 1989, Pat. No. 5,103,667. This application Jul. 17, 1992, Ser. No. 915,792

Int. Cl.[5] G01P *15/08*

U.S. Cl. 73—1 D **6 Claims**



1. An accelerometer comprising:

a housing;

a beam mounted in said housing movable relative to said housing in response to an applied force, said beam including a conductive mass formed on said beam;

at least one capacitive plate attached to said housing and disposed such that a potential difference between said capacitive plate and said mass causes a movement of said mass;

means for producing a potential difference between said mass and said capacitive plate; and

at least one piezoresistive element connecting said housing and said beam for sensing movement of said mass relative to said housing wherein said housing comprises:

a frame for supporting said beam and said mass;

a base supporting said frame underlying said beam and having a first air gap therebetween;

a cap overlying said beam and having a second air gap therebeween; and

said first and second air gaps providing squeeze film damping for movements of said mass on said beam, and further being sized so that said base and said cap provide mechanical stops for movements of said mass.

5,253,511

TRANSMITTER WITH MULTIFUNCTION ADJUSTMENT

Rafael Jaramillo, Minnetonka; Roger L. Frick, Chanhassen; Kären B. Carlson, Eden Prairie; Randy K. Paschke, Chaska, and Christopher M. Throne, Lakeville, all of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.

Continuation of Ser. No. 603,173, Oct. 25, 1990, abandoned. This application May 22, 1992, Ser. No. 888,263

Int. Cl.[5] G01D *3/02*

U.S. Cl. 73—1 R **41 Claims**

31. A transmitter, comprising:

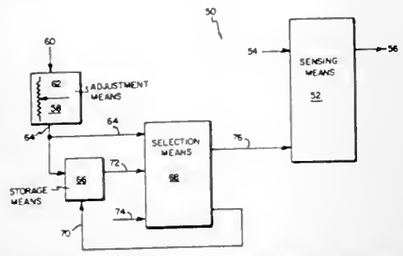
manual adjustment means which is manually controllable by an operator for providing both fine range and coarse range adjustments of an adjusted electrical output, the adjusted electrical output adjusting in response to manual inputs in the fine range and adjusting at a time rate of change automatically in the coarse range;

storage means for storing the adjusted electrical output in nonvolatile memory as a stored value when a store command is received;

selection means receiving manual selections from the operator, for selecting the adjusted electrical output after the operator activates a desired setting and for providing the store command and selecting the stored value after occurrence of a predetermined event; and

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circuit means sensing a process variable for controlling a transmitter output which represents the process variable



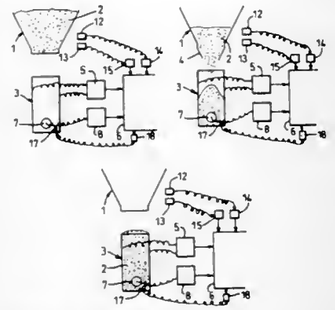
and which has a parameter controlled by the selection such that the parameter can be adjusted coarsely and finely and made insensitive to adjustment by the storing.

5,253,512

MOISTURE METER FOR GRANULAR OR POWDERED PRODUCTS, AND METHOD FOR MEASURING THE DEGREE OF MOISTURE

Dominique Le Gigan, Parmain, France, assignor to Star Partners, Chicago, Ill.

Filed Jun. 11, 1992, Ser. No. 897,271
Claims priority, application France, Jun. 13, 1991, 9107215
Int. Cl.[5] G01N *19/10, 27/22, 21/85*
U.S. Cl. 73—73 **27 Claims**



1. A moisture tester for analyzing granular or powdered product, comprising:

a measurement cell for the product to be analyzed, wherein said cell is filled with and successively emptied of said product;

a means of indirect measurement of the moisture of the product;

a measurement processing unit for processing the measurement from said means for indirect measurement; and

a hygrometric sensor arranged so as to be in contact with the air surrounding said product to be analyzed and wherein said sensor is connected to the measurement processing unit in order to make corrections to the values for the apparent moisture measured by said indirect measurement means.

18. A method of measuring the moisture content for granular or powdered products by means of a moisture tester comprising the steps of:

providing an empty main cell;

measuring, during a given period of time, a hygrometric value of the ambient air of a zone of the empty main cell;

placing said granular or powdered product into said empty main cell;

measuring during a given period of time hygrometric values of the ambient air of a zone of the main cell containing said granular or powdered product in said main cell;

indirectly determining the apparent moisture content of the granular or powdered product contained by said main cell;

determining corrective values for the apparent measured moisture value based upon the hygrometric values measured with the empty main cell and the main cell containing said granular or powdered product; and

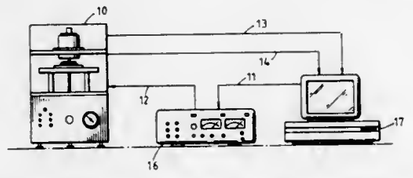
correcting said apparent moisture content based upon said corrective values for the apparent measured moisture value.

5,253,513

DEVICE FOR DETERMINING VISCOELASTIC PROPERTIES OF LIQUIDS AND A METHOD FOR USE

William E. Van Arsdale, Houston, and Hatim Motivala, Katy, both of Tex., assignors to University of Houston, Houston, Tex.

Filed Nov. 8, 1991, Ser. No. 789,719
Int. Cl.[5] G01N *11/16*
U.S. Cl. 73—54.41 **9 Claims**



1. A method of determining viscoelastic properties of liquids comprising the steps of:

placing a liquid circularly between and in contact with parallel plates;

sinusoidally oscillating one of the plates in a direction normal to the other plate;

measuring the radius of the fluid circle;

measuring the force of the oscillations;

measuring the displacement of the moving plate;

measuring the mean distance between the plates;

measuring the frequency of the oscillations; and

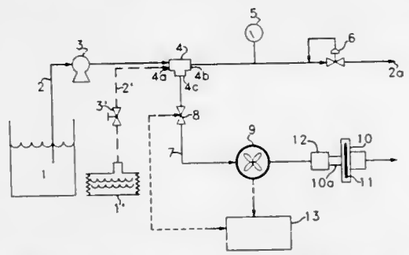
determining G', the storage modulus, and G'', the loss modulus, based on these measurements.

5,253,514

WATER-BORNE PARTICULATE-MEASURING APPARATUS

John W. Kaakinen, 4131 N. Overlook Ter., Portland, Oreg. 97217

Filed Dec. 2, 1991, Ser. No. 800,994
Int. Cl.[5] G01N *15/06*
U.S. Cl. 73—61.73 **5 Claims**



1. Apparatus for measuring the level of particulates in water containing particulates ≧0.2 micron in diameter comprising:

(a) a sampling pipe for removing a sample of water from water containing particulates, said sampling pipe having an inlet and a first outlet and a second outlet, the inlet being in communication with said flow of water;

(b) pump means in communication with the inlet of said sampling pipe for pressurizing said sample of water and for delivering the same to said sampling pipe;

(c) back pressure regulator means connected to the first outlet of said sampling pipe for maintaining water pressure within said sampling pipe at a constant value and for continuously bleeding off a portion of said sample of water;

(d) filter means in communication with the second outlet of said sampling pipe for filtering said sample of water passing through said second outlet of said sampling pipe, said filter means being capable of filtering particulate matter from said sample of water and of permitting a water sample flow rate of at least 100 mL/min. at 30 psi and 25° C.;

(e) flow rate detecting means for continuously detecting the flow rate of said sample of water passing through said filter means and generating a corresponding output as a function of time; and

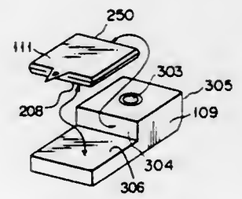
(f) evaluating means coupled to said flow rate detecting means for determining at predetermined times the plugging factor and/or the silt density index of said sample of water passing through said flow rate detecting means.

5,253,515

ATOMIC PROBE MICROSCOPE AND CANTILEVER UNIT FOR USE IN THE MICROSCOPE

Akitoshi Toda, Kunitachi, and Shuzo Mishima, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 26, 1991, Ser. No. 661,485
Claims priority, application Japan, Mar. 1, 1990, 2-47296; Nov. 13, 1990, 2-306804
Int. Cl.[5] G01B *21/30, 11/30*
U.S. Cl. 73—105 **4 Claims**



1. A cantilever unit for use in an atomic probe microscope, comprising:

a replaceable cantilever including a lever section having a probe, and a supporting block for supporting the lever section, said supporting block having first and second attachment sections; and

a lever seat for removably receiving and supporting the cantilever, said lever seat having a first face in contact with said first attachment section and a second face in contact with said second attachment section when the cantilever is received and supported on the lever seat, said first and second faces being at an angle relative to each other, and said first and second attachment sections of said supporting block are arranged at an angle relative to each other; and

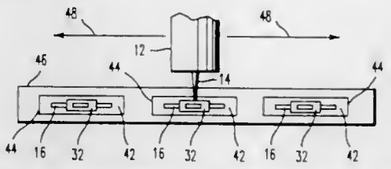
wherein said first attachment section has a border ridge arranged to contact said first face of said lever seat when the cantilever is received and supported on the lever seat.

5,253,516

ATOMIC FORCE MICROSCOPE FOR SMALL SAMPLES HAVING DUAL-MODE OPERATING CAPABILITY

Virgil B. Elings, and John A. Gurley, both of Santa Barbara, Calif., assignors to Digital Instruments, Inc., Santa Barbara, Calif.

Continuation of Ser. No. 527,388, May 23, 1990, abandoned.
This application May 7, 1992, Ser. No. 883,043
Int. Cl.[5] G01B *5/28*
U.S. Cl. 73—105 **7 Claims**



1. An atomic force microscope useful for scanning small samples to obtain the surface topography and other surface information of a surface thereof, comprising:

a cantilever arm supported on one end for movement on an opposite end, said opposite end having a sample holding area thereon carrying a sample to be scanned, said cantilever arm being removably held by a structural member of the atomic force microscope;

a scanning tip;

scanning means disposed over said sample holding area and carrying said scanning tip on a scanning end thereof for moving said scanning tip over said sample in a scanning pattern;

detector means for detecting movement of said opposite end of said cantilever arm and for developing a signal at an output thereof reflecting an amount of movement of said opposite end of said cantilever arm;

controller and driver means connected to said scanning means and to receive said signal from said detector means for driving said scanning means in said scanning pattern and for deriving surface image data from said signal;

wherein:

said cantilever arm is held by a removable mounting block;

said structural member is adapted to removable receive a plurality of mounting blocks containing individual cantilever arms with samples thereon for scanning at a plurality of scanning stations; and,

said scanning tip is positionable over respective ones of said scanning stations.

5,253,517

FLOW CONVERTER

Marek Molin, Neutraubling, and Andreas Wildgen, Nittendorf-/Haugenried, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 707,636, May 30, 1991, abandoned.
This application Feb. 10, 1993, Ser. No. 16,662
Claims priority, application European Pat. Off., May 30, 1990, 90110285.5
Int. Cl.[5] G01F *15/00*
U.S. Cl. 73—118.2 **7 Claims**

1. A flow converter for an air flow rate meter, comprising:

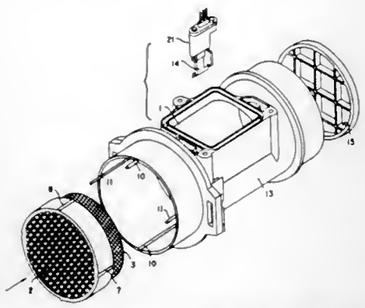
a plastic flow rectifier for converting an aspirated air mass into a laminar air flow moving in a given flow direction, said flow rectifier including a honeycomb body and a ring integral with said honeycomb body, said honeycomb body having a surface disposed at right angles to said given flow direction, and said ring including a portion protruding out of said surface; and

a grid being permanently secured to the protruding portion downstream of said flow rectifier for generating microscopic eddies in the laminar air flow; and

said flow rectifier further including means for securing a

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predetermined angle between said honeycomb body and an edge surface of the air flow rate meter and fixing said flow rectifier in alignment with the air flow rate meter



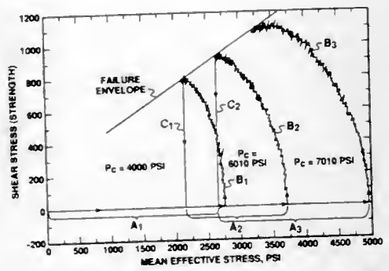
said means including elements that individually both center and fix the flow rectifier relative to the air flow rate meter.

5,253,518

APPARATUSES AND METHODS FOR ADJUSTING A MATERIAL'S FLUID CONTENT AND EFFECTIVE STRESSES

Ronald P. Steiger, Houston, and Peter K. Leung, Sugar Land, both of Tex., assignors to Exxon Production Research Company, Houston, Tex.

Filed Aug. 31, 1990, Ser. No. 576,692
Int. Cl.[5] E21B *49/02*
U.S. Cl. 73—153 **8 Claims**



1. A step-wise test method for triaxially testing a single sample of a material at different pore pressures in a single test procedure to obtain strength values for the sample, the sample having two ends and prepared and mounted by mounting a pore pressure transducer in a pore pressure chamber in a first end cap of a triaxial test apparatus, the pore pressure chamber in fluid communication with a pore pressure channel extending to a surface of the first end cap for disposition contactingly adjacent the rock sample to be tested, the pore pressure channel for receiving sample fluid expelled from the sample during testing, the pore pressure channel and the pore pressure chamber filled with an inert fluid immiscible with the sample fluid, and a flexible impermeable jacket applied to the sample other than to the sample's ends, and applying the first end cap to one end of the sample and a second end cap to the other end of the sample, the sample having a pore pressure, the pore pressure chamber in fluid communication via a flow line having a valve thereon for controlling flow with a pressure generator having a cavity for receiving an amount of the inert immiscible fluid from the pore pressure chamber, the test method comprising

placing the sample in a confinement vessel of a triaxial test apparatus and sealing the vessel shut,

isostatically loading the sample by introducing a confining fluid under pressure into the confinement vessel to provide a constant confining pressure on the sample to consolidate the sample and allow it to reach a predetermined pore pressure,

interconnecting the pore pressure transducer with a monitor system outside of the test apparatus, and then opening the valve,

allowing the sample to consolidate and sample fluid to flow from the sample into the pore pressure channel by adjusting the pressure generator so that the cavity receives an amount of inert immiscible fluid corresponding to the amount of sample fluid flowing from the sample until the sample's pore pressure equilibrates with pressure in the pore pressure chamber, and then closing the valve,

applying a load piston to one end cap to apply a load on the sample which approaches the shear failure level of the sample, the piston sealingly extending through the confinement vessel to contact the sample,

measuring and recording pore pressure of the sample and load thereon continuously during loading of the sample,

releasing load on the sample,

changing the confining pressure to a new confining pressure on the sample and opening the valve to allow sample fluid to flow into or out of the pore pressure channel with a corresponding flow of inert immiscible fluid into or out of the pressure generator's cavity,

permitting the sample's pore pressure to equilibrate with the new confining pressure until fluid stops flowing from or into the sample, and then closing the valve, at a new pore pressure,

and

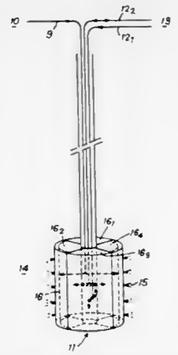
measuring and recording a new pore pressure of the sample and load thereon following application a load by the piston which again approaches the shear failure level of the sample.

5,253,519

METHOD AND DEVICE FOR IN-SITU MEASUREMENT OF GROUND HEAVE CHARACTERISTICS

Ernest Muschotti, La Seyene Sur Mer, and Etienne Flavigny, Grenoble, both of France, assignors to Societe Anonyme Stiled E.R.G., La Seyne Sur Mer, France

PCT No. PCT/FR90/00368, § 371 Date Nov. 27, 1991, § 102(e) Date Nov. 27, 1991, PCT Pub. No. WO90/15324, PCT Pub. Date Dec. 13, 1990
PCT Filed May 25, 1990, Ser. No. 778,129
Claims priority, application France, Jun. 9, 1989, 89 07294
Int. Cl.[5] E21B *47/00*
U.S. Cl. 73—155 **16 Claims**



1. In a method for measuring in-situ a ground characteristic, the method comprising providing a hole in the ground, introducing an expansible sensor into the hole, expanding the expansible sensor into contact with ground walls of the hole and further expanding the expansible sensor into the ground walls of the hole, and measuring a first characteristic of the ground at the sensor as a function of a first pressure and a first volume of a selected extend of the further expansion of the expansible sensor, the improvement comprising:

supplying a liquid into the ground at the expansible sensor until a saturation point of the ground at the expansible sensor is reached;

maintaining the first volume constant while supplying the liquid by increasing the first pressure until a second pressure is reached at the saturation point of the ground, whereby the first volume will increase and the second pressure will decrease; and

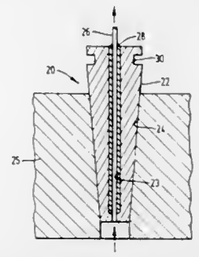
measuring a second characteristic of the ground at the sensor as a function of the difference of the first and second pressures, whereby the second characteristic is a ground heave characteristic.

5,253,520

FLOW SENSOR CONNECTOR

Charles F. Drexel, Rolling Hills, and Hamid Saghatchi, Orange, both of Calif., assignors to DXL International, Inc., Torrance, Calif.

Filed Dec. 7, 1990, Ser. No. 624,165
Int. Cl.[5] G01F *5/00*
U.S. Cl. 73—202 **4 Claims**



1. A flow meter having a fluid inlet, a fluid outlet, and a fluid passage between the two, where the fluid passage comprises

1) a flow splitter section,

2) a disconnectable inlet flow connector comprising

(a) a frusto-conical inlet taper pin having a longitudinal bore therethrough and

(b) a connector base containing a matched frusto-conical inlet taper bore in the flow splitter section, such that the taper pin is press-fittable in the taper bore to form a connection having a leakage level less than about 10^{-9} scc/sec helium,

3) a disconnectable outlet flow connector comprising

(a) a frusto-conical outlet taper pin having a longitudinal bore therethrough and

(b) a connector base containing a matched frusto-conical outlet taper bore in the flow splitter section, such that the taper pin is press-fittable in the taper bore to form a connection having a leakage level less than about 10^{-9} scc/sec helium, and

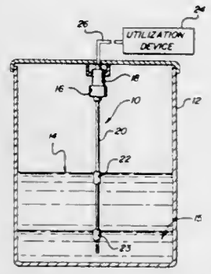
4) a flow sensor assembly containing a flow tube having a first end portion adapted to receive fluid from the flow splitter section, through the inlet flow connector, and, downstream of the inlet flow connector, a second end portion adapted to return the fluid to the flow splitter section, through the outlet flow connector, wherein the first end portion of the flow tube is secured in a nonrotatable fashion, and fixed, in the longitudinal bore of the inlet taper pin, the second end portion of the flow tube is secured in a nonrotatable fashion, and fixed, in the longitudinal bore of the outlet taper pin, and each taper pin is press fittable into its associated taper bore without relative rotation between each taper pin and its associated taper bore.

5,253,521

METHOD OF TRANSMITTING MEASURED TEMPERATURE AND POSITION PARAMETERS FROM A TRANSDUCER

Igor Abramovich, and Neil McKenna, both of Simsbury, Conn., assignors to Magnetek Inc., Clawson, Mich.

Filed Oct. 26, 1992, Ser. No. 966,364
Int. Cl.[5] G01F *23/00*; G01R *33/18*
U.S. Cl. 73—306 **10 Claims**



1. In a combined temperature transducer and magnetostrictive displacement transducer for measuring the position of at least one displaceable magnet and the temperature at a plurality of sensors, the method of encoding position and temperature measurements comprising:

making measurements by the displacement transducer and the temperature transducer in a prescribed order to obtain a sequence of measurement values;

producing a pair of pulses for each measurement, the pulses in each pair being spaced in accordance with the corresponding measurement value; and

transmitting data in a series of time frames, the first frame being synchronizing frame and subsequent frames comprise the pairs of pulses in the prescribed order, whereby the order of each frame in the series corresponds to the parameter being measured and the pulse spacing in each frame represents the measurement value.

5,253,522

APPARATUS FOR DETERMINING FLUID LEVEL AND FLUID DENSITY

David S. Nyce, Apex, N.C., and Jacob Tellerman, Bayside, N.Y., assignors to MTS Systems Corporation, Minneapolis, Minn.

Filed Jul. 11, 1991, Ser. No. 728,359
Int. Cl.[5] G01N *9/12*
U.S. Cl. 73—453 **21 Claims**

1. An apparatus capable of determining fluid level and fluid density in which at least portions thereof are submerged, said apparatus comprising:

a first float means submergible in said fluid and having a first position marker means provided therewith, said first float means being provided along a guide means between a first pair of support means;

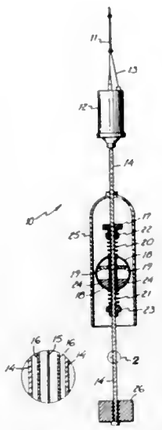
a first pair of axial translational force means each having a pair of ends and each being capable of being extended or contracted in length between said ends along a primary axis thereof to an extent depending on magnitudes of axial forces exerted therebetween, said first pair of axial translational force means each having one said end thereof connected to said first float means and each having that remaining said end thereof connected to a different one of said first pair of support means;

a position determination means extending at least in part along said guide means past one of said first pair of support

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means, said position determination means being capable of measuring relative positions of said first marker means between said first pair of support means; and

a second float means for providing an output signal indicative of a level of said fluid within a container, said second float means being at least partially exposed outside said fluid within said container and having a second position marker means provided therewith, said position determination means being capable of measuring the position of said second position marker means within said container.



5,253,523

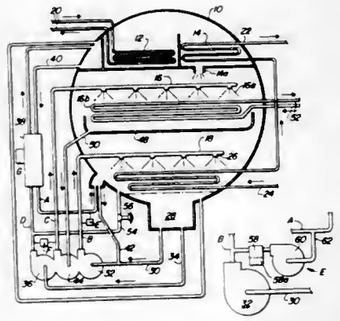
ABSORPTION TYPE CHILLER

Billy J. Bernardin, 218 Iowa St., Wilton, Iowa 52778

Filed May 5, 1992, Ser. No. 878,700

Int. Cl.[5] F25B *15/00*

U.S. Cl. 62—476 **17 Claims**



1. In an absorption type chiller system including a concentrator, a condenser, an evaporator, an absorber and system circuits comprising a concentrated aqueous salt solution circuit, a less concentrated aqueous salt solution circuit and a refrigerant circuit, the improvement comprising a liquid-transfer means from the concentrated salt solution circuit to a less concentrated salt solution circuit, said liquid transfer means comprising a connection including a magnetic filter for filtering out iron oxide from the concentrated salt solution.

5,253,524

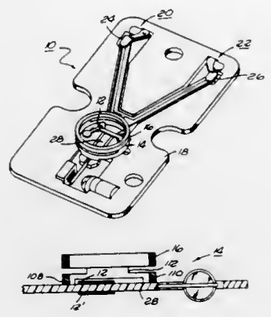
INTEGRATED ACCELEROMETER WITH COIL INTERFACE SPACER

Henry C. Abbink, Westlake; Daryl K. Sakaida, Northridge, and Stanley F. Wyse, Encino, all of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Division of Ser. No. 633,260, Dec. 24, 1990, Pat. No. 5,191,794. This application Sep. 28, 1992, Ser. No. 951,799

Int. Cl.[5] G01P *15/13*

U.S. Cl. 73—497 **3 Claims**



1. An integrated accelerometer comprising in combination:

a) a planar support base having an internal aperture;

b) a pendulous mass, said mass including a pair of arms;

c) a pair of spaced flexible hinges for pivotally supporting said pendulous mass within said aperture;

d) a substantially round torquer coil;

e) a substantially round interface spacer of material having a coefficient of thermal expansion that is less than that of the coil, said spacer being fixed to said pendulous mass and to said coil for substantially limiting the transmission of mechanical stresses between said coil and said pendulous mass; and

f) said spacer including (i) a pair of upstanding prongs at the upper edge of said spacer for contacting said torquer coil and (ii) a pair of downwardly-directed prongs at the lower edge of said spacer for contacting said pendulous mass.

5,253,525

DEVICE FOR DETECTING ANGULAR VELOCITY

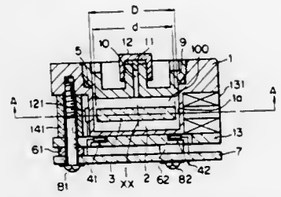
Shinji Fukui; Takaharu Idogaki, both of Okazaki; Toshihisa Ishihara, Nishio; Hideki Kusunoki, Toyota, and Hideo Inoue, Ashigarakami, all of Japan, assignors to Nippon Soken, Inc, Nishio and Toyota Jidosha Kabushiki Kaisha, Toyoto, Japan

Filed Mar. 1, 1991, Ser. No. 662,295

Claims priority, application Japan, Mar. 2, 1990, 2-52503; Jan. 9, 1991, 3-000999

Int. Cl.[5] G01P *15/08*

U.S. Cl. 73—504 **19 Claims**



1. An angular velocity detecting device arranged in a field to which an angular movement is applied, said device comprising: a casing;

a magnetic fluid filled in the casing;

a magnetic member, having a first axis for rotation, and arranged inside the casing so that said magnetic member is freely rotatable about the first axis and inclinable with respect to the casing against an elastic force of the magnetic fluid and with respect to at least one second axis transverse to the first axis, upon the application of said angular movement;

means for rotating the magnetic member about said first axis, said rotating means being spaced from the magnetic member and not contacting the magnetic member;

means for controlling the rotating means for maintaining a constant rotational speed of the magnet member about the first axis;

means for detecting a degree of inclination of the magnetic member with respect to the casing while the magnetic member is rotated at the constant speed, and;

means for calculating an angular velocity of said angular movement in response to the detected degree of the inclination of the magnetic member with respect to the casing.

5,253,526

CAPACITIVE ACCELERATION SENSOR WITH FREE DIAPHRAGM

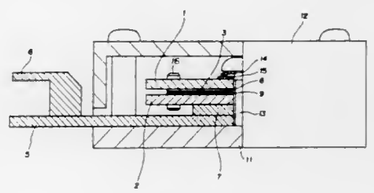
Atsushi Omura; Masaaki Takagi, and Shigekazu Nakamura, all of Tokyo, Japan, assignors to Copal Company Limited, Tokyo, Japan

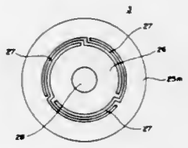
Filed May 22, 1991, Ser. No. 704,221

Claims priority, application Japan, May 30, 1990, 2-140742; May 30, 1990, 2-140743; May 30, 1990, 2-140744; May 30, 1990, 2-140745; Nov. 5, 1990, 2-299538

Int. Cl.[5] G01P *15/125*

U.S. Cl. 73—517 R **12 Claims**





1. An acceleration sensor comprising:

a first stationary substrate having a first central junction pad and a first peripheral stationary electrode of an annular shape surrounding the first central junction pad;

a second stationary substrate having a second central junction pad and a second peripheral stationary electrode of an annular shape which surrounds the second central junction pad and which is opposed to the first peripheral stationary electrode with a given spacing;

an electrically conductive diaphragm having a central segment fixed in the spacing between the pair of first and second junction pads and a peripheral segment of an annular shape surrounding around and extending resiliently from the central segment to undergo a displacement in the spacing relative to the first and second peripheral stationary electrodes in response to an external acceleration force;

a pair of spacers composed of thin metal plates having an identical shape and an identical thickness with each other, and being disposed between respective ones of the first and second central junction pads and the central segment of the diaphragm to sandwich the same such as to provide an electrical path from the peripheral segment to either of the first and second central junction pads, and

a coupling member passing through the central segment for securing a superposed structure of the diaphragm, the pair of spacers, and the pair of first and second stationary substrates with each other.

5,253,527

TORQUE BALANCER

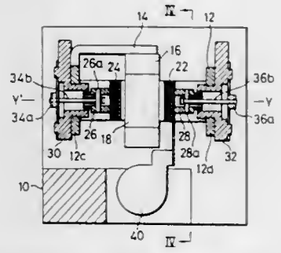
Takao Yamaguchi, 1-22-19, Ooizumicho Nerimaku Tokyoto, and Hajime Nishizawa, 4-28-3, Hongou Bunkyoku Tokyoto, both of Japan

Filed Dec. 18, 1990, Ser. No. 629,714

Claims priority, application Japan, Dec. 28, 1989, 1-343475; Sep. 4, 1990, 2-233700

Int. Cl.[5] G01P *15/13*

U.S. Cl. 73—517 B **2 Claims**



1. A torque balancer comprising: a magnet and a yoke fixed to a frame to define a magnetic field gap midway of a closed magnetic circuit; a movable coil located in said magnetic field gap defined by said magnet and said yoke and supported for pivotal movement about a pivotal center line extending across the magnetic pole direction of said magnet; a weight attached to said movable coil in a position distant from the pivotal center thereof by a predetermined distance; a relative declination detector for detecting declination of said movable coil from a reference position thereof with respect to said magnet and said yoke; and a feedback apparatus for supplying said movable coil with a negative feedback of a declination signal detected by said relative declination detector to hold said movable coil in said reference position regardless any possible torque caused by force applied to said weight, said movable coil being supported by elongated torsion bands extending on opposite sides thereof on extensions of said pivotal center line, each said torsion band having one end coupled to and biased by a leaf spring and having the other end fixed to a band hook formed as unitary part of said movable coil,

said band hook including a pin extending in parallel orientation with a line connecting the pivotal center of said movable coil and the center of said weight, said torsion band extending from said one end connected to said leaf spring along said pivotal center line of said movable coil, then fit on the outer periphery of said pin, bent thereafter, and terminating at the other end fixed to said band hook.

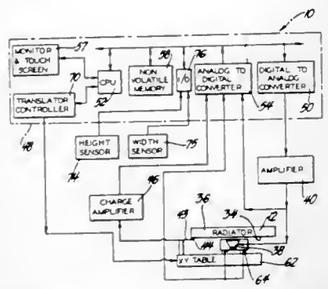
VOL 1155 ISS 3 OCT 19 1993 UMI

5,253,528

VIBRATION TECHNIQUE FOR MEASURING BONDING IN AUTOMOTIVE RADIATORS

John H. Varterasian, Livonia; Francis H. Chen, Rochester Hills; Wolfgang Kiel, Warren, all of Mich.; Kent E. Brittin, Lockport, N.Y.; Patrick D. Quinn, Rochester Hills, Mich.; Kenneth J. Zielesch, Fraser, Mich.; Kurt A. Tesnow, Sterling Heights, Mich., and Thomas H. Worswick, Mount Clemens, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 17, 1991, Ser. No. 716,494
Int. Cl.[5] G01H *13/000*
U.S. Cl. 73—582 17 Claims



1. A method of measuring defective bonding within heat exchanger cores, the method including the steps of:

vibrating the heat exchanger core at a plurality of frequencies causing deflection of the heat exchanger core as a whole;

measuring a first natural frequency in a first mode of vibration indicative of bonding in a first region of the heat exchanger core;

measuring a second natural frequency in a second mode of vibration indicative of bonding in a second region of the heat exchanger core;

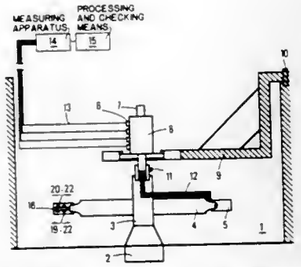
comparing the first and second natural frequencies to predetermined frequency values to determine the amount of defective bonding in the heat exchanger core.

5,253,529

MEASUREMENT OF CONSTITUENTS OF A CENTRIFUGED SYSTEM BY EMISSION/RECEPTION OF MECHANICAL SIGNALS

Roland Lenormand; Pierre Forbes, both of Rueil Malmaison; Moricio Hoyos, Epinay sur Seine, and Francoise Deflandre, Argenteuil, all of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Filed Aug. 26, 1991, Ser. No. 749,774
Claims priority, application France, Aug. 27, 1990, 90 10755
Int. Cl.[5] G01N *29/00*
U.S. Cl. 73—597 18 Claims



17. A process for measurement of a distribution of concentrations of constituents of a medium containing at least one fluid, comprising centrifuging under appropriate conditions, of the medium in a centrifuge comprising a centrifuge arm and characterized by the following stages:

(a) during centrifuging, a mechanical signal is emitted at an adequate frequency and intensity range from a plurality of emission points at spaced locations along a length of travel traversing a plurality of constituents within the medium and in contact with or in the immediate vicinity of the centrifuged medium,

(b) a corresponding transmitted signal is received by at least one reception point in contact with or in the immediate vicinity of the centrifuged medium after the mechanical signal has traversed a part of said medium lying between said at least one emission point and said at least one reception point,

(c) for each pair of emission and reception points, a measurement is performed of at least one propagation characteristic of the mechanical signal, and

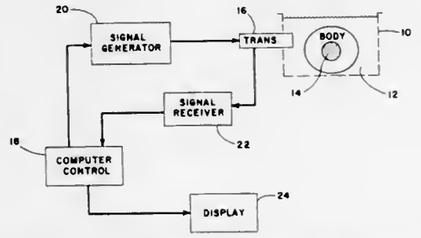
(d) the distribution of the concentrations of the constituents in the medium is determined by appropriate processing means from said measurements of the propagation characteristics of the signal.

5,253,530

METHOD AND APPARATUS FOR REFLECTIVE ULTRASONIC IMAGING

John H. Letcher, III, 7421 S. Marion, Tulsa, Okla. 74136

Filed Aug. 12, 1991, Ser. No. 743,727
Int. Cl.[5] G01N *29/22*
U.S. Cl. 73—602 10 Claims



1. A method of producing a representation of acoustical impedances of materials within a body, comprising:

(a) introducing at least one wavelet of ultrasonic energy into a body, the wavelet having the shape defined as a solution to:

$$W(x) = \sum_{n=0}^{M-1} (-1)^n C_n \phi (2x - 1 + n),$$

where W is an amplitude of the wavelet at a time (x), ϕ is a function of time (x), M is a defined even positive integer, n is a summation index taking all integer values between 0 and M − 1, each C_n is a number, and where the function ϕ and each coefficient C_n are a solution to the dilation equation:

$$\phi(x) = \sum_{n=0}^{M-1} C_n \phi (2x - n);$$

(b) receiving reflections of the introduced ultrasonic energy from body material interfaces; and

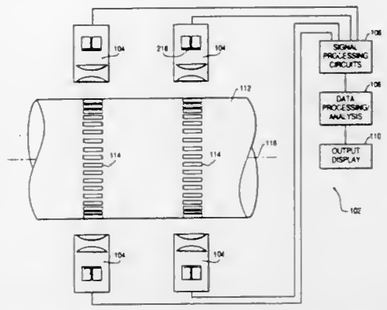
(c) transforming the received reflections, utilizing coefficient C_n with the same values as used in step (a) to create the wavelet, to produce a representation of acoustical impedances for the body materials.

5,253,531

SYSTEM AND METHOD FOR MONITORING TORSIONAL VIBRATIONS AND OPERATING PARAMETERS OF ROTATING SHAFTS

Dana A. Walker, 622 Oakland Hills Dr., #302, Arnold, Md. 21012, and Michael D. Walker, 148 Fourth St., St. James, N.Y. 11780

Filed Apr. 10, 1992, Ser. No. 866,055
Int. Cl.[5] G01H *9/00*
U.S. Cl. 73—650 37 Claims



1. A system for analyzing rotational characteristics of a moving shaft having an axis of rotation and having a plurality of grid lines spaced about its circumference, comprising:

optical detection means mountable in a fixed position proximate tot he shaft in the area of the grid lines for producing an output signal varying with movement of the grid lines relative to said optical detection means during rotation of the shaft, said optical detection means comprising:

incoherent radiation energy generation means for producing incoherent radiation energy and directing it against the grid lines;

Ronchi grid means for selectively passing radiation from said radiation energy generating means and having a plurality of radiation passage lines with spacing corresponding to the grid lines;

lens means for imaging a radiation image scattered from the shaft grid lines onto the plan of said Ronchi rid means; and

photodetection means for detecting the radiation level passing through said Ronchi grid means and generating an output signal representative of said movement of the grid lines; and

processing circuit means connected to said photodetection means for receiving said output signal and generating an output signal and generating an output indicative of recurring torsional vibrations in the shaft.

5,253,532

TEMPERATURE COMPENSATED PRESSURE TRANSDUCER WITH DIGITAL OUTPUT FOR LOW VOLTAGE POWER SUPPLY

Bruce H. Kamens, Thomaston, Conn., assignor to Timex Corporation, Middlebury, Conn.

Filed Mar. 9, 1992, Ser. No. 849,627
Int. Cl.[5] G01L *9/06, 19/04*
U.S. Cl. 73—708 10 Claims

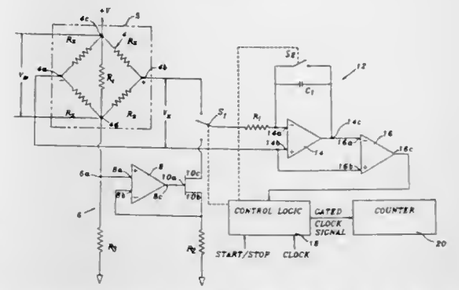
1. Pressure transducer apparatus for use with a low voltage supply source comprising:

strain gauge bridge circuit means including a plurality of piezoresistive resistors of equal resistance electrically connected in a bridge circuit having input and output terminals and disposed on a pressure-responsive diaphragm, said strain gauge bridge circuit means being capable when biased with a constant voltage source of providing an output voltage which is proportional to the pressure applied to said diaphragm and which output voltage is ratiometric with the voltage supplied by said voltage source;

a substantially non-temperature-sensitive resistor element electrically connected in parallel with the input terminals of said strain gauge bridge circuit means and having a resistance value of approximately three and six-tenths that of one of said piezoresistive resistors;

analog temperature adjustment means for compensating for errors introduced in said strain gauge bridge circuit means output voltage caused by variations in ambient temperature,

said analog temperature adjustment means having an input connected to a current-sensing resistor in series with said strain gauge bridge circuit means and also having an output, and adapted so that the output of said analog temperature adjustment means is an output current whose value changes concurrently and in direct proportion to variations in said bridge circuit output voltage as a result of variations in ambient temperature, and



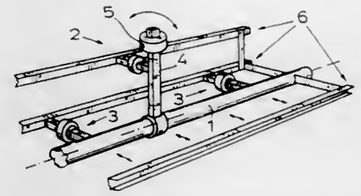
dual-slope integrating analog to digital converter means having an input and an output, said converter means electrically connected to alternately receive as input said strain gauge bridge circuit output and said analog temperature adjustment means output, whereby the output of said analog to digital converter is temperature compensated.

5,253,533

MASS FLOW METER

Son Lam, Bad Urach; Herbert Christ, Reutlingen, and Rolf Heisig, Reutlingen-Altenburg, all of Fed. Rep. of Germany, assignors to Krohne Messtechnik MASSAMETRON GmbH & Co. KG, Fed. Rep. of Germany

Filed Jul. 26, 1991, Ser. No. 736,400
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1990, 4023989
Int. Cl.[5] G01F *1/84;* G01N *11/00*
U.S. Cl. 73—861.37 8 Claims



1. A Coriolis-type meter for flow media including

a basically straight pipe having inlet and outlet ends and a longitudinal centerline;

means for supporting the ends of the pipe;

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an arm connected at one end to the pipe intermediate the ends of the pipe;

at least one oscillation generator contacting said arm at a selected contact point thereon spaced from said one end of the arm for moving said arm so as to simultaneously torsionally oscillate said pipe about said centerline and bend said pipe in an oscillating manner, and

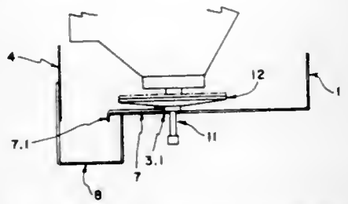
at least one transducer responsive to movements of said pipe between the ends thereof to produce electrical signals indicative of those movements.

5,253,534

CALIBRATOR FOR GRANULAR BROADCAST SPREADERS (IMPELLER; WALK-BEHIND SPINNER-TYPE)

George W. Hamilton, Jr., 1617 Regina Cir., State College, Pa. 16803

Filed Sep. 16, 1991, Ser. No. 760,521
Int. Cl.[5] G01F *25/00*
U.S. Cl. 73—861 **8 Claims**



1. A calibration device for determining the output of granular materials from broadcast agricultural spreaders comprising:

(a) a rigid elongate container for collecting granular material discharged from a broadcast spreader enclosing the impeller of said spreader and having a distal opening in a bottom thereof for removal of said discharged material and having an essentially open top and adapted on the bottom surface to encircle an impeller drive axle of said spreader thus containing discharged material, and

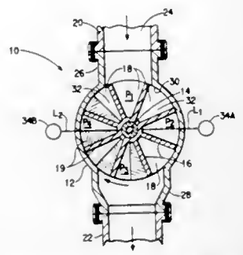
(b) a rigid weighing pan which is open on a top thereof and which is removably attached to the container and is capable of receiving granular material deposited in the elongate container.

5,253,535

APPARATUS AND METHOD FOR MONITORING MASS FLOW OF SOLIDS

William J. McCown, Gulfport, Miss., assignor to E. I. Du Pont de Nemours and Company, Wilington, Del.

Filed Dec. 3, 1991, Ser. No. 801,920
Int. Cl.[5] G01F *1/86*
U.S. Cl. 73—861 **6 Claims**



1. An apparatus for transporting solid particulate material and calculating mass flow rate of the material, the apparatus comprising:

(a) a rotary feeder comprising

i/ a rotatable shaft having a plurality of vanes extending helically therefrom so as to form helical pockets;

ii/ a housing;

iii/ a housing inlet for receiving solid particulate material into the helical pockets;

iv/ a housing outlet for discharging solid particulate material from the helical pockets; and

v/ means for rotating the rotatable shaft;

(b) at least one flux discharging radiation source disposed within the rotatable shaft;

(c) a first flux radiation detector disposed externally of the housing downstream of the housing inlet and upstream of the housing outlet;

(d) a second flux radiation detector disposed externally of the housing downstream of the housing outlet and upstream of the housing inlet;

(e) means for measuring and signaling the rate of rotation of the rotatable shaft;

(f) means for measuring and signaling the amount of flux radiation transmitted through the helical pockets to the first and second detectors;

(g) means for calculating mass flow rate of the solid particulate material from a specific helical pocket by correlating the signals of rate of rotation, and signals of flux radiation received by the first and second detectors; and

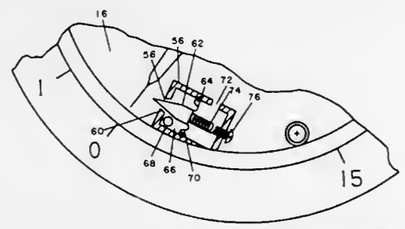
(h) means for displaying mass flow rate.

5,253,536

ROTARY FLOWMETER WITH VARIABLE INLET

Thomas C. Jones, and Michael D. Leshner, both of Columbia, Md., assignors to BOC Health Care, Inc., Liberty Corner, N.J.

Filed Jul. 1, 1992, Ser. No. 907,264
Int. Cl.[5] G01F *1/22, 1/28*
U.S. Cl. 73—861.53 **14 Claims**



1. A flowmeter for indicating the flow of a fluid, said flowmeter having a housing, a needle moveably affixed to said housing, variable orifice means having an opening with a variable cross-sectional area positioned in said housing to direct the flow of the fluid to impinge upon the moveable needle to move said needle responsive to the effect of the velocity of the fluid impinging on said needle, means responsive to the pressure differential of the fluid as it passes through said variable orifice means to vary the cross-sectional area of said opening to control the velocity of the fluid impinging on said needle.

5,253,537

MAGNETIC FLOW METER

Toyofumi Tomita, and Toshihiko Okamoto, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

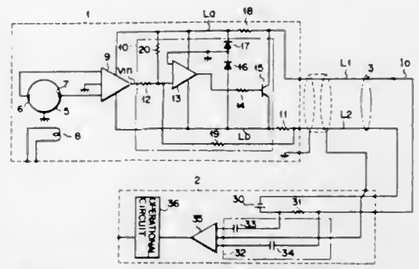
Filed Nov. 4, 1991, Ser. No. 787,141
Claims priority, application Japan, Nov. 6, 1990, 2-300185
Int. Cl.[5] G01F *1/60*
U.S. Cl. 73—861.17 **11 Claims**

1. A magnetic flow meter comprising:

flow rate sensing means which includes a measuring tube through which a fluid flows, a pair of opposed electrodes installed in said measuring tube, exciting means, including

a magnetic coil provided adjacent said measuring tube, for generating a magnetic field in a direction perpendicular to a centerline of said tube and between said electrodes and applying it to said measuring tube, and current signal transmitting means for converting a differential voltage across said pair of electrodes into a current signal proportional to the differential voltage;

an operational amplifier means which has one input terminal supplied with said differential voltage and the other input terminal supplied with a constant voltage and produces a



base signal having a voltage corresponding to a difference between said differential voltage and said constant voltage.

a signal cable one end of which is connected to said current signal transmitting means and which transmits said current signal from said current signal transmitting means; and

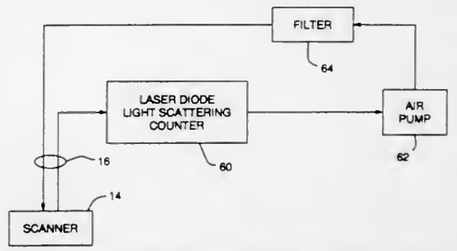
converting means to which the other end of said signal cable is connected and which converts said current signal transmitted over said signal cable into a flow signal representing a flow rate through said measuring tube.

5,253,538

METHOD AND DEVICE FOR QUANTIFYING PARTICLES ON A SURFACE

Robert H. Swick, New Castle, Del.; Gene J. Sullivan, LaFayette, Calif.; Donald G. Lutz, San Ramon, and Richard S. Dryden, San Jose, Calif., assignors to Dryden Engineering Co., Inc., Santa Clara, Calif.

Filed Apr. 26, 1991, Ser. No. 692,157
Int. Cl.[5] G06M *11/00*
U.S. Cl. 73—864.34 **27 Claims**



1. A device for counting particles on a sample surface, comprising:

a scanner having at least one opening for receiving particles from the sample surface;

a tube having first and second ends, the first end of the tube being connected to the scanner;

a particle counter connected to the second end of the tube; and

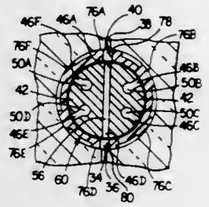
means for producing a first fluid stream flowing through the scanner opening and the tube in a direction from the sample surface to the particle counter, for carrying the particles to the counter for quantitation.

5,253,539

ANALYZER SYSTEM

Robert F. Maciel, Tyngsboro, and Bruno De Gironimo, Billerica, both of Mass., assignors to Iniziative Marittime 1991, s.r.l., Turin, Italy

Filed Jul. 9, 1991, Ser. No. 727,571
Int. Cl.[5] G01N *21/27*
U.S. Cl. 73—864.83 **13 Claims**



1. An improved valve for use in an electrochemical analysis system that includes a plurality of flow through analysis chambers, said valve being connected in series between an outlet port of one analysis chamber and an inlet port of a second analysis chamber and having a first position connecting the two analysis chambers in series for flow of a sample to be analyzed therethrough and a second position in which the two analysis chambers are connected to separate sources of calibrating fluids, said valve including a housing member with a cylindrical recess, a valve spool member disposed in said cylindrical recess, said spool member having a cylindrical surface and including a circumferential array of ports in said cylindrical surface, a through passage in said spool member interconnecting two of said ports, and other ones of said ports being separately connected to individual sources of calibrating fluids, said housing and spool members having coaxial cylindrical valve surfaces in juxtaposed spaced relation, a plurality of passages in the housing member, each said passage terminating at a port in said cylindrical housing recess surface, a sleeve member centering said spool member in said housing recess, said sleeve member including a plurality of apertures, and an annular seal member carried by said sleeve member, said seal member having a continuous annular seal surface in sealing engagement with said cylindrical surface of said valve spool member and through passages that are positioned in fixed alignment with ports of said housing member by said sleeve member, and boss portions that protrude through said sleeve apertures for seating against said cylindrical housing recess surface to provide resilient spaced support of said sleeve member in said housing member.

5,253,540

LAWN MOWER STARTING AID

Charles M. Sanders, and Douglas E. Sanders, Sr., both of R.R. 3, Box 1134, King George, Va. 22485

Filed Sep. 14, 1992, Ser. No. 944,413
Int. Cl.[5] F02N *3/02*
U.S. Cl. 74—6 **3 Claims**

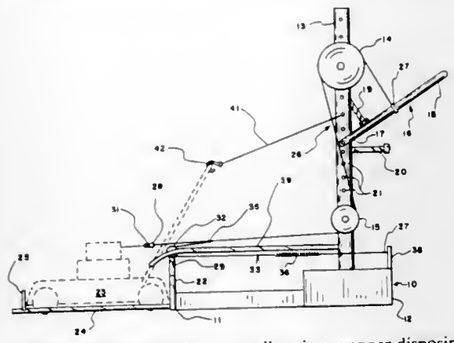
1. An auxiliary starting device for an internal combustion engine associated with a mobile machine, said engine having a recoil type starter with a clutch and a pull cord having a proximal extremity attached to said starter and a free distal extremity equipped with a pull handle, said machine adapted to rest upon a horizontal surface, said starting device comprised of:

a) a horizontally disposed foundation base elongated between front and rear extremities.

b) a support post extending in a vertical plane emergent from said base,

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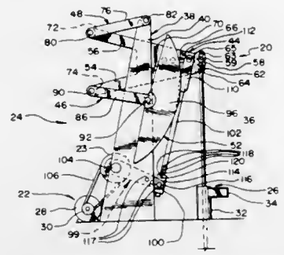
c) upper and lower pulleys rotatably held by said post and disposed to rotate in the same vertical plane,
d) an activation lever having a lower extremity pivotally attached to said support post at a site between said pulleys, said lever adapted to travel between the pulleys and substantially in the vertical plane,
e) upper and lower stop means associated with said support post and adapted to define upper and lower contactive limits of travel of said lever,
f) an abutment surface associated with the front extremity of said base,
g) clamping means adjustably associated with said abutment surface and adapted to immobilize said machine,
h) a pulling cable having a first extremity affixed to said lever and a second extremity configured to removably associate with said pull cord handle, said cable passing



about said upper and lower pulleys in a manner disposing said second extremity substantially in line with said pull cord,
i) a return pulley positioned above said abutment surface and disposed for rotation in a vertical plane,
j) a return cable having a first extremity, and a second extremity attached to said pulling cable, said return cable passing about said return pulley, and
k) restoring means having a free forward extremity attached to the first extremity of said return cable and a fixedly held rear extremity, whereby,
a) downward travel of said lever forces deployment of said pull cord, thereby exerting starting force upon the engine, and
b) said restoring means returns the lever to its upper, starting position, and permits the pull cord to return to the engine.

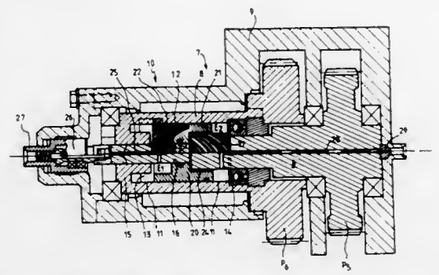
5,253,541
OIL WELL PUMPING MECHANISM
Kevin L. Mangle, Maple Grove, and Artbur G. Erdman, New Brighton, both of Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.
Filed Mar. 16, 1990, Ser. No. 494,737
Int. Cl.[5] F16H *21/32*
U.S. Cl. 74—41 **50 Claims**

1. An apparatus for providing a reciprocating, generally linear output motion as presented by a path tracer point as it travels along a path of travel between first and second limit points, said apparatus defining a central position when said path tracer point is positioned generally mid-way between said first and second limit points from a generally rotating input motion source, comprising:
a support frame;
a linkage assembly having—
a floating link;
a first grounded link having a floating end operably, pivotally coupled to said floating link to present a first floating pivot axis and an opposed end operably, pivotally coupled to said support frame to present a first grounded pivot axis point;
a second grounded link having a floating end operably, pivotally coupled to said floating link to present a second floating pivot axis and an opposed end operably, pivotally coupled to said support frame to present a second grounded pivot axis; and



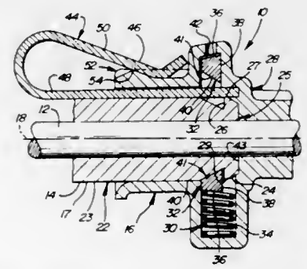
a driving dyad having a first member operably coupled to said input motion source and a second member operably coupled to said floating link to present a driving pivot axis, said first and second floating pivot axes being on the same side of the line defined by said first and second grounded pivot axes, when said apparatus is in said centered position.

5,253,542
VARIABLE MOMENT VIBRATOR USABLE FOR DRIVING OBJECTS INTO THE GROUND
Christian Houze, Paris, France, assignor to Procedes Techniques de Construction, Pantin, France
Filed Jul. 14, 1992, Ser. No. 913,496
Claims priority, application France, Jul. 15, 1991, 91 09253
Int. Cl.[5] F16H *33/20;* **E02D** *7/18*
U.S. Cl. 74—61 **12 Claims**



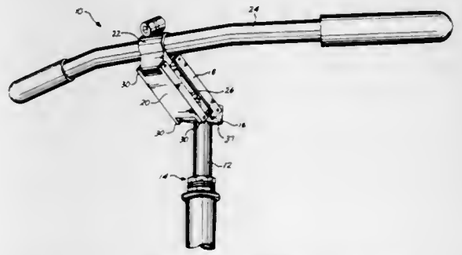
1. Variable moment vibrator usable for driving objects into the ground comprising at least two series of eccentric weights each comprising at least two eccentric weights rotating about shafts to which are fastened respective gears which mesh with each other so as to rotate in opposite directions and a drive system comprising a first motor coupled to said first series of weights by first gearing and to said second series of weights by a transmission device separate from said first gearing and incorporating a phase-shifter comprising:
a first transmission shaft mounted to rotate on a fixed structure and comprising at least one portion in the form of a cylindrical sleeve whose internal bore comprises a first sealing surface and a first internally screwthreaded part with helical teeth;
a cylindrical second transmission shaft mounted to rotate coaxially with said first transmission shaft and delimiting therewith an annular space closed at one end by an end wall, said second transmission shaft comprising a second sealing surface and a first externally screwthreaded part with helical teeth;
an annular piston member axially mobile in said annular space and having a cylindrical external surface comprising in succession a third sealing surface adapted to slide in fluid-tight manner on said first sealing surface and a second externally screwthreaded part having helical teeth meshing with the teeth of the first internally screwthreaded part and an inside surface comprising in succession a fourth sealing surface adapted to slide in fluid-tight manner on said second sealing surface and a second internally screwthreaded part having helical teeth meshing with the helical teeth of the first externally screwthreaded part; and
a pressurized fluid inlet circuit comprising an axial passage in said second transmission shaft which discharges at one end into a working chamber delimited by the two transmission shafts and the annular piston member and at the other end into a distribution passage via a rotary seal mounted at the end of said second transmission shaft.

5,253,543
HELM/CABLE LATCHING MECHANISM
John A. Carlson, Wayne, Pa., assignor to Teleflex Incorporated, Limerick, Pa.
Filed Oct. 18, 1990, Ser. No. 599,655
Int. Cl.[5] F16C *1/10*
U.S. Cl. 74—501.5 R **17 Claims**



1. A motion-transmitting remote control assembly (**10**) for use in conjunction with a steering helm assembly (**11**) for a marine craft (**13**) of the type for transmitting forces along a curved path by a flexible motion-transmitting core element (**12**), said motion-transmitting remote control assembly (**10**) comprising:
a flexible conduit (**14**) having a longitudinal axis extending through opposite ends;
coupling means (**16**) for removably securing said flexible conduit (**14**) to a support structure (**20**);
said coupling means (**16**) including a male coupler (**22**) having an outer circumference, a leading nose (**24**) and a relief (**26**) disposed adjacent said leading nose (**24**) and perpendicular to said longitudinal axis (**18**);
said coupling means (**16**) further including female housing means (**28**) fixedly secured to said support structure (**20**) for receiving said male coupler (**22**) therein;
locking means (**30**) fully enclosed by said female housing means (**28**) for removably securing said male coupler (**22**) inside said female housing means (**28**);
said locking means (**30**) including ring means (**32**) having a predetermined thickness and surface area, said ring means (**32**) further including a flat side surface (**38**) and an inner chambered surface (**40**) creating a tooth (**41**) for allowing said leading nose (**24**) and said relief (**26**) of said male coupler (**22**) to pass therethrough, said tooth (**41**) abutting said relief (**26**) to lock said male coupler (**22**) substantially inside said female housing means;
said locking means (**30**) further including biasing means (**34**) for producing a force to continuously bias said ring means (**32**) into abutting engagement with said male coupler (**22**), said motion transmitting remote control assembly (**10**) characterized by
lock access means (**42**) located in said female housing means for allowing an unlocking force to engage a portion of a circumference of said ring means (**32**) to unlock said locking means (**30**) and for limiting the surface area of said ring means (**32**) receiving the unlocking force to a portion of said circumference having a length and width both less than said predetermined thickness of said ring means (**32**).

5,253,544
SHOCK ABSORBING BICYCLE HANDLEBAR ASSEMBLY
James D. Allsop, Bellingham, Wash.; Eivind Clausen, White Rock, Canada; Robert A. Samac, Des Moines, and Raymond G. Pabon, Federal Way, both of Wash., assignors to Allsop, Inc., Bellingham, Wash.
Continuation of Ser. No. 760,621, Sep. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 648,173, Jan. 30, 1991, abandoned. This application Nov. 25, 1992, Ser. No. 982,229
Int. Cl.[5] B62K *21/16*
U.S. Cl. 74—551.1 **35 Claims**



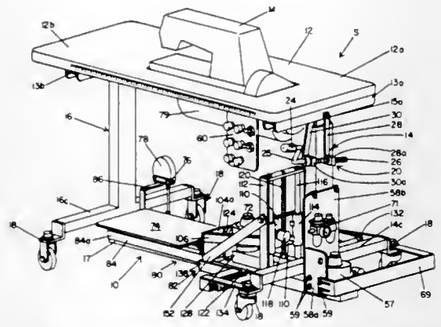
1. A bicycle handlebar support assembly comprising:
a mounting block secured to a bicycle front fork assembly;
an upper linkage member having a front end, and a tail end wherein said tail end is pivotally attached to said mounting block;
a lower linkage member having a front end and a tail end disposed below said upper linkage member and spaced therefrom, said lower linkage member pivotally attached to said mounting block at said tail end;
handlebar clamp assembly means for mounting a handlebar pivotally attached to said upper linkage member front end and said lower linkage member front end;
a stop assembly including a first stop element attached to said upper linkage member and extending downward therefrom and a second stop element attached to said lower linkage member wherein said stop members are positioned to move apart from each other when said linkage members are moved downward and are positioned to engage and abut each other when said linkage members are moved upward to stop upward movement of said linkage members prior to said lower linkage member contacting said upper linkage member; and
a biasing member extending between said mounting block and said front end of one of said linkage members for resisting downward movement of said linkage members wherein said biasing member is pivotally connected to said mounting block.

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5,253,545
ADJUSTABLE FOOT PEDAL FOR INDUSTRIAL SEWING MACHINES

James D. Barrons; Morris D. Hunt, both of Stantonville, and Carlton H. Ackermann, Franklin, all of Tenn., assignors to DBH Limited, Inc., Adamsville, Tenn.

Filed Dec. 1, 1992, Ser. No. 983,819
Int. Cl.[5] G05G *1/14, 1/16*
U.S. Cl. 74—561 **22 Claims**



1. The combination of an adjustable foot pedal assembly and an industrial machine which is supported by a stand having legs in contact with a support surface; said foot pedal assembly comprising

a treadle plate rockably mounted on said foot pedal assembly beneath and longitudinally in relation to the stand, for operation of the industrial machine supported by the stand;

means for selective transverse adjustment of said foot pedal assembly in relation to a longitudinal axis of the stand, connected to the legs of the stand, spacedly in relation to the support surface, to thereby permit placement of said treadle plate at a position an optimal distance from an operator of said industrial machine;

means for selective vertical adjustment of said foot pedal assembly, in relation to the support surface, connected to the means for selective transverse adjustment, to thereby permit placement of said treadle plate at a position an optimal height from the support surface for the operator of the machine;

means for selective initial angle of tilt adjustment of said treadle plate;

whereby the height, transverse position and initial angle of tilt of said treadle plate can each be adjusted independently of and irregardless of one another.

5,253,546
VARIABLE VALVE ACTUATING APPARATUS

Alvon C. Elrod, Clemson, S.C., and Michael T. Nelson, Birmingham, England, assignors to Clemson University, Clemson, S.C.

Continuation of Ser. No. 943,755, Sep. 10, 1992, abandoned, which is a division of Ser. No. 827,618, Jan. 29, 1992, Pat. No. 5,161,429, which is a division of Ser. No. 530,546, May 29, 1990, Pat. No. 5,136,887. This application Jan. 19, 1993, Ser. No. 6,156
Int. Cl.[5] F16H *53/00*
U.S. Cl. 74—567 **10 Claims**

1. An actuating apparatus employing one or more cams, comprising:

(a) an elongated hollow shaft, said shaft defining a longitudinal axis, an exterior surface, an interior surface, and a slot defined through said interior and exterior surfaces,

i) said interior surface of said hollow shaft defining an interior cylindrical bearing surface,

ii) said slot being defined by a pair of opposed sidewalls and a pair of opposed endwalls disposed between said sidewalls, each said slot sidewall extending in a direction transverse to said longitudinal axis,

iii) said exterior surface of said hollow shaft further defining a base circle band having a constant radius of curvature and extending circumferentially between said endwalls of said slot,

(b) a movable cam member, said movable cam member defining an actuating lobe and a seating member integrally connected to said actuating lobe,

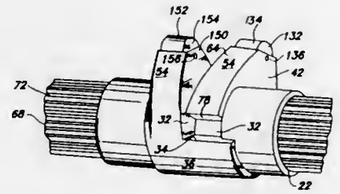
i) said actuating lobe defining a cam surface,

ii) said seating member defining an outer cylindrical shaft bearing surface disposed opposite said cam surface,

iii) said outer cylindrical shaft bearing surface being configured to rotatably engage said interior cylindrical bearing surface of said hollow shaft,

iv) each of said actuating member and sad cam surface having a width configured to project through said slot of said hollow shaft when said outer cylindrical shaft bearing surface is disposed to rotatably engage said interior cylindrical bearing surface of sad hollow shaft, said width of said cam surface being defined by opposed edges,

v) said cam surface being configured to engage the cam follower and defining a nose portion, a leading ramp, and a trailing ramp,



vi) said nose portion being disposed between said leading ramp and said trailing ramp, relative to said leading ramp and said trailing ramp said nose portion being the portion of said cam surface disposed the greatest distance away from said outer cylindrical shaft bearing surface,

vii) said leading ramp forming the portion of said cam surface that the cam follower engages before engaging said nose portion during revolution of said hollow shaft about said longitudinal axis of said hollow shaft,

viii) said trailing ramp forming the portion of said cam surface that said follower engages after passing said nose portion during revolution of said hollow shaft,

ix) said nose portion of said cam surface being formed by the outer surface of a circular cylindrical roller member,

x) said roller member being rotatably mounted in said actuating lobe between said leading ramp and said trailing ramp;

(d) an elongated inner shaft defining an axis of rotation along the length thereof and having an outer surface; and

(e) means for nonrotatably connecting sad inner shaft and said movable cam member for simultaneous rotational movement.

5,253,547
BALANCER DEVICE FOR IN-LINE ENGINE

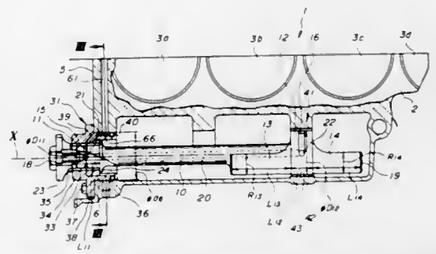
Sachkio Yoneyama; Hisao Ohkawa, both of Kanagawa; Shisei Kai, Tokyo, and Takeshi Houkita, Kanagawa, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 20, 1992, Ser. No. 870,907
Claims priority, application Japan, Apr. 30, 1991, 3-098869
Int. Cl.[5] F16F *15/10*; F16H *37/06*
U.S. Cl. 74—604 **6 Claims**

1. A balancer device in combination with an in-line engine, said balancer device comprising:

a balance shaft rotated according to the rotation of a crankshaft of the engine, said balance shaft including a first journal portion, a second journal portion and an unbalance portion, the first journal portion being located in a vicinity of one end of the engine, the unbalance portion disposed in a vicinity of the second journal portion, the first journal portion being smaller in diameter than the second journal portion;

means defining a balance shaft inserting hole which is formed at one end of a cylinder block of the engine and through which said balance shaft is inserted and installed to the engine, said balance shaft inserting hole having a



diameter which is larger than a maximum diameter of said balance shaft;

a fixing member inserted in said balance shaft inserting hole and fixedly secured to the cylinder block to restrict a sliding movement of said balance shaft in an axial direction;

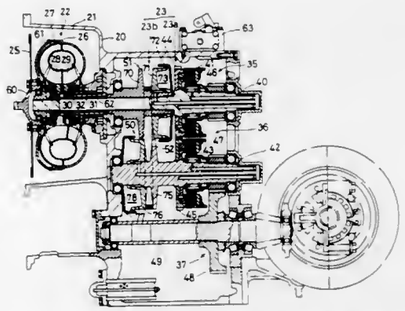
a first bearing portion rotatably supporting the first journal portion, said first bearing portion being set to said fixing member; and

a second bearing portion rotatably supporting the second journal portion, said second bearing portion being set to the cylinder block.

5,253,548
VEHICLE TRANSMISSION INCORPORATING MULTI-STAGE TORQUE CONVERTER

Masayoshi Sahashi, Neyagawa, Japan, assignor to Daikin Clutch Corporation, Osaka, Japan

Filed Aug. 13, 1992, Ser. No. 929,781
Claims priority, application Japan, Aug. 14, 1991, 3-064416[U]
Int. Cl.[5] F16H *47/10, 47/07, 47/00*
U.S. Cl. 74—718 **9 Claims**



1. A torque transmission apparatus operating in connection with a motor vehicle engine, comprising:

a multi-stage torque converter comprising an impeller wheel which is connected to said motor vehicle engine, a turbine wheel hydraulically coupled to said impeller, and separate stators hydraulically coupled to said turbine wheel;

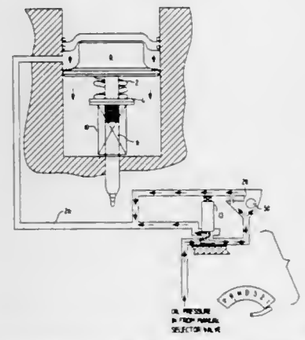
a main transmission having a turbine shaft connected to said turbine wheel, a countershaft in geared engagement with said turbine shaft, and an output shaft selectively coupled to either of said turbine shaft or countershaft; and

a stepless speed-change transmission connected to one of said stators and to said countershaft of said main transmission such that torque developed by said stator is added through said countershaft to torque of said turbine shaft of said main transmission.

5,253,549
METHODS AND SYSTEMS FOR IMPROVING THE OPERATION OF AUTOMATIC TRANSMISSIONS FOR MOTOR VEHICLES

Gilbert W. Younger, 2621 Merced Ave., El Monte, Calif. 91733

Filed Oct. 11, 1990, Ser. No. 596,063
Int. Cl.[5] B60K *41/06*
U.S. Cl. 74—867 **23 Claims**



1. A method of modifying an automatic transmission of an automotive vehicle to improve gear engagement, said automatic transmission including a servo-piston movable through a piston stroke comprising a clearance stroke and an engagement stroke to effect gear engagement, said piston being movable in a first predetermined direction through said clearance stroke and said engagement stroke by fluid pressure applied thereto, said servo piston driving an engagement pin in the same direction of movement as said servo pisto, said method comprising the steps of adjusting said piston stroke by:

applying a resilient force to said servo-piston through said engagement pin in a direction opposed to said first predetermined direction of movement of said servo piston to counteract said force applied to said servo-piston by said applied fluid pressure, and providing spacer means on said engagement pin for cooperating with said applied resilient force for adjusting the distance travelled by said servo-piston in said first predetermined direction during a time interval required to apply a predetermined fluid pressure to said servo-piston,

wherein said servo-piston is a reverse servo-piston for reverse gear engagement, said reverse servo-piston being driven by the fluid pressure applied thereto, said method further including the steps of applying said fluid for driving said reverse servo-piston through a valve and selectively adjusting the fluid flow through said valve between at least two different predetermined operating positions corresponding to two different flow rates until a predetermined fluid pressure is established, and thereafter closing said valve to result in zero fluid flow therethrough and applying said fluid exclusively through at least one control orifice.

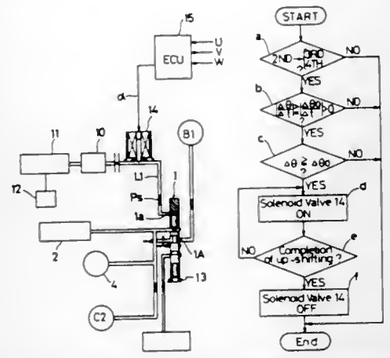
VOL 1155 ISS 3 OC 19 1993 UMI

5,253,550

FLUID PRESSURE CONTROL DEVICE FOR AUTOMATIC TRANSMISSION

Shiro Sonoda, Toyoake, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 3, 1992, Ser. No. 863,083
Claims priority, application Japan, Apr. 5, 1991, 3-099753
Int. Cl.[5] B00K *41/06*
U.S. Cl. 74—868 **5 Claims**



1. A fluid pressure control device which is used in an automatic transmission and which includes a timing valve having a spool that is axially movable according to a signal indicating an engine output upon a power-off up-shifting in order to rapidly drain fluid pressure to the timing valve from a frictional engaging portion, comprising:

a first pressure source from which a pressure indicating the engine output is to be applied to one end portion of the spool;

a second pressure source from which a pressure is to be applied to an end portion of the spool opposite said one end portion so as to be balanced with the pressure from the first pressure source other than during power-off up-shifting; and

means for increasing the pressure applied to the one end portion of the spool from the first pressure source when the ratio of the change in accelerator opening with respect to time exceeds one predetermined vale and when the change in quantity of the accelerator opening exceeds another predetermined value.

5,253,551

CENTRIFUGE TUBE AND CENTRIFUGE TUBE CAP REMOVING AND INSTALLING TOOL AND METHOD

Donald H. DeVaughn, San Francisco, Calif., assignor to Bio-Pias, Inc., San Francisco, Calif.

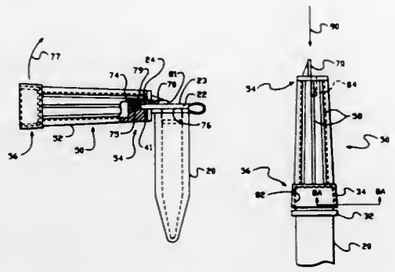
Filed Jul. 12, 1990, Ser. No. 551,874
Int. Cl.[5] B67B *7/44*
U.S. Cl. 81—3.09 **3 Claims**

1. A cap manipulating tool for opening and closing any one of a snap cap, removably mounted in, and a screw cap, threadably mounted on, an open end of a centrifuge tube, said snap cap having an upwardly facing end surface and a circumferentially protruding lip portion with a downwardly facing lip surface, said tool comprising:

an elongated body having a longitudinally extending body axis;

snap cap engaging means coupled to one end of said body and including a substantially planar surface on said body defining an opening of a slot dimensioned to receive said lip portion, said opening being flush with said planar surface and said slot having an upwardly facing slot surface formed and positioned for engagement with said lip surface, and a tab portion proximate and extending outwardly of said slot, said tab portion having a downwardly facing tab surface extending outwardly of said slot surface to engage said end surface at a position radially inward of said lip portion, and said body extending away from said snap cap engaging means to provide a manually grippable lever for application of opening and closing forces to said snap cap; and

screw cap engaging means coupled to an opposing end of



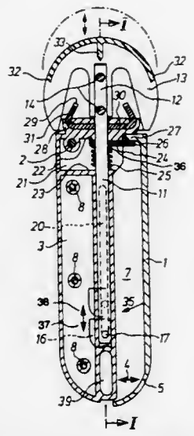
said body and defining socket means having a socket axis axially aligned substantially with said body axis, said socket means being formed and dimensioned to receive said screw cap, said screw cap engaging means including substantially rigid friction means for applying a torsional force to said screw cap to screw said screw cap on and off said tube, and for retaining said screw cap in said tool when said screw cap is unscrewed from said tube.

5,253,552

TONG-LIKE DEVICE FOR OPENING SCREW-ON LIDS

Dieter Brand, Bad Ems; Peter Kern, Stuttgart, and Johannes G. Solf, Sindelfingen, all of Fed. Rep. of Germany, assignors to Leifheit AG, Nassau/Lahn, Fed. Rep. of Germany

Filed Oct. 8, 1991, Ser. No. 772,844
Claims priority, application European Pat. Off., Oct. 8, 1990, 90119292/2
Int. Cl.[5] B67B *7/18*
U.S. Cl. 81—3.42 **17 Claims**



1. A tong-like device for unscrewing screw-on lids of different sizes which are screwed onto containers, comprising:

a retaining handle having:

a front end;

jaw means mounted on said front end;

a front region;

an adjustable drawbar including:

a first end portion;

a longitudinal axis;

a clamping bracket having a substantially flat portion, the clamping bracket being attached to the first end portion of said adjustable drawbar;

said adjustable drawbar being capable of moving the clamping bracket toward and away from said jaw means along the longitudinal axis thereof;

an actuating handle pivotally mounted on said retaining handle, said actuating handle having a pressure rib formed thereon;

the retaining handle and the actuating handle each extending in a direction parallel to the longitudinal axis of the adjustable drawbar;

a guide wall on the front region of said retaining handle, said guide wall being positioned to be substantially perpendicular to said adjustable drawbar;

a drawplate mounted to be displaceable on the adjustable drawbar, said drawplate having an impingement zone defined thereon;

a compression spring mounted to urge the drawplate against the guide wall so that the impingement zone of the drawplate rests against the pressure rib of the actuating handle; and

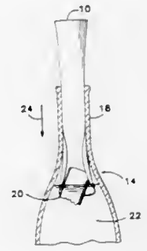
said pressure rib of the actuating handle being positioned in approximately the same plane as the guide wall above said front region of said retaining handle when the tong-like device is in a neutral position, whereby upon application of a squeezing force to the actuating handle toward the retaining handle when a screw-on lid is held by the clamping bracket and the jaw means, the drawplate, responsive to the application of the squeezing force, will initially displace the adjustable drawbar in a direction to cause said clamping bracket and said jaw means to tightly clamp onto said screw-on lid and thereafter to transmit said squeezing force to rotate said screw-on lid to thereby loosen said lid.

5,253,553

APPARATUS AND METHOD FOR REMOVING A STOPPER FROM A BOTTLE

Michael Mothershead, 1733 Avon Way, Forest Grove, Oreg. 97116

Filed Mar. 23, 1992, Ser. No. 855,833
Int. Cl.[5] B67B *7/10*
U.S. Cl. 81—3.48 **18 Claims**



1. A method for retrieving a stopper from a bottle comprising the steps of:

longitudinally curling at least one end of a relatively thin elongate member, wherein said elongate member is formed of a material other than cloth;

inserting the curled end of the member into the mouth of the bottle;

positioning the curled end to place the cork within the inserted curled portion; and

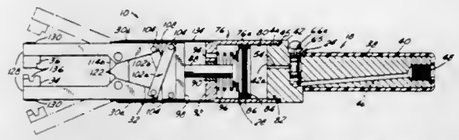
extracting the elongate member from the bottle by pulling the elongate member outwardly from the bottle.

5,253,554

POWER DRIVEN HOSE CLAMP TOOL

Salvatore J. Riera, 61801 Cetnor, Washington, Mich. 48094, and Brent A. Thorn, 23090 Halsted, Apt. 208, Farmington Hills, Mich. 48035

Filed Nov. 27, 1992, Ser. No. 982,470
Int. Cl.[5] B25B *27/10*
U.S. Cl. 81—9.3 **18 Claims**



1. A power driven hose clamp tool for gripping wings of a spring tension hose clamp of a predetermined diameter when in a relaxed state so as to selectively increase the diameter thereof by mutually squeezing the wings toward each other, said power driven hose clamp tool comprising:

handle means for providing a hand grip;

a main body connected with said handle means;

a first arm having a near end and an opposite distal end, said first arm being pivotally connected with said main body at a predetermined location between said near and distal ends thereof;

first claw means connected with said first arm at said distal end thereof;

a second arm having a near end and an opposite distal end, said second arm being pivotally connected with said main body at a predetermined location between said near and distal ends thereof;

second claw means connected with said second arm at said distal end thereof;

a T-bar having a first end and a second end;

scissor-like linkage means pivotally connected with said first and second ends of said T-bar and connected with said near end of each of said first and second arms for providing pivotal movement of said first and second arms in response to reciprocal movement of said T-bar;

drive means connected with said main body and connected to said T-bar at a location medially with respect to said first and second ends thereof for causing reciprocal movement of said T-bar with respect to said main body; and

control means connected with at least one of said main body and said handle means for providing selective actuation of said drive means.

5,253,555

MULTIPLE BLADE SET STRIP APPARATUS FOR CABLE AND WIRE

Jack L. Hoffa, Brea, Calif., assignor to Eubanks Engineering Company, Monrovia, Calif.

Continuation-in-part of Ser. No. 659,557, Feb. 22, 1991, which is a continuation-in-part of Ser. No. 611,057, Nov. 9, 1990, Pat. No. 5,146,673. This application Sep. 26, 1991, Ser. No. 765,986
Int. Cl.[5] H02G *1/12*
U.S. Cl. 81—9.51 **40 Claims**

1. In process means for processing longitudinally axially extending wire that includes a core and protective structure extending about the core, the combination comprising

a) first blade means for relative movement laterally to sever the wire,

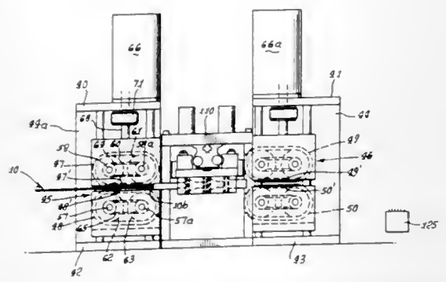
b) other blade means spaced axially from said first blade means for relative movement laterally to penetrate said wire structure to selected depth,

c) said first and other blade means being operatively interconnected to move laterally simultaneously to first sever the wire and to then penetrate said structure to said selected depth,

d) and wire guide means to guide the wire as it moves axially

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proximate the blade means, and means to displace at least a part of said guide means to allow removal of a severed length of said structure, as the wire is moved axially relative to said blade means,

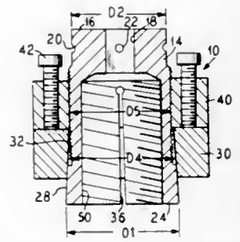


e) said guide means comprising a pivoted trap door part defining side recess means to receive the wire.

5,253,556
ROD ROTATING TOOL

Michael W. Kelly, Joliet, Ill., and Glenn F. Jorgensen, Ridgewood, N.J., assignors to Power House Tool Inc., Joliet, Ill. and JNT Technical Services Inc., Little Ferry, N.J.

Filed Nov. 12, 1992, Ser. No. 974,945
Int. Cl.[5] B25B *13/48*
U.S. Cl. 81—53.2 **20 Claims**



1. A tool for adjusting the axial position of a threaded post comprising:

a collet having a first end with a surface configuration adapted to receive a torque applying driver, a second end outwardly flared with a largest diameter at said second end and having a plurality of longitudinal slits extending from said second end and stopping short of said first end, an externally threaded section between said first and second ends, and an internal opening sized to receive said post with a minimum amount of play, said internal opening having a surface with a friction enhancing contour;

a ring having an internal diameter slightly larger than a diameter of said threaded section and smaller than said outwardly flared diameter;

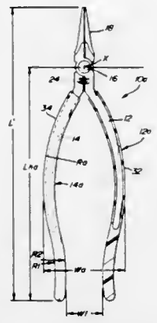
a sleeve having an interanl thread to match with said external thread, said sleeve having a plurality of axially extending extendable members thereon;

wherein said ring is carried on said collet between said threaded portion and said flared portion and said sleeve is threaded on said threaded portion until said sleeve engages with said ring, and said members are extended to push said ring onto said flared portion to cause said second end of said collet to collapse and grippingly engage said post.

5,253,557
ERGONOMIC HANDLE CONSTRUCTION FOR HAND-HELD TOOLS

David E. Dolak, Columbia, S.C., assignor to The Triangle Tool Group, Inc. a subsidiary of The Triangle Corporation, Stamford, Conn.

Filed Nov. 12, 1992, Ser. No. 974,927
Int. Cl.[5] B25B *7/00*
U.S. Cl. 81—427.5 **28 Claims**



1. A hand-held tool comprising:

a tool body having a pair of elongated basic handles pivotably connected at their upper ends to pivot about a pivot axis, at least a portion of the lower ends of said basic handles having outer surfaces of an arcuate, convexly curved contour,

said tool body including a nose portion defined by a pair of work members connected with and extending from said upper ends of said basic handles,

said work members adapted to engage a workpiece,

a pair of extension members,

each of said extension members having a hollow portion adapted to receive at least a portion of said lower ends of said basic handles with a generally snug fit,

said hollow portion being of a minimal wall thickness whereby it will generally adopt the contour of the portion of said lower ends which it overengages,

said extension members having a substantially solid portion extending from said lower ends of said basic handles,

said solid portions having an arcuate concave contour whereby a generally serpentine contour is defined by the combination of said hollow portion contour following the convex contour of said lower ends of said basic handles and said concave solid portion,

a soft flexible sheath covering each of said extension members to define a final handle assembly adapted to be gripped by the operator and selectively manipulated to pivot the handle members about said axis to selectively engage the workpiece with said work members.

5,253,558
HOSE CUTTING APPARATUS AND SYSTEM, AND METHOD FOR USING SAME

Kenneth J. Guddal, Jr., St. Paul, Minn., assignor to Marken Manufacturing, Inc., St. Paul, Minn.

Filed Dec. 12, 1991, Ser. No. 807,045
Int. Cl.[5] B26D *3/16, 7/14*
U.S. Cl. 83—18 **7 Claims**

1. A method of cutting hose having a longitudinal axis and terminating at one free end portion, comprising the steps of:

(a) providing cutting means for severing a hose generally across its diameter at a selected position along its length; said cutting means having a leading side and an opposite trailing side;

(b) providing means for measuring hose length as hose passes

said measuring means with the axis of the hose lying along a first line;

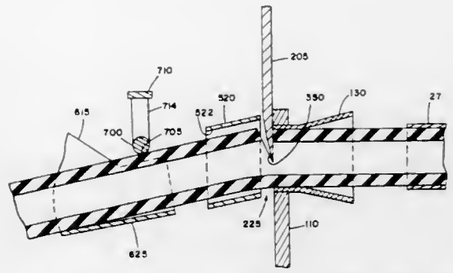
(c) positioning said measuring means at a position spaced from said cutting means, proximate said leading side thereof;

(d) providing means for bending hose, as the hose is being cut by said cutting means;

(e) positioning said bending means at a position spaced from said cutting means and proximate said trailing side of said cutting means;

(f) providing means for supporting hose, said supporting means being located between said measuring means and said leading side of said cutting means;

(g) providing means for moving hose along a pathway; in a direction along the hose's axis along a path from a first position in which a terminating free end portion of the hose is located proximate said measuring means, to a



second position in which a selected position along the length of the hose is located proximate said cutting means and wherein said free end portion is located proximate said bending means;

(h) passing the cutting means through hose;

(i) operating said bending means generally simultaneously with said cutting means to bend the hose, such that the axis of the terminating free end portion is moved along a path between a position in which the axis of the terminating free end portion of the hose, and a portion of the hose located between the cutting means and the measuring means define an angle less than 180°;

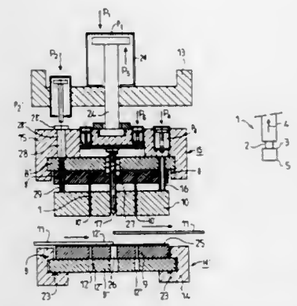
(j) said supporting means operating generally simultaneously with said cutting means and said bending means to support a generally central portion of the hose immediately adjacent the cutting means and to the leading side thereof to maintain the axis of the central portion of the hose in a substantially colinear relationship with said first line.

5,253,559
DEVICE AND SYSTEM FOR PIERCING PRINTED CIRCUITS

Michel Philippe, Vert-Village, and Alain Sorel, Les Baux Ste Croix, both of France, assignors to U.S. Philips Corp., New York, N.Y.

Filed Jun. 19, 1991, Ser. No. 717,734
Claims priority, application France, Jun. 26, 1990, 90 07994
Int. Cl.[5] H05K *13/00;* **B26F** *1/14*
U.S. Cl. 83—133 **7 Claims**

1. A punching device for piercing a printed circuit board comprising a first tool assembly, a punch holder assembly and a hold-down clamp each secured to the first tool assembly, a second tool assembly comprising a die, at least one of the two tool assemblies being mounted floating relative to the other tool assembly, the device being adapted for introduction of a printed circuit board to be pierced between the hold-down clamp and the die, said device including means for mutual positioning said hold-down clamp relative to said die and for positioning said die relative to the printed circuit board, first variable controllable means for applying a force on the punch holder assembly in the direction of a punch stroke and second variable controllable means controllable independently of the first variable controllable means for applying a force on the hold-down clamp in such a direction as to press on the printed circuit board to be punched, said first variable controllable means comprising a controllable actuator for applying a force

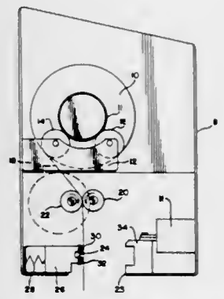


to the punch holder assembly in a punch return direction, and third variable controllable means which act on the hold-down clamp for separating the punch holder assembly from the hold-down clamp after the punch stroke.

5,253,560
SHEET DISPENSER

Gordon G. McDonald, 5 Melford Avenue, Westermains, Kirkintilloch, Scotland, and Michael W. Barnes, 451 Houghfold Way, Harwood Bolton, Bl2 3PU, Lancashire, England

Continuation of Ser. No. 464,816, Jan. 16, 1990, abandoned. This application Jul. 10, 1992, Ser. No. 912,228
Claims priority, application United Kingdom, Jan. 19, 1989, 89011845
Int. Cl.[5] B26D *7/10*
U.S. Cl. 83—171 **3 Claims**



1. A dispenser for sheet material, the dispenser comprising

(a) means for extracting a length of sheet material from a roll defining an axis,

(b) an axially extending head including two elements spaced by a fixed distance, each element having a convex surface, the spaced elements defining a gap between the convex surfaces, the head being movable forwardly toward the axis and backwardly and being biased forwardly,

(c) an axially extending bar including two portions spaced by a fixed distance, the bar being movable toward and away from the axis, from an initial position to a final position, through a range of intermediate positions wherein the spaced portions of the bar are disposed to draw an extracted length of sheet material over the convex surfaces of the spaced elements of the head and tautly across the gap and to clamp the tautly drawn material to the convex surfaces,

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(d) means for moving the bar from the initial position, through the intermediate positions, to the final position, the head being movable backwardly with the bar as the bar is moved through the range of intermediate positions to the final position, and

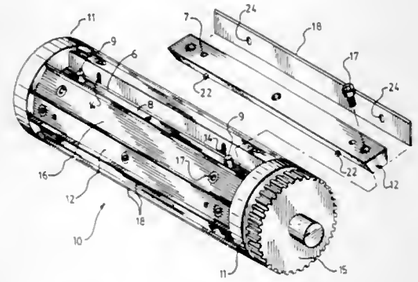
(e) means including a stationary, electrically heated, axially extending wire for severing the length of sheet material from sheet material remaining on the roll, the heated wire being disposed between the spaced elements of the head before the head is moved backwardly with the bar, whereby, after the extracted length of sheet material is drawn tautly over the convex surfaces of the spaced elements of the head and is clamped to the convex surfaces, movement of the bar through the range of intermediate positions to the final position moves the head and the tautly drawn length backwardly with the bar so as to bring the tautly drawn length into contact with the heated wire.

5,253,561

ROTARY BUTT CUTTING APPARATUS

Harry Wynn, 2051 Merchants Gate, Unit 13, Oakville, Ontario, Canada L6M 3H6

Filed Oct. 10, 1991, Ser. No. 774,344
Int. Cl.[5] B41J *11/70*; B26D *1/62*
U.S. Cl. 83—674 **3 Claims**



1. Cutting apparatus comprising:

a cutting roller having a cylindrical body with a generally smooth surface carried between a pair of coaxial bearer rolls;

an even-numbered plurality of trapezoidal blocks fastenable to said body so as to each run longitudinally along the circumference of said body over a substantial portion of the distance between said bearer rolls with parallel surfaces thereof arranged generally tangential to said body, and angled sides thereof being directed substantially radially, alternate ones of said blocks being intended to remain in place semi-permanently, the other said blocks being intended to be periodically removed;

a plurality of elongated blades of fixed height having a bass edge and an opposite cutting edge parallel to said base edge, said base edge registering against said body with said blades projecting radially outwardly from said body between said trapezoidal blocks;

fastening means for securing said alternate ones of said trapezoidal blocks against said body; and

fastening means for forcing said other trapezoidal blocks inwardly towards said body to thereby force the bases of said blades against said body and to anchor said blades between said semi-permanent and removable blocks,

said cutting apparatus further comprising flat areas which are machined into the outer surface of the body under said alternate ones of said trapezoidal blocks, running the length of said blocks, to thereby provide a suitably flat surface to which the blocks may be secured.

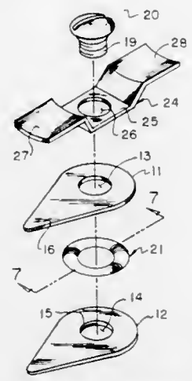
and further in which said flat areas cover only a portion of the arc subtended by said alternate ones of said trapezoidal blocks, such that small gaps are left under opposite sides of the bottoms of said blocks.

5,253,562

DOUBLE PLECTRUM HAVING A SPACER FILLED WITH COMPRESSIBLE FLUID

Marvin L. Kline, I-1 Oaklane Gardens, Trexlertown, Pa. 18087

Filed Aug. 4, 1992, Ser. No. 924,760
Int. Cl.[5] G10D *3/16*
U.S. Cl. 84—322 **2 Claims**



1. A plectrum for a stringed instrument, comprising,

a first body plate and a second body plate, the first body plate and the second body plate arranged in a spaced coextensive relationship relative to one another, with the first body plate having a first body striking projection coplanar with the first body plate extending therefrom, and a second body striking projection coplanar with the second body plate extending therefrom, with the first body plate having a first body bore, and the second body plate having a second body bore, wherein the first body bore and the second body bore are coaxially aligned, and

fastening means for securing the first body plate and the second body plate, and

wherein the fastening means includes an externally threaded fastener body, and a fastener head fixedly mounted to an upper distal end of the fastener body extending laterally of the first body bore having an internally threaded bore wall, and the internally threaded bore wall arranged for threaded inter-engagement with the fastener body, and a spacer ring receiving the fastener body therethrough positioned between the first body plate and the second body plate, and

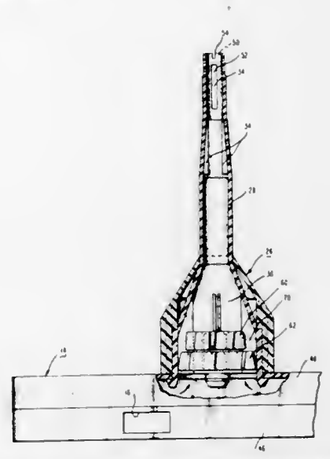
wherein the spacer ring is of a torroidal configuration and includes a resilient sheath torroidal tube having a tube cavity, and the tube cavity including a compressible fluid contained therewithin, and a lever plate, the lever plate including a central web, the central web including a central web bore positioned in contiguous communication to a top surface of the first body plate, and the central web bore coaxially aligned with the first body bore and the second body bore receiving the fastener body therethrough, and the lever plate having a forward lever flange and a rear lever flange that are diametrically aligned relative to one another on opposed sides of the central web bore, with the forward lever flange and the rear lever flange spaced above the central web, and the forward lever flange positioned over the first body striking projection and the second body striking projection, and the rear lever flange extending on a diametrically opposed side of the central web bore positioned over the first body plate and the second body plate.

5,253,563

UNIVERSAL SUPPORT APPARATUS FOR HEATING AND SUPPORTING OF A MUSICAL INSTRUMENT

Gary Smith, 256 W. 5th Ave., Collegeville, Pa. 19426, assignor to Mobile Music, Horsham; Gary Smith, Collegeville and Joseph Stefano, Oreland, all of Pa., a part interest

Filed Feb. 14, 1992, Ser. No. 836,581
Int. Cl.[5] G01G *5/00*
U.S. Cl. 84—453 **20 Claims**



1. An improved universal support apparatus for heating and supporting of a musical instrument comprising:

a) a base member defining a heated air chamber means therein, said base member further defining a base inlet means therein in fluid flow communication with respect to said heated air chamber means to facilitate supplying of heated air thereto, said base member defining a mounting location means including a mounting means and a base outlet means to facilitate support of a musical instrument with respect thereto, said base outlet means being in fluid flow communication with respect to said heated air chamber means to allow heated air to exit therefrom;

b) a heating means in fluid flow communication with respect to said base inlet means and said heated air chamber means to supply heated air thereto;

c) an instrument support means detachably attached with respect to said mounting means at said mounting location means on said base member, said instrument support means including:

(1) a body member detachably attached with respect to said mounting means of said base member at said mounting location means and extending upwardly therefrom adapted to receive a musical instrument positioned thereon as desired, said body member defining a support chamber means therein and a support chamber inlet means being in fluid flow communication with respect to one another, said support chamber inlet means being in fluid flow communication with respect to said base outlet and said heated air chamber means responsive to said body member being mounted with respect to said mounting means of said base member to allow heated air to flow from said heated air chamber means to said support chamber means, said body member further defining body outlet means thereon to allow heated air to flow outwardly therethrough from said support chamber means to contact a musical instrument positioned upon said body member to facilitate heating thereof;

(2) a securement means fixedly attached with respect to said body member and detachably securable with respect to said mounting means to detachably secure said instrument support means with respect to said base member as desired; and

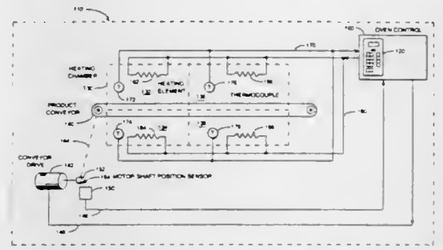
d) an external spacing means attached with respect to said body member of said instrument support means to facilitate movement of heated air after exiting said body outlet means along a musical instrument positioned upon said body member of said instrument support means.

5,253,564

CONVEYOR OVEN CONTROL

Richard Rosenbrock, Bluffton, Ind.; William S. Schjerven, Sr., Schaumburg, and Ralph A. Chrzastek, Warrenville, both of Ill., assignors to The Middleby Corporation, Rosemont, Ill.

Continuation of Ser. No. 753,426, Aug. 30, 1991, Pat. No. 5,197,375. This application Sep. 4, 1992, Ser. No. 940,791
Int. Cl.[5] A21B *1/40, 1/42*; H05B *1/02*
U.S. Cl. 99—328 **17 Claims**



1. A control device for an oven having at least one cooking region, at least one heating means for said cooking region, and means for transporting a product through said cooking region, said control device comprising:

means for receiving from a user a plurality of sets of desired operating parameters, each such set including at least one parameter related to a temperature produced by said heating means and at least one other parameter related to the speed of said transporting means;

means for storing said sets of parameters;

means for retrieving a selectable one of said sets of parameters upon request of said user;

means for controlling at least said heating means and said transporting means according to said retrieved set of parameters; and

means responsive to said parameter related to the speed of said transporting means for adjusting controlling said product transport means to maintain the product within the cooking region for a time corresponding to said parameter related to the transporting means speed.

5,253,565

PIZZA CONSTRUCTION AND APPARATUS

Gary B. Burton, 44 Eagle Crest Dr., #25, Lake Oswego, Oreg. 97035

Filed Mar. 7, 1991, Ser. No. 666,192
Int. Cl.[5] A47J *37/06*
U.S. Cl. 99—374 **2 Claims**

1. A cooking apparatus for forming pizzas comprising:

a base member,

a hot plate surface on said base member having at least one pizza cooking area,

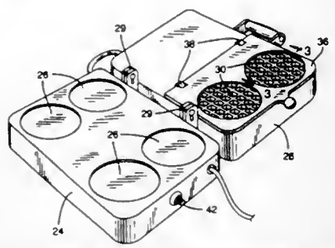
said hot plate surface comprising a smooth upper surface arranged to cook pizza dough into a pizza crust with a flat bottom surface,

a lid hingedly connected to said base member for opening and closing relation with said hot plate surface, and

a waffle-type forming surface on said lid arranged to face said hot plate surface ion the closed position of said lid whereby to engage pizza dough on said hot plate surface

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and form recesses in an upper surface of the pizza dough when the dough is being cooked on said hot plate surface, said waffle-type forming surface being supported on a support plate having selected hinged movement on aid lid



whereby said waffle-type forming surface is in alignment with said pizza cooking surface in one hinged movement thereof and is out of alignment with said pizza cooking area in another hinged movement thereof.

5,253,566

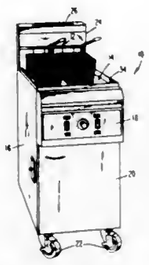
INFRA-RED DEEP FAT FRYER

Mark E. McCabe, Center Barnstead; David R. Nerbonne, Concord, and George McMahon, Manchester, all of N.H., assignors to Pitco Frialator, Inc., Bow, N.H.

Filed Oct. 5, 1992, Ser. No. 956,206

Int. Cl.[5] **A47J** *27/02, 37/12*

U.S. Cl. 99—403 **7 Claims**



1. A deep fat fryer comprising:

an inner shell having a front, sides and back and defining a tank having an upper cooking portion, a central heating portion and a lower sump portion, a pair of mutually spaced tubes extending through the central portion thereof and opening through the front and back of said shell, the sides of said sump portion tapering to an outlet port in the front of said shell;

an outer shell surrounding and spaced away from corresponding portions of said inner shell, a jacket surrounding the sides and back of the central portion of said inner shell and disposed between the sides and back of said inner and outer shells, the back of said jacket forming a stack to receive exhaust gases;

a pair of cylindrical infra-red surface burners, each mounted in one of said tubes and having an external surface spaced away from the internal surface of said tube, each burner comprising a porous, sintered metal mesh cylinder means coupled to the front of each burner for admitting a pressurized fuel air mixture into the interior of said cylinders and means for igniting said mixture at the external surface of said cylinders, whereby the heat of combustion radiates from said mesh cylinders heating said tubes and exhaust gases are expelled from the back of said tubes,

circulating baffle means disposed between said inner shell and jacket for circulating hot exhaust gases expelled from said tubes around the sides of the central portion of said tank from the rear to the front and around the sides of the upper portion from the front to the rear and then returned to said stack for heating said portions of said tank therewith, the front portion of said inner shell being spaced away from the front portion of said outer shell and door means in the front portion of said outer shell to define a compartment therebetween for access to said burners and sump outlet port.

5,253,567

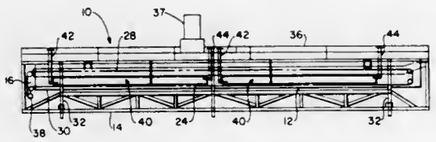
THERMAL FLUID HEAT EXCHANGER FOR DEEP FAT FRYER

Ramesh M. Gunawardena, Solon, Ohio, assignor to Stein, Inc., Sandusky, Ohio

Filed Mar. 5, 1993, Ser. No. 26,610

Int. Cl.[5] **A47J** *27/00, 37/00, 37/12*

U.S. Cl. 99—404 **10 Claims**



1. A deep fat fryer for the frying of large quantities of food products comprising;

a housing for containing a bath of hot cooking oil;

means for conveying food products from an infeed end to a discharge end of said housing, said means for conveying being supported within said housing and adapted to pass through said bath of hot cooking oil for frying of said food products;

at least one heat exchanger unit positioned within said housing and immersed in said bath for heating of said oils to a predetermined temperature, said at least one heat exchanger unit comprising at least two substantially vertically disposed sheet members forming at least one flow channel therebetween through which a thermal fluid is passed for heating of said plates, said plates acting as heat transfer surfaces for heating of said oil within said housing to a substantially uniform temperature; and

a thermal fluid circulation system coupled to said at least one heat exchanger unit for providing a substantially uniform volume of thermal fluid through said at least one flow channel, and including means for heating said thermal fluid to a predetermined temperature.

5,253,568

CHEESE-MAKING TRAYS WITH REMOVABLE STORES

Giovanni Prella, Vercelli, and Roberto Zugni, Abbiategrasso, both of Italy, assignors to Nestec S.A., Vevey, Switzerland

Filed Mar. 13, 1992, Ser. No. 851,216

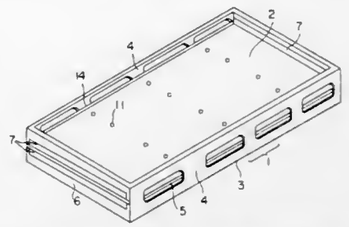
Claims priority, application European Pat. Off., Mar. 30, 1991, 91105119.1

Int. Cl.[5] **A23C** *19/00;* **A01J** *25/00, 25/16, 27/00*

U.S. Cl. 99—458 **13 Claims**

1. A tray for draining and ripening cheese comprising a plate having upper and lower faces and a frame having walls having an inner surface connected to the plate about a periphery of the plate to define upper and lower tray portions, the frame having

a slot positioned, respectively, adjacent each of the upper and lower faces of the plate for receiving a removable store which,



upon insertion through a slot, is juxtaposed to a face of the plate.

5,253,569

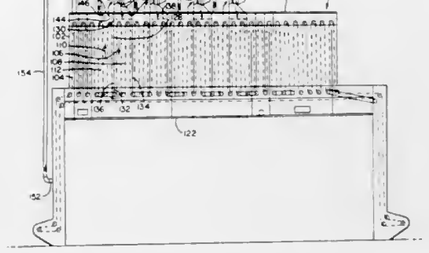
SERPENTINE FOOD PROCESSING WITH CLOSED-LOOP RECIRCULATION

Claude L. McFarlane, Madison; Daniel J. Cody, Prairie du Sac, and George R. Millard, Jr., Poynette, all of Wis., assignors to DEC International, Inc., Madison, Wis.

Continuation-in-part of Ser. No. 517,251, May 1, 1990, abandoned. This application Nov. 4, 1991, Ser. No. 754,539

Int. Cl.[5] **A23B** *4/03*

U.S. Cl. 99—476 **8 Claims**



1. Food processing apparatus, comprising:

a food processing chamber for processing a food product;

a serpentine conveyor in said chamber for transporting said food product along a serpentine path having a plurality of parallel flights connected at their ends by U-shaped bends;

means for supplying a processing medium to said chamber and for providing recirculation of said processing medium along a closed-loop recirculation path having a supply path portion along and parallel to a first set of said flights, and a return path portion along and parallel to a second set of said flights, comprising a blower having a high pressure supply side supplying said processing medium to said supply path portion, and having a low pressure return side drawing said processing medium from said return path portion, such that said processing medium acts on said food product in both said supply and return path portions and said food product on said flights travels both with and against the direction of flow of said processing medium during each of said supply and return path portions without reversing the direction of flow of said processing medium along said closed-loop recirculation path, wherein said chamber comprises first and second distally opposite end walls spaced oppositely from said ends of said flights at said U-shaped bends and extending perpendicularly to said flights, said high pressure supply side of said blower and said low pressure return side of said blower each communicating through said first end wall with the interior of said chamber, and such that the processing medium flows along the entire length of said first set of flights in said supply path portion and along the entire length of said second set of flights in said return path portion.

5,253,570

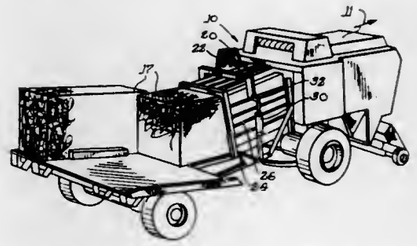
BALER WITH LOAD SENSOR

Victor D. Goeckner, Virden, Ill., assignor to Hay & Forage Industries, Hesston, Kans.

Continuation of Ser. No. 537,732, Sep. 30, 1983, abandoned. This application May 5, 1986, Ser. No. 859,235

Int. Cl.[5] **B30B** *15/26, 9/30*

U.S. Cl. 100—41 **20 Claims**



1. In apparatus for applying an adjustable force to a material, the improvement comprising:

an assembly including an element which undergoes compressive loading during the application of force to the material;

adjustable input power means for supplying force to the material; and

means for adjusting the input power means, including

electrical circuit means comprising transducer means having a pair of relatively movable components operable, upon relative movement therebetween, for changing an electrical parameter experienced by said circuit means;

means operably coupling one of said components with said element for movement of the coupled component in response to compressive loading on said element; and

control means operably connected with said input power means and said circuit means for detecting said electrical parameter change, and for adjusting said input power means in response to said electrical parameter change, in order to thereby adjust the force applied to said material.

5,253,571

METHOD FOR GUIDING STEEL BANDS ABOUT A LONGITUDINAL AXIS OF A CONTINUOUSLY WORKING PRESS

Friedrich B. Bielfeldt, and Detlef Kroll, both of Eppingen, Fed. Rep. of Germany, assignors to Maschinenfabrik J. Dieffenbacher GmbH & Co., Eppingen, Fed. Rep. of Germany

Continuation of Ser. No. 672,650, Mar. 21, 1991, abandoned. This application Mar. 1, 1993, Ser. No. 26,216

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1990, 4017791

Int. Cl.[5] **B30B** *5/06*

U.S. Cl. 100—41 **7 Claims**

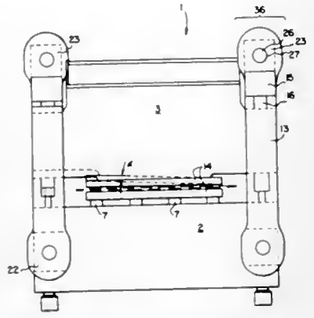
5. A method of guiding first and second endless steel bands about a longitudinal axis of a continuously working press for the manufacture of pressed boards, the continuously working press having short-stroke pressure cylinders and having multiple pressure regions of varying pressure, and said bands transmitting pressing pressure to the material to be pressed and drawing said material through said press, said method comprising the steps of:

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(A) guiding said first and second bands, via driving drums and return drums, around a pressing ram and a pressing table, respectively;

(B) altering a position of said pressing ram so that a part of said pressing ram is inclined at an angle α relative to a horizontal plane, said altering step comprising the steps of

(i) temporarily relieving pressure in said short-stroke pressure cylinders which are located on one longitudinal side of a high-pressure region of said press, and then



(ii) applying a pressure which opposes the pressure imposed by said short-stroke pressure cylinders and which overcomes the pressures imposed by those of said pressure cylinders which are located on said one longitudinal side, thereby adjusting the height of said one longitudinal side so that said part of said pressing ram is inclined at said angle α; and

C) altering an axis of at least one of said drums through an angle β.

5,253,572

PRESS WITH INDEPENDENT CONTROLS FOR RECIPROCATION OF AND PRESSURE APPLICATION BY RAM

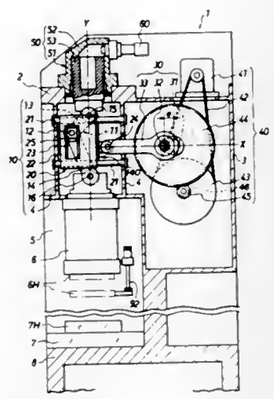
Tadayoshi Uehara, and Toshio Suzuki, both of Sagamihara, Japan, assignors to Aida Engineering, Ltd., Kanagawa, Japan

Filed Sep. 11, 1992, Ser. No. 943,245

Claims priority, application Japan, Sep. 24, 1991, 3-243715

Int. Cl.[5] B30B *15/14, 15/16*

U.S. Cl. 100—48 **20 Claims**



1. A press, comprising:

a press drive;

a reciprocation unit associated with said press drive to be driven thereby in horizontal reciprocation;

a ram;

a motion direction shifting unit coupled to said reciprocation unit and said ram so as to reciprocate said ram vertically between an upper position and a lower rest position in response to horizontal reciprocation of said reciprocation unit, such that said ram remains in a state of substantial rest with respect to said shifting unit for a period of time upon reaching said rest position;

a pressure applying device for pushing said ram downward during said period of time;

sensor means for detecting that said ram is in the rest state; and

a pressure drive/control means for driving said pressure applying device to apply a controlled press forming force to said ram when said sensor means detects said rest state of said ram.

5,253,573

SAFETY DEVICE FOR LIMITING THE AXIAL LOAD EXERTED ON A DRIVE WORM

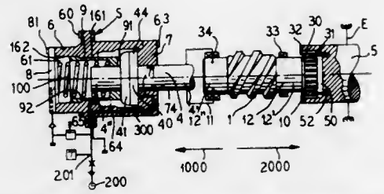
Joseph Modoux, Echallens, Switzerland, assignor to Bobst SA, Switzerland

Filed Apr. 3, 1991, Ser. No. 680,054

Claims priority, application Switzerland, Apr. 3, 1990, 01113/90

Int. Cl.[5] B30B *15/28*

U.S. Cl. 100—53 **14 Claims**



1. In a safety device for limiting the axial operating loading forces exerted on a drive worm of a machine, said drive worm being mounted on a rotary main shaft having one end which is provided with connecting means for forming an axially detachable connection with a drive shaft, said main shaft having coupling means for connecting a second end of the main shaft to a non-rotary auxiliary shaft that is connected to a safety device, said safety device allowing axial shifting of the drive worm in a first direction in response to an axial overload so as to disconnect the connecting means to free the main shaft from the drive shaft, the improvements comprising the safety device having a housing containing a holding chamber provided with at least an engagement surface adjacent one end and a pressurized oil inlet of a pressurized line spaced from the engagement surface, a holding piston being provided on the auxiliary shaft and disposed in said holding chamber, said holding piston having a first surface and a second surface, means for introducing a pressurized oil through said pressurized line and oil inlet to act on the first surface of the piston to urge the piston in a second direction to exert a force opposite to the first direction and the axial loading until the second surface of the piston contacts said engagement surface of said chamber to limit the shift of the drive worm in said second direction, a passage being provided for a free flow of oil contained within the chamber between the first surface and the second surface of the piston, and relief means being connected to the pressurized line for enabling a slight discharge of oil from the chamber in response to an overpressure applied to the oil in said chamber so as to enable a shifting of the piston in the first direction away from the engagement surface so that pressure is applied on both said first and second surfaces to eliminate the holding force and enable the disengaging of said connecting means.

5,253,574

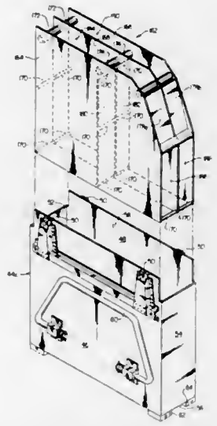
PLANK MOUNTED AIRCRAFT ARMAMENT SYSTEM HAVING IMPROVED AMMUNITION MAGAZINE APPARATUS AND ASSOCIATED MOUNTING STRUCTURE

Paul H. Sanderson, 2019 Cripple Creek, Lewisville, Tex. 75067

Division of Ser. No. 874,032, Apr. 27, 1992, which is a continuation-in-part of Ser. No. 614,504, Nov. 16, 1990, Pat. No. 5,187,318, and a continuation-in-part of Ser. No. 532,172, Jun. 4, 1990, Pat. No. 5,024,138, said Ser. No. 532,172 is a continuation of Ser. No. 297,970, which is a division of Ser. No. 144,873, Jan. 13, 1988, Pat. No. 4,893,545. This application Nov. 24, 1992, Ser. No. 980,639

Int. Cl.[5] F41A *9/79*

U.S. Cl. 89—34 **4 Claims**



1. Machine gun ammunition magazine apparatus comprising:

an ammunition magazine box having an open end, and an unpartitioned interior configured to operatively receive a serpentined length of a first caliber machine gun ammunition belt; and

conversion means for converting said magazine box between usage with said first caliber machine gun ammunition belt and usage with a second caliber machine ammunition belt, said conversion means including:

means removably insertable into said magazine box for changing its interior from a first caliber ammunition belt storage configuration to a second caliber ammunition belt storage configuration, said means removably insertable into said magazine box being a unitary structure including wall means for dividing the interior of said magazine box into two side-by-side storage chambers configured to receive serpentined, side-by-side lengths of said second caliber machine gun ammunition belt interconnected by a twisted section of said second caliber machine gun ammunition belt, and for forming within the interior of said magazine box a cross-over chamber for operatively receiving said twisted belt section, and

interchangeable first and second lid means removably securable to said open end of said magazine box,

said first lid means, when secured to said open end of said ammunition magazine box, facilitating the outfeed of said first caliber machine gun ammunition belt from said open end of said ammunition magazine box, and

said second lid means, when secured to said open end of said ammunition magazine box, facilitating the outfeed of said second caliber machine gun ammunition belt from said open end of said ammunition magazine box.

5,253,575

COVER DRIVING SYSTEM

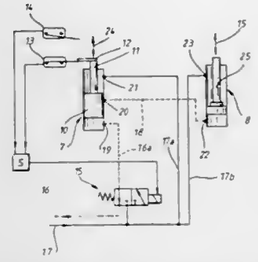
Klaus-Peter Claar, Gechingen; Frank van de Poel, Rottenburg; Kurt Schaible, Aidlingen; Jürgen Schrader, Weil im Schönbuch, and Holger Seel, Aidlingen, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Aug. 3, 1992, Ser. No. 923,447

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1991, 4125829

Int. Cl.[5] F15B *15/26*

U.S. Cl. 91—44 **3 Claims**



1. A drive system for a covering of a convertible car, comprising at least one lifting cylinder adapted to engage on the covering for opening and closing, a lock for locking and unlocking the covering, a working cylinder for transferring the lock into a locking position and into an unlocking position, a control valve to which the lifting cylinder is connected via a pressure line and a control unit configured for controlling the control valve, wherein the working cylinder is arranged with two connections in the pressure line, one of the connections on the working cylinder being to the control valve and another of the connections on the working cylinder being to the lifting cylinder, and, after the lock is transferred to the unlocking position, the working cylinder being configured such that the pressure line communicates with the lifting cylinder to allow movement of the lifting cylinder to open the covering independently of a position of a piston of the lifting cylinder wherein the another connection is arranged at a distance from a lower stop point of a piston of the working cylinder, which lower stop point is a predetermined amount less than the height of the piston of the working cylinder, and the distance of the another connection from an upper stop point of the piston of the working cylinder is greater than the height of the piston of the working cylinder.

5,253,576

SWASHPLATE ASSEMBLY FOR AN AXIAL PISTON PUMP

Donald G. Bethke, 3619 Nagawicka Shores Dr., Hartland, Wis. 53029

Continuation of Ser. No. 832,374, Feb. 7, 1992, abandoned. This application Dec. 21, 1992, Ser. No. 995,926

Int. Cl.[5] F01B *3/00, 13/04*

U.S. Cl. 92—12.2 **8 Claims**

1. In an axial piston pump assembly which includes a housing having an outer wall defining a generally cylindrical interior and an end wall, a drive shaft extending through the end wall and rotatably mounted in the housing for rotation on the axis of the cylindrical interior, a rotor attached to the drive shaft for rotation therewith, a plurality of circumferentially spaced axially disposed cylinders in the rotor, axially reciprocable pistons disposed in the cylinders, a swashplate surrounding the drive shaft and mounted in the housing for tilting movement on a tilt axis transverse to the drive shaft axis, a planar reaction surface on the swashplate which is engaged by the outer ends of the pistons, biasing means for urging the piston ends into engagement with the reaction surface, and

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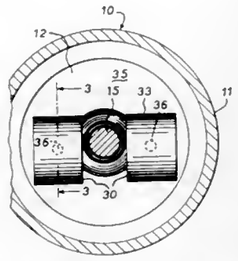
control means for tilting the swashplate on its axis to maintain the reaction surface angularly disposed with respect to the axis of the drive shaft; an improved swashplate mounting assembly comprising:

a pair of inboard trunion blocks individually and adjustably attached to the interior of the housing end wall on opposite sides of the driveshaft;

means for attachment said trunion blocks to the end wall for movement between an adjustable preliminary assembly position and a fixed final assembly position;

each of said trunion blocks having a convex semicylindrical outer surface, said outer surfaces having coincident axes which define the tilt axis of the swashplate; and,

concave semicylindrical bearing surfaces on the side of the swashplate opposite said reaction surface supporting the swashplate for tilting movement on said trunion block outer surfaces.



7. A method of manufacturing a swashplate for an axial piston pump, which swash plate includes a plate body having a smooth planar surface on one side and a concave semicylindrical bearing surface on the other side, the axis of the bearing surface lying parallel to the planar surface, the method comprising the steps of:

a) forming a metal casting with opposite generally planar parallel surfaces;

b) cutting and finishing a cylindrical bore through the casting midway between and parallel to said generally planar surfaces; and,

c) cutting the casting into two substantially identical pieces on a cutting plane parallel to said planar surfaces and on the axis of said cylindrical bore, whereby each piece comprises a swashplate.

5,253,577

PISTON-CYLINDER ASSEMBLY OF PLASTIC MATERIAL AS WELL AS PROCESS AND APPARATUS FOR ITS MANUFACTURE

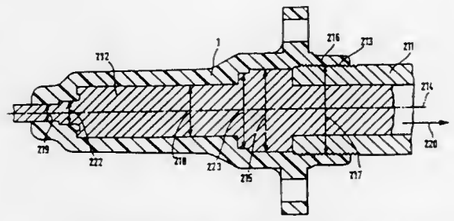
Juergen Schonlau, Walluf; Alfred Birkenbach, Hattersheim; Ralf Harth, and Wolfgang Ritter, both of Oberursel/Ts., all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 455,363, Jan. 9, 1990, Pat. No. 5,121,686.
This application Mar. 30, 1992, Ser. No. 844,597
Claims priority, application Fed. Rep. of Germany, May 16, 1988, 2816610; May 16, 1988, 3816607; May 16, 1988, 3816609
Int. Cl.[5] F01B *11/02*; F16J *10/00*; B28B *7/20*
U.S. Cl. 92—170.1 **2 Claims**

1. A process for manufacturing a cylinder housing of a piston cylinder device comprising the steps of assembling a first tool comprised of an externally threaded bushing over one end of an elongates stepped diameter second tool, said second tool being formed with a plurality of shoulders of progressively increasing diameter towards said one end thereof to form a stepped configuration, said one end thereof being of reduced diameter and said external thread of said first tool being of larger diameter than the largest diameter of said second tool;

molding plastic around said assembled first and second tools so as to form a cylinder with said first and second tools embedded therein;

rotating said first tool to be unthreaded from a portion of said cylinder formed thereover with an internal thread; and thereafter axially withdrawing said stepped diameter



second tool from said molded cylinder, whereby a cylinder housing having a stepped diameter with an internal thread formed at one end is produced.

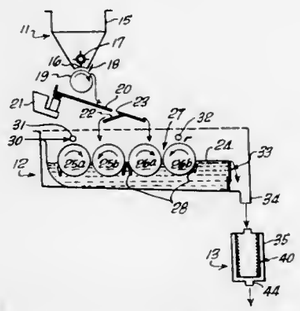
2. A cylinder housing of a piston cylinder device as manufactured by the process of claim 1.

5,253,578

APPARATUS FOR WETTING AND DISSOLVING DRY PARTICLES

Sheng H. Hsu, Marysville, Ohio, assignor to Nestec S. A., Vevey, Switzerland

Filed Mar. 16, 1992, Ser. No. 852,054
Int. Cl.[5] A47J *31/00*
U.S. Cl. 99—275 **11 Claims**



1. An apparatus for wetting and dissolving finely divided dry particles in a liquid which comprises

a dissolving tank having liquid supply means and discharge means, gate means in said tank intermediate said supply means and discharge means to provide a body of liquid of predetermined level in said tank,

at least one pair of axially aligned counter-rotating drums mounted in said tank partially submerged in said body of liquid, the drums in each of said pair being mounted in close proximity to define a nip therebetween,

means for rotating each drum in each of said counter-rotating pairs toward said nip,

a solubilizing bar tangentially mounted substantially parallel and in close proximity to an upwardly rotating section of each drum submerged in the body of liquid, said bar extending over substantially the entire axial length of the drum to provide a converging gap between the bar and the surface of the adjacent drum,

feeding means mounted above the dissolving tank for depositing the dry particles onto one of the drums in each counter-rotating pair, and

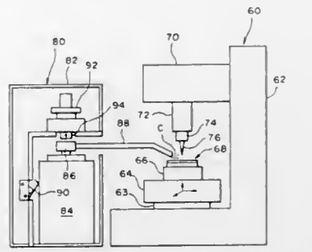
filter means in communication with the liquid discharge means of said tank to receive liquid from the tank and disintegrate and dissolve any solid particles in the liquid.

5,253,579

RUBBER STAMP, MANUFACTURING DEVICE THEREFOR, AND METHOD OF MANUFACTURE THEREFOR

Yoshitaka Yoshii, 5-11-23, Tokugyo, Kofu-shi, Yamanashi-ken, and Ichiro Suzuki, Kofu, both of Japan, assignors to Yoshitaka Yoshii, Kofu, Japan

Filed Feb. 12, 1992, Ser. No. 835,127
Claims priority, application Japan, Feb. 13, 1991, 3-41247; Feb. 13, 1991, 3-41248
Int. Cl.[5] B41C *1/00*
U.S. Cl. 101—401.1 **11 Claims**



1. A method for manufacturing rubber stamps comprising the steps of:

(a) preparing a stamp body including a stamp face of a rubber material having a predetermined glass-transition temperature,

(b) detachably adhering a protective metal foil on said stamp face of said stamp body,

(c) spraying a coolant against said metal foil for a sufficient period of time to cool said rubber material below said glass-transition temperature thereof,

(d) engraving said stamp face through said metal foil using a rotating cutter to form a predetermined image and thereby removing those portions of said metal foil overlying the areas of said image,

(e) maintaining said rubber material below said glass-transition temperature during said engraving step (d),

(f) repeating said steps (c), (d) and (e) until said image is formed completely, and

(g) removing the remaining said metal foil from said stamp face.

5,253,580

APPARATUS FOR CONVEYING A PRINTED OBJECT

Richard D. Dee, 921 W. Macada Rd., Bethlehem, Pa. 18017; Louis A. DiGiacomo, 600 Orchid Cir., Emmaus, Pa. 18049, and Geza Tomosy, 3900 Fish Hatchery Rd., Allentown, Pa. 18103

Filed Aug. 24, 1992, Ser. No. 934,380
Int. Cl.[5] B65G *29/00*
U.S. Cl. 101—40.1 **8 Claims**

1. An apparatus for conveying a printed object comprising:

vacuum means for supplying a vacuum;

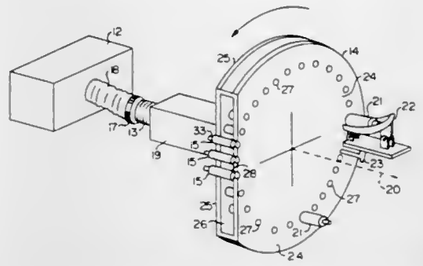
a rotationally driven central shaft operably associated with the vacuum means, said central shaft having a bore therethrough for carrying the vacuum;

rotary disc means mounted on the central shaft for rotation therewith for conveying the printed object sequentially from a receipt station to a discharge station, said rotary disc means having a front face, a back face and an internal vacuum chamber for carrying the vacuum, said internal vacuum chamber being in communication with the central shaft's bore and the vacuum means, said front face having at least one vacuum port;

wherein the vacuum is delivered to the vacuum port so that suction created by the vacuum picks-up the object at the receipt station;

a valve means associated with the vacuum port for controlling the delivery of the vacuum to the vacuum port so that suction crated by the vacuum picks-up the object at the receipt station; and

wherein said valve means is an air valve system comprised of a cylinder mounted in the rotary disc means' internal vacuum chamber so that the cylinder is attached to an interior of the disc means' back face, and extends through the chamber and the disc means' back face, with the cylinder's axis being aligned with the vacuum port generally parallel to the disc means' rotational axis, said cylinder having a cavity in communication with the vacuum port and a valve disposed in said cavity, said valve having a stem extending through the cylinder and protruding outwardly beyond the disc means' back face whereby depression of the valve's stem at the receipt station opens said cavity to that the cavity is in communication with the internal vacuum chamber thereby creating sufficient suction to retain the object against the disc means' front face at the vacuum port.

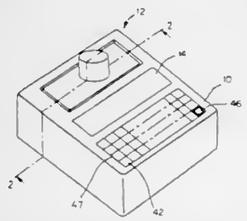


5,253,581

STAMP DEVICE EMPLOYING A HEAT SENSITIVE STENCIL PAPER TO BE PERFORATED BY HEAT OF A THERMAL HEAD

Takashi Miki, Nagoya, and Tetsuji Fuwa, Hashima, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Continuation of Ser. No. 811,974, Dec. 23, 1991, abandoned. This application Feb. 25, 1993, Ser. No. 22,833
Claims priority, application Japan, Dec. 29, 1990, 2-417190; May 9, 1991, 3-104225; May 27, 1991, 3-121028
Int. Cl.[5] B41L *13/02*
U.S. Cl. 101—121 **31 Claims**



1. A portable stamping device, comprising:

a stencil producing unit further comprising:

data input means providing a plurality of characters for enabling an operator to selectively input desired ones of the plurality of characters to make up image data to be used to produce a stamping stencil;

thermal head means for forming pores by heat in a thermal

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stencil paper at a printing position on the basis of the data input by said data input means; and

stenciling sheet supplying means for supplying the thermal stencil paper from a supply position to the printing position;

the portable stamping device also comprising means for use of the thermal stencil paper, having pores therein, that is separate from the stencil producing unit, said means for use having an ink supply means for supplying the pores formed in the thermal stencil paper with ink at an ink supplying position and used for printing when separated from said stencil producing unit.

5,253,582

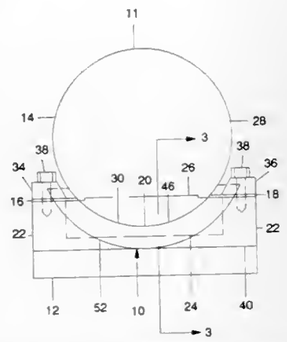
SEALING DEVICE FOR A PRINTING PRESS

Kevin W. Orth, Des Plaines, and Walter J. Pelczarski, Downers Grove, both of Ill., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Sep. 19, 1991, Ser. No. 762,824

Int. Cl.[5] B41F *31/02*

U.S. Cl. 101—366 **18 Claims**



1. A sealing device for a printing press, comprising:

a base defining a chamber for retaining ink;

a roller mounted on said base over the chamber, with the chamber communicating with the roller; and

a sealing member having a surface for contacting the roller, said sealing member being constructed from a flexible porous material and having a flexible fluid impervious barrier extending over at least one side of the sealing member to prevent passage of ink through the sealing member, with said contacting surface being free of the fluid impervious barrier, such that the sealing member defines the contacting surface by the porous material facing the roller, with the fluid impervious barrier being of one-piece construction with the porous material, and with the porous material and barrier being flexible to conform to the shape of the roller.

5,253,583

DEVICE FOR POSITIONING PRINTING MATERIAL FOR USE IN A PRINTING APPARATUS

Hiroshi Yamamoto, and Kenro Shimamoto, both of Higashihiroshima, Japan, assignors to Fuji Kikai Kogyo Kabushiki Kaisha, Hiroshima and Dainippon Ink and Chemicals, Inc., Tokyo, both of Japan

Filed Feb. 26, 1992, Ser. No. 843,773

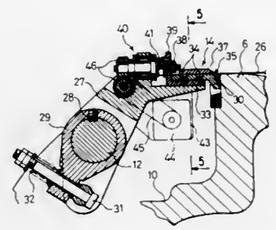
Claims priority, application Japan, Mar. 4, 1991, 3-010932[U]

Int. Cl.[5] B41F *1/30*

U.S. Cl. 101—409 **4 Claims**

1. A device for positioning printing material for use in a printing apparatus in which printing is applied to the printing material by passing the material through between an impression cylinder and a blanket cylinder, the device comprising positioning means disposed in a recessed portion formed on an outer surface of the impression cylinder, said positioning means comprising:

a stopper positioned to contact a leading end of the printing material;



drive means mounted to move the stopper forward and backward in the direction of transport of the printing material;

control means connected to control said drive means while the impression cylinder is being rotated; and

operation means for operating the control means for adjusting the stopper while the cylinder is being rotated.

5,253,584

PYROTECHNIC MATERIALS

Frederick G. Allford, Kent, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Whitehall, England

PCT No. PCT/GB90/00360, § 371 Date Nov. 6, 1991, § 102(e) Date Nov. 6, 1991, PCT Pub. No. WO90/10724, PCT Pub. Date Sep. 20, 1990

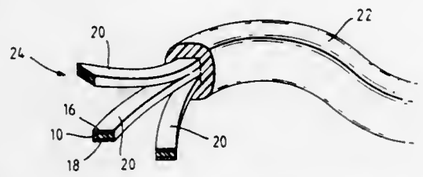
PCT Filed Mar. 9, 1990, Ser. No. 777,220

Claims priority, application United Kingdom, Mar. 13, 1989, 8905747

The portion of the term of this patent subsequent to Feb. 25, 2009, has been disclaimed.

Int. Cl.[5] F42B *3/18*

U.S. Cl. 102—202.7 **17 Claims**



1. A pyrotechnic material comprising a substrate film of an oxidizing halogenated polymeric material and at least one layer 2 to 100 microns thick of an oxidizable metallic material vapor deposited onto the surface of the polymeric material in at least one location, wherein the polymeric and metallic materials are conjointly capable of reacting together exothermically on ignition, the thickness and composition of the metallic material being such as to ensure reliable and consistent lateral progression of the exothermic reaction.

5,253,585

EXPLOSIVE PIPE CRIMPING METHOD AND DEVICES

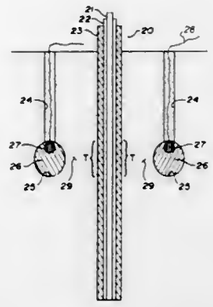
David Hudak, 349 East 12th Street, North Vancouver, B.C., Canada V7L 2K1 ; Andrew McQuilkin, 10384 McSween Rd., Chilliwack BC, Canada V2P 6H5 ; Stephen B. Murray, 101 Primrose Drive S.E., Medicine Hat, Alberta, Canada T1B 2C4 , and David V. Ritzel, 246 - 2nd Street S.W., Medicine Hat, Alberta, Canada T1A 4A9

Filed Apr. 27, 1992, Ser. No. 874,105

Claims priority, application United Kingdom, Apr. 26, 1991, 9109097

Int. Cl.[5] F42B *3/00*

U.S. Cl. 102—311 **5 Claims**



1. An explosive method for symmetrically crimping a target portion of a generally tubular, passageway-forming assembly, comprising:

emplacing an explosive main charge symmetrically about the assembly in spaced relation therewith and in a plane perpendicular to the longitudinal axis of the assembly, the main charge having a plurality of initiation charges associated therewith at an outer surface of the main charge remote from the target portion, said initiation charges being associated with means for detonation thereof, the initiation charges, main charge, and target portion being generally linearly aligned;

coupling the main charge with the target portion by means of a dense coupling medium extending between them;

confining the non-coupled surface of the main charge with a layer of dense medium for retarding venting of detonation gases;

the spacing of the main charge from the assembly and the quantity and quality of the explosive being adapted to ensure that, upon detonation, the produced pressure pulse will compress the coupling medium to crimp the assembly; and

detonating the initiation charges simultaneously to propagate a detonation front through each portion of the main charge so that a convergent pressure pulse compresses the coupling medium and effects symmetrical crimping of the target portion to thereby restrict the passageway.

5,253,586

METHOD OF STEMMING A BLAST HOLE

Paul N. Worsey, Rolla, Mo., assignor to The Curators of the University of Missouri, Columbia, Mo.

Filed Oct. 15, 1992, Ser. No. 961,487

Int. Cl.[5] F42B *3/00*

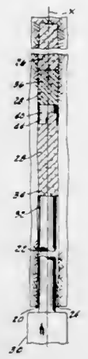
U.S. Cl. 102—313 **19 Claims**

1. A method of stemming a blast hole loaded with an explosive charge, said blast hole having side walls, an outwardly opening mouth and a central axis extending longitudinally of the blast hole, the method comprising the steps of:

inserting a blast plug through the mouth of the blast hole and positioning the blast plug axially outwardly of the explosive charge;

inserting a conduit having a discharge end inwardly through the mouth of the blast hole and positioning the discharge end of the conduit within the blast hole axially outwardly of the explosive charge;

forcing particulate stemming material under pressure



through the conduit for exit from its discharge end into the blast hole in a generally axially inward direction to retain the plug within the blast hole; and

as stemming material is being forced out of the discharge end of the conduit, moving the discharge end of the conduit generally axially outwardly relative to the blast hole toward the mouth of the blast hole to simultaneously fill and pack the blast hole with stemming material.

5,253,587

SEPARATION AND AERODYNAMIC BRAKING DEVICE FOR THE PROPULSION STAGE OF A MISSILE

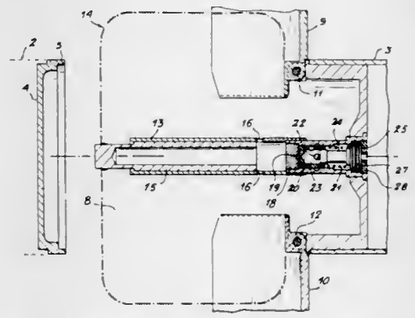
René Thouron, La Ferte St Aubin, and Pascal Herrero, Clery St Andre, both of France, assignors to Thomson-Brandt Armements, La Ferte Saint Aubin, France

Filed Dec. 23, 1992, Ser. No. 996,779

Claims priority, application France, Dec. 23, 1991, 91 16040

Int. Cl.[5] F42B *4/06*

U.S. Cl. 102—351 **6 Claims**



1. Device for the separation and the aerodynamic braking of a propeller stage including:

means of attachment locking the propulsion stage to the rest of the missile known as the payload stage, these means being shearable to enable separation;

an annular housing for an inflatable bag located at one extremity of the propulsion stage at its interface with the payload stage and closed by hinged flaps which open out

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after separation of the means of attachment of the propulsion and payload stages;

an inflatable bag, attached to the propulsion stage and placed deflated in said annular housing, which when inflated comes out of the housing to augment the effective cross-sectional area of the propulsion stage;

a tubular piston for separation of the propulsion and payload stages which is mobile within a hollow cylindrical support fixed to the propulsion stage, placed at the center of the said housing and oriented in a direction parallel to the direction of separation of the means of attachment of the propulsion and payload stages, and which has a passive position in which it is retracted into the cylindrical support and a working position in which it emerges from the cylindrical support and comes into contact with the payload stage which it then pushes away until the means of locking and the separation of the means of attachment are sheared;

at least one opening in the wall of the cylindrical support which is uncovered by the tubular piston when it moves into a working position and which connects the internal volumes of the cylindrical support and the inflatable bag;

an initiatable gas generator which is arranged inside the tubular piston and which, when it is primed, pushes the piston into a working position which leads to the separation of the propulsion stage and inflates the bag, and;

means of initiating the gas generator capable of detecting the end of operation of the propulsion stage.

5,253,588

DEVICE FOR REDUCING THE SPIN RATE OF A SUBMUNITION UNIT

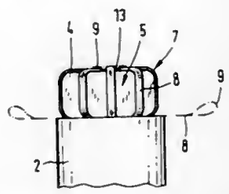
Karl-Heinz Vogt, Essen, and Heinz Olmscheid, Castrop-Rauxel, both of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Ratingen, Fed. Rep. of Germany

Filed Jun. 18, 1992, Ser. No. 900,132

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1991, 4124658

Int. Cl.[5] F42B *10/14*

U.S. Cl. 102—386 **4 Claims**



1. A device for reducing the rate of rotation of a spinning submunition unit having a tail end provided with a deployable braking device, from a time after the submunition unit is ejected from a spin stabilized carrier projectile until the braking device is deployed, comprising:

a plurality of bands arranged to form a star-shaped symmetrical band structure for placement around the braking device, each of said bands having a free end;

a wind pocket attached to each of said free ends; and

a break line for holding together the free ends of said bands.

5,253,589

FOLDING DOOR APPARATUS FOR A RAILWAY PLATFORM

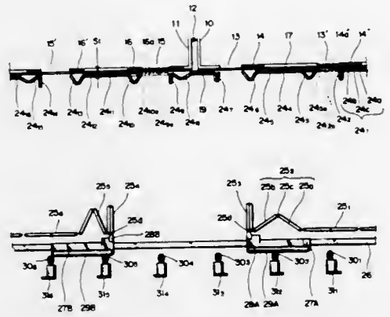
Isamu Kawanishi, and Yukio Uozumi, both of Kobe, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Japan

Filed Jul. 24, 1992, Ser. No. 917,945

Claims priority, application Japan, Jul. 31, 1991, 3-060406[U]; Jul. 31, 1991, 3-191751

Int. Cl.[5] B61B *1/02*

U.S. Cl. 104—28 **4 Claims**



1. A folding door apparatus for a railway platform, comprising:

at least two cooperating folding doors each composed of two elements, a mid-portion between the two elements serving as an inflection point of each said folding door, said at least two folding doors being movable between closed positions in which said folding doors are disposed serially along the railway platform and inflected positions in which an opening between said at least two folding doors is formed;

a door opening and closing driving apparatus including a pair of opening and closing acting bodies for moving said folding doors in a direction and amount necessary to form said opening between said folding doors; and

a logic unit for analyzing information regarding the position and width of an entrance of a railway vehicle stopped at the platform, and for controlling the direction and amount of movement of said folding doors such that said opening between said folding doors corresponds to the entrance of said railway vehicle.

5,253,590

ULTRA HIGH-SPEED PNEUMATIC TRANSPORTATION SYSTEM

Henry Marusak, R-1 Box 302, Williams, Ind. 47470

Filed Apr. 21, 1992, Ser. No. 871,499

Int. Cl.[5] B61B *13/00*

U.S. Cl. 104—138.1 **5 Claims**

1. A high-speed pneumatic transportation system comprising:

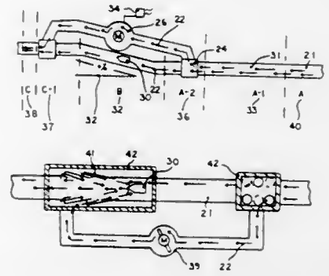
a main line having a tubular cross-section and defining a travel path, said main line including at least a horizontally oriented section connected to at least an inclined section;

at least one vehicle movable along inside said main line;

generator means for generating an air stream inside said main line for forcing said at least one vehicle to move along inside said main line;

vehicle speed reducing means provided generally at said inclined section for reducing the speed of said at least one vehicle generally at the inclined section so as to lower gravitational force imposed on passengers in said at least one vehicle;

said vehicle speed reducing means including a first means, located near an entry to said inclined section, for bypassing a portion of the air stream inside the horizontal section and directing said portion of the air stream against the front end of said at least one vehicle travelling toward the inclined section, so as to reduce the speed of said at least one vehicle travelling toward the inclined section;



said vehicle speed reducing means further including a second means, located at the inclined section, for bypassing a portion of the air stream around said inclined section, for reducing the air stream in the inclined section.

5,253,591

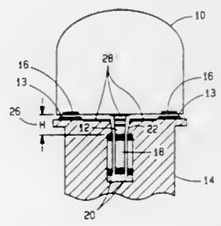
HIGH SPEED MAGLEV DESIGN

Donald M. Rote, Lagrange; Jianliang He, Woodridge, and Howard Coffey, Darien, all of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 28, 1992, Ser. No. 952,439

Int. Cl.[5] B60L *13/00*

U.S. Cl. 104—281 **6 Claims**



1. A magnetic leviation and propulsion system for a vehicle having a base surface and two ends where the vehicle is adapted to travel over a roadbed comprising:

a slotted guideway having a vertical slot with two parallel interior surfaces and an opening opposite the roadbed where said guideway is coupled to the roadbed either directly for at grade structures or indirectly through a plurality of pillars which support said guideway;

a vertical undercarriage attached along a centerline of the base surface of the vehicle where said vertical undercarriage resides in said vertical slot of said guideway,

a plurality of ground coils affixed to both said interior surfaces of said vertical slot of said slotted guideway where said ground coils are vertically oriented and continue the length of said slotted guideway and where said coils are energized by an external multiphase power source to create a traveling magnetic wave,

a plurality of strong field superconducting magnets attached to the vertical undercarriage in a manner so that said magnets are approximately parallel to said ground coils on either side of said strong field superconducting magnets and have an approximate vertical orientation and where said strong field superconducting magnets interact with said traveling magnetic wave to propel the vehicle along said guideway and where a vertical distance between an upper surface of said strong field superconducting magnets and the vehicle base can be controlled;

a plurality of weak field superconducting magnets oriented approximately horizontally and attached to the base of the vehicle,

a plurality of guideway-mounted non-magnetic conductors oriented approximately parallel to said weak field superconducting magnets and located beneath said weak field magnets where an interaction between said weak field magnets and said non-magnetic conductors generates a repulsive force between said conductors and said weak field magnets to provide for leviation and guidance of the vehicle when said weak field superconducting magnets are energized,

a means for magnetically shielding a passenger cabin in the vehicle from a magnetic field generated by said strong field superconducting magnets.

5,253,592

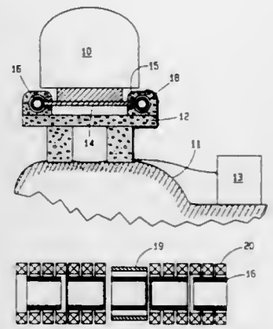
MAGNETIC LEVITATION CONFIGURATION INCORPORATING LEVITATION, GUIDANCE AND LINEAR SYNCHRONOUS MOTOR

Howard T. Coffey, Darien, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 28, 1992, Ser. No. 920,737

Int. Cl.[5] B60L *13/04*

U.S. Cl. 104—281 **5 Claims**



1. A magnetic levitation and propulsion system for a vehicle adapted to travel over a roadbed comprising:

a pair of slotted guideways where each guideway of said pair has a hollow, cylindrical interior surface where said guideway is imbedded in a support structure and where said support structure is coupled to the roadbed,

a plurality of conducting guideways affixed to said interior surface of said guideway where said conducting guideway has a longitudinal slot running the length of the conductive guideway,

a plurality of propulsion windings affixed to said interior surface of said guideway and bordering said conducting guideway, where said propulsion windings form a hollow cylinder having a longitudinal slot running the length of the hollow cylinder where said slot is aligned with the slot in said guideway and where said windings are energized by a power source to create a traveling magnetic wave,

a plurality of superconducting magnet devices producing a magnetic field and affixed to the vehicle where said superconducting magnet devices are located interior to said plurality of propulsion windings and to said plurality of said conducting guideways, where said superconducting magnets are connected to the vehicle by a support member which traverses said guideway through said slot and where said magnet devices generates a repulsive force between said conductive guideway and where said mag-

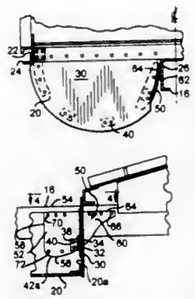
VOL 1155 ISS 3 OCT 19 1993 UMI

netic devices and interact with said traveling magnetic wave to propel the vehicle along said guideway.

5,253,593
TUB/CENTER SILL ATTACHMENT FOR GONDOLA CAR

William E. Kurtz, Johnstown, and Kerry L. Sauter, Sidman, both of Pa., assignors to Johnstown America Corporation, Chicago, Ill.

Filed Sep. 24, 1992, Ser. No. 949,975
Int. Cl.[5] B61D 9/08
U.S. Cl. 105—406.1 15 Claims



14. A method of attaching a support plate to and end of a concave floor panel of a gondola rail car and to a center sill, through a vertical cover plate comprising the steps of

passing the support plate through the vertical cover plate,

positioning a first portion of the support plate adjacent the concave floor panel, on a first side of the vertical cover plate,

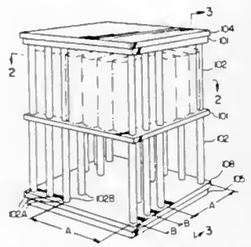
positioning a second portion of the support plate adjacent the center sill, on the opposite side of the vertical cover plate from said first side, and

affixing said first and second portions respectively to the concave floor panel and the center sill.

5,253,594
REVOLVING BOOKCASE

Xen N. Sideris, 666 Georgia Ave., Palo Alto, Calif. 94306

Continuation-in-part of Ser. No. 614,305, Nov. 16, 1990, Pat. No. 5,101,738. This application Dec. 2, 1991, Ser. No. 801,539
Int. Cl.[5] A47B 57/00
U.S. Cl. 108—94 29 Claims



1. A revolving storage shelf unit comprising:

at least three shelf panels including a bottom shelf panel and a top shelf panel;

said shelf panels being square planar members,

each having four corners and four edges, a cover panel;

a plurality of vertical support members vertically interspacing adjacent shelf panels and defining storage bins,

each of said vertical support member having an axis and two planar ends substantially perpendicular to said axis, and including means for receiving screw type fasteners;

said vertical support members interspacing the same shelf panels constituting a set of vertical support members, said plurality of vertical support members including at least one set of support members;

each set of vertical support members being arranged in "L" patterns, said "L" patterns extending from each corner of a shelf panel with the long side of each L parallel to and proximal to one edge of said shelf panel and extending to a point on said edge, the base of said L extending inward from said edge at said point, the base of the "L" at a first corner along with the long side of an "L" at a second, adjacent corner defining one of said storage bins,

said "L" patterns of different shelf panels being coaxially arranged, and corresponding vertical support members of said "L" patterns of different shelf panels being axially aligned;

a cover panel including means for receiving screw type fasteners in locations corresponding to the arrangement of said vertical support members;

wherein said panels having openings for passing said screw type fasteners in locations corresponding to the arrangement of said vertical support members;

said bottom panel having openings for receiving screw type fasteners in locations corresponding to the arrangement of said vertical support member;

said top shelf panel being mounted between said cover panel and the highest set of vertical support members in said shelf unit,

additional shelf panels being mounted between vertically adjacent sets of vertical support members and

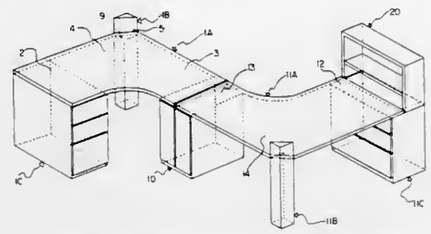
said bottom panel being attached to the lowest set of vertical support members;

a base secured to the bottom of said bottom shelf panel in a freely rotating manner.

5,253,595
MODULAR SYSTEM FOR OFFICE FURNITURE

Charles Heidmann, Strasbourg, France, assignor to Steelcase Strafor (S.A.)

Continuation of Ser. No. 816,231, Jan. 3, 1992, abandoned. This application Mar. 5, 1993, Ser. No. 27,588
Claims priority, application European Pat. Off., Mar. 19, 1991, 91440021.3
Int. Cl.[5] A47B 3/06
U.S. Cl. 108—157 6 Claims



1. A modular system for office furniture, comprising:

a first planar module having top and bottom planar surfaces, rectangular first and second end sections having different widths, and a third angular middle section connecting said first and second end sections, said top and bottom planar surfaces defining an asymmetrical, reversible working surface, said angular middle section having a cutoff corner, and said first, second and third sections being formed as a single piece;

a second support module having a top surface configured to support the width of said first end section of said first planar module;

a third support module having a top surface configured to support the width of said second end section of said first planar module; and

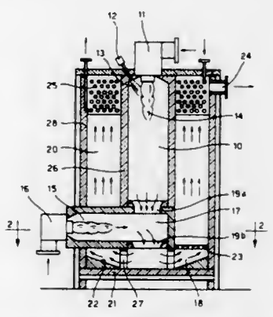
a fourth support module having a horizontal flat triangular surface for engaging and supporting said cutoff corner of said angular middle section of said first planar module, said fourth support module having an upper portion having a triangular cross section which extends vertically above said triangular surface and said top surface of said first planar module, said upper portion including at least one electrical outlet, and a lower portion having a square cross section extending vertically below said triangular surface and said bottom surface of said first planar module;

wherein said first, second, third and fourth modules are selectively fixed in position with respect to one another by gravity alone, said first end section of said first planar module resting on said top surface of said second support module, said angular middle section of said first planar module resting on said triangular surface of said fourth support module, and said second end section of said first planar module resting on said top surface of said third support module.

5,253,596
METHOD AND UNIT FOR THE THERMAL DESTRUCTION OF POLLUTANT WASTES

Corrado Bono Coraggioso, Milan, Italy, assignor to Bono Energia S.P.A., Milan, Italy

Filed May 1, 1992, Ser. No. 877,201
Claims priority, application Italy, May 10, 1991, MI91A 001287
Int. Cl.[5] F23B 5/00; F23M 13/00
U.S. Cl. 110—211 7 Claims



1. Method for the thermal destruction of liquid and gaseous industrial waste effluent, whereby the waste effluent is injected into a primary combustion chamber where it is mixed with the combustion gases of a primary burner to form a first mixture heated to a first temperature level, subsequently the first mixture of gases and waste effluent is further heated by the combustion gases of a secondary burner to form a second mixture which combustion is brought to a second temperature level corresponding to a temperature of thermal destruction of the waste, then maintaining said mixture at said second temperature level for a predetermined period of time, the method comprising the steps of:

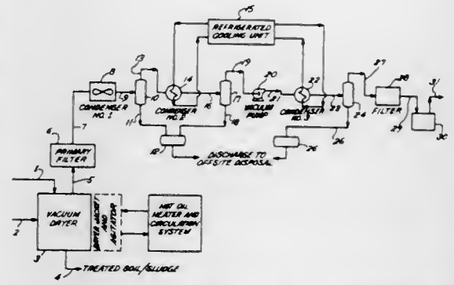
feeding said first mixture of gas and waste effluent into an intermediate mixing zone where strong turbulence condition are created by impinging said first gas mixture with a flow of secondary combustion gas transversely fed to the flow of the above mentioned first gas mixture;

and maintaining said mixture of gas and waste effluent in adiabatic conditions at said temperature of thermal distruction by reversing it along an annular path which surrounds and develops at least for most of said primary combustion chamber.

5,253,597
PROCESS FOR SEPARATING ORGANIC CONTAMINANTS FROM CONTAMINATED SOILS AND SLUDGES

Carl P. Swanstrom, Naperville; Peter G. Romzick, Homewood, and Carl R. Palmer, Geneva, all of Ill., assignors to Chemical Waste Management, Inc., Oak Brook, Ill.

Filed Jun. 18, 1992, Ser. No. 900,281
Int. Cl.[5] F23G 5/02
U.S. Cl. 110—346 13 Claims

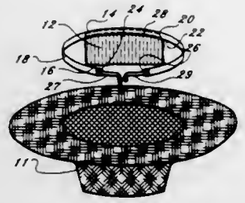


1. A method for separating chemical contaminants from contaminated feed materials comprising, subjecting the feed materials contaminated with chemical compounds to a vacuum sufficient to expose the feed materials to a final pressure from about 400 mm Hg to about 50 mm Hg; simultaneously heating the feed materials to a temperature effective to volatilize the contaminants, but below incineration temperature and below thermal desorption temperatures required at atmospheric pressure; substantially continuously removing the evolved vapors for a period of time sufficient to effect a desired degree of separation of the contaminants from the feed materials.

5,253,598
METHOD FOR MANUFACTURING HATS

Hans Rinehuls, West Palm Beach, Fla., assignor to Jass Concepts, West Palm Beach, Fla.

Filed Feb. 28, 1992, Ser. No. 818,176
Int. Cl.[5] A42C 5/02
U.S. Cl. 112—263.1 13 Claims



1. A method of installing a band in a hat, comprising the steps of:

(a) positioning a piece of fabric relative to a semi-rigid band, said fabric having a first end and a second end, said band having a top edge, a bottom edge and two side edges;

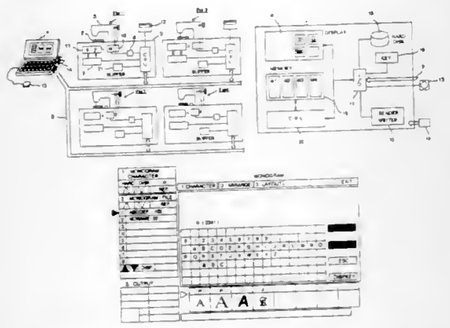
(b) fastening said fabric near said first end to said band, said fabric being between said side edges, said fabric further being adjacent said bottom edge and a nominal distance therefrom;

(c) positioning said band and attached fabric relative to a hat, said hat having a crown portion defined by a crown surface, and a brim surface disposed substantially normal to said crown surface;

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(d) fastening said fabric near said second end to said crown surface a nominal distance form said brim surface;
(e) rotating said band two times about its longitudinal axis toward and into said hat crown portion; and
(f) fastening said band to said crown surface of said hat.

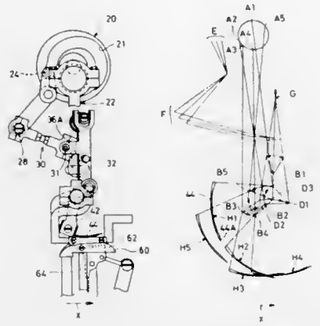
5,253,599
EMBROIDERING SYSTEM AND CONTROL SYSTEM THEREFOR
Tadaaki Hashiride, Okazaki, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Sep. 21, 1992, Ser. No. 947,574
Claims priority, application Japan, Sep. 20, 1991, 3-241669
Int. Cl.[5] D05B *21/00, 25/00*
U.S. Cl. 112—121.12 **8 Claims**



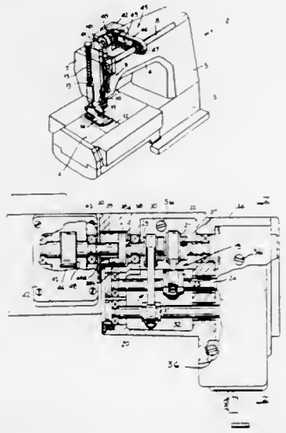
6. Apparatus for embroidering comprising:
a plurality of embroidering machines for receiving embroidering data;
display means for displaying image data;
input means for selecting image data to be displayed;
memory means for storing embroidering patterns, each of said embroidering patterns having corresponding image data and embroidering data for characters of several languages, said characters having different character symbols for the same phonetic sound; and
main control means for determining whether a phonetic sound selected via said input means corresponds to image data for more than one character stored in said memory means, for controlling a display of image data which corresponds to said phonetic sound and for sending embroidering data for an embroidering pattern which corresponds to a selected one of said character symbols to at least one of said plurality of embroidering machines.

5,253,600
VARIABLE NEEDLE TRAVELLING ARC IN A SCOOP-STITCH SEWING MACHINE
Masato Sugahara, Tokyo, Japan, assignor to Sugahara Machine Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 8, 1992, Ser. No. 958,300
Claims priority, application Japan, May 22, 1992, 4-155779
Int. Cl.[5] D05B *1/24*
U.S. Cl. 112—267.1 **4 Claims**

1. A method for performing scoop-stitching wherein a curved needle is repeatedly moved along an arc of travel around a normally fixed radius into and out of penetrating engagement with fabric to be sewn, said method comprising the steps of changing the arc of travel of the needle before penetration of the fabric such that the needle first penetrates the fabric along an arc having a radius less than said fixed radius, and after the needle has penetrated the fabric, changing the arc of travel to an increased radius.

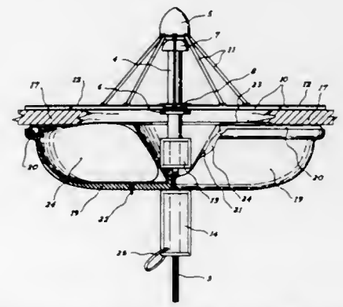


5,253,601
DETACHABLE TOP FEED UNIT FOR SEWING MACHINES
Roberto Sanvito, Buccinasco, Italy, assignor to Rimoldi, S.r.l., Milan, Italy
Filed Jan. 14, 1993, Ser. No. 4,432
Claims priority, application Italy, Feb. 28, 1992, M19-2U000177
Int. Cl.[5] D05B *27/04, 73/02*
U.S. Cl. 112—320 **6 Claims**



1. A detachable top-feed unit for sewing machines, comprising:
at least one top feed dog (17) operatively connected to a rocking arm (18);
a first control eccentric (21) and a second control eccentric (29) receiving a rotatory motion from an upper drive shaft (8), longitudinally housed in an arm (6) of a sewing machine (2);
a vertical-movement kinematic mechanism (19) operatively interposed between the first eccentric (21) and the rocking arm (18) for transmitting a vertical reciprocating motion to the top feed dog (17);
a horizontal-movement kinematic mechanism (20) operatively interposed between the second eccentric (29) and the rocking arm (18) for transmitting a horizontal reciprocating motion to the top feed dog (17), further comprising:
a box-shaped housing structure (34) operatively receiving the vertical- and horizontal-movement kinematic mechanisms (19, 20);
detachable coupling means (35*a*, 35*b*, 36, 36*a*) for removably engaging the box-shaped housing structure (34) to the sewing machine (2);
an auxiliary shaft (37) rotatably received in the housing structure (34), carrying said first and second control eccentrics (21, 29) and provided at one end thereof with a first half-coupling (38) appearing externally of the box-shaped structure (34) through an access opening (39) formed on one side thereof;
an interconnecting stem (41) rotatably engaged to the sewing machine arm (6) and carrying, at one end thereof, a second half-coupling (40) to be operatively engaged with said first half-coupling (38) when the housing structure (34) is connected to the sewing machine (2);
driving-gear means (45) operating between said upper drive shaft (8) and the interconnecting stem (41) for transmitting the rotatory motion from the upper drive shaft to the auxiliary shaft (37).

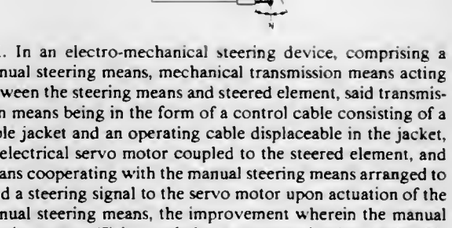
5,253,602
APPLIANCE FOR PLUGGING A HOLE IN A BOAT HULL
John B. Moriarty, Unit 1, 15 Carrathool Place, Mooloolaba, Queensland 4557, Australia
Filed Dec. 9, 1991, Ser. No. 802,688
Claims priority, application Australia, Dec. 13, 1990, PK3887
Int. Cl.[5] B63B *43/16*
U.S. Cl. 114—227 **6 Claims**



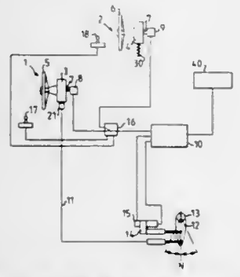
1. An appliance for plugging a hole in a boat hull comprising a stem, a tubular slide sleeved upon said stem, a hub fixed to a distal end of said stem, a proximal abutment flange on said slide, a distal abutment flange having a converging distal surface on said slide, a collar slideable along said slide between said abutment flanges, a plurality of ribs, each pivoted at one end to said collar and able to radiate therefrom in the manner of wheel spokes, a like plurality of control arms respectively pivoted at one end to said ribs at a position intermediate the rib ends and pivoted at their other ends to said hub, and an impervious membrane secured to said ribs and filling the spaces therebetween when the ribs are radiating from said collar.

5,253,603
UNDERWATER VEHICLE MUFFLER
Ralph P. Mascolo, Newport, R.I., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Jul. 10, 1992, Ser. No. 911,445
Int. Cl.[5] F42B *19/00*
U.S. Cl. 114—20.1 **7 Claims**

1. An exhaust system for releasing exhaust gases generated by the propulsion means of an underwater vehicle, said exhaust gases being released under water at the aft end of the vehicle, said exhaust system having relatively low noise emission, said exhaust system comprising:
an exhaust valve disposed at the aft end of the vehicle for receiving the exhaust gas, the exhaust valve having an outer wall having openings therein that permit exhaust gas to flow therethrough into the water;
a contoured strainer member disposed exterior to the exhaust valve and having an exterior surface, the exterior surface of the strainer having a contour that matches the contour of the vehicle and that provides for hydrodynamic flow of water along the vehicle and the strainer member as the vehicle is propelled through the water, the strainer member having a plurality of openings in the exterior surface, said openings being relatively small compared to the openings in said outer wall of the exhaust valve, said relatively small openings causing the formation of relatively small bubbles in the water when the exhaust gas is expelled therethrough.



5,253,604
ELECTRO-MECHANICAL STEERING DEVICE, ESPECIALLY FOR BOATS
Stig F. Bohlin, Goteborg, Sweden, assignor to AB Volvo Penta, Goteborg, Sweden
PCT No. PCT/SE90/00831, § 371 Date Jul. 23, 1992, § 102(e) Date Jul. 23, 1992, PCT Pub. No. WO91/08947, PCT Pub. Date Jun. 27, 1991
PCT Filed Dec. 13, 1990, Ser. No. 859,496
Claims priority, application Sweden, Dec. 14, 1989, 8904222
Int. Cl.[5] B63H *25/20*
U.S. Cl. 114—144 E **3 Claims**



1. In an electro-mechanical steering device, comprising a manual steering means, mechanical transmission means acting between the steering means and steered element, said transmission means being in the form of a control cable consisting of a cable jacket and an operating cable displaceable in the jacket, an electrical servo motor coupled to the steered element, and means cooperating with the manual steering means arranged to send a steering signal to the servo motor upon actuation of the manual steering means, the improvement wherein the manual steering means (5) is coupled to a command value sender (8), arranged to send a signal dependent on the position of the steering means relative to a predetermined position to an electronic control unit (10), the steered element (12) is coupled to an actual value sensor (15), disposed to send a signal, depen-

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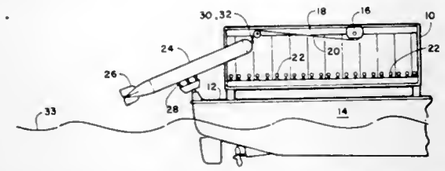
dent on the position of the steered element relative to a predetermined position, to the control unit, said control unit being disposed to compare said signals and send a control signal dependent on the difference to the servo motor (**14**), and the jacket and the operating cable are so joined to the steering means and the steered element that an initial operating movement of the steering means does not cause a relative displacement between the cable and the jacket.

5,253,605

METHOD AND APPARATUS FOR DEPLOYING AND RECOVERING WATER BORNE VEHICLES

Kenneth D. Collins, San Diego, Calif., assignor to Applied Remote Technology, Inc., San Diego, Calif.

Filed Dec. 21, 1992, Ser. No. 994,289
Int. Cl.[5] B63B *21/66*
U.S. Cl. 114—259 **6 Claims**



1. A method of launching a water born vehicle into a rough water surface, said vehicle having a front and rear surface and positioned within a portable container van secured to the deck of a surface ship comprising the steps of:

moving the vehicle from a stowed position within said container van a finite distance to a position where said rear surface of said vehicle extends over said water beyond said deck;

attaching said front surface of said vehicle to the end of an extendable and contractible cable supported by a translatable gantry crane;

elevating the front surface of said vehicle with said cable causing the rear surface of said vehicle to penetrate the rough water surface;

moving the front surface of said vehicle rearwardly beyond the deck of said surface ship while said forward surface remains elevated by translating said translatable crane; and

lowering the forward surface of said vehicle into the water after said vehicle is positioned over said water spaced from said surface ship by extending said cable toward said water.

5,253,606

MACHINE FOR GRIPPING, SECURING AND HANDLING UNDERWATER VEHICLES AND THE LIKE

Aurelio Ortelli, Bologna, Italy, assignor to Riva Calzoni S.P.A., Milan, Italy

Filed Sep. 9, 1992, Ser. No. 943,009
Claims priority, application Italy, Sep. 10, 1991, MI91A 002388
Int. Cl.[5] B63B *23/00*
U.S. Cl. 114—259 **9 Claims**

1. A machine for gripping and handling an underwater vehicle provided with an extension projecting above a water surface, said machine being mounted on a ship and comprising:

a turret mounted rotatably about a turret axis on a ship;

a crane mounted on said turret and provided with a pair of jibs pivotally connected with one another, one of said jibs being formed with a free end;

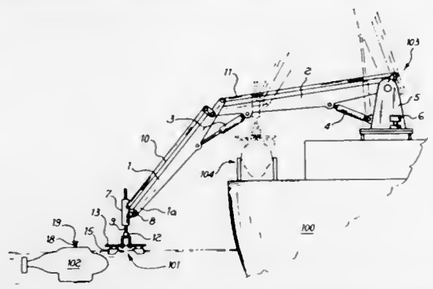
actuating means for displacing said jibs;

a guide extending along a guide axis and mounted on said free end of said one of said jibs;

a rod coaxial with and slidable in said guide, said rod being formed with a respective free end projecting axially toward a water surface from said guide;

an articulated member mounted rotatably about said guide axis on said free end of said rod, said articulate member swivelling about a swivel axis extending perpendicular to an axis of said guide and being axially fixed to said rod to move therewith axially;

a gripper mounted rigidly on said articulated member for engaging said extension of a vehicle to be handled;



retaining means on said gripper for retaining said extension of the vehicle to be handled upon gripping thereof by said gripper;

floating means mounted on said articulated member and riding in the water for supporting said gripper on the surface;

controlling means operatively connected with said rod and said guide for controlling a preset axial position of said rod relative to said guide; and

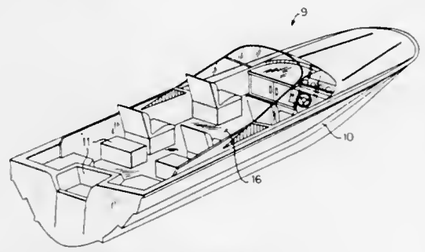
means on said jibs for maintaining said guide axis and said turret axis parallel to one another.

5,253,607

ONE STEP MOLDED ALL PLASTIC BOAT AND MANUFACTURE OF THE SAME

Shijie Chen, Room 301, Building 35, Lianhuashan Residential Quarters, Zhuhai, Guangdong Province, China

Filed May 14, 1991, Ser. No. 699,634
Claims priority, application China, May 16, 1990, 90102742.1
Int. Cl.[5] B63B *5/24*
U.S. Cl. 114—357 **16 Claims**



1. An all plastic boat hull comprised of

an outer surface layer and

an inner surface layer and

a cavity portion defined by said outer surface layer and said inner surface layer, said cavity portion containing a plastic foaming material,

wherein said outer surface layer and said inner surface layer are made of physically modified resin which is comprised of

a resin as the main raw material,

a powdery additive and

a filler;

wherein said physically modified resin has in terms of the weight of the resin 1% to 10% short glass fibre and other fibre are added,

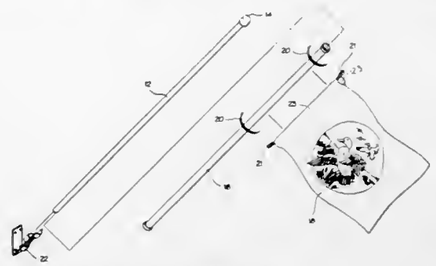
such fibre and resin being used for preparing physically modified plastic crude powder material after being pelletized.

5,253,608

FLAG POLE ASSEMBLY

Robert C. Burke, 618 Magnolia Ave., Charlotte, N.C. 28203

Filed Apr. 8, 1992, Ser. No. 865,556
Int. Cl.[5] G09F *17/00*
U.S. Cl. 116—173 **4 Claims**



1. A flag pole assembly comprising:

(a) a support bracket;

(b) a pole having a mounting end selectively receivable by and removable from said bracket and an upper free end;

(c) a stopping member as said upper free end of said pole;

(d) at least one sleeve for carrying a flag, said sleeve being of a length substantially the same as the dimension of said pole between its said mounting end and said stopping member and formed to slide onto and off said pole over its mounting end when removed from said bracket; said stopping member having a greater diameter than a diameter of said sleeve; and

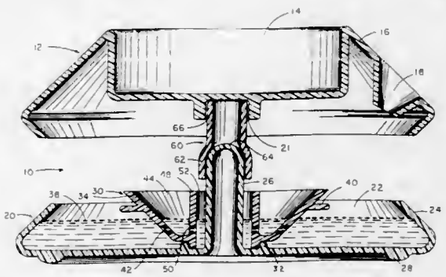
(e) means for mounting the flag at lengthwise spaced apart locations on said sleeve with one mounting location being more closely adjacent said outer free end of said pole and the other mounting location being more closely adjacent said mounting end of said pole when said sleeve is disposed on said pole, whereby said flag and said sleeve are easily removable and replaceable as a unit to and from said pole over its mounting end.

5,253,609

PET DISH

Kenneth W. Partelow, and Terry Seligman, both of 3395 Fisher Rd., Palm Harbor, Fla. 34683

Filed Aug. 27, 1992, Ser. No. 935,985
Int. Cl.[5] A01K *5/01*
U.S. Cl. 119—61 **8 Claims**



1. A pet feeding dish comprising

a tray portion having a generally concave upper surface adapted to hold a predetermined volume of liquid;

a pedestal;

a deflector-trap adapted to surround said pedestal, said deflector-trap having

an inner wall with a first hole therethrough, said first hole located below the surface of said liquid, and an outer wall, having a second hole therethrough, said second hole located below said surface of said liquid; and

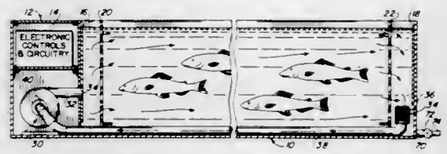
a food containing portion, adapted to be supported above said tray portion by said pedestal.

5,253,610

TANK FOR ELECTROANESTHETIZING FISH

Norman G. Sharber, 515 W. Havasupi Rd., Flagstaff, Ariz. 86001

Filed Apr. 27, 1992, Ser. No. 874,715
Int. Cl.[5] A01K *63/00*
U.S. Cl. 119—215 **24 Claims**



1. Apparatus for electroanesthetizing aquatic animals, said apparatus comprising in combination:

a) a tank for containing water and the aquatic animals to be electroanesthetized;

b) a source of electric power for generating an electric signal to establish an electric field in said tank to electroanesthetize the aquatic animals;

c) means for producing a flow of water within said tank from an upstream end of said tank to a downstream end of said tank;

d) a first electrode disposed at the upstream end of said tank;

e) a second electrode disposed at the downstream end of said tank; and

f) means for interconnecting said first and second electrodes with said power source to establish the electric field and commensurate flow of electric current between said first and second electrodes.

5,253,611

Patent Not Issued For This Number

5,253,612

STACKABLE PET CARRIER

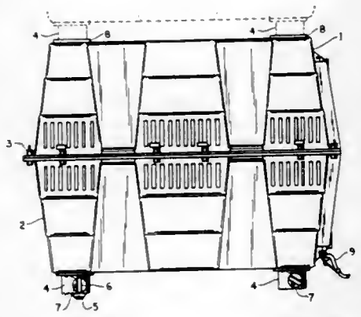
Charles R. Goetz, Carnegie, Pa., assignor to Alco Industries Inc., Valley Forge, Pa.

Filed Mar. 30, 1992, Ser. No. 866,889
Int. Cl.[5] A01K *13/00*
U.S. Cl. 119—19 **7 Claims**

1. A pet carrier comprising a top portion and a bottom portion detachably fastened together, said top and bottom portions having ventilated sidewalls, an end wall of said pet carrier having a door extending into said top and bottom portions, and hinge means extending into said top and bottom portions for pivotally opening said door, a plurality of supports underneath the bottom thereof, a roller contained in each of said supports, means for selectively moving said rollers verti-

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cally so that their lower surfaces are selectively moved above or below the bottom of said supports, together with a plurality of receptacles mounted on the top of said carrier and positioned in vertical alignment with said supports, so that when two like carriers are stacked, the rollers of one will be contained within the receptacles of the other, said pet carrier being of substantially rectangular box-like construction of having four supports on the four corners of the bottom thereof and



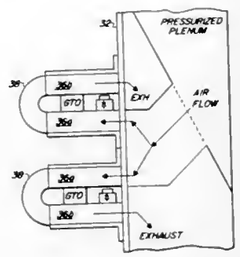
having four rollers, each contained in one of said supports and wherein each of said supports comprises rectangular sidewalls open at the bottom, and a knob connected to the outside of said rectangular sidewalls, and cam means operated by turning of said knob to selectively move said rollers vertically so that the lower surfaces of said rollers are selectively moved and locked in position above or below the bottom surfaces of said rectangular sidewalls.

5,253,613

HIGH POWER AC TRACTION INVERTER COOLING

Ronald B. Bailey, and Ronald F. Griebel, both of Erie, Pa., assignors to General Electric Company, Erie, Pa.

Filed Apr. 30, 1992, Ser. No. 876,678
Int. Cl.[5] H05K *7/20*
U.S. Cl. 123—41.31 **4 Claims**



1. An alternating current (AC) electric powered locomotive comprising:

a plurality of AC electric motors each coupled in driving relationship to a respective pair of a plurality of pairs of wheels on the locomotive;

a direct current (DC) electric power source;

an inverter mounted in the locomotive, said inverter including a plurality of semiconductor devices arranged for receiving DC electric power from said DC electric power source and for inverting said DC electric power to AC electric power for application to said AC electric motors;

an electrical device compartment defined by at least one wall vertically oriented in said locomotive, an air exhaust and an air supply plenum being formed on an opposite side of said wall from said electrical device compartment, said wall including a plurality of apertures therethrough from each of said air exhaust and said air supply plenums;

a plurality of hollow air cooled heat sinks each having one end attached to said wall in a cantilever fashion, said heat sinks being arranged in pairs such that a first end of one of a pair is coupled to said wall overlaying an aperture therethrough to said air supply plenum and a first end of another of the pair is coupled to said wall overlaying an aperture therethrough to said air exhaust plenum;

clamping means operatively associated with each of said pair of heat sinks and adapted to compress each heat sink of each pair toward the other heat sink of the pair when selected ones of said semiconductor devices are positioned between the heat sinks of each pair of heat sinks, the clamping means clamping said heat sinks into thermal contact with opposing power terminals of said semiconductor devices;

electrically insulative conduit means coupled to second ends of each of said pair of heat sinks for forming a continuous air passage between said heat sinks; and

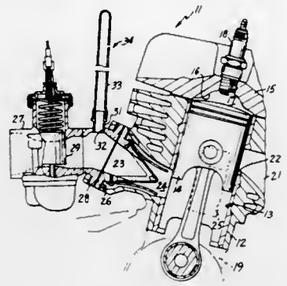
blower means mounted in the locomotive and coupled to said air supply plenum for forcing air into said supply plenum and into each of said one of said pairs of heat sinks through said wall, in parallel, said air being exhaust from said first end of said another of said pairs of heat sinks through said wall into said exhaust air plenum in parallel.

5,253,614

INTAKE SYSTEM FOR ENGINE

Noritaka Matsuo; Koichiro Takeuchi, both of Iwata, and Tokuji Muramatsu, Hamakita, all of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Continuation of Ser. No. 210,199, Jun. 20, 1988, abandoned, which is a continuation of Ser. No. 163,201, Jun. 25, 1980, abandoned. This application Aug. 7, 1991, Ser. No. 742,575
Claims priority, application Japan, Jun. 27, 1979, 54-81752
Int. Cl.[5] F02B *27/00*
U.S. Cl. 123—52 M **10 Claims**



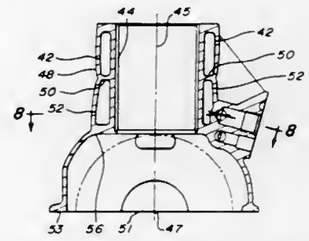
1. In an induction system for an internal combustion engine having a chamber of variable volume, an intake passage for delivering a charge to the chamber, said intake passage including a carburetor and a spacer interposed between said carburetor and a body of said engine defining said chamber of variable volume, and throttle valve means for controlling the flow to the chamber through said intake passage, the improvement comprising a branch passage in communication with said intake passage formed in part by a pipe extending through said spacer and positioned between said throttle valve means and said chamber for providing a closed volume in communication with said intake passage for improving induction efficiency, said communication being through a single restricted opening having an effective cross-sectional area less than one fourth of the effective cross-sectional area of the intake passage, the volume defined by said branch passage being at least one sixth of the volume of said intake passage between said throttle valve means and said chamber.

5,253,615

CYLINDER BLOCK CYLINDER BORE ISOLATOR

Thomas J. Heater, Milford; Charles R. Dysarz, Dearborn, and John V. Counihan, Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 24, 1992, Ser. No. 996,537
Int. Cl.[5] F01P *5/10*
U.S. Cl. 123—41.74 **9 Claims**



1. A multi-cylinder internal combustion engine block comprising:

a plurality of cylinders each having a cylindrical bore surface defined by a cylinder wall formed concentrically about a cylinder axis, the cylinder axes oriented generally perpendicular to an engine crank axis, the cylinder walls each having axially aligned upper and lower ends, and a central region therebetween, the lower ends located between and spaced from the crank axis and the upper ends;

an outer block wall, circumferentially surrounding the cylinder walls and extending between a top deck and a crank axis plane;

a water jacket web extending radially from each respective cylinder wall central region to the outer block wall, defining a shallow water jacket generally between the water jacket web and the cylinder upper end, the water jacket web being integral with the cylinder walls and outer block wall; and

a second web extending between and integral with the cylinder wall lower ends and the outer block wall and thereby forming an isolation chamber therebetween extending to the water jacket web, said cylinder walls, outer block wall, water jacket web, and second web all being integrally formed to provide a strong, lightweight structure which reduces combustion noise emitted from the engine block.

5,253,616

TUBULAR INTAKE MANIFOLD AND METHOD FOR MAKING SAME

Karl D. Voss, Farmington Hills, Mich., assignor to CMI International, Inc., Southfield, Mich.

Filed Jan. 15, 1992, Ser. No. 821,636
Int. Cl.[5] F02M *35/10*
U.S. Cl. 123—52 MC **24 Claims**

1. A method for producing a tubular intake manifold (**10**) for an internal combustion engine, said method comprising:

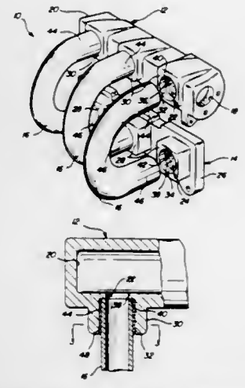
forming a metal tubular plenum member (**12**) having an open end (**18**) and an opposite closed end (**20**) and formed with annular wall portions its peripheral wall;

forming a complimentary flange member (**14**) with annular wall portions (**34**) defining a plurality of inlet holes (**24**) extending through the flange (**14**), With the walls (**32, 34**) of the outlet (**22**) and inlet (**24**) holes presenting a set of joining surfaces;

forming a plurality of metal tubes (**16**) having opposite ends (**44,46**) formed for press-fit engagement into the associated holes (**22,24**) of the plenum (**12**) and flange (**14**) members, with the ends (**44,46**) of the tubes (**16**) presenting a complimentary set of joining surfaces;

coating one set of the joining surfaces with a low melting point molten metal coating material (**52**) and allowing it to solidify;

heating the tubes (**16**) and plenum (**12**) and flange (**14**) members to an elevated temperature and thereafter forcing the ends (**44,46**) of the tubes (**16**) into the associated holes (**22,24**) of the preformed plenum (**12**) and flange (**14**)



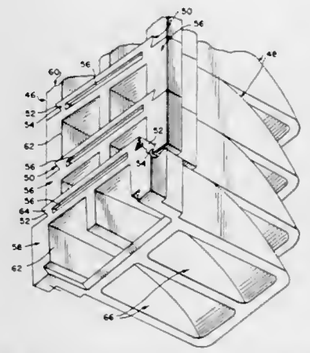
members with the joining surfaces in interference engagement with one another causing the coating material (**52**) to alloy with the tube metal and further with each of the plenum and flange metals and metallurgically bonding the ends (**44,46**) of the tubes **16** to each of the plenum (**12**) and flange (**14**) members.

5,253,617

REED VALVE ASSEMBLY FOR AN INTAKE MANIFOLD AND METHOD OF ASSEMBLY

Richard E. Fitzpatrick, Schaumburg; William K. McDannel, Darien, and Craig R. Leitner, St. Charles, all of Ill., assignors to Capsonic Group Inc., Elgin, Ill.

Filed Sep. 3, 1992, Ser. No. 940,074
Int. Cl.[5] F02M *35/00*
U.S. Cl. 123—52 MF **19 Claims**

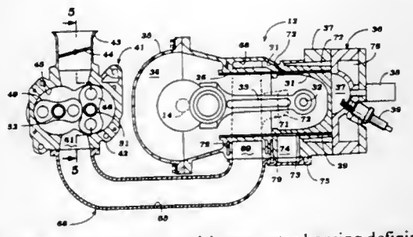


1. A method of constructing a valve assembly locatable in a fluid flow path between an intake manifold and a cylinder in an internal combustion engine for preventing blow back from the cylinder into the manifold and for reducing back pressure in said manifold, the method comprising the steps of: molding a main body comprising an inlet and an outlet from a plastic material; insert molding a valve petal member in the main body for opening and closing the outlet; and further comprising the step of overmolding a cushioning surface onto the body adja-

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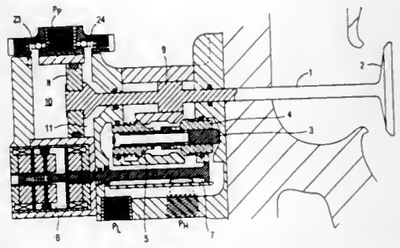
cent the outlet against which the petal member engages and seals for closing said outlet.

5,253,618
MARINE ENGINE
Masanori Takahashi, and Yoshihide Hirano, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabbushiki Kaisha, Hamamatsu, Japan
Filed Oct. 8, 1992, Ser. No. 958,236
Claims priority, application Japan, Nov. 16, 1991, 3-328061
Int. Cl.[5] F02B 75/02
U.S. Cl. 123—65 BA 13 Claims



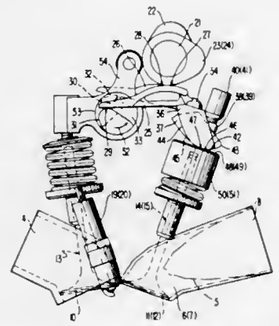
1. An air compressor comprising an outer housing defining a pumping chamber, a moveable element within said pumping chamber for drawing a charge into said pumping chamber and compressing the charge therein, an inlet opening for communicating with said pumping chamber for admitting a charge to said pumping chamber, and an outlet opening communicating with said pumping chamber for permitting a charge to be delivered from said pumping chamber, at least one of said openings having its lower wall extending no higher than the lower wall of the pumping chamber for draining of liquid from the pumping chamber through said one opening when the compressor is not operating.

5,253,619
HYDRAULICALLY POWERED ACTUATOR WITH PNEUMATIC SPRING AND HYDRAULIC LATCHING
William E. Richeson, and Frederick L. Erickson, both of Fort Wayne, Ind., assignors to North American Philips Corporation, New York, N.Y.
Filed Dec. 9, 1992, Ser. No. 990,777
Int. Cl.[5] F01L 9/02
U.S. Cl. 123—90.12 20 Claims



1. A bistable actuator mechanism comprising
a pneumatic piston translatable in opposed first and second directions toward respective first and second stable positions,
a first pneumatic chamber for compressing air as said piston translates in said first direction, thereby providing a spring force in said second direction,
a second pneumatic chamber for compressing air as said piston translates in said second direction, thereby providing a spring force in said first direction,
hydraulic power means for urging said pneumatic piston to said first stable position against said spring force in said second direction.

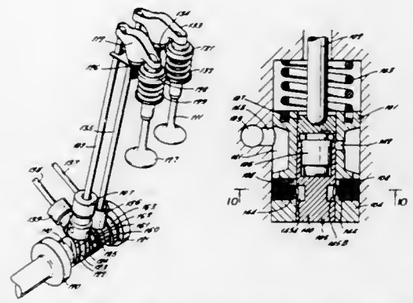
5,253,620
INTERNAL COMBUSTION ENGINE ADJUSTABLE VALVE GEAR
Michael Dohn, Esslingen, and Karl Zeilinger, Winnenden, both of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany
Filed Mar. 2, 1993, Ser. No. 25,257
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1992, 4209062
Int. Cl.[5] F01L 1/12, 1/18, 1/26
U.S. Cl. 123—90.16 5 Claims



1. An adjustable valve gear for at least two lift-type intake valves per cylinder in an internal combustion engine having at least one camshaft with cams each arranged to actuate a respective rocker arm via a first curve joint situated in a central region thereof, each rocker arm being supported via a second curve joint in a region of a longitudinal end thereof on an adjusting shaft, with a support position adjustable as a function of operating parameters including speed and load of the internal combustion engine by rotation of the adjusting shaft in an adjustment path, and articulated in a region of another longitudinal end on a respective rocker cam pivotable about a pivot supported on a housing of the internal combustion engine and rests on the respective lift-type intake valve via a third curve joint comprising a respective base-circle track and an adjoining cam track on the rocker cam, wherein each lift-type intake valve is operatively associated with a separate rocker cam and at least one of the three curve joints associated with one of the lift-type intake valve differs from the similar curve joint associated with another lift-type intake valve of the same cylinder such that the lift curve of the one lift-type intake valve differs from the lift curve of the other lift-type intake valve in the same position of the adjusting shaft over at least part of the adjustment path of the adjusting shaft.

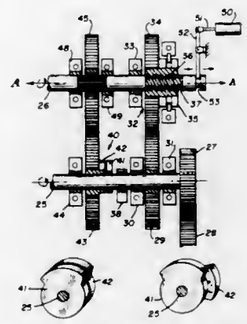
5,253,621
VALVE CONTROL MEANS
Clive Dopson, and Jeffrey Allen, both of Norwich, United Kingdom, assignors to Group Lotus PLC, Norfolk, United Kingdom
Continuation-in-part of Ser. No. 920,389, Aug. 14, 1992. This application Apr. 8, 1993, Ser. No. 44,816
Int. Cl.[5] F01L 1/34
U.S. Cl. 123—90.16 22 Claims

1. Valve control means for a push-rod internal combustion engine comprising:
valve means;
cam means comprising a rotatable camshaft having a first cam member and a second cam member having a different profile from said first cam member;
means for transmitting reciprocating movement to the valve means from said cam means, said transmitting means comprising rocker arm means in engagement with said valve means, a push-rod connected to the rocker arm means, a first cam follower member in engagement with the push-rod and a second cam follower member movable relative to said first cam follower member, and locking means to enable said cam follower members to be linked so as to move together;



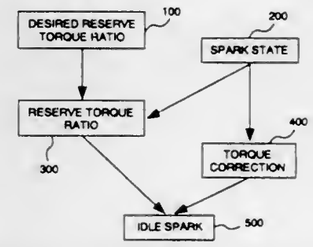
wherein when the cam follower members are not so linked, the valve means is controlled by the first cam follower member in engagement with and following the profile of the first cam member and when the cam follower members are linked, the valve means is controlled by the second cam follower member in engagement with and following the profile of the second cam member.

5,253,622
CAM PHASE CHANGE MECHANISM
Irvin Bornstein; Thomas B. Middlebrooks; Scott M. Eddy, and Charles E. Benedict, all of Tallahassee, Fla., assignors to Bornstein Motor Company, Inc., Tallahassee, Fla.
Filed Feb. 17, 1993, Ser. No. 18,714
Int. Cl.[5] F01L 1/04
U.S. Cl. 123—90.17 16 Claims



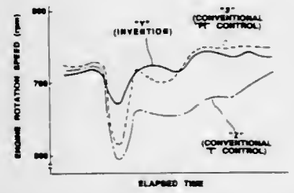
1. A mechanism for controlling the duration of opening of the fuel intake valve of an internal combustion engine in response to an engine throttle control means wherein the engine includes a crankshaft, the mechanism comprising, a primary cam shaft, means for drivingly connecting the primary cam shaft to the crankshaft, a split intake valve control cam mounted to said primary cam shaft and having a first lobe which is fixed to said primary cam shaft and a second lobe which is freely mounted adjacent said first lobe and to said primary cam shaft, an auxiliary cam shaft having an elongated axis oriented generally parallel and spaced from said primary cam shaft, first gear means for drivingly connecting said primary cam shaft to said auxiliary cam shaft so that said cam shafts rotate at the same rate, a drive cam control gear means mounted to said auxiliary cam shaft, a driven cam control gear means freely mounted to said primary cam shaft and connected to said second lobe and being drivingly engaged with said drive cam control gear means, and means for axially shifting at least a portion of said auxiliary cam shaft relative to said primary cam shaft whereby the axial movement of said at least a portion of said auxiliary cam shaft rotates said drive cam control gear means to thereby rotate said second lobe relative to said first lobe of said split intake valve control cam, and means for drivingly connecting the intake valve to said split intake valve control cam.

5,253,623
METHOD OF CONTROLLING COMBUSTION ENGINE TIMING
Borys J. Melnyk, Allen Park, and Michael J. Cullen, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Aug. 10, 1992, Ser. No. 927,709
Int. Cl.[5] F02D 41/16, 43/00
U.S. Cl. 123—339 26 Claims



1. A method of maintaining the speed of a spark-ignited internal combustion engine operating at a desired idle speed to compensate for engine speed variations caused by a torque disturbance, the engine being controlled according to a control strategy executed by an electronic controller having memory, the method comprising the step of:
determining a desired final spark advance utilizing an actual idle speed and the desired idle speed expressed as an RPM error ratio to linearize the relationship between RPM error and torque.

5,253,624
IDLING SPEED CONTROL SYSTEM OF INTERNAL COMBUSTION ENGINE
Makoto Anzai, and Yoshinori Yamamura, both of Kanagawa Pref., Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Oct. 13, 1992, Ser. No. 959,623
Claims priority, application Japan, Oct. 14, 1991, 3-264563
Int. Cl.[5] F02M 3/00; F02B 23/00
U.S. Cl. 123—339 5 Claims



1. In an internal combustion engine having an intake passage led to cylinders of the engine, a throttle valve installed in said intake passage, a bypass passage bypassing said throttle valve

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and an air-flow controller installed in said bypass passage for controlling the amount of air flowing in said bypass passage,

an idling speed control system comprising:

first means for deriving the rotation speed of said engine;

second means for deriving the pressure in said intake passage downstream of said throttle valve;

third means for providing a desired rotation speed of said engine;

fourth means for deriving an actual rotation speed load torque of the engine from both the derived rotation speed and the derived pressure in said intake passage;

fifth means for deriving a target rotation speed load torque of the engine from both the derived pressure in said intake passage and the desired rotation speed from said third means; and

sixth means for comparing the derived actual rotation speed load torque and the derived target rotation speed load torque thereby to produce an instruction signal representing a corrected air amount which is to be fed to the engine; and

seventh means for controlling said air-flow controller in accordance with said instruction signal.

5,253,625

INTERNAL COMBUSTION ENGINE HAVING A HYPEREUTECTIC ALUMINUM-SILICON BLOCK AND ALUMINUM-COPPER PISTONS

Raymond J. Donahue, Fond du Lac; Terrance M. Cleary, Allenton, and Benjamin L. Sheaffer, Oshkosh, all of Wis., assignors to Brunswick Corporation, Skokie, Ill.

Filed Oct. 7, 1992, Ser. No. 957,730

Int. Cl.[5] **C22C** *21/02*; **F02F** *7/00, 3/00*

U.S. Cl. 123—193.4 **8 Claims**

1. An internal combustion engine, comprising a cast engine block having at least one cylindrical bore and a piston disposed to move in direct contact with said bore, said block composed of a hypereutectic aluminum-silicon alloy containing from 16% to 30% by weight of silicon and having precipitated silicon particles distributed throughout said alloy, said piston being composed of an aluminum-copper alloy containing from 10% to 15% by weight of copper and having a eutectic containing a continuous copper-aluminum phase.

5,253,626

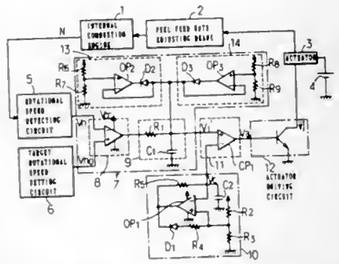
ROTATIONAL SPEED CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Yasukazu Hatano; Hidetoshi Suzuki, both of Numazu, and Satoshi Hitomi, Shizuoka, all of Japan, assignors to Kokusan Denki Co., Ltd., Japan

Filed Oct. 6, 1992, Ser. No. 958,558

Int. Cl.[5] **F02D** *41/14*

U.S. Cl. 123—352 **6 Claims**



1. A rotational speed control system for an internal combustion engine, comprising:

a fuel feed rate adjusting means for adjusting a rate of fuel fed to the internal combustion engine;

an actuator for actuating said fuel feed rate adjusting means;

a rotational speed detecting circuit for detecting a rotational speed of the internal combustion engine to generate a speed detection signal;

a target speed setting circuit for generating a target speed setting signal representing a target rotational speed of the internal combustion engine;

a comparator for carrying out comparison between said speed dection signal and said target speed setting signal, to thereby generate an integration command signal while said speed detection signal does not exceed said target speed setting signal;

an integrating circuit including an integrating capacitor and permitting said integrating capacitor to be charged at a predetermined time constant while said comparator generates said integration command signal;

an oscillator for generating a sawtooth signal voltage varied between a minimum level above an earth level and a maximum level lower than a power supply voltage;

a pulse width modulation circuit for carrying out comparison between an integral voltage obtained across said integrating capacitor and said sawtooth signal voltage, to thereby generate a pulse signal kept at a high level for a period of time during which said integral voltage exceeds said sawtooth signal voltage;

an actuator driving circuit fed with said pulse signal generated from said pulse width modulation circuit and permitting a drive current to flow through said actuator for a period of time during which said pulse signal is kept at a high level; and

a voltage limiting circuit for limiting a maximum level of said integral voltage to said maximum level of said sawtooth signal voltage or below and a minimum level of said integral voltage to a minimum level of said sawtooth signal voltage or above.

5,253,627

BURNING CONDITION DETECTING DEVICE AND BURNING CONTROL DEVICE IN AN INTERNAL COMBUSTION ENGINE

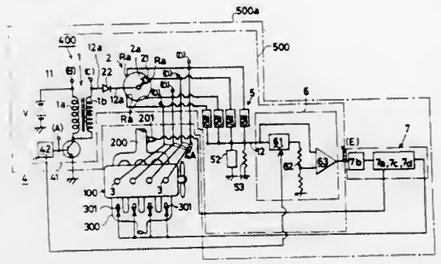
Shigeru Miyata; Hideji Yoshida; Yoshihiro Matsubara, and Yasuo Ito, all of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Dec. 10, 1992, Ser. No. 988,842

Claims priority, application Japan, Dec. 10, 1991, 3-026138; Mar. 11, 1992, 4-052041; Jul. 1, 1992, 4-174398

Int. Cl.[5] **F02D** *41/04*

U.S. Cl. 123—435 **7 Claims**



1. In a burning condition detecting device in an internal combustion engine which includes an ignition circuit having a primary coil and a secondary coil connected to a spark plug by way of a diode and a series gap of a distributor, and having an interrupter means which on-off actuates a primary current flowing through the primary coil to induce secondary voltage across the secondary coil to apply a high voltage across electrodes of a spark plug through the diode and the series gap of the distributor so as to establish a spark discharge between electrodes of the spark plug:

the burning condition detecting device comprising:

a voltage charger circuit which on-off actuates the primary coil to induce a charging voltage in the secondary circuit either during establishing the spark discharge or during a predetermined period of time immediately after an end of the spark discharge, the charging voltage being applied to the spark plug to electrically charge a stray capacity inherent in the spark plug so as to form a sparkplug voltage;

a voltage divider circuit which divides the sparkplug voltage in accordance with a high impedance element and a low impedance element;

a voltage level detecting circuit which detects a sparkplug voltage waveform divided by the voltage divider circuit; and

an attenuation detecting circuit which detects a degree of variation of an attenuation time period of the spark plug voltage waveform so as to determine a variation of an air-fuel ratio of an air-fuel mixture gas injected into a cylinder of the internal combustion engine by a fuel injector.

3. In a burning control device in an internal combustion engine which includes an ignition circuit having a primary coil and a secondary coil connected to a spark plug by way of a diode and a series gap of a distributor, and having an interrupter means which on-off actuates a primary current flowing through the primary coil to induce secondary voltage across the secondary coil to apply a high voltage across electrodes of a spark plug through the diode and the series gap of the distributor so as to establish a spark discharge between electrodes of the spark plug:

the burning control device comprising:

a voltage charger circuit which on-off actuates the primary coil to induce a charging voltage in the secondary circuit either during establishing the spark discharge or during a predetermined period of time immediately after an end of the spark discharge, the charging voltage being applied to the spark plug to electrically charge a stray capacity inherent in the spark plug so as to form a sparkplug voltage;

a voltage divider circuit which divides the sparkplug voltage in accordance with a high impedance element and a low impedance element;

a voltage level detecting circuit which detects a sparkplug voltage waveform divided by the voltage divider circuit; and

an attenuation detecting circuit which detects a degree of variation of an attenuation time period of the sparkplug voltage waveform so as to determine a variation of an air-fuel ratio of an air-fuel mixture gas injected into a cylinder of the internal combustion engine by a fuel injector;

an air-fuel ratio sensor provided in an exhaust path of the internal combustion engine to detect an air-fuel ratio of the air-fuel mixture gas on the basis of an oxygen component and unconsumed fuel component in an exhaust gas of the exhaust path; and

a control circuit comprising:

(a) a feedback means provided to control an amount of fuel injected from the fuel injector in each cylinder of the internal combustion engine, and feeding back to the injector so that the air-fuel ratio of the air-fuel mixture gas is a lean air-fuel ratio which is predetermined on the basis of data experimentally or calculated according to the running condition of the internal combustion engine;

(b) a distinction means provided to detect an air-fuel ratio of the air-fuel mixture gas corresponding to a stable burning limit in each cylinder of the internal combustion engine on the basis of an output signal from the attenuation detecting circuit;

(c) an adjusting means provided to adjust an amount of fuel injected from the fuel injector to make the air-fuel ratio of the air-fuel mixture gas approach to a critical air-fuel ratio which is substantially corresponding to that of the stable burning limit in each cylinder of the internal combustion engine;

(d) a renewal means provided to renew the lean air-fuel ratio to approach it to a target air-fuel ratio which is determined on the basis of the critical air-fuel ratio.

5,253,628

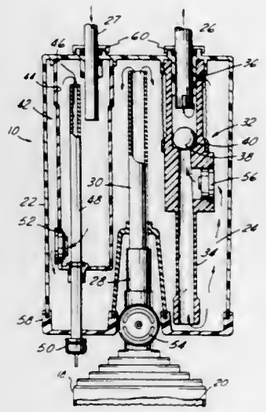
INTERNAL COMBUSTION ENGINE FUEL PICKUP AND RESERVOIR

Bradley A. Brown, Metamora, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 9, 1992, Ser. No. 910,925

Int. Cl.[5] **F02M** *37/04*; **E03B** *11/00*

U.S. Cl. 123—516 **16 Claims**



1. A fuel reservoir system for an internal combustion engine, comprising:

a canister having a storage volume for holding fuel;

at least one fuel supply line extending from the canister to the engine;

at least one fuel return line extending from the engine to the canister;

an entrance pipe for conducting raw fuel into the canister; and

an exit pipe, operatively connected with said fuel supply line, for conducting fuel from the canister to the fuel supply line, with said exit pipe comprising:

a draft tube extending from the upper part of the storage volume into the lower part of the storage volume;

a purge passage communicating the upper portion of the draft tube with the storage volume; and

a flow restrictor mounted in the draft tube upstream of the purge passage.

5,253,629

FLOW SENSOR FOR EVAPORATIVE CONTROL SYSTEM

Joseph Fornuto, Rochester; William E. Gifford, Hemlock; Karen M. Meyer, Avon; Otto Muller-Girard, Jr., Rochester, all of N.Y., and Harold M. Haskew, Milford, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 3, 1992, Ser. No. 829,829

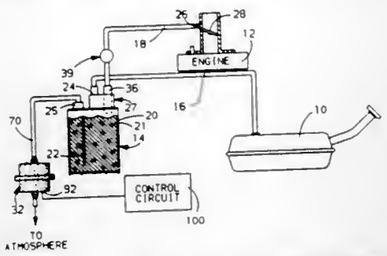
Int. Cl.[5] **F02M** *33/02*; **F02B** *77/02*

U.S. Cl. 123—519 **8 Claims**

1. In a fuel evaporative control system having a canister for adsorbing fuel vapor evaporated from a fuel tank, said canister having an opening to the fuel tank, an opening to the atmosphere, and an opening to a vacuum source for an engine, the improvement comprising a flow device for detecting a malfunction of said fuel evaporative control system comprising:

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a housing having two valve chambers, located in the opening from the canister to atmosphere, and having two apertures for flow into and out of said valve chambers,
one of said apertures opening to atmosphere, and the second of said apertures opening to the canister,
and said valve chambers each having a check valve comprising a valve seat, a valve member engageable with the valve seat, and a valve spring urging the valve member against the valve seat to inhibit flow through the valve



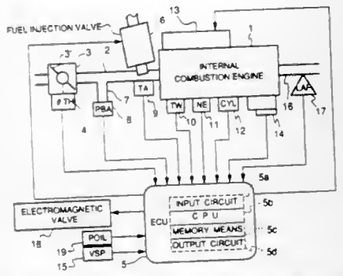
chamber, wherein the first valve member opens in response to pressure conditions in said second aperture to permit fluid flow from the fuel tank through the canister and the first valve chamber, and the second valve member opens in response to vacuum conditions in said second aperture to permit flow of air through the second valve chamber and canister, and wherein said flow device includes a means to detect movement of at least one of said valve members.

5,253,630

AIR-FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSION ENGINES

Shusuke Akazaki, and Kotaro Miyashita, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 16, 1992, Ser. No. 945,519
Claims priority, application Japan, Sep. 18, 1991, 3-267181
Int. Cl.[5] F02D *41/14, 41/16*
U.S. Cl. 123—682 **14 Claims**



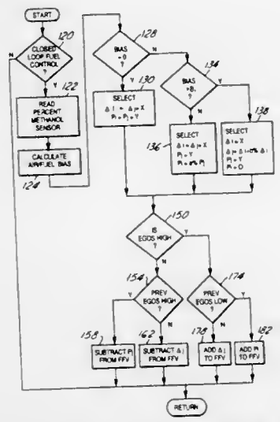
1. In an air-fuel ratio control system for an internal combustion engine installed on an automotive vehicle, said engine having an exhaust passage, said system including an exhaust gas ingredient concentration sensor arranged across said exhaust passage for detecting the air-fuel ratio of an air-fuel mixture supplied to said engine, said system controlling the air-fuel ratio of said mixture to a desired air-fuel ratio set according to operating conditions of said engine, in response to an output from said exhaust gas ingredient concentration sensor,
the improvement comprising:
rotational speed-detecting means for detecting the rotational speed of said engine;
load-detecting means for detecting load on said engine;
first air-fuel ratio-calculating means for calculating a first value of said desired air-fuel ratio based on the engine rotational speed detected by said rotational speed-detecting means and the load on the engine detected by the load-detecting means;
start-determining means for determining whether or not said vehicle has just started from a standing position thereof;
second air-fuel ratio-calculating means for calculating a second value of said desired air-fuel ratio based on results of determination by said start-determining means;
low temperature-determining means for determining whether or not a temperature of said engine is lower than a predetermined value;
third air-fuel ratio-calculating means for calculating a third value of said desired air-fuel ratio based on results of determination by said low temperature-determining means; and
setting means for setting the largest value of at least said first to third values of said desired air-fuel ratio calculated by said first to third air-fuel ratio-calculating means to a final value of said desired air-fuel ratio.

5,253,631

A1R/FUEL CONTROL SYSTEM FOR FLEXIBLE FUEL VEHICLES

Judith M. Curran, Northville, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 16, 1992, Ser. No. 976,830
Int. Cl.[5] F02B *75/12*
U.S. Cl. 123—696 **9 Claims**



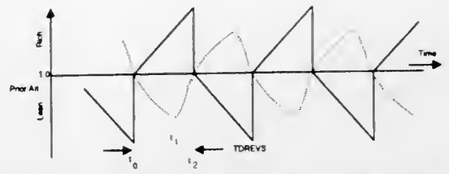
1. A fuel control method for maintaining stoichiometric combustion in an internal combustion engine fueled with a blend of gasoline and alcohol, comprising the steps of:
measuring an output of a percent alcohol sensor indicating a percent alcohol in the fuel blend;
comparing an output of an exhaust gas oxygen sensor to a single reference to provide rich indication when the exhaust gases are rich of said reference and a lean indication when the exhaust gases are lean of said reference;
integrating said rich and lean indications to provide a fuel delivery correction signal;
biasing said integration as a function of said percent alcohol measurement in the fuel blend to provide a modified correction signal thereby compensating for a lean shift in said exhaust gas oxygen sensor output caused by presence of alcohol in the fuel blend; and
delivering fuel to the engine as a function of both said percent alcohol measurement and said correction signal to maintain the stoichiometric combustion.

5,253,632

INTELLIGENT FUEL CONTROL SYSTEM

Timothy J. Brooks, Troy, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 17, 1992, Ser. No. 992,365
Int. Cl.[5] F02M *51/00*
U.S. Cl. 123—696 **13 Claims**



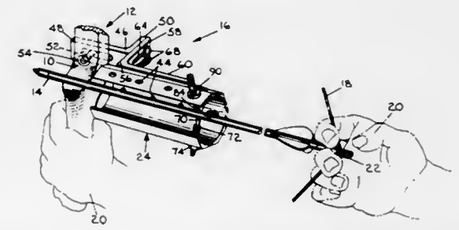
1. The method of controlling the fuel delivery rate at which fuel is supplied to the fuel intake of an internal combustion engine comprising, in combination, the steps of:
measuring the amount of oxygen in the combustion gases exhausted by said engine to produce a rich exhaust indication when said oxygen level is low and a lean exhaust indication when said oxygen level is high;
responding to the onset of each lean exhaust indication by abruptly increasing said fuel delivery rate to a predetermined rich step value thereafter maintaining said delivery rate at said rich step value until the onset of a rich exhaust indication or until a predetermined rich step duration expires;
responding to the expiration of said rich step duration by progressively increasing said delivery rate from said predetermined rich step value until a rich exhaust indication is produced;
responding to the onset of each rich exhaust indication by abruptly decreasing said fuel delivery rate to a predetermined lean step value and thereafter maintaining said delivery rate at said lean step value until the onset of a lean exhaust indication or until a predetermined lean step duration expires; and
responding to the expiration of said lean step duration by progressively decreasing said delivery rate from said predetermined lean step value until a lean exhaust indication is produced.

5,253,633

ARROW STABILIZER APPARATUS

Frank W. Sisko, 159 Elkin Ave., Indiana, Pa. 15701

Filed Sep. 21, 1992, Ser. No. 947,475
Int. Cl.[5] F41B *5/22*
U.S. Cl. 124—44.5 **9 Claims**



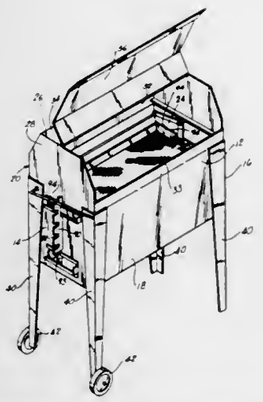
1. An arrow stabilizer apparatus mounted to the riser of a bow for stabilizing arrow flight during the shooting process, comprising:
a major body member which is substantially tubular-shaped for lateral mounting to the bow, the major body member having a front end and a rear end and defining an inner elongated bore extending therethrough;
the major body member further characterized by having a slot extending the length of the major body member for loading the arrow in longitudinal and coaxial disposition within the bore;
a pair of spaced-apart spring-biased bottom plungers mounted to the major body member and projecting into the bore and cooperatively forming a cradle means for supporting and maintaining the arrow in its longitudinal disposition within the bore;
a selectively manual retractable and insertable spring-biased top plunger mounted to the major body member and projecting downwardly into the bore in cooperating relationship with the bottom plungers for selectively contacting the arrow;
the top plunger and the bottom plungers positioned in the same vertical plane and arranged to maintain slidable contact with the arrow for dampening excessive torque induced during the shooting process;
a first adjustment means including a plurality of spaced-apart mounting holes successively arranged about the major body member for allowing the selective repositioning of the top plunger and the bottom plungers in successive vertical planes along the length of the major body member; and
a second adjustment means including a slidable bracket member for selectively adjusting the major body member transverse to the riser of the bow to accommodate arrows of different lengths.

5,253,634

GRILLING APPARATUS

Darrell LeBeouf, P.O. Box 1895, Crowley, La. 70527-1895

Filed Mar. 19, 1992, Ser. No. 854,427
Int. Cl.[5] A47J *37/07*
U.S. Cl. 126—25 A **15 Claims**



1. An apparatus for grilling food, comprising:
a) a container portion for housing heating elements, the container further comprising a plurality of sidewalls, a floor portion, and a top portion;
b) a grilling surface positioned within the container portion for placing the food to be grilled thereup;
c) a tray member housing the heating elements, such as coals;
d) a bar member extending and mounted between the sidewalls, the bar member further comprising a pair of parallel arm members, a first end of the parallel arm members secured to the bar member and a second end of the parallel arm members extending out and hingedly engaged to the tray member;
e) a handle member, attached to the bar member, the handle member positioned exterior to the container portion to

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impart rotational movement to the bar member as the handle member is moved upward and downward, so that the parallel arm members raise and lower the tray member within the container portion; and

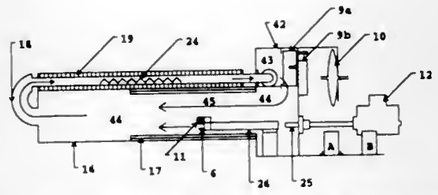
f) means for securing the handle member at a plurality of positions between its upper most and lower most positions, so that the tray member is secured at various positions from the grilling surface as desired.

5,253,635

GAS-FIRED HEATER

John C. K. Overall, Scarborough, Canada, and Hayk A. Tikiryan, Thornhill, Canada, assignors to Canadian Gas Research Institute, Ontario, Canada

Filed Apr. 29, 1992, Ser. No. 875,474
Int. Cl.[5] F24C *3/00*
U.S. Cl. 126—85 B **22 Claims**



1. A gas-fired heater, for mounting on a wall within a building, the heater comprising:

a gas inlet for combustion gas;

a combustion air inlet;

a burner connected to the combustion air and gas inlets; and

an elongate U-shaped heat exchanger including a generally horizontal lower section having an inlet into which the burner discharges combustion gases, and a generally horizontal upper section connected to the lower section and having an outlet for combustion gases, wherein the lower section includes an inlet portion adjacent the inlet thereof, which inlet portion is lined with insulating material, to reduce heat transfer therefrom and thereby promote more uniform heat dissipation along the length of the heat exchanger.

5,253,636

APPARATUS AND METHOD FOR CONTROLLING GREASE BUILD-UP IN COOKING VENT DUCTS

Lewis H. Glover, Pasadena, Tex., and Gregory H. Glover, 3806 Cottonwood Dr., LaPorte, Tex. 77571, assignors to Gregory H. Glover, Pasadena, Tex.

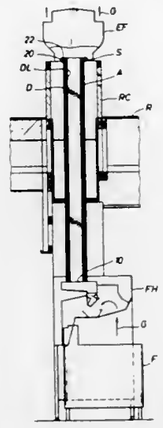
Filed Jun. 15, 1992, Ser. No. 898,291
Int. Cl.[5] F24C *15/20*
U.S. Cl. 126—299 R **9 Claims**

1. A method for controlling grease build-up in cooking vent ducts, comprising

prefabrication two liners each substantially comprised of a rigid tubular unit custom built to fit closely but not tightly within a duct and to define a small annular space between the duct and the liner;

installing one of the two liners in a duct between a cooking vent opening and the duct exhaust;

sealing providing a sealing member between said liner and said duct the annular space between the liner and the duct such that a majority of the space remains;



periodically replacing the installed liner with the other liner; and

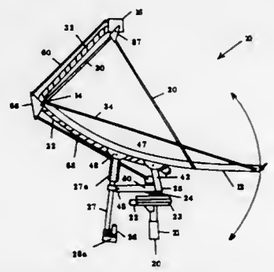
cleaning the replaced liner.

5,253,637

HYPERFOCAL TRACKING SOLAR THERMAL COLLECTOR

Miles M. Maiden, P.O. Box 782, Blue Hill, Me. 04614

Filed Mar. 12, 1992, Ser. No. 849,772
Int. Cl.[5] F24J *2/38*
U.S. Cl. 126—696 **20 Claims**



1. A solar thermal collector comprising:

an extended reflector surface constructed to concentrate radiation from a radiation source along a focal line, said reflector surface being oriented in a generally upward direction relative to the earth with the focal line above the reflector surface;

a tracking system supporting the extended reflector surface for tracking a source of radiation by relative motion of the reflector surface to different tracking positions for optimizing concentrated radiation at the focal line, said tracking system being constructed to maintain the focal line of the extended reflector surface in a substantially horizontal orientation relative to the earth during tracking in different tracking positions;

an elongate absorber positioned substantially at the focal line for absorbing and converting radiation to heat energy;

an elongate absorber housing coupled to the extended reflector surface for rotation around an elongate axis of the absorber housing, said absorber housing being constructed for positioning the elongate absorber substantially along the focal line, said absorber housing comprising an insulating enclosure for the elongate absorber for reducing conduction heat loss, said absorber housing being formed with an elongate aperture oriented in a downward direction relative to the earth for receiving and passing concentrated radiation from the extended reflector surface to the elongate absorber;

and a leveling system coupled to the absorber housing, said leveling system being constructed to maintain the absorber housing in a substantially horizontal attitude and in a rotational position with the elongate aperture facing downward relative to the earth during elevational tracking in different tracking positions of the reflector surface to suppress convection heat loss from the elongate absorber and absorber housing.

14. A method of concentrating and collecting solar energy using an extended reflector surface in the configuration of a section of a cylindrical curve for concentrating solar energy at a focal line comprising:

mounting an elongate absorber at the focal line for converting solar energy to heat energy, housing the elongate absorber in an insulating elongate absorber housing to reduce convection heat loss, mounting the absorber housing for rotation around an elongate axis of the absorber housing, and forming the absorber housing with an elongate aperture adjacent to the focal line facing downward relative to the earth for passing concentrated solar energy from the extended reflector surface to the elongate absorber;

first tracking the radiation source to different azimuthal angles by rotating the reflector surface to respective rotational angles around a substantially vertical axis relative to the earth;

after azimuthal tracking of the radiation source, tracking the radiation source to different elevation angles above the horizon of the earth by tilting the reflector surface to different respective tilting angles around a substantially horizontal axis relative to the earth, thereby maintaining the focal line and absorber in a substantially horizontal attitude relative to the earth during azimuthal and elevational tracking;

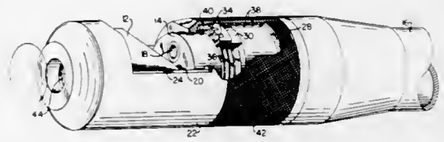
and orienting and maintaining the aperture of the absorber housing in a downward facing direction relative to the earth during elevational tracking to reduce convection heat loss by rotating the absorber housing relative to the reflector surface around an elongate axis of the absorber housing thorough a rotary angle opposite and substantially equal to the tilting angle of the reflector surface during elevational tracking.

5,253,638

RIGHT-ANGLE DETACHABLE VARIABLE-POSITION REFLECTOR ASSEMBLY

Richard A. Tamburrino, Auburn, and Alan S. Knieriem, Syracuse, both of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Mar. 25, 1992, Ser. No. 857,620
Int. Cl.[5] A61B *1/06*
U.S. Cl. 128—6 **6 Claims**



1. Right-angle detachable variable-position prism or mirror assembly for a borescope of the type that includes an insertion tube with a viewing head at its distal end, the head having a distally-facing image sensor oriented parallel to a longitudinal axis of the borescope viewing head, and a helical male thread on a peripheral wall of said head; the prism or mirror assembly comprising:

a generally tubular housing adapted to overfit the distal end of said head;

a reflector mounted in said housing along an optical axis of the image sensor for reflecting to the latter light that enters a window on one side of the housing;

a mounting ring disposed within said housing proximally of said reflector and having a female thread adapted for mounting onto the helical thread of said borescope head;

biasing means positioned in said housing between said ring and a proximal end of said housing and urging the housing proximally with respect to said borescope head on which said ring is adapted to be mounted; and

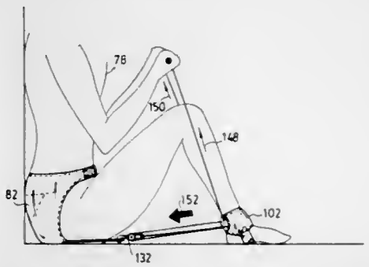
a plurality of detent means spaced around a distal face of said ring and cooperating with at least one engaging means affixed to the interior of said housing; wherein said engaging means normally interlocks with one of said detent means on said ring to hold the housing and reflector against rotation relative to said ring and said borescope head, but said engaging means is freed from said detent means by pulling said housing distally after which the housing and reflector can be rotated to a new rotational position relative to said head and said ring, and upon release of said housing said biasing means urges said engaging means to interlock with another of said detent means to hold said housing and said reflector at said new rotational position.

5,253,639

THERAPEUTIC LEVERAGING DEVICE

Thomas L. Johnston, Pittsford, N.Y., assignor to Mechanical Advantage Ltd., Pittsford, N.Y.

Continuation-in-part of Ser. No. 638,074, Jan. 7, 1991, Pat. No. 5,076,576. This application Nov. 13, 1991, Ser. No. 791,952
Int. Cl.[5] A61H *5/00, 1/02*
U.S. Cl. 128—25 R **20 Claims**



1. An apparatus for flexing a knee joint of a human body, comprising a seat harness, means for grasping a foot, line cord, means for connecting said seat harness to said line cord, a first means for guiding said line cord, a second means for guiding said line cord, a third means for guiding said line cord, and a fourth means for guiding said line cord, wherein:

(a) said seat harness is a flexible member adapted to be worn about the human body comprised of a flap comprised of a grommet, wherein said means for connecting said seat harness to said line cord is releasably attached to said seat harness grommet;

(b) said means for grasping a foot is comprised of a first pulley block and a second pulley block, wherein said first pulley block is comprised of said first means for guiding line cord and said second means for guiding line cord, and said second pulley block is comprised of said third means for guiding line cord and said fourth means for guiding line cord;

(c) said line cord has a diameter from about 0.1 to 0.5 inches;

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(d) one portion of said line cord extends from said means for connecting said seat harness to said first means for guiding said line cord, to said means for connecting said seat harness, to said second means for guiding said line cord; and

(e) another portion of said line cord extends from said means for connecting said seat harness to said third means for guiding said line cord, to said means for connecting said seat harness, to said fourth means for guiding said line cord.

5,253,640

PROCESS FOR THE CALIBRATION OF A FLOW SENSOR IN A RESPIRATORY SYSTEM

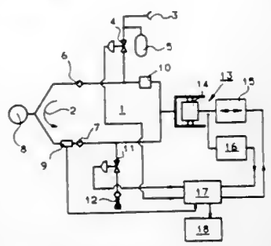
Wolfgang Falb, Krummesse; Karl-Ludwig Gippert; Ulrich Heim, both of Lübeck; Uvo Hölscher, Stockelsdorf; Siegfried Kiske, Gross Grönau; Götz Kullik, Lübeck; Ralf-Ernst Löser, Kreuzkamp, and Christoph Mauer, Bad Schwartau, all of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Lübeck, Fed. Rep. of Germany

Filed Feb. 10, 1992, Ser. No. 833,309

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1991, 4111965

Int. Cl.[5] A61M *16/01*

U.S. Cl. 128—200.24 **20 Claims**



1. A process for calibrating a flow sensor in a respiratory system with final control elements arranged in the respiratory system for feeding gas to and withdrawing gas from a respiration gas stream, in communication with lungs of a patient and with a drive unit for imparting flow to the respiration gas stream, the process for calibrating comprising the steps of:

actuating each of said final control elements to switch said respiratory system to a closed respiratory system, wherein gas is neither fed nor withdrawn from said respiration gas stream, with directed respiration gas flow between lungs of the patient and said closed respiratory system;

activating the drive unit to feed the respiration gas present in the closed respiratory system through the flow sensor according to a predetermined time-volume relationship; and

forming a calibration value for the flow sensor by comparison of the time-volume relationship with a measured signal of the flow sensor.

5,253,641

RESPIRATORY FILTER APPARATUS AND METHOD

Thomas V. Choate, P.O. Box 87, East Sandwich, Mass. 02537

Continuation of Ser. No. 444,759, Dec. 1, 1989, abandoned. This application Oct. 3, 1991, Ser. No. 770,550

Int. Cl.[5] A61M *11/00*

U.S. Cl. 128—200.14 **14 Claims**

1. An efficient respiratory filter apparatus to reduce the risk of airborne disease transmission from a patient's respiratory effluent, which apparatus comprises:

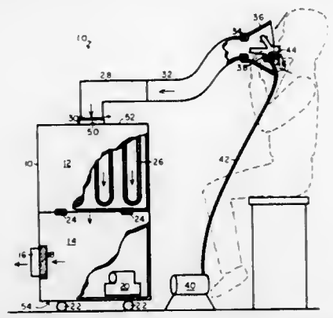
a) a housing defining an upper and lower chamber therein and the upper chamber having a top surface and having an air inlet on the top surface and an air outlet in the lower chamber and wheel means on the bottom surface of the lower chamber to permit wheeled movement of the filter apparatus;

b) a motor blower means within the lower chamber of the housing to draw air into the air inlet and to discharge air from the air outlet;

c) a high efficiency filter means within the housing and extending across the upper chamber to filter air drawn through the housing between the air inlet and the air outlet;

d) a tube means having a one and an other end, one end in air passage communication with the air inlet on the top surface of the upper chamber;

e) a face cone means secured to the other end of the tube means, the face of the cone means extending outwardly



and of sufficient size and shape to encompass generally the face of the patient; and

f) swivel means on the top surface of the upper chamber of the housing and about the air inlet and connected to the one end of the tube means to provide for swivel movement of the tube means about the axis of the air inlet to enable the convenient positioning of the face cone means for use by the patient;

g) a nebulizer means to produce medication in aerosol form which tends to induce coughing in a patient receiving the medication whereby a patient's respiratory effluent is drawn into the cone means by the flow of air into the air inlet and aerosol particles removed by the high efficiency filter means prior to discharge of the air through the air outlet.

5,253,642

SURGICAL GOWN

Wyman H. Stackhouse; Mildred K. Stackhouse, both of Manhatten Beach; Richard J. Greff, Yorba Linda; Frederic S. Bongard, Redondo Beach, and Stanley R. Klein, Palos Verdes, all of Calif., assignors to Stackhouse, Inc., Riverside, Calif.

Filed Mar. 25, 1992, Ser. No. 858,324

Int. Cl.[5] A62B *17/00, 18/00*

U.S. Cl. 128—205.29 **6 Claims**

1. A surgical gown adapted to protect a user from contaminated body fluids, comprising:

an integral drape including a body tube with front portions and back portions, a pair of sleeves, and a hood with portions defining an opening for the face of the user;

first protective means for covering the front portions and sleeves of the drape, comprising a sheet material with properties impervious to the contaminated fluids; portions of the hood defining an opening for the face of the user;

second protective means for covering at least a portion of the opening of the hood, the second protective means comprising a transparent eye shield impervious to the contaminated fluid and having properties for being bent from a generally flat transportable configuration to a generally curved operative configuration;

retention means coupled to the eye shield exteriorly of this hood for bending the eye shield from the flat transportable configuration to the curved operative configuration and for releasably retaining the eye shield in the curved operative configuration in front of the eyes of the user;

third protective means for covering the remainder of the opening of the hood, formed from a material having properties for facilitating breathing through the mouth of the user while inhibiting passage of the contaminated fluids through the mask; and

means for attaching the sheet material, the shield, and the mask to the drape to form an integral unit having properties for bringing each of the protective means into operative disposition when the drape is initially donned by the user.

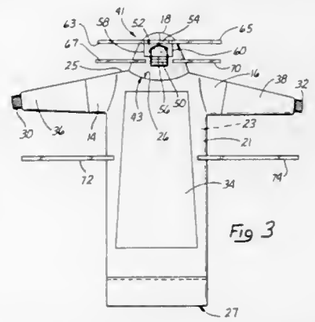


Fig 3

5,253,643

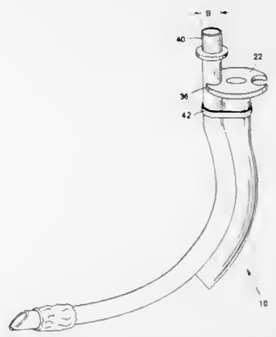
ORAL AIRWAY FOR DEMOUNTABLY ATTACHING AN ENDOTRACHEAL TUBE

Evelyn C. Price, San Antonio, Tex., assignor to Evelyn C. Price, Betsy J. Nielson, & Robert E. Gohlke, a partnership, San Antonio, Tex.

Filed Jan. 13, 1992, Ser. No. 820,305

Int. Cl.[5] A61M *25/02*

U.S. Cl. 128—207.14 **6 Claims**



1. An oral airway for providing fluid communication for the passage of gas, for oral suctioning and the like from a patient's mouth through the throat into the trachea and joinable to an endotracheal tube, the oral airway consisting of:

an elongated tubular body having a first open end defining a first orifice and a second open end defining a second orifice;

an annular plate, integral with the first open end of said tubular body, said plate having a top surface and a bottom surface, the top and bottom surfaces joined by a perimeter, the perimeter having walls defining means for demountably attaching an endotracheal tube thereto, wherein the attaching means of said plate comprises a first pair of resilient lips and a second pair of resilient lips formed into a "C" shape, each lip of each of the pairs being oppositely disposed from the other lip of the pair and having a fixed linear distance between them that is less than the outside diameter of the endotracheal tube.

5,253,644

PMT DETECTING PACEMAKER

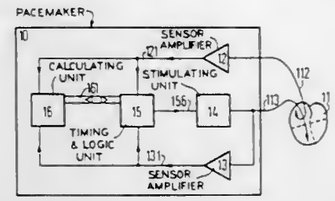
Hakan Elmvist, Bromma, Sweden, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

PCT No. PCT/SE89/00484, § 371 Date Aug. 23, 1991, § 102(e) Date Aug. 23, 1991, PCT Pub. No. WO91/03274, PCT Pub. Date Mar. 21, 1991

PCT Filed Sep. 8, 1989, Ser. No. 752,649

Int. Cl.[5] A61N *1/368*

U.S. Cl. 607—14 **10 Claims**



1. A heart pacemaker comprising:

sensing means for detecting atrial events in a heart beating in successive heart cycles;

stimulating means for stimulating the ventricle of said heart, said atrial events and the stimulation of the ventricle constituting cardiac events;

variable delay means for generating a variable time delay between the detection of an atrial event and the stimulation of the ventricle;

time measuring means for measuring a time interval between consecutive cardiac events, at least one of said detected events being a natural heartbeat detected by said sensing means;

calculating means for calculating the correlation between said time delay and said time interval measured by said time measuring means; and

logic means for indicating the presence of a pacemaker-mediated tachycarida if the value of said correlation deviates from a predetermined value.

5,253,645

METHOD OF PRODUCING AN AUDIBLE ALARM IN A BLOOD PRESSURE AND PULSE OXIMETER MONITOR

Bruce A. Friedman, Tampa; Daryl L. Bordon, Temple Terrace, and Richard Medero, Tampa, all of Fla., assignors to Critikon, Inc., Tampa, Fla.

Filed Dec. 13, 1991, Ser. No. 807,537

Int. Cl.[5] A61B *8/14*

U.S. Cl. 128—633 **10 Claims**

1. A method for producing an audible alarm in a patient monitoring system including a blood pressure module having a cuff placed on a limb of a patient and a pulse oximeter placed on the limb of the patient, comprising the steps of:

using said cuff to measure peak oscillation amplitudes of the blood pressure of said patient over a blood pressure measurement cycle and to produce a first output which represents a first logical state;

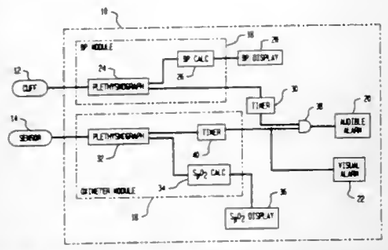
using said pulse oximeter to measure an oxygen saturation (SpO_2) level of said patient and to produce a second logical state;

inputting said first and second logical states into a gate pro-

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ducing an output from said gate, said output capable of enabling an audible alarm; and

masking said second logical state as input for enabling said audible alarm in said gate whenever said peak oscillation amplitudes fall in a range between a minimum level P_{min} and a threshold level P_{thr}



wherein during said masking of said second logical state, said audible alarm rejects a spurious oxygen saturation level alarm and said masking does not occur during at least a portion of said blood pressure measurement cycle.

5,253,646

DIAGNOSTIC APPARATUS FOR MEASURING CHANGES OF ARTERIAL AND VENOUS BLOOD VOLUMES IN BRAIN WITH RESPIRATION SIGNAL MODULATION

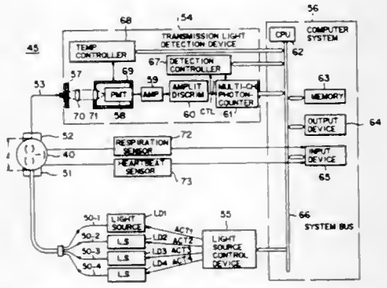
David T. Delpy, and Mark Cope, both of London, United Kingdom, assignors to Hamamatsu Photonics K.K., Shizuoka, Japan

Filed Mar. 18, 1992, Ser. No. 853,183

Claims priority, application European Pat. Off., Dec. 30, 1991, 91312095.2

Int. Cl.[5] A61B *5/00, 6/00*

U.S. Cl. 128—633 **6 Claims**



1. An apparatus used for diagnosing a living subject, comprising:

light source means for emitting light of different wavelength;

light introducing/receiving means for introducing said light into a brain of the living subject and receiving light transmitted through the brain;

detecting means for detecting occurrences of respirations of the living subject and outputting a respiration signal indicative of said occurrences of said respirations;

deriving means for deriving the transmitted light from said introducing/receiving means in synchronism with the respiration signal and outputting a modulated light transmission signal indicative of the transmitted light which is modulated by the respiration signal;

analyzing means for analyzing the modulated light transmission signal and providing an operation result, the operation result indicating variations in concentration of oxygenated media ΔX_{02} and disoxygenated media ΔX contained in venous blood of the brain;

operation means for performing an arithmetic operation of

$$K_1 \times \Delta X_{02} / \{\Delta X + \Delta X_{02}\}$$

where K_1 is a first predetermined constant, a result of the arithmetic operation indicating an oxygen saturation in the venous blood of the brain; and

displaying means for displaying the result of the arithmetic operation.

5,253,647

INSERTION POSITION AND ORIENTATION STATE PICKUP FOR ENDOSCOPE

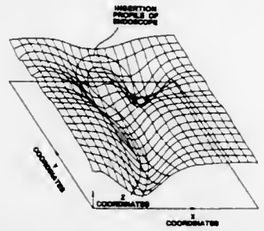
Yutaka Takahashi, Hachioji; Yoshikatsu Nagayama, Sagamihara; Hiroki Hibino, Hachioji; Katsunori Sakiyama, Akigawa; Yoshihito-Shimizu, Hachioji; Sakae Takehana, Machida; Yoshinao Oaki; Koji Koda, both of Hachioji; Yoshinobu Soeda, Fukuoka; Masato Toda, Hachioji; Toshiaki N-oguchi, Tachikawa; Yuichi Yamada, Tokyo, and Akira Osawa, Yokohama, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 12, 1991, Ser. No. 684,405

Claims priority, application Japan, Apr. 13, 1990, 2-98521; Dec. 12, 1990, 2-401686

Int. Cl.[5] A61B *5/05*

U.S. Cl. 128—653.1 **18 Claims**



1. A position and orientation state pickup for detecting the position and orientation state of an endoscope inserted in a living body comprising:

a means for forming an electromagnetic field in the living body from outside said living body having a frequency below the visible range, wherein said means for forming an electromagnetic field is a means for generating an alternating magnetic field, including a coiling means for emitting a magnetic field toward a living body and an oscillator circuit for supplying alternating current to the coiling means; and

detecting means for determining the position and orientation of said endoscope from the detection of the energy distribution in said electromagnetic field influenced by the endoscope in said living body.

5,253,648

METHOD AND APPARATUS FOR EXCLUDING ARTIFACTS FROM AUTOMATIC BLOOD PRESSURE MEASUREMENTS

Richard A. Walloch, Aloha, Oreg., assignor to SpaceLabs Medical, Inc., Redmond, Wash.

Filed Oct. 11, 1991, Ser. No. 774,661

Int. Cl.[5] A61B *5/02*

U.S. Cl. 128—681 **15 Claims**

1. A blood pressure monitor, comprising:

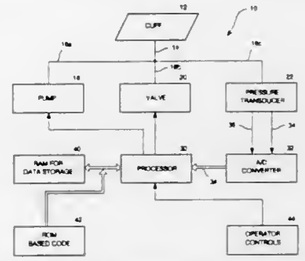
a blood pressure cuff;

an air pressure pump pneumatically coupled to the blood pressure cuff;

a valve pneumatically coupled to the blood pressure cuff;

a pressure transducer pneumatically coupled to the blood pressure cuff, the pressure transducer generating a signal indicative of air pressure in the blood pressure cuff and a signal corresponding to the oscillometric pulses in the blood pressure cuff;

processor means connected to the pressure transducer and receiving the signal indicative of the air pressure in the blood pressure cuff and the signal corresponding to oscillometric pulses in the blood pressure cuff, the processor means connected to the air pressure pump and the valve, the processor means comprising means for energizing the air pump to inflate the blood pressure cuff, energizing the



valve to reduce the air pressure in the blood pressure cuff, detecting an occurrence of an oscillometric pulse, determining an amplitude and rise time of the oscillometric pulse, determining whether the amplitude and rise time are within amplitude and rise time screening limits, disregarding the pulse when the amplitude and rise time are not within the screening limits, determining whether the screened pulse matches another screened pulse detected at the same cuff air pressure level based on the amplitude and rise time of the pulses, saving pulse data when pulses match, and determining systolic and diastolic pressures based on the saved pulse data.

5,253,649

PROCESS FOR THE MEASUREMENT OF BLOOD CIRCULATION BY MEANS OF NON-RADIOACTIVE MICROSPHERES

Rainer Gross, Wuppertal; Wolfgang Paffhausen, Leverkusen; Andreas Schade, Essen, and Gerd Heusch, Neuss, all of Fed. Rep. of Germany, assignors to Triton Technology, Inc., San Diego, Calif.

Filed Jun. 7, 1991, Ser. No. 712,004

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1990, 4019025

Int. Cl.[5] A61B *5/026*

U.S. Cl. 128—691 **13 Claims**

1. In a process for the measurement of blood circulation within an organ tissue specimen of an animal including carrying out the process steps of:

coloring microspheres with dye,

introducing the microspheres into a blood circulation of the animal,

sampling the organ tissue specimen of the animal, which specimen contains the microspheres,

determining a number of microspheres in the specimen sampled, and

calculating the blood circulation in the animal by use of the number of microspheres determined to be within the specimen,

wherein the improvement comprises the following steps:

before the step of coloring, starting with a feedstock of uniform size, monodisperse, microspheres;

wherein the step of coloring the microspheres serves to make the monodisperse microspheres homogeneous in coloration;

wherein each microsphere has, as a consequence of being monodisperse in size and homogeneous in coloration with the other microspheres, an equal color intensity;

after the sampling step, isolating the dye that is within the microspheres present in the specimen by

dissolving tissue and blood portions of the specimen while leaving the microspheres with their dye content substantially unchanged, followed by

eluting the dye from the microspheres; and

wherein the step of determining the number of microspheres comprises:

measuring the color intensity of the eluted dye; and

calculating the number of microspheres that were within the specimen as the measured color intensity of the eluted dye divided by the color intensity per microsphere.

5,253,650

APPARATUS FOR RECORDING AN ELECTROCARDIOGRAM

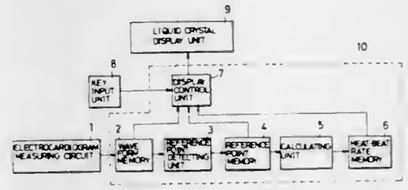
Yoshihiro Wada, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 521,705, May 10, 1990, abandoned. This application Mar. 29, 1991, Ser. No. 677,544

Claims priority, application Japan, May 16, 1989, 1-123563

Int. Cl.[5] A61B *5/044*

U.S. Cl. 128—712 **11 Claims**



1. An apparatus for recording electrocardiographic signals capable of displaying a change of spike intervals of adjacent QRS groups among a plurality of QRS groups of an electrocardiographic wave, said apparatus capable of displaying a time change of an electric potential with heart pulsations, said QRS groups showing an electric potential at a start of a ventricular systole, said apparatus comprising:

means for measuring an electrocardiographic wave comprised of a plurality of QRS groups;

a first memory means having a plurality of addresses for storing said electrocardiographic wave measured by said measuring means;

means for detecting said QRS groups in said electrocardiographic wave stored in said first memory means;

means for detecting a reference point of each R wave of said QRS groups;

means for displaying a plurality of adjacent QRS groups of said electrocardiographic wave stored in said first memory means; and

a control means for controlling said display means so that said plurality of adjacent QRS groups of said electrocardiographic wave are displayed on said display means with a reference point of any one of said QRS groups in said electrocardiographic wave fixed at a predetermined position on said display means,

said measuring means including means for sampling said electrocardiographic wave and means for converting said sampled electrocardiographic wave into a series of digital signals,

said detecting means including means for subtracting each of said digital signals from a preceding digital signal in said series of digital signals to obtain a difference for each digital signal and means for detecting a reference point of said QRS groups by identifying a digital signal having a minimum value of said difference calculated thereby.

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5,253,651

VENTILATORY INSTRUMENT FOR MEASURING PEAK EXPIRATORY FLOW

James A. Stockwell, and Ronald F. Checksfield, both of London, United Kingdom, assignors to Ferraris Development and Engineering Company Limited, London, England

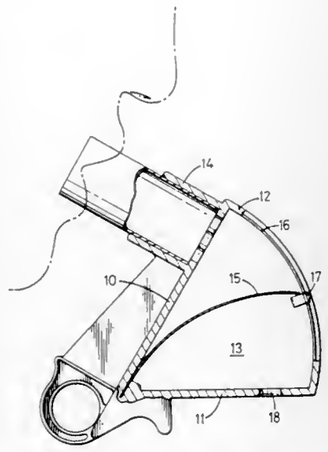
PCT No. PCT/EP91/00124, § 371 Date Jul. 30, 1992, § 102(e) Date Jul. 30, 1992, PCT Pub. No. WO91/11140, PCT Pub. Date Aug. 8, 1991

PCT Filed Jan. 21, 1991, Ser. No. 867,190

Claims priority, application United Kingdom, Jan. 23, 1990, 9001505

Int. Cl.[5] A61B *5/087*

U.S. Cl. 128—716 18 Claims



1. A ventilatory instrument for measuring peak expiratory flow of a human subject, comprising:

a hollow casing having an interior and forming a slot, the casing also forming an inlet by which a forced expiration by the human subject is admitted into the interior to be vented therefrom through the slot;

an indicator member mounted in the slot for movement therealong; and

a resiliently flexible vane having one end fixed to and within the hollow casing so that it extends across the interior of the casing as a cantilever, and a radial outer portion, the vane also having a major surface which faces the inlet whereby the forced expiration admitted into the interior through the inlet is directed onto the major surface to cause the vane to flex against its own resilience so that the radial outer portion traces a path; the slot following a curve which is substantially similar to said path and being at least as long as said path, said radial outer portion being adjacent the curved slot and between the indicator member and the inlet so that it traverses the slot as the vane flexes, said casing including a curved wall portion defining a clearance with said radial outer portion of said vane as said vane flexes, said clearance being substantially the same throughout the travel of said radial outer portion, said radial outer portion being operable (i) in response to the forced expiration into the interior to push the indicator member away from the inlet along the curved slot to increase an extent of the slot between the indicator member and the inlet as the vane flexes away from the inlet and (ii) to separate from the indicator member upon movement of the vane back towards the inlet, the indicator member remaining as an indication of maximum travel along the slot.

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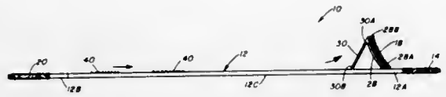
CYTOLOGIC SAMPLING DEVICE FOR COLLECTING CERVICAL AND VAGINAL CELL SPECIMENS

James I. Fast, 7300 N. Monroe St., Hutchinson, Kans. 67502-8921

Filed Jan. 25, 1993, Ser. No. 8,492

Int. Cl.[5] A61B *10/00*

U.S. Cl. 128—756 20 Claims



1. A cytologic sampling device for collecting cervical cell specimens from a uterine cervix, said device comprising:

(a) an elongated stem having a pair of opposite end portions and a longitudinal portion extending between said opposite end portions;

(b) first means on one of said pair of end portions of said stem for collecting endocervical cell specimens upon insertion of said one end portion of said stem into a vagina and within the mouth of a cervix; and

(c) an actuator mounted on said longitudinal portion of said stem and having second means located adjacent to said first means for collecting exocervical cell specimens, said actuator being movable relative said longitudinal stem portion for moving said second means between a stored position adjacent to said longitudinal portion to permit entry of said one end portion of said stem into the vagina and a deployed position displaced from said longitudinal portion to permit collecting of the exocervical cell specimens concurrently as said first means collects endocervical cell specimens.

5,253,653

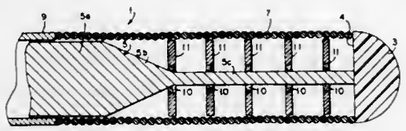
FLUOROSCOPICALLY VIEWABLE GUIDEWIRE FOR CATHETERS

James B. Daigle, Worcester; Richard M. DeMello, Acton, and Bruce W. Flight, Melrose, all of Mass., assignors to Boston Scientific Corp., Watertown, Mass.

Filed Oct. 31, 1991, Ser. No. 786,061

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—772 9 Claims



1. A fluoroscopically viewable guidewire for a catheter to measure the size and shape of occlusions in a blood vessel, said guidewire comprising:

a core wire having a flexible distal end formed of a body section which tapers into a gauging section;

a proximal marker means, a distal marker means and at least one intermediate marker means, each of said marker means being radiopaque and linearly disposed on said gauging section, said marker means being spaced from each other at a predetermined distance; and

a helical coil of radiotransparent flexible wire surrounding at least the gauging section of said core wire.

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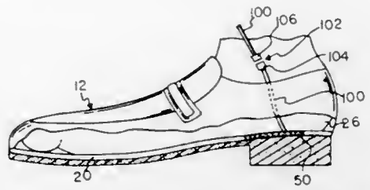
ORTHOPEDIC WEIGHT MONITOR

Berten R. Thomas, 38 N. Pine Cir., Belleair, Fla. 34616; Harry Steinman, 1965 Cove La., Clearwater, Fla. 34624, and Stephen D. Alley, 3425 High Bluffs Dr., Largo, Fla. 34640

Filed Apr. 30, 1992, Ser. No. 876,481

Int. Cl.[5] A61B *51/103*

U.S. Cl. 128—779 22 Claims



1. A shoe having a sole and an upper coupled adjacent to their peripheries defining a foot-receiving space therebetween and an opening for passage of a wearer's foot; a flexible pad means shaped for conforming to the bottom of a foot positioned inside the space for receiving a wearer's foot thereon, the pad means having a heel portion positionable beneath the heel of a wearer; sensor means encased within the heel portion of the pad means to be located beneath the heel of the wearer, the sensor means comprising a thin, rigid rectangular plate means and a foil strain gage means coupled therebeneath, the plate means having means at opposed edges to minimize deflection of the plate means about an axis extending from one opposed edge to the other; electronic module means remotely positioned from the sensor means to receive signals from the foil stain gage means; and electrical line means between the sensor means and the electronic module means.

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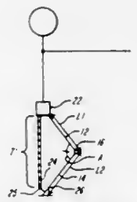
APPARATUS AND METHOD FOR MEASURING RANGE OF MOTION OF AN ARTICULATED JOINT

Kevin R. Stone, 1 Throckmorton La., Mill Valley, Calif. 94941; Perry A. Klebahn, 2633 Steiner St., San Francisco, Calif. 94115, and William R. Knapp, 116 Gilbert St., Menlo Park, Calif. 94025

Filed Dec. 17, 1992, Ser. No. 992,066

Int. Cl.[5] A61B *5/10*

U.S. Cl. 128—782 12 Claims



1. Apparatus for measuring the angle A of flexure of a joint between longitudinal axes of adjacent, jointed body parts, the apparatus comprising:

A. first coupling means for fixture to a first of said body parts at a point P1, said point P1 being a distance L1 from the joint being measured;

B. second coupling means for fixture to a second of said body parts at a point P2, said point P2 being a distance L2 from said joint being measured;

C. measuring means for generating a signal T representative of the distance between point P1 and point P2;

D. computing device responsive to said signal from said measuring means including means for determining the angle A in accordance with the function

$$A = \cos^{-1}[(L1^2 + L2^2 - T^2)/2(L1)(L2)].$$

5,253,656

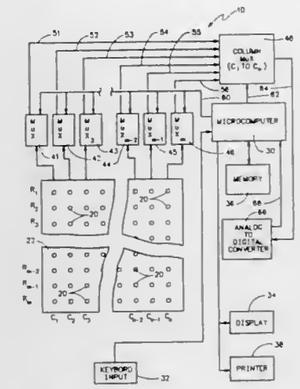
APPARATUS AND METHOD FOR MONITORING CONTACT PRESSURE BETWEEN BODY PARTS AND CONTACT SURFACES

Richard G. Rincoe, 49 South Homlman Way, Golden, Colo. 80401, and Paul J. Moore, Jr., 890 Moline St., Aurora, Colo. 80010

Filed May 23, 1991, Ser. No. 704,615

Int. Cl.[5] A61B *5/103*

U.S. Cl. 128—782 16 Claims



1. Apparatus adapted to monitor pressure at a plurality of locations along an exterior surface of a body part to produce a force profile corresponding to a distribution of force caused by pressure of said body part against a contact surface, comprising:

(a) a plurality of pressure sensors organized in an array on at least one strip of flexible substrate material conformable to the contour of the exterior surface of said body part such that said sensors are adapted to be interposed between and in contact with both the exterior surface of said body part and said contact surface at selected locations at which pressure is to be monitored, each of said sensors operative in response to compressive pressure between the exterior of said body part and said contact surface at its respective location to generate a force signal proportional to the pressure therebetween;

(b) monitor means in communication with the array of said sensors for receiving the force signal produced by each respective said sensor and for producing an output signal having pressure data corresponding to the pressure sensed by the respective said sensor, said monitor means including address means for addressing each of said sensors in said array with a unique address corresponding to its position in said array;

(c) processing means in communication with said monitor means for receiving and processing the output signals to produce the force profile defining the distribution of force corresponding to the magnitude and location of pressure exerted between the contact surface and the exterior surface of said body part, said processing means including command means for generating a read signal operative to cause said monitor means to produce a set of said output signals correlated to each sensor and to communicate said set of output signals to said processing means as a read event; and

(d) a plurality of switch means each operative to produce a switch active signal when in an active state, said monitor

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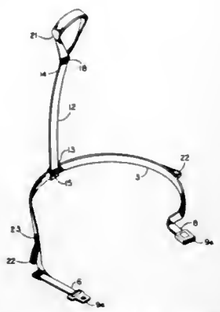
means operative after receipt of said read signal to initiate a read event in response to each switch active signal.

5,253,657

HARNESS UTILIZED IN SHIFTING A POSITION OF A HUMAN WEARER

Ida M. Butterfield, 1026 Buchanan, Yuba City, Calif. 95991

Continuation-in-part of Ser. No. 821,476, Jan. 14, 1992. This application Apr. 24, 1992, Ser. No. 874,115
Int. Cl.[5] A61G *15/00*; A61F *5/37*
U.S. Cl. 128—845 9 Claims



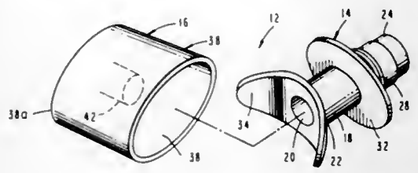
1. A harness employed by a user for shifting the position of a wearer, comprising:
a) a body belt constructed from sturdy material terminating in first and second end regions;
b) coupling means for reversible mating associated with said body belt, wherein when mated by said coupling means, said first and second body belt end regions form a reversibly linked structure about said wearer's body of adjustable perimeter size;
c) a shoulder strap having a minimum length of about two feet and constructed from sturdy material terminating in first and second end domains, wherein said shoulder strap first end domain is attached to said body belt between said body belt first and second end regions, proximate the long axis midpoint of said belt;
d) a first handle formed into a loop constructed from sturdy material attached to said shoulder strap second end domain; and
e) a second handle formed into a loop constructed from sturdy material attached to said body belt.

5,253,658

PATIENT MOUTHPIECE DEVICE WITH CONTAMINATION SHIELD

Russell W. King, Sierra Madre, Calif., assignor to Medi-Nuclean Corporation, Inc., Baldwin Park, Calif.

Filed May 11, 1992, Ser. No. 881,064
Int. Cl.[5] A61C *5/14*
U.S. Cl. 128—859 16 Claims



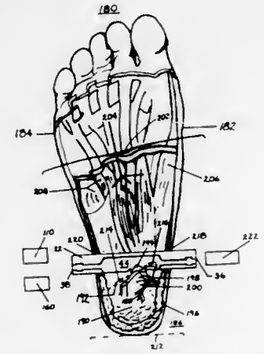
1. A patient mouthpiece for use in connection with respiratory equipment of the character used in supplying fluids to a patient, comprising:
(a) a first portion including:
(i) an elongated body having a fluid passageway therethrough, said body having a first end and a second end for interconnection with the respiratory equipment;
(ii) a first wall circumscribing said body at a location intermediate said first and second ends;
(iii) a second wall being curved and receivable within the patient's mouth, said second wall circumscribing said body proximate said first end thereof whereby said first portion can be securely supported in place during the supply of fluids to the patient;
(b) a second portion for removable interconnection with said first portion, comprising a skirt portion receivable over said second curved wall of said first portion, said skirt portion being closed at one end by a closure wall and having an opening at the opposite end for closely receiving said first wall of said first portion, said second portion further, including sealing means for sealably closing said fluid passageway of said body of said first portion.

5,253,659

METHOD AND SYSTEM FOR PERFORMING ENDOSCOPIC SURGERY AT LOCATIONS WHERE TISSUE INSERTS INTO BONE

Gregory McNamara, Lowell, Mass.; David C. Morley, Jr., Amherst, N.H., and William E. Donahue, Cleveland, Ohio, assignors to Endoscopic Heel Systems, Inc., Lowell, Mass.

Filed Jul. 14, 1992, Ser. No. 914,192
Int. Cl.[5] A61B *19/00*
U.S. Cl. 128—898 12 Claims



1. A procedure for performing endoscopic surgery in a patient to relieve heel pain in a foot, the foot having a heel with skin, fat pad, plantar fascia, os calcis bone, vascular and neural structures, and muscles including flexor digitorum brevis, abductus hallucis, and abductus digiti minimi, the procedure comprising the steps of:
determining a location for avoiding the vascular and neural structures of the heel;
marking the skin at said location on a medial side of the foot;
making an entry incision at said mark;
forming a channel at said entry incision between the os calcis, plantar fascia, the aponeurotic fibers of the muscles by bluntly separating the plantar fascia from surrounding soft tissue both superiorly and inferiorly, said channel avoiding the vascular and neural structures in the heel, said channel being formed by inserting a detachable obturator sleeve member assembly and driving said assembly to a lateral side from said medial side of the foot until said assembly tents the skin on said lateral side,
making an exit incision at said tented skin to pass and position said assembly at said lateral side of said foot,
locating a portal in said sleeve member at a predetermined operative site, said operative site located adjacent both the plantar fascia and os calcis;

retracting said obturator from said sleeve member forming a medial and lateral opening at each end of said sleeve member,
inserting an endoscope into said medial opening and an instrument means in said lateral opening,
performing a first surgical operation at said operative site,
cleaning said operative site;
inserting said obturator into said sleeve member;
retracting said sleeve member and obturator from the heel; and
closing said entry and exit incisions.

5,253,660

REDUCED SIDESTREAM SMOKE SMOKING ARTICLE WRAPPERS, METHODS OF MAKING SUCH WRAPPERS AND SMOKING ARTICLES MADE FROM SUCH WRAPPERS

Ajit S. Dixit, and William F. Owens, Jr., both of Pisgah Forest, N.C., assignors to P. H. Glatfelter Company, Spring Grove, Pa.

Filed Apr. 24, 1992, Ser. No. 873,230
Int. Cl.[5] A24D *1/02*
U.S. Cl. 131—365 15 Claims

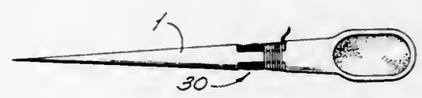
11. A method of reducing sidestream smoke of smoking articles wrapped in a cellulosic sheet comprising forming the sheet with an ultracarb, a homogeneous mixture of huntite and hydromagnesite, filler at levels int he range of 5% to 50% of the basis weight of the cellulosic sheet.

5,253,661

COMPOSITE ORAL CLEANING APPARATUS

Harold Alonzo, P.O. Box 191 (9-½Mile Marker on Hwy. 11), Kurtistown, Hi. 96769

Filed Sep. 14, 1992, Ser. No. 944,436
Int. Cl.[5] A61C *15/00*
U.S. Cl. 132—321 16 Claims



1. A composite oral cleaning apparatus comprising:
an elongated, substantially solid shaft having first and second ends; and
recessed floss holding means cut into said elongated shaft for securing a length of dental floss without increasing the diameter of said shaft when said dental floss is wrapped around said recessed floss holding means, said floss holding means sized to accomodate multiple turns of floss when wrapped therearound;
said first end of said elongated shaft comprising a pick cleaning means, said pick cleaning means having a pointed tip;
said second end of said elongated shaft comprising a scooping means, said scooping means having first and second surfaces wherein at least one of said surfaces is concave.

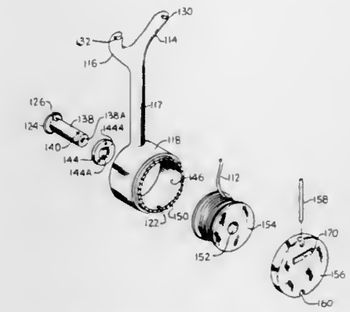
5,253,662

DENTAL FLOSS HOLDER

Se K. Won, 6261 Glacier Dr., Westminster, Calif. 92683

Continuation-in-part of Ser. No. 911,963, Jul. 10, 1992, Pat. No. 5,201,330. This application Mar. 31, 1993, Ser. No. 40,501
Int. Cl.[5] A61C *15/00*
U.S. Cl. 132—325 6 Claims

1. In a dental floss holder of the type having a body member with an axial bore formed therein so as to extend from one side thereof, which is open and on which unidirectional ratcheting teeth are circularly disposed in axial alignment with the bore, to the other body side which is closed but with a small diameter opening extending there through, a pair of prongs extending outwardly laterally from the body member normal to the bore in a wishbone configuration, each of said prongs having a deep floss receiving groove formed longitudinally along its outer surface, and each prong terminating in a tip across which the groove extends toward the other prong, an axle extending through the body member, a spool holding dental floss mounted on the axle within the body member, and a passageway formed on the body member for passing the floss from the spool through the body member, the combination of:
a locking cap of circular cross-sectional configuration complementary to the cross-sectional configuration of the body member, said cap having a peripheral lip depending therefrom so as to enclose the main body ratcheting recesses when the cap is disposed on the main body member, and a circular shoulder formed within the recess formed by the lip and adjacent thereto, said shoulder having



ratcheting teeth formed thereon so as to be complementary to the main body ratcheting teeth and engageable therewith when the cap is mounted on the main body member; and
locking cap attaching means connected between said locking cap and said body member for attaching said cap to said axle so as to hold said cap ratcheting teeth in engagement with said main body ratcheting teeth, said locking cap attaching means including
a straight pin extending diametrically across said locking cap and through a transverse passageway formed in said axle and
pin engaging means formed on said locking cap and operable when engaged by said pin while extending through said axle transverse passageway to hold said pin in a deflected disposition so as to urge the cap ratcheting teeth against the main body ratcheting teeth.

5,253,663

TRANSFER APPARATUS

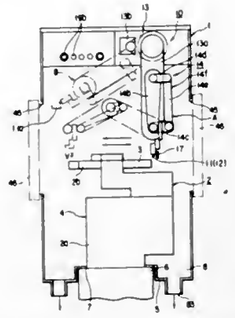
Hiroshi Tanaka; Mitsuo Nishi, both of Kurume; Ryuichi Mizoguchi, Kumamoto, and Yuuji Kamikawa, Uto, all of Japan, assignors to Tokyo Electron Limited, Tokyo and Tokyo Electron Saga Limited, Tosu, Japan

Filed Aug. 26, 1992, Ser. No. 935,400
Claims priority, application Japan, Aug. 26, 1991, 3-236816; Sep. 4, 1991, 3-250224
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—95.2 7 Claims

1. An apparatus for transferring a plurality of wafer-like objects to be treated, comprising:
a housing for defining a closed space;
an opening portion formed in said housing;
a transfer arm disposed in said housing, said arm comprising a movable portion capable of extending out from said housing through said opening portion;
a holding portion, disposed in said movable portion of said arm, for holding the objects to be treated, said holding portion having a plurality of holding grooves for arrang-

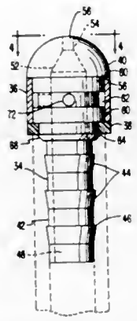
VOL 1155 ISS 3 OCT 19 1993 UMI

ing the objects to be treated with predetermined intervals therebetween;
opening/closing means for airtightly opening/closing said opening portion;
cleaning means, disposed in said housing, for spraying a cleaning solution against said holding portion;
drying means, disposed in said housing, for spraying a drying gas against said holding portion;



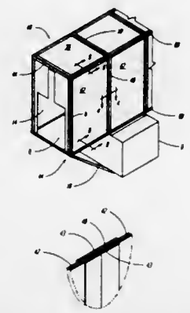
a support member for supporting said cleaning means and said drying means;
position switching means for moving said support member between an operation position and a standby position; and
moving means for moving said support member along said holding portion in a direction perpendicular to said holding grooves.

5,253,664
DRAIN BLASTER
Timothy J. Wilson, Baltimore, Md., assignor to Jet Blast Products Corporation, Baltimore, Md.
Filed Jul. 14, 1992, Ser. No. 913,176
Int. Cl.[5] B08B *9/04*
U.S. Cl. 134—167 C **7 Claims**



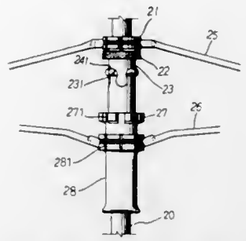
4. A fluid jet cleaning system, particularly adapted for household use, comprising:
an elongated flexible hose;
coupling means at one end of said hose to effect connection thereof to a source of pressurized water;
a jet nozzle assembly connected to the other end of said hose including:
a body having at one end an enlarged head containing an ejector opening and means at the other end for frictional attachment of said body to said hose;
a spinner sleeve containing at least one tangential opening rotatably secured to said body;
means for securing said spinner sleeve to said body including an annular recess in said body and an annular retainer ring mounted in said recess, said retainer ring being formed of flexible plastic material defining a radial shoulder oppositely axially spaced from said enlarged head and sized to loosely retain said spinner sleeve therebetween;
means forming an axial passage through said body for conducting water from said hose;
first reduced diameter passage means connecting said axial passage to said ejector opening; and
second reduced diameter passage means for establishing fluid communication between said axial passage and said tangential opening in said spinner.

5,253,665
INDUSTRIAL WASHERS FOR CLEANING METAL PARTS
James N. Guirl, 1590 Fenpark Dr., St. Louis, Mo. 63026
Filed Jun. 15, 1992, Ser. No. 898,430
Int. Cl.[5] B08B *13/00;* **A47B** *47/05*
U.S. Cl. 134—201 **8 Claims**



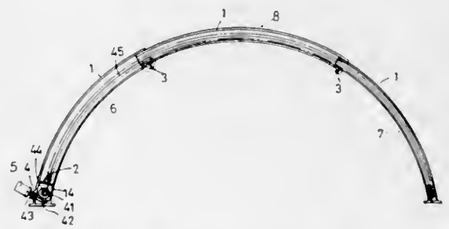
1. In an industrial spray washer for cleaning and chemically treating surfaces of metal articles with spray of aqueous cleansing agents to prepare them for such uses as coating processes, wherein the spray washer includes a washer tank, and a drainboard affixed to the washer tank, the combination of the tank and drainboard forming a washer base area, a spray assembly carrying nozzles directing spray on an article when it is held above the washer base area so that spray flows from the drainboard into the tank, means conveying cleaning solution from the washer tank to the spray assembly, and a washer housing having walls enclosing the spray assembly and the base area, said housing including horizontal and vertical top, bottom, and side metal framework members and wall panels affixed to the framework members to form walls of the washer housing, the improvement comprising the wall panels being plastic to thus form corrosion resistant housing walls, the framework members being in the form of elongated expansion seals to allow expansion of the plastic wall panels while preventing fluid flowthrough along edges of the plastic wall panels seated in the framework members, and wherein the plastic wall panels are seated in the expansion seals without being bolted in them and without loss of seal despite differences in rates of expansion of plastic and metal, thus permitting expansion and contraction of the plastic wall panels without buckling.

5,253,666
UMBRELLA OPENING AND CLOSING DEVICE WITHOUT USE OF SPRING LATCHES
Shih-Chen Huang, Chang-hua, Taiwan, assignor to Yung Shun Umbrella Co., Ltd., Changhua, Taiwan
Filed Sep. 10, 1992, Ser. No. 942,847
Int. Cl.[5] A45B *25/06*
U.S. Cl. 135—28 **1 Claim**



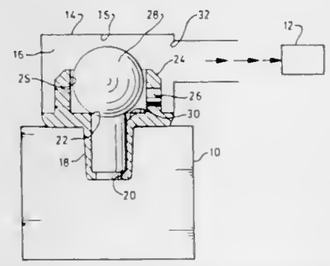
1. An umbrella opening and closing device without use of spring latches comprising a first retainer and a second retainer and a rib securing ring having a plurality of spaced securing recesses defined on the periphery thereof; said first retainer being extended downwardly from an upper mounting member to which the main frame of an umbrella is pivotally attached and having a number of Ω shaped female cavities disposed thereon; said second retainer integrally extended from a main runner having a plurality of spaced grooves disposed thereon in which the stretching ribs of said umbrella are pivotally located; and said grooves being positioned in linear alignment with said securing recesses so that the stretching ribs can be firmly engaged with said securing recesses when said umbrella is closed for receiving; said second retainer being provided with a number of Ω shaped male protrusions disposed at the top end thereof which are integrally complementary in shape to said female cavities so as to permit the two to be tightly engaged with each other when said main runner is pushed upward along the central post of said umbrella so as to keep the canopy of said umbrella opened which is disposed on top of said main frame pivotally connected to said stretching ribs which are pivotally associated at another end with said main runner.

5,253,667
COLLAPSIBLE TUBULAR FRAME
Ching-Pao Chung, No. 120-18, Yu Che, Yu Che Li, Ma Tou Chen, Tainan Hsien, Taiwan
Filed Mar. 16, 1993, Ser. No. 31,969
Int. Cl.[5] E04H *15/38*
U.S. Cl. 135—103 **3 Claims**



1. A shrinkable tubular frame comprising:
a plurality of hollow curved tubes including a left largest diameter curved tube having an outer end, at least one intermediate curved tube having an outer end, a right smallest diameter curved tube having an outer end, said tubes having nearly the same length and curvature but different diameter so as to be telescopically bitted one inside another;
a coil spring having opposite ends extending through in said frame having one end fixed at an outer end of a left largest-diameter curved tube and the other end fixed at an outer end of a right smallest-diameter curved tube;
a plurality of fixing units for securing each two adjacent tubes when each said two adjacent tubes are extended out; and,
a winding unit including a worm gear, a rope, a rope, a motor; wherein,
said rope having one end connected to said outer end of said right smallest diameter curved tube and extending through all tubes, and the other end wound on said worm;
said motor connected to and rotating said worm such that said worm meshes with said worm gear and winds said rope on said worm to telescopically withdraw said tubes one inside another.

5,253,668
SMOOTH-OPENING, LOW-HYSTERESIS BALL HEAD VALVE
Vaughn Mills, Ann Arbor, Mich., assignor to G.T. Products, Inc., Ann Arbor, Mich.
Filed Feb. 18, 1993, Ser. No. 18,815
Int. Cl.[5] F16K *15/04*
U.S. Cl. 137—12 **4 Claims**



3. In a vehicle fuel system comprising a fuel tank and a vapor trap connected to the fuel tank to receive fuel vapor, and a ball head valve connected between the fuel tank and the vapor trap to selectively vent fuel vapor from the tank to the trap, the ball head valve comprising a hollow valve body having a vent inlet communicating with the interior of the fuel tank and a vent outlet communicating with the vapor trap, a circular valve seat between the vent inlet and the vent outlet, a valve chamber defined between the valve seat and the vent outlet, a cylindrical retainer surrounding the valve seat in the valve chamber, a ball valve element within the cylindrical retainer movable between a rest position on the valve seat and an open position off the valve seat, radial flow vents in the retainer communicating the bore of the retainer with the valve chamber, and a bleed vent associated with the valve seat to maintain flow from the fuel tank to the valve chamber when the ball valve element is in the rest position on the valve seat, a method for calibrating the ball head valve to achieve two-stage flow with a smooth, low hysteresis transition between low and high flow, comprising the following steps:
selecting a specified head pressure at which the ball head valve is lifted off the valve seat to the open position resulting in a change from low to high flow;
selecting a specified weight and diameter for the ball valve element;
determining the diameter of the valve seat required to lift a ball valve element of the specified weight at the specified head pressure;
determining the total area of the radial flow vents;
determining the height of the axial bore based on the diame-

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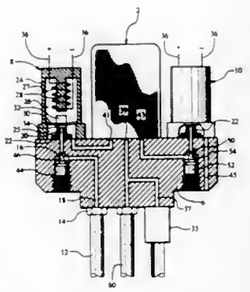
ter of the ball valve element and the diameter of the valve seat;
determining a diameter for the axial bore slightly larger than the diameter of the ball valve element such that the ball does not spin within the bore during lift off and does not exhibit substantial hysteresis on closing;
setting the height of the valve chamber to limit the travel height of the ball valve element such that at maximum lift the center line of the ball rises no higher than the height of the cylindrical retainer;
sizing the vent outlet such that its diameter is greater than that of the valve seat; and
calibrating the bleed vent to permit vapor flow below the specified head pressure without increasing the head pressure.

5,253,669

CONTROLLING PROCESS GAS FLOW

Tommy L. Gray, Dallas, Tex., assignor to Span Instruments, Inc., Plano, Tex.

Filed Apr. 23, 1992, Ser. No. 872,407
Int. Cl.[5] G05D *16/02, 16/20*
U.S. Cl. 137—14 **15 Claims**



12. A method of controlling the pressure in a pressure regulator bonnet comprising the steps of:
determining a present regulator bonnet pressure;
comparing the present regulator bonnet pressure to a preset pressure to determine if the present regulator bonnet pressure is equal to, higher than or lower than, the preset pressure;
generating a control signal in response to the comparison of the present regulator pressure and the preset pressure;
in response to the control signal, establishing a control pressure in a buffer tank;
adjusting the pressure in the buffer tank to equalize the regulator bonnet pressure and the preset pressure.

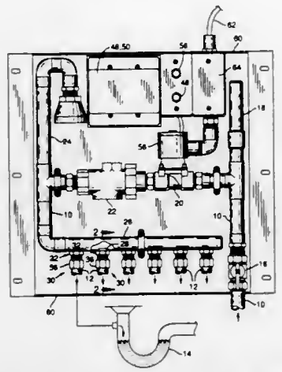
5,253,670

MULTIPLE DRAIN TRAP PRIMER VALVE ASSEMBLY FOR SEWER LINES

Charles H. Perrott, Portland, Oreg., assignor to C. H. Perrott, Inc., Portland, Oreg.

Filed Dec. 14, 1992, Ser. No. 990,026
Int. Cl.[5] E03C *1/296*
U.S. Cl. 137—247.25 **6 Claims**

1. A multiple drain trap primer valve assembly comprising in combination:
a) a plumbing conduit system including a house line **10** carrying water under pressure and a plurality of branch lines **12** each serving the drain trap **14** of a particular plumbing fixture,
b) connected into the house line, manifold means **26** for receiving water under pressure from the house line and having a plurality of discharge openings **28**, one for each branch line,
c) a plurality of coupling means **30** for coupling the branch lines to the manifold openings, one to each opening,
d) the coupling means each including a flow orifice **44** of size predetermined to substantially equalize the flow of priming water to each branch line **12**, and



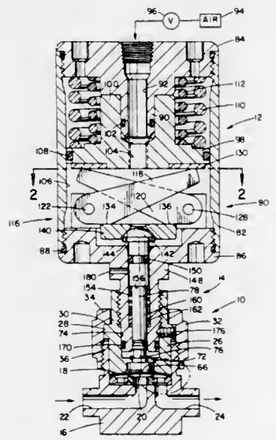
e) in the house line, upstream from the manifold means, valve means **20** positioned for opening the house line to the manifold means to deliver water under pressure through the flow orifices to the branch lines for a predetermined timed period at predetermined timed intervals.

5,253,671

HIGH PRESSURE DIAPHRAGM VALVE

Terrence J. Kolenc, Mentor, Ohio, assignor to Nupro Company, Willoughby, Ohio

Continuation-in-part of Ser. No. 888,897, May 26, 1992. This application Sep. 18, 1992, Ser. No. 947,428
Int. Cl.[5] F16K *7/17*
U.S. Cl. 137—315 **8 Claims**



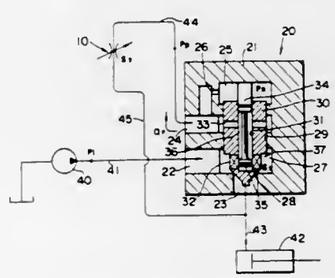
1. A valve comprising:
a valve body defining a valve chamber having inlet and outlet ports connecting the chamber with the exterior of the body;
a valve element for controlling flow through the chamber between the inlet and outlet ports;
an expansible fluid motor operator assembly including a housing carrying a reciprocated element for moving the valve element between open and closed positions, the operator assembly further including a bonnet connected to the housing with the reciprocated element extending therethrough and a connector member releasably connecting the bonnet member to the valve body, adjustment means associated with the bonnet member for permitting adjustment of the bonnet member relative to the housing to adjust the distance the reciprocated element extends from the bonnet to control the force to be applied to the valve element prior to the assembly of the operator assembly to the valve body and lock means for fixing the adjustment means in a predetermined position, said lock means being incapable of being released when the bonnet member is connected to the valve body to prevent adjustment of the stroke of the reciprocated element without disconnecting the operator assembly from the valve body.

5,253,672

HYDRAULIC PRESSURE CONTROL SYSTEM

Kazuo Uehara, Tokyo; Tadao Karakama, Kawasaki; Sadao Nunotani, Hiratsuka; Naoki Ishizaki, Kamakura, and Masayuki Tanaami, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Continuation of Ser. No. 8,386, Jan. 28, 1987, abandoned. This application Apr. 11, 1989, Ser. No. 336,570
Claims priority, application Japan, Jan. 30, 1986, 61-16934; Jun. 12, 1986, 61-135011; Sep. 30, 1986, 61-230029
Int. Cl.[5] F15B *13/042;* **F16K** *31/383;* **G05D** *7/01*
U.S. Cl. 137—489 **7 Claims**



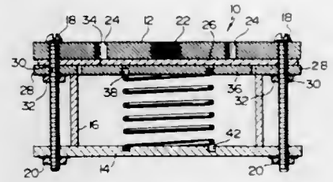
1. A hydraulic pressure control system comprising:
a flow control valve having a moveable valve body, an input port, an output port, a pilot output port, and a back pressure chamber,
and a first variable throttle provided in a first pilot hydraulic passage extending from the input port to the pilot output port for changing an opening area in response to the amount of movement of said valve body in a direction where said valve body leaves from a valve seat,
a pilot valve having a second variable throttle,
a pilot valve input passage connecting the pilot output port to the pilot valve,
said pilot output port of said flow control valve being coupled through said pilot valve input passage and said pilot valve to said output port of said flow control valve, the pilot valve variably controlling the amount of hydraulic pressure in the back pressure chamber to thereby variably control the position of said valve body,
wherein said flow control valve is provided with a fixed throttle disposed in a second pilot hydraulic passage extending from the back pressure chamber to one of the first pilot hydraulic passage and the pilot valve input passage.

5,253,673

DISTRIBUTION VALVED MANIFOLD SYSTEM

Roger Guay, 2389 Juliette, Rockland, Ontario, Canada K4K 1L7

Filed Aug. 18, 1992, Ser. No. 931,396
Int. Cl.[5] F16K *15/14*
U.S. Cl. 137—512.4 **1 Claim**



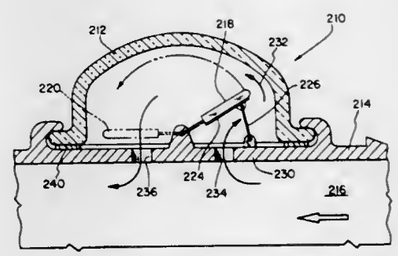
1. A fluid distribution manifold, comprising:
a housing having a circular port plate having a central fluid inlet opening extending axially therethrough, a plurality of equally, angularly spaced fluid outlet openings extending longitudinally through said port plate, a circular end plate axially spaced from said port plate and a cylindrical, tubular side wall extending between and secured to said port plate and said end plate;
a diaphragm disposed in and peripherally sealingly secured to said housing for movement between a closed position whereat said diaphragm engages one side of said port plate and sealingly closes each said openings and an open position displaced from said port plate whereat said diaphragm opens said openings and forms a fluid chamber which permits fluid communication openings;
a rigid ring for securing the periphery of said diaphragm to the underside of said port plate;
a rigid backing plate disposed in said housing for engagement with a side of said diaphragm remote from said port plate; and
a helical compression spring disposed between said backing plate and said end plate for urging said diaphragm towards said closed position.

5,253,674

COOLANT CORROSIVENESS INDICATOR

Charles S. Argyle, Willowdale; Brian E. Cheadle, Bramalea, both of Canada, and Steven L. M. Bokor, Rochester Hills, Mich., assignors to Long Manufacturing Limited, Oakville, Ontario, Canada

Division of Ser. No. 821,631, Jan. 16, 1992, Pat. No. 5,181,536, which is a division of Ser. No. 610,804, Nov. 8, 1990, Pat. No. 5,127,433. This application Nov. 4, 1992, Ser. No. 971,341
Claims priority, application Canada, Apr. 19, 1992, 2014982
Int. Cl.[5] F16K *37/00;* **F28F** *19/00*
U.S. Cl. 137—559 **12 Claims**



1. A corrosion sensor for a heat exchange system comprising:
support means for mounting the sensor in said system to

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enable the sensor to contact heat exchanging fluid flowing through the system;
a visual indicator in the form of a pivotable flap mounted on said support means and movable from a first position indicating that the heat exchanging fluid is in a noncorrosive state to a second position indicating that said fluid has become corrosive to at least a limited degree, said flap having different colors on opposite sides thereof;
a corrodible release mechanism for holding said indicator in said first position and located so as to be immersed in said heat exchange fluid during use of said sensor; and
sight glass means mounted in or on said support means, said indicator being visible through said sight glass means;
wherein said release mechanism corrodes and breaks when said fluid becomes corrosive to at least a limited degree, thereby releasing said indicator so that it moves to said second position.

5,253,675

APPARATUS FOR CONNECTING DOUBLE VACUUM PIPES FOR CONDUCTING CRYOGENIC FLUID

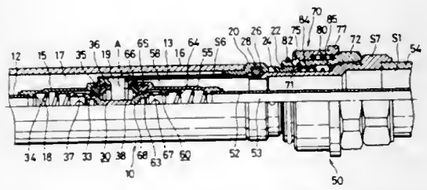
Takeaki Ooshio, and Reichi Makishima, both of Tokyo, Japan, assignors to Nitto Kohki Co., Ltd., Tokyo, Japan

Filed Mar. 3, 1992, Ser. No. 845,258

Claims priority, application Japan, Mar. 22, 1991, 3-024558[U]

Int. Cl.[5] F16L *37/28*

U.S. Cl. 137—614.05 **16 Claims**



1. An apparatus for connecting first and second double vacuum pipes for conducting cryogenic fluid, each of said first and second double vacuum pipes comprising an inner tube defining therein a fluid passage and having two ends, and an outer tube having an inner peripheral surface, an inner space and two ends, said apparatus comprising:
connecting means having two ends;
a first tubular member having an outer peripheral surface, an inner space and two ends, one end being connected to one of said two ends of said connecting means in said inner space of said outer tube of said first double vacuum pipe, said first tubular member being inserted in said outer tube of said first double vacuum pipe, with a space being defined between said inner peripheral surface of said outer tube of said first double vacuum pipe and said outer peripheral surface of said first tubular member;
first valve means for hermetically connecting the other end of said first tubular member to one of said two ends of said inner tube of said first double vacuum pipe, said first valve means having a first valve movable axially of said first tubular member, for closing said inner tube of said first double vacuum pipe when said first valve is not moved toward said one end of said inner tube of said first double vacuum pipe and for causing said inner tube of said first double vacuum pipe to communicate with said inner space of said first tubular member when said first valve is moved toward said one end of said inner tube of said first double vacuum pipe;
one-touch locking means having two ends, one end being connected to one of said two ends of said outer tube of said second double vacuum pipe, and having said connecting means inserted therein from the other end of said locking means, said locking means having a locking position at which said locking means securely holds said connecting means;
a second tubular member having two ends, one end being connected to said other end of said locking means, said second tubular member extending from said locking means in a direction opposite to said one end of said locking means, said second tubular member being inserted in said first tubular member, with a space being defined between said first and second tubular members;
a warming chamber defined between said first and second tubular members;
second valve means hermetically connecting the other end of said second tubular member to one of said two ends of said inner tube of said second double vacuum pipe, said second valve means having a second valve engageable with said first valve and movable axially of said second tubular member together with said first valve, for closing said inner tube of said second double vacuum pipe when said second valve means is not moved toward said one end of said inner tube of said second double vacuum pipe and for causing said inner tube of said second double vacuum pipe to communicate with said warming chamber when said second valve is moved toward said one end of said inner tube of said second double vacuum pipe; and
a communication space defined between said first and second valve means, for effecting communication between said inner tubes of said first and second double vacuum pipes when said locking means securely holds said connecting means.

5,253,676

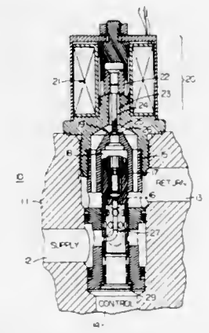
LOW BERNOULLI FORCE CONTROL ORIFICE

Evan L. Craig, Chaffee, N.Y., assignor to Moog Controls, Inc., East Aurora, N.Y.

Filed Aug. 13, 1992, Ser. No. 930,317

Int. Cl.[5] F15B *13/043*

U.S. Cl. 137—625.61 **6 Claims**



1. Hydraulic pressure control valve providing an output control pressure that is proportional to a control signal level applied thereto; said valve having fluid pressure conduits respectively communicating with a fluid pressure source and a fluid return line, and a control pressure outlet; comprising
a primary stage that includes a limiting restriction having an inlet coupled to said fluid pressure source a controlled orifice coupled to said return line, and a pressure control zone defined between said restriction and controlled orifice; said controlled orifice including a seat and a plunger urged against said seat and said plunger being coupled to a control device to which said control signal level is applied for urging said plunger relative to said seat, thus establishing a controlled flow between said seat and said plunger; and
a secondary stage coupled to said control zone, said pressure source, and said return line for delivering fluid at a controlled pressure at said control pressure outlet in response to the pressure at said control zone;
wherein said seat has a conical surface facing said plunger; and said plunger has a stem coupled to said control device, and a distal head facing said seat conical surface,
said plunger head having a distal face with a concave central portion, a transverse distal face, meeting at a sharp corner a generally cylindrical surface extending proximally from said distal face and a conic proximal surface extending from said cylindrical surface to said stem.

5,253,677

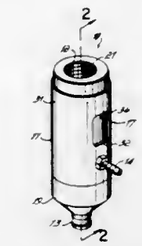
CHEMICAL EDUCTOR WITH INTEGRAL ELONGATED AIR GAP

William F. Sand, Cincinnati, Ohio, assignor to Hydro Systems Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 732,469, Jul. 18, 1991, Pat. No. 5,159,958. This application Aug. 24, 1992, Ser. No. 934,709

Int. Cl.[5] F16K *1/00*

U.S. Cl. 137—888 **6 Claims**



1. A chemical eductor with integral air gap comprising a water inlet and a first nozzle;
an elongated air gap chamber between said first nozzle and a second venturi nozzle downstream of said first nozzle said air gap chamber having an outer wall and at least one window, a barrier spaced from said outer wall blocking each of said windows, said barrier having one or more openings offset from each of said windows in said outer wall;
a venturi diffuser tube downstream of said second venturi nozzle;
a chemical inlet into an area between said second venturi nozzle and said venturi diffuser;
an overspray chamber above said second venturi nozzle communicating with a collection chamber downstream of said second nozzle passage means extending from inside the outer wall of said air gap chamber to said collection chamber.

5,253,678

LONG TUBE HAVING A SMALL DIAMETER

Munekatsu Furugen, Amagasaki, Japan, assignor to Sumitomo Metal Industries, Ltd., Osaka, Japan

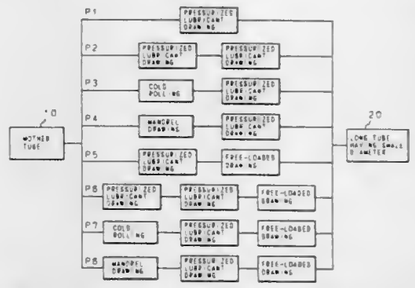
Continuation of Ser. No. 760,124, Sep. 16, 1991, abandoned, which is a division of Ser. No. 714,998, Jun. 14, 1991, Pat. No. 5,076,084, which is a continuation of Ser. No. 497,662, Mar. 23, 1990, abandoned. This application Nov. 19, 1992, Ser. No. 979,405

Claims priority, application Japan, Mar. 27, 1989, 1-75620; Jul. 10, 1989, 1-178690

Int. Cl.[5] F15D *1/00*

U.S. Cl. 138—39 **18 Claims**

1. A long tube having a small diameter for use in a heat exchanger of a steam generator in a thermoelectric power plant or a nuclear power plant, being manufactured by a method,
in which a mother tube is placed in a vessel filled with pressurized lubricant oil and subjected to one step of plug drawing using the pressurized lubricating oil at a constant pressure in the vessel of 500 kgf/cm^2 or more to provide a reduction in wall-thickness of the mother tube, the tube having an internal surface roughness in the as-drawn condition of no greater than 3.8 μm and the tube exhibiting a S/N ratio of at least 13 during internal eddy-current defect detection where S is an output in volts of a signal responding to a standard defect and N is an output in volts of a signal responding to dimensional fluctuation in the tube's internal diameter.



5,253,679

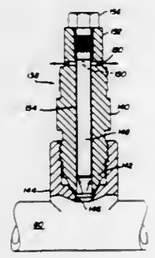
VALVE ASSEMBLY FOR HIGH PRESSURE WATER SHUT-OFF GUN

Amos Pacht, Houston, Tex., assignor to Butterworth Jetting Systems, Inc., Houston, Tex.

Division of Ser. No. 825,469, Jan. 24, 1992, Pat. No. 5,224,686, which is a continuation-in-part of Ser. No. 579,804, Sep. 7, 1990, abandoned, which is a continuation-in-part of Ser. No. 467,257, Jan. 19, 1990, abandoned. This application Apr. 2, 1993, Ser. No. 42,164

Int. Cl.[5] F15D *1/02*

U.S. Cl. 138—40 **12 Claims**



1. Safety bleeder valve for continuously relieving pressure from a high pressure water line, in operable combination comprising:
a body having a connection for a high pressure water line fitting, the connection leading to an internal bore in the body for receiving a closely toleranced core, the body including at least one bleeder opening spaced apart from the fitting connection and leading from the bore to the outside of the body;
a removable core member positionable in the bore, the core member being closely toleranced to fit the bore snugly, leaving only a fine gap between the core member and the bore wall to allow controlled bleeding of high pressure water when the body is connected to a high pressure water line; and
means for positioning the core member in the bore whereby high pressure water can continue to pass between the core member and the wall of the bore along the gap and out the

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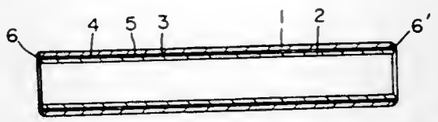
bleeder opening to safely relieve high pressure without prematurely closing when a connected line is bled to a lower pressure.

5,253,680

DUPLEX METAL PIPE FOR DAMPING

Takeshi Matsumoto, Numazu, Japan, assignor to Usui Kikusai Sangyo Kaisha Ltd., Japan

Continuation of Ser. No. 453,590, Dec. 20, 1989, abandoned.
This application Apr. 18, 1991, Ser. No. 687,210
Claims priority, application Japan, Dec. 29, 1988, 63-335627
Int. Cl.[5] F16L *9/14*
U.S. Cl. 138—148 6 Claims



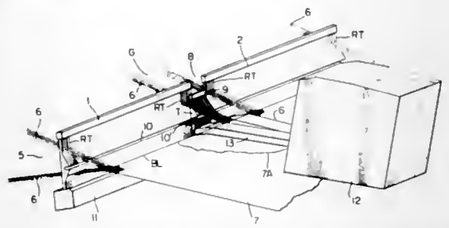
1. A duplex metal pipe for damping comprising an inner pipe having opposed ends and a cylindrical outer surface and an outer pipe having opposed ends and a substantially cylindrical inner surface, said inner pipe being secured concentrically within the outer pipe by connections at the respective opposed ends such that a substantially uniform annular clearance of 10 μm to 150 μm is provided between the inner surface of the outer pipe and the outer surface of said inner pipe extending between the connections of said outer pipe to said inner pipe.

5,253,681

REED FOR FORMING A GAP IN THE FABRIC PRODUCED ON AN AIR WEAVING LOOM

Gottfried Cramer, and Gerhard Hofmaier, both of Lindau, Fed. Rep. of Germany, assignors to Lindauer Dornier Gesellschaft mbH, Lindau, Fed. Rep. of Germany

Filed Sep. 17, 1992, Ser. No. 946,739
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1991, 4131167
Int. Cl.[5] D03D *49/62*
U.S. Cl. 139—192 3 Claims



1. A combination comprising a weaving reed and reed filler member for forming a gap in a fabric produced on an air loom, said reed comprising a plurality of reed sections spaced from each other in a longitudinal reed direction cross-wise to a fabric feed advance direction, a breach between two neighboring reed sections for forming said fabric gap, said reed filler member being sized for fitting into said breach when said reed is in a shed open back position, and means for mounting said reed filler member in a stationary position wherein said reed filler member is in alignment with said reed sections when said reed sections are in said shed open back position, whereby said reed filler member remains constantly in said stationary position.

5,253,682

FREE PISTON GAS DELIVERY APPARATUS AND METHOD

Carl E. Haskett, 15484 Wilana Dr., Tyler, Tex. 75713, and John M. Cobb, 3400 Varsity Dr. Apt. 1916, Tyler, Tex. 75701

Filed Dec. 13, 1991, Ser. No. 807,146
Int. Cl.[5] B65B *1/04, 3/04*
U.S. Cl. 141—3 17 Claims

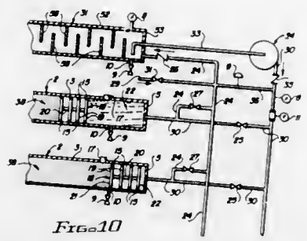


FIG. 10

1. A free piston gas delivery apparatus for mounting on a delivery vehicle having a reference plane parallel to a horizontal reference plane when said vehicle is disposed horizontally, comprising at least one cylinder adapted for mounting on the delivery vehicle in longitudinally tilted relationship with respect to the vehicle reference plane; a free piston slidably disposed in said cylinder for dividing said cylinder into a gas chamber for receiving compressed natural gas and a non-gaseous working fluid chamber for receiving non-gaseous working fluid, said gas chamber being disposed higher than said non-gaseous working fluid chamber; gas conduit means communicating with said gas chamber of said cylinder and gas conduit valve means provided in said gas conduit means for selectively transferring compressed natural gas to and from said gas chamber of said cylinder; at least one non-gaseous working fluid reservoir mounted on said delivery vehicle for containing a supply of non-gaseous working fluid; non-gaseous working fluid conduit means communicating with the interior of said non-gaseous working fluid reservoir and the interior of said non-gaseous working fluid chamber of said cylinder for transferring non-gaseous working fluid therebetween; pump means provided in said non-gaseous working fluid conduit means for pumping non-gaseous working fluid from said non-gaseous working fluid reservoir through said non-gaseous working fluid conduit means to said non-gaseous working fluid chamber of said cylinder, thereby displacing said piston toward said gas chamber to transfer said gas from said gas chamber through said gas conduit means; and non-gaseous working fluid conduit valve means provided in said non-gaseous working fluid conduit means for selectively controlling said pumping and sequentially displacing of said piston to transfer gas from said gas chamber through said gas conduit means and for returning the non-gaseous working fluid from said non-gaseous working fluid chamber to said non-gaseous working fluid reservoir in response to slidable displacement of said free piston in said cylinder toward said non-gaseous working fluid chamber.

5,253,683

METHOD AND APPARATUS FOR DISPENSING DESICCANT MATERIALS INTO WINDOW SPACER FRAMES

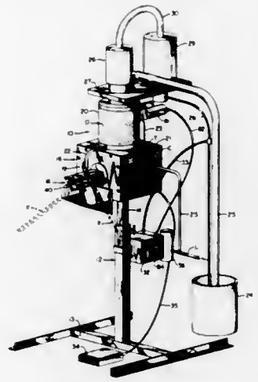
Dennis J. Ekren, and Kenneth C. Seaton, both of Denver, Colo., assignors to Tools for Bending, Inc., Denver, Colo.

Continuation of Ser. No. 425,006, Oct. 23, 1989, abandoned.
This application Nov. 20, 1991, Ser. No. 801,611
Int. Cl.[5] B23P *23/00*
U.S. Cl. 141—67 6 Claims

1. In apparatus for depositing a desiccant material in particle form into two adjacent sides of a rectangular spacer frame member in which said two adjacent sides have adjacent open end portions, the improvement comprising:

a normally sealed chamber containing a desiccant material therein;

a fill head including a single discharge port in communication with the interior of said chamber and means on said fill head for releasably clamping said adjacent sides of said frame member to position both of the open ends thereof in alignment with said single discharge port;



means for pressurizing said chamber whereby to force said desiccant material through said discharge port into said adjacent sides of said frame material;

said fill head having opposed, downwardly inclined surfaces extending away from said discharge port; and

means mounting said fill head for rotation about an axis through said fill head and between said downwardly inclined surfaces to vary the angle of inclination of said downwardly inclined surfaces.

5,253,684

DRAIN CLEANER DISPENSER

Arthur Sternheimer, Spring Valley, N.Y., and Anthony Delia, W. Redding, Conn., assignors to Block Drug Company, Inc., Jersey City, N.J.

Filed Apr. 8, 1991, Ser. No. 681,953
Int. Cl.[5] B67D *5/00*
U.S. Cl. 141—329 7 Claims



1. A dispensing system, comprising:

(A) a container of material to be dispensed, the container having a side wall and a lower end wall, the lower end wall having a periphery which is frangibly connected to the side wall; and

(B) a dispenser, including:

(a) a sleeve for slidably receiving the container, the sleeve having a central axis;

(b) conveying means for conveying the material from the container to a desired location by gravity; and

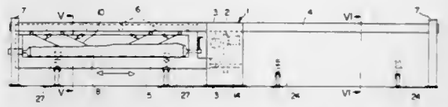
(c) a pin for opening the container by separating the lower end wall from the side wall along substantially the entire periphery of the end wall, the pin extending upwardly within the sleeve and having a point for piercing the lower end wall and a ledge for pushing upwardly on the lower end wall, the separated lower end wall being retained by the pin after separation from the side wall along substantially its entire periphery and the material being conveyed from the container around the separated lower end wall.

5,253,685

CLAMPING AND FEEDING DEVICE FOR THE MACHINING OF BOLES

Johann Wolf, Muhldorf 86, A-4644 Scharnstein (Oberosterreich), Austria

Filed Apr. 10, 1992, Ser. No. 867,055
Claims priority, application Austria, Apr. 24, 1991, 856/91
Int. Cl.[5] B27B *31/00*
U.S. Cl. 144—242 R 10 Claims



1. Clamping and feeding device for the machining of boles by machining tools, said device being guided in reciprocating fashion on a machining station and comprising: a lower support for a bole and hold-downs being arranged at an upper, roller-guided part for guidance along a profiled rail of a supporting frame, a carrier slide (5 having a lower frame section (12), which provides said lower support for the bole (8), and an upper frame section (9) that carries said hold-downs (10) for the bole (8), said upper frame section further carrying rollers (6) for the suspended guidance of the carrier slide (5) on said profiled rail.

5,253,686

PROCESS AND DEVICE FOR SEPARATING OR SLITTING A RIGID MATERIAL

Hans Dietz, Ammerbuch, Fed. Rep. of Germany, assignor to Wurster u. Dietz GmbH u. Co. Maschinenfabrik, Tubingen-Derendingen, Fed. Rep. of Germany

Filed Jun. 15, 1992, Ser. No. 898,504
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1991, 4120096; Jun. 26, 1991, 4121021
Int. Cl.[5] B27G *19/08;* B26D *7/08*
U.S. Cl. 144—363 20 Claims

1. A method of cutting wood, comprising the steps of:

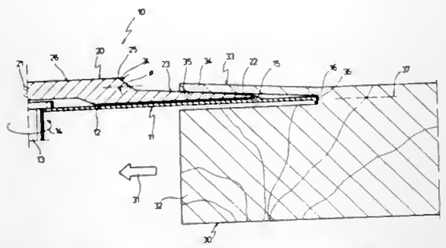
selecting an elongate piece of wood having a modules of elasticity between 50,000 and 400,000 kg/cm^2;

cutting an elongate slot into said piece of wood using a circular saw blade having a plurality of spaced peripheral cutting teeth at a cutting speed exceeding 40 m/s, thereby dividing said piece of wood into a first and a second section; and

bending said first section away from said slot by means of a wedge-like stationary separator element to lift off said first section from said saw blade immediately after the formation of said slot, wherein, when said piece of wood comes into contact with said saw blade, a top of said cut first

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section is first bent by means of a stationary raised rim adjacent said teeth about a first angle (α) away from said slot and, thereafter, by means of a stationary inclined separator element section about a second angle (δ) greater



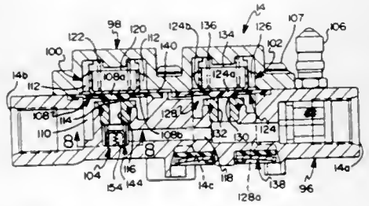
than said first angle (α), such that, after transition from said first angle (α) to said second angle (δ) said first section is entirely arranged at a distance from a first outer portion of said separator element arranged between said raised rim and said inclined separator element section.

5,253,687

VEHICLE CENTRAL TIRE INFLATION SYSTEM

James A. Beverly, Kalamazoo; Alan R. Freigang, Portage, and Gary R. Schultz, Kalamazoo, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Sep. 3, 1991, Ser. No. 753,562
Int. Cl.[5] B60C *23/00*
U.S. Cl. 152—416 **6 Claims**



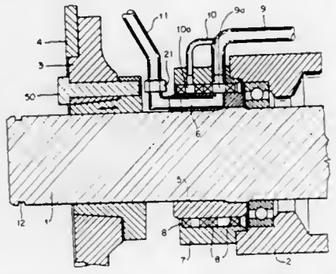
1. A system for monitoring and controlling air pressure in a tire of a vehicle; the system comprising:
an air control circuit including a pressure source and a vacuum source respectively for providing positive and negative pressures relative to an ambient air pressure, pressure and vacuum control valves each selectively movable from a closed position to an open position for respectively connecting a conduit means with the pressure source and the vacuum source;
at least one wheel assembly rotatably mounted on an axle assembly and a tire chamber defined by a tire mounted on the wheel assembly;
a rotary seal assembly for communicating the positive and negative air pressures from a non-rotatable port thereof connected to the conduit means to a rotatable port thereof;
a wheel valve assembly affixed for rotation with each wheel assembly, the wheel assembly comprising:
a housing including inlet, outlet and exhaust ports;
a first valve device in the housing including first valving means movable between open and closed positions respectively for allowing and preventing air communication between the inlet and outlet ports, first spring means for biasing the first valving means to the closed position, and first surface means responsive to positive air pressure in the inlet port for moving the first valving means to the open position;
a second valve device in the housing including second valving means movable between open and closed position respectively for allowing and preventing air communication between the outlet and exhaust ports, second spring means for biasing the second valving means to the closed position, and second surface means responsive to negative air pressure in the inlet port for moving the second valving means to the open position; and
a third valve device in the housing disposed in series between the first valve device and the outlet port, the third valve device including third valving means movable between first and second positions during the open position of the first valving means, the third valving means movable to the first position for allowing substantially unrestricted air flow from the inlet port to the outlet port in response to air flow from the inlet port to the outlet port, and the third valving means movable to the second position for allowing only restricted flow of air from the outlet port to the inlet port in response to air flow from the outlet port to the inlet port.

5,253,688

TIRE PRESSURE CONTROL SYSTEM

Martin Tigges, Schlehenweg 30, D-4040 Neuss, Fed. Rep. of Germany

Filed Sep. 12, 1991, Ser. No. 758,614
Int. Cl.[5] B60C *23/00*
U.S. Cl. 152—417 **2 Claims**



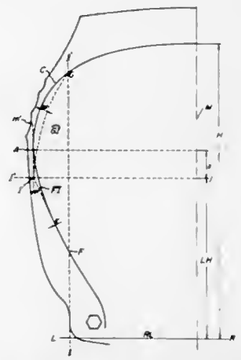
1. Tire pressure control unit for motor vehicles, particularly for tractors, in combination with a wheel with a tire, wherein the wheel is displaceable on a drive axle in an axial direction for adjusting to different track widths, comprising:
a revolving drive axle on which said wheel is rotatably mounted;
displacement means for having the wheel be displaceable on said drive axle in an axial direction;
means for providing a pressure medium;
flexible means for passing said pressure medium to the tire of the wheel, and said wheel having an axis;
flexible control means for controlling said means for passing said pressure medium to the wheel;
a stationary horn in which said axle is accommodated;
said pressure medium passing through an intermediary line, said intermediary line passing through a rotary air transmission means, and said rotary transmission means being placed externally of the wheel, and comprising an inner annular member coaxially disposed within an outer annular member, said annular members coaxially disposed relative to the wheel axis, wherein said inner annular member is secured to the axle, and said outer annular member is secured to the horn;
a radially sealed first circumferential annular chamber formed between the inner and outer annular members, said means for providing the pressure medium being fitted in said first annular chamber; and
a second circumferential annular chamber which is axially sealed from the first annular chamber and serves to transmit a control medium through a control line which is fitted in said second annular chamber, the first and second annular chambers being provided in said inner annular member;
said flexible means for passing said pressure medium connecting said first annular chamber to said wheel;
said flexible control means connecting said second annular chamber to the wheel;
wherein said flexible means for passing said pressure medium to the wheel comprises a flexible conduit connected to a valve on the wheel;
wherein said flexible control means for controlling said means for passing said pressure medium comprises a flexible control conduit which transmits said control medium to said valve on the wheel either to open the valve thereby permitting the pressure medium to flow controllably into the tire or to close the valve thereby shutting off the flow of the pressure medium into the tire;
a connection on the tire through which the pressure medium is fed into the tire or discharged from the tire; and
a flexible conduit connecting said valve on the wheel to said connection on the tire; and
whereby the wheel is displaceable on the drive axle in an axial direction for adjusting to different track widths with the tire pressure control unit connected thereto.

5,253,689

HEAVY DUTY RADIAL TIRE CARCASS PROFILE

Kiyoshi Sato; Kuninobu Kadota, both of Kodaira; Tatsuro Shimada, Musashimurayama, and Hiroyuki Koseki, Kodaira, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Continuation of Ser. No. 595,726, Oct. 3, 1990, abandoned, which is a continuation of Ser. No. 433,942, Nov. 9, 1989, abandoned, which is a continuation of Ser. No. 118,127, Nov. 9, 1987, Pat. No. 4,915,151. This application Jun. 19, 1991, Ser. No. 715,892
Claims priority, application Japan, Dec. 25, 1986, 61-308054
Int. Cl.[5] B60C *3/00*
U.S. Cl. 152—454 **2 Claims**



1. In a heavy duty radial tire including at least one radial carcass extending from one bead portion to the other bead portion and using inextensible cords and a belt arranged outwardly of the radial carcass for reinforcing a tread of the tire, the improvement comprising; an outer profile of the tire in radial cross-sections mounted on an approved rim, said rim having a width which is not wider than that of a design rim and under no load condition during filling of said tire inner pressure from 5% to 100% of a normal inner pressure, said outer profile of the tire comprising a first profile portion expanding during filling radially outwardly in a tread zone from one end of said tread through a crown center to the other end of said tread, the ends of said tread also expanding outwardly, a second profile portion depressing axially inwardly of the tire at least in a part of a radially outer zone of a sidewall from said one end of said tread to a tire maximum width position when said tire is filled with the normal inner pressure, and a third profile portion expanding during filling axially outwardly of the tire in a radially inner zone of said sidewall from said tire maximum width position to a parting point of the sidewall from the rim flange when said tire is filled with the normal inner pressure thereby properly distributing strains occurring in the tire when inflated to a normal inner pressure, said tire mounted on a rim having a bead seat engaging said bead portions of said tire, said bead seat being inclined at a degree of 5° relative to a rotating axis of the tire, wherein a carcass profile in the radial cross-sections of the tire mounted on the approved rim and filled with an inner pressure 5% of the normal inner pressure and under no load condition is a composite curve smoothly passing through points F, A and G, where the point A is a point of contact of a carcass line C of the carcass profile with a tangent mm' in a radial direction to the carcass line at a carcass line maximum width position and the points F and G are intersections of the carcass line C and a perpendicular ll' to a bead base line RL, said perpendicular ll' spaced apart axially outwardly from an equatorial plane M of the tire by a distance of 0.5 times a rim width corresponding to a distance between flanges of the rim, and said carcass profile fulfills three relations in millimeters, a first relation $0<240/H\times v<3.5$, where v is a maximum distance of the carcass line C spaced outwardly of a segment of line $\overline{FI}$ connecting the points F and I, where the point I is an intersection of the tangent mm' and a straight line jj' which is in parallel with a rotating axis of the tire and spaced from the bead base line RL by a distance LH of 0.55 times H, where H is a maximum height of the carcass line C from the bead base line RL, a second relation $4.0<240/H\times w<9.5$, whereby w is a maximum distance of the carcass line C spaced outwardly of an arc $\overset{\frown}{GI}$ passing through the point G contacting and tangent to the tangent mm' at the point I, and a third relation $15<240/H\times x<35$, where x is a distance between the points A and I.

5,253,690

HIGH SPEED HEAVY DUTY TIRE INCLUDING BEAD PART WITH SIDE PACKING RUBBER

Kiyoshi Ueyoko, Osaka; Mikio Takatsu, Takarazuka, and Hiroshi Hoshino, Kobe, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan

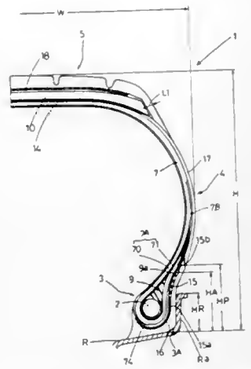
Continuation-in-part of Ser. No. 632,006, Dec. 21, 1990, Pat. No. 5,160,384. This application Dec. 10, 1991, Ser. No. 804,998
Claims priority, application Japan, Dec. 28, 1989, 1-344638; Dec. 10, 1990, 2-410004
The portion of the term of this patent subsequent to Nov. 3, 2009, has been disclaimed.
Int. Cl.[5] B60C *13/00, 15/00, 15/06*
U.S. Cl. 152—525 **2 Claims**

1. A high speed heavy duty tire and rim assembly comprising
a rim, said rim having a flange with a radially outermost edge; and
a tire, said tire including:
a pair of bead portions, each of said bead portions having a bead core disposed therein,
a pair of sidewall portions,
a radial carcass extending between said pair of bead portions and turned up around the bead cores to form two turned up portions and one main portion therebetween,
a belt disposed radially outside of the carcass,
a tapered bead apex disposed between the main portion and each turned up portion of the carcass and extending radially outward from each of the bead cores,
a tread, the tread having a pair of tread edges, and
a sidewall disposed axially outside of the carcass in each of said sidewall portions and extending from the bead base of said bead portion to one of said pair of tread edges,
the sidewall including a lower sidewall and an upper side-

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wall, the lower sidewall extending radially outwardly from the bead base over a height corresponding to said radially outermost edge of said flange, the upper sidewall extending radially outwardly from the radially outer edge of the lower sidewall,

each of said bead portions being provided with a reinforcement filler, said filler extending from radially beneath the bead core and terminating in an upper end axially outward of the bead core, and a side packing rubber of small thickness, said side packing rubber extending radially outwardly from the upper end between the carcass and the lower sidewall,



the side packing rubber having a 100% modulus MP of 53 to 95 kg/sq.cm,

the bead apex made of rubber having a 100% modulus MA of 78 to 120 kg/sq.cm,

the lower sidewall made of rubber having a 100% modulus MC of 40 to 70 kg/sq.cm,

the upper sidewall made of rubber having a 100% modulus MS of 10 to 45 kgf/sq.cm, and

these 100% modulus values MP, MA, MC and MS being in the relation of MS<MC<MP<MA.

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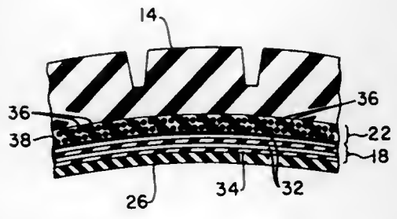
TIRE HAVING SPECIFIED BELT RUBBER COMPOSITION

Richard M. Scriver, Madison, Conn., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 13, 1992, Ser. No. 819,915

Int. Cl.[5] B60C *1/00*

U.S. Cl. 152—537 **5 Claims**



1. A tire comprising two substantially inextensible circumferential beads, an outer circumferential tread, two sidewalls extending radially from and connecting said tread to said beads, and a plurality of load-bearing fabric reinforced components including a toroidal shaped fabric reinforced rubber carcass and a circumferential fabric reinforced rubber belt positioned between said tread and said carcass, wherein said belt comprises a fabric embedded in a reinforced and vulcanized rubber composition and wherein the fabric of said belt comprises a plurality of cords of substantially inextensible high modulus material, said fabric of said belt being woven and flexible and having a width at least about 10 times as great as its thickness, and wherein the rubber of said belt is a sulfur cured blend comprising (A) about 5 to about 30 parts of a graft copolymer of a lower alkyl acrylate or lower alkyl methacrylate and natural rubber, said graft copolymer comprising about 40 to about 60 parts by weight of said lower alkyl acrylate or methacrylate, balance said natural rubber, and (B) about 70 to about 95 parts by weight of an additional diene rubber or mixture thereof, per 100 parts of rubber, the rubber of said belt having an overall alkyl acrylate or alkyl methacrylate content from about 2 to about 10 parts by weight per 100 parts of said rubber of said belt, the vulcanized rubber composition of said belt having an elongation at break of at least 200%.

5,253,692

BEAD PORTION OF A TIRE

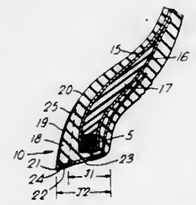
Paul Stephens, Halesowen, and Thomas Holmes, Coldfield, both of England, assignors to Sumitomo Rubber Industries, Limited, Hyogo, Japan

Division of Ser. No. 630,192, Dec. 19, 1990, abandoned. This application Apr. 15, 1991, Ser. No. 685,282

Claims priority, application United Kingdom, Dec. 21, 1989, 8928942; Sep. 21, 1990, 9020590

Int. Cl.[5] B60C *15/024, 15/06*

U.S. Cl. 152—543 **8 Claims**



1. A tire comprising in at least one main bead region a circumferentially extending inextensible bead hoop and an additional retention zone positioned axially inward of and integral with the main bead region, the additional retention zone having an axially inner tip or toe substantially axially inward of the main bead region, the construction of the bead between the bead hoop and the tip being such as to provide substantial form stiffness to withstand compression forces between the hoop and tip and the tip of the tire being formed by an elastomeric material having a compression set property at 70° Centigrade of greater than 50% such that when the tire is fitted to a wheel rim having sharp teeth in the region contacted by the tip, the material of the tip engages the teeth.

5,253,693

HOLD AND RELEASE MECHANISM FOR A FIRE DOOR SPRING TENSION ADJUSTING WHEEL

Wayne G. Marlatt, North Brunswick, and Wojciech K. Cader, Edison, both of N.J., assignors to Atlas Roll-Lite Door Corp., Edison, N.J.

Filed Sep. 29, 1992, Ser. No. 953,482

Int. Cl.[5] E05F *15/20*

U.S. Cl. 160—7 **13 Claims**

1. In combination with a door coupled to adjustable spring means for providing releasable mechanical energy to assist in closing the door, the spring means having an adjusting wheel supported for rotation on a plate, the adjusting wheel being rotatable in a first direction to increase the tension of the spring means and being formed along its periphery with at least one notch, an arrangement for allowing rotation of said adjusting wheel in said first direction and for selectively preventing

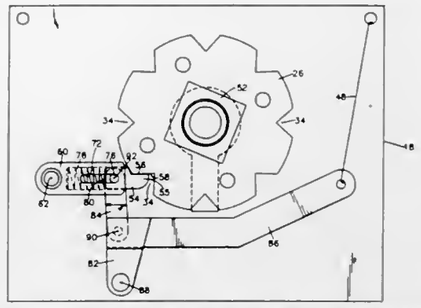
rotation of said adjusting wheel in a second direction opposite to said first direction, the arrangement comprising:

an interference finger having at a first end a first surface for engagement with the side of said at least one notch which trails when said adjusting wheel rotates in said second direction;

means for holding said finger;

means for mounting said holding means to said plate for pivoting movement about a pivot point;

said holding means including means for allowing said finger to partake of reciprocatory motion along a linear path toward and away from said pivot point and means for



yieldably biasing said finger along said linear path away from said pivot point;

support means for releasably supporting said holding means so that said finger extends into said at least one notch and engages said side of said at least one notch to prevent said adjusting wheel from rotating in said second direction; and

release means effective for allowing said support means to release said holding means so that said holding means can pivot about said pivot point and move said finger out of engagement with said side of said at least one notch to allow said adjusting wheel to rotate in said second direction.

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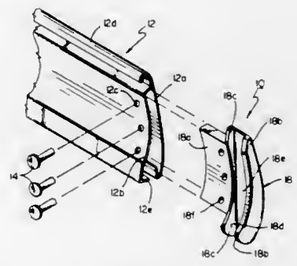
ROLLING SHUTTER SLAT END RETAINER

Richard G. Bernardo, 2350 NE. 29th St., Lighthouse Point, Fla. 33064

Filed Nov. 27, 1991, Ser. No. 800,622

Int. Cl.[5] E06B *9/07*

U.S. Cl. 160—133 **6 Claims**



1. A rolling shutter having hollow slats said slats having first and second inside walls and said slats having C-shaped end guide tracks for guiding said slats during movement, said shutter being capable of being rolled up for storage, said shutter including:

a plurality of slat and retains, each secured to a slat end for interaction with a guide track, each of said slat end retains including a rigid body having a first segment sized and contoured to fit snugly inside one end of a hollow slat for a distance at least sufficient for attaching said rigid body to one end of a slat;

said body having a second segment including a web extending away from said first body segment, said body having a proximal end and a distal end relative to a slat, a web extending away from said first body segment toward said distal end;

a pair of flanges connected to said web and extending above said web at said distal end of said rigid body away from said first segment; said pair of flanges connected to said web and spaced apart forming a channel for engagement with said C-shaped guide track; and

said guide track means including a pair of rigid coplanar fins separated by an opening, said fin opening being smaller than said distal end flanges, said web passing through said fin opening whereby said distal end flange is movably keyed to said guide track, thereby securing said slat at each end whereby the wind loading on each slat is enhanced such that said wind load cannot remove said slat end retainers from said guide track.

5,253,695

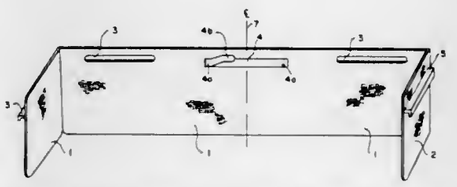
VEHICLE VISOR SUPPORTED INTERIOR CURTAIN

Frank S. Nenstiel, P.O. Box 91222, Long Beach, Calif. 90809-1222

Continuation-in-part of Ser. No. 765,666, Sep. 26, 1991, abandoned. This application Oct. 19, 1992, Ser. No. 961,493

Int. Cl.[5] B60J *3/00*

U.S. Cl. 160—370.2 R **2 Claims**



1. A light blocking interior curtain for a vehicle windshield and side door windows comprising:

a light blocking flexible curtain material having a top portion, a bottom portion, and two end portions;

two horizontally aligned slits defining a perimeter and being disposed in said curtain material below said top portion and positioned an equal distance about a vertical centerline thereof, said horizontally aligned slits receiving sun visors associated with said vehicle windshield for supporting said curtain material;

each of said end portions having disposed thereon on an outside facing surface thereof an elongated L-shaped channel member, said L-shaped channel members receiving an upper edge portion of said side door windows for supporting said curtain material;

tension adjusting means comprising a first strip of touch fastener material secured horizontally on an inside facing surface thereof of said curtain material and spanning across said vertical centerline, and a second strip of touch fastener material secured to an end thereof of said first strip thereby forming a pull tab.

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5,253,696

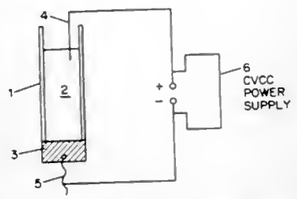
METHOD AND APPARATUS FOR CONTROLLING SOLIDIFICATION OF METALS AND OTHER MATERIALS

Asoka K. Misra, 159 E. 30 St. Apt. #14A, New York, N.Y. 10016

Continuation-in-part of Ser. No. 865,109, Apr. 8, 1992, abandoned, and a continuation-in-part of Ser. No. 876,760, May 1, 1992. This application Jun. 18, 1992, Ser. No. 900,561

Int. Cl.[5] B22D *27/02*

U.S. Cl. 164—48 19 Claims



1. A method for solidification of a molten material comprising the steps of:
   (a) placing molten material in contact with a first electrode formed from a conductive material and a second electrode formed from a semiconductive metal oxide, and
   (b) passing an electric current between the first and second electrodes while the molten material is cooling at a current density of from 10 to 500 mA/cm^2.

10. An apparatus for solidification of molten materials comprising:
   (a) a first electrode formed from a conductive material;
   (b) a second electrode formed from a semiconductive metal oxide;
   (c) means for connecting said first and second electrodes to a power supply; and
   (d) a wall member which in combination with either the first electrode or the second electrode forms a mold which imparts a shape to the solidifying material.

5,253,697

MANUFACTURE OF ARTICLES CONSISTING OF A COMPOSITE MATERIAL

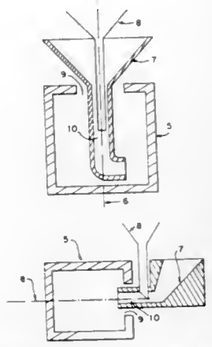
Luc LaJoye, Montigny-les-Metz, and Laurent LaJoye, Metz, both of France, assignors to Les Bronzes d'Industrie, societe anonyme, Amneville, France

Continuation of Ser. No. 465,363, Jan. 16, 1990, abandoned. This application Aug. 27, 1991, Ser. No. 754,252

Claims priority, application France, Jan. 16, 1989, 89 00447

Int. Cl.[5] B22D *13/02, 19/02*

U.S. Cl. 164—97 8 Claims



1. An apparatus for molding composite materials from a metallic or organic matrix and at least one reinforcing element, comprising:
   a mold having an axis of rotation;
   means for rotating said mold about said axis of rotation;
   first means for feeding a liquid matrix material into said mold, said first feeding means having a tube with an exit end opening into the mold; and
   second means for feeding reinforcing elements into said mold, said second feeding means opening within the tube of said first feeding means, whereby the reinforcing elements generate turbulence in the liquid matrix material such that the reinforcing elements and the liquid materials are mixed immediately prior to exiting the exit end of the tube.

5,253,698

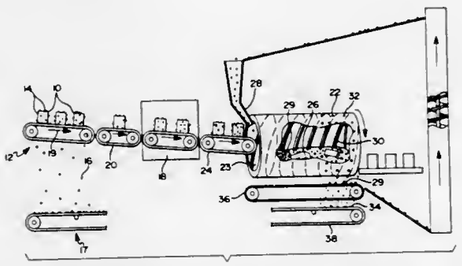
COMBINATION SAND CLEANING AND HEAT TREATING APPARATUS FOR SAND CASTED METALLIC PARTS AND METHOD

John R. Keough; William R. Keough, both of Birmingham, and Bela V. Kovacs, Bloomfield Hills, all of Mich., assignors to Applied Process, Livonia, Mich.

Continuation-in-part of Ser. No. 769,581, Oct. 2, 1991, abandoned, which is a continuation of Ser. No. 469,089, Jan. 23, 1990, abandoned. This application Feb. 26, 1992, Ser. No. 841,418

Int. Cl.[5] B22D *29/00, 30/00*

U.S. Cl. 164—269 36 Claims



1. An apparatus for simultaneously heat treating and cleaning sand from hot, demolded sandcast metal parts having residual sand adhering thereto, comprising:
   a booster furnace adapted to heat hot demolded sand-cast metal parts to an appropriate heat treatment temperature;
   a flow-through agitation container which receives the metal parts from the booster furnace;
   means for transporting the metal parts from the booster furnace to the agitation container;
   a flowing, non-melting, non-reactive agitation media partly filling the agitation container; and
   means for agitating the agitation media around and in contact with the metal parts;
   the agitation media being smaller in size than the metal parts and of a size and composition simultaneously adequate to clean the residual adhering sand from the metal parts by impact, and to quench the metal parts by removing heat from the metal parts by contact.

5,253,699

PROCESS FOR IMPROVING THE SURFACE CONDITION AND THICKNESS REGULARITY OF A CAST METAL STRIP

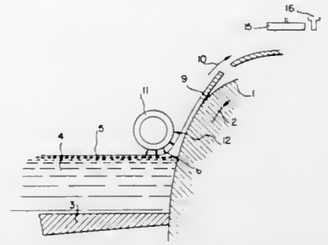
Philippe Solignac, Saint Egrève, and André Combry, Grenoble, both of France, assignors to Pechiney Recherche, Courbevoie, France

Filed Jul. 15, 1992, Ser. No. 913,211

Claims priority, application France, Jul. 31, 1991, 91 09976

Int. Cl.[5] B22D *11/06*

U.S. Cl. 164—463 14 Claims



1. Process for improving the surface condition and thickness regularity of a thin metal strip of known width cast on a rotating wheel by injection of molten metal having free surface forming a meniscus in contact with the wheel, comprising:
   detecting undulations or variations in thickness of the strip of at least 10 μm,
   forming a gas cushion above the free surface by means of a porous body disposed facing the free surface, and
   adjusting pressure of the gas cushion, the location of the porous body, or both the pressure and location to control the variations or undulations.

14. Apparatus for casting a thin strip of metal comprising:
   a wheel in combination with a means for rotation thereof;
   an injector for injecting molten metal onto said wheel the molten metal having a free surface forming a meniscus in contact with said wheel;
   means for determining undulations or variations in thickness of the strip of at least 10 μm;
   a porous body disposed facing the free surface and connected to a source of gas for producing a gas cushion above the free surface, and
   means for adjusting the gas cushion comprising means for adjusting gas pressure, means for adjusting the position of the porous body, or both means for adjusting pressure and position.

5,253,700

CLIMATE CONTROL SYSTEM FOR REFRIGERATED TRACTOR-TRAILERS

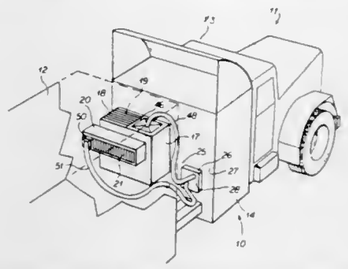
George M. Early, Jr., 108 Laurie Dr., Ormond Beach, Fla. 32176

Filed Feb. 22, 1993, Ser. No. 20,351

Int. Cl.[5] B60H *3/00*

U.S. Cl. 165—42 12 Claims

1. A climate control system for the cabin of a tractor coupled to a trailer that has a refrigeration system which may supply cooled air to the trailer through an outlet duct in fluid communication with the interior of the trailer and which may expel air used to ventilate the refrigeration system, being thereby warmed, to ambience through a ventilation exhaust duct, and with the climate control system comprising first conduit means for conducting warmed ventilation air from the trailer refrigeration system ventilation duct to the cabin; second conduit means for conducting cooled air from the trailer refrigeration system outlet duct to the cabin; and control means for selectively controlling the flow of air through said first and second conduit means, whereby the climate within the cabin may be controlled through the selective conveyance of either cooled



air or warmed air from the refrigeration system of the trailer to the cabin.

5,253,701

EVAPORATION HEAT EXCHANGER APPARATUS FOR REMOVING HEAT

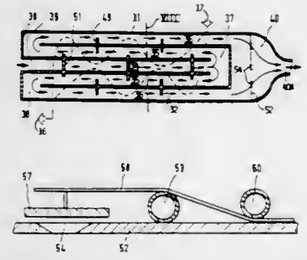
Bernhard Leidinger, Weyhe-Leeste, Fed. Rep. of Germany, assignor to ERNO Raumfahrttechnik GmbH, Bremen, Fed. Rep. of Germany

Filed Sep. 4, 1992, Ser. No. 940,471

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1991, 4130693

Int. Cl.[5] G05D *23/12*

U.S. Cl. 165—39 6 Claims



1. An evaporation heat exchanger for removing heat generated in a spacecraft under zero gravity operating conditions and under accelerations, comprising a processing chamber (2, 32), a plurality of tubes arranged in a bundle, first inlet means for introducing an evaporant into said tubes, first outlet means for discharging vapor from said tubes, second inlet means for flowing a coolant to be cooled into heat exchange contact with outer surfaces of said tubes, second outlet means for returning cooled coolant into an active cooling circuit, baffle means for influencing a flow direction of said coolant in said processing chamber, temperature sensing means arranged for sensing the temperature of said coolant approximately where it enters said processing chamber (2, 32) through said second inlet means to provide a coolant temperature responsive control, and means for controlling a cross-sectional flow area of said first outlet means for discharging vapor in response to said temperature responsive control.

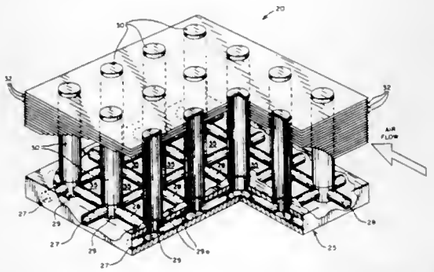
VOL 1155 ISS 3 OCT 19 1993 UMI

5,253,702

INTEGRAL HEAT PIPE, HEAT EXCHANGER, AND CLAMPING PLATE

Howard L. Davidson, San Carlos, and Ehsan Ettehadieh, Albany, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jan. 14, 1992, Ser. No. 820,566
Int. Cl.[5] F28D *15/02*; H01L *23/427*
U.S. Cl. 165—80.4 17 Claims



1. An integral heat pipe, heat exchanger, and clamping assembly comprising:

an evaporator comprising a first and a second plurality of wick-lined channels containing a working fluid;

said first plurality of wick-lined channels extending internally and laterally in a first dimension across said evaporator;

said second plurality of wick-lined channels extending internally and laterally across said evaporator in a second dimension substantially perpendicular to said first dimension in a grid-like manner and being in fluid communication with said first plurality of wick-lined channels;

condenser means coupled to said evaporator for condensing evaporated working fluid vapor; and,

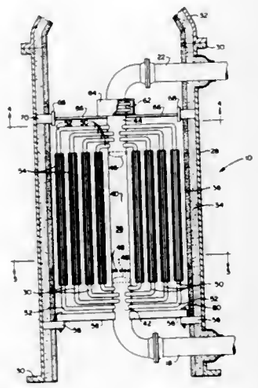
heat exchanger means connected to said condenser means for transferring that absorbed by said condenser means.

5,253,703

WASTE HEAT EXCHANGER

Bashir I. Master, Wayne, and Philip A. Weiner, Succasunna, both of N.J., assignors to ABB Lummus Crest Inc., Bloomfield, N.J.

Filed Sep. 1, 1992, Ser. No. 938,831
Int. Cl.[5] F22B *21/22*
U.S. Cl. 165—82 3 Claims



1. A heat exchanger including a vertically oriented shell having an upper end and a lower end and a longitudinal gas passage therethrough, gas inlet means at the upper end of said shell and gas outlet means at the lower end of said shell whereby gas passes longitudinally down through said shell and comprising:

a. a support/header tube assembly extending longitudinally through said shell generally at the center thereof,

b. means dividing said support-header tube assembly into an upper header, a lower header and a middle support tube,

c. a plurality of longitudinally extending heat exchange tubes between said shell and said support/header tube assembly, each tube upper and lower ends bent and extending generally horizontally inward and attached for support and fluid flow to said upper and lower headers respectively,

d. means for feeding fluid into said lower header and up through said heat exchange tubes and out through said upper header, and

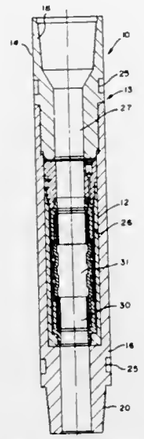
e. means for supporting said support/header tube assembly in said shell, said means for supporting adapted to permit differential thermal expansion between said shell and said support/header tube assembly and comprising beams extending between and attached to said lower header and said shell.

5,253,704

HIGH PRESSURE AUTOMATIC MUD SAVER VALVE

Reginald J. Barrus, Jefferson, La.; Donald J. Barrus, Los Alamintos, Calif.; Theodore A. Kritikos, and John W. Owensby, both of New Orleans, La., assignors to KOB, Inc., Gretna, La.

Continuation-in-part of Ser. No. 410,889, Sep. 22, 1989, Pat. No. 4,969,513. This application Nov. 13, 1990, Ser. No. 611,797
The portion of the term of this patent subsequent to Nov. 13, 2007, has been disclaimed.
Int. Cl.[5] E21B *34/02*
U.S. Cl. 166—53 7 Claims



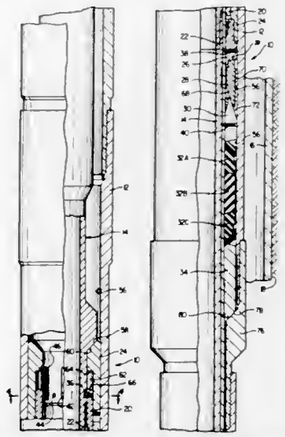
1. In an automatically closing diaphragm valve having a diaphragm with inner and outer wall surfaces in which a pressurized fluid behind the wall of the diaphragm and acting on the outer surface of the diaphragm causes the diaphragm to deflect and close a flow passage defined at least in part by the inner surface of the wall of the diaphragm when the pressure in the passage is less than a predetermined value, and pressure in the flow passage above a predetermined value causes the diaphragm to deflect and exhaust the pressurized fluid from the region behind the diaphragm, the improvement comprising a backup element having a smooth surface for supporting the diaphragm, exhaust passage means defined by said backup element for allowing pressurized fluid to escape from between the diaphragm and the backup element in response to high pressure in said flow passage, and valve means between said diaphragm and said backup element for closing said exhaust passage means in response to pressure transmitted to the valve means by the diaphragm while maintaining the exhaust passage means smaller than the space into which the diaphragm can extrude at the pressure existing in the flow passage, said valve means including a portion projecting toward said diaphragm for holding said diaphragm away from said exhaust passage means to enable substantially all pressurized fluid behind the diaphragm to escape through said exhaust passage means.

5,253,705

HOSTILE ENVIRONMENT PACKER SYSTEM

Sammy R. Clary; Michael R. Hutto, both of Jay, Fla., and Tommy L. Stambaugh, Celina, Tex., assignors to Otis Engineering Corporation, Carrollton, Tex.

Filed Apr. 9, 1992, Ser. No. 865,904
Int. Cl.[5] E21B *23/06*
U.S. Cl. 166—123 13 Claims



1. A packer system adapted to be installed inside a polished bore receptacle using a running tool suspended on a tubing string inside an oil or gas well, the packer system comprising:

first shearable means for connecting the packer system in fixed longitudinal relation to the running tool;

second shearable means for connecting the packer system in sliding longitudinal relation to the running tool over a limited range of travel;

a mandrel;

bottom support means connected to the mandrel for engaging the polished bore receptacle to limit downward motion of the packer system relative to the polished bore receptacle;

a plurality of elastomeric packer elements disposed on the mandrel;

compression means disposed above the packer elements for setting the packer elements by longitudinally compressing the packer elements against the bottom support means to radially expand the packer elements into sealing engagement with the polished bore receptacle;

means for communicating a downwardly exerted compressive force from the running tool to the compression means;

third shearable means for connecting the mandrel to the compression means; and

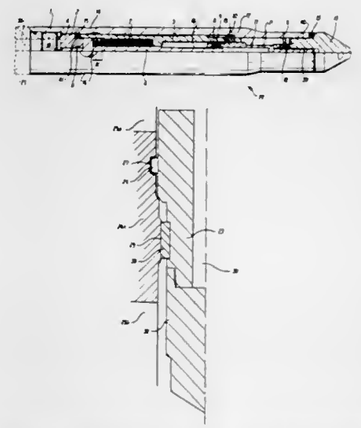
means disposed above the packer elements for preventing upward movement of the compression means relative to the polished bore receptacle after the packer elements are set.

5,253,706

RELEASE MECHANISM

Michael A. Reid, Aberdeen, Great Britain, assignor to Well-Equip Limited, Aberdeen, Scotland

Filed Dec. 26, 1991, Ser. No. 813,816
Claims priority, application United Kingdom, Dec. 29, 1990, 9028185
Int. Cl.[5] B25J *17/00*; E21B *33/12, 34/16*
U.S. Cl. 166—135 8 Claims



1. A plug for coupling to a landing nipple in a well, the plug isolating an upper section of the well from a lower section of the well when coupled to the landing nipple, the plug comprising:

a first body member;

a second body member;

a lock member securing said first body member to said second body member in a first position; and

a release mechanism for releasing said lock member, said release mechanism comprising:

a reciprocal member mounted on said first body member for movement relative to said first body member; and

a catch mechanism movable between a first position in which said lock member is fixed and a second position in which said lock member is released;

means responsive to a force on said reciprocal member for moving said reciprocal member in a first direction when a force is applied thereto; means for moving said reciprocal member in a second direction when the force is removed; and, means responsive to repeated reciprocal movement of said reciprocal member in said first and second directions for effecting movement of said catch mechanism from the first position to the second position to release said lock member to permit relative movement between said first and second body members.

5,253,707

INJECTION WELL FRACTURING METHOD

Joseph H. Schmidt, and James C. Abel, both of Anchorage, Ak., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Feb. 12, 1992, Ser. No. 834,423
Int. Cl.[5] E21B *43/17, 43/267*
U.S. Cl. 166—270 8 Claims

1. A method for hydraulically fracturing an earth formation from a fluid injection well comprising the steps of:

injecting a proppant-laden fracturing fluid into said earth formation through said well to create a propped fracture extending from said well;

displacing said proppant-laden fracturing fluid with a sub-

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stantially proppant-free fluid to provide an unpropped portion of said fracture adjacent said well; and

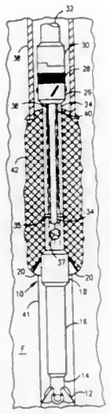
injecting a liquid through said well at a pressure sufficient to open said unpropped portion of said fracture and into said fracture to stimulate the production of fluids from said formation.

5,253,708

PROCESS AND APPARATUS FOR PERFORMING GRAVEL-PACKED LINER COMPLETIONS IN UNCONSOLIDATED FORMATIONS

Steve L. Alexander, Bakersfield, Calif., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 11, 1991, Ser. No. 806,052
Int. Cl.[5] E21B *7/20, 10/32, 10/34, 43/04*
U.S. Cl. 166—278 10 Claims



1. A process for installing a slotted liner and gravel pack within an unconsolidated hydrocarbonaceous fluid-bearing formation, the formation having at least one hydrocarbonaceous fluid producing zone, the formation further having a bore hole drilled to a first pre-determined depth above the hydrocarbonaceous fluid producing zone and a well casing installed in the bore hole to about the first pre-determined depth, the well casing having an internal diameter, comprising the steps of:

(a) lowering on a pipe string through the bore hole an apparatus for drilling and installing a slotted liner for gravel packing, the apparatus including a drill bit for drilling a pilot hole, means for enlarging the pilot hole to a diameter larger than the internal diameter of the well casing and sufficient for gravel packing, the pilot hole enlarging means being initially retracted and located within a housing above the pilot hole drill bit, a slotted liner having a first end and a second end, the first end joined to the apparatus above the housing and a drive assembly integrally joined to the second end of the slotted liner;

(b) rotating the apparatus to drill a pilot hole through the hydrocarbonaceous fluid producing zone;

(c) expanding the initially retracted pilot hole enlarging means upon exceeding the first pre-determined depth;

(d) enlarging the pilot hole to a diameter larger than the internal diameter of the well casing and sufficient for gravel packing;

(e) continuing steps (b)-(d) until the first end of the slotted liner reaches a second pre-determined depth, the second pre-determined depth sufficient to place the slotted liner within the hydrocarbonaceous fluid producing zone;

(f) injecting a highly viscous fluid to substantially maintain the diameter of the enlarged hole;

(g) installing a gravel pack tool assembly; and

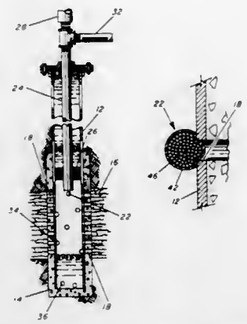
(h) injecting a gravel slurry into an annulus defined by the enlarged hole and slotted liner to gravel pack the annulus.

5,253,709

METHOD AND APPARATUS FOR SEALING PIPE PERFORATIONS

Larry N. Kendrick, Lafayette, La., and William A. Savage, Edmond, Okla., assignors to Conoco Inc., Ponca City, Okla.

Continuation-in-part of Ser. No. 472,519, Jan. 29, 1990, abandoned. This application Jun. 24, 1991, Ser. No. 720,044
Int. Cl.[5] E21B *33/13*
U.S. Cl. 166—284 18 Claims



1. In a well system having a wellbore with a perforated casing (12) extending into an earth formation (16), the formation and wellbore being such that during a well treatment operation in which pumpable material is pumped into the wellbore, a disproportionately large amount of material passes through certain perforations (18) in the casing, means for plugging the perforations which are receiving a disproportionate amount of materials being pumped into the wellbore, wherein said means comprises:

a plurality of sealing members (22) for placement into the material being pumped into the wellbore, said sealing members being characterized by an outer shell (42) having a generally fully spherical shape when not subjected to other than gravitational forces, said shell having a diameter which is larger than the diameter of perforations (18) in the casing, said shell being constructed of a material which when subjected to forces greater than the force of gravity is deformable; and

a core material (46) housed within said outer shell, said core material being flowable to follow the shape of said outer shell when said outer shell is deformed.

17. A method of plugging perforations (18) in a casing (12) in a wellbore extending from the surface and penetrating into an earth formation (16) in conjunction with a formation treatment involving the introduction of a fluid into the wellbore at the surface, with such fluid having dispersed therein a plurality of ball sealers, and said ball sealers being sized to seal said perforations; wherein the improvement is characterized by:

introducing into the fluid at the surface ball sealers being comprised of a deformable outer shell (42) having a spherical outer surface and defining an interior chamber (44) and a plurality of particles (46) within the interior chamber forming a core flowable with and capable of assuming the shape of the deformable outer shell (42); and

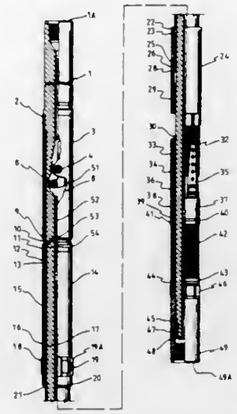
continuing the flow of such fluid until at least a portion of the outer surface (42) of some of said ball sealers (22) has become positioned within said perforations (18) with such particles (46) flowing within the chamber (44) due to the force of the flowing fluid for forming a bridge within the outer shell across the perforations to lodge the ball sealers in the perforations.

5,253,710

METHOD AND APPARATUS TO CUT AND REMOVE CASING

Thurman B. Carter, Pearland; Shane P. Hart, Houston, and Carl D. Reynolds, Alvin, all of Tex., assignors to Homco International, Inc., Pearland, Tex.

Continuation of Ser. No. 824,863, Jan. 22, 1992, abandoned, which is a continuation of Ser. No. 672,089, Mar. 19, 1991, abandoned. This application Sep. 22, 1992, Ser. No. 951,305
Int. Cl.[5] E21B *29/00*
U.S. Cl. 166—298 16 Claims



14. A method for cutting and removing casing from a wellbore on a single trip of a workstring into said wellbore, comprising the steps of:

securing a cutting assembly and a grapple assembly to said workstring, said cutting assembly being selectively actuable at least partially in response to hydraulic pressure and said grapple assembly being actuable at least partially in response to hydraulic pressure;

lowering said cutting assembly and said grapple assembly into said wellbore until said cutting assembly is at a depth where it is desired to cut said casing;

applying hydraulic pressure in said workstring to actuate said grapple to cause said grapple to engage said casing;

applying tension to said workstring to place said casing in tension through said grapple assembly;

rotating said workstring to rotate said cutting assembly, which has been extended in response to hydraulic pressure, so as to cut said casing; and

after said casing has been cut, applying pull on said workstring to remove said casing from said wellbore.

5,253,711

PROCESS FOR DECOMPOSING POLYSACCHARIDES IN ALKALINE AQUEOUS SYSTEMS

Thomas C. Moondshine, Houston, Tex., assignor to Texas United Chemical Corp., Houston, Tex.

Filed Mar. 2, 1992, Ser. No. 844,167
Int. Cl.[5] E21B *43/26*
U.S. Cl. 166—300 10 Claims

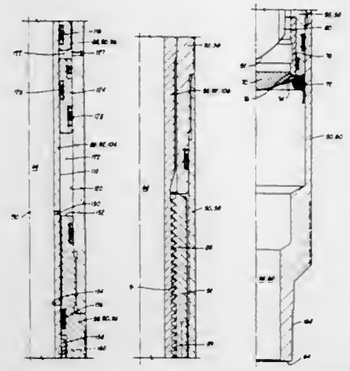
6. The method of breaking an alkaline fracturing fluid having a hydrophilic polysaccharide polymer hydrated therein which comprises adding to the fluid a peroxide selected from the group consisting of alkaline earth metal peroxides, zinc peroxide, and mixtures thereof, the concentration of the peroxide being sufficient to break the fracturing fluid at the desired temperature and pH of the fracturing fluid.

5,253,712

ROTATIONALLY OPERATED BACK PRESSURE VALVE

Loren C. Swor, 1313 W. Elder, Duncan, Okla. 73533

Filed Mar. 2, 1992, Ser. No. 844,814
Int. Cl.[5] E21B *34/06*
U.S. Cl. 166—330 18 Claims



1. A rotationally operated back pressure valve apparatus for use in a well, comprising:

a housing having an upper end and a lower end and having a housing bore defined therethrough from said lower end to said upper end;

a flapper valve disposed in said housing, said flapper valve having a closed position for sealing said housing bore against upward flow therethrough and having an open position wherein said flapper valve is pivoted downward in said housing from its closed position, thereby opening said housing bore;

a hollow stinger tube received in said housing bore and having a lower end, said tube being slidable within said housing between a first position wherein said lower end of said stinger tube is located above said flapper valve and a second position wherein said lower end of said stinger tube is located below said flapper valve and said stinger tube holds said flapper valve in its said open position, said stinger tube having a stinger bore therethrough; and

an operating mandrel rotatably mounted in said housing bore and extending upward out of said upper end of said housing, said operating mandrel having a threaded engagement with said stinger tube so that rotation of said operating mandrel a plurality of full turns in a first direction relative to said housing translates into sliding motion of said stinger tube from its said first position to its said second position, and so that rotation of said operating mandrel in a second direction a like number of turns relative to said housing translates into sliding motion of said stinger tube from its said second position to its said first position.

5,253,713

GAS AND OIL WELL INTERFACE TOOL AND INTELLIGENT CONTROLLER

David P. Gregg, New Philadelphia; Lawrence R. Lamp, Millersburg, and John G. Corp, Akron, all of Ohio, assignors to Belden & Blake Corporation, North Canton, Ohio

Filed Mar. 19, 1991, Ser. No. 671,459
Int. Cl.[5] E21B *43/12*; F04B *47/12*
U.S. Cl. 166—372 39 Claims

1. A valving member for use with a well producing fluids under pressure through a production conduit having an inner wall, the member comprising:

a body slidable within the production conduit, the body

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having a longitudinal axis, a transverse radial axis orthogonal to the longitudinal axis, and an internal passageway;

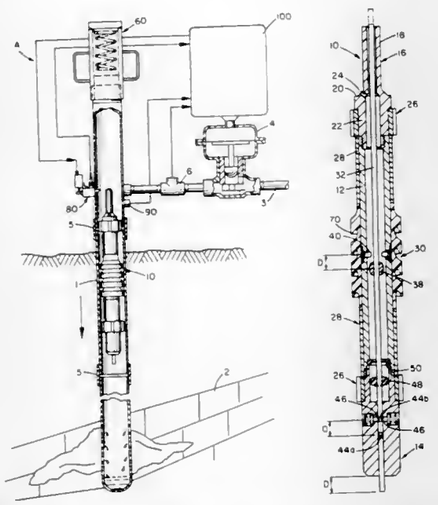
a radially expansible sealing means attached to the body for selectively i) circumferentially contacting the inner wall of said production conduit to seal against a first flow of said fluids between the body and the inner wall when expanded and ii) avoiding contact of the inner wall of said production conduit when contracted allowing said first flow;

bleeder means for permitting a second flow of said fluids through the internal passageway when in an opened position, and for restricting the second flow of the fluids through the passageway when in a closed position;

bleeder control means for selectively disposing the bleeder means into the closed position when the body is at a first end of the conduit, and for disposing the bleeder means into the opened position when the body is at the other end of the conduit; and,

initiating means for selectively urging the sealing means into radial expansion.

25. A method of operating a gas and oil well system having a conduit connecting a producing formation and a storage



tank, a sales valve between the tank and the formation, a pressure transducer for sensing pressure within the conduit between the sales valve and the formation, an interface tool slidable within the conduit, and a tool catcher for selectively holding the tool, the method comprising the steps of:

opening an internal valve in the tool and contracting a circumferential seal on said tool away from contacting an inner wall of said conduit when the tool is at the catcher;

closing the sales valve and releasing the tool from the tool catcher into the conduit when the pressure transducer senses a first pressure in the conduit allowing the tool to fall within the conduit toward the formation;

closing the internal valve and expanding the circumferential seal to contact the inner wall of said conduit by a mechanical linkage initiated when the tool arrives at the formation;

opening the sale valve when the pressure transducer senses a second pressure different from the first pressure in the conduit to cause the tool to raise the accumulated fluids;

catching the tool in the tool catcher, and;

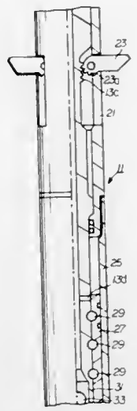
holding the tool in the catcher while the pressure transducer senses a changing pressure in the conduit different from the first pressure and different from the second pressure.

5,253,714

WELL SERVICE TOOL

John P. Davis, Cypress, Tex., and Robert S. Beeman, Bossier City, La., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Aug. 17, 1992, Ser. No. 931,246
Int. Cl.[5] E21B *10/00*
U.S. Cl. 166—376 **19 Claims**



1. A well service tool for use in a wellbore, the well service tool comprising:

a mandrel having a fluid conduit therethrough, the mandrel couplable in fluid flow communication with a fluid pressure source;

an expendable knife-mounting member coupled to the mandrel;

at least one knife pivotally secured to the expendable knife-mounting member; and

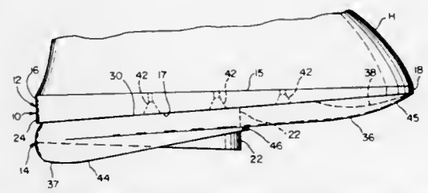
a pressure-responsive member including a positive extender to selectively extend the knife, and to selectively temporarily maintain the knife in an extended position, responsive to a relative movement between the pressure-responsive member and the mandrel, the relative movement induced by increased fluid pressure from the fluid pressure source, wherein an end of the knife is extended generally radially outwardly from an exterior of the well service tool.

5,253,715

HORSESHOE FOR TREATMENT OF LAME HORSES

Eugene D. Ovnicek, Columbia Falls, Mont., assignor to World Wide Horseshoes, Inc., Whitefish, Mont.

Filed Sep. 18, 1992, Ser. No. 947,140
Int. Cl.[5] A01L *7/02*
U.S. Cl. 168—14 **18 Claims**



1. A combination pad and horseshoe for treatment of lameness, comprising:

a) a full hoof pad member generally shaped to the outside

edges of a horse's hoof and made of resilient material and having an upper hoof contact surface and a bottom shoe mounting surface;

b) an elongated frog insert means carried by said pad member and extending downwardly from said shoe mounting surface and shaped such that it has a rear edge generally coincident with said pad member, and such that it extends forwardly toward an opposite end of said pad member, and terminates at an inner tip end a predetermined distance from said rear edge at about the center of said pad member, said frog insert means being formed so that its rear edge will be spaced inwardly of the heels of a horseshoe mounted on the pad member and so that it extends longitudinally of said pad member whereby it will generally underlie the frog portion of a hoof to which the combination is applied;

c) a horseshoe body member also being generally shaped to the edges of a horse's hoof including a toe area and rearwardly extending branch members with heel sections at the ends thereof, said body member having a planar upper surface for being mounted on said pad member and a lower surface; and

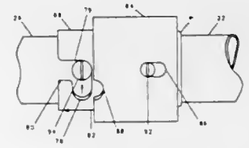
d) heel means carried by each of the heel sections of said horseshoe body member each having a raised ground contact heel portion which extends downwardly and forwardly to provide an elongated ground contact surface sufficient to support a horse's foot with the heel thereof in an elevated position, said heel means and said frog insert means being so cooperatively constructed and arranged that the frog insert means rear edge is above the heel means ground contact surface and that the frog insert means inner tip end extends forwardly of said heel means and downwardly beyond a ground surface line when said heel means and said horseshoe body member are in full contact with the ground whereby when a horse's full weight is on a hoof shod with the combination the inner tip end of said frog insert means is pressed upwardly by the ground against the frog of the hoof to lend support to the coffin bone of the hoof and whereby the heel of the hoof is supported by said heel means in an elevated position.

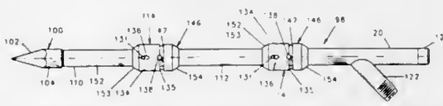
5,253,716

FOG PRODUCIG FIREFIGHTING TOOL

Wallace F. Mitchell, St. Mary's Rd. and Hwy. 60, Mettawa, Ill. 60069

Filed Nov. 27, 1991, Ser. No. 799,284
Int. Cl.[5] A62C *31/22*
U.S. Cl. 169—70 **3 Claims**





1. A firefighting tool of modular construction comprising:

a nozzle comprising an elongated body including an outer surface and having a bore partially therethrough defining a bore open end and an inner surface, a plurality of apertures extending through said body to said bore, each said aperture defining an axis with the respective axis of each said aperture intersecting outwardly from said outer surface with the axis of another of said apertures such that pressurized liquid flowing through each of said apertures impacts upon the liquid flowing through another of said apertures to create a fog, and a diverging solid front portion;

a first tubular member having an outer diameter, an outer surface, and first and second open ends and defining a passageway therebetween wherein said first open end is connected to said bore open end so that said passageway is in communication with said nozzle bore;

a tubular end member having an outer diameter, an outer surface, and an open end and an inlet port having a means to couple said inlet port to a source of the pressurized liquid;

an inner collar on one of said first tubular member and said tubular end member, said inner collar having an inner diameter a little larger than said outer diameter of another one of said first tubular member and said tubular end member, said inner collar having an L-shaped groove therein;

a pin extending above said outer surface of said another one of said first tubular member and said tubular end member;

an outer collar longitudinally slidable over said inner collar; and

capture means on said outer collar for capturing said pin in said L-shaped groove and retaining said first tubular member and said tubular end member in coupled relationship;

whereby the liquid from the source of the liquid passes through said end member, said first member, said bore, and finally to said apertures.

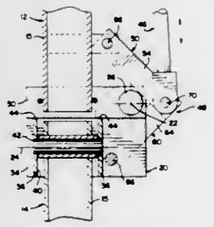
5,253,717

FOLDABLE AGRICULTURAL IMPLEMENT

Daniel E. Roush, Niles, and Robert A. Klaviter, Jr., Lockport, both of Ill., assignors to Case Corporation, Racine, Wis.

Filed Jan. 30, 1992, Ser. No. 828,292
Int. Cl.[5] A01G *63/32*
U.S. Cl. 172—311 **16 Claims**





1. A foldable agricultural implement comprising a main section for moving generally horizontal across a field, a wing section for moving generally horizontal across the field, and a folding mechanism for foldably connecting adjacent ends of said sections, said folding mechanism including a first pivot connection whereat the wing and main sections are articulately joined and which allows horizontal pivotal movement of the wing section between a working position whereat the wing section is positioned in essentially the same horizontal plane as and laterally adjacent to the main section and a folded position whereat the wing section remains in essentially the same plane as the main section but is pivoted forwardly into a generally parallel relationship with main section, said folding mechanism further including a second pivot connection whereat the wing and main sections are articulately joined and which allows for

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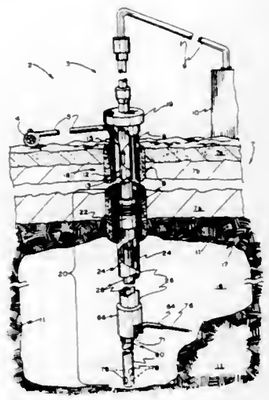
vertical oscillatory movements of the wing section relative to the main section thereby permitting the wing section to move vertically independently of the main section in response to changing contours of the underlying terrain when arranged in a working position.

5,253,718

WELLBORE MINERAL JETTING TOOL

O. Wayne Lawler, Humble, Tex., assignor to Seacoast Services, Inc., Houston, Tex.

Division of Ser. No. 790,217, Nov. 8, 1991, Pat. No. 5,181,578.
This application Jan. 22, 1993, Ser. No. 7,796
Int. Cl.[5] E21B *10/00*
U.S. Cl. 175—20 12 Claims



1. A wellbore mining comminuting and collecting tool for use with, and installed at the lower end of, a drilling pipestring having a longitudinal axis, the pipestring being inserted into a predrilled and cased vertical hole, said comminuting and collecting tool comprising a first and a second tube wherein pressurized fluid flows from a source above ground through the pipestring into one of said first and second tubes, and a slurry created by discharge of said pressurized fluid is collected and conducted above ground in the other of said first and second tubes,

said comminuting and collecting tool further comprising a cutting jet nozzle means extensible from said comminuting and collecting tool at an angle whereby a jet of pressurized fluid discharged axially from said jet nozzle means is directed against surrounding mineral deposits at said angle from said vertical hole, and

pressure from said jet lifts said slurry and also supports a roof of a chamber defined in a geological formation by hydraulic comminution and collection, and

said tool assumes dimensions sufficiently small to fit into the cased hole by retraction of said jet nozzle upon cessation of flow of pressurized fluid.

5,253,719

PROCESS FOR DIAGNOSING FORMATION DAMAGE MECHANISM THROUGH THE USE OF RADIALLY ORIENTED CORE SAMPLES CUT FROM THE WELLBORE WALL

Matthew E. Blauch, Duncan, and Milton B. Enderlin, Bartlesville, both of Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Jun. 15, 1992, Ser. No. 898,994
Int. Cl.[5] E21B *25/00, 49/06*
U.S. Cl. 175—50 19 Claims

1. A method for diagnosing damage, comprising the steps of:

obtaining a sidewall core sample from a subterranean formation penetrated by a wellbore;

analyzing said formation core sample; and using said analysis to determine the type of scale damage, the severity of said damage, and the depth from the wellbore to which said damage extends.

10. A method for diagnosing formation damage, comprising the steps of:

taking a plurality of side-wall core samples from a subterranean formation penetrated by a wellbore;

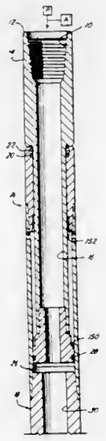
analyzing said formation core samples; and using said analysis to determine parameters of the formation fines migration damage.

5,253,720

METHOD AND APPARATUS FOR TAKING AN UNDISTURBED CORE SAMPLE

Steven R. Radford, South Jordan, Utah; Haraldur Karlsson, Kingwood, Tex., and James T. Aumann, Salt Lake City, Utah, assignors to Energy Ventures, Inc.

Filed Jun. 13, 1991, Ser. No. 716,664
Int. Cl.[5] E21B *25/00*
U.S. Cl. 175—58 19 Claims



17. A method of obtaining core specimens from a formation, comprising the steps of:

lowering a tool having a housing and a core barrel with its entrance initially plugged off to a point adjacent the formation;

retaining the core barrel to the housing;

driving the assembly of the core barrel, housing, and plug at the entrance to said core barrel into the formation to a sufficient depth to isolate the plugged of entrance to the core barrel from well fluids;

moving the core barrel with respect to said housing and with respect to said plug at its entrance to obtain a sample; and

applying a downward force on said housing as said core barrel is moved with respect to said housing and said plug to help retain said housing in the formation a sufficient depth to isolate the core barrel from well fluids.

5,253,721

DIRECTIONAL BORING HEAD

Douglas W. Lee, Wichita, Kans., assignor to Straightline Manufacturing, Inc., Newton, Kans.

Filed May 8, 1992, Ser. No. 880,589
Int. Cl.[5] E21B *7/08*
U.S. Cl. 175—73 9 Claims



1. A steerable tool for drilling holes in the ground comprising:

a flexible tubular drill string;

a drill head on the forward end of said drill string having a hydraulic cutting nozzle and a cutting blade means attached thereto;

drive means for intermittent rotating and lineal advancement of the drill head;

fluid supply means supplying pressurized fluid to the drill string and a nozzle which produces a fluid cutting jet;

the cutting blade means is positioned with the plane of the blade on the axis of rotation of the drill head which cuts a blade hole radius in the ground; and

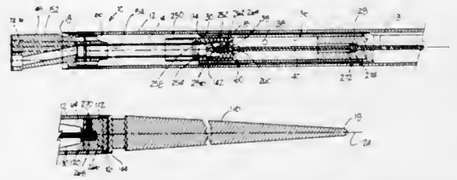
ramp means attached to the head behind the blade including a steering surface positioned at an acute angle to the axis of rotation of the drill string for deflecting the drill head and its drill string in a particular direction by linear advancement of the drill head without rotation.

5,253,722

IMPACT BORER FOR EMBEDDING LINES, ANCHORING CABLES AND SINKING WELLS

Harry P. Laffkas, 11109 Sycamore Hills Dr., Fort Wayne, Ind. 46825

Continuation-in-part of Ser. No. 625,079, Dec. 10, 1990, Pat. No. 5,161,626. This application May 21, 1992, Ser. No. 887,159
Int. Cl.[5] E21B *4/14, 7/26*
U.S. Cl. 175—296 14 Claims



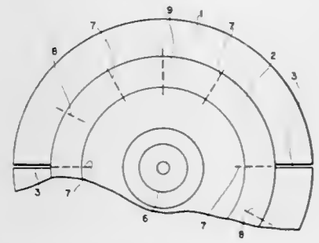
1. An impact borer comprising an elongated shell with a longitudinal bore extending therethrough, said shell and said bore having opposite ends, an anvil secured to one of said shell ends and closing one of said bore ends, a ram positioned within said bore and being reciprocally slideable therein against and away from said anvil, a director secured to said shell at said other of said shell ends closing said bore at said other bore end, said ram and director dividing said bore into front, rear and ram chambers, said director isolating said front and rear chambers in alternation upon reciprocation of said ram, said director defining an inlet passage communicating with said ram chamber and an outlet passage communicating with said rear chamber, said ram having a tubular bore therein, said ram bore having opposite ends and being closed at one of said opposite ends adjacent said anvil, said director includes a manifold, an inlet tube and a guide, said guide being positioned within said ram bore, said inlet tube extending from said manifold into said ram bore through an opening at said other ram end, said inlet tube having its distal end secured to said guide, said guide being stationary with respect to said shell, said ram being reciprocally slideable in relation to both said guide and said shell, said ram having a guide bore extending therethrough, a guide rod extending from said guide to said anvil, said guide rod being in said guide bore of said ram to align said ram with said guide and said shell upon reciprocation.

5,253,723

RING CUTTER FOR TUNNEL DRILLING IN ROCK

Stein Narvestad, President Harbitzgate 23A 0259, Oslo, Norway

PCT No. PCT/NO90/00018, § 371 Date Jul. 30, 1992, § 102(e) Date Jul. 30, 1992, PCT Pub. No. WO91/11588, PCT Pub. Date Aug. 8, 1991
PCT Filed Jan. 26, 1990, Ser. No. 916,074
Int. Cl.[5] E21B *10/12;* E21C *25/18*
U.S. Cl. 175—373 5 Claims



1. A cutter head for drilling tunnels in rock comprising:

a rotational body having a first and a second inclined surface defining a wedge-shaped groove, and pin openings;

a cutter ring formed of two substantially identical ring halves disposed in said groove, said ring halves having radially inwardly directed portions with a dovetail form abutting said first included surface;

diametrically oppositely arranged pins attached to said cutter ring halves and extending into said pin holes; and

a clamping ring tightened radially inwardly by bolts and disposed between said cutter ring and said second included surface;

wherein said ring halves are separated by gaps, said gaps being peripherally offset from said pins by 90°.

5,253,724

POWER WHEELCHAIR WITH TRANSMISSION USING MULTIPLE MOTORS PER DRIVE WHEEL

Ronald E. Prior, 4915 Industrial Way, Coeur d'Alene, Id. 83814

Filed Oct. 25, 1991, Ser. No. 783,614
Int. Cl.[5] B60K *1/02*
U.S. Cl. 180—65 11 Claims

1. A powered vehicle comprising:

a frame;

first and second independently rotatable drive wheels mounted to the frame;

first and second motors attached to the frame;

a first coupler connecting the first and second motors to the first drive wheel such that the first motor drives the first drive wheel in a first speed range and the second motor drives the first drive wheel in a second speed range, wherein the first coupler comprises:

a first drive coupled between the first motor and the second motor; and

a second drive coupled between the first motor and the first drive wheel;

a first drive tensioner coupled to the second motor;

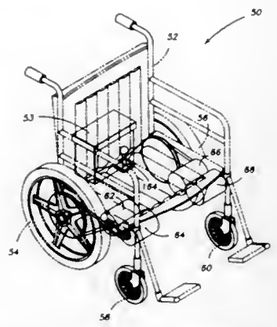
a first spring device coupled between the first and second motors to transfer tension provided by the first drive tensioner to the second drive;

third and fourth motors attached to the frame;

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a second coupler connecting the third and fourth motors to the second drive wheel such that the third motor drives the second drive wheel in the first speed range and the fourth motor drives the second drive wheel in the second speed range, wherein the second coupler comprises:

a third drive coupled between the third motor and the fourth motor; and



a fourth drive coupled between the third motor and the second drive wheel;

a second drive tensioner coupled to the fourth motor; and

a second spring device coupled between the third and fourth motors to transfer tension provided by the second drive tensioner to the fourth drive.

5,253,725

POWER STEERING APPARATUS

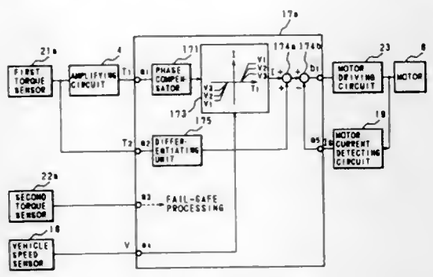
Mitsubiko Nishimoto, Nara, Japan, assignor to Koyo Seiko Co., Ltd., Osaka, Japan

Division of Ser. No. 686,107, Apr. 16, 1991, Pat. No. 5,201,818. This application May 4, 1992, Ser. No. 878,095

Claims priority, application Japan, May 9, 1990, 2-120343; May 9, 1990, 2-120344

Int. Cl.[5] B62D *5/04*

U.S. Cl. 180—79.1 **2 Claims**



1. A power steering apparatus comprising:

a torque sensor for detecting a steering torque exerted on a steering wheel;

first detected torque signal means, coupled to said torque sensor, for providing a first detected torque signal;

second detected torque signal means, coupled to said torque sensor, for providing a second detected torque signal;

wherein a voltage of said second torque signal varies over a greater effective torque detection width than a voltage of said first torque signal;

a motor for assisting a steering force of said steering wheel;

a control unit comprising:

target current means for generating a target current from said first detected torque signal;

differentiating means for differentiating said second detected torque signal to produce a differentiated signal; and

combining means for combining said target current and said differentiated signal for producing a current to drive said motor.

5,253,726

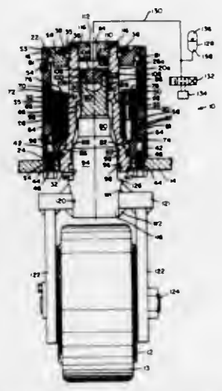
STEERING ASSEMBLY FOR UTILITY VEHICLES

Paul P. Weyer, P.O. Box 398, Enumclaw, Wash. 98022

Filed May 15, 1992, Ser. No. 883,670

Int. Cl.[5] B62D *5/06*

U.S. Cl. 180—132 **23 Claims**



1. A steering assembly for a utility vehicle having a support frame, comprising:

a fluid-powered rotary actuator, including:

a body attached to the frame, said body having a longitudinal axis, and body upper and lower ends;

first and second fluid ports for introducing pressurized fluid within said body at longitudinally spaced-apart locations;

a drive member extending generally longitudinally and coaxially within said body, said drive member being supported for rotational movement relative to said body, said drive member having a central elongated bore therein with an open end at said body lower end;

a piston mounted within said body with said first port in fluid communication with one side thereof and said second port in fluid communication with an opposite side thereof to produce reciprocal longitudinal movement of said piston within said body in response to selective application of pressurized fluid to said first and second ports;

a torque-transmitting member mounted for reciprocal longitudinal movement within said body, said torque-transmitting member engaging said body and said drive member to translate longitudinal movement of said piston toward said body upper end into rotational movement of said drive member relative to said body in a first rotational direction, and longitudinal movement of said piston toward said body lower end into rotational movement of said drive member relative to said body in a second rotational direction opposite said first rotational direction;

an axially extendable member extending generally longitudinally and coaxially within said central bore with a lower end portion projecting downward out of said central bore open end to a position below said body lower end, said extendable member being axially movable within said central bore and being rotatably driven by said drive member for rotation with said drive member, said extendable member having a piston portion located within said central bore to define an interior fluid chamber; and

a third fluid port in fluid communication with said central bore fluid chamber;

a wheel;

a wheel support member mounted to said lower end portion of said extendable member for rotation therewith, said wheel being rotatably mounted to said wheel support member in a position to rollingly support the frame, said wheel support member being rotatable by said drive member transmitting rotational force thereto through said extendable member to turn said wheel to steer the frame to the left or right; and

an accumulator connected to said third fluid port, said central bore fluid chamber and a portion of said accumulator being filled with a substantially non-compressible hydraulic fluid and the remainder of said accumulator being filled with a compressible fluid, said extendable member piston portion moving upward within said central bore in response to upward movement of said wheel to transmit the force of the upward movement through said hydraulic fluid to said compressible fluid in said accumulator for absorption of at least a portion of the transmitted force, whereby said wheel is steered by controlling rotation of said drive member, and shock that would be produced by sudden upward movement of said wheel is transmitted to and absorbed by said compressible fluid to cushion the ride of the frame.

5,253,727

STEERING MECHANISM FOR AN ARTICULATED VEHICLE

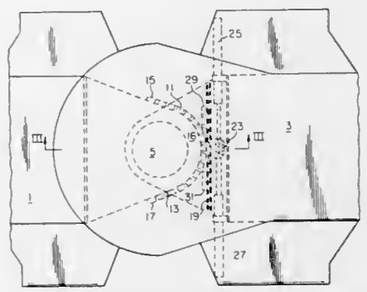
Michael Etherington, Abingdon, Va., and Michael R. Long, Gainsborough, England, assignors to Dosco Overseas Engineering Ltd., Notts, United Kingdom

Filed Jun. 30, 1992, Ser. No. 906,896

Claims priority, application United Kingdom, Jan. 14, 1992, 9200657

Int. Cl.[5] B62D *13/00*

U.S. Cl. 180—137 **16 Claims**



1. A steering mechanism for an articulated vehicle having a first section and a second section interconnected by an articulation joint, said steering mechanism comprising means having a substantially arcuate surface on said first section, moveable means mounted on said second section, means connecting said means having a substantially arcuate surface and said moveable means to move said means having a substantially arcuate surface, and means to move said moveable means relative to said second section to adjust said means connecting said means having a substantially arcuate surface and said moveable means to rotate said first section of a vehicle relative to said second section of a vehicle about said articulation joint.

5,253,728

STEERING CONTROL METHOD FOR A MOTOR VEHICLE WITH A DIFFERENTIAL

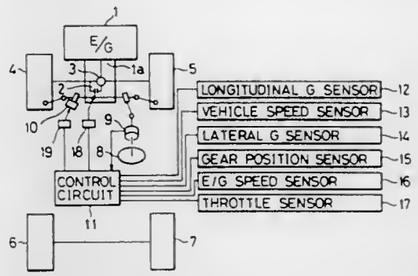
Kouji Matsuno, Kasakake, and Toyohiko Mouri, Ohta, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 13, 1992, Ser. No. 928,776

Claims priority, application Japan, Aug. 26, 1991, 3-238808

Int. Cl.[5] B62D *6/00*

U.S. Cl. 180—140 **2 Claims**



1. A steering control method for a motor vehicle having, an engine mounted on said motor vehicle, a differential provided between a left front wheel and a right front wheel for absorbing a speed difference of said left and right front wheels, restricting means mounted on said differential for controlling a torque distribution to said left and right front wheels, a steering wheel operatively connected to said wheels for steering said motor vehicle, an electric motor connected with said steering wheel for assisting an operation of said steering wheel, a torsion torque sensor connected to said steering wheel for detecting a torsion torque of said steering wheel and for producing a torsion torque signal, a vehicle speed sensor for detecting a vehicle speed and for generating a vehicle speed signal, an engine speed sensor for detecting an engine speed and for generating an engine speed signal, a throttle sensor for detecting an opening degree of a throttle valve in said engine and for producing a degree signal, a gear position sensor for detecting a position of selected gears and for generating a position signal, a lateral G sensor mounted on said motor vehicle for detecting a lateral acceleration and for generating a lateral G signal, and a longitudinal G sensor mounted on said motor vehicle for detecting a longitudinal acceleration and for generating a longitudinal G signal, an improvement of the control method which comprises the steps of:

deriving an amount and a direction of a torque displacement from said lateral and longitudinal G signals when said restricting means is locked;

deactivating said restricting means when said direction of said torque displacement is from the outside wheel to the inside wheel;

calculating a load distribution to said left and right wheels when said direction of said torque displacement is from said inside wheel to said outside wheel;

computing a driving torque from a map storing data in a function of said position signal, said engine speed signal and said degree signal;

determining a restricting torque from said load distribution and said driving torque;

actuating said restricting means in accordance with said restricting torque;

deciding a correction amount from said restricting torque and characteristic values of said motor vehicle; and

correcting an assist force by said electric motor so as to improve a traction performance and to attain an optimum control of said steering wheel without fluctuation.

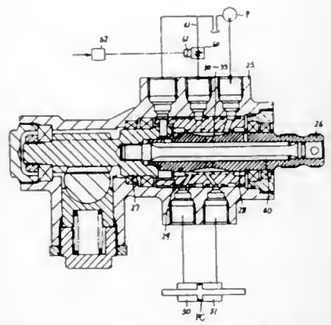
VOL 1155 ISS 3 OCT 19 1993 UMI

5,253,729

POWER STEERING SYSTEM

Katsuhiro Suzuki, Kani, Japan, assignor to Kayaba Kogyo Kabushiki Kaisha, Minato, Japan

Filed Nov. 20, 1991, Ser. No. 795,016
Claims priority, application Japan, May 22, 1989, 1-128149
Int. Cl.[5] B62D 5/083, 6/02
U.S. Cl. 180—142 1 Claim



1. A power steering system comprising an input shaft;
a rotary valve operatively connected through said input shaft to a handle said including a rotary spool and a sleeve arranged around said rotary spool;
said rotary spool and sleeve being rotated relative to each other depending upon turning of the handle, resulting in being changed over, so that a direction of actuation of a power cylinder and power assistance force are controlled depending upon the changing-over of said rotary valve;
wherein first and second valve groups are provided so as to be changed over depending upon relative rotation between said rotary spool and said sleeve to control the amount of fluid fed to the power cylinder;
said first and second valve groups are arranged in a manner to be positioned on a circumference of said sleeve and opposite to each other on a diametric line defined in a section perpendicular to an axis of said sleeve;
third and fourth valve groups are provided so as to control the amount of a part of fluid discharged from a pump to substantially control feed pressure of the fluid;
said third and fourth valve groups are arranged in a manner to be positioned in the same circumference and opposite each other on a line perpendicular to said diametric line on which said first and second valve groups are positioned;
blocks are arranged between said first valve group and said second valve group and between said third valve group and said fourth valve group so as to interrupt communication between said respective valve groups; and
a variable throttle valve which is controlled depending upon the travel speed of a vehicle arranged on a downstream side of said third and fourth valve groups.

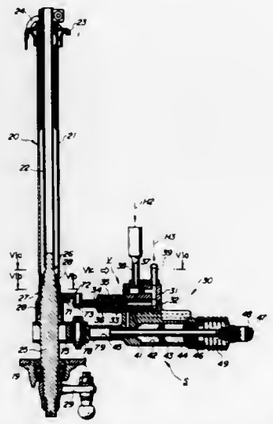
5,253,730

POWER STEERING APPARATUS

Kiyotaka Hayashi; Kazushiro Inoue, both of Saitama; Tatsuhiro Tomari, Tokyo; Kanau Iwasbita, Saitama, and Shoichi Honda, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 362,259, Jun. 6, 1989, abandoned. This application Nov. 7, 1991, Ser. No. 789,523
Claims priority, application Japan, Jun. 8, 1988, 63-140950; Sep. 12, 1988, 63-227932
Int. Cl.[5] B62D 5/06
U.S. Cl. 180—146 15 Claims

1. A power steering apparatus for a motor vehicle, comprising:
a steering shaft having an axis, an upper portion on which a steering handle is mounted and a lower portion operatively coupled to a steerable wheel of the motor vehicle;
phase difference generating means disposed between the upper and lower portions of said steering shaft and having a first action point for allowing a steering angular phase difference within a predetermined range between the wheel and the first action point;
lever arm means angularly movable about the axis of said steering shaft and angularly displaceable therewith, said lever arm having a second action point; and
actuator means operatively coupled between said first and second action points and comprising means for acting, by said lever arm means, on said steering shaft as a function of the angular displacement of said lever arm means for assisting in turning said steering shaft.
said upper portion of said steering shaft including an upper shaft to which said steering handle is connected and which is rotatable with said steering handle,



said lower portion of said steering shaft including a lower shaft operatively coupled to a steerable wheel of the motor vehicle,
said phase difference generating means for interconnecting said upper and lower shafts while allowing the steering angular phase difference being responsive to the application of a steering force to said upper shaft;
said lever arm means having an arm projecting laterally to said upper shaft and angularly displaceable therewith; and
said actuator means comprising control valve means having a valve body angularly movable about a pivot on a vehicle frame of the motor vehicle, and a control valve pivotally mounted on a distal end of said arm and slidable in said valve body as a function of angular movement of said arm means for controlling an assisting force to be applied to said lower shaft.

5,253,731

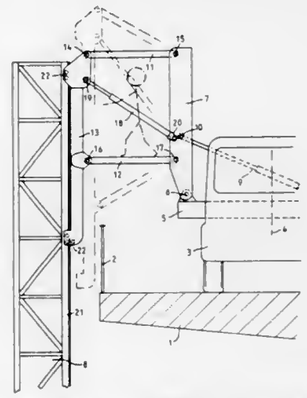
BRIDGE UNDERVIEW DEVICE

Alfons Moog, Untersiggingen 110, 7774 Deggenhausertal 3, Fed. Rep. of Germany

PCT No. PCT/DE90/00685, § 371 Date Mar. 6, 1992, § 102(e) Date Mar. 6, 1992, PCT Pub. No. WO91/03603, PCT Pub. Date Mar. 21, 1991
ub. Date ASep. 7, 1990, Ser. No. 838,403
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1989, 8910749
Int. Cl.[5] E04G 1/36
U.S. Cl. 182—63 5 Claims

1. A bridge underview device comprising
(a) a chassis;

(b) a turntable mounted on said chassis and being rotatable about a vertical axis;
(c) a bearing element mounted on said turntable by a first pivot joint for a swinging motion about a horizontal axis of said first pivot joint;
(d) a guide member;
(e) an elevating tower;
(f) mounting means for mounting said elevating tower on said guide member for gliding displacement relative to said guide member;
(g) a first arm coupled to said bearing element by a second pivot joint and to said guide member by a third pivot joint;
(h) a second arm extending parallel to said first arm and being coupled to said bearing element by a fourth pivot joint and to said guide member by a fifth pivot joint; said



second, third, fourth and fifth pivot joints each having a horizontal axis; said first and second arms being swingable in unison to either side beyond a central position of said first and second arms for swinging said guide member and said elevating tower as a unit relative to said bearing member in a vertical plane while maintaining an unchanged orientation; in said central position said guide member being at a maximum distance from said bearing element;
(i) first positioning means for maintaining said bearing member in a desired angular position relative to said chassis; and
(j) second positioning means for maintaining said guide member in a desired distance relative to said bearing member.

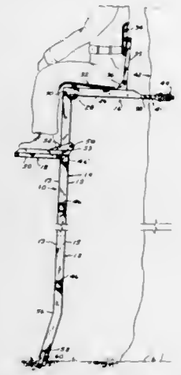
5,253,732

PORTABLE FOLDING TREE STAND

Danny R. Daniels, Rte. 3, Box 567, Broken Bow, Okla. 74728

Filed Feb. 22, 1993, Ser. No. 20,954
Int. Cl.[5] A45F 3/26
U.S. Cl. 182—116 5 Claims

1. A hunter's foldable and portable tree stand, comprising:
a multisection pole-type ladder assembly including a base section and an upper section hingedly connected in axial rigid alignment when in upright operative position and juxtaposed when folded;
a rigid generally planar seat overlying a pole-like seat base hingedly connected horizontally, at one end, with the upper end portion of said upper section for supporting a hunter above ground when in operative position and juxtaposed with said upper section when folded;
yoke means including a pair of arms diverging from said seat base for contact with a tree;
a foot support platform having a rearward portion and having a pair of rearwardly projecting ears secured to said rearward portion and straddling the upper end portion of said upper section for pivoting movement from a horizontal operative position to a juxtaposed position with the upper section when folded; and



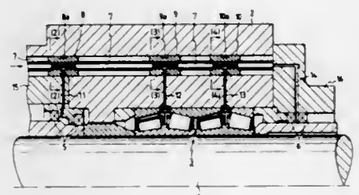
an elongated flexible element partially surrounding the tree opposite the yoke means and connected with said pair of arms for securing the seat to the tree.

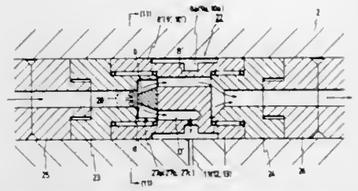
5,253,733

OIL AND AIR LUBRICATION DEVICE

Takeshi Miyachi, Osaka, Japan, assignor to Koyo Seiko Co., Ltd., Osaka, Japan

Filed Aug. 18, 1992, Ser. No. 931,329
Claims priority, application Japan, Aug. 20, 1991, 3-207989; Dec. 25, 1991, 3-343035; Jun. 26, 1992, 4-169245
Int. Cl.[5] F01M 1/00
U.S. Cl. 184—6.26 2 Claims





1. An oil and air lubrication device for distributing an oil to a plurality of lubrication points through a plurality of branch passages as said oil is sent by an oil supplying means from an oil source along a peripheral surface of a single oil feed passage line, comprising:
at least one distribution means for sending required quantities of said oil to said lubrication points, said distribution means being provided in said oil feed passage line, each of said at least one distribution means having an introducing passage for sending said required quantity of said oil to said lubrication point via branch passages and at least one

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passing passage for passing another required quantity of said oil to a next down-stream distribution means; and

an equalizing means, provided in said oil feed passage line at inlet ends of said distribution means, for equalizing the inflow quantities of said oil between said introducing passage and said passing passages.

5,253,734

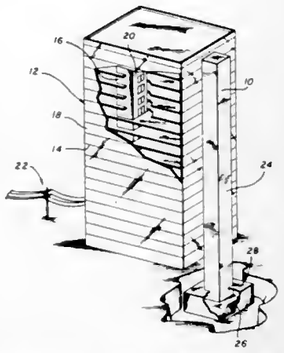
HIGH RISE EMERGENCY ELEVATOR

Charles J. Laurutis, 808 W. 35th Pl., Yuma, Ariz. 85365

Filed Mar. 11, 1992, Ser. No. 850,171

Int. Cl.[5] B66B *9/02*

U.S. Cl. 187—6 **9 Claims**



1. An apparatus for vertical transportation between the floors of a building during an emergency, said building having a plurality of floors, a first power supply, an interior and an exterior, said apparatus comprising:

structural support means permanently positioned on said exterior of said building;

transport means for transporting persons and materials between said floors along said structural support means;

generating means for providing power for said transport means independent of said first power supply, said generating means electrically connected to said transport means; and

a single environmental enclosure for protecting both an elevator car and said generating means from damage to environmental effects prior to their use.

5,253,735

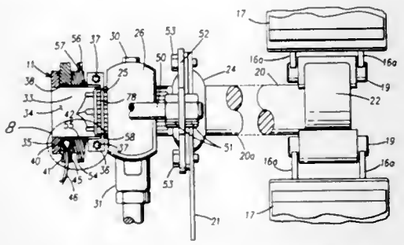
APPARATUS TO SENSE AND ANNUNCIATE TRUCK BRAKE CONDITION

Reese G. Larson, S. 506 Leta St., Spokane, Wash. 99216, and John V. Boes, E. 14806 Rockwell Ave., Spokane, Wash. 99207

Filed Sep. 28, 1992, Ser. No. 951,822

Int. Cl.[5] F16D *66/02*

U.S. Cl. 188—1.11 **3 Claims**



1. In a braking system having opposed brake shoe arms pivotally movable into frictional engagement with the circumferential rim of a brake drum by means of an "S" cam carried for rotation on an "S" cam shaft having an end extending externally of the brake drum and activated by a radially extending adjustment arm having a clevis interconnecting driving linkage spacedly adjacent the "S" cam shaft, apparatus to sense and annunciate brake condition at a distance from the brake system, comprising in combination:

a cam shaft disk having an elongate sleeve-like sensor body with first and second ends defining a channel for carriage upon the splined end of the "S" cam shaft, said body defining a disk bearing surface and having clamping weans at the first end to releasably positionally maintain at least a first end portion of the body upon an "S" cam shaft, said body carrying an annular cam shaft disk at the second end, said cam shaft disk carrying a first switching means radially spaced from its bore;

an annular sensor disk journaled on the sleeve-like body of the cam shaft disk adjacent the cam shaft disk, said sensor disk carrying second and third switching means, respectively, on each side, said second switching means operatively communicating with the first switching means carried by the cam shaft disk, said sensor disk having adjustable mechanical linkage to maintain the sensor disk in fixed rotary position relative to the sleeve-like body carrying it;

an annular slack adjuster arm disk rotatably carried by the sleeve-like body of the cam shaft measuring disk adjacent the sensing disk and spacedly distant from the cam shaft disk, said slack adjuster arm disk having, forth switching, means in the surface adjacent the sensor disk to operatively communicate with the third switching means on the adjacent surface of the sensor disk, said slack adjuster arm disk having an adjustably positionable adjustment arm extending radially to communicate with an outer end portion of the slack adjuster arm to cause the slack adjuster arm disk to rotate responsively to the motion of the slack adjustment arm; and

an annunciating system having at least two annunciators at a spaced distance from the brake system, a first annunciator communicating with the third switching means to annunciate the proximity of the fourth switching means carried by the slack adjuster arm disk with the third switching means proximate thereto to indicate need for brake slack adjustment and a second annunciator to annunciate proximity of the first switching means carried by the cam shaft disk to the second switching means to indicate parts wear.

5,253,736

RAILWAY BRAKE ACTUATOR

William H. Kohler, Ringwood, N.J., assignor to Tec Tran Corporation, Mahwah, N.J.

Continuation-in-part of Ser. No. 739,338, Aug. 1, 1991, Pat. No. 5,176,227. This application Dec. 31, 1992, Ser. No. 999,015

Int. Cl.[5] B61H *13/00*

U.S. Cl. 188—59 **25 Claims**

1. A brake actuator for operating a railway brake, comprising

a first output member comprising a cylinder having an operating cavity with open and closed ends,

a second output member comprising a piston assembly extending through the open end into the cavity,

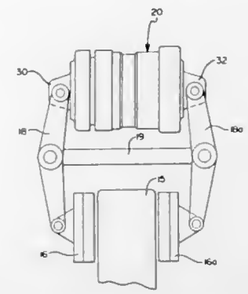
means connecting the actuator to the brake such that extension of the piston from the cylinder applies the brake and retraction of the piston within the cylinder releases the brake,

a gripper ring carried by one of the output members and gripping a surface of the other output member with a frictional force to enable movement therewith,

spring means engaging the ring and exerting a retracting force on the ring and other output member which is smaller than the friction force, a first abutment on the one member limiting retraction of the ring and other member by the spring means,

power means for extending the piston assembly with a force greater than the friction force and greater than the retracting force to apply the brake and for enabling the spring means to retract the piston assembly to release the brake,

a second abutment on the cylinder limiting extension of the



ring upon extension of the piston assembly and ring by the hydraulic force, while permitting continued movement of the piston assembly relative to the ring to apply the brake, whereby the limited retraction of the ring provides brake slack, and movement of the piston assembly relative to the ring upon extension compensates for brake wear.

5,253,737

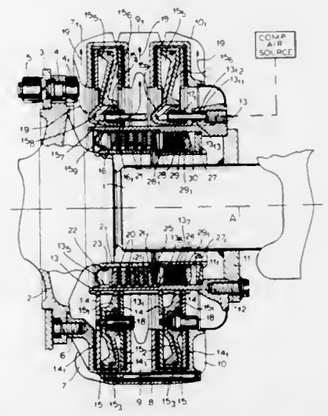
AUXILIARY BRAKE FORCE MULTIPLYING SPRING IN A MULTIDISC SERVICE AND AUXILIARY BRAKE SYSTEM

Hermann Klaue, Montreux, Switzerland, assignor to Datwyler AG, Altdorf, Switzerland

Filed Nov. 25, 1991, Ser. No. 798,284

Int. Cl.[5] B60T *8/32*; **F16D** *55/24*

U.S. Cl. 188—71.5 **9 Claims**



1. A full-lining brake for a heavy duty vehicle, comprising:

a stationary cylindrical brake carrier;

a plurality of annular brake disks axially shiftable and angularly fixed on said brake carrier and surrounding same, said brake disks being formed with friction brake linings;

a brake housing surrounding and enclosing said disks and connected with a wheel to be braked, said housing being juxtaposed with said linings and frictionally engageable thereby and being formed with radial convectively heat-dissipating ribs;

actuating means between said disks for urging said disks against said housing to brake said wheel; and

a wheel locking and auxiliary brake within said carrier comprising:

a sleeve affixed to a hub of said wheel and extending axially into said carrier coaxial therewith and defining an annular compartment with said carrier,

an axial heat-storing stack of a multiplicity of axially movable braking plates received in said compartment and including a multiplicity of plates formed with friction linings and angularly connected to said sleeve and a multiplicity of plates alternating therewith and angularly connected to said carrier,

spring means biasing said plates into mutual frictional contact, and

compressed air actuated force-relieving means effective to counteract said spring means and relieving a force thereof on said plates to permit rotation of said wheel, said spring means including:

a force-transmitting force-multiplying plate spring acting upon said stack,

an axially shiftable actuating tube engaging said force transmitting plate spring, and

a spring bearing on said tube;

said force relieving means including an annular piston operatively connected with said tube and actuatable by compressed air to shift said tube.

5,253,738

SAFETY DISC BRAKE FOR LIFTS

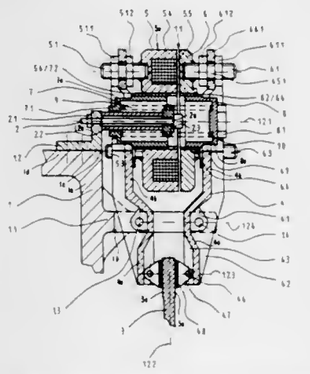
Josef Vertesy, Luzern, and Toni Bissig, Hergiswil, both of Switzerland, assignors to Inventio AG, Hergiswil NW, Switzerland

Filed Jul. 9, 1991, Ser. No. 727,586

Claims priority, application Switzerland, Jul. 12, 1990, 02 327/90

Int. Cl.[5] B60T *13/04*

U.S. Cl. 188—171 **6 Claims**



1. A safety disc brake, especially for lifts, comprising:

carrier bolts;

two brake levers pivotally mounted upon the carrier bolts;

said brake levers being provided with brake shoes and brake linings;

each of said brake levers having a longer arm and a shorter arm;

a brake disc;

pre-biased brake springs for urging the brake shoes and brake linings of the brake levers against the brake disc;

said pre-biased brake springs being arranged between the longer arms of the brake levers and exerting a brake spring force;

said brake levers being non-overlapping and mechanically independently movable;

means for exerting an electromagnetic counter force effective at the region of the longer arms of the brake levers to

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lift the brake shoes and brake linings of the brake levers off the brake disc;

said means for exerting an electromagnetic counter force comprising an electromagnet which actuates the brake levers against the brake spring force of the brake springs;

said electromagnet comprises a pot magnet which is fixedly connected with one of the brake levers of the two brake levers and an armature plate which is fixedly connected with the other brake lever of the two brake levers;

the electromagnet has a predetermined working direction;

means defining a respective three-point attachment having three attachment locations respectively associated with the pot magnet and the armature plate and adjustable at each attachment location in said predetermined working direction;

one of said three-point attachments connected the pot magnet with the one brake lever; and

the other of said three-point attachments connecting the armature plate with the other brake lever.

5,253,739

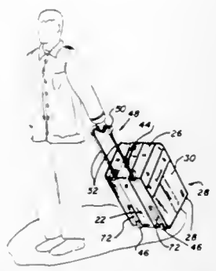
WHEELED FLIGHT BAG WITH RETRACTABLE PULL HANDLE

William L. King, Denver, Colo., assignor to Samsonite Corporation, Denver, Colo.

Filed Mar. 19, 1992, Ser. No. 854,504

Int. Cl.[5] A45C *5/14*

U.S. Cl. 190—18 A **31 Claims**



1. A wheeled luggage bag of a generally rectangular prismatic configuration formed by a bottom wall and a top wall opposing one another and both extending in a length and a width dimension of the prismatic configuration, a top end wall and a bottom end wall opposing one another and both extending in a height and the width dimension of the prismatic configuration, and a right side wall and a left side wall opposing one another and both extending in the length and height dimensions of the prismatic configuration, the length dimension being the greatest dimension and the width dimension being the least dimension, the walls connecting together at their intersections to form the prismatic configuration with an interior enclosure adapted for receiving luggage, and an improvement in combination therewith comprising:

a pair of wheels located at the intersection of the bottom wall and the bottom end wall, the wheels spaced apart from one another in the width dimension, the wheels rotating in a plane substantially defined by the length and height dimensions;

a pull handle connected to the bag at the bottom wall and including a grip and at least one elongated rod, the elongated rod located at the bottom wall and extendable away from and retractable toward the top end wall, the grip connected to an end of the rod which is extendable together with the rod away from the end wall, the rod connected to the bag to transmit torsional forces through the rod between the bag and the grip;

an internal support structure extending along the bottom wall and supporting the bottom wall and wherein

the wheels are rotatably connected to the support structure at approximately the location of the connection of the bottom wall and the bottom end wall, and

the rod is slidably connected to the internal support structure.

5,253,740

AUTOMOTIVE POWER TRAIN WITH ANNULAR ELASTIC BODY FOR REDUCING VIBRATIONS OF FLYWHEEL ASSEMBLY

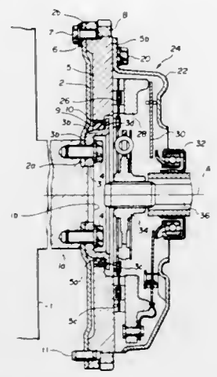
Satoshi Kohno, and Shizuaki Hidaka, both of Kanagawa, Japan, assignors to Atsugi Unisia Corp., Atsugi, Japan

Filed Sep. 10, 1991, Ser. No. 757,239

Claims priority, application Japan, Sep. 10, 1990, 2-94857[U]

Int. Cl.[5] F16F *15/12*; B60K *17/00*

U.S. Cl. 192—70.16 **3 Claims**



1. In an automotive power train;

an engine having a crankshaft, said crankshaft having an axis and being rotatable about an axis;

a flywheel;

a torque transmitting member in the form of an annular resilient disc having an inner peripheral portion connected to said crankshaft and an outer peripheral portion connected to said flywheel;

said flywheel having a central axial bore and an inner peripheral wall means defining said central axial bore, said flywheel also having a radially extending wall including a working surface;

a clutch having a clutch disc frictionally engageable with said flywheel at said working surface;

said crankshaft having fixed thereto means defining an axially extending cylindrical wall disposed in said central axial bore in opposed and spaced relationship to said inner peripheral wall means;

an elastic annular body having an inner peripheral wall fixed to said cylindrical wall of said crankshaft and an outer peripheral wall opposed to said inner peripheral wall;

means for reducing transmission of heat from said flywheel to said elastic annular body, said transmission of heat reducing means including a heat insulating ring disposed between said outer peripheral wall of said elastic annular body and said inner peripheral wall means of said flywheel; and

wherein said means defining said axially extending cylindrical wall has a reinforcement member fixedly secured to said crankshaft with said annular resilient disc interposed between said crankshaft and said reinforcement member, and said reinforcement member includes an axially extending cylindrical portion formed with said axially extending cylindrical wall.

5,253,741

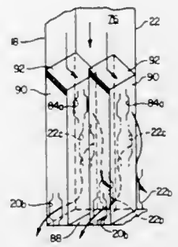
FLUIDIZED BED STEAM REACTOR INCLUDING TWO HORIZONTAL CYCLONE SEPARATORS AND AN INTEGRAL RECYCLE HEAT EXCHANGER

Walter P. Gorzegno, Morristown, N.J., assignor to Foster Wheeler Energy Corporation, Clinton, N.J.

Division of Ser. No. 792,565, Nov. 15, 1991. This application Oct. 21, 1992, Ser. No. 964,170

Int. Cl.[5] B65G *11/00*

U.S. Cl. 193—29 **8 Claims**



1. An apparatus for distributing particulate solids from a source between first and second containers, said apparatus comprising:

a trough for receiving said solids from said source;

means for dividing said trough into first and second sets of compartments;

means for selectively directing said solids into said first set of compartments;

means for permitting the passage of said solids from said first set of compartments to said first container;

means for permitting the passage of said solids from said first container to said second set of compartments; and

means for permitting the passage of said solids from said second set of compartments to said second container.

5,253,742

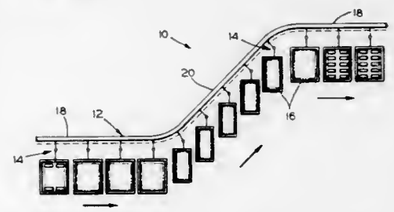
CONVEYOR HANGERS WITH ARTICULATED LINKAGES

Richard A. Dooley, 400 S. Westwood Ave., Toledo, Ohio 43609

Filed May 7, 1992, Ser. No. 879,417

Int. Cl.[5] B65G *17/32*

U.S. Cl. 198—680 **8 Claims**



1. A conveyor comprising an overhead conveyor rail having a generally horizontal portion and an angled portion which is angularly disposed to a horizontal plane, chain means movably carried below said rail, hanger means supported by said rail and movable therealong by said chain means, said hanger means comprising an upper link carried by said rail and movable by said chain means with said chain means maintaining said upper link in a position perpendicular to said rail, a lower link, connecting means connecting an upper end of said lower link to a lower end of said upper link, said connecting means being a universal joint positioned at an angle relative to said links whereby said lower link rotates about a generally vertical axis when said hanger means is moved below the angled portion of said conveyor rail.

5,253,743

WAFER BLOCK MAGAZINE FOR A SHORT-TIME INTERMEDIATE STORAGE OF WAFER BLOCKS

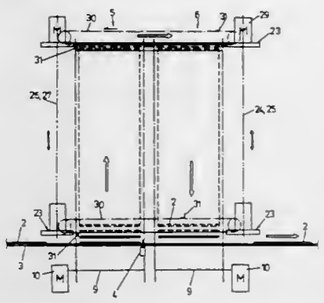
Franz Haas, Sr., Vienna; Franz Haas, Jr., Leobendorf; Johann Haas, Klosterneuburg, and Friedrich Ivan, Vienna, all of Austria, assignors to Franz Haas Waffelmaschinen Industriegesellschaft m.b.H., Vienna, Austria

Filed Jul. 21, 1992, Ser. No. 917,506

Claims priority, application Austria, Jul. 25, 1991, 1489/91

Int. Cl.[5] B65G *1/12*

U.S. Cl. 198—347.1 **8 Claims**



1. A wafer block magazine for the temporary storage of wafer blocks, comprising

(a) vertical storage towers,

(1) at least one of said towers having a feeding station and an additional one of said towers having a discharge station, and

(2) each one of the vertical storage towers defining a vertically extending, free interior space open at opposite sides, the towers being sequentially juxtaposed in a row along the opposite open sides,

(b) vertical conveyors arranged laterally of the free interior space of an associated on of the towers, each one of the vertical conveyors including

(1) wafer block support elements movable vertically up and down in the associated tower, the support elements defining horizontal storage compartments for receiving respective ones of the wafer blocks, and

(c) a horizontal conveyor vertically displaceable within the interior spaces of the juxtaposed towers for transferring the wafer blocks between horizontally aligned ones of the storage compartments of the towers.

5,253,744

ACCUMULATOR

Dorian F. Steeber, Taylors, S.C., assignor to Hartness International, Greenville, S.C.

Continuation of Ser. No. 669,744, Mar. 15, 1991, abandoned. This application Oct. 13, 1992, Ser. No. 960,254

Int. Cl.[5] B65G *1/00*

U.S. Cl. 198—347.3 **43 Claims**

1. A method of surge control for products being transported via a moving conveyor belt means in a predetermined downstream direction between two production areas, said method comprising:

providing an accumulator device with an upstream infeed and a downstream outfeed, and situated alongside the conveyor belt means intermediate the two production areas so that one of such areas is upstream of the accumulator device infeed and the other production area is downstream of such device outfeed, such accumulator device being capable of controllably removing products from the

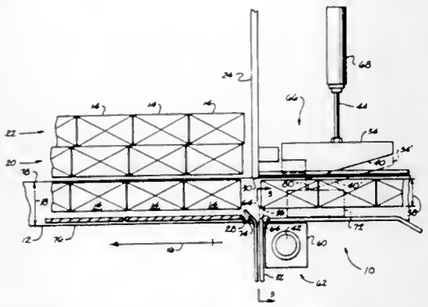
VOL 1155 ISS 3 OCT 19 1993 UMI

conveyor belt means if there is a back-up of products being fed to the downstream production area; and

controllably removing products from the conveyor belt means with the accumulator device if a queue of products develops within the accumulator device between the outfeed and infeed thereof; wherein said removing step includes

establishing an infeed trapping point and engaging the leading edge of any product transported thereagainst by the conveyor belt means, such trapping point being situated along the conveyor belt means a predetermined distance upstreawm from the accumulator device infeed;

relatively shifting the queue of products an adequate distance downstream such that all products downstream of the infeed trapping point and not engaged thereat are



transported downstream at least to the accumulator device infeed, so that products are removed undamaged from the conveyor belt means by the accumulator device regardless of the relative position of products at the device infeed whenever the removing step commences;

wherein said engaging step includes partially restricting the product path on the conveyor belt means without applying any clamping force to the products, and

wherein said engaging step further includes injecting an engagement member partially into the product path such that adequate width remains for products to pass by said engagement member if the leading edge of such products has already passed thereby, while upstream from said engagement member guiding products relatively upstream on the conveyor belt means toward such engagement member so as to be engaged thereby.

5,253,745

CONVEYING AND STORAGE SYSTEMS

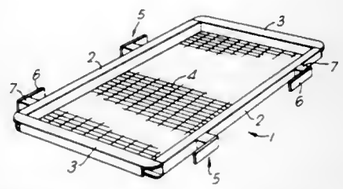
Hugo van den Bergh, Enniskerry, and John Hayes, Clane, botb of Ireland, assignors to Oseney Limited, Dublin, Ireland

Filed Sep. 6, 1991, Ser. No. 756,050

Claims priority, application Ireland, Sep. 7, 1990, 3258/90; Mar. 26, 1991, 998/91

Int. Cl.[5] B65G *29/00*

U.S. Cl. 198—465.1 9 Claims



1. A substantially rectangular product carrying unit in combination with guide and support rails defining guide means for travelling movement of said unit, said product-carrying unit having four edge regions, a first two of said four edge regions extending along two opposite sides of the unit for travelling engagement with respective said guide and support rails, and the other two of said four edge regions extending transversely between said first two of said four edge regions, each of said first two of said four edge regions comprising a substantially continuous elongate structure having a downwardly-directed surface in low friction engagement with cooperating upwardly-directed support means of a respective one of said guide and support rails for support of the unit during said travelling movement and said first two of said four edge regions also cooperating with said guide and support rails for lateral guidance of the unit during said travelling movement, said downwardly-directed surface being displaceable relative to said cooperating upwardly-directed support means within predetermined limits without loss of support or lateral guidance of said unit during said traveling movement and terminating outwardly of said unit in a downwardly-directed flange, the unit also having coupling means for linking the unit, when engaged with said guide and support rails, with an adjacent like unit at entry of said adjacent like unit into engagement with the same guide and support rails, said coupling means comprising at least one coupling member provided on one of said other two of said four edge regions, for interconnecting association with a coupling member of said adjacent like unit, said coupling member provided on said one of said other two of said four edge regions and said coupling member of said adjacent like unit being formed for continuing interconnecting association of the coupling members in the event of displacement within predetermined limits of said unit relative to said adjacent like unit, and said coupling means and said low-friction engagement of said downwardly-directed surfaces of said first two of said four edges of said unit with said cooperating upwardly-directed support means of said guide and support rails together enabling movement of said unit and said adjacent like unit, when linked together, along said guide and support rails in a direction of advance for the linked-together units by pulling the leading unit of the linked-together units in said direction of advance or by pushing the trailing unit of the linked-together units in said direction of advance.

5,253,746

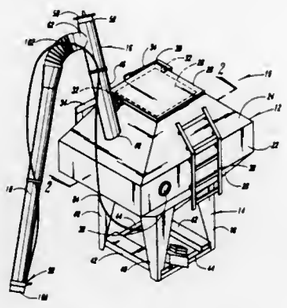
AUGER ASSEMBLY FOR A BULK SEED TRANSPORT BIN

Garry D. Friesen, 704 Clover La., and Raymond P. Waldner, 816 Kalvin Dr., both of Storm Lake, Iowa 50588

Filed Dec. 17, 1992, Ser. No. 992,421

Int. Cl.[5] B65G *65/34*

U.S. Cl. 198—550.2 6 Claims



1. A bulk seed transport bin, comprising:

a frame for supporting a container;

an enclosed storage container mounted on said frame and having a roof portion, a side wall portion and a generally funnel-shaped lower portion;

an access opening formed in said roof portion for loading said container with product;

a lid operably mounted on the roof portion of said container and operable between an open position revealing the access opening, and a closed position covering the access opening;

an auger mounted through the roof portion of said container for dispensing product from said container;

said auger including:

an elongated tube having upper and lower ends, the upper end projecting upwardly and outwardly through the roof portion, the lower end projecting downwardly and outwardly through the lower portion, and an intermediate portion of said tube located within the interior of said container;

an intake opening formed through the intermediate portion of said tube within said container, through which product within the container will pass into said tube;

a dispensing port formed in the upper end of said tube, above the roof portion of the container, for dispensing products from the tube; and

an auger shaft having upper and lower ends, rotatably mounted within said tube such that rotation of the shaft will move product upwardly through the tube from the intake opening to the dispensing port;

a connector shaft rotatably mounted through an opening in the lower end of said auger tube, for supporting and rotating said auger shaft, said connector shaft having an upper end projecting within the auger tube, and a lower end projecting downwardly exteriorly of the auger tube;

said auger shaft having a hollow lower end removably journaled on the upper end of said connector shaft;

said auger tube having an open upper end to permit removal of said auger shaft;

a flange removably mounted on the upper end of said auger tube to selectively close the upper end, said flange rotatably bearing the upper end of said auger shaft;

coacting means on said auger shaft lower end and said connector shaft upper end, for rotating said auger shaft upon rotation of said connector shaft; and

drive means connected to the lower end of the connector shaft for selectively rotating the connector shaft.

5,253,747

EQUIPMENT ADAPTED TO PERFORM A COORDINATED TRANSFER OF PACKAGED SIGNATURE BUNDLES FORM PACKAGING ASSEMBLIES TO DOWNSTREAM MACHINES

Giorgio Pessina, and Aldo Perobelli, both of Cusano Milanino, Italy, assignors to O.M.G. di Giorgio Pessina e Aldo Perobelli S.n.c., Milan, Italy

Continuation of Ser. No. 649,300, Jan. 30, 1991, abandoned, which is a continuation of Ser. No. 359,525, Jun. 1, 1989, abandoned. This application Oct. 22, 1992, Ser. No. 966,111

Claims priority, application Italy, Jun. 27, 1988, 21116 A/88

Int. Cl.[5] B65G *37/00*

U.S. Cl. 198—631 2 Claims

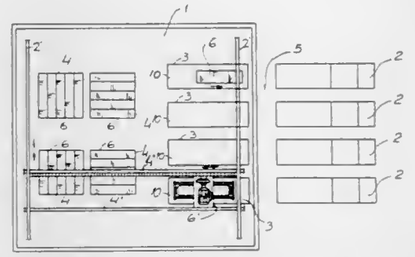
1. An equipment adapted to perform a coordinated transfer of packaged signature bundles comprising:

platform positions on which bundles are piled;

a plurality of downstream machines;

a plurality of displaceable conveyors corresponding to the number of the machines and being installed in a space between said platform positions and said machines, and with a service passage normally provided around said machines, including a passage between each conveyor and a machine, which passage may be closed by displacement of the conveyor to feed a bundle from the conveyor to the machined and then reopended; and

a bridge crane frame having at least one pair of substantially horizontal parallel fixed guide rails above and along the platform positions and enough of the conveyors, at least one pair of substantially horizontal parallel movable guide rails extending perpendicularly with respect to said fixed guide rails and slidably movable therealong, a transfer head assembly mounted on said movable guide rails for longitudinal displacement therealong having bundle pick-up means mounted on said transfer head assembly and



vertically displaceable with respect thereto, in order to pick up said bundles from said platform positions, transfer and release said bundles on said conveyors, said machines and passage being outside of the movement of said transfer head assembly.

5,253,748

MODULAR CONVEYOR BELT SEALED SPROCKET DRIVE SYSTEM

Brent A. Ledet, Metairie, La., assignor to The Laitram Corporation, Harahan, La.

Filed Oct. 28, 1992, Ser. No. 963,681

Int. Cl.[5] B65G *23/06*

U.S. Cl. 198—834 10 Claims



1. A modular conveyor belt sprocket drive unit for modular conveyor belt systems with a modular link belt of predetermined width adapted for engaging sprocket drive means distributed in a predetermined pattern across the belt width, comprising in combination:

a rotary drive shaft disposed along an axis to be oriented across said conveyor belt width,

a set of laminar sprocket wheels keyed to said shaft for rotation therewith variably positionable at selected positions along the shaft, all floatable on the shaft to move axially along the shaft in response to dynamic conditions encountered in driving the belt, and

tracking means axially positioned at an unkeyed sprocket wheel station along the shaft for permitting a limited degree of wander of the belt away from a preferred path.

5,253,749

OPEN AREA CONVEYOR ASSEMBLY

Peter J. Ensch, Milwaukee, Wis., assignor to Rexnord Corporation, Milwaukee, Wis.

Continuation of Ser. No. 603,892, Oct. 25, 1990, abandoned. This application Jun. 23, 1992, Ser. No. 902,761

Int. Cl.[5] B65G *17/06*

U.S. Cl. 198—850 10 Claims

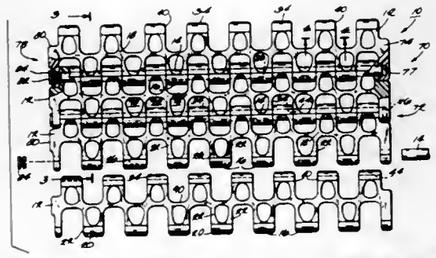
1. A module for use in a conveyor chain assembly including a plurality of modules linked together in end to end relation by a plurality of chain pins, each of the chain pins having a diameter, the module comprising

a plurality of forwardly extending link ends, each forwardly extending link end having a bore, the bores of the forwardly extending link ends being axially aligned and

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having a diameter that is slightly larger than the diameter of a chain pin and that is sufficiently large to house the chain pin, and each of the forwardly extending link ends having therein a rearwardly facing opening communicating with the bore and adapted to expose a portion of the chain pin,

a plurality of rearwardly extending link ends, each rearwardly extending link end including a rearwardly facing drive surface to be engaged by a sprocket tooth of a chain sprocket and including a bore, the bores of the rearwardly extending link ends being axially aligned and having a diameter that is slightly larger than a diameter of the chain



pin and that is sufficiently large to house the chain pin, each rearwardly extending link end having a forwardly facing opening communicating with the bore and adapted to expose a portion of the chain pin,

a plurality of reach bars extending between and connecting respective ones of the forwardly and rearwardly extending link ends, each of the reach bars including an upper edge and a lower edge, and

a support rib extending between the upper edges of the reach bars and being spaced from the lower edges of the reach bars and wherein the support rib is centrally located intermediate the forwardly extending link ends and the rearwardly extending link ends.

5,253,750

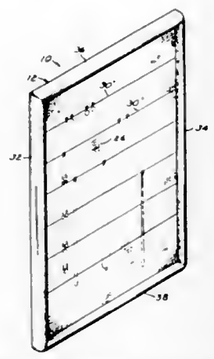
JEWELRY FRAME

Michael E. Keffer, 6536 W. Hefner, Oklahoma City, Okla. 73162

Continuation-in-part of Ser. No. 877,289, May 1, 1992, abandoned. This application Jan. 22, 1993, Ser. No. 8,445

Int. Cl.[5] **B65D** *73/00*

U.S. Cl. 206—6.1 **2 Claims**



2. A frame for holding and displaying items of jewelry, comprising:

a backboard formed from rigid planar material having opposing end edge surfaces, a front surface, a back surface and having opposing side edge surfaces;

a plurality of pairs of V-shaped grooves transversely formed in said side surfaces in equally spaced-apart relation from one said end surface; and,

a length of elongated monofilament line of uniform diameter secured by one end portion to said backboard back surface adjacent one said end edge surface and adjacent one said side edge surface and one groove of the adjacent pair of said pairs of grooves and tautly extended toward the other end edge surface of said backboard in a wrap-around action on the backboard while successively passing through the respective groove of each pair of grooves of said plurality of pairs of grooves,

said line secured by its other end portion to the back surface of said backboard adjacent said other end edge surface of its opposing end edge surfaces, a rectangular frame means including a top member, a bottom member and opposing side members contiguously surrounding said backboard, said top, bottom and side members each having a coextensive groove in its surfaces for cooperatively nesting a peripheral edge portion of said backboard.

5,253,751

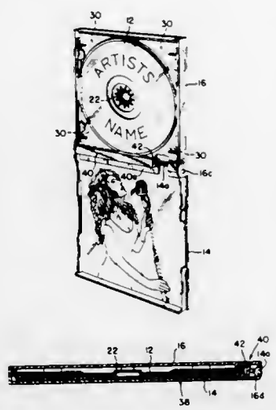
PACKAGING FOR COMPACT DISCS

Robert W. Wipper, Washington Township, Bergen County, N.J., assignor to Sony Music Entertainment Inc., New York, N.Y.

Filed Oct. 23, 1991, Ser. No. 780,633

Int. Cl.[5] **B65D** *5/50, 85/30, 85/57*

U.S. Cl. 206—45.19 **10 Claims**



6. A container for displaying and storing a recorded medium, including:

a) a base;

b) a lid pivotally mounted on the base for movement because a fully open display position, in which position the lid extends generally in the same plane as the base, and a closed storage position wherein the lid is juxtaposed on the base for retaining the recorded medium therebetween;

c) first lock means for maintaining the lid in its fully open display position; and

d) a tray having means thereon for holding the recorded medium between the lid and said tray when the lid is in the fully open display position and for holding the medium within the base after the lid has been moved to the closed storage position.

5,253,752

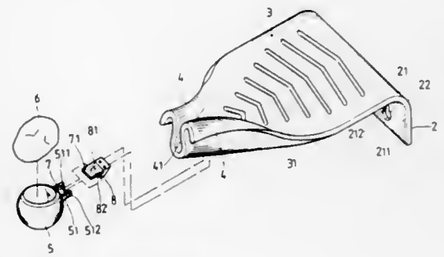
SOAP DISH

Maan J. Jang, P.O. Box 82-144, Taipei, Taiwan

Filed Apr. 2, 1993, Ser. No. 41,865

Int. Cl.[5] **A47K** *5/08*

U.S. Cl. 206—77.1 **2 Claims**



1. A soap dish comprising:

an inclined platform;

a seat fixedly mounted on the bottom of said inclined platform and having an iron plate thereon;

a liquid container having a U-shaped member pivotally connected with said seat, said U-shaped member having thereon a magnet engageable with the iron plate of said seat; and

a sponge received in said liquid container.

5,253,753

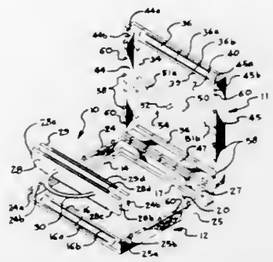
DISPLAY CASE

Timothy M. Brownfield, 16661 Townhouse Dr., Tustin, Calif. 92680

Filed Jul. 27, 1992, Ser. No. 919,224

Int. Cl.[5] **B65D** *85/57*

U.S. Cl. 206—310 **19 Claims**



1. A display case comprising:

first and second separate generally identical display case halves having interior surfaces and peripheral edge portions in facing relation with the like surfaces and edge portions of the other half, which, when mated together in facing relationship form an enclosure with at least one display opening;

at least one of said edge portions includes matingly coacting configurations for attaching and aligning said halves: and

one of said interior surfaces includes means for enabling attachment of an article thereto for display through said display opening.

17. A display case comprising:

first and second generally identical display case halves which when joined together form an enclosure with a display opening;

each of said display case half includes a peripheral edge portion in facing relation with the like edge portion of the other half, said edge portions including matingly coacting pegs and apertures, alternately positioned, or located, so that when said pegs and apertures are keyed, one to the other, an enclosure is formed with an aligned display opening; and

spaced parallel span rails at one end of said enclosure which define a compartment into which illumination means may be inserted for illuminating the display area.

5,253,754

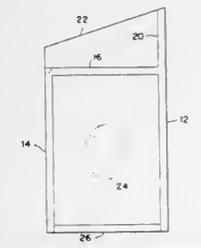
PEEL PACKAGE AND METHOD OF PACKAGING ORGANS

Charles I. Soodak, Silver Spring, Md., assignor to American Fluoroseal Corporation, Silver Spring, Md.

Filed Aug. 14, 1992, Ser. No. 929,205

Int. Cl.[5] **B65D** *81/18*

U.S. Cl. 206—438 **22 Claims**



1. A cryogenic temperature stable peelable package for storing and transporting transplantable organs at cryogenic temperatures comprising:

a first laminate including an inner layer of fluorinated ethylenepropylene copolymer and an outer layer of a nonthermoplastic polyimide;

a second laminate heat welded to said first layer to define a continuous peelable seal and a closed inner cavity, said second laminate including an inner layer of a fluorinated ethylenepropylene copolymer and an outer layer of a nonthermoplastic polyimide, said polyimide having a melting temperature higher than said inner layer;

said inner layer of said first laminate being heat sealed to said inner layer of said second laminate to define said peelable seal;

said inner layer of said first and second laminates having a thickness such that said inner layers have a tear strength less than the tear strength of said outer layers and said inner and outer layers having a bond strength such that said inner layer delaminates from said outer layer upon peeling said peelable seals open substantially without tearing said outer layer.

9. A method of producing a cryogenic temperature stable, peelable package for storing and transporting transplantable organs at cryogenic temperatures comprising:

superimposing first and second laminates, said laminates including an inner layer of fluorinated ethylenepropylene copolymer and an outer layer of a nonthermoplastic polyimide, said first and second laminates being superimposed with the inner layers facing one another;

heat welding said first and second laminates together to form first and second spaced apart side seams and first and second end seams to define a continuous peelable seem forming a closed cavity;

said inner layers of said first and second laminates having a thickness such that said inner layers have a tear strength less than a tear strength of said outer layers, and said inner and outer layers having a bond strength such that said inner layer delaminates from said outer layer substantially without tearing said outer layer upon peeling said peelable seals open.

13. A method of packaging a transplantable animal organ in

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a cryogenic temperature stable peelable package, said method comprising:

superimposing first and second laminates including an inner layer of fluorinated ethylenepropylene copolymer and an outer layer of a nonthermoplastic polyimide, said first and second layers being superimposed with the inner layers facing one another;

heat sealing said first and second laminates together to form first and second spaced-apart side seams and a first end seam extending between said side seams to form an open-ended cavity;

placing a transplantable animal organ in said open-ended cavity; and

heat sealing a second end seam extending between said first and second side seams to define a peelable seal and a closed cavity containing said organ;

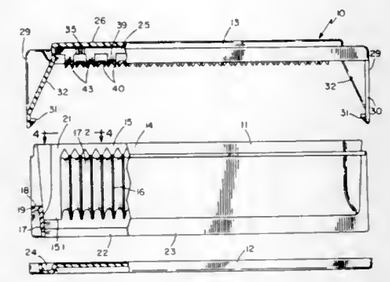
said inner layers of said first and second layers of said laminate having a thickness such that said inner layers have a tear strength less than a tear strength of said outer layers, and said inner and outer layers having a bond strength between one another such that said inner layer delaminates from said outer layer substantially without tearing said outer layer upon peeling said peelable seal open.

5,253,755

CUSHIONED COVER FOR DISK CONTAINER

Dale A. Maenke, Chaska, Minn., assignor to Fluoroware, Inc., Chaska, Minn.

Filed Mar. 20, 1991, Ser. No. 672,466
Int. Cl.[5] B65D *85/30*
U.S. Cl. 206—444 **5 Claims**



1. A protective cover and an elongate disk container portion receiving said cover thereon,

said container portion comprising sidewall portions, an open disk storing interior portion between the sidewall portions, an open top portion of said interior portion, and disk confining rib and slot portions formed in the sidewall portions,

a plurality of disks stored in a row in said interior portion of the container portion, said disks comprising side edge portions confined by said rib and slot portions and said disks comprising rounded upper edge portions disposed adjacent the open top portion along a row substantially midway between the sidewall portions,

said protective cover comprising an elongate panel portion overlying and substantially closing the open top portion of the container portion, the panel portion having opposite elongate side portions adjacent the sidewall portions of the container portion,

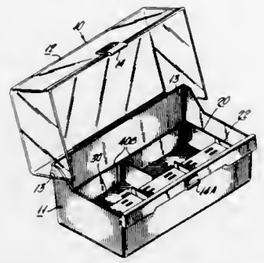
and a multiplicity of elongate cantilever disk cushioning portions comprising inner end portions having disk hold down elements thereon and aligned with each other in and along a row substantially midway between the sidewall portions of the container portion and also substantially midway between the side portions of the panel portion to confront the row of disk rounded upper edge portions adjacent to said open top portion, the hold down elements comprising disk engaging faces engaging the disk rounded upper edge portions, said hold down elements being resiliently yieldable toward the panel portion, the elongate cantilever disk cushioning portions comprising resiliently yielded mounting arms and also comprising outer end portions rigidly secured to the panel portion, the mounting arms of adjacent cushioning portions extend in opposite directions toward the row of hold down elements.

5,253,756

CONTAINER FOR DATA-STORAGE DEVICES

Malcolm L. Goekler, Laredo, Tex., assignor to Hunt Holdings, Inc., Wilmington, Del.

Filed Oct. 13, 1992, Ser. No. 959,609
Int. Cl.[5] B65D *85/30, 1/36, 6/04*
U.S. Cl. 206—444 **10 Claims**



1. A container for holding a plurality of different sizes of data storage devices such as cartridges, cassettes and/or disks each capable of bearing electrically, magnetically or optically recorded information, comprising:

an outer box having sidewalls and a bottom;

a plurality of trays each having a platform for receiving and holding said data storage devices, and each insertable into and removable from said box;

at least one of said trays having first support members extending in one direction normal to said platform thereof, and having second support members extending in the opposite direction normal to said platform, whereby said at least one of said trays, in a first position thereof, can rest on the bottom of said box supported by said first support members, or supported by said second members when said tray is turned over to a second position thereof;

the height of the upper side of said platform above said bottom of said box being less when said tray is in said first position than when it is in said second position;

said at least one tray having walls extending normally to said platform and defining a plurality of open-topped compartments for holding said data storage devices.

5,253,757

DRAWING RECEPTACLE FOR USE WITH COMPUTER PRINTERS

James S. Locker, Muncie, Ind., assignor to Ball State University, Muncie, Ind.

Filed May 12, 1992, Ser. No. 881,518
Int. Cl.[5] B65H *31/14;* **A47B** *63/00;* **B65D** *1/34*
U.S. Cl. 206—449 **10 Claims**

1. A drawing receptacle adapted for use with an output of a printer, comprising:

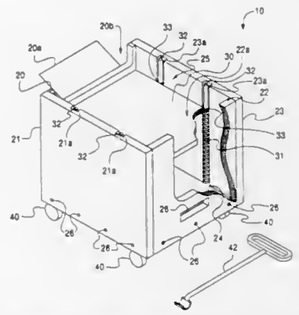
a rectangular base;

drawing retention means located about said base, forming an open receptacle top and being adapted to retain drawings inserted into the open receptacle top;

a plurality of compression springs supported at their bottoms by said base;

a plurality of vertically extending rods carried by said base, said plurality of rods extending within and locating said compression springs adjacent said drawing retention means; and

a receptacle floor yieldably carried by said compression springs above said base and within said drawing retention means and adapted to support drawing stacks of variable quantity,



said compression springs being located between said base and said receptacle floor,

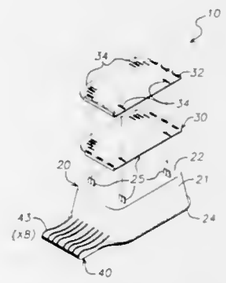
said receptacle floor including means forming a plurality of openings through which said rods extend so that said compression springs engage the receptacle floor.

5,253,758

STACKABLE COOKWARE

Irving J. Bissell, II, 1731 SE. 15th St., No. 505, Fort Lauderdale, Fla. 33316

Filed Oct. 1, 1992, Ser. No. 963,682
Int. Cl.[5] B65D *21/02*
U.S. Cl. 206—518 **16 Claims**



1. A cooking apparatus having improved stacking capabilities with similarly shaped cooking apparatuses, said cooking apparatus allowing for compact shipping space when shipping more than one of said similar shaped cooking apparatuses, comprising:

a first container for retaining food and liquids, said container having a bottom surface and a sidewall depending upwardly and tapering outwardly from the bottom surface, said sidewall having a top edge; said container shaped to easily receive a second container having a similar shape as said first container;

a first lid member operatively associated with a first portion of the top edge of said sidewall and having a first plurality of apertures extending therethrough said first lid member being removable from the top edge of said sidewall;

a second lid member operatively associated with a second portion of the top edge of said sidewall and having a second plurality of apertures extending therethrough, said second lid member being removable from the top edge of said sidewall; and

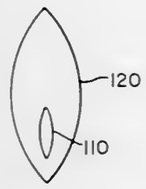
means for storing said first lid member and said second lid member beneath said first container when said cooking apparatus is not in use.

5,253,759

CONTAINERIZATION SYSTEM

Samuel T. Gouge, and James E. Shue, both of Raleigh, N.C., assignors to Rhone-Poulenc Inc., Research Triangle Park, N.C.

Continuation-in-part of Ser. No. 680,301, Apr. 4, 1991, abandoned, and a continuation-in-part of Ser. No. 679,290, Apr. 2, 1991, abandoned, and a continuation-in-part of Ser. No. 713,684, Jun. 11, 1991, abandoned. This application Mar. 27, 1992, Ser. No. 859,112
Int. Cl.[5] B65D *81/32, 85/82*
U.S. Cl. 206—524.7 **4 Claims**



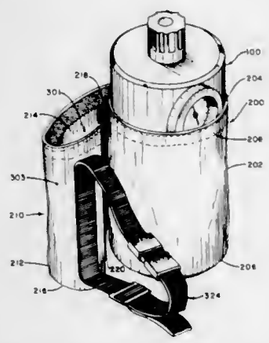
1. A containerization system which comprises at least one inner cold water soluble bag containing an agrochemical selected in the group comprising plant protection agents, pesticides, insecticides, herbicides, fungicides, nematocides, acaricides, plant nutrients, plant growth regulators, the containerization system further comprising an outer cold water soluble bag containing another hazardous compound different from the first and selected in the group comprising activity promoters, penetrating agents, synergists, antidotes, sticking agents, spreaders, activators, compatibility agents, adjuvants for the cold water soluble bags, plasticizers, the outer bag also containing the inner bag with its content wherein the inner bag sinks and the outer bag floats when put into water.

5,253,760

PROTECTIVE APPARATUS FOR A PRESSURIZED BREATHING DEVICE

Don M. Miller, 4949 Stumbung Ln. Apt. 104, Baton Rouge, La. 70816

Continuation-in-part of Ser. No. 756,992, Sep. 9, 1991. This application May 13, 1992, Ser. No. 884,457
Int. Cl.[5] B75D *85/08*
U.S. Cl. 206—525 **18 Claims**



1. An interchangeable protective apparatus for a pressurized breathing device, the pressurized breathing device containing a

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pressure gauge, a pressure output line and an end cap, said apparatus comprising:

a protective valving member constructed of rigid material; and

a carrying member constructed of flexible, pliable material; and wherein

said protective valving member, includes:

a top assembly having a portion defining an aperture so that said end cap can fit therethrough;

a cylindrical body, said cylindrical body being attached to said top assembly, said cylindrical body containing a portion having an aperture and sized to receive the pressure gauge so that the pressure gauge is viewable;

first means, for securing said protective valving member to said carrying member, and said first securing means contains a section having a slotted area;

and wherein said carrying member includes:

a second cylindrical body with a top and bottom end;

second means, located at the top end of said second cylindrical body, for securing said carrying member to said protective valving member by mating with said first means and wherein as said first and second securing means are secured together, the slotted area will decrease in size in order to properly secure to the pressurized breathing device and wherein the pressure output line fits therethrough.

5,253,761

RESERVOIR FOR CAPSULE FOR ORAL ADMINISTRATION

Mathijs Faber, Schagen, Netherlands, assignor to Mallinckrodt Medical, Inc., St. Louis, Mo.

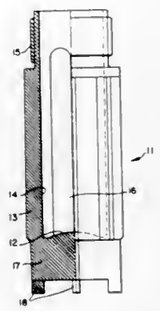
PCT No. PCT/US89/03272, § 371 Date Mar. 5, 1991, § 102(e) Date Mar. 5, 1991

PCT Filed Jul. 28, 1989, Ser. No. 646,627

Claims priority, application Netherlands, Aug. 4, 1988, 88011947

Int. Cl.[5] B61D *43/10*

U.S. Cl. 206—530 **11 Claims**



1. A shielded holder for holding at least one orally administered capsule which contains a substance dangerous to the environment; the holder comprising an internal reservoir in which the capsule is contained, the reservoir being shaped substantially in the form of a cylinder having a closed lower end, has means to facilitate closure by a cap at an open upper end, and includes a plurality of longitudinal ribs on the interior surface of the cylinder; and

an internal shielding sleeve surrounding the reservoir.

5,253,762

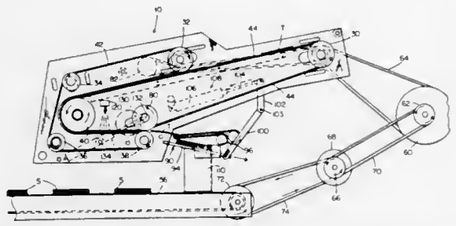
STACKING, COUNTING AND SORTING DEVICE FOR FLEXIBLE, PLANAR FOOD PRODUCTS

Daryl G. Duncan, Yakima, Wash., assignor to Arr-Tech Manufacturing, Inc., Zillah, Wash.

Filed Feb. 6, 1992, Ser. No. 831,934

Int. Cl.[5] B07C *5/00*

U.S. Cl. 209—552 **12 Claims**



1. An apparatus for stacking flexible, planar food products, said apparatus comprising:

a first conveyor belt extending around a first roller;

a second conveyor belt extending around a second roller, said first and second rollers being mounted close to each other in a generally parallel relationship, said first and second conveyor belts traveling at the same speed and extending parallel to and closely adjacent each other prior to reaching said first and second rollers so that said food products can be sandwiched between said first and second belts prior to reaching said first and second rollers and are discharged from a discharge location between said first and second belts as said first and second belts extend around said first and second rollers;

a discharge tray mounted beneath said discharge location at a position spaced from said discharge location in the direction that said food products are traveling as they reach said discharging location so that said food products are discharged onto said discharge tray;

counting means for counting the number of said food products that have been discharged onto said discharge tray;

a discharge conveyor positioned beneath said discharge tray, said discharger conveyor being selectively moved in response to a discharge conveyor actuator signal;

actuator means for selectively moving said discharge tray transversely while said discharge tray remains in substantially the same angular orientation in response to a discharge tray actuator signal, said discharge tray moving at a speed that is sufficient so that the inertia of a stack of said food products allows said discharge tray to be removed from beneath said stack without transversely moving said stack so that said stack falls onto said discharge conveyor belt;

control means responsive to said counter means for generating said discharge tray actuator signal and said discharge conveyor actuator signal for respective predetermined periods when said counter means counts a predetermined number of said food products;

a reject conveyor mounted above said discharge tray;

inspection means for examining said food products for defects prior to reaching said discharge location and for generating a defect signal in response thereto;

actuating means for moving the central axis of one of said rollers between first and second positions along an arcuate path having a center of curvature that is coincident with the central axis of the other of said roller thereby altering the angle of a discharge plane that is tangent to said first and second rollers at said discharge location, said discharge plane extending closer to said discharge tray when said roller is in its first position and said discharge plane extending closer to said reject tray when said roller is in its second position so that said food products are discharged onto said discharge tray when said roller is in its first position and said food products are discharged onto said reject conveyor when said roller is in its second position; and

actuator control means operatively connected to said inspection means and said actuating means for leaving said roller in its first position unless said inspection means generates said defect signal, and for moving said roller to its second position when said inspection means generates said defect signal, whereby said satisfactory food products are stacked on said discharge tray and said defective articles are stacked on said reject conveyer.

5,253,763

COLLAPSIBLE CONTAINER

David C. Kirkley, 2112 Firestone Dr., League City, Tex. 77573, and James L. Bereck, 1811 San Jose, Friendswood, Tex. 77564

Filed Aug. 11, 1992, Ser. No. 928,049

Int. Cl.[5] B65D *19/14*

U.S. Cl. 206—600 **2 Claims**

1. A collapsible container for the transportation of general cargo, comprising:

a rectangular base having a bottom panel forming a horizontal floor for said container;

a pair of opposing side walls connected by hinge means to said rectangular base, each of said walls including:

a central hinge defining an upper and a lower panel of substantially equal surface area adapted to be folded upon themselves and toward the interior of said container into a collapsed condition upon said floor;

a front wall removably joined to said base;

a rear wall removably joined to said base;

said side, front, and rear walls including:

a plurality of upright edges defining the thickness of each of said walls;

said side walls further including:

a rabbet in each of said upright edges for receiving said front and rear walls; and,

each said front and rear walls further including:

a rabbet in each of said upright edges for receiving said side walls;

a cover panel removably joined to said side, front, and rear walls defining a closed container of predetermined volume, whereby when said side walls are in a collapsed condition, said front and rear walls are shaped and dimensioned to be horizontally positioned, one above the other, thereupon, and said cover panel is shaped and dimensioned to be fitted horizontally atop said front and rear walls.

5,253,764

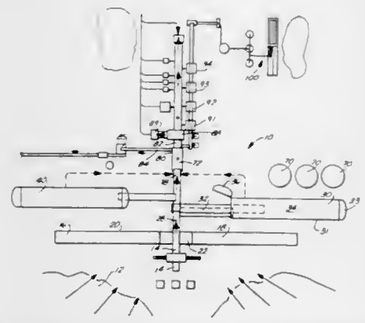
SYSTEM FOR TREATMENT OF HOUSEHOLD WASTE

Paul Gement, 1920 Woodvine St., Mandeville, La. 70448

Filed Jul. 2, 1992, Ser. No. 907,670

Int. Cl.[5] B03B *1/00*

U.S. Cl. 209—3 **16 Claims**



1. A process for treating a diverse waste stream containing cellulose-based material, comprising:

a. placing the waste into a treatment vessel having an interior space;

b. heating the vessel containing the waste under a certain pressure;

c. introducing a wetting agent into the vessel containing the waste;

d. agitating the waste and the wetting agent under heat and pressure for a sufficient period of time to subject most of the cellulose product to the wetting agent; and

e. applying a partial vacuum to the interior of the sealed vessel, to remove sufficient moisture from the waste so that the cellulose material does not adhere to the other components in the waste stream upon removal.

5,253,765

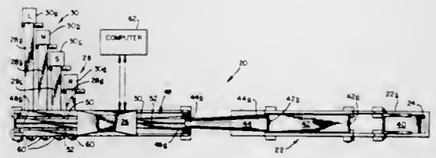
SORTING AND GRADING SYSTEM

Robert M. Moorehead, South Beach, Oreg.; John K. Anderson, Garland, and Charles E. Jeske, Plano, both of Tex., assignors to L.M.B. Electronics, Inc., Richardson, Tex.

Filed Jan. 14, 1993, Ser. No. 4,701

Int. Cl.[5] B07C *5/02*

U.S. Cl. 209—539 **20 Claims**



1. A system for sorting randomly oriented objects of varying sizes based upon the size of the object, the objects having minimum and maximum linear dimensions, the system comprising:

transport means for conveying the objects from an input location to one of a plurality of output locations;

means disposed along said transport means for capturing the image of each object to be sorted;

image processing means for determining the minimum and maximum linear dimension of each object based upon the captured image;

image processing means for determining the shape of each object based upon the captured image;

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means for selecting either the minimum or maximum linear dimension of the object based upon the shape of the object;

means for categorizing the size of the objects based upon the selected minimum or maximum dimension and for generating a control signal;

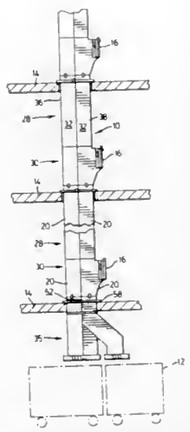
means responsive to said control signal for selectively routing the object based upon the categorized object size to one of said plurality of output locations.

5,253,766

WASTE DISPOSAL CHUTE

Geoffrey B. Sims, 429 Clendenan Ave., Toronto, Ontario, Canada M6P 2X7

Filed Mar. 14, 1991, Ser. No. 669,500
Claims priority, application Canada, Apr. 5, 1990, 2013984
Int. Cl.[5] B07C 7/04
U.S. Cl. 209—702 11 Claims



1. A chute assembly, for segregating material in a multi-story structure comprising:

a plurality of laterally adjacent chutes, each chute having a plurality of elongate, longitudinal, telescoping members, said telescoping members each having an inlet port, an outlet port and a telescoping portion, said telescoping portions and said outlet ports being formed at the same end of each telescoping member, each of said outlet ports fitting snugly inside the inlet port of the longitudinally adjacent telescoping member below;

means for providing access to each chute;

means for retaining said chutes in the multi-story structure;

a first vertical companion clip attached to one of said telescoping members; and

a second vertical companion clip attached to a laterally adjacent telescoping member, wherein said first vertical companion clip is releasably connected to said second vertical companion clip.

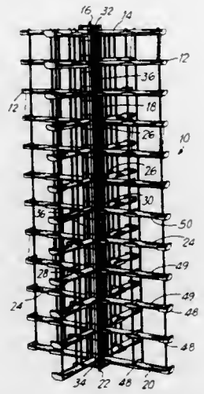
5,253,767

ROTATABLE DISPLAY TOWER FOR COMPACT DISCS AND THE LIKE

Lloyd Koeppel, North Freedom, Wis., assignor to Gressco, Ltd., Waunakee, Wis.

Filed Dec. 12, 1991, Ser. No. 806,720
Int. Cl.[5] A47G 29/00
U.S. Cl. 211—40 6 Claims

1. A rotatable merchandise display tower for a box-like container of merchandise for rotation on a stationary support base comprising at least two identical, vertically spaced shelves having aligned axis of rotation, mounting means on each of the shelves for supporting the selves on top of one another, each of said shelves comprising two or more radial arms extending from said mounting means, each of said arms of said shelves having a pair of sloped walls extending downwardly and outwardly in opposite directions from a common peak, said sloped walls having a bottom edge, spaced metal rods extending from the peak of a first of said arms of a first of said shelves to the peak of an arm located immediately above the first of said arms, said metal rods disposed in a vertical plane passing through said peaks of said first arm and said arm immediately above, and a bottom support surface extending upwardly and outwardly from said bottom edge of said opposed sloped walls; said rods and said bottom support surfaces providing tilted back support to said container; said metal rods,



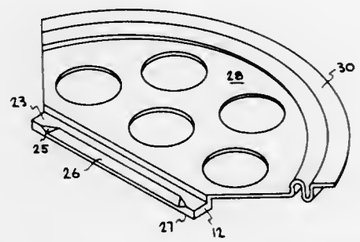
said opposed slope walls, and said bottom support surfaces of said first arm cooperating with said opposed slope walls of said arm located immediately above to define two opposed merchandise holding pockets on either side of said peak, each of said pockets being substantially open to allow said container of merchandise to be viewed face-on, an uppermost of said vertically spaced shelves having an upwardly extending exposed end on said mounting means of said uppermost shelf coaxial with said axis of rotation and a lowermost of said vertically spaced shelves having a downwardly extending exposed end on said mounting means of said lowermost shelf co-axial with said axis of rotation, said exposed ends receivable in said stationary support base for enabling the display tower to be supported for rotational movement.

5,253,768

WIPING BAR AND SUPPORT FOR PAINT BRUSHES

Steven J. Traversa, and Vito L. Racano, both of 4857 Cahuenga Blvd., North Hollywood, Calif. 91601

Filed Apr. 5, 1993, Ser. No. 42,666
Int. Cl.[5] A47F 7/00
U.S. Cl. 211—65 8 Claims



1. A device for wiping excess paint from a brush comprising:

a paint wiping body having a top face, a blade face, a bottom face, a multiplicity of opposing beveled edges, a first support end, and a second support end, wherein said blade face forms an acute angle with respect to said bottom face, and wherein said beveled edges form a pyramidal section with respect to said blade face and said top face;

a plurality of inner spring clips, said inner spring clips having an inner detent, said inner spring clips being affixed to said first end of said body and to said second end of said body in a generally perpendicular orientation;

a plurality of paint container outer rim clips, said outer rim clips having an outer detent, said outer rim clips and said inner rim clips oriented such that said outer rim detents and said inner rim detents substantially oppose each other; and

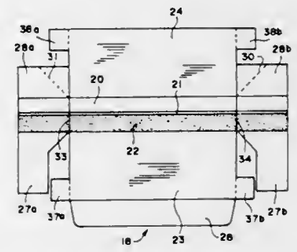
wherein said inner and outer detents may force expansion of said inner and said outer rim clips to entrap a rim of a paint can, thereby containing said paint wiping body generally within said paint can rim.

5,253,769

TRAY DESIGN FOR MERCHANDISE DISPLAY DEVICE

Kirk A. Vlastakis, Clemmons, N.C., assignor to Alliance Display and Packaging Company, Winston-Salem, N.C.

Filed May 12, 1992, Ser. No. 881,874
Int. Cl.[5] A47F 7/00
U.S. Cl. 211—126 25 Claims



1. A tray suitable for holding product in a merchandise display device, said tray being constructed from corrugated board and comprising

a) a bottom panel member for supporting product, said bottom panel member having opposing first and second side edges and opposing front and rear edges,

b) a bottom-reinforcing panel designed to underlie at least a portion of said bottom panel member, said bottom-reinforcing panel having a rear edge, two opposing side edges and a front edge that is essentially parallel to and adjacent to the front edge of said bottom panel member,

c) an elongated panel folded along its longitudinal axis and disposed between and attached to the front edge of said bottom panel member and the front edge of said bottom-reinforcing panel, said folded elongated panel extending along the entire length of the front edge of the bottom panel member and projecting generally upwardly a predetermined distance to form a front wall of said tray,

d) first and second side walls projecting generally upwardly and positioned in abutting relationship to the respective first and second side edges of the bottom panel member, said first and second side walls comprising folded sections that are continuous with the folded elongated panel extending along the front edge of the bottom panel member,

e) first and second locking panels attached to said first and second side walls, respectively, and extending a predetermined distance beneath the bottom panel member, and

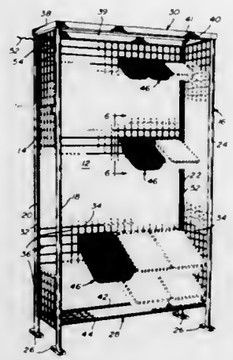
f) first and second connecting panels attached to said first and second side walls, respectively, and to opposing side edges of said bottom-reinforcing panel, each of said connecting panels being folded and, together with the attached bottom-reinforcing panel, being positioned beneath said locking panels and said bottom panel member.

5,253,770

MERCHANDISING UNIT

Gunter Rosenthal, St-Benoit, Canada, assignor to Rosenthal Import Ltd., Montreal, Canada

Filed Dec. 26, 1991, Ser. No. 813,594
Int. Cl.[5] A47F 3/00
U.S. Cl. 211—133 4 Claims



1. A merchandising unit comprising a first upstanding planar display panel, vertical weight bearing columns at each vertical edge of the first display panel, a second and third display panel extending from respective ones of said vertical weight bearing columns, the second and third display panel extending at right angles to the first panel and on the same side thereof to form a vaulted space therewithin, a vertical weight bearing column located at each respective other vertical edge of the second nd third display panels, a rectangular frame located at the top of the merchandising unit and connected to each vertical weight bearing column at a respective corner of the rectangular frame to maintain the merchandising unit in a self supporting integral unit, each first, second and third display panel including an open grid for receiving on either face, display devices provided with mounting brackets engageable within the open grid of each display device such that the display devices are accessible within the vaulted space and on the faces of the display panels facing outwardly of the vaulted space.

5,253,771

COUNTER-BALANCED, MULTIPLE CABLE CONSTRUCTION CRANE

Martin M. Mikulas, Jr., and Li-Farn Yang, both of Boulder, Colo., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 18, 1991, Ser. No. 793,974
Int. Cl.[5] B66C 23/76
U.S. Cl. 212—148 15 Claims

1. An apparatus for hoisting and moving a payload having a center of mass, comprising:

(a) a lifting means comprising an end effector and three cables;

each cable having a winding end and a working end;

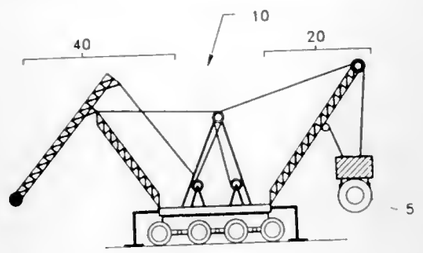
each winding end attached to a different point of the lifting means; and

each working end attached to a different point of the end effector such that the three cables each lift the payload and converge toward the center of mass of the payload;

(b) a counter-balancing means comprising a first boom, a

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first cable, a second cable, a first means for coiling, a second means for coiling, and a counterweight;
the first boom having a first end and a second end,
the first end of the first boom rotatably joined to the foundation, the second end of the first boom rotatably joined to the second boom;
the second boom having a first end and a second end;
the first cable having a working end and a coiling end, the working end of the first cable attached to the second end of the first boom, the coiling end of the first cable attached to the first means for coiling;
the first means for coiling attached to the foundation;
the second cable having a working end and a coiling end, the working end of the second cable attached to the first



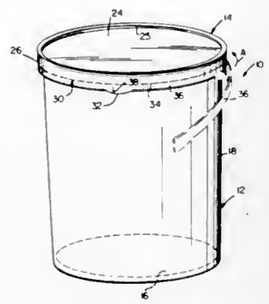
end of the second boom, the coiling end of the second cable attached to the second means for coiling;
the second means for coiling attached to the foundation;
the counterweight being attached to the second end of the second boom;
(c) a foundation having a top and a bottom and two opposite ends;
the lifting means joined to one of the two opposite ends of the foundation; and
the counter-balancing means joined to the opposite end which is not joined to the lifting means; and
(d) a transporting means connected to the bottom of the foundation, the transporting means providing for transportation of the apparatus.

5,253,772

TAMPER EVIDENT CONTAINER ASSEMBLY

Edward M. Earnest, Owings Mills, Md., assignor to Sweetheart Cup Company, Inc., Chicago, Ill.

Continuation of Ser. No. 876,907, Apr. 30, 1992, abandoned, which is a continuation of Ser. No. 703,858, May 21, 1991, abandoned. This application Feb. 26, 1993, Ser. No. 26,202
Int. Cl.[5] B65D *17/40*
U.S. Cl. 220—276 **8 Claims**



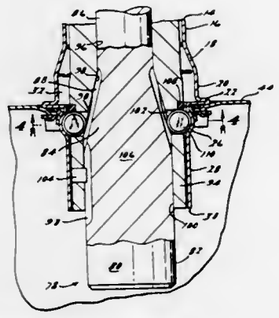
1. A tamper evident container assembly comprising:
an open-ended container body having a bottom wall and peripheral side wall, said side wall having an upper rim protruding radially outwardly of said peripheral side wall;
a reusable lid having a top wall portion constructed of skirt portion, said depending skirt portion constructed of spiral wound stock and having a free end, a major portion of said free end tucked under said upper rim, said skirt portion including the tucked portion being in substantially continuous engagement with said rim to thereby lock said lid to said container body;
wherein said depending skirt portion is further provided in a lower portion thereof with a line of weakening extending annularly about said skirt portion to thereby define an annular removable tear strip inclusive of said free end; and further wherein a minor portion of said free end is left untucked to thereby provide a gripping area to facilitate tearing and removal of said tear strip.

5,253,773

FILLER TUBE FOR LIQUID CONTAINERS

Kevin R. Choma, Canton, and Jack L. Boldt, Jr., Waterford, both of Mich., assignors to General Signal Corporation, Stamford, Conn.

Filed Aug. 26, 1992, Ser. No. 935,542
Int. Cl.[5] F16L *13/14*
U.S. Cl. 230—86.2 **2 Claims**



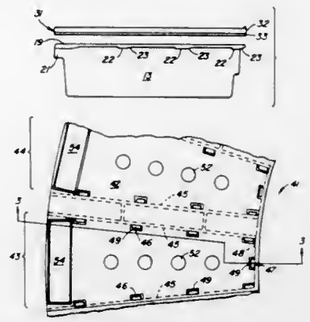
1. A tube assembly, comprising:
a filler tube having a first diameter portion, a second diameter portion extending from said first diameter portion, said second diameter portion having an increasing diameter from said first end to a second end, a third diameter portion, a fourth diameter portion having a plurality of outward projections and an outwardly projecting annular flange disposed between said third and fourth diameter portions;
a tank for receiving said filler tube, said tank including a body and a sealing arrangement, said sealing arrangement including a downwardly tapering section, an annular recess which forms a gap, an upwardly projecting annular lip and a downwardly extending diameter portion having a plurality of outward projections which overlap said outward projections of said tube;
sealing means disposed between said filler tube and said tank; and
a retainer member disposed over said downwardly extending diameter portion, said retainer member having a plurality of recessed areas wherein the outward projections of said tank overlap said recessed areas to lock said filler tube to said tank.

5,253,774

REAGENT RECEPTACLE AND SUPPORT RACK FOR AUTOMATED CLINICAL ANALYZERS

Jordan S. Honig, Albany; Christopher J. Macko, Martinez, and Richard B. Edwards, Vacaville, all of Calif., assignors to Bio-Rad Laboratories, Inc., Hercules, Calif.

Filed Jun. 26, 1992, Ser. No. 904,915
Int. Cl.[5] B65D *43/12, 51/20*
U.S. Cl. 220—345 **1 Claim**



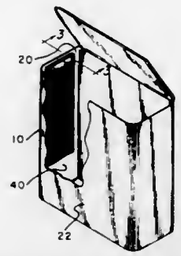
1. A device for holding liquid materials used in clinical assays, said device comprising:
at least two receptacles, each having an opening;
a puncturable membrane sealing each said opening to substantially prevent evaporation from said receptacle;
a support to receive said at least two receptacles: and said support including for each said receptacle:
a retaining wall whose perimeter defines an area at least as great as that of said opening, said retaining wall containing at least one hole having an area substantially smaller than said puncturable membrane; and
guide means to guide said receptacle into said support such that said retaining wall overlies said puncturable membrane, thereby permitting puncture of said puncturable membrane through said hole.

5,253,775

COMBINED HAMPER AND LAUNDRY BAG

Laurence P. Gould, 301 Chestnut St., Haddonfield, N.J. 08033

Filed Jan. 22, 1992, Ser. No. 823,767
Int. Cl.[5] B65D *25/16*
U.S. Cl. 220—403 **8 Claims**



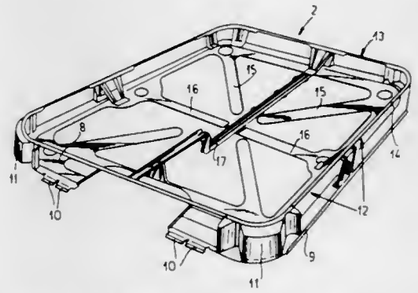
1. An apparatus for storing and maintaining separation of small laundry items from large laundry items prior to and during a washing and drying process comprising:
(a) a hamper, said hamper having an open end and at least one vertical side wall;
(b) a bag for holding said small laundry items, said bag comprising a flexible bag portion having an open end for inserting small laundry items therein and having means for sealing said open end, said bag further including a latching strip permanently attached to said open end of said bag portion, said latching strip maintaining said open end in a substantially closed condition, said latching strip including first and second ends and having a keyhole opening located adjacent each of said first and second ends thereof, and
(c) a mounting means enabling said bag to be removably attached directly to only said one vertical wall of said hamper, said mounting means being comprised of an elongated mounting strip and having a means for securing said mounting strip to said vertical wall of said hamper, said mounting strip having first and second ends and having knobs extending forwardly therefrom and located adjacent to each of said first and second ends of said mounting strip such that said knobs are in alignment with said keyhole openings of said latching strip for hanging said bag.

5,253,776

TRANSPORT AND STORAGE CONTAINER WITH SHEET-METAL FLOOR

Claude Decroix, Saverne, and Francis Herrmann, Mittelbronn, both of France, assignors to Sotralentz S.A., Drulingen, France

Filed May 20, 1992, Ser. No. 886,697
Claims priority, application Fed. Rep. of Germany, May 25, 1991, 4117159
Int. Cl.[5] B65D *19/10*
U.S. Cl. 220—495 **9 Claims**



1. A transport and storage container comprising:
an annular and erect outer wall constituted as a grid-work of welded-together vertical and horizontal bars and having a lower edge provided with a lower-edge bar and an upper edge provided with an upper-edge bar;
a normally horizontal and generally rectangular sheet-metal floor plate having first, second, third, and fourth sides, the first, second, and third sides each being formed with an inwardly open C-section outer rim engaged over the lower-edge bar and the fourth side being free of such a C-section rim and being formed with outwardly projecting tabs that engage over the lower-edge bar; and
a flexible inner vessel enclosed by the outer wall and resting on the floor plate.

5,253,777

PALLET CONTAINER

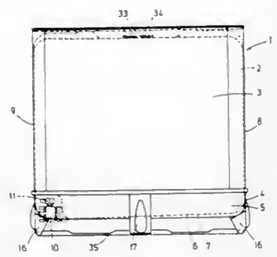
Udo Schutz, Ruckersteg 4, Selters, Fed. Rep. of Germany

Filed Mar. 16, 1992, Ser. No. 851,897
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1991, 4108399; Nov. 11, 1991, 4136963
Int. Cl.[5] B65D *21/02*
U.S. Cl. 220—571 **22 Claims**

1. In a pallet container for liquids, having an inner container of a synthetic resin with respectively one sealable filling and discharge opening, an outer jacket of metal in contact with the inner container and a bottom fashioned as a pallet, wherein the pallet is adapted for handling by means of stacker lifting truck

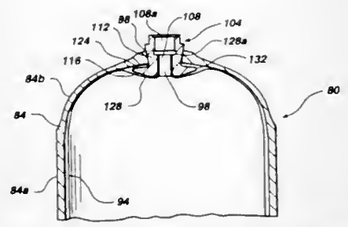
VOL 1155 ISS 3 OCT 19 1993 UMI

or shelf-servicing device, the improvement wherein the pallet comprises a floor pan for flush accommodation of the inner container and for selective mounting of a sheet-metal or lattice jacket, said inner container having a front wall, a rear wall, and a bottom designed as a drainage bottom with a central, flat drainage channel extending with a slight slope from the rear



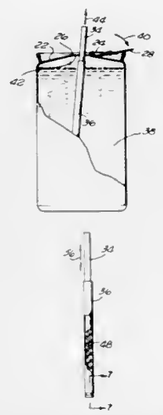
wall to a drainage connection arranged at the front wall for mounting a drainage valve, said floor pan having a bottom adapted to the drainage bottom of the inner container and exhibiting reinforcing creases, said creases having bases which lie in a joint, horizontal plane; and said floor pan being attached on a pallet frame.

5,253,778
FLUID PRESSURE VESSEL BOSS-LINER ATTACHMENT SYSTEM
Sadanandan N. Sirosh, Calgary, Canada, assignor to Edo Canada Ltd., Calgary, Canada
Filed Jan. 28, 1992, Ser. No. 827,226
Int. Cl.[5] F17C *1/06*
U.S. Cl. 220—590 **8 Claims**



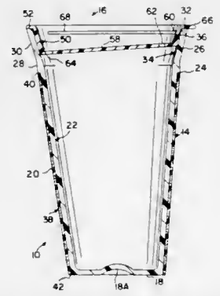
1. A pressure vessel for holding fluids comprising:
an outer shell made of a substantially rigid, mechanically strong material, and having at least one oblate end section with an opening therein,
boss means having a neck portion for fitting in the opening in the outer shell and a flange portion extending outwardly from one end of the neck portion, and
an inner, generally fluid impervious liner disposed in the outer shell against the inside surface thereof, and having at least one end section with an opening aligned with the opening of the outer shell, said inner liner being formed with a dual-layer lip circumscribing the opening in the liner and having an upper lip segment and a lower lip segment, with an annular recess therebetween for receiving and holding therein the flange portion of the boss means, and
wherein the flange portion of the boss means includes an outer rim having a plurality of notches spaced thereabout for contacting the recess wall of the dual-layer lip.

5,253,779
BEVERAGE CONTAINER HAVING A SELF-CONTAINED POP-UP STRAW ASSEMBLY
Gul N. Lee, 13346 Ridgecrest La., Cerritos, Calif. 90701
Filed Jan. 3, 1992, Ser. No. 817,264
Int. Cl.[5] B65D *17/34*; A47G *19/22*
U.S. Cl. 220—705 **14 Claims**



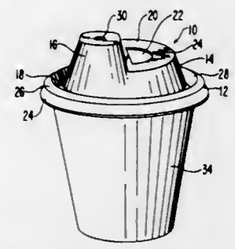
1. A beverage container having a self-contained pop-up straw assembly comprising:
a container body having bottom and side walls and a sloping top wall terminating in a closure and defining a beverage chamber; and
a drinking straw assembly enclosed in said chamber, comprising telescoping inner and outer tubes, said inner tube terminating in a coil, as an integral extension of one of its ends, disposed within said outer tube and constituting resilient means to urge said tubes apart against said sliping wall whereby to cause said straw assembly to tend to center itself in said container and project out of said container when said closure is open.

5,253,780
THERMAL DRINKING CUP
John G. Adado, .3308 S. Creek Dr., Suite 202, Grand Rapids, Mich. 49512
Filed Jun. 23, 1992, Ser. No. 902,945
Int. Cl.[5] B65D *11/00*
U.S. Cl. 220—711 **31 Claims**



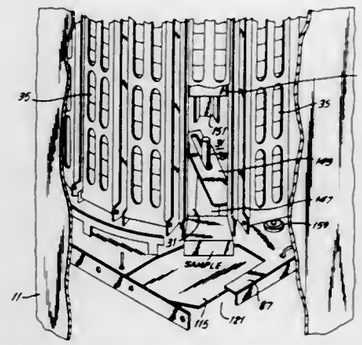
1. A drinking receptacle for holding and dispensing a liquid beverage, which comprises, in combination:
(a) a container means comprising a surrounding sidewall extending along and around a longitudinal axis of the container means for a bottom wall to form an open end of the container means, wherein a first sealing member is provided at the open end;
(b) a cover means mountable on the container means and having a second sealing member that mates with the first sealing member to close the open end of the container means in a sealing engagement, wherein the cover means is comprised of a sidewall closed by a top wall having an arcuate shaped drinking slot provided through the top wall and meeting with the sidewall of the cover means for removing the beverage from the drinking receptacle when the cover means is sealed on the container means and a vent opening wherein the vent opening and the drinking slot are positioned diametrically opposite each other on the top wall of the cover means, wherein when the cover means is mounted on the container means, the top wall of the cover means has a downwardly sloping tilt that slopes form the vent opening to the drinking slot, and wherein an annular ring is provided on the sidewall of the cover means for preventing beverages on the top wall of the cover means from splashing out of the cover means and wherein the annular ring has a gap adjacent the drinking slot for allowing the beverage to exit through the annular ring; and
(c) an insulating sheath means mounted on the sidewall of the container means and comprised of a closed cell elastomeric material, wherein the sheath means enables a person to hold the drinking receptacle in their hand when the beverage in the container means is at or near the boiling point without burning their hands.

5,253,781
DISPOSABLE DRINK-THROUGH CUP LID
Hubert Van Melle, Etobicoke, and Terrance N. Durdon, Milton, both of Canada, assignors to James River Corporation of Virginia, Richmond, Va.
Filed Jun. 29, 1992, Ser. No. 905,361
Int. Cl.[5] A47G *19/22*
U.S. Cl. 220—713 **14 Claims**



1. A disposable cup lid for a drinking cup holding a drinkable beverage comprising:
(a) peripheral cup engaging means for securely engaging an upper peripheral edge of the drinking cup;
(b) volume-extending means formed integrally with said cup engaging means having a substantially frustoconical cross-sectional configuration with a larger diameter end positioned interiorly adjacent to and extending axially relative to said cup engaging means for substantially extending the volume of said cup; and
(c) spout means formed integrally with said volume-extending means having a substantially frustoconical side cross-sectional configuration with a wider diameter end located adjacent to said volume-extending means and extending axially therefrom for conducting the beverage from said cup to a consumer, wherein said volume-extending means has an outer surface at a smaller diameter end which includes a recessed area adjacent to said spout means.

5,253,782
ARTICLE DISPENSING APPARATUS
Lawrence B. Gates, Vernon, N.J., and Charles P. Crawley, Mentor, Ohio, assignors to Paul A. Wiebel, McAfee, N.J.
Filed May 20, 1992, Ser. No. 886,037
Int. Cl.[5] B65B *57/00*
U.S. Cl. 221—15 **10 Claims**



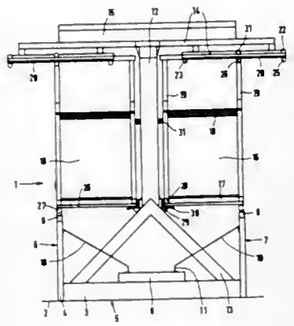
1. An article dispensing apparatus which comprises:
(a) a frame, a protective housing mounted on said frame and an outlet chute for said article;
(b) a turret having an axis rotatably mounted on said frame to rotate about said axis, said turret including a plurality of vertically aligned channel members circumferentially arranged about said axis, each channel member adapted to hold a vertical stack of said articles, including a bottom article;
(c) a hand-operated handle mounted on said frame and protruding exteriorly of said housing, said handle adapted to be operated by a user;
(d) means operated by said handle to rotate said turret a partial turn so as to align a channel member with said outlet chute, and
(e) ram means comprising two members reciprocally mounted to reciprocate upon operation of said handle, and ram operating means to drive one of said ram members outwardly from said axis to eject an article from a first channel member and then, on the next operation of said handle, to drive the other ram member from said axis to eject a second sample from a second channel member.

5,253,783
APPARATUS FOR STORING AND AUTOMATICALLY SORTING ITEMS
Karl Freudelsperger, Hausmannstatten, Austria, assignor to Knapp Logistik Automation G.m.b.H., Austria
Filed Sep. 17, 1992, Ser. No. 945,940
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1991, 9111566[U]
Int. Cl.[5] B65G *59/00*
U.S. Cl. 221—131 **11 Claims**

1. Apparatus for the storage and automated sorting of items, comprising a plurality of bin-bases mounted in sloping manner in at least one row and affixed to a frame from which they can be pulled out, and item-specific bins on the bin-bases, each bin having one dispenser at a lower end, and at least one horizontal conveyor positioned beneath the bin-bases and transversely to their end faces, wherein the horizontal conveyor extends width-wise only across a central part of the apparatus, and wherein the apparatus further comprises guide plates sloping downward toward the horizontal conveyor in a part of the apparatus to which the conveyor does not extend, the frame comprising an upper beam resting on a row of pillars mounted

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above the horizontal conveyor and supported on lateral sides of said conveyor by supports having two legs, each leg being



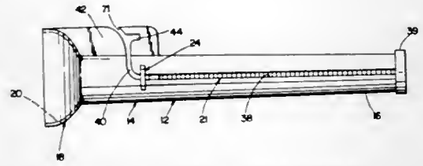
located on one side of the conveyor, and wherein one row of bin-bases is mounted on each side of the rows of pillars.

5,253,784

METHOD AND APPARATUS FOR THE DISPENSING OF GAME BOARD CHIPS

Gary Kossel, R.D. #1, Box 230-C, Bentleyville, Pa. 15314

Filed Mar. 12, 1992, Ser. No. 849,877
Int. Cl.[5] B65G *59/06*
U.S. Cl. 221—267 **11 Claims**



1. A game board chip dispenser which comprises:
a) an elongate tube for receiving and storing game board chips;
b) open opposing ends on said tube with one end for receiving chips into said tube, and the opposing end for dispensing chips from said tube;
c) funnel means on the receiving end of said tube for collecting and aiding alignment of said chips being placed into said tube;
d) an axial slot formed in said tube, intermediate of said opposing ends for receiving a movable plunger therein;
e) a plunger movably mounted in said slot, and having means thereon for moving said plunger said means extending outside a perimeter of said tube;
f) a board abutment surface located on said dispensing end of said tube;
g) means on said dispensing end of said tube for dispensing one chip each time said board abutment surface is in contact with said board and said plunger is pressed towards said board.

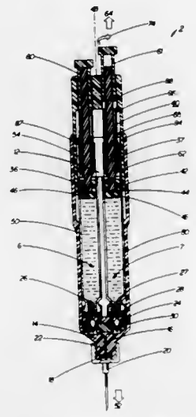
5,253,785

VARIABLE PROPORTION DISPENSER

Terry M. Haber, Lake Forest; Clark B. Foster, Laguna Niguel, and William H. Smedley, Lake Elsinore, all of Calif., assignors to Habley Medical Technology Corp., Laguna Hills, Calif.

Filed Apr. 2, 1992, Ser. No. 862,090
Int. Cl.[5] B67D *5/22, 5/52*
U.S. Cl. 222—43 **20 Claims**

1. A variable proportion dispenser comprising:
a housing;
first and second variable volume containers mounted to the housing and including first and second exits and first and second movable elements by which the contents of the first and second containers can be forced through said first and second exits as the first and second movable elements are moved from first and second starting positions towards first and second ending positions;
first and second drive stems drivingly coupled to the first and second movable elements, the first and second drive stems including smooth, axially extending drive surfaces; and
a reciprocal drive assembly for reciprocally driving the first and second drive stems so to drive the first and second movable elements from the first and second starting positions towards the first and second ending positions in a cyclic manner, the reciprocal drive assembly including:



first and second reciprocating drivers drivingly coupled to the first and second drive stems along the smooth drive surfaces by one-way drive elements;
first and second stroke adjusters for adjusting the relative distances the first and second reciprocating drivers and the first and second drive stems associated therewith travel during each cycle of the reciprocal driver so the amounts and proportions of the contents of the first and second containers forced through the first and second exits during each of one or more cycles of the reciprocal drive assembly can be selected by the user while said amounts and proportions remain the same unless said relative distances are changed; and
said drive surfaces and said reciprocating drivers adapted to permit a continuous range of said relative distances to be chosen by the user through adjustment of said stroke adjusters.

5,253,786

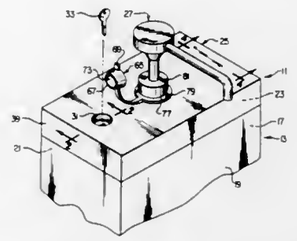
COSMETIC DISPENSER WITH LOCKABLE LID

Laurie H. Schmidt, P.O. Box 541237, Dallas, Tex. 75354-1237

Filed Nov. 30, 1992, Ser. No. 982,863
Int. Cl.[5] B67B *5/00*
U.S. Cl. 222—153 **3 Claims**

1. A dispenser for liquids, such as cosmetics, comprising:
a hollow container having an opening for filling the container, said opening having a periphery;
a lid having first and second opposed edge portions and an inner surface;
means for securing the lid at its opposed edge portions, at least one of said securing means being a lock that is releasable by means of a key;
said lock having a moveable tang and being attached to the inner surface of the lid adjacent to the second edge portion thereof;

an aperture in the lid through which access to the lock may be had to insert the key therein;
receiving means in the periphery of the container opening, said receiving means being adapted to engage the lock's tang, thereby securing the second opposed edge portion of the lid to the container opening;



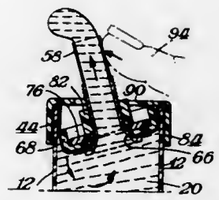
a plug having first and second ends;
the first end being adapted to be inserted in said aperture, thereby sealing the aperture and thus protecting the lock; and
the second end having means to attach the plug to the lid.

5,253,787

FLUID DISPENSER WITH TILTABLE DISPENSING NOZZLE AND SEALING MEMBRANE

William T. Wilkinson, Crownsville, Md., and John J. Nelson, Levitown, Pa., assignors to Package Research Corporation, Cleveland, Ohio

Filed Aug. 3, 1992, Ser. No. 924,285
Int. Cl.[5] B67D *5/42*
U.S. Cl. 222—209 **14 Claims**



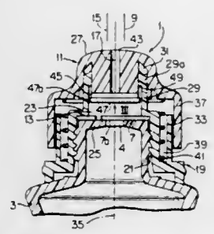
1. A dispenser for a fluid substance such as toothpaste comprising an elongated tube having an open top and an open bottom with a chamber therebetween for holding the substance therein, a bottom closure mounted to and closing said open bottom of said tube, said bottom closure being longitudinally movably sealingly mounted in said open bottom of said tube to press against said substance and move into said chamber as said substance is dispensed from said tube, a flexible membrane sealingly closing said open top of said tube, a nozzle separate and distinct from said membrane, said nozzle extending through said membrane, said nozzle having a longitudinal passageway communicating with said chamber for dispensing said substance from said chamber when said nozzle is in a dispensing orientation, said nozzle having a flange below and in contact with said membrane, and said membrane being made of a stretchable resilient material to permit said nozzle to be tilted to said dispensing orientation with a portion of said nozzle flange pressing upwardly against said membrane to prevent said nozzle from completely passing through said membrane so that said tilted nozzle would act to stretch said membrane into said chamber to reduce the size of said chamber and force a metered portion of said substance through said nozzle.

5,253,788

DEVICE FOR DISPENSING AND DOSING A PRODUCT, SUCH AS A COSMETIC PRODUCT, CONTAINED IN A RECEPTACLE

Michel Vandromme, Le Plessis Brion, and Charles Pileur, Noyon, both of France, assignors to Yves Saint Laurent Parfums, Neuilly Sur Seine, France

Filed Jul. 16, 1992, Ser. No. 913,794
Claims priority, application France, Jul. 3, 1992, 92 08237
Int. Cl.[5] B67D *5/42*
U.S. Cl. 222—321 **5 Claims**



2. A device for dispensing and dosing a product contained in a receptacle having an outlet aperture upon which the device is mounted, the device comprising:
a first valve disposed over the aperture;
a slide system having a fixed part and a movable part which penetrates into a zone of the fixed part, the zone outwardly defining a chamber for dispensing a dose of the product, the system including a piston which is movable in the zone which includes a discharge passage passing therethrough, allowing the chamber to communicate with the outside;
a first movement of the piston opening the first valve to allow dosed product to be dispensed from the receptacle to the dosing chamber;
a second movement of the piston being in a reverse direction from the first movement and pressurizing the product contained in the chamber thereby forcing the product to be dispensed to the discharge passage while checking return of product to the receptacle by closure of the first valve;
a second valve associated with the piston for closing the communication through the discharge passage, at least at the end of the first piston movement, while opening the communication during the second piston movement; and
means for delivering a complete for partial dose of product contained in the dosing chamber.

5,253,789

FUEL PELLET BUCKET CONSTRUCTION

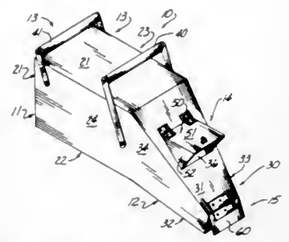
Nicholas S. Mateko, 36079 Brandywine St., Newark, Calif. 94560

Filed Jun. 23, 1992, Ser. No. 903,116
Int. Cl.[5] B67C *11/00*
U.S. Cl. 222—462 **3 Claims**

1. A pellet bucket construction consisting of:
an open ended receptacle member having a bottom panel;
a tapered nozzle member disposed at an inclined angle, and operatively attached to, the top of the receptacle member; wherein the nozzle member is provided with a downwardly inclined nozzle opening one end and a feed opening disposed on an inclined upper surface, and a hinged closure flap which is dimensioned to overlie the nozzle opening; and wherein, at least a portion of the outboard end of the nozzle member extends outwardly relative to one side of the receptacle member; and, a feed chute member, including cover plate element hingedly connected to the upper surface of the nozzle member and

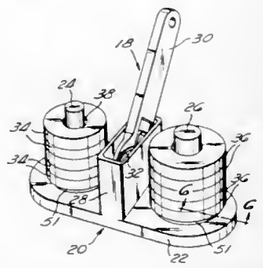
VOL 1155 ISS 3 OCT 19 1993 UMI

dimensioned to overlie the feed opening, wherein each of the sides of the cover plate element are provided with



inwardly extending flange elements which projects into the interior of the nozzle member.

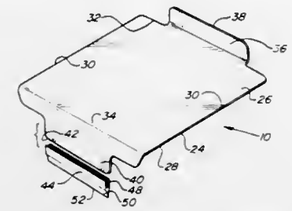
5,253,790
FABRIC CUTTING SYSTEM
John R. Brady, 20041 Canada Rd., #R4, El Toro, Calif. 92630
Continuation-in-part of Ser. No. 899,344, Jun. 16, 1992, abandoned. This application Jan. 5, 1993, Ser. No. 479
Int. Cl.[5] A47B *25/00*
U.S. Cl. 223—109 R **13 Claims**



1. A system for holding a pattern and a material to be cut in place upon a mat, said system comprising:
a) a plurality of first generally circular bodies having a generally circular central aperture formed therein of a first diameter and having pins extending downwardly therefrom;
b) a plurality of second generally circular bodies having a generally circular central aperture formed therein of a second diameter and having pins extending downwardly therefrom; and
c) a caddy having a base and a holder, first posts of a first diameter extending upwardly from said base, the first diameter of said first post being less than the first diameter of said first bodies to facilitate stacking of said first bodies about said first post, and second posts of a second diameter extending upwardly from said base, second diameter of said second post being less than the second diameter of said second bodies to facilitate stacking of said second bodies about said second post.

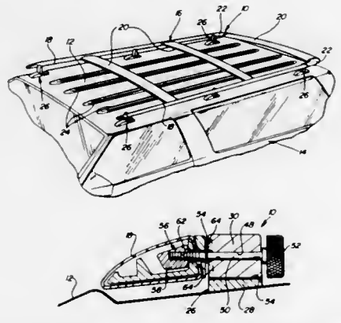
4. A system for holding a pattern and a material to be cut in place upon a mat, said system comprising:
a) a plurality of generally circular bodies having a generally circular central aperture formed therein and having a plurality of pins extending downwardly therefrom; and
b) a caddy having a base and a holder and also having at least one post extending upwardly from said base, the diameter of said post being less than the diameter of said central aperture in said bodies to facilitate stacking of said bodies about said post.

5,253,791
RACK FOR CARRYING ARTICLES ON A SEAT OF A VEHICLE
John A. Chiodo, 15944 Chilmsford, Mt. Clemens, Mich. 48044
Filed Mar. 16, 1992, Ser. No. 852,016
Int. Cl.[5] B60R *7/04*
U.S. Cl. 224—275 **12 Claims**



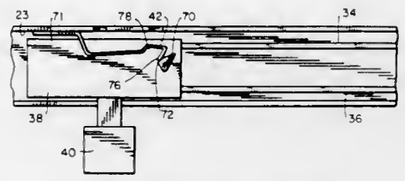
1. A rack for supporting objects on a seat of a vehicle, said rack comprising:
a platform having a pair of opposed support surfaces extending between a first side and a second side;
a first leg having a first predetermined length extending from one of said pair of surfaces adjacent said first side;
a second leg having a second predetermined length, said second leg extending from another of said pair of surfaces adjacent said second side whereby said platform is adapted to be supported on said seat by one of said first and second legs; and
an extension member having a groove for accepting a free end of one of said first and second legs, said extensions member being adapted to extend between said one of said first and second legs to said seat to position said platform on a generally horizontal plane.

5,253,792
LUGGAGE CARRIER WITH POP-UP FRAME
Jerald J. Foster, Milford; Craig A. Stapleton, Port Huron; Curtis J. Nordin, Port Huron, and Mark C. Towns, Port Huron, all of Mich., assignors to Huron/St. Clair Incorporated, Port Huron, Mich.
Division of Ser. No. 728,868, Jul. 11, 1991, Pat. No. 5,096,106. This application Mar. 11, 1992, Ser. No. 850,186
Int. Cl.[5] B60R *9/00*
U.S. Cl. 224—321 **6 Claims**



1. An article carrier mountable to a vehicle surface, said carrier comprising:
a frame having a pair of side rails for retaining articles within said carrier;
a plurality of adjustable support stanchions mounted to the vehicle surface, said stanchions connected to said frame to selectively move said frame between a lower stored position substantially flush with the vehicle surface and an elevated position spaced apart from the vehicle surface; and
means for selectively locking said adjustable support stanchions relative to the vehicle surface and said frame, said locking means includes a manually rotatably bolt extending through said stanchion into said frame and threadably attached to a connector bar slidably received within said side rail of said frame such that rotation of said bolt in a first direction to tighten said locking means draws said connector bar into frictional engagement with said side rail and rotation of said bolt in a second direction loosens said locking means to release said connector bar from said frictional engagement for selectively moving said frame.

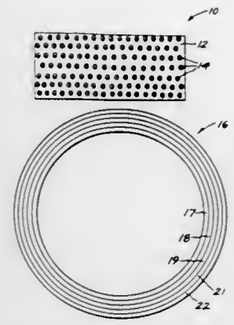
5,253,793
APPARATUS FOR APPLYING TWO-PART SURGICAL FASTENERS
David T. Green, Westport; Henry Bolanos, East Norwalk; Robert J. Geiste, Milford, all of Conn.; Wayne P. Young, Brewster, N.Y.; Stephen W. Gerry, Bethel, and Frank M. Rende, III, Stamford, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Continuation-in-part of Ser. No. 583,867, Sep. 19, 1990, Pat. No. 5,156,614. This application Feb. 6, 1991, Ser. No. 651,594
Int. Cl.[5] A61B *17/00*
U.S. Cl. 227—178 **36 Claims**



1. A surgical fastening apparatus comprising:
a channel member;
a pusher assembly slidably mounted within said channel member, said pusher assembly having at least one cam bar longitudinally movable through said channel member for sequentially firing fasteners, and a cam bar retainer for mounting said cam bar;
a projection extending from an outer surface of said cam bar retainer; and
hook means positioned proximal of said projection and out of engagement therewith, said hook means being dimensioned and configured for engagement with said projection upon retraction of said cam bar retainer after firing the fasteners to thereby block distal movement of said cam bar retainer.

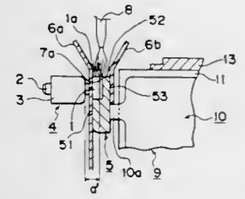
5,253,794
REINFORCED MULTILAYER FILAMENT REINFORCED RING STRUCTURE
Paul A. Siemers, Clifton Park; Stephen F. Rutkowski, Duanesburg, both of N.Y.; Joseph J. Jackson, Topsfield, and Donald R. Spriggs, San Diego, both of Calif., assignors to General Electric Company, Schenectady, N.Y.
Division of Ser. No. 546,961, Jul. 2, 1990. This application Nov. 9, 1992, Ser. No. 973,512
Int. Cl.[5] B23K *31/02*
U.S. Cl. 228—121 **5 Claims**

1. The method of forming a superring structure having a high volume fraction of filamentary reinforcement embedded in a titanium base matrix metal which comprises
providing a plurality of individual ring structures as a nestable set,
each of said ring structures having continuous filamentary reinforcement of at least several layers embedded in the matrix metal,
assembling said rings into a nested, concentric set and maintaining a clearance between the adjacent rings of said set of no more than 0.030 of an inch,
enclosing the set of nested rings within a HIPing can, and



HIPing the enclosed rings for at least 30 minutes at at least 5 ksi, and at least 800° C.

5,253,795
MANUFACTURING METHOD FOR BATTERY TERMINAL
Masakazu Sato, Takatsuki, Japan, assignor to Yuasa Battery Co., Ltd., Osaka, Japan
Filed Aug. 6, 1992, Ser. No. 925,183
Claims priority, application Japan, Aug. 20, 1991, 3-233883
Int. Cl.[5] B23K *31/02*
U.S. Cl. 228—174 **1 Claim**



1. A method for manufacturing a battery terminal, including a strap connecting one of a plurality of lugs of a plurality of plates and a resin-wrapped post having a post body and a pedestal integrated into an L-shape, the post body being wrapped with a resin in order to secure liquid-tightness, comprising the steps of:
forming a notch in the strap, the notch running from an upper-face side to a side-face side opposite the plates connected to the strap when the plates are positioned such as to locate the strap on a side of the plates;
fitting the pedestal of the resin-wrapped post in the notch in such a manner that the post body extends to an opposite side of one of the pates at a right angle to the strap;
installing a first protection plate between a contact portion of the pedestal with the notch and the resin portion of the resin-wrapped post;
installing a second protection plate between the contact portion and one of the plates;
applying a flame of a burner on the contact portion from above the strap and the pedestal at a spot between the first protection plate and the second protection plate, thereby welding the pedestal to the strap without causing the resin portion to become molten or the post from becoming misshapen.

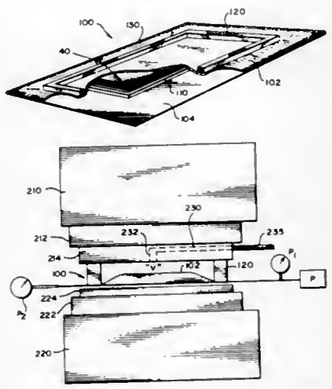
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5,253,796

RETORT FOR GAS DIFFUSION BONDING OF METALS UNDER VACUUM

George W. Stacher, Westminster, and Seb R. Sarkisian, Torrance, both of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Jul. 1, 1991, Ser. No. 724,250
Int. Cl.[5] B23K *20/00*
U.S. Cl. 228—193 9 Claims



1. A tool for interaction with one of a pair of press members to define a chamber in which gas diffusion bonding of preselected areas of a stack of sheets of titanium aluminide material can be carried out, said tool comprising:

an envelope for enclosing said stack within a sealed, evacuated environment;

a frame member disposed on one exterior surface of said envelope facing said one press member and having a perimeter which encompasses the perimeter of said stack; said frame member having a height greater than the greatest height of said envelope atop said stack,

whereby when said envelope and said press member are moved toward one another in advance of carrying out said diffusion bonding process, the volume between said press member and said envelope atop said stack form a bonding chamber into which gas can be pumped to create a diffusion bonding pressure, said chamber being heated to a diffusion bonding temperature while said pressure is maintained over a period of time sufficient to effect diffusion bonding.

5,253,797

METHOD OF BONDING MOLYBDENUM TO STEEL

William A. Ferrando, Arlington; Subhash D. Karmarkar, Great Falls, both of Va.; Scott M. Hoover, Burtonsville, Md., and Amarnath P. Divecha, Falls Church, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 21, 1992, Ser. No. 916,428
Int. Cl.[5] B23K *31/02*
U.S. Cl. 228—194 11 Claims

1. A method of bonding a molybdenum surface to a steel surface by

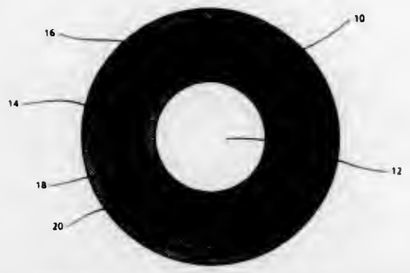
(1) forming a thin coating of silver metal on the molybdenum surface; or on the steel surface, or on both the molybdenum and steel surfaces by

(a) coating the molybdenum surface, the steel surface, or both the molybdenum and steel surfaces with molten $AgNO_3$,

(b) heating the molten $AgNO_3$ coated surface above the decomposition temperature of $AgNO_3$ to decompose the $AgNO_3$ and form a uniform layer of silver metal on the surface, and

(c) removing any gray material which may be formed on the surface of the silver metal layer;

(2) placing the molybdenum surface and the steel surface together with the silver metal layer between them; and



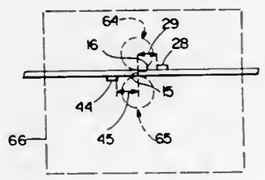
(3) sintering to form a diffusion bond between the silver metal layer and the molybdenum surface and to form a diffusion bond between the silver metal layer and the steel surface.

5,253,798

PRESSURE SEAL ADHESIVE PATTERN FOR IBM 3800 PRINTERS

Leo Lombardo, Manchester, N.H., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Jan. 23, 1992, Ser. No. 824,408
Int. Cl.[5] B65D *27/34, 27/10*
U.S. Cl. 229—92.1 16 Claims



1. A mailer type business form processed by a printer having rollers, and operated to occasionally pause, the mailer comprising:

a folded paper sheet having first and second faces, first and second opposite longitudinal edges, and first and second transverse fold lines defining first, second and third sections of said sheet;

first and second longitudinal lines of weakness forming with said longitudinal edges first and second longitudinal marginal portions;

a first transverse edge and a second transverse edge, both parallel to said first and second fold lines;

longitudinal patterns of adhesive disposed in said longitudinal marginal portions for holding said marginal portions of said first through third sections together;

a first transverse pattern of adhesive disposed adjacent said first transverse edge on said first face and first section; and

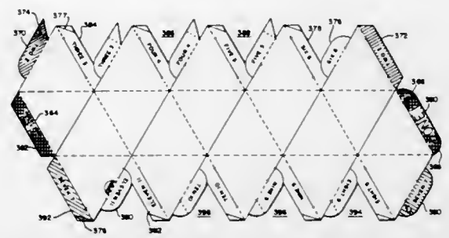
said first transverse pattern of adhesive being spaced from its associated transverse edge a distance sufficient to insure that the adhesive does not interfere with rollers of a printer used to process the mailer during pausing of the printer.

5,253,799

HIDDEN LOCKING TAB AND SLOTTED FLAP SYSTEM FOR MULTI-SIDED PACKAGES

Edward H. Sebesta, 1502 Seevers Ave., Dallas, Tex. 75216

Filed Sep. 20, 1990, Ser. No. 585,613
Int. Cl.[5] B65D *5/10*
U.S. Cl. 229—108 45 Claims



1. A system for construction of a multi-sided solid shaped carton, package, or box comprising:

(a) a flat blank having multiple polygon shaped faces, each face hingably connected to at least one other face, and having free edges of said faces connectable to free edges of other faces to form said multi-sided carton;

(b) a first edge forming element for connecting a first pair of said free edges with a first degree of holding force, including a first tab hingably connected to one free edge of said first pair of free edges and a correspondingly constructed slotted flap hingably connected to another free edge of said first pair of free edges; and

(c) a second edge forming element for connecting a second pair of said free edges with a second degree of holding force which is greater than said first degree of holding force, including a second tab hingably connected to one free edge of said second pair of free edges and a correspondingly constructed slotted flap hingably connected to another free edge of said second pair of free edges.

5,253,800

PIZZA TRAY

Stephen L. France, Township of Convis, County of Calhoun, Mich., assignor to Arvco Container Corporation, Kalamazoo, Mich.

Filed Feb. 12, 1993, Ser. No. 17,250
Int. Cl.[5] B65B *5/20*
U.S. Cl. 229—109 11 Claims

10. A pizza tray comprising:

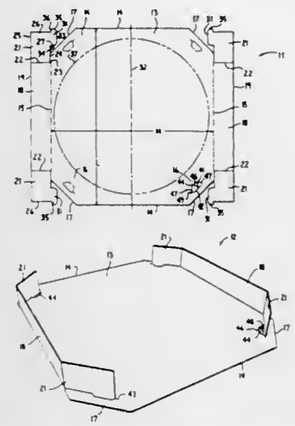
a one piece blank comprising a generally horizontal planar base wall having four corner regions;

a pair of opposing vertical sidewalls folded upward from opposite sides of said planar basewall about horizontal sidewall fold lines;

a pair of vertical extension flaps folded inwardly about vertical fold lines defined at opposite ends of each said sidewall so that said flaps overlie said base wall;

each said flap having a foot extending downward therefrom and through a corresponding slot in a respective said corner region, said slot defined by score lines and a pressure tab fold line; and

a pressure tab joined to said base wall by each said pressure tab fold line and angling downwardly from said pressure tab fold line and being pressingly engaged against the



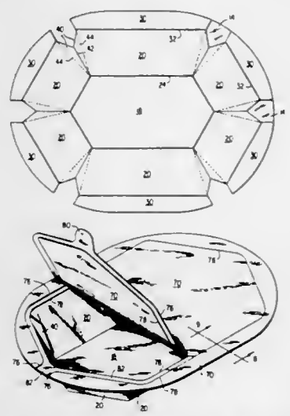
respective foot to hold said foot in its respective slot and prevent said vertical sidewalls and flaps from collapsing.

5,253,801

MULTI SIDED FOOD TRAY

Linda A. Bernstein, Campbell Hall; Robert L. Gordon, Monroe, both of N.Y.; Tung C. Ma, Fort Lee, N.J., and Robert Sosnowksi, Monroe, N.Y., assignors to International Paper Company, Purchase, N.Y.

Filed Dec. 22, 1992, Ser. No. 995,231
Int. Cl.[5] B65D *5/40, 5/56*
U.S. Cl. 229—113 5 Claims



1. A preform for forming a flanged tray, the perform including a unitary blank of paperboard and a unitary plastic seat affixed to one surface of said paperboard blank, said paperboard blank having cut and score lines, said score lines defining a central polygonal bottom panel having edges, each said polygonal bottom edge foldably connected to one edge of a radially outwardly extending trapezoidal sidewall forming panel, each said trapezoidal panel having a radially outermost portion, the radially outermost portion of each said sidewall panel foldably connected to a flange forming flap, each said sidewall panel having a pair of side edges which taper away

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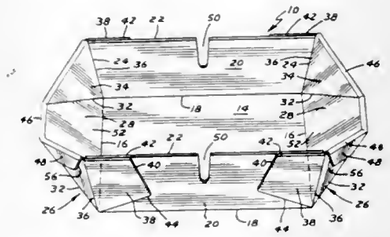
from each other with increasing radial distance from said polygonal bottom to thereby define a gap between respective said side edges of next adjacent said sidewall panels, said plastic sheet extending over the entire said one surface of said preform and extending radially outwardly from said polygonal bottom and covering said gaps.

5,253,802

FOLDABLE, MICROWAVABLE BAKING PAN USABLE AS A PROMOTIONAL DEVICE

Stuart N. Bernard, Anoka; Christianne L. Strauss; Marsha D. Thompson, both of Minneapolis, and Duane R. Mode, Bloomington, all of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Nov. 9, 1992, Ser. No. 973,506
Int. Cl.[5] B65D *5/36, 5/42*
U.S. Cl. 229—114 20 Claims



1. Foldable pan comprising, in combination: a bottom panel having first and second end edges and first and second side edges; first and second side panels integrally connected to and foldable about the first and second side edges, with side panels having opposite edges extending at an obtuse angle from the side edges of the bottom panel; first and second end panels integrally connected to and foldable about the first and second end edges, with the end panels having opposite edges extending at an acute angle from the end edges of the bottom panel; first and second triangular panels integrally connected to and foldable about the opposite edges of each of the end panels, with the triangular panels each further including an outer edge extending at an obtuse angle to the end edges of the bottom panel corresponding to the obtuse angle of the opposite edges of the side panels; and means for abutting the opposite edges of the side panels with the outer edge of the triangular panels, with the triangular panels being foldable about the outer edges relative to the side panels, with the pan being foldable between a three-dimensional condition with the side, end, and triangular panels upstanding from the bottom panel and a flat condition with the side panels overlying the bottom panel and the first and second triangular panels overlying the end panels extending in a continuous, planar manner from the bottom panel.

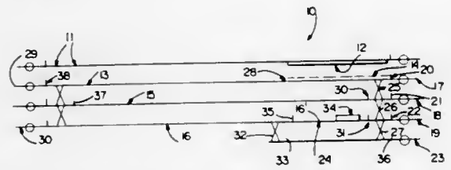
5,253,803

REUSABLE MAILER

Stanley Chess, Jerome, Id., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Aug. 31, 1992, Ser. No. 936,394
Int. Cl.[5] B65D *27/06*
U.S. Cl. 229—305 5 Claims

1. A return mailer comprising:
a top ply having first and second side edges, a first perforation adjacent said first side edge, and an intermediate perforation;
outgoing address indicia printed on said top ply substantially between said first perforation and said intermediate perforation;
a second ply having first and second side edges, and a first perforation adjacent said first side edge, and a pivot line between said first perforation and said second edge; said second ply of approximately the same dimensions as said top ply and having first and second faces, said first face closest to said top ply; said second ply having a sealing agent disposed on said first face adjacent said first perforation;



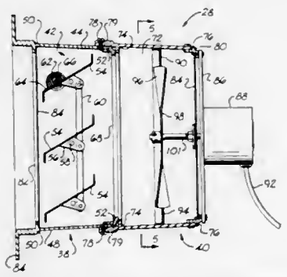
a reply address printed on said second ply second face between said first perforation and said pivot line; and
a third ply connected adjacent first and second side edges thereof to the second face of said second ply, and removably covering said reply address.

5,253,804

TEMPERATURE AND HUMIDITY SENSITIVE HIGH EFFICIENCY EXHAUST VENTILATOR APPARATUS

Paul M. Sarazen, Jr., 214 Fairview Dr., and Dennis A. Beam, Jr., 410 Westfield Dr., both of Shelby, N.C. 28150

Filed May 12, 1992, Ser. No. 882,182
Int. Cl.[5] B01F *3/02;* F24F *7/00*
U.S. Cl. 236—44 C 17 Claims



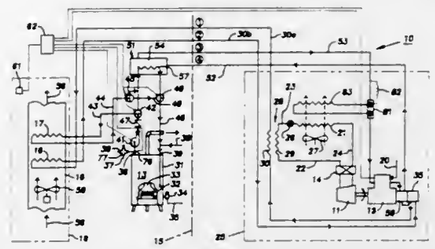
1. Temperature-responsive powered-fan foundation ventilator apparatus, comprising:
a louver housing defining an air passageway therethrough, said housing defining a front edge and a rear edge opposite said front edge;
means for selectively opening and closing said louver housing air passageway depending upon ambient temperature, said ambient temperature dependent opening and closing means being disposed in said air passageway of said louver housing;
a fan housing defining an air passageway therethrough, said housing defining a front edge and a rear edge opposite said front edge, said front edge of said fan housing being disposed in opposition to said rear edge of said louver housing;
means for mounting a fan, said fan mounting means being disposed in opposition to said rear edge of said fan housing;
a fan carried by said fan mounting means;
a fan orifice plate disposed across said air passageway of said fan housing and between said front and rear edges of said fan housing and defining an orifice through said orifice plate; and
said fan including a fan blade operatively disposed in said orifice of said orifice plate.

5,253,805

HEAT PUMP SYSTEM WITH REFRIGERANT ISOLATION

Paul F. Swenson, Shaker Heights, Ohio, assignor to Consolidated Natural Gas Service Company, Inc., Pittsburgh, Pa.

Filed Sep. 3, 1992, Ser. No. 940,096
Int. Cl.[5] F25B *27/00*
U.S. Cl. 237—2 B 14 Claims



1. A heat pump system for heating the air in an occupied building comprising a refrigeration circuit external of the building including a refrigerant, a refrigerant vapor compressor, a pair of coils for evaporating and condensing the refrigerant and an expansion valve, a fuel-fired prime mover external of the building for operating the compressor, the first heat transfer circuit including a first heat transfer fluid for absorbing heat rejected by the prime mover and for delivering the rejected heat to the interior of the building, said first heat transfer circuit including a supply line for conducting the first heat transfer fluid heated by the rejected heat from the prime mover into the building to supply heat to the interior of the building and a return line for conducting the first heat transfer fluid cooled by the transfer of heat in the building from the building back to the prime mover for absorption of heat, a second heat transfer fluid circuit for transferring heat between the refrigeration circuit and the interior of the building, the second heat transfer circuit including a second heat transfer fluid for transferring heat between one of the coils of the refrigeration circuit and the air in the building, the second heat transfer circuit including a supply line for conducting the second heat transfer fluid having exchanged heat with said one refrigeration coil into the building to effect an exchange of heat with the air in the building and a return line for conducting the second heat transfer fluid affected by transfer of heat with the air in the building from the building back to said refrigeration coil for continued heat transfer, said second heat transfer fluid circuit serving to isolate the refrigerant vapor from the interior of the building.

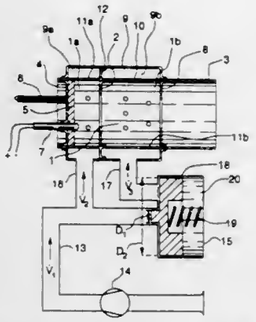
5,253,806

LIQUID FUEL-OPERATED HEATER FOR VEHICLES

Gerhard Gaysert, Esslingen, and Dieter Götz, Kirchheim, both of Fed. Rep. of Germany, assignors to J. Eberspächer, Esslingen, Fed. Rep. of Germany

Filed Dec. 8, 1992, Ser. No. 986,985
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1991, 4141367
Int. Cl.[5] F23D *15/02*
U.S. Cl. 237—12.3 C 4 Claims

1. A liquid fuel-operated vehicle heater arrangement, operated independently of a vehicle engine, the heater arrangement comprising:
a combustion chamber formed with a wall with air passage openings, said combustion chamber having a downstream end connected to a flame tube for heat exchange;
fuel supply means for supplying fuel connected to said combustion chamber;
ignition means, connected to said combustion chamber, for igniting said fuel;
means defining an annular space surrounding said combustion chamber wall air passage openings including a partition extending outwardly from said wall substantially at right angles to a longitudinal axis of said combustion chamber for separating said annular space into two compartments including an upstream compartment and a downstream compartment;



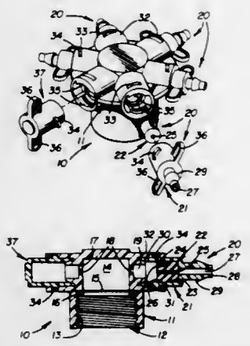
a first air supply line connected to said upstream compartment and a second air supply line connected to said downstream compartment; and
control element means for controlling flow of combustion air for supplying combustion air to at least one of said first air supply line and second air supply line.

5,253,807

MULTI-OUTLET EMITTER AND METHOD

Edward H. Newbegin, Portland, Oreg., assignor to Wade Manufacturing Co., Portland, Oreg.

Filed Mar. 17, 1992, Ser. No. 852,530
Int. Cl.[5] B05B *1/16*
U.S. Cl. 239—11 17 Claims



1. A multi-outlet emitter adapted for irrigation purposes comprising
a body defining an inlet adapted for connection to a pressurized fluid source, said body being disposed on a vertically disposed central longitudinal axis thereof,
at least three separate outlets each communicating with said inlet and exposed exteriorly on said body, and
at least three emitter means each releasably connected to a respective one of said outlets for discharging said fluid at selectively varied flow rates therefrom, said outlets and said emitter means being solely spaced one-from-another circumferentially about an outer side of said body and said

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axis to at least substantially lie in a same horizontally disposed plane.

14. A method for selectively varying the individual flow rates for a multi-outlet emitter adapted for irrigation purposes comprises the steps of

exposing a plurality of separate outlets defined exteriorly on said emitter,

connecting a first tubular fitting, having a first flow control valve exhibiting a first flow rate, to one of said outlets,

connecting a second tubular fitting, having a second flow control valve exhibiting a second flow rate different than said first flow rate, to another one of said outlets, and

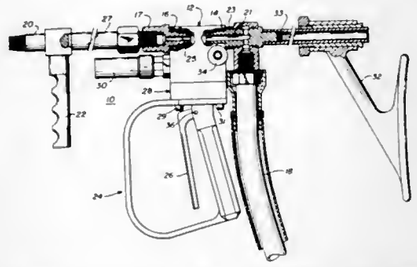
replacing a standard sprinkler, threadably connected to external screw threads formed at an outlet from a standard one-half inch riser pipe, with said multi-outlet emitter by threadably connecting internal screw threads formed at an inlet to said emitter to the external screw threads formed at the outlet from said riser pipe.

5,253,808

POWER ASSISTED DUMP VALVE

Amos Pacht, Houston, Tex., assignor to Butterworth Jetting Systems, Inc., Houston, Tex.

Filed Jun. 16, 1992, Ser. No. 899,357
Int. Cl.[5] B05B *1/14, 9/01*
U.S. Cl. 239—124 **12 Claims**



1. A valve for receiving a flow of fluid from a low pressure fluid source and selectively causing a high pressure output at the outlet of a nozzle assembly comprising:

a unitary valve body;

a first fluid passageway extending through the valve body and having the low pressure fluid source coupled to one end as an input and the high pressure fluid nozzle assembly coupled to the other end as an output;

a valve chamber extending into the unitary valve body;

a fluid pressure dump assembly sealably closing one end of the valve chamber, the assembly having a channel for dumping fluid in the chamber to the atmosphere;

a piston slidably carried in the valve chamber, the piston having a first portion with a first diameter for sealably separating the chamber into first and second sections and a second portion with a second smaller diameter extending into the second chamber section for sealably mating with the channel in the dump assembly to prevent fluid flow to the atmosphere;

a resilient spring member interposed between the piston and the first chamber section to urge the piston in sealing relationship with the channel in the dump assembly;

a first orifice in the piston having a diameter sufficient to receive the resilient spring member and second orifice in the piston for enabling fluid communication between the first and second chamber sections;

a fluid conduit coupling the fluid passageway to the second chamber section such that fluid introduced at the low pressure inlet may be selectively used to either force the piston against and compress the resilient spring member in the first chamber section to open the channel in the dump assembly and dump the fluid in the second chamber section to atmosphere or to assist the spring member in snapping the piston against and sealing the dump assembly channel to create the high pressure output; and

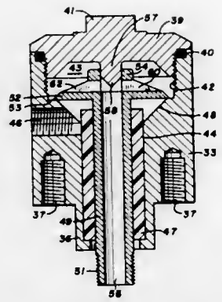
a manually operated control valve coupled to the first chamber section for selectively closing and venting the first chamber section such that, when the valve is in the closed position, the dump assembly channel is sealed with a snapping action of the piston and fluid is forced at high pressure out the high pressure nozzle and, when the valve is in the vent position, the dump assembly channel is open and the fluid is dumped to ambient pressure so as to remove the high pressure at the output of the high pressure nozzle.

5,253,809

SPINNER ASSEMBLY FOR FLUID CLEANER

Harold A. Poppitz, Savage, and Harold A. Petsch, Excelsior, both of Minn., assignors to Chaska Chemical Co., Savage, Minn.

Filed Sep. 21, 1992, Ser. No. 947,555
Int. Cl.[5] B05B *1/30, 3/06*
U.S. Cl. 239—257 **22 Claims**



1. An apparatus for discharging fluid under pressure comprising: a body having a passage extended into the body and a chamber, one portion of the passage open to the chamber, shaft means located in the passage and rotatably mounted on the body, cap means attached to the body, body means secured to the cap means for laterally balancing the shaft means in the body, including the boss means extended into the longitudinal passage of the shaft means, the shaft means having a head located in the chamber and a longitudinal passage open to the chamber, means for carrying fluid under pressure to the passage in the body whereby fluid flows from the passage in the body into the chamber and around the head and into the passage of the shaft means, and fluid discharging means mounted on the shaft means to receive fluid from the longitudinal passage in the shaft means, the fluid discharging means being operable to rotate the shaft means in response to the discharge of fluid therefrom.

5,253,810

HIGH HEAT, HIGH PRESSURE, NON-CORROSIVE INJECTOR ASSEMBLY

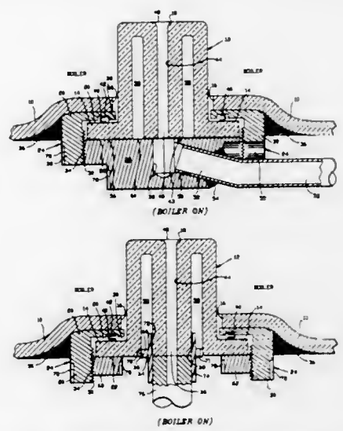
John D. Maltby, and Leonard J. Martini, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 13, 1992, Ser. No. 850,635
Int. Cl.[5] B05B *15/06*
U.S. Cl. 239—397.5 **12 Claims**

1. An injector assembly comprising:

a ceramic injector having an outwardly extending flange and having a central fuel passageway which has a forward fuel outlet and a rearward fuel inlet, the injector flange having forward and rearward surfaces which face oppositely away from one another;

a retainer engageable with the injector flange on opposite sides thereof for retaining the injector having forward and rearward retainer plates and including a tightener, the tightener engaging the forward retainer plate with the forward surface of the flange and engaging the rearward retainer plate with the rearward surface of the flange, the tightener including a tightener coupling fixedly attached to the forward retainer plate and extending perpendicularly therefrom, the tightener coupling and the rearward retainer plate engaging one another for clamping the



ceramic flange between the forward retainer plate and the rearward retainer plate;

the forward retainer plate including a groove;

the injector and the retainer having different coefficients of expansion;

a spring biased seal disposed in the groove and located between the retainer and the flange;

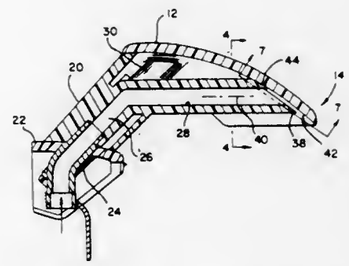
the rearward retainer plate extending across and sealing the injector about the rearward fuel inlet and having a fuel passageway which communicates with the central fuel passageway at the rearward fuel inlet.

5,253,811

SHEET FLOW SPOUT

Kenneth J. Sieth, Cedarburg, Wis., assignor to Kohler Co., Kohler, Wis.

Filed Nov. 8, 1991, Ser. No. 789,571
Int. Cl.[5] B05B *1/26*
U.S. Cl. 239—523 **5 Claims**



1. A spout, comprising:

a nozzle for accepting a flow of water from a water supply and conducting it along a nozzle axis to a nozzle discharge orifice; and

a shield having a curved surface overlying the orifice that is fixed relative to the orifice, the surface having:

a face portion spaced from and opposing the orifice to create a slot between the shield and orifice for forming the water into a sheet; and

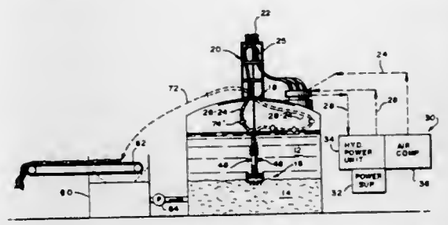
a guide portion extending about the face portion in two orthogonal directions and having an outer edge lower than the face portion, the guide portion and the face portion having a curvature inward toward the orifice in the two orthogonal directions for deflecting the sheet inward before the sheet passes the outer edge to promote the formation of a continuous sheet of water suitable in which to bathe.

5,253,812

TANK CLEANING METHOD AND APPARATUS

Wesley Staples, Rte. 3, Box 1512, and Russell Staples, Rte. 5, Box 8082, both of Palatka, Fla. 32177

Filed Oct. 16, 1992, Ser. No. 961,823
Int. Cl.[5] B02C *23/36*
U.S. Cl. 241—21 **14 Claims**



1. A tank-cleaning apparatus, comprising a vertically buoyant housing, at lest one cutter/transporter unit mounted at the lower end of the housing, drive means for the at least one cutter/transporter unit, separate drive means to generate horizontal and vertical propulsion of the housing to thereby move the housing in a random pattern adjacent the bottom of a tank and cutting tank-deposited solids and transporting the solids to a liquid mixing impeller, including further means for varying the buoyancy of the tank-cleaning apparatus, wherein the further means for varying the buoyancy of the tank-cleaning apparatus includes inflatable tubes carried adjacent the upper end of the housing and means for directing compressed air to and from said tubes.

5,253,813

METHOD FOR RECOVERING PVC AND URETHANE FOAM FROM COMMINGLED TRIM WASTE USING ELUTRIATORS

Philip L. Belliveau, and Samuel W. Pollard, both of Rochester, N.H., assignors to Davidson Textron Inc., Dover, N.H.

Filed Oct. 19, 1992, Ser. No. 962,901
Int. Cl.[5] B02C *23/14*
U.S. Cl. 241—24 **9 Claims**

7. A recycling apparatus for sorting a the component materials of a composite plastic articles, said apparatus characterized by;

a comminutor for comminuting composite plastic articles into particles forming a composite mixture of component plastic materials under a first predetermined size;

a first cyclone elutriator for sorting said mixture of comminuted particles into a first mixture that is dominantly comprised of said first plastic component and a second mixture that is dominantly comprised of said second plastic component;

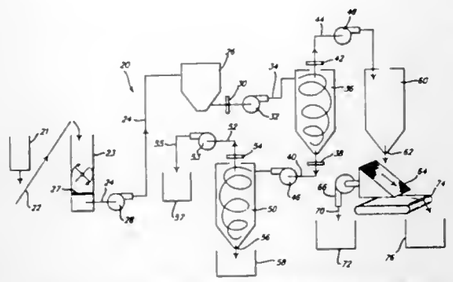
a separating mechanism for separating the particles in the said second mixture into a first group of particles sized below a second predetermined size and a second group of

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intermediately sized particles sized between said first and second predetermined sizes;

a second cyclone elutriator for sorting said first mixture by into a less dense mixture portion and a denser purer group of particles that is substantially comprised of particles of said first plastic component;

a vacuum system for drawing said less dense mixture portion from said second cyclone elutriator by an air stream;



conduit means for transporting said particles from said comminutor to said first elutriator and from said elutriator to said separating mechanism and said second cyclone elutriator by a gaseous flow; and

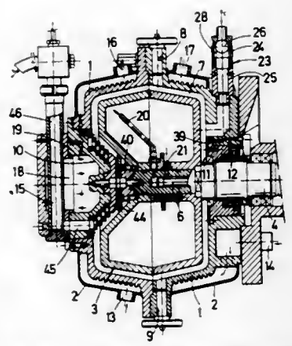
blower means for forming said gaseous flow in said conduit means.

5,253,814

MILLING BODIES SEPARATOR, IN THE COMMINUTING, CRUSHING AND DEAGGLOMERATING MILLS FOR SOLIDS DISPERSED IN LIQUIDS

Carlos O. Pujol, Badalona, Spain, assignor to Oliver Y. Batlle, S.A., Badalona, Spain

Filed May 29, 1992, Ser. No. 891,639
Claims priority, application Spain, Jun. 27, 1991, 9101516
Int. Cl.[5] B02C *17/16*
U.S. Cl. 241—171 **3 Claims**



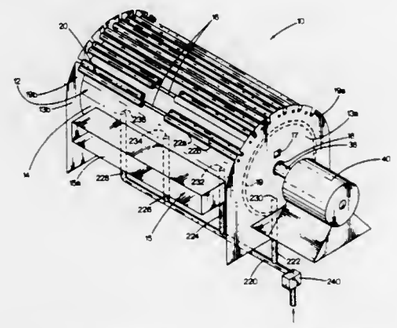
1. In a mill having a grinding chamber, and a stater and rotor with shaft for comminuting and crushing and disagglomerating solids, predispersed in liquids, the improvement comprising an inlet port for product to be treated composed of two parts sealingly secured to each other, and having axially and longitudinally aligned hollowed openings, a sphere and resilient means, constituting a one-way inlet valve for product to be so treated, wherein the first part is provided with a chamber for said sphere and an inner seat for the adjustment for said sphere against said inner seat, based on the opposing action of said resilient means, and wherein said resilient means rest with an opposing end on an inner projection provided by said second part, and said second part having an extension extending into the interior of said chamber, and limiting the travel of said sphere; and said mill further having at least a cross wise passage for the pressure circulation of the product to be treated, and said second part being threadably secured to the body of said stater.

5,253,815

FIBERIZING APPARATUS

Mark W. Bowns, Auburn; Fred E. Olmstead, Federal Way; Peter A. Graef, Tacoma, and Clifford R. Bolstad, Milton, all of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed Oct. 31, 1990, Ser. No. 607,312
Int. Cl.[5] B02C *13/04, 13/12*
U.S. Cl. 241—186.1 **31 Claims**



1. A hammermill for fiberizing sheets or mats of fibers comprising:

a housing;

an elongated rotor within the housing and having first and second ends and a longitudinal axis of rotation, the rotor including a central shaft and plural hammers mounted thereto, the hammers having distal end surfaces forming an effective rotor surface upon rotation of the rotor about the axis of rotation;

means for rotating the central shaft to thereby rotate the hammers;

means for delivery of a mat to the hammers as the hammers are rotated; and

first and second end plates mounted to the respective first and second ends of the rotor, the end plates projecting radially outwardly from the shaft to a location spaced further from the shaft than the distal end surfaces of the hammers, the end plates effectively directing air flow at the ends of the rotor, and resulting from rotation of the hammers, toward the center of the rotor to minimize the possibility of an accumulation of fibers at the ends of the rotor.

5,253,816

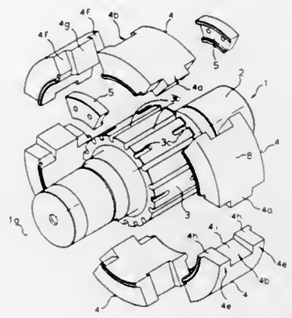
MATERIAL CRUSHING ROLLER CONSTRUCTION

Gerhard Kästingschäfer, Wadersloh; Bernhard Peterwerth, Bad Laer, and Helmut Krumme, Wadersloh, all of Fed. Rep. of Germany, assignors to Krupp Polysius AG, Fed. Rep. of Germany

Continuation of Ser. No. 566,077, Aug. 13, 1990, abandoned, which is a continuation-in-part of Ser. No. 382,114, Jul. 20, 1989, abandoned. This application May 11, 1992, Ser. No. 884,221
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1989, 3927884
Int. Cl.[5] B02C *4/30*
U.S. Cl. 241—227 **11 Claims**

1. A material crushing roller for applying compressive force

on bulk material and comprising a plurality of like, rigid segments in encircling relation about a roller body rotatable about an axis, each segment having between its leading and trailing ends an outer arcuate material engaging surface spanning the width of such segment, each segment having at its leading end a surface beyond which a single lug projects circumferentially in the direction of rotation, each of said lugs being of less width than that of such segment and having an outer surface extending in arcuate prolongation of and at the level of the material engaging surface, a leading end surface and a pair of parallel sides, each segment having at its trailing end a surface having



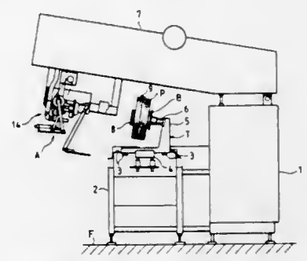
one recess therein, said recess having spaced sides and a base surface and being of such width as snugly to accommodate the lug of the adjacent segment, the lug and recess of each segment being symmetrical with respect to the central plane of such segment extending at right angles to the axis of rotation of said roller body, each segment being characterized in that each of the surfaces of the leading and trailing ends thereof, the leading end surface of said lug, and the base surface of said recess extend radially with respect to said axis, the outer surface of each of said segments and the outer surface of each of said lugs having the same radius from said axis.

5,253,817

BUNCH WINDING PROCESSING APPARATUS

Yasunori Hatakeyama, Shiga, and Kenichi Ueda, Kyoto, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Mar. 31, 1992, Ser. No. 861,431
Claims priority, application Japan, Apr. 9, 1991, 3-076531
Int. Cl.[5] B65H *54/00*
U.S. Cl. 242—18 R **16 Claims**



1. A bunch winding yarn processing apparatus for a package having a start end of yarn retained in a slit formed in a tube, a bunch winding yarn, and a regular winding yarn defining a nip point, the apparatus comprising:

bunch winding yarn guide means for pressing the bunch winding yarn against the tube at a pressing location in spaced relationship with the nip point, and

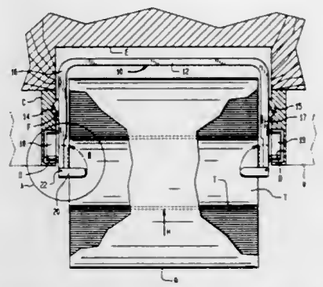
unwinding means for unwinding the bunch winding yarn between the pressing location and the start end of yarn.

5,253,818

DISPENSER FOR SHEET MATERIAL

Gary D. Craddock, 4942 Commonwealth Dr., Sarasota, Fla. 34242

Filed Mar. 18, 1992, Ser. No. 853,597
Int. Cl.[5] B65H *16/02, 16/04*
U.S. Cl. 242—55.2 **6 Claims**



1. A dispenser for sheet material arranged in a roll having a hollow tubular center and a standardized length, said dispenser comprising:

a main U-shaped support member having spaced generally parallel outwardly extending legs between which the length of the roll will fit;

an end piece pivotally connected to and transversely extending toward one another from each leg and opposingly aligned one to another in a roll engaging position;

each said end piece spring biased into the roll engaging position and having stop means for preventing pivotal movement in any direction except for inward pivotal movement of each said end piece from the roll engaging position toward a roll disengaging position wherein the roll, when depleted, may be removed by movement to disengage said end pieces from within the tubular center, said end pieces automatically returning to the roll engaging position thereafter;

said legs sized in length in relation to a nominal diameter of the roll, when the roll is new, to prevent the new roll from being moved into the disengagement position;

each said leg including extensions transversely extending away from one another and sized and spaced apart to be secured within an existing roll holder having opposing facing spaced apart cavities for receiving an elongated spool positioned through the tubular center.

5,253,819

SPEED MATCH SPLICING METHOD AND APPARATUS

Richard A. Butler, Jr., Marion, Mass., assignor to Butler Automatic, Inc., Canton, Mass.

Continuation-in-part of Ser. No. 754,821, Sep. 4, 1991. This application Mar. 20, 1992, Ser. No. 854,224
Int. Cl.[5] B65H *19/16*
U.S. Cl. 242—58.3 **2 Claims**

1. A method of splicing a running web to the web on a ready roll comprising the steps of:

a. applying an adhesive splicing medium to the leading end of the web on the ready roll;

b. accelerating said ready roll;

c. determining the circumferential surface speed of said ready roll proximate the splicing medium without contacting said ready roll by:

1. measuring the circumferential extent of the adhesive medium;

2. measuring the time that it takes said medium to pass by

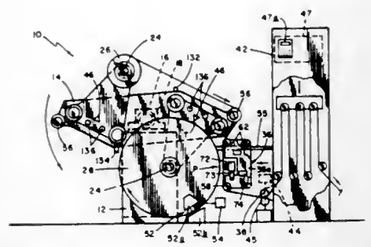
VOL 1155 ISS 3 OCT 19 1993 UMI

a selected fixed point opposite said roll surface during each revolution of said roll; and

3. dividing said extent by said time to produce a value indicative of the surface speed of the roll in the vicinity of said splicing medium;

d. determining the speed of the running web;

e. comparing the running web speed and the ready roll surface speed in the vicinity of the splicing medium during



seccessive revolutions of the roll to produce speed difference signals;

f. applying the difference signals to control the speed of the running web and/or the ready roll to match the speed of the running web and the surface speed of the ready roll in the vicinity of the splicing medium; and

g. touching the running web to the surface of the ready roll after achieving said speed match to effect a splice.

5,253,820

CAPTIVE CABLE COIL AND ITS APPLICATION TO A REGULATOR FOR DEPLOYING A LENGTHENING PIECE OF A SPACE INSTRUMENT

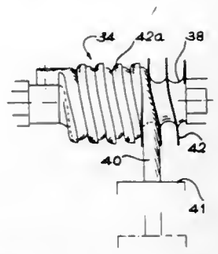
Jean-Pierre Henry, Valbonne, France, assignor to Aerospatiale Societe Nationale Industrielle, France

Filed Apr. 26, 1991, Ser. No. 692,154

Claims priority, application France, May 18, 1990, 90 06264

Int. Cl.[5] B65H *75/02*

U.S. Cl. 242—99 **4 Claims**



1. A cable regulator for the deployment of a deployable lengthening piece of a space instrument, said cable regulator including a coil, a centrifugal brake geared onto said coil through a speed multiplier, and a cable wound on an outer surface of said coil, said cable having a first extremity secured to said coil and a second extremity secured to said deployable lengthening piece, wherein the cable is wound to form only one layer on said coil, said single layer being contained in a substantially helical-shaped throat formed on the outer surface of said coil, a partition separating two adjacent spires of said throat, said partition comprising an external portion which is folded back onto the cable, in order to captively contain said cable on said coil, said external portion being permanently deformed when the cable is unwound from said coil during payout, and wherein said coil is mounted by dismantable fixing means on a shaft of the speed multiplier, outside a housing containing the speed multiplier and the centrifugal brake.

5,253,821

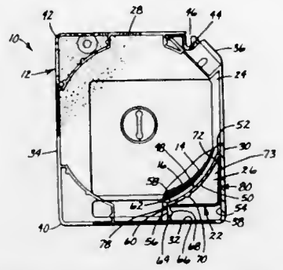
SECURITY MAGNETIC TAPE CARTRIDGE FOR USE IN ELECTRONIC ARTICLE SURVEILLANCE SYSTEMS

Michael W. Johnson, Cottage Grove, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 2, 1992, Ser. No. 844,136

Int. Cl.[5] G11B *23/07;* **G08B** *13/14*

U.S. Cl. 242—197 **8 Claims**



1. A security cartridge for computer recording media adapted to have recorded thereon information of such sensitivity as to warrant institution of measures to prevent unauthorized removal of the cartridge from an access restricted work space, said cartridge being of the type containing a single reel of magnetic tape and having a cartridge top wall, an opposed cartridge bottom wall, and cartridge sidewalls extending between said top and bottom walls, said cartridge top, bottom and side walls defining a generally sealed chamber within which said reel is positioned, said cartridge further including an internal support structure and two magnetic markers adapted for use with an electronic article surveillance system, wherein each said marker presents a front face and an opposed rear face, and wherein the markers are affixed in a generally orthogonal manner to each other to carrier means received within said cartridge chamber, said carrier means including first and second generally orthogonally oriented generally planar marker mounting surfaces, and engagement margins for operably, abutably engaging said cartridge internal structure to thereby lock said carrier means within a predetermined position within said cartridge chamber.

5,253,822

TAPE CARTRIDGE HAVING A NAME PLATE WITH AN INDEX FORMED THEREON

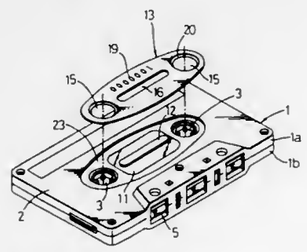
Tadao Matsuki, Tokyo; Nobutaka Miyazaki, Otokuni, and Osamu Yamamoto, Takatsuki, all of Japan, assignors to Hitachi Maxell, Ltd., Ibaraki, Japan

Filed Aug. 20, 1990, Ser. No. 569,904

Claims priority, application Japan, Aug. 22, 1989, 1-97586[U]

Int. Cl.[5] G11B *23/38*

U.S. Cl. 242—199 **12 Claims**



1. A tape cartridge comprising:

a case body of plastic material composed of upper and lower halves, each half having a main wall in which there is

defined at an intermediate portio thereof of a pair of drive shaft insertion holes in right and left portions thereof, said case body including two pairs of upper and lower flange members inwardly projected from inner peripheral portions of said drive shaft insertion holes continuous with said main wall, said main wall of said case body having a transparent window plate made of transparent plastic material integrally formed with said main wall by bicolor molding of said upper and lower halves of said case body, between said right and left drive shaft insertion holes, such that the state of the wound tape can be seen through said window plate, said window plate having an elevated portion elongated in a right to left direction projected outward from an intermediate portion of said window plate;

a pair of hubs for winding a tape therebetween, which are rotatably installed in positions corresponding to said drive shaft insertion holes in said case body, displacement of said hubs being regulated by said flange members; and

at least one name plate made of material harder than said plastic material of said case body, said name plate being attached to an outer surface of at least one of said main walls of said case body inclusive of said right and left drive shaft insertion holes, said name plate having a window hole elongated in a right to left direction positioned between said right and left shaft insertion openings in an intermediate portion of said name plate, said position of said window hole corresponding to said elevated portion of said window plate, said name plate having one or more indexes formed on an outer surface thereof and having a pair of right and left shaft insertion openings defined therein, positions of said shaft insertion openings corresponding to said drive shaft insertion holes defined in said case body, said at last one name plate having a pair of ring shaped shaft guide members, each member of said pair having a tapered portion with a guide surface inwardly projected from an inner peripheral portion of each of said shaft openings, said shaft guide members being attached closely in contact with said inner peripheral portions of said drive shaft insertion holes, wherein in said outer surface of said main wall there is formed an elliptical concave portion corresponding in shape to that of said name plate having a size slightly larger than that of said name plate so that said name plate may be installed in said concave portion and fixed to said main wall through an adhesive member, wherein an outer surface of said name plate is coincident with or slightly lower than said outer surface of said main wall.

5,253,823

GUIDANCE PROCESSOR

Richard V. Lawrence, Blackwater, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

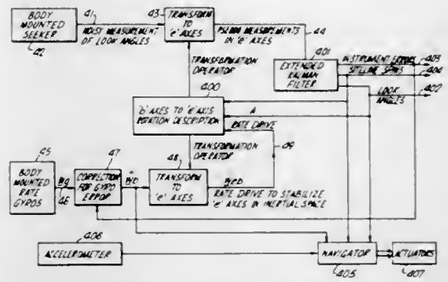
Filed Sep. 26, 1984, Ser. No. 662,981

Claims priority, application United Kingdom, Oct. 7, 1983, 8326848

Int. Cl.[5] F41G *7/00*

U.S. Cl. 244—3.15 **6 Claims**

1. In a homing missile having a strapdown seeker providing sight line look angle measurements with respect to missile body axes, a guidance processor including means for receiving sight line look angle measurements, and transformation means for transforming the look angle measurements from missile



body axes to pseudo measurements in a further set of axes defined to force the pseudo measurements to be small.

5,253,824

HOLLOW CORE AIRFOIL

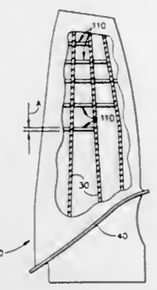
Herbert Halila, and Kurt L. Hansen, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 685,946, Apr. 16, 1991, abandoned.

This application Sep. 1, 1992, Ser. No. 939,531

Int. Cl.[5] B64C *3/18, 11/24*

U.S. Cl. 244—123 **3 Claims**



1. A hollow core airfoil comprising:

first and second halves diffusion bonded together;

a substantially hollow central portion between said first and second halves;

a root portion, a tip portion, a leading edge and a trailing edge;

a plurality of radial ribs extending from said root portion to said tip portion within said hollow portion wherein said radial ribs comprise ridges of said first and second half diffusion bonded to form continuous ribs; and

a plurality of chord-wise stringers within said hollow portion wherein said stringers are arranged such that said stringers on said first half are not bonded to said stringers on said second half and a portion of said chord-wise stringers extend from said leading edge to said trailing edge wherein said chord-wise stringers are arranged in a foot print pattern starting at said leading edge and having a length proportional to a predetermined load concentration at said leading edge.

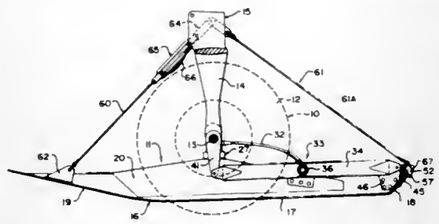
VOL 1155 ISS 3 OC 19 1993 UMI

5,253,825

AIRCRAFT SKI

Melvyn R. Christian, R.R. #1, Woodlands, Manitoba, Canada R0C 3H0

Filed Jul. 30, 1992, Ser. No. 921,945
Int. Cl.[5] B64C 25/52
U.S. Cl. 244—108 20 Claims



1. A landing wheel and ski combination for an aircraft for use of a tire surface in movement across firm ground and a ski surface for movement across snow-covered ground, the combination comprising a rotatable landing wheel having a ground-engaging tire surface, an axle on which the wheel is mounted for rotation, a support assembly for the axle for mounting the wheel on the aircraft, a ski assembly mounted on the axle so as to be carried thereby, the ski assembly including a bottom ski surface for movement across the snow-covered ground, a frame structure providing structural support for the ski surface, ram means actuable to cause movement of the frame structure through a movement length relative to the axle between a first raised position in which the tire surface projects below the ski surface for movement across the firm ground and a second lowered position in which the ski surface is arranged at a height relative to the tire surface for movement across the snow-covered ground, a front cable restraining means connected to a position on the frame structure forwardly of the axle, a rear cable restraining means connected to the frame structure at a position thereon rearwardly of the axle, said front and rear cable restraining means being arranged to maintain a required attitude of the ski about the axle, said front cable restraining means being elastically extendible and said rear cable restraining means being non-extendible, and means responsive to said movement of the frame structure relative to the axle to cause movement of the rear cable restraining means relative to the frame structure by length greater than the movement length thus allowing said position on the frame structure rearwardly of the axle to move by a first distance to accommodate said movement length and a second distance beyond said first distance to change said attitude of the ski surface about the axle.

5,253,826

LIGHTWEIGHT SEALED PARACHUTE AND HARNESS ASSEMBLY

Joseph W. Coltman, Scottsdale, and Kenneth W. Sego, Jr., Phoenix, both of Ariz., assignors to Simula Inc., Phoenix, Ariz.

Filed Jan. 9, 1992, Ser. No. 818,799
Int. Cl.[5] B64D 17/40, 17/64
U.S. Cl. 244—147 32 Claims

1. An environmentally sealed bail-out parachute system comprising:

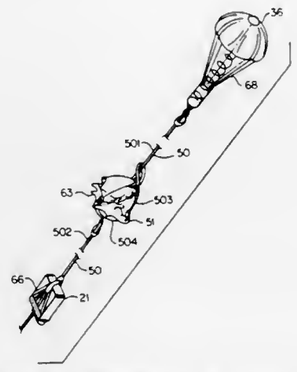
(a) a pilotchute in a container;

(b) means for ejecting the pilotchute out of the container;

(c) an environmentally sealed vacuum bag in the container, said vacuum bag having at least three tear initiation points;

(d) a deployment bag containing a main parachute environmentally sealed inside the vacuum bag, said main parachute having suspension lines;

(e) an outer bridle connecting the pilotchute to attachment points on the vacuum bag positioned next to and inside of each tear initiation point, such that when the pilotchute is ejected into the airstream during a jump, the force exerted by the outer bridle tears the vacuum bag at the tear initiation points, the tears propagate from the tear initiation points until the tear lines intersect and a section of the vacuum bag is torn completely out of the vacuum bag; and



(f) an inner bridle connecting the outer bridle to the deployment bag, such that the pilotchute, the outer bridle and the inner bridle pull the deployment bag out of the vacuum bag after the vacuum bag is torn open;

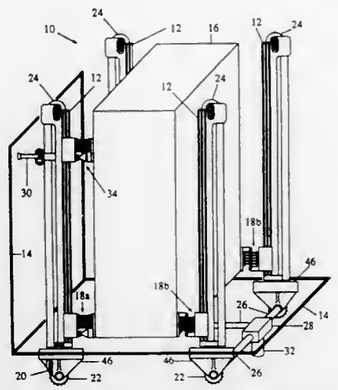
wherein after the deployment bag is pulled out of the vacuum bag, the suspension lines pull the main parachute out of the deployment bag.

5,253,827

CHAIN DRIVEN, RAIL GUIDED PAYLOAD DEPLOYMENT SYSTEM

Glen E. Funk, Chino, and Edwin E. Henkel, Lakewood, both of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Sep. 30, 1991, Ser. No. 767,591
Int. Cl.[5] B64G 1/64
U.S. Cl. 244—158 R 6 Claims



1. A payload deployment system for a spacecraft, comprising:

a) a plurality of parallel guide rails securely supported at their respective bases to a deployment portion of said spacecraft, at least two of said guide rails having a drive chain for translating said payload along the length of and off of the end of said guide rail;

b) a plurality of synchronizing drive shafts coupled to said chain driven guide rails to insure precise timing between said drive chains;

c) drive motor/output gear box means, for providing driving force to said drive chains; and

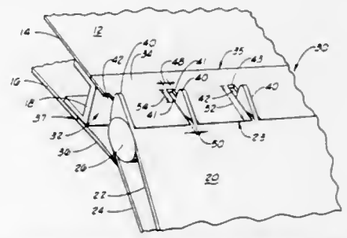
d) payload attach fittings securely affixed to said payload for engagement with said guide rails and said drive chains, wherein prior to deployment the payload is mounted to said guide rails and engaged to said drive chains and, during deployment, synchronous rotation of said drive shafts powers said drive chains, forcing said payload attach fittings to translate along and off of said guide rails, said guide rails providing a precise trajectory for the payload and said drive chains, thereby, providing the force to accelerate and eject the payload from said spacecraft.

5,253,828

CONCEALABLE FLAP-ACTUATED VORTEX GENERATOR

Ronald A. Cox, Norman, Okla., assignor to The Board of Regents of The University of Oklahoma, Norman, Okla.

Filed Jul. 17, 1992, Ser. No. 916,316
Int. Cl.[5] B64C 23/06
U.S. Cl. 244—199 10 Claims



1. An improved flight lifting surface assembly for aircraft, the flight lifting surface assembly having a flight lifting surface box, a flight lifting surface flap, and a flap actuator assembly for hingeably connecting the flight lifting surface flap to the flight lifting surface box wherein the improvement comprises:

a plurality of vanes of substantially rectangular cross-section mounted directly to the flap actuator assembly wherein the vanes are substantially concealed when the flight lifting surface flap is in a nominal position relative to the flight lifting box and wherein the vanes are exposed a variable distance into a boundary layer and able to generate vortices in the boundary layer on a portion of the lifting surface assembly during flight when the flight lifting surface flap is in a deflected position relative to the flight lifting box.

5,253,829

VEHICLE SUNROOF DEFLECTOR AND MOUNTING SYSTEM

Barry A. Willey, Maywood, Ill., assignor to National Cycle, Inc., Maywood, Ill.

Filed Feb. 23, 1989, Ser. No. 314,872
The portion of the term of this patent subsequent to Apr. 19, 2009, has been disclaimed.
Int. Cl.[5] B60J 7/22
U.S. Cl. 296—217 7 Claims

1. A self-contained air deflector assembly for adhesive mounting to a vehicle roof, said air deflector assembly comprising, in combination, a shield unit and an elongated elastomeric mounting strip unit, said shield unit being made from a single sheet of material and contoured to provide a shield center portion and a pair of opposed, swept back wing portions, said shield center and said wing portions being defined in part by continuous inwardly and outwardly facing, spaced apart lower mounting surface margins and a lower shield edge portion extending between and joining said lower mounting surface margins to provide a continuous engagement area for said mounting strip, said mounting strip including a lower body portion defined in part by a downwardly facing, adhesive-receiving surface and in part by inner and outer shoulder surfaces extending upwardly from said adhesive-receiving surface and converging towards each other, an upper body portion including inner and outer, flexible mounting flaps having opposed, first and second shield-engaging surfaces lying generally parallel to and spaced apart from each other and engaging respective ones of said mounting surface margins of said shield unit, said upper body also including a third surface extending between and joining the lower edges of said shield-engaging surfaces, and inner and outer, downwardly converging exterior surfaces, with said strip further including a flexible neck portion extending between and joining said upper and lower body portions, said flexible neck portion being defined by surfaces extending respectively between the upper ends of said converging shoulder surfaces and the lower ends of said downwardly converging exterior surfaces, and means for adhesively securing said mounting strip to a vehicle roof, said adhesive means being positioned on said adhesive-receiving surface of said mounting strip unit, whereby said shield unit associated therewith may be adhesively secured to the roof of an associated vehicle.

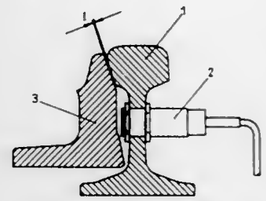


5,253,830

METHOD FOR MONITORING THE CONDITION OF RAIL SWITCH POINTS

Wolfgang Nayer, and Gerald Durchschlag, both of Zeltweg, Austria, assignors to Voest-Alpine Eisenbahnsysteme Gesellschaft m.b.H., Vienna, Austria

Filed May 8, 1992, Ser. No. 880,420
Claims priority, application Austria, May 8, 1991, 957/91
Int. Cl.[5] B61L 5/10
U.S. Cl. 246—220 7 Claims



1. A method for monitoring a condition of a rail switch point and for detecting premature abrasive wear-and-tear in a region of a tongue switching rail and a stock rail of the rail switch point, comprising the steps of:

successively detecting signals, provided by at least one proximity sensor disposed in a region of the tongue switching rail, said signals representing a separation distance between the tongue switching rail and the stock rail during at least a period of time when the rail switch point is being travelled upon;

storing in a memory a measured value representative of one

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of the signals detected during the detecting step, said measured value representing a minimum separation distance;

comparing the measured value stored in the memory to, at least a first limiting value to obtain a result value; and

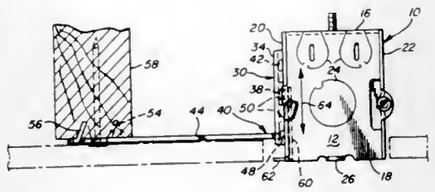
generating a first warning signal when the measured value stored in the memory is greater than the first limiting value compared thereto.

5,253,831

OUTLET BOX WITH ADJUSTABLE MOUNTING POSITIONS

Panos C. Theodorides, 82 Linfield St., Holdbrook, Mass. 02343

Filed Mar. 14, 1991, Ser. No. 669,360
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—27.3 **8 Claims**



1. An outlet box assembly comprising:

side, top, bottom and rear walls defining an outlet box,

a bracket slidably supported to the exterior of one side wall of the box, said bracket having a support arm substantially parallel to the side wall of the box and a mounting arm substantially perpendicular to the side wall of the box, said mounting arm being adapted to be secured by fastening means in a wall in which the assembly is to be installed,

said support arm having a plurality of holes,

a bracket engaging pin extending through the side wall of the box for engaging said plurality of holes to control the slidable movement of the box relative to the bracket,

flexible biasing means coupled to said pin for biasing said pin into engagement with said one of the plurality of holes in said support arm and further for retaining said bracket in engagement with said bracket engaging pin, wherein depression of said pin permits movement of said outlet box relative to said bracket, such that the bracket engaging pin can engage with any of the plurality of holes in said bracket engaging arm to properly position the outlet box with respect to the wall in which it is mounted,

and a stop tab extending from the side wall of said outlet box for preventing unintentional disengagement of said outlet box from said bracket, said stop tab being a flange formed from and integral with said biasing means.

5,253,832

SPRING COUNTERBALANCED BOOM SUSPENSION SYSTEM

Mark T. Bolas, 220 Curtner St., Apt. O, Palo Alto, Calif. 94306, and Russell C. Mead, Jr., 262 Princeton, Menlo Park, Calif. 94025

Filed Jul. 26, 1991, Ser. No. 735,516
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—123.1 **16 Claims**

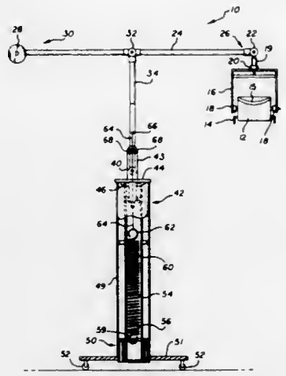
1. A viewing apparatus suspension system comprising:

a) means for viewing an image;

b) pivotable and rotatable mounting means operatively connected to said means for viewing for supporting the weight of said means for viewing;

c) a cantilever arm means having first and second ends, said first end being operatively connected to said pivotable and rotatable mounting means, said first end being operative to bear the weight of said mounting means and said means for viewing, and said cantilever arm means having a pivot point at said second end;

d) support means for supporting said means for viewing, said support means including a longitudinal axis of orientation, a base end and an opposite pivot end pivotally and rotatably connected to said pivot point of said second end of said cantilever arm means to allow for pivotal and rotational movement of said cantilever arm means about said support means pivot end; and



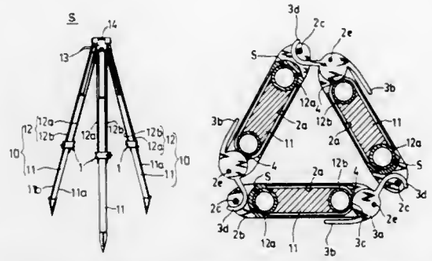
e) spring means for counterbalancing the weight of said means for viewing and said mounting means, said spring means being connected between said support means and an attachment point on said cantilever arm means intermediate said first end and said pivot point at said second end, and said spring means having a zero free length, whereby said cantilever arm means is capable of a fully counterbalanced range of motion about said pivot point between a horizontal position extending to one side of said support means and a substantially vertical position.

5,253,833

TRIPOD LOCK DEVICE

Kenji Indou, Hadano, Japan, assignor to Sokkia Co., Ltd., Kanagawa, Japan

Filed Sep. 28, 1992, Ser. No. 951,881
Claims priority, application Japan, Sep. 30, 1991, 3-278314
Int. Cl.[5] F16M *11/38*
U.S. Cl. 248—168 **24 Claims**



1. A tripod lock device for locking a tripod having a head and three identical legs each connected by one hinge to the head, each of the three legs being composed of a fixed leg and a movable leg slidably movable relative to the fixed leg, one of the fixed leg and the movable leg including a pair of parallel spaced leg members, the other of the fixed leg and the movable leg being slidably disposed between the leg members for expanding and contracting each respective leg, said tripod lock device comprising:

three identical leg lock units each associated with one of the three legs of the tripod for locking the movable leg and the fixed leg against relative movement, said leg lock units being engageable with each other to lock the three legs of the tripod against spreading, each of said leg lock units including a frame, an eccentric cam and an engagement portion;

said frame having a through-hole in which said leg members of one of said fixed leg and the movable leg and the other of the fixed leg and the movable leg are disposed, one of said leg members being secured to said frame;

said eccentric cam being rotatably mounted on said frame at a position adjacent to the other of said leg members, said eccentric cam having a presser portion and a hook, when said eccentric cam is rotated in one direction, said presser portion of said eccentric cam forcing said other leg member toward said one leg member to firmly grip the other of said fixed leg and said movable leg between said one leg member and said other leg member; and

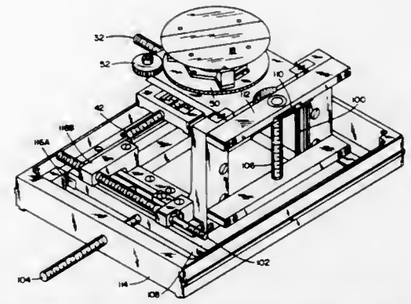
said engagement portion being disposed on said frame at a position adjacent to said one leg member in a diagrammatically opposite relation to said eccentric cam about said through-hole, said engagement portion of each of the three leg lock units being interlockingly engageable with said hook of an adjacent one of the three leg lock units to lock the three legs of the tripod when said eccentric cam is rotated in said one direction with the three legs of the tripod disposed near together.

5,253,834

ALIGNMENT FIXTURE FOR UNOBSTRUCTED PIVOT POINT

Edward V. Sullivan, Huntington Station, and Benjamin J. Pernick, Forest Hills, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Feb. 19, 1992, Ser. No. 836,817
Int. Cl.[5] F16M *11/12*
U.S. Cl. 248—179 **6 Claims**



1. A fixture having a platform movable with six degrees of freedom comprising:

mounting means for selectively undergoing translational displacement in three orthogonal directions;

connecting rod at the bottom end of a spherical bearing located in the mounting means, a top end of the connecting rod being pivotally connected to the peripheral center of a spherical sector platform, movement of the connecting rod causing the platform to undergo rotation in roll and pitch;

bearing means contacting the platform periphery for maintaining the sector's center of curvature at a fixed point in space thereby serving as a pivot point of the platform; and

means for rotationally mounting the bearing means for allowing the platform to undergo yaw while maintaining a constant center of curvature;

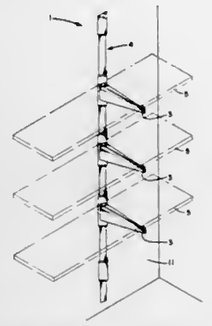
whereby the space outwardly of the platform is free of structure.

5,253,835

SHELF BRACKET ASSEMBLY

Warren L. Herron, III, 404 N. Sunset Blvd., Gulf Breeze, Fla. 32561-4060

Filed Feb. 18, 1992, Ser. No. 836,524
Int. Cl.[5] A47B *47/00*
U.S. Cl. 248—220.2 **17 Claims**



1. A shelf bracket assembly, comprising:

(a) a plurality of vertical shelf bracket support strips operatively attached to a wall, each said strip having a plurality of slots aligned vertically along the length of said support strips;

(b) a plurality of shelf brackets operatively attached to said support strips, each said bracket comprising:

(i) a base comprising an upper end, a lower end, and vertically aligned hooked portions between said upper and lower ends of a size and shape to lockingly fit within said vertical slots of said support strip; and

(ii) a horizontal support member fixedly connected to said base and of a size and strength capable of supporting at least half the weight of a shelf; and

(c) cover means operatively attached to said support strips for completely covering said support strips in the space between said shelf brackets, in the space above a top said shelf bracket and in the space below a bottom said shelf bracket.

5,253,836

CLAMP FOR FASTENING A SHELL WHICH ENCOMPASSES A TRACKBALL TO A KEYBOARD OF A LAPTOP COMPUTER

Shih Y. Tso, 11th Fl., No. 116, Sec. 2, Nanking E. Rd., Taipei, Taiwan

Filed May 13, 1992, Ser. No. 882,485
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—225.31 **5 Claims**

1. A clamp for fastening a shell which encompasses a trackball to a keyboard, comprising:

a base having an elongated member integrally connecting two walls each having a plurality of first grooves each having a cavity, said elongated member having a plurality of second grooves;

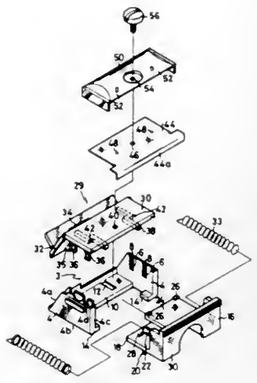
a spring-biased element having a first plate connected with a second plate, said first plate having first springpositioning means while said second plate has a plurality of protrusions each for sliding within each said second groove;

a tray having a first plate connected at an obtuse angle with a second plate having second spring-positioning means formed on a first surface and means for binding the shell

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formed on a second surface, said first plate having a plurality of hooks each guided by each said first groove to be received in each said cavity;

a plurality of compression springs biased between said first means and second means; and



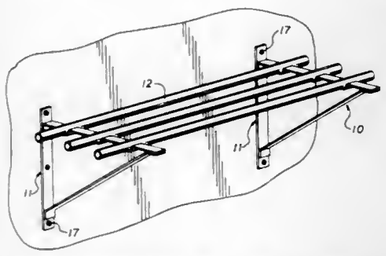
a buckle strip being secured to said first plate of said tray and formed with a bent portion beyond the first plate of said spring-biased element.

5,253,837

SHELF BRACKET FOR USE WITH CONDUIT

Charles W. Loux, 6858 Netherland Dr., Middletown, Ohio 45044

Filed Dec. 21, 1993, Ser. No. 993,403
Int. Cl.[5] A47G *29/02*
U.S. Cl. 248—250 **20 Claims**



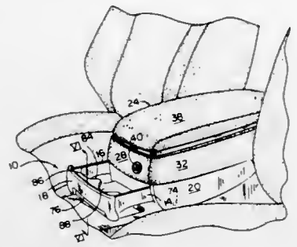
1. A shelf bracket for mounting on a wall for use in conjunction with a set of elongated members to form a shelf system, said shelf bracket having (i) a vertical leg for attachment to the wall; (ii) a horizontal leg extending substantially perpendicular from the vertical leg, said horizontal leg having at least three recesses formed in it to partially receive the elongated members in a substantially wobble-free state and dimensioned such that a top surface of each elongated member extends above the top surface of the horizontal leg; and (iii) a diagonal support leg extending from near a bottom of the vertical leg to near an end of the horizontal leg.

5,253,838

CONTAINER HOLDER

David J. Spykerman, Holland, Mich., assignor to Prince Corporation, Holland, Mich.

Filed Mar. 23, 1992, Ser. No. 855,429
Int. Cl.[5] A47C *7/62*
U.S. Cl. 248—311.2 **25 Claims**



1. A container holder for a vehicle having a component with opposing sidewalls and a front wall, comprising:

a holding member shaped to hold a container therein;

bracket means for movably supporting said holding member, said bracket means having opposing, inwardly facing means for attaching to the exterior surface of the opposing sidewalls of the component such that said holding member and bracket means straddle the component;

means for movably mounting said holding member to said bracket means, said holding member being movable between an extended use position in which said holding member is exposed for holding a container, and a retracted storage position in which said holding member is positioned in a compact position adjacent the component front wall; and

foldable floor means connected to said holding member and extending toward the component front wall for supporting a container placed in said holding member, said foldable floor means being foldable against the component front wall for storage when said holding member is in said compact position.

5,253,839

BRACE

Alex R. McClure, 4 Lugo Court, Tullamarine, Victoria, Australia

PCT No. PCT/AU90/00308, § 371 Date Jan. 13, 1992, § 102(e) Date Jan. 13, 1992, PCT Pub. No. WO91/01424, PCT Pub. Date Feb. 7, 1991
PCT Filed Jul. 19, 1990, Ser. No. 793,411
Claims priority, application Australia, Jul. 20, 1989, PJ 5370
Int. Cl.[5] A47F *5/00*
U.S. Cl. 248—354.1 **16 Claims**

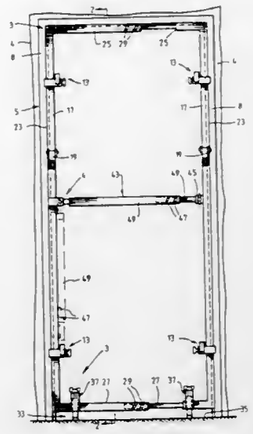
1. A device to brace a door frame the prevent the sides of the door frame buckling or otherwise deforming when grout or other filler material is used to fill a hollow region defined by channel members constituting the door frame and/or gap between the door frame and an adjacent wall, comprising:

(a) a pair of elongate support members each having a contact surface which can contact a side of the door frame substantially along the length thereof;

(b) at least one coupling means coupling the support members together so that the support members are movable between a retracted position and an expanded position;

(c) a fastener means for selectively locking the support members in the expanded position with the contact surfaces contacting the opposed sides of the door frame to brace the sides of the door frame; and

(d) a leg member pivotally connected to each support member for swinging movement laterally to the plane of the door frame, each leg member being adjustable in length to locate the support members at a required inclination with respect to the floor.

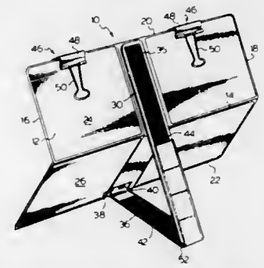


5,253,840

ADJUSTABLE BOOK REST

Beverley Sheremetta, 15 Maple Avenue, Dundas, Ontario, Canada L9H 4W3

Filed Jun. 19, 1992, Ser. No. 901,292
Claims priority, application Canada, Feb. 28, 1992, 2062037
Int. Cl.[5] A47B *97/04*
U.S. Cl. 248—452 **4 Claims**



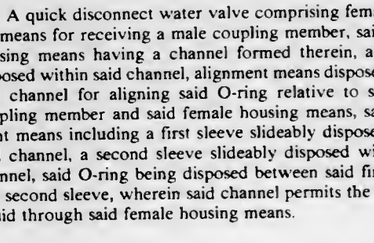
1. A readily adjustable and portable book rest comprising a support member having a transversely extending fold line providing an upper support member portion above the fold line and a lower support member portion below the fold line, a rigid spine secured to the upper support member portion and projecting therefrom below the fold line, and a flexible adjustment strap extending from the lower support member portion and securable to the spine at different positions therealong to enable the book rest to be erected for use with the upper support member portion at a desired angle by angulating the lower support member portion about the fold line rearwardly relative to the upper support member portion and appropriately securing the adjustment strap to the spine to cause the desired angle to be maintained by the book rest when set down on a supporting surface with a lower edge of the lower support member portion and a lower end of the spine being supported thereby, the adjustment strap and the spine each carrying a strip of Velcro material, the strip of Velcro material carried by the spine extending over substantially the whole length of the spine, to enable the adjustment strap to be secured to the spine at different locations to enable the upper support member portion to be set at different angles.

5,253,841

PRINTER VIBRATION ISOLATING APPARATUS

Tetsuya Yamada, Okayama, Japan, assignor to Sanwa Supply Co., Ltd., Okayama, Japan

Continuation of Ser. No. 719,100, Jun. 21, 1991, abandoned, which is a continuation of Ser. No. 473,342, Feb. 1, 1990, abandoned. This application Dec. 11, 1992, Ser. No. 989,911
Claims priority, application Japan, Jun. 21, 1989, 1-160023
Int. Cl.[5] F16M *11/00*
U.S. Cl. 248—638 **1 Claim**



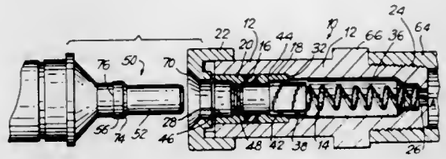
1. A printer vibration isolating apparatus for absorbing lateral vibration caused by reciprocal movement of a printing head of a printer comprising a left and right pair of vibration control swingable means for supporting the printer said pair of vibration control swingable means comprising a pair of concave-surface bases extending in a direction parallel to a direction of said reciprocal movement of said printing head of said printer, a pair of triangular plates arranged so as to have one upper apex and two lower apexes, a set of at least two rollers rolling on each said concave-surface base, the rollers of each said set of rollers being provided at the lower apexes of each said triangular plate and a support rod for supporting thereon said printer, said support rod being coupled between the upper apexes of said pair of triangular plates.

5,253,842

QUICK DISCONNECT WATER VALVE ASSEMBLY

Laszlo Huebscher, New Brunswick, N.J., and Eric A. Deitrich, Woodbine, Md., assignors to Lab Products, Inc., Maywood, N.J.

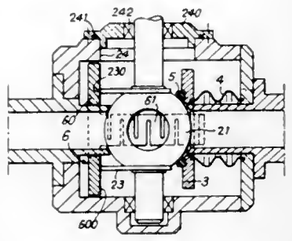
Filed Jul. 30, 1992, Ser. No. 922,603
Int. Cl.[5] F16L *37/28*
U.S. Cl. 251—149.6 **13 Claims**



1. A quick disconnect water valve comprising female housing means for receiving a male coupling member, said female housing means having a channel formed therein, an O-ring disposed within said channel, alignment means disposed within said channel for aligning said O-ring relative to said male coupling member and said female housing means, said alignment means including a first sleeve slideably disposed within said channel, a second sleeve slideably disposed within said channel, said O-ring being disposed between said first sleeve and second sleeve, wherein said channel permits the flow of a liquid through said female housing means.

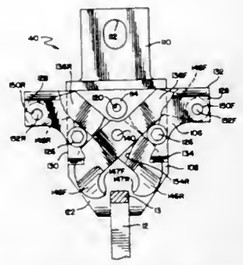
VOL 1155 ISS 3 OCT 19 1993 UMI

5,253,843
RETRACTABLE-GASKET VALVE HAVING TWO STIFFNESSES
Patrick Garceau, Saint Marcel, France, assignor to Societe Europeenne de Propulsion, Suresnes, France
Filed Dec. 10, 1992, Ser. No. 990,331
Claims priority, application France, Dec. 27, 1991, 91 16263
Int. Cl.[5] F16K *5/20*
U.S. Cl. 251—159 **18 Claims**



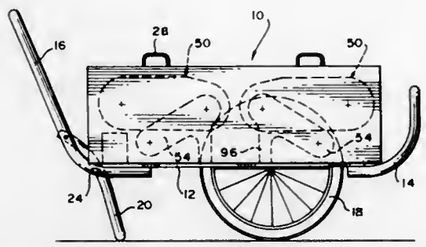
1. A retractable-gasket ball valve comprising a valve body defining an upstream duct segment and a downstream duct segment, a spherical shutter member having a calibrated opening and movable between an open position and a closed position, and vice versa, sealing means fixed to the valve body and including, in particular, a gasket for providing sealing between the shutter member and the valve body when the shutter member is in its closed position, and a slide for causing said sealing means to pass between a retracted position which is also a rest position in which the sealing means is spaced apart from the spherical shutter member, and a contact position in which the gasket is pressed against the shutter member, wherein the valve includes a first resilient element of low stiffness which, when the valve is brought to its open position tends to separate the sealing means from the shutter member, and a second resilient element of relatively greater stiffness which is put under tension by the slide a few degrees before the mechanical closure position of the valve when the gasket is in contact with the shutter member, and which exerts controlled pressure on said gasket in contact with the shutter member.

5,253,844
HAIRPIN SPIKE PULLING TOOL AND MACHINE THEREFOR
Dennis J. Cotic, and Jack K. Hosking, both of Waukesha, Wis., assignors to Oak Industries, Inc., Waltham, Mass.
Filed Apr. 6, 1992, Ser. No. 863,826
Int. Cl.[5] B25C *11/00*
U.S. Cl. 257—18 **13 Claims**



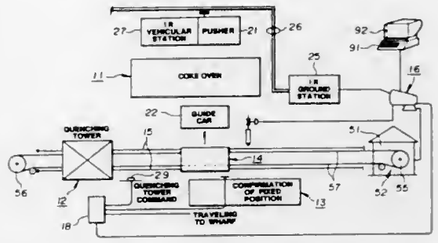
1. A hairpin spike pulling tool for engagement in a spike pulling machine for use in removing a railroad hairpin spike out of a railroad tie supporting a rail of a railroad track, the spike pulling machine including a machine frame, wheels for supporting the machine frame for movement along railroad tracks, an engine supported by the machine frame for driving at least one of the wheels, and apparatus for supporting each said pulling tool or movement from a retracted position downwardly and toward the hairpin spike into a position wherein said pulling tool engages the spike and then moves upwardly to pull the spike from the tie, wherein the hairpin spike includes a loop-shaped head defining a loop-aperture above the surface of the railroad tie, said pulling tool comprising:
housing means for mounting said tool to the machine;
first and second scissors elements each having a hook at a lower end, said elements being engaged in said housing means and configured for pivotal movement relative to each other so that said hooks are abutted against each other and are movable for engaging the loop-shaped head of the hairpin spike;
means disposed on said tool for moving said hooks into an open position;
each of said scissors elements having an upper end, and said means for moving including a fluid power cylinder having a blind end and a rod end, said blind end connected to one of said upper ends, and said rod end having a shaft connected to the other of said upper ends;
means for biasing said hooks into abutting relationship including a spring connected between said upper ends of said scissors elements for returning said hooks to the closed position upon the release of pressure in said fluid power cylinder.

5,253,845
PORTABLE WELL PIPE AND PUMP PULLER
Robert A. Wilbert, 35 Paradise Trail, Stockholm, N.J. 07460
Filed Jul. 9, 1992, Ser. No. 911,103
Int. Cl.[5] E21B *19/00*
U.S. Cl. 254—30 **14 Claims**



1. An apparatus for moving a well pipe, pump and other downhole equipment in relation to a well bore, said apparatus comprising a frame, wheel means supporting said frame, handle means on said frame to enable the apparatus to be moved into overlying relation to a well bore, a pair of opposed well pipe engaging means on aid frame, each of said well pipe engaging means including a belt assembly, means on said frame drivingly connected to the belt assemblies for driving them in opposite directions, each belt assembly including an elongated endless belt including a vertically elongated portion, said vertically elongated portions being disposed in opposed facing relation for engaging opposed vertical external surfaces of a pipe for moving the pipe longitudinally when the belts are driven, said belt being flexible and constructed of resilient material and provided with an outer surface having a longitudinal central groove means for engaging pipes and other well bore equipment having various external surface characteristics, each of said belts being mounted on a pair of spaced multi-grooved pulleys, shaft means supporting said pulleys from a pair of side plates with one of said pulley shafts being adjustable to tension the belt and gear drive means connected to one of the shaft means supporting each pair of pulleys for driving the pulleys.

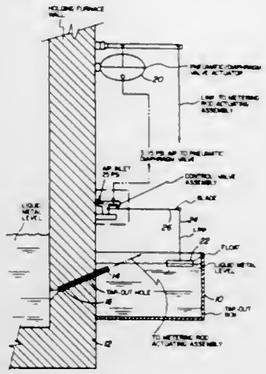
5,253,846
APPARATUS AND METHOD FOR CONTROLLING OPERATION OF QUENCHING CAR/BUCKET CAR FOR COKE OVEN
Yoshihiro Omae; Haruo Watanabe; Susumu Sonoki; Yoichi Kanemasa; Kazuo Sagara; Takashi Yoshimune, and Tetsuo Yamasaki, all of Kitakyushu, Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan
Filed Jul. 23, 1991, Ser. No. 734,761
Claims priority, application Japan, Jul. 24, 1990, 2-193884; Jul. 24, 1990, 2-193885; Jul. 24, 1990, 2-193886; Aug. 28, 1990, 2-224492; Nov. 7, 1990, 2-299739; Nov. 7, 1990, 2-299740
Int. Cl.[5] C21B *13/06*
U.S. Cl. 266—44 **7 Claims**



1. A method for controlling the operation of a quenching car for a coke oven in which the quenching car is actuated in association with a pusher to travel on a track and charged with calcined coke pushed out from a designated coking chamber of the coke oven by the pusher and the quenching car is moved into a quenching tower for quenching the coke and then moved to designated one of coke wharves for discharging the coke to the coke wharf, comprising the steps of:
providing a quenching car operating means for connecting a wire rope to said quenching car and drawing said wire rope due to the driving of a winch structure to reciprocate said quenching car on said track;
detecting the amount of driving of said winch structure to output required operational position data of said quenching car on said track;
confirming approach of said quenching car to a position at which said quenching car receives coke from said designated coking chamber, a quenching position in said quenching tower and a position at which coke is discharged from said quenching car to said designated coke wharf to output operational position confirming data; and
carrying out control so as to permit a desired operation to take place depending upon coincidence between said required operational position data of said quenching car and said operational position confirming data.

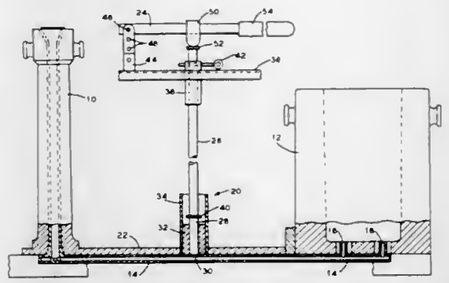
5,253,847
TAP-OUT METERING ROD CONTROL SYSTEM
Billy D. Utley, Huntingdon, Tenn., assignor to Noranda USA, Inc., Huntingdon, Tenn.
Filed Dec. 2, 1992, Ser. No. 984,665
Int. Cl.[5] B22D *41/14*
U.S. Cl. 266—95 **2 Claims**

1. A system for controlling motion of a metering rod used to regulate the flow of metal from a holding furnace to a tap-out box comprising:
a) a float floating on the surface of the molten metal in the tap-out box;
b) a metering rod actuator connected to the metering rod to move the metering rod into or out of a tap-out hole interconnecting the holding furnace to the tap-out box;
c) a control valve assembly mounted on a fixed support and having an inlet orifice connected to an air pressure supply and two outlet orifices, one connected to the metering rod actuator and the other to an exhaust orifice; and
d) a blade connected to the float and adapted to be moved by it closer or further away from the exhaust orifice so as to control the air exhausted at the outlet orifice of the control valve in proportion to the spacing between the blade and



exhaust orifice, resulting in variation in the air pressure at the outlet connected to the metering rod actuator depending upon the float and blade positions.

5,253,848
VALVE FOR MOLTEN METAL CONDUIT
Robert D. Saunders, Barboursville, and William L. Mankins, Huntington, both of W. Va., assignors to Inco Alloys International, Inc., Huntington, W. Va.
Filed Jun. 12, 1992, Ser. No. 897,685
Int. Cl.[5] B22D *35/04*
U.S. Cl. 266—236 **14 Claims**



1. A device for stopping bottom pouring of molten metal into an ingot mold having a height less than another ingot mold connected to a single conduit network comprising:
a ceramic conduit having a longitudinal central passage directed to the ingot mold of lesser height;
a ceramic breakaway seal placed in an opening in a wall of said ceramic conduit for preventing the molten metal from flowing through said opening in said wall of said ceramic conduit;
a nonmetallic plug adjacent said ceramic seal; and
a means for breaking said seal and pushing said nonmetallic plug orthoganally into said longitudinal central passage into said ceramic conduct to prevent flow of molten metal through said ceramic conduit into the ingot mold of lesser height.

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5,253,849

WHEEL SUSPENSION STRUCTURE WITH BUFFERING LEAF SPRINGS

Yoshihide Kamada, 146-11, Oaza Kami, Ageo-shi, Saitama-ken, Japan

Filed Jul. 19, 1991, Ser. No. 732,612
Int. Cl.[5] F16F *1/20*; B60B *9/04*
U.S. Cl. 267—36.1 9 Claims



1. An apparatus comprising: an axle having a central axis; an annular rim extending around said axle concentric to said axis, said rim having on a radially inner side thereof a plurality of angularly spaced surface portions; first support means supported on said rim and including a plurality of first support portions which are angularly offset from each other, which are each spaced radially inwardly from a respective said surface portion on said rim, and which each have therethrough an opening; second support means supported on said axle and including a plurality of second support portions provided at locations spaced angularly about said central axis, said second support portions each having therethrough an opening; and a plurality of elongate leaf spring elements which are arranged as chord members with respect to said rim, each said leaf spring element having opposite ends which directly engage respective said surface portions on said rim, having a central portion which is slidably received in said opening in a respective one of said second support portions, and having between said central portion and each said end thereof a respective end portion which is slidably received in the opening through a respective one of said first support portions.

5,253,850

AIRSPRING WITH NON-MOLDED-IN BEAD

Thomas E. Burkley, Akron; Edwin L. Haines, Fairlawn; Frank G. Mungo, Cuyahoga Falls, and James E. Woodlee, Kent, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jun. 4, 1992, Ser. No. 894,379
Int. Cl.[5] F16F *9/04*
U.S. Cl. 267—64.24 1 Claim

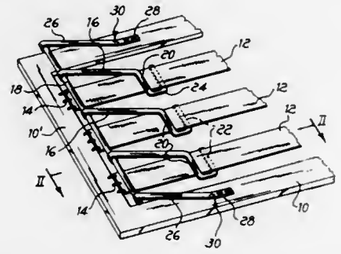
1. A method of assembling a fluid pressure sleeve to an end member comprising:
(a) vulcanizing an elastomeric fluid pressure sleeve;
b) wrapping an end portion of said vulcanized sleeve about a bead ring;
(c) placing the wrapped bead ring into an end member; and
(d) crimping said end member about the wrapped bead ring.

5,253,851

DEVICE TO OBTAIN A SUPPLEMENTARY SPRINGING EFFECT IN SUPPORTING FRAMES PROVIDED WITH ELASTIC BELTS

Anacleto Fontana, Lesmo, Italy, assignor to Cintel S.r.l., Italy

Filed Mar. 3, 1992, Ser. No. 845,386
Claims priority, application European Pat. Off., Apr. 30, 1991, 91830175.5
Int. Cl.[5] F16F *3/00*; A47C *23/02*
U.S. Cl. 267—103 6 Claims



1. A support device for providing resiliency to an article including a frame having a plurality of sides, said support device comprising: belt means having a first end and a second end, and being connected between at least two sides of said frame, said belt means extending in a first plane and having an upper support surface and a lower surface; arm means operatively connected to said belt means to provide resilient support therewith, at least a portion of said arm means extending in a second plane and being connected to said belt means at an intermediate location between said first and second ends so that said second plane extends obliquely with respect to said first plane on a side of said first plane comprising said upper support surface, said arm means including a first member extending generally transverse with respect to said belt means and being arranged to rest on said lower surface of said belt means and a second member extending generally transverse with respect to said belt means and being arranged to rest on said upper support surface of said belt means, and connecting means for connecting said first and second members, said first and second members arranged at spaced locations along said first plane, at least a portion of said belt means and said arm means being adapted to be temporarily displaced from said first and second planes respectively upon application of a force to said arm means, said force having a component perpendicular to said first plane, whereby a counter force to said perpendicular component is produced as a result of said operative connection between said belt means and said arm means, said counter force acting to return said belt means and said arm means to said respective first and second planes.

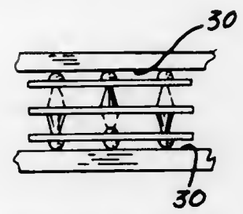
5,253,852

SPRING USED WITH COMPLEMENTARY SPACER

Walter F. Pleva, Indiatlantic, Fla., assignor to Uniform Loading Spring Corporation, Clearwater, Fla.

Continuation-in-part of Ser. No. 197,321, May 23, 1988, Pat. No. 5,072,917, which is a continuation of Ser. No. 52,066, May 21, 1987, abandoned. This application Nov. 12, 1991, Ser. No. 790,799
Int. Cl.[5] F16F *3/02*
U.S. Cl. 267—162 3 Claims

1. A uniform loading spring utilized in compression in combination with at least one adjacent spacer, the spring being substantially flat, of a flexible material and having a top surface and a bottom surface, each surface having a plurality of symmetrically shaped protrusions mounted thereon, each of the protrusions having a base portion and a spherically configured tip portion remote from the base portion, the at least one adjacent spacer having a top surface and a bottom surface, each surface having a number of tip portion receiving recesses pre-formed therein, the spacing of the spacer recesses on the spacer bottom surface being identical to the spacing of the tip portions of the spring protrusions on the spring top surface, such that when the spring and the spacer have been moved into



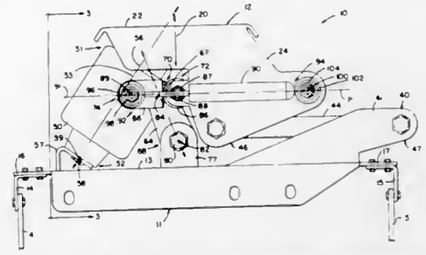
a contiguous relationship the spherical tip portions of the spring protrusions of the spring top surface are precisely and fitably received in the pre-formed tip portion receiving recesses of the spacer bottom surface to prevent rotation of the spacer with respect to the spring during utilization of the spring.

5,253,853

VIBRATION DAMPENING DEVICE

Richard Conaway, Shelby, Ohio, and Thomas A. McKenzie, Spring Lake, Mich., assignors to Applied Power Inc., Butler, Wis.

Filed Sep. 15, 1992, Ser. No. 944,917
Int. Cl.[5] B60G *11/26*
U.S. Cl. 267—256 19 Claims



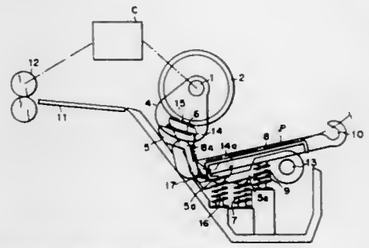
1. A vibration dampening suspension device for isolating a suspended body from the force vibrations of a supporting body, comprising:
a) an impact plate adapted for mounting to said suspended body or supporting body and having a vertical axis;
b) a support plate adapted for mounting to the other of said suspended body or supporting body;
c) a link member having first and second ends, said first end pivotally interconnected with said support plate at a support pivot;
d) a lever member having a longitudinal axis and first and second ends, said first end pivotally interconnected with said impact plate at a main pivot;
e) a hydraulic shock absorber having a central axis and first and second ends, where said first end is pivotally interconnected with said lever member second end at a shock pivot and said second end is pivotally interconnected with said impact plate at a pivot spaced from said main pivot; and
f) wherein said second end of said link member is pivotally interconnected with said lever member at a lever pivot positioned intermediate said first and second ends of said lever member and intermediate said shock pivot and main pivot for rotation of said lever member with respect to said main pivot.

5,253,854

SHEET FEEDING APPARATUS

Masahide Tanoue; Hiroyuki Ishii; Harukazu Sekiya, all of Yokohama; Ryukichi Inoue, Kawasaki, and Kazuhide Kudo, Higashi Murayama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 17, 1992, Ser. No. 852,998
Claims priority, application Japan, Mar. 19, 1991, 3-080730; Jun. 25, 1991, 3-180257
Int. Cl.[5] B65H *5/00*
U.S. Cl. 271—10 40 Claims



1. A sheet feeding apparatus, comprising:
sheet supporting means for supporting sheets;
separating means for separating the sheets fed from said sheet supporting means one by one, said separating means comprising rotary feeding means and friction means urged against each other with a predetermined separating pressure to separate the sheets therebetween;
separating pressure releasing means for releasing the separating pressure after the sheets fed from said sheet supporting means are separated by said separating means; and
double feed preventing means insertable into and retractable from a sheet feeding path for the sheet separated by said separating means, said double feed preventing means being inserted into said sheet feeding path for preventing a double feed of the sheets, when the separating pressure is released by said separating pressure releasing means.

5,253,855

SHEET FEEDING DEVICE

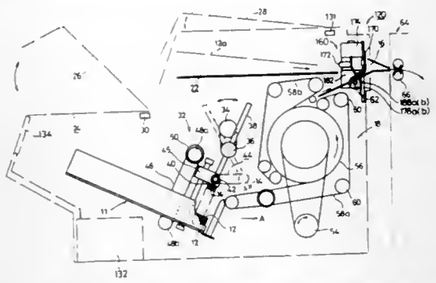
Nobuyuki Torisawa, and Norikazu Soga, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 12, 1991, Ser. No. 805,950
Claims priority, application Japan, Dec. 13, 1990, 2-401926; Jun. 20, 1991, 3-148987; Jun. 20, 1991, 3-148988
Int. Cl.[5] B65H *3/44*
U.S. Cl. 271—9 14 Claims

12. A sheet feeding device for feeding sheets one by one, said device comprising:
sheet separating means for removing an uppermost sheet of a plurality of stacked sheets stored in a sheet to a sheet discharge port;
shutter means for opening and closing said sheet discharge port;
a sheet insertion slot for introducing an extra sheet, other than said plurality of stacked sheets, directly into said sheet discharge port; and

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a swingable plate and a drive source, wherein one end of said swingable plate is coupled to said drive source, and an



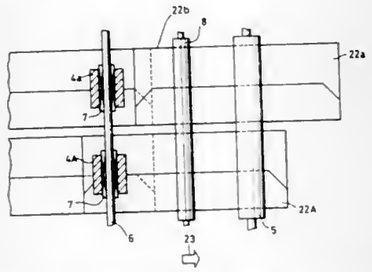
opposite end thereof is engaged with said shutter means for opening and closing said sheet discharge port.

5,253,856

SHEET TRANSPORT DEVICE

Masami Fuchi, Neyagawa; Hiroshi Kubota, Osaka, and Kenji Oda, Toyonaka, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed May 26, 1992, Ser. No. 889,013
Claims priority, application Japan, May 30, 1991, 3-127574
Int. Cl.[5] B65H *3/44*
U.S. Cl. 271—9 **2 Claims**



1. A sheet transport device comprising:

at least first and second sheet transport path means extending parallel to one another; and

transport means for transporting sheets along said first and second sheet transport means, the transport means including:

a single drive shaft extending normal to said first and second sheet transport path means;

roller means mounted on the drive shaft in a position corresponding to each of the first and second sheet transport path means, each roller means being rotatable in a sheet transport direction independently of rotation of said single drive shaft; and

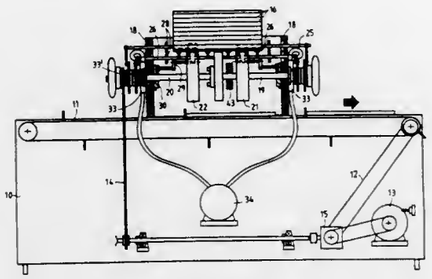
transmission including a one-way clutch means provided between the drive shaft and roller means for transmitting rotational force of the drive shaft rotating in a sheet transport direction to the roller means and for shutting off transmission of the rotational force of the roller means rotating in the sheet transport direction to the drive shaft.

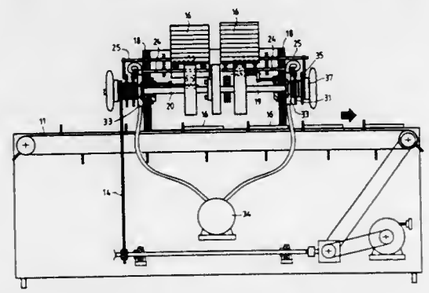
5,253,857

DEVICE FOR FEEDING SHEETS FROM ONE OR TWO SOURCES

Aris Ballestrazzi, and Lamberto Tassi, both of Savignano Sul Panaro, Italy, assignors to SITMA S.p.A., Spilamberto, Italy

Filed Jul. 28, 1992, Ser. No. 921,047
Claims priority, application Italy, Aug. 5, 1991, M19-1A002205
Int. Cl.[5] B65H *3/44*
U.S. Cl. 271—91 **3 Claims**





1. A feeding device for separately feeding single sheets from at least one stack of sheets, comprising:

a support structure provided with a table for positioning a stack of sheets to be fed;

at least one pair of rotary drums rigidly positioned with a drive shaft which is rotatably supported on said support structure;

a plurality of operating elements associated with said pair of drums, said operating elements comprising gripper elements positioned on said rotary drums for gripping said sheets and sucker elements for withdrawing a single sheet from the bottom of said stack and transporting the single sheet towards said gripper elements; and

a linkage system comprising levers and cams provided in proximity to the first end of said drive shaft for controlling said operating elements so as to provide for a phase difference; wherein:

said drive shaft is divided into two parts which can be connected together in an intermediate region at ends of each of said parts, the ends of each of said parts being provided with removable engagement means and being capable of being secured in a relative position and rotated through any selectable angle;

said linkage system that comprises levers and cams operationally connected with the operating elements of a first drum of the device; and

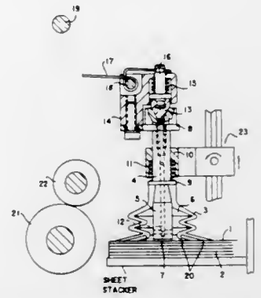
a second linkage system comprising levers and cams is provided in proximity to the other end of said drive shaft and is operationally connected with the operating elements of a second drum of the device.

5,253,858

DEVICE FOR SINGLY SEPARATING OR SINGLING OUT STACKED PRINTING FORMS

Martin Grieve, Heidelberg-Ziegelhausen, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed May 20, 1992, Ser. No. 886,504
Claims priority, application Fed. Rep. of Germany, May 21, 1991, 4116491
Int. Cl.[5] B65H *3/08*
U.S. Cl. 271—103 **10 Claims**



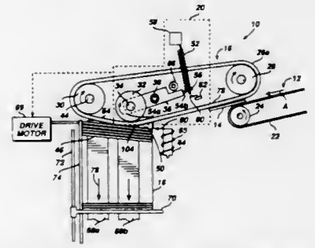
1. Device for singly separating stacked sheet-like elements, comprising at least one sucker for applying vacuum, said sucker being deformable for varying the volume thereof, a vertically and rotatably displaceable holder formed with an inner air duct and having a lower end at which said sucker is disposed, closure means controllable in accordance with a given operating cycle for opening and closing said air duct, drive means for vertically and rotatingly displacing said holder, a support operatively coupled with said drive means and having guide means for guiding said displaceable holder substantially perpendicularly to a suction surface of said sucker and between respective stops at spaced-apart locations of said guide means, resilient means for biasing said holder in a direction towards a lower end position thereof, said holder being formed with a sensing surface at said lower end thereof and within said deformable sucker for cooperating with an upper surface of a respective uppermost sheet-like element of a stack of sheet-like elements.

5,253,859

APPARATUS AND METHOD FOR STACKING SHEET-LIKE ARTICLES

Mario Ricciardi, 2816 Virginia La., Glenview, Ill. 60025

Filed Jun. 7, 1991, Ser. No. 712,195
Int. Cl.[5] B65H *43/00*
U.S. Cl. 271—176 **14 Claims**



1. Apparatus for stacking a plurality of flat articles on edge, said apparatus comprising:

a discharge magazine for sequentially receiving and stacking said flat articles in a stack;

said discharge magazine including moveable discharge support means adapted to support said stack of articles on edge and moveable compression plate means to maintain said articles on edge;

drive means for controllably moving said discharge support means;

a stacker section adjacent said discharge magazine for transporting articles sequentially into said stack, said stacker section comprising stacker belt means extending around a plurality of roller means;

the last of said articles in said stack abutting against said stacker belt means adjacent one of said roller means to apply a compressive force developed by said stack of flat articles and said compression plate to said one roller means;

said one roller means movably mounted to said stacker section with respect to at least another of said plurality of roller means, for movement responsive to increases and decreases in said compressive force;

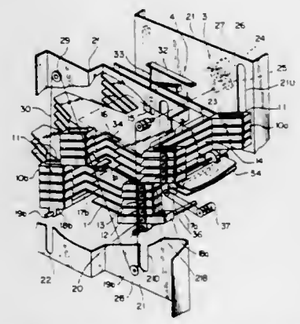
actuator means operatively connected to and responsive to movement of said one roller means and connected to said drive means for activating said drive means and said discharge support means to transport said stack of flat articles away from said stacker section when said compressive force reaches a predetermined maximum value.

5,253,860

FINISHER FOR AN IMAGE FORMING APPARATUS

Akira Hirose, Tokyo; Takashi Fujii, Ohmiya, and Fumitaka Hyodou, Nukata, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 5, 1992, Ser. No. 925,981
Claims priority, application Japan, Aug. 6, 1991, 3-219281; Aug. 29, 1991, 3-242393
Int. Cl.[5] B65H *29/22*
U.S. Cl. 271—176 **14 Claims**



1. A finisher, operatively connectable to a sheet discharging device, for finishing sheets discharged from said sheet discharging device and distributed to a plurality of bin trays which are arranged one above another in said finisher, said finisher comprising:

a discharge roller for sequentially discharging the sheets driven out of the sheet discharging device to the bin trays;

a drive motor for driving said discharge roller; and

control means for controlling a rotation speed of said drive motor in response to size information representative of a size of the sheets sequentially discharged to the bin trays.

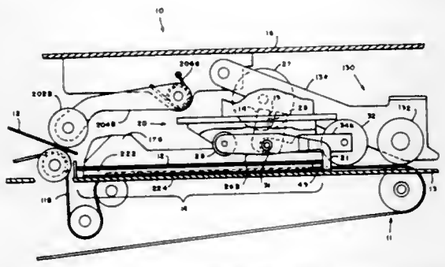
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5,253,861

DOCUMENT REGISTRATION APPARATUS WITH IMPROVEMENT TO PREVENT SHINGLING DURING REMOVAL OF DOCUMENTS

Roderick N. Schmaling, Brookfield Center, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Aug. 28, 1992, Ser. No. 937,623
Int. Cl.[5] B65H *31/04*
U.S. Cl. 271—213 8 Claims



1. In a document registration apparatus for use with conveying means for transporting documents along a document path from an upstream direction to a downstream direction through a document registration position, said document registration apparatus including a plurality of laterally-spaced registration stops at a downstream end positioned substantially perpendicular to the document path for both stopping the documents at the document registration position and for aligning the documents relative to the document path when said stops are adjacent to the document path, and pinch roller means at an upstream end for urging the stopped documents against the conveying means, an improvement comprising:

means for supporting the documents above the conveying means when the documents are against the registration stops, said supporting means being laterally positioned adjacent the conveying means,

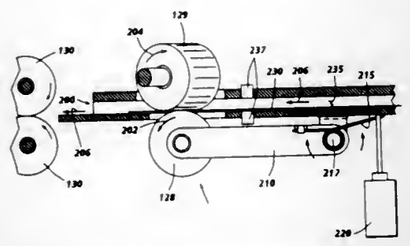
wherein the conveying means includes a pair of transport belts situated in a fixed plane and said supporting means comprises at least one deck rail laterally positioned between said transport belts.

5,253,862

ADJUSTABLE NORMAL FORCE EDGE REGISTERING APPARATUS

Thomas Acquaviva, Penfield; Vinod K. Agarwal, Webster; Robert P. Siegel, Penfield, and Lam F. Wong, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 23, 1991, Ser. No. 812,086
Int. Cl.[5] B65H *5/06*
U.S. Cl. 271—251 21 Claims



1. A sheet handler for successively transporting sheets in a preselected direction to and from processing stations in image processing devices comprising:

a driven cross-roller;

a second cross-roller mounted for free rotation;

means for loading said rollers for applying a force urging the engagement of the rollers at a sheet receiving nip; and

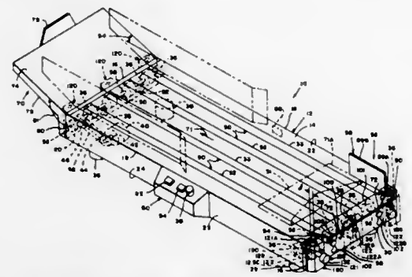
means for transporting sheets of varying characteristics through the sheet receiving nip, said transporting means comprising means for adjusting the force applied by said loading means to adjust the normal force on the sheets passing through the sheet receiving nip and means for actuating said adjusting means to adjust the force applied by said loading means.

5,253,863

PORTABLE SHEET FEEDING APPARATUS

William H. Brewster, Jr., Fairfield, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Nov. 23, 1992, Ser. No. 979,973
Int. Cl.[5] B65H *5/02*
U.S. Cl. 271—265 13 Claims



1. Apparatus for transporting a sheet comprising:

a. a frame including an elongate generally rectangularly-shaped upper wall having opposite ends;

b. at least one endless belt looped about the upper wall, the at least one belt including a belt run overlaying the upper wall and extending longitudinally of the length thereof between the opposite upper wall ends;

c. a d.c. motor supported by the frame and connected for driving the at least one belt in opposite directions;

d. means for connecting the apparatus to a source of supply of a.c. power, the connecting means including a power switch operable for energizing the apparatus;

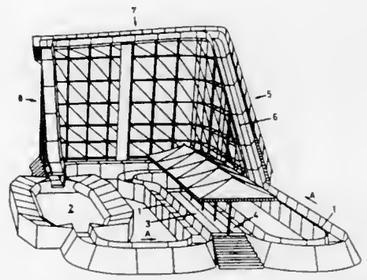
e. means for controlling energization of the motor, the controlling means including a two position switch supported by the frame, the switch selectively actuatable for energizing the motor to drive the at least one belt in either of the opposite directions for moving the belt run(s) thereof in either direction between the opposite upper wall ends, the controlling means including means for sensing a sheet fed to the upper wall and thus to the belt run(s), the sensing means including a sensor removably connectable to different positions on the apparatus for sensing sheets fed from different directions toward the belt run(s), and the controlling means including means responsive to the sensing means sensing a sheet for energizing the motor.

5,253,864

WATER JUMP COURSE

Bernard Heege, Laubauch-Leienkaul; Hans Hofmann, Biel-Benken, and Rudolf Heege, Kaisersesch, all of Fed. Rep. of Germany, assignors to Weber Karussell AG, Zurich, Switzerland

Filed Nov. 6, 1986, Ser. No. 927,680
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1986, 3606728
Int. Cl.[5] A63G *21/00*
U.S. Cl. 472—88 4 Claims



1. A water jump course for a boat with a front wheel and a rear wheel, characterized in that:

the course is a circuit with a water trough adjoining a water tank at the lower end of a jump slope having a roller surface for the wheels of said boat, said water trough being directed past an exit platform and an entrance platform to an incline where the longitudinal conveyor connecting the upper end of the incline to the upper end of the jump slope; and

an end segment mounted to the slope lower end and movable between a normal upper position wherein the end segment forms a continuation of the rolling surface of the jump slope and a lower position when the end segment is moved downwardly in response to the front wheel of the boat rolling over the end segment, wherein said end segment is upwardly biased against a stop into its normal upper position, said end segment being operatively connected to a centrifugal mass for both exerting an upward force on a front wheel and moving the end segment to its lower position out of the path of the rear wheel of said boat.

5,253,865

SAFETY BALL HAVING A CLOTH COVER WITH A FLAT-STITCHED SEAM AND METHOD

Bruce E. Kinnee, San Ramon, Calif., assignor to Easton Sports, Inc., Burlingame, Calif.

Filed Jun. 4, 1992, Ser. No. 893,497
Int. Cl.[5] A63B *37/12*
U.S. Cl. 273—60 A 18 Claims

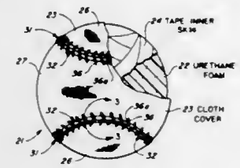
1. A game ball with a cover having stitched seams comprising:

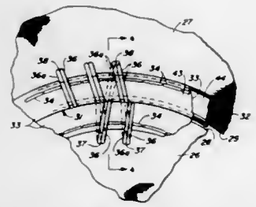
a substantially spherical core formed of an elastically deformable material;

a flexible cover means mounted around and enclosing said core, said cover means having opposed cover edges juxtaposed together along a circumferentially extending butt seam;

edge binding means including cloth-edge reinforcing means and a plurality of binding stitches closely proximate to each of said edges and securing said reinforcing means to said cover means proximate each of said edges; and

a plurality of seam stitches in said cover means with each of said seam stitches extending over the plurality of binding stitches from a position inwardly of said binding stitches and edge reinforcing means on one of said edges to a position inwardly of said binding stitches and said edge





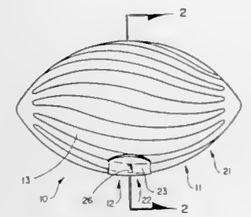
reinforcing means on the other of said edges to secure said edges together in a relatively flat stitched butt seam.

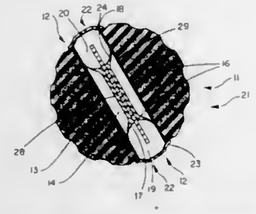
5,253,866

BALL WITH A PASSIVE SOUND DEVICE

Randall H. Moorman, Georgetown, Mass., and Hansan Ma, Cape Elizabeth, Me., assignors to Tonka Corporation, Pawtucket, R.I.

Filed Jul. 18, 1991, Ser. No. 731,865
Int. Cl.[5] A63B *43/02*
U.S. Cl. 273—65 EE 19 Claims





1. A ball comprising a body portion having an outer surface and including a cavity opening outwardly through an opening in said outer surface, said cavity opening a closed inner end, said body portion having first and second ends and a longitudinal axis of rotation extending between said first and second ends, said body portion increasing in diameter from said first end thereof to a midpoint between said first and second ends and then decreasing in diameter to said second end, said cavity defining a sound chamber which is operable for receiving air therein in order to produce a whistling sound when said ball is moved through the air in a spiral rotation.

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5,253,867

MULTI-COMPONENT SHAFT FOR GOLF CLUBS

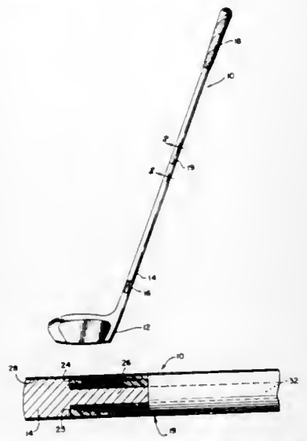
Donald M. Gafner, c/o Dallas Golf Co., 46 Broadway Sq., Mesquite, Tex. 75150

Continuation of Ser. No. 568,612, Aug. 16, 1990, abandoned, which is a continuation of Ser. No. 413,127, Sep. 27, 1989, abandoned. This application Jul. 11, 1991, Ser. No. 729,887

Int. Cl.[5] A63B *53/10*

U.S. Cl. 273—80 R

4 Claims



1. A shaft for a golf club comprising a metallic shaft abutting a composite material in an end-to-end relationship at a location along the length of the shaft wherein said metallic shaft includes a solid metallic shaft and wherein said solid metallic shaft defines a region of smaller diameter adjacent an end, a portion of the composite material being wrapped about said sampler diameter portion.

5,253,868

GOLF CLUB PUTTER

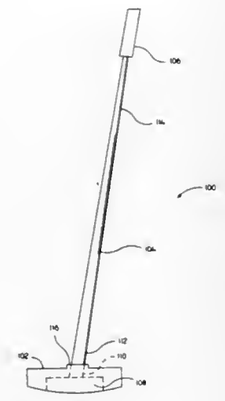
Peter E. Baumann, 1351 Ridge Dr., Yreka, Calif. 96097; Terry Wiens, 1814 196th Street, Langley, BC, Canada V3A 4P4 , and Bill Featherson, Box 1939, Squamash, B.C., Canada V0N 3G0

Filed Jun. 1, 1992, Ser. No. 891,870

Int. Cl.[5] A63B *53/02*

U.S. Cl. 273—80 R

4 Claims



1. A golf club comprising;

a. a clubhead body having a top and a bottom, and a center of gravity located within said body;

b. a pin means extending upwardly from said top of said clubhead body and having a longitudinal axis extending therethrough, said longitudinal axis, when extended, intersecting the center of gravity of said clubhead body, said pin means being secured to said clubhead body, said pin means having a proximal end adjacent to said top of said clubhead body and a distal end opposite to said proximal end and spaced from said top of said clubhead body;

c. an elongated reverse tapered shaft having a grip end and a tip end;

d. said reverse shaft continuously tapering radially inwardly from a larger outside diameter adjacent said tip end to a smaller outside diameter adjacent said grip end;

e. said shaft being secured to said pin means such that said tip end of said shaft matingly engages said pin means.

5,253,869

GOLF PUTTER

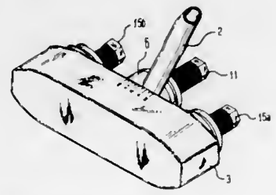
Craig B. Dingle, 58 Hillside Rd., and William Harpell, 30 Springbrook Terr., both of Sparta, N.J. 07871

Filed Nov. 27, 1991, Ser. No. 799,276

Int. Cl.[5] A63B *53/02, 53/08*

U.S. Cl. 273—80.1

2 Claims



2. A golf putter head comprising:

a head comprising an elongated metal body portion having a substantially flat ball-contacting surface and a second surface substantially parallel to said ball-contacting surface, said second surface including a central potion and a pair of lateral end portions on either side of said central portion;

a central metal post fixed to and protruding outwardly in substantially normal relation from the central portion of said second surface in a direction pointed away from said ball-contacting surface;

a pair of metal posts fixed to and protruding outwardly from symmetrical positions from respective lateral end portions of said second surface in a direction substantially parallel to said central metal post; said central post and said pair of posts being screw-threaded;

weights comprising a plurality of annular metal washers constructed to be interposed in interchangeable relation on said posts for varying the location of the center of gravity of said head in accordance with a preselected pattern;

means including a plurality of screw-threaded nuts for securing said hub and said washers in locked position on said respective posts;

an annular cylindrical hub having a central bore constructed and arranged to be accommodated in axial relation on said central post, contiguous with said second surface and to be rotatable to different positions about said axis with reference to said second surface;

means for securing said hub in a preselected one of said axial positions on said post;

a shaft having a hand grip on one end and a terminal portion opposite said hand grip; and

means for securing the terminal portions of said shaft to the cylindrical wall of said hub in radial relation to said hub, wherein the terminal portion of said shaft is secured to said hub and said hub is secured on said post; said shaft being constructed to be locked at a preselected axial position relative to said head.

5,253,870

GOLF PRACTICING DEVICE WITH HEAD MOTION DETECTOR

Reginald C. Bedney, 663 S. Indian Hill Blvd., Claremont, Calif. 91711

Filed Mar. 25, 1992, Ser. No. 858,311

Int. Cl.[5] A63B *69/36*

U.S. Cl. 273—187.2

8 Claims



1. A golf training device for detecting motion of the head of the golfer standing on a horizontal surface during a golf club swing comprising:

a generally rigid elongated member having an elongated extension portion rigidly mounted at one end of said member extending in a direction generally normal to the longitudinal axis of said member and a short distance therefrom, the longitudinal axis of said extension portion and said elongated member lying in the same plane;

an elongated band having means thereon receiving one end of said member therein whereby the longitudinal axis of said member extends outwardly away from said band with the longitudinal axis of said member making an angle of about 45° with said horizontal surface when mounted on the head of a golfer standing on said horizontal surface and said extension portion extends downwardly therefrom; and

a flexible adjustable strap mounted to said band for encircling the head of a golfer having mating detachable means at opposite ends of said strap for detachably and adjustably mounting said strap to the head of a golfer whereby, when said band and strap encircle the head of a golfer, said band and strap form a circular plane, the longitudinal axis of said member being generally aligned with said circular plane, said rigid extension portion moves in unison with said member whereby, when said device is worn by said golfer, said extension portion is visible to said golfer to allow the golfer to view the same when swinging a golf club to thereby detect movement or non-movement of said extension portion during swinging of a golf club.

5,253,871

GOLF BALL

Francois Viollaz, Evian, France, assignor to Taylor Made Golf Company, Inc., Carlsbad, Calif.

Filed Aug. 14, 1991, Ser. No. 745,285

Claims priority, application France, Aug. 22, 1990, 90 10696

Int. Cl.[5] A63B *37/02, 37/06*

U.S. Cl. 273—228

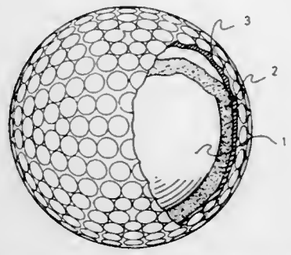
20 Claims

1. A golf ball comprising

a core comprising an elastomer material;

a cover comprising a thermoplastic material; and

an intermediate layer comprising a thermoplastic composition having at least 10% by weight of amide block



copolyether with respect to the total weight of the composition.

5,253,872

GOLF BALL

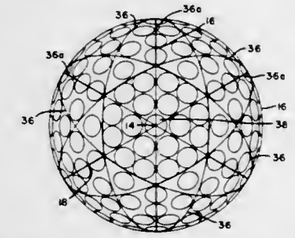
Lane D. Lemons, Fort Worth, Tex., and John W. Jepson, Naples, Fla., assignors to Ben Hogan Co., Richmond, Va.

Filed Dec. 11, 1991, Ser. No. 805,595

Int. Cl.[5] A63B *37/14*

U.S. Cl. 273—232

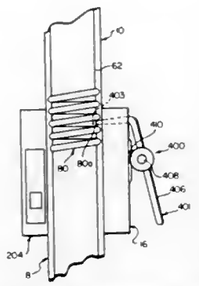
17 Claims



1. A golf ball having an equator (16) which is a great circle path about said golf ball, said great circle path being defined as a circle on the surface of the ball formed by a plane which passes through the center of the ball, and first and second poles (14) on the surface of the golf ball, the poles being the points where a line perpendicular to the said plane of the ball and which passes through the center of the ball intersects the surface of the golf ball, and said golf ball having a plurality of dimples on the surface thereof, said dimples being distributed on the surface of the golf ball according to the configuration of a tetrakaidecahedron projected onto the surface of the golf ball, said projected tetrakaidecahedron comprising two spherical hexagons (10) and twelve spherical trapezoids (12), one said spherical hexagon (10) having as its center point the first pole (14) and the other said spherical hexagon having as its center point the second pole (14), the legs (24) of each hexagon (10) serving as a top (24) of each spherical trapezoid (12) and a section of the equator (16) serving as a base of each spherical trapezoid (12), each of the sides (18) of each of the spherical trapezoids (12) extending from a vertex of the spherical hexagon (10) to the equator (16), all said spherical trapezoid sides (18) being equal in length and each said spherical trapezoid (12) having the shape of a truncated spherical isosceles triangle, and said dimples being symmetrically positioned on the surface of the golf ball to correspond to the layout of the hexagons and trapezoids of the said tetrakaidecahedron projected onto the surface of the ball.

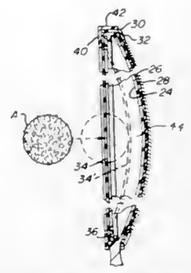
VOL 1155 ISS 3 OCT 19 1993 UMI

5,253,873
VARIABLE FORCE PROJECTOR AND CATCHER
Donald Grattan, 4156 N. Paulina, Chicago, Ill. 60613
Filed Jul. 8, 1992, Ser. No. 910,707
Int. Cl.[5] F41B *7/00*
U.S. Cl. 273—324 **6 Claims**



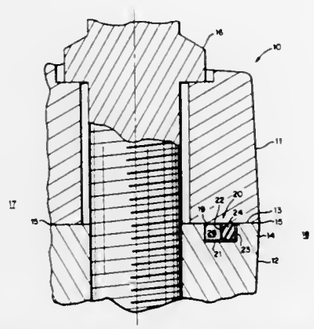
1. A toy projectile shooter for shooting a projectile comprising:
an elongated tubular barrel having a breech end and having a projectile receiving muzzle end being flared and defining an open-ended cup larger that said projectile;
a trigger assembly at said breech end;
a spring-loaded plunger rod reciprocatably mounted within said tubular barrel movable between a cocked position in which the plunger rod is biased to move toward the projectile and an operating position in which the plunger rod impacts the projectile and shoots the projectile from the muzzle end,
a spring in the barrel adapted to be compressed to store spring energy when the plunger rod is in its cocked position and to apply force to the plunger rod to move it to impact the projectile,
a trigger assembly positioned along the barrel for holding the plunger rod in its cocked position and for releasing the plunger rod for travel to impact and to shoot the projectile, and
a safety catch operable to hold the plunger rod in its cocked position until there is an operation of both the safety catch and the trigger assembly to allow the plunger rod to travel to impact and shoot the projectile.

5,253,874
ADHESIVE FILAMENT AND MEMBRANE RACQUET
Donald L. Hoffman, Wynnewood, Pa., assignor to Hilco Corporation, Norristown, Pa.
Filed Aug. 14, 1992, Ser. No. 930,884
Int. Cl.[5] A63B *59/00, 67/00*
U.S. Cl. 273—346 **5 Claims**



1. A racquet for striking and catching a ball of the type which is covered with a an adhesive filament material which will adhere to a structure covered with a similar adhesive filament material, the racquet comprising:
a frame which includes a handle and a rim;
a striking face comprising a membrane of resilient material stretched across one side of said rim;
support frame means having a flat surface for adhering the membrane to the flat surface;
means for securing the support frame means and membrane adhered thereto to said frame, the means for securing having a flange for covering the outer edge of the membrane;
a convex catching plate attached to said rim and extending in a convex arc in the direction opposite the striking face;
said membrane, catching plate and rim defining between them a sealed drum chamber; and
the convex surface of the catching plate being covered with an outer layer of said adhesive filament material.

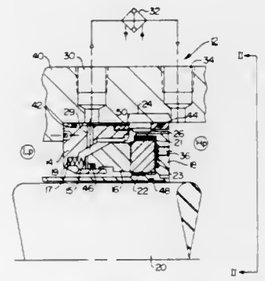
5,253,875
METHOD FOR SEALING A HIGH PRESSURE SECTION OF A GAS TURBINE CASING
Richard W. Gentile, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Continuation of Ser. No. 536,085, Jun. 11, 1990, Pat. No. 5,076,591. This application Aug. 8, 1991, Ser. No. 742,345
The portion of the term of this patent subsequent to Dec. 31, 2008, has been disclaimed.
Int. Cl.[5] F16J *15/08, 15/10*
U.S. Cl. 277—1 **4 Claims**



1. A method for sealing a high pressure section of a gas turbine casing having a pair of joint elongated flanges with smooth mating surfaces, the method being effective to both permit the utilization of leakage gas in a lower pressure section of the turbine and to prevent escape of leakage gas from the casing into the surrounding atmosphere, the method comprising the steps of:
(a) providing a groove including a bottom wall and a pair of side walls within and extending along one of said flanges;
(b) locating a seal structure in said groove, said seal structure including a gasket member running along and between said flanges, within said groove in a direction transverse to the natural direction of gas escape, but permitting the mating surfaces to be joined in flange to flange contact, said gasket including an elongated strip seated on said bottom wall and having first and second upstanding substantially parallel side walls, one of said first and second gasket side walls engaging one of said first and second groove side walls and the other of said first and second gasket side walls lying intermediate said first and second groove side walls so that said gasket defines a sealing channel between said first and second gasket side walls, and a gas control channel between the other of said groove side walls and said other of said gasket side walls; and

(c) inserting a flexible seal element within said sealing channel.

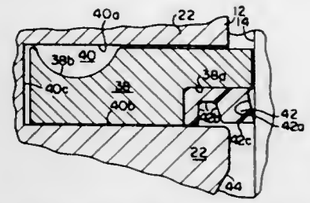
5,253,876
SYSTEM AND METHOD FOR ACTIVELY COOLING DRY-RUNNING GAS SEALS
James F. Gardner, Exeter; John Short, North Scituate, and Amitava Datta, East Greenwich, all of R.I., assignors to EG&G Sealol, Inc., Providence, R.I.
Continuation of Ser. No. 500,560, Mar. 28, 1990, abandoned. This application Aug. 6, 1992, Ser. No. 924,793
Int. Cl.[5] F16J *15/34*
U.S. Cl. 277—15 **6 Claims**



1. A dry-running gas seal for sealing a high pressure area from a low pressure area, the seal comprising:
a stationary seal ring carrier holding a stationary seal ring;
a rotary seal ring carrier holding a rotary seal ring facing said stationary seal ring; and
circulating means for capturing a portion of the gas surrounding said rotary seal ring carrier and transferring the captured gas to a heat exchanger for cooling and returning the cooled gas to the high pressure area adjacent to the seal, said circulating means including apertures having flow scoops positioned radially outside said rotary seal ring carrier and in fluid communication with the gas surrounding said rotary sea ring carrier, a heat exchanger in fluid communication with said apertures, and a return conduit in fluid communication with said heat exchanger and having a return outlet adjacent to said apertures, whereby the portion of the gas captured by said circulating means is transferred to and cooled by said heat exchanger.

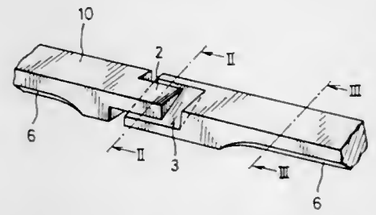
5,253,877
PISTON RING HAVING TAPERED OUTWARDLY EXTENDING WIPER
Richard DeBiasse, 10 Central Ave., Madison, N.J. 07940, and Donald J. Altobelli, Trenton, N.J., assignors to Richard DeBiasse, Madison, N.J.
Filed Aug. 6, 1990, Ser. No. 563,395
Int. Cl.[5] F16J *9/20*
U.S. Cl. 277—24 **29 Claims**

1. A piston head assembly for an internal combustion engine comprising:
a piston head in an internal combustion engine having formed in the circumference thereof at least one ring groove, and
a split resilient piston ring received within one ring groove with some axial clearance, having parallel top and bottom faces enabling it to move freely in the ring groove, and having a flexible wiper extension at the bottom of its outer edge, said wiper extension tapering outwardly as it extends the bottom outer edge of the piston ring and increasing the bottom outer edge of the piston ring in diameter so that in application in a cylinder at its extremity at least the



wiper extension contacts and is deformed by the cylinder wall.

5,253,878
COMPRESSION RING FOR INTERNAL-COMBUSTION ENGINES
Takashi Miura, Kashiwazaki, Japan, assignor to Kabushiki Kaisha Riken, Tokyo, Japan
Filed May 28, 1992, Ser. No. 889,393
Claims priority, application Japan, Jun. 4, 1991, 3-159420
Int. Cl.[5] F16J *9/14*
U.S. Cl. 277—220 **10 Claims**



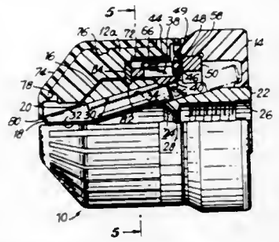
1. A compression ring for an internal-combustion engine, comprising:
an outer circumferential surface;
a lower circumferential surface;
a radially extending first butt end face having a circumferentially projecting rib; and
a radially extending second butt end face opposing said first butt end face and having a circumferentially extending notch at a position corresponding to said rib for receiving said rib, said rib overlapping with said notch in a circumferential direction so as to define an overlap circumferential portion separate from a remaining circumferential portion;
said outer and lower circumferential surfaces defining a lower outer circumferential corner portion formed to have a cut-away portion extending between first and second circumferential points disposed within said remaining circumferential portion, said cut-away portion extending around said compression ring within said remaining circumferential portion and without extending into said overlap circumferential portion.

5,253,879
NON-IMPACT KEYLESS CHUCK
Robert O. Huff, Piedmont; Paul T. Jordan, Seneca, and William F. Forquer, West Union, all of S.C., assignors to Jacobs Chuck Technology Corporation, Wilmington, Del.
Division of Ser. No. 449,722, Dec. 11, 1989, Pat. No. 5,125,673. This application May 18, 1992, Ser. No. 884,205
Int. Cl.[5] B23B *31/10*
U.S. Cl. 279—62 **27 Claims**

1. A chuck for use with a manual or powered driver having

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a rotatable drive shaft comprising a generally cylindrical body member having a nose section and a tail section and a first circumferential groove formed therein intermediate said nose and tail sections, said tail section having an axial bore formed therein to mate with said drive shaft of said driver and said nose section having an axial bore formed therein and a plurality of angularly disposed passageways formed therethrough and intersecting said axial bore and said first circumferential groove, a plurality of jaws slidably positioned in each of said angularly disposed passageways, each of said jaws having a jaw face formed on one side thereof and threads formed on the opposite side thereof, a nut rotatably mounted in said circumferential groove and in engagement with said threads on said



jaws, said nut having a first bearing race formed thereon, a generally cylindrical front sleeve member fixed on said nut and overlying the said nose section of said body member, a bearing thrust ring fixed on said body member and having a second bearing race formed thereon and in juxtaposition with said first bearing race, an anti-friction bearing disposed between said first and second bearing races, and a relatively soft elastomeric grip boot fixed to said front sleeve member, said grip boot engaging said front sleeve member for a predetermined distance aligned with the axis of said body member, the thickness of said grip boot being only a small fraction of said predetermined distance so that said grip boot does not project significantly out from said sleeve in a radial direction.

5,253,880

CLAMPING DEVICE FOR HOLDING A WORKPIECE IN A LATHE

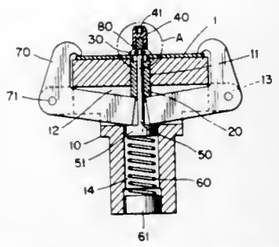
Pyeong-Sig Won, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suweon, Rep. of Korea

Filed Oct. 31, 1991, Ser. No. 786,077

Claims priority, application Rep. of Korea, Nov. 1, 1990, 90-17697

Int. Cl.[5] B23B *31/18*

U.S. Cl. 279—106 **14 Claims**



1. A clamping device for holding a disc-shaped workpiece having a center hole, comprising:

a supporting surface on which the workpiece can be seated such that the center hole thereof is aligned with a center aperture in said supporting surface,

outer clamping means movable between a non-clamping position and a clamping position wherein a portion of said clamping means clamps an outer peripheral portion of the workpiece against said supporting surface,

an inner assembly extending through said center aperture and the center hole, said inner assembly including:

inner clamping means movable between a non-clamping position and a clamping position, a portion of said inner clamping means clamping an inner portion of the workpiece against said supporting surface when said inner clamping means is in said clamping position,

moving means for moving said inner and outer clamping mens to their clamping positions, said moving means being movable to a release position permitting said inner and outer clamping means to be moved to their non-clamping positions,

an ejector member movable within said center aperture to an ejecting position for moving said inner and outer clamping means to their non-clamping positions, and

biasing means arranged to store energy in response to movement of said inner and outer clamping means to their clamping positions and to bias said ejector member to its ejecting position in response to movement of said moving means to said release position.

5,253,881

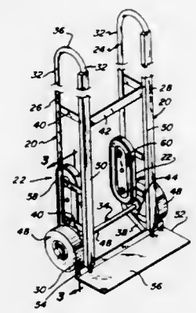
HAND TRUCK STAIR CRAWLER ASSEMBLY

Gary L. Dunkle, Wichita, Kans., assignor to Harper Trucks, Inc., Wichita, Kans.

Filed Aug. 24, 1992, Ser. No. 933,716

Int. Cl.[5] B62B *5/02*

U.S. Cl. 280—5.22 **3 Claims**



1. A hand truck stair crawler assembly including a stair engaging crawler assembly mounted on a conventional hand truck assembly, comprising:

a) said stair engaging crawler assembly includes a stair crawler assembly having a portion extended laterally of said hand truck assembly for engaging and traversing an inclined support surface;

b) said stair crawler assembly includes a main roller support assembly having a main roller assembly mounted thereon;

c) said main roller assembly includes a plurality of roller bearing members mounted in abutting relationship in said main roller support assembly for independent rotational movement in an oblong path and an endless belt member mounted on said roller bearing members for movement in said oblong path;

d) each of said roller bearing members having a central bearing body section integral at opposite ends with end belt retaining sections positioned outwardly of said central bearing body;

e) said end belt retaining sections each having end roller portions with outer contact surfaces aligned with each other for support on said main roller support assembly with a minimum amount of friction loss and a pair of laterally spaced, outwardly inclined sidewalls extending between said central bearing body section and said outer contact surfaces of said end roller portions;

f) said endless belt member having an outer wall and an inner contact wall integral with inclined side contact walls extending between said inner and outer walls and mounted for support on said central bearing body section and said end belt retaining section; whereby said inner contact wall and said inclined side contact walls of said endless belt member are in full and constant contact with said central bearing body section and said inclined sidewalls respectively of said roller bearing members and said endless belt member contacts and is supported solely on individual ones of said roller bearing members for ease of rotational movement with a minimum amount of friction loss during movement in said oblong path.

5,253,882

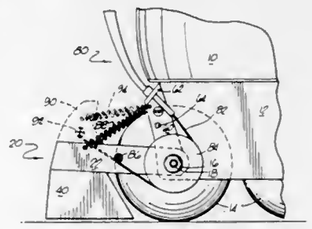
HAND ACTIVATED SKATE BRAKE AND METHOD

David N. Mitchell, Englewood, Colo., assignor to Out of Line Sports, Inc., Englewood, Colo.

Continuation-in-part of Ser. No. 830,609, Feb. 4, 1992. This application Aug. 24, 1992, Ser. No. 934,166

Int. Cl.[5] A63C *17/14*

U.S. Cl. 280—11.2 **7 Claims**



1. A roller skate brake system, comprising:

a brake carriage having a first arm, a second arm, and a back member connecting said first arm and said second arm, the first arm having a pivot point, and the second arm having a pivot point opposite the pivot point of the first arm, said carriage being rotatably connected at said pivot points to a roller skate with the back member oriented towards the rear of the skate, the carriage riding on said skate above a skating surface when the skate is being used to skate on said surface; a rotation of said carriage in a first direction about said pivot points urging said back member towards the skating surface, and a rotation of the carriage in a second direction about the pivot points urging said back member away from the skating surface,

(b) a brake pad operatively connected to said back member so as to move towards and away from said skating surface in concert with said back member,

(c) hand-activated actuator means operatively connected to the carriage, said actuator means urging the carriage to rotate in said first direction so that the brake pad is urged towards said skating surface when the actuator is engaged and;

(d) return means operatively connected to said carriage, said return means urging the carriage to rotate in said second direction so that the brake pad is urged away from the skating surface when the actuator is not engaged,

wherein said pivot points are connected to said skate at the axle of the rearmost wheel of said skate, said brake system thereby using the skating surface for stopping said skate when the actuator is engaged and while the angle of the skate relative to the ground remains constant.

5,253,883

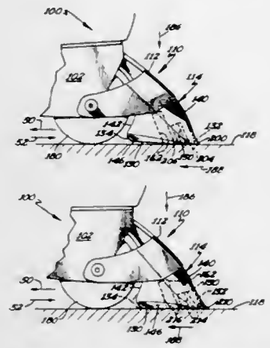
PROGRESSIVELY ACTUATED BRAKE FOR A ROLLER SKATE

Paul G. Moldenhauer, St. Louis Park, Minn., assignor to Rollerblade, Inc., Minneapolis, Minn.

Continuation of Ser. No. 714,869, Jun. 13, 1991, abandoned. This application Jan. 14, 1993, Ser. No. 4,625

Int. Cl.[5] A63C *17/14;* **B60T** *1/14*

U.S. Cl. 280—11.2 **33 Claims**



1. A brake and an in-line roller skate, the skate being useable by a skater on a skating surface and including a frame mounting a plurality of wheels in a common plane of rotation and further including means for attaching the frame to a skater's foot, said brake being engaged upon the skating surface by the skater pivoting the skate rearwardly and downwardly about the rearwardmost of the wheels to apply a braking force, said brake comprising:

a brake pad formed of at least one compressible material and including front and rear portions, said brake pad further including a braking surface disposed substantially transversely to said common plane and engageable with the skating surface as the skate is pivoted about the rearwardmost wheel, said brake pad braking surface further including leading and trailing edges; and

means for attaching said brake pad to the skate rearwardly of the rearwardmost wheel such that said trailing edge engages the skating surface before said leading edge when said brake is applied;

wherein said pad further includes means for abating rebound and oscillation of the brake pad as the brake is applied; and

said means for abating comprises a pair of relief apertures extending upwardly into said pad from said braking surface.

5,253,884

ROLLER ADJUSTMENT MEANS FOR IN LINE SKATE

Gary Landers, 173 W. 7th St., South Boston, Mass. 02127

Filed Dec. 13, 1991, Ser. No. 806,305

Int. Cl.[5] A63C *17/06*

U.S. Cl. 280—11.27 **4 Claims**

1. In combination with an in line skate having a boot, a frame supporting the boot, and a plurality of wheels rotatably mounted on axles supported by the frame, the improvement of a system for adjusting the height of at least one of the axles in relation to the frame, the system comprising

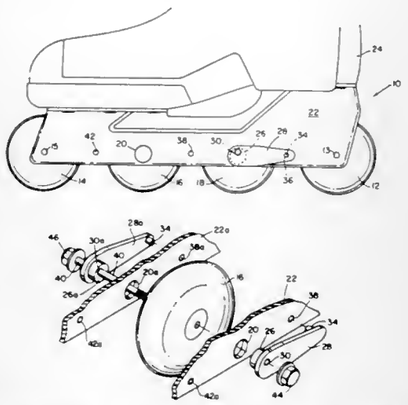
a pair of opposed, coaxially rotatable bushings supported by the frame and each defining a through hole for passing the ends of a wheel axle, the axle-receiving through holes being located eccentrically to the bushings' rotational axis,

securing means coupled to the wheel axle for securing the bushings and axle relative to the frame,

a lever extending radially outwardly form each of the rotat-

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able bushings for receiving a force to rotate the bushings, and



locking means, formed with the frame, for releasably and replaceably receiving a portion of each of the levers to secure the bushings against unwanted rotation.

5,253,885

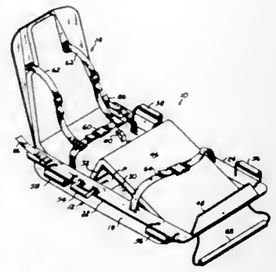
STAIRWAY DESCENDING PATIENT CARRIAGE

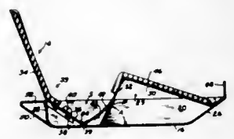
Jamie L. McCracken, and Kathy L. Goff, both of 3824 N. Airport Dr., Stillwater, Okla. 74075

Filed Nov. 2, 1992, Ser. No. 970,740

Int. Cl.[5] B62B *13/16*

U.S. Cl. 280—20 **3 Claims**





1. A stairway descending carriage for rescuing patients, comprising:

a rigid toboggan type frame having upright side walls, forward and rearward ends and a flat bottom;

partition means transversely dividing said frame for defining a rearward seat section;

a pair of elongated vertically spaced rearward and upwardly inclined slot forming guides secured in parallel relation to an inner surface of each of the side walls in cooperative aligned confronting relation transversely of the flat bottom and adjacent a rearward limit of the seat section;

seat and back support means including a normally upright elongated back supporting panel having a downward and forwardly inclined depending end portion slidably received at opposite side edge portions by the side wall guides for supporting contact at a depending edge with said flat bottom and forming a rearward portion of said seat section;

forward and rearward panel means extending between said partition means and the forward end of said frame for supporting the legs of a patient when in a flexed position; and,

strap means connected with the frame for operator control of a rate of stairway descent.

5,253,886

WHEELCHAIR

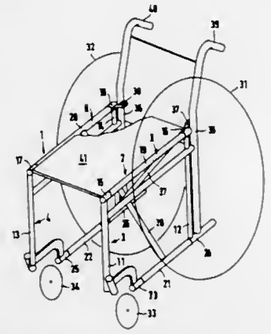
Rolf-Dieter Weege, Kalletal, Fed. Rep. of Germany, assignor to Meyra Wilhelm Meyer GmbH & Co., KG, Fed. Rep. of Germany

Filed Jan. 13, 1992, Ser. No. 819,829

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1991, 9100562

Int. Cl.[5] B62B *11/00*; B62M *1/14*

U.S. Cl. 280—39 **4 Claims**



4. A collapsible wheelchair comprising

opposed side frames,

a pair of vertical guide posts slidably mounted for vertical movement on each side frame,

a seat-supporting tube rotatably connected to each pair of vertical posts,

a flexible seat member extending between said seat-supporting tubes,

a pair of cross bars interconnected at a pivot between their ends, having upper and lower ends,

one cross bar of said pair having its upper end connected to the seat-supporting tube on one side frame and its lower end having an articulated connection with said opposing side frame,

the other cross bar of said pair having its upper end connected to the seat-supporting tube on the frame opposing said one side frame and its lower end having an articulated connection with said one side frame

a vertical shaft connected to each of said side frames in the plane thereof, said shafts serving as handles for manipulating the wheelchair,

an axle mounted adjacent said shaft on each of said seat-supporting tubes, said axle being parallel to the axis of said tubes, and

rollers mounted on said axles for rolling against the surface of said shafts as the chair is collapsed and expanded by moving said side frames toward and away from each other.

5,253,887

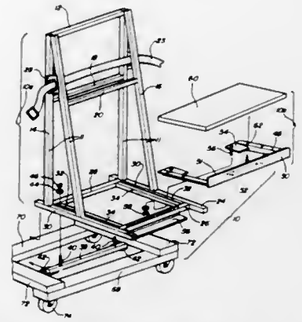
DOLLY MODIFYING APPARATUS

Keith J. Marenger, 576 E. Baker, Clawson, Mich. 48017

Filed Apr. 3, 1992, Ser. No. 863,414

Int. Cl.[5] B62B *3/10*

U.S. Cl. 280—79.3 **11 Claims**



1. A selectively attachable apparatus for use with a four wheel dolly having an open center area, said apparatus being useful for assisting in the transportation of objects, said apparatus comprising:

a frame member having a base portion, a support structure extending upwardly from said base portion and means for securing the frame member to said dolly;

said means for securing the frame member to said dolly including a slide bar having at least one projecting post member and retainer means selectively attachable to said post member,

said base portion including slot means for receiving said at least one post member and a flange extending from a first end of the base portion,

whereby upon positioning said apparatus on the dolly such that the flange engages the dolly along a first end and positioning the slide bar substantially contiguously against said dolly along a second end, by attaching said retainer means to said at least one post member the apparatus becomes secured to the dolly.

5,253,888

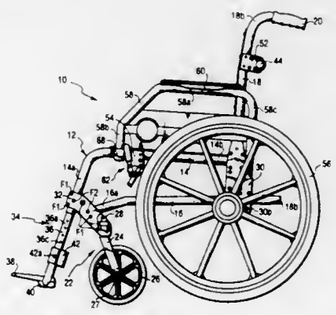
RIGID FRAME WELDLESS WHEELCHAIR

Paul Friedrich, Ventura, Calif., assignor to Da International, Ltd., White Plains, N.Y.

Filed Apr. 2, 1993, Ser. No. 35,691

Int. Cl.[5] A61G *5/02*

U.S. Cl. 280—250.1 **18 Claims**



1. A wheelchair comprising:

(a) a pair of like side frame assemblies spaced from each other and each including a generally horizontal seat tube; a generally horizontal bottom tube below said seat tube, each of said seat and bottom tubes having front and rear ends; and a generally vertical back rest tube having a lower end proximate to said rear ends of said seat and bottom tubes and an upper end extending upwardly of said seat tube and forming hand grips;

(b) a caster assembly for each side frame assembly carrying a caster wheel and having a generally upwardly extending shaft portion;

(c) first clamping means for each of said side frame assemblies for rigidly clamping respective rear ends of said seat and bottom tubes and said lower end of said back rest tubes;

(d) second clamping means for each of said side frame assemblies for rigidly clamping respective front ends of said seat and bottom tubes and caster assembly tube portion;

(e) footrest support means secured to said seat tube;

(f) a plurality of traverse tube means having ends and extending between said side frame assemblies and having lengths substantially corresponding to a width of the wheelchair;

(g) third clamping means for rigidly connecting the ends of each transverse tube means to a respective side frame assembly;

(h) a wheel axle extending through each of said second clamping means; and

(i) rear wheels mounted on said rear axle, said first, second and third clamping means being formed of a molded composite material.

5,253,889

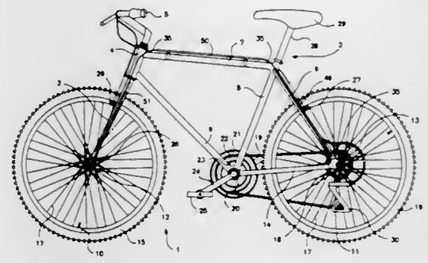
ALL WHEEL DRIVE VEHICLE

Joseph W. Kaminski, Campbell, Calif., assignor to Michele Chiarella, Lugano-Castagnola, Switzerland

Continuation of Ser. No. 470,176, Jan. 25, 1990, abandoned. This application Sep. 21, 1992, Ser. No. 948,344

Int. Cl.[5] B62M *1/02*

U.S. Cl. 280—230 **78 Claims**



1. A vehicle having a power source for producing a total torque, having at least a first wheel and a second wheel, the first wheel being rotatable about a first axle and the second wheel being rotatable about a second axle, the power source being remote from the first axle and the second axle, wherein the vehicle comprises:

a first power train for conveying power from the power source to the first wheel and a second power train for conveying power from the first wheel to the second wheel, wherein

said first power train comprises a first transmission engaged by the power source and for engaging the first wheel, and wherein said second power train comprises a second transmission engaged by the first wheel and for engaging the second wheel; and

wherein said second power train further comprises a torque limiting clutch adapted for releasing when driving torque applied thereto exceeds a predetermined value, and wherein said clutch is adjustable for varying said value when the vehicle is moving.

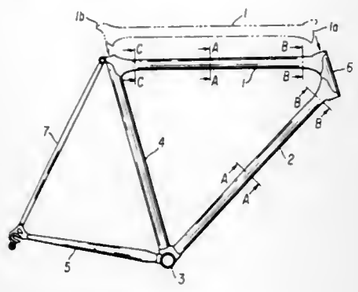
VOL 1155 ISS 3 OCT 19 1993 UMI

5,253,890

BICYCLE FRAME

Kikuzo Takamiya, Kitamoto; Hiroshi Todoroki, Ageo, and Masazumi Shimizu, Okegawa, all of Japan, assignors to Bridgestone Cycle Co., Ltd., Japan

Filed Dec. 17, 1991, Ser. No. 808,763
Claims priority, application Japan, Dec. 18, 1990, 2-411281; Dec. 18, 1990, 2-411282; Mar. 18, 1991, 3-077172; Jul. 4, 1991, 3-189584
Int. Cl.[5] B62K *19/02*
U.S. Cl. 280—281.1 10 Claims



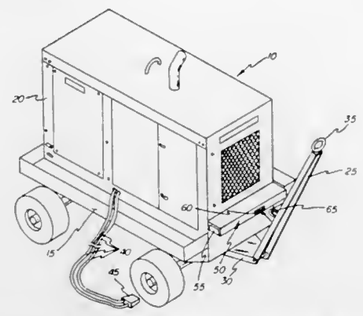
1. A bicycle frame comprising:
a head tube having upper and lower end portions;
top and down tubes having respective front and rear end portions, the upper and lower end portions of the head tube being integrally connected to the front end portions of the top and down tubes, respectively;
a seat tube having upper and lower end portions;
first and second seat stays each having front and rear end portions, the front end portions of the first and second seat stays being integrally connected to the rear end portion of the top tube;
first and second chain stays each having front and rear end portions, the first seat stay and the first chain stay having respective rear end portions integrally connected to each other thereby forming a first pair, the second seat stay and the second chain stay having respective rear end portions integrally connected to each other thereby forming a second pair; and
a hanger lug integrally connected to the rear end portion of the down tube, the lower end portion of the seat tube and the front end portions of the first and second chain stays;
wherein front and rear end portions of the top tube comprise respective front and rear bulge-processed ends which form respective front and rear bores to receive the upper end portion of the head tube and the upper end portion of the seat tube, respectively, each bulge-processed end comprising a ring-shaped portion which completely circumferentially surrounds the head tube and the seat tube at respective upper end portions thereof, each bore having an axis which intersects the longitudinal axis of the top tube;
wherein the front end portion of the down tube comprises a front bulge-processed end which forms a bore to receive the lower end portion of the head tube, the bore comprising a ring-shaped portion which completely circumferentially surrounds the head tube at the lower end portion thereof, the bore having an axis which intersects the longitudinal axis of the down tube; and
wherein a vertical dimension of the top tube as viewed in cross-section increases from an intermediate portion thereof to the front and rear end portions thereof, and wherein a vertical dimension of the down tube as viewed in cross-section increases from an intermediate portion thereof to the front end portion thereof.

5,253,891

SAFETY INTERLOCK MECHANISM FOR AIRCRAFT GROUND POWER UNITS

John K. Carlin, Troy; Brian J. Hicks, Arcanum, and Jerry L. Besecker, Covington, all of Ohio, assignors to Hobart Brothers Company, Troy, Ohio

Filed Nov. 13, 1992, Ser. No. 976,433
Int. Cl.[5] B60D *1/62*; B60R *16/00*
U.S. Cl. 280—422 3 Claims



1. In a ground power unit for providing electrical power to an aircraft comprising
a wheeled chassis,
a motor-generator carried on said chassis,
a towing arm attached to said chassis which is movable from an upper position to a lower position where it can be attached to a motor vehicle for movement from one location to another, and
an electrical cable having one end connected to said motor-generator and having a plug at the other end for connection to a mating connector on an aircraft,
the improvement comprising
a tow bar catch mounted on said towing arm,
a box mounted on said chassis having an opening positioned to receive said tow bar catch and a receptacle for receiving the plug end of said electrical cable, and
an interlock mechanism within said box for preventing both said tow bar catch and said plug from being removed from said box at the same time, said mechanism including
means for preventing said plug from being removed from said box when said tow bar catch is not fully in said opening, and
means for preventing said tow bar catch from being removed from said box when said plug is not fully in said receptacle.

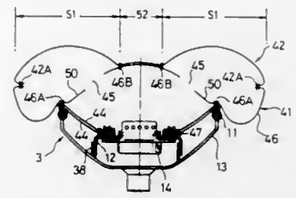
5,253,892

AIR BAG

Takeshi Satoh, Shiga, Japan, assignor to Takata Corporation, Tokyo, Japan

Filed Nov. 16, 1992, Ser. No. 977,098
Claims priority, application Japan, Dec. 4, 1991, 3-320514
Int. Cl.[5] B60R *21/24*, *21/22*
U.S. Cl. 280—731 8 Claims

1. An air bag for protecting a driver opposing to a steering wheel disposed approximately at a horizontal state comprising:
a first annular cloth means disposed on a side of the steering wheel and having an opening formed in a central portion for receiving at least one of an inflator and an inflator gas,
a second circular cloth disposed on a side of the driver and joined at a circumferential edge thereof with a circumferential edge of said first cloth means, and
a connection piece for connecting a radial midway region of said first cloth means with a central region of said second cloth, said connection piece having a length so that a protruded portion, which protrudes to a side of the driver more than the central region of the second cloth is formed at an outer circumference of a connecting portion between said connection piece and said second cloth when the air bag is extended fully, and



a diameter of the air bag extended fully being greater than a diameter of the steering wheel so that the protruded portion located between the driver and the steering wheel is established on and around the steering wheel.

5,253,893

TRACTOR TRAILER JACKNIFE PREVENTION SYSTEM

Theodore R. Brown, and Benvinda Brown, both of 67 Ash Park Dr., Stoughton, Mass. 02072

Filed Apr. 22, 1992, Ser. No. 872,099
Int. Cl.[5] B62D *53/06*
U.S. Cl. 280—432 4 Claims

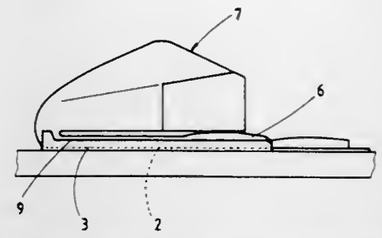
1. A system preventing the jackknifing of a tractor trailer operated by a driver wherein said tractor is of the type having a mounting plate having a diameter, said mounting plate having a slot and an aperture disposed therein, said mounting plate having an exterior edge and said trailer is of the type having a kingpin engageable through said slot into said aperture, said system comprising:
a ring member fixed in position around said kingpin, said ring member having an outer edge and having a diameter substantially equal to and coaxial with the diameter of said mounting plate on said tractor;
a plurality of teeth positioned around the outer edge of said ring member;
a plurality of teeth positioned around the exterior edge of said mounting plate;
braking means partially circumscribing both the exterior edge of said mounting plate and said outer edge of said ring member to engage both said ring member and said mounting plate to lock said trailer in fixed position to said tractor; and
means to engage said braking means, said engagement means being controlled by said driver.

5,253,894

INTERFACE PLATE FOR SKI SAFETY BINDING

Pascal Thomas, Chambery; Renaud G. Gilles, Cran-Gevrier, and Daniel Saxod, Cruseilles, all of France, assignors to Salomon S.A., Chavanod, France

Filed Oct. 9, 1992, Ser. No. 958,719
Claims priority, application France, Oct. 10, 1991, 91 12710
Int. Cl.[5] A63C *9/00*
U.S. Cl. 280—607 8 Claims



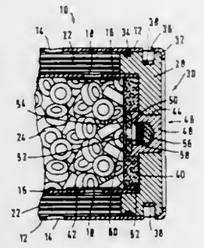
1. Interface plate for an alpine ski safety binding comprising a base designed to be assembled to the upper surface of a ski, wherein said plate has an edge (3, 13) extending along at least one portion of its periphery and rising along lateral faces of the binding base and wherein said plate has, on either side of its median zone, a lateral element (5, 15) carrying said edge (3, 13) and which is inclined substantially downward and outward from said plate, so that, when said base (6) is mounted on the ski and said plate (1) is squeezed between said base of the binding and said ski, said lateral elements (5, 15) straighten into a horizontal position, thereby forcing said edges (3, 13) to flatten along said lateral faces of said base.

5,253,895

GAS GENERATOR, WITH SAFETY DEVICE, FOR AN AIR BAG

Anton Bretfeld, Furth, and Josef Kraft, Berg, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Nov. 29, 1991, Ser. No. 799,951
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1990, 4037769
Int. Cl.[5] B60R *21/26*
U.S. Cl. 280—736 13 Claims



1. A gas generator for an air bag comprising:
a housing for containing a gas-producing material and
a self-ignition device for igniting the gas-producing material at a predetermined minimum temperature of the housing, characterized in that the self-ignition device is connected in a heat-conducting manner to the housing; the housing, only in a region adjacent to the self-ignition device, consists of a first material with a high thermal conductivity and the housing consists otherwise of a second material with a substantially lower thermal conductivity relative to that of the first material; and

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a thermal insulation is arranged on an inner side of the housing in a region of the self-igniting device, said thermal insulation covering the housing region consisting of the first material with a high thermal conductivity and surrounding an end of the self-ignition device without shielding the gas-producing material relative to the self-ignition device.

5,253,896

HARNESS ANCHORAGE REINFORCEMENT FOR A CONVERSION VAN

Andrew Verbeski, Milwaukee, Wis., assignor to The Compliance Group, Inc., Milwaukee, Wis.

Filed Oct. 4, 1991, Ser. No. 771,623
Int. Cl.[5] B60R *22/00*
U.S. Cl. 280—808 **8 Claims**



1. A harness anchorage reinforcement beam for reinforcing an upper roof rail in a conversion van and for anchoring a harness retractor receptor plate attached to the upper roof rail comprising:

an elongated metal channel member having a middle portion and an interior side edge and an exterior side forming a U-shaped cross section extending the length of the beam;

the beam having a length corresponding to the distance from a driver's door post rearward to a second forwardmost vertical sidewall column of the van;

a flange on one end of the beam extending in a direction opposite of the side edges, with the flange being fastenable to a the driver's door post;

on the interior side edge a first projecting tab and a second projecting tab, the distance between the tabs corresponding to the length of the harness retractor receptor plate; and

the beam being engageable with the upper frame rail of the van.

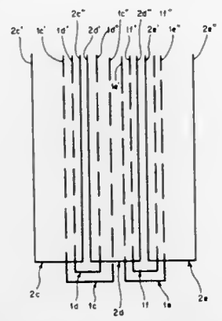
5,253,897

BOOK

Peter P. Troendle, Sonnwendgasse 22, A-1100 Vienna, Austria

PCT No. PCT/AT90/00062, § 371 Date Dec. 10, 1991, § 102(e) Date Dec. 10, 1991, PCT Pub. No. WO90/15721, PCT Pub. Date Dec. 27, 1990
PCT Filed Jun. 13, 1990, Ser. No. 793,427
Claims priority, application Austria, Jun. 21, 1989, 1519/89; Feb. 16, 1990, 365/90
Int. Cl.[5] B42D *1/00*
U.S. Cl. 281—21.1 **5 Claims**

1. A book comprising a plurality of sheets, each sheet being folded in a zone constituting a back of the book along an axis of symmetry extending between two opposite edges of the sheets to provide a first leaf and a second leaf, at least one first one of the sheets having the first leaf thereof arranged between the two leaves of a second one of the sheets and the second leaf thereof arranged between the two leaves of a third one of the sheets, the first sheet having two cut-outs extending along the axis of symmetry from the opposite edges towards the center, and the second and third sheets having a slot-shaped cut-out extending along the axis of symmetry in the center, the leaves



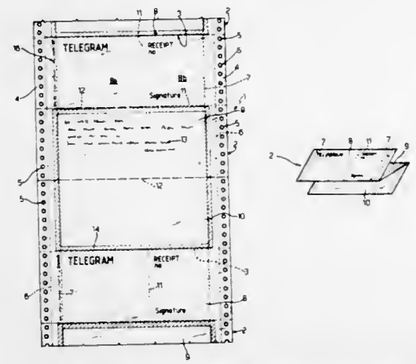
of the first sheet being insertable into the slot-shaped cut-outs in the second and third sheets.

5,253,898

TELEGRAM BLANK

Luciano Mangione, Siccomario, Italy, assignor to Send Italia S.p.A., Rome, Italy

Filed May 20, 1992, Ser. No. 886,131
Claims priority, application Italy, May 21, 1991, TO91 U 000110
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—62 **5 Claims**



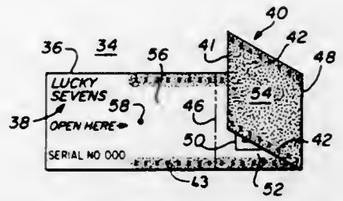
1. A telegram blank comprising a single sheet foldable into first and second outer portions and an intermediate portion connected together along folded lines, each said portion being of the same dimension, said three portions being printed on the same face of the blank and adapted to be folded zig zag fashion, said first outer portion defining a telegram destination and identification field, said intermediate portion defining a telegram text field, said second outer portion arranged to be folded over said telegram text field and glued together along glue strips in such a way as to enclose said telegram text field inside, said first outer portion including a perforated line having a first section extending transversely through said first outer portion and a second section extending along a fold line, said perforated line dividing said first outer portion into two parts, one of said parts being separable for confirmation of delivery, said separable part not being provided with glue strips.

5,253,899

SPECIALTY GAME CARDS AND METHOD FOR MAKING SAME

W. Loren Greenwood, Woodinville, Wash., assignor to Ace Novelty Co., Inc., Bellevue, Wash.

Filed Feb. 9, 1990, Ser. No. 477,675
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—106 **14 Claims**



1. In a specialty ticket of the paper type having a first panel with visible indicia thereon to identify the ticket and a second panel formed with folded sections concealing indicia that represents winning and non-winning combinations, the improvement comprising:

bonding adhesive applied to at least portions extending along the sides of only the foldable sections to hold said foldable sections together while allowing said foldable sections to be easily separated to view the combination of indicia concealed by the folded sections forming the second panel; and

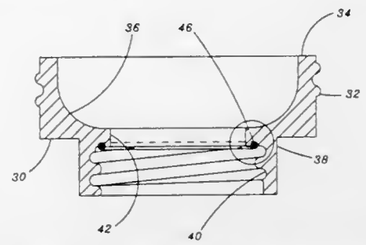
perforations extending along and through the side edges of at least the folded sections to assist in holding said folded sections together.

5,253,900

CONVERSION ADAPTER FOR AIRBRUSH LIQUID MEDIA RESERVOIR

Glenn W. Snyder, 2204 Quail Ridge Dr., Plainsboro, N.J. 08536

Continuation of Ser. No. 793,789, Nov. 18, 1991, abandoned. This application Dec. 14, 1992, Ser. No. 990,950
Int. Cl.[5] F16L *23/00, 55/00*
U.S. Cl. 285—12 **1 Claim**



1. A container conversion adapter for use with an arcuately-threaded airbrush liquid media vessel having an open top surface comprising:

a. a generally cylindrical monolithic one-piece hollow rigid member having an externally arcuately-threaded portion at one end dimensioned to threadably engage a standard arcuately-threaded airbrush jar liquid media reservoir opening and an internal curved wall at said one end to permit liquid airbrush media to flow back into said arcuately-threaded vessel;

b. an arcuately-threaded internal axial partial bore at the other end of said rigid member dimensioned to threadably engage said airbrush liquid media arcuately-threaded vessel; and,

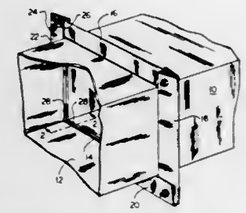
c. an axial bore through said rigid member having a diameter smaller than the diameter of the said internal threaded axial partial bore forming a stop means for preventing further insertion of said arcuately-threaded vessel by contact with said top surface of said arcuately-threaded vessel, said axial bore providing a communicating passage to receive an airbrush aspirating tube into said arcuately-threaded vessel.

5,253,901

DUCT REINFORCEMENT

A. Reese Hunter, Greensboro, N.C., assignor to Industrial Air, Inc., Greensboro, N.C.

Filed Jan. 10, 1992, Ser. No. 819,405
Int. Cl.[5] F16L *9/04*
U.S. Cl. 285—424 **17 Claims**



1. An apparatus for reinforcing a duct made of a peripheral skin of sheet metal comprising

a. a plurality of lengths of metal straps,

i. each strap being configured to have a cross section including a V-shape portion and inwardly turned edges spaced from the apex of said V-shaped portion to form a gap between said edges and

ii. said straps together having lengths sufficient to circumscribe the duct and arranged to circumscribe the duct with said apices of said V-shapes away from the peripheral skin, and

b. a plurality of fasteners driven outwardly through the peripheral skin into said gaps in said circumscribing straps and engaging said inwardly turned edges to bind the skin to said straps so that said straps reinforce the skin to prevent excessive flexure of the skin.

5,253,902

ANTI-SEIZING SURFACE COATING FOR ASSEMBLY MEANS FOR TUBES BY THREADINGS AND PROCESS FOR PRODUCING SUCH A COATING

Daniel Petelot, Landrecies, and François David, Aulnoye Aymeries, both of France, assignors to Vallourec Industries, Boulogne-Billancourt, France

Filed Feb. 20, 1992, Ser. No. 839,945
Claims priority, application France, Feb. 21, 1991, 91 02767
Int. Cl.[5] F16L *7/00*
U.S. Cl. 285—94 **24 Claims**

11. A process for producing an anti-seizing coating for a joint of a threaded tubular assembly having surfaces that come into sliding contact, said process comprising:

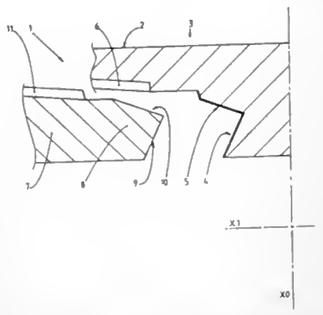
depositing on a surface of a first member of said joint that comes into sliding contact with a surface of a second member of said joint an intermediate layer comprising a metal selected from the group consisting of copper, nickel and chromium;

depositing a further layer comprising lead on top of said intermediate layer; and

heating said layers at a temperature between 100° and 350°

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C. for a period from 1 to 10 hours in the presence of an oxygen containing gas to transform the lead in said further



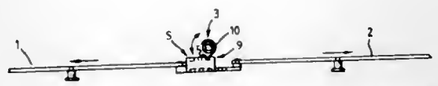
layer into lead oxide to form a contact layer comprising at least 70% lead oxide.

5,253,903

ESPAGNOLETTE MECHANISM

Ernest C. Daley, Nr. Malmesbury, United Kingdom, assignor to Regent Lock Company Limited, Chippenham, England

Filed Aug. 27, 1992, Ser. No. 937,355
Int. Cl.[5] E05C *1/06*
U.S. Cl. 292—39 **11 Claims**



1. An espagnolette mechanism, comprising, (i) a first elongate member, (ii) a second elongate member, (iii) said first and second elongated members being slidably displaceable in substantially opposite directions, (iv) drive means for said elongate members, (v) the drive means comprising, (vi) a first rotatable gear member adapted to be connected with a rotatable means, (vii) a second rotatable gear member, (viii) a first rack means connected to the first elongate member and operatively connected with the first and second gear members, (ix) a second rack means connected with the second elongate member, (x) the first and second rack means being respectively defined by an L-section angle member, (xi) the L-section angle members being assembled together to form a substantially rectangular housing in which said second rotatable gear member is mounted, opposite walls of said housing defined by opposite substantially parallel limbs of the angle section members defining the respective first and second rack means, (xii) wherein rotation of the first gear member moves the first rack means longitudinally causing rotation of the second gear member which moves the second rack means and the second elongate member longitudinally in the opposite direction.

5,253,904

SECURITY LOCK FOR SLIDING DOOR OR WINDOW

Henry Ruby, 855 Cornwall Ave., Cheshire, Conn. 06410

Filed Dec. 1, 1992, Ser. No. 983,716
Int. Cl.[5] E05C *5/04*
U.S. Cl. 292—58 **18 Claims**

1. A locking apparatus, comprising:

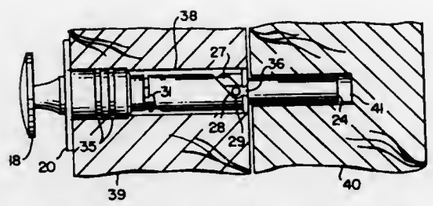
a first sleeve defining a spirally extending slot that extends along its length, said spirally extending slot formed between first and second edges of said first sleeve;

means for holding said first sleeve stationary;

a hollow cylindrical member defining an axially extending slot that extends along its length, said hollow cylindrical member being rotatably disposed within said first sleeve;

a tubular member having a projecting tab fixed thereto, said tubular member being slidably disposed within said hollow cylindrical member, wherein said projecting tab is slidingly engaged simultaneously within said spirally and axially extending slots; and

means for rotating said hollow cylindrical member either in a first direction or a second direction whereby when said hollow cylindrical member is rotated in said first direction, said projecting tab contacts an edge of said first sleeve whereby said contact results in a first force being exerted on said projecting tab thereby causing said tubular member to telescopically extend from said hollow cylindrical member and when said hollow cylindrical member is rotated in said second direction, said projecting tab contacts an edge of said first sleeve whereby said contact results in a second force being exerted on said projecting tab thereby causing said tubular member to telescopically retract into said hollow cylindrical member.

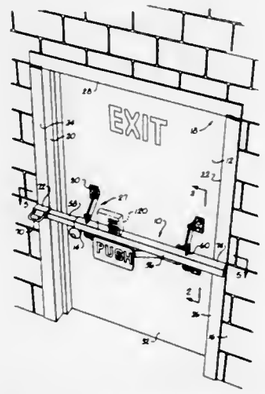


5,253,905

DOOR LOCKING SYSTEM

Ozzie B. Hutson, Spartanburg, S.C., assignor to Fortruss, Inc., Greenville, S.C.

Filed Nov. 18, 1992, Ser. No. 978,139
Int. Cl.[5] E05C *15/02*
U.S. Cl. 292—92 **13 Claims**



1. A door locking device for attachment to the surface of a door, the door being held within a door frame having first and second outer frame surfaces adjacent the door and spaced on opposite sides of the door from one another, the door being hinged adjacent the second frame surface for swinging outwardly away from the door frame, the door locking device comprising:

a mounting structure for attachment to the surface of the door;

retractable engagement means fixedly connected to said mounting structure; said retractable engagement means including an engagement member movable from an engagement position adjacent to and in front of the first outer frame surface, for restraining the door from outward movement door frame, to a retracted position for allowing the door to move outwardly from the door frame; and

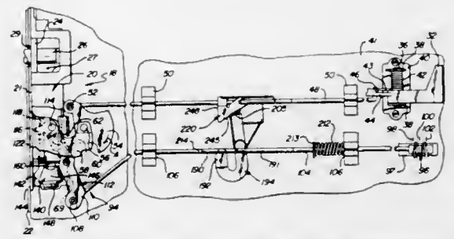
retraction means actuatable in a substantially horizontal plane and mechanically contactable with said engagement member for selectively causing said engagement member to be maintained in said engagement position, such that upon a force being delivered to said retraction means in a direction substantially perpendicular to the surface of the door, said retraction means causes said engagement member to move from said engagement position to said retracted position, thereby allowing the door to swing outwardly from the door frame.

5,253,906

LINKAGE FOR VEHICLE DOOR LATCH

Lloyd W. Rogers, Jr., Shelby Township, Macomb County, and John I. Moceanu, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 4, 1992, Ser. No. 878,064
Int. Cl.[5] E05C *3/26*
U.S. Cl. 292—216 **11 Claims**



1. A vehicle door latch assembly for releasably securing a door hinged for swinging movement between opened and closed positions with respect to a door opening in a vehicle body having striker means associated therewith comprising main body means adapted to be secured to the door,

a locking bolt associated with said striker means and supported by said main body means and movable to a first position by the striker means when said door is moved to said closed position so that said striker means is captured by said locking bolt to retain the door in a closed position,

selectively operable lever system means including a transfer lever for effecting the movement of said locking bolt from said first position in which said striker means is captured by said locking bolt to a second position in which said striker means is released from capture by said locking bolt to allow said door to be opened,

a locking linkage including a locking lever associated with said lever system means and movable between an unlocking position to allow said lever system means to effect the movement of said locking bolt to said second position in which said door can be opened and a locking position in which said lever system means is unable to effect the movement of said locking bolt to said second position so that said door cannot be opened by said lever system means,

displaceable block means responsive to an unbalancing force greater than a force of predetermined magnitude to move from an initial position in which said lever system can move said locking bolt to said second position so that the door can be opened to a blocking position in which said lever system means is blocked from effecting the opening of the door,

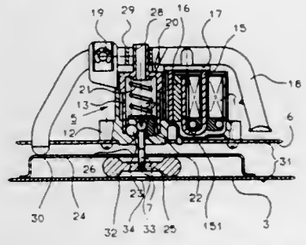
and unblocking means associated with said locking linkage to move said block means from said blocking position to said initial position so that said lever system means can be actuated to effect the movement of said locking bolt back to said second position in which said striker means is released from capture by said locking bolt.

5,253,907

LOCKING DEVICE FOR A PIVOTABLE DOOR

Christian Schnoor, Lübeck; Wolfgang Rittner, Bad Schwartau; Roderich Thometschek, Stockelsdorf, and Alfred Rother, Lübeck, all of Fed. Rep. of Germany, assignors to Drägerwerk AG, Lübeck, Fed. Rep. of Germany

Filed Sep. 16, 1992, Ser. No. 945,734
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1991, 4131156
Int. Cl.[5] E05C *19/00*
U.S. Cl. 292—252 **8 Claims**



1. A locking device for a door of a container, the door being pivotable around a hinge, comprising: a mounting plane forming a part of said container, said mounting plane extending parallel to said door in a door closed position, said mounting plane overlapping an area of said door in said door closed position; a first locking part attached to said mounting plane, said first locking part being arranged stationary on said mounting plane of said container and being connected to a rocker arm, said rocker arm being actuated by a solenoid for moving a tubular locking piston of said first locking part to achieve a release position of said tubular locking piston; a second locking part connected to said door, said second locking part including a coupling pin with an undercut, said second locking part being connected to said door via a position-changeable pin holding means for holding said coupling pin in a position with respect to said door; adjustment means for acting on said position changeable holding means for changing an amount said coupling pin is inserted into said first locking part in said door closed position, whereby a depth of engagement of said coupling pin into said first locking part is changeable, thereby determining an amount of play between said container and said door in said door closed position; and access means for access to said adjustment means when said door is in said closed position wherein said adjustment means is activated by an adjusting tool, said access means including a space for receiving said adjusting tool through said locking piston from a rocker arm side of said locking piston.

5,253,908

COMMODE STALL DOOR LATCH

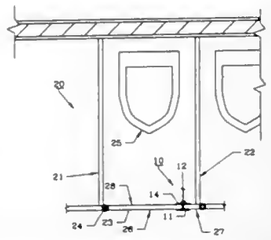
Patrick J. Leonard, III, 1904 Lynn Tree Ct., High Point, N.C. 27265

Filed Feb. 11, 1993, Ser. No. 16,297
Int. Cl.[5] E05C *19/18*
U.S. Cl. 292—289 **11 Claims**

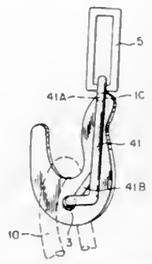
1. A door latch for a door having an inside and an outside face comprising: means to engage an outside door face, a guideline, said guideline connected to said outside door face engaging means, and a means to engage an inside door face, said inside door face engaging means slidably positioned on said guideline, a means to adjustably secure said inside door

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face engaging means along said guideline, said securing means positioned on said guideline whereby the door can be maintained between said inside and said outside door face engaging means.



5,253,909
COMBINATION OF A CHAIN AND A CHAIN HOOK
Harumi Oshita, 5-7-12, Shozoku-Cho, Iwakuni-shi, Japan
Filed May 15, 1992, Ser. No. 883,353
Int. Cl.[5] B66C *1/34*
U.S. Cl. 294—82.11 4 Claims

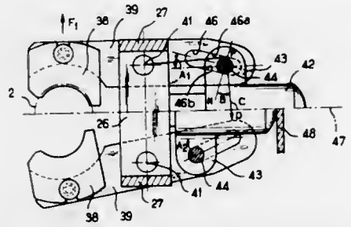


1. A combination of a chain and a chain hook for hooking a material, comprising:

a hook having a J-character shape, said hook including a hook head portion at one end, a hook tail portion at the other end, a hook bottom portion located between the hook head portion and the hook tail portion, a support hole provided near the hook bottom portion, a semicircular notch formed at the hook head portion on a side of the hook tail portion, and an inner periphery extending from the hook head portion to the hook tail portion through a portion near the hook bottom portion, a distance between the support hole and the hook head portion being greater than a distance between the support hole and the hook tail portion, and

a chain including a first ring directly linked with and passing through the support hole, said first ring including two elongated portions having upper and lower ends, two lateral portions extending laterally from the elongated portions at the lower ends and having distal ends away from the lower ends of the elongated portions, an upper member situated between the upper ends of the elongated portions, a lower member situated between the distal ends of the lateral portions, reinforcing members each situated between the elongated portion and the lateral portion to reinforce the lateral portion, and a stud situated between the elongated portions near the upper ends thereof so that when the hook is not used and hung through the first ring, the J-character hook takes substantially an inverted J-character shape, and when the hook is used by hanging the material at the hook tail portion, the notch at the hook head portion contacts and engages the stud of the first ring to substantially take the J-character along the chain while the elongated portions and the lateral portions are located along-side the hook without crossing the inner periphery of the hook.

5,253,910
GRIPPER CLAMP AND MACHINE FOR TREATING OBJECTS, PARTICULARLY BOTTLES, EQUIPPED THEREWITH
René Perrier, 91, rue Fernand Lafont, 07160 Le Cheylard, France
PCT No. PCT/FR91/00292, § 371 Date Dec. 6, 1991, § 102(e) Date Dec. 6, 1991, PCT Pub. No. WO91/15309, PCT Pub. Date Oct. 17, 1991
ub. Date AApr. 10, 1991, Ser. No. 777,420
Claims priority, application France, Apr. 11, 1990, 90 04652
Int. Cl.[5] B66C *1/42*
U.S. Cl. 294—116 3 Claims



1. In a gripper clamp for bottles comprising at least two jaws movable and articulated relative to one another between a gripping position and a release position, at least one of the jaws being movable by actuating means which undergo a translatory movement in a direction forming an axis of symmetry for the two jaws, transmission means between the actuating means and the movable jaw to transmit to the movable jaw movement between the release position and the gripping position, said transmission means comprising a tenon movable against an inclined ramp, the tenon and the ramp being associated one with the movable jaw and the other with the actuating means; the improvement wherein the actuating means comprises a translatable member cooperating with a cam of a treatment machine, and a return spring continuously urging the actuating means toward a position corresponding to the gripping position of the jaws in contact with the bottle, and wherein the ramp converges toward said axis of symmetry in a direction away from the jaws with an inclination such that said transmission means is irreversible in respect of the return of the movable jaw to its release position from the gripping position upon the imposition of force on that portion of the jaw that contacts the bottle.

5,253,911
GRIPPER APPARATUS FOR USE IN A ROBOTICS SYSTEM
Brian P. Egan, Longmont, and Lynn C. Jacobs, Louisville, both of Colo., assignors to Storage Technology Corporation, Louisville, Colo.
Filed Apr. 3, 1992, Ser. No. 863,440
Int. Cl.[5] B25J *15/02*
U.S. Cl. 294—116 22 Claims

1. Apparatus including a pair of gripper jaws for grasping an object, said apparatus comprising:

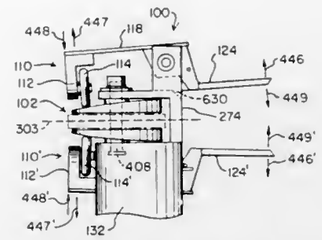
(a) a cam having a top surface and also having a center plane having both axes perpendicular to an axis of rotation of said cam, wherein said top surface has a lobed area and a non-lobed area and intersects said axis of rotation;

(b) a cam follower abutting said top surface of said cam;

(c) a flexible member for connecting one jaw of said pair of gripper jaws to said cam follower, said flexible member being effective for applying a predetermined maximum

closing force via said one jaw against said object in response to a predetermined displacement of said cam follower relative to said center plane of said cam;

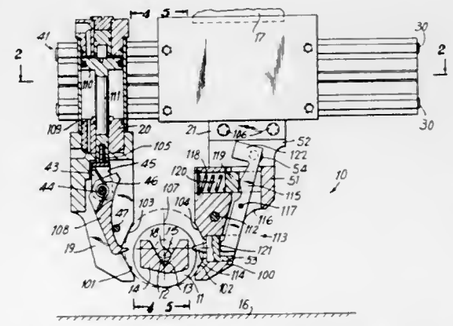
(d) means for biasing said one jaw away from said center plane toward an open position to urge said cam follower against said top surface of said cam;



(e) means for closing said one jaw to grasp said object by rotating said cam to a first position in which said cam follower abuts said lobed area of said cam; and

(f) means for opening said one jaw to release said object by rotating said cam to a second position in which said cam follower abuts said non-lobed area of said cam.

5,253,912
GRIPPER APPARATUS FOR ELECTRIC MOTOR COMPONENTS
Giuseppe Andorlini, Florence, and Luciano Santandrea, Tavarnelle Val di Pesa, both of Italy, assignors to Axis USA, Inc., Marlborough, Mass.
Filed Apr. 10, 1991, Ser. No. 683,195
Int. Cl.[5] B25J *15/08*
U.S. Cl. 294—119.1 27 Claims



1. Gripper apparatus for gripping an electric motor component, said component having an axis, a surface, and at least one depression in said surface, said gripper apparatus further being for rotationally indexing said component about said axis, said gripper apparatus comprising:

first and second gripper arms for contacting said component surface parallel to said component axis, each of said gripper arms having a gripper surface shaped for contacting said component surface to prevent translation of said component, at least one of said gripper arms being movable toward and away from the other of said gripper arms;

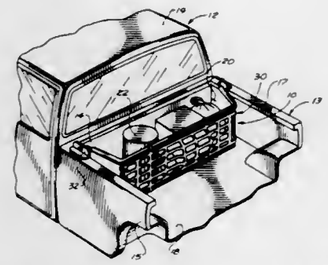
means for moving said at least one of said gripper arms for causing said gripper arms to contact said component surface;

indexing means for engaging said component surface and causing rotation of said component about said component axis;

stopping means for stopping rotation of said component by said indexing means after said indexing means has rotated said component to a desired position; and

disengaging means associated with said stopping means for disengaging said indexing means when said stopping means stops said rotation.

5,253,913
TRUCK BED PARTITION
Pierre Metivier, Phoenix, Ariz., assignor to William F. Baker, Glendale, Ariz.
Filed Jul. 17, 1992, Ser. No. 915,905
Int. Cl.[5] B60R *5/04*
U.S. Cl. 296—37.6 14 Claims



1. A truck bed partition for retaining loose articles in a specific portion of a truck bed, said partition comprising:

a cargo cage including:

a frame having an upper member for extending substantially transverse of said truck bed;

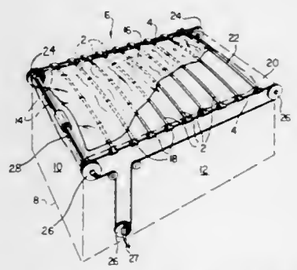
spacer arms, each having an attachment end, extending from said frame;

said spacer arms disposed at a transverse angle to said top member;

mounting members attachable to said truck bed; and

a securement member for rotatably securing each of said attachment ends to a respective one of said mounting members.

5,253,914
TARPAULIN COVER SYSTEM FOR TRUCKS
Vito Biancale, #461, Hwy. #5, R.R. #2, Dundas, Ontario, Canada L9H 5E2
Filed Sep. 28, 1992, Ser. No. 952,262
Int. Cl.[5] B60P *7/04*
U.S. Cl. 296—100 2 Claims



1. In a movable tarpaulin cover system for the elongated body of an open-top truck or trailer having sides front and back, the system comprising:

a tarpaulin to cover the body, one end of which tarpaulin is anchored to the front of the body, a plurality of upwardly curved intermediate bows extending in parallel fashion from side to side transversely across the body, the bows

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secured at spaced locations to the tarpaulin for support thereof, the bows supported on a pair of cables, one on each side of the body, each cable providing horizontal reach of the cable extending along parallel to and above the upper edge of a different one of the sides of the body, sleeves being provided at ends of the intermediate bows through which said reaches of the cables pass, the cables sliding through the sleeves during longitudinal movement with respect to the body, and a lead bow extending parallel to the intermediate bows from side to side transversely across the body, the lead bow being secured to the free end of the tarpaulin and ends of this bow being secured to said cable reaches for movement therewith longitudinally with respect to the body, movement of the lead bow in one direction to draw the free end of the tarpaulin longitudinally to the back end of the body to covering position and to draw the intermediate bows and tarpaulin associated with each proportionately rearwardly depending upon the location at which each intermediate bow is secured to the tarpaulin, movement of the lead bow in the other direction to retract the free end of the tarpaulin and the lead and intermediate bows to the front end of the body to open position, the improvement characterized by the sleeves of the intermediate bows being elongated in the direction of movement of the corresponding cable reach to a length sufficient to maintain their associated bows, during movement, arched upwardly across the body and being of a uniform transverse vertical cross-section comprising spaced parallel upper and lower sides in operation oriented transversely from side to side with respect to the trailer body and joined by semi-circular ends to provide an obround appearance in cross-section.

5,253,915

MOTOR VEHICLE FOLDING HOOD

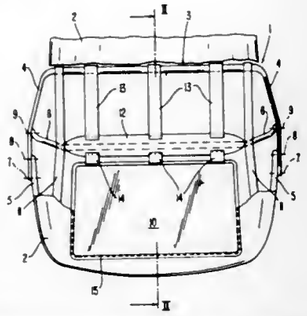
Jürgen Schnader, Weil im Schönbuch; Martin Guckel, Wiernsheim; Walter Cornel, Sindelfingen, and Heimut Rottler, Aidlingen, all of Fed. Rep. of Germany, assignors to Mercedes-Benz A.G., Fed. Rep. of Germany

Filed Jul. 27, 1992, Ser. No. 920,208

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1991, 4124813

Int. Cl.[5] B60J *1/00*

U.S. Cl. 296—107 **13 Claims**



1. A folding hood for a motor vehicle, comprising a hood cover, a hood frame including a strut for supporting the hood cover and configured to be foldable closed in order to stretch the hood cover, and a shaping shell for reinforcing the stretched hood cover and adjoining the strut, said shaping shell being mounted between the strut and the hood cover and being provided with a dimensional rigidity to interact in a shaping manner with the hood cover resting flat thereon, the shaping shell being positioned under the hood cover via tensile connectors extending transversely to the strut, said tensile connectors being stretched tightly when the hood frame is folded closed, wherein said shaping shell is configured to be transversely deformable, in an elastically resilient manner, about a longitudinal axis extending along a bearing position thereof on the strut such that, when the folding hood is open, said shaping shell is retained in a relaxed initial position having a defined initial shape, and, when the folding hood is closed, said shaping shell can be bent into the shaping manner of use by tensioning advance of said tensile connectors.

5,253,916

MOTOR VEHICLES

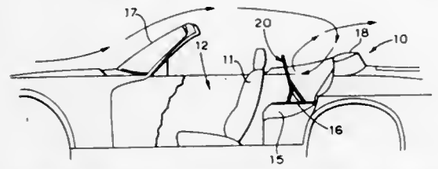
Donald J. Moore, Wolston, and Michael Colley, Coventry, both of England, assignors to Jaguar Cars Limited, United Kingdom

Filed Jan. 21, 1993, Ser. No. 7,152

Claims priority, application United Kingdom, Jan. 25, 1992, 9201648; Aug. 26, 1992, 9218106

Int. Cl.[5] B60N *3/00*

U.S. Cl. 296—180.5 **10 Claims**



1. A wind deflector for shielding the occupants of a convertible vehicle from backdraughts comprising a rigid board which is mounted on a substantially flat surface behind the seats of a vehicle, the board being mounted on the flat surface by means of a linkage mechanism by which it may be moved between a retracted position, in which it lies flat against the flat surface, to an operative position in which it extends upwardly behind the seats to a height sufficient to shield the occupants of the vehicle from backdrauqhts, the lower edge of the rigid board being spaced above the flat surface when the rigid board is in its operative position and an extension of the deflector being attached to the rigid board and the flat surface.

5,253,917

APPARATUS FOR FASTENING A REMOVABLE ROOF SECTION OF A PASSENGER CAR

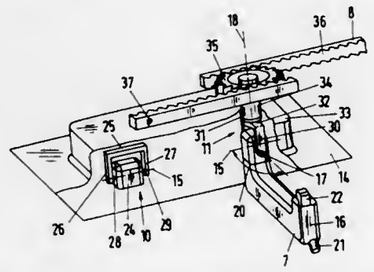
Heinrich Brueggemann, Hagen, Fed. Rep. of Germany, assignor to Wilhelm Karmann GmbH, Osnabrueck, Fed. Rep. of Germany

Filed Apr. 27, 1992, Ser. No. 874,495

Claims priority, application Fed. Rep. of Germany, May 6, 1991, 9105583[U]

Int. Cl.[5] B60J *7/185*

U.S. Cl. 296—218 **21 Claims**



21. Fastening apparatus for detachably fastening a removable roof section to a vehicle body comprising an elongated locking means on said roof section movable between a roof-lock position in which said locking means locks said roof section to said vehicle body and a roof-unlock position in which said locking means unlocks said roof section from said vehicle body, a handle having two end parts, rotatable means rotatably connecting one end part of said handle with said locking means, said rotatable means being rotatable about a rotatable axis such that said handle is rotatable about said rotatable axis between a handle-lock position to dispose said locking means in said roof-lock position and a handle-unlock position to dispose said locking means in said roof-unlock position, a connecting link means rotatably joined to the roof section and forming an extension of the other of said end parts of said handle, and disconnectable connecting means between said other end part of said handle and said connecting link means on said roof section, said disconnectable connecting means having a connect position which connects said other end of said handle and said connecting link means on said roof section, said disconnectable connecting means having a disconnect position which disconnects said other end of said handle from said connecting link means on said roof section such that said other end of said handle is separated from said connecting link means on said roof section to thereby enable said other end of said handle to be disconnected and separated from said connecting link means on said roof section and to be rotated about said rotatable axis between said handle-lock position and said handle-unlock position.

5,253,918

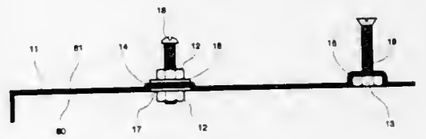
TRUCK BED LINER WITH INTEGRAL RAIL AND TIE-DOWN FASTENERS

Stephen R. Wood, and Richard Kremer, both of Bloomingdale, Ind., assignors to Futurex Industries, Inc., Marshall, Ind.

Filed Dec. 1, 1992, Ser. No. 983,945

Int. Cl.[5] B62B *33/02*

U.S. Cl. 296—39.2 **24 Claims**



1. A truck bed liner for a vehicle cargo bed having at least one interior surface, comprising:

a liner capable of substantially covering the interior surface of the vehicle cargo bed,

the liner comprising a first liner surface for engaging the interior surface of the vehicle cargo bed and a second liner surface opposite the first liner surface; and

an attachment member having two opposing surfaces, the first opposing surface of the attachment member being embedded in and substantially flush with the first liner surface of the vehicle cargo bed.

5,253,919

ARRANGEMENT FOR THE DAMPING OF TORSIONAL VIBRATIONS

Hans-Heinrich Kohlmeier, Mönsheim; Rainer Joest, Mühlacker, both of Fed. Rep. of Germany; Christophe Liefooghe, Hove, Belgium; Heinz Bayer, Ulm, Fed. Rep. of Germany, and Hermann Burst, Rutesheim, Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

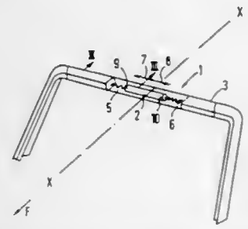
Filed Oct. 1, 1991, Ser. No. 769,367

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1990, 4030990

Int. Cl.[5] B60J *1/02*; **B60R** *27/00*

U.S. Cl. 296—96.21 **17 Claims**

1. An arrangement for damping of body-side torsional vibrations on a convertible vehicle comprising a damper held elastically by way of a elastic slide bearings on a frame of a windshield and arranged at a distance from the frame so that the damper can relatively freely swing in a transverse direction of the vehicle, the slide bearings each having a maximal height



damping a natural torsional frequency of the vehicle in an area of the frame.

5,253,920

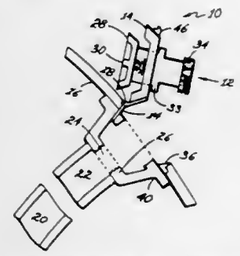
GAS CAP APPARATUS

Bernard Eldridge, 21 Captains Row, Orleans, Mass. 02653

Continuation-in-part of Ser. No. 787,827, Nov. 5, 1991, abandoned. This application Oct. 13, 1992, Ser. No. 959,983

Int. Cl.[5] B62D *39/00*

U.S. Cl. 296—97.22 **11 Claims**



1. A gas cap apparatus permanently installed on a vehicle for removably sealing the vehicle's fuel tank filler tube comprising:

a) an access plate having an outer rim adjacent a contoured recess characterized by a central annular opening and including hinge means for mounting said access plate on the vehicle for movement between an open position and a closed position;

b) said filler tube includes an orifice and an associated threaded member in the neck of said filler tube,

c) a gas cap movably connected to said access plate permitting rotation about a central axis comprising;

i) a cylindrical journal having cylindrical surface configured to cooperate with said annular opening having a top end and a bottom end, and a retainer collar positioned between said top end and bottom end of said sliding journal;

ii) a cap mounted coaxially on the top end of the sliding journal including a handle member;

iii) a threaded adapter mounted coaxially on said bottom end configured to engage said associated threaded member in the neck of said filler tube;

d) means for manually urging the gas cap in engagement with the neck of said filler tube, whereby the threaded adapter sealably engages the associated threaded member of the filler tube; wherein the gas cap is operable to slide between an inner sealing position and a raised detached position and for pivotal movement with the access plate between a closed position and an open position.

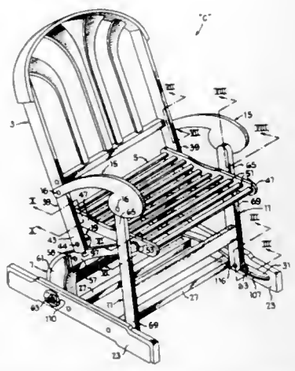
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5,253,921

FOLDABLE ROCKING CHAIR

Gilles Boulet, St-Gérard-de-Majella, Canada, assignor to Meubles St-Gerard Inc., Quebec, Canada

Filed Jan. 31, 1992, Ser. No. 829,702
Claims priority, application Canada, Apr. 26, 1991, 2041306
Int. Cl.[5] A47C 3/02
U.S. Cl. 297—32 20 Claims



1. A foldable rocking chair of the type comprising in combination:

a stationary base provided with parallel riding surfaces spaced apart from each other and connected together, each riding surface having a longitudinal axis and being undulated with respect to its longitudinal axis;

a back provided with a pair of stiles, each stile being spaced apart form each other, a lower portion of each stile defining a short rear leg;

a seat;

a pair of main rear legs, each leg having an upper portion, an intermediate portion and a lower portion, each lower portion being provided with a rolling means intended to ride forward and backward on a portion of a corresponding riding surface;

a pair of front members, each member having an upper portion defining a stem and a lower portion defining a front leg, each front leg being provided with a rolling means intended to ride forward and backward on a portion of a corresponding riding surface;

a pair of arms, each arm having opposite ends;

a pair of connecting members, each member having opposite ends;

six pairs of connectors, each connector defining means of the type for connecting parts together and for pivotally moving these parts around a pivoting axis that is substantially horizontal and perpendicular with respect to the longitudinal axis of riding surfaces, the pivoting axis of each connector of a same pair of connectors being substantially co-axial;

each connector of a first pair of connectors pivotally connecting the seat with a corresponding stile, just above the short rear leg,

each connector of a second pair of connectors pivotally connecting the seat with the upper portion of a corresponding main rear leg and a corresponding front member between its upper and lower portions,

one connector of a third and a fourth pairs of connectors, pivotally connecting, respectively, opposite ends of one arm with respectively a corresponding upper part of the front member and a corresponding stile, above the connector connecting the seat with that stile, the other connector of a third and fourth pairs of connectors, pivotally connecting, respectively, opposite ends of the other arm with respectively a corresponding upper part of the front member and a corresponding stile, above the connector connecting the seat with that stile,

one connector of a fifth and sixth pairs of connectors, pivotally connecting, respectively, opposite ends of one connecting member with respectively an intermediate portion of a corresponding main rear leg and a corresponding short rear leg, the other connector of a fifth and sixth pairs of connectors, respectively, opposite ends of the other connecting member with respectively an intermediate portion of the main rear leg and the short rear leg,

above mentioned stiles, arms, front members, main rear legs, seat and connecting members being movable around pivoting axis defined by their corresponding connectors between a folded position and an unfolded position,

the folded position being obtainable when the back is tilted around pivoting axis of each connector of the first pair of connectors over the seat connecting members are moved around the pivoting axis defined by each connector of the fifth and sixth pairs of connectors from a locked position where pivoting axis defined by connector of the fifth pair of connectors are positioned ahead a plane that is substantially coplanar with the pivoting axis defined by connectors of the first and sixth pairs of connectors and each short rear leg applies against the intermediate portion of a corresponding main rear leg, to an unlocked position where pivoting axis defined by connector of the fifth pair of connectors, are positioned behind the plane that is substantially coplanar with the pivoting axis defined by connectors of the first and sixth pairs of connectors, ends of arms are moved around corresponding pivoting axis defined by connectors of the third and fourth pairs of connectors, front members are moved around the pivoting axis defined by each connector of the second pair of connectors in such a way that rolling means of the front legs are ridden on the riding surface from a first position where rolling means of the front legs are positioned ahead a substantially vertical plane coplanar with the pivoting axis defined by each connector of the second pair of connectors, to a second position where rolling means of the front legs are positioned behind the substantially vertical plane toward rolling means of the main rear legs, said arms, seat and upper portion of the main rear legs being lowered toward the base; and

the unfolded position being obtainable when the aforesaid steps are reversed until pivoting axis defined by connector of the fifth pair of connectors, are positioned ahead the plane that is substantially coplanar with pivoting axis defined by connectors of the first and sixth pairs of connectors, short rear legs respectively apply against the intermediate portion of a corresponding main rear leg, and rolling means of the front legs are positioned ahead the vertical plane.

5,253,922

CHAIR ADJUSTABLE IN HEIGHT PROVIDING A WEIGHT BEARING SURFACE AT ANY HEIGHT, AND HAVING A SEAT THAT ROTATES SO AS TO CHANGE ITS ANGLE OF INCLINATION

Esmond N. Corlett, Nottingham, England, assignor to British Technology Group Limited, London, England

Continuation of Ser. No. 442,696, Nov. 29, 1989, abandoned, which is a continuation-in-part of Ser. No. 197,002, May 23, 1988, abandoned. This application Oct. 10, 1991, Ser. No. 774,735
Claims priority, application United Kingdom, May 23, 1987, 8712288; Nov. 29, 1988, 8827846
Int. Cl.[5] A47C 3/40
U.S. Cl. 297—344.16 2 Claims

1. A chair, comprising:

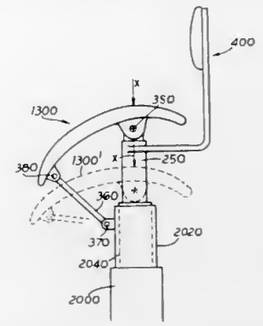
a seat having a front portion, a rear portion and a curved exterior surface therebetween;

means for raising and lowering said seat to any height in a range from a fully seated, low, position to a semi-standing, high position;

cooperative means connected to said seat for adjusting an angle of tilt of said seat as the height of said seat is changed; and

said seat having a curvature such that an imaginary horizontal transverse line drawn thereacross at the highest position on said curved exterior surface will move towards a rear portion of said seat as said seat is moved from said low position to said high position; and

a backrest, said backrest being attached to said raising and lowering means and being independent of said seat, said backrest remaining in a substantially vertical position as said seat is raised and lowered.

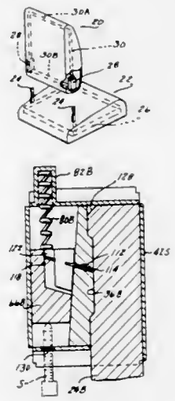


5,253,923

SEAT ASSEMBLY HAVING WEDGED LOCKING MECHANISM

Leroy Gootee, 19187 Laurel, Livonia, Mich. 48152

Filed Aug. 21, 1991, Ser. No. 748,089
Int. Cl.[5] A47C 7/00
U.S. Cl. 297—440.21 20 Claims



1. In a seat assembly including a seat base having seat base frame, a seat back having a seat back frame, and attachment means for mounting said seat back frame upon said seat base frame;

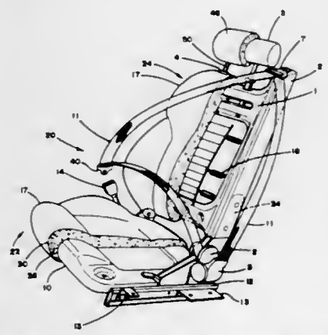
the improvement wherein said attachment means comprises an elongate rigid coupling bar having a lower end mounted on said seat base frame and projecting upwardly from said seat base, a housing fixedly mounted adjacent a bottom of said seat back frame, means defining a coupling bar receiving recess in said housing extending upwardly from a bottom of said housing and defined in part by a first side wall slidably engageable with a first longitudinal side edge of said bar upon upward movement of said bar into said recess, a locking member mounted in said housing and having a locking edge in facing opposed relationship to a second longitudinal side edge of said bar opposite said first edge and movable within said housing along a fixed path toward and away from said bar, wedge means mounted in said housing between a wall of said housing and said locking member for movement between an elevated inoperative position and a lowered locking position, said wedge means when in said inoperative position allowing movement of said coupling bar into said housing, actuating means for shifting said wedge means from said inoperative position to said locking position, said second edge of said bar having a locking recess therein and said locking edge of said locking member having a locking projection of a shape complementary to said locking recess, said wedge means being operable upon movement from said inoperative position toward said locking position to wedge said locking member toward said bar to seat said locking projection in said locking recess when said wedge means is in said locking position to positively lock said bar against withdrawal from said recess.

5,253,924

BLOW MOLDED SEAT BACK WITH INTEGRAL REINFORCING MEMBER

Patrick M. Glance, Plymouth, Mich., assignor to Concept Analysis Corporation, Plymouth, Mich.

Filed Jun. 11, 1991, Ser. No. 713,762
Int. Cl.[5] A62D 35/00
U.S. Cl. 297—452.1 15 Claims



1. A seat back for a vehicle seat comprising a seat back and seat unit mounted on a seat base, the seat back comprising an integral, hollow molded body portion formed in the shape of a seat back from a thermoplastic resin, and a high modulus reinforcing member incorporated into the body, the reinforcing member comprising an elongated member formed of one or a combination of metal, a high modulus resin, or a composite material and extending upwardly from a base of the seat back to a position adjacent an upper portion of the seat back, the reinforcing member being attached to a seat back support mechanism at the base of the seat back, the reinforcing member providing resistance to forward directed forces on the seat back, the reinforcing member having a non-circular cross section and the body comprising an integral hollow, tubular portion that fits closely over the reinforcing member through the body and conforms generally with the shape of the reinforcing member, the engagement of the tubular portion of the body on the reinforcing member resisting torsional forces exerted on the body about the axis of the reinforcing member, the reinforcing member having a generally rectangular cross

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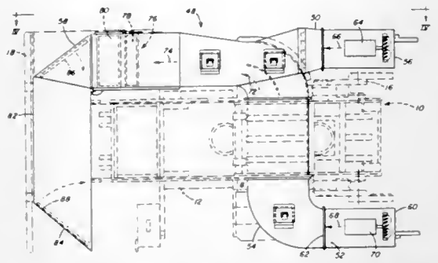
section, with one corner of the member facing a passenger seating area of the seat being beveled.

5,253,925

METHOD AND APPARATUS FOR COLLECTING AND REMOVING DUST ON A MINING MACHINE

Andrew E. Modzik, Jr., Morgantown, W. Va., assignor to Tamrock World Corporation, N.V., Curacao, Netherlands Antilles

Filed Jan. 17, 1992, Ser. No. 822,077
Int. Cl.[5] F21C *35/22*; F21F *5/02*
U.S. Cl. 299—12 22 Claims



11. A method for removing airborne dust from a mine face during a mining operation comprising the steps of,

dislodging material from a mine face,

conveying the dislodged material rearwardly from the mine face on a mining machine,

positioning a duct system on the mining machine to extend longitudinally from an inlet adjacent to the mine face to an outlet adjacent to a rearward portion of the mining machine,

mounting a fan on the mining machine adjacent to the inlet to the duct system,

mounting a scrubber device on the mining machine in a position removed from the fan by an extended length of the duct system adjacent to the outlet to the duct system,

conveying dust laden air longitudinally on the mining machine through the duct system from the inlet to the outlet and laterally of the dislodged material conveyed on the mining machine,

separating dust particles from the flow of air in the scrubber device,

collecting the dust particles on the mining machine for disposal, and

discharging from the scrubber device the air substantially free of dust particles.

5,253,926

PROCESS FOR MAKING GENERAL USE OF THE EARTH'S HEAT AND OBTAINING MINERALS IN THE ZONE OF WEAKNESS (AT DEPTHS OF 13–30 KM)

Werner Foppe, Geilenkirchen, Fed. Rep. of Germany, assignor to Compisa AG, Switzerland

PCT No. PCT/CH90/00212, § 371 Date Jul. 11, 1991, § 102(e) Date Jul. 11, 1991, PCT Pub. No. WO91/03690, PCT Pub. Date Mar. 21, 1991
PCT Filed Sep. 10, 1990, Ser. No. 721,635
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1989, 3930232
Int. Cl.[5] E21C *37/12*
U.S. Cl. 299—16 17 Claims

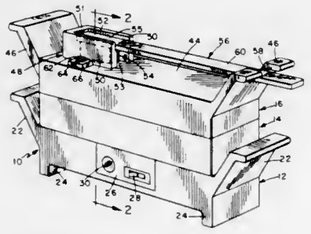
1. A process for the recovery of geothermal energy and mineral resources in a hot rock in a deep zone of a continental lithosphere lying between 13 and 30 kilometers and in which a shear strength of the hot rock suddenly decreases in relation to an overburden comprising: generating a hydrostatic pressure at a bottom of a water column in a lined boring and supplying an additional pressure with at least one pump at a surface through the lined boring, which said lined boring acts as a cold water pressure shaft, producing a hydraulic fracturing effect to create a plurality of fractured heating zones, returning the supplied water to the surface through at least one recovery shaft located at a distance from the cold water pressure shaft after extracting heat from the hot rock, and recovering at least one of said extracted heat and a mineral fraction in the water.

5,253,927

TOOTHBRUSH RECYCLING APPARATUS AND METHOD

Kenneth R. Erickson, 12827 Camino Ramillette, San Diego, Calif. 92128

Filed Jan. 13, 1992, Ser. No. 819,996
Int. Cl.[5] A46D *1/045*, *1/08*, *9/04*
U.S. Cl. 300—2 8 Claims



1. A recycling apparatus for brushes having moldable bristles, comprising:

a housing having a chamber for receiving water;

heater means for heating the water in the chamber to produce steam;

the chamber having at least one outlet orifice for allowing steam to escape from the chamber;

a mold positioned over said outlet orifice, the mold having a mold chamber of shape and dimensions substantially matching those of the bristle part of a brush head and an entry opening for insertion of a brush head into the mold chamber, the mold chamber communicating with said outlet orifice; and

the mold having upstanding spaced side walls and at least one end wall defining a rectangular mold chamber open at one end for insertion and removal of the bristle part of a brush head.

5,253,928

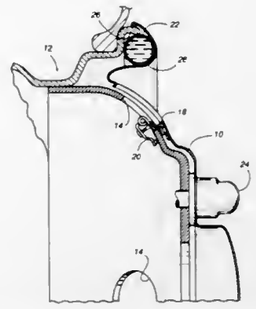
ATTACHMENT OF KINETIC WHEEL BALANCERS

Anthony J. Patti, 27610 Fairview Ave., Hayward, Calif. 94542

Filed Jan. 11, 1993, Ser. No. 2,798
Int. Cl.[5] F16F *15/22*
U.S. Cl. 301—5.22 7 Claims

1. A method for attaching a kinetic wheel balancer to a vehicle wheel comprising:

concentrically placing the wheel balancer on the interior of an ornamental wheel cover; and



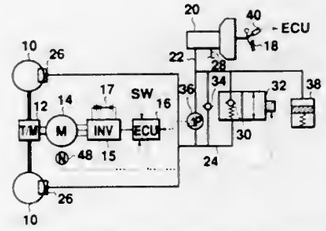
installing said wheel cover on a vehicle wheel whereby said wheel balancer is captured between said wheel cover and said vehicle wheel.

5,253,929

BRAKE CONTROL SYSTEM OF ELECTRIC VEHICLE

Harumi Ohori, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Dec. 16, 1992, Ser. No. 991,125
Claims priority, application Japan, Dec. 20, 1991, 3-338545; Dec. 20, 1991, 3-338976
Int. Cl.[5] B60T *13/74*
U.S. Cl. 303—3 20 Claims



1. A brake control system for controlling a hydraulic brake means and a regenerative brake means mounted to an electric vehicle, the hydraulic brake means generating a hydraulic pressure in response to a braking request to mechanically brake drive wheels and idle wheels, the regenerative brake means braking the drive wheels due to a regeneration of a motor for running, the brake control system comprising:

cutoff means arranged in a hydraulic pressure transmission path to the drive wheels for cutting off a hydraulic pressure transmission when the hydraulic pressure generated by the hydraulic brake means is not greater than a predetermined value;

liquid consumption means for consuming a liquid amount corresponding to the cutoff hydraulic pressure on an opposite side to the drive wheels seen from the cutoff means when the hydraulic pressure is cut off by the cutoff means;

pressure difference detection means for detecting a pressure difference generated between a front and a rear of the cutoff means caused by the cutoff; and

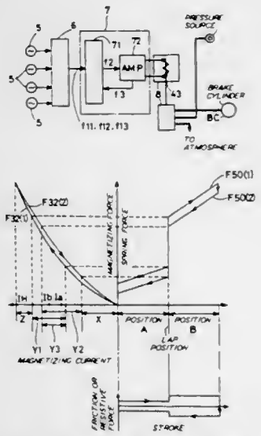
regenerative brake control means for obtaining a regenerative torque command value depending on the pressure difference detected by the pressure difference detection means and controlling the regenerative brake means on the basis of the obtained regenerative torque command value.

5,253,930

AIR BRAKE CONTROL SYSTEM HAVING AN ELECTROMAGNETIC VALVE DEVICE WHICH HAS TWO SET POINTS FOR ESTABLISHING A LAP POSITION

Seiki Maruta, and Asaji Imanaka, both of Kobe, Japan, assignors to Nippon Air Brake Co., Ltd., Kobe, Japan

Filed Sep. 25, 1991, Ser. No. 766,457
Claims priority, application Japan, Sep. 26, 1990, 2-101352[U]
Int. Cl.[5] B60T *15/14*; F16K *11/10*
U.S. Cl. 303—15 10 Claims



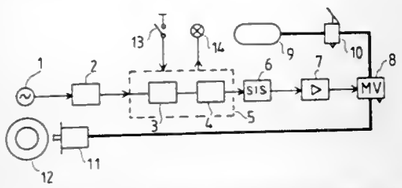
1. An electromagnetic solenoid valve system comprising an electromagnetic solenoid valve body which includes a first chamber leading to a first port, a second chamber leading to a second port, and a third chamber leading to a third port, a position A connecting said first and third chambers, a position B connecting said second and third chambers, said electromagnetic valve isolates each of said chambers between the positions A and B to assume a lap position, a drive controller for providing magnetizing current to the solenoid of said electromagnetic valve, and having the characteristic of possessing different setting values of magnetizing currents due to the stroke resistance of said electromagnetic solenoid valve when said drive controller moves the electromagnetic valve to the LAP position either from said position A in which a first lap magnetic current setting value is established or from said position B in which a second lap magnetic current setting value is established and in which the magnetizing force follows a first hysteresis curve when the electromagnetic valve moves from said position A to said position B and in which the magnetizing force follows a second hysteresis curve when the electromagnetic valve moves from said posistion B to said position A.

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5,253,931
CONTROL LOGIC FOR AN ANTI-LOCK VEHICLE BRAKE SYSTEM

Harald Köster, Hannover; Helmut Pannbacker, Hemmingen, and Henrich Riedemann, Hannover, all of Fed. Rep. of Germany, assignors to WABCO Westinghouse Fahrzeugbremsen GmbH, Hannover, Fed. Rep. of Germany

Filed Aug. 21, 1991, Ser. No. 748,199
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1990, 4027785
Int. Cl.[5] B60T *8/32*
U.S. Cl. 303—95 **41 Claims**



15. An automatic control circuit for an anti-lock protected vehicle braking system comprising

a wheel speed sensor having an output and for monitoring the wheel speed and for delivering a signal corresponding to the wheel speed through said output;

a signal processing stage having an input connected to the output of the wheel speed sensor for generating signals corresponding to a wheel deceleration, a wheel acceleration, and a wheel slip, said signal processing stage having a standard automatic control logic for modulating brake pressure during time periods under normal operating conditions of the vehicle and having a special automatic control logic for modulating brake pressure during an all-terrain operating state of the vehicle and wherein the special automatic control circuit is adapted to control all-terrain operation;

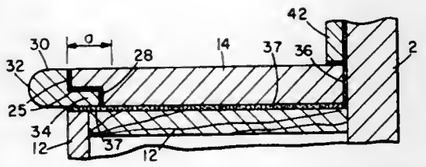
an all-terrain switch connected to the signal processing stage, wherein the driver can switch on the special automatic control circuit with the all-terrain switch;

control means for actuating the special automatic control circuit such that additional time periods are generated during which a short-term locking of an automatically controlled wheel occurs to thereby modulate a brake pressure.

5,253,932
MODULAR COUNTERTOP SYSTEM

Danilo N. Nesovic, 6370 Kimi La., La Mesa, Calif. 91942

Filed Dec. 5, 1991, Ser. No. 803,013
Int. Cl.[5] A47B *96/18*
U.S. Cl. 312—140.3 **20 Claims**



1. A modular counter structure supported by an underlying base, which comprises:

at least one flat unedged surface-providing sheet member formed of a first material which is essentially impervious to moisture penetration, impact and scratching; said member having a top surface, a bottom surface, a peripheral edge area having in at least a portion thereof a peripheral recess extending upwardly from said bottom surface and terminating below said top surface;

at least one preformed elongated edge facing member formed of a second material which is also essentially impervious to moisture penetration, impact and scratching; said edge facing member having a front and a back; said back comprising a rearward extending tongue portion fitted into said recess and in contact with said sheet member and said base; said front of said edge facing member extending outwardly beyond said peripheral edge area of said sheet member and presenting an appearance which is substantially the same as or consistent with the appearance of said top surface of said sheet member; and

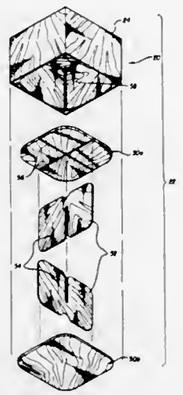
adhesive means for directly bonding said sheet member to said edge facing member;

whereby said tongue portion of said edge facing member is retained in said peripheral recess between said sheet member and said base and said sheet member is supported on said base at least in part through said edge facing member.

5,253,933
SPEAKER STAND

Daniel R. Walker, P.O. Box 5832, Napa, Calif. 94581-0832

Filed Feb. 5, 1992, Ser. No. 831,457
Int. Cl.[5] A47B *91/00;* **F16M** *11/38*
U.S. Cl. 312—351.7 **12 Claims**



1. A speaker stand comprising:

an enclosure including a top lateral surface having an underside joined to the top edge of a peripheral wall defining a chamber with an opening in the bottom,

an internal structure removably inserted into said bottom opening of said chamber,

said internal structure includes a top lateral surface and a bottom lateral surface and two substantially upright cross members,

said top lateral surface of said internal structure is juxtaposed to said underside of said top lateral surface of said enclosure,

said bottom lateral surface of said internal structure supported above a horizontal planar supporting surface,

said bottom of said enclosure and said bottom lateral surface of said internal structure are spaced upwardly apart,

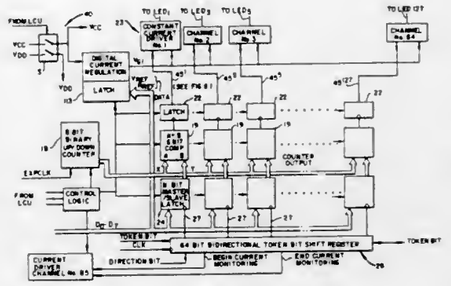
said enclosure including guides attached directly on said underside of said top lateral surface of said enclosure,

said guides centering said internal structure within said chamber.

5,253,934
L.E.D. ARRAY PRINTER WITH EXTRA DRIVER CHANNEL

Martin Potucek; Mary A. Hadley, both of Greece; Keith W. Agar, Henrietta; Jeffrey A. Small, Chili; Hieu T. Pham, Webster, and Yee S. Ng, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 26, 1990, Ser. No. 543,929
Int. Cl.[5] G01D *15/14, 15/00*
U.S. Cl. 346—107 R **29 Claims**



28. A non-impact printer apparatus comprising:

a recording head having a plurality of recording elements for recording on a recording medium,

a plurality of driver chips;

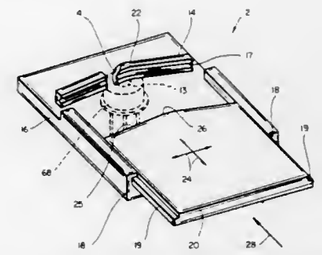
a driving means incorporated on each of said driver chips for selectively driving said plurality of recording elements in accordance with respective image data signals, each said the driving means including a plurality of current driving channels,

monitoring means for monitoring a monitorable current in each of said driver chips, said monitoring means including a token bit shift register and said monitoring means being responsive to a token bit signal output from said token bit shift register to select which said monitorable current is being monitored.

5,253,935
COUPLES FOR TERMINATING OPTICAL FIBER ENDS

William D. Uken, Fremont, and Akira Tomita, Redwood City, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed May 4, 1990, Ser. No. 518,050
Int. Cl.[5] G02B *6/28*
U.S. Cl. 350—96.16 **22 Claims**



1. An optical fiber transmission network for transmitting at least one of encoded data, voice, and video signals at a modulation rate in excess of 4 kHz between first and second telecommunication units, comprising:

first and second telecommunications units;

a first optical fiber having first and second ends for transmitting at least one of encoded data, voice, and video signals at a modulation rate in excess of 4 kHz between the units;

means for modulating light from a light source so as to encode information indicative of the data, voice, or video signals at a modulation rate in excess of 4 kHz to be transmitted from the first telecommunication unit to the second telecommunication unit;

means for injecting the modulated light into the first optical fiber so as to propagate away from its first end and towards its second end;

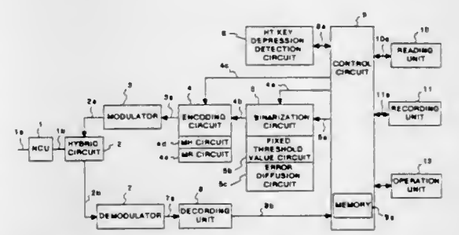
means for withdrawing and detecting the modulated light through a side of the fiber at a first bend at a location less than 20 cm from the second fiber end; and

means for recreating the data, voice, or video signals from the detected modulated light for use by the second telecommunications unit.

5,253,936
DATA COMMUNICATION APPARATUS AND DATA COMMUNICATION METHOD

Shinichi Isbida, Yokohama, Japan, assignor to Canon Kabushiki Kaisba, Tokyo, Japan

Continuation of Ser. No. 611,641, Nov. 13, 1990. This application Oct. 13, 1992, Ser. No. 960,278
Claims priority, application Japan, Nov. 16, 1989, 1-296202
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—427 **22 Claims**



1. A data communication apparatus comprising:

first image processing means for binarizing an original by a pseudo halftone processing method;

second image processing means for binarizing an original with a fixed threshold value;

selection means for selecting one of said first and second image processing means;

encoding means for encoding a binary image by one of MH encoding and MR encoding; and

detection means for detecting which image processing means is selected by said selection means,

wherein when said detection means determines that said first image processing means is selected, said encoding means performs encoding by the MH encoding method to perform a data communication with a destination apparatus.

5,253,937
METHOD AND APPARATUS FOR DISPERSING OR DISSOLVING PARTICLES OF A PELLETIZED MATERIAL IN A LIQUID

David W. Sebeimann, and Nang T. Bui, both of Aurora, Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Jun. 29, 1992, Ser. No. 905,722
Int. Cl.[5] B01F *15/02*
U.S. Cl. 366—136 **29 Claims**

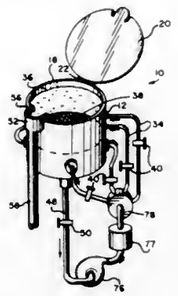
1. A method for dispersing or dissolving a pelletized material in a liquid comprising the steps of:

A) providing a container having a lower chamber portion and a platform positioned above the lower chamber portion;

B) placing the pelletized material on the platform;

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C) introducing a stream of liquid into the container through at least one port to produce a vortex which washes over the pelletized material and releases particles which are



then dispersed or dissolved in the liquid, said port being positioned at an angle below the horizontal so that the water stream strikes the base of the container; and

D) removing the resulting dispersion or solution.

5,253,938

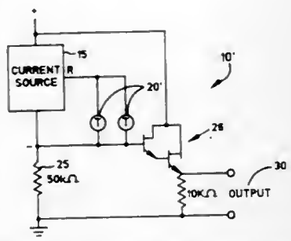
THERMISTOR CONTROLLED CURRENT SOURCE VERSATILE TEMPERATURE SENSOR

Thomas E. Stixrud, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 7, 1992, Ser. No. 957,563

Int. Cl.[5] G01K *7/24, 33/06*

U.S. Cl. 374—173 **12 Claims**



1. An apparatus for providing an uncomplicated and reliable measurement of temperature comprising:

a current source provided with "+" and "−" biasing leads and an "R" load resistor lead, said current source having the capability for providing a robust current within a robust current range being at least a portion of the range from one microamp to 10 milliamps;

a pair of thermistors coupled in parallel with respect to one another to lower a control current and consequent self heating, said pair of thermistors being coupled to the "−" lead and the "R" lead of said current source and having the property to vary in resistance in accordance with said temperature; and

a load resistor connected in series to said "−" lead of said current source to receive said robust current to provide an output being a function of temperature variations to cause a robust output voltage change thereacross in a range determined by the magnitude of said load resistor.

5,253,939

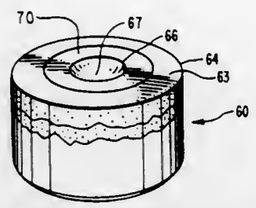
HIGH PERFORMANCE BEARING PAD FOR THRUST BEARING

David R. Hall, Provo, Utah, assignor to Anadrill, Inc., Houston, Tex.

Filed Nov. 22, 1991, Ser. No. 797,132

Int. Cl.[5] F16C *17/04*

U.S. Cl. 384—303 **26 Claims**



1. A bearing pad employable in a thrust bearing as one of a plurality of bearing pads in a bearing pad retainer, the bearing pad having an insertion end fixed in one of two opposed bearing pad retainers, the bearing pad retainers rotatable relative to another, the bearing pad having an exposed bearing end projecting from the bearing pad retainer and terminating in a bearing face having a periphery, so that the bearing faces of bearing pads in one bearing pad retainer are in contact with the bearing faces of the bearing pads in the other bearing pad retainer, said bearing pad comprising:

(a) an effective bearing contact surface formed in said bearing face; and

(b) reservoir means formed within the periphery of said bearing face for retaining a material when said portion of said bearing face is occluded by a bearing face of an opposing bearing pad.

5,253,940

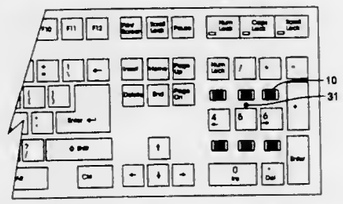
USER SELECTABLE NUMERIC KEYCAPS LAYOUT

Max Abecassis, 19020 NE. 20th Ave., Miami, Fla. 33179

Filed Feb. 19, 1992, Ser. No. 836,976

Int. Cl.[5] B41J *5/08*

U.S. Cl. 400—495 **1 Claim**



1. A method of providing a numeric keypad with both selectively changeable and unchangeable functions comprising:

providing a first set of key caps to configure the keypad in a 123 layout;

providing a second set of key caps to configure the keypad in a 789 layout;

providing each of said key caps except the number 5 key cap of each set with a machine control function;

interchanging the machine control functions relative to the first set of key caps such that the functions contained on keys 1, 2, and 3, respectively, of the first set of key caps are contained on keys 7, 8, and 9, respectively, of the second set of key caps, and the functions contained on keys 7, 8, and 9, respectively, of the first set of key caps are contained on keys 1, 2, and 3, respectively, of the second set of key caps;

selecting one of said sets of key caps;

installing the selected set on a numeric keyboard; and,

providing switch means to enable machine operation consistent with the selected one of said set of key caps.

5,253,941

TRANSFER/RECORDING PAPER CARTRIDGE

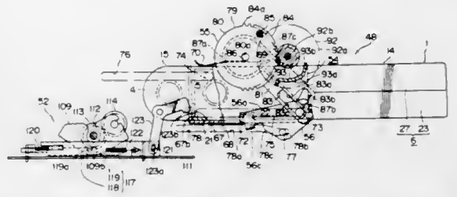
Hitoshi Kamoda, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed Aug. 14, 1991, Ser. No. 745,614

Claims priority, application Japan, Aug. 21, 1990, 2-219448; Aug. 21, 1990, 2-219449

Int. Cl.[5] B41J *35/28*

U.S. Cl. 400—692 **6 Claims**



1. A recording apparatus for forming an image on a recording paper, comprising:

a) a transfer/recording paper cartridge integrally having a recording paper container containing recording papers, and a transfer paper container containing a feed spool on which is wound a transfer paper and a winding spool to which is fastened the leading end of the transfer paper;

b) a cartridge holder removably holding the transfer/-recording paper cartridge and capable of being moved between an ejecting position where the transfer/recording paper cartridge is inserted therein or removed therefrom, and a predetermined loading position;

c) locking means for locking the transfer/recording paper cartridge on the cartridge holder;

d) moving means for moving the cartridge holder to the loading position; and

e) a support frame supporting the component;

wherein said support frame has support plates provided with guide slots, and said cartridge holder further comprises:

a bottom plate provided with stopper lugs with which the transfer/recording paper cartridge is brought into contact;

two side plates provided respectively along the opposite side edges of the bottom plate; and

guide pins projecting from the outer surfaces of the side plates so as to slide along the guide slots.

5,253,942

METHOD FOR APPLYING PAINT UPON SURFACES

Christine P. Stokes, 3462 S. 5100 West, Hooper, Utah 84315

Filed May 18, 1984, Ser. No. 605,260

Int. Cl.[5] B05D *1/26*

U.S. Cl. 401—176 **3 Claims**

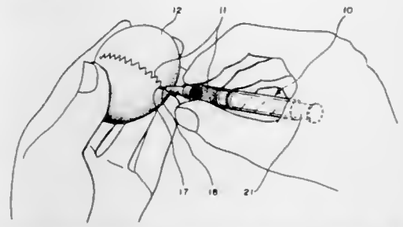
1. A method of applying paint to the surface of an object to be decorated, comprising the steps:

providing a medical hypodermic plungered syringe assembly having a barrel in the approximate length of 2½ to 3", a plunger within the barrel, and a nozzle assembly having a nozzle body secured at one of its ends to one end of the barrel, and terminating at its other end in an elongate, sharp ended tubular needle;

severing said needle at a location in the approximate range of ⅛ to ⅜" from the nozzle body and shaping the exterior end of the portion remaining attached to the nozzle body so as to provide a paint outlet tip of desired configuration;

providing a quantity of the paint within said barrel between the plunger and the nozzle body;

grasping said device in one hand and placing the paint outlet tip of the nozzle upon the surface to be decorated with the paint; and



causing relative motion between the paint outlet tip and the surface while applying force by said hand upon the exterior end of the plunger to cause the paint to flow from the outlet tip onto the surface.

5,253,943

PLASTIC CLIPBOARD HAVING ELASTIC ENGAGING PINS

Muneharu Miyashita, Inuyama, Japan, assignor to Yazaki Industrial Chemical Co Ltd., Shizuoka, Japan

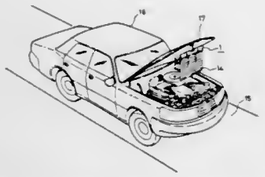
Filed Sep. 30, 1992, Ser. No. 953,916

Claims priority, application Japan, Oct. 31, 1991, 3-097989

Int. Cl.[5] B42F *13/12, 13/36*

U.S. Cl. 402—68 **3 Claims**





1. A clipboard for holding sheets of instructions comprising a main body that is formed by bending a flat rectangular plastic material longitudinally into a structure of largely inversed U-shaped cross-section having a vertically extending front board, vertically extending backside board that is larger in length than and facing opposite the front board and a horizontal top roof member interposed between the parallel front and backside board, and a horizontal top portion between the front and backside board, the front and backside boards being adapted in combination to releasably clamp a bunch of identical worksheets therebetween, and a hook centrally mounted in the top roof member and adapted to hang the clipboard, the hook having means to orient the clipboard in two alternative vertical planes perpendicular to each other whereby the clamped worksheets held beneath the horizontal roof member can be selectively faced in either of two directions, and a pair of engaging pins planted in an upper center portion of the backside board and each having a forward end thereof adapted for engagement with a pair of apertures bored in the front board, at locations just opposite the paired engaging pins, the

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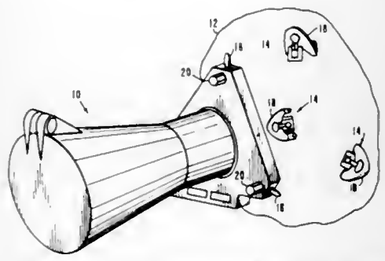
paired engaging pins being adapted to elastically buldge out the worksheets around the aperture, and penetrate a pair of holes centrally formed in an upper margin part of each worksheet clamped, when the worksheets are inserted into position in the main body.

5,253,944

PRECISION ALIGNMENT AND MOUNTING APPARATUS

Dennis R. Preston, Brookfield, Conn., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 22, 1991, Ser. No. 748,587
Int. Cl.[5] F16B *21/00*
U.S. Cl. 403—13 **11 Claims**



1. An alignment and mounting apparatus for aligning and mounting together first and second modules in a desired alignment position, comprising:
an alignment pin mounted to said first module;
a three-stage alignment means mounted to said second module for guiding and aligning said alignment pin to the desired alignment position, said three-stage alignment means having three alignment elements each providing finer alignment precision including a shoehorn flange providing a broad capture range for the alignment pin, said shoehorn flange having a funnel shape for funneling the pin towards an exit opening, a Y-slot formed at the opening of the shoehorn flange for reducing allowable alignment pin motion and a block having a V-groove juxtaposed with the Y-slot for providing a seated alignment for the alignment pin; and
fastening means for mounting said first and second modules together.

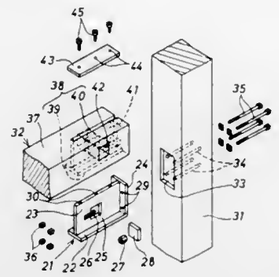
5,253,945

METAL CONNECTOR FOR BUILDING AND JOINTING STRUCTURE OF BUILDING USING THE SAME

Kiyoshi Hosokawa, 779 Sasagase-cho, Hamamatsu-shi, Shizuoka-ken, Japan

Filed Dec. 31, 1991, Ser. No. 815,143
Int. Cl.[5] B23G *3/00*
U.S. Cl. 403—258 **16 Claims**

1. A metal connector for jointing first and second members of a building to each other, comprising:
a metal connector body including a bottom plate and a core plate secured vertically to an upper face of said bottom plate, said core plate having a window hole formed therein;
a bolt, said bolt being secured at a base end portion thereof to an inner periphery of said core plate around said window hole such that the free end portion of said bolt extends into said window hole with a spacing left between the free end portion of said bolt and an opposing portion of the inner periphery of said window hole;
said metal connector body being connected, at a longitudinal end thereof remote from said bolt, to said second member;
said first member having a fitting recess formed at a jointing end portion thereof in a profile suitable to closely receive said bottom plate and said core plate of said metal connector body, said fitting recess being open to a bottom of said first member;
said first member further having a working window hole formed contiguously to said fitting recess therein;
a nut screwed on the free end portion of said bolt; and
a holding plate inserted in said spacing between said nut and an opposing peripheral portion of said working window



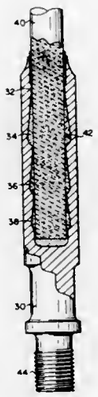
hole, and wherein said nut is turned in a predetermined direction to axially move on said bolt to push against said holding plate, said holding plate thus pushing against the opposing peripheral portion of said working window hole to force said first member to move toward said second member until a longitudinal end of said first member is closely contacted with said second member.

5,253,946

SUCKER ROD END FITTING

Damon L. Watkins, Levelland, Tex., assignor to Dover Resources, Inc., Tulsa, Okla.

Filed May 20, 1992, Ser. No. 886,525
Int. Cl.[5] F16B *11/00*
U.S. Cl. 403—268 **7 Claims**



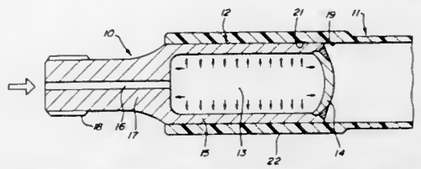
1. A connector to connect the end of a cylindrical rod, which connector comprises:
an elongated body having a receptacle opening therein, the opening providing a receptacle wall; and
said receptacle wall being defined by a plurality of axially aligned tapered annuluses, each annulus having a cross-section defined by a pair of opposed ends, one end asymptotically approaching said receptacle wall in a convex curve as viewed from within said receptacle and the opposite end arcuately approaching said receptacle wall in a concave curve as viewed from within said receptacle.

5,253,947

CONNECTION BETWEEN A TUBULAR SHAFT MADE OF A FIBER COMPOSITE MATERIAL AND A METAL JOURNAL, AS WELL AS A METHOD OF PRODUCING SUCH A CONNECTION

Miloslav Petrzelka, Much-Kranuchel; Werner Hoffmann, Siegburg, and Thomas Schafferus, Rheinberg, all of Fed. Rep. of Germany, assignors to GKN Automotive AG, Siegburg, Fed. Rep. of Germany

Filed Oct. 22, 1991, Ser. No. 780,764
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1990, 4033593; Mar. 7, 1991, 4107222
Int. Cl.[5] F16C *3/00*; F16B *4/00*
U.S. Cl. 403—274 **18 Claims**



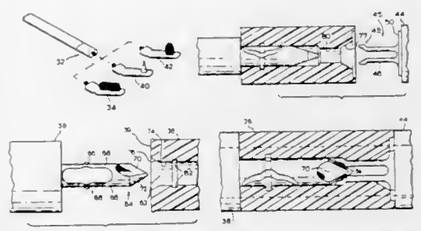
1. A locking connection for transmitting torque comprising:
a fiber composite hollow tubular shaft being capable of elastic radial expansion;
a metallic connecting element having a hub journal plastically expanded within said tubular shaft elastically expanding said tubular shaft; and
said hub journal having a plastically expandable chamber means, capable of being pressurized for expanding said hub journal within said tubular shaft, said hub journal being in a compressive connecting relationship to said elastically expanded tubular shaft such that said shaft and said connecting element maintain a locked connection.

5,253,948

CONNECTOR FOR RELEASABLY CONNECTING AND LOCKING A FIRST MEMBER TO A SECOND MEMBER

Peter R. Butler, 504 Riverside Drive, London, Ontario, Canada

Continuation-in-part of Ser. No. 223,135, Jul. 22, 1988, abandoned. This application Jul. 30, 1991, Ser. No. 737,645
Int. Cl.[5] B25G *3/24*; A46B *17/00*
U.S. Cl. 403—289 **4 Claims**



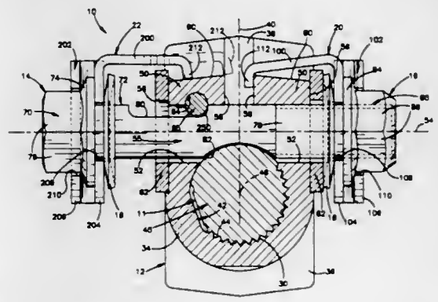
2. A connector for releasably connecting and locking a first member to a second member in alignment on a longitudinal axis, comprising:
a first member having an integral connecting member extending from an end of said first member, said connecting member having two resilient arms, the ends of each arm having a retaining surface;
a second member having an integral locking member extending from an end of said second member, said locking member including an end surface for cooperation with said ends of said arms on said connecting member;
an intermediate member having two ends and a passage extending through the intermediate member from one end to the other, a shoulder within said passage, said shoulder cooperating with said retaining surfaces on said arms for releasably retaining said connecting member in said passage, and releasable connecting means adjacent said one end for releasably connecting said intermediate member to said second member, said releasable connecting means comprising outwardly extending projections on said locking member, said projections resiliently displaceable inwardly toward said longitudinal axis and outwardly extending recesses in said passage in said intermediate member, said projections engaging in said recesses when said locking member is pushed into said passage;
wherein the locking member of the second member extends into said passage through said one end and said connecting member extends into said passage through said other end, and said first member can be locked to said intermediate member by relative rotation of the locking member and the connecting member.

5,253,949

FAIL-SAFE UNIVERSAL JOINT CONNECTION

Gerald K. Oxley; Frederick D. Venable, and Jim L. Rau, all of Lafayette, Ind., assignors to TRW Inc., Lyndhurst, Ohio

Filed Jul. 21, 1992, Ser. No. 918,635
Int. Cl.[5] F16B *7/04*
U.S. Cl. 403—317 **21 Claims**

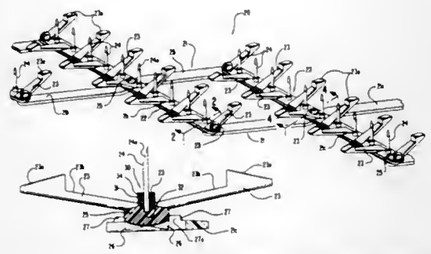


1. An apparatus comprising:
a bolt receiving member having a passage with an axis;
a bolt movable in said passage, said bolt having a partially installed position in said passage and an installed position in said passage, said bolt being movable along said axis in an axially inward direction from said partially installed position to said installed position; and
a spring clip means for moving with said bolt when said bolt is moved from said partially installed position to said installed position and for locking said bolt in said installed position, said spring clip means having first and second portions;
said first and second portions of said spring clip means having initial positions in which said first portion engages said bolt and said second portion engages said bolt receiving member;
said first and second portions of said spring clip means further having locking positions in which said first portion engages said bolt and said second portion interlocks with said bolt receiving member to block movement of said bolt out of said passage; and
said second portion of said spring clip means being movable in a first direction against a bias of said spring clip means from said initial position to an intermediate position upon a first amount of movement of said bolt in said axially inward direction from said partially installed position toward said installed position, and being movable in a second direction opposite the first direction and under the influence of said bias from said intermediate position to said locking position upon further movement of said bolt in said axially inward direction toward said installed position, whereby said second portion of said spring clip

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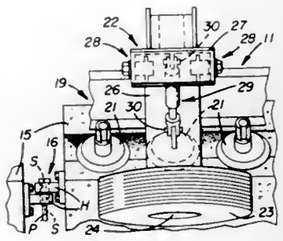
means moves resiliently into said locking position to interlock with said bolt receiving member upon movement of said bolt in said axially inward direction from said partially installed position to said installed position.

5,253,950
VEHICLE TIRE DEFLATOR
Donald C. Kilgrow, P.O. Box 844, Monticello, Utah 84535, and Melvin H. Pedersen, 845 Park St., Salt Lake City, Utah 84102
Filed Mar. 27, 1992, Ser. No. 859,071
Int. Cl.[5] E01F *13/00*
U.S. Cl. 404—6 14 Claims



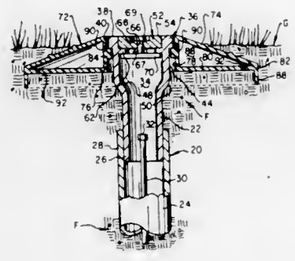
1. An improved vehicle tire deflator comprising, a plurality of rocker arm means; means for pivotally interconnecting said rocker arm means to allow for movement of said rocker arm means to a side-by-side folded relationship and to an end-to-end extended configuration; a plurality of spike boss means mounted at intervals along an upper surface of said rocker arm means; hollow spike seat means formed in each said spike boss means that each include a hole formed longitudinally into said spike boss means through the top thereof for receiving an end of a hollow spike, and which said hole is countersunk longitudinally, forming a cushioning sleeve seat for receiving a hollow spike cushioning sleeve snugly fitted therein; a straight hollow spike having a flat end for fitting into said spike boss means hole, and an opposite pointed end; a resilient cushioning sleeve for snugly fitting into said straight hollow spike; and rocker arms actuator means connected to extend outwardly and upwardly from said rocker arm means, each said rocker arm actuator means including a shoulder that is for first contact with a pneumatic tire rolling thereon.

5,253,951
DRIVE SYSTEM AND METHOD FOR TRANSFERRING BARRIER SYSTEMS
Steven L. Peek, Walnut Grove, Calif., assignor to Barrier Systems, Inc., Sausalito, Calif.
Filed Nov. 12, 1991, Ser. No. 790,364
Int. Cl.[5] E01F *13/00*
U.S. Cl. 404—6 16 Claims



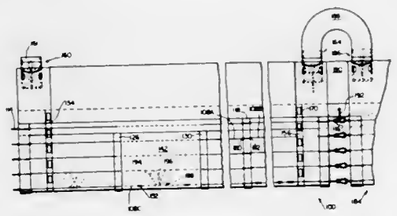
1. A mobile transfer and transport vehicle in combination with a barrier system having a plurality pivotally interconnected and closely spaced modules adapted to be positioned in free-standing relationship on a roadway or the like, said vehicle comprising a frame and conveyor means mounted on said frame for engaging, supporting, lifting and transferring said barrier system from a first side of said vehicle to a second side thereof, said conveyor means including a plurality of spaced guide means for engaging and supporting said modules and drive means for engaging said modules for either pulling said modules through said conveyor or retarding movement of said modules through said conveyor means, said drive means being movably mounted on the frame of said vehicle, independent of said guide means and disposed on at least one lateral side of said modules.

5,253,952
STABILIZER FOR UNDERGROUND VALVE HOUSING
Bruce W. Selway, 617 W. College, Jacksonville, Ill. 62650
Filed May 18, 1992, Ser. No. 884,377
Int. Cl.[5] E01F *5/00*
U.S. Cl. 404—25 10 Claims



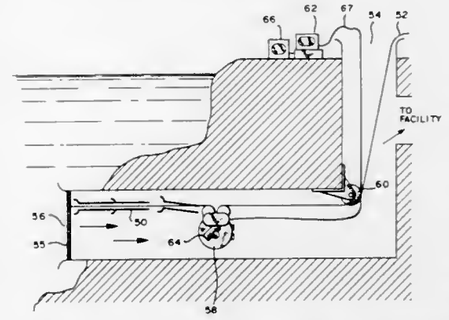
1. A support for a tubular section of an underground valve housing, said support having:
- a generally flat bottom wall;
- a conical top wall joined to said bottom wall;
- a tubular wall joined at opposite ends to said top and bottom walls;
- an inner cylindrical surface of said tubular wall defining an axial bore through said support;
- an outer cylindrical surface of said tubular wall coacting with said top wall and said bottom wall to define a hollow chamber in said support; and,
- a support surface projecting from said tubular wall into said bore to support said tubular section.

5,253,953
BOOM FOR CONTAINING OIL SPILLS
Malcolm B. Whidden, Jr., P.O. Box 280, South Harpswell, Me. 04079
Division of Ser. No. 571,148, Aug. 23, 1990, Pat. No. 5,087,152.
This application Dec. 10, 1991, Ser. No. 804,589
Int. Cl.[5] E02B *15/04*
U.S. Cl. 405—63 24 Claims



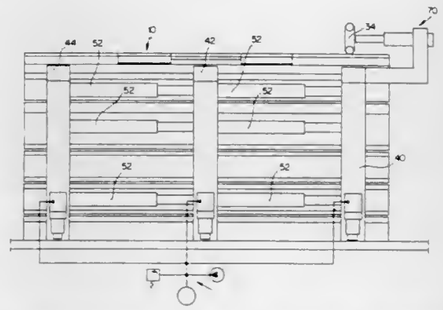
1. A boom section adapted to be connected to other boom sections for containing a substance on the surface of water, the boom section comprising:
- first and second independently inflatable and independently deflatable chambers, the chambers being made of a material flexible enough to allow the chambers to be substantially flat when deflated so as to facilitate snug winding of the boom section about a drum, the material also allowing the chambers to expand upon inflation, the first and second chambers arranged in a substantially parallel fashion;
- a substantially fluid-impermeable curtain, connected to the first and second inflatable chambers and disposed substantially parallel thereto; and
- a plurality of vertically spaced horizontal cables securely affixed to the curtain to substantially reduce slippage between the cables and curtain so that the cables provide support for the curtain, no two cables being at the same vertical height on the curtain and a plurality of the cables being located at heights away from top and bottom edges of the curtain, each of the cables terminating at first and second ends with first and second fastening means, respectively, the first fastening means adapted to be connected to a second fastening means on a preceding or subsequent boom section.

5,253,954
ALTERNATE INTAKE PIPE SYSTEM TO ELIMINATE ZEBRA MUSSEL COLONIZATION
Samuel E. Landsberger, Ithaca, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.
Filed Jul. 14, 1992, Ser. No. 913,014
Int. Cl.[5] E03B *3/04*
U.S. Cl. 405—127 19 Claims



1. An intake water pipe system for preventing or eliminating zebra mussel colonization along the interior walls of one or more intake water pipes comprising:
- a pump for supplying water to a facility;
- a main intake pipe having an inlet end in communication with a water source and an outlet end in communication with said pump;
- first and second generally parallel alternate intake pipes disposed within said main intake pipe, each having an inlet end in communication with said water source, an outlet end in communication with said pump, and a diameter smaller than that of said main intake pipe; and
- first controllable valve means disposed between said outlet end of said main intake pipe and said pump for selectively controlling the flow of water through said main intake pipe;
- whereby, water flow through said main intake pipe can be selectively controlled to prevent or eliminate zebra mussel colonization in said main intake pipe.

5,253,955
AUTOMATICALLY ADVANCING SUPPORTING AND SLIDING FORM FOR INTRODUCING AN IN-SITU CONCRETE LINING
Heinz-Theo Walbrohl, Nordstr. 73, D-5300, Bonn 1, Fed. Rep. of Germany
PCT No. PCT/EP91/00171, § 371 Date Jul. 29, 1992, § 102(e) Date Jul. 29, 1992, PCT Pub. No. WO91/11590, PCT Pub. Date Aug. 8, 1991
PCT Filed Jan. 30, 1991, Ser. No. 916,010
Claims priority, application Fed. Rep. of Germany, Jan. 30, 1990, 4002669
Int. Cl.[5] E21D *11/10*
U.S. Cl. 405—147 17 Claims



1. Self-travelling support and slide formwork for producing a concrete lining when finishing a gallery or tunnel or similar elongated structure with a formwork body (**10**) extending in the longitudinal direction of the structure and substantially parallel to its excavation wall, which is subdivided into several formwork segments (**14**) lying adjacent to one another in circumferential direction, where each formwork segment (**14**) comprises an outer formwork element (**16**, **16***a*) supported on an associated subconstruction (**18**), where the formwork elements (**16** **16***a*) collectively form an outer formwork surface, with a front formwork (**34**) which closes the front side of an annular space between the excavated wall of the structure (**2**) and the formwork body (**10**) and with a support construction carrying at least the subconstruction (**18**) of the formwork segments (**14**) comprising several support frames (**40**, **42**, **44**) arranged next to one another, where the support forces to be exerted by the formwork surface on the incoming concrete can be applied to the effective formwork outer surface by means of hydraulically driven transmission members (**50**), characterized in that the formwork segments (**14**) form formwork segment groups, that at least as many formwork segment groups (**12**, **22**, **32**) are provided as the number of support frames (**40**, **42**, **44**), that each formwork segment group (**12**, **22**, **32**) is rigidly connected to a different support frame (**40**, **42**, **44**) and is slidably mounted on the remaining support frames (**40**, **42**, **44**), that in each formwork segment (**14**) the transmission member (**50**) is arranged between the formwork element (**16**, **16***a*) and its associated subconstruction (**18**), that the formwork elements (**16**, **16***a*) and the associated subconstructions (**18**) are coupled in non-shiftable manner in longitudinal direction and that independently operable pressure/advancement means (**52**) are arranged between the individual support frames (**40**, **42**, **44**), with which each support frame (**40**, **42**, **44**) is shiftable with respect to the remaining support frames (**40**, **42**, **44**).

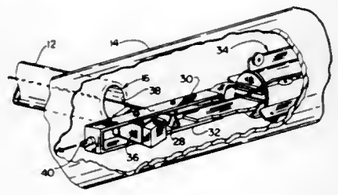
VOL 1155 ISS 3 OCT 19 1993 UMI

5,253,956

METHOD OF LINING BRANCH LINE

Benjamin T. Fisco, South Freeport, Me., and Hanz Tidhult, Jarfalla, Sweden, assignors to American Pipeline Supply, Corp., South Freeport, Me.

Filed Mar. 2, 1992, Ser. No. 844,476
Int. Cl.[5] F16L *55/16*
U.S. Cl. 405—154 9 Claims



1. A method of lining at least a selected portion of a first closed carrier such as a sewer lateral which makes a blind connection to a second closed carrier such as sewer main at a point remote from an access point to the sewer main so that the connection is therefore not readily accessible to a person, said method comprising the steps of:

providing an access opening at the distal end of the selected portion of the first carrier,

introducing a cable end into the distal end opening and guiding the cable through the first carrier, through the blind connection, into the second carrier and up through a point of access to the second carrier at a point remote from the connection,

attaching a liner to the cable at the distal end access opening, and

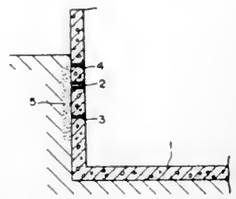
guiding the cable through the blind connection while pulling the liner with the cable through the lateral until the liner is positioned in the selected portion of the lateral.

5,253,957

METHOD OF STOPPING LEAK IN IN-GROUND CONCRETE STRUCTURE

Yutaka Fujikawa, Hirosbima, Japan, assignor to Asset Enterprise Co., Ltd., Tokyo, Japan

Filed Feb. 6, 1992, Ser. No. 832,039
Claims priority, application Japan, Oct. 7, 1991, 3-258835
Int. Cl.[5] E02D *37/00*; E04G *23/02*
U.S. Cl. 405—229 11 Claims



1. A method of stopping a leak of ground-water from a leaking portion of an in-ground concrete structure, comprising the steps of:

(a) forming a through-hole in a non-leaking portion of the in-ground concrete structure at a position adjacent to the leaking portion;

(b) injecting a filler material into said through-hole to a position on the ground side of the leaking portion of the in-ground concrete structure; and

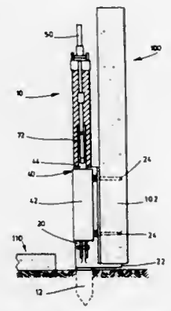
(c) causing said injected filler material to fill up said leaking portion from the ground side thereof by the pressure of ground-water, thereby sealing the leaking portion of the in-ground concrete structure.

5,253,958

DEVICE FOR DRIVING A STAKE INTO THE GROUND

Serge Bellemare, 3248 Hochelaga, Montrëal, Qc, Canada H1W 1G6

Filed Feb. 8, 1993, Ser. No. 14,764
Int. Cl.[5] E02D *7/20, 27/48*
U.S. Cl. 405—232 7 Claims



1. A device for driving a stake into the ground, said stake being driven along a driving axis, said device comprising:

a main frame having attaching means for securing said main frame to an inertial massive base;

a driving member having a hammering head for driving said stake;

jack means extending parallel to said driving axis and having a first portion intended to be secured to said main frame and a second portion which is mobile with respect to said first portion, said jack means having a power stroke and a return stroke;

at least two rods extending parallel to said driving axis, each of said rods having an end which is solid with said second portion of said jack means, said rods extending respectively through bores provided in said driving member, said rods being provided at predetermined distances along their length with at least two pairs of segments secured thereon, said segments having a diameter larger than a diameter of said rods and being able to go through said bores;

two gate means disposed onto said driving member, respectively around said bores, said gate means allowing said segments to go through said bores during said return stroke and preventing said segment from going through said bores during said power stroke to move said hammering head against said stake; and

guiding means attached onto said second portion of said jack means and having a bore to receive said stake so that said stake be substantially kept coaxial to said driving axis during said return and power strokes, whereby said device drives said stake into the ground as said hammering head is moved against said stake during said power stroke.

5,253,959

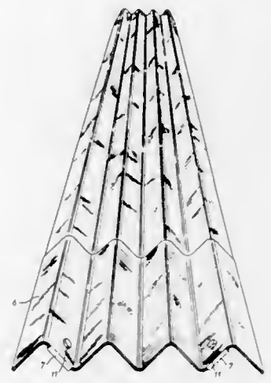
METHODS OF CONSTRUCTION AND IMPLEMENTS THEREFOR

Ian G. MacDonald; Ian R. MacDonald, and Cameron J. MacDonald, all of Mount Tamborine, Australia, assignors to Cenefill Pty Ltd, Australia

PCT No. PCT/AU89/00229, § 371 Date Dec. 14, 1990, § 102(e) Date Dec. 14, 1990, PCT Pub. No. WO89/11567, PCT Pub. Date Nov. 30, 1989
PCT Filed May 24, 1989, Ser. No. 623,927
Claims priority, application Australia, May 25, 1988, PI8426; Jun. 3, 1988, PI8597; Aug. 16, 1988, PI9873
Int. Cl.[5] E02D *3/02*
U.S. Cl. 405—279 21 Claims

1. A method of constructing a load bearing surface including at least one inter-connectable corrugated sheet, each inter-connectable sheet having at least one alternating radiused ridge and radiused trough connected by a linear web, said method comprising the steps of:

(a) providing at least one adapter also comprising a corrugated sheet having corrugations complementary to those



of said inter-connectable sheet, said at least one adapter having means for temporary attachment to said inter-connectable sheet;

(b) using said at least one adapter to place said inter-connectable sheet into its required position; and

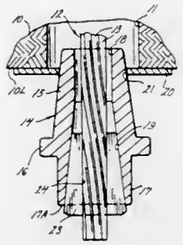
(c) removing each of said at least one adapter so that no adapters remain attached to said sheet.

5,253,960

CABLE ATTACHABLE DEVICE TO MONITOR ROOF LOADS OR PROVIDE A YIELDABLE SUPPORT OR A RIGID ROOF SUPPORT FIXTURE

James J. Scott, HCR 33, Box 36, Rolla, Mo. 65401

Filed Aug. 10, 1992, Ser. No. 926,996
Int. Cl.[5] E21D *21/00*
U.S. Cl. 405—302.2 10 Claims



1. A fixture for holding tension means supporting load bearing means in a passage formed in a geologic earth structure, the fixture comprising:

a) a body having an outer elongated tapering portion projecting in one direction from a circumferential flange encircling said body and an outer tool portion projecting from said flange opposite to said outer tapering portion, said body tapering portion and said tool portion being integral with said flange, and said body further having an internally directed cylindrical bore having an end opening outwardly from said tapering portion and an internal tapering bore forming an extension of said cylindrical bore and opening through said outer tool portion, said internally directed cylindrical bore and said internal tapering bore being sized to receive a load carrying member;

b) geologic earth support means in the form of a plate cooperating with said body tapering portion to assume an initial position spaced from said flange on said body tapering portion and being movable in response to geologic earth support to provide a visually observe change in the initial spacing of said plate along said outer tapering portion relative to said flange; and

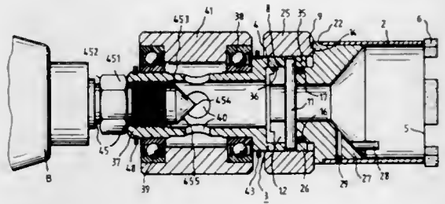
c) wedge means received in said internal tapering bore of said body, said wedge means engaging the tension means for retaining said body and plate means in geologic earth supporting cooperating positions.

5,253,961

COUPLING FOR DRILLING MACHINE WITH DUST EXTRACTOR

Bernd Geissler, Eicklingen, Fed. Rep. of Germany, assignor to Geissler & Kuper Gesellschaft Mit Beschränkter Haftung Diamantwerkzeuge Maschinen, Celle, Fed. Rep. of Germany

PCT No. PCT/EP90/00316, § 371 Date Oct. 7, 1991, § 102(e) Date Oct. 7, 1991, PCT Pub. No. WO90/12193, PCT Pub. Date Oct. 18, 1990
PCT Filed Feb. 24, 1990, Ser. No. 768,969
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1989, 3910946; Apr. 6, 1989, 3911159; Jun. 3, 1989, 890687
Int. Cl.[5] B25D *17/18*
U.S. Cl. 408—58 16 Claims



1. A drilling device comprising

(a) a housing having a housing wall;

(b) a hollow, cylindrical drive member accommodated in said housing and having a drive member wall, an interior and opposite first and second end portions;

(c) two axially spaced bearings mounted in said housing and supporting said drive member for rotation relative to said housing;

(d) a tubular shank adjoining said first end portion of said drive member and being torque-transmittingly connected therewith; said tubular shank having an interior being in communication with the interior of said drive member;

(e) a drill bit carried on said tubular shank;

(f) a port means passing through said housing wall for passage of drill cuttings from an interior of said housing;

(g) an opening provided in said drive member wall between said bearings for maintaining communication between the interior of said drive member and the interior of said housing to provide for passage of drill cuttings from the interior of said drive member to the interior of said housing; said opening in said drive member wall having a border portion oriented away from said tubular shank;

(h) a flow deflection member supported in said drive member in said second end portion thereof; said flow deflection member including a flow deflection surface extending to said border portion of said opening in said drive member wall; and

(i) means for preventing a clogging of a flow path of drill cuttings from the interior of said tubular shank to the interior of said drive member.

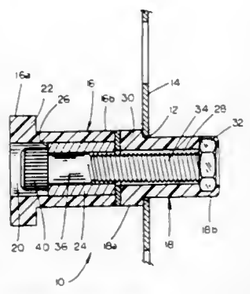
VOL 1155 ISS 3 OCT 19 1993 UMI

5,253,962

CHOCK HANGER

John W. Close, Jr., 980 S. 72nd St., Omaha, Nebr. 68114

Filed Oct. 15, 1992, Ser. No. 969,922
Int. Cl.[5] F16B *13/04*
U.S. Cl. 411—34 8 Claims



1. A chock hanger, comprising:
an elongated hanger body having first and second ends and a cylindrical aperture extending lengthwise therethrough;
a tubular bushing positioned coaxially within said cylindrical aperture, having first and second ends, an inner diameter, and an outer diameter;
a rigid flat washer having an aperture therethrough and forward and rearward faces, positioned with its forward face against the second ends of said hanger body and bushing and coaxial therewith;
said washer aperture having a diameter less than the outer diameter of the bushing such that the second end of the bushing contacts the forward face of the washer;
an elongated connector body of a resilient flexible material with memory, having first and second ends and a cylindrical aperture extending lengthwise therethrough;
said connector body aperture having a diameter substantially the same as the inner diameter of said washer;
said connector body having a flange formed at the first end thereof projecting annularly outwardly therefrom;
a nut immovably mounted in the second end of said connector body with a threaded aperture located coaxial with the connector body aperture;
said connector body front end positioned in abutting contact with the rearward face of said washer with the connector body aperture aligned with the washer aperture; and
a screw having a cap and threaded shank, the threaded shank journaled through said bushing, washer aperture and connector body aperture and threaded into said nut;
said screw cap having a diameter greater than the inner diameter of the bushing such that the cap will contact the bushing first end when the shank is threaded into the nut.

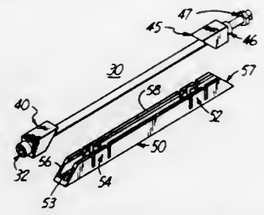
5,253,963

SNAP TOGETHER WEDGELOCK

Andrew J. Ries, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 806,945, Dec. 11, 1991, Pat. No. 5,156,647. This application Jul. 15, 1992, Ser. No. 913,333
The portion of the term of this patent subsequent to Oct. 20, 2009, has been disclaimed.
Int. Cl.[5] F16B *13/04*
U.S. Cl. 411—75 7 Claims

1. A snap-together wedgelock assembly comprising:
a screw assembly comprising a screw, a first wedge and a second wedge, said screw being passed through said first wedge and said second wedge; and
a main wedge having a longitudinal axis, a first end, a second end and a top portion, said main wedge further having a channel along said longitudinal axis being open at said first end, said second end and said top portion, said channel adapted such that said screw may be inserted into said channel through said top portion and along said longitudinal axis, said main wedge having deformable walls on opposite sides of said channel along at least a portion of said longitudinal axis, said deformable walls retaining said



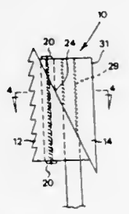
screw when said screw assembly is inserted into said main wedge, wherein said first wedge is located at said first end, said second wedge is located at said second end and said screw is located in said channel along said longitudinal axis.

5,253,964

ROCKBOLT ANCHORING HEAD

Theodore D. Swemmer, Transvaal, South Africa, assignor to Hugo Trustees, Channel Islands

Filed Apr. 7, 1992, Ser. No. 864,591
Claims priority, application South Africa, Apr. 22, 1991, 91/2989
Int. Cl.[5] F16B *13/04*
U.S. Cl. 411—79 6 Claims



1. A rockbolt anchoring head comprising a first wedge member which has "a wedge surface, the first wedge member having a U-shape in cross section and being formed with a passage defined by the arms of the U-shape for receiving a" rockbolt, a second wedge member which has a wedge surface complemental to that of the first wedge member and which is connectable to the rockbolt, the wedge surfaces of the first and second wedge members being arranged in sliding relationship with one another, and biasing means acting between the first and second wedge members to cause relative sliding movement between the wedge surfaces, the wedge members in combination forming a body which is non-circular in a cross-section taken transversely to the axis of the rockbolt.

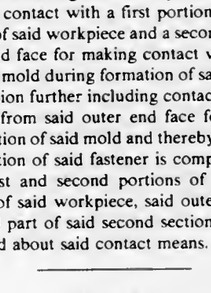
5,253,965

PIERCING FASTENER WITH ADHESIVE

Jeffrey R. Angel, Oxford, Mich., assignor to Progressive Tool & Industries Co., Southfield, Mich.

Filed Apr. 13, 1992, Ser. No. 867,481
Int. Cl.[5] F16B *39/00, 39/02*
U.S. Cl. 411—82 21 Claims

1. A fastener comprising:
a shank having a longitudinal axis;
a head disposed at one end of said shank;
piercing means disposed at an opposite end of said shank;
a plurality of barbs disposed on said opposite end of said shank, said plurality of barbs projecting in a direction away from said longitudinal axis of said shank;



a groove extending along said shank; and
an adhesive disposed in said groove.

5,253,966

FASTENER FOR A MOLDED WORKPIECE

William J. Clemens, Plymouth; Dale M. Mayol, Belleville, both of Mich., and John J. Anderton, Jr., Oil City, Pa., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 20, 1992, Ser. No. 886,268
Int. Cl.[5] F16B *23/00, 35/06;* B41B *11/58*
U.S. Cl. 411—399 7 Claims

1. A fastener adapted to be at least partially embedded within a molded workpiece, said fastener comprising:
a first threaded section; and
a second section having a first end part defining a shoulder for making contact with a first portion of a mold during formation of said workpiece and a second end part having an outer end face for making contact with a second portion of said mold during formation of said workpiece, said second section further including contact means extending outwardly from said outer end face for contacting said second portion of said mold and thereby ensuring that said second section of said fastener is compressively engaged by said first and second portions of said mold during formation of said workpiece, said outer end face of said second end part of said second section including a relief area formed about said contact means.

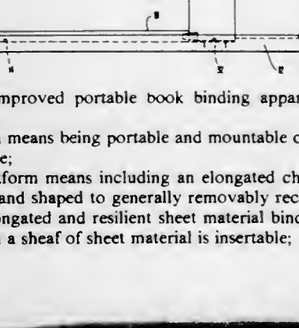
5,253,967

ADAPTER ASSEMBLY FOR TENSIONING THREADED FASTENERS AND METHOD OF TENSIONING THREADED FASTENERS

Joseph N. Orban, South Plains, and John A. Braun, Kenilworth, both of N.J., assignors to Biach Industries, Cranford, N.J.

Filed Nov. 8, 1991, Ser. No. 789,509
Int. Cl.[5] F16B *37/08, 37/14;* B23P *11/02*
U.S. Cl. 411—432 14 Claims

1. A method of adapting a threaded fastener extending from a shaft for use with tensioning apparatus comprising the steps of:
removing an existing fastening nut from the threaded fastener;
threading an adapter nut over the fastening shaft for the full length of the shaft;
threading a fastening nut over the adapter nut;
positioning the tensioner about the threaded shaft and adapter nut and fastening nut;
threading a puller bar from the tensioner into a threaded receptacle of the adapter nut to connect the tensioner to the adapter nut;
pulling the puller bar means to stretch the fastening shaft and



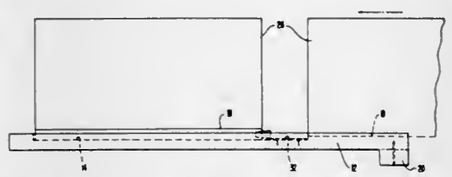
thereby lift the fastening nut connected to the adapter nut off the flange from which the threaded shaft extends;
threading the fastening nut along the adapter nut until it contacts the flange through which the fastening shaft extends;
relaxing the tension on the puller bar to relax the upward stress on the tensioner adapter nut and create a downward stress on the tensioner adapter nut by the action of the threaded shaft;
unthreading the puller bar from the tensioner adapter nut, removing the tensioner from about the tension threaded shaft and fastening nut assembly; and
threading a dust cap over the exposed end of the tensioner adapter nut.

5,253,968

PORTABLE BOOK SPINER APPARATUS

Dennis C. Paedae, Jr., 5045 Carpenter Creek Dr., Pensacola, Fla. 32503

Filed May 26, 1992, Ser. No. 888,155
Int. Cl.[5] B42B *5/06*
U.S. Cl. 412—34 4 Claims



1. An improved portable book binding apparatus which comprises:
platform means being portable and mountable on a support surface;
said platform means including an elongated channel being sized and shaped to generally removably receive therein an elongated and resilient sheet material binder clip into which a sheaf of sheet material is insertable;

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guiding and spreading means adjacent an entrance to said binder clip receiving channel;

said guiding and spreading means includes at least a pair of elongated and spaced apart, flexibly resilient guiding and spreading fingers which are adapted to protrude longitudinally into said receiving channel;

said guiding and spreading fingers are spaced apart at least by a predetermined distance and are constructed and mounted so as to be inserted between leading end portions of leg portions of the binder clip so as to spread apart the leading end portions, to thereby allow and guide a sheaf of sheet material between said guiding and spreading finders and into and between the leg portions of the binder clip;

said receiving channel facilitates guiding of the binder clip in said channel onto said guiding and spreading fingers so that said guiding and spreading fingers spread apart at least the end portions of the clip leg portions thereby facilitating slidable insertion of a sheaf of papers between the guiding and spreading fingers into and between the binder clip leg portions.

5,253,969

FEEDING SYSTEM FOR STRIP MATERIAL, PARTICULARLY IN TREATMENT PLANTS FOR METAL STRIPS

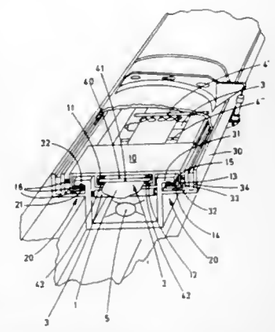
Withold Richert, Hückelhoven, Fed. Rep. of Germany, assignor to SMS Schloemann-Siemag Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 491,946, Mar. 12, 1990, abandoned. This application May 11, 1992, Ser. No. 883,814

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1989, 3907749

Int. Cl.[5] B23Q *5/00*

U.S. Cl. 414—17 **4 Claims**



1. In a feeding system for strip material for transporting a strip over a conveying distance of limited length, the improvement comprising the feeding system including a transfer carriage and a rail guide for guiding the transfer carriage, the transfer carriage defining a chamber for receiving the strip, the transfer carriage having means for fastening the strip during feeding of the strip over the conveying distance by temporarily holding the beginning of the strip, the transfer carriage having at both sides thereof a reversible linear motor each for driving the transfer carriage over the conveying distance, each linear motor having current-carrying active motor components and permanent magnets as reaction components, the active motor components being integrated int he rail guide and the reaction components being integrated in the transfer carriage, the transfer carriage being plate-shaped, the transfer carriage having at both sides thereof vertically extending flanges and horizontally extending flanges connected to the vertically extending flanges, the flanges extending in travel direction of the carriage and forming chambers which are open toward the center of the carriage, the rail guide having outwardly directed horizontal webs for engagement in the chambers in a labyrinth-like manner, the rail guide having additional outer horizontal webs and vertically upwardly extending webs, wherein the horizontal web is located underneath the horizontal flange of the transfer carriage and the vertical webs are located outside of the vertically extending flange of the carriage, the vertical and horizontal flanges of the transfer carriage being equipped with guide rollers with vertically and horizontally extending axes for guiding the transfer carriage on the vertical and horizontal webs of the rail guide, the horizontal webs of the rail guide extending into the chambers being provided on the bottom surfaces thereof with the active motor components and the horizontal flanges of the transfer carriage being provided on the upper surfaces thereof with the permanent magnets of the reaction components of the linear motors.

5,253,970

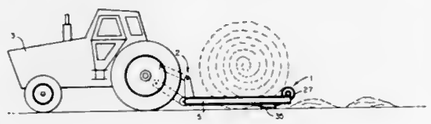
ROUND HAY BALE DISPENSER

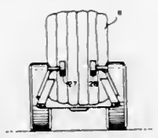
William L. Bashaw, III, Rte. 1, Box 277, Goshen, Va. 24439

Filed Aug. 13, 1992, Ser. No. 929,129

Int. Cl.[5] A01D *90/12*

U.S. Cl. 414—24.6 **5 Claims**





1. A round hay bale dispenser comprising a transversely extending main frame adapted to be connected to a conventional three-point hitch on a tractor, a pair of spaced, longitudinally extending arm, means for pivotally connecting the forward end of each arm to a respective end of said transversely extending main frame, power means operatively connected between said main frame and said arms for moving said arms simultaneously laterally relative to each other to vary the space therebetween, a round bale of hay supported on the ground and positioned in the space between said arms to be guided thereby, said arms having a cross-sectional configuration permitting sliding and frictional engagement with said round bale of hay substantially below a transverse axis, and a freely rotatable wheel mounted on the opposite end of each arm and extending inwardly into the space between the arms, said wheels frictionally engaging the peripheral surface of the hay bale at opposite end portions thereof when the tractor pulls the arms causing the hay bale to roll on the ground about an axis transverse to a longitudinal axis, whereby the frictional engagement of the freely rotatable wheels with the opposite end portions of the bale cause the hay to be pulled from the bale and fall on the ground in chunks, rather than layers, thereby making the hay more palatable for livestock to be fed.

5,253,971

WASTE MATERIAL LOADING DEVICE

J. Keith Weinlader, 337 Ludwell Dr., Lancaster, Pa. 17601

Filed Apr. 6, 1992, Ser. No. 864,457

Int. Cl.[5] B65G *65/38*

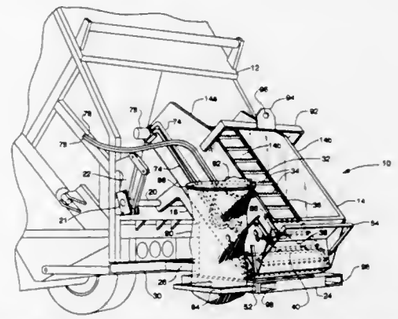
U.S. Cl. 414—412 **18 Claims**

1. A device for loading waste material into a refuse collection vehicle, said device comprising:

a trough attached to a rear end of the refuse collection vehicle;

an inclined conveyor disposed in said trough, said conveyor having a lower end and an upper end;

anchoring means disposed at the lower end of said conveyor for anchoring a bag containing waste material; and



means on said conveyor for tearing open said bag so that the waste material is emptied from the bag and carried by said conveyor into the rear end of the refuse collection vehicle.

5,253,972

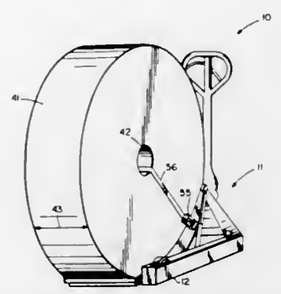
ROLL DOLLY

Wilbur Drew, Dover, and Ross A. Freeman, Somersworth, both of N.H., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Jan. 30, 1992, Ser. No. 827,210

Int. Cl.[5] B65G *7/00*

U.S. Cl. 414—469 **20 Claims**



12. A roll transporting mechanism, comprising

a frame including first and second substantially parallel support arms elongated in a first dimension, and spaced from each other in a second dimension generally transverse to the first dimension; said arms having first and second ends;

wheel means operatively mounted to said frame for facilitating wheeled transport thereof;

means for receiving a roll between said arms, said roll receiving means comprising a rigid cradle pivotally mounted to and between said arms; said cradle having a first end and a second end, said second end of said cradle being closer to said arms second ends than said first end of said cradle is; and said cradle being pivotally mounted to said arms about a generally horizontal axis, adjacent said first ends of said arms between said wheel means and said first ends and said arms; and

at least one shock absorber mounted between said arms and said second end of said cradle.

18. A method of transporting a roll of web material having a central hollow core and a weight of more than one hundred pounds using a transporting mechanism having a pair of spaced wheeled arms with a cradle pivotally mounted between the arms and having an entry end, and a jack for jacking one end of the arms upwardly, comprising the steps of:

(a) ensuring that the jack has jacked up the arms;

(b) wheeling the mechanism into operative association with a roll of web material so that the roll is at the entry end of the cradle;

(c) rolling the roll into the cradle with the hollow core of the roll horizontal, the weight of the roll causing the cradle to pivot to a position in which the roll cannot spontaneously roll back out the entry end of the cradle;

(d) wheeling the mechanism to a position where the roll is desirably to be placed;

(e) lowering the arms to roughly floor level, allowing the cradle to pivot forward to a position in which the roll can be removed; and

(f) rolling the roll out of the cradle at the desired position.

5,253,973

VEHICLES AND VEHICLE LIFTS

Percy Fretwell, Nordern, England, assignor to Ricon UK Limited, Manchester, England

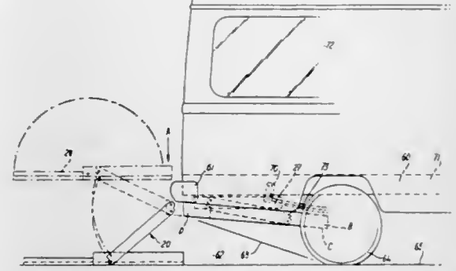
PCT No. PCT/GB89/01316, § 371 Date May 3, 1991, § 102(e) Date May 3, 1991, PCT Pub. No. WO90/05072, PCT Pub. Date May 17, 1990

PCT Filed Nov. 3, 1989, Ser. No. 681,542

Claims priority, application United Kingdom, Nov. 5, 1988, 8825951; Mar. 16, 1989, 8906059; May 17, 1989, 8911276

Int. Cl.[5] B60P *1/44*

U.S. Cl. 414—558 **10 Claims**



1. A lift adapted to be affixed to a vehicle for movement of a load between raised and lowered positions, the lift comprising:

a platform structure for receiving the load to be moved between the raised and lowered positions;

a mounting structure including at least a pair of elongate spaced-apart rail members adapted to be affixed to said vehicle to receive said platform structure therebetween for storage from a position intermediate said raised and lowered positions;

at least one parallelogram structure coupling said platform structure to said mounting structure and including upper and lower substantially parallel arms with inner and outer ends pivotally coupled respectively to said mounting structure and said platform structure to define an unequal modified parallelogram whereby to carry said platform structure so as to change the inclination motion pattern of the platform as between said raised and lowered positions to incline slightly downwards as it extends outwards from the vehicle when in the lowered position and to incline slightly upwards as it extends outwards from the vehicle in the raised position; and

motive means for driving said parallelogram mechanism between said raised and lowered positions.

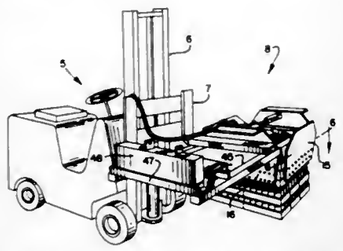
VOL 1155 ISS 3 OCT 19 1993 UMI

5,253,974

GRAPPLE CLAMP FOR LIFTING GROUPS OF OBJECTS

John A. Williams, 932 E. 194 St., Glenwood, Ill. 60425

Filed Nov. 17, 1992, Ser. No. 977,774
Int. Cl.[5] B66F 9/18
U.S. Cl. 414—623 8 Claims



1. In a grapple clamp for engaging a plurality of objects with sufficient equalized clamping force from four sides to permit lifting thereof, comprising, rectangular frame means, four hinge means mounted in rectangular configuration on said frame means, an elongated clamp jaw having an elongated clamping surface carried on each of said hinge means so as to provide two pairs of elongated clamp jaws with the jaws in each pair and said clamping surfaces thereon being swingable toward and away from each other and with the direction of swinging of each pair of clamp jaws being at 90° to the direction of swinging of the other pair, said clamp jaws forming a rectangular enclosure, and an axially extendable fluid-powered actuator operably interconnected between the clamp jaws of each pair thereof for forcibly swinging the clamp jaws and clamping surfaces of each pair toward each other, each of said fluid-powered actuators having a fluid connection through which fluid under pressure may be introduced to actuate the pair of clamp jaws operably interconnected by the actuator, and common fluid conduit means interconnecting said fluid-introducing connections on said actuators whereby the clamping forces exerted by said two pairs of clamp jaws are equalized, the improvement comprising:

a vertically extending load stabilizer block, and means suspending said load stabilizer block from a central position within said rectangular frame means whereby said block serves as a solid core within a surrounding group of objects clamped together by said grapple clamp.

5,253,975

CAR LOADING APPARATUS

Hiroyuki Takaguchi, Nagasaki, Japan, assignor to Taiyo Seiki Iron Works Co., Ltd., Osaka, Japan

Continuation of Ser. No. 640,623, Dec. 21, 1990, abandoned. This application Nov. 15, 1991, Ser. No. 794,620
Claims priority, application Japan, Dec. 21, 1989, 1-333586; Jun. 21, 1990, 2-164981; Jul. 4, 1990, 2-179286; Oct. 24, 1990, 2-289904
Int. Cl.[5] B60P 3/08
U.S. Cl. 414—786 7 Claims

7. A method for loading a container with cars, comprising the steps of:

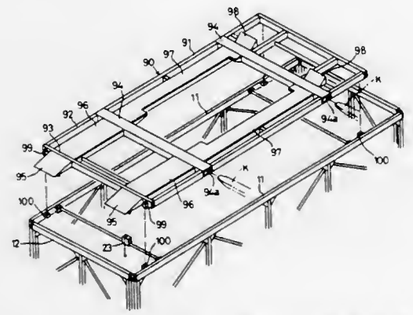
assembling, outside of the container, a substantially rectangular box-shaped car loading apparatus having a base frame and an upper car loading frame spaced above said base frame;

moving a first car into a first predetermined position on said base frame of said car loading apparatus while said car loading apparatus is outside of the container;

moving a second car into a second predetermined position on said upper car loading frame of said car loading apparatus while said car loading apparatus is outside of the container;

lashing down the second car to said upper car loading frame of said car loading apparatus in such a manner as to forcibly compress compressible components of the second car to lower the overall height of the second car;

moving said car loading apparatus into the container after said car loading apparatus has been assembled, the first car has been moved into said first predetermined position on said base frame, and the second car has been moved into said second predetermined position on said upper car loading frame and lashed down to said upper car loading frame;



wherein said step of assembling said car loading apparatus comprises providing side frames, assembling said base frame with said side frames prior to moving the first car into said first predetermined position on said base frame, and assembling said upper car loading frame on said side frames above said base frame after the first car has been moved into said first predetermined position on said base frame; and

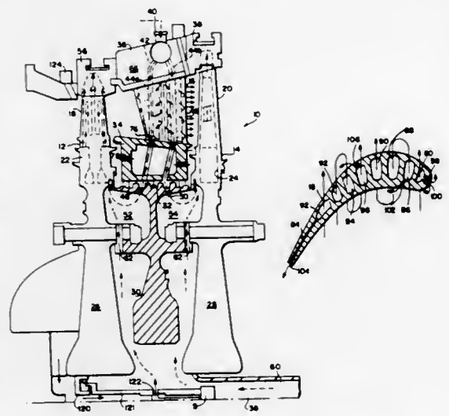
wherein said step of moving the second car onto said upper car loading frame is performed prior to assembly of said upper car loading frame on said side frames.

5,253,976

INTEGRATED STEAM AND AIR COOLING FOR COMBINED CYCLE GAS TURBINES

Francisco J. Cunha, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 19, 1991, Ser. No. 794,032
Int. Cl.[5] F01D 5/18
U.S. Cl. 415—114 24 Claims



1. A cooling system for a gas turbine comprising:

a pair of axially spaced, rotatable turbine stages, each having a plurality of turbine blades for disposition in a gas flow through said turbine;

said turbine blades each having at least one interior passage extending from an inlet port adjacent a root portion of the blade to an outlet port adjacent a tip portion of the blade;

a nozzle stage between said turbine stages and including a plurality of nozzle vanes for disposition in the gas flow;

each said vane having at least one interior passage having an inlet and an outlet adjacent respective radially outer and inner end portions of said vane for passing steam from said inlet radially inwardly through said vane to said outlet;

a spacer between said turbine stages and rotatable therewith;

at least one passageway through said spacer and in communication with said outlets for said vanes and said inlet ports for said turbine blades for flowing steam from said nozzle vanes to said turbine blades, whereby steam may flow through said passages in said blades to cool said blades.

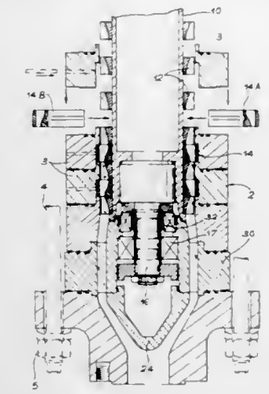
19. A blade for the turbine stage of a gas turbine, comprising:

a body having a discrete length and a general airfoil shape, with pressure and suction sides, tip and root portions and leading and trailing edges;

a plurality of discrete internal passages extending lengthwise along said blade having inlet and outlet ports adjacent said root and tip portions, respectively, for flowing cooling fluid through the blade including a pair of single-pass passages adjacent said leading and trailing edges, respectively, and first and second multi-pass passages intermediate said leading and trailing edges and said single-pass passages;

each of said first and second multi-pass passages having first, second and third discrete passageways for flowing cooling fluid from said root portion toward said tip portion, back toward said root portion and finally toward said tip portion, respectively, to cool intermediate portions of said blade, said third passageways disposed adjacent one another, said first and second passageways of said first multi-pass passage being disposed between the leading edge and said third passageway thereof, said first and second passageways of said second multi-pass passage being, disposed between the trailing edge and said third passageway thereof whereby cooling fluid flows through said first and second passages generally toward one another for exit through outlets thereof substantially medially of the airfoil-shaped body and at said tip portion of said blade.

permit their installation around the assembly constituted by the shaft (10) and the pulsating systems (12), and a central part of



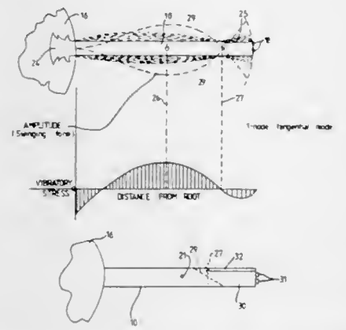
the main body (2) is constituted by at least as many washers (3) as there are stages.

5,253,978

TURBINE BLADE REPAIR

Michael J. Fraser, Gloucestershire, United Kingdom, assignor to Turbine Blading Limited, United Kingdom

Filed Apr. 24, 1992, Ser. No. 874,298
Claims priority, application United Kingdom, Apr. 26, 1991, 9109016
Int. Cl.[5] F01D 5/10
U.S. Cl. 416—190 14 Claims



1. A method of repairing a turbine blade provided with an inner, root end and an opposed outer end and having a damaged part adjacent the outer end of the blade, comprising:

(a) determining the position of a node of minimum amplitude of oscillation of the blade along its length between the inner end and the outer end at the resonance frequency of the blade when it is unrestrained except by attachment of the root to a rotor;

(b) separating the damaged outer part of the blade in the region of the node the position of which is determined in accordance with step (a) thereby leaving a residual, undamaged part of the blade including the root, and

(c) joining a new outer end part to the residual part of the blade in the region of separation according to step (b).

8. A repaired turbine blade of the type having an inner, root end and an opposed, outer end and wherein a portion of the blade including the outer end comprises a new part joined to a residual original part at a joint located in the region of a node

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5,253,977

MULTISTAGE PUMP FOR TWO-PHASE EFFLUENTS

Jean-Edmond Chaix, Pierrevert, France, assignor to Technicatome Societe Technique Pour L'Energie Atomique, France

Filed Dec. 10, 1991, Ser. No. 805,100
Claims priority, application France, Dec. 14, 1990, 90 15698
Int. Cl.[5] F01D 1/04, 9/04
U.S. Cl. 415—199.5 6 Claims

1. A multistage pump comprising a main body (2) having an inlet end and an outlet end, said inlet end being sealed by an inlet flange and said outlet end being sealed by an outlet flange, a shaft (10) placed in the main body (2) and to which are joined pulsating systems (12), and straighteners (14) fixed within the main body (2) and alternating with the pulsating systems (12), wherein the shaft (10) and the pulsating systems (12) form a one-piece assembly, each straightener (14) is constituted by two half-rings (14A, 14B) inserted in a washer (3) so as to

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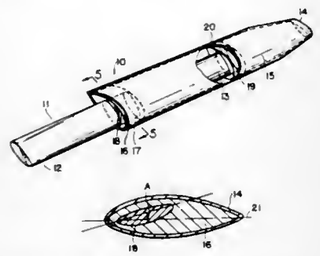
the position of which is determined as a position of minimum amplitude of oscillation of the blade along its length from the inner end to the outer end at the resonance frequency of the blade when it is unrestrained except by attachment of the root to a rotor.

5,253,979

VARIABLE DIAMETER ROTOR HAVING AN OFFSET TWIST

Evan A. Fradenburgh, Fairfield; S. Jon Davis, Orange; Robert C. Moffitt, Seymour, and Joseph A. Visintainer, Beacon Falls, all of Conn., assignors to United Technologies Corporation, Stratford, Conn.

Filed Jun. 1, 1992, Ser. No. 891,577
Int. Cl.[5] B64C *11/16*
U.S. Cl. 416—223 R 9 Claims



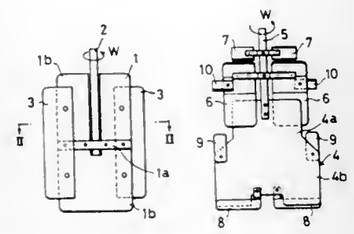
1. A variable diameter rotor blade comprising:
an inboard airfoil section, an outboard airfoil section, means for telescoping the outboard section relative to the inboard section for varying the blade diameter,
the inboard section having a linear twist from a root end to an outboard end thereof,
the outboard section having a linear twist from a root end to an outboard end thereof and having a chamber therein for slidably receiving the inboard section,
bearing means disposed within the chamber for supporting the inboard section, the bearing means having a passage, disposed at an offset angle relative to the plane of the outboard section, through which the inboard section is slidable, the outboard section being disposed at an offset twist relative to the inboard section in the amount of the offset angle to provide a twist transition between the inboard and outboard sections.

5,253,980

AGITATING VANE

Shigeru Nishioka, Tokyo, and Mikio Asai, Kawaguchi, both of Japan, assignors to Satake Chemikal Equipment Mfg., Ltd., Moriguchi, Japan

Filed Jun. 29, 1992, Ser. No. 905,824
Claims priority, application Japan, Oct. 28, 1991, 3-095902
Int. Cl.[5] B01F *7/16*
U.S. Cl. 416—231 A 5 Claims



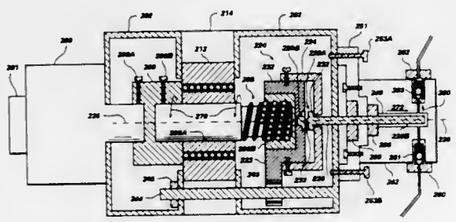
1. An agitating vane comprising:
a rotary shaft,
a plate-like vane arranged at an extreme end of a rotary shaft to agitate a liquid, a plane of said plate-like vane extending substantially parallel to a rotational axis of said rotary shaft so that one surface of said plate-like vane faces upstream in a rotational direction; and
auxiliary vanes covering a part of the upstream surface of said plate-like vane, with a clearance being left between the upstream surface and the auxiliary vanes.

5,253,981

MULTICHANNEL PUMP APPARATUS WITH MICROFLOW RATE CAPABILITY

Frank J. Yang, 20056 Karn Cir., Saratoga, Calif. 95070, and Chiko Fan, Danville, Calif., assignors to Frank Ji-Ann Fu Yang, Saratoga, Calif.

Filed Mar. 5, 1992, Ser. No. 847,654
Int. Cl.[5] F04B *41/05, 49/08*
U.S. Cl. 417—3 20 Claims



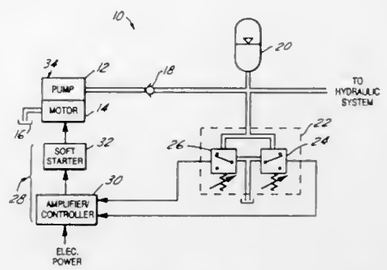
1. A direct drive fluid pump, comprising:
a central housing having first and second ends;
a chamber housing mechanically attached to said central housing at said second end, and enclosing an elongated chamber having an opening at one end, an inlet including an inlet valve and connectable to receive fluid from an external reservoir, and an outlet including an outlet valve through which fluid may be expelled;
a piston having a drive end and a pump end, said pump end being operably disposed for linear reciprocating motion in said chamber through said opening;
a bidirectional motor having a motor shaft which rotates about an axis, said bidirectional motor mounted to said first end of said central housing; and
drive coupling means mounted within said central housing for coupling said drive end of said piston to said motor shaft, said drive coupling means having a proximal portion comprising a rod having a first end and an externally threaded second end, said first end being mechanically affixed to said motor shaft for rotation in synchrony therewith about said axis, and a distal portion coupled to said drive end of said piston, said distal portion including mounting means disposed within and operably mounted to said central housing, for mounting said piston for slidable motion along the direction defined by said axis, said mounting means having an internally threaded cavity operably disposed and dimensioned for incremental and reversible engagement and rotation of said threaded second end of said rod, thereby to convert said rotation into linear reciprocating motion of said said piston;
wherein said motor shaft and said piston are arranged substantially colinearly along said axis.

5,253,982

ELECTROHYDRAULIC PUMP LOAD CONTROL SYSTEM

Albin J. Niemiec, Sterling Heights, and James V. Bloomquist, Bloomfield, both of Mich., assignors to Vickers, Incorporated, Troy, Mich.

Filed Nov. 23, 1992, Ser. No. 980,242
Int. Cl.[5] F04B *49/00*
U.S. Cl. 417—38 3 Claims



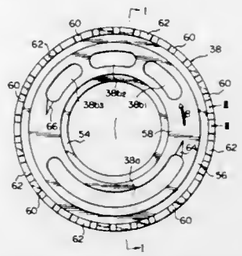
1. An electrophydraulic pump load control system that comprises:
an integrated fluid-cooled electric motor/hydraulic pump within a unitary assembly with means for internally circulating hydraulic fluid from an inlet through the motor to and through the pump to cool the motor,
accumulator means coupled to said pump for storing a reserve of pump discharge fluid at a preselected pressure,
pressure sensing means operatively coupled to said accumulator means for providing an electrical signal as a function of fluid pressure at said accumulator means, and
motor control means for terminating application of electrical power to said motor when pressure at said accumulator means exceeds a first preselected pressure threshold, and thereafter gradually reapplying electrical power to said motor at a predetermined rate when pressure at said accumulator means decreases to a second preselected threshold less than said first threshold.

5,253,983

AXIAL PISTON PUMP HAVING FIXED SLANT CAM PLATE FOR CAUSING RECIPROCATION OF PISTONS

Shigeru Suzuki; Kunifumi Goto, and Wataru Minami, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Jul. 24, 1991, Ser. No. 734,891
Claims priority, application Japan, Aug. 1, 1990, 2-81980[U]
Int. Cl.[5] F04B *39/02*
U.S. Cl. 417—485 8 Claims



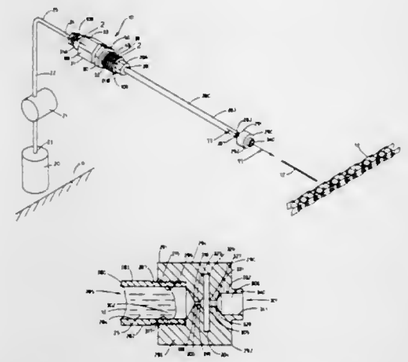
1. An axial piston pump for pumping an operating oil through a hydraulic system, said pump comprising:
a rotary cylinder block having a plurality of cylinder bores formed therein and disposed at regular intervals around a rotational axis thereof, each of said cylinder bores being opened at a bottom thereof through a hole formed in an end wall of said rotary cylinder block;
a plurality of pistons slidably received in said cylinder bores, respectively;
a slant cam plate member engaged with said pistons during rotation of said rotary cylinder block, for causing reciprocation of said pistons within the cylinder bores thereof; and
a fixed valve plate member having a suction port and a discharge port formed therethrough, said end wall of said rotary cylinder block being resiliently pressed against said valve plate member so that said holes of said cylinder bores are operatively connected with said suction and discharge ports of said valve plate member during rotation of said rotary cylinder block, whereby the operating oil is sucked up into each of said cylinder bores in sequence through said suction port of said valve plate member and the corresponding hole of the cylinder bore, and is then discharged from each of said cylinder bores in sequence through said corresponding hole of the cylinder bore and said discharge port of said valve plate member,
wherein said valve plate member is provided with an annular seal land formed thereon surrounding said suction and discharge ports with an annular groove around said annular seal land, and a plurality of bearing lands are formed at regularly spaced intervals along a periphery of said valve plate member with a radial groove between every two adjacent bearing lands; said annular groove and said radial grooves being in communication and serving as a guide passage for operating oil leaked from between said annular seal land and said end wall of said rotary cylinder block, and said radial grooves are each at least partially defined by a cylindrical surface extending from a radial side edge of the corresponding radial groove, which side edge is defined as a trailing side edge with respect to a rotating surface of said end wall of said rotary cylinder block, to a bottom of said radial groove, whereby penetration of said operating oil between said bearing lands and said end wall of said rotary cylinder block is facilitated.

5,253,984

APPARATUS FOR DISPENSING A LIQUID ON A REMOTE OBJECT

Donald G. Gruett, and Scott D. Wright, both of Manitowoc, Wis., assignors to Oil-Rite Corporation, Manitowoc, Wis.

Filed Jul. 21, 1992, Ser. No. 918,633
Int. Cl.[5] F04B *17/00;* F05B *1/28*
U.S. Cl. 417—401 6 Claims



1. An apparatus for applying a subject liquid on an object of interest, the apparatus comprising:
a metering device disposed in fluid communication with the subject liquid, the metering device including a housing

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having an inlet and an outlet for the subject liquid and a cylinder being disposed in the housing, the housing including an end which communicates with the housing outlet and a check valve being borne by the housing and the check valve being biased to close the end of the cylinder, and a piston being operatively disposed in the cylinder thereby defining a metering chamber ahead of the piston and the inlet being disposed in fluid-supplying relation relative to the metering chamber, and wherein force applied to the piston drives the piston forwardly through a working stroke to force the subject liquid into the metering chamber, out of the chamber, and past the check valve; and

a nozzle defined by a main body which includes opposite first and second ends and which is disposed in fluid-flowing relation relative to the metering device, the main body having formed therethrough a passageway which permits fluid flow from the first end through the second end, and an elongated cavity intersecting the passageway, and which is disposed in substantially perpendicular relation relative thereto, and the second end having formed thereon an overflow reservoir which is disposed in fluid communication with the passageway and which collects non-ejected subject liquid.

5,253,985

EXHAUST GAS TURBOCHARGER HAVING ROTOR RUNNERS DISPOSED IN ROLLER BEARINGS

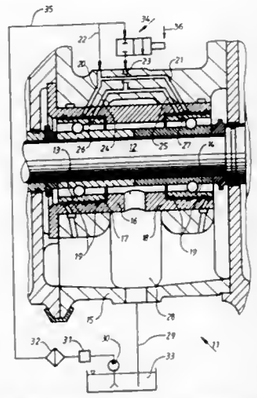
Georg Ruetz, Immenstaad, Fed. Rep. of Germany, assignor to MTU Motoren- und Turbinen-Union Friedrichshafen GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 713,065, Jun. 11, 1991. This application Mar. 8, 1993, Ser. No. 28,601

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1990, 4021325

Int. Cl.[5] F04B *17/00*

U.S. Cl. 417—407 **5 Claims**



1. An exhaust gas turbocharger, having rotor runners disposed in roller bearings, a bearing support in which the roller bearings are supported and which are supplied with lubricating oil from an oil supply via a main lubricating oil duct, and an oil film damping gap pressure-fed from the lubricating oil supply, wherein a separate oil duct branches off the main lubricating oil duct for the pressure feeding of the oil film damping gap, and a shut-off device controllable in response to a control signal to interrupt the oil supply to the roller bearings is coupled in the main lubricating oil duct downstream of the oil duct branch off from the main lubricating oil duct and between the lubricating oil supply and the roller bearings and which shut-off device controls the pressure oil lubricating of the roller bearings.

5,253,986

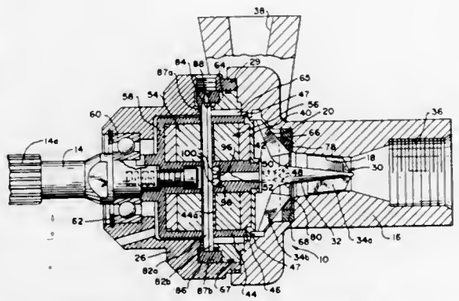
IMPELLER-TYPE PUMP SYSTEM

John C. Bond; Homer E. Gravelle, both of Arvada, and William J. Mabe, Thornton, all of Colo., assignors to Milton Roy Company, Arvada, Colo.

Filed May 12, 1992, Ser. No. 882,454

Int. Cl.[5] F04B *17/00*

U.S. Cl. 417—420 **13 Claims**



1. An impeller-type pump system, comprising:

housing means defining a pump chamber and a fluid inlet communicating with the chamber;

an impeller assembly rotatably mounted in the pump chamber downstream of the inlet, the impeller assembly including a forward impeller means and a rearward magnet hub mounting a driven magnetic coupling member;

bearing means rotatably mounting the impeller means in the pump chamber, the bearing means engaging the outside of the magnet hub to minimize overall parasitic drag;

separator means disposed adjacent the driven magnetic coupling member and closing the pump chamber;

means communicating pump discharge pressure to the back side of the magnetic coupling member for axially balancing the impeller in the pump chamber;

a magnetic drive member rotatably mounted in the housing on the opposite side of the separator; and

gearing mounted in the housing and connected to drive the magnetic drive member.

5,253,987

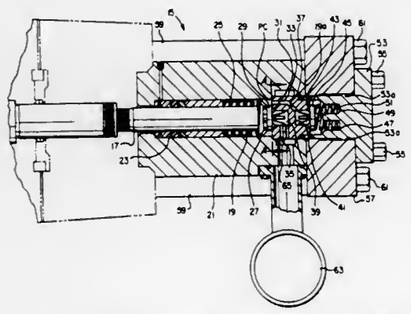
FLUID END FOR HIGH-PRESSURE FLUID PUMPS

Curtis W. Harrison, 7533 Kathy La., Fort Worth, Tex. 76126

Filed Apr. 3, 1992, Ser. No. 862,816

Int. Cl.[5] F04B *21/02*

U.S. Cl. 417—566 **2 Claims**



1. A fluid end for use in a high-pressure, reciprocating, fluid pump including a power end having at least one reciprocating plunger extending therefrom, the fluid end comprising:

a cylinder including a bore therethrough for receiving the reciprocating plunger, the bore having a longitudinal axis;

a valve body disposed at one end of the bore, the valve body including a suction valve seat and a discharge valve seat, the suction valve seat and discharge valve seats in substantially coaxial alignment with the longitudinal axis of the bore;

a suction valve including a rigid disk having a circumferential conical surface formed thereon, the circumferential conical surface having a layer of elastomeric, abrasion-resistant material formed thereon to matingly and sealingly engage the suction valve seat;

a discharge valve formed substantially identically to and interchangeable with the suction valve;

a discharge biasing member disposed for urging the suction valve into selective sealing engagement with the suction valve seat;

a pressure chamber within the bore defined at one end of the bore by the valve body and at an opposite end by the reciprocating plunger and a packing member disposed within the bore;

a suction biasing member disposed to abut the suction valve at one end of the suction biasing member and to abut a packing member disposed within the bore at an opposite end of the suction biasing member, wherein the suction biasing member urges the suction valve into selective sealing engagement with the suction valve seat and maintains the packing member in a selected position in the bore of the cylinder;

at least one fluid flow passage disposed in the valve body about the periphery of the suction valve seat, the fluid flow passage in fluid communication at one end thereof with the pressure chamber and in fluid communication at an opposite end thereof with the discharge valve seat, a first of the fluid flow passages positioned within the valve body to collect and discharge gas bubbles from the pressure chamber, a second of the fluid flow passages positioned in the valve body to collect and discharge solid particles from the pressure chamber;

a discharge manifold having at least one discharge passage in selective fluid communication with the fluid flow passages to selectively discharge fluid from the fluid end; and

a valve cover removably attached to the discharge manifold to permit selective removal and confinement of the valve body within the fluid end.

5,253,988

GEAR PUMP

Alfred K. Hunziker, Guodetswil; Fritz Haupt; Eduard Mischler, both of Regensdorf, and Stefan Kalt, Spreitenbach, all of Switzerland, assignors to Maag Pump Systems AG, Zurich, Switzerland

Filed Feb. 27, 1992, Ser. No. 842,714

Claims priority, application Switzerland, Feb. 27, 1991, 593/91

Int. Cl.[5] F04C *15/00*

U.S. Cl. 418—1 **23 Claims**

1. A gear pump comprising:

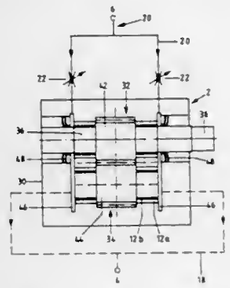
a housing (**30**) provided with an inlet channel (**4**) and an outlet channel (**6**);

a plurality of gear bodies (**32, 34**) having bearing journals (**36**);

bearings for rotatably supporting said bearing journals and hence said gear bodies in the housing;

said bearings having a high pressure side disposed towards said gear bodies and a low pressure side disposed towards ends of said bearing journals;

a system of passages (**8**), which includes said bearings, being connected to the outlet channel to permit circulation of a leakage stream of product being conveyed, characterized in that the system of passages includes at least one adjustable valve element (**22**), for varying flow on the low pressure side (**16, 46**) of said bearings.



5,253,989

SCROLL FLUID APPARATUS HAVING A REVOLVING SCROLL OF SEPARATE MEMBERS

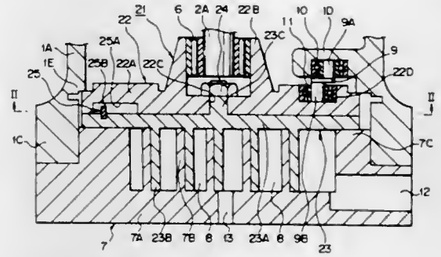
Manabu Shindo; Hiroshi Mitsuhashi; Susumu Sakamoto; Hiroyuki Kamagami, and Minoru Machino, all of Kanagawa, Japan, assignors to Tokico Ltd., Kanagawa, Japan

Filed Jun. 18, 1992, Ser. No. 900,720

Claims priority, application Japan, Jun. 20, 1991, 3-176132

Int. Cl.[5] F01C *1/04, 21/06*

U.S. Cl. 418—55.2 **8 Claims**



1. A scroll fluid apparatus comprising:

a cylindrical casing;

a drive shaft rotatably supported by said casing at one end portion of the casing, and having a crank at an end thereof located in the casing;

a revolving scroll having a first spiral scroll wrap and a boss portion which connects the revolving scroll to said crank for permitting orbiting movement of the revolving scroll;

a fixed scroll secured to the other end portion of said casing in opposing relation to said revolving scroll, said fixed scroll having an end plate and a second spiral scroll wrap which defines, in cooperation with said first scroll wrap, a plurality of compression chambers;

an auxiliary crank connected at one end thereof to said casing and at the other end thereof to the rear side of said revolving scroll; and

said revolving scroll comprising an auxiliary member connected to said other end of said auxiliary crank, an end plate member disposed on the side of said auxiliary member which faces said fixed scroll member, said first scroll wrap being provided on the end plate member, and positioning means provided between said auxiliary member and said end plate member for preventing relative displacement between said auxiliary member and said end plate member in the circumferential directions thereof

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while allowing said end plate member to thermally expand radially outward relative to said auxiliary member, said positioning means including an elongate engagement groove extending radially in one of said auxiliary member and said end plate member and an engagement projection provided on the other of said auxiliary member and said end plate member, said engagement projection extending into said elongate engagement groove and engaging said other of said auxiliary member and said end plate member at a portion thereof defining sides of the elongate engagement groove.

5,253,990

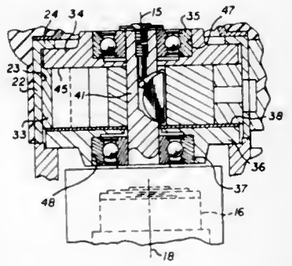
FLUID DEVICE WITH WEAR REDUCING ROTOR ASSEMBLY

Alma A. Hutchins, Pasadena, Calif., assignor to Hutchins Manufacturing Company, Pasadena, Calif.

Filed Sep. 2, 1992, Ser. No. 939,731

Int. Cl.[5] F01C *21/00*; F03C *2/00*

U.S. Cl. 418—270 **19 Claims**



1. A fluid device comprising:

a rotor;

a housing containing a chamber through which fluid flows as the rotor turns about an axis relative to the housing;

a shaft extending through a passage in the rotor and turning therewith;

said rotor having an inner surface containing an axially extending groove and said shaft having an outer surface containing an axially extending groove opposite said groove of the rotor;

a key received partially within said groove of the rotor and partially within said groove of the shaft and keying the rotor and shaft rotatively together;

a fastener connected threadedly to said shaft and operable by threaded adjustment relative thereto to urge said key radially outwardly toward the rotor and thereby rigidly lock the rotor and shaft against relative movement; and

a leaf spring contained within said groove in the rotor radially between the key and rotor and which acts to resist outward displacement of the key by said fastener relative to the rotor and shaft.

5,253,991

APPARATUS FOR PRODUCING SPHEROIDAL INORGANIC PARTICULATE MATERIAL

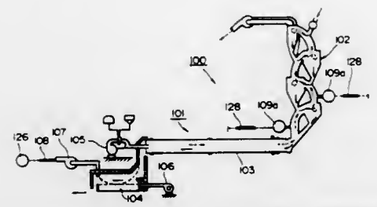
Norio Yokota, Narashino; Takahiko Yoshimura, Warabi; Shusuke Harada, Narashino; Masatoshi Onodera, Narashino, and Akihiko Miyauchi, Narashino, all of Japan, assignors to Sumitomo Cement Co., Ltd., Tokyo, Japan

Division of Ser. No. 662,562, Feb. 28, 1991, abandoned, which is a division of Ser. No. 615,432, Nov. 16, 1990, abandoned. This application Sep. 4, 1991, Ser. No. 754,733

Claims priority, application Japan, Nov. 20, 1989, 1-301462; Dec. 28, 1989, 1-340516; Dec. 28, 1989, 1-340517; Dec. 28, 1989, 1-340518; Mar. 26, 1990, 2-75950; Mar. 26, 1990, 2-75951; Mar. 26, 1990, 2-75952; Apr. 13, 1990, 2-98661; Jun. 7, 1990, 2-149187; Jun. 8, 1990, 2-150306; Jun. 8, 1990, 2-150307

Int. Cl.[5] B28B *1/54*; B29B *9/16*

U.S. Cl. 425—6 **10 Claims**



1. An apparatus for producing a spheroidal particulate construction material comprising particles of a construction material selected from the group consisting of cement, slug and gypsum; the apparatus comprising a suspension preheater for preheating raw powder of said construction material, a rotary kiln for calcining the preheated powder of said construction material connected to said suspension preheater, a cooler for cooling the calcined construction material connected to said rotary kiln, a burner which is connected to said cooler and having a nozzle which generates a high temperature flame through which the powder of said construction material is passed so that it is melted or semi-melted, an introductory portion in communication with the cooler and the burner for introducing a first exhaust gas discharged from said cooler into said burner, and a feed pipe for feeding high temperature fine powder of said construction material preheated by said suspension preheater into the high temperature flame of said burner,

wherein said apparatus further comprises a cyclone having a cylindrical side wall, a cooling means for cooling the construction material in the cyclone, and a flame pipe provided on said side wall, said nozzle of the burner connected to said cooler and said feed pipe for feeding the preheated high temperature fine powder of said construction material to the flame of said burner being arranged inside said flame pipe, in close vicinity to each other, the opening end portion of said feed pipe being directed toward the flame of said burner,

wherein said cyclone has a structure so that the particles of the construction material are passed through the high temperature flame to convert them into a melted or semi-melted state and are jetted into the cyclone, thereby the melted or semi-melted particles are cooled and spheroidized.

5,253,992

EXTRUDER DIE FOR THE EXTRUSION OF THERMOPLASTIFIED SYNTHETIC RESIN

Hans Reifenhäuser, Troisdorf, Fed. Rep. of Germany, assignor to Reifenhauser GmbH & Co. Maschinenfabrik, Troisdorf, Fed. Rep. of Germany

Filed Feb. 25, 1992, Ser. No. 841,345

Int. Cl.[5] B29C *47/22, 47/92*

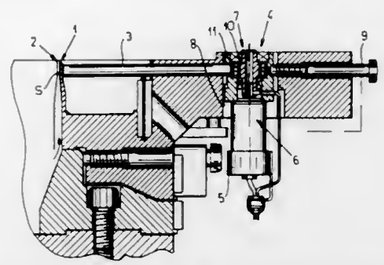
U.S. Cl. 425—72.1 **2 Claims**

1. An annular extrusion die for extruding a tubular strand of thermoplastified synthetic resin for blowing into a foil and forming part of a foil blowing head, said die comprising:

a die body formed with an annular passage for a thermoplastified synthetic resin;

an annular outlet orifice on said body communicating with said passage and defined between a gap-controlling resilient adjustable annular lip and an annular counterlip, whereby adjustment of a gap width between said lips varies a thickness of said strand of said thermoplastified synthetic resin emerging from said orifice;

at least one axially shiftable positioning rod on said body acting upon said gap-controlling lip for displacing same to



adjust said gap width, said gap-controlling lip acting resiliently against said rod as a restoring spring; and

a control and regulating device for actuating said positioning rod, said control and regulating device including a unitary assembly of:

a servomotor in the form of a stepping motor having an angularly displaceable output element,

a step-down transmission driven by said output element, and

a driver in the form of san eccentric disk rotatable by said transmission having a roller bearing on a periphery of the disk and acting upon said rod whereby said resilient lip acting as said restoring spring directly maintains said rod against said driver.

5,253,993

APPARATUS FOR THE PRODUCTION OF PELLETS OF METAL POWDER USED AS CATALYSTS

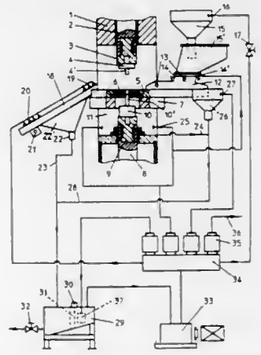
Udo Birkenstock, Ratingen; Wolfgang Gay, Odenthal, and Wolfgang Korsch, Berlin, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 739,972, Aug. 5, 1992, Pat. No. 5,135,903. This application Apr. 15, 1992, Ser. No. 868,913

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1990, 4026351

Int. Cl.[5] B22F *3/00*

U.S. Cl. 425—78 **5 Claims**



1. An apparatus for production of pellets of metal powder suspensions which comprises a press with a filling shoe and a pellet discharge chute, and means for establishing a wet processing environment, wherein the means for establishing a wet processing environment comprises an integrated spray and rinsing water circuit consisting of a water pump, a water-sludge container supplying water to the pump, a spray nozzle control receiving water from the pump, several spray nozzles receiving water from the control and sludge and rinsing water return pipes for returning sludge and water to the water-sludge container.

5,253,994

SYSTEM FOR MOLDING A SYNTHETIC-RESIN USING PLASTIC SCRAP

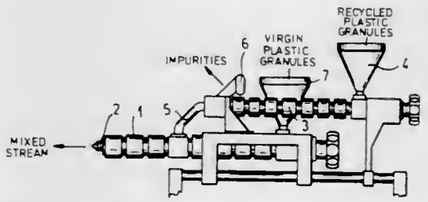
Konrad Zweig, Augsburg; Erwin Bürkle, Bichl; Markus Spötzl, München, and Peter Karlinger, Augsburg, all of Fed. Rep. of Germany, assignors to Krauss-Maffei Aktiengesellschaft, München, Fed. Rep. of Germany

Filed Apr. 8, 1992, Ser. No. 865,173

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1991, 4111751; Mar. 5, 1992, 4207015

Int. Cl.[5] B29C *45/46*

U.S. Cl. 425—130 **3 Claims**



1. An apparatus for molding a synthetic-resin article, the apparatus comprising:

a mold;

means for plastifying a virgin granulate into a fluent stream and advancing the stream;

means for plastifying a recycle granulate into a fluent stream;

means including an injection-molding device for storing the fluent recycle stream in molten condition;

means for receiving the molten recycle-granulate stream from the storing means and for filtering the recycle-granulate stream while still plastified and removing unmelted particulate impurities from it;

means for combining the filtered recycle stream while still plastified with the virgin stream to form a combined stream; and

means for feeding the combined stream into the mold.

5,253,995

APPARATUS FOR MAKING A PULSE DAMPENER

Bruce A. Romstad, Deford, and Frederick J. Whitcroft, Bloomfield Hills, both of Mich., assignors to Caro Manufacturing Corporation, Caro, Mich.

Divisioo of Ser. No. 413,945, Sep. 28, 1989, abandoned. This application Nov. 25, 1991, Ser. No. 797,408

Int. Cl.[5] B29C *49/30*; B29D *22/00*

U.S. Cl. 425—522 **1 Claim**

1. A molding apparatus for making a hollow pressurized pulse dampener, said apparatus comprising;

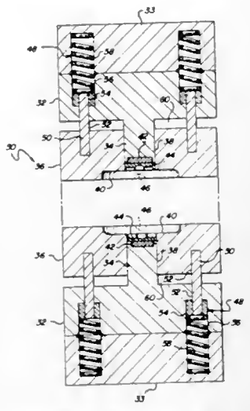
a pair of platens fixedly attached to a pair of support blocks, a pair of secondary members, each secondary member associated with one of said fixed platens, one of said fixed platens and one of said secondary members from each pair being oppositely disposed with respect to one another, each of said fixed platens including a primary member extending from said fixed platen, each of said secondary members including a centrally disposed aperture and a

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second mold surface, said oppositely disposed platens and secondary members adapted for mating engagement to define a mold cavity for molding an intermediate member;

said primary member disposed through said centrally disposed aperture of said associated secondary member and including a distal terminal end which includes a first mold surface for molding a pulse dampener;

biasing means for biasing each secondary member with respect to the associated primary member, including a pair of plungers disposed within a pair of connecting passageways extending between associated ones of said secondary members and said fixed platens, said pair of plungers terminating in a pair of bushings disposed within a pair of bushing cavities, said bushing cavities extending between said platens and said support blocks, and a spring disposed within each of said pair of bushing cavities and acting between said support blocks and said bushings, to bias said



plungers and the secondary members such that said first mold surfaces are disposed recessed within said secondary members;

said secondary members being moveable with respect to said primary members to present said first mold surfaces in said mold cavity to form said pulse dampener from said intermediate member, said secondary members including means for continuously, positively and precisely pressurizing said mold cavity and said intermediate member until said first mold surfaces are presented within said cavity to mold said pulse dampener, said pressurizing means including a pair of grooves oppositely disposed with respect to each other on said secondary members for defining a passageway, said passageway providing fluid communication between said mold cavity and a pressurized fluid source for pressurizing said intermediate member and said pulse dampener to a precise, predetermined level.

5,253,996

APPARATUS FOR MANUFACTURING CONTAINERS WITH THICKENED FLANGES

Richard L. Moore, Fairhope, Ala., assignor to The Lerio Corporation, Mobile, Ala.

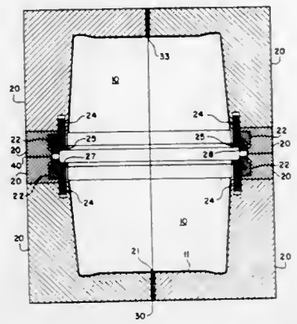
Filed Nov. 15, 1991, Ser. No. 792,930
Int. Cl.[5] B29C *49/20*
U.S. Cl. 425—525 10 Claims

1. A molding apparatus for producing containers having thickened flanges from a parison of moldable material, said molding apparatus comprising:

(a) means for enclosing said parison, said enclosing means comprising a plurality of major mold sections and a plurality of minor mold sections, said plurality of minor mold sections comprising at least two minor mold sections per container, said major and minor mold sections enclosing a mold chamber, said major mold sections being separable along the longitudinal axis of said containers, whereby when said major mold sections close around said parison, a tail of material will be captured between said major mold sections; and

(b) means for expanding said parison of moldable material to contact said major and minor mold sections;

said minor mold sections being movable to bring into



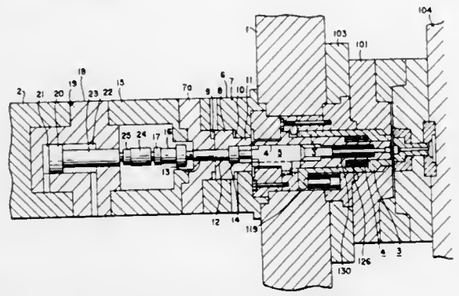
contact and substantially fuse adjacent layers of said moldable material after said material has been brought into contact with said major and minor mold sections by said expanding means, said thickened flanges being formable without substantially moving said major mold sections and whereby said tail of material will not be detached from said containers during formation of said thickened flanges or release of said containers from said mold chamber.

5,253,997

INJECTION MOLDING MACHINE FOR MOLDING DISK-SHAPED RECORDING MEDIUM CARRIERS

Koichi Kamada, Chiba, Japan, assignor to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 758,519, Sep. 6, 1991, abandoned, which is a continuation of Ser. No. 412,754, Sep. 26, 1989, abandoned. This application Feb. 12, 1993, Ser. No. 17,436
Claims priority, application Japan, Sep. 30, 1988, 63-246792
Int. Cl.[5] B29C *45/38*
U.S. Cl. 425—556 2 Claims



1. An injection molding machine, comprising:

a mold-mounting plate having a front surface for mounting a mold thereon, a rear surface and a hole extending through said plate and said front and rear surfaces;

a substrate ejecting rod slidably inserted in a front portion of said hole and extending through a front half and said front surface of said mold-mounting plate, said substrate ejecting rod having a bore extending longitudinally in a center thereof;

a gate-cutting punch slidably inserted in said bore of said substrate ejecting rod and extending through said mold-mounting plate and said front and rear surfaces of said plate, said gate-cutting punch having a bore extending longitudinally in a center thereof, a sprue-ejecting ejector pin slidably inserted in said bore of said gate-cutting punch, said sprue-ejecting ejector pin having a rear end;

a gate-cutting drive cylinder mounted on said rear surface of said mold-mounting plate and having a rear surface and a piston for abutting against a rear end of said gate-cutting punch, said piston having a stepped bore with a large-diameter front portion and a small-diameter rear portion extending axially through said piston;

an ejector rod extending through said stepped bore of said piston and having a large-diameter portion slidable within said large-diameter front portion of said stepped bore and a small-diameter portion extending from said large-diameter portion of said ejector rod forwardly, said small-diameter portion of said ejector rod having a front end and for abutting against said rear end of said sprue-ejecting ejector pin, said ejector rod movable together with said piston as said piston moves towards said mold-mounting plate but otherwise arranged to move independently of said piston;

a sprue-ejecting drive cylinder on said rear surface of said gate-cutting drive cylinder, said sprue-ejecting drive cylinder having a piston with a piston rod of said sprue-ejecting drive cylinder piston engagable with a rear end of said ejector rod; and

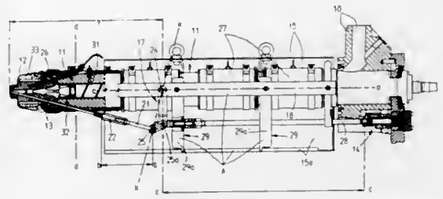
transmitting means for transmitting forward movement of said sprue-ejecting ejector pin to said substrate ejecting rod to move the substrate ejecting rod forwardly as said sprue-ejecting ejector pin moves forwardly by a predetermined distance.

5,253,998

PLASTICIZING ASSEMBLY FOR USE IN AN INJECTION MOLDING MACHINE

Karl Hehl, Arthur-Hehl-Str. 32, D-7298 Lossburg 1, Fed. Rep. of Germany

Filed Nov. 29, 1991, Ser. No. 800,068
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1991, 4105731
Int. Cl.[5] B29C *45/23*
U.S. Cl. 425—562 12 Claims



1. In a plasticizing assembly for use in an injection molding machine, the assembly including

a plasticizing cylinder having a cylinder section and a nozzle section communicating with said cylinder section, said nozzle section having a nozzle orifice defining an injection axis, and clamping means for holding said cylinder and nozzle sections together in axial alignment,

heating means for heating plastic material in said plasticizing cylinder,

a feed screw having forward and rear ends and being rotatably and axially movably mounted in said plasticizing cylinder and being axially reciprocable therein between predetermined rearmost and foremost positions and being operable to feed plastic material,

a back flow valve mounted on said feed screw at said forward end,

a carrier block; a rear end of said cylinder section being detachably mounted in said carrier block,

a skeleton surrounding said plasticizing cylinder and at least part of said heating means; said skeleton extending between a location radially aligned with said back flow valve when said feed screw is in said foremost position and a location radially aligned with a forward end of said carrier block, said skeleton including skeleton elements radially aligned with said heating means and serving to protect said plasticizing cylinder and said heating means and to support said plasticizing cylinder,

a first needle-guiding bore formed in said nozzle section and being inclined relative to said injection axis and opening into said nozzle orifice,

a valve needle longitudinally slidably mounted in said first needle-guiding bore and being operable to open and close said nozzle orifice,

a valve-actuating cylinder adjacent to said carrier block and extending in a direction substantially parallel to said injection axis, and

a force-transmitting linkage to transmit force from said valve-actuating cylinder to said valve needle to operate said valve needle; said force-transmitting linkage comprising a rear link longitudinally aligned with and longitudinally movable by said valve-actuating cylinder, a forward link longitudinally aligned with said valve needle and being inclined to said injection axis and being operable to longitudinally move said valve needle, and a motion-deflecting lever pivoted on a first axis by supporting pivot means radially aligned with said heating means and by additional pivot means being pivoted on at least one second axis spaced from said first axis to said rear and forward links, said lever being arranged to transform a movement along said injection axis imparted by said valve-actuating cylinder to said rear link into a longitudinal movement of said forward link and said valve needle,

the improvement wherein

said supporting pivot means are radially aligned with and radially outwardly spaced from said heating means with respect to said injection axis and are mounted on said skeleton elements,

said motion-deflecting lever and said supporting pivot means are entirely disposed inside said skeleton,

a second needle-guiding bore extends in said cylinder section as a continuation of said first needle-guiding bore; said second needle-guiding bore opening on an outside surface of said cylinder section at a location radially aligned with said back flow valve when said feed screw is in said foremost position; said valve needle having a length portion extending in said second needle-guiding bore; said second needle-guiding bore having a diameter larger than a diameter of said length portion for defining a radial clearance between a wall of said second needle-guiding bore and said valve needle; and

said valve needle is stationarily connected to said forward link and extends out of said second needle-guiding bore to a location radially aligned with said feed screw when said feed screw is in said foremost position.

5,253,999

ROTARY INJECTION MOLDING MACHINE

Satoru Kosuge, Komoro, Japan, assignor to Nissei Asb Machine Co., Ltd., Japan

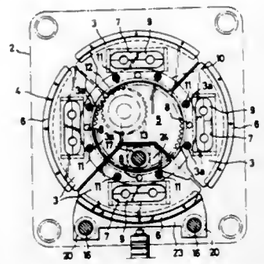
Filed Jan. 30, 1992, Ser. No. 828,391
Claims priority, application Japan, Jan. 31, 1991, 3-32354
Int. Cl.[5] B29C *45/06*
U.S. Cl. 425—575 15 Claims

1. A rotary molding machine, comprising:

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a machine platform and a base mounted above said platform and separated therefrom;

a transfer plate having a raised position under said base, said transfer plate formed by a plurality of sectorial plates, each of said sectorial plates being adapted for holding respective lip molds to be vertically removable with the corresponding sectorial plate from said raised position to a lowered position above said machine platform;



an injection mold located at said lowered position to close with said lip molds;

means for vertically removing said sectorial plate; and

driving means for intermittently rotating said transfer plate through a predetermined degree of rotation so that after each said intermittent rotation at least one of said lip molds lies above said injection mold and in position to be lowered so as to be closed with said injection mold.

5,254,000

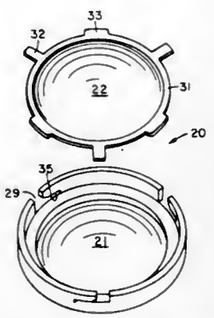
ORGANIC POLYMER LENS MOLD

Mark S. Friske, Corning, N.Y.; Paul W. Hollon; Donald L. Keyes, both of Cincinnati, Ohio, and Frederick E. Noll, Big Flats, N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Apr. 23, 1992, Ser. No. 872,453

Int. Cl.[5] B29C *33/34, 39/40*

U.S. Cl. 425—595 **11 Claims**



1. A mold for an organic polymer, ophthalmic lens element comprising separate upper and lower mold members, each mold member being composed of a thermoplastic polymer, the lower mold member comprising a bottom portion having a surface contour that corresponds to, but is the reverse of, a surface contour on the lens element being molded, and an annular wall rising vertically from an outer edge of the surface contour of the bottom portion and defines the periphery of a central, bowl-shaped cavity with contours that conform to those of an ophthalmic lens to be molded therein, and an annular rim extending radially and outwardly from an upper end portion of the vertical annular wall, the upper mold member having a central portion with an under surface that corresponds in contour to that of the upper surface of the ophthalmic lens to be molded, and with an annular rim that surrounds the central portion and that rests on the annular rim of the lower member when the two members are assembled, the annular rim on the upper mold member has a smaller outer diameter than the outer diameter of the annular rim on the lower mold member and the rim on the upper member has spaced projections which extend to the upstanding wall extending from the outer edge of the lower annular rim when the members are assembled, thereby centering the upper member within the lower member.

5,254,001

HOT REPLACEABLE TUCKSTONES FOR INDUSTRIAL FURNACES

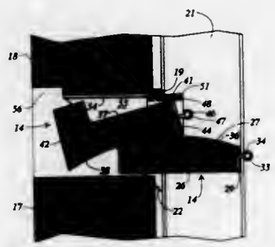
H. Gunter Frohlich, Cincinnati, Ohio, assignor to Dyko Industriekeramik GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Mar. 16, 1992, Ser. No. 852,382

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1992, 4200243

Int. Cl.[5] F27D *1/00*

U.S. Cl. 432—247 **25 Claims**



1. An industrial type furnace having an interior heating chamber, an exterior, and having a support plate for supporting at least a portion of the wall of the furnace,

a tuckstone assembly adapted to be installed in the furnace wall in a space between the support plate and the furnace wall beneath said support plate, said tuckstone assembly comprising:

a support block including a front end portion for extending toward the heating chamber of the furnace and a rear end portion for extending toward the exterior of the furnace and an upper surface,

a nose block supported by said support block and having a front end portion for facing the heating chamber of the furnace and a rear end portion for extending toward the exterior of the furnace and a lower surface, said lower surface being shaped to mate with the upper surface of said support block to form a slip joint therewith,

the mating surfaces of said support block and said nose block being shaped to change the vertical height of said tuckstone assembly when said blocks are moved with respect to each other along their slip joint,

whereby the blocks can be arranged with each other in a low vertical profile configuration and moved into the space between the support plate and the furnace wall beneath the support plate and moved with respect to each other along their slip joint to increase their vertical profile and fill the space.

5,254,002

ORTHODONTIC PLASTIC BRACKET

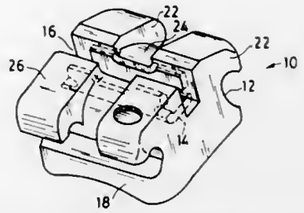
James F. Reher, Pomona, and Farrokh Farzin-Nia, Inglewood, both of Calif., assignors to Ormco Corporation, Glendora, Calif.

Filed Apr. 8, 1991, Ser. No. 682,261

Int. Cl.[5] A61C *3/00*

U.S. Cl. 433—8 **46 Claims**

1. An aesthetically pleasing orthodontic bracket having a strength sufficient to withstand forces, including archwire-applied forces, normally encountered in orthodontic treatment, said bracket comprising a base portion and a body portion extending therefrom, said bracket having at least one tiewing having an archwire slot for receiving an orthodontic archwire, said slot comprising a bottom wall and two opposed sidewalls which extend from said bottom wall, said base portion having a tooth contact surface for mounting the orthodontic bracket to a tooth, said body portion being made of a material selected from the group consisting of substantially transparent and substantially translucent plastics having a filler for



improved strength in an amount which does not substantially reduce the transparency or translucency of said transparent or translucent plastic, respectively, said body portion having an insert made of a material having a strength greater than that of said body portion, said insert forming at least a portion of said archwire slot for receiving an orthodontic archwire, said insert comprising a bottom wall which extends along at lest a portion of the length of said slot and a pair of opposing sidewall support sections which form at least a portion of sidewalls of said slot, said insert begin sized and configured so as not to substantially reduce the transparency or translucency of the bracket.

5,254,003

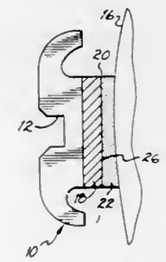
METHOD OF FORMING AND BRACKET OF NICKEL-CHROMIUM-BERYLLIUM BASED ALLOYS

Craig A. Andreiko, Alta Loma, Calif., assignor to Ormco Corporation, Glendora, Calif.

Filed Mar. 2, 1992, Ser. No. 844,794

Int. Cl.[5] A61C *3/00*

U.S. Cl. 433—9 **13 Claims**



1. An article for application to a patient's tooth to support an arch wire, comprising:

a dental bracket made from a nickel-chromium-beryllium based alloy and having a groove at one end for receiving the arch wire, the bracket having a particular surface for bonding to the tooth.

5,254,004

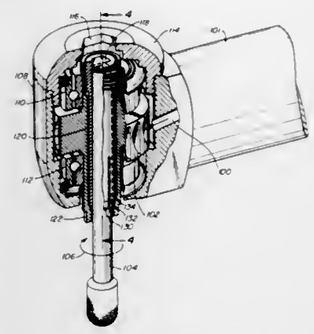
SELF-TIGHTENING CHUCK FOR DENTAL TOOLS

Michael Feldman, Howell, and Moshe Meller, Princeton, both of N.J., assignors to Erah Meller, Haifa, Israel

Filed Jan. 21, 1993, Ser. No. 7,244

Int. Cl.[5] A61C *1/14*

U.S. Cl. 433—129 **16 Claims**



1. In a rotary dental drive tool having a rotatable driving member which is connected to a working tool via a chuck arrangement, the rotatable driving member rotating in a clockwise direction during use, the improvement wherein the chuck arrangement comprises:

a chuck member having a tool-engaging internal surface portion for receiving a working tool therein, said chuck member having a tapered outer surface portion, said tapered outer surface portion being engageable with a tapered inner surface portion of said rotatable driving member so as to press said tool-engaging internal surface portion of said chuck member against said working tool to fixedly engage said working tool with said rotatable driving member via said chuck member; and

a left-hand threaded screw member on an outer surface portion of said chuck member and which is engageable with a left-hand threaded screw portion on an inner surface portion of said rotatable driving member, said chuck member being rotatable in a left-hand threaded manner into said screw threaded portion of said rotatable driving member so as to cause said tapered surfaces to mutually engage and press said tool-engaging surface portion of said chuck member against said working tool responsive to rotation of said rotatable driving member, whereby said chuck member automatically tightens against said working tool during operation of the rotary dental drive tool and said working tool rotates with said rotatable driving member.

5,254,005

DENTAL IMPLANT SYSTEM AND METHOD

Max Zuest, 595 San Fernando, San Diego, Calif. 92106

Continuation of Ser. No. 436,432, Nov. 14, 1989, abandoned. This application Aug. 22, 1991, Ser. No. 751,661

Int. Cl.[5] A61C *8/00*

U.S. Cl. 433—173 **15 Claims**

1. A combined denture and support assembly, comprising:

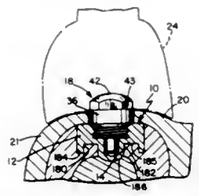
a denture of more than one tooth;

an anchor securing one ned of the denture to the jawbone;

support means for freely supporting a distal region of the denture at a selected location to the rear of the first bicuspid, the support means comprising a first, short part for embedding in the jawbone at the selected location and a second part for projecting up to at least the tissue level, the second part having an upper rest surface for non-reten-

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tively supporting the denture and for accepting biting pressure from the denture; and



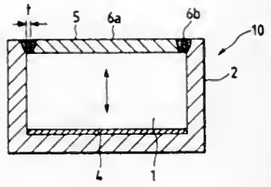
said support means has a height no grater than its outer diameter.

5,254,006

PERMANENT MAGNET ASSEMBLY FOR FALSE TOOTH STABILIZATION

Hirohide Yamada, Saitama, Japan, assignor to Hitachi Metals, Ltd., Tokyo, Japan

Filed Sep. 11, 1992, Ser. No. 943,557
Claims priority, application Japan, Sep. 12, 1991, 3-232129
Int. Cl.[5] A61C *13/235*
U.S. Cl. 433—189 **8 Claims**



1. A permanent magnet assembly for false tooth stabilization comprising:

a cup-shaped case having an opening, the case being formed of a corrosion resistant and magnetic material,

a permanent magnet having opposite end faces, magnetized in the direction between the end faces thereof and positioned in the case, and

a seal plate formed of a corrosion resistant material and fitted into and fixed to the opening of the case to hermetically seal the case, said seal plate comprising:

a central seal plate portion formed of a magnetic material and facing an end face of said permanent magnet, and

a seal edge portion formed of a non-magnetic material, the radial width dimension of said seal edge portion being in the range of 0.03 to 0.07 mm, and at least abutting portions of said case and said seal plate being welded to each other, said seal edge portion of said seal plate facing an outer peripheral edge of an end face of said permanent magnet.

5,254,007

BABY ENTERTAINMENT AND LEARNING APPARATUS FOR HIGHCHAIRS

Chris S. Eagan, 670 Eldorado La., Las Vegas, Nev. 89123

Filed Jan. 29, 1993, Ser. No. 10,878
Int. Cl.[5] G09B *5/04*
U.S. Cl. 434—319 **14 Claims**

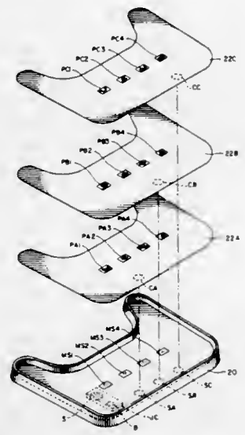
1. Baby entertainment and learning apparatus for highchairs comprising:

a) a tray having means for removably attaching said tray to a highchair, said tray providing a top surface for holding baby feeding bottles, cups, dishes and utensils and baby play toys, said tray including in the top surface at least one pressure activated microswitch;

b) an interchangeable tray top panel including at least one depressible picture block and a panel identity means, said at least one picture block being oriented on said panel so as to overlay the said at least one pressure activated microswitch of said tray; and

c) tray circuitry components mounted to an underside of said tray and including: an integrated circuit microchip within which is stored voice, sound and musical information; a low voltage battery power source; a speaker; and panel switch means,

said circuitry components being electrically interconnected with said panel switch means being closed by



said panel identity means when said tray top panel is in place on said tray, and

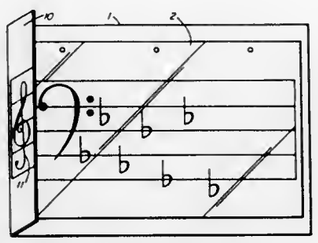
said circuitry components being activated by finger touch pressure applied through said at least one picture block of said panel to the said at least one pressure activated microswitch of said tray to selectively release the stored information of said microchip corresponding to the subject matter of the said at least one picture block as audible voice, sound and musical information through said speaker.

5,254,008

DEVICE FOR TEACHING MUSIC

Beverley G. Dawson, 96 Pembroke Street, Kingston, Canada K7L 4N7

Continuation-in-part of Ser. No. 674,119, Mar. 25, 1991, abandoned. This application Aug. 24, 1992, Ser. No. 933,653
Int. Cl.[5] G09B *25/00, 13/00, 15/02*
U.S. Cl. 434—427 **4 Claims**



1. A music teaching apparatus comprising:

a planar representation of a keyboard;

a transparent, planar sheet having printed thereon a representation of at least a half staffboard;

a first plurality of transparent planar sheets adapted to be positioned in a selected overlying relationship to said keyboard;

a second plurality of transparent sheets adapted to be moved in planar parallel overlying sliding relationship to said staffboard; and

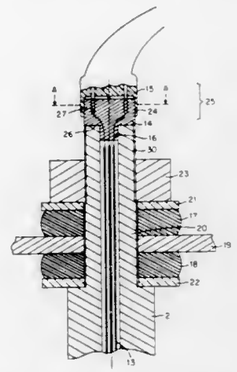
a plurality of sticker elements of selected colour, each selectively arrangeable and permanently mountable on any selected said sheet of said first and second plurality of transparent sheets so as to provide a permanent pattern thereon and overlie said staffboard and said keyboard.

5,254,009

CONTROLLABLE VIBRATION DAMPER FOR MOTOR VEHICLES

Thomas Wörmann, Wuppertal, Fed. Rep. of Germany, assignor to August Bilstein GmbH & Co. KG, Ennepetal, Fed. Rep. of Germany

Filed Mar. 27, 1992, Ser. No. 859,099
Claims priority, application Fed. Rep. of Germany, May 23, 1991, 4116805
Int. Cl.[5] H01R *19/40*
U.S. Cl. 439—34 **7 Claims**



1. A variable dashpot for motor vehicles with a vehicle body, comprising: a hollow piston rod secured to said vehicle body by fastening means; electrical connections in said hollow piston rod for connecting selectively to sensor means and controllable valve means; male and female connectors for connecting said connections additionally to processing and activating circuit means; said male and female connectors being held at a top region and said hollow piston rod, said male connector being connectable to said female connector; a projection on a lower end of said female connector insertable and securable in said piston rod until said female connector rests against the upper end surface of said piston rod with an upper part of said female connector receiving pins of said male connector, said projection being directly insertable into a front side of an open hollow space of said hollow piston rod, wherein said female connector and said projection each have a diameter, the diameter of said projection being shorter than the diameter of the female conector.

5,254,010

SECURING A SURFACE MOUNT ELECTRICAL CONNECTOR IN A METAL SHIELDING SHELL

Wayne S. Davis, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

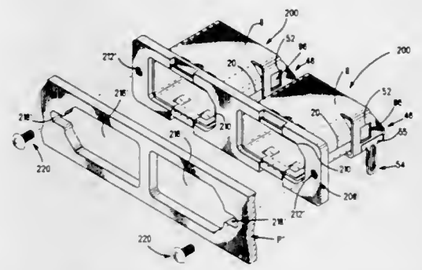
Filed Sep. 16, 1992, Ser. No. 945,798
Int. Cl.[5] H01R *13/648*
U.S. Cl. 439—108 **12 Claims**

1. A folded sheet metal shielding shell for receiving an electrical connector for surface mounting on a circuit board (PCB), the shielding shell comprising:

a top wall;

a bottom wall for location proximate to a face of the circuit board (PCB) when the connector is mounted thereon;

first and second side walls connected to the top and bottom walls to define in cooperation therewith a tubular enclosure having a forward open end for receiving a mating shield and an open rear end for receiving said connector,



the first side wall extending rearwardly of the second side wall;

a cantilever flange connected to the top wall and providing a rearward extension of the second wall having formed therein a latching opening for latchingly receiving a latching member on the connector, said flange being resiliently deflectable away from the first side wall; and

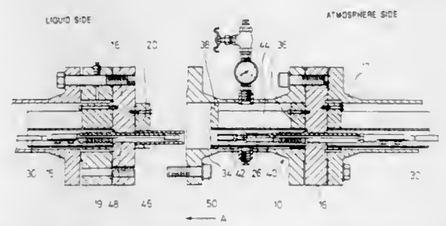
a mounting post depending from the cantilever flange below the bottom wall of the shell for connection to a grounding conductor (G) on the circuit board (PCB).

5,254,011

CABLE CONNECTING AND DISCONNECTING APPARATUS FOR SUBMERGED PUMP

Kazuo Ishikura, and Yuichiro Miura, both of Tokyo, Japan, assignors to Nikkiso Co., Ltd., Tokyo, Japan

Filed Mar. 30, 1992, Ser. No. 860,416
Claims priority, application Japan, Mar. 30, 1991, 3-67331
Int. Cl.[5] H01R *13/523*
U.S. Cl. 439—198 **2 Claims**



1. A cable connecting and disconnecting apparatus for a submerged pump for connecting and disconnecting a liquid side power cable with an atmosphere side power cable, comprising in combination a liquid side terminal header, an atmosphere side terminal header, a liquid-tight intermediate container detachably secured between said headers, the intermediate container having therein a pair of partitions, an insulating tube disposed within said intermediate container and extending between said partitions and defining with said partitions an air-tight chamber within the intermediate container and outside the insulating tube and between the partitions, an atmosphere side terminal pin projecting from said atmosphere side terminal header into said insulating tube, a liquid side terminal pin projecting from said liquid side terminal header, a pin guide

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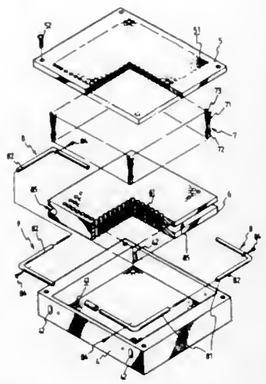
surrounding said liquid side terminal pin, said liquid side terminal pin and atmosphere side terminal pin being in electrical contact with each other, an end portion of said pin guide being disposed within an adjacent end portion of said insulating tube.

5,254,012

ZERO INSERTION FORCE SOCKET

Hsing-Sheng Wang, Chungli, Taiwan, assignor to Industrial Technology Research Institute, Taiwan

Filed Aug. 21, 1992, Ser. No. 933,989
Int. Cl.[5] H01R *13/15*
U.S. Cl. 439—263 6 Claims



1. A socket for electrically connecting electronic elements having electrically conductive pins to a circuit board. said socket comprising:

a base having four sides and a bottom with a plurality of first holes formed thereon;

a top cover which is connected with said base to form a hollow box-like member having a top side formed by said top cover and a bottom side formed by said bottom of the base and four lateral sides, said top cover having a plurality of second holes formed thereon to allow said pins of said electronic elements to penetrate therethrough;

a slidable block which is disposed inside said box-like member and slidable up and down therein, said slidable block having a plurality of funnel-like penetrating holes with a wider end formed on a first side thereof opposing said top side of the box-like member and a narrower end formed on a second side thereof opposing said bottom side of the box-like member, each of said funnel-like holes corresponding to one of said first holes and also corresponding to one of said second holes;

a plurality of pinching elements, each of which is constituted by two resilient conductive strips with first ends thereof secured together and second ends thereof separated to form a Y-shaped element, each of said Y-shaped elements being disposed inside one of said funnel-like holes with the first end thereof penetrating through said narrower end of each of said funnel-like holes and each of said corresponding first holes to form an electrical connection with said circuit board and the separate second ends thereof inside said wider end of each of the funnel-like holes for receiving said pins of the IC element therebetween; and

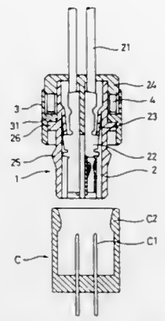
a lifting mechanism pivotally connected to said slidable block for moving said slidable block up and down so as to have said separate second ends of the Y-shaped pinching elements pinch and release said pins of the IC elements to form and break an electrical connection therebetween.

5,254,013

PUSH-PULL LOCK CONNECTOR

Hideo Tanaka, Tokyo, Japan, assignor to Hirose Electric Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 659,081, Feb. 22, 1991, abandoned. This application Jun. 23, 1992, Ser. No. 908,511
Claims priority, application Japan, Apr. 25, 1990, 2-43538[U]
Int. Cl.[5] H01R *13/627*
U.S. Cl. 439—352 8 Claims



1. A push-pull lock connector comprising:

a square sectioned plug housing made from an insulating material for housing a plurality of contacts and having an outer projection integrally formed on an outside thereof for engagement with a mating connector and a first stopper member integrally formed on said outside above said outer projection;

a square sectioned sliding sleeve surrounding and movable along an upper portion of said plug housing and having a second stopper member which is integrally formed to extend inwardly and cooperates with said first stopper member to restrict downward movement thereof and a front configuration which fits over said mating connector; and

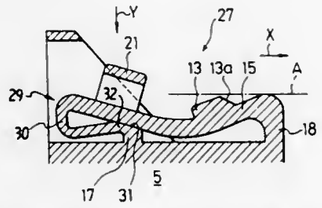
a pair of leaf springs secured to said second stopper member of said sliding sleeve in a square space between said square sectioned plug housing and said square sectioned sliding sleeve for biasing said sliding sleeve downwardly so that said sliding sleeve fits over said mating connector to thereby lock said outer projection to said mating connector.

5,254,014

MALE CONNECTOR

Sakai Yagi; Masanori Tsuji; Kimihiro Abe, and Motohisa Kashiyama, all of Shizuoka, Japan, assignors to Yazaki Corporation, Japan

Filed Feb. 12, 1992, Ser. No. 834,218
Claims priority, application Japan, Feb. 12, 1991, 3-005255[U]
Int. Cl.[5] H01R *13/627*
U.S. Cl. 439—353 5 Claims



1. A male connector to be fitted to a female connector having a fitting hood, a first terminal and a first engaging portion, comprising:

a connector body fitted to said fitting hood, having a holding chamber to hold a second terminal to be fitted to said first terminal;

an elastic lock arm integrally formed on said connector body through a front supporting portion and a rear supporting portion in an inserting direction, having a second engaging portion provided on the respective supporting portion to engage said first engaging portion; and

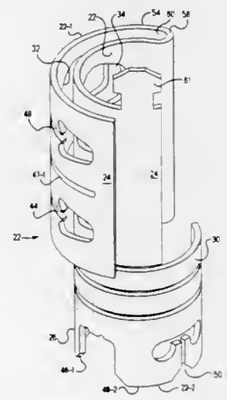
an elastic bending portion cantilevered from at least one of said front supporting portion and said rear supporting portion and said elastic lock arm, integrally connecting at least one of said front supporting portion and said rear supporting portion with said elastic lock arm said bending portion bending so as to position said elastic lock arm over at least one of said supporting portions.

5,254,015

INSULATION DISPLACING BARREL TERMINAL

James W. Robertson, Oberlin, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 7, 1991, Ser. No. 773,069
Int. Cl.[5] H01R *4/24*
U.S. Cl. 439—410 35 Claims



1. An insulation displacement connector assembly for terminating a conductor of an insulated wire for electrical connection to another conductor means, said assembly comprising:

an insulating housing having a terminal receiving cavity defined by and within a cylindrical wall, said cylindrical wall having at least one wall opening for receiving a respective said insulated wire;

a one-piece terminal or slidably mounting in said terminal receiving cavity, said terminal having a first portion, a second portion and a connecting portion integrally joining and electrically connecting said first and second portions, said first portion having at least a first wire receiving opening therethrough aligned with said at least one wall opening for receiving said insulated wire, said first portion also having a first slot which partially extends circumferentially around said terminal and which communicated with each said first wire receiving opening, said second portion adapted to be electrically connected to said other conductor means and said connecting portion being torsional and elastically yielding to permit said first portion to be rotated relative to said second portion;

said terminal receiving cavity and said second portion including cooperating stopping means adapted to prevent rotation of said second portion during rotation of said first portion, and said insulating housing adapted to provide access to said second portion for connecting thereto of said other conductor means; and

a cap for slidably mounting onto said housing, said cap being rotatable with respect to said insulating housing and having a wall portion coextending along said first portion of said terminal and having at least one cap opening therein which becomes operatively related to a respective said first wire receiving opening and said wall opening when said cap is mounted onto said housing, said wall portion being capable of engaging and rotating said first portion of said terminal when said cap is rotated;

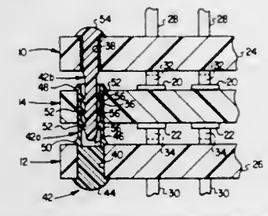
said conductor of each said insulated wire becoming terminated in a respective said first slot when said insulated wire is placed through a respective said cap opening, said wall opening and said first wire receiving opening, and said cap is rotated to cause said first portion to rotate relative to said second portion.

5,254,016

INTERCONNECT DEVICE MOUNTING APPARATUS FOR PRINTED CIRCUIT BOARDS

James J. Ganthier, Spring, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Jun. 17, 1992, Ser. No. 899,735
Int. Cl.[5] H01R *13/73*
U.S. Cl. 439—567 10 Claims



1. Apparatus for operatively coupling first and second electrical components to first and second series of spaced apart electrically conductive contact areas respectively surface mounted on opposite first and second sides of the same portion of a printed circuit board, said apparatus comprising:

a first interconnect device operatively positionable in an overlying relationship with said first series of electrically conductive contact areas,

said first interconnect device being securable the said first electrical component and having means, engageable with said first series of electrically conductive contact areas, for electrically coupling said first series of electrically conductive contact areas to the secured first electrical component;

a second interconnect device operatively positionable in an overlying relationship with said second series of electrically conductive contact area,

said second interconnect device being securable to said second electrical component and having means, engageable with said second series of electrically conductive contact areas, for electrically coupling said second series of electrically conductive contact areas to the secured second electrical component; and

holding means for respectively holding said first and second interconnect devices in their operative positions on said first and second sides of the same portion of said printed circuit board said holding means including:

a spaced plurality of mounting holes formed transversely through said printed circuit board outwardly of said first and second series of electrically conductive contact areas,

a plurality of fastening structures each having first and second enlarged end portions and an intermediate portion disposed between said first and second end portions, said intermediate portions being positionable within said mounting holes with said first and second end portions

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respectively disposed outwardly beyond said first and second sides of said printed circuit board, and

means for associating the first and second end portions of each fastening structure with each of said first and second interconnect devices in a manner such that each fastening structure exerts, on each of said first and second interconnect devices, a hold-down force directed inwardly toward said printed circuit board,

each of said fastening structures including a first section having an outer end portion defining said first end portion of the fastening structure, a second section having an outer end portion defining said second end portion of the fastening structure, and an inner end portion telescopingly engageable with said inner end portion of said first section, and cooperating means on said inner end portions for securely holding them in their telescopingly engaged relationship,

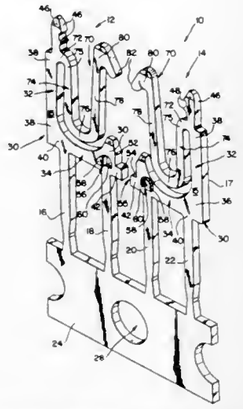
one of said first and second sections being insertable through one of said mounting holes and being provided with snap-action means for locking it to said printed circuit board in response to such insertion.

5,254,017

TERMINAL FOR LOW PROFILE EDGE SOCKET

Robert J. Tondreault, Louisville, Ky., and James F. DePriest, New Albany, Ind., assignors to Robinson Nugent, Inc., New Albany, Ind.

Filed Sep. 13, 1991, Ser. No. 759,409
Int. Cl.[5] H01R *23/70*
U.S. Cl. 439—637 **7 Claims**



1. A terminal for use in an electronic connector including a housing having a plurality of spaced apart walls defining a plurality of terminal-receiving cavities for establishing electrical contact with a conductive surface on a circuit board, the terminal comprising:

a base portion formed to include a generally planar first side surface and a generally planar second side surface opposite the first side surface;

contact means coupled to the base portion for engaging the conductive surface on the circuit board upon insertion of the circuit board into the housing; and

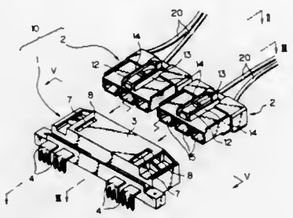
a split dimple formed on the base portion for retaining the terminal within a terminal-receiving cavity of the housing, the split dimple including a first raised section positioned to lie above the plane of the first side surface of the base portion for engaging a first wall of the housing to retain the terminal in the housing, and a first depressed section located adjacent the first raised section, the first depressed section lying below the plane of the first side surface of the base portion, the split dimple also including a second raised section aligned with the first depressed section and positioned to lie above the plane of the second side surface of the base portion for engaging a second wall of the housing to retain the terminal in the housing, and a second depressed section located adjacent the second raised section and aligned with the first raised section, the second depressed section lying below the plane of the second side surface of the base portion.

5,254,018

CONNECTOR

Hisashi Sawada, Mie, Japan, assignor to Sumitomo Wiring Systems, Ltd., Mie, Japan

Filed Jul. 16, 1992, Ser. No. 913,698
Claims priority, application Japan, Aug. 1, 1991, 3-193165
Int. Cl.[5] H01R *13/64*
U.S. Cl. 439—680 **2 Claims**



1. A connector comprising:

a main connector body comprising a front face, a plurality of coupling spaces, and a plurality of sets of male terminals, with each set of said male terminals being provided in a corresponding one of said coupling spaces in said main connector body; and

a plurality of mating connector bodies having a set of female terminals connected to sets of divided conductor circuits, each of said mating connector bodies being coupled to one of said coupling spaces in said main connector body;

each set of said male terminals being provided in connection with said sets of said divided conductor circuits, said male terminals having free ends which extend toward said mating connector bodies but which remain within said coupling spaces so as not to project beyond the front face of said main connector body;

said main connector body being provided with ribs adjacent to each set of said male terminals in each coupling space;

each of said mating connector bodies being provided with a vacant cavity adjacent to said female terminals in connection with a corresponding one of said ribs;

each rib being disposed in a different position in each of said coupling spaces so that the rib is opposed to the vacant cavity in each mating connector body.

5,254,019

CONFIGURABLE CODED ELECTRICAL PLUG AND SOCKET

Rocco J. Noschese, Wilton, Conn., assignor to Burndy Corporation, Norwalk, Conn.

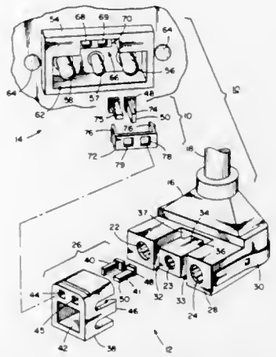
Filed Jul. 8, 1992, Ser. No. 911,556
Int. Cl.[5] H01R *13/64*
U.S. Cl. 439—681 **20 Claims**

1. An electrical connector comprising:

a housing;

electrical contacts mounted to the housing; and

a coding module connected to the housing, the coding module comprising a frame and at least two keys, the frame being connected to the housing with a window for each key, the windows being orientated towards a path of insertion with a second connector, each key having a keying section located in one of the windows thereby blocking a portion of each window, the windows being larger than the keying sections such that a receiving area is provided in each window next to the keying sections,



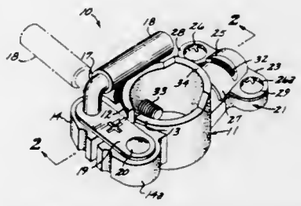
the keying sections being selectably positionable in the windows to provide a plurality of different blocked window patterns.

5,254,020

SNAP ON BATTERY CABLE CONNECTOR

Rizal A. Obligar, 602 W. 216th St., Carson, Calif. 90745

Filed Mar. 10, 1992, Ser. No. 848,861
Claims priority, application Philippines, Dec. 18, 1991, 654677
Int. Cl.[5] H01R *4/30*
U.S. Cl. 439—761 **1 Claim**



1. A snap on battery cable connector for connection to a battery cable and comprising:

an elongated electrically conductive body having a circular recess formed therein defined by a pair of semi-circular jaws projecting from a central yoke, each being formed at the free end thereof with an integral ear, a circular cam rotatably secured on one of said ears, a pair of link arms opposedly disposed at the top and bottom portions of said ears;

a lever eccentrically attached to said cam, which couples the respective one extremities of said links with one said ear; including

a handle rotatable through a predetermined path to drive said cam to shift said jaws between a released position and a post grip position;

a rivet connecting the opposite extremities of said links with the other said ear;

an open ended cable gripping neck integrally extending from said yoke and formed with a semi-circular cradle formed with laterally projecting spaced apart ribs for gripping such cable; and

a complementary clamp piece overlaying said neck and open on either end is formed with a ridge arranged to cooperate with said ribs in gripping said cable; and

screw means for connecting said clamp to said neck; and

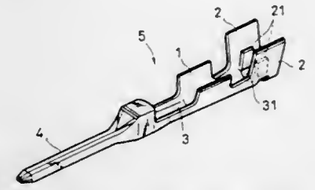
wherein one of said jaws includes a stop disposed at one end of said path to limit rotation of said handle to prevent the excessive rotation thereof.

5,254,021

ELECTRICAL TERMINAL

Hiroshi Yamamoto; Hitoshi Sakai; Takayoshi Endo, and Tamio Watanabe, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Aug. 20, 1992, Ser. No. 932,503
Claims priority, application Japan, Aug. 21, 1991, 3-066131[U]
Int. Cl.[5] H01R *4/18*
U.S. Cl. 439—866 **1 Claim**



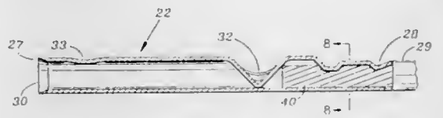
1. An electrical terminal, comprising: a conductor crimping portion for crimping the conductor of an electrical wire, and a stabilizer which crimps the insulation coating of said electrical wire and prevents rolling of said electrical terminal; said stabilizer having a pair of legs interconnected to each other through a bottom plate, said bottom plate being partly cut so as to form an aperture, the portions of said bottom plate defining both ends of said aperture being inwardly bent to form a pair of projecting tabs.

5,254,022

ELECTRICAL CONNECTOR DEVICE AND METHOD OF MANUFACTURER THEREOF

Ross M. Stuart, Tustin, Calif., assignor to Edward W. Burger and John C. Harrington, III, Phoenix, Ariz.

Continuation of Ser. No. 386,439, Jul. 28, 1989, abandoned. This application Jan. 28, 1992, Ser. No. 750,886
Int. Cl.[5] H01R *4/10*
U.S. Cl. 439—877 **8 Claims**



1. An electrical connector assembly comprising:

a) a pin connector assembly including

(i) insulating body means having an array of recesses formed in a generally planar face thereof;

ii) a pin member in each of said recesses, each of said pin members being generally identical and formed of electrically conductive material, with each of said pin members in a generally parallel, equally spaced orientation, in coaxial relation with said recesses; each pin having a first end member terminating inwardly of said face and having a second end configured for suitable attachment to a conductive cable member;

b) a socket connector assembly including

i) insulating body means having a generally planar face thereof including a portion thereof for abuting coaction with the face of said pin connector body means;

ii) an array of seamless generally identical electrically conductive tubular socket members having a first end projecting out from said socket connector body face and maintained by said socket connector body means in

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row aligned, generally parallel, equally spaced relationship and configured, dimensioned and arranged for mating coaction with a corresponding one of said pin members within said socket members, the inner configuration of said recesses generally corresponding to the outer configuration of said socket members and having a second end configured for suitable attachment to a conductive cable member;

iii) each of said socket members including spring means formed as at least one depression adjacent said first end of said socket member a given distance from the end thereof sufficient to enable partial insertion of the pin member within the socket member prior to engagement with said depression, said depression urging the pin member thereafter into abuting electrical engagement with the opposite inner sidewall of said socket member;

iv) each of said pin members and said socket members including electrical conductor securing crimp means formed at a position for depressing the conductor material thereof under pressure into frictional engagement with said pin and socket members, said resulting crimp being generally D-shaped;

v) each of said socket members including electrical conductor stop means formed in each of said socket members for enabling positioning of said conductor within the socket member a selected distance form the second end thereof; and

vi) said spring means depression is configured in shape and in depth in a manner to avoid local stress in said socket member, said depression being generally oval-shaped with the long axis of the oval in axial alignment with the longitudinal axis of said socket member, said depression located a distance from said first end of said socket member within a range equal to one to four times the outer diameter of said socket member, and said depression has a radius of curvature in the axial direction of said socket member approximately equal to twice the radius of the opening of socket member, the depth of said depression selected to produce an engaging force for holding said pin member.

5,254,023

WATER JET PROPULSION UNIT

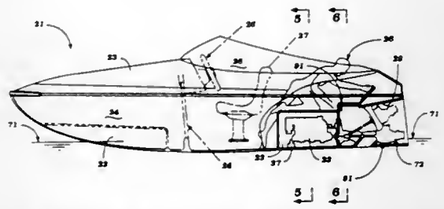
Noboru Kobayashi, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Continuation of Ser. No. 489,361, Mar. 6, 1990, abandoned. This application Jul. 22, 1991, Ser. No. 735,154

Claims priority, application Japan, Mar. 8, 1989, 1-57589; Mar. 8, 1989, 1-57590; Mar. 10, 1989, 1-58985; Mar. 16, 1989, 1-65274; Apr. 21, 1989, 1-103253

Int. Cl.[5] **B63H** *11/00*

U.S. Cl. 440—38 **33 Claims**



1. A watercraft having a hull defining a tunnel at the rear end thereof, a jet propulsion unit positioned substantially within said tunnel and having a generally downwardly facing water inlet portion, an impeller portion containing an impeller for drawing water through said water inlet portion and a discharge nozzle portion for discharging water from said impeller portion for powering said watercraft, an engine supported by said hull, drive means for driving said impeller from said engine, and means for pivoting said jet propulsion unit about a generally horizontally extending transverse axis disposed contiguous to said water inlet portion, said drive means including a universal joint disposed at the pivot axis of said jet propulsion unit, said means for pivoting said jet propulsion unit includes a pair of spaced apart guide rails fixed to said hull and having slots receiving pins affixed to said jet propulsion unit and for taking side thrusts on the jet propulsion unit.

5,254,024

ROTATABLE JET PROPULSION UNIT FOR WATERCRAFT

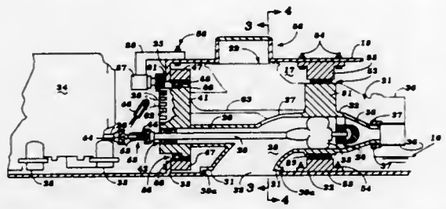
Noboru Kobayashi, and Hirofumi Imaeda, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jul. 1, 1991, Ser. No. 723,831

Claims priority, application Japan, Jun. 20, 1990, 2-163412

Int. Cl.[5] **B63H** *11/113*

U.S. Cl. 440—42 **15 Claims**



1. A jet propelled watercraft comprised of a hull, a jet propulsion unit comprised of a water inlet portion having a water inlet opening, an impeller portion receiving an impeller rotatable about a first axis extending longitudinally or said hull for drawing water through said water inlet opening and a discharge portion for discharging water moved by said impeller generally rearwardly to effect a propulsion force, and supporting means for supporting said jet propulsion unit upon said hull for rotation of at least said water inlet portion about a second axis form a downwardly facing propulsion position, said second axis extending substantially longitudinally relative to said hull and being offset form said first axis and above said first axis when said jet propulsion unit is in its downwardly facing position.

5,254,025

METHOD FOR MANUFACTURING LAMP HAVING INTERFERENCE-FIT METALLIC BASES

Dennis D. Spaulding, Methuen, Mass., and Nicholas W. Brett, Fremont, N.H., assignors to GTE Products Corporation, Danvers, Mass.

Filed Sep. 25, 1992, Ser. No. 951,509

Int. Cl.[5] **H01J** *9/34*

U.S. Cl. 445—26 **8 Claims**

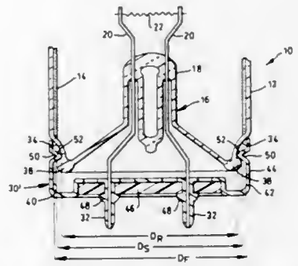
1. A method for manufacturing a lamp, said method comprising the steps of:

providing an hermetically sealed cylindrical glass envelope having at least one end portion; said end portion having an annular groove and a terminating annular seal, said annular seal having a predetermined diameter;

providing a lamp base comprising a metallic base shell having an annular flange with an inner surface, insulating means secured to said base shell, and base pin or contact means mounted on said insulating means, said annular flange having a predetermined minimum diameter at 77° F.;

heating said annular flange to a predetermined temperature so as to increase said predetermined minimum diameter of said annular flange to an expanded diameter;

thereafter, fitting said annular flange over said end portion; and



cooling said annular flange so that said inner surface thereof forms an interference fit with said end portion so as to retain said lamp base on said end portion in a cement-free manner.

5,254,026

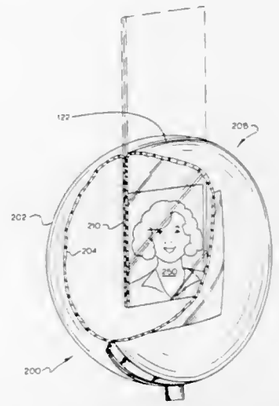
BALLOON DISPLAY DEVICE

Frederick H. Kaiser, 503 Peachtree Ct., Crystal Lake, Ill. 60014

Continuation-in-part of Ser. No. 788,597, Jan. 6, 1992, abandoned. This application Jul. 17, 1992, Ser. No. 914,920

Int. Cl.[5] **A63H** *3/06, 3/00;* **A47G** *1/06;* **B65D** *81/02*

U.S. Cl. 446—220 **13 Claims**



1. A display device having an inner section and an outer section comprising:

a) a first piece and a second piece being secured to each other;

b) said first piece and said second piece being substantially symmetrical and substantially transparent;

c) said first piece including a first body with a first pocket tab extending therefrom;

d) said second piece including a second body with a second pocket tab extending therefrom;

e) said first piece and said second piece being joined together at the edges thereof to form said outer section as an inflatable device;

f) a valve means for inflating the inflatable device connected with said inflatable device;

g) said first pocket tab and said second pocket tab combining to form a pocket as said inner section;

h) said pocket being folded within said inflatable device;

i) said first body and said second body combining to form said inflatable device and receiving said pocket;

j) a flap being secured to said first body adjacent said pocket;

k) said flap having sufficient size to extend over and cover said pocket; and

l) said flap having releasable securing means to selectively seal said inner section across said pocket.

5,254,027

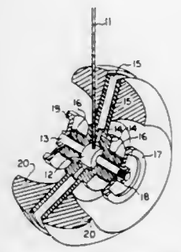
ADJUSTABLE PERFORMANCE YO-YO

John J. McAvoy, Jr., 1428 SW. 137, Seattle, Wash. 98166

Filed Dec. 13, 1991, Ser. No. 806,480

Int. Cl.[5] **A63H** *1/30*

U.S. Cl. 446—250 **7 Claims**



1. An adjustable performance yo-yo comprising in combination:

a. axle means having at least one threaded end,

b. yoke means defined as cylindrical bearing means rotatably mounted on a central portion of said axle means and having a conically shaped aperture,

c. tether means having bulbous end means captured in said yoke conically shaped aperture,

d. two inertial disks, each disk having a hub with cylidrical bearing means, said disks mounted on and allowing independent rotation motion on each end of said axle means, and spaced by said yoke to define a first gap between said two inertial disks,

e. flat smooth annular surface means on facing surfaces of each of said inertial disks whereby contact with said tether means extending is effected and whereby the said contact length of said tether is defined by

$$(\pi/4)(D_0^2 - D_1^2)/d$$

at the completion of slack tether loops wound within the said annular smooth surface means, where D_1 and D_0 are the inside and outside diameters of said flat smooth annular surface means and d is the diameter of said tether means, and where looping of said tether means causes tether cross section to become oval thereby increasing pressure of said contact between said flat smooth annular surface means and said tether means,

f. second surface means on said inertial disks extending radially beyond said flat smooth annular surface means, whereby said gap between the said two inertial disks at said second surface means forms a second gap which is larger than said first gap to inhibit further skimming contact with said tether means and wherein said tether means may be wound in said second gap beyond said flat smooth annular surface means,

g. two knob means, one fixed to said axle upon a non-threaded end by press fit, the other with threads interfacing on said axle threaded end whereby relative rotation of said two knobs provides adjustment means of said gap between said two inertial disks.

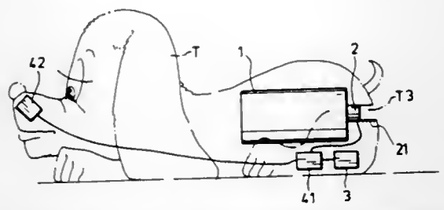
VOL 1155 ISS 3 OCT 19 1993 UMI

5,254,028

FLUID RELEASING AND SOUND GENERATING TOY

Ming-Kang Liao, 9F, No. 196, Sec. 4, Cheng-Te Rd., Taipei City, Taiwan

Filed Oct. 13, 1992, Ser. No. 959,687
Int. Cl.[5] A63H *3/28*
U.S. Cl. 446—297 6 Claims



1. A fluid releasing and sound generating toy, comprising:
a toy body having a chamber formed therein and including a cover attached to said toy body and covering said chamber, and a fluid discharge hole formed in an outer surface of said toy body;
a container containing compressed fluid therein, said container being disposed removably in said chamber of said toy body and being capable of being removed from said chamber when said cover is opened to uncover said chamber;
an electric valve connected operatively to said container so as to be activated to release said compressed fluid from said container;
a tube connected detachably to said electric valve at one end thereof and communicated with said fluid discharge hole of said toy body so as to allow said compressed fluid to flow out of said toy body from said fluid discharge hole;
a sound generating unit disposed securely in said toy body so as to be activated to generate sound;
a receiving circuit positioned in said toy body and connected electrically to said electric valve and said sound generating unit; and
a controller unit being actuatable so as to transmit an electrical signal to said receiving circuit in order to activate said electric valve to release said compressed fluid from said container, and to activate said sound generating unit to generate sound at same time.

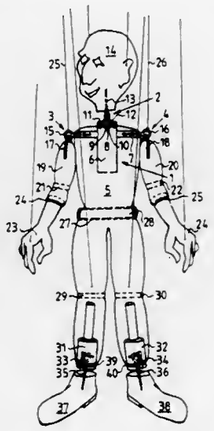
5,254,029

ARTICULATED ASSEMBLY FOR PUPPETS AND STUFFED TOY DOLLS

Mel Myland, Schinznach-Dorf, Switzerland, assignor to Glorex AG, Fullinsdorf, Switzerland

PCT No. PCT/CH91/00160, § 371 Date Apr. 6, 1992, § 102(e) Date Apr. 6, 1992, PCT Pub. No. WO92/02280, PCT Pub. Date Feb. 20, 1992
PCT Filed Aug. 8, 1991, Ser. No. 844,666
Claims priority, application Switzerland, Aug. 10, 1990, 2615/90
Int. Cl.[5] A63J *19/00*
U.S. Cl. 446—362 6 Claims

1. An articulated assembly for puppets and stuffed toy dolls, comprising:
a neck-shoulder element having a neck articulation and two shoulder articulations, said neck-shoulder element further including a first roundwood crossedly attached to a second roundwood, said second roundwood being thinner than said first roundwood;
a first eyebolt;
a first loop being secured to an upper front side of said first roundwood on which said first eyebolt is suspended as an eyelet;
a second loop and a third loop;
a second eyebolt and a third eyebolt each being attached to an end of said second roundwood, said second eyebolt and said third eyebolt forming eyelets through which said second loop and said third loop are capable of being drawn, so that each of said neck and shoulder articulations are formed by one of said eyelets in a closed mode with said first loop, said second loop and said third loop, respectively, being passed through one of said eyelets in said closed mode, each of said first loop, said second loop and said third loop being secured by a free end to one side of said neck and shoulder articulations, respectively;



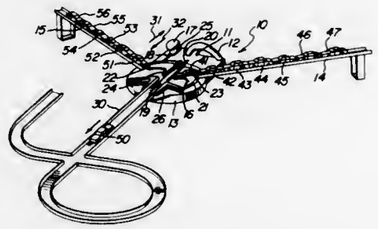
two foot elements each having a foot articulation; and, means for attaching said two foot elements to said neck-and-shoulder element.

5,254,030

RAPID ACTION TOY VEHICLE LAUNCHER

Eric C. Ostendorff, Torrance, and Toshio Yamasaki, Long Beach, both of Calif., assignors to Mattel, Inc., El Segundo, Calif.

Filed Aug. 17, 1992, Ser. No. 929,965
Int. Cl.[5] A63H *29/00, 17/00*
U.S. Cl. 446—430 8 Claims



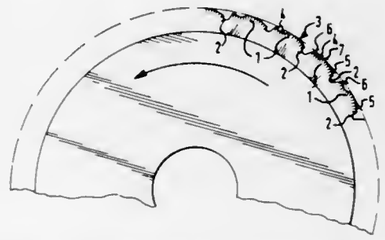
1. A toy vehicle launcher comprising:
a base defining a launch platform;
a carriage pivotally coupled to said launch platform defining a pair of launch stations each configured to receive a toy vehicle;
a pair of feed ramps coupled to said launch platform for receiving a plurality of toy vehicles;
means for accelerating a toy vehicle; and
operative means coupled to said carriage for pivotally moving said carriage to align one of said launch stations with one of said feed ramps and to align the other of said launch stations with said means for accelerating and for activating said means for accelerating.

5,254,031

TOOL FOR DISSECTING AND DISMEMBERING SLAUGHTERED STOCK

Axel Balke, Augustinerstr. 24, Solingen 19, Fed. Rep. of Germany

Filed May 22, 1992, Ser. No. 886,905
Claims priority, application Fed. Rep. of Germany, May 27, 1991, 4117229
Int. Cl.[5] B23D *35/00;* A22C *17/04*
U.S. Cl. 452—149 24 Claims



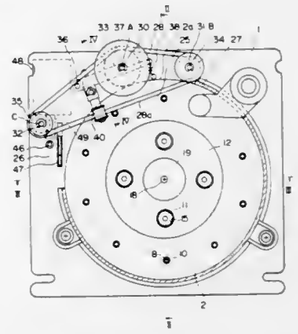
1. A cutting tool comprising a blade having a plurality of cutting teeth (1) spaced from each other by an intermediate cutting gap (2), each cutting tooth having a cutting edge (3), said blade being adapted for movement in a cutting direction, each cutting edge (3) including a concave area (4) at a leading edge of each cutting tooth with respect to the cutting direction, each cutting edge (3) further including a convex area (5) adjoining said concave area (4), and said convex area (5) includes a convex edge which slopes from a high point thereof adjacent said concave area (4) to a low point spaced therefrom in a direction opposite to said cutting direction.

5,254,032

COIN FEEDING DEVICE

Hiroshi Abe, Tokyo, Japan, assignor to Asahi Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 16, 1992, Ser. No. 915,013
Claims priority, application Japan, Jul. 19, 1991, 3-269963
Int. Cl.[5] G07D *1/00*
U.S. Cl. 453—56 6 Claims



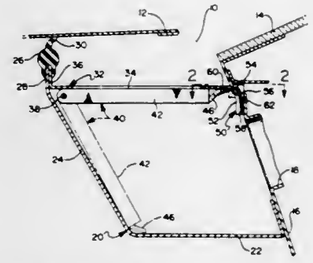
1. A coin sorting device comprising:
a rotary plate having a front surface on the side where a coin is loaded at a lower portion thereof and a rear surface on its other side, said rotary plate being adapted for use in feeding said coin to a coin outlet located around a periphery of said front surface;
a coin transporting piece reception hole passing through said rotary plate;
a coin transporting piece carrier adapted to be rotated in synchronism with said rotary plate in an opposed position, said coin transporting piece being inclined to said rear surface of said rotary plate at a predetermined angle;
a coin transporting piece protruding from said coin transporting piece carrier, said coin transporting piece projecting from said front surface and passing through said coin transporting piece reception hole, wherein said coin transporting piece catches said coin at the lower portion of said front surface and feeds it to an upper portion of said front surface, and said predetermined inclination angle is in the range such that said coin transporting piece extends substantially from said front surface as said coin transporting piece approaches the lower portion from the upper portion of said front surface, and that said coin transporting piece is caused to substantially withdraw in said front surface as said coin transporting piece approaches the upper portion from the lower portion of said front surface;
coin feeding belt means for feeding said coin to said coin outlet from the upper portion of said front surface, said coin feeding belt means comprising a belt member for contacting said coin in order to transport said coin from the upper portion of said front surface to said coin outlet; and
a belt driving member for driving said belt member in a rotational direction of said rotary plate, said belt driving member comprising a belt driving pulley which is rotated by being in frictional contact with the peripheral surface of said rotary plate.

5,254,033

AUTOMATICALLY RELEASED AIR INLET FILTER

Steven M. Brauen, Nospelt, Luxembourg, and James L. Cronk, Steyning, England, assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 1, 1992, Ser. No. 937,769
Int. Cl.[5] B60H *3/06*
U.S. Cl. 454—146 7 Claims



1. A filtered air inlet for an automotive ventilation system subject to an accumulation of dirt comprising:
an air induction opening on a vehicle;
a passage inside the induction opening;
a filter in the passage for filtering air flowing from the inlet to the passage, whereby gradual dirt accumulation on the filter in combination with air flow causes an increasing force on the filter;
means for mounting the filter in the passage for movement between a first operative filtering position and a second position for bypassing the air flow; and
latch means responsive to the force on the filter for holding the filter in the first position when the force on the filter is below a threshold and for releasing the filter for movement to the second position when the force reaches the threshold.

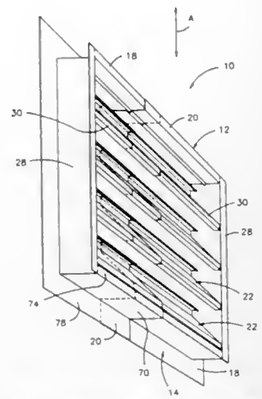
VOL 1155 ISS 3 OCT 19 1993 UMI

5,254,034

ADJUSTABLE WIDTH LOUVER

Ronald A. Roth, Philadelphia, Pa., assignor to Penn Ventilator Company, Inc., Philadelphia, Pa.

Filed Apr. 25, 1991, Ser. No. 691,555
Int. Cl.[5] F24F *13/18*
U.S. Cl. 454—277 13 Claims



1. A horizontally adjustable louver, comprising:
a. horizontally spaced vertically extending side members movable horizontally within a continuum of positions;
b. vertically spaced two-piece telescoping top and bottom members extending horizontally between said side members, respective first and second pieces of said top and bottom members being interchangeable; and
c. telescopingly engaging pairs of blade members extending between said side members, said blade members being interchangeable and each blade member comprising:
i. a horizontally elongated web formed along one horizontally extending edge of said blade member and defining a blade member vertical extremity;
ii. a horizontally elongated hook formed along a second horizontally extending edge of said blade member and defining a blade member second vertical extremity;
iii. respective hook portions of each blade member of a pair slidably receiving webs of the paired blade member;
iv. respective hook portions of respective blade members of a pair defining respective upper and lower vertical extremities of said paired blade members.

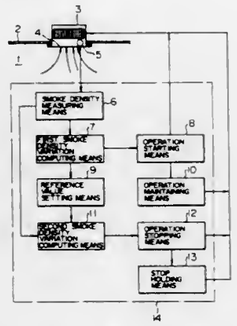
5,254,035

AUTOMATIC OPERATION APPARATUS FOR VENTILATING FAN

Migifumi Kiuchi, Kasugai, Japan, assignor to Matsushita Seiko Co., Ltd., Osaka, Japan

Filed Oct. 14, 1992, Ser. No. 960,054
Claims priority, application Japan, Oct. 18, 1991, 3-270751
Int. Cl.[5] F24F *11/00*
U.S. Cl. 454—343 3 Claims

1. An automatic operation apparatus for a ventilating fan comprising:
a smoke density detection element for detecting a smoke density in a room;
a smoke density measuring means for measuring a detection output from said smoke density detection element for every predetermined time;
a first smoke density variation computing means for computing a variation in smoke density from a smoke density measured by said smoke density measuring means at that time and an initially measured smoke density used as a reference value;
an operation starting means for starting operation of said ventilating fan when the variation computed by said first smoke density variation computing means exceeds a first set value;
a reference value setting means for storing therein said initially measured smoke density as a reference value;
an operation maintaining means for maintaining the operation of said ventilating fan, irrespective of a detection output from said smoke density measuring element, until a predetermined time elapses after the operation of said ventilating fan is started;



a second smoke density variation computing means for computing a variation in smoke density from a smoke density measured by said smoke density measuring means and the reference value stored in said reference value setting means after the predetermined time elapses;
an operation stopping means for stopping the operation of said ventilating fan when the variation computed by said second smoke density variation computing means becomes lower than a second set value; and
a stop maintaining means for maintaining stopping of the operation of said ventilating fan, irrespective a detection output from said smoke density detecting element until a predetermined time elapse after the operation of the ventilating fan is stopped by said operation stopping means.

5,254,036

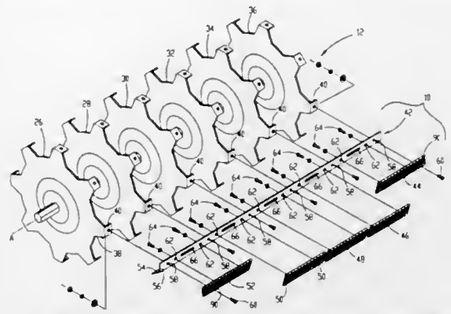
SECTIONAL RASP BAR ASSEMBLIES FOR COMBINE THRESHING CYLINDERS

Eric Johnson; R. Nathan Massey, and Kevin L. Myers, all of Salina, Kans., assignors to Great Plains Manufacturing, Incorporated, Assaria, Kans.

Filed Jul. 5, 1991, Ser. No. 725,315
Int. Cl.[5] A01F *12/20*
U.S. Cl. 460—71 20 Claims

1. A sectional rasp bar assembly adapted for mounting onto supporting structure of a combine threshing cylinder, said assembly comprising:
an elongated backing plate;
means for mounting said plate on said supporting structure in such a manner that the longitudinal axis of the plate extends parallel to the axis of rotation of the cylinder in radially spaced relation to said axis of rotation;
a plurality of rasp bar sections, each having a number of threshing teeth thereon; and

means for detachably, rigidly mounting said sections immovably on said plate in a series extending along the length of



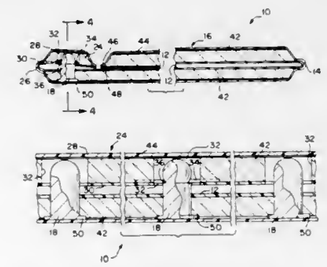
the latter and in a manner to present regions of structural discontinuity between successive sections in the series.

5,254,037

PORTABLE WRITING APPARATUS

Scott R. Penniman, Spring House, Pa., assignor to R.E.P. Industries, Inc., Lansdale, Pa.

Filed Apr. 6, 1992, Ser. No. 863,614
Int. Cl.[5] B41L *3/04*
U.S. Cl. 462—79 11 Claims



1. A portable writing apparatus comprising:
(a) a substantially flat writing surface,
(b) a plurality of post means adjacent one edge of the writing surface and extending outwardly therefrom, at least one of said post means being formed with a recess therein,
(c) latch cover means designed to overlay said plurality of post means, said latch cover means defining a plurality of openings therein for receiving said plurality of post means when said latch cover means is laid thereover, and
(d) latch means embedded in said latch cover means for releasably attaching said latch cover means to said post means having a recess therein, said latch means being integral with said latch cover means and being associated with at least one of said openings in said latch cover means.

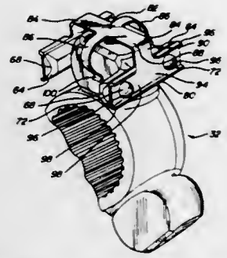
5,254,038

BALL TRIPLAN CONSTANT VELOCITY JOINT CENTERING SPRING

Dean J. Schneider, Highland, Mich., assignor to GKN Automotive, Inc., Auburn Hills, Mich.

Filed Jan. 23, 1992, Ser. No. 824,554
The portion of the term of this patent subsequent to Nov. 3, 2009, has been disclaimed.
Int. Cl.[5] F16D *3/205*
U.S. Cl. 464—111 15 Claims

1. A positioning spring for positioning a plurality of rolling elements with respect to a trunnion member of a triplan universal joint, said spring comprising:
a body having a first and second end;
first arm means including a first frame extending from said first end of said body, said first frame defining a first pair of apertures, each aperture of said first pair of apertures retaining one rolling element of said plurality of rolling elements with respect to said trunnion member of said triplan universal joint;
second arm means including a second frame extending from



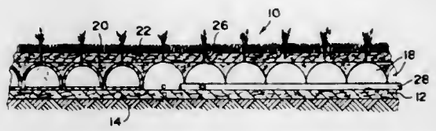
said second end of said body, said second frame defining a second pair of apertures, each aperture of said second pair of apertures retaining one rolling element of said plurality of rolling elements with respect to said trunnion member of said triplan universal joint;
resilient retaining means for securing said position spring to said trunnion member of said universal joint and for positioning at least one of said plurality of rolling elements with respect to said trunnion member, said resilient retaining means interposed between said first and second arm means and extending from said body.

5,254,039

PLAYGROUND CONSTRUCTION

Juan Garcia, 13335 Little Morongo Rd., Desert Hot Springs, Calif. 92240

Filed Sep. 10, 1992, Ser. No. 942,788
Int. Cl.[5] E04F *15/16*; A63C *19/04*
U.S. Cl. 472—92 4 Claims



1. An improved playground construction which comprises:
a) a layer of padding placed upon a hard ground surface of a playing field;
b) a plurality of inflatable dome-shaped ribs placed one next to each other on said layer of padding which extend transversely to the length of the playing field;
c) a filler material placed between the tops of said ribs, so as to form a flat surface thereacross;
d) a strip of artificial grass placed upon the flat surface of said filler material and the tops of said ribs; and
e) means for conveying compressed air into said ribs, so that said ribs will inflate to help cushion the fall of players and reduce injury, while giving more spring and bounce to said strip of artificial grass for running players.

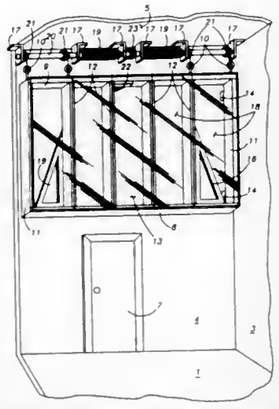
VOL 1155 ISS 3 OCT 19 1993 UMI

5,254,040

HANDBALL - SQUASH COURT CONVERSION SYSTEM

James D. Eller, E. 14420 6th Ave., Spokane, Wash. 99216, and Jack L. Cosby, S. 6127 Crestline Ave., Spokane, Wash. 99223

Filed Oct. 11, 1991, Ser. No. 775,720
Int. Cl.[5] E06B 7/34
U.S. Cl. 472—94 11 Claims



1. An apparatus which allows a handball court, comprised of a front wall, two side walls, a rear wall, a ceiling and a floor, to be used to play the game of squash in addition to the game of handball, and which comprises:
   a. a rear squash wall comprised of:
      i. a vertical playing surface; and
      ii. a structural support means to which said playing surface is attached, and which is attachable to and detachable at an intermediate position perpendicular to the two side walls of the handball court, wherein the vertical playing surface facilitates playing the game of squash, and which includes a means through which squash players can enter and exit; and
   b. a hoist means attached to a structural member which provides structural support for the handball court, and said hoist means which is operatively connected to said rear squash wall such that the hoist means lifts the rear squash wall to and suspends it at a position over a rear portion of the handball court so that the rear squash wall is above the area used to play handball and approximately parallel to the rear wall of the handball court, and said hoist means which can also lower the rear squash wall back down to the floor of the handball court for re-attachment to the handball court to play the game of squash.

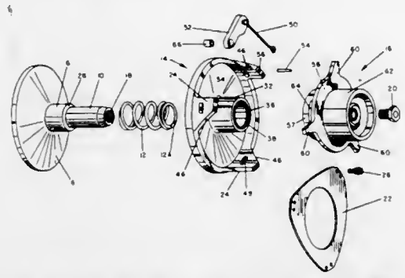
5,254,041

V-DRIVE CLUTCH ASSEMBLY

Marley J. Duclo, P.O. Box 730, Hotchkiss, Colo. 81419

Filed Oct. 26, 1992, Ser. No. 967,104
Int. Cl.[5] F16H 55/00
U.S. Cl. 474—14 4 Claims

1. A V-drive clutch assembly for a V-belt driven vehicle comprising:
   a fixed sheave plate adapted to be secured to the drive shaft of said vehicle, a hollow belt idler support member centrally affixed to the convex surface of said fixed sheave plate and a hollow shaft member affixed to said idler support member, said shaft member having a diameter less than the diameter of said idler support member and being threaded at its outer end;
   a neutral retainer coil spring mounted on said shaft member and bearing against said idler support member under tension;
   a movable sheave plate assembly, said assembly being axially movable along the axis of said idler support member in response to the speed of the engine of said vehicle, said sheave plate assembly having a convex surfaced sheave plate which cooperatively, axially moves toward or away from said fixed sheave plate to engage or release said V-belt therebetween, a plurality of shift cam means affixed around the periphery of the concave surface of said movable sheave plate, a centrally positioned hub affixed to the concave surface of said movable sheave plate, said hub being adapted to retain said coil therein and of sufficient internal diameter to move axially along the axis of said idler support member;



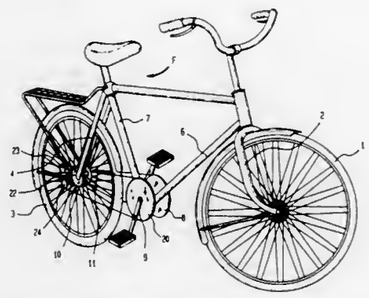
   a cam follower assembly which cooperatively mates with the hub of said movable sheave plate, said cam follower assembly having weight arm retainer ring means, drive lug plate means adapted to engage said shift cam means and a plurality of weight arms, said lug plate means being affixed to the outer end of said hollow shaft, one end of each weight arm being pivotally connected to said cam means and the other end of the weight arm being pivotally connected to said retainer ring means, said weight arms thereby being radially biased relative to the axis of said drive shaft; and
   bearing plate means affixed to the outer end of said cam shaft means.

5,254,042

TRANSMISSION DEVICE ASSEMBLY FOR A BICYCLE

Kim Chung-Suk, Ga/109, Daeheung Apartment, 134-1, Ojeong-dong Jung-ku, Bucheo-shi, Kyonggi-do, Rep. of Korea

Filed May 20, 1992, Ser. No. 886,034
Claims priority, application Rep. of Korea, May 20, 1991, 91-7179; Mar. 25, 1992, 92-4792
Int. Cl.[5] F16H 59/00
U.S. Cl. 474—69 11 Claims



1. A transmission device for a bicycle comprising:
   a first transmission means for obtaining a forward driving force wherein a first free wheel is driven in conformity with a movement of a first drive unit when a crank shaft is forwardly rotated; and

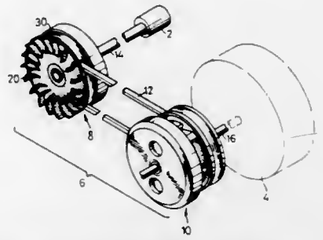
   a second transmission means for obtaining said forward driving force wherein a rotational force is produced in a rotational direction of a second drive unit, said rotational force being applied to a second free wheel under a reverse rotation of crank shaft.

5,254,043

VARIABLE TRANSMISSION PULLEY

O'a Ling, Taipei, Taiwan, assignor to Vincent F. Colvin, Taipei, Taiwan

Filed Nov. 17, 1992, Ser. No. 977,642
Int. Cl.[5] F16H 55/52
U.S. Cl. 474—69 3 Claims



1. A pulley mounting a shaft and comprising:
   a first section securely mounting the shaft and having a belt-engaging side shaped as a truncated cone;
   a second section mounting the shaft so that said second section can axially move along said shaft but not rotating with respect to the shaft, and having a belt-engaging side shaped as a truncated cone and a slide-engaging side;
   a disk securely mounting the shaft and having a slide-engaging side;
   a number of slides contacting said slide-engaging sides of said second section and disk;
   a belt contacting on said belt-engaging sides of said first and second sections;
   when the rotational speed of the shaft increases, centrifugal forces exerted on said slides overcome a tension in said belt, so that said slides radially spread between said slide-engaging sides of said second section and disk for axially moving said second section toward said first section, so that said belt-engaging sides of said first and second sections expand said belt for raising a radius of curvature of said belt riding thereon;
   when the rotational speed of the shaft decreases, the tension in said belt overcomes the centrifugal forces exerted on said slides, so that said belt contracts for reducing the radius of curvature of said belt.

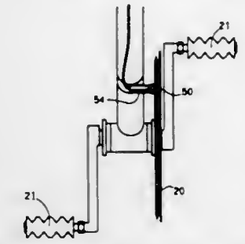
5,254,044

CONTROL SYSTEM FOR ADJUSTING BICYCLE GEAR RATIOS

Paul M. Anderson, 3167 Carnegie Pl., San Diego, Calif. 92122

Filed Oct. 7, 1991, Ser. No. 772,163
Int. Cl.[5] F16H 61/00
U.S. Cl. 474—70 58 Claims

1. In combination,
   a bicycle having front and rear wheels and a sprocket and a pedal crank for driving the sprocket and a gear chain in engagement with the sprocket and a plurality of gears on the rear wheel, the chain being adjustable in position relative to the gears on the rear wheel to provide an engagement between individual ones of the gears and the gear chain,
   means operative in an automatic mode and operatively coupled only to the sprocket and the frame for determining the speed of the sprocket at each instance, and
   means operative in the automatic mode and responsive at each instance only to the determination of the sprocket speed for adjusting the position of the gear chain relative



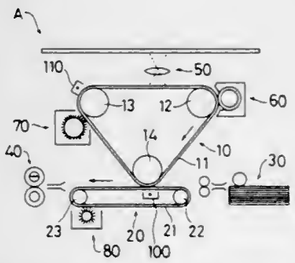
to the gears on the rear wheel to maintain the speed of the sprocket within particular limits.

5,254,045

FLAT BELT DRIVING DEVICE

Mitsuhiko Takahashi; Katsuya Yamaguchi; Yoshihisa Nakano; Hiroshi Matsuoka; Arao Umeda; Shinya Yuki, and Sadao Tanimoto, all of Kobe, Japan, assignors to Bando Chemicals Industries, Ltd., Kobe, Japan

Filed Oct. 17, 1991, Ser. No. 777,938
Claims priority, application Japan, Oct. 23, 1990, 2-286252; Jan. 22, 1991, 3-5553
Int. Cl.[5] F16H 57/00, 55/48
U.S. Cl. 474—92 7 Claims



1. A flat belt driving device having a plurality of rollers for running a flat belt trained thereto, comprising:
   an elastic body with which a plurality of short fibers are mixed for forming at least an outer peripheral belt contacting surface layer on at least one of said rollers,
   said short fibers being averagely oriented in a specific direction in said elastic body and protruding at their tip portions from the surface of said roller in a range of 0.01 to 1.0 mm.

5,254,046

BELT RETAINER

Gary D. Hohnl, Slinger, Wis., assignor to Deere & Company, Moline, Ill.

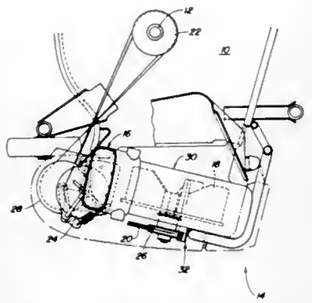
Filed Jun. 26, 1992, Ser. No. 904,744
Int. Cl.[5] F16H 7/08
U.S. Cl. 474—101 7 Claims

1. Retaining means usable with a rotatable pulley carried on a housing and an endless drive element entrained around the pulley, the retaining means including:
   a bracket having a first leg slidably mounted to the housing and a second upstanding leg joined with the first, the bracket being shiftable between
   a first position whereat the second leg is adjacent the endless drive element and

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a second position whereat the second leg is spaced from the endless drive element;

stop means between the bracket and housing for releasably securing the bracket in its first position and



means biasing the bracket toward the housing for engagement with the stop means.

5,254,047

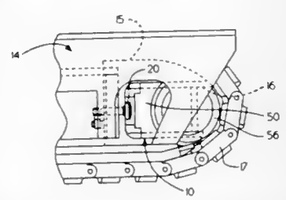
CHAIN TAKE-UP APPARATUS

Roger C. Anderson, Franklin, Pa., assignor to Joy Technologies Inc., Pittsburgh, Pa.

Filed Nov. 12, 1991, Ser. No. 790,941

Int. Cl.[5] F16H *7/14*

U.S. Cl. 474—110 **8 Claims**



1. Apparatus for adjusting the operative position of a rotatable support for an endless driven element, said rotatable support being mounted on a frame for movement in a first direction, comprising:

a piston member non-rotatably attached to said frame;

a carrying member operably attached to said rotatable support, said carrying member defining a cylinder adapted to slidably receive said piston in fluid sealing relationship therein;

a screw member rotatably received within said piston member;

means for axially advancing said carrying member on said piston in said first direction to a predetermined position;

means for advancing said screw member relative to said piston member to contact said carrying member when said carrying member is in said predetermined position; and

means for locking said screw member in position after contacting said carrying member in said predetermined position to thereby mechanically retain said carrying member in said predetermined position.

5,254,048

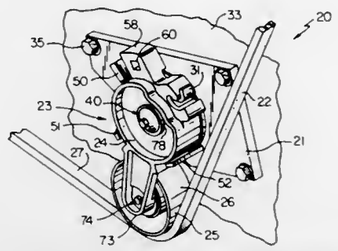
BELT TENSIONING SYSTEM, BELT TENSIONER THEREFOR AND METHODS OF MAKING THE SAME

David E. Gardner, Royal Oak, and David B. Novak, Bloomfield Hills, both of Mich., assignors to Dayco Products, Inc., Dayton, Ohio

Division of Ser. No. 832,297, Feb. 7, 1992. This application Oct. 30, 1992, Ser. No. 970,345

Int. Cl.[5] F16H *7/00*

U.S. Cl. 474—135 **10 Claims**



1. In a method of making a belt tensioning system comprising a support means having an abutment means, an endless transmission belt construction carried by said support means and arranged to move in a certain path relative to said support means, an arm pivotally mounted to said support means, a pulley rotatably carried by said arm and being in engagement with said belt construction, and a wound coiled spring having opposed ends one of which is operatively interconnected to said abutment means of said support means and the other of which is operatively interconnected to said arm whereby the force of said wound coiled spring tends to pivot said arm in a direction that urges said pulley against said belt construction with a force that tensions said belt construction, the improvement comprising the steps of forming said arm to have a shoulder means for being engaged by said one of said opposed ends of said wound coiled spring by the force of said wound coiled spring so as to permit removal of said arm and said wound coiled spring as a self-contained unit from said support means when said arm is pivoted to a certain position where said shoulder means of said arm engages said one end of said wound coiled spring and effectively moves said one end of said wound coiled spring out of contact with said abutment means of said support means, and mounting said arm to said support means with a single fastening member.

5,254,049

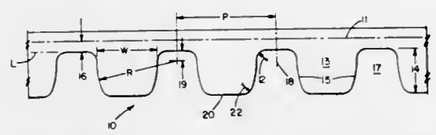
SYNCHRONOUS DRIVE BELT

Michael J. W. Gregg, Lincoln, Nebr., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 1, 1992, Ser. No. 876,992

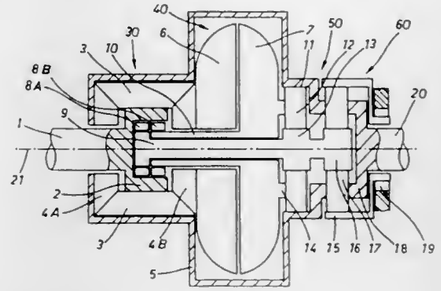
Int. Cl.[5] F16G *1/28, 5/20*

U.S. Cl. 474—205 **3 Claims**



1. An endless synchronous drive belt comprised of a resilient elastomer, reinforced with one or more reinforcing members extending along and thereby defining a pitch line, with a succession of identical teeth, each having a tooth depth, uniformly spaced apart by their pitch P, having fore and aft flank surfaces, the space between adjacent teeth defining a land line and a tooth root radius which inscribes a 90° arc which forms the transition between the land line and a tangent to the flank surface perpendicular to the land line and has its center in said land area wherein each said flank surface is shaped in cross-section as an arc of a circle with a radius R having its center located in said land area no further than said centerline away from its opposed flank and below said land line from a distance equal to said tooth root radius up to one half said tooth depth.

an input shaft, fixedly connected to said power source, and an output shaft having a common centre axis, and a box drum rotatably journalled relative to said centre axis;



a differential;

a fluid clutch;

a first planetary gear, having a plurality of planetary wheels;

a secondary planetary gear having a plurality of planetary wheels;

a gearshift main shaft whose rotating axis coincides with said centre axis, said input shaft being operatively adapted to transmit a power-source activated rotating motion to said gearshift main shaft and, by said differential, to box drum and to a pump wheel included in the fluid clutch, characterized in that power transmission from said input shaft to said main shaft is arranged through a first overrunning clutch such that said main shaft has a speed of rotation which is at least equal to that of said input shaft; both a sun wheel included in said first planetary gear and a sun wheel included in said second planetary gear are coupled to said main shaft; a first planetary support included in said first planetary gear is coupled to a turbine disc included in the fluid clutch and a first annular gear for imparting a rotation a moment to said planetary wheels of said first planetary gear is fixedly connected to said box drum; said turbine disc of said fluid clutch is also coupled with said input shaft through a second overrunning clutch such that the speed of rotation of said turbine disc is limited not to exceed that of said input shaft; a second planetary support included in said second planetary gear is coupled to the drum box; a second annular gear peripheral disc which is capable of being set in rotatable motion by said planetary wheels of said second planetary gear is journalled to be rotatable relative to said centre axis and in such a way fixedly through a third overrunning clutch mounted on a stationary body portion such that the rotation of said second annular gear is prevented in the direction opposite to a rotating direction of said box drum.

5,254,050

POWER TRANSMISSION BELT

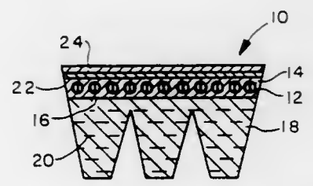
Masayoshi Nakajima, Motoyamaminamimachi; Kazuhiro Takeda, and Kazutoshi Ishida, both of Kobe, all of Japan, assignors to Mitsuboshi Belting Ltd., Japan

Filed Mar. 27, 1991, Ser. No. 676,089

Claims priority, application Japan, Mar. 29, 1990, 2-83142

Int. Cl.[5] F16G *1/08*

U.S. Cl. 474—260 **23 Claims**



1. A power transmission belt comprising a compressed rubber layer produced from a rubber composition containing a chlorosulfonated polyethylene obtained by chlorosulfonating a linear, low density polyethylene to obtain a chlorosulfonated polyethylene having a chlorine content in the range of about 15 to about 35% by weight and an adhesion rubber layer produced from a composition that does not contain the chlorosulfonated polyethylene.

5,254,051

GEARSHIFT

Erkki Saarijärvi, Rovaniemi, Finland, assignor to Matti Mäkilä, Loimaa, Finland, a part interest

PCT No. PCT/FI90/00295, § 371 Date Jul. 1, 1992, § 102(e) Date Jul. 1, 1992, PCT Pub. No. WO91/09239, PCT Pub. Date Jun. 27, 1991

PCT Filed Dec. 13, 1990, Ser. No. 858,987

Claims priority, application Finland, Dec. 14, 1989, 895972

Int. Cl.[5] F16H *47/08, 3/72*

U.S. Cl. 475—47 **1 Claim**

1. A continuously variable hydro-mechanical transmission, comprising a power source:

5,254,052

POWER TRANSMITTING SYSTEM FOR A FOUR-WHEEL DRIVE MOTOR VEHICLE

Toshio Kobayashi, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 10, 1991, Ser. No. 698,677

Claims priority, application Japan, May 23, 1990, 2-134307

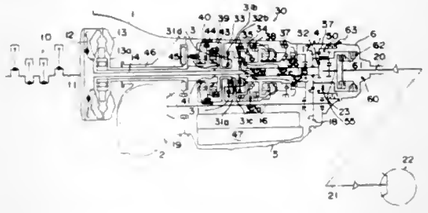
Int. Cl.[5] F16H *1/42;* **B60K** *17/34*

U.S. Cl. 475—249 **3 Claims**

1. In an automatic transmission for a four-wheel drive motor vehicle, having an engine mounted on said vehicle, a torque

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converter directly connected to said engine and being housed in a transmission case for transmitting a torque of said engine to



a front drive shaft and a rear drive shaft, a central differential coaxially mounted on an output shaft for differentiating speed between front and rear drive shafts, said central differential having a complex planetary gear device and a first friction clutch interposed between a first intermediate shaft connected with a carrier of said planetary gear device and said rear drive shaft, said front drive shaft being driven via said carrier, a fixed portion provided on said central differential, and said complex planetary gear device comprising a first pinion and a second pinion integrally supported by a carrier, and a second intermediate shaft meshed with said planetary gear device, the improvement of the automatic transmission which comprises:

a second friction clutch mounted on said fixed portion for restricting a differentiating function of said central differential; and

a third friction clutch mounted on said second intermediate shaft for transmitting said power to said rear wheels in order to distribute said torque to said front and rear wheels by controlling said differential in dependency on said differentiating function.

5,254,054

Patent Not Issued For This Number

5,254,053

FIVE-SPEED AUTOMATIC TRANSMISSION

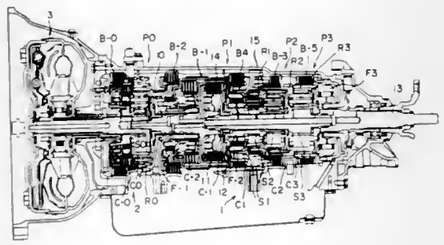
Takao Taniguchi, Okazaki; Kazumasa Tsukamoto, Toyota; Masahiro Hayabuchi; Masanori Kadotani, botb of Anjo; Masahiko Ando, Okazaki; Yasuo Hojo, Nagoya; Seitoku Kubo, Toyota; Yutaka Taga, and Hidehiro Oba, both of Aichi, all of Japan, assignors to Aisin AW Co., Ltd. and Jidosha Kabushiki Kaisha Toyoda, both of Japan

Filed Oct. 23, 1992, Ser. No. 964,631

Claims priority, application Japan, Oct. 29, 1991, 3-308340

Int. Cl.[5] F16H *3/62*

U.S. Cl. 475—276 **1 Claim**



1. A five-speed automatic transmission comprising:

a main transmission which includes an input element and three sets of planetary gearing including speed change elements, clutches for engaging and disengaging said speed-change elements and brakes for fixing and releasing said speed change elements, said main transmission providing four forward speed ranges and one reverse speed range; and

an over-drive transmission of a front disposition type which includes an over-drive planetary gearing set having a speed change element connected to the input element of said main transmission, said speed change element of said overdrive planetary gearing set being adapted to be engaged, disengaged and fixed to selectively provide one of a directly coupled stage and an over-drive stage; said directly coupled stage being released in said reverse speed range; and one of said clutches of said main transmission being engageable to establish said directly coupled stage and one of said brakes being engageable for establishing said reverse speed range.

5,254,055

SEAT RECLINING DEVICE WITH PLANETARY GEARS

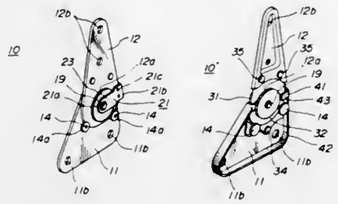
Tadashi Kawakita; Chiyokatsu Yokokura, and Mikio Kihata, all of Kanagawa, Japan, assignors to Ikeda Bussan Co., Ltd., Ayase, Japan

Filed Jun. 26, 1992, Ser. No. 904,665

Claims priority, application Japan, Jun. 28, 1991, 3-057875[U]

Int. Cl.[5] A47C *1/02*

U.S. Cl. 475—341 **10 Claims**



1. A seat reclining device for a reclining seat, comprising:

a base plate adapted to be secured to a seat base of the seat, said base plate including a first ring gear;

an arm plate adapted to be secured to a seatback of the seat, said arm plate including a second ring gear;

a planetary gear mechanism interposed between said base and arm plates which induces a stepless pivoting movement of said arm plate relative to said base plate, said planetary gear mechanism including

said first and second ring gears whereby separation of said first and second ring gears from each other tends to cause a malfunction of said planetary gear mechanism,

a plurality of planetary gear bodies, each gear body having first and second gears respectively meshed with said first and second ring gears,

a sun gear meshed with the second gear of each gear body, and

a portion shaft on which said sun gear is securely disposed, said rotation shaft passing through respective center openings formed in said base and arm plates,

a retainer which holds said base plate and said arm plate to suppress the separation of said base and arm plates, said retainer being a generally U-shaped metal member and including

a reduced U-shaped base portion which straddles end portions of said base and arm plates, and

two arm portions which extend in the same direction from said base portion to hold therebetween said base and arm plates, said arm portions having at their leading ends respective openings through which said rotation shaft passes;

wherein said first ring gear, said second ring gear and said sun gear are concentrically arranged with respect to an axis of said rotation shaft.

5,254,056

TOROIDAL TYPE CONTINUOUSLY VARIABLE TRANSMISSION

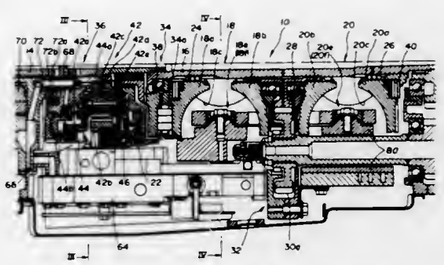
Masaki Nakano, Kanagawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 31, 1992, Ser. No. 922,489

Claims priority, application Japan, Aug. 1, 1991, 3-214258

Int. Cl.[5] F16H *15/08*

U.S. Cl. 476—10 **9 Claims**



1. A toroidal type continuously variable transmission which is drivingly connected to a torque converter or fluid coupling, said toroidal type continuously variable transmission comprising:

an input shaft connected to the torque converter or fluid coupling;

a first shaft disposed to be coaxial with said input shaft;

a second shaft disposed to be parallel with said first shaft;

first and second toroidal transmission mechanisms disposed tandem on said first shaft;

a forward-reverse switching device connected to said input shaft and disposed between said torque converter or fluid coupling and said first toroidal transmission mechanism and operatively connected to said first and second toroidal transmission mechanisms;

a torque transmission mechanism disposed between said first and second toroidal transmission mechanisms and connected to said first and second toroidal transmission mechanisms and said second shaft; and

a control valve assembly disposed at a space surrounded by said forward-reverse switching device, said first toroidal transmission mechanism and said torque transmission mechanism.

5,254,057

Patent Not Issued For This Number

5,254,058

ARTIFICIAL CLIMBING WALL WITH MODULAR ROUGH SURFACE

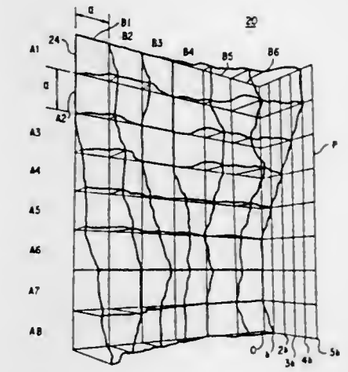
Francois Savigny, Le Touvet, France, assignor to Entre-Prises S.A., Le Touvet, France

Filed Oct. 1, 1991, Ser. No. 769,230

Claims priority, application France, Oct. 15, 1990, 90 13013

Int. Cl.[5] A63B *7/04*

U.S. Cl. 482—37 **9 Claims**



1. An artificial structure for a climbing wall, comprising:

a plurality of elementary panels of conjugate standard shapes, assembled to one another by removable fixing means to form a modular surface, whose configuration is modifiable after recomposition of the panels,

means for connecting the modular surface to a fixed support extending parallel to a vertical rear plane,

said panels having specific curved structures, wherein when said plurality of elementary panels projects on said vertical rear plane a succession of identical regular frames of equal projected surfaces in the form of inscribed polygons is generated, arranged in several rows and columns said panels having side edges, said side edges having profiles and level differences, and said side edges comprising at least one of a first profile associated with a first level difference and a second profile associated with a second level difference, wherein assembly of said panels having different specific curved structures is achieved by having said profiles and level differences of consecutive side edges being the same to obtain a modular rough surface being a curved surface arranged according to a plurality of levels, with constant staggering, said plurality of levels appearing on a front plane extending perpendicular to said rear plane,

said modular rough surface comprising a first group of panels belonging to the first level difference, a second group of panels with second profile edges belonging to the second level difference, and a third group of panels with at least one of a first and second profile edge belonging to the first and second level differences, wherein said panels of the third group are arranged to connect panels of the first and second groups together.

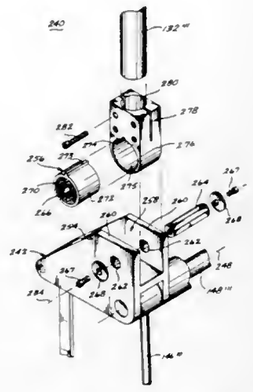
VOL 1155 ISS 3 OCT 19 1993 UMI

5,254,059

EXERCISE APPARATUS

Brian A. Arthur, Snohomish; Paul T. Dunham, Everett; Lawrence J. Graf, Snohomish, and William C. Henderson, Bellingham, all of Wash., assignors to Precor Incorporated, Bothell, Wash.

Continuation-in-part of Ser. No. 559,633, Jul. 30, 1990, Pat. No. 5,129,873. This application Mar. 15, 1991, Ser. No. 670,329
The portion of the term of this patent subsequent to Jul. 14, 2009, has been disclaimed.
Int. Cl.[5] A63B *22/04*
U.S. Cl. 482—52 12 Claims



1. A stair climbing exercise apparatus comprising:
a frame including an upright member;
first and second hand levers pivotably mounted to the upright members of the frame on a first axis;
first and second annular elastomeric mounting means mounted about a second axis between the frame and each of the first and second hand levers, respectively, to mount each hand lever on the frame, wherein each elastomeric mounting means is deformed about the second axis to resist movement of the respective hand lever as the respective hand lever is pivoted about the first axis from a nominal position to a rotated position, the elastomeric mounting means storing energy as the respective hand lever is pivoted from the nominal position and then releasing the stored energy to return the hand lever to the nominal position;
first and second foot levers pivotably mounted to the upright member of the frame on a third axis spaced from the first axis;
first and second linkage means for coupling the first and second hand levers to the first and second foot levers, respectively; and
resistance means coupled to the at least one of the hand and foot levers to resist pivoting of each hand lever in the direction from its nominal position to its rotated position.

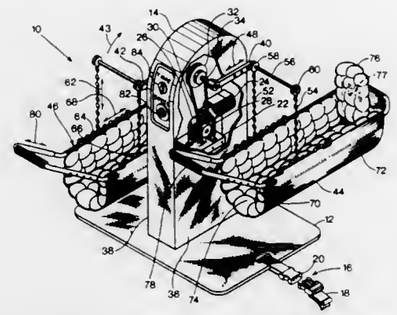
5,254,060

MOTORIZED EXERCISER FOR HUMAN LIMBS

Larry H. Bohanan, 4501 Pleasant Ridge Rd., Knoxville, Tenn. 37912

Filed Jun. 1, 1992, Ser. No. 890,778
Int. Cl.[5] A63B *69/16*
U.S. Cl. 482—60 20 Claims

1. A passive exercising unit for manipulating limbs of a patient to achieve improved circulation, development of muscles and achieve full extension of the limbs, said unit comprising:
a base member;
an upstanding housing member mounted upon said base member, said housing member having front and back surfaces and oppositely disposed side surfaces;
a drive means within said housing member, said drive means including a rotatable shaft extending from each of said oppositely disposed side surfaces of said housing member and means to rotate said shaft;
a pair of crank arms, each of said crank arms having a first end and a distal end, said first end of a first of said crank arms attached at said first end to said shaft exterior one of said oppositely disposed sides of said housing member and a second of said crank arms attached at said first end to said shaft exterior a second of said oppositely disposed sides of said housing member, said first crank arm directed oppositely to said second crank arm;
a first leg cradle support unit pivotally and releasably mounted from said distal end of said first crank arm, said first leg cradle adapted to support substantially all of a



lower leg portion of a patient, said first leg cradle provided with means for adjusting a distance toward said base member from said first leg cradle to said distal end of said first crank arm; and
a second leg cradle support unit pivotally and releasably mounted from said distal end of said second crank arm, said second leg cradle adapted to support substantially all of a second lower leg portion of the patient, said second leg cradle provided with means for adjusting a distance toward said base member from said second leg cradle to said distal end of said second crank arm;
wherein said means for adjusting distance between each of said leg support cradles and said respective of said distal ends of said crank arms comprises a selectable length of a flexible member having a first end pivotally attached to an axle mounted orthogonally from said distal end of said crank arm, and a second end pivotally attached to a selected position on said leg support cradle.

5,254,061

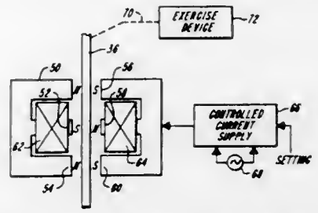
EDDY CURRENT BRAKING SYSTEM

John C. Leask, Mason, N.H., assignor to Anisquam Equipment Corp., Anisquam, Mass.

Continuation of Ser. No. 682,668, Apr. 9, 1991, abandoned, which is a continuation of Ser. No. 460,756, Jan. 4, 1990, Pat. No. 5,031,900. This application Aug. 19, 1992, Ser. No. 932,278
The portion of the term of this patent subsequent to Jul. 16, 2008, has been disclaimed.
Int. Cl.[5] A63B *22/06, 21/005*
U.S. Cl. 482—63 3 Claims

1. In exercise apparatus having a rotary part which is driven by the hand or foot of an individual in which movement of said rotary part is countered by the utilization of an eddy current brake in which a moving conductor in the form of a disc is passed adjacent magnets, the improvement of providing that said conductor be substantially exclusively aluminum in any eddy current generating area and providing that said eddy current brake has a force multiplying head to one side of said

disc adjacent said eddy current generating area for imparting eddy current braking force of sufficient magnitude to effectively counter the movement of said rotary part unaugmented by other magnetic force generating means, said force multiplying head including an electro-magnet having multiple pole



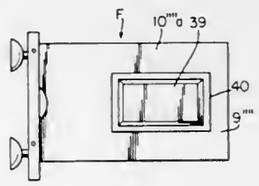
pieces pointing in the same direction and at least one coil surrounding at least one pole piece and to which current is supplied, whereby said force multiplication permits the utilization of an aluminum disc to provide sufficient brake power for exercise apparatus, said eddy current brake being the sole resistance to movement of said rotary part.

5,254,062

KARATE KICK-BOARD TARGET

Daniel Hoffman, Maplewood, N.J., assignor to The Chestnut Group, Inc., Newton, Mass.

Continuation of Ser. No. 665,649, Feb. 25, 1991, abandoned. This application Oct. 27, 1992, Ser. No. 967,559
Int. Cl.[5] A63B *69/34*
U.S. Cl. 482—83 7 Claims



1. A striking apparatus for use as a martial arts target comprising:
a multilaminated target sheet having a width and length sized to receive blows from a users foot or arm and flex in response thereto;
a rigid support member to which one edge of said sheet is secured;
a pair of suction cups having axially extending means engaging said support member at spaced positions on the side to which said sheet is secured, said suction cups shaped to simultaneously engage a flat surface at any one of a plurality of positions;
said apparatus adapted to flex at said sheet and at said axially extending means in response to blows on said sheet when said cups are adhered to a flat surface;
said multilaminated sheet being formed with an aperture adjacent said rigid support member forming a hand grip for use when said suction cups are not engaging a flat surface.

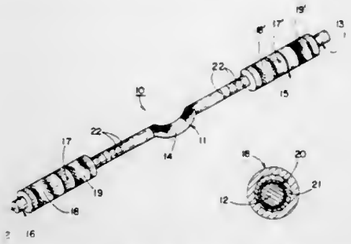
5,254,063

BARBELL WITH ECCENTRIC WEIGHTS

Hugh A. House, Jr., P.O. Box 849, Rockwell, N.C. 28138

Filed Oct. 31, 1991, Ser. No. 785,992
Int. Cl.[5] A63B *21/075*
U.S. Cl. 482—107 5 Claims

1. An exercise device comprising: an elongated member, having a central section, a pair of weight elements, said elements movably positioned upon said elongated member on each side of said central section, each of said weight elements comprising a left and a right rotatable weight section, a means to lock said weight elements on said elongated member, said locking means affixed to said weight elements, a means to secure left and right weight sections together, said securing means allowing opposite rotation of said weight sections on



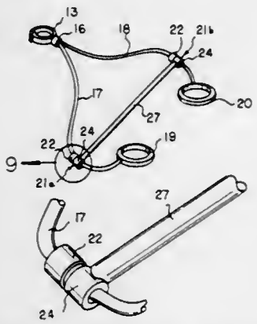
said elongated member, said securing means affixed to one of said weight sections each of said weight sections defining a bore, said bores positioned slightly off center, a flexible tube, said tube fitted within said bores whereby rotating one section in a first direction around said elongated member while simultaneously rotating the other section in an opposite direction will deform said flexible tube to tighten said weight element on said elongated member.

5,254,064

RESILIENT ARM EXERCISING DEVICE FOR ATTACHMENT TO A STATIONARY SUPPORT SUCH AS A TREADMILL

Donna J. Rock, P.O. Box 834, Riverton, Utah 84065

Filed Jun. 29, 1992, Ser. No. 905,441
Int. Cl.[5] A63B *21/02*
U.S. Cl. 482—126 3 Claims



1. A treadmill exercise apparatus for use with a treadmill member, having a treadmill member, having a treadmill support, wherein the apparatus comprises,
a mounting collar strap adapted for securement about the treadmill support, with the mounting collar strap having a collar strap first end and a collar strap second end, with the collar strap first end having a first fastener, the collar strap second end having a second fastener, with the first fastener and second fastener arranged for securement relative to one another, and
an anchor boss fixedly mounted medially of the strap member, and
a first flexible exercise strap and a second flexible exercise strap, each of an equal predetermined length, with the first strap having a first strap first end and a first strap second

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end, the second strap having a second strap first end and a second strap second end, the first strap first end and the second strap first end are fixedly secured to the anchor boss, the first strap second end includes a first strap ring mounted thereto, the second strap second end includes a second strap ring mounted thereto for manual grasping of the first strap ring and the second strap ring, and

a slide member, the slide member including a first tube selectively securable to a second tube, with the first tube and the second tube coaxially aligned, the first tube including a first tube bore, the second tube including a second tube bore, with the first tube bore and the second tube bore in communication relative to one another to receive at least said first strap through the slide member, and the first tube bore formed with a conical internal thread, with the second tube having an externally threaded conical split plug coaxially aligned with the second tube threadedly received within the first tube bore to receive at least said first strap through the slide member to effect selective securement of the first strap within the slide member.

5,254,065

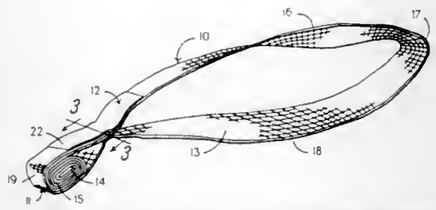
FLEXIBLE LOOP FASTENING STRAP SUPPORTABLE IN DOOR STRUCTURE

Todd E. Pollock, 3216 W. 21st, Spokane, Wash. 99204

Filed Dec. 16, 1991, Ser. No. 808,215

Int. Cl.[5] A63B *21/04*

U.S. Cl. 482—129 **6 Claims**



1. A flexible fastening strap for exercise and physical therapy apparatus that is releasably engageable for support in a door structure having a substantially rectilinear frame defining an orifice wherein a door is mounted at one side by plural hinges for opening and closing, with latching means engageable between the frame and the door side opposite the hingeably supported side, comprising in combination:

an elongate flexible strap with first and second ends having an enlarged first end portion with the first end portion of the strap extending about the periphery of the enlarged end portion and a spaced distance therefrom to form a first loop side and extending back to the enlarged first end portion to form a second loop side, said second end portion of the strap extending back to the enlarged first end portion at the side opposite that from which the first loop side exited from the enlarged first end portion and extending around a portion of the said enlarged first end portion and therepast, adjacent the first loop side, a distance greater than the thickness of a door about the edge of which the fastening strap is to be engaged,

the loop portion of said fastening strap having a length to extend between the adjacent surfaces of the periphery of a door and the associated frame supporting the door and a spaced distance therebeyond and thickness to allow the loop to be positioned between the said door and its supporting frame when the door is in closed condition, and

said enlarged end portion of the strap being of size sufficient to prevent its passage between opposed portions of the periphery of a door and its associated frame that are to support the fastening strap;

first fastening means spacedly adjacent the enlarged end portion of the strap interconnecting the two loop side portions with each other and second fastening means interconnecting the second end portion of the strap with at least the first loop side; and

frictional coating material covering at least a portion of the outer peripheral surface of the second end of the fastening strap, from the enlarged first end portion to the second strap end.

5,254,066

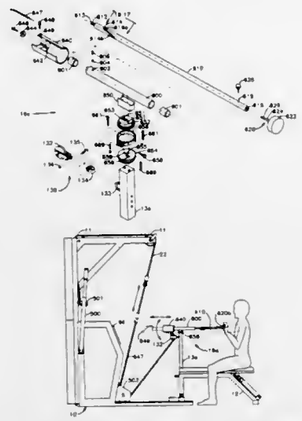
USER FORCE APPLICATION DEVICE FOR AN EXERCISE, PHYSICAL THERAPY, OR REHABILITATION APPARATUS

Michael L. Brown, Jeffersonville, Ind.; Jan W. Miller, Louisville, Ky.; Wilbur W. Spatig, Sellersburg, Ind., and Dean M. Zigoris, Louisville, Ky., assignors to Motivator, Inc., Louisville, Ky.

Continuation-in-part of Ser. No. 668,588, Mar. 13, 1991. This application Sep. 24, 1991, Ser. No. 765,026

Int. Cl.[5] A63B *21/00, 103/00*

U.S. Cl. 482—137 **17 Claims**



1. A user force application device, comprising: a hollow outer cylinder having a connector end and a user end, an outer surface and an inner surface, and an axis; an inner cylinder having a connector end and a user end, an outer surface, and an axis, said inner cylinder inserted into said hollow outer cylinder and in co-axial alignment therewith, said inner cylinder being freely rotatable around said axis and freely slidable within said hollow outer cylinder along said axis, said connector ends of said hollow outer cylinder and said inner cylinder opposing said user ends of said hollow outer cylinder and said inner cylinder; a grip detachably connected to said user end of said inner cylinder, said grip having a handle; and, means to detachably connect said connector end of said inner cylinder to the tension transmitting device of an exercise apparatus and to provide rotational resistance.

16. In combination with an exercise apparatus having a linearly extendable and retractable tension transmitting device having a first end and a second end, said second end connected to a movement control means which regulates the extension and retraction of the tension transmitting device, said control means being operably connected to a force measuring device which determines the tension applied to said tension transmitting device and provides an electronic signal representing this tension to a control computer, the improvement which comprises a user force application device, comprising:

(a) a hollow outer cylinder having a connector end and a user end, an outer surface and an inner surface, and an axis;

(b) an inner cylinder having a connector end and a user end, an outer surface, and an axis, said inner cylinder inserted into said hollow outer cylinder and in co-axial alignment therewith, said inner cylinder being freely rotatable around said axis and freely slidable within said hollow outer cylinder along said axis, said connector ends of said hollow outer cylinder and said inner cylinder opposing said user ends of said hollow outer cylinder and said inner cylinder;

(c) a grip detachably connected to said user end of said inner cylinder, said grip having a handle;

(d) a larger cylinder having a connector end and a user end, an outer surface, and an axis; said larger cylinder connected to said connector end of said inner cylinder and in coaxial alignment therewith; said connector ends of said larger cylinder, said inner cylinder, and said hollow outer cylinder opposing said user ends of said larger cylinder, said inner cylinder, and said hollow outer cylinder;

(e) a connector having a first and second end, said first end of said connector being connected to said outer surface of said larger cylinder toward said connector end of said larger cylinder and said second end of said connector being detachably connected to said first end of said tension transmitting device;

(f) an arm support attachment having an upper and lower end;

(g) a mounting block having a flat surface and an opposed inwardly curved surface, said opposed inwardly curved surface of said mounting block having a radius equal to the radius of said hollow outer cylinder, said outer surface of said hollow outer cylinder connected to said opposed inwardly curved surface of said mounting block,

(h) an upper and lower circular face plate, each circular face plate having a first flat circular side parallel to a second flat circular side, said first flat circular side having a radius less than that of said second flat circular side, said first flat circular side of said upper circular face plate connected to said flat surface of said mounting block, said first flat circular side of said lower circular face plate connected to said upper end of said arm support attachment; and,

(i) an adjustable clamp, said adjustable clamp tightened by the user to hold said second flat circular side of said upper circular face plate against said second flat circular side of said lower circular face plate, such that said user force application device is in the desired exercise position as set by the user.

5,254,067

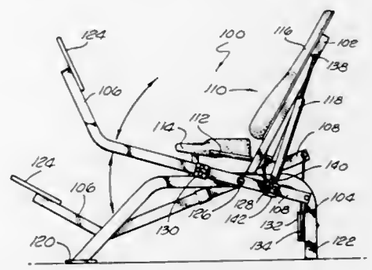
RECUMBENT LEG EXERCISER

Theodore G. Habing, Long Beach; Ronald S. Gibson, Valencia, and Douglas J. Habing, Manhattan Beach, all of Calif., assignors to Pacific Fitness Corporation, Cypress, Calif.

Continuation-in-part of Ser. No. 541,919, Jun. 21, 1990, abandoned. This application Feb. 18, 1992, Ser. No. 838,158

Int. Cl.[5] A63B *21/00*

U.S. Cl. 482—137 **14 Claims**



1. A recumbent leg exerciser comprising:

a frame;

a seat supported on said frame for accommodating a user of the exerciser;

at least one footbeam pivotally mounted on said frame;

a footpad coupled to said at least one footbeam having an operating surface for engagement by a foot of the user, said footpad having a path of travel in a vertical plane disposed in approximate horizontal alignment with said seat such that said operating surface is generally upright in an upper portion of said path of travel so that a corresponding leg of the user is extended generally forwardly when said foot of the user engages said footpad; and

resistance means coupled to said at least one footbeam for resisting pivotal movement thereof; wherein said footbeam is pivotally mounted on said frame at a position substantially rearward of the path of travel of said footpad.

5,254,068

AUTOMATIC SETUP APPARATUS

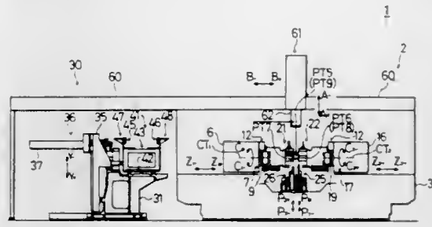
Kazuo Yamada, Gifu; Sumiaki Inami, Aichi; Shigemitsu Ito, Aichi, and Tomio Tajima, Aichi, all of Japan, assignors to Yamazaki Mazak Kabushiki Kaisha, Japan

Filed Aug. 16, 1991, Ser. No. 745,949

Claims priority, application Japan, Aug. 17, 1990, 2-216695

Int. Cl.[5] B23Q *3/155*

U.S. Cl. 483—14 **9 Claims**



1. An automatic setup apparatus in a numerical control machine tool having an arranged apparatus on which setup change members are exchangeably installed, said automatic setup apparatus comprising:

a workpiece storing means for storing workpieces;

a workpiece information storing means for storing workpiece information concerning said workpiece stored in said workpiece storing means provided at said workpiece storing means;

a workpiece information reading means for reading said workpiece information out of said workpiece information storing means;

a workpiece carrying means for picking said workpiece out of said workpiece storing means and carrying, provided being free to move from said numerical control machine tool to a position of said workpiece storing means;

a setup change member storing means for storing a plurality of kinds of said setup change members;

a setup change member information storing means for storing setup change member information concerning said setup change member, provided at each said setup change members;

a setup change member information reading means for reading said setup change member information out of said setup change member information storing means;

a setup change member decision means for deciding said setup change member to be set up to said arranged apparatus on the basis of said workpiece information read out with said workpiece information reading means;

a setup change member carrying means for selecting said setup change member decided with said setup change member decision means from said setup change member storing means on the basis of said setup change member

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information read out with said setup change member information reading means and carrying, provided being free to move between a position of said setup change member storing means and a position of said arranged apparatus;

a holding apparatus storing means for storing a plurality of kinds of holding apparatus capable of holding said workpieces or said setup change members;

a holding apparatus information storing means for storing holding apparatus information concerning said holding apparatus provided at each of said holding apparatus;

a holding apparatus information reading means for reading said holding apparatus information out of said holding apparatus information storing means;

a common carrying means being free to move to a position of said holding apparatus storing means so as to exchange said holding apparatus by selecting from said holding apparatus storing means on the basis of said holding apparatus information read out with said holding apparatus information reading means according to kinds of said workpieces or said setup change members to be carried, provided as said workpiece carrying means and said setup change member carrying means;

a carrying control program decision means for deciding a carrier control program to be used on the basis of said workpiece information read out with said workpiece information reading means; and

a carrier control means for driving and controlling said common carrying means on the basis of said carrier control program decided with said carrier control program decision means.

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Patent Not Issued For This Number

5,254,070

GODET

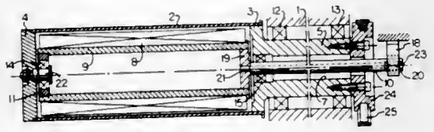
Ernst Callhoff, Remscheid, Fed. Rep. of Germany, assignor to Barmag AG, Remscheid, Fed. Rep. of Germany

Filed Feb. 26, 1992, Ser. No. 841,579

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1991, 4105968; Mar. 11, 1991, 4107719

Int. Cl.[5] B21B *13/02*

U.S. Cl. 492—16 **11 Claims**



1. A godet comprising

an elongate hollow cylindrical shell (2) having a free end and an opposite end portion, said opposite end portion including a tubular extension (5) which is adapted to be rotatably mounted to a machine frame member (1) so that the shell extends in cantilever fashion from the machine frame member to said free end of said shell,

an elongate shaft (9) disposed coaxially within said shell and including a free end and an opposite end portion, said opposite end portion of said shaft comprising a shaft extension (10) which extends coaxially through said tubular extension (5),

means (18) for securing said shaft extension (10) to the machine frame member (1) so as to preclude rotation of said shaft while permitting limited radial movement thereof, and

bearing means (14) rotatably interconnecting the free end of said shell with the free end of said shaft, and so that load induced radial deflections of the shell are transmitted to the free end of said shaft and the shaft may be similarly deflected.

5,254,071

ROTARY FEEDER FOR THE ACCURATE PLACING OF SHEET ELEMENTS ON FLAT SUPPORTS

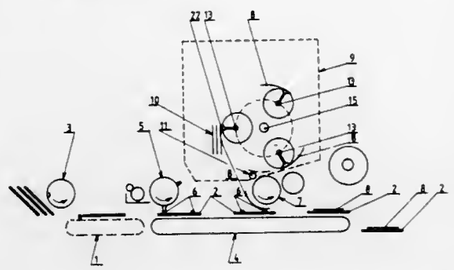
Francis Laroche, La Couronne, France, assignor to Societe Anonyme Etudes Services Automatismes Techniques Esatec, La Courbonne, France

Filed Jul. 18, 1991, Ser. No. 731,863

Claims priority, application France, Jul. 20, 1990, 9009541

Int. Cl.[5] B31B *1/90*

U.S. Cl. 493—96 **10 Claims**



1. A rotary feeder for accurately placing sheet elements on flat supports, comprising:

at least one fixed, translation-adjustable magazine for storing stacked sheet elements;

a suction cylinder cooperating with a device for continuously feeding flat supports, each flat support to be provided with one sheet element;

a press roller located adjacent to and cooperating with said suction cylinder;

at least one picking up member for picking up and transferring the sheet elements one at a time to said suction cylinder; and

moving means for supporting and driving said picking up member along an at least partly hypocycloidal trajectory so that two turning back points of the hypocycloidal trajectory coincide with a first point for picking up each sheet element in said magazine and a second point for transferring each sheet element to said suction cylinder adjacent said press roller and so that said picking up member, from said second point, avoids said press roller while transferring each sheet element to said suction cylinder;

whereby each sheet element is attached at the first point to said picking up member with a relative nil speed between said picking up member and said fixed magazine, and at the second point each sheet element is disengaged from said picking up member during a turning back movement of said picking up member with respect to said press roller, thus ensuring an accurate continuous positioning at high speed of the sheet elements on the flat supports.

5,254,072

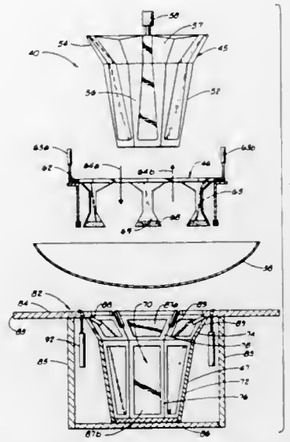
FLAT-PANELED FLOWER POT OR FLOWER POT COVER

Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.

Continuation of Ser. No. 736,348, Jul. 26, 1991, Pat. No. 5,127,817, which is a continuation-in-part of Ser. No. 422,653, Oct. 17, 1989, Pat. No. 5,073,161, and Ser. No. 710,272, Jun. 4, 1991, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Ser. No. 411,247, Sep. 22, 1989, and Ser. No. 411,245, Sep. 22, 1989, said Ser. No. 422,653, is a continuation-in-part of Ser. No. 397,114, Aug. 22, 1989, Pat. No. 5,029,412, and Ser. No. 367,098, Jun. 15, 1989, Pat. No. D. 318,030, which is a continuation-in-part of Ser. No. 283,014, Dec. 8, 1988, abandoned, which is a continuation of Ser. No. 652,903, Sep. 21, 1984, abandoned, which is a continuation-in-part of Ser. No. 613,053, May 22, 1984, Pat. No. D. 293,224, said Ser. No. 397,114, is a continuation-in-part of Ser. No. 366,588, Jun. 15, 1989, Pat. No. 5,111,613, which is a continuation-in-part of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a cootinuation-in-part of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned. This application Apr. 14, 1992, Ser. No. 868,821

Int. Cl.[5] B31B *1/44*

U.S. Cl. 493—154 **1 Claim**



1. A method for forming a sheet of material into a flat-paneled flower pot or flower pot cover, the steps comprising:

positioning a sheet of material over an opening of a female die, the opening having female forming surfaces for a flat-paneled base and flat-paneled skirt;

placing a bracket on the sheet of material, the bracket having legs corresponding to the number and position of flat panels to be formed;

moving a male die through the bracket and into the opening of the female die until male forming surfaces of the male die press the sheet of material against the forming surfaces of the female die to form the flat-paneled flower pot or flower pot cover having at least three flat panels with substantially no overlapping folds in the flat panels; and

pivoting a plurality of fingers of the female die to hold the sheet of material against the male die to control the sheet of material as the male die moves into the opening of the female die;

wherein the bracket legs engage and control the sheet of material as the sheet of material is pushed into the opening of the female die by the male die.

5,254,073

METHOD OF MAKING A VENTED POUCH

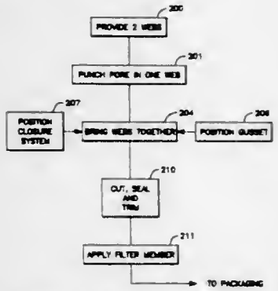
Cecil Richison, Hudson, Wis., and Gary M. Bell, Crystal, Minn., assignors to Kapak Corporation, St. Louis Park, Minn.

Continuation of Ser. No. 742,401, Aug. 8, 1991, Pat. No. 5,147,272, which is a division of Ser. No. 516,111, Apr. 27, 1990, Pat. No. 5,059,036. This application Jun. 30, 1992, Ser. No. 906,686

The portion of the term of this patent subsequent to Sep. 15, 2009, has been disclaimed.

Int. Cl.[5] B31B *37/18, 37/84*

U.S. Cl. 493—195 **4 Claims**



1. A method of preparing pouch arrangements having: first and second opposed panel sections; a bottom edge; a base gusset member; a rib and trough closure arrangement; and, a gas filter oriented in one of the panel sections; said method including the steps of:

(a) providing a continuous full web of panel section material;

(b) splitting the full web into first and second continuous half webs of panel section material;

(c) forming a continuous feed of pouch blank by:

(i) directing the first and second continuous half webs into juxtaposed orientation with one another to form the continuous feed of pouch blank with: front and back faces; and, first and second, opposite, longitudinal side edges;

(ii) orienting a first continuous base gusset between the first and second half webs along the first longitudinal side edge;

(iii) orienting a second continuous base gusset between the first and second half webs along the second longitudinal side edge;

(iv) orienting first and second continuous strips of rib and trough closure arrangement:

(A) aligned substantially parallel to one another and substantially parallel to the first and second longitudinal side edges; and

(B) positioned between the first and second half webs and also between the first and second continuous base gussets;

(d) sealing the continuous feed of pouch blank to form a plurality of sections therein comprising pouch arrangements joined to one another with:

(i) a top end of each pouch arrangement joined to a top end of another pouch arrangement along a center line of the continuous feed, the center line being oriented between and substantially parallel to the first and second rib and through closure arrangements;

(ii) a side edge of each pouch arrangement joined to a side edge of a next pouch arrangement; and,

(e) cutting the pouch blank into individual ones of the pouch arrangements;

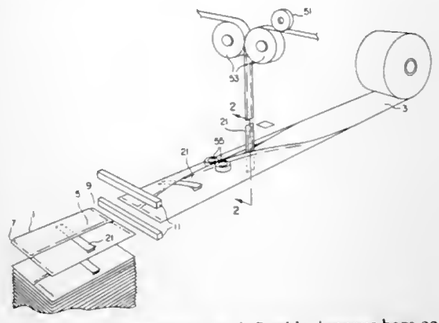
(f) said method being further characterized by steps of:

(i) punching a plurality of pores in the first continuous half web such that pouch arrangements therefrom will each have a pore positioned spaced from the rib and trough closure arrangement therein and toward the bottom edge thereof;

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(ii) orienting a gas valve arrangement over the pore in each pouch arrangement.

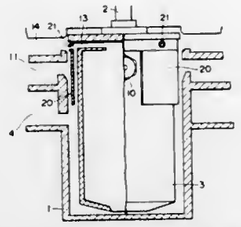
5,254,074
INFLATABLE PACKAGING BAG
James A. Landers, Madbury, N.H.; Gary O. Reid, Colorado Springs, Colo., and Steven J. Greenland, Stratham, N.H., assignors to Laminated Films & Packaging, Portsmouth, N.H.
Filed Nov. 12, 1991, Ser. No. 791,086
Int. Cl.[5] B31B *1/84*
U.S. Cl. 493—213 **1 Claim**



1. A method of manufacturing inflatable dunnage bags comprising:
providing a web of heat sealable plastic film having a first free end, a first margin and a second margin;
juxtaposing said first and said second margins to form a tube;
heat sealing said free end in a hermetic fashion;
inserting a self-sealing valve between said first and said second margins;
heat sealing said first margin to said second margin, thereby forming a hermetically sealed upper seam traversed by said valve;
folding said seam upon a face portion of said web to form a fold;
cutting said plastic film at second end;
heat sealing said second end across said fold in a hermetic fashion to form one of said dunnage bags;
repeating the above steps.

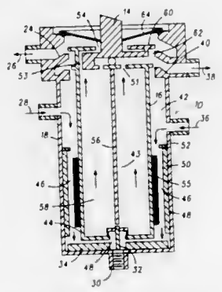
5,254,075
INTERNAL CIRCULATION TYPE CENTRIFUGAL EXTRACTOR
Shin-ichi Nemoto; Ryo Shimizu; Hiroshi Takeda, all of Ibaraki, and Tomio Kawata, Katsuta, all of Japan, assignors to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan
Filed Dec. 2, 1991, Ser. No. 801,667
Claims priority, application Japan, Dec. 18, 1990, 2-403017
Int. Cl.[5] B04B *1/00*
U.S. Cl. 494—35 **4 Claims**

1. A centrifugal extractor for use in extraction of first and second liquid phases, comprising:
a cylindrical casing having a first phase inlet and a second phase inlet in a lower part thereof, a fist phase outlet and a second phase outlet in an upper part thereof, an inner wall, and a bottom wall;
a cylindrical rotor rotatably mounted in said casing for high speed rotation, said cylindrical rotor being spaced from said inner wall of said casing and from said bottom wall of said casing to form gaps therebetween, said gap between said rotor and said bottom wall of said casing constituting a mixing chamber, and a supply port being formed in a bottom of said rotor for supplying a mixture of the first and second phases into said rotor from said mixing chamber;
wherein a first phase draw port and a second phase draw port are formed in an upper part of said rotor at positions corresponding to positions of said first phase outlet and said second phase outlet, respectively, of said casing for directing the first and second phases flowing from inside said rotor toward said first and second phase outlets, respectively;
wherein a first phase weir and a second phase weir are mounted in said rotor for guiding the first phase and the second phase, separated from one another by centrifugal force inside said rotor, to said first phase draw port and said second phase draw port, respectively; and



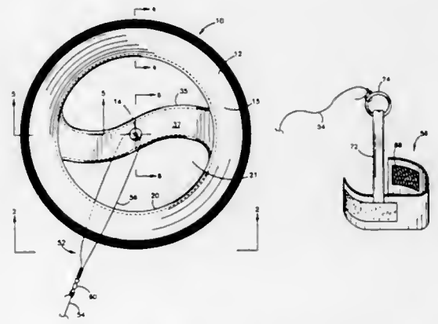
wherein a reflux cover is fitted to said upper part of said rotor to encompass an outer periphery of said rotor and maintain a space between said outer periphery of said rotor and said reflux cover, said reflux cover constituting a reflux means for causing one of the first and second phases flowing out through its respective draw port toward its respective outlet to be partially diverted to said mixing chamber.

5,254,076
CENTRIFUGAL PYROCONTACTOR
Lorac S. Chow, Willowbrook, and Ralph A. Leonard, River Forest, both of Ill., assignors to ARCH Development Corporation, Chicago, Ill.
Filed Aug. 6, 1992, Ser. No. 927,028
Int. Cl.[5] B04B *7/12, 11/00*
U.S. Cl. 494—37 **4 Claims**



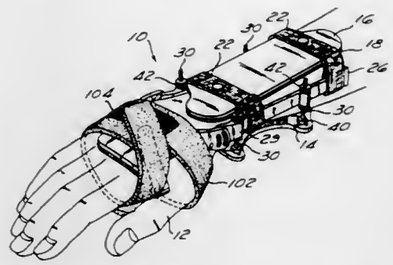
1. A method for mixing and separating immiscible liquid salts and liquid metals at high temperatures in a centrifugal contactor having a rotor disposed for rotation about a vertical axis within an outer housing, comprising the steps of:
introducing the liquid salts and liquid metals into an annular mixing zone defined by an exterior substantially cylindrical surface of said rotor and an interior substantially cylindrical surface of said outer housing;
placing vertical vanes on said substantially cylindrical surface of said rotor, and locating said vertical vanes adjacent vertical baffles placed on said interior substantially cylindrical surface of said outer housing;
intensely mixing the immiscible liquid salts and liquid metals in said mixing zone between said vertical vanes attached to said exterior substantially cylindrical surface of said rotor and said vertical baffles by propelling said liquid salts and liquid metals along a horizontal baffle affixed to said interior substantially cylindrical surface of said outer housing and past said vertical baffles and said vertical vanes, such that only radial forces need be applied to said liquid salts and liquid metals to provide efficient mixing;
reducing splashing of the liquid salts and liquid metals during said mixing by contacting said liquid salts and metals with said horizontal baffle and said vertical baffles;
minimizing vortices in the immiscible liquid salts and liquid metals by allowing the mixed liquid salts and liquid metals to flow over bottom vanes attached to a bottom portion of said outer housing;
allowing the mixed liquid salts and liquid metals to enter an interior portion of said rotor radially after passing over said bottom vanes and passing through an inlet disposed in a bottom portion of said rotor;
separating the immiscible liquid salts and liquid metals into a dense phase and a light phase in said interior portion of said rotor; and
providing separate exits from said interior portion of said rotor for said dense phase and said light phase of the immiscible liquid salts and liquid metals.

5,254,077
TETHERED RING-SHAPED TOY
John R. Nottingham; John W. Spirk, Jr., both of Moreland Hills; Webster, Jr. Paul T., Chagrin Falls, and Christopher S. Lynch, Lakewood, all of Ohio, assignors to Nottingham-Spirk Design Associates, Inc., Cleveland, Ohio
Filed Jan. 24, 1992, Ser. No. 825,031
Int. Cl.[5] A63H *27/00*
U.S. Cl. 446—48 **17 Claims**



1. A flying toy, comprising:
a ring-shaped frame rotatable about an axis substantially perpendicular to a plane of the toy, said frame extending upwardly and outwardly from the plane away from the axis and having a downwardly extending skirt around the periphery thereof, said frame including an inner circumferential edge defining an opening through the frame and said skirt including an outer peripheral edge defining a border, the outer peripheral edge of said skirt lying in a plane which extends in parallel but upwardly offset relation from the plane of the inner circumferential edge to increase lift during the flight of the toy, said frame also including an upper surface and a lower surface, said lower surface being smooth and continuous and providing a convex curvature which creates an air foil for the toy during flight.

5,254,078
WRIST BRACE
Peter R. Carter, Dallas, Tex.; John C. Gates, Fountain Valley, and Edward L. Castillo, Laguna Hills, both of Calif., assignors to Innovation Sports, Inc., Irvine, Calif.
Continuation of Ser. No. 710,359, Jun. 3, 1991, Pat. No. 5,203,766. This application Oct. 23, 1992, Ser. No. 965,739
Int. Cl.[5] A61F *5/00*
U.S. Cl. 602—21 **26 Claims**



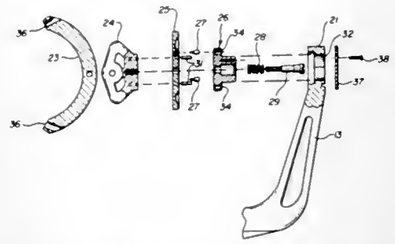
1. A wrist brace comprising:
an anterior forearm plate adapted to be disposed in direct contact with the anterior aspect of a user's forearm;
an elongate lateral strut attached to said anterior forearm plate so as to be adapted to extend longitudinally along the lateral aspect of the forearm;
an elongate medial strut attached to said anterior forearm plate so as to be adapted to extend longitudinally along the medial aspect of the forearm;
a hand brace pivotally connected to the proximal ends of said lateral strut and said medial strut, said hand brace adapted to be disposed in direct contact with the posterior aspect of the user's hand and sized to overlie at least the second and third metacarpal bones of the user's hand;
means positioned between said lateral and medial struts and said hand brace for causing the hand brace to apply a compression force against the second and third metacarpal bones of the user's hand; and
a posterior forearm plate releasably attached to said lateral strut and said medial strut, said posterior forearm plate adapted to be disposed in direct contact with the posterior aspect of the user's forearm when attached to said lateral and medial struts;
wherein the pivotal connection of said hand brace to said struts is adapted to permit controlled pivotal movement of a user's wrist about a single axis.

5,254,079
HEAD CLAMP
Victor B. Agbodoe, Boston; Edward L. Gallini, Marion, and Robert E. David, Duxbury, all of Mass., assignors to Codman & Shurtleff, Inc., Randolph, Mass.
Filed Jul. 29, 1992, Ser. No. 921,867
Int. Cl.[5] A61H *1/02*
U.S. Cl. 602—32 **2 Claims**

1. In a surgical head clamp including a frame, a first head engaging pin supported on the frame, a bracket rotatably supported on the frame aligned with and spaced from the first head engaging pin, second and third head engaging pins mounted on the bracket, means for advancing the first head engaging pin axially toward the bracket to cause the head engaging pins to engage the head, the first head engaging pin being aligned with the axis of rotation of the bracket, the improvement comprising means to positively lock said bracket to said frame to prevent accidental rotation of said bracket, including a retainer plate attached to said bracket, a plurality of index pins affixed at spaced apart locations to said retainer plate, an index plate affixed to said frame, said index plate having a plurality of apertures to receive the index pins, means

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to bias the retainer plate against the index plate to releasably secure the index pins in said apertures with a force to allow the



axially and rotational movement of said retainer plate to reposition the index pins in the apertures to thereby reposition said bracket.

5,254,080

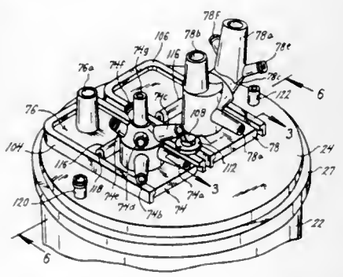
QUICK-CHANGEOVER APPARATUS FOR HANDLING MEDICAL FLUID

Erin J. Lindsay, Manchester, Mich., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 493,286, Mar. 14, 1990. This application Apr. 17, 1991, Ser. No. 686,495

Int. Cl.[5] B01D *19/02*

U.S. Cl. 604—4 **23 Claims**



1. A connection system for facilitating connections with an apparatus for handling medical fluids, such as blood, to adapt the apparatus for one or more particular uses, the system comprising:

at least one port means in the apparatus comprising at least one opening in fluid communication with the apparatus;

at least one connector block, each connector block having at least one access opening for fluid communication with the port means, and at least one connection device for making a connection to the connector block to adapt the apparatus for a particular medical use when the connector block is in communication with the port means of the apparatus;

track means on the apparatus for movably mounting the connector blocks on the apparatus such that the blocks can be moved into and out of alignment with the port means; and

a seal tray alignable with the track means and having rail means for slidably mounting a connector block and initially sealing the connector blocks access opening, the seal tray and the track means being so configured that the rail means of the seal tray can be aligned with the track means to allow the connector block to be moved at least partially off of the seal tray onto the track means, thereby to bring the connector block's access opening(s) into alignment with the port means.

5,254,081

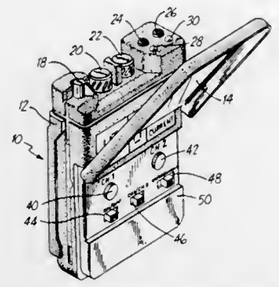
MULTIPLE SITE DRUG IONTOPHORESIS ELECTRONIC DEVICE AND METHOD

Donald D. Maurer, Anoka; Thomas J. Williams, Oak Grove, and Scott A. Stevens, Minneapolis, all of Minn., assignors to Empi, Inc., St. Paul, Minn.

Filed Feb. 1, 1991, Ser. No. 649,495

Int. Cl.[5] A61N *1/30*

U.S. Cl. 604—20 **32 Claims**



1. An electronic, iontophoresis controller for controlling infusion of ionic drugs into a patient, the controller comprising:

a plurality of iontophoresis source and return electrodes configured for attachment to the patient's skin, wherein each source electrode contains the ionic drugs and creates an electrical current path through the patient with at least one corresponding return electrode for transcutaneously delivering the ionic drugs into the patient;

controller means for controlling operation of the iontophoresis source and return electrodes; and

a plurality of iontophoresis electrode driver channels wherein each channel includes:

an iontophoresis electrode output configured for electrical connection to at least one source electrode and at least one corresponding return electrode;

an independent direct-current regulator which generates a direct-current output at a selected direct-current intensity through the electrode output; and

isolation means coupled to the electrode output and the independent current regulator for electrically isolating each electrode output from the electrode outputs of the other driver channels and for electrically isolating the controller means from the electrode outputs of at least one driver channel.

5,254,082

ULTRASONIC SURGICAL SCALPEL

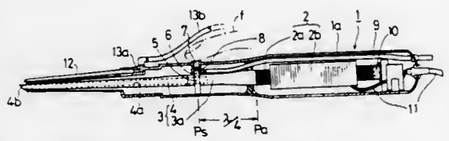
Haruo Takase, 20-16, Shimoochiai 3-chome, Shinjuku-ku Tokyo, Japan

Continuation of Ser. No. 481,163, Feb. 20, 1990, abandoned. This application Apr. 9, 1991, Ser. No. 682,896

Claims priority, application Japan, Feb. 18, 1989, 1-18167[U]

Int. Cl.[5] A61B *17/20*

U.S. Cl. 604—22 **7 Claims**



1. An ultrasonic surgical scalpel comprising:

handpiece defined by a casing having a rear end and a suction regulating mouth capable of being closed directly with a finger tip;

an ultrasonic vibrator contained within said handpiece, which vibrator generates ultrasonic vibrations when applied with an alternating current;

a horn connected to said vibrator so as to vibrate due to the vibrations generated by the vibrator, which horn comprises a suction nozzle having a leading end and a suction passage axially extending so as to open at the leading end in a non-axial direction of the horn to form a suction mouth;

a flushingpipe provided along an extension surface of said suction nozzle for supplying a solution to around said suction mouth at the leading end of said suction nozzle, said flushing pipe being detachably retained by a joint portion formed on said casing and connected with a conduit through which said solution is fed to said flushingpipe;

an elastic supporting member for supporting said horn at a point substantially one-fourth wavelength of the vibrations generated by said vibrator form a connection point at which said horn and vibrator are connected toe each other; and

a connection member mounted where said supporting member is disposed, said connection member having a port connected to said suction passage in said suction nozzle, a port connected to a suction pipe extending outside through said rear ed of said casing, and a port connected to said suction regulating mouth,

whereby a suction force is imparted to said suction passage in said suction nozzle through said suction pipe and regulatable by opening or closing said suction regulating mouth with the finger tip so that, when said suction regulating mouth is closed with the finger tip, said suction force in said suction passage is kept normal, and when said suction regulating mouth is open, said suction force in said suction passage is reduced.

5,254,083

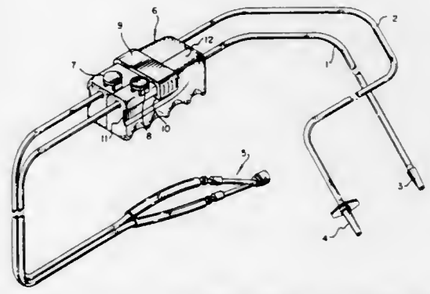
SUCTION AND IRRIGATION APPARATUS

John S. Gentelia, Madison; Frank Williams, Utica; Alfred Solan, Cassville, and Sharyn Longo, Frankfort, all of N.Y., assignors to Conmed Corporation, Utica, N.Y.

Filed Feb. 10, 1992, Ser. No. 833,000

Int. Cl.[5] A61M *1/00*

U.S. Cl. 604—35 **9 Claims**



1. A suction and irrigation handpiece for controlling flow through resilient tubing comprising, top and bottom walls interconnected with a pair of sidewalls and a pair of end walls to form a hollow housing, a pair of apertures in each end wall, a pair of resilient tubes extending through said apertures to provide passageways through the housing, a pair of clamping valves extending through the top walls of the housing and engaging said resilient tubes, said clamping valves being slidable within the housing to open and close said resilient tubes, spring means within said housing and engaging said clamping valves for urging said clamping valves to a position to close the resilient tubes and releasable means on the housing and further including recesses in the sidewalls of said housing, said releasable means comprising a slidable bracket which slides in said recesses to retain said clamping valves in a position to open the resilient tubes so that the suction and irrigation handpiece can slide along the length of the resilient tubing to be positioned at any point convenient for use by the physician.

5,254,084

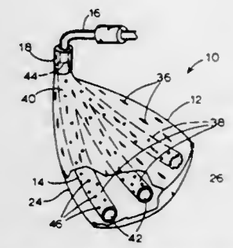
PERITONEAL CATHETER DEVICE FOR DIALYSIS

Gregory L. Geary, 12355 N.W. Maple Hill La., Portland, Oreg. 97229

Filed Mar. 26, 1993, Ser. No. 37,347

Int. Cl.[5] A61M *1/00*

U.S. Cl. 604—29 **15 Claims**



1. A catheter device for dialysis comprising:

ductwork comprising multiple tubes and a source conduit connected with the tubes;

envelope structure forming a chamber encompassing the tubes;

the envelope having an interior and an exterior; and

the envelope being fluid permeable to allow fluid flow between the interior and the exterior of the envelope.

5,254,085

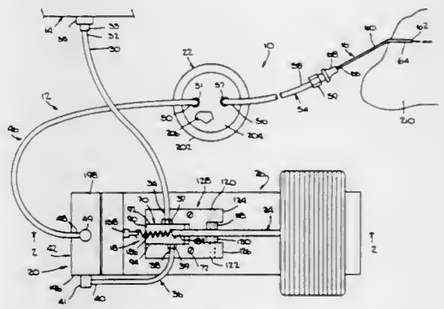
ASPIRATION SYSTEM WITH POSITIVE PRESSURE

John T. Cleveland, Jr., Jacksonville, Fla., assignor to Xomed-Treace Inc., Jacksonville, Fla.

Filed Sep. 19, 1991, Ser. No. 762,696

Int. Cl.[5] A61M *1/00*

U.S. Cl. 604—35 **13 Claims**



1. An aspiration system comprising,

a) a valve having an open position and a closed position,

b) fluid flow means including a first fluid flow portion on a first side of said valve communicable with a suction source, and a second fluid flow portion on a second side of said valve communicable with a suction instrument,

c) a positive pressure input means being communicable with said second fluid flow portion for inducing a pulse of positive pressure in said second fluid flow portion when said valve is in said closed position,

d) said first and second fluid flow portions being communi-

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cable through said valve when said valve is in said open position, said first and second fluid flow portions being non-communicable when said valve is in said closed position,

e) actuating means for actuating movement of said valve from one of said positions to the other of said positions and for actuating said positive pressure input means to cause said positive pressure input means to induce said pulse of positive pressure in said second fluid flow portion, said actuating means being voluntarily actuatable the discretion of an operator to open and close said valve and to cause said positive pressure input means to induce said pulse of positive pressure in said second fluid flow portion,

f) and wherein said actuating means comprise an actuating member pivotable with respect to said valve from a first limit position, wherein said valve is in said closed position, to a second limit position, wherein said valve is in said open position, and to a predetermined intermediate limit position between said first and second positions, wherein said valve remains in said open position during the course of movement of said actuating member from said second limit position to said intermediate limit position and vice versa,

g) and wherein said actuating member is connected to said positive pressure input means to cause movement of said positive pressure input means to generate said pulse of positive pressure in said second fluid flow portion, said positive pressure input means having an end of input pulse position, wherein no positive pressure pulse can be generated, said end of input pulse position corresponding to the first limit position of said actuating member, said positive pressure input means being movable from said end of input pulse position to a beginning of input pulse position, wherein a positive pressure pulse can be generated, said beginning of input pulse position corresponding to the second limit position of said actuating member, and

h) wherein said positive pressure input means includes a movable pulsing member, means for connecting said actuating member to said movable pulsing member such that said pulsing member remains motionless in said end of input pulse position while said actuating member moves from said first limit position to said intermediate limit position, said connection means enabling said actuating member to cause movement of said pulsing member from said end of input pulse position to said beginning of input pulse position when said actuating member pivots from said intermediate limit position to said second limit position, reverse movement of said actuating member from said second limit position to said first limit position enabling said pulsing member to move from said beginning of input pulse position to said end of input pulse position to generate said pulse of positive pressure.

5,254,086

MEDICAL LAVAGE APPARATUS AND METHODS

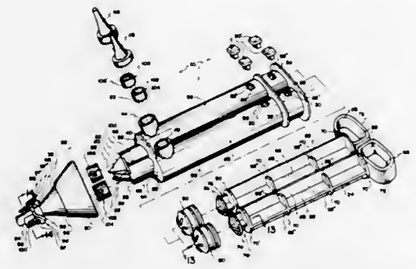
Darrel Palmer, Sandy, and William R. Houghton, Midvale, both of Utah, assignors to Ballard Medical Products, Draper, Utah

Filed Jul. 31, 1992, Ser. No. 923,706
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—38 **8 Claims**

1. A liquid and physiological debris aspirating apparatus comprising:

an aspirating syringe comprising an aspirating cylinder and an aspirating plunger, the cylinder being associated with a liquid and debris influent port and a liquid and debris effluent port;

at least one of said ports comprising a one-way physiological debris-passing slit valve comprising a dome-shaped diaphragm having a convex surface and a concave surface, the diaphragm comprising at least one curvilinear slit disposed between the convex and concave surfaces and comprising normally closed contiguously abutting slit edge surfaces which remain contiguous responsive to pressure applied to the convex surface of the diaphragm and which slit edge surfaces separate from each other responsive to pressure applied top the concave side of diaphragm due to manual manipulation of the aspirating



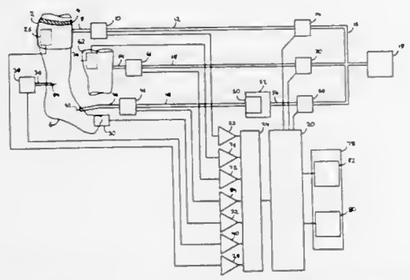
plunger in respect to the aspirating cylinder to open the diaphragm to accommodate flow of liquid and physiological debris between the separated slit edge surfaces.

5,254,087

TOURNIQUET APPARATUS FOR INTRAVENOUS REGIONAL ANESTHESIA

James A. McEwen, Richmond, Canada, assignor to IVRA Systems, Inc., Richmond, Canada

Filed Jan. 29, 1990, Ser. No. 471,514
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—66 **14 Claims**



1. Apparatus for administering and maintaining anesthesia in a portion of a patient's limb distal to a cuff, comprising in combination:

(a) a cuff for substantially encircling a limb and applying pressure to a vein in the limb to restrict flow past the cuff in a proximal direction of fluid contained in the vein in the portion of the limb distal to the cuff;

(b) applied pressure transducing means for generating an applied pressure signal representative of the maximum pressure applied to the vein by the cuff;

(c) delivery pressure control means responsive to the applied pressure signal for determining a reference pressure and for generating a delivery pressure control signal representative of the reference pressure; and

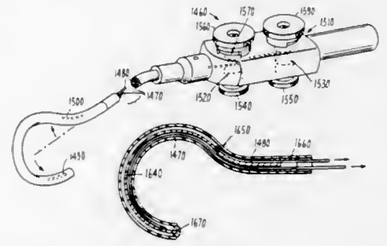
(d) anesthetic delivery means responsive to the delivery pressure control signal for introducing anesthetic fluid into the vein distal to the cuff and for adjusting the anesthetic fluid delivery pressure to a pressure less than the reference pressure.

5,254,088

CATHETER STEERING MECHANISM

Ingemar Lundquist, Pebble Beach, and Russell B. Thompson, San Leandro, both of Calif., assignors to EP Technologies, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 736,384, Jul. 26, 1991, abandoned, which is a division of Ser. No. 473,667, Feb. 2, 1990, abandoned. This application Dec. 16, 1992, Ser. No. 991,474
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—95 **10 Claims**



1. A steering mechanism comprising:

a steering shaft having a proximal end and a distal end and a lumen therethrough;

a coiled spring mounted in the steering shaft and having a distal end that terminates within the steering shaft short of the distal end of the steering shaft, the distal end of the steering shaft being free of any coiled spring;

a lead spring having an axis and a bendable portion extending outside the distal end of coiled spring but still within the distal end of the steering shaft that is free of any coiled spring for bending the distal end of the steering shaft in response to an applied force relative to the coiled spring,

a first steering wire extending through the lumen, having a first end attached to the lead spring a first location outside at the distal end of the coiled spring and having a second end exiting the proximal end;

a second steering wire extending through the lumen, having a third end attached to the lead spring at a second location outside the distal end of the coiled and having a fourth end exiting the proximal end; and

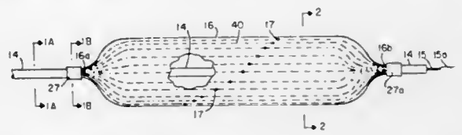
a controller positioned at the proximal end and attached to the second and fourth ends, for placing tension on at least one of the first steering wire and the second steering wire, for applying force to the steering wire to bend the distal end of the steering shaft toward the tensed steering wire.

5,254,089

MEDICATION DISPENSING BALLOON CATHETER

James C. Wang, Norton, Mass., assignor to Boston Scientific Corp., Watertown, Mass.

Filed Apr. 2, 1992, Ser. No. 862,415
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—96 **13 Claims**



1. An inflatable medical device for the delivery of medications to an organ in the body, said device comprising:

a catheter having a plurality of lumens disposed therein, said catheter having a distal end adapted to be disposed within a bodily organ;

a hollow, inflatable, medication-deliverable balloon defined by walls and having a distal and a proximal end, the proximal end of the balloon being disposed on the distal end of said catheter, the interior of said balloon being in fluid flow relationship with one of said lumens whereby to provide the interior of said balloon with inflation fluids;

a least one conduit for the delivery of medications to predetermined locations within said bodily organ, said conduit being disposed within the wall of said balloon;

means for delivering medications from another of said lumens in said catheter to said conduit;

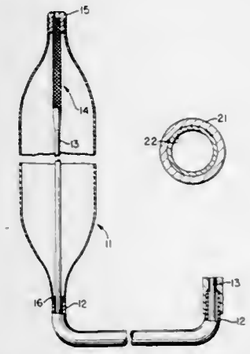
means for dispensing medications from said conduit to said predetermined locations.

5,254,090

BALLOON CATHETER HAVING A DUAL LAYER INNER MEMBER

Edward J. Lombardi, Derry, N.H.; John M. Hegarty, Reading, and Wayne P. Griffin, Dracut, both of Mass., assignors to Kontron Instruments, Inc., Everett, Mass.

Continuation of Ser. No. 640,951, Jan. 14, 1991, abandoned. This application Aug. 11, 1992, Ser. No. 928,136
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—96 **5 Claims**



1. In a balloon catheter apparatus having a hollow catheter having a proximate end and a distal end and an inflatable and deflatable balloon having a proximate end and a distal end, the proximate end of the balloon being sealably attached to the distal end of the catheter, and an elongated member or central lumen disposed within the hollow catheter, the improvement wherein the elongated member is comprised of a dual layer comprised of an inner soft elastomeric polyurethane layer and an outer hard plastic nylon layer, the elongated member being formed by forming the outer layer onto the inner layer by coextrusion and the dual layer extends the entire length of the elongated member.

5,254,091

LOW PROFILE BALLOON CATHETER AND METHOD FOR MAKING SAME

Wassim R. Aliahmad, Inglewood; Said S. Hilal, Laguna Niguel, and Nabil Hilal, Mission Viejo, all of Calif., assignors to Applied Medical Resources Corporation, Laguna Hills, Calif.

Filed Jan. 8, 1991, Ser. No. 639,672
Int. Cl.[5] A61M *29/02*
U.S. Cl. 604—96 **5 Claims**

1. A non-distensible balloon adapted to be disposed circumferentially on a tube having an elongate axis, and adapted to be rolled on the tube to achieve a low profile, the balloon comprising:

an end wall disposed in an end region of the balloon and in a fixed circumferential relationship with the tube;

a central wall disposed in a central region of the balloon and

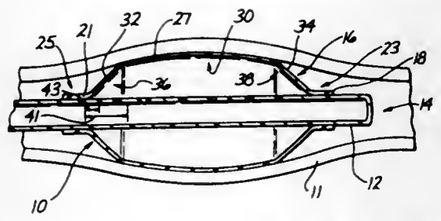
VOL 1155 ISS 3 OCT 19 1993 UMI

in a displaced relationship with the tube when the balloon is inflated;

a transition wall extending from the end wall to the central wall of the balloon, the transition wall defining;

a height transition region wherein the transition wall extends from a first radius at the end wall to a second radius at the central wall, the height transition region having a first axial length, and

a thickness transition region wherein the transition wall varies from a maximum thickness to a minimum thickness,



the thickness transition region having a second axial length less than the first axial length;

first portions of the balloon disposed in the transition wall and having a thickness t_1, an inside radius r_1, and an outside radius R_1; and

second portions of the balloon disposed in one of the end wall, central wall and the transition wall, and having a thickness t_2, an inside radius r_2 and an outside radius R_2;

wherein

the thickness t_1 of the first portions of the balloon is characterized by the following formula:

$$t_1 < t_2\left(\frac{r_1 + R_1}{r_2 + R_2}\right).$$

5,254,092

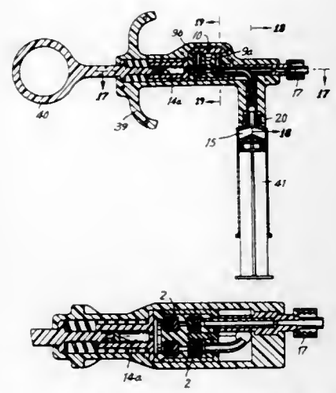
FLUID FLOW CHECK VALVE

Mark Polyak, Minnetonka, Minn., assignor to American Medical Systems, Inc., Minnetonka, Minn.

Filed Sep. 15, 1992, Ser. No. 945,056

Int. Cl.[5] A61M *29/00, 5/00;* **F16K** *15/18, 15/00*

U.S. Cl. 604—99 **13 Claims**



1. An element of a valve for controlling flow of a fluid through a flow path, which element comprises a housing defining said flow path and having an indented portion about said flow path, a poppet mounted within said indented portion such that an internal end of the indented portion defines a seat which provides a fluid-tight seal when the poppet mounted within the indented portion is held against said seat, spring means for holding said poppet against said seat, rigid movable means associated with the poppet, for altering the orientation of said poppet relative to said seat and thereby seal or unseal the flow path, and actuating means for moving said movable means.

5,254,093

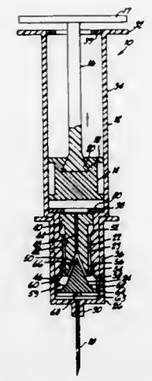
NON-REUSABLE HYPODERMIC SYRINGE

Joseph W. Bartlett, Lawndale, and Gail F. Linn, Playa del Rey, both of Calif., assignors to Medical Appliances, Inc., Los Angeles, Calif.

Filed Feb. 12, 1990, Ser. No. 478,667

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—110 **38 Claims**



1. A single use disposable hypodermic syringe comprising:

a hollow elongated barrel portion;

a piston in sealing engagement with and axially translated along said barrel portion;

a piston rod secured to said piston and projecting from one end of said barrel portion for use in reciprocating said piston;

a walled chamber disposed proximate the other end of said barrel portion;

a first plug member disposed in said chamber and moveable therein from a rearward position to a forward position;

a second plug member disposed forwardly of said first plug member;

fluid flow means disposed in said first plug member for allowing fluid flow therethrough;

means defined by said first plug member for maintaining said first plug member in said rearward position upon air being drawn into and ejected from said barrel portion through said fluid flow means in response to translation of said piston within said barrel portion and for permanently maintaining said first plug member in said forward position upon said first plug member being moved to said forward position by said liquid during ejection thereof from said syringe; and

means defined by said second plug member for sealing said fluid flow means upon said first plug member being forced to said forward position and said piston being retracted within said barrel portion toward said one end thereof to prevent any additional liquid from being drawn into said barrel portion through said fluid flow means thereby rendering said syringe non-reusable.

5,254,094

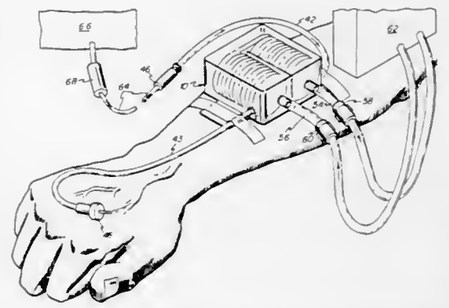
PHYSIOLOGICAL FLUID WARMER

David L. Starkey, 8724 Normandy La., Centerville, Ohio 45458, and Feraidoon Irani, 8421 Schoolgate Dr., Huber Heights, Ohio 45424

Continuation-in-part of Ser. No. 380,939, Jul. 17, 1989, abandoned. This application Aug. 16, 1990, Ser. No. 568,453

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—113 **37 Claims**



1. In combination with a source of a physiological fluid, a venous entry device for infusion of said physiological fluid into a patient at an infusion site, and a source of heat transfer fluid maintained at a preselected temperature, the improvement comprising:

a chamber having an exterior surface adapted to be attached to and supported by said patient such that said chamber may rest upon a skin surface of said patient at said infusion site,

means defining a fluid-tight interior in said chamber including walls defining an exterior surface of said chamber,

means for conveying said heat transfer fluid from and to said source thereof to and from, respectively, said interior of said chamber,

a continuous single length of tubing positioned within said interior of said chamber,

said tubing having an interior surface defining a continuous, fluid-tight passage therethrough out of fluid contact with said interior of said chamber and an exterior surface in heat transfer relationship with a heat transfer fluid conveyed through said interior of said chamber,

said tubing further including opposing ends wherein one of said ends of said tubing defines an upstream end located adjacent to one of said walls to define an entry point for said physiological fluid through one of said chamber walls and into said tube and wherein the other of said ends defines a downstream end located adjacent to one of said walls to define an exit point for said physiological fluid through one of said chamber walls and out of said tube,

means for conveying said physiological fluid from said source thereof to said upstream end of said tubing for flow through said passage,

means for conveying said physiological fluid from said downstream end of said tubing to said venous entry device wherein said means for conveying physiological fluid to and from said tubing define continuous fluid-tight passages passing through said chamber walls and connected to respective ends of said single length of tubing, and

said means for conveying said physiological fluid from said downstream end of said tubing having a length of less than one foot from said downstream end of said tubing to said venous entry device, such that the heat lost by said physiological fluid after leaving said chamber is minimized.

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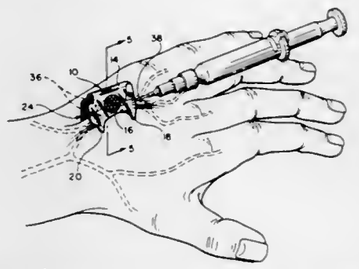
VEIN TENTER

Clyde B. Harvey, P.O. Box 1144, Monrovia, Calif. 91016

Filed May 27, 1992, Ser. No. 888,507

Int. Cl.[5] A61M *5/00, 5/32;* **A41F** *1/00;* **A44B** *1/04*

U.S. Cl. 604—115 **12 Claims**



1. A stabilizer for blood vessels comprising a pair of elongate flat panels adapted to be manually grasped and manipulated in one hand, said panels including elongate inner edges, hinge means joining said panels along said inner edges, said panels diverging from said hinge means at an acute angle relative to each other, each panel terminating in an elongate outer edge portion in lateral alignment with the elongate outer edge portion of the other panel remote from said hinge means, said hinge means resiliently retaining said panels with the outer edge portions laterally spaced from each other for selective manual lateral movement of said outer edge portions toward each other for engagement of skin of a patient and stabilization of a portion of a blood vessel positioned between said panels, said panels each having a forward edge and a rear edge extending between said joined inner edges and the respective outer edge portions, the forward edges being linear along their full extent and defining skin engaging and pushing means for directing lateral pressure against an adjacent blood vessel, each said rear edge, for a portion along their length, being convexly curved outward relative to the associated panel, said convexly curved portions of the rear edges being laterally opposed for engagement adjacent a portion of a blood vessel and stabilization of the portion of the blood vessel therebetween, each said panel having a grip area centrally thereof between said inner edge and said outer edge portion thereof and inwardly of said forward and rear edges thereof for selective manipulation of said outer edges, forward edges, and rear edges for blood vessel stabilization.

5,254,096

SYRINGE PUMP WITH GRAPHICAL DISPLAY OR ERROR CONDITIONS

Jean-Claude Rondelet, St. Etienne de Crossey, and Jean-Michel Dupouy, La Tronche, both of France, assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 23, 1992, Ser. No. 950,385

Int. Cl.[5] A61M *1/00*

U.S. Cl. 604—152 **11 Claims**

1. A syringe pump for pumping fluid from a syringe having a barrel and a plunger, the plunger having a flange, the syringe pump comprising:

a housing;

a pusher for pushing the plunger;

clamp means for engaging the syringe barrel and for holding the syringe barrel in a stationary position relative to the housing;

clamp detector means for detecting whether or not the syringe is properly held in position relative to the housing by the clamp means and for producing an output indicative of whether the syringe is properly held in position relative to the housing;

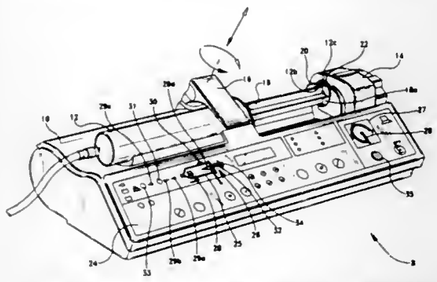
antisiphon means for engaging the plunger and holding the

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plunger stationary relative to the pusher, thereby preventing the plunger from moving independently of the pusher;

antisiphon detector means for detecting whether the plunger is properly engaged by the antisiphon means and for producing an output indicative of whether the plunger is properly engaged by the antisiphon means;

a display comprising a graphical representation of the syringe, the graphical representation comprising a representation of the syringe barrel and the plunger, first indicium means for indicating the output of the clamp detector means and located at a point on the display generally



corresponding to the position on the syringe barrel where the clamp engages the syringe barrel and second indicium means for indicating the output of antisiphon detector means, and located at a point on the display generally corresponding to the position on the plunger where the antisiphon means engages the plunger;

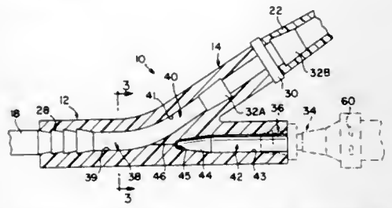
electronic circuitry for transmitting the outputs of the clamp detector means and the antisiphon detector means respectively to the first and second indicia means such that the display indicates whether or not the syringe is properly held relative to the housing and whether or not the plunger is properly engaged by the antisiphon means.

5,254,097

COMBINED PERCUTANEOUS CARDIOPULMONARY BYPASS (PBY) AND INTRA-AORTIC BALLOON (IAB) ACCESS CANNULA

Robert B. Schock; John J. Lucas, both of Sparta; William C. Corrigan, Jr., Randolph, and Manuel L. Capinpin, Bayonne, all of N.J., assignors to Datascope Investment Corp., Montvale, N.J.

Filed Jan. 6, 1992, Ser. No. 817,399
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—167 **53 Claims**



1. A cannula adapted for percutaneous insertion into the body of a patient and comprising percutaneous insertion means and a cannula body, said cannula body comprising

a common leg having a distal end, a proximal end and a common lumen therethrough defined by a common lumen wall, said common lumen being in fluid communication with said percutaneous insertion means,

a primary access port leg having a primary lumen defined by a primary lumen wall, said primary lumen being in fluid communication with said common lumen and forming a continuous blood flow path therewith,

a secondary access port leg having a secondary lumen defined by a secondary lumen wall, and

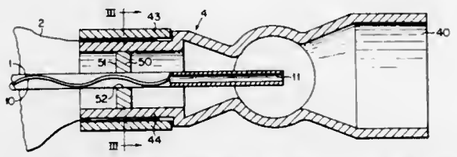
hemostasis means for providing access for percutaneous insertion of a catheter through said secondary lumen and said blood flow path, and for preventing a blood flow from said blood flow path through said secondary lumen.

5,254,098

SUCTION CATHETER ASSEMBLIES

Karl Ulrich, Belmont, and Tom Devlin, Cambridge, both of Mass., assignors to Smiths Industries Medical Systems, Inc., Keene, N.H.

Filed Feb. 16, 1993, Ser. No. 18,255
Int. Cl.[5] A61M *16/00*
U.S. Cl. 604—171 **9 Claims**



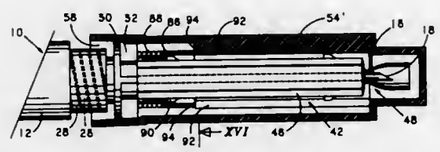
1. A suction catheter assembly for use in removing fluid from a patient, the assembly comprising: an aspirating catheter having a proximal and distal end, said distal end being suitable for insertion into a patient; a vacuum connecting member located in the vicinity of the proximal end of the catheter; a patient connecting member mounted to surround the catheter in the vicinity of the distal end of the catheter; a protective sleeve extending along the aspirating catheter where it extends between the patient connecting member and the vacuum connecting member; and a linear-to-angular motion coupling between the catheter and the patient connecting member such that linear displacement of the catheter through the patient connecting member automatically effects angular displacement of the catheter.

5,254,099

HARD COVER FOR PRE-COCKING PROTECTED INJECTION APPARATUS

Thomas C. Kuracina, Ojai; Randall E. Ohnemus, and Craig W. Smith, both of Ventura, all of Calif., assignors to InjectiMed. Inc., Ventura, Calif.

Filed Mar. 10, 1992, Ser. No. 850,681
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—198 **5 Claims**



1. In a medical device having a needle carried by a base twistedly attached to the medical device, the improvement for protectively capping the needle and providing ease of attachment and disattachment of the needle comprising:

a) the base having a plurality of radial longitudinal vanes; and,

b) a hollow cover sized to fit over the needle and said plurality of longitudinal vanes, said cover having a closed end and an inwardly tapering open end into which said plurality of radial longitudinal vanes wedgedly fit to hold the base and the needle in said cover, said cover further having at least one inward projection contacting a side surface of one of said plurality of radial longitudinal vanes whereby a user can twist the base to attach and disattach the needle by twisting said cover; wherein additionally,

c) the needle has a retractable protective sleeve disposed thereover with a bias spring and locking collar disposed over said retractable protective sleeve, said bias spring biasing said locking collar from a retracted position which allows the protective sleeve to retract, to an extended position which prevents the protective sleeve retraction; and additionally comprising,

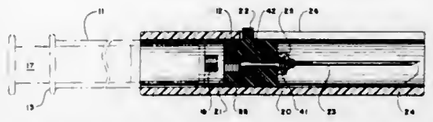
d) at least one vertical shoulder disposed inside said cover adjacent said open end for holding said locking collar and said spring in a retracted position.

5,254,100

PROTECTIVE NEEDLE ASSEMBLY FOR HYPODERMIC SYRINGE

Michael L. Huband, 6513 Hagueman Dr., Richmond, Va. 23225

Continuation-in-part of Ser. No. 711,652, Jun. 6, 1991, Pat. No. 5,104,385. This application Mar. 23, 1992, Ser. No. 856,377
The portion of the term of this patent subsequent to Apr. 14, 2009, has been disclaimed.
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—198 **6 Claims**



1. A needle-protecting assembly adapted for use with a conventional hypodermic syringe comprised of a barrel having a discharge extremity provided with needle-accepting means, said needle-protecting assembly comprising:

a) a hub having a circular cylindrical sidewall disposed upon a central axis, a forward extremity having forwardly directed coupling means for engaging a mounting collar of a conventional cannula having a pointed extremity, a rear extremity having a recess configured to engage said needle accepting means, a control tab radially emergent from said sidewall, and a passageway extending between said coupling means and recess along said axis, and

b) a transparent cylindrical sheath elongated between forward and rearward rims and configured to slide upon said sidewall and envelope said hub, said sheath having: 1) a longitudinal slot extending in parallel relationship to said axis between a first extremity and a second extremity forwardly spaced from said first extremity, 2) a circumferentially disposed arcuate slot communicating with said first extremity, and 3) a locking aperture circumferentially separated from said arcuate slot,

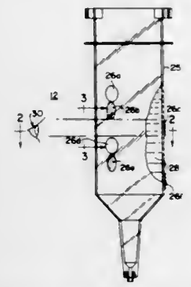
c) said sheath engaging said control tab in a manner whereby reciprocal axial motion of the sheath is permitted when said tab is in said longitudinal slot, and an irreversibly locked condition is produced when the tab is in said locking aperture, said locked condition characterized in disposing the forward rim of the sheath forwardly of the pointed extremity of said cannula.

5,254,101

FLUID PRESENCE INDICATOR FOR ROTATABLE SYRINGE

Frederick W. Trombley, III, Queensburry, N.Y., assignor to Medrad, Inc., Indianola, Pa.

Filed Nov. 27, 1992, Ser. No. 983,078
Int. Cl.[5] A61M *5/18*
U.S. Cl. 604—207 **9 Claims**



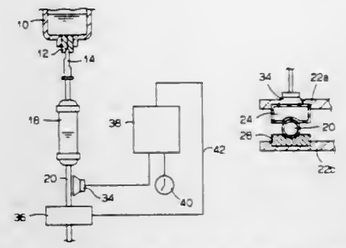
1. In a rotatable angiographic syringe having a transparent, hollow, cylindrical barrel for receiving a transparent liquid, and a plunger axially reciprocal within the barrel for discharging the liquid therefrom, the improvement comprising indicator means carried by said barrel, said indicating means including a plurality of discrete patterns of predetermined shape substantially circumferentially disposed around said barrel, whereby the liquid alters the perceived configuration of said patterns when viewed through said barrel to provide a direct visual indication of the presence of a transparent liquid within said barrel notwithstanding the rotational orientation of said syringe.

5,254,102

APPARATUS FOR CONTROLLING THE RATE OF DRIPPING OF INTRAVENOUS FLUID

Genshiro Ogawa, 13-3 Aza-Nishikoken Oaza-Iouyama, Inuyama-shi Aichi-ken, Japan

Filed Aug. 24, 1992, Ser. No. 933,811
Claims priority, application Japan, Aug. 23, 1991, 3-237016; Aug. 30, 1991, 3-246916
Int. Cl.[5] A61M *5/16*
U.S. Cl. 604—253 **12 Claims**



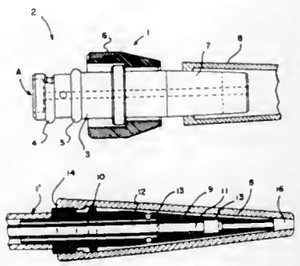
1. An apparatus for controlling the rate of dripping of an intravenous fluid into a drip-feed bottle that has a fluid-supply tube extending therefrom, comprising

(a) drip-detecting means positionable on the fluid-supply tube below the drip-feed bottle for detecting the dripping of an intravenous fluid into a drip-feed bottle, said drip-detecting means comprising a pair of clipping elements positionable with the supply tube located therebetween and biased toward each other by a spring, an air bag connected to an inside of one of the clipping elements for being pressed against the supply tube, and means con-

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nected to the air bag for detecting vibrations resulting from intravenous fluid dripping into the drip-feed bottle;
(b) a clock for measuring time and indicating the current time;
(c) constricting means positionable on the fluid-supply tube at a position downstream of the drip-feed bottle for constricting the supply tube; and
(d) a flow controller for controlling constriction of the supply tube by the constricting means based on a signal from the drip-detecting means indicating detection of a drip and a time signal from the clock.

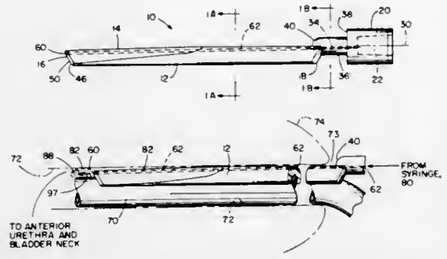
5,254,103
DENTAL SYRINGE WITH DISPOSABLE PROTECTIVE TUBING
Melle A. Heuillon, 3 rue Petite Rue, 55170 Ancerville, France
Filed May 21, 1991, Ser. No. 703,609
Int. Cl.[5] B61M *5/00*
U.S. Cl. 604—263 **10 Claims**



1. A nozzle for use with a dental syringe having a syringe body, for projecting air, water, and mixtures of air and water in dental surgery, in combination with a disposable tube for preventing microbial and viral contamination between patients detachably connected to and overlying the nozzle, the nozzle comprising an adapter having means at a proximal end for connection with the syringe body, and a male conical projection at a distal end for mechanically receiving the tube, a first longitudinal passage formed in the nozzle for discharging water from the nozzle, and a plurality of transverse bores formed in the nozzle for communicating with a second longitudinal passage and a space defined between the male conical projection and the tube, for discharging air from between the nozzle and the tube.

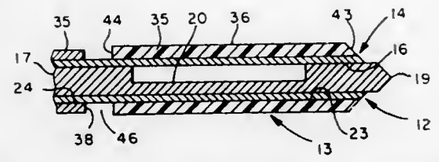
5,254,104
DEVICE FOR PERICATHETER RETROGRADE
William L. Furlow, Nashville; L. Dean Knoll, Brentwood; Ralph C. Benson, Jr., Mt. Juliet, all of Tenn., and Russel R. Voght, Elk River, Minn., assignors to Center for Urological Treatment & Research, Nashville, Tenn.
Filed Oct. 22, 1991, Ser. No. 781,748
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—264 **13 Claims**

1. Pericatheter type disposable device in the form of a unitary single component formed in one piece from substantially rigid plastic, said device being for use in a urethra having an in-dwelling catheter, and for use with a syringe means, said pericatheter type disposable device comprising:
i) an elongate element having a substantially crescent-shaped cross-section, with a smooth convex outer surface which in use contacts the inside of the urethra, and a smooth concave inner surface which in use contacts the in-dwelling catheter, said elongate element having a central axis, a distal end and a proximal end;
ii) a mating member for engaging the syringe means, said mating member having its central axis generally parallel to said central axis of said elongate element; and
iii) a spacer member intermediate and coupling said proximal end of said elongate element to said mating member, said spacer member being in line with the central axis of said mating member and being off-set from said elongate element to form a protuberance at the outer surface of said elongate member;



said device having a straight relatively small diameter through-bore extending from an opening in said distal end of the elongate element, through said elongate element, through said spacer member, and into said mating member, said through-bore being in fluid communication with said syringe means.

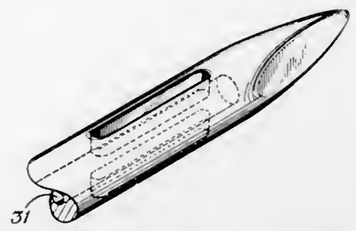
5,254,105
SHEATH FOR WOUND CLOSURE CAUSED BY A MEDICAL TUBULAR DEVICE
John R. Haaga, 4309 N. Hilltop, Chagrin Falls, Ohio 44022
Continuation-in-part of Ser. No. 787,518, Nov. 4, 1991, Pat. No. 5,195,988, which is a division of Ser. No. 514,769, Apr. 26, 1990, Pat. No. 5,080,655, which is a division of Ser. No. 288,858, Dec. 23, 1988, Pat. No. 4,936,835, which is a continuation-in-part of Ser. No. 199,130, May 26, 1988, Pat. No. 4,838,280. This application Jun. 10, 1992, Ser. No. 896,588
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—265 **29 Claims**



1. The combination of a tubular medical device for accessing a body part of a patient through the tissue thereof and a hollow tubular sheath initially positioned on said device externally of said tissue and pusher means associated with said device for positioning said sheath in said body tissue for minimizing hemorrhagic complications resulting from the body tissue wound when said device and said pusher means are removed from said body tissue, said sheath having a generally rigid outer coating and an inner core.

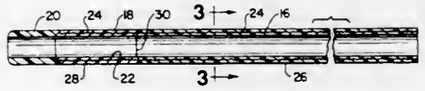
5,254,106
HYDRODISSECTION NEEDLE
Fred T. Feaster, 1125 Coliege Ave., Fort Worth, Tex. 76104
Filed Apr. 17, 1992, Ser. No. 870,397
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—272 **8 Claims**

1. A hydrodissection needle for use for performing surgery on a person's eye, comprising:
an elongated member having a central axis extending along its length, a rear end, an elongated body portion, and a sharp front end with two flattened opposite facing sides extending rearward from said sharp front end to said elongated body portion,
said two flattened sides being the only flattened sides extending rearward from said sharp front end and being free of apertures,
a central aperture extending generally along said central axis of said member from said rear end to a position near said front end,
said member having a side wall surrounding said central aperture,



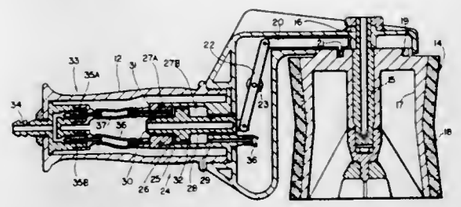
said elongated body portion being generally cylindrical having the same outside diameter from the rear of said flattened sides along a substantial portion of the length of said elongated body portion,
said member having a rear inlet opening leading to said central aperture at said rear end, and
at least one outlet opening formed through said elongated body portion near and rearward of said two flattened sides and in fluid communication with said central aperture for allowing the flow of liquid through said member from said rear inlet opening at said rear end, by way of said central aperture and from said central aperture outward by way of said outlet opening.

5,254,107
CATHETER HAVING EXTENDED BRAID REINFORCED TRANSITIONAL TIP
Peter P. Soltesz, Miami, Fla., assignor to Cordis Corporation, Miami Lakes, Fla.
Continuation of Ser. No. 665,298, Mar. 6, 1991, abandoned. This application Sep. 23, 1992, Ser. No. 949,742
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—282 **11 Claims**



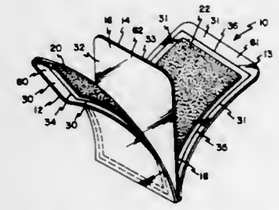
1. An intravascular catheter which comprises:
a flexible, plastic inner tube; a fibrous, tubular reinforcement member carried by said inner tube;
a first section comprising a first plastic material overlying said inner tube and reinforcement member;
a second section comprising a second plastic material having different physical properties from said first plastic material and overlying said inner tube and reinforcement member;
said first section being in abutting relationship which said second section;
said tubular reinforcement member comprising integral fibers that extend between and are embedded in the plastic of both said first and second sections; and
a third section abutting said second section, said third section comprising a plastic free of said embedded, fibrous, tubular reinforcement member and generally free of said inner tube;
said catheter having a central, smooth, plastic-walled open lumen.

5,254,108
ROLLER APPLICATOR
Anthony I. Burrell, Avoca Beach; Glen W. Bunyan, Kanwal, and Ian R. Phillips, Killara, all of Australia, assignors to N. J. Phillips Pty. Limited, Somersby, Australia
Filed Jan. 16, 1992, Ser. No. 821,702
Int. Cl.[5] A61M *35/00*
U.S. Cl. 604—289 **25 Claims**



17. A hand held applicator to apply a liquid to an animal, said applicator comprising:
a body including a handle to be gripped by a user;
a rotatable element rotatably mounted on said body for rotation about an axis;
a pump mounted in said handle;
device means mounted on said body and coupling said element and said pump so that rotation of said element causes operation of said pump;
at least one nozzle mounted on said body and which in use is directed at said animal;
first duct means extending from said pump to said nozzle; and
further duct means to deliver said liquid to said pump so that upon rotation of said element said liquid is delivered under pressure so said nozzle by operation of said pump and via said first duct means.

5,254,109
SEPARATELY PACKAGED APPLICATOR PADS FOR TOPICAL DELIVERY OF INCOMPATABLE DRUGS
James A. Smith, Chatham, Mass., and Betty J. Murphy, Upper Montclair, N.J., assignors to Creative Products Resource Associates, Ltd., North Caldwell, N.J.
Filed Dec. 7, 1992, Ser. No. 986,598
Int. Cl.[5] A61M *35/00*
U.S. Cl. 604—289 **35 Claims**



1. A method for applying a plurality of dermatological agents to the skin from one dispensing and applicator system comprising the steps of:
(a) providing a dispensing and applicator system comprising:
(1) a first and second flexible, moisture impermeable cover sheet;
(2) a first applicator pad and a second applicator pad affixed to a first surface of said first and second cover sheets, respectively; said first pad being impregnated with a first composition comprising a first dermatologi-

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cal agent and said second pad being impregnated with a second composition comprising a second dermatological agent; and

(3) a flexible, moisture impermeable support sheet having the peripheral surface of its first side releasably sealed by means of a first continuous seal line to the opposed peripheral surface of the first cover sheet so as to form a first compartment containing the first pad attached t said surface of first cover sheet; and having the peripheral surface of its second side releasably sealed by means of a second continuous seal line to the opposed peripheral surface of the second cover sheet so as to form a second compartment containing said second pad attached to said second cover sheet, which seal lines are positioned inwardly from the edges of the sheets over a portion of the opposed peripheral surfaces, so as to form two pairs of opposed flanges;

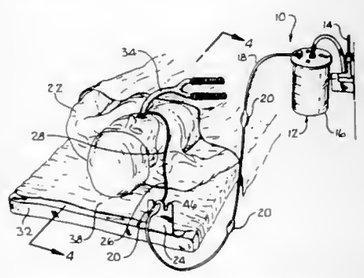
(b) sequentially manually grasping and separating each pair of opposed flanges to at least partially release each cover sheet from the support sheet, so that said first pad and said second pad are exposed; and

(c) contacting said first pad and said second pad with the skin to release the compositions sequentially from the pads, to thereby apply a film of the agents onto the skin.

5,254,110
VACUUM SYSTEM FOR USE DURING SURGICAL PROCEDURES

Donald H. Marcus, 16837 Calahan St., Sepulveda, Calif. 91343, and Edward J. Hunter, 8415 Oakdale Ave., Canoga Park, Calif. 91306

Filed Jun. 9, 1992, Ser. No. 896,113
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—322 **9 Claims**



1. A support for suction tubing forming a portion of a surgical aspiration system, the support comprising:

a flat, horizontally disposed base adapted to fit beneath a patient-supporting mattress;

a bracket member extending vertically upwardly from the base, wherein the bracket member is integrally formed and rigidly positioned with respect to the base;

an aperture through the bracket member in which a portion of the suction tubing is positioned;

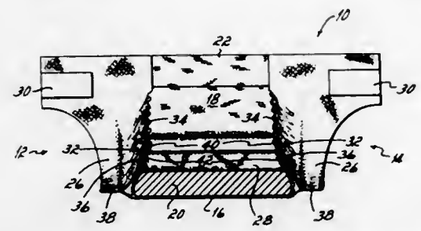
a pair of vertically extending anchor slots adjacent to the aperture, providing means for temporarily anchoring a distal end of the suction tubing; and

means for permitting insertion of the suction tubing into the aperture, but preventing withdrawal of the suction tubing from the aperture without destroying the utility of the suction tubing.

5,254,111
BARRIER CUFF FOR DISPOSABLE ABSORBENT ARTICLES

Leopoldo V. Cancio; Pai-Chuan Wu, both of Cincinnati, Ohio; Thomas R. Ryle, Burlington, Ky.; Robert M. Mortellite, Hamilton, and J. David Toppen, Loveland, both of Ohio, assignors to Clopay Plastic Products Company, Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 821,342, Jan. 13, 1992, Pat. No. 5,202,173, which is a continuation of Ser. No. 478,935, Feb. 12, 1990, abandoned. This application Dec. 9, 1992, Ser. No. 988,188
Int. Cl.[5] A61F *13/15, 13/20*
U.S. Cl. 604—385.1 **8 Claims**



1. A disposable absorbent article for personal use having a waste barrier cuff comprising:

a backsheet which forms an article outside layer when used by a person;

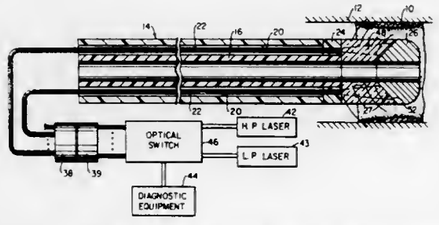
a waste absorbent layer positioned inside of said backsheet; and

a waste barrier cuff disposed adjacent a margin of the absorbent article defining a waste containment pocket with said backsheet, said cuff being an embossed thermoplastic film having a pattern embossed therein in a normal unstretched state, said film having thick and thin areas and a plurality of post-embossed stretched areas along lines spaced substantially uniformly across a surface area of both sides of said embossed film, said stretched areas being separated by unstretched areas and having a thickness less than said unstretched areas, said thin areas of said embossed film in its normal unstretched state being stretched more readily than said thick areas, said film being ultrasoft and quiet in comparison with said embossed film in its normal unstretched state.

5,254,112
DEVICE FOR USE IN LASER ANGIOPLASTY

Edward Sinofsky, Peabody; W. Scott Andrus, Lexington, and Michael Madden, Ashby, all of Mass., assignors to C. R. Bard, Inc., Murray Hill, N.J.

Filed Oct. 29, 1990, Ser. No. 604,931
Int. Cl.[5] A61N *5/06*; A61B *8/12*
U.S. Cl. 606—7 **20 Claims**



1. A catheter for use in removing diseased tissue within a body cavity, comprising

an elongated tube having a distal end,

an ultrasonic transducer at the distal end of said tube,

means for transmitting laser energy through said catheter to said ultrasonic transducer to cause said transducer to transmit acoustical energy toward said tissue,

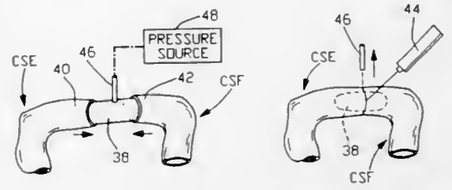
means for detecting acoustical energy reflected rom said tissue, and

means for transmitting laser energy through said catheter to ablate said tissue.

5,254,113
ANASTOMOSIS METHOD

Peter J. Wilk, 185 West End Ave., New York, N.Y. 10023

Filed Aug. 31, 1992, Ser. No. 937,598
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—8 **19 Claims**



1. A method for use in performing an anastomosis, comprising the steps of:

juxtaposing free ends of two sections of a ressected tubular organ of a patient so as to form a continuous lumen through the sections upon termination of a connection operation, said step of juxtaposing including the steps of inserting an inflatable balloon into said sections at their free ends, inflating said balloon, and pulling said sections over the inflated balloon;

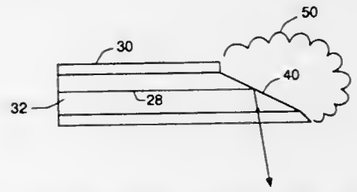
placing a strip of a biocompatible material over said sections along a seam therebetween; and

bonding said strip to outer surfaces of said sections so as to form a seal about said seam.

5,254,114
MEDICAL LASER DELIVERY SYSTEM WITH INTERNALLY REFLECTING PROBE AND METHOD

Edward D. Reed, Jr.; James R. Kermode, both of Sunnyvale, and Dennis C. Frezzo, San Francisco, all of Calif., assignors to Coherent, Inc., Palo Alto, Calif.

Filed Aug. 14, 1991, Ser. No. 745,269
Int. Cl.[5] A61N *5/06*
U.S. Cl. 606—15 **18 Claims**



1. A medical laser system for delivering laser energy to a treatment site in a liquid medium comprising:

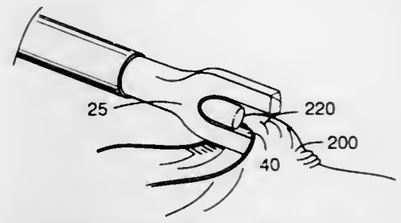
means for generating a laser output having a particular wavelength and energy level; and

an optical fiber having a longitudinal axis and an input end and a delivery end, with the laser output being coupled to the input end and exiting the delivery end, and with the delivery end terminating in an end surface disposed at a non-normal angle with respect to the longitudinal axis of the fiber, said end surface being exposed to allow contact with the liquid medium, and with the wavelength and energy level of the laser output being selected such the output exiting the delivery end will vaporize the liquid medium in contact therewith creating a vapor bubble abutting said end surface and with the angle of said end surface being selected so that the laser output will be totally internally reflected off the end surface and be redirected out of the fiber in a direction transverse to the longitudinal axis of the fiber.

5,254,115
COAGULATING SCALPELS

Krishna M. Bhatta, Brookline, Mass., and Thomas E. Haw, Portland, Oreg., assignors to The General Hospital Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 595,448, Oct. 11, 1990, abandoned. This application Oct. 11, 1991, Ser. No. 775,171
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—16 **42 Claims**



1. A coagulating scalpel the distal end of which comprises a first dissecting element,

a second dissecting element, and

a cutting and coagulating element,

said first dissecting element having a distal end, a longitudinal axis, an inner surface which faces a gap between said first dissection element and said second dissecting element and which is adapted to permit substantially free passage of tissue over said surface, and an outer surface which does not face a gap between said first dissecting element and said second dissecting element,

said second dissecting element having a longitudinal axis, an inner surface which faces a gap between said first dissecting element and said second dissecting element and, and an outer surface which does not face a gap between said first dissecting element and said second dissecting element, and

said cutting and coagulating element comprising an optical filament having a distal end, a focal point, a longitudinal axis, and a portion that lies adjacent said dissecting elements,

said optical fiber being positioned in said gap between said first and said second dissecting elements, said focal point of said optical filament being proximal to said distal end of said first dissecting element, and said longitudinal axes of said first and second dissecting elements and said longitudinal axis of said portion of said optical fiber that lies adjacent said dissecting elements being essentially parallel.

5,254,116
CRYOSURGICAL INSTRUMENT WITH VENT HOLES AND METHOD USING SAME

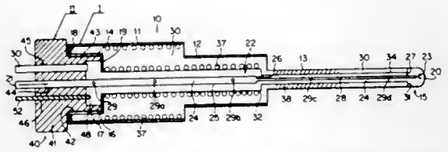
John G. Baust, Candor; ZhaoHua Chang, Binghamton, both of N.Y., and J. J. Finkelstein, Bethesda, Md., assignors to Cryomedical Sciences, Inc., Rockville, Md.

Filed Sep. 6, 1991, Ser. No. 756,287
Int. Cl.[5] A61B *17/38*
U.S. Cl. 606—23 **24 Claims**

1. In a cryoprobe instrument including a probe casing having a closed end including a freezing zone for freezing live tissue and an open end, a cryogenic refrigerant supply tube having a

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supply tube inlet for receiving liquid cryogenic refrigerant at the open end and a supply tube outlet for delivering the liquid cryogenic refrigerant to the freezing zone at the closed end, a cryogenic refrigerant exhaust channel surrounding the supply tube for transporting the used refrigerant from the closed end towards the open end, said exhaust channel having an exhaust channel inlet, and thermal insulation for insulating the side wall



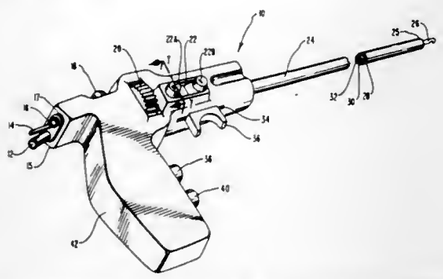
of the probe casing from the exhaust channel inlet to the open end, the improvement comprising at least one vent hole in the supply tube upstream of said freezing zone and located between the exhaust channel inlet and the supply tube inlet and in flow communication with the thermally insulated exhaust channel thereby enabling during operation of the cryoprobe instrument gas formed or present in the supply tube to be vented to the exhaust channel.

5,254,117

MULTI-FUNCTIONAL ENDOSCOPIC PROBE APPARATUS

Larry Rigby; Eric Steckel, both of Salt Lake City, and Dixon Ford, Farmington, all of Utah, assignors to Alton Dean Medical, Woods Cross, Utah

Filed Mar. 17, 1992, Ser. No. 854,108
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—46 **39 Claims**



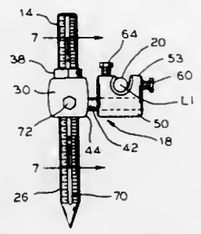
1. A multi-functional endoscopic probe apparatus comprising:
an elongated tube comprising a lumen therethrough and an electro-surgical tip means for the selective electro-surgical cutting and cauterizing at a distal end of said elongated tube wherein said tube is comprised of multiple lumens therethrough and wherein said electro-surgical tip means comprises an elongated metallic member slidably situated in a first lumen;
first application means for applying a negative pressure to one of the lumens of said elongated tube;
second application means for applying an irrigation stream to one of the lumens of said elongated tube;
third application means for applying an electric voltage to said tip means; and
handle means for enabling said apparatus to be conveniently held and operatively controlled with one hand as to all functions provided by each of said application means, said handle means attached to a proximal end of said elongated tube and wherein said handle means comprises:
first control means for selectively operating said first application means;
second control means for selectively operating said second application means; and
third control means for selectively operating said third application means; and
wherein said second control means comprises first means for directing fluid flow to a second lumen, and second means for directing fluid flow to a third lumen, and wherein said third lumen is substantially smaller in cross-sectional area than said second lumen such that a relatively small, high velocity irrigation stream is provided through said third lumen, and a relatively large, low velocity irrigation stream is provided through said second lumen.

5,254,118

THREE DIMENSIONAL SPINE FIXATION SYSTEM

Srdjian Mirkovic, 600 N. McClurg Ct., Apt. 3805A, Chicago, Ill. 60611

Filed Dec. 4, 1991, Ser. No. 802,311
Int. Cl.[5] A61F *5/04*
U.S. Cl. 606—61 **2 Claims**



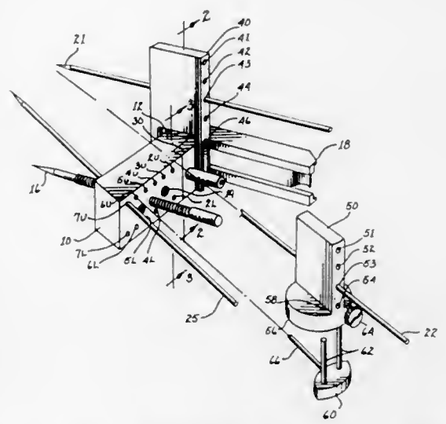
2. An internal spine fixation system comprising:
elongated means for providing rigidity to the spine;
a plurality of connectors for attachment to said elongated means, said connectors each having a first member with an aperture extending through said first member, and a second member having a rod-receiving slot, said first member slidably connected to said second member along a slide pin extending between said first and second members, said second member mounted for rotation about said slide pin;
means for locking said second member anywhere along substantially said entire slide pin so as to fix the rotational and translational position of said second member relative to said first member;
a fastener for each of said first members having a proximal end and a distal end, said distal end for engagement with one of said apertures in said connectors and said proximal end for affixation in said spine;
a height adjustment means engaging each of said connectors for selectively changing the position of each of said connectors along the length of said fasteners and the height of said connectors above said proximal end; and
wherein each of said first members has a pair of parallel guides along its top surface, said guides defining a channel between them, and wherein said height adjustment means comprises a nut for engagement with each of said fasteners, said nut having a flange seated in said channel and lockingly engaged beneath said guides, whereby rotation of said nut moves said first member along the length of said fastener.

5,254,119

OSTEOTOMY DEVICE AND METHOD THEREFOR

Saul N. Schreiber, 6525 N. Central Ave., Phoenix, Ariz. 85012

Filed Aug. 23, 1991, Ser. No. 749,426
The portion of the term of this patent subsequent to Jan. 7, 2009, has been disclaimed.
Int. Cl.[5] A61F *5/00, 2/32*
U.S. Cl. 606—87 **4 Claims**



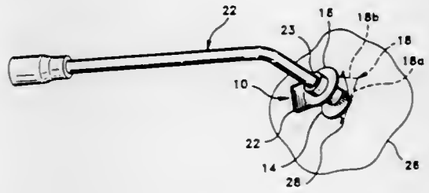
1. An osteotomy guide used in the removal of a wedge shaped piece of bone from a patient's leg, said piece of bone having first and second sides that intersect at the apex of the wedge, the angle between said first and second sides being substantially equal to the angle through which said leg must be rotated to correct the leg's misalignment, which comprises:
block means for establishing a reference alignment with respect to said patient's leg;
external locator means coupled to said block means for locating the positions of said apex and said first and second sides of said bone wedge externally above said patient's leg;
internal locator means coupled to said block means for transferring said positions of the apex and said first and second sides of said bone wedge form said external locator means to corresponding locations inside said bone of said patient's leg;
said block means comprises positioning pin means coupled to said block means for positioning said block means parallel to said bone of said patient's leg to establish said reference alignment,
said block means further comprises transmittal means for transmitting said positions determined by said external locator means to said internal locator means, said external locator means disposed atop said transmittal means, said internal locator means being integral with said transmittal means; and further comprising a plurality of surgical pins;
said transmittal means further comprises a first column of transverse bores extending therethrough and a plurality of columns of oblique bores extending therethrough, said oblique bores being aligned with said transverse bores and said columns of oblique bores positioned at predetermined angles from said first column of transverse bores, said transverse and oblique bores being sized to receive said surgical pins, and said columns of transverse bores and oblique bores are aligned so as to form an upper row of bores and a lower row of bores.

5,254,120

MYRINGOTOMY VENTILLIATION TUBE, METHOD, APPLICATOR AND KIT

James Z. Cinberg, 167 N. Ridgewood Rd., South Orange, N.J. 07079, and Peter J. Wilk, 185 W. End Ave., New York, N.Y. 10023

Continuation-in-part of Ser. No. 833,511, Feb. 11, 1992, Pat. No. 5,178,623, and a continuation-in-part of Ser. No. 921,308, Jul. 28, 1992, Pat. No. 5,207,685. This application Oct. 13, 1992, Ser. No. 959,672
Int. Cl.[5] A61F *17/00*
U.S. Cl. 606—109 **4 Claims**



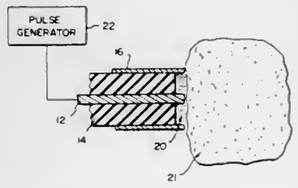
1. A kit for use in performing a myringotomy operation, comprising:
a ventilation tube provided at a distal end with a cutting edge;
a placement obturator releasably connected to said ventilation tube at a proximal end thereof;
a disposable otoscope:
a syringe connectable to a proximal end of said obturator for aspirating a quantity of fluid into a distal end of said obturator;
a culture vial;
a local anesthetic applicator having an elongate handle portion; and
a container enclosing said ventilation tube said placement obturator, said otoscope, said syringe, said culture vial, and said local anesthetic applicator.

5,254,121

METHOD AND DEVICE FOR REMOVING CONCRETIONS WITHIN HUMAN DUCTS

Bernard Manevitz, Bronx, N.Y., and George Berci, Los Angeles, Calif., assignors to Meditron Devices, Inc., Hackensack, N.J.

Filed May 22, 1992, Ser. No. 888,337
Int. Cl.[5] A61B *17/22*
U.S. Cl. 606—128 **10 Claims**



1. A device for removing concretions within human ducts comprising:
a flexible probe having first and second ends at opposite termini thereof and being of inert material and of sufficiently small diameter to be deployable within said ducts including a ureter to a situs of said concretions, said probe comprising:
a flexible first electrode extending axially along a length of said probe and being embedded in a solid electrically insulative material; and
a flexible second electrode arranged radially outward

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from said first electrode as a continuous electrically conductive surface encircling and coextensive with said first electrode, said first and second electrodes terminating at said first end of said probe while said electrically insulative material terminates short of said first end by a length of from 0.01 to 10 mm; and

a means for generating an electrical pulse connected at said second end of said probe to one of said electrodes such that electrical discharges radiate from one of said electrodes to said other electrode across a surface of said concretions.

5,254,122

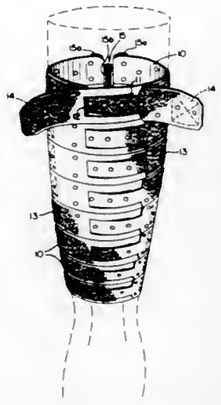
LONGITUDINALLY EXTENDING SPLICING BAND FOR BODY OR LIMB ENCIRCLING THERAPEUTIC DEVICE

Frank D. Shaw, 18 Oakwood La., Rumson, N.J. 07760

Filed Jul. 23, 1992, Ser. No. 919,055

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—201 **5 Claims**



1. A body or limb encircling therapeutic device including a plurality of body or limb encircling compression bands, each band having a slot at one end and a narrow portion at the other end, the narrow portion of the band being inserted through the slot to tighten the band on the body or limb, fastening surfaces on the inner surfaces of the both ends of each band and on the outer surface of each band to hold the band in tightened condition, each band further having an intermediate span removed to adjust its length, leaving cut ends to be spliced, and a longitudinally extending splicing band which has a fastening surface on one side to interlock with and splice the cut ends of the compression bands, said splicing band being separable into two longitudinally extending parts, and fastening means carried by the parts to separate and reconnect the longitudinal parts while the longitudinal parts remain fastened to the cut ends of the compression bands to maintain the compression bands in assembled condition when the fastening means has separated the longitudinal parts.

5,254,123

COMPRESSIVE DEVICE FOR ULTRASOUND-GUIDED REPAIR OF PSEUDOANEURYSMS

Ken Bushéy, Davis, Calif., assignor to Complete System Diagnostics, Inc., Davis, Calif.

Filed Feb. 24, 1992, Ser. No. 840,450

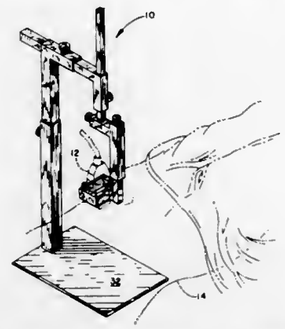
Int. Cl.[5] A61B *19/00*

U.S. Cl. 606—130 **11 Claims**

1. An apparatus for supporting an ultrasound transducer to apply pressure to a localized portion of a human body, comprising:

(a) a first clamp member, said first clamp member having first and second ends;

(b) a second clamp member, said second clamp member having first and second ends, one end of said first clamp member pivotally coupled to one end of said second clamp member, said first and second clamp members having opposing ends adapted to receive means for releasably locking said first and second clamp members in a



fixed position, said first and second clamp members adapted to receive and hold an ultrasound transducer;

(c) first support means for supporting said clamp members, said first support means coupled to said clamp members;

(d) second support means for supporting said first support means, said second support means pivotally coupled to said first support means; and

(e) a base, said second support means coupled to said base.

5,254,124

EPILATION HEAD FOR MOTOR-POWERED EPILATING APPLIANCES

Hans-Eberhard Heintke, Wächtersbach; Gebhard Braun, Kelkheim, and Walter Schäfer, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

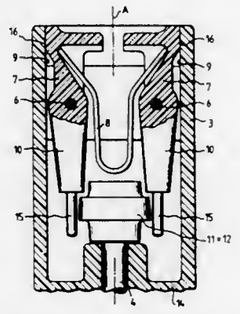
PCT No. PCT/DE91/00512, § 371 Date Apr. 2, 1992, § 102(e) Date Apr. 2, 1992, PCT Pub. No. WO92/01405, PCT Pub. Date Feb. 6, 1992

PCT Filed Jun. 22, 1991, Ser. No. 842,150

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1990, 4023252

Int. Cl.[5] A45D *26/00*

U.S. Cl. 606—133 **12 Claims**



1. An epilating appliance comprising a casing, an epilation head and a drive motor operatively attached to said epilation head, said epilation head comprising hollow cylinder structure

which is at least in part enclosed by the appliance casing, said cylinder structure having an inner surface and an open end that defines a working surface (B) to be placed in contact with the skin, axle structure in said hollow cylinder structure, gripping structure mounted in said hollow cylinder structure and comprised of at least two diametrically opposed gripping members pivotally mounted on said axle structure and adapted to be urged into gripping engagement with said inner surface of said hollow cylinder structure, control structure disposed equiaxially with a geometrical axis (A) of said cylinder structure, a transmission link coupled to said drive motor for producing relative movement between said hollow cylinder structure and said control structure, and a lever arrangement responsive to said control structure and coupled to said gripping members for driving said gripping members.

5,254,125

SCROTUM INCISOR INSTRUMENT

Wayne Porter, Rte. 1, and Jim Reid, 1502 Matthews, both of Bowie, Tex. 76230

Filed Dec. 16, 1992, Ser. No. 991,842

Int. Cl.[5] A61B *19/00*

U.S. Cl. 606—135 **21 Claims**

1. An instrument for grasping and incising the scrotum of an animal, the instrument comprising:

a barrel having a forward end, a rearward end and a channel extending from the forward end of the barrel to the rearward end of the barrel, the rearward end of the barrel having a rod slot extending into the channel and the forward end of the barrel having a cutting area communicating with the channel;

a rod extending through the rod slot into the channel and having a first end protruding from the barrel through the rod slot and a second end disposed within the channel;

a pair of forceps members connected to the second end of the rod, the forceps members having a rearward end and a forward end, the forward end of the forceps members including a pair of opposing clamping faces, the clamping faces being movable between an open position wherein the clamping faces are spaced apart and a clamped position wherein the clapping faces are proximate to one another and are adapted to grasp a portion of the scrotum;

a knife pivotally attached to the barrel at the forward end of the barrel, the knife having a cutting edge and being positioned to pivot through the cutting area; and

actuating means for thrusting the cutting edge of the knife through the cutting area in response to rearward movement of the rod far enough to draw the portion of the scrotum grasped by the forceps members into the channel rearward of the cutting area.

5,254,126

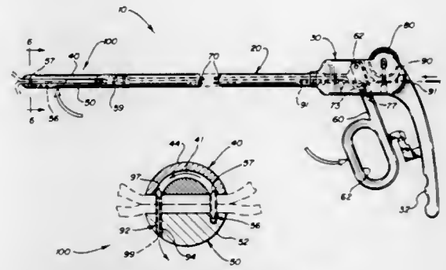
ENDOSCOPIC SUTURE PUNCH

Charles J. Filipi, Omaha, Nebr.; William C. McJames, II, Belle Mead, and John Mandara, Jr., Piscataway, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Jun. 24, 1992, Ser. No. 903,702

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—146 **37 Claims**



1. An endoscopic suture punch, comprising:

an elongate tubular frame;

a handle mounted to an end of said frame;

a pair of jaws mounted to the other end of said frame, wherein one jaw is movable, and one jaw is stationary, said movable jaw being pivotally mounted;

actuation means mounted to said frame for actuating at least one jaw wherein the actuation means comprises a lever pivotally mounted in the handle and an actuation rod pivotally connected to the lever on one end and to at least one jaw on the other end;

punch means mounted to at least one of said jaws for punching a pathway through tissue;

a suture pathway means through said handle, frame, jaws and punch means for receiving a suture;

wherein the suture pathway means comprises a first tubular member extending through the handle, frame, and a first jaw, a second tubular member extending through said first jaw and an arcuate pathway in the other jaw said arcuate pathway connecting the first and second tubular members; and

suture drive means mounted to said handle for moving a suture through the pathway means.

5,254,127

METHOD AND APPARATUS FOR CONNECTING AND CLOSING SEVERED BLOOD VESSELS

Mark H. Wholey, Oakmont, and William E. Novogradac, deceased, late of Pittsburgh, both of Pa. by Barbara J. Novogradac, Executrix , assignors to Shadyside Hospital, Pittsburgh, Pa.

Division of Ser. No. 843,384, Feb. 28, 1992. This application Feb. 18, 1993, Ser. No. 18,812

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—153 **6 Claims**

1. A micro fastener for connecting blood vessels and portions of blood vessels comprising:

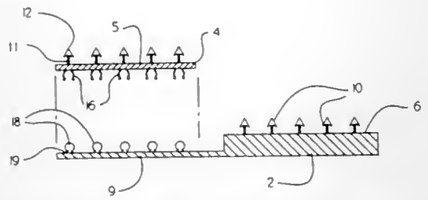
a. a female member adapted to conform to an inner wall of the blood vessel, the female member having an outer surface and an inner surface;

b. a male member adapted to conform to an inner wall of the blood vessel, the male member having a first outer surface portion sized and positioned to engage the inner surface of the female member and also having a second outer surface portion;

c. a plurality of barbs sized to pierce and anchor in a blood vessel wall, the barbs attached to and extending from the outer surface of the female member and extending from a second outer surface portion of the male member;

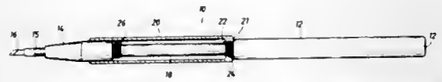
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d. a first fastening means attached to the inner surface of the female member; and
e. a second fastening means attached to the first outer surface portion of the male member



the first and second fastening means sized and configured to engage one another to lock the male member to the female member.

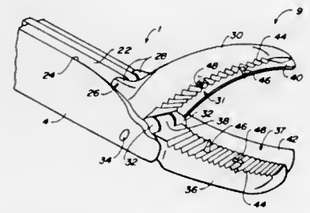
5,254,128
SURGICAL KNIFE WITH ATTACHED, MOVABLE BLADE PROTECTOR
Bernard E. Mesa, Huntsville, Tex., assignor to Micro Engineering, Inc., Huntsville, Tex.
Filed Oct. 11, 1990, Ser. No. 595,969
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—167 **4 Claims**



1. A reusable surgical knife having an attached, moveable blade protector, comprising:
an elongated knife body having a generally cylindrical portion of reduced and fixed diameter disposed between a generally cylindrical portion and a frustoconical portion,
a cutting blade extending from said frustoconical portion of said knife body,
a shield member having therethrough an opening for receiving said frustoconical portion of said knife body and having an end wall portion with an opening therethrough for receiving said reduced diameter portion of said knife body and wherein said end wall portion is selectively slidable along and around said reduced diameter portion of said knife body, and
locking means for engaging a portion of said end wall portion for locking said shield member in either one of two locked positions.

5,254,129
ARTHROSCOPIC RESECTOR
Chris B. Alexander, 1458 26th Ave., San Francisco, Calif. 94122
Filed Nov. 22, 1991, Ser. No. 796,578
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—170 **12 Claims**

1. Resector apparatus including:
a first blade;
a first jaw fixed in position with respect to the first blade;
a second blade;
a second jaw rotatable with respect to the second blade, the first and second blades rotatable together and apart with respect to each other in scissor-cutting relationship, the first and second jaws rotatable together and apart with respect to each other in plier-clamping relationship;
tissue-clamping means on the first and second jaws;
spring means for allowing the second jaw and second blade to rotate in fixed tandem together with respect to the first jaw and first blade and also for allowing the second jaw and second blade to rotate apart with respect to each other automatically upon the second jaw receiving pressure tending toward such rotation apart with respect to each other;
rotating means for rotating the first and second blades together and apart with respect to each other in said scissor-cutting relationship and for rotating the first and secodn jaws together and apart with respect to each other in said plier-clamping relationship;
an elongated shaft separating the rotating means from the jaws and blades, the shaft operatively interconnecting the rotating means with the jaws and the blades, the shaft having a longitudinal axis and a first shaft end;
an opposed pair of legs included in the rotating means, the legs rotatable inwardly and outwardly with respect to

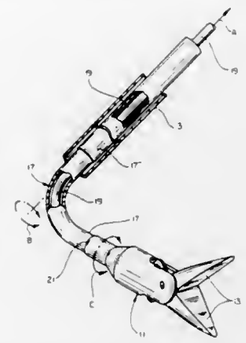


each other in scissor-leg relationship, the legs operably connected by the shaft to the first and second blades and to the first and second jaws;
the rotating means having a first pivot; and
a push rod included in the rotating means adjacent to the shaft and moveable longitudinally with respect to the axis of the shaft, the push rod having a first push rod end,
the first blade connected to the first pivot at the first push rod end,
the second blade fixedly connected to the first shaft end in pivotally-coupled scissor-cutting relationship with the first blade,
the first jaw connected to the first pivot, and
the second jaw connected to the first shaft end in pivotally-coupled plier-clamping relationship with the first jaw and in pivotally-rotatable relationship with respect to the second blade.

5,254,130
SURGICAL DEVICE
Philippe Poncet, and Karl van Dyk, both of Fremont, Calif., assignors to Raychem Corporation, Menlo Park, Calif.
Filed Apr. 13, 1992, Ser. No. 867,649
Int. Cl.[5] A61B *17/28*
U.S. Cl. 606—206 **18 Claims**

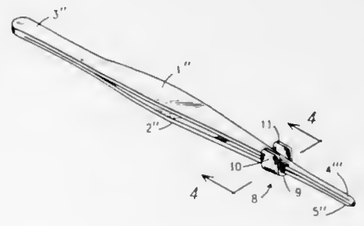
1. A surgical device comprising
(a) a tubular housing having a longitudinal bore extending therethrough,
(b) a first elongate member extending through the longitudinal bore of the housing, and having a proximal and distal segment, wherein at least part of the distal segment comprises an elastic material, and wherein the distal segment assumes a first shape when extended from the longitudinal bore, and bends to assume a second shape when withdrawn into the bore;
(c) a second elongate member also having a proximal and distal segment, the second elongate member extending substantially parallel to the first elongate member so that it is bent by the first elongate member, when the first elongate member changes from its first to its second shape and vice versa, the second elongate member being rotatable relative to, and substantially about, the axis of the first elongate member, and

(d) an operating head secured to the distal segment of the second elongate member sufficiently firmly so that it
(i) is moved with the second elongate member when the first elongate member changes from its first to its second shape and



(ii) can be rotated by the second elongate member relative to and substantially about the axis of the first elongate member.

5,254,131
NON-SLIP SURGICAL FORCEPS HAVING A BRACKET
Dean Razi, 5804 Cruiser Way, Tampa, Fla. 33615
Filed Jul. 17, 1992, Ser. No. 914,514
Int. Cl.[5] A61B *17/42*
U.S. Cl. 606—208 **9 Claims**

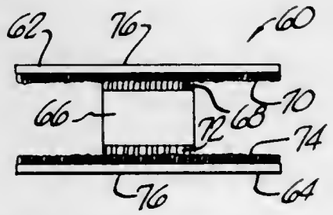


1. A surgical forceps comprising:
(a) a first jaw having a length and shape suitable for surgical purposes and having a first end and a second end;
(b) a second jaw having an exterior surface having a shape and length similar to that of the first jaw and having a first end and a second end, the second end of the first jaw being joined to the second end of the second jaw in such a manner that the first end of each jaw will be spaced a slight distance from each other when there is no pressure applied to bring lhem together;
(c) a bracket having a bottom with two opposing sides and two arms, said bottom connecting said two arms extending parallel to each ocher and from said opposing sides of said bottom and having an open space therebetween, said arms extending in the same direction from said bottom having an open space therebetween said bracket being affixed to an exterior surface the second jaw with the arms extending toward and enclosing said first jaw and and provide means for receiving said first in jaw in the space between said arms whereby when said first jaw is positioned between said arms, said first jaw will be able to twist from said second jaw.

5,254,132
METHODS FOR TREATING SUTURABLE WOUNDS BY USE OF SUTURES AND CYANOACRYLATE ADHESIVES
Linda M. Barley, Colorado Springs; J. Royce Renfrow, Mt. Crested Butte, and Michael Byram, Colorado Springs, all of Colo., assignors to MedLogic, Inc., Colorado Springs, Colo.
Filed Sep. 1, 1992, Ser. No. 938,838
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—214 **8 Claims**

1. A method for closing the separated skin sections of a suturable wound which comprises the steps of:
(a) cleaning the wound;
(b) suturing or stapling the separated skin sections of the wound so that the sutures or staples are separated from each other by no more than about 1.2 centimeters and no less than about 0.6 centimeter;
(c) applying butyl-2-cyanoacrylate adhesive to the opposing and still separated skin sections between the sutures or staples in an amount sufficient so that upon polymerization, the skin sections are joined wherein the application is conducted so that contact of the cyanoacrylate adhesive with the sutures or staples is avoided; and
(d) contacting the adjacent separated skin sections under conditions that permit the adhesive to polymerize so as to join separated skin sections.

5,254,133
SURGICAL IMPLANTATION DEVICE AND RELATED METHOD OF USE
Arnold S. Seid, 427 16th St., Santa Monica, Calif. 90402
Filed Apr. 24, 1991, Ser. No. 690,774
Int. Cl.[5] A61B *17/04*
U.S. Cl. 606—215 **13 Claims**



1. A surgical implantation device adapted to be placed within a patient using a surgical tube inserted through the patient's skin, for sealing a wall opening in one of the patient's body cavities, the surgical implant comprising:
a first planar patch member, for bridging the wall opening, that can be compressed into an implanting condition such that it fits within a surgical tube and that can be expanded into a deployed condition upon release from the surgical tube such that it assumes a planar shape;
a second planar patch member, for bridging the wall opening, that can be compressed into an implanting condition such that it fits within a surgical tube and that can be expanded into a deployed condition upon release from the surgical tube such that it assumes a planar shape;
a second planar patch member, for bridging the wall opening, that can be compressed into an implanting condition such that it fits within the surgical tube and that can be expanded into a deployed condition upon release from the surgical tube such that it assumes a planar shape; and
a locating member having a predetermined length;
wherein one end of the locating member and one surface of the first patch member include hook and loop fasteners, for removably attaching the two members together, and the opposite end of the locating member and one surface of the second patch member include hook and loop fasteners, for removably attaching the two members together;
wherein the first planar member, locating member, and

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second planar member are apart in the implanting condition;

and wherein in the deployed condition, the first patch member is positioned on one side of the wall opening in the patient's body cavity, the second patch member is positioned on the other side of the wall opening, and the locating member extends through the wall opening to interconnect the first and second patch members.

5,254,134

TEXTILE-FINISHING AGENT

Zhong Z. Zhao, Munich, and Tjoei H. Chu, Maria Ward Str. 24, 8000 Munich 19, both of Fed. Rep. of Germany, assignors to Tjoei H. Chu, Munich, Fed. Rep. of Germany

Filed Jan. 13, 1992, Ser. No. 820,073

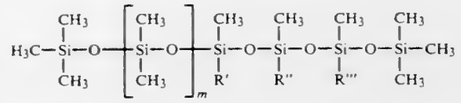
Claims priority, application Fed. Rep. of Germany, Jan. 11, 1991, 4100703

Int. Cl.[5] **B32B** *33/00;* **D06M** *13/11*

U.S. Cl. 8—120 **8 Claims**

1. A textile finishing composition comprising

(a) a water-soluble polysiloxane of formula 1,



where R′ is a polyether residue consisting of —CH_2—CH_2—O— and/or —CH_2—CH_2—CH_2—O— units,

R″ is an epoxy polyether residue of which the polyether chain corresponds to that of R′,

R‴ is a polyethoxy residue, and

m is an integer of about 1,000 to 3,000,

the sequence of the units denoted by m, R′, R″ and R‴ being arbitrary;

(b) dodecyl-dimethyl-benzyl ammonium chloride as an antimicrobial substance;

(c) bisepoxypropyl-hexamethylene diamine as a cross-linking agent; and

(d) acetic acid and magnesium chloride as a catalyst.

5,254,135

METHODS FOR DYEING KERATINOUS FIBRES WITH AMINOINDOLES, COMPOSITIONS AND DEVICES FOR USE

Gerard Lang, Saint-Gratien; Alex Junino, Livry-Gargan, and Jean Cotteret, Verneuil-sur-Seine, all of France, assignors to L'Oreal, Paris, France

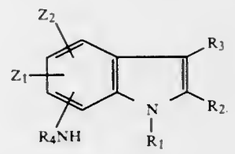
Continuation of Ser. No. 599,800, Oct. 22, 1990, abandoned. This application Jul. 21, 1992, Ser. No. 915,649

Claims priority, application France, Oct. 20, 1989, 89 13788; Mar. 16, 1990, 90 03436

Int. Cl.[5] **A61K** *7/13*

U.S. Cl. 8—408 **34 Claims**

1. A method for dyeing keratinous fibers comprising applying to said fibers a composition (A) containing in a medium suitable for dyeing said fibers at least one aminoindole having the formula



(I)

wherein

R_1 and R_3, each independently, represent hydrogen or C_1–C_4 alkyl, R_2 represents hydrogen, C_1–C_4 alkyl or COOR′ wherein R′ is hydrogen or C_1–C_4 alkyl,

R_4 represents hydrogen, C_1–C_4 alkyl, C_1–C_4 hydroalkyl or C_2–C_4 polyhydroxyalkyl

Z_1 represents hydrogen, halogen, C_1–C_4 alkyl or OR wherein R represents hydrogen or C_1–C_4 alkyl, and

Z_2 represents hydrogen or C_1–C_4 alkyl,

or a salt thereof,

said aminoindole of formula (I) being present in an amount ranging from 0.01 to 5 percent by weight based on the total weight of said composition and

developing the color on the said fibers using an oxidizing system selected from

(i) iodide ions and hydrogen peroxide, in which case said composition (A) also contains either

(a) iodide ions present in an amount ranging from 0.007 to 4 percent by weight, expressed as I^- ions, relative to the total weight of said composition (A), or

(b) hydrogen peroxide at a pH ranging from 2 to 7, the application of said composition (A) being preceded or followed by the application of a composition (B) containing in a medium suitable for dyeing said fibers either

(a′) hydrogen peroxide at a pH ranging from 2 to 12 when said composition (A) contains iodide ions, or

(b′) iodide ions at a pH ranging from 3 to 11 when said composition (A) contains hydrogen peroxide;

(ii) a nitrate, in which case the application of said composition (A) is followed by the application to said fibers of an aqueous composition (B) having an acid pH, said composition (A) or said composition (B) containing at least one nitrite present in an amount ranging from 0.02 to 1 mole/liter;

(iii) an oxidizing agent selected from the group consisting of periodic acid or a water soluble salt thereof, sodium hypochlorite, potassium ferricyanide, silver oxide, Fenton's reagent, lead (IV) oxide, cesium sulfate and ammonium persulfate, said oxidizing agent being present in said composition (A) in an amount ranging from 0.004 to 0.07 mole per 100 g of said composition (A), or

separately applying said oxidizing agent to said fibers at the same time or subsequently, by means of a composition (B) containing said oxidizing agent in a medium suitable for dyeing said fibers;

(iv) metal anions selected from the group consisting of permanganates and bichromates, present in a molar amount of more than 10^{-3} mole/1000 g of an aqueous composition (B) having a pH ranging from 2 to 10, said composition (B) being applied to said fibers prior to the application of said composition (A) thereto;

(v) a salt of a metal of Groups III to VIII of the periodic table, said salt being applied to said fibers in a separate step by means of a composition (B) containing said salt in a medium suitable for dyeing said fibers, said salt being present in an amount ranging from 0.01 to 2 percent, expressed as metal ion; or

(vi) a rare earth salt present in a composition (B) comprising a medium suitable for dyeing said fibers, said rate earth salt being present in an amount ranging from 0.1 to 8 percent by weight relative to the total weight of said composition (B), said composition (B) being applied to said fibers prior to or subsequent to the application of said composition (A) to said fibers.

5,254,136

TRICHROMATIC FIBER REACTIVE DYE COMPOSITION AND METHOD FOR DYEING OR PRINTING FIBER MATERIALS USING THE COMPOSITION

Miwako Fujii, Iruma; Naoki Harada, Ibaraki, and Shuhei Hashizume, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jul. 30, 1992, Ser. No. 921,702

Claims priority, application Japan, Aug. 2, 1991, 3-217950

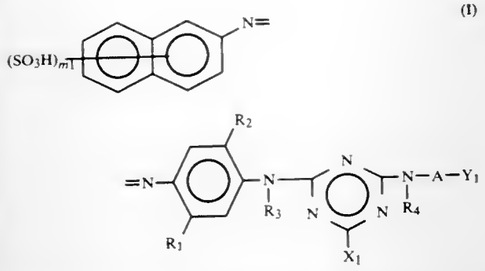
Int. Cl.[5] **C09B** *62/04, 62/20, 62/343*

U.S. Cl. 8—549 **14 Claims**

1. A fiber reactive dye composition which comprises at least 5 reactive dyes selected from the group of reactive dyes represented by the following formulas (I) to (VII) respectively in the form of free acid:

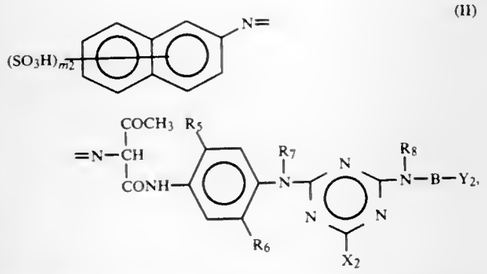
VOL 1155 ISS 3 OCT 19 1993 UMI

(I)



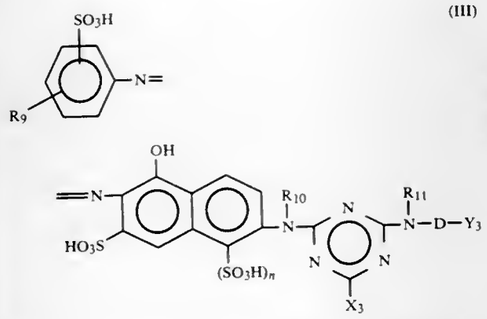
wherein m_1 is an integer of 1-3, R_1 and R_2 are each independently hydrogen, alkyl, alkoxy, acylamino or ureido, R_3 and R_4 are each independently hydrogen or unsubstituted or substituted alkyl, A is unsubstituted or substituted phenylene or naphthylene, X_1 is halogen and Y_1 is $-SO_2CH=CH_2$ or $-SO_2CH_2CH_2Z_1$, Z_1 being a group capable of being split off by the action of an alkali,

(II)



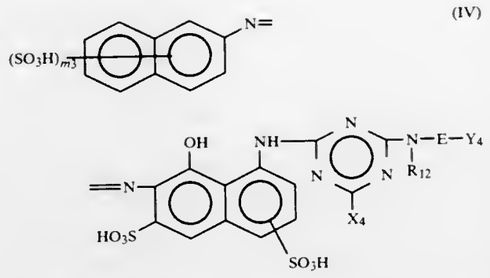
wherein m_2 is an integer of 1-3, R_5 and R_6 are each independently hydrogen, sulfo, alkyl or alkoxy, R_7 and R_8 are each independently hydrogen or unsubstituted or substituted alkyl, B is unsubstituted or substituted phenylene or naphthylene, X_2 is halogen and Y_2 is $-SO_2CH=CH_2$ or $-SO_2CH_2CH_2Z_2$, Z_2 being a group capable of being split off by the action of an alkali,

(III)



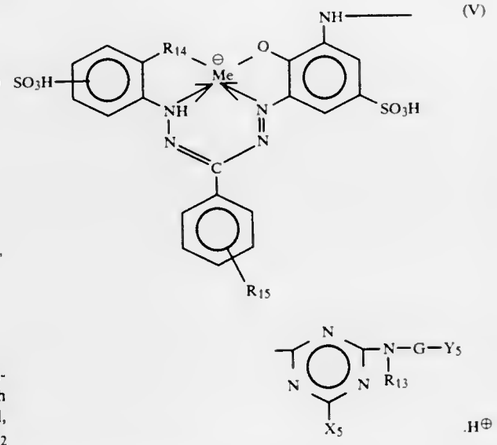
wherein n is 0 or 1, R_9 is hydrogen, alkyl or alkoxy, R_{10} and R_{11} are each independently hydrogen or unsubstituted or substituted alkyl, D is unsubstituted or substituted phenylene or naphthylene, X_3 is halogen and Y_3 is $-SO_2CH=CH_2$ or $-SO_2CH_2CH_2Z_3$, Z_3 being a group capable of being split off by the action of an alkali,

(IV)



wherein m_3 is an integer of 1-3, R_{12} is hydrogen or unsubstituted or substituted alkyl, E is unsubstituted or substituted phenylene or naphthylene, X_4 is halogen and Y_4 is $-SO_2CH=CH_2$ or $-SO_2CH_2CH_2Z_4$, Z_4 being a group capable of being split off by the action of an alkali,

(V)



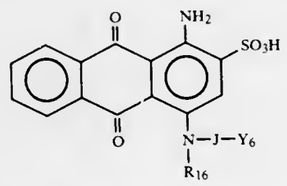
wherein R_{13} is hydrogen or unsubstituted or substituted alkyl, R_{14} is —O— or



R_{15} is hydrogen, methyl, ethyl, nitro, sulfo or chlorine, G is unsubstituted or substituted phenylene or naphthylene, Me is a metal ion of an atomic number of 27-29, X_5 is halogen and Y_5 is

$-SO_2CH=CH_2$ or $-SO_2CH_2CH_2Z_5$, Z_5 being a group capable of being split off by the action of an alkali,

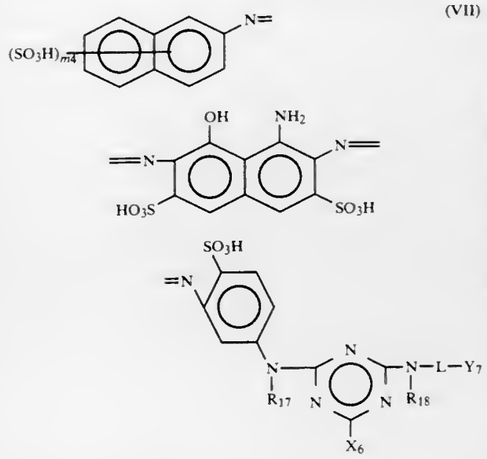
(VI)



wherein R_{16} is hydrogen or unsubstituted or substituted alkyl, J is unsubstituted or substituted phenylene or naphthylene, Y_6

is $-SO_2CH=CH_2$ or $-SO_2CH_2CH_2Z_6$, Z_6 being a group capable of being split off by the action of an alkali, and

(VII)



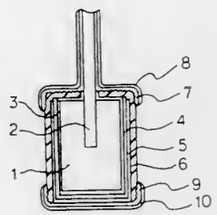
wherein m_4 is an integer of 1-3, R_{17} and R_{18} are each independently hydrogen or unsubstituted or substituted alkyl, L is unsubstituted or substituted phenylene or naphthylene, X_6 is halogen and Y_7 is $-SO_2CH=CH_2$ or $-SO_2CH_2CH_2Z_7$, Z_7 being a group capable of being split off by the action of an alkali, provided that the dye composition contains respectively at least one yellow reactive dye selected from the group of reactive dyes represented by the formulas (I) and (II), red reactive dye selected from the group of reactive dyes represented by the formulas (III) and (IV) and blue reactive dye selected from the group of reactive dyes represented by the formulas (V) to (VII).

5,254,137

METHOD OF PRODUCING CHIP-TYPE SOLID-ELECTROLYTE CAPACITOR

Toshiyuki Mitani, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Oct. 29, 1991, Ser. No. 783,982
Claims priority, application Japan, Oct. 29, 1990, 2-291536
Int. Cl.[5] B21F *41/00*
U.S. Cl. 29—25.03 **4 Claims**



1. A method of producing a chip-type, solid-electrolyte capacitor comprising the steps of:

providing a solid-electrolyte capacitor element having opposed top and bottom surfaces and a side surface extending therebetween;

forming a sheathing resin layer on said top surface and said side surface of said capacitor element;

roughening a surface area of said sheathing resin layer by using a laser beam under such irradiation concentrations as to be approximately 30 to 100 μm in spot diameter and approximately 0.2 Joule in output;

forming a plated metal layer on said surface area after roughening thereof, and forming a solder layer on said plated metal layer.

5,254,138

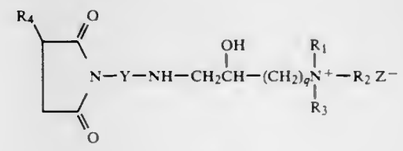
FUEL COMPOSITION CONTAINING A QUATERNARY AMMONIUM SALT

Paul R. Kurek, Barrington, Ill., assignor to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 695,055, May 3, 1991, abandoned. This application May 4, 1992, Ser. No. 878,369
Int. Cl.[5] C10L *1/18, 1/22*
U.S. Cl. 44—347 **7 Claims**

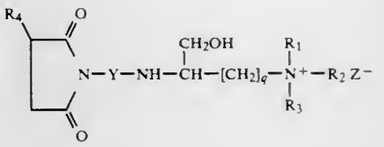
1. A conductive fuel detergent composition having the formula:

D



OR

E



where

R_1, R_2, and R_3 are independently selected from the group consisting of alkyl, hydroxyalkyl, and alkoxyalkyl moieties;

R_4 is an alkyl radical of molecular weight from about 100 up to about 3000;

Y is an alkylene, aminoalkylene, or oxyalkylene moiety, wherein N—Y—NH is selected from the group consisting of ethylenediamine, 1,2-propylenediamine, 1,3-propylene diamine, the isomeric butylenediamines, pentanediamines, hexanediamines, heptanediamines, diethylenetriamine, dipropylenetriamine, dibutylenetriamine, triethylenetetraamine, tetraethylenepentaamine, pentaethylenehexaamine, hexamethylenetetramine, and bis(hexamethylene) triamine, the diaminobenzenes, the diaminopyridines, the Ω-aminopoly(alkyleneoxy)alkyl amines of the general formula $H_2N[RCH—CH_2—O]_s[R'CH—CH_2—O[_t[R''-CH—CH_2—O]_u]RCH—CH_2NH_2$, where each of s, t, and u is an integer from 1 up through about 10 with the constraint that $1 \leqq (s+t+u) \leqq 10$, and where R=H, CH_3, or C_2H_5;

Z is selected from the group consisting of halide, hydroxy, acetate, and methylsulfate; and

q is an integer from 1 to about 10.

5,254,139

METHOD FOR TREATING COAL

Robert J. Adams, 2364 Trimble Rd., Pittsburgh, Pa. 15237

Filed Aug. 5, 1991, Ser. No. 740,450
Int. Cl.[5] C10L *5/00*
U.S. Cl. 44—626 **13 Claims**

1. A method for continuously treating moisture-containing coal in order to increase the rank of said coal, without allowing said coal to become exothermic, comprising the steps of:

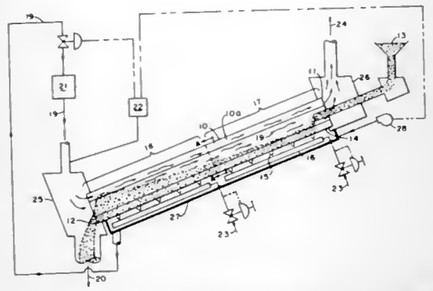
a. passing said coal through externally heated retort means

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having an external shell temperature of about 500°–1,000° F.;

b. shock heating said coal in the drying section of said retort means, thereby driving off said moisture from said coal such that said coal contains about 1% or less by weight moisture and generating CO_2, wherein said CO_2 is absorbed by the interstices of said coal replacing said moisture driven off from said coal to thereby resist reabsorption of water by said coal following pretreatment;

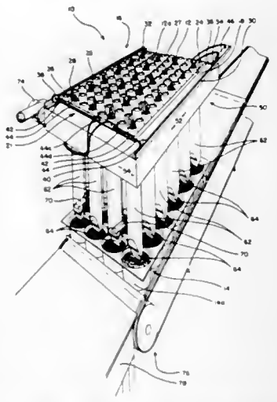
c. treating said shock heated dried coal in the treating section of said retort means wherein said treated coal main-



tains an internal temperature of about 350°–550° F. and before said coal becomes exothermic, and before vaporization of volatiles from said coal occurs, passing a cooling oxygen lean blanket gas stream having a temperature of about 300°–450° F. into said retort and through said shock heated dried coal until said coal surface is cooled, by providing said blanket gas with sufficient oxygen to catalyze molecular simplification of hydrocarbon molecules in said coal without allowing said coal to become exothermic; and

d. recovering said treated coal from said retort means.

5,254,140
PLANT TRANSFERRING AND TRANSPLANTING SYSTEM
Barney K. Huang, 3332 Manor Ridge Dr., Raleigh, N.C. 27603
Filed Mar. 11, 1991, Ser. No. 667,188
Int. Cl.[5] A01G *9/08*
U.S. Cl. 47—1.01 **10 Claims**



1. A plant transfer system for simultaneously delivering a plant and water form a plant tray to a planting area comprising:

a. a support structure holding and supporting the plant tray;

b. a water supply;

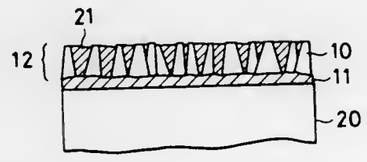
c. means for directing water from the water supply onto and into the plant tray where the water may accumulate therein;

d. at least one drop tube extending downwardly form the support structure and including an outlet end;

e. vacuum means for inducing both a plant and water from the plant tray and directing both the plant and water together down the drop tube into a planting area underlying the drop tube; and

f. wherein the water within the plant tray tends to assist in sealing the vacuum generated by the vacuum means.

5,254,141
INDUSTRIAL DIAMOND COATING AND METHOD OF MANUFACTURING THE SAME
Shunpei Yamazaki, Tokyo, and Masaya Kadono, Kanagawa, both of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan
Filed May 22, 1991, Ser. No. 704,104
Claims priority, application Japan, May 30, 1990, 2-140226
Int. Cl.[5] B32B *9/00*
U.S. Cl. 51—295 **4 Claims**



1. A coated article comprising:

an article having at least one surface; and

an industrial diamond coating provided on said surface where said coating comprises a number of CVD formed diamond crystals wherein spaces between the crystals are filled with a heat resistant, adhesive material which joins the diamond crystals to said one surface, said article formed by the steps comprising:

forming said diamond crystals by CVD on a temporary substrate;

attaching said substrate having said diamond crystals to said surface of the article using said adhesive material;

removing said substrate from said article in order that said diamond crystals remain on said surface of the article;

eliminating carbon in forms other than said diamond crystals from (a) the surface of said temporary substrate prior to the attachment of the substrate to the surface of the article or (b) the surface of said article after the removal of said substrate from the article; and

filling void spaces occurring on the surface of said article with said adhesive material to form said industrial diamond coating.

5,254,142
WHISKER REINFORCED COMPOSITES FOR CUTTING TOOLS WITH IMPROVED PERFORMANCE
Per G. Johansson, Bromma, and N. Gunnar L. Brandt, Solna, both of Sweden, assignors to Sandvik AB, Sandviken, Sweden
Filed Jan. 21, 1992, Ser. No. 822,851
Claims priority, application Sweden, Jan. 21, 1991, 9100176
Int. Cl.[5] C04B *35/56*
U.S. Cl. 51—309 **9 Claims**

1. An oxide based ceramic cutting insert for chip forming machining comprising a ceramic oxide based matrix and 5–50% by volume of homogeneously dispersed whiskers and/or platelets of silicon carbide, the intensity of the $\{10\bar{1}0\}$-peak from the hexagonal modification of the silicon carbide is >0.7 of the intensity from the $\{111\}$-peak from the cubic modification of the silicon carbide in X-ray diffraction pattern from the rake face using CuKα-radiation.

5,254,143
DIAPHRAGM FOR GAS-LIQUID CONTACT, GAS-LIQUID CONTACT APPARATUS AND PROCESS FOR PRODUCING LIQUID CONTAINING GAS DISSOLVED THEREIN
Takanori Anazawa, Sakura, and Hideki Watanabe, Chiba, both of Japan, assignors to Dainippon Ink and Chemical, Inc., Tokyo, Japan
Continuation of Ser. No. 727,419, Jul. 9, 1991, abandooed. This application Nov. 3, 1992, Ser. No. 970,957
Claims priority, application Japan, Jul. 9, 1990, 2-180977
Int. Cl.[5] B01D *53/22*
U.S. Cl. 95—46 **25 Claims**



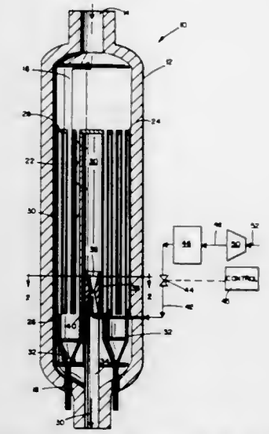
1. A process for producing a liquid containing a gas dissolved therein, which comprises introducing a liquid into a hydrophilic side of a diaphragm for gas-liquid contact wherein the diaphragm comprises a single membrane or a laminate of at least two membranes, at least one surface of the membrane is hydrophilic and all surfaces of micropores present in the membrane are essentially hydrophobic, and introducing a gas into the other side of the membrane for gas-liquid contact.

5,254,144
METHOD AND APPARTUS FOR SEPARATING PARTICULATE MATERIAL FROM COMBUSTIBLE GASES
Steven J. Provol, San Diego, Calif., assignor to Pyropower Corporation, San Diego, Calif.
Filed Aug. 19, 1992, Ser. No. 931,400
Int. Cl.[5] B01D *46/04*
U.S. Cl. 95—280 **17 Claims**

1. A method of cleaning combustible gas with a filter, and keeping the filter clean, comprising the steps of:

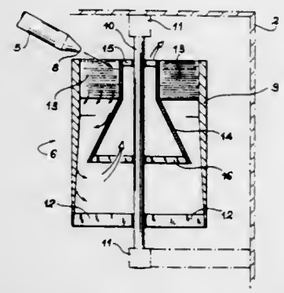
(a) passing, at a first pressure, combustible gas laden with particles through the filter, at least some of the gas passing through the filter to be cleaned, and particles collecting on a dirty surface of the filter, while cleaned combustible gas exits through a clean surface of the filter;

(b) periodically or intermittently forcing clean combustible short chain hydrocarbon gas at a second pressure, higher than the first pressure, through the filter clean surface to dislodge particles collected on the dirty surface of the filter; and



(c) combining the clean combustible gas with the cleaned combustible gas, and passing the mixture thereof toward a use station.

5,254,145
CENTRIFUGAL OIL DE-AERATOR
Franck R. D. Denece, Moissy Cramayel, and Jérôme M. Friedel, Sivry Courtry, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "SNECMA", Paris, France
Filed Feb. 9, 1993, Ser. No. 15,427
Claims priority, application France, Feb. 19, 1992, 92 01866
Int. Cl.[5] B01D *19/00*
U.S. Cl. 96—217 **3 Claims**



1. A device for de-aerating oil comprising a bowl defining an axis of rotation and having first and second ends, means mounting said bowl for rotation about said axis, and a plurality of radial blades mounted within said bowl at said first end thereof such that oil to be de-aerated can be projected onto the blades to cause said bowl to rotate, said bowl being open at said second end remote from said blades, and said bowl having an inner surface which widens out towards said second end.

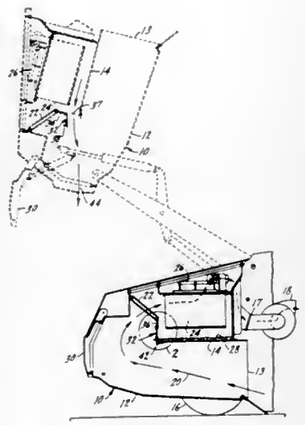
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5,254,146

MEANS FOR EMPTYING A FILTER BOX

Jeffrey J. Beaufoy, Prior Lake, Minn., assignor to Tennant Company, Minneapolis, Minn.

Filed Dec. 28, 1992, Ser. No. 997,331
Int. Cl.[5] B01D *50/00*
U.S. Cl. 55—320 12 Claims



1. In a surface maintenance machine having a vacuumized dust control system, an air filter in a filter box, means for moving said filter box between an operating position wherein dust and debris accumulate in the bottom of the box and a tilted position wherein accumulated dust and debris are emptied out of the box, said filter box being provided with an opening in one of its walls through which dust and debris may be emptied when the box is moved to said tilted position, characterized by a gravity operated closure which covers said opening when the filter box is in its operating position and uncovers said opening when said filter box is in its tilted position, said gravity operated closure having a weight attached thereto and positioned offset from the center of gravity of the closure.

5,254,147

DRAW-DOWN CYCLONIC VACCUM CLEANER

Eugene W. Finke, Wilmington, Ohio, assignor to NuTone, Inc., Cincinnati, Ohio

Continuation of Ser. No. 765,600, Sep. 26, 1991, abandoned, which is a continuation of Ser. No. 504,134, Apr. 3, 1990, Pat. No. 5,080,697. This application Nov. 18, 1992, Ser. No. 978,445
The portion of the term of this patent subsequent to Jan. 14, 2009, has been disclaimed.
Int. Cl.[5] A47L *9/10*; B01D *45/12*
U.S. Cl. 55—337 4 Claims

1. A vacuum cleaning apparatus comprising:

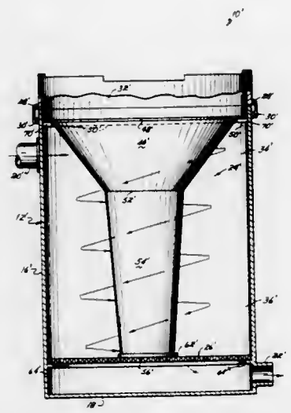
a receptacle having a side wall, a top wall and a bottom wall to define a volume therebetween;

a first opening in said side wall;

means for producing a downwardly spiralling air flow from air entering said receptacle through said first opening, said downwardly spiralling air flow producing means having an imperforate exterior surface, an upper section, and a lower section, said downwardly spiralling air flow producing means being stationary within said receptacle and being positioned so that said upper section is opposed to said first opening in said side wall and separates said first opening from said top wall, said lower section of said air flow producing means being proximate said bottom wall of said receptacle;

a filter positioned within a portion of said volume outside said air flow producing means so that said filter is interposed between said first opening in said side wall and said bottom wall, said filter substantially spanning said portion of said volume from said side wall to said air flow producing means so that along the length of the filter, the filter is substantially separate from the downwardly spiralling air flow producing means; and

a second opening in said receptacle, said second opening being located below said filter and adapted for connection to a vacuum producing means for exhausting the filtered air whereby said vacuum producing means creates subatmospheric air pressure in said volume within said receptacle which pulls air into said receptacle through said first opening, said air tangentially strikes and downwardly spirals around said imperforate exterior surface of said downwardly spiralling air flow producing means, passes through said filter, and exhausts said receptacle through said second opening so that particulate in said air entering through said first opening is removed by said filter and the removed particulate is compacted atop said filter by said air flow downwardly spiralling about said imperforate exterior surface of said air flow producing means.

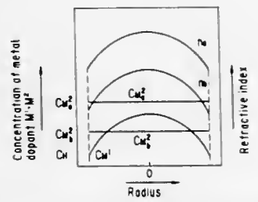


5,254,148

METHOD OF MANUFACTURING DISTRIBUTED INDEX OPTICAL ELEMENTS

Minoru Inami, Hachiooji; Satoshi Noda, Akishima; Morinao Fukuoka, and Yuko Kurasawa, both of Hachiooji, all of Japan, assignors to Olympus Optical Company Limited, Japan

Continuation of Ser. No. 718,222, Jun. 20, 1991, abandoned.
This application Jan. 14, 1993, Ser. No. 4,631
Claims priority, application Japan, Jun. 20, 1990, 2-162140; Sep. 26, 1990, 2-256112; Apr. 11, 1991, 3-106633
Int. Cl.[5] C03B *37/016*
U.S. Cl. 65—3.11 22 Claims



1. A method of manufacturing distributed index optical elements, comprising the steps of: preparing silica sol including at least one metal dopant other than silicon; subjecting the silica sol to a gelling treatment to form a wet silica gel; dipping the wet silica gel in an elute to selectively extract by elution a part of the at least one metal dopant other than silicon from the wet silica gel to thereby impart a concentration distribution of the at least one metal dopant in the silica gel; and drying and sintering the silica gel.

5,254,149

PROCESS FOR DETERMINING THE QUALITY OF TEMPER OF A GLASS SHEET USING A LASER BEAM

Amin H. Hashemi, Farmington, and Timothy L. Kelly, Ann Arbor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 6, 1992, Ser. No. 864,279
Int. Cl.[5] C03B *32/00*
U.S. Cl. 65—29 11 Claims

1. a process for determining temper quality in a glass sheet, comprising the steps of:

A) scoring a major surface of a tempered glass sheet with a laser beam; and

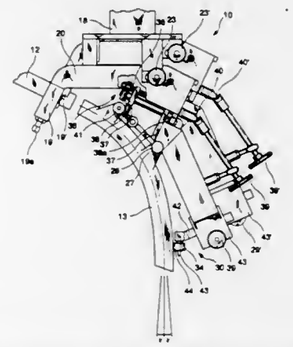
B) repeating step A a number of times sufficient to cause the glass sheet to shatter.

5,254,150

ALIGNMENT APPARATUS FOR A GOB DELIVERY SYSTEM

Robert F. Riemer, Andover, Mass., and David Braithwaite, Tyne and Wear, United Kingdom, assignors to VHC, Ltd., West Palm Beach, Fla.

Continuation-in-part of Ser. No. 769,924, Sep. 30, 1991, Pat. No. 5,213,602. This application Mar. 25, 1992, Ser. No. 857,339
Int. Cl.[5] C03B *7/16*
U.S. Cl. 65—225 3 Claims



1. A gob guide apparatus in combination with a glassware forming machine having a machine frame, a gob distributor scoop and a blank mold having a mold opening for receiving gobs of molten glass, said gob guide apparatus guiding the delivery of gobs of molten glass between said gob distributor scoop and said blank mold opening of said glassware forming machine, said gob guide apparatus comprising:

a trough having upper and lower ends, said upper end pivotally mounted to the frame of said glassware forming machine for arcuate movement in a horizontal plane;

a deflector having upper and lower ends;

a carriage mounted to said machine frame and carrying said deflector, said carriage including a holder receiving the lower end of said trough and deflector support means for pivotally mounting the upper end of said deflector to said holder, said trough positioned to extend downwardly between said scoop and said deflector at an acute angle with respect to the horizontal with the lower end of said trough being aligned along a first axis, said carriage further having first and second adjustment means for permitting respective longitudinal and transverse movement of said deflector relative to said first axis, said holder maintaining centerline alignment between the upper end of said deflector and the lower end of said trough during said longitudinal and transverse movement of said deflector on said carriage; and

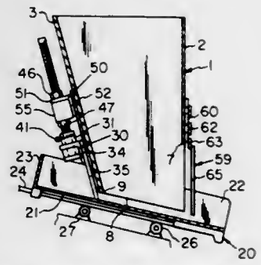
a deflector exit adjustment means for pivotally adjusting the angular position of the lower end of said deflector relative to the entrance of said blank mold opening.

5,254,151

GLASS BATCH CHARGER HAVING SEALS WHICH PREVENTS ACCUMULATION OF BATCH

Edward W. Larson, and Thomas H. Gould, both of Washington, Pa., assignors to Frazier-Simplex, Inc., Washington, Pa.

Filed Jun. 2, 1992, Ser. No. 893,207
Int. Cl.[5] C03B *3/00*
U.S. Cl. 65—335 17 Claims



1. Apparatus for charging batch material to a molten glass furnace comprising a stationary material supply hopper having a front wall with vertical edges, a rear wall with vertical edges and opposed sidewalls connecting a vertical edge of said front wall and an inclined edge of said rear wall, a batch material inlet opening at a upper end of said hopper and a batch material outlet opening at a lower end of said hopper, a reciprocable elongated charger plate having a bottom wall with an upper surface located below said outlet opening of said hopper to receive batch material from said outlet opening of said hopper and supply a batch material to the furnace, said reciprocable charger plate bottom wall having side edges and an upstanding sidewall connected at each of said side edges of said bottom wall substantially parallel with and spaced from said sidewalls of said hopper, means for reciprocating said charger plate relative to said stationary hopper, seal means located behind said hopper having a lower edge below the lower edge of said rear wall of said hopper, adjustable means for attaching said seal means to said rear wall of said hopper to adjust said lower edge of said seal means relative to said upper surface of said bottom wall of said charge plate and flapper means connected to said front wall of said hopper adjacent each of said vertical edges of said front wall to prevent loose material from passing between said upstanding sidewalls of said charger plate and said sidewalls of said hopper when said charger plate is reciprocated relative to said hopper, said flapper means including a plate attached to the outer surface of said front wall of said hopper adjacent one of said vertical edges of said front wall, hinge means attached to said mounting plate and a depending elongated flapper member pivotally attached to said hinge means to pivot relative to said hopper when said charger plate is reciprocated relative to said hopper, whereby said seal means and said flapper means prevent loose material from accumulating behind said rear wall of said hopper.

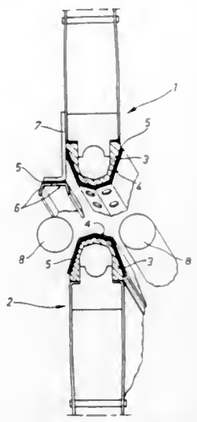
VOL 1155 ISS 3 OCT 19 1993 UMI

5,254,152

COOLING STATION IN A TEMPERING PLANT FOR GLASS SHEETS

Jukka H. Vehmas, Tampere, Finland, assignor to Tamglass Engineering Oy, Finland

Continuation of Ser. No. 761,498, Sep. 18, 1991, abandoned. This application Oct. 14, 1992, Ser. No. 961,019
Claims priority, application Finland, Sep. 20, 1990, 904626
Int. Cl.[5] C03B *27/04*
U.S. Cl. 65—348 17 Claims



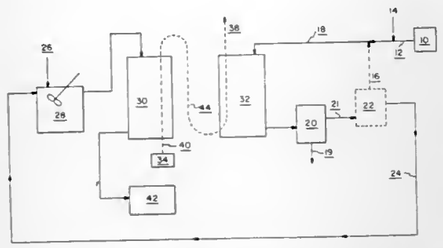
1. A cooling station in a tempering plant for glass sheets for chilling, heat-strengthening, or after-cooling, comprising upper and lower cooling-air blast nozzles above and below the glass sheets to be cooled and nozzle covers covering said upper and lower nozzles, the nozzle covers of said upper and lower nozzles being covered with perforated plates having a reflection coefficient of more than 0.8 for heat radiation, and wherein said plates are detachable from said nozzle covers and are thus replaceable.

5,254,153

CYANIDE RECYCLING PROCESS

Terry 1. Mudder, Duvall, Wash., assignor to Cyprus Minerals Company, Englewood, Colo.

Continuation-in-part of Ser. No. 424,765, Oct. 20, 1989, Pat. No. 5,078,977, which is a continuation-in-part of Ser. No. 261,386, Oct. 21, 1988, Pat. No. 4,994,243. This application Jan. 6, 1992, Ser. No. 817,288
Int. Cl.[5] C22B *11/08*; C01C *3/08*
U.S. Cl. 75—732 28 Claims



1. A process for recycling cyanide in a precious metals recovery circuit, comprising the steps of:
(a) recovering precious metals from a precious metals containing slurry to form a cyanide-containing waste stream;
(b) adjusting the pH of the cyanide-containing waste stream;
(c) volatilizing HCN in said waste stream; and
(d) contacting the volatilized HCN with a precious metals-containing slurry.

14. A process for recycling cyanide in a precious metals recovery circuit, comprising the steps of:
(a) forming a slurry comprising cyanide and precious metals-containing ore;
(b) recovering precious metals from said precious metals containing slurry to form a cyanide-containing waste stream;
(c) adjusting the pH of the cyanide-containing waste stream;
(d) volatilizing HCN in said waste stream;
(e) contacting the volatilized HCN with decant water to recover cyanide from said waste stream; and
(f) recycling said decant water to said slurry.

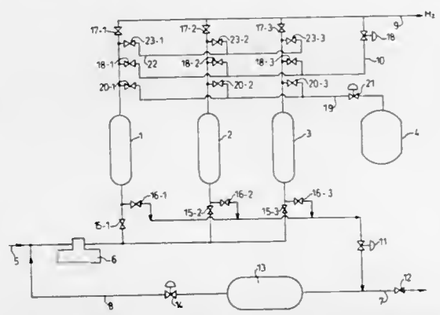
28. A process for recovering precious metals from a precious metals containing ore, comprising the steps of:
(a) contacting said ore with a cyanide-containing stream to form an ore slurry;
(b) recovering said precious metals from said slurry to form a precious metals-depleted tailings slurry;
(c) adjusting the pH of said tailings slurry to between about pH 5.5 and about pH 8.5;
(d) volatilizing HCN from said pH adjusted slurry in a packed tower; and
(e) contacting at least a portion of said volatilized HCN with an ore slurry.

5,254,154

PROCESS FOR THE PURIFICATION OF A GAS BY ADSORPTION

Pierre Gauthier, Fresnes, and Christian Monereau, Paris, both of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Oct. 19, 1992, Ser. No. 962,683
Claims priority, application France, Oct. 17, 1991, 91 12805
Int. Cl.[5] B01D *53/04*
U.S. Cl. 95—12 7 Claims



1. In a process for the purification of a gas containing selectively adsorbable impurities, using several adsorbers with, for each adsorber, a cycle comprising the following operating phases which are offset from one adsorber to the next timewise by a fraction 1/n of the duration of the cycle in which n is the number of adsorbers, the cycle comprising substantially isobaric production at a high pressure of the cycle, said production comprising the admission of impure gas to be treated into an adsorber at a first end of the adsorber with circulation of this gas in the adsorber and simultaneous withdrawal from a second end of the adsorber of purified gas, the direction of flow in the adsorber from the first end to the second end being cocurrent and the opposite direction being countercurrent; regeneration of the adsorber comprising a decompression of the adsorber to a low pressure of the cycle, this decompression comprising at least one stage in which a residual gas is withdrawn countercurrent from the adsorber; and increasing the pressure to the high pressure of the cycle; the improvement comprising mixing a portion of said residual gas with the impure gas to be treated, and purging the rest of said residual gas.

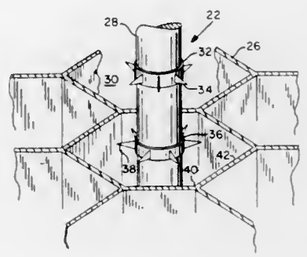
7. Process according to claim 1, wherein the flow rate of the purge is varied during the course of the cycle, as a function of the concentration of impurities of the residual gas.

5,254,155

WET ELECTROSTATIC IONIZING ELEMENT AND COOPERATING HONEYCOMB PASSAGE WAYS

Fred E. Mensi, 101 Peach St., Avenel, N.J. 07001

Filed Apr. 27, 1992, Ser. No. 874,391
Int. Cl.[5] B03C *3/41, 3/78*
U.S. Cl. 96—44 3 Claims



1. A wet electrostatic precipitator device which comprises:
a) a plurality of hexagonal honeycomb collector passage ways;
b) a corresponding mating plurality of stationary rod elements to be centrally located at axes of each said hexagonal honeycomb collector passage way; and
c) means for securing a multiplicity of ionizing blades to a surface of each said stationary rod elements wherein said means is a band fitted over said stationary rod and fabricated by punching out and folding back in a radial direction a group of six substantially triangular spines to form several sets of a first crown and several sets of a second crown, wherein each of said spines of said first crowns are positioned to point at an apex of said hexagonal honeycomb collector passage way, each of said spines of said second crowns are positioned to point at a mid point of a flat side of said hexagonal honeycomb collector passage way, and each of said spines of said second crowns are shorter than said spines of said first crowns.

5,254,156

AQUEOUS SOLUTION FOR ACTIVATION ACCELERATING TREATMENT

Akisbi Nakaso, Oyama; Kaoru Oginuma, Mito; Takeshi Shimazaki, Hitachi, and Akio Takahashi, Shimodate, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Division of Ser. No. 518,500, May 2, 1990, Pat. No. 5,206,052. This application Nov. 18, 1992, Ser. No. 978,405
Claims priority, application Japan, May 9, 1989, 1-115834
Int. Cl.[5] C23C *18/18*
U.S. Cl. 106—1.11 3 Claims

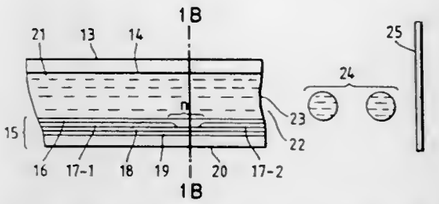
1. An aqueous solution for activation accelerating treatment prior to electroless plating consisting of water, sulfuric acid in a concentration of 0.01 to 5 mole/liter and cupric chloride in a concentration of 0.00003 to 0.03 mole/liter.

5,254,157

RECORDING SOLUTION CONTAINING A COMPOUND OBTAINED BY ALKYLATION OR ACETYLATION OF A TRIOL

Shoji Koike; Kyoko Fukushima, both of Yokohama, and Koromo Shirota, Inagi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 22, 1991, Ser. No. 748,812
Claims priority, application Japan, Aug. 24, 1990, 2-221178
Int. Cl.[5] C09D *11/02*
U.S. Cl. 106—20 D 14 Claims



1. A recording solution comprising a coloring matter and a liquid medium, wherein said recording solution contains a compound obtained by alkylation of one or two hydroxyl group(s) of a triol having 4 or more carbon atoms.

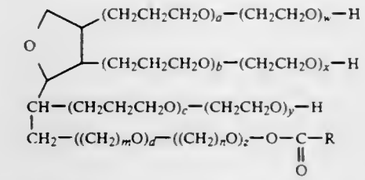
5,254,158

INK JET INK COMPOSITIONS

Marcel P. Breton, Mississauga; Geoffrey A. R. Nobes, Kitchener; Barbel Helbrecht, Oakville, and Shadi L. Malhotra, Mississauga, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 17, 1992, Ser. No. 946,213
Int. Cl.[5] C09D *11/02*
U.S. Cl. 106—20 R 5 Claims

1. An ink composition which comprises an aqueous liquid vehicle, a colorant, and an additive material selected from the group consisting of sorbitan monoester alkoxylates of the formula:



wherein the sum of w+x+y+z is from about 10 to about 25, the sum of a+b+c+d is from 0 to 12, with being less than 3, b being less than 3, c being less than 3, and d being less than 3, m is 2 or 3, and n is 2 or 3, with the sum of m+n being no more than 5, wherein the ratio of w segments to a segments, the ratio of x segments to b segments, the ratio of y segments to c segments, and the ratio of z segments to d segments are each from 100:0 to about 50:50, and wherein R is an alkyl group.

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5,254,159

INK COMPOSITIONS

Kurt B. Gundlach, Pittsford, N.Y.; Geoffrey A. R. Nobes, Kitchener; Marcel P. Breton, Mississauga, both of Canada, and Richard L. Colt, Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 17, 1992, Ser. No. 992,353
Int. Cl.[5] C09D *11/02*
U.S. Cl. 106—22 H 35 Claims

1. An ink composition which comprises water, a dye, and N,N'-bis(3-aminopropyl)-1,2-ethylenediamine.

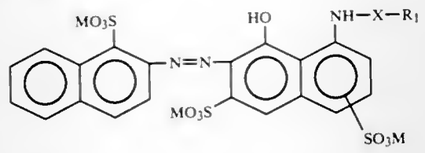
5,254,160

MAGENTA DYE, JET INK, AND COLOR SET

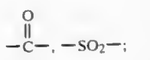
Bradley L. Beach; Kathryn E. Burns, both of Lexington, Ky.; James F. Feeman, Wyomissing, Pa.; Ann M. Piekunka, and Agnes K. Zimmer, both of Lexington, Ky., assignors to Lexmark International, Inc., Greenwich, Conn.

Filed Dec. 14, 1992, Ser. No. 990,480
Int. Cl.[5] C09D *11/02*
U.S. Cl. 106—22 K 15 Claims

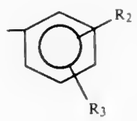
5. A lightfast ink comprising at least 1 percent by weight of a dye dissolved in a polar vehicle, said dye being of the structural formula;



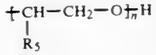
wherein:
X is



R_1 is:
an aliphatic radical having from 7 to 18 carbon atoms; the radical



in which
R_2 is -lower alkoxy, -halogen, $—NO_2$ —CN, $—CO_2H$;
R_3 is —H, -lower alkyl having 1 to 4 C atoms, -halogen, $—CO_2H$;
M is H, Li, Na, K, $—N(R_4)_4$ in which
R_4 is H,



in which
R_5 is —H, -lower alkyl, and
n is 1 to 4; and in which
one of the $—SO_3M$ groups on the amino-naphthol radical is positioned meta or para to the —NH— group and the other $—SO_3M$ is meta to the —OH.

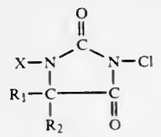
5,254,161

THERMALLY STABLE NITROCELLULOSE EMULSIONS, SOLUTIONS AND COATINGS

John P. DeVido, Kennett Square, Pa.; Ernest C. Linsay, Hockessin, and Daniel M. Zavisza, Newark, both of Del., assignors to Aqualon Company, Wilmington, Del.

Filed Oct. 24, 1991, Ser. No. 781,839
Int. Cl.[5] C09D *101/18*
U.S. Cl. 106—170 13 Claims

1. A nitrocellulose composition in the form of a coating, solution or emulsion, characterized in that the composition exhibits reduced yellowing during aging wherein the composition comprises nitrocellulose and an effective amount of one or more of borax or a chlorinated hydantoin having the following structure:



wherein X can be Cl or Br, and where R_1 and R_2 can be hydrogen or methyl groups.

5,254,162

BROWN SPINEL PIGMENTS BASED ON ZINC CHROMITE, METHOD OF THEIR PRODUCTION AND USE

Dietrich Speer; Akos Kiss, both of Hanau, and Jenny Horst, Gelnhausen, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 18, 1992, Ser. No. 946,574
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1992, 4131548
Int. Cl.[5] C09C *1/04, 1/34*
U.S. Cl. 106—419 14 Claims

1. A brown spinel pigment comprising zinc chromite and exhibiting an atomic ratio of chromium to zinc in a range of 1:greater than 0.5 up to 2, and wherein said brown spinel pigments are iron-free.

5,254,163

PIGMENT PREPARATIONS

Helmut Bellaire, Ludwigshafen, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 6, 1992, Ser. No. 831,911
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1991, 4105861
Int. Cl.[5] C09C *1/44*
U.S. Cl. 106—477 4 Claims

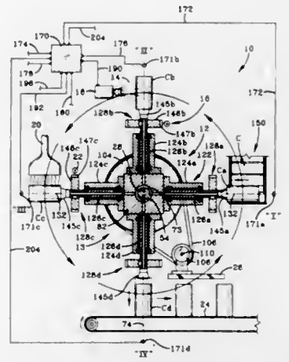
1. A pigment preparation containing from 20 to 40% by weight, based on the weight of the preparation, of a pigment based on carbon black, from 1 to 10% by weight, based on the weight of the preparation, of a dispersant based on a reaction product of polyhydroxystearic acid with a diamine or hydroxyalkylamine, and from 50 to 79% by weight, based on the weight of the preparation, of olein.

5,254,164

COATING SYSTEM INCLUDING INDEXING TURRET ROTATABLE IN THE VERTICAL AND HORIZONTAL PLANES ABOUT A STATIONARY SHAFT WITH LOADING AND UNLOADING OF CONTAINERS AND CLOSURES FROM THE EDGES OF THE TURRET

Matsunaga Masahumi, Yokohama, Japan, assignor to Nordson Corp., Westlake, Ohio

Filed Jun. 15, 1992, Ser. No. 898,651
Int. Cl.[5] B05B *1/00*
U.S. Cl. 118—58 14 Claims



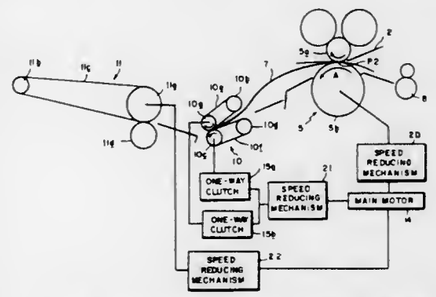
10. An indexing machine for a coating system for containers or closures having at least one turret with multiple vacuum chucks rotating in a horizontal plane, comprising:
means for loading said containers or closures of said vacuum chucks at a first station of said turret;
means for applying a coating to said containers or closures at a second station of said turret; and
means for unloading said containers or closures from said turret.

5,254,165

IMAGE FORMING APPARATUS

Akira Haruna, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 629,669, Dec. 19, 1990, abandoned.
This application Nov. 18, 1992, Ser. No. 978,045
Claims priority, application Japan, Dec. 19, 1989, 1-330063
Int. Cl.[5] B05C *11/00*
U.S. Cl. 118—60 5 Claims



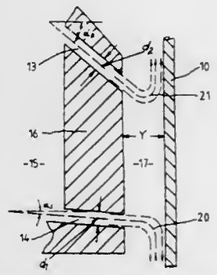
1. An image receiving sheet transport system comprising:
a pressure developing device for transporting a photosensitive sheet coated with light and pressure sensitive microcapsules containing photosetting materials and coloring dyes and an image receiving sheet coated with developer which reacts with the coloring dyes to develop colors, the pressure developing device transporting, in a transporting direction, the photosensitive sheet and the image receiving sheet, the two sheets being superimposed one on top of the other so that during transportation the two sheets are pressed together by said pressure developing device to form an image on the image receiving sheet, pressure being applied when the leading edge of the image receiving sheet arrives at the pressure developing device and being released when the trailing edge thereof passes therefrom,
a glosser unit spaced from the pressure developing device in the transporting direction for heating and pressing the image receiving sheet passed through the pressure developing device, to give a glossy finish to the image formed on the image receiving sheet,
a transport device, provided between the pressure developing device and the glosser unit, for grasping the image receiving sheet on both surfaces thereof and transporting, in the transporting direction, the image receiving sheet that has passed through the pressure developing device on to the glosser unit,
a first speed reducing means for transmitting power to the pressure developing device so as to transport the two sheets at a first transporting speed,
a second speed reducing means for transmitting power to the transport device so as to transport the image receiving sheet at a second transporting speed lower than the first transporting speed,
a third speed reducing means for transmitting power to the glosser unit so as to transport the image receiving sheet at a third speed higher than the second speed, and
a one-way clutch for transmitting power to the transport device from the second speed reducing device so that the image receiving sheet is transported only in the transporting direction,
wherein the differences in transporting speeds between the pressure developing means and the glosser unit causes the image receiving sheet transported from the pressure developing device to the glosser unit to be buckled by the time the image receiving sheet reaches the glosser unit.

5,254,166

STRIP COATING DEVICE HAVING JET STRIPPERS TO CONTROL COATING THICKNESS

Cat V. Tu, Corrimal East, Australia, assignor to John Lysaght (Australia) Limited, Sydney, Australia

Filed Mar. 6, 1992, Ser. No. 845,939
Claims priority, application Australia, Mar. 6, 1991, 72689/91
Int. Cl.[5] B05K *11/06*
U.S. Cl. 118—63 7 Claims



1. A strip coating apparatus having a jet stripping means comprising:
two dual-nozzle assemblies which, when in use, are disposed one on either side of an ascending, substantially vertical strip which is to be partly stripped of liquid coating, each dual nozzle assembly comprising upper and lower elongate nozzles extending transversely of the strip;
means to supply pressurized gas to said upper and lower

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elongate nozzles for emergence therefrom as jet streams directed towards the strip; and

a reaction body intermediate the upper and lower elongate nozzles defining a pressurized stabilizing zone between itself and the strip,

wherein the lower nozzle of each assembly is directed in a downwardly inclined direction such that any jet stream emerging therefrom is in a downwardly inclined direction.

5,254,167

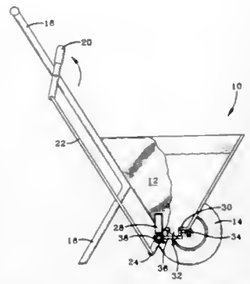
ADHESIVE APPLICATION APPARATUS

Ronald J. Janoski, Chagrin Falls; Richard J. Gibson, North Olmsted; Donald C. Portfolio, Solon; Gregory J. Rudolph, Novelty, and Todd P. Hadaway, North Ridgeville, all of Ohio, assignors to Tremco, Inc., Beachwood, Ohio

Filed Sep. 10, 1991, Ser. No. 757,161

Int. Cl.[5] **B05C** *11/02, 5/00;* **B05B** *13/02*

U.S. Cl. 118—108 **23 Claims**



1. An apparatus for depositing a fluid adhesive on a substrate, comprising:

holding means for holding a supply of adhesive above said substrate;

a plurality of spaced openings in a lower portion of said holding means for enabling flow of fluid adhesive therethrough onto said substrate;

a plurality of blocking members, each blocking member being associated with a corresponding one of said openings and being movable between a first position in blocking relation of said opening and a second position disposed of said opening, whereby flow is enabled through the associated openings when said blocking members are in the second position;

a rotatable shaft in operative connection with said blocking members through a plurality of lockable collars mounted on said shaft, each of said collars being operatively connected with a corresponding blocking member, said lockable collars enabling movement of at least one selected blocking member from the first position to the second position responsive to movement of said rotatable shaft;

manual actuation means in connection with said rotatable shaft; and

movement means for moving said apparatus on said substrate.

5,254,168

COATING APPARATUS HAVING OPPOSED ATOMIZING NOZZLES IN A FLUID BED COLUMN

Howard Littman, 7 Tulip Tree La.; Morris H. Morgan, 1233 Viewmont Dr., both of Schenectady, N.Y. 12309, and Stevan D. Jovanovic, C-22 Sunset Terr., Troy, N.Y. 12180

Filed Jun. 4, 1992, Ser. No. 893,827

Int. Cl.[5] **B05B** *7/00*

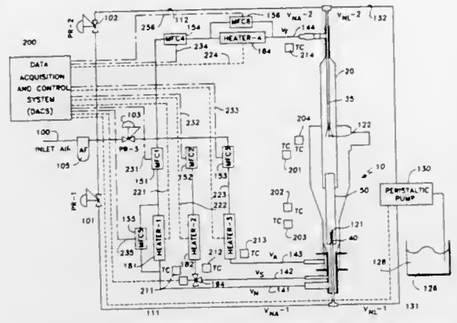
U.S. Cl. 118—666 **17 Claims**

1. An apparatus for spray coating discrete particles while such particles are suspended in a apparatus, said apparatus comprising, in combination:

an upstanding column including an upper cylindrical body section provided with a vent, a downwardly tapered intermediate section and a lower cylindrical section, said tapered intermediate section and said lower cylindrical section housing a vertically extending draft tube;

a vertically positioned fountain tube adapted with an air inlet port and a spray extension terminating in opposing air and liquid inlets and extending axially above said upper cylindrical body section, said fountain tube housing a downwardly-facing atomizing spray nozzle and having a greater diameter than said draft tube, wherein both tubes concentrically intersect within the column in an opened telescopic dual-jet and spray arrangement;

a cylindrical inlet chamber depending from and communicating with said lower cylindrical section, said cylindrical inlet chamber being provided with an air entry port and



containing a jet inlet tube and an upwardly-facing atomizing spray nozzle positioned in coaxial relationship to said jet inlet tube and said draft tube;

a tubular channel which depends from said cylindrical inlet chamber and communicates with said jet inlet tube, said tubular channel being provided with a swirl flow inlet line;

an air inlet tubular chamber which depends from and communicates with said tubular channel, said tubular chamber being adapted with an air inlet opening and having a centrally protruding spray extension provided with terminally opposing air and liquid inlets; and

regulating means for controlling flow distribution and flow rates within the apparatus and for controlling temperatures of all inlet streams to the apparatus.

15. The apparatus according to claim **1**, further comprising thermocouple probe and pressure probe means for monitoring temperatures and pressures within said column.

5,254,169

HIGH-VACUUM COATING APPARATUS

Karl-Heinrich Wenk, Bad Nauheim, Fed. Rep. of Germany, assignor to Leybold Aktiengesellschaft, Hanau, Fed. Rep. of Germany

Filed Jul. 15, 1992, Ser. No. 914,752

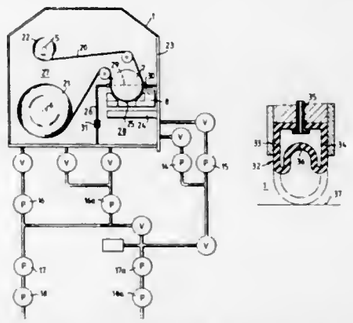
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1992, 4207525

Int. Cl.[5] **C23C** *14/24, 14/26*

U.S. Cl. 118—718 **4 Claims**

1. High-vacuum coating apparatus for coating a film comprising: an evacuable vacuum tank, mechanical pumps and at least one diffusion pump for evacuating the vacuum tank, a supply roll for unwinding a film, a take-up roll, a coating cylinder for guiding the film to the take-up roll, an evaporator bank disposed underneath the coating cylinder for the evaporation of the coating material, a partition wall for dividing the

vacuum tank into a winding chamber having the supply roll and take-up roll and a coating chamber which contains the evaporator bank and into which at least one area of the coating cylinder, where the coating of the film takes place, extends facing the evaporator bank, the mechanical pumps being disposed for the evacuation of the winding chamber and the coating chamber, and the diffusion pump being connected



exclusively to the coating chamber, the apparatus including a floor running unit having the partition wall including a bearing plate and a tank-end plate between which plates the partition wall is fastened, the vacuum tank having a wall and the apparatus including an inflatable tubular gasket, which therefore is variable in cross section, for sealing the partition wall from the wall of the vacuum tank, the tubular gasket having an interior having an atmosphere connection.

5,254,170

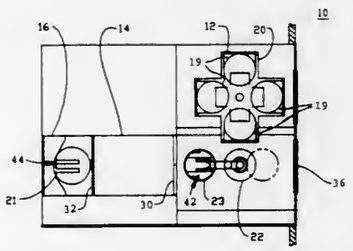
ENHANCED VERTICAL THERMAL REACTOR SYSTEM

John J. Devilbiss, San Mateo; James A. Glaze, Danville; Steve Lugosi; Allen D. McNaughton, both of Fremont, and Robert G. Ozaraki, Livermore, all of Calif., assignors to ASM VT, Inc., Phoenix, Ariz.

Filed Aug. 7, 1989, Ser. No. 390,595

Int. Cl.[5] **C23C** *16/00*

U.S. Cl. 118—719 **16 Claims**



1. A vertical thermal reactor system comprising:

a wafer handling chamber into which semiconductor wafers are placed into the reactor system for processing and from which processed wafers are removed from the reactor system, said wafer handling chamber including a carrousel for holding a plurality of wafers before and after processing;

a process chamber for processing wafers received from said wafer handling chamber;

a first passageway directly between said process chamber and said wafer handling chamber, with a first door for sealing said first passageway;

a cool down chamber in which processed wafers from said process chamber cool down; and

a second passageway directly between said cool down chamber and said process chamber, with a second door for sealing said second passageway.

5,254,171

BIAS ECR PLASMA CVD APPARATUS COMPRISING SUSCEPTOR, CLAMP, AND CHAMBER WALL HEATING AND COOLING MEANS

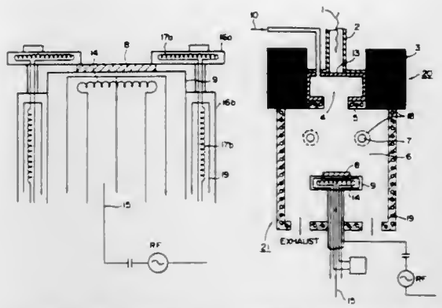
Hideaki Hayakawa, Kanagawa; Junichi Sato, Tokyo, and Tetsuo Gocho, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 13, 1992, Ser. No. 867,516

Claims priority, application Japan, Apr. 16, 1991, 3-025592[U]

Int. Cl.[5] **C23C** *16/00, 16/50*

U.S. Cl. 118—723 MR **5 Claims**



1. A bias ECR plasma CVD apparatus including an ECR plasma generating chamber and a plasma CVD chamber for forming a film on a substrate by a plasma CVD reaction, comprising:

a susceptor for supporting the substrate;

a first heating device and a first cooling device provided in said susceptor for maintaining the substrate and a vicinity about the substrate at a constant temperature;

a mechanical clamp means for clamping the substrate, said mechanical clamp means comprising a mechanical clamp for clamping the substrate and a mechanical clamp holder for holding said mechanical clamp; and

a second heating device and a second cooling device provided in said mechanical clamp means for maintaining the substrate and the vicinity about the substrate at a constant temperature.

5,254,172

ROTATING FURNACE TUBE HAVING A NON-ROTATING SLIDABLE WORK HOLDER FOR PROCESSING SEMICONDUCTOR SUBSTRATES

Toshio Otaki, Takasaki; Hitoshi Ikeda, Annaka; Masato Yamada, Annaka, and Takao Takenaka, Annaka, all of Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Mar. 19, 1992, Ser. No. 854,037

Claims priority, application Japan, Mar. 28, 1991, 3-089842

Int. Cl.[5] **B08B** *3/04;* **B05D** *7/24*

U.S. Cl. 118—725 **8 Claims**

1. An apparatus for processing a semiconductor substrate, comprising:

a furnace tube;

supply means for supplying a fluid into said furnace tube;

discharge means for discharging said fluid from said furnace tube;

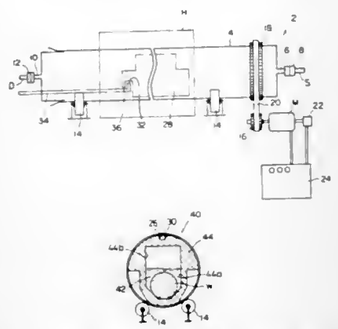
support means for rotatably supporting said furnace tube;

drive means for rotating said furnace tube about its longitudinal axis;

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controlling means for controlling operation of said drive means; and

a holder slidably and non-rotatably received in said furnace tube for holding a plurality of semiconductor substrates, said furnace tube including a guide rail extending longitudinally along an inside surface of said furnace tube for



slidably guiding therealong said holder, and elongate setting means having an end formed with an engagement portion lockingly engageable with an end of said holder, said elongate setting means being movable longitudinally to move said holder along said guide rail for setting the holder in a desired position.

5,254,173

TURNTABLE MECHANISM

William N. Myers, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 31, 1992, Ser. No. 828,612
Int. Cl.[5] B05C *13/00*
U.S. Cl. 118—728 **7 Claims**

1. A mechanism for holding and maneuvering a workpiece being worked on under high temperature conditions; the mechanism including a tubed workpiece carrying member in the form of a tubular cradle; the cradle having ends adapted for pivotal cradle movement arcuately about a virtually horizontal axis through its ends; means for driving the cradle to tilt said cradle in an arc; a workpiece turntable drive mechanism carried by the cradle; said workpiece turntable having a rotatable shaft affixed thereto; means securing the shaft to the turntable drive mechanism for rotation of the shaft and turntable by the drive mechanism about an axis transverse to the cradle axis; and internal cooling means including interconnected channels within the cradle tubes, the turntable drive shaft and the turntable drive mechanism for coolant flow through the cradle tubes, the drive shaft and the turntable drive mechanism.

5,254,174

METHOD FOR PREPARING A MIXTURE OF SACCHARIDES

Ole Hansen, and John Jensen, both of Nakskov, Denmark, assignors to Danisco A/S, Copenhagen, Denmark

PCT No. PCT/DK90/00241, § 371 Date Mar. 17, 1992, § 102(e) Date Mar. 17, 1992, PCT Pub. No. WO91/04342, PCT Pub. Date Apr. 4, 1991
PCT Filed Sep. 21, 1990, Ser. No. 842,196
Claims priority, application Denmark, Sep. 22, 1989, 4688/89
The portion of the term of this patent subsequent to Jul. 7, 2009, has been disclaimed.
Int. Cl.[5] C13D *3/14, 1/00*
U.S. Cl. 127—53 **8 Claims**

1. A method for preparing a mixture of fructose, glucose and compounds of the general formula GF_n, wherein G is glucose and F is fructose and n is an integer, comprising calculated as dry matter

0–10% by weight of G+F+GF,
5–20% by weight of GF_2,
5–15% by weight of GF_3,
5–15% by weight of GF_4,
5–15% by weight of GF_5, and
80–25% by weight of GF_6 and above,

where the mixture is recovered from tubers of Jerusalem artichoke (*Helianthus tuberosus* L.) or from roots of chicory (Cichorium), by means of a method which does not involve any chemical modification of the components of the mixture, by which method the following steps are carried out:

a) the substantially cleaned tubers or roots are cut into cosettes,
b) the cosettes are subjected to extraction with water,
c) the extract, or juice, is treated in a suitable order one or more times by each of the following steps:
   1) addition of $Ca(OH)_2$, to a pH value of 10.5–11.5,
   2) addition of CO_2 or phosphoric acid, to a pH value of 8.0–9.5 and
   3) filtration
d) the juice from step c) is subjected to ion exchange,
e) the juice from step d) is optionally treated with active carbon,
f) the juice from step d) or e) is optionally concentrated by hyperfiltration,
g) the juice from step d) , e) or f) is optionally evaporated to a syrup, and
h) the syrup is optionally dryed to a powder, characterized by subjecting the juice or syrup during any suitable moment subsequent to step c) but prior to step h) to a physical separation to reduce the amount of fructose, glucose and sucrose, said physical separation being carried out by chromatography or nanofiltration or both.

5,254,175

PROCESS FOR REMOVING CONTAMINANTS, IN PARTICULAR MATERIAL RESIDUES, IN POORLY ACCESSIBLE MACHINE PARTS

Hans-Gerd Kaiser, Germanenstr. 44, D-5650 Solingen 1, Fed. Rep. of Germany

PCT No. PCT/EP89/00068, § 371 Date Jul. 18, 1990, § 102(e) Date Jul. 18, 1990, PCT Pub. No. WO89/07130, PCT Pub. Date Aug. 10, 1989
PCT Filed Jan. 24, 1989, Ser. No. 549,001
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1989, 3802127
Int. Cl.[5] B08B *3/04, 9/02*; C23G *1/14, 1/24*
U.S. Cl. 134—2 **3 Claims**

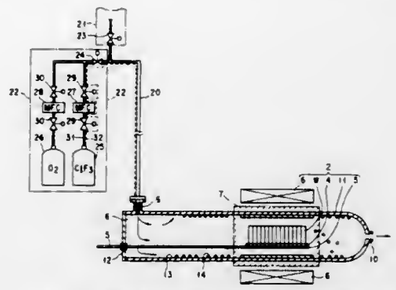
1. A process for cleaning machine parts used in transport and molding of materials in a pasty state including the removal of material residues on changeover from a first said material to a different material, the improvement comprising: introducing a solution comprising a salt selected from the group consisting of an organic salt, an inorganic salt and mixtures thereof and a solvent selected from the group consisting of an inorganic solvent, a polar organic solvent and mixtures thereof, which solvent dissolves said salt, into an operating machine together with a first batch of said different material, said solution having a salt concentration of said salt of at least 0.5% by weight based on a total weight of said solution up to a saturation limit for said salt at room temperature, said salt having a melting point above a processing temperature of said subsequent material, and said solvent having a boiling point below a processing temperature of said subsequent material.

5,254,176

METHOD OF CLEANING A PROCESS TUBE

Shigebito Ibuka, Tokyo, and Chitoshi Nogami, Nara, both of Japan, assignors to Tokyo Electron Limited, Tokyo and Iwatani International Corporation, Osaka, both of Japan

Filed Feb. 3, 1992, Ser. No. 829,508
Int. Cl.[5] C03C *23/00*; B08B *7/00, 9/02*
U.S. Cl. 134—2 **14 Claims**



1. A cleaning method for removing a low density silicon-based film adhered to an inner wall of a ceramic process tube in a process of forming a silicon-based film on a semiconductor wafer, comprising the steps of:

taking a wafer having a silicon-based film formed thereon out of said process tube; then

controlling the temperature within the process tube to fall within a range of between 400° C. and the boiling point of ClF_3;

supplying, while the temperature is controlled to be below 400° C., a cleaning gas containing ClF_3 into the process tube to allow said cleaning gas to react with said low density silicon-based film; and

releasing the gaseous material from the process tube.

5,254,177

METHOD AND SYSTEM FOR DISPOSING OF CONTAMINATED PARAFFIN WAX IN AN ECOLOGICALLY ACCEPTABLE MANNER

Carl J. Chauvin, Chauvin, La., assignor to Paraffin Solutions, Inc., Baton Rouge, La.

Filed Feb. 10, 1992, Ser. No. 833,047
Int. Cl.[5] B08B *9/00*
U.S. Cl. 134—8 **14 Claims**

1. A method of removing and disposing of wax buildup from a first pipeline, comprising:

(a) removing said wax buildup from said first pipeline in the form of paraffinic wax chunks;

(b) passing said paraffinic wax chunks through a first stage size reduction apparatus and thereby extruding said paraffinic wax chunks into spaghetti-like strings of paraffinic wax;

(c) after step (b), mixing said strings of paraffinic wax with a carrier oil to form a slurry;

(d) passing said slurry through a second stage size reduction apparatus wherein said slurry is subjected to a shearing action to further reduce the size of said strings of paraffinic wax into still smaller wax particles; and

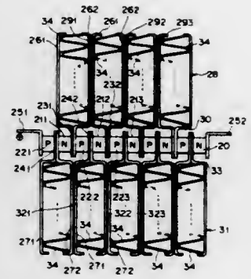
(e) pumping slurry discharged from said second stage size reduction apparatus into a receiving pipeline carrying a refinable petroleum oil for transport with said refinable petroleum oil to a refinery.

5,254,178

THERMOELECTRIC TRANSDUCER APPARATUS COMPRISING N- AND P-TYPE SEMICONDUCTORS AND HAVING ELECTRONIC CONTROL CAPABILITIES

Kenji Yamada, Chiryu; Yoshitaka Tomatsu, Nagoya; Tatsuya Oike, Okazaki, and Kazutoshi Nishizawa, Toyoake, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 30, 1991, Ser. No. 784,230
Claims priority, application Japan, Oct. 30, 1990, 2-290837; Apr. 16, 1991, 3-84277; Jul. 4, 1991, 3-164411; Sep. 20, 1991, 3-241465
Int. Cl.[5] H01L *35/28*
U.S. Cl. 136—204 **22 Claims**



1. A thermoelectric transducer apparatus primarily constituted by N-type semiconductors and P-type semiconductors and having electronic control capabilities comprising:

a group of pairs of thermoelectric elements linearly arranged, each pair being constituted by an N-type thermoelectric element and a P-type thermoelectric element arranged in this order;

heat-absorbing-type plate electrodes and heat-liberating-type plate electrodes arranged alternately, each plate electrode connecting two adjacent thermoelectric elements to electrically and serially connect said N- and P-type thermoelectric elements;

a DC power source connected to the both ends of said line of thermoelectric elements electrically and serially connected by arranging each of said heat-absorbing-type and heat-liberating-type plate electrodes between two adjacent thermoelectric elements to supply each of said heat-absorbing-type plate electrodes with an electric current running from the N-type thermoelectric element to the P-type thermoelectric element connected thereto and each of said heat-liberating-type plate electrodes with an electric current running from the P-type thermoelectric element to the N-type thermoelectric element;

pairs of heat-absorbing heat exchanger plates, each of said pairs being formed by extending one of said heat-absorbing type plate electrodes to a side of said line of N- and P-type thermoelectric elements to form a pair of heat-absorbing fins integral with said heat-absorbing-type plate electrode;

pairs of heat-liberating heat exchanger plates, each of said pairs being formed by extending one of said heat-liberating-type plate electrodes to a side of said line of N- and P-type thermoelectric elements opposite to that of said pairs of heat-absorbing fins to form a pair of heat-liberating fins integral with said heat-liberating-type plate electrode;

means for physically binding and electrically insulating adjacent heat-absorbing heat exchanger plates extending from related neighboring heat-absorbing-type plate electrodes and adjacent heat-liberating-type heat exchanger plates extending from related neighboring heat-liberating-type plate electrodes;

partition wall formed by part of said heat-absorbing-type or heat-liberating type plate electrodes or said heat-absorb-

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ing or heat-liberating heat exchanger plates integral with said respective electrodes to provide a partition for separating flow paths of cooled and coolant fluids.

5,254,179

PHOTOVOLTAIC DEVICE AND SOLAR MODULE HAVING A PARTIAL TRANSPARENCY

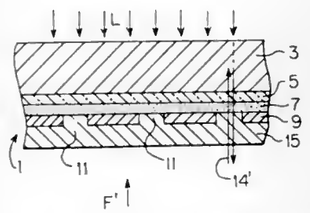
Alain Ricaud, Gif-sur-Yvette; Jacques Schmitt, La Ville Du Bois; Jean-Marie Siefert, Arcueil, and Thierry Emeraud, Bures-sur-Yvette, all of France, assignors to Solems S.A., Palaiseau, France

Filed Feb. 19, 1992, Ser. No. 836,819

Claims priority, application France, Feb. 21, 1991, 91 02075; Apr. 22, 1991, 91 04927

Int. Cl.[5] H01L *31/042*

U.S. Cl. 136—244 13 Claims



1. A photovoltaic device for producing photogenerated current, comprising:

a transparent electrically insulating substrate;

a plurality of photosensitive elements laminated on the substrate;

said photosensitive elements comprising an opaque electrically conductive layer through which continuous parallel grooves are formed to allow light to pass through the device, the photogenerated current flowing in said conductive layer along a predetermined direction;

said grooves extending longitudinally along the direction of the photogenerated current, from a first end of said conductive layer to a second opposite end thereof, thereby dividing said conductive layer into a series of continuous bands.

5,254,180

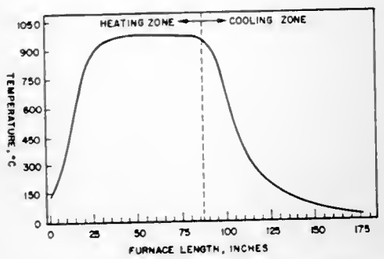
ANNEALING OF CARBON STEELS IN A PRE-HEATED MIXED AMBIENTS OF NITROGEN, OXYGEN, MOISTURE AND REDUCING GAS

Brian B. Bonner, Nesquehoning, and Diwakar Garg, Macungie, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 22, 1992, Ser. No. 995,611

Int. Cl.[5] C21D *1/00*

U.S. Cl. 148—208 9 Claims



1. A process for oxide annealing carbon steel in a nitrogen-based furnace atmosphere containing X percent by volume moisture comprising the steps of:

mixing non-cryogenically produced nitrogen containing up to Y% by volume residual oxygen with slightly more than 2Y% by volume by hydrogen;

humidifying the mixture with a volume percent of moisture calculated as X−2Y; and

feeding the humidified mixture into the heating zone of the furnace in a direction to permit reaction of the residual oxygen and hydrogen in the mixture prior to oxygen contacting the steel being treated so that an atmosphere with a pH_2/pH_2O ratio of less than 2 is created in the furnace.

5,254,181

METHOD OF NITRIDING STEEL UTILIZING FLUORIDING

Akira Yoshino, Osakasayama; Masaki Tahara, Takatuski; Haruo Senbokuya, Tondabayashi; Kenzo Kitano, Kawachinagano, and Teruo Minato, Hashimoto, all of Japan, assignors to Daidousanso Co., Ltd., Osaka, Japan

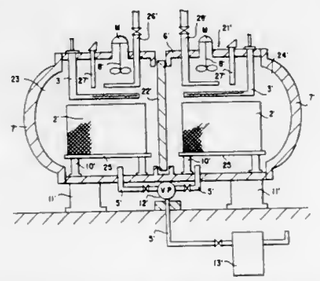
Continuation-in-part of Ser. No. 688,217, Apr. 22, 1991, abandoned, continuation-in-part of Ser. No. 479,013, Feb. 12, 1990, Pat. No. 5,013,371. This application Jul. 10, 1991, Ser. No. 727,614

Claims priority, application Japan, Jun. 10, 1989, 1-177660

The portion of the term of this patent subsequent to May 19, 2009, has been disclaimed.

Int. Cl.[5] C23C *8/34*

U.S. Cl. 148—231 2 Claims



1. A method for nitriding steel comprising fluoriding a steel work in heated condition in an atmosphere of a mixed gas composed of fluorine gas and inert gas and, then, nitriding the fluorided steel work in heated condition in an atmosphere of nitriding gas.

5,254,182

THIN FILM OF AMORPHOUS ALLOY

Kunihiko Mizumoto; Koichi Haruta, and Hirokazu Kajiura, all of Ichihara, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 258,721, Oct. 17, 1988, Pat. No. 4,995,923. This application Aug. 8, 1990, Ser. No. 564,191

The portion of the term of tbis patent subsequent to Feb. 26, 2008, has been disclaimed.

Int. Cl.[5] H01F *10/16*

U.S. Cl. 148—304 21 Claims

1. An optical recording medium having a recording layer of a thin film of an amorphous alloy consisting essentially of

(i) 2 to 95 atom % of at least one element selected from Fe and Co,

(ii) at least 15 atom % to 94 atom % of at least one element selected from Pt and Pd, and

(iii) 2 to 95 atom % of at least one element selected from

(a) 3d transition elements other than Fe and Co,

(b) 4d transition elements other than Pd,

(c) 5d transition elements other than Pt,

(d) La, Ce, Pr, Nd, Pm, Sm, Eu or mixtures thereof,

(e) Group III B elements,

(f) Group IV B elements,

(g) Group V B elements, and

(h) Group VI B elements, and said film having an easy axis of magnetization perpendicular to the film face.

5,254,183

GAS TURBINE ELEMENTS WITH COKE RESISTANT SURFACES

John A. Harris, III, West Palm Beach; William H. Edwards, III, Port St. Lucie, and Edward S. Smith, Lake Worth, all of Fla., assignors to United Techynologies Corporation, Hartford, Conn.

Filed Dec. 20, 1991, Ser. No. 811,346

Int. Cl.[5] C22F *1/00*

U.S. Cl. 148—318 12 Claims

1. A fuel contacting element for a gas turbine engine, said element comprising a material selected from the group consisting of titanium, titanium alloys, stainless steel, and nickel base superalloys, and having a surface absorbed nitrogen layer having a depth of from about 0.00001 inches to about 0.0005 inches formed by heating said element in an atmosphere selected from nitrogen, mixtures of hydrogen and nitrogen, and ammonia, at a temperature of from about 1800° to about 1850° F. for about one hour, cooling to a temperature of from about 1525° to about 1575° F. and holding for about four hours, and cooling to a temperature of from about 1375° to about 1425° F. and holding for about sixteen hours.

5,254,184

CORROSION RESISTANT DUPLEX STAINLESS STEEL WITH IMPROVED GALLING RESISTANCE

John H. Magee, Jr.; Theodore Kosa, both of Reading, and Donald K. Schlosser, Shillington, all of Pa., assignors to Carpenter Technology Corporation, Reading, Pa.

Filed Jun. 5, 1992, Ser. No. 893,774

Int. Cl.[5] C22C *38/44*

U.S. Cl. 148—325 21 Claims

1. A duplex, stainless steel alloy having a good combination of galling resistance and corrosion resistance, said alloy consisting essentially of, in weight percent, about

	%
Carbon	0.1 max.
Manganese	6 max.
Silicon	2.5–6
Chromium	16–24
Nickel	2–12
Molybdenum	4 max.
Nitrogen	0.07–0.30
Copper	3.0 max.
Cobalt	5 max.
Sulfur	0.3 max.
Boron	0.005 max.

and the balance is essentially iron, wherein

the ratio Ni/Si is not more than about 2.5; Ni+0.68(% Cr)+0.55(% Mn)+0.45(% Si)+27(% C+% N)+Mo+0.2(% Co)≧27.5; and

said elements are balanced such that in the annealed condition, said alloy contains about 15–50 v/o ferrite.

5,254,185

METHOD FOR PRODUCING A SURFACE-COATED COMPONENT, IN PARTICULAR A CONTACT PIECE FOR A VACUUM SWITCH, AND DEVICE FOR EXECUTING THIS METHOD

Ekkehard Schade, Baden, Switzerland, assignor to Calor-Emag AG, Ratingen, Fed. Rep. of Germany

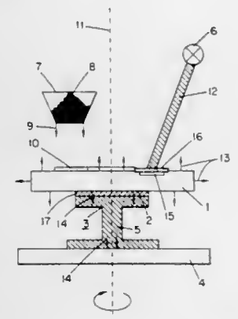
PCT No. PCT/CH90/00285, § 371 Date Aug. 14, 1991, § 102(e) Date Aug. 14, 1991, PCT Pub. No. WO91/09409, PCT Pub. Date Jun. 27, 1991

PCT Filed Dec. 17, 1990, Ser. No. 752,600

Claims priority, application Switzerland, Dec. 15, 1989, 4513/89-7

Int. Cl.[5] B05B *5/06;* H01H *11/04*

U.S. Cl. 148—512 10 Claims



1. A method for producing a surface-coated electric contact piece having a metallic substrate comprising heating a local area of the substrate to a temperature "several hundred °C." above room temperature, but below its melting point; coating the local area by applying an additive to the substrate surface in the form of a loose layer of powder; and applying additional heat to the local are to cause the substrate to be melted so that the powder present in the powder layer is wetted by liquid metal from the locally melted area, whereby the powder of the powder layer is bonded with the surface of the substrate and a surface layer is formed, the substrate being pre-heated by means of a heating current source which emits electrons and has a controllable beam current density, and during the preheating of the substrate the heating current source being operated with an output several times higher than during the coating of the local area.

5,254,186

NITROCELLULOSE PROPELLANT COMPOSITION

Thomas B. Downes, and John D. M. Pearson, both of Ayrshire, Scotland, assignors to Royal Ordnance plc, United Kingdom

Continuation of Ser. No. 230,666, Aug. 9, 1988, abandoned, which is a continuation of Ser. No. 81,816, Jul. 14, 1987, abandoned. This application Dec. 20, 1989, Ser. No. 466,703

Claims priority, application United Kingdom, Jul. 15, 1986, 8617239

Int. Cl.[5] C06B *45/10*

U.S. Cl. 149—19.4 11 Claims

1. In a nitrocellulose based propellant composition containing a platonizing ballistic modifier, the improvement comprising, as a platonizing ballistic modifier, zinc oxide, so as to provide reproducible plateaux, and to suppress acoustic resonance, said propellant composition being characterized in that it has improved plateau or mesa burning characteristics, does not undergo ballistic drift on storage and has improved chemical stability.

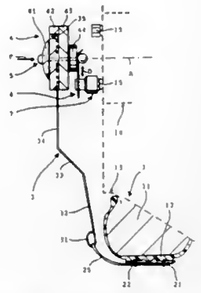
VOL 1155 ISS 3 OCT 19 1993 UMI

5,254,187

ANTI-SKID DEVICE FOR VEHICLE WHEELS

Michel Metraux, Pully, Switzerland, assignor to Autotyp S.A., Switzerland

Filed Jan. 24, 1992, Ser. No. 826,481
Claims priority, application Switzerland, Jan. 24, 1991, 207/91
Int. Cl.[5] B60C *27/14*
U.S. Cl. 152—216 14 Claims



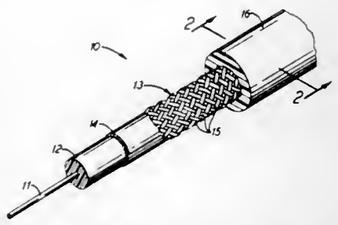
1. An anti-skid device for a vehicle wheel, comprising:
a housing capable of being removably fastened on an outer side of the wheel;
a plurality of radial arms having opposed ends, one of each of said ends being fastened in said housing;
anti-skid means connected with the other ends of said plurality of radial arms and extending along a peripheral tread surface of the wheel;
elastic pulling means extending through the housing and adapted to turn freely with respect to the housing and capable of pulling the housing in a direction towards the wheel upon advancement of the vehicle, so as to place the anti-skid means on the peripheral tread surface of the wheel;
fastening means connected with the wheel for fastening the housing on the wheel, said fastening means including a passage radial with respect to the axis of the wheel;
a lever extending between the housing and the wheel and connected to the housing by said elastic means, said lever having an extension which extends through said radial passage to slide freely relative to the fastening means.

5,254,188

COAXIAL CABLE HAVING A FLAT WIRE REINFORCING COVERING AND METHOD FOR MAKING SAME

Douglas J. Blew, Hickory, N.C., assignor to Comm/Scope, Hickory, N.C.

Filed Feb. 28, 1992, Ser. No. 843,734
Int. Cl.[5] H01B *13/22*
U.S. Cl. 156—53 4 Claims



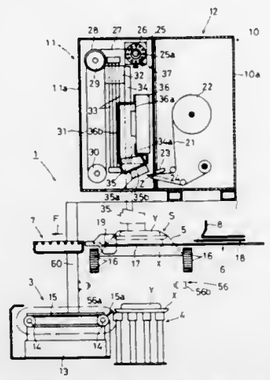
1. A method for making a coaxial cable comprising the steps of:
advancing an elongate center conductor along a predetermined path of travel into and through an extrusion head and extruding a foamed polymer onto the center conductor to produce a foam dielectric surrounding the center conductor;
advancing the foam dielectric covered center conductor from the extrusion head to a foil shield wraping station and wrapping an electrically conductive foil shield around the foam dielectric;
advancing the foil wrapped dielectric from the foil wrapping station to a reinforcing wire covering station for arranging a plurality of flat reinforcing wires around the foil shield; and
continuously advancing the thus formed article from the wire covering station to a jacketing station located in tandem with the wire covering station and extruding a protective jacket over the wire covering.

5,254,189

LABELLING METHOD AND APPARATUS THEREFOR

Kenji Hirobe, and Maplo Takama, both of Kurita, Japan, assignors to Isbida Scales Mfg. Co., Ltd., Kyoto, Japan

PCT No. PCT/JP91/01641, § 371 Date Jul. 6, 1992, § 102(e) Date Jul. 6, 1992, PCT Pub. No. WO92/09485, PCT Pub. Date Jun. 11, 1992
PCT Filed Nov. 26, 1991, Ser. No. 877,185
Claims priority, application Japan, Nov. 30, 1990, 2-338322
Int. Cl.[5] B65C *9/00*
U.S. Cl. 156—64 7 Claims



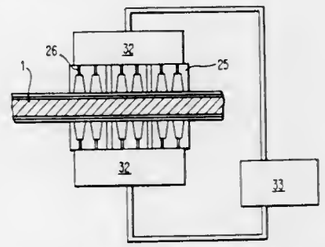
1. A labelling method for applying a label to a product by moving a suction head, carrying the label at a lower face of the suction head, downwardly towards the product positioned therebelow, which comprises steps of interrupting a drive of the suction head in an applying direction immediately before the suction head being lowered arrives at a label applying surface of the product to permit the label to be subsequently applied by the effect of an inertia operation, and detecting an upward leap of the suction head in response to a reaction which has occurred at the time of application of the label, and elevating the suction head after this detection.

5,254,190

TENDONS FOR PRESTRESSED CONCRETE STRUCTURES AND METHOD OF USING SUCH TENDONS

Makoto Kurauchi, Houston, Tex.; Kiyoshi Hayasaki, Amagasaki, Japan; Toshikazu Minami, Amagasaki, Japan, and Mutsuhiko Ohnishi, Amagasaki, Japan, assignors to Shinko Kosen Kogyo Kabushiki Kaisha, Amagasaki, Japan

Division of Ser. No. 478,704, Feb. 8, 1990, abandoned, which is a continuation-in-part of Ser. No. 111,197, Oct. 22, 1987, abandoned. This application May 23, 1991, Ser. No. 705,062
Claims priority, application Japan, Dec. 28, 1986, 61-309965
The portion of the term of this patent subsequent to Sep. 22, 2009, has been disclaimed.
Int. Cl.[5] B29C *47/02;* B32B *31/16*
U.S. Cl. 156—85 1 Claim



1. A method of using tendons for a prestressed concrete structure, which comprises:
coating a wire strand core member with an unset bonding adhesive with a thickness of at least 20μ wherein said unset bonding adhesive comprises a latent normal temperature settable adhesive;
melt extruding and shrinking a seamless plastic sheath around said coated core member;
corrugating the plastic sheath with the depth of an indented portion thereof being deeper than the thickness of the plastic forming the sheath;
rapidly cooling the tendons;
burying said plastic sheathed coated core member of each tendon in concrete;
tensioning and fixing said plastic sheathed coated core member after a strength value of said concrete has increased to a degree to permit tensioning said core member and before said unset bonding adhesive sets; and
setting said unset adhesive at a normal temperature.

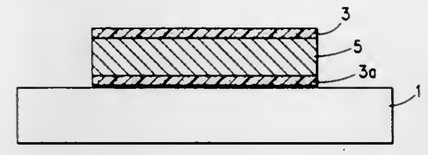
5,254,191

METHOD FOR REDUCING SHRINKAGE DURING FIRING OF CERAMIC BODIES

Kurt R. Mikeska, Wilmington, and Daniel T. Schaefer, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 4, 1990, Ser. No. 591,192
The portion of the term of this patent subsequent to Feb. 4, 2009, has been disclaimed.
Int. Cl.[5] C04B *37/00*
U.S. Cl. 156—89 28 Claims

1. A method for reducing X-Y shrinkage during firing of a ceramic body comprising the sequential steps of
a. providing an unfired ceramic body comprising an admixture of finely divided particles of ceramic solids and sinterable inorganic binder dispersed in a voltalizable solid polymeric binder;
b. applying to a surface of the unfired ceramic body a flexible constraining layer such that the constraining layer conforms closely to the unfired ceramic body to form an assemblage, the constraining layer comprising finely divided particles of non-metallic inorganic solids dispersed in a voltilizable polymeric binder, penetration of the sinterable inorganic binder of the ceramic body into the constraining layer being no more than 50 μm whereby said constraining layer is applied such that X-Y shrinkage upon firing of the ceramic body is reduced;
c. firing the assemblage at a temperature and for a time sufficient to effect volatilization of the polymeric binders



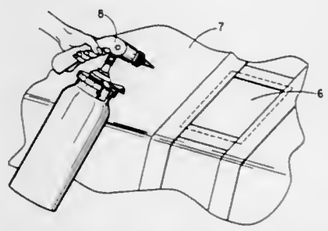
from both the ceramic body and the constraining layer, forming interconnected porosity in the constraining layer and sintering of the inorganic binder in the ceramic body;
d. cooling the fired assemblage; and
e. removing the constraining layer having interconnected porosity from the surface of the sintered ceramic body.

5,254,192

PROCESS FOR MATCHING COLOR OF PAINTS ON VEHICLES

Thomas P. Speakman, Media, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 3, 1991, Ser. No. 758,428
Int. Cl.[5] B32B *35/00*
U.S. Cl. 156—94 4 Claims



1. A process for obtaining an exact color match for a repair of a painted surface of a vehicle which comprises the following steps:
(1) applying a coating of a paint by spray application to the top surface of a flexible plastic substrate that has a coating on its back of a pressure sensitive adhesive layer and has a removable backing layer positioned over the pressure sensitive adhesive layer,
(2) applying a coating of the same paint used in step (1) to the exterior of a vehicle to provide a painted surface, steps (1) and (2) are performed simultaneously using the same spray application method used in step (1) for applying the paint,
(3) each of the coatings of paint on the flexible substrate and exterior of the vehicle are dried under the same or substantially the same conditions, where the drying temperatures used are ambient temperatures and up to 40° C.,
(4) a damaged area of the painted surface of the same vehicle is repaired by removing the backing layer and adhering a suitable portion of the coated plastic substrated prepared in step (1) to the damaged area thereby obtaining an exact color match of the painted plastic substrate and the painted surface of the vehicle.

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5,254,193

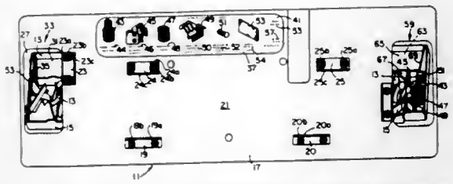
RIBBON ASSEMBLY FIXTURE WITH INTEGRAL INSTRUCTIONS AND METHOD

Patrick D. Carter; Bruce S. Jones, and Allen W. Putnam, all of Franklin, Tenn., assignors to Pelikan, Inc., Franklin, Tenn.

Filed Apr. 24, 1991, Ser. No. 690,683

Int. Cl.[5] B32B *31/18*

U.S. Cl. 156—157 **13 Claims**



1. An assembly fixture for assembling parts of a ribbon cartridge into a ribbon cartridge case, said ribbon cartridge being for use with a typewriter, or printer, comprising

a base plate having a top surface and outside edges,

stop means on the base plate for receiving and properly positioning and holding a case of a ribbon cartridge in an assembly space for assembling parts of a ribbon cartridge into the case, and

instruction means mounted on the base plate showing parts of the ribbon cartridge for instructing an assembly operator how to assemble the parts of the cartridge in the case and how to thread a ribbon around the parts in the case.

5,254,194

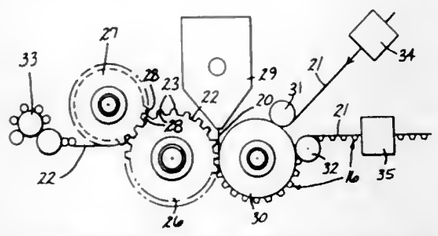
COATED ABRASIVE SHEET MATERIAL WITH LOOP MATERIAL FOR ATTACHMENT INCORPORATED THEREIN

Ronald L. Ott, Lake Elmo; Michael R. Gorman, White Bear Lake; Dennis L. Becker, Vadnais Heights; Donald W. Folske, Oakdale; William L. Melbye, Minneapolis; Susan K. Nestegard, Woodbury; David E. Slama, Vadnais Heights; John L. Barry, North St. Paul, and Jeffrey R. McMahon, Woodbury, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 555,049, Jul. 18, 1990, which is a continuation-in-part of Ser. No. 517,409, Apr. 27, 1990, abandoned, which is a continuation of Ser. No. 193,832, May 13, 1988, abandoned. This application Aug. 21, 1991, Ser. No. 748,038

Int. Cl.[5] B32B *31/08*

U.S. Cl. 156—176 **24 Claims**



1. A method for forming a coated abrasive material comprising a backing having front and rear surfaces, a layer of abrasive grains adhered to said front surface by a layer of bonding resin and a multiplicity of loops projecting from said rear surface, a sheet of which coated abrasive material can be releasably attached to a pad having a support surface and a multiplicity of hooks projecting for the support surface by releasable engagement between the loops and the hooks while the sheet of coated abrasive material is driven by the pad to abrade a workpiece, said method comprising:

providing a sheet of fibers;

corrugating the sheet of fibers to have arcuate portions projecting in the same direction from spaced anchor portions of the sheet of fibers;

forming a layer of liquid polymeric bonding material;

immersing the anchor portions of the sheet of fibers in the layer of liquid polymeric bonding material;

solidifying the layer of liquid polymeric bonding material to form at least a portion of the backing around the spaced anchor portions of the sheet of fibers with the arcuate portions of the sheet of fibers projecting from the rear surface of the backing; and

adhering a layer of abrasive grains to a front surface of the backing with a layer of bonding resin; and

said corrugating step comprising the steps of:

providing first and second generally cylindrical corrugating members each having an axis and including a plurality of spaced ridges defining the periphery of the corrugating member, the ridges having outer surfaces and defining spaces between said ridges adapted to receive portions of the ridges of the other corrugating member in meshing relationship with the sheet of fibers therebetween; mounting the corrugating members in axially parallel relationship with portions of the ridges in meshing relationship;

rotating at least one of the corrugating members; and

feeding the sheet of fibers between the meshed portions of the ridges to generally conform the sheet of fibers to the periphery of the first corrugating member and form the arcuate portions of the fibers in the spaces between the ridges of the first corrugating member and the anchor portions of the sheet of fibers along the outer surfaces of the ridges of the first corrugating member.

5,254,195

PROCESS FOR MANUFACTURING MOISTURE EXCHANGE ELEMENT

Pen C. Tseng; Yew K. Chuah; Chen U. Hwang; Shiao J. Chu; Han T. Chang; Chin S. Huang; Chang C. Chen, and Po/Yu Chen, all of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed May 8, 1992, Ser. No. 880,532

Int. Cl.[5] B65H *18/00;* **B31F** *7/00;* **B05D** *5/00;* **B01J** *20/00*

U.S. Cl. 156—184 **10 Claims**

1. A process for preparing a moisture exchange element comprising the steps of:

(a) preparing a substrate made of organic or inorganic fiber;

(b) impregnating the substrate with an aqueous impregnating solution comprising:

(i) 5–20 wt % colloidal silica,

(ii) 0.25–2.5 wt % metallic salt which is soluble in water, and

(iii) an acid of an amount sufficient to maintain the pH value of the impregnating solution at 5–9; and

(c) drying and gelatinizing the impregnating solution deposited on the impregnated substrate at an elevated temperature in such a manner that an absorbent having a pore size greater than 20 Å will be formed on the substrate.

5,254,196

SECURITY OF NEGOTIABLE INSTRUMENTS THRU THE APPLICATION OF COLOR TO XEROGRAPHIC IMAGES

Gerald Abowitz, Penfield; Raphael F. Bov, Jr., Pittsford; Paul W. Eakin, Webster, and Wayne R. Smith, Pittsford, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 20, 1990, Ser. No. 630,901

The portion of the term of this patent subsequent to Jan. 21, 2009, has been disclaimed.

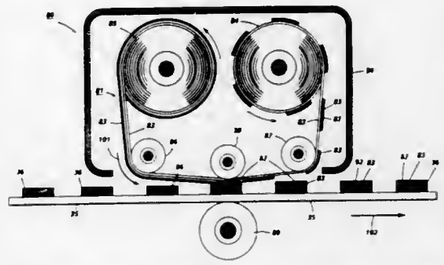
Int. Cl.[5] B41M *5/26*

U.S. Cl. 156—235 **6 Claims**

1. A fraud prevention method to be used in creating MICR readable images out of previously fused non-magnetic images, comprising the steps of:

providing a substrate containing non-magnetic images on a surface thereof;

providing a film including a heat resistant backing member with colored, highly reflective media and a magnetite media adhered thereto; and



providing a heater member positioned adjacent said backing member and adapted to contact and heat said backing member and press said colored media and magnetite media against predetermined portions of said non-magnetic images in order to fuse said colored, highly reflective media and said magnetic media onto said non-magnetic images and thereby render the resultant images readable by MICR readers and highly resistant to forgery.

5,254,197

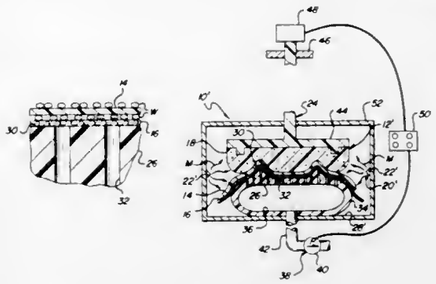
MICROWAVE BONDING OF FOAM TO FABRIC USING WATER AS A SUSCEPTOR

William F. Klems, Royal Oak, Mich., assignor to Lear Seating Corp., Southfield, Mich.

Filed Jun. 25, 1990, Ser. No. 542,958

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—272.2 **8 Claims**



1. A method comprising the steps of:

positioning a steam activated adhesive sheet (**14**) between a fabric layer (**16**) and a precontoured foam pad (**18**) adapted for use as a seat or backrest cushion in a seat cushion assembly (**12**);

contacting the fabric layer (**16**), adhesive sheet (**14**) and foam pad (**18**) together;

supplying liquid water (W) to a surface of the adhesive sheet (**14**) before said contacting step and thereafter radiating the fabric layer (**16**), adhesive sheet (**14**), said water (W) and foam pad (**18**) with microwave radiation (M) thereby generating steam in amounts sufficient to activate the adhesive (**14**), and adhesively bonding the fabric layer (**16**) to the foam pad without damaging either the fabric layer (**16**) or the foam pad (**18**).

5,254,198

METHOD OF BONDING A METAL OR ALLOY UTILIZING A POLYMERIZABLE THIOCARBOXYLIC ACID OR A DERIVATIVE THEREOF

Mitsunobu Kawashima, and Ikuo Omura, both of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Division of Ser. No. 662,513, Feb. 28, 1991, Pat. No. 5,186,783, which is a division of Ser. No. 368,799, Jun. 20, 1989, abandoned. This application Jun. 3, 1992, Ser. No. 892,928

Claims priority, application Japan, Jun. 20, 1988, 63-152491; Aug. 8, 1988, 63-198623

Int. Cl.[5] C09J *5/02*

U.S. Cl. 156—307.3 **1 Claim**

1. A method of bonding a metal or alloy to another material, comprising:

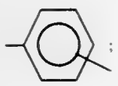
(i) applying an adhesive composition to said metal or alloy to obtain an adhesive coated metal or alloy; and

(ii) contacting said another material with said adhesive coated metal;

wherein said adhesive composition comprises a polymerizable thiocarboxylic acid or derivative thereof of the formula:

$$(H_2C{=}C(R_4)-Y-)_m-(R_6)_n-C(=S)-R_2$$

wherein R_4 is hydrogen or methyl; R_6 is a hydrocarbon group of 1 to 40 carbon atoms which can be substituted with —OH, —C≡N, —NH_2, —SO_3H, halogen, —COOH, —CSSH or —COSH; Y is —COO—, —OOC—, —CONH—, —COS—, —SOC—, —S— or

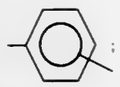


R_2 is —SH or —SR_3, where R_3 is a hydrocarbon group of the formula

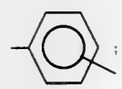
$$-(R_6')_{n'}-(Y'-C(R_4')=CH_2)_{m'}$$

wherein R_4' is the same as R_4; R_6' is the same as R_6; Y' is the same as Y;

with the proviso that when Y is —COO—, —OOC—, —CONH—, —COS—, —SOC— or —S—, n is 1; when Y is



n is 0 or 1; when R_2 is —SH, then m is 1; that when R_2 is —SR_3, m is 0 or 1; that $m+n \geqq 1$; that when Y' is —COO, —OOC, —CONH—, —COS—, —SOC— and —S—, n^1 is 1; that when Y' is



n'is 0 is 1; that m' is 0 or 1; $m'+n' \geqq 1$; and $m+m \geqq 1$.

VOL 1155 ISS 3 OCT 19 1993 UMI

5,254,199

PROCESS FOR BONDING SUBSTRATES OF GLASS FIBER REINFORCED POLYESTER RESIN

Horst Stepanski, Leverkusen; José Colinas-Martinez, Wermelskirchen; Rainer Trinks, Dormagen; Bernhard Jansen, Cologne; Hanns-Peter Müller, Bergisch Gladbach, and Otto Ganster, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

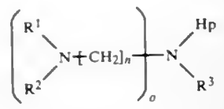
Filed Mar. 11, 1992, Ser. No. 849,269

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1991, 4108877

Int. Cl.[5] C09J *5/02*

U.S. Cl. 156—307.3 15 Claims

1. An adhesive containing an isocyanate prepolymer a), an isocyanate reactive component b) and a catalyst for the reaction of a) and b), characterized in that the catalyst comprises a compound corresponding to the formula:



wherein

R^1 and R^2 may be identical or different and denote an alkyl group having 1 to 4 carbon atoms,

R^3 denotes a CHO group or H or alkyl group having 1 t 4 carbon atoms, optionally substituted with a CHO group,

n stands for an integer from 2 to 4.

o stands for 1 or 2,

p stands for 0 or 1 and

o+p=2.

8. A process for bonding substrates of glass fiber reinforced polyester resin comprising applying to a surface of at least one substrate the adhesive as recited in claim 1, and contacting said surface with a surface of another substrate to which the adhesive is optionally applied.

5,254,200

METHOD AND APPARATUS FOR PEELING A RELEASABLE SHEET FROM AN ADHESIVE LABEL

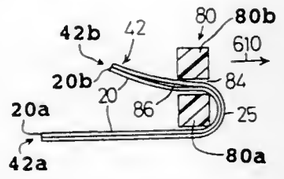
Yukihito Takagi, Kasugai, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Feb. 3, 1992, Ser. No. 829,321

Claims priority, application Japan, Mar. 12, 1991, 3-46492

Int. Cl.[5] B32B *35/00*

U.S. Cl. 156—344 18 Claims



1. A method of removing a releasable sheet from an adhesive layer of a label, said label being comprised of a tape base having the adhesive layer and the releasable sheet adhered to the adhesive layer, comprising the steps of:

inserting the label into an opening formed by first and second members arranged more than a thickness of the label away from each other so that the first member is adjacent to the tape base, and the second member is adjacent to the releasable sheet;

confronting one end portion of the label with an opposite end portion of the label by rotating the second member about the first member so that the label bends; and

moving one end of the label relative to the first and second members until the label is removed from the opening so that a space forms between a portion of the releasable sheet and the adhesive layer, and said space is located at one of said end portions of said label.

5,254,201

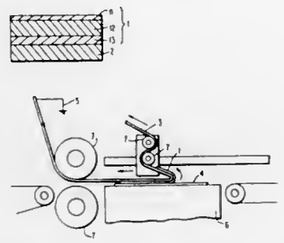
METHOD OF STRIPPING OFF WAFER-PROTECTIVE SHEET

Yukari Konda; Eiji Shigemura; Yutaka Kuwabara; Shoji Yamamoto, and Tatuya Kubozono, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

Filed Jan. 23, 1992, Ser. No. 824,564

Int. Cl.[5] B32B *35/00*

U.S. Cl. 156—344 4 Claims



1. A method of stripping off a wafer protective sheet comprising:

(1) bonding with a pressure-sensitive adhesive layer (a) an electrically conductive protective sheet applied to a semiconductor wafer on its side where a circuit pattern has been formed, and (b) an electrically conductive continuous-form stripping tape comprising a flexible substrate and a conductive layer; and

(2) peeling the stripping tape from the semiconductor wafer; wherein said bonding and peeling of the stripping tape is conducted automatically by means of an automatic stripping system while the protective sheet is kept grounded through the stripping tape.

5,254,202

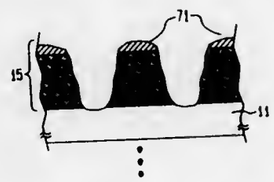
FABRICATION OF LASER ABLATION MASKS BY WET ETCHING

Leon H. Kaplan, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 7, 1992, Ser. No. 864,838

Int. Cl.[5] B44C *1/22*; C03C *15/00, 25/06*; C23F *1/00*

U.S. Cl. 156—345 20 Claims



15. A patterned reflector, comprising:

a plurality of pairs of layers, each of said pairs of layers comprising a layer of silicon oxide and at least one of hafnium oxide and tantalum oxide; and

a patterned layer of metal, said metal being resistant to etching with a highly caustic solution at a temperature above 65° C., said plurality of pairs of layers being patterned in accordance with said patterned metal layer.

5,254,203

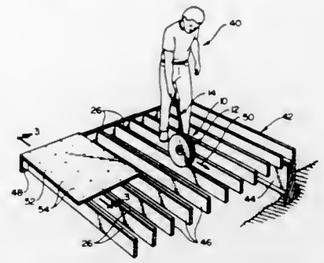
METHOD AND APPARATUS FOR CONSTRUCTION OF FLOORING TO PREVENT SQUEAKS

Charles Corston, 501 Willow Court S., Bellingham, Wash. 98225

Continuation-in-part of Ser. No. 761,686, Sep. 18, 1991. This application Jun. 19, 1992, Ser. No. 901,426

Int. Cl.[5] E04F *21/00*; B32B *31/00*

U.S. Cl. 156—391 19 Claims



1. A tool for applying adhesive cushioning tape to an edge of a floor joist for supporting floor decking, so as to prevent squeaking due to movement of said decking relative to said joist, said tool comprising:

a handle member configured to be held by an operator;

a roller member mounted to a lower end of said handle member so as to enable said operator to apply downward pressure on said roller member against said edge of said joist;

a spool member mounted to said handle member for unwinding a roll of said tape so that an adhesive side of said tape is exposed;

a guide member mounted to said lower end of said handle member and having a guide area defined by first and second spaced apart wall members for engaging said edge of said joist and guiding said roller for forward movement thereon, at least one said wall member being a compound wall structure comprising a plurality of plate-like wall segments stacked together in side-by-side relationship and mounted to said guide member so as to be individually displaceable thereon away from said guide area, so that the width of said guide area is adjustable to accommodate joists of various widths by selectively displacing individual said wall segments which lie adjacent said guide area; and

means for feeding said tape which is unwound from said roll under said roller member so that said adhesive side of said tape is pressed against said edge of said joist by said downward pressure on said roller member.

5,254,204

BEAD LOCKING APPARATUS FOR TIRE BUILDING MACHINE

Yoshinobu Miyanaga, Hyogo, and Takaaki Okuda, Fukushima, both of Japan, assignors to Sumitomo Rubber Industries Limited, Kobe, Japan

PCT No. PCT/JP91/00407, § 371 Date Jan. 6, 1992, § 102(e) Date Jan. 6, 1992, PCT Pub. No. WO91/15360, PCT Pub. Date Oct. 17, 1991

PCT Filed Mar. 28, 1991, Ser. No. 776,414

Claims priority, application Japan, Mar. 30, 1990, 2-34881[U]

Int. Cl.[5] B29D *30/26*

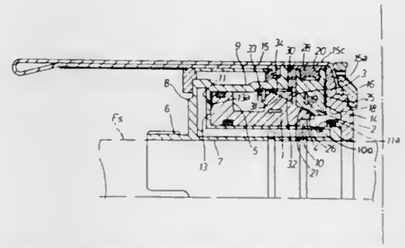
U.S. Cl. 156—401 7 Claims

1. A bead locking apparatus for a tire building machine comprising:

a sleeve member mounted on a shaft of a tire building machine the sleeve member having a cylinder adjacent to the shaft, a rear wall standing radially outwardly of the cylinder at a rear part thereof, an outer cylindrical wall extending forwardly from an outer end of the rear wall and a piston chamber formed from an annular space formed by the cylinder, the rear wall and the outer cylindrical wall;

a readily detachable ring standing radially outwardly of a front part of the cylinder, an annular wall standing radially outwardly at a front end of the outer cylindrical wall, the annular wall and detachable ring being generally circumferentially parallel, the annular wall having generally the same radial height as the ring and defining a circumferential internal space with the ring, a circumferential outward mouth being formed between the annular wall and the ring;

a slider mounted on the piston chamber, the slider being shaped to be formfitting to the piston chamber and being axially reciprocable between the rear wall and the ring, the slider being provided on an outer front surface with a tapering inclination which extends forwardly of the annular ring;



a plurality of bead locking segments circumferentially arranged outwardly on the tapering portion in the circumferential space between the annular wall and the ring with each segment having a bottom surface formfitting to the tapering inclination of the slider such that the segments slide as the slider moves to thereby change radial height of the segments;

an elastic ring circumferentially encircling over outer ends of the segments for providing a centripetal tension; and

a bladder covering the circumferential outward mouth formed between the annular wall and the ring;

the piston chamber being divided into a front chamber and a rear chamber and an opening being provided on the rear wall for supplying a fluid into the rear chamber and an opening being provided on a front end of the cylinder for supplying a fluid into the front chamber, wherein the fluid supplied into the front chamber communicates with the bladder for expansion of the bladder.

5,254,205

WAFER BINDING METHOD AND APPARATUS

Yukio Tsutsumi; Tatsumi Matsumoto; Keisuke Takahashi, and Mitsuzi Koyama, all of Tokyo, Japan, assignors to Mitsubishi Materials Corporation and Mitsubishi Materials Silicon Corporation, Tokyo, Japan

Filed Nov. 29, 1991, Ser. No. 800,833

Claims priority, application Japan, Nov. 30, 1990, 2-334104

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—538 6 Claims

1. A wafer binding apparatus comprising:

a binding unit which binds said wafer to said carrier plate;

a first carrier means which supplies a carrier plate to said binding unit,

a second carrier means which supplies said wafer to said binding unit, and

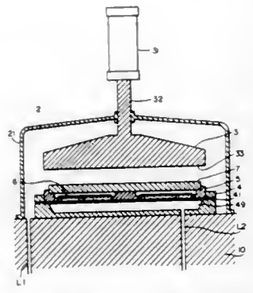
a third carrier means which carries said carrier plate bonded to said wafer from said binding unit,

wherein said binding unit comprises:

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a carrier plate support means which supports said carrier plate,

a wafer support means, located on the under side of said carrier plate support means, which supports said wafer, and



a wafer transportation means which raises said wafer, supported by said support means, up until contacting the under surface of said carrier plate,

wherein in the interval between said first carrier means and said binding unit, a rolling means is provided for flipping the sides of said carrier plate.

5,254,206

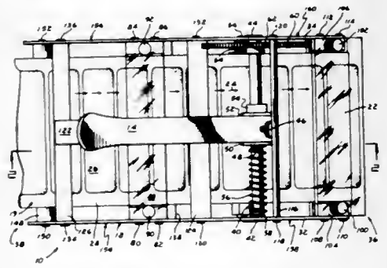
HAND-HELD LABELING DEVICE

Donald B. Wing, 304 Front St., Marion, Mass. 02738

Filed Jan. 31, 1992, Ser. No. 828,508

Int. Cl.[5] B44C *7/00*

U.S. Cl. 156—542 **32 Claims**



1. A hand-held labeling device comprising:

a. a housing having opposed sidewalls;

b. a transverse bar rotatably mounted between the sidewalls;

c. an advance lever means fixedly mounted to the transverse bar, along with the bar's midlength, whereby the advance lever activates the transverse bar and causes it to rotate when the advance lever is depressed, and wherein the advance lever is adapted in size and shape to accommodate a user's hand;

d. a drive gear having a first and second side, wherein the gear's first side is drivingly connected to the transverse bar and is rotated by the transverse bar when the advance lever is depressed;

e. a pinion gear that meshes with the drive gear and is attached to a rolling bar, whereby the drive gear rotates this pinion gear when the advance lever is depressed;

f. a forward rolling bar fixed between the pinion gear and a sidewall, wherein the forward rolling bar is rotated simultaneously with the pinion gear;

g. a rearward rolling bar rotatably mounted between the sidewalls, wherein the rearward bar is adjacent to the forward rolling bar, wherein the rolling motion of the forward bar causes rearward bar to turn;

h. a beveled deflection bar fixed between the sidewalls at a front portion of the machine for separating labels from a base ply, wherein a label web consists of self-adhesive labels adhered to a base ply of laminated paper;

i. a beveled wiper bar mounted above and parallel to the deflection bar and extending between the sidewalls, wherein a leading beveled edge of the wiper bar works in cooperation with an underlying aligned leading beveled edge of the deflection bar to strip the labels from the base ply; and

j. a means for enabling a user to substantially view the labels as they travel through the housing.

5,254,207

METHOD OF EPITAXIALLY GROWING SEMICONDUCTOR CRYSTAL USING LIGHT AS A DETECTOR

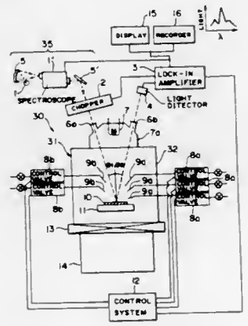
Jun-ichi Nishizawa, 6-16, Komegafukuro 1-chome, Aoba-ku, Sendai-shi, Miyagi-ken, and Toru Kurabayashi, Sendai, both of Japan, assignors to Research Development Corporation of Japan, Tokyo; Jun-ichi Nishizawa, Sendai; Zaidan Hojin and Handotai Kenkyu Shinkoka, all of Japan

Filed Nov. 30, 1992, Ser. No. 983,331

Claims priority, application Japan, Nov. 30, 1991, 3-342448

Int. Cl.[5] C30B *23/02*

U.S. Cl. 156—601 **4 Claims**



1. A method of epitaxially growing a semiconductor crystal, comprising:

introducing a material or a material gas and an impurity or an impurity gas into a crystal growth chamber to grow a crystal film on a substrate therein;

applying a light beam from a variable-wavelength light source to the crystal film being grown on the substrate while varying the wavelength of the light beam;

measuring the dependency, on the wavelength of the light beam, of the intensity of light reflected or diffused by the crystal film;

selecting an optimum wavelength for measurement dependent on the type of molecules adsorbed while the crystal film is being grown;

applying light at said optimum wavelength to the crystal film being grown;

measuring a time - dependent change in the intensity of light reflected or diffused by the crystal film; and

based on the time dependent change in the intensity of light measured adjusting the rate at which the material or the material gas is introduced into the crystal growth chamber to control the growth rate of the crystal film, the composition ratio of a mixed crystal thereof, and the density of the impurity therein.

5,254,208

METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE

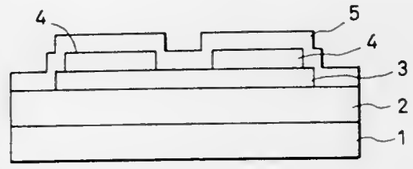
Hongyong Zhang, Kanagawa, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Filed Jul. 15, 1991, Ser. No. 729,999

Claims priority, application Japan, Jul. 24, 1990, 2-195173; Jul. 28, 1990, 2-199979; Jul. 28, 1990, 2-199980

Int. Cl.[5] C30B *1/08*

U.S. Cl. 156—603 **11 Claims**



1. In a method for manufacturing a semiconductor device comprising the steps of forming a non-single crystal semiconductor layer on a glass substrate and crystallizing said non-single crystal semiconductor layer, the improvement comprising:

heating said glass substrate at a temperature not higher than strain point of said glass substrate before forming said non-single crystal semiconductor layer in an atmosphere comprising a gas selected from the group consisting of hydrogen gas and carbon monoxide gas;.

5,254,209

METHOD OF MAKING MICROMECHANICAL COMPONENTS

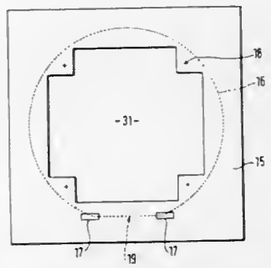
Steffen Schmidt; Hans-Peter Trah, both of Reutlingen, and Franz Riedinger, Burladingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 8, 1992, Ser. No. 960,817

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1991, 4134291

Int. Cl.[5] H01L *21/306;* **B44C** *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—626 **11 Claims**



1. A method of making micromechanical components from silicon by anisotropically etching silicon wafers in a manner suitable to align the components relative to the crystal structure of the silicon, comprising the steps of:

taking a single wafer from a plurality of substantially identical wafers made from a rod-shaped unitary silicon crystal and provided with a substantially flat portion of predetermined length in their circumference;

deriving a value characteristic of the orientation of the crystal structure of said single wafer relative to said flat portion; and

applying said value to the remaining wafers of said plurality for the processing thereof.

5,254,210

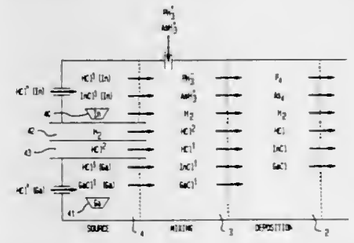
METHOD AND APPARATUS FOR GROWING SEMICONDUCTOR HETEROSTRUCTURES

Kenneth A. Jones, Brick; Joseph R. Flemish, Westfield, both of N.J.; Alok Tripathi, Acton, Mass., and Vladimir S. Ban, Princeton, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 27, 1992, Ser. No. 874,779

Int. Cl.[5] C23C *16/00*

U.S. Cl. 156—613 **20 Claims**



1. A hydride vapor phase epitaxy reactor comprising:

loading means for loading a semiconductor substrate into a reactor furnace;

source means for creating a flow of metal monochlorides;

mixing means coupled to said source means for mixing predetermined anion reactant gas mixtures with said flow of metal monochlorides;

deposition means connected to said loading means and said mixing means for exposing said substrate to the anion reactant gas mixtures and the flow of metal monochlorides; and

means for introducing a predetermined amount of hydrogen gas and hydrogen chloride in said mixing means so as to alternatively increase the amount of III or V semiconductor material being deposited on said substrate thereby depositing alternating layers of predetermined semiconductor materials on said substrate.

12. A hydride vapor phase epitaxy method comprising the steps of:

loading a semiconductor substrate into a reactor furnace;

creating a flow of metal monochlorides;

mixing predetermined amounts of anion reactant gas mixtures with said flow of metal monochlorides;

exposing said substrate to the anion reactant gas mixtures and the flow of metal monochlorides; and

introducing a predetermined amount of hydrogen gas and hydrogen chloride in said mixing step so as to alternatively increase the amount of III or V semiconductor material being deposited on said substrate thereby depositing alternating layers of predetermined semiconductor materials on said substrate.

5,254,211

METHOD FOR FORMING CRYSTALS

Takao Yonehara, Atsugi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 501,436, Mar. 22, 1990, abandoned, which is a continuation of Ser. No. 174,382, Mar. 28, 1988, abandoned. This application Sep. 13, 1991, Ser. No. 759,768

Claims priority, application Japan, Mar. 27, 1987, 62-73605

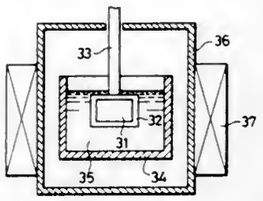
Int. Cl.[5] C30B *19/06*

U.S. Cl. 156—621 **13 Claims**

1. A method of forming a crystal which comprises the steps of: providing a substrate having (i) a non-nucleation of an amorphous surface material with a small nucleation density

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and (ii) a nucleation surface of an amorphous material which is a material different from the material of the non-nucleation surface and having a larger nucleation density than the material of said non-nucleation surface, said nucleation surface having an area which is sufficiently fine enough to form only a single nucleus from which a monocrystal is grown;



dipping said substrate in a solution containing a monocrystal-forming material, thereby initiating crystal growth at said single nucleus while in said monocrystal-forming material solution.

5,254,212

METHOD OF FABRICATING ELECTROSTRICTIVE-EFFECT DEVICE

Takahiro Someji, Fukaya; Junichi Watanabe, Kumagaya; Yoshiyuki Watanabe, Fukaya; Shigeru Jyoumura, Tokyo; Katsuhiko Kojyou, Fukaya; Kazuo Kazama, Kumagaya, and Kiyomi Tanaka, Oosato, all of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

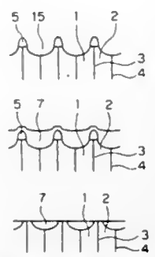
PCT No. PCT/JP91/01196, § 371 Date May 6, 1992, § 102(e) Date May 6, 1992, PCT Pub. No. WO92/05593, PCT Pub. Date Apr. 2, 1992

PCT Filed Sep. 9, 1991, Ser. No. 855,048

Claims priority, application Japan, Mar. 14, 1991, 3-074592; Mar. 14, 1991, 3-74593; Jun. 28, 1991, 3-0158157; Sep. 13, 1991, 2-242962

Int. Cl.[5] B44C *1/22;* **C23F** *1/00*

U.S. Cl. 156—630 **6 Claims**



1. A method of fabricating a lamination-type displacement device, comprising the steps of:

forming thin films of an electromechanical transducer material alternately with internal electrodes of a conductive material to form a laminate in which the internal electrodes are exposed at different parallel side surfaces;

forming a protective film on and around alternate layers of the internal electrodes at one side surface;

forming a protective film on and around the internal electrodes other than said internal electrodes at the other side surface;

selectively polishing the side surfaces of the laminate except for the protective films; and

removing the protective films.

5,254,213

METHOD OF FORMING CONTACT WINDOWS

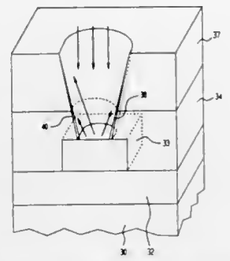
Tokuhiko Tamaki, Sakai, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 23, 1990, Ser. No. 601,986

Claims priority, application Japan, Oct. 25, 1989, 1-278839

Int. Cl.[5] H01L *21/00*

U.S. Cl. 156—655 **7 Claims**



1. A method of forming contact windows in an insulating layer, said contact windows extending down to an underlying aluminum alloy layer which is formed under said insulating layer, said method comprising the steps of:

forming an etching mask layer having openings for defining contact window regions of said insulating layer on said insulating layer;

performing an etching process using an etching gas to which N_2 has been added, thereby etching away said contact window regions of said insulating layer through said openings of said etching mask layer to form said contact windows, thereby exposing a surface of said underlying aluminum alloy layer;

nitriding said exposed surface of said underlying aluminum alloy layer through said contact windows using said etching gas;

removing said etching mask layer from said insulating layer; and

forming a wiring layer on said insulating layer so that said wiring layer and said underlying aluminum alloy layer are in contact with each other through said contact windows.

5,254,214

PLASMA TAPER ETCHING FOR SEMICONDUCTOR DEVICE FABRICATION

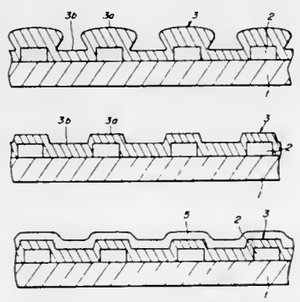
Isamu Hijikata, and Kazutoshi Fujisawa, both of Kanagawa, Japan, assignors to Tokyo Ohka Kogyo Co., Ltd., Japan

Filed Sep. 23, 1991, Ser. No. 764,428

Claims priority, application Japan, Sep. 21, 1990, 2-253631

Int. Cl.[5] H01L *21/306;* **B44C** *1/22;* **C03C** *15/00;* **C23F** *1/00*

U.S. Cl. 156—643 **13 Claims**



1. A method of etching an object with surface irregularities including lands in a plasma, comprising the steps of,

preparing plasma processing means having a chamber which houses therein a plasma processing region and a plasma generating region spaced therefrom;

placing the object to be etched in said plasma processing region; and

etching the corner edges of the lands of the object into a taper shape in a plasma generated in said plasma generating region with a processing gas introduced therein.

5,254,215

DRY ETCHING METHOD

Shingo Terakado, and Osamu Kitamura, both of Tsukuba, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

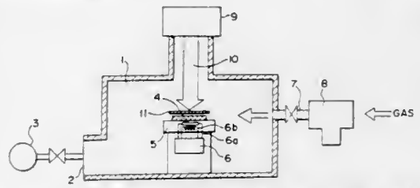
Continuation-in-part of Ser. No. 565,264, Aug. 9, 1990, Pat. No. 5,183,531. This application Nov. 12, 1991, Ser. No. 792,221

Claims priority, application Japan, Aug. 11, 1989, 1-208095; Mar. 27, 1990, 2-77944; Apr. 25, 1990, 2-109110; Mar. 27, 1991, 3-90029; May 23, 1991, 3-147933

The portion of the term of this patent subsequent to Feb. 2, 2010, has been disclaimed.

Int. Cl.[5] H01L *21/00*

U.S. Cl. 156—643 **12 Claims**



1. A dry etching method comprising introducing reactive gases activated by microwaves into a reactant chamber, and selectively etching target regions by the radiation of light to the target areas on a substrate, that is material to be etched, positioned in the reactant chamber, the light including a wavelength band for exciting inner shells of constituent atoms of the substrate, wherein the activated reactive gases contact, and effect etching of, the substrate at locations which do not receive the light radiation and effect a greater degree of etching of the substrate at the target areas than at the locations which do not receive the light radiation.

5,254,216

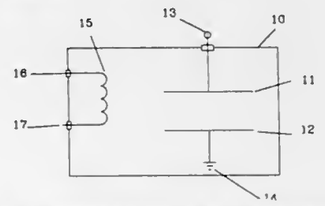
OXYGEN SCAVENGING IN A PLASMA REACTOR

James G. Frank, Richardson, and Gabriel G. Barna, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 21, 1991, Ser. No. 719,219

Int. Cl.[5] H01L *21/00*

U.S. Cl. 156—643 **5 Claims**



Claim 1. A method for scavenging traces of oxygen from a semiconductor wafer process chamber prior to and between process steps, comprising the steps of:

evacuating the process chamber; and

applying power to a filament to heat the filament to a temperature to react with and remove trace amounts of oxygen; and

performing a process on a semiconductor wafer.

5,254,217

METHOD FOR FABRICATING A SEMICONDUCTOR DEVICE HAVING A CONDUCTIVE METAL OXIDE

Papu Maniar, and C. Joseph Mogab, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 27, 1992, Ser. No. 919,328

Int. Cl.[5] C23F *1/00;* **H01L** *21/302*

U.S. Cl. 156—656 **15 Claims**

11. A method for fabricating a semiconductor device comprising:

providing a semiconductor substrate;

forming a doped region in the substrate;

depositing a first ruthenium oxide layer to overlie the doped region;

depositing a dielectric layer;

depositing a second ruthenium oxide layer to overlie the dielectric layer;

forming a masking pattern on the second ruthenium oxide layer; and

sequentially etching the second ruthenium oxide layer, the dielectric layer, and the first ruthenium oxide layer using the masking pattern as an etching mask, wherein the first and second ruthenium oxide layers are etched in an oxygen plasma.

5,254,218

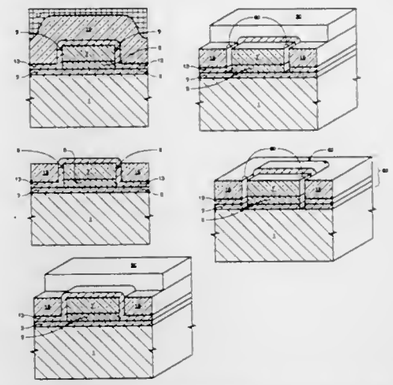
MASKING LAYER HAVING NARROW ISOLATED SPACINGS AND THE METHOD FOR FORMING SAID MASKING LAYER AND THE METHOD FOR FORMING NARROW ISOLATED TRENCHES DEFINED BY SAID MASKING LAYER

Ceredig Roberts, Boise, Id., and Alan Reinberg, Westport, Conn., assignors to Micron Technology, Inc., Boise, Id.

Filed Apr. 22, 1992, Ser. No. 872,747

Int. Cl.[5] H01L *21/306*

U.S. Cl. 156—662 **25 Claims**



1. A process for creating an etch mask having isolated spacings, said isolated spacings, said process for creating the etch mask comprising the following steps:

a) creating a mask island on starting substrate, said island having a first pair of opposing exterior walls and a second pair of opposing exterior walls;

b) blanket depositing a spacer layer overlying said starting substrate and said mask island, said spacer layer being etchable with a significant degree of selectivity over said mask island, said spacer layer having a given thickness which substantially corresponds to a desired width of the isolated spacings, said spacer layer having a first pair of opposing ends and a second pair of opposing ends, said first pair of opposing ends adjacent to said first pair of opposing exterior walls and said second pair of opposing

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ends adjacent to said second pair of opposing exterior walls, said first and second pairs of opposing ends having a width equal to the given thickness;

c) blanket depositing a protective layer overlying said spacer layer, said spacer layer capable of being distinctly etchable over said protective layer;

d) removing at least a portion of said protective layer to a level at or below an initial top surface of said spacer layer to expose a first portion of said spacer layer, a second portion of the spacer layer at a distance from the island greater than said given thickness remaining covered by a remaining portion of said protective layer;

e) masking said first pair of opposing ends, said second pair of opposing ends and said first portion of said spacer layer interposed between said second pair of opposing ends remaining exposed; and

f) removing said spacer layer remaining exposed subsequent to said masking said first pair of opposing ends to create the etch mask having the isolated spacings, each of the isolated spacings having an inner wall and an outer wall, each of said inner walls self aligned to one of said opposing walls of said second pair of opposing walls, and said outer walls self aligned to said remaining portion of said protective layer and said second portion of said spacer layer, said isolated spacings having said desired width.

5,254,219

FILM-TYPE EVAPORATOR

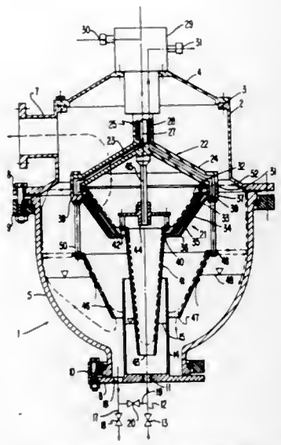
Vaclav Feres, 3002 Buena Vida Cir., Las Cruces 88001, N. Mex.

Filed Mar. 10, 1992, Ser. No. 848,931

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1991, 4107844

Int. Cl.[5] B01D *1/22*

U.S. Cl. 159—6.1 **12 Claims**



1. A film-type evaporator for thickening liquid products comprising a container having a vapor outlet, a hollow drive shaft introduced into the container from above, said hollow drive shaft including means for supplying and removing a heating medium through said shaft, a rotor in said container, said rotor being rotated by said drive shaft, and said rotating rotor having at least one conically upwardly widening heating surface, means for feeding a liquid product to an inside surface of the at least one heating surface in the vicinity of a smaller diameter thereof, the product spreading in film-like manner towards a larger diameter thereof and means for feeding the liquid product as a concentrate from a larger diameter of the at least one heating surface into the container, means for guiding the heating medium supplied and removed through said hollow drive shaft on the outside of said at least one heating surface, a spider connected to the hollow drive shaft in the vicinity of the larger diameter of said rotor, said spider having at least one hollow arm for the feeding and at least one hollow arm for the removal of the heating medium, a conical inner immersion tube of said means for feeding a liquid, said conical inner immersion tube transversing said rotor in the vicinity of the smaller diameter of said rotor, said conical inner immersion tube rotating with the rotor and being immersed with its smaller diameter in a liquid product or concentrate in the lower part of the container and on its larger diameter is connected to the hollow drive shaft of the rotor, said conical inner immersion tube having an overflow edge on its larger diameter for feeding the liquid product or concentrate onto the at least one heating surface.

5,254,220

PROCESS FOR POSITIONING RIGID SEGMENTS INTO A CONTINUOUS PAPER WEB

Juan de la Cierva, and Jesus C. Prieto, both of Madrid, Spain, assignors to Fabrica Nacional de Moneda y Timbre, Madrid, Spain

Filed Jul. 1, 1992, Ser. No. 907,071

Int. Cl.[5] D21H *21/52*

U.S. Cl. 162—108 **6 Claims**

1. A process for positioning rigid segments with magnetic properties into a paper web being formed comprising the steps of:

A. cutting segments from a continuous rigid wire member thereby forming said rigid segments having two ends;

B. positioning said rigid segments on a continuous strip of a stretchable adhesive carrier means with a predetermined uniform space between said rigid segments thereby forming a continuous hybrid band; and

C. feeding said hybrid band into said paper web being formed in a manufacturing process wherein said paper web includes at least one sheet across the width of said paper web and said sheet including one matrix area and a peripheral margin around said matrix area, and said matrix area further including a plurality of contiguously disposed document areas having each a peripheral edge and a predetermined document area height, and the wavelength of said band is equal to the length of the segment plus the space separating the segment from an adjacent segment and wherein the space between contiguous matrices is a multiple of the wavelength of said hybrid band and wherein said number of rigid segments is at least two which are positioned within each one of said document areas so that the ends of said rigid segments are uniformly positioned at a predetermined distance from said peripheral edge.

5,254,221

PROCESSES FOR THE PRODUCTION OF PAPER AND PAPER BOARD

Peter Lowry, Suffolk, Va., and David Farrar, West Yorkshire, England, assignors to Allied Colloids Limited, England

Continuation of Ser. No. 711,370, Jun. 5, 1991, Pat. No. 5,185,061, which is a continuation of Ser. No. 460,862, Feb. 1, 1990, abandoned. This application Nov. 23, 1992, Ser. No. 979,895

Claims priority, application United Kingdom, Apr. 22, 1988, 8809588

The portion of the term of this patent subsequent to Feb. 9, 2010, has been disclaimed.

Int. Cl.[5] D21H *17/45*

U.S. Cl. 162—168.2 **12 Claims**

1. In a process of making paper or paper board comprising

providing a solution of a water soluble cationic polymeric retention aid formed from 10 to 95% by weight acrylamide and 90 to 5% dialkyl aminoalkyl(meth)acrylate or dialkyl aminoalkyl(meth)acrylamide as acid addition or quaternary ammonium salt,

mixing said solution into an aqueous cellulosic suspension to provide an amount of said polymeric retention aid of from 100 to 1,000 grams dry weight polymer per ton dry weight of suspension, and then

draining said aqueous cellulosic suspension through a travelling screen and thereby forming paper or paper board,

the improvement which comprises

making the speed of the travelling screen above 850 meters per minute,

providing the said cationic polymeric retention acid as a reverse phase suspension,

using as the said cationic polymeric retention acid a linear polymer that has a solubility in water of less than 25 lumps per gram polymer and that has intrinsic viscosity of at least 12 dl/g,

providing the said solution by mixing said reverse phase suspension with water and thereby forming a solution that is free of undissolved polymer particles that will leave polymer deposits on the paper or paper board,

whereby the retention and formation are maintained relative to the retention and formation obtained when the said polymer is replaced by a larger amount of polymer formed from the same monomer or monomer blend but having intrinsic viscosity in the range 7 to 10 dl/g.

5,254,222

SEALING DEVICE

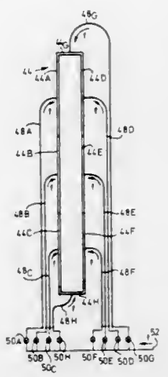
Lucien Mazzini, Hayange, and Jean-Marc Leroy, Dunkerque, both of France, assignors to Sollac, Puteaux and Lorfonte, Uckange, both of France

Filed Aug. 19, 1992, Ser. No. 931,985

Claims priority, application France, Aug. 21, 1991, 91 10497

Int. Cl.[5] C10B *25/16*

U.S. Cl. 202—248 **4 Claims**



1. Sealing device for a coke oven, said device comprising:

a door frame having an opening;

a door mounted so as to be movable relative to said door frame in a direction substantially parallel to an axis perpendicular to a side of the oven where the opening is located,

a sealing element fixed to said door and having an edge for forming a junction with said door frame,

a channel member connected to said door adjacent to said sealing element and extending throughout the periphery of said door and including a plurality of compartments,

a plurality of distinct supply conduits respectively connected to said compartments for supplying sealing gas to said compartments, said sealing gas having a pressure higher than the pressure prevailing inside said oven, and

means for adjusting the flow of said sealing gas in each supply conduit.

5,254,223

PROCESS FOR MAKING SEMIPERMEABLE POLYMERS WITH ION EXCHANGE AND ION CONDUCTIVE CAPABILITIES ON AN ELECTRICALLY CONDUCTIVE SUBSTRATE

Mira Josowicz, Hohenzollernstrabe 49, 8000 Munchen, and Karin Potje-Kamloth, Putzbrunnerstr. 12, 8012 Ottobrunn, both of Fed. Rep. of Germany

Filed Aug. 21, 1992, Ser. No. 933,490

Int. Cl.[5] C25B *3/10*

U.S. Cl. 204—59 R **16 Claims**

1. A process for preparation of a semipermeable polymer layer, said polymer layer having a thickness, exhibiting ion-exchanging capability and ion-conducting capability comprising the steps of:

(a) producing said polymer layer from an electrolyte bath by electrochemical polymerization of a OH-containing aromatic monomer, which contains acidic or basic functionalized groups;

(b) depositing in situ said polymer layer on an electrically conducting substrate; and

(c) subsequently self cross-linking said polymer layer by one of heating and irradiating.

5,254,224

METHOD FOR INCREASING THE MOLAR RATIO OF ALUMINUM TO CHLORINE IN POLYALUMINUM CHLORIDE SOLUTIONS

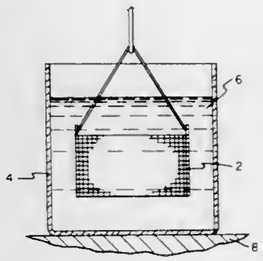
Gerhard Kudermann, Alfter, and Karl-Heinz Blaufuss, Windhagen, both of Fed. Rep. of Germany, assignors to VAW Aluminium AG, Bonn, Fed. Rep. of Germany

Filed Mar. 19, 1992, Ser. No. 854,113

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1991, 4108972

Int. Cl.[5] C25B *1/26*

U.S. Cl. 204—94 **10 Claims**



1. A method for increasing the molar ratio of aluminum to chloride in an aluminum chloride solution by the electrochemical dissolution of aluminum, comprising:

contacting a starting aluminum chloride solution having a molar ratio of aluminum to chlorine equal to or greater than 0.5, with a galvanic element, said galvanic element comprising aluminum metal and an electrochemically more noble metal, whereby said aluminum metal will dissolve electrochemically.

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5,254,225

RECOVERY OF METALLIC COMPOUNDS FROM GEOTHERMAL BRINE

Darrell L. Gallup, Chino, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Aug. 29, 1991, Ser. No. 752,048
Int. Cl.[5] C25C *1/00*
U.S. Cl. 204—105 R 17 Claims

1. A method of depositing compounds containing at least one metal from a geothermal brine comprising:

contacting a geothermal brine containing dissolved metal components of at least one metal selected from the group consisting of iron, zinc, manganese, and lead and at least one scale-forming species with two spaced-apart electrodes, said electrodes made from material selected from the group consisting of mild steel, galvanized poultry wire, stainless steel, Hastalloy C-276, and graphite;

applying an electrical current having a potential voltage of between 0.2 and 3 volts across said electrodes to form a deposit containing at least one compound of said metal and at least some of said scale-forming species, said deposit containing a substantially larger proportion of said metal relative to the scale-forming species than the concentrations of the metal compared to the scale-forming species in the geothermal brine on the cathode; and

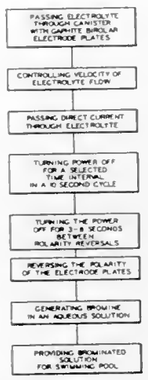
recovering said deposit from said cathode.

5,254,226

ELECTROLYTIC CELL ASSEMBLY AND PROCESS FOR PRODUCTION OF BROMINE

Ronald C. Williams; C. Donald Kettle, both of Clearwater; Earl E. Stebbins, Brooksville, and L. Marshall McCullough, Belleair, all of Fla., assignors to Ad rem Manufacturing, Inc., Clearwater, Fla.

Filed May 5, 1992, Ser. No. 878,682
Int. Cl.[5] C25B *1/24, 9/00*
U.S. Cl. 204—128 13 Claims



1. A method for electrolytically producing bromine from an aqueous electrolyte bromide solution to provide brominated water for sanitizing a body of water, the method comprising:

(a) pumping the bromide solution through an electrolytic cell, said electrolytic cell including a canister having a compartment that houses two electrodes functioning as an anode and a cathode, and a plurality of bipolar planar electrode plates in spaced-apart relationship between the anode and the cathode and parallel to a flow of the bromide solution moving from an input end of the canister, across the electrode plates, and out an output end of the canister;

(b) supplying a direct current from a power supply to the electrolytic cell in an adjustable operating cycle controlled by a DC power timer, the operating cycle being 60 seconds or less in length and defined by connecting the power supply to the anode and cathode for up to 90% of the cycle and by disconnecting the power supply from the anode and cathode for the balance of the operating cycle, the direct current from the power supply establishing a polarity at the anode and cathode and passing through the bipolar electrode plates and the aqueous solution in the electrolytic cell to produce brominated water;

(c) directing the brominated water from the canister to the body of water for sanitizing the body of water;

(d) reversing the polarity of the electrodes functioning as the anode and the cathode in an adjustable polarity cycle controlled by a polarity timer, the polarity of the anode and the cathode being switched every 3 to 10 minutes, which results in the bipolar electrode plates alternatively functioning as an anode on one face and as a cathode on the other face;

(e) overriding the DC power timer to disconnect the direct current power supply from the anode and the cathode for approximately 3 to 10 seconds prior to the reversing of the polarity of the electrodes, and then returning to the operating cycle;

(f) monitoring the bromine content of the brominated water and the build-up of a deposit on the electrodes; and

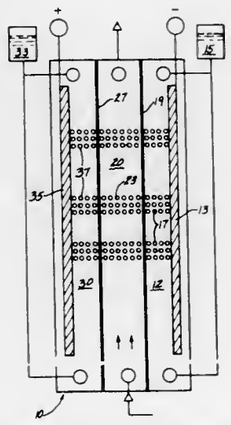
(g) adjusting the DC power timer to control the operating cycle and adjusting the polarity timer to control the polarity cycle and override, whereby brominated water with the desired bromine concentration is supplied to the body of water and the build-up of the deposits on the electrodes is eliminated.

5,254,227

PROCESS FOR REMOVING CATALYST IMPURITIES FROM POLYOLS

David W. Cawlfield; Jerry J. Kaczur, both of Cleveland, Tenn., and Hassan Arabghani, Wilton, Conn., assignors to Olin Corporation, Cheshire, Conn.

Continuation-in-part of Ser. No. 366,996, Jun. 16, 1989, abandoned. This application Nov. 15, 1991, Ser. No. 793,088
Int. Cl.[5] C25F *5/00*
U.S. Cl. 204—131 25 Claims



1. A process for removing a strongly ionic metallic impurity from an impure polyol which comprises:

a) passing the impure polyol through at least one ion exchange compartment containing an ion exchange medium, the ion exchange compartment being separated from an anode compartment and a cathode compartment by ion exchange membranes, the ion exchange membranes and ion exchange medium having functional groups of the opposite charge as that of said strongly ionic metallic impurity,

b) conducting an electric current across the ion exchange compartment substantially transverse to the direction of flow of the impure polyol, and

c) transporting the strongly ionic metallic impurity through an ion exchange membrane to separate said strongly ionic metallic impurity from the polyol.

5,254,228

MODIFIED CEMENTITIOUS COMPOSITION

Luc B. J. Westhof, Arendonk; Frans L. J. De Peuter, Moi, both of Belgium, and George G. Tessier, Holland, Pa., assignors to ICI Americas, Inc., Wilmington, Del.

Filed Feb. 14, 1992, Ser. No. 837,294
Claims priority, application United Kingdom, Feb. 12, 1991, 9102904
Int. Cl.[5] B32B *3/02;* C04B *7/00*
U.S. Cl. 204—147 7 Claims

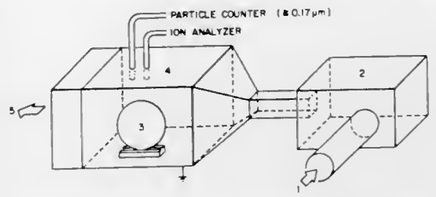
1. In a reinforced concrete structure which is cathodically protected by means of a cathode and an anode embedded in a cementitious composition, the improvement which comprises including a water-soluble base selected from the group consisting of hydroxides of lithium, sodium, potassium, and barium in said cementitious composition to neutralize hydrogen ions formed at the anode whereby deterioration of the anode and consequent loss of cathodic protection are inhibited.

5,254,229

ELECTRIFIED OBJECT NEUTRALIZING METHOD AND NEUTRALIZING DEVICE

Tadahiro Ohmi, 1-17-301, Komegabukuro 2-chome, Aoba-ku, Sendai-shi, Miyagi-ken 980, and Hitoshi Inaba, Machida, both of Japan, assignors to Tadahiro Ohmi, Miyagi, Japan

Filed Apr. 10, 1991, Ser. No. 651,264
Claims priority, application Japan, Aug. 18, 1989, 1-212145; Dec. 26, 1989, 1-335211
Int. Cl.[5] C25F *1/00;* H05F *3/06*
U.S. Cl. 204—157.15 3 Claims



1. A method of neutralizing an electrified object, comprising the steps of:

releasing electrons from an irradiated object by use of a photoelectric effect;

combining the released electrons with gas-state atoms or molecules to generate negative ions; and

neutralizing a positive electric charge in an electrified object by the negative ions.

5,254,230

METHODS FOR PREPARING BASIC ALUMINUM COMPOUNDS WITH ULTRASOUND

Vijay K. Joshi, and Jawahar C. Parekh, both of Livingston, N.J., assignors to Reheis, Inc., Berkeley Heights, N.J.

Filed Jul. 17, 1992, Ser. No. 916,299
Int. Cl.[5] C01B *7/00*
U.S. Cl. 204—157.42 19 Claims

1. A process for preparing basic aluminum compounds of Formula I:

$$Al_2(OH)_{6-a}X_a \quad (I)$$

wherein X is Cl^-, Br^-, F^-, I^-, $SO_4^=$ or NO_3^- and a is about 0.9 to 4, said compound being characterized by size exclusion chromatography as having a Band I percent aluminum value of about 5% or less and a Band II percent aluminum value of about 50% to about 90%, comprising (a) suspending aluminum metal in an aqueous medium to form a slurry, (b) applying ultrasonic energy to said slurry, (c) reacting said sonicated slurry with an aluminum compound of Formula II:

$$Al_nX_m \quad (II)$$

or an acid of Formula III:

$$H_nX \quad (III)$$

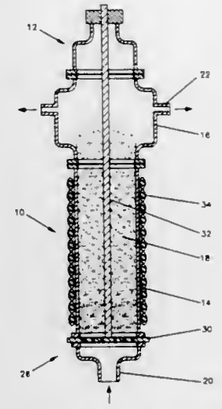
wherein X is Cl^-, Br^-, F^-, I^-, $SO_4^=$ or NO_3^-, n is 1 or 2 and m is 3, at a temperature of about 45° C. to 100° C. to form a reaction product.

5,254,231

METHOD AND APPARATUS FOR CHEMICALLY ALTERING FLUIDS IN CONTINUOUS FLOW

William O. Heath; Judson W. Virden, Jr., both of Richland; R. L. Richardson, West Richland, and Theresa M. Bergsman, Richland, all of Wash., assignors to Battelle Memorial Institute, Richland, Wash.

Filed Aug. 3, 1992, Ser. No. 923,769
Int. Cl.[5] H05F *3/00*
U.S. Cl. 204—164 22 Claims



1. An apparatus for chemically altering fluids having, (a) means for applying an electrical potential across a bed of particles and creating a region of non-equilibrium plasma among said particles, and (b) means for passing said fluid through said region, wherein said fluids are chemically altered through contact with said non-equilibrium plasma, wherein the improvement comprises:

said means for applying said electrical potential having a ceramic housing with said particles therein and at least two electrodes with at least one outer electrode positioned outside said ceramic housing, whereby said housing is positioned between said particles and said at least one outer electrode;

said particles have a dielectric constant less than 33, and

said electrical potential is applied with electricity having a frequency of less than 500 Hz.

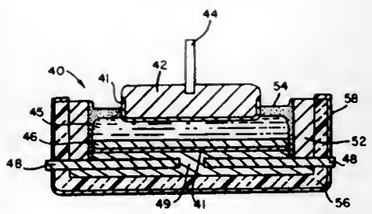
VOL 1155 ISS 3 OCT 19 1993 UMI

5,254,232

APPARATUS FOR THE ELECTROLYTIC PRODUCTION OF METALS

Donald R. Sadoway, Belmont, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Feb. 7, 1992, Ser. No. 832,748
The portion of the term of this patent subsequent to Mar. 12, 2008, has been disclaimed.
Int. Cl.[5] C25C *3/06, 3/08, 3/12, 7/00*
U.S. Cl. 204—243 R 18 Claims



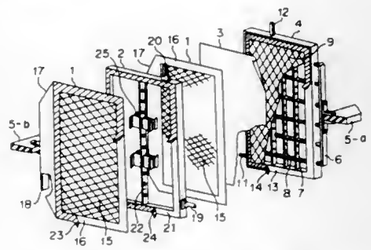
11. An electrolytic cell for the production of a metal product by the electrolytic reduction of an oxide based feed material dissolved in a molten electrolyte, said cell comprising a vessel for containing the molten electrolyte, a vessel lining in contact with the electrolyte, an anode and a cathode, wherein at least one of said anode and cathode comprises a metallic alloy of the metal product and a metal more noble than the metal product, upon which, under the operating conditions of the cell and on all surfaces which contact the electrolyte, exists a protective layer comprising an oxide of the metal product.

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MONOPOLAR ION EXCHANGE MEMBRANE ELECTROLYTIC CELL ASSEMBLY

Makoto Nakao, Yokohama; Hidenori Shibata, Chiba; Takeo Aikawa, Kimitsu; Takahiro Uchibori, Funabashi, and Hiroki Yano, Ichihara, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Continuation of Ser. No. 654,060, Feb. 12, 1991, Pat. No. 5,221,452. This application Jul. 10, 1992, Ser. No. 911,737
Claims priority, application Japan, Feb. 15, 1990, 2-32497; Sep. 21, 1990, 2-250303
Int. Cl.[5] C25B *9/00, 11/03, 11/04, 13/04*
U.S. Cl. 204—257 20 Claims



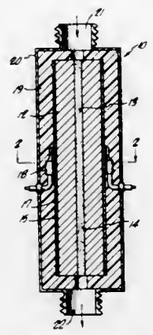
1. A monopolar ion exchange membrane electrolytic cell assembly, comprising:
- at least one electrolytic cell comprising anode compartment frame opposed to a cathode compartment frame with an ion exchange membrane interposed therebetween, the anode and cathode compartment frames each having a feeding and discharging system for an electrolyte and a discharging system for generated gas;
- an anode made of a foraminous first plate fixed to the anode compartment frame so that the first plate is close to or in contact with the ion exchange membrane;
- means for supplying electricity to the foraminous first plate, comprising power supply rods and/or power supply ribs from a power source located outside the cell; and
- a cathode comprising a foraminous second plate and an electricity conducting frame means, wherein the frame means is integrally and electrically connected to the foraminous second plate and encloses the second foraminous plate, for conducting electricity to and from the foraminous second plate;
- wherein the second plate is pressed by a resilient member means for pressing, from the side opposite to the side facing the ion exchange membrane, whereby the flexible cathode plate is deflected so that the cathode is close to or in contact with the ion exchange membrane; and
- at least one spacer is interposed between the second plate and the ion exchange membrane for maintaining a uniform distance separation between the second plate and the ion exchange membrane.

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ELECTROLYTIC CELL FOR TREATMENT OF LIQUIDS

Gustavo A. Solis Cortes, Nahoas #70 Fracc Coronitas, and Pablo D. Rivera Gonzalez, Calle Agaues #119 Frac. Las Fincas, both of Ensenada, Mexico

Continuation-in-part of Ser. No. 722,089, Jun. 27, 1991, abandoned. This application Jul. 21, 1992, Ser. No. 917,702
Int. Cl.[5] C25B *9/04, 11/12, 15/08*
U.S. Cl. 204—275 4 Claims



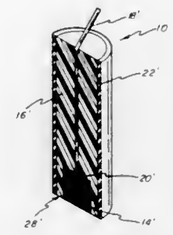
1. An electrolytic cell for treatment of liquid flowing through a treatment chamber, comprising:
- a housing;
- carbon electrodes secured within said housing, said carbon electrodes having interior and exterior surfaces and said carbon electrodes being positioned so that the interior surfaces of said carbon electrodes are parallel to each other;
- spacers secured along the interior surface edges of said carbon electrodes to complete formation of the treatment chamber through which the liquid to be treated can flow, said spacers being made of an electrically non-conductive material;
- an electrical distributor running the length of and in contact with each said carbon electrode; and
- connection means for supplying electrical current to said carbon electrodes.

5,254,235

MICROELECTRODE ARRAYS

Huan P. Wu, Beavercreek, Ohio, assignor to The Yellow Springs Instrument Company, Yellow Springs, Ohio

Filed Feb. 26, 1992, Ser. No. 841,843
Int. Cl.[5] C25B *11/03*; G01N *27/30*
U.S. Cl. 204—284 23 Claims



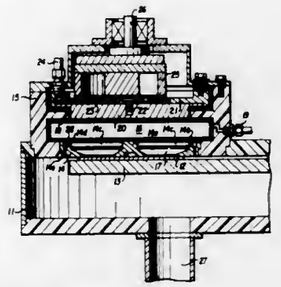
1. A microelectrode array for use in electrochemical analysis, comprising:
- a conductive minigrid having a plurality of vertical filaments and a plurality of horizontal filaments woven together, said minigrid having a measuring end;
- means for mounting said minigrid defining a measuring surface; and
- wherein said horizontal filaments of said minigrid are disposed essentially parallel to said measuring surface and said vertical filaments of said minigrid are disposed essentially perpendicular to said measuring surface, and said measuring end of said minigrid is located adjacent said measuring surface such that said measuring end of said minigrid forms an array of discrete conductive surfaces defined by end portions of said vertical filaments of said minigrid.

5,254,236

SPUTTERING APPARATUS

Kyoji Kinokiri, Tokyo, and Jiro Ikeda, Fujieda, both of Japan, assignors to Shibaura Engineering Works Co., Ltd., Japan

Filed Sep. 30, 1991, Ser. No. 767,399
Claims priority, application Japan, Jan. 25, 1991, 3-025473
Int. Cl.[5] C23C *14/34*
U.S. Cl. 204—298.11 20 Claims



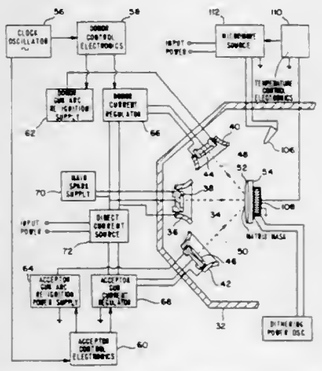
1. A sputtering apparatus comprising:
- a film-deposition chamber having a gas-supplying pipe connected thereto, for depositing a film on the surface of a substrate to be processed,
- a target provided in said film-deposition chamber,
- a mask provided opposite said target in said film-deposition chamber, said mask having an opening portion and a masking portion, and
- holding means for holding said substrate against said mask in such a manner that the film-deposition surface of said substrate is in close contact with said mask,
- wherein said mask further includes exhaust passages formed in the masking portion thereof, each of said exhaust passages having a first end exposed to the inside of said film-deposition chamber and an other end exposed to the outside of said film-deposition chamber, wherein each of said exhaust passage first ends and said other end thereof communicate with each other, but not in a straight line path.

5,254,237

PLASMA ARC APPARATUS FOR PRODUCING DIAMOND SEMICONDUCTOR DEVICES

Alvin A. Snaper, 2800 Cameo Cir., Las Vegas, Nev. 89107, and Charles W. Benfield, 1000 W. Bonanza Rd., Las Vegas, Nev. 89106

Continuation of Ser. No. 663,329, Mar. 1, 1991, abandoned. This application Jul. 2, 1992, Ser. No. 909,221
Int. Cl.[5] C23C *14/32*
U.S. Cl. 204—298.41 10 Claims



1. Apparatus for producing semiconductor devices, comprising:
- a vacuum chamber;
- one or more plasma arc guns in said vacuum chamber;
- loading means for loading a substrate holder into said vacuum chamber;
- irradiating means for irradiating a substrate on said substrate holder with at least one plasma arc beam from said one or more plasma arc guns;
- pulse control means for applying precisely controlled time duration pulses to said one or more plasma-arc guns, said pulse control means comprising; start means for applying a start current to said one or more plasma-arc guns to strike an arc, pulse generating means applying current to said one or more plasma-arc guns to sustain said arc, clock oscillator means, a first register for starting pulses from said clock oscillator while current to said one or more plasma-arc guns is on, gate means gating pulses from said clock oscillator to said first register, a second register storing a preset pulse count representing a preselected time period when current to said one or more plasma-arc guns is on, first comparing means comparing the preset pulse count in said second register with the pulse count gated to said first register, stop pulse generating means generating a stop pulse to stop current to said one or more plasma-arc guns; a third register for storing pulses from said clock oscillator while current to said one or more plasma-arc guns is off, a fourth register storing a preset pulse count representing a preselected time period when current to said one or more plasma-arc guns is off, second comparing means for comparing the number of pulses stored in said fourth register with the number of pulses

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received by said third register; restart pulse generating means for restarting current to said one or more plasma-arc guns; whereby application of current to said one or more plasma-arc guns to supply material to said substrate is precisely controlled.

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SURFACE TREATING SOLUTION AND SURFACE TREATING PROCESS FOR ZINC-PLATED STEEL PLATES

Hitoshi Ishii, and Toshi Miyawaki, both of Hiratsuka, Japan, assignors to Nihon Parkerizing Co., Ltd., Japan

Filed Jan. 25, 1991, Ser. No. 645,816
Claims priority, application Japan, Jan. 25, 1990, 2-15715
Int. Cl.[5] C25D *5/48*
U.S. Cl. 205—155 **10 Claims**

1. A treating solution for forming a hydroxide film by carrying out cathodic electrolysis on each surface of zinc-plated steel plates which consists essentially of water and

(a) 0.2 to 50 g/l of one or more metal ions selected from the group consisting of Mg^{2+}, Cr^{3+}, Ca^{2+}, Ni^{2+}, Co^{2+}, and Al^{3+}, and

(b) 0.1 to 50 g/l of one or more oxidizing agents selected from the group consisting of nitrate ions, nitrite ions, chlorate ions, bromate ions and hydrogen peroxide.

5,254,239

MASK STRIPPER FOR ELECTROFORM PARTING

Ernest F. Matyi, Webster; William G. Herbert, Williamson; Gary J. Maier, and Loren E. Hendrix, both of Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 26, 1993, Ser. No. 51,931
Int. Cl.[5] C25D *1/20*
U.S. Cl. 205—67 **14 Claims**



1. A method for separating an electroformed article from a mandrel comprising:

(a) masking a portion of a mandrel with a mask comprising an electrically nonconductive outer surface;

(b) electroforming an article on the mandrel wherein the electroforming material is deposited on the mandrel surface and substantially fails to adhere to or does not adhere to the nonconductive outer surface of the mask, whereby the end of the electroformed article is adjacent to the mask; and

(c) removing the article from the mandrel by: (i) pushing the mask against the end of the article to effect movement of the article in the direction of separation; or (ii) removing the mandrel while keeping the mask stationary, whereby the end of the article pushes against the mask during withdrawal of the mandrel.

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HYDROCRACKING OF PETROLEUM FEEDSTOCKS USING A TRI-ELEMENTAL CATALYST WITH A TITANIA-ALUMINA SUPPORT

Roberto E. Galiasso; Mary Palma; Edilberto Rodriguez; Fernando Gonzalez, all of Los Teques, and Ricardo Prada, Caracas, all of Venezuela, assignors to Intevep, S.A., Venezuela

Continuation-in-part of Ser. No. 697,118, May 8, 1991. This application Feb. 18, 1992, Ser. No. 837,806
Int. Cl.[5] C10G *47/04, 45/00*
U.S. Cl. 208—112 **10 Claims**

1. A hydrocracking and hydrogenation process suitable for a petroleum hydrocarbon feedstock that contains sulfur, nitrogen, and aromatic components, which process comprises:

contacting said hydrocarbon feedstock, under hydrocracking conditions, with a particulate catalyst constituted by a porous support comprising alumina and titania wherein the alumina is present in an amount in the range of about 95 weight percent to about 70 weight percent, and wherein the titania is present in an amount of about 5 to about 30 weight percent, both based on the weight of the support, and by a catalytically active tri-elemental phase on the support consisting essentially of a transition element of Group VI-B of the Periodic Table of Elements, a transition element of the first transition series of Group VIII of the Periodic Table of Elements, and a transition element of the second transition series of Group VIII of the Periodic Table of Elements; said porous support having a surface area in the range of about 130 m^2/gram to about 300 m^2/gram and at least about 95 percent of the pores thereof having a pore diameter in the range of about 20 Angstroms to about 500 Angstroms; and said Group VI-B transition element being present in an amount in the range of about 6 weight percent to about 30 weight percent, expressed as weight of the corresponding oxide and based on the weight of the catalyst, said Group VIII first transition series element being present in an amount in the range of about 2 weight percent to about 10 weight percent, expressed as weight of the corresponding oxide and based on the weight of the catalyst, and said Group VIII second transition series element being present in an amount in the range of about 0.01 weight percent to about 1 weight percent, based on the weight of the catalyst, for a time period sufficient to convert at least a portion of said cracked petroleum hydrocarbon feedstock into a product having relatively lower aromatic content.

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LOADING CONTROL SYSTEM FOR A CYCLICAL CENTRIFUGAL MACHINE WHICH ADJUSTS PINCH POSITION

Joseph B. Bange, Hamilton, and Donald J. Henkel, Loveland, both of Ohio, assignors to The Western States Machine Company, Hamilton, Ohio

Filed Aug. 12, 1992, Ser. No. 928,803
Int. Cl.[5] B01D *17/12, 17/038*
U.S. Cl. 210—86 **11 Claims**

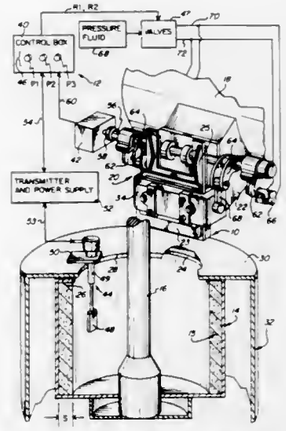
8. In a centrifugal apparatus including a rotary centrifugal basket, a loading gate movable between closed and open positions to control the delivery of charge material through said gate for loading the basket and control means operative in response to each opening of said gate for closing said gate when a certain final volume of charge material is accumulated in the basket, said control means comprising:

means for moving said gate from a closed position to a gate full open position that is variable in extent to adapt it for loading properties of the charge material;

means for producing a gate full open signal representing the extent of displacement of the gate away from said closed position to the gate full open position;

and means including a pinch position circuit rendered operative in response to the load of material in the basket approaching said final volume for moving the gate from said gate full open position to a pinch position to slow said delivery;

means operative in response to the load reaching the final volume for moving the gate from the pinch position to the closed position;



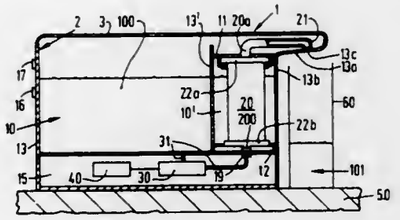
said pinch position circuit being responsive to said gate full open signal for determining the extent the gate is open in said pinch position.

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FILTRATION UNIT HAVING MEANS FOR PREVENTING REUSE OF FILTER

Sijtze van der Meer, Hastings, Great Britain, and Klaus Melgaard, Hove, England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 27, 1992, Ser. No. 825,697
Claims priority, application United Kingdom, Jan. 28, 1991, 9101772
Int. Cl.[5] B01D *27/10*
U.S. Cl. 210—91 **15 Claims**



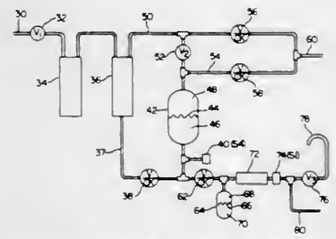
1. A water cleaning device comprising a housing arranged to be supported by a surface, the housing defining a receptacle for water to be cleaned, a water filtration unit removably mounted to a mounting support provided by the housing and an electrically operated pump and control means for controlling the pump provided within the housing for pumping water through the filtration unit to provide cleaned filtered water at an outlet of the water filtration unit, wherein the filtration unit carries a collar designed such that when the filtration unit is removed from the mounting support it is fixed in position relative to the filtration unit and such that the filtration unit cannot be mounted to the mounting support provided by the housing again after the filtration unit has once been removed from the housing.

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WATER CONDITIONING SYSTEM AND AN ELECTRONIC CONTROL THEREFOR

Keith E. Carr, Lincoln Township, Berrien County, and Edward C. Peterson, St. Joseph Township, Berrien County, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jun. 22, 1992, Ser. No. 902,198
Int. Cl.[5] B01D *29/92, 61/20*
U.S. Cl. 210—94 **26 Claims**



1. An electrically controlled reverse osmosis water conditioning system adapted for purifying an external water supply, said water conditioning system comprising:

a reverse osmosis filter having a supply water input, a product water output and a waste water output;

a supply water line connectable between said water supply and said supply water input of said reverse osmosis filter for purification for supplying water to said reverse osmosis filter;

a first solenoid valve selectively operable in closed and open positions and located in said supply water line for controlling the flow of supply water to said reverse osmosis filter,

a product water storage tank having an internal bladder, said internal bladder dividing said tank into a squeeze chamber and a product water chamber;

a squeeze water line connected between said waste water output of said reverse osmosis filter and said squeeze chamber of said product water storage tank;

a second solenoid valve selectively operable in closed and open positions and located in said squeeze water line for controlling the flow of waste water to said squeeze chamber;

a drain line connected to said squeeze chamber including means for restricting waste water flow for maintaining a minimum predetermined squeeze water pressure in said squeeze chamber;

a product water line connected between said product water output of said reverse osmosis filter and said product water chamber of said product water storage tank;

a pressure switch located in said product water line having a first preselected high pressure position and a second preselected low pressure position;

said pressure switch being operable in said second preselected position to energize and open said first solenoid valve to provide inlet water to said reverse osmosis filter;

a flow switch for sensing product water flow located in said product water line;

said flow switch being operable in a normally open position, said flow switch being movable to a closed position when product water flow is sensed, thereby energizing and opening said first solenoid valve to provide inlet water to said reverse osmosis filter, and further opening said second solenoid valve to provide waste water to said squeeze chamber.

2. The water conditioning system of claim 1, further including a full tank indicator light for indicating a full storage tank condition, said full tank indicator light being energizable by said pressure switch in said first preselected high pressure position.

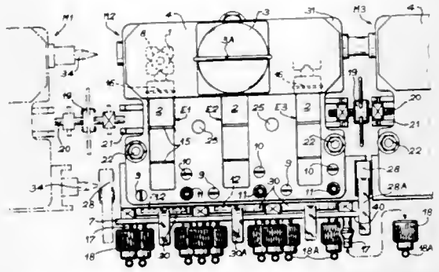
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5,254,244

MODULAR MIXER-SETTLER HAVING SEPARATE STAGES MANIPULATABLE BY TELEMANIPULATOR

Rodolph Chomel, Camaret/Aygues, France, assignor to Cogema Compagnie Generale des Matieres Nucleaires, France

Filed Aug. 20, 1992, Ser. No. 932,691
Claims priority, application France, Sep. 5, 1991, 91 10983
Int. Cl.[5] B01D *11/04*
U.S. Cl. 210—95 8 Claims



1. Mixer-settler having separate stages and mechanical stirring, each stage comprising a mixing chamber (1), a turbine (8) contained within the mixing chamber which is rotated by motor means (3, 4), a settling chamber (2) linked with the mixing chamber (1), circulation pipes (39) for light and heavy phases and arranged to connect to corresponding pipes of adjacent stages, at least one inlet (EL, El) and one outlet (SL, Sl) for the respectively heavy and light phases, an interphase level regulator member (11) and connecting means (9, 10) for the said connecting to at least one inlet and outlet of the light and heavy phases, wherein the mixer-settler has separable modules (M1, M2, M3), each of said modules having at least one of said stages (E1, E2, E3) and means for tight connection to one or more adjacent modules such that each module is adapted to be manipulated by a telemanipulator and be remotely manipulated and used when it is isolated in a tight enclosure and inaccessible to an operator.

5. Mixer-settler according to claim 1, wherein each stage (E1, E2, E3) has a remotely dismantlable shield window (12) placed on a front face (40) thereof, said shield window facing the settling chamber (2) so as to enable visualization of the interphase between the light and heavy phases.

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MULTI-STAGE ANAEROBIC PACKED COLUMN REACTOR WITH FIXED-FILM COLUMN FILTER

Tsutome Arimizu, 29-15, Nishi-machi 3-chome, Kokubunji-shi, Tokyo, Japan

Filed Mar. 31, 1992, Ser. No. 865,038
Claims priority, application Japan, Apr. 1, 1991, 3-092686
Int. Cl.[5] C02F *3/30, 3/10*
U.S. Cl. 210—150 13 Claims

7. The multi-purpose anaerobic wastewater treatment system comprising a down flow stationary fixed film reactor comprising:

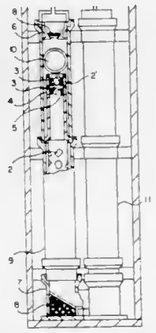
an outermost tubular member;

an inner column filter, positioned within the tubular member, said column filter comprising

a vertical column having a top and a bottom and a vertical axis;

a plurality of through-holes through said column, said through-holes having a rectangular cross-section comprising a pair of parallel long sides and a pair of parallel short sides wherein the long sides of each rectangular through-hole are inclined to the vertical axis of the column, said through-holes being arranged in at least more than one circular grouping around the column, wherein each circular grouping of said through-holes is parallel with any next successive grouping of said through-holes, said grouping of said through-holes being arranged from the top of the column to the bottom of the column, the area of said through-holes at the bottom of the column being the same as the area of said through-holes at the top of the column, thereby limiting pressure increases during operation of the treatment system; and

a baffle plate provided with each said through-hole on one long side of the through-hole, said baffle plate having



the same area and shape as said through-hole and extending inward of said column perpendicular to the column;

and an innermost filter column within said inner filter column, wherein the reactor column, the inner column filter and the innermost filter column form an inner annulus and an outer annulus and extend downward into a borehole;

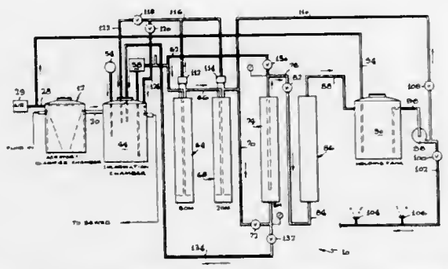
an entry from a previous upflow reactor; and a coupling box connecting said downflow column to any subsequent upflow column.

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WATER RECLAMATION SYSTEM

Sonia Rivelli, S&S Ranch, 7535 Valley Sage Rd., Acton, Calif. 93510; Jean Savoy, P.O. Box 557, Broussard, La. 70518; Geraldo R. Silveira, P.O. Box 557, Broussard, La. 70518, and Gerard D. Klug, P.O. Box 557, Broussard, La. 70518

Filed Jul. 16, 1991, Ser. No. 730,433
Int. Cl.[5] C02F *3/20, 9/00*
U.S. Cl. 210—195.4 7 Claims



1. A water reclamation system for reclaiming a waste water stream comprising:

an aerator/clarifier chamber, a baffle in said chamber to divide said chamber into an aeration chamber and a clarifier chamber, a connection on said aerator/clarifier chamber for receiving household waste water into said aeration chamber, an air diffuser within said aeration chamber so that aerobic bacterial digestion in said aeration chamber breaks down waste in the waste water stream, said clarifier baffle having an opening adjacent the lower end thereof so that waste water passes the lower portion of said baffle and rises in said clarification chamber so that gravitational separation of heavy particles occurs, an outlet from said clarifier chamber to pass clarified water out of said clarifier chamber;

a sterilizer treatment tank, inlet means on said sterilizer treatment tank to receive waste water from said clarifier chamber outlet, means for introducing a sterilizer into said sterilizer treatment tank so that bacteria are killed therein to provide a digested, sterilized waste water stream;

a pump to pump sterilizer water from said sterilizer treatment tank;

at least two filters serially connected to receive water from said pump, said two filters serially removing smaller particles from the waste water stream, said filters being serially connected to a holding tank for holding sterilized and filtered water for reuse; and

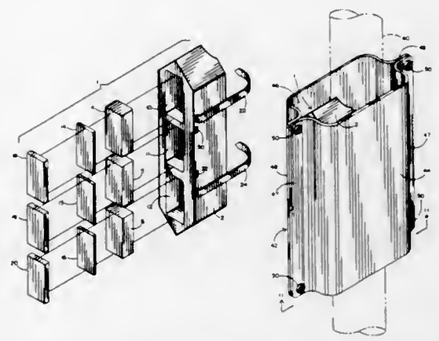
means for backwashing said serial filters, said means for backwashing including means for backwashing one of said filters with water from said sterilizer treatment tank and returning the backwash water to said sterilizer treatment tank and for backwashing the other of said filters with reclaimed water from said holding tank and returning at least part of said water to said sterilizer treatment tank.

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MAGNETIC FLUID CONDITIONER HAVING MAGNETIC FIELD SHIELDING MEANS

Hooshang Kashani, San Juan Capistrano, Calif., assignor to Cashew Consulting, Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 600,917, Oct. 22, 1990, abandoned. This application May 1, 1992, Ser. No. 877,290
Int. Cl.[5] C02F *1/48*
U.S. Cl. 210—222 7 Claims



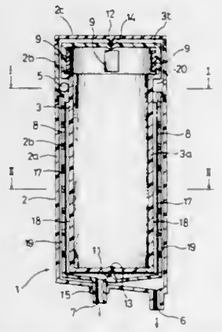
1. A combination including a conduit through which a fluid flows and a magnetic fluid conditioner adapted to be attached to said fluid conduit, said fluid conditioner comprising a non-magnetic housing to be attached to a portion of the fluid conduit, said housing having a longitudinal axis that is parallel to said conduit and a plurality of cavities extending along said axis, a plurality of magnets, one of said magnets being located within each of said cavities of said housing and aligned along said longitudinal axis to generate a magnetic field to penetrate said conduit, a plurality of magnetic field shielding plates, one of said shielding plates being located within each of said cavities of said housing to cover respective ones of said magnets in said cavities such that said plurality of magnets are positioned between the conduit and said plurality of magnetic field shielding plates, and magnetic field shielding enclosure means surrounding said housing and the portion of the conduit to which said housing is attached so that said enclosure means and said pluralities of shielding plates block and confine the magnetic field generated by said plurality of magnets to said conduit and the fluid flowing therethrough, said magnetic field shielding enclosure means comprising magnetic field shielding sections that are connected together at opposite sides of the fluid conduit.

5,254,248

BLOOD PLASMA SEPARATING APPARATUS

Atsuo Nakamura, Fujinomiya, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 26, 1991, Ser. No. 721,252
Claims priority, application Japan, Jun. 28, 1990, 2-171247
Int. Cl.[5] B01D *61/00*
U.S. Cl. 210—321.67 11 Claims



1. A plasma separating apparatus comprising:

a housing having a blood inlet port, a plasma outlet port, a blood cell outlet port, and a plasma passage;

said housing further including:

a substantially cylindrical inside housing surrounded by a substantially cylindrical outside housing; and

said inside housing having a plurality of plasma passage openings formed in a side wall thereof;

a rotor rotatably mounted in said inside housing:

a blood separating space formed between an outside surface of said rotor and an inside surface of said inside housing, said blood separating space being in fluid communication with said blood inlet port at an upper portion of said inside surface of said inside housing, said blood separating space being in fluid communication with said blood cell outlet port at a lower portion of said inside surface of said inside housing;

said plasma passage being formed between said inside housing and said outside housing, said plasma passage enclosing a circumference of said blood separating space, said plasma passage further being in fluid communication with said plasma outlet port at a lower portion of said outside housing;

a plasma separating membrane disposed in said inside housing for separating said blood separating space from said plasma passage, said plasma separating membrane being attached to a portion of a side wall of said inside housing so as to cover said plasma passage openings;

said outside housing further enclosing said portion of said side wall of said inside housing where said plasma separating membrane is attached to said inside housing;

said inside housing having first and second projections respectively provided substantially at a center of a top and bottom end portion of said inside housing;

said rotor having a closed top end portion and a closed bottom end portion;

said closed top end portion of said rotor having a first concavity provided substantially at a center of said closed top

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end portion of said rotor for receiving a tip end portion of said first projection; and

said closed bottom end portion of said rotor having a second concavity provided substantially at a center of said closed bottom end portion of said rotor for receiving a tip end portion of said second projection.

5,254,249

ANTI-THROMBOGENIC BLOOD TREATING SYSTEM

Ryozo Terada, Kanagawa; Kazumi Tanaka, Shiga, and Tetsunosuke Kunitomo, Kanagawa, all of Japan, assignors to Toray Industries, Inc., Japan

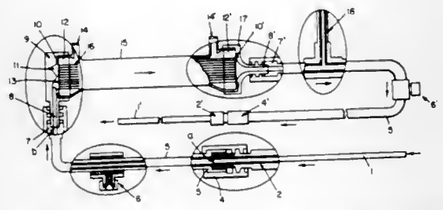
PCT No. PCT/JP90/00536, § 371 Date Feb. 11, 1991, § 102(e) Date Feb. 11, 1991, PCT Pub. No. WO90/12607, PCT Pub. Date Nov. 1, 1990

PCT Filed Apr. 25, 1990, Ser. No. 623,458

Claims priority, application Japan, Apr. 25, 1989, 1-106196

Int. Cl.[5] B01D *63/02*

U.S. Cl. 210—321.62 **3 Claims**



1. An anti-thrombogenic blood treating system, comprising selectively permeable hollow yarn membranes made of a composition containing a copolymer consisting of a monomer with a polyethylene oxide component of 5 or more in polymerization degree and a polymerizable carbon-carbon double bond in the same molecule and a monomer with a polymerizable carbon-carbon double bond, and headers, catheters and circuits respectively covered on the blood contact surface with a heparinized hydrophilic copolymer containing vinyl chloride as a component monomer, in combination.

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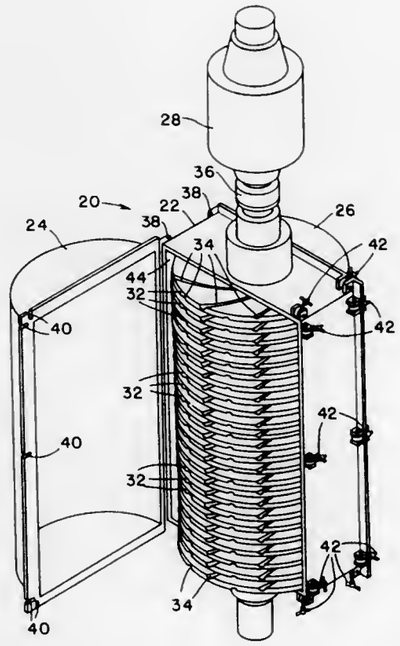
ROTARY FILTRATION DEVICE AND FILTER PACK THEREFOR

Philip M. Rolchigo, Edison; Leonard T. Hodgins, Closter, and Malcolm R. Kahn, Franklin Lakes, all of N.J., assignors to Membrex, Inc., Fairfield, N.J.

Continuation-in-part of Ser. No. 708,069, May 30, 1991, Pat. No. 5,143,630. This application May 15, 1992, Ser. No. 884,079

Int. Cl.[5] B01D *63/16*

U.S. Cl. 210—321.67 **37 Claims**



1. A rotary filtration device for filtering fluid into permeate and retentate, said device comprising (a) a readily insertable and removable filter pack, the filter pack being essentially stationary in the device during normal operation and comprising a first filter and a permeate collection member having a first major surface, the first filter being adjacent the first major surface; (b) a permeate collection header; (c) a first rotating member; and (d) a rotatable shaft having a longitudinal axis to which shaft the rotating member is attached and by which shaft it is rotated during normal operation; the first rotating member being near the first filter to define a first fluid filtration gap therebetween when the filter pack is in its normal operating position in the device; the permeate collection member having at least one passageway for permeate and also having fluid connection means for fluidly connecting the passageway to the permeate collection header when the filter pack is in its normal operating position so that permeate that passes from the fluid filtration gap through the filter and into the passageway of the permeate collection member can flow into the permeate collection header during normal operation; the device having means to allow the filter pack to be readily inserted into and removed from its normal operating position in the device by moving the filter pack in a direction generally perpendicular to the longitudinal axis of the shaft and provide an alternative to having to move the rotating member out of the path of the filter pack during its insertion or removal.

25. A readily insertable and removable filter pack for use in a rotary filtration device for filtering fluid into permeate and retentate, the filter pack being essentially stationary in the device during normal operation and comprising first and second filters and a permeate collection member having first and second major surfaces and a third surface, the first filter being adjacent the first major surface and the second filter being adjacent the second major surface; said device having a permeate collection header, first and second rotating members, and a rotatable shaft having a longitudinal axis to which shaft the rotating members are attached and by which shaft they are rotated during normal operation; the first rotating member being near the first filter to define a first fluid filtration gap therebetween and the second rotating member being near the second filter to define a second fluid filtration gap therebetween when the filter pack is in its normal operating position in the device; the permeate collection member having at least one passageway for permeate and also having fluid connection means in its third surface for fluidly connecting the passageway to the permeate collection header when the filter pack is in its normal operating position so that permeate that passes from the fluid filtration gaps through the filters and into the passageway of the permeate collection member can flow into the permeate collection header during normal operation; the device and the filter pack having means to allow the filter pack to be readily inserted into and removed from its normal operating position in the device and provide an alternative to having to move the rotating members out of the path of the filter pack during its insertion or removal.

5,254,251

MEMBRANE FOR THE SEPARATION OF LIQUID MIXTURES BY PERVAPORATION

Gisela Bengtson, Hamburg, and Karl W. Böddeker, Breitenfelde, both of Fed. Rep. of Germany, assignors to GKSS-Forschungszentrum Geesthacht GmbH, Geesthacht, Fed. Rep. of Germany

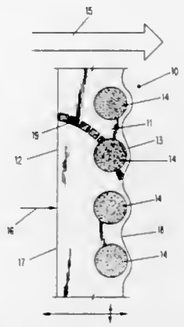
PCT No. PCT/DE90/00520, § 371 Date Mar. 23, 1992, § 102(e) Date Mar. 23, 1992, PCT Pub. No. WO91/01176, PCT Pub. Date Feb. 7, 1991

PCT Filed Jul. 11, 1990, Ser. No. 820,699

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1989, 3924501

Int. Cl.[5] B01D *15/00*

U.S. Cl. 210—490 **12 Claims**



1. A membrane for the separation of liquid mixtures by pervaporation, said membrane having two surfaces, a first one of said surfaces representing a feed side and a second one of said surfaces representing a permeate side, said membrane being comprised of a swellable elastomeric polymer material and a reinforcing support embedded essentially parallel to said membrane surfaces in said polymer material, said reinforcing support being a woven mesh arranged asymmetrically so that said reinforcing support is adjacent to said permeate side.

5,254,252

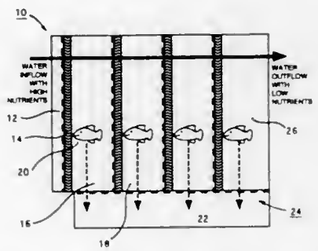
ECOLOGICAL TREATMENT SYSTEM FOR FLOWING WATER

Ray W. Drenner, 2534 Boyd, Fort Worth, Tex. 76109

Filed Sep. 29, 1992, Ser. No. 954,259

Int. Cl.[5] C02F *3/32*

U.S. Cl. 210—602 **26 Claims**



1. A method of treating flowing water in a waterway to reduce the quantity of undesirable chemicals in the water using periphyton and fish, the method comprising: maintaining the flowing water in the waterway at a minimum flow rate of about 1 to about 10 cm/s;

exposing the flowing water to periphyton;

treating the flowing water by allowing the uptake of undesirable chemicals by the periphyton for reducing the quantity of undesirable chemicals; and

controlling periphyton growth and converting undesirable chemicals to forms removable form the flowing water with fish.

5,254,253

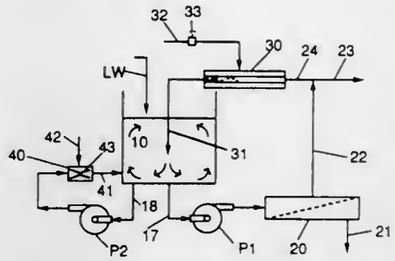
MODULAR SHIPBOARD MEMBRANE BIOREACTOR SYSTEM FOR COMBINED WASTEWATER STREAMS

Henry Behmann, Puslinch, Canada, assignor to Zenon Environmental Inc., Burlington, Canada

Continuation-in-part of Ser. No. 794,867, Nov. 19, 1991, Pat. No. 5,151,187. This application Aug. 21, 1992, Ser. No. 934,879

Int. Cl.[5] C02F *1/44, 3/12*

U.S. Cl. 210—607 **20 Claims**



1. A process for treating organic liquid waste generated on-board a host marine vessel, utilizing a membrane-bioreactor system, said process comprising,

(a) feeding an aqueous suspension of said liquid waste comprising black water, grey water, and oily water to a bioreaction zone containing live microorganisms adapted to digest said liquid waste;

(b) flowing activated sludge withdrawn from said bioreaction zone, to a membrane filtration zone at a velocity and pressure sufficient to maintain a predetermined membrane flux in said zone, at which flux essentially no solids are retained on the surface of said membrane having a predetermined molecular cut-off which will permit passage of only molecules smaller than 500,000 Daltons;

(c) separating water which is essentially solids-free, as a permeate, from a solids-containing concentrate, and removing the permeate from said membrane filtration zone;

(d) flowing said concentrate from said membrane filtration zone into a gas micronizing zone comprising a microporous air diffuser element without introducing additional energy into said concentrate until it is introduced into said micronizing zone;

(e) introducing said concentrate axially into said micronizing zone, while discharging into said zone a gas containing at least about 20% oxygen under pressure in the range from about 150 kPa to about 1000 kPa so as to incorporate micronized gas bubbles having an average diameter in the range from about 1 μm to about 1000 μm into said concentrate, forming a microaerated concentrate having separate gas and liquid phases;

(f) directly flowing a continuous stream of the microaerated concentrate from said micronizing zone into said bioreaction zone without introducing any additional energy into the microaerated concentrate after it leaves said micronizing zone;

(g) introducing a first tail-jet of said microaerated concentrate below the surface of liquid in the reactor to establish a recycle loop in said bioreaction zone;

(h) flowing an auxiliary stream of air in the form of coarse bubbles greater than about 2 mm in diameter, with enough energy to maintain a desirable recirculation pattern in said reaction zone; and, at the same time, directing said first tail-jet into said bioreaction zone so as to maintain an

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average liquid velocity of at least 03. meter/sec within said bioreaction zone while also maintaining said recirculation pattern therein; whereby an adequate hydraulic retention time, based on flow of said liquid waste, and solids retention time is obtained to retain soluble organics greater than said molecular weight cut-off in said reaction zone for a period at least 10 times longer than the hydraulic retention time based on liquid waste flow.

5,254,254

BIOLOGICAL METHOD OF TREATING WASTEWATER IN BATCH WITH POROUS BIOMASS CARRIER

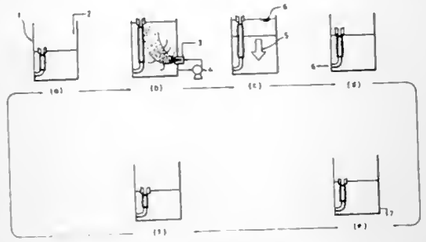
Hang Sik Shin, Seoul, and Heoung S. Park, Kyonggi, both of Rep. of Korea, assignors to Korea Advanced Institute of Science and Technology, Taijeon, Rep. of Korea

Filed Nov. 12, 1991, Ser. No. 790,162

Claims priority, application Rep. of Korea, Jan. 26, 1991, 91-1332

Int. Cl.[5] C02F *3/10, 3/30*

U.S. Cl. 210—616 **9 Claims**



1. A biologic method of treating wastewater which comprises the steps of:

a) introducing wastewater into a batch reactor in which an amount of floating porous biomass carrier has been previously added to render microorganisms retained in a high concentration;

b) mixing and biologically reacting the wastewater with the microorganisms under aerobic, anoxic and/or anaerobic conditions which are provided sequentially in an appropriate order depending on the type of pollutant to be treated, the reactor being provided sequentially with anaerobic, anoxic and aerobic conditions by adjusting the amount of air introduced and the mixing intensity;

c) separating the resultant mixture into two phases by means of sedimentation;

d) draining the supernatant wastewater from the reactor;

e) removing a portion of the sludge which remains as the lower layer from the reactor; and

f) allowing the reactor to stand until a fresh wastewater is introduced for the next run.

5,254,255

ENHANCED EXTRACTION OF VALERIC ACID OR CAPROIC ACID FROM AQUEOUS MIXTURES

William S. Kalema, Kampala, Uganda Uganda, and Leon S. Scott, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 15, 1992, Ser. No. 961,323

Int. Cl.[5] **B01D** *11/04*

U.S. Cl. 210—634 **9 Claims**

1. A process for the purification of an aqueous solution containing a dicarboxylic acid selected from the group consisting of adipic acid, methyl glutaric acid and a monocarboxylic acid selected from the group consisting of valeric acid and caproic acid which comprises extracting the monocarboxylic acid with an organic solvent for monocarboxylic acid that is substantially water-immiscible and selected from the group consisting of hexane, n-heptane, cyclohexane, dichloromethane, benzene, toluene, o-xylene, m-xylene, butylbenzenes, diethylbenzene, anisol, chlorobenzene, bromobenzene, propylbenzene, 1-bromonaphthalene, 1-chloronaphthalene, 1-methylnaphthalene and mixtures thereof containing an effective amount of an extraction-enhancing acid that is soluble in the organic solvent and selected from the group consisting of acetic acid, propionic acid, butyric acid, 2-methyl butyric acid, isobutyric acid, 4-tolylacetic acid, cyclohexanecarboxylic acid, benzoic acid, benzenesulfinic acid, p-toluenesulfonic acid and 2-toluneboronic acid.

5,254,256

PROCESS FOR RECLAMATION AND TREATMENT OF PAINT OVERSPRAY TREATMENT COMPOSITIONS

Edwin C. Zuerner, Troy; Robert R. Petzeit, and Norman Fnster, both of Bloomfield Hills, all of Mich., assignors to Nortru, Inc., Detroit, Mich.

Filed Jul. 20, 1992, Ser. No. 916,536

Int. Cl.[5] **B01D** *11/04*

U.S. Cl. 210—639 **28 Claims**

1. A process for treating spent aqueous emulsion which includes a non-volatile hydrocarbon component, the spent aqueous emulsion containing paint solids, the process comprising the steps of:

a) separating said emulsion into an organic phase and an aqueous phase;

b) extracting organic material including said non-volatile hydrocarbon component from said organic phase with a quantity of a hydrocarbon solvent extractant sufficient to selectively solubilize the non-volatile hydrocarbon component employed in the aqueous emulsion to form an intermediate extract product; and

c) separating the resulting intermediate extract product into a hydrocarbon solvent extractant fraction and a fraction containing the non-volatile hydrocarbon employed in the aqueous emulsion.

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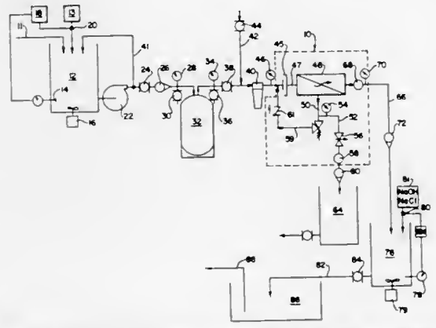
RECLAIMING OF SPENT BRINE

Frank A. Brigano, Hoffman Estates; William J. Soucie, Grayslake, and Stanley F. Rak, Mundelein, all of Ill., assignors to Culligan International Company, Northbrook, Ill.

Filed Jan. 19, 1993, Ser. No. 5,668

Int. Cl.[5] **B01D** *61/04*

U.S. Cl. 210—639 **18 Claims**



8. The method of purifying spent brine from the regeneration of ion exchange resin, which comprises: acidifying said spent brine to a pH of less than 3 with hydrochloric acid; and passing said brine through a nanofiltration membrane to purify said brine by separating from said brine a waste stream which comprises the majority of divalent ions present in increased concentration relative to the sodium chloride present in said waste stream, when compared with purified brime which has passed through said membrane.

5,254,258

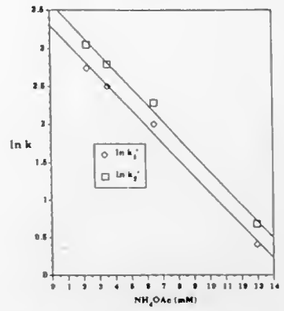
CHIRAL SELECTOR USEFUL FOR SEPARATION OF ENANTIOMERS OF β-AMINO ALCOHOL COMPOUNDS

William H. Pirkle, Champaign, and John A. Burke, III, Urbana, both of Ill., assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

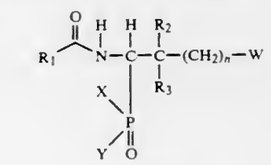
Filed Sep. 17, 1991, Ser. No. 761,212

Int. Cl.[5] **B01D** *61/38*

U.S. Cl. 210—643 **21 Claims**

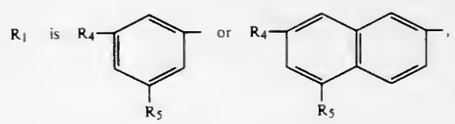


1. A chemical compound having the formula:



I

wherein



R_1 is R_4 or R_4,

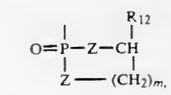
R_2 and R_3 are each independently lower alkyl,

R_4 and R_5 are each independently NO_2, $N(R_6)_3^+$, CN, $COOR_7$, SO_3H or COR_8,

R_6, R_7 and R_8 are each independently hydrogen or lower alkyl,

W is H or $CH{=}CH_2$,

X and Y are each independently OR_9 or $NR_{10}R_{11}$, or X and Y together with the P to which they are attached form a 5- or 6-membered ring having the formula:

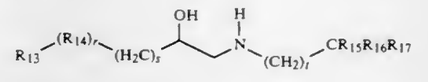


R_9, R_{10}, R_{11} and R_{12} are each independently hydrogen or lower alkyl,

Z is O or NH,

n is 1 to 8 when W is H, or 1 to 3 when W is $CH{=}CH_2$, and m is 1 or 2, said compound being an R or an S enantiomer or a mixture of R and S enantiomers.

5. A process of separating enantiomers which comprises contacting a mixture of enantiomers of a first compound having a first and a second optical configuration and having the formula:



wherein

R_{13} is aryl or a nitrogen, sulfur or oxygen containing heterocyclic ring, either of which may be unsubstituted or substituted with lower alkyl, lower alkoxyalkyl or lower alkenyloxy,

R_{14} is O, S or NH,

R_{15}, R_{16} and R_{17} are each independently hydrogen or lower alkyl, and

r, s and t are independently 0 or 1,

with a chiral selector, said selector being an R or S enantiomer of the compound of claim 1, under conditions effective to form a complex between an enantiomer of said first compound having said first optical configuration and an enantiomer of said compound of claim 1 and recovering the non-complexed enantiomer of said first compound having said second optical configuration.

5,254,259

METHOD AND APPARATUS FOR EFFECTING THE TRANSFER OF HEAT OR MASS THROUGH A MEMBRANE INVOLVING THE USE OF VORTICES

Brian J. Bellhouse, The Lodge, North Street, Islip, Oxfordshire OX5 2SQ, and Ian J. Sobey, 11 Wyndam Way, Oxford OX2 8DF, both of United Kingdom

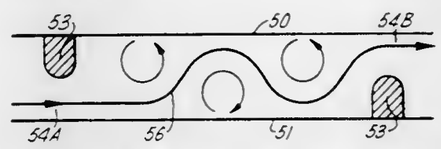
PCT No. PCT/GB90/01301, § 371 Date Feb. 13, 1992, § 102(e) Date Feb. 13, 1992

PCT Filed Aug. 17, 1990, Ser. No. 829,089

Claims priority, application United Kingdom, Aug. 17, 1989, 8918772; Jan. 25, 1990, 9001702

Int. Cl.[5] **B01D** *61/00, 61/28*

U.S. Cl. 210—650 **15 Claims**



11. Apparatus for effecting the transfer of heat or mass using vortices in a fluid, said apparatus comprising a conduit, means for passing the fluid through the conduit with a reversing, but means, flow, said conduit including a plurality of chambers defined between at least two substantially planar side walls, each chamber having restricted opposite ends, said opposite ends respectively defining an inlet and an outlet, each of said opposite ends comprising a deflector surface which extends from one side wall, across the width of the chamber towards, but terminating short of, the opposite side wall, thereby forming the respective inlet or outlet adjacent to the opposite wall, said deflector surfaces comprising rungs of a ladder-like structure, the rungs of which are alternately offset towards opposite side walls.

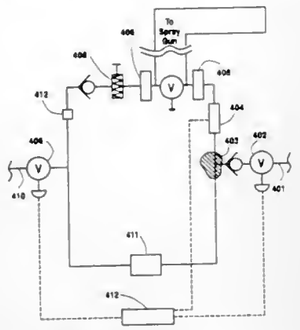
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5,254,260

MEMBRANE INJECTOR

Kenneth A. Nielsen, Charleston; Jeffrey D. Goad, Barboursville, and Lise Dahuron, Charleston, all of W. Va., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed May 12, 1992, Ser. No. 881,651
Int. Cl.[5] B01D *61/20*
U.S. Cl. 210—651 18 Claims



10. A method which comprises:

passing a coating composition containing crystalline polymeric material into contact with the outlet face of a microporous membrane;

passing a second fluid containing a supercritical fluid and at least one non-solvent component for said crystalline polymeric material into contact with the inlet face of said microporous membrane; and

pressuring said fluid to cause flow against said microporous membrane into said coating composition thereby substantially preventing the precipitation of said crystalline polymeric material when being mixed with said second fluid.

5,254,261

INTERFACIALLY SYNTHESIZED REVERSE OSMOSIS MEMBRANES AND PROCESSES FOR PREPARING THE SAME

John E. Tomaschke, San Diego, and Istvan E. Ary, Vista, both of Calif., assignors to Hydranautics, San Diego, Calif.

Continuation-in-part of Ser. No. 744,194, Aug. 12, 1991, abandoned. This application Feb. 19, 1992, Ser. No. 838,515
Int. Cl.[5] B01D *67/00*
U.S. Cl. 210—654 55 Claims

1. A water permeable membrane prepared by interfacially polymerizing, on a microporous support, (1) an essentially monomeric polyamine reactant having at least two amine functional groups per reactant molecule, and (2) an essentially monomeric amine-reactive reactant comprising a polyfunctional single ring cycloaliphatic acyl halide having fewer than 6 carbon atoms per ring, or mixture thereof, wherein the amine-reactive reactant has, on the average, at least about 2.2 acyl halide groups per reactant molecule.

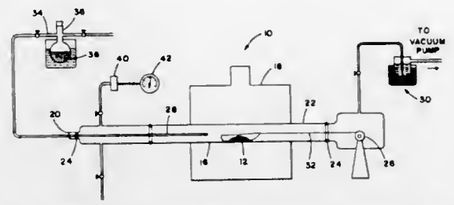
45. A process for desalination of brackish water or sea water comprising passing the water under pressure through a membrane according to claim 1.

5,254,262

CARBON-CLAD ZIRCONIUM OXIDE PARTICLES

Eric F. Funkenbusch, St. Paul; Peter W. Carr, Minneapolis; Douglas A. Hanggi, and Thomas P. Weber, both of St. Paul, all of Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Continuation of Ser. No. 805,529, Dec. 21, 1991, abandoned, which is a division of Ser. No. 497,594, Mar. 22, 1990, Pat. No. 5,108,597. This application Jan. 15, 1993, Ser. No. 5,873
Int. Cl.[5] B01D *15/08*
U.S. Cl. 210—656 11 Claims



1. A method for forming a chromatographic support material utilizing chemical vapor deposition, comprising the steps of:

(a) placing a plurality of porous inorganic oxide particles having a diameter of about 1–500 microns, a surface area of about 5/300 m^2/g, and a pore diameter of about 20–5000 Å within a reaction chamber;

(b) elevating the temperature within the reaction chamber and reducing the pressure within the reaction chamber; and

(c) introducing a vapor comprising carbon into the reaction chamber so as to thermally decompose the vapor and deposit a cladding of said carbon onto the particles under conditions so as to yield porous inorganic oxide particles having the exterior surfaces and the surfaces of the pores substantially covered with said carbon cladding and allowing subsequent pore access, thereby enhancing chromatographic utility.

5,254,263

METHOD OF MAKING SLUDGE POWDER AND SEALANT FROM PAINT SLUDGE AND SLUDGE POWDER AND SEALANT COMPOSITIONS PRODUCED THEREBY

Michael J. Gerace, Dayton; Sevilla C. Gamboa, Huber Heights, and Yasminka S. Landaburu, Yellow Springs, all of Ohio, assignors to Aster, Inc., Yellow Springs, Ohio

Continuation-in-part of Ser. No. 763,324, Sep. 20, 1991, Pat. No. 5,160,628. This application Jul. 29, 1992, Ser. No. 921,559
Int. Cl.[5] B01D *37/00*
U.S. Cl. 210—667 13 Claims

1. A method of preparing a sealant composition with a paint sludge containing water, solvent, and uncured polymer resin comprising:

generating a sludge powder containing uncured polymer by adding a processing filler to said paint sludge having a volatiles content of 0–50% by weight, and

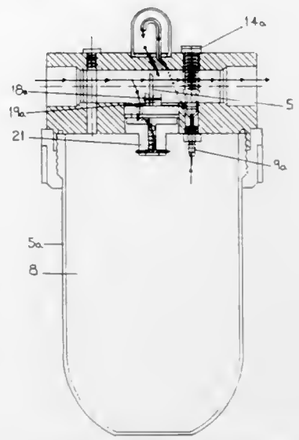
combining with said sludge powder a polymer, plasticizer, curative, an adhesion promoter and sealant filler materials to form a sealant composition.

5,254,264

METHOD OF DISPENSING A SUBSTANCE INTO A FLOW OF WATER

Duncan Armstrong, 4 Falmouth Ct., Mt. Sinai, N.Y. 11766

Filed Dec. 26, 1991, Ser. No. 813,484
Int. Cl.[5] C02F *5/08*
U.S. Cl. 210—696 5 Claims



1. A method of dispensing a substance into a flow of water, comprising:

providing an air lubricator comprising a casing having an air input port, an air output port, a channel in fluid communication with said ports, flap means disposed within said channel for creating a high pressure region on a side of said flap means facing said input port and a low pressure region on the side of said flap means facing said output port, a reservoir for the holding of lubricant, said reservoir in fluid communication with said high and low pressure regions such that the pressure differential across said flap means formed by a flow of air will force the injection of a lubricant in said reservoir into an air stream;

filling said reservoir with the substance to be dispensed;

supplying means for receiving the flow of water into said input end;

supplying means for receiving the flow of water emanating from said output end;

supplying the flow of water at a rate sufficient to induce a pressure differential across said flap means of a degree effective in dispensing the substance into the flow of water.

5,254,265

GARBAGE DISPOSAL SYSTEM

Yung Rung Chung, 3F-3, No. 8, Alley 1, Lane 166, Peita Road, Hsinchu, and S. C. Lee, 8F-2, No. 2, Lanz 6, Lanchou St., Taipei, both of Taiwan

Filed Jul. 31, 1992, Ser. No. 922,371
Int. Cl.[5] B30B *11/00*; F23G *5/00*
U.S. Cl. 210—774 1 Claim

1. A garbage disposal system for household garbage comprising the process of:

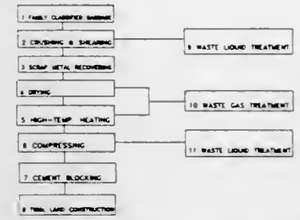
a. crushing and shearing process to crush the collected garbage and separate the liquid from the solid, and then to shear the solid into refuse strips in approximately 1 cm width;

b. scrap metal recovery process to separate scrap metal from the refuse strips for re-use;

c. drying process to heat the solid refuse which was left after said process "b" at 80°–90° C. in a heating tunnel for 4 to 5 hours;

d. high-temperature heating process for sterilization to heat the dried solid refuse which was left after the process "c" at 200°–300° C. in a screw-friction machine which is rotated at 2400–3600 rotation per minute characteristically to produce a large quantity of heat energy due to the effects of friction and compression for self-sufficiency and also to supply heat source for said drying process;

e. compression process to compress the solid refuse which was left after said process "d" into a refuse block by a hydraulic press machine;



f. cement blocking process to put the refuse block thus obtained from said process "e" in a cement box for sealing and making into a caisson for sea water concrete or tidal land construction;

g. waste liquid treatment process to filtrate pollutants from waste liquid produced from said process "a" and "e" by means of a liquid filter layer of fine sand, charcoal, wooden chip, gravel, and ozone;

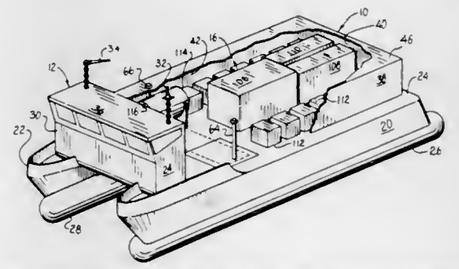
h. waste gas treatment process to filtrate waste gas produced from said process "c" and "d" by means of a gas filter layer of active carbon, ozone and fine sand.

5,254,266

OIL SPILL CLEANUP CRAFT AND METHOD USING CATAMARAN WITH EXCEPTIONAL STABILITY

Michael D. Barnes, Hazen, and Craig R. Fischer, Garrison, both of N. Dak., assignors to Aquatron, Inc., Garrison, N. Dak.

Filed Mar. 6, 1992, Ser. No. 847,941
Int. Cl.[5] B01D *17/02*
U.S. Cl. 210—776 37 Claims



36. A method of cleaning an oil spill from a body of water, such as a sea, ocean, or lake, comprising the steps of:

skimming oil, sludge and water from the surface of said body of water using a scoop mounted between the hulls of a small waterplane area twin hull boat having two parallel, spaced hulls connected at their upper ends by a deck and having respective pontoons attached to the base of each hull,

separating and processing said skimmed oil, sludge and water sufficiently to separate said skimmed oil, sludge and water into a commercial grade oil output, a cleaned water output sufficiently clean for return to said body of water,

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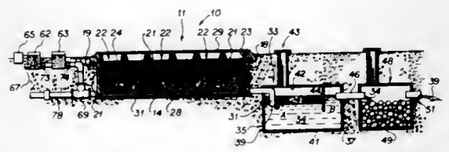
and a sludge output using continuous flow separating and processing means carried by said twin hull boat, and storing said commercial grade oil output in oil storage means for later commercial use.

5,254,267

GREASE SEPARATING METHOD AND SEPARATOR SYSTEM

Paul A. Deskins, P.O. Box 1846, 106 Whitley Rd., Warner Robins, Ga. 31093, and Charles T. Murray, 1214 Overton Dr., Box 93, Lawrenceville, Ga. 30245

Filed May 12, 1992, Ser. No. 882,312
Int. Cl.[5] B01D *17/00*
U.S. Cl. 210—799 **18 Claims**



13. A method for separating grease and solid particles from wastewater comprising the steps of:

filtering the wastewater through a filter means transversely disposed in a tank, the filter means being removably supported on its sides and from below;

passing the filtrated wastewater through a bed of discrete individual particles that occlude any residual grease from the filtrated wastewater, said particles providing support from below; and

passing the filtrated wastewater from the bed of discrete individual particles to a conduit means.

5,254,268

ANTI-STATIC RINSE ADDED FABRIC SOFTENER

Curtis Schwartz, Ambler, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Nov. 19, 1991, Ser. No. 794,535
Int. Cl.[5] D06M *13/322, 13/342*
U.S. Cl. 252—8.6 **16 Claims**

1. A process for decreasing anti-static properties of textiles comprising rinsing a textile fabric in a fabric softening composition comprising from about 25 to about 95 percent by weight water, from about 2 to about 60 percent by weight of a cationic softening agent and from about 0.5 to about 18 percent by weight of a water-soluble polymer, wherein said polymer is a reaction product of (a), (b) and, optionally (c), wherein;

(a) is selected from the group consisting of ethylenically unsaturated monocarboxylic acids and their salts, ethylenically unsaturated dicarboxylic acids, their salts and anhydrides,

(b) is selected from the group consisting of surfactant radicals and polyalkylenoxy compounds, wherein the surfactant radicals consist of a hydrophobic group linked to a polyalkylenoxy group and

(c) is a carboxylate-free monomer.

5,254,269

FABRIC CONDITIONING COMPOSITION CONTAINING AN EMULSIFIED SILICONE MIXTURE

Timothy J. Taylor, Hoboken, and Samuel Lin, Paramus, both of N.J., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

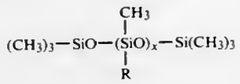
Filed Nov. 26, 1991, Ser. No. 797,841
Int. Cl.[5] D06M *10/08*
U.S. Cl. 252—86 **19 Claims**

1. A fabric conditioning composition comprising:

(a) from about 60 to about 99 wt. percent of a hydrocarbon based fabric conditioning component selected from the group consisting of a cationic quaternary ammonium salt, a tertiary fatty amine having at least one C_8 to C_{30} alkyl chain, a carboxylic acid having 8 to 30 carbon atoms and one carboxylic group per molecule, an ester of a polyhydric alcohol, a fatty alcohol, an ethoxylated fatty alcohol, an alkyl phenol, an ethoxylated alkyl phenol, an ethoxylated fatty amine, an ethoxylated monoglyceride, and ethoxylated diglyceride, a mineral oil, a polyol and mixtures thereof; and

(b) from about 1 to about 40 wt. percent of an emulsified mixture consisting essentially of

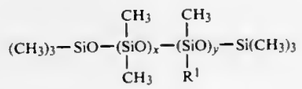
(1) a silicone oil having a formula:



(I)

wherein R is methyl, phenyl or a C_1-C_5 alkyl and x is from 5 to 100,000, the silicone oil having a viscosity of from 10 to 1,000,000 centistokes, and

(2) a silicone based nonionic emulsifier having at least 1 of formulas:



(II)

wherein

R^1 is

$$-R'-(C_2H_4O)_m-(C_3H_6O)_n-R^2p;$$

R' is a divalent hydrocarbon radical;

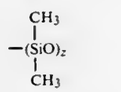
R^2 is H,CH_3 or $COCH_3$; and x and y are each individual 1 or greater than 1 and the sum of x+y is up to about 20,000; m and n are individually 0, 1 or greater than 1 and the sum of m+n is from 1 to about 300, and the silicone content of the compound of formula II is from about 1 to about 15 weight percent or

$$A-(B-A'-)_d \qquad III$$

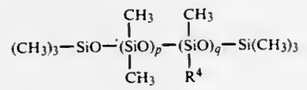
wherein

A and A' are each individually a randomly arranged block copolymer of $-(C_2H_4O)-$ and $-(C_3H_6O)-$, and d is 1 to 10,000 provided that when d is 1 A' terminates with H, OH, methyl or an acyl group;

and B is



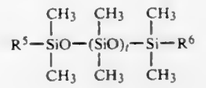
wherein z is 10 to 10,000, compounds of formula II having a silicone content of about 1 to about 15 wt. percent or



IV

wherein R^4 is a linear or branched alkyl group having from 6 to 50 carbon atoms and connected to the Si atom via a Si—O—C or a Si—C bond, or R^4 is a linear or branched alkylamino with p being 0 to about 10,000 and q being 1 to 10,000 and the total sum of p+q being from about 2 to about 20,000,

and the silicone content of formula IV being below about 65 wt. percent, or



V

wherein R^5 and R^6 are each individually a linear or branched alkyl group having 6 to 50 carbon atoms and R^5 and R^6 are attached to the Si atom via a C—Si bond or a C—O—Si bond; and t is from 1 to 10,000, the silicone content of formula V being below about 65 wt. percent,

and mixtures of the silicone emulsifiers II-V thereof, the fabric conditioning composition being a stable non-aqueous composition having less than 5 wt. percent of water or an organic solvent.

5,254,270

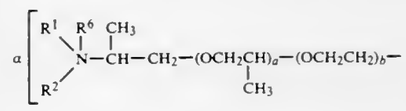
FABRIC SOFTENERS BASED ON QUATERNARY POLY(OXYALKYLENE) ALKANOLAMINE ESTERS

Horst Birkhan, Steinau-Ulmbach, and Michael Fender, Soden-Salmunster, both of Fed. Rep. of Germany, assignors to Rewo Chemische Werke GmbH, Fed. Rep. of Germany

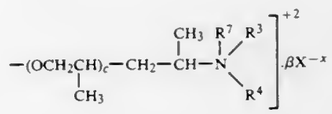
Filed Mar. 13, 1992, Ser. No. 850,578
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1991, 4108025
Int. Cl.[5] D06M *13/46*
U.S. Cl. 252—8.8 **32 Claims**

1. An aqueous fabric softener composition comprising

A) 5-35% by weight based on the softener composition, of one or more compounds of the general formula (1)



(1)



wherein

R^1, R^2, R^3 and R^4 are identical or different radicals of the formula R^5-(O—CH(R)—CH_2)$_m$—wherein each R^5 is H or a substituted or unsubstituted acyl radical of 6-22 carbon atoms with or without a double bond, an wherein at least one R^5 must be an acyl radical and at least one R^5 must be —H;

the radicals R are identical or different, and are each H or $-CH_3$;

R^6 and R^7 are identical o different, and are each H, $-CH_3$, $-C_2H_5$ or $-C_2H_4OH$;

X^{-x} is one or more anions selected from the group consisting of organic and inorganic anions;

x is 1, 2 or 3;

a, b, and c are each 0-20;

n is the sum of (a+b+c) and is 1-30;

each m is independently 1-5, and the sum of all m values is at least 4; β is 1 or 2; and α equals the product $(0.5)(\beta)(x)$; and

B) optionally, 10-90% by weight, based on the weight of said one or more compounds of formula (1), of one or more ammonium fabric softening compounds and

C) optionally, 1-5% by weight based on the softener compounds, of one or more additives selected from the group consisting of dyes, scents, electrolytes, high molecular weight ether compounds for viscosity regulation, organic solvents and cationic and nonionic surfactants and

D) water to 100% by weight based on the softener composition.

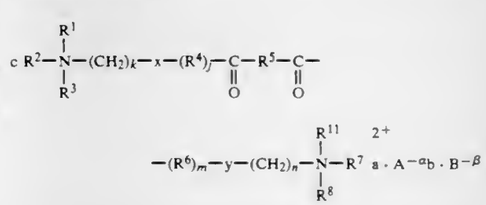
5,254,271

AMMONIUM COMPOUNDS, PREPARATION THEREOF AND USE THEREOF AS CLEANING AGENT, COSMETIC RAW MATERIAL AND SOFTENER, IN PARTICULAR AS FINAL-RINSE FABRIC SOFTNER

Ingo Hamann, Bad Orb; Elke Hohn; Hans-Jurgen Kohle, both of Schuchtern; Winfried Wehner, Neuhof, and Joachim Weigand, Freigericht, all of Fed. Rep. of Germany, assignors to Rewo Chemische Werke GmbH, Fed. Rep. of Germany

Filed Apr. 1, 1992, Ser. No. 861,451
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1991, 4110663
Int. Cl.[5] D06M *10/08;* **C11D** *17/00, 1/12;* **A61K** *7/06*
U.S. Cl. 252—8.8 **6 Claims**

1. An aqueous final-rinse fabric softener comprising 5 to 30% by weight of at least one ammonium compound of the general formula (1)

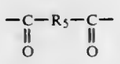


wherein

R^1 and R^{11} are the same or different and each is H, $-CH_3$, $-C_2H_5$, $-(C_3H_6O)_pH$, or $-(C_2H_4O)_eH$;

R^2, R^3, R^7 and R^8 are the same or different and each is a straight-chain or branched alkyl radical containing 1-18 carbon atoms, or a straight-chain or branched alkylene radical containing 2-18 carbon atoms;

R^4 and R^6 are the same or different and are represented by the formula $-(CH_2-CHR^9-O)_d-$ wherein d is zero to 20 and in each of the units of the formula $-(CH_2-CHR^9-O)-$ R^9 is independently H or $-CH_3$, and wherein the oxygens of said alkoxy groups are attached to the carboxyl groups in formula (1), provided that R^9 is —H in up to 10 of said units and R^9 is $-CH_3$ in up to 10 of said units;



is the radical of a dimerized fatty acid, said fatty acid containing 16-22 carbon atoms before dimerization;

x and y are independently —O— or —NH—;

$A^{-\alpha}$ and $B^{-\beta}$ are the same or different and each is the anion of a water-soluble monobasic or polybasic inorganic or organic acid, and a, b and c are integers related such that $c=[(a)(\alpha)+(b)(\beta)]/2$;

k and n are the same or different and each is an integer from 2-4;

p and e are the same or different and each is an integer from 1-5; and

j and m are the same or different and each is zero or one, provided that j is zero when x is —NH— and m is zero when y is —NH—.

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5,254,272

LUBRICANT COMPOSITIONS WITH METAL-FREE ANTIWEAR OR LOAD-CARRYING ADDITIVES AND AMINO SUCCINATE ESTERS

David K. Walters, Camberley, England, and Arthur S. Thomas, Swansea, Wales, assignors to Ethyl Petroleum Additives Limited, Bracknell, England

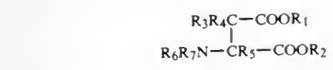
Continuation of Ser. No. 633,776, Dec. 26, 1990, abandoned. This application Nov. 2, 1992, Ser. No. 970,549

Claims priority, application United Kingdom, Dec. 22, 1989, 8929096

Int. Cl.[5] C10M *137/08, 133/16*

U.S. Cl. 252—32.7 E 40 Claims

1. A metal free lubricant composition comprising a major amount of oil of lubricating viscosity and minor amounts of (a) a metal-free anti-wear or load-carrying additive containing sulphur and/or phosphorus and (b) a corrosion inhibitor in the form of an amino succinate ester of formula



in which each of R_1 and R_2 is alkyl of 1 to 30 carbon atoms; each of R_3, R_4 and R_5 is selected from hydrogen and alkyl of 1 to 4 carbon atoms; and each of R_6 and R_7 is selected from hydrogen, alkyl of 1 to 30 carbon atoms, and an acyl group derived form a saturated or unsaturated carboxylic acid of up to 30 carbon atoms, at least one of R_6 and R_7 being a said acyl group.

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GREASE COMPOSITION

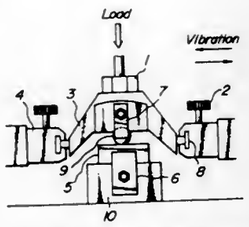
Hachiro Kageyama, Kamakura; Shoji Yamanaka, Hiroshima, and Shigeo Tamai, Yokohama, all of Japan, assignors to Kyodo Yushi Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 740,179, Aug. 5, 1991, abandoned. This application Oct. 6, 1992, Ser. No. 956,962

Claims priority, application Japan, Aug. 6, 1990, 2-206703; Jul. 10, 1991, 3-195058

Int. Cl.[5] C10M *115/08, 113/00*

U.S. Cl. 252—34 9 Claims



1. A grease composition consisting essentially of a base oil and 1-70% by weight of at least one intercalation compound consisting of a metallic phosphorus chalcogenide as a host layer and an alkylamine or alkylammonium chloride as a guest.

5,254,274

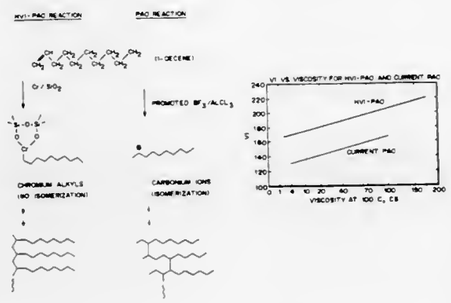
ALKYLAROMATIC LUBRICANT FLUIDS

Suzzy C. Ho, Plainsboro, and Margaret M. Wu, Belle Mead, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

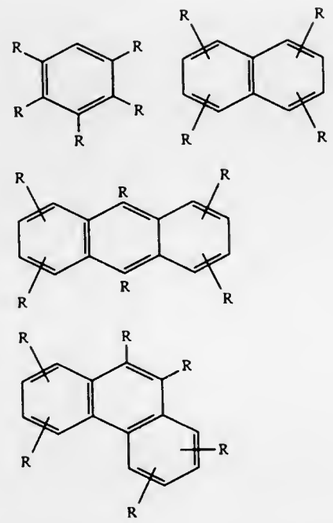
Division of Ser. No. 629,946, Dec. 19, 1990, Pat. No. 5,132,478, and a continuation-in-part of Ser. No. 402,378, Sep. 5, 1989, abandoned, each is a continuation-in-part of Ser. No. 293,911, Jan. 6, 1989, abandoned. This application Apr. 2, 1992, Ser. No. 862,039

Int. Cl.[5] C10M *107/00, 107/02*

U.S. Cl. 252—45 10 Claims



1. An alkylaromatic hydrocarbon composition having the structure



where at least one R group is the hydrocarbon residue derived from an olefin oligomer having a branch ratio of less than 0.19 produced by the oligomerization of a C_2-C_{20} 1-alkene; and where the remaining R groups are hydrogen, C_1-C_{20} cyclic or acyclic alkyl and alkenyl, aryl, NH_2, acylamido, halogen, acyl, NO_2, YO and YS where Y is hydrogen, acyl, alkoxycarbonyl, phenyl and C_1-C_{20} cyclic or acyclic alkyl and alkenyl.

5,254,275

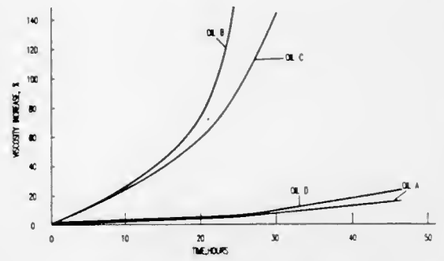
LUBRICATING OIL CONTAINING AN O-ALKYL-N-ALKOXYCARBONYLTHIONOCARBAMATE (PNE-633)

Morton Beltzer; Jacob J. Habeeb, both of Westfield, N.J., and Karla S. Colle, Houston, Tex., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

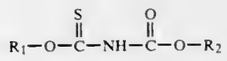
Continuation-in-part of Ser. No. 805,757, Dec. 12, 1991, abandoned. This application Jul. 13, 1992, Ser. No. 912,539

Int. Cl.[5] G01M *135/18*

U.S. Cl. 252—47.5 10 Claims

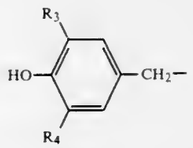


1. A lubricating oil composition which comprises
(a) a lubricating oil basestock, and
(b) an 0-alkyl-N-alkoxycarbonylthionocarbamate having the formula

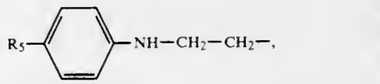


where

R_1 is a hindered phenol of the formula



or an aniline moiety of the formula



R_2 is an alkyl group, an aryl group, an alkaryl group, an arylalkyl group, or substituted derivatives thereof, containing from 1 to 20 carbon atoms, R_3 and R_4 are each alkyl containing from 1 to 12 carbon atoms, and R_5 is alkyl containing from 2 to 12 carbon atoms.

5,254,276

DIOL PHOSPHITE ADDUCTS OF OLEFINS AS MULTIFUNCTIONAL LUBRICANTS AND ADDITIVES FOR LUBRICANTS

Linda A. Benjamin, Westville; Andrew G. Horodysky, Cherry Hill, both of N.J.; Derek A. Law, Yardley, and Shi-Ming Wu, Newtown, both of Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

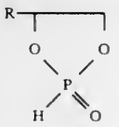
Continuation-in-part of Ser. No. 641,326, Jan. 15, 1991, abandoned, which is a continuation of Ser. No. 292,066, Dec. 30, 1988, abandoned. This application Feb. 3, 1992, Ser. No. 829,653

The portion of the term of this patent subsequent to Dec. 10, 2008, has been disclaimed.

Int. Cl.[5] C10M *137/12;* C07F *9/02*

U.S. Cl. 252—49.8 19 Claims

1. An improved lubricant composition comprising a major proportion of an oil of lubricating viscosity or a grease prepared therefrom and a minor multifunctional antiwear, antioxidant, extreme pressure amount of olefin-phosphate adduct reaction products of (a) olefins or oligomers thereof having at least one free olefinic group and (b) aliphatic diol-derived phosphites having the following generalized structure:



where R is an alkyl group of 1 to 12 carbon atoms, phenyl, or aralkyl and R optionally contains oxygen, sulfur or nitrogen or mixtures thereof.

5,254,277

CORROSION INHIBITOR COMPOSITION FOR FORMULATED POLYOL ESTER FLUIDS

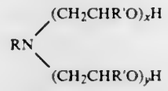
William F. Gentit, Weston, Conn., and Sydney H. Shapiro, Chicago, Ill., assignors to Akzo N.V., Arnhem, Netherlands

Filed Dec. 20, 1991, Ser. No. 811,400

Int. Cl.[5] C10L *105/56*

U.S. Cl. 252—51.5 R 6 Claims

1. A polyol ester lubricant composition which comprises a predominant amount of a polyol ester basestock and an effective amount range from about 0.1% to about 5.0% by weight of the composition for corrosion inhibition of a mixture of a hydroxylamine compound and an alkyldiamine dicarboxylate in a weight ratio of from about 0.5:1 to about 2:1 wherein the hydroxylamine compound is of the formula



where x and y are integers whose sum ranges from 2 to 5, R' is selected from the group consisting of hydrogen, methyl, ethyl and phenyl, and R is selected from the group consisting of C_8 to C_{24} alkyl, $R'OCH_2CH_2CH_2$, where R' is C_6 to C_{24} alkyl, and $R''CONHCH_2CH_2CH_2$, where R'' is C_7 to C_{23} alkyl and wherein the alkyldiamine dicarboxylate is of the formula

$$RNH(CH_2)_nNH_2{\cdot}2R'COOH$$

where R is C_7 to C_{23} alkyl-containing, R' is long chain alkyl or alkenyl, and n is an integer of up to about 6.

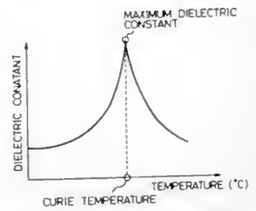
VOL 1155 ISS 3 OCT 19 1993 UMI

5,254,278

LEAD TITANATE BASED PIEZOELECTRIC CERAMIC MATERIAL

Kazuhide Kaneko, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

Filed May 15, 1992, Ser. No. 883,956
Claims priority, application Japan, May 16, 1991, 3-111535
Int. Cl.[5] C04B *35/46*
U.S. Cl. 252—62.9 5 Claims



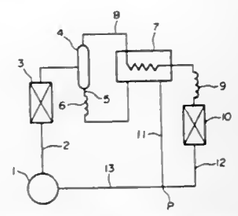
1. Lead titanate based piezoelectric ceramic materials wherein the composition can be represented by $(Pb_{1-(3/2)x}A_x)(Ti_{1-y}B_y)O_3$ wherein A represents one or more elements selected from the group consisting of La and Sm, B represent one or more elements selected from the group consisting of Mn, Ni and Cr, and $0.02 \leqq x \leqq 0.06$ and $0.001 \leqq y \leqq 0.007$.

5,254,279

NONHAZARDOUS AND ENVIRONMENTALLY NONDESTRUCTIVE REFRIGERANT COMPOSITION

Kazuo Takemasa; Yutaka Ohmori, both of Ohta, and Jiro Yuzawa, Ohizumi, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Mar. 30, 1992, Ser. No. 859,820
Claims priority, application Japan, Apr. 2, 1991, 3-70081
Int. Cl.[5] C09K *5/04*
U.S. Cl. 252—67 3 Claims



1. A ternary refrigerant composition consisting essentially of from 75 to 99 wt % of chlorodifluoromethane and 1-chloro-1,1-difluoroethane and from 1 to 25 wt % of octafluoropropane, wherein the proportion of said chlorodifluoromethane ranges from 2.8 parts by weight per part by weight of said 1-chloro-1,1-difluoroethane to 14 parts by weight per part by weight of said 1-chloro-1,1-difluoroethane.

5,254,280

REFRIGERATION COMPOSITIONS HAVING POLYOXYALKYLENE GLYCOLS WITH ALKYLENE GROUPS HAVING AT LEAST 4 CARBON ATOMS THEREIN

Raymond H. P. Thomas; David Nalewajek; Hang T. Pham, and David P. Wilson, all of Erie, N.Y., assignors to AlliedSignal Inc., Morristown, N.J.

Continuation-in-part of Ser. No. 614,549, Nov. 16, 1990, Pat. No. 5,154,846, which is a continuation-in-part of Ser. No. 290,120, Dec. 27, 1988, Pat. No. 4,975,212. This application Jul. 28, 1992, Ser. No. 922,113
The portion of the term of this patent subsequent to Dec. 4, 2007, has been disclaimed.
Int. Cl.[5] C09K *5/04*
U.S. Cl. 252—68 21 Claims

1. A composition for use in compression refrigeration and air-conditioning comprising:
(a) at least one refrigerant selected from the group consisting of hydrofluorocarbon, hydrochlorofluorocarbon, fluorocarbon, and chlorofluorocarbon; and
(b) at least one polyoxyalkylene glycol selected from the group consisting of polyoxyalkylene glycol which is at least difunctional with respect in hydroxyl groups and other polyoxyalkylene glycols having at least one alkyl cap on one end thereof; wherein said polyoxyalkylene glycol has a molecular weight of about 300 to about 4,000, has a viscosity of about 5 to about 150 centistokes at 37° C., and is made from alkylene oxide having at least 4 carbon atoms; and
(c) a lubricant selected from the group consisting of mineral oil, alkyl benzene, and ester.

5,254,281

SOAP BARS WITH POLYHYDROXY FATTY ACID AMIDES

Francisco A. Pichardo, Cincinnati, and James E. Kaleta, Fairfield, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 645,361, Jan. 29, 1991, abandoned. This application Jan. 8, 1992, Ser. No. 818,321
Int. Cl.[5] C11D *9/00*
U.S. Cl. 252—108 2 Claims

1. A soap composition in bar form, consisting essentially of:
(a) from about 75% to about 85% by weight of a substantially water-soluble non-lithium mixed C_{12}–C_{18} fatty acid soap;
(b) at least about 1% by weight of a polyhydroxy fatty acid amide surfactant of the formula
wherein R^1 is C_1–C_4 hydrocarbyl, R^2 is C_{11}–C_{17} alkyl or alkenyl and Z is 1-deoxyglucityl or 2-deoxyfructityl; and
(c) the balance comprising water and optional minor ingredients.

5,254,282

ACIDIFIED NMP COMPOSITIONS STABILIZED WITH RESPECT TO COLOR FORMATION THEREIN

Frank Fusiak, Bayonne, N.J., assignor to Verona Inc., Greenville, S.C.

Filed Mar. 31, 1992, Ser. No. 860,968
The portion of the term of this patent subsequent to Sep. 17, 2008, has been disclaimed.
Int. Cl.[5] C11D *7/32, 7/50;* C09D *9/00*
U.S. Cl. 252—143 3 Claims

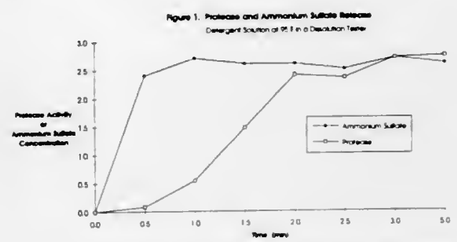
1. A paint remover composition which is stabilized against significant long-term color formation therein consisting essentially of a mixture of about 75–99% by weight N-methyl-2-pyrrolidone, and about 1–25% by weight of an inorganic or organic acid having a $pKa \geqq 4.0$, and about 10–1000 ppm of a chelating agent selected from the group consisting of ethylenediamine-tetraacetic acid, hydroxyethylethylenediaminetriacetic acid, their sodium or potassium salts, and mixtures thereof.

5,254,283

ISOPHTHALIC POLYMER COATED PARTICLES

Raymond E. Arnold, San Francisco, and Nathaniel T. Becker, Burlingame, both of Calif., assignors to Genencor International, Inc. and Eastman Kodak Co., both of Rochester, N.Y.

Filed Jan. 17, 1991, Ser. No. 642,596
Int. Cl.[5] C11D *3/386, 3/37;* C12N *9/99*
U.S. Cl. 252—174.12 8 Claims



1. A particulate enzyme containing material coated with a continuous layer capable of delaying the release of at least a portion of the particulate enzyme containing material in aqueous solutions, said layer comprising a non-water soluble isophthalic acid polymer.

5,254,284

GLASS CLEANER HAVING ANTIFOG PROPERTIES

Patrizia Barone, Wayne, N.J.; Michael T. Endres, Woodridge, and Shanker B. Patel, Tinley Park, both of Ill., assignors to Miles Inc., Elkhart, Ind.

Filed Apr. 13, 1992, Ser. No. 867,379
Int. Cl.[5] C11D *3/075, 3/22*
U.S. Cl. 252—174.15 8 Claims

1. In a composition for cleaning hard surfaces which comprises water, a cleaning agent and a surfactant, the improvement which comprises the inclusion therein of a silicone glycol, having a molecular weight of from about 2,000 to 4,000 in an amount of from about 0.01 to 1.0% w/w of the composition and from about 0.01 to 1.0% w/w of a xanthan gum having a molecular weight of from about 1.5 million to 2.5 million to inhibit the fogging of said hard surface subsequent to the application of the cleaning composition thereto.

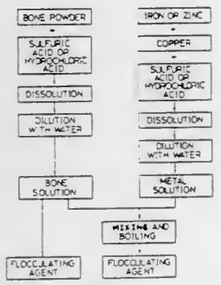
5,254,285

FLOCCULATING AGENT FOR THE PURIFICATION OF FLUIDS

Sanai Fujita, No. 2256-13 Kitatokorozawa-cho, Tokorozawa-shi Saitama-ken, Japan

Continuation-in-part of Ser. No. 276,265, Nov. 25, 1988, Pat. No. 5,047,255. This application Sep. 9, 1991, Ser. No. 756,809
Claims priority, application Japan, Apr. 28, 1988, 63-105579; Apr. 28, 1988, 63-105580
Int. Cl.[5] C02F *5/00, 1/52*
U.S. Cl. 252—175 6 Claims

1. A liquid flocculating agent for purification of fluids, said flocculating agent consisting essentially of a mixture of:
a first liquid and a second liquid;
said first liquid consisting essentially of calcined animal bone dissolved in at least one acid for dissolving said calcined animal bone; and
said second liquid consisting essentially of at least one metal dissolved in at least one acid for dissolving said at least one metal;
said mixture being a third liquid for flocculating organic substances in liquids, said third liquid consisting essentially of said first liquid and said second liquid;
said calcined animal bone is prepared by the steps of:
calcining crude animal bone to produce calcined bone having a water content of less than about 6 percent by weight; and
beneficiating said calcined animal bone to a size of between about 20 mesh to about 200 mesh;
said at least one acid of first liquid consists essentially of at least one member of the group consisting of:
hydrochloric acid and sulfuric acid;
said at least one metal consists essentially of at least one member of the group consisting of:



copper, iron, and zinc; and
the at least one acid of said second liquid consists essentially of at least one member of the group consisting of: hydrochloric acid and sulfuric acid;
said calcined animal bone being present in said first liquid in a quantity sufficient to produce flocculating action of the third liquid; and
said at least one metal being present in said second liquid in a quantity sufficient to promote coagulation and solidification of organic substances present in a liquid containing said third liquid.

5,254,286

COMPOSITION FOR CONTROLLING SCALE IN BLACK LIQUOR EVAPORATORS

Jasbir S. Gill, McKees Rocks, and Kenneth F. Henderson, Pittsburgh, both of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 708,522, May 31, 1991, abandoned. This application Dec. 10, 1992, Ser. No. 988,544
Int. Cl.[5] C02F *5/10, 1/00;* D21C *7/14*
U.S. Cl. 252—180 1 Claim

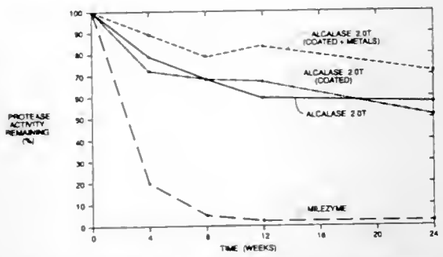
1. A composition useful as a deposit control agent to control the formation, deposition and adherency of scale imparting compounds in an aqueous system involving the processing of black liquor during paper making, comprising an anionic/cationic polymer mixture of:
(a) a polyanion selected from polyacrylic acid, having a weight average molecular weight of about 2 thousand, and
(b) the polycation poly(dimethyldiallylammonium chloride) having a weight average molecular weight of 1 million,
wherein the weight ratio of polyanion (a) to polycation (b) is about 1:2.

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5,254,287
ENCAPSULATED ENZYME IN DRY BLEACH COMPOSITION

David L. Deleeuw, San Ramon; Dale S. Steichen, Byron, and James D. Mitchell, Alamo, all of Calif., assignors to The Clorox Company, Oakland, Calif.

Continuation of Ser. No. 402,207, Sep. 1, 1989, Pat. No. 5,167,854, which is a continuation-in-part of Ser. No. 384,954, Jul. 24, 1989, Pat. No. 5,093,021, which is a continuation-in-part of Ser. No. 45,316, May 4, 1989, Pat. No. 4,863,626, which is a continuation-in-part of Ser. No. 899,461, Aug. 22, 1986, Pat. No. 5,089,167, which is a continuation-in-part of Ser. No. 767,980, Aug. 21, 1985, abandoned, and a continuation-in-part of Ser. No. 792,344, Oct. 28, 1985, abandoned, which is a continuation-in-part of Ser. No. 767,980, Oct. 28, 1985, Ser. No. 384,954, Oct. 28, 1985, which is a division of Ser. No. 45,316, Oct. 28, 1985. This application Jan. 13, 1992, Ser. No. 821,522
Int. Cl.[5] C01B *15/055*
U.S. Cl. 252—186.27 **7 Claims**



1. A dry, granular oxidant bleach and enzyme composition which has enhanced enzyme stability despite prolonged storage in the presence of said oxidant bleach, and improved enzyme solubility in an aqueous medium, said bleach composition comprising:

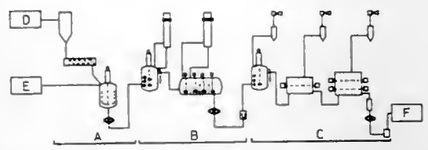
a) an oxidant selected from the group consisting of alkali metal perborates, alkali metal percarbonates, hydrogen peroxide adducts, and mixtures thereof; and

b) a hydrolase which is coated substantially completely by a water soluble polymer in the range of 10–40% by weight of the uncoated hydrolase, in which an additive selected from the group consisting of reducing agents, a transition metal, and mixtures thereof is incorporated in an effective amount to enhance hydrolase stability.

5,254,288
PROCESS FOR THE PRODUCTION OF POLYESTER WITH INCREASED ELECTROCONDUCTIVITY

Johannes M. Verheijen, Ranst; August M. Mariën, Westerlo; Roger I. De Saedeleer, Edegem; Ludovicus M. Hellemans, Boechout, and Jan H. Van Hove, Berchem, all of Belgium, assignors to Agfa-Gevaert, N.V., Morstel, Belgium

Filed Feb. 20, 1992, Ser. No. 837,912
Claims priority, application European Pat. Off., Feb. 28, 1991, 91200424.9
Int. Cl.[5] H01B *1/00, 1/20, 1/22;* C08G *63/692*
U.S. Cl. 252—518 **9 Claims**



1. A continuous direct esterification and polycondensation process for the production of polyester comprising units of ethylene terephthalate as the major repeating units by supplying terephthalic acid and ethylene glycol to bis(betahydroxyethyl) terephthalate or its oligomer so as to carry out esterification, followed by polycondensing the resulting oligomer under increasingly reduced pressure, and wherein a solution in ethylene glycol of a metallic salt is added to the oligomer reaction mixture when the esterification rate has reached at least 80% characterized in that said solution is added to said oligomer reaction mixture in such manner that escape of the added ethylene glycol out of the said oligomer reaction mixture is prohibited.

5,254,289
NONLINEAR OPTICAL AND CONDUCTIVE POLYMERIC MATERIAL

Thomas J. Barton; Sina Ijadi-Maghsoodi, and Yi Pang, all of Ames, Iowa, assignors to Iowa State University, Ames, Iowa

Division of Ser. No. 594,481, Oct. 9, 1990, Pat. No. 5,115,062, which is a continuation-in-part of Ser. No. 442,946, Nov. 29, 1989, abandoned. This application May 4, 1992, Ser. No. 877,925
Int. Cl.[5] H01B *1/06*
U.S. Cl. 252—520 **16 Claims**

1. A conductive polymeric material comprising a polymer doped with a dopant to enhance conductivity, the polymer having been formed by polymerization of a diethynylsilane by exposure to a catalyst and having a molecular weight between about 20,000 and about 200,000 grams per mole.

5,254,290
HARD SURFACE CLEANER

Genevieve Blandiaux, Rue Lonhienne, 3A, B-4870 Trooz; Myriam Loth, Rue de Tilleur, 404, B-4420 Saint-Nicolas, and Jean Massaux, Heids de Hansez, 80C, B-4877 Olne, all of Belgium

Filed Apr. 25, 1991, Ser. No. 691,621
Int. Cl.[5] C11D *1/12*
U.S. Cl. 252—545 **8 Claims**

1. A phosphate-free hard surface aqueous cleaning composition consisting of approximately by weight:

(a) 2 to 10 percent of a surfactant system consisting of a mixture of 1 to 8 percent of an anionic surfactant and 1 to 6 percent of a nonionic surfactant, wherein said nonionic surfactant is selected from the group consisting of ethoxylated fatty alcohols and ethoxylated/propoxylated fatty alcohols and mixtures thereof and said anionic surfactant is selected from the group consisting of ethoxylated fatty alcohols and ethoxylated/propoxylated fatty alcohols and mixtures thereof and said anionic surfactant is selected from the group consisting of water soluble alkane sulfonates, having 10 to 20 carbon atoms alkali metal salts of said sulfonates alkyl glycerol ether sulfonates having 10 to 18 carbon atoms, alkali metal salt of said alkyl glycerol ether sulfonates, paraffin sulfates having 10 to 18 carbon atoms, alkyl ether sulfates having 12 to 18 carbon atoms and mixtures thereof;

(b) a solvent system consisting of a mixture of 0.1 to 5.0 percent of a water insoluble hydrocarbon solvent being selected from the group consisting of C_{8-20} paraffins and C_{8-20} isoparaffins and mixtures thereof and 0.5 to 6.0 percent of a water soluble or water dispersible solvent which is selected from the group consisting of alkyoxyalkanols, alkoxyalkoxy-alkanols, alkylene glycol, glycol ethers and alkylene acetates and mixtures thereof;

(c) 0.5 to 3.0 percent of a fatty acid having about 12 to about 18 carbon atoms;

(d) 2.0 to 8.0 percent of a sequestering agent selected from the group consisting of 2-hydroxy-3-aminopropionic-N,N diacetic and alkali metal salts of 2-hydroxy-3-aminopropionic-N,N-diacetic acid; and

(e) the balance being water, wherein said cleaning composition has a pH of about 8.5 to 12.5.

5,254,291
SURFACTANT COMPOSITIONS

Terry Crutcher; Joe D. Sauer; Kim R. Smith, and James E. Borland, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

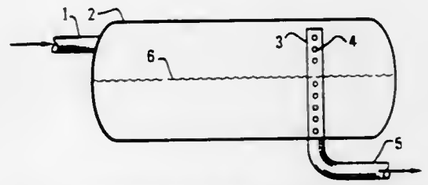
Filed May 10, 1991, Ser. No. 698,551
Int. Cl.[5] C11D *1/831*
U.S. Cl. 252—545 **5 Claims**

1. A surfactant mixture consisting of (1) about 5–75% by weight of an ethoxylated fatty alcohol corresponding to the formula $Z(OCH_2CH_2)_mOH$ in which Z is an alkyl group containing 10–18 carbons and m is an integer of 2–15, (2) about 10–75% by weight of a fatty acid alkanolamide, and (3) about 10–75% by weight of an alkyl sulfate.

5,254,292
DEVICE FOR REGULATING AND REDUCING THE FLUCTUATIONS IN A POLYPHASIC FLOW, AND ITS USE

Daniel Gabryelczyk, Rueil Malmaison; Marcel Arnaudeau, Paris, and Maurice Cessou, Saint Symphorien D'Ozon, all of France, assignors to Institut Francais du Petrole, Rueil Malmaison Cedex, France

Continuation of Ser. No. 576,414, Sep. 30, 1991, abandoned. This application Feb. 22, 1993, Ser. No. 20,434
Claims priority, application France, Feb. 2, 1989, 89 01332
Int. Cl.[5] B01F *3/04*
U.S. Cl. 261—76 **16 Claims**



1. A device for regulating and reducing the fluctuations in composition of a polyphasic flow having at least a liquid phase and a gas phase, said device comprising a container for separation of said phases which form a liquid-gas interface within said container, said container having at least one inlet opening for the polyphasic mixture and means for extracting the contents of said container, characterized by said extraction means including a portion extending vertically in said container to traverse the liquid-gas interface in normal operation, and by said extraction means having extraction openings distributed on both sides of said interface in normal operation for extracting liquid and gas phases from said container; density and distribution of said openings being determined to attenuate the fluctuations of the polyphasic flow if the level of the liquid-gas interface is displaced a certain value from an equilibrium level of the liquid-gas interface situated in a predetermined zone of the vertically extending portion of the extraction means.

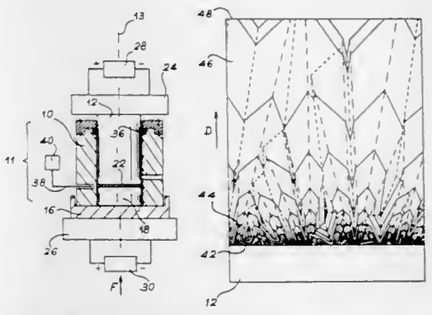
5,254,293
METHOD FOR OBTAINING AN ORGANIC POLYCRYSTALLINE MATERIAL

Jean Flicstein, Paris, and Denise Morin, Nogent sur Marne, both of France, assignors to l'Etat Francais, represente par le Ministere des Postes, des Telecommunications et de l'Espace (Centre National d'Etudes des Telecommunications), France

Division of Ser. No. 320,569, Mar. 8, 1989, Pat. No. 5,177,205. This application Oct. 20, 1992, Ser. No. 964,078
Claims priority, application France, Mar. 14, 1988, 88 03285
Int. Cl.[5] B29D *11/00;* B29C *43/02*
U.S. Cl. 264—1.3 **10 Claims**

1. Method for obtaining a polycrystalline material comprising elongated monocrystalline grains orientated along a given direction, this material being formed from a molecular organic compound whose molecules have at least one axis of symmetry along this direction and at least one dipole orientated along this axis, this method comprising the following stages:

a)—preparation of a fine powder of said compound having a size grading less than one micrometre,



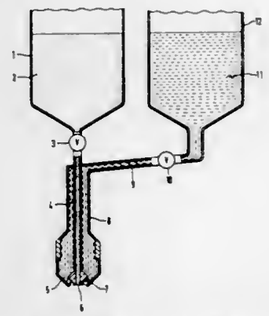
b)—drying under vacuum of the powder,

c)—compression of the powder under vacuum along this direction.

5,254,294
SOFT GELATIN CAPSULES

Jens-Christian Wunderlich, Heidelberg; Ursula Schick, Wiesloch; Jurgen Freidenreich, Schriesheim, and Jurgen Werry, Ludwigshafen, all of Fed. Rep. of Germany, assignors to Alfatec Pharma GmbH, Heidelberg, Fed. Rep. of Germany

Filed Apr. 30, 1992, Ser. No. 876,863
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1992, 4201178
Int. Cl.[5] B29C *35/00*
U.S. Cl. 264—4 **9 Claims**



1. A process for the preparation of soft shaped gelatin capsules containing a filling material by a dropping procedure comprising the steps of coating said filling material with a soft gelatin mass to form a coated material, forming droplets of said coated material and causing said droplets to fall into a cooling bath which contains an exceedingly cold liquid having a boiling point of between −70° C. and −220° C. which has no negative biological influence or leaves no harmful residue upon the soft gelatin capsules, wherein said droplets are shaped and solidified into capsules.

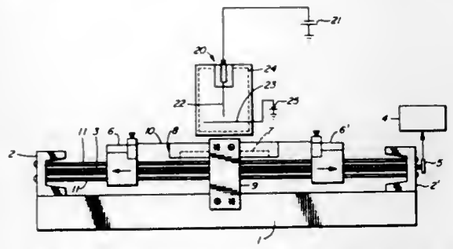
VOL 1155 ISS 3 OCT 19 1993 UMI

5,254,295
METHOD FOR FORMING REINFORCED POWDER PARTICLES
John A. Grassi, Princeville, and M. Brad Beardsley, Laura, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.
Filed Dec. 4, 1992, Ser. No. 985,716
Int. Cl.[5] B29B *9/10*
U.S. Cl. 264—14 6 Claims



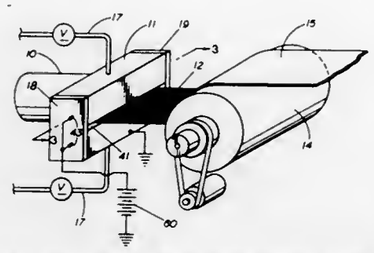
1. A method of forming solid reinforced powder particles, consisting essentially of:
forming a flowable slurry comprising powder matrix particles and reinforcing particles;
pressurizing said slurry;
discharging said pressurized slurry from an atomizing nozzle;
forming a plurality of discrete droplets containing said reinforcing particles coated with said powder matrix particles; and,
suspending said atomized discrete droplets in said heated air temperature environment for a time sufficient to evaporate substantially all free moisture from said discrete droplets, said heated air temperature environment comprising air heated to a temperature of less than about 500° C.

5,254,296
METHOD TO DOUBLE THE PIEZO-AND PYROELECTRIC OF POLYVINYLIDINE FLUORIDE (PVDF) FILMS
Martin M. Perlman, Montreal, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada
Filed Nov. 13, 1991, Ser. No. 791,275
Claims priority, application Canada, Dec. 11, 1990, 2032015
Int. Cl.[5] B29C *35/00*
U.S. Cl. 264—22 13 Claims



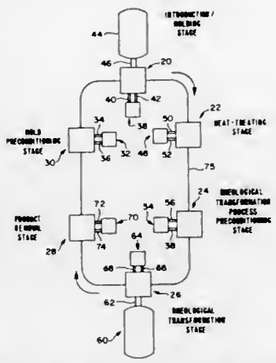
1. A method of manufacturing polymers films with enhanced piezoelectric and pyroelectric constants wherein films of polyvinylidene fluoride (PVDF) and co-polymers thereof are subjected to simultaneous stretching and corona poling at an elevated temperature, the corona poling being performed with a grid placed between a corona needle and a film, the grid being electrically connected to a controlled voltage source in order to control the surface potential of that film.

5,254,297
CHARGING METHOD FOR MELTBLOWN WEBS
William E. Deeds, Knoxville, Tenn., assignor to Exxon Chemical Patents Inc., Linden, N.J.
Filed Jul. 15, 1992, Ser. No. 913,839
Int. Cl.[5] B29C *71/00*
U.S. Cl. 264—22 6 Claims



1. In a meltblowing process wherein a molten thermo-plastic resin is extruded through a plurality of orifices of a meltblowing die to form a plurality of fibers, and wherein hot air streams are blown into contact with the extruded fibers at such an angle to stretch and attenuate the fibers, the improvement comprising:
(a) electrically charging the hot air streams prior to contacting the extruded fibers; and
(b) thereafter causing the hot air streams to contact the extruded fibers and impart an electrical charge to the fibers.

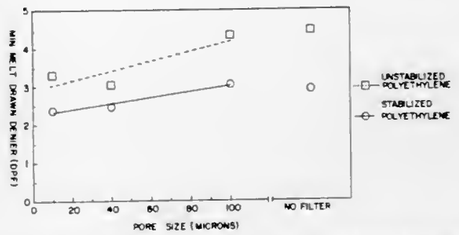
5,254,298
PLASTIC MOLDING PROCESS WITH PRECONDITIONING AND HEAT-TREATING OF MOLD AND PLASTIC BEFORE RHEOLOGICAL TRANSFORMATION
Jean-Pierre Ibar, New Canaan, Conn., assignor to Solomat Partners, L.P., Stamford, Conn.
Continuation-in-part of Ser. No. 245,412, Sep. 26, 1988, abandoned. This application Mar. 4, 1991, Ser. No. 663,989
Claims priority, application France, Dec. 2, 1986, 86 16834
Int. Cl.[5] B29C *35/02*
U.S. Cl. 264—23 10 Claims



1. A molding process for producing a molded plastic product, said process comprising the following steps:
(a) subjecting at least one mold to a mold preconditioning stage, said mold preconditioning stage comprises heating said mold to a temperature which is conducive for having a deformable plastic material molded therein,
(b) introducing a deformable plastic material into or over a cavity defined within said preconditioned mold,

(c) molding said deformable plastic material in accordance with a specific plastic molding technique,
(d) heat-treating said deformed plastic material by subjecting said material to a treating temperature (T_O) which is at least equal to about 1.0 times the value of said material's glass transition temperature (T_g), when T_g is expressed in degrees Kelvin,
(e) subjecting said mold and said heat-treated material to a rheological transformation process preconditioning stage, said rheological transformation process preconditioning stage comprises adjusting the temperature of said mold to a temperature which is conducive for having said heat-treated material subjected to a rheological transformation process.
(f) subjecting said heat-treated material contained within said preconditioned mold to a rheological transformation process, and
(g) removing said molded product from said mold.

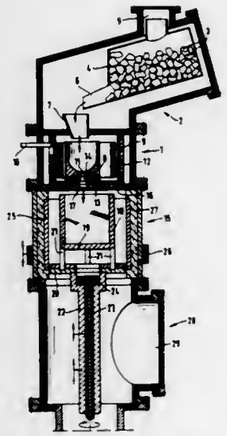
5,254,299
METHOD OF IMPROVING MELT SPINNING OF LINEAR ETHYLENE POLYMERS
Stephen P. Krupp, Houston; John O. Bieser, Lake Jackson, and Edward N. Knickerbocker, League City, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.
Continuation-in-part of Ser. No. 428,280, Oct. 27, 1989, Pat. No. 5,112,686, which is a continuation-in-part of Ser. No. 339,335, Apr. 17, 1989, Pat. No. 4,990,204, which is a continuation-in-part of Ser. No. 114,169, Oct. 27, 1987, Pat. No. 4,842,922. This application Aug. 27, 1991, Ser. No. 750,662
Int. Cl.[5] D01D *1/10*
U.S. Cl. 264—40.2 11 Claims



1. In a method of melt spinning at least one linear ethylene polymer into a fine denier fiber consisting essentially of linear ethylene polymer, the improvement characterized by applying an amount of shear and micro-mixing in a melt spin pack immediately prior to extrusion of the linear ethylene polymer through a spinneret die so that the linear ethylene polymer is melt drawn into a fiber of less than about 6 denier per filament.

5,254,300
PROCESS FOR CASTING SILICON BLOCKS OF COLUMNAR STRUCTURE
Georg Priewasser, Ach, Austria; Lothar Huber, Burghausen, Fed. Rep. of Germany, and Gerhard Spatzier, Egglsberg, Austria, assignors to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH, Burghausen, Fed. Rep. of Germany
Filed Jun. 7, 1991, Ser. No. 712,340
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1990, 4018967
Int. Cl.[5] C04B *35/60*
U.S. Cl. 264—40.4 6 Claims

1. A process for casting polycrystalline silicon blocks as a base material for solar cells, comprising:
gradually fusing solid silicon in a melting station by supplying heating power to the melting station;
releasing the fused silicon therefrom continuously, or in phases into a mold, said mold having a bottom and a bottom region, thereby causing an increasing filling level of the mold with molten silicon;
after covering said mold bottom with molten silicon, starting the solidification of silicon from the mold bottom, thereby generating a crystallization front between solidified and fused silicon;
stabilizing said crystallization front with an energy supply to a heating zone surrounding said bottom region of the mold;
moving the crystallization front in the direction of the increasing filling level of the mold by a relative movement



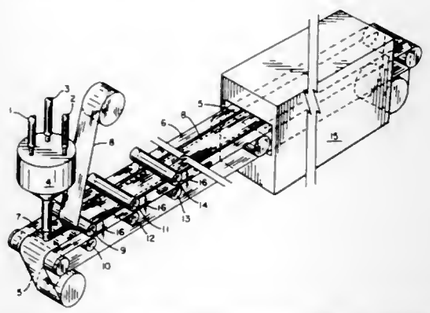
between the mold and the heating zone, the crystallization front being held within the heating zone;
controlling a melt level of the molten silicon superimposed upon the crystallization front by matching the quantity of molten silicon released from the melting station to the energy supply to the heating zone;
stopping the feeding of molten silicon into the mold after the intended filling level has been reached; and
causing the remaining molten silicon in the mold to crystallize so that a completely solidified silicon block having approximately vertically oriented crystallites is obtained.

5,254,301
PROCESS FOR PREPARING A SHEET OF POLYMER-BASED FOAM
Robert W. Sessions, Hinsdale; Roy D. Carr, Burr Ridge, and Peter E. Morin, Orland Park, all of Ill., assignors to Ferris Mfg. Corp., Burr Ridge, Ill.
Continuation of Ser. No. 422,954, Oct. 18, 1989, abandoned, which is a continuation-in-part of Ser. No. 175,036, Mar. 29, 1988, Pat. No. 5,064,653. This application Feb. 5, 1993, Ser. No. 14,044
Int. Cl.[5] B29C *67/22*
U.S. Cl. 264—46.2 61 Claims

1. A continuous process for the preparation of a polymer-based porous cellular foam sheet of a predetermined thickness wherein the foam is produced from a reaction product capable of curing at ambient temperature formed by the reaction of a reactant composition comprising a prepolymer and water, said process comprising:
(a) providing a continuously moving substrate for supporting the foam sheet being formed;
(b) depositing said reaction product onto said substrate at a rate and in an amount such that the thickness of the sheet formed by the reaction product, if allowed to rise to its fullest extent without undergoing compression, would be greater than said predetermined thickness;

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(c) allowing said reaction product to begin rising to form a rising foam sheet;
(d) passing said rising foam sheet into and through a compression zone;
(e) compressing said rising foam sheet to a predetermined degree while maintaining the thus-compressed thickness of the rising foam sheet constant as it passes through said compression zone;



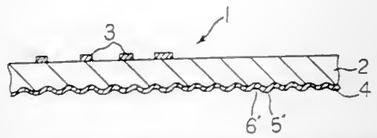
(f) removing said rising foam sheet from said compression zone;
(g) allowing the rising foam sheet exiting from said compression zone to rise to provide a porous cellular foam sheet of said predetermined thickness; and
(h) finally curing said foam sheet.

5,254,302

METHOD OF PREPARING AN IN-MOLD LABEL

Masaaki Yamanaka, Ibaraki, Japan, assignor to Oji Yuka Goseishi Co., Ltd., Tokyo, Japan

Filed Mar. 3, 1992, Ser. No. 845,256
Claims priority, application Japan, Mar. 4, 1991, 3-062722
Int. Cl.[5] B05D *5/10*
U.S. Cl. 264—129 **4 Claims**



1. A method of preparing an in-mold label which comprises, embossing a resin film to form a gravure pattern comprising from 60 to 200 roll-formed lines per inch, stretching the embossed film, coating the stretched film on its embossed pattern side with a heat-sensitive liquid resinous adhesive in an amount of from 1 to 10 g/m^2 on a dry resin basis, and then drying the applied adhesive to form an adhesive layer on the film.

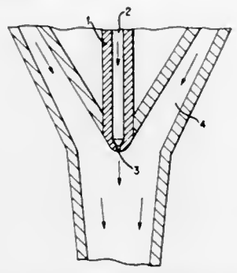
5,254,303

METHOD AND DEVICE FOR MANUFACTURING MOLDED BODIES

Karl Ostertag, Erlenbach; Gerhard Ries, Obernburg, and Alfons Leeb, Kleinwallstadt, all of Fed. Rep. of Germany, assignors to Akzo N.V., Netherlands

Continuation of Ser. No. 656,557, Feb. 15, 1991, abandoned. This application Jun. 17, 1992, Ser. No. 899,933
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1990, 4004798
Int. Cl.[5] D01D *5/14*
U.S. Cl. 264—181 **19 Claims**

1. A method for shaping bodies from threadforming substances, said threadforming substances comprising a homogeneous liquid multicomponent system, wherein the liquid multicomponent system is forced through at least one nozzle opening into a pressurized liquid, which is at a pressure greater than atmospheric pressure, the pressurized liquid and the liquid multicomponent system are moved in the direction of travel in an elongated tapered channel system composed of sections,



each section having a constant or slightly tapering cross section, and the flow rate of the pressurized liquid is increased as a function of said tapering whereby the flow rate of the pressurized liquid at an output end of the channel system is increased to at least 350 m/min.

5,254,304

INJECTION MOLDING PROCESS FOR PRODUCING A BOX-SHAPED PLASTIC HOUSING

Katsura Adachi, Sagamihara; Makoto Usui, Yokohama; Kota Nishii, Isehara; Takashi Muraya, Kawasaki; Toshihiro Kobayashi, Machida; Kazuyuki Tamura, Mishima, and Junichi Sato, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki and Fujitsu Kasei Ltd., Yokohama, both of Japan

Filed Oct. 15, 1991, Ser. No. 775,561
Claims priority, application Japan, Oct. 15, 1990, 2-273191
Int. Cl.[5] B29C *45/26*
U.S. Cl. 264—328.1 **5 Claims**

SIMULATION TEST OF RESIN FLOW



▲ GATE
①-⑥ ACCUMULATION OF GAS

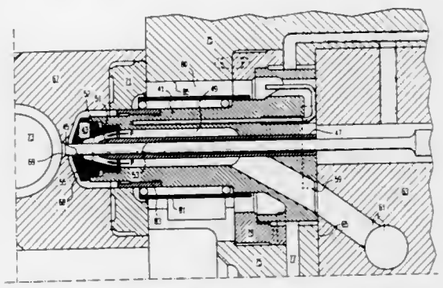
1. An injection molding process for producing a integrally molded box-shaped plastic housing of a resin material, comprising:
defining integral housing portions comprising a substantially flat-shaped bottom wall portion of a first thickness and having a peripheral edge, an upright wall portion having a bottom edge integrally joining the peripheral edge of the bottom wall portion and extending substantially transversely to the bottom wall portion to a first height and having a second thickness, the integrally connected bottom and upright wall portions defining the box-shaped plastic housing and having respective outer and inner surfaces, the inner surfaces of the respective bottom and upright wall portions defining the interior volume of the box-shaped plastic housing, and at least one integral rib structure on the inner surface of the bottom wall portion and projecting, in a transverse direction to the inner surface of the bottom wall portion, into the interior of the housing, the first thickness of the bottom wall portion being selected in the range of from one-third to two-thirds the second thickness of the upright wall portion;
forming a cavity in a mold, the cavity comprising cavity portions respectively corresponding to the bottom wall portion, the upright wall portion, and each rib structure of the housing, the cavity portions being in fluid communication and the mold further being defined to include first and second mold parts selectively moveable into assembled relationship with a surface portion of the first mold part being received within a corresponding surface portion of the second mold part and, when so assembled, the respective surface portions of the first and second mold parts defining the mold cavity therebetween and, correspondingly, the inner and outer surfaces of the bottom and upright wall portions of the housing;
defining injection gates including at least one gate in direct fluid communication with the rib structure cavity portion and at least a second gate in direct fluid communication with the upright wall cavity portion; and
simultaneously injecting the resin, in a fluid state, into the mold cavity through each of the gates and thereby utilizing each rib structure cavity portion and the sidewall cavity portion as passageways through which the injected fluid resin flows and enters into and fills all of the cavity portions completely, including the bottom wall cavity portion of the first, relatively smaller thickness dimension.

5,254,305

INJECTION NOZZLE AND METHOD FOR CHARGING AN INJECTION NOZZLE

Louis Fernandez, and Otto Hofstetter, both of Uznach, Switzerland, assignors to Otto Hofstetter AG, Switzerland

Continuation-in-part of Ser. No. 630,348, Dec. 17, 1990, abandoned, which is a continuation of Ser. No. 281,197, Dec. 7, 1988, abandoned. This application Sep. 26, 1991, Ser. No. 767,032
Claims priority, application Switzerland, Dec. 10, 1987, 4831/87
Int. Cl.[5] B29C *45/38*
U.S. Cl. 264—328.9 **22 Claims**



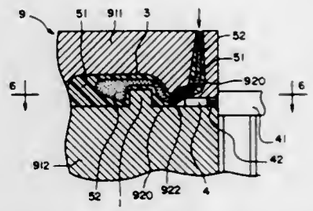
1. A method for injecting a moldable material through an injection nozzle to a mold cavity, said injection nozzle including a nozzle body defining a nozzle channel extending in an axial direction and having a first end and a second end, inlet means adjacent said first end of said nozzle channel for introducing the moldable material into said nozzle channel, a nozzle outlet having an outlet diameter connected to said nozzle body at said second end of said nozzle channel, a nozzle pin having a pin diameter slidably disposed in said axial direction in said nozzle channel between a first position to open said nozzle outlet and a second position to close said nozzle outlet, guide sleeve means for slidably supporting said nozzle pin in said nozzle channel, said guide sleeve means having one end immovably connected with respect to said nozzle body adjacent said first end of said nozzle channel and a free end proximate said nozzle outlet, a nozzle pin channel disposed between said free end of said guide sleeve means and said nozzle outlet, said nozzle pin channel having a length which is substantially equal to said pin diameter, and distribution means in said nozzle channel for directing the moldable material from said inlet means to said nozzle pin channel, said method comprising the steps of:
providing the moldable material to said nozzle channel with a pressure distribution which is asymmetrical in radial directions with respect to said axial direction, and
conveying the moldable material with said asymmetrical pressure distribution and with a substantially uniform temperature distribution through said distribution means in direct contact with an outside surface of said guide sleeve means from said inlet means to said nozzle pin channel and then to said nozzle outlet, wherein said length of said nozzle pin channel with respect to said pin diameter substantially prevents deflection of said nozzle pin from said axial direction.

5,254,306

METHOD FOR MAKING A DOUBLE LAYER MOLDED PRODUCT USING A DAM IN THE MOLD CAVITY

Yoshihiro Inada; Hiroshi Mukai; Yasunobu Teramoto, and Hiroshisa Narukawa, all of Aichi, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Oct. 28, 1991, Ser. No. 782,144
Claims priority, application Japan, Oct. 29, 1990, 1-291049; Oct. 31, 1990, 1-296706
Int. Cl.[5] B29C *45/16, 45/28, 45/30*
U.S. Cl. 264—572 **10 Claims**



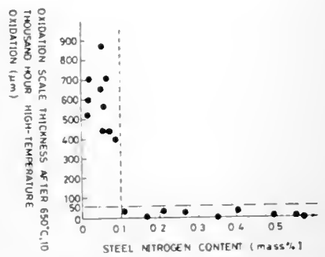
1. A method of molding a double layer molded product comprising:
providing a mold including wall means defining a molding cavity; means defining a gate through which materials are injected into said molding cavity, said gate defining a longitudinal axis of injection; and means defining a dam within said molding cavity, said dam intersecting said axis of injection, at least one gap being defined between said dam and said wall means of said molding cavity;
injecting a skin-forming material into said molding cavity through said gate; and
injecting a core-forming material into said skin-forming material within said molding cavity through said gate, said core-forming material being intersected and diverted to flow through said at least one gap whereby pressure gradients along said axis of injection and in a direction transverse thereto are made substantially uniform whereby the core material is uniformly injected into the skin-forming material from said gate to more remote portions of said mold cavity.

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5,254,307
HIGH-NITROGEN FERRITIC HEAT-RESISTING STEEL WITH HIGH NIOBIUM CONTENT AND METHOD OF PRODUCTION THEREOF

Yasushi Hasegawa; Masahiro Ohgami; Hisashi Naoi, all of Kanagawaken, and Fujimitsu Masuyama, Nagasakiken, all of Japan, assignors to Nippon Steel Corporation and Mitsubishi Jukogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Apr. 28, 1992, Ser. No. 875,685
Claims priority, application Japan, Apr. 30, 1991, 3-097765
Int. Cl.[5] C22C *38/22, 38/24;* B22D *1/00*
U.S. Cl. 420—66 8 Claims



1. A high-nitrogen ferritic heat-resisting steel with high Nb content, consisting of, in weight percent
0.01–0.30% C,
0.02–0.80% Si,
0.20–1.00% Mn,
8.00–13.00% Cr,
0.005–1.00% Mo,
0.20–1.50% W,
0.05–1.00% V,
over 0.12 up to 2.00% Nb, and
0.10–0.50% N,
and being controlled to include
not more than 0.050% P,
not more than 0.010% S, and
not more than 0.020% O,
the remainder being Fe and unavoidable impurities.

5,254,308
ZIRCONIUM ALLOY WITH IMPROVED POST-IRRADIATION PROPERTIES

Anand M. Garde, West Simsbury, and Satya R. Pati, Simsbury, both of Conn., assignors to Combustion Eogineering, Inc., Windsor, Conn.

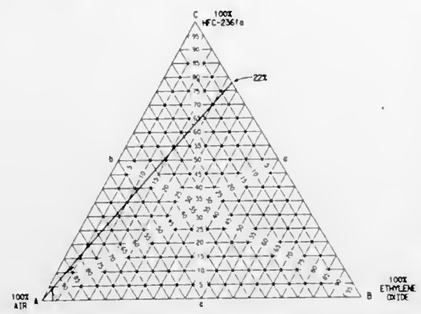
Filed Dec. 24, 1992, Ser. No. 996,567
Int. Cl.[5] C22C *16/00*
U.S. Cl. 420—422 21 Claims

1. A zirconium alloy for use in light water nuclear core structure elements and fuel cladding, which comprises an alloy composition as follows:
tin, in a range of 0.45 to 0.75 wt. %;
iron, in a range of 0.4 to 0.53 wt. %;
chromium, in a range of 0.2 to 0.3 wt. %
niobium, in a range of 0.3 to 0.5 wt. %;
nickel, in a range of 0.012 to 0.03 wt. %;
silicon, in a range of 50 to 200 ppm;
carbon, in a range of 80 to 150 ppm;
oxygen, in a range of 1,000 to 2,000 ppm; and
the balance being of zirconium.

5,254,309
STERILANT MIXTURE AND STERILIZATION METHOD

Vinci M. Felix, Kennett Square, Pa., and Tuneen Chisolm-Carter, New Castle, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del. and Praxair Tech., Inc., Danbury, Conn.

Continuation of Ser. No. 920,034, Jul. 21, 1992, abandoned. This application Feb. 2, 1993, Ser. No. 12,790
Int. Cl.[5] A61L *2/16*
U.S. Cl. 422—34 9 Claims

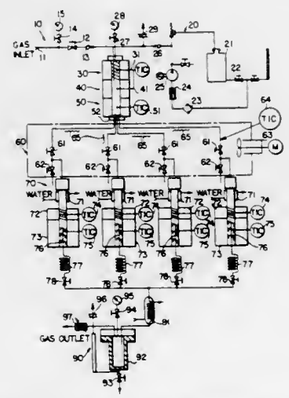


1. A sterilant mixture which comprises from 15 to 30 mole percent ethylene oxide and from 70 to 85 mole percent 1,1,1,3,3,3-hexafluoropropane.

5,254,310
HIGH TEMPERATURE GENERALIZED CORROSION TEST INSTALLATION

Joelle A. Bressan, Rosny-sous-Bois, France, assignor to Gaz de France, Paris, France

Filed Dec. 19, 1991, Ser. No. 810,691
Claims priority, application France, Dec. 31, 1990, 90 16544
Int. Cl.[5] G01N *17/00, 33/00*
U.S. Cl. 422—53 14 Claims

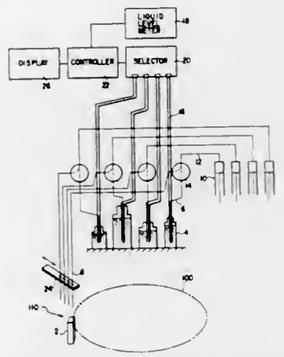


1. A generalized corrosion test installation comprising:
a selective liquid-feeder assembly for feeding a liquid;
a selective gas-feeder assembly for feeding a gas under pressure; wherein, at least one of the liquid and the gas is corrosive;
a mixer and preheater assembly comprising a vaporizing stage in fluid communication with the liquid-feeder assembly for vaporizing the fed liquid, a mixer stage in fluid communication with the gas-feeder assembly for mixing the gas and the vapor, and a preheater stage for preheating the gas-vapor mixture to a temperature on the order of from 150° C. to 300° C.;
a distributor assembly for distributing a flow of the preheated gas-vapor mixture to a plurality of generalized corrosion test circuits each comprising a reactor including an intermediate preheater stage for intermediately preheating the gas-vapor mixture up to a temperature on the order of from 400° C. to 600° C. and a final heater stage for containing at least one sample of a material to be tested in contact with a final flow of the gas-vapor mixture and for raising the temperature of the final flow to a temperature between about 700° C. and about 850° C.;
cooling means for cooling an outflow of the gas-vapor mixture from each of the test circuits; and
a separator device for separately recovering the liquid phase and the gas phase from said gas-vapor mixture.

5,254,311
CONTINUOUS MULTINOMINAL ANALYSIS METHOD AND APPARATUS

Masao Ushikubo, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 29, 1992, Ser. No. 905,938
Claims priority, application Japan, Jul. 2, 1991, 3-161615
Int. Cl.[5] G01N *1/14, 35/08*
U.S. Cl. 422—81 8 Claims

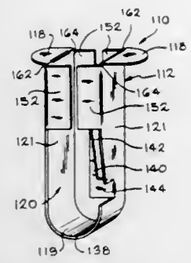


1. A multinominal analysis method for sucking liquid reagents contained in a plurality of vessels by sucking means, adding the liquid reagents to specimens and analyzing reactions of the specimens with the reagents, said method comprising the steps of:
(a) determining first and second residual amounts of the liquid reagent in each of the vessels, the first residual amount corresponding to a minimum amount of reagent which is to remain in each respective vessel so that the sucking means is capable of sucking reagent, and the second residual amount corresponding to an amount slightly greater than the first residual amount;
(b) sucking the liquid reagents contained in the vessels by the sucking means, adding the reagents to the specimens, thereby causing reaction of the specimens with the reagents, and analyzing the reactions;
(c) detecting that the liquid reagent in each of the vessels is reduced to the second residual amount;
(d) indicating on a display at least one of a liquid reagent which has been reduced to the second residual amount and the vessel containing the liquid reagent; and
(e) continuing analysis of the reactions until the liquid reagent which has been reduced to the second residual amount is further reduced to the first residual amount.

5,254,312
APPARATUS FOR COLLECTING A BLOOD SAMPLE FROM A SEALED TUBE

Charles R. Staebler, 7874 Van Raden, Pinckney, Mich. 48169; Rodney D. Capps, II, 1274 Shevchenko, Ann Arbor, Mich. 48103, and John F. Richards, 3849 Van Amberg Rd., Brighton, Mich. 48116

Filed May 18, 1992, Ser. No. 884,132
Int. Cl.[5] B01L *3/02*
U.S. Cl. 422—100 4 Claims



1. An integrally formed apparatus for use with a receptacle in obtaining a blood sample from a sealed container, said apparatus comprising:
a body including an upper end, a lower end, and side walls disposed between said upper and lower ends, said side walls being spaced apart and cooperating to generally define a central cavity in said body for receiving said sealed container therein, said side walls being opposingly positioned to one another and connected together by said lower end thereby providing said body with a substantially U-shape having open sides adjacent to said side walls;
means formed on said body for mounting said body to said receptacle such that said body extends into said receptacle; and
an element integrally formed from a portion of said body and being located within said central cavity and having a sharp tip directed toward said upper end of said body, said element being capable of penetrating said sealed container when said sealed container is received within said central cavity thereby providing an opening in said sealed container through which said blood sample can flow into said receptacle when said body is mounted on said receptacle.

5,254,313
APPARATUS FOR DILUTING AND MIXING A LIQUID SPECIMEN

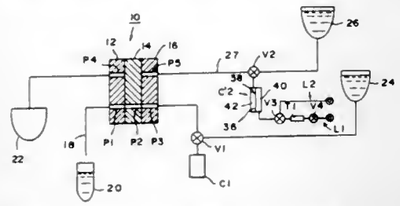
Toshiaki Kuroda, Takasagoshi, and Hiroyuki Inoue, Kakogawashi, both of Japan, assignors to Toa Medical Electronics Co., Ltd., Kobe, Japan

Division of Ser. No. 822,896, Jan. 21, 1992. This application Jul. 15, 1992, Ser. No. 913,455
Claims priority, application Japan, Apr. 24, 1991, 3-122553; Aug. 9, 1991, 3-224615
Int. Cl.[5] G01N *1/14*
U.S. Cl. 422—100 3 Claims

3. An apparatus for diluting and mixing specimen, comprising:
a sampling valve for aspirating a liquid specimen;
suction means connected to the sampling valve for applying a suction to the sampling valve to thereby aspirate the liquid specimen;
a reaction vessel connected to the sampling valve; and
reagent discharge means connected to the sampling valve, said reagent discharge means including: a working chamber; a thin film separating the working chamber into an air chamber and a liquid chamber connected to the sampling valve; a three-way changeover valve connected to the air

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chamber; a positive pressure supply line connected to the three-way changeover valve; a negative pressure supply line connected to the three-way changeover valve; and a positive pressure accumulator and a valve disposed in the



positive pressure supply line for operating the thin film, wherein

the reagent discharge means is operative such that a specific ratio of a mixed solution of specimen and reagent is prepared in the reaction vessel.

5,254,314

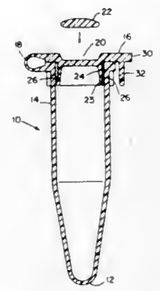
MICROCENTRIFUGE TUBE

Zhilong Yu, Silver Spring; Zhipeog Yu, Laurel, and Perry B. Newton, III, Arnold, all of Md., assignors to International Mould Engineering, Arnold, Md.

Continuation of Ser. No. 398,152, Aug. 24, 1989, abandoned. This application Oct. 19, 1992, Ser. No. 963,280

Int. Cl.[5] **G01N** *21/03*

U.S. Cl. 422—102 **2 Claims**



1. An improved lid for a test tube, said test tube having a sealed bottom, an open top having inner and outer edges, said tube also having an inner surface and an outer surface, and a lid shaped to fit into the open top of the tube, said lid having an upper surface and lower surface, said lid also having a rim attached to the upper surface of the lid, said rim extending over the top of the test tube when the lid is covering the test tube, said rim having an upper surface and a lower surface, said lid having top and bottom surfaces and said lid having a plug connected to and extending from the bottom surface of said lid, said plug having an inner and outer surface, an upper portion attached to the bottom surface of the lid and a lower portion distal from said bottom surface, said plug being insertable into the tube when the lid is shut onto the open top of the tube, wherein the improvement comprises:

a flange connected to and extending vertically downwardly from the lower surface of the rim of the lid, said flange being at least approximately three sixteenths (3/16) of an inch (4.7 mm) wide and wherein the flange is as long as or longer than the plug.

5,254,315

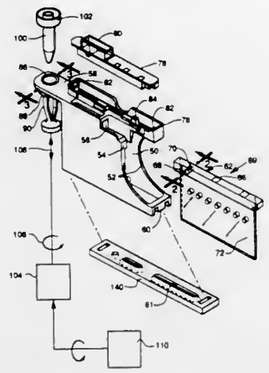
CARRIER DEVICE

Colin A. Nurse, Newark, Del., and Robert E. Bernstine, Chesapeake City, Md., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 26, 1991, Ser. No. 736,155

Int. Cl.[5] **B01L** *9/06*

U.S. Cl. 422—104 **3 Claims**



1. An analytical carrier device for processing samples held in a reaction container comprising:

a hollow vessel comprising a top side and other sides defining a hollow chamber within the vessel wherein the top side has an exterior top side that is not within the hollow chamber,

a support member having an identifying indicia and a transparent container attached to the support member wherein the support member is constructed and adapted to be slidable within the chamber of the vessel,

a sample container constructed and adapted to be removably mounted to the exterior top side of the vessel,

a reaction container holder constructed and adapted to hold the reaction container and to be mounted on the exterior top side wherein the reaction container holder is further constructed and adapted to be agitated independently from the hollow vessel to facilitate the mixing of the contents in the reaction container.

5,254,316

REACTORS FOR HETEROGENEOUS SYNTHESIS

Umberto Zardi, Via Lucino 57, CH-6932 Breganzona, and Giorgio Pagani, Lugano, both of Switzerland, assignors to Ammonia Casale S.A., Italy and Umberto Zardi, Breganzona, Switzerland

Continuation of Ser. No. 453,709, Dec. 20, 1989, abandoned. This application Apr. 3, 1992, Ser. No. 864,178

Claims priority, application Switzerland, Dec. 21, 1988, 04739/88

Int. Cl.[5] **B01J** *8/04;* **C01C** *1/04*

U.S. Cl. 422—148 **5 Claims**

3. A converted ammonia reactor comprising:

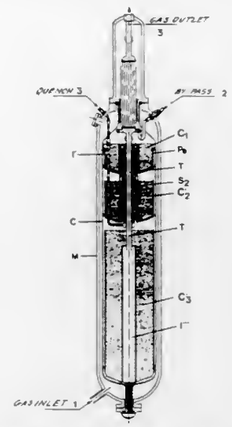
two upper catalyst beds contained within two substantially annular shaped catalyst baskets, each catalyst basket having a substantially centrally located opening;

a lower catalyst bed contained in a third catalyst basket, the lower catalyst bed substantially filling the lower half of the ammonia reactor:

means for directing gas flow radially or axially-radially in the two upper catalyst beds and the lower catalyst bed; and

a heat exchanger including means for indirect cooling for cooling gas flowing between the two upper catalyst beds

and the lower catalyst bed, the heat exchanger being located in the substantially centrally located opening and



extending substantially coextensive with both of the catalyst baskets containing the two upper catalyst beds.

5,254,317

DEVICE FOR GENERATING OZONE

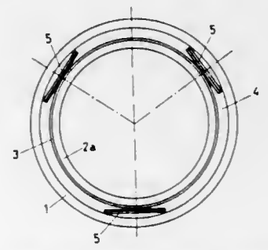
Melchior Fischer, Lieli, and Paul Köstinger, Regensdorf, both of Switzerland, assignors to Ozonia AG, Zurich, Switzerland

Filed Mar. 15, 1991, Ser. No. 669,939

Claims priority, application Switzerland, Mar. 28, 1990, 1023/90

Int. Cl.[5] **B01J** *19/12*

U.S. Cl. 422—186.18 **9 Claims**



1. A device for generating ozone from oxygen or an oxygen-containing gas by silent electric discharges in a discharge gap through which the gas flows, comprising:

a tubular outer electrode and an inner electrode concentrically surrounded by the outer electrode,

a dielectric which separates the electrodes from one another arranged in the discharge gap, and

metallic spring elements provided for spacing the dielectric from the outer electrode, said metallic spring elements having free ends pointing essentially tangentially with respect to the dielectric surface and resting against the inside wall of the outer electrode.

5,254,318

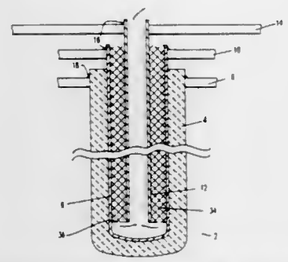
LINED REFORMER TUBES FOR HIGH PRESSURE REFORMER REACTORS

Joseph J. Williams, Sudbury; Robert A. Rosenberg, Dover, and Lane J. McDonough, Natick, all of Mass., assignors to Stone & Webster Engineering Corporation, Boston, Mass.

Filed Jul. 20, 1992, Ser. No. 916,366

Int. Cl.[5] **B01J** *08/04*

U.S. Cl. 422—197 **36 Claims**



1. A reformer tube assembly for use in convective reformer reactors having feed gas inlet means, product gas outlet means, a plurality of reformer tubes cooperating with said inlet and outlet means, and means for supplying a heating medium to an exterior portion of the reformer tubes, said reformer tubes comprising a ceramic tube, a portion of which is exposed to a feed or process gas, having an interior and an inner diameter, an exterior and an outer diameter, an open top end, a closed bottom end and a means for support attached adjacent to said open top end, a corrosion resistant liner, conforming to the entire portion of the interior of the ceramic tube exposed to the feed or process gas, said corrosion resistant liner having an inner diameter, an outer diameter equal to the inner diameter of the ceramic tube at operating temperature, an open top end and a closed bottom end, and a centrally disposed metal tube having an interior, an exterior, an open top end, an open bottom end and a means for support attached adjacent to the open top end of the centrally disposed metal tube wherein there is a space between the open bottom end of the centrally disposed metal tube and the bottom closed end of the corrosion resistant liner and further wherein the centrally disposed metal tube has an outer diameter less than the inner diameter of the corrosion resistant liner thereby forming an annulus therebetween for disposition of a catalyst whereby during operation feed gas is introduced to the catalyst in the annulus between the corrosion resistant liner and the centrally disposed metal tube for reaction to form product gases which pass between the open bottom end of the centrally disposed metal tube and the closed bottom end of the corrosion resistant liner and are removed up through the interior of the centrally disposed metal tube and out of the reformer reactor through the product gas outlet.

5,254,319

SINGLE CRYSTAL PULLING APPARATUS

Michiaki Oda, and Koji Mizuishi, both of Annaka, Japan, assignors to Shin-Etsu Handotai Co., Ltd., Japan

Filed Feb. 3, 1992, Ser. No. 829,900

Claims priority, application Japan, Feb. 8, 1991, 3-37895

Int. Cl.[5] **C30B** *15/10*

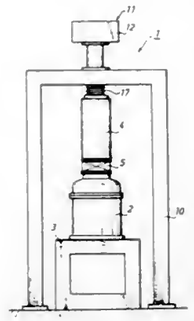
U.S. Cl. 422—249 **6 Claims**

1. A single crystal pulling apparatus having a main chamber steadied on a first frame body, a pull chamber provided above the main chamber with an isolation valve provided between said main chamber and said pull chamber, and a winder assembly provided above the pull chamber, said single crystal pulling apparatus further comprising

a second frame body which is founded independently from the main chamber and the pull chamber, wherein

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said winder assembly is rigidly supported by said second frame body independently of said pull chamber, and



a hermetical and flexible tube provided between the winder assembly and the pull chamber to communicate the winder assembly with the pull chamber.

5,254,320

METHOD FOR ROASTING SULPHIDE ORES

Rolf E. Malmström, Helsinki, Finland, assignor to A. Ahlstrom Corporation, Noormarkku, Finland

Filed Dec. 17, 1991, Ser. No. 808,720
Claims priority, application Finland, Dec. 17, 1990, 906201
Int. Cl.[5] C01G *7/00, 5/00, 3/12, 1/12*
U.S. Cl. 423—28 **20 Claims**

1. A method of roasting sulphide ore materials containing precious metals and impurities using a furnace, the roasting resulting in the production of sulphur dioxide gas, comprising the steps of:

(a) feeding sulphide ore material containing precious metals and impurities into a furnace;

(b) roasting the sulphide ore material in the furnace at a roasting temperature of about 600–850° C. to produce a roasted material;

(c) mixing lime-containing material with water to produce an aqueous slurry;

(d) supplying the aqueous slurry to the furnace to cool the furnace and to effect reaction of sulphur dioxide gas with lime to form calcium sulphate;

(e) discharging calcium sulphate and/or sulphite from the furnace; and

(f) discharging roasting material from the furnace, and acting on the roasted material to recover precious metal therefrom.

5,254,321

PROCESS FOR CHROMIUM REMOVAL USING AN INORGANIC SULFUR COMPOUND

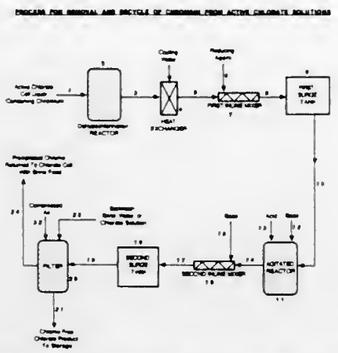
John R. Jackson, Wilmington, N.C., assignor to Huron Tech Corp., Delco, N.C.

Continuation-in-part of Ser. No. 759,656, Sep. 13, 1991, abandoned, which is a continuation of Ser. No. 611,796, Nov. 13, 1990, abandoned. This application Apr. 22, 1992, Ser. No. 872,110
Int. Cl.[5] C01G *37/02;* **B01D** *21/00*
U.S. Cl. 423—55 **15 Claims**

1. A process for the removal of chromium from a first, aqueous liquid or sludge, said process comprising:

A) adding to said first, aqueous liquid or sludge a reducing agent selected from the group consisting of an inorganic sulfur containing compound in which sulfur is present in the 4+ oxidation state, said inorganic sulfur containing compound being added in an amount to react with said chromium in said first, aqueous liquid or sludge,

B) reacting at a temperature of about 30° to about 55° C. and a pH of about 5 to about 7 in order to precipitate a chromium compound comprising substantially chromium oxide, and



C) separating said chromium oxide from said first aqueous liquid or sludge to obtain a second, aqueous liquid characterized as essentially chromium ion free.

5,254,322

METHOD FOR REDUCING AUTOMOTIVE NO_x EMISSIONS IN LEAN BURN INTERNAL COMBUSTION ENGINE EXHAUST USING A TRANSITION METAL-CONTAINING ZEOLITE CATALYST WHICH IS IN-SITU CRYSTALLIZED

Nazeer A. Bhore, Wilmington, Del.; Francis G. Dwyer, West Chester, Pa.; David O. Marler, Deptford, and John P. McWilliams, Woodbury, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Aug. 10, 1992, Ser. No. 927,108
Int. Cl.[5] B01J *8/00;* **C01B** *21/00;* **B01D** *47/00*
U.S. Cl. 423—239.2 **20 Claims**

1. A method for reducing nitrogen oxides contained in an exhaust gas from an internal combustion engine operating under lean burn conditions, which comprises contacting said exhaust gas at a temperature of at least 300° C. with a hydrothermally stable catalyst comprising a transition metal and a zeolite having the structure of ZSM-5, said zeolite being prepared by in-situ crystallization of an aggregate comprising ZSM-5 seeds, silica, and a crystalline silicate, wherein said exhaust gas has a molar ratio of hydrocarbons to nitrogen oxides of at least the stoichiometric ratio, said reducing is substantially effected by hydrocarbon reductant and said catalyst is capable of an absolute NO_x conversion activity of 30% or more after aging at 800° C. for 5 hours.

5,254,323

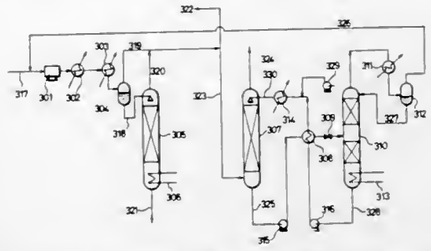
INDUSTRIAL PROCESS FOR THE SEPARATION AND RECOVERY OF CHLORINE

Hiroyuki Itoh; Yoshitsugu Kono; Isao Kikuchi; Shinji Takenaka, all of Ohmuta; Masanobu Ajioka, Yokohama, and Mitsuo Kudoh, Tokyo, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Continuation of Ser. No. 600,716, Oct. 22, 1990, abandoned, which is a division of Ser. No. 310,929, Feb. 16, 1989, Pat. No. 5,000,006. This application Aug. 3, 1992, Ser. No. 921,606
Claims priority, application Japan, Feb. 16, 1988, 63-31792; Feb. 17, 1988, 63-32837; Mar. 15, 1988, 63-59428
Int. Cl.[5] C01B *7/01;* **B01D** *53/34*
U.S. Cl. 423—241 **3 Claims**

1. A process for removal of chlorine from a gaseous mixture comprising chlorine gas and carbon dioxide gas, which comprises feeding an aqueous solution or suspension containing an alkali metal sulfite and/or an alkaline earth metal sulfite, and

washing the gaseous mixture with the solution or suspension while controlling the pH of the solution so as to ensure that



only chlorine is removed from the gaseous mixture, said pH being further limited to a value of from 1.9–6.3.

5,254,324

DINITRAMIDE SALTS AND METHOD OF MAKING SAME

Jeffrey C. Bottaro, Mountain View; Robert J. Schmitt, Redwood City; Paul E. Penwell, Menlo Park, and David S. Ross, Palo Alto, all of Calif., assignors to SRI International, Menlo Park, Calif.

Filed Jun. 18, 1990, Ser. No. 540,020
Int. Cl.[5] C01F *17/00*
U.S. Cl. 423—263 **21 Claims**

11. A N,N-dinitramide salt having the formula $M^{+r}[N(NO_2)_2^-]_r$ where r is the cationic charge of M and M is a cation selected from the group consisting of:

a) mono, di, and trivalent metal ions elected from the group consisting of Li, Na, K, Rb, Cs, Ca, Ba, Sr, Mg, Cu, Ag, and Au, Zn, Cd, Hg, Al, Sc, Y, Ga, In, Lanthanide elements (57–71), Ti, Zr, Hf, Ge, Sn, V, Nb, Ta, Cr, Mo, W, Mn, Tc, Re, Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, and Pt;

b) a cation having the formula $R_kH_mN_n^{+z}$, wherein n = 1 to 8, k = 0 to 2+n, z = 1 to n, m = n+2+z−k, and each R is the same or different 1–6 carbon straight chain or branched alkyl; and

c) a nitrogen-containing cation selected from the group consisting of guanidinium; triaminoguanidinium; nitronium; nitrosonium; an ionic polymer of ethyleneimine containing 1–10,000 nitrogen atoms; cubane-1,4-bis ammonium ion; cubane-1,2,4,7-tetra ammonium ion; cubane-1,2,3,4-tetra ammonium ion; cubane-1,3,5,7-tetra ammonium ion; cubane-1,2,3,4,7-penta ammonium ion; and cubane-1,2,4,6,8- penta ammonium ion.

5,254,325

PROCESS AND APPARATUS FOR PREPARING CARBON BLACK

Hiroshi Yamasaki; Yasuhiro Sagara; Kazuaki Shinohara; Hiroshi Nakagaki; Masaki Kurihara, and Takaaki Kanai, all of Fukuoka, Japan, assignors to Nippon Steel Chemical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 601,719, Dec. 19, 1990, abandoned. This application Apr. 20, 1992, Ser. No. 870,744
Claims priority, application Japan, Dec. 28, 1989, 1-338087; Feb. 28, 1990, 1-45319
Int. Cl.[5] C09C *1/50*
U.S. Cl. 423—450 **11 Claims**

1. In a process for preparing carbon black, in an apparatus having a substantially streamwise center line comprised of:

a combustion chamber, a cylindrical throat more contracted than said combustion chamber, and successively downstream from the throat, an expanding venturi portion, and a carbon black reaction chamber which is more expanded than said throat;

said process comprising:

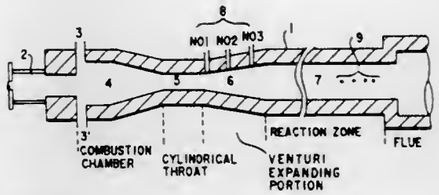
substantially combusting a fuel in said combustion chamber into a hot combustion gas, having properties necessary to support carbon black formation including substantially no combustable components;

feeding a carbon black precursor hydrocarbon material, having a CF value of at least less than about 10.1 and a BMCI value of more than about 100, into said hot combustion gas downstream of said combustion chamber, under conditions sufficient to convert such to carbon black in said reaction chamber;

forming carbon black from said hydrocarbon material in said reaction chamber; and

quenching the carbon black thus formed;

the improvement which comprises the combination of:



passing said hot combustion gas in a substantially one phase, plug laminar flow state, through at least said expanding venturi portion; and

spraying said carbon black precursor hydrocarbon material into said laminar flowing hot combustion gas, under conditions sufficient to convert such to carbon black, from hydrocarbon material spraying nozzles provided at at least two locations which are axially spaced from each other and are each radially spaced a different distance from the center line of said expanding venturi portion, at least one of which is in said expanding portion, the downstream of at least one of said locations being spaced radially further from said center line than at least one of an upstream of said locations.

5,254,326

PRODUCTION OF HYDROGEN PEROXIDE

David W. Leyshon; Robert J. Jones, and Robert N. Cochran, all of West Chester, Pa., assignors to ARCO Chemical Technology, L.P., Wilmington, Del.

Filed Mar. 22, 1993, Ser. No. 34,320
Int. Cl.[5] C01B *15/026*
U.S. Cl. 423—591 **2 Claims**

1. In a process for the production of hydrogen peroxide wherein methyl benzyl alcohol is reacted with molecular oxygen in the liquid phase in an oxidation zone to form hydrogen peroxide and a vapor stream is removed from the oxidation zone during the reaction, the improvement which comprises recovering about 5–70% of the product hydrogen peroxide from said vapor stream from the oxidation zone.

5,254,327

ZEOLITIC CATALYST OF MFI TYPE, ITS PREPARATION AND USE

Nelson P. Martinez; Juan A. Lujano, both of Edo Miranda; Nieves Alvarez; Francisco Machado, both of Caracas, and Carmen M. Lopez, San Antonio de los Altos, all of Venezuela, assignors to Intevep, S.A., Caracas, Venezuela

Filed Apr. 3, 1992, Ser. No. 863,125
Int. Cl.[5] C01B *33/24;* **B01J** *29/28*
U.S. Cl. 423—718 **13 Claims**

1. A MFI zeolitic material prepared from a gel product having a molar ratio of compounds as follows:

mixing the aqueous solution with a colloidal silica to form a gel product having a molar ratio of compounds as follows:

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$\frac{SiO_2}{Al_2O_3}$: 14–22;

$\frac{OH^-}{SiO_2}$: 0.055–0.065;

$\frac{Na_2O}{SiO_2}$: 0.08–0.11; and

$\frac{H_2O}{SiO_2}$: 14–22;

having a composition expressed in terms of molar ratios of oxides as follows:

$$ZM_{2/n}O:Al_2O_3:YSiO_2:Z\ H_2O$$

wherein M comprises at least one cation selected from Group I of the Periodic System of Elements, wherein X is the molar ratio of alkali cation oxide to alumina and is between 0.9 to 1.2, Y is the molar ratio of silica to alumina and is between 16 to 26, and Z is the molar ratio of water to alumina and is between 0.4 to 2.0, and wherein the zeolitic material is characterized by a d-spacing as follows:

Diffraction angle/2θ	Lattice distance Units (A)	Relative intensity
7.93	11.15	37
8.81	10.03	32
11.89	7.44	3
13.19	6.71	5
14.81	5.98	9
15.57	5.69	11
15.85	5.59	17
16.57	5.35	3
17.76	4.99	7
19.30	4.60	4
20.40	4.35	9
20.79	4.27	14
22.05	4.03	14
23.12	3.84	100
23.74	3.75	59
24.30	3.66	32
24.71	3.60	10
25.70	3.46	22
26.32	3.38	10
26.85	3.32	15
27.31	3.26	8
38.36	3.15	5
29.19	2.99	16
29.97	2.98	18
30.86	2.90	2
32.69	2.73	3.

5,254,328

METHOD OF PREPARING A RADIODIAGNOSTIC COMPRISING A GASEOUS RADIONUCLIDE, AS WELL AS A RADIONUCLIDE GENERATOR SUITABLE FOR USING SAID METHOD

Jacobus D. M. Herscheid, Nieuw Vennep, and Leo F. Van Roojj, Amstelveen, both of Netherlands, assignors to Mallinckrodt Medical, Inc., St. Louis, Mo.

PCT No. PCT/US90/03897, § 371 Date Jan. 23, 1992, § 102(e) Date Jan. 23, 1992

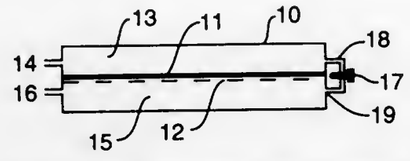
PCT Filed Jul. 11, 1990, Ser. No. 809,559

Claims priority, application Netherlands, Jul. 12, 1989, 8901792

Int. Cl.[5] A61K *43/00; C01G 57/00*

U.S. Cl. 424—1.1 **11 Claims**

1. A method or preparing a radiodiagnostic including a gaseous radioactive daughter nuclide formed by radioactive decay of a parent nuclide, the method comprising the step of eluting, with an eluent, the radioactive daughter nuclide from the parent nuclide, the parent nuclide being provided ionically on an ion exchange membrane, past which the eluent is made to flow.



5,254,329

METHOD FOR IMPROVING VISUALIZATION OF SEROTONERGIC STRUCTURES IN NONHUMAN VERTEBRATES

Melvyn H. Keiner, 436 Main St., Spotswood, N.J. 08884

Filed Mar. 11, 1991, Ser. No. 667,522

Int. Cl.[5] A61K *49/00, 49/02*

U.S. Cl. 424—9 **21 Claims**

1. A method for examining a serotonergic tissue structure of a nonhuman vertebrate, comprising the steps of:

(a) while the vertebrate is alive, intravenously administering L-tryptophan;

(b) sacrificing the vertebrate at a time significantly less than one hour after completing said administration step and (c) thereafter examining a serotonergic tissue structure of said vertebrate using serotonin-sensitive examination means.

5,254,330

AEROSOL CARRIERS

David Ganderton, Exeter, and Nuha M. Kassem, London, both of England, assignors to British Technology Group Ltd., London, England

Filed Sep. 20, 1991, Ser. No. 762,007

Claims priority, application United Kingdom, Jan. 24, 1990, 9001635

Int. Cl.[5] A61K *9/14*

U.S. Cl. 424—46 **14 Claims**



1. A dry powder inhalent composition comprising an effective amount of at least one non-proteinaccous pharmacological agent in admixture with a particulate carrier suitable for use in dry powder inhalent compositions, said carrier comprising particles having an average particle size of from 5.0 to 1000 microns and a rugocity as measured by air permeametry of less than 1.75.

5,254,331

SKIN CREAM COMPOSITION

Jack Mausner, New York, N.Y., assignor to Chanel, Inc., New York, N.Y.

Filed Sep. 12, 1991, Ser. No. 758,768

Int. Cl.[5] A61K *7/42, 7/48, 9/50*

U.S. Cl. 424—59 **6 Claims**

1. An emulsified emollient skin cream composition comprising: water, and emulsified and dispersed in the water:

(a) a protein complex comprising:

(i) human serum proteins comprising at least one protein fraction selected from the group consisting of the albumin fraction and the globulin fraction; and

(ii) hydrolyzed animal protein comprising at least one hydrolyzed protein selected from the group consisting of hydrolyzed bovine protein, hydrolyzed porcine protein, and hydrolyzed ovine protein;

(b) a protein-arginine-niacinamide-adenosine phosphate complex comprising propylene glycol, serum proteins, niacinamide, water, adenosine phosphate, and arginine;

(c) dimethylsilanoyl hyaluronate; and

(d) at least one emulsifying agent; the protein complex comprising from about 5.1% to about 6.9% of the composition, the protein-arginine-niacinamide-adenosine phosphate complex comprising from about 3.4% to about 4.6% of the composition, the dimethylsilanoyl hyaluronate comprising from about 5.1% to about 6.9% of the composition, (k) the emulsifying agent being present in a quantity sufficient to emulsify and disperse the protein complex, the protein-arginine-niacinamide-adenosine phosphate complex, and the dimethylsilanoyl hyaluronate, with water comprising the remainder of the skin cream composition.

5,254,332

LOW RESIDUE ANTIPERSPIRANT STICKS

Wendy R. Grezcyn, Randolph, and Linda J. Lancaster, Old Bridge, both of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Filed Mar. 20, 1992, Ser. No. 854,209

Int. Cl.[5] A61K *7/32, 7/34, 7/36, 7/38*

U.S. Cl. 424—66 **25 Claims**

1. An antiperspirant stick which provides the user with excellent antiperspirant/deodorant efficacy, reduced residue and high temperature stability, which comprises

(a) from about 25 to 45 percent by weight of a volatile silicone oil;

(b) from about 10 to 20 percent by weight of a water-insoluble liquid emollient; characterized in that the weight ratio of volatile silicone oil to water-insoluble liquid emollient is from about 2.0:1 to 4.0:1

(c) from about 12 to 20 percent by weight of a low melting point wax;

(d) from about 5 to 15 percent by weight of a coupling agent;

(e) from about 18 to 30 percent by weight of an antiperspirant active material; and

(f) from about 1.0 to 30 percent by weight of a sodium bicarbonate deodorant active material.

5,254,333

HAIR TREATMENT COMPOSITION AND HAIR DYE COMPOSITION

Takayoshi Kajino, Chiba; Toru Yoshibara, Tokyo; Joshio Okada, Utsunomiya, and Hidetoshi Tagami, Tokyo, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Jun. 27, 1991, Ser. No. 722,517

Claims priority, application Japan, Jul. 10, 1990, 2-181759; Sep. 21, 1990, 2-253378; Sep. 21, 1990, 2-253379

Int. Cl.[5] A61K *7/13*

U.S. Cl. 424—70 **2 Claims**

1. A hair dye composition which comprises (a) 0.0001 to 10% by weight of an acidic dye, (b) 0.1 to 30% by weight of 2-benzyloxyethanol, and (c) 0.05 to 20% by weight of a water-soluble nonionic polymer compound.

5,254,334

ANHYDROUS FOAMING COMPOSITION CONTAINING LOW CONCENTRATIONS OF DETERGENTS AND HIGH LEVELS OF GLYCERIN AMD EMOLLIENTS SUCH AS OILS AND ESTERS

Jose E. Ramirez, Trumbull, and Mohan Visbnupad, Monroe, both of Conn., assignors to Imaginative Research Associates, Inc., Bridgeport, Conn.

Filed May 4, 1992, Ser. No. 878,363

Int. Cl.[5] A61K *7/06, 7/075*

U.S. Cl. 424—70 **13 Claims**

1. An anhydrous cream composition comprising

a) glycerin in an amount from about 40 to about 60% by weight based on the weight of the total composition;

b) sodium cocoyl isethionate in an amount from about 10 to about 19% by weight based on the weight of the total composition;

c) emollients in an amount from about 10 to about 40% by weight based on the weight of the total composition; and

d) sodium lauryl sulfate in an amount from about 1 to about 5% by weight based on the weight of the total composition.

5,254,335

HAIR CONDITIONING COMPOUNDS CONTAINING REACTIVE NONIONIC SURFACTANTS AND ISOTHIURONIUM COMPOUNDS AND METHOD OF USE

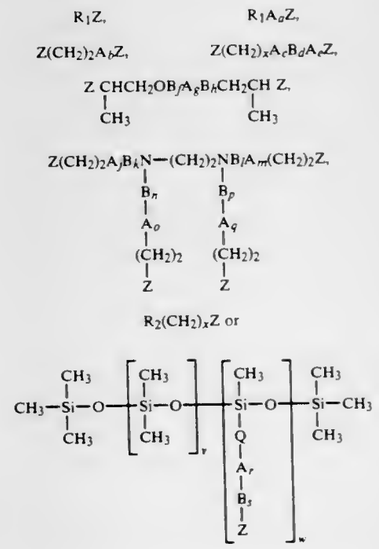
Thomas M. Deppert, Waterbury, and Janusz Z. Jachowicz, Bethel, both of Conn., assignors to Clairol Incorporated, New York, N.Y.

Division of Ser. No. 595,073, Oct. 10, 1990, abandoned. This application Jul. 23, 1992, Ser. No. 918,886

Int. Cl.[5] A61K *7/06;* **C07C** *335/32;* **C07F** *7/04, 7/10*

U.S. Cl. 424—70 **24 Claims**

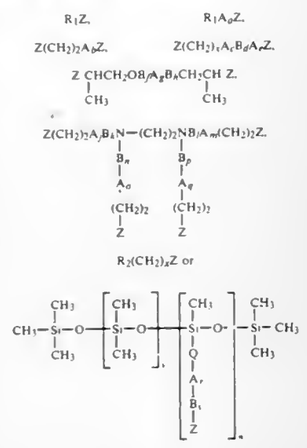
1. Aqueous compositions useful as hair conditioners for human hair containing an excipient which is acceptable in hair conditioning compositions together with a water soluble compound of the formula:



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wherein:
R_1 is an alkyl or arylalkyl, the alkyl having about 12 to 24 carbons;
R_2 is a perfluoroalkyl having about 4 to 16 carbons;
A is an ethoxy group;
B is a propoxy group;
Z is an isothiuronium halide group;
Q is an alkylene group having about 2 to 5 carbon atoms;
a through s are integers designating the degree of ethoxylation and/or propoxylation or both, v is an integer of about 5 to 500, w is an integer of about 5 to 200 and x is an integer from about 0 to 4 in an amount which is effective when hair is treated by contact with the composition for from about 5 to about 30 minutes to improve the combability of the hair compared with hair which has not been so treated.

13. A process for conditioning human hair which comprises treating the hair with an aqueous composition containing a water soluble compound of the formulas:



wherein
R_1 is an alkyl or arylalkyl, the alkyl having about 12 to 24 carbons;
R_2 is a perfluoroalkyl having about 4 to 16 carbons;
A is an ethoxy group;
B is a propoxy group;
Z is an isothiuronium halide group;
Q is an alkylene group having about 2 to 5 carbon atoms;
a through s are integers designating the degree of ethoxylation and/or propoxylation or both, v is an integer of about 5 to 500, w is an integer of about 5 to 200 and x is an integer from about 0 to 4 in an amount which is effective when hair is treated by contact with the composition for from about 5 to about 30 minutes to improve the combability of the hair compared with hair which has not been so treated.

5,254,336
METHOD OF INCREASING HAIR SHINE AND REPAIRING ALKALINE-DAMAGED HAIR
Myra A. Hoshowski, Addison, and Chaitanya Patel, Glen Ellyn, both of Ill., assignors to Helene Curtis, Inc., Chicago, Ill.
Filed Sep. 24, 1992, Ser. No. 950,817
Int. Cl.[5] A61K *7/06, 7/08*
U.S. Cl. 424—70 **19 Claims**

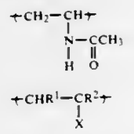
1. A method of restoring shine to hair that has been dulled as a result of contact with an alkaline hair treating composition comprising:
contacting the hair with an acid solution consisting essentially of acid and water having an acid concentration of 0.05% to 1.0% by weight, having a pH in the range of about 2.0 to about 3.8 and containing at least about 0.75 milliequivalent of free acid per milliliter of acid solution; and
rinsing the hair with water.

5,254,337
DEODORIZING COMPOSITIONS FOR ANIMAL GROOMING
Bonita K. Marcus, Rye, N.Y., and Anthony J. Gioffre, Ridgefield, Conn., assignors to UOP, Des Plaines, Ill.
Continuation-in-part of Ser. No. 67,977, Jun. 30, 1987, Pat. No. 4,795,482. This application May 2, 1988, Ser. No. 189,013
Int. Cl.[5] A23F *5/22*
U.S. Cl. 424—76.1 **4 Claims**

1. A deodorizing animal grooming composition consisting essentially of from about 0.5 to 99 percent by weight of a crystalline siliceous molecular sieve which is in a state of being at least partially activated with respect to organic molecular species, has pore diameters of at least 5.5 Angstroms, and in which at least 90 percent of the framework tetrahedral oxide units are SiO_2 tetrahedra and which has a sorptive capacity for water at 25° C. and 4.6 torr water vapor pressure of less than 10 weight percent, at least one diluent or agglomerating agent selected from the group consisting of starch, silica powder, grain flour, talc, pumice and clay, and an insecticide or insect repellant.

5,254,338
EXTERNAL APPLICATION BASE OR AUXILIARY AGENT AND EXTERNAL APPLICATION COMPOSITION FOR HUMAN BEING OR ANIMAL CONTAINING THE SAME
Yasuyuki Sakai, Tokyo; Noriyuki Suzuki, Oita; Tetsuo Kudo, Oita; Kuniomi Marumo, Oita; Toshiyuki Aizawa, Oita; Kunio Imamura, Tokyo; Shuichi Sugita, Tokyo, and Kazuo Kanbayashi, Tokyo, all of Japan, assignors to Showa Denko K.K., Tokyo, Japan
Filed Feb. 8, 1991, Ser. No. 652,715
Claims priority, application Japan, Mar. 12, 1990, 2-60741; Mar. 12, 1990, 2-62232; Mar. 12, 1990, 2-62233; Mar. 12, 1990, 2-62234
Int. Cl.[5] A61K *9/70*
U.S. Cl. 424—78.35 **2 Claims**

1. A plastering agent comprising a mixture of 2.5 to 33 parts by weight of a polymer or copolymer of N-vinylacetamide, 67 to 97.5 parts by weight of water and/or alcohols and 0.01 to 30 parts by weight of a pharmacologically active component, based on 100 parts by weight of the total amount of said mixture, which are held on a support and further covered with a surface protective film, wherein said polymer or copolymer of N-vinylacetamide has a structure containing 50 to 100 mole % of a repeating unit represented by Formula (I) shown below and 0 to 50 mole % of at least one repeating unit represented by Formula (II) shown below:



(I)

(II)

wherein R^1 represents a hydrogen atom, CH_3, C_6H_5, or COOM, wherein M represents a hydrogen atom or an alkali metal; R^2 represents a hydrogen atom, CH_3, COOM, wherein M is as defined above; X represents COOM, wherein M is as defined above; when R_1 and X are COOM, Formula (II) also may have a cyclic acid anhydride structure.

5,254,339
PROCESS FOR PREPARING IMMUNE COMPLEXES
Bror Morein, Ollonstigen 3, Vreta, S-75590 Uppsala, Sweden
PCT No. PCT/SE87/00480, § 371 Date Jun. 1, 1987, § 102(e) Date Jun. 1, 1987, PCT Pub. No. WO87/02250, PCT Pub. Date Apr. 23, 1987
PCT Filed Oct. 16, 1986, Ser. No. 70,920
Claims priority, application European Pat. Off., Oct. 16, 1985, 85850326.1
Int. Cl.[5] A61K *39/00, 39/39*
U.S. Cl. 424—88 **19 Claims**

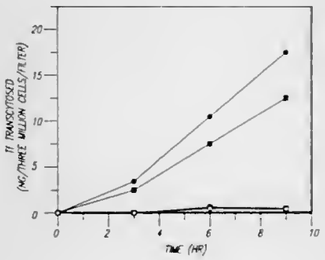
1. In a method for producing an immunogenic complex between an antigen and a polar triterpensaponin having hydrophobic regions, comprising the steps of
a. solubilizing the antigen with a solubilizing agent to form a complex between the solubilizing agent and the antigen,
b. contacting the solubilized antigen with a solution containing a polar triterpensaponin having hydrophobic regions present at a concentration to form a protein-triterpensaponin complex either
i. by separating the antigen from the solubilizing agent and immediately transferring the separated antigen to the glycoside containing solution, or
ii. by removing the solubilizing agent after contact has been made with the glycoside containing solution, and
c. isolating and purifying the protein-glycoside complex which results from said contact,
wherein the antigen has exposed hydrophobic peptide domains through which the hydrophobic regions of the glycoside bind, said domains being derived from
i. amphiphatic proteins or peptides which have hydrophobic domains accessible without modification,
ii. hydrophilic proteins or peptides made amphiphatic through covalent attachment of hydrophobic groups, or
iii. amphiphatic proteins or peptides having hydrophobic domains being made accessible through chemical means or by heat treatment,
wherein the solubilizing agent is selected from the group consisting of non-ionic detergents, ionic detergents, Zwitterionic detergents, or detergents based upon gallic acid, and wherein the resulting complex has
i. a lower sedimentation constant that the corresponding micelles
ii. a higher sedimentation constant that the corresponding monomeric form of the antigen, and
iii. an open spherical structure,
the improvement comprising adding to the solubilized antigen at least one lipid selected from the group consisting of fats, glycerol ethers, waxes, phospholipids, glycolipids, isoprenoids, steroids, and mixtures thereof, in a molar ratio of lipid to antigen of between 0.1:1 to 100:1, prior to contact of the solubilized antigen with the glycoside-containing solution in step b.i. or b.ii.

5,254,340
VACCINE SUITABLE FOR PROPHYLAXIS AND CONTROL, RESPECTIVELY, OF THE PIG DISEASE CAUSED BY *HAEMOPHILUS PLEUROPNEUMONIAE* AND A METHOD FOR OBTAINING EXTRACELLULAR PROTEINACEOUS MATERIAL OF *HAEMOPHILUS PLEUROPNEUMONIAE* FOR USE IN SUCH VACCINES
Leonardus A. M. G. Van Leengoed, and Elbarte M. Kamp, both of Lelystad, Netherlands, assignors to Centraal Diergeneeskundig Instituut, Lelystad, Netherlands
Filed Aug. 11, 1989, Ser. No. 392,781
Claims priority, application Netherlands, Aug. 12, 1988, 8802007
Int. Cl.[5] A61K *39/02, 39/00*
U.S. Cl. 424—92 **2 Claims**

1. Vaccine suitable for prophylaxis and control of *Haemophilus pleuropneumoniae* in pigs, consisting essentially of a content of a mixture of hemolytic and cytotoxic proteinaceous materials, effective for producing protection against *Haemophilus pleuropneumoniae* in pigs, in the cell-free supernatants derived from the culture medium of:
both at least one *H. pleuropneumoniae* strain selected from the group consisting of serotypes 1, 5, 6, 9 and 11; and
at least one *H. pleuropneumoniae* strain selected from the group consisting of serotypes 2, 3, 4 and 8.

5,254,341
Patent Not Issued For This Number

5,254,342
COMPOSITIONS AND METHODS FOR ENHANCED TRANSEPITHELIAL AND TRANSENDOTHELIAL TRANSPORT OR ACTIVE AGENTS
Wei-Chiang Shen, San Marino, and Jiansheng Wan, Montery Park, both of Calif., assignors to University of Southern California, Los Angeles, Calif.
Filed Sep. 30, 1991, Ser. No. 768,508
Int. Cl.[5] C12N *5/02, 5/06, 5/08*
U.S. Cl. 424—401 **2 Claims**



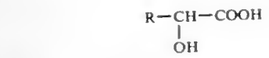
1. A method for enhancing transcellular or transmembrane transport of an active agent, said method comprising:
forming a conjugate of said active agent with a cell-surface receptor ligand for a transferrin receptor; and
administering said conjugate and a transfer enhancing amount of a transfer enhancement agent which enhances transcytosis of a cell-surface receptor/ligand complex.

5,254,343
REDUCTION OF CUTANEOUS ATROPHY
Prakash Parah, Williamsville, N.Y.; Robert Lavker, Malvern, and James Levden, Haverford, both of Pa., assignors to Bristol-Myers Squibb Company, New York, N.Y.
Division of Ser. No. 671,577, Mar. 19, 1991. This application Feb. 13, 1992, Ser. No. 835,173
Int. Cl.[5] A61K *7/00, 31/19*
U.S. Cl. 424—401 **1 Claim**

1. A method for decreasing the reduction of glycosaminoglycans in papillary dermis caused by contacting mammalian skin with a steroid, comprising contacting such skin with a papillary dermis glycosaminoglycans increasing amount of a

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dermatologically acceptable salt of an alpha-hydroxy acid of the formula I:



(I)

wherein R is H or a C_{1-5} hydrocarbon group.

5,254,344

OIL-IN-WATER PESTICIDAL EMULSION, PROCESS FOR APPLICATION

Mohammad Dookhith, Thurins, and Hubert Linares, Caluire, both of France, assignors to Rhone-Poulenc Inc., Research Triangle Park, N.C.

Continuation of Ser. No. 526,776, May 17, 1990, Pat. No. 5,096,711, which is a continuation of Ser. No. 343,043, Apr. 25, 1989, abandoned. This application Mar. 13, 1992, Ser. No. 850,943

Claims priority, application France, May 9, 1988, 88 06494

The portion of the term of this patent subsequent to Mar. 17, 2009, has been disclaimed.

Int. Cl.[5] A01N *25/00*

U.S. Cl. 424—405 **4 Claims**

1. A stabilized oil-in-water pesticidal emulsion comprising:

a pesticidally effective amount of a lipophilic substance which has a melting point below 100° C. and is optionally dissolved in an organic solvent;

water;

an emulsifying system consisting of an effective oil in water emulsifying amount of at least one surface active agent; and

a titanium dioxide dispersing or stabilizing agent in an amount, and of a particle size, effective to maintain or improve the stability of the emulsion.

5,254,345

POLY(ORTHOCARBONATE ACETAL) BIOERODIBLE POLYMERS

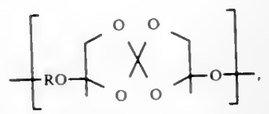
Stefano A. Pogany, and Gaylen M. Zentner, both of Lawrence, Kans., assignors to Merck & Co., Inc., Rahway, N.J.

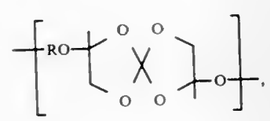
Filed Oct. 11, 1991, Ser. No. 774,667

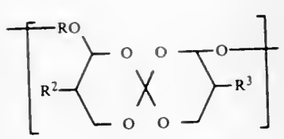
Int. Cl.[5] A61F *2/02*; **A01N** *25/08*; **A61K** *9/14, 31/765*

U.S. Cl. 424—426 **7 Claims**

1. A polymer having a plurality of acid labile groups comprising an orthocarbonate and an acetal group sharing in common an oxygen atom, the polymer having from about 5 to about 1000 units, the units selected from the group consisting of

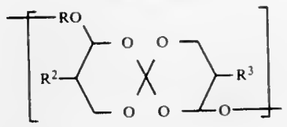






or

-continued



wherein R is

(a) a linear hydrocarbon chain with a total of from 2 to about 20 carbon atoms,

(b) a branched hydrocarbon chain with a total of from 4 to about 20 carbon atoms,

(c) a cyclic hydrocarbon with a total of from 3 to about 20 carbon atoms,

(d) a hydrocarbon residue containing in the main chain or, if branched, in either the main chain or the branched chain at least one heteroatom, selected from the group consisting of O, N, S or halogen,

(e) any hydrocarbon defined in (a), (b), (c) or (d) wherein at least one carbon atom is replaced by silicon,

and R^2 and R^3 are independently H or a linear or branched hydrocarbon moiety of from 1 to about 10 carbon atoms.

5,254,346

OCCLUSIVE BODY FOR ADMINISTERING A PHYSIOLOGICALLY ACTIVE SUBSTANCE

Mark J. Tucker, Round Steps, High Street, Stow-on-the-Wold, Gloucester GL54 1DL, United Kingdom, and Mark R. Tucker, P.O. Box 23530, Bahrain, Bahrain

PCT No. PCT/GB89/00185, § 371 Date Aug. 17, 1990, § 102(e) Date Aug. 17, 1990, PCT Pub. No. WO89/07959, PCT Pub. Date Sep. 8, 1989

PCT Filed Feb. 23, 1989, Ser. No. 555,463

Claims priority, application United Kingdom, Feb. 23, 1988, 8804164

Int. Cl.[5] A61F *13/00*

U.S. Cl. 424—449 **33 Claims**



1. An occlusive body for the transdermal administration of a physiologically active substance, said body comprising the combination of:

a) an impermeable backing;

b) a rate-controlling microporous membrane, said impermeable backing and rate-controlling microporous membrane defining a cavity therebetween;

c) a liquid material, comprising said physiologically active substance in liquid form, confined between said impermeable backing and said rate-controlling microporous membrane within said cavity;

d) a viscous flowable gel material confined between said impermeable backing and said rate-controlling microporous membrane within said cavity for substantially immobilizing said liquid material; and

e) means for attaching the body to the skin, which means does not substantially affect release of said substance through said microporous membrane,

said rate-controlling microporous membrane being permeable to and in contact with said physiologically active substance and wherein either,

i) the rate-controlling microporous membrane is hydrophilic and the material in said cavity is hydrophobic, or

ii) the rate-controlling microporous membrane is hydrophobic and said cavity contains a hydrophilic wetting agent, whereby in use, passage of said physiologically active substance through said microporous membrane is rate-controlling and said physiologically active substance is released from said rate-controlling microporous membrane at a rate that is substantially constant over a period of hours.

5,254,347

CONTROLLED RELEASE PHARMACEUTICAL PREPARATION AND METHOD FOR PRODUCING THE SAME

Masayoshi Samejima, Mino; Kazuo Noda, Takarazuka; Yoshiyuki Hirakawa, Toyonaka, and Hiroyuki Yoshino, Suita, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Division of Ser. No. 329,408, Mar. 24, 1989, Pat. No. 5,068,112. This application Jul. 12, 1991, Ser. No. 729,841

Claims priority, application Japan, Mar. 31, 1988, 63-80604

Int. Cl.[5] A61K *9/16*

U.S. Cl. 424—495 **8 Claims**

1. A controlled release pharmaceutical preparation comprising:

(a) a core containing a pharmaceutically active ingredient; and

(b) a porous cellulose film formed on the surface of said core by spraying a water-organic solvent mixture containing ethyl cellulose or a mixture of ethyl cellulose and hydroxypropyl cellulose, said porous cellulose film having a porosity of about 0.4 to 0.9 calculated according to the formula:

$$1 - \frac{\text{(total weight of film)/(total volume of film)}}{\text{(true specific gravity of film)}}$$

5,254,348

TRANSDERMAL THERAPEUTIC SYSTEM COMPRISING TULOBUTEROL AS ACTIVE SUBSTANCE

Hans R. Hoffmann, and Michael Horstmann, both of Neuwied, Fed. Rep. of Germany, assignors to LTS Lohmann Therapie Systeme GmbH & Co. KG, Neuwied, Fed. Rep. of Germany

Filed Jan. 28, 1991, Ser. No. 646,560

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1990, 4002481

Int. Cl.[5] A61F *13/02*

U.S. Cl. 424—449 **9 Claims**

1. Transdermal therapeutic system with tulobuterol or one of the pharmaceutically acceptable salts thereof as active substance, comprising a backing layer which is substantially impermeable to active substances and at least one matrix layer which contains the active substance, in which transdermal therapeutic system the matrix layer a styrene-butadiene-styrene- or styrene-isoprene-styrene block copolymer.

5,254,349

PROCESS FOR LESSENING IRRITATION CAUSED BY DRUG

Liang C. Dong, Mountain View; Michael H. Dealey, San Francisco; Terry L. Burkoth; Patrick S. L. Wong, both of Palo Alto; Jerry D. Childers, and Brian L. Barclay, both of Sunnyvale, all of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Division of Ser. No. 804,137, Dec. 6, 1991, Pat. No. 5,200,195. This application Oct. 21, 1992, Ser. No. 963,962

The portion of the term of this patent subsequent to Nov. 20, 2007, has been disclaimed.

Int. Cl.[5] A61K *9/24*

U.S. Cl. 424—473 **2 Claims**

1. A process for lessening the irritation caused by a drug delivered from a dosage form, wherein the process comprises:

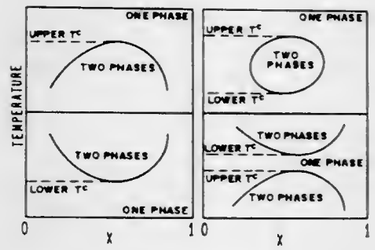
(a) admitting a dosage form into a biological fluid environment of use, the dosage form comprising:

(1) a wall comprising a composition permeable to the passage of fluid, which wall surrounds:

(2) a compartment;

(3) a drug composition in the compartment comprising 20 wt % to 85 wt % of a hydrophilic polymer having a critical solution temperature of 35° C. to 50° C., 10 wt % to 45 wt % of a dehydrating agent having an affinity for water, and a drug;

(4) a displacement composition in the compartment comprising a composition that imbibes fluid, expands and thereby displaces the first composition from the dosage form;



(5) an exit passageway in the wall that connects the compartment with the environment of use;

(b) imbibing fluid into the displacement composition causing it to expand and displace the drug composition from the dosage form, whereby the drug is delivered to the biological environment of use; and wherein the process is characterized by:

(c) imbibing fluid into the drug composition inducing the hydrophilic polymer to flocculate in the presence of the dehydrating agent and the drug, which flocculates, when delivered to the biological environment, results in a lessening of drug irritation of the biological environment.

5,254,350

METHOD OF PREPARING A THROMBOPLASTIN EXTRACT

David A. Barrow, Sour Lake, and Richard L. Rullman, Beaumont, both of Tex., assignors to Helena Laboratories Corporation, Beaumont, Tex.

Filed Jul. 22, 1991, Ser. No. 733,325

Int. Cl.[5] A61K *35/30*

U.S. Cl. 424—570 **32 Claims**

1. A process for preparing a thromboplastin extract comprising:

a) providing a powdered thromboplastin source;

b) extracting said powdered brain thromboplastin source in an aqueous solution comprising a metal ion chelator;

c) separating said powdered brain thromboplastin source in aqueous solution into sedimented powder and supernatant thromboplastin extract; and

d) isolating said supernatant thromboplastin extract.

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5,254,351

DEEP-FROZEN, PRE-PROOFED DOUGHS

Hendrikus B. de Boer, Rockanje; Marjolein L. Hagemans, Vlaardingen; Birgit Nestl, Rotterdam, all of Netherlands, and Jakob van der Meer, Tokyo, Japan, assignors to Van den Bergh Foods Co., Division of Conopco, Inc., Lisle, Ill.

Filed Dec. 23, 1991, Ser. No. 812,554

Claims priority, application European Pat. Off., Dec. 28, 1990, 90203515.3; Jun. 4, 1991, 91201349.7

Int. Cl.[5] A21D *2/26*

U.S. Cl. 426—23 14 Claims

1. A deep-frozen, pre-proofed dough comprising flour, water, yeast, and 0.5–10 wt. % based on the flour, of gelatin compound selected from the group consisting of gelling gelatin with a bloom rate of 50–300 and non-gelling gelatin with a bloom rate of 0–50.

5,254,352

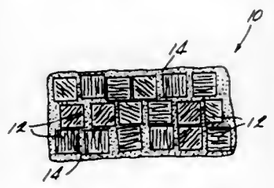
FISH ANALOG PRODUCT

William J. Hartman, Duluth, Minn., and Robert F. Delahunt, Gordon, Wis., assignors to Oscar Mayer Foods Corporation, Madison, Wis.

Division of Ser. No. 762,868, Sep. 18, 1991, Pat. No. 5,188,854. This application Dec. 10, 1992, Ser. No. 988,747

Int. Cl.[5] A23L *1/325*

U.S. Cl. 426—92 4 Claims



1. A fish fillet or fish steak analog comprising

chunks of a natural fish arranged in the form of a natural fish product,

a gelled surimi paste between adjacent chunks of said fish and substantially covering the surfaces of said chunks, said surimi paste binding said fish chunks into said natural fish product form,

said surimi paste as applied to said fish chunks having a water content, by weight, which is approximately one-half that of the surimi content of said paste, and

said fish product form being characterized in that the said fish chunks are substantially cooked through, said surimi paste is gelled, and said fish product is pasteurized.

5,254,353

SEALANT FOR BAKED PRODUCTS

Victor T. Huang, Moundsview; Barbara J. Timm-Brock, Shoreview; Rhonda S. Sward, St. Paul; Sylvia Abrams, Brooklyn Center, and Karin C. Gaertner, Andover, all of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed May 28, 1992, Ser. No. 890,062

Int. Cl.[5] A23B *7/08*

U.S. Cl. 426—94 12 Claims

1. A method for reducing the rate of moisture transmission into and out of baked goods consisting essentially of coating the baked good with a sealant, said sealant comprising about 40–72% sugar by weight, about 8–30% starch hydrolysate by weight having a DE of less than about 38, and about 20–30% water by weight wherein about 70–80% of the sealant is solids.

5,254,354

FOOD PACKAGE COMPRISED OF POLYMER WITH THERMALLY RESPONSIVE PERMEABILITY

Ray F. Stewart, Redwood City, Calif., assignor to Landec Corporation, Menlo Park, Calif.

Continuation of Ser. No. 623,602, Dec. 7, 1990, abandoned. This application May 18, 1992, Ser. No. 885,915

Int. Cl.[5] B65D *85/00*

U.S. Cl. 426—106 23 Claims

1. A package which is surrounded by air and which comprises

(1) a container which retains its shape at temperatures between 0° C. and 40° C., and

(2) within the container, a biological material which is actively respiring and which is selected from the group consisting of foods and flowers;

said container comprising one or more control sections which provide the only way in which oxygen, carbon dioxide and water vapor from the air can enter or leave the container, at least one of said control sections being a first control section

(a) which is composed of a polymeric material which comprises a crystalline polymer having a first order transition point T_m from 0° C. to 40° C. and a heat of fusion of at least 5 J/g, and

(b) said polymeric material being sufficiently permeable to oxygen, carbon dioxide and water vapor and the polymeric material exhibiting an increase in permeability to at least one of oxygen and carbon dioxide by a factor of at least 2.5 over a temperature range of 10° C. between 0° C. and 40° C. such that said control sections cause said package to provide an environment around the biological material which adjusts to the respiration of the biological material to extend its shelf-life when the temperature of the container and biological material changes within the temperature range of 0° C. and 40° C.

5,254,355

PROCESS FOR BEVERAGE TABLETS AND PRODUCTS THEREFROM

Staci L. Smith, Nanuet; Randall R. Jackson, Bronx; Joseph D. Albaum, Pleasantville, all of N.Y.; Robert W. Fusi, Stockton, N.J., and Sean S. Doherty, Mahopac, N.Y., assignors to Kraft General Foods, Inc., Northfield, Ill.

Filed May 29, 1992, Ser. No. 890,212

Int. Cl.[5] A23P *1/00*

U.S. Cl. 426—285 10 Claims

1. A method for producing a sugar-free beverage tablet which will completely dissolve in water with gentle stirring to produce a beverage within 45 seconds comprising the steps of:

(a) dry-blending a mix containing, on a weight basis, mannitol at a level of from 20% to 70% and effective to function as the sole binder for the tablet, from 10% to 60% crystalline acid, from 1% to 20% water-soluble CO_2-generator and form 1% to 5% intensive sweetener, said mix being essentially free of powdered die lubricant;

(b) compressing said mix in an externally lubricated tabletting press to obtain tablets having a hardness of less than 35 Newtons;

(c) glazing the surface of said tablets to increase the hardness by at least 10 Newtons and into a range of about 30 to 70 Newtons.

5,254,356

BAKERY GOODS WITH LIQUID SHORTENING SYSTEM

David Busken, Azle, Tex., assignor to Bunge Foods Corporation, Bradley, Ill.

Filed Apr. 15, 1991, Ser. No. 685,442

Int. Cl.[5] A21D *13/08*

U.S. Cl. 426—553 7 Claims

1. A method for baking chemically leavened cakes, whereby the chemically leavened cakes are of enhanced moistness, both initially and upon storage, the method comprising:

preparing a baking formulation including cake flour, chemical leavening and flavoring components;

adding to the baking formulation a liquid shortening emulsifier system consisting essentially of a liquid blend of at least about 85% of a liquid vegetable oil composition, between about 1.5 and about 8% of propylene glycol monoester emulsifiers and between about 1% and about 5% of diacetyl tartaric acid esters of monoglycerides, all based upon the total weight of the liquid shortening emulsifier system, wherein the propylene glycol monoester emulsifiers and the diacetyl tartaric acid esters of monoglycerides are at a weight ratio of between about 0.4:1 to about 4:1; and

blending the liquid shortening emulsifier system with and into the baking formulation, and baking the resulting blended composition into a cake exhibiting enhanced moistness, both initially and upon storage.

5,254,357

PROCESS FOR MAKING A FIBER BEVERAGE

Bruce J. Langner, 1540 Ocean Ave., Unit 11, Sea Bright, N.J. 07760

Continuation-in-part of Ser. No. 850,005, Mar. 10, 1992, Pat. No. 5,178,896, which is a continuation-in-part of Ser. No. 735,083, Jul. 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 722,878, Jun. 28, 1991, abandoned. This application Jun. 24, 1992, Ser. No. 903,986

The portion of the term of this patent subsequent to Jan. 12, 2009, has been disclaimed.

Int. Cl.[5] A23L *2/00*

U.S. Cl. 426—590 10 Claims

1. A process for preparing a dietary fiber supplement aqueous liquid, water-dilutable, concentrate composition containing about 1.0 to about 5.0 percent w/v of 400 grade methylcellulose fiber which comprises,

(a) mixing said 400 grade methylcellulose with a high density liquid diluent in proportions ranging from about 1 to 4 parts, by volume, of said high density liquid diluent to one part by weight of said 400 grade methylcellulose sufficient to provide said 1.0 to about 5.0 percent w/v concentration in the finished concentrate volume at a stirring rate of about 300 to 400 RPM for a time sufficient to obtain a substantially uniform mixture of said 400 grade methylcellulose and said high density liquid diluent,

(b) mixing water with the mixture from step (a) while stirring the mixture at a rate of about 300 to 400 RPM in an amount of water and for a time sufficient to provide the resulting composition with a concentrated formulation having long-term shelf stability storage properties, which concentrate formulation, when diluted with at least 3 volumes of water per volume of the resulting concentrate composition up to the volume which provides practical acceptability of the resulting end product beverage formulation which will provide a beverage composition containing about 1 to 2 grams of the 400 grade methylcellulose and about 0.45 to about 0.55 of weight percent per 10 ounce serving of said resulting beverage strength composition.

5,254,358

METHOD OF GEL-COATING SEED AND APPARATUS THEREFORE

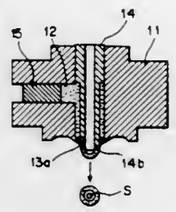
Yasushi Kouno, and Takeo Hayashi, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Oct. 1, 1991, Ser. No. 769,261

Claims priority, application Japan, Oct. 2, 1990, 2-263071; Oct. 2, 1990, 2-263072; Oct. 2, 1990, 2-263073; Oct. 2, 1990, 2-263074

Int. Cl.[5] B05D *3/12*

U.S. Cl. 427—4 1 Claim



1. A method of gel-coating seed comprising the steps of:

preparing a nozzle having a gel flow channel, a plunger insertion hole with a valve seat at an end thereof, said plunger insertion hole being in communication with said gel flow channel, and a cutting plunger with a valve applied to said valve seat, said cutting plunger being inserted in said plunger insertion hole;

feeding gel in said gel flow channel;

opening said valve to flow said gel from said gel flow channel;

closing said valve to cut off a portion of said gel, a gel coating film being formed of said cut off portion of said gel at a lower end of said plunger insertion hole after said cut off portion of said gel has dropped down gravitationally;

feeding at least one seed on said gel coating film;

opening said valve again to coat said at least one seed with additional gel flowing out from said gel flow channel;

closing said valve again to drop said gel-coated seed gravitationally and to cut off a portion of said additional gel sufficient to form said gel coating film; and

repeating above process from said step of feeding at least one seed to continuously gel-coat seeds fed to said nozzle.

5,254,359

METHOD OF FORMING TITANIUM NITRIDE COATINGS ON CARBON/GRAPHITE SUBSTRATES BY ELECTRIC ARC THERMAL SPRAY PROCESS USING TITANIUM FEED WIRE AND NITROGEN AS THE ATOMIZING GAS

Zbigniew Zurecki, Macungie; Edward A. Hayduk, Jr., Blandon; John G. North, Pottstown; Robert B. Swan, Bath, and David L. Mitchell, Jr., Coopersburg, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 360,564, Jun. 2, 1989. This application Jun. 14, 1991, Ser. No. 715,169

The portion of the term of this patent subsequent to Nov. 19, 2008, has been disclaimed.

Int. Cl.[5] B05D *3/06*

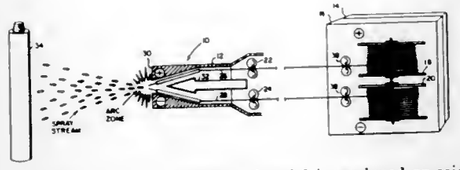
U.S. Cl. 477—449 14 Claims

1. A method of improving the high temperature oxidation and mechanical wear resistance of a carbon or graphite substrate comprising the steps of:

exposing said substrate without preheating and without being confined in a pressure or atmosphere controlled chamber to the effluent from an electric arc thermal spray gun using titanium wire and nitrogen gas as the atomi-

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zing/propelling gas, whereby a substantially titanium nitride electrically conductive coating having a titanium



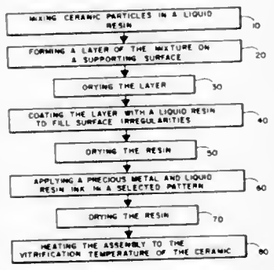
to nitrogen ratio of between 1 and 2 is produced on said substrate.

5,254,360

PROCESS FOR PRODUCING CERAMIC CAPACITORS WITH THINNER ELECTRODES

Joseph W. Crownover, La Jolla; Ben B. Meckel, Encinitas, and Aubrey M. Burer, El Cajon, all of Calif., assignors to BMC Technology Corporation, San Diego, Calif.

Filed Jul. 29, 1991, Ser. No. 737,319
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—79 **16 Claims**



1. The process for making ceramic capacitors which comprises the steps of:

mixing ceramic particles in a liquid resin;

forming a layer of the resulting mixture of ceramic particles in a liquid resin on a supporting surface;

drying said layer;

coating the layer with a liquid resin to fill surface depressions and irregularities;

drying said resin to provide a substantially smooth surface;

applying onto said smooth surface a mixture of precious metal particles in a liquid resin by silk screen printing in a pattern;

drying the resin; and

heating the resulting assembly to the vitrification temperature of said ceramic particles.

5,254,361

METHOD FOR PRODUCING PRINTED CIRCUIT BOARDS

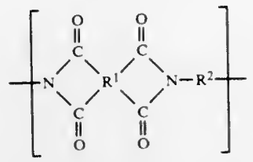
Takao Kawamoto; Hitoshi Yano; Kazutsune Kikuta, all of Ichihara, and Shiro Konotsune, Yokosuka, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Continuation of Ser. No. 556,522, Jul. 24, 1990, abandoned. This application Feb. 13, 1992, Ser. No. 826,773
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—96 **5 Claims**

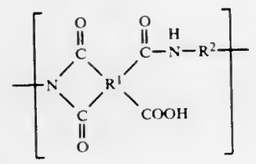
1. A method for producing circuit boards with a film having improved printing properties, adhesion, flexibility and heat resistance which comprises

(1) preparing a liquid printing ink composition from an admixture of a solvent, a polyamide-acid (A), and a partially imidized polyamide-acid (B) containing repeating units of the following formulas (I), (II) and (III),

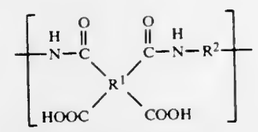
(I)



(II)



(III)



wherein R^1 is a tetravalent organic group and R2 is a divalent organic group,

(a) the weight ratio of (A) to (B) ranges from 1:10 to 100:1, and

(b) the total amount of the polyamide-acid (A) and the partially imidized polyamide-acid (B) being 5–50% of the entire composition,

(2) applying said liquid composition containing a mixture of said solvent, a polyamide-acid (A) and said partially imidized polyamide-acid (B) to the circuit board,

(3) heating said film coated circuit board to effect drying and curing of said film.

5,254,362

METHOD AND APPARATUS FOR DEPOSITION OF SOLDER PASTE ON A PRINTED WIRING BOARD

Gregory S. Shaffer, Tempe, and Anthony R. Weeks, Gilbert, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 23, 1992, Ser. No. 965,811
Int. Cl.[5] C23C *26/00*
U.S. Cl. 427—96 **18 Claims**

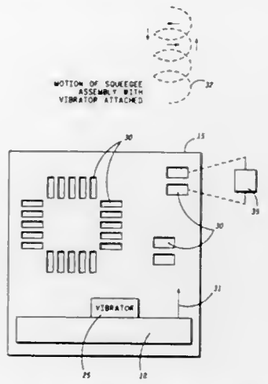
1. Apparatus for uniform deposition of solder paste on a printed wiring board (PWB) comprising:

a stencil having a plurality of apertures through two planar surfaces, one planar surface of said stencil placed in contact with one surface of said PWB;

said solder paste being applied on another planar surface said stencil;

squeegee application means for applying said solder paste through said plurality of apertures of said stencil to said PWB, said squeegee application means being in contact with the other planar surface of said stencil and with said solder paste; and

means for vibrating said squeegee application means for providing a uniform deposition of said solder paste through each of said plurality of apertures of said stencil



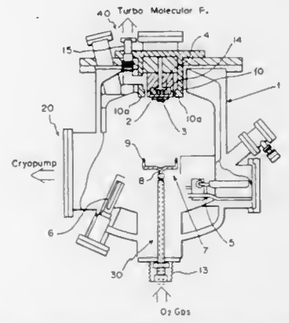
to said PWB, said means for vibrating being connected to said squeegee application means.

5,254,363

METHOD FOR PRODUCING OXIDE FILMS

Ryusuke Kita, Urayasu; Takashi Hase, Ichikawa; Masato Sasaki, Mitaka, and Tadataka Morishita, Kanagawa, all of Japan, assignors to Int'l Superconductivity Tech. Center, Tokyo; Kabushiki Kaisha, Osaka and Kabushiki Kaisha Kobe Seiko Ibo, Hyogo, all of Japan

Filed Jul. 10, 1992, Ser. No. 911,492
Claims priority, application Japan, Jul. 10, 1991, 3-169734
Int. Cl.[5] B05D *5/12, 3/02*
U.S. Cl. 427—126.3 **4 Claims**



1. A method of producing an oxide film comprising the steps of:

reducing a pressure inside a vacuum chamber to 1×10^{-9} Torr or less;

evaporating at least one metal element and depositing vapor of the metal element onto a substrate in the vacuum chamber to form a metal film;

forming an airtight chamber that encloses the substrate in the vacuum chamber;

oxidizing the metal film to form an oxide film by introducing an oxidizing gas directly into the airtight chamber while the vacuum is maintained around the airtight chamber; and

discharging the gas inside the airtight chamber directly out of the vacuum chamber.

5,254,364

METHOD OF MAKING A SOIL COMPOSITION COMPRISED OF CLAY-COATED SAND PARTICLES

Boris Kviesitis, Des Moines, Iowa, assignor to True Pitch, Inc., Altonna, Iowa

Division of Ser. No. 521,409, May 10, 1990, Pat. No. 5,151,123. This application Mar. 23, 1992, Ser. No. 855,583
Int. Cl.[5] B05D *7/24*
U.S. Cl. 427—214 **5 Claims**

1. A method of making a granulated, flowable, pliable, non-adhering, non-toxic, substantially dry soil composition, comprising:

a) placing sand particles in an agitation mixer;

b) adding to said sand particles at least one coating material selected from the group consisting of polyvinyl alcohol, polyvinyl acetate, polyvinyl chloride, natural or synthetic rubber latex, and glycerol to form a coating on said sand particles; and

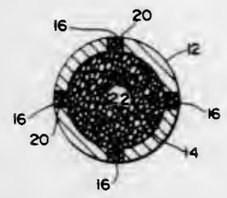
c) adding clay to said agitation mixer to form a coating of clay on said sand particles coated in step b).

5,254,365

METHOD OF MAKING CERAMIC COMPOSITE ARTICLES

Ratnesh K. Dwivedi, Wilmington, Del., assignor to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 429,210, Oct. 30, 1989, Pat. No. 5,082,700, which is a continuation of Ser. No. 84,550, Aug. 10, 1987, Pat. No. 4,886,766. This application Jan. 21, 1992, Ser. No. 823,727
Int. Cl.[5] B06D *7/22*
U.S. Cl. 427—235 **20 Claims**



1. A method for producing a self-supporting ceramic composite body comprising a plurality of axially aligned, spaced apart walls having a bounded cross-section, said ceramic composite body comprising (1) a ceramic matrix obtained by an oxidation of a parent metal with an oxidant to form an oxidation reaction product; and (2) at least one filler material embedded by said matrix, the method comprising the steps of:

(a) providing a shaped parent metal body comprising at least two axially aligned patterns of parent metal having at least one open cavity to provide a plurality of axially aligned, spaced-apart walls each having a bounded cross-section and opposed wall surfaces;

(b) juxtaposing at least one bedding of conformable filler material on said opposed wall surfaces, said at least one bedding of filler material being characterized by (1) being permeable to said oxidant when required for said oxidant to contact the molten parent metal in step (c) and being permeable to infiltration by the growth of oxidation reaction product through the at least one bedding of filler material, and (2) retaining sufficient conformability to provide for accommodation of any melting-point volume change of said parent metal and any differential thermal expansion between said parent metal and the at least one bedding of filler material, wherein said at least one bedding of filler material comprises a support zone which is intrinsically self-bonding at a temperature above the melting point of the parent metal but below and sufficiently close to the temperature at which the molten parent metal

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reacts with said oxidant to form said oxidation reaction product, to permit said accommodation;

(c) heating said shaped parent metal body to a temperature above its melting point but below the melting point of said oxidation reaction product to form a body of molten parent metal and, at said temperature,

(1) reacting the molten parent metal with said oxidant to form said oxidation reaction product,

(2) maintaining at least a portion of said oxidation reaction product in contact with and between said body of molten metal and said oxidant, to progressively draw molten metal from said body of molten metal through the oxidation reaction product and into said at least one bedding of filler material to concurrently form said plurality of axially aligned, spaced apart walls in said at least one bedding of filler material as fresh oxidation reaction product continues to form at an interface between said oxidant and previously formed oxidation reaction product, and

(3) continuing said reaction for a time sufficient to at least partially embed the at least one bedding of filler material with said oxidation reaction product by growth of oxidation reaction product to form a self-supporting ceramic composite body having a plurality of axially aligned, space apart walls which inversely replicate in opposed directions the geometry of said shaped parent metal body, each of said spaced apart walls having a bounded cross-section, said spaced apart walls further including surfaces which define at least three axially aligned fluid passageways; and

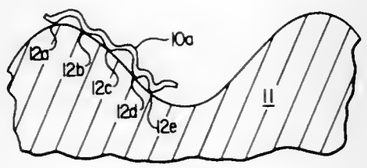
(d) separating the resulting self-supporting composite body from any excess filler material.

5,254,366

METHOD OF TREATING TUBULARS WITH UNGELLED GELATIN

Frank E. Lowther, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Apr. 6, 1992, Ser. No. 864,280
Int. Cl.[5] B05D *7/22*
U.S. Cl. 427—238 **9 Claims**



1. A method for treating a tubular having fluids flowing therethrough which, in turn, have a temperature above the melting temperature of gelatin, said method comprising:

mixing a gelatin solution with said flowing fluids in said tubular, said gelatin solution comprising:

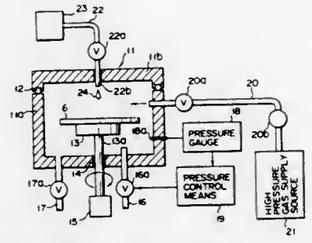
an ungelled solution of technical gelatin derived from collagen and used in foods and glues, said ungelled gelatin solution having a temperature of not less than the temperature of said fluids flowing in said tubular whereby said said gelatin solution remains ungelled after mixing with said flowing fluids.

5,254,367

COATING METHOD AND APPARATUS

Kimiharu Matsumura, Kumamoto, and Hiroyuki Sakai, Koshi, both of Japan, assignors to Tokyo Electron Limited, Tokyo and Tokyo Electron Kyushu Limited, Kumamoto, both of Japan

Continuation of Ser. No. 549,411, Jul. 6, 1990, abandoned. This application Apr. 10, 1992, Ser. No. 865,766
Claims priority, application Japan, Jul. 6, 1989, 1-175267
Int. Cl.[5] B05D *3/12*
U.S. Cl. 427—240 **5 Claims**



1. A coating method, comprising the steps of:

preparing a chamber surrounding a substrate, means for supplying a gas into the chamber, means for exhausting a gas from the chamber, means for detecting the inner pressure of the chamber, pressure control means for controlling the inner pressure of the chamber, means for spin-rotating the substrate, and means for applying a liquid including a solvent;

determining a vapor pressure of the solvent at a coating processing temperature based on the relationship between the temperature and the vapor pressure obtained before the preparing step;

supplying the determined vapor pressure data to the pressure control means;

supplying a pressurized gas into the chamber by using the gas supply means;

exhausting the gas from the chamber by using the exhausting means;

detecting the inner pressure of the chamber by using the pressure detecting means;

controlling the exhausting means by using the pressure control means based on the detected pressure and said vapor pressure of the solvent at the coating process temperature so as to keep the inner pressure of the chamber higher than said vapor pressure, whereby generating a gas stream around the substrate in the chamber by exhausting the chamber, while supplying the pressurized gas thereto;

spin-rotating the substrate by using the spin-rotating means; and

applying the liquid to the substrate by using the liquid applying means, while the substrate is rotated.

5,254,368

PERIODIC CHEMICAL PROCESSING SYSTEM

Robert H. Kadlec, Chelsea, Mich., and Garo G. Vaporciyan, Houston, Tex., assignors to University of Michigan, Ann Arbor, Mich.

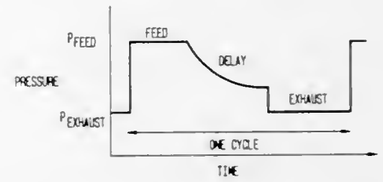
Continuation of Ser. No. 662,492, Feb. 27, 1991, abandoned, which is a continuation of Ser. No. 441,187, Nov. 22, 1989, abandoned, and Ser. No. 116,092, Nov. 2, 1987, abandoned. This application Aug. 7, 1992, Ser. No. 927,242
Int. Cl.[5] B01J *8/00*
U.S. Cl. 423—247 **3 Claims**

1. A pressure-periodic process for reacting and separating gaseous components, the process comprising the steps of:

(a) introducing into a single bed chemical processing unit at a first pressure and in a first direction of flow, a multicomponent feed gas for forming both a reaction product and an adsorption product during a pressurization portion of a pressure cycle, said single bed chemical processing unit having an adsorption zone and a reaction zone arranged in series with each other with respect to said first direction of flow, said reaction zone being located downstream from said adsorption zone, a first end adjacent said adsorption zone having a first input having open and closed states for controlling the introduction of the multicomponent feed gas and a first output having open and closed states, and a second end downstream from said adsorption zone having a second output, said first input being in said open state and said first output being in said closed state during said step of introducing;

(b) permitting adsorption of a component of the multicomponent feed gas in the adsorption zone, and reaction between at least two components of the multicomponent feed gas to produce the reaction product in the reaction zone, said adsorbed component of the feed gas being the adsorption product, said first output being in a closed state during at least a portion of this step;

(c) continuously withdrawing at a second pressure, which is



a residual pressure lower than said first pressure, the reaction product from the second output in the first direction of flow, said first output being in closed then open states during successive portions of this step;

(d) terminating step (a) by placing said first input in said closed state, said first input remaining in a closed state for a period of time after performing said present step of terminating, and said first output being in a closed state during performance said present step of terminating; and

(e) exhausting at a third pressure, by placing said first output in said open state, and desorbing said adsorption product through said first output, said adsorption product being said previously adsorbed component of the multicomponent feed gas, before the pressure equalizes from the first end to the second end and after a delay after initiating step (d), said third pressure being a residual pressure which is sufficiently low to permit said previously adsorbed component to be desorbed, whereby the flow of said adsorption product is in a direction within said single bed chemical processing unit contrary to the first direction of flow, said first output remaining in a closed state substantially throughout the duration of step (b).

5,254,369

METHOD OF FORMING A SILICON DIFFUSION AND/OR OVERLAY COATING ON THE SURFACE OF A METALLIC SUBSTRATE BY CHEMICAL VAPOR DEPOSITION

Juichi Arai, Ibaraki; Eiichi Ozawa, Chiba, and Jean-Marie Friedt, Funakawara, all of Japan, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris Cedex, France

Continuation-in-part of Ser. No. 686,487, Apr. 17, 1991, abandoned. This application May 5, 1992, Ser. No. 878,465
Int. Cl.[5] C23C *16/00*
U.S. Cl. 427—248.1 **13 Claims**

1. A method of forming a silicon diffusion coating or silicon base overlay coating or both on the surface of a metallic sample, comprising:

a) mechanically polishing a surface of the sample to form a mirror surface,

b) cleaning said sample surface, and introducing the sample into a cold-wall low pressure chemical vapor deposition (LPCVD) enclosure,

c) evacuating the enclosure up to a pressure, P_t, which is lower than about 0.5 Torr, and at a temperature between room temperature and about 300° C.,

d) maintaining said pressure, P_t, while heating the sample to a temperature of at least about 50° C.,

e) introducing a gas or gas mixture comprising at least one silicon hydride gas, and maintaining the pressure inside the enclosure between about 0.1 and about 100 Torr,

f) maintaining the introduction of the gas or gas mixture in the enclosure for deposition or diffusion of silicon or both, on or through the surface of the metallic sample or both, to obtain a thickness of the silicon diffusion or silicon overlay coating, and

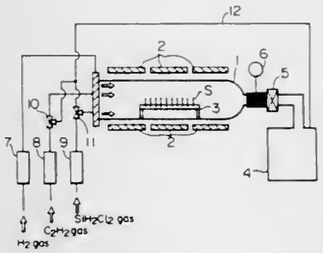
g) cooling the sample to about room temperature, and withdrawing the sample from the LPCVD enclosure.

5,254,370

METHOD FOR FORMING A SILICON CARBIDE FILM

Hiroyuki Nagasawa, Akishima, and Yohichi Yamaguchi, Higashimurayama, both of Japan, assignors to Hoya Corporation, Tokyo, Japan

Filed Jun. 19, 1992, Ser. No. 901,217
Claims priority, application Japan, Jun. 24, 1991, 3-178665
Int. Cl.[5] C23C *16/00*
U.S. Cl. 427—249 **10 Claims**



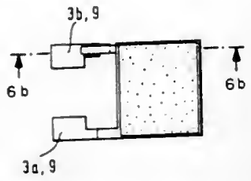
1. A method for forming a silicon carbide film by means of a hot wall type CVD apparatus having a reaction tube, a heater surrounding the reaction tube and at least one gas-introducing tube to introduce gases to the reaction tube, which comprises placing a substrate in the reaction tube and introducing a plurality of gases into the reaction tube through the gas-introducing tube with heating the reaction tube and under reduced pressure to form a silicon carbide film on the substrate, the silicon carbide film being formed on the substrate from at least an acetylene gas and a dichlorosilane gas as a plurality of the above gases by alternately repeating the following procedures (A) and (B),

(A) introducing the acetylene gas for at least 2 seconds, and

(B) introducing the dichlorosilane gas for 3 to 12 seconds.

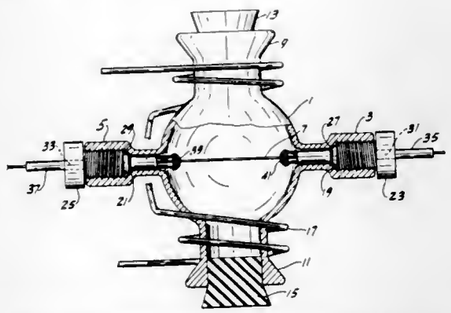
VOL 1155 ISS 3 OCT 19 1993 UMI

5,254,371
METHOD OF MANUFACTURING A CAPACITIVE HUMIDITY SENSOR
Frank Hegner, Lörrach, and Traugott Kallfass, Grossbottwar, both of Fed. Rep. of Germany, assignors to Endress u. Hauser GmbH u. Co., Maulburg, Fed. Rep. of Germany
Filed Aug. 28, 1991, Ser. No. 751,169
Claims priority, application European Pat. Off., Sep. 12, 1990, 9081689
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—487 **6 Claims**



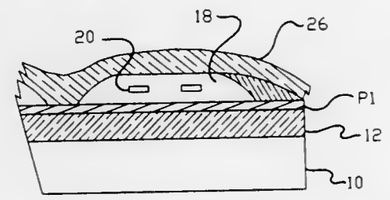
1. Method of manufacturing a capacitive humidity sensor comprising the following steps:
forming a bottom electrode on an insulating substrate,
depositing a humidity-sensitive polymer layer of uniform thickness on the bottom electrode leaving contact areas uncovered,
activating surface bonds of the polymer layer by ion bombardment,
applying a colloidal dispersion of SiO_2 or Al_2O_3 particles of uniform grain size as a layer of evenly distributed particles to the polymer layer and subsequently drying it,
depositing a cover electrode on the particles still evenly distributed on the polymer layer after the drying of the dispersion, and
removing the particles together with the portions of the cover electrode overlying them utilizing an ultrasound bath.

5,254,372
METHOD AND APPARATUS FOR PLASMA TREATMENT OF A FILAMENT
Michael F. Nichols, Columbia, Mo., assignor to Nichols Technologies, Inc., Columbia, Mo.
Filed Feb. 27, 1991, Ser. No. 661,838
Int. Cl.[5] B05D *3/06, 7/22;* **A01N** *1/02*
U.S. Cl. 427—488 **16 Claims**



16. A method for selective plasma treatment of a portion of the outside surface of a filament, the method comprising the steps of:
training said filament through inlet means of a plasma treatment chamber, through tubular inlet side masking means which is carried by said inlet means, through exit means of said plasma treatment chamber, and through tubular exit side masking means which is carried by said exit means;
adjusting said inlet side masking means to mask said filament from exposure to plasma between said inlet means and a segment of said filament which comprises said portion;
adjusting said exit side masking means to mask said filament from exposure to plasma between said exit means and said segment; and
interrupting the movement of said filament while subjecting said portion to plasma treatment by establishing a plasma within said chamber which contacts said filament.

5,254,373
PROCESS OF MAKING THIN FILM MAGNETIC HEAD
Ronald A. Barr, Mountain View, Calif., assignor to Read-Rite Corp., Milpitas, Calif.
Filed Apr. 19, 1993, Ser. No. 47,497
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—498 **7 Claims**

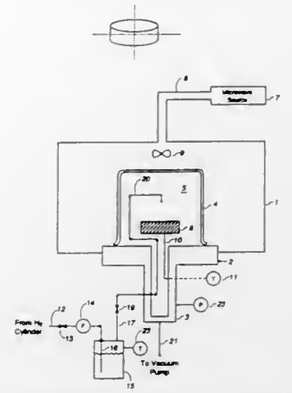


1. A process for making a thin film transducer having first and second spaced magnetic pole piece layers and an electrical coil structure between said layers, said magnetic layers forming a magnetic yoke and defining a transducing gap, comprising the steps of:
depositing a first pole piece layer on a substrate;
depositing a first layer of insulation material over said first pole piece layer;
depositing an electrical coil structure over said first layer of insulation material;
depositing a second layer of insulation material above said electrical coil structure;
depositing a first thin layer of photoresist over said second layer of insulation material and over a portion of said first pole piece layer;
forming a pattern to define at least a portion of said second pole layer;
depositing a second thick layer of photoresist over said first thin layer of photoresist for precisely defining the pattern of said second pole layer;
depositing said second pole piece layer over said second thick layer of photoresist.

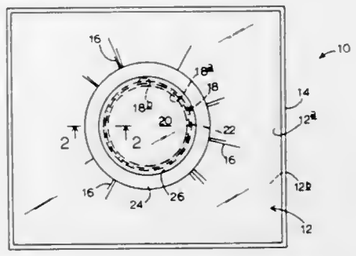
5,254,374
CHEMICAL VAPOR INFILTRATION USING MICROWAVE ENERGY
David J. Devlin; Robert P. Currier; Joseph R. Laia, Jr., all of Los Alamos, and Robert S. Barbero, Santa Cruz, all of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Apr. 8, 1992, Ser. No. 866,025
Int. Cl.[5] B05D *3/02*
U.S. Cl. 427—553 **10 Claims**

1. A method for producing a composite consisting essentially of one or more ceramic materials and one or more reinforcing materials, said method comprising:
a. providing a porous preform;
b. providing reactants in gaseous form to a gas-tight chamber where said preform is located, where said reactants are capable of reacting to form a ceramic material when

raised to a temperature above a minimum reaction temperature;
c. heating said preform by means of microwave energy in order to establish temperature gradients within the preform such that temperatures of locations within the preform increase as distances of said locations from exterior surfaces of the preform increase and continuing to heat until all of said preform has been heated to temperatures at or above said minimum reaction temperature; and
d. removing gas consisting of unreacted reactants and reaction products from said chamber.



5,254,375
APPARATUS FOR CONTROLLABLY SEPARATING FRAMED WORKING AREA FROM REMAINDER OF THE MEMBRANE
Yung-Tsai Yen, 196 Tuscaloosa Ave., Atherton, Calif. 94025
Filed Aug. 26, 1991, Ser. No. 749,709
Int. Cl.[5] A47G *1/12*
U.S. Cl. 428—14 **10 Claims**

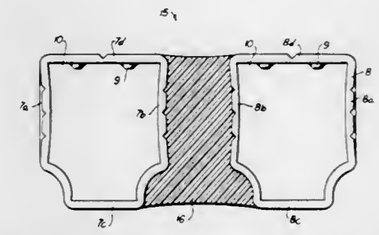


1. Apparatus for forming a defined working area of a membrane that is controllably separable from the remainder of the membrane, comprising:
an expanse of tensed membrane material having first and second surfaces;
a support frame for defining a working area on the expanse, the support frame having an inner and outer edge; and
a border formed from applied solidifiable fluid for reducing tension in the membrane, the border positioned on the membrane and extending continuously around and peripherally outward of the outer edge of the support frame, and in continuous contact with the membrane.

5,254,376
GRAPHIC COMMUNICATION MEDIUM
Jane S. Grosslight, 700 North Ride, Tallahassee, Fla. 32303
Filed Sep. 26, 1989, Ser. No. 412,792
The portion of the term of this patent subsequent to Sep. 19, 2006, has been disclaimed.
Int. Cl.[5] B44C *1/22*
U.S. Cl. 428—29 **19 Claims**

1. A graphic communication device comprising a sheet of paper having a front and back surface with a uniformly applied layer of dry pastel substance, said pastel substance being suspended in solution for application to said paper, said pastel substance being infused onto said front surface and being selectively removable therefrom, said pastel being translucent and of a uniform color different from that of said paper such that, when removed, a contrast is presented between said paper and said pastel layer, said pastel also being applied in a thickness sufficient to permit re-covering of said front surface by spreading said dry pastel over the area from which it was removed.

5,254,377
LAMINATED MULTILAYER INSULATING GLASS AND A SPACER FOR THE LAMINATED MULTILAYER INSULATING GLASS
Horst Lingemann, Wuppertal, Fed. Rep. of Germany, assignor to Helmut Lingemann GmbH & Co., Fed. Rep. of Germany
Continuation of Ser. No. 413,164, Sep. 27, 1989, Pat. No. 5,087,489. This application Aug. 27, 1991, Ser. No. 750,813
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1988, 8812216
Int. Cl.[5] B29D *22/00;* **E06B** *3/24*
U.S. Cl. 428—34.1 **10 Claims**



8. Spacer especially for producing a heatable multilayer insulating glass characterized by at least two panes of glass held a distance apart by a spacer in an interspace (3) between the panes and a resistance heating element on a glass surface facing the interspace, the spacer (6) comprising:
two parallel hollow sections (7, 8) arranged with some distance between them and having side walls (7*a*, 7*b* and 8*a*, 8*b*) parallel to the glass surfaces;
a solid web (16) of an unfoamed and fully-cured polyurethane casting compound filling the interspace (15) between the two hollow sections (7, 8) and adhering well to the mutually-facing surfaces (7*b*, 8*b*) of the side walls of the hollow sections (7, 8); and
the web being hard and forming a permanent bond with the hollow sections so that the hollow sections and the hard web bonded thereto create a uniformly strong spacer having relatively high torsional rigidity and electrical insulation, and relatively low thermal conductivity across the side walls (7*b*, 8*b*).

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5,254,378

RADIATION RESISTANT POLYPROPYLENE ARTICLES AND METHOD FOR PREPARING SAME

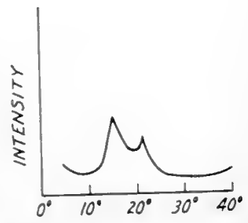
Dennis L. Krueger, Hudson, Wis.; Thomas I. Insley, Lake Elmo, Minn.; Daniel E. Meyer, Stillwater, Minn., and Richard J. Rolando, Oakdale, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 486,083, Feb. 27, 1990, abandoned, which is a division of Ser. No. 302,126, Jan. 24, 1989, Pat. No. 4,931,230, which is a continuation of Ser. No. 43,094, Apr. 30, 1987, abandoned, which is a continuation-in-part of Ser. No. 861,068, May 8, 1986, abandoned. This application Apr. 6, 1992, Ser. No. 869,072

The portion of the term of this patent subsequent to Jan. 7, 2009, has been disclaimed.

Int. Cl.[5] C08J *3/28*

U.S. Cl. 428—34.1 9 Claims



1. An radiation-sterlized polypropylene article consisting essentially of non-crystalline mesomorphic polypropylene which is substantially undegraded after at least six months storage.

5,254,379

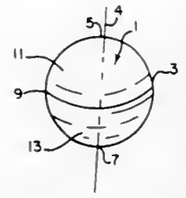
PAINT BALL

Thomas G. Kotsiopoulos, Northfield, and Gary E. Gibson, Wheeling, both of Ill., assignors to Perfect Circle Paint Ball Inc., Wheeling, Ill.

Filed Oct. 21, 1991, Ser. No. 779,826

Int. Cl.[5] F42B *8/14;* B32B *1/06*

U.S. Cl. 428—35.7 25 Claims



1. A paint ball shell comprising a generally spherical shell member having an interior surface and an exterior surface defining a wall thickness, and having an axis of symmetry defining a first pole and a second pole in the paint ball shell, said axis of symmetry being substantially normal to a plane passing through said shell member, said shell member comprising a polymer molecularly oriented in said paint ball shell along circumferential lines extending from said first pole to said second pole for developing fracture lines extending from an impact point on said shell member toward said first pole and from said impact point toward said second pole upon the application of fracturing forces at said impact point.

5,254,380

DRY POWDER MIXES COMPRISING PHASE CHANGE MATERIALS

Ival O. Salyer, Dayton, Ohio, assignor to University of Dayton, Dayton, Ohio

Division of Ser. No. 835,854, Feb. 2, 1992, Pat. No. 5,211,949, which is a division of Ser. No. 462,365, Jan. 9, 1990, Pat. No. 5,106,520. This application Mar. 17, 1993, Ser. No. 48,324

Int. Cl.[5] B29D *22/00;* B32B *1/00;* A47G *23/04;* F24H *7/00*

U.S. Cl. 428—35.7 10 Claims

1. A food receptacle or beverage container receptacle comprising a housing, and a powder-like mix consisting essentially of a phase change material and finely divided silica particles, in combination, disposed in said housing, said silica particles having particle sizes of about 7×10^{-3} to about 7×10^{-2} microns, said phase change material being selected from the group consisting of water, glycerine, ethylene glycol, crystalline alkyl hydrocarbons having a carbon chain length of C_{14} and greater, crystalline fatty acids, crystalline fatty acid esters, crystalline alicyclic hydrocarbons, crystalline aromatic compounds, hydrated salts, clathrates, semi-clathrates, gas clathrates, polyethylene glycol, and halogen-terminated alkyl hydrocarbons, said phase change material having a melting and freezing point of from about −20° to about 80° C. and being present in an amount of 80% or less by weight and said silica particles being present in an amount of 20% or more by weight based on the total weight of the combination of phase change material and silica particles.

5,254,381

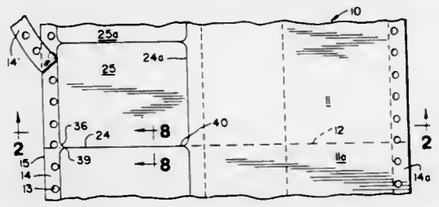
LABEL-EQUIPPED SHEET

Donald J. Hoffmann, Elmhurst, and Joseph J. Juszak, Crystal Lake, both of Ill., assignors to Wallace Computer Services, Inc., Hillside, Ill.

Continuation-in-part of Ser. No. 705,313, May 24, 1991, abandoned, and a continuation-in-part of Ser. No. 705,325, May 24, 1991, abandoned. This application May 21, 1992, Ser. No. 886,739

Int. Cl.[5] A61F *13/02;* G09F *3/10*

U.S. Cl. 428—40 5 Claims



1. A label product comprising an elongated label stock web having a plurality of equally longitudinally spaced apart, transversely extending lines of perforation defining a string of connected form lengths, a release liner having a coating of release material on only one surface and being of a predetermined width, said label stock web having a width substantially greater than said predetermined width, uniform thickness pressure sensitive adhesive between said release liner one surface and said web, said release liner extending continuously over each of said form lengths, said release liner one surface having a longitudinally extending edge band free of release material whereby said web is permanently adhered to said release liner in said longitudinally extending edge band, and a perimetrically diecut label in said web in each form length spaced from said band and overlying said liner whereby said label is removed from said web and whereby said liner still remains attached to said web, said edge band being coextensive with said release liner.

5,254,382

OPTICAL RECORDING MEDIUM

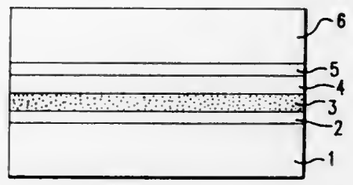
Osamu Ueno, and Hideo Kobayashi, both of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Nov. 25, 1991, Ser. No. 796,827

Claims priority, application Japan, Nov. 29, 1990, 2-325938

Int. Cl.[5] B32B *3/00*

U.S. Cl. 428—64 7 Claims



1. An optical recording medium comprising a substrate having provided thereon a recording layer whose optical properties reversibly change on application of light or heat to conduct recording, reproduction, or erasing of information, said recording layer comprising a recording material selected from the group consisting of

$\{(Ge_yTe_{1-y})_a(Sb_zTe_{1-z})_{1-a}\}_{1-b}(In_{1-x}Te_x)_b$,
$\{(GeTe)_A(Sb_2Te_3)_{1-A}\}_{1-B}(InTe)_B$ and
$(Ge_2Sb_2Te_5)_{1-C}(InTe)_C$

wherein $0.4\leqq y\leqq0.6$, $0.3\leqq z\leqq0.5$, $0.4\leqq x\leqq0.6$, $0.1\leqq a\leqq0.5$, $0.01\leqq b\leqq0.3$, $0.25\leqq A\leqq0.75$, $0.02\leqq B\leqq0.35$ and $0.05\leqq C\leqq0.6$.

5,254,383

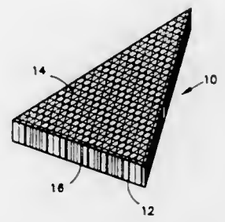
COMPOSITES HAVING IMPROVED PENETRATION RESISTANCE AND ARTICLES FABRICATED FROM SAME

Gary A. Harpell; Dusan C. Prevorsek, both of Morristown, and Max W. Gerlach, Hackettstown, all of N.J., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Sep. 14, 1992, Ser. No. 944,627

Int. Cl.[5] B32B *1/04*

U.S. Cl. 428—68 24 Claims



1. A penetration resistant composite comprising a planar body having one or more fibrous layers on a surface of said body, each of said layers comprising a fiber network, said fiber network such that movement of said fibers in the direction of the edges of said body is restrained such that when said composite is tested with a high L/D threat in accordance with The State of California Specification 8470-8BS-001, Paragraph 3.3, dated Aug. 1988, the movement of the point of said threat along the surface of said composite is restrained by said fiber network.

5,254,384

HEATABLE CAR FOOT MAT

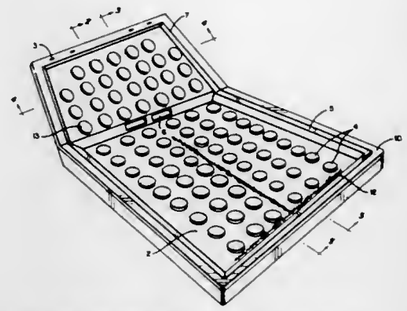
Winston L. Gordon, 72, Risdon Crt., Etobicoke Ont., Canada M9C-4E7

Filed Apr. 16, 1991, Ser. No. 686,745

Claims priority, application Canada, Aug. 22, 1989, 609765

Int. Cl.[5] B32B *3/08, 3/10, 1/06*

U.S. Cl. 428—71 2 Claims



1. A floor mat for a motor vehicle comprising:
a perforated upper mat;
a reservoir having a first chamber to underlie the feet of an operator and a second chamber to underlie the pedals of the motor vehicle,
said first chamber having a floor and a perimeter ridge with a front wall, two side walls and a rear wall,
said second chamber having a floor, two side walls and a front wall, a rear portion of the floor of the second chamber being joined along the top of the front wall of said first chamber to flex upwardly and forwardly of the first chamber and to drain into the first chamber;
a plurality of first pedestals spaced apart on the floor of the first chamber and a plurality of second pedestals spaced apart on the floor of the second chamber to support the upper mat above the first and second chambers of the reservoir;
an air duct extending beneath the floor of the second chamber and communicating with the first chamber through a port in the front wall of the first chamber, said air duct to be connected to a heater vent of the motor vehicle to supply warm air to the first chamber.

5,254,385

ENCAPSULATED ASPHALT

Darren G. Hazlett, 4902 Dry Oak Trail, Austin, Tex. 78749

Filed Jnn. 3, 1991, Ser. No. 709,298

Int. Cl.[5] B32B *5/16*

U.S. Cl. 428—76 4 Claims

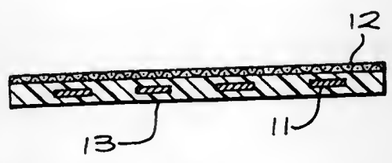
1. Encapsulated asphalt articles consisting of asphalt-containing polymer capsules, having asphalt inside a polymer cover, said capsules being processible as granular solids comprising in combination:
a) an interior of asphaltic or modified asphaltic material, which is encapsulated within
b) a polymer or copolymer encapsulant, wherein said encapsulant covers said asphaltic material in a continuous coating, said capsules being non-adherent to one another at room temperatures.

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5,254,386
DEODORIZED CARPETS AND PROCESS FOR PRODUCING SAME
Madeline P. Simpson, Flemington, and Raymond S. Brown, Bridgewater, both of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.
Filed May 10, 1991, Ser. No. 698,722
Int. Cl.[5] B32B *3/02*; D04H *11/00*; D05C *17/00*; B05D *1/36*
U.S. Cl. 428—95 8 Claims

1. A self-deodorizing tufted carpet product comprising a primary backing material and rows of a carpet yarn stitched into said primary backing material to produce a face of yarn on one side of the backing and tuft loop backs of yarn on the opposite underside of the backing, wherein sodium bicarbonate in an amount of from about 0.5 to 2.0 percent by weight and a water soluble latex in an amount of from about 0.05 to 0.25 percent by weight, based on the weight of the tufted carpet product, have been deposited within said backing and along about one-half the lower length of said carpet yarn and wherein a layer of carpet adhesive composition has been applied on the treated tuft loop backs and on the treated underside of the backing.

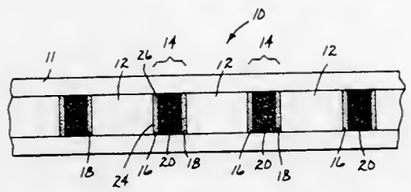
5,254,387
HIGH STRENGTH MULTI-LAYERED TAPE
Daniel Gallucci, 1523 N. Beverly Glen, Bel Air, Calif. 90077
Filed Sep. 10, 1990, Ser. No. 580,840
Int. Cl.[5] B32B *5/12, 7/00, 5/06*
U.S. Cl. 428—113 4 Claims



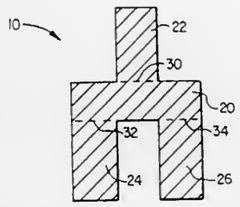
1. A layered tape comprising:
(a) a plurality of unidirection fibrous ribbons of high strength material formed from a material selected from the group consisting of E-glass, S-glass, aramid, carbon and oriented polyethylene;
(b) a top layer of the tape comprising a group of woven fibers selected from the group consisting of polyester, nylon and fiberglass;
(c) a carrier means of flexible polymeric material encapsulating said plurality of ribbons and joining thereto said group of woven fibers into a continuous tape; said plurality of ribbons arranged longitudinally in said continuous tape and said woven fibers oriented at an oblique angle relative to said ribbons; and
(d) a polymer adhesive coating on one side of said layered tape for bonding to structural components.

5,254,388
LIGHT CONTROL FILM WITH REDUCED GHOST IMAGES
Sanford Cobb, Jr., Saint Mary's Po, Minn.; Leo A. Meyer; Jeffrey J. Melby, and Scott G. Theirl, all of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
PCT No. PCT/US91/09724, § 371 Date Dec. 20, 1991, § 102(e) Date Dec. 20, 1991
Continuation-in-part of Ser. No. 632,123, Dec. 21, 1990, abandoned. This PCT application Dec. 20, 1991, Ser. No. 820,611
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—120 30 Claims

1. A louvered plastic film comprising a plurality of clear regions separated by louvers wherein each of said louvers has a central region having a first coefficient of extinction and an outer region adjacent said clear region having a second coefficient of extinction, said first coefficient of extinction being at least 1.5 times said second coefficient of extinction.

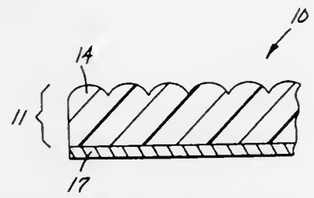


5,254,389
VOID FILL MATERIAL
Russell W. Tether, Dallas, Tex., assignor to Corropak, Inc., Dallas, Tex.
Continuation-in-part of Ser. No. 804,995, Dec. 11, 1991, Pat. No. 5,188,880. This application Oct. 13, 1992, Ser. No. 959,774
The portion of the term of this patent subsequent to Oct. 13, 2010, has been disclaimed.
Int. Cl.[5] B32B *3/10*
U.S. Cl. 428—131 19 Claims



1. A void fill material for use within a container around a product comprising:
(a) a primary section defining a primary plane; and
(b) at least two limbs extending from the primary section, wherein the void fill material is made of a corrugated material.

5,254,390
PLANO-CONVEX BASE SHEET FOR RETROREFLECTIVE ARTICLES AND METHOD FOR MAKING SAME
Shih-Lai Lu, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Nov. 15, 1990, Ser. No. 613,136
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—156 22 Claims

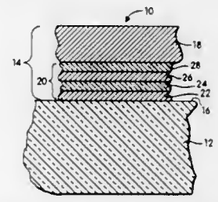


1. A transparent base sheet having first and second broad faces, said second face being substantially planar and said first face having an array of substantially hemi-spheroidal microlenses thereon, said microlenses being wider and shorter than portions of true spheres, the shape of said microlenses and thickness of said base sheet being such that collimated light substantially orthogonally incident to said array is focused approximately at said second face.

5,254,391
SOFT, ELASTOMERIC, POLYMER COATED CONTACT SURFACE
Elbert Davis, 30781 S. Coast Hwy., Villa 91, Laguna Beach, Calif. 92651
Division of Ser. No. 532,403, Jun. 4, 1990, Pat. No. 5,164,231. This application May 21, 1992, Ser. No. 886,796
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—195 19 Claims

1. A coated contact surface having a high coefficient of friction comprising a contact surface coated directly with a polymer having a hardness of 20 to 40 Shore A, a tensile strength of 700 to 1700 psi, an elongation of 400 to 1400 percent and a tear resistance of 100 to 400 PLI, which polymer forms a solid film from an evaporating solvent, said solidified polymer itself providing said high coefficient of friction.

5,254,392
ANTI-IRIDESCENCE COATINGS
Carole G. Burns, Canton; Daryl J. Middleton, Riverview, and James W. Proscia, Dearborn, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Jun. 24, 1991, Ser. No. 720,135
The portion of the term of this patent subsequent to Dec. 1, 2009, has been disclaimed.
Int. Cl.[5] B32B *7/02*
U.S. Cl. 428—212 15 Claims

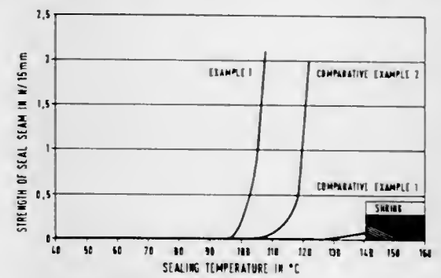


1. A substantially transparent glazing article comprising a substantially transparent substrate bearing a coating on a surface thereof, said coating comprising an optically functional layer having a refractive index higher than the substrate, and an anti-iridescence layer which is less thick than the optically functional layer and positioned mediate the substrate surface and the optically functional layer, the anti-iridescence layer comprising a first high refractive index zone directly on the substrate surface, having a refractive index at least 0.1 higher than the substrate, a first low refractive index zone over the first high refractive index zone, having a refractive index at least 0.1 lower than the first high refractive index zone, a second high refractive index zone over the first low refractive index zone, having a refractive index at least 0.1 higher than the first low refractive index zone, and a second low refractive index zone over the second high refractive index zone, having a refractive index at least 0.1 lower than the second high refractive index zone.

5,254,393
BIAXIALLY ORIENTED MULTI-LAYER POLYOLEFIN FILM
Ursula Murschall, Nierstein; Herbert Peiffer, Mainz-Finthen, and Gunter Schloegl, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Oct. 21, 1991, Ser. No. 780,059
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1990, 4034134
Int. Cl.[5] B32B *15/08, 7/02, 27/32*; D02J *1/22*
U.S. Cl. 428—212 22 Claims

1. A biaxially oriented, shrinkable, multi-layer film which is heat-sealable on both sides, having a longitudinal shrinkage of more than about 7% at 120° C. and a transverse shrinkage of more than about 5% at 120° C. comprising:
a) a base layer consisting essentially of a peroxidically degraded polypropylene, and
b) at least one heat-sealable layer on either side of said base layer, wherein each of said heat-sealable layers comprises an ethylene-propylene copolymer and an anti-blocking agent.

5,254,394
HEAT-SEALABLE PACKAGING FILM
Lothar Bothe, Mainz-Gonsenheim; Volker Dolle; Andreas Winter, both of Kelkheim, and Thomas Wilbelm, Sulzfeld, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Nov. 4, 1991, Ser. No. 787,099
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1990, 4035344
Int. Cl.[5] B32B *27/08, 5/16*
U.S. Cl. 428—212 22 Claims



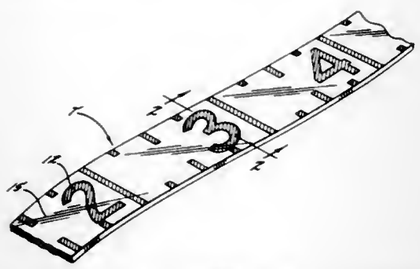
1. A multilayer film which comprises:
a) a base layer consisting essentially of an isotactic polypropylene, and
b) at least one additional layer comprising a syndiotactic polypropylene homopolymer, which possesses isotacticity of less than about 15%.

5,254,395
PROTECTIVE COATING SYSTEM FOR IMPARTING RESISTANCE TO ABRASION, IMPACT AND SOLVENTS
William P. Hodnett, III, Martinsville, Va., assignor to Thor Radiation Research, Inc., Va.
Continuation-in-part of Ser. No. 235,917, Aug. 23, 1988, Pat. No. 5,114,783. This application Dec. 27, 1991, Ser. No. 815,329
The portion of the term of this patent subsequent to May 19, 2009, has been disclaimed.
Int. Cl.[5] B32B *7/02, 27/00*
U.S. Cl. 428—217 17 Claims

1. An abrasion resistant, clear, transparent and non-yellowing coating system for imparting a highly scratch resistant, chemical resistant, impact resistant protective finish to a substrate comprising a relatively hard outer coating layer of a highly crosslinked acrylic copolymer derived from at least 40

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percent by weight of a multifunctional aliphatic acrylate monomer of three to six functional groups adhered to a relatively soft base coating layer comprising at least 40 percent by weight



of a crosslinked aliphatic urethane acrylate copolymer and a lesser proportion of said multifunctional aliphatic acrylate monomer of three to six functional groups.

5,254,396

CARBON FIBER STRUCTURE AND PROCESS FOR PRODUCING THE SAME

Tetsuji Takemura; Akio Takamatsu, and Yoshiyuki Nishimura, all of Kamisu, Japan, assignors to Petoca Ltd., Tokyo, Japan

Filed Jan. 25, 1991, Ser. No. 652,955

Claims priority, application Japan, Jan. 26, 1990, 2-15063

Int. Cl.[5] D01F *9/145;* **C04B** *35/52*

U.S. Cl. 428—225 **6 Claims**

6. A carbon-carbon composite material comprising piled up sheets of an infusibilized, or infusibilized an slightly carbonized fiber or optically anisotropic pitch mixed with a phenolic resin fiber having an elongation and shrinkage during heat treatment at carbonizing temperatures greater than those of said optically anisotropic pitch fiber with mixing proportion of said phenolic resin fiber of 10 to 40% relative to the mixture, and a carbonizable impregnant.

5,254,397

CARBON FIBER-REINFORCED COMPOSITE MATERIAL HAVING A GRADIENT CARBIDE COATING

Chibiro Kawai, and Tadashi Igarashi, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 623,186, Dec. 6, 1990, abandoned. This application Jun. 8, 1992, Ser. No. 895,458

Claims priority, application Japan, Dec. 27, 1989, 1-339557

Int. Cl.[5] B32B *9/00, 18/00;* **C04B** *35/02, 35/52*

U.S. Cl. 428—245 **4 Claims**

1. A coated carbon fiber-reinforced composite material comprising a substrate material which comprises a carbon matrix and reinforcing carbon fibers and a coating layer coating the substrate material which comprises silicon carbide and at least one material selected from the group consisting of titanium carbide, zirconium carbide and hafnium carbide wherein a part of said coating layer contacting said substrate material consists of at least one material selected from the group consisting of titanium carbide, zirconium carbide and hafnium carbide, a surface part of said coating layer consists of silicon carbide and a composition in an intermediate part between the part contacting the substrate material and the surface part continuously or stepwise changes from at least one material selected from the group consisting of titanium carbide, zirconium carbide and hafnium carbide to silicon carbide.

5,254,398

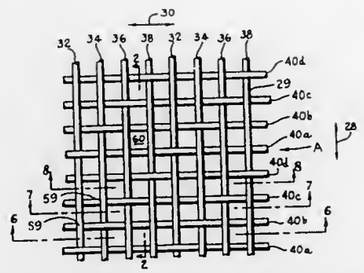
WOVEN MULTILAYER PAPERMAKING FABRIC HAVING INCREASED STABILITY AND PERMEABILITY AND METHOD

Hermann Gaisser, Reutlingen, Fed. Rep. of Germany, assignor to Wangner Systems Corporation, Greenville, S.C.

Continuation of Ser. No. 763,039, Aug. 5, 1985, Pat. No. 5,114,777. This application May 18, 1992, Ser. No. 885,276

Int. Cl.[5] D03D *3/04;* **D21F** *3/02, 7/08*

U.S. Cl. 428—255 **11 Claims**



1. A woven multilayer papermaking fabric for use with a papermaking machine having a paper support side and a roller contact side, said fabric having a weft yarn system with yarns extending in the cross machine direction of said papermaking machine and a multiple layer warp yarn system with yarns extending in the machine direction of said papermaking machine and normal to said first direction, wherein said multiple layer warp yarn system includes monofilament yarns selected from one of an oval and rectangular cross-section yarns arranged in at least first and second warp yarn layers one on top of the other in a superposed configuration to define at least pairs of stacked load bearing warp yarns extending in said machine direction along the entire fabric length, said stacked arrangement facilitating increased fabric stability; and

said weft yarn system includes said weft yarns disposed in said cross-machine direction in a weave pattern which stabilizes said stacked warp yarns and adjacent ones of said stacked warp yarns layers being relatively positioned in said cross machine direction across said fabric to provide a desired degree of permeability.

4. A woven multilayer papermaking machine fabric having increased fabric stability in the machine direction of a papermaking machine comprising:

an upper warp layer of load bearing warp yarns forming a support surface, said upper layer of warp yarns, which extend in said machine direction, having a cross-section of a first configuration;

a lower warp layer of load bearing warp yarns which extend in said machine direction having a cross-section of a second configuration;

stacked warp yarn pairs defined by respective ones of said upper and lower warp yarn layer arranged in a generally vertically stacked relation one over the other along the entire fabric length;

said stacked warp yarn pairs being arranged adjacent one another in a desired relationship transverse said fabric to provide a desired fabric permeability;

a weft yarn system which includes weft yarns having a cross-section of a third configuration interwoven with said first and second warp yarn layers to bind with said respective ones of said upper and lower warp yarns to maintain said stacked pairs in said vertical arrangement; and

at least one of said first, second, and third configurations having a non-circular cross section.

5,254,399

NONWOVEN FABRIC

Yasuyuki Oku; Takeshi Yamasaki, and Masanobu Matsuoka, all of Tokyo, Japan, assignors to Mitsubishi Paper Mills Limited, Tokyo, Japan

Filed Dec. 18, 1991, Ser. No. 808,925

Claims priority, application Japan, Dec. 19, 1990, 2-412057; Jan. 18, 1991, 3-019362; Apr. 11, 1991, 3-108548; Apr. 12, 1991, 3-108635

Int. Cl.[5] D04H *1/58*

U.S. Cl. 428—288 **8 Claims**

1. A nonwoven fabric having good sheet formation comprising fibers whose diameter is 7 μm of less, whose length (L) to diameter (D) ratio is within the range of $2000 < L/D \leq 6000$, and wherein the fibers are three-dimensionally entangled.

5,254,400

MICROCELLULAR AND ULTRAMICROCELLULAR MATERIALS CONTAINING HYDROFLUOROCARBON INFLATANTS

Willard H. Bonner, Jr., Bath, Me., and Lun Y. Wei, Hockessin, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 18, 1991, Ser. No. 687,057

Int. Cl.[5] B32B *3/26, 27/36;* **C08J** *9/14*

U.S. Cl. 428—305.5 **6 Claims**

1. An improved ultramicrocellular material comprising closed polyhedral cells of poly(ethylene terephthalate) polymer, wherein the cells contain an inflatant, the improvement comprising selecting the inflatant from the group consisting of hydrofluorocarbon compounds having the empirical formula:

$$C_nF_{2n+1}H$$

wherein,

n is an integer from 2 to 5.

5,254,401

PACKAGING MATERIAL FOR CONTROLLED ATMOSPHERE PACKAGING

Robert H. Kelch, Granville, and Vincent S. Zabrocki, Newark, both of Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 29, 1990, Ser. No. 619,574

Int. Cl.[5] B32B *5/18, 7/12;* **B65D** *85/50*

U.S. Cl. 428—317.1 **3 Claims**



1. A packaging material useful for the controlled atmosphere packaging in bulk of ripened produce, consisting essentially of a liner material and a supporting cardboard substrate, wherein the liner material consists of an open cell foamed adhesive layer of one or more ethylene acrylic acid copolymer adhesives and a substantially solid thermoplastic film layer of polyethylene or polystyrene in face to face relationship.

5,254,402

MOLDING LAMINATE

Syunji Okubo, Ohtsu; Toshiharu Nakae, Shiga; Osamu Wada, Nagoya; Masayuki Togo, Kyoto, and Fusayoshi Akimaru, Ohtsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Nov. 27, 1991, Ser. No. 799,212

Claims priority, application Japan, Nov. 30, 1990, 2-339742; Dec. 26, 1990, 2-406901; Sep. 26, 1991, 3-247649; Sep. 26, 1991, 3-247650

Int. Cl.[5] B32B *7/12*

U.S. Cl. 428—317.7 **44 Claims**

1. A molding laminate comprising

a cross-linked polyolefin resin foam;

a facing material laminated on said cross-linked polyolefin resin foam; and

an adhesive layer adhering said facing material to said cross-linked polyolefin resin foam, said adhesive layer comprising a water-based adhesive material which is an emulsion selected from the group consisting of acrylic resins having polar groups and urethane resins having polar groups, and a curing agent, comprising an aziridine, which has been applied to at least one of said foam and said facing, and baked thereon by means of an infrared radiation in advance of adhering said cross-linked polyolefin resin foam and said facing material to each other.

5,254,403

COATED RECORDING SHEETS

Shadi L. Malhotra, Mississauga, Canada, assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 23, 1992, Ser. No. 872,373

Int. Cl.[5] B41M *5/00;* **B32B** *27/08*

U.S. Cl. 428—323 **8 Claims**

1. A recording sheet which comprises a substrate and an image receiving layer consisting essentially of a mixture of (a) a polymer capable of forming a latex and selected from the group consisting of (i) poly (vinyl chloride), (ii) ethylene-vinyl chloride copolymers, (iii) poly (vinyl acetate), (iv) carboxylated poly (vinyl acetate), (v) ethylene-vinyl acetate copolymers, (vi) polymers containing acrylate monomers, (vii) poly styrene, (viii) styrenebutadiene copolymers, (ix) carboxylated styrene-butadiene copolymers, (x) butadiene-acrylonitrile copolymers, (xi) butadiene-acrylonitrile-styrene copolymers, and (xii) mixtures thereof; (b) a polysaccharide; and (c) a polymer containing oxyalkylene monomers.

5,254,404

MAGNETIC RECORDING MEDIUM COMPRISING FERROMAGNETIC PARTICLES HAVING CRYSTALLITE SIZE OF LESS THAN 450 ANGSTROMS AND A SPECIFIED POLYURETHANE BINDER

Hiroshi Hashimoto, and Akira Ushimaru, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 551,820, Jul. 12, 1990, abandoned. This application May 13, 1992, Ser. No. 884,273

Claims priority, application Japan, Jul. 12, 1989, 1-179670

Int. Cl.[5] G11B *5/00*

U.S. Cl. 428—323 **4 Claims**

1. A magnetic recording medium comprising a non-magnetic support having thereon at least one magnetic recording layer comprising a dispersion of ferromagnetic particles in a binder, said ferromagnetic particles having a crystalline size of 450Å or less, said binder comprising the combination of a polyisocyanate and a polyurethane binder consisting essentially of at least one terminal hydroxyl group at each end of the polyurethane molecule, said polyurethane binder being prepared by reacting (a) a polyurethane prepolymer comprising at least one terminal isocyanate group at each end of the polyurethane prepolymer molecule, said polyurethane prepolymer having a glass transition temperature of at least 0° C. and containing a

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polar group, with (b) a compound comprising at least one terminal hydroxyl group at each end of the polymer molecule and having a glass transition temperature of −30° C. or less.

5,254,405

NON-CELLULAR POLYURETHANE COMPOSITE

Vincent F. Panaroni, El Toro, and Thomas R. McClellan, Mission Viejo, both of Calif., assignors to Urethane Technologies, Incorporated, Irvine, Calif.

Filed Oct. 2, 1991, Ser. No. 771,308
Int. Cl.[5] B32B *5/16, 27/40*
U.S. Cl. 428—327 **12 Claims**

1. A non-cellular polyurethane composite material comprising from 1 to 40 wt % of desiccant dried rubber particles having a moisture content of less than 500 ppm incorporated in a polyurethane matrix, wherein said desiccant dried rubber particles have been dried prior to adding to said polyurethane by mixing rubber particles with desiccant.

5,254,406

FACEPAINT MATERIAL

Richard G. Quynn, Duxbury, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 19, 1992, Ser. No. 962,765
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—328 **8 Claims**

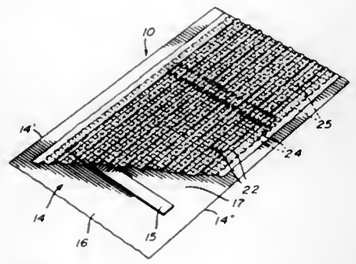
1. A facepaint material for application to the skin of the human body to reduce the possibility of detection of the user by a thermal imaging device, said facepaint material comprising a vehicle having a percentage radiation absorption of less than five percent in the 8 to 14 micrometer wavelength region and having nickel particles contained therein.

5,254,407

REINFORCED COMPOSITE BACKING TAPE

Fernand Sergerie; Robert Sergerie, and Luc Sergerie, all of Timmins, Canada, assignors to Modern Carpet Tools Ltd., Ontario, Canada

Filed May 28, 1992, Ser. No. 889,235
Claims priority, application Canada, May 7, 1992, 2068191-8
Int. Cl.[5] A01N *3/00;* **B32B** *31/26*
U.S. Cl. 428—343 **11 Claims**



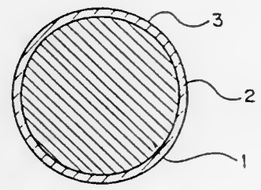
1. A reinforced composite backing tape for securing adjoining straight edges of carpet, floor or wall coverings and particularly, but not exclusively, for interconnecting abutting edges of carpet pieces; said backing tape comprising an elongated reinforced backing sheet having opposed elongated parallel edges defining a longitudinal direction; a plurality of spaced apart straight rigid stabilizing elements immovably retained by said backing sheet between said elongated edges and throughout the length of said tape, said stabilizing elements extending transverse to said longitudinal direction and being formed from a material which resists said tape from folding along an elongated seam defined along said abutting edges of said carpet pieces when used to adjoin straight edges of said carpet pieces and to prevent carpet peaking along said abutting edges, and thermo-meltable adhesive material disposed over a top surface of said tape to adhesively secure said tape to edge surface portions of backing material of said carpet pieces with said stabilizing elements extending across said elongated seam.

5,254,408

MAGNET WIRE AND ELECTROMAGNETIC RELAY USING THE SAME

Akibisa Takeuchi; Waichiro Kozen, and Hirohiko Nakabayashi, all of Aichi, Japan, assignors to Sumito Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 6, 1987, Ser. No. 117,607
Claims priority, application Japan, Nov. 11, 1986, 61-268904; Nov. 11, 1986, 61-268905; Nov. 11, 1986, 61-268906
Int. Cl.[5] B32B *27/00;* **D02G** *3/00*
U.S. Cl. 428—383 **19 Claims**



1. A polyurethane magnet wire comprising a conductor having provided thereon a polyurethane insulation coating, wherein the total amount of the phenolic compounds contained in organic compounds which evaporate from said coating by heating at 280° C. for 2 minutes is 0.2 wt % or less based on the weight of said coating, and the total amount of said organic compounds which evaporate from said coating is 2 wt % or less based on the weight of said coating.

5,254,409

CONDUCTIVE RESIN COMPOSITE

Kiyoshi Yagi, and Makoto Katsumata, both of Shizuoka, Japan, assignors to Yazaki Corporation, Japan

Filed Oct. 19, 1990, Ser. No. 599,716
Claims priority, application Japan, Oct. 26, 1989, 1-277051
Int. Cl.[5] D01F *6/18, 9/12;* **H01B** *1/06;* **C01B** *31/04*
U.S. Cl. 428—392 **19 Claims**

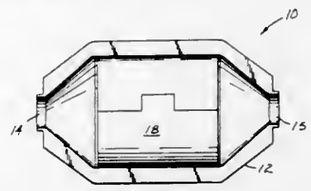
1. Conductive resin composite, comprising:
(a) graphite fiber with crystal structure such that carbon hexagonal net planes are arranged substantially in parallel to a fiber axis and in annular ring growth fashion around the fiber axis, said graphite fiber including a fluorine-containing reaction compound; and
(b) synthetic resin kneaded with said graphite fiber so that said graphite fiber is dispersed into said synthetic resin;
wherein said reaction compound is formed by reacting fluorine or transition element fluoride with said graphite between the carbon hexagonal net planes, to form a higher conductivity intercalation compound, and
wherein further the intercalation compound composed of graphite fiber and fluorine is graphite intercalation compound fiber having a crystal c-axis direction in which the interative periodic length of the crystal in the c-axis direction ranges from 6 to 20 Angstrom.

5,254,410

PARTIALLY DEHYDRATED VERMICULITE FLAKES AND METHOD OF MAKING SAME

Roger L. Langer, Hudson, Wis., and Richard P. Merry, White Bear Lake, Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Apr. 18, 1991, Ser. No. 687,228
The portion of the term of this patent subsequent to Apr. 18, 2009, has been disclaimed.
Int. Cl.[5] B32B *5/16*
U.S. Cl. 428—402 **17 Claims**



1. Intumescent vermiculite flakes having
a) from about 1.0 to 3.2% by weight of chemically bound water, and
b) a uniform bulk density from about 0.2 to 0.9 g/cm^3.

5,254,411

FORMATION OF HEAT-RESISTANT DIELECTRIC COATINGS

Yoshihumi Takeda; Toshinobu Ishihara, and Ken'ichi Ito, both of Niigata, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Dec. 4, 1991, Ser. No. 803,486
Claims priority, application Japan, Dec. 5, 1990, 2-405377; Dec. 5, 1990, 2-405378
Int. Cl.[5] B32B *9/04*
U.S. Cl. 428—447 **12 Claims**

1. A method for forming a heat resistant, dielectric coating comprising the steps of
applying a heat resistant coating composition comprising an organic silicon polymer, a silazane compound selected from the group consisting of tetramethyldisilazane, hexamethylcyclotrisilazane, octamethylcyclotetrasilazane and mixtures thereof, and an inorganic filler to a substrate, and
baking the coating in an atmosphere of ammonia gas or a mixture of ammonia gas and an inert gas.

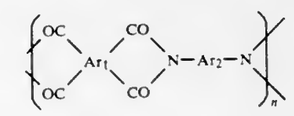
5,254,412

HEAT RESISTING ADHESIVE MATERIAL

Masao Fujimoto, Minatoiimanaka, Japan, assignor to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

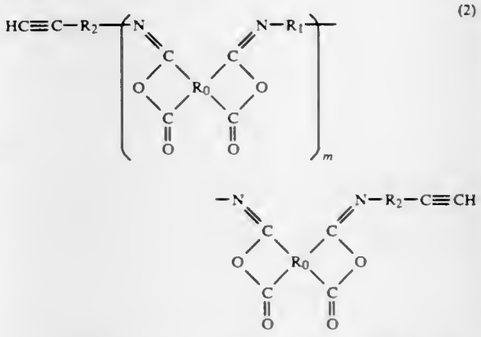
Filed May 15, 1992, Ser. No. 884,490
Claims priority, application Japan, May 17, 1991, 3-142352
Int. Cl.[5] B32B *27/08*
U.S. Cl. 428—473.5 **4 Claims**

1. A heat resistant adhesive material which comprises an aromatic polyimide supporting film wherein the main component of the film is a repeating unit of the general formula:



(1)

where Ar_1 is an aromatic tetracarboxylic acid residue, Ar_2 an aromatic diamine residue, and n is an integer 1 or greater; at least one side of which is coated with an adhesive layer wherein the main component of the adhesive is an acetylene terminated polyimide of the formula:



(2)

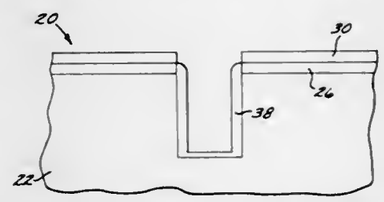
wherein R_0 represents tetravalent organic groups, R_1 and R_2 divalent organic groups, and m is an integer 0 to 100.

5,254,413

METHOD FOR REPAIR AND RESTORATION OF A CERAMIC THERMAL BARRIER-COATED SUBSTRATE BY PROVIDING AN INTERMETALLIC COATING

Antonio F. Maricocchi, Loveland, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 648,770, Jan. 3, 1991, abandoned. This application Apr. 16, 1992, Ser. No. 870,176
Int. Cl.[5] B32B *15/00, 35/00*
U.S. Cl. 428—633 **19 Claims**



1. A process for providing an intermetallic coating on the surface of an article, comprising the steps of:
providing an article having a bond coat overlying at least a portion of the surface of the article and a ceramic thermal barrier coating overlying the bond coat; and
applying a protective layer over an uncoated portion of the surface by contacting at least the uncoated portion of the surface of the article with an intermetallic coating source material, the intermetallic coating source material comprising a mixture of a metallic source of aluminum and ceramic particles, the intermetallic coating source material having no halide activator therein.

5,254,414

METAL AIR STORAGE BATTERY

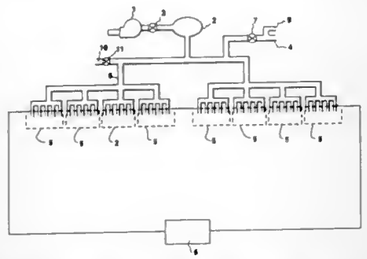
Boris Tsenter, Jerusalem, Israel, assignor to Battery Technologies International, Jerusalem, Israel

Filed Nov. 4, 1992, Ser. No. 787,333
Int. Cl.[5] H01M *8/06, 12/06*
U.S. Cl. 429—29 **6 Claims**

1. A metal-oxygen electrochemical cell, comprising:
(a) a vessel;
(b) an alkali metal hydroxide electrolyte partially filling said vessel;

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(c) a metal electrode immersed in said electrolyte; an oxygen electrode immersed in said electrolyte;
(d) means for introducing oxygen to said oxygen electrode;
(e) means for introducing hydrogen to said oxygen electrode;



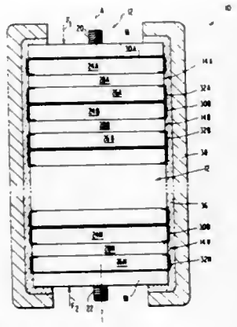
(f) means for cutting off said oxygen to said oxygen electrode; and
(g) means for cutting off said hydrogen to said oxygen electrode.

5,254,415

STACKED CELL ARRAY BIPOLAR BATTERY WITH THERMAL SPRAYED CONTAINER AND CELL SEAL

Mark T. Williams, Hampstead; James D. Briscoe, Westminister, and Salah M. Oweis, Ellicott City, all of Md., assignors to Saft America Inc., Cockeysville, Md.

Filed Apr. 9, 1992, Ser. No. 865,471
Int. Cl.[5] H01M *6/46, 2/08, 1/18, 4/36*
U.S. Cl. 429—153 **24 Claims**



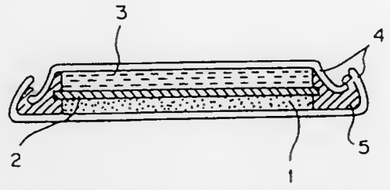
1. In a bipolar battery comprising:
a plurality of individual cells with electrode faces in a face-to-face stacked array with electrically-opposite electrode ends, electrically conductive metal end plates in contact with said electrode ends of the array, each cell including a pair of electrically-opposite electrodes in contact with and separated by a central separator comprising an electrolyte, normally fluid during the operation of the battery, said array including at least one current collector between and in electrical contact with adjacent electrodes of adjacent cells, the improvement comprising:
a first, thermal-sprayed electrode or electrolyte resistant material ceramic layer on the exterior of the face-to-face stacked array over the axial length of the stacked array, and onto the peripheral faces of said metal end plates remote from said individual cells, said ceramic layer being of a thickness sufficient to virtually eliminate any electrolyte leakage from each cell, and a second, thermal-sprayed metal layer over said thermal sprayed ceramic layer of a thickness sufficient, forming a ceramic sealant and metal support and containment structure for the bipolar battery stack, and wherein the material forming said thermal-sprayed ceramic layer and that of the thermal-sprayed metal layer having sufficient coefficients of thermal expansion (CTE) to maintain a seal.

5,254,416

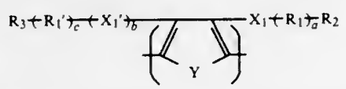
ELECTRON CONDUCTIVE HIGH POLYMER

Tadahiko Kubota, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 9, 1992, Ser. No. 818,287
Claims priority, application Japan, Jan. 24, 1991, 3-022611
Int. Cl.[5] H01M *4/60;* **C08G** *75/00*
U.S. Cl. 429—213 **12 Claims**



7. A positive electrode for a battery comprising an electron conductive high polymer comprising a repeating unit represented by following formula (1):



(1)

wherein X_1 and $X_{1'}$ each independently represents a divalent linkage group selected from the group consisting of —C-(O)O—, —C(O)NR_5—, —CH_2O—, —(O)S(O)—, —C(O), and —C(O)CH_2O—, wherein R_5 represents a hydrogen atoms or an alkyl group having from 1 to 3 carbon atoms; R_1 and R_1' each represents an alkylene group; R_2 represents a cyclic ester derivative group, an acyclic ester derivative group, a cyclic ether derivative group, or a sulfone derivative group; R_3 represents a hydrogen atom, an alkyl group, an aryl group, a cyclic ester derivative group, an acyclic ester derivative group, a cyclic ether derivative group, or a sulfone derivative group; a, b, and c each represents 0 or 1; and l represents —NR_4—, —O—, —S—, —Te—, or —Se—, wherein R_4 represents a hydrogen atom, an alkyl group, or an aryl group.

5,254,417

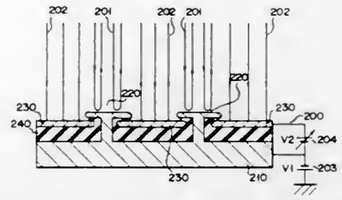
REFLECTION MASK AND ELECTRICALLY CHARGED BEAM EXPOSING APPARATUS USING THE REFLECTION MASK

Hirotsugu Wada, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 17, 1991, Ser. No. 760,913
Claims priority, application Japan, Sep. 28, 1990, 2-256960
Int. Cl.[5] G03F *9/00*
U.S. Cl. 430—5 **9 Claims**

1. A reflection mask comprising:
a substrate having a surface comprising a selected portion and the other portion;
a reflection pattern formed on said selected portion of said surface of said substrate;
first voltage applying means for applying on said reflection pattern a voltage sufficient to reflect electrically charged beams irradiated to said reflection pattern;
a non-reflection pattern provided on the other portion of said surface of said substrate; and

second voltage applying means for applying on said non-reflection pattern a voltage sufficient to allow electrically



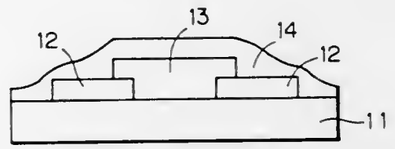
charged beams to be incident on said non-reflection pattern.

5,254,418

METHOD OF MANUFACTURING PHOTOMASK

Kazuya Kamon; Junji Miyazaki, and Hitoshi Nagata, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 16, 1991, Ser. No. 777,189
Claims priority, application Japan, Oct. 22, 1990, 2-285466
Int. Cl.[5] G03F *9/00*
U.S. Cl. 430—5 **7 Claims**



1. A method of manufacturing a photomask, said method comprising the steps of:
(a) preparating a transparent substrate having two major surfaces;
(b) selectively coating one major surface of said transparent substrate with two light shielding layers which are separated from each other, to thereby define an uncoated region of said transparent substrate, said uncoated region being between said two light shielding layers;
(c) providing a phase shifter on said uncoated region such that said light shielding layers and said phase shifter are alternately arranged in a first direction; and
(d) forming an intermediate shifter to overlie said transparent shifter, said light shielding layers and said phase shifter such that a thickness of said intermediate shifter gradually changes in a region of a border between the phase shifter and the transparent substrate, the thickness gradually changing in a second direction perpendicular to the first direction.

5,254,419

METHOD FOR DUST-PROOFING IN THE MANUFACTURE OF ELECTRONIC DEVICES AND PELLICLE THEREFOR

Meguru Kashida; Satoshi Watanabe, both of Gunma; Toshinobu Ishihara, Niigata; Yoshihiro Kubota, Gunma, and Ikuo Fukui, Niigata, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jan. 6, 1992, Ser. No. 817,438
Claims priority, application Japan, Jan. 14, 1991, 3-014691
Int. Cl.[5] G03F *9/00*
U.S. Cl. 430—5 **4 Claims**

1. A method for dust-proofing of a photomask which comprises: covering the photomask with a pellicle of a film made from a polyvinyl alcohol of which the hydrogen atoms of at least 40% of the hydroxy groups are replaced each with a triorganosilyl group represented by the general formula

R_3Si—,

in which each R is, independently from the others, a monovalent hydrocarbon group.

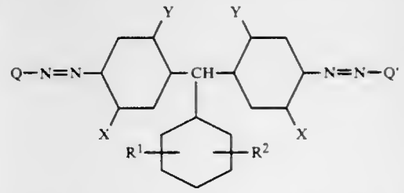
5,254,420

MAGENTA TONER FOR DEVELOPING ELECTROSTATIC IMAGES, COLORED RESIN, COLORED MOLDED RESIN MEMBER AND COLOR FILTER

Masahiro Otsuka, Osaka, Japan, assignor to Orient Chemical Industries, Ltd., Osaka, Japan

Filed Dec. 6, 1991, Ser. No. 803,464
Claims priority, application Japan, Dec. 14, 1990, 2-410888
Int. Cl.[5] G03G *9/09*
U.S. Cl. 430—7 **10 Claims**

1. A magenta toner for developing electrostatic images which comprises a resin and at least one kind of the dis-azo dye represented by the following formula [1]:



[I]

wherein X represents methyl group, ethyl group or alkoxy group having 1 to 4 carbon atoms; Y represents hydrogen atom or methyl group; R^1 and R^2 independently represent hydrogen atom, alkyl group, alkoxy group or halogen atom; Q and Q' represent naphthol AS residue.

5,254,421

TONER RECEIVING PRINTING PLATE

Paul J. Coppens, Turnhout; Serge M. Tavernier, Lint; Robert F. Janssens, Geel; Paul Märksch, Antwerp; Marc P. Stevens, Belsele, and Mikolaas C. de Jaeger, Hove, all of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Jun. 27, 1990, Ser. No. 544,382
Claims priority, application European Pat. Off., Jun. 28, 1989, 89201696.5
Int. Cl.[5] G03G *13/28*
U.S. Cl. 430—49 **15 Claims**

1. Electrophotographic method of obtaining lithographic printing plates comprising the following steps: (i) uniformly electrostatically charging a photoconductor element, (ii) image-wise discharging said photoconductor element, (iii) developing the resulting electrostatic charge pattern with dry toner particles of which more than 90% by volume have an equivalent particle size diameter less than 10 microns and more than 50% by volume have an equivalent particle size diameter less than 7 microns, (iv) electrostatically transferring the developed image to a toner receiving plate, said toner receiving plate comprising a plastic film support that is thermostable to a temperature of at least 140° C. and a crosslinked hydrophilic layer thereon, said layer containing infrared absorbing substances in such an amount that the reflection density of said layer in the visible spectrum is between 0.4 and 1.4, and (v) fixing the transferred toner to said toner receiving plate by infrared radiation fusing.

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5,254,422

ELECTROPHOTOGRAPHIC LITHOGRAPHIC PRINTING PLATE PRECURSOR

Eiichi Kato, and Kazuo Ishii, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 3, 1991, Ser. No. 725,113

Claims priority, application Japan, Jul. 5, 1990, 2-176195; Nov. 15, 1990, 2-307240; Nov. 19, 1990, 2-311547

The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.

Int. Cl.[5] **G03G** *13/28, 5/00*

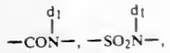
U.S. Cl. 430—49 **11 Claims**

1. An electrophotographic lithographic printing plate precursor which utilizes an electrophotographic light-sensitive material comprising a conductive support having provided thereon at least one photoconductive layer containing photoconductive zinc oxide and a binder resin, wherein the binder resin contains at least one graft-type copolymer comprising at least (1) a monofunctional monomer containing a functional group which has at least one atom selected from a fluorine atom and a silicon atom and is capable of forming at least one hydrophilic group selected from a sulfo group, a phosphono group, a carboxy group and a hydroxy group through decomposition, and (2) a monofunctional macromonomer which has a weight average molecular weight of from 1×10^3 to 2×10^4, and has a polymerizable double bond group represented by the general formula (I) described below bonded to only one terminal of the main chain thereof.

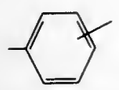
(1)



wherein X_1 represents —COO—, —OCO—, $(CH_2)_nOCO$—, $(CH_2)_mCOO$—, —O—, $-SO_2-$, —CO—,



—CONHCOO—, —CONHCONH—, or

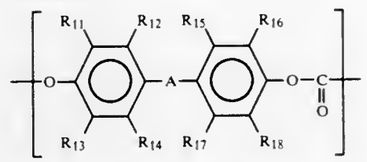


(wherein d_1 represents a hydrogen atom or a hydrocarbon group; and n and m each represents an integer of from 1 to 4); and a_1 and a_2, which may be the same or different, each represents a hydrogen atom, a halogen atom, a cyano group, a hydrocarbon group, —COO—Z_1 or —COO—Z_1 bonded via a hydrocarbon group (wherein Z_1 represents a hydrocarbon group which may be substituted).

thereon, wherein the surface layer of said electrophotographic photosensitive member contains a polymer having a component unit represented by the following Formula (1) and a polymer having a component unit represented by the following Formula (2) and a component unit represented by the following Formula (3)

Formula (1):

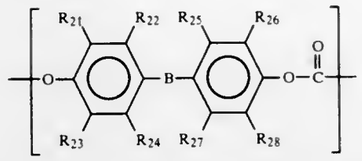
(1)



wherein A is a straight-chain, branched or cyclic alkylidene group having 1 to 15 carbon atoms, an aryl-substituted alkylidene group, an arylenedialkylidene group, or —O—, —S—, —CO—, —SO— or $-SO_2-$; and R_{11} to R_{18} each is a hydrogen atom, a halogen atom, an alkyl group having 1 to 4 carbon atoms, an alkenyl group having 2 to 4 carbons, or an aryl group

Formula (2):

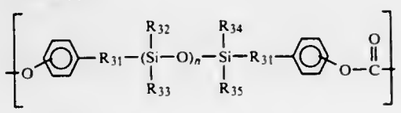
(2)



wherein B is a straight-chain, branched or cyclic alkylidene group having 1 to 10 carbon atoms, an aryl-substituted alkylidene group, an arylenedialkylidene group, or —O—, —S—, —CO—, —SO— or $-SO_2-$; and R_{21} to R_{28} each is a hydrogen atom, a halogen atom, an alkyl group having 1 to 4 carbon atoms or an alkenyl group having 2 to 4 carbons

Formula (3):

(3)



wherein R_{31} is an alkylene group or alkylidene group having 2 to 6 carbon atoms; R_{32} to R_{35} each is an alkyl group having 1 to 3 carbon atoms, a phenyl group or a substituted phenyl group; and n represents an integer of 1 to 200.

5,254,423

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER, AND ELECTROPHOTOGRAPHIC APPARATUS, DEVICE UNIT AND FACSIMILE MACHINE HAVING THE PHOTOSENSITIVE MEMBER

Shinya Mayama, Yamato; Naoto Fujimura, Yokohama; Toshiyuki Yoshihara, Inagi; Kiyoshi Sakai, Hachioji; Hideki Anayama, Yokohama; Hideyuki Ainoya, Tokyo, and Katsumi Aoki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 16, 1992, Ser. No. 962,333

Claims priority, application Japan, Oct. 17, 1991, 3-296645

Int. Cl.[5] **G03G** *5/147, 15/22;* **H04N** *1/23*

U.S. Cl. 430—58 **27 Claims**

1. An electrophotographic photosensitive member comprising a conductive support and a photosensitive layer provided

5,254,424

HIGH SOLIDS REPLENISHABLE LIQUID DEVELOPER CONTAINING URETHANE-MODIFIED POLYESTER TONER RESIN

Thomas Felder, Pannal, England, assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 23, 1991, Ser. No. 812,470

Int. Cl.[5] **G03G** *9/125*

U.S. Cl. 430—112 **46 Claims**

1. A method for producing a readily redispersible high solids replenishable electrostatic liquid developer concentrate having a solids content of more than about 50%, comprising:

blending particles containing a urethane modified polyester resin and a colorant with a liquid toner dispersant to form a toner dispersant mixture, wherein the particles have an

average particle size of less than 30 microns as measured by a centrifugal particle size analyzer.

5,254,425

SELF-DISPERSING COLORANT, LIQUID DEVELOPING AGENT FOR ELECTROSTATIC PHOTOGRAPHY, TONER SUPPLY AND TONER KIT

Nobuo Suzuki; Yutaka Sakasai, and Hiromichi Tachikawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 20, 1990, Ser. No. 615,948

Claims priority, application Japan, Nov. 20, 1989, 1-301079

Int. Cl.[5] **G03G** *9/13*

U.S. Cl. 430—115 **12 Claims**

1. A liquid developing agent for electrostatic photography, which comprises toner grains at least containing a resin, dispersed in a high-electrical insulating carrier liquid, wherein the resin is a self-dispersing graft-copolymer capable of self-dispersing in the carrier liquid to form said toner grains,

wherein the self-dispersing graft-copolymer is formed from a macromonomer having a polymerizable functional group at its terminal and a comonomer, wherein said macromonomer is formed from one of (a) a monomer forming moiety which is insoluble in the carrier liquid or (b) a monomer forming moiety which is soluble in the carrier liquid, and said comonomer is formed from the other of the monomer forming moiety (a) or (b),

the insoluble monomer forming moiety is represented by formula (1):

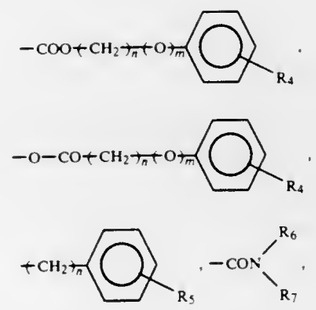
(1)



wherein

R_1 represents a hydrogen atom or a methyl group;

R_2 represents —$COOR_3$, —O—COR_3,



or —CN;

R_3 represents a substituted or unsubstituted alkyl group having from 1 to 3 carbon atoms, a cycloalkyl group having from 3 to 8 carbon atoms, or a residue or a crosslinked hydrocarbon compound having 4 to 18 carbon atoms;

R_4 represents a hydrogen atom, an alkyl group having from 1 to 4 carbon atoms, a halogen atom, a nitro group, a cyano group or a phenyl group, with the number of R_4's being from 1 to 3;

R_5 represents a hydrogen atom, a methyl group, an ethyl group, a halogen atom, a nitro group, a cyano group or a hydroxyl group, with the number of R_5's being from 1 to 3; and

R_6 and R_7, which may be the same or different, each represents an alkyl group having from 1 to 4; and

the soluble monomer forming moiety is represented by formula (2):

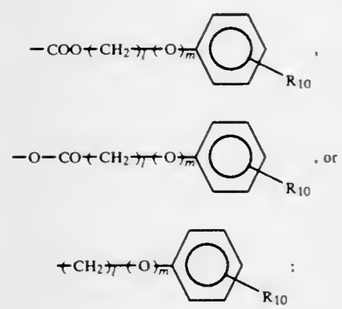
(2)



wherein

R_1 represents a hydrogen atom or a methyl group;

R_8 represent —$COOR_9$, —O—COR_9, —OR_9,



R_9 represents a linear or branched, substituted or unsubstituted, alkyl group having from 6 to 22 carbon atoms;

R_{10} represents a linear or branched, substituted or unsubstituted, alkyl group having from 4 to 12 carbon atoms; and

l represents from 0 to 6; and m represents 0 or 1.

5,254,426

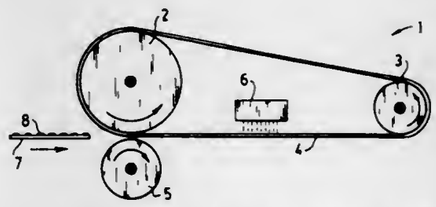
METHOD OF MAKING A PROJECTION VIEWABLE TRANSPARENCY

Muhammed Aslam; Lawrence P. DeMejo, both of Rochester, and Dinesh Tyagi, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 1, 1992, Ser. No. 862,654

Int. Cl.[5] **G03G** *13/01, 13/20*

U.S. Cl. 430—124 **11 Claims**



1. A fusing method for making a transparency capable of projecting an electrostatographic colored toner image that exhibits excellent color clarity, which method comprises:

a. providing a transparent element having a transparent support comprising a polymer layer bearing an image in colored toner particles that exhibit a loss tangent (tan δ) up to about 1.5 upon fusing the image with heat and pressure, the polymer forming such layer having a greater loss tangent (tan δ) than the toner particles upon such fusing;

b. passing the element successively through a fusing zone, a cooling zone and a release zone;

c. within the fusing zone, bringing the image and polymer layer into pressure contact with a surface of a fusing member at a temperature that fuses the image to the support and causes the polymer layer to flow;

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d. maintaining contact between the fused image and the fusing member within the cooling zone while reducing the temperature of the fusing member; and

e. separating the fused image from the fusing member within the release zone at a temperature where the image and the polymer layer do not offset.

5,254,427

ADDITIVES FOR LIQUID ELECTROSTATIC DEVELOPERS

Gregg A. Lane, San Diego, Calif.; William A. Houle, Flatrock, N.C., and Loretta A. G. Page, Newark, Del., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 30, 1991, Ser. No. 814,549
Int. Cl.[5] G03G 9/12
U.S. Cl. 430—137 26 Claims

1. A method of preparing a liquid electrostatic developer concentrate, comprising the steps of:

preparing a liquid electrostatic developer which contains up to 20% toner solids;

adding a surfactant to said liquid electrostatic developer; and

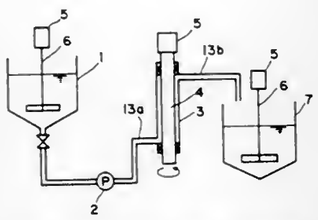
further concentrating said liquid electrostatic developer to a concentration of up to about 35%–95% toner solids.

5,254,428

PROCESS FOR PREPARATION OF LIGHT-SENSITIVE MICROCAPSULE

Shunichi Isbikawa, Kanagawa, and Hideo Nagano, Shizuoka, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 25, 1992, Ser. No. 841,020
Claims priority, application Japan, Feb. 25, 1991, 3-050118
Int. Cl.[5] G03C 5/00
U.S. Cl. 430—138 14 Claims



1. A process for preparation of light-sensitive microcapsules containing silver halide, a reducing agent, an ethylenically unsaturated polymerizable compound and a color image forming substance, which comprises the steps in order of:

mixing an oily phase containing the silver halide, the reducing agent, the polymerizable compound and the color image forming substance with an aqueous medium containing a water-soluble polymer in water;

supplying the mixture to a clearance of not larger than 5 mm between an inner cylinder and an outer cylinder;

passing the mixture through the clearance while rotating the outer cylinder and/or the inner cylinder to form an emulsion of the oily phase in the aqueous medium; and

then forming shells around the droplets of the oily phase.

5,254,429

PHOTOPOLYMERIZABLE COATING COMPOSITION AND LITHOGRAPHIC PRINTING PLATE PRODUCED THEREFROM

Robert F. Gracia, Woodstock; Shek C. Hong, Vernon, and William J. Ryan, Middletown, all of Conn., assignors to Anocoil, Rockville, Conn.

Filed Dec. 14, 1990, Ser. No. 627,710
Int. Cl.[5] C03C 1/54
U.S. Cl. 430—162 18 Claims

13. A printing plate comprising a lithographic substrate coated with a photopolymerizable coating composition comprising

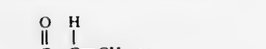
(a) one or more ethylenically unsaturated polymerizable monomers or oligomers;

(b) a dye or pigment;

(c) a photoinitiator;

(d) a diazonium salt; and

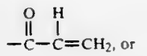
(e) an ethylenically unsaturated, urethane-containing self-crosslinkable grafted cellulose ester polymer of the formula



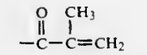
$$[C_6H_7O_2(OCCH_3)_x(OR^1)_y(OR^2)_z(OR^3)_{3-(x-y-z)}]_n$$

wherein

R^1 is a (meth)acrylate moiety of the formula

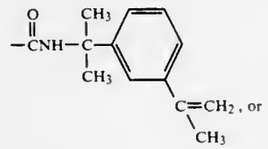


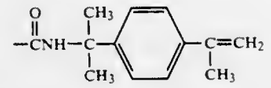
$$-C(=O)-C(H)=CH_2, \text{ or}$$



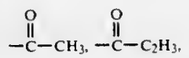
$$-C(=O)-C(CH_3)=CH_2$$

R^2 is a α-methylstyrene moiety of the formula

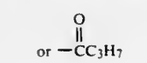




R^3 is independently H,



$$-C(=O)-CH_3, -C(=O)-C_2H_3,$$



$$\text{or } -C(=O)C_3H_7$$

x is 0.1 to 2.5

y is 0.1 to 2.0

z is 0.1 to 2.0 and

n is 30–250, provided that (x+y+z) is in the range of 0.3 to 3.0.

18. The printing plate of claim 13 further comprising an organic polymer layer which is substantially impermeable to oxygen and is soluble in aqueous developers, and which is coated over the photopolymerizable coating composition.

5,254,430

PRESENSITIZED PLATE HAVING ANODIZED ALUMINUM SUBSTRATE, HYDROPHILIC LAYER CONTAINING PHOSPHONIC OR PHOSPHINIC COMPOUND AND PHOTOSENSITIVE LAYER CONTAINING O-QUINONE DIAZIDE COMPOUND

Akira Nagashima; Keiji Akiyama, and Tadao Toyama, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara, Japan

Filed Jan. 29, 1992, Ser. No. 827,452
Claims priority, application Japan, Jan. 31, 1991, 3-10604; Mar. 12, 1991, 3-46932
Int. Cl.[5] G03F 7/11, 7/30
U.S. Cl. 430—166 16 Claims

1. A presensitized plate for use in making a lithographic printing plate comprising an aluminum plate which is surface-roughened and then anodized so that the amount of an anodized layer formed is not less than 1.0 g/m^2; a hydrophilic layer which is applied onto the anodized layer; and, on the hydrophilic layer, a positive working photosensitive layer comprising an o-quinone diazide compound and an alkaline water-soluble resin as a binder, wherein the hydrophilic layer comprises at least one compound selected from the group consisting of phenylphosphonic acid, p-nitrophenylphosphonic acid, p-methoxyphenylphosphonic acid, p-hydroxyphenylphosphonic acid, p-tolylphosphonic acid, p-acetylphenylphosphonic acid, p-cyanophenylphosphonic acid, m-chlorophenylphosphonic acid, methylethylphosphonic acid, ethylphosphonic acid, 2-carboxyethylphosphonic acid, 2-phenylethylphosphonic acid, 2-hydroxyethylphosphonic acid, 2-methyoxyethylphosphonic acid, 2-acetylethylphosphonic acid, 2-chloroethylphosphonic acid, phenylphosphinic acid, p-nitrophenylphosphinic acid, p-methoxyphenylphosphinic acid, p-hydroxyphenylphosphinic acid, p-tolylphosphinic acid, p-acetylphenylphosphinic acid, p-cyanophenylphosphinic acid, m-chlorophenylphosphinic acid, methylphosphinic acid, ethylphosphinic acid, 2-carboxyethylphosphinic acid, 2-phenylethylphosphinic acid, 2-hydroxyethylphosphinic acid, 2-methoxyethylphosphinic acid, 2-acetylethylphosphinic acid, 2-chloroethylphosphinic acid, dimethylphosphinic acid, diethylphosphinic acid and diphenylphosphinic acid.

5,254,431

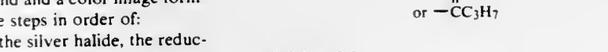
RADIATION-SENSITIVE POLYMERS HAVING SULFONYL URTHANE SIDE CHAINS AND AZIDE CONTAINING SIDE CHAINS IN A MIXTURE WITH DIAZO COMPOUNDS CONTAINING

Terence Etherington, Leeds, and Victor Kolodziejczyk, Bradford, both of United Kingdom, assignors to Vickers plc, London, England

Continuation of Ser. No. 849,825, Mar. 11, 1992, abandoned, which is a continuation of Ser. No. 304,518, Jan. 31, 1989, abandoned. This application Nov. 23, 1992, Ser. No. 980,429
Claims priority, application United Kingdom, Feb. 3, 1988, 8802314
Int. Cl.[5] G03F 7/012, 7/016, 7/021; C08F 8/00
U.S. Cl. 430—171 6 Claims

1. A radiation-sensitive polymer comprising:

i) a plurality of first substituent groups selected from a) groups of the general formula:



$$N_3-R(CR^1=CR^2)_a-(CR^3=CR^4)_b-COO^x-$$

attached at O^x to carbon atoms of the polymer, wherein a and b are zero or 1 and a+b is at least 1; R represents an aromatic radical optionally substituted with a group or groups additional to the azido group; and R^1, R^2, R^3 and R^4, which may be the same or different, represent halogen atoms, hydrogen atoms, cyano groups, alkyl groups, aryl groups, alkoxy groups, aryloxy groups, aralkyl groups or aralkoxy groups provided that at least one of the groups R^1 to R^4 represents a halogen atom or a cyano group; and

b) groups derived from an azide substituted N-phenyl anthranilic acid, and

ii) a plurality of second substituent groups of the general formula:

$$R^6-SO_2-NH-C(=O)-$$

attached at C^y to carbon atoms of the polymer where R^6 may be alkyl, alkoxy, aryloxy, or a tertiary amine group substituted with an alkyl or acyl radical having a 1–6 C atoms or an aryl radical having 6–10 C atoms.

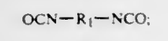
5,254,432

PHOTOSENSITIVE COMPOSITION

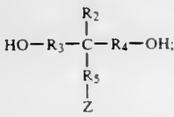
Toshiaki Aoai, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed Apr. 26, 1990, Ser. No. 514,941
Claims priority, application Japan, Apr. 28, 1989, 1-110604
Int. Cl.[5] G03F 7/023, 7/32; G03C 1/77
U.S. Cl. 430—192 16 Claims

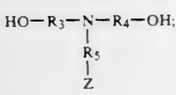
1. A positive working photosensitive composition comprising, in admixture, an effective sensitizing amount of an o-quinonediazide compound, and a polyurethane resin having a phosphonic acid group or ester group thereof, or a phosphoric acid group or ester group thereof in an amount effective to adhere the composition to a support, wherein said polyurethane resin comprises, as a basic structure, a reaction product of a diisocyanate compound having the following general formula (I) with a diol compound having the following general formula (II) or (IV) and a second diol which differs in structure from those of formulae (II) and (IV):



$$OCN-R_1-NCO; \quad (I)$$



$$HO-R_3-C(R_2)(R_5)(Z)-R_4-OH; \quad (II)$$



$$HO-R_3-N(R_5)(Z)-R_4-OH; \quad (IV)$$

wherein

R_1 represents a divalent aliphatic or aromatic hydrocarbon group unsubstituted or substituted with an alkyl, aralkyl, aryl, alkoxy or halogeno group and, if necessary, R_1 may have another functional group which is inert to the isocyanate group,

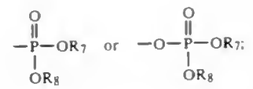
R_2 represents a hydrogen atom, or an alkyl, aralkyl, aryl, alkoxy or aryloxy group which may be unsubstituted or substituted with a cyano or nitro group, a halogen atom selected from F, Cl, Br or I, —$CONH_2$, —$COOR_6$, —OR_6, —$NHCONHR_6$, —$NHCOOR_6$, —$NHCOR_6$, —$OCONHR_6$ or —$CONHR_6$, R_6 being an alkyl group having 1 to 10 carbon atoms or an aralkyl group having 7 to 15 carbon atoms,

R_3, R_4 and R_5 may be the same as or different from each other and each represents a single bond or a divalent aliphatic or aromatic hydrocarbon group which may be unsubstituted or substituted with an alkyl, aralkyl, aryl or alkoxy group or a halogen atom; if necessary, R_3, R_4 and R_5 may contain a functional group which is inert to the isocyanate group; and two or three of R_2, R_3, R_4 and R_5 may be joined together to form a ring,

Ar represents a trivalent aromatic hydrocarbon group unsubstituted or substituted, and

Z represents

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wherein R_7 and R_8 are the same as or different from each other and each represents a hydrogen, sodium or potassium atom or an alkyl or aryl group.

5,254,433

DYE FIXING ELEMENT

Yoshisada Nakamura; Nobuo Seto, and Masakazu Morigaki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

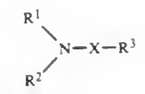
Filed May 24, 1991, Ser. No. 705,205

Claims priority, application Japan, May 28, 1990, 2-137884; Sep. 14, 1990, 2-245813

Int. Cl.[5] G03C *5/54*

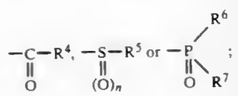
U.S. Cl. 430—203 **6 Claims**

1. A dye fixing element to which a diffusible dye is transferable, the dye having been formed or released during development, either after or at the same time as imagewise exposure of a photosensitive element, which photosensitive element comprises a photosensitive silver halide, a binder and a dye-providing compound which forms or releases a diffusible dye in correspondence or counter-correspondence to the exposure, wherein the dye fixing element comprises a polymer mordant and at least one compound represented by general formula (I):



(I)

where R^1 and R^2, which may be the same or different, each represents a hydrogen atom, an alkyl group, an alkenyl group, an alkynyl group, an aryl group



R^3 represents a hydrogen atom;

X represents —O—



R^4, R^5, R^6 and R^7 each represents an alkyl group, an alkenyl group and alkynyl groups, an aryl group, an alkoxy group, an aryloxy group or an amino group;

n represents 1 or 2;

and the total number of carbon atoms of the compound represented by general formula (I) is at least 6.

5,254,434

METHOD OF FORMING THERMAL TRANSFER DYE IMAGES

Herman J. Uytterhoeven, Bonheiden; Joan T. Vermeersch, Deinze; Daniël M. Timmerman, and Marcel J. Monbaliu, both of Mortsel, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Oct. 28, 1991, Ser. No. 783,243

Claims priority, application European Pat. Off., Oct. 30, 1990, 90202872.9

Int. Cl.[5] G03F *7/34*

U.S. Cl. 430—203 **3 Claims**

1. Method of forming thermal transfer dye images comprising the steps of:

exposing a recording element comprising a support having thereon at least one layer of an organic photochemical imaging composition comprising a homogeneously distributed heat-diffusible dye monomer or dye precursor monomer and a member selected from the group consisting of

(a) organic photoreactive non-thermoplastic compositions comprising an ethylenically unsaturated monomeric, oligomeric, or polymeric component and a photoinitiator for initiating the polymerization of said ethylenically unsaturated monomeric, oligomeric, or polymeric component and the concurrent copolymerization of said heat-diffusible dye monomer or dye precursor monomer,

(b) organic photoreactive non-thermoplastic compositions comprising at least one epoxy system and a cationic photoinitiator for initiating the polymerization of said epoxy system and the concurrent copolymerization or crosslinking of said heat-diffusible dye monomer or dye precursor monomer, and

(c) organic photoreactive non-thermoplastic compositions comprising at least one polymer carrying photosensitive groups, whose photochemical reactions induce crosslinking of the polymer and concurrent crosslinking of said heat-diffusible dye monomer or dye precursor monomer,

said at least one layer being permeable to said dye monomer or dye precursor monomer, to an image-wise distribution of actinic radiation to create in said layer a change in its permeability corresponding to said image-wise distribution of actinic radiation, wherein said change in permeability is brought about by the radiation-induced polymerization or crosslinking reaction of said organic photochemical imaging composition combined with a concurrent copolymerization or crosslinking reaction of said heat-diffusible dye monomer or dye precursor monomer,

bringing said recording element having an image-wise changed permeability into contact with an image-receiving element,

overall heating of at least one of said contacting elements to cause the heat-diffusible dye monomer or dye precursor monomer to diffuse from the areas having unchanged permeability and transfer to said image-receiving element,

and when—in the case of said dye precursor monomer is present a reaction of said transferred dye precursor monomer with a reagent present in said recording element, in said image-receiving element, or in a fluid medium applied to said image-receiving element, to convert said transferred dye precursor monomer into a dye.

5,254,435

METHOD OF PATTERNING RESIST

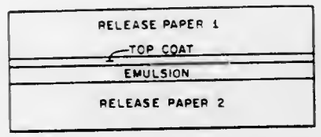
Paul E. Grandmont, Franklin, and Harold Lake, Sharon, both of Mass., assignors to The Foxboro Company, Foxboro, Mass.

Continuation of Ser. No. 651,697, Feb. 6, 1991, abandoned, which is a division of Ser. No. 489,789, Mar. 5, 1990, Pat. No. 5,015,553, which is a continuation-in-part of Ser. No. 742,742, Jun. 10, 1985, Pat. No. 4,666,818. This application Sep. 16, 1992, Ser. No. 946,812

The portion of the term of this patent subsequent to May 14, 2008, has been disclaimed.

Int. Cl.[5] G03C *1/90*

U.S. Cl. 430—260 **6 Claims**



1. A composite sheet material for transferring an unexposed layer forming a temporary in situ mask for high energy exposure of a photo-polymerizable layer provided on a substrate, said photo-polymerizable layer being overlaid with a strippable protective layer, comprising

a pair of release papers serving as a pre-exposure carrier sandwiching an adherent, baseless, unexposed, undeveloped, photographic emulsion layer having high gamma and high contrast under relatively low energy exposure, said emulsion layer being nonreleasably bondable to said strippable protective layer, each of said release papers serving only as a carrier to transport the emulsion layer, each of said release papers being peelably removable from said emulsion layer during or after application of said emulsion layer to said strippable protective layer on the photo-polymerizable layer prior to said low energy exposure of the emulsion layer, each of said release papers being absent and playing no role in the in situ exposure and development of the emulsion layer on the strippable protective layer.

5,254,436

METHOD FOR IMAGE FORMATION

Masao Koga, and Minoru Ohashi, both of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills Limited, Tokyo, Japan

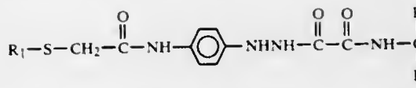
Filed Dec. 23, 1991, Ser. No. 812,100

Claims priority, application Japan, Dec. 27, 1990, 2-414658

Int. Cl.[5] G03C *1/06*

U.S. Cl. 430—264 **7 Claims**

1. A method for image formation which comprises imagewise exposing a silver halide photographic light-sensitive material comprising a support and at least one hydrophilic colloid layer including a silver halide emulsion layer and then developing it with a developer in the presence of a compound represented by the following formula (I):



(I)

wherein R_1 represents an alkyl group of 1–8 carbon atoms or a cycloalkyl group having 4–8 carbon atoms in the ring, R_2, R_3 and R_4 may be identical or different and each represents a hydrogen atom, an alkyl group, an aralkyl group, an aryl group or a heterocyclic group with proviso that they cannot be simultaneously hydrogen atoms, R_2 and R_3 may link to each other to form a ring structure, and at least one hydroxy group is present in the substituents R_2, R_3 and R_4.

5,254,437

PHOTOSENSITIVE RESIN COMPOSITION FOR FLEXOGRAPHIC PRINTING

Koichi Ueda, Neyagawa; Katsuji Konishi, Ibaraki, and Kazunori Kanda, Yao, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Continuation of Ser. No. 716,979, Jun. 18, 1991, abandoned. This application Feb. 8, 1993, Ser. No. 15,049

Claims priority, application Japan, Jun. 18, 1990, 2-158960

Int. Cl.[5] G03C *1/492*

U.S. Cl. 430—273 **7 Claims**

1. A photosensitive resin plate for flexographic printing comprising

a substrate,

a photosensitive resin layer formed on said substrate, and a resin layer, following curing, having a Shore A hardness of 30° to 80° and an impact resilience of 20% or more, and

a resin matte layer formed on said photosensitive resin layer, said resin matte layer containing a polymerization inhibiting material and said resin matte layer having an intrinsic inhibition index of 3 or more and a with-time inhibition index of 3 or more, calculated from the following equation:

Inhibition index $= (A - B)/A \times 100$

wherein

A = a dot diameter (micron) when the matte layer does not contain the polymerization inhibiting material and B = a dot diameter (micron) when the matte layer contains the polymerization inhibiting material

where the intrinsic inhibition index is defined as being determined after leaving a photosensitive resin plate for one day and the with-time inhibition index is defined as being determined after leaving a photosensitive resin plate for 7 days.

5,254,438

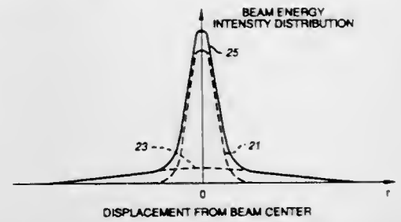
SINGLE PASS COMPENSATION FOR ELECTRON BEAM PROXIMITY EFFECT

Geraint Owen, and Hua-Yu Liu, both of Palo Alto, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 621,192, Nov. 29, 1990, abandoned. This application Apr. 6, 1992, Ser. No. 863,917

Int. Cl.[5] G03C *5/00*

U.S. Cl. 430—296 **12 Claims**



1. An improved method of proximity effect correction to produce a selected radiation pattern in an electron beam resist material, which method, in a single pass across the exposed surface of the resist material, compensates for variation of electron beam energy deposition in the resist material due to electron backscatter, the method comprising the steps of:

(1) providing a collection of equal area pixels, each having predetermined length d, that covers the exposed surface of the resist material, with the selected pattern being defined by a first set of pixels and a complementary pattern being defined by a second set of pixels that includes no pixels from the first set;

(2) assigning a corresponding memory location to each pixel, with an initial value of zero being contained in each of these memory locations;

(3) choosing an electron beam characteristic radius R_f for a direct electron beam and determining a characteristic

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beam radius R_b for backscattered electrons in the resist material that arises from irradiation by the direct electron beam of characteristic radius R_f;

(4) choosing an electron beam current density Q_f for the direct electron beam;

(5) for each pixel in the first set, adding the value Q_f to the value contained in the corresponding memory location;

(6) for each given pixel in the second set, determining the set of all pixels in the first and second sets that lie within a distance $R'=R_b(1+\eta_e)^{-1}$ from this given pixel, including the given pixel itself, and adding the value χQ_f to the memory locations corresponding to each of these pixels, where $\chi=\eta_e d^2/\pi R_b^2(1+\eta_e)^1$ and η_e is the ratio of energy deposited by backscattered electrons divided by energy deposited by forward scattered electrons;

(7) determining the accumulated value contained in the memory location corresponding to each pixel in the first set and in the second set after steps (5) and (6) are performed for each pixel in the first and second sets; and

(8) in a single irradiation, irradiating each pixel on the exposed surface with a scanned electron beam of characteristic beam radius R_f, where the radiation exposure for each pixel is equal to the accumulated value contained in the memory location corresponding to that pixel.

5,254,439

LIGHT-SENSITIVE POLYMER, METHOD FOR PREPARING THE SAME AND METHOD FOR FORMING PATTERNS

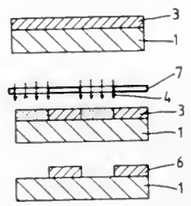
Yoshiyuki Tani; Masayuki Endou; Kazufumi Ogawa, all of Kadoma; Yasuhisa Tanaka, Tokyo; Toshinobu Ishihara, Tokyo, and Tohru Kubota, Tokyo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd. and Shin-Etsu Chemical Co., Ltd., Japan

Division of Ser. No. 622,152, Dec. 3, 1990, Pat. No. 5,126,419, which is a continuation of Ser. No. 307,955, Feb. 9, 1989, abandoned. This application Mar. 20, 1992, Ser. No. 854,696

Claims priority, application Japan, Feb. 9, 1988, 63-27994

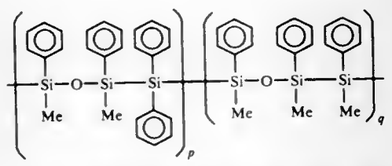
Int. Cl.[5] **G03F** *7/30*

U.S. Cl. 430—326 **3 Claims**



1. A method for forming fine patterns comprising the following steps:

(a) forming a resist on a surface of a substrate, by applying an organic solution of a light-sensitive polymer comprising repeating units represented by the general formula:



wherein Me represents a methyl group and p and q are each a positive integer, said polymer being sensitive to about 250 nm wavelength KrF excimer laser rays only and having a weight average molecular weight of 1,000 to 1,000,000;

(b) selectively exposing the light-sensitive polymer on the substrate to far ultraviolet rays; and

(c) developing the exposed polymer with ethanol.

5,254,440

SELECTED METHYLOL-SUBSTITUTED TRIHYDROXYBENZOPHENONES AND THEIR USE IN PHENOLIC RESIN COMPOSITIONS AND PROCESSES OF FORMING RESIST IMAGES

Medhat A. Toukhy, Barrington, R.I., assignor to OCG Microelectronic Materials, Inc., Cheshire, Conn.

Division of Ser. No. 654,841, Feb. 13, 1991, Pat. No. 5,177,172, which is a division of Ser. No. 200,676, May 31, 1988, Pat. No. 5,002,851. This application Sep. 30, 1992, Ser. No. 953,381

Int. Cl.[5] **G03F** *7/32, 7/023*

U.S. Cl. 430—326 **7 Claims**

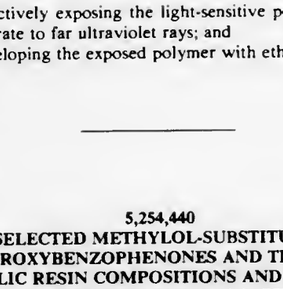
1. The process of forming an positive image on a photoresist-coated substrate comprising:

(1) coating said substrate with a light-sensitive composition useful as a positive working photoresist, said composition comprising an admixture of o-quinonediazide compound and a binder resin comprising the condensation reaction of precursors comprising para-cresol, meta-cresol, formaldehyde, and a methylol-substituted trihydroxybenzophenone having formula (I):



(I)

and said binder resin containing units of formula (II):



(II)

wherein the starting mole ratio of meta-cresol to para-cresol is from about 70:30 to about 30:70; wherein the starting mole ratio of said methylol-substituted trihydroxybenzophenone to the other phenolic precursors is from 0.1:99.9 to 20:80; and wherein said resin has from about 0.1% to about 30% by moles of the units of formula (II); the amount of said o-quinonediazide compound being about 5% to about 40% by weight and the amount of said binder resin being about 60% to 95% by weight, based on the total solid content of said light-sensitive composition; (2) subjecting said coating on said substrate to an image-wise exposure of radiant light energy; and (3) subjecting said image-wise exposed coated substrate to a developing solution wherein the exposed areas of said light-exposed coating are dissolved and removed from the substrate, thereby resulting in positive image-wise pattern in the coating.

5,254,441

DEVELOPMENT INHIBITOR REFLECTOR LAYERS

Glenn T. Pearce, Fairport; Elizabeth V. Patton, Pittsford; Michael R. Roberts, Rochester; Ignazio S. Ponticello, Pittsford; George Villard, Rochester; Susan C. Gross, deceased, late of Rochester, all of N.Y., and Marjorie M. Datskow, executrix, Lafayett Hill, Pa., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 1, 1991, Ser. No. 771,030

Int. Cl.[5] **G03C** *1/34, 1/46, 7/26*

U.S. Cl. 430—382 **18 Claims**

1. A photographic element comprising at least one silver halide emulsion layer in reactive association with a DIR compound and at least one barrier layer located between said silver halide emulsion layer and a second silver halide emulsion layer or between said silver halide layer and a solution for processing; said silver halide emulsion layer comprising a polymer comprised of repeating units of the formula —(A)— and —(B)— wherein A is derived from a hydrophobic ethylenically unsaturated monomer and B is derived from a hydrophilic ethylenically unsaturated monomer; wherein the polymer contains from about 1×10^{-5} to about 4×10^{-3} moles/gram of ion forming functional groups which are or form anionic acid salts or acid addition salts of primary amino groups such that the polymer layer reflects development inhibitor released from the DIR compound and allows the passage of solutions for processing the silver halide emulsion layer.

5,254,442

METHOD OF PROCESSING SILVER HALIDE COLOR PHOTOGRAPHIC MATERIALS AND A PROCESSING APPARATUS THEREFOR

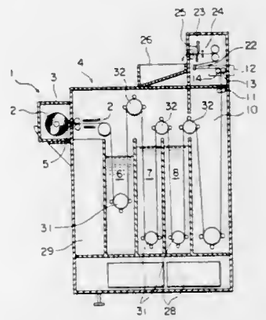
Satoru Kuse, Hino; Sigeharu Koboshi, Sagamihara, and Masayuki Kurematsu, Hino, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 381,841, Jul. 19, 1989, abandoned. This application Jan. 8, 1991, Ser. No. 637,949

Claims priority, application Japan, Jul. 21, 1988, 63-182278; Jul. 22, 1988, 63-183827

Int. Cl.[5] **G03C** *7/00*

U.S. Cl. 430—393 **11 Claims**



1. A method of processing an exposed silver halide color photographic material having a silver chloride content of at least 80 mole %, comprising a step of color development, a step of bleach fixing, and a step of stabilizing, wherein an air-time ratio of 15 to 65% is utilized at the step of color development or at the step of bleach fixing.

5,254,443

PHOTOGRAPHIC DIRECT POSITIVE MATERIAL CONTAINING A MASKED BENZOTRIAZOLE STABILIZER

Piet Kok, Gent, and Jean-Marie O. Dewanckele, Drongen, both of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

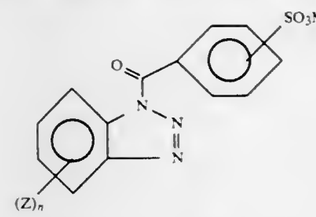
Filed Jul. 21, 1992, Ser. No. 915,673

Claims priority, application European Pat. Off., Aug. 13, 1991, 91202073; Dec. 16, 1991, 91203295

Int. Cl.[5] **G03C** *5/29, 1/34*

U.S. Cl. 430—401 **12 Claims**

1. Photographic direct positive material comprising a support and one or more radiation sensitive emulsion layers containing internal latent image-forming silver halide grains characterized in that at least one of said emulsion layers further contains a compound corresponding to general formula (I):



(I)

wherein Z represents a lower alkyl group, a nitro group or a halogen atom, n=0 to 4, and M represents a positive counterion.

12. A method for forming an image comprising imagewise exposing a photographic direct positive material according to claim 1, and developing said material (a) in the presence of a nucleating agent, or (b) with light flashing of said material during processing.

5,254,444

PHOTOGRAPHIC PROCESSING COMPOSITION AND PROCESSING METHOD USING THE SAME

Hisashi Okada, and Shigeru Nakamura, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

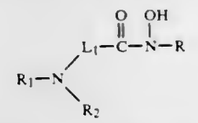
Division of Ser. No. 695,658, May 6, 1991. This application Jun. 25, 1992, Ser. No. 904,156

Claims priority, application Japan, May 9, 1990, 2-119250; May 18, 1990, 2-128588; Jul. 2, 1990, 2-175026

Int. Cl.[5] **G03C** *5/39*

U.S. Cl. 430—491 **20 Claims**

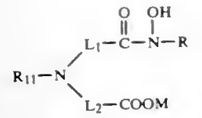
1. A photographic processing composition for processing an imagewise exposed photographic material containing at least one compound represented by



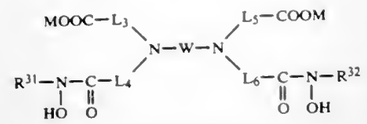
(I)

wherein R, R_1, and R_2 each represent a hydrogen atom, an alkyl group or an aryl group; and L_1 represents an alkylene group or an arylene formulae (II) and (III) in an amount of from 10 mg to 50 g/l:

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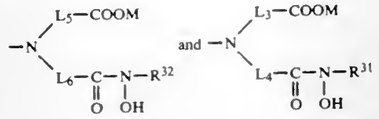


(II)



(III)

wherein R, R_{11}, R^{31} and R^{32} each represent a hydrogen atom, a substituted or unsubstituted alkyl group or a substituted or unsubstituted aryl group; L_1 represents a substituted or unsubstituted alkylene group or a substituted or unsubstituted arylene group; L_2, L_3, L_4, L_5 and L_6 each represent a substituted or unsubstituted alkylene group or a substituted or unsubstituted arylene group; M represent a hydrogen atom, an alkali metal or ammonium; and W represents a divalent bonding group which may be substituted by one or more substituent groups connecting to



via a substituted or unsubstituted alkylene group (including a cyclohexylene group) or a substituted or unsubstituted arylene group.

5,254,445

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Yasuhiko Takamuki, and Takeshi Sampei, both of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Mar. 20, 1992, Ser. No. 855,620

Claims priority, application Japan, Mar. 26, 1991, 3-061930

Int. Cl.[5] G03C *1/81, 1/85, 1/30*

U.S. Cl. 430—501 **17 Claims**

1. A method of manufacturing a silver halide photographic light-sensitive material, the material comprising a polyester support carrying a silver halide layer and an antistatic layer; the method comprising steps of:

(a) coating the silver halide layer and the antistatic layer onto the polyester support,

(b) drying the coated layers to complete a light sensitive film, thereafter

(c) winding the film onto a first core, the silver halide layer coated side facing outwardly,

(d) heating the wound film at a temperature of 30° C. to 55° C. and at an absolute humidity of not more than 1%, for not less than 12 hours, thereafter

(e) removing the film from the first core and cutting the film, and thereafter

(f) winding the cut film onto a second core, the silver halide layer coated side facing inwardly.

5,254,446

SILVER HALIDE COLOR NEGATIVE PHOTOSENSITIVE MATERIAL

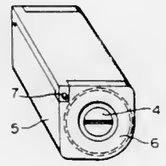
Shinpei Ikenoue; Toshiyuki Watanabe, and Seiji Ichijima, all of Minami-Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 24, 1991, Ser. No. 705,439

Claims priority, application Japan, May 29, 1990, 2-138819

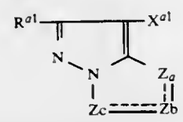
Int. Cl.[5] G03C *1/46*

U.S. Cl. 430—503 **13 Claims**



1. A silver halide color photosensitive material which comprises at least one red-sensitive silver halide emulsion layer containing a cyan coupler, at least one green-sensitive silver halide emulsion layer containing a magenta coupler and at least one blue-sensitive silver halide emulsion layer containing a yellow coupler formed on a transparent support, wherein the support contains 4×10^{-4} to 3 g, per m^2 of the support, of a fine ferromagnetic powder and the green-sensitive emulsion layer contains a magenta coupler of the following general formula [A]:

general formula [A]:



wherein R^{a1} represents a hydrogen atom or a substituent, X^{a1} represents a hydrogen atom or a group which can be split off by coupling reaction with an oxidation product of an aromatic primary amine developing agent, Za, Zb and Zc each represent a methine, substituted methine, =N— or —NH—, one of Za-Zb bond and Zb-Zc bond is a double bond and the other is a single bond; when Zb-Zc is a carbon-to-carbon double bond, it may be a part of the aromatic ring; the coupler may form a dimer or polymer through R^{a1} or X^{a1}; and when Za, Zb or Zc is the substituted methine, the coupler may form a dimer or polymer through the substituted methine.

5,254,447

PHOTOGRAPHIC ELEMENTS COMPRISING A GLASS PLATE SUPPORT AND METHOD FOR THEIR MANUFACTURE

Arlene L. Meyer, Pittsford; Thomas M. Smith, and Richard O. Smith, both of Spencerport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 20, 1992, Ser. No. 871,869

Int. Cl.[5] G03C *1/815*

U.S. Cl. 430—510 **11 Claims**

1. A photographic element comprised of a series of layers interposed between a rigid glass plate and a flexible polymeric film, said series of layers comprising, in order:

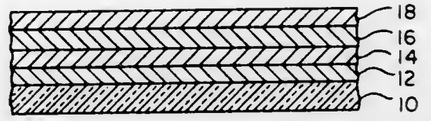
(1) an adhesive layer in contact with said glass plate,

(2) an antihalation layer,

(3) a silver halide emulsion layer,

(4) a protective overcoat layer and

(5) a release layer in contact with said protective overcoat layer and with said flexible polymeric film; said release layer having greater adhesion to said flexible polymeric film than to said protective overcoat layer to thereby permit said flexible polymeric film to be stripped from said photographic element.



5,254,448

LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL

Taketoshi Yamada; Yasuhiko Takamuki, and Youji Aritomi, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Dec. 23, 1991, Ser. No. 812,756

Claims priority, application Japan, Jan. 8, 1991, 3-656; Feb. 4, 1991, 3-33401

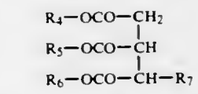
Int. Cl.[5] G03C *1/76*

U.S. Cl. 430—523 **10 Claims**

1. A silver halide photographic light-sensitive element comprising a support and provided thereon a conductive layer containing a water-soluble polymer or a metal oxide and at least one surface active agent containing a fluorine atom is contained in a protective layer selected from a protective layer of a silver halide emulsion layer or a protective layer of a backing layer, wherein said surface active agent containing a fluorine atom is represented by Formulae Fa, Fb, Fc, Fd or Fc,

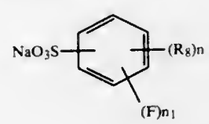
Formula Fa

Formula Fb



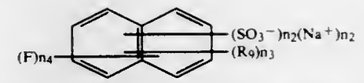
wherein R_1, R_2, R_4, R_5 and R_6 each represent a straight-chain or branched alkyl group having 1 to 32 carbon atoms, which may also be an alkyl group that forms a ring, at least one group of R_1 and R_2 and at least one group of R_4, R_5 and R_6 are each substituted with at least one fluorine atom, R_1, R_2, R_4, R_5 and R_6 may also each represent an aryl group as exemplified by a phenyl group and a naphthyl group, in these aryl groups, at least least one group of R_1 and R_2 and at least one group of R_4, R_5 and R_6 are each substituted with a group substituted with at least one fluorine atom, R_3 and R_7 each represent a carboxylato group, a sulfonato group or an acid group,

Formula Fc



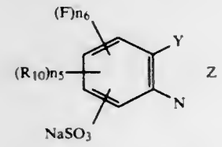
wherein R_8 represent an alkyl group having 1 to 32 carbon atoms, these groups are each substituted with at least one fluorine atom, n is an integer of 1 to 3, and n_1 is an integer of 0 to 4,

Formula Fd



wherein R_9 represents a saturated or unsaturated straight-chain or branched alkyl group having 1 to 32 carbon atoms, these saturated or unsaturated alkyl groups are each substituted with at least one fluorine atom, n_2 and n_3 each represent an integer of 1 to 3, and n_4 is an integer of 0 to 6,

Formula Fe



wherein Y represents a sulfur atom, a selenium atom, an oxygen atom, a nitrogen atom or a group $—N(R_{11})—$, wherein R_{11} represents a hydrogen atom or an alkyl group having 1 to 3 carbon atoms, R_{10} represents a group having the same definition as the group represented by R_8 in Formula Fc, or an aryl group, substituted with at least one fluorine atom, Z represents a group of atoms necessary to complete a hetero ring of 5 or 6 members, the above hetero ring may further have a substituent such as an alkyl group or aryl group, and on these substituents each a fluorine atom may be substituted.

5,254,449

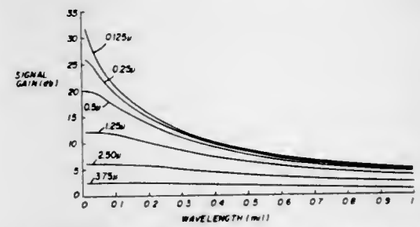
PHOTOGRAPHIC ELEMENT CONTAINING THINB TRANSPARENT MAGNETIC RECORDING LAYER AND METHOD FOR THE PREPARATION THEREOF

Robert O. James, and John Rieth, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 473,494, Feb. 1, 1990, abandoned. This application Dec. 13, 1991, Ser. No. 807,424

Int. Cl.[5] G03C *5/14*

U.S. Cl. 430—533 **8 Claims**



1. A photographic element comprising a photosensitive layer, a flexible cellulose organic acid ester support film, and adjacent thereto a substantially transparent magnetic recording layer containing magnetic particles in a binder said magnetic particles having a specific surface area of at least 30 m^2/g, said magnetic recording layer having a dried thickness of less than about 1.5 micron and increases the optical density of the photographic element by less than 0.2 optical density unit across the visible portion of the spectrum from 400 to 700 nm.

VOL 1155 ISS 3 OCT 19 1993 UMI

5,254,450
HYDROPHOBICALLY SUBSTITUTED AMYLOSE STARCH-SIZED PHOTOGRAPHIC PAPER SUPPORT AND PHOTOGRAPHIC ELEMENT CONTAINING SAME

David J. Lacz, Honeoye Falls, N.Y.; Douglas L. Herrmann, Baltimore, Md.; Todd R. Skochdopole, and Anita M. Fees, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 9, 1992, Ser. No. 988,242
Int. Cl.[5] G03C *1/775*
U.S. Cl. 430—538 13 Claims

1. A silver halide color photographic print element formed by coating at least one color-forming silver halide emulsion layer over a paper support prepared by

(a) forming a paper sheet and drying said sheet to below about 10 percent water;

(b) applying an aqueous solution of hydrophobically substituted amylose starch to both sides of said sheet;

(c) drying said paper sheet to below about 5 percent water;

(d) applying an aqueous solution of said hydrophobically substituted amylose starch to both sides of said sheet;

(e) drying said paper sheet to below about 10 percent water; and

(f) extruding a layer of polyolefin on both sides of said paper sheet.

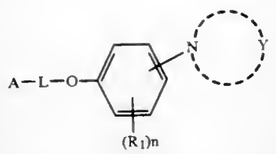
5,254,451
SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT SENSITIVE MATERIAL

Hiroshi Kita; Yutaka Kaneko; Noboru Mizukura, and Toru Kubota, all of Tokyo, Japan, assignors to Konica Corporation, Tokyo, Japan

PCT No. PCT/JP92/00243, § 371 Date Sep. 22, 1992, § 102(e) Date Sep. 22, 1992
PCT Filed Mar. 2, 1992, Ser. No. 927,409
Claims priority, application Japan, Feb. 13, 1992, 4-26816
Int. Cl.[5] G03C *7/38*
U.S. Cl. 430—558 3 Claims

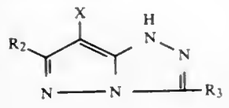
1. A silver halide color photographic light sensitive material containing a magenta coupler represented by the following Formula I:

Formula I

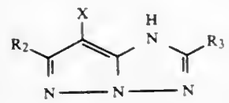


wherein A represents a residual group eliminating R_2 or R_3 from a pyrazolotriazole magenta coupler represented by the following Formula II or III; L represents a divalent linking group; Y represents a group consisting of the non-metal atoms necessary to form a 5- or 6-membered heterocyclic ring together with a nitrogen atom; R_1 represents a substituent; and n is an integer of 0 to 4:

Formula II



Formula III



wherein R_2 and R_3 represent each a hydrogen atom or a substituent; and X represents a hydrogen atom or a group capable of splitting off upon reaction with the oxidized product of a color developing agent.

5,254,452
LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL FOR X-RAY EXPOSURE

Haruhiko Sakuma, Hino, Japan, assignor to Konica Corporation, Tokyo, Japan

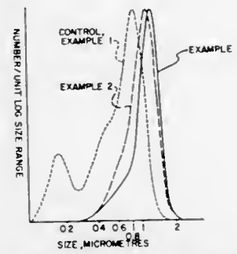
Filed Oct. 9, 1991, Ser. No. 774,697
Claims priority, application Japan, Oct. 16, 1990, 2-277345
Int. Cl.[5] G03C *1/00*
U.S. Cl. 430—567 5 Claims

1. A light-sensitive silver halide photographic material for x-ray exposure comprising a transparent support and at least one silver halide emulsion layer provided on said support, wherein said photographic material being characterized in that the density of a non-light-exposed portion through a blue-light (Db) is not more than 0.09, and that the density through a red-light (Dr) less that through the blue-light (Db) falls in the range of from 0.02 to 0.10.

5,254,453
PROCESS FOR PREPARING NARROW SIZE DISTRIBUTION SMALL TABULAR GRAINS

Elizabeth Pui-lu Chang, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 16, 1992, Ser. No. 869,674
Int. Cl.[5] G03C *1/015*
U.S. Cl. 430—569 17 Claims



1. A method of forming small narrow size distribution silver bromide of bromoiodide grains having coefficients of variation of less than 25. grain thickness of 0.05 to 0.5. mean aspect ratio of greater than 2. and equivalent circular diameters of 0.2 to 3 micron.

comprising digesting nucleated grains in a basic silver halide solvent having a concentration of between about 0.0015 and about 0.015N and neutralizing said basic solvent after said digesting and prior to growth.

5,254,454
METHOD OF PREPARING SILVER HALIDE GRAINS FOR PHOTOGRAPHIC EMULSION AND LIGHT SENSITIVE MATERIAL CONTAINING THE SAME

Chikao Mimiya; Satoshi Ito; Haruhiko Masutomi, and Kazuyoshi Ichikawa, all of Tokyo, Japan, assignors to Konica Corporation, Tokyo, Japan

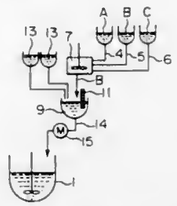
Continuation of Ser. No. 793,098, Nov. 15, 1991, abandoned. This application Jan. 29, 1993, Ser. No. 13,192
Claims priority, application Japan, Nov. 19, 1990, 2-314891
Int. Cl.[5] G03C *1/015*
U.S. Cl. 430—569 11 Claims

1. A method for preparing silver halide grains for a photographic emulsion comprising the steps of:

(a) mixing an aqueous silver salt solution, an aqueous halide solution and an aqueous protective colloid solution in a mixer provided outside a parent liquid tank to produce a first emulsion comprising silver halide fine grains;

(b) transferring said first emulsion to an adjustment vessel;

(c) adjusting the pAg of said first emulsion to a prescribed value of pAg in the adjustment vessel to produce a pAg adjusted emulsion; and



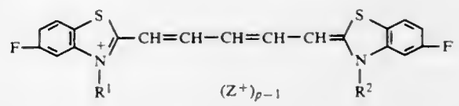
(d) supplying said pAg adjusted emulsion to a second emulsion comprising nucleic grains in the parent liquid tank to produce said silver halide grains.

5,254,455
SILVER HALIDE EMULSIONS SPECTRALLY SENSITIZED TO INFRARED RADIATION WITH NOVEL CYANINE DYES

Zbigniew J. Hinz, Melrose, and Emmett S. McCaskill, Wellesley, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 2, 1991, Ser. No. 801,441
Int. Cl.[5] G03C *1/20*
U.S. Cl. 430—584 24 Claims

1. A light-sensitive photographic silver halide emulsion spectrally sensitized to infrared radiation above about 800 nm with a sensitizing dye having the formula



wherein R^1 is alkyl having 2 to 4 carbon atoms or $-(CH_2)_mR'$ wherein R' is carboxy or sulfo and m is 2, 3 or 4; R^2 is $-(CH_2)_nR''$ wherein R'' is carboxy or sulfo and n is 2, 3 or 4; Z^+ is a counter ion; and p is 1 or 2 provided p is 1 when R^1 is alkyl and p is 2 when R^1 is $-(CH_2)_mR'$.

5,254,456
METHOD OF MANUFACTURING SILVER HALIDE EMULSION

Seiji Yamashita; Shunji Takada, and Shigeru Shibayama, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 470,156, Jan. 25, 1990, abandoned, which is a continuation-in-part of Ser. No. 435,283, Nov. 9, 1989, abandoned. This application Mar. 30, 1992, Ser. No. 860,609
Claims priority, application Japan, Nov. 18, 1988, 63-291966; Jan. 25, 1989, 1-15520
Int. Cl.[5] G03C *1/00, 1/34*
U.S. Cl. 430—611 16 Claims

1. A color light-sensitive material comprising a transparent support having thereon at least one light-sensitive silver halide emulsion layer, wherein 50 weight percent or more of silver halide grains contained in said emulsion layer are the silver halide grains constituting the silver halide emulsion manufactured by performing reduction sensitization using 5×10^{-5} to 1×10^{-1} mol of at least one ascorbic acid or a derivative thereof per mol of silver halide during precipitation of silver halide grains in a process of manufacturing a silver halide emulsion, wherein reduction sensitization is performed in the presence of at least one of the compounds represented by formula (I):

$$R—SO_2S—M \quad (I)$$

wherein R represents an aliphatic group, an aromatic group, or a heterocyclic group, M represents a cation and the compounds represented by formula (I) can be polymers containing, as a repeating unit, divalent groups derived from structures represented by formula (I).

5,254,457
MONOCLONAL ANTIBODIES AND METHOD FOR IDENTIFYING DIFFERENT AIDS-RELATED VIRUSES

Anton A. Minassian, Sotia, Burma; Mikulas Popovic, and Robert C. Gallo, both of Bethesda, Md., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed Jan. 11, 1989, Ser. No. 295,933
Int. Cl.[5] C12Q *1/70;* C12N *5/00;* A61K *35/14;* C07K *3/00*
U.S. Cl. 435—5 5 Claims

1. A hybridoma cell line selected from the group consisting of R1C7 or A4F6.

5,254,458
IMMUNOASSAYS USING ANTIGENS PRODUCED IN HETEROLOGOUS ORGANISMS

Larry T. Mimms, Lake Villa, Ill., assignor to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 701,626, May 14, 1991, which is a continuation of Ser. No. 549,679, Jan. 5, 1990, which is a continuation of Ser. No. 115,135, Oct. 30, 1987. This application Jul. 29, 1992, Ser. No. 922,354
Int. Cl.[5] G01N *33/53*
U.S. Cl. 435—5 23 Claims

2. A method for detecting an antigen specific antibody in a test sample comprising the steps of:

(a) immobilizing a first recombinant derived antigen specific to the antibody to be detected on a solid phase;

(b) contacting the solid phase produced in step (a) with an aqueous phase test sample containing or suspected of containing the antigen specific antibody;

(c) contacting the solid phase produced in step (b) with an aqueous phase containing a second recombinant derived antigen having a label affixed thereto, the second recombinant derived antigen being derived from a source that is heterologous to the source of said first recombinant derived antigen;

(d) separating the aqueous phase from the solid phase;

(e) measuring the presence of the label on the solid phase or in the liquid phase to detect and/or titer the presence of antibody in the test sample.

5,254,459
NUCLEOTIDE AND AMINO ACID SEQUENCES OF PROTEIN MTP40 OF *M. TUBERCULOSIS* AND SYNTHETIC PEPTIDES DERIVED THEREFROM

Manuel E. Patarroyo, Calle 135 No.15-40, Bogota, Colombia

Division of Ser. No. 572,171, Aug. 23, 1990, Pat. No. 5,171,839. This application Sep. 4, 1992, Ser. No. 940,468
Int. Cl.[5] C12Q *1/68;* G01N *33/569*
U.S. Cl. 435—6 10 Claims

1. A diagnostic or taxonomic typification system for assaying for the presence of *M. tuberculosis* comprising:

(a) an oligonucleotide of the formula

ATGCTCGGCAACGCGCCGTCGGTGGTTCCCAACACCA

CGTTAGGGATGCACTGCGGCAGC

TTCGGCAGCGCTCCCAGCAACGGGTGGCTCAAGTTGG

GTCTGGTCGAATTCGGTGGAGTC

GCAAAGTTGAACGCTGAGGTCATGTCGCCAACCACGC

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-continued

CGTCGCGCCAGGCGGTCATGTTG

GGAACCGGCACGCCGAACCGGGCGCGAATCAACTTCA

ATTGCGAGGTGTGGTCGAACGTG

TCGGAGACCATCAGCGGGCCGCGGCTGTACGGCGAAA

TGACAATGCAGGGAACGCGAAAA

CCCAGACCGAGCGGACCACGAATGCCACCGGACCCGG

GTACTGCGTCGATGTTGGGCACC

GTGACGAATTCGCCGGGTGTCCCGGCGGTGCCGTGGG

GGGCGTGA

wherein the nucleotides are written from left-to-right according to their 5' to 3' order or any derived fragment therefrom greater than 15 nucleotides in length; and

(b) indicating means for signalling the reaction of the oligonucleotide of (a) or any derived fragment therefrom greater than 15 nucleotides in length with a nucleic acid molecule.

5. A diagnostic system for assaying for the presence of *M. tuberculosis* in a sample of body fluids or body tissues containing antibodies or cells comprising:

(a) an isolated protein of the formula

Met—Lys—Gly—Asn—
Ala—Pro—Ser—Val—Val—Pro—Asn—Thr—Thr—Leu—Gly—
Met—His—Cys—Gly—Ser—
Phe—Gly—Ser—Ala—Pro—Ser—Asn—Gly—Trp—Leu—Lys—
Leu—Gly—Leu—Val—Glu—
Phe—Gly—Gly—Val—Ala—Lys—Leu—Asn—Ala—Glu—Val—
Met—Ser—Pro—Thr—Thr—
Pro—Ser—Arg—Gln—Ala—Val—Met—Leu—Gly—Thr—Gly—
Thr—Pro—Asn—Arg—Ala—
Arg—Ile—Asn—Phe—Asn—Cys—Glu—Val—Trp—Ser—Asn—
Val—Ser—Glu—Thr—Ile—
Ser—Gly—Pro—Arg—Leu—Tyr—Gly—Glu—Met—Thr—Met—
Gln—Gly—Thr—Arg—Lys—
Pro—Arg—Pro—Ser—Gly—Pro—Arg—Met—Pro—Pro—Asp—
Pro—Gly—Thr—Ala—Ser—
Met—Leu—Gly—Thr—Val—Thr—Asn—Ser—Pro—Gly—Val—
Pro—Ala—Val—Pro—Trp—
Gly—Ala

written from left-to-right in the direction of the amino-terminus to the carboxy-terminus; and

(b) indicating means for signalling the immunoreaction of the isolated protein (a) with a sample of body fluids or body tissues containing antibodies or cells.

5,254,460

SOLVENT MEDIATED RELAXATION ASSAY SYSTEM

Lee Josephson, Arlington; Edward T. Menz, Quincy, and Ernest V. Groman, Brookline, all of Mass., assignors to Advanced Magnetics, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 518,567, May 3, 1990. This application May 3, 1991, Ser. No. 695,378

The portion of the term of this patent subsequent to Nov. 17, 2009, has been disclaimed.

Int. Cl.[5] **G01N** *33/53*

U.S. Cl. 435—7.25 **12 Claims**

1. A method, of assaying the concentration of an analyte in a solvent wherein the analyte is selected from the group consisting of a protein, a substrate of an enzyme, and a product of a reaction of the enzyme, comprising:

selecting a magnetic material having positive magnetic susceptibility to alter the relaxation characteristics of a nucleus included in the solvent, such relaxation characteristics obtained by a magnetic resonance technique, the magnetic material being selected so that its effect, on the relaxation of the nucleus included in the solvent, is modified by the interaction of the analyte with the magnetic material;

causing the magnetic material and the analyte to be located in the solvent;

allowing the magnetic material to interact with the analyte; and measuring the relaxation characteristics of the nucleus by a magnetic resonance technique.

5,254,461

METHOD OF AND APPARATUS FOR DETERMINING MICROORGANISM POPULATIONS ELECTROCHEMICALLY

Gilson H. Rohrback, Mill Creek, Wash., and Elmond A. Holmes, Fullerton, Calif., assignors to Infometrix, Incorporated, Seattle, Wash.

Continuation-in-part of Ser. No. 433,607, Nov. 7, 1989, abandoned. This application Nov. 30, 1990, Ser. No. 620,528

Int. Cl.[5] **C12Q** *1/04;* **G01N** *25/08*

U.S. Cl. 435—34 **16 Claims**

1. A method of electrochemically determining populations of live bacteria, said method comprising:

filtering a sample of fluid containing live bacteria the population of which is to be measured, to thereby obtain a filtrate,

wherein said filtering is performed to prevent said bacteria from begin present in said filtrate,

making an electrochemical measurement relative to said filtrate by employing electrode means contacted only by said filtrate and not contacted by said bacteria, and

employing the results of said electrochemical measurement to determine the population of bacteria in said sample.

5,254,462

ANIMAL CELL LINE USEFUL FOR EXPRESSION OF EXOGENOUS GENES

Tadao Oono; Kaoru Saijo, and Junko Kurashima, all of Ushiku, Japan, assignors to Rikagaku Kenkyusho, Wako, Japan

Filed Jun. 13, 1991, Ser. No. 714,639

Claims priority, application Japan, Oct. 23, 1990, 2-285171; May 14, 1991, 3-107932

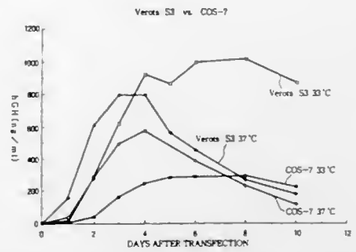
Int. Cl.[5] **C12P** *21/02;* **C12N** *5/10, 15/63*

U.S. Cl. 435—69.1 **7 Claims**

7. A method for producing a transfected gene product which comprises the steps of:

(a) activating Vero-317 cells that express T antigen as a SV40 gene product in a protein-containing medium;

(b) transfecting the cells with a recombinant DNA comprising DNA replication origin of SV40 and at least one gene encoding a protein or peptide;



(c) cultivating the transformant obtained in the step (b) in a substantially protein-free medium; and

(d) recovering the gene product from the cultured medium.

5,254,463

METHOD FOR EXPRESSION OF BOVINE GROWTH HORMONE

Herman A. de Boer, Pacifica; Herbert L. Heyneker, Burlingame, and Peter H. Seeburg, San Francisco, all of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation of Ser. No. 178,824, Apr. 5, 1988, abandoned, which is a continuation of Ser. No. 632,361, Jul. 19, 1984, abandoned, which is a continuation of Ser. No. 303,687, Sep. 18, 1981, abandoned. This application Sep. 12, 1990, Ser. No. 582,590

Int. Cl.[5] **C12P** *21/02;* **C12N** *15/71, 15/70, 15/03*

U.S. Cl. 435—69.4 **26 Claims**

1. A method comprising culturing a microbial cell containing DNA encoding a bovine growth hormone from which the presequence has been eliminated and wherein the messenger RNA transcribed from the DNA (a) contains at least a translational start signal and an N-terminal portion encoding the bovine growth hormone and (b) within the region from nucleotide +1 to +100 is free of secondary structure having a thermodynamic energy arithmetically less than or equal to the thermodynamic energy of the secondary structure formed by homologous base pairing between nucleotides 46 to 51 and nucleotides 73 to 78 of the native messenger RNA encoding BGH.

5,254,464

PROCESS FOR PRODUCING D-ALANINE

Masae Takeuchi, and Tetsu Yonehara, both of Aichi, Japan, assignors to Toray Industries, Inc., Japan

Continuation of Ser. No. 250,322, Sep. 28, 1988, abandoned. This application Aug. 1, 1991, Ser. No. 742,147

Claims priority, application Japan, Oct. 7, 1987, 62-253127

Int. Cl.[5] **C12P** *13/06;* **C12N** *15/00, 1/20*

U.S. Cl. 435—116 **4 Claims**

1. A process for producing D-alanine comprising cultivating a mutant derived from a parent strain selected from the group consisting of *Brevibacterium lactofermentum* ATCC 13869 and *Brevibacterium flavum* ATCC 13826 which has the ability to produce D-alanine from assimilable carbon and nitrogen sources other than alanine and resistance to 50 mg/l of D-cycloserine, producing and accumulating thereby D-alanine in a culture broth and recovering D-alanine from the culture broth.

5,254,465

PROCESS FOR MANUFACTURE OF ALKALINE EARTH ACETATES

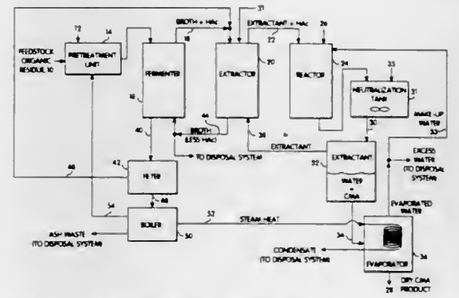
Donald L. Wise, Belmont, Mass., assignor to Northeastern University, Boston, Mass.

Continuation-in-part of Ser. No. 369,183, Jun. 20, 1989, Pat. No. 5,068,188. This application Oct. 1, 1991, Ser. No. 770,978

The portion of the term of this patent subsequent to Nov. 26, 2008, has been disclaimed.

Int. Cl.[5] **C12P** *7/54, 39/00, 7/40;* **C12N** *1/20*

U.S. Cl. 435—140 **12 Claims**



1. A process for producing calcium and/or magnesium salts of acetic acid comprising the following steps:

pretreating biomass to facilitate fermentation;

fermenting the biomass anaerobically in a continuous manner to form acetic acid in a fermentation broth;

extracting the acetic acid continuously from the fermentation broth with an oil phase which may optionally contain a liquid ion exchanger, resulting in the production of an organic phase consisting essentially of oil, acetic acid and optionally, a liquid ion exchanger material;

treating the acetic acid-containing organic phase directly and continuously with water and solid basic material containing calcium and/or magnesium metal ions, resulting in the formation of calcium and/or magnesium salt of acetic acid and water, the water forming an aqueous phase, the acetic acid salt being located substantially in the aqueous phase; and

recovering the calcium and/or magnesium salt of acetic acid from the aqueous phase.

5,254,466

SITE-SPECIFIC MODIFICATION OF THE CANDIDA TROPICALS GENOME

Stephen Picataggio, Santa Rosa; Kristine Deanda, Graton, and L. Dudley Eirich, Santa Rosa, all of Calif., assignors to Henkel Research Corporation, Santa Rosa, Calif.

Filed Nov. 6, 1989, Ser. No. 432,091

Int. Cl.[5] **C12N** *15/09;* **C12P** *7/44*

U.S. Cl. 435—142 **30 Claims**

1. A process for the site-specific modification of the *C. tropicalis* genome comprising: (1) transforming a *C. tropicalis* host which is auxotrophic for uracil to prototrophy by disrupting through homologous recombination a target gene selected from the group consisting of the POX4A, POX4B, POX5 and combinations thereof with a linear DNA fragment comprised of a *C. tropicalis* URA3 selectable marker gene wherein said selectable marker gene which is flanked on both ends by DNA sequences having homology to said target gene; (2) selecting the transformants produced in -top (1) for prototrophy by the ability of said transformants to grow in a medium deficient in uracil.

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5,254,467

FERMENTIVE PRODUCTION OF 1,3-PROPANEDIOL

Josef Kretschmann, Langenfeld; Franz-Josef Carduck, Haan; Wolf-Dieter Deckwer, Oldenburg; Carmen Tag, Brunswick, and Hanno Biebl, Wolfenbuettel, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf and Gesellschaft fuer Biotechnologische Forschung mbH, Brunswick, both of Fed. Rep. of Germany

Continuation-in-part of Ser. No. 402,209, Sep. 1, 1989, abandoned. This application Apr. 25, 1991, Ser. No. 691,648
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1988, 3829618; Jul. 24, 1989, 3924423
Int. Cl.[5] C12P *7/04;* C12R *1/145*
U.S. Cl. 435—158 16 Claims

1. A process for the transformation of glycerol into 1,3-propanediol by microorganisms comprising the steps of: (a) fermenting under standard anaerobic fermentation conditions and constant pH a microorganism strain selected from the group consisting of *Clostridium butyricum* SH 1 (DSM 5431) and *Clostridium butyricum* AK 1 (DSM 5430) and mutants thereof in a nutrient medium comprised of an aqueous glycerol solution having from about 5% to about 20% by weight glycerol to produce a biomass and 1,3-propanediol solution in a volume/time yield of more than $2.2 g \cdot h^{-1} \cdot a^{-1}$, and (b) separating said 1,3-propanediol solution from said biomass.

5,254,468

BILAYER PELLET CONTAINING IMMOBILIZED XYLOSE ISOMERASE AND UREASE FOR THE SIMULTANEOUS ISOMERIZATION AND FERMENTATION OF XYLOSE TO ETHANOL

Ronald L. Fournier; Sasidhar Varanasi, and James P. Byers, all of Toledo, Ohio, assignors to The University of Toledo, Toledo, Ohio

Filed Oct. 31, 1991, Ser. No. 785,938
Int. Cl.[5] C12P *7/14, 19/24;* C12N *11/18, 11/04*
U.S. Cl. 435—162 7 Claims

1. A bilayered immobilized enzyme pellet for use in the simultaneous isomerization and fermentation of xylose to ethanol consisting of in combination:

a core region consisting of porous polymer material having xylose isomerase immobilized therein and

an outer layer consisting of porous polymer material having urease immobilized therein.

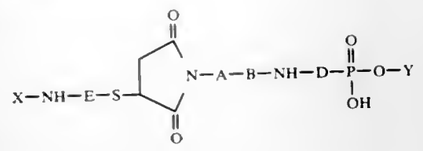
5,254,469

OLIGONUCLEOTIDE-ENZYME CONJUGATE THAT CAN BE USED AS A PROBE IN HYBRIDIZATION ASSAYS AND POLYMERASE CHAIN REACTION PROCEDURES

Harold C. Warren, III, Rush, and Fred T. Oakes, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 406,224, Sep. 12, 1989, Pat. No. 5,082,780. This application Sep. 17, 1991, Ser. No. 762,136
The portion of the term of this patent subsequent to Jan. 21, 2009, has been disclaimed.
Int. Cl.[5] C12N *9/96, 9/04, 9/06, 9/08*
U.S. Cl. 435—188 5 Claims

1. A covalent conjugate of an enzyme and an oligonucleotide having the structure:



wherein

X—NH— represents an enzyme which has either a reactive amino group or a group that is convertible to a reactive amino group, from which a hydrogen atom has been removed from said reactive amino group.

E is selected from the group consisting of R^5, $R^5—X'—R^6$, $X''—R^5$ and $X''—R^5—X'—R^6$, wherein R^5 and R^6 are independently alkylene or arylene, X' is oxy, thio or imino, and X'' is carbonyl, methylenecarbonyl, methylenecarbonyloxy, methylenecarbonylimino, ethylenesulfonyl, ethylenecarbonyl and methylenephenylene, and E has a molecular weight of from about 14 to about 1,000 daltons,

A is selected from the group consisting of alkylene, arylene, cycloalkylene, heterocyclylene, and any combination of two or more of the foregoing divalent groups,

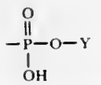
B is selected from the group consisting of carbonyl, sulfonyl, iminocarbonyl, phospho, oxycarbonyl and thiocarbonyl,

D is $—D'—(—B'—)_p—$ wherein D' is selected from the group consisting of heterocyclylene, $R^7—(—O—R^8—)_q—$ are independently alkylene or arylene, and any combination of two or more of the foregoing divalent groups,

B' is selected from the group consisting of oxy, thio, imino, carbonylimino, iminocarbonyloxy, phosphonoxy and ureylene,

p is 0 or 1,

q is 1 to 30, and



represents an oligonucleotide chain from which a hydroxy group has been removed from the terminal phosphate at the 3' or 5' end thereof,

provided that —A—B—NH—D— has a molecular weight of from about 100 to about 10,000 daltons.

5,254,470

ALKALINE PROTEASE, ALKALINE PROTEASE GENE, RECOMBINANT DNA, DNA FRAGMENT FOR THE EXPRESSION OF GENE, AND PROCESS FOR THE PRODUCTION OF ALKALINE PROTEASE

Seiji Murakami; Hiroki Tatsumi; Yoshihiro Ogawa; Eiichi Nakano; Hiroshi Motai, all of Noda; Shigetoshi Sugio, Hirakata; Atsushi Masaki, Hirakata; Yutaka Ishida, Hirakata; Kohji Murakami, Hirakata; Haruhide Kawabe, Hirakata, and Hirofumi Arimura, Hirakata, all of Japan, assignors to Japanese Research and Development Association for Improvement of Enzyme Function in Food Industry, Japan

Filed Mar. 20, 1991, Ser. No. 672,304
Claims priority, application Japan, Mar. 23, 1990, 2-71810
Int. Cl.[5] C12N *9/62, 15/51*
U.S. Cl. 435—225 4 Claims

1. A mutant alkaline protease which is a mutant of a wild-type alkaline protease having the sequence shown in SEQ ID No: 3, wherein amino acid number 40 of said wild-type alkaline protease is replaced by leucine or isoleucine.

5,254,471

CARRIER FOR CELL CULTURE

Yuuichi Mori, Shizuoka; Shigeyasu Kobayashi, Kanagawa; Miyoshi Okamoto, Osaka; Kouji Watanabe, Shiga, and Shouji Nagaoka, Kanagawa, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 518,329, May 4, 1990, abandoned, which is a continuation of Ser. No. 221,244, Aug. 3, 1988, abandoned. This application Jan. 13, 1992, Ser. No. 821,299
Claims priority, application Japan, Oct. 6, 1986, 61-236355
Int. Cl.[5] C12N *5/00*
U.S. Cl. 435—240.23 12 Claims

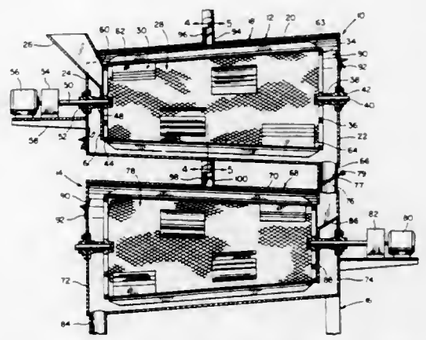
1. In a method for culturing animal and plant cells in which the cells differentiate and proliferate on a carrier, the improvement which comprises producing, as a carrier for the cell culture, a composite of ultra fine fibers having a fineness of less than 0.5 denier.

5,254,472

ORGANIC DIGESTING SYSTEM

Edward H. Brooks, III, and Johnathan A. Brooks, both of 55 Acadia Dr., Rockland, Me. 04841

Filed Feb. 24, 1992, Ser. No. 840,180
Int. Cl.[5] C12M *1/10*
U.S. Cl. 435—312 10 Claims



1. An organic digesting system comprising a stationary substantially horizontal outer drum having end walls forming an enclosure, inlet means at one end of the drum for introducing material to be digested, outlet means at the bottom of the drum remote from the inlet means for discharge of digested material, an inner rotatable drum mounted within the stationary drum in generally concentric relation thereto, means journaling the inner drum from the stationary drum for rotation about a generally horizontal axis, means rotatably driving said inner drum, said inner drum including a porous peripheral wall and open ends spaced from the end walls of the stationary drum, means guiding material to be digested from the inlet means into the open end of the inner drum adjacent thereto, the outlet means in the outer drum being located at the open end of the inner drum remote from the inlet means, said inner drum including a plurality of outwardly extending blades thereon and a plurality of inwardly extending blades thereon for lifting and agitating organic material being digested with the finer particles of material passing through the porous peripheral wall of the inner drum and being lifted and agitated by the outer blades with the finer particles being lifted by the outer blades and passing back through the porous peripheral wall into the interior of the rotating drum for subsequent sifting through the coarser material retained interiorly of the inner drum and ultimately being discharged through the outlet means, the blades on the interior of the inner drum lifting and tumbling coarser particles for agitation and forming smaller particles from the coarser particles, said blades on the interior of the inner drum including a plurality of circumferentially and longitudinally spaced arrays of blades for sequential lifting and tumbling of the coarser material being digested.

5,254,473

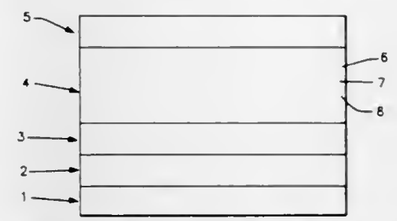
SOLID STATE DEVICE FOR MONITORING INTEGRAL VALUES OF TIME AND TEMPERATURE OF STORAGE OF PERISHABLES

Gordhanbhai N. Patel, Somerset, N.J., assignor to JP Laboratories

Filed Mar. 16, 1990, Ser. No. 494,572
Int. Cl.[5] G01N *31/00;* A22C *17/10*
U.S. Cl. 436—1 29 Claims

1. A method of determining the elapsed shelf life of a perishable product comprising the steps of (1) packaging said product with an indicator device capable of changing color in relationship to its exposure to a temperature above and below a base line temperature and to the time of said exposure, for monitoring the time-temperature history of a substrate, comprising a solid state dispersion comprised of:

(a)(i) a binder comprising a reaction inert, neutral finely divided absorbent, in the presence of a reactant being a salt of an acid or an organic compound substituted by at least one labile moiety which, in ionic form, is an anion or



(ii) a binder/reactant, comprising at least one solid organic polymer whose constituent units contain, as a covalent substituent, at least one labile moiety which, in ionic form, is an anion;

(b) as indicator, at least one acid sensitive pH dye which is non-phototropic during the time of said exposure,

(c) as activator, at least one base, deposited as a layer on said substrate; and (2) observing the color change of the device after storage.

5,254,474

METHOD OF ASSESSING THERMAL PROCESSING OF FOOD USING INTRINSICALLY-CREATED COMPOUNDS

Hie-Joon Kim, Wayland, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 25, 1991, Ser. No. 660,308
Int. Cl.[5] G01N *30/74, 31/00*
U.S. Cl. 436—1 11 Claims

1. A method of determining the relative sterility of thermally processed foods, comprising:

homogenizing at least a portion of a thermally-processed food with water to prepare an aqueous extract of soluble compounds, including thermally-produced soluble compounds;

subjecting said aqueous extract to anion exclusion chromatography with an acidic eluant to create an eluted stream;

measuring over time the ultraviolet absorbance of said soluble compounds in said eluted stream; and

determining from said absorbance of one or more of said thermally-produced soluble compounds having an absorption maximum at approximately 285 or approximately 298 nanometers an indication of the relative sterility of the food.

5,254,475

SEQUENTIAL C-TERMINAL DEGRADATION OF PEPTIDES AND PROTEINS

Jerome M. Bailey, Duarte, Calif., assignor to City of Hope, Duarte, Calif.

PCT No. PCT/US91/04434, § 371 Date May 31, 1992, § 102(e) Date May 31, 1992
Continuation-in-part of Ser. No. 576,943, Aug. 13, 1990, Pat. No. 5,059,540. This PCT application Jun. 21, 1991, Ser. No. 856,151
Int. Cl.[5] G01N *33/68*
U.S. Cl. 436—89 1 Claim

1. A method for sequencing a peptide by carboxyl terminal

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degradation which comprises coupling the carboxyl terminus of a peptide with a coupling reagent to form a peptidylthiohydantoin derivative and cleaving the peptidylthiohydantoin derivative with a reagent having the formula $R_3Sio^-X^+$, in which R is a straight or branched chain hydrocarbon radical



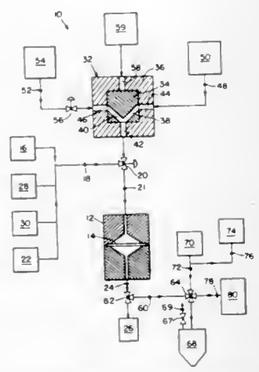
having from about 1 to about 10 carbon atoms and X is an alkali metal ion to provide a thiohydantoin derivative of the amino acid previously at the carboxyl terminus of a peptide and a peptidyl residue lacking such an amino acid, the N-terminal of said peptide being covalently coupled to an activated, carboxylic acid modified, polyethylene membrane.

5,254,476

METHOD AND SYSTEM FOR ANALYSIS OF PEPTIDES AND PROTEINS

James M. Coull, Westford, and James D. Dixon, Newtonville, both of Mass., assignors to Millipore Corporation, Bedford, Mass.

Filed Jun. 5, 1992, Ser. No. 893,689
Int. Cl.[5] G01N *33/68*
U.S. Cl. 436—89 10 Claims



1. A method for liberating a terminal amino acid residue of a peptide or protein for isolation and identification of the terminal residue, comprising the steps of:

a) exposing a peptide or protein to a coupling reagent and a buffer to derivatize the terminal residue of the peptide or protein; and

b) passing a cleaving-reagent in the form of a spray across the peptide or protein to thereby cleave the derivatized terminal residue from the peptide or protein, whereby the terminal amino acid residue is liberated for isolation and identification.

5,254,477

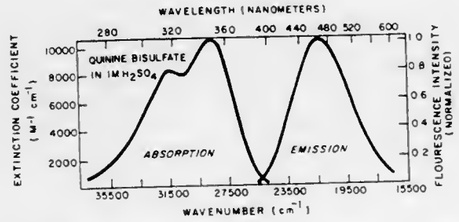
FLOURESCENCE INTRAMOLECULAR ENERGY TRANSFER CONJUGATE COMPOSITIONS AND DETECTION METHODS

David R. Walt, Lexington, Mass., assignor to Trustees of Tufts College, Medford, Mass.

Continuation of Ser. No. 294,175, Jan. 6, 1989, abandoned, which is a continuation-in-part of Ser. No. 878,128, Jun. 25, 1986, Pat. No. 4,822,746. This application Sep. 19, 1991, Ser. No. 762,245

The portion of the term of this patent subsequent to Sep. 1, 2009, has been disclaimed.

Int. Cl.[5] G01N *21/64, 21/80;* C12Q *1/00*
U.S. Cl. 436—172 4 Claims



1. A method for detecting an analyte of interest in a fluid sample, said method comprising the steps of:

admixing the fluid sample containing the analyte of interest with a fluid containing a preformed, fluorophore-absorber linked conjugate composition whose spectral characteristics are affected by contact with the analyte of interest to form a fluid reaction mixture, said preformed, fluorophore-absorber linked conjugate composition comprising

(a) at least one fluorophore which is non-reactive with the analyte of interest, said fluorophore having characteristic and definable light absorption and light emission spectra, and which absorbs exciting light energy of a first wavelength, which transfers non-radiatively at least a portion of said exciting energy to an absorber, and which emit another portion of said exciting energy as emitted light of a second wavelength,

(b) at least one absorber which is reactive with the analyte of interest and whose spectral characteristics are modulated by reactive contact with the analyte of interest, said absorber having a light absorption spectrum which overlaps in some degree with the definable light emission spectrum characteristic of said analyte non-reactive fluorophore, and which absorbs energy transferred non-radiatively by said analyte non-reactive fluorophore, and which is held at a spatial distance of not more than 100 Angstroms from said analyte non-reactive fluorophore, and

(c) chemical linking agent means for holding said analyte reactive absorber at said spatial distance from said analyte non-reactive fluorophore within said conjugate composition;

introducing light energy of the first wavelength to said reaction mixture whereby said analyte non-reactive fluorophore of said conjugate composition absorbs said exciting light energy and emits an intensity of light of the second wavelength and wherein at least a portion of said exciting energy is non-radiatively transferred to and absorbed by said analyte reactive absorber of said conjugate composition; and

determining the intensity of said emitted light of the second wavelength from said reaction mixture, said intensity of emitted light being a measure of the analyte of interest in the sample.

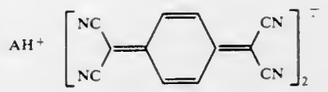
5,254,478

USE IN MAGNETOMETRY BY ELECTRONIC PARAMAGNETIC RESONANCE (EPR) OF TETRACYANOQUINODIMETHANE DERIVATIVES

Mehdi Moussavi, Saint Egreve, France, assignor to Commissariat a l'Energie Atomique, France

Filed Mar. 19, 1991, Ser. No. 671,548
Claims priority, applicatioo France, Apr. 4, 1990, 90 04322
Int. Cl.[5] G01N *24/10*
U.S. Cl. 436—173 5 Claims

1. A magnetometric method of measuring a magnetic field by electromagnetic paramagnetic resonance using applied high frequency power and a tetracyanoquinodimethane derivative as a paramagnetic substance having an electronic magnetic moment the improvement comprising selecting as the paramagnetic substance a tetracyanoquinodimethane derivative of the formula:



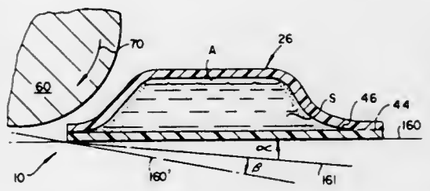
in which AH^{30} is a cation derived from a heterocyclic aromatic base having three aromatic rings and a single heteroatom included in one of the rings as an NH^+ group, exposing said paramagnetic substance to a magnetic field to be measured, and measuring the magnetic field by detecting the variation of the magnetic flux produced by the precession of the magnetic moment of said paramagnetic substance, whereby a reduced level of applied high frequency power is required compared to measuring a magnetic field using electromagnetic paramagnetic resonance without using said cation.

5,254,479

METHODS FOR PREVENTING AIR INJECTION INTO A DETECTION CHAMBER SUPPLIED WITH INJECTED LIQUID

John B. Chemelli, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 19, 1991, Ser. No. 810,945
Int. Cl.[5] G01N *1/10, 21/00*
U.S. Cl. 436—180 8 Claims



1. A method of preventing air from interfering with liquid reactions involving a solution in a detection chamber, the solution being transferred to said detection chamber from a first burstable compartment connected via a passageway in a generally horizontally positioned cuvette and containing both said solution and residual air, the method comprising the steps of:

a) bursting said first compartment with pressure applied by exterior pressure means that pushes said solution into said detection chamber but not said residual air,

b) keeping said pressure means on said first compartment at a location sufficient to leave residual air in said first compartment during the time of said liquid reactions in said detection chamber, and

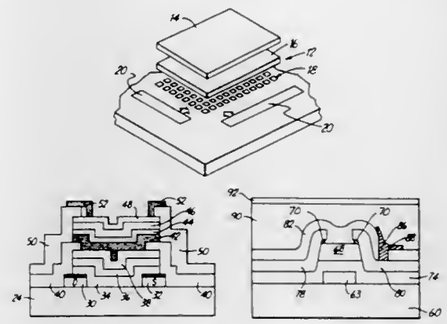
c) thereafter, also ejecting any residual air left in said first compartment by pressure exerted by said exterior pressure means.

5,254,480

PROCESS FOR PRODUCING A LARGE AREA SOLID STATE RADIATION DETECTOR

Nang T. Tran, Cottage Grove, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 20, 1992, Ser. No. 839,268
Int. Cl.[5] H01L *31/18*
U.S. Cl. 437—2 8 Claims



1. A process for producing a large area radiation detector, the process comprising:

forming submodules, each submodule including an array of thin film transistors;

positioning the submodules in side-by-side relationship;

forming a bottom electrode layer that overlies the thin film transistor arrays of the submodule;

depositing on the bottom electrode layer doped and undoped amorphous silicon layers;

forming a top electrode layer on the amorphous silicon layers;

using microlithography to form an array of top electrode regions overlying the thin film transistors of the submodules;

selectively etching the doped and undoped amorphous silicon layers using the array of top electrode regions as a mask to form an array of photosensitive devices overlying the thin film transistors

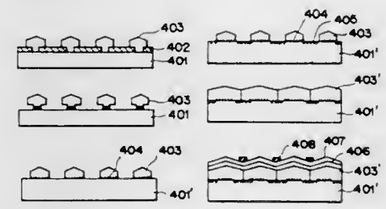
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5,254,481

POLYCRYSTALLINE SOLAR CELL MANUFACTURING METHOD

Shoji Nishida, Fujisawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 19, 1991, Ser. No. 794,462
Claims priority, application Japan, Nov. 20, 1990, 2-315084
Int. Cl.[5] H01L *31/18, 31/0368*
U.S. Cl. 437—4 7 Claims



1. A method for manufacturing polycrystalline solar cells comprising the sequential steps of:

arranging a plurality of single silicon crystals having regulated crystal orientation on a metal substrate at desired intervals;

forming a metal-silicon intermediate layer between said

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metal substrate and said single silicon crystals by applying heat;

oxidizing the exposed surface portions of said metal substrate; and

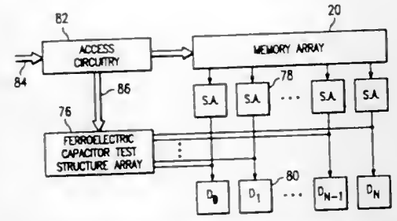
performing crystal growth by a selective epitaxial growing method with said single silicon crystals as seed crystals.

5,254,482

FERROELECTRIC CAPACITOR TEST STRUCTURE FOR CHIP DIE

David E. Fisch, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 510,171, Apr. 16, 1990, abandoned.
This application Apr. 15, 1992, Ser. No. 869,825
Int. Cl.[5] G01R *31/26;* **H01L** *21/66*
U.S. Cl. 437—8 **27 Claims**



1. In a semiconductor wafer of the type having a plurality of circuit die, and at least some of the die having a ferroelectric component, a method of incorporating a test structure in the semiconductor wafer, comprising the steps of:

fabricating at least one ferroelectric test structure into each said die having ferroelectric component so that the test structure undergoes substantially the same processing environment as does functional circuitry of the die;

fabricating said ferroelectric test structure as a two-terminal device in series with a transistor switch for switchably connecting the ferroelectric component between bond pads; and

connecting the ferroelectric test structure so that each terminal of the ferroelectric test structure is coupled to a different bond pad of the respective die for providing electrical access to the test structure by way of said bond pads and so that analog tests can be conducted thereon and analog signals resulting from said tests can be obtained from at least one of the bond pads.

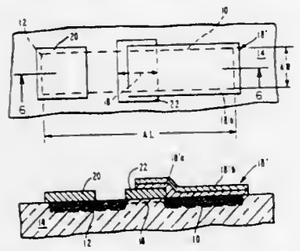
5,254,483

GATE-TO-OHMIC METAL CONTACT SCHEME FOR III-V DEVICES

C. David Forgerson, II, and David A. Johnson, both of Camarillo, Calif., assignors to Vitesse Semiconductor Corporation, Camarillo, Calif.

Division of Ser. No. 618,992, Nov. 28, 1990, Pat. No. 5,121,174, which is a continuation-in-part of Ser. No. 402,802, Sep. 5, 1989, abandoned, which is a continuation-in-part of Ser. No. 112,232, Oct. 23, 1987, abandoned. This application Mar. 4, 1992, Ser. No. 846,225
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—22 **14 Claims**

1. A method of forming a contact for shorting at least one of a source and drain region to a gate electrode in a III-V semiconductor device having an active region therebetween, said contact comprising an ohmic metal contact, said method comprising contacting at least one of said source and drain regions with a first portion of said contact and contacting said gate electrode with a second portion of said contact, said contact routed directly over said active region between said first portion and said second portion to provide a reduced area contact, said ohmic metal comprising a composite ohmic metal comprising (a) a first layer of a metal which makes ohmic contact to III-V semiconductor materials in contact with at least one of said source or said drain and with said gate electrode and (b) a



second layer of an electrically conductive, thermally stable, electromigration-resistant metal capable of providing good step coverage formed over said first layer.

5,254,484

METHOD FOR RECRYSTALLIZATION OF PREAMORPHIZED SEMICONDUCTOR SURFACES ZONES

Heinz-Achim Hefner, Brackenheim; Joachim Imschweiler, Heilbronn-Böckingen, and Michael Seibt, Göttingen, all of Fed. Rep. of Germany, assignors to Telefunken electronic GmbH, Fed. Rep. of Germany

Filed Sep. 24, 1991, Ser. No. 764,615
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1990, 4035842
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—24 **10 Claims**

1. A method for manufacturing a semiconductor array of silicon with a surface zone of low penetration depth, wherein: said surface zone is amorphized by implantation of germanium ions, at an energy of approximately 70 keV and a dose of approximately $3 \cdot 10^{14}$ cm^{-2}, in the surface of a single-crystal semiconductor element, said surface zone is then doped by BF_2^+ implantation at an energy of 15 keV to 25 keV and a dose of $3 \cdot 10^{13}$ cm^{-2} to $3 \cdot 10^{14}$ cm^{-2}, and finally the amorphous layer is recrystallized by a heat treatment consisting of a first furnace process step whose temperature is selected such that recrystallization of said amorphous layer does not yet take place but the interface zone is smoothed between said amorphous surface zone and said single-crystal semiconductor element, said first step being followed by a second furnace process step whose temperature is sufficiently high for said amorphous surface zone to recrystallize and low enough for the movability of the implanted impurity atoms to remain low, and said second step being followed by a final rapid thermal annealing process at a temperature high enough for said implanted impurity atoms to be activated and for a duration short enough to minimize the redistribution of said impurities.

5,254,485

METHOD FOR MANUFACTURING BIPOLAR SEMICONDUCTOR DEVICE

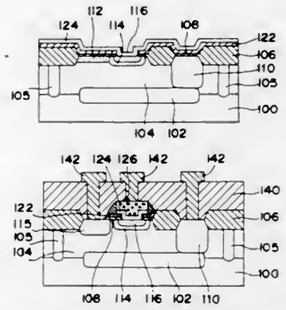
Mizuki Segawa, Osaka; Shuichi Kameyama, Hyogn; Hiroshi Shimomura, and Atsusbi Hori, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 17, 1991, Ser. No. 760,987
Claims priority, application Japan, Sep. 18, 1990, 2-249457
Int. Cl.[5] H01L *21/265, 29/70*
U.S. Cl. 437—31 **11 Claims**

1. A method for manufacturing a bipolar semiconductor device comprising the steps of:

forming a first semiconductor thin film of a non-single crystal on the surface of a first semiconductor region of a single crystal which is of a first electric conduction type to be a collector,

forming a second semiconductor region of said first electric conduction type to be an emitter in said first semiconductor region by implanting an impurity of said first electric conduction type through said first semiconductor thin film,



forming a third semiconductor region of a second electric conduction type to be a base by implanting an impurity of said second electric conduction type through said first semiconductor thin film, and

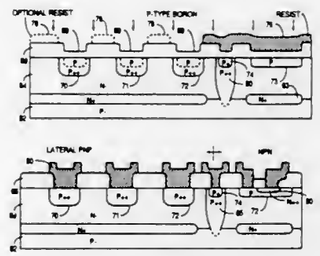
forming a second semiconductor thin film of a non-single crystal on said first semiconductor thin film.

5,254,486

METHOD FOR FORMING PNP AND NPN BIPOLAR TRANSISTORS IN THE SAME SUBSTRATE

Martin J. Alter, Los Altos, Calif., assignor to Micrel, Incorporated, Sunnyvale, Calif.

Filed Feb. 21, 1992, Ser. No. 840,721
Int. Cl.[5] 0834 *21/265, 29/70*
U.S. Cl. 437—31 **8 Claims**



1. A method for forming high conductivity regions self-aligned with low conductivity regions in an epitaxial layer comprising the steps of:

forming, over a substrate of a first conductivity type, a buried layer of a second conductivity and an epitaxial layer of said second conductivity type;

forming an insulating layer on a top surface of said epitaxial layer;

forming a first pattern in said insulating layer during a first masking step to define one or more first regions to be low conductivity regions and one or more second regions to be high conductivity regions;

depositing dopants of said first conductivity type into said first and second regions as defined by said first masking step;

masking said first regions in a second masking step to prevent dopants from being deposited into said first regions during a subsequent doping step;

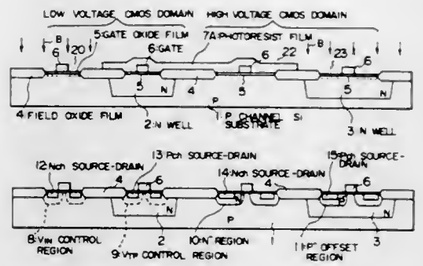
depositing dopants of said first conductivity type into said second regions and not into said first regions, so that said second regions are more highly doped than said first regions, while using said first pattern from said first masking step to self-align said highly doped second regions to said first regions.

5,254,487

METHOD OF MANUFACTURING HIGH AND LOW VOLTAGE CMOS TRANSISTORS ON A SINGLE CHIP

Akio Tamagawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 23, 1993, Ser. No. 21,028
Claims priority, application Japan, May 13, 1992, 4-119456
Int. Cl.[5] H01L *21/266*
U.S. Cl. 437—34 **12 Claims**



1. Method of manufacturing a semiconductor device where high voltage CMOS transistors and low voltage CMOS transistors are installed on a same chip, by a silicon gate CMOS process, characterized in that the method comprises:

process of forming N wells for low voltage P channel transistors and for high voltage P channel transistors in a P type Si substrate, by ion implantation and thermal diffusion,

process of forming field oxide films for separating elements and gate oxide films,

process of B ion implantation in high voltage N channel transistor domains for controlling threshold voltage,

process of B ion implantation in high voltage P channel transistor domains for controlling threshold voltage,

process of forming gate electrodes by generating a polysilicon film and by etching said polysilicon film selectively,

process of simultaneous B ion implantation in low voltage N channel transistor domains for controlling threshold voltage and in high voltage P channel transistor domains for field intensity relaxation,

process of simultaneous P ion implantation in low voltage P channel transistor domains for controlling threshold voltage and in high voltage N channel transistor domains for field intensity relaxation.

5,254,488

EASILY MANUFACTURABLE THIN FILM TRANSISTOR STRUCTURES

Ivan Haller, Chappaqua, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 412,714, Sep. 26, 1989, abandoned, which is a division of Ser. No. 140,699, Jan. 4, 1988, Pat. No. 4,888,632. This application Sep. 4, 1990, Ser. No. 581,316
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—40 **9 Claims**

1. A process for fabricating a thin film semiconductor device on a transparent substrate, comprising:

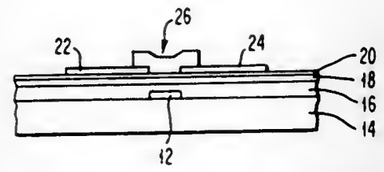
depositing a gate electrode on said transparent substrate,

selecting at least one lower transparent insulating layer material, having a refractive index different from said transparent substrate, in combination with a thickness of at least one lower transparent insulating layer such that said lower transparent insulating layer thickness multiplied

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times said lower transparent insulating layer refractive index approximately equals an odd multiple of one fourth of the wavelength of lithographically active light transmitted through said transparent substrate,

depositing at least one lower transparent insulating layer having said selected refractive index and thickness over said transparent substrate and said gate electrode,



depositing a thin light-permeable semiconductor layer having a light absorbing property over said lower transparent insulating layer,

applying a photoresist layer over said light-permeable semiconductor layer, and

exposing said photoresist layer by transmitting said lithographically active light through said transparent substrate, said transparent insulating layers, and said light-permeable semicondcutor layer to said photoresist layer.

5,254,489

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE BY FORMING FIRST AND SECOND OXIDE FILMS BY USE OF NITRIDATION

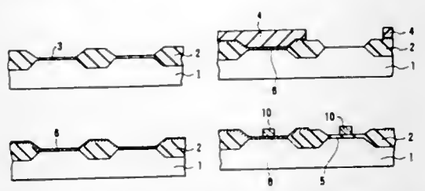
Hidetoshi Nakata, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 18, 1991, Ser. No. 779,078

Claims priority, application Japan, Oct. 18, 1990, 2-280393; Nov. 30, 1990, 2-340916

Int. Cl.[5] **H01L** *21/265*

U.S. Cl. 437—40 **13 Claims**



1. A method of manufacturing a semiconductor device, comprising the steps of:

forming an element region and an element isolation region on a semiconductor substrate of a first conductivity type;

forming a first oxide film prospectively serving as a gate insulating film in said element region;

annealing in a nitrogen or ammonia atmosphere to nitrify an entire surface of said first oxide film;

performing thermal oxidation of said nitrified first oxide film;

removing a portion of said nitrified first oxide film forming a second oxide film prospectively serving as a gate insulating film in the removed portion using said nitrified first oxide film as a mask; and

forming a gate electrode constituted by a polysilicon film on each of said nitrified first oxide film and said second oxide film.

5,254,490

SELF-ALIGNED METHOD OF FABRICATING AN LDD MOSFET DEVICE

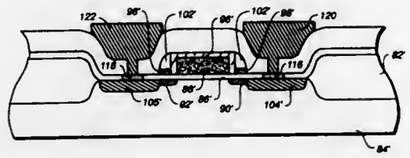
Toshihiko Kondo, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Division of Ser. No. 636,660, Jan. 2, 1991, abandoned. This application Jan. 22, 1992, Ser. No. 825,448

Claims priority, application Japan, Jan. 11, 1990, 2-4188; Jan. 11, 1990, 2-4190; Oct. 2, 1990, 2-265895

Int. Cl.[5] **H01L** *21/336*

U.S. Cl. 437—44 **7 Claims**



4. A self-aligned method for fabricating an MIS device, comprising the steps of:

forming a first insulating layer on a semiconductor substrate;

forming a gate electrode comprising polysilicon on a part of the first insulating layer;

forming two lightly doped areas each on a side of the gate electrode under the surface of the semiconductor substrate using the gate electrode as a mask;

opening up a first source contact hole and a first drain contact hole in the first insulating layer to expose the substrate;

forming a refractory metal layer on the surface of the gate electrode, in the contact holes, and on the first insulating layer;

heat treating the refractory metal layer in a nitrogen atmosphere to convert a part of the refractory metal layer in contact with the gate electrode into a silicide layer and a part of the refractory metal layer in contact with the first insulating layer into a nitride layer;

forming a second insulating layer over and on the sides of the gate electrode over the semiconductor substrate;

etching the first and second insulating layers and the nitride layer so that sidewalls of the second insulating layer with a predetermined thickness are formed on the sides of the gate electrode and portions of the first insulating layer and nitride layer covered by the gate electrode and the sidewalls are left behind;

forming a source area and a drain area on the surface of semiconductor substrate using both the gate electrode and sidewall as a mask;

forming a third insulating layer over and on the sides of the gate electrode over the substrate;

opening up second source and drain contact holes above the first source and drain contact holes, respectively; and

depositing metal layers in the second source and drain contact holes in contact with the silicide layers in the first source and drain contact holes.

5,254,491

METHOD OF MAKING A SEMICONDUCTOR DEVICE HAVING IMPROVED FREQUENCY RESPONSE

Bernard W. Boland, Scottsdale; Robert B. Davies, Tempe, and Paul W. Sanders, Scottsdale, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 23, 1991, Ser. No. 763,773

Int. Cl.[5] **H01L** *21/76*

U.S. Cl. 437—47 **9 Claims**

1. A method for making a semiconductor device having an improved frequency response, comprising:

providing a semiconductor substrate, the semiconductor substrate having a top surface and a bottom surface;

providing an epitaxial layer on the top surface of the semiconductor substrate;

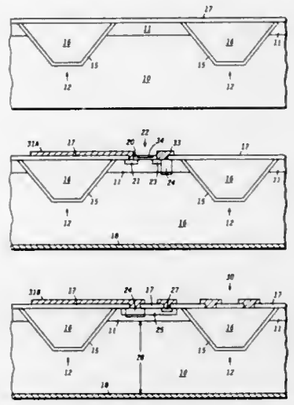
forming at least one trough through the epitaxial layer, the at least one through extending into the semiconductor substrate;

lining the at least one through with a first dielectric material, wherein the first dielectric material serves as an insulating layer that masks the at least one through;

filling the at least one through with a second dielectric material, wherein the second dielectric material extends above the epitaxial layer;

planarizing the second dielectric material, wherein a portion of the epitaxial layer is removed;

covering the epitaxial layer and the second dielectric material with a third dielectric material, wherein the first, second, and third dielectric materials collectively serve as a dielectric material of a parasitic capacitor;



fabricating at least one semiconductor device in an active area adjacent to the at least one through, the at least one semiconductor device comprising a first region, a second region, and a third region, wherein the first region includes the bottom surface of the semiconductor substrate;

providing a bottom contact to the first region of the semiconductor substrate, wherein the bottom contact serves as a first electrode of the parasitic cpacitor and a first electrode of the at least one semiconductor device;

providing a conductive interconnect wherein the conductive interconnect is over the the at least one through and extends to the second region of the at least one semiconductor device, the conductive interconnect serving as a second electrode of the parasitic capacitor and a second electrode of the at least one semiconductor device; and

providing a third electrode to the at least one semiconductor device, werein the third electorde contacts the third region of the at least one semiconductor device.

5,254,492

METHOD OF FABRICATING AN INTEGRATED CIRCUIT FOR PROVIDING LOW-NOISE AND HIGH-POWER MICROWAVE OPERATION

Hua Q. Tserng, Dallas, and Paul Saunier, Garland, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 10, 1992, Ser. No. 973,906

Int. Cl.[5] **H01L** *21/70*

U.S. Cl. 437—56 **9 Claims**

1. A method of fabricating an integrated circuit for providing low-noise and high-power microwave operation comprising:

depositing a buffer on a substrate;

depositing a low-noise channel layer above said buffer;

depositing a low-noise buffer layer above said low-noise channel layer;

depositing a power channel layer above said low-noise buffer layer;

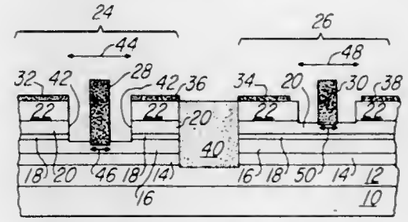
depositing a wide bandgap layer above said power channel layer;

depositing a cap layer above said wide bandgap layer;

forming a first transistor configuration by etching said cap layer, said wide bandgap layer, and said power channel layer in a first pattern to form a first recess exposing said low-noise buffer layer;

forming a second transistor configuration by etching said cap layer in a second pattern to form a second recess exposing said wide bandgap layer;

etching a third recess inside of said first recess that extends slightly into said low-noise buffer layer;



etching a fourth recess inside of said second recess that extends slightly into said wide bandgap layer;

depositing a first gate metallization in said third recess;

depositing a second gate metallization in said fourth recess;

depositing a first drain contact on said cap layer on one side of said first recess and a first source contact on an opposite side of said first recess; and

depositing a second drain contact on said cap layer on one side of said second recess and a second source contact on an opposite side of said second recess, wherein said contacts are alloyed and driven through said cap layer, said wide bandgap layer, said power channel layer and said low-noise buffer layer to make contact with said low-noise channel layer and said power channel layer.

5,254,493

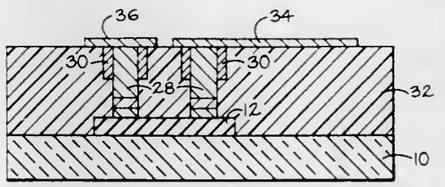
METHOD OF FABRICATING INTEGRATED RESISTORS IN HIGH DENSITY SUBSTRATES

Nalin Kumar, Austin, Tex., assignor to Microelectronics and Computer Technology Corporation, Austin, Tex.

Division of Ser. No. 605,806, Oct. 30, 1990, Pat. No. 5,120,572. This applicatioo Feb. 24, 1992, Ser. No. 841,311

Int. Cl.[5] **H01L** *21/70*

U.S. Cl. 437—60 **17 Claims**



1. A method of making an integrated resistor in a substrate, comprising:

applying a resistive layer over an underlying substrate;

applying a first mask over selected portions of the resistive layer but leaving a portion of resistive layer uncovered;

etching away the uncovered portion of the resistive layer and removing the first mask;

applying in series upwardly a first electrically conductive

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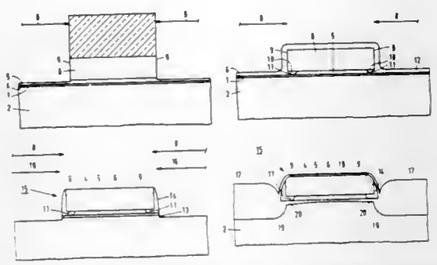
layer, an upper adhesive layer, and an electrically nonconductive layer on the resistive layer;
applying a second mask over selected portions of the resistive layer leaving exposed portions for electrical connections;
etching the nonconductive layer and the upper adhesive layer from the exposed portions;
depositing conductive electrical connections in the exposed portions to the first conductive layer;
removing the second mask; and
removing the first electrically conductive, upper adhesive, and the nonconductive layers outside the electrical connections, thereby leaving the electrical connections connected to the unetched portions of the resistive layer on the substrate.

5,254,494

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE HAVING FIELD OXIDE REGIONS FORMED THROUGH OXIDATION

Paulus A. Van Der Plas; Nicole A. H. F. Wils, and Andreas H. Montree, all of Eindhoven, Netherlands, assignors to U.S. Philips Corp., New York, N.Y.

Filed Jun. 8, 1992, Ser. No. 896,082
Claims priority, application European Pat. Off., Jun. 10, 1991, 91201414.9
Int. Cl.[5] H01L *21/76*
U.S. Cl. 437—69 **5 Claims**



1. A method of manufacturing a semiconductor device in which field oxide regions are formed in a surface of a silicon body through oxidation, wherein said body is provided with an oxidation mask which is formed in a layered structure provided on the surface and comprising a lower layer of silicon oxide, an intermediate layer of polycrystalline silicon and an upper layer of material comprising silicon nitride, windows are etched into the upper layer, the intermediate layer is removed by etching within the windows and below an edge of the windows, a cavity being formed below said edge, after which material comprising silicon nitride is provided in the cavity while the surface of the silicon body situated within the windows is covered by the layer of silicon oxide.

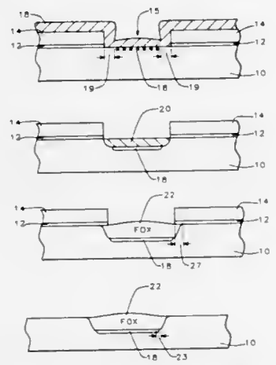
5,254,495

SALICIDE RECESSED LOCAL OXIDATION OF SILICON

Water Lur, Taipei, and J. Y. Wu, Dou-Lio, both of Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan

Filed May 7, 1993, Ser. No. 57,882
Int. Cl.[5] H01L *71/302*
U.S. Cl. 437—70 **25 Claims**

1. The method of local oxidation of an integrated circuit comprising:
forming a thin silicon oxide layer over the surface of a silicon substrate;
depositing a layer of silicon nitride overlying said silicon oxide layer;
patterning said silicon oxide and silicon nitride layers to provide openings exposing portions of said silicon substrate that will be oxidized subsequently using the said local oxidation method;
depositing a metal layer overlying said silicon nitride layer and within said openings to said substrate;
selectively ion implanting channel-stops into said substrate through said openings;
reacting said metal layer with said silicon substrate where



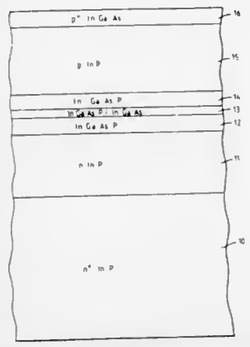
said metal layer contacts said substrate within said openings to form metal silicide regions;
removing said metal silicide regions leaving recesses in said silicon surface within said openings;
growing field oxide regions within said openings; and
removing said silicon nitride and said silicon oxide layers thereby completing local oxidation of said integrated circuit.

5,254,496

SEMICONDUCTOR MIXED CRYSTAL QUANTUM WELL DEVICE MANUFACTURE

Alan T. R. Briggs, Stansted Mountfitchet, and Julia M. Jowett, Dorridge, both of United Kingdom, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jan. 14, 1993, Ser. No. 4,436
Claims priority, application United Kingdom, Jan. 17, 1992, 9200988
Int. Cl.[5] H01L *21/20*
U.S. Cl. 437—133 **18 Claims**



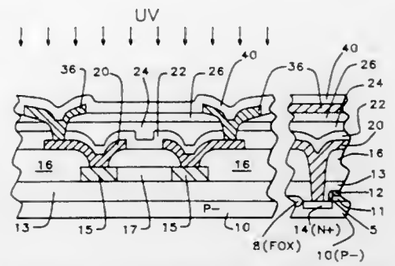
1. A method of making, by vapour phase epitaxial growth upon a substrate, a semiconductor mixed crystal quantum well device that includes a quantum well stack that consists of one or more mixed crystal ternary quantum well layers interleaved between mixed crystal quaternary barrier layers of a material three of whose four constituent elements are the three constituent elements of the ternary material of the quantum well layers, wherein the bulk lattice parameter of the material of said one or more quantum well layers is mismatched with respect to that of the substrate, and wherein the flux of the epitaxial growth source materials of two elements of the same group of the Periodic Table remains unchanged during the vapour phase epitaxial growth of said quantum well and barrier layers, whereby in the resulting device the relative atomic proportions of said two elements are substantially the same in its quantum well and barrier layers.

5,254,497

METHOD OF ELIMINATING DEGRADATION OF A MULTILAYER METALLURGY/INSULATOR STRUCTURE OF A VLSI INTEGRATED CIRCUIT

Chwen-Ming Liu, Shinchu, Taiwan, assignor to Taiwan Semiconductor Manufacturing Company, Hsinchu, Taiwan

Filed Jul. 6, 1992, Ser. No. 908,089
Int. Cl.[5] H01L *21/268, 21/441*
U.S. Cl. 437—173 **20 Claims**



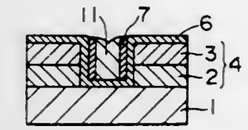
1. A method for forming multiple metal, spin-on-glass multilayer metallurgy for a one micrometer or less feature size integrated circuit with substantially free field inversion comprising:
providing a semiconductor substrate having a pattern of field effect device source/drain regions therein with a pattern of gate dielectric and gate electrode structures associated therewith and a pattern of field isolation structures at least partially within said semiconductor substrate electrically separating certain of these source/drain regions from one another;
forming a first passivation layer over the surfaces of said patterns; and
forming said multilayer metallurgy thereover by opening a pattern of openings through said passivation layer to at least some of said source/drain regions,
depositing and patterning a first metallurgy layer in contact with said pattern of openings;
forming a first silicon oxide via dielectric layer over said pattern of first metallurgy layer;
forming a spin-on-glass layer over said via dielectric layer and curing the layer;
forming a second silicon oxide via dielectric layer over said spin-on-glass layer;
forming a pattern of openings in said second via layer, said spin-on-glass layer, and said first via layer;
depositing and patterning a second metallurgy layer in contact with said pattern of openings to make electrical contact with said first metallurgy layer;
forming a second passivating dielectric layer over said second metallurgy layer; and
illuminating the structure with ultra violet radiation for a time sufficient to neutralize charges in the multilevel metallurgy structure wherein said multilevel metallurgy integrated circuit with substantially free field inversion is completed.

5,254,498

METHOD FOR FORMING BARRIER METAL STRUCTURE

Hirofumi Sumi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 21, 1992, Ser. No. 886,092
Claims priority, application Japan, May 23, 1991, 3-149892
Int. Cl.[5] H01L *21/44*
U.S. Cl. 437—190 **2 Claims**



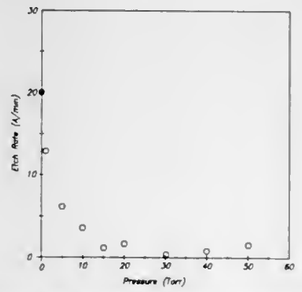
1. A method for forming a barrier metal structure in a contact hole, comprising the steps of:
opening a contact hole in an insulation film layer on a substrate in a diameter larger than an originally intended value;
forming a barrier metal layer over the entire surfaces of said insulation film layer;
forming an oxidation film layer over the entire surfaces of said barrier metal layer until the diameter of said contact hole reaches said target value;
etching said oxidation film layer by anisotropic etching; and
embedding a metal in said contact hole.

5,254,499

METHOD OF DEPOSITING HIGH DENSITY TITANIUM NITRIDE FILMS ON SEMICONDUCTOR WAFERS

Gurtej S. Sandhu; Trung T. Doan, and Scott G. Meikle, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Jul. 14, 1992, Ser. No. 914,748
Int. Cl.[5] H01L *21/283*
U.S. Cl. 437—192 **25 Claims**



1. A chemical vapor deposition method of providing a conformal layer of TiN atop a semiconductor wafer in a manner which increases density and reduces etch rate of the TiN layer, the method comprising the following steps:
positioning a wafer within a chemical vapor deposition reactor;
heating the positioned wafer to a selected processing temperature of from about 200° C. to about 600° C.;
injecting selected quantities of a gaseous titanium organometallic precursor of the formula $Ti(NR_2)_4$, where R is selected from the group consisting of H and a carbon containing radical; gaseous ammonia; and a carrier gas to within the reactor having the positioned preheated wafer therein; and
maintaining the reactor at a pressure of from about 5 Torr to about 100 Torr and the wafer at a selected elevated temperature which in combination are effective for reacting the precursor and ammonia to deposit a film on the wafer

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which comprises TiN, the film having increased density and reduced etch rate over films deposited by the same method but at lower than about 5 Torr pressure.

5,254,500

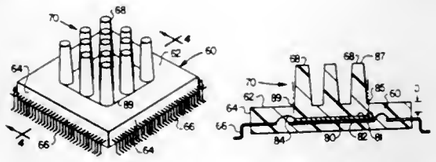
METHOD FOR MAKING AN INTEGRALLY MOLDED SEMICONDUCTOR DEVICE HEAT SINK

David S. AuYeung, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Division of Ser. No. 650,626, Feb. 5, 1991, Pat. No. 5,155,579. This application Jul. 6, 1992, Ser. No. 908,987

Int. Cl.[5] H01L *21/56, 21/58, 21/60*

U.S. Cl. 437—214 **8 Claims**



1. A method of cooling a semi-conductor device housed within a discrete package, said method comprising said steps of:

integrally molding a plurality of heat dissipation elements immediately above said semi-conductor device in molded engagement therewith and upstanding therefrom and dissipating heat generated thereby

securing said semi-conductor device in direct thermal contact with said heat dissipation elements to thereby transfer heat from said semi-conductor device through said heat dissipation elements and outwardly therefrom; and

discharging heat from said semi-conductor device through said heat dissipation elements.

5,254,501

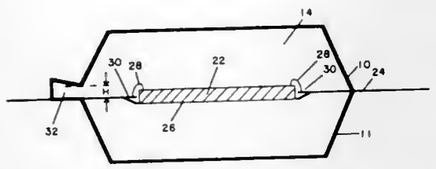
SAME-SIDE GATED PROCESS FOR ENCAPSULATING SEMICONDUCTOR DEVICES

Richard K. Tung, Cupertino, and Joel J. Camarda, San Francisco, both of Calif., assignors to Cypress Semiconductor Corporation, San Jose, Calif.

Filed Sep. 11, 1992, Ser. No. 942,892

Int. Cl.[5] H01L *21/60*

U.S. Cl. 437—214 **9 Claims**



1. A process for encapsulating a semiconductor device attached to a leadframe with electrical connections between the device and the lead frame and positioned in a mold cavity in a transfer mold press containing a separable two part mold having a transfer pot containing a transfer ram, a plurality of mold cavities, a plurality of runners connecting the mold cavities to the transfer pot and a gate to each mold cavity, located in the same half of each mold cavity as the device, comprising:

placing an encapsulating plastic in the transfer pot and forcing the encapsulating plastic from the transfer pot, through the runners and a gate into a mold cavity and allowing the encapsulating plastic to completely fill the mold cavity and harden to encapsulate the device,

wherein:

the gate through which the encapsulating plastic is injected into the mold cavity containing the device is located in the same half of the mold cavity as the device and is at least 2 mm in width by at least 0.30 mm in height or depth;

the velocity of encapsulating plastic moving through the mold is between 2.0 and 4.0 mm/sec.;

and the loop height of the electrical connections between the device and the leadframe is less than 12 mils.

5,254,502

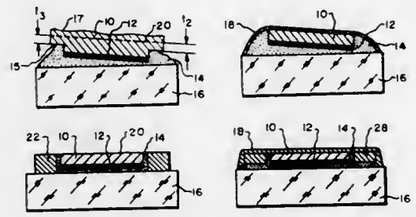
METHOD FOR MAKING A LASER SCREEN FOR A CATHODE-RAY TUBE

Vladmir I. Kozlovsky, Troisk, U.S.S.R., assignor to Principia Optics, Inc., Temple City, Calif. and P. N. Lebeder Institute of Physics, Moscow, U.S.S.R.

Filed Mar. 27, 1992, Ser. No. 858,617

Int. Cl.[5] H01L *21/302*

U.S. Cl. 437—225 **15 Claims**



1. A method of making a laser having an image forming area and comprising an optical cavity having a reflecting mirror and a partly transparent mirror, a semiconductor member which has a first side and a second side opposite to said first side and which is positioned between said reflecting mirror and said partly transparent mirror, and a support and heat removing member made of a transparent material, said support member having a top side and being attached to said partly transparent mirror, said method comprising:

polishing said first side of said semiconductor member;

forming said partly transparent mirror of a material resistant to etching solutions on said first polished side of said semiconductor member, said partly transparent mirror having an outer surface and covering a part of the surface area of said first polished side of said semiconductor member surrounding said image forming area;

etching off a layer of said semiconductor member of a thickness of 20 to 50 μm on said first polished side of said semiconductor member to define a support surface of said semiconductor member surrounding said image forming area, said support surface being equally spaced from the outer surface of said partly transparent mirror;

attaching said support member to said outer surface of said partly transparent mirror;

polishing said second side of said semiconductor member; and

forming said reflecting mirror on said second side of said semiconductor member.

5,254,503

PROCESS OF MAKING AND USING MICRO MASK

Donald M. Kenney, Shelburne, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 2, 1992, Ser. No. 892,081

Int. Cl.[5] H01L *21/308*

U.S. Cl. 437—228 **9 Claims**

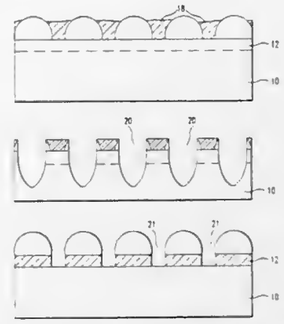
1. The method of forming regular sub-lithographic patterns in the range of hundreds to thousands of Angstrom units in dimension comprising the steps of:

forming as a part of the surface of a substrate a non-planar region including a relief pattern having irregularities in its surface, the irregularities having dimensions of about 20 to 1000 Angstrom units;

forming a masking pattern on said non-planar region using said relief pattern to determine the configuration thereof; and

using the masking pattern to etch substantially vertical trench regions into said substrate.

5. The method of forming regular sublithographic patterns in the range of hundreds to thousands of angstrom units in dimension comprising the steps of:



forming on the surface of a substrate a non-planar region including a relief pattern having dimensions of about 20–1000 angstrom units;

forming a masking pattern using said relief pattern to determine the configuration thereof; and

using the masking pattern to etch substantially vertical trench regions into the substrate, wherein the step of forming the masking pattern includes the step of forming a masking layer on the surface of the substrate prior to the formation of the non-planar region and wherein the formation of the non-planar region includes deposition of polycrystalline silicon.

5,254,504

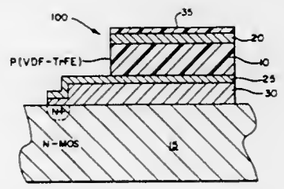
METHOD OF MANUFACTURING FERROELECTRIC MOSFET SENSORS

Jan Van der Spiegel, Philadelphia, Pa., and Antinino Fiorillo, Piza, Italy, assignors to Trustees of the University of Pennsylvania, Philadelphia, Pa.

Division of Ser. No. 337,665, Apr. 13, 1989. This application Sep. 5, 1991, Ser. No. 755,123

Int. Cl.[5] H01L *21/469;* **B05D** *5/12*

U.S. Cl. 437—231 **15 Claims**



1. A method of manufacturing a ferroelectric polymer-containing sensor responsive at ultrasonic frequencies, comprising:

(a) providing a semiconductor transistor having a gate with a first surface;

(b) spin coating a solution comprising said polymer and a solvent onto said first surface to provide a solution coated surface;

(c) removing substantially all of said solvent to provide a polymer film with a substantially uniform thickness of less than about 10 μm coated on said first surface;

(d) substantially uniformly poling at least a portion of said polymer film; and

(e) providing at least one electrode electrically connected to said gate of said semiconductor transistor for establishing electrical contact between said polymer film and a voltage potential.

5,254,505

PROCESS OF FORMING CAPACITIVE INSULATING FILM

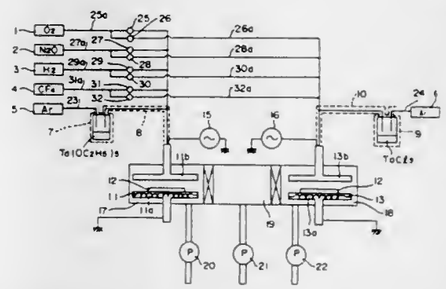
Satoshi Kamiyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 3, 1991, Ser. No. 753,765

Claims priority, application Japan, Aug. 31, 1990, 2-231661

Int. Cl.[5] H01L *21/02;* **B05D** *5/12*

U.S. Cl. 437—235 **3 Claims**



1. A process of forming a capacitive insulating film, comprising the steps of:

forming a tantalum oxide film through thermochemical reaction involving organic tantalum charge gas and oxygen gas; and

subsequently forming a tantalum oxide film through plasma chemical reaction involving tantalum halogenide charge gas and nitrous oxide (N_2O) gas, said steps being performed in the same apparatus on the same substrate to form a lower tantalum oxide film and an upper tantalum oxide film.

5,254,506

METHOD FOR THE PRODUCTION OF SILICON OXYNITRIDE FILM WHERE THE NITROGEN CONCENTRATION AT THE WAFER-OXYNITRIDE INTERFACE IS 8 ATOMIC PRECENT OR LESS

Takashi Hori, Takatsuki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 449,698, Dec. 11, 1989, abandoned. This application Aug. 28, 1991, Ser. No. 758,325

Claims priority, application Japan, Dec. 20, 1988, 63-321186

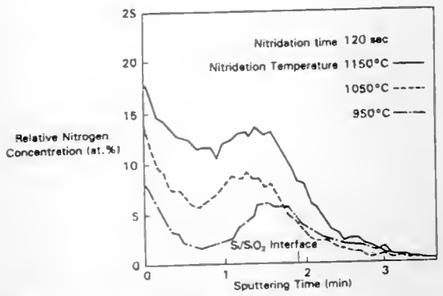
Int. Cl.[5] H01L *21/02*

U.S. Cl. 437—241 **2 Claims**

1. A method for the production of a semiconductor device comprising a semiconductor substrate comprising the steps of forming a thermal oxide film on said substrate and nitriding

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said thermal oxide film in an atmosphere of nitriding gas so as to have a peak nitrogen concentration of about 8 atomic % or



less at the point nearest, the interface between the oxynitride film and the substrate.

5,254,507

SEMI-INSULATING INP SINGLE CRYSTALS, SEMICONDUCTOR DEVICES HAVING SUBSTRATES OF THE CRYSTALS AND PROCESSES FOR PRODUCING THE SAME

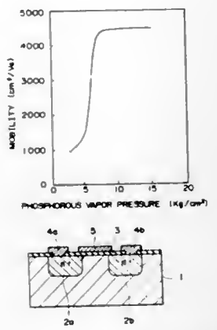
Haruhito Shimakura; Osamu Oda, and Keiji Kainosho, all of Toda, Japan, assignors to Nippon Mining Co., Ltd., Tokyo, Japan

Division of Ser. No. 661,616, Feb. 28, 1991, Pat. No. 5,173,127. This application Sep. 11, 1992, Ser. No. 943,686

Claims priority, application Japan, Mar. 2, 1990, 2-51370; May 1, 1990, 2-115403; May 11, 1990, 2-122669

Int. Cl.[5] H01L *21/324, 21/477*

U.S. Cl. 437—247 **4 Claims**



1. A process of producing a semi-insulating InP single crystal, comprising the step of heat treating an undoped InP single crystal intermediate having a concentration of all of native Fe, Co and Cr of 0.05 ppmw or less under an absolute phosphorous vapor pressure exceeding 6 kg/cm^2.

5,254,508

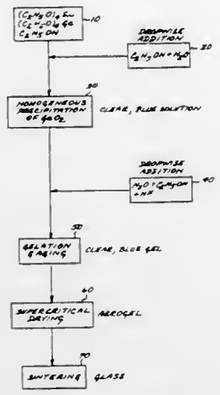
SOL-GEL PROCESS FOR FORMING A GERMANIA-DOPED SILICA GLASS ROD

Fikret Kirkbir, Newbury Park, and Satyabrata Raychaudhuri, Westlake Village, both of Calif., assignors to Yazaki Corporation, Tokyo, Japan

Filed Dec. 12, 1991, Ser. No. 806,036

Int. Cl.[5] C03C *3/04, 13/04*

U.S. Cl. 501—12 **18 Claims**



1. A process for forming a germania-doped silica glass rod, comprising the steps of:

forming a first solution of tetraethyl orthosilicate, tetraethyl orthogermanate, and ethanol in selected relative proportions, wherein the molar ratio of tetraethyl orthosilicate to tetraethyl orthogermanate in the first solution is equal to or less than 9:1;

forming a second solution of ethanol and deionized water;

adding the second solution to the first solution at a selected controlled rate, under continuous stirring, to form a third solution in which hydrolysis of the silicon and germanium of the first solution is initiated;

forming a fourth solution of ethanol, deionized water, and a catalyst comprising hydrofluoric acid;

adding the fourth solution to the third solution at a selected controlled rate, under continuous stirring, to form a fifth solution in which condensation of the hydrolyzed silicon and geranium is initiated, thereby producing a wet gel matrix having an average pore radius of at least about 45 Angstroms, the matrix including hydroxyl groups;

exchanging ethanol for fluid in the pores of the wet gel while maintaining the wet gel at a temperature in the range of about 20° C. to about 55° C. for about 24 hours;

drying the wet gel matrix under supercritical conditions of ethanol by heating the wet gel to a temperature of about 250° C. at a pressure of about 1100 to about 1200 psi;

chlorinating the dried gel matrix by exposing the dry gel to a gaseous mixture of chlorine and either helium, oxygen, or helium and oxygen, for about at least one hour, at a temperature of at least about 700° C.;

oxygenating the chlorinated gel matrix by exposing the chlorinated gel to substantially pure gaseous oxygen for at least about 24 hours, at a temperature of at least about 700° C.;

purging the oxygenated gel matrix by exposing the oxygenated gel to gaseous helium for at least about five hours, at a temperature of at least about 700° C.; and

densifying the oxygen-purged gel matrix by raising the temperature of the oxygenated gel at a rate of at least about 5° C. per minute, maintaining the oxygenated gel at a temperature greater than 1200° C. for a time duration of less than about 30 minutes, and then lowering the temperature of the oxygenated gel at a rate of at least about 5° C. per minute.

5,254,509

PRODUCTION OF METAL CARBIDE ARTICLES

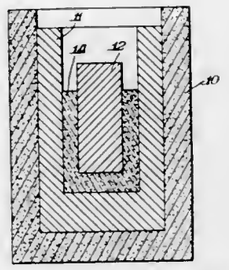
Adam J. Gesing; Edward S. Luce; Narashima S. Raghavan, all of Kingston, Canada, and Danny R. White, New Castle, Del., assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 414,191, Sep. 28, 1989, Pat. No. 5,082,807, which is a division of Ser. No. 2,823, Jan. 2, 1990, Pat. No. 4,891,338. This application Jan. 21, 1992, Ser. No. 823,530

The portion of the term of this patent subsequent to Jan. 20, 2007, has been disclaimed.

Int. Cl.[5] C04B *35/56*

U.S. Cl. 501—93 **20 Claims**



1. A method for producing a self-supporting ceramic composite comprising a carbide, which method comprises:

a) establishing in a substantially inert atmosphere a body of molten parent metal comprising a metal selected from the group consisting of titanium, hafnium and zirconium in surface contact with a permeable mass comprising (1) a filler comprising at least one relatively inert compound and a metal carbide comprising at least one carbide of a metal selected from the group consisting of titanium, hafnium and zirconium and (2) a carbon source for reaction with said molten metal to form a carbide of the molten metal, the carbon moiety of said carbon source being present in no more than a stoichiometric amount, said carbon source comprising elemental carbon and at least one reducible metal carbide selected from the group consisting of the carbides of molybdenum, chromium, cobalt, iron, nickel and vanadium;

b) maintaining said surface contact for a time sufficient to effect infiltration of molten parent metal into said permeable mass and to permit reaction of said parent metal with said carbon source to form (1) a parent metal carbide comprising a carbide of a metal selected from the group consisting of titanium, hafnium and zirconium and (2) a metallic constituent comprising at least one metal reduced from said at least one reducible metal carbide; and

c) continuing said infiltration and reaction for a time sufficient to at least substantially complete said reaction of said carbon source with said parent metal and thereby produce said self-supporting ceramic composite.

5,254,510

HEAT RESISTIVE PHOSPHATE SINTERED BODIES AND A PROCESS FOR PRODUCING THE SAME

Keiji Matsubiro, Nagoya, and Tsuneaki Ohashi, Ohgaki, both of Japan, assignors to NGK Insulators, Ltd., Japan

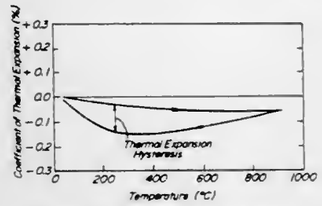
Filed Aug. 28, 1990, Ser. No. 573,816

Claims priority, application Japan, Sep. 7, 1989, 1-232080

Int. Cl.[5] C04B *35/48*

U.S. Cl. 501—104 **19 Claims**

1. A heat resistive phosphate sintered body consisting essentially of a solid solution of $R_yZr_4Si_xP_{6-x}O_{24}$, wherein x is greater than zero and less than or equal to two, $\frac{2}{3} \leqq y \leqq 2$, R is a combination of one or more cations having a charge of +2 or +3, and x and y satisfy an electrically neutral condition, said heat resistive phosphate sintered body having a thermal expansion hysteresis not more than 0.3%, a dimensional change after



a heat cycling not more than 1%, and a four point flexural strength not less than 100 kg/cm^2 after the heat cycling, wherein the heat cycling comprises 100 heating and cooling cycles between 100° C. and 1,200° C.

5,254,511

METHOD FOR PRODUCING COMPOSITE CERAMIC STRUCTURES USING DROSS

S. K. Nadkarni, Jonquiere, and Narasimha S. Raghavan, Kingston, both of Canada, assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 617,723, Nov. 26, 1990, Pat. No. 5,134,102, which is a continuation of Ser. No. 429,818, Oct. 31, 1989, Pat. No. 4,985,382, which is a division of Ser. No. 907,935, Sep. 16, 1986, Pat. No. 4,891,345. This application Jul. 27, 1992, Ser. No. 919,803

Int. Cl.[5] C04B *35/10, 35/36, 35/58*

U.S. Cl. 501—155 **15 Claims**

1. A method for producing a self-supporting ceramic composite body, said ceramic composite body comprising (1) a ceramic matrix obtained by oxidation of a parent metal comprising at least one metal selected from the group consisting of aluminum, tin, silicon, titanium, zirconium and hafnium to form a polycrystalline material comprising an oxidation reaction product of said parent metal with at least one oxidant and (2) at least one filler material comprising at least one dross material embedded by said ceramic matrix, the method comprising the steps of:

(a) comminuting at least one dross material, said dross material being obtained from a metal melting operation and said dross material being derived from dross forming metals selected from the group consisting of aluminum, titanium, zinc, magnesium, copper and alloys thereof;

(b) chemically treating said at least one comminuted dross material to remove at least a portion of at least one metal component from said at least one dross material;

(c) providing said at least one comminuted and chemically treated dross material as at least a portion of a permeable mass of at least one filler material;

(d) orienting a parent metal comprising at least one metal selected from the group consisting of aluminum, tin, silicon, titanium, zirconium and hafnium and said permeable mass of said at least one filler material comprising said dross material relative to each other so that formation of said oxidation reaction product will occur in a direction towards and into said mass of at least one filler material comprising said dross material;

(e) heating said parent metal to a temperature above its melting point but below the melting point of said oxidation reaction product to form a body of molten parent metal and reacting the molten parent metal with at least one oxidant at said temperature to form said oxidation reaction product, and at said temperature maintaining at least a portion of said oxidation reaction product in contact with and extending between said body of molten metal and said oxidant, to draw molten metal through the oxidation reaction product towards said at least one oxi-

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dant and towards and into the adjacent mass of at least one filler material comprising said dross material so that oxidation reaction product continues to form within the mass of at least one filler material comprising said dross material at an interface between said at least one oxidant and previously formed oxidation reaction product; and

(f) continuing said reacting for a time sufficient to infiltrate at least a portion of said mass of at least one filler material comprising said dross material with said oxidation reaction product.

5,254,512

METHOD FOR TREATING GAS AND REGENERATING CATALYST PORTION BY PORTION

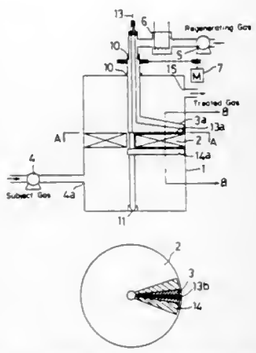
Kanji Ueda; Yoshinori Takata; Tadaichi Shibahara, and Yoshinori Yoshida, all of Hyogo, Japan, assignors to Sumitomo Seika Chemicals Co., Ltd., Hyogo, Japan

Filed Nov. 22, 1991, Ser. No. 796,354

Claims priority, application Japan, Nov. 28, 1990, 2-332340; Jul. 2, 1991, 3-188093

Int. Cl.[5] B01J *38/14, 38/04, 20/34;* **B01D** *53/36*

U.S. Cl. 502—52 **14 Claims**



1. A method for continuously treating a gas using an apparatus with a catalyst bed housed with an oxidation catalyst therein, the catalyst bed being located within a housing and the method comprising the steps of: passing a subject gas containing adsorbable substances selected from the group consisting of sulfides, amines, ketones, organic acids, aldehydes, phenols and alcohols through the catalyst bed to adsorb the adsorbable substances in the subject gas thereto; passing a regenerating gas through the catalyst bed to react and decompose said adsorbed substances and simultaneously regenerate the catalyst bed, wherein said regenerating gas is passed through a regenerating portion of the catalyst bed, said regenerating portion being formed by passing through the regenerating gas from a blowing hole for the regenerating gas; periodically moving the blowing hole above the catalyst bed to regenerated all of the catalyst bed, the blowing hole being periodically moved from portion to portion in one of a rotational movement and a sliding movement, the catalyst bed being fixed and nonmovable relative to the housing while the blowing hole is movable relative to both the catalyst bed and the housing; and reversing the flow of said regeneration gas and decomposition substances through the catalyst bed.

5,254,513

METHOD FOR THE REACTIVATION OF SPENT ALUMINA-SUPPORTED HYDROTREATING CATALYSTS

David E. Sherwood, Jr., Port Arthur, Tex., and Johnnie R. Hardee, Jr., Arkadelphia, Ark., assignors to Texaco, Inc., White Plains, N.Y.

Filed May 20, 1991, Ser. No. 702,480

Int. Cl.[5] B01J *20/34*

U.S. Cl. 502—55 **18 Claims**

1. A process for reactivating a spent alumina-supported hydrodesulfurization catalyst used in treating metal contaminated hydrocarbon feedstocks, consisting essentially of an alumina support and containing one or more metals selected from the group consisting of cobalt, molybdenum, tungsten, nickel, phosphorus and vanadium which comprises:

a) stripping process oil from the spent catalyst by washing with a hydrocarbon solvent and drying the washed catalyst thus obtaining free-flowing spent catalyst,

b) contacting the free-flowing spent alumina-supported catalyst in a steam treatment zone with steam at a temperature ranging from about 1000° to about 1250° F., and

c) recovering a reactivated alumina-supported catalyst from the said steam-treating zone.

5,254,514

ZEOLITE SSZ-37

Yumi Nakagawa, Kensington, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.

Filed Jun. 30, 1992, Ser. No. 906,919

Int. Cl.[5] B01J *29/28;* **C01B** *33/34*

U.S. Cl. 502—62 **11 Claims**

1. A zeolite having a mole ratio of an oxide selected from silicon oxide, germanium oxide and mixtures thereof to an oxide selected from aluminum oxide, boron oxide, gallium oxide, iron oxide and mixtures thereof between 25:1 and 400:1 and having the X-ray diffraction lines of Table 2.

8. A zeolite composition, comprising the zeolite of claim 1 or 2 and an inorganic matrix.

5,254,515

CATALYST FOR DECOMPOSING NITROGEN OXIDES AND A METHOD OF PURIFYING A WASTE GAS CONTAINING NITROGEN OXIDES

Tetsuya Imai, Hiroshima, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP90/01394, § 371 Date Jul. 19, 1991, § 102(e) Date Jul. 19, 1991, PCT Pub. No. WO91/06508, PCT Pub. Date May 16, 1991

PCT Filed Oct. 30, 1990, Ser. No. 721,659

Claims priority, application Japan, Nov. 24, 1989, 1-303194; Oct. 31, 1990, 1-281996

Int. Cl.[5] B01J *29/06*

U.S. Cl. 502—64 **3 Claims**

1. A catalyst for decomposing nitrogen oxides, comprising a crystalline silicate having an x-ray diffraction pattern as shown in table 1 and wherein said crystalline silicate has a chemical composition represented by the following formula in the terms of mole ratios of oxides under a dehydrated state,

$$(1.0\pm0.4)R_2O\cdot[a\cdot M_2O_3\cdot b\cdot Al_2O_3]\cdot ySiO_2$$

in which R is at least one of alkali metal ions and hydrogen ion, M is an ion of at least one element selected from the group consisting of Group VIII elements, titanium, chromium, niobium and antimony, $a+b=1$, $a>0$, $b>0$ and $y>12$, and wherein at least some of R ions are replaced by copper ions.

5,254,516

FLUIDIZABLE ZINC TITANATE MATERIALS WITH HIGH CHEMICAL REACTIVITY AND ATTRITION RESISTANCE

Raghubir P. Gupta; Santosh K. Gangwal, both of Durham, N.C., and Suresh C. Jain, Morgantown, W. Va., assignors to Research Triangle Institute, Research Triangle Park, N.C.

Filed Mar. 26, 1992, Ser. No. 858,215

Int. Cl.[5] B01J *21/16, 20/12, 20/06;* **B01D** *53/02*

U.S. Cl. 502—84 **19 Claims**

1. A durable, granulated zinc titanate sorbent material of spherical shape substantially free of sharp edges adapted for fluidized-bed applications, with a surface area of 1–15 m^2/g and a particle size range of 50–400 μm, prepared from ZnO and TiO_2 in ZnO/TiO_2 molar ratios of 0.5–2.0, an activator/-promotor selected from the group consisting of Groups VIB, VIIB and VIII metal compounds, and Groups IA and IIA alkali and alkaline earth metal compounds, in combination in 0–10% by weight, an inorganic binder in an amount of 2.0–15% by weight selected from the group consisting of finely-sized bentonite, kaolinite, forsterite, vermiculite, feldspar, portland cement, oil shale, calcium sulfate and mixtures thereof, and an organic binder in amounts of 0.1 to 5% by weight, selected from the group consisting of Methocel, polyvinyl acetate, cellulose, hydropropyl cellulose, starch, lignin sulfonate and molasses all granulated together, dried, then indurated in an oxidizing environment in a calcination step to form said material.

5,254,517

DIETHYLALUMINUM ALKOXIDE/ALUMINUM ALKYL CO-CATALYST FOR IMPROVED POLYMERIZATION YIELD

Edwar S. Shamsoum, Houston; David J. Rauscher, Webster, and Shabbir Malbari, Pasadena, all of Tex., assignors to Fina Technology, Inc., Dallas, Tex.

Filed Oct. 11, 1991, Ser. No. 776,498

Int. Cl.[5] C08F *4/642*

U.S. Cl. 502—110 **31 Claims**

17. A process for making a catalyst system comprising:

a) mixing an aluminum alkyl of the general formula AlR'_3 where R' is an alkyl of from 1–8 carbon atoms and R' may be the same or different with diethylaluminum alkoxide; and

b) adding the diethylaluminum alkoxide/aluminum alkyl mixture to a Ziegler-Natta type catalyst having a transition metal compound of the general formula MR_x where M is a Group IVB, VB or VIB metal, R is a halogen or a hydrocarbyloxy and x is the valence of the metal;

wherein the mole-to-mole ratio of diethylaluminum alkoxide to total aluminum ranges from about 0.5 to about 0.20;

wherein the mole-to-mole ratio of total aluminum to transition metal ranges from about 100 to about 500.

5,254,518

GROUP IVB OXIDE ADDITION TO NOBLE METAL ON RARE EARTH MODIFIED SILICA ALUMINA AS HYDROCARBON CONVERSION CATALYST

Stuart L. Soled, Pittstown; Gary B. McVicker, Califon; William E. Gates, Somerville, and Sabato Miseo, Pittstown, all of N.J., assignors to Exxon Research & Engineering Company, Florham Park, N.J.

Filed Jul. 22, 1992, Ser. No. 916,759

Int. Cl.[5] B01J *23/12, 23/16*

U.S. Cl. 502—241 **10 Claims**

1. A catalyst composition comprising metal(s) selected from the group consisting of Group VIII noble metal(s), mixtures of Group VIII noble metal(s) and rhenium, mixtures of Group VIII noble metal(s) and tin, and mixtures of Group VIII noble metal(s), tin and rhenium, a Group IVB oxide, and an amorphous silica-alumina support having at least about 50 wt % silica, having dispersed thereon a rare earth oxide.

2. A catalyst composition according to claim 1 wherein said Group IVB oxide is present in an amount of about 0.1 to about 15 weight percent.

3. A catalyst composition according to claim 1 wherein said Group IVB oxide is selected from the group consisting of silica, germania, tin oxide and mixtures thereof.

4. A catalyst composition according to claim 2 wherein said Group IVB oxide is preferably silica.

5,254,519

CATALYST COMPOSITION CONTAINING PLATINUM AND RHODIUM COMPONENTS

Chung-Zong Wan, Somerset; Samuel J. Tauster, Englishtown, and Harold N. Rabinowitz, Upper Montclair, all of N.J., assignors to Engelhard Corporation, Iselin, N.J.

Continuation-in-part of Ser. No. 483,485, Feb. 22, 1990, Pat. No. 5,057,483. This application Oct. 11, 1991, Ser. No. 775,666

Int. Cl.[5] B01J *21/04, 21/06, 23/10, 23/42, 23/46*

U.S. Cl. 502—252 **35 Claims**

1. A catalyst composition comprising a carrier on which is disposed a catalytic material, the catalytic material comprising:

a catalytic coat comprising a combination of a co-formed rare earth oxide-zirconia solid support material having a catalytically effective amount of a first rhodium catalytic component dispersed thereon, and a first activated alumina solid support material having a catalytically effective amount of a platinum catalytic component dispersed thereon.

5,254,520

CATALYST FOR THE SYNTHESIS OF METHANOL

Alkeos Sofianos, Pretoria, South Africa, assignor to CSIR, Pretoria, South Africa

Filed Sep. 17, 1991, Ser. No. 761,715

Claims priority, application South Africa, Sep. 18, 1990, 90/7437

Int. Cl.[5] B01J *21/04, 21/06, 23/06, 23/28, 23/34, 23/72*

U.S. Cl. 502—307 **18 Claims**

1. A methanol synthesis catalyst precursor which comprises an intimate admixture of precipitated compounds, which are thermally decomposable to oxides or mixed oxides, of copper, zinc, aluminium, zirconium, and molybdenum.

8. A methanol synthesis catalyst precursor which comprises an intimate admixture of precipitated compounds, which are thermally decomposable to oxides or mixed oxides, of copper, zinc, aluminium, zirconium, and manganese.

5,254,521

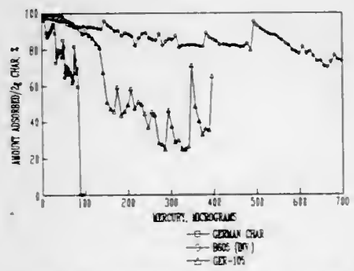
LEONARDITE CHAR ADSORBENTS

Curtis L. Knudson, Grand Forks, N. Dak., assignor to University of North Dakota Energy and Environment Research Center Foundation, Grand Forks, N. Dak.

Filed Aug. 3, 1992, Ser. No. 896,333

Int. Cl.[5] C01B *31/10, 31/08;* **B01D** *53/02*

U.S. Cl. 502—432 **7 Claims**



1. A process of preparing a low rank coal filter material suitable for use in lieu of activated carbon filter materials, and

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which also provides more efficient filtration of sulfur dioxide and nitric oxides in power plants than do high rank coal filter materials, said method consisting essentially of:

(a) size reducing Leonardite having an oxygen content of from about 30% to about 35% to a small but flue-gas filter effective size; and thereafter,

(b) heating said size reduced Leonardite to a temperature within the range of 550° C. to 850° C. in the presence of a flow of inert gas, for a time sufficient to activate said Leonardite as a filter material.

5,254,522

PRESSURE-SENSITIVE OR HEAT-SENSITIVE RECORDING MATERIAL

Rudolf Zink, Therwil; Peter Möckli, and Peter Rohringer, both of Schönenbuch, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 26, 1991, Ser. No. 675,213

Claims priority, application Switzerland, Mar. 29, 1990, 1035/90

The portion of the term of this patent subsequent to May 7, 2008, has been disclaimed.

Int. Cl.[5] B41M *5/136, 5/145*

U.S. Cl. 503—217 23 Claims

1. A pressure-sensitive or heat-sensitive recording material comprising a substrate and a colour reactant system comprising

(A) an aromatic or nitrogen-containing heterocyclic aldehyde,

(B) an organic condensation component containing an activated methylene group or a primary or secondary nitrogen atom and

(C) an electrophilic and colour-developing component.

5,254,523

THERMAL TRANSFER RECORDING MEDIUM AND METHOD FOR THERMAL TRANSFER RECORDING

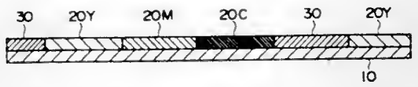
Hideo Fujimura, and Yoshinori Nakamura, both of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan

Filed Dec. 3, 1991, Ser. No. 800,329

Claims priority, application Japan, Dec. 5, 1990, 2-404643; Dec. 5, 1990, 2-404644; Dec. 5, 1990, 2-404645

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 4 Claims



1. A thermal transfer image-receiving sheet comprising:

a substrate sheet; and

a dye-receiving layer formed on at least one surface of the substrate sheet, and comprising a dye-receiving resin;

wherein a contact angle of a surface of the dye-receiving layer to tetradecane is 10° or greater.

5,254,524

TEXTURED SURFACE BETWEEN DONOR AND RECEIVER FOR LASER-INDUCED THERMAL DYE TRANSFER

Mark P. Guittard, and Hugh S. A. Gilmour, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 26, 1991, Ser. No. 800,903

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 12 Claims

7. In a process of forming a laser-induced thermal dye transfer image comprising:

a) contacting at least one dye-donor element comprising a support having thereon a dye layer comprising a dye dispersed in a polymeric binder having an infrared-absorbing material contained in said dye layer or in a separate layer associated therewith, with a dye-receiving element comprising a support having thereon a polymeric dye image-receiving layer;

b) imagewise-heating said dye-donor element by means of a laser; and

c) transferring a dye image to said dye-receiving element to form said laser-induced thermal dye transfer image,

the improvement wherein said polymeric layer of either said dye-donor element or said dye-receiving element in face-to-face relationship therewith has a textured surface which is formed only by said polymer, so that effective contact between said dye-receiving element and said dye-donor element is prevented during transfer of said laser-induced thermal dye transfer image, said textured surface having a surface roughness average, R_a, of at least 0.8 μm.

5,254,525

THERMAL TRANSFER IMAGE RECORDING MATERIAL AND METHOD OF ITS PRODUCTION

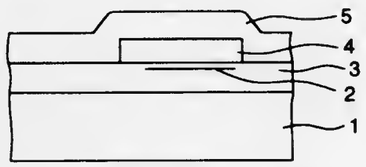
Atsushi Nakajima; Tomonori Kawamura; Shigehiro Kitamura, and Kunihiro Koshizuka, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Feb. 19, 1992, Ser. No. 838,501

Claims priority, application Japan, Feb. 21, 1991, 3-27592

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 6 Claims



1. A thermal transfer image recording material comprising:

a support having thereon, an image-receiving layer having a transferred image therein, a transparent protective layer and a UV set resin layer in this order.

5,254,526

METHOD TO PREVENT ALGAE GROWTH IN POOLS AND SPAS

Jock Hamilton, 3741 E. Telegraph Rd., Piru, Calif. 93040

Filed Aug. 24, 1989, Ser. No. 397,973

The portion of the term of this patent subsequent to Jul. 11, 2006, has been disclaimed.

Int. Cl.[5] A01N *59/08, 59/26*

U.S. Cl. 504—119 8 Claims

1. A method of inhibiting the growth of algae in a body of water comprising:

directly adding to said body of water a water soluble source of bromide ions in an amount sufficient to provide a concentration of bromine to approximately 0.1 ppm to 100 ppm, adding directly to said body of water a chlorine-containing oxidizer in amount sufficient to oxidize said source of bromide ions to bromide at the concentration specified and provide a concentration of chlorine containing oxidizer of approximately 0.2 ppm to 10 ppm sufficient to safely sterilize said body of water;

said chlorine-containing oxidizer selected from the group consisting of chlorine, an alkali metal hypoclorite or trichlorotriazine trione, or sodium or potassium dichlorotriazine trione;

adding an alkali metal, alkaline earth metal, or ammonium polyphosphate in proportions from approximately 5 to 15 weight parts of said polyphosphate per each 100 weight parts of said source of bromide ions; said polyphosphate being premixed with said source of bromide ions prior to addition to said body of water.

5,254,527

OPTICALLY ACTIVE HERBICIDAL ETHYL-2-(4-(6-CHLORO-BENZOXAZOL-2-YLOXY)-PHENOXY)-PROPIONATE

Hans J. Nestler, Königstein/Taunus; Gerhard Hörlein, Frankfurt am Main; Reinhard Handte, Hofheim am Taunus; Hermann Bieringer, Eppstein/Taunus; Friedhelm Schwerdtle, Frankfurt am Main; Peter Langelüddeke, Hofheim am Taunus, and Peter Frisch, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

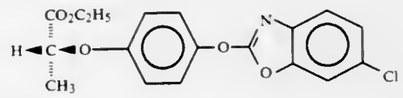
Continuation of Ser. No. 663,274, Feb. 28, 1991, abandoned, which is a continuation of Ser. No. 434,490, Nov. 9, 1989, abandoned, which is a continuation of Ser. No. 144,612, Jan. 11, 1988, abandoned, which is a continuation of Ser. No. 730,295, May 3, 1985, abandoned, which is a division of Ser. No. 971,427, Dec. 20, 1978, Pat. No. 4,531,969, This application Nov. 7, 1991, Ser. No. 790,128

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1977, 2758002

Int. Cl.[5] A01N *43/76;* C07D *263/58*

U.S. Cl. 504—270 12 Claims

1. A method for combating undesirable plant growth which comprises applying thereto a herbicidally effective amount of an optically active compound which is ethyl-2-(4-(6-chlorobenzoxazol-2-yloxy)-phenoxy)-propionate containing at least 80% of the D-form of formula



and containing less than 20 percent of the L-form.

5,254,528

BRAKE DEVICE INCLUDING MAGNET AND SUPERCONDUCTOR

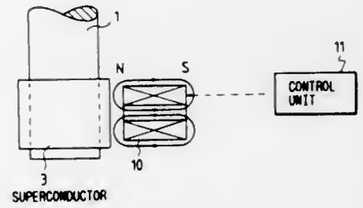
Ryoichi Takahata, Yamatotakada, Japan, assignor to Koyo Seiko Co., Ltd., Osaka, Japan

Filed Aug. 29, 1991, Ser. No. 751,776

Claims priority, application Japan, Sep. 3, 1990, 2-233554

Int. Cl.[5] F16F *15/03;* H01L *39/00*

U.S. Cl. 505—1 15 Claims



15. An apparatus, comprising:

a rotatable member;

a Type II superconductor

means for varying a magnetic field around the rotatable member in conjunction with its rotation; and

means for applying a resistance to the rotation of the rotatable member using only the varied magnetic field and the superconductor, the resistance being generated by a pinning effect between the superconductor and a source of the magnetic field.

5,254,529

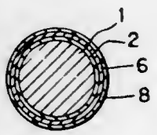
SUPERCONDUCTING FIBERS MADE WITH YTTRIUM AND YTTRIUM OXIDE INTERLAYERS AND BARIUM CUPRATE COVER LAYERS

Amarnath P. Divecha, Falls Church, Va., and James M. Kerr, Bethesda, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 31, 1991, Ser. No. 790,725

Int. Cl.[5] B32B *9/00*

U.S. Cl. 505—1 5 Claims



1. A high temperature superconductor comprising an alumina yarn with a yttrium coating having a superconductor coating thereon, said alumina yarn with a yttrium coating having a first layer thereon of yttrium oxide, and another layer thereon of barium cuprate which has been applied in the molten state to the first layer, and a superconductor layer of $YBa_2Cu_3O_{7-x}$ between said first layer and barium cuprate layer formed at the interface therebetween.

5,254,530

MOCVD OF A-AXIS OR B-AXIS ORIENTED SUPERCONDUCTING BI-SR-CA-CU-O FILMS

Tsunemi Sugimoto, Yamaguchi; Kazushi Sugawara, Tokyo; Mikio Nakagawa, and Yuh Shiohara, both of Tokyo, all of Japan, assignors to International Superconductivity Technology Center, Tokyo; Ube Industries, Ltd., Yamaguchi; Sharp Corporatoin, Osaka and Fujikura Ltd., Tokyo, all of Japan

Filed Jun. 18, 1992, Ser. No. 900,370

Claims priority, application Japan, Jun. 24, 1991, 3-151689

Int. Cl.[5] C23C *16/00*

U.S. Cl. 505—1 10 Claims

1. A method of fabricating a Bi-Sr-Ca-Cu-O superconductive film comprising,

forming a Bi-Sr-Ca-Cu-O superconductive film on an MgO (100) single crystal substrate by a chemical vapor deposition method at a substrate temperature of 780° C. or less and a film formation speed of 1.0 nm/min to 2.5 nm/min so that the Bi-Sr-Ca-Cu-O superconductive film consisting essentially of an a-axis or b-axis orientation with respect to a substrate surface is grown on the substrate, said chemical vapor deposition method including reaction gases of organometallic complexes of Bi, Sr, Ca and Cu, a carrier gas and an oxidizing gas, partial pressure of said oxidizing gas being from 1 to 10 torr.

5,254,531

OLEOPHILIC BASIC AMINE COMPOUNDS AS AN ADDITIVE FOR INVERT DRILLING MUDS

Heinz Mueller, Monheim; Claus-Peter Herold, Mettmann, and Stephan von Tapavicza, Erkrath, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 478,185, Feb. 9, 1990, abandoned. This application Jan. 21, 1992, Ser. No. 825,436

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1989, 3903785

Int. Cl.[5] C09K *7/02, 7/06*

U.S. Cl. 507—131 25 Claims

13. The process of regenerating a viscous water-in-oil invert drilling mud and improving the flowability of said mud, said mud containing an ester oil in a continuous oil phase together with a disperse aqueous phase, an emulsifier, weighting agent, and fluid loss additive, comprising adding to said mud a basic amine compound having an oleophilic character and a limited

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solubility in water, and forming an oil-soluble salt with said amine compound and a carboxylic acid formed by hydrolysis of said ester oil.

5,254,532

PREPARATION FOR TREATING AND PREVENTING THROMBOSES AND THROMBOEMBOLIC COMPLICATIONS, USE OF SUCH A PREPARATION AND A METHOD OF PRODUCING THE SAME

Hans P. Schwarz, Vienna; Ewald Molinari, Modling; Yendra Linnau, and Susanne Pfeiler, both of Vienna, all of Austria, assignors to Immuno Aktiengesellschaft fur chemisch-medizinische Produkte, Vienna, Australia

Continuation of Ser. No. 540,357, Jun. 19, 1990, Pat. No. 5,143,901. This application Feb. 21, 1992, Ser. No. 840,719

Claims priority, application Austria, Jun. 26, 1989, 1551/89

The portion of the term of this patent subsequent to Sep. 1, 2009, has been disclaimed.

Int. Cl.[5] **A61K** *37/00*

U.S. Cl. 514—2 **7 Claims**

1. A method of treating and preventing thromboembolic complications in patients afflicted with congenital or acquired Protein S deficiencies, the method comprising administering to the patient a therapeutic composition comprising Protein S at a concentration at least 50 times that present in native plasma and free from C4b-binding protein, wherein the protein S has been purified by either polyclonal affinity chromatography or monoclonal affinity chromatography.

5,254,533

ELFAMYCIN

Thierry Kiener, Neris les Bains; Arie Kies, Commentry, and Rodolphe Margraff, Viry-Chatillon, all of France, assignors to Rhone-Poulenc Rorer S.A., Antony, France

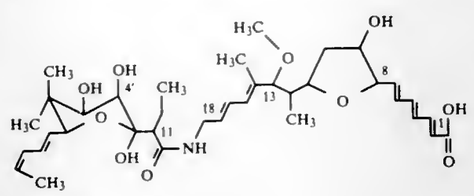
Filed Feb. 8, 1991, Ser. No. 652,109

Claims priority, application France, Feb. 8, 1990, 90 01442

Int. Cl.[5] **C07H** *17/02*

U.S. Cl. 514—8 **3 Claims**

2. A composition of matter having substantially no antibiotic effect comprising an animal feed and a compound selected from the group consisting of an acid represented by formula (II)



and a salt thereof.

5,254,534

ADJUVANT FOR CANCER IMMUNOTHERAPY

Masaaki Tachibana, and Hiroshi Tazaki, both of Tokyo, Japan, assignors to Green Cross Corporation, Osaka and Milk Industry Co., Tokyo, both of Japan

Filed Jan. 30, 1989, Ser. No. 303,219

Claims priority, application Japan, Jan. 29, 1988, 63-17423

Int. Cl.[5] **A61K** *37/02*

U.S. Cl. 514—12 **6 Claims**

1. In a process in which an in vivo tumor necrosis factor activity is produced in a patient by administration of a cancer immunoactivating agent to the patient, the improvement which comprises administering to said patient a colony stimulating factor in an amount sufficient to enhance said in vivo tumor necrosis factor activity, said colony stimulating factor having the following properties:

(a) molecular weight

it is a homodimer composed of two identical subunits and, when determined by sodium dodecyl sulfate-polyacrylamide gel electrophoresis (SDS-PAGE), its molecular weight is 70,000–90,000 daltons: the molecular weight of the subunit resulting from dissociation with a reducing agent and not retaining biological activity as determined by SDS-PAGE is 35,000–45,000 daltons.

(b) amino acid sequence of subunit:

the subunit protein constituting the homodimer has the amino acid sequence shown below, which contains 214–238 amino acid residues: the 122nd and 140th amino acid (asparagine) residues each has a typical N-glycoside binding site representable by asparagine (Asn)-X-threonine (Thr)/serine (Ser), where X is an optionally selected amino acid residue:

subunit amino acid sequence

1
Glu—Glu—Val—Ser—Glu—Tyr—Cys—Ser—His—Met
—Ile—Gly—Ser—Gly—His—Leu—Gln—Ser—Leu—Gln
—Arg—Leu—Ile—Asp—Ser—Gln—Met—Glu—Thr—Ser
—Cys—Gln—Ile—Thr—Phe—Glu—Phe—Val—Asp—Gln
50
—Glu—Gln—Leu—Lys—Asp—Pro—Val—Cys—Tyr—Leu
—Lys—Lys—Ala—Phe—Leu—Leu—Val—Gln—Asp—Ile
—Met—Glu—Asp—Thr—Met—Arg—Phe—Arg—Asp—Asn
—Thr—Pro—Asn—Ala—Ile—Ala—Ile—Val—Gln—Leu
—Gln—Glu—Leu—Ser—Leu—Arg—Leu—Lys—Ser—Cys
100
—Phe—Thr—Lys—Asp—Tyr—Glu—Glu—His—Asp—Lys
—Ala—Cys—Val—Arg—Thr—Phe—Tyr—Glu—Thr—Pro
—Leu—Gln—Leu—Leu—Glu—Lys—Val—Lys—Asn—Val
—Phe—Asn—Glu—Thr—Lys—Asn—Leu—Leu—Asp—Lys
—Asp—Trp—Asn—Ile—Phe—Ser—Lys—Asn—Cys—Asn
150
—Asn—Ser—Phe—Ala—Glu—Cys—Ser—Ser—Gln—Asp
—Val—Val—Thr—Lys—Pro—Asp—Cys—Asp—Cys—Leu
—Tyr—Pro—Lys—Ala—Ile—Pro—Ser—Ser—Asp—Pro
—Ala—Ser—Val—Ser—Pro—His—Gln—Pro—Leu—Ala
—Pro—Ser—Met—Ala—Pro—Val—Ala—Gly—Leu—Thr
200
—Trp—Glu—Asp—Ser—Glu—Gly—Thr—Glu—Gly—Ser
—Ser—Leu—Leu—Pro—Gly—Glu—Gln—Pro—Leu—His
214
—Thr—Val—Asp—Pro—Gly—Ser—Ala—Lys—Gln—Arg
—Pro—Pro—Arg—Ser—Thr—Cys—Gln—Ser—Phe—Glu
—Pro—Pro—Glu—Thr—Pro—Val—Val—Lys

(c) isoelectric point:

the isoelectric point (pI) as determined by the polyacrylamide gel isoelectric focusing and sucrose density gradient isoelectric focusing techniques is 3.1–3.7:

(d) sugar chain-constituting monosaccharides:

the following sugar chain-constituting monosaccharides have been identified by high-performance liquid chromatography following hydrolysis: mannose, galactose, N-acetylglucosamine, N-acetylgalactosamine and N-acetyl-neuraminic acid:

(e) circular dichroism spectrum:

the far ultraviolet CD spectrum recorded with a circular dichroism dispersion meter has minimum peaks at the wavelengths 208 and 222 nm, indicating that an α-helix structure is contained.

(f) thermal stability:

the biological activity is not lost even upon heating at α°+0.5° C. for 60 minutes:

(g) infrared absorption:

the infrared absorption spectrum shows the following characteristic absorptions (cm^{-1}):

3250, 2900, 1640, 1520, 1410, 1180, 1120, 1040.

(h) physiological activity:

it has colony stimulating activity against mammalian monocyte-macrophage series cells.

5,254,535

COMPOSITION AND TREATMENT WITH BIOLOGICALLY ACTIVE PEPTIDES AND ANTIBIOTIC

Michael Zasloff, Merion Station, and Barry Berkowitz, Ft. Washington, both of Pa., assignors to The Children's Hospital of Pennsylvania, Philadelphia, Pa.

Continuation-in-part of Ser. No. 339,292, Apr. 17, 1989, abandoned. This application Sep. 5, 1989, Ser. No. 402,642

Int. Cl.[5] **A61K** *37/02;* **C07K** *7/08, 7/10*

U.S. Cl. 514—12 **77 Claims**

1. A process of inhibiting growth of a target cell in a host, comprising:

administering to a host at least one biologically active amphiphilic peptide, said peptide being an ion channel-forming peptide; and

an antibiotic selected from the class consisting of a bacitracin, an aminoglycoside antibiotic, a penicillin, a monobactam, a hydrophobic, antibiotic, a 50-S ribosome inhibitor, and an, antibiotic having a large lipid-like lactone ring, said biologically active amphiphilic peptide and said antibiotic being administered in a combined amount effective to inhibit growth of a target cell in a host.

5,254,536

THERAPEUTIC UTILITY OF PLASMINOGEN ACTIVATOR INHIBITOR-1 TO CONTROL BLEEDING

Adrienne L. Racanelli, and Thomas M. Reilly, both of Wilmington, Del., assignors to The Du Pont Merck Pharmaceutical Company, Wilmington, Del.

Filed Jan. 10, 1992, Ser. No. 820,013

Int. Cl.[5] **A61K** *37/64*

U.S. Cl. 514—12 **4 Claims**

1. A method of controlling localized bleeding in a patient, said method comprising topically administering to said patient a pharmaceutical composition comprising active PAI-1 protein in an amount effective to control said localized bleeding when topically administered, and a vehicle suitable for said topical administration.

5,254,537

COMPOSITION AND TREATMENT WITH PEPTIDE COMBINATIONS

Michael Zasloff, Merion Station, Pa., assignor to The Children's Hospital of Pennsylvania, Philadelphia, Pa.

Continuation-in-part of Ser. No. 346,894, May 3, 1989, abandoned, which is a continuation-in-part of Ser. No. 302,985, Jan. 30, 1989, abandoned. This application May 10, 1991, Ser. No. 711,183

Int. Cl.[5] **A61K** *37/02*

U.S. Cl. 514—13 **26 Claims**

1. A composition comprising:

a) a magainin peptide, sequence ID. No. 1, 2, or 3, or analogue or derivative thereof, sequence ID No. 4, 5, or 6; and

(b) at least one member selected from the group consisting of (i) a PGLa peptide, sequence ID. No. 7 and (ii) an XPF peptide, sequence ID. No. 8.

5,254,538

METHOD OF TREATING PERIODONTAL DISEASE

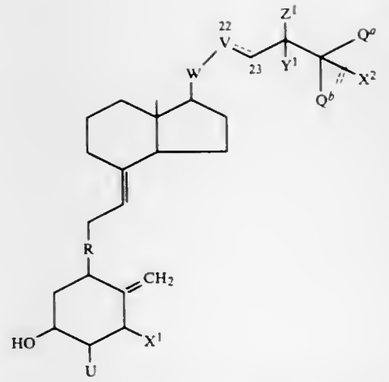
Michael F. Holick, Sudbury, and Xiao Tian, Boston, both of Mass., assignors to Trustees of Boston University, Boston, Mass.

Continuation of Ser. No. 416,781, Oct. 4, 1989, abandoned. This application Jan. 27, 1992, Ser. No. 826,230

Int. Cl.[5] **A61K** *31/70, 31/59, 7/16*

U.S. Cl. 514—35 **8 Claims**

1. A method of treating periodontal disease in an animal which comprises administering to said animal a pharmaceutical composition comprising a therapeutically effective amount of a vitamin D compound and a pharmaceutically acceptable carrier, wherein said vitamin D compound has the formula:



wherein the bond between carbons C-22 and C-23 is single or double bond;

Y^1 is hydrogen, F, CH_3, CH_2CH_3 or X^1;

U is hydrogen, —OH or —O—(C_2–C_4 alkyl)—OH;

Z^1 is F, H or X^1;

Q^a is CF_3 or CH_2X^1;

Q^b is CF_3 or CH_3;

R is a double bond or an epoxy group;

wherein X^1 and X^2 are selected form the group consisting of hydrogen and —OH;

W is CH—CH_3 or O; and

V is CH_2 or O; with the proviso that both W and V are not both O; and

"= = =" is either a single bond between Q^a and Q^b or a hydrogen atom on Q^1 and Q^b, with the proviso that wherein "= = =" is a single bond, then X^2 is H.

5,254,539

METHOD OF TREATING HIV WITH 2',3'-DIDEOXYINOSINE

Hiroaki Mitsuya, Rockville, and Samuel Broder, Bethesda, both of Md., assignors to U.S. Government, Dept. of Health and Human Services, c/o National Institutes of Health, Bethesda, Md.

Continuation of Ser. No. 420,664, Aug. 28, 1989, abandoned, which is a continuation of Ser. No. 84,055, Aug. 11, 1987, Pat. No. 4,861,759, which is a continuation-in-part of Ser. No. 937,925, Dec. 4, 1986, abandoned, which is a continuation-in-part of Ser. No. 769,016, Aug. 26, 1985, abandoned. This application Feb. 28, 1991, Ser. No. 663,288

The portion of the term of this patent subsequent to Aug. 29, 2006, has been disclaimed.

Int. Cl.[5] **A61K** *31/70;* **C07D** *473/16;* **C07H** *19/167*

U.S. Cl. 514—46 **7 Claims**

1. A method for treating an individual infected with human immunodeficiency virus, comprising administering a therapeutically effective amount of 2',3'-dideoxyinosine or a pharmaceutically acceptable salt thereof, to said individual.

5,254,540

SACCHARIDE COPOLYMERS HAVING ANTIBACTERIAL ACTIVITY

Franco Conti, Milan, Italy, assignor to Etablissement Texcontor, Liechtenstein

Filed Dec. 8, 1989, Ser. No. 447,846

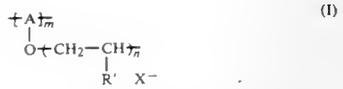
Claims priority, application Italy, Jul. 21, 1989, 21262 A/89

Int. Cl.[5] **A61K** *31/715;* **C07H** *17/00;* **C08B** *1/00, 31/00*

U.S. Cl. 514—57 **2 Claims**

1. A saccharide copolymer having antibacterial or antifungal activity of the following formula (I):

VOL 1155 ISS 3 OCT 19 1993 UMI



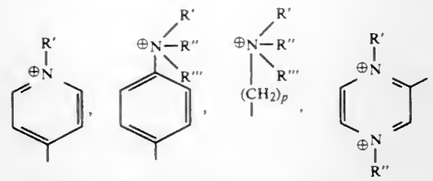
(I)

wherein:

A represents a monomeric unit selected from the group consisting of a starch and a cellulose, and wherein between 10 and 90% of said monomeric units contain two aldehyde groups, obtained by oxidative opening in the C_2 and C_3 positions of the glucoside unit;

m is an integer between 10 and 10,000;

R^+ is a quaternary ammonium radical selected from the group consisting of:



wherein R', R'', and R''' are the same or different and each is an alkyl or benzyl radical, and p is zero or an integer between 1 and 10;

X^- is an anion selected from the group consisting of F^-, Cl^-, Br^-, I^-, HSO_4^- and $CH_3OSO_3^-$; and

n is an integer between 100 and 250.

2. A pharmaceutical composition having antibacterial or antifungal activity comprising an antibacterial or antifungal effective amount of the saccharide copolymer as defined in claim 1 and a pharmaceutically acceptable carrier.

5,254,541

(QUINOLIN-2-YLMETHOXY)INDOLE/CYCLODEXTRIN COMPLEX

Elizabeth Kwong, Pointe Claire, Canada, assignor to Merck Frosst Canada, Inc., Quebec, Canada

Filed Nov. 15, 1991, Ser. No. 793,059

Int. Cl.[5] A61K *31/715, 31/47*

U.S. Cl. 514—58 **3 Claims**

1. A complex of 2-hydroxpropyl-B-cyclodextrin and 3-[N-(p-chlorobenzyl)-3-(t-butylthio)-5(quinolin-2-ylmethoxy)indol-2-yl]-2,2-dimethylpropanoic acid, sodium salt in the molar ratio 1-5:1.

5,254,542

ORGANIC SILICON COMPOUNDS AND COSMETIC COMPOSITIONS

Koji Sakuta, and Satoshi Kuwata, both of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo

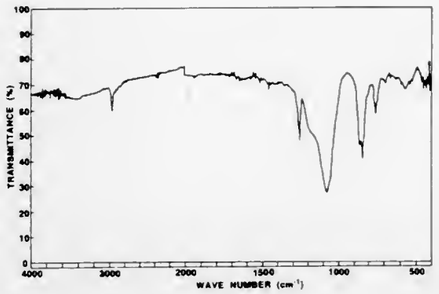
Filed Sep. 25, 1991, Ser. No. 765,305

Claims priority, application Japan, Sep. 25, 1990, 2-254971

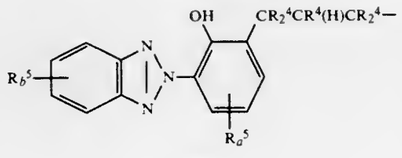
Int. Cl.[5] A01N *25/02*

U.S. Cl. 514—63 **20 Claims**

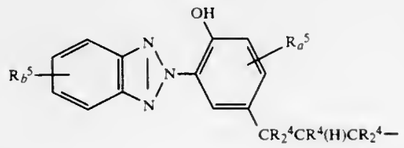
1. An organic silicon compound having a benzotriazole or benzophenone skeleton, comprising $R^1{}_3SiO_{\frac{1}{2}}$ and SiO_2 units as essential units and $R^2SiO_{3/2}$ and $R^3{}_2SiO$ units as optional units, the amounts of $R^2SiO_{3/2}$ and $R^3{}_2SiO$ units each ranging from 0 to 20 mol % of the entire compound, the siloxane units being present in a molar ratio: $(R^1{}_3SiO_{\frac{1}{2}}+R^2SiO_{3/2}+R^3{}_2SiO)/SiO_2$ of from 0.5 to 1.5, 1 to 33 mol % of the total quantity of the organic groups represented by R^1, R^2 and R^3 being selected from the groups of the following structural formulae (1) through (7), the remainder being a monovalent saturated or unsaturated organic group having 1 to 18 carbon atoms,



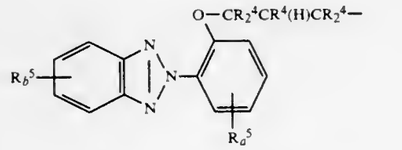
(1)



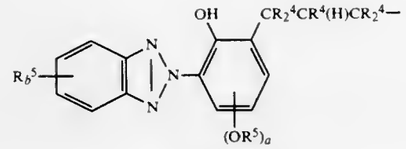
(2)



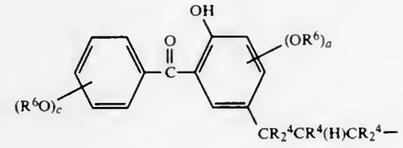
(3)



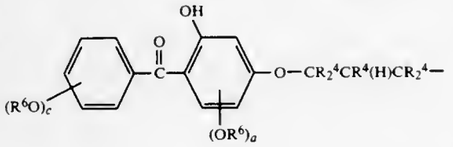
(4)



(5)

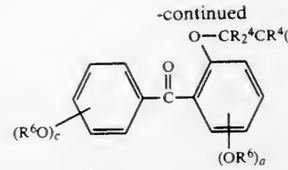


(6)



-continued

(7)



wherein

R^4 is a hydrogen atom or a monovalent saturated hydrocarbon group having 1 to 5 carbon atoms,

R^5 is selected from the group consisting of monovalent saturated or unsaturated organic groups having 1 to 18 carbon atoms, halogen atoms, alkoxy, carboxy, hydroxy, and amino groups,

R^6 is a hydrogen atom or a monovalent saturated or unsaturated hydrocarbon group having 1 to 10 carbon atoms,

letter a is an integer of from 0 to 3, b is an integer of from 0 to 4, and c is an integer of from 0 to 5.

5,254,543

SULPHONYLBENZYL-SUBSTITUTED PYRIDONES WHICH ARE ANGIOTENSION II RECEPTOR ANTAGONISTS

Rudolf Hanko, Duesseldorf; Walter Hübsch, Wuppertal; Jürgen Dressel, Wuppertal; Peter Fey, Wuppertal; Thomas Krämer, Wuppertal; Ulrich Müller, Wuppertal; Matthias Müller-Gliemann, Solingen-Ohligs; Martin Beuck, Erkrath; Stanislav Kazda; Claudia Hirth-Dietrich, both of Wuppertal; Andreas Knorr, Erkrath; Johannes-Peter Stasch, Wuppertal; Stefan Wohlfeil, Hilden, and Özkan Yalkinoglu, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 18, 1993, Ser. No. 19,000

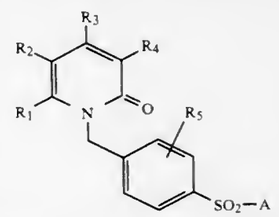
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1992, 4206045

Int. Cl.[5] A61K *31/44;* **C07D** *401/10*

U.S. Cl. 514—89 **7 Claims**

1. A sulphonylbenzyl-substituted pyridone of the formula

(I)



in which

R^1 represents straight-chain or branched alkyl having up to 8 carbon atoms, which is optionally substituted by cycloalkyl having 3 to 6 carbon atoms, hydroxyl or by straight-chain or branched alkoxy having up to 6 carbon atoms, or represents cycloalkyl having 3 to 6 carbon atoms,

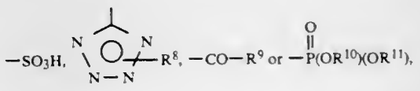
R^2, R^3 and R^4 are identical or different and represent hydrogen, cyano or straight-chain or branched perfluoroalkyl having up to 8 carbon atoms, or represent straight-chain or branched alkyl having up to 8 carbon atoms, which is optionally monosubstituted or disubstituted by identical or different substituents from the group consisting of hydroxyl, halogen, carboxyl, and straight-chain or branched alkoxy or alkoxycarbonyl each having up to 6 carbon atoms, or by phenyl, phenoxy or by a 5- to 7-membered, saturated or unsaturated heterocycle having up to three heteroatoms, where the cyclic systems can in turn be monosubstituted or disubstituted by identical or different substituents from the group consisting of trifluoromethyl, trifluoromethoxy, halogen, nitro, cyano, hydroxyl and hydroxymethyl or by straight-chain or branched alkyl or alkoxy each having up to 6 carbon atoms, or represent straight-chain or branched acyl or alkoxycarbonyl each having up to 8 carbon atoms, benzyloxycarbonyl or carboxyl, or represent phenyl which is optionally monosubstituted to trisubstituted by identical or different substitutents from the group consisting of halogen, nitro, cyano, hydroxyl, hydroxymethyl, trifluoromethyl and trifluoromethoxy or by straight-chain or branched alkyl or alkoxy each having up to 6 carbon atoms, or represent a group of the formula —CO—NR^6R^7, in which

R^6 and R^7 are identical or different and denote hydrogen, straight-chain or branched alkyl having up to 8 carbon atoms or aryl or aralkyl each having 6 to 10 carbon atoms,

R^5 represents hydrogen, halogen or straight-chain or branched alkyl having up to 8 carbon atoms, or represents straight-chain or branched perfluoroalkyl having up to 6 carbon atoms, or represents a group of the formula —OX, wherein

X denotes hydrogen, benzyl, a hydroxyl protective group or denotes straight-chain or branched alkyl having up to 8 carbon atoms,

A represents a 3 to 8-membered saturated nitrogen containing heterocycle bonded via a nitrogen atom and having up to 2 further heteroatoms from the series consisting of S, N and O and which is optionally monosubstituted or disubstituted by identical or different substituents from the group consisting of perfluoroalkyl having up to 5 carbon atoms and a radical of the formula



in which

R^8 denotes hydrogen, straight-chain or branched alkyl having up to 6 carbon atoms or triphenylmethyl

R^9 denotes hydroxyl, straight-chain or branched alkoxy having up to 8 carbon atoms, phenoxy, benzyloxy or a group of the formula —$NR^{12}R^{13}$, in which

R^{12} and R^{13} are identical or different and denote hydrogen or straight-chain or branched alkyl having up to 6 carbon atoms or phenyl,

R^{10} and R^{11} are identical or different and denote hydrogen, straight-chain or branched alkyl having up to 8 carbon atoms or phenyl,

and their salts.

5,254,544

HYDROXYPHOSPHINYL PHOSPHONATE SQUALENE SYNTHETASE INHIBITORS AND METHOD

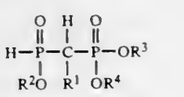
Scott A. Biller, Ewing, and John K. Dickson, Jr., Mount Holly, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Sep. 25, 1992, Ser. No. 950,555

Int. Cl.[5] A61K *31/66;* **C07F** *9/48*

U.S. Cl. 514—107 **18 Claims**

1. A compound having the structure



wherein

R^2, R^3 and R^4, are independently H, alkyl, aryl, or a metal ion; and

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R^1 is a lipophilic group containing at least 6 carbons, and including pharmaceutically acceptable salts thereof.

5,254,545

INJECTABLE PREPARATIONS CONTAINING CEPHALOSPORIN MEDICAMENT

Yasuo Ishibashi, Gifu; Isamu Hasegawa, Aichi; Masanori Kayano, Saitama; Ryoichi Machida, Chiba; Masahiro Kawahara, Ibaraki, and Sumio Watanabe, Aichi, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Sep. 28, 1990, Ser. No. 589,922

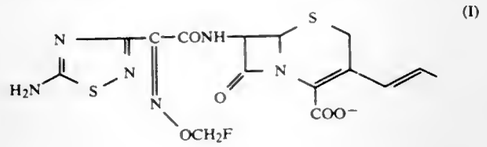
Claims priority, application Japan, Sep. 30, 1989, 1-253782

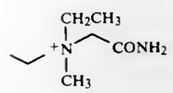
Int. Cl.[5] A61K *31/545*

U.S. Cl. 514—202 **1 Claim**

1. A preparation containing 7β-{2-(5-amino-1,2,4-thiadiazol-3-yl)-(Z)-2-fluoromethoxyiminoacetamido}-3-{(E)-3-(carbamoylmethylethylmethylammonio)-1-propen-1-yl}-3-cephem-4-carboxylate represented by the following formula:

(I)





or a pharmaceutically acceptable salt thereof, and 0.1 to 1.3 parts by weight of lactose, 0.01 to 0.065 parts by weight of citric acid or a sodium salt thereof and 0.1 to 0.65 parts by weight of arginine or a hydrochloride thereof or sodium chloride, said values being per part by weight of the cephem derivative or its pharmaceutically acceptable salt.

5,254,546

FUSED ARYL SUBSTITUTED IMIDAZOLE ANGIOTENSIN II RECEPTOR INHIBITORS

Robert J. Ardecky, Landenburg, Pa.; David J. Carini, Wilmington, Del.; John Jonas V. Duncia, Newark, Del., and Pancras C. Wong, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

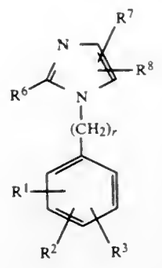
Continuation of Ser. No. 545,302, Jun. 27, 1990, abandoned, which is a continuation-in-part of Ser. No. 375,069, Jun. 30, 1989, abandoned. This application Jun. 18, 1992, Ser. No. 900,540

Int. Cl.[5] C07D *403/10, 405/14, 409/14;* **A61K** *31/415*

U.S. Cl. 514—225.8 **9 Claims**

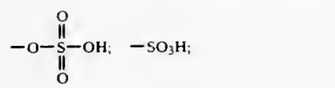
1. An antihypertensive compound of the formula:

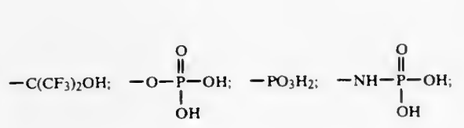
(I)

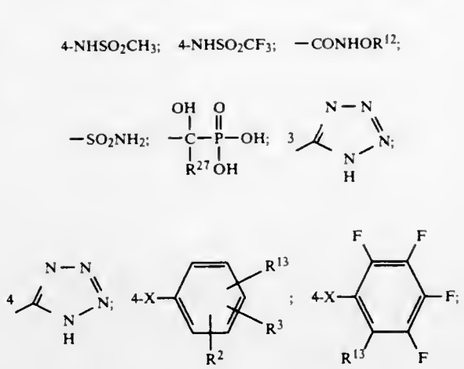


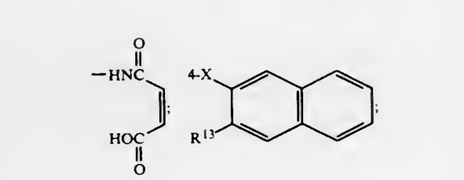
wherein

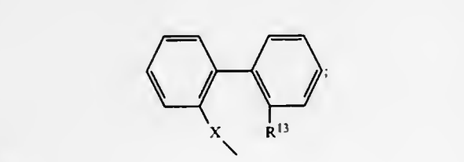
R^1 is —4—CO_2H; —4-CO_2R^9;

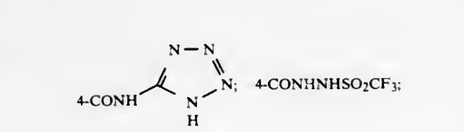


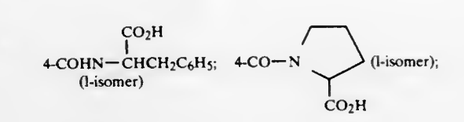


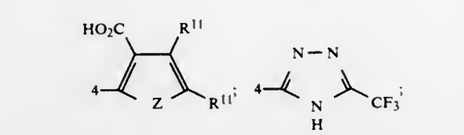


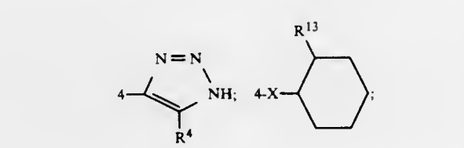




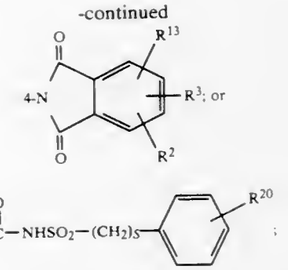




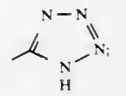




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R^2 is H; Cl; Br; I; F; NO_2; CN; alkyl of 1 to 4 carbon atoms; acyloxy of 1 to 4 carbon atoms; alkoxy of 1 to 4 carbon atoms; CO_2H; CO_2R^9; $NHSO_2CH_3$; $NHSO_2CF_3$; CONHOR[12]; SO_2NH_2;



;

aryl; or furyl;

R^3 is H, Cl, Br, I or F; alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms;

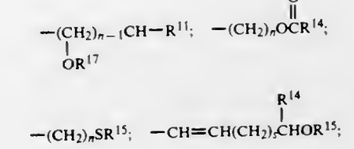
R^4 is CN, NO_2 or CO_2R^{11};

R^5 is H, alkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, alkenyl or alkynyl of 2 to 4 carbon atoms;

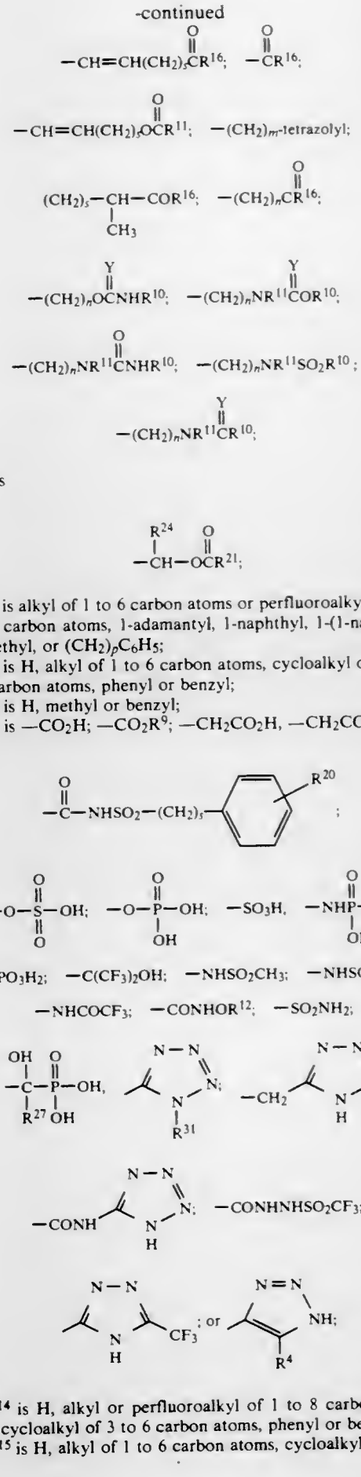
R^6 is alkyl of 2 to 10 carbon atoms, alkenyl or alkynyl of 3 to 10 carbon atoms or the same groups substituted with F or CO_2R^{14}; cycloalkyl of 3 to 8 carbon atoms; cycloalkylalkyl of 4 to 10 carbon atoms; cycloalkylalkenyl or cycloalkylalkynyl of 5 to 10 carbon atoms; $(CH_2)_sZ(CH_2)_mR^5$ optionally substituted with F or CO_2R^{14}; benzyl or benzyl substituted on the phenyl ring with 1 or 2 halogens, alkoxy of 1 to 4 carbon atoms, alkyl of 1 to 4 carbon atoms or nitro;

R^7 is 1- or 2-naphthyl; 5- or 6-naphthoquinonyl; 3-, 4- or 5-acenaphthyl; 3-, 4- or 5-acenaphthenyl; 1-, 2- or 9-anthracenyl; 1- or 2-anthraquinonyl; 1-, 2-, 3-, 4-, or 9-phenanthrenyl; 2-, 3-, 4-, 5-, 6-, 7- or 8-quinolinyl; 1-, 3-, 4-, 5-, 6-, 7- or 8-isoquinolinyl; 2-, 3-, 4-, 5-, 6- or 7-indolyl which can be substituted on ring nitrogen with lower alkyl of 1 to 5 carbon atoms or benzyl; 4-, 5-, 6- or 7-indenyl; 2-, 3-, 4-, 5-, 6- or 7-benzofuryl; 2-, 3- , 4-, 5-, 6- or 7-benzothienyl; 1-, 2-, 3- or 4-dibenzofuryl; 1-, 2-, 3- or 4-dibenzothienyl; 1-, 2-, 3- or 4-fluorenyl; any of the foregoing polycyclic aryl groups substituted with 1 or 2 substituents selected from halogen, alkoxy of 1–5 carbon atoms, alkyl of 1–5 carbon atoms, $—NO_2$, CN, $—CF_3$, $—COR^{16}$, $—CH_2OR^{17}$, $—NHCOR^{17}$, $—CONR^{18}R^{19}$, $S(O)_rR^{17}$, and $SO_2NR^{18}R^{19}$; the anhydride of 4,5-dicarboxyl-1- or 2-naphthyl; or substituted alkyl, alkenyl, or alkynyl of 1 to 10 carbon atoms substituted with a substituted or unsubstituted polycyclic aryl group as defined above; —S(O)$_r$-heteroaryl, $—NR^{18}$-heteroaryl, and —N—H—SO_2-heteroaryl,

R^8 is



-continued



R^9 is

R^{10} is alkyl of 1 to 6 carbon atoms or perfluoroalkyl of 1 to 6 carbon atoms, 1-adamantyl, 1-naphthyl, 1-(1-naphthyl-)ethyl, or $(CH_2)_pC_6H_5$;

R^{11} is H, alkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, phenyl or benzyl;

R^{12} is H, methyl or benzyl;

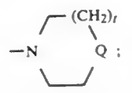
R^{13} is $—CO_2H$; $—CO_2R^9$; $—CH_2CO_2H$, $—CH_2CO_2R^9$;

R^{14} is H, alkyl or perfluoroalkyl of 1 to 8 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, phenyl or benzyl;

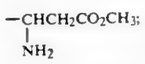
R^{15} is H, alkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 6

VOL 1155 ISS 3 OCT 19 1993 UMI

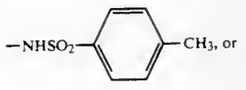
carbon atoms, phenyl, benzyl, acyl of 1 to 4 carbon atoms, phenacyl;
R^{16} is H, alkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, $(CH_2)_pC_6H_5$, OR^{17}, or $NR^{18}R^{19}$;
R^{17} is H, alkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, phenyl or benzyl;
R^{18} and R^{19} independently are H, alkyl of 1 to 4 carbon atoms, phenyl, benzyl, (X-methylbenzyl, or taken together with the nitrogen form a ring of the formula

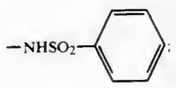


Q is NR^{20}, O or CH_2;
R^{20} is H, alkyl of 1–4 carbon atoms, or phenyl;
R^{21} is alkyl of 1 to 6 carbon atoms, $-NR^{22}R^{23}$, or



R^{22} and R^{23} independently are H, alkyl of 1 to 6 carbon atoms, benzyl, or are taken together as $(CH_2)_u$ where u is 3–6;
R^{24} is H, CH_3 or $-C_6H_5$;
R^{25} is $NR^{27}R^{28}$, OR^{28}, $NHCONH_2$, $NHCSNH_2$,



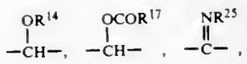


R^{26} is hydrogen, alkyl with from 1 to 6 carbon atoms, benzyl, or allyl;
R^{27} and R^{28} are independently hydrogen, alkyl with from 1 to 5 carbon atoms, or phenyl;
R^{29} and R^{30} are independently alkyl of 1–4 carbon atoms or taken together are $-(CH_2)_q-$;
R^{31} is H, alkyl of 1 to 4 carbon atoms, $-CH_2CH=CH_2$ or $-CH_2C_6H_4R^{32}$;
R^{32} is H, NO_2, NH_2, OH or OCH_3;
X is a carbon-carbon single bond, —CO—, $-CH_2-$, —O—, —S—, —NH—,

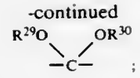


$-OCH_2-$, $-CH_2O-$, $-SCH_2-$, $-CH_2S-$, $-NHC(R^{27})(R^{28})$, $-NR^{23}SO_2-$, $-SO_2NR^{23}-$, $-C(R^{27})(R^{28})NH-$, —CH=CH—, —CF=CF—, —CH=CF—, —CF=CH—, $-CH_2CH_2-$, $-CF_2CF_2-$,

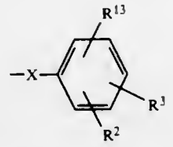




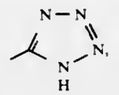
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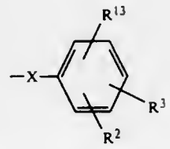
Y is O or S;
Z is O, NR^{11}, or S;
m is 1 to 5;
n is 1 to 10;
p is 0to 3;
q is 2to 3;
r is 0to 2;
s is 0to 5;
t is 0or 1;
or a pharmaceutically acceptable salt thereof; provided that:
(1) the R^1 group is not in the ortho position;
(2) when R^1 is



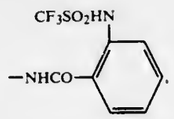
X is a single bond, and R^{13} is CO_2H, or



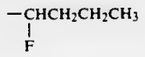
then R^{13} must be in the ortho or meta position; or when R^1 and X are as above and R^{13} is $NHSO_2CF_3$ or $NHSO_2CH_3$, R^{13} must be ortho;
(3) when R^1 is



and X is other than a single bond, then R^{13} must be ortho except when $X=NR^{23}CO$ and R^{13} is $NHSO_2CF_3$ or $NHSO_2CH_3$, then R^{13} must be ortho or meta;
(4) when R^1 is 4-CO_2H or a salt thereof, R^6 cannot be S-alkyl;
(5) when R^1 is 4-CO_2H or a salt thereof, the substituent on the 4-position of the imidazole cannot be CH_2OH, CH_2O-$COCH_3$, or CH_2CO_2H;
(6) when R^1 is



R^6 is not methoxybenzyl;
(7) the R^6 is not



or CH_2OH.

5,254,547

THIOACID AMIDE DERIVATIVES AND FODDER COMPOSITIONS CONTAINING THE SAME

Zoltán Budai; Tibor Mezei; Klára Reiter née Esses; Lajos Fekete; Károly Magyar; Attila Nagy, and László Puskás, all of Budapest, Hungary, assignors to EGIS Gyogyszergyar, Budapest, Hungary

Filed Dec. 4, 1991, Ser. No. 802,236
Claims priority, application Hungary, Dec. 22, 1990, 8447/90
Int. Cl.[5] A61K *31/535*
U.S. Cl. 514—237.5 **5 Claims**

1. A composition for use in animal feed to increase the weight gain of the animal comprising, as active ingredient, 4-(4'-hexyloxy-3-methoxyphenyl)-thioxomethylmorpholine in admixture with suitable inert solid or liquid carriers or diluents.

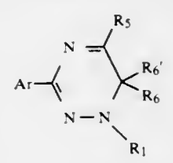
5,254,548

COMPOUNDS HAVING AN ARYLTRIAZINE STRUCTURE

Camille-Georges Wermuth, Strasbourg; Jean-Jacques Bourguignon, Hipsheim; Isabelle Morin, Le Raincy; Pierre Renard, Versailles; Michelle Devissaguet, Neuilly sur Seine; Jean-Francois R. de La Faverie, Le Chesnay, and Gérard Adam, Le Mesnil le Roi, all of France, assignors to Adir et Compagnie, Courbevoie, France

Filed Jan. 14, 1992, Ser. No. 820,512
Claims priority, application France, Jan. 15, 1991, 91 00338
Int. Cl.[5] A61K *31/53;* **C07D** *253/065*
U.S. Cl. 514—242 **9 Claims**

1. A compound selected from those of formula I:

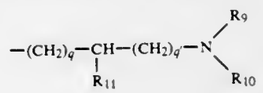


(I)

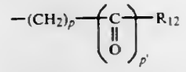
in which:
Ar represents optionally substituted aryl, pyridyl, thienyl, furyl, or pyrimidyl,
R_5 represents hydrogen, alkyl, cycloalkyl, or cycloalkylalkyl, or aryl, or aralkyl, each of which is optionally substituted in the aromatic ring, and
R_1 and R_6 together form a bond, and
R_6' represents a radical of the formula:



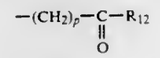
in which
R_7 represents hydrogen or alkyl,
and R_8 represents a group of the formula:



in which
q represents an integer of inclusive 1 to 3,
q' represents 0 or 1,
R_{11} represents, hydrogen or alkyl, R_9 and R_{10} together with the nitrogen atom carrying them form a mono- or bicyclic heterocycle having inclusive, which from 5 to 10 atoms is saturated or contains a double bond and optionally includes in its skeleton an additional hetero atom selected from nitrogen, oxygen, and sulphur, remaining ring atoms being carbon, it being understood that, when R_9 and R_{10} together form a heterocycle containing a second nitrogen, that nitrogen may itself be substituted by optionally substituted alkyl, aryl, or by a chain of the formula



in which p represents 1, 2, or 3, p' represents 0 or 1, and R12 represents optionally substituted aryl,
or R_9 and R_{11} together with the nitrogen and carbon atoms carrying them form a heterocycle having inclusive which 5 to 7 atoms optionally includes in its skeleton an additional hetero atom selected from nitrogen, oxygen, and sulphur, remaining ring atoms being carbon,
or R_7 and R_8 together with the nitrogen atom carrying them form a piperazine substituted at the other nitrogen by alkyl, by optionally substituted phenyl, or by a chain of the formula



in which p and R_{12} are as defined above,
an optical isomer, thereof and an addition salt thereof with a pharmaceutically-acceptable acid,
it being understood that:
the term "substituted" indicates that the groups it governs may be substituted by one or more identical or different radicals selected from halogen, hydroxy, nitro, amino, trifluoromethyl, alkyl, and alkoxy, and/or may carry at two adjacent carbon atoms an $-O-(CH_2)_r-O-$ group in which r represents an integer of inclusive 1 to 3,
unless indicated otherwise, the terms "alkyl" and "alkoxy" mean such a group having inclusive, 1 to 6 carbon atoms in a straight or branched chain, and the term "cycloalkyl" means such a saturated cyclic group having 3 to 7 carbon atoms inclusive,
the term "aryl" means phenyl or naphthyl, and the term "heteroaryl" means a mono- or bi-cyclic aromatic group having inclusive, which 5 to 10 atoms includes in its carbon skeleton inclusive 1 to 3 hetero atoms selected from nitrogen, oxygen, and sulphur atoms being carbon.

5,254,549

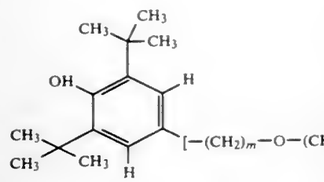
BHT ETHER COMPOUNDS AND THEIR USE AS HYPOLIPIDEMIC AND ANTIATHEROSCLEROTIC DRUGS

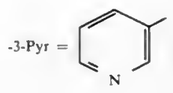
Markus R. Gold, Nauheim; Panayiotis Jarglis; Heinz Junglas, both of Frankfurt; Juergen H. Leimner, Niedernhausen; Dezsoe Peteri, Breunigweiler; Guenter P. Quack, Frankfurt; Josef Strohmeier, Alzenau/Hörstein, and Petra M. Wülfroth, Liederbach, all of Fed. Rep. of Germany, assignors to Merz & Co. GmbH & Co., Frankfurt, Fed. Rep. of Germany

Filed Dec. 19, 1991, Ser. No. 810,214
Int. Cl.[5] A01N *43/58;* **C07D** *211/18*
U.S. Cl. 514—247 **12 Claims**

1. A compound selected from BHT-omega-pyridyl ether compounds of the formula:

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wherein

m=1,3

for m=1, Σ=6–9 (n thus being 4–7)

for m=3, Σ=5–11 (n thus being 1–7)

Sum (Σ)=[m+n+1 (for oxygen)]

wherein the bond between the two carbon atoms of the $(CH_2)_n$ moiety most closely adjacent the pyridine ring is a single, double, or triple bond, a-n-d pharmaceutically-acceptable acid addition salts thereof.

5,254,550

PROLINAL DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS THEREOF

Masaaki Toda, Osaka; Shuichi Ohuchida, Kyoto, and Hiroyuki Ohno, Shiga, all of Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

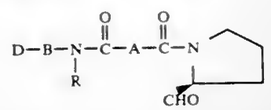
Division of Ser. No. 533,648, Jun. 5, 1990, Pat. No. 5,100,904, which is a division of Ser. No. 123,410, Nov. 20, 1987, Pat. No. 4,956,380. This application Dec. 6, 1991, Ser. No. 803,421

Claims priority, application Japan, Nov. 20, 1986, 61-275375; Sep. 14, 1987, 62-228452

Int. Cl.[5] A61K *31/495;* **C07D** *401/12*

U.S. Cl. 514—250 **4 Claims**

1. A prolinal derivative of the formula:



wherein A represents an alkylene group of from 1 to 8 carbon atom(s) or an alkenylene group of from 2 to 8 carbon atoms or a saturated hydrocarbon ring of from 3 to 7 carbon atoms, R represents a hydrogen atom, a phenyl group, a benzyl group, an alkyl group of from 1 to 8 carbon atom(s) or a cycloalkyl group of from 3 to 7 carbon atoms, B represents a single bond or an alkylene group of from 1 to 8 carbon atom(s) unsubstituted or substituted by a phenyl group or a benzyl group, D represents a heterocyclic ring selected from the group consisting of imidazole, pyrimidine, pyrazine, quinazoline and phenazine rings, which ring represented by D may be partially or fully saturated and wherein said heterocyclic ring represented by D is unsubstituted or substituted by from one to three of a halogen atom, alkyl or alkoxy group of from 1 to 4 carbon atom(s), nitro group or trifluoromethyl group.

5,254,551

FLOUR FORTIFICATION FORMULATION COMPRISING GRANULATED RIBOFLAVIN

Paula S. Kirk, 5751 Golfview, Dearborn Heights, Mich. 48127, and Douglass N. Schmidt, 27780 Johnson, Grosse Isle, Mich. 48138

Filed Apr. 30, 1990, Ser. No. 516,605

Int. Cl.[5] A61K *31/525*

U.S. Cl. 514—251 **13 Claims**

1. A flour fortification formulation which comprises riboflavin in an amount of from about 0.5 weight percent to about 10 weight percent, riboflavin assay basis, the riboflavin being in the form of a riboflavin granulate, the riboflavin granulate having a flowability index of from about 75 to about 750, with riboflavin granules having an average granule size of from about 50 microns to about 300 microns, the riboflavin granules comprising water in an amount of from about 0.1 weight percent to about 4 weight percent, total granulate weight basis, and wherein at least 90 weight percent of the riboflavin is present in the form of granules, the granules being comprised of riboflavin in an amount of from at least about 75 weight percent to about 99.5 weight percent.

5,254,552

ARYL-AND HETEROARYL PIPERAZINYL CARBOXAMIDES HAVING CENTRAL NERVOUS SYSTEM ACTIVITY

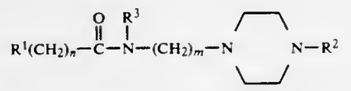
Magid A. Abou-Gharbia, Glen Mills; John P. Yardley, Gulph Mills, and Wayne E. Childers, Jr., Yardley, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation of Ser. No. 533,974, Jun. 6, 1990, abandoned, which is a division of Ser. No. 493,179, Mar. 14, 1990, Pat. No. 5,010,078, which is a continuation-in-part of Ser. No. 335,075, Apr. 7, 1989, abandoned, which is a continuation-in-part of Ser. No. 297,460, Jan. 13, 1989, abandoned, which is a continuation-in-part of Ser. No. 197,890, May 24, 1988, abandoned. This application Mar. 16, 1992, Ser. No. 852,119

Int. Cl.[5] A61K *31/495;* **C07D** *295/145, 401/04, 401/14*

U.S. Cl. 514—252 **3 Claims**

1. A compound having the formula



(I)

wherein R^1 is 1-adamantyl, 3-methyl-1-adamantyl, 3-noradamantyl, unsubstituted or substituted-2indolyl, 3-indolyl wherein the substituents are selected from lower alkyl, lower alkoxy and halo; R^2 is unsubstituted or substituted phenyl, benzyl or pyridinyl, wherein the substituents are selected from lower alkyl, lower alkoxy, trifluoromethyl and halo; R^3 is H or lower alkyl of 1 to 3 carbon atoms; n is the integer 0 or 1; and m is the integer from 2 to 5; or a pharmaceutically acceptable salt thereof.

5,254,553

4-[4-[4-(4-HYDROXYPHENYL)-1-PIPERAZINYL]PHENYL]-5-METHYL-3H-1,2,4-TRIAZOL-3-ONE DERIVATIVES

Jan Heeres, Vosselaar; Joseph H. Mostmans, Antwerpen, and Johan R. M. Beetens, Zandhoven, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

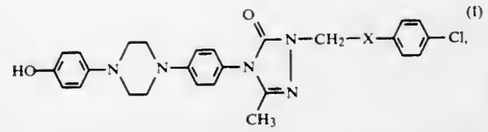
Filed Aug. 24, 1992, Ser. No. 933,848

Claims priority, application European Pat. Off., Sep. 13, 1991, 91202351.2

Int. Cl.[5] A61K *31/495;* **C07D** *403/10*

U.S. Cl. 514—252 **10 Claims**

1. A compound having the formula



(I)

a pharmaceutically acceptable acid addition salt thereof, or an enantiomeric form thereof, wherein X represents C=O or CHOH.

5,254,554

3-HYDROXY-SUBSTITUTED-1-PHENYL-1,4-DIHYDRO-4-OXOPYRIDAZINES AND DERIVATIVES, AND USE

Jean-Marie Autin, Labruguiere; Dennis Bigg, and Jean-Francois Patoiseau, both of Castres, all of France, assignors to Pierre Fabre Medicament, Boulogne, France

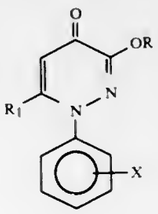
Filed May 20, 1992, Ser. No. 886,341

Claims priority, application France, May 22, 1991, 91 06148

Int. Cl.[5] C07D *237/22*

U.S. Cl. 514—253 **6 Claims**

1. A compound selected from a 3-substituted-1-phenyl-1,4-dihydro-4-oxopyridazine of Formula I:



I

in which:

"X" represents one or more substituents selected from C_{1-4} alkyloxy, halogen, and trifluoromethyl;

"R_1" represents hydrogen or C_{1-3} lower alkyl;

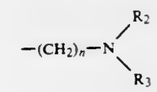
"R" represents

hydrogen;

C_{1-4} lower-alkyl or C_{2-4} alkenyl;

C_{1-4} lower-alkyl; or

aminoalkyl of Formula II:



II

in which "n" is 2 to 4, inclusive, and

"R_2" and "R_3", identical or different, represent hydrogen or C_{1-4} lower-alkyl;

phenyl C_{1-4} alkyl, optionally substituted in the aromatic ring by one or more substituents selected from C_{1-3} alkyl, C_{1-3} alkyloxy, halogen, and trifluoromethyl; and

arylmethyl, wherein aryl is selected from 2-pyridyl, 3-pyridyl, 4-pyridyl, and 2-quinolinyl, and a pharmaceutically-acceptable salt thereof when R contains a salt-forming group.

5,254,555

AMINO PYRIMIDIN-7-YL SUBSTITUTED BENZOPYRANS FOR TREATMENT OF HYPERTENSION

Geoffrey Stemp; John M. Evans, both of Harlow, and Gordon Burrell, Swarthmoor, Nr. Ulverston, all of England, assignors to Beecham Group p.l.c., England

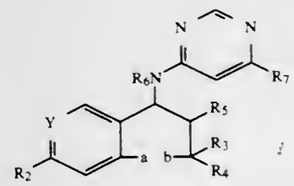
Continuation of Ser. No. 604,873, Oct. 29, 1990, abandoned. This application Mar. 19, 1992, Ser. No. 855,446

Claims priority, application United Kingdom, Oct. 30, 1989, 8924376

Int. Cl.[5] A61K *31/505;* **C07D** *239/02, 415/00, 237/00*

U.S. Cl. 514—256 **10 Claims**

1. A compound of formula (I) or a pharmaceutically acceptable salt thereof:



(I)

wherein

a and b together form an —O— or —CH_2— linkage or a bond;

either Y is N and R_2 is hydrogen; or

Y is C—R_1

wherein

either one of R_1 and R_2 is hydrogen and the other is nitro, cyano, halo, CF_3, C_2F_5, formyl, aldoxime, CF_3O, NO-2—CF=CH—, NC—CH=CH—; a group R_XX— wherein R_X is C_{1-6} alkyl, aryl or 2- or 3-furyl, 2- or 3-pyrryl, 2- or 3-thienyl, or 2-, 3- or 4-pyridyl, or 2- or 3-benzofuryl, 2- or 3-benzothienyl, or 2- or 3-indolyl, or 2- or 3-quinolyl, either of which may be optionally substituted by one, two or three of C_{1-4} alkyl, C_{1-4} alkoxy, nitro, halo, CF_3 and cyano; and X is C=O, O.C=O, C=O.O, CHOH, SO, SO_2, O.SO, O.SO_2, CONH, O.CONH, C=S, O.C=S, C=S.O, CH.SH, SONH, SO_2NH, O.SONH, O.SO_2NH, CO—CH=CH, C=NHOH, C=NNH_2; or a group R_yR_zNZ— wherein R_y and R_z are independently hydrogen or C_{1-6} alkyl and Z is C=O, SO or SO_2; or a group $(R_wO)_2P(O)W$ wherein R_w is hydrogen or C_{1-6} alkyl and W is O or a bond; or

R_1 is a C_{3-8} cycloalkyl group or a C_{1-6} alkyl group optionally substituted by a group which is hydroxy, C_{1-6} alkoxy, amino optionally substituted by one or two C_{1-6} alkyl groups, C_{1-7} alkanoylamino, C_{3-8} cycloalkyloxy or C_{3-8} cycloalkylamino; and R_2 is hydrogen; or

one of R_1 and R_2 is nitro, cyano or C_{1-3} alkylcarbonyl and the other is a different group selected from nitro, cyano, halo, C_{1-3} alkylcarbonyl, methoxy or amino optionally substituted by one or two C_{1-6} alkyl or by C_{2-7} alkanoyl; or

R_1 and R_2 together with the carbon atoms to which they are attached, form 2,1,3-oxadiazole or triazole;

either one of R_3 and R_4 is hydrogen or C_{1-4} alkyl and the other is C_{1-4} alkyl; or

R_3 and R_4 together are C_{2-5} polymethylene;

R_5 is hydrogen, hydroxy, C_{1-6} alkoxy, C_{1-7} acyloxy or ONO_2;

R_6 is hydrogen or C_{1-6} alkyl; and

R_7 is halo, amino or methylamino.

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5,254,556

3-PIPERIDINYL-1,2-BENZISOXAZOLES

Cornelus G. M. Janssen, Vosselaar; Alfonsus G. Knaeps, Herentals; Ludo E. J. Kennis, Turnhout, and Jan Vandenberk, Beerse, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Division of Ser. No. 422,847, Oct. 17, 1989, Pat. No. 5,158,952, which is a continuation-in-part of Ser. No. 267,857, Nov. 7, 1988, abandoned. This application Aug. 19, 1992, Ser. No. 932,142
The portion of the term of this patent subsequent to Oct. 27, 2009, has been disclaimed.
Int. Cl.[5] C07D *487/04, 413/04;* A61K *31/505*
U.S. Cl. 514—258 6 Claims

1. A compound selected from the group consisting of a C_{2-20}alkanoic acid ester of 3-[2-[4-(6-fluoro-1,2-benzisoxazol-3-yl)-1-piperidinyl]ethyl]-6,7,8,9-tetrahydro-9-hydroxy-2-methyl-4H-pyrido[1,2-a]pyrimidin-4-one, a pharmaceutically acceptable acid addition salt thereof, and an enantiomeric form thereof.

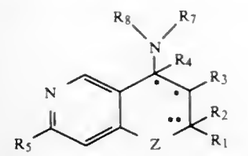
5,254,557

COMPOUND AND TREATMENT

Derek R. Buckle; David G. Smith, both of Epsom, and Frederick Cassidy, Harlow, all of England, assignors to Beecham Group p.l.c., England

Continuation of Ser. No. 458,636, Jan. 9, 1990, abandoned. This application Jun. 1, 1992, Ser. No. 892,619
Claims priority, application United Kingdom, May 9, 1988, 8810929; Nov. 1, 1988, 88255088
Int. Cl.[5] C07D *401/14, 403/14;* A61K *31/44, 31/505*
U.S. Cl. 514—269 26 Claims

1. A pharmaceutical composition useful for the treatment of reversible airways obstruction and asthma in mammals including humans which comprises a therapeutically effective amount of a compound of the formula (IA):



(IA)

a pharmaceutically acceptable salt thereof or a pharmaceutically acceptable solvate thereof, in the form of a microfine powder, wherein Z is O;

R_1 and R_2 are each hydrogen or alkyl of 1 to 6 carbon atoms; or R_1 and R_2 together are polymethylene;

R_3 is hydrogen, hydroxy, alkoxy of 1 to 6 carbon atoms or acyloxy of 1 to 7 carbon atoms; R_4 is hydrogen; or R_3 and R_4 together are a bond; R_5 is hydrogen; and R_7 and R_8 together with the nitrogen atom to which they are attached form a 6-membered unsubstituted or substituted, unsaturated heterocyclic ring, the ring being a single ring and having the depicted nitrogen atom as the sole heteroatom and wherein a carbon atom of the ring forms the moiety C=X wherein X is O or S, in combination with a pharmaceutically acceptable carrier.

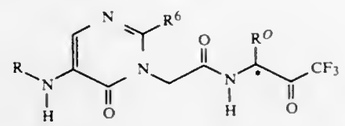
5,254,558

SUBSTITUTED 1,3-DIAZINES AS LEUKOCYTE ELASTASE INHIBITORS

Peter R. Bernstein, Wallingford, Pa.; Philip D. Edwards, Claymont, Del.; Royston M. Thomas, Wilmington, Del.; Chris A. Veale, Newark, Del.; Peter Warner, Macclesfield, England, and Donald J. Wolanin, Wilmington, Del., assignors to Imperial Chemical Industries PLC, Millbank, England

Filed Aug. 14, 1992, Ser. No. 930,568
Claims priority, application United Kingdom, Aug. 15, 1991, 9117641; Apr. 16, 1992, 9208378; Jul. 8, 1992, 9214447
Int. Cl.[5] A61K *31/505;* C07D *239/22*
U.S. Cl. 514—269 16 Claims

1. A compound of formula I



I

wherein:

R^0 is (1-5C)alkyl;

R is hydrogen; or

R is an acyl group of formula A.X.CO— in which A.X.—, taken together, is hydrogen, trifluoromethyl, 2,2,2-trifluoroethoxy, amino, methoxyamino, 2,2,2-trifluoroethylamino, RbRcN.O—, RaOCONH—, R^1SO_2NH—, RaOCO—, RbRcNVO— or RaCO—; or

R is an acyl group of formula A.X.CJ— in which

J is oxygen or sulfur;

X is a direct bond, imino, oxy or thio; and

A is as defined below or

A is tetrahydropyran-4-yl, 1-methylpiperid-4-yl, or 5-methyl-1,3-dioxacyclohex-5-ylmethyl; or

R is a sulfonyl group of formula D.W.SO_2— in which D.W—, taken together, is hydroxy, amino, di(lower alkyl-)amino, 2,2,2-trifluoroethylamino, 2,2,2-trifluoroethyl, 3,3,3-trifluoropropyl or trifluoromethyl; or

W is a direct bond, imino, carbonylimino, oxycarbonylimino or iminocarbonylimino; and

D is as defined below; or

R is an alkyl, aryl or heteroaryl group G as defined below;

the group A, D or G is (1-6C)alkyl, (3-6C)cycloalkyl, (3-6C)cycloalkyl-(1-3C)alkyl, aryl, aryl(1-3C)alkyl, heteroaryl or heteroaryl(1-3C)alkyl wherein an aryl or heteroaryl moiety may bear one or more halogeno, nitro, methyl or trifluoromethyl groups and further wherein the group A, D or G may bear one or more substituents selected from a group consisting of hydroxy, lower alkoxy, lower acyloxy, COORa, CONRbRc, $COO(CH_2)_2NReRf$, cyano, SO_2R^1, $CONRdSO_2R^1$, NReRf, NRgCHO, $NRgCOR^2$, $NRgCOOR^2$, NRhCQNRiRj, $NRkSO_2R^3$, SO_2NRlRm, $SO_2NRnCOR^4$ and P(O)(ORa)$_2$ in which

Q is oxygen or sulfur;

Ra-Rn are independently hydrogen, benzyl or lower alkyl; or, independently, a group NRbRc, NReRf, NRiRj or NRlRm is a cyclic radical selected from a group consisting of 1-pyrrolidinyl, piperidino, morpholino or 1-piperazinyl which may bear a lower alkyl substituent at the 4-position; or, independently, a group NReRf is a cyclic radical selected from a group consisting of 2-pyrrolidinon-1-yl, succinimido, oxazolidin-2-on-3-yl, 2-benzoxazolinon-3-yl, phthalimido and cis-hexahydrophthalimido; and

R^1-R^4 are independently trifluoromethyl, (1-6C)alkyl, (3-6C)cycloalkyl, aryl or heteroaryl in which the aryl or heteroaryl may bear one or more substituents selected from a group consisting of lower alkyl, hydroxy, lower alkoxy, halogeno or trifluoromethyl; and

R^6 is (1-5C)alkyl which has no tertiary carbon, (3-7C)cycloalkyl, aryl or heteroaryl, which aryl or heteroaryl

independently may bear one or more of the substituents defined for the group A or an aryl or heteroaryl moiety thereof; and

provided that no aliphatic carbon is bonded to more than one nitrogen or oxygen, except as part of a cyclic ketal or where the nitrogen bears a carbonyl group; or,

for a compound of formula I which is acidic or basic, a pharmaceutically acceptable salt thereof.

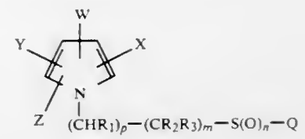
5,254,559

INSECTICIDAL, ACARICIDAL AND MOLLUSCICIDAL 1-(SUBSTITUTED)THIOALKYLPYRROLES

David G. Kuhn, Newtown, Pa., and Venkataraman Kameswaran, Princeton Junction, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 4, 1991, Ser. No. 804,260
Int. Cl.[5] A01N *43/54, 43/76, 43/36;* C07D *277/16, 263/58, 403/12, 207/34, 239/10*
U.S. Cl. 514—274 28 Claims

1. A compound having the structure



I

wherein

W is CN or NO_2;

X is halogen or phenyl optionally substituted with one to three C_1-C_3alkyl, C_1-C_3alkoxy, C_1-C_3alkylthio, C_1-C_3alkylsulfinyl, C_1-C_3alkylsulfonyl, halogen, CN, NO_2, CF_3, R_4CF_2B, R_5CO or NR_6R_7 groups;

Y is CF_3, halogen or phenyl optionally substituted with one to three C_1-C_3alkyl, C_1-C_3alkoxy, C_1-C_3alkylthio, C_1-C_3alkylsulfinyl, C_1-C_3alkylsulfonyl, halogen, CN, NO_2, CF_3, R_4CF_2B, R_5CO or NR_6R_7 groups;

Z is halogen or CF_3;

R_1 is hydrogen, C or C_3-C_6cycloalkyl;

R_2 and R_3 are each independently hydrogen, C_1-C_6 or C_3-C_6cycloalkyl

R_4 is hydrogen, fluorine, CHF_2, CHFCl or CF_3;

R_5 is C_1-C_3alkyl, C_1-C_3alkoxy or NR_6R_7;

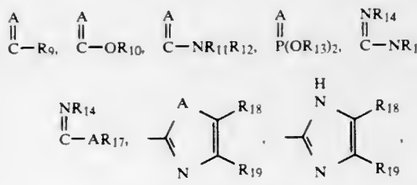
R_6 is hydrogen or C_1-C_3alkyl;

R_7 is hydrogen, C_1-C_3alkyl or R_8CO;

R_8 is hydrogen or C_1-C_3alkyl; B is $S(O)_q$ or O;

m, n, p and q are each independently an integer of 0, 1 or 2 with the proviso that the sum (p+m) must be greater than 0;

Q is



CN, C_1-C_6alkyl optionally substituted with one or more phenyl, CN or halogen groups or phenyl optionally substituted with one to three C_1-C_3alkyl, C_1-C_3alkoxy, halogen, CN, NO_2, CF_3 or $NR_{20}R_{21}$ groups;

A is O or S;

R_9 is C_1-C_6alkyl or phenyl;

R_{10} is C_1-C_6alkyl;

R_{11} and R_{12} are each independently hydrogen, C_1-C_6alkyl or may be taken together with the atom to which they are attached to form a 5- to 7- membered ring;

R_{13} is C_1-C_4alkyl;

R_{14} is hydrogen, C_1-C_4alkyl or may be taken together with either R_{15} or R_{17} and the atoms to which they are attached to form a 5- to 7-membered ring optionally substituted with one or two C_1-C_3alkyl groups;

R_{15} and R_{16} are each independently hydrogen or C_1-C_4alkyl;

R_{17} is C_1-C_4alkyl or when taken together with R_{14} and the atoms to which they are attached may form a 5- to 7-membered ring optionally substituted with one or two C_1-C_3alkyl groups;

R_{18} and R_{19} are each independently hydrogen or C_1-C_3alkyl or when taken together may form a ring wherein $R_{18}R_{19}$ is represented by —CH=CH—CH=CH—;

R_{20} and R_{21} are each independently hydrogen or C_1-C_3alkyl and

the acid addition salts thereof.

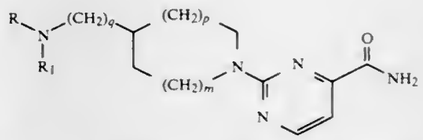
5,254,560

2-PIPERIDINYLPYRIMIDINE-4-CARBOXAMIDE DERIVATIVES, AND THEIR USE IN THERAPEUTICS

Pascal George, St. Arnoult en Yvelines; Christian Maloizel, Meudon; Benoit Marabout, Massy, and Jean-Pierre Merly, Sceaux, all of France, assignors to Synthelabo, Le Plessis Robinson, France

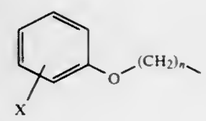
Filed Jun. 26, 1992, Ser. No. 904,061
Claims priority, application France, Jun. 27, 1991, 91 07938; May 18, 1992, 92 06004
Int. Cl.[5] C07D *401/04;* A61K *31/505*
U.S. Cl. 514—275 8 Claims

1. A compound which is a carboxamide derivative of formula (I)



(I)

in which R represents a hydrogen atom, a methyl group or a phenoxyalkyl group of formula



in which

X represents one or more substituents independently chosen from hydrogen, fluorine, chlorine, methyl, 1-methylethyl and methoxy and

n is 2 or 3,

m is 0 or 1 and

p is 1 or 2 such that m+p=2,

q is 0 or 1, and

R_1 represents a hydrogen atom or a methyl group, or a pharmaceutically acceptable acid addition salt thereof.

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5,254,561

TRICYCLIC ANTIPSYCHOTIC AGENTS

David C. Billington, Lavallois Perret, France, and Michael G. N. Russell, Welwyn Garden City, England, assignors to Merck Sharp & Dohme Limited, Hoddesdon, England

Filed Jun. 18, 1991, Ser. No. 716,880

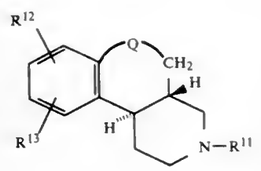
Claims priority, application United Kingdom, Jun. 25, 1990, 9014061

Int. Cl.[5] **A61K** *31/435;* **C07D** *221/06, 491/056*

U.S. Cl. 514—290 **6 Claims**

1. A compound of formula IIA or a salt thereof:

(IIA)



wherein

Q represents a bond or a group of formula $—(CH_2)_2—$;

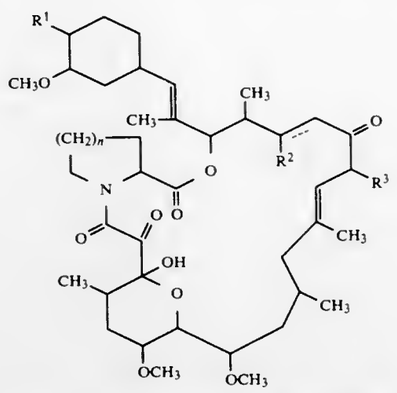
R^{11} is selected from the group consisting of C_{3-6} alkyl, C_{2-6} alkenyl, C_{3-10} cycloalkyl, C_{3-7} cycloalkyl (C_{1-6}) alkyl and aryl (C_{1-6}) alkyl; and

R^{12} and R^{13} both represent hydrogen.

R^2 is hydrogen or the same meanings as R^1,

R^3 is methyl, ethyl, propyl or allyl, n is an integer of 1 or 2, and

(I)



the symbol of a line and dotted line is a single bond or a double bond, or pharmaceutically acceptable basic salt thereof to a subject in need of said treatment.

5,254,562

TRICYCLO COMPOUNDS, A PROCESS FOR THEIR PRODUCTION AND A PHARMACEUTICAL COMPOSITION CONTAINING THE SAME

Masakuni Okuhara; Hirokazu Tanaka; Toshio Goto, all of Sakuramura; Tohru Kino, Tsuchiura, and Hiroshi Hatanaka, Sakuramura, all of Japan, assignors to Fujisawa Pharmaceutical Company, Ltd., Osaka, Japan

Division of Ser. No. 606,837, Oct. 31, 1990, abandoned, which is a division of Ser. No. 491,205, Mar. 9, 1990, Pat. No. 5,110,811, which is a continuation of Ser. No. 868,749, May 30, 1986, Pat. No. 4,929,611, which is a continuation-in-part of Ser. No. 799,855, Nov. 20, 1985, Pat. No. 4,894,366. This application Jun. 18, 1992, Ser. No. 900,487

Claims priority, application United Kingdom, Dec. 3, 1984, 8430455; Feb. 5, 1985, 8502869; Apr. 1, 1985, 8508420

The portion of the term of this patent subsequent to May 29, 2007, has been disclaimed.

Int. Cl.[5] **A61K** *31/395;* **C07D** *498/16*

U.S. Cl. 514—291 **14 Claims**

1. A method for treating resistance to transplantation which comprises administering an effective amount of a compound of the formula:

wherein

R^1 is hydroxy or pharmaceutically acceptable protected hydroxy selected from the group consisting of 1-(lower alkylthio)(lower)alkyloxy, tri(lower)alkylsilyloxy, lower alkyl-diphenyl-silyloxy, pharmaceutically acceptable organic carboxylic acyloxy, pharmaceutically acceptable organic sulfonic acyloxy, and pharmaceutically acceptable organic carbamic acyloxy,

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5,254,563

BETA-CARBOLINES, PROCESS FOR THEIR PRODUCTION AND THEIR USE IN PHARMACEUTICAL AGENTS

Andreas Huth; Martin Kruger; Dieter Rahtz; Dieter Seidelmann; Ralph Schmiechen; Lechoslaw Turski, all of Berlin, Fed. Rep. of Germany; John S. Andrews, EP, Oss, Netherlands, and Herbert H. Schneider, Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

PCT No. PCT/DE90/00982, § 371 Date Oct. 23, 1991, § 102(e) Date Oct. 23, 1991, PCT Pub. No. WO91/09858, PCT Pub. Date Jul. 11, 1991

ub. Date ADec. 19, 1990, Ser. No. 773,659

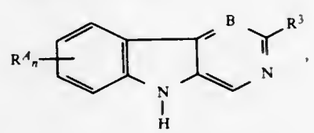
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1989, 3943225

Int. Cl.[5] **C07D** *471/04;* **A61K** *31/435*

U.S. Cl. 514—292 **8 Claims**

1. A compound of formula I

1



wherein

R^4 is halogen, $—CHR^1—R^2$, phenyl or OR^5;

n is 1 or 2;

R^1 is hydrogen or C_{1-4} alkyl;

R^2 is hydrogen, C_{1-4} alkyl, $—O—C_{1-4}$ alkyl or substituted or unsubstituted phenyl, benzyl or phenoxy radical;

R^5 is hydrogen, tri-C_{1-4} alkylsilyl, C_{1-4} alkyl, C_{3-7} cycloalkyl

or substituted or unsubstituted phenyl, benzyl or hetaryl radical;

B is CR^4;

R^4 is unsubstituted or substituted monocylic or bicyclic aryl or hetaryl radical or a C_{3-10} cycloalkyl or bicycloalkyl radical as well as their isomers; or an acid addition salt thereof.

5,254,564

SUBSTITUTED ISOQUINOLINE COMPOUNDS, PHARMACEUTICAL COMPOSITION AND METHOD OF USE IN TREATING PAIN IN MAMMALS

Vittorio Vecchietti; Giuseppe Giardina, and Roberto Colle, all of Milan, Italy, assignors to Lo Zambeletti S.p.A., Italy

Filed Jul. 16, 1990, Ser. No. 553,723

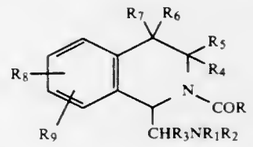
Claims priority, application United Kingdom, Jul. 18, 1989, 8916395

Int. Cl.[5] **A61K** *31/47;* **C07D** *217/26*

U.S. Cl. 514—307 **5 Claims**

1. A compound, or a solvate or salt thereof, of formula (I):

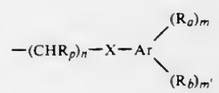
(I)



in which:

RCO is an acyl group in which the group R has the formula (11):

(11)



in which

n is 0, 1 or 2;

m is 0, 1 or 2;

m' is 0, 1 or 2, provided $m+m' < 3$

x is a direct bond, or O, S or NR_c in which R_c is hydrogen or C_{1-6} alkyl;

Ar is phenyl;

each of R_a and R_b is halogen;

or, when m is 2 and m' is O, two R_a's form a C_{2-6}-polymethylene group;

and R_p is hydrogen or C_{1-6}alkyl;

and R_1 and R_2 together form a pyrrolidin group; with the proviso that none of the remaining groups can combine to form a fused or spiro ring with the isoquinoline ring system;

R_3 is hydrogen, C_{1-6} alkyl, or phenyl;

R_4 and R_5 are identical and are hydrogen or C_{1-6} alkyl;

R_6 and R_7 are identical and are hydrogen or C_{1-6} alkyl; with the provision that R_4, R_5, R_6 and R_7 are not simultaneously hydrogen;

R_8 and R_9, which may be the same or different, are each hydrogen, C_{1-6} alkyl, $—CH_2OR_{10}$, halogen, hydroxy, C_{1-6}alkoxy, C_{1-6}alkoxycarbonyl, thiol, C_{1-6}alkylthio,

$—NHCOR_{12}$, $—NHSO_2R_{13}$, $—CH_2SO_2NR_{14}R_{15}$, in which each of R_{10} to R_{15} is independently hydrogen, C_{1-6}alkyl, aryl or aralkyl.

5,254,565

QUINOLINE DERIVATIVES, THEIR PRODUCTION AND USE

Kanji Meguro, Nishinomiya, and Hitoshi Ikeda, Higashiosaka, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 377,136, Jul. 10, 1989, abandoned. This application Dec. 16, 1991, Ser. No. 807,813

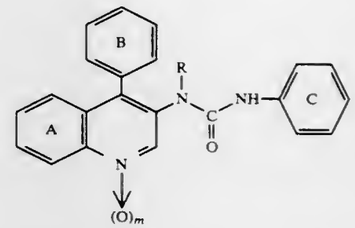
Claims priority, application Japan, Jul. 12, 1988, 63-174137; Aug. 29, 1988, 63-214266; Jul. 27, 1989, 1-75925

Int. Cl.[5] **C07D** *215/60, 215/38;* **A61K** *31/47*

U.S. Cl. 514—312 **9 Claims**

1. A quinoline derivative of the formula (I):

(I)



wherein R is a hydrogen atom, or an alkyl group or a phenyl alkyl group having 7 to 9 carbon atoms in which the benzene ring is substituted or unsubstituted; m is 0 or 1; and when m = 1, each of rings A, B and C is substituted or unsubstituted; and when m = 0, (a) each of rings A and C is substituted or unsubstituted and ring B is substituted, or (b) ring C is substituted with at least one fluorine atom, ring B has no substituent and ring A is substituted or unsubstituted, the substituents for the A, B and C rings numbering from 1 to 4 and being selected from the group consisting of a halogen atom, an optionally halogenated lower alkyl group, an optionally halogenated lower alkoxy group, an optionally halogenated lower alkylthio group, nitro group, a carboxyl group, an esterified carboxyl group, hydroxy group, a C1–4 acyloxy group selected from the group consisting of formyloxy, acetyloxy, propionyloxy, and butyryloxy, and an aliphatic acyl group having 1–3 carbon atoms selected from the group consisting of formyl, acetyl, and propionyl;

subject to at least one of the following provisos:

(a) the ring A has a substituent at the 6-, 8-, or both positions of the quinoline nucleus,

(b) the ring B has a substituent at the 2-position, or

(c) the ring C has a substituent at the 2-, 4-, or both positions;

or its salt.

5,254,566

DECAHYDROQUINOLINE COMPOUNDS

Francois Clemence, Paris; Gilles Hamon, Le Raincy, and Odile Le Martret, Paris, all of France, assignors to Roussel Uclaf, France

Filed Sep. 22, 1992, Ser. No. 950,087

Claims priority, application France, Sep. 24, 1991, 91 11736

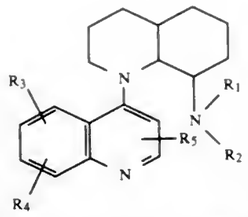
Int. Cl.[5] **A61K** *31/44;* **C07D** *401/04*

U.S. Cl. 514—313 **9 Claims**

1. A compound selected from the group consisting of racemates, enantiomeric and diastereoisomeric forms of a compound of the formula

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I



wherein R_1 and R_2 are individually selected from the group consisting of hydrogen and alkyl of 1 to 5 carbon atoms optionally substituted with at least one halogen, hydroxy, alkyl or alkoxy of 1 to 4 carbon atoms or taken together with the nitrogen to which they are attached form a heterocycle selected from the group consisting of pyrrolidinyl, piperidinyl, morpholinyl, piperazinyl, methylpiperazinyl, ethylpiperazinyl, propylpiperazinyl, phenylpiperazinyl, chlorophenylpiperazinyl, trifluoromethylphenylpiperazinyl and benzylpiperazinyl optionally substituted with at least one member of the group consisting of alkyl or alkoxy of 1 to 5 carbon atoms, benzyl and phenyl, R_3 and R_4 are individually selected from the group consisting of hydrogen halogen, hydroxy (C_{1-5})alkyl and (C_{1-5})alkyloxy, both alkyl and alkoxy are optionally substituted with at least one substituent selected from the group consisting of halogen, hydroxy, phenyl, (C_{1-4})alkyl and (C_{1-4})alkyloxy, R_5 is hydrogen or alkyl of 1 to 5 carbon atoms optionally substituted with at least one member of the group consisting of halogen, hydroxy, phenyl, (C_{1-4})alkyl and (C_{1-4})alkyloxy or a non-toxic, pharmaceutically acceptable acid addition salt or quaternary ammonium salt.

5,254,567

AMORPHOUS (QUINOLIN-2-YLMETHOXY)INDOLE COMPOUNDS WHICH HAVE USEFUL PHARMACEUTICAL UTILITY

Brian Down, Pierrefonds, and John H. Hutchinson, Montreal, both of Canada, assignors to Merck Frosst Canada, Inc., Quebec, Canada

Continuation-in-part of Ser. No. 793,087, Nov. 15, 1991, abandoned. This application Nov. 9, 1992, Ser. No. 973,491

Int. Cl.[5] C07D *401/12*; A61K *31/475*

U.S. Cl. 514—314 **8 Claims**

1. Amorphous 3[N-(p-chlorobenzyl)-3-(t-butylthio)-5-(quinolin-2-ylmethoxy)indol-2-yl]-2,2-dimethylpropanoic acid, sodium salt.

5,254,568

BENZOPYRANS AS ANTIESTROGENIC AGENTS

Randhir S. Kapil, Jammu-Tawi; Susheel Durani, Bombay; Janak D. Dhar, and Bachu S. Setty, both of Lucknow, all of India, assignors to Council of Scientific & Industrial Research, New Delhi, India

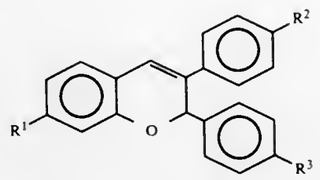
Continuation of Ser. No. 582,249, Sep. 13, 1990, abandoned. This application Oct. 22, 1992, Ser. No. 965,608

Int. Cl.[5] A61K *31/445, 31/40*; C07D *405/12*

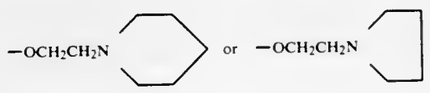
U.S. Cl. 514—320 **12 Claims**

1. A compound of the formula I

(I)



wherein R^1 and R^2, which may be the same or different, are each —H, —OH, alkoxy of 1 to 17 carbon atoms or alkoxycarbonyl of 2 to 18 carbon atoms, and R^3 is



5,254,569

(AMIDOMETHYL)NITROGEN HETEROCYCLIC ANALGESICS

Robert S. Cheeseman, Phoenixville, Pa.; Hollis S. Kezar, III, Newark, and Richard M. Scribner, Wilmington, both of Del., assignors to The Du Pont Merck Pharmaceutical Company, Wilmington, Del.

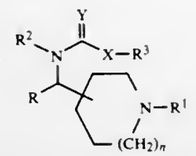
Filed Jan. 14, 1991, Ser. No. 640,561

Int. Cl.[5] C07D *211/32, 401/12*; A61K *31/443*

U.S. Cl. 514—331 **42 Claims**

1. A compound of the formula:

(I)



or a pharmceutically acceptable salt or stereoisomer thereof wherein:

R is C1–C10 alkyl, C6–C10 carbocyclic aromatic ring, $(CH_2)_mOAr$, $(CH_2)_mSAr^1$(m=1-3), lower alkyl bearing a C6–C10 carbocyclic aromatic ring, each optionally substituted with 1–5substituents independently selected from the group consisting of:

fluorine, chlorine, bromine, trifluoromethyl, cyano, nitro, hydroxy, thiol, trifluoromethylsulfonyl, 1,1,2,2-tetrafluoroethylsulfonyl, C1–C3 alkyl, C1–C3 alkoxy, haloalkyl of 1–3 carbon atoms and 1–7 halogen atoms, CO_2H, tetrazole, carboalkoxy of 2–6 carbon atoms, $S(O)_qR^4$ (q=0–3), NR^5R^6, COR^7, $CONR^8R^9$ and $SO_2NR^8R^9$;

R^1 is H, C1–C6 alkyl, C1–C6 alkenyl including branched chain alkenyl, C3–C6 cycloalkyl, C3–C6 cycloalkylmethyl, benzyl, phenethyl, and 3-phenylpropyl;

R^2 is C1–C3 alkyl;

R^3 is C6–C10 carbocyclic ring, each optionally substituted with 1–5 substituents independently selected from the group consisting of:

fluorine, chlorine, bromine trifluoromethyl, cyano, nitor, hydroxy, thiol, trifluoromethylsulfonyl, 1,1,2,2-tetrafluoroethylsulfonyl, C1–C3 alkoxy, CO_2H, tetrazole, carboalkoxy of 2–6 carbon atoms, $S(O)_qR^4$ (q=0–3), NR^5R^6, COR^7, $CONR^8R^9$ and $SO_2NR^8R^9$;

R^4 to R^9 independently are H or C1–C6 alkyl;

X is single bond, CH_2, CH_2O, CH_2S or CH_2NH;

Y is O or S;

n is l; and

Ar and Ar^1 independently are C6–C10 carbocyclic, or C6–C10 aromatic ring, optionally substituted with 1-5 substituents independently selected from the group consisting of:

fluorine, chlorine, bromine, trifluoromethyl, cyano, nitor, hydroxy, thiol, trifluoromethylsulfonyl, 1,1,2,2-tetrafluoroethylsulfonyl, C1–C3 alkyl, C1–C3 alkoxy, CO_2H, tetrazoke, carboalkoxy of 2–6 carbon atoms, $S(O)_qR^4$ (q=0–3) NR^5R^6, COR^7, $CONR^8R^9$ and $SO_2NR^8R^9$.

5,254,570

ACYL DERIVATIVE OF DIANHYDROHEXITOLS

Peter Stoss, and Matyas Leitold, both of New York, N.Y., assignors to Pfizer Inc., New York, N.Y.

Filed Sep. 20, 1989, Ser. No. 411,345

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1988, 3831949

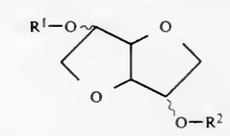
Int. Cl.[5] A61K *31/44*

U.S. Cl. 514—337 **6 Claims**

1. A pharmaceutical composition used for the prevention and treatment of cardiovascular disease comprising:

(a) a compound of formula I

I

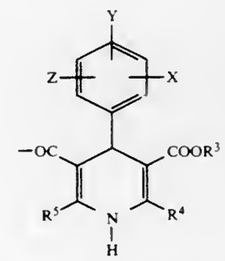


wherein

R^1 is hydrogen, a $(C_1–C_6)$ acyl radical having 2 to 5 carbon atoms, a pyridylcarbonyl radical or nitro; and

R^2 is a 1,4-dihydropyridylcarbonyl radial of the general formula II

II



wherein X, Y, and Z are each independently selected from from the group consisting of hydrogen $(C_1–C_6)$ alkoxy, $(C_1–C_6)$ alkyl, cyano, dialkylamino, chloro, bromo, fluoro, iodo, nitro trifluoromethyl, and methylenedioxy, with the proviso that no more than one of X, Y, and Z is methylenedioxy;

R^3 is a straight-chain or branched, saturated or unsaturated hydrocarbon radical having 1 to 5 carbon atoms, wherein the carbon chain of said hydrocarbon radical may optionally be interrupted by an oxygen atom and wherein said hydrocarbon radical may optionally be substituted with one cyano group; and

R^4 and R^5 are $(C_1–C_6)$ alkyl;

or a pharmaceutically acceptable salt of said compound of formula 1;

(b) isosorbide 5-mononitrate (5-1SM) or isosorbide 2-mononitrate (2-ISM) or glycerol trinitrate (GTN) or glycerol 1-mononitrate (1-GMN) or glycerol 2-mononitrate (2-GMN), in a ratio by weight of said component (a) to said component (b) of from about 8:1 to about 1:80;

and, optionally,

(c) a pharmaceutically acceptable carrier.

5,254,571

CHEMICAL COMPOUNDS

William J. Coates, Welwyn Garden City, and Sean T. Flynn, St. Albans, both of England, assignors to Smith Kline & French Laboratories Ltd., Welwyn Garden City, England

Continuation of Ser. No. 760,849, Sep. 17, 1991, abandoned, which is a continuation of Ser. No. 339,733, Apr. 18, 1989, abandoned. This application Sep. 25, 1992, Ser. No. 951,363

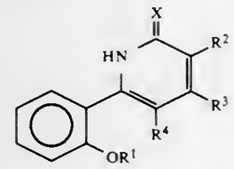
Claims priority, application United Kingdom, Apr. 21, 1988, 8809481

Int. Cl.[5] C07D *213/62*; A61K *31/44*

U.S. Cl. 514—344 **13 Claims**

1. A compound of the formula (1):

(1)



or a pharmaceutically acceptable salt thereof, wherein

X is O or S;

R^1 is C_{2-6}alkyl, C_{2-6}alkenyl, C_{3-5}cycloalkylC_{1-4}alkyl, or C_{1-4}alkyl substituted by 1 to 6 fluoro groups;

R^2 is hydrogen, —CN, —$CONR^5R^6$, 5-tetrazolyl, —NO_2, or $NHCOR^8$ wherein R^5, R^6 and R^8 are independently hydrogen or C_{1-4}alkyl;

R^3 is hydrogen or C_{1-4}alkyl; and

R^4 is hydrogen or C_{1-4}alkyl.

5,254,572

METHOD AND COMPOSITION FOR SUPPLEMENTING VITAMIN B6 WHERE THE PN-PLP PATHWAY IS DISTURBED

Willem J. Serfontein, Pretoria, South Africa, assignor to Vesta Medicines (pty) Ltd., South Africa

Continuation-in-part of Ser. No. 125,996, Nov. 27, 1987, abandoned, and Ser. No. 395,033, Aug. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 125,996, Aug. 17, 1989, and Ser. No. 153,973, Feb. 9, 1988, abandoned. This application Jan. 17, 1990, Ser. No. 466,676

Claims priority, application United Kingdom, Jan. 17, 1989, 8900924

Int. Cl.[5] A61K *31/44*

U.S. Cl. 514—345 **8 Claims**

1. A method or raising the intracellular level, other than in a healthy liver, of pyridoxal phosphate (PLP) and the plasma level of pyridoxal (PL) in a human or animal patient having insufficient ability to convert pyridoxine (PN) into intracellular PLP leading to depressed or inadequate intracellular PLP contents, which comprises administering to the patient an active agent selected from the group consisting of pyridoxal (PL), pyridoxamine, acetals or pyridoxal, condensation products arising form the reaction of the aldehyde group or pyridoxal with an amine, and addition salts of any of the foregoing members of the group with pharmaceutically acceptable acids in an amount and at a rate effective to supply from 0.008 to 7.2 mg/kg/day of said active agent, calculated as pyridoxal and based on body weight.

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5,254,573

SUBSTITUTED HETEROCYCLIC DERIVATIVES USEFUL AS PLATELET AGGREGATION INHIBITORS

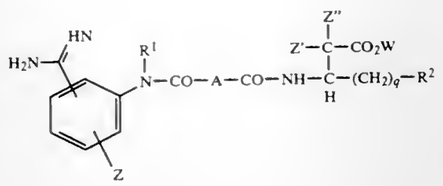
Philippe R. Bovy; Joseph G. Rico; Thomas E. Rogers, all of Ballwin; Foe S. Tjoeng, Manchester, all of Mo., and Jeffery A. Zablocki, Skokie, Ill., assignors to Monsanto Company, St. Louis, Mo. and G. D. Searle & Co., Skokie, Ill.

Continuation-in-part of Ser. No. 888,686, May 22, 1992, abandoned, which is a continuation-in-part of Ser. No. 777,875, Oct. 15, 1991, abandoned. This application Oct. 6, 1992, Ser. No. 953,661

Int. Cl.[5] C07D *213/02;* A61K *31/45*

U.S. Cl. 514—357 **26 Claims**

1. A compound or a pharmaceutically acceptable salt, prodrug or ester thereof having the formula:



wherein

R^1 is selected from the group consisting of hydrogen, lower alkyl radicals, lower alkenyl radicals, lower alkynyl radicals, alicyclic hydrocarbon radicals, aromatic hydrocarbon radicals, wherein all of said radicals are optionally substituted with hydroxyl, lower alkoxy, lower alkyl, halogen, nitro, carboxyl, sulfonyl, trifluoromethyl, amino, acyloxy, phenyl and naphthyl which are optionally substituted with halogen, nitro, lower alkoxy, and lower alkyl;

R^2 is selected from monocyclic heterocyclyl radicals in which 1 to about 3 heteroatoms are independently selected from oxygen, nitrogen and sulfur, which are optionally substituted with hydroxyl, lower alkoxy, lower alkyl, halogen, nitro, carboxyl, sulfonyl, trifluoromethyl, amino, acyloxy, phenyl and naphthyl which are optionally substituted with halogen, nitro, lower alkoxy, and lower alkyl;

A is selected from the group consisting of lower alkyl radicals, lower alkenyl radicals, lower alkynyl radicals, alicyclic radicals, wherein all of said radicals are optionally substituted with hydroxyl, lower alkoxy, lower alkyl, halogen, aromatic hydrocarbons which are optionally substituted with halogen, nitro, lower alkoxy and lower alkyl;

W is selected from the group consisting of hydrogen, lower alkyl radicals, lower alkenyl radicals, lower alkynyl radicals, alicyclic hydrocarbon radicals and aromatic hydrocarbon radicals, wherein all of said radicals are optionally substituted with hydroxyl, lower alkoxy, lower alkyl, halogen, nitro, amino, acyloxy, phenyl and naphthyl which may be optionally substituted with halogen, nitro, lower alkoxy, and lower alkyl;

Z, Z', Z" are independently selected from the group consisting of hydrogen, lower alkyl radicals, halogen, alkoxy, cyano, sulfonyl, carboxyl, and hydroxyl radicals; and

q is an integer from 0 to about 6.

5,254,574

TETRAZOLE DERIVATIVES, PROCESS FOR THEIR PREPARATION AND THEIR USE

Dieter Binder, Wien; Josef Weinberger, Bad Hall, and Andreas Koch, Mattersburg, all of Austria, assignors to Chemisch Pharmazeutische Forschungsgesellschaft m.b.H., Linz, Austria

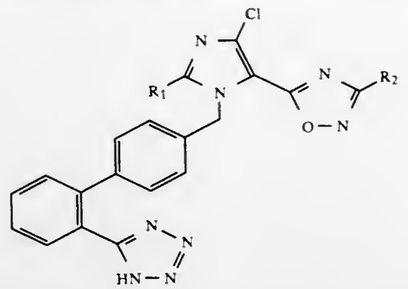
Filed Dec. 31, 1991, Ser. No. 815,199

Claims priority, application Austria, Jan. 31, 1991, A 209/91

Int. Cl.[5] C07D *271/06;* A61K *31/41*

U.S. Cl. 514—361 **6 Claims**

1. New tetrazole derivatives of the formula



(I)

in which R_1 denotes a saturated or unsaturated, straight-chain or branched (C_1–C_6) alkyl radical and R_2 denotes methyl or ethyl, and their pharmaceutically usable salts.

5,254,575

4-ARYL-THIAZOLE DERIVATIVES

John H. Pick, Lanarkshire, and Robert T. Logan, both of Lanarkshire, Scotland, assignors to AKZO N.V., Arnhem, Netherlands

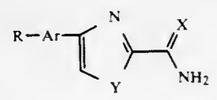
Filed Mar. 25, 1992, Ser. No. 857,526

Claims priority, application European Pat. Off., Mar. 25, 1991, 91302573.0

Int. Cl.[5] C07D *277/56;* A01K *31/425*

U.S. Cl. 514—365 **8 Claims**

1. A 4-aryl-thiazole derivative having the formula I



I

wherein

X is NOH;

Y is S;

Ar is a group selected from the group consisting of phenyl, naphthyl, tetrahydronaphthyl, and biphenyl;

R is one to four substituents independently selected from the group consisting of hydrogen, hydroxy, lower alkyl, lower alkoxy, lower thioalkyl, cycloalkyl, halogen, CF_3, NO_2, and O-ALK-NR_1R_2, in which ALK is a saturated aliphatic hydrocarbon group having from 2 through 6 carbon atoms, and R_1 and R_2 are independently hydrogen or lower alkyl, or form, together with the nitrogen atom to which they are bonded, a heterocyclic ring consisting of a 5- or 6-membered ring and wherein said heterocyclic ring may contain a second hetero atom of nitrogen or oxygen and be substituted with lower alkyl; and

a pharmaceutically acceptable salt thereof, excluding 4-(4-chlorophenyl)-thiazole-2-carboxamide.

5,254,576

DIPHENYL-HETEROCYCLIC-OXAZOLE AS PLATELET AGGREGATION INHIBITORS

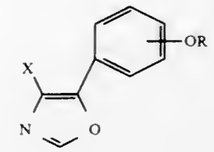
Jeffrey L. Romine, Meriden; Nicholas A. Meanwell, East Hampton, and Scott W. Martin, Middletown, all of Conn., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Filed Apr. 3, 1992, Ser. No. 862,680

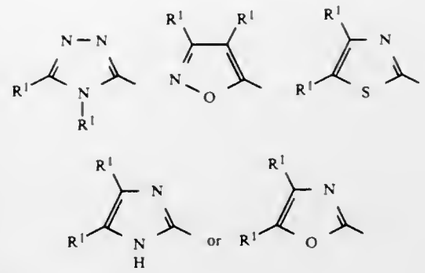
Int. Cl.[5] A61K *31/54, 31/535;* C07D *417/04, 413/04*

U.S. Cl. 514—365 **21 Claims**

1. Compounds of the formula



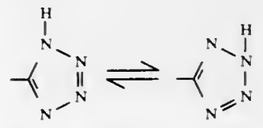
X is



R is CH_2R^2, H;

R^1 is phenyl or thienyl;

R^2 is



H, CN, CO_2R^3, or OR^3; and

R^3 is H, or C_1–C_4 lower alkyl;

or pharmaceutically acceptable salt thereof.

5,254,577

AMINOMETHYLOXOOXAZOLIDINYL ARYLBENZENE DERIVATIVES USEFUL AS ANTIBACTERIAL AGENTS

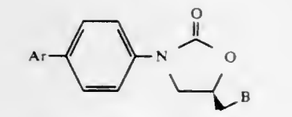
Randall K. Carlson; Chung-Ho Park, and Walter A. Gregory, all of Wilmington, Del., assignors to The Du Pont Merck Pharmaceutical Company, Wilmington, Del.

Division of Ser. No. 558,126, Jul. 24, 1990, abandoned, which is a division of Ser. No. 225,809, Jul. 29, 1988, Pat. No. 4,948,801. This application Aug. 14, 1992, Ser. No. 929,452

Int. Cl.[5] A61K *31/42;* C07D *263/04, 263/06*

U.S. Cl. 514—376 **33 Claims**

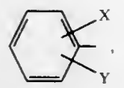
1. An aryl benzene oxazolidinone of the formula



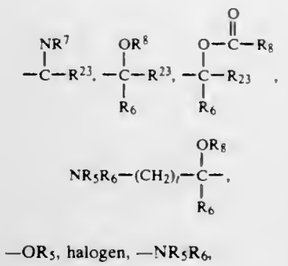
(I)

wherein, for the l, and mixtures of the d and l stereoisomers of the compound

Ar is an aromatic group selected from the group consisting of

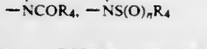


X independently is H, $—NO_2$, $—S(O)_nR^1$, —SH, $—S(C{=}O)R^4$, $—COR^{23}$, $—CONR^5R^6$,



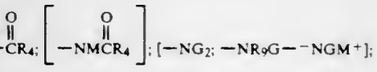
$—NR_5R_6—(CH_2)_t—C(OR_8)R_6$,

—CN, $—OR_5$, halogen, $—NR_5R_6$,



$—C_{23}(OR_{16})OR_{17}$, $—C(NR_5R_{25})(R_9)(R_{23})$, alkyl of 1 to 8 carbons optionally substituted with halogen, OH =O other than at alpha position, $S(O)_nR_{24}$, or NR_5R_6, alkenyl of 2–5 carbons or cycloalkyl of 3–8 carbons;

R_1 is C_1–C_4 alkyl, optionally substituted with halogen, OH, CN, NR_5R_6 or CO_2R_8; C_2–C_4 alkenyl; $—NR_9R_{10}$; $—N_3$;



R_4 is alkyl of 1–4 carbons, optionally substituted with halogen;

R_5 and R_6 are independently H, alkyl of 1–8 carbons, cycloalkyl of 3–8 carbons, $—(CH_2(_tOR_8$;

R_7 is $—NR_5R_6$, $—OR_5$ or

R_8 is H or alkyl of 1–4 carbons;

R_9 is H, C_1–C_4 alkyl;

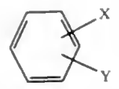
R_{10} is H, C_1–C_4 alkyl, C_2–C_4 alkenyl, $—OR_8$ or $NR_{11}R_{11A}$;

R_{11} and R_{11A} are independently H or C_1–C_4 alkyl;

Y independently is H, F, Cl, Br, OR_8, alkyl of 1–3 carbons, or NO_2;

X and Y taken together with Ar is

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to form a fused six membered carbocylic ring;
M is a physiologically acceptable cation;
n is 0, 1 or 2;
p is 0 or 1;
q is 3, 4 or 5;
r is 4 or 5;
t is 1, 2 or 3;
B is



or N_3;
R_{12} is H, C_1–C_{10} alkyl or C_3–C_8 cycloalkyl;
R_{13} is H; C_1–C_4 alkyl optionally substituted with halogen, C_2–C_4 alkenyl; C_3–C_4 cycloalkyl; phenyl; $-(C{=}O)R_{15}$; $-CH_2OR_{15}$; $-CH(OR_{16})OR_{17}$; $-CH_2S(O)_vR_{14}$; $-OR_{18}$; $-SR_{14}$; $-CH_2N_3$; or the O=C—R_{13} represents the carbonyl residue selected from the group consisting of glycine, L-alanine, L-cysteine, L-proline, and D-alanine; $-NR_{19}R_{20}$; or $-C(NH_2)R_{21}R_{22}$;
R_{14} is C_1–C_4 alkyl, optionally substituted with halogen;
R_{15} is H or C_1–C_4 alkyl, optionally substituted with halogen;
R_{16} and R_{17} are independently C_1–C_4 alkyl or, taken together are $-(CH_2)_m-$;
R_{18} is C_1–C_4 alkyl;
R_{19} and R_{20} are independently H or C_1–C_2 alkyl;
R_{21} and R_{22} are independently H, C_1–C_4 alkyl, C_3–C_6 cycloalkyl, phenyl;
u is 1 or 2;
v is 0, 1 or 2;
m is 2 or 3;
s is 2, 3, 4 or 5;
R_{23} is H, alkyl of 1–8 carbons optionally substituted with halogen, cycloalkyl of 3–8 carbons, alkyl of 1–4 carbons substituted with one to three of $-S(O)_nR_{24}$, $-OR_8$, $-O(C{=}O)R_8$, or $-NR_5R_6$; or alkenyl of 2–5 carbons optionally substituted with CHO or CO_2R_8;
R_{24} is alkyl of 1–4 carbons or cycloalkyl of 3–8 carbons; and
R_{25} is R_6 or NR_5R_6;
or a pharmaceutically suitable salt thereof.

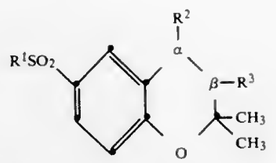
5,254,578

BENZOPYRAN DERIVATIVES HAVING ANTI-HYPERTENSIVE AND VASODILATORY ACTIVITY AND THEIR THERAPEUTIC USE

Toshibiko Hashimoto; Hidekazu Masuko; Hiroyuki Koike, and Toshio Sada, all of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

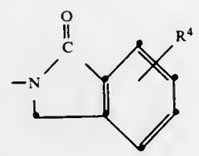
Continuation of Ser. No. 778,527, Oct. 18, 1991, abandoned. This application Nov. 9, 1992, Ser. No. 973,560
Claims priority, application Japan, Oct. 24, 1990, 2-286617
Int. Cl.[5] A61K *31/40;* **C07D** *405/04*
U.S. Cl. 514—414 **9 Claims**

1. A compound of formula (I):



(I)

in which:
R^1 represents a trifluoromethyl group or a pentafluoroethyl group;
R^2 represents a group of formula (II):



(II)

in which R^4 represents a hydrogen atom;
α-β represents a carbon-carbon single bond; and
R^3 represents a nitrooxy group;
or a pharmaceutically acceptable salt thereof.

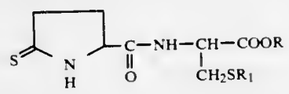
5,254,579

N-(5-THIOXO-L-PROLYL)-L-CYSTEINE, DERIVATIVES THEREOF, PROCESSES FOR THE PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Stefano Poli; Germano Coppi, and Giovanni Signorelli, all of Quinto de'Stampi-Rozzano, Italy, assignors to Poli Industria Chimica S.p.A., Milan, Italy

Filed May 8, 1992, Ser. No. 879,907
Claims priority, application Italy, May 29, 1991, M191 A 001470
Int. Cl.[5] A61K *31/40;* **C07D** *207/12, 409/12, 403/12*
U.S. Cl. 514—422 **15 Claims**

1. Compounds of general formula I



(I)

in which
R is H, straight or branched C_1–C_6 alkyl, phenyl, phenyl(C_1–C_6)alkyl and (C_1–C_4)dialkylamino(C_1–C_{10})alkyl;
R_1 is H, straight or branched C_1–C_6 alkyl, (C_1–C_6)alkoxycarbonyl(C_1–C_8)alkyl, benzoyl, phenyl(C_1–C_6)alkanoyl, 2-thenoyl and 3-thenoyl; R_1 can represent S linked to an equal residue of formula (I), to give a disulfide;
the enantiomers, diastereoisomers and mixtures thereof and the pharmaceutically acceptable salts thereof.

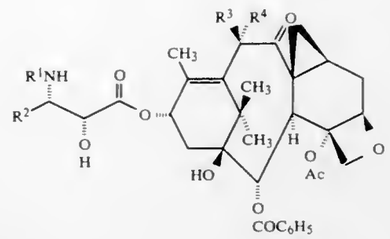
5,254,580

7,8-CYCLOPROPATAXANES

Shu-Hui Chen, Hamden, and Vittorio Farina, West Hartford, both of Conn., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Continuation-in-part of Ser. No. 6,423, Jan. 19, 1993, which is a continuation of Ser. No. 907,261, Jul. 1, 1993, abandoned. This application Mar. 11, 1993, Ser. No. 29,819
Int. Cl.[5] A01N *43/02;* **C07C** *305/00*
U.S. Cl. 514—449 **11 Claims**

1. A compound of formula I



I

in which
R^1 is $-COR^z$ in which R^z is t-butyloxy, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-6} cycloalkyl, or phenyl, optionally substituted with one to three same or different C_{1-6} alkyl, C_{1-6} alkoxy, halogen or $-CF_3$ groups;
R^2 is C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-6} cycloalkyl, or a radical of the formula $-W-R^x$ in which W is a bond, C_{2-6} alkenediyl, or $-(CH_2)_t-$, in which t is one to six; and R^x is naphthyl, furyl, thienyl or phenyl, and furthermore R^x can be optionally substituted with one to three same or different C_{1-6} alkyl, C_{1-6} alkoxy, halogen or $-CF_3$ groups;
R^3 is OCOR, —OCOOR, H, or OH; R^4 is hydrogen; or R^3 and R^4 jointly form a carbonyl group; and R is C_{1-6} alkyl.
8. A pharmaceutical formulation which comprises as an active ingredient a compound as claimed in any one of claims 1 to 7 associated with one or more pharmaceutically acceptable carriers, excipients or diluents therefor.

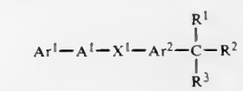
5,254,581

PYRAN DERIVATIVES AND THEIR USE AS INHIBITORS OF 5-LIPOXYGENASE

Pierre A. R. Bruneau, Ludes, France; Robert I. Dowell, Congleton, and David Waterson, Macclesfield, both of England, assignors to Imperial Chemical Industries PLC, London, England and ICI Pharma, Cergy Cedex, France

Continuation of Ser. No. 717,509, Jun. 19, 1991, abandoned. This application Feb. 2, 1993, Ser. No. 12,810
Claims priority, application European Pat. Off., Jun. 21, 1990, 90401755.5
Int. Cl.[5] A61K *31/35;* **C07D** *309/06*
U.S. Cl. 514—460 **8 Claims**

1. A cyclic ether derivative of the formula I



I

wherein Ar^1 is phenyl or naphthyl, and Ar^1 may optionally bear up to five substituents selected from amino, halogeno, hydroxy, cyano, (1–4C)alkyl, (1–4C)alkoxy, (1–4C)alkylthio, (1–4C)alkylsulphinyl, (1–4C)alkylsulphonyl, (1–4C)alkylamino, di-[(1–4C)alkyl]amino, (2–4C)alkanoyl, fluoro-(1–4C)alkyl, cyano-(1–4C)alkyl, phenyl, benzoyl and phenyl-(1–4C)alkyl, and wherein said phenyl, benzoyl or phenyl-(1–4C)alkyl substituents may optionally bear a substituent selected from halogeno, (1–4C)alkyl and (1–4C)alkoxy;
wherein A^1 is a direct link to X^1 or is (1–3C)alkylene;
wherein X^1 is oxy, thio, sulphinyl, sulphonyl or imino;
wherein Ar^2 is phenylene which may optionally bear one or two substituents selected from halogeno, hydroxy, amino, nitro, cyano carbamoyl, ureido, (1–4C)alkyl, (1–4C)alkoxy, (1–4C)alkylamino, di-[(1–4C)alkyl]amino, fluoro-(1–4C)alkyl and (2–4C)alkanoylamino;
wherein R^1 is (1–4C)alkylthio, (1–4C)alkylsulphinyl, (1–4C)alkylsulphonyl, (1–4C)alkylamino or di-[(1–4C)alkyl]amino, or
R^1 is hydrogen, formyl, cyano, carbamoyl, (1–4C)alkyl, (1–4C)alkoxycarbonyl, N-(1–4C)alkylcarbamoyl, N,N-di-[(1–4C)alkyl]carbamoyl, hydroxy-(1–4C)alkyl, fluoro-(1–4C)alkylthio, (2–4C)alkanoyl or (1–4C)alkoxy-(1–4C)alkyl; and
wherein R^2 and R^3 together form a group of the formula $-A^2-X^2-A^3-$ which, together with the carbon atom to which A^2 and A^3 are attached, defines a ring having 6 ring atoms, wherein A^2 and A^3, which may be the same or different, each is (1–3C)alkylene and X^2 is oxy, and which ring may bear one, two or three substituents which may be the same or different, selected from hydroxy, (1–4C)alkyl and (1–4C)alkoxy;
or a pharmaceutically-acceptable salt thereof.

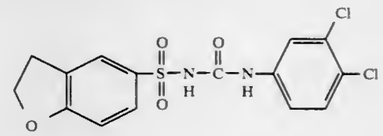
5,254,582

ANTITUMOR COMPOSITIONS AND METHODS

George B. Boder, Martinsville; William J. Ehlhardt, Indianapolis; Gerald B. Grindey, Indianapolis; John E. Toth, Indianapolis; John F. Worzalla, Indianapolis, and John L. Zimmermann, Greenfield, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Feb. 5, 1992, Ser. No. 831,604
Int. Cl.[5] A01N *43/08;* **A61K** *31/34*
U.S. Cl. 514—469 **3 Claims**

1. A method of treating susceptible neoplasms in mammals which comprises administering to a mammal in need of said treatment an effective amount for treating susceptible neoplasms of a compound of the formula



or a pharmaceutically acceptable salt thereof.

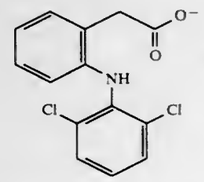
5,254,583

SALTS OF 2-(2,6-DICHLOROANILINO)-PHENYLACETIC ACID, A PROCESS FOR THEIR PREPARATION AND THEIR USE FOR PHARMACEUTICAL PREPARATIONS TO BE APPLIED LOCALLY

Grafe Ingomar, Nürnberg; Schickaneder Helmut, Eckental; Mörsdorf J. Peter, Langenzenn; Vergin Hartmut, and Ahrens Kurt-Henning, both of Nürnberg, all of Fed. Rep. of Germany, assignors to Heumann Pharma GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Feb. 5, 1992, Ser. No. 831,477
Claims priority, application European Pat. Off., Feb. 7, 1991, 91101674.9
Int. Cl.[5] A01N *55/02, 37/12;* **C07C** *229/00*
U.S. Cl. 514—492 **5 Claims**

1. A pharmaceutical composition suitable for topical administration comprising an effective anti-inflammatory, anti-rheumatic or analgesic amount of a salt of 2-(2,6-dichloroanilino)-phenylacetic acid having the formula



(I)

wherein Me is rubidium or caesium and a physiologically and topically acceptable organic solvent therefor.

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5,254,584

N-ACETONYLBENZAMIDES AND THEIR USE AS FUNGICIDES

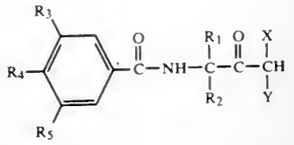
Enrique L. Michelotti, Fort Washington; Robert R. Raney, Newtown Square, and David H. Young, Ambler, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Dec. 18, 1992, Ser. No. 993,158

Int. Cl.[5] **A01N** *47/48, 37/18;* **A61K** *31/165;* **C07C** *235/12*

U.S. Cl. 514—514 **30 Claims**

1. A compound of the formula:



wherein:

R_1 and R_2 are each independently H, (C_1-C_4)alkyl, (C_2-C_4-)alkenyl or (C_2-C_6)alkynyl;

R_3, R_4 and R_5 are each independently H, halo, (C_1-C_4)alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl or $CR_6{=}NOR_7$, provided that at least one of R_3, R_4 and R_5 is $CR_6{=}NOR_7$;

R_6 is H, (C_1-C_4)alkyl, (C_2-C_6)alkenyl or (C_2-C_6)alkynyl;

R_7 is H, (C_1-C_4)alkyl, (C_2-C_6)alkenyl, (C_2-C_6)alkynyl or (C_1-C_4)alkylcarbonyloxy(C_1-C_4)alkyl; and

X and Y are each independently H, halo, cyano, thiocyanato, isothiocyanato or (C_1-C_4)alkylsulfonyloxy; and

agronomically acceptable salts thereof.

5,254,585

USE OF PEROXIDIZED LIPIDS FOR THE PREPARATION OF A DRUG INTENDED FOR THE TREATMENT OF CIRCULATORY INSUFFICIENCIES BY LOCAL APPLICATION

Stéphane Desjonqueres, Montesson, France, assignor to Laboratoires Carilene, Montesson, France

PCT No. PCT/FR90/00494, § 371 Date Dec. 30, 1991, § 102(e) Date Dec. 30, 1991, PCT Pub. No. WO91/00101, PCT Pub. Date Jan. 10, 1991

PCT Filed Jul. 2, 1990, Ser. No. 784,397

Claims priority, application France, Jul. 3, 1989, 89 08883

Int. Cl.[5] **A61K** *31/23*

U.S. Cl. 514—552 **25 Claims**

1. A pharmaceutical composition for the treatment of circulatory insufficiencies in a mammal by local application wherein said composition contains a peroxidized lipid, having a degree of peroxidation of between 50 and 200 milliequivalents per kilogram.

5,254,586

Patent Not Issued For This Number

5,254,587

METHODS FOR TREATING AIDS

Stanislaw R. Burzynski, 20 W. Rivercrest, Houston, Tex. 77042

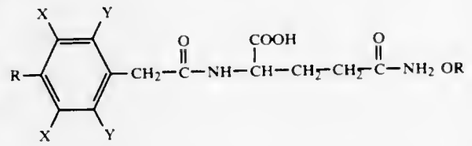
Division of Ser. No. 577,464, Sep. 4, 1990, Pat. No. 5,089,508. This application Nov. 8, 1991, Ser. No. 790,584

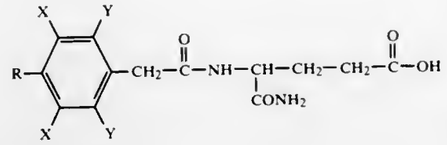
Int. Cl.[5] **A61K** *31/195*

U.S. Cl. 514—563 **9 Claims**

1. A method of treating AIDS in an afflicted host comprising:

administering to the host a pharmaceutical composition containing a therapeutically effective amount of an active compound of the formula:





or mixtures thereof,

wherein

R is OH, NH_2, OW, or H;

X is H, F, Cl, Br, I, OH, OW, NO_2, or NH_2;

Y is H, F, Cl, Br, or I;

W is



or a C_1 to C_{12} aliphatic group;

Z is an aliphatic or aromatic group of C_1 to C_{12};

X and Y can both vary within the compound; and pharmaceutically acceptable salts thereof.

5,254,588

TREATMENT OF PULMONARY DYSFUNCTION WITH 15-KETOPROSTAGLANDIN COMPOUNDS

Ryuji Ueno, and Hiroyoshi Osama, both of Hyogo, Japan, assignors to KabushikiKaisha Ueno Seiyaku Oyo Kenkyujo, Osaka, Japan

Continuation of Ser. No. 616,955, Nov. 21, 1990, abandoned. This application Jun. 2, 1992, Ser. No. 892,642

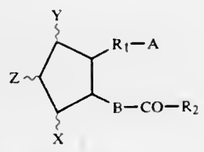
Claims priority, application Japan, Nov. 22, 1989, 1-303841

Int. Cl.[5] **A61K** *31/19, 31/557*

U.S. Cl. 514—573 **13 Claims**

1. A method for treatment of a pulmonary dysfunction which comprises administering, to a subject in need of such treatment, a pulmonary dysfunction treatment effective amount of a 15-ketoprostaglandin compound represented by formula (I):

(I)



wherein X and Y are hydrogen, hydroxy, halo, lower alkyl, hydroxy(lower)alkyl, or oxo, with the proviso that at least one of X and Y is a group other than hydrogen, and 5-membered

ring may have at least one double bond, Z is hydrogen or halo, Z is $-CH_2OH$, $-COCH_2OH$, —COOH or its functional derivative, B is $-CH_2-CH_2-$, —CH=CH— or —C≡C—, R_1 is bivalent saturated or unsaturated, lower or medium aliphatic hydrocarbon residue which is unsubstituted or substituted with halo, oxo or aryl, R_2 is saturated or unsaturated, lower or medium aliphatic hydrocarbon residue which is unsubstituted or substituted with halo, hydroxy, oxo, lower alkoxy, lower alkanoyloxy, cyclo(lower)alkyl, aryl or aryloxy, and said compound represented by formula (I) having a halogen atom at least at one of positions 5 and 16.

5,254,589

SULFONYL UREA AND CARBAMATE ACAT INHIBITORS

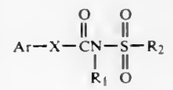
Joseph A. Picard, Ypsilanti; William H. Roark, and Bruce D. Roth, both of Ann Arbor, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Oct. 15, 1991, Ser. No. 776,112

Int. Cl.[5] **A61K** *31/175*

U.S. Cl. 514—592 **3 Claims**

1. A method for treating atherosclerosis in a patient in need thereof which comprises administering to said patient an effective amount of a compound of the formula



wherein X is —NH—; wherein Ar is

(a) phenyl which is unsubstituted or is substituted with from one to three substituents selected from:

alkyl having from 1 to 4 carbon atoms and which is straight or branched,

alkoxy having from 1 to 3 carbon atoms and which is straight or branched,

hydroxy,

fluorine,

chlorine,

bromine,

nitro,

cyano,

trifluoromethyl,

—COOH,

—COOalkyl wherein alkyl has from 1 to 4 carbon atoms and which is straight or branched,

$-(CH_2)_mNR_3R_4$ wherein m is zero or one, and each of R_3 and R_4 is hydrogen or a straight or branched alkyl group having 1 to 4 carbon atoms;

(b) 1- or 2-naphthyl which is unsubstituted or substituted with one to three substituents selected from:

alkyl having from 1 to 4 carbon atoms and which is straight or branched,

alkoxy having from 1 to 3 carbon atoms and which is straight or branched,

hydroxy,

fluorine,

chlorine,

bromine,

nitro,

cyano,

trifluoromethyl,

—COOH,

—COOalkyl wherein alkyl has from 1 to 4 carbon atoms and which is straight or branched,

$-(CH_2)_mNR_3R_4$ wherein m, R_3, and R_4 have the meanings defined above;

wherein R_1 is hydrogen, lower alkyl having from 1 to 4 carbon atoms or benzyl; wherein R_2 is



wherein each of R_5 and R_6 is hydrogen, methyl, ethyl, phenyl, phenyl substituted with straight or branched lower alkyl having from 1 to 4 carbon atoms, straight or branched lower alkoxy having from 1 to 4 carbon atoms, chlorine, fluorine or bromine, or R_5 and R_6 together with the carbon atom to which they are attached form a cyclic group having from 3 to 8 carbon atoms; and R_7 is a straight or branched alkyl group having from 4 to 16 carbon atoms; and pharmaceutically acceptable salts thereof; in combination with a pharmaceutically acceptable carrier.

5,254,590

ACYLAMINOPHENOL COMPOUNDS

Charles Malen, Fresnes; Jean-Michel Lacoste, Sevres; Jean-Paul Vilaine, Chatenay-Malabry, all of France, and Albert Lenaers, Triel sur Seine, Belgium, assignors to Adir et Compagnie, Courbevoie, France

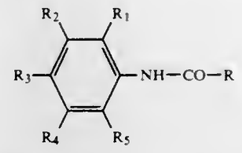
Filed Mar. 5, 1992, Ser. No. 847,599

Claims priority, application France, Mar. 8, 1991, 91 02800

Int. Cl.[5] **A01N** *37/22, 37/18*

U.S. Cl. 514—613 **33 Claims**

1. A compound selected from those of formula (I):



(I)

in which:

R represents linear or branched (C_8-C_{21}) alkyl, linear or branched 1-(C_8-C_{21})alkyl-(C_3-C_6)cycloalk-1-yl, or linear or branched (C_8-C_{21}) alkenyl having one to three double bonds, and

R_1 and R_4 represent simultaneously hydroxyl, and

R_2, R_3 and R_5, which are identical or different, represent

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linear or branched (C_1-C_6) alkyl or linear or branched (C_1-C_6) alkoxy,

its enantiomers, diastereoisomers and epimers, and its cis/trans isomers, as well as its addition salts with a pharmaceutically-acceptable base.

5,254,591

PHARMACEUTICAL COMPOSITION FOR TREATING GASTROESOPHAGEAL REFLUX

Christopher J. Martin, Victoria, Australia, assignor to The University of Melbourne, Parkville, Australia

Continuation of Ser. No. 737,392, Jul. 29, 1991, abandoned, which is a continuation of Ser. No. 370,111, Jun. 21, 1989, Pat. No. 5,036,057, which is a continuation of Ser. No. 127,662, Dec. 21, 1987, abandoned. This application Apr. 10, 1992, Ser. No. 867,065

Claims priority, application Australia, Jan. 3, 1986, PH4084

Int. Cl.[5] **A61K** *31/16, 47/00*

U.S. Cl. 514—616 **5 Claims**

1. A pharmaceutical composition comprising

(i) oxethazaine in an amount sufficient to indirectly inhibit relaxation of the lower esophageal sphincter by acting on mechanoreceptors located in the fundus of the stomach, and

(ii) a carrier for said oxethazaine selected from the group consisting of alginic acid and alginates, said carrier adapted to float on gastrointestinal fluids contained in the stomach such that said carrier is more proximate to the gastric mucosa below said sphincter than said gastrointestinal fluids, said carrier being accordingly adapted to deliver said oxethazaine to the fundic mucosa such that it is able to act on said mechanoreceptors.

5,254,592

MULTIPLY SUBSTITUTED ANILINES, PHENOLS AND PYRIDINES-IMMUNOMODULATING AGENTS

Barbara B. Lussier, Rochester, N.J.; Lee H. Latimer, Rochester, N.Y.; Carl R. Illig, Phoenixville, Pa., and William N. Washburn, Titusville, N.J., assignors to Sterling Drug Inc., New York, N.Y.

Filed Dec. 31, 1991, Ser. No. 815,447

Int. Cl.[5] **A61K** *31/165;* **C07C** *233/65*

U.S. Cl. 514—617 **2 Claims**

1. A compound which is N-(1,1-dimethylethyl)-2-(2,4-bis(1,1-dimethylpropyl)phenoxy)-5-hydroxy-4-methylbenzamide

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5,254,593

COMPOSITIONS CONTAINING BIGUANIDES AND DERIVATIVES THEREOF AS INHIBITORS OF NONENZYMATIC CROSS-LINKING

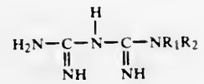
Peter C. Ulrich, Tenafly, N.J., and Anthony Cerami, Shelter Island, N.Y., assignors to The Rockefeller University, New York, N.Y.

Division of Ser. No. 606,425, Oct. 31, 1990, Pat. No. 5,100,919, which is a continuation-in-part of Ser. No. 481,869, Feb. 20, 1990, Pat. No. 5,128,360, which is a continuation-in-part of Ser. No. 220,504, Jul. 18, 1989, abandoned, which is a division of Ser. No. 798,032, Nov. 14, 1985, Pat. No. 4,758,583, which is a continuation-in-part of Ser. No. 590,820, Mar. 19, 1984, Pat. No. 4,665,192. This application Dec. 16, 1991, Ser. No. 807,609

Int. Cl.[5] **A61K** *31/155*

U.S. Cl. 514—635 **5 Claims**

1. A method for inhibiting the advanced glycosylation of a target protein comprising contacting the target protein with an effective amount of composition comprising a compound selected from the group consisting of compounds of the formula



wherein R_1 and R_2 together with the nitrogen atom form a heterocyclic ring containing from 1 to 2 heteroatoms and 2 to 6 carbon atoms, the second of said heteroatoms being selected from the group consisting of nitrogen, oxygen and sulfur; a biocompatible or pharmaceutically acceptable acid addition salt, or a mixture thereof; and a carrier therefor.

5,254,594

REMEDIES FOR BONE DISEASES

Kazuaki Niikura; Yoshimitsu Nakajima; Yoshitada Notsu; Ryuji Ono, and Osamu Nakayama, all of Ibaraki, Japan, assignors to Klinge Pharma GmbH, Munich, Fed. Rep. of Germany

Filed Apr. 8, 1992, Ser. No. 865,106

Claims priority, application Japan, Apr. 9, 1991, 3-166944

Int. Cl.[5] **A61K** *31/135*

U.S. Cl. 514—648 **3 Claims**

1. A method of treating bone diseases characterized by abnormalities in bone metabolism comprising administering to a patient suffering from bone disease a therapeutically effective amount of droloxifene or a pharmaceutically acceptable salt thereof.

5,254,595

ARYLOXYPROPANOLAMINOTETRALINS, A PROCESS FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Umberto Guzzi, Milan; Marco Baroni, Vanzago; Sergio Boveri, Tortona; Luciano Manara, Pietra Marazzi, and Alberto Bianchetti, Milan, all of Italy, assignors to Elf Sanofi, Paris, France

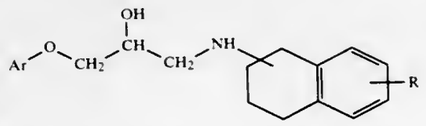
Continuation of Ser. No. 454,856, Dec. 22, 1989, abandoned. This application Jan. 9, 1992, Ser. No. 818,513

Claims priority, application France, Dec. 23, 1988, 88 17139

Int. Cl.[5] **C07C** *237/02, 215/56;* **A61K** *31/165, 31/135*

U.S. Cl. 514—652 **11 Claims**

1. An aryloxypropanolaminotetralin compound of formula (i) and acid addition salts thereof



(i)

wherein R is hydrogen, hydroxy or methoxy; and

Ar represents naphthyl, tetralyl, indanyl, indenyl, phenyl or phenyl substituted by a group selected from the group consisting of halogen, cyano, hydroxy, amino, nitro, carboxyl, carbamoyl, trifluoromethyl, $C_{1\text{-}10}$alkyl, $C_{2\text{-}10}$alkenyl, $C_{2\text{-}10}$alkynyl, $C_{3\text{-}8}$cycloalkyl, $C_{1\text{-}7}$alkanoyl, $C_{1\text{-}10}$alkoxy, $C_{2\text{-}10}$hydroxyalkyl, $C_{2\text{-}10}$alkoxyalkyl, $C_{3\text{-}10}$alkoxyalkoxyalkyl, $C_{2\text{-}10}$alkoxyalkoxy, $C_{2\text{-}10}$alkenyloxy, $C_{3\text{-}10}$alkenyloxyalkyl, $C_{2\text{-}10}$alkynyloxy, $C_{3\text{-}10}$alkynyloxyalkyl, $C_{3\text{-}8}$cycloalkoxy, $C_{1\text{-}10}$alkylthio, $C_{2\text{-}10}$alkylthioalkyl, $C_{1\text{-}7}$acylamino, $C_{2\text{-}8}$acylaminoalkyl, $C_{1\text{-}6}$acyloxy, $C_{2\text{-}5}$alkoxycarbonyl, $C_{4\text{-}8}$cycloalkoxycarbonyl, and aminocarbonylamino.

5,254,596

PROCESS FOR THE MANUFACTURE OF METHANOL AND DIMETHYL ETHER

Gether Irick, Jr., Gray; Patricia N. Mercer, and Keneth E. Simmons, both of Kingsport, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 15, 1992, Ser. No. 945,048

Int. Cl.[5] **C07C** *27/06*

U.S. Cl. 518—728 **5 Claims**

1. Process for the preparation of methanol, dimethyl ether or a mixture thereof which comprises contacting synthesis gas with a catalyst comprising chemically-mixed, titanium-zinc oxide wherein the Zn:Ti atomic ratio is in the range of 0.025:1 to 0.58:1 wherein the process is carried out at a temperature of about 200° to 350° and a pressure of about 700 to 5500 psig.

5,254,597

PRODUCTION OF CHLOROFLUOROCARBON-FREE, URETHANE-CONTAINING MOLDINGS HAVING A CELLULAR CORE AND A COMPACTED PERIPHERAL ZONE

Peter Horn, Heidelberg; Ulrich Mueller, Neustadt; Wolfgang Hoelderich, Frankenthal; Rudolf Taddey, Damme; Dieter Tintelnot, Diepholz, and Ludwig Schuster, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF A.G., Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 24, 1992, Ser. No. 981,025

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1991, 4139520

Int. Cl.[5] **C08J** *9/34*

U.S. Cl. 521—51 **16 Claims**

1. A process for the production of chlorofluoro-carbon-free, urethane- or urethane- and urea-containing moldings having a cellular core and a compacted peripheral zone, by reacting

a) an organic and/or modified organic polyisocyanate with

b) at least one relatively high-molecular-weight compound containing at least two reactive hydrogen atoms, and, if optionally,

c) a low-molecular-weight chain extender and/or crosslinking agent, in the presence of

d) a blowing agent,

e) a catalyst,

f) additives and, if optionally,

g) assistants,

in a closed mold with compaction, wherein one of the additives (f) is microporous activated charcoal, microporous carbon molecular sieve or a mixture thereof.

5,254,598

BIODEGRADABLE COMPOSITION AND PRODUCTS

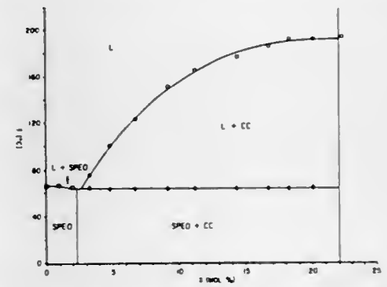
Herman W. Schlameus; Mary C. Marshall; Stephen T. Wellinghoff; Donald J. Mangold, and James R. Scott, all of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed Dec. 9, 1991, Ser. No. 804,291

Int. Cl.[5] **C08J** *9/36, 3/32;* **B32B** *3/26;* **C08K** *7/02*

U.S. Cl. 521—54 **7 Claims**

1. A biodegradable composition comprising a polymer matrix having distributed substantially uniformly therethrough hollow sphere-like inclusions or microcapsules, said polymer matrix consisting essentially of a water-soluble polymer/-polymer-compatible salt system with said salt present in an amount sufficient to achieve the eutectic point of the mixture



of said polymer and said salt to prevent the immediate dissolution of said polymer in water, but dissoluble in water over time.

5,254,599

PLASTIC MOLDINGS MADE OF WATER-EXPANDED POLYMER RESIN

Lothar Frank, deceased, late of Plüderhausen, Fed. Rep. of Germany by Brigitte Frank, legal representative , assignor to Schock & Co. GmbH, Schorndorf, Fed. Rep. of Germany

Filed Feb. 12, 1992, Ser. No. 835,125

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1991, 4104295

Int. Cl.[5] **C08G** *18/14*

U.S. Cl. 521—65 **33 Claims**

1. Plastic molding made of a water-expanded polymer resin and produced form a curable mixture containing a water component emulsified by an emulsifier component in a resin-forming component, said resin-forming component of said curable mixture comprising a monomer component and an acrylate cross-linker or a monomer component, a low to medium molecular weight polymeric acrylate polymer and an acrylate cross-linker, and the weight ratio of said water component to said resin-forming component being at least 1:1.

5,254,600

METHOD OF PRODUCING RIGID FOAMS AND PRODUCTS PRODUCED THEREFROM

Robert H. Blanpied; Robert J. Butkus; Andy I. McLaughlin, and Richard L. Donald, all of Meridian, Mich., assignors to Atlas Roofing Corporation, Meridian, Mich.

Continuation-in-part of Ser. No. 568,707, Aug. 17, 1990, abandoned, and Ser. No. 720,735, Jun. 25, 1991. This application Mar. 16, 1992, Ser. No. 851,889

Int. Cl.[5] **C08G** *18/18, 18/22;* **C08J** *9/08*

U.S. Cl. 521—125 **23 Claims**

1. A method of producing a thermosetting foam, the method comprising the steps of:

(1) preparing a first of two foam forming blends using a multi-isocyanate functional compound chosen from the group consisting of polymeric polymethylene polyphenylisocyanate, and a prepolymer made therefrom;

(2) preparing a second of two foam forming blends by mixing together:

(a) a polyol;

(b) water in an amount less than 1% by weight of the total foam;

(c) the tertiary amine catalyst having at least two hydrogen bonding sites for one water molecule, wherein both the hydrogen segment and the hydroxyl segment of water are attracted by both of the hydrogen bonding sites on the catalyst molecule essentially simultaneously;

(d) an alkali metal organo-salt catalyst;

(3) mixing a first blowing agent with at least one of the two foam forming blends;

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(4) mixing together the first and second foam forming blends wherein both blends have viscosities in excess of 250 cps and are at temperatures in excess of 75° F. and whereby the following occurs:

(a) the tertiary amine catalyst initiates a reaction between the water and the polymeric polymethylene polyphenylisocyanate whereby prior to a gel point of the foam:

i) a second blowing agent is produced for forming closed cells in the blends and for causing expansion in the liquid blends;

ii) sufficient exothermic heat is produced to initiate boiling of the first blowing agent; followed by

(b) the alkali metal organo-salt catalyst induces rapid vaporizing of the first blowing agent due to a high level of exothermic heat, whereby expansion of the mixed blends is substantially completed prior to the effective conversion of the mixed liquid blends to a rigid solid, the alkali metal organo-salt catalyst being present in an amount sufficient to cause a sufficiently complete trimerization reaction.

5,254,601

HCEC BLOWN RIGID FOAMS WITH LOW THERMAL CONDUCTIVITY

Herman P. Doerge, Pittsburgh, Pa., assignor to Miles Inc., Pittsburgh, Pa.

Filed Sep. 20, 1991, Ser. No. 763,109

Int. Cl.[5] C08J *9/14*

U.S. Cl. 521—131 **10 Claims**

1. A process for the production of a rigid polyurethane foam having a thermal conductivity of less than about 0.130 Btu-in./hr.ft^2°F. comprising reacting

a) an organic polyisocyanate with

b) an organic material having at least two isocyanate-reactive hydrogen atoms and an OH value of from about 200 to about 650 in he presence of

c) from about 0.1 to about 1.0% by weight of water and

d) a blowing agent selected from the group consisting of 1,1-dichloro-2,2,2-trifluoroethane and dichlorofluoroethane.

5,254,602

CURABILITY-IMPARTING COMPOSITION, METHOD FOR CURING WITH SAID COMPOSITION, AND METHOD FOR PRODUCTION OF GLASS FIBER-REINFORCED PLASTIC

Yoshihiro Tomura, and Shigeki Banno, both of Aichi, Japan, assignors to Nippon Oil & Fats Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 408,386, Sep. 18, 1989, abandoned. This application Feb. 21, 1992, Ser. No. 837,617

Claims priority, application Japan, Oct. 1, 1988, 63-245891

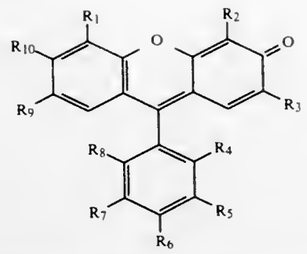
Int. Cl.[5] C08F *2/50;* **C08L** *67/06;* **C08K** *5/07, 5/14*

U.S. Cl. 522—24 **12 Claims**

1. A composition for imparting to an unsaturated polyester the property to cure on exposure to visible light, which composition comprises:

(a) an unsaturated polyester;

(b) a fluorescein compound photoreducing dye having the following structure:



and selected from the group consisting of (1) compounds wherein R_1 and R_2 are Br, R_4 is selected from the group consisting of COONa and COOH, R_3 and R_9 are selected from the group consisting of NO_2 and Br, R_{10} is selected from the group consisting of ONa and OH, and R_5, R_6, R_7 and R_8 are H; (2) compounds wherein R_1, R_2, R_3 and R_9 are I, R_4 is selected from the group consisting of COONa and COOH, R_{10} is selected from the group consisting of ONa and OH, and R_5, R_6, R_7 and R_8 are H; (3) compounds wherein R_1, R_2, R_3 and R_9 are I, R_{10} is selected from the group consisting of ONa and OH, R_4 is selected from the group consisting of COONa and COOH, and R_5, R_6, R_7 and R_8 are Cl; and (4) compounds wherein at least one of R_1, R_2, R_3, R_5, R_7 and R_9 is selected from the group consisting of Br, Cl and I, provided that they otherwise are H, R_4 is selected from the group consisting of COONa and COOH, and R_{10} is selected from the group consisting of ONa and OH;

(c) tribenzylamine; and

(d) at least one peroxide selected from the group consisting of diacyl peroxides, peroxy esters and peroxy monocarbonates, said peroxide having a ten-hour half-life temperature of not less than 70° C.,

the amounts of the components (b), (c), and (d) falling in the range of 0.016 to 1 part by weight, 0.1 to 5 parts by weight and 0.2 to 5 parts by weight, respectively, based on 100 parts by weight of component (a).

5,254,603

LOW TOXICITY RADIATION CURABLE RESINS AND COATINGS MADE THEREFROM

Steven H. Nahm, Greensburg, Pa., assignor to Hercules Incorporated, Wilmington, Del.

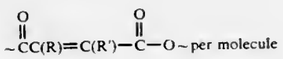
Filed Dec. 24, 1990, Ser. No. 633,735

Int. Cl.[5] C08K *5/16*

U.S. Cl. 522—72 **10 Claims**

1. A UV radiation curable coating composition comprising:

(a) about 35 weight % to 45 weight % of an unsaturated polyester resin having at least two ethylenic group of the structure:



where R and R' are the same or different and are selected from the group of hydrogen, an alkyl having 1 to 22 carbon atoms and aryl;

(b) about 24 weight % to 48 % of a reactive monomer selected from the group consisting of vinyl acetate, divinyl adipate, divinyl phthalate, divinly isophthalate and mixtures thereof;

(c) about 2 weight % of 6 weight % of a photoinitiator selected from the group of solid benzoyl cyclohexanol and liquid isopropanol; and

(d) between about 15 weight % to 25 weight % of nitrocellulose.

5,254,604

LIGHT POLYMERIZABLE RESIN COMPOSITIONS FOR THE PREPARATION OF CLASP PATTERNS

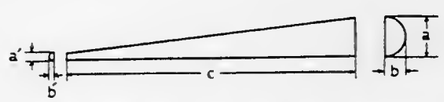
Hiroshi Mori, Chita; Tatsuhiko Takahashi, Nagoya, and Akira Hasegawa, Inuyama, all of Japan, assignors to G-C Toshi Kogyo Corporation, Kasugai, Japan

Continuation of Ser. No. 519,316, May 8, 1990, abandoned, which is a continuation-in-part of Ser. No. 348,160, May 8, 1989, abandoned, which is a continuation-in-part of Ser. No. 197,973, May 24, 1988, abandoned. This application Dec. 16, 1991, Ser. No. 807,655

Claims priority, application Japan, Jun. 23, 1987, 62-156101

Int. Cl.[5] G08F *2/46*

U.S. Cl. 522—95 **9 Claims**



1. A light-polymerizable resin composition capable of being formed into a shape suitable for the preparation of clasp patterns, which consists of (a) a light-polymerizable compound which is solid at room temperature and has a melting point of about 60°-80° C. and at least one ethylenically unsaturated double bond, (b) an organic filler material, (c) a light polymerization initiator, (d) a reducing agent, and, optionally (e) a polymerization inhibitor.

5,254,605

IMIDE EPOXY RESIN COMPOSITION FOR SEALING SEMICONDUCTOR ELEMENTS

Whan G. Kim, Seoul; Byung W. Lee, Yongin, and Ji Y. Lee, Seoul, all of Rep. of Korea, assignors to Cheil Industries, Inc., Rep. of Korea

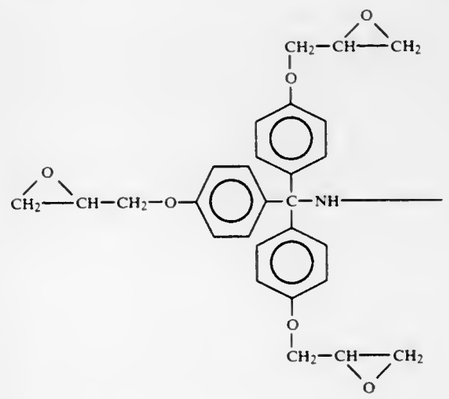
Filed Oct. 21, 1992, Ser. No. 964,457

Claims priority, application Rep. of Korea, Nov. 30, 1991, 91-21870; Nov. 30, 1991, 91-21871; Nov. 30, 1991, 91-21872

Int. Cl.[5] C08G *59/26, 59/32, 73/06, 73/10*

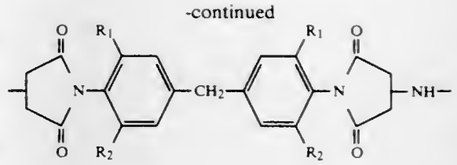
U.S. Cl. 523—428 **2 Claims**

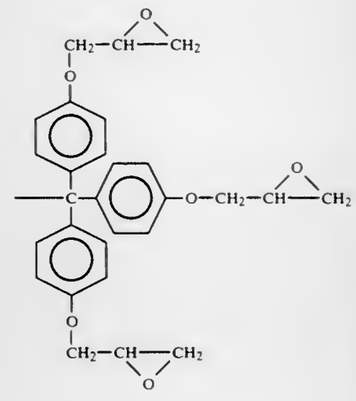
1. Epoxy resin composition for sealing semiconductor elements comprising an o-cresol-novolak epoxy resin, a phenol novolac curing agent, a curing accelerator, a plasticizer and a high performance epoxy resin, wherein the high performance epoxy resin is selected from the group consisting of epoxy resins represented by the formulae (I-a), (I-b) and (I-c), as follows;

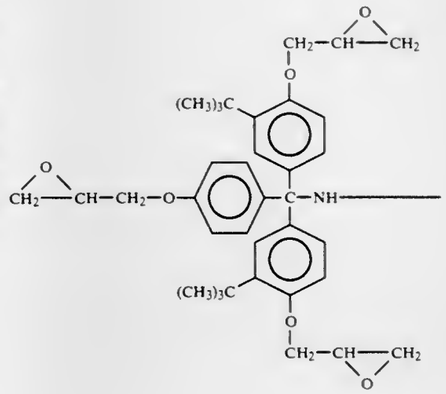


(I-a)

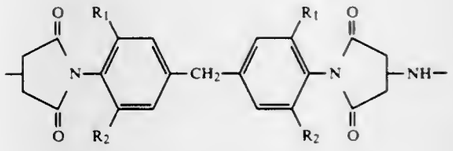
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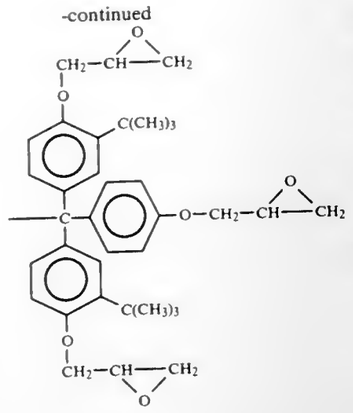


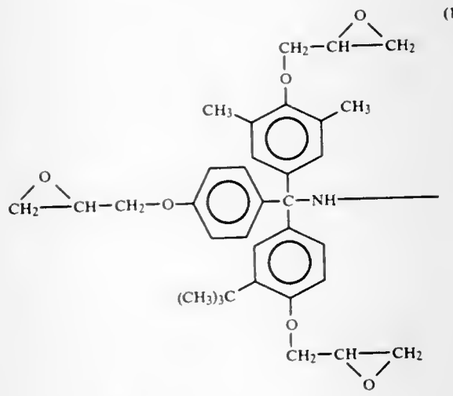
(I-b)



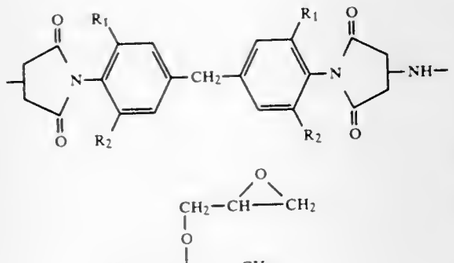
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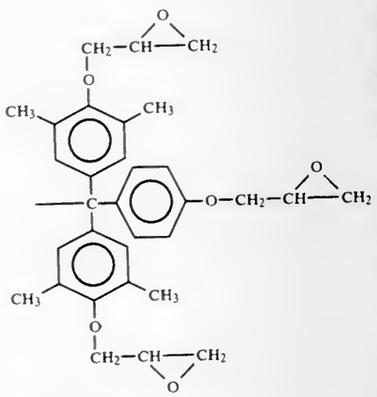
-continued





(1-c)





wherein, R_1 and R_2 represent independently H or a $-(CH_2)_nCH_3$ radical, and n represents 0 or an integer of 1 or greater.

5,254,606

SURFACE-PROTECTIVE AGENT

Ryuzo Mikami, and Tadashi Okawa, both of Ichihara, Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 522,753, May 11, 1990, Pat. No. 5,082,916. This application Sep. 12, 1991, Ser. No. 758,030
Claims priority, application Japan, Sep. 13, 1990, 2-242894
The portion of tbe term of this patent subsequent to Jan. 21, 2009, has been disclaimed.
Int. Cl.[5] C08K *5/54*
U.S. Cl. 523—522 **21 Claims**

1. A surface-protective agent comprising a solvent solution of a silicone-modified polyester prepared by reacting, in the presence of an effective amount of a hydrosilylation catalyst,
(A) a polyester containing at least one alkenyl group and having no unsaturated terminal groups, said polyester having a number average molecular weight of about 500 to about 5,000; and
(B) an organopolysiloxane containing one hydrosilyl group.

5,254,607

BIODEGRADABLE, LIQUID IMPERVIOUS FILMS

Robert K. McBride, Jasonville; James M. Adams, Terre Haute; Peter I. Chang, Terre Haute, and Carl D. Ray, Terre Haute, all of Ind., assignors to Tredegar Industries, Inc., Richmond, Va.

Filed Jun. 26, 1991, Ser. No. 721,794
Int. Cl.[5] C08L *3/04, 3/06*
U.S. Cl. 524—52 **13 Claims**

1. A biodegradable liquid impervious film comprising a blend of:
(a) a biodegradable interpenetrated network of destructurized starch and a copolymer selected from the group consisting of ethylene acrylic acid copolymer and ethylene vinyl alcohol copolymer; and
(b) a biodegradable aliphatic polyester, the weight ratio of said interpenetrated network of destructurized starch and copolymer to said aliphatic polyester being greater than 1:1.

5,254,608

ULTRAVIOLET SCREENER BLENDS

George R. McClure, Claymont, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 19, 1989, Ser. No. 423,364
Int. Cl.[5] C08K *5/34, 5/07*
U.S. Cl. 524—91 **9 Claims**

1. In a fluoropolymer film comprising up to about 10 weight % of ultraviolet light absorber, the improvement wherein the film comprises at least three ultraviolet light absorbers, each absorber having a molecular weight less than that which will form a visible separate phase in the fluoropolymer; each absorber present in a quantity below the saturation level of that absorber in the fluoropolymer; and each absorber having a molecular structure which differs chemically from each other absorber.

5,254,609

POLYARYLENE SULFIDE RESIN COMPOSITION AND PROCESS FOR THE PREPARATION

Hagime Serizawa, Mishima; Hiroyuki Sano, Fuji, and Masaru Kubota, Fujinomiya, all of Japan, assignors to Polyplastics Co., Ltd., Osaka, Japan

Filed Dec. 19, 1991, Ser. No. 810,186
Claims priority, application Japan, Dec. 25, 1990, 2-405945
Int. Cl.[5] C08K *5/15*
U.S. Cl. 524—114 **14 Claims**

1. A polyarylene sulfide resin composition obtained by melt kneading
(A) 97 to 20 parts by weight of a polyarylene sulfide resin and

(B) 3 to 80 parts by weight of a polyamide resin with
(C) 0.1 to 15 parts by weight of a monomeric compound having an aliphatic carbon-carbon double bond and an epoxy group in its molecule selected from the group consisting of N-[4-(2,3-epoxypropxy)-3,5-dimethylbenzyl]-acylamide and N-diallylaminoepoxypropane,
(D) 0 to 20% by weight based on component (C) of a radical initiator, and
(E) 0 to 400 parts by weight per 100 parts by weight of the sum of component (A) and (B) of one or more fillers selected from fibrous, powdery, flaky and hollow ones.

5,254,610

POLYESTER/POLYCARBONATE BLENDS CONTAINING PHOSPHITES

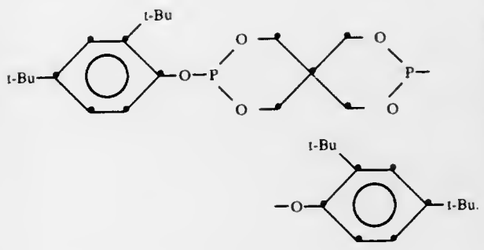
James D. Small, Jr., Blountville; Michael L. Cassell, Kingsport; A. James Cox, Kingsport; Michael J. Keegan, Kingsport, and W. Paul Bell, Jonesborough, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 2, 1991, Ser. No. 739,561
Int. Cl.[5] C08K *5/51, 5/52*
U.S. Cl. 524—120 **3 Claims**

1. A thermoplastic molding composition comprising:
(a) 10–90% by weight of a polyester or a copolyester, comprising: repeat units from at least one aromatic, aliphatic, or alicyclic dicarboxylic acid, wherein the aromatic portion of said aromatic dicarboxylic acid has 6–20 carbon atoms, and wherein the aliphatic or alicyclic portion of said aliphatic or alicyclic dicarboxylic acid has 3–20 carbon atoms, and repeat units from at least one aliphatic glycol having 2–20 carbon atoms;
(b) 90–10% weight of an aromatic polycarbonate of 4,4-isopropylidenediphenol (bisphenol-A); and
(c) 0.1 to about 2% by weight of a combination of aliphatic diphosphite and aromatic phosphite compounds,
wherein said aliphatic diphoshite has the following formula:



and wherein said aromatic phosphite has the following formula:



5,254,611

WATER DISPERSABLE URETHANE ACRYLATE OLIGOMER

Michael D. McDermott, Yardley, Pa., assignor to Henkel Corporation, Plymouth Meeting, Pa.

Filed Jun. 30, 1992, Ser. No. 906,812
Int. Cl.[5] C08L *75/04*
U.S. Cl. 524—198 **19 Claims**

1. A photocurable acrylate oligomer having the formula:

$$H_2C{:}CHCOORO[[COHNR'NH\text{-}CO[O[CH_2]_rCCH_3X]_mO]_n[CONHR'NHCOYR'\text{-}'Y]_p]_qCONHR'NHCOOROCOCH{:}CH_2 \quad (I)$$

wherein R is alkyl or aryl; R' is an aliphatic or aromatic moiety; R'' is C_1 to C_{10} alkyl, macro polyester or polyether; X is H or alkyl COOH; Y is NH or O; n, m, q and t are positive integers; and p is zero or a positive integer.

5,254,612

STRIPPABLE PROTECTIVE FILM AND COMPOSITION THEREFOR

Masahiro Sugi, and Mutsuhiro Tanaka, botb of Ichihara, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

PCT No. PCT/JP90/01008, § 371 Date Mar. 1, 1991, § 102(e) Date Mar. 1, 1991, PCT Pub. No. WO91/02028, PCT Pub. Date Feb. 21, 1991
PCT Filed Aug. 7, 1990, Ser. No. 655,367
Claims priority, application Japan, Aug. 7, 1989, 1-204215
Int. Cl.[5] C08L *23/20*
U.S. Cl. 524—274 **14 Claims**

1. A composition for a strippable protective film, which contains
85–20% by weight of a propylene/1-butene random copolymer (A) having a melt index (230° C.) of 0.1–100 g/10 min, propylene content of 60–85 mol %, and a heat of fusion of 20–80 joule/g,
15–80% by weight of an ethylene/α-olefin copolymer (B) having a melt index (190° C.) of 0.1–100 g/10 min, ethylene content of 75–95 mol %, crystallinity index of 0–30%, and an α-olefin having 3–10 carbon atoms, and
0–10% by weight of a tackifier (C), wherein (A)+(B)+(C) is 100% by weight.

5,254,613

MOLDING COMPOSITION FOR THE PRODUCTION OF INORGANIC SINTERED PRODUCTS

Michael Bayer, Lützelburg, and Iris Nagl, Burgheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 16, 1992, Ser. No. 899,483
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1991, 4119997
Int. Cl.[5] C08J *5/00*
U.S. Cl. 524—277 **6 Claims**

1. A molding composition which is based on inorganic sintering materials and comprises
70 to 96 parts by weight of a ceramic or metal powder,
1 to 10 parts by weight of a semi-synthetic wax having a dropping point of 79° to 90° C., an acid number of 5 to 35 mg of KOH/g, a saponification number of 70 to 160 mg of KOH/g, a density of 0.97 to 1.03 g/cm^3 and a viscosity at 100° C. of 20 to 80 mPa.s,
2 to 10 parts by weight of a polyolefin wax having a dropping point of 102° to 158° C., an acid number of 0 to 64 mg of KOH/g, a saponification number of 0 to 115 mg of KOH/g, a density of 0.87 to 1.03 g/cm^3 and a viscosity at 170° C. of 100 to 1500 mPa.s,
0.98 to 9.9 parts by weight of an ethylene/vinyl acetate copolymer having a melt index of 0.2 to 440 dg/min, a vinyl acetate content of 11 to 42% and a Vicat softening point of 36° to 80° C.,
0 to 0.05 part by weight of an organic peroxide having a scorch temperature of greater than 100° C. and
0 to 0.05 part by weight of an azo ester.

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5,254,614

POLYCARBONATE RESIN COMPOSITION FOR OPTICAL USE

Yoshitomi Urabe; Hironori Hayashida, both of Kitakyushu, and Yoshiaki Ohtani, Nakama, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed May 22, 1991, Ser. No. 704,095

Claims priority, application Japan, Jun. 8, 1990, 2-151316; Jun. 8, 1990, 2-151318

Int. Cl.[5] C08J *7/14;* **C08K** *5/09;* **C08L** *69/00*

U.S. Cl. 524—321 **8 Claims**

1. A transparent polycarbonate resin composition for optical use comprising a polycarbonate resin mixed with 5 to 1000 ppm, based on the polycarbonate resin, of adipic acid or tartaric acid.

5,254,615

Patent Not Issued For This Number

5,254,616

METAL OXIDE DEACTIVATION OF NATURAL RUBBER FATTY ACIDS

David A. Benko, Munroe Falls; Fredrick L. Magnus, Mogadore; Zalman Ronen, Akron, all of Ohio; Walter H. Waddell, Pittsburgh, Pa., and Robert W. Strozier, Houston, Tex., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jun. 24, 1991, Ser. No. 720,047

Int. Cl.[5] C08K *5/09*

U.S. Cl. 524—394 **22 Claims**

1. A process for deactivating fatty acids which are present in an uncured bulk elastomer prior to compounding in an amount sufficient to adversely affect tack and cure properties, wherein said elastomer is a sulfur vulcanizable diene-containing polymer or mixture thereof, said process comprising adding to said bulk elastomer a sulfur vulcanizing agent and an amount of metal oxide sufficient to deactivate said fatty acids, said metal oxide being selected from the group consisting of aluminum oxide and mixtures of calcium oxide and aluminum oxide, wherein said metal oxide is aluminum oxide from about 0.1 phr to about 7 phr or a mixture comprising from about 0.5 phr of aluminum oxide and from about 0.05 phr to about 1 phr of calcium oxide.

5,254,617

RESIN COMPOSITION FOR PRODUCING A FILM AND METHOD FOR PRODUCING A FILM BY USING THE SAME

Hiroshi Inoue; Toshihiro Nishimura, and Takashi Matsunaga, all of Chiba, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

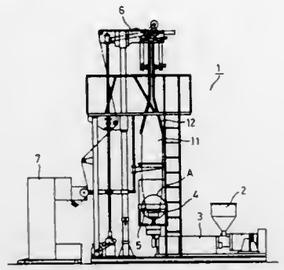
PCT No. PCT/JP90/01485, § 371 Date Jun. 17, 1991, § 102(e) Date Jun. 17, 1991, PCT Pub. No. WO91/07461, PCT Pub. Date May 30, 1991

PCT Filed Nov. 15, 1990, Ser. No. 689,283

Claims priority, application Japan, Nov. 16, 1989, 1-298564

Int. Cl.[5] C08J *5/18;* **C08L** *23/20;* **B32B** *27/08*

U.S. Cl. 524—433 **5 Claims**



1. A resin composition for producing a film by blow-film extrusion consisting essentially of

(A) 35 to 87 parts by weight of a high-density polyethylene having melt flow rate at 190° C. of 0.01 to 0.1 g/10 min., density of 0.938 to 0.965 g/cm^3, and melt tension of at least 10 g;

(B) 3 to 25 parts by weight of a propylene-based polymer having melt flow rate at 230° C. of 0.3 to 10 g/10 min.;

(C) 10 to 45 parts by weight of talc;

(D) 1 to 10 parts by weight per 100 parts by weight of (A), (B) and (C) of CaO and/or MgO; and

(E) 0.05 to 1 part by weight per 100 parts by weight of (A), (B) and (C) of a surface active agent;

wherein (C)/(B) is from 2 to 4.

5,254,618

TREAD RUBBER COMPOSITIONS FOR HEAVY DUTY PNEUMATIC TIRE

Masayuki Ohashi, and Hiroshi Yamada, both of Kodaira, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Nov. 25, 1991, Ser. No. 796,847

Claims priority, application Japan, Nov. 26, 1990, 2-317867

Int. Cl.[5] C08K *3/04*

U.S. Cl. 524—495 **4 Claims**

1. A tread rubber composition for heavy duty pneumatic tire comprising 30–100 parts by weight of carbon black satisfying the following conditions:

(1) cetyl trimethyl ammonium bromide adsorption specific surface area (CTAB) is within a range of 130–160 m^2/g;

(2) dibutylphathalate absorption (DBP) is within a range of 90–120 ml/100 g; and

(3) average void size of aggregate (Dm) is not more than 210 Å, based on 100 parts by weight of at least one rubber component selected from natural rubber and diene series rubbers.

5,254,619

CURABLE COMPOSITION

Naotami Ando, Hyogo, Japan, assignor to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 27, 1992, Ser. No. 826,426

Claims priority, application Japan, Jan. 28, 1991, 3-8636

Int. Cl.[5] C08L *51/00*

U.S. Cl. 524—504 **7 Claims**

1. A curable composition comprising

(A) (a1) an alkoxysilyl group-containing acrylic copolymer having a group represented by the formula (I):

$$(R^1O)_{3-a}-\overset{R^2{}_a}{\underset{|}{Si}}-\underset{|}{CH}- \quad (I)$$

wherein

R^1 is an alkyl group having 1 to 10 carbon atoms,

R^2 is a hydrogen atom, or a monovalent hydrocarbon group having 1 to 10 carbon atoms selected from an alkyl group, an aryl group or an aralkyl group, and a is 0, 1 or 2,

(B) a curing catalyst,

(C) an organic solvent, and

(D) a cross-linked polymer in the state of fine particles: said cross-linked polymer (D) comprising:

(d1) a backbone polymer polymerized from (i) a monomer mixture of (i1) at least 50 parts by weight of at least one alkyl acrylate, wherein said alkyl group has 2 to 8 carbon atoms, (i2) 0.005 to 5 parts by weight of a cross-linking monomer, (i3) 0 to 49.95 parts by weight of other (meth)acrylic monomer and (i4) 0 to 20 parts by weight of a non-(meth)acrylic copolymerizable monomer, the amount of the monomer mixture (i) being 100 parts by weight, said backbone polymer (d1) having a glass transition temperature of not more than 10° C.; and

(d2) a grafted phrase polymerized in the presence of said backbone polymer (d1) from (ii) a monomer mixture of (ii1) at least 40 parts by weight of at least one alkyl methacrylate, wherein said alkyl group has 1 to 4 carbon atoms, (ii2) 0 to 20 parts by weight of other (meth)acrylic comonomer and (ii3) 0 to 60 parts by weight of a non-(meth)acrylic copolymerizable comonomer, the amount of the monomer mixture (ii) being 100 parts by weight; said polymer (D) being insoluble but stably dispersible in the components (A), (B) and (C).

5,254,620

THERMOPLASTIC MOLDING COMPOSITIONS BASED ON POLYAMIDES AND THERMOPLASTIC POLYESTER ELASTOMERS

Walter Goetz; Walter Betz, both of Ludwigshafen, and Gunter Pipper, Bad Duerkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 2, 1991, Ser. No. 801,195

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1990, 4039420

Int. Cl.[5] C08L *77/00*

U.S. Cl. 524—538 **1 Claim**

1. A process for preparing a thermoplastic molding composition, which process comprises mixing

A) from 0.5 to 5% by weigh of a thermoplastic polyester elastomer and

B) from 0 to 50% by weight of fibrous or particulate fillers or mixtures thereof into a melt of

C) from 40 to 99.5% by weight of a polyamide pre-polymer having a viscosity number of from 40 to 80 ml/g and subsequently post condensating in the solid phase.

5,254,621

AIR BAG COATING COMPOSITION AND AIR BAG

Yoshio Inoue, and Kazuma Momii, both of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Oct. 1, 1992, Ser. No. 955,383

Claims priority, application Japan, Oct. 1, 1991, 3-280635

Int. Cl.[5] C08J *5/02;* **C08L** *83/06*

U.S. Cl. 524—837 **15 Claims**

1. An aqueous silicone emulsion composition for forming a coating on an air bag, comprising:

(A) an organopolysiloxane having at least two hydroxyl radicals attached to silicon atoms in a molecule, emulsified in water,

(B) at least one member selected from the group consisting of an epoxy-functional silane represented by the following formula:

$$R_n{}^4Si(OR^2)_{4-n}$$

wherein R^2 is an alkyl or acyl radical having 1 to 10 carbon atoms, R^4 is a monovalent epoxy-containing radical, and n is an integer of 1 to 3, or a hydrolyzate thereof, and an organosilane represented by the following formula:

$$R_m{}^5-\overset{(OR^2)_{3-m}}{\underset{|}{Si}}-R^6-NCO$$

wherein R^2 is as defined above, R^5 is a monovalent organic radical having 1 to 10 carbon atoms, R^6 is a divalent hydrocarbon radical having 1 to 10 carbon atoms, optionally interrupted in the chain by a sulfur atom, and m is a number of from 0 to 3, or hydrolyzate thereof,

(C) colloidal silica, and

(D) a curing catalyst.

5,254,622

ABS RESIN COMPOSITIONS AND MOLDED ARTICLES THEREOF HAVING IMPROVED COATING PERFORMANCES

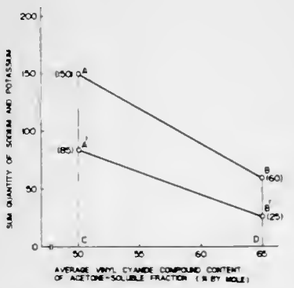
Atsushi Nanasawa, and Noriaki Umeda, both of Kurashiki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 447,811, Dec. 8, 1989, abandoned. This application Nov. 27, 1991, Ser. No. 799,878

Claims priority, application Japan, Dec. 9, 1988, 63-310058; Mar. 22, 1989, 1-067675

Int. Cl.[5] C08L *55/02, 33/20, 35/06, 33/08*

U.S. Cl. 525—80 **17 Claims**



1. A resin composition comprising graft copolymer (I) prepared by graft-copolymerizing a vinyl cyanide monomer and an aromatic vinyl monomer onto a rubbery polymer and a copolymer (II) prepared by copolymerizing a vinyl cyanide monomer and an aromatic vinyl monomer, wherein:

(i) content of the rubbery polymer in said resin composition is 5 to 50% by weight,

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(ii) average content (M) of vinyl cyanide monomer in the acetone-soluble fraction (P) of said resin composition is 50 to 65% by mole,
(iii) (M) of the vinyl cyanide monomer of (I) is substantially equal to the average vinyl cyanide monomer content of (II), and
(iv) in a composition distribution chart, at least 70% by weight of (P) exists in the range of (M) ±2.5% by mole.

5,254,623

CURABLE FLUORINATED ORGANOSILOXANE COMPOSITIONS EXHIBITING IMPROVED ADHESION

Michael J. Watson, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Sep. 25, 1992, Ser. No. 951,517
Int. Cl.[5] C08F *8/00*
U.S. Cl. 525—100 **6 Claims**

1. A curable organosiloxane composition comprising
A. a polyorganosiloxane containing at least two silicon-bonded alkenyl radicals per molecule where at least 20 percent of the siloxane units contain a silicon-bonded perfluoroalkylethyl radical and the silicon atoms containing said alkenyl radicals are separated by at least two dimethylsiloxane units from the closest silicon atom containing said perfluoroalkylethyl radical;
B. as the curing agent for said composition, an organohydrogensiloxane containing an average of more than two silicon-bonded hydrogen atoms per molecule;
C. an amount of a hydrosilation catalyst sufficient to promote curing of said composition, where said catalyst is selected from the group consisting of metals from the platinum group of the periodic table and compounds of these metals; and
D. as the adhesion promoter, an effective amount of an alkoxy-substituted organosilicon compound containing at least one organofunctional substituent bonded to silicon through carbon, where said substituent is selected from the group consisting of epoxy, amino, alkenyl, alkyl esters of ethylenically unsaturated carboxylic acids and polymers derived from said acids, and the concentration of said organosilicon compound is sufficient to achieve adhesion between said composition and a substrate in contact with said composition during curing.

5,254,624

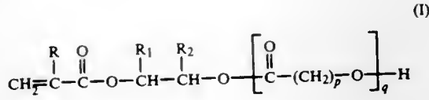
COMPATIBLE BLENDS OF AROMATIC POLY(ESTER) CARBONATES AND POLYAMIDES

Georg Heger, Krefeld; Erwin Piejko, Bergisch Gladbach; Josef Buekers, Krefeld; Leo Morbitzer, Cologne, and Alexander Karbach, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 16, 1992, Ser. No. 851,514
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1991, 4110484
Int. Cl.[5] C08L *69/00, 77/00*
U.S. Cl. 525—133 **16 Claims**

I. Blends consisting essentially of
A) 5 to 70% by weight thermoplastic polyamides,
B) at least 10% by weight thermoplastic aromatic polyester carbonates or polycarbonates,
C) 1 to 20% by weight thermoplastic copolymers of
C1) 9.5 to 99.5% by weight C_{1-4} alkyl (meth)acrylates,
C2) 10 to 80% by weight C_{10-40} alkyl (meth)acrylates or (meth)acrylates corresponding to the following general formula

(I)



in which
R, R_1, R_2 represent hydrogen or methyl,
p is a number of 2 to 6 and
q is a number of 2 to 200,
C3) 0.5 to 15% by weight vinyl monomers containing acid or tertiary ester groups, the polymers C) optionally containing at least 5% by weight glutarimide units, and
D) 0 to 30% by weight elastomers, A), B), C) and, optionally, D) adding up to 100% by weight, and, optionally,
E) at least one additive.

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LIGHT-ABSORBING POLYMERS

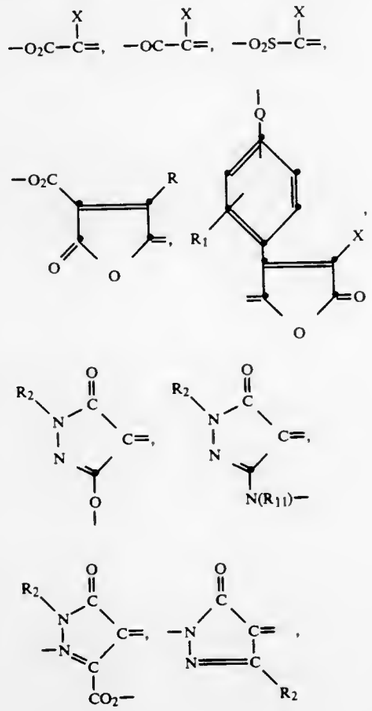
Max A. Weaver; James J. Krutak; Clarence A. Coates; Wayne P. Pruett, all of Kingsport, and Samuel D. Hilbert, Jonesborough, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 711,774, Jun. 7, 1991, abandoned. This application May 26, 1992, Ser. No. 888,940
Int. Cl.[5] C08L *65/00, 67/00, 23/00;* **C08G** *10/00*
U.S. Cl. 525—165 **9 Claims**

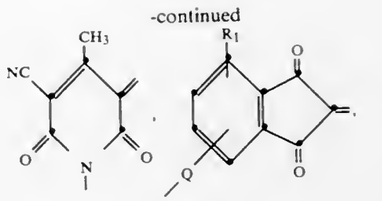
1. A light absorbing thermoplastic polymer composition, which comprises a thermoplastic polymer, said thermoplastic polymer selected from the group consisting of polyesters, polyvinyl chloride, polyvinylidene chloride, polyurethanes, polycarbonates, cellulose esters, polyacrylates, polyvinylesters, and polyester-amides, blended with a light absorbing polymer represented by Formula (I)

$$-(A{=}HC{-}B{-})_n- \qquad (I)$$

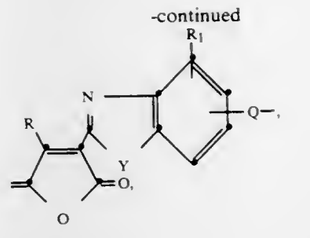
wherein active methylene residues (A) are selected from the formulae:

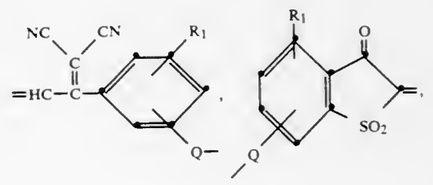


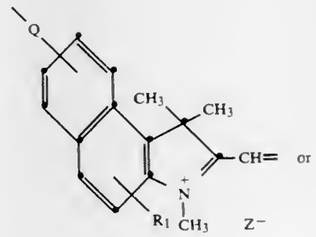
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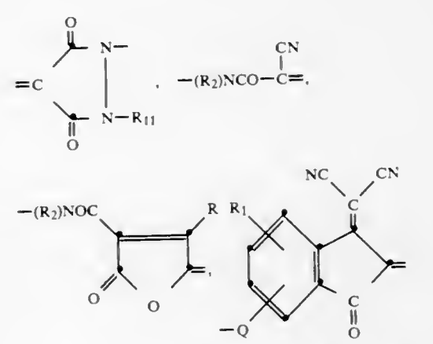


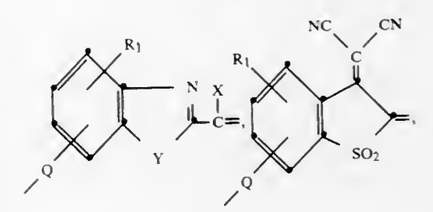
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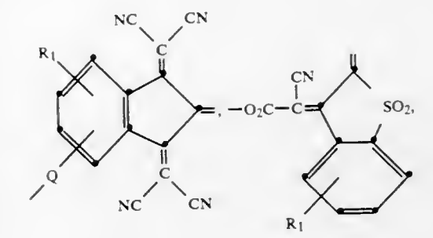


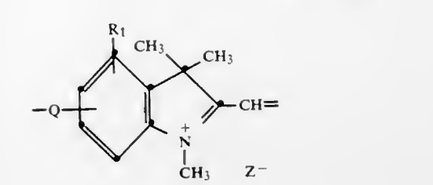












wherein Q is selected from a group consisting of a covalent bond, $—CO_2—$, —CO—, —S—, —O—, $—SO_2—$, $—CON(R_2)—$, $—N(SO_2R_3)—$ and $—SO_2N(R_2)—$;
X is selected from a group consisting of cyano; a phenyloxycarbonyl group optionally substituted with halo, C_1-C_6 alkoxy, C_3-C_8 cycloalkyl, phenyl, phenoxy, cyano, C_1-C_6 alkanoyloxy, hydroxy, and C_1-C_6 alkoxycarbonyl; C_1-C_9 alkylaminocarbonyl; C_1-C_{12} alkylsulfonyl; C_3-C_8 cycloalkylsulfonyl; and an aryl group selected from the group consisting of phenyl, naphthyl, phenanthyryl, thienyl, furyl, pyrrolyl, imidazolyl, pyrazolyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, triazolyl, thiadiazolyl, oxadiazolyl, tetrazolyl, thiatrizolyl, oxatrizolyl, pyridyl, pyrimidyl, pyrazinyl, pyridizinyl, thiazinyl, oxazinyl, triazinyl, thiadiazinyl, oxadiazinyl, dithiazinyl, dioxazinyl, oxathiazinyl, tetrazinyl, thiatriazinyl, oxatriazinyl, dithiadiazinyl, imidazolinyl, dihydropyrimidyl, tetrahydropyrimidyl, tetrazolo, purinyl, benzoxazolyl, benzothiazolyl, benzimidazolyl, and indolyl; and said aryl groups substituted once with a group selected from the group consisting of halo, phenoxy, phenyl, hydroxy, amino, C_1-C_6 alkoxycarbonyl, nitro, carboxy, cyano, C_1-C_6 alkylsulfonyl, and C_1-C_6 alkoxy;
Y is selected from the group consisting of —O—, —S—, —NH— and an imino group substituted once with a group selected from the group consisting of hydrogen, C_1-C_6 alkyl, C_3-C_8 cycloalkyl, and an aryl group selected from the group consisting of phenyl, naphthyl, phenanthyryl, thienyl, furyl, pyrrolyl, imidazolyl, pyrazolyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, triazolyl, thiadizolyl, oxadiazolyl, tetrazolyl, thiatrizolyl, oxatrizolyl, pyridyl, pyrimidyl, pyrazinyl, pyridizinyl, thiazinyl, oxazinyl, triazinyl, thiadiazinyl, oxadiazinyl, dithiazinyl, dioxazinyl, oxathiazinyl, tetrazinyl, thiatriazinyl, oxatriazinyl, dithiadiazinyl, imidazolinyl, dihydropyrimidyl, tetrahydropyrimidyl, tetrazolo, purinyl, benzoxazolyl, benzothiazolyl, benzimidazolyl, and indolyl;
Z^- is a counter anion;
R is hydrogen, C_1-C_6 alkyl, or an aryl group selected from

VOL 1155 ISS 3 OCT 19 1993 UMI

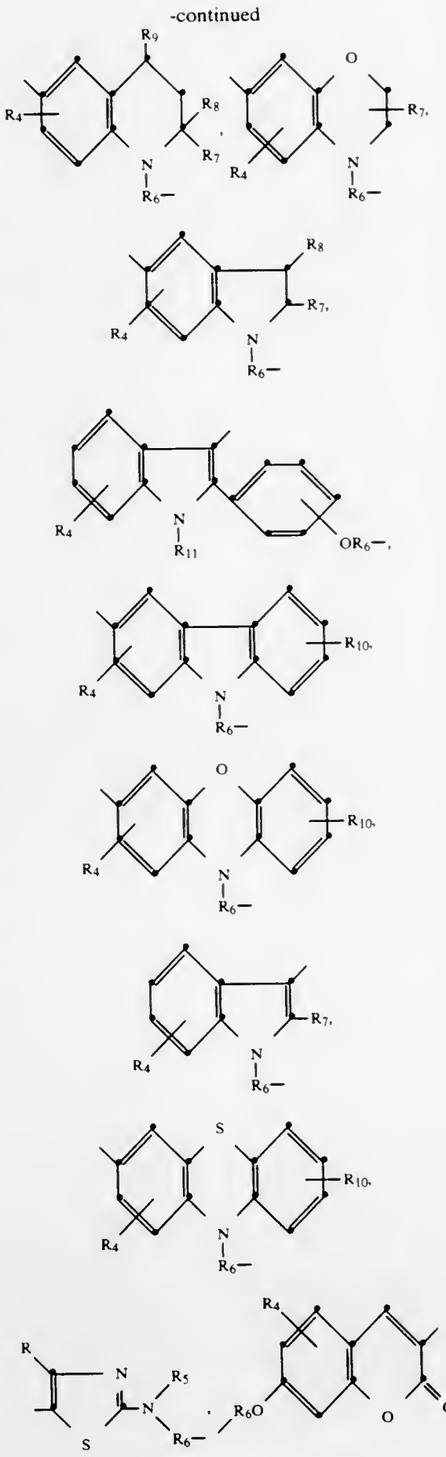
the group consisting of phenyl, napthyl, phenanthyryl, thienyl, furyl, pyrrolyl, imidazolyl, pyrazolyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, triazolyl, thiadizolyl, oxadiazolyl, tetrazolyl, thiatrizolyl, oxatrizolyl, pyridyl, pyrimidyl, pyrazinyl, pyridizinyl, thiazinyl, oxazinyl, triazinyl, thiadiazinyl, oxadiazinyl, dithiazinyl, dioxazinyl, oxathiazinyl, tetrazinyl, thiatriazinyl, oxatriazinyl, dithiadiazinyl, imidazolinyl, dihydropyrimidyl, tetrahydropyrimidyl, tetrazolo, purinyl, benzoxazolyl, benzothiazolyl, benzimidazolyl, and indolyl; and said aryl groups substituted once with a group selected from the group consisting of halo, phenoxy, phenyl, hydroxy, amino, C_1–C_6 alkoxycarbonyl, nitro, carboxy, cyano, C_1–C_6 alkylsulfonyl, and C_1–C_6 alkoxy;

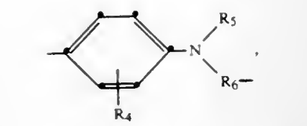
R_1 is hydrogen, C_1–C_6 alkyl, C_1–C_6 alkoxy or halogen;

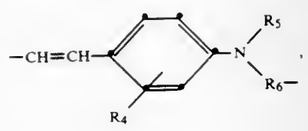
R_2 is selected from the group consisting of hydrogen; C_1–C_6 alkyl; C_1–C_6 alkyl substituted by a group selected from the group consisting of halo, phenyl, phenoxy, C_1–C_4 alkanoyloxy, hydroxy, amino, C_1–C_6 alkoxycarbonyl, nitro, carboxy C_1–C_6 alkylsulfonyl, cyclohexyl, carbamoyl, cyano, C_1–C_6 alkylsulfonyl, and C_1–C_6 alkoxy; C_3–C_8 cycloalkyl; or an aryl group selected from the list consisting of phenyl, napthyl, phenanthyryl, thienyl, furyl, pyrrolyl, imidazolyl, pyrazolyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, triazolyl, thiadizolyl, oxadiazolyl, tetrazolyl, thiatrizolyl, oxatrizolyl, pyridyl, pyrimidyl, pyrazinyl, pyridizinyl, thiazinyl, oxazinyl, triazinyl, thiadiazinyl, oxadiazinyl, dithiazinyl, dioxazinyl, oxathiazinyl, tetrazinyl, thiatriazinyl, oxatriazinyl, dithiadiazinyl, imidazolinyl, dihydropyrimidyl, tetrahydropyrimidyl, tetrazolo, purinyl, benzoxazolyl, benzothiazolyl, benzimidazolyl, and indolyl; and said aryl groups substituted once with a group selected from the group consisting of halo, phenoxy, phenyl, hydroxy, amino, C_1–C_6 alkoxycarbonyl, nitro, carboxy, cyano, C_1–C_6 alkylsulfonyl, and C_1–C_6 alkoxy;

R_3 is C_1–C_6 alkyl, optionally substituted by one or more groups selected from the group consisting of halo, phenoxy, C_1–C_4 alkanoyloxy, hydroxy, amino, C_1–C_6 alkoxycarbonyl, nitro, carboxy, C_1–C_6 alkylsulfonyl, cyclohexyl, carbamoyl, cyano, C_1–C_6 alkylsulfonylamino, and C_1–C_6 alkoxy; C_3–C_8 cycloalkyl; an aryl group selected from the group consisting of phenyl, napthyl, phenanthyryl, thienyl, furyl, pyrrolyl, imidazolyl, pyrazolyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, triazolyl, thiadizolyl, oxadiazolyl, tetrazolyl, thiatrizolyl, oxatrizolyl, pyridyl, pyrimidyl, pyrazinyl, pyridizinyl, thiazinyl, oxazinyl, triazinyl, thiadiazinyl, oxadiazinyl, dithiazinyl, dioxazinyl, oxathiazinyl, tetrazinyl, thiatriazinyl, oxatriazinyl, dithiadiazinyl, imidazolinyl, dihydropyrimidyl, tetrahydropyrimidyl, tetrazolo, purinyl, benzoxazolyl, benzothiazolyl, benzimidazolyl, and indolyl; wherein the divalent moiety B is represented by one of the following formulae:

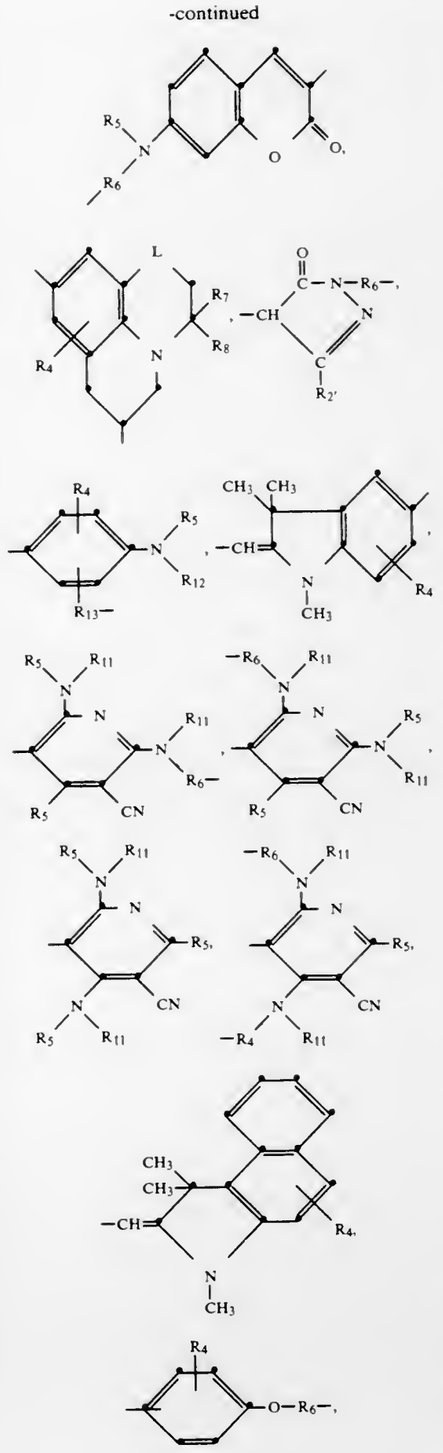
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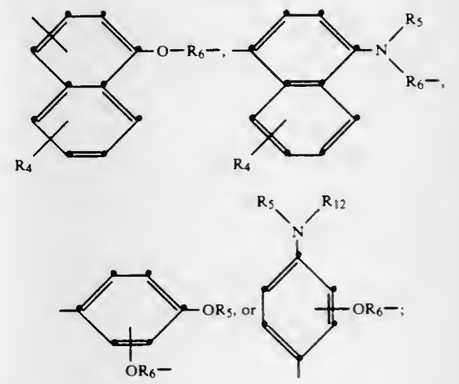




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wherein

R_4 and R_{10} are hydrogen or 1-2 substituents selected from C_1–C_6 alkyl, C_1–C_6 alkoxy or halogen;

R_5 and R_{12} are selected from unsubstituted C_1–C_6 alkyl; C_3–C_6 alkenyl; C_3–C_8 cycloalkyl; phenyl; C_1–C_6 alkyl substituted by one or more groups selected from the group consisting of halo, phenyl, phenoxy, C_1–C_4 alkanoyloxy, hydroxy, amino, C_1–C_6 alkoxycarbonyl, nitro, carboxy C_1–C_6 alkylsulfonyl, cyclohexyl, carbamoyl, cyano, C_1–C_6 alkylsulfonyl, and C_1–C_6 alkoxy; C_3–C_8 cycloalkyl; and phenyl;

R_6 is selected from the group consisting of C_1–C_6 alkylene, C_3–C_8 cycloalkylene, phenylene, C_1–C_{12} alkylenephenylene C_1–C_{12} alkylene, C_1–C_{12} alkylene-(C_3–C_8)cycloalkylene-C_1–C_{12} alkylene, C_1–C_{12} alkylene—O—C_1–C_{12} alkylene, C_1–C_{12} alkylene—S—C_1–C_{12} alkylene, C_1–C_{12} alkylene—SO_2—C_1–C_{12} alkylene, C_1–C_{12} alkylene—O—phenylene—O—C_1–C_{12} alkylene, C_1–C_{12} alkylene—N(SO_2R_3)C_1–C_{12} alkylene, and C_1–C_{12} alkylene-phenylene;

R_7, R_8, and R_9 are hydrogen or C_1–C_{12} alkyl;

R_{11} is hydrogen, C_1–C_6 alkyl or an aryl group selected from the group consisting of phenyl, napthyl, phenanthyryl, thienyl, furyl, pyrrolyl, imidazolyl, pyrazolyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, triazolyl, thiadizolyl, oxadiazolyl, tetrazolyl, thiatrizolyl, oxatrizolyl, pyridyl, pyrimidyl, pyrazinyl, pyridizinyl, thiazinyl, oxazinyl, triazinyl, thiadiazinyl, oxadiazinyl, dithiazinyl, dioxazinyl, oxathiazinyl, tetrazinyl, thiatriazinyl, oxatriazinyl, dithiadiazinyl, imidazolinyl, dihydropyrimidyl, tetrahydropyrimidyl, tetrazolo, purinyl, benzoxazolyl, benzothiazolyl, benzimidazolyl, and indolyl;

R_{13} is selected from C_1–C_6 alkylene, —O—R_6— or N(SO_2R_3)—R_6—;

L is selected from the group consisting of a direct bond, —O—, —CH_2— and —$CH(CH_3)$—; and n is an integer of from about 2 to about 40.

5,254,626

HIGH-TENACITY, HIGH-IMPACT-STRENGTH THERMOPLASTIC COMPOSITIONS

Maurizio Penco, Codogno; Maria A. Pastorino, Genoa, and Giorgio Giannotta, Milan, all of Italy, assignors to Istituto Guido Donegani S.p.A., Novara, Italy

Filed Jul. 14, 1992, Ser. No. 912,985

Claims priority, application Italy, Aug. 2, 1991, MI91A 002157

Int. Cl.[5] **C08H** *67/02*

U.S. Cl. 525—166 **11 Claims**

1. Thermoplastic compositions comprising:

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(a) from 55 to 85% by weight of at least one aromatic polyester;

(b) from 10 to 40% by weight of at least one elastomeric copolymer constituted by 45–90 mol % of ethylene; 5–50 mol % of an alkyl acrylate or alkyl methacrylate, in which the alkyl moiety contains from 1 to 8 carbon atoms; and 0.3–5 mol % of an unsaturated epoxide;

(c) from 0.5 to 5% by weight of at least one elastomeric copolymer constituted by 45–90 % of ethylene; 5–50 mol % of an alkyl acrylate or alkyl methacrylate, in which the alkyl moiety contains from 1 to 8 carbon atoms; and 0.1–5 mol % of monomeric units functionalized with amido-aminic and/or imido-aminic groups;

with the total of the percentages of components (a), (b) and (c) equating 100.

5,254,627

ELECTRICALLY CONDUCTIVE POLYPYRROLEAMINE POLYMER NETWORKS

Giuseppe Rossi, Dearborn; Susan M. Ward, Ann Arbor; Henk van Oene, Westland, and Joseph W. Holubka, Livonia, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 7, 1993, Ser. No. 1,604

Int. Cl.[5] C08J *5/18*

U.S. Cl. 525—203 **8 Claims**

1. An electrically conductive polyaminopyrrole polymer network comprising conjugated crosslinking between polyaminopyrrole polymer segments.

5,254,628

DIENE POLYMERS HAVING REDUCED HYSTERESIS AND IMPROVED RAW VISCOSITY INCORPORATING PRIMARY PARTIAL COUPLING AND TERMINALS FORMED FROM AROMATIC NITRILE COMPOUNDS

David F. Lawson, Uniontown; Mark L. Stayer, Jr., Mogadore, and Thomas A. Antkowiak, Rittman, all of Ohio, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Nov. 18, 1991, Ser. No. 794,105

Int. Cl.[5] C08L *9/00, 47/00, 53/02*

U.S. Cl. 525—237 **25 Claims**

1. A method for preparing a diene polymer or copolymer having improved raw viscosity and adapted to form elastomer compositions having reduced hysteresis properties comprising the steps in sequence of:

(a) preparing a living diene polymer or copolymer containing active organoalkali or organoalkaline earth metal terminals by anionically polymerizing a conjugated diene monomer or mixture of a conjugated diene monomer and vinyl aromatic hydrocarbon monomer in a hydrocarbon solvent using an organoalkali metal or organoalkaline earth metal initiator;

(b) coupling from about 10 to about 70 percent by weight of the living diene polymer or copolymer chains by reacting the organoalkali or organoalkaline earth metal terminals thereof with from about 0.1 to about 0.7 equivalents of a tin polyhalide, based on the number of halogen atoms in said tin polyhalide, per mole of said living diene polymer or copolymer chains, said tin polyhalide having the general formula R_aSnX_b, wherein R is selected from the group consisting of alkyl, alkenyl, cycloalkyl and aryl groups, X is a halogen atom, a is an integer of 0–2 and b is an integer of 2–4; and

(c) terminating the remaining living diene polymer or copolymer chains by reacting the organoalkali or organoalkaline earth metal terminals thereof with from about 0.3 to about 100 moles of an aromatic nitrile compound selected from the group consisting of unsubstituted and substituted benzonitriles.

5,254,629

POLYMERIZATION OF CYCLIC OLEFINS

Donald R. Kelsey, Fulshear, and Dale L. Handlin, Jr., Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.

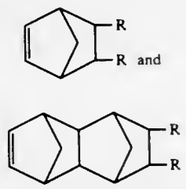
Continuation of Ser. No. 708,157, May 31, 1991, abandoned, which is a continuation-in-part of Ser. No. 548,445, Jul. 5, 1990, abandoned, which is a continuation of Ser. No. 278,101, Nov. 30, 1988, abandoned. This application Apr. 29, 1992, Ser. No. 875,852

Int. Cl.[5] C08F *4/628, 4/629, 4/78*

U.S. Cl. 525—247 **11 Claims**

1. A process for preparing a crosslinked polymer having a flexural modulus greater than about 270,000 psi, a notched IZOD impact of greater than about 9 ft-lb/in and a flexural yield strength greater than about 9,000 psi, comprising the steps of:

(a) introducing into a mold a reaction mixture comprising at least one cyclic olefin monomer



comprising dicyclopentadiene, from about 1 to about 10% by weight, based on the weight of the monomer, of an elastomer polymer, and a catalyst comprising an aryloxysubstituted transition metal compound selected from the group consisting of molybdenum compounds and tungsten compounds, from about 1 to about 15 moles per mole of the transition metal compound of a organo tin hydride co-catalyst, and from about 0.001 to about 10 moles per mole of the transition metal compound of a boron halide promoter, and

(b) maintaining the reaction mixture under polymerization conditions for a time sufficient for polymerization of the cyclic olefin in the presence of the elastomer and formation of a molded article, the polymerization being carried out at an induction time of less than about 1 minute and a time to maximum exotherm of less than about 2 minutes.

5,254,630

PROCESS FOR THE PRODUCTION OF A VINYL CHLORIDE-BUTYL ACRYLATE GRAFT COPOLYMER FOR PROCESSING BY INJECTION MOLDING

Frank Schmidt, Essen, Fed. Rep. of Germany, assignor to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Oct. 26, 1990, Ser. No. 603,506

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1989, 3936065

Int. Cl.[5] C08F *251/00, 253/00, 225/00, 257/00*

U.S. Cl. 525—261 **9 Claims**

1. A process for the production of a vinyl chloride-butyl acrylate graft copolymer suitable for processing by injection molding, in an aqueous dispersion, which comprises polymerizing vinyl chloride in the presence of a crosslinked polybutyl acrylate and regulator compounds selected from the group consisting of (a) the organic thio compounds: C_2–C_{12}-mercaptoalkanols, C_2–C_{12}-mercap-substituted aliphatic carboxyl compounds, and xanthogen disulfides with C_2–C_4-alkyl radicals, (b) the saturated or unsaturated chlorinated hydrocarbons of the formulae $C_nH_{2n+2-x}Cl_x$ and $C_nH_{(2n-x)}Cl_x$, where n=2–12, and (c) C_2–C_{12}-aliphatic aldehydes, in an amount effective to regulate molecular weight reduction.

5,254,631

CATIONICALLY ELECTRODEPOSITABLE FINELY DIVIDED GELLED POLYMERS HAVING A CORE-SHEATH STRUCTURE OBTAINED BY EMULSION POLYMERIZATION

Kenji Yamamoto; Haruo Nagaoka; Teiji Katayama; Masafumi Kume, all of Hiratsuka; Tadayoshi Hiraki, Odawara; Eisaku Nakatani, Hiratsuka; Yasuyuki Hirata, Hatano, and Haruhiko Kataoka, Hiratsuka, all of Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan

Filed Sep. 27, 1991, Ser. No. 766,793

Claims priority, application Japan, Sep. 28, 1990, 2-257221; Sep. 28, 1990, 2-257222

Int. Cl.[5] C08F *263/00, 283/00*

U.S. Cl. 525—278 **11 Claims**

1. A cationically electrodepositable finely divided gelled polymer obtained by, in the first step, emulsion-polymerizing, in the presence of a water-soluble or water-dispersible cationic resin which is a reaction product obtained by reacting a polyphenol compound with epichlorohydrin and then reacting the epoxy group of the resulting polyepoxide compound with a cationic agent selected from the group consisting of aliphatic, alicyclic or aromatic aliphatic primary or secondary amines, tertiary amines, secondary sulfide salts and tertiary phosphate salts, a monomer component (A) comprising

(a) a polymerizable unsaturated vinylsilane monomer having a vinylic double bond and a hydrolyzable alkoxysilane group and represented by the formula

$$(R)_3SIQ$$

wherein Q denotes a polymerizable unsaturated group selected from a gamma-methacryloxypropyl group and a vinyl group, and R denotes an acetoxy group or an alkoxy group having 1 to 8 carbon atoms,

(b) a polymerizable monomer having at least two radically polymerizable unsaturated groups in the molecule and being selected from a polymerizable unsaturated monocarboxylic acid ester of a polyhydric alcohol, a polymerizable unsaturated alcohol ester of a polybasic acid, and an aromatic compound substituted with two or more vinyl groups,

(c) a polymerizable unsaturated monomer having a vinylic double bond and a hydroxyl group, and

(d) another polymerizable unsaturated monomer, the monomer compound (A) comprising

the monomer (a) 0.5 to 10% by weight,

the monomer (b) 1 to 50% by weight,

the monomer (c) 1 to 30% by weight, and

the monomer (d) 10 to 97.5% by weight,

and then, in the second step, emulsion-polymerizing, in the presence of the aqueous finely divided gelled polymer obtained in the first step, a monomer component (B) comprising

(e) a blocked mono- or polyisocyanate in which the at least one isocyanate group in the molecule is blocked with a radically polymerizable monohydroxy compound,

(f) a polymerizable unsaturated monomer having a vinyl double bond and a hydroxyl group, and

(g) another polymerizable unsaturated monomer, the monomer component (B) comprising

the monomer (e) 10 to 40% by weight,

the monomer (f) 1 to 40% by weight, and

the monomer (g) 30 to 89% by weight,

said cationically electrodepositable finely divided gelled polymer having a core-sheath structure consisting of a core of the polymerization product of the monomer component (A) and a sheath of the polymerization product of the monomer component (B).

5,254,632

METHOD OF MANUFACTURING POLYALKYL METHACRYLATE MACROMONOMERS, AND USE OF SAME IN THE MANUFACTURE OF COMB POLYMERS

Volker Kerscher, Reinheim, and Werner Siol, Darmstadt-Eberstadt, both of Fed. Rep. of Germany, assignors to Rohm GmbH Chemische Fabrik, Darmstadt, Fed. Rep. of Germany

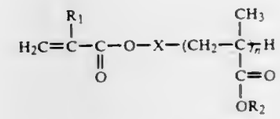
Filed Jul. 2, 1992, Ser. No. 907,560

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1991, 4121811

Int. Cl.[5] C08F *265/04, 18/00*

U.S. Cl. 525—309 **5 Claims**

1. A method of synthesizing a macromonomer of formula I:



I

wherein R_1 is hydrogen or methyl,

X is a biradical group, and

R_2 is an alkyl group of 1–40 carbon atoms, and

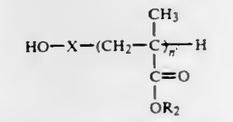
n is such that the molecular weight of the macromonomer I is in the range of 500–100,000 Dalton, which comprises:

conducting transesterification between a monomeric ester of formula II:



II

where R_3 is an alkyl group with 1–8 carbon atoms, and a hydroxyl-group-terminated polyalkyl methacrylate of formula III:



III

wherein X and R_2 have the same meanings as defined above, and n'—n; and

eliminating the alcohol HOR_3, thereby resulting in the formation of the compound of Formula I.

5,254,633

PROCESS FOR THE PREPARATION OF CONDUCTIVE POLYMER BLENDS

Chien-Chung Han, Madison, and Ronald L. Elsenbaumer, Morris Township, Morris County, both of N.J., assignors to Allied Signal Inc., Morris Township, Morris County, N.J.

Filed Jul. 10, 1991, Ser. No. 727,768

Int. Cl.[5] C08L *75/04*

U.S. Cl. 525—327.4 **34 Claims**

1. A process for forming a blend comprising one or more conjugated backbone homopolymers of copolymers and one or more non-conductive homopolymers of copolymers which comprises:

a) coating all or part of the surface of particles comprising one or more non-conductive homopolymers or copolymers with one or more conjugated backbone homopolymers or copolymers to form coated particles; and

b) processing a plurality of said coated particles into a polymer blend comprising said conjugated backbone homopolymers or copolymers dispersed in a continuous phase comprising said non-conductive homopolymers or copolymers.

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5,254,634

CROSSLINKED COPOLYMER PARTICLES AND PROCESS FOR PRODUCING THE SAME

Tsuyoshi Ito; Hiroaki Takayanagi, both of Tokyo, and Go Honda, Kanagawa, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

PCT No. PCT/JP90/01583, § 371 Date Nov. 8, 1991, § 102(e) Date Nov. 8, 1991, PCT Pub. No. WO92/01721, PCT Pub. Date Feb. 6, 1992

PCT Filed Dec. 6, 1990, Ser. No. 773,572

Claims priority, application Japan, Jul. 25, 1990, 2-197050; Jul. 30, 1990, 2-192454

Int. Cl.[5] C08F *20/20*

U.S. Cl. 525—330.3 16 Claims

1. Crosslinked copolymer particles comprising hydrophilic crosslinked copolymer particles obtained from glycerol monomethacrylate and a crosslinking polyvinyl compound, which has a hydrophobic functional group having 4 or more carbon atoms being mainly bonded to the glycerol monomethacrylate via an oxygen atom derived from a hydroxyl group of said glycerol monomethacrylate.

5,254,635

RUBBER COMPOSITION CONTAINING DIBENZYL THIURAM SULFIDE

Arthur Stevenson, West Bromwich, and Ranvir S. Virdi, Handsworth Wood, both of England, assignors to Robinson Brothers Limited, West Bromwich, England

Filed Aug. 13, 1990, Ser. No. 566,838

Claims priority, application United Kingdom, Aug. 18, 1989, 8918890.8; Nov. 10, 1989, 8925415.5

Int. Cl.[5] C08C *19/22, 19/20*

U.S. Cl. 525—332.7 8 Claims

1. A sulfur free vulcanizable composition which comprises 100 part by weight rubber and accelerators consisting essentially of a dibenzylthiuram sulfide in an amount up to about 1.5 parts by weight, from about 1 to about 6 parts by weight dihydrocarbyl xanthogen polysulfide of the formula $R^1O\text{-}CS\text{-}S_x\text{-}SC\text{-}OR^2$ wherein R^1 and R^2 are the same or different and selected from the group consisting of alkyl, cycloalkyl and N-free heterocyclic groups and x is an integer of at least 2; from about 0 to about 5 parts by weight of a xanthate compound selected from the group consisting of dihydrocarbyl xanthates and metal hydrocarbylxanthates of the formula $R^4O\text{—}CS\text{—}S\text{—}R^5$ wherein R^4 is selected from the group consisting of alkyl, cycloalkyl and N-free heterocyclic groups and R^5 is selected from the group consisting of a metal and R^4; and less than 0.2 parts by weight of nitrosatable materials.

5,254,636

RAPID HYDROLYSIS OF CROSSLINKED MALEIC ANHYDRIDE/LOWER ALKYL VINYL ETHER COPOLYMERS

Yoon T. Kwak, Brooklyn, N.Y., and Stephen L. Kopolow, Plainsboro, N.J., assignors to ISP Investments Inc., Wilmington, Del.

Filed May 28, 1992, Ser. No. 889,341

Int. Cl.[5] C08F *8/12, 8/32, 8/42*; A61K *7/11*

U.S. Cl. 525—369 14 Claims

1. The process for rapid hydrolysis of crosslinked maleic anhydride/C_1 to C_4 alkyl vinyl ether copolymer particles having an average particle size of from about 1 to about 1500 microns to form a clear gel which comprises (a) agitating said crosslinked copolymer in between about 10 to about 10,000 parts of deionized water to form a suspension or dispersion; (b) hydrolyzing the copolymer at a hydrolysis temperature of from about 60° to about 90° C. for a period sufficient to complete hydrolysis of the crosslinked copolymer; (c) cooling the reaction mixture to at least 5° below the hydrolysis temperature and (d) then adding between about 0.4 and about 5 weight % based on copolymer of a basic neutralizing agent to provide a clear stabilized gel.

5,254,637

THERMOSETTING COATING COMPOSTIONS

J. Stewart Witzeman, Kingsport; Allen L. Crain, Blountville, both of Tenn., and Robert J. Clemens, Ormskirk, Great Britain, assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 709,049, Jun. 3, 1991. This application Aug. 24, 1992, Ser. No. 933,548

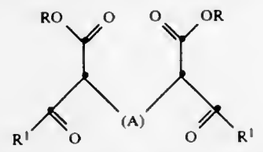
Int. Cl.[5] C08F *8/14*

U.S. Cl. 525—386 31 Claims

1. A curable enamel composition comprising

(a) about 95 to about 55 weight percent, based on the total weight of (a) and (b), of one or more curable polymers having free hydroxyl groups;

(b) about 5 to abut 45 weight percent, based on the total weight of (a) and (b), of a compound of Formula (1)



(1)

wherein R is C_1–C_6 alkyl; R^1 is C_1–C_6 alkyl or aryl; and A is a group of the formula



—(CH)—; R^2

wherein R^2 is phenyl; or A is a C_1–C_{10} hydrocarbyl radical; and

(c) about 0 to about 50 weight percent, based on the total weight of (a) and (b), of a solvent.

5,254,638

COMPOSITE MATERIALS OF INTERPENETRATING INORGANIC AND ORGANIC POLYMER NETWORKS

Bruce M. Novak, Orinda, and Mark W. Ellsworth, Berkeley, both of Calif., assignors to The Reagents of the University of California, Oakland, Calif.

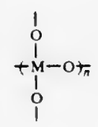
Filed Mar. 25, 1991, Ser. No. 674,849

Int. Cl.[5] C08G *79/00*; C08F *283/12*

U.S. Cl. 525—389 17 Claims

1. A method for forming an interwoven organic-inorganic solid composite material comprising

a) forming a mixture of a precursor polymer, a parent polymerizable alcohol, and a catalyst system, said precursor polymer comprising an inorganic polymer backbone chain with the structure



wherein M is Si or Ti, O is oxygen, and n is the number of repeating units and wherein at least a plurality of the side chain oxygen atoms are each bound to a pendant polymerizable alkoxide moiety through an alkoxide linkage.

b) hydrolyzing at least a portion of said alkoxide linkages to release the linked alkoxide moieties from the remaining inorganic polymer backbone to form polymerizable alcohol monomers,

c) polymerizing at least a portion of said alcohol monomers into organic polymer chains, and

d) hydrolyzing and condensing said remaining inorganic polymer backbone to form a solid composite material comprising an interwoven network with the organic polymer chains interpenetrating said network, said catalyst system being capable of catalyzing hydrolysis of said alkoxide linkages, polymerization of said polymerizable alcohol monomers, and hydrolysis and condensation of said inorganic polymer backbone.

5,254,639

BINDING AGENTS

Arno Gardziella, Witten-Rüdinghausen; Achim Hansen, Iserlohn-Letmathe; Stephan Schröter, Essen, and Josef Suren, Wünnenberg Haaren, all of Fed. Rep. of Germany, assignors to Rutgerswerke Aktiengesellschaft AG, Fed. Rep. of Germany

Filed Oct. 26, 1992, Ser. No. 966,287

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1991, 4136562

Int. Cl.[5] C08L *61/02*

U.S. Cl. 525—398 15 Claims

1. A binding agent for molded bodies and molding compositions produced by prereacting a mixture of 5 to 60% by weight of sulfur-free ligning or a ligning fraction produced by the Organosolv process having a means molecular weight of 800 to 4000 and 40 to 95% by weight of a phenol novolac resin and subjecting the latter to high shear forces in a kneader or extruder and optionally mixing the same with a curing agent.

5,254,640

COPOLYETHERIMIDE ESTER COMPOSITIONS

John A. Tyrell, Dalton, Mass., and S. Jack Willey, Chatham, N.Y., assignors to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 546,138, Jun. 29, 1990. This application Jan. 8, 1992, Ser. No. 818,181

Int. Cl.[5] C08L *77/00*

U.S. Cl. 525—423 4 Claims

1. A thermoplastic resin composition consisting essentially of:

(a) a polyetherimide ester resin;

(b) a melt viscosity increasing amount of (i) an alkali metal salt of an aliphatic polycarboxylic acid, and (ii) a multifunctional epoxide having an average epoxy functionality of greater than 2.0 epoxy groups.

5,254,641

POLYURETHANE FILMS AND THEIR USE FOR BONDING

Patrick Alex, Pecerse; Andre Piard, Bernay, both of France, and Eduard de Jong, Troisdorf, Fed. Rep. of Germany, assignors to Elf Atochem Deutschland, GmbH, Bonn, Fed. Rep. of Germany

Filed Aug. 5, 1992, Ser. No. 925,512

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1991, 4125957

Int. Cl.[5] C08L *75/04*

U.S. Cl. 525—424 9 Claims

1. A film of thermoplastic polyurethane with a Shore hardness of 75 A to 92 A and having 5 to 20% by weight of polyether amide block copolymers and/or polyether ester block copolymers, based on the weight of the polyurethanes.

5,254,642

THERMOPLASTIC POLYESTER LOW PROFILE ADDITIVES FOR VINYL ESTER/POLYESTER RESINOUS COMPOSITIONS

Ken K. Chang, Dublin, and Timothy A. Tufts, Powell, both of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Sep. 12, 1992, Ser. No. 940,972

Int. Cl.[5] C08F *20/20*

U.S. Cl. 525—438 20 Claims

1. A thermosettable resinous composition which comprises:

(a) between about 0 and 95 wt-% of a thermosettable vinyl ester resin;

(b) between about 5 and 100 wt-% of a thermosettable polyesters resin; and

(c) between about 5 and 40 wt-% of a low profile additive comprising a non-gelling, saturated polyester formed from dibasic acid and an EO/PO block copolymer having an EO/PO molar ratio ranging from about 0.1 to 0.9, said polyester having an acid value of greater than about 10.

5,254,643

HIGH-MOLECULAR UNSATURATED POLYESTER RESIN

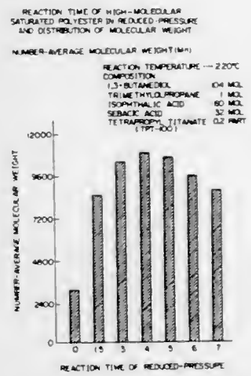
Eiichiro Takiyama, Kamakura; Ryushi Ogura; Takao Hokari, both of Takasaki, and Yositaka Hatano, Higasikanbaragun, all of Japan, assignors to Showa Highpolymer Co., Ltd., Tokyo, Japan

Filed Mar. 13, 1992, Ser. No. 850,815

Claims priority, application Japan, Mar. 15, 1991, 3-074238

Int. Cl.[5] C08F *20/00*

U.S. Cl. 525—445 4 Claims



1. An unsaturated alkyd having a number-average molecular weight of at least 5,000 obtained by esterification and then deglycolization reaction under highly reduced pressure of the following substances (a) and (b):

(a) at least 10 mol % of an α,β-unsaturated polybasic acid or an anhydride thereof relative to 100 mol % of the total polybasic acid, including any saturated or non-α,β-unsaturated polybasic acid (or anhydride thereof); and

(b) a mixture solution comprising 50–99 mol % of a polyhydroxy alcohol having a boiling point of 300° C. or less at 760 mm Hg and 1–50 mol % of a polyhydroxy alcohol selected from the group consisting of hydrogenated bisphenol A, bisphenol A ethylene oxide addition products, bisphenol A propylene oxide addition products, glycerin diallyl ether, trimethylolpropane mono or diallyl ether, and nonamethylene glycol.

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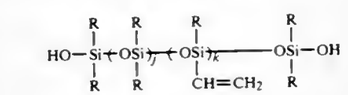
5,254,644
SILICONE SELF-ADHESIVE COMPOSITION

Takahide Kobori; Isamu Moriizumi; Mitsuhiro Takarada, and Kenichi Isobe, all of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

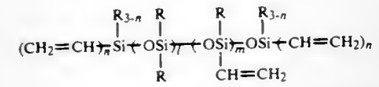
Filed May 8, 1992, Ser. No. 880,258
Claims priority, application Japan, May 9, 1991, 3-133643
Int. Cl.[5] C08F *283/12*
U.S. Cl. 525—478 **11 Claims**

I. A silicone self-adhesive composition comprising

(A) 100 parts by weight of at least one organopolysiloxane selected from the group consisting of organopolysiloxanes of the following general formula (1) and (2):



(1)



(2)

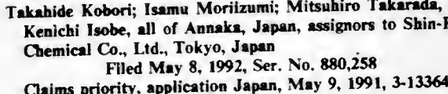
wherein R is a monovalent hydrocarbon group excluding alkenyl, letter n is an integer of from 0 to 3, k and m each are 0 or a positive integer, with the proviso that m is an integer of at least 2 when n is 0, and j and l each are an integer of at least 2,000,

(B) about 100 to 250 parts by weight of an organopolysiloxane comprising $R_3^1SiO_{\frac{1}{2}}$ and SiO_2 units wherein R^1 is a monovalenthydrocarbon gropu or a hydroxyl group, the molar ratio of $R_3^1SiO_{\frac{1}{2}}$ unit to SiO2 unit being in the range of from 0.5 to 1.2,

(C) an organohydrogenpolysiloxane containing at least two hydrogen atoms attached to silicon atoms in a molecule, in an amount such that the ratio of the total molar number of hydrogen atoms in component (C) and the total molar number of vinyl groups in components (A) and (E) is 0.1 to 5,

(D) a catalytic amount of a platinum catalyst, and

(E) an organopolysiloxane of the following general formula (3);



(3)

wherein R and n are as defined above, p is an integer of from 0 to 1,000, q is an integer of from 10 to 1,000, and $0 \leqq p/q \leqq 1$.

5,254,645
CLUSTER AZASILACYCLOALKYL FUNCTIONAL POLYSILOXANES

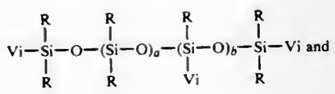
Russell K. King, and Chi-long Lee, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Sep. 2, 1992, Ser. No. 938,743
Int. Cl.[5] C08G *77/26*
U.S. Cl. 525—479 **38 Claims**

I. A process for the preparation of a cluster azasilacycloalkyl functional polysiloxane comprising

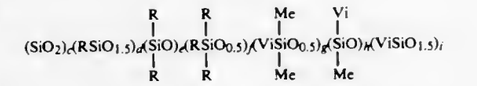
(I) combining

(A) a vinyl-containing polysiloxane selected from the group consisting of



and

-continued



in which each R is an independently selected monovalent hydrocarbon radical or halogenated hydrocarbon radical, Vi is vinyl radical, Me is methyl radical, a has an average value of from 0 to 1000, b has an average value of from 0 to 10, the value of c, d, e, f, g, h, and i being such that the ratio of (R + Me + Vi) per Si is in the range of from 0.5 to 1.8 and the value of g, h, and i being such that there is at least two Vi per molecule, with

(B) polyfunctional hydrogen polysiloxane selected from the group consisting of

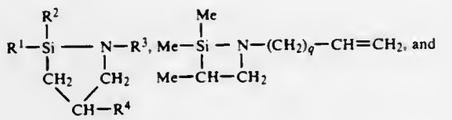


which R has the same meaning as defined for ingredient (A), x has an average value of from 3 to 10 inclusive, y has an average value of from 0 to 100, n has an average value of from 3 to 10 inclusive and m has an average value of from 1 to 10 inclusive, in the presence of

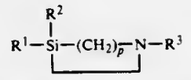
(C) a platinum catalyst for the reaction of vinyl with silicon-bonded hydrogen, wherein the ratio of SiH in (B) to the Si—Vi in (A) exceeds 1.5:1,

(II) reacting (A) with (B) in the presence of (C) to obtain a reaction product in which the vinyl radical in (A) reacts with the SiH of (B) to produce ≡Si—CH_2CH_2—Si≡ bonds, and there remains unreacted SiH groups in the reaction product, and thereafter

(III) adding an azasilacycloalkane selected from the group consisting of



and



in which g has a value of 1 to 4 inclusive, p has a value of 4 to 6 inclusive, each of R^1, R^2, and R^3 is independently selected from the group consisting of a hydrogen atom, methyl, and an aliphatic unsaturated monovalent hydrocarbon radical, where one of R^1, R^2, and R^3 is a monovalent hydrocarbon radical with olefinic unsaturation or acetylenic unsaturation, and R^4 is a hydrogen atom or methyl, wherein there is at least one molecule of azasilacycloalkane per unreacted SiH in the reaction product of (II), and (IV) reacting the azasilacycloalkane with the reaction product of (II) forming a cluster azasilacycloalkyl functional polysiloxane.

5,254,646
POLYMER SCALE PREVENTIVE AGENT, POLYMERIZATION VESSEL FOR PREVENTING POLYMER SCALE DEPOSITION, AND PROCESS OF PRODUCING POLYMER USING SAID VESSEL

Toshihide Shimizu, Urayasu, and Minoru Shigemitsu, Ibaraki, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Sep. 6, 1991, Ser. No. 755,764
Claims priority, application Japan, Sep. 7, 1990, 2-238530; Sep. 7, 1990, 2-238531
Int. Cl.[5] C08F *2/00*
U.S. Cl. 526—62 **4 Claims**

1. A process of producing a polymer by polymerization of a monomer having an ethylenic double bond in a polymerization vessel, comprising the step of carrying out said polymerization in a polymerization vessel having on its inner wall surfaces a coating comprising at least one compound selected from the group consisting of agars and agaroses, whereby the deposition of polymer scale is prevented.

5,254,647
PROCESS FOR PRODUCING STYRENE-BASED POLYMERS

Koji Yamamoto; Kazutoshi Ishikawa; Hideki Imabayashi, and Takashi Izumi, all of Ichihara, Japan, assignors to Idemitsu Petrochemichal Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 464,936, Jan. 16, 1990, abandoned. This application May 24, 1991, Ser. No. 707,183
Claims priority, application Japan, Jan. 20, 1989, 1-9929
Int. Cl.[5] C08F *2/02, 12/08*
U.S. Cl. 526—65 **10 Claims**

1. A process for producing a styrenic polymer having highly syndiotactic configuration comprising a first step of preliminarily polymerizing a styrenic monomer by the use of self cleaning reactor, while applying a sufficient shearing force to maintain a polydispersive state at 120° C. or lower until the start of solid phase condition in the polymerization system and a second step of introducing the preliminarily polymerized product into a vessel reactor and proceeding with polymerization under the solid phase condition to enhance conversion to polymer.

5,254,648
PROCESS FOR THE PREPARATION OF POLYTHIOPHENES AND ELECTRICALLY CONDUCTING DEVICES CONTAINING THEM

Elise Destryker, Sint-Pieters-Leeuw; Etienne Hannecart, Tervuren, and Claude Franquinet, Brussels, all of Belgium, assignors to SOLVAY & CIE (Société Anonyme), Brussels, Belgium

Continuation of Ser. No. 607,824, Nov. 1, 1990, abandoned, which is a continuation-in-part of Ser. No. 364,227, Jun. 12, 1989, abandoned. This application Jun. 21, 1991, Ser. No. 718,967
Claims priority, application Belgium, Nov. 17, 1989, 8901230
The portion of the term of this patent subsequent to Jun. 22, 2010, has been disclaimed.
Int. Cl.[5] C08G *75/06*
U.S. Cl. 526—93 **20 Claims**

1. A process for the preparation of electrically conductive, doped polythiophene, the process comprising:

a. polymerizing unsubstituted thiophene by a chemical route in a reaction medium comprised of:

unsubstituted thiophene,

a ferric salt which is effective as a doping agent and as an agent inducing polymerization and which is added to the reaction medium as an anhydrous ferric salt,

an alkyl halide present in an amount of less than 0.04 liter per gram of thiophene, and

water,

wherein the water is introduced in an amount ranging between 0.009 and 900% by weight of the alkyl halide, and

wherein the water and the anhydrous ferric salt are present in a molar ratio ranging between 0.01 and 6.

5,254,649
CATIONIC POLYMERIZATION OF 1-OLEFINS

Colin D. Miln, Edinburgh, and Douglas Stewart, Central Region, both of Scotland, assignors to BP Chemicals Limited, London, England

Filed Nov. 28, 1990, Ser. No. 619,299
Int. Cl.[5] C08F *4/16, 10/10*
U.S. Cl. 526—221 **15 Claims**

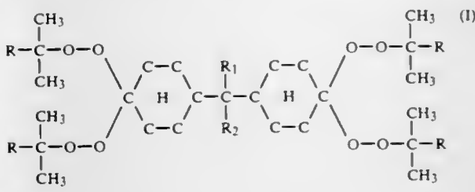
1. A process for the cationic polymerization of a feedstock containing a 1-olefin which comprises polymerizing a 1-olefin in the liquid phase at a temperature from −100° to 100° C. in the presence of a catalyst composition comprising tin tetrachloride and an organic halide co-catalyst which is a source of cations which is substantially free of organometallic compounds to obtain a polymer predominating in terminal unsaturation.

5,254,650
PROCESS FOR THE PREPARATION OF STYRENE OR STYRENE DERIVATIVE-CONTAINING COPOLYMERS

Takumi Fukumura, Asa, Japan, assignor to Kayaku Akzo Corporation, Tokyo, Japan

Continuation of Ser. No. 652,382, Jan. 31, 1991, abandoned, which is a continuation of Ser. No. 384,377, Jul. 24, 1989, abandoned. This application Mar. 20, 1992, Ser. No. 855,156
Claims priority, application Japan, Jul. 22, 1988, 63-181498; Jul. 22, 1988, 63-181499
Int. Cl.[5] C08F *4/36, 12/08*
U.S. Cl. 526—232.3 **14 Claims**

1. A process of preparing α-methylstyreneacrylonitrile copolymers which comprises copolymerizing a polymerization mixture which comprises α-methylstyrene, acrylonitrile and at least one tetrafunctional peroxide of the general formula (I):



(I)

wherein

R is a C_1-C_5 alkyl group or a phenyl group;

R_1 is a C_1-C_2 alkyl group; and

R_2 is a C_1-C_2 alkyl group.

5,254,651
ROOM TEMPERATURE CURING, ALTERNATING ISOPROPENYL-DIMETHYLBENZYLISOCYANATE COPOLYMERS HAVING HIGH ISOCYANATE FUNCTIONALITY

Vazken Alexanian, Darien; Robert G. Lees, Stamford, and Denise E. Fiori, Trumbull, all of Conn., assignors to American Cyanamid Company, Stamford

Division of Ser. No. 177,208, Apr. 4, 1988. This application Jun. 11, 1992, Ser. No. 897,205
Int. Cl.[5] C08F *4/32, 226/02*
U.S. Cl. 526—232.5 **23 Claims**

1. A proces for preparing a substantially alternating, organic solvent soluble copolymer having a molecular weight of from about 2000 to about 4000, with at least 8 weight percent of unreacted isocyanate functionality and containing monomeric units consisting essentially of (i) 40 to 50 mole percent of an

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isopropenyl-α,α-dimethylbenzyl isocyanate, (ii) 60 to 50 mole percent of an unsaturated ester, and (iii) from zero to 5 mole percent of a non-isocyanate reactive polymerizable monomer, said process comprising the following steps:

A) simultaneously adding reactor charge materials comprising:

1. 40 to 50 mole percent meta-/para-isopropenyl-α,α-dimethylbenzyl isocyanate monomer;
2. 60 to 45 mole percent unsaturated ester monomer;
3. zero to 5 mole percent non-isocyanate reactive unsaturated monomer;
4. a perester free-radical initiator;
5. optionally, a solvent; and
6. optionally, a chain transfer agent, into a reaction zone containing a non-isocyanate reactive solvent, with the proviso that the weight ratio of total monomers to total solvent in the reactor zone is from about 2:1 to about 20:1, and

B) maintaining the reaction zone of step (A) containing the reactor charge at a temperature and for a time sufficient to polymerize at least 99 weight percent of the meta-/para-isopropenyl-α,α-dimethylbenzyl isocyanate monomer.

5,254,652

TERPOLYMERS OF ETHYLENE, THEIR PREPARATION, AND THEIR USE AS ADDITIVES FOR MINERAL OIL DISTILLATES

Werner Reimann, Duisburg; Michael Feustel, Kelkheim, and John Hobes, Dinslaken, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 23, 1991, Ser. No. 813,887

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1990, 4042206

Int. Cl.[5] **C08F** *218/04, 218/08, 210/02*

U.S. Cl. 526—331 **4 Claims**

1. A terpolymer comprising ethylene units, 5% to 35% by weight of vinyl acetate units, and 1% to 25% by weight of vinyl neononanoate or vinyl neodecanoate units, both based on said terpolymer, said terpolymer having a number average molecular mass ($\overline{M}_n$) of 500 to 5,000 g/mol.

5,254,653

TERPOLYMER RUBBER OF STYRENE, ISOPRENE AND BUTADIENE

Adel F. Halasa, Bath, Ohio; Jean Bergh, Vianden, Luxembourg, and Fernand A. J. Fourgon, Bastogne, Belgium, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 458,069, Dec. 28, 1989. This application May 18, 1992, Ser. No. 884,351

The portion of the term of this patent subsequent to Sep. 10, 2008, has been disclaimed.

Int. Cl.[5] **C08F** *236/10*

U.S. Cl. 526—337 **5 Claims**

1. A linear styrene, isoprene, butadiene terpolymer rubber (SIBR) which is comprised of (1) about 6 to about 40 weight percent bound styrene; (2) about 20 to about 65 weight percent bound isoprene; and (3) about 10 to about 50 weight percent bound butadiene and is characterized by having a single glass transition temperature (Tg) which is in the range of about −10° C. to −75° C. a heterogeneity index in the range of about 1.5 to about 2.4 and a ML4(100) viscosity in the range of about 70 to about 100, and further characterized in that at least 98 percent of its styrene is contained in sequential styrene units of 5 or less, and at least 75 percent of its styrene is contained in sequential styrene units of 2 or less and the bound butadiene structure contains about 8 to about 40 percent 1,2-vinyl units with the remainder being essentially composed of 1,4-configured units, the said bound isoprene structure contains about 8 to about 50 percent 3,4-vinyl units with the remainder being essentially 1,4-configured units with less than about 2 percent 1,2-configured units and the sum of the said percent 1,2-vinyl units of the bound butadiene and the percent 3,4 units of the bound isoprene is in the range of about 20 to about 90.

5,254,654

MONODISPERSED POLYDIMETHYLSILOXANE-α,ω-DIOL FLUIDS AND α,ω-SUBSTITUTED POLYDIMETHYLSILOXANES AND POLYDIMETHYLCYCLOSILOXANES PREPARED THEREFROM

Mark A. Buese, Upper Darby, and Sejal Patel, Philadelphia, both of Pa., assignors to Temple University of the Commonwealth System of Higher Education, Philadelphia, Pa.

Filed Jul. 10, 1992, Ser. No. 911,426

Int. Cl.[5] **C08G** *77/06*

U.S. Cl. 528—14 **30 Claims**

1. A process for reducing the molecular weight distribution of a polydimethylsiloxane-α,ω-diol fluid comprising

contacting the fluid with a catalyst comprising an alkaline earth metal hydroxide, oxide, hydride or mixture thereof for a time sufficient to result in the narrowing of the molecular weight distribution of the molecules of said fluid, and

separating the reduced dispersivity fluid from the catalyst.

5,254,655

ORGANOSILICON POLYMERS, AND DYES, EXHIBITING NONLINEAR OPTICAL RESPONSE

Wayne M. Gibbons; Robert P. Grasso; Michael K. O'Brien, all of New Castle County, Del.; Paul J. Shannon, Chester County, Pa., and Shao-Tang Sun, New Castle County, Del., assignors to Hercules Incorporated, Wilmington, Del.

Filed Feb. 5, 1992, Ser. No. 831,609

Int. Cl.[5] **C08G** *77/08*

U.S. Cl. 528—15 **15 Claims**

1. An organosilicon crosslinked polymer or crosslinkable prepolymer which comprises the hydrosilation reaction product of reactants comprising the following:

(a) at least one cyclic polysiloxane having at least two hydrosilation reactive ≡SiH groups; and

(b) at least one organic dye having:

(i) an absorption maximum between 300 and 2000 nm;

(ii) an extinction coefficient, at the absorption maximum, greater than 2×10^3 L/mol cm; and

(iii) at least two hydrosilation reactive carbon-carbon double bonds;

wherein at least one of said at least one cyclic polysiloxane and said at least one organic dye has more than two hydrosilation reactive sites.

5,254,656

CURABLE ORGANOSILOXANE COMPOSITIONS CONTAINING ORGANOTITANATE/MICROENCAPSULATED PLATINUM CO-CATALYSTS

Carl J. Bilgrien, Midland, and Beth A. Witucki, Bay City, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Aug. 31, 1992, Ser. No. 937,020

Int. Cl.[5] **C08G** *77/06*

U.S. Cl. 528—15 **5 Claims**

1. In a curable organosiloxane composition comprising

A) an organopolysiloxane containing an average of at least two terminally unsaturated hydrocarbon radicals per molecule,

B) an amount of an organohydrogenpolysiloxane sufficient to cure said organopolysiloxane to an elastomer in the presence of a hydrosilation catalyst, and

C) an amount of a microencapsulated platinum-containing hydrosilation catalyst sufficient to promote curing of said composition,

the improvement comprising the presence in said composition of

D) an amount of an organotitanium compound sufficient to increase the cure rate of said composition relative to the rate achieved in the absence of said compound, where the organotitanium compound is selected from the group consisting of titanic acid esters and betadicarbonyltitanium compounds.

5,254,657

RTV SILICONE RUBBER COMPOSITIONS AND CURED PRODUCTS THEREOF

Yoshio Inoue, Annaka, Japan, assignor to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jun. 1, 1992, Ser. No. 891,122

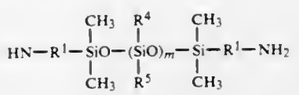
Claims priority, application Japan, May 30, 1991, 3-153681; Jun. 3, 1991, 3-160074

Int. Cl.[5] **C08G** *77/08*

U.S. Cl. 528—17 **7 Claims**

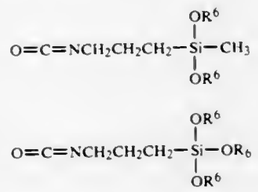
1. A room temperature vulcanizable silicone rubber composition comprising:

(A) an organopolysiloxane represented by the following formula:



wherein R^1 is a substituted or unsubstituted divalent hydrocarbon group having 1 to 20 carbon atoms or a divalent organic group having 1 to 20 carbon atoms and containing an ether bond or —NH— bond, R^4 and R^5 are independently selected from substituted or unsubstituted monovalent hydrocarbon groups having 1 to 20 carbon atoms, and letter m is an integer of at least 5,

(B) an organic silicon compound of either of the following formulae:



wherein R^6 is a substituted or unsubstituted monovalent hydrocarbon group having 1 to 20 carbon atoms, and

(C) a curing catalyst.

5,254,658

METHOD FOR THE PREPARATION OF BRANCHED ORGANOPOLYSILOXANE

Takuya Ogawa, and Tosbio Suzuki, both of Kanagawa, Japan, assignors to Dow Corning Japan, Ltd., Tokyo, Japan

Filed Oct. 19, 1992, Ser. No. 963,157

Claims priority, application Japan, Oct. 31, 1991, 3-286753

Int. Cl.[5] **C08G** *77/04*

U.S. Cl. 528—37 **21 Claims**

1. A method for the preparation of branched polyorganosiloxane, wherein said method comprises reacting an alkali metal compound with a silanol-containing polysiloxane to form an alkali metal salt of the silanol-containing polysiloxane, the silanol-containing polysiloxane being described by formula

$$\{SiO_{4/2}\}_x\{R^1{}_2(OH)SiO_{\frac{1}{2}}\}_y\{R^1{}_3SiO_{\frac{1}{2}}\}_z\{RO_{\frac{1}{2}}\}_u,$$

wherein each R^1 is independently selected from a group consisting of C1–8 alkyls, haloalkyls, alkenyls, and aryls; R is selected from a group consisting of hydrogen atom and C1–8 alkyls; $2\leqq x\leqq500$; $2\leqq y+z+u\leqq150$; $2\leqq y$; $0\leqq z$; $0\leqq u\leqq15$; $0.3\leqq(y+z+u)/x\leqq3$; and $0\leqq u/(x+y+z)\leqq0.1$); subsequently reacting the alkali metal salt of the silanol-containing polysiloxane with cyclic organopolysiloxane described by formula

$$\{SiR^2R^3O\}_m,$$

where R^2 and R^3 are defined as for R^1 and $3\leqq m\leqq8$, and end-capping with triorganomonohalosilane or protic acid to form a branched organopolysiloxane described by formula

$$\{SiO_{4/2}\}_x\{R^1{}_2ASiO_{\frac{1}{2}}\}_y\{R^1{}_3SiO_{\frac{1}{2}}\}_z\{RO_{\frac{1}{2}}\}_u,$$

wherein each R^1 is independently selected from a group consisting of C1–8 alkyls, haloalkyls, alkenyls, and aryls; A is a group described by formula

$$-(OSiR^2R^3)_n-R^4,$$

R^2 and R^3 are defined as for R^1, R^4 is selected from a group consisting of C1–8 alkyls, haloalkyls, alkenyls, hydrogen atom, and hydroxyl group, and $1\leqq n\leqq1{,}000$; R is selected from a group consisting of hydrogen atom and C1–8 alkyls; $2\leqq x\leqq500$; $2\leqq y+z+u\leqq150$; $2\leqq y$; $0\leqq z$; $0\leqq u\leqq15$; $0.3\leqq(y+z+u)/x\leqq3.0$; and $0\leqq u/(y+z+u)\leqq0.1$.

5,254,659

INSULATING COATING COMPOSITION, SOLDERABLE INSULATED WIRES, PRODUCTION PROCESS OF THE INSULATED WIRES AND FLYBACK TRANSFORMERS USING THE INSULATED WIRES

Tetsuo Tajima, Fujisawa; Ryoichi Sudo, Yokosuka; Makoto Kobata, Yokohama; Fusaji Shoji, Yokohama; Masayoshi Kitadani, Yokohama, and Kouji Oikawa, Esashi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

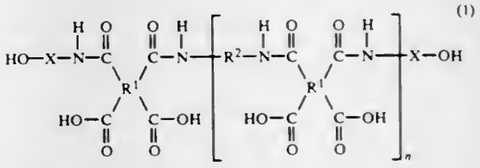
Filed Mar. 27, 1991, Ser. No. 675,951

Claims priority, application Japan, Mar. 27, 1990, 2-77309; Apr. 13, 1990, 2-96428; Sep. 5, 1990, 2-233254; Sep. 20, 1990, 2-252547

Int. Cl.[5] **C08G** *18/80*

U.S. Cl. 528—45 **22 Claims**

1. A solderable, insulated wire having a polyimide resin coating, which has been produced by coating a conductor with an insulating coating composition, which comprises a polyamide acid represented by the following formula (1), and then baking the thus-coated composition,



(1)

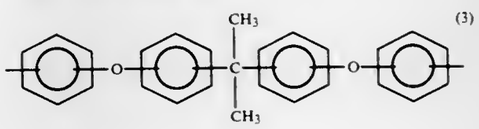
wherein

X represents an alkylene or alkylenephenylene group,

n represents a positive integer,

R^1 represents a tetravalent organic group, and

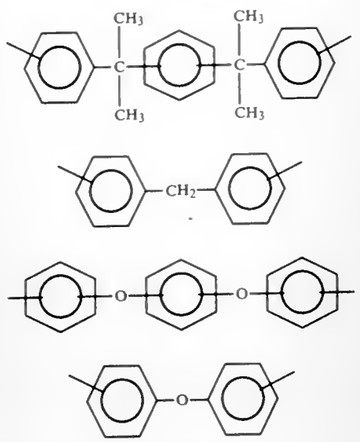
R^2 represents a divalent organic group, with the proviso that R^2 represents a divalent organic group selected from the group consisting of divalent organic groups represented by the following formulae (3):



(3)

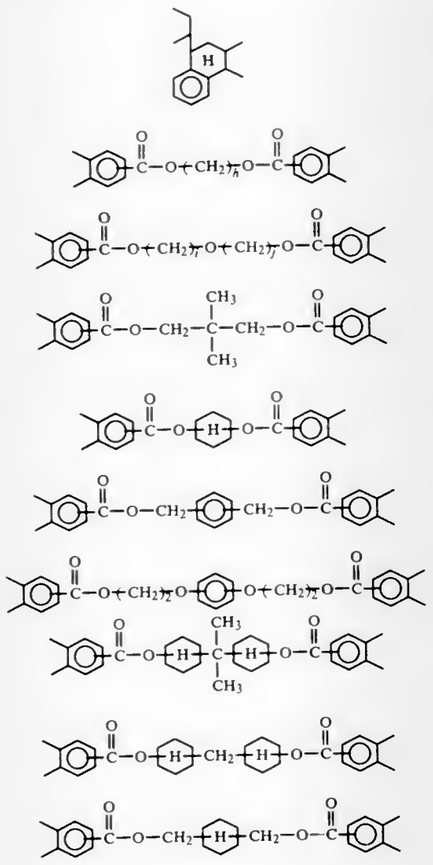
VOL 1155 ISS 3 OCT 19 1993 UMI

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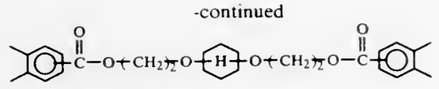


when R^1 is a tetravalent organic group selected from the group consisting of tetravalent organic groups represented by the following formulae (2):

(2)

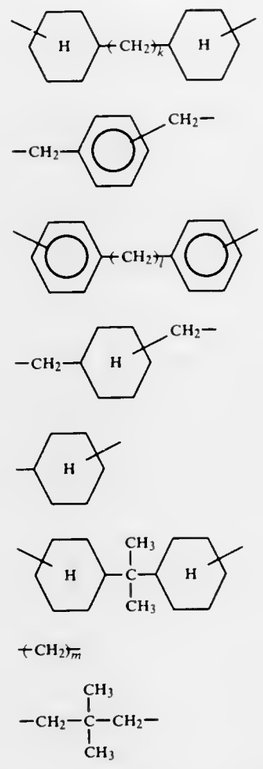


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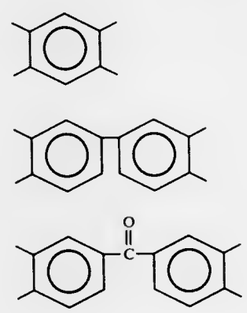
h being an integer of 2–16, and
i and j being individually an integer of 2–10,
and R^2 represents a divalent organic group selected from the group consisting of divalent organic groups represented by the following formulae (5):

(5)

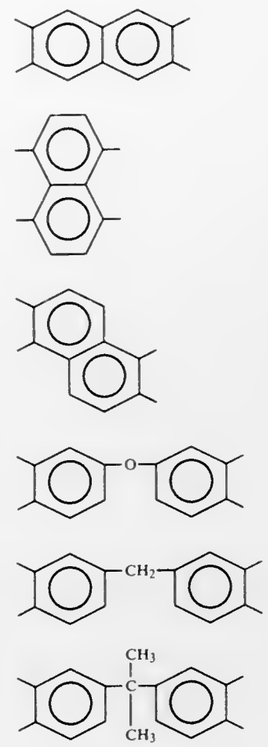


k being an integer of 1–10, and
l and m being individually an integer of 2–10
when R^1 is a tetravalent organic group selected from the group consisting of tetravalent organic groups represented by the following formulae (4):

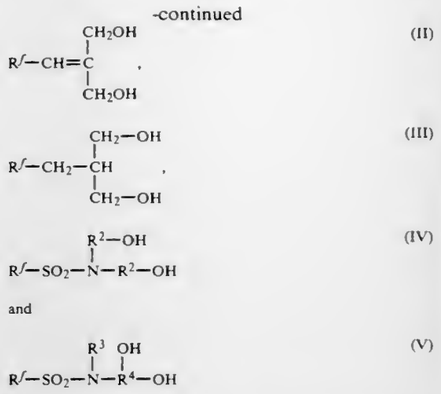
(4)



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-continued



(II)

(III)

(IV)

and

(V)

in which
R_f represents a perfluoroalkyl group containing from 4 to 26 carbon atoms, and
R^2 represents a difunctional saturated aliphatic hydrocarbon radical containing from 2 to 4 carbon atoms,
R^3 represents a C_1–C_4 alkyl group,
R^4 represents a trifunctional saturated aliphatic hydrocarbon radical containing from 3 to 4 carbon atoms, and
n represents 0, 1 or 2.

5,254,660

POLYISOCYANATE SOLUTIONS USEFUL FOR IMPREGNATING POROUS INORGANIC SUBSTRATES

Stephan Kirchmeyer, Leverkusen; Hanns-Peter Müller, Odenthal-Höffe; Hermann Kober, Bergisch Gladbach; Stefan Böhm, Leverkusen, and Josef Pedain, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 2, 1992, Ser. No. 970,354

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1991, 4136768

Int. Cl.[5] C08G *18/32*

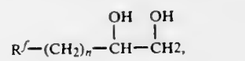
U.S. Cl. 528—49 **7 Claims**

1. A fluorine-containing diisocyanate or polyisocyanate having a fluroine content determined as perfluorinated alkyl group content of from 15 to about 60% by weight, an isocyanate content of from about 0.5 to about 15% by weight and urethane groups which is the reaction product of

a) a diisocyanate or polyisocyanate having (cyclo)aliphatically bound isocyanate groups and a molecular weight of from about 168 to about 1,000 and

b) a less than equivalent amount of a fluroine-containing monohydric or dihydric alcohol selected from the group consisting of

(I)



5,254,661

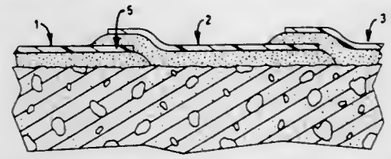
WATERPROOFING LAMINATE WITH INTEGRAL RELEASE COATING

John E. Wilson, Quakertown, Pa.; Arnold M. Rosenberg, Potomac, Dale P. Bentz, Frederick, both of Md., assignor to W.R. Grace & Co.-Conn., New York, N.Y.

Filed Nov. 5, 1991, Ser. No. 787,851

Int. Cl.[5] B32B *3/00*

U.S. Cl. 428—57 **14 Claims**



1. A waterproofing laminate, comprising: a flexible sheet-like polymeric support having a first major side thereof coated with a release coating which is substantially non-adherent to bituminous compositions and having a second major side thereof coated with a flexible membrane layer of an adhesive bituminous composition, wherein said release coating is applied as a water-based emulsion whereby said release coating, when dried, is removable from said first major side of said support layer by wet abrasion.

5,254,662

BIOSTABLE POLYURETHANE PRODUCTS

Michael Szycher, Lynnfield, Mass., and Andrew M. Reed, Arvada, Colo., assignors to PolyMedia Industries, Inc., Burlington, Mass.

Continuation of Ser. No. 581,013, Sep. 12, 1990. This application May 18, 1992, Ser. No. 885,927

Int. Cl.[5] C08G *18/42, 18/44*

U.S. Cl. 528—67 **25 Claims**

1. A biostable implantable polyurethane article having a low modulus of elasticity and a high ultimate tensile strength wherein said article is made from a polyurethane prepared by the reaction of tetramethylxylylene diisocyanate, metaxylene

diisocyanate, an aliphatic or aliphatic-alicyclic organic diisocyanate or a mixture of said organic dissocyanates, a polycarbonate glycol wherein the polycarbonate glycol has the following formula:

$$[HO[R^1\text{-}O(CO)O\text{-}R^1]_nOH]$$

$$HOR^1[O(CO)O\text{-}R^1]_nOH$$

in which R^1 is a linear hydrocarbon chain of about 2 to 20 carbon atoms said polycarbonate glycol having a molecular weight of from about 650 to 3500 molecular weight units and n having a value in accordance with the molecular weight units and n having a value in accordance with the molecular weight and an aliphatic diol having about 2 to 8 carbon atoms or an aliphatic diamine having about 2 to 10 carbon atoms or a mixture of an aliphatic diamine having about 2 to 10 carbon atoms and an alkanolamine, or alkanolamines said article having an ultimate tensile strength in excess of 4000 psi, an elastic modulus of 100% strain of between about 125 psi and 475 psi and a Shore A hardness of about 70 or less.

5,254,663

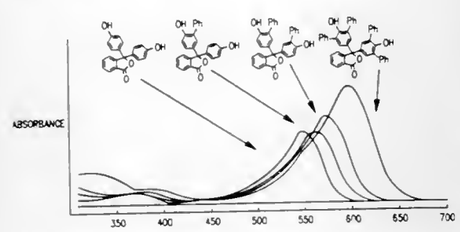
POLYMERS DERIVED FROM PHENOLPHTHALEINS

Allan S. Hay, 5015 Glencairn Avenue, Montreal, Quebec, Canada H3W 2B3

Continuation of Ser. No. 931,310, Aug. 18, 1992, which is a continuation-in-part of Ser. No. 874,683, Apr. 28, 1992, abandoned. This application Apr. 5, 1993, Ser. No. 42,576

Int. Cl.[5] C08G *65/38;* **C07D** *237/32*

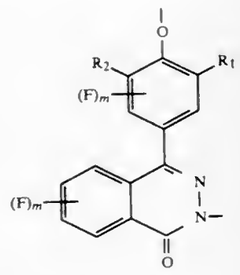
U.S. Cl. 528—86 **9 Claims**



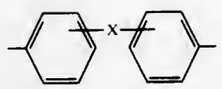
1. A polymer represented by formula (X):

$$+A-Z\rightarrow_x+Cp-Z\rightarrow_y \quad (X)$$

wherein A is a monomeric radical of formula (XIV):



Z is a linking radical of formula (XV)



(XV)

Cp is the radical —A— of formula (XIV) or is derived from a comonomer selected from the group consisting of bisphenols and biphenols,

x is an integer of at least 1,

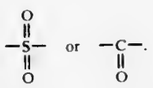
y is an integer of 1 or more

x+y=n,

n is an integer of 2 to 200,

R_1 and R_2 are the same or different and are selected from hydrogen, fluorine, phenyl and fluorophenyl,

each m, which may be the same or different, is an integer of 0, 1, 2, 3 or 4, and



X is —S— or —C—.

5,254,664

CURING COMPOSITION

Subhash C. Narang, Redwood City; Asutosh Nigam; Apparao Satyam, both of Menlo Park; Susanna C. Ventura, Mountain View, all of Calif., and Yoshihiro Arita, Osaka, Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Filed Dec. 31, 1991, Ser. No. 815,227

Int. Cl.[5] C08G *69/00, 14/04, 8/04, 14/02*

U.S. Cl. 528—137 **2 Claims**

1. A curing composition for the preparation of a crosslinked resin composed of a compound (A) having at least two 2-oxazoline groups, a compound (B) having at least two functional groups of one or a plurality selected from the group consisting of an aromatic hydroxyl group, an amino group and a thiol group, wherein the ratio of compound (A) to compound (B) is from 90:10 to 10:90, and an onium salt catalyst (C) which accelerates reaction of the compound (A) with the compound (B), said onium salt catalyst being present in an amount of from about 0.1 to 10% by weight based on the total amount of compounds (A) and (B), wherein a counter anion of said onium salt is at least one selected from the group consisting of a tetrafluoroborate, hexafluoroantimonate, hexachloroantimonate, hexafluorophosphate, hexafluoroarsenate, perchlorate, trifluoromethylsulfite, fluorosulfonate, p-toluenesulfonate, hydrogen phosphate, hydrogen sulfate, iodide, bromide, chloride and fluoride, and wherein a cationic part of said onium salt catalyst is at least one selected from the group consisting of sulfonium, oxonium, ammonium, iodonium, phosphonium, diazonium, nitronium and nitrosonium.

5,254,665

AMMELINE-MELAMINE-FORMALDEHYDE RESINS (AMFR) AND METHOD OF PREPARATION

George M. Crews, Gonzales; Shen Ji, Donaldsonville, both of La.; Charles U. Pittman, Jr., Tuscaloosa, Ala., and Ruicheng Ran, Starkville, Miss., assignors to Melamine Chemicals, Inc., Donaldsonville, La.

Filed Aug. 24, 1992, Ser. No. 933,815

Int. Cl.[5] C08G *12/30*

U.S. Cl. 528—254 **10 Claims**

1. Process for producing ammeline-melamine-formaldehyde resins comprising

(a) providing ammeline in substantially pure form;

(b) forming a water-soluble salt of ammeline;

(c) mixing the water-soluble salt of ammeline with formaldehyde and melamine;

(d) adjusting the pH of the mixture to within the range of from about 8 to 10 and polymerizing the mixture while maintaining the pH within the range of about 8 to 10.5.

5,254,666

PROCESS FOR PRODUCTION OF ALKALINE OR ALKALINE-EARTH METAL TEREPHTHALATE OR OF TEREPHTHALIC ACID, OF HIGH PURITY, FROM POLYOL POLYTEREPHTHALATE AND IN PARTICULAR FROM WASTE OF AN ETHYLENE GYLCOL POLYTEREPHTHALATE

Jacques Benzaria, Chambly, France, assignor to Institut Francais du Petrole, Rueil Malmaison, France

Filed Jan. 29, 1992, Ser. No. 827,050

Claims priority, application France, Jan. 30, 1991, 91 01025

Int. Cl.[5] C08G *63/02;* **C07C** *63/14*

U.S. Cl. 528—272 **14 Claims**

1. A process for the production of terephthalic acid or an alkali metal or alkaline-earth metal salt of terephthalic acid, comprising continuously reacting a polyol polyterephthalate with an alkali metal or alkaline-earth metal hydroxide, at 130°–190° C., at approximately atmospheric pressure, in the absence of water or in the presence of a maximum amount by weight of water equal to that of the alkali metal or alkaline-earth metal hydroxide, the proportion of alkali metal or alkaline earth metal hydroxide being 50 to 300% of the stoichiomatic amount necessary to produce entirely salified terephthalate, and optionally acidifying the salified terephthalate to produce terephthalic acid.

5,254,667

MACROMERS FOR PREPARATION OF GRAFT POLYMER POLYOL DISPERSIONS

John E. Davis, Woodhaven, Mich., assignor to BASF Corporation, Parsippany, N.J.

Filed Jul. 10, 1989, Ser. No. 377,080

Int. Cl.[5] C08F *261/06, 283/06*

U.S. Cl. 528—306 **4 Claims**

1. An alkylfumarate-group-containing macromer suitable for use in preparing vinyl graft polymer polyether polyol dispersions comprising the reaction product of an alkylfumaryl halide and a polyether polyol.

5,254,668

POLYAMIDOPOLYFUNCTIONAL AMINE FROM LACTAM AND ETHER AMINE

Richard J. G. Dominguez; Richard J. Clark, II; Richele T. Howelton, and George P. Speranza, all of Austin, Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Filed Jun. 29, 1992, Ser. No. 905,699

Int. Cl.[5] C08G *69/14*

U.S. Cl. 528—323 **14 Claims**

1. An amidoamine of the formula:

$$R'-[(OR'')_x-(R''')_z-NH+C-(CH_2)_p-NH)_yH]_k$$

where

R is independently hydrogen or lower alkyl of 1 to 4 carbon atoms;

R' is an alkyl group when k is 1, and is an alkylene group when k is greater than 1; where R' has 2 to 18 carbon atoms;

R'' is independently lower alkylene of 2 to 4 carbon atoms;

R''' is independently straight or branched lower alkylene of 2 to 6 carbon atoms;

x is independently 1 to 200;

y is independently 1 to 300;

z is independently 1 to 200;

p is independently 2 to 11; and

k is from 1 to 8; where the x and z groups are distributed in blocks or randomly.

5,254,669

CROSSLINKED POLYMER FROM LONG ALKYL CHAIN POLYAMINE

John R. Blackborow, Edinburgh, Scotland, assignor to BP Chemicals Limited, London, England

Filed Aug. 25, 1992, Ser. No. 934,928

Claims priority, application France, Aug. 30, 1991, 91 11018

Int. Cl.[5] C08G *69/26*

U.S. Cl. 528—342 **15 Claims**

1. A process for the manufacture of a crosslinked polymer comprising reacting an organic crosslinking agent which is a polycarboxylic acid or a derivative of a polycarboxylic acid, and a polyamine, other than a succinimide, substituted by a long alkyl chain having from 10 to 800 carbon atoms and having at least two amine functional groups which are selected from the group consisting of primary and secondary amines.

5,254,670

POLYANILINE DERIVATIVES AND THEIR PRODUCTION PROCESS

Osamu Oka, Shizuoka, Japan, assignor to Tomoegawa Paper Co., Ltd., Tokyo, Japan

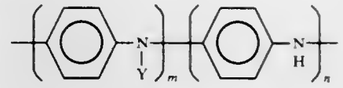
Filed Apr. 30, 1991, Ser. No. 693,867

Claims priority, application Japan, May 2, 1990, 2-115163; May 11, 1990, 2-119699; Mar. 25, 1991, 3-83023; Mar. 22, 1991, 3-83024; Mar. 25, 1991, 3-83025

Int. Cl.[5] C08L *79/00*

U.S. Cl. 528—373 **3 Claims**

1. A polyaniline derivative represented by the following formula (I):



(I)

wherein Y is $R_5+O-R_4\rightarrow_z OR_3-$, R_3 being a linear or branched alkylene group having 1–22 carbon atoms, R_4 being a linear or branched alkylene group having 1–22 carbon atoms, R_5 being a substituted or unsubstituted alkyl group having 1–22 carbon atoms or a cycloalkyl group, and k is an integer of 0–5, and n and m independently represent polymerization degrees and are integers satisfying the following equations: $m/(n+m)=0.01$–1 and $n+m=20$–1000.

5,254,671

EXTRACELLULAR SEGMENTS OF HUMAN E IMMUNOGLOBULIN ANCHORING PEPTIDES AND ANTIBODIES SPECIFIC THEREFOR

Tse W. Chang, Houston, Tex., assignor to Tanox Biosystems, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 515,604, Apr. 27, 1990, abandoned. This application Oct. 29, 1992, Ser. No. 973,321

Int. Cl.[5] C07K *7/10;* **C12N** *15/13*

U.S. Cl. 530—324 **3 Claims**

1. An isolated DNA or RNA fragment encoding the peptides of SEQ ID NO:2 or SEQ ID NO:3.

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5,254,672

SYNTHETIC PEPTIDES WHICH CONTAIN SEQUENCES FROM FACTOR VIIA, AND THE USE THEREOF

Hermann Pelzer, Marburg, and Werner Stüber, Lahntal, both of Fed. Rep. of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Fed. Rep. of Germany

Filed Mar. 11, 1991, Ser. No. 666,913
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1990, 4007902
Int. Cl.[5] C07K *7/00, 17/00*
U.S. Cl. 530—328 2 Claims

1. Synthetic decapeptide selected from the group consisting of:

Cys-Arg-Asn-Ala-Ser-Lys-Pro-Gln-Gly-Arg

and

Ile-Val-Gly-Gly-Lys-Val-Cys-Pro-Lys-Gly,

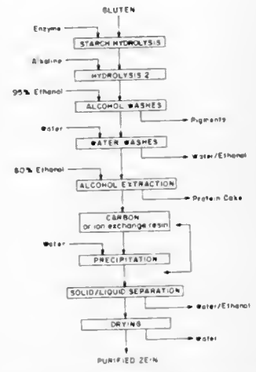
said peptide being chemically synthesized and being antigenic.

5,254,673

PURIFICATION OF ZEIN FROM CORN GLUTEN MEAL

Richard B. Cook, Revere; Frank M. Mallee, Acton, and Mark L. Shulman, Waltham, all of Mass., assignors to Opta Food Ingredients, Inc., Bedford, Mass.

Filed Dec. 26, 1991, Ser. No. 814,118
Int. Cl.[5] C07K *3/02, 3/12, 15/10*
U.S. Cl. 530—373 15 Claims



1. A method of producing decolored and deflavored zein or zein bodies and glutelins from corn gluten comprising removing color and flavor impurities from the gluten by treating corn gluten with alkali to remove fatty acids and corn oils contained therein and then with an aqueous alcoholic solvent having a concentration which does not substantially extract zein, zein bodies and glutelins therefrom, thereafter changing the concentration of the alcoholic solvent to a concentration sufficient to separate the gluten into decolored and deflavored zein or zein bodies and glutelin fractions.

5,254,674

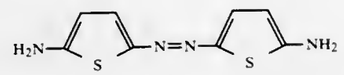
DIAMINOAZOTHIOPHENE COMPOUND AND A METHOD FOR PREPARING THE SAME

Yasunori Yokomichi, Osaka; Shinichi Tada, Ikoma; Hitoshi Nishino, Kyoto, and Kenji Seki, Higashiosaka, all of Japan, assignors to Osaka Gas Company, Limited, Osaka, Japan

Filed Nov. 6, 1992, Ser. No. 972,528
Claims priority, application Japan, Nov. 7, 1991, 3-291503
Int. Cl.[5] C09B *62/35*
U.S. Cl. 534—765 1 Claim

1. A diaminoazothiophene compound represented by the formula (I):

(I)



salts thereof or metal complexes thereof.

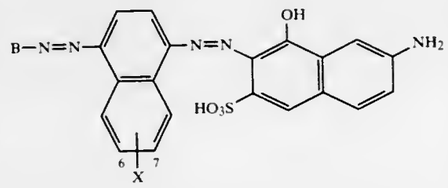
5,254,675

ANIONIC DISAZO DYES

Peter Gregory, Bolton; Prahalad M. Mistry, Ashton-under-Lyne, and David Greenwood, Oldham, all of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Jan. 3, 1992, Ser. No. 816,677
Claims priority, application United Kingdom, Jan. 8, 1991, 9100302
Int. Cl.[5] C09B *31/08, 67/22;* C09D *11/02*
U.S. Cl. 534—829 5 Claims

1. A compound which, in the free acid form, is of the Formula:



wherein

B is 3- or 4-carboxyphenyl; and

X is H.

5. A composition comprising a first compound defined in claim 1 and a second compound as shown in claim 1, in which B is 3- or 4- carboxyphenyl and X is sulpho at the 6- or 7-position.

5,254,676

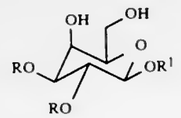
OLIGOSACCHARIDE INHIBITORS FOR INFLUENZA VIRUS

Subramaniam Sabesan, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

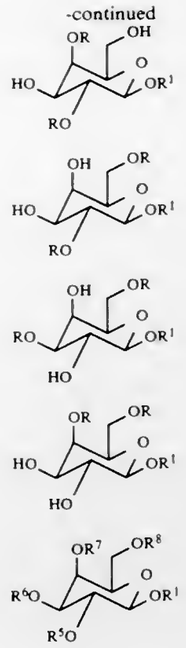
Division of Ser. No. 796,201, Nov. 22, 1991, Pat. No. 5,220,008.
This application Feb. 19, 1993, Ser. No. 20,192
Int. Cl.[5] C07G *3/00, 11/00;* C07H *15/00, 17/00*
U.S. Cl. 536—4.1 4 Claims

1. A polymer comprising a repeating unit of formula I, II, III, IV, V or VI

I



-continued



wherein

R^1 is $(CH_2)_nCOOR^2$ or $(CH_2)_nCONHR^3NHC(O)R^4$;

n is an integer from 1 to 20;

R^2 is a C_1 to C_6 alkyl or aralkyl;

R^3 is a C_1 to C_4 alkyl;

R^4 is alkenyl;

R^5, R^6, R^7, and R^8 are each independently H, C_6H_5CH, allyl, tertbutyldimethylsilyl or 2-deoxy-2-phthalimido-3,4,6-tri-O-acetyl-β-D-glucopyranosyl; and

R is a monsaccharide selected from the group consisting of glucosamine, N-protected glucosamine, and O-protected glucosamine,

a disaccharide consisting of galactose glycosidically linked to N-acetylglucosamine, or

a triscasshride consisting of N-acetylneuraminic acid glycosidically linked to galactose which in turn is glycosidically linked to N-acetyl-glucosamine.

3. A composition comprising bovine serum albumin bonded to one or more heptasaccharides selected from the group consisting of:

5-(methoxycarbonyl)pentyl 2,3-di-O-{5-acetamido-3,5-dideoxy-D-glycero-D-galacto-2-nanulopyranosylonic acid(2→6)-β-D-galactopyranosyl(1→4)-2-acetamido-2-deoxy-β-D-glucopyranosyl}-β-D-galactopyranoside;

5-(methoxycarbonyl)pentyl 2,4-di-O-{5-acetamido-3,5-dideoxy-D-glycero-D-galacto-2-nanulopyranosylonic acid(2→6)-β-D-galactopyranosyl(1→4)-2-acetamido-2-deoxy-β-D-glucopyranosyl}-β-D-galactopyranoside;

5-(methoxycarbonyl)pentyl 2,6-di-O-{5-acetamido-3,5-dideoxy-D-glycero-D-galacto-2-nanulopyranosylonic acid(2→6)-β-D-galactopyranosyl(1→4)-2-acetamido-2-deoxy-β-D-glucopyranosyl}-β-D-galactpyranoside;

5-(methoxycarbonyl)pentyl 3,6-di-O-{5-acetamido-3,5-dideoxy-D-glycero-D-galacto-2-nanulopyranosylonic acid(2→6)-β-D-galactopyranosyl(1→4)-2-acetamido-2-deoxy-β-D-glucopyranosyl}-β-D-galactopyranoside; and

5-(methoxycarbonyl)pentyl 4,6-di-O-{5-acetamido-3,5-dideoxy-D-glycero-D-galacto-2-nanulopyranosylonic acid(2→6)-β-D-galactopyranosyl(1→4)-2-acetamido-2-deoxy-β-D-glucopyranosyl}-β-D-galactopyranoside.

II

III

IV

V

VI

5,254,677

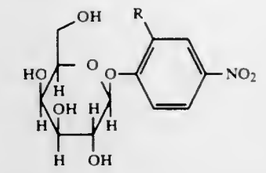
β-GALACTOSIDASE SUBSTRATES FOR CEDIA

Hans-Joachim Guder; Ruppert Herrmann, both of Weilheim, and Dietmar Zdunek, Munich, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Jun. 25, 1991, Ser. No. 720,306
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1990, 4021063
Int. Cl.[5] C07G *3/00;* C07H *15/00;* B01N *33/567;* C12Q *1/48*
U.S. Cl. 435—7.9 8 Claims

1. A compound of the formula:

(I)



wherein R is a trifluoromethyl radical or a cyano group.

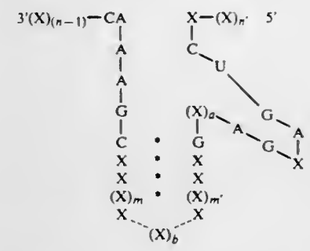
5,254,678

RIBOZYMES

James P. Haseloff, O'Conner; Wayne L. Gerlach, Hughes; Philip A. Jennings, West Chatswood, and Fiona H. Cameron, Forestville, all of Australia, assignors to Gene Shears Pty. Limited, St. Leonards, Australia

Continuation of Ser. No. 536,625, Aug. 14, 1990, abandoned.
This application Aug. 5, 1992, Ser. No. 926,148
Claims priority, application Australia, Dec. 15, 1987, PI5911; Aug. 19, 1988, PI9950; Sep. 9, 1988, PJ0353; Nov. 4, 1988, PJ1304; Nov. 7, 1988, PJ1333
Int. Cl.[5] C12N *15/11, 15/70, 15/74, 15/79*
U.S. Cl. 536—23.2 7 Claims

1. A compound having the formula:



wherein each X represents a ribonucleotide which may be the same or different;

wherein each of $(X)_{n-1}$ and $(X)_{n'}$ represents an oligoribonucleotide having a predetermined sequence which is (a) capable of hybridizing with an RNA target sequence to be cleaved and (b) does not naturally occur covalently bound to the sequences C—A—A—A—G—C— and X—C—U—G—A—, respectively, such RNA target sequence not being present within the compound;

wherein each of n−1 and n' represents an integer which defines the number of ribonucleotides in the oligonucleotide with the proviso that the sum of n+n' is greater than or equal to 14;

wherein each • represents base pairing between the ribonucleotides located on either side thereof;

wherein each solid line represents a chemical linkage providing covalent bonds between the ribonucleotides located on either side thereof;

wherein a represents an integer which defines a number of

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ribonucleotides with the proviso that a may be 0 or 1 and if 0, the A located 5' of $(X)_a$ is bonded to the G located 3' of $(X)_a$;

wherein each of m and m' represents an integer which is greater than or equal to 1;

wherein each of the dashed lines independently represents either a chemical linkage providing covalent bonds between the ribonucleotides located on either side thereof or the absence of any such chemical linkage; and

wherein $(X)_b$ represents an oligoribonucleotide which may be present or absent with the proviso that b represents an integer which is greater than or equal to 2 if $(X)_b$ is present.

5,254,679

CEPHALOSPORIN INTERMEDIATES

Robert H. Bradbury, Wilmslow, United Kingdom; Frederic H. Jung, Rilly la Montagne; Jean J. Lohmann, Hermonville, both of France; Peter R. Marsham, Poynton, United Kingdom, and Georges Pasquet, Bazancourt, France, assignors to Imperial Chemical Industries PLC, London, England and ICI Pharma, Cergy, Cedex, France

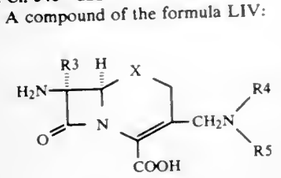
Division of Ser. No. 409,290, Sep. 19, 1989, Pat. No. 5,049,558, which is a continuation of Ser. No. 738,646, May 28, 1985, abandoned. This application Jun. 28, 1991, Ser. No. 723,273

Claims priority, application European Pat. Off., May 30, 1984, 84401116.3

Int. Cl.[5] **C07D** *501/18*

U.S. Cl. 540—221 **17 Claims**

1. A compound of the formula LIV:



LIV

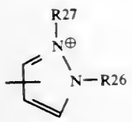
in which

X is sulphur or sulphinyl (R or S configuration);

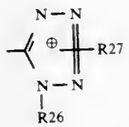
R3 is hydrogen or methoxy;

R4 is hydrogen, (1–4C)alkyl, halo(1–4C)alkyl, hydroxy(1–4C)alkyl, (1–4C)alkoxy(1–4C)alkyl, carboxy (1–4C)alkyl, amino(1–4C)alkyl, cyano(1–4)alkyl, (1–4C)alkanoylamino(1–4C)alkyl, allyl, furfuryl, benzyl or pyridyl(1–4C)alkyl;

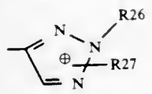
R5 is an aromatic heterocyclic ring system which is linked via carbon and is one of the formula IV to L, excluding XLII,



IV

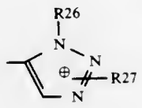


V

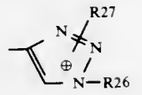


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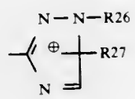
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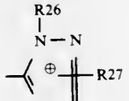
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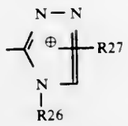
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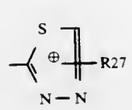
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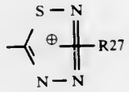
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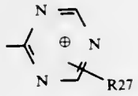
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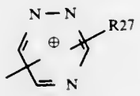
XII



XIII



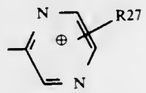
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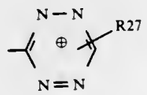
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XVI

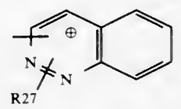


XVII

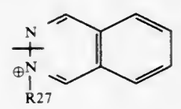


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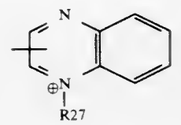
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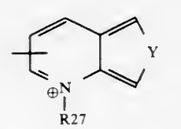
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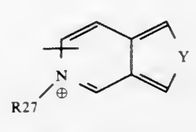
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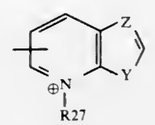
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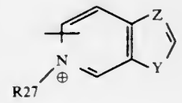
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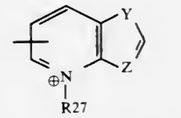
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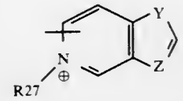
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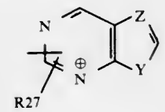
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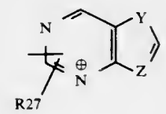
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XXVII

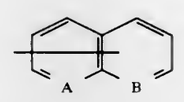


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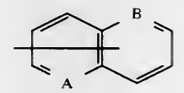


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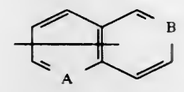
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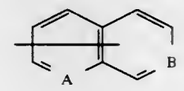
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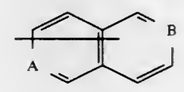
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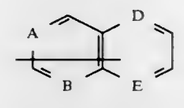
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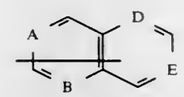
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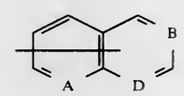
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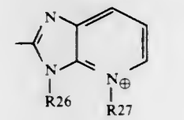
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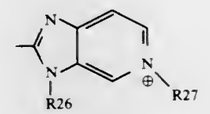
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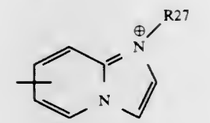
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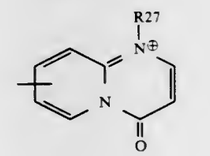
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XXXIX



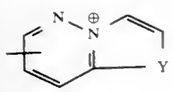
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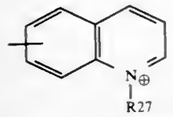


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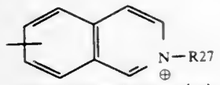
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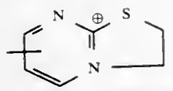




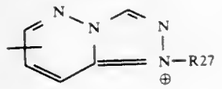
(Linked through benzene ring)

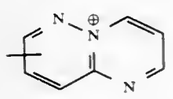


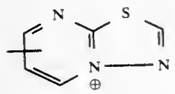
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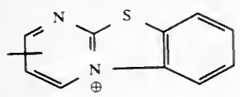


(. = single or double bond)









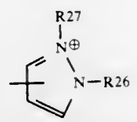
each of these ring systems being optionally substituted where possible, on a carbon atom or atoms, by one, two or three substituents selected from halogen, (1-6C)alkyl, carboxy, (2-6C)alkoxycarbonyl, (2-6C)alkoxycarbonyl(1-4C)alkyl, (1-6C)alkoxy, (1-6C)alkylthio, cyano, (2-4C)cyanoalkyl, amino, (1-6C)alkylamino, (2-8C)dialkylamino, benzylamino (optionally substituted in the benzene ring thereof by nitro), thenylamino, allylamino, (1-6C)aminoalkylamino, (1-6C)alkoxy(1-6C)alkylamino, (1-6C)hydroxyalkylamino, hydroxy, mercapto, carbamoyl, (2-6)alkylcarbamoyl, (3-10C)dialkylcarbamoyl, phenylthio and heteroarylthio wherein heteroaryl is a 5- or 6-membered ring containing 1, 2 or 3 hetero atoms selected from oxygen, nitrogen and sulphur and in which

Y is oxygen, sulphur or NR27;

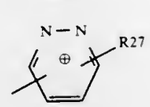
Z is hydrogen or CH;

one of A, B, D and E is +NR27 and the remainder are nitrogen;

and ring systems of Formula IV, XVI or XVII,

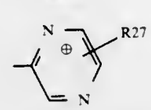


IV



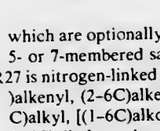
XLIII

XVI



XLIV

XVII



XLV which are optionally fused, or a carbon-carbon bond, with 5- or 7-membered saturated carbocyclic ring;

R27 is nitrogen-linked and is (1-6C)alkyl, (1-6C)alkyl(2-6C-)alkenyl, (2-6C)alkenyl, (2-8C)alkoxyalkyl, carboxy(1-6-C)alkyl, [(1-6C)alkoxy]carbonyl(1-6C)alkyl, carbamoyl(-1-6C)alkyl, carboxymainocarbonyl(1-6C)alkyl, [(1-6C-)alkoxy]carbonylamino-carbonyl(1-6C)alkyl, [(2-8)al-

XLVI kanoyl]methyl, benzoylmethyl, (1-6C)hydroxyalkyl, (1-6C)alkylamino or phenyl(1-6C)alkyl or phenyl, each optionally substituted by 1 or 2 groups selected from halogen, hydroxy, amino, carboxy, nitro, carbamoyl, cyano, trifluoromethyl, and aminomethyl;

R26 is hydrogen, (1-6C)alkyl, phenyl or benzyl;

XLVII and the salts formed with acids and bases which afford pharmaceutically acceptable anions and cations, respectively.

5,254,680

XLVIII **PROCESS FOR THE PREPARATION OF 7 ALPHA-ALKOXYCEPHEM DERIVATIVES**

Marco Alpegiani, Milan; Pierluigi Bissolino, S. Giorgio Lomellina; Matteo D'Anello, Cormano, and Ettore Perrone, Boffalora Ticino, all of Italy, assignors to Farmitalia Carlo Erba S.r.l., Milan, Italy

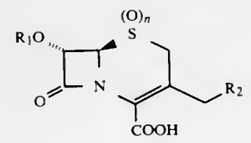
XLIX **Filed Apr. 25, 1991, Ser. No. 691,089**

Claims priority, application United Kingdom, May 22, 1990, 9011463

Int. Cl.[5] C07D *501/04*

U.S. Cl. 540—230 **17 Claims**

L **1**. A process for the preparation of a compound of the formula (I):



(I)

wherein

R_1 represents:

(a) a straight or branched alkyl group having from 1 to 20 carbon atoms,

(b) a straight or branched alkenyl group having from 2 to 6 carbon atoms,

(c) a straight or branched alkynyl group having from 2 to 6 carbon atoms, or

(d) an aryl C_1-C_4 alkyl group,

each of the groups defined in (a) to (d) above being unsubstituted or substituted by one or more of:

(i) a halogen atom,

(ii) a C_1-C_4 alkoxy group,

(iii) a cyano group, and

(iv) a C_1-C_4 alkylthio group,

R_2 represents:

1) a hydrogen atom,

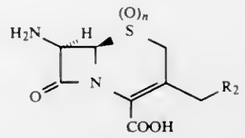
2) a chlorine atom,

3) a methoxy or ethoxy group, or

4) an acetoxy group and

n represents zero, one or two;

the process comprising reacting a compound of the formula (II):



(II)

wherein R_2 and n are as defined above, with an inorganic or organic nitrite in an alcohol R_1OH wherein R_1 is as defined above, or in a mixture of the alcohol R_1 OH with an organic solvent, in the presence of an inorganic or organic acid.

5,254,681

PROCESS FOR PREPARING MONOBACTAMES AND THEIR INTERMEDIATE PRODUCT

Giuseppe Guanti; Luca Banfi; Enrica Narisano, and Giorgio Cevasco, all of Genova, Italy, assignors to Consiglio Nazionale Delle Ricerche, Rome, Italy

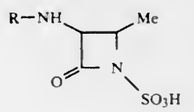
Continuation of Ser. No. 562,028, Aug. 2, 1990, abandoned. This application May 11, 1993, Ser. No. 884,226

Claims priority, application Italy, Aug. 2, 1989, 21426 A/89

Int. Cl.[5] C07D *201/08*

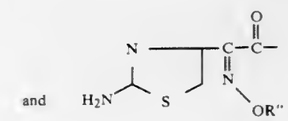
U.S. Cl. 540—355 **14 Claims**

1. A process for preparing monobactames of formula (1) having the configuration (3S,4R):



(1)

where R=R'—CO—, Ar—CH_2CO—, Ar OCH_2 OCO—



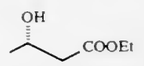
where R=C_{1-6} alkyl

Ar=aryl

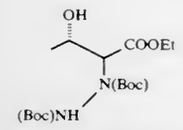
and R=C_{1-6}alkyl

and their pharmaceutically acceptable salts,

wherein: ethyl hydroxybutanoate of formula (4):



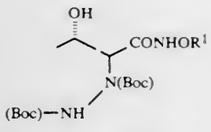
is reacted with di-tert-butylazodicarboxylate (step 1), the resulting product (5)



(5)

(Boc = tert-butoxycarbonyl)

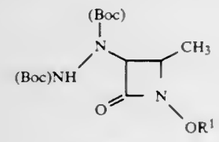
is hydrolyzed so as to form a free carbonyl in position 1 and is reacted with a hydroxylamine and subsequently with acetic anhydride, or with O-benzyl- or with O-alkyl-hydroxylamine in the presence of a condensing agent, product (6)



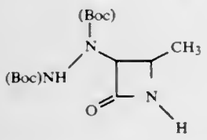
(6)

where R^1=alkyl, benzyl, or acetyl,

is cyclized to product (7) (step 3), where R^1 is defined as above, product (7) is converted into (8) by hydrogenolysis of the N—OH bond (step 4), product (8)

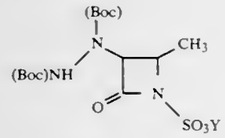


(7)



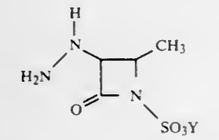
(8)

is sulphonated to give acid (9) (Y=H) or a salt thereof (step 5)



(9)

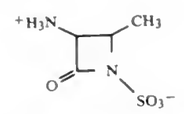
this is converted into the corresponding hydrazine (10) where Y=H or an organic or inorganic cation) or into a salt thereof (by acid treatment) (step 6).



(10)

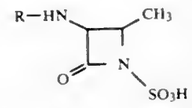
then the hydrazine derivative is catalytically hydrogenated into zwitterion (11) (step 7)

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(11)

which is finally reacted with an acylating compound in order to give the desired product of formula (1)



wherein R is as indicated above which can be optionally salified with a base or an acid.

5,254,682

CYCLIC RENIN INHIBITORS CONTAINING 3(S)-AMINO-4-CYCLOHEXYL-2(R)-HYDROXY-BUTANOIC ACID OR 4-CYCLO-HEXYL-(2R, 3S)-DIHYDROXYBUTANOIC ACID OR RELATED ANALOGS

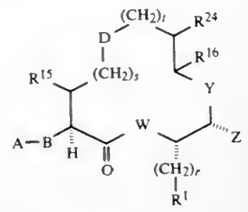
Daljit S. Dhanoa, Tinton Falls; Arthur A. Patchett, Westfield; William J. Greenlee, Teaneck; William H. Parsons, Rahway; Thomas A. Halgren, Upper Montclair; Ann E. Weber, Scotch Plains, and Libu Yang, Woodbridge, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 618,599, Nov. 30, 1990, abandoned, which is a continuation-in-part of Ser. No. 558,982, Jul. 27, 1990, abandoned, which is a continuation-in-part of Ser. No. 447,957, Dec. 8, 1989, abandoned. This application Jun. 11, 1991, Ser. No. 714,114

Int. Cl.[5] **C07D** *225/00*

U.S. Cl. 540—451 **15 Claims**

1. A compound of the formula:



(I)

wherein:

A is hydrogen,

Het,

where Het is a saturated or unsaturated 5 to 7-membered monocyclic or 7 to 10-membered bicyclic ring which contains at least one and up to two nitrogen atoms (optionally quaternized or in the N-oxide form),

where Het may optionally be benzofused,

where Het may optionally contain one additonal ring atom chosen from among the list consisting of O or S, in sulfide, sulfoxide or sulfone form,

where Het may optionally be substituted with one or two Het substituents independently selected from the group consisting of —OH, C_1-C_4-alkyl, —CF_3, —CN, C_1-C_4-alkoxy, C_1-C_4-alkoxy-C_1-C_4-alkoxy, halo, —NH_2, mono- or di-(C_1-C_4-alkyl)amino, —CO_2H, —CO_2—C_1-C_4-alkyl, —$CONR^{2a}R^{2b}$, —SO_3H, C_1-C_4-alkyl-CO—, aryl (where aryl is unsubstituted or mono-di-, or trisubstituted phenyl or naphthyl wherein the substitutent(s) is/are independently selected from the group consisting of C_1-C_8-alkyl, amino, phenyl-C_1-C_4-alkyl, mono- or di-C_1-C_4-alkyl amino, amino-C_1-C_4-alkyl, mono- or di-C_1-C_4-alkylamino-C_1-C_4-alkyl, guanidyl, guanidyl-C_1-C_4-alkyl, —OH, C_1-C_4-alkoxy, —$CONR^{2a}R^{2b}$, —CO_2H, —CO_2—C_1-C_4-alkyl, —CF_3, halo, C_1-C_4-alkyl-CO—, C_1-C_4-alkyl-CONH—, tri-(C_1-C_4-alkyl)N^+X^-, where X^- is a counterion selected from the group consisting of single negatively charged ions, such as chloride, bromide, nitrate, perchlorate, benzoate, maleate, benzenesulfonate, methanesulfonate, tartrate, hemitartrate, and acetate) and mono- or disubstituted C_1-C_4-alkyl (where the substitutent(s) is/are independently selected from the group consisting of —CO_2H, —CO_2—C_1-C_5-alkyl, C_1-C_5-alkyl-CONH—, —OH, —SO_3H, C_1-C_4-alkyl-SO_2—, C_1-C_4-alkyl-SO—, —SO_2NHCO—C_1-C_4-alkyl, C_1-C_5-alkyl-OCONH— and aryl as defined above),

where if one or both N are quaternized in Het, then each nitrogen atom may be quaternized with a Het substituent cited above selected from the group consisting of —C_1-C_4-alkyl, —CF_3, aryl and mono- or disubstituted C_1-C_4-alkyl with the corresponding counterion being X^- as defined above,

where Het may have in the alternative to the above Het substituents, a Het substituent selected from the group consisting of —$(CH_2)_q$— and —$(CH_2)_2O(CH_2)_2$— which forms a quaternary spirocyclic ring with the N atom wherein q is 3-to-6 and the counterion is X^- as defined above,

where Het may be substituted both with one Het substituent chosen from among those listed above and also with up to four Het substituents selected from the group consisting of C_1-C_2-alkyl substituents and Het-C_1-C_4-alkyl (where Het is as defined above without optional substitution and where the alkyl group is optionally substituted with one or two substituents independently selected from the group consisting of hydroxyl, —CO_2H, —CO_2—C_1-C_4-alkyl, —SO_3H, and aryl where aryl is as defined above),

aryl,

where aryl is defined above,

R^2CO—,

where R^2 is unsubstituted or mono- or disubstituted C_1-C_4-alkyl where the substituent(s) is/are selected from the group consisting of C_1-C_4-alkyl, —SO_3H, aryl or aryl-CO— (where aryl is as defined above), Het or Het-CO— (where Het is as defined above), $R^{2a}O$—, $R^{2a}OCO$—, $R^{2a}R^{2b}N$—, $R^{2a}R^{2b}NCO$—, $R^{2a}R^{2b}NCONH$—, $R^{2a}R^{2b}NSO_2$, $(R^{2a}O)(R^{2b}O)PO$—, $R^{2c}S$—, $R^{2c}SO$—, $R^{2c}SO_2$—, $R^{2c}CONH$—, $R^{2c}OCONH$—, and —$N(R^{17}R^{18}R^{19})^+X^-$ (where R^{2a} and R^{2b} are independently hydrogen, C_1-C_4-alkyl, aryl as defined above, Het as defined above, R^{2c} is C_1-C_4-alkyl, aryl as defined above or Het as defined above, R^{19} is C_1-C_4-alkyl, R^{17} and R^{18} are independently aryl as defined above, Het as defined above or C_1-C_4-alkyl optionally substituted with a substituent chosen from the group consisting of aryl as defined above, Het as defined above, —OH, —NH_2, —NH—C_1-C_4-alkyl, —$N(C_1$-C_4-alkyl$)_2$, —CO_2H, —CO_2—C_1-C_4-alkyl, —SO_3H, —CO—NH—SO_2—C_1-C_4-alkyl, or —CO—NH—SO_2-aryl, and X^- is as defined above),

R^2— (where R^2 is as defined above),

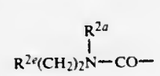
R^2OCO— (where R^2 is as defined above),

R^2SO_2— (where R^2 is as defined above),

Aryl-CO— (where aryl is as defined above),

Het-CO— (where Het is as defined above),

$R^{2a}R^{2b}N$—CO— (where R^{2a} and R^{2b} are as defined above),



where R^{2a} is as defined above and R^{2e} is het-CO where Het is as defined above or Het SO_2—,

$R^{2a}R^{2b}N$—SO_2— (where R^{2a} and R^{2b} are as defined above) and

C_1-C_4-alkyl-$(OCH_2CH_2)_xOCO$— (where x is 1 to 3);

B is

CH_2—$CH[(CH_2)_rR^3]CON(R^{11})$—$N(A^1)CH[(CH_2)_rR^3]CO$—$N(R^{11})$—, —O—$CH[(CH_2)_rR^3]CO$—$N(R^{11})$—, —$N(A^1)CH[(CH_2)_rR^3]$—CO—O—, —O—$CH[(CH_2)_rR^3]CO$—O— or —$N(A^1)CH[(CH_2)_rR^3]CH(OH)CH_2$—,

where

r is 0-to-2,

A^1 is hydrogen or C_1-C_4-alkyl,

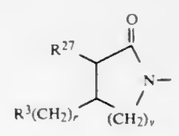
R^3 is hydrogen, C_1-C_4-alkyl, C_3-C_7-cycloalkyl, aryl as defined above, Het as defined above or 4-(morpholin-4-yl)ethoxy phenyl-, and

R^{11} is hydrogen or C_1-C_4-alkyl,

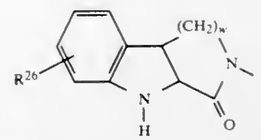
A and B together may alternatively be:

G—$CH_2CH[(CH_2)_rR^3]$—Q—$N(R^{11})$—,

G—$CH_2CH[(CH_2)_rR^3]$—CO—O—, Het-S(O)$_m$—$CH[(CH_2)_rR^3]CON(R^{11})$—, (where r, R^3, R^{11} and Het are as defined above and Q is —CO— or —SO_2—), $R^{2d}CON(R^{11})$—, $R^{2d}OCON(R^{11})$— or $R^{2d}SO_2N(R^{11})$—, R^{2d}—CO—O—, (where R^{2d} is Het as defined above, aryl as defined above, or C_1-C_4-alkyl or C_2-C_4-alkenyl substituted with Het, Het-O—, aryl, or aryl-O—, each as defined above),



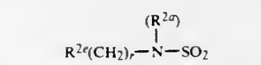
or



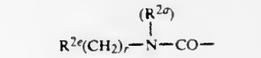
(where v is 1-to-3, w is 1 or 2, R^3 and r are as defined above, R^{27} is hydrogen, C_1-C_4-alkyl or A—N(H)— where A is independently selected from the definitions of A as defined above and R^{26} is C_1-C_4-alkyl, amino, mono- or di-C_1-C_4-alkylamino, —OH, C_1-C_4-alkoxy, —CO_2H, —CO_2—C_1-C_4-alkyl, —$CONR^{2a}R^{2b}$, —CF_3, halo, —NHCO—O—C_1-C_4-alkyl, —$N(C_1$-C_4-alkyl)-CO—O—C_1-C_4-alkyl, —NHCO—C_1-C_4-alkyl or —$N(C_1$-C_4-alkyl)CO—C_1-C_4-alkyl);

G is

R^{20}—S(O)$_m$— (where m is 0-to-2 and R^{20} is C_3-C_7-cycloalkyl, aryl as defined above, Het as defined above or C_1-C_6-alkyl optionally substituted with one or two substituents chosen from the group consisting of C_1-C_4-alkoxy, —OH, —CO_2H, —CO_2—C_1-C_4-alkyl, —NH_2, —NH(C_1-C_4-alkyl), —$N(C_1$-C_4-alkyl$)_2$, and (C_1-C_5-alkyl)CO—O—), $R^{17}R^{18}NSO_2$— (where R^{17} and R^{18} are as defined above),



where r, R^{2a} and R^{2e} are as defined above, or



where r, R^{2a} and R^{2e} are as defined above;

$R^{20}CO$— (where R^{20} is as defined above), $R^{20}OCO$— (where R^{20} is as defined above) or —$CH(OH)CH_2$Het (where Het is defined above);

A and B together may be —J—$CH[(CH_2)_r$—$R^3]$—K—;

K is

—CH_2—,

—CH(OH)—,

—CO—,

—NH—,

—O—,

—S—,

—SO—,

—SO_2—,

—NO—,

—P(O)O—;

J is

R^{28}—CO—$(CH_2)_d$ (where d is 0-to-4, R^{28} is —OH, —O—C_1-C_6-alkyl, —$NR^{18}R^{18}$, Het), R^{29}—SO_2—, where R^{29} is —C_1-C_4-alkyl, aryl, Het), R^{30} (where R^{30} is aryl, Het), —C_1-C_4-alkyl, optionally substituted with aryl, Het, —CO_2H, —CO_2—C_1-C_4-alkyl, —SO_2—C_1-C_4-alkyl, —SO_2Ar, —SO_2Het), R^{30}—NH—CO, where R^{30} is defined above;

R^1 is C_1-C_4-alkyl, aryl as defined above, unsubstituted, di-, or trisubstituted C_3-C_7-cycloalkyl (where the substituents is/are selected from the group consisting of C_1-C_4-alkyl, trifluoromethyl, —OH, C_1-C_4-alkoxy, or halo) or a 5- or 6-membered ring saturated heterocycle containing one or two heteratoms selected from the group consisting of N, O or S, optionally substituted with one or two substituents (where the substituents is/are selected from among the group consisting of C_1-C_4-alkyl, C_1-C_4-alkoxy, halo, —NH_2, or —OH);

R^{15} is C_1-C_4-alkyl, aryl as defined above, imidazol-4-yl, thiazol-4-yl or thiazol-5-yl;

D is

a single bond or is

—CO—O—

—O—

—CH=CH—

—CO— or

—CH(OH)—

(where R^{25} is —H or C_1-C_4-alkyl and asymmetrical groups are read clockwise into formula I from left to right);

s is 0-to-1;

t is 1-to-4;

W is N-R^{23} or O (where R^{23} is defined below);

R^{16} is

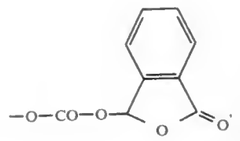
hydrogen or

C_1-C_4-alkyl optionally substituted with a substituent chosen from among the group consisting of C_1-C_4-alkyl, C_3-C_7-cycloalkyl, aryl as defined above, Het as defined above, —OH, —SO_3H, —CO_2H, CO_2—C_1-C_4-alkyl, —CO—Het, —$NR^{17}R^{18}$, —NHR^{18}, —$N(R^{17}R^{18}R^{19})^+X^-$ (where X^-, R^{17}, R^{18} and R^{19} are defined above), —S(O)$_m$—R^{21} (where m is as defined above and R^{21} is Het, aryl or C_1-C_4-alkyl the alkyl optionally substituted with a substituent chosen from among the group consisting of aryl, Het, —NH_2, —OH, —NH—C_1-C_4-alkyl or $N(C_1$-C_4-alkyl$)_2$), —SO_2NH_2, —$SO_2NR^{17}R^{18}$ (where R^{17} and R^{18} are as defined above), —SO_2NHR^{18} (where R^{18} is as defined above) and —$CH_2(OCH_2CH_2)_x$—O—C_1-C_4-alkyl, (where x is as defined above);

Y is —OCO—, —CH_2CO— or —$CH_2CH(OH)$— (where Y is inserted into formula I clockwise from left to right);

Z is —NH_2, —OH —OPO_3H_2, —$OCOR^{22}$, —O—CO—OR^{22} (where R^{22} is 5-indanyl or C_1-C_6-alkyl optionally substituted with Ph, —SO_3H, —CO_2H, —PO_3H_2, —NH_2, —NH(C_1-C_4-alkyl), —$N(C_1$-C_4-alkyl$)_2$, —$N(C_1$-C_4-alkyl$)_3^{30}$ X^- where X^- is defined above), —$OCHR^{22a}$—$OCOR^{22b}$ (where R^{22a} and R^{22b} are C_1-C_4-alkyl),

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or —O—$COCH_2O$—$(CH_2CH_2O)_x$—C_1-C_4-alkyl or —O—CO—$O(CH_2CH_2O)_x$—C_1-C_4-alkyl (where x is as defined above);

R^{23} is hydrogen or C_1-C_4-alkyl; and

R^{24} is hydrogen or C_1-C_4-alkyl.

5,254,683

THERAPEUTIC BENZAZARINE COMPOUNDS

Marc J. Chapdelaine, Wilmington, Del., and Charles D. McLaren, Landenberg, Pa., assignors to Imperial Chemical Industries PLC, London, England

Filed Dec. 31, 1991, Ser. No. 816,327

Claims priority, application United Kingdom, Jan. 2, 1991, 9100028

Int. Cl.[5] C07D *223/16;* **A61K** *31/55*

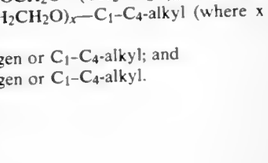
U.S. Cl. 540—523 **7 Claims**

1. A compound of formula I or of formula II, formulae set out hereinbelow, wherein:

I

or

II



R^1, R^2, R^3 and R^4 are independently selected from: hydrogen, (1-3C)perfluoroalkyl, halo, nitro and cyano;

R^5 is a (1-5C)alkyl group;

provided that R^2 and R^3 are not both (independently) selected from the group consisting of hydrogen and halogen when R^1 and R^4 are hydrogen;

and pharmaceutically acceptable salts of compounds of formula I.

5,254,684

PROCESS FOR PRODUCING AMIDE BY LIQUID PHASE REARRANGEMENT OF OXIME

Yusuke Izumi, 907 Hara-4-chome, Tenpaku-ku, Nagoya-shi; Hiroshi Sato; Hiroshi Yoshioka, both of Niihama, and Yoshisaburou Nomura, Ehime, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka and Yusuke Izumi, Nagaoya, both of Japan

Filed May 19, 1992, Ser. No. 885,604

Claims priority, application Japan, May 21, 1991, 3-116077; Oct. 15, 1991, 3-266041

Int. Cl.[5] C07D *201/04, 223/00, 239/00*

U.S. Cl. 540—535 **14 Claims**

1. A process for producing an amide which comprises subjecting an oxime selected from the group consisting of cyclohexanone oxime, cyclopentanone oxime, cyclododecanone oxime, acetone oxime, 2-butanone oxime, acetophenone oxime and benzophenone oxime to liquid phase rearrangement in the presence of 0.1–50 mole % of phosphorus pentoxide based on the molar amount of the oxime and at least one compound selected from the group consisting of N,N-dialkyl amides, N-alkyl cyclic amides and dialkyl sulfoxides.

5,254,685

TRICYCLIC COMPOUND OR SALTS THEREOF, METHOD FOR PRODUCING THE SAME AND ANTIMICROBIAL AGENT CONTAINING THE SAME

Masaharu Yokomoto; Akira Yazaki; Norihiro Hayashi; Shunso Hatono; Satoshi Inoue, and Yasuhiro Kuramoto, all of Hiroshima, Japan, assignors to Wakunaga Seiyaku Kabushiki Kaisha and Fujisawa Pharmaceutical Co., Ltd., both of Osaka, Japan

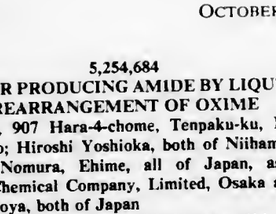
Filed Aug. 7, 1991, Ser. No. 741,333

Claims priority, application Japan, Aug. 9, 1990, 2-211190; Apr. 12, 1991, 3-080144; Jul. 4, 1991, 3-164356

Int. Cl.[5] C07D *471/06;* **A61K** *31/50, 31/55, 31/435*

U.S. Cl. 544—234 **4 Claims**

1. A tricyclic compound represented by Formula I or a pharmaceutically acceptable salt thereof,



wherein n is 1, R^1 is hydrogen, lower alkyl, benzyl, phenyl, lower alkanoyloxy-lower alkyl, lower alkoxycarbonyloxy-lower alkyl, lower alkoxymethyl, phthalidyl, di-lower alkyl amino-lower alkyl or (5-methyl-2-oxo-1,3-dioxol-4-yl)-methyl;

R^2 is hydrogen, halogen, or amino group which may be substituted by benzylidene, hydroxy-benzylidene, mono-, di-, or tri-phenyl(lower)alkyl or an acyl group selected from lower alkanoyl, mono-, di- or tri-halo(lower alkanoyl, lower-alkoxycarbonyl, carbamoyl, benzoyl, toluoyl, naphthoyl, phenyl(lower)alkanoyl, phenyloxycarbonyl, naphthyloxycarbonyl, phenoxy(lower)alkanoyl, phenylglyoxyloyl, naphthylglyoxyloyl, benzyloxycarbonyl and p-nitrobenzyloxycarbonyl;

R^3 is hydrogen or lower alkyl;

R^4 is hydrogen, lower alkyl which may be substituted by hydroxyl, halogen or lower alkoxy; phenyl-lower alkyl, or an acyl group selected from lower alkanoyl, lower-alkoxycarbonyl, benzoyl, phenyloxycarbonyl;

X is hydrogen or halogen;

Y is pyrrolidinyl group which may be unsubstituted or either mono- or di-substituted with a substituent selected from

the group consisting of a halogen atom, a hydroxyl group, an amino group, an amino-lower alkyl group and a lower alkyl group, or Y is a group represented by Formula R^5—$(CH_2)_m$—A— wherein R^5 is hydrogen or lower cycloalkyl which may be substituted by amino; m is an integer from 0 to 3 and A is oxygen or sulfur.

5,254,686

PROCAINE DOUBLE SALT COMPLEXES

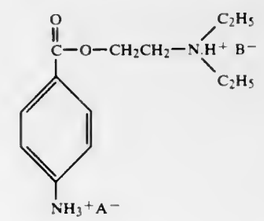
Robert Koch, P.O. Box 565, West Jordan, Utah 84084

Division of Ser. No. 322,917, Mar. 14, 1989, Pat. No. 5,162,344, which is a continuation-in-part of Ser. No. 46,241, May 4, 1987, abandoned. This application Sep. 25, 1992, Ser. No. 951,662

Int. Cl.[5] C07D *475/00, 473/00;* **A61K** *31/495, 31/415*

U.S. Cl. 514—249 **8 Claims**

1. A double salt complex formed from the reaction between stoichiometric amounts of a procaine salt and a vitamin acid, said double salt complex having the formula:



where B is the anion of an acid selected from the group consisting of hydrochloric, hydrobromic, boric, nitric, and butyric acids and A is selected from the group consisting of the anion of folic acid and the anion of biotin.

5,254,687

PROCESS FOR THE PREPARATION OF PYRROLO[2,3-D]PYRIMIDINES

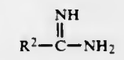
Edward C. Taylor, and Hemantkumar H. Patel, both of Princeton, N.J., assignors to The Trustees of Princeton University, Princeton, N.J.

Filed Dec. 4, 1991, Ser. No. 802,192

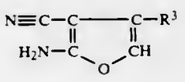
Int. Cl.[5] C07D *487/04*

U.S. Cl. 544—280 **5 Claims**

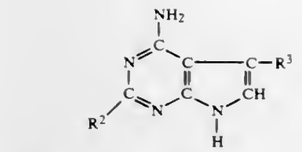
1. Process for the preparation of pyrrolopyrimidines which comprises bringing a nucleophile of the formula:



in which R^2 is hydrogen, amino, or an unsubstituted or substituted alkyl, aralkyl, aryl, alkylthio, aralkylthio, or arylthio group, into contact with a 2-aminofuran of the formula:



in which R^3 is a nucleophile-stable substituent, under reactive conditions to produce a pyrrolopyrimidine of the formula:



in which R^2 and R^3 are as defined above.

5,254,688

PROCESS FOR PRODUCING PYRIDO[1,2-A]PYRIMIDINE DERIVATIVE

Atsunori Sano; Motoshige Sumino, both of Saitama; Masami Ishihara, Fukaya, and Kazuo Maruhashi, Kawagoe, all of Japan, assignors to Wako Pure Chemical Industries, Ltd., Osaka, Japan

Filed Jun. 19, 1991, Ser. No. 717,591

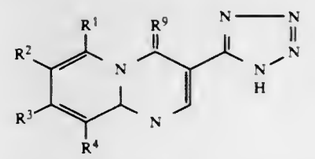
Claims priority, application Japan, Jun. 21, 1990, 2-163618

Int. Cl.[5] C07D *239/10;* **544** *282*

U.S. Cl. 544—282 **2 Claims**

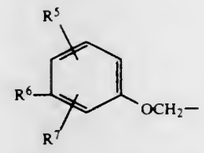
1. A process for producing a compound of the formula (I):

(I)



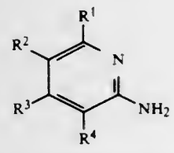
wherein R^1 and R^3 are independently a hydrogen atom or a lower alkyl group having 1 to 6 carbon atoms; R^2 and R^4 are independently a hydrogen atom, a halogen atom, a lower alkyl group having 1 to 6 carbon atoms, a lower alkoxy group having 1 to 6 carbon atoms, a phenyl group or a group of the formula (II):

(II)



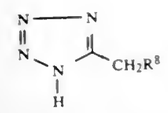
wherein R^5 is a hydrogen atom or a hydroxyl group; R^6 is a hydrogen atom, or an acetyl group, a propionyl group, a butyryl group or a benzoyl group; R^7 is a hydrogen atom, a lower alkyl group having 1 to 6 carbon atoms or an allyl group; and R^9 is an oxygen atom, which comprises reacting a compound of the formula (III):

(III)



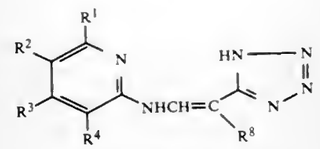
wherein R^1 to R^4 are as defined above, with a compound of the formula (IV):

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(IV)

wherein R^8 is a lower alkoxycarbonyl group having 2 to 7 carbon atoms, and a C_{1-6} alkyl orthoformate, in the absence of a catalyst, to yield a compound of the formula (V):



(V)

wherein R^1 to R^4 and R^8 are as defined above, and subjecting the compound of the formula (V) to a ring closure reaction in the presence of a base selected from the group consisting of a caustic alkali, a hydroxide of alkaline earth metal, a metal alkoxide, an organic base and ammonia, wherein the base for the ring closure reaction is added in an amount sufficient for forming a physiologically acceptable salt of a compound of the formula (I), followed by isolation of the reaction product without neutralization.

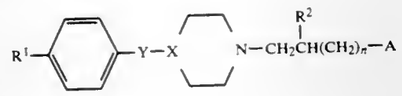
5,254,689

PIPERDINYL AND PIPERAZINYL DERIVATIVES

John A. Butera, Kendall Park; Jehan F. Bagli, and John W. Ellingboe, both of Princeton, all of N.J., assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 841,922, Feb. 25, 1992, Pat. No. 5,202,346.
This application Oct. 7, 1992, Ser. No. 957,568
Int. Cl.[5] C07D *401/00, 403/00, 241/04, 295/00*
U.S. Cl. 544—360 **6 Claims**

1. A compound of the formula:



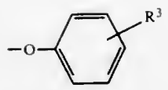
in which
R^1 is alkylsulfonamido of 1 to 6 carbon atoms, arylsulfonamido of 6 to 10 carbon atoms, $—NO_2$, —CN, 1-imidazolyl or 1,2,4-triazol-1-yl;
Y is



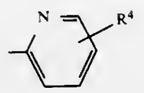
$—CH_2—$ or $—SO_2—$;
X is —N=;
R^2 is hydrogen when n is 0 or when Y is



otherwise it is hydrogen or —OH;
n is one of the integers 0,1,2,3,4,5 or 6;
A is



where R^3 is alkylsulfonamido of 1 to 6 carbon atoms, arylsulfonamido of 6 to 10 carbon atoms, $—NO_2$, —CN, 1-imidazolyl or 1,2,4-triazol-1-yl; or



where R^4 is hydrogen or alkyl of 1 to 6 carbon atoms;
or a pharmaceutically acceptable salt thereof.

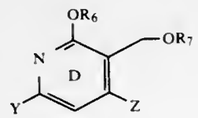
5,254,690

ALKOXYMETHYLPYRIDINE D-RING INTERMEDIATES USEFUL FOR THE SYNTHESIS OF CAMPTPTHECIN AND CAMPTOTHECIN ANALOGS

Daniel L. Comins, and Matthew F. Baevsky, both of Cary, N.C., assignors to North Carolina State University, Raleigh, N.C.

Division of Ser. No. 927,220, Aug. 10, 1992, Pat. No. 5,200,524, which is a division of Ser. No. 744,489, Aug. 13, 1991, Pat. No. 5,162,632. This application Feb. 12, 1993, Ser. No. 17,026
Int. Cl.[5] C07D *213/64*
U.S. Cl. 546—302 **7 Claims**

1. A compound selected from the group consisting of compounds of Formula X:



(X)

wherein:
R_6 and R_7 are loweralkyl:
Y is Cl or H; and
Z is halogen.

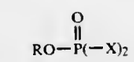
5,254,691

PHOSPHORYLATING AGENT AND METHOD FOR FORMING PHOSPHODIESTER BOND USING THE SAME

Hideto Mori, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

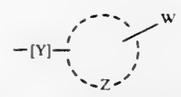
Continuation of Ser. No. 782,049, Oct. 23, 1991, abandoned. This application Feb. 22, 1993, Ser. No. 20,436
Claims priority, application Japan, Oct. 29, 1990, 2-291104
Int. Cl.[5] C07F *9/28*
U.S. Cl. 548—111 **13 Claims**

1. A phosphorylating agent represented by the following general formula (1):



(1)

wherein R represents a protective group for phosphoric acid; and X represents a heterocyclic residue represented by the following general formula (2):



(2)

wherein Y represents a single bond, an oxygen or a sulfur atom; Z represents a heterocyclic nucleus comprising at least one nitrogen atom as a ring-forming element which may be condensed with another aromatic ring; and W is selected from the group consisting of halogen atoms and phenyl, nitro, sulfo, alkoxycarbonyl, aryloxycarbonyl, alkylsulfonyl, arylsulfonyl and cyano groups, provided that the heterocyclic residue of the formula (2) may have two or more W groups as substituents; wherein the nitrogen atom-containing heterocyclic ring is an azole ring, a heterocyclic ring comprising at least one nitrogen atom and other hetero atoms selected from oxygen, sulfur and selenium atoms or a cyclic imide.

5,254,692

2,6-DIALKYL-4-(BENZOTHIAZOL- OR BENZOXAZOL-7-YL)-1,4-DIHYDROPYRIDINES

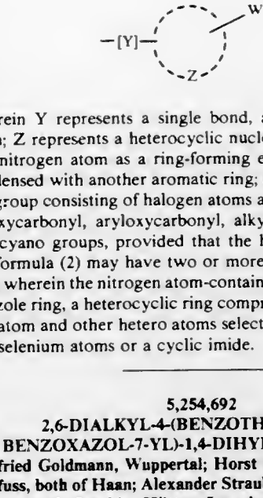
Siegfried Goldmann, Wuppertal; Horst Böshagen; Jürgen Stoltefuss, both of Haan; Alexander Straub; Rainer Gross, both of Wuppertal; Joachim Hütter, Leverkusen; Siegbert Hebisch, and Martin Bechem, both of Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 677,731, Mar. 29, 1991, Pat. No. 5,200,420.
This application Oct. 15, 1992, Ser. No. 961,289
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1990, 4011106
Int. Cl.[5] C07D *263/56, 277/64*
U.S. Cl. 548—152 **1 Claim**

1. A compound of the formula

(IV)

in which
R^3 represents a radical of the formula



in which
R^6—denotes hydrogen, halogen or straight-chain or branched alkyl or alkoxy in each case having up to 8 carbon atoms, and
R^7—denotes aryl having 6 to 10 carbon atoms, which is optionally monosubstituted or disubstituted by identical or different substituents selected from the group consisting of halogen, nitro, cyano, trifluoromethyl, trifluoromethoxy, trifluoromethylthio, straight-chain or branched alkyl, alkoxy or alkoxycarbonyl in each case having up to 8 carbon atoms, and carboxyl, or
— denotes thienyl or pyridyl,
R^4 represents hydrogen, or represents straight-chain or branched alkyl, alkenyl, alkadienyl or alkynyl in each case having up to 10 carbon atoms which are optionally monosubstituted or disubstituted by identical or different substituents selected from the group consisting of halogen, hydroxyl, carboxyl, cyano, nitro, phenoxy and straight-chain or branched alkylthio, alkoxy, alkoxycarbonyl, acyl or acyloxy in each case having up to 8 carbon atoms, and phenoxy or phenyl or phenyl monosubstituted or disubstituted by identical or different substituents selected from the group consisting of halogen and straight-chain or branched alkyl or alkoxy in each case having up to 6 carbon atoms, and
R^5 represents straight-chain or branched alkyl having up to 8 carbon atoms.

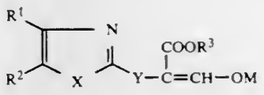
5,254,693

FUNGICIDAL SUBSTITUTED ACRYLIC ESTERS

Alexander Klausener, Stolberg; Gerd Kleefeld, Duesseldorf; Wilhelm Brandes, Leichlingen; Stefan Dutzmann, Duesseldorf, and Gerd Hänssler, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 478,119, Feb. 9, 1990, Pat. No. 5,114,959. This application Nov. 5, 1991, Ser. No. 788,007
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1989, 3905119
Int. Cl.[5] C07D *277/34, 277/42, 263/38, 263/48*
U.S. Cl. 548—187 **2 Claims**

1. A hydroxyacrylic ester or alkali metal salt thereof of the formula



(II)

in which
R^1 represents hydrogen, or represents straight-chain or branched alkyl having 1 to 8 carbon atoms, or represents straight-chain or branched alkenyl having 2 to 8 carbon atoms, or represents aralkyl having 1 to 6 carbon atoms in the straight-chain or branched alkyl moiety, aralkenyl having 2 to 6 carbon atoms in the straight-chain or branched alkenyl moiety or aryl having 6 to 10 carbon atoms in the respective aryl moiety, each of which is optionally monosubstituted to polysubstituted in the aryl moiety by identical or different substituents selected from the group consisting of halogen, cyano, nitro, in each case straight-chain or branched alkyl, alkoxy or alkylthio, each of which has 1 to 4 carbon atoms, in each case straight-chain or branched halogenoalkyl, halogenoalkoxy or halogenoalkylthio, each of which has 1 to 4 carbon atoms and 1 to 9 identical or different halogen atoms, in each case straight-chain or branched alkoxycarbonyl or alkoximinoalkyl, each of which has 1 to 8 carbon atoms in the individual alkyl moieties, cycloaklyl having 3 to 7 carbon atoms, double-linked alkanediyl having 3 to 5 carbon atoms, or aryl, aralkyl, aryloxy or aralkyloxy, each of which has 6 to 10 carbon atoms in the aryl moiety and if appropriate 1 to 4 carbon atoms in the straight-chain or branched alkyl moiety and each of which is optionally monosubstituted to polysubstituted in the aryl

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moiety by identical or different substituents from the group consisting of halogen, alkyl, alkoxy, alkylthio, halogenoalkyl, halogenoalkyl, halogenoalkoxy and halogenoalkylthio, each having 1 to 4 carbon atoms and if appropriate 1 to 9 identical or different halogen atoms, or hetero-arylalkyl or heteroaryl, each of which has 2 to 9 carbon atoms and 1 to 4 identical or different oxygen, sulphur or nitrogen hetero atoms in the heteroaryl moiety and if appropriate 1 to 4 carbon atoms in the straight-chain or branched alkyl moiety and each of which is optionally monosubstituted to polysubstituted in the heteroaryl moiety by identical or different substituents from the group consisting of halogen, alkyl, alkoxy, alkylthio, halogenoalkyl, halogenoalkoxy and halogenoalkylthio, each having 1 to 4 carbon atoms and if appropriate 1 to 9 identical or different halogen atoms;

R^1 furthermore represents a heteroaryl radical which has 2 to 9 carbon atoms and 1 to 4 identical or different hetero atoms and which is optionally monosubstituted to polysubstituted by identical or different substituents, selected from the group consisting of the same substituents as provided for in the definition of aryl substituents given above.

R^2 represents fluorine, chlorine, bromine, iodine, cyano, nitro or formyl, or represents straight-chain or branched halogenoalkyl having 1 to 4 carbon atoms and 1 to 9 identical or different halogen atoms, or represents in each case straight-chain or branched alkoxyalkyl or alkylthioalkyl, each of which has 1 to 4 carbon atoms in the individual alkyl moieties, or represents in each case straight-chain or branched hydroximinoalkyl, alkoximinoalkyl, N-alkyliminoalkyl or N,N-dialkylhydrozonoalkyl, each of which has 1 to 4 carbon atoms in the individual alkyl moieties, or represents in each case straight-chain or branched alkoxy or alkylthio, each of which has 1 to 4 carbon atoms, or represents in each case straight-chain or branched halogenoalkoxy or halogenoalkylthio, each of which has 1 to 4 carbon atoms and each of which has 1 to 9 identical or different halogen atoms, or represents in each case straight-chain or branched alkonoyl, alkoxycarbonyl or N,N-dialkylcarbamoyl, each of which has 1 to 4 carbon atoms in the individual alkyl moieties, or represents heterocyclylcarbonyl, the heterocyclyl radical being a saturated five- to seven-membered N-linked heterocyclic ring which can optionally contain a further oxygen, sulphur or nitrogen hetero atom and which can optionally be monosubstituted to tetrasubstituted by methyl and/or ethyl;

R^2 furthermore represents N-aryliminoalkyl, aryloxy or arylthio, each of which is optionally monosubstituted to polysubstituted in the aryl moiety by identical or different substituents, each of which has 6 to 10 carbon atoms, the straight-chain or branched alkyl moiety having 1 to 4 carbon atoms and possible aryl substituents in each case being: halogen, cyano, nitro, in each case straight-chain or branched alkyl, alkoxy or alkylthio, each of which has 1 to 4 carbon atoms, in each case straight-chain or branched halogenoalkyl, halogenoalkoxy or halogenoalkylthio, each of which has 1 to 4 carbon atoms and 1 to 9 identical or different halogen atoms, in each case straight-chain or branched alkoxycarbonyl or alkoximinoalkyl, each of which has 1 to 4 carbon atoms in the individual alkyl moieties, or phenyl which is optionally monosubstituted to polysubstituted by identical or different substituents from the group consisting of halogen and/or straight-chain or branched alkyl having 1 to 4 carbon atoms,

R^3 represents straight-chain or branched alkyl having 1 to 6 carbon atoms, or represents aralkyl which has 1 to 4 carbon atoms in the straight-chain or branched alkyl moiety and 6 to 10 carbon atoms in the aryl moiety and which is optionally monosubstituted to polysubstituted in the aryl moiety by identical or different substituents, including the substituents mentioned in the case of R^1,

X represents oxygen or sulphur,

M represents hydrogen or represents an alkali metal cation and

Y represents oxygen or sulphur or represents a radical



where

R^6 represents hydrogen, or represents straight-chain or branched alkyl having 1 to 6 carbon atoms, or represents straight-chain or branched alkanoyl having 1 to 6 carbon atoms in the alkyl moiety, or represents aralkyl which has 1 to 6 carbon atoms in the straight-chain or branched alkyl moiety or aryl having in each case 6 to 10 carbon atoms in the respective aryl moiety, each of these aralkyl or aryl moieties being optionally monosubstituted to polysubstituted in the aryl moiety by identical or different substituents, including the substituents in the aryl moiety mentioned in the case of R^1.

5,254,694

OPTICALLY ACTIVE EPOXYCYCLOHEXANE DERIVATIVE AND EPOXYCYCLOHEXANONE DERIVATIVE, AND PROCESS FOR THE PREPARATION THEREOF

Kunikazu Sakai, Setagaya, and Kyoko Takahashi, Yokohama, both of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

PCT No. PCT/JP90/01042, § 371 Date Feb. 12, 1992, § 102(e) Date Feb. 12, 1992, PCT Pub. No. WO91/02728, PCT Pub. Date Mar. 7, 1991

PCT Filed Aug. 16, 1990, Ser. No. 834,547

Claims priority, application Japan, Aug. 18, 1989, 1-211290; Aug. 25, 1989, 1-217221; Apr. 12, 1990, 2-95007

Int. Cl.[5] C07D *303/32, 301/00*

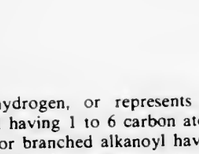
U.S. Cl. 549—546 **1 Claim**

1. An optically active epoxycyclohexanone represented by the formula:



and an enantiomer thereof produced by the process comprising the steps of

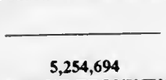
a) reacting an optically active aldehyde derivative represented by the general formula (1):



(1)

wherein R^1 and R^2 each represent a lower alkoxy group or together form a 1,3-dioxolane ring together with the carbon atom to which they are bonded,

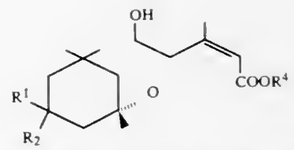
with a 3-methylcrotonic ester represented by the general formula (2):



(2)

wherein R^4 represents a lower alkyl, allyl, aralkyl or aryl group; and X represents a chlorine, bromine or iodine atom,

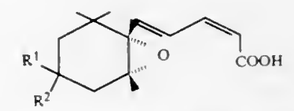
to produce an optically active epoxycyclohexane having an ester group represented by the general formula (3):



(3)

wherein R^1, R^2 and R^4 are the same as described above,

b) treating the compound (3) with a solution of alkali metal alkoxide in solvent to produce an optically active epoxycyclohexane having a carboxyl group represented by the general formula (4):



(4)

wherein R^1 and R^2 are the same as described above, and

c) treating the compound (4) with perchloric acid under cooling to produce the objective epoxycyclohexanone.

5,254,695

SUBSTITUTED TRIAZOLES

Peter M. Quan, Rochdale; David Stewart, Royton, and Anthony J. Nelson, Middleton, all of England, assignors to Imperial Chemical Industries PLC, London, England

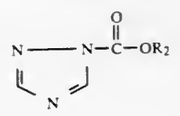
Continuation of Ser. No. 391,982, Aug. 10, 1989, abandoned, which is a division of Ser. No. 165,350, Feb. 29, 1988, Pat. No. 4,879,388, which is a continuation of Ser. No. 912,660, Sep. 29, 1986, abandoned, which is a continuation of Ser. No. 663,696, Oct. 22, 1984, abandoned. This application Apr. 10, 1991, Ser. No. 683,135

Claims priority, application United Kingdom, Nov. 17, 1983, 8330715

Int. Cl.[5] C07D *249/08*

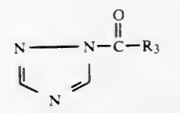
U.S. Cl. 548—266.8 **2 Claims**

1. A triazole which is 1-(alkyl)oxycarbonyl or a 1-alkylcarbonyl-1,2,4-triazole of formula (4) or (5) respectively:



(4)

or



(5)

wherein R_2 and R_3 respectively are branched chain alkyl groups containing from 9 to 24 carbon atoms.

5,254,696

N-ACYLPYRROLIDINE DERIVATIVES

Michael Negele, Cologne; Bernd Baasner, Bergisch-Gladbach; Heinz-Jürgen Bertram, Holzminden, and Jürgen Hartwig, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

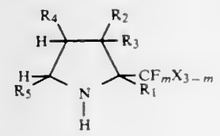
Division of Ser. No. 754,883, Sep. 4, 1991, Pat. No. 5,171,355. This application Jul. 21, 1992, Ser. No. 917,547

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1990, 4029054

Int. Cl.[5] C07D *207/08, 207/16*

U.S. Cl. 548—531 **2 Claims**

1. A pyrrolidine derivative of the formula

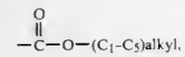


(II)

in which

R_1, R_2 and R_3 independently of one another represent hydrogen, fluorine, chlorine, bromine, optionally substituted C_1-C_5-alkyl or optionally substituted C_5-C_{10}-aryl,

R_4 represents hydrogen, fluorine, chlorine, bromine, cyano, optionally substituted C_1-C_5-alkyl, optionally substituted C_5-C_{10}-aryl or



R_5 represents hydrogen, optionally substituted C_1-C_5-alkyl or optionally substituted C_6-C_{10}-aryl,

X represents hydrogen, fluorine, chlorine, bromine or optionally substituted C_1-C_4-alkyl, and

m represents 1, 2 or 3, the optional substituents on alkyl in the definitions of R_1, R_2, R_3, R_4, R_5 and X being selected from the group consisting of fluorine, chlorine, bromine, hydroxyl, methoxy and ethoxy, and the optional substituents on aryl in the definitions of R_1, R_2, R_3, R_4, R_5 being selected from the group consisting of fluorine, chlorine, bromine, C_1-C_4-alkyl and C_1-C_4-alkoxy, with the exception of the compound 2-trifluoromethyl-pyrrolidine.

5,254,697

PROCESS FOR THE PREPARATION OF HALOALKYLLACTONES

David Waterson, Macclesfield, Great Britain, assignor to Imperial Chemical Industries PLC, London, England

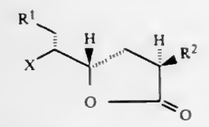
Filed Jun. 4, 1990, Ser. No. 532,620

Claims priority, application United Kingdom, Jun. 2, 1989, 8912659

Int. Cl.[5] C07D *307/33*

U.S. Cl. 549—313 **4 Claims**

1. A process for the manufacture of a halolactone of the formula I



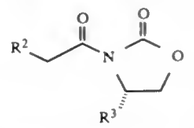
I

wherein R^1 is (3-8C)cycloalkyl, branched(3-6C)alkyl or phenyl, the latter group being unsubstituted or optionally bearing 1 or 2 substituents independently selected from halogeno, trifluoromethyl, cyano, (1-4C)alkyl and (1-4C)al-

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koxy; R^2 is a (1-6C)alkyl, (1-4C)alkoxy or (1-4C)alkylthio group; and X is a halogeno group; characterised by:

(i) reacting an oxazolidinone of the formula III



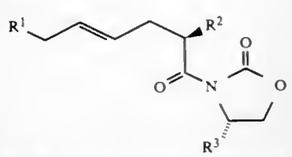
III

wherein R^2 has any of the meanings defined above and R^3 is (1-6C)alkyl or phenyl(1-4C)alkyl the benzene ring of which may optionally bear 1 or 2 substituents independently selected from halogeno, (1-4C)alkyl and (1-4C)alkoxy, with a (2E)-butenyl halide of the formula IV



IV

wherein Y is halogeno and R^1 has any of the meanings defined above, in the presence of a strong base, to give an oxazolidinone of the formula



II

wherein R^1, R^2 and R^3 have any of the meanings defined above; followed by

(ii) reacting the oxazolidinone of the formula II with a halogenating agent.

5,254,698

PHENYLDIOXANES

David Coates, Wimborne; Simon Greenfield; Graham Smith, both of Poole, all of Great Britain; Volker Reiffenrath, Rossdorf, Fed. Rep. of Germany; Joachim Krause, Dieburg, Fed. Rep. of Germany, and Herbert Plach, Darmstadt, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

PCT No. PCT/EP90/02132, § 371 Date Feb. 12, 1991, § 102(e) Date Feb. 12, 1991, PCT Pub. No. WO91/09026, PCT Pub. Date Jun. 27, 1991

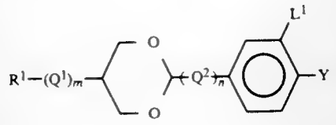
PCT Filed Dec. 8, 1990, Ser. No. 654,607

Claims priority, application United Kingdom, Dec. 8, 1989, 8927778; Dec. 19, 1989, 8928583

Int. Cl.[5] **C07C** *319/06*

U.S. Cl. 549—369 **10 Claims**

1. A phenyldioxane of formula I

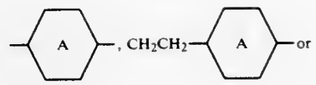


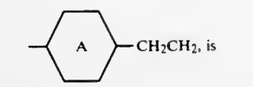
I

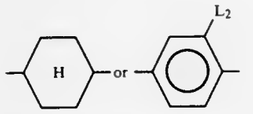
wherein

R^1 is alkyl residue with up to 16 C atoms, wherein one or two nonadjacent CH_2 groups may be replaced by —O—, —S—, —CO—O—, or —O—CO—,

Q^1 and Q^2 are each independently







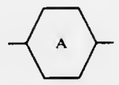
L^1 and L^2 are each independently F or H, and

Y is Cl or F

m and n are 0 or 1

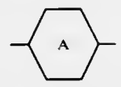
with the provisos that

a) in the case that m is 0, m is 1 and Q^1 is



one of L^1 and L^2 is F and Y is Cl or F and

b) in the case that n is 1, m is 0 and Q^2 is



one of L^1 and L^2 is F or L^1 and L^2 are H and Y is Cl.

5,254,699

CYCLIC PERFLUOROETHERS AND METHOD OF MAKING

Hiroshi Inomata, Annaka; Yasuo Tarumi, Takasaki; Noriyuki Koike, Tano, and Shuzi Suganuma, Takasaki, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

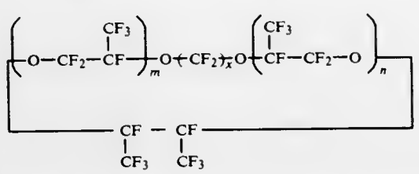
Filed Apr. 16, 1992, Ser. No. 868,767

Claims priority, application Japan, Apr. 16, 1991, 3-111100

Int. Cl.[5] **C07D** *319/12*

U.S. Cl. 549—380 **3 Claims**

1. A cyclic perfluoroether of the general formula (1):



(1)

wherein x is an integer of from 2 to 10, and m and n are independently an integer of from 0 to 2.

5,254,700

PROCESS FOR PRODUCTION OF N-SUBSTITUTED CARBAZOLES

Masashi Kamitamari, Ibaraki; Takashi Kamikawa, Toyonaka; Osamu Maruyama, Takatsuki; Shinzaburo Masaki, Toyonaka, and Junji Shiraiwa, Kawachinagano, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

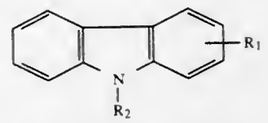
Filed Feb. 19, 1993, Ser. No. 20,117

Claims priority, application Japan, Feb. 27, 1992, 4-041155

Int. Cl.[5] **C07D** *209/86, 209/88*

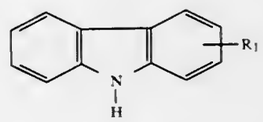
U.S. Cl. 548—440 **20 Claims**

1. A process for the production of an N-substituted carbazole compound of the formula:



(IV)

wherein R_1 is a hydrogen atom, a C_1–C_6 alkyl group, a nitro group, a C_1–C_6 alkoxy group or a halogen atom, and R_2 is a C_1–C_6 alkyl group, a C_2–C_6 alkenyl group or a C_7–C_8 aralkyl group, comprising the step of reacting a carbazole compound of the formula:



(I)

wherein R_1 is the same as defined above, with a halogenated compound of the formula:

$$R_2—X \quad \text{(II)}$$

wherein R_2 is the same as defined above and X is a halogen atom, in an inert solvent in the presence of an acid-removing agent and an amine of the formula:

$$R_3R_4R_5N \quad \text{(III)}$$

wherein R_3, R_4 and R_5 are the same or different and are a hydrogen atom, a C_1–C_6 alkyl group or a C_7–C_8 aralkyl group with the proviso that R_3, R_4 and R_5 cannot all simultaneously be a hydrogen atom.

5,254,701

PROCESS FOR THE PRODUCTION OF MIXTURES OF 2-HYDROXYTETRAHYDROFURAN AND 4-HYDROXYBUTANAL

Stephen N. Falling, Kingsport, Tenn., and Gerald W. Phillips, Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 20, 1991, Ser. No. 702,483

Int. Cl.[5] **C07D** *307/20;* **C07C** *45/59*

U.S. Cl. 549—475 **13 Claims**

1. Process for the production of a mixture of 2-hydroxytetrahydrofuran and 4-hydroxybutanal by the steps of:

(1) heating 2,5-dihydrofuran in the presence of a catalyst system comprising a tertiary phosphine and ruthenium or rhodium to convert the 2,5-dihydrofuran to 2,3-dihydrofuran; and

(2) contacting 2,3-dihydrofuran with water in the presence of an acidic catalyst to convert the 2,3-dihydrofuran to a mixture of 2-hydroxytetrahydrofuran and 4-hydroxybutanal.

5,254,702

PROCESS FOR THE PREPARATION OF 2-OXYTETRAHYDROFURANS

Ann P. Lawson, Lancashire, Del., and Jeffrey A. Klang, Media, Pa., assignors to Arco Chemical Technology, L.P., Wilmington, Del.

Filed Apr. 13, 1992, Ser. No. 868,050

Int. Cl.[5] **C07D** *307/20, 307/28*

U.S. Cl. 549—475 **16 Claims**

1. A process for producing a 2-oxytetrahydrofuran, said process comprising reacting a two-phase mixture of:

(a) an aqueous solution containing 4-hydroxybutanal, and

(b) a solution of a hydroxy compound in a nonpolar organic solvent;

in the presence of an acid catalyst to produce a solution of the 2-oxytetrahydrofuran in the nonpolar organic solvent.

13. A process for producing 2,3-dihydrofuran, said process comprising:

(a) reacting a two-phase mixture of:

(i) an aqueous solution containing 4-hydroxybutanal, and

(ii) a solution of a hydroxy compound in a nonpolar organic solvent;

in the presence of an insoluble inorganic acid catalyst to produce a solution of a 2-oxytetrahydrofuran in the nonpolar organic solvent;

(b) separating the organic phase containing the 2-oxytetrahydrofuran from the aqueous phase;

(c) isolating the 2-oxytetrahydrofuran from the organic solution; and

(d) thermally decomposing the 2-oxytetrahydrofuran in the liquid or vapor phase to produce 2,3-dihydrofuran.

5,254,703

SEMI-SYNTHESIS OF TAXANE DERIVATIVES USING METAL ALKOXIDES AND OXAZINONES

Robert A. Holton, Tallahassee, Fla., assignor to Florida State University, Tallahassee, Fla.

Filed Apr. 6, 1992, Ser. No. 863,829

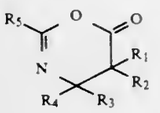
Int. Cl.[5] **C07D** *305/14*

U.S. Cl. 549—510 **13 Claims**

1. A process for the preparation of a taxane derivative comprising:

providing a metal alkoxide having the tetracyclic taxane nucleus, the metal being a Group IA, IIA, IIIA, IVA, VA, VIA or transition metal and is attached to the oxygen at the C-13 position of the nucleus,

reacting the metal alkoxide with an oxazinone to form an intermediate, wherein the oxazinone has the formula:



(2)

wherein

R_1 is —OR_6;

R_2 is hydrogen, alkyl, alkenyl, alkynyl, aryl, or heteroaryl;

R_3 and R_4 are independently hydrogen, alkyl, alkenyl, alkynyl, aryl, heteroaryl, or acyl, provided, however, that R_3 and R_4 are not both acyl;

R_5 is alkyl, alkenyl, alkynyl, aryl, alkoxy, aryloxy or heteroaryloxy; and

R^6 is a hydroxy protecting group; and

converting said intermediate to the taxane derivative by removing the hydroxy protecting group.

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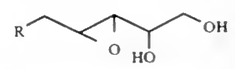
5,254,704

OPTICALLY ACTIVE EPOXIDES AND A PROCESS FOR THE PRODUCTION THEREOF

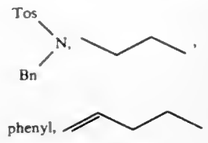
Seiichi Takano, and Kunio Ogasawara, both of Sendai, Japan, assignors to Chisso Corporation, Onaka, Japan

Filed May 20, 1992, Ser. No. 885,795
Claims priority, application Japan, May 20, 1991, 3-142775
Int. Cl.[5] C07D 303/04, 303/14, 301/19
U.S. Cl. 549—552 7 Claims

7. An optically active epoxide of high optical purity having the formula:



wherein R is selected from the group consisting of BnO,



phenyl,

and $CH_3(CH_2)_{13}$.

5,254,705

PROCESS FOR PRODUCING DESULFURIZED FATS AND OILS OR FATTY ACID ESTERS AND PROCESS FOR PRODUCING ALCOHOLS BY USING SAID DESULFURIZED FATS AND OILS OR FATTY ACID ESTERS

Yasuyuki Hattori; Hiroyuki Tamura; Hidetoshi Kadowaki, and Kiyoshi Tsukada, all of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed May 29, 1992, Ser. No. 890,109
Claims priority, application Japan, May 31, 1991, 3-129234; Sep. 25, 1991, 3-245683
Int. Cl.[5] C07C 51/36
U.S. Cl. 554—141 4 Claims

1. A process for producing desulfurized fats and oils or fatty acid esters which comprises contacting fats and oils or fatty acid esters with a catalyst represented by the following formula (I) under a hydrogen atmosphere or a mixture of hydrogen with an inert gas:

$$Ni.Cu_xO_y \quad (I)$$

wherein x represents an atomic ratio of Cu determined by referring Ni a 1 and a value of from 0.02 to 8; and
y is an atomic ratio of oxygen satisfying the valence requirements of Ni and Cu.

5,254,706

PROCESS OF MAKING PHOSPHITE-BORANE COMPOUNDS

Bernard F. Spielvogel, Raleigh, and Anup Sood, Durham, both of N.C., assignors to Boron Biologicals, Inc., Raleigh, N.C.

Division of Ser. No. 701,682, May 10, 1991, Pat. No. 5,143,907.
This application Aug. 31, 1992, Ser. No. 938,398
Int. Cl.[5] C07F 9/142, 9/141
U.S. Cl. 556—402 3 Claims

1. A process for the preparation of a phosphite-borane compound, comprising the steps of:
reacting trialkylphosphite-cyanoborane with trialkyloxonium tetrafluoroborate to yield alkylated phosphite-cyanoborane;
hydrolyzing the alkylated phosphite cyanoborane in the presence of a base to form trialkylphosphite-(N-alkylcarbamoyl)borane; and
hydrolyzing the trialkylphosphite-(N-alkylcarbamoyl)borane under acidic hydrolysis conditions to produce trialkyl-phosphite-carboxyborane.

5,254,707

PREPARATION OF CYCLOPENTADIENE DERIVATIVES

Jamie R. Strickler; John M. Power, and Meng-Sheng Ao, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Dec. 7, 1992, Ser. No. 986,197
Int. Cl.[5] C07C 22/00, 83/00
U.S. Cl. 556—413 13 Claims

1. A process for preparing a compound of the formula:

Cp'YNHR

wherein: Cp' is a cyclopentadienyl or a substituted cyclopentadienyl group, Y is a covalent bridging group which contains one or more group 14 elements, and R is a C_1 to C_{20} hydrocarbyl or substituted hydrocarbyl group; said process comprising reacting a ligand of the formula:

Cp'YX

wherein Cp' and Y are as defined above and X is halogen; with from about 0.9 to 1.1 mol per mole of said ligand of a primary amine of the formula:

NH_2

wherein R is as defined above; in an inert solvent in the presence of a HX scavenger at an elevated temperature of at least about 35° C. so as to form said compound.

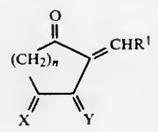
5,254,708

SUBSTITUTED CYCLIC KETONES, SUBSTITUTED CYCLIC ENONES, AND PROCESS FOR PRODUCING THE SAME

Fumie Sato, Fujisawa; Kazutaka Arai, and Katsuaki Miyaji, both of Funabashi, all of Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 207,549, Jun. 16, 1988, Pat. No. 4,994,619.
This application Dec. 14, 1990, Ser. No. 627,505
Claims priority, application Japan, Jun. 16, 1987, 62-149873; Aug. 4, 1987, 62-194947; Feb. 10, 1988, 63-29709; Feb. 25, 1988, 63-43045
Int. Cl.[5] C07F 7/08, 7/18
U.S. Cl. 556—436 8 Claims

1. A substituted cyclopentanone or cyclohexanone derivative represented by the formula (IIb):



(IIb)

where X denotes (α-OZ, β-H) or (α-H, βOZ); Y denotes (α-OZ', β-H) or (α-H, β-OZ'); Z and Z' each denotes a hydrogen atom or a protective group for the hydroxyl group selected from the group consisting of a trialkylsilyl group, a methyl group, an alkoxyalkyl group, an aralkoxyalkyl group, a trityl group and a tetrahydropyranyl group, Z and Z' being the same or different from each other; R_1 denotes a hydrogen atom, a substituted or unsubstituted C_{1-10} alkyl group, alkenyl group, or alkynyl group, or a substituted or unsubstituted phenyl group; and n is 1 or 2.

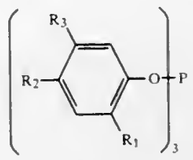
5,254,709

METHOD FOR PREPARING STEARICALLY HINDERED ARYL PHOSPHITES

Bryon A. Hunter, Alpine, Utah, assignor to Uniroyal Chemical Company, Inc., Middlebury, Conn.

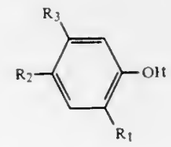
Continuation of Ser. No. 447,988, Dec. 8, 1989, abandoned. This application Aug. 24, 1992, Ser. No. 935,663
Int. Cl.[5] C07F 9/145
U.S. Cl. 558—96 20 Claims

1. A process of making of triarylphosphite of formula (1)



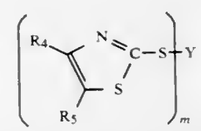
(1)

where R_1 is a C_4–C_{18} tertiary alkyl, R_2 and R_3 are independently selected from hydrogen, hydroxy, C_1–C_{20} straight chain or branched alkyl, C_2–C_{20} cycloalkyl, C_6–C_{20} aryl and C_7–C_{20} aralkyl groups, said process comprising:
a) reacting a phosphorus trihalide with a hydroxy-substituted aromatic compound of the formula (2) in the presence or absence of a solvent, and in the presence of 0.005 to 10 mol %, relative to the hydroxy-substituted aromatic compound, of a catalyst to form a reaction mixture,



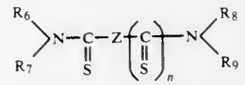
(2)

(b) isolating said triaryl phosphite from said reaction mixture; said catalyst being selected from the group consisting of a mercaptothiazole having the structure of formula (A), a dithiocarbamate of formula (B), mercaptothiazoline, mercaptobenzimidazole, and mercaptobenzoxazole,



(A)

wherein R_4 and R_5 individually are hydrogen or C_1–C_{12} alkyl; R_4 and R_5 combinedly may be benzo, C_2–C_{18} branched or linear alkylene; when m is 1, Y is hydrogen, C_2–C_8 alkylamino, C_3–C_8 cycloalkylamino, a monovalent metal, morpholino, C_1–C_8alkyl, phenyl, or benzyl; and when m is 2, Y is a bond, divalent metal, C_2–C_8 alkylene, or C_2–C_8 alkylene diamine;
and wherein said dithiocarbamate has the structure of formula (B)



(B)

wherein n is 0 or 1 and Z is —S—, —S—S—, S—Metal—S—; when n is 1, then R_6R_7, R_8, R_9 are independently selected from hydrogen, C_1–C_8 branched or linear alkyl or phenyl; when n is 0, then R_6, R_7, R_8, R_9 are independently selected from C_1–C_8 alkyl, C_1–C_8 alkoxy, and R_6 and R_7 or R_8 and R_9 combinedly are C_1–C_8 oxydialkylene, benzo or C_2–C_8 alkylene.

5,254,710

ALKENYL ETHER POLYCARBONATES

Jeffrey S. Plotkin, Monsey, N.Y.; Fulvio J. Vara, Chester, N.J.; James A. Dougherty, Pequannock, N.J.; Paul D. Taylor, West Milford, N.J., and Kolazi S. Narayanan, Palisades Park, N.J., assignors to ISP Investments Inc., Wilmington, Del.

Division of Ser. No. 490,867, Mar. 9, 1990, abandoned. This application Feb. 3, 1993, Ser. No. 13,270
Int. Cl.[5] C07C 69/96
U.S. Cl. 558—266 11 Claims

1. A compound having the formula



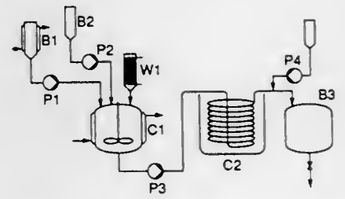
wherein A is selected from the group consisting of lower alkyl and R'HC=CHOR—; R and R'' are each independently a divalent radical having from 2 to 20 carbon atoms and are selected from the group of alkylene, mono- or poly- alkoxylated alkylene, alkenylene, alkynylene, arylene, alkarylene and aralkylene radicals, which radicals are optionally substituted with halo, alkyl, cyano, nitro or alkoxy; R' is hydrogen or lower alkyl; (n) has a value of from 1 to 10 and (m) has a value of from 0 to 10; with the proviso that R'' contains at least 3 carbon atoms when m is zero.

5,254,711

CONTINUOUS PREPARATION OF 3-CYANO-3,5,5-TRIMETHYLCYCLOHEXANONE

Hans J. Pander, Roedersheim-Gronau; Hardo Siegel, Speyer, and Otto Woerz, Friedelsheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 5, 1993, Ser. No. 14,171
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1992, 4203456
Int. Cl.[5] C07C 253/30
U.S. Cl. 558—341 3 Claims



1. A process for the continuous preparation of 3-cyano-3,5,5-trimethylcyclohexanone by base-catalyzed reaction of isophorone and hydrogen cyanide, which comprises carrying out the reaction in two separate reaction zones
a) with essentially complete back-mixing and subsequently
b) essentially without back-mixing.

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5,254,712

PROCESS FOR THE PREPARATION OF 5-OXOHEXANE NITRILES AND THE COMPOUND 2,4-DIMETHYL-5-OXOHEXANE NITRILE

Anna M. C. F. Castelijns, Stein; Henricus J. Arts, Sittard, and Richard Green, Geleen, all of Netherlands, assignors to Stamicarbon B.V., Netherlands

Continuation of Ser. No. 638,397, Jan. 7, 1991, abandoned. This application Jun. 24, 1992, Ser. No. 902,785

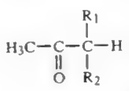
Claims priority, application Netherlands, Jan. 6, 1990, 9000034

Int. Cl.[5] **C07C** *253/30*

U.S. Cl. 558—368 **17 Claims**

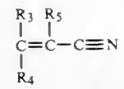
1. Process for the preparation of 5-oxohexane nitriles which comprises reacting

(a) a methyl ketone of the formula



wherein R_1 and R_2 each independently are H or an electron donating group of 1-20 carbon atoms selected from the group consisting of alkyl, alkenyl, cycloalkyl and alkoxy group, and wherein at least R_1 or R_2 is not hydrogen, and

(b) an α,β-unsaturated nitrile of the formula



wherein R_3, R_4 and R_5 each independently are H or an alkyl, alkenyl, cycloalkyl or alkoxy electron donating group having up to 20 carbon atoms and wherein at least one of the groups R_3, R_4, R_5 is not hydrogen in the presence of a catalytically effective amount of a strong base sufficient to promote the production of 5-oxohexane nitriles at a ratio of about 10:1 and higher to the production of undesired isomers resulting form the reaction of the methyl group of the methylketone with the α,β-unsaturated nitrile.

5,254,713

2- AND 3-CHLOROPYRROLES AND PROCESS FOR PREPARING THE SAME

Shinzo Kagabu; Itsumi Kawai, both of Gifu, and Katsuaki Wada, Oyan-a, all of Japan, assignors to Nihon Bayer Agrochem K.K., Tokyo, Japan

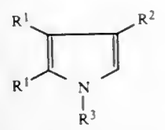
Division of Ser. No. 777,879, Oct. 15, 1991, Pat. No. 5,210,218. This application Feb. 10, 1993, Ser. No. 15,779

Claims priority, application Japan, Apr. 9, 1991, 3-13466

Int. Cl.[5] **C07D** *207/34*

U.S. Cl. 548—560 **4 Claims**

1. A 2- or 3-chloropyrrole of the formula



in which

R^1 is chlorine and the other one

R^1 is hydrogen, C_{1-6}-alkyl, or phenyl or naphthyl optionally substituted by at least one member selected from the group consisting of C_{1-6}-alkyl, C_{1-6}-alkoxy, C_{1-6}-alkylthio and halogen,

R^2 is C_{1-6}-alkyl optionally substituted by at least one member selected from the group consisting of C_{1-6}-alkoxy, C_{1-6}-alkylthio and halogen, and

R^3 is tertiary alkyl of up to 6 carbon atoms or is phenyl-substituted alkyl connected to the N atom by a tertiary carbon atom.

5,254,714

HYDROGENATION OF AROMATIC-SUBSTITUTED OLEFINS USING ORGANORUTHENIUM CATALYST

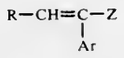
Merrikh Ramezanian, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Oct. 10, 1991, Ser. No. 774,797

Int. Cl.[5] **C07C** *69/76, 229/00;* **C07F** *15/00*

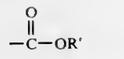
U.S. Cl. 560—8 **10 Claims**

1. A process for the enantioselective hydrogenation of an aromatic-substituted olefin of the formula:

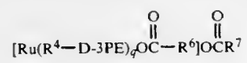


(I)

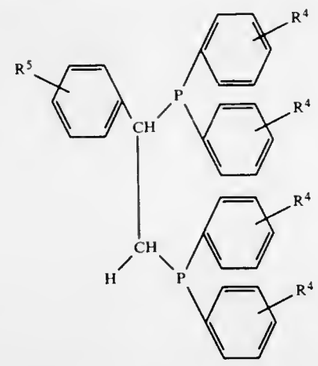
where R is hydrogen or C_1 to C_6 linear or branched alkyl, Z is



where R' is hydrogen or C_1 to C_6 linear or branched alkyl, —CN, C(NH)OR" where R" is C_1 to C_6 linear or branched alkyl, or —C(O)NH_2; and Ar is phenyl or naphthyl unsubstituted or substituted with benzoyl or substituted benzoyl, C_1 to C_6 linear or branched alkyl, C_1 to C_6 linear or branched alkoxy, halo, or carboxylic acid or C_1 to C_6 linear or branched alkyl ester thereof, which comprises contacting said aromatic-substituted olefin with a catalytically effective amount of a ruthenium phosphite complex of the formula:



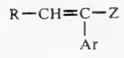
where R^4—D—3PE is



(III)

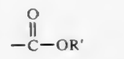
R^5 represents a hydrogen atom or alkyl group having from 1 to 9 linear or branched carbon atoms, a halogenated alkyl group having from 1 to 4 linear or branched carbon atoms, a phenyl group, a phenyl group substituted with an alkyl group having from 1 to 4 linear or branched carbon atoms, and α-aminoalkyl group, the alkyl group having from 1 to 4 linear or branched carbon atoms, or an a-aminophenylalkyl group, the alkyl group having from 7 to 10 carbon atoms, or R^6 and R^7 are taken together to form an alkylene group having from 1 to 4 linear or branched carbon atoms; and q represents 1 or 2.

6. A process for the enantioselective hydrogenation of an aromatic-substituted olefin of the formula:



(I)

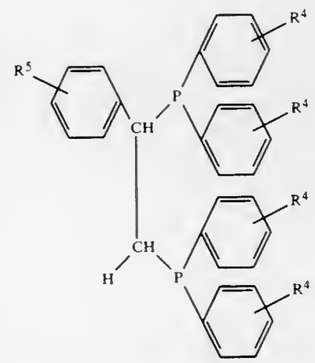
where R is hydrogen or C_1 to C_6 linear or branched alkyl, Z is



where R' is hydrogen or C_1 to C_6 linear or branched alkyl, —CN, C(NH)OR" where R" is C_1 to C_6 linear or branched alkyl, or —C(O)NH_2; and Ar is phenyl or naphthyl unsubstituted or substituted with benzoyl or substituted benzoyl, C_1 to C_6 linear or branched alkyl, C_1 to C_6 linear or branched alkoxy, halo, or carboxylic acid or C_1 to C_6 linear or branched alkyl ester thereof, which comprises contacting said aromatic-substituted olefin with a catalytically effective amount of a ruthenium phosphite complex of the formula:

$$[RuH_t(R^4\text{—D—3PE})_v]Y_w \quad \text{(V)}$$

where R^4—D—3PE is



(III)

Y is $[S_2CN(CH_3)_2$, (O_2CCH_3), (NCS) or $[(R_1)C(O)CH_2(R_2)$-$C(O)]$where R_1 and R_2 are the same or different and are hydrogen or C_1 to C_6 linear or branched alkyl; when t is 0, then v is 1 and w is 2; and when t is 1, then v is 2 and w is 1.

5,254,715

AMINOSULFONYL CARBAMATES

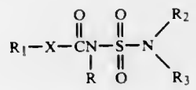
Joseph A. Picard, and Drago R. Sliskovic, both of Ypsilanti, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 610,487, Nov. 7, 1990, abandoned. This application Aug. 19, 1991, Ser. No. 747,031

Int. Cl.[5] **C07C** *307/06*

U.S. Cl. 560—13 **6 Claims**

1. A compound of the formula



Formula I

wherein X=oxygen or sulfur; R is hydrogen, a straight or branched alkyl group having from 1 to 8 carbon atoms, or benzyl;

wherein R_1 is

(a) phenyl substituted with from one to three substituents selected from:
phenyl,
alkyl having from one to six carbon atoms and which is straight or branched,
alkoxy having from one to six carbon atoms and which is straight or branched,
phenoxy,
hydroxy,
fluorine,
bromine,
nitro,
trifluoromethyl,
—COOH,
—COOalkyl wherein alkyl has from one to four carbon atoms and which is straight or branched,
—$(CH_2)_pNR_4R_5$ wherein p is zero or one, and each of R_4 and R_5 is hydrogen or a straight or branched alkyl group having one to four carbon atoms;

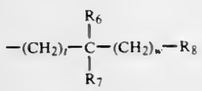
(b) 1- or 2-naphthyl which is unsubstituted or substituted with one to three substituents selected from
phenyl,
alkyl having from one to six carbon atoms and which is straight or branched,
alkoxy having from one to six carbon atoms and which is straight or branched,
phenoxy,
hydroxy,
fluorine,
chlorine,
bromine,
nitro,
trifluoromethyl,
—COOH,
—COOalkyl wherein alkyl has from one to four carbon atoms and is straight or branched,
—$(CH_2)_pNR_4R_5$ wherein p, R_4, and R_5 have the meanings defined above; or

(c) —$(CH_2)_2$—Q wherein s is a number of form zero to three and Q is a 4- or 6-membered monocyclic or fused bicyclic heterocycle containing at least one to four nitrogen, oxygen or sulfur atoms in at least one ring member;

wherein each of R_2 and R_3 is

(a) hydrogen;

(b) the group



wherein t is zero or one to four; w is zero or one to four with the proviso that the sum of t and w is not greater than five; R_6 and R_7 are independently selected from hydrogen or alkyl having for one to six carbon atoms, or when R_6 is hydrogen, R_7 can be selected from the groups defined for R_8; and R_8 is phenyl or phenyl substituted with from one to three substituents selected from straight or branched alkyl having from one to six carbon atoms, straight or branched alkoxy having from one to six carbon atoms, phenoxy, hydroxy, fluorine, chlorine, bromine, nitro, trifluoromethyl, —COOH, COOalkyl wherein alkyl has from one to four carbon atoms and is straight or branched, or —$(CH_2)_pNR_4R_5$ wherein p, R_4 and R_5 have the meanings defined above;

(c) a straight or branched hydrocarbon chain having from 1 to 20 carbon atoms and which is saturated or contains from one to three double bonds;

(d) an alkyl group having from one to six carbon atoms

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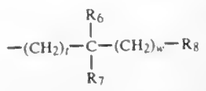
wherein the terminal carbon is substituted with hydroxy or $-NR_6R_7$ wherein R_6 and R_7 have the meanings defined hereinabove;

(e) $-(CH_2)_sQ$ wherein s and Q have the meanings defined above;

(f) phenyl or phenyl substituted with from one to three substituents selected from phenyl,
alkyl having form one to six carbon atoms and which is straight or branched,
alkoxy having from one to six carbon atoms and which is straight or branched,
phenoxy,
hydroxy,
fluorine,
chlorine,
bromine,
nitro,
trifluoromethyl,
—COOH,
—COOalkyl wherein the alkyl moiety has from one to four carbon atoms and is straight or branched, or
$-(CH_2)_pNR_4R_5$ wherein p, R_4, and R_5 have the meanings defined above; or

(g) NR_7R_3 taken together form a monocyclic heterocyclic group selected form pyrrolidino, piperidino, morpholino, or piperazino, each of which is unsubstituted or substituted with one substituent selected from phenyl, straight or branched alkyl having from one to six carbon atoms; and pharmaceutically acceptable salts thereof; with the provisos:

(i) when each of R_2 and R_3 is the group



R_7 is hydrogen or alkyl having from one to six carbon atoms;

(ii) at least one of R_1,R_2, and R_3 is phenyl or substituted phenyl;

(iii) both R_2 and R_3 are not hydrogen at the same time;

(iv) when R_1 is phenyl disubstituted on the 2,6-positions with alkyl having form one to four carbon atoms or with methoxy, or trisubstituted on the 2,4,6-positions with alkyl having from one t four carbon atoms, neither of R_2 or R_3 is phenyl; and

(v) the following compound wherein Ph means phenyl is excluded.

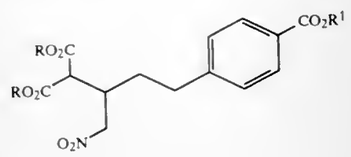
5,254,716

INTERMEDIATES, AND PROCESSES THERETO, FOR THE PREPARATION OF 5,6-DIHYDROPYRROLO[2,3-D]PYRIMIDINES

Charles J. Barnett, Indianapolis, and Thomas M. Wilson, Speedway, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 15, 1992, Ser. No. 961,595
Int. Cl.[5] C07C *205/02*
U.S. Cl. 560—20 **4 Claims**

1. A compound of formula I



wherein

R is the same C_1–C_4 alkyl or phenyl which may be substituted; and

R^1 is H, C_1–C_4 alkyl, phenyl which may be substituted or benzyl.

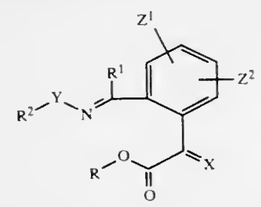
5,254,717

IMINO-SUBSTITUTED PHENYL DERIVATIVES, THE PREPARATION THEREOF AND FUNGICIDES CONTAINING THESE

Wassilios Grammenos; Albrecht Harreus, both of Ludwigshafen; Hubert Sauter; Beate Hellendahl, both of Mannheim; Reinhard Doetzer, Weinheim; Eberhard Ammermann, Ludwigshafen, and Gisela Lorenz, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 24, 1992, Ser. No. 825,378
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1991, 405160
Int. Cl.[5] C07C *229/34, 37/50*
U.S. Cl. 560—35 **7 Claims**

1. A compound of the formula I



where

R is hydrogen or C_1–C_6-alkyl;

R^1 is hydrogen, C_1–C_4-alkyl, C_1–C_4-haloalkyl or unsubstituted or substituted aryl;

Z^1 and Z^2 are identical or different and each is hydrogen, halogen, C_1–C_4-alkoxy, C_2–C_4-alkenyloxy, cyano, nitro, C_1–C_4-haloalkyl, C_2–C_4-haloalkenyloxy, C_2–C_4-alkenyl, C_1–C_4-haloalkoxy, C_1–C_6alkyl or C_2–C_4-alkynyl;

Y is oxygen (—O—), nitrogen, (—NH—) or C_1–C_6-alkyl (R^3)-substituted nitrogen (—N(R^3)—), where R^3 is hydrogen or C_1–C_6 alkyl;

R^2 is hydrogen, unsubstituted or substituted alkyl, unsubstituted or substituted cycloalkyl, unsubstituted or substituted alkenyl, unsubstituted or substituted aryl, unsubstituted or substituted alkynyl, unsubstituted or substituted cycloalkenyl, unsubstituted or substituted arylalkyl, unsubstituted or substituted aryloxyalkyl, unsubstituted or substituted hetaryl, unsubstituted or substituted hetarylalkyl, unsubstituted or substituted hetaryloxyalkyl, unsubstituted or substituted acyl, unsubstituted or substituted arylalkenyl, unsubstituted or substituted hetarylalkenyl, unsubstituted or substituted heterocyclyl, unsubstituted or substituted heterocyclyloxy, unsubstituted or substituted arylcarbonyl, unsubstituted or substituted hetarylcarbonyl or C_1–C_4-alkoxycarbonyl-C_1–C_4-alkyl, where Y and R^2 may form a ring which may be substituted if Y is —NH— or $—NR^3—$;

X is CH_2, CH—C_1–C_4-alkyl, CH—C_1–C_4-alkoxy, CH—C_1–C_4-alkylthio, N—C_1–C_4-alkoxy or NOH, wherein in the above substituted groups the substituent is selected from the group consisting of halogen, C_1–C_6-alkyl, C_1–C_6-alkyloxy, C_1–C_6- alkylthio, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy, C_2–C_6-alkenyloxy, cyano, cyanato, thiocyanato, nitro, amino, hydroxyl, carboxyl, C_1–C_6-alkylamino, di-C_1–C_6-alkylamino, phenyl, phenoxy, phenylthio, phenylamino, C_1–C_6-alkoxyiminoalkyl, C_1–C_4-alkyliminoalkyl and C_3–C_6- cycloalkyl.

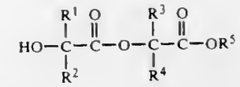
5,254,718

ESTERS OF UNSYMMETRICALLY 2-SUBSTITUTED GLYCOLIC ACID DIMERS

David L. Anton, Wilmington, and Charles E. Nakamura, Claymont, both of Del., assignors to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Feb. 27, 1991, Ser. No. 661,776
Int. Cl.[5] C07C *69/76, 69/66, 69/73*
U.S. Cl. 560—55 **9 Claims**

1. A compound represented by the following Formula I,



wherein:

R^1, R^2, R^3, and R^4 are selected from the group consisting of hydrogen, alkyl, aryl, alkaryl and aralkyl, wherein said alkyl, aryl, alkaryl and aralkyl optionally have one or more branched chain, unsaturated chain, halogen, nitrile, ketone or ether substitutions and R^5 is selected from the group consisting of alkyl, aryl, alkaryl and aralkyl, wherein said alkyl, aryl, alkaryl and aralkyl optionally have one or more branched chain, unsaturated chain, halogen, nitrile, or ether substitutions, and wherein R^1 and R^2 are not equal to R^3 and R^4; provided that the pk_a of the equivalent alcohol of R^5 is less than or equal to 14.5.

5,254,719

PROCESS FOR PREPARING PURIFIED DIMETHYL NAPHTHALENEDICARBOXYLATE

Juergen K. Holzhauer, Naperville, and David A. Young, Warrenville, both of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed May 31, 1991, Ser. No. 708,492
Int. Cl.[5] C07C *67/54*
U.S. Cl. 560—78 **11 Claims**

1. A process for preparing purified dimethyl-2,6-naphthalenedicarboxylate from 2,6-naphthalenedicarboxylic acid, wherein the 2,6-naphthalenedicarboxylic acid is prepared by the liquid phase oxidation of a 2,6-dialkyl or 2-alkyl-6-acyl naphthalene compound using a catalyst comprising cobalt and manganese oxidation metals, which process comprises:

(a) reacting the 2,6-naphthalenedicarboxylic acid containing residual cobalt and manganese oxidation catalyst metals with methanol at a temperature in the range of about 80° C. to about 200° C., in the presence of a strong acid selected from sulfuric acid, hydrofluoric acid, hydrochloric acid, phosphoric acid, benzene sulfonic acid, alkylaromatic sulfonic acid, methane sulfuric acid, a chloroacetic acid, and a fluoroacetic acid to form a reaction mixture comprising dimethyl-2,6-naphthalenedicarboxylate;

(b) crystallizing the dimethyl-2,6-naphthalenedicarboxylate by cooling the reaction mixture;

(c) partitioning crystallized dimethyl-2,6-naphthalenedicarboxylate from reaction mixture mother liquor containing solubilized residual oxidation catalyst metals;

(d) dissolving the crystallized dimethyl-2,6-naphthalenedicarboxylate in a recrystallization solvent at a temperature in the range of about 80° C. to about 190° C., to form a recrystallization mixture;

(e) recrystallizing dimethyl-2,6-naphthalenedicarboxylate by cooling the recrystallization mixture;

(f) partitioning recrystallized dimethyl-2,6-naphthalenedicarboxylate from recrystallization mother liquor;

(g) vacuum distilling the recrystallized dimethyl-2,6-naphthalenedicarboxylate such that the distilled dimethyl-2,6-naphthalenedicarboxylate contains less than about 5000 particles greater than about 1.5 microns in size per gram of distilled dimethyl-2,6-naphthalenedicarboxylate; and

(h) recovering the distilled dimethyl-2,6-naphthalenedicarboxylate.

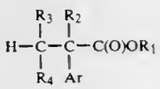
5,254,720

PROCESS FOR PREPARING ARYL-SUBSTITUTED ALIPHATIC CARBOXYLIC ACIDS AND THEIR ALKYL ESTERS

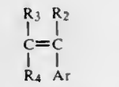
Tse-Chong Wu, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Dec. 28, 1992, Ser. No. 996,948
Int. Cl.[5] C07C *69/76, 51/10*
U.S. Cl. 560—105 **38 Claims**

1. A process for preparing an aryl-substituted aliphatic carboxylic acid or ester or salts thereof having the formula:



where R_1 is hydrogen or alkyl, R_2, R_3 and R_4 are hydrogen, alkyl, cycloalkyl, alkyl-substituted cycloalkyl, aryl either substituted or unsubstituted, alkoxy, alkylthio, heteroaryl either substituted or unsubstituted, alkanoyl, aroyl either substituted or unsubstituted, heteroarylcarbonyl either substituted or unsubstituted, trifluoromethyl or halo and Ar is unsubstituted or substituted aryl which comprises treating an olefinic compound of the formula:



where Ar, R_2, R_3 and R_4 are as previously defined and water or a compound of the formula R_1OH where R_1 is as previously defined with carbon monoxide at a pressure of at least about 1 atmosphere and a temperature from about 25° C. to about 200° C. in the absence of oxygen and in the presence of a catalyst that is i) a mixture of palladium(0) or the inorganic salts of palladium and the salts of copper and (ii) at least one acid stable ligand.

5,254,721

PROCESS FOR PRODUCING CYCLOHEXYL ACETATE

Kaoru Inoue; Masao Iwasaki, and Kazuaki Matsui, all of Kanagawa, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Continuation of Ser. No. 709,983, Jun. 4, 1991, abandoned. This application Jan. 5, 1993, Ser. No. 597
Claims priority, application Japan, Jun. 11, 1990, 2-149965; Jun. 15, 1990, 2-155253
Int. Cl.[5] C07C *69/02, 67/00*
U.S. Cl. 560—231 **18 Claims**

1. A process for producing cyclohexyl acetate which comprises reacting acetic acid with cyclohexene in the presence of at least one heteropolyacid mainly composed of oxides of tungsten which has water of crystallization adjusted to an amount on average of 3.0 moles or less per one molecule of the heteropolyacid.

VOL 1155 ISS 3 OCT 19 1993 UMI

5,254,722
PROCESS FOR THE PRODUCTION OF TRIGLYCERIDES

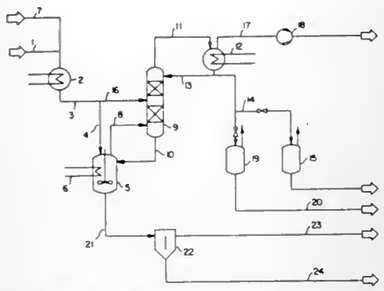
Eberhard Peukert, Hilden; Horst Rutzen, Langenfeld, and Gerhard Wollmann, Hilden, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed May 19, 1988, Ser. No. 195,995

Claims priority, application Fed. Rep. of Germany, May 20, 1987, 3716950

Int. Cl.[5] **C07C** *67/03, 69/18*

U.S. Cl. 554—227 **21 Claims**



1. A process for the production of triglycerides of fatty acids which comprises:

a) initially reacting a mixture of alkali metal carbonate catalyst and glycerol with a substantial molar excess of a C_1–C_4 alkyl ester of C_6–C_{22} fatty acid at a temperature between about 150° C. and 250° C. at less than atmospheric pressure and under substantially anhydrous conditions to produce an initial reaction mixture containing the corresponding triglycerides of said fatty acids, and partially reacted glycerol with unreacted hydroxyl groups,

b) thereafter, reacting at least a portion of said initial reaction mixture with additional C_1–C_4 alkyl ester of C_6–C_{22} fatty acid under conditions to achieve substantially full conversion of said unreacted hydroxyl groups, and

c) separating a product containing the corresponding triglycerides of said fatty acids from unreacted alkyl ester and from said alkali metal carbonate catalyst.

5,254,723
PREPARATION OF GLYCOL DIESTERS FROM POLYETHERS

Lau S. Yang, Wilmington, Del., and Diane A. Macarevich, Collegeville, Pa., assignors to ARCO Chemical Technology, L.P., Wilmington, Del.

Filed Nov. 23, 1992, Ser. No. 979,991

Int. Cl.[5] **C07C** *67/24*

U.S. Cl. 560—240 **15 Claims**

1. A process for making a glycol diester from a polyether, said process comprising reacting the polyether with an acyclic, aliphatic anhydride in the presence of an effective amount of a Lewis acid to produce the glycol diester.

5,254,724
METHOD FOR SYNTHESIS OF DESFERRIOXAMINE B, ANALOGS AND HOMOLOGS THEREOF

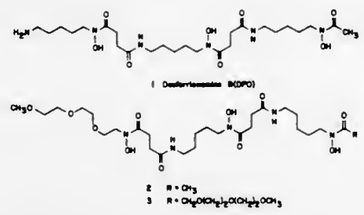
Raymond J. Bergeron, Jr., Gainesville, Fla., assignor to University of Florida Research Foundation, Inc., Alachua, Fla.

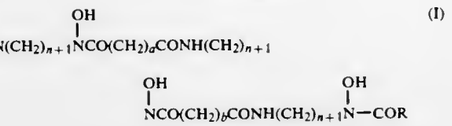
Filed Oct. 30, 1991, Ser. No. 784,949

Int. Cl.[5] **C07C** *259/06*

U.S. Cl. 560—312 **3 Claims**

1. A method for synthesizing desferrioxamine B or a homolog thereof having the formula:





(I)

wherein:

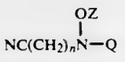
each n may be the same or different and is an integer from 1 to 10;

a and b may be the same or different and are integers from 1 to 6; and

R is an alkyl group having from 1 to 10 carbon atoms or an aryl group,

comprising:

(a) cleaving Q from a compound having the formula:

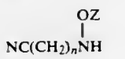


(4)

wherein Z is a hydroxyl protecting group and

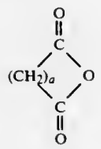
Q is an amino protecting group,

to produce a protected hydroxylamine having the formula:

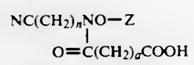


(5)

(b) condensing hydroxylamine (5) with an anhydride having the formula:



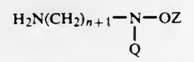
wherein a is an integer from 1 to 6 to produce a compound having the formula:



(6)

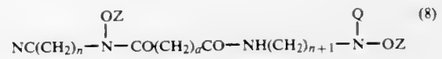
wherein n is an integer from 1 to 10,

(c) reducing compound (4) to produce an amine having the formula:



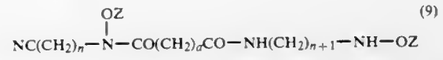
(7)

(d) condensing the carboxylic acid (6) with said amine (7) to produce a nitrile having the formula:



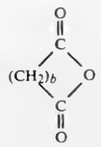
(8)

and cleaving Q therefrom to produce an amine having the formula:

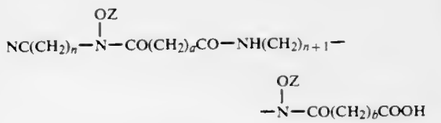


(9)

(e) reacting the amine (9) with an anhydride having the formula:

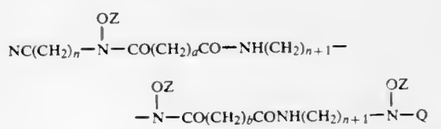


wherein b is an integer from 1 to 6 to produce a compound having the formula:



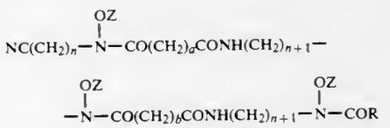
(10)

(f) reacting compound (10) with compound (7) to produce a nitrile having the formula:



(11)

(g) cleaving Q therefrom to produce the free amine followed by acylation to produce a compound having the formula:



(12)

and

(h) reducing said compound (12) to produce said compound of formula (I).

5,254,725
INHIBITORS OF KYNURENINASE

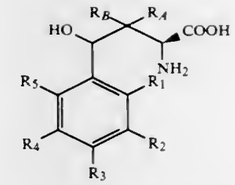
Robert S. Phillips, and Rajesh K. Dua, both of Athens, Ga., assignors to University of Georgia Research Foundation, Inc., Athens, Ga.

Filed Apr. 18, 1991, Ser. No. 689,705

Int. Cl.[5] **C07C** *229/36;* **A61K** *31/195*

U.S. Cl. 562—444 **14 Claims**

1. A compound selected from the group consisting of compounds having the formula:



and pharmaceutically acceptable salts thereof, wherein:

R_A and R_B, independently of one another are H, a halogen, CF_3 or a small alkyl group having one to three carbon atoms;

R_1 is NH_2, NR_6R_7, halogen, CF_3 or a small alkyl group having from one to three carbon atoms, wherein:

R_6 and R_7, independently of one another, are H, a formyl group or a small alkyl group having from one to three carbon atoms with the exception that only one of R_6 or R_7 can be a formyl group,

R_2 is OH, halogen, or CF_3; and

R_3, R_4 and R_5, independently of one another, are H, halogen, CF_3 or small alkyl group having from one to three carbon atoms.

5,254,726
NO-CARRIER-ADDED (NCA) ARYL (18E) FLUORIDES VIA THE NUCLEOPHILIC AROMATIC SUBSTITUTION OF ELECTRON RICH AROMATIC RINGS

Yu-Shin Ding, Central Islip; Joanna S. Fowler, Bellport, and Alfred P. Wolf, Setauket, all of N.Y., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Jun. 7, 1991, Ser. No. 711,684

Int. Cl.[5] **C07C** *229/42, 213/08, 47/52*

U.S. Cl. 562—445 **3 Claims**

1. A method for synthesizing a no-carrier-added (NCA) aryl [^{18}F]fluoride selected from the group consisting of 6-[^{18}F]fluoro-L-DOPA, 2-[^{18}F]fluorotyrosine, 6-[^{18}F]fluoronorepinephrine, and 6-[^{18}F]fluorodopamine, comprising reacting the corresponding aromatic nitro compound having a suitably protected hydroxyl substituent on an electron rich ring of the aromatic nitro compound with a no-carrier added (NCA) [^{18}F]fluoride ion.

5,254,727
ACYCLIC TRICARBOXYLIC ACID COMPOUNDS

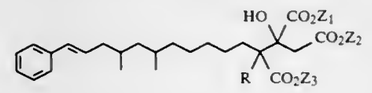
Claude Dufresne, East Brunswick, N.J.; E. Tracy T. Jones, Solana Beach, Calif., and Leslie A. Ferrell, Cranford, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 19, 1992, Ser. No. 962,547

Int. Cl.[5] **C07L** *59/48*

U.S. Cl. 562—470 **8 Claims**

1. A compound having the formula



(I)

wherein

R is H or OH,

Z_1, Z_2 and Z_3 are each independently selected from

a) H

b) C_1–C_5 alkyl

c) C_1–C_5 alkyl substituted with a member of the group consisting of

i) phenyl

ii) phenyl substituted with methyl, methoxy, halogen (Cl, Br, I, F) or hydroxy; or

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a pharmaceutically acceptable salt thereof.

5,254,728

COMPLEXES CONTAINING S(+)-PHENYL ALKANOIC ACIDS AND α-HYDROXYALKANOIC

Henrich H. Paradies, Iserlohn, Fed. Rep. of Germany, assignor to Medice Chem.-pharm. Fabrik Pütter GmbH & Co. KG, Iserlohn/Westfalen, Fed. Rep. of Germany

Filed Nov. 15, 1991, Ser. No. 792,485

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1990, 4036459

Int. Cl.[5] C07C *57/30, 59/64, 229/26;* A61K *31/205*

U.S. Cl. 562—496 22 Claims

1. A hydrogen-bridge-bound complex having a stoichiometry or 1:1 comprising an S(+)-phenyl alkanoic acid and an α-hydroxyalkanoic acid in which the complex bond is based on a carboxylate-carboxyl interaction with a proton switch of the form R_t—COOH . . . $^{\ominus}$OOC—$R_2 \rightleftarrows R_t$—COO$^{\ominus}$. . . HOO-C—R_2 where R_t—COOH denotes the S(+)-phenyl alkanoic acid and R_2—COOH the α-hydroxyalkanoic acid and the pKa value relating to the carboxyl group of the S(+)-phenyl alkanoic acid lies in the range of 3.5–3.9 and the pKa value relating to the carboxyl group of the α-hydroxyalkanoic acid lies in the range of 1.8–2.9.

5,254,729

METHOD FOR PURIFYING GLYCINE

Kenji Fujiwara; Susumu Yoshinaga; Yuji Matsuu; Hiroshi Kato, and Atsuhiko Hiai, all of Osaka, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed May 24, 1991, Ser. No. 705,363

Claims priority, application Japan, May 31, 1990, 2-140086

Int. Cl.[5] C07C *229/08, 215/08*

U.S. Cl. 562—554 4 Claims

1. A method for preparing purified glycine crystals which comprises the steps of reacting glycolonitrile, carbon dioxide gas and ammonia in the presence of water to obtain an aqueous reaction solution containing glycine, removing most of any remaining carbon dioxide gas and ammonia from the reaction solution, adjusting the pH of the remaining alkaline aqueous glycine solution to 3.5–6 with an acidic cation exchange resin, decoloring said aqueous glycine solution by contacting the solution with active carbon, and evaporating water from the solution to crystallize pure glycine crystals.

5,254,730

PRODUCTION OF AMINO ACIDS AND AMINO ACID DERIVATIVES BEARING ISOTOPIC HYDROGEN LABELS

James L. Kilgore, Worcester Foundation of Experimental Biology 222 Maple Ave., Shrewsbury, Mass. 01545

Filed Jan. 14, 1992, Ser. No. 820,526

Int. Cl.[5] C07C *229/00*

U.S. Cl. 562—575 20 Claims

1. A method for synthesizing α-amino acids, and derivatives thereof, which bear hydrogen isotopes on the α- and β-carbons by a process comprising:

preparing a mixture consisting of a metal catalyst and a protic solvent;

combining an α-(N-substituted azomethine)-substituted carboxylic acid equivalent with the catalyst-solvent mixture, said carboxylic acid equivalent being a compound selected from the group consisting of carboxylic acids, their salts, their esters with alcohols, phenols and thiol derivatives, and N-unsubstituted- and N-substituted carboxamides, including those amides which are formed with amino acid amino groups;

introducing a source of molecular hydrogen at a pressure sufficient to effect the reduction of the azomethine double bond, concurrent with isotopic exchange of the substrate β-hydrogens with the protic solvent and molecular hydrogen.

5,254,731

SUBSTITUTED 3,4-DIHYDRONAPHTHALENES, PHARMACEUTICAL COMPOSITIONS CONTAINING THEM, AND PREPARATION PROCESSES

Oswald Zimmer, Dueren; Werner Vollenberg, and Johannes Schneider, both of Stolberg, all of Fed. Rep. of Germany, assignors to Gruenenthal GmbH, Aachen, Fed. Rep. of Germany

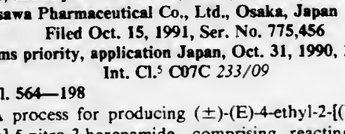
Filed Jul. 10, 1992, Ser. No. 911,625

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1991, 4124345

Int. Cl.[5] C07C *53/06*

U.S. Cl. 562—621 14 Claims

1. A substituted 3,4-dihydronaphthalene corresponding to the formula I



wherein

R^1 is a methyl group or an amino group;

R^2 represents a hydrogen atom or a methyl group, and

R^3 is a linear or branched chain alkyl group having 1 to 4 carbon atoms, an allyl or crotyl group, or a cyclopentyl group.

5,254,732

N-FLUOROSULFONIMIDES AND THEIR APPLICATION AS FLUORINATING AGENTS

Edmond Differding, Neuve, Belgium, assignor to AlliedSignal Inc., Morristown, N.J.

Filed Feb. 28, 1992, Ser. No. 843,692

Int. Cl.[5] C07C *311/15, 17/12, 17/14*

U.S. Cl. 564—82 7 Claims

1. A compound of the formula

$$R_1SO_2—NX—O_2SR_2$$

wherein X represents an isotope or natural isotopic mixture of fluorine, and R_1 and R_2 independently are phenyl or naphthyl, which is unsubstituted or substituted by at least one substituent selected from the group consisting of alkyl groups having 1 to 6 carbon atoms, alkoxy groups having 1 to 6 carbon atoms, alkylsulfonyl groups having 1 to 6 carbon atoms, perfluoroalkylsulfonyl groups having 1 to 6 carbon atoms, mono- to perfluoroalkyl groups having 1 to 6 carbon atoms, cyano, chlorine, and bromine.

5,254,733

PROCESS FOR PRODUCING AN ALIPHATIC AMIDE AND SALTS THEREOF

Kooji Kagara, Minoo; Nobutaka Kawai, Osaka; Koji Machiya, Kobe, and Kiyoaki Takasuka, Ikeda, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Oct. 15, 1991, Ser. No. 775,456

Claims priority, application Japan, Oct. 31, 1990, 2-296815

Int. Cl.[5] C07C *233/09*

U.S. Cl. 564—198 6 Claims

1. A process for producing (±)-(E)-4-ethyl-2-[(E-hydroxyimino]-5-nitro-3-hexenamide, comprising reacting 2-ethylcrotonaldehyde, with a carbamoyl-containing Wittig reagent and reacting the reaction product, either without isolation or after isolation, further with a dinitrogen trioxide or, in the presence of an acid, and a nitrite.

5,254,734

METHOD FOR PREPARING AN OXIME

Yu Kanda, Kitakyushu; Takeshi Matsuoka, Kikakyushu; Haruo Habu, Kitakyushu, and Tsutomu Yonemori, Mizumaki, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Feb. 7, 1992, Ser. No. 832,321

Claims priority, application Japan, Feb. 13. 1991, 3-20130

Int. Cl.[5] C07C *249/08*

U.S. Cl. 564—259 8 Claims

1. A method for preparing an oxime, which comprises partitioning an aqueous hydroxylamine salt solution phase and a ketone or aldehyde phase by a cation exchange membrane, and permitting hydroxylamine in the aqueous hydroxylamine salt solution phase to diffuse and transfer through the membrane to the ketone or aldehyde phase and to form an oxime in the ketone or aldehyde phase, wherein the concentration of the hydroxylamine salt in the aqueous solution is from 5 to 60% by weight, the volume of the ketones or aldehyde phase is from 0.1 to 10 times the volume of the aqueous hydroxylamine salt solution phase.

5,254,735

PROCESS FOR PREPARING SOLID AMINE OXIDES

Kim R. Smith; Y.-D. Mark Chen; Rebecca F. Smith; James E. Borland, and Joe D. Sauer, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 724,127, Jul. 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 652,618, Feb. 8, 1991, abandoned. This application May 4, 1992, Ser. No. 878,265

Int. Cl.[5] C07C *291/00*

U.S. Cl. 564—298 17 Claims

1. In a process for preparing an amine oxide by reacting a tert-amine with at least a stoichiometric amount of an aqueous hydrogen peroxide having a concentration of at least 50% by weight, the improvement which comprises conducting at least the latter part of the reaction in the presence as the reaction medium of a normally gaseous material which (a) has a critical temperature <160° C. and a critical pressure <12 MPa, (b) is in a liquefied, densified, or supercritical state in which it has a density of at least 0.1 g/cc, and (c) is present in an amount sufficient to maintain the reaction mixture stirrable throughout the reaction; said amount being such as to provide a reaction medium/reactant weight ratio of at least 1/1.

5,254,736

PROCESS FOR THE PREPARATION OF DISSYMMETRIC ALIPHATIC SECONDARY ALKYLAMINES

Christian Forquy, Monein, France, assignor to CECA, S.A., France

Filed Jul. 28, 1992, Ser. No. 920,755

Claims priority, application France, Jul. 29, 1991, 91 09615

Int. Cl.[5] C07C *209/60*

U.S. Cl. 564—480 9 Claims

1. A process for the preparation of secondary methylalkyl amines of general formula:

$$R—NH—CH_3$$

in which R is C_{10}–C_{22} aliphatic chain, by amination reaction between an alcohol and a monoalkylamine comprising carrying out said amination reaction by catalysis with a supported nickel catalyst in the presence of potassium carbonate, the weight ratio between the potassium carbonate and the nickel catalyst being between 1:4 and 1:1, under a hydrogen pressure between 10 and 50 bars.

5,254,737

CONTINUOUS PREPARATION OF SECONDARY AMINES FROM NITRILES USING A TWO-STEP PROCESS

Robert L. Zimmerman, Austin, Tex., assignor to Texaco Chemical Company, White Plains, N.Y.

Filed Sep. 17, 1990, Ser. No. 583,109

The portion of the term of this patent subsequent to Jul. 14, 2009, has been disclaimed.

Int. Cl.[5] C07C *209/00*

U.S. Cl. 564—490 11 Claims

1. A continuous process for the preparation of secondary amines from nitriles comprising the steps of:

continuously passing a nitrile over a reduction, hydrogenation catalyst, in the presence of added ammonia and hydrogen to produce an intermediate reaction product; and

continuously passing the intermediate reaction product over the same catalyst in the presence of hydrogen but the absence of ammonia.

5,254,738

PREPARATION OF 1,4-ALKYLENEDIAMINES

Ulrich Koehler, Heidelberg; Hardo Siegel, Speyer, and Matthias Irgang, Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Lufwigshafen, Fed. Rep. of Germany

Filed Feb. 19, 1991, Ser. No. 657,632

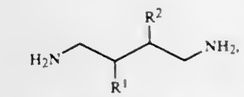
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1990, 4006979

The portion of the term of this patent subsequent to Jul. 21, 2009, has been disclaimed.

Int. Cl.[5] C07C *209/48*

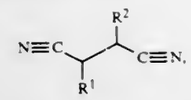
U.S. Cl. 564—491 10 Claims

1. A process for the preparation of a 1,4-alkylenediamine of the formula



(I)

in which the substituents R^1 and R^2 are independently hydrogen, C_1-C_{10}-alkyl, phenyl or benzyl, which comprises reacting a succinic dinitrile of the formula



(II)

in which R^1 and R^2 have the meanings stated, with hydrogen at a temperature of from 30° to 250° C. and a pressure of from 50 to 350 bar in contact with a hydrogenation catalyst, wherein the hydrogenation catalyst used contains cobalt oxide and one or more oxides of the elements iron, nickel, manganese, chromium, molybdenum, tungsten, and phosphorus and one or more oxides of elements in the alkali metal group, alkaline earth metal group, and rare earth group of the Periodic Table, and of scandium, and/or of yttrium.

VOL 1155 ISS 3 OCT 19 1993 UMI

5,254,739

PROCESS FOR THE PRODUCTION OF CYCLOPROPYLMETHYLKETONE

Roger Hunston, Blonay, and Rudolf Waditschatka, Gipf-Oberfrick, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 794,536, Nov. 19, 1919. This application Sep. 18, 1992, Ser. No. 947,658

Int. Cl.[5] C07C *45/67*

U.S. Cl. 568—346 26 Claims

1. A process for the production of cyclopropylmethylketone by heating from 160° C. to 220° C. α-acetyl-γ-butyrolactone in the presence of a halide, optionally in an inert solvent, characterized in that i) the halide is selected from the group of LiCl and MX_n, wherein M is $Li^{\oplus}$, $Na^{\oplus}$, $K^{\oplus}$ or quaternary phosphonium when n=1, and $Mg^{2\oplus}$ or $Ca^{2\oplus}$ when n=2, and X is $Br^{\ominus}$ or $I^{\ominus}$, ii) the said acetylbutyrolactone is added throughout the reaction continuously and simultaneously cyclopropylmethylketone is distilled off continuously, and iii) a large excess of the halide is maintained from the start to the end of the reaction.

5,254,740

METAL PHTHALOCYANINE OXIDATION CATALYSTS

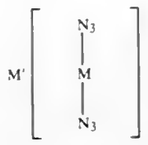
Paul E. Ellis, Jr., Downingtown, and James E. Lyons, Wallingford, both of Pa., assignors to Sun Company, Inc. (R&M), Philadelphia, Pa.

Filed Apr. 2, 1992, Ser. No. 862,038

Int. Cl.[5] C07C *45/33*

U.S. Cl. 568—399 3 Claims

1. Method of oxidizing alkanes which comprises contacting an alkane with air or oxygen and compound having the formula



where M is iron, cobalt, manganese or chromium, N^3 is azide, ◯ is phthalocyanine, and M′ is alkali metal or ammonium or tetraalkylammonium.

5,254,741

RHODIUM HYDROFORMYLATION CATALYSTS CONTAINING BISPHOSPHITE LIGANDS

Peter M. Lorz, Mannheim; Werner Bertleff, Viernheim; Michael Roeper, Wachenheim, and Dieter Koeffer, Weinheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

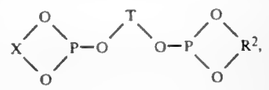
Continuation of Ser. No. 747,596, Aug. 20, 1991, Pat. No. 5,202,297. This application Oct. 28, 1992, Ser. No. 967,433

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1990, 4026406

Int. Cl.[5] C07C *45/50*

U.S. Cl. 568—454 1 Claim

1. A process for hydroformylating olefins having from 2 to 20 carbon atoms to their corresponding aldehydes which comprises carrying out the reaction at a temperature of from 20° C. to 200° C. and at a pressure of from 0.05 to 700 bar in the presence of a rhodium hydroformylation catalyst containing bisphosphite ligands of the formula I



I

where

-x- is a divalent bisarylene radical or R^1,

T is a divalent arylene or bisarylene radical, and

R^1 and R^2 are identical or different and are hydrocarbyl substituted or unsubstituted alkylene or ortho-arylene, the molar ratio of H_2:CO in the reaction being from 1:10 to 100:1.

5,254,742

PROCESS FOR PREPARING 2-HEXENE-1,6-DIAL

Yuji Ohgomori; Shuji Ichikawa; Takahiro Yoneyama, and Naoko Sumitani, all of Ibaraki, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Oct. 8, 1992, Ser. No. 958,091

Claims priority, application Japan, Oct. 8, 1991, 3-260846; Jan. 8, 1992, 4-1544

Int. Cl.[5] C07C *45/72*

U.S. Cl. 568—463 12 Claims

1. A process for preparing 2-hexene-1,6-dial, comprising: dimerizing 2-propenal in the presence of an organoruthenium dimerization catalyst.

5,254,743

SOLID BASES AS CATALYSTS IN ALDOL CONDENSATIONS

Jennifer S. Holmgren, Bloomingdale, and Blaise J. Arena, Chicago, both of Ill., assignors to UOP, Des Plaines, Ill.

Filed Dec. 9, 1992, Ser. No. 987,838

Int. Cl.[5] C07C *45/73, 45/72*

U.S. Cl. 568—463 31 Claims

1. A process for conducting the aldol condensation of a carbonyl compound of formula $R_mCH_2CR_nO$, where R_m is selected from the group consisting of alkyl or alkenyl moieties having from 1 to 20 carbon atoms, or an arylalkyl moiety where the aryl group is a phenyl, substituted phenyl, naphthyl, phenanthryl, or biphenylyl moiety and the alkyl group contains from 1 to 20 carbon atoms, and where R_n is selected from the group consisting of hydrogen, alkyl or alkenyl moieties having from 1 to 20 carbon atoms, or an arylalkyl moiety where the aryl group is a phenyl, substituted phenyl, naphthyl, phenanthryl, or biphenylyl moiety and the alkyl group contains from 1 to 20 carbon atoms, comprising flowing at a temperature between about 50° and about 300° C. a mass of said carbonyl compound through a fixed mass of a solid basic catalyst comprising a solid solution of a divalent first metal oxide and a trivalent second metal oxide having a surface area of at least 150 m^2 per gram, said first metal selected from the group consisting of magnesium, calcium, barium, nickel, cobalt, iron, copper, zinc, and any combination thereof, and said second metal selected from the group consisting of aluminum, gallium, chromium, cobalt, iron, lanthanum, and any combination thereof, where said first metal is not exclusively magnesium when said second metal is exclusively aluminum, and recovering from the effluent the aldol condensation products.

5,254,744

PREPARATION AND PURIFICATION OF POLY(TETRAMETHYLENE ETHER) FORMAL GLYCOLS AND POLY(OXYBUTYLENE FORMAL) GLYCOLS

John F. Neumer, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 28, 1992, Ser. No. 843,884

Int. Cl.[5] C07C *43/303*

U.S. Cl. 568—601 13 Claims

1. A process for the preparation of oligomeric formal diols comprising mixing and refluxing at 80°-81° C. cyclohexane solvent, formaldehyde, and one of the following glycols or mixtures of glycols, at a mole ratio in the range between 0.95(n−1) and 1.10(n−1) moles of formaldehyde per n mole of glycol in the presence of 1 to 10 weight percent (based on the weight of glycol) of solid montmorillonite catalyst:

(a) poly(tetramethylene ether) glycol having a number average molecular weight of 650 to 3,000.

(b) a mixture of poly(tetramethylene ether) glycol having a number average molecular weight of 650 to 3,000 and one or more glycols of the formula $HO(C_xH_{2x}O)_nH$ wherein x is 2 or 3 and n is from 5 to 50, or

(c) a glycol of the formula $HOC_yH_{2y}OH$ wherein y is 2 to 6; removing a distillate consisting of water and cyclohexane from the formal reaction product of (a), (b), or (c) and recovering a formal reaction product of (a), (b), or (c) having a number average molecular weight of 500 to 10,000.

5,254,745

MELAMINE POLYOLS COINITIATED WITH TOLUENE DIAMINE HAVING REDUCED VISCOSITY

Joachim Jähme, Bobenheim-Roxheim, Fed. Rep. of Germany, assignor to BASF Corporation, Parsippany, N.J.

Filed Nov. 12, 1991, Ser. No. 791,299

Int. Cl.[5] C07C *43/11*

U.S. Cl. 568—613 19 Claims

1. A polyether polyol prepared by oxyalkylating, with one or more alkylene oxides in the presence of potassium hydroxide, a mixture of initiators consisting essentially of:

a) toluene diamine;

b) melamine in an amount of from about 1 to about 30 weight percent based on the total weight of a), b), and c); and

c) optionally a minor amount with respect to toluene diamine, of an initiator other than toluene diamine or melamine.

5,254,746

HYDROXYLATION OF PHENOLS/PHENOL ETHERS

Michel Costantini, Lyon; Jean-Michel Popa, Drancy, and Michel Gubelmann, Lyon, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

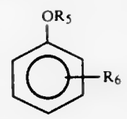
Continuation of Ser. No. 261,590, Oct. 24, 1988, abandoned. This application Aug. 19, 1992, Ser. No. 930,457

Claims priority, application France, Oct. 29, 1987, 62-15247

Int. Cl.[5] C07C *43/11*

U.S. Cl. 568—626 19 Claims

1. A process for the hydroxylation of a phenol or phenol ether having the general formula (I):



(I)

in which R_5 is a hydrogen atom, a methyl group, an ethyl group or a phenyl group, and R_6 is a hydrogen atom, an alkyl radical having from 1 to 4 carbon atoms, an alkoxy radical having from 1 to 4 carbon atoms or a phenyl or cyclohexyl radical, comprising reacting such phenol or phenol ether with hydrogen peroxide in the presence of a catalytically effective amount of a titanozeosilite comprising an MFI zeolite based on titanium oxide and silicon oxide and having a monoclinic crystalline structure.

5,254,747

FLUORINE-CONTAINING CHIRAL SMECTIC LIQUID CRYSTALS

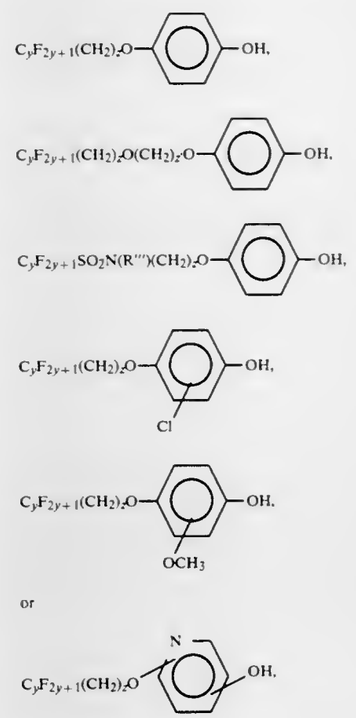
Eugene P. Janulis, Mahtomedi, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 373,898, Jun. 29, 1989, abandoned, which is a division of Ser. No. 53,551, May 29, 1987, Pat. No. 4,886,619, which is a continuation-in-part of Ser. No. 879,988, Jun. 30, 1986, abandoned. This application May 21, 1991, Ser. No. 703,393

Int. Cl.[5] C07C *43/23, 41/00, 27/10;* C09K *19/52*

U.S. Cl. 568—650 6 Claims

1. A compound represented by the formula



or

wherein z is 1 to 20, z′ is 1 to 20, and y is 1to 20.

5,254,748

METHYL-TERTIARY ETHER PRODUCTION

Harvey D. Hensley; Richard L. Anderson, both of Bartlesville, Okla., and Michael E. Olbrich, Naperville, Ill., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 577,182, Sep. 4, 1990, abandoned. This application Dec. 17, 1991, Ser. No. 809,687

Int. Cl.[5] C07C *41/06*

U.S. Cl. 568—697 4 Claims

4. An integrated process for producing tertiary alkyl ether compounds which joins isoolefin production and ether production by reacting an isoolefin with a primary alcohol under etherification conditions, said integrated process comprising the steps of:

(a) passing a structurally mixed hydrocarbon feed stream containing an isoolefin having four or five carbon atoms per molecule to an ether forming unit reaction zone;

(b) providing a primary alcohol containing one or two car-

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bon atoms per molecule to said ether forming unit reaction zone via an alcohol feed stream;

(c) reacting said isoolefin and said primary alcohol in said ether forming unit reaction zone under conditions sufficient to form tertiary alkyl ether and unreacted constituents and withdrawing said tertiary alkyl ether from said ether forming unit reaction zone in an ether product stream;

(d) withdrawing a residual stream of remaining unreacted constituents comprising isoparaffin, isoolefin, n-paraffin and n-olefin having four or five carbon atoms;

(e) passing a first portion of said residual stream to a combination hydrogenation/dehydrogenation unit reaction zone;

(f) contacting said said first portion of said residual stream with a supported Group VIII noble metal catalyst in said combination unit reaction zone under conditions sufficient for simultaneous conversion of a portion of said isoparaffin to an isoolefin and a portion of said n-olefin to an n-paraffin;

(g) withdrawing a reaction product stream from said combination unit reaction zone and passing at least a portion of said reaction product stream comprising at least a portion of said isoolefin to an ether forming unit reaction zone;

(h) withdrawing a second portion of said residual stream from said ether forming unit reaction zone and passing said second portion to an alkylation unit reaction zone;

(i) contacting said second portion of said residual stream with an acid catalyst tinder alkylation conditions in an alkylation zone to produce reaction constituents comprising alkylate product and n-butane;

(j) withdrawing an alkylate product stream and an n-butane stream from said alkylation zone;

(k) passing said n-butane stream to an isomerization unit for converting n-butane to isobutane; and

(l) withdrawing a recycle stream comprising isobutane from said isomerization unit and passing said recycle stream to said combination unit reaction zone.

5,254,749

PROCESS FOR PRODUCING DIPENTAERYTHRITOL

Yosbihiko Kambara; Toru Idemoto; Yasuki Ono, all of Takaishi, and Chika Tona, Sakai, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

PCT No. PCT/JP91/00004, § 371 Date Aug. 9, 1991, § 102(e) Date Aug. 9, 1991, PCT Pub. No. WO91/10633, PCT Pub. Date Jul. 25, 1991

PCT Filed Jan. 8, 1991, Ser. No. 741,518

Claims priority, application Japan, Jan. 9, 1990, 2-953; Sep. 26, 1990, 2-254130; Oct. 8, 1990, 2-268461

Int. Cl.[5] C07C *41/00, 43/00*

U.S. Cl. 568—698 **12 Claims**

1. A process for producing dipentaerythritol, comprising the steps of:

condensing pentaerythritol in a liquid polar solvent in the presence of an acid catalyst to produce dipentaerithritol;

lowering the temperature of the reaction mixture before the conversion of pentaerythritol reaches 25% to crystallize a part of pentaerythritol; and

removing the crystallized pentaerythritol from the reaction mixture containing dipentaerythritol in an increased concentration.

5,254,750

REMOVAL OF GUAIACOL FROM CRESYLIC ACID BY HEATING WITH A STRONG BASE

John A. Waters, Houston, Tex., assignor to Merichem Company, Houston, Tex.

Filed Apr. 5, 1993, Ser. No. 42,550

Int. Cl.[5] C07C *37/68, 37/70*

U.S. Cl. 568—749 **14 Claims**

1. A process for removing guaiacol impurities from a naturally occurring cresylic acid mixture which comprises the steps of:

heating the cresylic acid mixture for a sufficient period of time in the presence of an aqueous solution of a strong base at a temperature of from about 50° C. to about 350° C. at autogenous pressure;

cooling the mixture; and

recovering the cresylic acid product from the mixture.

5,254,751

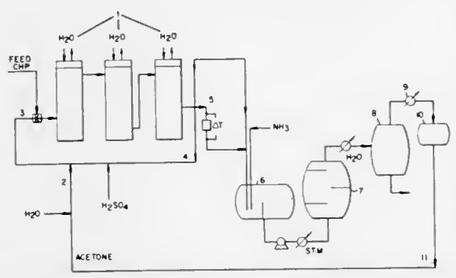
METHOD FOR THE DECOMPOSITION OF CUMENE HYDROPEROXIDE BY ACIDIC CATALYST TO PHENOL AND ACETONE

Vladimir M. Zakoshansky, St. Petersburg, U.S.S.R., assignor to General Electric Company, Pittsfield, Mass.

Filed Sep. 14, 1992, Ser. No. 944,688

Int. Cl.[5] C07C *37/08*

U.S. Cl. 568—798 **39 Claims**



1. An improved method for the decomposition of cumene hydroperoxide by acidic catalyst to phenol and acetone wherein the improvement comprises decomposing cumene hydroperoxide in a non-isothermal manner in the presence of excess acetone whereby the molar ratio of acetone to phenol in a decomposition reactor is from about 1.1:1 to 1.5:1 whereby the rate of decomposition of cumene hydroperoxide is reduced and the reaction is more controllable and more selective.

5,254,752

PREPARATION OF 4-HALOBENZYL ALCOHOLS

Franz Merger, Frankenthal; Martin Brudermueller, Mannheim, and Martin Schmidt-Radde, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

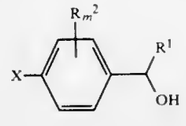
Filed Oct. 14, 1992, Ser. No. 960,774

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1991, 4134497

Int. Cl.[5] C07C *29/141, 27/04*

U.S. Cl. 568—812 **14 Claims**

1. A process for the preparation of a 4-halobenzyl alcohol of the formula



where

R^1 is hydrogen, C_1- to C_{20}- alkyl, C_2-to C_{20}-alkoxyalkyl, C_2- to C_{20}-cycloalkyl, or C_4- to C_{30}-alkoxyalkyl,

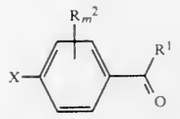
R^2 is C_1- to C_{20}-alkyl, C_2- to C_{20}- alkoxyalkyl, C_3- to C_{20}-cycloalkyl or C_4- to C_{30}-cycloalkylalkyl,

X is halogen and

m is 0 and 2,

which comprises:

reacting a haloaromatic carbonyl compound of the formula



where R^1, R^2, X and m are as defined above, with hydrogen on a hydrogenation catalyst containing copper oxide (I), copper oxide (II) or mixtures thereof in the presence of at least one primary, secondary or tertiary amine selected from the group consisting of acyclic, cyclic and heterocyclic aliphatic amines, and mixtures thereof, and in the presence or absence of an inert solvent, at from 50° to 130° C. and at from 10 to 200 bar.

5,254,753

PRODUCTION OF ARYL ETHANOLS

J. R. Durrwachter; G. N. Mott; H. Ramos, Jr., and Ahmed Tafesh, all of Corpus Christi, Tex., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Feb. 25, 1992, Ser. No. 841,138

Int. Cl.[5] C07C *29/141*

U.S. Cl. 568—814 **23 Claims**

1. A method for producing aryl ethanols which comprises

(a) providing an aryl methyl ketone of the formula

Ar—CO—CH_3

wherein Ar is an unsubstituted or substituted phenyl, or naphthyl radical, wherein the substituents are selected from the group consisting of hydroxyl, alkoxy, alkyl, phenyl, benzyl, sulfonic acid, and sulfonic acid radicals, wherein the alkyl substituent is a branched or unbranched D1-C8 alkyl radical, wherein said alkyl, phenyl, and benzyl radicals are unsubstituted or substituted with one or more substituents selected from hydroxyl, sulfonic acid, and sulficin acid radicals, and wherein siad phenyl and benzyl substituents are unsubstituted or substituted with a C1-C8 alkyl or C1-C8 alkoxy radical or both;

(b) oxidizing said aryl methyl ketone, using an alkyl nitrite in a mixture of a suitable acid and a primary or secondary alcohol at about −30° C. to about 35° C. to a ialkylacetal derivative of an aryl glyoxal wherein said alcohol contributes the alkyl groups in said dialkylacetal derivative;

(c) hydrolyzing said dialkylacetal derivative at about 15°-150° C. in an acid medium to its corresponding aryl glyoxal; and

(d) hydrogenating said aryl glyoxal in the presence of a transition metal catalyst on an inert support in a suitable solvent at about 10°-150° C. and at a hydrogen pressure of about 30-1,000 psi to aryl ethanol.

5,254,754

PROCESS FOR PREPARING ADDUCT OF UNSATURATED ALCOHOL AND IODINATED FLUOROALKANE

Yoshio Amimoto; Masaru Hirai; Sueyoshi Ishikawa, and Tatsuya Ohtsuka, all of Osaka, Japan, assignors to Daikin Industries Ltd., Osaka, Japan

Filed Jul. 14, 1991, Ser. No. 640,838

Claims priority, application Japan, Jan. 18, 1990, 2-9298

Int. Cl.[5] C07C *31/34*

U.S. Cl. 568—842 **8 Claims**

1. A process for preparing an addition product of an alkenol and a 1-iodofluoroalkane which comprises reacting the alkenol and the 1-iodofluoroalkane in the presence of at least one catalyst selected from the group consisting of azo compounds and peroxides and at least one additive selected from the group consisting of water, a salt of an alkali metal or an alkaline earth metal with a weak acid, silver nitrate and an alkyl oxirane or halooxirane.

5,254,755

PARTIALLY FLUORINATED ALKANOLS HAVING A TERTIARY STRUCTURE

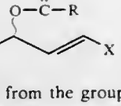
Chien C. Li, East Aurora; Kane D. Cook, Buffalo, and Rajat S. Basu, Williamsville, all of N.Y., assignors to Allied-Signal Inc., Del.

Division of Ser. No. 625,727, Dec. 4, 1990, abandoned. This application Nov. 6, 1991, Ser. No. 788,401

Int. Cl.[5] C07C *31/34*

U.S. Cl. 568—842 **2 Claims**

1. A compound having the formula



wherein R' is selected from the group consisting of CF_3CF_2CHF—, CF_3CHFCF_2—, $CHF_2(CF_2)_2$—, $CF_3CF_2CH_2$—, $CF_3(CHF)_2$—, $CF_3CH_2CF_2$—, CHF_2CF_2CHF—, CHF_2CHFCF_2—, $CHF(CF_2)_2$, CF_3CHFCH_2—, CF_3CH_2CHF—, $CHF_2CF_2CH_2$—, $CHF_2(CHF)_2$—, $CHF_2CH_2CF_2$—, CH_2FCF_2CHF—, $CH_2FCHFCF_2$—, $CH_3(CF_2)_2$—, $CF_3(CH_2)_2$—, CHF_2CHFCH_2—, CHF_2CH_2CHF—, $CH_2FCF_2CH_2$—, $CH_2F(CHF)_2$—, $CH_2FCH_2CF_2$—, CH_3CF_2CHF—, CH_3CHFCF_2—, $CHF_2(CH_2)_2$—, $CH_2FCHFCH_2$—, CH_2FCH_2CHF—, $CH_3CF_2CH_2$—, $CH_3(CHF)_2$—, $CH_3CH_2CF_2$—, $CH_2F(CH_2)_2$—, and CH_3CHFCH_2—.

5,254,756

PROCESS FOR THE PRODUCTION OF (2R,3E)-4-HALO-3-BUTEN-2-OLS

Markus Bänziger, Brig-Glis, and John McGarrity, Visp, both of Switzerland, assignors to Lonza Ltd., Basel, Switzerland

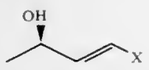
Filed Nov. 5, 1992, Ser. No. 971,564

Claims priority, application Switzerland, Nov. 15, 1991, 3339/91

Int. Cl.[5] C07C *33/42*

U.S. Cl. 568—843 **11 Claims**

1. A process for the production of a (2R, 3E)-4-halo-3-buten-2-ol of the formula:



I

where X is chlorine, bromine or iodine, from the corresponding racemic (2RS,3E)-4-halo-3-buten-2-ol, comprising reacting the racemic (2RS,3E)-4-halo-3-buten-2-ol with the corresponding acid anhydride or acid chloride in the presence of a tertiary amine into a corresponding racemic ester having the formula:

II

wherein R is selected from the group consisting of an alkyl group having 1 to 8 carbon atoms, and an alkyl group having 1 to 8 carbon atoms and being substituted with halogen, and X has the above mentioned meaning, and then enantioselectively hydrolyzing the corresponding racemic ester of formula II with a lipase from *Pseudomonas fluorescens*.

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5,254,757

PREPARATION OF 2,2-BIS-HYDROXYMETHYL-BUTANEDIOL-(1,4)

Franz Merger, Frankenthal, and Martin Schmidt-Radde, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

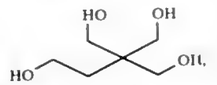
Filed Oct. 22, 1993, Ser. No. 964,865

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1991, 4134771

Int. Cl.[5] C07C *27/04, 29/145, 31/18*

U.S. Cl. 568—863 6 Claims

1. A process for the preparation of 2,2-bis-hydroxymethyl-butanediol-(1,4) of formula I



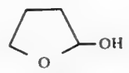
(I)

which comprises: condensing 4-hydroxybutyraldehyde of formula II



(II)

and/or 2-hydroxytetrahydrofuran of formula III



(III)

with formaldehyde in the presence of a basic catalyst at a temperature of from 0° to 100° C. catalytically hydrogenating the resulting reaction mixture at a temperature of from 70° to 200° C. and a pressure of from 1 to 200 bar and isolating 2,2-bis-hydroxymethyl-butanediol-(1,4) from the hydrogenation product.

5,254,758

HYDROGENATION PROCESS

Andrew G. Hiles, Pinner, and Michael W. M. Tuck, London, both of England, assignors to Davy McKee (London) Limited, London, England

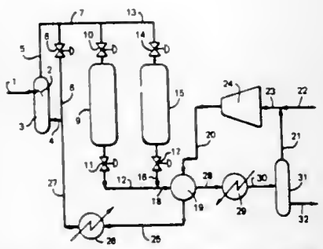
PCT No. PCT/GB90/01167, § 371 Date Feb. 12, 1992, § 102(e) Date Feb. 12, 1992, PCT Pub. No. WO91/01961, PCT Pub. Date Feb. 21, 1991

PCT Filed Jul. 27, 1990, Ser. No. 820,655

Claims priority, application United Kingdom, Aug. 4, 1989, 8917862

Int. Cl.[5] C07C *29/141, 29/145, 5/10*

U.S. Cl. 568—881 9 Claims



1. In a vapor phase hydrogenation process in which an organic feedstock is contacted with hydrogen in a hydrogenation zone under vapour phase hydrogenation conditions in the presence of a heterogeneous hydrogenation catalyst to produce a hydrogenation product of said organic feedstock, the improvement comprising providing a hydrogenation zone which includes first and second hydrogenation reactors connected in parallel, each containing a respective charge of the hydrogenation catalyst, supplying in a first phase of operation a vaporous feedstock mixture containing the organic feedstock and hydrogen to the first hydrogenation reactor only, recovering from the first hydrogenation reactor during said first phase of operation a vaporous product mixture comprising said hydrogenation product, supplying, in a second phase of operation subsequent to the first phase, the vaporous feedstock mixture to the second hydrogenation reactor only, recovering from the second hydrogenation reactor during said second phase of operation a vaporous product mixture comprising said hydrogenation product, supplying, in a third phase of operation subsequent to the second phase, the vaporous feedstock mixture simultaneously both to the first hydrogenation reactor and to the second hydrogenation reactor, and recovering from the first hydrogenation reactor and the second hydrogenation reactor in said third phase of operation a vaporous product mixture comprising said hydrogenation product.

5,254,759

CATALYTIC REMOVAL OF PEROXIDE CONTAMINANTS FROM TERTIARY BUTYL ALCOHOL

John R. Sanderson, Leander; John F. Knifton, Austin, and Melvin E. Stockton, Georgetown, all of Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Filed Jun. 12, 1992, Ser. No. 897,695

Int. Cl.[5] C07C *29/88, 31/12, 29/00*

U.S. Cl. 568—922 4 Claims

1. In a method for enhancing the quality of a tertiary butyl alcohol feedstock contaminated with peroxides including ditertiary butyl peroxide, tertiary butyl hydroperoxide and allyl tertiary butyl peroxide, the improvement comprising the steps of:

a. continuously contacting said feedstock in a peroxide decomposition reaction zone with a peroxide decomposition catalyst at a temperature of about 100° to about 300° C. for a period of time sufficient to substantially decompose said peroxide contaminants, and

b. recovering from the products of said reaction a tertiary butyl alcohol product contaminated with not more than about 300 ppm of peroxide contaminants,

c. said catalyst consisting essentially of finely divided ferric oxide deposited on particulate metallic iron.

5,254,760

INHIBITING POLYMERIZATION OF VINYL AROMATIC MONOMERS

Roland A. E. Winter, Armonk, N.Y.; Sheng-Shing Li, Danbury, Conn.; Leslie R. Gatecbair, Katonah, and Volker H. von Ahn, Mahopac, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 29, 1992, Ser. No. 921,824

Int. Cl.[5] C07C *7/20*

U.S. Cl. 585—5 23 Claims

1. A composition which comprises

(a) a vinyl aromatic compound, and

(b) an effective inhibiting amount, sufficient to prevent premature polymerization during distillation or purification of said vinyl aromatic compound, of a mixture of

(i) 5 to 95% by weight, based on the total weight of components (i) and (ii), of a stable hindered nitroxyl compound, and

(ii) 95 to 5% by weight, based on the total weight of components (i) and (ii), of an aromatic nitro compound.

5,254,761

PROCESS FOR SELECTIVE REDUCTION OF UNSATURATED ORGANIC COMPOUNDS

Dane K. Parker, Massillon, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 18, 1992, Ser. No. 885,082

Int. Cl.[5] C07C *5/00, 5/02, 5/04, 2/00*

U.S. Cl. 585—250 14 Claims

1. A process for reducing a reducible carbon-to-carbon multiple bond in a water-immiscible unsaturated organic compound containing the same and having a molecular weight not over 1000 which comprises contacting said organic compound with hydrazine or a hydrate thereof and an oxidant selected from the group consisting of oxygen, hydrogen peroxide and organic hydroperoxides in an alkaline emulsion comprising an aqueous phase containing water and an effective amount of metal ion initiator, a water immiscible organic phase containing said organic compound, and an effective stabilizing amount of an anionic surfactant.

5,254,762

Patent Not Issued For This Number

5,254,763

CATALYST AND PROCESS FOR THE SELECTIVE HYDROGENATION OF BENZENE

Udai S. Gill, 146-A Craig Henry Dr., Nepean, Ontario K2G 4M6; Craig W. Fairbridge, RR #2, 3563 Diamondview Rd., Kinburn, Ontario, both of Canada, and Brian A. Farnand, 18 Norwich Way, Nepean, Ontario, Canada K2G 5R3

Filed Dec. 2, 1991, Ser. No. 801,395

Int. Cl.[5] C07C *5/10*

U.S. Cl. 585—269 4 Claims

1. A process for the selective hydrogenation of benzene in an organic solution of other organic hydrocarbon compounds comprising: admixing said solution with water; adding a water-soluble organo-metallic hydrogenation catalyst; carrying out a catalytic hydrogenation in a hydrogenation zone at a temperature of about 45° to about 250° C. at a pressure of about 200 psi to about 500 psi in a biphasic system of said water and said organic solution, whereby said benzene is selectively solubilized in said water and thus is selectively hydrogenated in the presence of said water soluble organo-metallic catalyst and recovering said organic solution from said hydrogenation zone.

5,254,764

INTEGRATED PROCESS FOR PRODUCING ISO-BUTENE AND ALKYL TERT-BUTYL ETHERS

Ivano Miracca, Lodi, and Giorgio Fusco, Milan, both of Italy, assignors to Snamprogetti S.p.A., Milan, Italy

Filed Nov. 4, 1991, Ser. No. 787,790

Claims priority, application Italy, Feb. 28, 1991, M191 A 000519

Int. Cl.[5] C07C *5/03*

U.S. Cl. 585—324 1 Claim

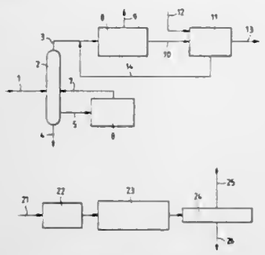
1. An integrated process for producing iso-butene and tert-butyl methyl ether or tert-butyl ethyl ether, comprising:

a) dehydrogenating a stream containing iso-butane, then compressing and partially condensing the gases produced to obtain, after separation, a gaseous stream containing hydrogen, nitrogen and C_1-C_4 hydrocarbons, and a liquid stream containing mainly C_4 hydrocarbons;

b) feeding said gaseous stream to an absorption column employing solvent to obtain from the top a gaseous mixture containing essentially hydrogen, nitrogen and C_1-C_3 hydrocarbons and from the bottom a liquid mixture containing essentially C_4 hydrocarbons and the spent solvent;

c) feeding said liquid stream containing mainly C_4 hydrocarbons to a distillation column to obtain from the top a gaseous mixture containing essentially C_3 hydrocarbons and from the bottom a liquid mixture containing iso-butane and iso-butene;

d) feeding the liquid mixture containing iso-butane and iso-butene from stage c) to a reactor, or to a first reactor if two or more reactors are used, together with methanol or ethanol to obtain the tert-butyl methyl ether or tert-butyl ethyl ether;



e) feeding the product from the reactor to a distillation column to obtain from the top a stream containing mainly the unreacted gases and from the bottom a liquid containing essentially tert-butyl methyl ether or tert-butyl ethyl ether;

f) feeding the stream containing mainly unreacted gases from stage e) directly to a wash column if only one reactor is used, or to a second reactor if two or more reactors are used, then feeding the product from said second reactor to a distillation column to obtain from the bottom a liquid mixture containing tert-butyl methyl ether or tert-butyl ethyl ether, which is recycled to the distillation column of stage e), or to a third reactor if several reactors are used, and from the top a mixture containing mainly unreacted gases, this stream being fed to a wash column; and

g) separation in the wash column to obtain from the top essentially the unreacted C_4 hydrocarbons and from the bottom a liquid mixture containing essentially water and methanol or ethanol used, these then being separated in a distillation column, wherein the solvent used in the column stage b) is a fraction of methanol or ethanol which is used in the process.

5,254,765

PROCESS AND APPARATUS FOR THE PRODUCTION OF AROMATIC HYDROCARBONS FROM AN ALIPHATIC HYDROCARBON CHARGE IN A REACTOR HEATED BY A FLUIDIZED PARTICLE BED

Gerard Martin, Rueil Melmaison, and Pierre Renard, Saint Nom La Breteche, both of France, assignors to Institut Francais de Petrole, Rueil Malmaison, France

Filed Dec. 3, 1990, Ser. No. 620,412

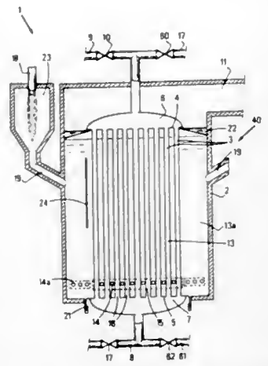
Int. Cl.[5] C07C *15/00, 2/52*

U.S. Cl. 585—407 14 Claims

1. In a process for the production of aromatic hydrocarbons in a reaction zone incorporating a plurality of reaction tubes, said process comprising a stage a) of contacting inside said reaction tubes a charge of at least one aliphatic hydrocarbon with 2 to 12 carbon atoms and a zeolitic catalyst composition optionally containing at least one metal, under reaction conditions such that a mixture is recovered containing aromatic hydrocarbons and a spent zeolitic catalyst with a minimum of coke deposited during the reaction, said reaction tubes being heated by indirect heat exchange in an enclosure containing a fluidized particle bed fluidized by fluidization gas, whereby outside walls of said reaction tubes are heated by said fluidized particle bed, the improvement comprising heating said fluidized bed at least partly by a heat supply resulting from the injection of hot gases produced in an area outside said enclo-

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sure, and introducing the externally produced hot gases into the fluidized bed separately from said fluidization gas under



conditions so as to provide a reaction temperature inside said reaction tubes of 400° to 600° C.

5,254,766
PROCESS FOR PRODUCING ALKYL-SUBSTITUTED AROMATIC HYDROCARBON USING HETEROPOLYACID SALTS

Terunori Fujita, Ohtake; Kazunori Takahata, Hatsukaichi; Hiroyasu Ohno, Hiroshima; Masayasu Ishibashi, Yamaguchi, and Hideo Oikawa, Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Oct. 9, 1991, Ser. No. 773,264
Claims priority, application Japan, Oct. 16, 1990, 2-277026; Mar. 14, 1991, 3-049710; Mar. 14, 1991, 3-049711; Jul. 19, 1991, 3-179283; Jul. 22, 1991, 3-204546; Jul. 22, 1991, 3-204547
Int. Cl.[5] C07C *2/70*
U.S. Cl. 585—467 11 Claims

1. A process for producing an alkyl-substituted naphthalene or naphthalene derivative, which comprises alkylating naphthalene or naphthalene derivative with an alkylating agent in the presence of a salt of a heteropoly-acid as a catalyst, said alkylating agent being selected from the group consisting of C_2–C_{20} monoolefins and said salt of said heteropoly-acid being at least one compound selected from the group consisting of a compound of formula (1)

$$K_xH_{3-x}PW_{12}O_{40} \quad (1)$$

wherein x is 0.5 to 2.8, and a compound of formula (2)

$$M_xH_{4-x}SiW_{12}O_{40} \quad (2)$$

wherein M is a metal belong to the group Ia of the periodic table, and x is as defined above.

5,254,767
HIGHLY SILICEOUS POROUS CRYSTALLINE MATERIAL AND ITS USE IN CONVERSION OF OXYGENATES

Francis G. Dwyer, West Chester, Pa., assignor to Mobil Oil Corp., Fairfax, Va.

Division of Ser. No. 587,327, Mar. 7, 1984, abandoned, which is a division of Ser. No. 373,451, Apr. 30, 1982, abandoned. This application Jun. 22, 1984, Ser. No. 623,585
Int. Cl.[5] C07C *1/20*
U.S. Cl. 585—469 3 Claims

1. A process for converting lower alcohols and/or related oxygenates to gasoline-grade boiling hydrocarbons comprising contacting a feedstock of methanol and/or related oxygenates with a zeolite catalyst comprising ZSM-22 under such temperature and pressure conditions to convert at least a portion of the feedstock to gasoline-grade hydrocarbons.

5,254,768
PROCESS FOR PRODUCING 3,3',4,4'-TETRAMETHYLDIPHENYLMETHANE

Shuta Kihara, Hiratsuka, Japan, assignor to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Feb. 7, 1992, Ser. No. 832,712
Claims priority, application Japan, Mar. 1, 1991, 3-059444
Int. Cl.[5] C07C *5/22*
U.S. Cl. 585—477 11 Claims

1. A process for producing 3,3',4,4'-tetramethyldiphenylmethane which comprises isomerizing a tetramethyldiphenylmethane containing at least one of 2,3,3',4'-tetramethyldiphenylmethane and 2,2',3,3'-tetramethyldiphenylmethane in the presence of a catalyst and a solvent to convert said tetramethyldiphenylmethane into 3,3',4,4'-tetramethyldiphenylmethane, wherein the catalyst is at least one catalyst selected from the group consisting of a Bronstead acid, a Lewis acid, a Friedel-Crafts catalyst and a zeolite catalyst and the solvent is o-xylene.

5,254,769
METHOD OF ISOMERIZATION OF DIMETHYLNAPHTHALENES

Makoto Takagawa; Ken Yamagishi, and Kazuo Nagagata, all of Tsukuba, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Mar. 16, 1992, Ser. No. 851,827
Claims priority, application Japan, Jun. 21, 1991, 3-177648; Oct. 23, 1991, 3-304104
Int. Cl.[5] C07C *5/22*
U.S. Cl. 585—477 17 Claims

1. A method of isomerization of dimethylnaphthalenes to 2,6-dimethylnaphthalene which comprises heating in a pressured vessel a mixture of dimethylnaphthalenes in a liquid phase comprising a solvent consisting essentially of a straight chain saturated aliphatic hydrocarbon having 5 to 12 carbon atoms at a temperature of from 70 ° to 150° C. in the presence of a catalyst consisting essentially of hydrogen fluoride.

5,254,770
ISOMERIZATION OF AROMATIC COMPOUNDS OVER ZSM-22 ZEOLITE

David H. Olson, Pennington, N.J.; Ernest W. Valyocsik, Yardley, Pa., and R. Bruce Calvert, Plainsboro, N.J., assignors to Mobil Oil Corp., Fairfax, Va.

Continuation of Ser. No. 531,585, Sep. 13, 1983, abandoned, which is a continuation of Ser. No. 413,958, Sep. 1, 1982, abandoned. This application Sep. 19, 1984, Ser. No. 652,164
Int. Cl.[5] C07C *5/27*
U.S. Cl. 585—481 15 Claims

1. In a process for isomerizing xylenes from a hydrocarbon mixture to produce a product stream comprising substantially an equilibrium mixture of xylene isomers, said process comprising contacting the hydrocarbon mixture with a catalyst comprising a zeolite, the improvement for selectively isomerizing said xylenes by minimizing xylene loss due to undesired side reactions, said improvement comprising selecting as said zeolite a ZSM-22 zeolite having a silica:alumina mole ratio of at least about 20 and having the X-ray diffraction pattern of Table I.

5,254,771
PROCESS FOR THE PREPARATION OF 1,1,1-TRIFLUORO-2-2-DICHLOROETHANE UNDER ELEVATED PRESSURE

Hans R. Cremer, Kerpen; Günter Siegemund, Hofheim am Taunus, and Wilhelm Lendle, Bad Soden am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 839,054, Feb. 18, 1992, abandoned, which is a continuation of Ser. No. 551,891, Jul. 12, 1990, abandoned. This application Feb. 26, 1993, Ser. No. 23,864
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1989, 3923248
Int. Cl.[5] C07C *17/00*
U.S. Cl. 570—123 17 Claims

1. A process for the preparation of 1,1,1-trifluoro-2,2-dichloroethane by chlorinating 1,1,1-trifluoro-2-chloroethane, which comprises thermally initiating the chlorination and carrying out said chlorination at temperatures from 150° to 400° C. and under an elevated pressure in a reaction mixture which is present in a supercritical state or in the liquid phase, said elevated pressure ranging from about 50 to about 400 bar.

5,254,772
CHEMICAL PROCESS

Wolfgang W. Dukat, Konigstein, Fed. Rep. of Germany; John H. Holloway, Leicester; Eric G. Hope, Warwickshire, both of England; Matthias Rieland, Hanover, Fed. Rep. of Germany; Paul J. Townson, Lancashire, and Richard L. Powell, Cheshire, both of England, assignors to Imperial Chemical Industries PLC, London, England

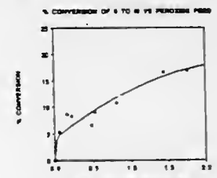
Filed Mar. 12, 1992, Ser. No. 849,604
Claims priority, application United Kingdom, Mar. 12, 1991, 9105167
Int. Cl.[5] C07C *17/20, 17/00*
U.S. Cl. 570—170 8 Claims

1. A process for the preparation of an alkane containing fluorine which comprises contacting a halogenated alkane containing at least one hydrogen atom and at least one halogen atom selected from chlorine, bromine and iodine with a transition metal fluoride selected from osmium hexafluoride, iridium hexafluoride, rhenium hexafluoride, ruthenium pentafluoride, vanadium pentafluoride and rhenium heptafluoride, and replacing at least one hydrogen atom or at least one chlorine, bromine or iodine atom in said halogenated alkane by a fluorine atom.

5,254,773
PROCESS FOR PREPARING TELOMERS FROM ETHYLENE AND ALPHA, OMEGA-DIBROMOPERFLUOROALKYLALKANES IN THE PRESENCE OF ORGANIC FREE-RADICAL GENERATORS

Antony P. Wright, Rhodes, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Feb. 26, 1993, Ser. No. 23,510
Int. Cl.[5] C07C *17/28, 19/08*
U.S. Cl. 570—172 18 Claims



1. In a process for the preparation of a telomer having the formula $BrCH_2CH_2(CF_2CFX)_nCH_2CH_2Br$ comprising reacting a telogen of the formula $Br(CF_2CFX)_nCH_2CH_2Br$ with ethylene in the presence of an organic free-radical generator, wherein X is independently selected from the group consisting of a fluorine radical and a trifluoromethyl radical and n is an integer having a value of 1–5, inclusive, the improvement comprising using at least 0.05 mole of said free-radical generator for each mole of said telogen.

5,254,774
PREPARATION OF HEXAFLUOROPROPENE OLIGOMERS

Robert A. Prokop, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 28, 1992, Ser. No. 997,600
Int. Cl.[5] C07C *17/26, 21/18*
U.S. Cl. 570—138 10 Claims

1. A process for the oligomerization of hexafluoropropene comprising contacting hexafluoropropene with a catalyst or a mixture of catalysts selected from the group consisting of the cyanide, cyanate, and thiocyanate salts of alkali metals, quaternary ammonium, and quaternary phosphonium, in the presence of polar, aprotic solvent.

5,254,775
CHEMICAL PROCESS

John H. Holloway, Stoneygate; Eric G. Hope, Rugby; Paul J. Townson, Preston, and Richard L. Powell, Tarporley, all of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Mar. 12, 1992, Ser. No. 849,603
Claims priority, application United Kingdom, Mar. 12, 1991, 9105166
Int. Cl.[5] C07C *17/20*
U.S. Cl. 570—170 7 Claims

1. A process for the preparation of an alkane containing fluorine which process comprises contacting a halogenated alkane containing at least one halogen atom selected from chlorine, bromine and iodine with a transition metal oxide fluoride which is an oxide fluoride of molybdenum, rhenium and osmium whereby to replace at least one chlorine, bromine or iodine atom in said halogenated alkane by a fluorine atom.

5,254,776
SYNTHESIS OF BROMOBIPHENYLS

John F. Lang, Webster Groves, and Narayanasamy Gurusamy, Ballwin, both of Mo., assignors to Mallinckrodt Specialty Chemicals Company, Chesterfield, Mo.

Filed Jul. 17, 1992, Ser. No. 916,301
Int. Cl.[5] C07C *25/18*
U.S. Cl. 570—190 22 Claims

1. A method of producing a bromobiphenyl compound comprising reacting together
a. a phenylboronic acid, and
b. a bromoiodobenzene.

5,254,777
CATALYTIC HYDROCHLORINATION SYSTEM AND PROCESS FOR THE MANUFACTURE OF VINYL CHLORIDE FROM ACETYLENE AND HYDROGEN CHLORIDE IN THE PRESENCE OF THIS CATALYTIC SYSTEM

Michel Strebelle, Brussels, and André Devos, Sint-Stevens-Woluwe, both of Belgium, assignors to Solvay (Société Anonyme), Brussels, Belgium

Filed Jun. 18, 1992, Ser. No. 901,168
Claims priority, application Belgium, Jun. 20, 1991, 9100600
Int. Cl.[5] C07C *17/08*
U.S. Cl. 570—233 6 Claims

1. A process for the manufacture of vinyl chloride, comprising reacting acetylene with hydrogen chloride in the presence of a liquid catalytic system comprising at least one group VIII metal compound, a fatty amine hydrochloride whose melting point is greater than 25° C. and an organic solvent chosen from the aliphatic, cycloaliphatic and aromatic hydrocarbons and their mixtures to produce vinyl chloride.

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5,254,778

LITHIUM/MAGNESIUM OXIDE CATALYST AND METHOD OF MAKING

Jack H. Lunsford, Bryan, and Paul G. Hinson, College Station, both of Tex., assignors to The Texas A & M University System, College Station, Tex.

Division of Ser. No. 483,357, Feb. 22, 1990, Pat. No. 5,041,405. This application Jun. 6, 1991, Ser. No. 711,210

Int. Cl.[5] C07C *2/00*

U.S. Cl. 585—500 **7 Claims**

1. An improved method for converting methane to ethane and ethylene comprising:

preparing a catalyst, the method for preparation of the catalyst comprising:

mixing a solution of a magnesium alkoxide in an alcohol with a solution of lithium ions in an alcohol;

hydrolyzing the magnesium alkoxide in the solution to form a gel; and

calcining the gel to form a catalyst which is effective for converting methane to ethane and ethylene; and

contacting methane and oxygen with an effective amount of the catalyst at temperatures less than about 700° C. to convert part of the methane to ethane and ethylene.

5,254,779

PROCESS FOR OXIDATIVE DEHYDROGENATION OF PROPANE

Carlo Mazzocchia; Ezio Tempesti, and Chafic Aboumrad, all of Tour Aurore - Place des Reflets, F-92080 Paris La Defense - Cedex 5, France

Division of Ser. No. 652,210, Feb. 5, 1991, Pat. No. 5,086,032, which is a continuation of Ser. No. 465,785, Jan. 18, 1990, abandoned. This application Oct. 1, 1991, Ser. No. 769,488

Claims priority, application France, Jan. 18, 1989, 89 00552

Int. Cl.[5] C07C *2/00, 5/327, 5/370*

U.S. Cl. 585—500 **16 Claims**

1. A process for the dehydrogenation of propane to propene, comprising contacting propane with molecular oxygen at a temperature of from 400° to 700° C. and at a pressure not exceeding 0.4 MPa in the presence of a catalyst of the following formula:

$$, Ni_aMoO_x \quad (I)$$

in which:

a is a number from 0.6 to 1.3, and

x is a number determined by the valency requirements of nickel and of molybdenum.

5,254,780

Patent Not Issued For This Number

5,254,781

OLEFINS PROCESS WHICH COMBINES HYDROCARBON CRACKING WITH COUPLING METHANE

Narasimhan Calamur, Willowbrook; George A. Huff, Jr., Naperville, and Harold A. Lindahl, Riverside, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Dec. 31, 1991, Ser. No. 815,244

Int. Cl.[5] C07C *2/00*

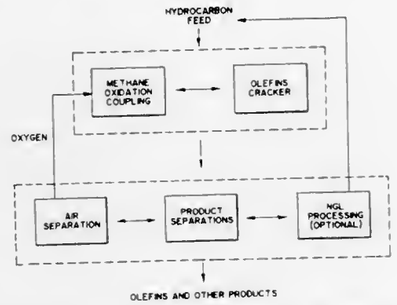
U.S. Cl. 585—500 **11 Claims**

1. A process to make olefins which combines cracking of a hydrocarbon feedstock with the coupling of methane, said process comprising:

the coupling in a first zone of a first feed which is essentially methane using an oxygen-affording gas to produce a product containing C_2 hydrocarbons;

hydrocarbon cracking in a second zone of a second feed which contains predominantly saturated hydrocarbons to form primarily an olefin-containing product;

effectively transferring heat evolved by said coupling from said first zone to said second zone to provide a majority of the heat required by said cracking without mixing the hot effluent of said coupling into said second zone;



combining the C_2+ containing portions of the effluents from said first zone and said second zone and individually separating the methane and at least the ethylene and propylene olefinic hydrocarbon components thereof; and

returning unreacted methane contained in the effluent of said first zone together with methane contained in the effluent of said second zone to the feed to said first zone.

5,254,782

CONTINUOUS PROCESS FOR THE TELOMERIZATION OF CONJUGATED DIENES

Barend J. Schaart; Hendrik L. Pelt, both of Terneuzen, and Grant B. Jacobsen, Hoek, all of Netherlands, assignors to The Dow Chemical Company, Midland, Mich.

PCT No. PCT/EP90/02263, § 371 Date Aug. 16, 1991, § 102(e) Date Aug. 16, 1991

PCT Filed Dec. 21, 1990, Ser. No. 768,541

Claims priority, application Netherlands, Dec. 29, 1989, 8903182

Int. Cl.[5] C07C *2/18*

U.S. Cl. 585—509 **17 Claims**

1. Continuous process for the telomerization of conjugated dienes comprising reacting in a reaction zone a conjugated diene with a compound containing an active hydrogen atom in the liquid phase in the presence of a Group VIII transition metal catalyst, a ligand compound selected from the group of tertiary phosphorous, tertiary arsenic and tertiary antimony compounds, and a catalyst promoter compound having basic properties, wherein at least 10,000 moles of conjugated diene are fed to the reaction zone per gram atom of the Group VIII transition metal of the catalyst fed to the reaction zone and the catalyst is not recycled.

5,254,783

CATALYST COMPRISING AMORPHOUS NIO ON SILICA/ALUMINA SUPPORT AND PROCESS FOR BUTENE DIMERIZATION

Ramzi Y. Saleh, Flemington; Stuart L. Soled, Pittstown, and Nicholas C. Dispenziere, Wall, all of N.J., assignors to Exxon Chemical Patents, Inc., Linden, N.J.

Division of Ser. No. 644,998, Jan. 22, 1991, Pat. No. 5,169,824. This application Aug. 31, 1992, Ser. No. 938,094

Int. Cl.[5] C07C *2/04*

U.S. Cl. 585—512 **10 Claims**

1. A process for preparing a mixture of isomeric octenes having an average of less than about 1.6 side chain methyl groups per molecule which comprises contacting butene at a temperature between about 150° to 275° C. and under pressure with a catalyst comprising NiO present as a continuous, dispersed substantial monolayer on the surfaces of a silica support having a surface area within the range of about 100 to 450 m^2/g, said support further containing an oxide of a trivalent metal selected form the group consisting of aluminum, gallium and indium, the quantity of said NiO present on said support being in the range of form about 0.07 to 0.12% by weight per square meter of support surface area, and the weight ratio of NiO to trivalent metal oxide present in said support being at least about 4 to 1, and recovering said octene product.

5,254,784

METHOD FOR RECOVERING A GASEOUS BORON TRIFLUORIDE BF_3 AND THE USAGE OF THE PRODUCT FORMED IN THE METHOD

Matti Nurminen; Fredrik Nissfolk; Raimo Linnaila, and Vesa-Matti Happonen, all of Porvoo, Finland, assignors to Neste Oy, Finland

Filed Dec. 20, 1991, Ser. No. 811,315

Claims priority, application Finland, Dec. 21, 1990, 906352

Int. Cl.[5] C07C *2/22*

U.S. Cl. 585—525 **10 Claims**

1. A method for recovering a gaseous boron trifluoride BF_3 from the exhaust gases of a sub-atmospheric pressure distillation, comprising the steps of:

performing a distillation to separate a catalyst complex from a reaction product,

pumping the gaseous component of the distillation under a sub-atmospheric pressure either by a liquid sealed rotary pump or an ejector pump, and

achieving a liquid ring in said liquid sealed rotary pump or correspondingly a fluid moment in said ejector pump by means of a complex formed by a liquid BF_3 and a C_1-C_{15} alcohol or by means of a fluid jet of this alcohol.

5,254,785

PRODUCTION OF OLEFINS

David D. Rosenfeld; Derrick D. Pete, both of Houston; Larry L. Iaccino, Friendswood, and Barrington M. Hammond, Houston, all of Tex., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Filed Jun. 9, 1992, Ser. No. 895,958

Int. Cl.[5] C07C *1/00*

U.S. Cl. 585—640 **21 Claims**

1. A process for the selective conversion of alkyl ethers containing about 5 to 12 carbon atoms to their corresponding olefins comprising contacting a feed containing one or a mixture of said ethers with a faujasite catalyst having a silica to alumina ratio of from about 3 to 1 to about 6 to 1 and a pore dimension in excess of about 6 angstroms, under conditions of temperature and pressure sufficient to convert a substantial quantity of ether to olefin, said catalyst further characterized that at least 50% by weight of the original content of alkali metal present in said catalyst has been exchanged with at least one alkaline earth metal.

5,254,786

OLEFIN DISPROPORTIONATION CATALYST AND PROCESS

Jiang-Jen Lin; Randall T. DePue, both of Houston, and Howard L. Fong, Sugar Land, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 572,736, Aug. 27, 1990, Pat. No. 5,098,876. This application Dec. 20, 1991, Ser. No. 811,216

Int. Cl.[5] C07C *6/04, 6/06*

U.S. Cl. 585—645 **35 Claims**

1. A process for the disproportionation of olefinic hydrocarbons having carbon numbers ranging from C_2 to about C_{50} which comprises contacting at least one olefinic hydrocarbon with a catalyst comprising at least one of molybdenum and rhenium supported on an inorganic oxide support promoted with an organoborane compound.

5,254,787

DEHYDROGENATION AND DEHYDROCYCLIZATION USING A NON-ACIDIC NU-87 CATALYST

Ralph M. Dessau, Edison, N.J., assignor to Mobil Oil Corp., Fairfax, Va.

Filed Sep. 8, 1992, Ser. No. 941,811

Int. Cl.[5] C07C *5/02*

U.S. Cl. 585—654 **14 Claims**

1. A process for the dehydrogenation of an aliphatic compound containing at least 2 carbon atoms comprising contacting the aliphatic compound under dehydrogenation conditions with a catalyst composition comprising a non-acidic zeolite having the structure of NU-87 and a Group VIA or Group VIII metal.

5,254,788

PROCESS FOR THE PRODUCTION OF OLEFINS FROM LIGHT PARAFFINS

Robert J. Gartside, Summit, N.J., and Axel R. Johnson, N. Babylon, N.Y., assignors to Stone and Webster Engineering Corporation, Boston, Mass.

Filed Sep. 10, 1991, Ser. No. 757,177

Int. Cl.[5] C07C *5/333, 5/327*

U.S. Cl. 585—659 **39 Claims**

1. A process for producing olefins from a paraffin having five or fewer carbon atoms, comprising:

(a) introducing a dehydrogenation catalyst to the top of a tubular downflow reactor to produce a fluidized catalyst stream;

(b) introducing a feed stream comprising a paraffin having five or fewer carbon atoms into the catalyst stream at a feed introduction point;

(c) mixing the catalyst stream and the feed stream in a mixing zone to produce a mixed stream;

(d) passing the mixed stream downward through a reaction zone at a temperature of from about 900° F. to about 1600° F. and a pressure of from about 10 to about 100 psig to produce an effluent comprising olefins; and

(e) passing the effluent through a separator to separate the catalyst from the effluent, thereby producing a separated catalyst stream and a clean effluent stream;

wherein the kinetic residence time of said process is from about 0.1 to about 2.0 seconds.

5,254,789

PROCESS FOR ISOMERIZING OLEFINS IN GASOLINE STREAMS

Gregory J. Gajda, Mount Prospect, Ill., assignor to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 776,541, Oct. 11, 1991, abandoned, which is a continuation-in-part of Ser. No. 477,016, Feb. 8, 1990, Pat. No. 5,057,635. This application Aug. 28, 1992, Ser. No. 937,614

The portion of the term of this patent subsequent to Oct. 15, 2008, has been disclaimed.

Int. Cl.[5] C07C *5/27*

U.S. Cl. 585—671 **19 Claims**

1. A process for the isomerization of isomerizable olefins having a ratio of branched to unbranched olefins of from about 0.05 to 1.5 in a stable olefinic stream containing less than about 0.1 mass % highly unsaturated hydrocarbons comprising contacting the stable olefinic stream at olefin-isomerization conditions with an isomerization catalyst containing at least one medium-pore molecular sieve to produce an isomerized product having a ratio of branched to unbranched olefins at least 0.1 greater than that of the stable olefinic stream.

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5,254,790

INTEGRATED PROCESS FOR PRODUCING MOTOR FUELS

Gregory D. Thomas, Martinez, Calif., and Vernon A. Cawi, Tulsa, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 1, 1992, Ser. No. 907,500
Int. Cl.[5] C07C *2/56, 5/25*
U.S. Cl. 585—717 20 Claims

1. A process for converting gasoline components to motor fuel components of lower volatility and higher octane rating which comprises the steps of:

(1) subjecting at least one gasoline feedstock comprising hydrocarbons containing 4–12 carbon atoms per molecule to fractional distillation under such conditions as to obtain an overhead fraction comprising primarily hydrocarbons containing 4–5 carbon atoms per molecule and a bottoms fraction comprising primarily hydrocarbons containing at least 6 carbon atoms per molecule;

(2) contacting the overhead fraction obtained in step (1) with added hydrogen gas and an effective hydroisomerization catalyst under such conditions as to substantially convert n-pentene-1 being present in said overhead fraction to n-pentene-2 and to substantially hydrogenate 1,3-pentadiene present in said overhead fraction to n-pentane;

(3) contacting the hydroisomerate obtained in step (2) with added methanol and an effective etherification catalyst in an etherification reactor so as to substantially convert the added methanol and at least one amylene selected from the group consisting of 2-methylbutene-2 and 2-methylbutene-1 contained in said hydroisomerate to tertiary-amyl methyl ether;

(4) separating the formed tertiary-amyl methyl ether from hydrocarbons containing 4–5 carbon atoms per molecule being present in the etherification product obtained in step (3);

(5) subjecting the hydrocarbons containing 4–5 carbon atoms per molecule obtained in step (4) to fractional distillation under such conditions as to obtain an overhead fraction containing primarily butenes and a bottom fraction containing primarily C5 paraffins and C5 olefins;

(6) subjecting the debutanized bottoms fraction obtained in step (5) to fractional distillation under such conditions as to obtain an overhead fraction containing primarily at least one isopentane and a bottoms fraction containing primarily internal amylenes and n-pentane; and

(7) introducing the overhead fraction from step (5), the bottoms fraction from step (6), and additional isobutane from an external source into an alkylation reactor, and contacting the thus-obtained hydrocarbon mixture with an effective alkylation catalyst under such conditions as to obtain an alkylation reaction product containing primarily paraffins containing at least 8 carbon atoms per molecule.

5,254,791

CYCLOALKANE ISOMERIZATION PROCESS

An-hsiang Wu; Lyle R. Kallenbach, and Marvin M. Johnson, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 28, 1993, Ser. No. 10,372
Int. Cl.[5] C07C *5/29*
U.S. Cl. 585—372 14 Claims

1. A process for isomerizing cycloalkanes which comprises contacting, at a reaction temperature of about 0°–100° C., at least one cycloalkane containing 5–10 carbon atoms per molecule with a solid catalyst composition at effective isomerization conditions,

wherein said catalyst composition has been prepared by a method comprising the steps of (1) heating in the substantial absence of water, at a temperature of about 40°–90° C., a mixture comprising (a) aluminum chloride, (b) at least one solid boron-containing material selected from the group consisting of boron phosphate on silica, boron phosphate on activated carbon and boron sulfate on silica, and (c) at least one chlorinated hydrocarbon having a normal boiling point of about 40°–90° C., wherein the weight ratio of aluminum chloride to said at least one solid boron-containing material is at least about 0.25:1; and (II) separating the solid material contained in the reaction mixture obtained in step (1) from said at least one chlorinated hydrocarbon under a dry gas atmosphere.

5,254,792

ISOPARAFFIN:OLEFIN ALKYLATION IN THE PRESENCE OF SYNTHETIC POROUS MCM-49

Altaf Husain, Marlton, N.J.; Albin Huss, Jr., Chadds Ford, Pa.; Donald J. Klocke, Somerdale, and Hye K. C. Timken, Woodbury, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Oct. 10, 1991, Ser. No. 774,482
Int. Cl.[5] C07C *2/56*
U.S. Cl. 585—722 22 Claims

1. An isoparaffin:olefin alkylation process comprising contacting isoparaffin and olefin with a calcined synthetic porous crystalline material which is characterized, in its uncalcined form, by an X-ray diffraction pattern including values as set forth in Table I of the specification and having a composition comprising the molar relationship

$$X_2O_3:(n)YO_2,$$

wherein n is less than about 20, X is a trivalent element selected from the group consisting of aluminum, boron, iron, and gallium and Y is a tetravalent element selected from the group consisting of silicon and germanium.

5,254,793

ALKYLATION PROCESS AND CATALYST THEREFOR

An-hsiang Wu, and Marvin M. Johnson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 25, 1993, Ser. No. 9,504
Int. Cl.[5] C07C *2/60*
U.S. Cl. 585—726 20 Claims

9. A process for alkylating alkanes which comprises contacting at least one feed alkane containing about 2–7 carbon atoms per molecule with at least one feed alkene containing about 2–7 carbon atoms per molecule with a catalyst composition at effective alkylation conditions so as to obtain at least one product alkane containing at least two more carbon atoms per molecule than said at least one feed alkane; wherein said catalyst composition has been prepared by a method which comprises the steps of:

(1) beating for a period of at least about 10 minutes, at a temperature in the range of about 40° C. to about 90° C., in the substantial absence of water: (a) aluminum chloride, (b) boron phosphate, (c) at least one inorganic support material selected from the group consisting of alumina and silica having a surface area of at least about 40 m^2/g, and (d) at least one chlorinated hydrocarbon having a normal boiling point of about 40°–90° C.; wherein the molar ratio of boron phosphate to aluminum chloride is at least about 0.1:1, and the weight ratio of boron phosphate to said at least one inorganic support material is at least about 0.05:1; and

(2) separating the solid component formed in the heated mixture obtained in step (1) from said at least one chlorinated hydrocarbon under a dry gas atmosphere.

5,254,794

ISOMERIZATION CATALYSTS AND PREPARATION THEREOF

An-hsiang Wu, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 26, 1992, Ser. No. 935,757
Int. Cl.[5] C07C *5/13*
U.S. Cl. 585—741 23 Claims

1. A cycloalkane conversion process which comprises contacting, at a temperature of up to about 100° C., at least one cycloalkane containing 5–10 carbon atoms per molecule with an isomerization catalyst composition, at such contacting conditions as to at least partially convert said at least one feed cycloalkane to at least one product cycloalkane isomer, wherein said isomerization catalyst composition has been prepared by a preparation method consisting essentially of the steps of:

(1) heating for a period of at least 1 hour, at a temperature in the range of about 40° C. to about 90° C., in the substantial absence of water: a mixture consisting essentially of (a) aluminum chloride (b) at least one metal salt selected from the group consisting of copper(II) sulfate, iron(II) sulfate, cobalt(II) sulfate, nickel(II) sulfate, manganese(II) sulfate, zinc sulfate, magnesium sulfate and calcium sulfate, (c) at least one solid inorganic refractory material having a surface area, measured by the BET method employing N_2, of at least 50 m^2/g, selected from the group consisting of alumina, silica, silica-alumina, aluminum phosphate and aluminum phosphate/oxide, and (d) at least one chlorinated hydrocarbon selected from the group consisting of dichloromethane, chloroform, carbon tetrachloride, 1,1-dichloroethane, 1,2-dichloroethane, 1,1,1-trichloroethane, 1,1-dichloropropane, 2,2-dichloropropane, 1-chlorobutane and 2-chloro-2-methylbutane; wherein the molar ratio of aluminum chloride to said at least one metal salt is at least about 2:1; and

(2) separating the solid component of the reaction mixture formed in step (1) from said at least one chlorinated hydrocarbon under a dry gas atmosphere.

5,254,795

REMOVAL OF 2-RING AROMATICS FROM LOW BOILING STREAMS CONTAINING LOW CONCENTRATIONS OF SAME USING MEMBRANES

Heather A. Boucher, Point Edward, and Donald T. MacGregor, Sarnia, both of Canada, assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Oct. 7, 1992, Ser. No. 957,118
Int. Cl.[5] C07C *7/144;* B01D *61/00*
U.S. Cl. 585—819 5 Claims

1. A method for the selective removal of 2-ring aromatics from straight run hydrocarbon distillate feed streams which contain about 3 wt% or less of said 2-ring aromatics, said process comprising contacting said hydrocarbon feed stream with one side of a polyesterimide membrane under pervaporation conditions thereby producing a permeate enriched in 2-ring aromatic hydrocarbons and a retentate of reduced 2-ring aromatic content as compared to the hydrocarbon feed.

5,254,796

OXIDATION PROCESS

Erwin Dietz, Kelkheim, and Siegfried Schiebler, Bad Soden am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jun. 17, 1992, Ser. No. 899,726
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1991, 4119996
Int. Cl.[5] C07D *311/78;* C07B *41/08*
U.S. Cl. 588—206 20 Claims

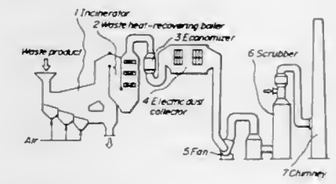
1. A process for the hydrolytic decomposition of a halogen-containing compound of the formula CX_4 or CHX_3 or a mixture of these compounds, in which X is the halogen chlorine or bromine or a combination thereof, which comprises: subjecting said halogen-containing compound to the hydrolytic decomposition in an aqueous-alkaline mixture at a temperature of between 0° and 100° under the autogenous pressure formed therein in a closed reaction vessel for a period of up to 10 hours and subsequently subjecting the mixture to heat treatment at a temperature of between 70° and 150° C. under the autogenous pressure formed therein, in the presence of sulfite.

5,254,797

METHOD OF TREATING EXHAUST GAS

Yoshinori Imoto, Nagoya; Katsunosuke Hara, Kariya; Masakatsu Hiraoka, 39-763, Kohata, Okurayama, Uji City, Kyoto-Fu; Kunio Sano, and Akira Inoue, both of Himeji, all of Japan, assignors to NGK Insulators, Ltd.; Masakatsu Hiraoka and Nippon Shokubai Kagaku Kogyo Co., Ltd., all of Japan

Continuation of Ser. No. 534,248, Jun. 7, 1990, abandoned. This application Nov. 24, 1992, Ser. No. 981,983
Claims priority, application Japan, Jun. 7, 1989, 1-144667; Jun. 8, 1989, 1-146250
Int. Cl.[5] A62D *3/00;* F23G *5/00;* C01B *7/00*
U.S. Cl. 588—207 16 Claims



1. A method for removing chlorinated dibenzo dioxins and chlorinated dibenzo furans from industrial or municipal waste incinerator exhaust gases, comprising:

placing a catalyst composition in honeycomb form in the exhaust stream of such an incinerator, said honeycomb having an open frontal area of at least 50% and a said catalyst composition consisting essentially of components A and B, wherein said component A is selected from the group consisting of a single-component oxide of a metal selected from the group consisting of Ti, Si and Zr, and a multi-component composite oxide of metals selected from the group consisting of Ti, Si and Zr, and said component B is a metal or metal oxide selected from the group consisting of Pt, Pd, and Ru and oxides thereof; and

passing industrial or municipal incinerator waste exhaust gases in contact with said catalyst composition at a reaction temperature of not lower than 250° C., a space velocity of the exhaust gases of not higher than 50,000 hr^{-1} and an amount of the exhaust gases of not larger than 250 m^3/hr 1 m^2 of geometric surface area of the catalyst honeycomb.

5,254,798

SECONDARY CONTAINMENT STRUCTURES FOR HAZARDOUS MATERIALS

Harry A. Zoback, Warminster, Pa., assignor to Warminster Fiberglass Company, Southampton, Pa.

Filed Jul. 13, 1992, Ser. No. 912,736
Int. Cl.[5] B09B *5/00;* B32B *9/00*
U.S. Cl. 588—259 7 Claims

1. A light-weight, high strength secondary containment structure for the safe storage of hazardous materials held in primary containers such as drums, cans and bottles, the structure comprising:

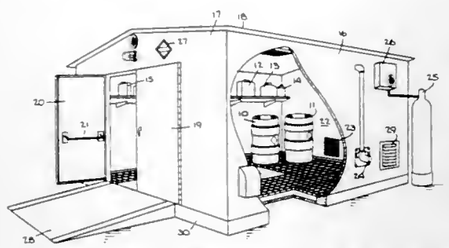
(a) a core formed by a rectangular base having a rectangular frame placed thereon to define a sump, the core being fabricated mainly of end-grain balso wood;

(b) a layer of fiberglass-reinforced plastic material envelop-

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ing the core and laminated thereto to form a unitary structural laminate of high strength; and

(c) a removable spill grating resting on the enveloped frame of the core to accommodate said container, whereby spill



and leakage from containers placed on the grating are collected in said sump, the inner edge of the frame at its upper end being indented to form a ledge surrounding the sump to receive the grating.

5,254,799

TRANSFORMATION VECTORS ALLOWING EXPRESSION OF *BACILLUS THURINGIENSIS* ENDOTOXINS IN PLANTS

Henri M. J. De Greve, Brussels, Belgium; Maria B. L. F. Salgado, Iguala, Mexico; Marc C. E. Van Montagu, Brussels, Belgium; Mark A. Vaeck, Zemst, Belgium; Marcus F. O. Zabeau, Gent, Belgium; Jan J. A. Leemans, Heusden, Belgium, and Hermanus F. P. Hofte, Gent, Belgium, assignors to Plant Genetic Systems N.V., Belgium

Continuation of Ser. No. 821,582, Jan. 22, 1986, abandoned, which is a continuation-in-part of Ser. No. 692,759, Jan. 18, 1985, abandoned. This application Jul. 23, 1990, Ser. No. 555,828

Int. Cl.[5] A01H *4/00;* **C12N** *5/10*

U.S. Cl. 800—205 **19 Claims**

1. A plant cell susceptible to transformation by Agrobacterium, the genome of which contains a chimeric gene comprising:

a) a first DNA fragment that encodes a N-terminal fragment of approximately 60–80 kD, derived from DNA encoding a Bacillus thuringiensis insecticidal crystal protein of approximately 130 kD which has been truncated; and

b) a promoter region and a 3' non-translated region containing a polyadenylation signal; the first DNA fragment being under the control of the promoter region; the promoter and 3' non-translated regions allowing the first DNA fragment to be expressed in the cell; whereby the chimeric gene can be expressed in the cell as an insect controlling amount of an insecticidal Bacillus thuringiensis polyopeptide toxin with toxicity to Lepidoptera insects.

5,254,800

TOMATO PLANTS AND CELLS CONTAINING PTOM36 ANTISENSE CONSTRUCTS

Colin R. Bird, Berkshire; Donald Grierson, Loughbrough; John A. Ray, Bracknell, and Wolfgang W. Schuch, Berkshire, all of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Oct. 19, 1990, Ser. No. 598,873

Claims priority, application United Kingdom, Oct. 20, 1989, 8923716

Int. Cl.[5] A01H *4/00;* **C12N** *5/14, 15/82*

U.S. Cl. 800—205 **11 Claims**

1. DNA constructs comprising a DNA sequence encoded by the clone pTOM36 which is preceded by a transcriptional initiation region operative in plants and positioned so that the construct can generate RNA complementary to pTOM36 mRNA in plant cells.

5,254,801

HETEROLOGOUS DOMINANT CONDITIONAL LETHAL GENE WHICH IS A PHOSPHONATE MONOESTER HYDROLASE AND USE THEREOF IN PLANTS

Stanton B. Dotson, Fenton, and Ganesh M. Kishore, Chesterfield, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 3, 1990, Ser. No. 621,670

Int. Cl.[5] A01H *4/00;* **C12N** *5/14, 15/82*

U.S. Cl. 800—205 **20 Claims**

16. Genetically transformed plants comprising plant cells containing a recombinant double-stranded DNA molecule comprising in sequence and operably linked:

a) a promoter which functions in plant cells to cause the production of an RNA sequence;

(b) a structural DNA sequence that causes the production of the phosphonate monoester hydrolase enzyme encoded by the sequence shown in Sequence ID No: 1; and

(c) a 3' non-translated DNA sequence which functions in plant cells to stabilize and increase expression of the RNA sequence,

said promoter being heterologous with respect to the structural coding sequence.

5,254,802

MALE STERILE BRASSICA PLANTS

Sietske Hoekstra, Montferlandstraat 2[II], NL-1079 PJ Amsterdam; Arnoldus J. Kool, Kerkeland 74, NL-1602 LJ Enkhuizen; Maria G. Nootebos, Gruttolaan 36, NL-1602 PJ Enkhuizen, and Mei-Lie M. C. Tan, Kastanjelaan 76, NL-1602 SM Enkhuizen, all of Netherlands

Continuation of Ser. No. 479,871, Feb. 14, 1990, abandoned, which is a continuation of Ser. No. 285,182, Dec. 15, 1988, abandoned. This application Dec. 10, 1990, Ser. No. 625,326

Claims priority, application United Kingdom, Dec. 17, 1987, 8729403; Mar. 29, 1988, 8807501; Sep. 1, 1988, 8820643

Int. Cl.[5] C12N *5/14, 15/05;* **A01H** *4/00*

U.S. Cl. 800—220 **6 Claims**

1. CMS *Brassica oleracea* plants containing mitochondria of the Ogura CMS cytoplasm, chloroplasts of fertile *Brassica oleracea*, and nuclear material of a fertile *Brassica oleracea.*

5,254,803

AUTOMATIC MUSICAL PERFORMANCE DEVICE FOR OUTPUTTING NATURAL TONES AND AN ACCURATE SCORE

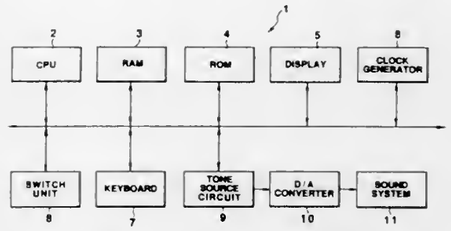
Ken Terao, Iruma, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed May 18, 1992, Ser. No. 885,306

Claims priority, application Japan, Jun. 17, 1991, 3-171764; Jun. 17, 1991, 3-171765

Int. Cl.[5] G09B *15/04;* **G10H** *1/18, 1/46*

U.S. Cl. 84—609 **29 Claims**



29. An automatic performance device comprising:

note information inputting means for selecting and inputting to the device a series of items of note information from a plurality of pre-prepared items of note information said series of items of note information comprising a piece of music information;

note information storage means for sequentially storing each respective item of noteinformtion input by said note information inputting means;

timing inputting means for inputting to the device generation timings for the respective items of note information input by said note information inputting means;

timing information storage means for storing the generation timings input by said timing inputting means in correspondence with the respective items of note information stored in said note information storage means; and

correction mean for correcting the note information stored in said note information storage means on the basis of the timing information stored in said timing information storage means.

5,254,804

ELECTRONIC PIANO SYSTEM ACCOMPANIED WITH AUTOMATIC PERFORMANCE FUNCTION

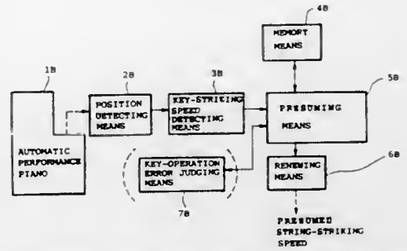
Takashi Tamaki, and Yasutoshi Kaneko, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed Mar. 30, 1990, Ser. No. 502,535

Claims priority, application Japan, Mar. 31, 1989, 1-83805; Mar. 31, 1989, 1-83806

Int. Cl.[5] G10C *3/18;* **G10H** *1/34;* **G10F** *1/02*

U.S. Cl. 84—626 **11 Claims**



1. An automatic performance piano system comprising:

(a) an automatic performance piano having a recording mode in which information of a performance including key-return speed is recorded and an automatic performance mode in which a pre-recorded performance is reproduced;

(b) a key-return speed detecting unit, operable at least during the recording mode, for detecting a key-return speed when a depressed key is released at a point substantially corresponding to when a damper in the piano starts to prevent vibration of a corresponding piano string;

(c) a recording means coupled to the key-return speed detecting unit for recording a key-return speed detected during the recording mode; and

(d) an automatic performance means responsive to the recording means for causing the piano to automatically reproduce a pre-recorded performance,

whereby an automatic performance can be carried out with high fidelity by use of a detected key-return speed.

5,254,805

ELECTRONIC MUSICAL INSTRUMENT CAPABLE OF ADDING MUSICAL EFFECT TO MUSICAL TONES

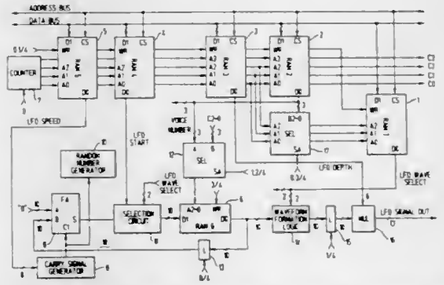
Akira Iizuka, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Mar. 19, 1991, Ser. No. 671,349

Claims priority, application Japan, Mar. 20, 1990, 2-70507

Int. Cl.[5] G10H *7/00, 1/02;* **G01P** *3/00*

U.S. Cl. 84—626 **16 Claims**



1. An electronic musical instrument capable of imparting an in-phase musical effect to plural musical tones having like tone color comprising:

a plurality of tone generation channels, the channels being processed in time-divisionally executed fashion;

memory means for storing voice numbers, each of said voice numbers specifying a tone color assigned to a musical tone to be generated by each of said channels;

random-access memory means for storing reference values, each of said reference values corresponding to a tone color specified by each of the voice numbers;

means for sequentially updating each of the reference values stored in the random-access memory means at regular time intervals, so that each of the reference values represents an amplitude value of a low-frequency signal;

means for reading out a voice number of a tone generation channel at a time slot of the channel;

means for reading out the amplitude value from the random-access memory means according to the readout voice number at the time slot of the channel; and

means for adding the musical effect to the musical tone to be outputted from the channel using the readout amplitude value;

wherein an in-phase musical effect is added to the musical tones having the same tone color on the basis of the same amplitude value being outputted from said random-access memory means.

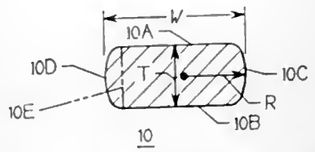
VOL 1155 ISS 3 OCT 19 1993 UMI

5,254,806

INSULATED MAGNET WIRE, METHOD OF FORMING THE SAME, AND TRANSFORMER WINDINGS FORMED THEREFROM

Steven Gross, Fort Wayne, Ind., and John Hessler, Payne, Ohio, assignors to General Electric Co., New York, N.Y.

Filed Dec. 2, 1991, Ser. No. 801,003
Int. Cl.[5] H01B 5/02, 7/00
U.S. Cl. 174—133 R 13 Claims



1. An insulated magnet wire comprising a conductor wire covered by an electrical insulation material, wherein said conductor wire has a cross-section defined by a pair of planar opposing sides and a pair of at least partially radiused curvilinear opposing ends, said sides being separated by a distance which is equal to or less than the radius of curvature of said curvilinear ends.

11. A method of forming an electrically insulated magnet wire, said method comprising the steps of:

providing a supply of conductor wire;

providing a supply of electrical insulation, said insulation comprising a soft, flexible fibrous insulation tape having a pressure-sensitive adhesive coating thereon, and a release strip peelably bonded to said insulation tape and covering said adhesive coating;

continuously feeding said conductor wire along a path;

continuously feeding said insulation along a path which converges with the wire path to a point of contact of said insulation with said wire;

peeling said release strip from said insulation tape immediately prior to contacting said insulation tape with said wire to uncover said adhesive coating; and

adhering said insulation tape to said wire wherein said tape covers both of said curvilinear ends and one of said planar sides of said conductor wire, the other of said planar sides of said conductor wire being substantially uncovered.

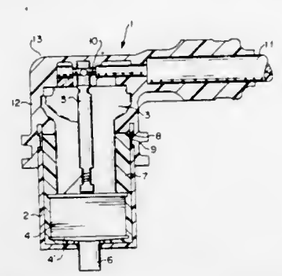
5,254,807

SENSOR, IN PARTICULAR RPM SENSOR

Werner Pfander, Fellbach; Kristian Leo, Brugstetten; Klaus Heyer, Freiberg; Uwe Köhler, Remseck, all of Fed. Rep. of Germany, and Hans-Jürgen Herderich, Anderson, S.C., assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 16, 1992, Ser. No. 842,198
Claims priority, application Fed. Rep. of Germany, Sep. 14, 1989, 3930702
Int. Cl.[5] H01L 23/28; G01P 3/44; H05K 5/06
U.S. Cl. 174—52.2 13 Claims

1. An RPM sensor (1) comprising a housing (13) for receiving electrical components, said housing (13) includes a first housing part and a second housing part (12), each of plastic, said first housing part (2) includes an upper end which is partly enveloped by a lower end of said second housing part (12), wherein a bond of said first and second housing parts (2 and 12) is attained over an entire circumference of a contact zone produced by encompassing the upper end of the first housing part (2) with the second housing part (12), said first housing part includes a circumferential groove (8) near its upper end, a melting element (9), which produces a material bond with both housing parts (2 and 12), of a plastic having a lower melting point than that of the plastic or plastics forming the first and second housing parts (2, 12) is disposed in said circumferential groove (8) in said first housing part that encompasses the circumference of the upper end face of the first housing part (2)



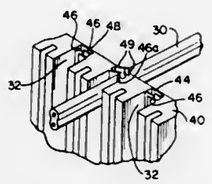
whereby a contact zone between said first and second housing is formed.

5,254,808

ENCLOSURE FOR AN ELECTRICAL TERMINAL BLOCK INCLUDING BARRIER MEANS FOR A CABLE ENTRY OPENING

Julio F. Rodrigues, Somerville, and Adam Fischer, Jr., Basking Ridge, both of N.J., assignors to Thomas & Betts Corporation, Bridgewater, N.J.

Continuation-in-part of Ser. No. 551,587, Jul. 11, 1990, Pat. No. 5,101,079. This application Sep. 6, 1991, Ser. No. 755,705
The portion of the term of this patent subsequent to Mar. 31, 2009, has been disclaimed.
Int. Cl.[5] H05K 5/00
U.S. Cl. 174—65 R 9 Claims



1. An enclosure for an electrical terminal block and electrical cables terminated to said terminal block, said enclosure comprising:

a housing having a back wall and a side wall projecting therefrom and extending thereabout to form a bounded chamber interiorly thereof, said terminal block being supported within said chamber;

said side wall including an opening formed therethrough for permitting passage of an electrical cable into said bounded chamber;

barrier means supported by said side wall adjacent said opening, said barrier means including a barrier wall at least partially surrounding said opening about a periphery thereof and a pair of elongate oppositely directed deflectable fingers projecting inwardly from said barrier wall into said opening, distal ends of each of said oppositely directed fingers overlapping to close off said opening and including a plurality of slitted end extents thereat for engaging and deforming around said electrical cable upon said passage thereof into said bounded chamber; and

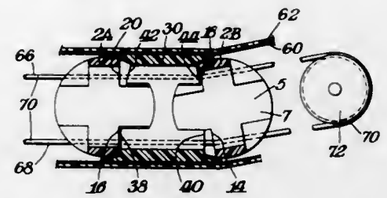
a cover movably supported by said side wall for enclosing said terminal block.

5,254,809

SEGMENTED FLEXIBLE HOUSING

James D. S. Martin, Dundee, Scotland, assignor to W. L. Gore & Associates, Inc., Newark, Del.

Filed Oct. 25, 1991, Ser. No. 782,580
Claims priority, application United Kingdom, Oct. 26, 1990, 9023394
The portion of the term of this patent subsequent to Nov. 20, 2007, has been disclaimed.
Int. Cl.[5] H01B 7/24; H02G 3/04
U.S. Cl. 174—68.1 11 Claims



1. A flexible housing capable of flexing in a plane between predetermined limits for use in protecting a transmission line in a pressurised environment, which comprises:

a conduit contained within encasing means; the conduit being constructed of a plurality of abutting segments, each segment having an opening therethrough defining a longitudinal axis, the abutting segments being arranged in series in such a way that the opening through each segment is in communication with the openings through each of the adjacent segments so as to provide a passage to contain the transmission line, each segment being provided at each opposed longitudinal end with a first butting surface situated to one side of the opening and spaced inwardly of the external surface of the conduit, the first butting surfaces of adjacent segments preventing flexing beyond one predetermined limit; and coupling means flexibly interlinking the segments, wherein the coupling means comprises first and second continuous non-stretching ligaments which pass through channels provided respectively on each side of the opening of each segment, the channels lying in a plane which is substantially parallel to the plane of the flexing of the conduit; the first and second ligaments being connected together at the ends of the housing to form an endless loop.

5,254,810

DEVICE FOR TRANSFERRING CURRENT BETWEEN TWO END POSITIONS WHICH ARE MOVABLE RELATIVE TO EACH OTHER

Friedrich Schauer, Heroldsberg; Manfred Wolff, Schwarzenbruck, and Andreas Neuner, Nuremburg, all of Fed. Rep. of Germany, assignors to kabelmetal electro Gesellschaft mit beschränkter Haftung, Hanover, Fed. Rep. of Germany

Filed Jun. 19, 1992, Ser. No. 901,543
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1991, 9107726[U]
Int. Cl.[5] H01B 7/06; H01R 39/00
U.S. Cl. 174—69 2 Claims

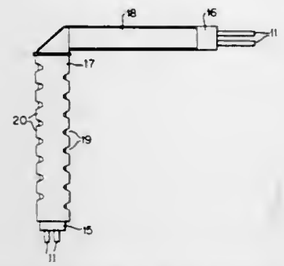
1. A device for transferring current between two end points of a flat-wire ribbon conductor extending in turns and serving to provide electric connection, the ribbon conductor being arranged in a housing, a length of the ribbon conductor being substantially greater than the distance between the two end points, and at least one of the two end points being movable relative to the other;

wherein the device includes a protective body of insulating material, and the ribbon conductor is bent 90° into bends at end portions thereof lying respectively at the end points;

each of the bends of the ribbon conductor is embedded in the protective body of insulating material, and is enclosed by the body for protection of the ribbon conductor;

the protective body has openings distributed along a length of the protective body, the protective body having webs disposed along opposite edges of the protective body for connecting front and back opposed sides of the protective body to enclose a section of the ribbon conductor, the openings being separated from each other by the webs, the webs covering the side edges of the ribbon conductor, the openings being open towards an edge; and

the protective body has a bendable tab located in the region of a bend, the tab extending from the protective body in a direction of the turns of the flat-wire ribbon conductor, and resting on an outer turn thereof.

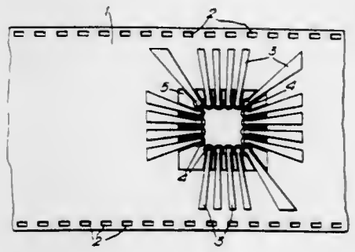


5,254,811

HYBRID MICROCHIP BONDING ARTICLE

Michael J. Ludden, Swindon, England, and Peter Nyholm, Austin, Tex., assignors to Raychem Limited, United Kingdom

PCT No. PCT/GB89/01158, § 371 Date May 16, 1991, § 102(e) Date May 16, 1991, PCT Pub. No. WO90/03662, PCT Pub. Date Apr. 5, 1990
PCT Filed Sep. 29, 1989, Ser. No. 671,789
Claims priority, application United Kingdom, Sep. 30, 1988, 8823057; Dec. 2, 1988, 8828245
Int. Cl.[5] H05K 1/00
U.S. Cl. 174—268 7 Claims



1. A tape-automated bonding article comprising a carrier sheet having first and second main surfaces, the first surface carrying at least one array of electrically conductive tracks having ends arranged for bonding to a microcircuit device, each such track end being electrically connected to the second surface of the carrier sheet by a tubular formation of electrically conductive material within at least one connecting hole of a diameter less than 200 micrometers, which tubular formation is bondable to the microcircuit device in use to connect the track end electrically thereto.

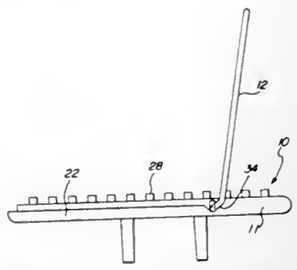
VOL 1155 ISS 3 OCT 19 1993 UMI

5,254,812

WEIGHING SCALE PLATFORM HAVING FOLDABLE ENVELOPE SUPPORT

Michael H. Hilford, Newport Beach, Calif., assignor to Micro General Corporation, Santa Ana, Calif.

Filed Dec. 10, 1992, Ser. No. 988,847
Int. Cl.[5] G01G 21/22
U.S. Cl. 177—262 23 Claims



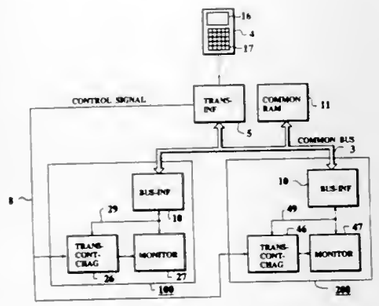
1. An improved platform for weighing scales comprising;
a. a thin, slab-shaped body having an upper surface adapted to support an object to be weighed,
b. an object support member,
c. means for pivotably attaching said object support member to said body in a manner permitting said support member to be pivoted upward from a non-operating position below said upper surface of said body to an upright, operable position, whereby an object may be placed on said upper surface of said body and leaned back against said support member, and
d. means for impeding rearward motion of said support member.

5,254,813

ELEVATOR CONTROLLING AND MONITORING SYSTEM

Yasuhiro Hirashiki, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 29, 1991, Ser. No. 737,132
Int. Cl.[5] B66B 3/00
U.S. Cl. 187—130 9 Claims



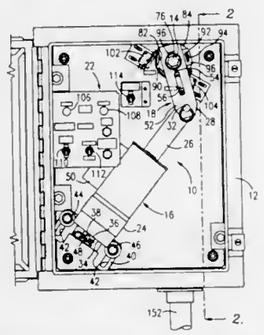
1. An elevator controlling system comprising:
a plurality of controlling microcomputers for controlling a plurality of elevators corresponding thereto;
single console means for inputting at least command data to instruct establishment of data communication, and also for monitoring conditions of the elevators under control;
single data transmission interface means, one terminal of which is connected to the console means and the other terminal of which is commonly connected to said plurality of controlling microcomputers; and,
a plurality of transmission control changing means employed in said plurality of controlling microcomputers, for changing data communication established in the console means and the respective controlling microcomputers in response to the command data inputted by the console means such that while said console means is being connected with one of said plurality of controlling microcomputers via said data transmission interface means to establish one data communication between said console means and said one controlling microcomputer, another data communication is established between said console means and another one of said controlling microcomputers by inputting said command data from said console means into said another one of said controlling microcomputers to monitor the condition of the elevator controlled by said another one microcomputer.

5,254,814

MOTOR OPERATOR CONNECTING MEMBER FOR PADMOUNT SWITCHGEAR

Deborah L. Harr, Columbia, Mo., assignor to A.B. Chance Company, Centralia, Mo.

Filed Aug. 11, 1992, Ser. No. 928,823
Int. Cl.[5] H01H 3/00
U.S. Cl. 200—17 R 13 Claims



1. In switchgear having a movable switch blade and contacts engaged thereby, a shaft operatively connected to the switch blade for moving the latter out of and into engagement with said contacts, a motor operator having a shiftable actuator, and means for connecting said motor to a source of power, the combination therewith of:
means for connecting said actuator to said shaft, said connecting means including manually manipulable means shiftably mounted for movement between a first shaft-engaging position whereby shifting of actuator serves to pivot said shaft and a second, disengaged position whereby said shaft may be pivoted independently of said actuator and the connecting means.

5,254,815

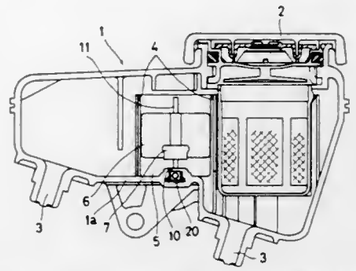
RESERVOIR TANK INCLUDING FLOAT WITH REED SWITCH UNIT

Toshihiro Nakano, Chiryu, and Shinji Sakata, Nishio, botb of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 24, 1992, Ser. No. 873,199
Claims priority, application Japan, Apr. 26, 1991, 03-97079
Int. Cl.[5] H01H 35/18
U.S. Cl. 200—84 C 11 Claims

1. A reservoir tank comprising:
a tank body storing an amount of operating fluid, connected to a specific device for supplying thereinto the operating fluid and having a bottom with a hole isolated from the operating fluid;

a float movable in said tank body in the vertical direction according to the variation of the liquid level of the operating fluid;
a magnet secured to a lower end of the float;
a reed switch unit assembly in said isolated hole and having a casing, a first connector secured to one end of the casing, a second connector secured to the one end of the casing, a first conducting element secured to the other end of the



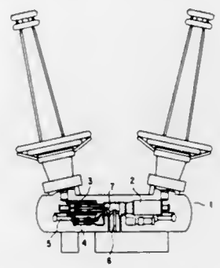
casing so as to be electrically connected therein to the first connector and having a distal end extending away from the casing, a reed switch positioned between the distal ends of the first and the second conducting elements and having opposite terminals electrically connected thereto; and
a pair of walls formed integrally with the first conducting element between which the reed switch is positioned.

5,254,816

POWER CIRCUIT BREAKER AND POWER RESISTOR

Naoki Shutoh, Yokohama; Motomasa Imai, Tokyo; Fumio Ueno, Yokohama; Hideyasu Andoh, Tokyo; Shoji Kozuka, Kawasaki; Hiroshi Endo, Yokohama, and Iwao Mitsuishi, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 30, 1992, Ser. No. 859,868
Claims priority, application Japan, Mar. 30, 1991, 3-93681; Mar. 12, 1992, 4-87574
Int. Cl.[5] H01C 7/10; H01H 33/16
U.S. Cl. 200—144 AP 13 Claims



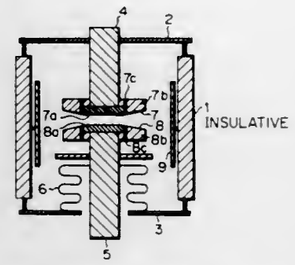
1. A power circuit breaker comprising:
a main switching means having an arc extinguishing function;
auxiliary switching means connected in parallel to said main switching means and having an arc extinguishing function; and
a closing resistor unit connected in series with said auxiliary switching means; and
wherein said closing resistor unit contains a resistor comprising zinc oxide, and titanium oxide in an amount of 0.5 to 25 mol. % and nickel oxide in an amount of 0.5 to 30 mol. %.

5,254,817

VACUUM SWITCH TUBE

Koichi Inagaki, Kagawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 15, 1992, Ser. No. 898,329
Claims priority, application Japan, Jun. 17, 1991, 3-171720
Int. Cl.[5] H01H 33/66, 1/02
U.S. Cl. 200—144 B 7 Claims



1. A vacuum switch tube comprising:
a vacuum vessel evacuated to a high vacuum pressure of 10^{-4} Torr or below;
a stationary electrode rod disposed in said vessel and having a stationary electrode at the distal end thereof, said stationary electrode including a main electrode located at a central portion thereof and an auxiliary electrode located at the periphery of the central portion; and
a movable electrode rod disposed in said vessel in opposed relation to said stationary electrode rod and having a movable electrode at the distal end thereof, said movable electrode including a main electrode located at a central portion thereof and an auxiliary electrode located at the periphery of the central portion, said movable electrode being brought into and out of contact with said stationary electrode of the stationary electrode rod when said movable electrode rod is moved,
wherein said main electrode of each of the stationary and movable electrodes is formed of a first alloy of an electrically-conductive metal and a fire-resisting metal, said auxiliary electrode of each of the stationary and movable electrodes are formed of a second alloy of the electrically-conductive metal and the fire-resisting metal, with the ratio by volume of the conductive metal to the fire-resisting metal in said first alloy being lower than the ratio by volume of the conductive metal to the fire-resisting metal in said auxiliary electrode.

5,254,818

MICROWAVE MELTING FURNACE FOR THE VITRIFICATION AND/OR DENSIFICATION OF MATERIALS

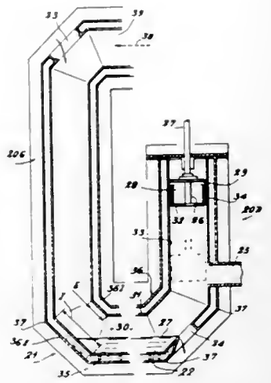
Bruno Aubert, Connaux, France, assignor to SGN-Societe Generale pour les Techniques Nouvelles, Saint Quentin En Yvelines, France

Filed Mar. 30, 1992, Ser. No. 860,071
Claims priority, application France, Apr. 3, 1991, 91 04037
Int. Cl.[5] H05B 6/78
U.S. Cl. 219—10.55 A 20 Claims

1. A microwave melting furnace for vitrification or densification of materials comprising:
a body having a lower part containing a melting vessel in which a molten bath is to produced,
a first inlet opening in said body for said materials,
an outlet opening in said melting vessel for molten materials, said outlet opening placed at the height of a desired level from a surface of said molten bath, and
a discharge opening in said body for gases and a second inlet in said body for introducing said microwaves,
wherein said melting vessel has an upper horizontal wall to

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define a volume above said surface of said molten bath, said melting vessel having a substantially constant cross-



section to produce a regular distribution of heat supplied by said microwaves to said molten bath.

5,254,819

HIGH-FREQUENCY HEATING APPARATUS WITH COPPER FOR GROUNDING LAYER SURROUNDING ELECTROMAGNETIC WAVE ANTENNA

Koji Yoshino, Kyoto; Takashi Kashimoto, Nara; Kimiaki Yamaguchi, Nara; Masato Youta, Nara; Shioichi Sakai, Yamatokoriyama, and Satomi Moriyama, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

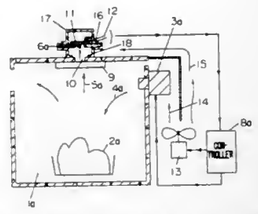
PCT No. PCT/JP90/01703, § 371 Date Aug. 28, 1991, § 102(e) Date Aug. 28, 1991, PCT Pub. No. WO91/10338, PCT Pub. Date Jul. 11, 1991

PCT Filed Dec. 29, 1989, Ser. No. 752,459

Claims priority, application Japan, Dec. 29, 1989, 1-340648; Feb. 28, 1990, 2-47567; Jul. 17, 1990, 2-188941

Int. Cl.[5] H05B *6/68*

U.S. Cl. 219—10.55 B **8 Claims**



1. A high-frequency heating apparatus comprising:

a heating chamber for accomodating a food;

a wave irradiator for irradiating electromagnetic waves over the food so as to heat the food;

an antenna positioned relative to said heating chamber for receiving a portion of the electromagnetic waves in the heating chamber other than those absorbed by the food;

a detection circuit connected to said antenna for detecting the electromagnetic waves received by said antenna and producing an output indicative of the received electromagnetic waves;

a controller connected to said detection circuit for controlling various operations of said apparatus in accordance with the output of said detection circuit; and

a printed board, said antenna being formed by copper foil provided on said printed board, said printed board further having a grounding face of copper foil on the same face of said printed board as said antenna and surrounding and spaced from said antenna.

5,254,820

ARTIFICIAL DIELECTRIC TUNING DEVICE FOR MICROWAVE OVENS

Peter S. Pesheck, Minneapolis, and Ronald R. Lentz, Plymouth, both of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed Nov. 19, 1990, Ser. No. 615,033

Int. Cl.[5] H05B *6/64*

U.S. Cl. 219—10.55 E **17 Claims**



1. An apparatus suitable for being placed in a microwave oven to locate a food product at a desired effective cooking height above an oven shelf in the microwave oven, the apparatus comprising:

a food supporting structure having a food contacting surface;

an artificial dielectric structure having a plurality of layers of laterally spaced conductive portions of material generally aligned such that the spaced conductive portions of material in each layer are offset and overlapping relative to the spaced conductive portions of material in adjacent layers to form overlapping regions of conductive material, the overlapping regions being spaced apart, being coupled to the food supporting structure, and having a real part of its complex dielectric value whereby the artificial dielectric structure has a desired electrical thickness so the food product absorbs a desired amount of microwave energy; and

spacing means, coupled to the food supporting structure, for spacing the food supporting structure at a desired distance from the oven shelf.

5,254,821

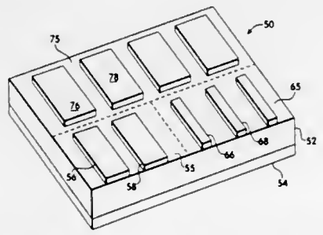
SELECTIVELY MICROWAVE-PERMEABLE MEMBRANE SUSCEPTOR SYSTEMS

Glenn J. Walters, Duxbury, Mass., assignor to Advanced Dielectric Technologies, Inc., Taunton, Mass.

Filed Jan. 15, 1991, Ser. No. 641,533

Int. Cl.[5] H05B *6/80*

U.S. Cl. 219—10.55 E **24 Claims**



1. A microwave susceptor for use in food packaging, the susceptor comprising:

(a) at least one substrate that is substantially transparent to microwave energy, the substrate having opposed surfaces;

(b) at least one microwave-absorptive coating disposed as a pattern upon a portion of one surface of the substrate, said at least one microwave-absorptive coating comprising a plurality of separate, electrically conductive regions; and

(c) at least one microwave-reflective coating disposed as a pattern overlapping said at least one microwave-absorptive coating to thereby modify the amount of microwave energy that reaches the microwave-absorptive coating when the susceptor is exposed to a microwave energy field, said microwave-reflective coating comprising a plurality of separate, electrically conductive regions.

5,254,822

ELECTRONIC COMBUSTION FURNACE

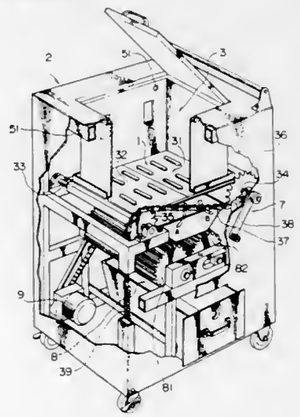
Akikazu Nara, Kyoto, Japan, assignor to Naraseiki Kabushiki Kaisha, Kyoto, Japan

Filed Jul. 26, 1991, Ser. No. 736,622

Claims priority, application Japan, Aug. 10, 1990, 2-213502

Int. Cl.[5] H05B *6/64*

U.S. Cl. 219—10.55 R **15 Claims**



6. An electronic combustion furnace for disposing of waste materials comprising:

a box for receiving an object to be melted, the box having a bottom portion, an inside, and an outside;

a suction path communicating between the inside and the outside of the box;

a first heating element mounted on the bottom portion and including a first heat-proof container and carbon powder vacuum sealed within the first container;

a microwave generator mounted adjacent the box and disposed to irradiate the first heating element with microwaves and cause the first heating element to be raised to a temperature for heating and melting an object disposed in the box;

a suction device which carries gas generated by combustion within the box along the suction path to the outside of the box; and

an exhaust gas purifying device disposed along the suction path for purifying gas passing along the suction path.

5,254,823

QUICK-COOKING OVEN

Philip R. McKee, Wichita, Kans., and Earl R. Winkelmann, Garland, Tex., assignors to Turbochef Inc., Wichita, Kans.

Filed Sep. 17, 1991, Ser. No. 761,285

Int. Cl.[5] B23K *15/10*

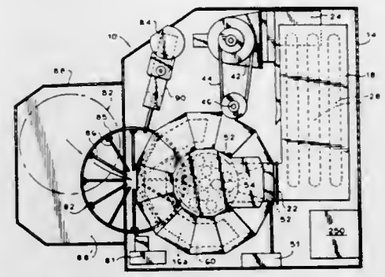
U.S. Cl. 219—10.55 R **42 Claims**

1. A hybrid oven for cooking by both hot air impingement and microwave cooking, comprising:

(A) a housing defining a cooking chamber of given volume adapted to receive a food product for cooking, a hot air plenum configured and dimensioned to hold a volume of air and means for selectively providing gaseous communication therebetween;

(B) actuatable microwave cooking means for microwave cooking of the product in said cooking chamber;

(C) actuatable impingement-causing means for causing impingement of air from said plenum onto the food product in said cooking chamber;



(D) associated with said plenum, a thermal reservoir of high specific heat and high heat capacity relative to the air disposed in said plenum and heating means for maintaining said thermal reservoir at a high temperature; and

(E) control means for actuating said microwave cooking means and said impingement-causing means in timed relation to one another.

5,254,824

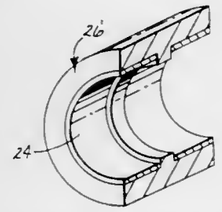
METHOD AND ARTICLE FOR MICROWAVE BONDING OF POLYETHYLENE PIPE

Craig S. Chamberlain, Woodbury; Daryl D. Dressler, St. Paul, and Brian J. Fish, White Bear Lake, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 588,591, Sep. 26, 1990, which is a continuation-in-part of Ser. No. 335,044, Apr. 7, 1989, abandoned. This application Nov. 27, 1991, Ser. No. 800,640

Int. Cl.[5] H05B *6/64*

U.S. Cl. 219—10.57 **9 Claims**



1. An article for bonding to a polyolefin pipe comprising a strip of composite bonding material formed of a plurality of susceptor particles dispersed in a polyolefin matrix, said susceptor particles comprising a substrate substantially non-reflective of microwave energy and a coating on said substrate absorptive of microwave energy, said coating having a thickness in the range of 1–100 Angstroms and having an electrical conductivity in the range of 10^{-6} to 10^{7} Ω-cm, resulting in said susceptor particles having a bulk resistivity in the range of 10^{-2} to 10^{8} Ω-cm.

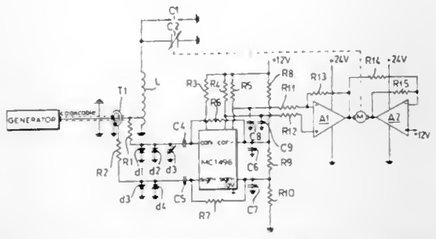
VOL 1155 ISS 3 OCT 19 1993 UMI

5,254,825

APPARATUS FOR THE SEALING OF MEDICAL PLASTIC ARTICLES

Alex Schippers, TC Exloo, Netherlands, assignor to NPBI Nederlands Produktielaboratorium Voor Bloedtransfusieapparatuur en Infusievloeistoffen B.V., Emmer-Compascuum, Netherlands

Filed Jan. 13, 1992, Ser. No. 820,040
Int. Cl.[5] H05B *6/54*
U.S. Cl. 219—10.87 7 Claims



1. A device for sealing a medical plastic article, comprising:
a sealing head having a pair of electrodes adapted to receive said article between them and provided with actuating means relatively displacing said electrodes to compress said article between the electrodes;
a radio-frequency generator connected by a coaxial cable to said electrodes for energizing said electrodes with said article compressed between the electrodes to seal the article, said electrodes forming a primary capacitor in a tuned network of said sealing head; and
circuit means connected to said electrodes and to said radio-frequency generator and including;
an adjustable variable secondary capacitor for automatically correcting a detuning of said sealing head adjustment of said secondary capacitor,
an electric motor connected to said variable capacitor for varying said capacitor to correct for said detuning, and
a balance detector connected to said electric motor and including a phase detector for detecting relative offset of voltage and current phases supplied to said head as a measure of detuning of said sealing head.

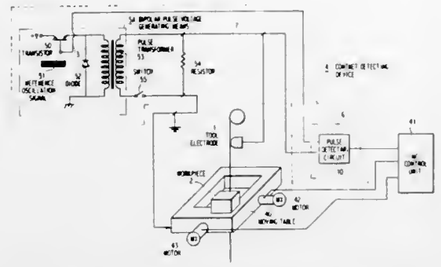
5,254,826

CONTACT DETECTING DEVICE FOR POSITIONING RELATIVELY MOVABLE ELEMENTS

Munenori Kimura, and Takuji Magara, both of Aichi, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan

Filed Nov. 27, 1990, Ser. No. 618,446
Claims priority, application Japan, Mar. 28, 1990, 2-79509
Int. Cl.[5] B23H *1/02*
U.S. Cl. 219—69.13 22 Claims

18. A method of detecting the relative position of a first and second elements, comprising:
applying a first signal voltage to a gap between said elements, said first signal voltage comprising a low-duty, asymmetrical bipolar pulse voltage having a predetermined period;
detecting said first signal voltage at said gap;



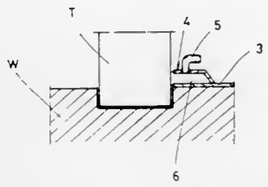
gating said detected first signal voltage in response to a second signal synchronized with said first signal to generate a contact identifying signal.

5,254,827

CHIP REMOVING DEVICE OF ELECTRO-DISCHARGE MACHINE

Yong-Koo Lee, 448-31, Seokyo-Kong, Mapo-Ku, Seoul, Rep. of Korea

Filed Dec. 11, 1991, Ser. No. 805,075
Claims priority, application Rep. of Korea, Dec. 12, 1990, 90-20369
Int. Cl.[5] B23H *1/10*
U.S. Cl. 219—69.14 5 Claims



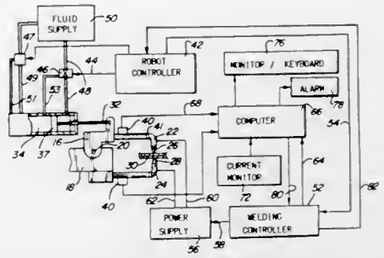
1. A chip removing device for use on an area of a workpiece to be machined by an electro-discharge machining apparatus which employs a discharge electrode, comprising:
(a) a lower plate having a substantially planar lower surface able to be disposed in flush engagement with the surface of the area of the workpiece to be machined;
(b) an upper closure member having an edge engageable with said lower plate and an upper, generally planar wall, generally parallel to said lower plate, spaced upwardly from said lower plate, wherein said upper closure member and said lower plate, together, define a cavity therewithin; and
(c) means for facilitating the continuous introduction of machining oil into said cavity;
(d) said lower plate and said upper, generally planar wall being adapted to be eroded by the discharge electrode used in the electro-discharge machining process when said chip removing device is in position with said lower plate in position flush against a surface of the area of the workpiece to be machined until the discharge electrode engages the surface to be machined; and
(e) wherein machining oil received in said cavity is free to flow around said discharge electrode to remove chips generated by the cutting process.

5,254,828

METHOD AND APPARATUS FOR CONTROLLING ELECTRICAL RESISTANCE SPOT WELDING

Ariel Stiebel, 88 Marlborough, Bloomfield Hills, Mich. 48013

Continuation-in-part of Ser. No. 694,937, May 2, 1991, Pat. No. 5,111,020. This application May 13, 1992, Ser. No. 882,469
The portion of the term of this patent subsequent to May 5, 2008, has been disclaimed.
Int. Cl.[5] B23J *11/24*
U.S. Cl. 219—110 6 Claims



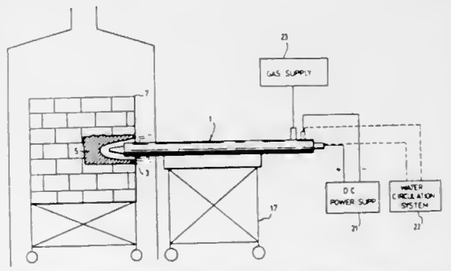
1. An electrical resistance spot welding apparatus that includes a welding gun having means for moving electrodes into and out of squeezing engagement with a work piece, said apparatus comprising:
a controllable source of electrical welding current coupled to said electrodes;
means for detecting the mechanical deformation in a work piece, said means for detecting further comprising a piezoelectric transducer mounted to said means for moving said electrodes, said piezoelectric transducer producing a continuous electrical signal indicative of said deformation;
means for terminating said welding current, said means for terminating continuously receiving and monitoring said electrical signal from said piezoelectric transducer to immediately terminate the welding current when said electrical signal indicates the occurrence of indentation of the weld; and
means for locking said means for moving said electrode holders during thermal expansion of the work pieces at the weld sites during formation of the weld, said means for locking operable to prevent movement of said electrodes during said thermal expansion.

5,254,829

USE OF A PLASMA TORCH TO OPEN A TAP HOLE IN A METAL FURNACE

Michel G. Drouet, St Bruno; Jean Meunier, Greenfield Park, and Hyun K. Choi, St. Lambert, all of Canada, assignors to Hydro Quebec, Montreal, Canada

Filed Dec. 5, 1990, Ser. No. 622,603
Int. Cl.[5] H05H *1/00;* B23K *9/00*
U.S. Cl. 219—121.39 15 Claims



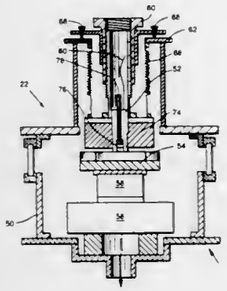
1. A method for opening a tap hole closed by a plug in a wall of a furnace, said method comprising the step of melting and breaking up the plug closing the tap hole by means of a jet of swirling gas of high speed and high temperature generated by a water cooled plasma torch;
wherein said plasma torch includes a water conduit and the gas that escapes from the tap hole is subjected to constant analysis as the plug melts and breaks up in order to detect the presence of water vapor and thus quickly detect a leak in the water conduit of said plasma torch.

5,254,830

SYSTEM FOR REMOVING MATERIAL FROM SEMICONDUCTOR WAFERS USING A CONTAINED PLASMA

Charles Zarowin, Rowayton, and L. D. Bollinger, Ridgefield, both of Conn., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 7, 1991, Ser. No. 696,897
Int. Cl.[5] B23K *9/00*
U.S. Cl. 219—121.43 18 Claims



1. A system for removing material from a semiconductor wafer; said system comprising:
means for determining thickness profile data for said semiconductor wafer;
means for generating a dwell time versus position map for said semiconductor wafer, said map being generated from said thickness profile data; and
means for removing material from said semiconductor wafer, said material removing means being controlled in accordance with said dwell time versus position map, said means including a plasma chemical etching chamber having a platform for receiving said semiconductor wafer, a means for creating a contained plasma within said chamber, said contained plasma having an etching footprint smaller than the dimension of thickness variation to be removed, and a means for controlling the dwell time and position of said plasma in accordance with said dwell time versus position map.

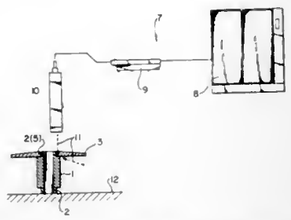
VOL 1155 ISS 3 OCT 19 1993 UMI

5,254,831

METHOD OF MANUFACTURING BOBBINS FOR SEWING MACHINE

Masahiro Seki, 735 Onazanakanokuchi, Nakanokuchimura, Nishikanbaragun, Niigataken, Japan

Filed Dec. 30, 1992, Ser. No. 998,344
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.64 6 Claims



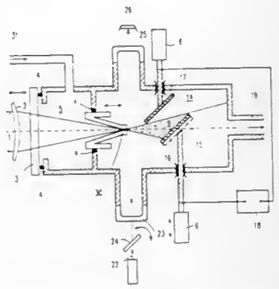
1. A method of manufacturing a sewing machine bobbin having flanges at both ends, which is characterized by integrally welding bobbin parts by means of laser beam irradiation.

5,254,832

METHOD OF MANUFACTURING ULTRAFINE PARTICLES AND THEIR APPLICATION

Georg Gartner, Aachen, and Hans Lydtin, Stolberg, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 8, 1991, Ser. No. 642,241
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1990, 4000690
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.66 21 Claims



1. Method of manufacturing ultrafine particles which are produced from a target by laser beam evaporation, characterized in that the laser beam is directed to the target in such a manner that the removal of the target material takes place in the direction of the laser beam.

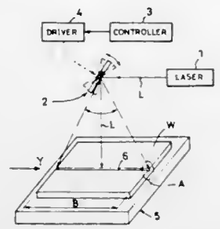
5,254,833

BRITTLE MATERIAL CLEAVAGE-CUTTING APPARATUS

Toshihiro Okiyama, Himeji, Japan, assignor to Soei Tsusho Company, Ltd., Osaka, Japan

Filed Aug. 27, 1992, Ser. No. 935,906
Claims priority, application Japan, Jan. 11, 1991, 3-2026
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.68 7 Claims

1. A brittle material cleavage-cutting apparatus comprising:
a placing stand for holding a brittle material;
a laser source for producing a laser beam; and
beam scanning means for deflecting the laser beam toward the brittle material on said placing stand and for causing the position at which the laser beam irradiates the brittle material to move in two dimensions along a predetermined cleavage-cutting line;



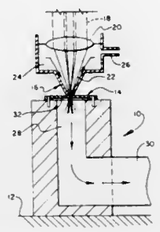
wherein said beam scanning means comprises a rotary mirror rotatable about two perpendicular axes and disposed in the advancing path of the laser beam from said laser source.

5,254,834

METHOD OF FORMING CLOSELY-SPACED, GENERALLY PARALLEL SLOTS THROUGH A THIN WALL AND PRODUCT FORMED THEREBY

David A. Johnson, St. Louis Park, Minn., assignor to JohnsTech International Corporation, Minneapolis, Minn.

Filed Jun. 2, 1992, Ser. No. 892,233
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.72 23 Claims



1. A method of forming a plurality of closely-spaced, generally-parallel slots through a thin wall, wherein the slots are intended to intersect at least one trough formed in one of two oppositely facing surfaces defining the wall, comprising the steps of:
(a) filling the trough with a filler material to form a rod, generally conforming in cross-section to a cross-section of the trough;
(b) laser machining, through the wall, a plurality of slots intersecting the filled trough; and
(c) removing portions of said rod from the trough.

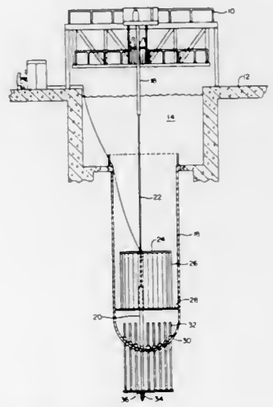
5,254,835

ROBOTIC WELDER FOR NUCLEAR BOILING WATER REACTORS

Charles A. Dalke; Gene W. Comstock; John A. Sies, all of San Jose, and Jan N. Hodges, Campbell, all of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Jul. 16, 1991, Ser. No. 730,498
Int. Cl.[5] B23K *9/12*
U.S. Cl. 219—125.11 20 Claims

1. An apparatus for storing an end effector nestably adjacent a pipe to which it is attached and for moving said end effector into a working position laterally-displaced (X axis) from said pipe, which comprises:
(a) a pair of pipe segments in rotating end-abuttable relationship, each segment bearing a ring gear about its circumference;
(b) a pair of helical lotus petals having an inner surface which conforms to the outer surface of a pipe segment to which each lotus petal is hingedly attached at a distal end, each lotus petal being attached hingedly at their respective proximal ends to a lotus petal hinge attachment stage and carrying engaged gear segments on each lotus petal proximal end which stabilize the lotus petals with respect to each other;
(c) drive means drivedly connected to each of said ring gears for separately driving each pipe segment; and



(d) an end effector carried by said lotus petal hinge attachment stage,
each lotus petal and said lotus petal hinge attachment stage, and thus said end effector, being nestably stored adjacent their respective pipe segments, said end effector being moveable to a working position laterally-displaced (X axis) from said pipe by said drive means rotating said pipe segments in opposite directions and being moveable horizontally (Y axis) by said drive means differentially rotating said pipe segments in the same direction.

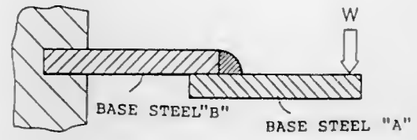
5,254,836

METHOD OF ARC WELDING WITH A FERRITE STAINLESS STEEL WELDING ROD

Yuuji Okada, Nagoya; Toshihiko Kobayashi, Okazaki; Hiroshi Sasabe; Yoshimitsu Aoki, both of Itami; Makoto Nishizawa, Nagoya, and Shunji Endo, Ibaragi, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha; Sumitomo Electric Indus., Ltd. and Nippon Stainless Steel Co., all of Japan

Continuation of Ser. No. 186,463, Apr. 26, 1988, abandoned. This application Jul. 20, 1989, Ser. No. 383,265
Claims priority, application Japan, Apr. 27, 1987, 62-103780
The portion of the term of this patent subsequent to Apr. 19, 2009, has been disclaimed.
Int. Cl.[5] C22C *38/20, 38/42*
U.S. Cl. 219—146.23 8 Claims

1. An arc welding process comprising the steps of:
preparing a welding material and
deposition a molten bead of said welding material on a workpiece, wherein said welding material consists essentially of:
0.03% by weight or less of carbon; 1.00% by weight or less of silicon; 1.00% by weight or less of manganese; from 16.0 to 21.0% by weight of chromium; from 0.30 to 0.80% by weight of niobium; from 0.30 to 0.80% by weight of copper; 0.025% by weight or less of nitrogen; and the balance of iron, and wherein the structure of the welding material is ferrite.

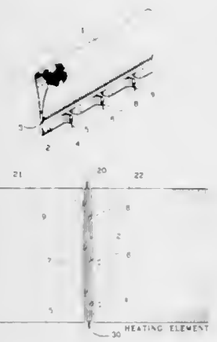


5,254,837

THERMALLY ACTIVATED RETAINER MEANS UTILIZING SHAPE MEMORY ALLOY

Margaret E. Grimaldi, and Leslie S. Hartz, both of Seabrook, Tex., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation of Ser. No. 731,829, Jul. 15, 1991, abandoned. This application Apr. 19, 1993, Ser. No. 49,648
Int. Cl.[5] B32B *23/02;* H05B *3/00*
U.S. Cl. 219—200 11 Claims



1. Gap filler having retainer means for retaining gap filler within void between adjacent structural members, said gap filler comprising a flat flexible portion having a plurality of edges, said flat flexible portion being folded such that two opposing edges are adjacent; said retainer means comprising a member having a plurality of edges, one edge of said retainer means being attachable to said two adjacent edges of said flat flexible portion and an opposite edge of said retainer means providing a plurality of depending tab members which in intermediate positions do not interfere with placement or removal of said gap filler between said tile members, said retainer means being fabricated from shape memory alloy which when heated to a specific memory temperature will thermally activate said tab members for deflection to predetermined memory positions engaging adjacent structural members to retain the gap filler between the structural members.

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5,254,838
IGNITER FOR ELECTRIC IGNITION SYSTEMS

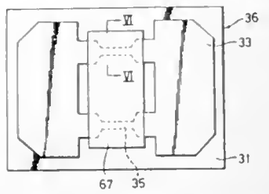
Hitoshi Hasegawa; Hirokazu Kobari; Junichi Kishimoto, all of Shirakawa; Nakaba Nakamura, and Akihito Tamura, both of Kyoto, all of Japan, assignors to Nippon Koki Co., Ltd., Tokyo and Susumu Co., Ltd., Kyoto, both of Japan

Continuation of Ser. No. 714,337, Jun. 12, 1991, abandoned, which is a continuation of Ser. No. 243,489, Sep. 12, 1988. This application Mar. 9, 1992, Ser. No. 847,859

Claims priority, application Japan, Sep. 14, 1987, 62-230463

Int. Cl.[5] **H05B** *3/00*

U.S. Cl. 219—270 **4 Claims**



1. An electronic ignition system comprising (a) a pair of conductors, (b) a pair of solderless terminals, each having a projecting part, connected to the conductors, (c) an ignitor connected to the projecting parts of the solderless terminals, (d) a primary charge on top of and in contact with the ignitor, (e) a cap on top of the primary charge, and (f) a plug assembly in contact with the cap and encasing the conductors and solderless terminals, wherein the ignitor comprises a thin insulating board and disposed on the board is a pair of terminals at a certain distance apart and between the terminals are disposed multiple heating elements, wherein on top of the heating elements is a protective coating film or inorganic thin film, wherein the igniter, when triggered, permits an electric current to flow through the conductors, the solderless terminal, the terminals and the heating elements, generating heat and thereby igniting the primary charge which melts the top of the cap.

5,254,839
OVEN FOR BURNING IN ELECTRONICS MODULES

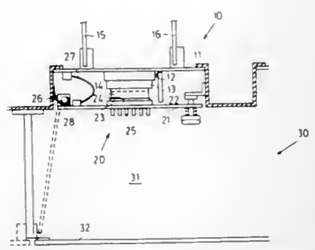
Bernard Laine, Nogent-sur-Marne, France, assignor to Froilabo, Ozoir la Ferrier, France

Filed Jul. 17, 1991, Ser. No. 731,255

Claims priority, application France, Jul. 23, 1990, 90 09389

Int. Cl.[5] **H05B** *1/02*

U.S. Cl. 219—494 **6 Claims**



1. An oven for burning in electronics modules, each of which incorporates a heatsink to radiate heat, said oven comprising for each module controlled electrical power supply circuits and locally controlled temperature regulator means employing a controllable dissipator comprising:

a heat shunt comprising:

a heat conducting body,

means for placing said heat conducting body in thermal contact with said heatsink of said module for conduction of heat therebetween,

means for heating said heat conducting body, and

a heatsink means for dissipating heat from said heat conducting body to an external environment,

dimensions and geometry of said heatsink means and temperature and ventilation conditions of said external environment being sufficient to enable a quantity of heat to be extracted from said shunt by said heatsink means which is greater than a quantity of heat dissipated by said heatsink of said module,

means for measuring module temperature, and

means for controlling said heating means in response to a signal delivered by said module temperature measuring means, so as to control heating of said shunt and, in turn, inputting of heat to and removing of heat from said module via said heat shunt so as to regulate temperature of each of said modules to a given set point value, the oven further comprising, for all modules, a centralized control unit supervising, through a network, operation of said modules and their associated locally controlled temperature regulator means.

5,254,840
MOUNTING FOR METAL HONEYCOMB STRUCTURES

David F. Thompson, Painted Post, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Dec. 12, 1991, Ser. No. 805,643

Int. Cl.[5] **H05B** *3/44;* **F01N** *3/10;* **B32B** *3/12*

U.S. Cl. 219—544 **7 Claims**

2. A mounting assembly for mechanically supporting and electrically insulating a metallic honeycomb structure which comprises:

a metallic honeycomb structure to be supported having a central body portion of desired thickness and having an outer wall of desired peripheral configuration bounding opposed first and second cellular faces, and said opposed faces having a plurality of cells extending longitudinally through the thickness of said body portion and terminating at their opposite ends in, and across the full extent of, said opposed cellular faces;

a first and second honeycomb structure, each having an outer wall with a peripheral configuration complementary with that of said metallic honeycomb structure outer wall, and each having a plurality of cells extending longitudinally therethrough terminating at their opposite ends in opposed face portions;

each of said ceramic honeycomb structures having a face portion with a peripheral configuration substantially identical to said desired peripheral configuration of said metallic honeycomb structure;

a face portion of a first of said ceramic honeycomb structures being in contact with the first of said opposed cellular faces of said metallic honeycomb structure substantially across its extent;

a face portion of a second of said ceramic honeycomb structures being in contact with the second of said opposed cellular faces of said metallic honeycomb structure substantially across its extent;

a recess formed in a surface of each of said honeycomb structures a given distance to form said face portion having a peripheral configuration substantially identical to that of said desired peripheral configuration of said metallic honeycomb structure;

a peripheral recessed wall bounding said recess and defining the peripheral configuration of said face portion;

said metallic honeycomb structure being positioned within each of said recess with a portion of said desired peripheral configuration of said body portion being snuggly recessed and engaged by said peripheral recessed wall of each recessed honeycomb structure;

each of said recessed face portions having a portion of said surface surrounding the same with said surface portions being in engagement with one another, and with said metallic honeycomb structure being enclosed within said recesses formed within said ceramic honeycomb structures; and

housing means retaining said ceramic honeycomb structures in contact with said opposed faces of said metallic honeycomb structure for mechanically supporting and electrically insulating said metallic honeycomb structure.

5,254,841
METHOD AND APPARATUS FOR PREVENTING BILLS OR THE LIKE FROM BEING PULLED OUT

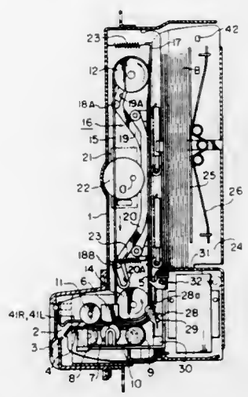
Masayuki Watabe, Moroyama, and Yoshinori Maruyama, Kawagoe, both of Japan, assignors to Nippon Conlux Co., Ltd., Tokyo, Japan

Filed Jul. 9, 1991, Ser. No. 727,414

Claims priority, application Japan, Jul. 12, 1990, 2-184849; Aug. 2, 1990, 2-205764

Int. Cl.[5] **G06F** *15/30*

U.S. Cl. 235—379 **4 Claims**



1. In a method of preventing bills from being pulled out of a bill processing machine, the improvement which comprises the steps of:

judging whether or not a bill, inserted through a bill inlet, is genuine;

passing the bill to a bill stacking position through a bill passage only when it is judged that the bill is genuine;

pushing the genuine bill at the bill stacking position into an accumulating box by rotating an eccentric cam of a stacker unit when a shutter switch is turned on after the genuine bill passes a shutter plate and a pull out preventing lever; and

then, holding the eccentric cam at a top dead center position thereof.

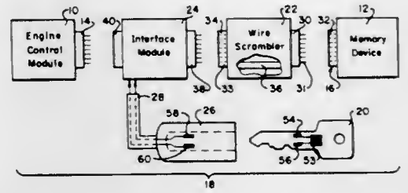
5,254,842
SYSTEM FOR PREVENTING UNAUTHORIZED OPERATION OF AN AUTOMOTIVE VEHICLE

Edward C. Posner, 1460 Rose Villa St., Pasadena, Calif. 91106; Phillip K. Sotel, 570 Garden La., Pasadena, Calif. 91105, and Mosbe Becker, 275 S. Grand Oaks, Pasadena, Calif. 91107

Continuation-in-part of Ser. No. 553,715, Jul. 16, 1990, abandoned, which is a continuation-in-part of Ser. No. 462,024, Jan. 8, 1990. This application Dec. 11, 1991, Ser. No. 806,712

Int. Cl.[5] **B60R** *25/04;* **G06K** *7/06*

U.S. Cl. 235—382 **10 Claims**



1. In an automotive vehicle having the vehicle engine controlled by an engine control module releasably interconnected with a data source via a plurality of terminals, a system for preventing unauthorized operation of the vehicle interconnected between the engine control module and the data source, comprising:

means interconnected with the data source terminals having outlet terminals in predetermined one-for-one scrambled relation to the data source terminals;

an interface module interconnected with said means and the engine control module responsive to coded signals for providing an unscrambled one-for-one interconnection from the engine control module to the data source;

a key device;

coded signal means carried by said key device; and

means interconnecting the coded signal means with the interface module.

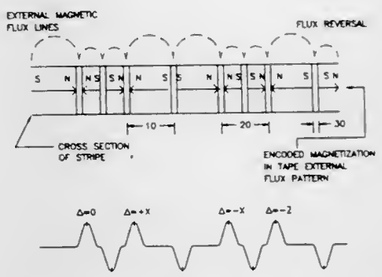
5,254,843
SECURING MAGNETICALLY ENCODED DATA USING TIMING VARIATIONS IN ENCODED DATA

John E. Hynes, 6417 Deer Park Rd., Reistertown, Md. 21136, and Stephen A. Conner, 3631 Yolando Rd., Baltimore, Md. 21218

Filed Aug. 7, 1991, Ser. No. 741,762

Int. Cl.[5] **G06K** *7/00, 5/02*

U.S. Cl. 235—449 **29 Claims**



1. A method of securing magnetically encoded data by a means of using inherent variations in the timing of magnetically encoded data in combination with the randomly varying effect of the magnetic media comprising:

deriving the inherent timing variations of the data by reading the magnetically encoded data after initial encoding;

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storing the initial timing data stream by representation as the initial Jitter Signature number;

comparing the jitter pattern of the timing data stream of any subsequent reading of the magnetically encoded data to the initial timing data stream generated from the stored initial Jitter Signature number; and

indicating the results of the comparison.

5,254,844

MIRRORLESS SCANNERS WITH MOVABLE LASER, OPTICAL AND SENSOR COMPONENTS

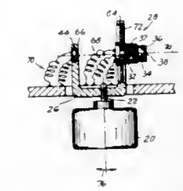
Mark J. Krichever, Hauppauge; Boris Metlitsky, Stony Brook; Edward D. Barkan, South Setauket; Howard M. Shepard, Great River, and Jerome Swartz, Old Field, all of N.Y., assignors to Symbol Technologies, Inc., Bohemia, N.Y.

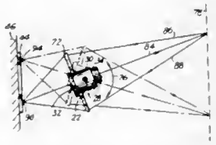
Continuation of Ser. No. 626,612, Dec. 7, 1990, abandoned, which is a continuation of Ser. No. 193,265, May 11, 1988, Pat. No. 5,144,120. This application Jan. 17, 1992, Ser. No. 823,588

The portion of the term of this patent subsequent to Sep. 1, 2009, has been disclaimed.

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—462 **32 Claims**





1. A scanner arrangement in a light scanning system for reading indicia having parts of different light reflectivity, said system being of the type including:

(A) a light source component for emitting a light beam,

(B) an optical component for optically modifying and directing the light beam from the light source component along a non-folded optical path toward indicia located in the vicinity of a reference plane exteriorly of the system, and

(C) a photodetector component having a field of view and operative for detecting at least a portion of light of variable intensity reflected off the indicia along a return path, and for generating an electrical signal indicative of the detected light intensity,

said arrangement comprising:

scanning means for mounting all of said components on a common boresight along which the optical and return paths are co-linear for scanning movement, and for moving all of said components to scan at least one of said light beam and said field of view across the indicia.

5. A scanner arrangement in a light scanning system for reading bar code symbols, said system being of the type including:

(A) a laser diode for emitting a laser beam,

(B) a focusing lens and an aperture stop for optically modifying and directing the laser beam from the laser diode along a non-folded optical path toward the symbol located in the vicinity of a reference plane exteriorly of the system, and

(C) a photodetector having a field of view and operative for detecting at least a portion of laser light of variable intensity reflected off the symbol, and for generating an electrical signal indicative of the detected laser light intensity,

said arrangement comprising:

scanning means for mounting the laser diode, the focusing lens and the aperture stop for scanning movement, and for moving the diode, lens and aperture stop together as a unit to scan at least one of said laser beam and said field of view across the symbol.

5,254,845

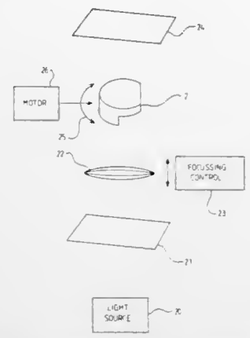
AUTOMATIC FOCUSING SYSTEM USING FOCAL LENGTH-CHANGING ELEMENT

David C. Burgess; Clive A. Stubbings, both of Cheshire, Great Britain; Jacques Ginestet, and Ilya Ravkin, both of Santa Clara, Calif., assignors to Applied Imaging International Limited, Cheshire, Great Britain

Filed Aug. 18, 1992, Ser. No. 931,944

Int. Cl.[5] G01J *1/20*

U.S. Cl. 250—201.3 **10 Claims**



1. An automatic focusing system for focusing an image on an area two dimensional sensor array, which sensor array comprises a plurality of sensors adapted to sense the image for subsequent use, the arrangement including an element inserted in the path of a beam of light directed towards the sensor array and comprising a transparent material of a predetermined refractive index, the element presenting at least one region of a predetermined thickness through which a part of the image may pass and a further region of a greater predetermined thickness through which another part of the image may pass, the image falling on the sensor array comprising three areas, one area where the image has passed through said one region, another area where the image has passed through the said further region, and a further area.

5,254,846

ANALOG PHOTOSENSOR OPERATING ON THE POWER FROM A STANDARD 4-20 MA INSTRUMENTATION CURRENT LOOP

Robert W. Fayfield, Shorewood, Minn., assignor to Banner Engineering Corporation, Minneapolis, Minn.

Continuation-in-part of Ser. No. 532,029, Jun. 1, 1990, abandoned. This application Feb. 24, 1992, Ser. No. 840,301

Int. Cl.[5] G01J *1/32*

U.S. Cl. 250—205 **5 Claims**

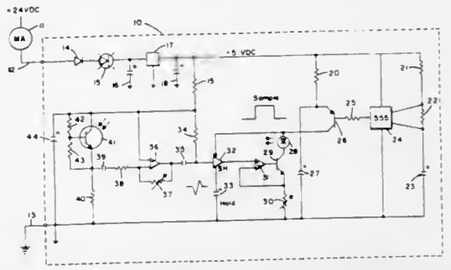
1. Photoelectric measuring and indicating apparatus, comprising:

light emitting means, coupled to a current source, for transmitting light having an intensity which varies with a current supplied thereto;

light responsive means for receiving light and producing a signal indicative of the intensity of the received light;

control means for controlling a current from said current source supplied to said light emitting means as a function of the intensity signal produced by said light responsive means, so that the current supplied to said light emitting means is at a maximum magnitude when the light received by said light responsive means is at a minimum magnitude, and the total current supplied to said light emitting means is at a minimum magnitude when the light received by said light responsive means is at a maximum magnitude, and the total current drawn by the apparatus is an inverse analog function of the intensity of the received light;

said control means comprising a timing circuit operable in response to the voltage of the intensity signal such that



said timing circuit draws a DC current from said current source having a magnitude that varies inversely with the magnitude of the voltage of the intensity signal; and

said control means further comprising means, coupled to said timing circuit, for selecting a first resistance to draw a DC current through said apparatus having a maximum magnitude when the intensity signal has a minimum magnitude, and for selecting a second resistance to draw a DC current through said apparatus having a minimum magnitude when the intensity signal has a maximum magnitude.

5,254,847

CONTACT-TYPE IMAGE SENSOR ASSEMBLY HAVING SUPPORTING STRUCTURE FOR MAINTAINING PREDETERMINED DISTANCE BETWEEN THE LENS AND THE ORIGINAL AND THE SENSOR

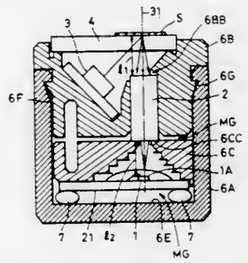
Fumio Hata, Tokyo, and Kenji Nagata, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 6, 1992, Ser. No. 863,762

Claims priority, application Japan, Apr. 8, 1991, 3-074906

Int. Cl.[5] H01J *40/14, 5/02*

U.S. Cl. 250—208.1 **21 Claims**



1. A contact-type image sensor assembly comprising:

an image sensor;

a light source for illuminating an original document which has image information;

an optical lens for imaging light reflected by said original document onto said image sensor; and

supporting means for supporting said image sensor, said light source, and said optical lens, wherein said supporting means comprises:

a first supporting member for supporting the surface of said original document at a predetermined distance from the light incidental side of said optical lens;

a second supporting member disposed separately from said first supporting member for supporting the light emission side of said optical lens at a predetermined distance from the light receiving side of said image sensor; and

a third supporting member for supporting said first and second supporting members at predetermined positions, wherein a predetermined space is formed between said light emission side of said optical lens and said light receiving side of said image sensor, and wherein said third supporting member supports said first and second supporting members so that their relative positions can be varied.

5,254,848

IMAGE SENSOR AND METHOD OF READING DATA OUT OF THE SAME HAVING LOAD CAPACITORS BEING RESPECTIVELY CONTINUOUSLY CONNECTED TO COMMON SIGNAL LINES

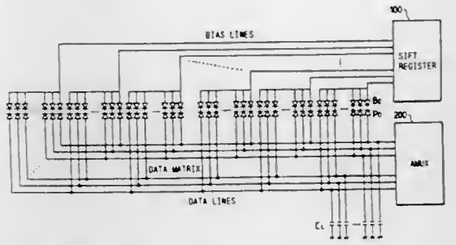
Hirotsugu Kashimura, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jun. 18, 1992, Ser. No. 900,475

Claims priority, application Japan, Jun. 21, 1991, 3-175737

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—208.1 **4 Claims**



1. An image sensor comprising:

a light sensing element array including a plurality of blocks each consisting of a linear array of light sensing elements each consisting of a photo diode and a blocking diode being connected in back-to-back connection and constructed such that both the photo diode and the blocking diode receive light;

common signal lines each connecting to a corresponding group of lead wires lead from the ends of the photo diodes in the light sensing elements, which are grouped for each block;

a readout circuit connected to said common signal lines;

a shift register for transferring a readout pulse to the ends of the blocking diodes of the light sensing elements for each block; and

load capacitors being, respectively, continuously connected to said common signal lines.

5,254,849

IMAGE READING APPARATUS HAVING LIGHT SHIELDING ELEMENT DISPOSED BETWEEN LIGHT EMITTING ELEMENTS

Hiroki Murakami, and Masao Funada, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jul. 2, 1992, Ser. No. 907,664

Int. Cl.[5] H01J *40/14*; H01L *33/00*

U.S. Cl. 250—208.1 **9 Claims**

6. An image reading apparatus comprises:

a transparent substrate having a first surface;

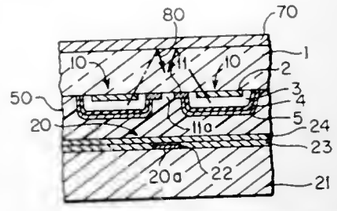
a pair of light emitting elements disposed apart from each other on said first surface of said transparent substrate;

a light shielding element disposed on said first surface of said

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substrate between said light emitting elements, an interior portion of said light shielding element being optically transmissive; and

a photoreceptor disposed in face to face orientation with said optically transmissive interior portion of said light shielding element;



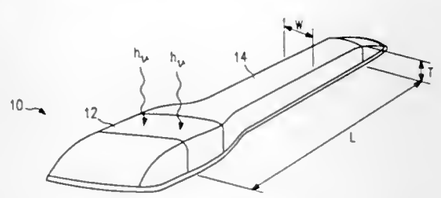
wherein emitted light from said light emitting element is reflected by an original placed on a second surface of said transparent substrate opposite from said first surface, and reflected light passes through said optically transmissive area and falls upon said photoreceptor.

5,254,850

METHOD AND APPARATUS FOR IMPROVING PHOTOCONDUCTOR SIGNAL OUTPUT UTILIZING A GEOMETRICALLY MODIFIED SHAPED CONFINEMENT REGION

Peter D. Dreiske, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 14, 1992, Ser. No. 930,881
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214.1 **17 Claims**



1. A photoconductor, comprising:

a photon collection aperture operable to receive photons;

a charge generation region in which charge carriers are generated in response to said photons, said charge generation region characterized by a charge generation area; and

a confinement region coupled to said charge generation region, said confinement region operable to conduct said charge carriers, said confinement region characterized by a conduction area of lesser area than said charge generation area.

5,254,851

WIDE-DYNAMIC RANGE LIGHT RECEIVER

Hideaki Yamakawa, Tokyo, and Hiroyuki Ibe, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

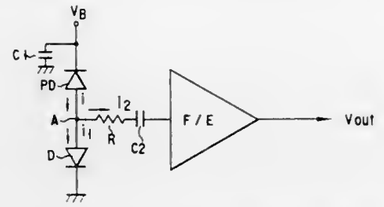
Filed Dec. 11, 1991, Ser. No. 805,059
Claims priority, application Japan, Dec. 26, 1990, 2-418380
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214 A **3 Claims**

1. A wide-dynamic range light receiver comprising:

a light-receiving element for receiving a light signal and converting the light signal into a current signal;

a non-linear impedance element, connected in series to the light-receiving element, having an impedance which increases as an output from the light-receiving element becomes closer to a minimum reception light level, said non-linear impedance element being substantially in the non-conductive state at the minimum reception light level, the impedance of said non-linear impedance element being decreased exponentially in accordance with the increase in the output of the light-receiving element;

a low-noise amplifier for amplifying a current signal derived from a connection node between the light-receiving element and the non-linear impedance element, and outputting the amplified signal; and



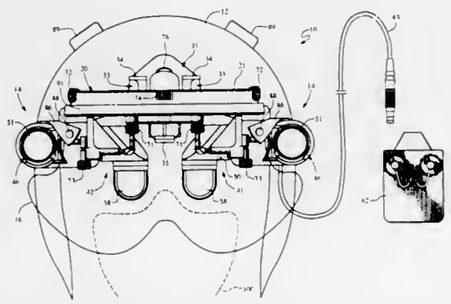
a pure resistor connected in series between the connection node of the light-receiving element and the non-linear impedance element and an input terminal of the low-noise amplifier, the pure resistor determining a limit value of current input to said low-noise amplifier on he basis of the input impedance thereof.

5,254,852

HELMET-MOUNTED NIGHT VISION SYSTEM AND SECONDARY IMAGER

Danny Filipovich, Lincolnwood, and Jack Fiore, Lake Barrington, both of Ill., assignors to Night Vision General Partnership, Morton Grove, Ill.

Filed May 28, 1992, Ser. No. 890,660
Int. Cl.[5] H01J *31/50;* **G01V** *9/02*
U.S. Cl. 250—214 VT **20 Claims**



1. A night vision system comprising:

night vision goggles apparatus adapted to be positioned substantially in front of a user's face for receiving incoming light from an object and for converting the incoming light to an intensified visible light for presentation to an eye of the user;

a visor mounted to a helmet to be worn by the user and adapted to be positioned substantially in front of the night vision goggles apparatus relative to the user's face such that the night vision goggles apparatus is generally positioned between the visor and the user's face; and

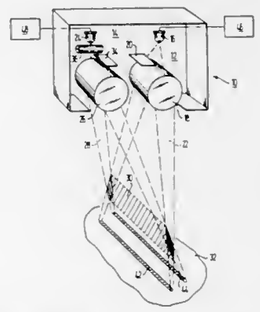
connecting means on said night vision goggles apparatus and on said visor for connecting the visor to the night vision goggles apparatus for retaining the visor in position substantially in front of the night vision goggles apparatus relative to the user's face and for retaining said night vision goggles apparatus generally between said visor and the user's face.

5,254,853

OPTICAL SENSING DEVICE

Stefan Reich, Ulrichstrasse 68, D-8021 Icking, Fed. Rep. of Germany

Continuation of Ser. No. 726,295, Jul. 5, 1991, abandoned. This application Dec. 18, 1992, Ser. No. 993,914
Int. Cl.[5] G01V *9/04;* **G01N** *21/86*
U.S. Cl. 250—221 **12 Claims**



1. An optical sensing device for sensing the presence of an object in a space between the sensing device and a predetermined opposed surface, said surface being positioned in a fixed space relationship with respect to said sensing device to define said space, said device comprising:

light source means including at least one source of light and an optical system for shaping the light emitted by said source of light into a beam of light directed to said surface and having a first dimension which is large in comparison with a second dimension normal to that first dimension;

light detector means including a light sensor and an optical system which establishes a field of view of said light sensor, said field of view being directed to said surface and having a first dimension which is large in comparison with a second dimension normal to said first dimension; said first dimension of said beam of light being essentially parallel to said first dimension of said field of view;

wherein said beam of light and said field of view are arranged so that they intersect each other so as to form a sensing volume which is spaced from said surface to provide a limiting sensing distance;

said optical systems of said light source means and said light detector means comprising first and second cylindrical optical elements, respectively, said optical elements being made of a transparent material and having each a fully circular cross-section and an axis; said axes being essentially parallel to each other and to said first dimensions,

said optical systems of said light detector means further comprising a third cylindrical optical element, said third cylindrical optical element having an axis and a circular cross-section,

said third optical element being positioned between said light sensor and said second cylindrical optical element,

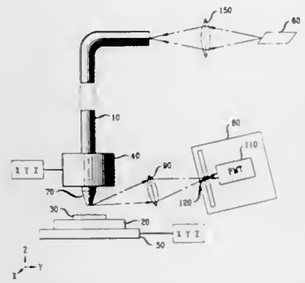
said axis of said third optical element being normal to the axis of said second optical element, and said second optical element having a diameter which is larger than a diameter of said third optical element.

5,254,854

SCANNING MICROSCOPE COMPRISING FORCE-SENSING MEANS AND POSITION-SENSITIVE PHOTODETECTOR

Robert E. Betzig, Chatham, N.J., assignor to At&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 4, 1991, Ser. No. 787,298
Int. Cl.[5] H01J *3/14, 37/00*
U.S. Cl. 250—234 **15 Claims**



1. A system for scanning at least a portion of the surface of a sample, the system comprising: a probe having a longitudinal axis and a tip; means for positioning the probe tip adjacent the surface; means for displacing the probe tip relative to the surface such that a scan pattern is described in a plane, to be referred to as the "scanning plane," which lies substantially parallel to the surface portion; and means for oscillating the probe tip relative to the surface at least at one oscillation frequency, characterized in that

the oscillating means are adapted to oscillate the probe tip substantially within the scanning plane; and the system further comprises:

a position-sensitive photodetector; and

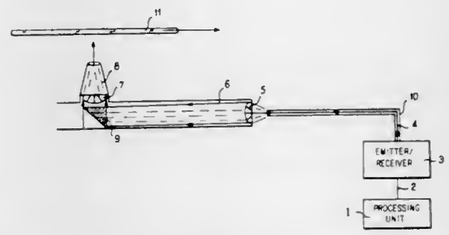
means for optically imaging the probe tip onto the position-sensitive photodetector such that changes in the oscillation of the probe tip can be detected.

5,254,855

DEVICE FOR CONTACTLESS DETECTION OF GLASS SHEETS IN MOVEMENT WITH ISOTHERMAL LIGHT PATH ENVIRONMENT

Denis Mathivat, Thourotte; Jacques Sabater, Gif sur Yvette, and Frederic Weber, Compiegne, all of France, assignors to Saint-Gobain Vitrage International, Courbevoie, France

Filed Dec. 23, 1991, Ser. No. 811,618
Claims priority, application France, Dec. 21, 1990, 90 16094
Int. Cl.[5] H01V *5/02*
U.S. Cl. 250—239 **19 Claims**



1. Device for contactless detection of glass sheets in movement in high temperature glass installations, comprising:

a reflective photoelectric barrier comprising an emitter and a receiver of light beams, and

an elongate channel of heat-resistant material whose walls

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delimit a homogeneous isothermal environment in a high temperature region of the installation, said channel being positioned in the path of light beams from said emitter and having a light beam outlet means for causing the light beam to emerge in the vicinity of a transport plane of a glass sheet to be detected.

5,254,856

CHARGED PARTICLE BEAM APPARATUS HAVING PARTICULAR ELECTROSTATIC OBJECTIVE LENS AND VACUUM PUMP SYSTEMS

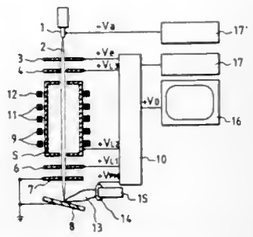
Hironobu Matsui, An Yang, Rep. of Korea; Mikio Ichihashi, Kodaira, Japan; Shinjiroo Ueda, Abiko, Japan; Tadashi Otaka, Katsuta, Japan; Kazue Takahashi, Tsuchiura, Japan; Toshiaki Kobari, Chiyoda, Japan, and Kenji Odaka, Tomobe, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 18, 1991, Ser. No. 717,018

Claims priority, application Japan, Jun. 20, 1990, 2-159663; Jun. 20, 1990, 2-159664; Jul. 4, 1990, 2-175214; Aug. 13, 1990, 2-211579

Int. Cl.[5] H01J *37/10, 37/18*

U.S. Cl. 250—310 57 Claims



1. A charged particle beam apparatus comprising:
a charged particle beam generating means for causing a charged particle source to generate a charged particle beam;
a charged particle beam focusing means for focusing said charged particle beam onto a sample;
a charged particle beam deflecting means for causing said charged particle beam to scan the surface of said sample;
an evacuating means for evacuating a space through which said charged particle beam passes;
a detecting means for detecting information obtained by irradiating said charged particle beam onto said sample; and
an image display means for displaying as an image the status of distribution of said information over the sample surface based on a detection signal forwarded from said detecting means;
said charged particle beam focusing means being constituted by an electrostatic lens containing a plurality of lens electrodes, one of said lens electrodes being a final electrode located closest to said sample;
all of said lens electrodes except for said final electrode being supplied with positive voltages as opposed to said final electrode when said charged particle beam is negatively charged;
all of said lens electrodes except for said final electrode being supplied with negative voltages as opposed to said final electrode when said charged particle beam is positively charged;
said charged particle beam deflecting means being so constructed as to deflect said charged particle beam within the inner space of at least one of said plurality of lens electrodes excluding said final electrode.

5,254,857

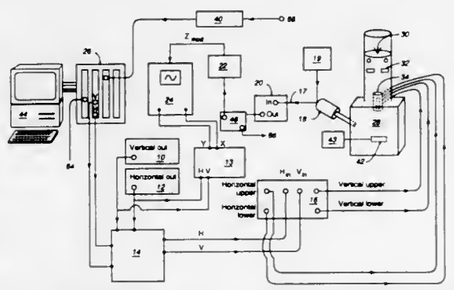
FAST SCANNING ELECTRON MICROSCOPE (FSEM)

Timothy J. Ross; Ming L. Wang, both of Albuquerque, N. Mex., and Ian D. R. Mackinnon, Middle Park, Australia, assignors to Kachina Technologies, Inc., Albuquerque, N. Mex.

Continuation of Ser. No. 708,505, May 31, 1991, abandoned. This application Oct. 19, 1992, Ser. No. 963,038

Int. Cl.[5] H01J *37/28*

U.S. Cl. 250—310 11 Claims



1. An apparatus for observing the real-time microstructural response of dynamically-loaded materials, said apparatus comprising in combination:
a. a high-speed continuous-scanning electron microscope having a spatial resolution of less than 100 nm in the submillisecond time region for interrogating the material under investigation; and
b. means for providing aperiodic tension and compression shock waves to the material.

5,254,858

SYSTEM HAVING NON-IMAGING CONCENTRATORS FOR PERFORMING IR TRANSMISSION SPECTROSCOPY

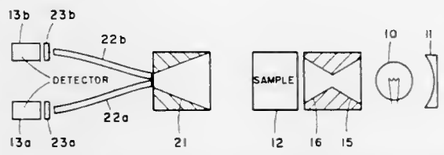
Dan Wolfman, Tel-Aviv, and Aharon Bornstein, Holon, both of Israel, assignors to State of Israel, Atomic Energy Commission, Sorea Nuclear Research Center, Israel

Filed Aug. 28, 1992, Ser. No. 938,008

Claims priority, application Israel, Sep. 2, 1991, 99367

Int. Cl.[5] G01N *21/35*

U.S. Cl. 250—339 4 Claims



1. In a system for performing IR spectroscopy, including a light source for transmitting a beam of light through a sample on to a detector, the improvement wherein there is further included a pair of first conical non-imaging concentrators tapered towards each other and disposed between the light source and the sample, so as to render the beam of light substantially uniform with respect to the sample regardless of their mutual spatial disposition.

5,254,859

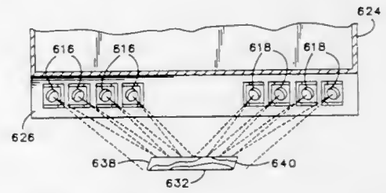
SAWMILL METHOD AND APPARATUS WITH EDGE SCANNING MEANS

George M. Carman, Corvallis, and Mark L. Carter, Springfield, both of Oreg., assignors to Aaron U. Jones, Eugene, Oreg.

Continuation-in-part of Ser. No. 867,051, Apr. 10, 1992, Pat. No. 5,249,491, continuation-in-part of Ser. No. 710,525, Jun. 3, 1991, abandoned, which is a continuation of Ser. No. 541,092, Jun. 20, 1990, Pat. No. 5,088,363, which is a continuation of Ser. No. 89,489, Aug. 21, 1987, abandoned. This application Apr. 30, 1992, Ser. No. 877,942

Int. Cl.[5] G01N *21/86*

U.S. Cl. 250—560 17 Claims



1. Scanning apparatus for viewing a wood member for the purpose of ascertaining the profile thereof, said wood member including faces and a side edge, said apparatus comprising:
illuminating means providing a beam of radiation for projecting an elongated image inwardly in intersecting relation with said side edge and a face of said wood member from a direction obliquely above and to the side of said side edge and along said wood member in a first sense, and
means for viewing said elongated image from a direction obliquely above and to the same side of said side edge and along said wood member in a second sense so that said image is viewed at a substantial angle.

5,254,860

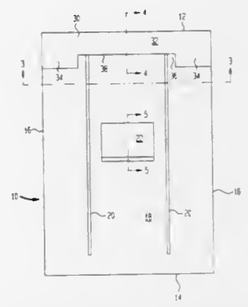
APPARATUS FOR GUIDING AN OPTICAL CHARACTER READER OVER AN INFORMATION CONTAINING CARD

Chi-ping Yeh, San Ccueng, and Meng-chia Tsai, Xien Chu, both of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jul. 24, 1992, Ser. No. 919,490

Int. Cl.[5] G06K *7/10*

U.S. Cl. 250—566 5 Claims



1. An apparatus for supporting and guiding an optical character reader across a document containing information to be read, comprising
a frame having a top surface,
first and second parallel rails disposed on said top surface of said frame, said first and second rails being suitable for supporting the optical character reader for sliding movement therealong,
an inner guide located at a forward end of said frame, said inner guide including a slot suitable for receiving the optical character reader and acting as a stop to determine an initial position for the optical character reader, and
a depression in said top surface of said frame between said first and second rails and dimensioned suitably for receiving the document to be read.

5,254,861

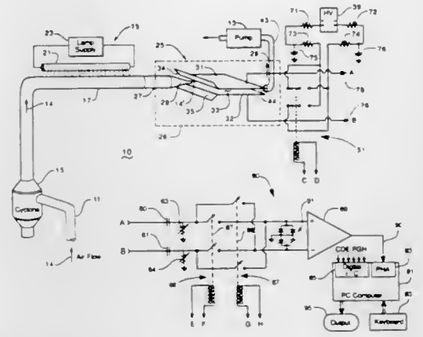
BIOLOGICAL AEROSOL PARTICLE DETECTOR AND METHOD HAVING AN ELECTRONIC PULSE DETECTION MEANS

David R. Carpenter, Austin, and John Taboada, San Antonio, both of Tex., assignors to The United States of America as represented by the Secretary of the Air Force, Wright-Patterson Air Force Base, Ohio

Filed Sep. 29, 1992, Ser. No. 953,638

Int. Cl.[5] G01N *15/06*

U.S. Cl. 250—573 28 Claims



1. A system for detecting airborne biological particles in a gaseous sample, comprising:
(a) a source of low energy radiation;
(b) means for flowing a gaseous sample past said radiation source for irradiating said sample with low energy radiation and thereby selectively ionizing biological particles in said sample;
(c) a detector for detecting and characterizing ionized biological particles in said sample, said detector including a pair of electrically charged conducting plates disposed in parallel confronting relationship to each other with a preselected space therebetween;
(d) a source of electrical potential operatively connected to said plates for applying a preselected electrical potential across said plates;
(e) means for flowing said sample between said plates; and
(f) electronic pulse detection means for sensing collisions on said charged plates by said ionized biological particles in said sample.

5,254,862

DIAMOND FIELD-EFFECT TRANSISTOR WITH A PARTICULAR BORON DISTRIBUTION PROFILE

Das Kalyankjumar, Raleigh; David L. Dreifus; Alison J. Tessmer, both of Cary, and Vasudev Venkatesan, Raleigh, all of N.C., assignors to Kobe Steel U.S.A., Inc., New York, N.Y.

Filed Aug. 14, 1991, Ser. No. 744,598

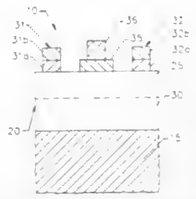
Int. Cl.[5] H01L *31/0132, 29/167, 29/207, 29/76*

U.S. Cl. 257—77 16 Claims

1. A field-effect transistor comprising:
a substrate;

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a boron-doped diamond layer on said substrate, said boron-doped diamond layer having a desired boron doping concentration profile extending in the depth direction into said diamond layer from the surface thereof opposite said substrate, said boron doping concentration being relatively high at the surface of said diamond layer and generally decreasing with increasing depth into said diamond layer;



a drain electrode and a source electrode in laterally spaced apart relation on the relatively highly-doped surface of said diamond layer for forming respective low resistance ohmic contacts therewith; and

an insulated gate electrode on said diamond layer between said drain and source electrodes, said insulated gate electrode comprising an insulating layer on the relatively highly-doped surface of said diamond layer and a gate electrode on said gate insulating layer.

5,254,863

SEMICONDUCTOR DEVICE SUCH AS A HIGH ELECTRON MOBILITY TRANSISTOR

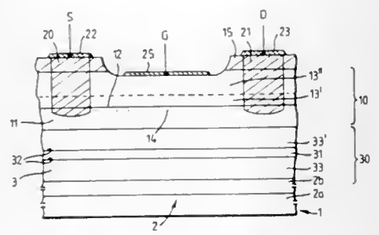
Stephen J. Battersby, Haywards Heath, England, assignor to U.S. Philips Corp., New York, N.Y.

Filed Oct. 15, 1991, Ser. No. 776,107

Claims priority, application United Kingdom, Oct. 19, 1990, 9022756

Int. Cl.[5] H01L *29/80*

U.S. Cl. 257—191 **11 Claims**



1. A semiconductor device comprising a semiconductor body having a substrate on which is provided a channel-defining region extending between input and output regions, the channel-defining region comprising a channel layer forming a heterojunction with at least one barrier layer so as to form within the channel layer a two-dimensional free charge carrier gas of one conductivity type for providing between the input and output regions a conduction channel controllable by a gate electrode overlying the channel-defining region, characterized in that a potential well region is provided between the substrate and the channel-defining region which comprises at least one potential well-defining layer forming heterjunctions with adjacent barrier layers to define for charge carriers of the one conductivity type a single potential well which is empty of free charge carriers of the one conductivity type when no voltage is applied between the input and output regions and which is sufficiently deep and wide to trap hot charge carriers of the one conductivity type emitted from the channel-defining region towards the substrate.

5,254,864

SEMICONDUCTOR DEVICE

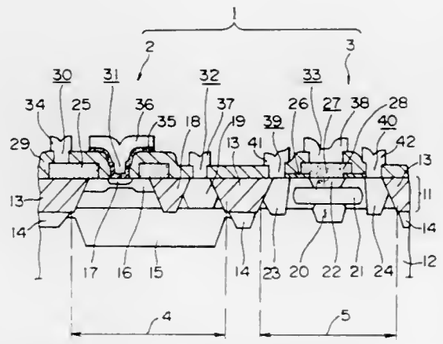
Tetsuo Ogawa, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 20, 1992, Ser. No. 855,093

Claims priority, application Japan, Mar. 20, 1991, 3-081410

Int. Cl.[5] H01L *27/02, 21/265*

U.S. Cl. 257—273 **3 Claims**



1. A semiconductor device including a bipolar transistor and a junction type field effect transistor, comprising:

a semiconductor substrate;

an epitaxial layer formed on an upper face of said semiconductor substrate;

a transistor separating region formed in said epitaxial layer except a formation region for said bipolar transistor and another formation region for said junction type field effect transistor;

a collector diffused layer formed in an upper face portion of said semiconductor substrate in said formation region for said bipolar transistor;

a base diffused layer formed in said epitaxial layer in said formation region for said bipolar transistor in such a manner as to connect to said collector diffused layer;

an emitter diffused layer formed at part of an upper face portion of said base diffused layer;

an element separating region formed in said epitaxial layer in said formation region for said bipolar transistor in such a manner as to neighbor with said base diffused layer;

a collector lead diffused layer formed in said epitaxial layer in said formation region for said bipolar transistor on the opposite side of said base diffused layer with respect to said element separating region in such a manner as to connect to said collector diffused layer;

a bottom gate diffused layer formed in an upper face portion of said semiconductor substrate in said formation region for said junction type field effect transistor;

a channel formation region formed in said epitaxial layer in said formation region for said junction type field effect transistor in such a manner as to connect to said bottom gate diffused layer;

a top gate diffused layer formed in said epitaxial layer in said formation region for said junction type field effect transistor in such a manner as to connect to said channel formation region; and

a pair of source/drain diffused layers formed in said epitaxial layer on the opposite sides of said channel formation region in said formation region for said junction type field effect transistor.

5,254,865

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE EMPLOYING MOSFETS

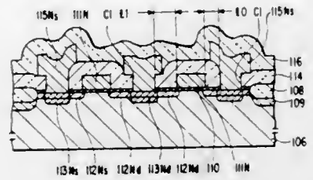
Shigeru Koshimaru, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 13, 1992, Ser. No. 912,751

Claims priority, application Japan, Jul. 12, 1991, 3-198383

Int. Cl.[5] H01L *29/10, 27/02*

U.S. Cl. 257—344 **4 Claims**



1. A semiconductor integrated circuit device comprising:

a first circuit which includes a first N-channel MOSFET formed on a first region of a semiconductor substrate, said first N-channel MOSFET having a first gate electrode formed on said semiconductor substrate on a first gate insulating film covering a first channel region, a first source region and a first drain region, said first drain region including a first low concentration impurity diffused layer having an end portion defining said first channel region beneath said first gate electrode and a first high concentration impurity diffused layer formed in contact with said first low concentration impurity diffused layer at a first predetermined distance from said end portion of said low concentration impurity diffused layer; and

a second circuit which includes a second N-channel MOSFET formed on a second region of said semiconductor substrate, said second N-channel MOSFET having a second gate electrode formed o said semiconductor substrate on a second gate insulating film covering a second channel region, a second source region and a second drain region, said second drain region including a second low concentration impurity diffused layer having an end portion defining said second channel region beneath said second gate electrode and a second high concentration impurity diffused layer formed in contact with said second low concentration impurity diffused layer at a second predetermined distance from said end portion of said second low concentration impurity diffused layer, wherein said second predetermined distance is greater than said first predetermined distance.

5,254,866

LDD CMOS WITH WIDER OXIDE SIDEWALL ON PMOS THAN NMOS

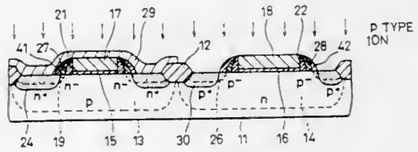
Ikuo Ogoh, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 28, 1991, Ser. No. 675,593

Claims priority, application Japan, Apr. 3, 1990, 2-89508

Int. Cl.[5] H01L *27/092*

U.S. Cl. 257—369 **6 Claims**



1. A semiconductor device comprising:

a semiconductor substrate having first and second field effect transistors, each said transistor including

a gate electrode formed on said semiconductor substrate with a gate insulating film interposed therebetween;

a first side wall spacer having a first predetermined thickness formed of one layer of an insulating film on opposite side wall surfaces of said gate electrode; and

source and drain regions, each comprising laterally arranged high and/or low impurity concentration regions, outwardly formed from portions close to opposite side portions of said gate electrode on said surface of said semiconductor substrate,

at least said second field effect transistor including a second side wall spacer having a second predetermined thickness greater than said first predetermined thickness formed of another layer of an insulating film formed at least on one side wall surface of said gate electrode,

the first side wall spacer for said first field effect transistor forming a diffusion mask for implanting said high impurity concentration regions respectively on opposite sides of said gate electrode, and

the second side wall spacer for said second field effect transistor forming a diffusion mask for implanting said high impurity concentration regions on at least one side of said gate electrode,

wherein said first field effect transistor is an n-channel type and said second field effect transistor is a p-channel type.

5,254,867

SEMICONDUCTOR DEVICES HAVING AN IMPROVED GATE

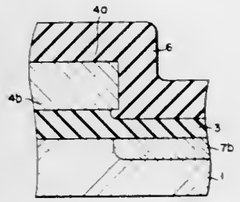
Sanae Fukuda, and Naoyuki Shigyo, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 8, 1991, Ser. No. 726,764

Claims priority, application Japan, Jul. 9, 1990, 2-179621; Sep. 28, 1990, 2-256962

Int. Cl.[5] H01L *29/78, 29/06*

U.S. Cl. 257—411 **10 Claims**



1. A semiconductor device, comprising:

a semiconductor substrate;

an electrode formed above the substrate, said electrode having a corner portion facing the substrate and a side surface contiguous to the corner portion; and

a laminate structure positioned between the substrate and the electrode and formed of an n-number of insulating films consisting of a first insulating film near the substrate to an n-th insulating film near the electrode, said laminate structure extending to cross a straight line joining the substrate and the corner portion of the electrode, and the values of the dielectric constant of the laminated insulating film progressively increasing with increase in the laminated order of the insulating films;

wherein said n-number is three or more, and said laminate structures includes at least three insulating films formed of silicon oxide, silicon nitride, and tantalum oxide, respectively, and arranged in this order from the substrate.

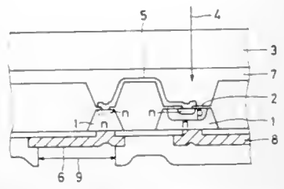
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5,254,868

SOLIDSTATE IMAGE SENSOR DEVICE

Yutaka Saito, Tokyo, Japan, assignor to Seiko Instruments Inc., Japan

Filed Jul. 22, 1991, Ser. No. 734,262
Claims priority, application Japan, Jul. 25, 1990, 2-196462
Int. Cl.[5] H01L *27/14, 31/00*
U.S. Cl. 257—432 34 Claims



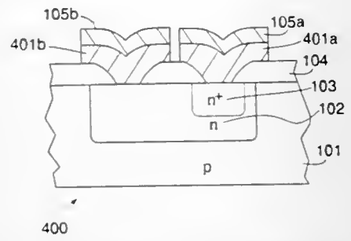
1. A solid state image sensor device comprising:
a semiconductor substrate;
a photo-sensor formed on a surface of the semiconductor substrate receptive of an electromagnetic wave irradiated from outside of the device;
an electrode formed on a surface of the photo-sensor receptive of the electromagnetic wave and extending along a surface of the semiconductor substrate receptive of the electromagnetic wave; and
an aperture formed on a surface which is opposite to the surface of the semiconductor substrate receptive of the electromagnetic wave so as to expose a part of a surface of the electrode which is not receptive of the electromagnetic wave and to connect the electrode to the surface which is opposite to the surface of the semiconductor substrate receptive of the electromagnetic wave to effect an electrical connection with an external circuit.

5,254,869

ALUMINUM ALLOY/SILICON CHROMIUM SANDWICH SCHOTTKY DIODE

John E. Readdie, San Jose; Benjamin H. Kwan, Pleasanton, and Jeng Chang, San Jose, all of Calif., assignors to Linear Technology Corporation, Milpitas, Calif.

Filed Jun. 28, 1991, Ser. No. 722,941
Int. Cl.[5] H01L *29/78*
U.S. Cl. 257—485 13 Claims



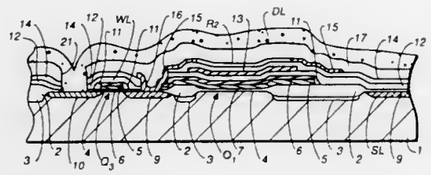
1. An improved integrated circuit Schottky diode having a rectifying junction formed at an interface between a metallization layer and a semiconductor, wherein the improvement comprises a layer formed from a premixed layer having at least three constituents including chromium, silicon, and carbon interposed between the metallization layer and the semiconductor to form the rectifying junction.

5,254,870

STATIC RANDOM ACCESS MEMORY HAVING MEMORY CELLS WITH ELECTRIC FIELD SHIELDING FOR CELL LOAD RESISTANCES

Masakazu Kimura, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 457,798, Feb. 14, 1990, abandoned. This application Jan. 10, 1992, Ser. No. 821,250
Claims priority, application Japan, May 7, 1988, 63-111032; May 11, 1988, 63-115231; Oct. 21, 1988, 63-265303; Dec. 7, 1988, 63-309127; Dec. 7, 1988, 63-309128
Int. Cl.[5] H01L *29/68, 29/78*
U.S. Cl. 257—659 5 Claims



1. A semiconductor memory device formed on a semiconductor substrate to constitute a memory cell of a static memory device comprising
first and second driver MOS transistors wherein source and drain regions for each of said first and second driver MOS transistors are formed in said substrate,
first and second transfer MOS transistors wherein source and drain regions for each of said first and second driver MOS transistors are formed in said substrate,
first and second load resistances,
a first gate insulating layer formed on said substrate,
a first conductive polycrystalline silicon layer formed on said gate insulating layer and patterned as first and second gates for said first and second driver MOS transistors and respectively connected to said first and second transfer MOS transistor source regions,
a second insulating layer formed on said first polycrystalline silicon layer,
a second conductive polycrystalline silicon or metal layer formed on said second insulating layer,
a third insulating layer formed on said second conductive layer,
a third intrinsic polycrystalline silicon layer formed on said third insulating layer, said third polycrystalline silicon layer patterned into a pair of spatially disposed, parallel polycrystalline strips with end sections of each of said strips formed into low resistance regions and wherein first ends of said end sections are connected to said transfer MOS transistor source regions and second ends of said end sections are connected to a first operating potential,
said low resistance end sections in each of said strips defining therebetween a central section respectively comprising said first and second load resistances,
boundary limits of said second conductive layer limited in a first direction substantially to a length of said first and second load resistance strips and in a second direction substantially to a width of both said first and second load resistance strips including spacing therebetween wherein the boundary limits of said first and second load resistance strips overlying said second conductive layer are within the boundary limits of said second conductive layer, and wherein said second conductive layer overlying said first and second driver MOS transistors does not correspond to boundary limits of said first and second driver MOS transistor in that said first and second driver MOS transistor drain and source regions extend laterally from beneath and beyond said second conductive layer boundary limits,
said second conductive layer connected to a potential source or to ground,

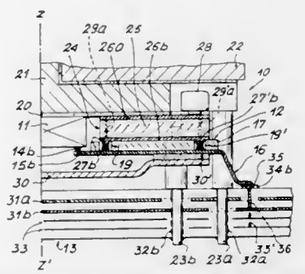
wherein said second conductive layer functioning as a shield for said first and second load resistance strips to protect said load resistance strips from effects of electric fields established from operation of said first and second driver MOS transistors, and
wherein said second conductive layer shield permitting a corresponding thinning of thickness of said third polycrystalline silicon layer forming said first and second load resistance strips to increase their resistance value thereby permitting a reduction in the length of said strips to a range of about 2 μm to 4 μm while maintaining their necessary high resistance values in the range of about 100 GΩ to 5TΩ for operation of said memory cell so that overall size of said memory cell is reduced and total density of said static memory device is increased.

5,254,871

VERY LARGE SCALE INTEGRATED CIRCUIT PACKAGE, INTEGRATED CIRCUIT CARRIER AND RESULTANT INTERCONNECTION BOARD

Eric Benavides, Bagneux, and Agnes Guilhot, Angers, both of France, assignors to Bull, S.A., Paris, France

Continuation of Ser. No. 433,265, Nov. 8, 1989, abandoned. This application May 8, 1990, Ser. No. 520,546
Claims priority, application France, Nov. 8, 1988, 88 14542
Int. Cl.[5] H01L *23/02, 23/12*
U.S. Cl. 257—666 22 Claims



1. An integrated circuit package (**10**) comprising an integrated circuit (**11**) having terminals (**14***a*, **14***b*, **14***s*), at least one potential plane, said integrated circuit and said at least one potential plane each being adapted to be connected to a power supply potential, and a lead frame (**16**) comprising first (**15***a*, **15***b*) and second (**15***s*) pluralities of leads having inner end portions respectively connected to said terminals of the integrated circuit and outer end portions, wherein each of the first plurality of said leads (**15***a*, **15***b*) has both said inner and said outer end portions connected to said potential plane.

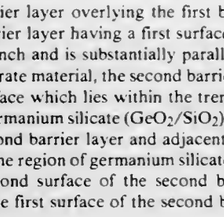
5,254,872

SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING THE SAME

Takashi Yoda; Tohru Watanabe, and Katsuya Okumura, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 493,275, Mar. 14, 1990, abandoned. This application Mar. 21, 1991, Ser. No. 673,265
Claims priority, application Japan, Mar. 14, 1989, 1-61557
Int. Cl.[5] H01L *23/48*
U.S. Cl. 257—751 8 Claims

1. A semiconductor device comprising:
a substrate;
an unsulating film deposited on the substrate at a predetermined position;
a contact hole formed in said insulating film;
a barrier metal film deposited on an entire bottom and an entire side wall of the contact hole, said barrier metal film having an oxide film of said barrier metal thereon;
a first metal film filled in said contact hole, said first metal film having a good fluidity when it is deposited; and
a second metal film of low resistance for forming an interconnection which passes above said contact hole filled in with said first metal film,



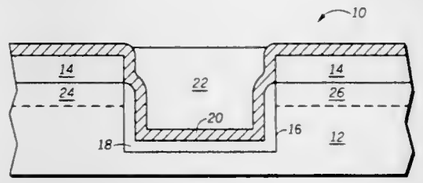
said barrier metal film suppressing interaction between said first metal film and the insulating film and
said oxide film improving its affinity for the first metal film.

5,254,873

TRENCH STRUCTURE HAVING A GERMANIUM SILICATE REGION

Stephen S. Poon, and Papu D. Maniar, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 803,930, Dec. 9, 1991, Pat. No. 5,190,889. This application Oct. 19, 1992, Ser. No. 962,546
Int. Cl.[5] H01L *27/02, 23/48*
U.S. Cl. 257—751 18 Claims



1. A trench structure comprising:
a substrate material having a surface;
a trench formed in the substrate material, the trench having a sidewall portion and a bottom portion;
a first barrier layer overlying the bottom portion of the trench and being adjacent the sidewall portion of the trench;
a second barrier layer overlying the first barrier layer, the second barrier layer having a first surface which lies outside the trench and is substantially parallel to the surface of the substrate material, the second barrier layer having a second surface which lies within the trench; and
a region of germanium silicate (GeO_2/SiO_2) material overlying the second barrier layer and adjacent the second barrier layer, the region of germanium silicate material covering the second surface of the second barrier layer and exposing the first surface of the second barrier layer.

5,254,874

HIGH DENSITY LOCAL INTERCONNECT IN A SEMICONDUCTOR CIRCUIT USING METAL SILICIDE

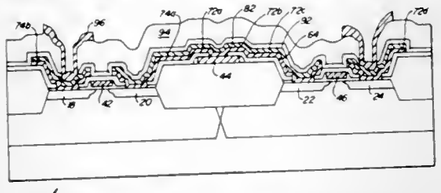
Manohar L. Malwah, Los Altos Hills, Calif., assignor to Quality Semiconductor Inc., Santa Clara, Calif.

Continuation of Ser. No. 518,016, May 2, 1990, abandoned. This application Oct. 8, 1991, Ser. No. 773,972
Int. Cl.[5] H01L *27/02, 23/48, 29/46, 29/54*
U.S. Cl. 257—754 15 Claims

14. A semiconductor circuit comprising:
a body of silicon semiconductor material, said body having

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a plurality of circuit devices, said devices in the body including at least two doped regions;
a metal silicide layer interconnecting said at least two doped regions; and
an amorphous silicon layer having at least two doped portions, each portion located between said metal silicide



layer and one of the doped regions of the body, each doped portion electrically connecting the silicide layer and one of said doped regions so that the metal silicide layer is electrically connected to the doped regions through the doped portions of the amorphous silicon layer.

5,254,875

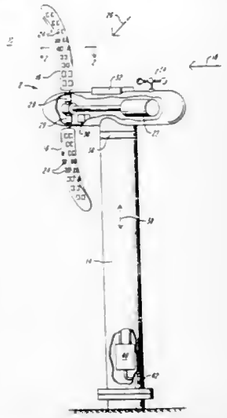
Patent Not Issued For This Number

5,254,876

COMBINED SOLAR AND WIND POWERED GENERATOR WITH SPIRAL BLADES

John J. Hickey, 27 Bowdoin St., Apt. 4A, Boston, Mass. 02115

Filed May 28, 1992, Ser. No. 890,642
The portion of the term of this patent subsequent to Dec. 24, 2008, has been disclaimed.
Int. Cl.[5] F03D *11/00*
U.S. Cl. 290—55 **14 Claims**



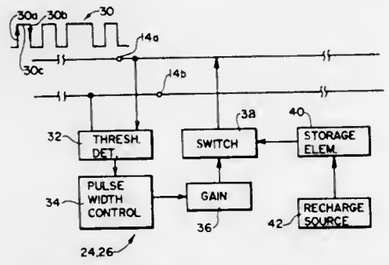
1. A combination solar and wind power generator with spirally formed air engaging vanes comprising:
a wind generator, responsive to the flow of air currents, for converting mechanical energy into electrical energy;
said wind generator including a plurality of spirally formed air engaging vanes having at least first and second surfaces, said first and second surfaces forming a cavity internal to said spirally formed air engaging vanes, said spirally formed air engaging vanes rotatably supported by said wind generator and operative for intercepting a flow of air currents for producing
said wind generator also including an electric generator apparatus coupled to said plurality of spirally formed air engaging vanes, for transforming said mechanical energy into a first source of electrical energy;
at least one of said first and second surfaces of said spirally formed air engaging vanes including a material which is light energy transparent;
at least a first plurality of surface deviations disposed on at least one of said first or second surfaces, said plurality of surface deviations arranged in a plurality of curvilinear deviation sets, said plurality of deviation sets extending radially from a central point and forming a spiral pattern of said surface deviations; and
a plurality of light sensitive cells, disposed within said cavity internal to said spirally formed air engaging vanes, responsive to light energy striking said light sensitive cells through at least one light energy transparent surface of said spirally formed air engaging vanes, and adapted for transforming light energy striking said light sensitive cells into a second source of electrical energy.

5,254,877

DISTRIBUTED POWER SUPPLY SYSTEM

Lee D. Tice, Bartlett; Jia Pang, West Chicago, and Robert J. Clow, North Aurora, all of Ill., assignors to Pittway Corporation, Chicago, Ill.

Filed Apr. 9, 1992, Ser. No. 866,138
Int. Cl.[5] H02J *9/00*
U.S. Cl. 307—66 **14 Claims**



1. A source of electrical energy usable with first and second conductors which carry an impressed electrical signal, the source comprising:
circuitry for storing a predetermined quantity of electrical energy;
circuitry, coupled to said storing circuitry and couplable to the conductors, for detecting a predetermined portion of the impressed electrical signal; and
circuitry, responsive to the detecting circuitry, for discharging said stored quantity of energy into the conductors within a predetermined time period in the presence of the impressed electrical signal.

5,254,878

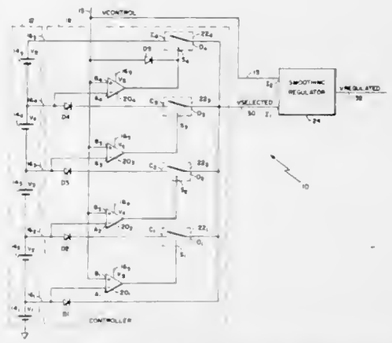
VOLTAGE REGULATED POWER SUPPLY PROVIDING A CONSTANT OUTPUT VOLTAGE

Lawrence H. Olsen, Hudson, N.H., assignor to Raytheon Company, Lexington, Mass.

Filed Dec. 31, 1991, Ser. No. 815,673
Int. Cl.[5] H02J *1/00*
U.S. Cl. 307—75 **8 Claims**

1. A regulated power supply comprising:
a) a voltage source having a plurality of outputs, each output having a successive increasing voltage level;
b) means, responsive to a control voltage signal, for selecting one of the plurality of outputs of the voltage source, the selecting means comprising:
(i) a plurality of switches, each switch coupled to a corresponding one of the outputs of the voltage source; and
(ii) comparator means, responsive to the control voltage signal and each one of the outputs of the voltage source, for selecting one of the outputs of the voltage source,

the selected one of the outputs of the voltage source having a voltage level greater than the control voltage signal, the comparator means comprising:
a first and a second transistor, each transistor having a base, an emitter and a collector, the emitter of the first transistor connected to a first one of the outputs of the voltage source, the emitter of the second transistor connected to the second successive output from the first one of the outputs of the voltage source;
a first resistor disposed between the base of the second transistor and the second successive voltage source



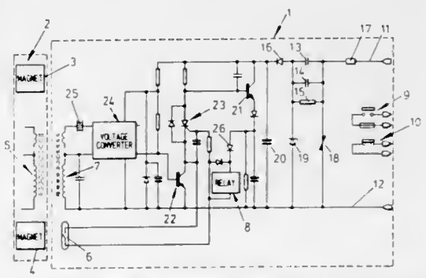
output and a second resistor disposed between the base of the second transistor and the collector of the first transistor;
a third resistor having a first terminal and a second terminal, the first terminal connected to the base of the first transistor; and
a diode disposed between the second terminal of the third resistor and the control voltage signal; and
c) smoothing regulator means, responsive to the control voltage signal and the selected one of the outputs of the voltage source, for providing a predetermined voltage level signal.

5,254,879

SAFETY SWITCH ASSEMBLY

George H. Jackson, Wigan, United Kingdom, assignor to EJA Engineering PLC, Wigan, United Kingdom

PCT No. PCT/GB90/00576, § 371 Date Dec. 5, 1991, § 102(e) Date Dec. 5, 1991, PCT Pub. No. WO90/13180, PCT Pub. Date Nov. 1, 1990
PCT Filed Apr. 17, 1990, Ser. No. 768,244
Claims priority, application United Kingdom, Apr. 14, 1989, 8908517; Dec. 19, 1989, 8928646
Int. Cl.[5] H01H *36/00*
U.S. Cl. 307—116 **4 Claims**



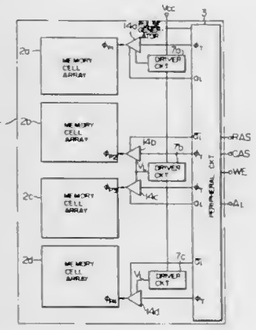
1. A safety switch assembly comprising first and second elements intended to be mounted on components of a safety enclosure that are moveable relative to one another, the first and second elements being in a predetermined relative position adjacent each other when the enclosure is in a closed condition and spaced apart when the enclosure is in an open condition, wherein the assembly comprises a source of magnetic flux mounted on one element and a magnetically operable switch 6 mounted on the other element, the magnetically operable switch 6 being arranged so as to be switched by the magnetic flux generated by the source of magnetic flux when the said one element is moved from a position spaced from the said other element to the said predetermined relative position adjacent the said other element, the assembly further comprises a pair of tuned circuits mounted in respective ones of the elements and a switching circuit connected to one of the tuned circuits, the switching circuit being arranged so as to be switched when the said one element is moved from a position spaced from the said other element to the said predetermined relative position adjacent the said other element, and the assembly further comprises an output circuit arranged to indicate that the enclosure is not closed unless both the magnetically operable switch 6 and the switching circuit indicate that the two element are in the predetermined relative position adjacent to each other.

5,254,880

LARGE SCALE INTEGRATED CIRCUIT HAVING LOW INTERNAL OPERATING VOLTAGE

Masashi Horiguchi, Kawasaki; Masakazu Aoki, Tokorozawa; Kiyoo Itoh, Higashikurume; Yoshinobu Nakagome, Hachioji; Norio Miyake, Higashimurayama; Takaaki Noda, Kodaira; Jun Etoh, Hachioji; Hitoshi Tanaka, Tachikawa, and Shinichi Ikenaga, Koganei, all of Japan, assignors to Hitachi, Ltd. and Hitachi VLSI Engineering Corporation, Tokyo, Japan

Division of Ser. No. 621,991, Dec. 4, 1990, abandoned, which is a division of Ser. No. 323,966, Mar. 15, 1989, Pat. No. 4,994,688.
This application Apr. 3, 1992, Ser. No. 863,705
Claims priority, application Japan, May 25, 1988, 63-125742; Dec. 2, 1988, 63-304152; Jan. 27, 1989, 1-16148
Int. Cl.[5] H03K *3/01, 5/01*
U.S. Cl. 307—296.1 **4 Claims**



1. A semiconductor device comprising:
an internal voltage generator generating an internal voltage different from an external voltage;
a first memory array;
a second memory array;
a first pulse generator using said internal voltage as a power supply and supplying a pulse to said first memory array;
a second pulse generator using said internal voltage as a power supply and supplying a pulse to said second memory array;
wherein said first pulse generator is supplied with a current from said internal voltage generator and outputs a pulse, when a first address signal is supplied to said first pulse generator;

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said second pulse generator is supplied with a current from said internal voltage generator and outputs a pulse, when a second address signal is supplied to said second pulse generator;

said first pulse generator is not supplied with a current from said internal voltage generator while said second pulse generator is supplied with a current from said internal voltage generator; and

said second pulse generator is not supplied with a current from said internal voltage generator while said first pulse generator is supplied with a current from said internal voltage generator.

5,254,881

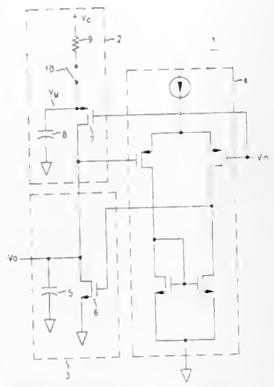
MASTER-SLAVE PEAK DETECTOR

Robert H. Leonowich, Muhlenberg Township, Berks County, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 16, 1991, Ser. No. 760,643

Int. Cl.[5] H03K *5/153;* **G01R** *19/04*

U.S. Cl. 307—351 **7 Claims**



5. A peak detector having a first capacitor, formed in an integrated circuit and responsive to an input signal, for holding the peak of the input signal across the first capacitor, characterized by:

a second capacitor;

means for changing a voltage on the second capacitor; and

a switch, responsive to the input signal and connected between the first capacitor and the second capacitor, for coupling the first capacitor to the second capacitor when the input signal differs a predetermined amount from the voltage on the second capacitor;

wherein the first capacitor is decoupled from the second capacitor and the voltage on the first capacitor is independent of the second capacitor voltage unless the switch so couples the capacitors.

5,254,882

METHOD AND DEVICE FOR PROCESSING TWO SEPARATELY REFERENCED SIGNAL LEVELS

Timothy A. T. Eyck, Sherman, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 11, 1992, Ser. No. 989,293

Int. Cl.[5] H03K *17/60, 19/02*

U.S. Cl. 307—296.6 **20 Claims**

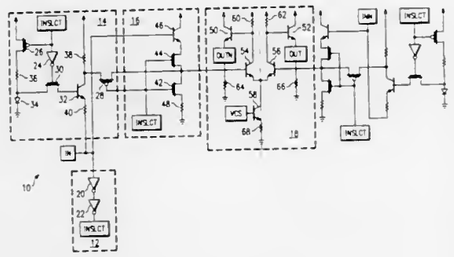
1. A device for processing different signal levels, comprising:

an input follower circuit for receiving an input signal having a first referenced signal level or a second referenced signal level, said input follower circuit converting said input signal having said first referenced signal level into a first signal having a third referenced signal level;

a latch circuit coupled to said input signal for activating said input follower circuit in response to said first referenced signal level on said input signal;

a translator circuit coupled to said latch circuit for converting said input signal having said second referenced signal level into a second signal having said third referenced signal level, said latch circuit activating said translator circuit in response to said second referenced signal level on said input signal; and

an output circuit coupled to said input follower circuit and said translator circuit for generating an output signal having said third referenced signal level from said first signal or said second signal according to which signal level occurs on said input signal.



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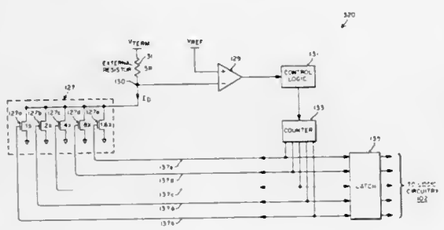
ELECTRICAL CURRENT SOURCE CIRCUITRY FOR A BUS

Mark A. Horowitz, Palo Alto; James A. Gasbarro, Mountain View, and Wingyu Leung, Cupertino, all of Calif., assignors to Rambus, Inc., Mountain View, Calif.

Filed Apr. 22, 1992, Ser. No. 872,919

Int. Cl.[5] H03K *19/003*

U.S. Cl. 307—443 **39 Claims**



1. Electrical current source circuitry for a bus, comprising:

(A) transistor means coupled between the bus and ground for controlling bus current;

(B) control circuitry coupled to the transistor means;

(C) a controller coupled to the control circuitry for controlling the transistor means, wherein the controller comprises:

(1) a variable level circuit comprising

(a) setting means for setting a desired current for the bus; and

(b) transistor reference means coupled to the setting means, wherein the variable level circuit provides a first voltage;

(2) voltage reference means for providing a reference voltage;

(3) comparison means coupled to the voltage reference means and the variable level circuit for comparing the first voltage with the reference voltage;

(4) logic means responsive to a trigger signal from the comparison means, wherein an output of the logic means is coupled to the control circuitry in order to turn on the transistor means in a manner dependent upon the output of the logic means.

5,254,884

Patent Not Issued For This Number

5,254,885

BI-CMOS LOGIC CIRCUIT WITH FEEDBACK

Kouichi Ando, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 8, 1992, Ser. No. 818,094

Claims priority, application Japan, Jan. 8, 1991, 3-000667; Feb. 7, 1991, 3-016170

Int. Cl.[5] H03K *19/02*

U.S. Cl. 307—446 **5 Claims**

1. A logic circuit comprising:

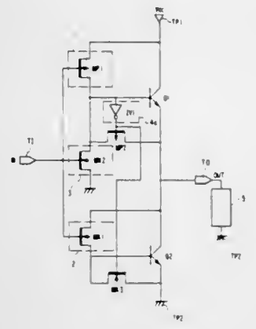
a first bipolar transistor with a collector connected to a first power supply terminal and an emitter connected to an output terminal;

a second bipolar transistor with a collector connected to said output terminal and an emitter connected to a second power supply corresponding to ground;

a first MOS transistor circuit including a first MOS transistor of a first-conductivity type capable of turning ON/OFF in response to an input signal applied to a gate of said first MOS transistor, said first MOS transistor being connected between said collector and a base of said first bipolar transistor and operating as a first bypass between the collector and the base of said first bipolar transistor in response to a result of a specified logic operation in response to said input signal;

a second MOS transistor circuit including a second MOS transistor of a second-conductivity type opposite to said first-conductivity type and capable of turning ON/OFF in response to said input signal applied to a gate of said second MOS transistor, said second MOS transistor being connected between said collector and a base of said second bipolar transistor and operating as a second bypass between said output terminal and said base of said second bipolar transistor in response to the result of said specified logic operation determined by said input signal, said second MOS transistor operating in reverse relation to said first MOS transistor;

a third MOS transistor circuit including a third MOS transistor of said second-conductivity type capable of turning ON/OFF in response to said input signal applied to a gate of said third MOS transistor, said third MOS transistor providing a connection between the base of said first bipolar transistor and said second power supply terminal in response to the result of said specified logic operation in



response said input signal, said third MOS transistor operating in the same relation to said second MOS transistor;

a fourth MOS transistor of said first-conductivity type, a drain and a source of said fourth MOS transistor being connected to the base of said first bipolar transistor and to said output terminal, respectively;

a fifth MOS transistor of said second-conductivity type, a source and a drain of said fifth MOS transistor being connected to said second power supply terminal and to the base of said second bipolar transistor, respectively; and

a control circuit for causing said fourth MOS transistor to turn ON/OFF following a predetermined time interval beginning after the turn-ON/turn-OFF of said first MOS transistor circuit, and for causing said fifth MOS transistor to turn ON/OFF following a predetermined time interval beginning after the turn-ON/turn-OFF of said second MOS transistor circuit,

wherein said control circuit includes an inverter supplied with a signal from the base of said first bipolar transistor, an inverted output supplied to the gates of said fourth and fifth MOS transistors, respectively.

5,254,886

CLOCK DISTRIBUTION SCHEME FOR USER-PROGRAMMABLE LOGIC ARRAY ARCHITECTURE

Khaled A. El-Ayat, Cupertino; King W. Chan, Los Altos, and William C. Plants, Santa Clara, all of Calif., assignors to Actel Corporation, Sunnyvale, Calif.

Filed Jun. 19, 1992, Ser. No. 901,604

Int. Cl.[5] H03K *19/177*

U.S. Cl. 307—465 **4 Claims**

1. In an integrated circuit including a user-programmable

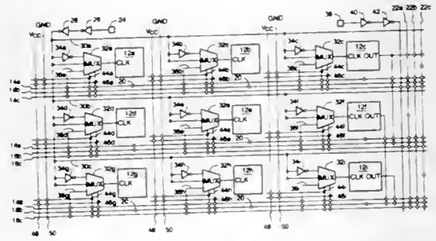
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logic array architecture comprising a plurality of user-programmable logic elements, each having data inputs and outputs, said user-programmable logic elements arranged in an array, at least some of said user-programmable logic elements including sequential logic elements having clock inputs, and further including a plurality of general interconnect lines which may be connected to one another and to said inputs and outputs of said logic elements, a clock distribution architecture including:

at least one clock input pin on said integrated circuit;

a plurality of clock distribution lines disposed in said array;

a buffering means, including at least one buffer amplifier having an input connected to said at least one clock input pin and an output connected to at least one of said clock distribution lines,



at least one inverting means having an input connected to at least one of said clock distribution lines, said at least one inverting means having an output;

a multiplexing means associated with each of said logic elements, each of said multiplexing means having a first input connected to one of said clock distribution lines, a second input connected to the output of said at least one inverting means, and a third input connected to a clock signal line connectable to at least one of said general interconnect line through a user-programmable element, an output connected to the clock input of the logic element with which it is associated, and means for selecting which of said first, second, and third inputs is connected to said output.

5,254,887

ECL TO BICMIS LEVEL CONVERTER

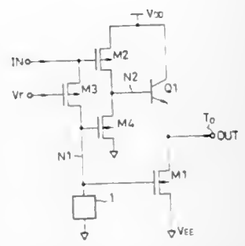
Takashi Oguri, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 18, 1992, Ser. No. 900,421

Claims priority, application Japan, Jun. 27, 1991, 3-155040; Jul. 22, 1991, 3-180651

Int. Cl.[5] H03K *19/092*

U.S. Cl. 307—475 **8 Claims**



1. A level converter comprising an ECL circuit having at least one output terminal, an emitter follower connected to the output terminal of said ECL circuit, and a level converting circuit connected to said emitter follower, for converting the logic level of an output signal from said ECL circuit into the logic level of a MIS or BiMIS output signal, the improvement being that said level converting circuit comprises:

an NPN first bipolar transistor having a collector connected to a power supply and an emitter connected to an output terminal of said level converter;

an N-type first MIS transistor having a drain connected to said output terminal and a source connected to a reference potential supply;

a P-type second MIS transistor having a source connected to said power supply, a drain connected to the base of said first bipolar transistor, and a gate connected to an input terminal supplied with an input signal from said emitter follower;

a P-type third MIS transistor having a source connected to the gate of said second MIS transistor, a drain connected to the gate of said first MIS transistor, and a gate connected to a terminal supplied with a control potential supply;

an N-type fourth MIS transistor having a source connected to said reference potential supply, a drain connected to the base of said first bipolar transistor, and a gate connected to the drain of said third MIS transistor; and

a discharge circuit having a first terminal connected to the gate of said first MIS transistor and a second terminal connected to said reference potential supply.

5,254,888

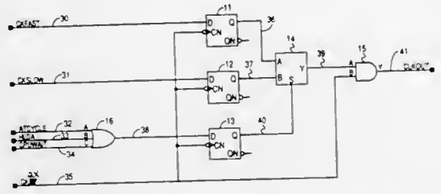
SWITCHABLE CLOCK CIRCUIT FOR MICROPROCESSORS TO THEREBY SAVE POWER

Robert H. J. Lee, Palo Alto, and John D. Kenny, Sunnyvale, both of Calif., assignors to Picopower Technology Inc., San Jose, Calif.

Filed Mar. 27, 1992, Ser. No. 858,834

Int. Cl.[5] H03R *19/003*

U.S. Cl. 307—480 **4 Claims**



1. A clock circuit for use in providing a clock signal to a logic circuit, said clock circuit comprising:

means for generating a first clock signal suitable for driving the logic circuit;

means for generating a second clock signal suitable for driving the logic circuit, said second clock signal having a frequency lower than that of said first clock signal;

multiplexer means having at least two input leads, a first of said input leads for receiving said first clock signal and a second input lead for receiving said second clock signal responsive to a control signal, for selecting either said first clock signal or said second clock signal for transmission to said logic circuit to drive said logic circuit;

an output lead connected to said multiplexer means;

means for controlling the state of said multiplexer means to transmit to said output lead said first clock signal in the absence of said control signal and said second clock signal in the presence of said control signal;

means for detecting the presence of said control signal, wherein said means for detecting the presence of said control signal comprises:

a first logic gate capable of receiving a plurality of input signals, said first logic gate producing a output signal having a first state in response to any one of said plurality of input signals indicating that the second clock signal should be utilized; and

means responsive to said output signal having a first state for providing said second clock signal to said logic circuit in response to any one of said plurality of control signals indicating that the second clock signal should be utilized.

5,254,889

MOSFET ANALOG MULTIPLIER

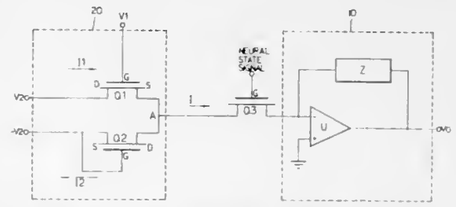
Il S. Han, Seoul, Rep. of Korea, assignor to Korea Telecommunication Authority, Rep. of Korea

Filed Jun. 18, 1992, Ser. No. 900,331

Claims priority, application Rep. of Korea, Nov. 1, 1991, 91-19374

Int. Cl.[5] G06G *7/16*

U.S. Cl. 307—529 **14 Claims**



5. A MOSFET analog multiplier comprising:

a variable resistive MOSFET linear means **20** for linearly varying output current I depending upon a symmetrical input voltage from voltage sources V2 and −V2 and an input voltage from an input voltage source V1 operatively associated with said symmetrical input voltage from said voltage source V2 and −V2, with said variable resistive MOSFET linear means **20** having a node A to output said linearly varied output current I therethrough;

an operational amplifying unit **10** for amplifying said linearly varied output current I, with said operational amplifying unit including an operational amplifier U having an inverting input terminal connected to said node A of said MOSFET linear means **20**, a non-inverting input terminal connected to the ground, and an output terminal, said operational amplifying unit **10** further including a feedback element Z connected between said inverting input terminal and said output terminal of said operational amplifier U; and,

a MOSFET Q3 operatively interposed between said node A of said MOSFET linear means **20** and said inverting input terminal of said operational amplifier U of said operational amplifying unit **10**, said MOSFET Q3 further including a gate electrode for receiving the input signal of a neural state, such that in use said MOSFET Q3 operates as a hybrid neural synapse circuit upon receiving said input signal of said neural state through said gate electrode of said MOSFET Q3.

5,254,890

GROUND BOUNCING REDUCING CIRCUIT AND METHOD

Ling-Ling Wang, Taipei Hsian, and Sheau-Jiung Lee, Taipei, both of Taiwan, assignors to Acer Incorporated, Taipei, Taiwan

Filed Jan. 16, 1992, Ser. No. 821,965

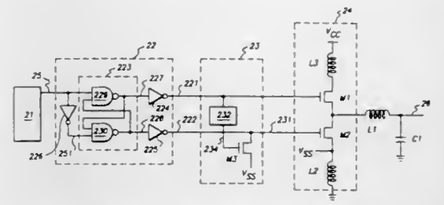
Int. Cl.[5] H03K *5/12, 17/16*

U.S. Cl. 307—542.1 **13 Claims**

1. For an output circuit having a current sinking means for discharging current from a load, a ground bouncing reducing circuit comprising:

a first control means for generating a first voltage control signal at a first output terminal and a second voltage control signal at a second output terminal in response to an input signal, the first control signal and the second control signal not being asserted at the same time; and

a second control means for providing an activation signal at a third output terminal to activate and current sinking means, said second control means comprising a delay means coupled to receive said first control signal for generating a third control signal which is a delayed version of said first control signal, and a signal regulating means coupled to receive said third control signal and controlled by said third control signal for gradually passing the second control signal as said activation signal to the current sinking means of the output circuit to slowly activate said sinking means, thereby, allowing the current sinking means to slowly discharge current from said load to reduce ground bouncing.



5,254,891

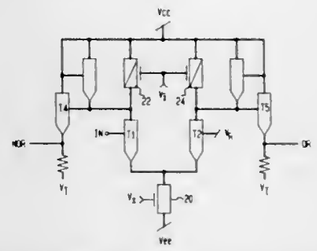
BICMOS ECL CIRCUIT SUITABLE FOR DELAY REGULATION

Jack A. Dorler, Holmes, and Francesco M. Masci, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 20, 1992, Ser. No. 870,654

Int. Cl.[5] H03K *17/60, 19/02*

U.S. Cl. 307—570 **5 Claims**



1. A bipolar emitter-coupled logic circuit responsive to a delay-regulating signal and its inverse that are variable over a continuous range above and below a nominal values in order to vary the operating speed of said logic circuit, comprising in combination:

a pair of bipolar transistors whose emitters are coupled to a constant current source to form an emitter-coupled current switch;

a first FET connected in series with a voltage source, said FET and said voltage source in combination comprising said constant current source, said first FET having a gate electrode, a source electrode, and a drain electrode;

a second and a third FET, each respectively connected in series with a collector of each of said pair of bipolar transistors, each of said second and third FETs having a gate electrode, a source electrode, and a drain electrode;

means to couple said variable delay-regulating signal to the

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gate electrode of said first FET to regulate a constant current through said emitter-coupled current switch; and means to couple the inverse of said variable delay-regulating signal to the gate electrode of each of said second and third FETs to regulate a current through the respectively collector of each of said bipolar transistors.

5,254,892

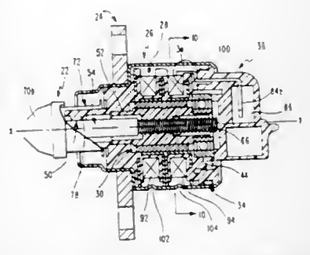
STEPPER MOTOR WITH INTEGRATED ASSEMBLY

Edward T. Bosman, Cheshire; Karla C. Pratt, Wolcott; Philip G. Atiyeh, Cheshire, and John F. Rutledge, Plantsville, all of Conn., assignors to North American Philips Corporation, New York, N.Y.

Division of Ser. No. 817,034, Dec. 30, 1991. This application Sep. 10, 1992, Ser. No. 943,365

Int. Cl.[5] H02K *37/14*

U.S. Cl. 310—49 R **7 Claims**



1. A stepper motor including a stator having a central axis and winding means disposed about the axis for producing a plurality of magnetic poles in the stator, a permanent-magnet rotor having a plurality of magnetic poles and being mounted for rotation about the axis, and a shaft coupled to the rotor such that rotation of the rotor effects linear motion of the shaft, characterized in that:

a. the stator comprises a monolithically-molded assembly including a plurality of multi-pole pieces embedded in a molding of insulating material, said molding defining:
   (1) at least one circumferential winding-holding channel disposed about the axis;
   (2) an inner, axially-extending opening for receiving at least a portion of the rotor;
   (3) a first axial end having bearing-holding means; and
   (4) a second axial end comprising a bearing portion having a bearing surface with a circular cross section and an adjacent shaft anti-rotation portion having an inner surface with a noncircular cross section of predefined shape;

b. the rotor comprises a body including:
   (1) a first end supporting a bearing secured by the bearing-holding means of the stator molding;
   (2) a second end having a bearing surface disposed for rotation against the bearing portion of the stator; and
   (3) a permanent magnet portion disposed for rotation within the stator; and
   (4) a threaded surface;

c. the shaft comprises an axially displaceable end extending from the stator and means for cooperating with the rotor and the stator to convert rotational movement of the rotor to axial displacement of the shaft, said means including:
   (1) a first portion of the shaft having a threaded surface disposed in the rotor body in rotatable engagement with the threaded surface of said rotor body; and
   (2) a second portion of the shaft including an outer surface with a cross section having said predefined shape and being slidably disposed in the shaft anti-rotation portion of the stator molding.

5,254,893

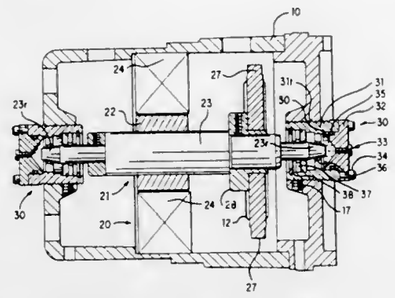
SHAFT SUPPORT ASSEMBLY FOR USE IN A POLYGON MIRROR DRIVE MOTOR

Russell D. Ide, P.O. Box 744, 641 Arnold Rd., Coventry, R.I. 02816

Filed Jan. 30, 1992, Ser. No. 828,228

Int. Cl.[5] H02K *7/08, 7/14;* **F16C** *32/06*

U.S. Cl. 310—90 **20 Claims**



1. A mirror drive motor assembly comprising:
a casing;
a motor supported within the casing, the motor comprising a stator mounted in the casing and a rotor rotatable relative to the stator, the rotor having two axial ends a mirror rotatably secured thereto at a location between the two axial ends, the rotor further comprising a shaft end extending from each axial end of the rotor, the shaft ends being coaxial and the shaft ends being conically tapered at their axial ends so as to have a continuous smooth uninterrupted conical surface;
a pair of bearing assemblies axially mounted within the casing for supporting the respective shaft ends of the rotor;
the bearing assemblies each comprising a housing having a shaft receiving opening formed therein for receiving the smooth conically tapered shaft ends of the rotor;
a bearing located within the housing, the bearing having a smooth conical bearing face for supporting the conical end of the rotor shaft;
seal means spaced from the conical bearing face for providing a seal between the bearing housing and the rotor shaft at a location axially inward of the respective conical surfaces so that the conical surfaces are enclosed within the housing in a fluid tight manner and separated from the mirror by the fluid tight housing; and
position adjusting means for adjusting the position of at least one of the bearing assemblies relative to the casing in which it is supported so as to adjust the position of the bearings with respect to the rotor shaft.

5,254,894

DUAL-STATOR INDUCTION SYNCHRONOUS MOTOR

Toshihiko Satake, Higashihiroshima, and Yukio Onogi, Hiroshima, both of Japan, assignors to Satake Engineering Co., Ltd., Tokyo, Japan

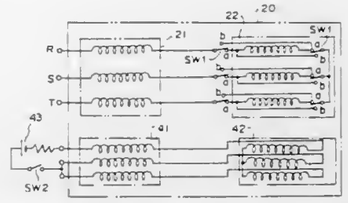
Filed May 28, 1991, Ser. No. 706,009

Claims priority, application Japan, May 26, 1990, 2-136381; Jun. 27, 1990, 2-170470

Int. Cl.[5] H02K *16/00, 16/04, 19/10, 19/14*

U.S. Cl. 310—114 **9 Claims**

1. A dual-stator induction synchronous motor having two rotor cores mounted on a common axis with a predetermined space provided therebetween and two stator cores respectively facing said two rotor cores, said motor comprising:
a rotor having two first rotor windings of a predetermined number of poles provided respectively on said two rotor cores and two second rotor windings of a different number of poles with respect to the number of poles of said first rotor windings provided respectively on said two rotor cores, said two first rotor windings being connected together and said two second rotor windings being connected together between said two rotor cores;
two stators each having two stator windings provided respectively on said two stator cores and having a number of poles identical to the number of poles of said first rotor windings and two excitation windings provided respectively on said two stator cores having a number of poles identical to the number of poles of said second rotor windings;
rectifier means for rectifying voltages generated in said two second rotor windings based on magnetic fields produced by said two excitation windings during synchronous operation and for suppylying the rectified voltages to said two



first rotor windings so that magnetic poles acting on rotating magnetic fields produced by said two stator windings are produced on said two rotor cores, said first rotor windings and said second rotor windings having connecting portions therebetween and said rectifier circuit being provided between said connecting portions; and
phase shifting means associated with one of said two stator windings for producing a first phase difference for starting and acceleration operation and a second phase difference for synchronous operation between a rotating magnetic field produced around one of said rotor cores facing one of said two stators and a rotating magnetic field produced around the other one of said two rotor cores facing the other one of said two stators, said first phase difference being different from said second phase difference by 180°.

5,254,895

MOTOR FOR DISC DRIVE

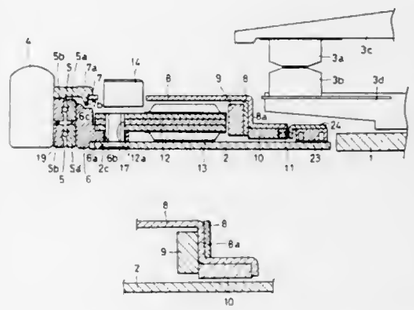
Shigeki Koizumi, Yokoze, Japan, assignor to Canon Denshi Kabushiki Kaisha, Chichibu, Japan

Filed Aug. 5, 1991, Ser. No. 740,510

Claims priority, application Japan, Aug. 6, 1990, 2-206900; Aug. 23, 1990, 2-087467

Int. Cl.[5] H02K *21/12*

U.S. Cl. 310—156 **4 Claims**



1. A thin compact motor for a disc drive for rotating a recording medium comprising:
a rotor yoke having an outer peripheral portion, said rotor yoke rotationally driving said recording medium;
a driving magnet for generating a rotating force, said driving magnet being joined to the outer peripheral portion of said rotor yoke;
a substrate;
a core yoke having a coil mounted thereon disposed in parallel and in opposing relationship with said rotor yoke;
a mounting member attaching said core yoke to said substrate, an end of said mounting member not projecting beyond said core yoke thereby minimizing a distance between said rotor and core yokes;
an auxiliary yoke joined to the outer peripheral portion of said rotor yoke, said auxiliary yoke preventing magnetic saturation of said rotor yoke and leakage of magnetic flux from said driving magnet through the outer peripheral portion of said rotor yoke; and
a chucking mechanism joined to said rotor yoke for holding said recording medium, said chucking mechanism having a driving member which transmits rotation of said rotor yoke to the recording medium, said driving member being movable between a first position in which said driving member engages said recording medium and a second position in which said driving member does not engage said recording medium, said driving member being projected toward said core yoke without abutting against the end of said mounting member at said second position.

5,254,896

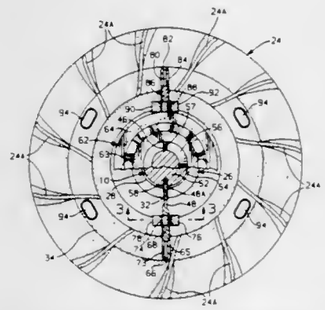
ALTERNATING CURRENT GENERATOR ROTOR

Michael D. Bradfield; Jorge E. Silva, and Thomas R. Sowash, all of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 20, 1992, Ser. No. 979,675

Int. Cl.[5] H02K *1/22*

U.S. Cl. 310—263 **5 Claims**



1. A rotor for an alternating current generator comprising, a shaft, a pair of pole segments carried by said shaft formed of magnetic material having a plurality of interleaved pole teeth, a core member formed of magnetic material disposed between said pole segments, a field coil disposed about said core member, a part formed of electrical insulating material located adjacent one of said pole segments, a slip ring assembly carried by said shaft comprising, first and second metallic slip rings, conductor means electrically connecting said first slip ring to a first end of said field coil, a first wire connected to said second slip ring, a second wire connected to a second end of said field coil, said first and second wires being twisted together to electrically connect said first and second wires and to provide a twisted together wire portion of a predetermined length, and means for locking said twisted together wire portion from movement relative to said part formed of electrical insulating material, said last named means comprising material of said part formed of electrical insulating material that completely encircles said twisted together wire portion at least over a

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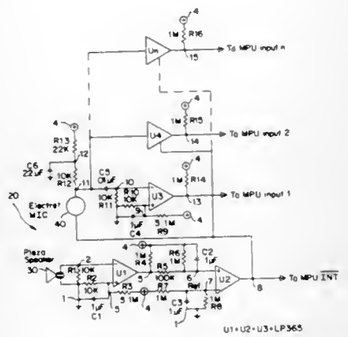
portion of the length of said predetermined length of twisted together wire portion.

5,254,897

ACTIVATION CIRCUIT FOR BATTERY-OPERATED SECURITY ALARM DETECTION SYSTEM

Robert E. Miller, Prospect, and Tam Nolan, Louisville, both of Ky., assignors to Blue Grass Electronics, Inc., Louisville, Ky.

Filed Oct. 7, 1992, Ser. No. 958,026
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—319 9 Claims



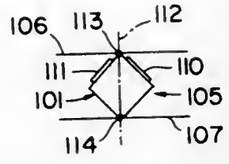
1. An activation circuit for a current-drawing security alarm detection system, comprising:
(a.) a piezo element having a first desired bandwidth, said piezo element producing an output when a signal having a frequency within said first desired bandwidth and a signal level above a noise threshold is detected; and,
(b.) means to activate a current-drawing detector having a second selected bandwidth upon production of said piezo element output.

5,254,898

VIBRATOR

Kokichi Terajima, Tokyo, Japan, assignor to Akai Electric Co., Ltd., Tokyo, Japan

Filed Aug. 25, 1992, Ser. No. 935,630
Claims priority, application Japan, Aug. 28, 1991, 3-240330
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—321 5 Claims



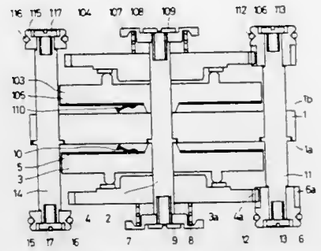
1. A vibrator comprising
a vibrating body having a polygonal lateral cross-section,
at least two piezoelectric elements, each respectively disposed on one of two nonparallel side surfaces of said vibrating body, and
a support structure which supports said vibrating body at two support points of said vibrating body, said support points being located in a split plane which passes through a line of intersection of two planes in which said nonparallel side surfaces lie, said split plane bisecting an inner angle formed by said two planes,
wherein said support points are located on opposing sides of said vibrating body and wherein each of said support points is positioned in the region of a nodal point of said vibrator.

5,254,899

MICRO-TRAVELLER WITH ULTRASONIC MOTOR

Makoto Suzuki; Nobuo Tsukada; Ichiro Horikoshi; Fujio Ozawa, and Masao Kasuga, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Filed Jan. 22, 1992, Ser. No. 824,014
Claims priority, application Japan, Sep. 17, 1991, 3-236650
Int. Cl.[5] H01L *41/08*; B61B *13/10*
U.S. Cl. 310—323 33 Claims



1. A traveller for travelling along a surface, comprising:
supporting means for supporting ultrasonic motors;
a first ultrasonic motor supported by the supporting means and comprising a first vibrating member for generating vibration in response to a drive signal applied thereto, a first moving member supported by said first vibrating member, and first pressure regulating means for applying pressure to urge said first vibrating member into contact with said first moving member;
first moving means engageable with a surface on which the traveller is to travel and turned by said first moving member for moving the traveller along the surface;
a second ultrasonic motor supported by the supporting means and comprising a second vibrating member for generating vibration in response to a drive signal applied thereto, a second moving member supported by said second vibrating member, and second pressure regulating means for applying pressure to urge said second vibrating member into contact with said second moving member;
second moving means engageable with the surface and turned by said second moving member for moving the traveller along the surface; and
a driving circuit for outputting drive signals to said first vibrating member and said second vibrating member.

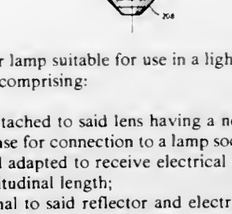
5,254,900

BROAD BEAM ULTRASONIC TRANSDUCER

Valentin Magori, Müchen, and Thomas Möckl, Coburg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

PCT No. PCT/DE90/00478, § 371 Date Dec. 18, 1991, § 102(e) Date Dec. 18, 1991, PCT Pub. No. WO91/00153, PCT Pub. Date Jan. 10, 1991
PCT Filed Jun. 22, 1990, Ser. No. 778,817
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1989, 3920663
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—334 10 Claims

1. An electroacoustic film transducer comprising:
a transducer body in the form of a parallelepiped with a length, a width and a thickness and one surface of the transducer body being a sound-emitting and/or sound-receiving surface, the transducer body having at least one lamina provided with electrodes, the lamina consisting of piezoelectric material, and at least two plates/films consisting of a plastic material, and the laminae and plates/films being connected to one another alternately in succession in a direction of the thickness,
the ratio of the width to the length of the parallelepiped having approximately the value 0.42,
a long lateral surface, defined by the thickness×length dimensions of the parallelepiped, being the sound-emitting and/or sound receiving surface,



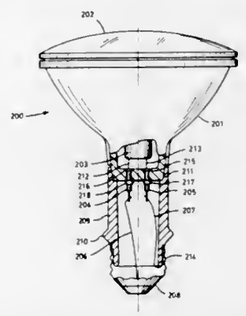
and the plastic material being a material having a mechanical oscillation quality factor in the order of magnitude of that of the piezoelectric material of the laminae, the plastic material having a lower acoustic characteristic impedance than that of the piezoelectric material of the laminae, and a Poisson ration of the plastic material being smaller than 0.3.

5,254,901

NECK EXTENDER FOR A REFLECTOR LAMP

Thomas Haraden, S. Hamilton; Harold L. Hough, Beverly, and Peter Gagnon, Topsfield, all of Mass., assignors to GTE Products Corporation, Danvers, Mass.

Filed Dec. 26, 1991, Ser. No. 814,333
Int. Cl.[5] H01J *1/32*
U.S. Cl. 313—113 13 Claims



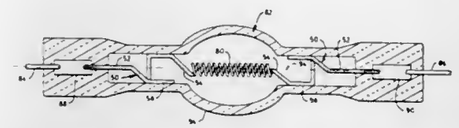
1. A reflector lamp suitable for use in a lighting fixture, said reflector lamp comprising:
a lens;
a reflector attached to said lens having a neck;
a threaded base for connection to a lamp socket of a lighting fixture and adapted to receive electrical energy and having a longitudinal length;
means, internal to said reflector and electrically connected to said base, for generating light in response to said electrical energy, said means for generating light comprising a lamp capsule; and
extender means, connected between the reflector and the threaded base, for extending the neck of the reflector, said extender means comprising a single electrical insulating member having a first end attached to said threaded base, a second end having a collar surround a portion of said neck of said reflector and directly and non-detachably connected to the neck of said reflector whereby said neck of said reflector and said threaded base are longitudinally separated a predetermined distance.

5,254,902

FILAMENT SUPPORT FOR TUBULAR LAMP CAPSULE

Robert M. Griffin, Hamilton; Peter R. Gagnon, Topsfield; Stephen J. Leadvaro, Salem, and Roy C. Martin, Peabody, all of Mass., assignors to GTE Products Corporation, Danvers, Mass.

Filed Dec. 27, 1991, Ser. No. 815,089
Int. Cl.[5] H01K *1/24*
U.S. Cl. 313—274 18 Claims



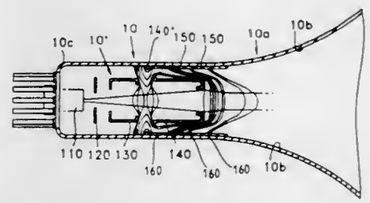
1. A filament support for supporting and centering a filament in a double-ended lamp envelope, comprising:
an inlead portion defining a central axis of said filament support;
a filament attachment portion; and
a centering portion interconnecting the inlead portion and the filament attachment portion, said centering portion including means for contacting an inner surface of the lamp envelope at a plurality of discrete, circumferentially spaced-apart contact regions that are substantially equally spaced from said central axis and including at least two axial segments and at least two lateral segments.

5,254,903

CATHODE RAY TUBE

Cheol-sik Jo, Seoul, and Seong-wu Ham, Kyunggi-do, both of Rep. of Korea, assignors to Samsung Electron Devices, Co., Ltd., Kyunggi-do, Rep. of Korea

Filed Dec. 31, 1991, Ser. No. 815,038
Claims priority, application Rep. of Korea, Jul. 10, 1991, 91-10560
Int. Cl.[5] H01J *29/48*
U.S. Cl. 313—450 1 Claim



1. A cathode ray tube, comprising:
a conductive layer on an inner surface of a conical body;
an electron gun having a control electrode, a focusing electrode and a screen electrode, said electron gun being provided in a neck which extends from the conical body to face the flat bottom for emitting an electron beam to the screen;
a plurality of electrode layers which are sequentially provided on the inner surface of the neck and form electrostatic lenses for controlling an electron beam along with the electrodes of said electron gun; and
a plurality of resistance layers, each resistance layer being disposed adjacent electrode layers on the inner surface of the neck;
wherein said conductive layer is electrically connected to the last electrode layer of said plurality of electrode layers and said plurality of electrode layers comprise an accelerating electrode layer surrounding the end of the focus

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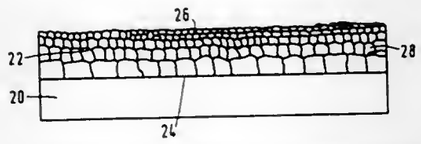
electrode and a focusing electrode layer positioned between the focusing electrode and the screen electrode.

5,254,904

ANTIREFLECTIVE COATING LAYER IN PARTICULAR FOR A CATHODE RAY TUBE

Renaat E. Van De Leest, and Maarten Buijs, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 27, 1991, Ser. No. 750,806
Claims priority, application European Pat. Off., May 21, 1991, 91201209.3
Int. Cl.[5] H01J *29/28;* G02B *1/10*
U.S. Cl. 313—479 7 Claims



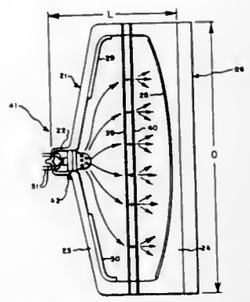
1. An antireflective coating layer on a substrate comprising a coating layer of a gel material having an index of refraction decreasing from the substrate to the outer surface of said coating layer, said coating layer being a closed layer substantially free of porosity, and said gel material having a degree of cross-linking increasing from said substrate to said outer surface.

5,254,905

CATHODE-LUMINESCENT PANEL LAMP, AND METHOD

Thomas A. Dunbar, Horseheads; Richard F. Kankus, Elmira, and Thomas J. Kolonoski, Horseheads, all of N.Y., assignors to Imaging & Sensing Technology Corporation, Horseheads, N.Y.

PCT No. PCT/US90/02644, § 371 Date Jan. 3, 1992, § 102(e) Date Jan. 3, 1992, PCT Pub. No. WO91/17563, PCT Pub. Date Nov. 14, 1991
PCT Filed May 10, 1990, Ser. No. 778,194
Int. Cl.[5] H01J *63/02*
U.S. Cl. 313—495 19 Claims



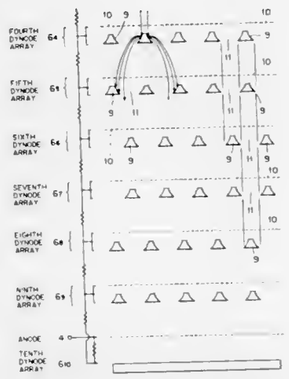
1. A cathode-luminescent panel lamp, comprising:
an evacuated tube having an optical axis, having a face plate and having a phosphor coating arranged on the inside surface of said face plate, said phosphor coating functioning as an anode and being operatively arranged to convert electrons impinging thereon into light passing through said face plate;
a single electron gun arranged within said tube in spaced relation to said phosphor coating, said gun being operatively arranged to selectively emit at least one divergent beam of electrons toward said phosphor coating to form an electron cloud; and
shaping means operatively arranged within said tube between said gun and phosphor coating for controlling the density of electrons striking said phosphor coating as a function of their angle from said optical axis and for distributing and normalizing the electrons in said cloud with respect to said face place and for causing the intensity of light emitted by said phosphor coating through said face plate to be substantially constant across the area of said face plate.

5,254,906

PHOTOMULTIPLIER TUBE HAVING A GRID TYPE OF DYNODES

Suenori Kimura, Hamamatsu, Japan, assignor to Hamamatsu Photonics K.K., Hamamatsu, Japan

Filed Aug. 14, 1991, Ser. No. 744,739
Claims priority, application Japan, Aug. 15, 1990, 2-215325
Int. Cl.[5] H01J *43/18, 43/22*
U.S. Cl. 313—535 23 Claims



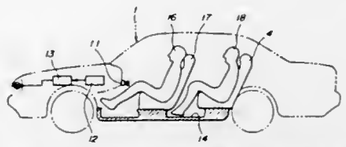
3. An electron multiplier tube comprising:
a plurality of spaced dynode arrays arranged in a first direction, each of said dynode arrays successively multiplying electrons incident hereto, and
an anode provided below said plurality of dynode arrays for collecting the multiplied electrons to output an amplified electrical signal, each of said dynode arrays comprising:
a plurality of rod-shaped dynode elements arranged in a second direction which extends perpendicularly to the first direction, and
a mesh electrode, proximate said plurality of rod-shaped elements, for providing an equipotential through the corresponding plurality of rod-shaped dynode elements,
wherein said plurality of dynode arrays are arranged to construct a dynode array group, said dynode array group being formed of at least two dynode arrays which are positioned next to each other in the first direction and which are arranged such that each rod-shaped dynode element in one of the two dynode arrays is aligned, along a plane extending in the first direction, with a corresponding dynode element in the other one of said two dynode arrays.

5,254,907

LIGHTING SYSTEM FOR USE IN VEHICLE CABIN

Yoshio Matsuno, Tokyo; Hitoshi Matsui, Kawasaki; Izumi Okamura, Hikone; Teruaki Shigeta, and Yoshinori Tanabe, both of Osaka, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama and Matsushita Electric Industrial Co., Ltd., Osaka, both of Japan

Filed Sep. 18, 1991, Ser. No. 761,052
Claims priority, application Japan, Sep. 21, 1990, 2-253446; Sep. 21, 1990, 2-253447
Int. Cl.[5] B60Q *1/00*
U.S. Cl. 315—77 2 Claims



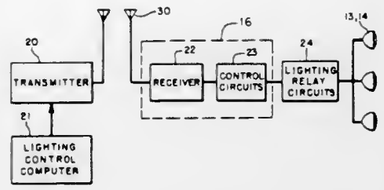
1. A method of controlling a lighting system for use in a cabin of a vehicle on a road, the vehicle having a seat, a roof, a floor, a door and a seat occupant, the lighting system including a first lamp arranged to the roof, a second lamp arranged to the seat and a third lamp arranged to the door, the method comprising the steps of:
generating a demand for providing a predetermined information to the seat occupant, controlling by means of a plurality of sensors and an arithmetic circuit, luminance of the first, second and third lamps to obtain a gradual increase in brightness in order of the seat, the floor and the road; and
sequentially turning on the first lamp, the second lamp and the third lamp in response to said demand.

5,254,908

SIGN BOARD LIGHTING CONTROL SYSTEM

Larry G. Alt, Crown Point; Robert C. Florin, Hammond; Joseph H. Little, Valparaiso, and Richard C. Oesterle, Crown Point, all of Ind., assignors to Profile Systems, Merrillville, Ind.

Filed Apr. 8, 1992, Ser. No. 865,108
Int. Cl.[5] H05B *41/00*
U.S. Cl. 315—312 71 Claims



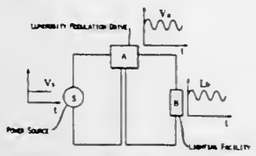
1. A system for controlling the illumination of each one of a plurality of sign boards in accordance with predetermined lighting protocols, assigned to each sign board, each protocol requiring predetermined on and off times, comprising:
transmission means for transmitting at least one reference signal; a lighting control unit associated with each, sign board, each said lighting control unit including receiver means for receiving each said transmitted reference signal, timing means responsive to each said received reference signal for initiating a predetermined timing period and sign lighting circuit means responsive to said timing means for controlling the application of operating current to the illuminating means of each said sign board following said timing period, whereby each said sign board is illuminated in accordance with its respective lighting protocol.

5,254,909

AUTOMATIC LUMINOSITY CYCLICAL MODULATION DEVICE FOR A LIGHTING FACILITY

Jia-Ming Shyu, and Meng-Feng Li, both of Hsinchu Hsien, Taiwan, assignors to Norm Pacific Automation Corp., Taiwan

Filed May 1, 1992, Ser. No. 877,313
Int. Cl.[5] H05B *41/38, 37/02*
U.S. Cl. 315—293 12 Claims



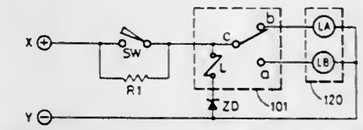
1. A device for controlling luminosity from a lamp powered by an electrical power source, comprising
power supplying means, connected to the power source and the lamp, for automatically supplying electrical power from the power source to the lamp, with a preset cyclically varying level, such that a resulting, predetermined cyclical variation in the level of luminosity from the lamp is imperceptible through the eyes of persons exposed thereto; and
means, operable by a user, for setting values corresponding to an average level, the period of variation and the amplitude of variation of the electrical power supplied to the lamp by said power supplying means.

5,254,910

COLOR-DIFFERENTIAL TYPE LIGHT DISPLAY DEVICE

Tai-Her Yang, 5-1 Taipin St., Si-Hu Town, Dzan-Hwa, Taiwan

Filed Apr. 3, 1992, Ser. No. 863,109
Int. Cl.[5] B60Q *1/26*
U.S. Cl. 315—313 13 Claims



1. An illuminated display arrangement comprising a circuit having at least two differently colored light sources which are selectively energizable and are arranged to illuminate a housing such that said housing appears differently colored according to which light source is energized, said circuit further including a switch, an impedance in parallel with said switch, and a relay coupled to said switch and impedance, said relay having a normally closed pair of contacts connected to one light source and a normally open pair of contacts connected to the other light source, whereby said switch may be selectively opened to pass sufficient current through said impedance to light said one light source but insufficient current to activate said relay and light the other light source, and said switch may be selectively closed to bypass said impedance, thereby passing sufficient current to activate said relay, extinguish the one light source and light the other light source;
whereby an observed color of the housing is substantially unaffected by external illumination.

5,254,911

PARALLEL FILAMENT ELECTRON GUN

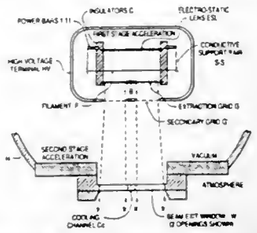
Tzvi Avnery, Winchester; Willem van de Stadt, Salem, and Michael J. Souza, Fall River, all of Mass., assignors to Energy Sciences Inc., Wilmington, Mass.

Filed Nov. 22, 1991, Ser. No. 796,479
Int. Cl.[5] G09G *1/04;* H01J *29/70, 3/14;* G21K *1/08*
U.S. Cl. 315—366 17 Claims

1. An electron beam gun contained within an evacuated

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windowed housing for generating electron beam radiation for passage through the window along a direction transverse to the longitudinal direction of travel of a surface-to-be-irradiated external to said window having, in combination, a plurality of longitudinally extending parallel transversely spaced substantially co-planar similar filaments for generating electrons upon becoming heated by current passing simultaneously therethrough; a substantially planar extractor grid spaced on one side of the filaments and substantially coextensive with the



area of the filaments and of polarity positive with respect to the filaments to draw the electrons generated thereby and maintain continuous acceleration in the said transverse direction to and through the grid; means for further continuously maintaining acceleration of the electrons to and through said window externally of said housing and upon said surface-to-be-irradiated; an electrostatic lens surface spaced on the other side of the filaments and substantially coextensive with the area of the filaments and of polarity with respect to the filaments such as to modify the flow of electrons from each filament to and through the extractor grid so as to provide electron beam shaping to generate a continuous transverse electron beam of desired uniformity and profile at said window, and in which the generated electron beam is accelerated to and through an anode window upon the said surface-to-be-irradiated, said window having an intermediate cooling channel region where electrons are blocked, and electron blocking means provided at a corresponding alined region of the extractor grid.

5,254,912

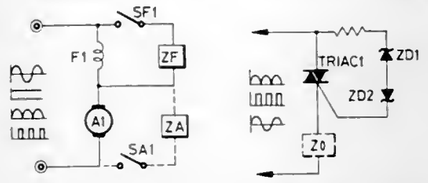
Patent Not Issued For This Number

5,254,913

SPEED LIMITING CIRCUIT FOR UNIVERSAL TYPE SERIES OR COMPOUND ELECTRIC MOTOR

Tai-Her Yang, 5-1 Taipin St., Si-Hu Town, Dzan-Hwa, Taiwan

Filed Aug. 14, 1991, Ser. No. 745,006
Int. Cl.[5] H02K *23/00*
U.S. Cl. 318—251 **4 Claims**



3. An adjustable high/low speed limiting circuit for a series excitation motor, comprising:

a plurality of series-connected zener diodes coupled in parallel across a series-connected field winding and armature of said motor, said diodes having a first plurality of tap leads coupled therebetween;

a second plurality of tap leads connected at successive intervals along said field winding of said motor; and

a switch device for selectively connecting each first tap leads with a corresponding second tap lead, said switch device being triggered when a voltage across said field winding exceeds a predetermined first value to shunt current around said field winding to an armature winding of said motor, and said switch device being triggered when a voltage across said armature winding exceeds a predetermined second value to shunt current around said armature winding of said motor;

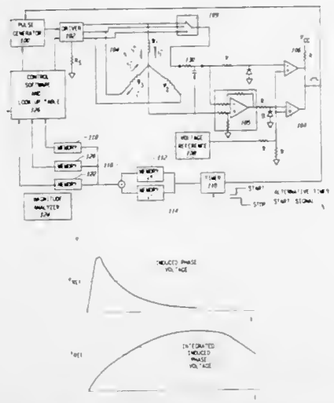
whereby when a load applied to said motor causes said field winding voltage to exceed said predetermined first value, said switch device reduces field current to limit a minimum speed of said motor, and when a substantially no-load condition on said motor causes said armature winding voltage to exceed said predetermined second value, said switch device maintains field magnetization to limit a maximum speed of said motor.

5,254,914

POSITION DETECTION FOR A BRUSHLESS DC MOTOR WITHOUT HALL EFFECT DEVICES USING A MUTUAL INDUCTANCE DETECTION METHOD

John C. Dunfield, and Gunter K. Heine, both of Santa Cruz County, Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Jun. 29, 1990, Ser. No. 546,236
Int. Cl.[5] H02K *29/00*
U.S. Cl. 318—254 **28 Claims**



1. In a brushless DC motor having multiple windings arranged as a stator and a permanent magnet rotor or a DC current excitation winding, apparatus for controlling ordered application of electrical current to the windings and measuring the response thereto for identifying a rotational position of said magnetic rotor relative to said windings without rotational movement of said rotor comprising:

circuit means coupled to the windings for selectively establishing current paths through selected windings in response to control signals,

driver means for applying short duration current pulses of first and second opposite polarities to each said selected winding,

monitoring means for detecting the induced voltage detected at an un-energized winding by each of said applied current pulses of opposite polarities, and

detection means for identifying a rotational position of said magnetic rotor relative to said windings based on the sign of the time difference between decay time of the induced voltage responses to said pulses applied to the same said selected winding.

5,254,915

MOTOR CONTROL DEVICE INCLUDING AN IMPROVED BRAKING CONTROL ARRANGEMENT

Hiroaki Komatsu, Ueda, and Toshinobu Katafuchi, Fujiidera, both of Japan, assignors to Mita Industrial Co., Ltd., Japan

Filed Jul. 7, 1992, Ser. No. 909,744
Claims priority, application Japan, Jul. 15, 1991, 3-174063
Int. Cl.[5] H02P *3/00*
U.S. Cl. 318—369 **7 Claims**

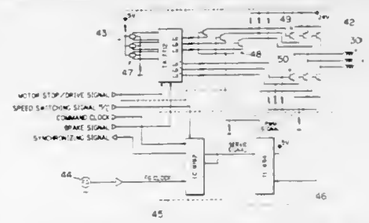
1. A motor control device for controlling the rotation of a motor, said motor control device comprising:

speed pulse outputting means connected to an axis of rotation of the motor for outputting a pulse corresponding to a rotational speed of the motor;

motor driving mean for applying driving power to the motor;

reference pulse generating means for generating a reference pulse in a case where the rotational speed of the motor is a predetermined reference speed;

braking means for cutting off a supply of power to the motor from the motor driving means to keep the motor in a



short-circuited state in order to decrease the speed of the motor, which is being rotated at a higher speed than said reference speed, to the reference speed; and

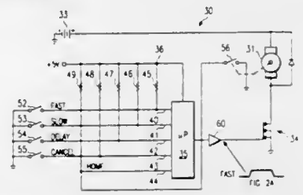
braking releasing means for comparing the speed pulse outputted from the speed pulse outputting means with the reference pulse generated by the reference pulse generating means during operation of the braking means to release the operation of the braking means at a time when the speed pulse is synchronized with the reference pulse.

5,254,916

WINDSHIELD WIPER SPEED AND DELAY CONTROL

Thomas Lea R. Hopkins, Cary, Ill., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Jul. 31, 1992, Ser. No. 923,217
Int. Cl.[5] H02P *1/00*
U.S. Cl. 318—443 **26 Claims**



1. A windshield wiper system, comprising:

a motor for connection to a windshield wiper;

a circuit for operating said motor to drive the windshield wiper;

a switch;

a motor drive circuit responsive to a first activation of said switch to enable said circuit for operating said motor to drive the windshield wiper for one sweep across a windshield;

a circuit responsive to a second activation of said switch enable said motor drive circuit to drive the windshield wiper at intervals determined by a time between said first and second activations of said switch; and

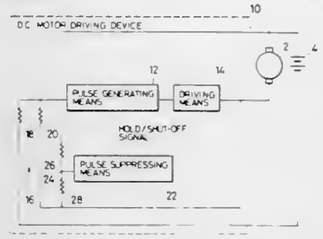
a circuit responsive to a third activation of said switch to enable said motor drive circuit to drive the windshield wiper at intervals determined by a time between a last sweep which directly precedes said third activation of said switch and said third activation of said switch.

5,254,917

DIRECT CURRENT MOTOR DRIVING DEVICE

Nobuo Oda, 26-10, Noge 2-chome, Setagaya-ku, Tokyo 158, Japan

Filed Apr. 22, 1992, Ser. No. 872,222
Int. Cl.[5] G05B *5/00*
U.S. Cl. 318—466 **15 Claims**



1. A direct current motor driving device for driving a direct current motor having a plus terminal and a minus terminal, the device comprising:

a direct current source having a plus terminal and a minus terminal, the plus terminal being connected to the plus terminal of the direct current motor;

pulse generating means for generating a pulse signal when an input signal to an input terminal of the pulse generating means exceeds a set threshold value;

driving means for driving the direct current motor in response to the pulse signal outputted by the pulse generating means; and

a first resistance type voltage dividing circuit inserted between the minus terminal of the direct current source and a minus terminal of the direct current motor for providing as the input signal to the pulse generating means a voltage signal produced by resistance-dividing a voltage between these terminals in a first ratio,

whereby a counter electromotive force generated by the direct current motor by the rotation of the direct current motor by an external force in a direction opposite to its driving rotational direction is added to a source voltage of the direct current source to be supplied to the first resistance type voltage dividing means, the voltage signal of the first resistance type voltage dividing means is increased to exceed the set threshold value of the pulse generating means, and the pulse signal is generated by the pulse generating means to actuate the direct current motor.

5,254,918

DETECTION OF POSITION OF ROTOR IN BRUSHLESS DC MOTOR

Yasuhiro Ueki, Sagamihara, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Continuation of Ser. No. 709,601, Jun. 5, 1991, abandoned. This application Oct. 22, 1992, Ser. No. 965,035
Claims priority, application Japan, Jun. 8, 1990, 2-150627
Int. Cl.[5] H02P *7/00*
U.S. Cl. 318—466 **4 Claims**

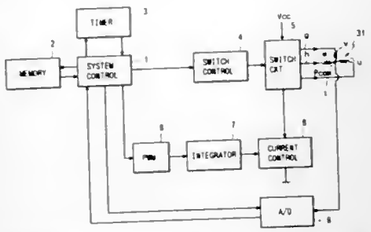
1. A method of detecting a position of a rotor in a brushless dc motor when the rotor is stationary, the motor comprising a stator having polyphase stator windings, the stator windings having first ends and second ends, the first ends being connected to each other at a common junction, the second ends being separated from each other, the method comprising the steps of:

feeding test currents to the stator windings via the second

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ends sequentially in different current-feed patterns which are separated into a first group and a second group;

detecting a first set of voltages at the common junction which occur in correspondence with the current-feed patterns in the first group respectively;



detecting a second set of voltages at the common junction which occur in correspondence with the current-feed patterns in the second group respectively; and

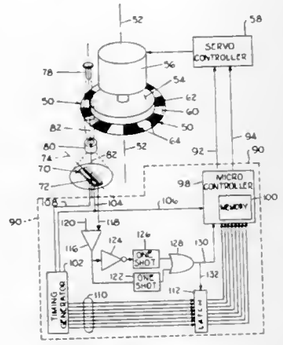
detecting a position of the rotor relative to the stator in response to the first set and the second set of the detected voltages at the common junction.

5,254,919

ENCODER SYSTEM USING LINEAR ARRAY SENSOR FOR HIGH RESOLUTION

Mark E. Bridges, Spencerport, and Robert W. Easterly, Churchville, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 22, 1991, Ser. No. 673,710
Int. Cl.[5] G05B *23/02*
U.S. Cl. 318—560 **19 Claims**



1. An encoder system comprising:

a) an encoder element comprising a series of segments arranged sequentially along a path on said element, said segments having two different properties and adjacent segments being of different properties, the spacing between segments of like properties defining a relatively coarse pitch relationship;

b) an array of sensor elements in closely-spaced fine pitch relation each having two states, said sensor elements being arranged sequentially along a path;

c) means for providing a coupling medium between said encoder element and said array which is responsive to the properties of said encoder element segments and which causes a change in state of said sensor elements in response to movement of said encoder element relative to said array;

d) said encoder element and said array being oriented relative to each other so that said path of said encoder element segments and said path of said array sensor elements are in operative relationship such that upon movement of said encoder element relative to said array said encoder element segments cause a change in state of said array sensor elements along said path of said array sensor elements;

e) said encoder element adapted for movement relative to said array so that the number of sensor elements changed in state during a given time is a function of the speed and position of said encoder element; and

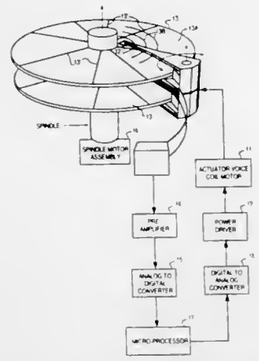
f) processing means connected to said array for converting information on the state of said sensor elements including the number of sensor elements changed in state into first and second output signals containing information on the position and velocity, respectively, of said encoder element.

5,254,920

SEEK SYSTEM FOR SECTOR SERVO DISK DRIVE

Vinay K. Agarwal, Santa Clara, and Dan Cautis, San Mateo, both of Calif., assignors to Western Digital (Singapore) Pte. Ltd., Singapore

Filed Jun. 14, 1991, Ser. No. 715,511
Int. Cl.[5] G05B *11/01*
U.S. Cl. 318—560 **2 Claims**



1. A servo system for moving a member from a first position to a second position in a time optimal fashion, said system comprising

motive means for moving said member,

means for generating a velocity profile representing the variation of the desired velocity of said member in moving from said first position to said second position in a time optimal fashion, said velocity profile having an acceleration phase and a deceleration phase, the transition from said acceleration phase to said deceleration phase being identified as a switch point;

means for periodically sampling the velocity of movement of said member in a sequence of sample periods during movement of said member;

means for energizing said motive means during said acceleration phase and said deceleration phase;

means for controlling said energizing means to cause said switch point to occur during one of said sample periods;

means for applying a feed-forward signal component to said energizing means;

said feed-forward signal component being a measure of the deceleration required to follow said velocity profile;

means for controlling changes in said required deceleration during said movement;

said means for controlling changes in said required deceleration including means for applying a control acceleration to said energizing means; and

said required deceleration (a) at any current sample (k) being

$$a(k) = \frac{v^2(k)}{2x(k)}$$

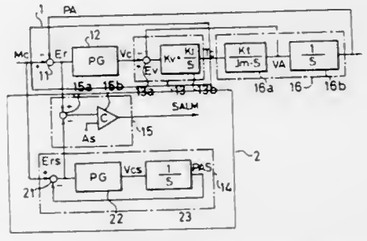
where v is the velocity of said movement at said sample and x is the distance between said first position and said second position at said sample.

5,254,921

ABNORMALITY DETECTING METHOD FOR A SERVO SYSTEM

Shunsuke Matsubara, Yamanshi, Japan, assignor to Fanuc Ltd., Japan

PCT No. PCT/JP89/01298, § 371 Date Aug. 28, 1990, § 102(e) Date Aug. 28, 1990, PCT Pub. No. WO90/08353, PCT Pub. Date Jul. 26, 1990
PCT Filed Dec. 28, 1989, Ser. No. 571,524
Claims priority, application Japan, Jan. 10, 1989, 1-1373
Int. Cl.[5] G05D *3/00*
U.S. Cl. 318—561 **2 Claims**



1. An abnormality detecting method for a servo system, comprising the steps of:

(a) simulatively executing a response operation corresponding to a normal servo control operation during an execution of a servo control operation by a simulator having a time constant equal to the reciprocal of a position loop gain of the servo system and represented by a first-order transfer function given by: $1/[(1/PG)S+1]$, where PG is a position loop gain and S is a laplacian operator; and

(b) determining an occurrence of an abnormal condition when a difference between an actual position deviation occurring in the servo control operation and a position deviation ocurring in the response operation simulatively executed in step (a) becomes larger than a predetermined value.

5,254,922

ROTATIONAL POSITION DETECTOR FOR ROBOT

Noboru Takagi, and Mitsuyoshi Obata, both of Kobe, Japan, assignors to Kabusbiki Kaisha Kobe Seiko Sho, Kobe, Japan

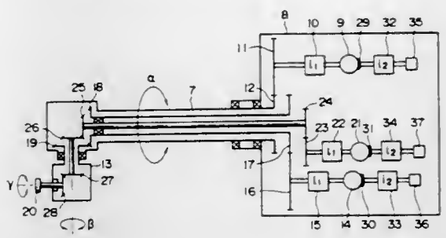
Filed Feb. 28, 1992, Ser. No. 842,970
Claims priority, application Japan, Mar. 22, 1991, 3-58908
Int. Cl.[5] B25J *19/02;* **G05B** *1/06*
U.S. Cl. 318—568.11 **3 Claims**

1. A rotational position detector for detection rotation of coaxial rotational numbers of a robot, comprising:

rotational members, each being capable of multiple rotations about the same axis; and

absolute value detectors for detecting rotational positions of each of said rotational members about said axis,

wherein each of said absolute value detectors is connected to a corresponding one of said rotational members, and wherein a ratio of a rotational angle period of said absolute value detector to a rotational angle period of said rotational member is 1:N, where N is an integer larger than 1.



5,254,923

INDUSTRIAL ROBOT SYNCHRONOUS CONTROL METHOD AND APPARATUS

Kiyoshi Kanitani, Toyama, Japan, assignor to Nachi-Fujikoshi Corp., Toyama, Japan

Filed Jul. 22, 1992, Ser. No. 916,717
Claims priority, application Japan, Jul. 24, 1991, 3-206214
Int. Cl.[5] B25J *9/16;* **G05B** *19/18*
U.S. Cl. 318—568.11 **10 Claims**



1. A method of controlling at least two industrial robots with use of a control apparatus which comprises at least one microcomputer used to execute operation programs of respective robots, at least one operation program storage section in which said operation programs are stored, at least one interpolation computing program storage section in which an interpolation computing program used to move each robot from one working position to the next working position is stored, actuator control sections the number of which corresponds to the number of said robots, and one shared memory, wherein said interpolation computing program storage section is provided with means for computing an interpolation movement with a specified moving speed and means for computing the interpolation movement with a specified moving time, said operation programs each contain a master/slave changing information used to designate one of the robots as the master and the remainder as the slave, and a synchronization ON/OFF changing information used to judge whether or not it is necessary to synchronize the robots, the method comprising the steps of changing said two interpolation computer means in accordance with said two changing informations, operating said robots independently of each other when the synchronization is turned OFF about all the robots, performing with the master robot the moving speed specified interpolation movement when the synchronization is turned ON about all the robots, and performing with the slave robot the moving time specified interpolation movement due to which the slave robot is moved in the same time required for the movement of the master robot without making use of the specified moving speed, thereby

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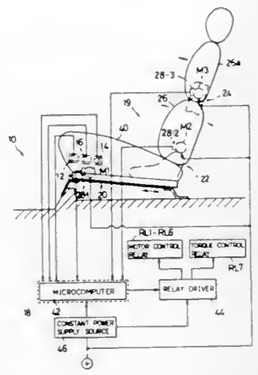
controlling at least two robots synchronously while performing the interpolation movements.

5,254,924

METHOD AND DEVICE FOR CONTROLLING MOTOR IN POWERED SEAT

Hiromitsu Ogasawara, Akishima, Japan, assignor to Tachi-S Co. Ltd., Tokyo, Japan

Filed May 22, 1992, Ser. No. 888,556
Int. Cl.[5] B60N 2/02; G05D 3/12
U.S. Cl. 318—590 **8 Claims**



1. A method for controlling a motor in a powered seat, in which said seat includes a seat cushion, and a seat back having a movable upper part, said method comprising the steps of:
detecting at least a location of said seat in a fore-and-aft direction thereof, a reclining angle of said seat back, and a tilt angle of said seat back upper part;
classifying a predetermined number of body sections for a physical constitution of an occupant on said seat;
defining a certain seat position fitting to each of average physiques obtained for each of said predetermined number of said body sections;
pre-setting said certain seat position on basis of an amount of displacement of said seat, seat back and seat back upper part from their set reference positions, and defining said seat position to be a standard position for each of said body sections;
permitting said standard position to be set temporarily by operation of position switch means;
and then permitting adjustment in position of said seat in said fore-and-aft direction, said reclining angle of said seat back, and said tilt angle of said seat back upper part, from the thus-temporarily set standard position, by operation of a manual switch means.

7. A device for controlling motors in a powered seat, in which said seat includes a seat cushion, and a seat back having a movable upper part, said device comprising:
a motor for causing said seat to be adjustably moved in a fore-and-aft direction, thereby allowing adjustment in position of said seat in said fore-and-aft direction;
a motor for adjusting an reclining angle of said seat back;
a motor for adjusting a title angle of said upper part of said seat back;
a manual switch means for allowing said motors to be manually controlled for adjustment of said seat, seat back and seat back upper part;
a mode selection switch means for selecting one of predetermined plural modes divided according to physical constitution sections of an occupant on said seat;
a position switch means for selecting one of plural preset standard positions and controlling corresponding one of said motors;
a central processing unit for processing input data according to a predetermined program and properly controlling corresponding one of said motors; and
position detecting means for detecting said position of said seat in said fore-and-aft direction, said reclining angle of seat back, and said tilt angle of said seat back upper part,
wherein, by operating said position switch means, said standard positions may be temporarily for each of said modes divided according said physical constitution sections of said occupant.

5,254,925

PERMANENT MAGNET CONTROL MEANS

Charles J. Flynn, Kansas City, Mo., assignor to Flynn Bros., Inc., Kansas City, Mo.

Filed Jan. 31, 1992, Ser. No. 828,703
Int. Cl.[5] H02P 8/00
U.S. Cl. 318—696 **18 Claims**

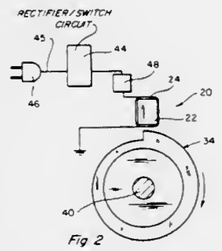


Fig 2

1. Means for using a permanent magnet to produce rotating movement in a rotatable member comprising a disc-like member having an axis of rotation, journal means supporting the disc-like member for rotation, and means for producing rotational movement of the disc-like member about the axis, said disc-like member having a circumferentially extending portion formed of magnetizable material that varies in cross-sectional size around the circumference thereof, the magnetic properties of said portion having locations of maximum and minimum cross-section adjacent to at least one location on the periphery thereof,
a permanent magnet having north and south poles,
means mounting the permanent magnet adjacent to the circumferentially extending portion of the disc-like member,
a coil of electrical conductivity mounted on the permanent magnet and extending therearound in the region between the north and south poles,
a source of dc voltage and switch means in series therewith connected across the conductive coil, and
means to control the opening and closing of the switch means in predetermined time periods in synchronism with rotation of the disc-like member.

5,254,926

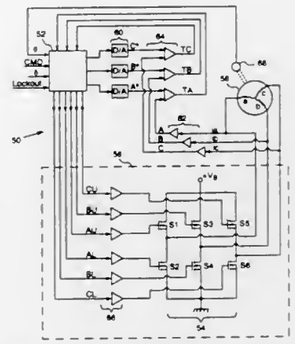
CURRENT-MODE HYSTERESIS CONTROL FOR CONTROLLING A MOTOR

John M. Miller, Saline; Roy I. Davis, Canton; Richard J. Hampo, Livonia; John R. Grabowski, Dearborn, and Paul T. Momcilovich, Carleton, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 787,805, Nov. 4, 1991, Pat. No. 5,159,542. This application Jun. 10, 1992, Ser. No. 898,762
Int. Cl.[5] H02P 5/00
U.S. Cl. 318—798 **11 Claims**

1. A current-mode hysteresis digital control system for controlling a motor based on a motor command signal, the motor having a plurality of phases, the digital control system comprising:

programmable logic means for generating a digital desired phase current signal for a particular motor phase in response to the motor command signal;
means for generating an actual phase current signal based on the actual current in the particular motor phase;
comparator means for comparing said desired phase current signal with the actual phase current signal and generating a digital error signal based on the difference therebetween; and



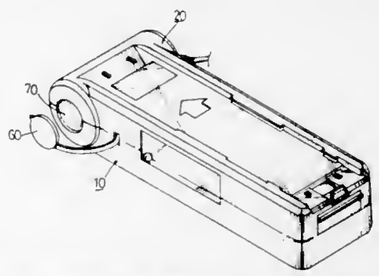
inverter switch means, including at least two switches for each motor phase, for generating the actual phase current for the particular motor phase from a DC power supply, the programmable logic means generating a digital switch state output signal to control the operating state of the inverter switch means based on the digital error signal, the digital switch state output signal digitally timed to include a lockout time for delaying the generation of the actual phase current by the inverter switch means so as to protect the at least two switches from a short circuit condition.

5,254,927

BATTERY CHARGER WITH APPLIANCE PLUG SOCKET

Chin-Hsing Chiang, 5 Floor, No. 2, alley 3, Lane 49, Houkang 1st Street, Hsin chuang City, Taipei, Hsien, Taiwan

Filed Jan. 30, 1992, Ser. No. 828,275
Int. Cl.[5] H02J 7/00
U.S. Cl. 320—2 **2 Claims**



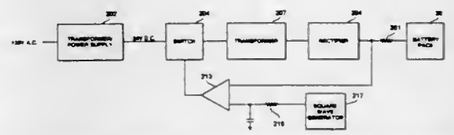
1. A battery charger and appliance plug outlet combination comprising:
a plastic housing having a top shell and a bottom shell with a hinged inner connection at one end thereof, said housing containing batteries to be charged and a charging circuit, said circuit connected to an external power supply so that said batteries disposed therein may be charged by said external supply;
said top and bottom shells defining a circular hole opening into said housing at said one end thereof, the hole being formed by segments defined in opposed portions of said top and bottom shells;
a conductive cylindrical socket disposed with said housing having an opening abutting the hole at said one end, an open opposite end and a conductive terminal extending from said opposite end;
non-conductive retaining means disposed in the top and bottom shells surrounding said socket for retaining said socket in alignment with said hole when said shells are closed about the hinged connection and for closing the end of said socket adjacent said terminal, said conductive terminal extending from a side of said cylindrical socket through said retaining means;
a conductive pole mounted on the non-conductive retaining means axially aligned with said cylindrical socket at the end thereof closed by said retaining means, said terminal and pole coupled respectively to positive and negative terminals of said power supply whereby when an appliance plug jack is inserted through the hole in said housing into said socket, electrical connection will be made between the pole at the end of said socket and the conductive sides of said socket through the terminal on said socket with the power supply for recharging said batteries to also power said appliance through said jack form said power supply.

5,254,928

POWER MANAGEMENT SYSTEM FOR BATTERY POWERED COMPUTERS

Steven J. Young, Milpitas, and Markus Wallgren, Palo Alto, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

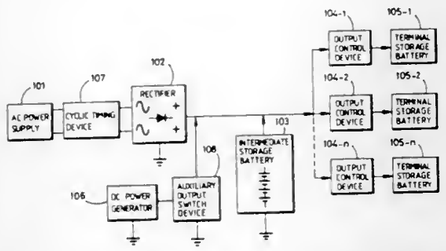
Filed Oct. 1, 1991, Ser. No. 770,193
Int. Cl.[5] H02J 7/10, 9/00
U.S. Cl. 320—14 **2 Claims**



1. A battery charging circuit with self-adjusting charging voltage levels, the circuit comprising:
first transformer means for converting an A.C. voltage to a D.C. voltage;
oscillator means coupled to the first transformer means for converting the D.C. voltage to a square wave of fixed amplitude but variable duty cycle;
second transformer means coupled to the oscillator means for converting the square wave to a sinusoidal wave, the amplitude of the sinusoidal wave varying directly with the duty cycle of the square voltage wave;
rectifier means coupled to the second transformer means and a battery, for converting the sinusoidal wave to a D.C. charging voltage; and
voltage comparator means having at least two inputs, a first input being coupled to an output of the rectifier means, a second input being coupled to a square wave generator, the output of the comparator means being coupled to the oscillator means, the comparator means decreasing the duty cycle of the oscillator means when the output of the comparator is high, the decrease in the duty cycle resulting in less voltage at the output of the second transformer means.

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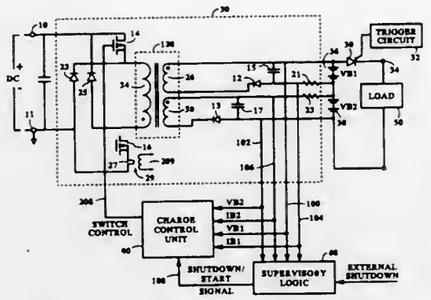
5,254,929
INTERMEDIATE STORAGE BATTERY CHARGING SYSTEM
Tai-Her Yang, 5-1 Taipin St., Si-Hu Town, Dzan-Hwa, Taiwan
Filed Apr. 3, 1992, Ser. No. 863,237
Int. Cl.[5] H02J *7/00*
U.S. Cl. 320—15 **8 Claims**



1. An intermediate storage charging system, comprising:
an AC input power supply;
a rectifier selectively connectable to said AC power supply for generating a first charging current therefrom;
an intermediate storage battery for generating a second charging current, said intermediate storage battery being connected to an output of said rectifier and chargeable thereby from said first charging current;
a cyclic timing control device connected between said AC input power supply and said rectifier for sending an existing charge on said intermediate storage battery and for connecting said AC input power supply to said rectifier only during a preset time interval of non-peak power consumption and while said existing charge on said intermediate storage battery does not exceed a preset saturation level; and
at least one terminal storage battery coupled to the interconnected of said intermediate storage battery and the output of said rectifier and charged thereby from said first and second charging currents, said terminal storage battery being charged exclusively by the second charging current of said intermediate storage battery during times of peak power consumption to thereby level consumption of said first changing current.

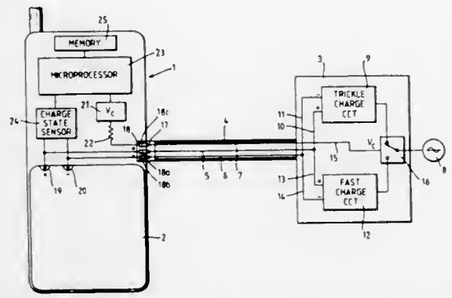
5,254,930
FAULT DETECTOR FOR A PLURALITY OF BATTERIES IN BATTERY BACKUP SYSTEMS
James A. Daly, Chelsea, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.
Filed Jun. 10, 1992, Ser. No. 896,713
Int. Cl.[5] H02J *7/04*
U.S. Cl. 320—15 **7 Claims**

1. A battery charger for charging a plurality of batteries, comprising:
a transformer, comprising a primary winding and a plurality of secondary windings;
each of said secondary windings connected to a corresponding one of said plurality of batteries;
a charge supply controller operable to repetitively switch a d.c. supply across said primary winding to cause a charging current to be supplied by each of said secondary windings to each corresponding battery of said plurality of batteries to charge each of said batteries to a voltage;
said charge supply controller responsive to said charging current supplied to said plurality of batteries and responsive to said voltage of each battery of said plurality of batteries to control the rate of switching of said d.c. supply and said charging current supplied to said batteries; and
supervisory means responsive to said voltage of each of said batteries and to said charging current of each of said secondary windings, for detecting when said voltage of any of said plurality of batteries rises above a predetermined voltage level or for detecting when said charging



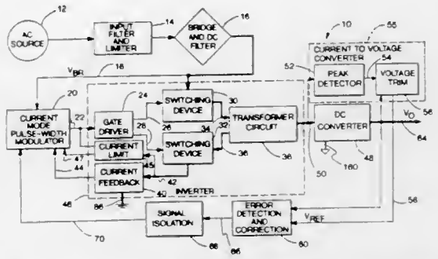
current to any of said batteries rises above a predetermined current level for discontinuing supply of charging current to said batteries.

5,254,931
BATTERY CHARGING APPARATUS IN A PORTABLE ELECTRONIC APPARATUS
Nils E. Martensson, Woking, England, assignor to Nokia Mobile Phones Ltd., Surrey, England
Filed Apr. 1, 1991, Ser. No. 678,720
Claims priority, application United Kingdom, Apr. 5, 1990, 9007683
Int. Cl.[5] H02J *7/04*
U.S. Cl. 320—22 **10 Claims**



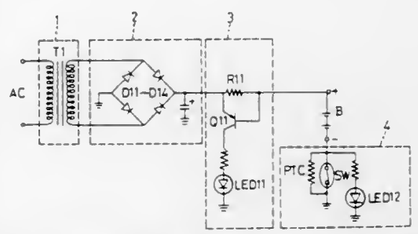
1. A system for charging a battery in a portable electronic apparatus, the portable electronic apparatus comprising visual display means, the system comprising:
means operable in at least two different modes for supplying a charging current to the battery,
wherein the portable electronic apparatus is provided with means, operably connectable to the means for supplying a charging current, for selectively enabling the different charging modes,
said enabling means comprising means for enabling a user to select an appropriate one of several pre-set operating instructions stored in memory and indicated on said visual display means.

5,254,932
CHARGING VOLTAGE CONTROL CIRCUIT FOR BATTERY CHARGERS
Hussein I. Bittar, Huntington, Ind., and Richard A. Karlin, Chicago, Ill., assignors to MagneTek, Inc., Los Angeles, Calif.
Filed Dec. 24, 1990, Ser. No. 634,093
Int. Cl.[5] H02J *7/04*
U.S. Cl. 320—23 **11 Claims**



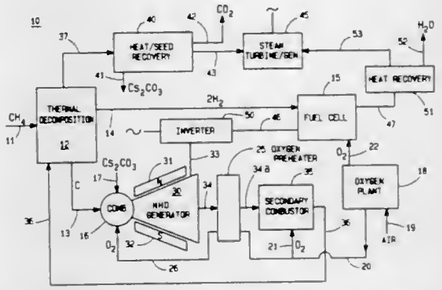
1. An improved method of operating a lead-acid-battery charger of the pulse-width modulated type having a duty cycle varying in response to charging current to maintain a desired charging voltage comprising the steps of:
a) holding the charging voltage at a constant voltage when the charging current is above a predetermined value; and
b) increasing the charging voltage when the charging current is in a range below the predetermined value by sensing the duty cycle and adjusting the charging voltage in response to changes in the duty cycle.

5,254,933
BATTERY CHARGING DEVICE
Pi-Chu Lin, No. 157-8, Hu-Tzu Nei, Hu-Nei Li, Chia-Yi Hsien, Taiwan
Filed Jul. 9, 1992, Ser. No. 911,191
Int. Cl.[5] H02J *7/10*
U.S. Cl. 320—35 **2 Claims**



1. A battery charging device for charging a rechargeable battery unit, comprising:
a step-down unit receiving an external alternating current line voltage input and reducing the line voltage input to an appropriate level;
a rectifier unit receiving the reduced line voltage input from said step-down unit and generating a direct current signal to charge the battery unit;
a current limiting means serially interconnecting said rectifier unit and the battery unit; and
a control unit including a temperature switch and a high resistance heating unit connected across said temperature switch, said switch and said heating unit being provided in a single circuit package, said switch being serially connected to the battery unit and being closed when the temperature of the battery unit is below a predetermined limit, said switch being opened to permit said direct current signal to flow through said heating unit when the temperature of the battery unit reaches the predetermined limit, said heating unit reducing the value of said direct current signal and generating heat which is sufficient to maintain said switch in an open circuit state when said direct current signal flows therethrough;
wherein said heating unit is a positive temperature coefficient thermistor;
wherein said current limiting means is a resistor with a relatively low resistance; and
said battery charging device further comprises a fast charge indicator means which includes: a PNP transistor having an emitter terminal, a base terminal and a collector terminal, said current limiting means being connected across said emitter and base terminals; and a first light emitting diode means serially connected to said collector terminal;
said direct current signal generating a voltage signal across said current limiting means, said voltage signal being sufficient to cause said transistor to conduct and permit current to flow from said collector terminal to said first light emitting diode means so as to cause said first light emitting diode means to generate light when said switch is closed, said voltage signal being insufficient to cause said transistor to conduct, thereby preventing said first light emitting diode means from generating light when said switch is opened.

5,254,934
METHOD OF AND SYSTEM FOR PRODUCING ELECTRICAL POWER
Ralph A. Carabetta; Gary E. Staats, both of Pittsburgh, Pa., and John C. Cutting, Point Pleasant, N.J., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Jan. 28, 1992, Ser. No. 826,697
Int. Cl.[5] H02K *44/08*
U.S. Cl. 322—2 R **24 Claims**



1. A method of converting chemical energy of methane to electrical energy, comprising thermally decomposing the methane to hydrogen and carbon in a decomposing nit at a temperature not less than about 1200° K. and at a pressure above atmospheric pressure transmitting the carbon to a combustor, introducing substantially pure oxygen and cesium or potassium seed material to the combustor and maintaining the oxygen and the seed material with the carbon from the decomposing unit at a pressure of not less than 50 atmospheres to combust the carbon and the oxygen and provide an ionized plasma having a temperature not less than about 3000° K., accelerating the ionized plasma to a velocity not less than about 1000 m/sec and transporting the accelerated ionized plasma through an MHD generator having a magnetic field in the range of from about 4 to about 6 tesla to generate dc power, decelerating the ionized plasma and passing the decelerated ionized plasma from the MHD generator in heat exchange relationship with the methane before the methane is introduced into the decomposition unit to heat the methane for decompo-

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sition and thereafter recovering any of the seed material in the decelerated ionized plasma and transporting the recovered seed material to the combustor, and converting the dc power from the MHD generator to AC power.

5,254,935

MONITORING CIRCUIT FOR A SYSTEM FOR RECHARGING A MOTOR VEHICLE BATTERY

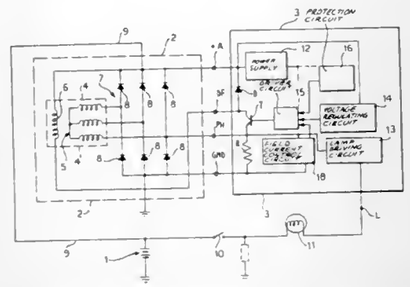
Roberto Vercesi, Turin, and Marcello Boella, Ivrea, both of Italy, assignors to Marelli Autronica S.p.A., Milan, Italy

Filed Apr. 13, 1992, Ser. No. 868,046

Claims priority, application Italy, Apr. 22, 1991, TO91A000305

Int. Cl.[5] H02J 7/14

U.S. Cl. 322—29 **8 Claims**



1. A monitoring circuit for a motor vehicle battery recharging system which comprises an electrical generator with an induction coil and a field coil, output of the generator being connected to terminals of a battery; the monitoring circuit comprising

a driver transistor having a collector-emitter path connected in series to the field coil of the generator and a direct current voltage source,

field coil current sensor means for providing a signal indicative of current flowing during operation in the field coil, and

driver circuit means for driving said transistor as a function of voltage produced by the generator and the signal provided by said field coil current sensor means, said driver circuit means comprising

a detector circuit connected to a phase of the generator for providing a signal indicative of rotary speed of the generator, and

a processing and comparison circuit coupled to said detector circuit for generating a signal for controlling conduction of current through said transistor so that current intensity flowing through the collector-emitter path of said transistor varies as a function of the rotary speed of the generator.

5,254,936

DUAL GENERATOR ELECTRICAL SYSTEM

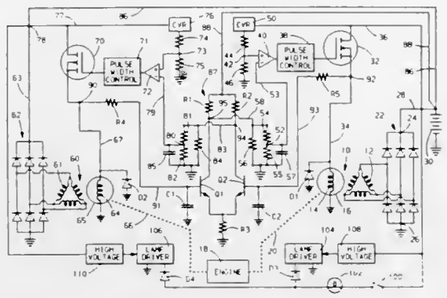
Larry J. Leaf; Jerald D. Luttrell, both of Anderson, and Jack D. Harmon, Carmel, all of Ind., assignors to General Motors Corporation, Detroit, Mich. and Delco Electronics Corp., Kokomo, Ind.

Filed Sep. 14, 1992, Ser. No. 944,379

Int. Cl.[5] H02J 7/16

U.S. Cl. 322—90 **9 Claims**

1. A dual generator electrical system for providing electrical current to an electrical load comprising, a first generator having a first output winding and a first field winding, a second generator having a second output winding and a second field winding, an electrical load, means connecting said output windings to said electrical load, means for supplying a series of first current pulses to said first field winding that have a controlled pulse width comprising a first voltage regulator connected to said first field winding, means for supplying a series of second current pulses to said second field winding that have a controlled pulse width comprising a second voltage regulator connected to said second field winding, means for developing a first control signal that is a function of the pulse width of



said first series of current pulses, means for developing a second control signal that is a function of the pulse width of said second series of current pulses, and means responsive to said first and second control signals operative to cause the pulse widths of said first and second current pulses to be substantially equal.

5,254,937

POWER SUPPLY CONTROL DEVICE HAVING MEMORY TABLES FOR PROVIDING A STABILIZED OUTPUT

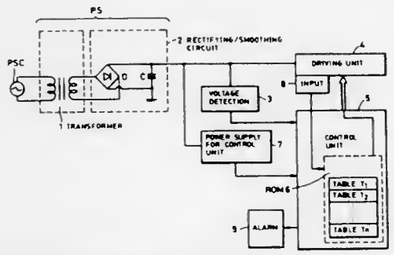
Shigeru Mizoguchi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 409,321, Sep. 19, 1989, abandoned. This application Mar. 4, 1991, Ser. No. 664,478

Claims priority, application Japan, Oct. 6, 1988, 63-250941

Int. Cl.[5] G05F 1/565; H02M 3/157

U.S. Cl. 323—283 **33 Claims**



1. An electronic apparatus comprising:

DC power supply means for receiving AC electric power, rectifying the AC electric power and outputting DC electric power;

detection means for detecting fluctuations of the DC electric power output from said DC power supply means, and for providing a fluctuation detect signal in response to the detected fluctuations;

memory means for storing a plurality of operating conditions in a plurality of tables, each table corresponding to a different value of the fluctuation detect signal;

driving means supplied with the DC electric power from said DC power supply means, for stably driving a load in accordance with a table of operating conditions selected in accordance with the fluctuation detect signal; and

control means for stably controlling said driving means in accordance with the plurality of operating conditions stored in a selected one of the tables, the operating conditions being selected in response to a plurality of drive conditions received from said driving means,

wherein one of the plurality of tables stored in said memory means is selected in response to the value of the fluctuation detect signal and one of the plurality of operating conditions in the selected table is selected in response to the plurality of drive conditions received from said driving means, so that the load can be stably driven during fluctuations in the DC electric power.

5,254,938

RESISTOR CIRCUIT WITH REDUCED TEMPERATURE COEFFICIENT OF RESISTANCE

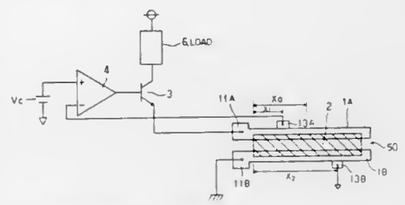
Hajime Ito, Ichinomiya, Japan, assignor to Nippondenso Co. Ltd., Kariya, Japan

Filed Apr. 21, 1992, Ser. No. 871,345

Claims priority, application Japan, Apr. 26, 1991, 3-125526; Jun. 11, 1991, 3-166491

Int. Cl.[5] H01C 7/13

U.S. Cl. 323—369 **11 Claims**



1. A resistor circuit, comprising:

a pair of linear conductive films;

a resistive film formed on an area between said conductive films and electrically connected to said conductive films;

a pair of resistor terminals electrically connected to first and second portions of said conductive films respectively;

a current source, electrically connected between said resistor terminals, to produce an electric current between said terminals; and

a pair of voltage output terminals electrically connected to third and fourth portions of said conductive films respectively, at least one of said third and fourth portions where said voltage output terminals are disposed being at a position different than either of said first or second positions where said resistor terminals are formed.

5,254,939

PROBE CARD SYSTEM

James C. Anderson, Santa Rosa; Brian P. Phillips, Glen Ellen, and Charles Honek, Santa Rosa, all of Calif., assignors to Xandex, Inc., Petaluma, Calif.

Filed Mar. 20, 1992, Ser. No. 855,763

Int. Cl.[5] G01R 1/02

U.S. Cl. 324—158 P **29 Claims**

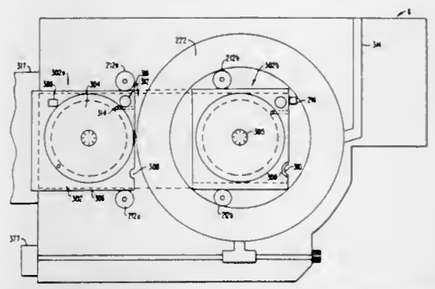
MICROFICHE APPENDIX INCLUDED

(172 Microfiche, 2 Pages)

24. A system for testing semiconductor wafers comprising:

a) a plurality of cassettes, each of said cassettes comprising a wafer probe card and a semiconductor memory, said semiconductor memory adapted to serially input and output a number of touchdowns of said wafer probe card to said semiconductor wafers; and

b) a transport assembly for moving a selected one of said cassettes into a wafer prober, said transport assembly comprising a single data input pin for serially reading a said number of touchdowns from said semiconductor memory when said cassettes are inserted into said wafer prober, and for inputting an updated number of touchdowns to said memory when said cassettes are removed from said wafer prober.



5,254,940

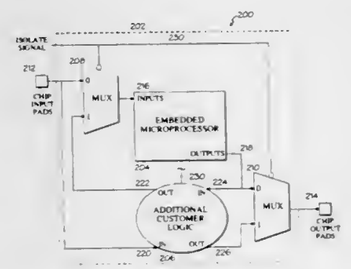
TESTABLE EMBEDDED MICROPROCESSOR AND METHOD OF TESTING SAME

Timothy P. Oke; Russell E. Cummings, II, both of Milpitas, and Nachum M. Gavrielov, Palo Alto, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Dec. 13, 1990, Ser. No. 628,202

Int. Cl.[5] G01R 31/28

U.S. Cl. 324—158 R **1 Claim**



1. An integrated circuit device comprising:

a silicon die having first inputs and first outputs;

a microprocessor on the die having second inputs and second outputs which are capable of being connected to the first inputs and first outputs via additional logic;

additional logic on the die having third inputs and third outputs, at least a portion of which third inputs are connected to a like number of the second outputs;

a first plurality of multiplexers, each multiplexer having a first data input, a second data input, and a data output, and arranged such that:

the data output of each of the first plurality of multiplexers is connected to a respective one of the second inputs;

the first data input of each of the first plurality of multiplexers is connected to a respective one of the third outputs; and

the second data input of each of the first plurality of multiplexers is connected to a respective one of the first inputs;

a second plurality of multiplexers, each multiplexer having a first data input, a second data input, and a data output, and arranged such that:

the data output of each of the second plurality of multiplexers is connected to a respective one of the first outputs;

the first data input of each of the second plurality of multiplexers is connected to a respective one of the third outputs; and

the second data input of each of the second plurality of

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multiplexers is connected to a respective one of the second outputs; and

means for controlling the first plurality and second plurality of multiplexers to bypass the additional logic in a test mode by logically connecting each multiplexer's data output to its second data input, thereby providing a direct connection between the second inputs and associated first inputs, and between second outputs and associated first outputs via the multiplexers, and for controlling the first plurality and second plurality of multiplexers to connect the additional logic between the second inputs and second outputs and associated first inputs and first outputs in a normal mode of operation by logically connecting each multiplexer's data output to its first data input.

5,254,941

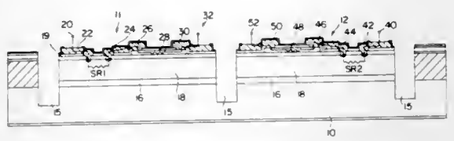
STRUCTURE AND METHOD FOR DETERMINING ISOLATION OF INTEGRATED CIRCUIT

David M. Osika, Somerville, N.J., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Oct. 29, 1991, Ser. No. 784,259

Int. Cl.[5] G01R *31/02*

U.S. Cl. 324—158 R **4 Claims**



1. A test structure for determining electrical isolation between elements of a monolithic integrated circuit comprising:

a first device and a second device formed on a semiconductor substrate, said first device separate from said second device, each device including in a single interconnection path and in passive monolithic electrical series connection:

a) a first contact pad;

b) a first substrate contact connecting said first contact pad to said substrate;

c) a second substrate contact connected to said substrate;

d) a first resistor contact connected to said second substrate contact;

e) a matching resistor of preselected value having a first end connected to the first resistor contact;

f) a second end of said matching resistor connected to a second resistor contact;

g) a resistor contact pad connected to said second resistor contact;

wherein said test structure is used for determining electrical isolation between a first portion of said substrate on which said first device is located and a second portion of said substrate on which said second device is located.

5,254,942

SINGLE CHIP IC TESTER ARCHITECTURE

Daniel D'Souza, 17999 Saratoga-Los Gatos Rd., Monte Sereno, Calif. 95030, and Ruth Alexander, Monte Sereno, Calif., assignors to Daniel D'Souza, Monte Sereno, Calif.

Continuation-in-part of Ser. No. 694,992, Apr. 25, 1991, abandoned. This application Jun. 8, 1992, Ser. No. 894,819

Int. Cl.[5] G01R *31/28*

U.S. Cl. 324—158 R **1 Claim**

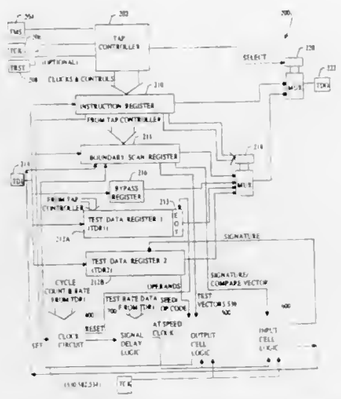
1. In a tester apparatus for performing boundary-scan tests in serial fashion of integrated circuits, which tester apparatus includes a test bus comprising control and data signal lines, a test bus controller for transmitting stimulus data to and receiving response data from a device under test (DUT), and a boundary-scan architecture which includes a plurality of registers coupled to the test bus including an instruction register for receiving clock and control signals from the test bus controller and storing the clock and control signals as large instruction sets, a boundary-scan register comprising a plurality of input and output boundary-scan cells for buffering stimulus and response signals associated with the DUT, a bypass register for providing a signal path by which test data can be routed without interference with a subsequent serially connected DUT, and a test data register for storing test parameters associated with the DUT, the improvement which comprises:

a) a clock circuit for permitting at speed testing of the DUT, which clock circuit includes:

i) a clock means for generating a high frequency clock signal;

ii) a divider means for dividing the high frequency clock signal received from said clock into a desired test rate frequency in response to test rate information received from said test data register;

iii) an up/down counter responsive to both said divided clock signal received from said divider means and test



cycle count data received from said test data register for determining the number of test cycles for said DUT; and

b) signal delay logic comprising coarse and fine signal delay elements responsive to clock signal output received from said clock circuit and stimulus and response data received from said boundary-scan register for selective delay of stimulus and response data to and from said DUT, and wherein:

i) each of said output boundary-scan cells of said boundary-scan register includes logic means for performing at speed test of said DUT from functional, algorithmic and random test pattern data received from said test data register; and

ii) each of said input boundary-scan cells of said boundary-scan register includes logic means for collecting at speed response data of said DUT and for compressing said at speed response data into a signature for comparison with a known good signature for said DUT to verify that said DUT is a good device.

5,254,943

INTEGRATED CIRCUIT DEVICE WITH A TEST CIRCUIT FOR A MAIN CIRCUIT

Yuya Momose, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 13, 1992, Ser. No. 911,987

Claims priority, application Japan, Jul. 12, 1991, 3-171494

Int. Cl.[5] G01R *31/02*

U.S. Cl. 324—158 R **7 Claims**

1. An integrated circuit device comprising:

a main circuit for producing an output signal in response to an input signal; and

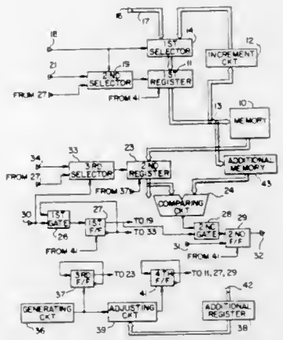
a supplementary circuit connected to said main circuit for carrying out a test operation of said main circuit,

said supplementary circuit comprising:

a test signal producing circuit for producing a test signal;

supplying means connected to said main and said test signal producing circuits for supplying said test signal as said input signal to said main circuit, said main circuit producing a data signal as said output signal in response to said test signal;

a data signal processing circuit connected to said main circuit for processing said data signal into a result signal representative of the result of said test operation;



a particular signal producing circuit connected to said signal producing circuit for producing a particular signal having a predetermined cycle and a particular phase; and

a specific signal producing circuit connected to said processing circuit for producing a specific signal having said predetermined cycle and a specific phase which is different from said particular phase, said test signal producing circuit producing said test signal with reference to said particular signal, said data signal processing circuit producing said result signal with reference to said specific signal.

5,254,944

INSPECTION PROBE FOR INSPECTING IRREGULARLY-SHAPED TUBULAR MEMBERS FOR ANOMALIES

Randall A. Holmes, Delmont, and Michael D. Coradi, Wilkinsburg, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 16, 1992, Ser. No. 868,900

Int. Cl.[5] G01N *27/90, 29/04*

U.S. Cl. 324—220 **7 Claims**

1. In a heat exchanger having a plurality of heat exchange tubes disposed therein, each of the tubes having a U-bend region, an inspection probe for inspecting a predetermined one of the tubes for anomalies, the tubes having an irregularly-shaped inside surface and defining a longitudinal axis therethrough, comprising;

(a) a generally barrel-shaped enclosure sized to be inserted into the tube, said enclosure having a generally cylindrical cavity therein having a generally circular open end facing the inside surface of the tube;

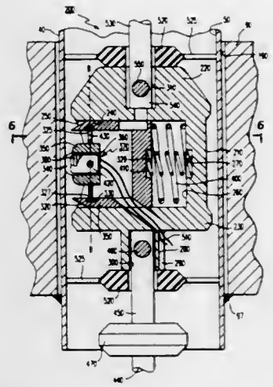
(b) a generally cylindrical housing slidably received through the open end of the cavity of said enclosure, said housing having a hollow portion therein having an open end facing the inside surface of the tube;

(c) a generally cylindrical swivel body pivotably mounted in the open end of the hollow portion of said housing, said swivel body having a recess therein facing the inside surface of the tube;

(d) a sensor pivotably mounted in the recess of said swivel body for sensing anomalies in the tube;

(e) a coil spring disposed in the cavity of said housing and interposed between said housing and said enclosure for slidably outwardly biasing said housing toward the inside surface of the tube;

(f) a generally cylindrical first pivot pin having a first end portion rotatably connected to said swivel body and having a second end portion attached to said sensor for pivoting said sensor about a first pivot point laying on a first



axis extending transversely to the longitudinal axis defined by the tube; and

(g) a generally cylindrical second pivot pin having a first end portion rotatably connected to said housing and a second end portion attached to said swivel body and disposed transversely with respect to said first pivot pin for pivoting said swivel body about a second pivot point laying on a second axis extending parallel to the longitudinal axis of the tube, whereby said sensor intimately engages the inside surface of the tube to precisely track the inside surface as said housing is outwardly biased by said spring, as said sensor pivots about the first pivot point, and as said swivel body pivots about the second pivot point.

5,254,945

MAGNETO-RESISTIVE SUPERCONDUCTIVE DEVICE AND METHOD FOR SENSING MAGNETIC FIELDS

Hideo Nojima; Hidetaka Shintaku, and Masayoshi Koba, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 544,899, Jun. 28, 1990, abandoned. This application Oct. 10, 1991, Ser. No. 773,765

Claims priority, application Japan, Jun. 30, 1989, 1-170303; Jun. 30, 1989, 1-170306

Int. Cl.[5] G01R *33/035, 33/06*

U.S. Cl. 324—248 **4 Claims**

1. A method of sensing an applied magnetic field using a magneto-resistive superconductor element containing weak coupling grain boundaries comprising the steps of:

(a) cooling the element to its superconductive state;

(b) applying a current to said element from a stabilized current source;

(c) applying an external magnetic field to the element;

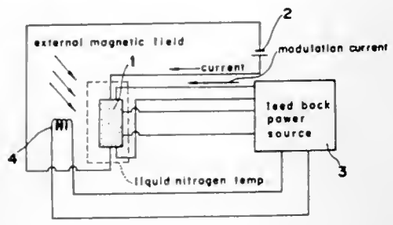
(d) outputting a voltage from the element, resulting from step (c), and inputting the output voltage as input voltage to a feed back power source;

(e) comparing the input voltage with a reference voltage;

(f) controlling current to a means for applying a bias mag-

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netic field to said element so that a difference between the input voltage and reference voltage is relatively small; and



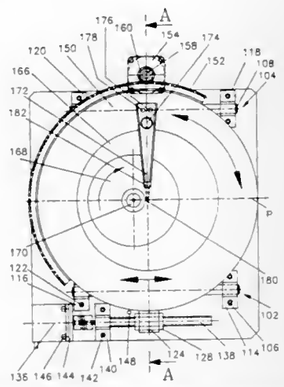
(g) applying the bias magnetic field to the element so that the sensitivity of the element to the external magnetic field is high.

5,254,946

MAGNETIC HEAD AND DISK TESTER WITH HEAD CENTRALLY MOUNTED ON RADIALLY-MOVING, ROTATABLE PLATFORM THAT SURROUNDS DISK

Nahum Guzik, Palo Alto, Calif., assignor to Guzik Technical Enterprises, Inc., San Jose, Calif.

Filed Feb. 25, 1992, Ser. No. 840,527
Int. Cl.[5] G01R *33/12*
U.S. Cl. 324—262 **16 Claims**



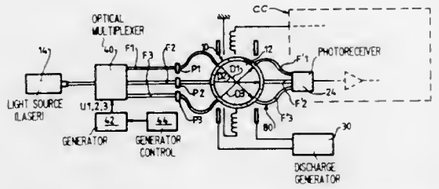
1. A magnetic head and disk tester comprising:
a first body having an axis of rotation and a flat surface, said flat surface being orthogonal to said axis of rotation;
a second body positioned near said flat surface of said first body, said second body having an area of interest;
spinning means for rotating said first body around said axis of rotation;
rotary means for angularly positioning said second body with respect to said first body, said rotary means having an axis of rotation;
translating means for linearly moving said second body in a radial path with respect to said first body, said rotary means being supported by said translating means;
supporting means for supporting said translating means; said first body being selected from the group consisting of magnetic disks and transparent disks;
said second body being a transducing head of a computer disk drive, said area of interest being a magnetic read-write element;
said read-write element being centrally positioned with respect to said rotary means.

5,254,947

OPTICAL PUMPING, RESONANCE MAGNETOMETER USING A PLURALITY OF MULTIPLEXED BEAMS

Jean-Jacques Chaillout, St Etienne de Crossey; Nelly Kernevez, Grenoble, and Jean-Michel Leger, Meylan, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 10, 1991, Ser. No. 712,408
Claims priority, application France, Jun. 14, 1990, 90 07413
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—304 **20 Claims**



1. An optical pumping resonance magnetometer including a cell filled with a gas having a gyromagnetic ratio γ, wherein said cell is immersed in an ambient magnetic field B_o, which is to be measured;
a light source emitting a light beam;
means for detecting an electric resonance signal at a Larmor frequency given by $F=\gamma B_o$;
means for measuring said frequency;
means for deducing the amplitude of said ambient magnetic field from said frequency by the relation $B_o=F/\gamma$, said magnetometer further comprising:
an optical multiplexer receiving said light beam from said source and successively supplying n light beams, n being an integer at least equal to 2, said n beams traversing n polarization means and subsequently being injected into said cell in n different polarizations in order to optically pump said gas to provide n optical pumping beams, wherein said detection means of said electrical resonance signal successively supplies n signals corresponding respectively to said n optical pumping beams.

5,254,948

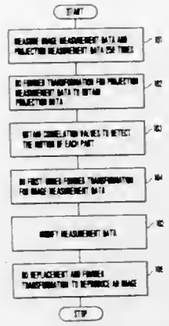
METHOD AND APPARATUS FOR BODY MOTION CORRECTIVE IMAGING

Koichi Sano, Sagamihara; Tetsuo Yokoyama, Tokyo, and Hideaki Koizumi, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 330,835, Mar. 30, 1989, Pat. No. 5,023,553. This application Feb. 25, 1991, Ser. No. 660,084
Claims priority, application Japan, Apr. 1, 1988, 63-78007
The portion of the term of this patent subsequent to Jun. 11, 2008, has been disclaimed.
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—309 **12 Claims**

1. A body motion corrective imaging method comprising the steps of:
generating a static magnetic field, a gradient magnetic field and a high-frequency magnetic field;
measuring a Nuclear Magnetic Resonance (NMR) data from an object under examination to which said magnetic fields are applied;
computing an intermediate data by one-dimensional Fourier transformation from said NMR data;
computing an amount of motion of projection data at each point of said intermediate data on the basis of correlation between said intermediate data;

modifying said NMR data on the basis of said amount of the motion of said projection data; and



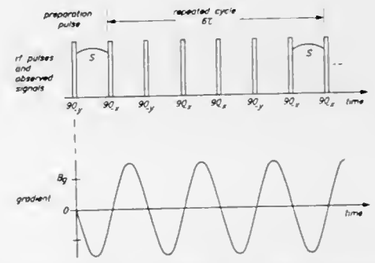
reconstructing an image of said object from said modified data.

5,254,949

NUCLEAR MAGNETIC RESONANCE IMAGING METHODS

Peter J. McDonald, Guildford, and Pawel F. Tokarczuk, South Ruislip, both of England, assignors to British Technology Group Ltd., London, England

PCT No. PCT/GB90/00967, § 371 Date Dec. 11, 1991, § 102(e) Date Dec. 11, 1991, PCT Pub. No. WO91/00529, PCT Pub. Date Jan. 10, 1991
PCT Filed Jun. 22, 1990, Ser. No. 781,206
Claims priority, application United Kingdom, Jun. 23, 1989, 8914467
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 **13 Claims**



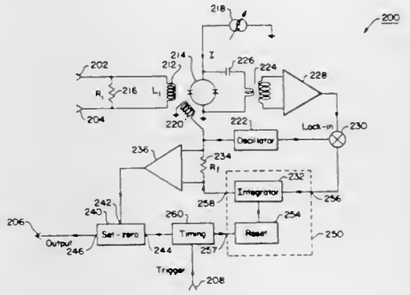
1. A method of obtaining NMR imaging information from an object, comprising:
subjecting the object to a static magnetic field, applying a gradient magnetic field which varies sinusoidally in amplitude about a zero value, applying a repetitive sequence of radio frequency pulses only at times of zero value of the said gradient field each having a frequency, magnitude and duration and successive pulses of the sequence being of such relative rf phase, that selected nuclei in the object precess with accumulated phase in each sequence, and measuring the resulting NMR signal from the object.

5,254,950

DC SUPERCONDUCTING QUANTUM INTERFERENCE DEVICE USABLE IN NUCLEAR QUADRUPOLE RESONANCE AND ZERO FIELD NUCLEAR MAGNETIC SPECTROMETERS

Non Q. Fan, San Diego, and John Clarke, Berkeley, both of Calif., assignors to The Regents, University of California, Oakland, Calif.

Filed Sep. 13, 1991, Ser. No. 759,997
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—322 **2 Claims**



1. A dc SQUID amplifier comprising:
a SQUID for generating a signal as a function of an applied magnetic flux;
an oscillator for generating a oscillatory signal;
a modulating feedback coil having a first end coupled to ground and a second end coupled to said oscillator, said modulating feedback coil generating an oscillatory magnetic flux for coupling to said SQUID;
mixer means coupled to said oscillator and said SQUID for generating a lock-in-signal;
integrator means for generating an integrated signal as a function of said lock-in signal;
means for coupling said integrated signal to said second end of said modulating feedback coil; and
means for preventing said integrator from saturation.

5,254,951

CIRCUIT FOR MEASURING DISCHARGING AND CHARGING CURRENT OF A BATTERY PROVIDING OFFSET/DRIFT VOLTAGE FOR CORRECTING AMPLIFIER OUTPUT

Seiji Goto; Kazuaki Tsunoda, both of Fukuoka, and Yukio Murayama, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 27, 1992, Ser. No. 888,785
Claims priority, application Japan, May 29, 1991, 3-152138
Int. Cl.[5] G01R *31/36;* **G01N** *27/42;* **H02J** *7/04*
U.S. Cl. 324—426 **14 Claims**

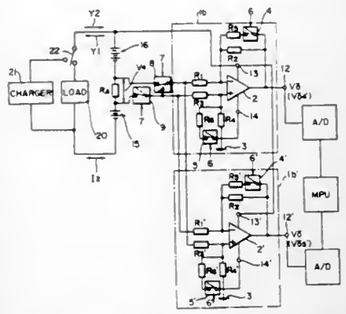
1. A current measuring circuit for measuring discharging current and charging current of a battery comprising:
a first battery adapted to be selectively connected to a load and a charger;
a resistor connected in series with the first battery having a sufficiently low resistance value as not to substantially restrain an output current from the first battery;
a first differential amplifier, which amplifies a potential difference across the resistor, the first differential amplifier comprising
a first operational amplifier,
a first resistor connected between one end of the resistor and one input terminal of the first operational amplifier,
a second resistor connected between the on input terminal and the output terminal of the first operational amplifier,

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a third resistor connected between the other end of the resistor and the other input terminal of the first operational amplifier, and

a fourth resistor connected between the other input terminal of the first operational amplifier and ground, the resistance value of the first resistor being equal to the resistance value of the third resistor and the resistance value of the second resistor being equal to the resistance value of the fourth resistor;

means for short-circuiting the one input terminal and the other input terminal of the first operational amplifier; and



calculating means for calculating difference between a first voltage outputted by the first operational amplifier when the one input terminal and the other input terminal of the first operational amplifier are short-circuited and a second voltage outputted by the first operational amplifier when the one input terminal of the first operational amplifier is connected with the one end of the resistor and the other input terminal of the first operational amplifier is connected with the other end of the resistor .

5,254,952

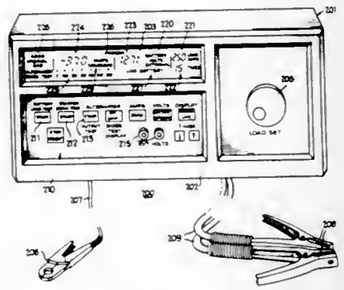
AUTOMATIC BATTERY AND CHARGING SYSTEM TESTER WITH MOTOR-DRIVEN CARBON PILE LOADING

Glenn E. Salley, Racine; Sohrab S. Rameshk, Milwaukee; Thomas P. Becker, Kenosha; Dennis G. Thibedeau, Franklin; Ronald D. Geisler, Kenosha; Paul A. Willems, Kenosha, and Robert D. Braun, Kenosha, all of Wis., assignors to Snap-on Tools Corporation, Kenosha, Wis.

Continuation-in-part of Ser. No. 660,163, Feb. 25, 1991, abandoned, which is a continuation of Ser. No. 405,447, Sep. 11, 1989, abandoned. This application Aug. 29, 1991, Ser. No. 751,704

Int. Cl.[5] G01N *27/46*

U.S. Cl. 324—429 **9 Claims**



1. Apparatus for automatically loading a test circuit in accordance with a variable parameter thereof which varies with the load, comprising:

carbon pile electrical impedance means adapted to be connected in the test circuit for loading thereof;

compression means coupled to said impedance means for varying the compression thereof and thereby effecting variation of the impedance thereof, said compression means including rotatable shaft means, and clamping means threadedly engaged with said shaft means and adapted for engagement with the carbon pile;

motive means coupled to said compression means for driving same, said motive means being coupled to shaft means for rotating same thereby to move said clamping means relative to the carbon pile for varying the compression thereof;

feedback means coupled to the test circuit for sensing the variable parameter and producing a parameter signal which is a function of the parameter;

drive control means coupled to said motive means and to said feedback means and responsive to said parameter signal for automatically controlling the operation of said motive means to vary the impedance of said impedance means so as to regulate the parameter signal to a predetermined value; and

timing means coupled to said drive control means for selectively adjusting the time period during which said predetermined value is maintained.

5,254,953

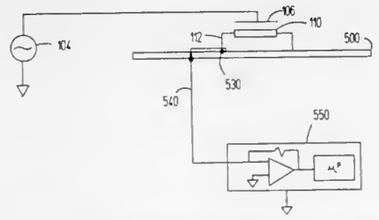
IDENTIFICATION OF PIN-OPEN FAULTS BY CAPACITIVE COUPLING THROUGH THE INTEGRATED CIRCUIT PACKAGE

David T. Crook; Kevin W. Keirn, both of Loveland, Colo., and Ugur Cilingiroglu, Goztepe, Turkey, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 631,609, Dec. 29, 1990, Pat. No. 5,124,660. This application Jun. 3, 1992, Ser. No. 892,868

Int. Cl.[5] G01R *31/02*

U.S. Cl. 324—538 **21 Claims**



1. A system for measuring the integrity of an electrical contact between an electrical connection pin of an electrical component and a first node of a circuit assembly, said system comprising:

(a) signal supplying means, comprising an output and a common signal return, for supplying an electrical current via said output to a pin of said electrical component;

(b) an electrical connection between a second node of the circuit assembly and said common signal return of said signal supplying means;

(c) a conductive electrode comprising a surface adapted to be placed in a fixed position in proximity to a surface of said pin; and

(d) measuring means, operatively coupled to said conductive electrode, for measuring a parameter indicative of a capacitance associated with connection of said pin to said circuit assembly, said capacitance being indicative of the integrity of the electrical connection between said pin and said circuit assembly.

5,254,954

DEFECT DETECTING APPARATUS AND METHOD FOR DETECTING A DEFECT IN AN INSULATOR USING AN ELECTRIC DISCHARGE SENSE BY AN OPTICAL PICKUP

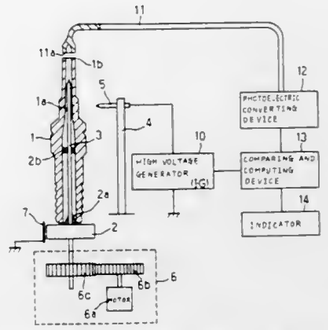
Takahiro Fujimoto, Nishio, and Hiroshi Nakatani, Kuwana, both of Japan, assignors to Nippondenso Co., Ltd, Kariya, Japan

Filed Mar. 17, 1992, Ser. No. 852,519

Claims priority, application Japan, Mar. 18, 1991, 3-52703

Int. Cl.[5] G01R *31/00, 31/12*

U.S. Cl. 324—551 **10 Claims**



1. An apparatus for detecting a defect in an insulator to be tested, which insulator has a hollow section which opens at a top end, comprising:

a hold section for holding the insulator to be tested;

an electric discharge means for producing a voltage which can cause an electric discharge between a hollow inside section of the insulator and an outside of said insulator across said top end;

a path recognizing means for automatically recognizing said electric discharge produced by said electric discharge means passing through a predetermined path of electric discharge including said top end; and

a discriminating means, receiving an indication from said path recognizing means that said electric discharge has passed said predetermined path, for discriminating whether said insulator is satisfactory in accordance with said recognizing by said path recognizing means.

5,254,955

ADVANCED PHASE LOCKED LOOP CIRCUIT

Hiroshi Saeki, Atsugi, and Hatsuo Motoyama, Machida, both of Japan, assignors to Anritsu Corporation, Tokyo, Japan

Division of Ser. No. 570,048, Aug. 20, 1990, Pat. No. 5,122,763. This application Jul. 9, 1991, Ser. No. 727,840

Claims priority, application Japan, Aug. 25, 1989, 1-217261; Sep. 21, 1989, 1-243434; Sep. 25, 1989, 1-246532; Mar. 30, 1990, 2-83049

Int. Cl.[5] H03K *5/13, 5/22*

U.S. Cl. 328—155 **11 Claims**

1. A PLL circuit having a frequency detection function, said circuit comprising:

a voltage controlled oscillator;

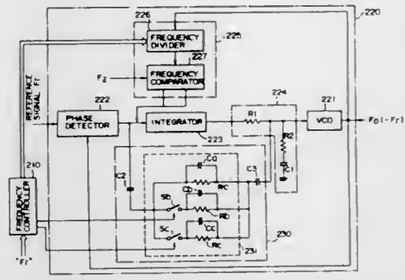
a phase detector for detecting a phase difference between a first reference signal and an output signal from said voltage controlled oscillator, and for outputting an error voltage according to the phase difference;

a loop filter for integrating the error voltage from said phase detector and for controlling said voltage controlled oscillator;

a control section for outputting upper limit frequency information and lower limit frequency information according to desired frequency setting information;

a first frequency comparator for dividing the frequency of the output signal from said voltage controlled oscillator according to the upper limit frequency information, comparing frequencies of a second reference signal and a frequency-divided signal and outputting down-pulses when the frequency of the frequency-divided signal is higher than that of the second reference signal;

a second frequency comparator for dividing the frequency of the output signal from said voltage controlled oscillator according to the lower limit frequency information, comparing frequencies of the second reference signal and a frequency-divided signal and outputting up-pulses when the frequency of the frequency divided signal is lower than that of the second reference signal; and



an up-down processor for receiving and inputting the down-pulses and the up-pulses to an input section of said loop filter to add to the error voltage from said phase detector;

wherein said up-down processor comprises first and second switch means each for switching a positive voltage and a negative voltage in accordance with the up-pulses and the down-pulses outputted from said first and second frequency comparators; and

whereby to perform the frequency detecting function for tracking the frequency of the output signal from said voltage controlled oscillator within a predetermined frequency range determined by the upper and lower limit frequency information and pulling in the frequency of the first reference signal.

5,254,956

COMPOSITE DIFFERENTIAL AMPLIFIER

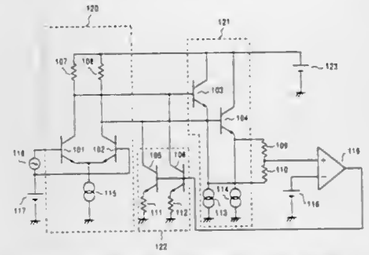
Kazunori Nishijima, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 29, 1992, Ser. No. 889,044

Claims priority, application Japan, May 29, 1991, 3-125752

Int. Cl.[5] H03F *3/45*

U.S. Cl. 330—258 **9 Claims**



1. A composite differential amplifier comprising:

a power supply for supplying a power to a circuit;

a differential amplifier for amplifying a voltage signal inputted from an input signal source;

an emitter-follower connected to an output side of said differential amplifier for converting said voltage signal

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outputted from said differential amplifier into a DC voltage and for amplifying said voltage outputted from said differential amplifier **120**;

an operational amplifier connected to an output side of said emitter-follower for amplifying said DC voltage outputted from said emitter-follower; and

a variable current source connected to an output side of said operational amplifier and connected to said output side of said differential amplifier for controlling a voltage of said output side of said differential amplifier in response to an output of said operational amplifier.

5,254,957

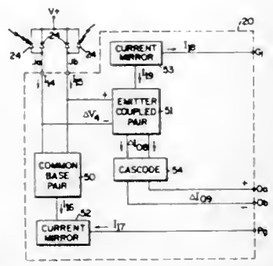
APPARATUS AND METHOD FOR AMPLIFYING OPTICALLY SENSED SIGNALS

James H. Lauffenburger, Colorado Springs, Colo., assignor to Information Storage, Inc., Colorado Springs, Colo.

Continuation of Ser. No. 732,333, Jul. 17, 1991, abandoned, which is a continuation of Ser. No. 636,022, Jan. 4, 1991, abandoned, which is a continuation of Ser. No. 532,225, Jun. 1, 1990, abandoned, which is a continuation of Ser. No. 437,285, Nov. 16, 1989, abandoned, which is a continuation of Ser. No. 293,300, Jan. 4, 1989, abandoned. This application Dec. 23, 1991, Ser. No. 814,321

Int. Cl.[5] **H03F** *3/08*

U.S. Cl. 330—308 **44 Claims**



1. A preamplifier circuit for amplifying pairs of photodetected current signals, comprising:

(a) first and second input terminals suitable for receiving first and second input current signals from photodetector sensors;

(b) emitter coupled transistor circuit means having at least one pair of transistors arranged in emitter-coupled configuration with their bases operatively connected to said first and said second input terminals respectively for receiving said first and said second input current signals therefrom;

(c) a first control input terminal suitable for receiving a first control current signal;

(d) first current source means operatively connected to said first control input terminal and to the emitters of said emitter coupled pair of transistors for providing a current source for said emitter coupled pair responsive to said first control current signal applied to said first control input terminal;

(e) common base connected circuit means having a second pair of transistors operatively connected in common base configuration, the emitters of said second pair of transistors being operatively connected to said first and said second input terminals for receiving said first and said second input current signals therefrom;

(f) second current source means operatively connected to the collectors of said pair of common base connected transistors, wherein the output current of said second current source equals the sum of said first and said second input current signals applied to said first and said second input terminals;

(g) first and second current output terminals; and

(h) output circuit means operatively connected with the collectors of said emitter coupled pair of transistors and with said first and said second output terminals, for respectively providing normalized differential output current signals to said first and said second output terminals, said differential output current between said first and said second output terminals being proportional to said first control current signal and to the difference of said first and said second input current signals and inversely proportional to their sum.

5,254,958

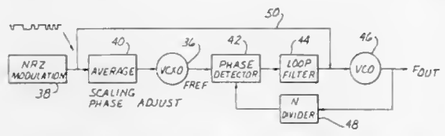
PHASE-LOCK-LOOP CIRCUIT AND METHOD FOR COMPENSATING, DATA BIAS IN THE SAME

Terry E. Flach, Altadena, and William C. McBride, Corona Del Mar, both of Calif., assignors to Pacific Communications, Inc.

Division of Ser. No. 656,704, Feb. 19, 1991, Pat. No. 5,205,294. This application Sep. 30, 1992, Ser. No. 954,162

Int. Cl.[5] **H03L** *7/099, 7/189, 27/12;* **H04L** *27/12*

U.S. Cl. 331—10 **3 Claims**



1. A phase-lock-loop circuit for providing frequency modulated digital signals comprising:

a source of digital signals;

averaging means for generating an average measure of said digital signal corresponding to low frequency components thereof;

first voltage controlled crystal oscillator coupled to said averaging means and controlled thereby for generating a variable frequency according to said measure;

a phase detector having its input coupled to the output of said first voltage controlled crystal oscillator;

a loop filter having an input coupled to an output of said phase detector;

a second voltage controlled oscillator having an input coupled to an output of said loop filter, said second voltage controlled oscillator generating an output frequency;

a divider having an input coupled to said output frequency and an output coupled to said phase detector, said divider having an output signal with a frequency which is a submultiple of said output frequency by a selected integer N; and

wherein the output of said source of digital signals is coupled to said input of said second voltage controlled oscillator so that high frequency components of said digital signals cause said output frequency of said second voltage controlled oscillator to be frequency-modulated while said DC value of said digital signals is compensated by means of said averaging means and first voltage controlled crystal oscillator.

2. A phase-lock-loop circuit comprising:

a phase detector with an input for receiving a reference frequency;

a loop filter having an input coupled to an output of said phase detector;

a voltage controlled oscillator having a controlled input coupled to an output of said loop filter, said voltage controlled oscillator generating an output frequency which is a multiple of said reference frequency;

a divider circuit having said output frequency coupled to its input and an output coupled to said phase detector, said output of said divider being said output frequency divided by said multiple;

a microcontroller coupled to said phase detector for determining whether said voltage controlled oscillator is phase locked and if not, in what direction the frequency of said voltage controlled oscillator ought to be changed to become locked;

a digital-to-analog converter having an input coupled to an output from said microcontroller. said digital-to-analog converter having an output coupled to said voltage controlled oscillator to preposition the operating frequency of said voltage controlled oscillator at a point as determined by said output of said digital-to-analog converter,

wherein said voltage controlled oscillator has a first frequency control means coupled to and controlled by said loop filter for fine frequency tuning and a second frequency control means coupled to and controlled by said digital-to-analog converter for positioning the operating frequency of said voltage controlled oscillator within a selected band; and

an analog-to-digital converter having an input coupled to said output of said loop filter and an output coupled to said microcontroller, said microcontroller monitoring said output of said analog-to-digital converter to generate a frequency correction signal to said digital-to-analog converter in order to maintain said phase-lock-loop circuit within a predetermined operating range.

5,254,959

FREQUENCY SYNTHESIZER HAVING PHASE CONTROL LOOP WITH PLURAL BRANCHES

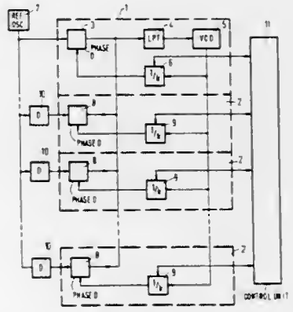
Christian Wünsch, Rötenbach/Pegnitz, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 26, 1992, Ser. No. 904,794

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1991, 4121361

Int. Cl.[5] **H03L** *7/087, 7/191*

U.S. Cl. 331—12 **20 Claims**



1. A circuit arrangement for frequency synthesis comprising a phase control loop (**1**) which includes

a first phase discriminator (**3**) for receiving a reference signal and an output signal supplied by a first frequency divider (**6**) with a division ratio k,

a low-pass filter (**4**) coupled to the output of the first phase discriminator (**3**), and

an oscillator (**5**) coupled to the output of the low-pass filter (**4**) for generating an output signal which can be supplied to the first frequency divider,

characterized in that

at least one further branch (**2**) is present with a further phase discriminator (**8**) and a further frequency divider (**9**) with a division ratio k, which further frequency divider is to be released,

in that the further phase discriminator (**8**) coupled to the input of the low-pass filter (**4**) is designed for receiving the reference signal delayed by a delay element (**10**) and the output signal of the further frequency divider (**9**) provided for receiving the oscillator (**5**) output signal,

in that each delay element (**10**) has a different delay time corresponding to a fraction of a period $T=1/(n*f_{ref})$ of the reference signal, n being the number of branches (**1,2**) and f_{ref} being the frequency of the reference signal, and

in that a release signal for releasing the frequency divider (**9**) is provided by a control (**11**) approximately after the delay time of the delay element (**10**) assigned to the relevant frequency divider (**9**).

5,254,960

OSCILLATOR CIRCUIT CAPABLE OF REMOVING NOISE

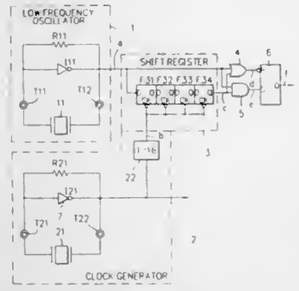
Hiroshi Hikichi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 13, 1992, Ser. No. 928,752

Claims priority, application Japan, Aug. 26, 1991, 3-212540

Int. Cl.[5] **H03B** *1/04, 5/32;* **H03K** *5/01*

U.S. Cl. 331—46 **5 Claims**



1. An oscillator circuit, comprising:

an oscillator means for outputting an oscillation signal of a first frequency;

a first clock generator circuit means for generating a first clock signal of a second frequency higher than the first frequency;

a shift register means of a plurality of shift stages for successively shifting the oscillation signal in synchronism with the first clock signal;

a logical AND circuit means for calculating a logical AND of the oscillation signal and an output of the shift register;

a logical OR circuit means for calculating a logical OR of the oscillation signal and the output of the shift register; and

a flip-flop circuit means to be set and reset by outputs of the logical AND circuit and the logical OR circuit.

5,254,961

LOW-POWER CRYSTAL CIRCUIT

J. Eric Ruetz, San Bruno, Calif., assignor to Samsung Semiconductor, Inc., San Jose, Calif.

Continuation of Ser. No. 704,745, May 23, 1991, Pat. No. 5,155,453. This application Oct. 13, 1992, Ser. No. 960,599

The portion of the term of this patent subsequent to Oct. 13, 2009, has been disclaimed.

Int. Cl.[5] **H03B** *5/36*

U.S. Cl. 331—116 FE **4 Claims**

1. A crystal oscillator system including a crystal for providing an oscillator output signal having required electrical characteristics, said system comprising:

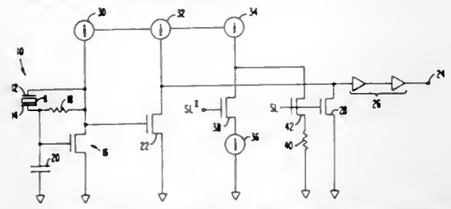
an amplifier circuit for driving the crystal and providing the oscillator output signal;

an amplifier current source for supplying current to the amplifier circuit;

a variable current supply means coupled to the amplifier current source in a current mirror configuration, said variable current supply means consisting of a first bias circuit for biasing the amplifier current source to supply a high level current to the amplifier circuit to drive the

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crystal to produce the oscillator output signal, and a second bias circuit for biasing the amplifier current source to supply a low level current to the amplifier circuit, said low level current not being sufficient to drive the crystal to produce the oscillator output signal but being sufficient to maintain crystal oscillation;



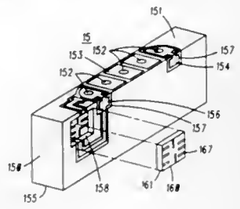
a select circuit for selecting the first bias circuit to operate the crystal circuit in a normal operation mode and for selecting the second bias circuit to operate the crystal circuit in a sleep operation mode.

5,254,962

COMBINED ACOUSTIC WAVE DEVICE AND CERAMIC BLOCK FILTER STRUCTURE

Douglas A. Morris, Placitas; Raymond L. Sokola, Albuquerque, both of N. Mex.; Frederick Y. Cho, Scottsdale, Ariz., and Charles W. Shanley, Lake Zurich, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 19, 1992, Ser. No. 901,005
Int. Cl.[5] H03H *9/00*; H01P *1/20*
U.S. Cl. 333—193 **20 Claims**



1. A filter comprised of:
a first ceramic block filter having an input and an output, said first filter comprised of a parallelepiped block of ceramic material having top, bottom, and side surfaces, the exterior surfaces of which, except for the top surface, are substantially coated with conductive material (metallized), said parallelepiped block including at least one metallized hole extending through said top and bottom surfaces, the metallization of said hole being electrically coupled to metallization on the exterior surfaces of the block at only the bottom surface of said block, said block further including at least one cavity formed in at least one side of said parallelepiped block;
at least one electronic device, said electronic devices being sized and shaped to fit substantially within said cavity;
means for coupling electrical signals between said first ceramic block filter and said at least one electronic device.

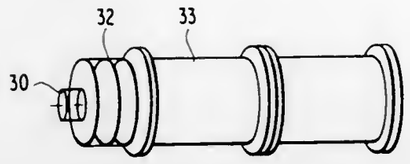
5,254,963

MICROWAVE FILTER WITH A WIDE SPURIOUS-FREE BAND-STOP RESPONSE

Rene R. Bonetti, Gaithersburg, and Albert E. Williams, Bethesda, both of Md., assignors to COMSAT, Washington, D.C.

Filed Sep. 25, 1991, Ser. No. 765,274
Int. Cl.[5] H01P *1/208, 5/12*
U.S. Cl. 333—208 **12 Claims**

1. An output filter having a narrow band-pass and wide band-stop response, the output filter comprising:
at least two single-mode transverse magnetic (TM) waveguide cavities that resonate in a TM_{010} mode;
a plurality of wave-guide cavities that resonate in transverse electric (TE) modes cascaded with one of said at least two TM_{010} cavities; and



an iris disposed between said at least two TM_{010} cavities, wherein said iris has four arcuate aperture sections that provide for coupling between said at least two TM_{010} cavities so as to eliminate spurious signals in the wide band-stop response of the output filter.

5,254,964

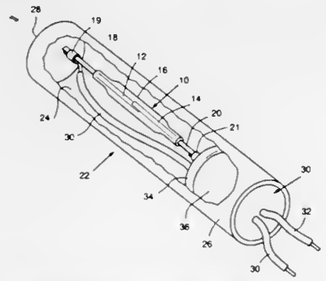
Patent Not Issued For This Number

5,254,965

PROTECTIVE REED SWITCH HOUSING

Donald R. Sandell, Shingle Springs, Calif., assignor to C & K Systems, Inc., Folsom, Calif.

Filed Nov. 26, 1991, Ser. No. 798,492
Int. Cl.[5] H01H *9/02*
U.S. Cl. 335—202 **6 Claims**



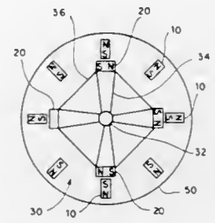
1. A reed switch assembly, comprising:
an elongate member having a substantially enclosed cavity therein defined by cavity walls and having a hole therethrough at one end thereof;
a reed switch having a body and first and second connecting leads, said reed switch being positioned completely inside said cavity;
first and second wires attached to said first and second connecting leads, respectively, said first and second wires extending through said hole in said elongate member to suspend said reed switch in said cavity such that said body of said reed switch does not make contact with said cavity walls of said elongate member and such that one of said first and second connecting leads remains suspended in free space within said cavity.

5,254,966

SPINNING PLATFORM WITH CROSSED-POLE MAGNETS

Peter Solar, P.O. Box 143, Scarborough, WA 6019, Australia

Filed Aug. 28, 1991, Ser. No. 751,051
Int. Cl.[5] H01F *7/02*
U.S. Cl. 335—306 **5 Claims**



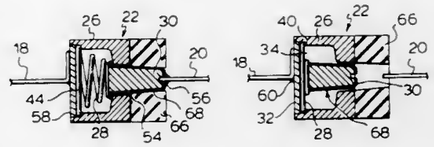
1. A magnetic device comprising;
a base;
a rotor, having an axis of rotation, further comprising a bearing hub mounted on said base to define said axis of rotation and,
a first number of arms extending radially from said bearing hub perpendicular to said axis of rotation, said arms having a common length and describing a common angle between adjacent ones of said arms, said arms having respective ends distal said bearing hub, and
rotor magnets, equal in number to said first number, each fixed to a respective one of said ends,
said rotor magnets disposed in a first circle centered on said bearing hub and having rotor magnetic dipoles tangential to said first circle, all of said rotor magnetic dipoles directed in a one rotational sense about said first circle; and
a second number of stator magnets disposed in a second circle coplanar, concentric with, and larger than said first circle, said stator magnets having stator magnetic dipoles aligned in radial directions all selectively inward and outward,
said second number equal to an integral multiple of said first number; whereby
said rotor may be rotated about said bearing hub to pass said rotor magnets past said stator magnets With the dipoles of the passing magnets at right angles to cause perturbations of rotational speed.

5,254,967

DUAL ELEMENT FUSE

Tony Biasutti, Mississauga; Peter Morgan, Toronto; Mary A. Ruggiero, Toronto, and Brian A. Young, Toronto, all of Canada, assignors to Nor-Am Electrical Limited, Toronto, Canada

Filed Dec. 22, 1992, Ser. No. 994,951
Claims priority, application Canada, Oct. 2, 1992, 2079722
Int. Cl.[5] H01H *85/04*
U.S. Cl. 337—165 **26 Claims**



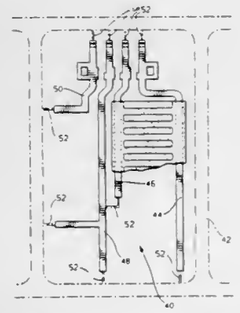
1. An electrical interruption device to interrupt current flow therethrough on a predetermined condition occurring, the device comprising,
spiral spring means having coils winding continuously about and constantly approaching a central axis, with successive coils having sufficiently reduced radius to pass axially through the center of an immediately outward adjacent coil,
the spring means having a first end portion and a second end portion,
the spring means having an inherent tendency to assume an unbiased first position,
the spring means being axially deformable from the unbiased first position to a second loaded position by drawing said second end portion along the axis relative to said first end portion,
holding means for engaging the first and second end portions to retain the spring means in the second loaded position,
said holding means comprising coupling means releasably securing the second end portion, wherein on said predetermined condition occurring said coupling means releases said second end portion to permit said spring means to move towards said unbiased first position,
said spring means in moving towards said unbiased first position actuating interruption of the current flow.

5,254,968

ELECTRICALLY CONDUCTIVE PLASTIC SPEED CONTROL RESISTOR FOR AN AUTOMOTIVE BLOWER MOTOR

Richard A. Zirnheld, Lockport, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 15, 1992, Ser. No. 898,278
Int. Cl.[5] H01C *13/00*
U.S. Cl. 338—50 **9 Claims**



1. In a vehicle blower motor control including a speed control resistor electrically connected in a current supply path of said blower motor and positioned in an air duct so that airflow produced by rotation of the blower motor dissipates heat generated in said resistor due to conduction of blower motor current therethrough, the improvement wherein the resistor is formed of electrically conductive plastic material having a characteristic melting temperature such that in a condition of inadequate heat dissipation, the resistor heats to said melting point whereupon portions of the electrically conductive plastic material melt to limit the current supplied to said motor and terminate the condition, said melting point being sufficiently low to protect the resistor environs from damage due to heating of the resistor.

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5,254,969

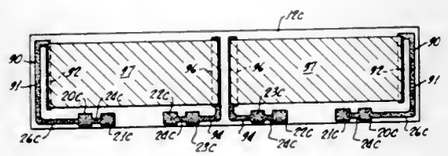
RESISTOR COMBINATION AND METHOD

Richard E. Caddock, Jr., Winchester, Oreg., assignor to Caddock Electronics, Inc., Riverside, Calif.

Continuation of Ser. No. 758,605, Sep. 12, 1991, abandoned, Continuation-in-part of Ser. No. 679,603, Apr. 2, 1991, abandoned. This application Mar. 12, 1993, Ser. No. 32,537

Int. Cl.[5] H01C *1/012*

U.S. Cl. 338—308 **49 Claims**



1. A resistor, which comprises:

(a) a substrate adapted to have resistive films applied thereto, said substrate having a front side and a back side, said substrate being so constructed and shaped that it will fracture substantially instantaneously in response to thermal shock when a high voltage is applied to the below-stated resistive films on said front and back sides of said substrate,

(b) a resistive film applied to said front side of said substrate,

(c) a resistive film applied to said back side of said substrate, and

(d) termination means connected to said films to connect the same into an electrical circuit,

said termination means including electrically conductive termination traces on opposed end regions of said front side of said substrate and on opposed end regions of said back side of said substrate,

said traces being respectively spaced from outer end portions of said resistive films and being adapted to break substantially instantaneously when said end regions of said substrate fracture in response to a high voltage applied to said films,

said resistive films, substrate, and termination means being such that said thermal shock fracture breaks the circuit through both of said resistive films and thus through said resistor.

5,254,970

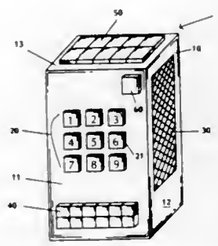
PROGRAMMABLE PERSONAL ALARM

Edward T. Brady, 400 Central Park W., Apt. 14-P, New York, N.Y. 10025

Filed Aug. 22, 1990, Ser. No. 571,312

Int. Cl.[5] G08B *3/00, 23/00*

U.S. Cl. 340—328 **2 Claims**



1. A portable personal alarm device comprising

a hollow housing member;

a battery disposed in said housing member;

a beeper disposed in said housing member, said beeper being provided to emit one or a plurality of sequentially discrete sounds;

first prompting means to indicate that said device is ready to receive a code, said first prompting means being connected to said battery and said beeper, said first prompting means being response to the flow of electricity from said battery to cause said beeper to emit one discrete sound;

code entering means disposed on a face of said housing member;

code register and storage means to register and store a code, said code register and storage means being disposed in said housing member and connected to said code entering means, said code register and storage means being selectively operable in a coding mode for registering and storing a first code, a verifying mode for verifying a registered and stored code, a deactivating mode for deactivating an alarm means and a re-coding mode for registering and storing a second code, said code register and storage means being initially set in the coding mode;

code storage activating means disposed in said housing member and connected to said code entering means and to said code register and storage means to activate storing of a code in said code register and storage means in said coding mode;

code storage and prompting means to indicate the storage of the first code in said code register and storage means, said code storage and prompting means including a code storage indicator, said code storage indicator being connected to said code register and storage means and to said beeper, said code storage indicator being operable in the coding mode of said code register and storage means to cause said beeper to emit a first plurality of discrete sounds;

first mode shifting means to shift the operation of said code register and storage means from the coding mode to the verifying mode, said first mode shifting means being responsive to operation of said code storage indicator;

code verifying and alarm setting means to verify the first code entered via said code entering means and to set alarm means, said code verifying and alarm setting means being connected to said code register and storage means and to said beeper, said code verifying and alarm setting means being operable in the verifying mode of said code register and storage means to cause said beeper to emit a second plurality of discrete sounds;

second mode shifting means to shift the operation of said code register and storage means from the verifying mode to the deactivating mode, said second mode shifting means being responsive to the operation of said code verifying and alarm setting means;

second prompting means to indicate the verification of said first code entered and the setting of said alarm means, said second prompting means being connected to said code verifying and alarm setting means;

alarm means connected to said code verifying and alarm setting means and to said battery, said alarm means being provided to emit a continuous sound;

alarm activating means to activate said alarm means, said alarm activating means being connected to said alarm means; and

alarm deactivating means to selectively deactivate said alarm means, said alarm deactivating means being connected to said code entering means and to said alarm means.

5,254,971

ADAPTIVE LAMP MONITOR USING CAPACITORS AND SWITCHES

Gregory E. Sutterlin, Wexford, Pa.; Samuel Lorincz, Boardman, and Charles E. Vink, Niles, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 643,383, Jan. 18, 1991, Pat. No. 5,144,282. This application Jun. 8, 1992, Ser. No. 896,090

Int. Cl.[5] B60Q *11/00*

U.S. Cl. 340—458 **13 Claims**

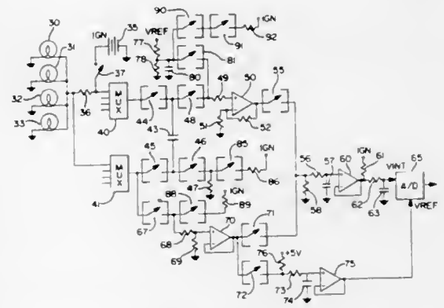
1. Lamp monitor apparatus for a vehicle lamp circuit having one or more lamps connected in parallel through a lamp switch to an electric power source, the lamp monitor apparatus comprising, in combination:

a sense resistor connected between the lamps and the lamp switch;

a capacitor;

first switch means connecting, when activated, the leads of the capacitor to the two ends of the sense resistor;

second switch means connecting, when activated, the leads of the capacitor across an input of a means for deriving



from an input voltage a signal for comparison with a reference to determine lamp outage; and

control means effective to repeatedly (1) activate the first switch means with the second switch means deactivated when the lamp switch is closed to energize the lamps so as to connect the capacitor across the sense resistor for sufficient time to charge the capacitor to essentially the voltage drop across the sense resistor and (2) deactivate the first switch means and activate the second switch means so as to apply the voltage across the capacitor to the deriving means.

5,254,972

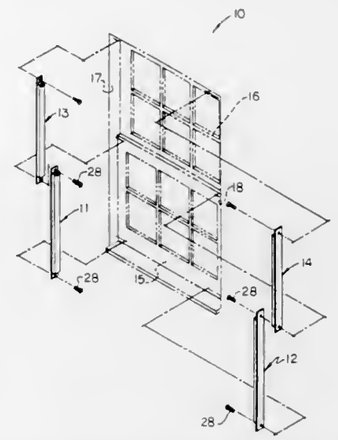
WINDOW SEALING KIT

Anthony J. Cordio, Jr., 27 Belmont Cir., Danbury, Conn. 06810

Filed Aug. 24, 1992, Ser. No. 933,830

Int. Cl.[5] G08B *13/08;* **E05D** *15/06;* **H01H** *3/16*

U.S. Cl. 340—545 **4 Claims**



1. A window sealing kit arranged for sealing a lower window and an upper window within a first side frame and a second side frame, wherein the kit comprises,

a first lower sealing member and a second lower sealing member arranged for positioning on opposed sides of the lower window between the first frame and the second frame,

and

a first upper sealing member and a second upper sealing member arranged for positioning on opposed sides of the upper window between the upper window and the respective first side frame and the second side frame,

and

each sealing member includes a flexible support strip, the flexible support strip having a support strip first end and a support strip second end, and a first aperture directed through the support strip adjacent the support strip first end, and a second aperture directed through the support strip adjacent the support strip second end,

and

a first fastener and a second fastener directed through the respective first aperture and the second aperture,

and

a resilient compressible sealing strip mounted to the support strip between the support strip first aperture and the support strip second aperture, wherein the sealing strip is of a shape retentive material having a sealing strip first end and a sealing strip second end, and a sealing strip front wall arranged coextensively between the sealing strip first end and the sealing strip second end, the support strip having a support strip front wall, wherein the sealing strip front wall is arranged parallel to the support strip front wall.

5,254,973

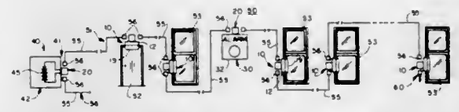
SECURITY CIRCUIT AND MODULAR DEVICES THEREFOR

John H. Gilmore, II, 627 Bakewell La., Naperville, Ill. 60565

Filed Feb. 28, 1992, Ser. No. 843,179

Int. Cl.[5] G08B *13/08*

U.S. Cl. 340—547 **20 Claims**



1. A modular device for interconnection with other devices by means of standard multiple conductor telephone connector cables each having ends terminated respectively by modular telephone jack plugs, said modular device comprising: an insulated housing including a function portion and a modular jack portion, a function circuit disposed in said function portion, and two standard telephone jack sockets disposed in said jack portion and each having a plurality of conductors, at least one conductor of one of said sockets and a corresponding at least one conductor of the other of said sockets being connected to said function circuit, the remaining conductors of said one socket being respectively directly connected to the corresponding conductors of said other socket.

5,254,974

DEACTIVATING DEVICE

Paulus Rebers, Groenlo, and Tallienco W. H. Fockens, Eibergen, both of Netherlands, assignors to N.V. Nederlandsche Apparatenfabriek Nedap, De Groenlo, Netherlands

Filed Sep. 30, 1991, Ser. No. 766,922

Claims priority, application Netherlands, Sep. 28, 1990, 9002120

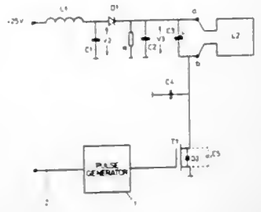
Int. Cl.[5] G08B *13/14*

U.S. Cl. 340—572 **22 Claims**

1. A deactivating device for deactivating shoplifting detection labels of an electronic shoplifting detection system, which labels comprise a resonant circuit with a coil and a capacitor,

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said deactivating device comprising an antenna circuit comprising an antenna coil tuned with at least one capacitor to the resonant frequency of the resonant circuit, by means of which sufficient energy can be induced in a resonant circuit of a label to effect electrical breakdown in the capacitor thereof, wherein the antenna coil of the deactivating device is coupled between a supply source and earth via a switching means having a conductive state and a blocking state; and control means for supplying at intervals control pulses to the switching



means in order to bring the switching means into the conductive state; wherein the energy necessary for deactivation is stored as magnetic energy in the antenna coil and the duration of each control pulse is chosen such that at the end of a control pulse, when the switching means returns to the blocking state, the energy necessary for deactivation has accumulated as magnetic energy in the antenna coil, which energy is subsequently converted into an alternating electromagnetic field for application to a detection label when the switching means is in the blocking state.

5,254,975

COMPENSATION TYPE HEAT SENSOR

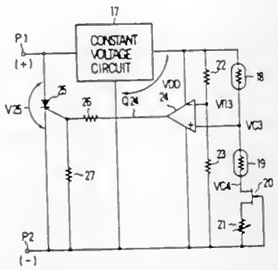
Yasuo Torikoshi, Kawasaki, Japan, assignor to Hochiki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1992, Ser. No. 859,103

Claims priority, application Japan, Mar. 29, 1991, 3-66036

Int. Cl.[5] G08B *17/06*

U.S. Cl. 340—589 **6 Claims**



1. A compensation type heat sensor comprising:

two temperature detection devices having respectively a small heat time constant and a large heat time constant, said two temperature detection devices having a negative temperature coefficient;

an active device with bias and connected in series with said two temperature detection devices before being connected to a predetermined power source;

said two temperature detection devices being selected and the bias of said active device being set so that

said active device operates in a triode region as a resistance value of each of said temperature detection devices is changed before a temperature of a supervisory region is raised to a predetermined dangerous level, said active device operating in a saturated region when said temperature has been raised to said dangerous level;

and when said temperature is raised slowly while said active device operates in said triode region, a voltage at a junction of said temperature detection devices is always lower than a reference voltage, said voltage at said junction becoming higher than said reference voltage when said temperature has been raised to said dangerous level,

but if said temperature is raised rapidly while said active device operates in said triode region, the voltage at said junction of said temperature detection devices becomes higher than said reference voltage even if said temperature is not raised to said dangerous level; and

comparison means detecting that said voltage at said junction has exceeded said predetermined reference voltage to determine that a fire has taken place.

5,254,976

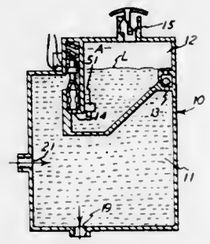
LIQUID LEAK DETECTOR APPARATUS AND METHOD

Robert A. Schueler, Oconomowoc, Wis., assignor to Textron Inc., Providence, R.I.

Filed Mar. 9, 1992, Ser. No. 848,280

Int. Cl.[5] G08B *21/00*

U.S. Cl. 340—605 **24 Claims**



1. A liquid leak detector comprising a main liquid tank and a secondary liquid tank in liquid-flow communication with each other and being in an enclosed liquid-flow system, a liquid flow passageway disposed in liquid flow communication between said tanks for liquid flow therebetween, said tanks and said passageway being arranged to effect liquid pressure equilibrium flow between said tanks, a liquid-flow responsive member movably disposed in said passageway and being arranged to be movable in response to said liquid pressure equilibrium being established between said tanks as a consequence of liquid flow through said passageway from said secondary tank and into said main tank, an electric switch operatively associated with said liquid-flow responsive member and being electrically switchable in response to movement of said liquid-flow responsive member, and an electric signal electrically connectable with said switch for signaling liquid flow through said passageway.

5,254,977

COLOUR DISPLAY

Lindsay W. MacDonald, Leighton Buzzard, England, assignor to Crosfield Electronics Ltd., England

Continuation of Ser. No. 527,902, May 24, 1990, abandoned.

This application Jul. 13, 1992, Ser. No. 911,382

Claims priority, application United Kingdom, Jun. 12, 1989, 8913445

Int. Cl.[5] G01G *1/28*

U.S. Cl. 345—150 **7 Claims**

1. A method of displaying in respective regions of a display, colours defined by a selected section of a colour space defined by N orthogonal axes, the method comprising:

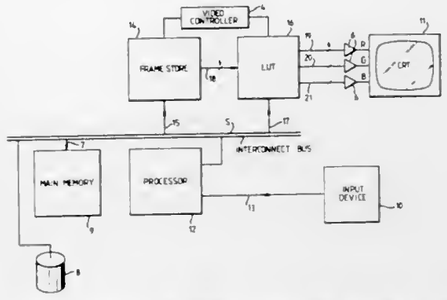
a) a first preliminary step of determining and storing data defining a set of displayable colours within the colour space, and a second preliminary step of storing addresses of a colour memory in locations of a frame tore corresponding to pixels of each region, wherein each region is defined by an array of pixels for each of which the same

colour memory address is stored, the addresses for each region being different;

b) subsequently:

i) determining the section of the colour space to be displayed;

ii) storing, at each address in the colour memory corresponding to a region which is to display a colour of the selected section, data defining the colour, and at each address



corresponding to an unused region, data defining a common background colour by downloading data selected from the previously generated colour data into the colour memory; and

iii) displaying on the display the colours defined in the color memory in the corresponding regions; and

c) repeating step b) without repeating step a) so as to display other selected sections of the colour space.

5,254,978

REFERENCE COLOR SELECTION SYSTEM

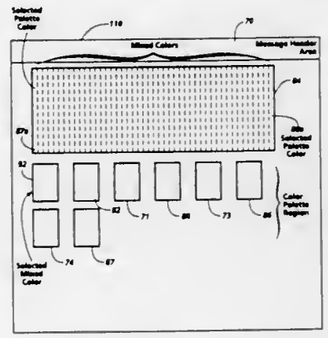
Giordano B. Beretta, Palo Alto, Calif., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 677,706, Mar. 29, 1991, abandoned.

This application Nov. 23, 1992, Ser. No. 980,148

Int. Cl.[5] G09G *1/28*

U.S. Cl. 345—150 **6 Claims**



1. An interactive system for creating a modified color palette composed of a plurality of palette colors, the interactive system comprising,

a memory device for storing data;

input means for receiving operation signals from an operator;

at least one color palette data structure including at least two colorimetrically measured colors composing a color palette; each colorimetrically measured color being defined by a set of coordinates for the colorimetrically measured color in a perceptually uniform color space; the at least one color palette data structure being stored in the memory device;

color palette display means including a display device for displaying thereon a color mixing region, for displaying therein a plurality of mixed colors, and a color palette region, for displaying therein the plurality of palette colors composing the modified color palette, in response to the operation signals from the input means; each of the palette colors of the modified color palette being defined by the set of coordinates for the palette color in the perceptually uniform color space;

color mixing means for selecting, in response to the operation signals, two selected mixing colors from the palette colors displayed in the color palette region, and for generating the plurality of mixed colors from the two selected mixing colors; the two selected mixing colors and the plurality of mixed colors being displayed in the color mixing region by the color palette display means; each selected mixing color and each mixed color being defined by the set of coordinates for the selected mixing color and the mixed color in the perceptually uniform color space;

wherein the color mixing means generates the plurality of mixed colors from the two selected mixing colors by successively varying the coordinates of the two selected mixing colors in the perceptually uniform color space by a coordinate change quantity beginning with the coordinates of one selected mixing color and ending with the coordinates of the other selected mixing color;

color palette adding means, responsive to the operation signals from the input means, for selecting one of the mixed colors displayed in the color mixing region, and for adding the mixed color to the palette colors of the modified color palette; the mixed color added to the modified color palette being displayed in the color palette region by the color palette display means;

color palette deletion means for selecting and deleting one of the palette colors from the modified color palette displayed in the color palette region, in response to the operation signals from the input means; the deleted palette color being removed from the color palette region; and

modified color palette memory means, cooperatively associated with the color palette display means, for storing in the memory device the modified color palette displayed in the color palette region, in response to the operation signals received from the input means.

5,254,979

RASTER OPERATIONS

Neil F. Trevett, Kingston-upon-Thames, and Malcolm E. Wilson, Bridport, both of England, assignors to DuPont Pixel Systems Limited, Weybridge, England

Continuation of Ser. No. 310,537, Feb. 14, 1989, abandoned.

This application May 6, 1991, Ser. No. 698,330

Claims priority, application United Kingdom, Mar. 12, 1988, 8806839; Mar. 19, 1988, 8806844; Mar. 23, 1988, 8806837; Mar. 23, 1988, 8806838; Mar. 23, 1988, 8806840; Mar. 23, 1988, 8806841; Mar. 23, 1988, 8806842; Mar. 23, 1988, 8806843; Mar. 23, 1988, 8806846; Mar. 23, 1988, 8806847; Mar. 23, 1988, 8806848; Mar. 29, 1988, 8806845

Int. Cl.[5] G09G *1/14*

U.S. Cl. 345—113 **10 Claims**

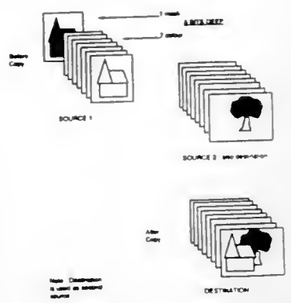
1. A graphics processing system for processing image data in which an image is represented by a plurality of patches, each patch representing a two dimensional array of pixels, and each patch having a plurality of planes, the data for each pixel having a respective bit in each plane, wherein the graphics processing system has an image memory, the system comprising:

(a) first means for isolating a first plane of a first input patch to permit operations to be performed on the bits of said plane, independently of the other planes of said first input patch;

(b) second means for performing at least one of a Boolean,

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arithmetic and shift operation on the bits of said first plane to form a modified plane; and



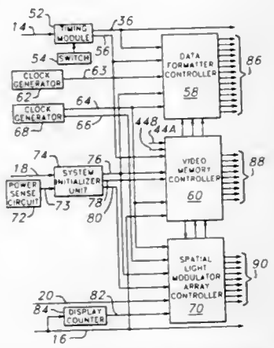
(c) third means for at least one of storing said modified plane in an output patch and holding said modified plane for subsequent processing by said second means.

5,254,980

DMD DISPLAY SYSTEM CONTROLLER

Henry D. Hendrix, Roswell, Ga.; Paul M. Urbanus, Dallas, Tex., and Masaho Asahara, Norcross, Ga., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 6, 1991, Ser. No. 756,007
Int. Cl.[5] G09G *3/34*; H04N *5/44*
U.S. Cl. 345—84 **14 Claims**



1. A method for controlling a spatial light modulator display system comprising:

a. dividing the display system control, and data transfer functions into a data formatter controller to supply address and control signals to at least one data formatter, a memory controller to control at least one video memory, and a modulator controller to supply address and modulator control signals to at least one spatial light modulator; and

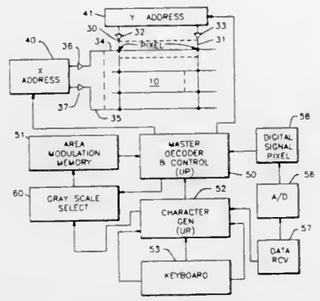
b. generating signals between said controllers to coordinate the addressing, reading, writing, and transferring of data between a data formatter, a memory, and a modulator, such that said transfers are done to provide said data and said modulator control signals to said modulator.

5,254,981

ELECTROPHORETIC DISPLAY EMPLOYING GRAY SCALE CAPABILITY UTILIZING AREA MODULATION

Frank J. Disanto, North Ills; Denis A. Krusos, Lloyd Harbor, and Christopher Laspina, Syosset, all of N.Y., assignors to Copytele, Inc., Huntington Station, N.Y.

Continuation of Ser. No. 402,774, Sep. 15, 1989, abandoned. This application Nov. 12, 1992, Ser. No. 975,119
Int. Cl.[5] G09G *3/34*
U.S. Cl. 345—107 **14 Claims**



1. Apparatus for providing grey scale capability for an electrophoretic display (EPID), wherein said electrophoretic display is an X-Y addressable display with each X-Y coordinate indicative of a given column and row intersection, with each X-Y coordinate defining a pixel, which pixel when energized provides a different intensity display as compared to a non-energized pixel comprising:

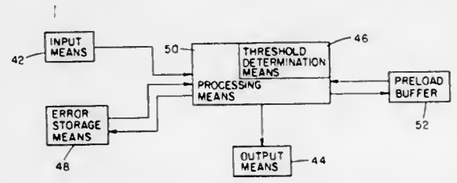
means coupled to said display for impressing upon said display of plurality of predetermined digital patterns that are independent of data or an image written on said display to cause said pixels in said display to be energized with respect to other pixels in said display according to a selected one of such patterns, said energized pixels being of same intensity as those pixels of an image on said display and each of said predetermined digital patterns being distinct and arranged in repetitive configurations that produce different grey scale levels, whereby the area about said image is effectively modulated according to said pattern to vary the contrast of said image with respect to the display background.

5,254,982

ERROR PROPAGATED IMAGE HALFTONING WITH TIME-VARYING PHASE SHIFT

Ronald I. Feigenblatt, Dobbs Ferry, and Carl G. Powell, Putnam Valley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 297,768, Jan. 13, 1989, abandoned. This application Jan. 12, 1990, Ser. No. 463,750
Int. Cl.[5] G09G *5/10, 3/36*
U.S. Cl. 345—148 **50 Claims**



1. A method of displaying an image comprising the steps of:

(a) providing an image comprising a plurality of image elements i(m,n), m comprising the integers 1 to m_{total}, n

comprising the integers 1 to n_{total}, n_{total} a function of m, each image element i(m,n) having an intensity I(m,n) equal to at least one of q image intensity values, where q is at least equal to three, each image element having a position;

(b) providing a display comprising a plurality of display elements d(m,n), each having a position corresponding to the position of image element i(m,n), and each display element d(m,n) being capable of emitting light with an intensity D(m,n) equal to one of r amplitude-ordered display intensity values A1,A2 . . . Ar, where r is an integer less than q, and Ax is the xth display intensity value;

(c) storing r−1 threshold values, (T1,T2, . . . T(r−1)), where Tx is the xth threshold value;

(d) storing an error value E(m,n) for each m and n, where E(m,n)=I(m,n−1)+E(m,n−1)−D(m,n−1) and E(m,1) for all m is a function of time and m only;

(e) for mapping the image into the display by displaying the plurality of display elements d(m,n) m=1 to m_{total} and, for each m, for n=1 to n_{total}, with an intensity;

(i) D(m,n)=A=1, if I(m,n)+E(m,n)<T1,

(ii) D(m,n)=Ar, if I(m,n)+E(m,n)≧T(r−1), or,

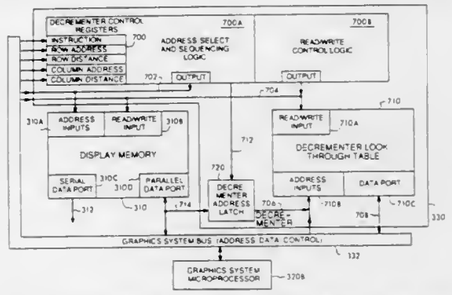
(iii) for r>2 and T1≦I(m,n)+E(m,n)<T(r−1), D(m,n)=Ax where x is the value between 2 and r−1 which satisfies the condition (T(x−1)≦I(m,n)+E(m,n)<Tx.

5,254,983

DIGITALLY SYNTHESIZED GRAY SCALE FOR RASTER SCAN OSCILLOSCOPE DISPLAYS

David W. Long, and Dennis J. Weller, both of Colorado Springs, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 5, 1991, Ser. No. 650,833
Int. Cl.[5] G09G *3/00*
U.S. Cl. 345—147 **20 Claims**



1. An improvement to a digitizing oscilloscope, said digitizing oscilloscope having a display, a display memory, and a display control, said display control drawing a current waveform and a plurality of prior waveforms on said display during a display refresh cycle, said current waveform and each of said plurality of prior waveforms being formed by a plurality of pixels on said display, said improvement comprising:

means in said display memory for providing a gray scale binary field of at least two bits for each of said plurality of pixels in each of said current waveform and said plurality of prior waveforms,

means receptive of each said gray scale binary field from said providing means for converting the binary value in each said gray scale binary field to a corresponding gray scale analog value, said display receptive of each said gray scale binary field to a corresponding gray scale analog value, said display receptive of each said gray scale analog value from said converting means for illuminating the corresponding pixel to the degree of brightness determined by the corresponding gray scale binary value so as to display said current waveform at full brightness an all of said plurality of prior waveforms,

means connected to said display memory and to said display control for decrementing prior to each said display, in a predetermined cycle of time independent of said display refresh cycle, the binary value in all of the gray scale binary fields of said current waveform and each of said prior waveforms by a predetermined binary value, said decremented gray scale binary fields replacing, in each said predetermined cycle of time, all of said gray scale binary fields in said providing means, said displaying means displaying each of said prior waveforms with the same degree of brightness and with each earlier prior waveform having a lower degree of brightness so as to display the direction of said current waveform with respect to said prior waveforms,

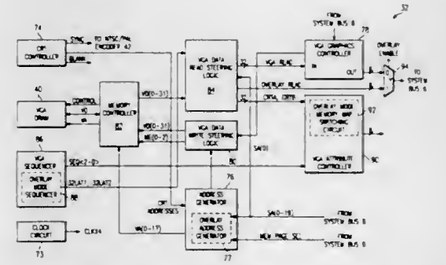
means connected to said display control and responsive to a manual input for providing said predetermined cycle of time.

5,254,984

VGA CONTROLLER FOR DISPLAYING IMAGES HAVING SELECTIVE COMPONENTS FROM MULTIPLE IMAGE PLANES

Carl K. Wakeland, Bedford, Tex., assignor to Tandy Corporation, Fort Worth, Tex.

Filed Jan. 3, 1992, Ser. No. 817,028
Int. Cl.[5] G09G *5/40*; G06F *3/14*
U.S. Cl. 345—144 **16 Claims**



1. A multimedia system operable in an overlay mode to display images formed from selective components of multiple image planes, comprising:

a system bus;

a central processing unit (CPU) connected to said system bus, said CPU generating a first image signal having one eight bit background pixel element encoded in each data byte thereof, a second image signal having two four bit foreground pixel elements encoded in each data byte thereof which overlays said first image signal, and a series of system addresses corresponding to first and second address maps for said first and second image signals;

a random access memory having first, second, third and fourth bit planes and connected to said system bus; and

a VGA controller connected to said system bus and receiving said first and second image signals and said system addresses from said CPU, said VGA controller comprising:

first means for routing a first data set comprised of a first series of data bytes corresponding to said first image signal and a second data set comprised of a second series of data bytes corresponding to said second image signal to said random access memory for storage therein comprising steering logic for sequentially routing each byte of said first and second series of data bytes input thereto to one of three of said four bit planes based upon whether said data byte is an even eight bit pixel data element, an odd eight bit pixel element, or two four bit pixel elements, said routing means interleaving said first and second data sets and storing said interleaved first

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and second data sets on said three of said four bit planes of said random access memory;
a switching circuit; and
second means for routing said interleaved first and second data sets to said switching circuit, said switching circuit separating said first and second data sets and selectively transmitting said first and second data sets for display based upon a characteristic of said second data set.

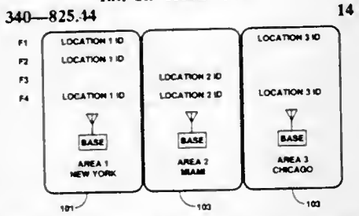
5,254,985

Patent Not Issued For This Number

5,254,986
NATION-WIDE PAGING WITH LOCAL MODES OF OPERATION

Michael J. DeLuca, Boca Raton, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 425,658, Oct. 23, 1989, abandoned.
This application Jan. 25, 1991, Ser. No. 646,483
Int. Cl.[5] H04B *7/00*
U.S. Cl. 340—825.44 **14 Claims**

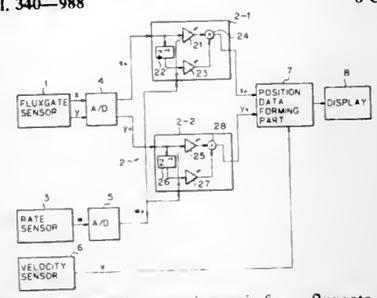


1. A method of operating a selective call receiver having a non-volatile memory, the method comprising the steps of:
storing a plurality of operational personalities in said non-volatile memory, each of said plurality of operational personalities having one of a plurality of protocol modes associated therewith;
receiving a signal comprising a location identifier identifying a geographic location of the selective call receiver;
automatically selecting one of said plurality of operational personalities in response to said location identifier; and
decoding said signal according to one of said plurality of protocol modes associated with said one of said plurality of operational personalities.

5,254,987
OUTPUT SIGNAL PROCESSING UNIT OF A FLUXGATE SENSOR

Yasuhiro Nakatani, Kobe, Japan, assignor to Fujitsu Ten Limited, Kobe, Japan

Filed Oct. 10, 1991, Ser. No. 774,354
Claims priority, application Japan, Oct. 16, 1990, 2-275273
Int. Cl.[5] G08G *1/123;* **G01C** *17/38*
U.S. Cl. 340—988 **8 Claims**

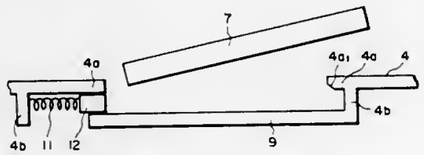


1. An output signal processing unit for a fluxgate sensor system comprising:
a fluxgate sensor which detects magnetic north and produces, as an output, a fluxgate sensor signal representative of the detected magnetic north;
an angular velocity sensor which is responsive to movement thereof in a direction angularly displaced from a straight line path of movement and which produces, as an output thereof, an angular velocity signal having a variable value indicative of the magnitude of the angular velocity of rotation of the angularly displaced movement relative to the straight path of movement; and
a low pass filter having a variable cutoff frequency and coupled to the fluxgate sensor and the angular velocity sensor for receiving the respective output signals thereof, the low pass filter responding to the variable value of the received angular velocity signal for correspondingly varying the variable cutoff frequency thereof in accordance with increasing and decreasing same in response to respective increases and decreases, respectively, of the angular velocity of rotation as represented by the angular velocity signal, and filtering the received fluxgate sensor signal in accordance with the varied cutoff frequency.

5,254,988
DATA COMMUNICATION SYSTEM WITH CARD MOUNTING PORTION

Yuji Nakano, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 22, 1991, Ser. No. 644,381
Claims priority, application Japan, Jan. 26, 1990, 2-16560; Jan. 29, 1990, 2-19882; Jan. 30, 1990, 2-19732
Int. Cl.[5] G06K *13/063;* **H03M** *11/00*
U.S. Cl. 341—22 **7 Claims**

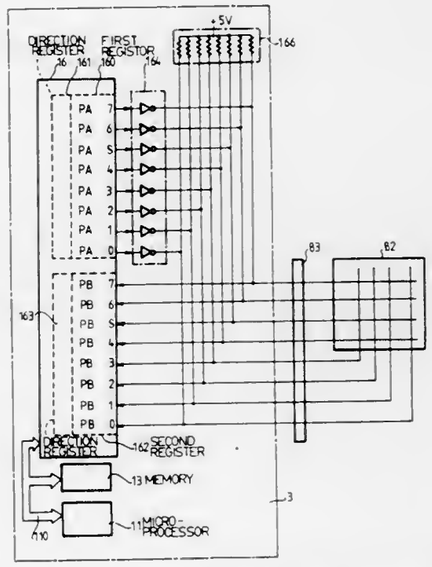


1. A data input/output system, comprising:
a card mounting portion for mounting a data memory card having data input keys and a first means for transmitting data freely detachably, said card mounting portion being formed with a recessed portion to receive said data memory card, and having an opening portion so that said input keys of the received data memory card can be operated, a pair of opposed peripheral portions of the opening portion, each of said peripheral portions being formed with a projection dimensioned and disposed so that the card can be inserted through the opening portion, said projections preventing the card from coming out of the opening portion, and another pair of opposed peripheral portions being formed with no projections;
communication means for communicating data between said first means and a second means, said second means being provided in said card mounting portion;
biasing means for biasing said card in a direction parallel to the bottom of said mounting portion when said card is mounted in said card mounting portion, the biasing means being disposed below one of the projections; and
positioning means for positioning said card in said card mounting position so that said first means may communicate with said second means, said positioning means comprising a tapered portion formed at said face of said mounting portion below the other of the projections, the tapered portion pressing said card against a bottom face of said mounting portion and positioning the card.

5,254,989
GARBLING THE IDENTIFICATION OF A KEY OF A NON-CODED KEYBOARD, AND CIRCUIT FOR PERFORMING THE METHOD

Philippe Verrier, Le Port Marly; Roger Poulenard, Le Pecq, and Hartmut Fink, St Nom La Breteche, all of France, assignors to Bull S.A., Paris, France

Continuation of Ser. No. 452,262, Dec. 18, 1989, abandoned.
This application Jul. 8, 1991, Ser. No. 728,050
Claims priority, application France, Dec. 20, 1988, 8816786
Int. Cl.[5] H03M *11/20*
U.S. Cl. 341—26 **7 Claims**

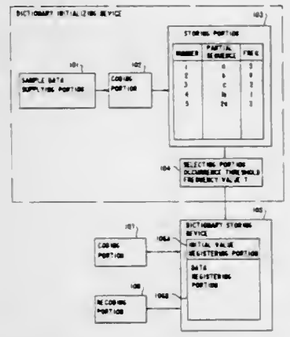


5. A circuit for identification of the actuated key of a non-coded matrix keyboard (**82**) by a scrambled scanning technique comprising:
a) a parallel input-output interface (**16**) having output and input registers (**160, 162**), each register having as many bits as the keyboard has columns and rows, of which one register (**160**) is disposed as an output register with each of its outputs individually connected to an input of one inverter from a set of inverters (**164**), and the other register (**162**) is disposed as an input register;
b) means for connecting the individual outputs of said inverters via one resistor from a set of resistors (**166**) to a voltage supply, and further to the input of corresponding bit significance of the input register;
c) means for connecting each row and column of the keyboard to one input of the input register (**162**) and to the output of corresponding bit significance of the output register (**160**) by way of the inverters;
d) a microprocessor (**11**) connected via a bus (**110**) to the interface (**16**); and
e) a memory (**13**) containing a program for management and control of the interface (**16**) by the microprocessor (**11**) for implementing the scrambled scanning technique and thereby identification of the actuated key of the non-coded keyboard.

5,254,990
METHOD AND APPARATUS FOR COMPRESSION AND DECOMPRESSION OF DATA

Shigeru Yoshida, Ebina; Yasuhiko Nakano, Atsugi; Yoshiyuki Okada, Isehara, and Hirotaka Chiba, Atsugi, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 768,201, Oct. 24, 1991, abandoned.
This application Jan. 11, 1993, Ser. No. 3,876
Claims priority, application Japan, Feb. 26, 1990, 2-45163; Mar. 13, 1990, 2-62325; Mar. 20, 1990, 2-070379; Oct. 15, 1990, 2-275835
Int. Cl.[5] H03M *7/30*
U.S. Cl. 341—51 **19 Claims**



1. A method for compressing and decompressing data in the incremental parsing manner, comprising the steps of:
coding by designating a reference number of the partial sequence having a maximum length coincidence from the coded partial sequences registered in a dictionary with regard to a received character sequence;
designating a new reference number for a partial sequence in which one character is added to the designated reference number as a code word, and registering the new reference number designated partial sequence in the dictionary; and
decoding by searching partial sequences registered in the dictionary using a code word represented by the reference number of the partial sequence, decompressing the original partial sequence, designating a new reference number to a partial sequence which is obtained by adding the beginning character of the currently decompressed partial sequence to the previously processed code word, and registering the new reference number designated partial sequence in the dictionary,
wherein an initialization of the dictionary is carried out by registering, as an initial value in the dictionary, a partial sequence having the highest frequency of occurrence among the partial sequences registered in the dictionary using the coding with regard to sample data, based on the determination that the partial sequence having the highest frequency of occurrence are already coded.

5,254,991
METHOD AND APPARATUS FOR DECODING HUFFMAN CODES

Peter Ruetz, Redwood City, and Po Tong, Fremont, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

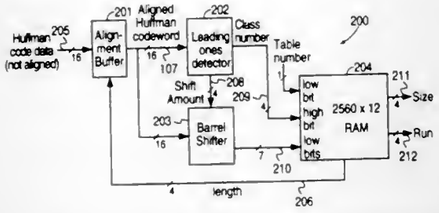
Filed Jul. 30, 1991, Ser. No. 737,959
Int. Cl.[5] H03M *7/40*
U.S. Cl. 341—65 **12 Claims**

1. A structure for decoding a Huffman codeword, said Huffman codeword having a length no longer than w bits, said structure comprising:
a leading 1's detector for detecting a number c of leading 1's

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in said Huffman codeword up to a predetermined maximum no more than w;

a logic circuit receiving said number c and said Huffman codeword for providing a word of up to m bits, said word being said Huffman codeword remaining after removing, for said number c less than said predetermined maximum, c+1 bits, and for said number c equal to said predetermined maximum, c bits;



means, having $w*2^m$ locations, for storing decoded values of Huffman codewords; and

means for forming an address comprising first and second fields being respectively said number c and said m-bit word; and

means for mapping said address to a location in said storage means.

5,254,992

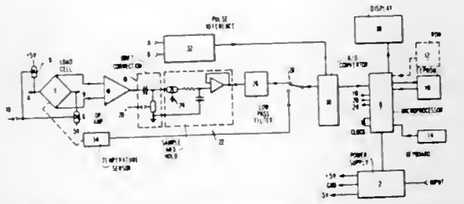
LOW POWER ELECTRONIC MEASURING SYSTEM

Harry J. Keen, St. Johnsbury, and Leon E. Saucier, South Rygate, both of Vt., assignors to Fairbanks Inc., Kansas City, Mo.

Filed Oct. 31, 1991, Ser. No. 785,539

Int. Cl.[5] H03M *1/06;* **G01G** *3/14*

U.S. Cl. 341—119 **29 Claims**



1. In an electronic measuring system comprising measuring transducer means operative when electrically powered to provide an electrical measurement signal output indicative of the magnitude of an entity being measured thereby; power means for providing power for said measuring system; control means operating to provide spaced energizing pulses from said power means to said measuring transducer means to cause said transducer means to provide a pulsed electrical measurement signal; and indicator means operative to receive said electrical measurement signal for providing an indication of the magnitude of the entity being measured at a predetermined resolution; the improvement comprising microprocessor means for determining an optimal pulse width and interval for each of said energizing pulses in accordance with said predetermined resolution for said measurement signal; and means operatively connected to said microprocessor means for varying said predetermined resolution, said microprocessor pulse width and interval determining means comprising means for determining an optimal frequency and duty cycle for said predetermined resolution and for varying said frequency and duty cycle in accordance with variations in said predetermined resolution for providing a variable pulse control signal to said control means in accordance with said variations in said predetermined resolution, said control means variably pulsing said measuring transducer means in response to said variable pulse control signal for pulsing said measuring transducer means in accordance with said predetermined resolution at any given time; whereby said system power is preserved by pulsing said measuring transducer means only when necessary in accordance with said resolution.

5,254,993

MULTIPLYING DIGITAL-TO-ANALOG CONVERTER

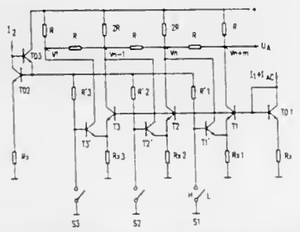
Jörg Wölber, Pinneberg, and Klaus Kröner, Hamburg, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 4, 1992, Ser. No. 941,024

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1991, 4130675

Int. Cl.[5] H03M *1/78*

U.S. Cl. 341—135 **18 Claims**



1. A multiplying digital-to-analog converter for converting an n-bit-wide digital signal into an analog signal, which comprises: a R-2R chain network, whose series resistors and whose shunt resistors positioned at either of two ends of the chain network each have a resistance R and whose remaining shunt resistors have a double resistance 2R, a supply voltage being impressed on the shunt resistor ends remote from the series resistors and wherein the shunt resistor ends near to the series resistors form connection points, and which has an output presenting the output signal, characterized in that

the chain network for the n-bit-wide digital signal comprises (n+m) connection points, where n,m are natural integers greater than zero,

the connection point (n+m) produces the analog signal of the converter,

A first current arrangement is provided which produces a constant first current that can be switched to the individual connection points (1+m) to (n+m), wherein the least significant bit of the digital signal is allocated to the connection point (1+m) and the most significant bit to the connection point (n+m) and the first current is switched only to those connection points whose allocated bit has a first state, and

a second current mirror arrangement is provided which produces a constant second current that is larger than that of the first current mirror arrangement and can be switched to the individual connection points 1 to n, wherein the least significant bit is allocated to the connection point 1 and the most significant bit to the connection point n, and the second current is switched only to those connection points whose allocated bit has a second state.

5,254,994

CURRENT SOURCE CELL USE IN CURRENT SEGMENT TYPE D AND A CONVERTER

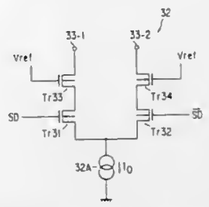
Hiroshi Takakura, and Junkei Goto, both of Kawasaki, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 4, 1992, Ser. No. 845,652

Claims priority, application Japan, Mar. 6, 1991, 3-040124; Apr. 8, 1991, 3-075209

Int. Cl.[5] H03M *1/66*

U.S. Cl. 341—153 **10 Claims**



1. A current source cell used in a current segment type D to A converter, comprising:

a first transistor having a current path one terminal of which is connected to an output terminal and having a gate to which a voltage higher than a threshold voltage of said first transistor is applied;

a second transistor having a current path one terminal of which is connected to another terminal of the current path of said first transistor and having a gate supplied with a first control signal generated by decoding a digital input signal;

a third transistor having a current path one terminal of which is connected to another terminal of the current path of said second transistor and having a gate supplied with a second control signal generated by decoding a digital input signal;

a fourth transistor having a current path one terminal of which is connected to another terminal of the current path of said first transistor and having a gate supplied with a third control signal generated by decoding a digital input signal; and

constant current means connected to another terminal of the current path of said third transistor and another terminal of the current path of said fourth transistor for causing a constant current to flow.

5,254,995

ANALOG TO DIGITAL PEAK DETECTOR UTILIZING A SYNCHRONIZATION SIGNAL

Horst Hantke, Berlin, Fed. Rep. of Germany, assignor to Siemens Nixdorf Informationssysteme AG, Fed. Rep. of Germany

Filed Aug. 17, 1992, Ser. No. 931,285

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1990, 4005037

Int. Cl.[5] H03M *1/36*

U.S. Cl. 341—159 **10 Claims**

1. A method for converting a peak value of an analog voltage into a digital value, comprising the steps of:

comparing the analog voltage with a plurality of mutually different reference voltages to produce binary values depending on results of the comparing step,

setting bistable memory elements to an initial state at a start of a conversion by an enabling signal,

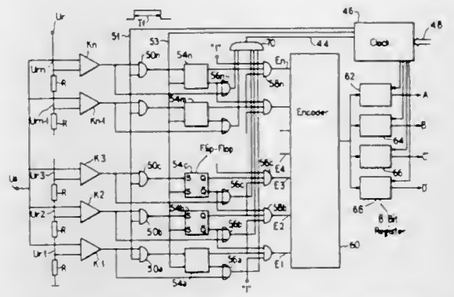
storing the binary values in the bistable memory elements if the analog voltage crosses respective ones of the references voltages in a first direction,

converting the binary values stored in the bistable memory elements into a digital value,

emitting the digital value, and

forming a synchronization signal by:

performing a first logical function on the binary values resulting from said comparing step and an inversion of the binary values stored in the bistable memory elements to form a logical intermediate value when said analog voltage crosses respective ones of said plurality of mutually different reference voltages in a direction opposite said first direction, and



performing a second logical function on all logical intermediate values to form the synchronization signal if any logical intermediate values are formed so as to indicate an occurrence of the peak value and that the peak value is present as a digital value.

5,254,996

CHARGE MONITORING SYSTEM FOR A REMOTE CONTROL SYSTEM

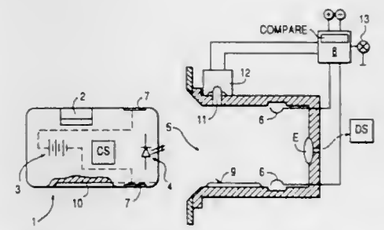
Klaus Claar, Gechingen, and Martin Lindmayer, Leonberg, both of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Oct. 31, 1991, Ser. No. 786,174

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1990, 4038038

Int. Cl.[5] G08C *19/12;* **B60R** *25/10*

U.S. Cl. 341—176 **22 Claims**



1. A remote control system, for an operator, comprising:

a transmitter having a current storage device and a transmit key, said current storage device maintaining an actual charge state, said transmitter being operator activated to transmit control signals fed from said current storage device;

a charge monitoring device having a charge state indicator, said charge monitoring device monitoring the actual charge state of said current storage device and said charge state indicator generating signals directed at the operator;

a receptacle into which said transmitter is inserted, said receptacle making contact between said transmitter and an element downstream of said receptacle,

wherein said charge monitoring device and said charge state indicator are arranged separate from said transmitter, said charge monitoring device being operatively connected downstream of said receptacle and further wherein the

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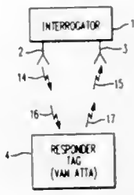
actual charge state of said current storage device is monitored by said charge monitoring device when said transmitter is inserted into and actuated within said receptacle, said charge state indicator being actuated when the actual charge state of the current storage device is below a minimum value.

5,254,997

RETRODIRECTIVE INTERROGATION RESPONSIVE SYSTEM

Marvin Cohn, Baltimore, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 31, 1992, Ser. No. 923,288
Int. Cl.[5] G01S *13/80*
U.S. Cl. 342—44 23 Claims



1. An interrogation responsive system for remote monitoring comprising:

(a) an interrogator having a transmitting antenna means for transmitting an interrogation signal;

(b) a responder made of semiconductor material having a receiving antenna means for collecting said interrogation signal;

(c) said responder further comprising encoding means connected to said responder receiving antenna means for imposing information on said interrogation signal collected by said responder;

(d) said responder further comprising retrodirective means connected to said encoding means for retransmitting said interrogation signal encoded with said information in the direction of said interrogator as a responder signal, and wherein said retrodirective means further comprises at least one receiving antenna means which are configured as a Van Atta array having at least one pair of antenna elements, and wherein said van Atta array is comprised of a plurality of paired antenna elements disposed in a two-dimensional configuration, said paired antenna elements of said Van Atta array being disposed in diagonal symmetry around the center of said array and said encoding means is comprised of means for imposing said code signal to said interrogation signal intermediate each of said elements of respective pairs of said paired antenna elements, and wherein said encoding means further comprises means for modulating said information on said interrogation signal intermediate said respective elements of said paired antenna elements and wherein said modulation means encodes said interrogator signal in either direction of propagation between said paired elements of said Van Atta array; and

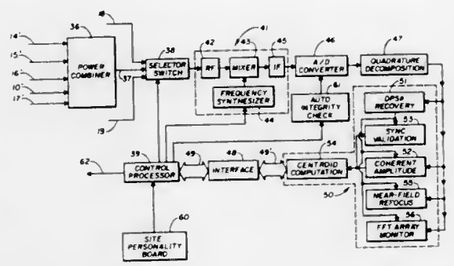
(e) said interrogator having a receiving antenna means for collecting said responder signal and means for decoding said information.

5,254,998

EXECUTIVE MONITOR FOR MICROWAVE LANDING SYSTEM

Edward F. C. LaBerge, and Robert J. Kelly, both of Baltimore, Md., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Nov. 2, 1992, Ser. No. 970,202
Int. Cl.[5] G01S *7/40*
U.S. Cl. 342—173 5 Claims



1. The method of monitoring the signal format of radio frequency (r.f.) transmissions by a ground-based unit of a Microwave Landing System (MLS) to insure the integrity of said signal format, said signal format containing synchronizing signals, identification, data, and signal events in accordance with predetermined standards; comprising the steps of:

receiving the r.f. signal transmissions of said MLS ground unit by a monitor receiver that is independent of any physical electrical connection to said ground unit;

down-converting said received r.f. signal transmissions to intermediate frequency (i.f.) signals;

decomposing said i.f. signals into digitized in-phase (I) and quadrature (Q) components;

recovering from said I and Q components said synchronizing signals contained in said signal format for use in timing the appearance of said signal events occurring in said signal format;

recovering from said I and Q components each of said identification, data, and signal events contained in said signal format;

comparing each of said recovered synchronizing, identification, data, and signal events with said predetermined standards therefor;

generating an alarm signal whenever any one of said recovered synchronizing, identification, data, or signal events departs from said predetermined standards by more than a tolerable amount;

periodically substituting for said down-converted received r.f. signal transmissions simulated i.f. signals, said simulated i.f. signals including simulated identification, data and signal events corresponding to like elements of said signal format except that each of said simulated identification, data and signal events is out-of-tolerance with respect to said predetermined standards;

performing said steps of decomposing, recovering and comparing for each of said simulated identification, data, and signal events; and

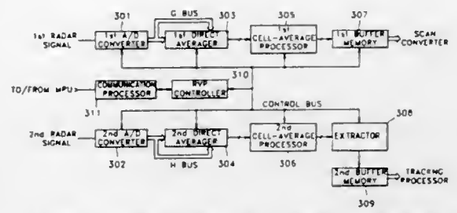
generating an alarm signal whenever said comparing step for each of said simulated identification, data, and signal events fails to disclose an out-of-tolerance condition with respect to said predetermined standards.

5,254,999

VIDEO SIGNAL PROCESSOR FOR RADAR SYSTEM

Sang-yoon Lee, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jan. 22, 1993, Ser. No. 8,565
Int. Cl.[5] G01S *7/298, 13/66*
U.S. Cl. 342—197 14 Claims



1. A video signal processor for a radar system having a pre-processor for outputting first and second radar signals by removing their respective clutter via different methods, a tracking processor and a scan converter, said video signal processor comprising:

first A/D converting means for receiving said first radar signal and performing analog-to-digital conversion at a predetermined conversion speed;

first direct averaging means for writing signals included in predetermined size of azimuth among said digitized first radar signal into different memories according to the azimuth and for averaging signals corresponding to the same range gates to output;

first cell average processing means having a microcomputer and a RAM for performing cell averaging the output of said first direct averaging means with the processing program down-loaded from a main controller of said radar system;

second A/D converting means for receiving said second radar signal and performing analog-to-digital conversion at a predetermined conversion speed;

second direct averaging means for writing signals included in predetermined size of azimuth among said digitized second radar signal into different memories according to the azimuth and for averaging signals corresponding to the same range gates to output;

second cell average processing means having a microcomputer and a RAM for performing cell averaging the output of said second direct averaging means with the processing program down-loaded from a main controller of said radar system;

extracting means for extracting target data from the output of said second cell average processing means;

radar video processor controlling means commonly connected to each of said means for generating various control signals; and

a communication processor connected to said radar video processor controlling means for performing data transmission/reception between the main controller of the radar system and said radar video processor controlling means,

the output of said first cell average processing means being applied to the scan converter and the output of said extracting means being applied to the tracking processor.

5,255,000

TRANSMISSION SIGNAL DIRECTION FINDING APPARATUS AND METHOD

Dean C. Puzzo, 1 Rainier Ct., Merrimack, N.H. 03054

Filed Nov. 15, 1991, Ser. No. 792,991
Int. Cl.[5] G01S *5/04*
U.S. Cl. 342—442 18 Claims

1. An apparatus for measuring the angles of arrival of a pair of transmission signals relative to a fixed antenna pair simultaneously receiving the transmission signals based upon the phase difference between antennas for each signal and the frequencies thereof, comprising:

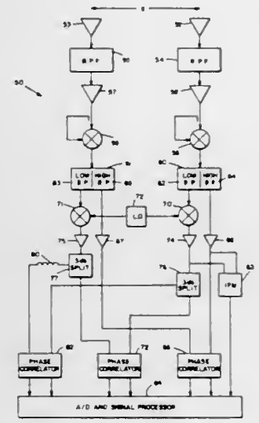
means for separately squaring the signals received by each antenna;

means for filtering each squared signal for separating a high frequency band and a middle frequency band;

first means for phase correlating high frequency band signals filtered from each squared signal for producing a sum signal of the phase differences between the antennas for received transmission signals;

second means for phase correlating middle frequency band signals filtered from each squared signal for producing a difference signal for the phase differences of the transmission signals received by the antenna pair;

means for determining the phase differences of the transmission signals received by the antenna pair from the sum and difference signals therefor;



means for providing delayed middle frequency band of signals filtered from a squared signal from one of the antennas;

third means for phase correlating the delayed middle frequency band signals from the one of the antennas with the middle frequency band signals of the other of the antennas from the means for filtering each squared signal, for producing a correspondence signal related to the correspondence between the frequencies and the determined phase differences; and

means for computing the angles of arrival of the pair of transmission signals using the phase differences from the means for determining, the frequencies of the transmission signals and the correspondence signal from the third means for phase correlating.

5,255,001

ANTENNA SYSTEM FOR PORTABLE RADIO APPARATUS

Yoshiharu Tamura, and Takao Ono, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 573,744, Aug. 28, 1990, abandoned. This application Dec. 14, 1990, Ser. No. 627,455
Claims priority, application Japan, Aug. 29, 1989, 1-223460; Dec. 14, 1989, 1-322586
Int. Cl.[5] H01Q *1/24, 1/50*
U.S. Cl. 343—702 19 Claims

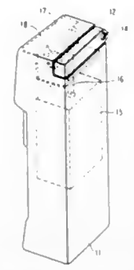
1. An antenna system for a portable radio apparatus, comprising:

an earth plate mounted in a casing of the radio apparatus;

a first antenna construction comprising an antenna element

VOL 1155 ISS 3 OCT 19 1993 UMI

accommodated therein, and a movable joint for allowing said first antenna construction to move between a first position where said first antenna construction forms a part of a contour of said casing and a second position where said first antenna construction protrudes from said contour; and



a second antenna construction affixed to said earth plate inside the casing and magneto-electrically coupled to said first antenna construction to constitute a single antenna together with said first antenna construction at least when said first antenna construction is in said first position, said second antenna construction correcting an antenna radiation characteristic of said first antenna construction when said first antenna construction is in said first position.

5,255,002

ANTENNA FOR VEHICLE WINDOW

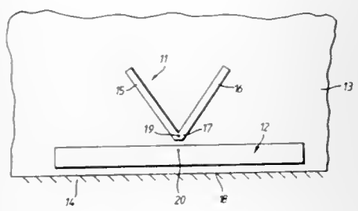
Stephen R. Day, Wigan, United Kingdom, assignor to Pilkington plc, St. Helens, United Kingdom

Filed Feb. 12, 1992, Ser. No. 834,355

Claims priority, application United Kingdom, Feb. 22, 1991, 9103737

Int. Cl.[5] H01Q *1/32*

U.S. Cl. 343—713 **10 Claims**



1. A vehicle window comprising a sheet for mounting on a vehicle body, said sheet supporting thereon adjacent an edge of the sheet an antenna system for transmission and/or reception of radio waves, said antenna system comprising (a) a first conducting member in the form of a single V-shaped member having lateral edges each of a length substantially equal to $\frac{1}{4}\lambda$ where λ is the wave length of the radio wave to be transmitted and received, said lateral edges being inclined inwardly towards each other to form an apex pointing towards said edge of the sheet and a connection terminal at the apex of said first conducting member, and (b) a second conducting member electrically insulated form the first conducting member and having a respective connection terminal, said second conducting member comprising a linear conductor having a length of substantially $(\frac{1}{4}+n/2)\lambda$ where n is an integer, on at least one side of said connection terminal of the second conducting member and being located between the first conducting member and said edge so as to form a transmission line with said vehicle body when located in said vehicle body and thereby form an earth line for the antenna system, both said conducting members lying in the plane of said sheet.

5,255,003

MULTIPLE-FREQUENCY MICROWAVE FEED ASSEMBLY

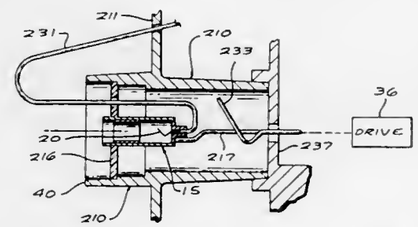
Rodney A. Mitchell, Tujunga, and Gerry B. Blachley, Simi Valley, both of Calif., assignors to Antenna Downlink, inc., Simi Valley, Calif.

Continuation-in-part of Ser. No. 405,548, Sep. 11, 1989, Pat. No. 5,107,274, which is a continuation of Ser. No. 105,135, Oct. 2, 1987, Pat. No. 4,903,037. This application Mar. 19, 1992, Ser. No. 854,548

The portion of the term of this patent subsequent to Feb. 20, 2007, has been disclaimed.

Int. Cl.[5] H01Q *13/02*

U.S. Cl. 343—756 **19 Claims**



1. A coaxial feed assembly for receiving incident electromagnetic signals comprising:

a first antenna assembly having a longitudinal axis and including

a feed assembly body having a boundary wall defining a first waveguide cavity through which incident electromagnetic energy can be conveyed, said boundary wall defining a first aperture at a forward end of said cavity and further defining a rearward end of said cavity,

a first probe mounted within said first waveguide cavity, for receiving electromagnetic energy in a first preselected band of frequencies, and

a support for supporting said first probe in a rearward portion of said first waveguide cavity;

a second antenna assembly having a longitudinal axis coaxial with the longitudinal axis of the first antenna assembly and receiving electromagnetic energy in a second preselected band of frequencies, higher than said first band of frequencies;

a mount for mounting said second antenna assembly coaxially within said first waveguide cavity, the second antenna assembly being mounted forwardly of said first probe and spaced from the boundary wall of said first waveguide cavity, said first waveguide cavity providing a continuous, uninterrupted signal path within said first waveguide cavity, around said second antenna assembly, for conveying incident electromagnetic energy from said first aperture to said first probe; and

a two-conductor transmission line extending through a portion of said first waveguide cavity, for conducting electromagnetic energy received by said second antenna assembly to the exterior of said body.

5,255,004

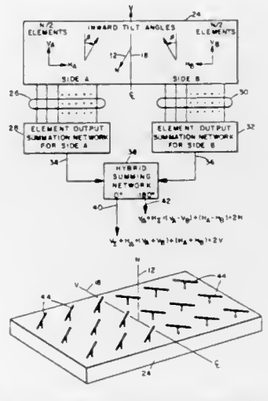
LINEAR ARRAY DUAL POLARIZATION FOR ROLL COMPENSATION

Bernard Berkowitz, San Diego; Paul R. Eberhardt, Encinitas, and David J. Miller, Santee, all of Calif., assignors to Cubic Defense Systems, Inc., San Diego, Calif.

Filed Sep. 9, 1991, Ser. No. 756,454

Int. Cl.[5] H01Q *25/020, 21/240*

U.S. Cl. 343—853 **17 Claims**



1. A planar array having a vertical center line in the array plane, said array comprising:

at least one row of linearly polarized antenna elements disposed in said array plane with an equal number of said elements disposed on first and second sides of said center line, each said element on said first side corresponding to one said element on said second side;

each said element disposed such that its polarization orientation is tilted at an angle with respect to said vertical center line, said tilt angles of said corresponding elements having opposite signs and magnitudes greater than 0° and less than 90°;

first summing means for adding the output signals from all said elements on a first said side to form a first sum signal;

second summing means for adding the output signals from all said elements on the second said side to form a second sum signal; and

third summing means for combining said first and second sum signals to form a monopulse sum signal and a monopulse difference signal.

5,255,005

DUAL LAYER RESONANT QUADRIFILAR HELIX ANTENNA

Claude Terret; Ala Sharatha, both of Rennes, and Léonid Aupy, Cesson Sevigne, all of France, assignors to L'Etat Francais Represente par LeMinistre des Pastes Telecommunications et de l'Espace, France

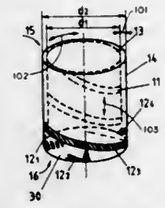
Filed Nov. 5, 1990, Ser. No. 609,383

Claims priority, application France, Nov. 10, 1989, 89 14952

Int. Cl.[5] H01Q *1/36, 21/20*

U.S. Cl. 343—895 **15 Claims**

1. A resonant helical antenna with quasi-hemispherical radiation comprising at least two concentric quadrifilar helices, each of the quadrifilar helices comprising four wires arranged helically to define a cylinder of constant radius, the radius of each of the quadrifilar helices being unique, and each one of the quadrifilar helices formed of two bifilar helices arranged orthogonally and excited in phase quadrature, the quadrifilar helices being situated coaxially with respect to each other, the wires of the quadrifilar helices being positioned to substantially



radially overlap each other for electromagnetically coupling the quadrifilar helices to improve the passband of the antenna.

5,255,006

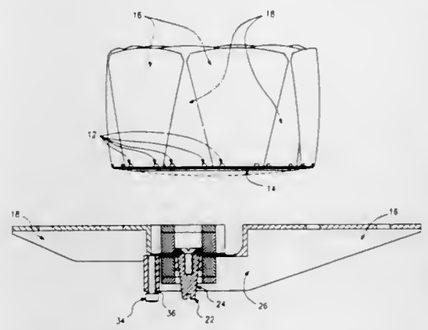
COLLAPSIBLE APPARATUS FOR FORMING A DISH SHAPED SURFACE

Peter R. Pappas, Sunnyvale; Stephen R. Turner, Fremont, and John P. Ciampaglia, Mt. View, all of Calif., assignors to Space Systems/Loral, Inc., Palo Alto, Calif.

Filed Aug. 29, 1991, Ser. No. 751,719

Int. Cl.[5] H01Q *15/20*

U.S. Cl. 343—915 **21 Claims**



1. A dish shaped assembly apparatus comprising:

a central base;

a plurality of panels having a narrow end proximal to the central base and a broader distal end, each panel having a protrusion located near one lateral edge of the panel at the distal end and which extends from the panel in a direction generally perpendicular to the planar surface of the panel at the location, and a cavity located near the opposite lateral edge of the panel at the distal end and which is adapted to receive and hold the protrusion of the adjacent panel; and

a plurality of hinge means each of which is attached to the base and to a different one of the plurality of the panels for coupling the panels to the central base and for allowing the panels to rotate from a collapsed position to an expanded position, wherein the edges of the panels overlap each other and form a dish shaped assembly such that the protrusions on each panel is received and held by the cavity on the adjacent panel and the cavity exerts a lateral holding force on the protrusion.

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5,255,007

METHOD AND APPARATUS FOR RECORDING A PATTERN OF AREAS OF MODIFIED OPTICAL PROPERTIES ON AN OPTICAL RECORD CARRIER

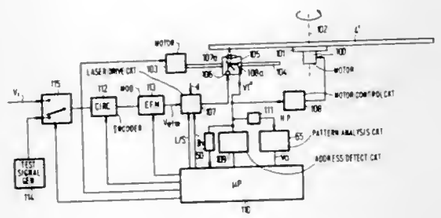
Johannes L. Bakx, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 13, 1990, Ser. No. 612,742

Claims priority, application Netherlands, Jan. 22, 1990, 9000150

Int. Cl.[5] G01D *9/00, 15/10;* G11B *7/00*

U.S. Cl. 346—1.1 11 Claims



1. A method of recording an information signal on a record carrier having a recording layer possessing an optical property which changes in any local area thereof upon heating of said local area above a predetermined write temperature, the change in said optical property constituting a detectable write mark in said local area; said method comprising the steps of:

(a) producing a radiation beam having an adjustable power level and which is focussed into a scanning spot of radiation incident on a local area of the recording layer;

(b) scanning the recording layer with said scanning spot so that said scanning spot is successively incident on successive local areas thereof, the scanning spot radiation being reflected or transmitted by a scanned local area as modified in accordance with said optical property of the recording layer in said local area;

(c) controlling the radiation beam in accordance with said information signal so as to produce a write pulse of the scanning spot radiation during scanning of each of a plurality of local areas of the recording layer, each said write pulse being of a power level sufficient to heat at least a portion of a scanned local area above said write temperature so as to form a write mark therein, formation of said write mark occurring at a speed dependent on the power level of said write pulse, said write mark being of a size dependent on said speed of formation thereof;

(d) detecting the modified radiation from each said scanned local area during formation of a write mark therein, and producing a detection signal indicative of changes in said radiation during formation of said write mark;

(e) deriving from said detection signal a speed-forming signal indicative of the speed of formation of each of said write marks; and

(f) adjusting the power level of the radiation beam during each said write pulse in accordance with said speed-forming signal, thereby maintaining the speed of formation and consequently the size of each said write mark substantially independent of variations in recording conditions which affect heating of a scanned local area by a write pulse.

5,255,008

ELECTROPHOTOGRAPHIC PRINTER USING A CONTINUOUS FORM RECORDING SHEET

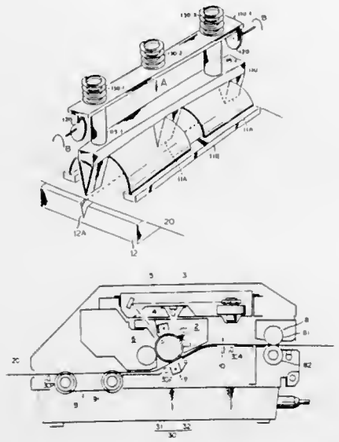
Tatsuya Yoshida, Saitama, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 560,749, Jul. 31, 1990, abandoned. This application Oct. 28, 1991, Ser. No. 783,122

Claims priority, application Japan, Jul. 31, 1989, 1-89943

Int. Cl.[5] G03G *15/00*

U.S. Cl. 346—24 10 Claims



1. A printing device, capable of employing at least a continuous-form recording sheet having a plurality of printing segments on which a desired image is to be formed, each of said segments being designated by a plurality of transverse perforations provided on said continuous-form recording sheet at predetermined intervals of length along a longitudinal direction thereof, said printing device comprising:

means for feeding said continuous-form recording sheet along a predetermined feeding path;

means for forming said desired image on said continuous-form recording sheet having been fed by said feeding means;

means for detecting a boundary on said continuous-form recording sheet, fed by said feeding means, between the segments on which an image forming operation by said forming means has been executed and the segments of said continuous-form recording sheet which have not been recorded upon;

means for cutting said continuous-form recording sheet at said boundary, said cutting means comprising a plurality of blade members, integrally formed on a semicylindrical-shaped elastic plate member arranged to be located along a width direction of said continuous-form recording sheet, for pressurizing said boundary between said segments, wherein said semicylindrical-shaped elastic plate member has a length substantially equal to said width of said continuous-form recording sheet;

a tension mechanism, which is arranged to be operable when said continuous-form recording sheet is cut by said blade member, for stretching said continuous-form recording sheet in opposite directions along a longitudinal direction thereof; and

means for engaging said cutting means, located beneath said continuous-form recording sheet and providing an anvil surface against which said cutting means applies pressure;

whereby said continuous-form recording sheet is divided into two portions along said predetermined feeding path.

5,255,009

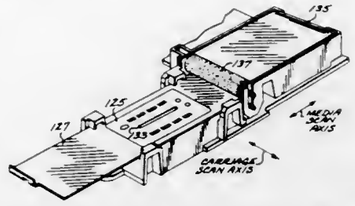
AUTOMATIC MAINTENANCE SYSTEM FOR DROP APERTURE PLATE (OPTICS PROTECTION)

Stephen W. Bauer; Mark W. Majette, and Michael T. Dangelo, all of San Diego, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 1, 1992, Ser. No. 876,938

Int. Cl.[5] B41J *2/01*

U.S. Cl. 346—25 6 Claims



1. Apparatus for protecting optical elements of an optical ink drop detector that detects whether an ink drop is in a drop detection zone, and for maintaining an aperture plate used in conjunction with the optical ink drop detector, comprising:

a plate having an apertured region and a non-apertured region, said plate being movable relative to the optical elements and configured to have the apertured region adjacent the drop detection zone when in a first position and to have said non-apertured region adjacent said detection zone when in a second position;

means for moving said plate between said first and second positions;

cleaning means for cleaning ink from said apertured region when said plate is moved from between said first and second positions; and

means for enclosing the apertured region of said plate when said plate is in said second position.

5,255,010

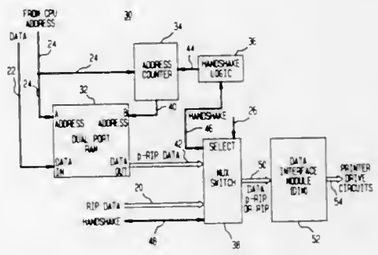
ELECTRONIC CIRCUIT FOR SUPPLYING SELECTED IMAGE SIGNALS TO A THERMAL PRINTER

Thomas A. Mackin, Hamlin, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 23, 1991, Ser. No. 749,030

Int. Cl.[5] G01D *15/10*

U.S. Cl. 346—76 L 10 Claims



1. A thermal printer system comprising:

a controlling processor unit (CPU);

a raster image processor (RIP) connected to receive signals and data from the CPU and to supply RIP data;

a thermal printer unit having associated electronic circuits;

MUX means, which has two data inputs and a data output, the output being connected to an input of the electronic circuits of the printer unit, one input of the MUX means being connected to receive RIP data, for switching the data on one or the other of its inputs to its output and applying the output data to the thermal printer; and

a pseudo-RIP circuit comprising random access memory (RAM) means for storing bit data and for outputting the stored data tot h other input of the MUX means, address counter means for actuating the RAM means, connection means for applying selected serial bit data from the CPU to an input of the RAM means and for applying address instructions from the CPU to the RAM means and to the address counter means, the address counter means operating by address instructions from the CPU sequencing at high speed through the bit data stored in the RAM means, the RAM means outputting its data as pseudo-RIP data to the other input of the MUX means, such that the thermal printer unit prints the pseudo-RIP data in real time and alternatively prints the RIP data in real time.

5,255,011

THERMAL PRINTER DRIVE CONTROL APPARATUS AND METHOD OF CONTROLLING THERMAL PRINT HEAD

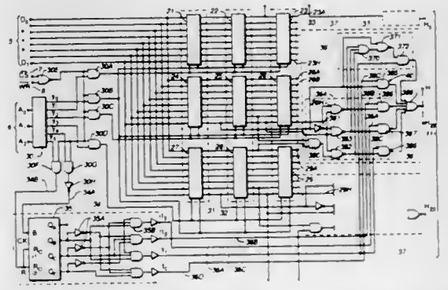
Masahiro Minowa; Naoki Kobayashi; Satoshi Nakajima, and Tadashi Furuhata, all of Suwa, Japan, assignors to Seiko Epson Corporation, Japan

Filed Oct. 3, 1990, Ser. No. 592,695

Claims priority, application Japan, Oct. 3, 1989, 1-258212; Oct. 12, 1989, 1-265675; Oct. 12, 1989, 1-265676

Int. Cl.[5] B41J *2/32*

U.S. Cl. 346—76 PH 20 Claims



1. A thermal printer drive control apparatus for a thermal printer operable relative to changing temperature conditions and different selected printing parameters comprising:

a thermal print head having a plurality of heating elements,

detection means for detecting at least a temperature of said print head,

mode selection means for detecting values selected for said printing parameters.

a processor having a data bus line and an address bus line for carrying an address designation for controlling operation of said thermal printer,

storage means for storing present print data and at least one previous print data in response to address designations, said storage means coupled to said data bus line and said address designations, said storage means coupled to said data bus line and said address bus line, to permit storage of print data into said storage means,

gate means coupled to said storage means for providing energizing signals with respect to each of said heating elements, said output energizing signals divided into a primary energizing interval determined according to present driving data and secondary energizing intervals determined according to previous print data,

energizing control means coupled to said detection and mode selection means for calculating a corrected pulse width coefficient based upon a standard pulse width value,

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and current operating temperature conditions detected at said thermal print head, and for determining said primary energizing interval and said secondary energizing intervals based upon said standard pulse width as correlated to said corrected pulse width coefficient and said selected printing parameters, and

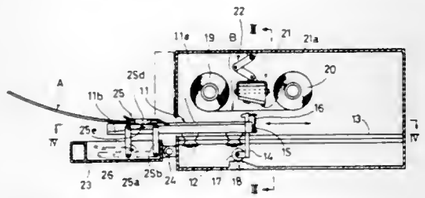
current flow interval pulse generating means for receiving said energizing intervals and for providing current in response thereto as said energizing signals to said gate means.

5,255,012

THERMAL TRANSFER PRINTER

Toshio Amano, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Aug. 6, 1992, Ser. No. 925,215
Claims priority, application Japan, Sep. 6, 1991, 3-227431
Int. Cl.[5] B42J *2/32*
U.S. Cl. 346—76 PH **9 Claims**



1. A thermal transfer printer comprising:

a main body;

a tray supported by the main body to reciprocate between an advancing limit position and a retreating limit position, the tray having a substantially flat support surface for receiving an image print sheet, the tray being provided with a clamp means at one end closer to the advancing limit position for removably clamping one end of the sheet;

a ribbon supply means carried by the main body above the tray for supplying a transfer ink ribbon;

a heating print head for causing ink transfer from the ink ribbon onto the sheet;

a moving means carried by the main body for supporting the print head above the tray, the moving means causing the print head to move toward the tray for pressing the ink ribbon against the sheet when the tray moves toward the advancing limit position, the moving means further causing the print head to move away form the tray when the tray moves toward the retreating limit position; and

a positioning-lifting means for laterally adjusting a position of the sheet relative to the tray at the time of placing the sheet on the tray and for lifting up the sheet form the tray when the tray is moved toward the retreating limit position.

5,255,013

MULTIPLE ADDRESS GREY LEVEL LED PRINTING WITH BINARY ARCHITECTURED PRINTHEAD

Yee S. Ng, Fairport; Hurjay Yeh, and Joseph M. Basile, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

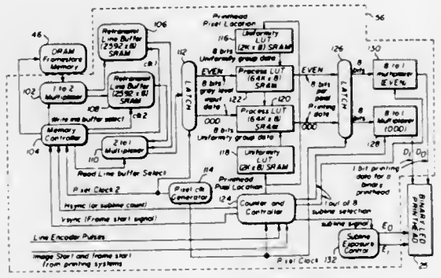
Filed Nov. 7, 1990, Ser. No. 609,868
Int. Cl.[5] G01D *15/14;* **H04N** *1/23*
U.S. Cl. 346—107 R **8 Claims**

1. A non-impact printing apparatus for recording, the apparatus comprising:

a binary architectured printhead including a plural number of recording elements and an equal plural number of respective data registers, each of said registers storing a single data bit to determine whether or not a respective one of said recording elements is enabled for recording during a subline recording period of a portion of a respective grey level pixel;

enabling means for enabling recording of each said grey level pixel by enabling said respective one of said recording elements to record said respective pixel during plural sub-line recording periods;

data formatting means for organizing image data for transmission to said registers, said formatting means including frame store memory means for storing signals representing a plurality of lines of image pixel data forming a complete image frame of said image pixel data, each said grey level pixel being represented by a signal of plural binary bits, selection means for sequentially selecting said lines of said image pixel data in said frame store memory means to sequentially enable output of a selected one of said lines of said image pixel data from said frame store memory means wherein said image pixel data for two adjacent pixels of said selected ones of said lines of said image pixel data are simultaneously selected and output from said frame store memory means by a controller, first buffer means for storing said selected one of said lines of said image pixel data output from said frame store memory means, look-up table correction memory means for outputting respective corrected multibit pixel printing data that modifies respective image pixel data wherein each of the respective corrected data is a signal of n binary data bits (with n being a



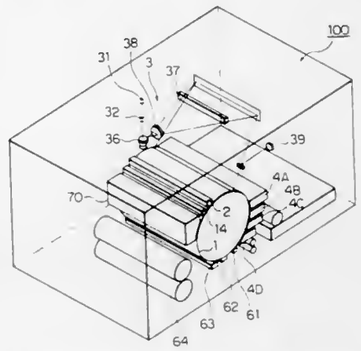
number greater than one), counter means for generating a count signal identifying said one of said recording elements, first memory means responsive to said count signal and storing respective signals related to characteristics of said one of said recording elements for outputting a first signal representing a characteristic of said one of said recording elements, means coupling said first buffer means and said first memory means to said correction memory means for inputting said image pixel data and said first signal representing a characteristic of said one of said recording elements as address inputs to said correction memory means to identify a memory location in said correction memory means, latch means for latching said respective corrected multibit data output from said correction memory means, multiplexer means for transmitting one of n data bits of the corrected multibit data stored in said latch means to a respective one of said registers, and said controller including means for controlling said coupling means to repeat n times the input of said image pixel data of each said pixel to said correction memory means, means for controlling said latch means to latch n times the output of the respective corrected multibit data from said correction memory means and means for controlling the multiplexer means to transmit to a respective register a different one of the n data bits for use in recording a respective pixel by said one of said recording elements.

5,255,014

IMAGE FORMING APPARATUS HAVING A HIGH γ PHOTORECEPTOR

Satoshi Haneda, and Masakazu Fukuchi, both of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Apr. 9, 1991, Ser. No. 682,732
Claims priority, application Japan, Apr. 12, 1990, 2-96685; May 8, 1990, 2-118280; May 29, 1990, 2-139138; May 29, 1990, 2-139139
Int. Cl.[5] H04N *1/21*
U.S. Cl. 346—108 **12 Claims**



1. An apparatus for forming an image, comprising:

a photoreceptor including an imaging surface for forming an electrostatic latent image thereon in response to an exposure light beam;

means for charging said imaging surface to a predetermined electric potential;

said photoreceptor having a light decay characteristic, wherein:

when an amount of exposure on an exposed point of said imaging surface is smaller than a given critical amount, an electric potential of the exposed point decays slightly; and

when an amount of exposure on the exposed point is larger than said given critical amount, the electric potential of the exposed point decays sharply;

image writing means, including a laser beam generator and a generator drive circuit, for scanning and exposing said imaging surface with a laser beam to write said electrostatic latent image on said imaging surface;

said generator drive circuit including a signal generator for generating a reference wave signal that has a frequency and an amplitude, and comparator means for comparing a level of an image density signal and a level of said reference wave signal, said comparator means including modulator means, responsive to the compared levels of said image density signal and said reference wave signal, for modulating said image density signal;

said laser beam generator being driven in accordance with said modulated image density signal so that when said level of said image density signal is lower than said level of said reference wave signal, said laser beam generator emits a laser beam; and

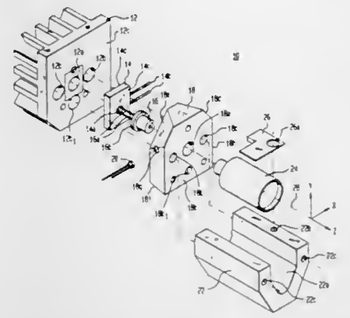
said signal generator setting an amplitude of said reference wave signal such that a maximum level of said image density signal, corresponding to a white image, is lower than a maximum level of said reference wave signal so that when an image is said white image, said laser beam generator emits a laser beam that has an initial amount of exposure light that is lower than said given critical amount to thereby prevent a latent image from being formed on said imaging surface.

5,255,015

ATHERMALLY COMPENSATED OPTICAL HEAD FOR A LASER SCANNER

Mark L. Noethen; Bradley S. Jadrich, both of Rochester, and Steven F. Entz, Brockport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 3, 1992, Ser. No. 896,089
Int. Cl.[5] H01S *3/04*
U.S. Cl. 346—108 **15 Claims**



1. An athermally compensated printhead comprising: characteristics for generating a beam of light;

a diode mount formed of a predetermined material with a predetermined coefficient of thermal expansion for mounting the laser diode in the printhead;

cooling means for maintaining the laser diode at a substantially constant operating temperature;

a collimator lens having predetermined changes in focal length versus changes in ambient temperature over a predetermined temperature range; and

a lens mount formed of a predetermined material with a predetermined coefficient of thermal expansion for mounting the collimator lens adjacent a first major surface of the diode mount to receive the beam of light from the laser diode, the predetermined coefficient of thermal expansion of the material of the lens mount having a value that compensates for the changes in focal length of the collimator lens versus changes in ambient temperature over the predetermined temperature range;

said predetermined material forming said diode mount and said predetermined material forming said lens mount being selected from the group consisting of:

a) said material of the lens mount and the diode mount are corresponding materials having the same coefficient of thermal expansion; and

b) said material of the lens mount and the diode mount are different materials having different predetermined coefficients of thermal expansion.

5,255,016

INK JET PRINTER RECORDING HEAD

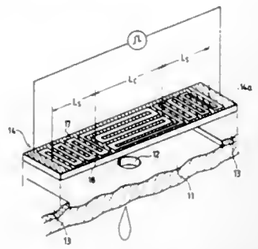
Minoru Usui, and Satoru Hosono, both of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Aug. 27, 1990, Ser. No. 572,529
Claims priority, application Japan, Sep. 5, 1989, 1-229771; Sep. 11, 1989, 1-234893; Sep. 11, 1989, 1-234894; Sep. 18, 1989, 1-241154
Int. Cl.[5] B41J *2/045*
U.S. Cl. 346—140 R **16 Claims**

1. An ink jet printer recording head comprising two confronting members with a small gap for admitting a portion of ink therebetween, a first member of said two confronting members being provided with an ink ejecting nozzle and a second member of said two confronting members being made of a piezoelectric material to serve as an ink pressuring member, wherein at least one surface of said ink pressuring member

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is provided with a pair of positively and negatively polarized electrodes arranged in a longitudinal direction on a first portion of said ink pressuring member and in a transverse direction



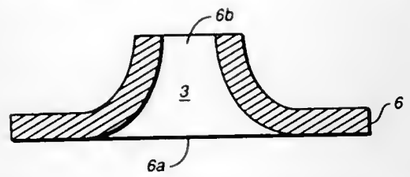
on a second portion of said ink pressuring member, such that a voltage applied across both of said electrodes deforms said ink pressuring member toward said nozzle thereby ejecting ink droplets through said nozzle.

5,255,017

THREE DIMENSIONAL NOZZLE ORIFICE PLATES

Si-Ty Lam, San Jose, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 3, 1990, Ser. No. 621,506
Int. Cl.[5] B41J *2/16;* C25D *1/08*
U.S. Cl. 346—140 R 3 Claims



1. A nozzle plate for an inkjet printer comprising:
a metal plate having a first surface and an opposed second opposed surface and a plurality of nozzles, each nozzle being defined by an inlet opening extending into the first surface and an outlet opening extending into the second surface, and each nozzle including an interior surface converging from the inlet opening to the outlet opening, the interior surface extending a distance in a direction parallel to an axis passing through the inlet and outlet opening, the distance being greater than a thickness of the metal plate between the first surface and second surface and the thickness of the metal plate being substantially uniform from the inlet opening to the outlet opening.

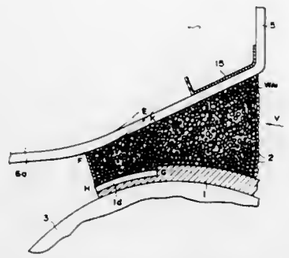
5,255,018

IMAGE FORMING APPARATUS

Takeshi Matoba, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 29, 1991, Ser. No. 707,019
Claims priority, application Japan, May 31, 1990, 2-139949
Int. Cl.[5] G01D *15/06*
U.S. Cl. 346—140 R 5 Claims

1. An image forming apparatus comprising:
a movable endless recording medium guided by a pair of roller-shaped support members;
a plurality of recording electrodes longitudinally arranged in confronting relation with one of said support members, for forming an image area on said recording medium in response to applied voltages;
developer supplying means, disposed opposite the one of said support members for holding said electrodes thereon, and for supplying conductive powder developer to a gap formed between said recording electrodes and said recording medium; and
a guide member disposed adjacent the one of said support members and upstream of said recording electrodes, for guiding and recording medium so that a distance between



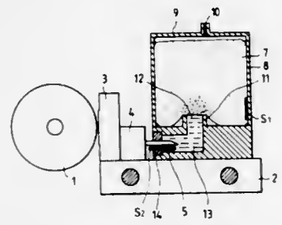
said recording medium and said developer supplying member gradually is narrowed at an entry portion to the gap, thereby to prevent an abrupt compression of the developer prior to supplying the developer to the gap formed between said recording electrodes and said recording medium.

5,255,019

INK NEAR-END DETECTING DEVICE

Seiji Mochizuki; Takahiro Naka; Kazuhiko Hara; Akira Takagi, and Yukihiro Hanaoka, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 642,761, Jan. 18, 1991, Pat. No. 5,070,346. This application Aug. 7, 1991, Ser. No. 742,529
Claims priority, application Japan, Jan. 30, 1990, 2-21022; Mar. 20, 1990, 2-70318; Nov. 29, 1990, 2-332640
The portion of the term of this patent subsequent to Dec. 3, 2008, has been disclaimed.
Int. Cl.[5] B41J *2/175;* G01D *18/00*
U.S. Cl. 346—140 R 6 Claims



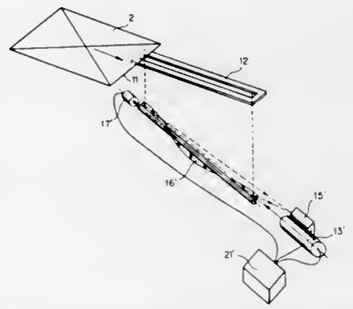
1. An ink near-end detecting device comprising:
a fixed member including a printing head with an ink supply member;
a detachable member detachable from said fixed member, said detachable member including an ink tank which accommodates a porous material containing an aqueous ink;
a pair of electrodes arranged in a part of said porous material and in a part of said fixed member, respectively;
means for supplying at least one signal representing a predetermined resistance reference value; and
resistance change detecting means for detecting a condition that said ink in said ink tank has been nearly used up from a change of the resistance between said electrodes of more than a predetermined reference resistance value.

5,255,020

PRINTING ASSEMBLY FOR FRANKING, OBLITERATING MACHINE OR THE LIKE

Claude Martin, Saint Germain en Laye, and Francis Chevillon, Paris, both of France, assignors to Secap, Boulogne Billancourt, France

Continuation of Ser. No. 459,809, May 15, 1990, Pat. No. 5,126,753. This application Feb. 4, 1992, Ser. No. 830,445
Claims priority, application France, Sep. 19, 1988, 88 12171
The portion of the term of this patent subsequent to Jun. 30, 2009, has been disclaimed.
Int. Cl.[5] G01D *15/16, 15/18;* G06F *15/20;* G06G *7/48*
U.S. Cl. 346—140 R 9 Claims



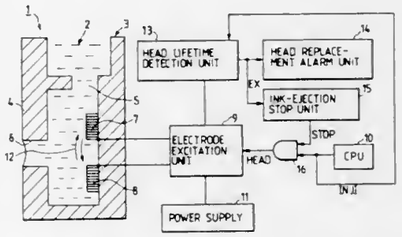
1. A printing assembly for a franking, canceling or stamping machine, comprising: a) ink emission nozzles; b) means for guiding an article to be printed in front of said nozzles; c) means for driving said article in front of said nozzles; and d) means for detecting movement of said article through said assembly, said means for detecting triggering emission of ink by said nozzles, and wherein said means for detecting comprises a device for constantly directly detecting a location of a moving edge of said article which is substantially transverse to a direction of movement of said article such that the detected location of said moving edge is indicative of a location of said article as said article passes through said assembly.

5,255,021

INK-JET PRINTER HAVING AN INK JET PRINT HEAD END OF LIFE DETECTION CIRCUIT

Tomoyuki Noguchi, Kasuga; Mitsuhide Matsuda, Umi; Tadashi Shiraishi, Kasuga, and Hideaki Horio, Umi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 1, 1992, Ser. No. 861,050
Claims priority, application Japan, Apr. 5, 1991, 3-72003
Int. Cl.[5] G01D *15/16*
U.S. Cl. 346—140 R 10 Claims



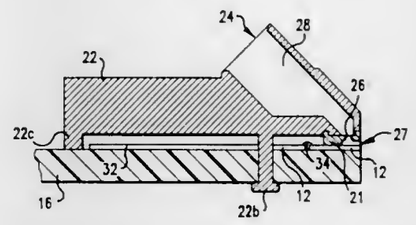
1. An ink-jet printer, comprising:
an ink-jet head having an ink tank for holding therein a conductive ink, a nozzle associated with said ink tank, and a pair of electrodes disposed on a portion of an inside wall of said ink tank;
electrode excitation means for applying a voltage to said pair of electrodes such that a current is passed through that portion of said conductive ink contained between said pair of electrodes to cause said portion of the conductive ink to become vaporized to produce bubbles and cause said bubbles to expand suddenly, exerting a sufficient pressure onto said conductive ink to expel droplets of conductive ink from said nozzle;
current detection means for detecting a current value flowing through said portion of the conductive ink contained between said pair of electrodes; and
lifetime detection means for producing an output signal indicative of the end of a lifetime of said pair of electrodes based on an output from said current detection means.

5,255,022

INK MANIFOLD HAVING ELASTOMER CHANNEL PLATE FOR INK JET PRINTHEAD AND PROCESS FOR MAKING

Vincent A. Burolla, Ontario, assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 2, 1992, Ser. No. 862,393
Int. Cl.[5] B41J *2/16*
U.S. Cl. 346—140 R 22 Claims



1. A thermal ink jet printhead comprising:
a manifold having an ink inlet and an ink outlet on different surfaces thereof, and a passage communicating said ink inlet with said ink outlet;
an elastomer channel plate having a plurality of channels formed on a first surface of said elastomer channel plate, and an ink reservoir formed on a second surface opposite from said first surface of said elastomer channel plate, said reservoir being in communication with said plurality of channels, said second surface of said elastomer channel plate attached to the surface of said manifold containing said ink outlet so that said reservoir communicates with said ink outlet;
a heater plate having a plurality of heater elements corresponding in number and location to said plurality of channels in said elastomer channel plate; and
a heat sink attached to said heater plate, said heat sink being secured to said manifold so that the heater elements on said heater plate are located in corresponding channels of said channel plate to form the thermal ink jet printhead.

5,255,023

APPARATUS AND METHOD FOR IMPROVED PAPER MARKING

James O. Bowlby, Jr., San Jose, and David R. Nygren, Berkeley, both of Calif., assignors to Bowlby Labs, Inc., Campbell, Calif.

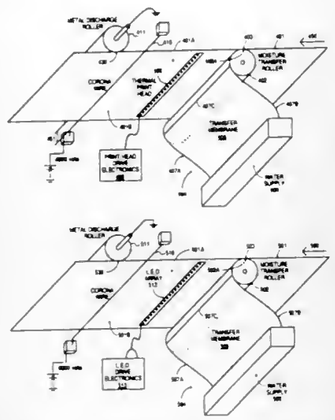
Filed Mar. 3, 1992, Ser. No. 846,481
Int. Cl.[5] G01D *15/06;* G03G *21/00, 15/14*
U.S. Cl. 346—160.1 14 Claims

1. An apparatus for marking paper comprising:
means for controlling a moisture content of said paper, said

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means for controlling placed in operative relation to said paper;

means for selectively changing said moisture content of said paper on a pixel by pixel basis, said means for selectively changing placed in operative relation to said paper;



means for applying an electrical charge to said paper, said means for applying an electrical charge placed in operative relation to said paper; and

means for selectively discharging said electrical charge on said paper, thereby forming a latent image on said paper.

5,255,024

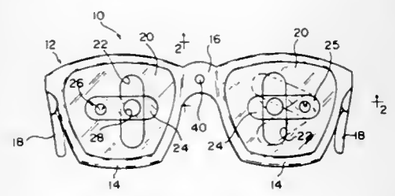
EYE DROP ALIGNMENT GLASSES

Charles W. Jensen, Rte. 4 Box 30-41, Lake Geneva, Wis. 53147

Filed Feb. 22, 1993, Ser. No. 20,425

Int. Cl.[5] G02C *1/00*; A61M *35/00*

U.S. Cl. 351—158 **3 Claims**



1. Eyedrop alignment glasses comprising;

a frame including two lens rims joined together by a bride, said frame also having a pair of temples extending rearwardly therefrom;

a leg engaged in each lens rim and having an elongated slot engaged in each lens and therein the slot being off center in the lens and close to the bridge;

a slide member extending across the lens and being pivotably fixed at one end thereof to the lens by a stud, the slide member having a bore therein and extending across the slot in a manner to maintain the bore overlying the slot; and

an adjustment member on the bridge which is adjustable to raise and lower the frame relative to the eyes of the user.

5,255,025

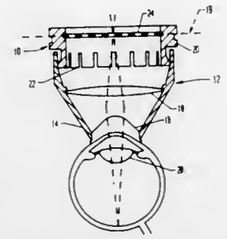
MEASUREMENT APPARATUS FOR INDIRECT OPHTHALMOSCOPY

Donald A. Volk, 9378 Jackson Ave., Mentor, Ohio 44060

Filed Oct. 15, 1991, Ser. No. 776,063

Int. Cl.[5] A61B *3/10*

U.S. Cl. 351—205 **15 Claims**



1. An apparatus for examination of the fundus of the eye by indirect ophthalmoscopy, comprising,

a housing supporting an optical system having at least one lens, including an imaging lens to form an aerial image of the fundus of the examined eye, wherein said housing is located relative to said examined eye such that said image forming lens is positioned a distance from the eye to form said aerial image,

a reticle formed on a transparent disc of material, and a supporting means for said transparent disc of material including outwardly extending yieldable tabs which will frictionally engage said housing to be selectively retained in association with said housing at a position which coincides with at least a portion of the aerial image formed by said optical system.

5,255,026

STEREO EYE FUNDUS CAMERA

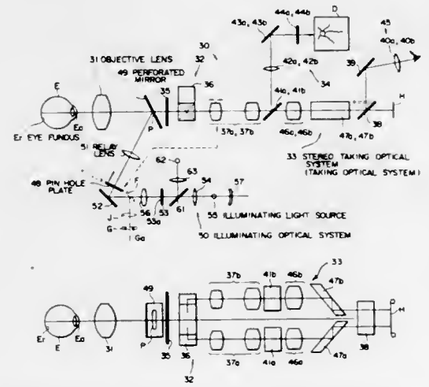
Akihiro Arai, and Takeyuki Kato, both of Tokyo, Japan, assignors to Kabushiki Kaisha Topcon, Tokyo, Japan

Continuation of Ser. No. 701,633, May 15, 1991, abandoned, which is a continuation of Ser. No. 472,385, Jan. 31, 1990, abandoned. This application Aug. 5, 1992, Ser. No. 924,571

Claims priority, application Japan, Feb. 1, 1989, 1-23155

Int. Cl.[5] A61B *3/14*

U.S. Cl. 351—206 **6 Claims**



1. A stereoscopic eye fundus camera, comprising:

illuminating optical means for applying a beam of light to the fundus of an eye which is to be tested through an objective lens;

mark projecting optical means for projecting a mark onto said fundus; and

stereoscopically photographing optical means, including first and second photographing optical systems, for simultaneously photographing, through said objective lens, said eye fundus and said mark which is projected onto the fundus by said mark projecting optical means.

5,255,027

EYE TESTING DEVICE

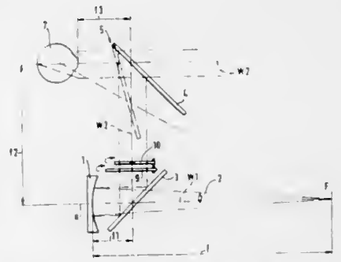
Josef Reiner, Cologne, and Rainer Kirchhübel, Asslar, both of Fed. Rep. of Germany, assignors to Oculus Optikgeraete GmbH, Wetzlar, Fed. Rep. of Germany

Filed Sep. 17, 1991, Ser. No. 761,324

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1990, 9017409[U]

Int. Cl.[5] A61B *3/02*

U.S. Cl. 351—211 **12 Claims**



1. A vision-testing apparatus comprising: a concave mirror, a test object arranged between the concave mirror and a focal point on a first optical path of the mirror, wherein between the concave mirror and the test object there is arranged a first, partially translucent dividing mirror to form a second optical path from the concave mirror to the eye of a person tested, and wherein a second, partially translucent dividing mirror is arranged in the second optical path, the eye of the person tested being arranged at a location on the second optical path which is a reflection of the focal point on the first optical path.

5,255,028

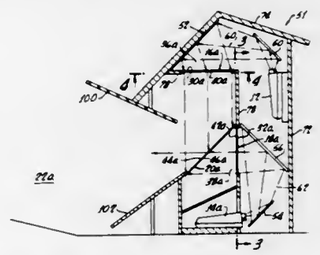
APPARATUS AND METHOD FOR PRODUCING 3-DIMENSIONAL IMAGES

Kevin Biles, 13364 Beach Ave., Marina del Rey, Calif. 90292

Filed May 15, 1992, Ser. No. 883,676

Int. Cl.[5] G03B *21/28*

U.S. Cl. 353—7 **18 Claims**



3. A system for producing apparent 3-dimensional viewing, said system comprising:

means for projecting a first image;

means for projecting a second image;

a first projection screen positioned to receive and transmit said first image;

a second projection screen positioned to receive and transmit said second image, said second projection screen being disposed at a substantially 90° angle to said first projection screen;

each of said first projection screen and said second projection screen transmitting at least 90 to 95 percent of the respective image received thereon, and each of said first projection screen and said second projection screen also absorbing 90 to 95 percent of light incident thereon from a respective direction opposite to said projected image; and

a glass plate having a reflective surface and a transmissive surface, said glass plate being positioned at a substantially 45° angle to said first projection screen and at a substantially 45° angle to said second projection screen, and wherein said reflective surface is disposed to reflect said first image and said transmissive surface is disposed to transmit said second image.

5,255,029

LIQUID CRYSTAL DISPLAY FOR PROJECTION SYSTEMS

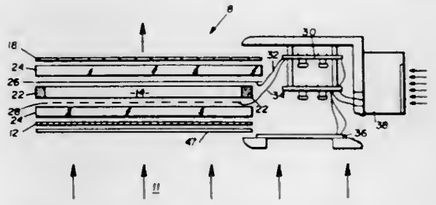
James W. Vogeley, and Arthur H. Vogeley, both of Yorktown, Va., assignors to nView Corporation, Newport News, Va.

Continuation of Ser. No. 625,037, Dec. 10, 1990, which is a continuation-in-part of Ser. No. 194,516, May 16, 1988, Pat. No. 4,976,536, which is a division of Ser. No. 44,332, Apr. 30, 1987, Pat. No. 4,763,993. This application Jul. 22, 1992, Ser. No. 920,190

The portion of the term of this patent subsequent to Dec. 11, 2007, has been disclaimed.

Int. Cl.[5] G03B *21/12*

U.S. Cl. 353—122 **27 Claims**



1. A low stress work station for providing display images to an operator, said images based upon an electronic signal, said work station comprising:

means for projecting a beam of light along an optical path, said projecting means including a light source;

a rear projection screen located at one end of said optical path and in a position to be viewed by said operator;

control means, responsive to said electronic signal, for generating liquid crystal means energizing signals;

twisted nematic crystal means, located along said optical path, for controlling polarization of light passing therethrough in response to localized energization and de-energization of said crystal means in accordance with said crystal means energizing signals;

means, responsive to said control means energizing signals, for selectively and locally energizing said crystal means;

back polarizing means, at least partially disposed in said beam and located between said crystal means and said light source, for polarizing light passing therethrough; and

front analyzing means, at least partially disposed in said beam and located between said crystal means and said rear projection screen, for allowing light of a selected polarization to pass therethrough and for blocking light not having said selected polarization.

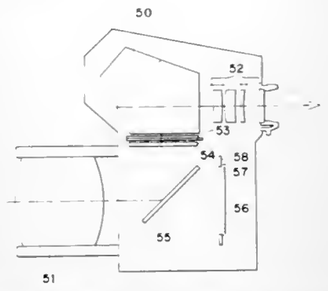
VOL 1155 ISS 3 OCT 19 1993 UMI

5,255,030

CAMERA

Hiromu Mukai, Kawachinagano; Kohtaro Hayashi, Hirakata, and Jun Ishihara, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 28, 1991, Ser. No. 751,321
Claims priority, application Japan, Aug. 31, 1990, 2-232205; Feb. 6, 1991, 3-15369
Int. Cl.[5] G03B *37/00*
U.S. Cl. 354—94 27 Claims



1. A camera capable of switching between a first photographing mode and a second photographing mode in which a ratio of a horizontal direction size against a vertical direction size is greater than said ratio to each other in said first photographing mode and having a view finder for checking a photographing range,

the view finder comprising:

visual frame display means for switching a visual frame for displaying the first photographing mode and a visual frame for displaying the second photographing mode;

view finder magnification varying means for varying magnification of the view finder; and

control means for switching the visual frame display means between the visual frame for displaying the first photographing mode and the visual frame for displaying the second photographing mode and increasing the magnification of the view finder with the magnification varying means when the visual frame display means is switched to the visual frame for displaying the second photographing mode.

5,255,031

DATA-RETAINABLE PHOTOGRAPHIC FILM CARTRIDGE

Shinpei Ikenoue, Minami-Ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

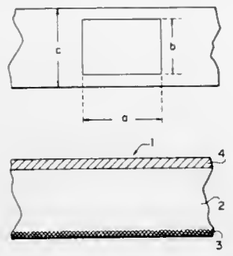
Continuation of Ser. No. 821,292, Jan. 10, 1992, abandoned, which is a continuation of Ser. No. 600,937, Oct. 22, 1990, abandoned. This application Nov. 20, 1992, Ser. No. 979,454
Claims priority, application Japan, Nov. 13, 1989, 1-131872[U]
Int. Cl.[5] G03B *17/24*
U.S. Cl. 354—106 12 Claims

1. A method for recording data on a photographic apparatus, said apparatus comprising a film cartridge, a spool disposed in said cartridge and rotatable about a longitudinal axis, photographic film being wound into a roll around said spool, said film having first and second longitudinally extending edges defining therebetween a photosensitive region, said photosensitive region having a photosensitive emulsion thereon and being divided into at least first areas and second areas, each of said first areas having a size between 350 mm^2 and 1200 mm^2, and said second areas having a size which is at least 15% of each of said first areas, said second areas being provided proximate said longitudinally extending edges, a magnetic medium being formed in a layer on said film, said method comprising the steps of:

optically recording film data in said second area when the film is produced, said film data including at least optically readable data for identifying the photographic film;

photographically recording an image in said first areas;

optically recording photography data in said second area during photography, said photography data including at



least optically readable data relating to conditions during exposure of said film;

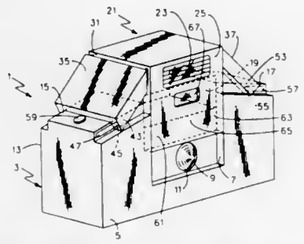
magnetically recording additional data on said magnetic medium, said additional data relating to conditions for use in processing prints from said photographic film when said film is photo-processed.

5,255,032

COMPACT CAMERA WITH DEPLOYABLE FLASH UNIT

Patricia F. Michaud, Winsted, Conn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 23, 1992, Ser. No. 917,651
Int. Cl.[5] G03B *15/03, 17/02*
U.S. Cl. 354—149.11 5 Claims



1. A compact camera comprising a camera body, a flash unit, and means supporting said flash unit for movement relative to said camera body between a storage position and an operative position, is characterized in that:

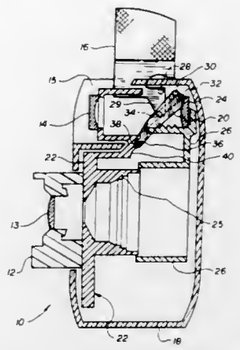
said supporting means includes a pair of flash support legs configured to be able to cover respective, spaced, top face portions of said camera body separated from each other by a gap adapted to receive said flash unit and means connecting said legs to said flash unit and to the camera body for retracting the flash unit into said gap and collapsing the legs substantially flat against said top face portions of the camera body when the flash unit is moved to its storage position and for projecting the flash unit from the gap and raising the legs from the top face portions when the flash unit is in its operative position.

5,255,033

FOLDING CAMERA

William F. Dassero, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 30, 1992, Ser. No. 859,993
Int. Cl.[5] G03B *15/03*
U.S. Cl. 354—149.11 15 Claims



1. A camera including a camera housing, a flash unit movable between a use position wherein the flash unit extends from the housing and a storage position wherein the flash unit is in the housing, a lens/shutter assembly and a viewfinder, characterized in the improvement comprising:

a movable mount carrying at least part of said lens/shutter assembly and a front component of said viewfinder, said mount being movable between a storage position for protecting the front lens/shutter assembly and an active position for presenting said lens/shutter assembly and said front component for photographic use; and

mount-biasing means for biasing said mount from the storage position to the active position in response to the movement of said flash unit into the use position, and for biasing said mount from the active position to the storage position in response to the movement of said flash unit into the storage position.

5,255,034

CAMERA HAVING AN AUTOMATIC FILM LOADING MECHANISM

Takahisa Shimada; Junichi Tanii; Ikushi Nakamura; Masaaki Chikasaki, and Sadafusa Tsuji, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

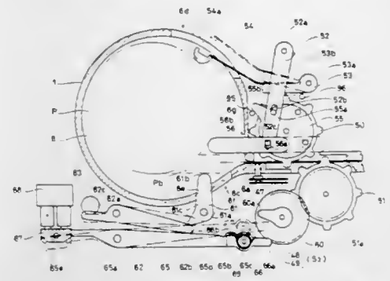
Continuation of Ser. No. 744,639, Aug. 8, 1991, abandoned, which is a continuation of Ser. No. 446,055, Dec. 5, 1989, abandoned. This application Nov. 10, 1992, Ser. No. 974,384
Int. Cl.[5] G03B *1/18*
U.S. Cl. 354—173.1 21 Claims

1. A camera which feeds a film from a patrone chamber to a spool chamber, comprising:

a film exposure portion having a first edge at the patrone chamber side and a second edge at the spool chamber side for forming an opening to expose a film to light;

film feed means for feeding the film from the patrone chamber to the spool chamber through said film exposure portion;

first detection means provided on the spool chamber side of the second edge for detecting whether or not a lead of the film which is fed to the spool chamber by said film feed means successfully passes the second edge in the direction of the spool chamber from the patrone chamber; and



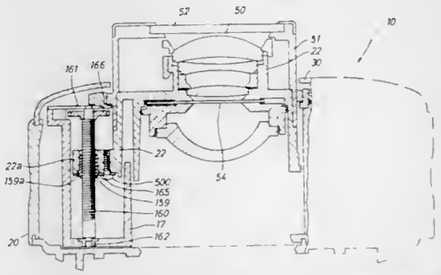
control means for controlling operation of said film feed means in response to an output of said first detection means.

5,255,035

FOCUSING CONTROL APPARATUS FOR A CAMERA

Mutsuhito Kichima, Hachioji, Japan, assignor to Konica Corporation, Tokyo, Japan

Division of Ser. No. 713,401, Jun. 10, 1991, Pat. No. 5,162,834. This application Sep. 18, 1992, Ser. No. 949,222
Claims priority, application Japan, Jun. 12, 1990, 2-153712
Int. Cl.[5] G03B *3/10*
U.S. Cl. 354—195.12 27 Claims



1. A camera comprising a main body provided with an aperture, a photographic lens, a mounting unit on said main body and movable with respect thereto, a guide shaft for said mounting unit, a support mounted on said main body and comprising a first portion and a second portion,

said first portion having a recess on one face and a projecting portion complementary to said recess on another face, said projecting portion engaging said aperture,

one end of said guide shaft on said first portion and another end of said guide shaft on said second portion, whereby said guide shaft extends in an optical axis direction of said lens; and

a bearing connected to said mounting unit and slidable along said guide shaft, at least part of said bearing being adapted to enter said recess.

5,255,036

Patent Not Issued For This Number

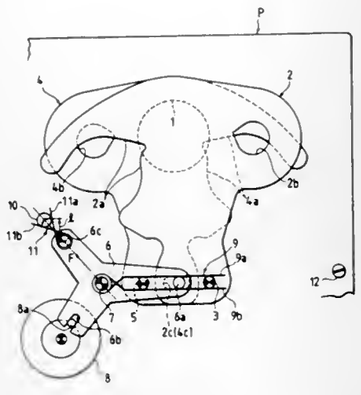
VOL 1155 ISS 3 OCT 19 1993 UMI

5,255,037

SHUTTER BLADE OPENING AND CLOSING DEVICE

Kouichi Kobayashi, Tokyo, Japan, assignor to Copal Company Limited, Tokyo, Japan

Filed Sep. 5, 1991, Ser. No. 755,557
Claims priority, application Japan, Sep. 6, 1990, 2-236146; Jun. 17, 1991, 3-045384; Jun. 17, 1991, 3-045385
Int. Cl.[5] G03B 9/06, 9/14
U.S. Cl. 354—229 18 Claims



1. A camera shutter comprising:

a shutter base plate having an exposure aperture;

a plurality of shutter blades, each pivoted on said shutter base plate, and each shutter blade having a first opening forming portion for forming a first exposure opening on the exposure aperture and a second opening forming portion for forming a second exposure opening, different in size from said first exposure opening, on the exposure aperture;

a shutter blade opening and closing lever pivotally mounted on said shutter base plate, and operatively connected to said plurality of shutter blades for pivoting said plurality of shutter blades to positions for forming the first exposure opening, and to other positions for forming the second exposure opening, and to closed positions thereof;

a closing spring supported on said shutter base plate and having a pair of arms for retaining said plurality of shutter blades at the closed positions thereof and biasing these shutter blades toward the closed positions thereof when said blades are moved toward the opened positions thereof; and

a driving motor mounted on said shutter base plate and directly connected to said shutter blade opening and closing lever for driving said shutter blade opening and closing lever, the driving motor being rotatable in two opposite directions by supplying a current in one of two opposite directions; such that:

said plurality of shutter blades are opened by said shutter blade opening and closing lever forming said first exposure opening when said driving motor is rotated in a first direction;

said plurality of shutter blades are opened by said shutter blade opening and closing lever forming said second exposure opening when said driving motor is rotated in a second direction opposite to said first direction; and

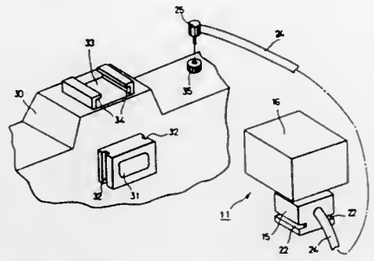
current supply to said driving motor is stopped upon lapse of a predetermined exposure time, whereby said plurality of shutter blades are returned to the closed positions thereof by said closing spring by way of said shutter blade opening and closing lever.

5,255,038

REMOTE CONTROL APPARATUS OF CAMERA

Shinya Suzuka, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 459,655, Jan. 2, 1990, abandoned. This application Apr. 22, 1992, Ser. No. 873,719
Claims priority, application Japan, Jan. 11, 1989, 1-4199
Int. Cl.[5] G03B 17/38
U.S. Cl. 354—266 9 Claims



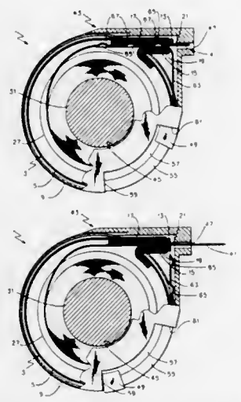
1. A remote control apparatus of a camera having a camera body with a finder eye-piece window and a mounting member, comprising, a receiver which is adapted to control a shutter of a camera body and which has a signal receiving surface and a transmitter which is adapted to be separated from the receiver, so that a remote release signal emitted from the transmitter can be received by the receiver to release the shutter of the camera body, said apparatus comprising, first mounting means connected to the receiver and adapted to engage with the finder eye-piece window for detachably mounting the signal receiving surface of the receiver to a rear portion of the finder eye-piece window for receiving a signal emitted from the transmitter through a finder optical system of the camera body, and second mounting means connected to the receiver and adapted to engage the mounting member of the camera body to detachably mount the receiver to the camera body.

5,255,039

FILM ASSEMBLAGE

Stephen H. Miller, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 15, 1992, Ser. No. 898,667
Int. Cl.[5] G03B 17/26
U.S. Cl. 354—275 8 Claims



1. A film assemblage comprising a cassette shell having a film ingress/egress slot through which a leading section of a filmstrip coiled in a roll inside said shell may be moved outside the shell, and a pull-strip for engaging said leading section which can be manually pulled outwardly through said slot to similarly draw the leading section outside said shell, is characterized in that:

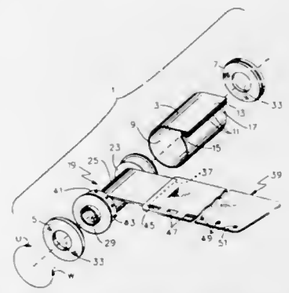
respective cooperating means are affixed to said shell and said pull-strip for constraining the pull-strip to be manually pulled around the exterior of the shell to draw said leading section of the filmstrip outwardly through said slot.

5,255,040

FILM CASSETTE AND LEADER

Daniel M. Pagano, Henrietta, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 29, 1992, Ser. No. 906,178
Int. Cl.[5] G03B 17/26, 1/04
U.S. Cl. 354—275 5 Claims



1. A film cassette comprising a lighttight housing, a spool rotatably supported inside said housing, a filmstrip wound onto said spool, a film leader attached to a leading end of said filmstrip, a sprocket rotatably supported inside said housing with identical pitch teeth adapted to be received in respective perforations along an edge section of said leader wider than said filmstrip for advancing the leader from the housing when said sprocket and said spool are rotated, is characterized in that:

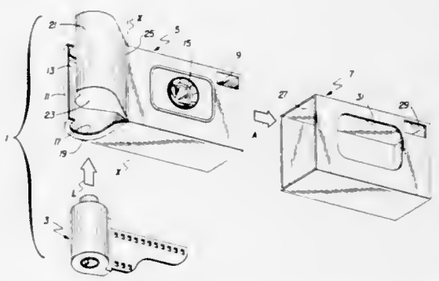
among said perforations that receive said teeth the perforation closest to said filmstrip is longer than the others to allow anyone of the teeth to readily enter that perforation when the filmstrip is wound onto said spool.

5,255,041

SINGLE-USE CAMERA WITH DOOR FOR CARTRIDGE RECEIVING CHAMBER

Ralph M. Lyon, and Mark A. Lamphron, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 11, 1993, Ser. No. 16,389
Int. Cl.[5] G03B 17/02
U.S. Cl. 354—288 4 Claims



1. A single-use camera comprising an exterior decorative cardboard casing having an open end, and a plastic light-tight camera housing arranged partly inside said exterior casing and having an end portion with a film cartridge receiving chamber located outside the exterior casing, is characterized in that:

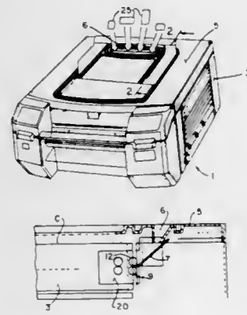
said end portion of the camera housing includes chamber covering means supported for opening movement to uncover said cartridge receiving chamber without being obstructed by said exterior casing, whereby a film cartridge may be removed from said cartridge receiving chamber without first taking said exterior casing off said camera housing.

5,255,042

TOP-DROP FILM FEED SYSTEM

Warren G. Fischer; Leonard P. Krystal, both of Kane County, Ill., and Thomas P. Muchisky, St. Louis, Mo., assignors to Fischer Industries, Inc., Geneva, Ill.

Filed Oct. 4, 1991, Ser. No. 771,203
Int. Cl.[5] G03D 3/08, 13/02
U.S. Cl. 354—319 7 Claims



1. A film processing apparatus, comprising:

(a) a housing defining a chamber area;

(b) a film transporting system located within said chamber area of the housing;

(c) a top cover for said housing, said top cover having a slot located in it to allow films to be dropped directly into the chamber beneath said housing;

(d) a removable inclined-plane film guide rack located below the slot; and

(e) means, positioned downstream from said inclined-plane film guide rack, for engaging an edge of the film within said housing, said engaging means directing the film from said film guide to said film transporting system of said processor.

5,255,043

APPARATUS FOR MAINTAINING CONSTANT IMAGE MAGNIFICATION IN A CAMERA SYSTEM

Masahiro Kawasaki, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

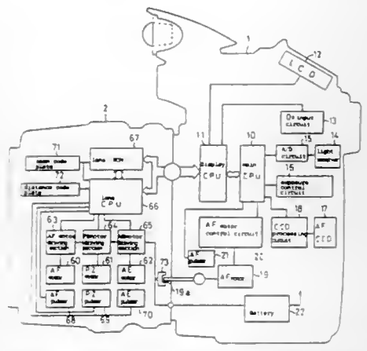
Continuation of Ser. No. 581,539, Sep. 12, 1990, abandoned, which is a continuation of Ser. No. 400,014, Aug. 29, 1989, Pat. No. 5,066,969. This application Mar. 16, 1992, Ser. No. 852,759
Claims priority, application Japan, Aug. 30, 1988, 63-215991
The portion of the term of this patent subsequent to Nov. 19, 2008, has been disclaimed.
Int. Cl.[5] G03B 5/00, 13/36
U.S. Cl. 354—402 48 Claims

1. A photographic lens that is selectively mountable to a camera body, comprising:

a group of electrical contacts that are selectively connectable with a plurality of electrical contacts associated with said camera body;

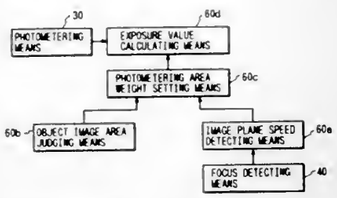
VOL 1155 ISS 3 OCT 19 1993 UMI

means for exchanging information between at least a part of said electrical contacts group and said plurality of electrical contacts, said exchanged information including defocus data determined by said camera body;
means for selecting said information in accordance with a capability of said camera body to which said photographic lens is mounted;



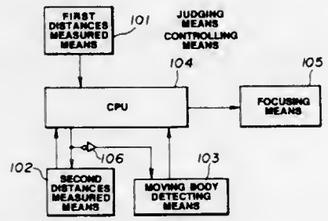
means for power zooming said photographic lens; and
a controller that receives said defocus data from said camera body and selected by said selecting means, said power zooming means being actuated in accordance with said defocus data to drive said photographic lens in a direction in which a magnification of an image to be photographed is maintained constant.

5,255,044
AUTOMATIC EXPOSURE CONTROL APPARATUS WITH IMPROVED EXPOSURE VALUE CALCULATION FOR PHOTOGRAPHING A MOVING OBJECT
Yasuaki Ishiguro, Fujimi, Japan, assignor to Nikon Corporation, Tokyo, Japan
Continuation of Ser. No. 709,289, Jun. 3, 1991, abandoned. This application Oct. 23, 1992, Ser. No. 965,521
Claims priority, application Japan, Jun. 5, 1990, 2-147957; Mar. 29, 1991, 3-091738
Int. Cl.[5] G03B *7/08, 13/36*
U.S. Cl. 354—402 **10 Claims**



1. An automatic exposure control apparatus comprising:
photometering means for photometering a plurality of areas within a phototaking image plane and outputting a plurality of photometering values each corresponding to a respective one of the areas;
focus detecting means for calculating a defocus amount corresponding to a distance between an object image plane and a film plane of a phototaking optical system;
image plane speed detection means for detecting, on the basis of current and past defocus amounts calculated by said focus detecting means, movement speed of the object image plane of the phototaking optical system in response to movement of the object along an optical axis of the phototaking optical system;
exposure value calculation means for calculating an exposure value on the basis of photometering values output from said photometering means; and
photometering area weight setting means for setting a weight of one or more of the photometering values, based on a detection result of the image plane speed detection means, to cause said exposure value calculation means to calculate a predicted exposure value which is to be used at a time of exposure and which is different from an exposure value that would be calculated for the object as positioned at the time of photometering, so as to account for predicted movement of the object between the time of photometering and the time of exposure.

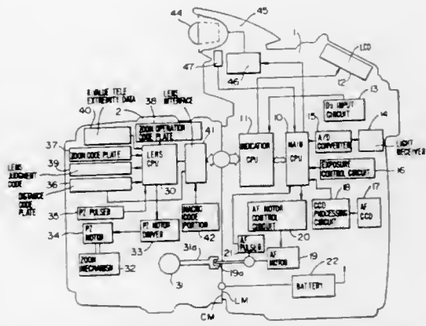
5,255,045
CAMERA SYSTEM HAVING DISTANCE MEASURING APPARATUS
Osamu Nonaka, Sagamihara, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Jan. 16, 1992, Ser. No. 822,309
Claims priority, application Japan, Feb. 25, 1991, 3-030480
Int. Cl.[5] G03B *13/36;* **G01J** *1/20*
U.S. Cl. 354—403 **20 Claims**



9. A camera system having a distance measuring apparatus comprising:
a central part distance measuring means measuring the object distance in the central part of the photographed picture;
a peripheral part distance measuring means measuring the object distance on the peripheral part of the photographed picture;
a central part moving object detecting means detecting a value responsive to the movement of the object in the central part of the photographed picture; and
a controlling means operating the peripheral part distance measuring means when the distance measured value by the central part distance measuring means is greater than the predetermined value and operating the central part moving object detecting means when the distance measured value by the central part distance measuring means is less than the predetermined value.

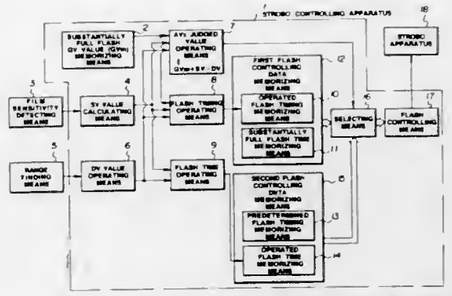
5,255,046
CAMERA SYSTEM
Masahiro Kawasaki; Hiroyuki Takahasi, and Shigeru Iwamoto, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 22, 1991, Ser. No. 748,782
Claims priority, application Japan, Aug. 22, 1990, 2-220888
Int. Cl.[5] G03B *7/00, 7/26*
U.S. Cl. 354—412 **43 Claims**

17. A camera system having a camera body, and a photographing lens which is detachably attached to said camera body, wherein;
said camera body comprises first control means for controlling an operation of said camera system;
said photographing lens comprises means for storing initial value data that is peculiar to said photographing lens and variable lens data which varies with a photographing condition, and second control means for sending said initial value data and said variable lens data to said first control means of said camera body in accordance with a request thereof;
said second control means of said photographing lens being brought into a sleep state when said first control means of said camera body outputs a first predetermined signal, said camera system further comprising means for detecting when said photographing lens is in a suitable configuration



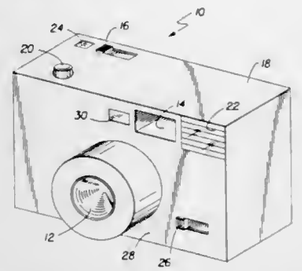
for photographing; wherein, upon determination, by said first control means to issue a first predetermined signal to effect a sleep state in said second control means, when said means for detecting detects that said photographing lens is in a suitable configuration for photographing, said second control means carries out limited communications with said first control means, after which said photographing lens is brought into a sleep state.

5,255,047
STROBO CONTROLLING APPARATUS
Toshiaki Ishimaru, Hachioji; Minoru Hara, Hino; Atsushi Maruyama, Machida, and Keiichi Tsuchida, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 654,818, Feb. 13, 1991, abandoned. This application Aug. 17, 1992, Ser. No. 929,476
Claims priority, application Japan, Feb. 13, 1990, 2-32194
Int. Cl.[5] G03B *15/05*
U.S. Cl. 354—416 **30 Claims**



1. A strobo apparatus and a strobo controlling apparatus therefor whereby, in a performance of a photographing operation, a flash amount can be controlled by controlling a flash time which is a length of time a flash developed by the strobo apparatus is maintained, comprising:
a gradually opening diaphragm combined sector shutter;
a memorizing means for memorizing information representing a guide number at a time of a maximum flash of said strobo apparatus;
a flash timing operating means for determining a first flash timing for the strobo apparatus relative to a time of opening said sector shutter responsive to the guide number at the time of said maximum flash and information representing a film sensitivity, said first flash timing representing a time when the strobo apparatus is initiated to flash;
a first flash controlling data memorizing means for memorizing data combining said first flash timing and a substantially full flash time of said strobo apparatus, said full flash time representing a time interval of a full flash generated by the strobo apparatus;
a flash time operating means for determining a second flash timing for said strobo apparatus to obtain a proper exposure responsive to said film sensitivity, and information representing a distance of an object and a predetermined diaphragm value;
second flash controlling data memorizing means for memorizing data combining information representing said second flash timing and a third flash timing for controlling the strobo apparatus when the sector shutter is operated at said predetermined diaphragm value;
a judged value operating mans for determining a judged diaphragm value responsive to said film sensitivity, said object distance and said maximum flash time guide number;
selecting means for selecting data stored in said first flash controlling data memorizing means when said judged diaphragm value is smaller than a predetermined value and for selecting data stored in said second flash controlling data memorizing means when said judged diaphragm value is larger than said predetermined value; and
flash controlling means for controlling the strobo apparatus responsive to said selecting means.

5,255,048
CAMERA WITH EXPOSURE-CONTROLLED PSEUDO-TELEPHOTO MODE AND METHOD OF OPERATION
Peter Labaziewicz, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 22, 1992, Ser. No. 964,698
Int. Cl.[5] C03B *5/00, 15/03, 17/24*
U.S. Cl. 354—419 **9 Claims**



1. A photographic camera for taking photographs of a scene, the camera having a picture taking lens that can be positioned to a plurality of lens focal lengths, a lens selection means for operation by the camera user to select one of the lens focal lengths at which the user wants the picture taking lens to be positioned, and a light sensing system that detects the amount of ambient light illuminating the scene and determines a low-light condition in which the detected ambient light is insufficient to provide a properly exposed photograph, the camera further including:
controller means responsive to a low-light condition for positioning the picture taking lens at a reduced available lens focal length compared to that selected by the user and for placing the camera in a pseudo-telephoto mode, in which mode an image from the picture taking lens that is

VOL 1155 ISS 3 OCT 19 1993 UMI

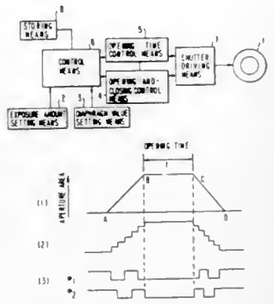
formed on a film frame is indicated as being a pseudo-telephoto frame.

5,255,049

SHUTTER CONTROL DEVICE FOR CAMERA AND CONTROL METHOD THEREFOR

Kazuo Akimoto; Shinji Miyata; Yoshiyuki Iwamatsu; Hiroko Fujita; Mitsuhiro Kakuta, and Tomoki Nakamura, all of Chiba, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan

Filed Apr. 20, 1992, Ser. No. 871,368
Claims priority, application Japan, Apr. 19, 1991, 3-88198
Int. Cl.[5] G03B *7/08*
U.S. Cl. 354—439 **11 Claims**



1. In a shutter control device for a camera, comprising setting means for determining the exposure value of the camera and the diaphragm value of the shutter for a given scene, control means for controlling the opening and closing operations and the opening time for the shutter on the basis of the values determined by said setting means, and shutter driving means for driving said shutter on the basis of a signal from said control means, the improvement wherein said control means comprises means for determining the opening time for the shutter for a predetermined diaphragm value with said exposure value, means for determining the opening time of the shutter as a function of the aperture area for the set diaphragm value of the shutter determined by said setting means, the times required for the opening and closing operations of the shutter for said predetermined diaphragm value, and the opening item for said predetermined diaphragm value.

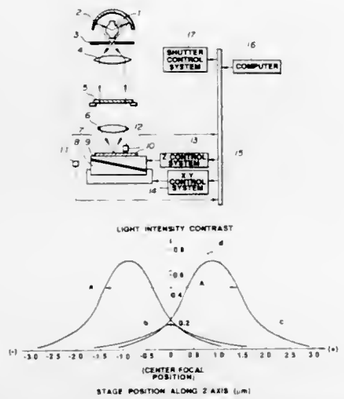
5,255,050

PROJECTION EXPOSURE METHOD

Tetsuya Kitagawa, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 4, 1991, Ser. No. 802,377
Claims priority, application Japan, Dec. 6, 1990, 2-405362
Int. Cl.[5] G03B *27/42*
U.S. Cl. 355—53 **8 Claims**

1. A method for projection exposure of projecting a photomask pattern on a wafer by a projection optical system comprising setting an image plane of said pattern on said wafer at three or more positions along the optical axis of said optical system within a predetermined extent, and carrying out light exposure operations sequentially at these positions so that the



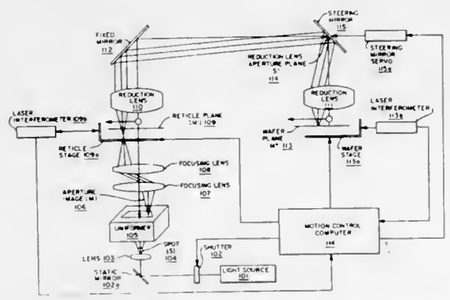
exposure light volume at near the mid point of said extent is smaller than that at both ends of said extent.

5,255,051

SMALL FIELD SCANNER

Paul C. Allen, Beaverton, Oreg., assignor to Etec Systems, Inc., Beaverton, Oreg.

Division of Ser. No. 720,205, Jun. 24, 1991. This application Jan. 5, 1993, Ser. No. 676
Int. Cl.[5] G03B *27/42, 27/32*
U.S. Cl. 355—77 **3 Claims**



1. In the photolithographic manufacture of integrated circuits, wherein a circuit pattern defined by a reticle is written on a semiconductor wafer, said reticle positioned on a reticle stage and said wafer positioned on a wafer stage, a method of printing said circuit pattern comprising the steps of:

a. positioning said reticle stage at a first predetermined position;

b. positioning said wafer stage at a second predetermined position;

c. precisely placing a reticle image on said wafer;

d. scanning a first print image field of said reticle in a first direction,

e. simultaneous with step d., scanning said wafer causing a first stripe to be printed on said wafer;

f. positioning said reticle stage at a third predetermined position for scanning a second print image field;

g. positioning said wafer stage at a fourth predetermined position;

h. precisely placing a reticle image on said wafer;

i. scanning said second print image field of said reticle in a second direction; and

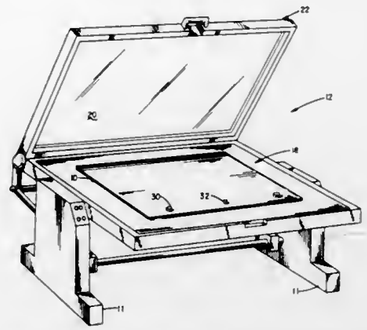
j. simultaneous with step i., scanning said wafer causing a second stripe to be printed on said wafer, said second stripe overlapping said first stripe.

5,255,052

IMAGE CONTROL BOARD

James N. Ternes, Roseville, and Willard J. Harder, Eden Prairie, both of Minn., assignors to Ternes Register System, St. Paul, Minn.

Filed Aug. 21, 1992, Ser. No. 933,483
Int. Cl.[5] G03B *27/20*
U.S. Cl. 355—91 **14 Claims**



1. A board providing precise registration and alignment of a plurality of planar work pieces each having a plurality of registration holes therein comprising:

a. a planar board member;

b. a plurality of pins mounted on said board and each pin projecting from said board along a pin axis perpendicular to said board, said pins adapted to be received within the registration holes of the work pieces; and

c. mounting means for securing at least one of said pins for multidirectional movement in the plane of the board while retaining said pin axis perpendicular to said board to ensure registration and alignment of the multiple work pieces with respect to each other, wherein a barrel having an end aperture is rigidly secured to said board, wherein said pin exhibits a non-circular shape when viewed end-on along said pin axis, and wherein said pin is mounted in said barrel to project through said end aperture yet permit non-rotational movement of said pin in said barrel and in the plane of the board.

5,255,053

IMAGE FORMING APPARATUS HAVING A TRANSFER DRUM, AN IMAGE MEMBER CARTRIDGE AND EXPOSURE MEANS

Michael H. Green, Rochester, and John M. Beres, Hilton, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 3, 1992, Ser. No. 985,472
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—200 **8 Claims**

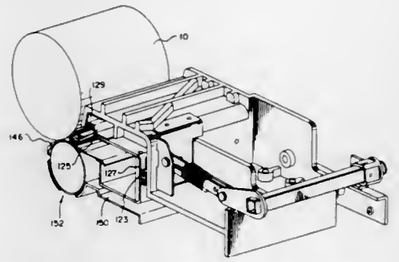
1. Image forming apparatus comprising:

a transfer drum,

an exposure means,

a chassis for mounting said exposure means, said chassis including means for receiving an image member cartridge with the image member in such a received cartridge fixed with respect to said exposure means,

means for supporting said chassis in said image forming apparatus for movement of said chassis and a received image member cartridge as a unit with respect to said transfer drum, and



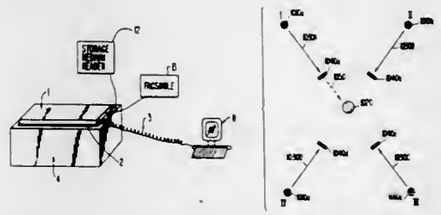
means for urging said chassis toward said transfer drum to cause engagement of an image member in the received image member cartridge with said transfer drum.

5,255,054

METHOD AND APPARATUS FOR CONVERTING A CONVENTIONAL COPIER INTO AN ELECTRONIC PRINTER

Irving Tsai, 435 E. 70th St., Apt. 16K, New York, N.Y. 10021

Division of Ser. No. 840,179, Feb. 24, 1992, Pat. No. 5,164,768, which is a continuation-in-part of Ser. No. 437,254, Nov. 16, 1989, Pat. No. 5,091,747. This application Aug. 14, 1992, Ser. No. 929,405
The portion of the term of this patent subsequent to Nov. 17, 2009, has been disclaimed.
Int. Cl.[5] G03G *15/00, 15/04*
U.S. Cl. 355—202 **30 Claims**



11. An apparatus for presenting images to a copier through a copier window to enable reproduction of the images by the copier, the apparatus comprising:

display means for displaying images through the copier window;

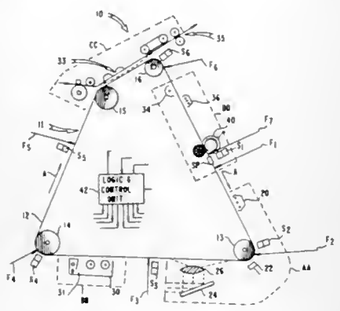
detecting means including a plurality of sensors for detecting the occurrence o a copying operation performed by the copier and for detecting the occurrence of error conditions arising during the copying process;

control means, responsive to the detecting means, for controlling the display means to display a first image prior to the detection of a copying operation and to display a second image following the detection of a copying operation by each of the plurality of sensors; and

miscopy protection means for halting the display of images subsequent to the detection of an error condition by the detecting means.

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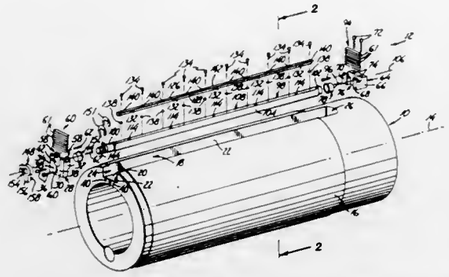
5,255,055
REPRODUCTION APPARATUS HAVING A PLURALITY OF NON-IMAGING PORTION DETECTORS
Gregory P. Mahoney, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 23, 1991, Ser. No. 812,093
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—208 9 Claims



1. An electrostatographic reproduction apparatus comprising:
(a) an endless imaging member having a fixed path and being movable along said fixed path, said imaging member having thereon a plural number N_1 of possible consecutive imaging portions as well as a non-imaging portion including an indicium in said non-imaging portion for identifying said non-imaging portion;
(b) means located at a first station along said fixed path for forming a latent image on one of said plural number N_1 of imaging frames of said imaging member;
(c) means located at a second station along said fixed path for developing such latent image;
(d) means located at a third station along said fixed path for transferring said developed image onto a receiver sheet; and
(e) a plural number N_2 of sensing means located one after another and spaced from each other at a plural number of predetermined consecutive sensing points along said fixed path a distance apart substantially equal to the dimension of an image portion measured in a direction along said fixed path for sensing passage of said non-imaging portion indicating means through any of said sensing points.

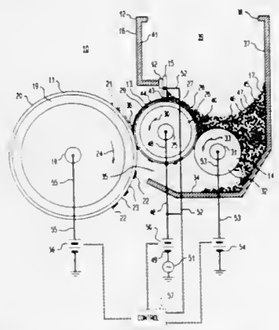
5,255,056
PHOTOCONDUCTOR FILM CLAMPING AND TENSIONING SYSTEM AND METHOD OF USE
Duane A. Preszler, River Falls; Donald L. Knutson, White Bear Lake, and Lawrence M. Lucking, Hugo, all of Minn., assignors to Minnesota Mining and Manufacturing Co., Saint Paul, Minn.
Continuation of Ser. No. 657,645, Feb. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 511,640, Apr. 20, 1990, abandoned. This application Jan. 28, 1993, Ser. No. 10,482
Int. Cl.[5] B41F *1/28*; G03G *5/00*
U.S. Cl. 355—211 16 Claims

1. A clamping and tensioning system for securing a sheet of material to an outer circumferential surface of a drum member, comprising:
a clamp rod movably mounted to the drum member and configured to releasably receive first and second edges of the sheet of material, the clamp rod being radially movable relative to the drum member between an initial state wherein the sheet of material is loosely received about the outer surface of the drum member and the clamp rod is in a first radial position relative to a longitudinal axis of the drum member, and a tensioned state wherein the sheet of material is securely tensioned about the outer surface of the drum member and the clamp rod is in a second radial position relative to the longitudinal axis of the drum member, the second position being different from the first position;
a spring biasing means mounted on the drum member and configured to be engaged by the clamp rod in its tensioned state, the spring biasing means providing a spring biasing



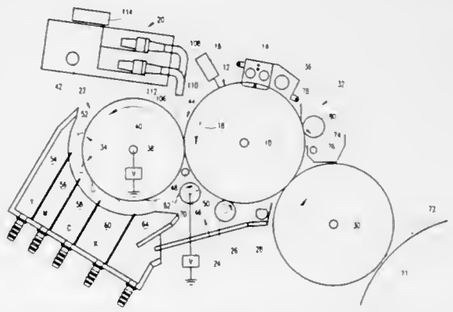
force directed generally radially inward toward the longitudinal axis of the drum member that acts to bias the clamp rod away from the second radial position towards the first radial position to securely tension the sheet of material about the outer surface of the drum member; and
a clamp collar coupled to the drum member and movably receiving the clamp rod, the clamp collar being adapted to releasably secure the clamp rod in the tensioned state.

5,255,057
GRAY SCALE MONOCOMPONENT NONMAGNETIC DEVELOPMENT SYSTEM
Eric C. Stelter, Rochester; Joseph E. Guth, Holley; William Vreeland, Webster, and Thomas A. Jadwin, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed May 29, 1992, Ser. No. 891,372
Int. Cl.[5] G03G *15/08*
U.S. Cl. 355—246 33 Claims



1. Apparatus for developing an electrostatic latent image, the apparatus comprising:
biasable developer means arranged for movement for carrying a monocomponent nonmagnetic developer comprising a mixture of toner particles triboelectrically chargeable to one polarity, and generally transparent counterpart charging beads triboelectrically chargeable to the opposite polarity, for developing the latent image;
conductive applying means adjacent the developer means and arranged for movement for applying the mixture thereto from a supply of the mixture in feed contact with the applying means; and
voltage means arranged for applying to the developer means a bias voltage having an AC component selective for producing an alternating field for triboelectrically charging the mixture in bulk between the applying means and developer means substantially independently of friction contact of the mixture with any surfaces of the apparatus, and a DC component selective for producing an electric field for developing the latent image to a selective image density with the bulk charged mixture applied to the developer means.

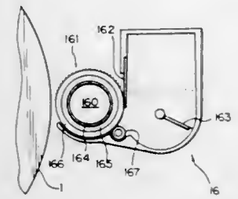
5,255,058
LIQUID DEVELOPER IMAGING SYSTEM USING A SPACED DEVELOPING ROLLER AND A TONER BACKGROUND REMOVAL SURFACE
Hanni Pinhas, Holon; Udi Chatow, Petach Tikva; Alon Gazit, Givataim; Ishaiau Lior, Nes Ziona, and Yehuda Niv, Rehovot, all of Israel, assignors to Spectrum Sciences B.V., Wassenaar, Netherlands
Filed Jan. 22, 1991, Ser. No. 643,497
Int. Cl.[5] G03G *15/10*
U.S. Cl. 355—256 46 Claims



1. Imaging apparatus comprising:
an image forming surface arranged for movement in a first direction at a development region whereat a developed visible image is formed at a given process speed using a liquid developer including electrically charged toner particles, the image forming surface having an electrostatic image including image and background areas at respective first and second potentials;
a development surface which is electrified to a third potential intermediate the first and second potentials and is spaced from the image forming surface at the development region and moves thereat;
a background toner removal surface spaced from the image forming surface for the removal of toner particles from the background areas; and
means for transferring the developed image to a final substrate.

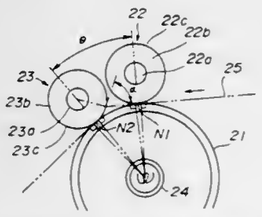
5,255,059
IMAGE FORMING APPARATUS
Tsukuru Kai, Fujisawa; Seiji Oka, Yokohama; Hidetoshi Yano, Yokohama; Shigeru Yoshiki, Yokohama, and Tsuyoshi Deki, Kawasaki, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Mar. 13, 1992, Ser. No. 851,539
Claims priority, application Japan, Mar. 15, 1991, 3-76797
Int. Cl.[5] G03G *15/06*
U.S. Cl. 355—261 6 Claims

1. In an image forming apparatus, comprising a developing device for developing a latent image electrostatically formed on an image carrier by a toner, said developing device comprising:
developer transporting means comprising a non-rotatable ultrasonic transporting means, wherein said non-rotatable ultrasonic transporting means is mounted non-rotatably in said image forming apparatus, has a roller-like configura-



tion, and is enclosed by a cylindrical portion of the developer transporting means.

5,255,060
FIXING APPARATUS FOR ELECTROGRAPHIC RECORDER
Hisao Chikano, Tokyo, Japan, assignor to Ricoh Company Ltd., Tokyo, Japan
Filed Jun. 24, 1992, Ser. No. 903,569
Claims priority, application Japan, Jun. 28, 1991, 3-158825
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—290 9 Claims



1. A fixing apparatus for an electrographic recorder comprising:
a fixing roller equipped with a heater for fixing a toner transferred onto a material for printing; and
a plurality of pressing rollers, spaced a predetermined distance apart from each other along the outer surface of said fixing roller, each of said pressing rollers being pressed to said fixing roller so as to form a nip portion, said material for printing being caught in said nip portion so that said toner is fixed onto said material,
said fixing roller and said plurality of pressing rollers being arranged so that an angle formed between a first tangential line tangential to said fixing roller at an outlet point of a nip portion of an upstream pressing roller and a second tangential line tangential to a downstream pressing roller at a point where said first tangential line intersects with a surface of said downstream pressing roller along a conveyance line of said material is less than 67 degrees.

5,255,061
IMAGE FORMING APPARATUS WITH A FIRST AND SECOND LID
Yozo Matsuura, Machida; Shiroh Kondoh, Atsugi, and Kazuhiro Yuasa, Zama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Nov. 30, 1990, Ser. No. 620,067
Claims priority, application Japan, Dec. 4, 1989, 1-313450
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—298 9 Claims

1. An image forming apparatus which forms a predetermined image on a recording paper fed through a feed path, comprising:
a body; and

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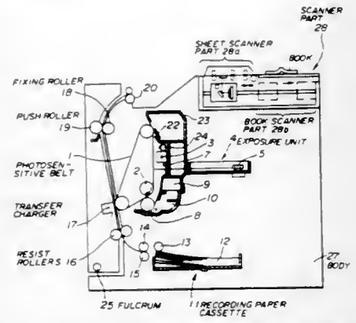
a first lid, pivotally provided on said body so as to pivot from a closing position to an opening position, said first lid closing said body when said first lid is located at the closing position, and the feed path being mostly exposed when said first lid is located at the opening position, wherein

said body comprising;

a first paper storing member which stores the recording paper,

a photosensitive member, said photosensitive member being formed so that a dimension thereof in a direction from the top to the bottom of said body is longer than a dimension thereof in a direction perpendicular to the direction from the top to the bottom of said body,

latent image forming means for forming a latent image appropriate to the predetermined image on the photosensitive member,



developing means for developing the latent image on the photosensitive member with toner after the latent image forming means forms the latent image on the photosensitive member,

a second paper storing member which stores the recording paper on which the predetermined image is formed, the recording paper being fed from the first paper storing member to the second paper storing member, and

toner recovery means for recovering remains of toner on the photoconductive member after the transfer means transfers the latent image to the recording paper, the toner recovery means being located in a position adjacent to a top portion of the photosensitive member, and wherein

said first lid comprises transfer means for transferring the latent image to the recording paper after the developing means develops the latent image on the photosensitive member with toner.

5,255,062

IMAGE FORMING APPARATUS HAVING A REMOVAL MEANS FOR SEPARATING DEVELOPERS

Tateki Oka, Atsugi; Hideyuki Kanbayashi, and Kenji Tabuchi, both of Toyohashi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 10, 1992, Ser. No. 819,188

Claims priority, application Japan, Jan. 14, 1991, 3-2567; Jan. 14, 1991, 3-2568; Jan. 14, 1991, 3-2569

Int. Cl.[5] G03G *15/01*

U.S. Cl. 355—326 **16 Claims**

1. A multi-color image forming apparatus comprising:

a photosensitive medium;

a first latent image forming means for forming a first electrostatic latent image on the photosensitive medium;

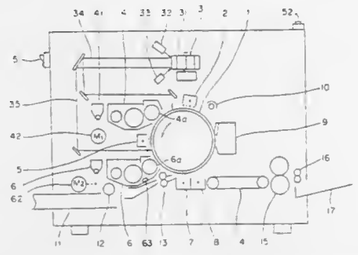
a first developing unit for developing the first electrostatic latent image with a first toner material of a first color;

a second latent image forming means for forming a second electrostatic latent image on the photosensitive medium;

a second developing unit for developing the second electrostatic latent image with a second toner material of a second color different from the first color;

a removal means for removing the first toner material mixing into the second developing unit;

a detecting means for detecting an amount of the first toner material mixing into the second developing unit;



a manually operable switch for activating the removal means; and

a control means for activating the removal means in the event that said manually operable switch is switched on and the amount of the first toner material detected by the detecting means is greater than a predetermined value.

5,255,063

COLOR COPYING APPARATUS WITH IMPROVED START TIMING OF A SCANNER

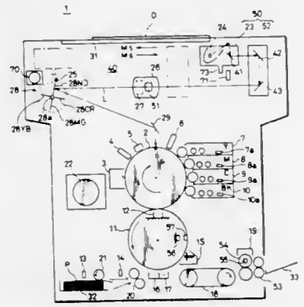
Hiroyuki Ideyama, Toyokawa; Tohru Fujiwara, Tokyo; Kenichi Muroki, Toyokawa, and Akito Wada, Toyohashi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 12, 1990, Ser. No. 626,530

Claims priority, application Japan, Dec. 15, 1989, 1-326223; Dec. 15, 1989, 1-326224; Dec. 15, 1989, 1-326226

Int. Cl.[5] G03G *15/01*

U.S. Cl. 355—327 **7 Claims**



1. A color copying apparatus comprising:

scanning means for scanning an original and forming a plurality of electrostatic latent images corresponding to color components of an image of the original, said scanning means executing a predetermined number of scanning operations for one original, each scanning operation corresponding to each color component,

developing means for converting the plurality of electrostatic latent images formed by said scanning means to toner images of different colors,

a rotating unit on which said converted toner images are superposed,

detecting means for detecting a rotating position of said rotating unit,

control means responsive to a detection output of said detecting means for controlling start timing of said scanning means, said control means including timing means for defining a suitable scan starting timing for each color component, and

adjusting means for adjusting said timing means, whereby each of said scan start timings are independently adjusted.

5,255,064

DISTANCE-MEASURING EQUIPMENT

Hiroko Maekawa, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

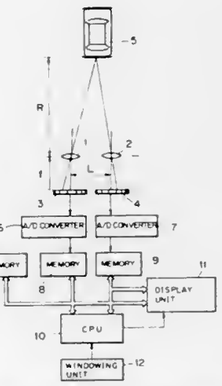
Filed Jul. 25, 1991, Ser. No. 735,565

Claims priority, application Japan, Sep. 3, 1990, 2-235317

The portion of the term of this patent subsequent to Jul. 12, 2009, has been disclaimed.

Int. Cl.[5] G01C *3/00, 5/00;* **B60T** *7/16*

U.S. Cl. 356—1 **5 Claims**



1. A distance-measuring equipment for measuring the distance from a moving target on the principle of triangulation by electrically detecting relative dislocations of first and second images comprising:

a pair of optical systems for detecting the dislocations disposed at a predetermined distance from each other, said pair of optical systems being composed of pairs of lenses and image sensors on which image of the moving target is focussed and captured through said respective lenses;

a pair of memory means for storing image signals which are outputted from said image sensors;

a windowing unit for forming a window by selecting specific image signal from either of said image signals stored in said respective memory means;

another memory means for storing said selected image signal as a reference image signal in said window;

a microprocessor which compares said reference image signal and another image signal by shifting the latter signal each time for one or more than one bit in accordance with a predetermined shift pattern, having an interpolation calculating function so as to improve the resolution for detecting the dislocation of said two image signals more precisely and calculating the distance from the moving target; and

a display unit for displaying the thus calculated distance by said microprocessor.

5,255,065

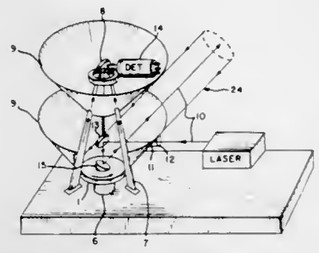
CONICALLY SCANNED HOLOGRAPHIC LIDAR TELESCOPE

Geary Schwemmer, Hampstead, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 10, 1992, Ser. No. 848,885

Int. Cl.[5] G01C *3/08;* **G02B** *5/32*

U.S. Cl. 356—5 **15 Claims**



1. An optical scanning device comprising:

a source of optical energy;

a rotating holographic optical element having a stationary focus, said holographic optical element diffracting said source of optical energy at an angle to said rotation axis so as to define a conical scanning area;

means for supporting and rotating said rotating holographic optical element;

a laser transmitting a beam of light to said rotating holographic optical element, said beam of light diffracted by said rotating holographic optical element and thereby emanating outward from said rotting holographic optical element in a conical manner; and

a small high damage threshold mirror attached to the center of said rotating holographic optical element.

5,255,066

MEASURING DEVICE FOR TRACK BUILDING MACHINES

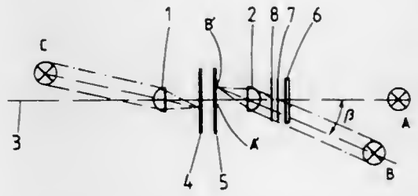
Heinz Jäger, Volketswil, Switzerland, assignor to Matisa Materiel Industriel, S.A., Crissier, Switzerland

Filed Jun. 8, 1992, Ser. No. 895,374

Claims priority, application Switzerland, Jun. 10, 1991, 1721/91

Int. Cl.[5] G01B *11/26*

U.S. Cl. 356—152 **13 Claims**



1. A measuring device for track building machines comprising:

a first and a second light source;

a first and a second lens disposed between said light sources at a preselected distance along an axis;

an optical receiver disposed between said two lenses and including at least one light sensor having a plurality of sensor zones for generating signals in response to light waves, said sensor being arranged to receive light waves from said light sources through said respective lenses, with said light waves being projected on one of said zones

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in accordance with an angular position of said first light source with respect to said axis; and

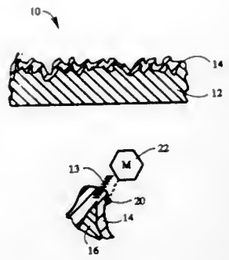
evaluation means for evaluating said signals from said light sensor.

5,255,067

SUBSTRATE AND APPARATUS FOR SURFACE ENHANCED RAMAN SPECTROSCOPY

Michael M. Carrabba, Franklin; Martin W. Rupich, Framingham, and R. David Rauh, Newton, all of Mass., assignors to EIC Laboratories, Inc., Norwood, Mass.

Filed Nov. 30, 1990, Ser. No. 621,172
Int. Cl.[5] G01J 3/44; G01N 21/65
U.S. Cl. 356—301 16 Claims



1. A substrate for surface enhanced Raman spectroscopy (SERS) of one or more molecular species, comprising

(a) a SERS-active metal capable of exhibiting a surface enhancement of Raman scattering of said molecular species, and

(b) a coating deposited by external means on said SERS-active metal and capable of adsorbing or reacting with said molecular species and bringing the adsorbed species or the reaction products in close proximity with said SERS-active metal

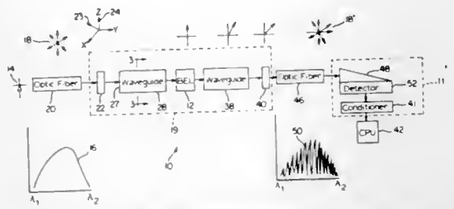
whereby the Raman spectrum of the said adsorbed species or products may be observed to be enhanced by the SERS-active metal.

5,255,068

FRINGE PATTERN ANALYSIS OF A BIREFRINGENT MODIFIED SPECTRUM TO DETERMINE ENVIRONMENTAL TEMPERATURE

Stephen M. Emo, Elkhart, Ind.; Devlin M. Gualtieri, Ledgewood; Janpu Hou, Bridgewater, both of N.J.; Terrance R. Kinney, South Bend, Ind.; Robert C. Morris, Ledgewood, and Herman van de Vaart, Califon, both of N.J., assignors to Allied-Signal Inc., Morristown, N.J.

Filed Nov. 25, 1991, Ser. No. 796,743
Int. Cl.[5] G01B 9/02
U.S. Cl. 356—351 14 Claims



1. A sensor for use in a temperature detector system to provide a detector array with a signal indicative of the current environmental temperature conditions experienced by the sensor, said sensor comprising:

a first linear polarizing element for orientating an initial broad band light spectrum communicated from a source carried on a first optic cable into a linearly polarized wave;

a first high temperature optical waveguide consisting of a high refractive index core made of substituted aluminum garnet surrounded by a lower refractive index cladding made of yttrium aluminum garnet for directing said linearly polarized wave along a desired path while maintaining the polarization state of said linearly polarized wave;

a birefringent crystal located adjacent said high refractive index core of said first high temperature optical waveguide for receiving said linearly polarized wave from said first linear polarizing element, said linearly polarized wave decomposing into first and second orthogonally polarized waves, said first and second orthogonally polarized waves experiencing a phase difference on propagating through said birefringent crystal;

a second high temperature optical waveguide consisting of a high refractive index core made of substituted aluminum garnet surrounded by a lower refractive index cladding made of yttrium aluminum garnet for communicating said first and second phase delayed orthogonally polarized waves from said birefringent crystal; and

a second linear polarizing element for combining said first and second orthogonally polarized waves to create a modulated light spectrum having a fringe pattern, said fringe pattern being a function of the current temperature experienced by said birefringent element; and

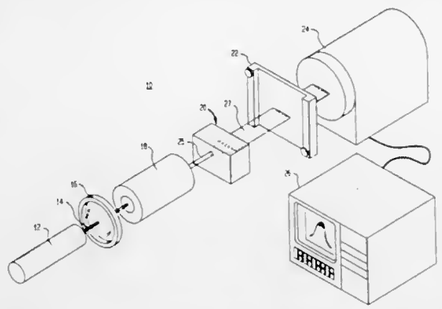
a second fiber optic cable connected to said second linear polarizing element for carrying said modulated light spectrum to an opto-electronic interface where said fringe pattern is extracted to accurately measure current environmental temperature conditions up to 1000° C. experienced by said birefringent crystal.

5,255,069

ELECTRO-OPTICAL INTERFEROMETRIC MICRODENSITOMETER SYSTEM

Francisco J. Duarte, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 735,205, Jul. 24, 1991, abandoned, which is a continuation of Ser. No. 373,954, Jun. 30, 1989, abandoned. This application Feb. 3, 1992, Ser. No. 829,366
Int. Cl.[5] G01B 9/02
U.S. Cl. 356—354 32 Claims



1. Electro-optical apparatus comprising:

means for generating a wide, thin substantially pure Gaussian beam of light;

means for holding a specimen to be examined in the light beam at a first location; and

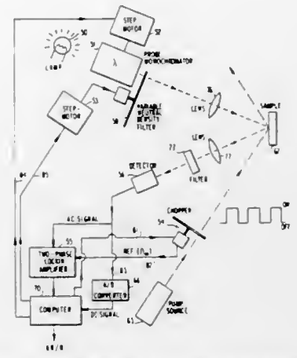
detector means at a second location spaced from the first location for receiving a pattern of interfering light waves coming from the specimen, and for generating electrical signals in accordance with the pattern of interfering light waves.

5,255,070

METHOD FOR DETERMINING INTERFACE PROPERTIES OF SEMICONDUCTOR MATERIALS BY PHOTOREFLECTANCE

Fred H. Pollak, 531 Main St., New York, N.Y. 10044; Hong-En Shen, 7 Country Club Rd., Apt. 29, Eatontown, N.J. 07724, and Gerald Lucovsky, 124 Lockwood West, Cary, N.C. 27511

Filed Jul. 20, 1989, Ser. No. 382,190
Int. Cl.[5] G01N 21/25
U.S. Cl. 356—417 4 Claims



1. A method of determining information in a semiconductor system about properties between two materials of different characteristics and different structural properties at an SiO_2/Si interface of a semiconductor material involving an SiO_2/Si system, comprising the steps of

a) directing a probe beam of monochromatic light onto a material sample whose characteristics are to be determined,

b) contactlessly electromodulating the sample by directing onto the same a modulated pump beam from a pump source to thereby modulate the built-in electric field at the surface/interface of the semiconductor system,

c) collecting the light reflected from or transmitted by the sample with a detector which produces a d.c. signal and an a.c. signal which contains (i) a spurious signal caused by diffuse reflected light from the pump source and/or photoluminescence produced by the pump light reaching the detector and (ii) the true signal,

d) normalizing the procedure to subtract the spurious signal from the true signal, and

e) evaluating the shifts of energy gaps in the band gaps of the photoreflectance spectrum of the semiconductor material to obtain information about at least one externally applied parameter causing such shift.

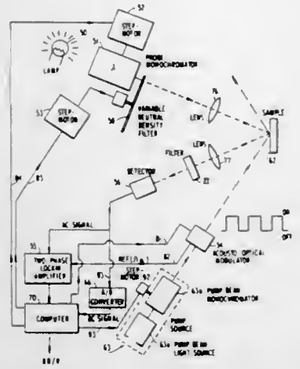
5,255,071

PHOTOREFLECTANCE METHOD AND APPARATUS UTILIZING ACOUSTO-OPTIC MODULATION

Fred H. Pollak, 531 Main St., New York, N.Y. 10044, and Hong-En Shen, 7 Country Club Rd., Apt. 29, Eatontown, N.J. 07724

Filed Sep. 13, 1989, Ser. No. 406,726
Int. Cl.[5] G01N 21/25
U.S. Cl. 356—417 20 Claims

1. An apparatus for determining characteristics of materials by photoreflectance, comprising monochromatic light source means, means for directing the monochromatic light onto a sample to be examined, pump beam means for directing a beam of energy onto the sample including acousto-optical modulation means for modulating said beam at frequencies above those attainable by mechanical modulation, means for directing at least a part of the non-absorbed monochromatic light and of the non-absorbed modulated beam from the sample onto a detector means operable to produce a d.c. signal and an a.c. signal in its outputs, computer means, means for applying the d.c. signal from the detector means to an input of the computer means, a lock-in amplifier means receiving at its input the a.c.



signal from the detector means and operatively connected with its output to another input of the computer means, and control means for keeping the substantially constant the operating conditions in a given experiment including variable means for varying the light intensity of the monochromatic light impinging on the sample and actuating means for controlling the variable means by an output from the computer means to maintain the d.c. signal substantially constant.

5,255,072

APPARATUS FOR ANALYZING FLUID BY MULTI-FLUID MODULATION MODE

Hajime Mikasa, Moriyama; Ichiro Asano, Kouka; Nobutaka Kihara, Nara; Shuichi Ishimoto, Kyoto; Isao Fujita, Simotubayashi; Norio Kada, Ibaraki; Takeshi Aoki, Kyoto; Takao Imaki, Nagaokakyo; Masahiko Fujiwara, Suita; Naohito Shimizu, and Junji Kato, both of Kyoto, all of Japan, assignors to Horiba, Ltd., Kyoto, Japan

Division of Ser. No. 278,046, Nov. 30, 1988. This application Jan. 13, 1992, Ser. No. 820,146

Claims priority, application Japan, Dec. 11, 1987, 62-314806; Dec. 12, 1987, 62-315047; Dec. 24, 1987, 62-328734; Dec. 26, 1987, 62-335864; Dec. 28, 1987, 62-335120; Dec. 29, 1987, 62-335786; Dec. 29, 1987, 62-335787; Dec. 29, 1987, 62-335788; Dec. 29, 1987, 62-335789; Dec. 29, 1987, 62-335790; Dec. 29, 1987, 62-335791; Dec. 29, 1987, 62-335792; Dec. 30, 1987, 62-201169; Dec. 30, 1987, 62-336616
Int. Cl.[5] G01N 21/85
U.S. Cl. 356—432 10 Claims

1. An apparatus for analyzing a fluid by a multi-fluid modulation mode comprising:

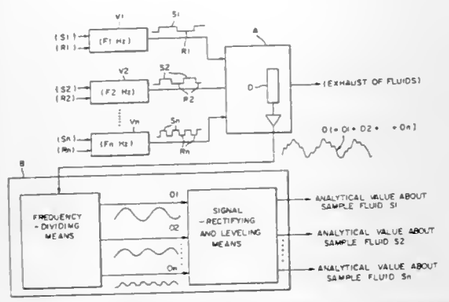
fluid modulation means for subjecting a plurality of sample fluids to a fluid modulation by a reference fluid at frequencies different from each other;

an analytical portion provided with only one detector, to which said respective sample fluids subjected to said fluid modulation are simultaneously and continuously supplied; and

signal treatment means for dividing an output signal from said analytical portion into signal ingredients having respective modulation frequencies for said sample fluids to carry out a rectification and a levelling treatment, said signal treatment means comprising a plurality of band-pass filters disposed in parallel to each other for passing only signals within bands in the vicinity of said respective

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modulation frequencies from the output signal from said detector, a synchronous detector-rectifier disposed in the lower stream of each of said plurality of band-pass filters for detecting and rectifying an output signal from the band-pass filter synchronously with the practical fluid-modulating action by the fluid modulation means corresponding to the frequency of the passband, and a leveller element disposed in the lower reaches of said respective synchronous detector-rectifiers for levelling an output signal from said respective synchronous detector-rectifiers, whereby analytical values about said respective sample fluid are obtained.



5,255,073

APPARATUS FOR EMITTING AND RECEIVING LIGHT

Svante Wallin, Lund, and Leif Unéus, Malmö, both of Sweden, assignors to OPSIS AB, Furulund, Sweden

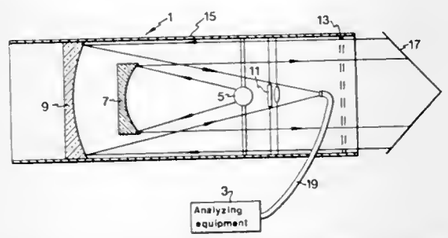
PCT No. PCT/SE90/00334, § 371 Date Nov. 19, 1991, § 102(e) Date Nov. 19, 1991, PCT Pub. No. WO90/14581, PCT Pub. Date Nov. 29, 1990

PCT Filed May 18, 1990, Ser. No. 775,983

Claims priority, application Sweden, May 19, 1989, 8901808

Int. Cl.[5] G01J *3/42*

U.S. Cl. 356—437 **4 Claims**



1. An apparatus for emitting and receiving light, comprising an emitter with a light source (**5**) and a concave mirror (**7**) in the focus of which said light source is positioned, and a receiver (**9**) which is adapted to receive light emitted from the light source and which is connected to equipment (**3**) for analyzing the light received, characterised in that the receiver comprises a concave mirror (**9**) which is disposed behind the mirror (**7**) of the emitter, relative to the light source (**5**), and whose periphery is situated outwardly of the periphery of the mirror (**7**) and whose focus, in which a means (**19**) for transmitting the received light to the analysing equipment (**3**) is provided, is located in front of the light source (**5**), and that the apparatus further comprises a reflector unit (**17**) adapted to reflect the light from the emitter to the receiver, and a movable first shielding element (**11**) adapted to prevent, in a first position, the light from the light source from reaching the transmitter directly and to let through, in a second position, the light from the light source directly to the transmitter (**19**).

5,255,074

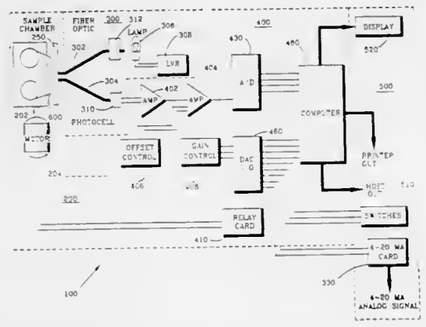
CONCENTRATION MEASURING APPARATUS AND CALIBRATION METHOD

Chris L. Kimbell; Robert M. Hayman, and W. Jay Szinyei, all of Houston, Tex., assignors to Baker Hughes, Inc., Houston, Tex.

Filed Apr. 17, 1991, Ser. No. 686,776

Int. Cl.[5] G01N *21/47, 21/55*

U.S. Cl. 356—445 **4 Claims**



1. An apparatus for measuring the concentration of a fluid in a process stream or environment comprising:

(a) a fluid sensing means comprising,

(1) a reflective sensory media which changes reflectivity at a rate indicative of the concentration of the fluid engaged with said media,

(2) a cassette for securing and dispensing said media, and

(3) a sample chamber in operative association with said cassette for receiving the fluid and engaging the fluid with said media,

(b) an optic transmission means comprising,

(1) a source for generating light in a range of frequencies for enhancing the change of reflectivity of the reflective sensing media,

(2) a detector for receiving and gauging the light intensity and for generating an analog signal characteristic thereof, and

(3) an optic fibre cable for directing the light from said source to said media and for accepting the reflected light from said media for directing the reflected light to said detector,

(c) a signal processing means comprising

(1) an amplifier for receiving and amplifying the analog signal from said detector,

(2) a converter for receiving and changing the amplified analog signal to a digital signal, and

(3) a computer for receiving the digital signal calculating the concentration of the fluid based upon the rate of change of the reflectivity of said media, and

(d) an interface comprising

(1) one or more switches for communicating with said computer to input calibration and operating parameters,

(2) a display for representing the concentration of the fluid calculated by said computer and for representing the calibration parameters input via said switches, and also representing changeable labels of said switches.

5,255,075

OPTICAL SENSOR

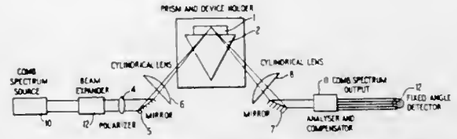
Rosemary Cush, Northampton, England, assignor to GEC-Marconi Limited, Stanmore, England

Filed Mar. 4, 1992, Ser. No. 845,662

Claims priority, application United Kingdom, Mar. 22, 1991, 9106102

Int. Cl.[5] G01N *21/75*

U.S. Cl. 356—445 **27 Claims**



1. A method of testing a biochemical sample, the method comprising providing an optical evanescent wave sensor device having a dielectric cavity and a sensing layer, providing an input beam of light having a comb spectrum with a uniform spacing between adjacent lines or bands of the spectrum, coupling said beam of light to said device to excite resonance in said device and projecting light reflected from said device onto an analyser for producing an output beam of light having a spectrum of a series of bright and/or dark lines or bands corresponding to the lines or bands of the comb spectrum of the input beam of light, sensitizing the sensing layer by the test sample, thereby causing an angular shift in the resonance angle, said lines or bands in the output spectrum being swept across a reference point as a result of said angular shift in the resonance angle and counting said lines or bands swept across said reference point, said angular shift in the resonance angle being equal to the product of the counted number of lines or bands swept across the reference point and the distance between two adjacent lines or bands in the output spectrum.

5,255,076

FLESH CORRECTION CIRCUIT AND METHOD OF FLESH CORRECTION

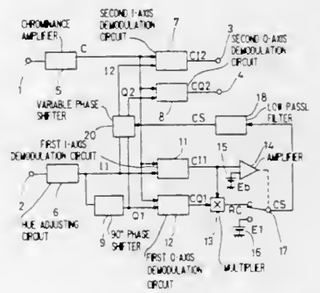
Atsushi Koyano, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 10, 1992, Ser. No. 896,620

Claims priority, application Japan, Nov. 25, 1991, 3-308945

Int. Cl.[5] H04N *9/64*

U.S. Cl. 358—27 **20 Claims**



1. A flesh correction method, comprising the steps of:

(a) generating a first I-axis reference signal and a first Q-axis reference signal from a subcarrier signal;

(b) demodulating a chrominance signal using said first I-axis reference signal and said first Q-axis reference signal thereby generating a first I-axis demodulated signal and a first Q-axis demodulated signal, respectively;

(c) processing said first I-axis demodulated signal and said first Q-axis demodulated signal through a computation process thereby generating an original correction signal;

(d) processing said original correction signal in such a manner that said original correction signal is regarded as valid during a predetermined period in said first I-axis demodulated signal, thereby generating a correction signal;

(e) correcting phases of said first I-axis reference signal and said first Q-axis reference signal by an amount which is determined under the control of said correction signal to generate a second I-axis reference signal and a second Q-axis reference signal; and

(f) demodulating said chrominance signal using said second I-axis reference signal and said second Q-axis reference signal thereby generating a second I-axis demodulated signal and a second Q-axis demodulated signal, respectively.

5,255,077

WHITE BALANCE CONTROL BASED UPON MAGNITUDE OF FLICKER

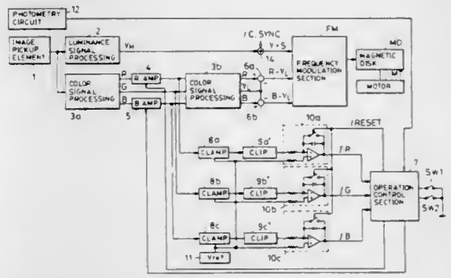
Yasuyuki Yamazaki, Ohmiya; Shigeo Yamagata, Yokohama; Tsutomu Takayama, Kawasaki, and Masao Suzuki, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 589,629, Sep. 28, 1990, abandoned. This application Feb. 8, 1993, Ser. No. 15,058

Claims priority, application Japan, Sep. 29, 1989, 1-255507

Int. Cl.[5] H04N *9/73*

U.S. Cl. 358—29 **11 Claims**



1. An electronic still camera comprising:

image pickup means for receiving light from an object, converting this light into an electrical signal, and outputting a plurality of color image pickup signals corresponding to the received light, and for outputting photometric signals corresponding to a brightness of the object;

flicker detection means for receiving the photometric signals and detecting therefrom a flicker component of the received light;

still image recording means for recording the color image pickup signals as a still image; and

control means for (a) effecting a first exposure with said image pickup means before still image recording is effected by said still image recording means, (b) forming white balance control signals by using first color image pickup signals output from the image pickup means during the first exposure and the flicker component detected by said flicker detection means, (c) determining a magnitude of the detected flicker component, (d) conducting a second exposure to obtain second color image pickup signals, and (e) effecting white balance control of the second color image pickup signals based on the white balance control signals and the determined magnitude of the flicker component.

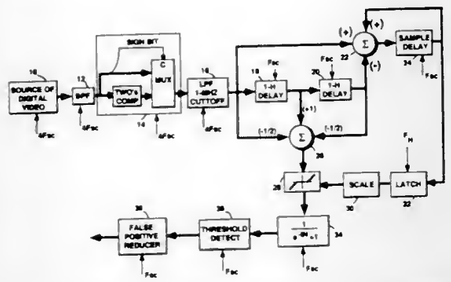
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5,255,078

IMPULSE NOISE DETECTOR FOR A VIDEO SIGNAL RECEIVER

James J. Gibson, Princeton, N.J., assignor to RCA Thomson Licensing Corporation, Princeton, N.J.

Filed Jun. 29, 1992, Ser. No. 906,186
Int. Cl.[5] H04N 5/213
U.S. Cl. 358—36 18 Claims



1. Apparatus for detecting impulse noise in video signals comprising:

a source of video signal;

filter means coupled to said source and having a passband centered in the region of the video signal energy minimum which is located between the video signal spectral region containing maximum luminance energy and the spectral region containing maximum chrominance energy, and arranged to substantially attenuate said spectral regions containing maximum luminance energy and maximum chrominance energy;

a subtractive line comb filter coupled to said filter means, for line comb filtering signal passed by said filter means; and

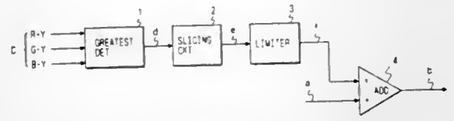
means coupled to said line comb filter for providing a signal having first and second states for signal passed by said line comb filter being greater and lesser than a threshold value respectively.

5,255,079

APPARATUS FOR CORRECTING A COLOR TONE OF A VIDEO SIGNAL

Atsuhisa Kageyama, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Japan

Filed May 30, 1991, Ser. No. 707,509
Claims priority, application Japan, Jun. 5, 1990, 2-148286
Int. Cl.[5] H04N 9/68
U.S. Cl. 358—37 15 Claims



1. A color-tone correcting apparatus comprising:

first means for detecting a greatest signal of first input component video signals, and outputting the detected greatest signal;

second means for removing small-level components from the output signal of the first means, and limiting an amplitude of the output signal of the first means to within a predetermined amplitude; and

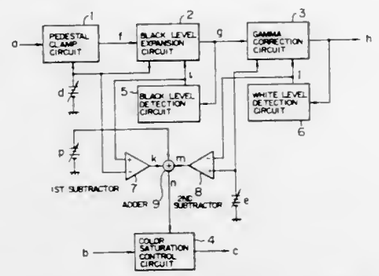
third means for adding an output signal of the second means and a second input component video signal.

5,255,080

CONTRAST CORRECTOR FOR VIDEO SIGNAL

Atsushisa Kageyama, and Hazama Yasue, both of Ibaraki, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 10, 1991, Ser. No. 727,969
Claims priority, application Japan, Jul. 17, 1990, 2-187294
Int. Cl.[5] H04N 9/77, 9/64, 9/69, 5/57
U.S. Cl. 358—39 4 Claims



3. A gray level correction device for video signals including a chrominance signal and a luminance signal which has pedestal level, a black level and a white level, said device comprising:

a pedestal clamp circuit for clamping said pedestal level of said luminance signal to a predetermined pedestal voltage;

a black level detection circuit for detecting said black level of said luminance signal;

a black level expansion circuit for expanding said black level to substantially said pedestal level of said luminance signal in accordance with said black level detected by said black level detection circuit and said predetermined pedestal voltage;

a white level detection circuit for detecting said white level of the luminance signal;

a gamma correction circuit for gamma-correcting said luminance signal with a gamma coefficient selected according to said white level detected by said white level detection circuit and a predetermined white level control voltage;

a first subtractor circuit for calculating a difference between said detected black level and said predetermined pedestal voltage and outputting a first color correction signal;

a second subtractor circuit for calculating a difference between the detected white level and said predetermined white level control voltage and outputting a second color correction signal;

means for outputting a color saturation control voltage;

an adder circuit for adding said first and second color correction signals to the said color saturation control voltage and providing a modified color saturation control signal; and

a color saturation circuit for controlling color saturation of said chrominance signal in accordance with said modified color saturation control signal.

5,255,081

COLOR TELEVISION CAMERA APPARATUS AND METHOD FOR PRODUCING AN ANALOG VIDEO SIGNAL FOR USE WITH A PLURALITY OF VIDEO STANDARD SYSTEM

Kazuyoshi Miyamoto, and Takashi Asaida, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 21, 1992, Ser. No. 839,164
Claims priority, application Japan, Feb. 25, 1991, 3-050213
Int. Cl.[5] H04N 9/04
U.S. Cl. 358—41 10 Claims

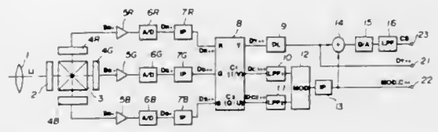
1. A color television camera apparatus comprising:

image signal generating means for generating digital three-color image signals as a 2fs-rate, in which fs≃4f_{sc} and f_{sc} is a sampling clock rate;

luminance signal generating means for selectively generating a digital luminance signal at a 2fs-rate so as to form a 2fs-rate digital luminance signal corresponding to a selected video standard system selected from among a plurality of video standard systems from the digital three-color image signals;

chrominance signal generating means for selectively generating digital chrominance signals at a fs-rate so as to form fs-rate digital chrominance signals corresponding to the selected video standard system from the digital three-color image signals;

modulating means for modulating said fs-rate digital chrominance signals corresponding to the selected video standard system;



rate converting means having filter means for performing filtering represented by a selected transfer function selected from among a plurality of transfer functions for converting modulated chrominance signals from said modulating means into 2fs-rate modulated chrominance signals, in which the selected transfer function is selected according to the selected video standard system;

composite video signal generating means for generating a digital composite video signal at a 2fs-rate according to the 2fs-rate digital luminance signal and the 2fs-rate modulated chrominance signals from the rate converting means; and

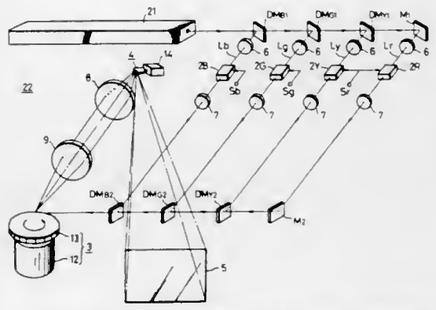
digital-to-analog converting means for converting said 2fs-rate digital composite video signal into an analog composite video signal.

5,255,082

LASER BEAM COLOR IMAGE DISPLAY APPARATUS

Sakuya Tamada, Tokyo, Japan, assignor to Sony Corporation, Japan

Filed Nov. 21, 1991, Ser. No. 795,847
Claims priority, application Japan, Nov. 30, 1990, 2-338351
Int. Cl.[5] H04N 9/31
U.S. Cl. 358—60 9 Claims



1. A laser beam color image display apparatus comprising:

first laser beam generating means for generating a blue laser beam;

second laser beam generating means for generating a green laser beam;

third laser beam generating means for generating a red laser beam;

said third laser beam generating means comprising mixing means for adding a laser beam having a wavelength of 568.2 nm and a laser beam having a wavelength of 647.1 nm by way of active mixture, thereby generating the red laser beam; and

scanning means for scanning a display screen with said blue laser beam, said green laser beam, and said red laser beam to display a color image on the display screen;

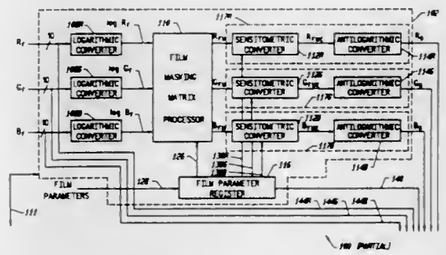
said third laser beam generating means further comprising first modulating means for modulating the intensity of said laser beam having the wavelength of 568.2 nm with a red signal component of a video signal and second modulating means for modulating the intensity of said laser beam having the wavelength of 647.1 nm with said red signal component.

5,255,083

DIGITAL COLOR CORRECTION SYSTEM AND METHOD

Patrice J. Capitant, Los Altos; Vinson R. Perry, San Carlos; David C. Collier, Gilroy, and John Carlucci, Sunnyvale, all of Calif., assignors to Sony Corporation of America, Park Ridge, N.J.

Filed Jun. 5, 1991, Ser. No. 710,704
Int. Cl.[5] H04N 1/70
U.S. Cl. 358—527 43 Claims



1. A digital film color corrector for correcting a film color signal representing a portion of a colored optical film image in accordance with a plurality of color correction parameters associated with color film characteristics, the color corrector comprising:

a color signal port for receiving a digital film color signal representing a color film dye density;

a parameter signal port for receiving a plurality of digital film color correction signals representing a plurality of color film characteristics including film color masking; and

film color corrector means for selectively correcting the received digital film color signal in accordance with the received digital film color correction signals, wherein the received digital film color signal is selectively modified to represent a color film exposure level.

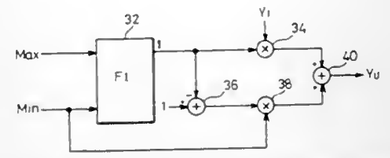
VOL 1155 ISS 3 OCT 19 1993 UMI

5,255,084

IMAGE PROCESSING APPARATUS FOR DETERMINING RATES OF OCR FOR EVERY COLORS BY FUNCTIONS OF RESPECTIVE COLOR SIGNALS

Seiichiro Morikawa, Kanagawa, and Hiroshi Shirakura, Tokyo, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 5, 1991, Ser. No. 755,373
Claims priority, application Japan, Sep. 14, 1990, 2-245608
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—527 4 Claims



1. An image processing apparatus for determining the rate of UCR (under color removal) for each color by a function of each of color signals, said image processing apparatus comprising:

means for determining the maximum value Max and the minimum value Min of each of input signals Yi, Mi and Ci; and

means for determining the rates of UCR indicative of Y_U, M_U and C_U from the input signals Yi, Mi, Ci and the maximum value Max and the minimum value Min, using respective functions F_Y, F_M and F_C, said Y_U, M_U and C_U being given by the following equations:

$$Y_U = F_Y(\text{Max, Min, Yi})$$

$$M_U = F_M(\text{Max, Min, Mi})$$

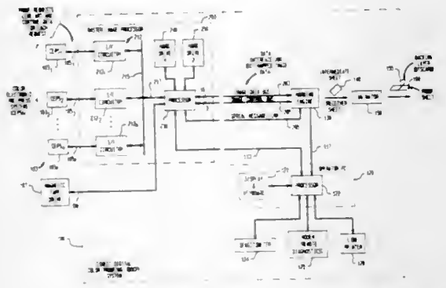
$$C_U = F_C(\text{Max, Min, Ci}).$$

5,255,085

ADAPTIVE TECHNIQUE FOR PROVIDING ACCURATE TONE REPRODUCTION CONTROL IN AN IMAGING SYSTEM

John P. Spence, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 782,940, Oct. 25, 1991. This application Apr. 22, 1992, Ser. No. 872,258
Int. Cl.[5] H04N *1/40, 1/46*
U.S. Cl. 358—527 32 Claims



1. An imaging system for generating an output image that exhibits a pre-defined tone reproduction characteristic and is substantially free of corruption attributable to a native tone reproduction characteristic of the system, said system comprising:

adaptation means, responsive to first values representing a pre-defined tone reproduction characteristic at a first pre-defined operating condition of the system and to second values representing a native tone reproduction characteristic of the system at a second pre-defined operating condition of said system, for varying said second values in a pre-defined manner and in response to an operational difference between said first and second pre-defined operating conditions so as to form third values and for modifying, in response to said first and third values, each one of a plurality of incoming digitized values that collectively represent an input image so as to form modified values, wherein said third values collectively represent the native tone reproduction characteristic of said system that is expected to occur at the first pre-defined operating condition; and

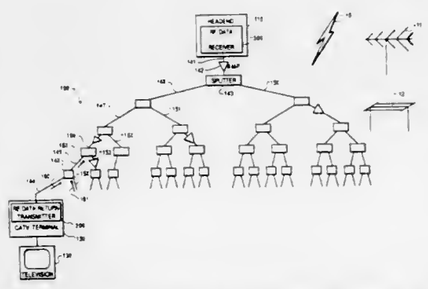
means, responsive to said adaptation means, for generating an output image, at said first pre-defined operating condition, in response to said modified values; whereby said output image exhibits said pre-defined tone reproduction characteristic substantially free of corruption from the native tone reproduction characteristic of the imaging system at the first predefined operating condition.

5,255,086

METHOD AND APPARATUS FOR RF DATA TRANSFER IN A CATV SYSTEM

Jay C. McMullan, Jr.; David J. Naddor, both of Doraville, and Robert J. Beyers, II, Snellville, all of Ga., assignors to Scientific-Atlanta, Inc., Norcross, Ga.

Division of Ser. No. 503,422, Apr. 2, 1990, Pat. No. 5,142,690, which is a continuation-in-part of Ser. No. 498,084, Mar. 20, 1990, Pat. No. 5,155,590, and a continuation-in-part of Ser. No. 498,083, Mar. 20, 1990. This application Aug. 3, 1990, Ser. No. 562,675
Int. Cl.[5] H04H *1/02*
U.S. Cl. 358—86 18 Claims



1. A method of allocating a population of remote units among a plurality of groups by a central control for a data return system, said remotes units each having a unique identifier respectively associated therewith, the method comprising the steps of:

(a) selecting a maximum number of remote units per group and a minimum number of groups;

(b) assigning said remote units to the minimum number of groups of remote units in accordance with the respective unique identifiers;

(c) determining an average number of remote units per group as the remote units are assigned thereto;

(d) comparing the average number of remote units per group to the maximum number of remote units per group;

(e) changing the number of groups if the average number of remote units per group exceeds the maximum number of remote units per group;

(f) repeating steps (c)–(e) while the average number of remote units per group is greater than the maximum number of remote units per group; and

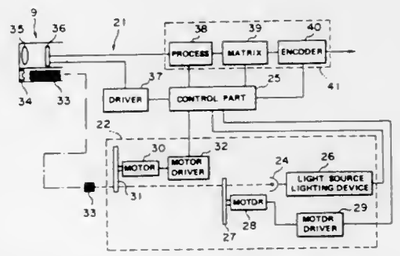
(g) communicating the respective group assignments to the remote units from the central control.

5,255,087

IMAGING APPARATUS AND ENDOSCOPE APPARATUS USING THE SAME

Kazunari Nakamura, and Akira Takano, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Division of Ser. No. 583,277, Sep. 7, 1990, Pat. No. 5,105,269, which is a division of Ser. No. 449,436, Dec. 11, 1989, Pat. No. 4,974,076, which is a division of Ser. No. 128,118, Nov. 30, 1987, abandoned. This application Dec. 27, 1991, Ser. No. 814,742
Claims priority, application Japan, Nov. 29, 1986, 61-284614; Nov. 29, 1986, 61-284615; Oct. 20, 1987, 62-266060; Nov. 17, 1987, 62-290302
The portion of the term of this patent subsequent to Oct. 31, 2006, has been disclaimed.
Int. Cl.[5] H04N *7/18;* A61B *1/06*
U.S. Cl. 358—98 7 Claims



1. An imaging apparatus comprising:

an image forming optical system for forming an object image;

an imaging means having a sensitivity to a wavelength range ranging from a visible range to a range other than the visible range and using a solid state imaging device converting an image formed by said image forming optical system into an electric signal;

a wavelength range dividing means for dividing an illuminating light into a plurality of wavelength ranges within a range in which said imaging means has a sensitivity and one of the wavelength ranges having a sensitivity to a wavelength range of high absorbance of pigment injected into a living body;

a selecting means for selecting one or more wavelength range divided by said wavelength range dividing means; and

a signal processing means for processing output signals of said imaging means corresponding to an illuminating light of each wavelength range selected by said selecting means by allotting said output signals to respective different color signals so as to process video signals.

5,255,088

SYSTEM AND PROCESS FOR VIDEO MONITORING A WELDING OPERATION

Gary J. Thompson, Saugus, Calif., assignor to Arc Machines, Inc., Pacoima, Calif.

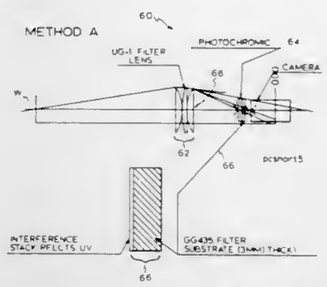
Filed Jan. 29, 1992, Ser. No. 827,615
Int. Cl.[5] H04N *7/18*
U.S. Cl. 358—101 10 Claims

1. A camera assembly for viewing an area of high optical contrast such as a welding operation, the camera assembly comprising:

a video camera;

means for forming a negative image, said negative image means darkening in response to light passed to it and focussed upon it; and

a first lens, said first lens capable of focussing an image of the area upon said negative image means, said negative image means interposed between said video camera and said first lens, whereby said image from said first lens passes



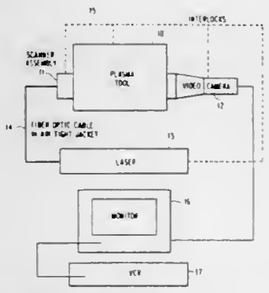
through its own negative image in said negative image means resulting in a succeeding image having reduced optical contrast so that an accurate image of said area is transmitted by said video camera.

5,255,089

PORTABLE PARTICLE DETECTOR ASSEMBLY

David E. Dybas, Clintondale, N.Y.; Kurt L. Haller, Colchester, Vt.; Edward F. Patterson, and Gary S. Selwyn, both of Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 26, 1992, Ser. No. 858,183
Int. Cl.[5] H04N *7/18*
U.S. Cl. 358—101 17 Claims



1. A particle detector comprising:

laser means for generating laser light;

scanner means for scanning said laser light into a reaction chamber of a plasma processing tool within which particles are to be detected, said scanner means comprising:

a light tight enclosure;

coupling means for coupling the laser light into said enclosure;

moving mirror means aligned with said coupling means for deflecting laser light from said scanning means in a scanning motion; and

a window in said enclosure adapted to be fitted adjacent a window of said plasma processing tool and through which the laser light is propagated;

video camera means for generating a video signal of laser light scattered by particles within said plasma processing tool; and

processing means for processing and displaying an image of said video signal.

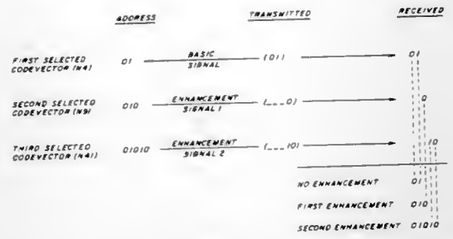
VOL 1155 ISS 3 OCT 19 1993 UMI

5,255,090

PROGRESSIVE TRANSMISSION OF VECTOR QUANTIZED DATA

Paul D. Israelsen, North Logan, Utah, assignor to Scientific-Atlanta, Inc., Atlanta, Ga.

Filed Nov. 19, 1991, Ser. No. 794,493
Int. Cl.[5] H04N 7/13, 7/133, 7/137
U.S. Cl. 358—133 37 Claims



1. In a tree search, variable rate vector quantization data compression system of the type the organizes an image frame into blocks of input data, and converts each block of input data to a multi-dimensional input vector, and having a codebook with plural levels of codevectors, each codevector being representative of a possible input vector, the codevectors at each successive level representing possible input vectors with greater accuracy than codevectors at a preceding level, each codevector having an associated address, a method comprising the steps of:

a) for each input vector, automatically selecting a plurality of codevectors, each codevector being selected from a different level of the codebook;

b) for a first one of the selected codevectors, transmitting data indicative of the address associated therewith; and,

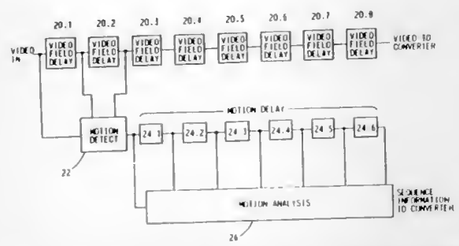
c) for each of the other selected codevectors, transmitting data indicative of at least a portion of the address of each other selected codevectors that, in combination with previously transmitted address data, uniquely identifies each other selected codevector.

5,255,091

DIGITAL TELEVISION STANDARDS CONVERSION

David Lyon, Farnham, England, and Guy R. Caplin, Otterburn Park, Canada, assignors to Snell & Wilcox Limited, Watereoville, England

PCT No. PCT/GB90/01619, § 371 Date Aug. 19, 1991, § 102(e) Date Aug. 19, 1991, PCT Pub. No. WO91/06182, PCT Pub. Date May 2, 1991
PCT Filed Oct. 22, 1990, Ser. No. 720,512
Claims priority, application United Kingdom, Oct. 20, 1989, 8923649; Mar. 30, 1990, 9007214
Int. Cl.[5] H04N 7/01, 9/11
U.S. Cl. 358—140 17 Claims



1. A television standards conversion process for use with an input film originating video signal, comprising the steps of:

comparing successive corresponding fields to detect pairs of duplicate fields deriving from the same film frame;

eliminating one field of each of said pairs from the video signal to leave video frames corresponding one for one with the original film frames; and

conducting line interpolation on said video frames to provide video fields at a line standard different from that of the input video signal; wherein:

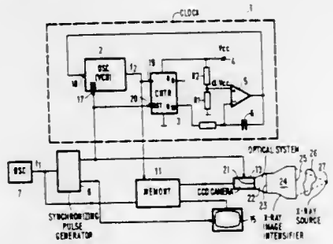
the step of comparing fields comprises storing at least four successive fields of the video signal to provide a multi-field delay between the step of comparing fields and the step of eliminating one field, in order to look beyond a video tape cut for detection of duplicate fields.

5,255,092

PICK-UP AND/OR DISPLAY DEVICE, AND AN IMAGING SYSTEM COMPRISING SUCH A DEVICE

Antonie R. M. Loonen, Eindhoven, Netherlands, assignor to U.S. Philips Corp., New York, N.Y.

Filed Nov. 20, 1991, Ser. No. 795,422
Claims priority, application Netherlands, Dec. 3, 1990, 9002652
Int. Cl.[5] H04N 5/14, 5/67, 5/6
U.S. Cl. 358—160 11 Claims



1. A video processing device comprising:

a memory for storing a video signal;

a clock for supplying read pulses to the memory; and

a synchronizing pulse generator for applying synchronizing pulses to a clock input of the clock;

wherein said clock comprises an oscillator having an output signal at an output of the oscillator which is adjustable in frequency in response to a frequency set signal at a frequency set input of the oscillator, said output of the oscillator coupling said output signal to the memory and to an integrating comparator circuit having an output coupled to the frequency set input of the oscillator, said integrating comparator circuit being configured to vary the frequency set signal at said frequency set input when there is a difference between a mean input signal and a predetermined reference voltage, the oscillator having a trigger input which comprises the clock input of said clock, the synchronizing pulses from said synchronizing pulse generator being for switching the oscillator off and on.

5,255,093

APPARATUS AND A METHOD FOR LIMITING GAIN IN A DIGITAL GAMMA CORRECTOR

Robert J. Topper, Hatboro, Pa., and Lee R. Dischert, Medford, N.J., assignors to Panasonic Technologies, Inc., Secaucus, N.J.

Filed Jun. 19, 1992, Ser. No. 901,372
Int. Cl.[5] H04N 5/202
U.S. Cl. 358—164 8 Claims

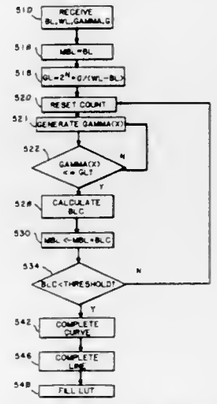
1. A method for reducing the maximum gain applied to an input video signal during gamma correction in a camera having a black level, a white level, a gamma exponent value, a desired maximum gain value and a count of possible input signal values, the method comprising the steps of:

a) calculating a gain limit value from the black level, the white level, the desired maximum gain value and the count;

b) generating a linear gamma function having a gain which equals said gain limit value;

c) generating a plurality of non-linear gamma functions having respective modified black levels;

d) selecting one of said non-linear gamma functions having a gain which substantially equals the gain limit value at a selected input signal value for which said linear and non-linear gamma functions have substantially equal values;



e) defining a gain limited gamma function having values which equal the values of the selected non-linear gamma function for input signals with values greater than the selected input signal value, and having values equal to the values of the linear gamma function for input signal values between the black level and the selected input signal value; and

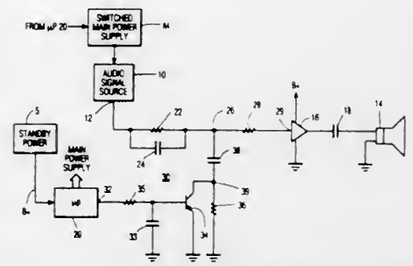
f) applying gamma correction to said video signal using the values in said gain limited gamma function to obtain a gamma corrected video signal.

5,255,094

MUTING CIRCUIT FOR ELIMINATING TRANSIENT SIGNALS GENERATED DUE TO POWER SUPPLY TURN-ON AND TURN-OFF

Lui T. Yong, and Goh S. Tiam, both of Singapore, Singapore, assignors to Thomson Consumer Electronics, S.A., Courbevoie, France

Filed Oct. 10, 1990, Ser. No. 594,777
Int. Cl.[5] H04N 5/60
U.S. Cl. 358—165 6 Claims



1. A muting circuit for eliminating transient generated signals due to power supply turn-on and turn-off comprising:

a first amplifier having a signal input terminal,

a second amplifier having a signal output terminal having a DC status and DC coupled to the signal input terminal of the first amplifier by a path,

a switchable power supply coupled to the second amplifier,

a microprocessor for switching the power supply between an "on" state and an "off" state, said microprocessor providing a microprocessor signal indicative of the power supply status, and

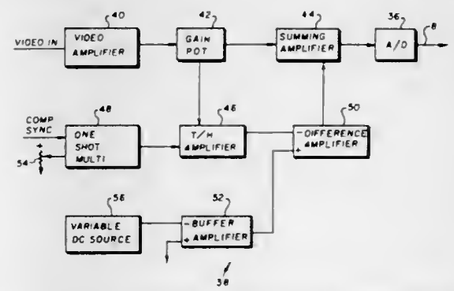
means AC coupled to a junction in the path and responsive to the microprocessor signal for eliminating transient signals at the junction caused by switching the power supply from one state to another state but without disturbing the DC status of the junction.

5,255,095

DC RESTORE CIRCUIT IN A VIDEO INTERFACE FOR MEDICAL IMAGING SYSTEM

Peter J. McNeilly, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 26, 1991, Ser. No. 797,840
Int. Cl.[5] H04N 5/18
U.S. Cl. 358—172 2 Claims



1. A DC restore interface apparatus for a medical imaging system comprising:

input means for receiving an analog video signal from a medical imaging source, said analog video signal having an active video portion and a composite sync portion with a back porch interval;

a summing amplifier having first and second inputs;

means for coupling said analog video signal from said input means to said first input of said summing amplifier;

a difference amplifier having inverting and non-inverting inputs connected to said second input of said summing amplifier;

a track and hold amplifier, coupled to the inverting input of said difference amplifier, for sampling the signal level of said analog video signal during said back porch interval, said sampling being accomplished before said analog signal is input to said summing amplifier;

a one shot multivibrator connected to said track and hold amplifier for determining the timing and duration of said sampling by said track and hold amplifier;

a buffer amplifier connected to said noninverting input of said difference amplifier, and having inverting and non-inverting inputs, said non-inverting input being connected to ground;

a variable direct current (DC) source connected to the inverting input of said buffer amplifier; and

an analog-to-digital converter connected to the output of said summing amplifier; wherein said output of said difference amplifier is a negative DC voltage which is summed with said analog video signal in said summing amplifier so that the output video signal from said summing amplifier is dynamically shifted to the reselected range of said analog-to-digital converter.

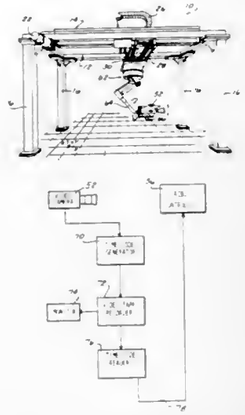
VOL 1155 ISS 3 OCT 19 1993 UMI

5,255,096

VIDEO TIME CODE SYNCHRONIZED ROBOT CONTROL APPARATUS

William M. Boyle, 2092 Saint Andrews, Rochester Hills, Mich. 48309

Filed Apr. 10, 1992, Ser. No. 866,446
Int. Cl.[5] H04N 7/18
U.S. Cl. 358—93 14 Claims



1. A video time code synchronized robot control apparatus comprising:
a robot including an arm movable through a path of movement;
a video camera, mounted on the arm of the robot, for generating video signals during operation of the video camera;
time code generator means for generating time code information;
video image storing means, responsive to the video signals from the video camera and the time code information from the time code generator means for storing a composite signal formed of the video signals and the time code information on a storage medium;
time code reader means, responsive to the composite video signal from the video image storing means, for decoding the time code information for each frame of the composite signal; and
robot controller means for controlling the path of movement of the robot arm in accordance with a stored control program, the robot controller means being responsive to the time code information for storing the position coordinates of the robot arm along the path of movement for each distinct time code associated with the video signal on a video signal frame by frame basis and for synchronizing the movement of the robot arm along its predetermined path of movement with the time code information during the generation of video signals and time code information from the storage medium on a frame-by-frame basis.

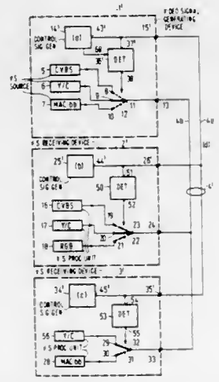
5,255,097

VIDEO SYSTEM

Richard C. Spiero, and Theodorus H. C. Van Groningen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 14, 1990, Ser. No. 628,275
Claims priority, application Netherlands, Jan. 19, 1990, 9000130
Int. Cl.[5] H04N 5/14, 5/46
U.S. Cl. 358—181 23 Claims

1. Video system comprising a video signal generating device, at least one video signal receiving device, and a signal bus, the video signal generating device having a video signal output for producing a video signal and the video signal receiving device having a video signal input for receiving the video signal, the video signal input of the at least one video signal receiving device being coupled to the video signal output of the video signal generating device over the signal bus, characterized in that the video signal generating device comprises means for generating a video signal according to x number of video signal formats from a total of y number of possible video signal formats, in that the at least one video signal receiving device comprises means for receiving and processing a video signal according to z number of video signal formats from the y number of possible video signal formats, in that for y it holds that $y>1$, and for x and z it holds that $1 \leqq x \leqq y$ and $1 \leqq z \leqq y$, in that the video signal generating device further comprises a control signal generator for generating a first control signal for each of the x video signal formats and for generating a second control signal for each of the y-x remaining video signal formats, and for producing the x first and y-x second control signals at control signal output means of the video signal generating device, in that the at least one video signal receiving device further comprises a further control signal generator for generating the first control signal for each of the z video signal formats and for generating the second control signal for each of the y-z remaining video signal formats and for producing the z first and y-z second control signals at control signal output means of the at least one video



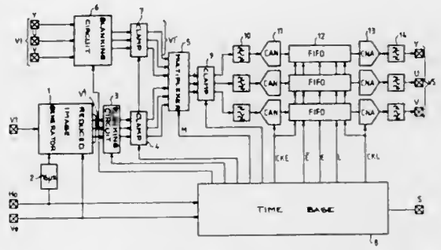
signal receiving device, in that the control signal output means of the video signal generating device and the control signal output means of the at least one video signal receiving device are coupled, respectively, to each other over the signal bus, in that the video system further comprises a detector unit having means for establishing, in response to the first and second control signals, the p video signal formats common to the video signal generating device and the at least one video signal receiving device from the y possible video signal formats, in that the detector unit has input means coupled, respectively, to the control signal output means of one of said video signal generating device and said at least one video signal receiving device and has an output for producing, for $p=1$, a detector signal indicative of the one common video signal format, and for producing, for $p \geqq 2$, a detector signal that is indicative of one of the p common video signal formats, and for applying the detector signal to the video signal generating device and the at least one video signal receiving device, in that the video signal generating device further comprises means for causing said video signal generating device to produce a video signal at its video signal output in accordance with the common video signal format established by the detector unit in response to the detector signal, and in that the at least one video signal receiving device further comprises means for adjusting the at least one video signal receiving device in response to the detector signal so that the video signal can be processed by the at least one video signal receiving device in accordance with the video signal format determined by the detector unit.

5,255,098

PROCESS FOR THE INSERTION OF A SUPPLEMENTARY VIDEO INFORMATION SET OUTSIDE A MAIN IMAGE

Michel Poivet, and Laurent Perdrieau, both of Illkirch, France, assignors to Laboratoire Europeen de Recherches Electroniques Avancees, Courbevole, France

Continuation of Ser. No. 570,143, Aug. 20, 1990, abandoned.
This application Jun. 4, 1992, Ser. No. 893,655
Claims priority, application France, Aug. 23, 1989, 89 11166
Int. Cl.[5] H04N 7/01, 7/00, 5/46
U.S. Cl. 358—183 10 Claims



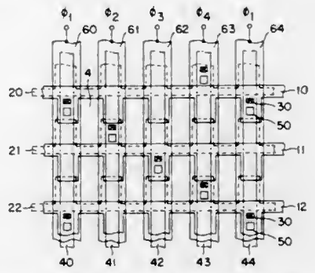
1. A process comprising displaying a 4:3 aspect ratio picture forming a main image on a 16:9 tube screen, said 4:3 aspect ratio picture occupying a large fraction of the screen, and displaying additional 4:3 pictures constituted by supplementary video information set in the remaining unused portion of the 16:9 tube screen, which process consists, before processing a particular line of said main image for display, of inserting said supplementary information set during the line return interval preceding said particular line of said main image.

5,255,099

SOLID STATE PICKUP DEVICE WITH STRAP LINE IN VERTICAL REGISTER

Kozo Orihara, Tokyo, Japan, assignor to Nec Corporation, Tokyo, Japan

Filed Jan. 17, 1992, Ser. No. 822,079
Claims priority, application Japan, Jan. 23, 1991, 3-6307
Int. Cl.[5] H04N 3/14, 5/335
U.S. Cl. 358—213.23 7 Claims



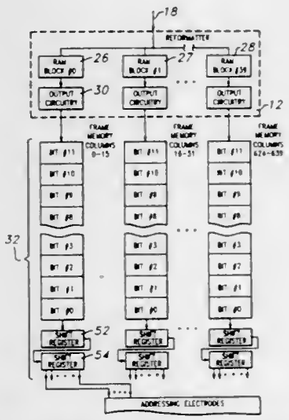
1. A solid state image pickup device, comprising:
at least one vertical register which includes:
a transfer channel,
a group of transfer electrodes driven by a vertical driving pulse and formed by crossing said transfer channel, said group of transfer electrodes including at least one first transfer electrode and at least one second transfer electrode,
an intermediate layer of polysilicon formed along said transfer channel and over said group of transfer electrodes,
an aluminum wiring layer formed along said transfer channel and over said intermediate layer of polysilicon,
at least one first contact connecting electrically at least one transfer electrode of said group transfer electrodes and said intermediate layer of polysilicon, and
at least one second contact connecting electrically said intermediate layer of polysilicon and said aluminum wiring layer,
wherein for said at least one vertical register at least one said first contact is respectively formed over one of one said first transfer electrode and one said second transfer electrode and at least one said second contact is respectively formed over one of one of said first transfer electrode and one said second transfer electrode driven by a vertical driving pulse of the same phase.

5,255,100

DATA FORMATTER WITH ORTHOGONAL INPUT/OUTPUT AND SPATIAL REORDERING

Paul M. Urbanus, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 6, 1991, Ser. No. 755,981
Int. Cl.[5] H04N 5/74
U.S. Cl. 358—231 11 Claims



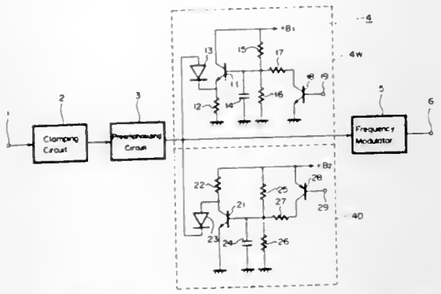
1. A method for displaying data from a standardized digital video signal comprising:
a. holding digital samples in a buffer, wherein the width of said buffer corresponds to the width of one digital sample;
b. reading said digital samples in words, wherein said words correspond to columns of said buffer;
c. storing said words in a frame memory;
d. transferring the contents of said frame memory to the inputs of a spatial light modulator array;
e. controlling said array to display said data; and
f. repeating steps a–e until said standardized video data stream is no longer available.

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5,255,101
APPARATUS FOR RECORDING VIDEO SIGNAL THROUGH FREQUENCY MODULATION WITH VARIABLE CLIPPING LEVEL

Shunji Okada, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 22, 1991, Ser. No. 688,475
Claims priority, application Japan, Apr. 24, 1990, 2-108076
Int. Cl.[5] H04N 5/91
U.S. Cl. 358—340 2 Claims



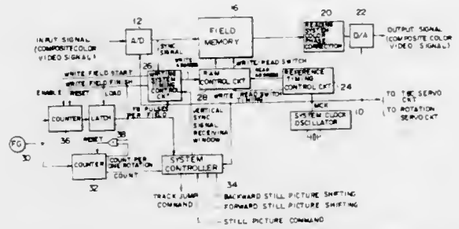
1. An apparatus for recording a video signal through frequency modulation on a recording medium, comprising:
a preemphasizing circuit means for preemphasizing the video signal;
a clipping circuit means for clipping the preemphasized video signal at a clipping level, said clipping circuit means having means for varying the clipping level depending on a type of the recording medium;
a frequency modulator means for frequency-modulating the clipped preemphasized video signal; and
said means for varying comprising a white clipping circuit having a white clipping circuit control signal input and a dark clipping circuit having a dark clipping circuit control signal input, wherein the recording medium types comprise evaporated tape and metal tape, and wherein the for evaporated tape a relatively low level control signal is applied at said white clipping level control signal input and a relatively high control signal is applied to said dark clipping level circuit control input, and for the metal tape, the white clipping level circuit control signal input has a relatively high control signal applied thereto and said dark clipping level control signal input has a relatively low control signal applied thereto.

5,255,102
OPTICAL DISC PLAYBACK DEVICE HAVING UNIFORM FRAME INTERVAL TRACK JUMP BASED ON DISC ROTATION ANGLE

Tatsuo Fushiki, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Sep. 29, 1989, Ser. No. 416,274
Claims priority, application Japan, Sep. 30, 1988, 63-247158; Sep. 30, 1988, 63-247159
Int. Cl.[5] H04N 5/76
U.S. Cl. 358—342 7 Claims

1. An optical disc playback device comprising:
a picture memory storing picture data reproduced from an optical disc;
memory control means for storing, when a still picture command has been given, picture data which is being reproduced in said picture memory and reading out the stored picture data repeatedly;
rotation signal generation means for generating, at a predetermined interval, a predetermined number of signals for each rotation of a disc motor coupled to the optical disc, said predetermined interval corresponding to a rotation angle determined by dividing a rotation of the disc motor into a predetermined number of equal rotational increments;
a system control means for detecting, when the still picture command has been given, a record position on the optical disc at which the picture data stored in said picture memory is recorded, and supplying a jump pulse to a tracking actuator of an optical pickup each time a position on the optical disc which has a specific relation with the record position has been detected in response to the signal generated by said rotation signal generation means, thereby to cause a beam spot to jump a predetermined number of tracks in a backward direction; and
recorded data angle amount detection means for detecting,



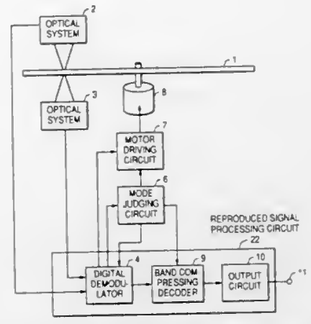
in response to the signal generated by said rotation signal generation means, an angle amount of recording on the optical disc of the picture data stored in said picture memory in the still picture playback mode;
said system control means detecting, when a still picture shifting command in a backward direction has been given, a position on the optical disc at which a forward picture data of one frame before the picture data stored in said picture memory is recorded from the detected recorded data angle amount to cause the optical pickup to perform track jump to a position before said position, and said memory control means storing the forward picture data in said picture memory and reading out the stored forward picture data repeatedly upon reaching the recorded position of the forward picture data.

5,255,103
OPTICAL DISK APPARATUS FOR SELECTIVELY RECORDING AND REPRODUCING SIGNALS HAVING DIFFERENT BIT RATES

Masahiro Honjo, Sakai, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 19, 1991, Ser. No. 794,013
Claims priority, application Japan, Nov. 20, 1990, 2-317216
Int. Cl.[5] H04N 5/76, 5/85
U.S. Cl. 358—342 7 Claims

1. An optical disc apparatus for reproducing a digital signal recorded on a recording disk in the form of a modulated coded signal, said modulated coded signal being one of a first modulated coded signal having a bit rate A1 and a second modulated coded signal having a bit rate A2 which is different from the bit rate A1, said apparatus comprising:
an optical reproducing means for reproducing said modulated coded signal from said recording disk to obtain a reproduced modulated coded signal;
a reproduced signal processing means for demodulating and decoding the reproduced modulated coded signal to obtain a reproduced digital signal;
a disk driving means for deriving said recording disk, said disk driving means being operable in a first mode in which said disk driving means drives said recording disk so as to rotate at one of a specified rotating speed K and specified linear velocity V and being operable in a second mode in which said disk driving means drives said recording disk to rotate at one of substantially a rotating speed K×A2/A1 and a linear velocity V×A2/A1;
a mode control means for controlling said disk driving

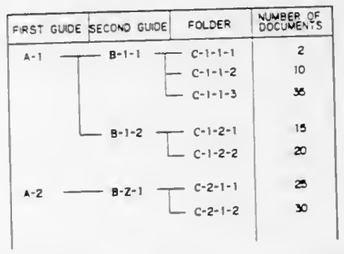


means to operate in said first mode when said modulated coded signal is said first modulated coded signal and to operate in said second mode when said modulated coded signal is said second modulated coded signal.

5,255,104
METHOD FOR DISPLAYING AMOUNT OF DOCUMENTS

Yasuhiro Kajigaya, Isehara, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 22, 1991, Ser. No. 659,163
Claims priority, application Japan, Feb. 22, 1990, 2-039595
Int. Cl.[5] H04N 1/40; G03G 15/00
U.S. Cl. 358—403 12 Claims

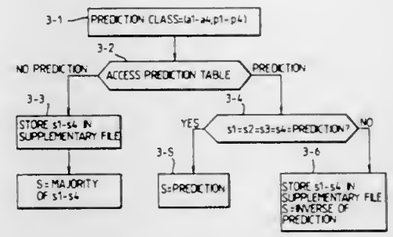


1. A method for displaying an amount of documents in which a plurality of stored documents are distributed in accordance with contents thereof, guide lines are provided on borders of the distributed documents, and the guide lines are displayed on a display screen, said method comprising the steps of:
(a) determining a state of respective guide lines in response to a number of documents collected together which have a same classification; and
(b) displaying the guide lines with a thickness thereof, a spacing therebetween or a hue therebetween which is proportional to the state determined in said step (a) said step (b) comprises the substep of:
i) displaying the guide lines with a change in spacing between the guide lines which is proportional to the state determined in said step (a);
the spacing between guide lines is incrementally variable by multiples of a folder interval, the folder interval being set at either a first predetermined interval value or a second predetermined interval value depending on whether a number of documents is above or below a threshold, respectively.

5,255,105
ENCODING IMAGE DATA

Mark A. Ireton, Manchester, and Costas S. Xydeas, Wilmslow, both of United Kingdom, assignors to International Computers Limited, London, United Kingdom

Continuation of Ser. No. 659,020, Feb. 21, 1991. This application Apr. 22, 1993, Ser. No. 51,571
Claims priority, application United Kingdom, Mar. 17, 1990, 9006080
Int. Cl.[5] H04N 1/41
U.S. Cl. 358—426 6 Claims



1. A method of encoding a first image to produce a second image of lower resolution than the first image each pixel in the second image corresponding to a superpixel group of pixels in the first image, the method comprising storing a table comprising a plurality of entries some of said entries containing prediction codes indicating a predicted pixel colour and others of said entries containing a code indicating that no prediction is provided, the method further comprising the steps:
(a) scanning the superpixels of the first image in a fixed scan pattern,
(b) for each superpixel in the first image, using values of a plurality of previously scanned pixels in the first image to form an address value,
(c) using the address value to address said table, to access an entry from said table,
(d) if said entry contains said code indicating that no prediction is provided, setting the colour of said corresponding pixel in the second image to a colour based on the colours of the pixels in the superpixel, and storing the actual pixel pattern of the superpixel in a supplementary file,
(e) if said entry contains a prediction code, comparing the prediction provided by said prediction code with the actual pixel pattern of the superpixel,
(f) if the prediction matches the actual pattern, setting the corresponding pixel in the second image to the predicted colour, and
(g) if the prediction does not match the actual pattern, setting the corresponding pixel in the second image to the inverse of the predicted colour and storing the actual pattern in said supplementary file.

5,255,106
METHOD AND APPARATUS FOR DELIVERING SECURED HARD-COPY FACSIMILE DOCUMENTS

Peter D. Castro, New York, N.Y., assignor to International Integrated Communications, Ltd., New York, N.Y.

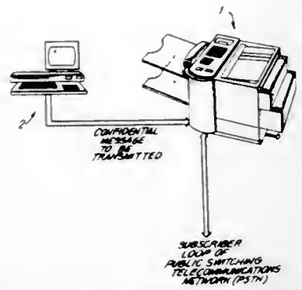
Continuation-in-part of Ser. No. 612,325, Nov. 13, 1991. This application Feb. 5, 1991, Ser. No. 651,027
Int. Cl.[5] G03B 27/00
U.S. Cl. 358—400 75 Claims

1. Apparatus for selectively transmitting and receiving facsimile information, comprising:
scanning means for scanning a first document bearing information and producing a first facsimile data signal representative of said information;
facsimile transmitting means for transmitting said first facsimile data signal to a selected receiving station remote from said apparatus;

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facsimile receiving means for receiving a second facsimile data signal from a transmitting station remote from said apparatus said second facsimile second data signal being representative of information contained in a second document disposed at said remote transmitting station;

facsimile recording means for recording a facsimile of said second document on the basis of said received second facsimile data signal;



facsimile information concealing means for concealing at least a portion of the information contained in said facsimile of said second document; and

control means for selectively controlling the operation of said scanning means, said facsimile transmitting means, said facsimile receiving means, said facsimile recording means, and said facsimile information concealing means.

5,255,107

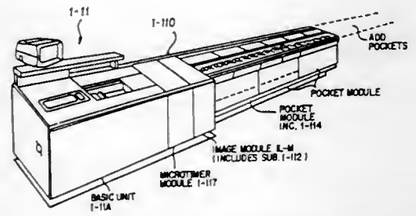
INTEGRATED MULTI-BEAM IMAGING ASSEMBLY

Gary Copenhaver, Canton; Johan Bakker, Union Lake, and John Vala, Plymouth, all of Mich., assignors to Unisys Corporation, Blue Bell, Pa.

Division of Ser. No. 737,949, Aug. 29, 1991, Pat. No. 5,144,457, which is a division of Ser. No. 419,045, Oct. 10, 1989, Pat. No. 5,063,461. This application Sep. 29, 1992, Ser. No. 933,841

Int. Cl.[5] H04N *1/04, 1/00, 7/18*

U.S. Cl. 358—474 **12 Claims**



5. A document imaging apparatus including transport means disposed operatively adjacent two sites on a transport platform with associated document-illumination and document-imaging means, said illumination means including lamp means and associated heat-dissipation means mounted below said platform; said imaging means including camera means and optical coupling means mounted above said platform; said coupling means being adapted to couple said sites with said lamp means and with said camera means, and including photopic filter means.

5,255,108

METHOD OF MAXIMIZING THE FREQUENCY OF ADJACENT FACET CROSS SCAN ERROR SUCH THAT THE INCREASED SPATIAL FREQUENCY REDUCES THE VISUAL PERCEPTION OF THE EXPOSURE ERROR

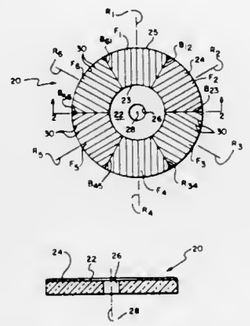
Badhri Narayan, and James E. Roddy, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 27, 1992, Ser. No. 874,789

The portion of the term of this patent subsequent to Oct. 12, 2010, has been disclaimed.

Int. Cl.[5] G02B *5/32*

U.S. Cl. 359—18 **10 Claims**



2. A method of manufacturing a multifaceted scanner element such as a hologon to maximize the spatial frequency of the cross scan error, said scanner element having an axis of rotation and an even number "n" of generally sector-shaped facets uniformly disposed about said axis, the scanner element being intended to have incident upon a substrate having a photosensitive layer receiving beams of radiation directed to said photosensitive layer to create an interference pattern on said layer in said sector-shaped facet; said method comprising:

rotating the hologon through angular steps of (360/n)°; and

exposing said sector-shaped facets to said beams of radiation in the sequence of 1, n−1, 3, n−3, . . . n, 2, n−2, 4. . . . where the scanner element has an even number of facets.

5,255,109

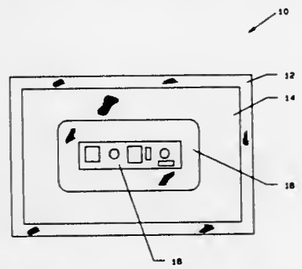
HEAT DISSIPATING LCD DISPLAY

Dean A. Klein, Lake City, Minn., assignor to PC Tech Inc., Lake City, Minn.

Filed Apr. 23, 1992, Ser. No. 872,364

Int. Cl.[5] G02F *1/133*

U.S. Cl. 359—43 **24 Claims**



1. Heat dissipating LCD display comprising:

a. an LCD display;

b. a heat spreading means on a back of said display; and,

c. an LCD power supply affixed to said heat spreading means.

5,255,110

DRIVING METHOD FOR OPTICAL MODULATION DEVICE USING FERROELECTRIC LIQUID CRYSTAL

Akihiro Mouri, Kokubunji; Tsutomu Toyono, Yokohama; Shuzo Kaneko, Tokyo; Yutaka Inaba, Kawaguchi, and Junichiro Kanbe, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 455,299, Dec. 22, 1989, Pat. No. 5,018,841, which is a division of Ser. No. 266,169, Nov. 2, 1988, Pat. No. 5,132,818, which is a division of Ser. No. 942,716, Dec. 17, 1986, Pat. No. 4,836,656. This application Mar. 8, 1991, Ser. No. 666,893

Claims priority, application Japan, Dec. 25, 1985, 60-295304; Dec. 25, 1985, 60-295305; Dec. 25, 1985, 60-295308; Jan. 7, 1986, 61-1186

Int. Cl.[5] G02F *1/133;* **G09G** *3/36*

U.S. Cl. 359—56 **11 Claims**



1. A driving method for an optical modulation device comprising scanning electrodes, signal electrodes disposed intersecting the scanning electrodes so as to form a pixel at each intersection of the scanning electrodes and signal electrodes, and an optical modulation material disposed between the scanning electrodes and the signal electrodes and assuming different orientation states when supplied with voltages of different polarities exceeding threshold voltages; said driving method comprising the steps of:

writing in all or prescribed pixels on a selected scanning electrode of the scanning electrodes in a writing period including at least four phases;

applying voltages of mutually opposite polarities in the first phase and the last phase, having an amplitude not exceeding the threshold voltages of said optical modulation material, to all of the pixels on a nonselected scanning electrode; and

applying to said selected scanning electrode two voltage signals having the same amplitude and mutually opposite polarities, a voltage signal having a smaller amplitude than said same amplitude, and a voltage signal 0 voltage, respectively, with respect to the potential of a nonselected scanning electrode in the writing period including said at least four phases, wherein said voltage signal of 0 voltage is applied in the last phase of said at least four phases.

5,255,111

FULL-DUPLEX OPTICAL TRANSMISSION SYSTEM

Peter T. H. Kwa, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Continuation of Ser. No. 630,662, Dec. 20, 1990, abandoned. This application Jan. 21, 1993, Ser. No. 8,235

Int. Cl.[5] H04B *10/24, 10/00*

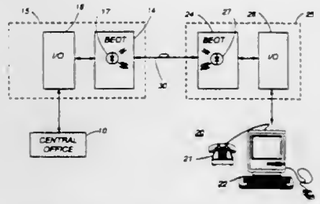
U.S. Cl. 359—113 **13 Claims**

1. An optical apparatus for transfer of full-duplex data signals over an optical waveguide, the apparatus comprising:

an electro-optic transducer means, coupled to the optical waveguide, responsive, in a first mode, to drive signal pulses to produce corresponding transmit optical signal pulses for transmission along the optical waveguide and responsive, in a second mode, to received optical signal pulses to produce detected signal pulses;

reception means including decoding means, for generating a receive bit of the data signals in response to the detected signal pulses;

driving means including encoding means responsive to each transmit bit of the data signals, for generating a pair of the drive signal pulses, each pair of drive signal pulses being within one bit period of the respective transmit bit of the data signals, the pulses of each pair of drive signal pulses being spaced apart by a predetermined time period equal to the period of at least one pulse of the pair of pulses and both pulses of each pair of drive signal pulses having the same logic level;



wherein the time delay between each pulse of the corresponding pair of transmit optical signal pulses differs from that of the pair of receive optical signal pulses, and wherein the duty cycle of the transmit optical signal pulses is such that for any phase relationship between transmission of the pairs of transmit signal optical pulses and reception of the pairs of receive optical signal pulses there is no interference between at least one transmit optical signal pulse and one receive optical signal pulse of each pair; and

switch means for switching the electro-optic transducer means between the first mode and the second mode, for coupling the driving means to the electro-optic transducer means in the first mode, and for coupling the electro-optic transducer means to the reception means in the second mode.

5,255,112

OPTICAL SCANNING APPARATUS AND SYSTEM

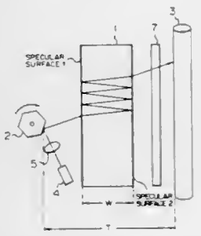
Yasuro Hori, Katsuta; Seiji Maruo, and Yasuaki Suzuki, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 19, 1991, Ser. No. 810,339

Claims priority, application Japan, Dec. 20, 1990, 2-404146; Nov. 29, 1991, 3-316003

Int. Cl.[5] G02B *26/08*

U.S. Cl. 359—196 **34 Claims**



2. An optical scanning apparatus including:

scanning means for scanning an optical beam in a main scanning direction; and

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an optical block including a plurality of plane surfaces or curved surfaces and on which the optical beam scanned by said scanning means is incident, said optical block including a pair of specular surfaces formed in part of said surfaces for reflecting the incident optical beam toward the inside of said optical block;

said optical block being disposed between said scanning means and an object to be scanned, the optical beam from said scanning means being reflected back and forth within said optical block, the reflected optical beam then reaching said object to be scanned; wherein

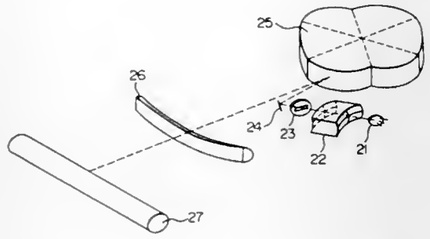
when a distance from said scanning means to said object to be scanned is T and the length of one side of said optical block in a reflection direction is W, W/T is set to a predetermined value in accordance with the number of times of reflection within said optical block.

5,255,113

POS-OBJECTIVE TYPE OPTICAL SCANNER

Motonobu Yoshikawa, Nisbinomiya, and Yoshiharu Yamamoto, Toyonaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 24, 1992, Ser. No. 856,642
Claims priority, application Japan, Apr. 3, 1991, 3-070961
Int. Cl.[5] G02B *26/08*
U.S. Cl. 359—196 **5 Claims**



1. A post-objective type optical scanner comprising:

a light source for emitting a light beam having a first width in a scanning direction and a second width in a sub-scanning direction;

a single lens having a light source side incident surface and an image plane side emergent surface, for converting said light beam into a scanning beam having a scanningwise width in said scanning direction and a subscanningwise width in said sub-scanning direction, said single lens comprising a scanning optical system having a first light source side principal point, for converting said first width into said scanningwise width, and a sub-scanning optical system having a second light source side principal point, for converting said second width into said subscanningwise width; whereby the distance of said first light source side principal point to said light source is greater than the distance of said second light source side principal point to said light source;

a means for scanning said scanning beam from said single lens on a scanning plane; and

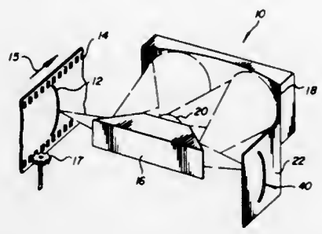
a correction lens arranged between said means for scanning and said scanning plane and having a sub-scanning focal distance which varies in said scanning direction from the center to each of both side ends of said correction lens, for focusing said scanning beam onto said scanning plane.

5,255,114

HIGH RESOLUTION SCANNER

David Kessler, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 790,887, Nov. 12, 1991, Pat. No. 5,221,975.
This application Feb. 16, 1993, Ser. No. 18,123
Int. Cl.[5] G02B *26/08*
U.S. Cl. 359—196 **1 Claim**



1. A scanner comprising:

illumination means for irradiating a receiving medium having an image thereon;

means for producing relative movement between said illumination means and said receiving medium;

detection means for receiving radiation from said receiving medium and for producing an electrical signal representative of the image on said receiving medium; and

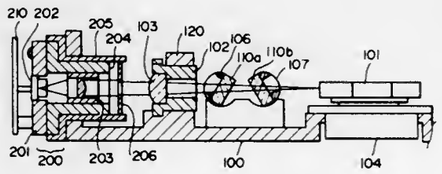
optical means disposed in an optical path between said receiving medium and said detection means for forming an image on said detection means which is the same size as the image on said receiving medium, said optical means including a convex mirror and a concave mirror.

5,255,115

OPTICAL SCANNING APPARATUS AND RECORDING APPARATUS USING THE SAME

Kazuo Kikuchi, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 18, 1992, Ser. No. 853,425
Claims priority, application Japan, Mar. 18, 1991, 3-052135
Int. Cl.[5] G02B *26/08*
U.S. Cl. 359—209 **20 Claims**



1. An optical scanning apparatus, comprising:

light source means for emitting an optical beam;

optical converging means for subjecting said optical beam to a power in one direction;

deflecting means for deflecting said optical beam for scanning; and

an optical imaging system for imaging the deflected optical beam to form a spot on a surface to be scanned,

the apparatus further comprising:

a plurality of light transmitting flat plates disposed in an optical path between said optical converging means and said deflecting means; and

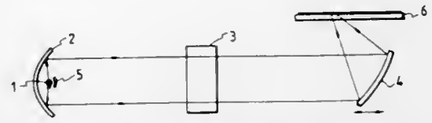
variable supporting means for supporting said light transmitting flat plates so that the inclination angles of said light transmitting flat plates relative to a perpendicular plane to said optical beam may vary to change a diameter of the spot of said optical beam.

5,255,116

ORIGINAL SCANNING APPARATUS

Keisuke Araki, Tokyo; Kazuo Fujibayashi, Kawasaki, and Miho Tanaka, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 14, 1992, Ser. No. 835,341
Claims priority, application Japan, Feb. 18, 1991, 3-46152; Apr. 16, 1991, 3-109680; Jul. 5, 1991, 3-191158
Int. Cl.[5] G02B *26/08*
U.S. Cl. 359—212 **26 Claims**



1. An original scanning apparatus, comprising:

an original support plate on which an original is rested;

a fixed point light source having a width smaller than that of said original support plate;

a shiftable reflection member for reflecting light beams emitted from said light source toward said original support plate, said shiftable reflection member being shifted in parallel with said original support plate to scan the original with slit-exposure; and

a first deflector member for deflecting the light beams emitted from said light source in a slit widthwise direction and a second deflector member for deflecting the light beams, deflected from said first deflector member, in a slit longitudinal direction, said first and second deflector members being formed discretely;

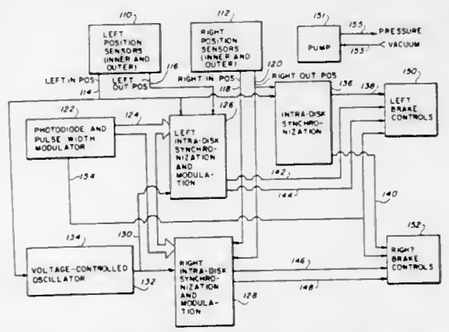
wherein the light beams deflected by said first and second deflector members are reflected toward said original support plate by said shiftable reflection member.

5,255,117

ADVANCED EYE OR SENSOR PROTECTION AND HIGH SPEED VARIABLE OPTICAL ATTENUATION SYSTEM

William B. Cushman, Pensacola, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 14, 1992, Ser. No. 842,287
Int. Cl.[5] G02F *1/26*; G02B *5/30*
U.S. Cl. 359—234 **10 Claims**



1. Eye protection goggles for providing light protection for the eyes of a wearer, said goggles comprising:

a pair of optical shutters adapted to be disposed in front of the eyes of a wearer; mean for supporting the shutters on the face of the wearer so that the shutters are disposed in front of the eyes of the wearer; and

a shutter control unit for controlling opening and closing of said shutters, said control unit including light detector means for detecting the light received by said optical shutters and for producing an output in accordance therewith; control means for controlling operation of said shutters such that the shutters are each opened and closed at an operating frequency sufficiently high to provide temporal integration of the light images received by the eyes of the wearer for controlling the time during each cycle of said operating frequency that the shutters are opened wherein said control means includes duty cycle control means responsive to the output of said light detector means for controlling the time during each cycle that the shutters are opened based on said output, said duty cycle control means comprises a pulse width modulator connected to said light detector for producing an output comprising pulses of a pulse width inversely related to the output of said light detector means, a voltage controlled oscillator for producing an output comprising a pulse train having a frequency which is a multiple of the operating frequency of said shutters; and

a shutter control circuit for controlling said shutters responsive to the output of said pulse width modulation means and the output of said voltage controlled oscillator, and for providing that when one of said shutters is open, the other shutter is closed so that only one eye of the wearer is exposed at any one time; and override means, responsive to the output of said light detecting means, for providing that said shutters are both closed when said output exceeds a predetermined value and

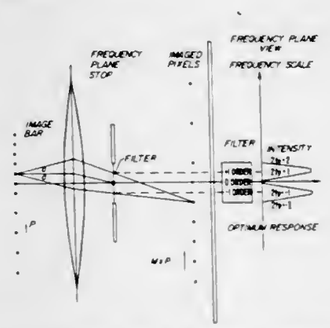
wherein said optical shutters each comprise a pair of coaxial rotatable disks each including alternating opaque and transparent sectors, said duty cycle control means further comprises shutter position sensing means for sensing the position of the disks of said shutters and for producing a corresponding output signal, and wherein said shutter control circuit is also responsive to the output signal produced by said shutter position sensing means in controlling said shutters.

5,255,118

ELECTROOPTIC TIR LIGHT MODULATOR IMAGE BAR HAVING ELECTRODE LENGTH FOR OPTIMIZING SPATIAL FREQUENCY RESPONSE

David L. Hecht, Palo Alto, Calif., assignor to Xerox Corporation, Rochester, N.Y.

Filed Dec. 31, 1991, Ser. No. 815,464
The portion of the term of this patent subsequent to Feb. 23, 2010, has been disclaimed.
Int. Cl.[5] G02F *1/03, 1/29*
U.S. Cl. 359—254 **8 Claims**



1. In a system that includes an electrooptic total internal reflection light modulator having a set of electrodes, an elec-

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tronic control subsystem for differentially encoding pixel data on the electrodes by applying corresponding voltages thereto in a manner that defines a minimum pixel pitch P, an illumination subsystem for providing an input beam to the modulator, which input beam is converted to a phase front modulated beam by the modulator and the voltages applied thereto, and an imaging subsystem for converting the phase front modulated beam to an imaged beam having an intensity modulated profile corresponding to the pixel data, wherein the diffraction efficiency of the system is in part defined by a set of properties of the modulator and the illumination and imaging subsystems and is characterized by a spatial frequency response, the improvement wherein:

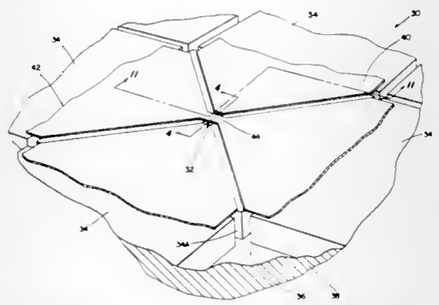
the electrodes are characterized by a length chosen to cause the frequency response of the modulator to approximate $\sin(\pi Pf)$ for small absolute values of f, where f is the spatial frequency.

5,255,119

REFLECTIVE MAGNETO-OPTIC DEVICE WITH AN EMBEDDED CONDUCTOR CHANNEL

William E. Ross, Woodland Hills, Calif., and David N. Lambeth, Webster, N.Y., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Apr. 13, 1992, Ser. No. 867,422
Int. Cl.[5] G02F *1/09*
U.S. Cl. 359—280 **14 Claims**



1. A reflective magneto-optic spatial light modulator (MOSLM) device comprising:

a) an optically transparent, nonmagnetic substrate;

b) at least one pixel element formed from a magneto-optic material on said substrate, said pixel further having a physical configuration sized to constrain a single magnetic domain that exhibits a known magnetic characteristic which can be selectively reversed;

c) a nucleation site formed in said pixel material;

d) a channel conductor embedded in said nucleation site;

e) a pair of electrical conductors positioned orthogonally on said said pixel outer surface;

f) a cross-over region developed by said electrical conductors at said nucleation site;

g) a selected one of said pair of conductors electrically interconnected to said channel conductor and electrically insulated from the remaining one of said pair of conductors; and

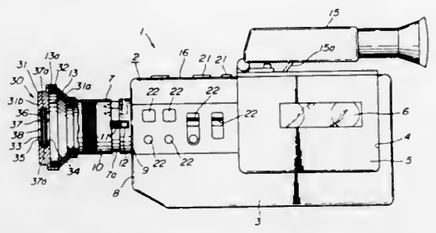
h) at least one of said pair of electrical conductors having a generally planar surface that develops a mirror surface to reflect incident radiation through said pixel element SO THAT the reflected incident radiation exits through the pixel to complete two passes through the magneto-optic material.

5,255,120

LENS CAP APPLICABLE TO A VIDEO CAMERA

Tsutomu Anzai, and Akira Isobe, both of Tokyo, Japan, assignors to Sony Corporation, Japan

Division of Ser. No. 223,418, Jul. 22, 1988, Pat. No. 5,162,942. This application Jun. 3, 1992, Ser. No. 892,952
Claims priority, application Japan, Aug. 6, 1987, 62-197210
Int. Cl.[5] G02B *23/16*
U.S. Cl. 359—511 **15 Claims**



1. A lens cap for the lens of a camera comprising:

(a) a lens cap body;

(b) first and second light transmissible screens supported by said lens cap body and defining a narrow space therebetween;

(c) means for removably attaching the lens cap to the camera, said attaching means extending from said lens cap body in a first direction; and

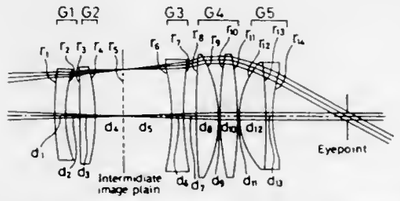
(d) a title element carrying indicia and being slideably positioned in said narrow space between said first and second light transmissible screens, said cap defining a light transmission path from said indicia in said first direction, whereby said indicia is visible to the lens of the camera through said first light transmissible screen, and said second light transmissible screen serves as a protective cover to said lens and title element while allowing light to enter said lens.

5,255,121

ULTRA-WIDE FIELD EYEPIECE FOR MICROSCOPES

Toshinobu Suzuki, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 23, 1992, Ser. No. 965,431
Claims priority, application Japan, Oct. 24, 1991, 3-277612
Int. Cl.[5] G02B *25/04, 9/60, 9/62*
U.S. Cl. 359—643 **8 Claims**



1. An ultra-wide field eyepiece for microscopes comprising, in order from an entrance side to an exit side;

a first lens unit of negative power;

a second lens unit of positive power;

a third lens unit of negative power;

a fourth lens unit of positive power, and

a fifth lens unit of positive power with a surface facing the entrance side having a stronger curvature than a surface facing the exit side,

wherein between the first and second lens units, and on the entrance side of and on the exit side of the third lens unit there are spaces, and

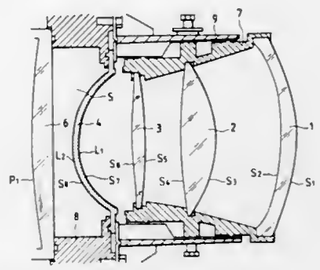
wherein the third to fifth lens units are located on the exit side of an intermediate image plane.

5,255,122

PROJECTION LENS SYSTEM FOR PROJECTION TYPE TELEVISION

Nobuhiro Konuma; Takahiko Yoshida; Hiroki Yoshikawa; Masayuki Muranaka, and Isao Yoshizaki, all of Kanagawa, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 12, 1990, Ser. No. 626,554
Claims priority, application Japan, Dec. 13, 1989, 1-321424
Int. Cl.[5] G02B *3/00, 9/00*
U.S. Cl. 359—650 **24 Claims**



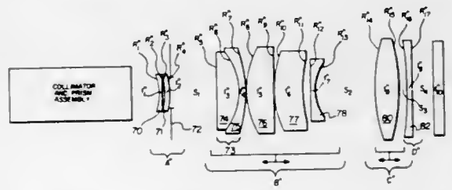
17. A projection lens system for a projection type television having a cathode-ray tube for projecting an image onto a screen, the projection lens system comprising a plurality of lenses disposed between the cathode-ray tube and the screen, and means for reducing observance of a ghost image including means for absorbing at least a portion of a wavelength region of light emitted from the cathode-ray tube.

5,255,123

MICROFILM READER/PRINTER ZOOM LENS SYSTEM

Lee R. Estelle, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 361,466, Jun. 5, 1989, Pat. No. 5,132,846. This application Apr. 6, 1992, Ser. No. 863,935
Int. Cl.[5] G02B *15/14*
U.S. Cl. 359—684 **10 Claims**



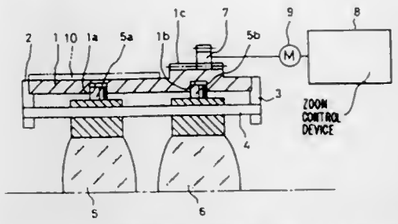
1. A zoom lens for forming an image of a substantially collimated optical output by a collimator, said zoom lens having an optical axis and comprised of a plurality of lens components centered on said optical axis and arranged in at least three optical units, said lens units having powers and spacings to image said collimated light at an image plane, two of said lens units are movable to vary the focal length of said zoom lens, said zoom lens including: a frontmost, fixed optical unit of negative optical power for receiving said substantially collimated light and provided with a fixed aperture stop; a second optical unit that is axially movable for zooming located behind said front optical unit, said second optical unit having positive power; and a rear optical unit immediately following said second optical unit that is axially movable for zooming located behind said front optical unit and said second optical unit, said rear optical unit having positive power.

5,255,124

CAM RING OF LENS BARREL AND METHOD FOR MANUFACTURING SAME

Makota Iwamura, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 377,554, Jul. 10, 1989, abandoned. This application Apr. 10, 1992, Ser. No. 865,764
Claims priority, application Japan, Mar. 9, 1989, 1-26803[U]; Apr. 26, 1989, 1-106985
Int. Cl.[5] G02B *15/14*
U.S. Cl. 359—694 **26 Claims**



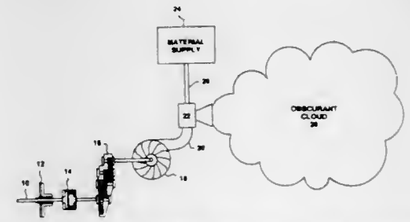
1. A cam ring of substantially annular shape for a lens barrel, said lens barrel including a lens group having an optical axis, said lens group being movable along the direction of the optical axis, said lens group including at least one guide pin, said cam ring comprising at least one cam groove, said at least one guide pin being engageable in a respective cam groove, and a gear which is provided on an outer surface of said cam ring to enable rotation of said cam ring, wherein at least a part of said cam groove is in the form of a cam groove with a closed bottom located on an inner surface of said cam ring, said gear being integrally formed on the outer surface of said cam ring, wherein said gear is inclined with respect to the circumferential direction of said cam ring.

5,255,125

PARTICULATE OBSCURANT DISSEMINATOR AIR SOURCE

D. Jeffrey Hale, White Hall, and William A. Adams, Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 28, 1992, Ser. No. 997,009
Int. Cl.[5] C09K *3/30;* H01Q *15/18;* G01J *1/00*
U.S. Cl. 359—889 **8 Claims**



1. A particulate obscurant disseminator air source which comprises:

means for generating rotational torque;

disengaging means for isolating said rotational torque means;

means for dampening impact loading mechanically coupled to said disengaging means;

gear box means for stepping up the RPM of said rotational torque means;

compressor means mechanically coupled to the output of said gear box means;

ejector means coupled to said compressor means for inducing air flow;

container means coupled to said ejector means for providing

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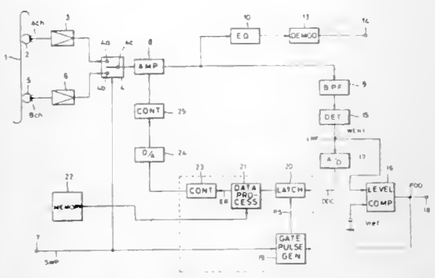
the particulate mixed with said additional air flow of said elector means to form an obscurant cloud which acts as a counter measure at near, mid and far infrared wavelength used by laser range finders and thermal imaging systems or millimeter wavelengths used by radars.

5,255,126

AGC CIRCUIT WITH CONSTANT ENVELOPE CIRCUIT FOR REPRODUCED RF SIGNALS FROM PLURAL CHANNELS

Hiroshi Matsuzawa; Ichitaro Sato, and Kaoru Urata, all of Kanagawa, Japan, assignors to Sony Corporation, Japan

Filed Jul. 1, 1991, Ser. No. 724,151
Claims priority, application Japan, Jul. 6, 1990, 2-178777
Int. Cl.[5] G11B *5/02*
U.S. Cl. 360—27 **12 Claims**



1. A recording and reproducing apparatus in which signals are recorded onto and reproduced from a magnetic tape wound around a peripheral surface of a rotary drum by magnetic heads which are attached to the peripheral surface of the rotary drum corresponding to a plurality of channels, respectively, comprising at least:

means for detecting an envelope level of a reproduced RF signal which is derived from the magnetic head for each channel of said plurality of channels and providing a detection output representative thereof;

means for comparing the detection output and a reference level and for generating a control voltage representative thereof and corresponding to the magnetic head for every channel;

means for storing the control voltage; and

means for controlling the envelope level of the reproduction RF signal to a constant level in accordance with a predetermined timing for supplying the control voltage.

5,255,127

DIGITAL MODULATED SIGNAL DEMODULATOR/DECODER APPARATUS

Etsuto Nakatsu, Minoo; Hiroaki Shimazaki; Haruo Ohta, both of Hirakata, and Masaaki Kobayashi, Kawanishi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 2, 1991, Ser. No. 724,888
Claims priority, application Japan, Jul. 5, 1990, 2-177714
Int. Cl.[5] G11B *5/09, 20/06*
U.S. Cl. 360—29 **8 Claims**

1. A digital modulated signal demodulator/decoder apparatus comprising:

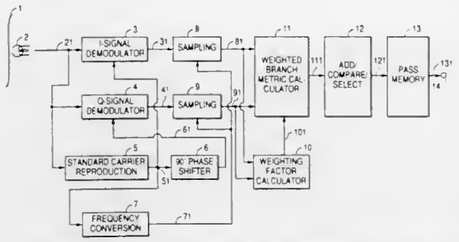
a demodulating means for receiving and demodulating an amplitude/phase modulated signal of digital form obtained through amplitude/phase modulation of a series of digital data processed by convolutional encoding to first and second demodulated signals with two different carrier waves which are 90-degree out of phase from each other;

a first sampling means for sampling the first demodulated signal at a timing of code identification;

a second sampling means for sampling the second demodulated signal at the timing of code identification;

a weighting factor calculating means for identifying codes of the first and second demodulated digital signals supplied from the first sampling means and the second sampling means respectively and then, calculating a reciprocal number of a standard deviation which represents statistical variations of a digital demodulated signal value identified as having the same code, for output as a weighting factor corresponding to the code;

a weighted branch-metric calculating means for on receipt of the two, first and second demodulated digital signals, multiplying by the weighting factor from the weighting factor calculating means an Euclidean distance between a signal point defined by the two demodulated digital sig-



nals and a reference signal point determined by the code to calculate a weighted distance which is in turn squared for output as a branch-metric value;

add/compare/select means for summing branch-metric values fed from the weighted branch-metric calculating means, comparing resultant branch-metric sums corresponding to all signal strings which may follow a given number of preparatory signal strings stored in a pass memory for selection of an output signal, and delivering a result of the comparison; and

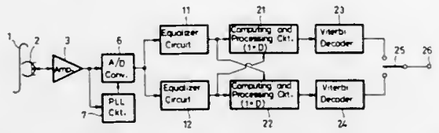
said pass memory having stored therein a given number of signal strings for selection of an output signal and delivering a signal value determined by the comparison result fed from the add/compare/select means while storing another group of signal strings supplied from the add/compare/-select means for selection of the succeeding output signal.

5,255,128

APPARATUS FOR DETECTING DIGITAL DATA

Hajime Inoue, Tokyo; Takahito Seki, and Keiji Kanota, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 4, 1991, Ser. No. 680,361
Claims priority, application Japan, Apr. 11, 1990, 2-95653
Int. Cl.[5] G11B *5/09*
U.S. Cl. 360—40 **24 Claims**



1. An apparatus for detecting input digital data comprising:

distributing means for distributing said input digital data into at least two channels; said distributing means being operative to distribute a first group of said input digital data including less than all of said input digital data into a first one of said channels, and to distribute a second group of said input digital data including less than all of said input digital data and including data outside said first group into a second one of said channels;

processing means in each of said channels for processing said digital data in the respective channel in accordance with a predetermined formula;

decoder means in each of said channels for decoding an output of said processing means in said respective channel in accordance with the Viterbi algorithm; and

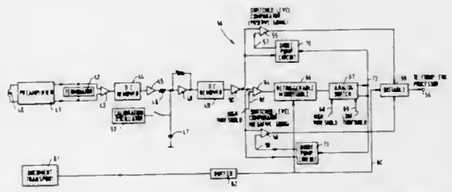
means for composing outputs of said decoder means in said channels to obtain digital data in one sequence.

5,255,129

MAGNETIC CODE READER WITH ADJUSTABLE THRESHOLDS

Philip B. Jones, Peartree Cottage, Slough Road, High Easter, Chelmsford, Essex CM14RD, United Kingdom

PCT No. PCT/GB90/01446, § 371 Date Oct. 17, 1991, § 102(e) Date Oct. 17, 1991, PCT Pub. No. WO91/04549, PCT Pub. Date Apr. 4, 1991
PCT Filed Sep. 19, 1990, Ser. No. 773,858
Claims priority, application United Kingdom, Sep. 22, 1989, 8921435
Int. Cl.[5] G11B *5/09*
U.S. Cl. 360—40 **9 Claims**



1. A reader for a coded security thread in a security document, wherein a sequence of consecutive bit cells of the same binary value is represented by a corresponding length of a magnetic material, the reader comprising:

at least one reading channel (**41–51**) coupled to at least one magnetic transducing means (**11,40**) for sensing along a track across the document and including processing circuits for forming a channel signal which exhibits a signal excursion of one sense in response to the passage of a leading end of a said length past the transducing means and a signal excursion of an opposite sense in response to the passage of a trailing end of the said length past the transducing means;

first and second comparators (**55,56**) for comparing the said channel signal with relatively positive and relatively negative thresholds respectively;

switching means (**59**) coupled to the comparators to provide a digital signal in accordance with the passage of the channel signal through the respective thresholds; and

control means (**64–71**) for adjusting the said thresholds in accordance with the amplitude of a signal excursion.

5,255,130

ADJUSTABLE WRITE EQUALIZATION FOR TAPE DRIVES

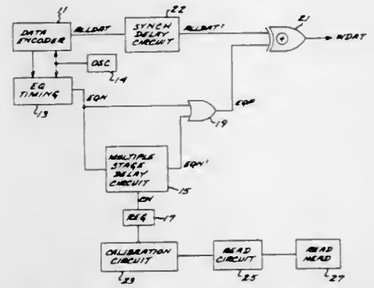
William A. Buchan; Gregory A. Unruh, both of San Clemente, Calif., and Yinyi Lin, Chuang Hua, Taiwan, assignors to Archive Corporation, Costa Mesa, Calif.

Filed Mar. 29, 1991, Ser. No. 678,086
Int. Cl.[5] G11B *20/14;* **H03K** *3/017, 5/06*
U.S. Cl. 360—41 **14 Claims**

1. A write circuit for a computer data tape drive, comprising:

data means for producing a binary data signal wherein a 1 is represented by a transition at the start of a respective bit interval and a 0 is represented by no transition at the start of said respective bit interval;

equalization means for producing equalization pulses for predetermined 0's in said binary data signal, said equalization pulses having a controllable width;



calibration means for controlling the width of said equalization pulses so as to achieve a desired equalization and for maintaining said width substantially constant; and

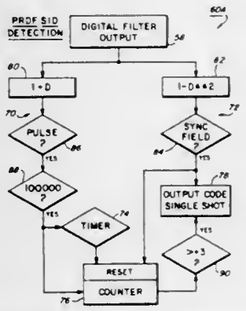
means for combining said binary data signal and said equalization pulses to produce a composite write data signal representative of information to be written to tape.

5,255,131

ASYNCHRONOUS SERVO IDENTIFICATION/ADDRESS MARK DETECTION FOR PRML DISK DRIVE SSYTEM

Jonathan D. Coker, and Richard L. Galbraith, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 13, 1992, Ser. No. 929,059
Int. Cl.[5] G11B *5/09*
U.S. Cl. 360—48 **15 Claims**



1. A method of asynchronous servo identification (SID)/address mark detection for data detection in a partial-response maximum-likelihood (PRML) data channel including a digital filter, said method comprising the steps of:

detecting a plurality of samples from the digital filter;

applying said detected samples to a first correlation filtering path for identifying a polarity threshold value;

applying said detected samples to a second correlation filtering path for identifying a second threshold value;

sequentially detecting and comparing sequential ones of said samples responsive to identifying said second threshold value to identify a predefined sequence;

incrementing a count value responsive to identifying said predefined sequence.

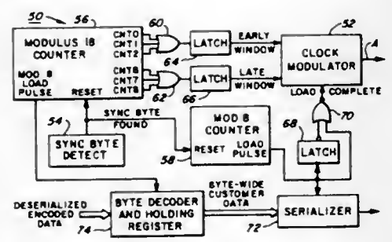
VOL 1155 ISS 3 OCT 19 1993 UMI

5,255,132

ADAPTABLE CLOCK CONTROL METHODS AND APPARATUS FOR A DIRECT ACCESS DISK DRIVE SYSTEM

Richard L. Galbraith, and Daniel D. Reno, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 4, 1991, Ser. No. 754,877
Int. Cl.[5] G11B *5/09*
U.S. Cl. 360—51 10 Claims



1. A data clock modulation method for a disk drive data storage file comprising the steps of:

generating a data reference clock;

sensing a readback signal from at least one predetermined region of the disk surface;

detecting a sync byte responsive to said readback signal;

generating an early window control signal and a late window control signal corresponding to end boundaries for capturing readback encoded data signals;

identifying a load complete signal responsive to said readback signal;

comparing said identified load complete signal with said early window control signal;

comparing said identified load complete signal with said late window control signal; and

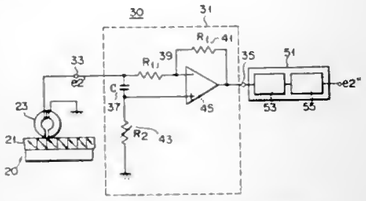
adjusting said generated data reference clock responsive to overlapping compared signals; said adjusted generated data reference clock having either an increased frequency or a decreased frequency, thereby to conform to a given disk speed.

5,255,133

WAVEFORM PROCESSING SYSTEM AND METHOD FOR RECORDING DIGITAL INFORMATION

Kazuyoshi Yamamori, Kawasaki; Tsutomu Tanaka, and Tamotsu Jitosho, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 17, 1991, Ser. No. 702,024
Claims priority, application Japan, May 17, 1990, 2-125478
Int. Cl.[5] G11B *5/02, 5/09*
U.S. Cl. 360—67 17 Claims



1. A waveform processing system comprising:

a magnetic head for reproducing digital information recorded in a magnetic recording medium;

waveform processing means for processing a reproduction waveform signal output from the magnetic head, the means having predetermined amplitude characteristics and phase characteristics for shifting the phase of the reproduction waveform by $2\times(\tan^{-1}2\pi fA)^{*}$ wherein f denotes the frequency of the reproduction waveform signal, and A a constant value; and

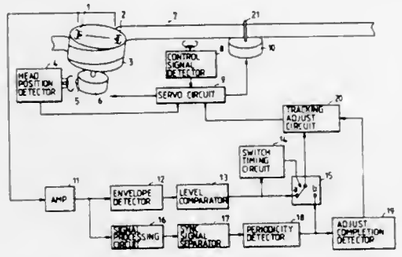
detection means for performing bit detection based on a waveform signal output from the waveform processing means.

5,255,134

AUTO-TRACKING SYSTEM FOR MAGNETIC RECORDING/REPRODUCING APPARATUS

Masataka Sekiya; Kiyoshi Hiramatsu; Hideyuki Usami, and Hisashi Ohta, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 16, 1991, Ser. No. 700,843
Claims priority, application Japan, May 18, 1990, 2-126688
Int. Cl.[5] G11B *15/467, 21/04*
U.S. Cl. 360—70 9 Claims



1. An auto-tracking system of a helical scan type magnetic recording/reproducing apparatus in which a run of a magnetic tape is controlled by a signal representative of a phase difference between a reference signal and a signal indicative of a running phase of said magnetic tape, comprising:

first means for separating a synchronizing signal from a video signal reproduced by rotary heads of said apparatus;

second means for successively measuring periodicity of said synchronizing signal of said video signal obtained in a field or frame and comparing the measured periodicity with a periodicity measured for a preceding field or frame to provide a variation of periodicity of said synchronizing signal;

servo means responsive to said signal representative of said phase difference for controlling a running state of said magnetic tape; and

tracking adjust means responsive to said periodicity comparison in said second means for causing said servo means to successively change tracking by a predetermined amount such that the periodicity variation measured by said second means is minimized.

5,255,135

METHOD OF LOADING SLIDER AND MAGNETIC DISK APPARATUS

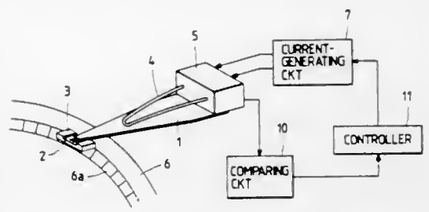
Seiji Itoh, Fukuoka, and Masaharu Fukakusa, Kumamoto, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 11, 1991, Ser. No. 713,210
Claims priority, application Japan, Jun. 12, 1990, 2-153664
Int. Cl.[5] G11B *21/02*
U.S. Cl. 360—75 8 Claims

1. A method of loading a negative pressure type slider of a magnetic disk apparatus for recording and reproducing information on and from a magnetic disk, said slider having a magnetic head and being fixedly secured to a flexible member so as to be floatable with respect to said magnetic disk and bendable toward said magnetic disk by pressing means, said method comprising the steps of:

(a) pressing said flexible member by said pressing means so that said slider moves toward said magnetic disk;

(b) reproducing a predetermined signal from said magnetic disk by means of said magnetic head so that the magnitude



of said predetermined signal reproduced is compared with a predetermined level; and

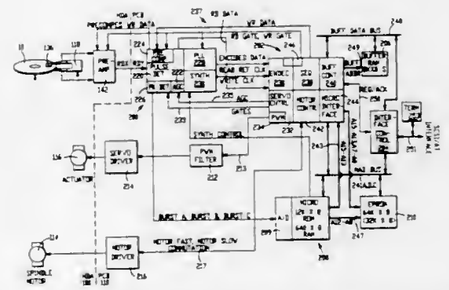
(c) stopping the pressing operation of said flexible member when the magnitude of said predetermined signal reproduced is greater than said predetermined level.

5,255,136

HIGH CAPACITY SUBMICRO-WINCHESTER FIXED DISK DRIVE

Michael G. Machado, Boulder, Colo.; Ronald R. Moon, Los Gatos, Calif.; Thomas A. Tacklind, San Martin, Calif.; William G. Moon, Saratoga, Calif.; Bruce R. Peterson, San Jose, Calif.; Clifford M. Gold, Fremont, Calif.; Daniel E. Barnard, San Jose, Calif., and James H. Do. Milpitas, Calif., assignors to Quantum Corporation, Milpitas, Calif.

Continuation-in-part of Ser. No. 569,065, Aug. 17, 1990, Pat. No. 5,170,299, which is a continuation-in-part of Ser. No. 650,791, Feb. 1, 1991, Pat. No. 5,241,546. This application Jun. 4, 1991, Ser. No. 710,171
Int. Cl.[5] G06F *1/00;* G11B *5/584*
U.S. Cl. 360—77.02 30 Claims



1. A Winchester disk drive data storage subsystem for connecting with a host computing system, the data storage subsystem including a head and disk assembly defining a disk spindle, a brushless DC spindle motor formed at said spindle for rotating a disk hub at a constant angular velocity, at least one rotating disk mounted to said hub and having two data storage surfaces defining a plurality of concentric data storage track locations having a track density of at least approximately 1700 tracks per inch, a data transducer head for each surface, the heads being radially positionable among the track locations, a mass balanced rotary voice coil actuated head positioning system for moving the data transducer heads between track locations during track seeking and settling and for maintaining a selected one of the data transducer heads in alignment with centerline of a track during track following operations during which data blocks are written to or read from the track being followed, the storage surfaces defining a series of radially extensive servo sectors embedded within circumferential zones of data tracks, the sectors being recorded at a constant data transfer rate and each sector including servo information comprising a track number value and a plurality of radially offset and circumferentially staggered servo bursts, each zone having a data transfer rate adapted to disk radius, and read preamplifier, write driver, head select integrated circuit means connected for selecting each said data transducer head, for amplifying analog signals read from a said data storage surface, and for amplifying signals to be written to said surface, the disk drive subsystem further comprising subsystem electronics mounted on a circuit board and including:

read channel means connected to said read preamplifier, write driver and head select integrated circuit means for processing said analog signals into digital signal transitions, and including pulse detector means for detecting said analog signals, phase locked loop means for generating a digital read data clock synchronized detected analog signals, and frequency synthesizer means for generating frequency signals for the phase locked loop means in relation to the data transfer rate of each data zone,

servo processing means connected to said read channel means for locating and processing said servo information located within each said servo sector into head position digital values,

data block sequencer means connected to said read channel means for locating and assembling data blocks from a serial data stream read from, and for forming and sending a serial data stream to, the data storage surfaces and for handling data block transfers between the disk storage surfaces and a buffer memory means,

buffer memory control means for handling transfers between the buffer memory means and a bus level interface means,

the bus level interface means for transferring data blocks and control values between the host computing system and the subsystem via a bus level interface structure,

the buffer memory means connected to said data block sequencer means and to said bus level interface means and controlled by said buffer memory control means for temporarily storing blocks of data passing between the subsystem and the host computing system, and

programmed digital controller means connected to said read channel means, said servo processing means, said data block sequencer means said buffer memory control means and said bus level interface means, and including servo supervision routine means for supervising operations of the servo processing means by generating and applying digital head position correction values to the head positioning system from said head position digital values generated by said servo processing means, and including data block transfer supervision routine means for supervising operations of said data block sequencer means, said buffer memory control means and said bus level interface means.

5,255,137

COOLING SYSTEM FOR RECORDING/REPRODUCING APPARATUS, WITH AIRFLOW RESTRICTED FROM READ/WRITE MEDIA SECTION

Hidenori Suzuki, Fujimi, Japan, assignor to Nippon Conlux Co., Ltd., Tokyo, Japan

Filed May 3, 1991, Ser. No. 695,273
Claims priority, application Japan, May 9, 1990, 2-119274
Int. Cl.[5] H05K *7/20;* G11B *33/14*
U.S. Cl. 360—97.02 18 Claims

12. A cooling system for information recording/reproducing apparatus comprising:

a housing;

an instrument section arranged in said housing for containing instruments for recording/reproducing information;

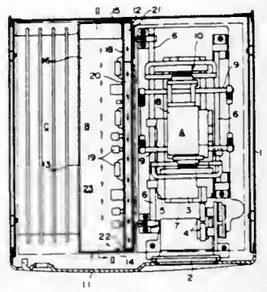
a power supply source chamber juxtaposed to said instrument section in said housing, said power supply source section including a front wall and a rear wall opposing said front wall;

a power supply source circuit board provided on said power

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supply source chamber, said power supply source circuit board defining one wall of said power supply source chamber;

an air flow passage provided between said power supply source chamber and said instrument section to direct a flow of cooling air adjacent to said instrument section and said power supply source chamber, said air flow passage having a wall facing said instrument section to cool said instrument section by the effect of cooling air flowing



along the interior of said wall and to seal said instrument section from the flow of cooling air;

an air intake port provided adjacent to said rear wall between said air flow passage wall and said power supply source circuit board;

an air flow return port provided between said power supply source chamber and said air flow passage adjacent to said front wall; and

an air outlet port provided in said power supply source chamber adjacent to said rear wall.

5,255,138

AUTOMATIC DISK CHANGER

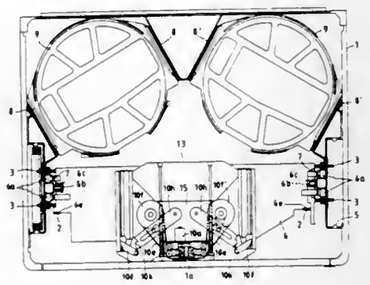
Kaoru Serita; Masaaki Kiyomiya; Jun Takahashi; Masaki Iwamoto, and Masatoshi Watanabe, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 473,259, Jan. 31, 1990, abandoned. This application Jun. 8, 1992, Ser. No. 895,233

Claims priority, application Japan, Jan. 31, 1989, 1-19553; Jan. 31, 1989, 1-19554; Jan. 31, 1989, 1-19555

Int. Cl.[5] G11B *17/08*

U.S. Cl. 360—98.04 **9 Claims**



1. An automatic disk changer comprising a tray transfer means for selectively extracting and returning trays supporting disks and which are housed in a case, said tray transfer means being provided in said case at a central portion of a width thereof and guided by guide means so that said tray transfer means can be moved up and down; a disk player installed to play a disk optionally transferred by said tray transfer means; said case having right and left corner portions formed by intersecting structural walls, and pairs of right and left tray guides for housing trays in said case, said pair of right tray guides and said pair of left tray guides each defining a center line therebetween and being provided in said case at said right and left corner portions thereof so that the center lines of said tray guides extend generally from the respective right and left corner portions toward said tray transfer means and intersect each other to form a V shaped angle therebetween; wherein said tray transfer means comprises a single tray gripping means which is operative to move between three positions including a first tray gripping position corresponding to said pair of right tray guides, a second tray gripping position corresponding to said pair of left tray guides, and a neutral position.

5,255,139

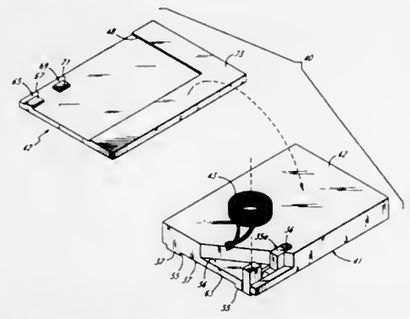
FERRITE CAPPED WINCHESTER-STYLE SLIDER

Marc J. von Huene, Goleta; Jerry C. Hanlon, Santa Barbara, and David M. Sherwood, Oxnard, all of Calif., assignors to Applied Magnetics Corporation, Goleta, Calif.

Division of Ser. No. 671,199, Mar. 18, 1991, Pat. No. 5,210,929. This application Mar. 9, 1993, Ser. No. 27,409

Int. Cl.[5] G11B *5/60, 5/17*

U.S. Cl. 360—103 **12 Claims**



1. A magnetic head slider for use in connection with a rotating magnetic medium, comprising:

a body having a upper surface, a lower surface, a leading edge and a trailing edge, wherein said lower surface defines a pair of air bearing elements;

a generally U-shaped partial core including an I-shaped portion defining a top surface and an L-shaped portion including a horizontal section and a vertical section, said vertical section defining a top surface, wherein said I-shaped portion and said horizontal section of said L-shaped portion define a front gap, wherein said partial core is supported by said body;

a coil of electrically conductive material mounted around one of said portions; and

a substantially solid cap mounted on said upper surface of said body, said cap sized and shaped to conform to the peripheral shape of said slider body to shield said partial core from magnetic flux, said cap including a first depending projection defining a first bottom surface corresponding in size and shape to said top surface of said I-shaped portion and a second depending projection defining a second bottom surface corresponding in size and shape to said top surface of said L-shaped portion, said first projection positioned on said cap so that said first bottom surface mates directly with said top surface of said I-shaped portion when said cap is mounted on said upper surface of said body and said second projection positioned on said cap so that said second bottom surface mates directly with said top surface of said vertical section of said L-shaped portion when said cap is mounted on said upper surface of said body, wherein magnetic flux passes through said cap during a read or write operation and said directly mating surfaces are lapped.

5,255,140

VCR MAGNETIC RECORDING HEAD FOR BOTH DIGITAL AND VHS FORMAT

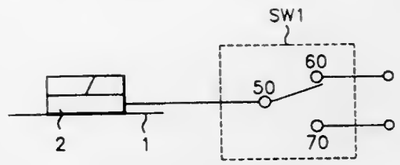
Jong-Kyoung Yoon, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 28, 1990, Ser. No. 635,869

Claims priority, application Rep. of Korea, Dec. 29, 1990, 1989-10073

Int. Cl.[5] G11B *21/24, 21/02, 5/53*

U.S. Cl. 360—109 **19 Claims**



1. A head assembly for a video cassette recorder, said head assembly comprising:

a head drum;

a first standard play channel head, a second extended play channel head, a first extended play channel head, and a second standard play channel head sequentially arranged as a double azimuth four-head about a surface of said head drum;

a piezoelement being disposed between said head drum and both the first standard play channel head and the first extended play channel head; and

switching means for moving the first standard play channel head and the first extended play channel head into first positions for use when the video cassette recorder is in a VHS mode by applying a control voltage to said piezoelement, and for moving the first standard play channel head and the first extended play channel head into second positions for use when the video cassette recorder is in a digital mode by removing the control voltage.

5,255,141

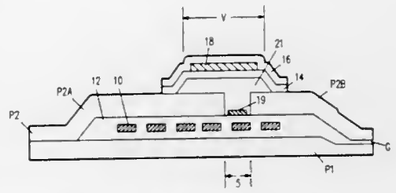
READ-WRITE MAGNETIC HEAD WITH FLUX SENSING READ ELEMENT

Erich P. Valstyn, Los Gatos, and Daniel A. Nepela, San Jose, both of Calif., assignors to Read-Rite Corp., Milpitas, Calif.

Filed Dec. 16, 1991, Ser. No. 807,194

Int. Cl.[5] G11B *5/147, 5/127*

U.S. Cl. 360—126 **7 Claims**



1. A thin film read-write magnetic head comprising:

first and second magnetic layers for forming a magnetic circuit path with a transducing gap;

flux sensing means disposed within said magnetic circuit path, said sensing means being bypassed and inactive during signal recording;

magnetic valve means coupled to said magnetic circuit path for providing a magnetic shunt to bypass said flux sensing means during signal recording,

said valve means comprising a magnetic shunt coupled to at least one of said magnetic layers and electrical conductor means encompassed by said magnetic,

said magnetic valve means being deactivated by passing a current through said electrical conductor means during signal reading so that the flux representing a read out signal is sensed by said flux sensing means.

5,255,142

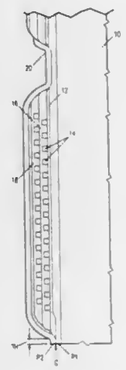
THIN FILM MAGNETIC HEAD WITH NARROW YOKE

Edgar M. Williams, Palo Alto; Peter G. Bischoff, Cupertino, both of Calif., and Shin-ichi Akoh, Hirakata, Japan, assignors to Read-Rite Corp., Milpitas, Calif.

Continuation of Ser. No. 789,934, Nov. 12, 1991. This application Apr. 19, 1993, Ser. No. 47,309

Int. Cl.[5] G11B *5/127, 5/147*

U.S. Cl. 360—126 **7 Claims**



1. A thin film magnetic head comprising:

a nonmagnetic substrate;

a magnetic yoke structure formed with a narrow rectangular section of a predetermined width disposed over said substrate, said yoke structure including first and second magnetic layers having portions with substantially parallel sides, said layers making contact to form a closure and a continuous magnetic path, said layers defining a transducing gap therebetween;

an electrical coil disposed between said magnetic layers and electrically insulated from said yoke structure;

characterized in that said width of said yoke structure is no greater than 55 micrometers, and the height of said yoke structure is in the range of about 110–130 micrometers,

whereby the excited yoke dimensions permit an optimum reduction in popcorn noise, an improved high frequency response and increased circuit efficiency.

5,255,143

MEANS FOR VISUALIZATION OF ROTARY MOVEMENT IN TAPE CASSETTES

Hans J. Wolf, Diefenbach-Sternenfels, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 27, 1991, Ser. No. 676,029

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1990, 9003809

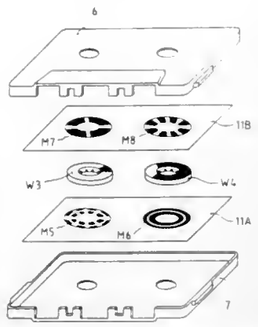
Int. Cl.[5] G11B *23/02*

U.S. Cl. 360—132 **23 Claims**

1. A tape cassette for recording media, consisting of two housing halves which enclose at least one rotatable reel having a central part and one recording medium wound at least temporarily on said reel, at least one of the housing halves being provided with an optical cover and parts of the rotating reel are only temporarily visible at least adjacent to said optical cover, wherein the at least one optical cover is arranged and formed at least vertically above or vertically below the central part of the reel which is provided with at least one optical

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mark having a color and the optical cover carries a contrast color thereto for forming a plurality of window spaces for



uncovering said optical mark which visibly interacts with said optical cover during rotation of the reel for proving various momentarily different optical pictures.

5,255,144

BRAKE DEVICE FOR TAPE REEL IN MAGNETIC TAPE CASSETTE

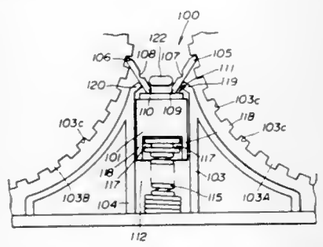
Yuji Iwahashi; Kiyoshi Urayama; Toshihiro Watanabe; Shinya Sato, and Masanori Tanaka, all of Tokyo, Japan, assignors to Sony Corporation, Japan

Continuation of Ser. No. 676,451, Mar. 26, 1991, abandoned, which is a continuation of Ser. No. 71,333, Jul. 9, 1987, abandoned. This application Mar. 20, 1992, Ser. No. 853,869

Claims priority, application Japan, Jul. 18, 1986, 61-110796[U]

Int. Cl.[5] G11B *23/02*

U.S. Cl. 360—132 **18 Claims**



1. A reel brake device for a magnetic tape cassette including a tape reel with a reel flange, the tape reel being disposed within a cassette housing, comprising:

at least a rectangular pawl-engaging cut-out formed on the outer periphery of said reel flange;

a brake assembly having a body and a blade-like braking pawl;

means for guiding said brake assembly for movement between a locking position, at which said brake assembly is adjacent to said tape reel and said braking pawl engages with said cut-out for restricting rotation of said tape reel, and an unlocking position, at which said entire brake assembly is farther from said tape reel than in said locking position and said braking pawl is positioned away from said cut-out for allowing rotation of said tape reel;

said braking pawl comprising a generally flat rectangular-shaped member having a first end fixed to said body and a second end engaging said cut-out when in said locking position, said member having a narrow groove extending across the width thereof intermediate said first and second ends forming a first reduced thickness section, and a second reduced thickness section formed in said member adjacent said first end, said first and second reduced thickness sections allowing resilient deformation of said braking pawl at pre-selected locations for absorbing forces exerted on said brake assembly through said braking pawl engaging with said cut-out that would tend to force the latter from said locking to said unlocking position, so that said brake assembly can be maintained at said locking position.

5,255,145

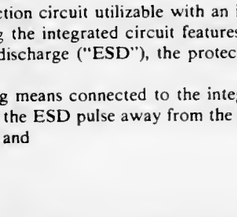
SHUTTER SPRING STOP FOR DISK CARTRIDGES

Gregg A. Ambur, Wahpeton, N. Dak., and David L. Hubbling, Breckenridge, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 30, 1991, Ser. No. 770,020

Int. Cl.[5] G11B *23/03*

U.S. Cl. 360—133 **10 Claims**



1. A U-shaped shutter for use on a substantially flat rigid disk cartridge for housing a rotatable disk, wherein the shutter comprises:

an upper arm;

a lower arm;

a base portion interconnecting the upper and lower arms;

wherein the shutter is mounted on the front wall of the cartridge to open and close a head access opening, and is slidable between an open position and a closed position by a means for biasing the shutter in the closed position; and

means for contacting and locating the biasing means between the cartridge and the contacting means, wherein the contacting means is located between the arms of the shutter without extending beyond the sides of the shutter arms, wherein the contacting means comprises a first arm and a second arm, wherein the first arm extends from the base portion of the shutter and the second arm extends along the base portion between the first arm and one of the arms of the shutter, and wherein the first arm extends beyond the second arm in the direction perpendicular to the plane of the shutter base portion, in a direction perpendicular to the plane of the shutter arms, and in a direction parallel to both the planes of the shutter base portion and the shutter arms.

5,255,146

ELECTROSTATIC DISCHARGE DETECTION AND CLAMP CONTROL CIRCUIT

William E. Miller, Los Gatos, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif. and National Semiconductor Corporation, Santa Clara, Calif.

Filed Aug. 29, 1991, Ser. No. 752,036

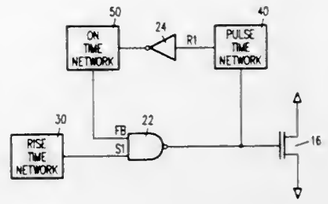
Int. Cl.[5] H02H *9/04*

U.S. Cl. 361—56 **5 Claims**

1. A protection circuit utilizable with an integrated circuit for protecting the integrated circuit features from a pulse of electrostatic discharge ("ESD"), the protection circuit comprising:

a. switching means connected to the integrated circuit for shunting the ESD pulse away from the integrated circuit features; and

b. control means connected to the switching means for activating the switching means, said control means including a plurality of detection circuits each responsive to a respective selected waveform characteristic of a typical ESD pulse to activate said switch means.



5,255,147

VERTICAL YOKE PROTECTION SYSTEM

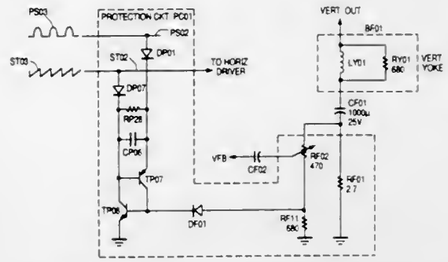
Chon S. Oh, Johore, Malaysia, assignor to Thompson Consumer Electronics, S.A., France

Continuation of Ser. No. 624,739, Dec. 3, 1990, abandoned. This application Nov. 17, 1992, Ser. No. 977,358

Claims priority, application United Kingdom, Dec. 22, 1989, 8929103

Int. Cl.[5] H02H *3/08;* **H04N** *17/00*

U.S. Cl. 361—93 **30 Claims**



9. A protection system for a television apparatus, comprising:

a vertical deflection circuit having a vertical yoke;

means for sensing vertical yoke current and generating a vertical yoke current feedback signal for controlling said vertical deflection circuit;

means for sensing said feedback signal to detect a vertical yoke abnormal current condition; and,

means for disabling said vertical deflection circuit responsive to said abnormal current condition.

5,255,148

AUTORANGING FAULTED CIRCUIT INDICATOR

Thomas Yeh, South Weymouth, Mass., assignor to Pacific Scientific Company, Weymouth, Mass.

Filed Aug. 24, 1990, Ser. No. 572,906

The portion of the term of this patent subsequent to Jan. 8, 2008, has been disclaimed.

Int. Cl.[5] H02H *3/00*

U.S. Cl. 361—93 **18 Claims**

10. A power distribution system, comprising:

a plurality of cables;

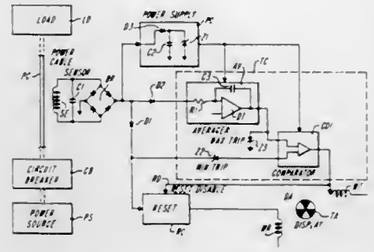
a circuit breaker connecting said cables to a power source;

a plurality of fault indicators coupled to said cables;

each of said fault indicators including sensing means for sensing current in the cables;

each of said fault indicators including reset means responsive to said sensing means for producing a reset indication in response to a minimum current;

each of said fault indicators including trip means responsive to said sensing means for producing a trip indication in response to the current exceeding a selected trip value; and



each of said fault indicators including selecting means in said trip means for sensing the average value of the current and selecting a trip value as a predetermined multiple of the average value.

5,255,149

TEMPERATURE ABNORMALITY DETECTOR FOR ELECTRONIC APPARATUS

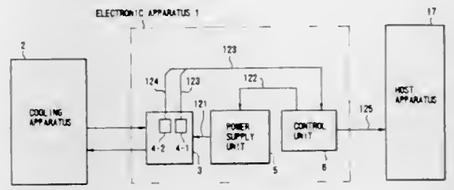
Yoichi Matsuo, Yamanashi, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 19, 1992, Ser. No. 836,907

Claims priority, application Japan, Feb. 26, 1991, 3-53207

Int. Cl.[5] H02H *5/04*

U.S. Cl. 361—103 **10 Claims**



1. A temperature abnormality detector for an electronic apparatus, comprising:

a plurality of temperature sensors arranged near a heat-generating electronic part mounted on an electronic apparatus;

first discriminating means for determining a sensor failure when a temperature value measured by one selected temperature sensor from said plurality of temperature sensors is not set within a predetermined range;

second discriminating means for determining whether the measured temperature value reaches a first level set within the predetermined range and a second level set as a value larger than that of the first level;

third discriminating means for determining a sensor failure when the measured value reaches the second level without passing through the first level on the basis of an output from said second discriminating means;

switching means for switching said selected temperature sensor from said temperature sensors to another temperature sensor of said plurality of temperature sensors in response to sensor-failure outputs from said first and third discriminating means; and

halt means for interrupting power supply to said electronic part and halting said electronic apparatus when the measured temperature value reaches the first level and then

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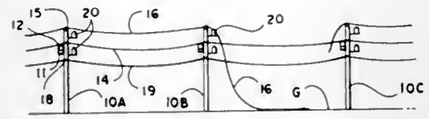
the second level on the basis of an output from said second discriminating means.

5,255,150

GROUNDING DEVICE FOR POWER LINES

J. Ronald Young, and Dorothy J. Young, both of 9900 LaView Cir., Roswell, Ga. 30075

Filed Dec. 11, 1991, Ser. No. 816,293
Int. Cl.[5] H02G 7/18
U.S. Cl. 361—107 6 Claims



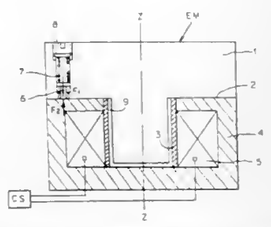
1. A grounding device for an electric power line, said power line being mounted on a plurality of poles constituting a pole line and including at least one phase line having an electric potential above ground potential, said grounding device being supported from one pole of said plurality of poles and including a base member formed of electrical insulating material fixed with respect to said one pole, a sensing member formed of electrical insulating material and yieldably carried by said base member for selective movement towards said base member, said sensing member being located beneath and adjacent to said at least one phase line and including directing means, and a contact area, the arrangement being such that in the event said phase line moves down towards said grounding device, said line will be directed to said contact area, an electrically conducting grounding tongue carried by said base member, said tongue being normally confined within said grounding device to be electrically insulated from said phase line, and projectable beyond said grounding device when said sensing member moves towards said base member, said grounding tongue being connected to ground potential.

5,255,151

ELECTROMAGNET WITH MOMENTARY DEMAGNETIZATION

Lijun Cai, No. 144, Unit 91, Beijing Institute of Technology, Beijing 100081, PRC; Jingling Deng, Beijing; Xueming Wang, Beijing, and Fuzhen Shen, Beijing, all of China, assignors to Lijun Cai, Beijing, China

Filed Oct. 10, 1991, Ser. No. 774,573
Claims priority, application China, Oct. 22, 1990, 90108316.X; Nov. 15, 1990, 90109015.8; Nov. 15, 1990, 90223472.2; Jul. 23, 1991, 91104978.9
Int. Cl.[5] H01F 7/08
U.S. Cl. 361—154 28 Claims



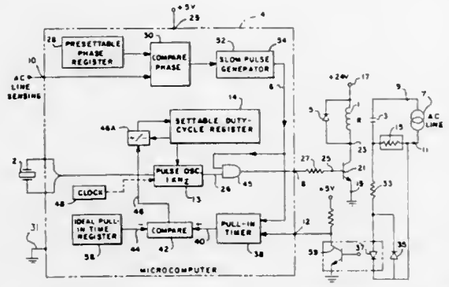
1. An electromagnet comprising an electromagnetic body including an armature and an iron core between which there is no demagnetizing air gap when the electromagnet is in a holding state; a DC excitation system including an exciting coil and a controllable power source means; and an energy storage means applied to the electromagnetic body, said energy storage means being stored with mechanical energy in the holding state of the electromagnet, which forms an action force on said iron core from said armature as well as a reaction force on said armature from said iron core, the action line of the resultant of said reaction force being non-collinear with the action line of the resultant of a holding force, the resultant force of the reaction force thereby generating a momentary rotation force on the armature so as to cause the armature to make a slight rotation permissible by the structure of the electromagnetic body relative to said iron core after the exciting coil is de-electrified; wherein said controllable power source means comprises an initiation power source and a holding power source of different voltages, and a control switch for real-time turning on said initiation power source and converting said initiation power source to said holding power source, said initiation power source and said holding power source respectively employing full bridge rectification to energize said exciting coil.

5,255,152

CONTROLLER FOR FIXED-TIME PULL-IN OF A RELAY

Bay E. Estes, III, and Richard H. Noens, both of Palatine, Ill., assignors to Eaton Corporation, Cleveland, Ohio

Filed Aug. 21, 1991, Ser. No. 747,831
Int. Cl.[5] H01H 47/02; H03K 3/017
U.S. Cl. 361—160 12 Claims



1. Apparatus for controlling to a predetermined value the pull-in-time delay for pulling in of a relay, which has a coil and contacts and is to be actuated a plurality of times, the pull-in-time delay being defined as the duration of a time interval starting when application of power to the coil of the relay starts and ending when the relay contacts close, comprising:

means for applying a controllable level of average power to said relay coil, said means including an input control signal terminal;

means for storing data specifying a predetermined pull-in-time delay;

means for detecting the start of application of power to said relay coil and providing a start signal thereupon;

means for sensing the closing of said contacts and providing a closure signal thereupon;

means responsive to said start and closure signals to ascertain the actual pull-in-time delay;

means for comparing said actual pull-in-time delay with said predetermined pull-in-time delay and providing an error signal accordingly;

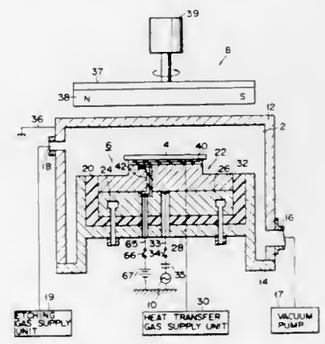
means connecting said error signal with said input control signal terminal with such polarity as to increase said level of average power supplied to said coil when said actual pull-in-time delay is greater than said predetermined pull-in-time delay, and to decrease said level of average power when said actual pull-in-time delay is less than said predetermined pull-in-time delay.

5,255,153

ELECTROSTATIC CHUCK AND PLASMA APPARATUS EQUIPPED THEREWITH

Toshihisa Nozawa, Yokohama; Junichi Arami, Hachioji; Isahiro Hasegawa, Zushi, and Katsuya Okumura, Yokohama, all of Japan, assignors to Tokyo Electron Limited, Tokyo and Kabushiki Kaisha Toshiba, Kawasaki, both of Japan

Filed Jul. 17, 1991, Ser. No. 731,478
Claims priority, application Japan, Jul. 20, 1990, 2-192462
Int. Cl.[5] H02N 13/00
U.S. Cl. 361—234 16 Claims



1. An electrostatic chuck comprising:

a chuck main body;

an electrostatic adsorption member arranged on an upper surface of the chuck main body, and having a first conductive member and a first insulating member covering the first conductive member;

a power supply member arranged through the chuck main body, and having a second conductive member electrically connected to the first conductive member, and a second insulating member covering the second conductive member; and

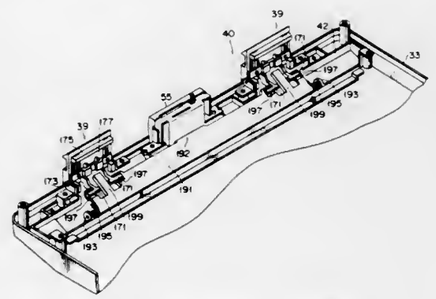
means for applying a voltage to the first conductive member via the second conductive member, thereby generating static electricity.

5,255,154

PORTABLE ELECTRONIC APPARATUS WITH A LATCH MECHANISM INCLUDING AN INTERLOCK

Takashi Hosoi; Keizo Ohgami, and Fumiaki Takeda, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 6, 1991, Ser. No. 695,501
Claims priority, application Japan, May 7, 1990, 2-115810
Int. Cl.[5] H05K 5/02; A45C 13/10
U.S. Cl. 361—680 8 Claims



1. A portable electronic apparatus comprising:

a housing;

input means mounted on the housing for inputting information;

a display unit mounted on the housing for movement between a closed position in which the input means is covered by the display unit and an open operative position in which the input means is accessible;

a pair of latch means, each being movable between (1) a latch position in which the latch means engages the housing so as to enable the display unit to be secured in the closed position and (2) a release position in which the latch means is disengaged from the housing so as to enable the display unit to be moved into the open position;

interlocking means, movable with the latch means between a first position in which the interlock means holds the latch means in engagement with the housing to a second position in which the interlocking means allows the latch means to take the release position, the interlocking means moving between the first position and the second position as the latch means begins to move from the latch position toward the release position; and

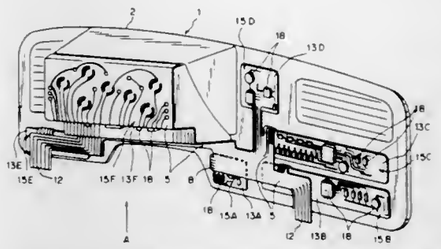
lock means for restraining the movement of the interlocking means, the lock means having an unlocked position in which the interlocking means can move with the latch means between the first position and the second position to allow the latch means to move from the latch position to the release position and a locked position in which the lock means holds the interlocking means in the first position which prevents the latch means from leaving the latch position.

5,255,155

STRUCTURE OF ELECTRIC CIRCUIT PANEL FOR INSTRUMENT PANEL OF AUTOMOBILE AND METHOD FOR FORMING THE SAME

Tetsuo Sugimoto, Osaka; Junichi Kojima, Aichi; Yoshitsugu Tsuji, Mie; Tetsuo Yamamoto, Nara, and Yukio Kominami, Mie, all of Japan, assignors to Sumitomo Wiring Systems, Ltd., Mie and Sumitomo Electric Industries, Ltd., Osaka, both of Japan

Filed Sep. 18, 1991, Ser. No. 761,529
Claims priority, application Japan, Sep. 19, 1990, 2-250946; Sep. 19, 1990, 2-250947; Feb. 22, 1991, 3-050825; Jul. 8, 1991, 3-273008
Int. Cl.[5] H05K 1/00
U.S. Cl. 361—749 11 Claims



1. An electric circuit panel structure for an instrument panel of an automobile, the instrument panel including an instrument cluster comprising a plurality of switches and instruments, said electric circuit panel structure comprising:

a flexible flat conductor wiring board; and

electric circuits provided on said board, wherein the switches and instruments are electrically connected to said electric circuits provided on said flexible flat conductor wiring board, and wherein the instrument cluster includes a plurality of recesses and raised surfaces, said flexible flat conductor wiring board being affixed to and conforming with the plurality of recesses and raised surfaces formed on the instrument cluster.

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5,255,156

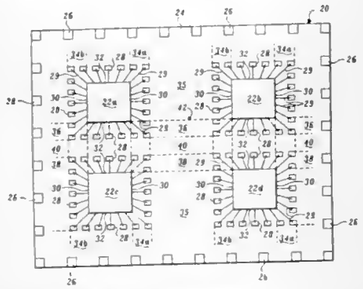
BONDING PAD INTERCONNECTION ON A MULTIPLE CHIP MODULE HAVING MINIMUM CHANNEL WIDTH

Kou-Chaun Chang, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 314,817, Feb. 22, 1989. This application Sep. 6, 1991, Ser. No. 756,319

Int. Cl.[5] H05K *7/02*

U.S. Cl. 361—783 **7 Claims**



1. An electrical circuit comprising:

a generally planar substrate;

a plurality of integrated circuits mounted on the substrate, each integrated circuit having associated with it a plurality of bond pads to which the integrated circuit is electrically coupled, the bond pads being disposed at a distance from a perimeter of the integrated circuit and arranged in a spaced-apart array, thereby defining a side channel between the perimeter of the integrated circuit and the bond pads associated with it, and defining a central channel between the bond pads associated with that integrated circuit and the bond pads associated with an adjacent integrated circuit;

a plurality of conductive traces formed on the substrate, for conducting electrical signals to and from the bond pads of the integrated circuits, wherein at least a portion of the conductive traces lie in said side channels adjacent the integrated circuits, and a portion of the conductive traces lie in the central channel between the bond pads associated with the adjacent integrated circuits.

5,255,157

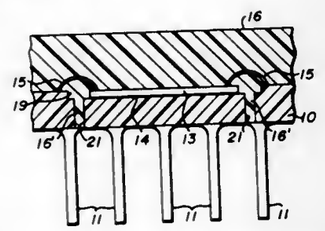
PLASTIC PIN GRID ARRAY PACKAGE WITH LOCKING PILLARS

Uli Hegel, Novato, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jan. 24, 1992, Ser. No. 824,641

Int. Cl.[5] H05K *7/02*

U.S. Cl. 361—783 **9 Claims**



1. A molded plastic semiconductor package comprising:

a printed wiring board having at least one semiconductor device mounted thereupon;

said printed wiring board having an array of traces having tips that form a pattern surrounding the periphery of said semiconductor device;

means for electrically connecting a trace pattern to said semiconductor device;

said printed wiring board further including a plurality of holes that extend completely therethrough in the trace pattern that surrounds the periphery of said semiconductor device; and

a molded plastic encapsulant covering said semiconductor device and extending over said printed wiring board to cover said means for electrically connecting said trace pattern to said semiconductor device and wherein said plastic encapsulant includes posts that extend through said plurality of holes to mechanically lock said encapsulant to said printed wiring board.

5,255,158

MICROWAVE CONNECTOR ASSEMBLY CONNECTED EASILY TO MICROWAVE CIRCUIT COMPONENTS

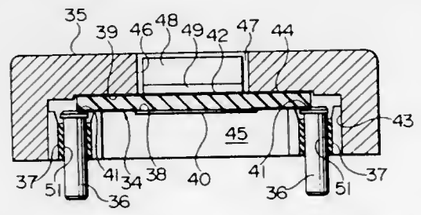
Yuhei Kosugi, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jun. 5, 1992, Ser. No. 893,723

Claims priority, application Japan, Jun. 7, 1991, 3-135204

Int. Cl.[5] H05K *7/02*

U.S. Cl. 361—760 **8 Claims**



1. A microwave connector assembly for use in electrical connection to terminals of at least one microwave circuit component, said microwave connector assembly comprising:

a substrate having a principal surface on which said at least one microwave circuit component is mounted;

a housing having bottom and wall surfaces which define a cavity for receiving said substrate with said substrate brought into contact with said bottom surface;

a conductor contact pin connected to one of said terminals and having a part projected outwardly of said cavity for connection to an external conductor; and

an insulator support member for supporting said conductor contact pin movable to and away from said substrate.

5,255,159

CIRCUIT BOARD SPACER

Douglas A. Seyk, Glendale, Ariz., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 25, 1990, Ser. No. 603,069

Int. Cl.[5] H05K *7/10;* **B23K** *31/02*

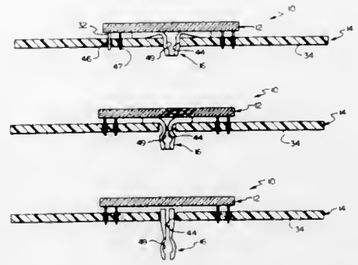
U.S. Cl. 361—770 **3 Claims**

1. A circuit board spacer, for placement between a pin grid array with a plurality of pins and a circuit board with respective pin holes during a soldering of the pins at the pin holes to the circuit board and for placement in a central opening of the circuit board, comprising:

a cylindrical body for insertion partly in the central opening and having an axis and an axial aperture and a radially outer surface and a radially inner surface and a first axial end face and a second axial end face; and

a plurality of radial legs each having a radial leg portion which is connected to an axial leg portion that is connected to the second axial end face; wherein

the radial leg portion has a hinge-like flexure portion for ease of bending the radial leg portion from a radial direction to an axial direction; and wherein



the radially inner surface has a step portion having a bearing surface for bearing against a bearing surface of an extraction rod.

5,255,160

ELECTRONIC DEVICE PACKAGE

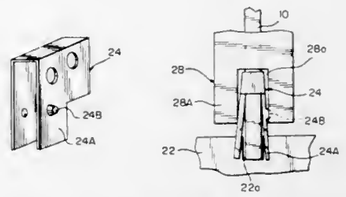
Misao Iwatare, Tokyo; Toshimasa Umetsu, Miyagi; Toshio Nakanishi, Tokyo; Makoto Moribe, Tokyo; Keijiro Kadomatsu, Tokyo; Toshiki Shimasaki, Tokyo, and Satoru Onodera, Tokyo, all of Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 10, 1991, Ser. No. 804,382

Claims priority, application Japan, Dec. 12, 1990, 2-402947[U]; Jan. 31, 1991, 3-16142[U]

Int. Cl.[5] H05K *7/14;* **H01R** *13/62*

U.S. Cl. 361—798 **3 Claims**



1. An electronic device package accommodatable in an electronic device casing, comprising:

a printed circuit board having a connector for mating with a connector which is mounted on said casing, said printed circuit board being formed with a notch in the front lower edge thereof;

elastic mechanical plate means affixed to said printed circuit board and having substantially the same thickness dimension as said printed circuit board, said elastic mechanical plate means being formed with an open portion at the lower end thereof which is so dimensioned as to be received in said notch and having outwardly extending lugs; and

ejector means rotatably mounted on said printed circuit board and capable of holding said elastic mechanical plate means from opposite sides;

said ejector means being rotated to press said lugs of said elastic plate to close said elastic mechanical plate means or rotated to release said lugs to open said elastic plate means.

5,255,161

WIRE GUIDE ELEMENT FOR A DISTRIBUTOR UNIT IN TELECOMMUNICATION SYSTEMS

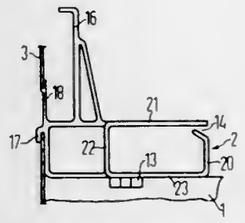
Rudolf Knoll, Berg, and Peter Stoerk, Eurasburg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 10, 1991, Ser. No. 804,365

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1990, 9017155[U]

Int. Cl.[5] H02G *9/04;* **H02B** *1/20*

U.S. Cl. 361—826 **20 Claims**



1. A wire guide element for distributor units in telecommunication systems, each of the distributor units having an oblong and substantially U-shaped carrier part that accepts plug connector strips for connecting and joining outgoing and incoming lines, at least one retainer element attached to a first end of the carrier part, the carrier part having legs, whereby line leads proceed between distributor units respectively arranged neighboring one another and whereby a separate cover hood is provided for each distributor unit, comprising:

a non-metallic hollow member having open opposed sides, and at least a rear wall and a lower wall, said lower wall having at least one outwardly projecting guide peg that plugs onto an end face of a respective leg of the legs of the carrier part at a first end thereof; and

a fastening element attached to said rear wall of said hollow member, said fastening element forming a mechanical connection with the retainer element that is connected to the first end of the carrier part;

wherein said hollow member forms a transverse channel between respective neighboring distributor units for the line leads.

5,255,162

LIGHTING DEVICE FOR A GRILLE OF A CAR STEREO

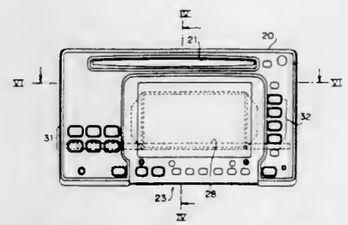
Masashi Kawamoto, Saitama, Japan, assignor to Pioneer Electric Corporation, Tokyo, Japan

Filed May 6, 1992, Ser. No. 879,235

Claims priority, application Japan, May 7, 1991, 3-041246[U]; Dec. 9, 1991, 3-109240[U]

Int. Cl.[5] G01D *11/28*

U.S. Cl. 362—26 **10 Claims**



1. A lighting device for a grille of a car stereo, the grille having a recess, an operation flap pivotally mounted in the recess, an opening for inserting a sound recording medium formed at a position behind the flap and in the recess, a liquid crystal display panel provided in the flap, and a plurality of

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buttons for operating the car stereo, the lighting device comprising:

a first light source provided behind the operation flap;

a first light introducing plate having a rear end and provided in the flap and disposed behind the liquid crystal display panel, the rear end of the first light introducing plate being positioned adjacent the first light source when the flap is closed, whereby the liquid crystal display panel is lighted by light transmitted from the first light source through the light introducing plate; and

at least one second light introducing plate provided adjacent the first light source and behind the buttons so as to light the buttons.

5,255,163

HEADLIGHT FOR MOTOR VEHICLE

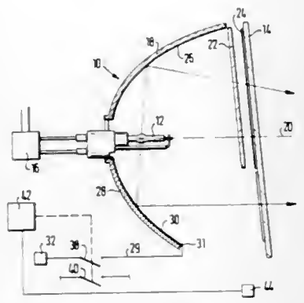
Rainer Neumann, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 8, 1993, Ser. No. 1,806

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1992, 4202872

Int. Cl.[5] B60Q *1/04*

U.S. Cl. 362—61 **7 Claims**



1. A headlight for a motor vehicle, comprising a gas discharge lamp as a light source emitting visible light and light in UV-wavelength region; a reflector having a first region which reflects the light for forming a low beam and a second region which reflects an additional light beam illuminating a region located beyond a region illuminated by the low beam; a filter arranged in a path of the additional light beam and at least partially absorbing the visible light and at least partially permeable for light in UV-wavelength region, said filter being formed by a coating which covers said second reflector region and is composed of a filtering material.

5,255,164

SAFETY LIGHT MARKER SYSTEM FOR MOTOR VEHICLES

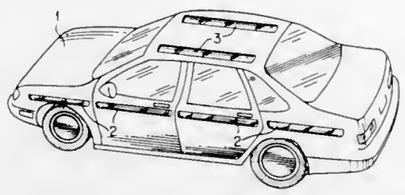
Gabriel Eidelman, 11705 Dinwiddie Dr., Rockville, Md. 20852, assignor to Gabriel Eidelman, Rockville, Md.

Filed Feb. 14, 1992, Ser. No. 835,493

Int. Cl.[5] B60Q *1/26*

U.S. Cl. 362—80 **1 Claim**

1. A safety light marker system for a vehicle for indicating vehicle location and signalling adjacent taller vehicles, said vehicle having an electric signalling system including a turning signal and a brake signal, said vehicle having a roof, said roof being generally polygonal having a front, a rear, a left and a right edge, the safety light marker system comprising two parallel elongated fixtures mounted on the roof substantially along the entire length thereof, said fixtures being disposed substantially parallel to the left and right side edges and displaced therefrom by a distance less than half of said width of said front and rear edges such that a first of said fixtures lies along said left edge while a second of said fixtures lies along said right edge, each of said fixtures including at least one light source adapted to provide illumination along the entire length of each of said fixtures for viewing from above so that said adjacent taller vehicles can determine, at low ambient light conditions, the location and orientation of the vehicle, said at least one light source of each of said fixtures being connected to said vehicle's said electric signalling system whereby said adjacent taller vehicles can view a turning signal and a brake signal from said light source when said signals are activated by said electric signalling system.



5,255,165

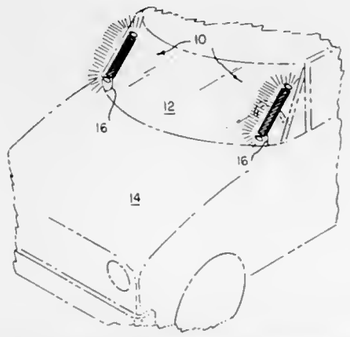
BRAKE LIGHT ASSEMBLY

John M. Cail, 4415 W. Florence Campbellstown Rd., Eaton, Ohio 45320

Filed Sep. 24, 1992, Ser. No. 949,990

Int. Cl.[5] B60Q *1/44*

U.S. Cl. 362—80.1 **2 Claims**



1. A new and improved brake light assembly for a vehicle comprising:

a housing, said housing having a light transmitting lens, illumination means in said housing,

conductor means adapted to be connected between said illumination means and a brake light circuit of said vehicle, and

means for mounting said housing on a front windshield inside surface of said vehicle, wherein said mounting means comprises a rim of flexible material peripherally surrounding said light transmitting lens, said rim having a hollow space therein, passage means between said hollow space and an exterior of said rim, encapsulated liquid means in said hollow space, and puncture means for perforating said encapsulation and causing said liquid adhesive to flow through said passage means upon flexure of said rim.

5,255,166

APPARATUS FOR ILLUMINATING A VEHICLE LICENSE PLATE AND METHOD OF USING SAME

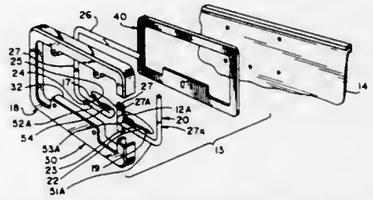
Jaime D. Gonzalez, 9390 Suva, Downey, Calif. 90240

Continuation-in-part of Ser. No. 839,814, Feb. 21, 1992, Pat. No. 5,192,125, which is a continuation of Ser. No. 741,784, Aug. 6, 1991, Pat. No. 5,150,961. This application Jan. 19, 1993, Ser. No. 5,583

The portion of the term of this patent subsequent to Mar. 9, 2010, has been disclaimed.

Int. Cl.[5] B60Q *1/56*

U.S. Cl. 362—83.2 **11 Claims**



1. An illuminating apparatus for use with the electrical system of a motor vehicle, comprising:

hollow tube means having a gas disposed therewithin for providing a source of bright glowing light, said tube means having a set of spaced apart electrodes;

a small sized printed circuit board disposed near said hollow tube means for electrical device mounting thereon;

power means mounted to said printed circuit board and coupled to the electrical system of the motor vehicle for receiving direct current power from the motor vehicle;

high-voltage high-frequency transformer means mounted to said printed circuit board and responsive to said power means for providing high-voltage electrical power to energize said tube means;

low-voltage conductor means for helping to couple said high voltage high frequency transforming means to the electrical system of the motor vehicle;

tube holder means adapted to be mounted to the motor vehicle for receiving and supporting said tube means in a stationary manner relative to the motor vehicle;

means defining a small space for receiving said printed circuit board within said tube holder means; and

nonconductive protective cover means for insulating said tube means and said high-voltage high-frequency transformer means within said tube holder means to substantially prevent electrical short circuit between said high-voltage high-frequency transformer means and the motor vehicle.

5,255,167

FINGER MOUNTED LASER SPOTLIGHT

Gregory J. Toussaint, Beavercreek, Ohio; Gregory R. Lynch, Niceville, Fla., and Robert J. Feldmann, Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation of Ser. No. 812,085, Dec. 23, 1991, abandoned. This application Dec. 17, 1992, Ser. No. 1,426

Int. Cl.[5] F21L *15/08*

U.S. Cl. 362—103 **2 Claims**

1. A near-infrared spotlight for mounting over a hand, comprising:

(a) a near-infrared laser diode;

(b) a heat sink housing attached to the near-infrared laser diode;

(c) means for positioning the near-infrared laser diode over a finger of the hand;

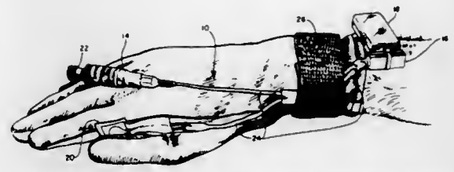
(d) a focusable lens assembly, the focusable lens assembly including a threaded hollow shaft for threading into the heat sink housing, a locking ring and a lens mounted on the threaded hollow shaft, wherein rotation of the threaded hollow shaft moves the lens relative to the near-infrared laser diode;

(e) stop means for limiting rotation of the threaded hollow shaft into the heat sink housing beyond a preselected position relative to the near-infrared light source so that a beam of near-infrared light emitted from the near-infrared laser diode cannot be focused more narrowly than a preselected divergence angle greater than a collimated beam of light;

(f) a laser diode power supply electrically connected to the near-infrared laser diode;

(g) a battery electrically connected to the laser diode power supply; and,

(h) a momentary switch electrically connected between the battery and the power supply.



5,255,168

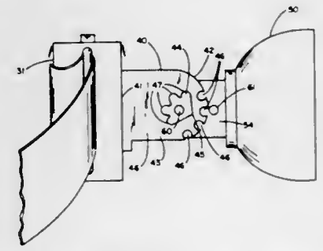
ADJUSTABLE SAFETY LIGHT BELL

Katrine B. Stevens, 10 Hamilton St., Salem, Mass. 01970

Filed Apr. 29, 1992, Ser. No. 875,298

Int. Cl.[5] F21L *15/08*

U.S. Cl. 362—108 **7 Claims**



1. A safety light belt worn by a person comprising:

a belt having two ends, an outer face and an inner face;

a holder attached centrally to the belt outer face and having a back, top, bottom, two sides and a front;

a light housing assembly with forward and rearward ends and containing illumination means adjustably connected to said holder and adjustably positioned therein so that said light housing assembly may illuminate an area forwardly upward, horizontal, or downward from a worn position on a person;

power supply means contained within said holder and electrically connected to said illumination means within said light housing assembly;

said holder containing a holder extension element protruding horizontally from its front;

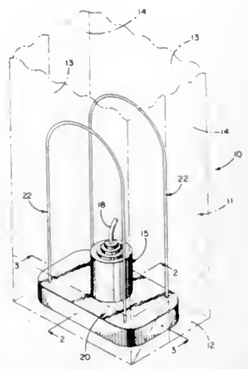
said light housing assembly being attached to said holder extension element; and

wherein said holder extension element is formed into two flat, prongs, each having an external side, and two ends, a holder end and an extension end, each extension end having a semicircular shape and a plurality of open, circular notches said circular notches positioned with respect to a horizontal reference forward of the holder, and along each holder extension element eternal side, an obtuse

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triangular opening formed at the approximate midpoint of the diameter chord line of said semicircular shaped.

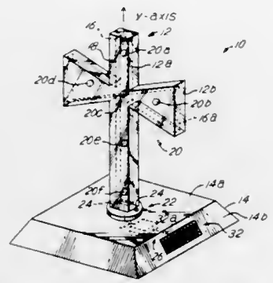
5,255,169
LUMINARY
Dustin Koch, 1019 Franklin Pl., Rockford, Ill. 61103
Filed Jan. 25, 1993, Ser. No. 8,631
Int. Cl.[5] F21L *19/00*
U.S. Cl. 362—162 **1 Claim**



1. A luminary comprising a one-piece and upright flexible sack having an open top, having a generally rectangular bottom wall, having a pair of generally parallel front and rear panels upstanding from said bottom wall, and having a pair of opposing side panels upstanding from said bottom wall and extending between said front and rear panels, a generally rectangular block of substantial weight disposed in said sack and resting on the bottom wall thereof to hold said sack in an upright position, said block having an upper side with a center portion and with four corner portions, a candle having a lower end, means in the center portion of the upper side of said block and engageable with the lower end of said candle to hold the candle in an upright position in said sack, an upwardly opening hole formed in the upper side of said base adjacent each of said corner portions, a pair of wires, each wire being of generally inverted U-shaped configuration and having two end portions, the end portions of one of said wires being received in two adjacent ones of said holes, the end portions of the other of said wires being received in the other two of said holes, said wires being disposed in upright positions and holding the panels of said sack away from said candle and the flame produced thereby when the candle is lit.

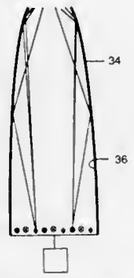
5,255,170
ILLUMINATED MEMORIAL
Diann F. Plamp, Mitchell, and LaDell R. Swiden, Brookings, both of S. Dak., assignors to Cemeteries Aglow, Inc., Mitchell, S. Dak.
Continuation of Ser. No. 792,549, Nov. 15, 1991, abandoned. This application Dec. 16, 1992, Ser. No. 991,167
Int. Cl.[5] F21L *9/00*
U.S. Cl. 362—183 **6 Claims**

4. A memorial comprising, in combination:
a base member;
a monument member secured to said base member and made of a substantially translucent material, said monument member having a configuration and an internal cavity substantially conforming to said configuration;
power means for providing electrical power, said power means including solar panel means for converting solar radiation to electrical energy and a battery interconnected to said solar panel means;
illumination means for illuminating said monument member in response to electrical power from said power means, said illumination means including at least one light source within said internal cavity, said illumination means, said substantially translucent material, said internal cavity and said power means cooperating to define means for providing a substantially glowing appearance to said monument member;
timer means for timing a predetermined period and issuing a timing signal at the end thereof;
light detection means for sensing ambient light and generating an ambient signal whenever a predetermined darkness threshold is met; and



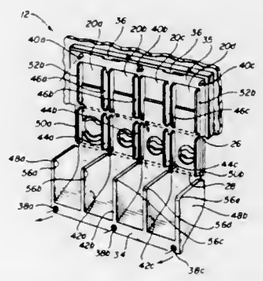
control means, coupled to said power means, said illumination means, said timer means, and said light detection means, for interconnecting said power means to said illumination means and initiating said timer means in response to said ambient signal; for disconnecting said power means from said illumination means and resetting said timer means in response to said timing signal; and for disconnecting said power means from said illumination means and resetting said timer means in response to termination of said ambient signal during said predetermined period.

5,255,171
COLORED LIGHT SOURCE PROVIDING INTENSIFICATION OF INITIAL SOURCE ILLUMINATION
L. Douglas Clark, 15 Conrad St., San Francisco, Calif. 94131
Filed Nov. 27, 1991, Ser. No. 799,117
Int. Cl.[5] F21V *7/00*; **G03B** *27/54*
U.S. Cl. 362—231 **19 Claims**



1. A light concentrator for an optical scanning input device, comprising:
concentrator means having a relatively large, diverging end, a relatively small converging end, and an enclosing wall joining said relatively large, diverging end with said relatively small converging end, said enclosing wall having an inner surface, and
a plurality of light sources arranged to supply a plurality of respective colors of light, said plurality of light sources being positioned adjacent said large, diverging end of said concentrator means so that light from said plurality of sources is directed into said large, diverging end,
said concentrator means being hollow and having a substantially parabolic shape when seen in axial cross section such that (a) when said light is directed into said large, diverging end, it will be reflected only once from said inner surface of said enclosing wall and then emerge out of said converging end, and (b) the intensity of light at said large, diverging end.

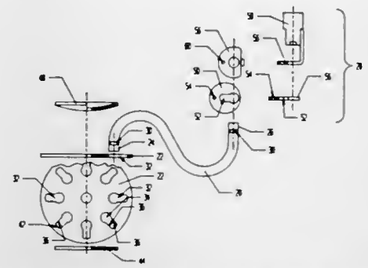
5,255,172
MESSAGE ILLUMINATION ASSEMBLY AND METHOD OF MANUFACTURE
Thomas A. Brandon, Livonia; Santo S. DeMaggio, deceased, late of Warren by Marion Steinbrecher, Executrix , and Vern E. Welch, Reading, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Sep. 25, 1992, Ser. No. 951,506
Int. Cl.[5] F21V *1/00*
U.S. Cl. 362—240 **16 Claims**



1. A message illumination assembly comprising:
at least one light enclosure formed from a single piece of folded molded plastic, said light enclosure including end walls molded on an inner surface thereof and two spaced living hinges; molded as part of the surface thereof
at least one partition molded on an inner surface of said light enclosure to form separate chambers therein;
each chamber having a first opening for insertion of a lighting means and also a second opening for placement of an indicator message thereover.

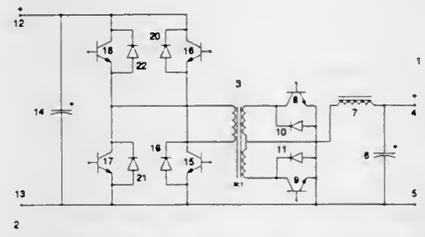
5,255,173
CHANDELIER ASSEMBLIES MADE OF INTERLOCKING COMPONENTS
Arnold Schonbek, Plattsburgh, N.Y., assignor to Schonbek Worldwide Lighting Inc., Plattsburgh, N.Y.
Continuation of Ser. No. 814,073, Dec. 24, 1991, abandoned, which is a continuation of Ser. No. 539,606, Jun. 18, 1990, abandoned. This application Sep. 4, 1992, Ser. No. 940,779
Int. Cl.[5] F21S *1/06*
U.S. Cl. 362—405 **28 Claims**

1. A chandelier framework comprising:
a first plate having plates slots and opposing plate surfaces, the surfaces being planar and parallel over at least a predetermined area of the plate,
tubular arms having arm slots, each arm extending through a respective plate slot, each respective plate slot being positioned in the predetermined area and each arm extending through the respective plate slot along a direction that is substantially perpendicular to planes defined by the opposing plate surfaces in the predetermined area, with the arm slot engaging the opposing surfaces of the plate adjacent the respective plate slot, the arm slots and the plate slots being shaped with respect to one another to prevent rotational movement of the arms within the slots, and
a second plate secured to the first plate, the second plate having at least one second plate surface that is substantially planar over a second predetermined area thereof, the



second predetermined area engaging at least a portion of the predetermined area of the first plate along one of the opposing plate surfaces, and
the second plate having a side edge abutting a surface of at least two arms for preventing lateral movement of the at least two arms within the plate slots.

5,255,174
REGULATED BI-DIRECTIONAL DC-TO-DC VOLTAGE CONVERTER WHICH MAINTAINS A CONTINUOUS INPUT CURRENT DURING STEP-UP CONVERSION
Muthu K. Murugan, Howell, N.J., assignor to Allied-Signal Inc., Morris Townsbip, Morris County, N.J.
Filed Oct. 18, 1991, Ser. No. 779,202
Int. Cl.[5] H02M *3/337*
U.S. Cl. 363—17 **6 Claims**



1. A bi-directional DC-to-DC voltage converter, which comprises:
a boost sub-circuit having a positive input/output terminal and a negative input/output terminal;
a bridge sub-circuit having a positive input/output terminal and a negative input/output terminal, said negative input-/output terminal being coupled to the negative input/output terminal of the boost sub-circuit;
a transformer having a primary and a secondary winding, said primary winding having a first terminal and a second terminal, said secondary winding having a first terminal, a second terminal, and a center-tap terminal;
a first filter capacitor coupling the positive and negative input/output terminals of said boost sub-circuit;
an inductor coupling the positive input/output terminal of said boost sub-circuit with the center-tap terminal of said transformer;
a first switching means interposed between the first terminal of said secondary winding and the negative input/output terminal of said boost sub-circuit;
a first rectifying means interposed between the first terminal of said secondary winding and the negative input/output

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terminal of said boost sub-circuit, and polarized so as to allow current to flow from the negative input/output terminal of said boost sub-circuit to the first terminal of said secondary winding;

a second switching means interposed between the second terminal of said secondary winding and the negative input/output terminal of said boost sub-circuit;

a second rectifying means interposed between the second terminal of said secondary winding and the negative input/output terminal of said boost sub-circuit, and polarized so as to allow current to flow from the negative input/output terminal of said boost sub-circuit to the second terminal of said secondary winding;

a third switching means interposed between the second terminal of said primary winding and the negative input/output terminal of said bridge sub-circuit;

a third rectifying means interposed between the second terminal of said primary winding and the negative input/output terminal of said bridge sub-circuit, and polarized so as to allow current to flow from the negative input/output terminal of said bridge sub-circuit to the second terminal of said primary winding;

a fourth switching means interposed between the second terminal of said primary winding and the positive input/output terminal of said bridge sub-circuit;

a fourth rectifying means interposed between the second terminal of said primary winding and the positive input/output terminal of said bridge sub-circuit, and polarized so as to allow current to flow from the second terminal of said primary winding to the positive input/output terminal of said bridge sub-circuit;

a fifth switching means interposed between the first terminal of said primary winding and the negative input/output terminal of said bridge sub-circuit;

a fifth rectifying means interposed between the first terminal of said primary winding and the negative input/output terminal of said bridge sub-circuit, and polarized so as to allow current to flow from the negative input/output terminal of said bridge sub-circuit to the first terminal of said primary winding;

a sixth switching means interposed between the first terminal of said primary winding and the positive input/output terminal of said bridge sub-circuit;

a sixth rectifying means interposed between the first terminal of said primary winding and the positive input/output terminal of said bridge sub-circuit, and polarized so as to allow current to flow from the first terminal of said primary winding to the positive input/output terminal of said bridge sub-circuit;

a second filter capacitor coupling the positive and negative input/output terminals of said bridge sub-circuit.

5,255,175

POWER GENERATION SYSTEM HAVING INDUCTION GENERATOR AND CONTROLLED BRIDGE RECTIFIER

Hiroshi Uchino, Hachioji, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 522,127, May 11, 1990, abandoned. This application Apr. 8, 1992, Ser. No. 865,684

Claims priority, application Japan, May 15, 1989, 1-118706; Jun. 1, 1989, 1-137458; Jun. 28, 1989, 1-163777

Int. Cl.[5] H02M *7/217*

U.S. Cl. 363—81 **11 Claims**

4. A power generating system comprising:

means for generating AC power;

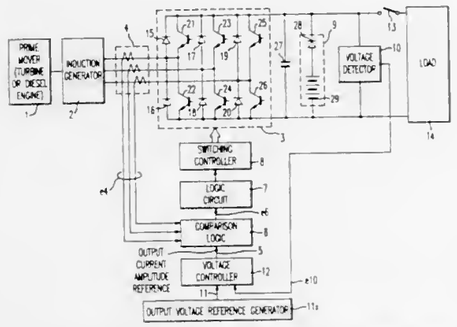
means for converting the AC power into DC power;

means for detecting an AC current flowing from said generating means to said converting means to provide an AC current signal;

means for generating a current amplitude reference having no frequency component which determines an amplitude of said AC current;

control means for comparing said AC current signal with said current amplitude reference to provide a comparison result, and controlling the power conversion operation of said converting means in accordance with said comparison result, such that the amplitude of said Ac current does not exceed an amplitude corresponding to said current amplitude reference;

means for detecting a DC output voltage of said converting means to provide a DC voltage signal;



wherein said current amplitude reference generating means includes means for comparing said DC voltage signal with a given output voltage reference to provide a comparison result, and for amplifying the comparison result to generate said current amplitude reference, and

wherein said control means has a function for controlling the DC output voltage of said converting means in accordance with said current amplitude reference.

5,255,176

CONTROL CIRCUIT FOR AN INVERTER OPERABLE IN AN INDIVIDUAL MODE AND AN INTERCONNECTION MODE

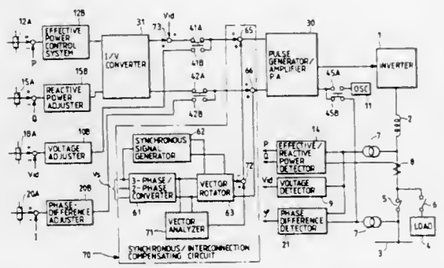
Yasunori Hatta, and Naoya Eguchi, both of Kanagawa, Japan, assignors to Fuji Electronic Co., Ltd., Kanagawa, Japan

Filed Jul. 18, 1991, Ser. No. 731,879

Claims priority, application Japan, Jul. 20, 1990, 2-191968

Int. Cl.[5] H02M *7/44*

U.S. Cl. 363—95 **6 Claims**



1. A control circuit for a voltage inverter for converting DC voltage to AC voltage operable in an individual mode and an interconnection mode, said control circuit comprising an individual control system in which the AC voltage is controlled in a constant-voltage and individually supplied to a load; a synchronous-interconnection control system for controlling an amplitude and a phase of an output voltage of said voltage inverter to synchronize the amplitude and phase with those in a power system and incorporating said inverter into the power system; and an effective power control system and a reactive power control system for controlling the effective component and the reactive component of an electric power transferred between the power system and said inverter interconnected with the power system, thereby to perform the interconnection mode operation; said control circuit serving also as a voltage adjuster for making a constant-voltage control or a synchronous control of said AC voltage, said control circuit further comprising:

a synchronous compensating circuit in which, when said inverter is operating in a power system synchronous operation mode under control of said synchronous-interconnection control system, a quantity of an instantaneous voltage variation occurring in the power system is detected in terms of a quantity of the component in phase with a reference voltage vector as the vector of the output voltage of said inverter, and a quantity of the orthogonal component, orthogonal to said reference voltage vector, is detected, and the detected variation quantities are respectively added to the outputs of a voltage adjuster and a phase adjuster in said synchronous-interconnection control system.

5,255,177

HIGH-VOLTAGE POWER SOURCE CONTROL DEVICE

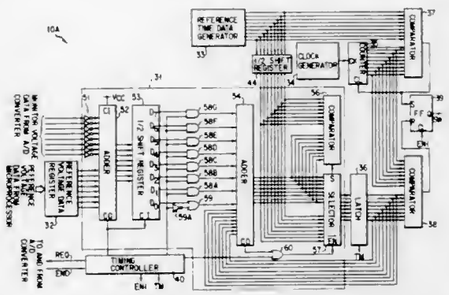
Juntaro Oku, Numazu, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Jun. 24, 1992, Ser. No. 903,515

Claims priority, application Japan, Jun. 27, 1991, 3-156621

Int. Cl.[5] H02M *3/28, 7/48*

U.S. Cl. 363—95 **8 Claims**



1. A high-voltage power source control device comprising:

pulse generating means for holding duration data and periodically generating a switching pulse of a duration corresponding to the duration data;

monitor means for generating a monitor voltage corresponding to an output voltage of a high voltage power source;

A/D converter means for outputting monitor voltage data based on the monitor voltage from said monitor means; and

control means for deriving a difference between the monitor voltage data from said A/D converter means and a reference voltage data as adjustment data, adding the adjustment data to the duration data, and setting the result of addition into said pulse generating means as new duration data to change the duty ratio of the switching pulse, thereby maintaining the output voltage of the high voltage power source at or near a reference voltage corresponding to the reference voltage data, said control means having dividing means for decreasing the adjustment data at a preset rate.

5,255,178

HIGH-FREQUENCY SWITCHING-TYPE PROTECTED POWER SUPPLY, IN PARTICULAR FOR ELECTROSTATIC PRECIPITATORS

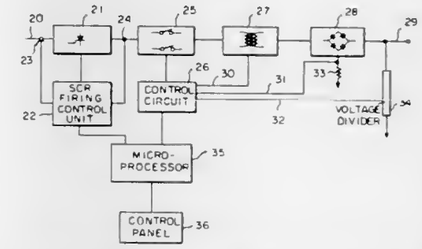
Guglielmo Liberati, Viareggio, Italy, assignor to Enel S.p.A., Rome, Italy

Filed Mar. 25, 1992, Ser. No. 857,154

Claims priority, application Italy, Apr. 12, 1991, 91 A/000083

Int. Cl.[5] H02M *5/443;* **B03C** *3/68*

U.S. Cl. 96—80 **9 Claims**



1. A high-frequency switching-type protected power supply, in particular for electrostatic precipitators, comprising

a regulated power supply means for providing direct voltage adjusted at a desired value and at a relatively low voltage;

a high efficiency, high frequency switching means connected to said regulated power supply means;

a step-up voltage transformer driven by said switching means until reaching substantially the desired operating voltage of the electrostatic precipitators;

a rectifier means feeding the electrostatic precipitators and connected to said step-up voltage transformer;

control circuit means connected to said high frequency switching means to control said switching means in response to abnormalities indicating an incipient discharge between electrostatic precipitator electrodes to modify the operating conditions in order to avoid the formation of disruptive discharges with consequent damage to power supply or electrostatic precipitators;

and means to signal possible incipient saturation of a core of said step-up voltage transformer connected to said control circuit means.

5,255,179

SWITCHED MODE POWER SUPPLY FOR SINGLE-PHASE BOOST COMMERCIAL AC USERS IN THE RANGE OF 1 KW TO 10 KW

Boze N. Zekan, 11 Boese Court, St. Catharines, Ontario, Canada L2N 7E7 , and Luciano Dellasmirra, 40 Sumbler Road, Welland, Ontario, Canada L3C 3N9

Continuation-in-part of Ser. No. 555,710, Jul. 23, 1990, abandoned. This application Jun. 28, 1991, Ser. No. 723,029

Int. Cl.[5] H02M *3/337*

U.S. Cl. 363—133 **17 Claims**

1. A DC to AC power converter, comprising:

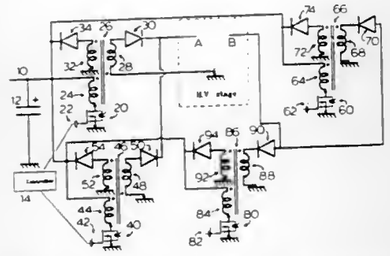
a converter circuit connectable to a low voltage DC source, and including a first and second pair of switch means for converting the DC source to an AC voltage by alternately switching between each switch means of the pair of switch means for producing a pulse train and by alternately switching between said first and second pairs of switch means, for producing a positive half cycle from the pulse train of the first pair of switch means and a negative half cycle from the pulse train of the second pair of switch means,

a first pair of transformers for boosting the voltage of the positive half cycle and a second pair of transformers for boosting the voltage of the negative half cycle, each of said transformers having a unidirectional short path for

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resetting the flux of the core of the transformer whereby one transformer is resetting while the other of the pair is conducting,

a filter means connected between an AC load and the first and second pair of transformers and having a plurality of damping modes for extracting a fundamental frequency from the output of the transformers, and having a control means responsive to a signal for switching between damping modes,



a sine wave oscillator for generating a sine wave at the fundamental frequency, and

feedback means for maintaining the AC at the fundamental frequency by comparing the output of the filter means with the sine wave and producing the signal, which signal is correlatable to the difference therebetween and sending the signal to the filter means.

5,255,180

CONTROL APPARATUS FOR SYSTEMATICALLY OPERATING AUDIO AND/OR VIDEO SETS

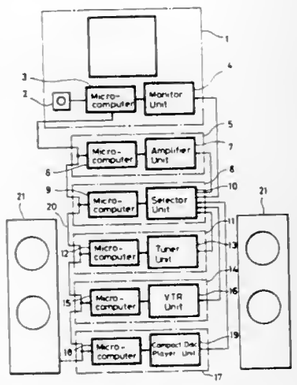
Hatsuhiko Shinoda, Tokyo; Yosuke Yukihira, Kanagawa, and Kazutoshi Matsumoto, Saitama, all of Japan, assignors to Sony Corporation, Japan

Filed Jul. 8, 1991, Ser. No. 726,808

Claims priority, application Japan, Aug. 10, 1990, 2-212596

Int. Cl.[5] G05B *19/02*

U.S. Cl. 364—140 **3 Claims**



1. A television audio system comprising:

a television and television control means;

an amplifier and amplifier control means;

a tuner and tuner control means;

a video tape recorder and video tape recorder control means; and

a compact disc player and compact disc player control unit;

a selector unit and selector control means;

wherein said selector control means has a plurality of different programming modes and said television control means, amplifier control means, tuner control means, video tape recorder control means, and compact disc player control means are connected to said selector control means and responsive to said selector control means in accordance with said plurality of different programming nodes, and;

wherein in a first of said plurality of different programming modes, an output signal is provided to turn on said amplifier, an output signal is provided to turn on said television, an output signal is provided to turn on said selector unit, an output signal is provided to select said tuner, an output signal is provided to turn on said tuner and an output signal is provided to select a channel.

5,255,181

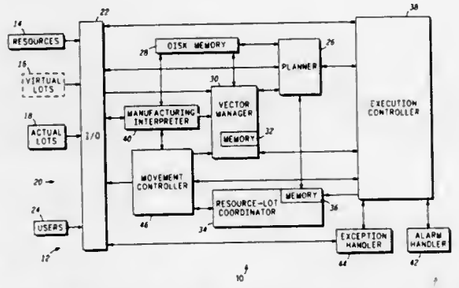
METHOD OF PLANNING ORGANIZATIONAL ACTIVITIES

William Chapman, Scottsdale; William Capen, Phoenix; Gwo-Jer Chang; Christopher Handorf, both of Mesa; Anant Raman, Chandler; Ajay Sevak, Tempe, and Kolur Venkatesh, Chandler, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 1, 1990, Ser. No. 532,306

Int. Cl.[5] G06F *15/22, 15/24;* **G06G** *7/52*

U.S. Cl. 364—401 **18 Claims**



1. A method for allocating a multiplicity of organizational resources to a plurality of organizational lots to accomplish organizational goals, said method comprising the steps of:

forming a list which identifies time-valued commitments to future uses of said resources by a first portion of said lots;

identifying one of said lots not included within said first portion of said lots, said one lot having a demand for said resources which is defined by instructions presented in a process flow description associated with said one lot;

obtaining said process flow description;

simulating allocation of said resources to said lot in accordance with said demand and said process flow description instructions, said simulated allocations refraining from interfering with said commitments identified in said list; and

modifying said list to reflect commitments to said one lot.

5,255,182

PAYMENT CARD POINT-OF-SALE SERVICE QUALITY MONITORING SYSTEM, APPARATUS, AND METHOD

Carl A. Adams, San Francisco, Calif., assignor to Visa International Service Association, San Francisco, Calif.

Filed Jan. 31, 1992, Ser. No. 828,409

Int. Cl.[5] G07G *1/12*

U.S. Cl. 364—405 **89 Claims**

27. In a transaction authorization network including a point-of-sale terminal and a central computer, wherein the point-of-sale terminal transmits a message regarding a transaction to the central computer, and the central computer processes the message and transmits the message back after processing to the point-of-sale terminal, a system for monitoring the quality of service provided by the transaction authorization network, comprising:

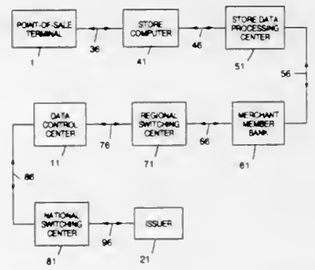
in the point-of-sale terminal

means for measuring the terminal elapsed time, the terminal elapsed time being the time that elapses between the origination time of the message and the time at which the point-of-sale terminal receives the message from the central computer, the origination time being the time at which the point-of-sale terminal begins to establish communication with the central computer,

means for generating terminal message monitoring data for each message, the terminal message monitoring data including a transaction serial number and the origination time,

means for logging at least part of the terminal message monitoring data, the at least part of the terminal message monitoring data including the transaction serial number and the origination time,

means for adding at least part of the terminal message monitoring data to the message as message monitoring data, the message monitoring data becoming part of the message, the at least part of the terminal message monitoring data added to the message including the transaction serial number,



means in the central computer for adding message monitoring data to the message, the message monitoring data becoming part of the message, the message monitoring data including

the computer elapsed time, the computer elapsed time being the time that elapses between the time at which the central computer receives the message from the point-of-sale terminal and the time at which the central computer transmits the processed message back to the point-of-sale terminal,

computer identity data, and

a computer action code, and in the point-of-sale terminal

means for adding message monitoring data to the message received by the point-of-sale terminal, the message monitoring data including an action code,

means for logging the message monitoring data in the message received by the point-of-sale terminal,

means for logging the terminal elapsed time for the message, and

terminal uploading means for uploading the logged message monitoring data, the logged terminal elapsed time, and the logged terminal message monitoring data.

5,255,183

TELEPHONE-BASED PERSONNEL TRACKING SYSTEM

Penina Katz, Flushing, N.Y., assignor to Interactive Voice Data System Inc., Flushing, N.Y. .

Filed May 29, 1990, Ser. No. 529,894

Int. Cl.[5] G06F *15/21*

U.S. Cl. 364—406 **27 Claims**

1. A method for tracking employees and generating employee reports, the method comprising:

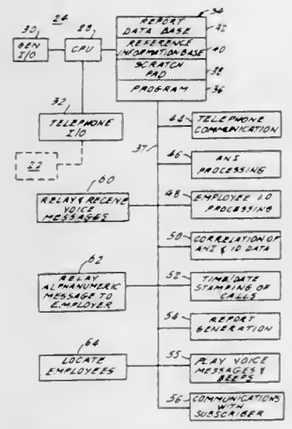
receiving telephone calls by a computer system from calling telephones located at various work sites;

detecting ANI (Automatic Number Identification) data which precedes the telephone calls;

receiving form the calling telephones employee identification codes, wherein each code identifies a respective calling employee;

providing an employee identification code data base containing valid employee identification codes;

verifying the employee identification codes being received form the calling telephones against the valid employee identification codes stored in the employee identification code data base;



creating telephone call records comprising those of the received telephone calls which have been verified against the valid employee identification codes and stamping each telephone call record with a time and date mark; and

generating a report containing information which defines for each given telephone call record the location from which the telephone call record was received based on the ANI data associated with the given telephone call record, the time and date of the telephone call and the identity of the employee.

5,255,184

AIRLINE SEAT INVENTORY CONTROL METHOD AND APPARATUS FOR COMPUTERIZED AIRLINE RESERVATION SYSTEMS

Scot W. Hornick, Naperville; Da D. Hong, Chicago, both of Ill.; Subhash Gupta, Minnetonka, and Ravi Mehrotra, Bloomington, both of Minn., assignors to Andersen Consulting, Chicago, Ill.

Filed Dec. 19, 1990, Ser. No. 630,261

Int. Cl.[5] G06F *15/26*

U.S. Cl. 364—407 **22 Claims**

1. An airline seat reservation system, comprising:

(a) a programmed computer;

(b) data storage means, coupled to the programmed computer, for storing a database describing a flight network and seat reservation requests, the flight network comprised of a known seat capacity for each of a plurality of flight legs, a known demand distribution for each of a plurality of itinerary/fare classes, a known revenue yield for a seat reserved within each itinerary/fare class, and a booking limit for each itinerary/fare class;

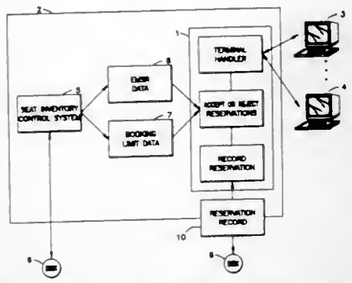
(c) the programmed computer including itinerary/fare class assignment means for processing the data base describing the flight network to assign seats in a flight leg to a plurality of itinerary/fare class combinations in at least one

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itinerary of the flight network, the assignment means comprising:

(1) means for formulating a plurality of nonlinear equations representing a constrained optimization of an expected total revenue for the flight network and a plurality of Lagrange multipliers each representing an expected marginal seat revenue for an additional seat available on a flight leg;

(2) means for refining an initial approximation of a solution to the nonlinear equations using a Newton-Raphson iteration to provide a globally optimal set of expected marginal seat revenues and booking limits;



(d) reservation terminal means, operatively connected to the programmed computer, for entering a seat reservation request for a particular itinerary/fare class; and

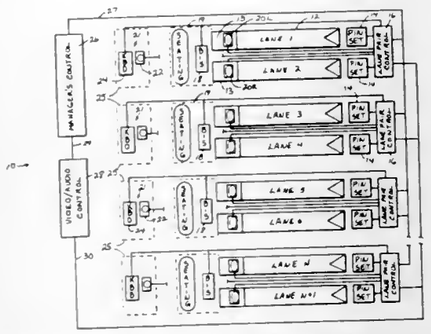
(e) the programmed computer including reservation means for receiving the seat reservation request from the reservation terminal means, for accepting or rejecting the seat reservation request in accordance with the globally optimal set of expected marginal seat revenues and booking limits, for recording the seat reservation request in the data storage means, and for transmitting an electronic status signal of the seat reservation request to the reservation terminal means.

5,255,185

BOWLING CENTER VIDEO DISPLAY SYSTEM

David L. Mowers, Muskegon, Mich.; Santo A. Lamantia, Woodridge, Ill.; David J. Mueller, Naperville, Ill.; Bruce N. Alleshouse, Wilmette, Ill.; Victor S. Barczyk, Upland, Calif.; Gerald A. Pierce, Redwood City, Calif.; David C. Wyland, San Jose, Calif.; Lawrence E. Demar, Chicago, and Paul G. Dussault, Barrington, both of Ill., assignors to Brunswick Bowling & Billiards Corp., Lake Forest, Ill.

Division of Ser. No. 182,977, Apr. 18, 1988, Pat. No. 5,101,354.
This application Jul. 2, 1991, Ser. No. 724,793
Int. Cl.[5] G06F *15/44*
U.S. Cl. 364—411 **15 Claims**



1. In a bowling center system including a plurality of bowling lanes, a plurality of bowling scoring systems, and a manager's control system connected to said bowling score systems, a video display system comprising:

a plurality of video source devices each including means for transmitting a video signal to convey dynamic video of still pictures displayed in rapid succession to provide an illustration of motion;

a plurality of video display terminals remotely located from said manager's control system and operable to display dynamic video information responsive to a received video signal;

a video communication network coupled to said transmitting means and said display terminals;

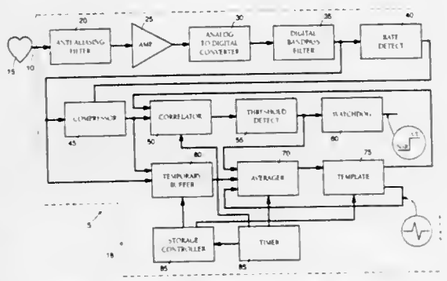
switching means operatively associated with said manager's control system and coupled in said video communication network for selectively coupling one of said video source device transmitting means to a selected video display terminal to receive the transmitted video signal so that said one video display terminal displays the dynamic video information associated with the received signal.

5,255,186

SIGNAL AVERAGING OF CARDIAC ELECTRICAL SIGNALS USING TEMPORAL DATA COMPRESSION AND SCANNING CORRELATION

Bruce M. Steinhaus, Parker, and Randy T. Wells, Littleton, both of Colo., assignors to Telectronics Pacing Systems, Inc., Englewood, Colo.

Filed Aug. 6, 1991, Ser. No. 740,922
Int. Cl.[5] G06F *15/42*
U.S. Cl. 364—413.06 **26 Claims**



1. A method of aligning cardiac electrical signal waveforms from a patient's heart to facilitate signal averaging, comprising the steps of:

sensing and sampling cardiac electrical signals and, in response thereto, determining a heart rate for identifying the patient's cardiac state;

when the patient's heart is functioning in a known cardiac state, storing a time sequence of template samples, temporally compressing said time sequence of template samples, and storing a time sequence of said temporally compressed template samples;

monitoring subsequent cardiac electrical signals by storing a time sequence of cardiac signal samples, temporally compressing said time sequence of cardiac signal samples, and storing a time sequence of temporally compressed cardiac signal samples;

determining a coarse alignment timing marker for a cardiac cycle of said subsequent cardiac electrical signals by mutually scan correlating said temporally compressed cardiac signal samples with said temporally compressed template samples, and by comparing resulting correlation coefficients to locate a maximum correlation coefficient indicative of signal alignment of said compressed template with said compressed cardiac signal; and

determining a fine alignment timing marker for said cardiac cycle of subsequent cardiac electrical signals by mutually scan correlating those of said noncompressed cardiac signal samples which are closely adjacent to samples which correspond to the maximum correlation coefficient with those of said noncompressed template samples which are closely adjacent to samples which correspond to the maximum correlation coefficient, and by comparing resulting correlation coefficients to locate a maximum correlation coefficient indicative of signal alignment of said noncompressed template with said noncompressed cardiac signal.

5,255,187

COMPUTER AIDED MEDICAL DIAGNOSTIC METHOD AND APPARATUS

Mark C. Sorensen, 11 N. Second St., Apt. 502, Philadelphia, Pa. 19106

Filed Apr. 3, 1990, Ser. No. 503,879
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—413.02 **31 Claims**



1. A method of presenting medical information for diagnosis and study of disease, comprising the following steps:

(a) entering into a processing means data indicative of at least one finding or one disease;

(b) displaying on a color display coupled to the processing means:

(i) in response to entered data indicative of a finding, the name of at least one disease known to cause the finding and for each disease displayed, findings known to be associated therewith,

(ii) in response to entered data indicative of a disease, the name of at least one finding known to be associated with the disease,

the displayed findings of each disease being color coded according to the significance of the presence or absence of each finding in ruling in or ruling out the possibility of the disease being present.

5,255,188

UNIVERSAL CONTROLLER FOR CONTINUOUS PASSIVE MOTION DEVICES

George Telepko, Ft. Washington, Pa., assignor to Jace Systems, Inc., Moorestown, N.J.

Filed Sep. 16, 1991, Ser. No. 760,424
Int. Cl.[5] A61H *1/02*
U.S. Cl. 364—413.27 **14 Claims**

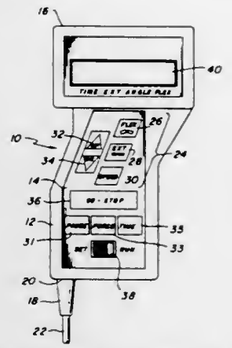
1. A universal controller for controlling a plurality of types of continuous passive motion (CPM) devices comprising:

a control panel;

input means located within the control panel for providing input parameters defining limits of operation and modes of operation for a particular CPM device;

microprocessing means for processing said input parameters and controlling the operation of the particular CPM device;

sensing means for determining an instantaneous operational state of the particular CPM device;



data retention means located within the microprocessing means for retention of CPM operating parameters;

time measuring means for measuring a time period for determining time dependent calculations and time related displays; and

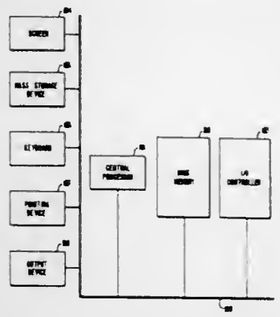
means for automatically determining a specific type of CPM device to be controlled by the controller.

5,255,189

METHOD AND SYSTEM FOR RETRIEVING IDEOGRAPHIC CHARACTERS AND THE ASSOCIATED DICTIONARY ENTRIES

Edward P. H. Woo, 22A Kennedy Road 2nd Floor, Hong Kong, Hong Kong

Filed Jun. 9, 1992, Ser. No. 896,480
Int. Cl.[5] G06F *15/38;* **G06G** *7/60*
U.S. Cl. 364—419.19 **51 Claims**



43. A computer system for retrieving characters, comprising:

means for storing a data base containing a collection of characters, said data base prearranged so that each character in said data base is associated with a plurality of memory fields specifying a selected set of geometrical characteristics including characteristics of any geometrical enclosures and its total number of strokes, with said characteristics of geometrical enclosures comprising at least nine types including:

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non-existence of any geometrical enclosures,
at least one geometrical enclosure with no strokes inside,
at least one geometrical enclosure with one vertical stroke inside,
at least one geometrical enclosure with one horizontal stroke inside,
at least one geometrical enclosure with two vertical strokes inside,
at least one geometrical enclosure with two horizontal strokes inside,
at least one geometrical enclosure with two strokes forming a cross inside,
at least one geometrical enclosure with more than two strokes inside, and
at least one irregular geometrical enclosure;

input means for allowing a user to identify the selected set of geometrical characteristics including all applicable ones of said nine types of geometrical enclosures based on the largest enclosures and total number of strokes of a character to be searched,

means, responsive to said input means, for searching through said data base for all characters having the selected set of geometrical characteristics same as those specified by the user and a particular number of strokes within a predetermined range of said total number of strokes including said total number; and

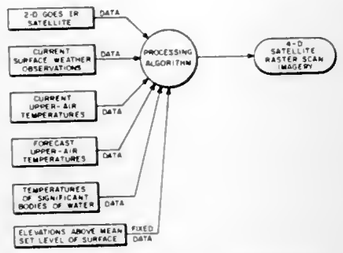
means, responsive to said searching means for retrieving all said characters for identification of said character by the user.

5,255,190

SOFTWARE METHOD FOR ENHANCING IR SATELLITE SENSOR CLOUD IMAGES

Ronald J. Sznaider, Circle Pines, Minn., assignor to Kavouras, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 359,351, May 31, 1989, abandoned. This application Sep. 21, 1990, Ser. No. 586,144
Int. Cl.[5] G06F *15/54*; G06G *7/48*; H04N *1/46*
U.S. Cl. 364—420 **15 Claims**



1. A method of enhancing two-dimensional IR satellite sensor cloud information for presentation on a raster scan display screen comprising the steps of:

(a) sampling and storing two-dimensional IR sensed cloud image radiance information pertinent to a predetermined geographical region from a geostationary orbit meteorological satellite in a memory of a general purpose digital computer;

(b) sampling and storing earth surface weather related information for said predetermined geographical region from multiple sources in said memory;

(c) sampling and storing current and forecasted upper-air temperature information obtained from radiosonde instruments at mandatory and significant altitude levels above said geographical region;

(d) storing in said memory of said digital computer information relative to the elevation above means seal level of the earth's surface in said predetermined geographical region;

(e) processing the stored information sampled in steps a, b, c and d to create cloud image raster scan signals exhibiting three-dimensional characteristics of said IR satellite sensor cloud information; and

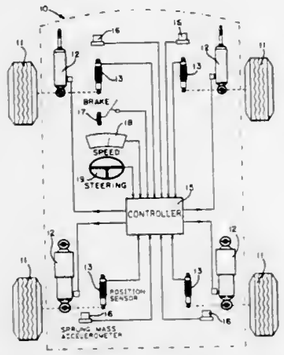
(f) applying said raster scan signals to a visual display device.

5,255,191

VEHICLE SUSPENSION CONTROL WITH RELATIVE SUSPENSION POSITION SENSOR AND DIFFERENTIATOR

Gary C. Fulks, Paris, France, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 26, 1992, Ser. No. 858,122
Int. Cl.[5] B60G *17/04*
U.S. Cl. 364—424.05 **10 Claims**



6. A suspension for a vehicle having a sprung mass and an unsprung mass and comprising, in combination:

an actuator connected between the sprung mass and the unsprung mass;

a relative suspension position sensor connected between the sprung mass and the unsprung mass for generating an analog relative position signal;

a digital suspension control for receiving and A/D converting an analog relative suspension velocity signal at a predetermined sampling rate and generating a control signal for the actuator to provide a desired suspension behavior; and

an analog circuit apparatus for deriving the analog relative suspension velocity signal from the analog relative position signal, the analog circuit apparatus comprising, in combination:

an operational amplifier;

a first resistor connected in negative feedback from an output of the operational amplifier to an inverting input thereof;

a circuit input connected through a first capacitor to the inverting input of the operational amplifier, the first resistor and first capacitor together providing a linearly increasing gain and a 90 degree phase lead for differentiating action over a low frequency range of vehicle suspension resonances;

a second resistor connecting the circuit input to the first capacitor;

a second capacitor connected from the output of the operational amplifier to the junction of the second resistor and first capacitor, the second resistor and second capacitor together with the first resistor and first capacitor defining a bandpass filter having a high Q with a peaking gain in an intermediate frequency range above the low frequency range of vehicle suspension resonances, the second resistor and second capacitor together providing a decreasing gain from the intermediate frequency range to define a predetermined low gain at a higher aliasing frequency related to the sampling frequency of the digital signal processing apparatus; and

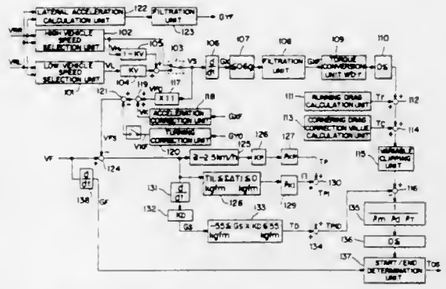
a third capacitor connected in parallel with the first resistor to control the Q of the bandpass filter so as to balance the amplitude of the peaking gain in the intermediate frequency range with the group delay in the lower frequency range of vehicle suspension resonances.

5,255,192

OUTPUT CONTROL APPARATUS FOR VEHICLE

Masayoshi Ito; Tomohiro Narita, both of Okazaki; Katsunori Otake; Kiichi Yamada, both of Nagoya; Yasunobu Miyata, Komaki, and Masayuki Hashiguchi, Obu, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 16, 1991, Ser. No. 701,507
Claims priority, application Japan, May 18, 1990, 2-127010; May 18, 1990, 2-127013
Int. Cl.[5] B60K *28/16*
U.S. Cl. 364—426.02 **18 Claims**



1. An output control apparatus for a vehicle comprising:

torque adjusting means for adjusting driving torque independent of manipulation by a driver of the vehicle;

driven wheel speed detection means for detecting rotational speed of driven wheels of the vehicle;

reference torque setting means for setting a reference driving torque according to said driven wheel speed detected by said driven wheel speed detection means;

driving wheel speed detection means for detecting rotational speed of driving wheels of the vehicle;

slip detection means for detecting a slip amount of the driving wheels according to said driving wheel speed detected by said driving wheel speed detection means and said driven wheel speed detected by said driven wheel speed detection means;

steering angle detection means for detecting a steering angle of the vehicle;

steering angle-dependent lateral acceleration calculation means for calculating a steering angle-dependent lateral acceleration estimated to generate in the vehicle according to said steering angle detected by said steering angle detection means;

turning correction means for correcting said slip amount so that said slip amount detected by said slip detection means increases in association with an increase in said steering angle-dependent lateral acceleration calculated by said steering angle-dependent lateral acceleration calculation means;

correction torque setting means for setting a correction torque according to said slip amount corrected by said turning correction means;

driving torque correction means for correcting said reference driving torque set by said reference driving torque setting means by said correction torque to calculate a target driving torque; and

torque control means for controlling said torque adjusting means so that an actual driving torque is equal to said target driving torque calculated by said driving torque correction means.

5,255,193

TRACTION CONTROL SYSTEM FOR CONTROLLING ENGINE OUTPUT AND BRAKE FOR MAINTAINING OPTIMUM WHEEL TRACTION WITH ROAD FRICTION LEVEL DEPENDENT BRAKE CONTROL

Shinji Katayose, Atsugi; Minoru Tamura, Yokohama, and Toru Iwata, Yokosuka, all of Japan, assignors to Nissan Motor Company, Yokohama, Japan

Continuation of Ser. No. 349,739, May 10, 1989, abandoned. This application Aug. 20, 1991, Ser. No. 752,198
Claims priority, application Japan, May 12, 1988, 63-113447
Int. Cl.[5] B60T *8/58*
U.S. Cl. 364—426.02 **22 Claims**

1. A traction control system for an automotive vehicle comprising:

first means, associated with an automotive engine and a manually operable accelerator means, for controlling engine output;

second means, associated with an automotive brake system, for adjusting braking pressure to be generated in a wheel cylinder of a driving wheel which is coupled with said automotive engine to receive said engine output so as to be driven by said engine output;

third means for monitoring rotation speed of said driving wheel to produce a driving wheel speed indicative signal;

fourth means for monitoring a vehicular body speed representative parameter for producing a vehicular body speed representative signal;

fifth means for deriving wheel slippage on said driving wheel on the basis of said wheel speed indicative signal and said vehicular body speed representative signal;

sixth means for generating a first control signal on the basis of said wheel slippage for controlling operation of said first means in order to adjust said engine output for suppressing said wheel slippage; and

seventh means for generating a second control signal on the basis of said wheel slippage for operating said second means for adjusting said braking pressure in order to suppress said wheel slippage, said seventh means varying a variation rate of said braking pressure according to a magnitude of said wheel slippage and a rate of variation of said wheel slippage.

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5,255,194

SYSTEM FOR MAINTAINING A VEHICLE EQUIPPED WITH ABS IN DRIVING DIRECTION DURING LATERAL SKIDDING

Rolf Schaufelberger, Ditzingen; Herbert Demel, Möglingen, and Elmar Müller, Markgröningen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

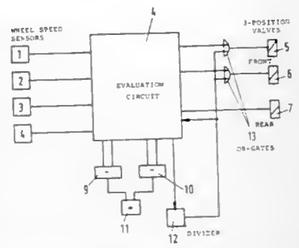
PCT No. PCT/EP89/00961, § 371 Date May 29, 1990, § 102(e) Date May 29, 1990, PCT Pub. No. WO90/02064, PCT Pub. Date Mar. 8, 1990

Continuation of Ser. No. 473,998, May 29, 1990, abandoned. This PCT application Aug. 16, 1989, Ser. No. 473,998

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1988, 3827883

Int. Cl.[5] B60T *8/32*

U.S. Cl. 364—426.02 20 Claims



1. System for maintaining direction of movement of the center of gravity of a vehicle equipped with front wheels and rear wheels and an antilock brake system which varies brake pressure at the wheels in dependency upon movement behavior of the wheels, said movement behavior including at least one of wheel speed, wheel deceleration, wheel acceleration, and slippage, said system comprising

means for detecting lateral skidding of the vehicle, and

means for shutting down the antilock braking system acting on the front wheels and automatically subjecting the front wheels to braking which is sufficiently forceful to cause slippage of the front wheel when lateral skidding of the vehicle has been detected.

5,255,195

POSITION MEASURING SYSTEM FOR VEHICLE

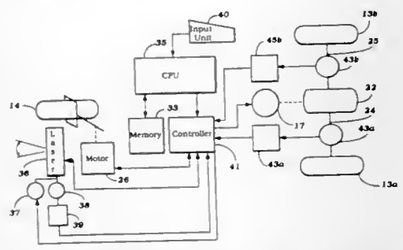
Hirofumi Mochizuki, and Takashi Mizokawa, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Continuation of Ser. No. 450,541, Dec. 14, 1989, abandoned. This application Jan. 23, 1992, Ser. No. 824,899

Claims priority, application Japan, Dec. 15, 1988, 63-315172

Int. Cl.[5] G06F *15/50*

U.S. Cl. 364—449 13 Claims



1. A position sensing arrangement for a dirigible vehicle travelling along a two dimensional path comprising markers placed at known coordinates, a scanner rotatable upon said vehicle and emitting a signal for sensing at least three angular positions of said markers relative to said vehicle in sequence during the travel of said vehicle along said path to provide first, second and third angular measurements, first vehicle measurement means other than said scanner for sensing the distance travelled by said vehicle between each of said angular measurements to provide first and second distance measurements, and second vehicle measurement means other than said scanner for sensing the course of the vehicle between each angular measurement to provide first and second angular course measurements, computing means for computing the actual location and the actual course of said vehicle from said first and second distance measurements and from said first and second angular course measurements, and means for controlling said vehicle based on the computed actual location and the actual course.

5,255,196

CUSTOM RATE PACK FOR POSTAGE SYSTEMS

Diem P. Tran, Fremont, and Mary C. Au, Union City, both of Calif., assignors to f.m.e. Corporation, Hayward, Calif.

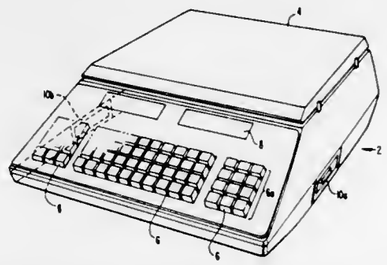
Filed Oct. 15, 1990, Ser. No. 597,931

Int. Cl.[5] G07B *17/00*

U.S. Cl. 364—464.03 20 Claims

MICROFICHE APPENDIX INCLUDED

(172 Microfiche, 2 Pages)



1. A postage scale comprising:

a) means for determining a weight of an article to be mailed;

b) means for calculating an amount of postage required for said article based on said weight, said means for calculating comprising central processing means, said central processing means programmed to input postage rate data and said weight, and output said amount of postage required;

c) a first slot in said postage scale for receiving a first, read-only memory pack for storage of said postage rate data wherein said first read-only memory further comprises memory for scale operating software, and wherein said first slot alternately receives read-only memory containing programming operating software for operation of said scale during programming of said user-programmed memory pack;

d) a second slot in said postage scale for alternately receiving:

i) a first, transaction memory pack, said transaction memory pack storing at least transactional information based on operation of said scale; and

ii) a second, user-programmed rate memory pack for storing said postage rate data, said user programmed rate memory pack storing rate data input by a user from an interface on said postage scale; and

e) means for indicating said amount of postage required to a user.

5,255,197

LINE PRODUCTION MANAGEMENT SYSTEM

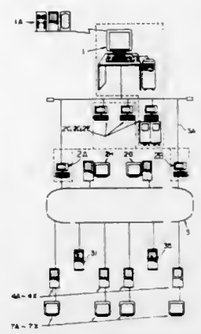
Kouji Iida, Suzuka, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 3, 1991, Ser. No. 725,840

Claims priority, application Japan, Jul. 6, 1990, 2-179041; Jul. 11, 1990, 2-183338; Jul. 16, 1990, 2-187711; Jul. 18, 1990, 2-189654; Jul. 18, 1990, 2-189655; Aug. 3, 1990, 2-206122

Int. Cl.[5] G06F *15/46*

U.S. Cl. 364—468 24 Claims



1. A line production management system, wherein an assigned quantity of work objects flow from upstream work stations to downstream work stations according to an assigned work sequence in an automated production line, said line production management system comprising:

a primary controller to maintain work files containing work sequence data defining the classification, work priority and quantity of the work objects to be processed, and to transmit said work files information through a communication network;

a secondary controller to generate and maintain correlation files to correlate each work sequence data included in said work files information with codes which determine each process to be performed for each work object in each work station, and to transmit said correlation files through said communication network;

a tertiary controller to generate step files based on said work files and correlation files received through said communication network, said step files containing processing instruction data for each work station; and

processing means to process said work objects according to the processing instruction data received from said tertiary controller.

5,255,198

EMBROIDERY DATA PROCESSING APPARATUS

Masaaki Yokoe, Nagoya, and Hideo Kawaguchi, Tajimi, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Feb. 11, 1991, Ser. No. 653,298

Claims priority, application Japan, Feb. 21, 1990, 2-40691

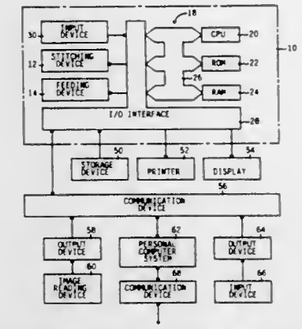
Int. Cl.[5] G06F *15/46*

U.S. Cl. 364—470 19 Claims

1. An apparatus for processing embroidery data necessary for a sewing machine to form an embroidery in an area by filling the embroidery area with stitches, comprising:

storing means for storing outline data representing an outline of an embroidery area which outline includes a curved line portion, said outline data including curved line data including data indicative of a characteristic of said curved line portion; and

producing means for dividing, by utilizing said outline data, a part of said embroidery area, which part is defined by, and between, said curved line portion and a line portion of said outline which is opposed to said curved line portion, into a plurality of quadrangular blocks, each of which is defined by and between a pair of opposed straight line segments, so that the pairs of opposed straight line segments of said quadrangular blocks cooperate with each other to approximate said curved line portion and said opposed line portion and so that said quadrangular blocks cooperate with each other to approximate said part of said embroidery area, (b) producing sets of quadrangular block data each of which represents an outline of a corresponding one of said quadrangular blocks and comprises four sets of point data indicative of four vertices of said corresponding one quadrangular block, an (c) producing, by utilizing said sets of quadrangular block data, said embroidery data comprising stitch position-related data specifying at least one stitch position on an intermediate portion of at least one of said pair of opposed straight line segments of said each quadrangular block, said intermediate portion excluding said vertices of said each quadrangular block.



5,255,199

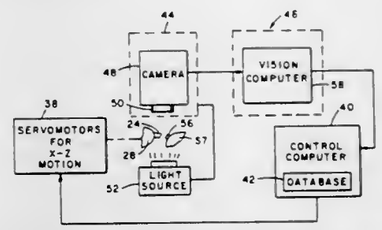
CUTTING TOOL FORM COMPENSATON SYSTEM AND METHOD

William E. Barkman, Oak Ridge; Edwin F. Babelay, Jr., Knoxville, and Edward J. Klages, Oak Ridge, all of Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Dec. 14, 1990, Ser. No. 628,525

Int. Cl.[5] G05B *19/18*

U.S. Cl. 364—474.17 6 Claims



1. In a computer-controlled machining apparatus having a controller and including a cutting tool and a workpiece holder which are movable relative to one another along a preprogrammed path during a machining operation for effecting a cut in a workpiece held by the workpiece holder wherein the preprogrammed path of relative movement between the cutting tool and workpiece holder is based upon an assumed size and shape of the cutting edge of the cutting tool and the controller includes a database including criteria relating to the assumed size and shape of the cutting edge, the improvement comprising:

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means for obtaining an image of the cutting edge of the cutting tool at a preselected stage of a marching operation;

means for generating information relating to the actual size and shape of the cutting edge at the preselected stage from the obtained image including means for obtaining an image of the cutting tool against a background so that the cutting tool and the background within the image possess contrasting light intensities, and wherein the image-obtaining means includes a light source and a camera having a lens so that by positioning the cutting tool between the lens of the camera and the light source, the cutting tool image received by the camera is a shadow of the cutting tool edge; and

means for comparing the generated information relating to the actual size and shape of the cutting edge with the criteria relating to the assumed size and shape of the cutting edge and for altering the preprogrammed path of relative movement in accordance with variations detected between the actual size and shape of the cutting edge and the assumed size and shape of the cutting edge;

the means for generating information includes means for scanning the obtained image along predetermined paths and identifying and collecting as data points along the cutting edge those points along each path at which sharp light intensity transitions occur;

the means for scanning includes means for scanning the image in one direction thereacross along a set of parallel paths and in another direction thereacross along another set of parallel paths wherein said one direction and another direction are orthogonal to one another; and

the means for generating information includes means for determining a center of the tool with the collected data points and means for removing from the collected data points those points which were collected from the image along paths oriented generally tangentially along the image of the cutting edge and includes means for redetermining a center of the cutting tool with the point data remaining after the removal of the tangentially-collected points.

5,255,200

NUMERICAL CONTROL INFORMATION GENERATING SYSTEM

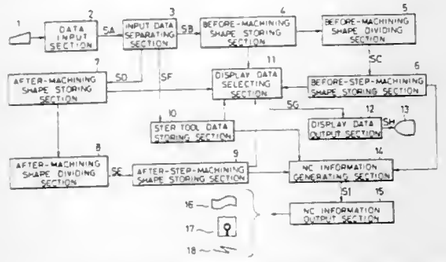
Yoshio Torizawa; Yukinori Otsubo, and Kenji Ito, all of Niwa, Japan, assignors to Kabushiki Kaisha Okuma Tekkosho, Aichi, Japan

Filed Dec. 4, 1990, Ser. No. 621,438

Claims priority, application Japan, Dec. 4, 1989, 1-314540

Int. Cl.[5] G05F *15/46*; G05B *19/18*

U.S. Cl. 364—474.22 **8 Claims**



1. A numerical control information generating system comprising:

means for receiving data denoting a work shape prior to a machining process and a work shape upon completion of the machining process;

means for dividing a work machining area, defined by a difference between the work shape upon completion of the machining process and the work shape prior to the machining process, into at least one subarea respectively corresponding to at least one sequential machining step of the machining process;

mean for defining a distinct tool start point and tool end point associated with each sequential machining step of the machining process, wherein each tool start point and each end point are different points which vary from one sequential machining step to another; and,

means for generating numerical control information defining a tool path of the machining process in which the tool path of each sequential machining step commences at the distinct tool start point associated therewith and terminates at the distinct tool path end point associated therewith.

5,255,201

NUMERICAL CONTROL INFORMATION GENERATING APPARATUS

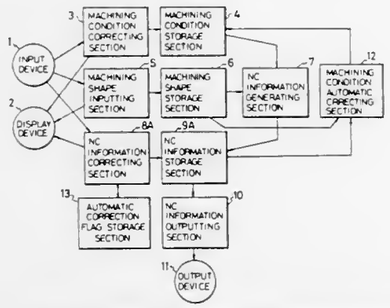
Takeharu Maeda, Niwa, Japan, assignor to Kabushiki Kaisha Okuma Tekkosho, Aichi, Japan

Filed Mar. 21, 1991, Ser. No. 672,661

Claims priority, application Japan, Mar. 30, 1990, 2-84388

Int. Cl.[5] G05B *19/19*

U.S. Cl. 364—474.35 **4 Claims**



1. A numerical control information generating apparatus comprising:

a machining condition storage means for storing machining conditions;

a machining shape storage means for storing machining shapes;

a numerical control information storage means for storing numerical control information;

a numerical control information generating means for generating the numerical control information stored in said numerical control information storage means according to the machining conditions stored in said machining conditions storage means and the machining shapes stored in said machining shape storage means;

a numerical control information correcting means for correcting the numerical control information stored in said numerical control information storage means; and,

a machining condition automatic correcting means for calculating new machining conditions according to the corrected numerical control information stored in said numerical control information storage means and the machining shapes stored in said machining shape storage means and for correcting the machining conditions stored in the machining condition storage section according to the calculated new machining conditions, wherein said machining condition automatic correcting section includes means for performing the inverse of the function for calculating the numerical control information from the machining conditions and the machining shapes contained in said numerical control information generating means.

5,255,202

DIGITAL SIGNAL PROCESSING METHOD AND SYSTEM, ELECTRIC POWER SYSTEM SIGNAL PROCESSING SYSTEM AND ELECTRIC POWER CONTROL SYSTEM

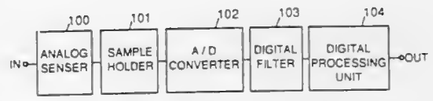
Mitsuyasu Kido, Hitachi; Tomio Chiba, Katsuta; Hiroyuki Kudo, Hitachi; Junzo Kawakami, Mito, and Tadao Kawai, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 11, 1991, Ser. No. 640,595

Claims priority, application Japan, Jan. 16, 1990, 2-6685; Feb. 16, 1990, 2-35785; Mar. 15, 1990, 2-64939

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—483 **44 Claims**



7. A system for processing a digital signal, comprising:

sample hold means for sample-holding an analog signal;

analog-to-digital converting means for converting the analog signal held by said sample hold means into a digital signal;

digital filter means for effecting a filtering process on the digital signal outputted from said analog-to-digital converting means; and

digital processing means for executing arithmetic processing on the digital signal outputted from said digital filter means;

said sampling frequency of said sample hold means being set such that a noise generation region in which noises are caused due to disturbance noises and a quantization error falls within the blocking band of said digital filter means, and the blocking band of said digital filter means is set to a higher frequency band than the pass band of the analog signal during arithmetic processing of the filter-processed digital signal.

5,255,203

INTERCONNECT STRUCTURE FOR PROGRAMMABLE LOGIC DEVICE

Om P. Agrawal, San Jose, and Michael J. Wright, Fresno City, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 394,221, Aug. 15, 1989, Pat. No. 5,212,652. This application Jun. 14, 1990, Ser. No. 538,211

Int. Cl.[5] H03K *17/693*

U.S. Cl. 364—489 **47 Claims**

1. A configurable interconnect structure for a logic device, where the logic device includes:

a plurality of logic cells, $CL_{1,1}$ to $CL_{C,R}$, arranged in an array consisting of C columns and R rows, each logic cell being denoted by $CL_{c,r}$ wherein c designates a column in the range 1 to C, and r designates a row in the range 1 to R, each of the logic cells $CL_{c,r}$ having plural inputs and at least one corresponding output, the plurality of logic cells generating cell output signals at the respective outputs of the logic cells in response to cell input signals supplied to the respective inputs;

a plurality of input/output pads; and

a plurality of input/output cells, each coupled to an input-/output pad of the logic device and each having an input and an output, the plurality of input/output cells providing interfaces between the respective input/output pads and its respective inputs and outputs;

the configurable interconnect structure comprising:

(a) a configuration store for storing program data specifying a user defined interconnect function;

(b) a plurality of horizontal buses HB_i, for i equal to 1 to R+1, extending along the rows of the array;

(c) a plurality of vertical buses VB_j, for j equal to 1 to C+1, extending along the columns of the array;

(d) a plurality of switching means at respective intersections of horizontal and vertical buses, each switching means having a plurality of horizontal terminals, a plurality of vertical terminals and interconnect means for interconnecting respective ones of the horizontal or vertical terminals in response to program data in the configuration store;

wherein each horizontal bus HB_i includes:

a plurality of conductive horizontal segments each of a length equal to or greater than a first distance separating two horizontally adjacent ones of said logic cells ($CL_{c,r}$ and $CL_{c+1,r}$), one or more of the horizontal segments having a first end connected to a horizontal terminal of a switching means located at the intersection of the horizontal bus HB_i with a first vertical bus VB_j, and a second end connected to a horizontal terminal of a switching means located at the intersection of the horizontal bus HB_i with another vertical bus VB_k,

wherein each of said one or more horizontal segments is further connected to an interconnect point belonging to a first plurality of interconnect points, the first plurality of interconnect points being provided for interconnecting respective inputs or outputs of logic cells and/or input/output cells with respective ones of the horizontal segments, and

wherein each horizontal bus HB_i further includes:

a plurality of conductive horizontal long lines, each of a length substantially greater than one of at least two conductive horizontal segments in the horizontal bus HB_i such that signal propagation time between ends of the horizontal long line is substantially less than signal propagation time through a like length of a combination of the at least two conductive horizontal segments and a corresponding number of switching means coupling the at least two conductive horizontal segments together, each horizontal long line extending horizontally across the array adjacent to a row of logic cells or input/output cells and intersecting across two or more vertical buses (VB_j, VB_{j+1}), and each being connected to a second plurality of programmable interconnect points (PIPs) that are provided for interconnecting respective outputs of logic cells and/or input/output cells with the respective horizontal long line in response to program data in the configuration store, and each horizontal long line being nonprogrammably connected directly to a respective plurality of inputs belonging to logic cells or to input/output cells adjacent to the respective horizontal long line;

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wherein each vertical bus VB_j includes:

a plurality of conductive vertical segments each of a length equal to or greater than a second distance separating two vertically adjacent ones of said logic cells ($CL_{c,r}$ and $CL_{c,r+1}$), one or more of the vertical segments having a first end connected to a vertical terminal of a switching means located at the intersection of the vertical bus VB_j with a first horizontal bus HB_i, and a second end connected to a vertical terminal of a switching means located at the intersection of the vertical bus VB_j with another horizontal bus HB_m,

wherein each of said one or more vertical segments is further connected to an interconnect point belonging to a third plurality of interconnect points, the third plurality of interconnect points being provided for interconnecting respective inputs or outputs of logic cells and/or input/output cells with respective ones of the vertical segments, and

wherein each vertical bus VB_j further includes:

a plurality of conductive vertical long lines, each of a length substantially greater than one of at least two conductive vertical segments in the same vertical bus VB_j such that signal propagation time between ends of the vertical long line is substantially less than signal propagation time through a like length of a combination of the at least two conductive vertical segments and a corresponding number of switching means coupling the at least two conductive vertical segments together, each vertical long line extending vertically across the array adjacent to a column of logic cells or input/output cells and intersecting across two or more horizontal buses (HB_i, HB_{i+t}), and each being connected to a fourth plurality of programmable interconnect points (PIPs) that are provided for interconnecting respective outputs of logic cells and/or input/output cells with the respective vertical long line in response to program data in the configuration store, and each vertical long line being nonprogrammably connected directly to a respective plurality of inputs belonging to logic cells or to input-/output cells adjacent to the respective vertical long line; and

the configurable interconnect structure further comprising:

(e) a plurality of programmable interconnect means, at respective intersections of the horizontal and vertical buses, each for interconnecting in response to program data in the configuration store a respective horizontal segment with a vertical long line or a respective vertical segment with a horizontal long line.

5,255,204

METHOD OF CALIBRATING AN ENZYME IMMUNO ASSAY SYSTEM

Yukio Saito, Yokobama; Koichi Sekiya, Ciba; Yoshihiro Sato, Yokobama; Takeshi Kohno, Hirakata; Hiroaki Takahasi, and Kenji Yamamoto, both of Kyoto, all of Japan, assignors to Sankyo Company, Ltd., Tokyo and Horiba, Ltd., Kyoto, both of Japan

Filed Mar. 13, 1991, Ser. No. 668,780
Claims priority, application Japan, Mar. 13, 1990, 2-62191
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—497 **9 Claims**

1. A method of measuring a concentration of a sample contained in a photometric cell comprising the steps of:

(a) providing a first optical detector of a first sensitivity for providing a first output value corresponding to a first range of concentrations adjacent said photometric cell;

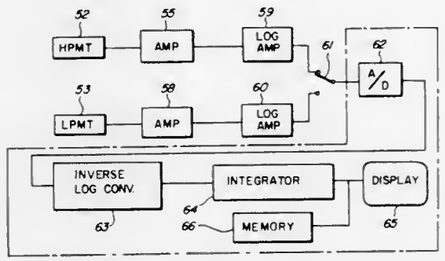
(b) providing a second optical detector of a second sensitivity different than the first sensitivity for providing a second output value corresponding to a second range of concentrations adjacent said photometric cell, said second range of concentrations including a overlapping range that partially overlaps said first range of concentrations;

(c) automatically exciting said sample to a luminescent reaction to emit light;

(d) measuring said luminescent light with said first optical detector to provide an electrical first output value;

(e) measuring said luminescent light with said second optical detector to provide an electrical second output value;

(f) determining an output ratio of said first and second outputs for a particular concentration that lies within said overlapping range of concentrations;



(g) preparing a calibration curve for converting said first and second output values into said concentration of said sample;

(h) determining if one of said optical detectors is beyond its range of concentrations; and

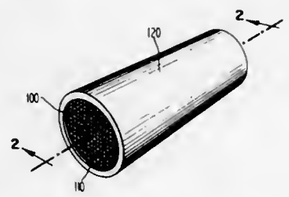
(i) deriving said concentration of said sample with said calibration curve if one of said optical detectors is beyond its range of concentrations based on a product of said other output value multiplied by said output ratio.

5,255,205

METHOD AND APPARATUS FOR REGULATING FLUID FLOW

Christopher M. Wurm; Lenore R. Frank, both of Landenberg, Pa., and Lee H. Altmayer, Hockessin, Del., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 2, 1990, Ser. No. 487,658
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—510 **21 Claims**



1. A method for regulating the passage of a fluid through a chamber that includes a matrix from which solute can be extracted, comprising the steps of:

passing the fluid through the chamber;

providing a data set to processing means, said data set comprising parameter information;

providing a swept chamber volume value by applying, via the processing means, a swept chamber volume function to the data set; and

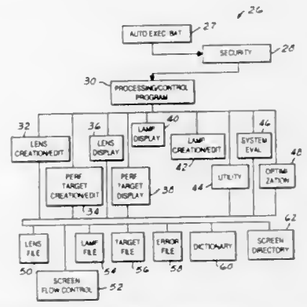
terminating the passage of the fluid through the chamber by reference to the swept chamber volume value.

5,255,206

METHOD AND APPARATUS FOR LIGHTING DESIGN

Richard J. Pegis, Hartford, Conn., assignor to The McKenna Group, Inc., Troy, Mich.

Filed Aug. 27, 1991, Ser. No. 750,792
Int. Cl.[5] H05B *35/00*; **G02B** *27/00*
U.S. Cl. 364—512 **14 Claims**



1. A lighting design system comprising:

a central processor under stored program control adapted to allow certain predefined screens of information to be selectively displayed, effective to solicit data from a lighting system designer, thereby, allowing a lens, lamp, and mirror to be specified in a manner which allows the specified lens, lamp, and mirror to cooperatively radiate light having a certain intensity and of a certain pattern;

screen display means, coupled to said central processor for defining the order that said certain predefined screens are to be displayed;

display means, coupled to said central processor, for displaying said certain predefined screens of information in the order defined by said screen display means;

keyboard means, coupled to said central processor, for allowing said lighting system designer to input data to said central processor, in response to said displayed screens of information;

target means for allowing said lighting system designer to specify a desired pattern and intensity of light;

storage means for allowing said specified desired pattern and intensity of light to be stored within said central processor;

performance means for comparing said pattern and intensity of said target means with said pattern and intensity cooperatively generated by said lens, mirror, and lamp and for identifying and displaying differences between said pattern and intensity of said light associated with said target means and said light generated by said lens, mirror, and lamp; and

optimization means for selectively modifying said specified lens, mirror, and lamp so as to substantially eliminate differences between said intensity of said light cooperatively generated by said lens, mirror, and lamp and said intensity specified by said target means.

5,255,207

METHOD FOR DESIGNING AND DETAILING CABINETS

Larry Cornwell, 4405 Manchester, Ste. 102, Encinitas, Calif. 92024

Continuation of Ser. No. 449,501, Dec. 1, 1989, abandoned, which is a continuation of Ser. No. 207,725, Jun. 16, 1988, abandoned. This application Jun. 18, 1992, Ser. No. 900,560
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—512 **19 Claims**

1. A method for building cabinets to fit within an available space, comprising the steps of:

a computer establishing a job database comprising

cabinet design standards customized for a user, the job database having cabinet design standards initially provided in the job database, and user-defined cabinet design standards that are fully defined by the user, the cabinet design standards including layout rules for the type, configuration, and positioning of cabinets to fit within an available space and construction rules for the construction of the individual cabinets, the step of establishing including the steps of

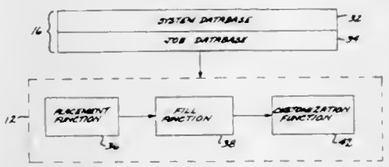
the computer copying from a system database an initial job database of system-defined cabinet design standards having parameters that may be modified by the user,

the user selectively modifying parameters for system defined cabinet design standards in the job database,

the computer permitting the user to selectively create custom defined cabinet design standards in the job database and permitting the user to input values for the custom defined cabinet design standards into the job database;

the user providing available space constraints for the placement of the cabinets, the placement being the designed location in space occupied by the cabinets;

the computer filling the available space of the base cabinets and the upper cabinets remaining after the step of providing, by



selecting an array of base cabinets according to the layout design rules of the database and the available space constraints,

adding upper cabinets, each corresponding in location and lateral dimension to the base cabinet directly below the upper cabinet, and

accepting modification to the placement or dimension of a cabinet or element thereof selectively by the user, thereafter repeating the steps of selecting an array and adding;

the computer completing final design of the cabinets using the construction rules of the cabinet design standards in the job database;

the computer detailing the cabinets to establish a cutting list, a bill of materials, and projected costs of manufacture, and printing the cutting list, bill of materials, and projected costs of manufacture,

the computer providing a user-selected elevational or three dimensional current image of the visual appearance of the design of the cabinets to the user on a video display terminal at each of the steps of selecting, filling the available space, and completing the final design; and

building an arrangement of cabinets according to the design produced responsive to the interaction between the user and the computer.

5,255,208

ON-LINE PROCESSOR BASED DIAGNOSTIC SYSTEM

Prashant B. Thakore, Library; John L. Coulter, Leechburg, and William D. Monaghan, Dravosburg, all of Pa., assignors to AEG Westinghouse Transportation Systems, Inc., Pittsburgh, Pa.

Filed Aug. 8, 1991, Ser. No. 742,035
Int. Cl.[5] G06F *11/00*
U.S. Cl. 364—551.01 **22 Claims**

1. A method of on-line trouble-shooting failures in a circuit controlled by on-board processing means including memory for providing a failure log and for storing diagnostic informa-

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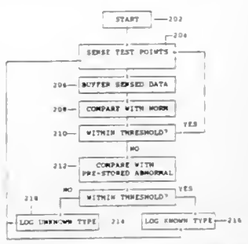
tion including normal signals and a plurality of known abnormal signals, the method comprising:

sensing signals at a plurality of points in the circuit and inputting the sensed signals to the processing means;

comparing the sensed signals with the stored normal signals;

comparing the sensed signals with the plurality of stored known abnormal signals when the comparison between the sensed signals and the normal signals indicates a difference which exceeds a certain threshold amount, otherwise returning to the sensing step; and

storing in the failure log an indication of a failure condition and then returning to the sensing step when the comparison between the sensed and a particular one of the known abnormal signals indicates a match, otherwise storing in the failure log a general indication of a failure condition and then returning to the sensing step;



wherein the normal and plurality of known abnormal signals are stored as a plurality of waveforms, and the step of comparing the sensed signals with normal signals includes the steps of:

storing the sensed signals as waveforms; and

sequentially retrieving and comparing the stored sensed signal waveforms with the plurality of normal signal waveforms to determine if a difference greater than a certain threshold exists between them;

and wherein the step of comparing the sensed signals with the plurality of known abnormal signals includes the step of:

sequentially retrieving and comparing stored sensed signal waveforms with the plurality of known abnormal signal waveforms to determine if a difference less than a certain threshold exists between them indicating a match.

5,255,209

METHOD FOR DETERMINING THE COMBUSTION CHAMBER PRESSURE IN A CYLINDER OF AN INTERNAL-COMBUSTION ENGINE WITH A PRESSURE SENSOR

Stefan Krebs, Regensburg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 527,291, May 22, 1990, abandoned. This application Aug. 14, 1991, Ser. No. 746,153

Claims priority, application European Pat. Off., May 23, 1989, 89109255

Int. Cl.[5] G01M *15/00*

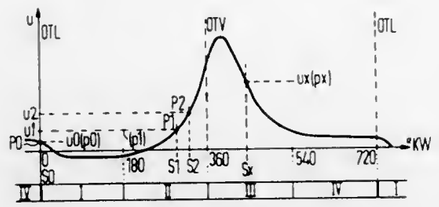
U.S. Cl. 364—558 20 Claims

1. A method for measuring pressure in a cylinder chamber of an internal-combustion engine using a sensor that is in communication with the cylinder chamber, the sensor generating an electrical signal representative of sensed pressure in the cylinder chamber, the cylinder chamber defined by a cylinder containing a piston in the internal-combustion engine, during operation of the internal-combustion engine having a plurality of work cycles, each work cycle for each cylinder chamber being composed of a first cycle for intake, a second cycle for compression, a third cycle for combustion and a fourth cycle for exhaust, comprising the steps of:

outputting a reference electrical signal, u0, from said sensor during each work cycle of the internal-combustion engine when the pressure in said cylinder chamber is at a known absolute reference pressure value, p0, for a reference piston position of the piston in the cylinder;

outputting first and second electrical signals, u1 and u2, from said sensor during the same cycle representative of pressure in said cylinder chamber for two different first and second piston positions of said piston in said cylinder;

determining a sensitivity, E, of the sensor from the absolute reference pressure value, p0, the reference electrical signal u0, the first and second electrical signals, u1 and u2, and a constant, K;



defining a characteristic curve of the sensor using the reference electrical signal, u0, and the sensitivity, E;

outputting a further electrical signal, ux, from the sensor representative of pressure in the cylinder chamber for an arbitrary piston position of the piston in said cylinder;

deriving a further pressure value, px, from the further electrical signal, ux, using the characteristic curve; and

using the further pressure value, px, as a value representing an actual pressure value in said cylinder chamber for said arbitrary piston position.

5,255,210

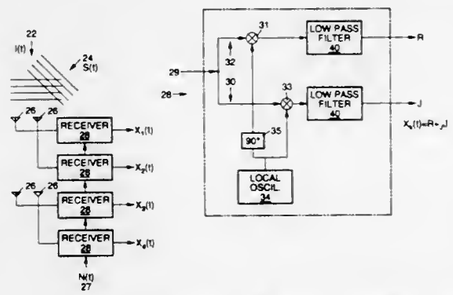
SELF-COHERENCE RESTORING SIGNAL EXTRACTION APPARATUS AND METHOD

William A. Gardner, Yountville, and Brian G. Agee, Davis, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation of Ser. No. 794,306, Nov. 14, 1991, abandoned, which is a continuation of Ser. No. 264,256, Oct. 28, 1988, abandoned. This application Aug. 3, 1992, Ser. No. 925,805

Int. Cl.[5] G06G *7/122*

U.S. Cl. 364—574 20 Claims



1. An apparatus for adapting an array of antennas upon which one or more signals impinges and extracting a signal of interest s(t) therefrom, comprising:

(a) receiving means for receiving on an array of antennas upon which one or more signals impinges, a plurality of input signals represented by a signal input vector x(t) having M components in which each component comprises an electrical signal representing a complex measurement of a self-coherent signal of interest s(t) contained in said input signals together with interference from noise and/or other signals;

(b) reference signal means for generating a reference signal vector r(t) from said signal input vector x(t), said reference signal means coupled to an output of said receiving means;

(c) said reference signal means including filtering means for filtering each component of said signal input vector x(t) through a predetermined filter, said reference signal means including shifting means for frequency shifting each component of said signal input vector x(t) by a frequency α;

(d) weight means for providing and updating a weight vector w having M components from said signal input vector x(t), said weight means including a first input coupled to an output of said receiving means, said weight means including a second input coupled to an output of said reference signal means; and

(e) summing means for generating an output signal y(t) having a measure of self-coherence, said summing means including a first input coupled to an output of said receiving means, said summing means including a second input coupled to an output of said weight means;

(f) wherein said weight means provides and updates said weight vector w to maximize self-coherence in said output signal y(t).

5,255,211

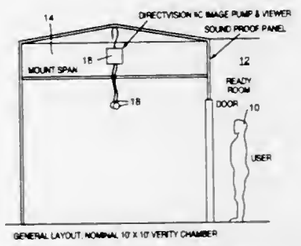
METHODS AND APPARATUS FOR GENERATING AND PROCESSING SYNTHETIC AND ABSOLUTE REAL TIME ENVIRONMENTS

Scott Redmond, Fresno, Calif., assignor to Redmond Productions, Inc., San Francisco, Calif.

Filed Feb. 22, 1990, Ser. No. 483,547

Int. Cl.[5] G06F *15/21*

U.S. Cl. 364—578 5 Claims



1. A system for generating and processing synthetic and absolute real time remote environments for interaction with a user which comprises, as interconnected elements:

a) data storage and retrieval means for storing high resolution digital image, sound and position coordinate data and for instantaneously retrieving the stored data, said data storage and retrieval means including image compression software processing means for compressing data for storage in image files, said image files including data for recreating images of absolute objects, data to recreate at least one primitive image basic model and data for recreating predesignated images, said data storage and retrieval means further including digital sound files for storing data to recreate absolute sounds; said data storage and retrieval means further including an interactive through-put image and sound processor for selectively combining an image of at least a portion of said user within said generated environments;

b) umbilical-less sensor means for nonintrusive sensing of the position and movement of the user's body within a three dimensional matrix, said umbilical-less sensor means further sensing user health telemetry data;

c) co-matrixed averaging means for processing data from said umbilical-less sensor means, the output of said co-matrixed averaging means being connected to said image and sound processor;

d) environmental modeling means for receiving data from said umbilical-less sensor means and for generating images of interactive body parts of said user in response to said data, said environmental modeling means further including parallel processor means for generating real time absolute and synthetic environment output in response to preselected commands and parameters stored in said data storage and retrieval means;

e) umbilical-less user stimuli means for input of absolute and synthetic environment output generated by said environmental modeling means to the user's biological senses via three dimensional visual input to the user's eyes, multidimensional sound input to the user's ears, and tactile input to the user's hands, feet and one or more other body parts;

f) primary control means for control of overall systems operation, including means for generating interface commands between said data storage and retrieval means, sensor means, environmental modeling means and user stimuli means; and,

g) in-system communication means for verbal communication by the user to and from said primary control means, whereby a user's selection of a synthetic or absolute environment, or a combination thereof, is communicated to the system primary control means which in turn communicates the selection to said environmental modeling means, thereby enabling the user to interact with the selected, generated and continually processed synthetic and absolute environment output via said sensor means and said user stimuli means.

5,255,212

METHOD OF PREDICTING A PHYSICAL QUANTITY OF A FLUID OR A MAGNETOFLUID

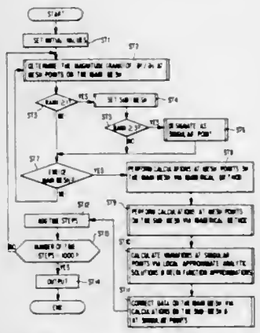
Yoshiomi Kondoh, Komagata-machi 694-3, Maebashi, Gunma 379-21; Takashi Yabe, Higashidai 1-5-3-604, Honjyo, Saitama 367; Jia-Ling Liang, Kiryu, and Satarou Yamaguchi, Tokyo, all of Japan, assignors to Yoshiomi Kondoh, Gunma; Takashi Yabe, Saitama and Mitsubishi Denki Kabushiki Kaisha, Tokyo, all of Japan

Filed Mar. 25, 1991, Ser. No. 674,008

Claims priority, application Japan, Mar. 27, 1990, 2-77659

Int. Cl.[5] G06F *15/20*; G06G *7/48*

U.S. Cl. 364—578 24 Claims



1. A method of calculating a flow rate of a fluid propagating through a wind channel at a predetermined velocity, wherein said velocity varies at different points within said wind channel, said method comprising the steps of:

(a) setting a main mesh over a region of said wind channel, said main mesh comprising mesh points separated by predetermined mesh spacings with respect to space and time;

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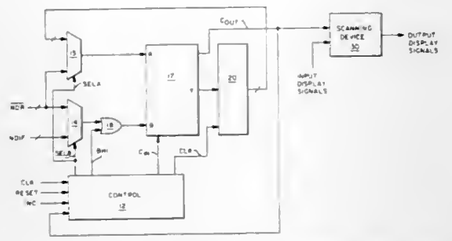
(b) setting initial values of said flow rate at each of said mesh points of said main mesh space in said wind channel;
(c) calculating a magnitude of inclination of said flow rate at each mesh point of said main mesh;
(d) setting a sub-mesh in regions of said wind channel where the magnitude of inclination of said flow rate is greater than or equal to a first predetermined level, said sub-mesh comprising mesh points positioned with respect to space and time and separated from each other by mesh spacings smaller than the mesh spacings of said main mesh;
(e) designating, as singular points, mesh points of the main mesh at which the magnitude of inclination of the flow rate through the wind channel is greater than or equal to a second predetermined level which is greater than said first predetermined level;
(f) calculating values of said flow rate at mesh points of said main mesh after a desired increment of time;
(g) calculating values of said flow rate at mesh points of said sub-mesh after said desired increment of time;
(h) calculating variations of said flow rate at mesh points of the main mesh that are designated as singular points in step (e), by one of an approximate analytic function and a delta function approximation;
(i) correcting values of said flow rate at mesh points of said main mesh, obtained in step (f), based on data obtained in steps (g) and (h); and
(j) repeating steps (c) through (i) for a predetermined number of time increments to obtain values of said flow rate through said wind channel after a predetermined length of time.

5,255,213

APPARATUS FOR PROVIDING SELECTABLE FRACTIONAL OUTPUT SIGNALS

Steven C. Wasserman, Fremont, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 635,266, Dec. 28, 1990, abandoned. This application Oct. 21, 1992, Ser. No. 965,048
Int. Cl.[5] G06F *7/52*; H03K *21/00*
U.S. Cl. 364—703 **8 Claims**



1. A circuit for producing output display signals which indicate a fraction of an image comprised of a series of lines, wherein each of said lines includes a series of input display signals corresponding to pixels, said fraction has a numerator value and a denominator value, said circuit comprising

adder/subtractor means for selectively adding or subtracting two numbers, such that a result is output from the adder/subtractor means, wherein the result has either a first or second polarity,

first multiplexer means coupled to the adder/subtractor means for furnishing a first value to the adder/subtractor means for selectively adding or subtracting two numbers, wherein said first value is equivalent to the numerator value of the fraction or the difference between the numerator value and the denominator value, and wherein the first multiplexer means is coupled to receive the numerator and the difference,

second multiplexer means coupled to the adder/subtractor means for furnishing a second value to the adder/subtractor means for selectively adding or subtracting two numbers, wherein said second value is equivalent to the difference between the numerator value of the fraction and the denominator value of the fraction or the result fedback from the adder/subtractor means, and wherein the second multiplexer means is coupled to receive the difference and the result,

means for causing the adder/subtractor means for selectively adding or subtracting to subtract the second value from the first value to produce the result,

means responding to said result being greater than zero for causing the second multiplexer means for furnishing the second value to furnish the result to the adder/subtractor means and the first multiplexer means for furnishing the first value to furnish the difference between the numerator value and the denominator, and for causing the adder/subtractor means for selectively adding or subtracting to subtract the first value from the result with each of the series of input signals until the value is zero or less,

means responding to said result being zero or less for causing the first multiplexer means for furnishing the first value to furnish the numerator to the adder/subtractor means and the means for furnishing the second value to furnish the result to the adder/subtractor means, and for causing the adder/subtractor means for selectively adding or subtracting to add the first value to the result,

means coupled to said means for selectively adding and subtracting for sequentially repeating the result for each input display signal in a line, wherein said result is repeated for each pixel in a line when a fraction of the lines of the image are being indicated, such that the result is the same for all of the input display signals corresponding to pixels in the same line; and

means coupled to receive the series of input display signals and the result for indicating whether each signal of the series of input display signals is to be utilized according to the polarity of the result, wherein the means for indicating includes means for providing output display signals, such that each signal of the series of input display signals is output by the means for providing only if the polarity of the result is the first polarity, and wherein when the result is sequentially repeated for each input display signal in the same line by the means for sequentially repeating a result, the polarity value of the result indicates whether each of the input displays signals in the line are to be utilized in the output display signals, such that the output display signals that are provided correspond to a fraction of the lines of the image.

5,255,214

PORTABLE COMPUTER WITH A LEVEL AND ANGULAR POSITION ADJUSTABLE LCD ASSEMBLY

Hsi-Kuang Ma, 4F, No. 48, Sec. 2, Chung Cherng Road, Taipei, Taiwan

Filed Sep. 11, 1992, Ser. No. 943,694
Int. Cl.[5] G06F *1/00*
U.S. Cl. 364—708.1 **2 Claims**

1. A portable computer of the type including a mainframe, a keyboard on the mainframe, a liquid crystal display assembly having a front screen and a back side, and means for electrically interconnecting the mainframe to the liquid crystal display assembly, the improvement comprising:

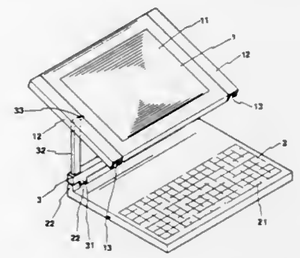
a) the liquid crystal display assembly including a pair of opposed longitudinal edges, a pair of opposed transverse edges, and a channel extending along each transverse edge;

b) a mainframe including a rear edge and an elongate block extending upwardly from the rear edge, the elongate block having a pair of spaced notches adjacent opposite ends thereof;

c) a revolving shaft including a pair of perpendicular stub rods, the stub rods being secured within the spaced notches for pivotal movement about a first pivot axis;

d) a pair of perpendicular supports extending outwardly from the revolving shaft adjacent opposite ends thereof, each support including an inwardly extending transverse pivot shaft, the transverse pivot shafts being secured to the transverse edges of the liquid crystal display assembly substantially midway between and defining a second pivot axis parallel to the opposed longitudinal edges of the display assembly;

e) the first pivot axis permitting the display assembly to be positioned in any of plural various angular positions and



the second pivot axis permitting the display assembly to be positioned in any of plural various level positions relative to the mainframe for receiving input signals from the keyboard; and

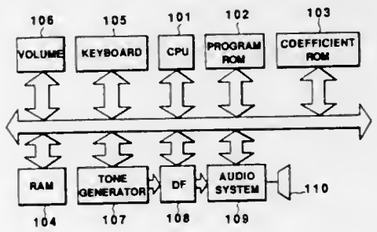
f) the first and second pivot axis further permitting the display assembly to be folded against the mainframe in a first position with the front screen facing outwardly from the mainframe for receiving input signals from a pen base input device, and in a second position with the front screen facing inwardly towards the mainframe for closing the computer, and the supports being received within the channels when the display assembly is in both the first and second folded positions.

5,255,215

DIGITAL FILTER SYSTEM WITH CHANGEABLE CUTOFF FREQUENCY

Goro Sakata, Mitaka; Kikuji Tanaka, Fussa; Kohtaro Hanzawa, Iruma, and Ryutaro Hayashi, Tachikawa, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Division of Ser. No. 608,572, Nov. 2, 1990, Pat. No. 5,140,541. This application Apr. 23, 1992, Ser. No. 872,922
Claims priority, application Japan, Nov. 7, 1989, 1-288020; Dec. 30, 1989, 1-341504
The portion of the term of this patent subsequent to Aug. 18, 2009, has been disclaimed.
Int. Cl.[5] G06F *15/31*
U.S. Cl. 364—724.19 **18 Claims**



1. A digital filter system comprising:

filter coefficient storage means for storing filter coefficients corresponding to discrete cutoff frequencies, respectively;

goal storage means for storing a goal value of cutoff frequency;

coefficient readout means for reading out filter coefficients corresponding to the goal value of the cutoff frequency stored in said goal storage means from said filter coefficient storage means;

filter means for receiving filter coefficients from said coefficient readout means and for filtering a signal input thereto in accordance with the received filter coefficients;

desired cutoff frequency varying means for varying a desired value of the cutoff frequency;

detecting means for detecting a difference between the desired value of the cutoff frequency from said desired cutoff frequency varying means and the goal value of the cutoff frequency stored in said goal storage means;

updating means responsive to said detecting means when said detected difference is larger than a predetermined value, for calculating a new goal value of cutoff frequency that is located between said goal value stored in said goal storage means and said desired value, and for updating said goal storage means with said new goal value of cutoff frequency; and

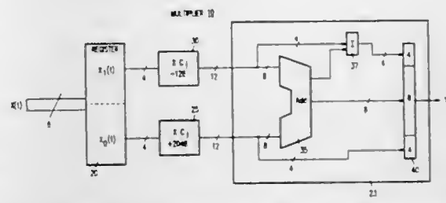
repeating means for repeating operations of said detecting means, said updating means and said coefficient readout means until said detected difference is reduced to a relatively small value.

5,255,216

REDUCED HARDWARE LOOK UP TABLE MULTIPLIER

Wolf-Ekkehard Blanz, and Charles E. Cox, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 16, 1991, Ser. No. 746,385
Int. Cl.[5] G06F *7/52*
U.S. Cl. 364—757 **16 Claims**



1. A multiplier for multiplying an N bit number by an M bit number, comprising:

storage means for storing an N bit number, said storage means having first and second non-overlapping bit groups for holding, respectively, first and second bit groups values, each bit group having the same number of bits;

a first look up table (LUT) coupled to the first bit group, said first bit group accessing said first LUT to produce a first value, said first value representing a sum of a first compensation value added to a product of an M bit number multiplier by said first bit group value;

a second LUT coupled to the second bit group, said second bit group accessing said second LUT to produce a second value, said second value representing a sum of a second compensation value added to a product of said M bit number multiplied by said second bit group value;

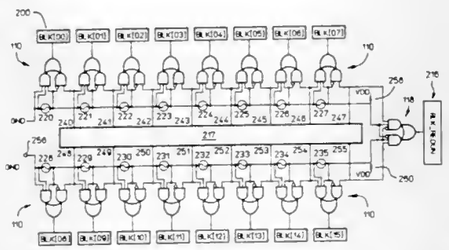
adding means, comprising first adding means and an increment means, said first adding means adding a first plurality of bits from said first LUT to a first plurality of bits from said second LUT to produce a partial result;

said first adding means further producing a carry out bit, said carry out bit being added to a second plurality of bits from said first LUT by said increment means;

whereby said product of said N bit number and said M bit number is produced.

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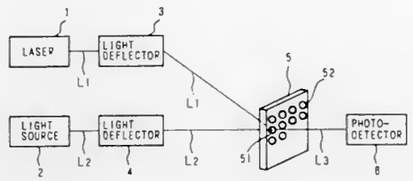
5,255,217
INTEGRATED CIRCUIT MEMORY DEVICE WITH A REDUNDANT MEMORY BLOCK
Charles M. C. Tan, Campbell, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Jan. 9, 1992, Ser. No. 818,667
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—96 17 Claims



11. An IC memory device comprising:
a first and a second memory block means each having an associated fusible link means, wherein the first memory block means is comprised of an array of memory cells arranged in a matrix of rows and columns, the matrix including at least (m+1) rows and (n+1) columns where m and n are integers greater than 1, wherein the second memory block means is comprised of an array of memory cells arranged in a matrix of rows and columns, the matrix including at least (p+1) rows and (q+1) columns where p and q are integers greater than 1;
a replacement memory block means,
wherein the replacement memory block means is comprised of an array of memory cells arranged in a matrix of rows and columns, the matrix including at least (r+1) rows and (s+1) columns where r and s are integers greater than 1, wherein the integers m, p, and r are of equal value and the integers n, q, and s are of equal value; and
a memory block selection means internal to the IC, the memory block selection means being coupled to the first, second and replacement memory block means, the memory block selection means operative such that if a fusible link is blown, the memory block associated with the blown fusible link is disabled, the replacement memory block is enabled and the selection means translates a block select for the disabled block means into a block select for a memory block means which is enabled, wherein reading a cell in an enabled memory block does not increase the signal to noise ratio.

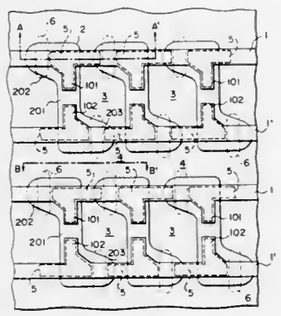
5,255,218
OPTICAL FREQUENCY MULTIPLE SIGNAL PROCESSING METHOD
Eiji Yagyu; Tetsuya Nishimura; Motomu Yoshimura, and Noriaki Tsukada, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 19, 1991, Ser. No. 762,572
Claims priority, application Japan, Sep. 26, 1990, 2-259331
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—119 22 Claims

1. A method of processing a multiple-frequency optical signal, wherein multiple optical signals are multiplexed in the frequency domain, the method characterized by the steps of:
applying said multiple-frequency optical signal to an optical recording medium whose light absorption spectrum may be varied by optical Stark effect according to an externally applied field; and



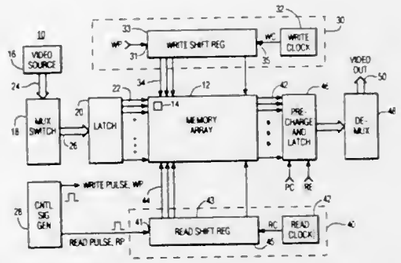
detecting an intensity-modulated multiple-frequency optical signal from the optical recording medium.

5,255,219
ULTRAVIOLET-ERASABLE TYPE NONVOLATILE SEMICONDUCTOR MEMORY DEVICE HAVING ASYMMETRICAL FIELD OXIDE STRUCTURE
Katsuya Sakai, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jan. 30, 1991, Ser. No. 648,131
Claims priority, application Japan, Jan. 31, 1990, 2-21556
Int. Cl.[5] H01L *29/78*
U.S. Cl. 365—185 5 Claims



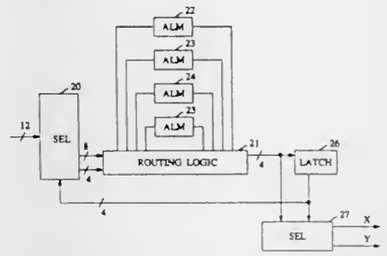
1. A nonvolatile semiconductor memory device comprising:
a semiconductor substrate;
a plurality of isolation films arranged in rows and columns on said semiconductor substrate, said isolation films providing isolation film pairs, said isolation film pairs comprising two of said isolation films adjacent to each other in a row direction;
each of said isolation film pairs including a base portion arranged in a column direction, a first expanded portion extending from one side of said base portion in a first direction parallel with said row direction, and a second expanded portion extending from another side of said base portion in a second direction opposite to said first direction;
an array of memory cells on said semiconductor substrate arranged in memory cell pairs, each memory cell pair including a pair of stacked gate structures having first and second gate insulating films, first and second floating gates and first and second control gates, each of said memory cell pairs being located such that a common drain region is defined by each of said isolation film pairs and that a common source region extending in said row direction is provided between one of said isolation film pairs and another of said isolation film pairs adjacent thereto in said column direction;
a first common conductive layer for providing said first control gate of each of said memory cell pairs, said first common conductive layer extending continuously in said row direction to pass over said first expanded portion of each of said isolation film pairs, said first control gate having a first expanded portion extending on said base portion in said column direction;
a second common conductive layer for providing said second control gate of each of said memory cell pairs, said second common conductive layer extending continuously in said row direction to pass through said second expanded portion of each of said isolation film pairs, said second control gate having a second expanded portion extending on said base portion in said column direction;
said first and second expanded portions of said first and second control gates being opposed to each other;
said first floating gate of each of said memory cell pairs being located beneath said first control gate and having a similar configuration to that of said first control gate, said first floating gate being electrically insulated at said first expanded portion of each of said isolation film pairs by a first cell slit from adjacent floating gates in said row direction; and
said second floating gate of each of said memory cell pairs being located beneath said second control gate and having a similar configuration to that of said second control gate, said second floating gate being electrically insulated at said second expanded portion of each of said isolation film pairs by a second cell slit from adjacent floating gates in said row direction.

5,255,220
DUAL PORT VIDEO MEMORY SYSTEM HAVING PULSE TRIGGERED DUAL COLUMN ADDRESSING
Paul D. Filliman, Indianapolis, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.
Filed Apr. 28, 1992, Ser. No. 876,076
Claims priority, application United Kingdom, Apr. 16, 1992, 9208493
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.04 4 Claims



1. A dual port memory system, comprising:
a memory array including two row conductors for each row of cells and two column conductors for each column of cells, each cell having a first terminal connected to a data input row conductor, a second terminal connected to data output row conductor, a third input connected to a write address column conductor and a fourth input connected to a read address column conductor;
input means for applying data to be stored to said data input row conductors;
output means for recovering data stored from said data output row conductors;
a first triggerable sequential pulse generator having a trigger input terminal and a plurality of output terminals coupled to said write address column conductors and being responsive to a write trigger pulse applied to said trigger input terminal for sequentially applying cell address signals to said write address column conductors at a first predetermined rate;
a second triggerable sequential pulse generator having a trigger input terminal and a plurality of output terminals coupled to said read address column conductors and being responsive to a read trigger pulse applied to said trigger input terminal for sequentially applying cell read address signals to said read address column conductors at a second predetermined rate; and
a control signal generator for generating said read and write trigger pulses in a timed relationship.

5,255,221
FULLY CONFIGURABLE VERSATILE FIELD PROGRAMMABLE FUNCTION ELEMENT
Dwight D. Hill, Holmdel, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Apr. 2, 1991, Ser. No. 679,370
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.08 14 Claims



1. A configurable function element including K memory cells, K being an integer, and configurable selection means coupled to said memory cells and responsive to applied data input signals, for accessing information stored in one or more said memory cells and delivering the accessed information to one or more output ports of said function element, the improvement comprising:
said configurable selection means including means for forming M memory subsets of 16 memory cells each, M being an integer, where each of said memory subsets develops two output bits in response to at most three selections bits applied to said memory subsets; and
said configurable selection means including means for forming a chain of said memory subsets by connecting one of said two output bits of memory subset i, where i is and integer index ranging from 1 to M−1, to one of said three section bits of memory subset i+1.

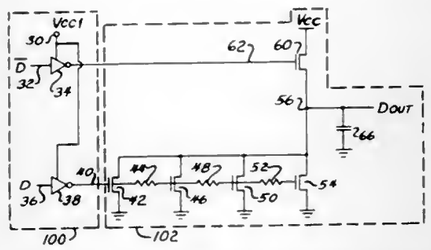
5,255,222
OUTPUT CONTROL CIRCUIT HAVING CONTINUOUSLY VARIABLE DRIVE CURRENT
S. Sheffield Eaton, Jr., Colorado Springs, Colo., assignor to Ramtron International Corporation, Colorado Springs, Colo.
Filed Jan. 23, 1991, Ser. No. 644,902
Int. Cl.[5] G11C *11/34*
U.S. Cl. 365—189.09 25 Claims

1. An output circuit for an integrated circuit memory designed to operate over a range of power supply voltages including a nominal voltage and a high voltage, the output circuit comprising:
a data receiving circuit connected to receive a data signal to be output from the memory;
a data output circuit having an output node and an output transistor having first, second, and control terminals,
the control terminal being responsively coupled to said data receiving circuit,
said first terminal being connected to receive the power supply voltage,
said second terminal being coupled to said output node; and

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a circuit providing a derived power supply voltage to said data receiving circuit, said derived power supply voltage being a function of the power supply voltage,

the data receiving circuit, the circuit providing a derived power supply voltage, and the data output circuit being



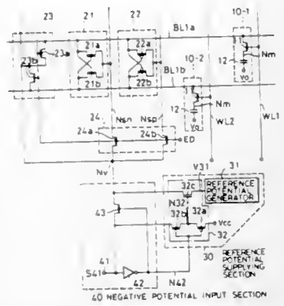
configured so that current drawn through said output transistor is higher at said nominal voltage than at said high voltage, and wherein the output circuit is configured to drive said output node with an output current that varies continuously in accordance with continuous changes in the power supply voltage over said range.

5,255,223

SEMICONDUCTOR MEMORY DEVICE HAVING ALTERNATIVELY OPERATED EQUALIZING AND ERASING FUNCTIONS

Takayuki Tanaka; Shinya Takahashi; Yuki Hashimoto, and Toshiharu Watanabe, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jul. 17, 1991, Ser. No. 731,337
Claims priority, application Japan, Jul. 23, 1990, 2-194666
Int. Cl.[5] G11C *11/407*
U.S. Cl. 365—189.09 **13 Claims**



1. A semiconductor memory device comprising:

a plurality of memory cells connected at the intersections of a plurality of pairs of bit lines and a plurality of word lines;

a plurality of sense amplifiers activated by the potentials on common nodes to sense and amplify the potential differences between the respective pairs of bit lines;

an equalizing means activated by an equalizing signal to apply the potential on a power supply node to the pairs of bit lines;

a reference potential supplying means for generating a reference potential and supplying the reference potential to the power supply node through a switching means; and

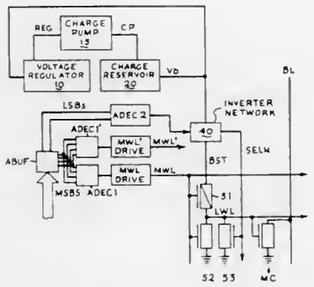
a negative potential input means for receiving an external signal of a negative potential and turning off the switching means and supplying the external signal to the power supply node.

5,255,224

BOOSTED DRIVE SYSTEM FOR MASTER/LOCAL WORD LINE MEMORY ARCHITECTURE

Duane E. Galbi, Jericho; Russell J. Houghton, Essex Junction, and Richard M. Parent, Shelburne, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 18, 1991, Ser. No. 810,000
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.09 **29 Claims**



1. A memory system receiving both a high supply voltage and a low supply voltage from an external source, the memory system accessing a particular one of a plurality of memory cells during an access cycle, the memory system comprising:

a plurality of local word lines, each of which is interconnected to different ones of the plurality of memory cells;

a plurality of master word lines, each coupled to selected ones of said local word lines;

first selection means for selecting one of said plurality of master word lines;

second selection means for selecting one of said plurality of local word lines coupled to a selected one of said plurality of master word lines; and

a charge reservoir for storing charge at a boost voltage exceeding the high supply voltage,

said second selection means including a driver transistor for coupling said boost voltage to said selected one of said plurality of local word lines, said driver transistor having a gate electrode coupled to said selected one of said plurality of master word lines, a first controlled electrode coupled to said selected one of said local word lines, and a second controlled electrode that is biased at said boost voltage only after said selected master word line has been substantially activated.

5,255,225

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE AND MEMORY CONSISTING OF SEMICONDUCTOR INTEGRATED CIRCUIT

Hiroaki Nambu, Sagamihara; Noriyuki Homma, Kodaira; Kunihiko Yamaguchi, Sayama; Kazuo Kanetani, Akishima; Hisayuki Higuchi, Kokubunji; Youji Idei, Asaka; Kenichi Ohata, Tachikawa; Yoshiaki Sakurai, Kokubunji; Masanori Odaka, Kodaira; Goro Kitsukawa, Hinodemachi; Nobuo Tamba, Ome; Masayuki Ohayashi, Ome; Toshiro Hiramoto, Ome, and Kayoko Saito, Hamura, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Device Engineering Co., Ltd., Chiba, both of Japan

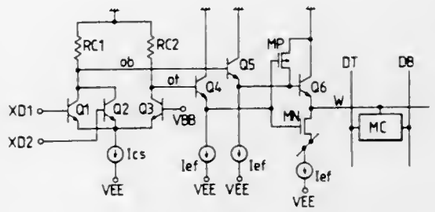
Filed Mar. 4, 1992, Ser. No. 845,557
Claims priority, application Japan, Apr. 5, 1989, 1-084863; Jul. 19, 1989, 1-184691; Aug. 16, 1989, 1-210083; Mar. 4, 1991, 3-062646
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—189.11 **28 Claims**

1. A semiconductor integrated circuit device comprising:

a current switch circuit which includes a first bipolar transistor having a base coupled to receive a first input signal, and a second bipolar transistor having a base coupled to receive a reference voltage and an emitter coupled to an emitter of said first bipolar transistor, and which generates lever-amplified inverted and non-inverted output signals with respect to said input signal;

a first emitter follower transistor having a base coupled to receive said inverted output signal;

an output emitter follower transistor which has a base coupled to receive an output signal from said first emitter follower transistors, and which generates an output signal;



a second emitter follower transistor having a base coupled to receive said non-inverted output signal;

a first current source used as a load; and
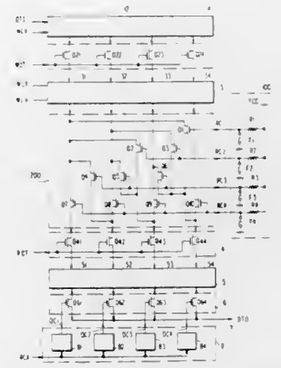
a first N-channel MOSFET having a gate coupled to receive an output signal from said second emitter follower transistor, and a source-drain path coupled between said first current source and an emitter of said output emitter follower transistor.

5,255,226

SEMICONDUCTOR MEMORY DEVICE WITH A REDUNDANCY CIRCUIT BYPASSING FAILED MEMORY CELLS

Kazuki Ohno, and Tasuharu Hoshino, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jun. 3, 1991, Ser. No. 709,565
Claims priority, application Japan, Jun. 1, 1990, 2-143439
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.12 **14 Claims**



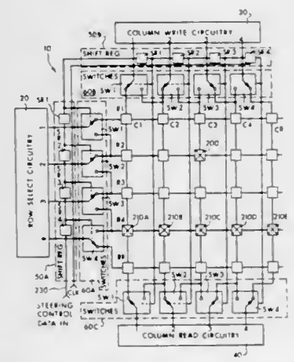
1. A semiconductor memory device comprising a redundancy write shift register including a plurality of data storage and shift stages, a write data transfer circuit for transferring in parallel data stored in said redundancy write shift register in response to a write-data transfer signal, a redundancy memory cell array including a plurality of memory cells for storing in parallel data transferred by said write data transfer circuit in a data write mode and for reading out in parallel data stored therein in a data read mode, a read data transfer circuit for transferring data read out of said redundancy memory cell array in response to a read-data transfer signal, a redundancy data output circuit including a plurality of stages for capturing in parallel data from said read data transfer circuit and outputting the captured data in a bit-serial manner, data-transfer path control means responsive to switching data for controlling data transfer from said redundancy write shift register to said redundancy data output circuit such that the data from each stage of said redundancy write shift register is transferred to a corresponding stage or a different stage of said redundancy data output circuit, and a signal generating circuit for generating said switching data.

5,255,227

SWITCHED ROW/COLUMN MEMORY REDUNDANCY

Jeffrey J. Haeffele, Monument, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 6, 1991, Ser. No. 651,681
Int. Cl.[5] G11C *19/28, 8/00*
U.S. Cl. 365—200 **11 Claims**



1. A system for reconfiguring a memory array, said memory array having a matrix composed of a plurality of columns and a plurality of rows, row select circuitry for selectively accessing said plurality of rows, write circuitry for writing data into selected columns of said plurality of columns, and read circuitry for reading data from selected columns of said plurality of columns, said system further comprising:

a plurality of redundant columns in said memory array, each one of said plurality of redundant columns being located at a predetermined location in said memory array so as to divide said plurality of columns into equal sectors of columns,

a plurality of redundant rows in said memory array, each one of said plurality of redundant rows being located at a predetermined location in said memory array so as to divide said plurality of rows into equal sectors of rows,

means connected to said write and read circuitry for testing said plurality of columns and rows for defects, said testing means generating a reconfiguration row bit pattern when a defective row is identified and a reconfiguration column bit pattern when a defective column is identified,

a plurality of first switches connected between said row select circuitry and said plurality of rows and plurality of redundant rows, each of said first plurality of switches selectively connecting one of two of said adjacent plurality of rows and plurality of redundant rows to one row said row select circuitry,

a plurality of second switches connected between said write circuitry and said plurality of columns and plurality of redundant columns, each of said second plurality of switches selectively connecting one of two of said adjacent plurality of columns and plurality of redundant columns to one column of said write circuitry,

a plurality of third switches connected between said read circuitry and said plurality of columns and plurality of

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redundant columns, each of said third plurality of switches selectively connecting one of two of said adjacent plurality of columns and plurality of redundant columns to one said column read circuitry,

first means receptive of said reconfiguration row bit pattern and connected to said first plurality of switches for programmably controlling the selective connection of each said switch to said one of two adjacent rows,

second means receptive of said reconfiguration column bit pattern and connected to said second and third plurality of switches for programmably controlling the selective connection of each said switch to said one of two adjacent columns.

5,255,228

SEMICONDUCTOR MEMORY DEVICE WITH REDUNDANCY CIRCUITS

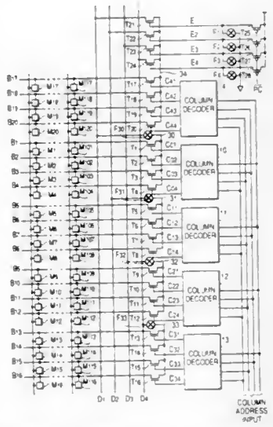
Minoru Hatta, Takatsuki, and Junko Hatta, Ibaraki, both of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Continuation of Ser. No. 719,685, Jun. 25, 1991, abandoned, which is a continuation of Ser. No. 462,119, Jan. 10, 1990, abandoned. This application Jul. 22, 1992, Ser. No. 917,674

Claims priority, application Japan, Jan. 10, 1989, 1-3159

Int. Cl.[5] G11C *8/00, 11/40*

U.S. Cl. 365—200 **10 Claims**



1. A semiconductor memory device comprising:

a memory cell array having plural memory cells arranged in rows and columns, wherein each of said columns has a column address assigned to it such that N columns (N being an integer not less than 2) out of N×M columns (M being an integer not less than 2) share a common column address out of M column addresses;

N I/O data lines which are simultaneously connectable to respective N columns of a common column address;

N×M first transfer gates, each having a terminal connected to a respective one of said N×M columns, and each being closed so as to allow a flow of current therethrough when an associated column is selected in response to column selection signals generated from column address input signals;

M spare columns, each having a different column address out of said M column addresses assigned thereto;

M second transfer gates, each having a terminal connected to each one of said M spare columns, and each being closed so as to allow a flow of current therethrough when an associated spare column is selected in response to column selection signals generated from said column address input signals;

N first conductive lines connected to other terminals of said N×M first transfer gates such that M of said N×M first transfer gates coupled to a common I/O data line with respective M column addresses have their other terminals connected to a respective one of said N first conductive lines;

N fusible links respectively connected between said N I/O data lines and said N first conductive lines;

a second conductive line connected to other terminals of said M second transfer gates; and

N electrical connecting means, each for electrically connecting each one of said N I/O data lines to said second conductive line as programmed.

5,255,229

DYNAMIC RANDOM ACCESS MEMORY INCLUDING STRESS TEST CIRCUITRY

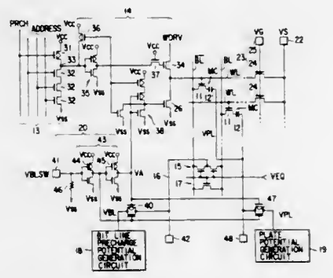
Hiroaki Tanaka, Yokohama, and Masaru Koyanagi, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 26, 1991, Ser. No. 813,578

Claims priority, application Japan, Dec. 27, 1990, 2-418761

Int. Cl.[5] G11C *7/02*

U.S. Cl. 365—201 **25 Claims**



1. A dynamic random access memory, comprising:

a plurality of memory cells arranged in rows and columns;

a word line connected to the memory cells in the same row;

a bit line connected to the memory cells in the same column;

a word line selection circuit for generating a word line selection signal in response to an address signal;

a word line driving circuit, connected between a word line driving voltage source and said word line, for driving said word line in response to an output signal of said word line selection circuit;

a noise killer circuit connected between said word line and ground potential;

a voltage stress test terminal to which a stress voltage is externally applied during a voltage stress test;

stress voltage transmission means, coupled to a first predetermined number of word lines and to the voltage stress test terminal for transmitting the stress voltage to the first predetermined number of word lines which is greater than a second predetermined number of word lines selected in response to the address signal during a normal operation mode when the stress voltage is applied to said voltage stress terminal and

noise killer control means coupled to the noise killer circuit and responsive to a first control signal for turning off said noise killer circuit connected to said word line to which the stress voltage is applied during the voltage stress test.

5,255,230

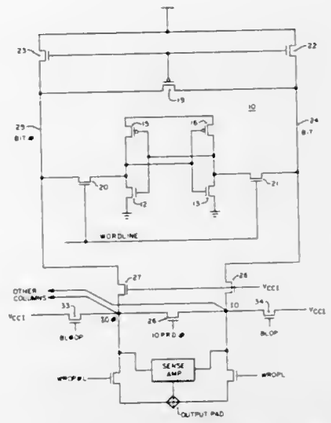
METHOD AND APPARATUS FOR TESTING THE CONTINUITY OF STATIC RANDOM ACCESS MEMORY CELLS

James Chan, Folsom; Robert E. Larsen, Shingle Springs, and Steve Eskildsen, Folsom, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 31, 1991, Ser. No. 816,635

Int. Cl.[5] G11C *29/00*

U.S. Cl. 365—201 **21 Claims**



1. A method of testing a memory array of SRAM cells arranged in columns, each SRAM cell including memory transistors, bit and bit # lines, the memory array including precharge circuitry, an output test terminal, and column select circuitry, the method comprising the steps of:

connecting the precharge circuitry to all of the SRAM cells of the memory array,

selecting from the SRAM cells selected SRAM cells, the selected SRAM cells having selected bit and bit # lines;

connecting the selected bit and bit# lines of the selected SRAM cells to the output test terminal,

disconnecting the memory transistors of the selected SRAM cells from the selected bit and bit# lines,

disconnecting the selected bit and bit# lines from the precharge circuitry,

enabling the column select circuitry to select a column including the selected SRAM cells,

applying a preselected voltage to the output test terminal, and

measuring a current flowing through the output test terminal.

5,255,231

ARCHITECTURE OF REALIZING BALANCE OF BIT LINE SENSE AMPLIFIER IN DRAM CELL ARRAY

Jong H. Oh, Kyoungkido, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Ichonkun Kyoungkido, Rep. of Korea

Filed Feb. 12, 1991, Ser. No. 654,245

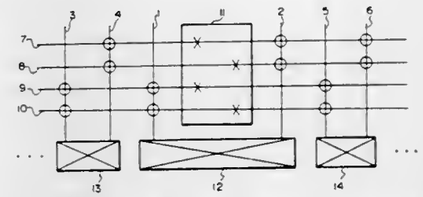
Claims priority, application Rep. of Korea, Feb. 24, 1990, 1990-2377

Int. Cl.[5] G11C *11/40*

U.S. Cl. 365—202 **3 Claims**

1. A semiconductor DRAM device of the type including a plurality of bit-line pairs, wherein each bit-line pair is connected to one of a plurality of sense amplifiers, said DRAM device also including a plurality of intersecting polysilicon word-lines and a plurality of metal word-lines wherein said metal word-lines connect said polysilicon word-lines at predetermined metal-wire shunt zones, each of said sensing amplifiers having a coupling capacitance value, said DRAM device comprising:

in a first of said bit-line paris, first and second bit-lines located on either side and adjacent to at least one of said predetermined metal-wire shunt zones;



a first of said plurality of sense amplifiers connected to said first and second bit-lines, so that said coupling capacitance value of said first sense amplifier is equal to and balanced with said coupling capacitance values of said other sensing amplifiers.

5,255,232

DRAM CELL PLATE AND PRECHARGE VOLTAGE GENERATOR

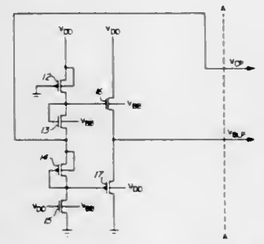
Richard C. Foss, Kirkcaldy Fife, Scotland, and Valerie L. Lines, Ottawa, Canada, assignors to Mosaid, Inc., Ontario, Canada

Filed Apr. 5, 1991, Ser. No. 680,748

Claims priority, application United Kingdom, Apr. 6, 1990, 9007793

Int. Cl.[5] G11C *11/24*

U.S. Cl. 365—203 **6 Claims**



1. A dynamic random access memory (DRAM) comprising bit storage capacitors and at least one bit line for receiving stored bits from said storage capacitors, means for generating a storage capacitor reference plate voltage and a bit line precharge maintaining voltage, comprising voltage supply means, voltage divider means connected across the voltage supply terminal means, a portion of the voltage divider means connected in a high series impedance circuit to a storage capacitor reference plate, a unity gain low impedance amplifier having an input connected to said voltage divider means and an output connected to a bit line to be precharged, the voltage supplied by said portion of the voltage divider means and the voltage supplied to said input of the amplifier by said voltage divider means being sufficient to maintain the storage capacitor reference voltage and maintain the precharge bit line voltage.

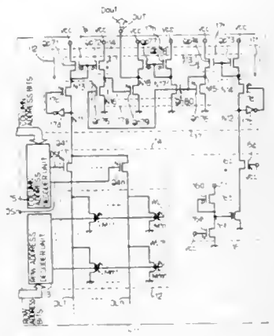
VOL 1155 ISS 3 OCT 19 1993 UMI

5,255,233

NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE EQUIPPED WITH SENSE AMPLIFIER CIRCUIT FOR DISCRIMINATING SMALL DIFFERENTIAL VOLTAGE LEVEL

Kyouichi Izumi, Kanagawa, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 1, 1992, Ser. No. 891,807
Claims priority, application Japan, Jun. 10, 1991, 3-137327
Int. Cl.[5] G05F *3/24*; G11C *7/02*
U.S. Cl. 365—207 8 Claims



1. A non-volatile semiconductor memory device comprising:

a) a memory cell array implemented by a plurality of addressable non-volatile memory cells arranged in rows and columns, and each having one of high and low threshold levels depending upon logic level of a data bit stored therein;

b) addressing means provided in association with said memory cell array, and selecting one of said plurality of addressable non-volatile memory cells for producing a read-out data signal of either high or low voltage level at an output node thereof, said read-out data signal being indicative of the threshold level of said one of said plurality of addressable non-volatile memory cells;

c) a reference unit operative to produce a reference voltage level regulated between said high and low voltage level of said read-out data signal at an output node thereof; and

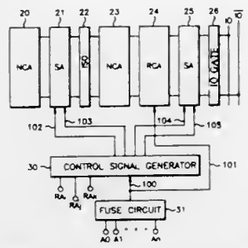
d) a sense amplifier unit comprising d-**1**) a data input node coupled with said output node of said addressing means, d-**2**) a reference node coupled with said output node of said reference unit, d-**3**) a first gate transistor having a drain node coupled with said data input node, d-**4**) a second gate transistor having a drain node coupled with said reference node, d-**5**) a first inverting circuit having an input node coupled with said data input node, and an output node coupled with a gate electrode of said first gate transistor, d-**6**) a second inverting circuit having an input node coupled with said reference node, and an output node coupled with a gate electrode of said second gate transistor, d-**7**) a first current mirror circuit coupled between a source of current and a source node of said first gate transistor for controlling a first current, d-**8**) a second current mirror circuit coupled between said source of current and a source node of said second gate transistor for controlling a second current, d-**9**) a third current mirror circuit having first and second input nodes respectively supplied with said first and second currents, and responsive to a voltage level converted from said second current for controlling a voltage level at said first input node thereof, and d-**10**) a differential amplifier circuit responsive to a differential voltage level between said first and second input nodes for producing an output data signal.

5,255,234

REDUNDANT MEANS OF A SEMICONDUCTOR MEMORY DEVICE AND METHOD THEREOF

Yong-Sik Seok, Taegu, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Mar. 25, 1991, Ser. No. 674,387
Claims priority, application Rep. of Korea, Dec. 22, 1990, 1990/21502
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—210 7 Claims



5. In a semiconductor memory device comprising a plurality of normal cell arrays each having sense amplifier, a redundant method for replacing a normal cell array having a defect with an internal redundant cell array in response to a defect of an externally inputted address signal comprising the methods of:

connecting said redundant cell array only with the sense amplifier employed in any one of adjacent normal cell arrays;

arranging an isolation gate between the bit lines of one of said normal cell array connected with said redundant cell array and the other of said normal cell array not connected with said redundant cell array, said isolation gate isolating or connecting said bit lines in response to an isolation signal; and

respectively applying to said sense amplifier and isolation gate a sensing control signal corresponding to a redundant control signal of a first or second state in response to the defect of said externally inputted address signal and said isolation signal, whereby the data stored in said redundant cell array is outputted through the sense amplifier connected with said redundant cell array during said redundant control signal being in the second state.

5,255,235

DYNAMIC RANDOM ACCESS MEMORY WITH DUMMY WORD LINES CONNECTED TO BIT LINE POTENTIAL ADJUSTING CAPACITORS

Hideshi Miyatake, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 564,519, Aug. 9, 1990, abandoned, which is a division of Ser. No. 192,575, May 11, 1988, Pat. No. 4,982,367. This application Mar. 25, 1992, Ser. No. 859,269
Claims priority, application Japan, May 15, 1987, 62-119207
Int. Cl.[5] G11C *11/407*
U.S. Cl. 365—210 6 Claims

1. A semiconductor dynamic random access memory comprising;

a plurality of memory cells arranged in a matrix of rows and columns, each memory cell including one N channel field effect transistor and one capacitor means;

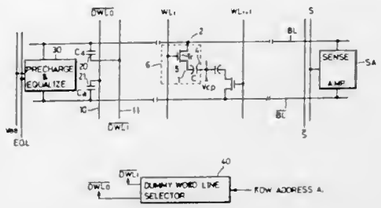
a plurality of word lines, one provided for each row, each word line being connected to respective gate electrodes of each transistor included in the memory cells on an associated row and having applied thereon a voltage substantially equal to an operating power-supply voltage Vcc when selected by a row decoder in response to an externally applied address;

a plurality of bit line pairs, one provided for each column, each bit line pair being connected to memory cells on an associated column;

a plurality of equalizing means, one for each column, each equalizing means connected between a bit line pair on an associated column and setting that bit line pair potential at half said operating power-supply voltage before the selection of a word line by the row decoder;

a plurality of sense amplifier means, one for each column, each sense amplifier means sensing and amplifying a potential difference between the bit lines of an associated bit line pair provided on an associated column; and

a plurality of bit line potential adjusting means, one for each



column, each bit line potential adjusting means consisting of a pair of capacitors each having one electrode connected to a respective bit line of an associated bit line pair in a corresponding column and another electrode connected to one of a pair of dummy word lines running parallel to said plurality of word lines; and

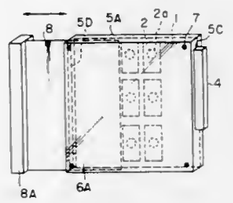
means for maintaining the potential of one dummy word line in said pair of dummy word lines at the operating power-supply voltage, and for shifting the potential of the other dummy word line of said pair of dummy word lines from the operating power-supply voltage to a ground level before a sense amplifier is made active for a sensing operation.

5,255,236

ROM CARD UNIT

Mitsuo Maehara, Nagoya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 8, 1991, Ser. No. 681,342
Claims priority, application Japan, Apr. 9, 1990, 2-93546
Int. Cl.[5] G11C *7/00, 13/04*
U.S. Cl. 365—218 4 Claims



1. A ROM card unit comprising:

a ROM card board on which a plurality of ROMs allowing data stored therein to be erased by ultraviolet light radiation are mounted, said ROMs having ultraviolet radiation windows;

a card package body accommodating said ROM card board with said ROMs so as to expose those sides of said ROMs where said ultraviolet radiation windows are located, said card package body being formed of a material capable of cutting off ultraviolet light; and

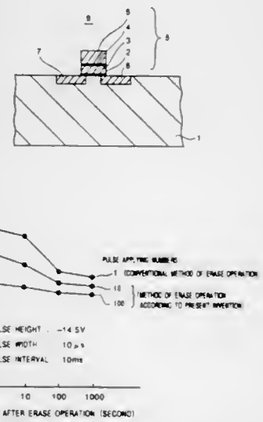
ultraviolet transmission means mounted on that side of said card package body where there are said ultraviolet radiation windows of said ROMs, said ultraviolet transmission means normally cutting off ultraviolet light from the outside of said package body, whereas allowing the transmission of ultraviolet light when data stored in said ROMs is to be erased so that ultraviolet light is radiated from the outside of said package body through said ultraviolet radiation windows of said ROMs wherein said ultraviolet transmission means comprises a transparent cover formed of a material permitting the transmission therethrough of ultraviolet light and fixed to that side of said card package body where there are said ultraviolet radiation windows of said ROMs, and an ultraviolet shield member formed of a material capable of cutting off ultraviolet light and mounted on the same side of said card package body as said transparent cover in such a manner as to be removable from said card package body.

5,255,237

METHOD OF ERASING A NONVOLATILE SEMICONDUCTOR STORAGE

Noriaki Kodama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 10, 1992, Ser. No. 866,510
Claims priority, application Japan, Apr. 10, 1991, 3-076635
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—218 3 Claims



1. A method of erasing a nonvolatile semiconductor storage provided with a composite gate formed on a surface of a semiconductor substrate by sequentially embedding a first gate insulating film, a floating gate electrode, a second gate insulating film and a control gate electrode and with a source and a drain in the surface of the semiconductor substrate, which are electrically separated with each other with embracing the composite gate, wherein when electrons accumulated to the floating gate electrode are emitted for an erasing operation, a drain potential is made into a floating potential and a plurality of continuous pulses of the negative high voltage of which parameter of multiplying pulse intervals by applying pulse numbers is 0.1 seconds or more are applied to the control gate electrode and Fowler-Nordheim tunnelling of electrons accumulated to the floating gate electrode is intermittently performed to the semiconductor substrate through the first gate insulating film for an erasing operation.

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FIRST-IN FIRST-OUT SEMICONDUCTOR MEMORY DEVICE

Hiroshi Ichige; Junichi Kono, both of Kodaira, and Toshio Okochi, Ohme, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 403,667, Sep. 6, 1989, abandoned. This application Nov. 18, 1991, Ser. No. 794,824

Claims priority, application Japan, Sep. 8, 1988, 63-224931; Sep. 30, 1988, 63-244002; Jun. 12, 1989, 1-149241

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—220 **7 Claims**



1. A semiconductor memory device having a bit cell array in which a plurality of bit cells are arranged in a matrix shape, in first-in first-out fashion, comprising:

write means for selecting a write position where data is to be written into said bit cell array;

read means for selecting one of a single read position and a plurality of read positions in the bit cell array, the selected one being one from which data written in said bit cell array can be read;

input signal lines coupled to said bit cells;

output signal lines coupled to said bit cells; and,

read control means for outputting first and second signals, wherein the first signal indicates a read operation for a single data item from the single read position and the second signal indicates a read operation for a plurality of data items from the plurality of read positions, wherein the single data item is output from said bit cell array in parallel fashion through said output signal lines when the read means receives the first signal, and wherein the plurality of data items are output from said bit cell array in parallel fashion through said output signal lines when the read means receives the second signal.

5,255,239

BIDIRECTIONAL FIRST-IN-FIRST-OUT MEMORY DEVICE WITH TRANSPARENT AND USER-TESTABLE CAPABILITIES

Michael P. Taborn; Larry Metzger, both of Austin, Tex., and David R. Horton, Apple Valley, Minn., assignors to Cypress Semiconductor Corporation, San Jose, Calif.

Filed Aug. 13, 1991, Ser. No. 745,073

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—221 **21 Claims**

1. A bi-directional first-in-first-out (FIFO) memory device on a monolithic integrated circuit chip, comprising:

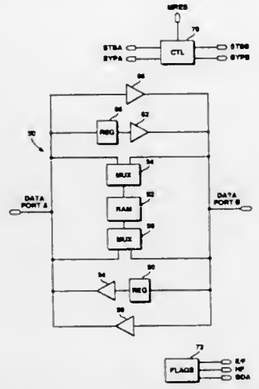
first and second device input/output (I/O) ports;

a single FIFO memory array for holding the FIFO data no matter which direction data is transferred through said FIFO device, said array comprising an input data port and an output data port;

means responsive to a first control signal for selectively coupling either said first or said second device I/O port to said input data port of said memory array;

means responsive to a second control signal for selectively coupling either said first or said second device I/O port to said at least one output data port of said memory array; and

means responsive to transparent bypass control signals for operating said device in a transparent bypass mode of operation, wherein data asserted at one of said first and second ports bypasses said FIFO memory array and is



transferred directly to said other of said first and second ports without passing through said FIFO memory array; whereby said FIFO device may be operated for data transfer either from said first I/O port to said second I/O port or vice versa depending upon the setting of said means responsive to said first control signal and said means responsive to said second control signal, enabling data transfer from said first I/O port to said second I/O port when said first I/O port is coupled to said input data port of said memory and said second I/O port is coupled to said output data port for said device, and enabling data transfer from said second I/O port to said first I/O port when said second I/O port is coupled to said input data port and said first I/O port is coupled to said output data port.

5,255,240

ONE STAGE WORD LINE DECODER/DRIVER WITH SPEED-UP DARLINGTON DRIVE AND ADJUSTABLE PULL DOWN

Robert C. Wong, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

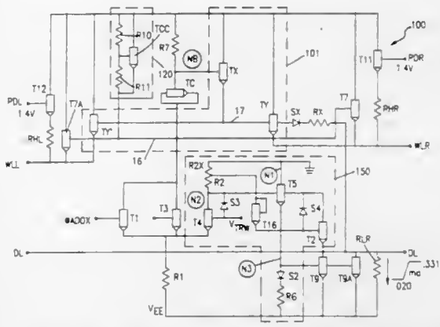
Filed Jun. 13, 1991, Ser. No. 714,442

Int. Cl.[5] G11C *8/00*; **H03K** *3/26*

U.S. Cl. 365—230.06 **12 Claims**

5. A word line driver circuit for a memory means, said word line driver circuit having at least one word line driver transistor including

a Darlington circuit connected in parallel with said at least one word line driver transistor; an input to said Darlington circuit being connected to an input of said word line driver transistor through a bootstrap capacitor having a



capacitance which is variable with a conductance through said bootstrap capacitor.

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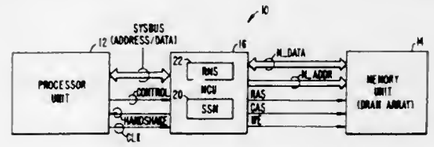
APPARATUS FOR INTELLIGENT REDUCTION OF WORST CASE POWER IN MEMORY SYSTEMS

Richard M. Stern; Floyd D. Kendrick, Jr., both of Santa Clara, and Jordan R. Silver, San Jose, all of Calif., assignors to Tandem Computers Incorporated, Cupertino, Calif.

Filed May 20, 1991, Ser. No. 703,228

Int. Cl.[5] G11B *17/30*

U.S. Cl. 365—226 **19 Claims**



1. In a data processing system including a processing unit and a memory system accessible to store and retrieve multi-bit data words in response to memory access requests from the processing unit, the memory system including means for providing a memory available signal indicative of capability of the memory system to honor a memory access request, the memory system being formed from an array of dynamic random access memory elements organized to include N groups of memory locations for storing multiple ones of the data words in each of the N groups, each of the N groups of memory locations being accessed by occurrence of a row address strobe signal, apparatus for limiting multiple back-to-back memory access operations to successive different ones of the N-groups of memory locations, the apparatus comprising:

counter means coupled to the memory system to receive an indication of occurrence of the row address strobe signal for providing a count of each separate one of such occurrences;

first circuit means coupled to receive the count to inhibit provision of the memory available signal when the count matches a predetermined value; and

second circuit means coupled to the counter means, and operable after a passage of a period of time that is initiated when the count matches the predetermined value to provide a first reset signal to cause the count of the counter means to be reset to a value other than the predetermined value.

5,255,242

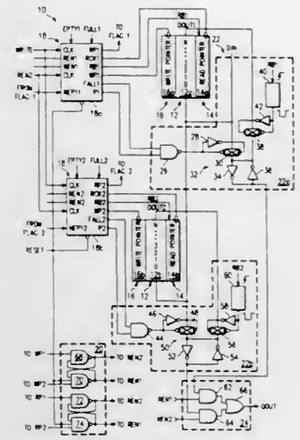
SEQUENTIAL MEMORY

Morris D. Ward, Garland; Jy-Der Tai, Plano, and Kenneth L. Williams, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 17, 1990, Ser. No. 628,316

Int. Cl.[5] G11C *7/00, 8/04*

U.S. Cl. 365—230.03 **9 Claims**



1. A sequential memory comprising:

an input for receiving a succession of data units;

a plurality of memories, each of said memories having a plurality of storage locations and coupled to said input for storing selected ones of said data units; and

interleave control circuitry coupled to said plurality of memories for writing successive ones of said data units to successive ones of said memories and for reading said data units from said memories in a predetermined sequence, said interleave control circuitry including:

a plurality of write pointer circuits, each write pointer circuit coupled to an associated one of said memories for indicating the next location in the associated memory to be written to, each write pointer circuit receiving a first control signal having one of a first and second state and responsive to said first state of said first control signal for writing a data unit to said next location;

a plurality of data access control circuits, each data access control circuit associated with one of said memories, each data access control circuit receiving a write signal having one of a first and second state and a second control signal having one of a first and second state and responsive to said first states of said write signal and said second control signal to supply said first state of said first control signal to the associated write pointer circuit; and

a bank select circuit responsive to said first control signals to produce said second control signals, one of said second control signals having said first state.

5,255,243

RANDOM ACCESS MEMORY DEVICE HAVING TRANSFER GATE UNIT FOR BLOCKING FLASH WRITE DATA BUFFER UNIT FROM PARASITIC CAPACITANCE COUPLED WITH BIT LINE PAIRS OF MEMORY CELLS

Eiji Kitazawa, Kanagawa, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 12, 1991, Ser. No. 789,897

Claims priority, application Japan, Nov. 9, 1990, 2-305385

Int. Cl.[5] G11C *8/00, 7/00*

U.S. Cl. 365—233 **5 Claims**

1. A random access memory device selectively entering a

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usual write-in phase, a usual read-out phase and a flash write phase of operation, comprising:

a) a plurality of random access memory cells arranged in rows and columns, and respectively storing data bits;

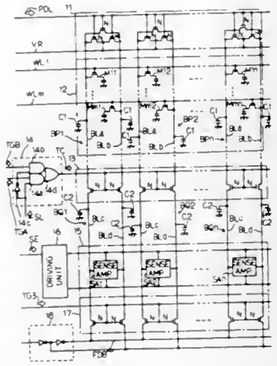
b) a plurality of first bit line pairs respectively coupled with the columns of said random access memory cells;

c) a plurality of word lines respectively coupled with the rows of said random access memory cells, and selectively activated for allowing data bits to be read out from random access memory cells coupled therewith to the associated first bit line pairs in the form of small differential voltage level, said word lines being further operative to allow data bits respectively indicated by large differential voltage levels on said plurality of first bit line pairs to be written into said random access memory cells coupled therewith;

d) a plurality of second bit line pairs respectively associated with said plurality of first bit line pairs;

e) a plurality of sense amplifier circuits respectively coupled with said plurality of second bit line pairs, and activated for respectively developing small differential voltage levels into said large differential voltage levels;

f) a first transfer gate unit coupled between said plurality of first bit line pairs and said plurality of second bit line pairs, and responsive to a timing controlling signal for interconnecting said plurality of first bit line pairs and said plurality of second bit line pairs;



g) a flash write data buffer unit responsive to a flash write data bit for producing a small differential voltage level on a flash write data bus;

h) a second transfer gate unit coupled between said flash write data bus and said plurality of second bit line pairs, and responsive to a gate control signal for distributing said small differential voltage level indicative of said flash write data bit to said plurality of second bit line pairs in said flash write phase of operation; and

i) a timing controller for producing said timing controlling signal, said timing controlling signal causing said first transfer gate unit to interconnect said plurality of first bit line pairs and said plurality of second bit line pairs except for a first predetermined time period containing at least a time period between activation of said sense amplifier circuits and completion of development into said large differential voltage levels in said usual read-out phase, said timing controlling signal causing said first transfer gate unit to interconnect said plurality of first bit line pairs and said plurality of second bit line pairs except for a second time period containing at least a time period between transmission of said small differential voltage level to said plurality of second bit line pairs and completion of development into said large differential voltage levels in said flash write phase.

5,255,244

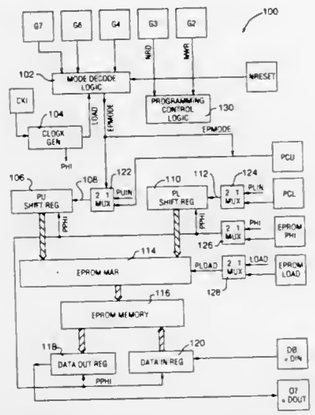
METHOD AND APPARATUS FOR SERIALLY PROGRAMMING AN ON-CHIP EPROM IN A MICROCONTROLLER

Shankar Dey, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jun. 21, 1991, Ser. No. 718,589

Int. Cl.[5] G11C *13/00*

U.S. Cl. 365—233 **5 Claims**



1. A microcontroller architecture for serially programming the microcontrollers on-chip EPROM, the microcontroller architecture comprising

a) mode decode means responsive to a plurality of operating mode input signals for generating corresponding operating mode signals, including an EPROM mode signal;

b) a clock generator for generating a load clock signal;

c) an upper byte address shift register for serially receiving a most significant address portion of an EPROM address in response to a pphi clock input signal and for providing the most significant address portion as an upper byte parallel output;

d) a lower byte address shift register for serially receiving a least significant address portion of an EPROM address in response to the pphi clock input signal and for providing the least significant address portion as a lower byte parallel output;

e) a memory address register that loads the upper and lower byte parallel outputs from the upper and lower byte address shift registers, respectively, and provides an EPROM address as an output, the EPROM address including the most and least significant address portions, in response to an EPROM load signal; and

f) an EPROM memory element comprising a plurality of storage elements and decoder means responsive to the EPROM address provided by the memory address register for providing access to a storage element specified by the EPROM address.

5,255,245

TOTAL FIELD IMAGING PROBE

Andre Clot, Clos Maronniers, Simiane, France 13109

PCT No. PCT/FR90/00574, § 371 Date Jan. 29, 1992, § 102(e) Date Jan. 29, 1992, PCT Pub. No. WO91/02269, PCT Pub. Date Feb. 21, 1991

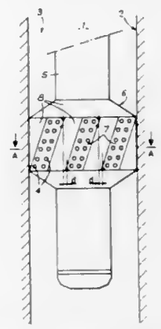
PCT Filed Jul. 27, 1990, Ser. No. 828,912

Claims priority, application France, Aug. 1, 1989, 89 10582

Int. Cl.[5] G01V *1/40*

U.S. Cl. 367—25 **10 Claims**

1. Total field imaging probe for effecting imaging logs over the whole periphery of the wall of a hole bored in the sub-soil and filled with a fluid said probe including sensors for measuring the characteristics of this soil mounted on or in the body of said probe, certain parts of said body being able to come into contact with said wall and, in the rest position, having an outer shape of a cylinder and a diameter smaller than the diameter of said hole, said body of the probe comprising: at least one casing



molded from a material of elastomer type, said casing comprising helical elements separated by bellows responsive to internal expansion means for unfolding said casing whereby said elements follow the shape of the wall of the well, said bellows ensuring the connections between the elements and maintaining the assembly of the casing in semi-rigid manner for following a peripheral surface continuity.

5,255,246

ELECTROACOUSTIC TRANSDUCER OF THE ELECTRET TYPE

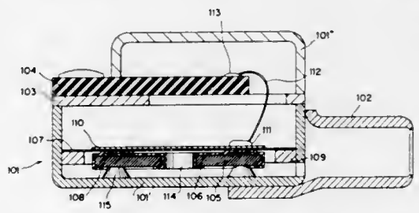
Aart Z. van Halteren, Hobrede, Netherlands, assignor to Siemens Nederland N.V., Den Haag, Netherlands

Filed Sep. 17, 1992, Ser. No. 945,918

Claims priority, application Netherlands, Sep. 17, 1991, 9101563

Int. Cl.[5] H04R *19/00*

U.S. Cl. 367—170 **14 Claims**



1. An electroacoustic transducer of the electret type, comprising a case having an opening via which the interior of the case communicates with the surroundings; a backplate and a diaphragm arranged opposite the backplate in the case, said backplate having a surface provided at least partly with an electret material, said diaphragm having a surface, a part of said surface of the diaphragm being provided with an electrically conductive layer; means for securing the circumference of the diaphragm to the inside wall of the case, and the backplate and the means for securing the diaphragm to the inside wall of the case are both electrically connected with the case and thereby have the same potential as the case.

5,255,247

ELECTRONIC TIMEPIECE INCLUDING INTEGRATED CIRCUITRY

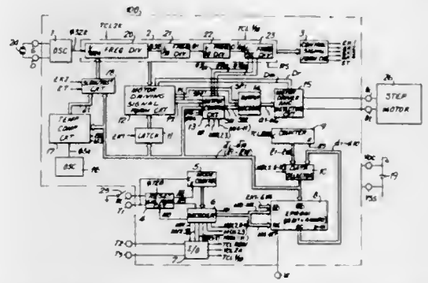
Tatsuo Moriya, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Division of Ser. No. 333,512, Apr. 5, 1989, Pat. No. 5,195,063. This application Sep. 1, 1992, Ser. No. 938,974

Claims priority, application Japan, Apr. 6, 1988, 63-46520

Int. Cl.[5] G04C *19/00*; **G04F** *5/00*; **G04B** *18/00*

U.S. Cl. 368—87 **18 Claims**



1. An integrated circuit for an electronic timepiece, comprising:

non volatile memory means for storing and producing control date;

volatile holding means for receiving and holding at least said control data;

motor driving signal forming means for selecting a motor driving signal period and pulse width based on the control data; and

reference data holding means for holding reference data wherein said volatile holding means is operable for receiving and holding said reference data and said motor driving signal forming means is also operable for selecting a motor driving signal period and pulse width based on the reference data.

5,255,248

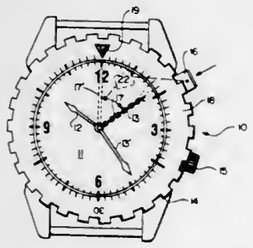
TIME LINE WATCH

Steven L. Goodmon, H.C.R. 5, Box 1267, Burnet, Tex. 78611

Continuation of Ser. No. 630,011, Dec. 19, 1992, abandoned. This application Jun. 10, 1992, Ser. No. 896,879

Int. Cl.[5] G04B *19/04*

U.S. Cl. 368—228 **1 Claim**



1. A time line watch comprising:

a watch case;

a central dial mounted on said case having an analog time scale representing a twelve hour time period visibly carried about the edge marginal region thereof;

an hour hand and a minute hand movably carried for positioning over said dial in sequential alignment with said time scale and coupled to means for positioning said hands about said dial to represent hour and minute in real time;

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a time line hand movably carried on said watch case and settable to a selected aligned stationary position with respect to said analog dial scale aligned with the current position of said minute hand and indicative of a starting time for a timed sequence;

pushbutton means carried on said watch case operably coupled to said time line hand for manually positioning said time line about said dial to said stationary position;

a bezel rotatably carried on said watch case in coaxial relationship with said dial;

said bezel having an index arrow indicia and a numerical indicia "30" separated by 180 degrees;

said bezel index arrow indicia and said time line hand cooperatively acting together when in circumferentially offset spaced-apart relationship whereby said time line hand visually indicates said starting time of an event while said bezel index arrow indicia indicates the end of said event and elapsed time is indicated by the real time position of said minute hand with respect to said start of event indication and which indicates the time remaining until the end of said event by the real time position of said minute hand with respect to said bezel arrow indicia;

said bezel index arrow indicia and said time line hand further cooperating together when in radially aligned spaced-apart relationship to visually indicate total event time elapsed between the real time position of said minute hand and said time line hand;

said time line hand being in a selected stationary position during timing of an event while said minute hand moves in angular relationship with respect to said time line hand to represent not only countup elapsed time of said time event but also countdown minutes to the end of the event;

said bezel having an incremental minute scale carried thereon with said index arrow indicia at the beginning of said scale and said "30" numerical indicia at the mid-point of said scale which is otherwise without further numerical indicia;

said time line hand being registerable with a selected increment of said scale to indicate the start of a timed event when said index arrow indicates event completion.

5,255,249

SEEK CONTROL APPARATUS

Junichi Horigome, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

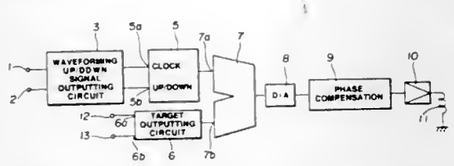
PCT No. PCT/JP90/01053, § 371 Date Apr. 17, 1991, § 102(e) Date Apr. 17, 1991, PCT Pub. No. WO91/03049, PCT Pub. Date Mar. 7, 1991

PCT Filed Aug. 17, 1990, Ser. No. 674,330

Claims priority, application Japan, Aug. 19, 1989, 1-213747

Int. Cl.[5] G11B *17/22*

U.S. Cl. 369—32 **4 Claims**



1. A seek control apparatus comprising:

current position detection means for detecting the current recording/reproducing track position of a head device on a recording surface of a disc-shaped recording medium,

target value outputting means for outputting a target value C that changes as a function of the second power of the time as the movement target position data from said current track position to an optional target track position, wherein the target value C is given by

$$C32\ at^2$$

for time 0 to time t_1, a being a coefficient, and by

$$C=C_0-a\,(t_0-t)^2$$

for time t_1 to time t_0, and

comparator means supplied with an output signal from said current position detection means and an output signal from said target value outputting means and adapted for comparing said output signal from said current position detection means and said output signal from said target value outputting means,

characterized in that seek control of said head device is performed on the basis of an output signal from said comparator means to accelerate said head device from a time 0 when said head device is at said current track position to an intermediate time t_1 and decelerate said head device from time t_1 to time t_0 when said head device is at said target track position.

5,255,250

COMBINATION OF A SIGNAL SOURCE AND A RECORDING DEVICE FOR RECORDING N PIECES OF MUSIC GENERATED BY THE SIGNAL SOURCE ON A MAGNETIC RECORD CARRIER, A SIGNAL SOURCE AND A RECORDING DEVICE TO BE USED IN THE COMBINATION

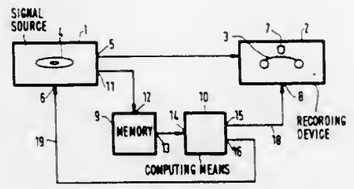
Jan Dewolf, and Gerardus Lokhoff, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 7, 1991, Ser. No. 772,987

Claims priority, application Netherlands, Oct. 24, 1990, 9002319; Feb. 5, 1991, 9100198

Int. Cl.[5] G11B *19/00*

U.S. Cl. 369—32 **24 Claims**



1. Combination of a signal source for generating a number of n successive pieces of music and a device for recording the n pieces of music on an A-side and a B-side of a magnetic record carrier, each of the n pieces of music having a time duration of T(i) and the total time duration of the n pieces of music being shorter than the total play time of the A and B-sides of the record carrier, the signal source furthermore being arranged for generating time information related to the time duration of each of the n pieces of music, the combination comprising:

a memory for storing the time information,

computing means for deriving from the time information a first group of g_1 pieces of music of the n pieces of music to be recorded on the A-side, and a second group of g_2 pieces of music to be recorded on the B-side, where g_1+g_2 is equal to n, and the computing means further being arranged for generating control signals and for supplying the control signals to the recording device and, in addition, the recording device being arranged for recording the group of g_1 pieces of music on the A-side of the record carrier and the group of g_2 pieces of music on the B-side of the record carrier in response to these control signals, and in which the computing means is arranged for establishing the total time duration T_{tot} of the n pieces of music, and is arranged for establishing the first group of g_1 pieces of music and the second group of g_2 pieces of music in such a way that the total time duration of the first group of g_1 pieces of music and the second group of g_2 pieces of

music are nearest to half the total time duration of the n pieces of music,

characterized in that the signal source is an arrangement for reproducing the n pieces of music from a second record carrier, for example, an optical record carrier, on which the n pieces of music are recorded in a specific order, in that the reproduction device is arranged for reproducing the n pieces of music in a specific order in response to a sequence control signal, in that the computing means is arranged for establishing a first group of g_1 not necessarily successive pieces of music of the n pieces of music on the second record carrier and of a second group of g_2 not necessarily successive pieces of music of the n pieces of music on the second record carrier, and is arranged for generating a sequence control signal in accordance with the groups of g_1 and g_2 respectively, pieces of music, and in that the reproduction device is arranged for reproducing first the first group of g_1 pieces of music from the record carrier and then the second group of g_2 pieces of music from the record carrier in response to the sequence control signal.

5,255,251

OPTICAL DISC CARTRIDGE HANDLING APPARATUS WITH REMOVABLE MAGAZINE

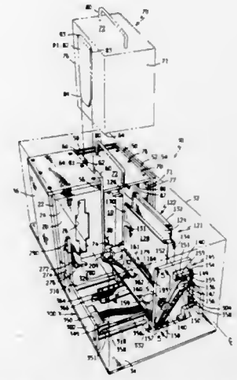
Timothy P. Fitzgerald, Minneapolis, and David J. Rother, Hastings, both of Minn., assignors to International Data Engineering, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 602,631, Oct. 24, 1990, Pat. No. 5,123,000. This application Oct. 15, 1991, Ser. No. 776,201

The portion of the term of this patent subsequent to Oct. 8, 2008, has been disclaimed.

Int. Cl.[5] G11B *17/22, 17/00*

U.S. Cl. 369—36 **12 Claims**



1. An optical disc cartridge handling apparatus for storing, handling, reading and writing of optical discs stored in cartridges which store data, comprising:

(a) a cartridge magazine removable from the apparatus for loading and unloading the cartridges in the apparatus, the magazine having slots therein for storing the cartridges;

(b) a flipper mechanism adapted to receive one of the cartridges from both the magazine and an optical disc drive with a cartridge slot, the flipper mechanism comprises:

(i) a pair of opposing plates for receiving and holding one of the cartridges in a sandwich-like manner to permit inversion and location of the cartridge;

(ii) a driven pulley connected to the plates for rotating the plates about a common center line for inverting the cartridge; and

(iii) a flipper alignment and stopping mechanism for stopping and aligning the flipper in front of the appropriate slot of the magazine or the optical disc drive slot comprising diametrically opposed detents on the pulley and a pivotally mounted and biased alignment breaking bar with a roller indexable within the detents;

(c) a picker mechanism comprised of a cartridge pusher and picker mounted along and adjacent the flipper mechanism for moving the cartridge into and out of the flipper mechanism from both the magazine and the optical disc drive cartridge slot; and

(d) a traverse mechanism for supporting and moving the flipper mechanism along an axis of motion to locate the flipper mechanism adjacent from both the magazine and the optical disc drive.

5,255,252

LIGHT SPOT POSITION DETECTOR AND OPTICAL HEAD

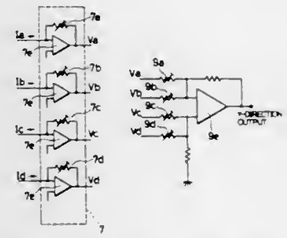
Hiroshi Katayama, Higashihiroshima, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 13, 1991, Ser. No. 744,340

Claims priority, application Japan, Aug. 31, 1990, 2-231554

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—44.36 **15 Claims**



1. A light spot position detector comprising:

light receiving means, which is divided into four quadrant light receiving parts by two dividing lines, the dividing lines intersecting each other at right angles, for receiving light;

projecting means for projecting a light spot onto said light receiving means;

amplifying means for individually amplifying detection signals outputted from said light receiving parts according to light intensity of the light spot on said light receiving means;

arithmetic means for calculating a two-dimensional position of the light spot on said light receiving means according to outputs from said amplifying means and for generating a first position signal and a second position signal indicating the two-dimensional position; and

gain adjusting means for adjusting gains of said amplifying means and arithmetic means with respect to the detection signals from said light receiving parts such that an amount of cross talk between the first position signal and the second position signal is restrained within a given range.

5,255,253

APPARATUS AND METHOD FOR CONTROLLING THE VELOCITY OF A DISK STORAGE HEAD

Naoyuki Kagami, Fujisawa; Hiroaki Kubo, Atsugi; Keiichi Okada, Kanagawa, and Makoto Takekoshi, Yokohama, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 7, 1991, Ser. No. 772,725

Claims priority, application Japan, Oct. 3, 1990, 2-263981

Int. Cl.[5] G11B *7/00*

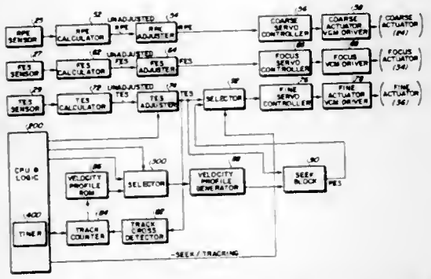
U.S. Cl. 369—44.28 **4 Claims**

1. A disk storage apparatus comprising:

driving means for moving a head in the radial direction on a recording disk;

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velocity detecting means for detecting a velocity at which the head moves and for generating a tracking error signal;
a velocity profile for storing information on a target velocity of the head;
driving signal generating means for comparing the tracking error signal from the velocity detecting means with a signal from the velocity profile and outputting a driving signal to the driving means based on the result of the comparison; and
control means for measuring a first time required for moving the head a predetermined distance at a predetermined velocity in the radial direction toward an inner area of the disk and, in a first comparison, comparing the measured



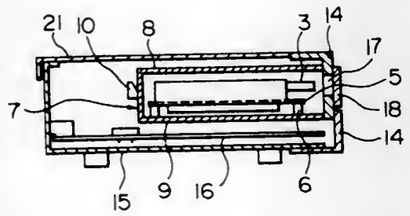
first time with a first predetermined reference value, the control means modifying the driving signal by increasing or decreasing an amplitude of the tracking error signal at a time when the head moves toward the inner area based on the result of the first comparison, and further for measuring a second time required for moving the head a predetermined distance at a predetermined velocity in the radial direction toward an outer area of the disk, and in a second comparison, comparing the measured second time with a second predetermined reference value, the control means modifying the driving signal at a time when the head moves toward the outer area, based on the result of the second comparison.

5,255,254

OPTICAL DISK DEVICE

Masayoshi Watanabe, and Takashi Ishikawa, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 17, 1991, Ser. No. 731,614
Claims priority, application Japan, Jul. 20, 1990, 2-190653; Feb. 25, 1991, 3-029843
Int. Cl.[5] G11B *33/02*
U.S. Cl. 369—75.1 **18 Claims**



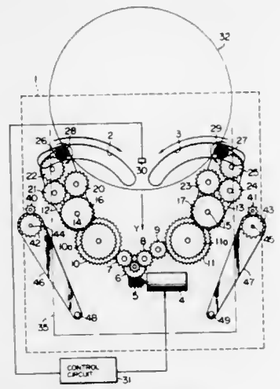
1. An optical disk device comprising:
a forwarding mechanism portion holding dismountably an optical disk;
an optical pickup, which reads out optically information at least from said optical disk;
driving means driving said optical disk;
a holding member holding fixedly said forwarding mechanism portion, said optical pickup and said driving means;
a covering member enveloping said holding member, said forwarding mechanism portion secured to said holding member, said optical pickup and said driving means;
chassis members enveloping and holding said covering member;
a front member disposed in front of said chassis members, in which an optical disk insertion hole, through which said optical disk is mounted and dismounted by an action of said forwarding mechanism portion is formed;
a door member disposed so as to be freely opened and closed to be brought into close contact with said optical disk insertion hole; and
a control circuit portion disposed outside of said covering member and inside of said chassis members.

5,255,255

DISK LOADING DEVICE

Masataka Kaneda, Machida; Takashi Suzuki, Tokyo; Hiromi Kameda, Fuchu; Yasuyoshi Kagohashi, Yokohama; Masahiro Watanabe, Sagamihara; Tukasa Nakayama, Yokohama, and Hiroto Nishida, Ishikawa, all of Japan, assignors to Matsushita Electric Industrial, Co., Ltd., Osaka, Japan

Filed Nov. 14, 1991, Ser. No. 792,172
Claims priority, application Japan, Nov. 27, 1990, 2-328605; Nov. 27, 1990, 2-328606; Nov. 27, 1990, 2-328667
Int. Cl.[5] G11B *17/04, 25/04*
U.S. Cl. 369—77.1 **15 Claims**



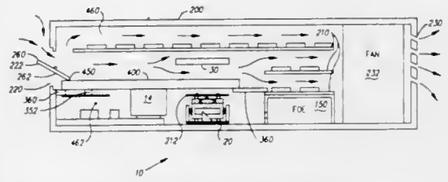
3. A disk loading device comprising:
a pair of rollers for transferring a disk;
roller drive means for rotating said pair of rollers in opposite directions around axes of said pair of rollers to transfer said disk by a force applied by said pair of rollers to said disk upon a rotation of said pair of rollers when peripheral surfaces of said pair of rollers are contacted with an outer peripheral surface of the disk;
roller movement means for moving said pair of rollers toward and away from each other to contact said peripheral surfaces of said pair of rollers against said outer peripheral surface of said disk to contact said outer peripheral surface of said disk at a predetermined pressure,
said roller movement means including a pair of frictional engagement means for providing a slippable coupling between said roller movement means and said roller drive means, thereby enabling a pressing of said peripheral surfaces of said pair of rollers against said outer peripheral surface of said disk at said predetermined force,
each of said pair of frictional engagement means including an input part coupled to said roller drive means and an output part rotatably supporting one of said axes of said pair of rollers and frictionally engaged with said input part; and
ejection means, comprising a pair of ejection arms, for moving said pair of ejection arms toward and away from each other;
wherein said pair of rollers are brought by said roller movement means into contact with said outer peripheral surface of said disk so as to transfer said disk by rotational drive forces of said pair of rollers, and said pair of ejection arms are urged by said ejection means against the outer peripheral surface of said disk so as to eject said disk.

5,255,256

OPTICAL DATA STORAGE SYSTEM WITH REDUCED PARTICLE CONTAMINATION

Edward M. Engler, San Jose; Stephen L. Heesacker, Sunnyvale; David A. Holmstrom, and Byron S. Lee, both of San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 7, 1992, Ser. No. 817,718
Int. Cl.[5] G11B *33/14*
U.S. Cl. 369—77.2 **20 Claims**



1. An optical data storage system comprising:
an optical disk drive for receiving an optical disk cartridge;
a housing enclosing the optical disk drive, the housing having an entrance aperture for receiving the optical disk cartridge;
an entrance door positioned over the entrance aperture, the entrance door being rotationally mounted to the housing along a pivot line located between the longitudinal edges of the door, the pivot line dividing the entrance aperture and the door into a first and second aperture portions and a first and second door portions, respectively, wherein the optical disk drive includes optical components and the cartridge substantially divides the interior of the housing into a first and a second compartment when the cartridge is positioned in the optical disk drive, the entrance aperture being located in the first compartment and the optical components being located in the second compartment, such that when a cartridge is inserted through the first aperture portion, the first door portion rotates to a position inside the entrance aperture and the second door portion rotates to a position outside the entrance aperture, thereby forming an airspace between the second door portion and the housing and allowing airflow through the second aperture portion.

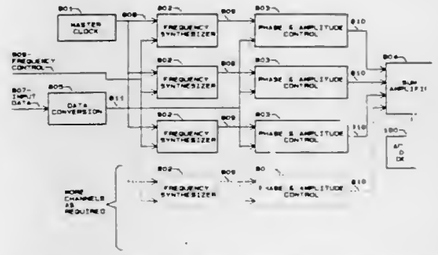
5,255,257

FREQUENCY, PHASE AND AMPLITUDE CONTROL APPARATUS AND METHOD FOR ACOUSTO-OPTIC DEFLECTOR OPTIMIZATION

Lawrence M. Bryant, 3951 Duncan Pl., Palo Alto, Calif. 94306; James W. Dickson, 363 Carroll St., Sunnyvale, Calif. 94086, and David R. Rodal, Palo Alto, Calif., assignors to Lasertape Systems, Inc.; Lawrence M. Bryant and James W. Dickson, San Bruno, Calif.

Filed Mar. 4, 1992, Ser. No. 846,529
Int. Cl.[5] G11B *3/74, 7/00*
U.S. Cl. 369—121 **43 Claims**

1. An apparatus for producing a multi-frequency signal having reduced intermodulation distortion, said apparatus comprising:
reference signal means for generating a reference signal;
multiple oscillator means for generating a plurality of single frequency signals with a predetermined frequency relationship and a direct phase relationship with said reference signal, said multiple oscillator means coupled to receive said reference signal from said reference signal means;
phase control means for controlling the phase of each of said plurality of single frequency signals to create a plurality of phase controlled single frequency signals, said phase control means controlling the phase of each of said plurality



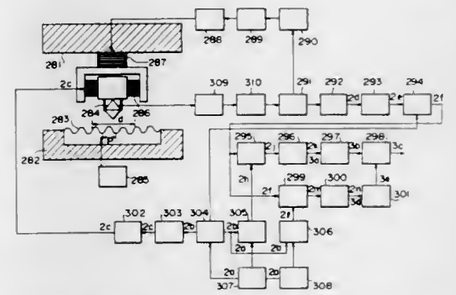
of single frequency signals against said reference signal in order to minimize the maximum amplitude of a summation of said plurality of phase controlled single frequency signals, said phase control means coupled to receive said plurality of single frequency signals from said multiple oscillator means; and
means for summing said plurality of phase controlled single frequency signals to produce said multi-frequency signal having a low maximum amplitude while maintaining a high average amplitude, said means for summing coupled to receive said plurality of phase controlled single frequency signals.

5,255,258

MICROPROBE, PREPARATION THEREOF AND ELECTRONIC DEVICE BY USE OF SAID MICROPROBE

Hisaaki Kawade, Atsugi; Haruki Kawada, Yokohama; Kunihiro Sakai; Hiroshi Matsuda, both of Isehara; Yuko Morikawa, Kawasaki; Yoshihiro Yanagisawa, Atsugi; Tetsuya Kaneko, Yokohama; Toshimitsu Kawase; Hideya Kumomi, both of Atsugi; Hiroyasu Nose, Zama, and Eigo Kawakami, Ebina, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 610,314, Nov. 9, 1990, Pat. No. 5,072,116, which is a continuation of Ser. No. 249,178, Sep. 26, 1988, abandoned. This application Jan. 18, 1991, Ser. No. 643,209
Int. Cl.[5] G11B *9/00*
U.S. Cl. 369—126 **20 Claims**



1. An electronic device for performing recording and reproduction, comprising a probe electrode constituted of a single

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crystal, a recording medium provided in opposition to said probe electrode, means for applying a voltage between said probe electrode and said recording medium, means for moving said probe for recording and/or reproducing information at different positions on said recording medium and means for detecting the position of said probe on said recording medium, wherein said single crystal has an apex surrounded by facets having a specific plane direction and including a specific crystal face.

5,255,259

METHOD OF ACCESS TO RECORDING MEDIUM, AND APPARATUS AND METHOD FOR PROCESSING INFORMATION

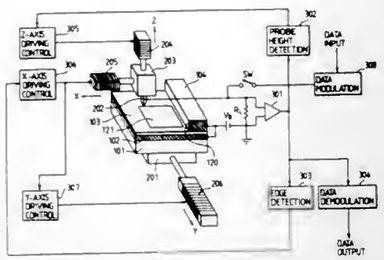
Katsunori Hatanaka, Yokohama; Osamu Takamatsu, Atsugi; Akihiko Yamano, Yokohama; Ryo Kuroda, Atsugi; Hiroyasu Nose, Zama, and Toshihiko Miyazaki, Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 685,643, Apr. 16, 1991, Pat. No. 5,199,021. This application Dec. 9, 1992, Ser. No. 988,162

Claims priority, application Japan, Apr. 18, 1990, 2-104057

Int. Cl.[5] G11B *9/00*

U.S. Cl. 369—126 **14 Claims**



1. An information processing apparatus for effecting at least one of recording of information on, reading-out of information from and erasing recorded information on a recording medium using a probe electrode, the recorded information being one of a physical change and a change of electronic state of the surface of the recording, said apparatus comprising:

a recording medium arranged close to the probe electrode;

generating means for generating an envelope signal, which envelopes one of a projecting portion and a portion of highest electronic state of said recording medium; and

comparing means for comparing a recorded information signal detected by the probe electrode with a voltage proportional to the envelope signal.

5,255,260

OPTICAL RECORDING APPARATUS EMPLOYING STACKED RECORDING MEDIA WITH SPIRAL GROOVES AND FLOATING OPTICAL HEADS

Noboru Yamada, Hirakata; Isao Satoh, Neyagawa; Sadao Mizuno, Ibaraki, and Yasuhiro Gotoh, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 23, 1990, Ser. No. 555,639

Claims priority, application Japan, Jul. 28, 1989, 1-197741; Nov. 15, 1989, 1-296531

Int. Cl.[5] G11B *17/028, 7/24, 7/12*

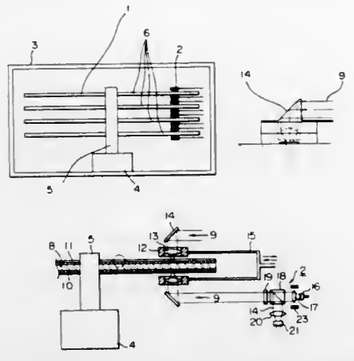
U.S. Cl. 369—199 **17 Claims**

3. An optical recording apparatus comprising:

(a) an optical recording body comprising plural stacked optical recording media each comprising a single plate substrate and overwritable thin recording films which are formed on opposite surfaces of said substrate, each surface of said substrate having a continuous grove or a row of signal pits arranged along a spiral line so as to guide a laser beam, serving as recording and reproducing means, to a desired position, directions of the spiral lines of the opposite surfaces of said substrate being opposite to each other, wherein said single laser beam is used to produce optically detectable phase changes between plural states corresponding to irradiating conditions of the laser beam, said single laser beam being used to perform recording and reproducing on said recording films, said plural stacked optical recording media being stacked such that a distance between opposed surfaces of adjacent recording media is 5 mm or less; and directions of the spiral lines on likewise facing surfaces of the plural recording media being the same as each other;

(b) means for rotating said recording body;

(c) a plurality of floating type optical heads which are respectively provided adjacent both sides of said optical recording media and each of which comprises a movable



part and a stationary part, said movable part comprising (i) a slider, (ii) one of a mirror or a prism, and (iii) an objective lens, said slider being subjected to resistance of surrounding air upon the rotation of said recording media in a predetermined direction to convert said resistance into a sliding force thereby causing the movable part to glide relative to the respective surfaces of said recording media at a predetermined distance therefrom, said mirror or said prism serving to deviate at an angle of 90 degrees a laser beam emanating from said stationary part, said objective lens serving to focus said laser beam from said mirror or said prism onto said recording media; and

(d) an airtight box for encasing therein said optical recording body, said rotating means, and said optical heads,

whereby said laser beam is irradiated on respective recording surfaces of said recording body for recording and reproducing of information signals.

5,255,261

INFORMATION RECORDING DISK

Tamotsu Iida, Tsuchiura; Shinichi Arai, Odawara, and Takeshi Maeda, Kokubunji, all of Japan, assignors to Hitachi Maxell, Ltd., Ibaraki and Hitachi Ltd., Tokyo, both of Japan

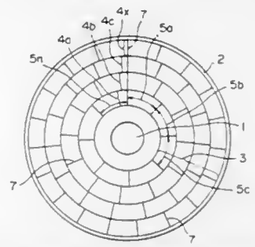
Filed Jun. 21, 1990, Ser. No. 541,742

Claims priority, application Japan, Jun. 27, 1989, 1-162671

Int. Cl.[5] G11B *3/70, 7/007, 7/24*

U.S. Cl. 369—275.3 **4 Claims**

1. An information recording disk comprising an annular structure, having an inner circumferential periphery and an outer circumferential periphery, and a concentric ring-shaped recording region provided thereon between the inner circumferential periphery and the outer circumferential periphery and the recording region including a plurality of concentric, annular blocks extending from an innermost annular block adjacent to the inner circumferential periphery to an outermost annular block adjacent to the outer circumferential periphery, each of the plurality of annular blocks being divided in a circumferential direction into a plurality of sectors, each of the plurality of sectors in any one of the plurality of annular blocks being of equal sector length, the number of sectors in an outer one of two adjacent annular blocks being larger than the number of sectors in an inner one of two adjacent annular blocks, and having a plurality of recording tracks and a plurality of pit trains for generating a header signal preformed in each of said annular blocks, at least one of said plurality of pit trains being associated with each of said plurality of sectors such that the recording density of an annular block increases from said innermost annular block to said outermost block, the sector length of each of the sectors in the outer one of two adjacent



annular blocks is greater than the sector length of each of the sectors in the inner annular block, and the header-signal generating pit train is preformed therein in each of the plurality of sectors so that all the sectors in adjacent annular blocks have the same recording capacity, wherein the recording region has a recording portion in which at least two of the plurality of annular blocks are pre-formatted so that a pit pitch of the header-signal generating pit train formed on an innermost recording track of the outer one of two adjacent annular blocks is larger than the pit pitch of the header-signal generating pit train formed on the innermost recording track of the inner annular block and sector length is defined as the length of the innermost recording track in any one of the plurality of annular blocks divided by the number of sectors in such annular block.

5,255,262

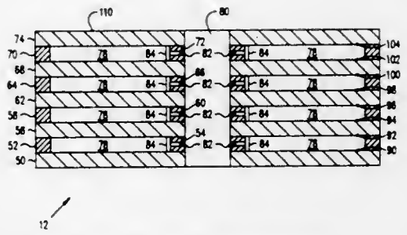
MULTIPLE DATA SURFACE OPTICAL DATA STORAGE SYSTEM WITH TRANSMISSIVE DATA SURFACES

Margaret E. Best, San Jose; Hal J. Rosen, Los Gatos; Kurt A. Rubin, Santa Clara, and Timothy C. Strand, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 4, 1991, Ser. No. 710,226

Int. Cl.[5] G11B *7/24, 7/26*

U.S. Cl. 369—275.1 **37 Claims**



1. An optical data storage medium comprising:

a first radiation transmissive member comprising a substrate having a first transmissive data surface for storing recorded data, the substrate having an index of refraction of n1, the first data surface having a land portion and having marks at elevation d1, where d1 is the perpendicular distance between the marks and the land portion;

a second member having a second data surface for storing recorded data, the second data surface having a land portion and having marks at elevation d2, where d2 is the perpendicular distance between the marks and the land portion;

means for supporting the first and second data surfaces in spaced apart relationship; and

a radiation transmissive medium positioned between the first and second data surfaces such that a beam of radiation from a first side of the optical data storage medium passes through the substrate of the first radiation transmissive member and focuses on either the first or second data surfaces, the radiation transmissive medium having an index of refraction of n2, and wherein d1n1 substantially equals d2n2.

5,255,263

INFORMATION READING SYSTEM AND RECORD CARRIER AND READING DEVICE FOR USE IN SUCH A SYSTEM

Cornelis M. J. Van Uijen; Yvonne A. Boersma, and James H. Coombs, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 3, 1992, Ser. No. 845,289

Claims priority, application Netherlands, Mar. 7, 1991, 9100408

Int. Cl.[5] G11B *21/00, 5/84*

U.S. Cl. 369—275.3 **14 Claims**



1. An information reading system comprising an information carrier and a reading device, in which system the information carrier has at least two parallel tracks which, viewed in the track direction, are divided into elementary areas, boundary positions defining the boundaries between the elementary areas being aligned in a direction transverse to the track direction, while information is recorded in the parallel tracks by means of information patterns which comprise marks and intermediate areas, the transitions between the marks and the intermediate areas substantially coinciding with the boundary positions, the influence of a mark on radiation differing from the influence of the intermediate areas on said radiation, the device comprising an optical system for directing a radiation beam onto a detection system via the information pattern, with the radiation beam being modulated in conformity with the information pattern, said optical system comprising means for focusing the radiation beam onto the information pattern, while a scanning spot is formed on the information pattern by the radiation beam, and said detection system generating at least one detection signal in dependence upon the modulation of the beam, the device comprising means for scanning the record carrier by means of the scanning spot along a line which is located sub-

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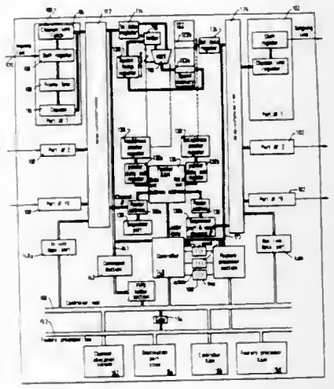
stantially centrally between said two parallel tracks, the mutual distance between the two parallel tracks being so small that the two parallel tracks are at least partly scanned by the radiation beam, the device comprising signal regeneration means for recovering the recorded information on the basis of the detection signals, said system being characterized in that the distribution of marks and intermediate areas across groups of at least two by two elementary areas is indicative of the recorded information, the signal regeneration means recovers the recorded information from the signal values of the detection signals at the instants when the centre of the scanning spot passes the boundary positions.

5,255,264

DISTRIBUTED CONTROL SWITCHING NETWORK FOR MULTI-LINE TELEPHONE COMMUNICATIONS

John M. Cotton, East Norwalk; Neil C. Olsen, Milford; Alex T. Wissink, Woodbridge; Gary V. Pieper, Wallingford; William A. Oswald, Oxford, all of Conn.; Nicholas Necula, Mount Vernon, N.Y.; Enrique Abreu, Huntington, Conn.; Maurice J. Mascarenhas, Stamford, Conn., and Rudy De Bruyn, Derby, Conn., assignors to IPC Information Systems, Inc., Stamford, Conn.

Filed Sep. 26, 1991, Ser. No. 766,047
Int. Cl.[5] H04L *12/58*
U.S. Cl. 370—24 **37 Claims**



17. In a telephone switching system having a plurality of switching elements for interconnecting addressable locations in the system via communication links carrying pulse code modulated data in time division multiplexed channels, each one of said switching elements comprising:

a plurality of switch ports each having an input for receiving incoming data and an output for transmitting outgoing data;

memory means having a plurality of addressable memory locations, said incoming data from said switch ports capable of being written into any one of said addressable memory locations, and said outgoing data being capable of being read from any one of said addressable memory locations;

a pointer table capable of storing addresses of said memory locations, said addresses utilized for writing incoming data and reading outgoing data in said memory locations, each one of said addresses associated with each one of said incoming and outgoing data;

summing means for summing two or more incoming data when said incoming data have the same address in said memory means; and

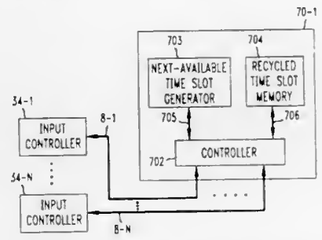
processor means adapted to manage the operation of the switching element to select outgoing switch ports by processing the address of said addressable location.

5,255,265

CONTROLLER FOR INPUT-QUEUED PACKET SWITCH

Kai Y. Eng, Middletown, and Mark J. Karol, Fair Haven, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 5, 1992, Ser. No. 878,801
Int. Cl.[5] H04L *12/56*
U.S. Cl. 370—60 **9 Claims**



1. Apparatus for scheduling arriving packet cells for input to a switch having a plurality of input ports and output ports, the apparatus comprising:

means, associated with each input port, for storing the packet cells arriving at the associated input port,

means, associated with each input port, for controlling the storage of packet cells in the storing means by requesting from a contention control means a transmission time for one arriving packet cell in which the one arriving packet cell is granted access to one of the plurality of output ports of the switch from the associated input port, by accepting the transmission time assigned by the contention control, and by returning a previously assigned transmission time,

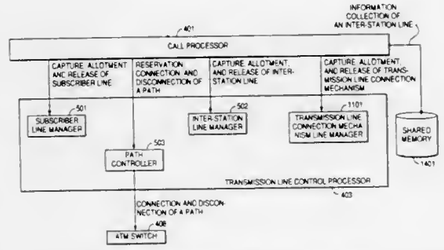
contention control means for assigning a transmission time to each request for access an output port of the switch and for storing at least one previously assigned transmission time returned by the controlling means.

5,255,266

ATM SWITCHING UNIT

Yoshihiro Watanabe, Yokohama; Junichi Yamazaki, Atsugi; Kazuo Hajikano, Suwarashi; Toshio Shimoe, Hadano; Yoji Tsuboi, Tokyo; Norihito Nishimoto, and Yoshiharu Sato, both of Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 21, 1991, Ser. No. 780,120
Claims priority, application Japan, Oct. 20, 1990, 2-282636; Apr. 10, 1991, 3-077474
Int. Cl.[5] H04L *12/56*
U.S. Cl. 370—60.1 **30 Claims**



1. An ATM switching unit having a transmission line switch means in an asynchronous transmission mode comprising:

a call processor means for controlling signals and various services; and

a transmission line control processor means for controlling a transmission line of said transmission line switch means at a request from said call processor means, wherein said transmission line control processor means comprises:

a subscriber line management means for managing the resources of subscriber lines accommodated in said transmission line switch means at a request of said call processor means;

an inter-station line management means for managing the resources of inter-station lines accommodated by said transmission line switch means at a request of said call processor means; and

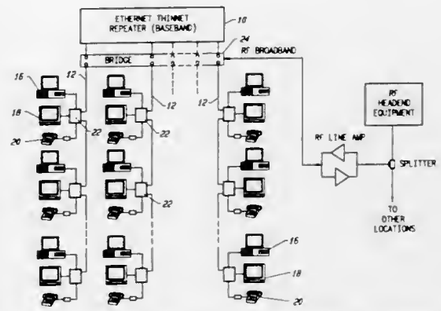
a path control means for controlling a path connection by said transmission line switch means at a request of said call processor means.

5,255,267

APPARATUS FOR COMBINING BROADBAND AND BASEBAND SIGNAL TRANSMISSIONS

David E. Hansen, Sunnyvale; Robert P. McNamara, San Jose; Chinh Q. Phan, Fremont, and Michael J. Serrone, Sunnyvale, all of Calif., assignors to First Pacific Networks, Inc., Sunnyvale, Calif.

Filed Mar. 9, 1992, Ser. No. 848,570
Int. Cl.[5] H04J *1/08, 1/10*
U.S. Cl. 370—85.1 **8 Claims**



1. A distribution network for RF broadband signals and baseband signals comprising:

a distribution cable;

a repeater low pass filter for connecting said distribution cable to a baseband signal;

a trunk high pass filter for connecting said distribution cable to a broadband signal; and

at least one tap in said cable including first and second terminals serially connected to said cable; a first low pass filter, a second low pass filter, and a directional coupler serially connected between said first and second terminals; a first high pass filter connected in parallel with said first and second low pass filters for passing broadband signals around said low pass filters, an MAU port and low pass filter connecting said MAU port to a common terminal of said first and second low pass filters, and a broadband port connected to said directional coupler.

5,255,268

DATA DISTRIBUTION NETWORK WITH IMPROVED BROADCAST FEATURE

Robert T. Cato; David R. Hughes, both of Raleigh; Carl J. Moreschi, Franklinton, and James M. White, Raleigh, all of N.C., assignors to International Business, Armonk, N.Y.

Filed Feb. 4, 1992, Ser. No. 830,824
Int. Cl.[5] H04J *3/24*
U.S. Cl. 370—94.1 **10 Claims**

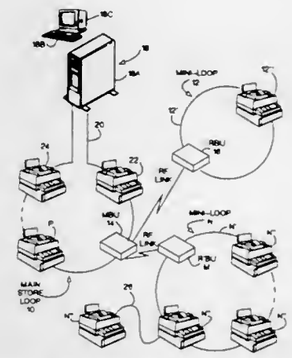
1. A distributed data processing system comprising:

a serial communications media interconnecting a controller and at least one terminal device;

a first means operatively coupled to said serial communications media; said first means monitoring packets of data on the serial communications media and storing selected ones of said packets of data;

at least one transmission link for transmitting information coupled to the first means;

at least one remote terminal for communicating with the controller; and



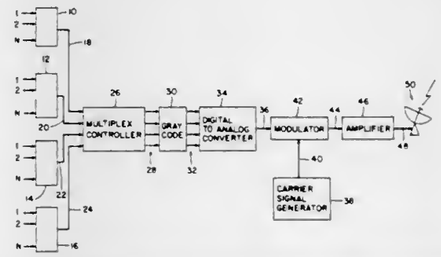
a second means interconnecting the at least one transmission link and the at least one remote terminal; said second means monitoring data packets received from said at least one transmission link and on detecting a missing or defective packet forwarding to the first means a retransmit message which causes the first means to retransmit the missing or defective packet followed by sequential transmission of other packets.

5,255,269

TRANSMISSION OF DATA BY FREQUENCY MODULATION USING GRAY CODE

Albert M. Stem, Jr., Tulsa, Okla., assignor to Spacecom Systems, Inc., Tulsa, Okla.

Filed Mar. 30, 1992, Ser. No. 860,131
Int. Cl.[5] H04L *27/34;* **H03M** *7/16*
U.S. Cl. 370—112 **2 Claims**



1. A method of transmitting multiple synchronized multiplex data frames employing a transmission system having a selected carrier signal frequency, comprising the steps of:

(a) inputting data from a plurality of data sources simultaneously into a plurality of multiplexers to provide as an output of each multiplexer a composite data signal to thereby provide a plurality of multiplexed output data signals;

(b) synchronizing said output composite data signals simultaneously received from said plurality of multiplexers in a

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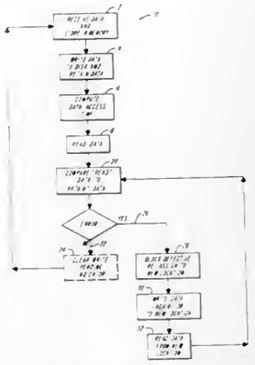
multiplex controller to provide a synchronized composite data signal stream output;
(c) encoding the synchronized composite data signal stream output from step (b) into Gray code format to obtain a Gray coded data stream;
(e) applying the Gray coded data stream from step (c) to a digital-to-analog converter to provide an analog signal output;
(f) generating a carrier signal of frequency selected for the transmission system;
(g) frequency modulating said carrier signal from step (f) with said analog signal from step (e);
(h) amplifying said frequency modulated carrier signal from step (g); and
(i) feeding the amplified frequency modulated carrier signal to the transmission system for transmission.

5,255,270

METHOD OF ASSURING DATA WRITE INTEGRITY ON A DATA STORAGE DEVICE

Moshe Yanai, Framingham; Natan Vishlitzky, Brookline; Bruno Altersecu, Newton, and Daniel Castel, Framingham, all of Mass., assignors to EMC Corporation, Hopkinton, Mass.

Filed Nov. 7, 1990, Ser. No. 610,425
Int. Cl.[5] G06F *11/10*; G11B *5/09*
U.S. Cl. 371—10.2 **19 Claims**



1. A method for assuring data write integrity for received data which is to be written to at least one data storage device, comprising the steps of:
storing said received data in at least one temporary memory storage medium, and setting an associated right pending indicator for said received data in said temporary memory storage medium, said right pending indicator indicating that the associated received data is to be written to at least one data storage device;
writing said received and stored data to selected storage locations on said at least one data storage device;
retaining said received data and said set, associated right pending indicator in said at least one temporary memory storage medium;
reading said received data written to said at least one data storage device;
comparing said recited data read from said at least one data storage device with said received data stored in said at least one memory storage medium;
determining if said received data read from said at least one data storage device is equivalent to said received data stored in said at least one temporary memory storage medium;
and
if said received data read from said at least one data storage device is equivalent to said received data stored in said at least one temporary memory storage medium, performing the steps of,
resetting said associated right pending indicator set in said temporary memory storage medium, and returning to the step of receiving data;
if said received data read from said at least one data storage device is not equivalent to said received data stored in said at least one temporary memory storage medium, performing the steps of,
re-writing said received and stored data from said at least one temporary memory storage medium to selected storage location on said at least one data storage device, and
returning to the steps of reading, comparing, and determining for said received data written to said selected storage locations on said at least one data storage device.

5,255,271

INTEGRATED CIRCUIT INTERNAL TEST MODE INDICATOR CIRCUIT

David Tatman, Missouri City, and Phat C. Truong, Houston, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 30, 1990, Ser. No. 574,823
Int. Cl.[5] G01R *31/28*
U.S. Cl. 371—22.1 **12 Claims**

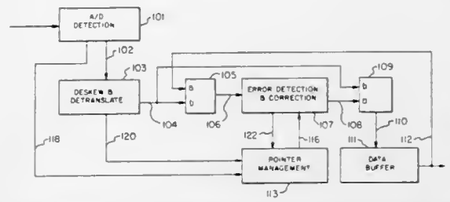
1. An indicator circuit, comprising:
a first OR circuit having at least two inputs and an output;
a signature mode signal input connected to one said input to said first OR circuit;
a special test mode signal input connected to a second said input to said first OR circuit;
a logic circuit means for providing indicator signals, said logic circuit means having at least three inputs and at least two outputs, a first of said inputs to said logic circuit means connected to said output of said first OR circuit;
an address signal connected to a second of said inputs to said logic circuit means;
a special test mode result input signal connected to a third of said inputs to said logic circuit means;
a first preprogrammed code indicator having an input connected to a first of said outputs of said logic circuit means; and
a second preprogrammed code indicator having an input connected to a second of said outputs of said logic circuit means.

5,255,272

PREDICTIVE TAPE DRIVE ERROR CORRECTION APPARATUS

Richard A. Gill, Arvada, and Christopher P. Zook, Boulder, both of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Feb. 25, 1991, Ser. No. 660,652
Int. Cl.[5] G06F *11/10*
U.S. Cl. 371—40.3 **16 Claims**



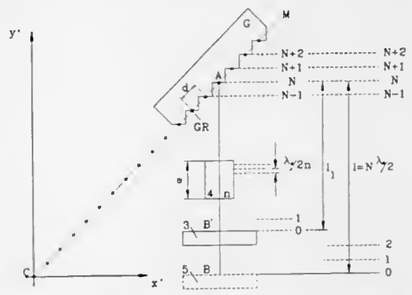
9. Apparatus for correcting errors in a data transmission that consists of a plurality of sequential data frames, wherein each data frame includes a plurality of data tracks, comprising:
means for deskewing data tracks received from said data transmission;
means for storing said deskewed data tracks in a memory for a presently received one of said plurality of data frames;
means for generating pointers indicative of detected data errors in said presently received deskewed data frame;
means for storing said generated pointers for each sequentially received data frame; and
means for correcting said stored deskewed data tracks for said presently received deskewed data frame using said stored pointers.

5,255,273

METHOD FOR ASCERTAINING MODE HOPPING FREE TUNING OF RESONANCE FREQUENCY AND THE Q-VALUE OF AN OPTICAL RESONATOR AND A DEVICE FOR CARRYING OUT THE METHOD

Olle B. Nilsson, Akersberga, and Kennet J. Vilhelmsson, Partille, both of Sweden, assignors to Radians Innova AB, Goteborg, Sweden

PCT No. PCT/SE90/00573, § 371 Date Apr. 21, 1992, § 102(e) Date Apr. 21, 1992, PCT Pub. No. WO91/03848, PCT Pub. Date Mar. 21, 1991
PCT Filed Sep. 7, 1990, Ser. No. 849,014
Claims priority, application Sweden, Sep. 7, 1989, 8902948
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—20 **12 Claims**



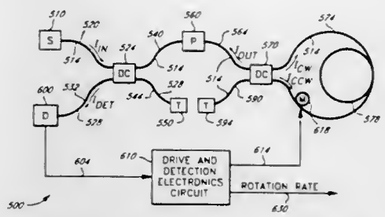
1. Method to ensure tuning without mode hopping of the resonator frequency and tuning of the Q - value of an optical resonator of the type comprising a partially reflecting resonator mirror (2) and a movable reflecting optical grating, with grooves (GR) parallel to the resonator mirror, intended to function as a wavelength selective reflector and which may comprise optical elements between the mirror and the grating, said optical elements being intended for collimation, amplification (4) and filtering of the radiation in the resonator characterized therein, that when changing the resonance wavelength (λ) of the resonator or its Q - value, the grating is moved in such a way that a line (C) on the grating, which is defined at a tuned initial position of the resonator by the intersection of the plane of grating grooves (M) and the virtual mirror plane (5) of the resonator mirror, remains at a distance less than λ/4 from the virtual mirror plane, which as a result of chromatic dispersion in the resonator media slides in distance to the fixed mirror with said resonator wavelength during the movement.

5,255,274

BROADBAND LASER SOURCE

Paul F. Wysocki, Stanford; Michel J. F. Digonnet, Palo Alto, and Byoung Y. Kim, Menlo Park, all of Calif., assignors to The Board of Trustees of the Leland Stanford University, Stanford, Calif.

Division of Ser. No. 403,703, Sep. 6, 1989, Pat. No. 5,189,676. This application Jun. 8, 1992, Ser. No. 895,602
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—26 **11 Claims**



1. An optical sensor for sensing an ambient effect, said optical sensor having an integration time, comprising:
a loop comprising an optical fiber having two polarization modes, each of said polarization modes propagating light at a different velocity, thereby providing an effective optical path length difference for said two modes for light traversing said loop; and
a broadband laser source having a cavity, said source being optically coupled to introduce light into said loop, said cavity having a lasing medium which emits radiation in an emission spectrum in response to application of pump energy to said lasing medium, said laser source further comprising a frequency modulator for shifting the frequency of said radiation by a predetermined frequency and for modulating said radiation shifted by said predetermined frequency, said frequency modulator sweeping across a substantial portion of said emission spectrum in a period shorter than the integration time of said sensor.

5,255,275

SOLID STATE LASER

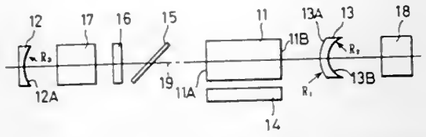
Tetsuya Motegi, Higashikurume, Japan, assignor to Hoya Corporation, Tokyo, Japan

Filed Jul. 29, 1992, Ser. No. 921,245
Claims priority, application Japan, Jul. 30, 1991, 3-189957
Int. Cl.[5] H01S *3/13*
U.S. Cl. 372—29 **11 Claims**

1. A solid state laser comprising:
a solid state laser medium;
laser-medium pumping means for performing an optical-pumping of the solid state laser medium; and
optical reflection means having a total reflection member for performing a total reflection of oscillating laser light and an output member for transmitting and outputting a part of the oscillating laser light, a reflection surface of the

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output member having a predetermined reflectivity distribution in the direction perpendicular to an optical axis of the solid state laser medium, wherein the reflection surface output member has a predetermined radius of curvature for efficient laser oscillation between the total reflec-



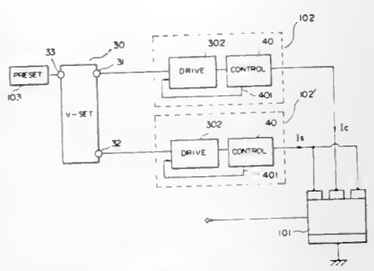
tion member and the output member, and wherein the radius of curvature of an output surface of the output member is established in such a way that rays of resonance light, which are incident through the solid state laser medium thereon when laser oscillation is effected, become parallel rays.

5,255,276

DRIVER CIRCUIT OF A TUNABLE LASER DIODE

Haruhiko Tabuchi; Shouichi Ogita, and Yuji Kotaki, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 2, 1991, Ser. No. 800,936
Claims priority, application Japan, Nov. 30, 1990, 2-329707
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—32 **11 Claims**



1. A driver circuit of a laser diode, said laser diode having a first electrode thereon for injecting therein a first drive current having a first magnitude and a second electrode thereon, separated from said first electrode for injecting therein a second drive current having a second magnitude, said second electrode means being provided on said laser diode in correspondence to portions thereof in which carriers are depleted the most, comprising:

presetting means for presetting a relationship between said first and second magnitudes;

current distribution means, controlled by said presetting means, for producing said first and second drive currents with respective magnitudes in accordance with the relationship preset by said presetting means;

first current control means, supplied with said first drive current from said current distribution means and comprising a first drive circuit and a first feedback loop, for maintaining a substantially constant magnitude of the first drive current; and

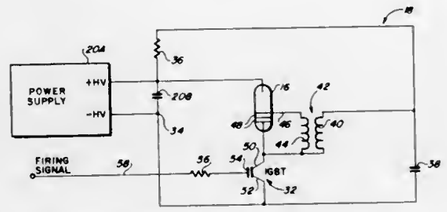
second current control means, supplied with said second drive current from said current distribution means and comprising a second drive circuit and a second feedback loop, for maintaining a substantially constant magnitude of the second drive current.

5,255,277

ELECTRONIC PULSE WIDTH CONTROLLER FOR FLASHLAMP PUMPED LASERS

Joseph E. Carvalho, Hollister, Calif., assignor to Whittaker Ordnance, Inc., Hollister, Calif.

Filed Sep. 30, 1991, Ser. No. 767,214
Int. Cl.[5] H01S *3/00*
U.S. Cl. 372—38 **23 Claims**



1. A flashlamp pumped laser system comprising:

a laser;

a flashlamp coupled to said laser so as to pump said laser when the flashlamp is energized, thereby initiating a pulse of coherent light energy from said laser;

a storage capacitor power supply for providing current to power said flashlamp during activation thereof; and

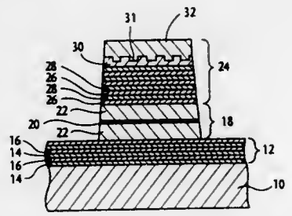
circuit means for selectively activating said flashlamp to pump said laser in response to an applied firing signal, said circuit means including means for applying an inductive transient signal to said flashlamp to energize the flashlamp and initiate current conduction therein and means for selectively terminating the activation of said flashlamp and thereby terminating said pulse of light energy form said laser upon the termination of said applied firing signal.

5,255,278

SEMICONDUCTOR LASER WITH VERTICAL RESONATOR

Yutaka Yamanaka, Tokyo, Japan, assignor to Nec Corporation, Tokyo, Japan

Filed Jul. 10, 1992, Ser. No. 911,577
Claims priority, application Japan, Jul. 10, 1991, 3-168543
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—45 **8 Claims**



1. A semiconductor laser device comprising a semiconductor substrate and a vertical resonator constructed on the substrate, the vertical resonator comprising:

a first reflector mirror region which comprises a multilayer laminate mirror formed on a surface of said substrate;

an active layer which comprises a double heterojunction and is formed on said first reflector mirror region; and

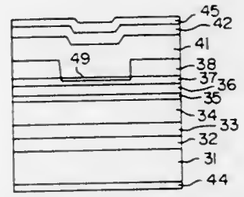
a second reflector mirror region comprising a multilayer laminate mirror formed on said active region, a phase grating layer which has a periodical structure in a plane parallel to a transversal plane with a period not longer than the laser oscillation wavelength and a metal layer which is formed on and in contact with said grating layer.

5,255,279

SEMICONDUCTOR LASER DEVICE, AND A METHOD FOR PRODUCING A COMPOUND SEMICONDUCTOR DEVICE INCLUDING THE SEMICONDUCTOR LASER DEVICE

Kosei Takahashi; Masahiro Hosoda, both of Nara; Atsuo Tsunoda; Takahiro Suyama, both of Yamatokoriyama, and Sadayoshi Matsui, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 9, 1991, Ser. No. 698,001
Claims priority, application Japan, May 9, 1990, 2-120858; May 18, 1990, 2-129914; May 18, 1990, 2-129916
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—46 **4 Claims**



1. A semiconductor laser device comprising:

a GaAs substrate,

a double hetero structure composed of AlGaInP crystals formed on said GaAs substrate,

an $(Al_XGa_{1-X})_{0.5}In_{0.5}P$ etching stop layer $(0 \leqq X \leqq 1)$

a GaAs optical absorption layer formed on said etching stop layer and having a strip groove extending therethrough to reach said etching stop layer,

an AlGaAs layer of a thickness of several molecules formed in the strip groove;

a regrowing AlGaAs layer formed on said etching stop layer and said GaAs optical absorption layer in such a manner so as to fill up said strip groove; and

an electrode formed beneath said GaAs substrate and an electrode formed on said layers;

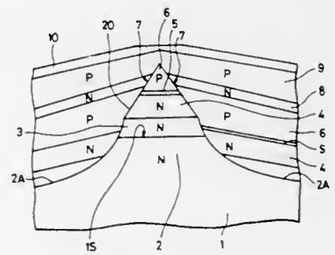
wherein said etching stop layer and said regrowing AlGaAs layer have a band gap energy greater than an optical energy generated within said double hetero structure.

5,255,280

SEMICONDUCTOR LASER

Hironobu Harui, and Shoji Hirata, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 22, 1992, Ser. No. 872,126
Claims priority, application Japan, Apr. 22, 1991, 3-090816; Apr. 25, 1991, 3-095344
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—46 **15 Claims**



1. A semiconductor laser comprising:

a strip raised region consisting of a semiconductor substrate and an AlGaAs layer on said semiconductor substrate;

first lower and second upper cladding layers disposed on said AlGaAs layer;

an active layer interposed between said first and second cladding layers;

said first and second cladding layers and said active layers being divided into sections in a cross-sectionally triangular body and sections on opposite sides of said cross-sectionally triangular two slant surfaces extending from opposite edges of said raised region and intersecting with each other above said raised region;

a current blocking layer disposed on each side of said cross-sectionally triangular body;

a third cladding layer covering said current blocking layer and said cross-sectionally triangular body; and

a cap layer disposed on said third cladding layer;

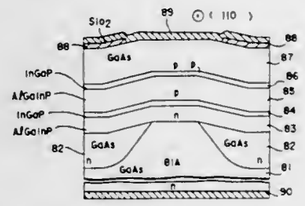
the arrangement being such that a supplied current flows substantially through said active layer in said cross-sectionally triangular body, enabling said active layer to emit light.

5,255,281

SEMICONDUCTOR LASER HAVING DOUBLE HETEROSTRUCTURE

Mami Sugano, Hadano; Akira Furuya; Toshiyuki Tanahashi, both of Atsugi; Makoto Kondo, and Chikashi Anayama, both of Isehara, all of Japan, assignors to Fujitsu Limited, Kawasaka, Japan

Division of Ser. No. 892,680, Jun. 4, 1992, Pat. No. 5,202,285, which is a continuation of Ser. No. 691,620, Apr. 25, 1991, abandoned. This application Dec. 24, 1992, Ser. No. 996,802
Claims priority, application Japan, Apr. 26, 1990, 2-108889; Jun. 20, 1990, 2-159997
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—46 **21 Claims**



1. A semiconductor laser comprising:

a substrate having a (100) face as its main surface, said substrate having a stripe of a first mesa extending in a <110> direction of the substrate and including a (111)B face as its sloping surface;

a buried layer formed on said substrate excluding a top surface of the stripe of the first mesa so that the (111)B face of the stripe of the first mesa is covered a sloping surface part of said buried layer, said top surface of the stripe of the first mesa being the (100) face of said substrate and forming a stripe of a second mesa together with the sloping surface of said buried layer, said stripe of the second mesa having a smaller inclination than said stripe of the first mesa; and

a double heterostructure made up of a plurality of semiconductor layers and formed on the stripe of the second mesa,

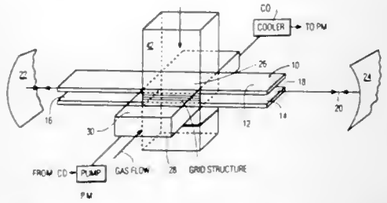
said double heterostructure having a substantially trapezoidal cross section which is determined by said stripe of the second mesa.

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5,255,282
OPEN WAVEGUIDE EXCIMER LASER

John L. Remo, St. James, N.Y., assignor to Quantametrics Inc., St. James, N.Y.

Filed Nov. 25, 1991, Ser. No. 796,718
Int. Cl.[5] H01S 3/097
U.S. Cl. 372—82 13 Claims

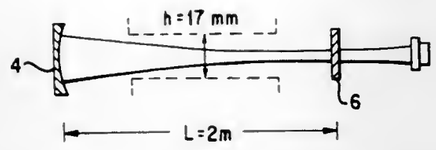


1. In a gas laser, the improvement comprising an open waveguide comprising an upper slab and a lower slab extending parallel to each other and being spaced from each other a selected distance, the open waveguide having an optical axis located between the upper and lower slab, said optical axis being parallel to the upper and lower slabs and extending in a first direction, means for flowing a laser gas medium between the upper and lower slabs in a second direction at substantially right angles to the optical axis to replenish and provide a source of fresh laser gas medium between the upper and lower slabs, excitation means for exciting the laser gas medium to a level sufficient to cause the laser gas medium to lase, the excitation means comprising microwave excitation means positioned to provide microwave energy to a region defining a defined by the discharge cell, the direction of said microwave energy being along a third direction at substantially right angles to the first and second direction, and means for generating an adjustable E-field along said microwave excitation means in the direction of travel of said microwaves.

5,255,283
PROCESS FOR MAKING A CUSTOM PHASE-CONJUGATED CIRCULAR MIRROR TO BE USED IN A LASER RESONATOR THAT WILL SUIT SPECIFICATIONS OF A USER AND A CUSTOM PHASE-CONJUGATED CIRCULAR MIRROR MADE ACCORDING TO THE PROCESS

Pierre-André Bélanger, Ste-Foy; Claude Paré, St Augustin de Desmaures; Richard L. Lachance, and Richard Van Neste, both of Sainte-Foy, all of Canada, assignors to Universite Laval, Quebec, Canada

Filed Jun. 30, 1992, Ser. No. 906,358
Int. Cl.[5] H01S 3/08
U.S. Cl. 372—99 16 Claims



1. A process for making a custom phase-conjugated circular mirror to be used in a laser resonator that will suit specifications of a user, said mirror reversing wave front of one particular input beam $\Psi_o(x)$ determined by said user, said input beam $\Psi_o(x)$ having a given wavelength, said laser resonator including said mirror and an output coupler cooperating with said mirror and separated therefrom by a laser gain medium, said mirror being at a distance L from said output coupler, said process comprising steps of:

(a) determining said input beam $\Psi_o(x)$ that will suit need of said user;

(b) calculating equation of $\Psi_L(x)$ which is a value of said input beam $\Psi_o(x)$ that is propagated through said laser gain medium at said distance L, where:

$$\Psi_L(x) = (i2\pi)/(\lambda B)\int_0^\infty \Psi_o(x_o)e^{(-i\pi/\lambda B)(Ax_o^2+Dx^2)}J_o[(2\pi x x_o)/\lambda B]x_o dx_o$$

where A, B and D are constants determined by optical elements in said laser gain medium, x_o is an integration variable, x is radial distance in transverse direction of propagation, and J_o is a Bessel function of zero order;

(c) calculating phase $\Phi_o(x)$ of said input beam, which is a phase of said input beam $\Psi_o(x)$ at said distance L, where:

$$\Psi_L(x) = |\Psi_L(x)|e^{-i(2\pi/\lambda)\Phi_o(x)}$$

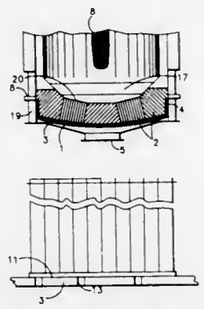
said phase $\Phi_o(x)$ determining profile of said custom phase-conjugated mirror; and

(d) fabricating said custom phase-conjugated mirror according to said profile determined in step (c), whereby a custom phase-conjugated mirror can be provided to suit said specifications of said user.

5,255,284
ANODE FOR AN ELECTIC ARC FURNACE UTILIZING ELECTRODE SEGMENTS

Dane Meredith, Brandon, Fla., assignor to Deutsch Voest-Alpine Industrieanlagenbau GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Nov. 4, 1991, Ser. No. 787,059
Int. Cl.[5] F27D 1/00
U.S. Cl. 373—72 25 Claims



1. A direct-current electric arc furnace having an at least one electric arc electrode switched as a cathode and a bottom electrode switched as an anode, the bottom electrode comprising

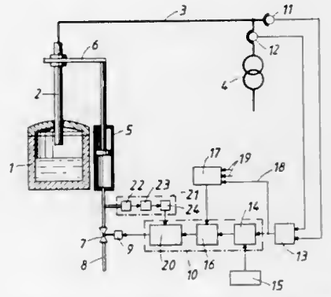
an electrically conductive bottom plate,

a plurality of concentrically arranged electrode segments, each of said plurality of electrode segments comprising an electrically non-conducting ramming mass configured to support a plurality of vertically arranged and electrically conducting segment conductors, with each of the segment conductors configured to form at least a portion of a pipe, the pipe-shaped segment conductor being electrically connected to the electrically conductive bottom plate to present a low cross sectional area upper frontal face to contact a melt contained in the furnace.

5,255,285
FEEDBACK CONTROL SYSTEM FOR THE IMPEDANCE CONTROL OF AN ELECTRIC ARC FURNACE

Heinrich Aberl, Linz, and Franz Rubenzucker, Traun, both of Austria, assignors to Voest-Alpine Industrieanlagenbau Gesellschaft m.b.H., Linz, Austria

Filed Dec. 2, 1991, Ser. No. 801,012
Claims priority, application Austria, Dec. 7, 1990, 2477/90
Int. Cl.[5] H05B 7/148
U.S. Cl. 373—105 4 Claims



1. A feedback control system having a controlled system gain for controlling the impedance of an electric arc furnace containing material to be melted comprising:

at least one electrode having a free end located within the electric arc furnace, wherein the distance from said free end of said at least one electrode to the material defines an arc gap;

a hydraulic electrode actuator coupled to said at least one electrode and including a supply of hydraulic fluid for adjusting the position of said at least one electrode to change the arc gap;

a control valve coupled to said hydraulic electrode actuator for controlling the supply of hydraulic fluid;

a valve actuator coupled to said control valve for controlling said control valve;

a controller coupled to said valve actuator and including a correcting stage, a difference-forming stage having a first and second inputs and a final stage to provide a corrected controller gain for controlling said valve actuator;

an actual impedance signal generator coupled to said first input for transmitting a signal representing an actual impedance of the feedback control system to said controller;

a set point signal generator coupled to said second input for transmitting a signal representing a desired impedance value to said controller, said controller comparing the actual impedance to the desired impedance to calculate said controlled controller gain; and

a correcting signal generator coupled to said correcting stage for transmitting a correction signal representing the controlled system gain, wherein said correcting stage adjusts said controlled controller gain in inverse proportion to said controlled system gain to calculate the corrected controller gain, whereby fluctuations in dynamic responses of the feedback control system are suppressed.

5,255,286
MULTI-POINT PYROMETRY WITH REAL-TIME SURFACE EMISSIVITY COMPENSATION

Mehrdad M. Moslehi, and Habib N. Najm, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 702,646, May 17, 1991, Pat. No. 5,156,461.
This application Jul. 10, 1992, Ser. No. 911,609
Int. Cl.[5] G01J 5/10
U.S. Cl. 374—121 30 Claims

1. A multi-point non-invasive, real-time pyrometry-based sensor apparatus for simultaneously measuring radiance of a semiconductor wafer in a fabrication reactor and compensating for wafer emissivity, comprising:

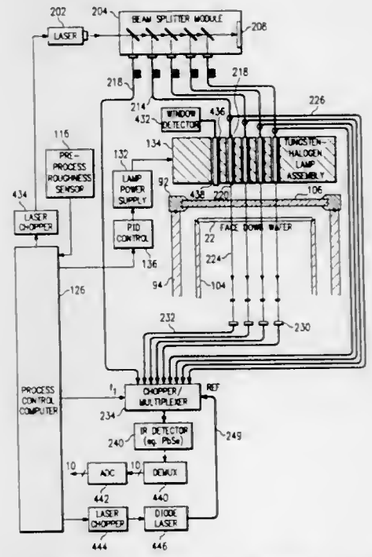
a laser source for emitting a beam of light;

a beam splitter module for receiving said beam, splitting said beam into a plurality of split beams, and simultaneously directing said split beams as incident beams to selected areas of the surface of the semiconductor wafer;

circuitry means for receiving a plurality of reflected beams caused by reflection of said incident beams from said wafer and for receiving incoherent radiant energy emitted by the semiconductor wafer;

circuitry means for detecting and processing said incident beams, said reflected beams and said incoherent radiant energy, for converting detected signals of said incident and reflected beams to values for semiconductor wafer emissivity and for converting said incoherent radiant energy into semiconductor wafer radiance measurements; and

circuitry means for achieving real-time semiconductor wafer temperature measurements based on said emissivity values and radiance measurements.



18. A method for multi-point non-invasive, real-time pyrometry-based semiconductor wafer temperature measurement and simultaneously compensating for wafer emissivity effects, comprising:

emitting a beam of optical energy;

receiving said beam, splitting said beam into a plurality of split beams, and simultaneously directing said split beams as incident beams to selected areas of the surface of the semiconductor wafer;

receiving a plurality of reflected beams caused by reflection of said incident beams from said wafer and receiving incoherent radiant energy from the semiconductor wafer;

detecting and processing said incident beams, said reflected beams and said incoherent radiant energy and converting detections of said incident and reflected beams to values for semiconductor wafer emissivity and also converting detections of said incoherent radiant energy into semiconductor radiance values; and

converting said radiance and emissivity values to wafer temperature measurements.

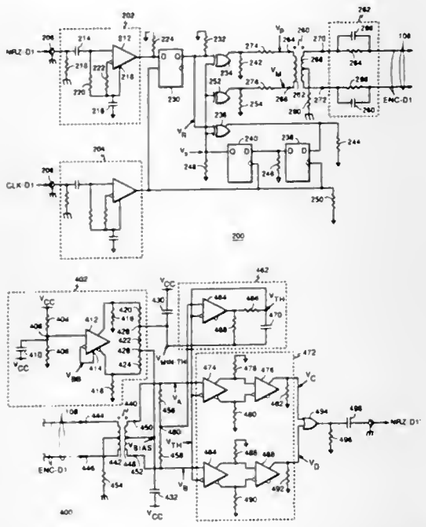
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5,255,287

TRANSCEIVER APPARATUS AND METHODS

David C. Davies, Chelmsford; Donald G. Vonada, Stow, and Robert A. Curtis, Hudson, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 28, 1991, Ser. No. 723,085
Int. Cl.[5] H04L *25/34*
U.S. Cl. 375—17 44 Claims



16. A transceiver for transmitting and receiving digital data on first and second transmission paths, respectively, said transceiver comprising:

transmitter means for transmitting a serial binary data signal to a remote receiver via the first transmission path, said transmitter means including means for encoding the serial binary signal as a first three-level modified duobinary encoded signal and means for providing a two-level driving signal for driving the first transmission path with the first three-level modified duobinary encoded signal; and

receiver means for receiving a second three-level modified duobinary encoded signal from a remote transmitter via the second transmission path, said receiver means including

means for generating a minimum threshold voltage and a bias voltage, the minimum threshold voltage being greater than the bias voltage;

phase splitting means, operatively coupled to receive the bias voltage, for splitting the second modified duobinary signal into first and second complementary three-level signals each having a middle voltage level equal to the bias voltage;

means, operatively coupled to receive the first and second complementary three-level signals and the minimum threshold voltage, for generating a first threshold voltage that is equal to or greater than the minimum threshold voltage according to a peak level of the first and second complementary three-level signals; and

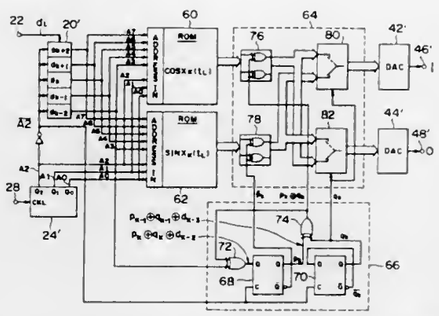
signal detection means, operatively coupled to receive the first and second complementary three-level signals and the first threshold voltage, for detecting logic levels in said first and second complementary three-level signals relative to the first threshold voltage, and for forming a serial binary signal having the detected logic levels.

5,255,288

ARRANGEMENT FOR CONVERTING BINARY INPUT SIGNAL INTO CORRESPONDING IN-PHASE AND QUADRATURE PHASE SIGNALS

Masaki Ichihara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 31, 1991, Ser. No. 648,758
Claims priority, application Japan, Jan. 31, 1990, 2-20659
Int. Cl.[5] H04L *27/12*; H03K *7/06*
U.S. Cl. 375—64 3 Claims



1. An arrangement for converting binary input data into corresponding in-phase and quadrature signals, comprising:

a counter which receives a first clock signal and counts clock pulses of said first clock signal up to N (N is a natural number), said counter generating, at a given time point, a plurality of counter outputs which includes a second clock signal the frequency of which is 1/N of said first clock signal;

a shift register which includes a plurality of shift stages from which shifted data are derived, said shift register being coupled to said counter so as to acquire the binary input data and shifting same in response to said second clock signal applied from said counter;

a first memory section having a look-up table including cosine data pre-stored therein, said first memory section is coupled to said shift register and said counter so as to receive an address signal which consists of first bit signals received from the shift stages and second bit signals received as the counter output from said counter, said first memory section producing an output defined by said address signal;

a second memory section having a look-up table including sine data pre-stored therein said second memory section being coupled to said shift register and said counter so as to receive said address signal and produce an output defined thereby;

a sequential logic coupled to said counter and said shift register, said sequential logic producing outputs in response to both said second clock signal and one of the shifted data of said shift register; and

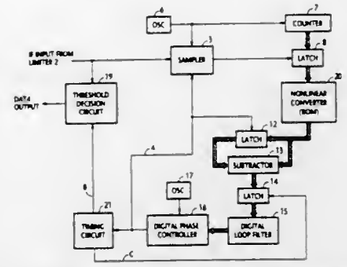
an output controller which includes first and second output terminals and first and second memory output polarity controllers which are respectively coupled to receive the outputs of said first and second memory sections, said output controller also including first and second input data selectors each of which is coupled to said first and second memory output polarity controllers, said first and second input data selectors also being coupled to said first and second output terminals, said output controller selectively reversing a polarity of each of the outputs of said first and second memory sections under control of said sequential logic, said output controller selectively steering the outputs of said first and second memory sections to said first and second output terminals under control of said sequential logic.

5,255,289

SYMBOL TIMING RECOVERY CIRCUIT

Hideho Tomita, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 19, 1992, Ser. No. 836,867
Claims priority, application Japan, Feb. 19, 1991, 3-024246
Int. Cl.[5] H04L *27/14*
U.S. Cl. 375—86 4 Claims



3. A symbol timing recovery circuit for an intermediate frequency M-ary PSK (phase shift keyed) signal, comprising:

phase detector means for detecting the instantaneous phase of a received intermediate frequency M-ary PSK signal at successive phase sampling points which are offset from a data sampling point on the opposite sides thereof to produce a pair of instantaneous phase values;

converter means for translating said instantaneous phase values to corresponding phase deviations which are measured from signal points of the PSK signal;

phase variation detector means for detecting a difference between said phase deviations;

phase control means for controlling said phase sampling points in accordance with said difference so that same is reduced to zero; and

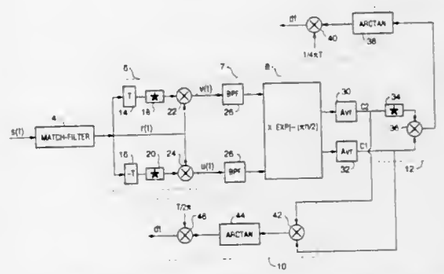
means for determining said data sampling point from the controlled phase sampling points.

5,255,290

METHOD AND APPARATUS FOR COMBINED FREQUENCY OFFSET AND TIMING OFFSET ESTIMATION

Kiomars Anvari, Walnut Creek, Calif., assignor to Teknekron Communications System, Inc., Berkeley, Calif.

Filed Aug. 21, 1992, Ser. No. 933,332
Int. Cl.[5] H04L *27/06*
U.S. Cl. 375—97 14 Claims



1. A method for generating a frequency offset estimate and a timing offset estimate from a base band signal, wherein the base band signal is a digital signal r(t) indicative of digital data which have been transmitted with a symbol frequency 1/T and a phase, but which have been received after transmission with a frequency offset error and a timing offset error, wherein the digital signal r(t) is a complex signal having a complex conjugate signal r*(t), including the steps of:

(a) performing a first nonlinear operation on the base band signal to generate a first nonlinear signal;

(b) while performing step (a), performing a second nonlinear operation on the base band signal to generate a second nonlinear signal, wherein the first nonlinear signal has form $(r(t))(r^*(t-T))$, where $T=(1/T)^{-1}$, and the second nonlinear signal has form $(r(t))(r^*(t+T))$; and

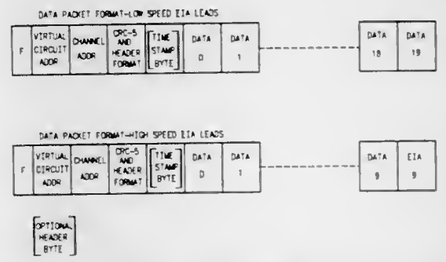
(c) processing the first nonlinear signal and the second nonlinear signal to generate the frequency offset estimate, and simultaneously processing the first nonlinear signal and the second nonlinear signal to generate the timing offset estimate.

5,255,291

MICROPROCESSOR BASED PACKET ISOCHRONOUS CLOCKING TRANSMISSION SYSTEM AND METHOD

Brian D. Holden, Half Moon Bay; Randall M. Presuhn, Campbell, and William L. Robertson, San Jose, all of Calif., assignors to Stratacom, Inc., Campbell, Calif.

Filed Nov. 14, 1988, Ser. No. 270,727
Int. Cl.[5] H04L *7/00*
U.S. Cl. 375—111 4 Claims



1. A communication system comprising:

a first microprocessor for measuring at a first location the frequency of a clock signal, produced external to the system, relative to a reference clock, which is carried throughout the system by clock signal paths, to produce corresponding measurement data;

a second microprocessor at a remote location within the system to construct at said remote location a replica clock using said measurement data; and

an information channel for transferring said measurement data between said first microprocessor and said second microprocessor.

5,255,292

METHOD AND APPARATUS FOR MODIFYING A DECISION-DIRECTED CLOCK RECOVERY SYSTEM

Christopher P. LaRosa, Lake Zurich, and Michael J. Carney, Palatine, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 27, 1992, Ser. No. 858,821
Int. Cl.[5] H04L *7/00, 25/36, 25/40*
U.S. Cl. 375—116 26 Claims

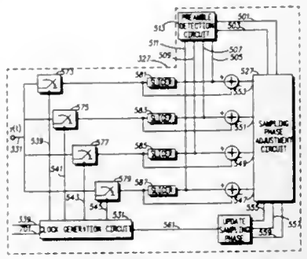
1. A method of modifying characteristics of a decision-directed clock recovery system to prevent false-locking and accelerate acquisition on a known symbol pattern, the clock recovery system having a first and a second control circuit, and a first and second clock signal corresponding to the first and the second control circuit, the first and the second control circuit having an effective loop bandwidth, the method comprising the steps of:

sampling a first received signal using said first and said second clock signals, and forming a corresponding first and second sampled signal;

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generating a first and a second symbol decision signal for said first and said second sampled signal;

detecting, responsive to said first and said second symbol



decision signals, a presence of a known symbol pattern in the first received signal; and

modifying, responsive to said step of detecting, the characteristics of the clock recovery system.

5,255,293

PHASE LOCKED LOOP ARRANGEMENT

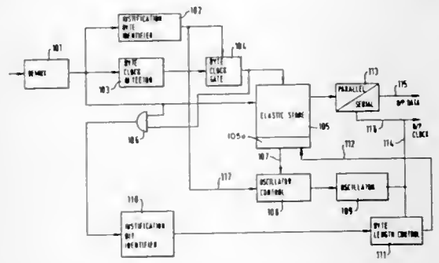
David L. Archer, Kirrawee, and Timothy C. Rayner, Kensington, both of Australia, assignors to Alcatel N.V.

Filed Mar. 5, 1991, Ser. No. 664,654

Claims priority, application Australia, Mar. 14, 1990, PJ9104

Int. Cl.[5] H04L *7/027, 7/02*

U.S. Cl. 375—118 **24 Claims**



11. A method of extracting output data from a stream of pulses containing data bytes, justification bytes and justification bits, justification bit identification information and justification byte identification information, the method comprising:

receiving the stream of pulses,

using the justification byte information to write the data bytes into a buffer store means of a retiming means,

measuring the contents of the buffer store means to produce a store fill status signal,

controlling a frequency of an output clock signal depending on the value of the store fill status signal,

operating the buffer store means as a FIFO store,

feeding the data from the buffer store means to a parallel-to-serial converter in bytes at a rate controlled by the output clock signal,

controlling the number of bits per byte by the bit justification information, and

controlling said frequency of the output clock signal by the store fill status signal to maintain the contents of the buffer store means at a chosen level.

5,255,294

SEALING DEVICE FOR CYLINDRICAL HOLLOW BODIES WITH AN OPENING AT AN END FACE, ESPECIALLY FOR SEALING PUMP SOCKETS IN THE INTERIOR OF REACTOR CONTAINERS

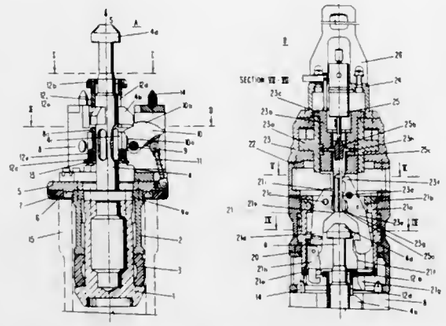
Helmut Bierwirth, Kassel, Fed. Rep. of Germany, assignor to Thyssen Industrie AG, Essen, Fed. Rep. of Germany

Filed Mar. 12, 1992, Ser. No. 850,437

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1991, 4108055

Int. Cl.[5] G21C *13/028*

U.S. Cl. 376—204 **6 Claims**



1. A sealing device for cylindrical hollow bodies with an opening at an end face, comprising:

a cylindrical sealing insert comprising two coaxially arranged, axially displaceable members and an elastic sealing ring disposed between said two coaxially arranged members such that a displacement of said two coaxially arranged members toward one another results in an enlargement of an outer diameter of said sealing ring, leading to a contact pressure between an outer circumference of said sealing ring and an inner wall surface of said cylindrical hollow body;

a placing tool, that is remote-controlled and detachably connected to said sealing insert, for clamping and locking said sealing insert in a sealing position as well as releasing said sealing insert from said sealing position, said placing tool comprising a clamping cylinder, a clamping piston slidably connected to said clamping cylinder, and a clamping piston rod, said piston rod being in the form of a hollow cylinder connected to said clamping piston;

said sealing insert further comprising a clamping anchor having a head, said clamping anchor being connected to a first one of said coaxially arranged members, and a sleeve connected coaxially and axially slidable about said clamping anchor;

said placing tool further comprising a release cylinder and a release piston connected to said release cylinder, said sleeve having a first flange at an upper end thereof and being actuatable by said release piston;

said placing tool further comprising a supporting body connected to said release piston and radially pivotable release hooks attached to said supporting body, said release hooks engaging said first flange for axially sliding said sleeve; and

said placing tool further comprising radially pivotable pawls connected to said clamping piston rod for engaging said head of said clamping anchor, and a control slide connected in an axially slidable, non-rotatably guided manner to said clamping piston rod for pivoting said release hooks and said pawls, said supporting body being axially guided at said clamping piston rod in a non-rotatable manner.

5,255,295

DEVICE FOR MEASURING THE TEMPERATURE OF THE PRIMARY COOLANT OF A NUCLEAR REACTOR, WITH ACCELERATED INTERNAL FLOW

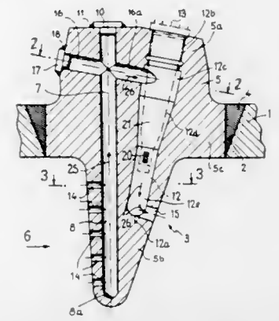
Michel Boulet, Cormeilles-en-Parisis, France, assignor to Framatome, Courbevoie, France

Filed May 4, 1992, Ser. No. 877,778

Claims priority, application France, May 3, 1991, 9105484

Int. Cl.[5] G21C *17/00*

U.S. Cl. 376—247 **10 Claims**



1. Device for measuring a temperature of a primary coolant of a nuclear reactor comprising a vessel in which a core of said reactor is disposed and a primary cooling system having at least one loop on which a steam generator is disposed and which comprises pipes in which said primary coolant of the reactor flows, said measuring device comprising a metallic body fixed in a wall of a reactor coolant pipe, said metallic body comprising a portion projecting inside said reactor coolant pipe and pierced by at least two channels communicating with an inner volume of said reactor coolant pipe through openings and enclosing a temperature measurement probe

(a) wherein said two channels extend substantially radially of said reactor coolant pipe and are connected to each other in the vicinity of ends of said channels;

(b) a first of said channels communicating with said inner volume of said reactor coolant pipe by a plurality of coolant inlet openings distributed substantially radially of said metallic body; and

(c) a second of said channels communicating with said inner volume of said reactor coolant pipe by at least one coolant outlet opening and enclosing said temperature measurement probe, in a zone situated between an end of said second channel which end is connected to an end of said first channel, and said coolant outlet opening.

5,255,296

COLLECTING AND RECIRCULATING CONDENSATE IN A NUCLEAR REACTOR CONTAINMENT

Terry L. Schultz, Murrysville Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 24, 1992, Ser. No. 903,639

Int. Cl.[5] G21C *15/18*

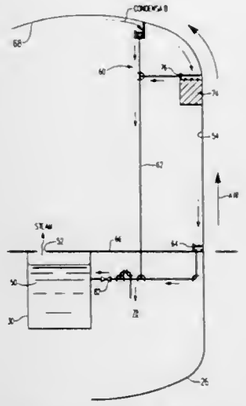
U.S. Cl. 376—299 **17 Claims**

1. A cooling apparatus for a nuclear reactor substantially enclosed in a containment structure, comprising:

a liquid storage tank disposed in the containment structure, the liquid storage tank being thermally coupleable to a heat source of the nuclear reactor in event of emergency and containing a cooling liquid exposed to air in the containment structure, whereby the cooling liquid in the storage tank is released as a vapor into an interior of the containment structure, forms a condensate on an interior wall of the containment structure, and flows downwardly due to gravity;

collection means disposed along the interior wall for collecting at least some of the condensate from the wall;

piping means coupling the collection means to the storage tank operable to communicate the condensate from the collection means to the storage tan, whereby the cooling liquid is recycled and reused; and,



a drain tank coupled by the piping means between the collection means and the storage tank, and further comprising valve means selectively operable to open and close a connection between the drain tank and the storage tank, said valve means being arranged to empty the drain tank into the storage tank in the event of emergency.

5,255,297

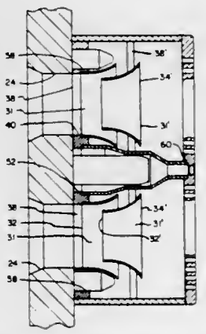
LOWER END FITTING WITH MULTISTAGE FLOW DIFFUSERS

William J. Bryan, Granby, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Continuation-in-part of Ser. No. 582,564, Sep. 14, 1990. This application Sep. 20, 1991, Ser. No. 763,003

Int. Cl.[5] G21C *1/04*

U.S. Cl. 376—352 **3 Claims**



1. An improved lower end fitting for a fuel rod containing fuel assembly of a pressurized water nuclear reactor, said lower end fitting having a top flow plate, and legs for engaging a lower core plate of said reactor and comprising:

multistage means for diffusing flow between the lower core plate and the lower end fitting top flow plate below the fuel rods, which diffusion spreads and evens flow in a manner which minimizes jet flow impingement on fuel

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rods above the lower end fitting and therefore reduces fuel rod vibration and fuel assembly pressure drop;

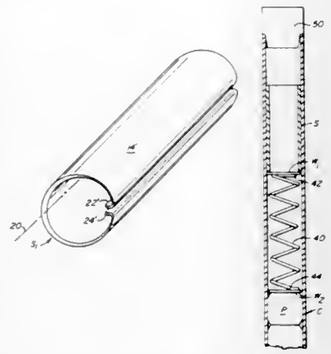
said multistage means for diffusion flow also acting as a means for stiffening the lower end fitting by being rigidly connected to the legs of the end fitting, thereby permitting said legs and flow plate to be thinner and of less mass.

5,255,298

LOCKING SLEEVE PLENUM SPRING RETAINER

Eric B. Johansson, and Harold B. King, both of Wrightsville Beach, N.C., assignors to General Electric Company, San Jose, Calif.

Filed Aug. 4, 1992, Ser. No. 924,805
Int. Cl.[5] G21C *3/18*
U.S. Cl. 376—412 12 Claims



1. In a fuel rod for a nuclear reactor comprising in combination:

cylindrical fuel rod cladding having at least one open end and a far end of said cylindrical cladding with a predetermined cylindrical inside diameter therebetween for receiving a plurality of cylindrical nuclear fuel pellets within said cladding;

a plurality of cylindrical nuclear fuel pellets having a diameter less than the inside diameter of said cladding inserted from said open end of said fuel rod cladding towards the far end of said fuel rod cladding;

means for limiting penetration of said cylindrical fuel pellets at the far end of said fuel rod cladding; and

means for maintaining said fuel pellets within said cladding at said open end of said cladding:

the improvement to said means for maintaining said fuel pellets within said cladding at the open end of said cladding comprising:

a generally elastic and cylindrical sleeve having a removed linear portion of the sleeve along the axial length of said sleeve and having an outside diameter exceeding the inside diameter of said cladding, said generally elastic and cylindrical sleeve compressible along said removed linear portion of said sleeve to a diameter less than said inside diameter of said cladding whereby insertion of said sleeve interior of said cladding can occur when said sleeve is elastically compressed;

said generally elastic and cylindrical sleeve inserted to said cladding and in radially expanded elastic contact with the inside wall of said cladding whereby said sleeve is frictionally held to said cladding; and,

means between said sleeve and said fuel pellets for maintaining said fuel pellets under compression from said sleeve interior of said fuel rod cladding;

first means for grasping said generally elastic and cylindrical sleeve defined adjacent one said removed linear portion of said sleeve for enabling compression of said cylinder from the inside of said cylinder; and

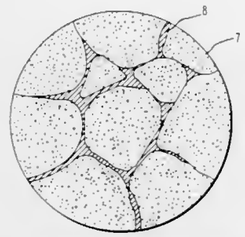
second means for grasping said generally elastic and cylindrical sleeve defined adjacent the other said removed linear portion of said sleeve for enabling compression of said cylinder from the inside of said cylinder.

5,255,299

METHOD OF MANUFACTURING NUCLEAR FUEL PELLETS

Mutsumi Hirai, Mito; Shinji Ishimoto, Orarai, and Kenichi Ito, Katsuta, all of Japan, assignors to Nippon Nuclear Fuel Development Co., Ltd., Ibaragi, Japan

Division of Ser. No. 674,170, Mar. 25, 1991, Pat. No. 5,180,527.
This application Jun. 9, 1992, Ser. No. 895,665
Claims priority, application Japan, Apr. 3, 1990, 2-87579; Nov. 5, 1990, 2-297082
Int. Cl.[5] G21C *3/00*
U.S. Cl. 376—421 7 Claims



1. A method for manufacturing nuclear fuel pellets by sintering at a sintering temperature, comprising the steps of:

(1) preparing a high-thermal conductivity substance, wherein said high-thermal conductivity substance comprises beryllium oxide alone up to a maximum of 13.6 wt. % with respect to the total amount of said nuclear fuel pellets, or a mixture of said beryllium oxide and at least one oxide selected from the group consisting of titanium, gadolinium, calcium, barium, magnesium, strontium, lanthanum, yttrium, ytterbium, silicon, aluminum, samarium, tungsten, zirconium, lithium, molybdenum, uranium, and thorium oxides up to a maximum of 12.5 wt. % with respect to the nuclear fuel pellets, or a eutectic composition obtained by heating said mixture of oxides, wherein a portion of said high-thermal conductivity substance liquefies at or near said sintering temperature;

(2) adding said high-thermal conductivity substance to a nuclear fission substance;

(3) mixing said high-thermal conductivity substance with said nuclear fission substance; and

(4) sintering the mixture obtained in step (3).

5,255,300

FUEL ASSEMBLY FOR BOILING WATER REACTORS

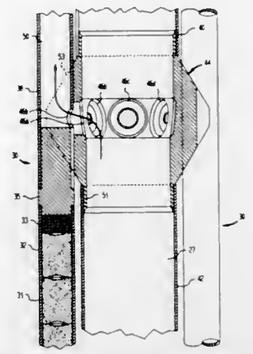
John F. Patterson, Richland, and Richard H. Ewing, W. Richland, both of Wash., assignors to Siemens Power Corporation, Bellevue, Wash.

Filed Jul. 30, 1991, Ser. No. 737,859
Int. Cl.[5] G21C *3/00*
U.S. Cl. 376—423 22 Claims

1. A fuel assembly for a boiling water nuclear reactor comprising:

an elongated central water channel surrounded by a plurality of fuel rods located substantially parallel to the central water channel, the central water channel having at least one wall member that defines an enclosed flow path therethrough, the central water channel including a lower opening for receiving moderator and allowing moderator to flow through the enclosed flow path defined by the at least one wall member, and the central water channel further including at least one outlet opening; and

at least one partial water rod having at least one wall member that defines an enclosed flow path therethrough, the partial water rod being coupled to a portion of one of the plurality of fuel rods so as to be disposed axially above a fuel portion of the fuel rod and further including an inlet



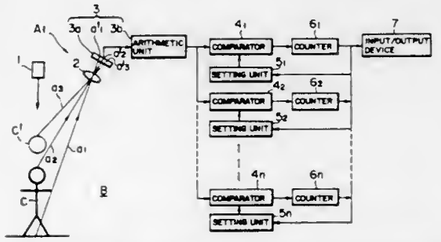
opening in communication with at least one outlet opening of the central water channel and defining a flow path for receiving moderator and allowing moderator to flow from the channel into an interior of the partial water rod.

5,255,301

APPARATUS FOR COUNTING THE NUMBER OF PASSING PERSONS BY STATURE

Kiyohisa Nakamura, and Kanji Matsuhashi, both of Hiroshima, Japan, assignors to Shinkawa Electric Co., Ltd., Hiroshima, Japan

Filed Oct. 30, 1991, Ser. No. 785,066
Claims priority, application Japan, Nov. 6, 1990, 2-300877
Int. Cl.[5] G07C *9/00*; G06M *1/00*
U.S. Cl. 377—6 8 Claims



1. An apparatus for counting the number of persons passing through a location by stature, comprising:

means for projecting a light beam toward the head of a passing person;

means for converging light reflected from a reflective position of the passing person, said converging means including an optical element;

light position detecting means for detecting the reflected light, said light position detecting means having a plurality of light-receiving positions onto which the reflected light is converged by said converging means in accordance with the height of the reflective position, said light positioning detecting means outputting signals which vary in accordance to the reflected light received at said light-receiving positions;

means for setting a plurality threshold values corresponding to height, said setting means including means for storing said plurality of threshold values and means for inputting said threshold values to be stored in said storing means;

means for comparing each of the signals output from said light position detecting means with said threshold values stored in said storing means and for outputting signals that vary in accordance with each of the comparisons; and

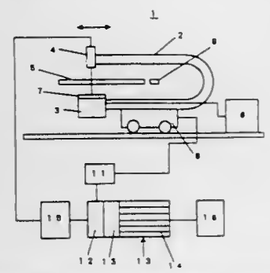
a plurality of counters for respectively counting the number of passing persons whose height correspond to each of said threshold values based on the comparisons and signals output by said comparing means.

5,255,302

FOIL-THICKNESS MEASURING DEVICE

Takayuki Shimamune, Tokyo, and Tamotsu Hayashi, Kanagawa, both of Japan, assignors to Permelec Electrode, Ltd., Kanagawa, Japan

Filed Mar. 3, 1992, Ser. No. 845,262
Claims priority, application Japan, Mar. 5, 1991, 3-38404; May 16, 1991, 3-111899
Int. Cl.[5] G01B *15/02*; C25D *1/04*
U.S. Cl. 378—55 20 Claims



1. A continuous, foil thickness measurement device adapted for use with a foil and adapted for incorporation into a foil production device, comprising:

an X-ray or γ-ray radiation source, positioned on a first side of a foil, for transmitting radiation toward said foil;

an X-ray or γ-ray detector, positioned on a second side of said foil from the radiation source, said first side being opposed to said second side, said detector including means for measuring the intensity of the transmitted radiation after a portion of incident radiation has been absorbed by the foil;

a movement member for moving the radiation source and the detector synchronously in a width direction of the foil;

a signal generator which generates one of a signal indicating a distance between a position of a portion of said foil whose thickness is being gauged and a side edge of the foil and a signal indicating the time period elapsed since movement of the radiation source and the detector began from a side edge of the foil;

a counter having a plurality of channels and which integrates, as a function of either change over said elapsed time or said distance between a portion of said foil whose thickness is being gauged and a side edge of said foil, detection signals output from the detector to generate an integrated count number for each channel;

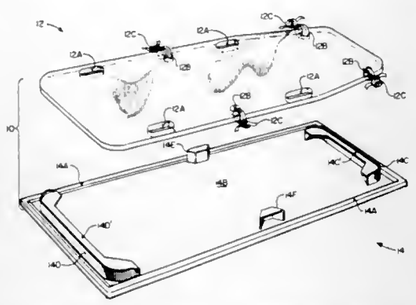
a channel-switching member for switching each of the plurality of channels of the counter according to signals generated by the signal generator, said channels being switched so as to store respective signals generated by said signal generator in said channels;

a calculator which calculates a foil thickness from said integrated count number for each channel of said counter; and

an output unit which outputs a foil thickness distribution.

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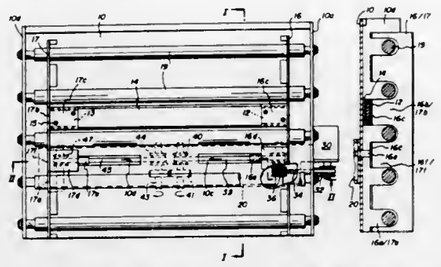
5,255,303
MULTI-PURPOSE EMERGENCY ROOM TRAUMA BOARD
J. Michael DiMaio, and James D. Dalton, Jr., both of Durham, N.C., assignors to Duke University, Durham, N.C.
Filed Nov. 17, 1992, Ser. No. 977,804
Int. Cl.[5] H05G *1/02*
U.S. Cl. 378—177 **14 Claims**



1. A multi-purpose emergency room trauma board for handling trauma victims during emergency treatment, comprising:
a rigid, non-porous plastic backboard defining a patient support surface on one side thereof;
a rigid, fluid impermeable base defining a top surface area at least equal to the patient support surface area of said backboard and comprising an elevated lip around the perimeter thereof to maintain patient body fluids within the top surface area of said base circumscribed by said lip; and
support means mounted on said rigid base and adapted to removably support said backboard thereon in a substantially parallel and spaced-apart relationship to said base sufficient in height to allow for slidably positioning an X-ray cassette between said backboard and said base;
whereby a patient on said trauma board may have selective X-rays taken of their upper and/or lower body in a hospital emergency room and then be transported on said backboard portion of said trauma board for subsequent post emergency room treatment and/or procedures.

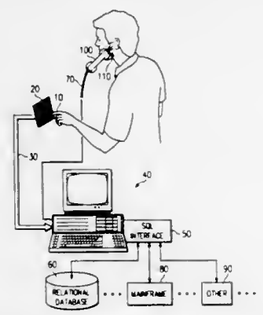
5,255,304
DEVICE FOR CENTERING X-RAY FILM CASSETTES
Friedrich Üffinger, Schorndorf-Weiler, and Hermann Dieterle, Esslingen, both of Fed. Rep. of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.
PCT No. PCT/EP91/00719, § 371 Date Dec. 20, 1991, § 102(e) Date Dec. 20, 1991, PCT Pub. No. WO91/16665, PCT Pub. Date Oct. 31, 1991
PCT Filed Apr. 15, 1991, Ser. No. 778,824
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1990, 4013285
Int. Cl.[5] G03B *42/02*
U.S. Cl. 378—181 **12 Claims**

1. Device for centering X-ray film cassettes of various sizes, which can be transported on rollers, by means of two parallel bars movable towards and away from each other, respectively, in a cassette loading and unloading apparatus, c h a r a c t e r



i z e d in that the bars (**16** and **17**) are arranged and designed such that the rollers (**19**) penetrate them.

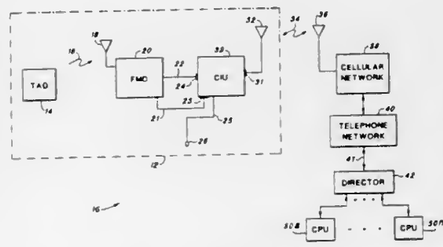
5,255,305
INTEGRATED VOICE PROCESSING SYSTEM
Sohail Sattar, Irving, Tex., assignor to Voiceplex Corporation, Irving, Tex.
Filed Nov. 1, 1990, Ser. No. 608,147
Int. Cl.[5] H04M *1/50, 1/64*
U.S. Cl. 379—34 **35 Claims**



1. A voice processing system for providing voice transactions through a telecommunications line comprising:
a general-purpose, digital computer adapted to communicate through the telecommunications line with an outside environment;
storage means interfaced to the general-purpose digital computer for storing at least one object having a state associated therewith that is modifiable and that will produce a voice transaction event upon modification;
at least one vector protocol that can be activated by a user in the outside environment through the telecommunications line for operating on the at least one object to produce the change in the object's state; and
an interface adapted to convert user commands input to the voice processing system through the telecommunications line to activate the vector protocol and alter the object's state.

5,255,306
CELLULAR INTERFACE UNIT FOR USE WITH AN ELECTRONIC HOUSE ARREST MONITORING SYSTEM
Donald A. Melton, and Gregory A. Younger, both of Boulder, Colo., assignors to BI Inc., Boulder, Colo.
Filed Jan. 10, 1991, Ser. No. 639,795
Int. Cl.[5] H04M *11/04, 11/00;* **G08B** *13/14, 23/00*
U.S. Cl. 379—38 **8 Claims**

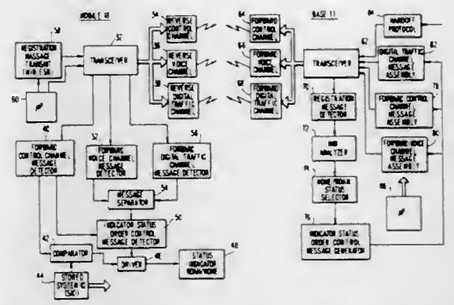
3. A cellular interface unit for use with an electronic house arrest monitoring (EHAM) system, said EHAM system including: (1) identifying means for positively identifying an individual; and (2) interface means placed at a house arrest location where a person being monitored is supposed to be for interfacing the identifying means with a host computer via an established telecommunicative link; said cellular interface unit comprising:
cellular transceiver means for transmitting and receiving cellular telephone signals to and from a prescribed telephone number through a cellular telephone network, a host computer being coupled to said prescribed telephone number;
connector means for detachably connecting a telecommunicative cable from said interface means to said cellular transceiver means, whereby telecommunicative contact may be established between said interface means and said host computer through which data signals may be sent;
sensing means for sensing any attempt to tamper with said



cellular interface unit and for momentarily interrupting said coupling means in response thereto;
a closed container wherein said cellular transceiver means, coupling means, and sensing means are housed; and
power supply means within said closed container for providing operating power for said cellular interface unit;
whereby any attempt to tamper with said cellular interface unit causes said telecommunicative contact to be momentarily interrupted, which interruption is reported to said host computer via said data signals once said telecommunicative contact is again established; and wherein
said sensing means includes movement means for sensing any non-incidental motion of said closed container, said movement means including:
a motion detector for generating a motion signal upon detection motion of said container; and
discrimination means for discriminating incidental generation of said motion signal from non-incidental generation of said motion signal.

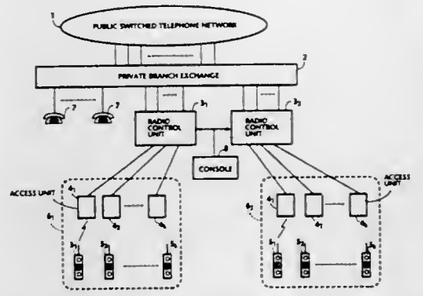
5,255,307
STATUS INDICATOR CONTROL FOR CELLULAR MOBILE TELEPHONE SYSTEM
Semyon Mizikovsky, Union, N.J., assignor to Sony Electronics Inc., Park Ridge, N.J.
Filed May 7, 1992, Ser. No. 879,607
Int. Cl.[5] H04M *11/00;* **H04Q** *7/00*
U.S. Cl. 379—58 **22 Claims**

1. Apparatus for use in a cellular mobile telephone system wherein voice and data signals are communicated between a mobile station and a base station, said mobile station being a subscriber to a home system, said mobile station being provided with a status indicator to indicate if the base station with which said mobile station is communicating is included in said home system and said mobile station having stored therein system identification data identifying said home station, said mobile station being operable in an idle mode, wherein the mobile station receives control messages including system identification data and transmits control messages including mobile station identification data, and said mobile station being operable in an active mode to transmit and receive voice signals, said apparatus comprising system ID detecting means at said mobile station for detecting if the system identification data received in a control message identifies said home system, status activating means for activating said status indicator in response to said system ID detecting means, status order control message sensing means for sensing receipt of an indicator status order control message, override means responsive to the



sensed indicator status order control message for selectively activating or deactivating said status indicator as determined by said indicator status order control message notwithstanding said system ID detecting means, and indicator status order control message transmit means at said base station for selectively transmitting said indicator status order control message to said mobile station.

5,255,308
WIDE AREA CORDLESS TELEPHONE SYSTEM CAPABLE OF RECEIVING INCOMING GROUP ADDRESS CALLS
Tadao Hashimoto, Tokyo, and Kazushige Tanaka, Kanagawa, both of Japan, assignors to NEC Corporation and Nippon Telegraph and Telephone Corp., both of Tokyo, Japan
Filed Feb. 8, 1991, Ser. No. 652,724
Claims priority, application Japan, Feb. 8, 1990, 2-30104
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—61 **8 Claims**



1. A wide area cordless telephone system for covering a plurality of service areas in each of which a plurality of cordless stations are located, comprising:
control means connected to a telephone network for generating a group-call signal in response to an incoming call from the telephone network; and
a plurality of access units divided into groups corresponding respectively to a respective service area, the access units of each group for establishing a radio control channel with the cordless stations located in the same service area as said access units, said access units of each group being

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responsive to said group-call signal for transmitting speech-channel identifiers to said cordless stations through said control channel to establish radio speech channels with the cordless stations located in the same service area as said access units receiving said group call signal, and transmitting ringing signals respectively to said cordless stations through said speech channels.

5,255,309

TELEPHONIC-INTERFACE STATISTICAL ANALYSIS SYSTEM

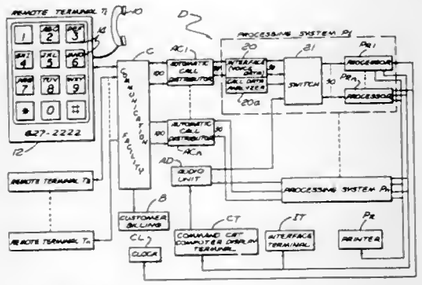
Ronald A. Katz, Los Angeles, Calif., assignor to First Data Resources Inc., Omaha, Nebr.

Division of Ser. No. 640,337, Jan. 11, 1991, which is a continuation of Ser. No. 335,923, Apr. 10, 1989, which is a continuation of Ser. No. 194,258, May 16, 1988, Pat. No. 4,845,739, which is a continuation-in-part of Ser. No. 18,244, Feb. 24, 1987, Pat. No. 4,792,968, which is a continuation-in-part of Ser. No. 753,299, Jul. 10, 1985, abandoned. This application Dec. 3, 1991, Ser. No. 803,269

The portion of the term of this patent subsequent to Dec. 20, 2005, has been disclaimed.

Int. Cl.[5] H04M *1/57, 1/66, 3/50, 15/12*

U.S. Cl. 379—88 **58 Claims**



1. A controlled interface system for use with a telephonic communication facility including remote terminals for individual callers, wherein said remote terminals may comprise a conventional telephone instrument, and wherein said telephone communication facility may provide called terminal DNIS signals, said controlled interface system comprising:

function unit means for supplying information of various formats, at least one of said formats being associated with an audio of a broadcast;

interface means for interfacing said telephonic communication facility with said function unit means for voice and digital communication including means to receive terminal formed digital signals and means to provide signals representative of vocal communication to individual callers; and

coupling means for coupling a caller at a terminal through said interface means to said function unit means for selective communication in accordance with a specific one of said formats under control of said called terminal DNIS signals.

5,255,310

METHOD OF APPROXIMATELY MATCHING AN INPUT CHARACTER STRING WITH A KEY WORD AND VOCALLY OUTPUTTING DATA

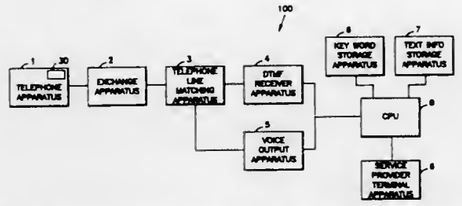
Eung I. Kim; Jae I. Kim, and Jong R. Lee, all of Seoul, Rep. of Korea, assignors to Korea Telecommunication Authority, Rep. of Korea

Continuation of Ser. No. 563,481, Aug. 7, 1990, Pat. No. 5,163,084. This application Aug. 17, 1992, Ser. No. 931,135

Claims priority, application Rep. of Korea, Aug. 11, 1989, 89-11435; Mar. 14, 1990, 90-3367

Int. Cl.[5] H04M *1/64, 11/08*

U.S. Cl. 379—88 **2 Claims**



1. A method for approximately matching an input character string having a first character through a last character input by a user having a telephone with DTMF buttons with a key word and for vocally outputting information data in response to the input character string to the telephone, said method comprising:

providing a character panel for the telephone with DTMF buttons with an alphabetic-numeric character display orderly arranged on the character panel for transmitting DTMF signals by pressing two different DTMF buttons in an orderly sequence thereby specifically designating a single character of the display of alphabetic and numeric characters;

A. inputting the character string to a voice information service system with a central processing unit (CPU) for syllabicating the inputted character string into character units a1, a2, a3 . . . aN without distinguishing between the component units of the character string;

B. discriminating whether all the character units match with all characters of any one of a plurality of service names stored at a service name file unit in a key word storage apparatus and if matched, vocally outputting the corresponding service name to the telephone thereby ending matching procedures, and if not matched;

C. comparing the first character unit of the input character string with the first character of key words stored at a key word dictionary unit in the key word storage apparatus, and if matched;

D. sequentially comparing the next character unit of the input character string by continuously and individually matching with the second character, third character, . . . Nth character, of the key word in the key word dictionary unit and if the key word is matched to the Nth character unit of the input character string;

E. storing service numbers with respect to the matched key word and with respect to the input character string representing a corresponding character sequence of the input character string with respect to the matched key word in a matching result file, and if the key word is not matched to the Nth character unit of the input character string;

F. sequentially adding the next character unit to the first character unit of the input character string which is not matched to the first character unit as step C or adding the next character unit of the input string to the input string which is not matched to the Nth character unit at step D to the key word; and

G. identifying whether matching has been performed to the last character unit (aN) of the input character string, and if the matching between all the characters of the input character string and those of the key word is not completed at step F, returning to step C to re-match the input character string of step F, and if completed, reviewing the stored matching result file and selecting the optimum service names by determining a number of prospective services to be finally selected, where one optimum service name is selected and outputted to the telephone in vocal form, and where the number of optimum service names selected is none or more than two, the input character string is input again as in step A, and where the number of the optimum service names selected is two, the two selected optimum service names are vocally output through the telephone to the user to allow the user to select one of the optimum service names thereby completing the selecting procedure of the optimum service name and outputting information data corresponding to the service name selected in vocal form through the telephone.

5,255,311

DATA COMMUNICATION APPARATUS

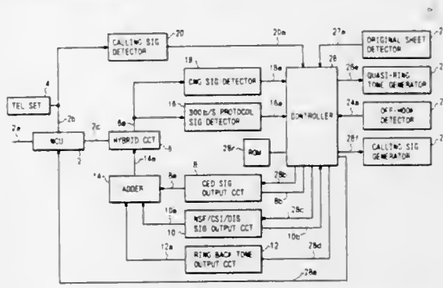
Takehiro Yoshida, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 25, 1991, Ser. No. 691,493

Claims priority, application Japan, Apr. 27, 1990, 2-110127

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—100 **8 Claims**



1. A data communication apparatus having a first switchover mode and a second switchover mode for switching over between data communication and speech communication, comprising:

detection means for detecting a condition of the apparatus; and

control means for selecting one of said first switchover mode and said second switchover mode according to the detection by said detection means and for conducting automatic switchover control between data communication and speech communication in the selected switchover mode, said

wherein, in said first switchover mode, said detection means detects whether a signal indicating data communication is received while outputting a signal indicating the hook condition of a telephone set, and said data communication apparatus conducts data communication if the signal indicating data communication is received and speech communication if the signal indicating data communication is not received within a first predetermined period of time, and wherein, in said second switchover mode, said data communication apparatus sends a procedure signal for data communication, said detection means detects whether a response signal to the transmitted procedure signal is received within a second predetermined period of time, and said data communication apparatus conducts data communication if the response signal is received within the second predetermined period of time and a process for speech communication if the response signal is not received.

5,255,312

FACSIMILE MACHINE CONNECTABLE TO VARIOUS COMMUNICATION EQUIPMENTS

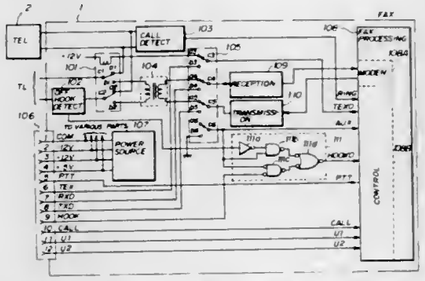
Takaho Koshiishi, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 608,265, Nov. 2, 1990, abandoned. This application Aug. 3, 1992, Ser. No. 921,982

Claims priority, application Japan, Nov. 10, 1989, 1-291073

Int. Cl.[5] H04M *11/00;* **H04N** *1/32*

U.S. Cl. 379—100 **13 Claims**



1. A facsimile machine which is coupled to a telephone line and a telephone set, said facsimile machine connecting the telephone set to the telephone line in a telephone mode and disconnecting the telephone set from the telephone line in a facsimile mode so as to use the telephone line as a communication line for a facsimile communication, said facsimile machine being connectable to a plurality of types of communication equipment via respective interface units which are designed exclusively for a corresponding one of the plurality of types of communication equipment and each using a predetermined set of signals, each of said interface units being provided with a respective signal converter, said facsimile machine comprising:

single connector means including signal lines for receiving and transmitting said predetermined set of signals for coupling the facsimile machine to each of the respective interface units;

control means, connected to said single connector means through said signal lines, for controlling an operation of said facsimile machine;

single switching means coupled to said connector means for arbitrarily selecting the communication line to the telephone line in a first mode and to one of the types of the communication equipment in a second mode; and

communication means for making a facsimile communication using the communication line which is selected by said switching means.

5,255,313

UNIVERSAL REMOTE CONTROL SYSTEM

Paul V. Darbee, Santa Ana, Calif., assignor to Universal Electronics Inc., Twinsburg, Ohio

Contiouation of Ser. No. 587,326, Sep. 24, 1990, Pat. No. 5,228,077, which is a continuation-in-part of Ser. No. 127,999, Dec. 2, 1987, Pat. No. 4,959,810. This application Apr. 8, 1993, Ser. No. 46,105

The portion of the term of this patent subsequent to Jul. 13, 2010, has been disclaimed.

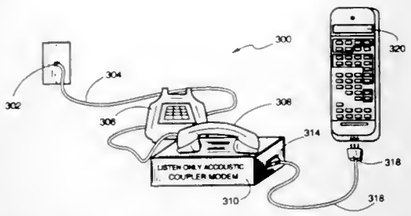
Int. Cl.[5] H04M *11/00;* **H04N** *5/44*

U.S. Cl. 379—102 **20 Claims**

2. A universal remote control system including a universal remote control comprising input means including a set of keys or pushbuttons for inputting commands into the remote control, infrared signal output means including infrared (IR) lamp

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driver circuitry for supplying an infrared signal to a controlled device, a central processing unit (CPU) coupled to said input means and to said signal output means, memory means coupled to said CPU and data coupling means including terminal means comprising a receiving port coupled to said CPU for enabling code data for creating appropriate IR lamp driver instructions for causing said infrared signal output means to emit infrared signals which will cause specific functions to occur in a specific controlled device, for operating a variety of devices to be



controlled, to be supplied from outside said remote control through said receiving port of said terminal means directly to said CPU for direct entry to said memory means to enable said remote control to control various devices to be controlled upon the inputting of commands to the keys of the input means and a data transmission system including coupling means for coupling said terminal means to a computer, directly, through a telephone line, through a modem and a telephone line, or through decoding means and a television set to receive a television signal picked up by the television set.

5,255,314

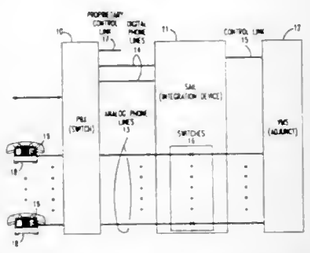
SWITCH ADJUNCT INTEGRATION ARRANGEMENT

Randy L. Applegate, Westminster; Ricky L. Overmyer, Golden; Stephen R. Peck, Boulder; John B. Sharp, Denver, and Nathan E. Wiscombe, Broomfield, all of Colo., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 29, 1991, Ser. No. 677,546

Int. Cl.[5] H04M *3/42, 1/64*

U.S. Cl. 379—212 **26 Claims**



1. An arrangement for integrating a telecommunications switching system connected to one or more first telecommunications lines, with an adjunct processor connected to the system by one or more second telecommunications lines each for having calls established and completed thereon, wherein each first line has a plurality of line appearances and a different one of the line appearances is bridged to each second line, the arrangement comprising:

receiving means for connecting to the one or more first lines each one of which has a plurality of line appearances including line appearances bridged to second lines, to receive communications thereon;

communicating means for communicating with the adjunct processor; and

communication causing means connected to the receiving and communicating means and responsive to receipt by the receiving means of a first communication for a bridged individual one of the line appearances which first communication signifies completion of a call, for causing the communicating means to communicate to the adjunct processor that a call has been completed on a second line to which the individual one of the line appearances is bridged.

5,255,315

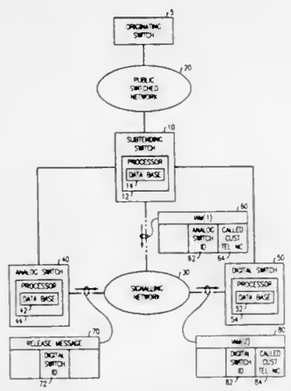
METHOD OF REROUTING TELECOMMUNICATIONS TRAFFIC

William J. Bushnell, St. Charles, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 691,578, Apr. 24, 1991, abandoned. This application Jun. 27, 1991, Ser. No. 725,944

Int. Cl.[5] H04M *7/00, 3/42*

U.S. Cl. 379—221 **10 Claims**



1. A method of establishing a telephone call connection to a customer, served by a first telephone switching system for switching telephone communication traffic or a second telephone switching system for switching telephone communication traffic, whose telephone number is one of a block served by said second telephone switching system, the method comprising the steps of:

transmitting a first setup message from a third telephone switching system for switching telephone communication traffic of a public switched network to the second telephone switching system;

responsive to receiving said first setup message, determining which telephone switching system serves said customer identified by said telephone number;

if said determining indicates that said customer is served by said second telephone switching system, establishing a connection to said customer in said second telephone switching system;

if said determining indicates that said customer is served by said first telephone switching system, transmitting a release message, the release message comprising the identification of the first telephone switching system, to the third telephone switching system; and

responsive to receiving said release message, transmitting a second setup message from the third telephone switching system to the first telephone switching system for establishing a call connection from the third telephone switching system, to the first telephone switching system.

5,255,316

HANDS-FREE TELEPHONE APPARATUS

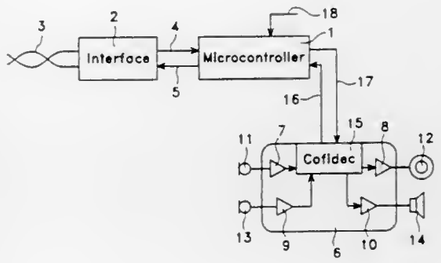
Jean-Pierre Poirier, Saint Denis; Francois Bonneau, Saint Gratien, and Denis Dutey, Montbrison, all of France, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Jul. 31, 1991, Ser. No. 739,598

Claims priority, application France, Aug. 8, 1990, 90 10123

Int. Cl.[5] H04M *1/60*

U.S. Cl. 379—389 **4 Claims**



1. Digital hands-free telephone apparatus for reception and transmission of digital speech data, said apparatus comprising:

a microcontroller for processing digital data and having a receive input and a receive output associated with a receive channel, and a send input and a send output associated with a send channel,

a coding-filtering-decoding circuit for converting analog speech data into digital speech data and vice-versa,

a microphone and a loudspeaker coupled by respective send and receive amplifier circuits and by said coding-filtering-decoding circuit o the send input and ht receive output of the microcontroller, respectively,

decision means associated with said microcontroller for determining average levels over a predetermined number of successive digital samples of any signals present at the respective send and receive inputs to said microcontroller, and for using said average levels to perform a decision-making operation in which it is determined which channel should be processed without attenuation and which channel should be attenuated,

at lest one attenuated value table for determining an attenuated output value form a given input value,

digital attenuation means also associated with said microcontroller and responsive to said decision means and to said attenuated value table or deriving an attenuated microcontroller output for the channel to be processed with attenuation from its respective microcontroller input, and for deriving a non-attenuated microcontroller output for the other channel from the other microcontroller input, and

end-of-word detecting means for maintaining the average level between two successive words in order to prevent sudden channel switching between the words of a given phrase,

wherein the decision to switch from attenuation to non-attenuation and vice-versa is taken as a unction of a position of a point that represents, in Cartesian coordinates, the values of the average levels of the send and receive channels in three areas including a hysteresis area separating an area in which the transmit channel is not attenuated and an area in which the receive channel is not attenuated.

5,255,317

SUBSCRIBER LINE INTERFACE CIRCUIT FOR SERVING ISDN SUBSCRIBERS USING ECHO CANCELLERS AND POTS SUBSCRIBERS

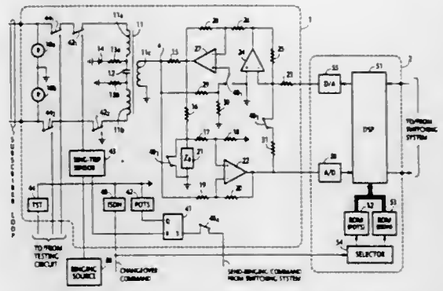
Masanobu Arai, and Yoshihide Hiraoka, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Mar. 9, 1992, Ser. No. 847,732

Claims priority, application Japan, Mar. 8, 1991, 3-43142

Int. Cl.[5] H04M *1/00*

U.S. Cl. 379—399 **8 Claims**



1. A subscriber line interface circuit for a digital telephone switching system serving both ISDN (Integrated Services Digital Network) subscriber stations having an echo canceller and POTS (Plain Old Telephone Service) subscriber stations, comprising:

a switched hybrid circuit operable during a POTS mode when an associated subscriber is using a POTS subscriber station and an ISDN mode when said associated subscriber is using an ISDN subscriber station, said switched hybrid circuit having a two-wire port coupled to a loop of the associated subscriber, a four-wire receive port and a four-wire transmit port, first amplifier means for coupling a signal at said two-wire port to said four-wire transmit port, second amplifier means for coupling a signal at said four-wire receive port to said two-wire port, and means for synthesizing a high termination impedance at said two-wire port during said POTS mode and a low termination impedance at said two-wire port during said ISDN mode;

an analog-to-digital (A/D) converter coupled to said four-wire transmit port of the hybrid circuit for converting analog signals therefrom to digital signals;

a digital-to-analog (D/A) converter coupled to said switching system for converting digital signals therefrom into analog signals and applying same to said four-wire receive port of the hybrid circuit;

a digital signal processor for receiving digital signals from said A/D converter and pulse code modulation signals from said switching system, processing the received signals according to a program supplied thereto and applying a processed version of the signals from the A/D converter to said switching system and a processed version of the signals from the switching system to said D/A converter;

first memory means for storing a first program for configuring said digital signal processor to effect balancing network computation and codec filter computation during said POTS mode;

second memory means for storing a second program for configuring said digital signal processor to effect echo canceller computation and equalization decision computation during said ISDN mode; and

means for causing said switched hybrid circuit and said first and second memory means to be switched from the POTS mode to the ISDN mode.

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5,255,318

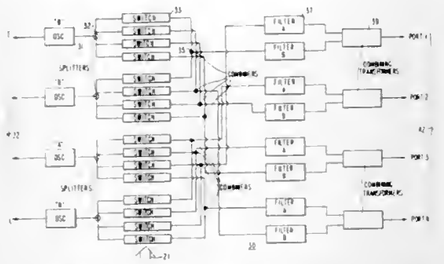
EXPANDABLE CABLE TELEVISION SUBSCRIBER CONTROL SYSTEM

Aravanan Gurusami, E. Syracuse; Robert Chamberlin, Manlius; Victor J. Jacek, Syracuse; Thomas P. Strong, Pompey; Jeffrey L. Cox, Camillus, and Mark Chapman, Bridgeport, all of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 673,872, Mar. 22, 1991, Pat. No. 5,140,633. This application Feb. 20, 1992, Ser. No. 839,139

Int. Cl.[5] H04N *7/167*

U.S. Cl. 380—7 **10 Claims**



1. A modular subscriber control apparatus for controlling access to cable television signals in response to control data transmitted with said cable television signals by a headend, said apparatus comprising:

a) a single distribution module comprising:

i. means for receiving said cable television signals and said control data; and

ii. a plurality of subscriber ports for providing program outputs via first switch means responsive to a first switch signal, to respective subscribers;

b) a plurality of jammer modules coupled to said distribution module, each jammer module comprising:

i. a plurality of frequency agile oscillators each responsive to respective frequency control signals, and

ii. second switch means, responsive to a second switch signal, for directing selected outputs from said plurality of frequency agile oscillators to said distribution module for distribution to said respective subscribers; and

c) a single control module coupled to each of said jammer modules and said distribution module, said control module comprising means for deriving said first and second switch signals and said frequency control signals from said control data.

5,255,319

NOISE SUPPRESSING CIRCUIT IN AN FM TUNER

Tetsuo Nakamura, and Masahide Terada, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 29, 1991, Ser. No. 677,184

Claims priority, application Japan, Sep. 26, 1990, 2-256525

Int. Cl.[5] H04H *5/00*

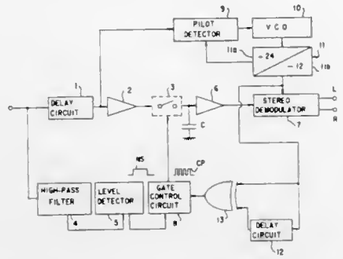
U.S. Cl. 381—13 **5 Claims**

1. A noise suppressing circuit in an FM tuner having a gate for controlling a composite signal applied to a stereo demodulator of the FM tuner, a capacitor for charging a voltage at an output terminal of the gate, and a detector for detecting noise included in the composite signal and for producing a noise dependent signal for controlling the gate to close it, the circuit comprising:

a pilot signal detector circuit means for detecting a pilot signal included in the composite signal an for outputting pilot dependent pulses to the stereo demodulator;

pulse generator means responsive to the pilot dependent pulses, for producing control pulses having a period shorter than a period of the pilot dependent pulse; and

gate control circuit means operatively connected to said detector and to said pulse generator means, for dividing the noise dependent signal with the control pulses so as to produce gate closing pulses during the noise dependent signal in synchronism with the control pulses,



the gate being connected to receive the gate closing pulses at a control input so as to close the gate for the period of the gate closing pulse, wherein a voltage charged in the capacitor before the closing of the gate is outputted.

5,255,320

HEARING AID

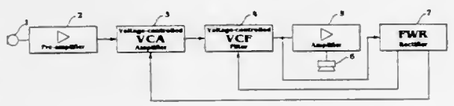
Zlatan Ribic, Vienna, Austria, assignor to Viennatone GmbH, Vienna, Austria

Filed Jan. 23, 1991, Ser. No. 644,911

Claims priority, application Austria, Feb. 2, 1990, A228/90

Int. Cl.[5] H04R *25/00*

U.S. Cl. 381—68.4 **9 Claims**



1. A single channel circuit for a hearing aid for persons with an impaired hearing faculty comprising:

a microphone,

a pre-amplifier coupled to said microphone, a voltage controlled amplifier/attenuator coupled to said pre-amplifier,

a voltage controlled filter having an adjustable frequency response, and coupled to said voltage controlled amplifier/attenuator, an output amplifier coupled to said voltage controlled filter, and

an earphone coupled to said output amplifier; and,

a full wave rectifier circuit coupled to said voltage controlled filter for producing a first voltage signal for controlling said voltage controlled filter via a first time function element and producing a second voltage signal for controlling said voltage controlled amplifier/attenuator; wherein

said full wave rectifier circuit including two parallel branches, a first transistor with a first emitter-collector path disposed in one of said branches, a second transistor with a second emitter-collector path disposed within the other of said branches, at least one resistor, said first and second emitter-collector paths being connected in series with said at least one resistor, a diode connecting the base of said second transistor to the collector of said first transistor; a second resistor connecting the base of said first transistor to the base of said second transistor, and a third resistor connecting the collector of said first transistor to the base of said first transistor, whereas said second voltage signal is coupled to the collector of said second transistor.

5,255,321

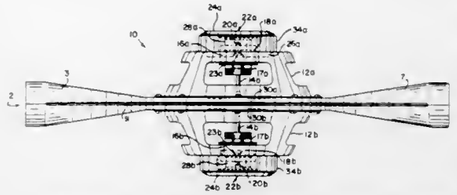
ACOUSTIC TRANSDUCER FOR AUTOMOTIVE NOISE CANCELLATION

Fancher M. Murray, Thousand Oaks, and Richard L. Weisman, Pasadena, both of Calif., assignors to Harman International Industries, Inc., Northridge, Calif.

Filed Dec. 5, 1990, Ser. No. 623,283

Int. Cl.[5] A61F *11/06*

U.S. Cl. 381—71 **6 Claims**



1. An acoustic transducer for producing pressure variations within a gas carrying duct in accordance with an applied electrical signal, comprising:

a conduit for insertion within the duct, having an inlet, an outlet, and a mid-portion;

wherein a part of the mid-portion of the conduit is relatively flexible so as to form a diaphragm, deformation of which produces pressure variations in the gas contained within the conduit;

means for deforming the diaphragm in a vibratory manner in accordance with an applied oscillatory electrical signal; and,

wherein the diaphragm deforming means is a stinger attached at one end to the diaphragm and oriented perpendicular thereto, and at the other end connected to an actuator coil of wire which is subjected to a static magnetic field.

5,255,322

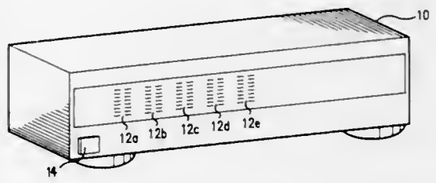
MULTI-ZONE AUDIO DISTRIBUTION AMPLIFIER

Robert P. Farinelli, Lexington, Ky.; Shelton R. Rose, Brentwood, and Michael Morgan, Nashville, both of Tenn., assignors to Square D Co., Palatine, Ill.

Filed Jan. 9, 1992, Ser. No. 819,087

Int. Cl.[5] H04R *27/00*

U.S. Cl. 381—84 **20 Claims**



1. An audio distribution amplifier system, comprising:

a housing having a first side and a second side;

a plurality of amplifier units, each unit including an input port for receiving an input stereo signal, at least one amplification circuit which amplifies the input stereo signal, an output port for providing access to the input stereo signal amplified by a preselected amplification factor, a printed circuit board having a surface upon which the amplification circuit is mounted and having interface and side edges, and a port panel that is connected to the printed circuit board and that is secured adjacent the second side of the housing;

an interface board including edge-connector means for providing power to each of the plurality of amplifier units; and

means, located adjacent the second side of the housing, for securing the amplifier unit within the housing;

wherein the amplifier units are modularly adaptable to the system such that each amplifier unit is operable independent of each other amplifier unit and is accessible via the second side at a position which receives the port panel.

5,255,323

DIGITAL SIGNAL PROCESSING DEVICE AND AUDIO APPARATUS USING THE SAME

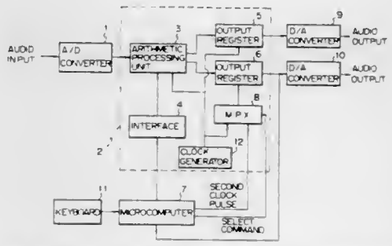
Hiroyuki Ishihara; Kazunaga Ida, both of Tokyo; Kazuo Watanabe, Koufu; Soichi Toyama, and Makio Yamaki, both of Tokyo, all of Japan, assignors to Pioneer Electronic Corporation and Pioneer Video Corporation, Tokyo, Japan

Continuation of Ser. No. 612,781, Nov. 14, 1990, abandoned. This application May 5, 1992, Ser. No. 880,302

Claims priority, application Japan, Apr. 2, 1990, 2-88782; Apr. 13, 1990, 2-98966; Apr. 27, 1990, 2-112744; Apr. 27, 1990, 2-112788

Int. Cl.[5] H03G *5/00*

U.S. Cl. 381—103 **9 Claims**



1. A digital audio signal processing device comprising:

arithmetic processing means for arithmetically processing an input digital audio signal at high speed in accordance with a predetermined program;

holding means for holding an output data from said arithmetic processing means and outputting a holding data at a timing synchronous with a clock pulse to be supplied thereto;

D/A converting means for converting the output holding data into an analog signal; and

clock pulse generating means for supplying a first clock pulse synchronous with an operation timing of said arithmetic processing means to the holding means;

said digital audio signal processing device further comprising control means for generating a select command in order to read said holding data of said holding means;

wherein said clock pulse generating means supplies a second clock pulse having a frequency lower than that of said first clock pulse to said holding means in response to said command.

5,255,324

DIGITALLY CONTROLLED AUDIO AMPLIFIER WITH VOLTAGE LIMITING

James E. Brewer, Canton; Peter S. Abowd, Farmington Hills, both of Mich., and Frank W. Raffaeli, Parma, Ohio, assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 26, 1990, Ser. No. 633,919

Int. Cl.[5] H03G *3/00, 11/00, 9/00*

U.S. Cl. 381—107 **12 Claims**

1. An audio system comprising:

microcontroller means for controlling operation of said audio system by generating digital commands in response to sensed inputs;

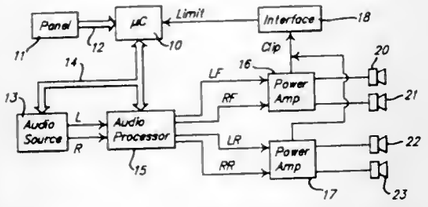
digitally-controlled audio processor means coupled to said

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microcontroller means for controlling a narrowband audio gain and a wideband audio gain of audio signals in response to said digital commands from said microcontroller means; wherein said digital commands comprise a wideband command signal and a narrowband command signal;

power amplifier means coupled to said audio processor means for amplifying said audio signal;

clip detect means coupled to said audio amplifier means for generating a clip signal indicative of the occurrence of clipping in said power amplifier means; and



interface means coupling said clip detect means with said microcontroller means for integrating said clip signal and for transmitting a digital limit signal to said microcontroller means when said integration indicates that clipping distortion exceeds a threshold;

said microcontroller means sensing said limit signal and altering said narrowband digital command to gradually reduce said narrowband gain while said limit signal is present until a predetermined narrowband gain is reached and altering said wideband command signal while simultaneously maintaining said narrowband command signal to gradually reduce said wideband gain if said limit signal persists.

5,255,325

SIGNAL PROCESSING CIRCUIT IN AN AUDIO DEVICE

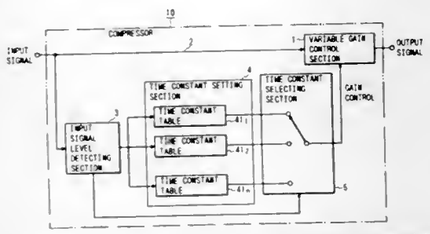
Shunsuke Ishimitsu; Hisashi Kihara, and Shuichi Mori, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 16, 1992, Ser. No. 913,620

Claims priority, application Japan, Oct. 9, 1991, 3-262071

Int. Cl.[5] H03G *3/00*

U.S. Cl. 381—107 **6 Claims**



1. A signal processing circuit in an audio device comprising:

variable gain control means for providing a variable amplification gain to an input signal in response to a gain control signal;

input signal level detecting means for detecting a level of the input signal and for generating a corresponding detection signal;

time constant setting means for storing a plurality of time constant tables, each one of the plurality of time constant tables including a set of input signal delay characteristics corresponding to a predetermined level of the input signal; and

time constant selecting means for selecting one of the plurality of time constant tables in the time constant setting section in response to the detection signal;

wherein the gain control signal is determined by the selected one of the plurality of time constant tables, such that the amplification gain of the variable gain control section is varied according to the selected on of the plurality of time constant tables.

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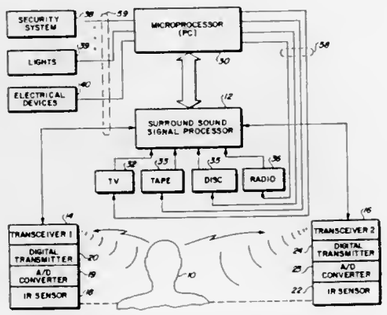
INTERACTIVE AUDIO CONTROL SYSTEM

Alden Stevenson, 3994 Belair Rd., Augusta, Ga. 30909

Filed May 18, 1992, Ser. No. 884,012

Int. Cl.[5] H03G *3/20*

U.S. Cl. 381—110 **15 Claims**



1. An interactive audio control system including in combination:

a signal processor means for supplying and receiving signals to be processed and including voice signature recognition means therein;

at least first and second transceiver means coupled with said processor means for reproducing sound signals received from said signal processor means and for supplying control signals to said signal processor means in response to spoken voice commands for controlling the sound reproduced by said first and second transceiver means in accordance with processed voice commands; and

means coupled with said first and second transceiver means for producing control signals supplied to said signal processor means for automatically changing the balance of sound signals reproduced by said first and second transceiver means in response to a predetermined external parameter.

5,255,327

VIBROSTIMULATIVE DEVICE

Yoichi Endo, Tokyo, Japan, assignor to Ken Hayashibara, Okayama, Japan

Continuation of Ser. No. 67,581, Jun. 24, 1987, abandoned. This application Oct. 30, 1989, Ser. No. 428,422

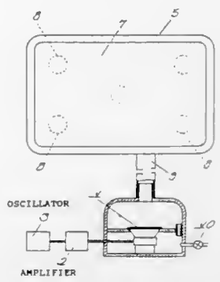
Claims priority, application Japan, Jul. 2, 1986, 61-155858

Int. Cl.[5] A61H *1/00*

U.S. Cl. 381—111 **14 Claims**

1. In a vibrostimulative device wherein the vibration from a vibration generator is transmitted to a vibratory member through a compressible closed gas space, the improvement comprising providing a compressible closed gas space of variable shape which is kept at a predetermined level of volume by a plurality of resilient support members separately provided in the compressible closed gas space, and supporting the vibratory member, with the resilient support members, whereby when the subject lies on the vibratory member, the weight of the subject, sustained by both compression in the compressible

closed gas space and the resilient support members, softens the vibratory member to help the subject to stably hold the body



thereon, and the compression efficiently transmits the vibration to provide comforts to the subject.

5,255,328

DYNAMIC MICROPHONE

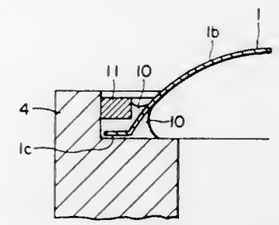
Yoshio Akiniwa, Tokyo, and Yoshio Kikuti, Sagamihara, both of Japan, assignors to Kabushiki Kaisha Audio-Technica, Japan

Filed Dec. 21, 1990, Ser. No. 632,023

Claims priority, application Japan, Dec. 28, 1989, 1-153160[U]

Int. Cl.[5] H04R *25/00*

U.S. Cl. 381—193 **2 Claims**



1. A dynamic microphone comprising:

a casing;

a diaphragm which is arranged in a front portion of the casing and can vibrate in accordance with a vibration from a sound source;

a magnet arranged behind the diaphragm;

a pole piece joined between a front surface of the magnet and the diaphragm;

a yoke plate joined to a rear surface of the magnet;

a voice coil which is arranged in a narrow gap between an outer peripheral surface of the pole piece and the yoke plate and is joined to the diaphragm so as to transverse a magnetic field formed by the magnet and can vibrate integratedly with the diaphragm; and

supporting means for supporting the diaphragm to the casing through a gel-like viscous liquid by filling the viscous liquid into gaps between the casing and the front and rear surfaces of the peripheral edge portion of an edge portion of the diaphragm.

5,255,329

HIGH-SPEED FAULT DETECTING METHOD AND APPARATUS

Katsuyuki Tanimizu, Hachioji; Shinichi Meguro, Numabukuro, and Akira Ishii, Tokyo, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

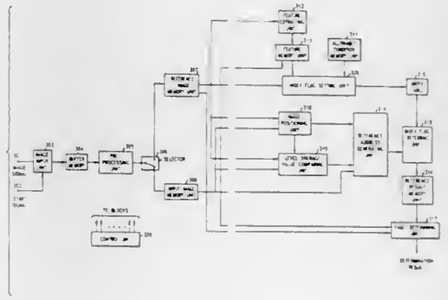
PCT No. PCT/JP88/00787, § 371 Date Mar. 29, 1989, § 102(e) Date Mar. 29, 1989, PCT Pub. No. WO89/01669, PCT Pub. Date Feb. 23, 1989

PCT Filed Aug. 9, 1988, Ser. No. 334,102

Claims priority, application Japan, Aug. 13, 1987, 62-200957; Aug. 8, 1988, 63-196110

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—8 **21 Claims**



1. In automatic comparative inspection of a printed color image having a plurality of gray scale levels of a number that can express full color values, a high-speed method for detecting fault generated in the printed image, said method comprising the steps of:

forming a reference image having a plurality of pixels,

preparing a table, which forms an index space, constituted by three axes including x- and y-coordinate axes of the reference image and an axis for a color number value having a multitude of flags corresponding in number to colors that can be assumed by each pixel of the reference image, and activating, for each pixel of the reference image, a base flag in the table having a three-dimensional address based on the coordinates of said pixel of the reference image and its color number value;

establishing, as a degree of conformance with respect to the values corresponding to the three-dimensional address of said base flag, an evaluation value based on the values of said base flag, of each of the flags around said base flag along the x- and y-axes, and of each of the flags around said base flag along the color axis; and

determining for each pixel in the image to be inspected the three-dimensional address of said pixel based on coordinate values and color number value of said pixel, and comparing the values of each pixel of the inspected image with the values of the corresponding pixel of the reference image and establishing that correspondence between each of the pixels in the reference image with each of the pixels in the inspected image is achieved when the values of the inspected pixels deviate from the values of the reference pixels by amounts falling within a preset threshold.

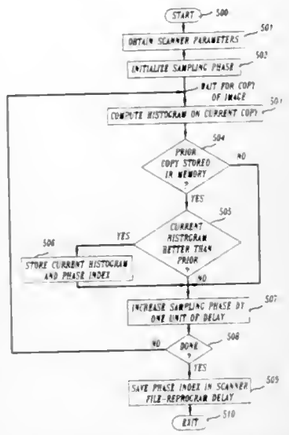
VOL 1155 ISS 3 OCT 19 1993 UMI

5,255,330

IMAGE ACQUISITION SAMPLE CLOCK PHASE CONTROL EMPLOYING HISTOGRAM ANALYSIS

Tu-Chuong Huynh, Manalapan, and Byung H. Lee, Holmdel, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 3, 1990, Ser. No. 592,396
Int. Cl.[5] G06K *9/66*
U.S. Cl. 382—18 **9 Claims**



1. Apparatus for adjusting the phase of a sampling signal having an initial phase, said sampling signal being used to digitally sample external signals forming individual frames of signals, said apparatus comprising

a memory,

means for sampling a predetermined number of said frames of external signals and for storing the results obtained from sampling each of said frames in said memory, wherein individual ones of said external signals of each of said frames define text when they are displayed on a display,

means, operative following the sampling of each of said predetermined number of frames of external signals, for incrementing the phase of said sampling signal by a predetermined amount of time, and

means, operative following the sampling of the last of said predetermined number of frames, for adjusting the phase of said sampling signal to the phase that was used to obtain that frame of stored results that is most indicative of said text.

5,255,331

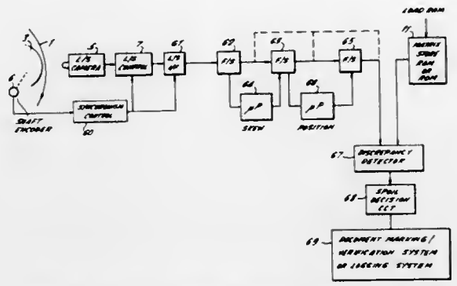
PRODUCTION OF AN IMAGE MODEL AND INSPECTION OF A PIXEL REPRESENTATION OF AN IMAGE

Bruce Kelly, Woodford Green, England, assignor to The Governor and Company of the Bank of England, London, England

Continuation of Ser. No. 743,929, Jun. 12, 1985, abandoned, which is a continuation-in-part of Ser. No. 632,967, Jun. 20, 1984, abandoned. This application Jan. 9, 1991, Ser. No. 639,076
Claims priority, application United Kingdom, Jun. 22, 1984, 8415996
Int. Cl.[5] G06K *9/38*
U.S. Cl. 382—50 **37 Claims**

1. Apparatus for comparing a secondary image composed of secondary image pixels with a master image composed of master image pixels, each of said pixels having a brightness value, the apparatus comprising:

means for providing, for each of a multiplicity of selected master image pixels, a respective digital signal having at least one signal element which represents a predetermined range of tolerance of the brightness value of the respective selected master image pixel; wherein said respective digital signal comprises a plurality of signal elements each of which is associated with a respective predetermined range of brightness and has a first signal value when the respective master image pixel and each of a plurality of master image pixels neighboring said respective master image pixel have brightness values which are within the respective range of brightness and a second signal value when



any one of said respective master image pixel and said pixels neighboring said respective master image pixel has a brightness value not within the respective range of brightness; and

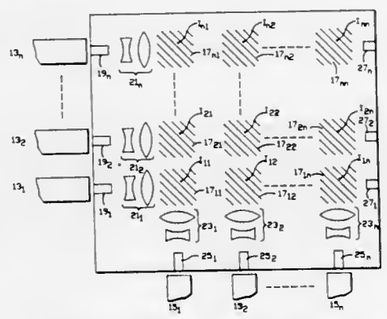
comparison means responsive to the digital signals for testing the brightness value of each of a multiplicity of selected secondary image pixels, each of which nominally corresponds to a respective one of said selected master image pixels, against the said predetermined range.

5,255,332

NXN OPTICAL CROSSBAR SWITCH MATRIX

David F. Welch, Palo Alto; Donald R. Scifres, San Jose; Robert G. Waarts, Palo Alto; Amos A. Hardy, Stanford; David G. Mehuys, and Stephen O'Brien, both of Sunnyvale, all of Calif., assignors to SDL, Inc., San Jose, Calif.

Filed Jul. 16, 1992, Ser. No. 915,918
Int. Cl.[5] G02B *6/36*
U.S. Cl. 385—17 **13 Claims**



1. An optical interconnection network comprising

a plurality of grating reflectors formed on a substrate in a matrix of rows and columns, each having firs and second states with respect to a received optical signal,

means for receiving and directing optical signal inputs in a first set of optical paths through rows of said grating reflectors, and

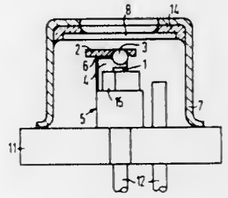
means applying a bias voltage to said grating reflectors for switching each said grating reflector to a selected state, such that optical signals directed onto grating reflectors in said first state continue propagating along said optical paths of said first set unperturbed by said grating reflectors to other grating reflectors in said rows, and such that optical signals directed onto grating reflectors in said second state are reflected by said grating reflectors form optical paths of said first set into optical paths of a second set directed through columns of said grating reflectors to form optical signal outputs.

5,255,333

OPTO-ELECTRONIC TRANSDUCER ARRANGEMENT HAVING A LENS-TYPE OPTICAL COUPLING

Hans-Ludwig Althaus, Lappersdorf; Ralf Dietrich, Munich; Erich Hufgard, Regensburg, and Werner Spaeth, Holzkirchen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 564,605, Aug. 9, 1990, abandoned. This application Jun. 11, 1992, Ser. No. 896,918
Claims priority, application European Pat. Off., Aug. 9, 1989, 89114735
Int. Cl.[5] G02B *6/28*
U.S. Cl. 385—33 **24 Claims**



1. An opto-electronic transducer arrangement comprising:

a transducer component having a beam axis;

an optical coupling lens;

a lens carrier holding the optical coupling lens;

a common carrier in which said transducer is disposed having a fastening part disposed immediately above and covering said transducer;

fastening layer means, disposed between and directly joining the fastening part of the common carrier and the lens carrier, for adjusting the position of the optical coupling lens relative to said fastening layer means;

said transducer component, said lens carrier, said optical coupling lens and said common carrier all being directly connected as a unit in a spacial relationship relative to one another with the bean axis of the transducer component being substantially perpendicular to said fastening layer means.

5,255,334

DIRECTIONAL COUPLER TYPE OPTICAL DEVICE AND A DRIVING METHOD THEREFOR

Hon-Ming Mak, Ichihara, and Hisaharu Yanagawa, Tokyo, both of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

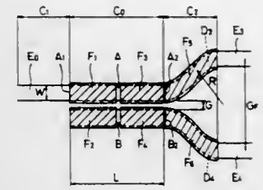
Filed May 29, 1992, Ser. No. 891,411
Claims priority, application Japan, Jun. 3, 1991, 3-131163; Jun. 3, 1991, 3-131164; Jun. 7, 1991, 3-136289; Jun. 7, 1991, 3-136290
Int. Cl.[5] G02B *6/10*
U.S. Cl. 385—41 **26 Claims**

1. A directional coupler type optical device, comprising:

an interaction region including two first optical waveguides with equal propagation constants arranged parallel to each other, and propagation constant control means on the first optical waveguides for controlling the respective propagation constants of the first optical waveguides;

an incidence-side lead region including a second optical waveguide optically connected to an incidence end of one of the two first optical waveguides;

an emergence-side lead region including two third optical waveguides each optically connected at one end thereof to an emergence end of a corresponding one of said two first optical waveguides, said third optical waveguides



diverging from each other with a suitable distance between them such that sufficient spacing for fiber connections is provided; and

coupling control means on the emergence-side lead region for controlling coupling between the two third optical waveguides.

5,255,335

OPTICAL FIBER COUPLER AND ITS MANUFACTURING METHOD

Hiroyuki Sasaki; Masato Shimamura, both of Tokyo; Yoshinori Namihira, Hachioji, and Yoshihiro Yoshida, Omiya, all of Japan, assignors to Japan Aviation Electronics Industry Limited and Kokusai Denshin Denwa Co., Ltd., both of Tokyo, Japan

Filed Apr. 15, 1992, Ser. No. 868,522
Claims priority, application Japan, Apr. 23, 1991, 3-091904
Int. Cl.[5] G02B *6/00, 6/36*
U.S. Cl. 385—43 **4 Claims**



1. An optical fiber coupler of a WDM type having an optical coupling portion of reduced length for a given coupling coefficient, said WDM coupler being formed by fusing together at least two optical fibers and stretching them to form an optical coupling portion between said fibers, said WDM coupler including means permitting the required length of said optical coupling portion to be reduced comprising an optical coupling control portion disposed between and physically separating claddings covering cores of said at least two optical fibers in said optical coupling portion, said optical coupling control portion having a refractive index different from the refractive indexes of each of said claddings.

5,255,336

INJECTION MOLDED OPTICAL COUPLING ELEMENTS

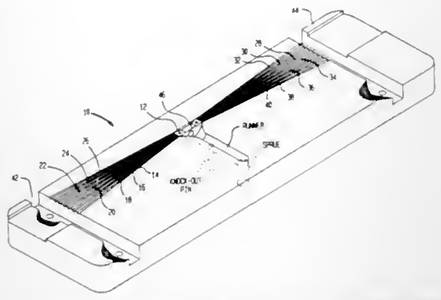
James E. Kuder, Fanwood, and Kevin F. Manning, Peapack, both of N.J., assignors to Hoechst Celanese Corp., Somerville, N.J.

Filed Apr. 20, 1992, Ser. No. 870,652
Int. Cl.[5] G02B *6/00, 6/36*
U.S. Cl. 385—46 **20 Claims**

1. A unitary injection molded waveguiding optical element

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comprising a light-propagating body member defining a propagation axis and integrally formed therewith at least one light coupling portion thereof, said light coupling portion projecting outwardly from said body member and being operable to couple light with said light propagating member, said light coupling portion being arranged such that it forms an angle of



about twenty five degrees or less with said propagation axis of said light-propagating member, said light propagating member and said light coupling portion defining an optical junction substantially free from lateral discontinuities such that said junction has a continuous waveguiding profile in the direction of propagation.

5,255,337

SPLICE CASE FOR OPTICAL FIBRE CABLE

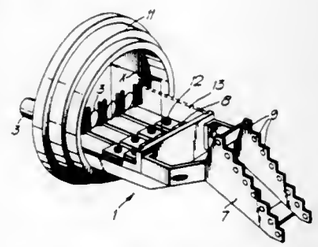
Karel F. W. Theys, Tielt-Winge, and Etienne R. Laeremans, Scherpenheuvel-Zichem, both of Belgium, assignors to N.V. Raychem S.A., Belgium

Continuation of Ser. No. 721,587, Jul. 17, 1991, abandoned. This application Jan. 19, 1993, Ser. No. 8,227

Claims priority, application United Kingdom, Jan. 17, 1989, 8900932

Int. Cl.[5] G02B 6/35

U.S. Cl. 385—135 20 Claims



1. A cable splice enclosure comprising:

a base having an outlet capable of receiving a cable and

a hollow cover which can be fixed to the base to close at least partially the enclosure such that the adjacent external surfaces of the base and cover lie substantially mutually flush:

in which the base and cover have means which can present their separation, said means lying substantially flush with or below said adjacent said external surfaces, and in which the cover and the base have projections that can mate in interdigitated fashion.

5,255,338

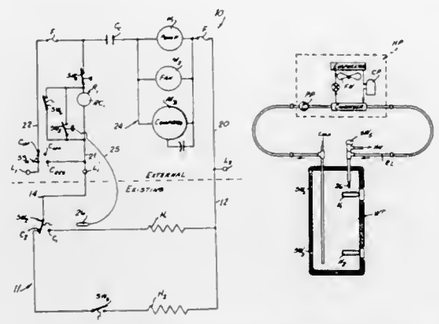
HEAT PUMP WATER HEATER CONTROL CIRCUIT

Glen P. Robinson, Jr., Atlanta, and Andrew L. Blackshaw, Dunwoody, both of Ga., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jul. 12, 1991, Ser. No. 729,418

Int. Cl.[5] H05B 3/78; F24H 1/20

U.S. Cl. 392—451 17 Claims



1. A thermostatic control circuit adapted to control the operation of both existing electrically powered conventional electric resistance upper and lower heating elements in the water tank in an electric hot water heater and a water heating heat pump where the existing resistance heating elements are normally powered through an existing thermostatic switch network having a lower switch responsive to the temperature of the water in the lower portion of the water tank to close in response to the water in the lower portion of the water tank dropping below a lower prescribed threshold value and an upper switch responsive to the temperature of the water in the upper portion of the water tank to shift from a first position to a second position in response to the temperature of the water in the upper portion of the water tank dropping below an upper prescribed threshold value, where the lower heating element is connected to line voltage from an electrical power source through the lower switch and the upper switch in series in response to said lower switch being closed and said upper switch being in said first position, where the upper heating element is connected to line voltage from the electrical power source in response to said upper switch being the second position, and where the lower heating element is disabled in response the upper switch being in the second position so as to produce an electrical power output in response to the temperature of water in the lower portion of the water tank being below the lower prescribed threshold level, said thermostatic control circuit comprising:

an impedance serially connecting said existing resistance heating elements to the electrical power output on said existing thermostatic switch network, said impedance having a sufficiently high impedance to reduce the current flow through said existing resistance heating elements to a level to substantially prevent the operation thereof when said existing thermostatic switch network provides line voltage at the electrical power output;

auxiliary control means operatively associated with said impedance and responsive to line voltage applied to said impedance to connect said water heating heat pump to line voltage to operate same; and

bypass switch means in parallel with said impedance for shorting out said impedance, said bypass switch means operable independently of the upper switch in the existing thermostatic switch circuit and responsive only to the temperature of the water at a prescribed upper position in the upper portion of the water tank dropping below a prescribed lower level to disable said heat pump while connecting said heating elements directly to line voltage through the existing thermostatic switch circuit to raise the amount of current flow through said heating elements to a level for at least the upper existing resistance heating element to heat the water and to again open responsive to the temperature of the water at said prescribed upper position in the water tank rising above a prescribed cutoff level to re-activate said heat pump while disabling said heating elements to automatically return the control of said existing resistance heating elements and water heating heat pump back to said impedance and said auxiliary control means as long as the temperature at said prescribed upper position is above said prescribed cutoff level.

5,255,339

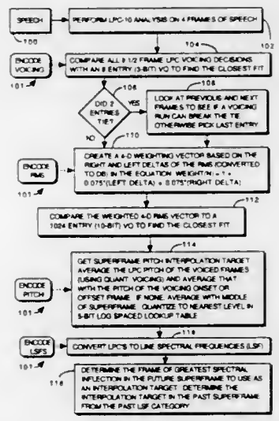
LOW BIT RATE VOCODER MEANS AND METHOD

Bruce A. Fette, Mesa, and Cynthia A. Jaskie, Scottsdale, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 19, 1991, Ser. No. 732,977

Int. Cl.[5] G10L 9/04

U.S. Cl. 395—2 19 Claims



1. A method of analyzing and coding input speech, wherein the input speech is divided into frames characterized at least by spectral information, the method comprising steps of:

forming superframes of N≧3 frames;

choosing S combinations of the N frames two at a time, where S=SUM(N−m) for m=1 to N to provide S sets of frame pairs;

quantizing spectral information of the S sets of frame pairs to provide S quantized spectral information values;

determining a first set of selected values corresponding to one of the S quantized spectral information values which produces least error when compared to input speech spectral information; and

coding the first set of selected values to provide coded signals representing input speech.

5,255,340

METHOD FOR DETECTING VOICE PRESENCE ON A COMMUNICATION LINE

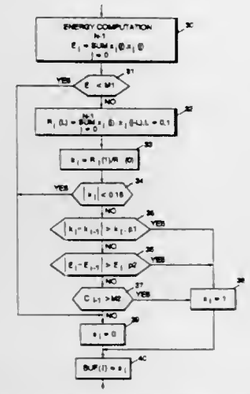
Charles Arnaud, Villeneuve-Loubet, and Michele Rosso, Saint-Jeannet, both of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 10, 1992, Ser. No. 927,049

Claims priority, application European Pat. Off., Oct. 25, 1991, 91480162

Int. Cl.[5] G10L 5/00

U.S. Cl. 395—2 4 Claims



1. A method for detecting voice presence on a communication line, in a system where communication data are incoming in the form of a series of successive binary samples, of which N are stored so as to successively make up an input block of samples, said method being characterized in that it comprises, after each input block, the steps of:

determining the stationary or non stationary state of the current said input block,

deciding voice presence in the incoming communication data if more than M3 non stationary states have been determined within the last M said input blocks including the current block, where M3 and M are arbitrarily selected parameter values

deciding end of voice presence if no non stationary states have been determined within the said last M said input blocks, including the current said input block;

wherein said step of deciding voice presence includes setting a Voice Presence flag to 1 if

the Voice Presence flag has been set to 1 at the previous said input block, and at least one non stationary state has been determined within M said input blocks preceding and including the current said input block, or

the Voice Presence flag has been set to 0 at the previous input block, but the number of non stationary determined states exceeds M3, and

the step of deciding end of voice presence includes setting a Voice Presence flag to 0 if

the Voice Presence flag has been set to 1 at the previous said input block and stationary states only have been determined within M said input blocks preceding and including the current said input block, or

the Voice Presence flag has been set to 0 at the previous said input block, but the number of non stationary determined states is less or equal than M3; and wherein the step of determining the stationary or non stationary state of the current said input block i includes the steps of

computing current signal energy for the current said input block,

if said current signal energy is lower than a threshold M1 , determining the current said input block to be stationary, where M1 is an arbitrarily selected parameter, otherwise

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computing the current PARCOR coefficient for the current said input block

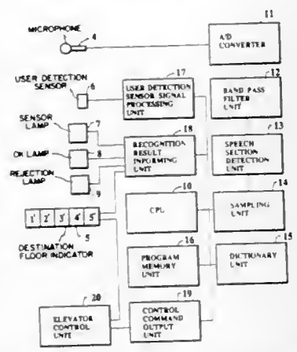
if the absolute value of the difference between said current PARCOR coefficient and the said PARCOR coefficient computed at the preceding said input block is lower than a fraction p1, which p1 is an arbitrarily selected parameter, of said current PARCOR coefficient, and if the absolute value of the difference between said current signal energy and the signal energy computed at the preceding said input block is lower than a fraction p2, which p2 is an arbitrarily selected parameter, of said current signal energy, and the number of non stationary determined states within M said input blocks preceding but not including the current said input block is lower than M2, which is an arbitrarily selected parameter, determining the current said input block to be stationary, otherwise determining the current said input block to be non stationary.

5,255,341

COMMAND INPUT DEVICE FOR VOICE CONTROLLABLE ELEVATOR SYSTEM

Yutaka Nakajima, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 564,614, Aug. 9, 1990, abandoned. This application Aug. 26, 1992, Ser. No. 934,305
Claims priority, application Japan, Aug. 14, 1989, 1-207983
Int. Cl.[5] G10L *5/00*
U.S. Cl. 395—2 **13 Claims**



1. A command input device for a voice controllable elevator system operated by an elevator control unit, comprising:

microphone means for receiving a voice command given by a user;

speech recognition means for recognizing the command;

sensor means for detecting the presence of the user within a prescribed proximity range of the microphone means initiated by a motion of the user toward the microphone means; and

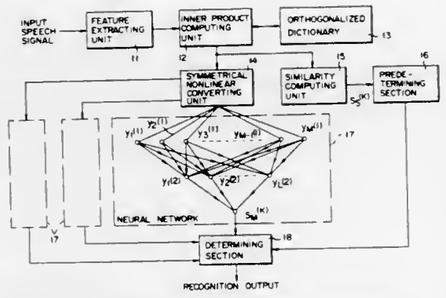
command output means connected with the speech recognition means and the sensor means for outputting the command recognized by the speech recognition means to the elevator control unit of the elevator system, in response to a termination of a detection of the presence of the user by the sensor means caused by a motion of the user away from the microphone means to a location outside of the prescribed proximity range, the command output means determining the end of the command given by the user, to be outputted to the elevator control unit, according to the termination of the detection of the presence of the user by the sensor means.

5,255,342

PATTERN RECOGNITION SYSTEM AND METHOD USING NEURAL NETWORK

Tsuneo Nitta, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 447,405, Dec. 7, 1989, abandoned. This application Dec. 17, 1992, Ser. No. 993,979
Claims priority, application Japan, Dec. 20, 1988, 63-321141
Int. Cl.[5] G10L *9/04*
U.S. Cl. 395—2 **4 Claims**



1. A speech pattern recognition system comprising:

speech input means for inputting a speech pattern to be recognized;

feature extracting means for extracting feature vectors from the input speech pattern;

dictionary mean for storing a plurality of orthogonalized reference patterns, which are equal to eigenvectors calculated using Karhunen-Loeve (KL) expansion, and whose categories are known;

inner product computing means, provided for each category, for computing inner products of the input speech pattern, using said feature vectors, whose category is unknown and the orthogonalized reference patterns of a category which are stored in said dictionary means and whose category is known;

converting means, provided for each category, for nonlinearly converting the inner product of a category, which is computed by said inner product computing means, in accordance with a positive-negative symmetrical nonlinear function;

evaluation value computing means, provided for each category and each evaluation value computing means including a multi-layer neural network whose elements each include multiplier means for multiplying an input signal from a lower adjacent layer by a preset weight coefficient and being connected to all elements constituting an upper adjacent layer, for computing an evaluation value of a category using the nonlinearly converted values calculated by said converting means and weight coefficients which are preset in said neural network of a category based on a discriminatively trained Back Propagation (BP) algorithm;

comparing means for comparing the evaluation values obtained by said evaluation value computing means using said neural networks with other evaluation values; and

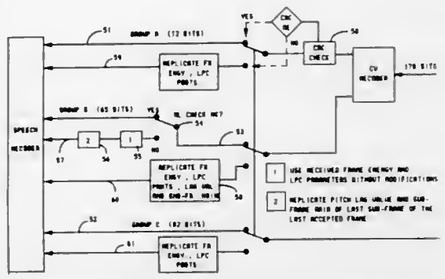
discriminating means for outputting a category to which the input speech pattern belongs as a recognition result using comparison results of said comparing means.

5,255,343

METHOD FOR DETECTING AND MASKING BAD FRAMES IN CODED SPEECH SIGNALS

Huan-Yu Su, St-Bruno, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jun. 26, 1992, Ser. No. 904,638
Int. Cl.[5] G10L *5/00*
U.S. Cl. 395—2.51 **5 Claims**



1. A method of improving the detection and masking of bad frames in a coded speech signal resulting from channel transmission errors, said coded speech signal having a first group of bits comprising the most significant bits of said coded speech signal, error detection bits and error correction bits, a second group of bits comprising the second most significant bits and error correction bits and a third group of bits comprising the least significant bits, said method comprising the steps of:

de-interleaving said coded signal to obtain a first series of bits comprising said first and second group of bits and a second series of bits comprising said third group of bits;

convolutionally decoding said first series of bits for recovering said first and second group of bits;

performing a Cyclic Redundancy Code (CRC) check on recovered bits of said first group;

if said CRC check is successful, utilizing said third group of bits and said recovered bits of said first group for speech decoding and performing a maximum likelihood check on said second group of bits;

if said maximum likelihood check is successful, utilizing said recovered bits of said second group for speech decoding; and

if said maximum likelihood check is unsuccessful, replicating the pitch lag value and sub-frame gain for each sub-frame of said bad frame, from the last sub-frame of the previously accepted frame.

5,255,344

INFERENCE RULE DETERMINING METHOD AND INFERENCE DEVICE

Hideyuki Takagi, Kyoto, and Isao Hayashi, Toyonaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 459,815, Jan. 17, 1990, Pat. No. 5,168,549. This application Jun. 26, 1992, Ser. No. 904,690
Claims priority, application Japan, May 20, 1988, 63-124354
Int. Cl.[5] G05B *13/00*
U.S. Cl. 395—3 **1 Claim**

1. A method of determining fuzzy inference rules for an adjusting device to adjust output characteristics of a membership value determiner in an inference device to be used in an outer system,

said inference device comprising a system variable input device for receiving input signals from said outer system and for generating an input vector from said input signals to the inference device;

the membership value determiner for generating a membership value indicative of the degree of attribution of the input vector to an IF part of a fuzzy inference rule of an IF-THEN type, the input vector being received from the system variable input device;

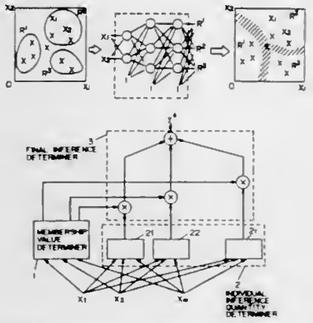
an individual inference quantity determiner for generating a first inference quantity of the input vector corresponding to the THEN part of a fuzzy inference rule, the input vector being received from the system variable input device;

a final inference quantity determiner for determining a final inference quantity by processing values attained from the inference quantities generated by the individual inference quantity determiner and the corresponding membership values; and

an adjusting device, receiving said input vector and said observed output from said system variable input device and said final inference quantity, for adjusting output characteristics of the membership value determiner,

wherein said membership value determiner includes a signal processing network having input terminals receiving input vectors from the system variable input device, output terminals and an artificial neural network structure including a plurality of multiple input-single output signal processors each receiving plural respective outputs from one or more others of said signal processors and providing one output to one or more others of said signal processors;

each of the multiple input-single output signal processors having an artificial neural network structure comprising a signal processor which includes a memory for storing a



plurality of weighting coefficients to define membership values;

a plurality of multipliers for weighting the input vector from the system variable input device with the weighting coefficients read from the memory;

at least one adder for generating output data by adding plural weighted input vectors from said multipliers; and

a threshold processor for generating an output as a membership value by clipping the output data from said adders within a predetermined range;

the method comprising the steps of:

(a) receiving and clustering the input vectors from the system variable input device and providing class numbers based on degree of similarity of the input vector, said class numbers corresponding to the output terminals of the membership value determiner respectively;

(b) calculating an ideal output vector on the assumption that the ideal output vector is output from only the corresponding output terminals of the signal processing network corresponding to the class numbers provided as the result of clustering;

(c) obtaining a difference between the ideal output vector and said first inference quantity from the signal processing network when said network receives the input vector from the system variable input device;

(d) altering the weighting coefficients stored in the memory in order to decrease the obtained difference;

(e) reiterating the above steps until the difference becomes

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less than a predetermined value so that a proper output characteristic is obtained for the signal processing network; and

(f) fixing the output characteristic of the membership value determiner based on the output characteristics of the signal processing network after the reiterating step (e) is performed.

5,255,345

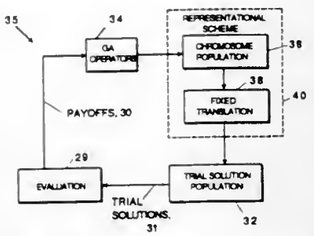
GENETIC ALGORITHM

Craig G. Shaefer, Charlestown, Mass., assignor to The Rowland Institute for Science, Inc., Cambridge, Mass.

Division of Ser. No. 865,783, Apr. 7, 1992, which is a continuation of Ser. No. 760,818, Sep. 17, 1991, abandoned, which is a continuation of Ser. No. 479,184, Feb. 12, 1990, abandoned, which is a continuation of Ser. No. 157,278, Feb. 17, 1988, abandoned. This application Sep. 1, 1992, Ser. No. 938,761

Int. Cl.[5] G06F *15/18*

U.S. Cl. 395—13 **11 Claims**



4. A computer method for selectively implementing at least two different problem solving algorithms on a computer, each algorithm being of the kind in which one or more trial solutions for a problem are represented by one or more tokens maintained in computer memory in accordance with a representational scheme, and in which the desired solution is reached by computer processing said tokens iteratively to modify their values, wherein in each iteration one or more computer-invoked operators may be applied to change either the token values or the trial solutions, said method comprising

storing in memory a set of computer-invokable available operators sufficient to perform multiple different problem solving algorithms,

a computer user selecting from the set of available operators a subset of operators for implementing one of the algorithms,

the computer performing the one algorithm using the subset of operators, and

repeating the selecting and performing steps for a second of the algorithms.

5,255,346

METHOD AND APPARATUS FOR DESIGN OF A VECTOR QUANTIZER

Frank H. Wu, Aurora, and Kalyan Ganesan, Englewood, both of Colo., assignors to U S West Advanced Technologies, Inc., Boulder, Colo.

Filed Dec. 28, 1989, Ser. No. 458,158

Int. Cl.[5] G06F *15/46;* **H04N** *9/32*

U.S. Cl. 395—23 **19 Claims**

1. A method for designing vector quantizers performed by a computer system including a processor, an input/output component and memory, wherein said method is controlled by said processor, the method comprising the steps of:

(a) acquiring via said input/output component training sequence of input vectors;

(b) forming a set of output vectors comprised of an initial output vector representative of said training sequence;

(c) splitting each of said output vectors in said set of output vectors into new output vectors, thereby forming a new set of output vectors;

(d) initializing a neighborhood as a function of the number of output vectors said set of output vectors;

(e) simulating a neural-network by arranging said set of output vectors as a single-layer perceptron model and storing said single-layer perceptron model in said memory;

(f) for each of said input vectors, performing the substeps of:

(i) associating an associated output vector to said input vector, termed associated input vector, wherein said associated output vector is an output vector that is closest to said associated input vector; and

(ii) readjusting and storing in said memory said associated output vector and all output vectors within said neighborhood of said associated output vector as a function of said associated input vector;

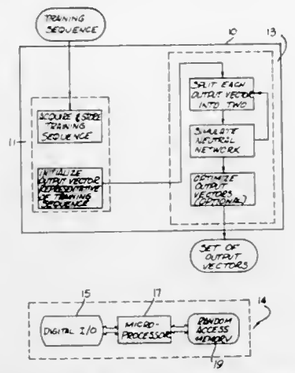
(g) calculating a relative distortion level for said output vectors and said input vectors;

(h) repeating steps (f) and (g) until said relative distortion level is less than or equal to a preselected optimization threshold level;

(i) reducing said neighborhood incrementally and repeating steps (f)–(h) until said neighborhood is zero; and

(j) repeating steps (c) through (i) until the number of output vectors in said set of output vectors equals a predetermined maximum number of output vectors,

wherein each of said steps and substeps are controlled by the processor, and whereby said set of output vectors represents said training sequence.



5,255,347

NEURAL NETWORK WITH LEARNING FUNCTION

Ikuo Matsuba, Zama, and Ichirou Sugita, Tokyo, both of Japan, assignors to Hitachi, Ltd. and Hitachi Keiyo Engineering Co., Ltd., both of Tokyo, Japan

Filed Apr. 23, 1991, Ser. No. 690,517

Claims priority, application Japan, Apr. 25, 1990, 2-107580

Int. Cl.[5] G10L *7/08*

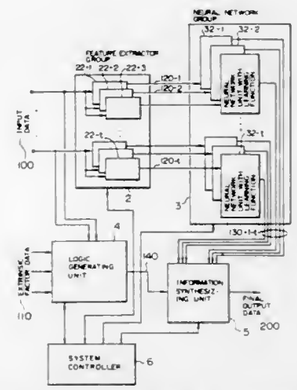
U.S. Cl. 395—23 **7 Claims**

1. A neural network system comprising:

feature extracting means for i) extracting N heterogeneous learning feature data, where N is an integer greater than one, from each of M data sets, where M is a positive integer each of which includes at least one learning data in a learning mode and ii) extracting N heterogeneous object feature data from at least one object data to be processed, in an execution mode;

a neural network including neurons and having N input layers and an output layer for learning a relation between each of the N learning feature data and a teacher data corresponding to the N learning feature data and a relation among the N learning feature data of each data set based on the N learning feature data of each set from said feature extracting means and a corresponding teacher data supplied thereto, in the learning mode, and for outputting a target data based on the learning result in response to input of the N object feature data from said feature extracting means in the execution mode, particular ones of said neurons being operatively coupled to the N input layers, respectively, such that the particular ones of said neurons can learn the relation among the N learning feature data; and,

learning control means for substantially simultaneously supplying each set of the N learning feature data and a corresponding teacher data to said neural network and for controlling said neural network to learn the relations in the learning mode.



5,255,348

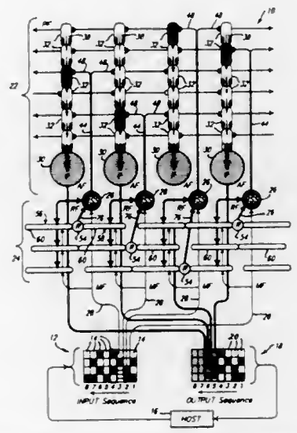
NEURAL NETWORK FOR LEARNING, RECOGNITION AND RECALL OF PATTERN SEQUENCES

Valeriy I. Nenov, 848 18th St., Apt. 5, Santa Monica, Calif. 90404

Filed Jun. 14, 1991, Ser. No. 715,573

Int. Cl.[5] G06F *15/18*

U.S. Cl. 395—24 **19 Claims**



19. A neural network for recognition of sequences of patterns, said neural network comprising:

a plurality of external and internal input means for receiving and transmitting data signals representing an element of one of said patterns;

a plurality of prediction means coupled to said external input means for producing an output signal value that is a prediction of a future data signal value in said temporal sequence pattern;

each prediction means including a plurality of interconnected dendritic compartments connected to an associated one of said internal input means for storing and transforming said input data signal values;

said prediction means including a processing element producing an output activation value at its output based on its inputs said processing element connected to at least one of said dendritic compartments, wherein said processing element includes means for producing an activation value which is a function of said transformed input signals form said plurality of dendritic compartments;

recognition means coupled to said external input means, and also to one associated prediction means output for producing an output signal only when a current prediction means output in response to a current input from said pattern matches the next external input data signal form a subsequent input from said pattern;

gate means with inputs coupled to the output of an associated prediction means and also coupled to the output of said recognition means, said gate means also coupled between said external input means and said internal input means, the gate means operative to selectively direct either the external input means or the prediction means output to said internal input means depending on the sate of the recognition means output, whereby when said current prediction means output matches the next external data signal, the prediction means produces its next output without an additional external input;

said internal input means providing a weighted connection form one of said gate means to one of said dendritic compartments in said associated prediction means and also to dendritic compartments in a plurality of other prediction means, said internal input means also provided a non-weighted connection to each of the other dendritic compartments in said associated prediction means;

said interconnected dendritic compartments in a given prediction means being arranged in a column-like structure with the bottom dendritic compartment in said column being connected to said processing element, and each dendritic compartment is connected to the one below it in the column, each dendritic compartment also including a positive long term memory means, a negative long term memory means and a short term memory means;

wherein said function used by said processing element to determine its activation value is proportional to the dot product of the difference between the data values in said positive and negative long term memory and the data values in said short term memories in the dendritic compartment.

5,255,349

ELECTRONIC NEURAL NETWORK FOR SOLVING "TRAVELING SALESMAN" AND SIMILAR GLOBAL OPTIMIZATION PROBLEMS

Anilkumar P. Thakoor, Pasadena; Alexander W. Moopenn, Hawthorne; Tuan A. Duong, South Pasadena, and Silvio P. Eberhardt, Pasadena, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuatioo-in-part of Ser. No. 470,664, Jan. 26, 1990, abandoned. This application Nov. 8, 1991, Ser. No. 789,567

Int. Cl.[5] G06F *15/46;* **G06G** *7/12*

U.S. Cl. 395—27 **29 Claims**

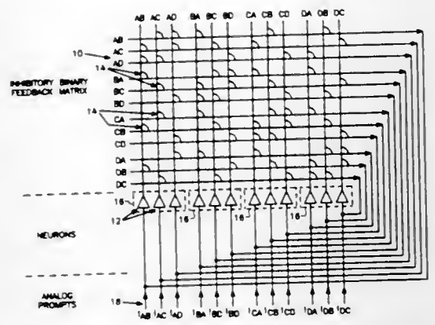
1. A high-speed neural network for solving global optimiza-

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tion problem involving selecting routing between a plurality of points comprising:

a binary synaptic array having a plurality of inputs and outputs and incorporating fixed rules of the problem being solved in a plurality of connecting binary inhibitory synapses;

b) a neuron array comprising a plurality of non-linear neuron elements each having an input and an output with said outputs of said non-linear neuron elements connected to respective ones of said inputs of said binary synaptic array;



c) analog prompting means connected to said inputs of said non-linear neuron elements for prompting said neuron array with analog voltages representing variables of the problem being solved; and,

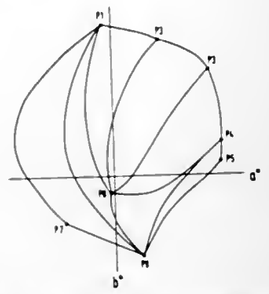
d) feedback means connected from said outputs of said binary synaptic array to respective ones of said inputs of said non-linear neuron elements, said outputs of said binary synaptic array also comprising the output of the neural network based processor.

5,255,350

PROCESS FOR COMPUTING DYEING AND PRINTING RECIPES IN ACCORDANCE WITH A GIVEN SHADE

Hanspeter Hermann, Lörrach, Fed. Rep. of Germany; Raymond Défago, Riehen, and Peter Franceschini, Movelier, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 22, 1991, Ser. No. 659,786
Claims priority, application Switzerland, Mar. 2, 1990, 674/90
Int. Cl.[5] G06K *15/00*
U.S. Cl. 395—109 11 Claims



1. A process for dyeing or printing of a given shade by color matching, which comprises

a) defining a given shade in a FTa*b* color space, where FT is a depth of shade value which, irrespective of hue, defines positions of equal color strength which by definition lie in a plane of the FTa*b* color space, and a* and b* are values of the CIELab color coordinate system;

b) determining a* and b* values at a given depth of shade for each dye to be used for color matching;

c) determining a* and b* values at a given depth of shade for mixtures of two dyes to be used for color matching;

d) segmenting the FTa*b* color space for each depth of shade plane into triangular levels by means of the a* and b* values of the dyes to be used for color matching, wherein the corner points of triangular levels correspond to the dyes to be used for color matching and the connecting line segment between two corner points corresponds to mixtures of the two dyes represented by the two corner points;

e) determining a ratio of dyes to be used in a dyeing or printing step by interpolation in a suitable segment from the known a* and b* values of the desired color at the desired depth of shade; and

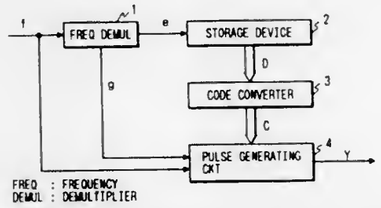
f) carrying out the dyeing or printing step with the ratio of the dyes obtained according to step e).

5,255,351

PULSE-WIDTH MODULATION DEVICE

Itsuo Takanashi, Kamakura; Takashi Yamamura; Toshikatsu Ichitou, both of Yokohama, and Kazunori Namiki, Yokosuka, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Feb. 14, 1992, Ser. No. 835,898
Claims priority, application Japan, Feb. 15, 1991, 3-042778
Int. Cl.[5] G06K *15/00*
U.S. Cl. 395—109 3 Claims



1. A pulse-width modulation device for controlling shapes of dots printed out by a printer by regulating shapes of pulses of pulse-width modulation signals, which respectively represent gray levels of micro-pixels of input image, according to code signals respectively indicating shapes of pulses of pulse-width modulation signals, each of which has a duration composed of time slots respectively indicating shapes of pulses of pulse-width modulation signals, each of which has a duration composed of time slots respectively corresponding to bits of image data representing a gray level of a micro-pixel, each dot being formed by printing a corresponding set of micro-pixels, the pulse-width modulation device comprising:

a code conversion means for converting image data corresponding to each micro-pixel of an input image into a code indicating a shape of a pulse of a corresponding pulse-width modulation signal, the code being predetermined according to a relative position of a micro-pixel in a corresponding set of micro-pixels, and for outputting a code signal representing the predetermined code, the indicated shape of the pulse being formed by making the corresponding pulse modulation signal have a high level at a predetermined corresponding number of time slots thereof, which time slots are serially connected from the time slot corresponding to the most significant bit of the image data or from the time slot corresponding to the least significant bit of the image data according to a gray level of each pixel; and

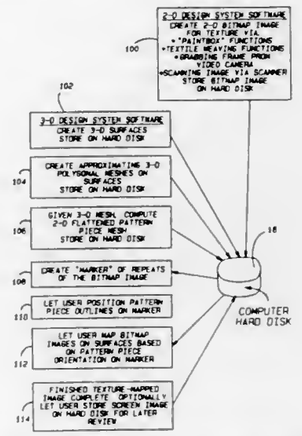
a pulse generating means for receiving the code signal and for generating the pulse of the predetermined pulse-width modulation signal according to the code in response to a predetermined clock signal, thereby preventing an occurrence of discontinuous pulses corresponding to a dot.

5,255,352

MAPPING OF TWO-DIMENSIONAL SURFACE DETAIL ON THREE-DIMENSIONAL SURFACES

Edward K. Falk, Rockford, Mich., assignor to Computer Design, Inc., Grand Rapids, Mich.

Continuation of Ser. No. 389,017, Aug. 3, 1989. This application Sep. 23, 1992, Ser. No. 949,741
Int. Cl.[5] G06F *15/72*
U.S. Cl. 395—125 11 Claims



1. In a computer-aided design system, a method for mapping two-dimensional pattern images onto a three-dimensional surface having a three-dimensional topology displayed on a graphic display, comprising:

generating a three-dimensional mesh conforming to the topology of the three-dimensional surface, said mesh including lines intersecting at nodal points, said lines forming polygonal elements having a given configuration between said nodal points;

converting said three-dimensional mesh to a two-dimensional pattern mesh, said two-dimensional pattern mesh having a pattern outline, a plurality of polygons corresponding to said polygonal elements, each of said polygons having edges directly corresponding to the distance between nodal points defined by the three-dimensional topology of the surface;

generating a bitmap image corresponding to the two-dimensional pattern image to be mapped, said bitmap image including a plurality of texture pixels;

orientating said two-dimensional pattern mesh upon said bitmap image of the pattern image such that said pattern outline is orientated relative to the pattern image to form a bitmap pattern piece image; and

mapping said bitmap pattern piece image to the displayed three-dimensional surface according to the configuration of said polygonal elements of said three-dimensional mesh to form a dimensionally correct image of the pattern image on the displayed three-dimensional surface, said mapping of said bitmap pattern piece image including:

assigning each edge of said polygonal elements of said two-dimensional mesh to an edge structure corresponding to a positional relationship of said polygon to other polygons within said two-dimensional mesh defined by two-dimensional positional coordinates;

sorting said edge structure in descending order into an edge list based on said two-dimensional positional coordinates of said edge structure of a polygon;

scanning said edge list to locate two opposing edge structures of a polygon, said opposing edge structures of a polygon forming an edge span therebetween;

interpolating a number of pixels along said edge span based upon the length of said edge span, the length of said edge span corresponding to the three-dimensional topology of the surface; and

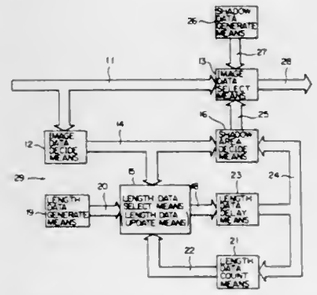
mapping said texture pixels of said bitmap image onto said edge span based upon the number of interpolated pixels.

5,255,353

THREE-DIMENSIONAL SHADOW PROCESSOR FOR AN IMAGE FORMING APPARATUS

Takanori Itoh, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 485,484, Nov. 27, 1990, abandoned. This application Apr. 20, 1992, Ser. No. 870,228
Claims priority, application Japan, Feb. 28, 1989, 1-47390; May 16, 1989, 1-122283
Int. Cl.[5] G06F *15/72*
U.S. Cl. 395—126 4 Claims



1. A three-dimensional shadow processor for an image forming apparatus, comprising:

shadow data generating means for generating shadow data;

shadow area specifying means coupled to said shadow data generating means for specifying a portion of an input image which will have a shadow area produced based upon input image data and in which said shadow data generating means comprises,

length data generating means coupled to said shadow data generating means for generating a set value of a length of a shadow to be generated;

image area decision means for determining whether or not an image is present on the basis of said input image data;

length data delaying means for delaying data representative of a remaining length of a shadow in a main scanning direction and subscanning direction;

length data counting means coupled to said length data delaying means for counting data representative of a remaining length of a shadow;

length data updating means coupled to said length data delaying means, said length data generating means and said length data counting means for selecting, on the basis of a result of decision by said image area decision means, either one of data delayed by said length data delaying means and representative of a remaining length of a shadow counted by said length data counting means and length data generated by said length data generating means, and updating data representative of any remaining length of a shadow in relationship with a predetermined value;

shadow area decision means for determining a shadow area in response to said image data and said data representative of a remaining length of a shadow having been updated and delayed after said selecting; and

image data selecting means for selectively outputting either

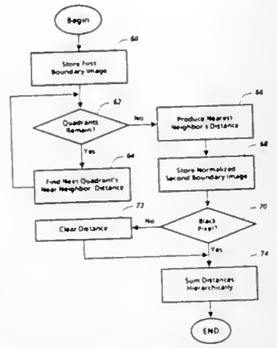
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one of said input image data and said shadow data responsive to an output from said shadow area decision means.

5,255,354
COMPARISON OF IMAGE SHAPES BASED ON NEAR NEIGHBOR DATA

James V. Mahoney, Sunnyvale, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 8, 1990, Ser. No. 535,091
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—133 **10 Claims**



1. A method of operating a system that includes memory and a processor, the processor including a plurality of processing units, each processing unit being connected for accessing data stored in the memory, the method comprising steps of:

for a first image that includes a plurality of pixels, storing in the memory a respective data item for each pixel, each pixel's respective data item including a first image pixel value; the respective data item of each pixel in the first image being stored so that a respective processing unit for the pixel can access the pixel's respective data item;

operating the processing units to produce, for each of the pixels in the first image, near neighbor distance data for the pixel, the near neighbor distance data indicating a distance to a near neighbor pixel whose first image pixel value meets a criterion; each pixel's processing unit producing the near neighbor distance data by operating on the pixel's respective data item; the step of operating the processing units to produce near neighbor distance data comprising substeps of:

finding, for each pixel in the first image, a set of near neighbor pixels that includes the near neighbor pixel; and

performing a hierarchical operation to produce, for each pixel's set of near neighbor pixels, a set of distance values indicating the distances to the near neighbor pixels;

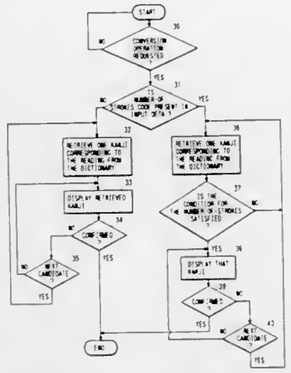
for a second image that includes a plurality of pixels, each mapping to a respective pixel of the first image, storing in the memory a respective data item for each pixel, each pixel's respective data item including a second image pixel value; the respective data item of each pixel in the second image being stored so that it can be accessed by a respective processing unit for the pixel; each pixel in the second image and the respective pixel of the first image both having the same respective processing unit; the pixels of the second image including a set of pixels whose pixel values meet the criterion; and

operating the processor to produce a measure of dissimilarity between the first and second images; the step of operating the processor to produce the measure of dissimilarity comprising a substep of producing, for the set of pixels of the second image whose pixel values meet the criterion, a sum of distances, the distances being the distances indicated by the near neighbor distance data of the respective pixels of the first image.

5,255,355
DOCUMENT PROCESSOR

Tadashi Suzuki, Saitama, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 10, 1990, Ser. No. 594,966
Int. Cl.[5] G06F *15/38*
U.S. Cl. 395—145 **7 Claims**



7. In a data processing system, a process of converting input data to kanji characters, wherein said system includes a central processing unit, a display apparatus having a display screen, an input apparatus, and memory, the process, performed by said central processing unit, comprised of the following steps:

receiving input data which includes characters representing a plurality of phonetic symbols and information designating the approximate number of kanji strokes corresponding to said phonetic symbols from said input apparatus;

receiving a command requesting conversion of said input data;

comparing said input data with the data stored in said memory, said memory containing data identifying kanji characters, phonetic symbols corresponding to each kanji character identified in said memory, and information corresponding to an approximate number of strokes of each of the kanji characters;

selecting at least one kanji character from the data stored in said memory which corresponds to said input data;

displaying said input data on said display screen of said display apparatus;

receiving a confirmation command indicating that the selected kanji character is correct.

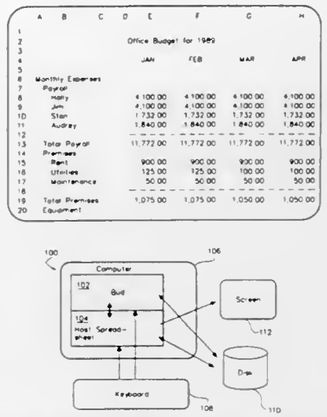
5,255,356
METHOD FOR HIDING AND SHOWING SPREADSHEET CELLS

Eric H. Michelman, Saratoga, and Devin E. Ben-Hur, Mountain View, both of Calif., assignors to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 359,678, May 31, 1989, abandoned. This application Dec. 14, 1992, Ser. No. 990,409
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—148 **25 Claims**

1. In a computer having a display device, an entry device, and a processor for executing a spreadsheet program, the spreadsheet program causing a plurality of intersecting rows and columns to be displayed on the display device, some of the plurality of rows having a predefined relationship with other rows, the predefined relationship being either dominant or subordinate, a method of hiding selected ones of the plurality of rows comprising the steps of:

a) automatically identifying a dominant row having a dominant relationship to at least one subordinate row;



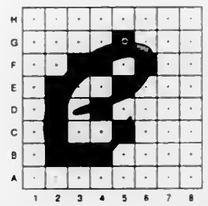
b) automatically selecting the at least one subordinate row having a subordinate relationship to the dominant row; and

c) hiding the selected at least one subordinate row such that the at least one subordinate row is not displayed on the display device.

5,255,357
METHOD FOR EDITING CHARACTER BIT MAPS AT SMALL SIZES USING CONNECTED RUNS

Michael Byron, Mountain View, and Thomas Malloy, Portola Valley, both of Calif., assignors to Adobe Systems Incorporated, Mountain View, Calif.

Continuation of Ser. No. 552,788, Jul. 13, 1990, abandoned. This application May 25, 1993, Ser. No. 67,333
Int. Cl.[5] G06F *15/62, 15/70*
U.S. Cl. 395—151 **12 Claims**

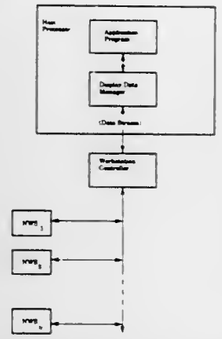


1. In a method of displaying a character having one or more black areas in the form of a plurality of pixels on a raster device which generates a plurality of horizontal scan lines in sequential order, wherein the character is described by an outline comprising one or more path segments; a cross is defined by the intersection of the character outline with the horizontal midline of a pixel; a cross pair is defined by two crosses which reside on the same scan line; runs of pixels are identified as the pixels between the two crosses of a cross pair, an improvement comprising the steps of: identifying where two of said runs collide with each other to cause a collision, and repairing the character by eliminating said collision between said two runs of pixels while maintaining the integrity of the character.

5,255,358
ACTION BAR PROCESSING ON NON-PROGRAMMABLE WORKSTATIONS

Leah J. H. Busboom, Oronoco; Stephen T. Eagen, and Harvey G. Kiel, both of Rochester, all of Minn., assignors to International Business Machines, Armonk, N.Y.

Filed Feb. 14, 1991, Ser. No. 655,874
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—153 **5 Claims**



1. In a computing system comprising a host processor, a workstation controller connected to the host processor, and a plurality of non-programmable workstations connected to the workstation controller, the improvement in presenting and processing action bars and pull-down menus at the workstation comprising:

a) means for transmitting a data stream from said host processor to said workstation controller, the data stream including information describing at least one action bar and a plurality of possible pull-down menu displays for a designated workstation;

b) means in said workstation controller for constructing a display panel to display an action bar from said action bar information, and means for transmitting said display panel construct to a designated one of said workstations;

c) means for displaying said action bar at said designated workstation, and means for transmitting an action bar keystroke signal from said designated workstation to said workstation controller, said action bar keystroke signal being representative of an action choice in said action bar display panel;

d) means in said workstation controller for constructing a pull-down menu display panel from said plurality of possible pull-down menu display panel to said designated workstation in response to said action bar keystroke signal; and

e) means for displaying said pull-down menu display panel at said designated workstation.

5,255,359
PICKING FUNCTION FOR A PIPELINE GRAPHICS SYSTEM USING HIERARCHICAL GRAPHICS STRUCTURES

Timothy J. Ebbers, Shokan; Daniel G. Gibbons, Ulster Park; David W. Li, Kingston; Bob C. Liang, West Hurley, and David C. Tannenbaum, Kingston, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

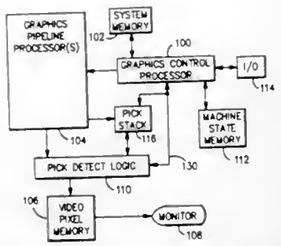
Filed Oct. 23, 1989, Ser. No. 425,781
Int. Cl.[5] G06F *3/153*
U.S. Cl. 395—161 **20 Claims**

1. In a graphics system in which graphics orders representing graphics primitives are organized as a hierarchy of structures at multiple levels with structures at higher levels invoking structures at lower levels, said orders being executed by a

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graphics pipeline having an input end and an output end, such that the structures currently being executed at said output end may differ from the structures currently being executed at said input end, said output end having a defined pick path made up of the structures currently being executed at said output end, apparatus for generating pick path data comprising:

means for detecting the interception of a predetermined pick window by a picked primitive being processed at said output end of said pipeline;



means for maintaining a stack storing pick path information indicating the pick path at said output end of said pipeline; and

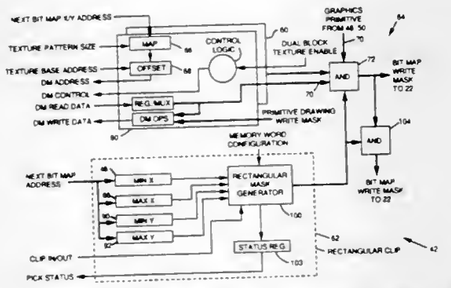
means for modifying said pick path information in said stack in response to the processing of said primitives at said output end of said pipeline, thereby to allow said system to return said pick path information at the time of detection of said picked primitive.

5,255,360

DUAL PROGRAMMABLE BLOCK TEXTURING AND COMPLEX CLIPPING IN A GRAPHICS RENDERING PROCESSOR

John M. Peaslee, and Jeffrey C. Malacarne, both of Chino Hills, Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Sep. 14, 1990, Ser. No. 582,696
Int. Cl.[5] G06F *15/20*
U.S. Cl. 395—162 **12 Claims**



1. A block texturing and complex clip mask processor for use in a graphics rendering processor which includes a graphics primitive generator means for generating graphic primitive signals and graphic primitive clip mask signals defining a clip mask window for masking drawing signals within and without the clip mask window, a display memory for receiving and storing texture pattern signals at predetermined addresses that define a texture pattern, and means for writing display signals to a bit map memory of a graphic display, the block texturing and clip mask processor comprising:

means for generating and storing texture patterns comprising texture pattern dimension signals and texture pattern address signals in the display memory;

means responsive to the texture pattern address and dimension signals for directly accessing a selected stored texture pattern from the display memory;

first combinational logic means for combining the graphic primitive clip mask, signals defining an arbitrarily shaped clip mask window, the selected texture pattern, and the texture pattern dimension signals to generate an arbitrarily shaped textured graphic primitive;

means for applying the arbitrarily shaped textured graphic primitive to predetermined address locations of the bit map memory of the graphic display; and

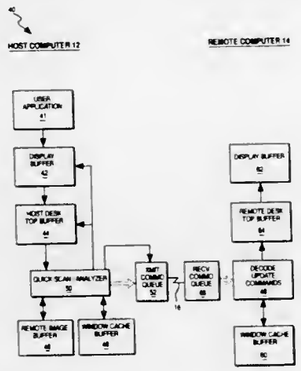
wherein two texture patterns are stored at two predetermined addresses in the display memory, and wherein the first combinational logic means includes means for combining one or both of the two texture patterns simultaneously and in sequence with the graphic primitive clip mask signals.

5,255,361

METHOD OF AND SYSTEM FOR UPDATING A DISPLAY UNIT

Janet R. Callaway; John M. McConaughy; Steven T. Pancoast, all of Austin, Tex., and Joan M. Thompson, Albuquerque, N. Mex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 287,751, Dec. 19, 1988. This application Apr. 4, 1991, Ser. No. 680,218
The portion of the term of this patent subsequent to Aug. 27, 2008, has been disclaimed.
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—162 **9 Claims**



1. In an information processing system having a host system which communicates with a remote system, a computer program, that executes on and controls said information processing system, to selectively update a remote display unit associated with said remote system to display information being stored at said host system, said computer program comprises:

means for determining differences between information being displayed on said remote display unit and said information being stored at said host system to be displayed on said remote display unit by comparing the contents of a host display buffer with the contents of a remote display buffer associated with said remote display unit;

means for selectively one of a plurality of change categories in response to said determining means; and

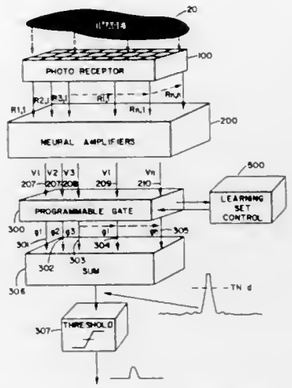
means for transmitting an update command from said host system to said remote system in response to said selected one of said plurality of change categories whereby only information which is different is transmitted to said remote system to update said remote display unit.

5,255,362

PHOTO STIMULATED AND CONTROLLED IMAGING NEURAL NETWORK

Robert W. Brandstetter, Levittown, and Nils J. Fonneland, Ronkonkama, both of N.Y., assignors to Grumman Aerospace Corporatioo, Bethpage, N.Y.

Filed Aug. 9, 1989, Ser. No. 391,471
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—163 **59 Claims**



31. A photostimulated imaging neural network for processing an image which is directly imaged as an input onto the neural network, comprising:

a direct imaging means utilizing light from a scene or an image of the scene for impressing an input image of light from the scene or image directly on said neural network as an input into said neural network;

a combined photo receptor and photo interconnect and response array means for converting said input image from said imaging means into a pattern of photo controlled electrical couplings to produce a plurality of electrical dendrite input signals, and for providing connectivity and temporal control for said network in response to a plurality of photo stimulus signals provided by a photo stimulus means;

a neuron amplifier array means having a plurality of individual electrical neuron amplifiers, said neuron amplifier array means providing a plurality of electrical axon output signals to a programmable gate array means in response to receipt of and stimulation by said plurality of electrical dendrite input signals from said combined photo receptor and photo interconnect and response array means, said programmable gate array means comprising an array of electrical gates which is configured by programming to perform a particular logical operation; and

a photo stimulus means for providing a light pattern which impinges on said combined photo receptor and photo interconnect and response array to form an operational network, said light pattern constituting said plurality of photo stimulus signals.

5,255,363

GRAPH-BASED PROGRAMMING SYSTEM AND ASSOCIATED METHOD

Mark R. Seyler, Portland, Oreg., assignor to Mentor Graphics Corporation, Wilsonville, Oreg.

Filed Jun. 19, 1990, Ser. No. 540,610
Int. Cl.[5] G06F *15/20*
U.S. Cl. 395—164 **10 Claims**

1. A graphical programming system, comprising:

an array of memory elements, each element for storing information;

means for displaying the memory elements as display areas of an initial size on a grid and for displaying options for manipulating the elements;

means for displaying a cursor over a memory element as information is entered therein;

entry means for entering information directly into a selected memory element;

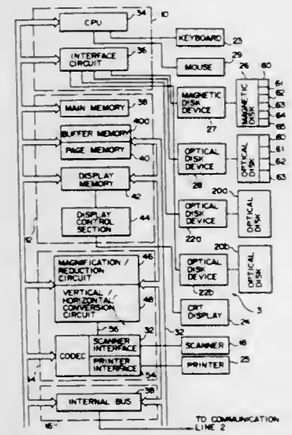
means for displaying information within the memory element as the information is entered; and means for adjusting the size of the display area of the memory element, if necessary, to provide for simultaneous display of all of the entered information within the area of the memory element.

5,255,364

ELECTRONIC FILING SYSTEM WHEREIN THE AUTOMATIC UPDATING OF RETRIEVAL DATA IS VOLUNTARILY INHIBITED

Kenji Hirose, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 30, 1990, Ser. No. 605,367
Claims priority, application Japan, Oct. 31, 1989, 1-281733
Int. Cl.[5] G06F *15/20*
U.S. Cl. 395—164 **11 Claims**



1. An electronic filing system for retrieving images recorded on a recording medium by using retrieval data which is updated in accordance with change of the images, comprising:

mode selecting means for selecting one reproduction modes including an inhibit mode, an automatic mode and a select mode, said mode selecting means including a keyboard having keys for designating the inhibit mode, the automatic mode and the select mode, means for generating a signal designating one of the reproduction modes selected by operating one of said keys, and memory means for storing the signal designating the selected reproduction mode;

determining means for determining whether or not memory contents recorded on the recording medium have been changed by another electronic filing system; and

data processing means of inhibiting updating of the retrieval data when said mode selecting means selects the inhibit mode, for updating the retrieval data when said mode selecting means selects the automatic mode, and for determining whether or not the updating of the retrieval data is performed when said mode selecting means selects the select mode, provided that said determining means determines that the memory contents of the recording medium have been changed.

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5,255,365

METHOD AND APPARATUS FOR COMPACTING DIGITAL TIME SERIES DATA FOR DISPLAY ON A DIGITAL OSCILLOSCOPE

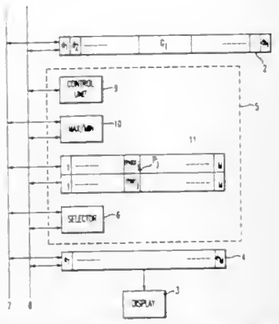
Viktor Hungerbühler, Meyrin, Switzerland, assignor to Le Croy S.A., Meyrin, Switzerland

Continuation of Ser. No. 376,526, Jul. 7, 1989, abandoned. This application Oct. 5, 1992, Ser. No. 956,556

Claims priority, application European Pat. Off., Jul. 12, 1988, 88810477

Int. Cl.[5] G06F *15/20*

U.S. Cl. 395—164 **11 Claims**



1. A method for displaying time series data points on a display screen of a digital oscilloscope wherein the screen of said digital oscilloscope has a horizontal resolution of M comprised of the steps of:

accepting an electrical signal, at at least one input, of said oscilloscope;

digitizing said accepted signal into digitized time series data of N data values, wherein N is a multiple of M;

storing a group of the digitized N data points, in an acquisition memory in M groups G_j, J=1,. . .,M, of L contiguous data points each, where M*L=N;

storing in an auxiliary memory, for each group G_j, a determined maximum and minimum value (max_j and min_j), as a pair of values (P_j);

selecting from said M pairs P_j, j=1,. . .,M_n in said auxiliary memory, a series of display values ej=1,. . .M, based upon an evaluation of those values in the pairs which include all extreme value excursions of said inputted signal and which represent an undistorted image of said signal;

shifting said selected series of display values into a display image memory; and

displaying an image based upon said display values stored in said display image memory.

5,255,366

ADDRESS PROCESSING UNIT FOR A GRAPHICS CONTROLLER

Wei K. Chia; Bor C. Kuo, both of Hsinchu; Jiunn M. Ju, Tainan, and Gen H. Chen, Hsinchu, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Nov. 25, 1991, Ser. No. 796,719

Int. Cl.[5] G06F *3/14*

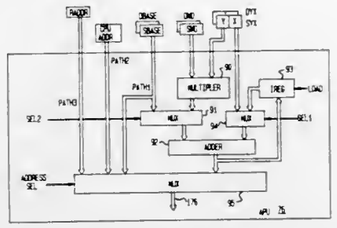
U.S. Cl. 395—166 **5 Claims**

1. An address processing unit for use in a graphics controller for processing addresses to memory means storing pixels comprising

a multiplexer for receiving addresses via plurality of address processing paths and for outputting row and column addresses for said memory means,

conversion means for converting two-dimensional addresses generated in said graphics controller into linear addresses and for transmitting the linear addresses to said multiplexer,

a first processing path wherein linear addresses generated in said graphics controller are transmitted directly to said multiplexer,



a second processing path wherein linear or two dimensional addresses generated by a host computer are transmitted directly to said multiplexer, and

a third processing path wherein screen refresh addresses are transmitted directly to said multiplexer.

5,255,367

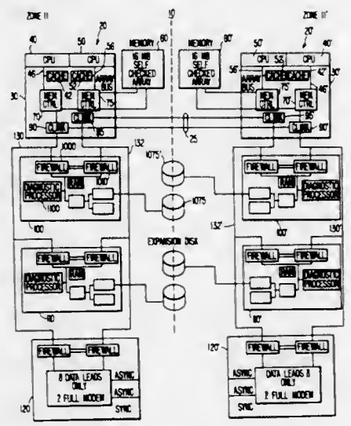
FAULT TOLERANT, SYNCHRONIZED TWIN COMPUTER SYSTEM WITH ERROR CHECKING OF I/O COMMUNICATION

William F. Bruckert, Northboro, Mass.; Thomas D. Bissett, Derry, N.H.; Dennis Mazur, Worcester, and John Munzer, Brookline, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 95,096, Sep. 4, 1987, abandoned. This application Jul. 19, 1989, Ser. No. 382,023

Int. Cl.[5] G06F *11/16*

U.S. Cl. 395—200 **21 Claims**



1. A dual processor computer system for connection to at least one input/output device comprising:

a first processing system including

a first central processing unit executing a series of data processing instructions including I/O instructions,

a first dedicated bus coupled to said first central processing unit;

a first memory unit coupled to said first central processing unit by said first dedicated bus,

first communications means coupled to said first central processing unit for transferring data into and out of said first processing system; and

a first data bus system coupled to said first communication means to transfer data to and from said first communication means;

a second processing system, operating independently of said first processing system, said second processing system including

a second central processing unit executing said series of data processing instructions including I/O instructions in the same order and approximately synchronously with said first central processing unit such that each of the instructions in said series of data processing instructions is executed approximately simultaneously by said first and second processing systems,

a second dedicated bus coupled to said second central processing unit;

a second memory unit coupled to said second central processing unit by said second dedicated bus, and

second communications means, coupled to said second central processing unit and to said first communications means, for transferring data into and out of said second processing system;

a second data bus system coupled to said second communications means for transferring data into and from said second communication means; and

checking means, coupled to said first and second data bus systems, for comparing the data transferred out of said first and second processing systems by said first and second communications means, to said at least one input/output device during the approximately synchronous execution of said series of data processing instructions by said first and second processing systems in response to said I/O instructions to determine correct instruction execution by said first and second processing systems.

5,255,368

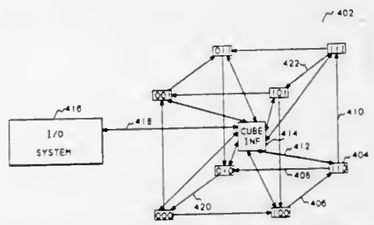
METHOD FOR SELECTING DATA COMMUNICATIONS PATHS FOR ROUTING MESSAGES BETWEEN PROCESSORS IN A PARALLEL PROCESSING COMPUTER SYSTEM ORGANIZED AS A HYPERCUBE

Timothy G. Barry, Ft. Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 19, 1991, Ser. No. 747,037

Int. Cl.[5] G06F *13/00, 15/16*

U.S. Cl. 395—200 **9 Claims**



1. In a parallel processing computer system organized as a hypercube, having one data communication path at each node of the system corresponding to each binary bit position in the address of the node, and wherein each of the data communication paths can be programmed to transfer data in either outbound or inbound directions, a computer implemented method for programming the data transfer direction of the data communication paths of a node of said computer system, wherein all steps of said computer implemented method are performed in each node of said parallel processing computer system, said computer implemented method comprising the step of:

(a) determining the binary address of said node;

(b) for each bit within said binary address, determining a number s by using the equation

$$s = \sum_{k=0}^{i/2-1} a_{2k+(i/2 \bmod 2+1) \bmod 2} + a_{i-(i \bmod 2)} + a_{i-(i \bmod 2)+1} + \sum_{k=i/2+1}^{(n-1)/2} a_{2k+i/2 \bmod 2} + i$$

wherein i is the bit position of said bit, numbered from right to left and wherein n is the dimension of the hypercube;

(c) if said number s is an odd number, programming said corresponding data communication path for inbound data whereby data will be transferred to said node on said data communication path; and

(d) if said number s is an even number, programming said corresponding data communication path for outbound data whereby data will be transferred from said node on said data communication path.

5,255,369

MULTIPROCESSOR SYSTEM WITH REFLECTIVE MEMORY DATA TRANSFER DEVICE

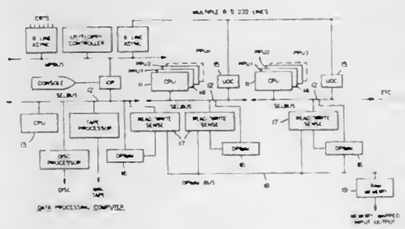
James C. Dann, Caterham, England, assignor to Encore Computer U.S., Inc., Ft. Lauderdale, Fla.

Continuation of Ser. No. 642,457, Jan. 17, 1991, Pat. No. 5,072,373, which is a continuation of Ser. No. 401,511, Aug. 30, 1989, Pat. No. 4,991,079, which is a continuation of Ser. No. 710,229, Mar. 11, 1985, abandoned. This application Sep. 11, 1991, Ser. No. 758,893

Claims priority, application United Kingdom, Mar. 10, 1984, 8406322; Aug. 14, 1984, 8420617

Int. Cl.[5] G06F *13/38*

U.S. Cl. 395—200 **46 Claims**



1. A data processing system comprising a plurality of nodes and a data bus interconnected therewith,

at least one processing node comprising:

a dual port local data store partitioned into sections, a first section reserved for the storage of data local to the node and not to be shared with the other nodes and a second section reserved for data shared with other processing nodes;

a processor;

a local bus connecting a first port of the local data store to the processor for transferring data to the local data store; and

read/write sense logic means connected to the local bus for sensing when the processor is transferring data to the local store, connected to the data link for transmitting sensed data onto the data link for sharing with another node and for sensing received data from the data link which is being shared from another node and for inputting sensed received data through a second port of the local data store;

said read/write sense logic means comprises:

first address comparator means for comparing an address of a signal transmitted by the processor to said first port, to determine if the signal is within a first range of allowable addresses for shared data;

successful write detector means for detecting the presence of a successful write signal on the local bus;

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first latch means for holding data transmitted by the processor on the local bus;

first gate means for receiving signals from the first address comparator means and the successful write detector means and for activating the first latch means upon receipt of signals indicating the address is within the first range of allowable addresses and a successful write to memory has occurred;

first FIFO register means for receiving data from the first latch means responsive to activation of the first gate means;

bus request logic means for generating a bus request signal to transmit data stored in the first FIFO register means along the data bus and for releasing data from the first FIFO register means upon receipt of a bus grant signal from another node designated as master node;

transmitter means for receiving data from the first FIFO register means and transmitting the data along the data bus to other nodes responsive to receipt of the bus grant signal by the bus request logic means;

receiver means for receiving signals from the data bus;

data valid detector means for detecting the presence of a data valid signal on the data bus;

second address comparator means for receiving an address of a signal received by the receiver means and determining if the address is within a second range of allowable addresses for shared data;

second latch means for holding data signals received by the receiver means;

second gate means for receiving signals from the data valid detector means and the second address comparator means and for activating the second latch means upon receipt of signals indicating the address is within the second range of allowable addresses and a valid data signal was received by the data valid detector means;

second FIFO register means for receiving data from the second latch means responsive to activation of the second latch means;

memory transfer request means for generating a signal requesting access to the local data store through the second port of the local data store and for releasing data from the second FIFO register means to the local data store upon receipt of a signal granting access to the local data store.

5,255,370

DATA TRANSFER APPARATUS AND DATA TRANSFER SYSTEM

Kazuya Sako; Masaaki Nagami; Takeshi Chono; Shoji Fujimoto, and Katsumaro Yasui, all of Kobe, Japan, assignors to Fujitsu Ten Limited, Hyogo, Japan

PCT No. PCT/JP88/00430, § 371 Date Dec. 28, 1988, § 102(e) Date Dec. 28, 1988, PCT Pub. No. WO88/08574, PCT Pub. Date Nov. 3, 1988

PCT Filed Apr. 28, 1988, Ser. No. 295,947

Claims priority, application Japan, Apr. 28, 1987, 62-105537; May 30, 1987, 62-135388; Jul. 31, 1987, 62-118743; Oct. 16, 1987, 62-262009; Dec. 17, 1987, 62-322598

Int. Cl.[5] G06F *13/00*

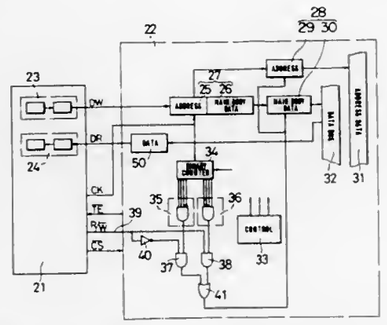
U.S. Cl. 395—250 **2 Claims**

1. A data transfer system for writing each group data of transfer data into shift registers for data transfer substantially simultaneously in which a transmitting register for externally transmitting transfer data is used also as a buffer register for writing the transfer data so as to temporarily store the data therein, the system comprising:

m+1 shift registers for storing one word data obtained by dividing the group data into m sub-groups wherein m is 2 or a larger integer;

a first switching means for sequentially selecting the shift registers according to a predetermined time period, and externally transmitting the group data by one word data each; and

a second switching means for selecting other m shift registers not selected by the first switching means and for writing the group data therein; wherein



while the shift register in which the final one word data of the specified group data is selected by the first switching means, the next group data is written into the remaining m shift registers by the second switching means.

5,255,371

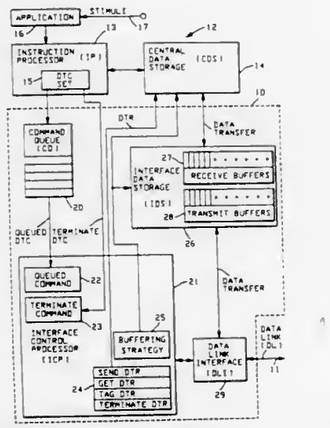
APPARATUS FOR INTERFACING A REAL-TIME COMMUNICATIN LINK TO AN ASYNCHRONOUS DIGITAL COMPUTER SYSTEM BY UTILIZING GROUPED DATA TRANSFER COMMANDS

Robert A. Latimer, Plymouth Meeting, and David W. Heileman, Jr., West Chester, both of Pa., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Apr. 2, 1990, Ser. No. 503,195

Int. Cl.[5] G06F *3/00, 13/00*

U.S. Cl. 395—250 **16 Claims**



1. Apparatus for interfacing a real-time data link to a digital computer system, said digital computer system including data storage means, said apparatus comprising:

data buffer means coupling said data link to said data storage means for buffering data received from said data storage means to be sent to said data link and for buffering data received from said data link to be sent to said data storage means,

Instruction Processor (IP) means in said digital computer system for issuing a sequence of Data Transfer Command (DTC) commands, said DTC commands including a SEND command and a GET command, each said DTC command having a TAG parameter, said IP means further operative for grouping said DTC commands into groups of related sequential commands by performing a SET-TAG function by setting said TAG parameter of each of said related sequential commands of a group to a common group value, said common group value being different for different groups, respectively,

control processor means coupled to said IP means, said data storage means and said data buffer means for receiving said DTC commands from said IP means and for processing said SEND command and said GET command by sending data from said data storage means to said data buffer means in response to said SEND command and getting data from said data buffer means to said data storage means in response to said GET command, and

data link interface means controlled by said control processor means and coupled between said data buffer means and said data link for transmitting, over said data link, said data sent to said data buffer means in response to said SEND command and for receiving from said data link into said data buffer means data to be transferred from said data buffer means to said data storage means in response to said GET command,

said control processor means further operative for performing, in response to a TERMINATE stimulus, a TERMINATE function with respect to one of said groups by terminating operations controlled by said related sequential commands of said one of said groups by immediately terminating transfer of data between said data buffer means and said data link, completing transfer of data in said data buffer means to said data storage means initiated in response to a GET command in said one of said groups, and not performing further operations controlled by said DTC commands in said one of said groups,

said control processor means performing said TERMINATE function with respect to said one of said groups by performing said TERMINATE function with respect to DTC commands having said TAG parameters thereof set to said common group value of said one of said groups.

5,255,372

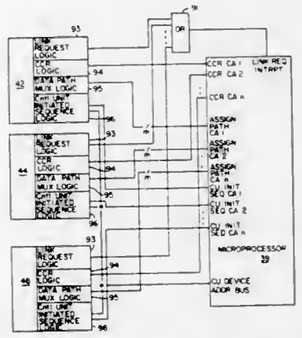
APPARATUS FOR EFFICIENTLY INTERCONNECING CHANNELS OF A MULTIPROCESSOR SYSTEM MULTIPLEXED VIA CHANNEL ADAPTERS

Adrian S. Butter, Binghamton, and Howard E. Parsons, Endwell, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 31, 1990, Ser. No. 575,575

Int. Cl.[5] G06F *12/42, 15/16*

U.S. Cl. 395—325 **15 Claims**



1. Apparatus for efficiently interconnecting data channels of a multiprocessor facility comprising:

a plurality of channel adapters, each channel adapter having an I/O port connected to one of said channels;

a microprocessor connected to each of said channel adapters, said microprocessor receiving from each adapter a respective channel request for a data link to another channel associated with another adapter, said microprocessor forming a link request storage table, and storing in said link request storage table only such requests which meet predefined criteria which identifies conditions in which channels may be efficiently interconnected; and,

first and second data paths interconnecting said plurality of channel adapters through a multiplexer associated with each of said channel adapters, said multiplexers being enabled by said microprocessor in response to said data link requests which meet said predefined criteria.

5,255,373

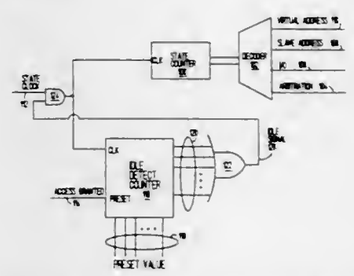
DECREASING AVERAGE TIME TO ACCESS A COMPUTER BUS BY ELIMINATING ARBITRATION DELAY WHEN THE BUS IS IDLE

Russell C. Brockmann; Leith L. Johnson, and William S. Jaffe, all of Fort Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 7, 1991, Ser. No. 741,712

Int. Cl.[5] G06F *13/36*

U.S. Cl. 395—325 **5 Claims**



1. In a computer system having a plurality of agents interconnected by a bus, wherein said bus has a plurality of sequential control states, a method of decreasing the time required to access said bus when said bus is idle, said method comprising the steps of:

(a) arbitrating for access to said bus during a first control state of said plurality of control states by agents requesting access to said bus, wherein access to said bus may be granted when said bus is not idle;

(b) detecting during said first control state, by a detector within each agent in said plurality of agents, whether said bus is idle, wherein said detector autonomously determines when said bus is idle independent of said bus;

(c) repeating the sequence of control states, within each agent in said plurality of agents, if said bus is not idle; and

(d) inhibiting transition to another control state, within each agent in said plurality of agents, if said bus is idle so as to maintain said bus in said first control state, thereby eliminating arbitration delay by enabling instantaneous access to said bus if an agent in said plurality of agents arbitrates for access when said bus is idle.

5,255,374

BUS INTERFACE LOGIC FOR COMPUTER SYSTEM HAVING DUAL BUS ARCHITECTURE

Alfredo Aldereguia; Nader Amini, both of Boca Raton; Richard L. Horne, Boynton Beach; Terence J. Lohman, and Cang N. Tran, both of Boca Raton, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 2, 1992, Ser. No. 816,203

Int. Cl.[5] G06F *13/14*

U.S. Cl. 395—325 **14 Claims**

1. A computer system, comprising:

system memory and a memory controller for controlling

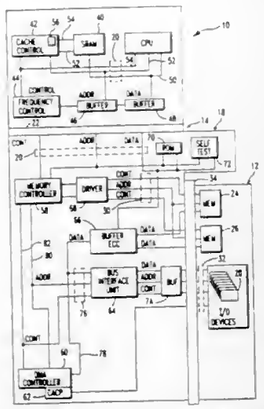
VOL 1155 ISS 3 OC 19 1993 UMI

access thereto, said system memory and said memory controller connected by a memory bus;

a central processing unit electrically connected with said memory controller;

a bus interface unit electrically connected to said memory controller by a system bus and electrically connected to a plurality of I/O devices by an I/O bus, said I/O devices and said central processing unit operating at different speeds and transferring data at different bandwidths over said I/O bus and said system bus, respectively, said bus interface unit including a buffer circuit wherein data read from an I/O device or written to an I/O device by said central processing unit over said system bus and said I/O bus via said bus interface unit is temporarily stored;

a central arbitration control point residing on said system bus for serially performing (i) arbitration cycles wherein said central arbitration control point arbitrates, between



I/O devices having requests pending for access to said I/O bus, to determine which of said I/O devices should be granted control of said I/O bus and (ii) grant cycles wherein said central arbitration control point grants control of said I/O bus to one of said I/O devices;

said bus interface unit also including posting logic for (i) temporarily storing in said buffer circuit during one system bus cycle write data in excess of that which may be written to an I/O device over said I/O bus in one I/O bus cycle, (ii) completing transfer of write data from said buffer circuit to a first I/O device over said I/O bus in at least two I/O bus cycles while releasing control of said system bus for further data processing during the first of said at least two I/O bus cycles, and (iii) preventing said central arbitration control point from granting control of said I/O bus to a second I/O device during said transfer of write data over said I/O bus to said first I/O device.

5,255,375

HIGH PERFORMANCE INTERFACE BETWEEN AN ASYNCHRONOUS BUS AND ONE OR MORE PROCESSORS OR THE LIKE

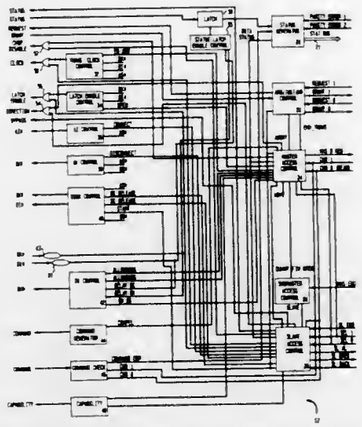
Neal A. Crook, Reading; Paul L. Bruce, Basingstoke, and Robert J. Galuszka, Reading, all of England, assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jan. 10, 1992, Ser. No. 819,389
Int. Cl.[5] G06F *13/14*
U.S. Cl. 395—325 **21 Claims**

1. An interface controller adapted to be coupled between an asynchronous bus and at least one processor, the asynchronous bus including address/data lines and handshaking signal lines and operating according to a bus protocol including a plurality of phases with handshaking signals on the handshaking signal lines to control transitioning of phases on the asynchronous bus, the interface controller comprising:

a plurality of asynchronous state machines coupled to said bus, each of the asynchronous state machines operating to detect, generate, and transmit handshaking signals on the handshaking signal lines of the asynchronous bus during certain ones of the phases;

a plurality of synchronous state machines coupled between said processors and said asynchronous state machines, said



synchronous state machines controlling the operating of said asynchronous state machines; and

a transceiver coupled to at least one of the asynchronous state machines and adapted to be coupled to each of the address/data lines of the asynchronous bus and the processor, such that said transceiver can receive and transmit address and data information between the processor and the address/data lines of the asynchronous bus under the control of at least one asynchronous state machine.

5,255,376

METHOD AND APPARATUS FOR SUPPORTING A DUAL BIT LENGTH PROTOCOL FOR DATA TRANSFERS

Edward H. Frank, Portola Valley, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jan. 14, 1992, Ser. No. 820,561
Int. Cl.[5] G06F *13/42*
U.S. Cl. 395—325 **2 Claims**

1. A method of transferring data in a computer system between devices selectively coupled to a bus, comprising the steps of:

transmitting a bus request signal from a master device to a controller device within a first time period of at least one clock cycle;

transmitting a bus grant signal from said controller device to said master device within a second time period of at least one clock cycle;

within a third time period of at least one clock cycle,

applying a virtual address to a plurality of data lines by said master device,

applying a read signal, if a read operation is to be performed, or applying a write signal, if a write operation is to be performed, to a read signal line by said master device, and

applying an extended transfer mode signal to a plurality of size lines by said master device;

within a fourth time period of at least one clock cycle,

translating said virtual address into a corresponding physical address by said controller device,

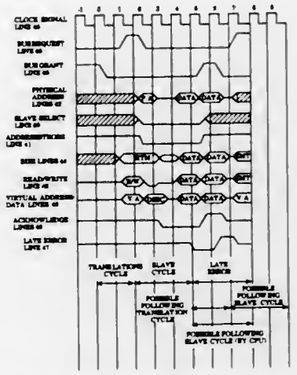
applying said physical address to a plurality physical address lines by said controller device,

applying a slave select signal to a slave select line by said controller device, said slave select line corresponding to a slave device coupled to said bus, said slave device being selected upon receiving said slave select signal;

applying a descriptor signal to said plurality of data lines by said master device, said descriptor signal including data identifying transfer type, transfer size and atomic operations to said slave device,

applying a write signal to said read signal line by said master device, such that if said slave decice is unable to transfer data in an extended transfer mode, said slave device being disabled upon receipt of said write signal, and,

applying an address strobe signal generated by said controller to an address strobe line coupled to said slave device, said slave device upon receiving said address strobe signal, latching said physical address



on said plurality of physical address lines, said read signal on said read signal line, and said descriptor signal on said plurality of data lines;

within a fifth time period of at least one clock cycle,

transmitting an acknowledge signal to a plurality of acknowledge lines by said slave device, said acknowledge signals notifying said controller that said slave device is ready to transfer data, and

said controller further tristating said physical address lines, said size lines, said read line and said data lines;

said master device applying data to said physical address lines, size lines, read lines, and data lines in the event of a write operation, within a sixth period of at least one clock cycle;

said slave device applying data to said physical address lines, size lines, read lines, and data lines in the event of a read operation, within said sixth period of at least one clock cycle;

such that data is transferred between said master and slave devices.

5,255,377

INTERFACE FOR ARBITRATING ACCESS TO THE PAGING UNIT OF A COMPUTER PROCESSOR

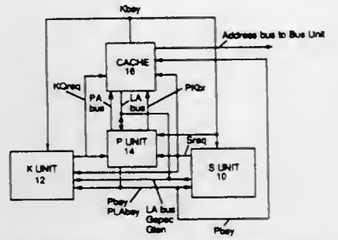
Erik L. Feldman, Santa Clara, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 434,447, Nov. 13, 1989, abandoned. This application Oct. 15, 1992, Ser. No. 962,157
Int. Cl.[5] G06F *9/30*
U.S. Cl. 395—325 **5 Claims**

1. In a computer processor having a prefetch unit which is a first source of linear addresses and requests to use a linear address bus, a segmentation unit which is a second source of linear addresses and requests to use a linear address bus, a paging unit for translating linear addresses into physical addresses when paging is implemented and for transferring linear addresses as physical addresses when paging is not implemented, a physical address bus within the computer processor for receiving physical addresses from the paging unit, and a linear address bus within the computer processor adapted to receive linear addresses from the prefetch unit and segmentation unit for processing by the paging unit, the improvement comprising:

means in the paging unit for generating signals to indicate whether the paging unit is busy,

means for selecting



no linear addresses to be transferred from the linear address bus to the paging unit if the paging unit is busy;

means for selecting a linear address from the segmentation unit to be transferred from the linear address bus to the paging unit if the paging unit is not busy and the segmentation unit has an address to be transferred to the paging unit; and

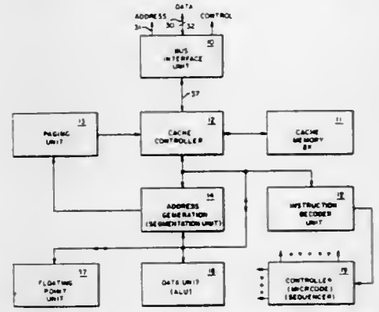
means for selecting a linear address from the prefetch unit to be transferred from the linear address bus to the paging unit if the paging unit is not busy, the segmentation unit has no address to be transferred to the paging unit, and the prefetch unit has an address to be transferred to the paging unit.

5,255,378

METHOD OF TRANSFERRING BURST DATA IN A MICROPROCESSOR

John H. Crawford, Santa Clara, and Edward T. Grochowski, San Jose, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 861,602, Apr. 1, 1992, abandoned, which is a continuation of Ser. No. 333,980, Apr. 5, 1989, Pat. No. 5,131,083. This application Nov. 24, 1992, Ser. No. 981,943
Int. Cl.[5] G06F *13/28*
U.S. Cl. 395—325 **10 Claims**



1. A microprocessor system including a microprocessor and

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an external memory device, said microprocessor having an internal bus of width W bits coupled to an external bus accomodating transfer of a data line of length L bits, said data line including a plurality of data items, said microprocessor system being adapted to transfer said plurality of data items in a burst format from said external memory device via said external bus to said internal bus, said microprocessor system comprising:

an address generator for generating a first address, A_0, for accessing in said external memory device a first data item of said data line;

an address sequence generator for generating a sequence of remaining addresses for accessing remaining ones of said data items of said data line, wherein said sequence of remaining addresses is generated according to

$$A_i = A_0 \oplus (i^*(W/8)),$$

where A_i represents one of said remaining addresses in said sequence and wherein i=1, 2, . . . ((L/W)−1) and L and W are integers;

wherein said external memory device transfers to said microprocessor said first data item corresponding to said first address, A_0, and wherein said external memory device transfers to said microprocessor in a burst format said remaining ones of said data items in an order corresponding to said sequence of remaining addresses.

5,255,379

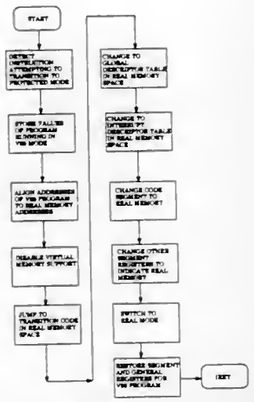
METHOD FOR AUTOMATICALLY TRANSITIONING FROM V86 MODE TO PROTECTED MODE IN A COMPUTER SYSTEM USING AN INTEL 80386 OR 80486 PROCESSOR

Michael D. Melo, Billerica, Mass., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Dec. 28, 1990, Ser. No. 636,075

Int. Cl.[5] G06F *12/02, 9/40*

U.S. Cl. 395—400 **14 Claims**



1. In a system comprising a processor, real memory space, and virtual memory space, said processor capable of operating in a real mode of operation, a protected mode of operation, and a virtual 8086 (V86) mode of operation utilizing a stack and a monitor program, a method of transitioning said processor from V86 mode to protected mode operation comprising the steps of:

detecting when a V86 processor attempts to transition to protected mode,

preserving predesignated information concerning the V86 processor at the time of the attempt to transition to protected mode,

copying data from real memory space used in running a process in real mode to high memory beyond real address range,

remapping the virtual memory space allotted to the V86 processor to the real memory space used in running a process in real mode,

moving a process for transitioning to said real memory space, switching said V86 processor to said real mode of operation,

when in real mode, executing said process for transitioning, said process of transitioning causing a transition to protected mode.

5,255,380

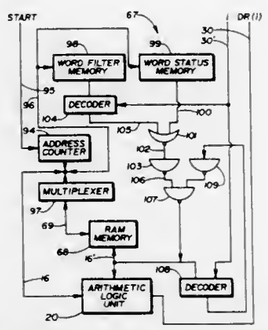
COMPUTER SYSTEM WITH DISTRIBUTED RAM MEMORY MODULES DESIGNED FOR CITO TRANSMISSION

Semyon Berkovich, Rockville, Md., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 179,464, Apr. 8, 1988, abandoned. This application Aug. 21, 1990, Ser. No. 571,338

Int. Cl.[5] G06F *13/00;* **H04J** *3/12*

U.S. Cl. 395—425 **4 Claims**



1. An apparatus for communicating between a plurality of senders and a receiver in accordance with a content induced transaction overlap (CITO) protocol, comprising:

a first serial communication bus;

a receiver connected to said first communication bus for receiving serial data transmitted thereon;

a plurality of senders, each said sender being connected to said first serial communication bus for collective synchronous transmission of data to said receiver, said data being compressed in accordance with a CITO format in accordance with a CITO protocol, each of said senders including:

a random access memory (RAM) for storing data words to be transmitted by said sender; and

a controller connected to said RAM for providing orthogonal access thereto, and for sensing an information content of the data words stored therein, said controller further comprising:

a word filter memory and a word status memory, wherein said word status memory contains a plurality of words of mask bit data each corresponding to a RAM data word, and said word filter memory contains a column of mask bit data where each bit corresponds to a RAM data word;

a first decoder for selecting a mask bit of said word filter data;

a second decoder for selecting a bit of said RAM data word;

a first invertor for inverting said bit selected by said second decoder;

a NOR gate for NORing said selected mask bit of word filter data with a mask bit of word status data and outputting a result;

a second invertor for inverting said result from said NOR gate; and

a NAND gate for NANDing said inverted result from said second invertor with said inverted selected bit of RAM data from said first invertor and for controlling output of said selected bit of RAM data for transmission by said sender, said NAND gate inhibiting output of said selected bit of RAM data if a mask bit of said word filter data or a mask bit of said word status data is present at said NOR gate.

5,255,381

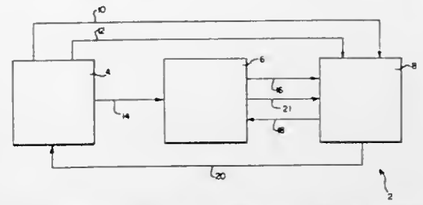
MODE SWITCHING FOR A MEMORY SYSTEM WITH DIAGNOSTIC SCAN

Kumar Chinnaswamy, Milford; Hansel A. Collins, Clinton; Michael B. Evans, Marlborough; Timothy P. Fissette, Westminster; Michael A. Gagliardo, Shrewsbury; John J. Lynch, Wayland, and James E. Tessari, Arlington, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation-in-part of Ser. No. 547,656, Jul. 3, 1990. This application Sep. 14, 1990, Ser. No. 582,476

Int. Cl.[5] G06F *12/00, 12/16;* **G11C** *7/00*

U.S. Cl. 395—425 **15 Claims**



1. A method for isolating a storage means of a memory having a step mode and a standby mode and for preserving the contents of said storage means by switching said memory between said step mode and said standby mode, said memory comprising a local clock and a local controller, said memory being adapted for connection to a computer system comprising a console, a system clock and a memory system controller for performing storage means control operations connected to said memory over a set of storage control lines in synchronization with said system clock for normal operations, said method comprising the steps of:

responding to a step mode enable signal for switching said memory to said step mode to transfer control of said storage means from said memory system controller to said local controller and to transfer synchronization of said local controller and said storage means from said system clock to said local clock;

asserting a step mode acknowledge signal allowing said local controller to accept said storage means control operations over said storage control lines, said local controller executing said storage means control operations in synchronization with said local clock; and

responding to the assertion of a standby mode enable signal for switching said memory to said standby mode and isolating said storage means from said local controller and preserving the contents of said storage means.

5,255,382

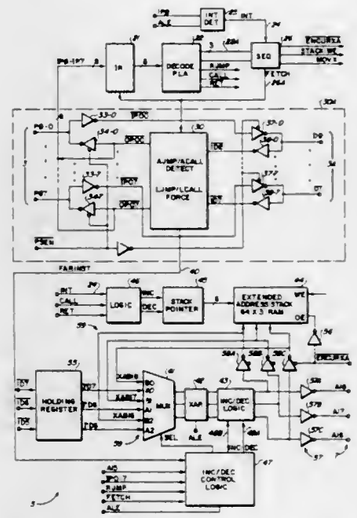
PROGRAM MEMORY EXPANDER FOR 8051-BASED MICROCONTROLLED SYSTEM

Martin B. Pawloski, 13718 E. Galveston St., Gilbert, Ariz. 85234

Filed Sep. 24, 1990, Ser. No. 587,244

Int. Cl.[5] G06F *12/00, 13/00*

U.S. Cl. 395—425 **17 Claims**



9. A method of operating an 8051-based microcontroller system to access more than 64 kilobytes of program memory address space independently of 64 kilobyte boundaries therein, comprising the steps of:

(a) operating an 8051 microcontroller to produce a first address and latching the first address in a program memory expander;

(b) sending an FJMP (far jump) instruction from a first address location of a program memory to the program memory expander, the FJMP (far jump) instruction including an op codes of an AJMP (absolute jump) instruction, the op code of the AJMP (absolute jump) instruction including three embedded address bits;

(c) detecting the AJMP (absolute jump) op code of the FJMP (far jump) instruction during an instruction cycle of the 8051 microcontroller;

(d) entering the three embedded address bits of the AJMP (absolute jump) op code into a holding register;

(e) generating an LJMP (long jump) op code in response to the detecting of the AJMP (absolute jump) op code, sending the LJMP (long jump) of code to the 8051 microcontroller, and operating the 8051 microcontroller to execute the LJMP (long jump) op code;

(f) operating the program memory expander to detect the beginning of a new instruction cycle and then transferring the three embedded address bits into an extended address register;

(g) using the three embedded address bits in the extended address register as the three most significant bits of a 19-bit target address, the least significant 16 bits of which are equal to the contents of a program counter of the 8051 microcontroller; and

(h) outputting the 19-bit target address to the program memory to access another address location of the program memory.

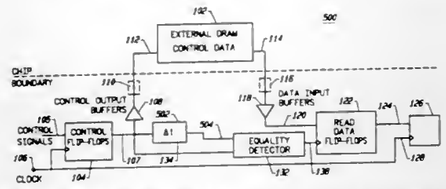
VOL 1155 ISS 3 OCT 19 1993 UMI

5,255,383

METHOD AND APPARATUS FOR SKEWING A MEMORY READ CLOCK SIGNAL IN A MAGNETIC DISK DRIVE SYSTEM

David M. Lewis, Santa Cruz, Calif., and Nimesh Parikh, Gruenwald, Fed. Rep. of Germany, assignors to Seagate Technology, Inc., Scotts Valley, Calif. and AT&T Company, New York, N.Y.

Filed Apr. 15, 1991, Ser. No. 686,113
Int. Cl.[5] G06F *12/02*
U.S. Cl. 395—425 14 Claims



10. A system for skewing a memory-read clock for latching a memory data signal into a read-data latch, said memory data signal being received from a memory device having a control-signal input terminal and data-signal output terminal, the system comprising:

a control-signal buffer, having an input terminal for receiving an input control signal and having an output terminal coupled to the control-signal input terminal of said memory device;

a read-data buffer, having an input terminal coupled to the data-signal output terminal of said memory device;

read-data latch means, having a data input terminal coupled to the output terminal of said read-data buffer, having an output terminal, and having a clock input terminal, for latching a data signal received from said memory device through said read-data buffer;

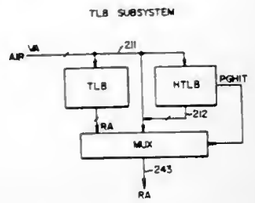
delay means for delaying a clock input signal for said read-data latch means and providing a read-memory clock signal, said clock signal skewed for a time corresponding to the propagation delay through the control-signal buffer and the propagation delay through the read-data input buffer.

5,255,384

MEMORY ADDRESS TRANSLATION SYSTEM HAVING MODIFIABLE AND NON-MODIFIABLE TRANSLATION MECHANISMS

Howard G. Sachs, Los Altos, and James Y. Cho, Los Gatos, both of Calif., assignors to Intergraph Corporation, Huntsville, Ala.

Continuation of Ser. No. 915,094, Oct. 3, 1986, abandoned, which is a continuation-in-part of Ser. No. 794,090, Oct. 31, 1985, abandoned, which is a continuation-in-part of Ser. No. 704,497, Feb. 22, 1985, abandoned. This application Sep. 26, 1991, Ser. No. 766,906
Int. Cl.[5] G06F *12/10*
U.S. Cl. 395—425 22 Claims



1. In a computing system having a cache memory coupled to a processor via a processor/cache bus and to a main memory via a system bus, wherein the computing system operates in supervisor and user modes, a method of translating a virtual address to a real address comprising the steps of:

receiving an externally supplied virtual address comprising a virtual segment address and a virtual page address;

addressing a translation lookaside buffer with the virtual address for translating the virtual address to a real address;

determining whether the virtual address was correctly translated by the translation lookaside buffer;

addressing a dynamic address translation means with the virtual address for translating the virtual address to a real address if the virtual address was not correctly translated by the translation lookaside buffer;

wherein the step of addressing the translation lookaside buffer comprises the steps of:

addressing a plurality of read/write memory elements which translates virtual addresses to real addresses with bits from the virtual page address when the computing system operates in both the supervisor mode and the user mode;

addressing hardwired combinational logic which translates predetermined virtual addresses to predefined real addresses with bits from the virtual segment address when the computing system is operating in the supervisor mode; and

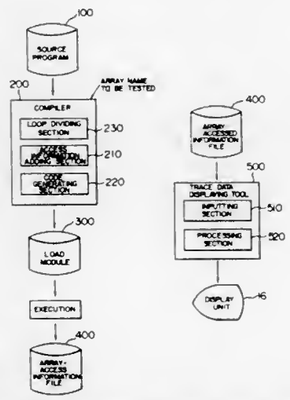
always preventing the dynamic address translation step whenever one of the predetermined virtual addresses is to be translated and the computing system is operating in the supervisor mode.

5,255,385

METHOD OF TESTING PROGRAM, AND COMPILER AND PROGRAM TESTING TOOL FOR THE METHOD

Sumio Kikuchi, Machida, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 20, 1991, Ser. No. 658,222
Claims priority, application Japan, Feb. 26, 1990, 2-44827
Int. Cl.[5] G06F *11/00*
U.S. Cl. 395—575 57 Claims



1. A method for testing a source program of a data processing system wherein a part of the source program is to be converted into a plurality of processes which are to be executed in parallel by a plurality of processors wherein each processor executes one of a plurality of processing types required by the source program part to be executed by an apparatus, the method steps comprising:

compiling the source program into an object program;

executing the object program;

generating an access information record each time an element of at least one test target array is processed for either a use or a definition, during execution of the object program, the access information record identifying at least (1) a subscript of the element, (2) one of the processing types used in processing the element and (3) whether the one processing type is the use or the definition of the element; and

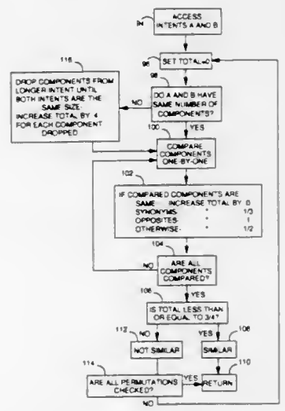
detecting whether the element of the at least one test target array prevents conversion of the source program part into the plurality of processes, depending upon the access information record generated for the element.

5,255,386

METHOD AND APPARATUS FOR INTELLIGENT HELP THAT MATCHES THE SEMANTIC SIMILARITY OF THE INFERRED INTENT OF QUERY OR COMMAND TO A BEST-FIT PREDEFINED COMMAND INTENT

John M. Prager, Ashland, Mass., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 8, 1990, Ser. No. 476,845
Int. Cl.[5] G06F *15/40, 15/403, 7/20*
U.S. Cl. 395—600 9 Claims



1. The method of operating a data processing system having a memory system for storing programs and data, a processor for executing said programs, input means selectively actuated by user to input user actions comprising questions and commands, and output means to visually provide said user with suggestions, said method providing an intelligent help system for suggesting valid commands to the user when the user enters questions and erroneous commands, comprising the steps of:

(a) storing within said memory system a plurality of predefined intents, each predefined intent including a plurality of words verbally defining the purpose of a different valid command;

(b) in response to the user entering a question or an erroneous command, storing within said data processing system an inferred intent which contains a plurality of words verbally defining a possible purpose of said question or said erroneous command;

(c) semantically comparing words in said inferred intent with words in different ones of said predefined intents to find a predefined intent that is semantically similar to said inferred intent, said comparing being done by

(c1) selecting one of said predefined intents and pairing words in said inferred intent with words in said one predefined intent,

(c2) determining whether the meanings of the words in each set of paired words are the same, synonymous, opposite, or not the same, synonymous, or opposite, and

(c3) deciding, based on the results of step (c2), whether said inferred intent and said one predefined intent are semantically similar or dissimilar, step (c3) deciding that the intents being compared are semantically similar when each intent has the same number of words, and

a. there are no more than two sets of paired words having synonymous meanings while each other set of paired words has the same meaning, or

b. there is no more than one set of paired words that are synonymous plus one set that has a meaning of being not the same, or synonymous, or opposite, while each other set has the same meaning, or

c. each set of paired words has the same meaning; and

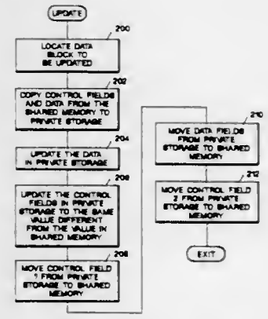
(d) creating a suggestion for said user to use the valid command, the purpose of which is defined by said one predefined intent when step (c3) decides said one predefined intent, is semantically similar to said inferred intent.

5,255,387

METHOD AND APPARATUS FOR CONCURRENCY CONTROL OF SHARED DATA UPDATES AND QUERIES

Michael E. Arnold, Snow Camp, N.C., and Graham P. Bate, Gaithersburg, Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 27, 1990, Ser. No. 515,895
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—600 4 Claims



1. In a data processing system having one or more data updating processes for a shared set of data, a computer-implemented method of insuring access to consistent data of the set by one or more data query processes, comprising the computer-implemented steps of:

on an update operation,

a) setting a first one of first and second control fields in shared memory, said control field associated with a block of data to be updated in shared memory, to a value different from its present value,

b) updating the data block, and wherein the step of updating the data block comprises

i) copying the block of data from shared memory into private storage,

ii) updating the data block in private storage, and

iii) copying the block from private storage into the shared memory,

c) setting the value of the second control field in shared memory to the value of the first control field and

on a query operation

d) copying a block to be queried and its associated first and second control fields from shared memory to private storage, and

e) further processing data contained in the block from private storage only if the values of the first and second control fields in private storage are equal,

f) repeating steps d) and e) for the query operation if the values of the control fields in private storage are not equal.

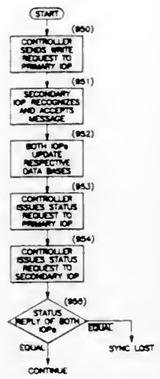
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5,255,388

SYNCHRONIZING SLAVE PROCESSORS THROUGH EAVESDROP BY ONE ON A WRITE REQUEST MESSAGE DIRECTED TO ANOTHER FOLLOWED BY COMPARISON OF INDIVIDUAL STATUS REQUEST REPLIES

Paul F. McLaughlin, Hatfield; Pankaj H. Mody, Maple Glen, and Robert W. Bristow, Hatboro, all of Pa., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 26, 1990, Ser. No. 588,389
Int. Cl.[5] G06F *15/04, 15/40, 11/16*
U.S. Cl. 395—600 **5 Claims**



1. In a process control system, having a master controller and at least one pair of slave input/output processors (IOPs) wherein a first IOP of the pair is a primary slave IOP and a second IOP of the pair is a secondary slave IOP, the first and second IOP having a first and second data base, respectively, the first and second IOP each executing the same tasks utilizing a first and second clocking system, respectively, and further wherein the data bases of the first and second IOPs are synchronized, communications by the master controller being made only to the first IOP including communications which modify the first data base, a method for insuring that the first and second data bases remain synchronized, comprising the steps of:

a) communicating a write request type message from the master controller to the first IOP to update the first data base, the message being a write request type message which requests the first IOP to store data included in the write request type message into the first data base;

b) eavesdropping on the communications of step (a) by the second IOP;

c) when the second IOP recognizes that the message of step (a) is to the corresponding primary slave IOP, accepting receipt of the write request type message by the second IOP;

d) executing the received write request type message by the first IOP and the second IOP, respectively, the execution of the received write request type message resulting in an update to the respective data bases with the data provided in said write request type message;

e) issuing a status request type message by the master controller to the first IOP;

f) issuing a status request type message by the master controller to the second IOP;

g) responding to the status request type message from the master controller by the first IOP with a response indicating a current status of the first data base;

h) responding to the status request type message from the master controller by the second IOP with a response indicating a current status of the second data base; and

i) verifying that responses to the requests of steps (g) and (h) are equal, indicating the update of the respective first and second data bases was completed identically, to permit the master controller to be assured that the first and second data bases remain synchronized after the update of the respective data bases.

5,255,389

DOCUMENT INTERCHANGE REPLACE OPTION VIA A COPY COMMAND

Diana S. Wang, Trophy Club, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 543,902, Jun. 21, 1990, abandoned. This application May 18, 1992, Ser. No. 887,562
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—600 **5 Claims**

COPY COMMAND

COMMAND	OPERANDS
COPY	IDENTIFIED-DATA, [,REFERENCED-DATA] (FROM FOLDER) [,REFERENCED-DATA] (TO DOCUMENT OR TO FOLDER) [,REFERENCED-DATA] (COPY AUTHORIZATION) [,AUTHORIZE] [,SOURCE-SERVICE] [,TARGET-SERVICE] [,REFERENCE-OBJECT-SCOPE] [,COPY-OPTION] [,ON-BEHALF-USER] [,MODIFY-DATA] [,UNIQUE-NAME] [,DOCUMENT-STATE] [,DEFER-OPTION]

1. A computer-implemented method, in a data processing system, of replacing profile information and contents of a first document in a target library stored in one of a plurality of shared libraries with profile information and contents of a second document from a source library by a user, said method comprising the steps of:

determining if said first document stored in said plurality of shared libraries specified by said user in a single copy command in said target library is revisable and if said first document is in a folder document;

determining if said user has edit access to said first document and read access to said second document; and

copying only profile information and contents of said second document into the profile information and contents of said first document specified in said single copy command when said first document is revisable and said user has edit access to said first document and read access to said second document and using a unique name provided in said single copy command to complete the copying step only when said first document is in a folder document.

DESIGN PATENTS

GRANTED OCT. 19, 1993

ERRATA

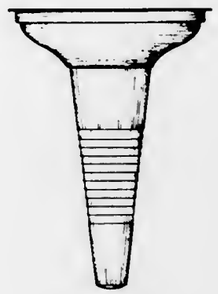
For CLASS	See PATENT NO.
013-119	D 340,446
021-035	D 340,475

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DESIGNS

OCTOBER 19, 1993

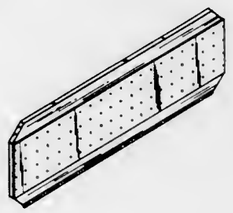
340,343
ICE CREAM CONE HOLDER
Mauricio Rizikow, 6401 Pine Tree Dr. Cir., Miami Beach, Fla. 33141
Filed Jul. 22, 1991, Ser. No. 733,247
Term of patent 14 years
U.S. Cl. D1—118



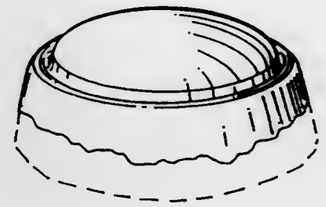
340,344
CAP FOR ATHLETES
Paul R. McPherson, 4665 Lake Trail Dr. #1A, Lisle, Ill. 60532
Filed Jun. 18, 1990, Ser. No. 539,661
Term of patent 14 years
U.S. Cl. D2—244



340,345
HEADBAND HAVING A SELF-ADHESIVE PORTION
John P. Russell, Center Point, Ala., assignor to Infection Control Products, Inc., Gardendale, Ala.
Filed Dec. 13, 1991, Ser. No. 807,568
Term of patent 14 years
U.S. Cl. D2—260



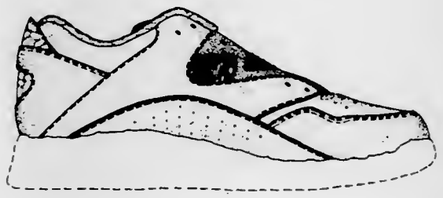
340,346
INFLATION DEVICE
Matthew L. Phillips, North Easton, Mass., assignor to Reebok International Ltd., Stoughton, Mass.
Filed Jul. 15, 1991, Ser. No. 731,761
Term of patent 14 years
U.S. Cl. D2—314



340,347
SHOE UPPER
Judith R. Close, Dedham, Mass., assignor to Reebok International Ltd., Stoughton, Mass.
Filed Jan. 25, 1993, Ser. No. 4,022
Term of patent 14 years
U.S. Cl. D2—314

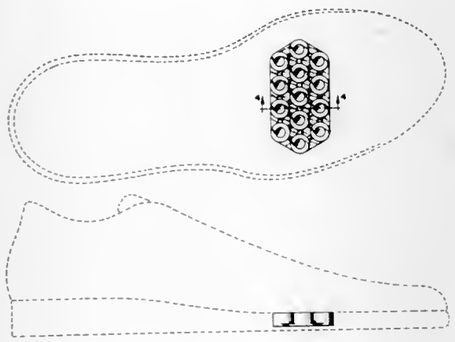


340,348
SHOE UPPER
John S. Earle, Portland, Oreg., assignor to Avia Group International, Inc., Beaverton, Oreg.
Filed Jan. 26, 1993, Ser. No. 4,076
Term of patent 14 years
U.S. Cl. D2—314

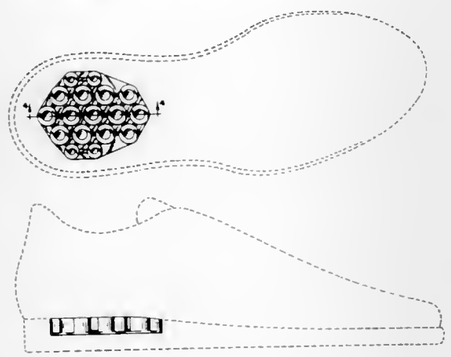


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340,349
INSERT FOR A SHOE
Bruce Kilgore, Lake Oswego, and Nancy Dalton, Portland, both of Oreg., assignors to Nike, Inc., Beaverton, Oreg.
Filed Nov. 26, 1991, Ser. No. 797,811
Term of patent 14 years
U.S. Cl. D2—318



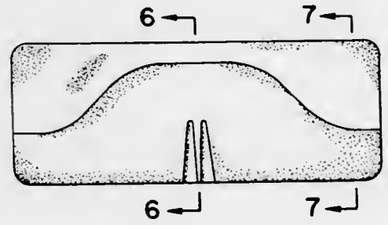
340,350
INSERT FOR A SHOE
Bruce Kilgore, Oswego, and Nancy Dalton, Portland, both of Oreg., assignors to Nike, Inc., Beaverton, Oreg.
Filed Nov. 26, 1991, Ser. No. 797,810
Term of patent 14 years
U.S. Cl. D2—318



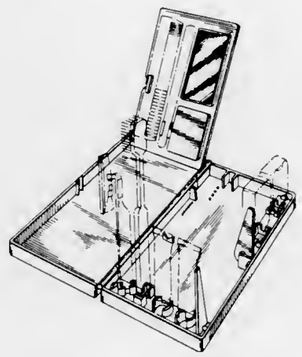
340,351
COMBINED BACKPACK AND COOLER
Timothy J. Wrath, 1960 Kapiolani Blvd. #113-359, Honolulu, Hi. 96826
Filed May 12, 1992, Ser. No. 881,893
Term of patent 14 years
U.S. Cl. D3—32



340,352
REINFORCING INSERT FOR SPECTACLE CASES
Robert J. Marks, 3080 S. Tioga Way, Las Vegas, Nev. 89117
Filed Apr. 9, 1990, Ser. No. 506,019
Term of patent 14 years
U.S. Cl. D3—34



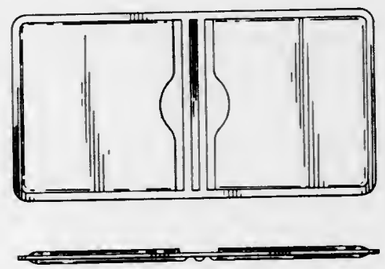
340,353
TOILETRY CASE
Jacques Benarrouch, 21 Rue Jean-Bourgey, Villeurbanne, France 69100
Filed Jun. 11, 1991, Ser. No. 713,330
Claims priority, application World Int. Prop. O., Jan. 23, 1991, DM/018675
Term of patent 14 years
U.S. Cl. D3—39



340,354
MESH DIVE BAG SOFT COOLER
Timothy J. Wrath, 1960 Kapiolani Blvd. #113-359, Honolulu, Hi. 96826
Filed May 12, 1992, Ser. No. 881,892
Term of patent 14 years
U.S. Cl. D3—41



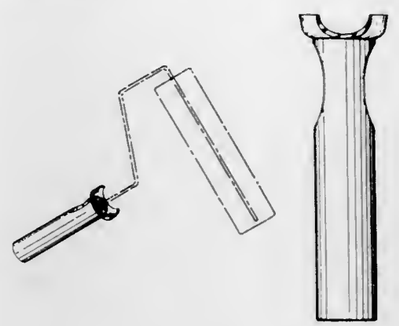
340,355
CONDOM POUCH
Renee Little, 8150 Ogontz Ave., Apt. 136, Wyncote, Pa. 19095
Filed Apr. 29, 1991, Ser. No. 692,516
Term of patent 14 years
U.S. Cl. D3—60



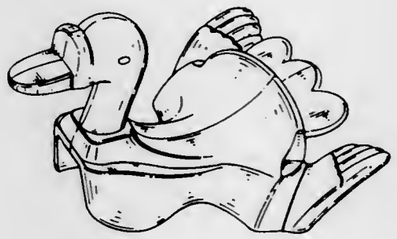
340,356
CASE FOR A COMPUTER
Cheryl Ann Hughes, Denver, Colo., assignor to Samsonite Corporation, Denver, Colo.
Filed Aug. 7, 1991, Ser. No. 741,883
Term of patent 14 years
U.S. Cl. D3—71



340,357
IMPLEMENT HANDLE
Wade H. Krinke, Marine-On-St. Croix, Minn., assignor to Padco, Inc., Minneapolis, Minn.
Filed Mar. 22, 1991, Ser. No. 674,033
Term of patent 14 years
U.S. Cl. D4—138



340,358
SEAT FOR ATTACHMENT TO A TRICYCLE
Kun-Hei Liu, 2F., No. 32, Lane 200, Tung Hwa Street, Taipei, Taiwan
Filed Apr. 30, 1992, Ser. No. 876,212
Term of patent 14 years
U.S. Cl. D6—354



340,359
CHAIR
John Caldwell, San Marino, Calif., assignor to Garden Source Furnishings, Incorporated, Atlanta, Ga.
Filed Oct. 18, 1991, Ser. No. 781,337
Term of patent 14 years
U.S. Cl. D6—358



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340,360
CHAIR
Radovan Strugarevic, and Tomi Strugarevic, both of c/o Mr. William Dransfield, 214 Stoneway La., Merion Station, Pa. 19066
Filed Jul. 29, 1991, Ser. No. 736,815
Claims priority, application Australia, Mar. 8, 1991, 669/91
Term of patent 14 years
U.S. Cl. D6—363



340,361
LAWN CHAIR
Chuen-Jong Tseng, No. 181, Pu-Tzepu, Wan-Chao Tsun, Chu-Chee Hsiang, Chiayi Hsien, Taiwan
Filed Aug. 9, 1990, Ser. No. 565,110
The portion of the term of this patent subsequent to Apr. 27, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—365



340,362
CHAIR
Norman W. Kiel, 0-281 Sunnyview Dr., Grandville, Mich. 49418
Filed Aug. 16, 1991, Ser. No. 746,506
Term of patent 14 years
U.S. Cl. D6—368



340,363
LAWN CHAIR
Chuen-Jong Tseng, No. 181, Pu-Tzepu, Wan-Chao Tsun, Chu-Chee Hsiang, Chiayi Hsien, Taiwan
Filed Aug. 9, 1990, Ser. No. 565,109
The portion of the term of this patent subsequent to Jun. 8, 2093, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—370



340,364
CHAIR
John Caldwell, 1829 Warwick Rd., San Marino, Calif. 91108
Filed May 23, 1991, Ser. No. 705,161
Term of patent 14 years
U.S. Cl. D6—370



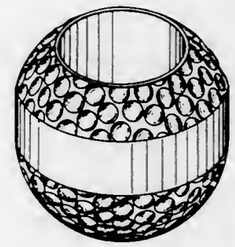
340,365
CHAIR
Stephen C. Hess, Birmingham, Ala., assignor to Winston Furniture Company, Birmingham, Ala.
Filed Oct. 29, 1991, Ser. No. 784,043
Term of patent 14 years
U.S. Cl. D6—370



340,366
CHAIR
Christian LaMalle, Saint Ismier, France, assignor to Allibert S.A., Grenoble, France
Filed Dec. 13, 1990, Ser. No. 626,860
Claims priority, application World Int. Prop. O., Jun. 14, 1990, DM/016919
Term of patent 14 years
U.S. Cl. D6—375



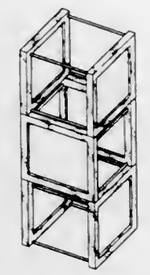
340,367
BASKET FOR FLOWERS OR WASTE PAPER
Asa Mansson, Tobisvägen 9, S-230 11 Falsterbo, Sweden
Filed Apr. 29, 1991, Ser. No. 692,522
Claims priority, application Sweden, Jan. 17, 1991, 910094
Term of patent 14 years
U.S. Cl. D6—404



340,368
HAT STAND
George S. Paige, Austin, Tex., assignor to Westyle, Inc., Dallas, Tex.
Filed Apr. 1, 1991, Ser. No. 677,962
Term of patent 14 years
U.S. Cl. D6—412

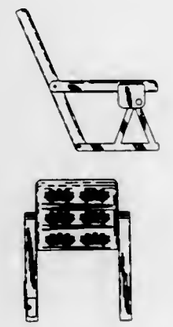


340,369
HANGER BAG DISPLAY-STAND
James Dokoupil, Liverpool; Robert Ackley, Brewerton, both of N.Y., and Stanleigh Wells, Bridgewater, Conn., assignors to The Croydon Company, Inc., Syracuse, N.Y.
Filed Jan. 17, 1991, Ser. No. 642,371
The portion of the term of this patent subsequent to Oct. 27, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—465



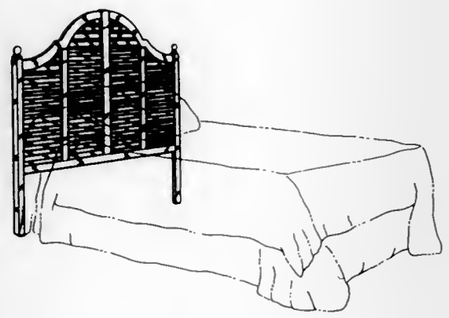
340,370
TABLE BASE
Giorgetto Giugiaro, Torino, Italy, assignor to Fiam Italia S.p.A., Pesaro, Italy
Filed Jul. 18, 1991, Ser. No. 731,920
Term of patent 14 years
U.S. Cl. D6—495

340,371
EASY CHAIR
Nick Casali, 68 Albury Grove Road, Cheshunt, Hertfordshire, England EN88NS
Filed Oct. 11, 1991, Ser. No. 775,063
Term of patent 14 years
U.S. Cl. D6—502

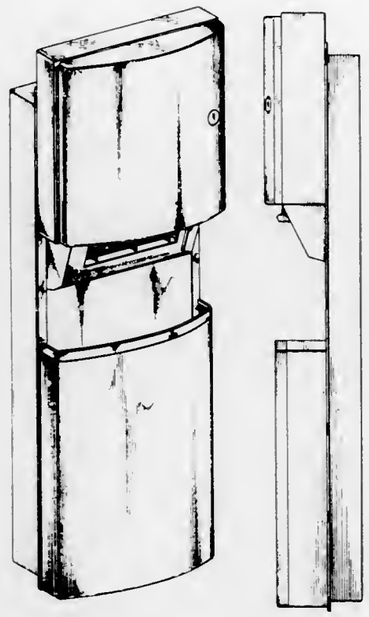


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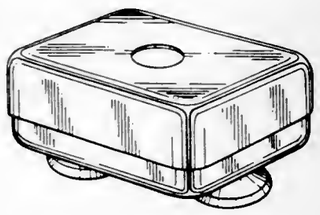
340,372
HEADBOARD FOR A BED
Edwin L. Ball, Thomasville, N.C., assignor to Lexington Furniture Industries, Inc., Lexington, N.C.
Filed Mar. 18, 1992, Ser. No. 853,324
Term of patent 14 years
U.S. Cl. D6—505



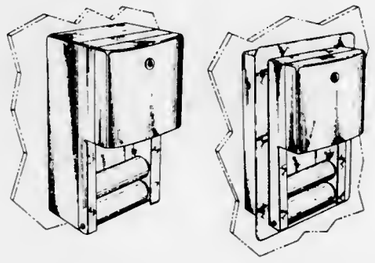
340,374
ROLL TOWEL DISPENSER WITH WASTE RECEPTACLE
David M. Hines, Santa Ana, Calif., assignor to Bobrick Washroom Equipment, Inc., North Hollywood, Calif.
Filed Jul. 13, 1992, Ser. No. 912,596
Term of patent 14 years
U.S. Cl. D6—519



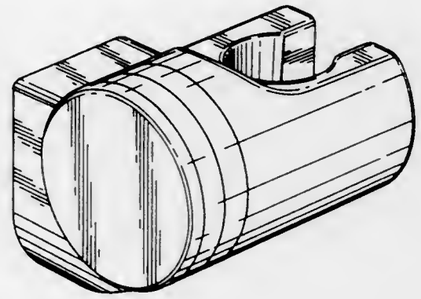
340,373
TISSUE DISPENSER
Jeff E. P. Konkin, 961 A Peterson Road, Campbell River, B.C. V9W 3H8, Canada
Filed Mar. 15, 1990, Ser. No. 493,867
Term of patent 14 years
U.S. Cl. D6—518



340,375
TOILET TISSUE DISPENSER
David M. Hines, Santa Ana, Calif., assignor to Bobrick Washroom Equipment, Inc., North Hollywood, Calif.
Filed Dec. 28, 1992, Ser. No. 2,996
Term of patent 14 years
U.S. Cl. D6—523



340,376
HAND SHOWER HOLDER
Odo Klose, Wuppertal, Fed. Rep. of Germany, assignor to Friedrich Grohe Aktiengesellschaft, Hemer, Fed. Rep. of Germany
Filed Aug. 26, 1991, Ser. No. 751,221
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1991, 9101317.8
Term of patent 14 years
U.S. Cl. D6—524

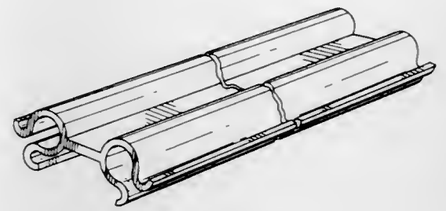


340,377
TOWEL BAR
William E. Brazis, Medina, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Dec. 28, 1992, Ser. No. 3,079
Term of patent 14 years
U.S. Cl. D6—549

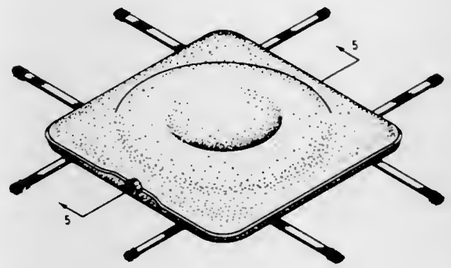




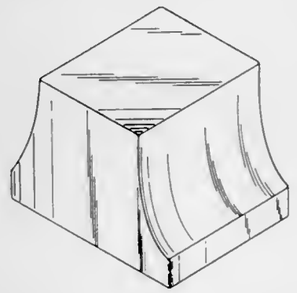
340,378
HOLDER FOR A DRAPE
Siegfried J. Schön, Etten-Leur, Netherlands, assignor to Schon B.V., Netherlands
Filed May 17, 1990, Ser. No. 524,994
Term of patent 14 years
U.S. Cl. D6—580



340,379
VEHICLE SEAT CUSHION
Richard E. Cain, 605 York Ave., Statesville, N.C. 28677
Filed Nov. 3, 1991, Ser. No. 786,945
Term of patent 14 years
U.S. Cl. D6—601

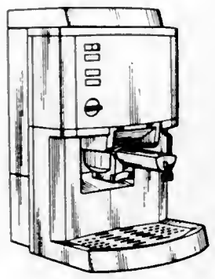


340,380
PILLOW FOR SEPARATING KNEES
Jack D. McDonald, Pensacola, Fla., assignor to Florida Foam Fabricators, Inc., Pensacola, Fla.
Filed Jun. 15, 1992, Ser. No. 897,977
Term of patent 14 years
U.S. Cl. D6—601

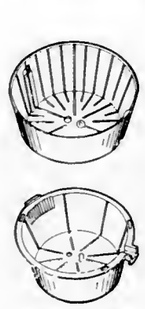


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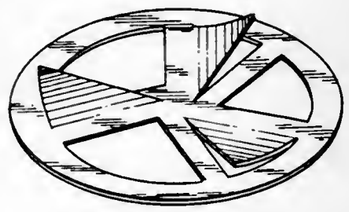
340,381
COFFEE MAKER
Jean-Francois Mermillod, St-Jean de Sixt, France, assignor to Calor S.A., Lyons, France
Filed Dec. 6, 1991, Ser. No. 802,780
Claims priority, application France, Jun. 7, 1991, 913538
Term of patent 14 years
U.S. Cl. D7—309



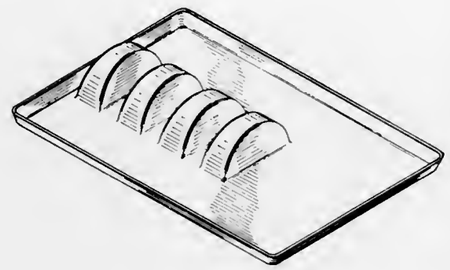
340,382
BASKET FOR A BEVERAGE MAKER
Francis R. Bannigan, Victoria, Australia, assignor to Kambrook Distributing Pty. Ltd., Australia
Filed Jun. 12, 1991, Ser. No. 714,764
Claims priority, application Australia, Dec. 13, 1990, 4027/90
Term of patent 14 years
U.S. Cl. D7—400



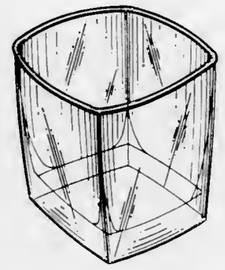
340,383
HEAT REDUCTION VOLUME COMPENSATOR WITH CURLED FINS FOR DISPOSITION BETWEEN A COFFEE POT AND HOT PLATE
F. Clark Addison, 3804 W. Eisenbower Ave., Loveland, Colo. 80537, and Peder J. Thorstensen, P.O. Box 1025, Loveland, Colo. 80539
Filed Aug. 29, 1991, Ser. No. 751,684
Term of patent 14 years
U.S. Cl. D7—407



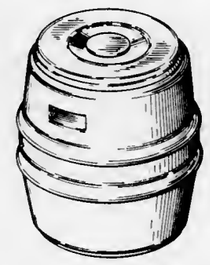
340,384
TACO PLATE
Thomas H. Couillard, and Eileen Couillard, both of 1390 Ashley La., Addison, Ill. 60101
Filed Aug. 9, 1991, Ser. No. 743,567
Term of patent 14 years
U.S. Cl. D7—504



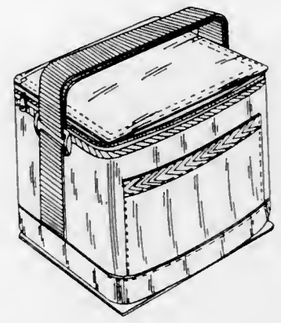
340,385
GLASS
Philippe J. Durand, Arques, France, assignor to Verrerie Cristallerie d'Arques, J. G. Durand et Cie, Arques, France
Filed Apr. 30, 1990, Ser. No. 516,226
The portion of the term of this patent subsequent to Nov. 24, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—509



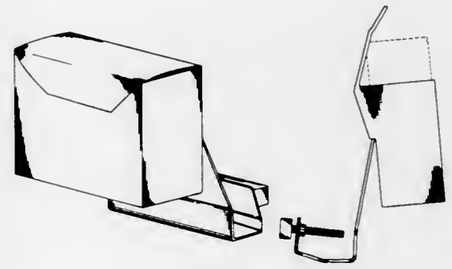
340,386
ICE BUCKET
John D. McGourthy, Sr., 5209 W. River Trail Ct., Mequon, Wis. 53092
Filed Sep. 4, 1991, Ser. No. 754,692
Term of patent 14 years
U.S. Cl. D7—603



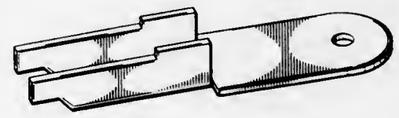
340,387
FLEXIBLE COOLER
Thomas J. Melk, Chicago, Ill., assignor to Outer Circle Products, Ltd., Chicago, Ill.
Filed Jan. 9, 1992, Ser. No. 818,371
Term of patent 14 years
U.S. Cl. D7—607



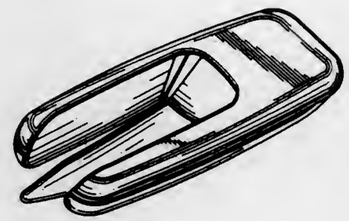
340,388
BEVERAGE CONTAINER HOLDER
Gregory C. Sedivec, 4006 Hill Rd., Boise, Id. 83703
Filed Jul. 29, 1991, Ser. No. 736,911
Term of patent 14 years
U.S. Cl. D7—620



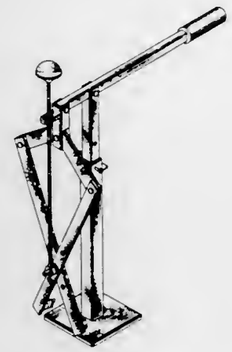
340,389
DEVICE FOR DISENGAGING A TERMINAL FITTED IN A CONNECTOR HOUSING
Makoto Yamanashi, Shizuoka, Japan, assignor to Yazaki Corporation, Japan
Filed Feb. 21, 1992, Ser. No. 839,877
Term of patent 14 years
U.S. Cl. D8—14



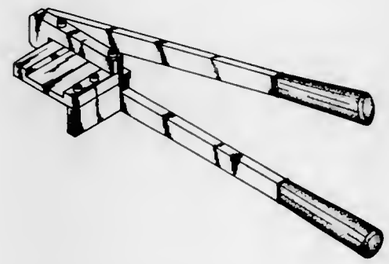
340,390
STAPLE REMOVER
Mel Evenson, San Pedro, Calif., assignor to Eldon Industries, Inc., Inglewood, Calif.
Filed Oct. 15, 1990, Ser. No. 597,766
Term of patent 14 years
U.S. Cl. D8—48



340,391
STAKE PULLER
Gregory H. Carpenter, 801 Park St., Lodi, Calif. 95240-5121
Filed Apr. 27, 1992, Ser. No. 874,445
Term of patent 14 years
U.S. Cl. D8—51

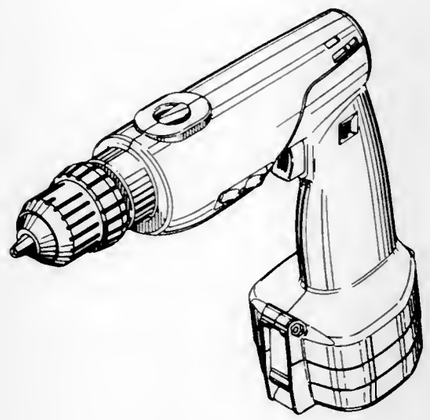


340,392
MULTIPURPOSE SIGN PREPARATION TOOL
Stig Axelsson, Tranås, Sweden, assignor to AB Hammarprodukter, Bjursas, Sweden
Filed Oct. 15, 1991, Ser. No. 776,488
Claims priority, application Sweden, May 13, 1991, 91-1014
Term of patent 14 years
U.S. Cl. D8—51

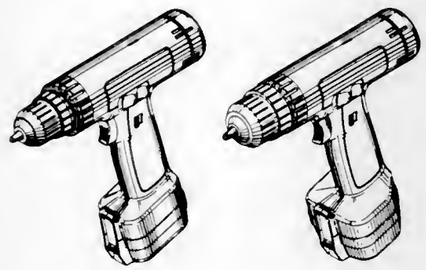


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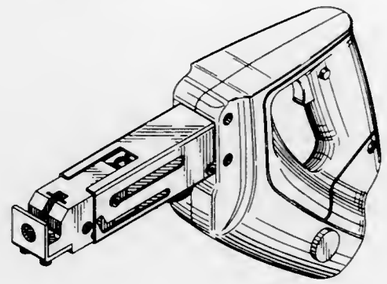
340,393
PORTABLE ELECTRIC DRILL
Michio Okumura, Anjo, Japan, assignor to Makita Corporation, Anjo, Japan
Filed Mar. 13, 1992, Ser. No. 851,530
Claims priority, application Japan, Sep. 18, 1991, 3-28305
Term of patent 14 years
U.S. Cl. D8—68



340,394
PORTABLE ELECTRIC DRILL
Michio Okumura, Anjo, Japan, assignor to Makita Corporation, Anjo, Japan
Filed Mar. 24, 1992, Ser. No. 857,294
Claims priority, application Japan, Sep. 30, 1991, 3-29639; Oct. 11, 1991, 3-30832
Term of patent 14 years
U.S. Cl. D8—68

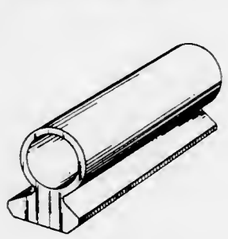


340,395
PORTABLE ELECTRIC SCREWDRIVER
Hideki Tanaka, Anjo, Japan, assignor to Makita Corporation, Anjo, Japan
Filed Feb. 26, 1992, Ser. No. 841,442
Claims priority, application Japan, Sep. 12, 1991, 3-27765
Term of patent 14 years
U.S. Cl. D8—69



340,396
ELECTRIC SCREWDRIVER
Kiyotaka Ichikawa, Anjo, Japan, assignor to Makita Corporation, Anjo, Japan
Filed Apr. 24, 1992, Ser. No. 873,077
Claims priority, application Japan, Oct. 31, 1991, 3-33230
Term of patent 14 years
U.S. Cl. D8—68

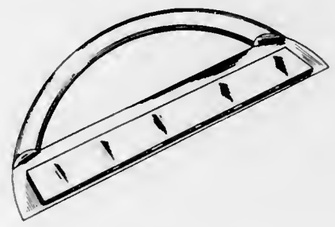
340,397
CONTOUR SANDER
Michael J. Demers, 75 Cambridge St., Lawrence, Mass. 01843
Filed May 21, 1991, Ser. No. 703,335
Term of patent 14 years
U.S. Cl. D8—90



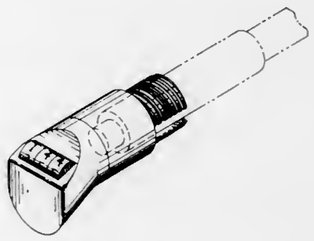
340,398
DOOR HANDLE
Joseph S. Clancy, Union Lake, Mich., assignor to Sash Controls, Inc., Ferndale, Mich.
Filed Apr. 1, 1991, Ser. No. 677,965
The portion of the term of this patent subsequent to Oct. 1, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—302



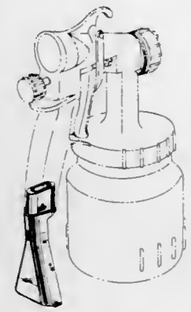
340,399
TOILET SEAT POSITIONING HANDLE
John Paglia, 1680 Narcissa Rd., Blue Bell, Pa. 19422
Filed Dec. 6, 1991, Ser. No. 802,778
Term of patent 14 years
U.S. Cl. D8—317



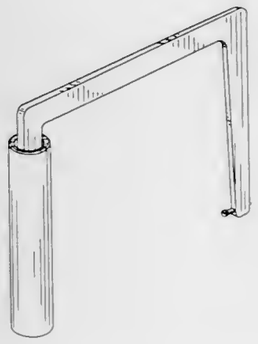
340,400
ATTACHABLE VEHICLE HAND BRAKE LOCK
Nicolas R. Lugo, 1521 Bellevue Ave. #105, Seattle, Wash. 98122
Filed Jun. 25, 1992, Ser. No. 903,881
Term of patent 14 years
U.S. Cl. D8—331



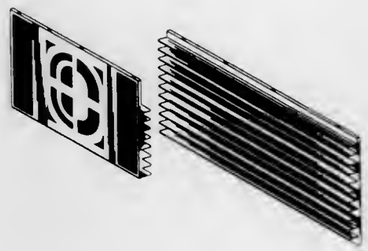
340,401
STAND FOR A PAINT GUN HANDLE
Ewald Kille, Friedrichshafen, Fed. Rep. of Germany, assignor to Wagner Spray Tech Corporation, Minneapolis, Minn.
Filed Jul. 18, 1991, Ser. No. 732,311
Term of patent 14 years
U.S. Cl. D8—354



340,402
PICTURE HANGING APPARATUS
G. Richard Holt, 100 Pin Oak Forest, San Antonio, Tex. 78232
Filed Apr. 27, 1992, Ser. No. 874,763
Term of patent 14 years
U.S. Cl. D8—373



340,403
ADJUSTABLE PICTURE HANGER
Bobby R. Bruner, Jr., 6330 Laurel La., Placerville, Calif. 95667
Filed Nov. 22, 1991, Ser. No. 796,228
Term of patent 14 years
U.S. Cl. D8—373

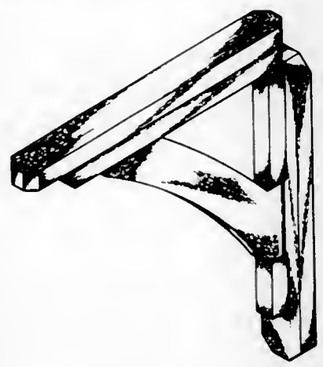


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340,404
FINIAL
Ronald L. Prezner, Valhalla, N.Y., assignor to The Decorative Hardware Studio, Inc., Chappaqua, N.Y.
Filed Dec. 6, 1991, Ser. No. 805,592
Term of patent 14 years
U.S. Cl. D8—378



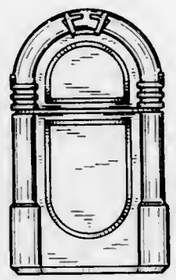
340,405
HOT TUB COVER BRACKET
Stephen P. Anderson, Winslow, Ark., assignor to A & B Accessories, Inc., West Fork, Ark.
Filed Aug. 13, 1991, Ser. No. 744,228
Term of patent 14 years
U.S. Cl. D8—381



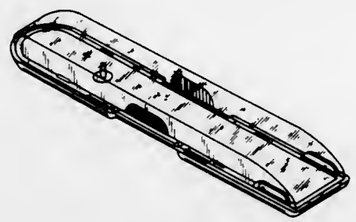
340,406
DOOR-SUPPORTED DOOR STOP
Patrick Foti, 70 Audubon Dr., Walpole, Mass. 02081
Filed Apr. 11, 1991, Ser. No. 683,653
Term of patent 14 years
U.S. Cl. D8—402



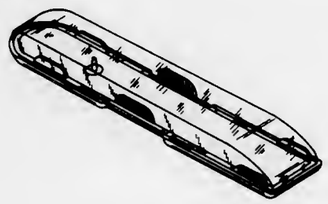
340,407
BOTTLE
Martin Rahe, Drosselweg 67, DE-4971 Hüllhorst, and Ortwin Eversmeyer, Pickertweg 25, D-4972 Löhne, both of Fed. Rep. of Germany
Filed Feb. 11, 1992, Ser. No. 833,900
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1991, 9105677
Term of patent 14 years
U.S. Cl. D9—328



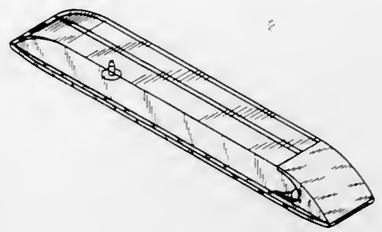
340,408
SHIPPING CONTAINER FOR JEWELRY ITEMS AND WATCH BANDS
Hermann Hirsch, Klagenfurt, Austria, assignor to Hirsch Armbander Gesellschaft mbH, Klagenfurt, Austria
Filed Aug. 23, 1991, Ser. No. 748,913
Claims priority, application Austria, Feb. 26, 1991, MU 398/91
Term of patent 14 years
U.S. Cl. D9—418



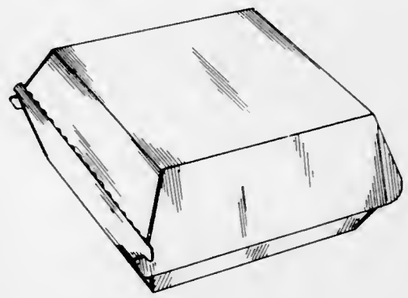
340,409
SHIPPING CONTAINER FOR JEWELRY ITEMS AND WATCH BANDS
Hermann Hirsch, Klagenfurt, Austria, assignor to Hirsch Armbander Gesellschaft mbH, Klagenfurt, Austria
Filed Aug. 23, 1991, Ser. No. 748,914
Claims priority, application Austria, Feb. 26, 1991, MU 399/91
Term of patent 14 years
U.S. Cl. D9—418



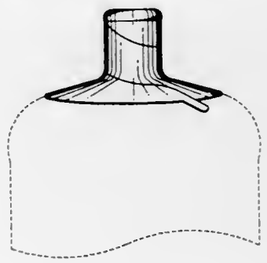
340,410
SHIPPING CONTAINER FOR JEWELRY ITEMS AND WATCH BANDS
Hermann Hirsch, Klagenfurt, Austria, assignor to Hirsch Armbander Gesellschaft mbH, Klagenfurt, Austria
Filed Aug. 23, 1991, Ser. No. 748,916
Claims priority, application Austria, Feb. 26, 1991, MU 401/91
Term of patent 14 years
U.S. Cl. D9—418



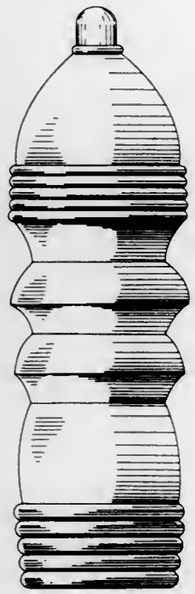
340,411
CONTAINER FOR FOOD PRODUCTS
Alex Ong, Fitzroy, Australia, assignor to Visy Board Properties Pty. Ltd., Victoria, Australia
Filed Oct. 11, 1991, Ser. No. 775,259
Claims priority, application Australia, Apr. 12, 1991, 1017/91
Term of patent 14 years
U.S. Cl. D9—433



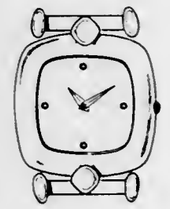
340,412
WATER BOTTLE CAP
Don S. Smith, Mission Viejo, Calif., assignor to Don S. Smith, Mission Viejo, Calif.
Filed Aug. 2, 1991, Ser. No. 740,016
Term of patent 14 years
U.S. Cl. D9—435



340,413
COMBINED COLLAPSIBLE SODA BOTTLE AND CAP
Jack Emig, 3055 Judyth St. SE., Warren, Ohio 44484
Filed Jun. 21, 1991, Ser. No. 718,865
Term of patent 14 years
U.S. Cl. D9—502

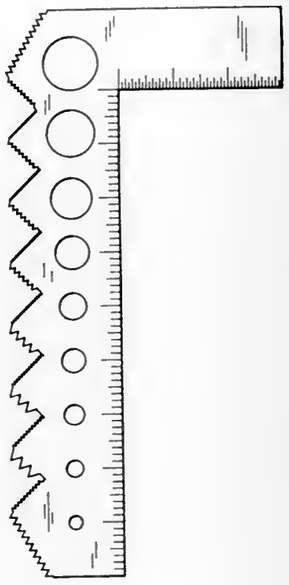


340,414
WRIST WATCH
Evert DeGraeve, New York, N.Y., assignor to Harry Winston Ultimate Timepiece S.A., Geneva, Switzerland
Filed Dec. 2, 1991, Ser. No. 801,082
Claims priority, application World Int. Prop. O., Sep. 2, 1991, DM/020.565
Term of patent 14 years
U.S. Cl. D10—39

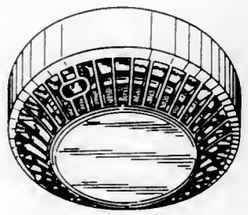


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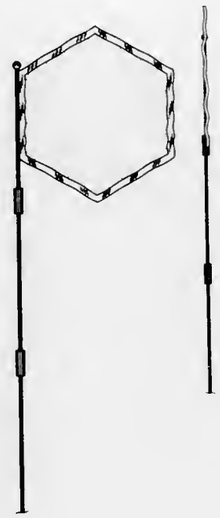
340,415
BOLT MEASUREMENT DEVICE
David Shadday, and Joel Shadday, both of 1316 N. Osage Dr., Tulsa, Okla. 74103
Filed Jul. 13, 1992, Ser. No. 912,602
Term of patent 14 years
U.S. Cl. D10—71



340,416
SMOKE DETECTOR
Kenneth R. Fenne, Glen Ellyn, Ill., assignor to Pittway Corporation, Chicago, Ill.
Filed Sep. 9, 1992, Ser. No. 942,527
Term of patent 14 years
U.S. Cl. D10—106



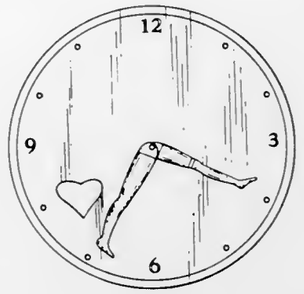
340,417
EMERGENCY SIGNAL FLAG
Albert T. Popp, and Michael M. Popp, both of 7325 Lattimore Dr., Las Vegas, Nev. 89128
Filed Nov. 12, 1991, Ser. No. 790,692
Term of patent 14 years
U.S. Cl. D10—109



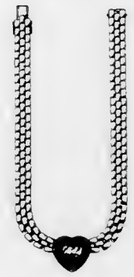
340,418
EMERGENCY SIGNAL FLAG
Albert T. Popp, and Michael M. Popp, both of 7325 Lattimore Dr., Las Vegas, Nev. 89128
Filed Nov. 12, 1991, Ser. No. 790,693
Term of patent 14 years
U.S. Cl. D10—109



340,419
COMBINED CLOCKFACE AND HANDS THEREFOR
Jan M. Dauth, 305 S. Roscoe Blvd., Ponte Vedra, Fla. 32082
Filed Oct. 24, 1990, Ser. No. 602,868
Term of patent 14 years
U.S. Cl. D10—124



340,420
NECKLACE
Claude Duvoisin, Thônex, Switzerland, assignor to Le Petit-Fils De L.U. Chopard & Cie S.A., Geneva, Switzerland
Filed Oct. 2, 1991, Ser. No. 770,956
Claims priority, application World Int. Prop. O., Apr. 5, 1991, 81/5427
Term of patent 14 years
U.S. Cl. D11—7



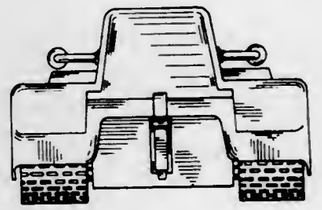
340,421
FINGER RING
Paolo Bulgari, Rome, Italy, assignor to Partecipazioni Bulgari S.p.A., Rome, Italy
Filed Dec. 18, 1990, Ser. No. 629,202
Claims priority, application World Int. Prop. O., Jul. 3, 1990, DM/017.067
The portion of the term of this patent subsequent to Aug. 24, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D11—27



340,422
JEWELRY ROPE CHAIN
Stefano Grando, 1131 Alta Loma Rd. #501, Los Angeles, Calif. 90069
Continuation of Ser. No. 439,512, Nov. 20, 1989, abandoned.
This application Jnn. 17, 1992, Ser. No. 900,527
Term of patent 14 years
U.S. Cl. D11—93



340,423
ALL TERRAIN VEHICLE
Flavio Gallone, Signal Lux S.p.A. - Via Milano 27, Cornaredo, Italy
Continuation-in-part of Ser. No. 549,681, Jul. 6, 1990, abandoned. This application Mar. 5, 1991, Ser. No. 665,004
Claims priority, application Italy, Jan. 12, 1990, 20434 B/90
Term of patent 14 years
U.S. Cl. D12—1

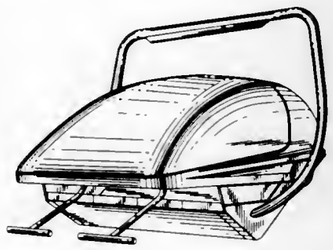


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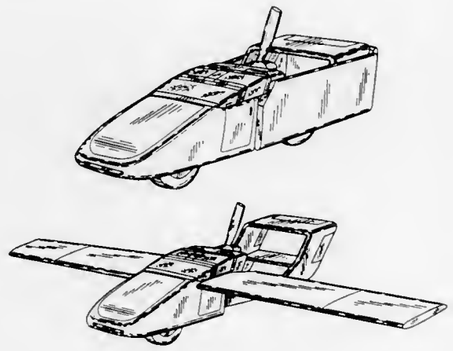
340,424
MOTORCYCLE
Junichi Kawajiri, Tokyo, Japan, assignor to Bridgestone Corporation, Tokyo, Japan
Filed Nov. 8, 1991, Ser. No. 789,468
Claims priority, application Japan, May 10, 1991, 3-13261
Term of patent 14 years
U.S. Cl. D12—140



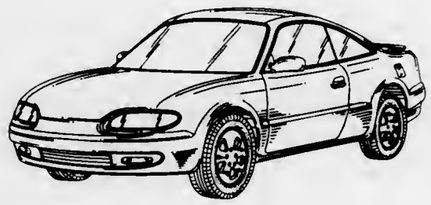
340,425
CHAIR FOR CHAIRLIFTS
Patrice Belliere, Annecy Le Vieux, and Frank Rousselin, Voiron, both of France, assignors to Von Roll Seilbahnen AG, Berne, Switzerland
Filed Jan. 31, 1991, Ser. No. 648,352
Claims priority, application France, Aug. 6, 1990, 905066
Term of patent 14 years
U.S. Cl. D12—52



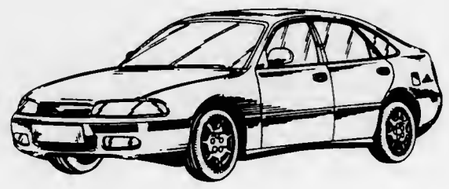
340,426
COMBINED ROAD AND AIRCRAFT VEHICLE
Harvey R. Miller, 3655 E. Amazon, Eugene, Oreg. 97405
Filed May 15, 1992, Ser. No. 884,546
Term of patent 14 years
U.S. Cl. D12—4



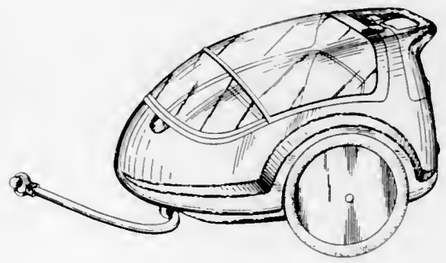
340,427
AUTOMOBILE
Yasuo Aoyagi, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan
Filed Apr. 23, 1991, Ser. No. 690,795
Claims priority, application Japan, Oct. 23, 1990, 2-35264
Term of patent 14 years
U.S. Cl. D12—92



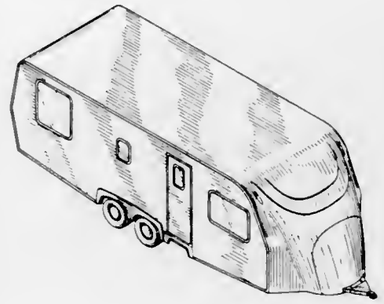
340,428
AUTOMOBILE
Yasuo Aoyagi, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan
Filed Sep. 13, 1991, Ser. No. 759,062
Claims priority, application Japan, Mar. 14, 1991, 3-6707
Term of patent 14 years
U.S. Cl. D12—92



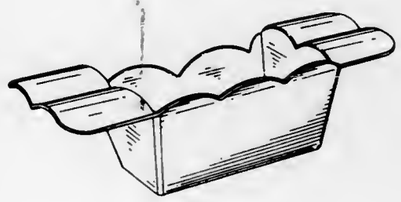
340,429
BICYCLE TRAILER
Gilbert Smith, Cambridge, Canada, assignor to Kid Around Kinetica Inc., London, Canada
Filed May 22, 1992, Ser. No. 886,480
Claims priority, application Canada, Nov. 21, 1991, 2111919
Term of patent 14 years
U.S. Cl. D12—102



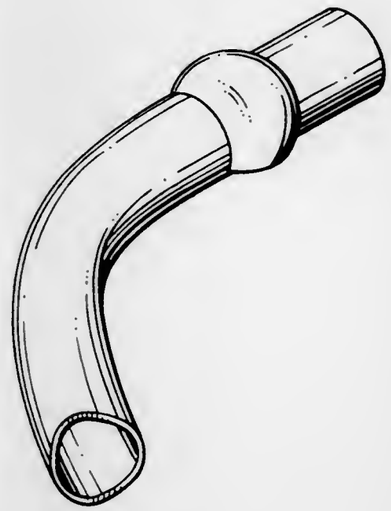
340,430
TRAILER
Donald W. Krah, Bristol, Ind., assignor to Shadow Cruiser, Inc., Bristol, Ind.
Filed Aug. 16, 1991, Ser. No. 747,193
Term of patent 14 years
U.S. Cl. D12—103



340,431
BASKET FOR ATTACHMENT TO A TRICYCLE
Kun-Hei Liu, 2F., No. 32, Lane 200, Tung Hwa Street, Taipei, Taiwan
Filed Apr. 30, 1992, Ser. No. 876,223
Term of patent 14 years
U.S. Cl. D12—114



340,432
BICYCLE HANDLEBAR ACCESSORY
Pippin Osborne, 2324 Haywood Avenue, West Vancouver, British Columbia, Canada V7V 1M8
Continuation-in-part of Ser. No. 647,003, Jan. 29, 1991, abandoned. This application Dec. 23, 1991, Ser. No. 812,222
Claims priority, application Canada, Jul. 19, 1991, 1907919
Term of patent 14 years
U.S. Cl. D12—114

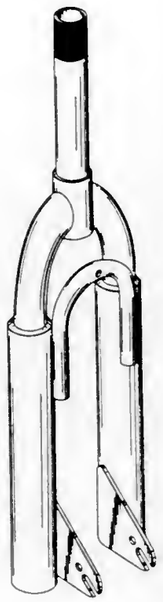


340,433
BICYCLE REAR SWING ARM
Raymond L. Baldwin, P.O. Box 32, and Rodney D. Moses, P.O. Box 475, both of Selma, Oreg. 97538
Filed Nov. 27, 1991, Ser. No. 802,447
Term of patent 14 years
U.S. Cl. D12—117

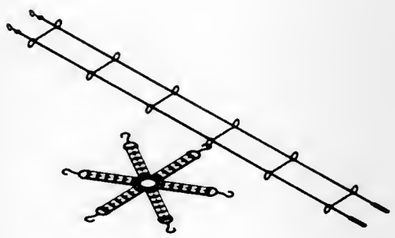


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340,434
BICYCLE FORK
Rodney L. Hammer, Smyrna; John K. Story, Donelson, and Karen S. Watson, Columbia, all of Tenn., assignors to Murray Ohio Manufacturing Company, Brentwood, Tenn.
Filed Mar. 18, 1992, Ser. No. 853,152
Term of patent 14 years
U.S. Cl. D12—118



340,435
WHEELCHAIR TIRE CHAIN
Sonja K. Johnson, 177 N. 3500 East, Rigby, Id. 83442
Continuation-in-part of Ser. No. 597,518, Oct. 15, 1990. This application Aug. 19, 1991, Ser. No. 746,895
Term of patent 14 years
U.S. Cl. D12—133



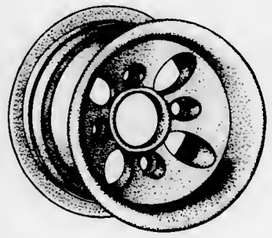
340,436
TIRE TREAD
André E. J. Baus, Bettembourg, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 23, 1992, Ser. No. 856,943
Term of patent 14 years
U.S. Cl. D12—146



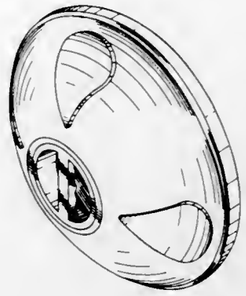
340,437
WINDSHIELD WIPER
Ming-Tung Yang, No. 4-3, Lane 97, Lung Chuen Street, Panchiao, Taipei Hsien, Taiwan
Filed Dec. 4, 1992, Ser. No. 2,120
Term of patent 14 years
U.S. Cl. D12—155



340,438
WHEEL FOR A PNEUMATIC TIRE
Joseph W. Sheeler, Mechanicsburg, Pa., assignor to Carlisle Tire & Rubber Company, Carlisle, Pa.
Filed Sep. 3, 1992, Ser. No. 938,653
Term of patent 14 years
U.S. Cl. D12—209



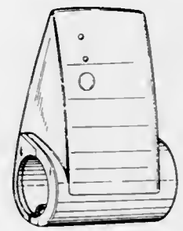
340,439
WHEEL HUBCAP AND RIM PROTECTOR
John N. Carbone, 99 Cedar St., Hanover, Mass. 02339
Filed May 14, 1992, Ser. No. 882,107
Term of patent 14 years
U.S. Cl. D12—213



340,440
SPARK PLUG COVER
S. Wyatt Fuller, Parkland, Fla., and Alwin J. Stahel, St. Paul, Minn., assignors to KuryAkyn Holdings, Inc., Somerset, Wis.
Filed Jun. 12, 1991, Ser. No. 718,841
Term of patent 14 years
U.S. Cl. D13—127



340,441
ELECTRIC PLUG FOR HOUSEHOLD CIRCUITRY
Philippee Piret, Ifs, France, assignor to Moulinex Societe Anonyme, Bagnolet, France
Filed May 13, 1992, Ser. No. 882,635
Claims priority, application France, Nov. 13, 1991, 917 047
Term of patent 14 years
U.S. Cl. D13—139

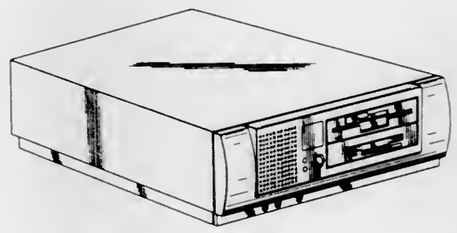


340,442
COMBINED SAFETY SWITCH HANDLE AND MOUNTING BRACKET
Brian P. Bessette, P.O. Box 1532, Burlington, Vt. 05402
Filed Nov. 25, 1992, Ser. No. 1,875
Term of patent 14 years
U.S. Cl. D13—168



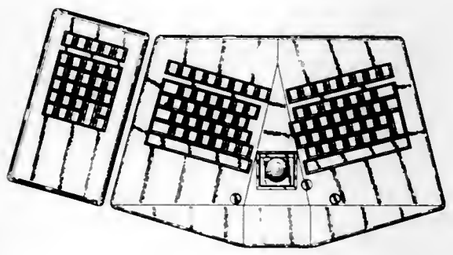
340,443
ELECTROSTATIC DISCHARGE DEVICE FOR USE WITH AN ELECTRICAL WALL SWITCH
Walter A. Schwalm, 745 Barberry La., Lake Forest, Ill. 60045
Filed Mar. 6, 1991, Ser. No. 665,451
Term of patent 14 years
U.S. Cl. D13—199

340,444
PERSONAL COMPUTER
Lawrence M. Kuba, Nashua, N.H., and Thomas A. Tedham, Topsfield, Mass., assignors to Wang Laboratories, Inc., Lowell, Mass.
Filed Feb. 6, 1992, Ser. No. 831,388
Term of patent 14 years
U.S. Cl. D14—100

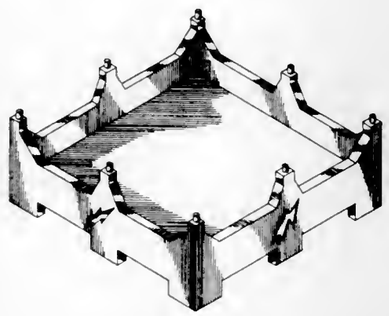


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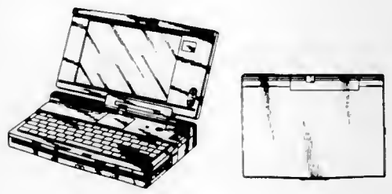
340,445
DUAL COMPONENT KEYBOARD UNIT
Kai-Uwe Marquardt, Rietheim-Weilheim; Ekkehard Sachs, Spaichingen, and Ralf Sauer, Wurmlingen, all of Fed. Rep. of Germany, assignors to Marquardt GmbH, Rietheim-Weilheim
Filed Sep. 10, 1991, Ser. No. 757,435
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1991, M9101962.1
Term of patent 14 years
U.S. Cl. D14—115



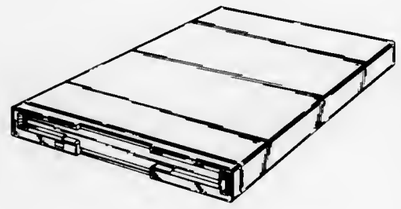
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AUTOMOBILE BATTERY STORAGE RACK
Michael R. Dalesandro, 17 Grant Ave., Cherry Hill, N.J. 08002
Filed Jul. 19, 1991, Ser. No. 732,692
Term of patent 14 years
U.S. Cl. D13—119



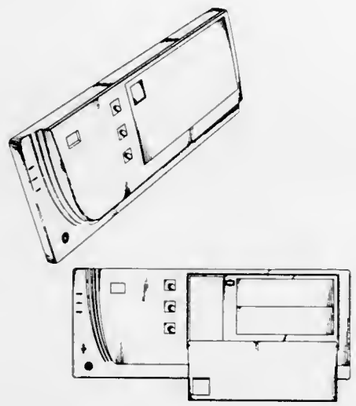
340,447
COMPUTER
Yuka Fukagawa; Masaharu Sawatani; Shimon Okada; Nobuaki Iwabuchi, and Kouji Kurihara, all of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 13, 1992, Ser. No. 819,511
Claims priority, application Japan, Jul. 19, 1991, 3-21597
Term of patent 14 years
U.S. Cl. D14—106



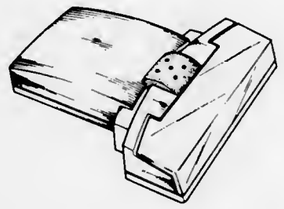
340,448
DISC DRIVE
Kazuhiko Inoue, Houya, and Takashi Watanabe, Ichikawa, both of Japan, assignors to Teac Corporation, Tokyo, Japan
Filed Sep. 3, 1991, Ser. No. 753,672
Claims priority, application Japan, Mar. 5, 1991, 3-5916
Term of patent 14 years
U.S. Cl. D14—109



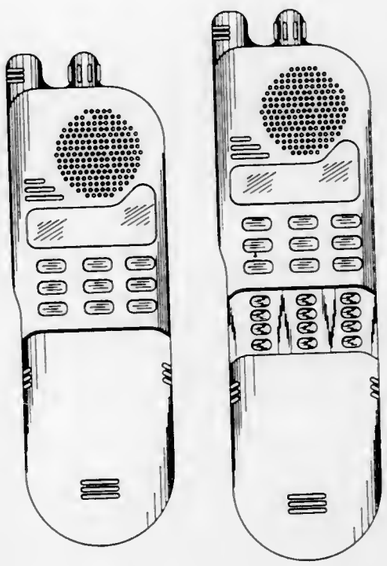
340,449
COMPUTER MAINFRAME FRONT PANEL
Edward Chu, 2F, No. 10, Lane 329, Sec. 1, Tunhua S. Rd., Taipei, Taiwan
Filed Oct. 30, 1991, Ser. No. 784,783
Term of patent 14 years
U.S. Cl. D14—115



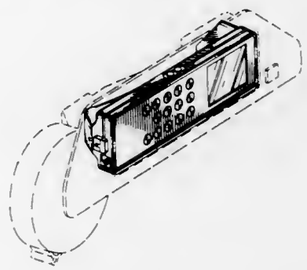
340,450
SCANNER
Shih Y. Tso, 11 Fl., No. 116, Sec. 2, Nanking E. Rd., Taipei, Taiwan
Filed Mar. 10, 1992, Ser. No. 849,124
Term of patent 14 years
U.S. Cl. D14—116



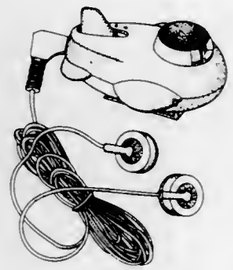
340,451
PORTABLE RADIO TELEPHONE
Thomas G. Beaumont, Bedford, Tex.; Scott H. Richards, Plantation, and Bruce A. Claxton, Coral Springs, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 2, 1992, Ser. No. 843,084
Term of patent 14 years
U.S. Cl. D14—138



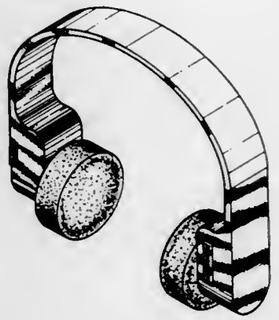
340,452
TELEPHONE HANDSET
Richard E. Skowronski, Elk Grove Village, Ill., assignor to GTE Airfone Incorporated, Oak Brook, Ill.
Filed Aug. 6, 1992, Ser. No. 926,267
Term of patent 14 years
U.S. Cl. D14—148



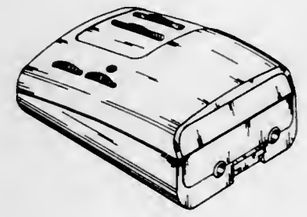
340,453
RADIO WITH HEADPHONES
Richard F. M. Peersmann, Scheveningen, Netherlands, assignor to Pollyflame International, B.V., Roelofarendsveen, Netherlands
Filed Feb. 1, 1991, Ser. No. 648,629
Term of patent 14 years
U.S. Cl. D14—189



340,454
HEADSET FOR USE BY JOGGERS
Lawrence J. Snide, and Thomas Hyland, both of 329 McCarty Ave., Albany, N.Y. 12209
Filed Oct. 18, 1991, Ser. No. 778,627
Term of patent 14 years
U.S. Cl. D14—192

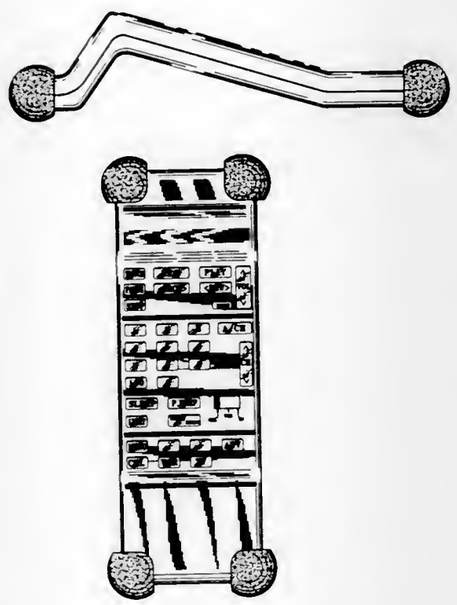


340,455
PORTABLE MUSICAL INSTRUMENT AMPLIFIER WITH A MOVABLE PLUG
David E. Christian, Danbury, Conn., assignor to CB Labs, Inc., Bridgeport, Conn.
Filed Jan. 10, 1991, Ser. No. 639,714
Term of patent 14 years
U.S. Cl. D14—217

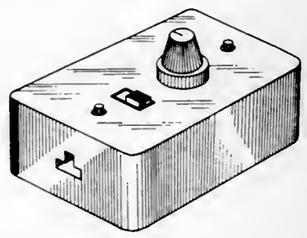


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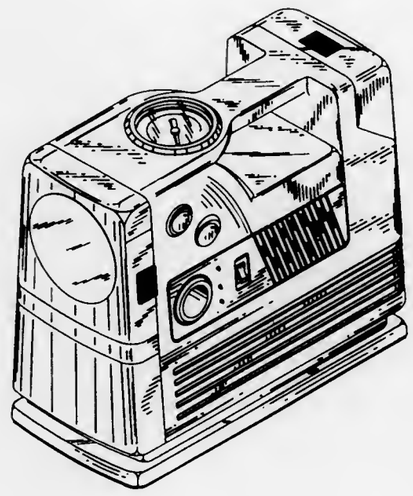
340,456
LIGHTED REMOTE CONTROL
Barbara A. Watson, Rte. 3 - Box 785-G, Hilliard, Fla. 32046
Filed Oct. 7, 1992, Ser. No. 225
Term of patent 14 years
U.S. Cl. D14—218



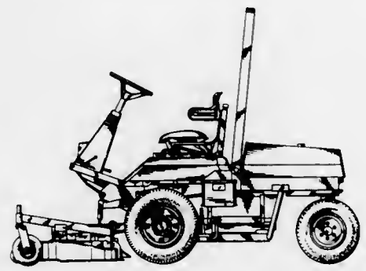
340,457
TELEPHONE LINE NOISE SUPPRESSOR
William E. Lennon, III, P.O. Box 8166, Lakeland, Fla. 33802
Filed Dec. 9, 1991, Ser. No. 804,166
Term of patent 14 years
U.S. Cl. D14—240



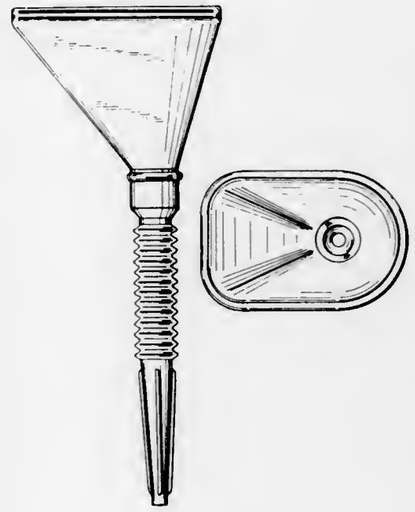
340,458
MOTOR OPERATED AUTOMOBILE AIR PUMP
Lee-Jung Wang, No. 84, Chuan Tzu Chin, Chuan Chin Li, Ma Tou Chen, Tainan Hsien, Taiwan
Filed Jul. 8, 1992, Ser. No. 909,824
Term of patent 14 years
U.S. Cl. D15—7



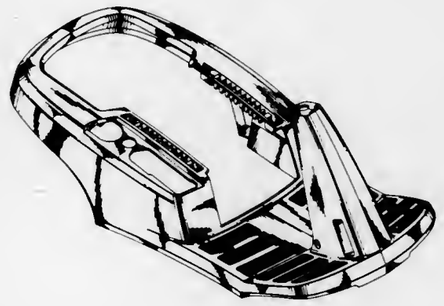
340,459
LAWN MOWER
Hiroaki Kawakita; Toshihiko Hamada; Yoshihiro Kawahara; Akiyoshi Takemoto, and Terutaka Takei, all of Sakai, Japan, assignors to Kubota Corporation, Osaka, Japan
Filed Apr. 3, 1991, Ser. No. 681,196
Claims priority, application Japan, Mar. 11, 1991, 3-6634
Term of patent 14 years
U.S. Cl. D15—15



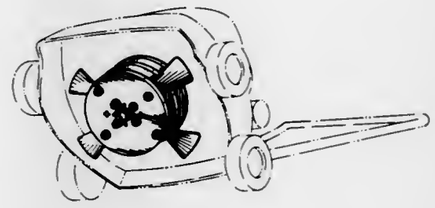
340,460
FUNNEL WITH LONG RIBBED SPOUT
Louis M. Pollak, Bridgewater, N.J., and Michael W. K. Young, Flushing, N.Y., assignors to Injectron Corporation, Plainfield, N.J.
Filed Feb. 5, 1992, Ser. No. 831,316
Term of patent 14 years
U.S. Cl. D15—150



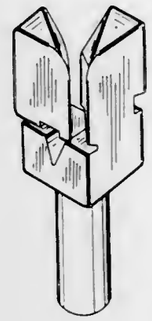
340,461
VEHICLE BODY
Jon M. Patterson, Wauwatosa; Wayne R. Hutchison, Mayville; Eugene G. Hayes, Beaver Dam; Daniel A. Sebben, West Bend; Richard D. Teal, Horicon, all of Wis.; Steven C. Wasson, Midland, Mich.; David R. Daniel, Midland, Mich.; Earl T. Moore, Midland, Mich.; Mansour Mirdamadi, Midland, Mich.; Luis Lorenzo, Midland, Mich.; Michael J. Coffey, Sanford, Mich.; Robert J. Cleereman, Midland, Mich.; James H. Weitz, Ridgewood, N.J., and Daniel R. Nickles, Monroe, N.Y., assignors to Deere & Company, Moline, Ill.
Filed Jun. 14, 1991, Ser. No. 716,613
Term of patent 14 years
U.S. Cl. D15—15



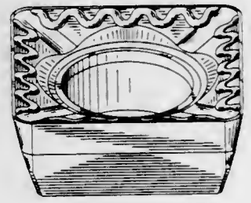
340,462
MOWER CUTTING HEAD
Jerry R. Cowart, P.O. Box 99, Brooklyn, Miss. 39425
Filed Oct. 11, 1991, Ser. No. 775,067
Term of patent 14 years
U.S. Cl. D15—17



340,463
APPLICATOR TRAP GUIDE
Benny M. Sedman, Laurens, S.C., assignor to AlSiMag Technical Ceramics, Inc., Laurens, S.C.
Filed Mar. 13, 1991, Ser. No. 669,217
Term of patent 14 years
U.S. Cl. D15—78

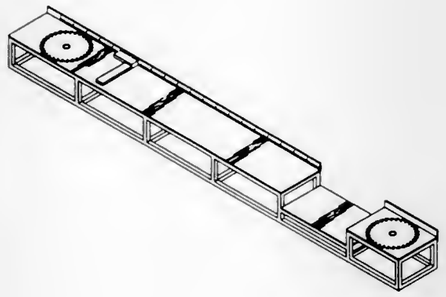


340,464
CUTTING INSERT FOR MILLING CUTTERS
Lars Markusson; Hans Lindberg, and Lars-Gunnar Wallstrom, all of Sandviken, Sweden, assignors to Sandvik AB, Sweden
Filed Jul. 17, 1992, Ser. No. 914,142
Claims priority, application Sweden, Jan. 17, 1992, 92-0114
Term of patent 14 years
U.S. Cl. D15—139

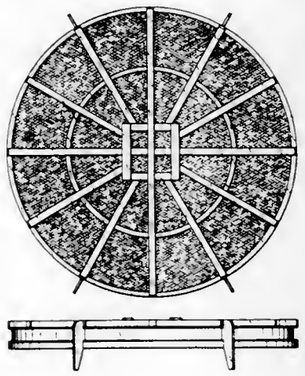


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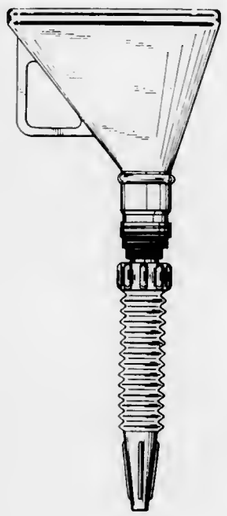
340,465
PORTABLE SKILL MASTER JIG
Mitchel T. Guertin, R.R. 4 Wilbraham Rd., Monson, Mass. 01057
Filed Apr. 15, 1991, Ser. No. 685,484
Term of patent 14 years
U.S. Cl. D15—140



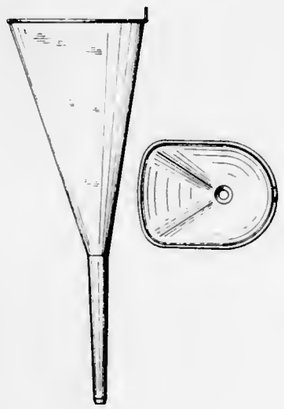
340,466
LADLE COVER
Joseph S. Simko, Highland, Ind., assignor to Simko & Sons Industrial Refractories, Inc., East Chicago, Ind.
Filed Aug. 9, 1991, Ser. No. 742,942
Term of patent 14 years
U.S. Cl. D15—144.1



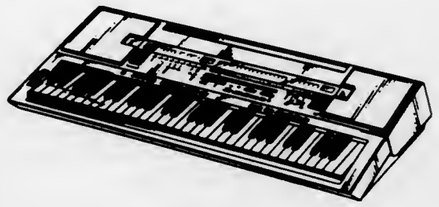
340,467
TWO-PIECE FUNNEL WITH LONG, RIBBED SPOUT
Louis M. Pollak, Bridgewater, N.J., and Michael W. K. Young, Flushing, N.Y., assignors to Injectron Corporation, Plainfield, N.J.
Filed Feb. 5, 1992, Ser. No. 831,314
Term of patent 14 years
U.S. Cl. D15—150



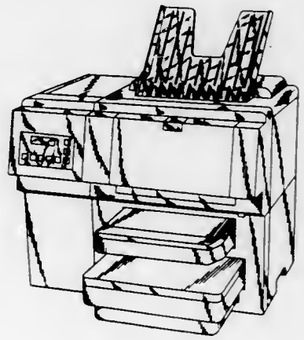
340,468
FUNNEL WITH LONG TAPERED SPOUT
Louis M. Pollak, Bridgewater, N.J., and Michael W. K. Young, Flushing, N.Y., assignors to Injectron Corporation, Plainfield, N.J.
Filed Feb. 5, 1992, Ser. No. 831,317
Term of patent 14 years
U.S. Cl. D15—150



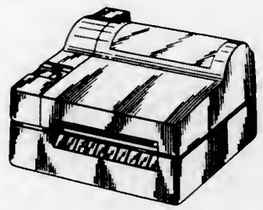
340,469
ELECTRONIC KEYBOARD MUSICAL INSTRUMENT
Tsutomu Nakada, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan
Filed Oct. 23, 1991, Ser. No. 782,265
Claims priority, application Japan, Apr. 25, 1991, 3-12338
Term of patent 14 years
U.S. Cl. D17—1



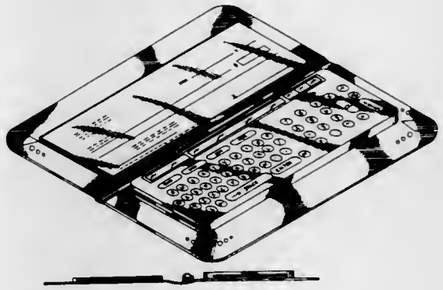
340,470
LASER BEAM PRINTER
Eiji Tsutsui, Sanda, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan
Filed May 22, 1991, Ser. No. 704,004
Claims priority, application Japan, Nov. 30, 1990, 2-40478
The portion of the term of this patent subsequent to Oct. 5, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—50



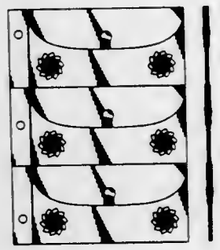
340,471
LABEL PRINTER
Yoshiro Yamamoto, Funabashi, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan
Filed Nov. 7, 1991, Ser. No. 788,742
Term of patent 14 years
U.S. Cl. D18—50



340,472
COMBINED CHECKBOOK AND COMPUTER THEREFOR
Harry C. Chriest, and Laurie M. Flest, both of 10057 Ashworth Ave. North, Seattle, Wash. 98133
Filed Sep. 26, 1990, Ser. No. 588,319
Term of patent 14 years
U.S. Cl. D19—11



340,473
LOOSELEAF BINDER SHEET FOR ORGANIZING COUPONS
Connie M. Dubs, 123 S. Lehman St., York, Pa. 17403
Filed Apr. 1, 1991, Ser. No. 677,961
Term of patent 14 years
U.S. Cl. D19—27

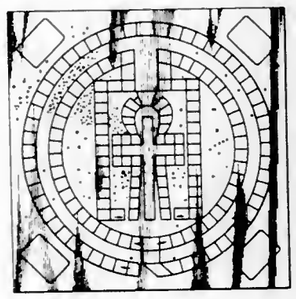


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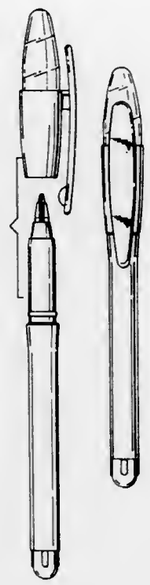
340,474
WRITING INSTRUMENT
Agnes Visage, Paris, France, assignor to Christian Dior, S.A., Paris, France
Filed Feb. 5, 1992, Ser. No. 831,521
Claims priority, application France, Aug. 23, 1991, 915,203
Term of patent 14 years
U.S. Cl. D19—49



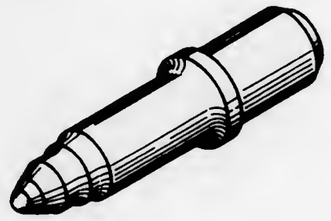
340,475
GAME BOARD
Johnny A. B. Dodd, 11 Mulberry Court, Ashmore Road, London W9 3BP, England
Filed Dec. 10, 1991, Ser. No. 805,593
Claims priority, application United Kingdom, Jun. 13, 1991, 2015309
Term of patent 14 years
U.S. Cl. D21—35



340,476
MARKING PEN
Junji Hiromori, Tokyo, Japan, assignor to Hiromori Inc., Tokyo, Japan
Filed Nov. 22, 1991, Ser. No. 797,091
Term of patent 14 years
U.S. Cl. D19—51



340,477
BALL-POINT PEN TIP
Pierre Regnault, Valeoce, France, assignor to Regnault Reynolds S.A., Valence, France
Filed Mar. 25, 1992, Ser. No. 857,299
Claims priority, application France, Oct. 21, 1991, 916559
Term of patent 14 years
U.S. Cl. D19—55



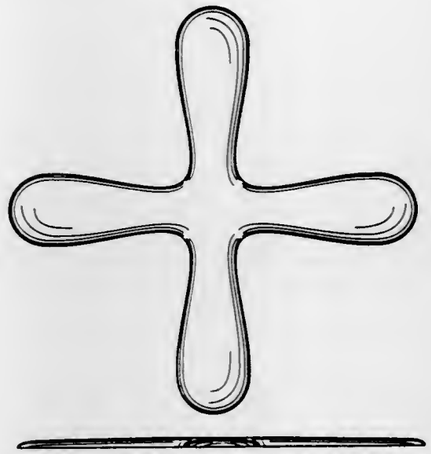
340,478
DART BOARD BEZEL
David B. Erskine, 97, Sidney Street, Apt 608, Belleville, Ontario, Canada K8P 4X9
Filed Mar. 19, 1991, Ser. No. 672,582
Claims priority, application Canada, Nov. 2, 1990, 02-11-90-4
Term of patent 14 years
U.S. Cl. D21—6



340,479
JOYSTICK
Patrick T. HO, Kwai Chung, Hong Kong, assignor to STD Electronic International Ltd, Hong Kong, Hong Kong
Filed Jul. 10, 1992, Ser. No. 911,318
Claims priority, application United Kingdom, Jan. 16, 1992, 2020319
Term of patent 14 years
U.S. Cl. D21—48



340,480
INDOOR BOOMERANG
Rodney A. Cummings, 17200 NW. Corridor Ct., Beaverton, Oreg. 97006
Filed Sep. 6, 1991, Ser. No. 756,123
Term of patent 14 years
U.S. Cl. D21—85



340,481
JUGGLER'S STICK
Mark Reimers, 13601 - 62nd Dr. S.E., Everett, Wash. 98208
Filed Dec. 13, 1991, Ser. No. 806,411
Term of patent 14 years
U.S. Cl. D21—100

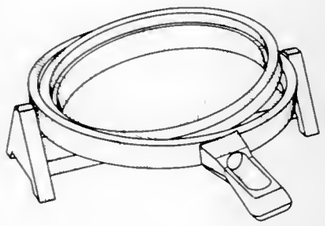


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340,482
DOLL HOUSE
Kevin R. Aker, Hudson; Robert L. Houry, Solon, and Jeffrey G. Martin, Hudson, all of Ohio, assignors to The Little Tikes Company, Hudson, Ohio
Filed Feb. 8, 1991, Ser. No. 653,802
Term of patent 14 years
U.S. Cl. D21—114



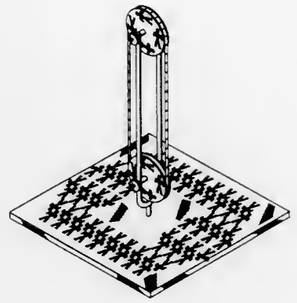
340,483
MARBLE RUNWAY TOY
Philip L. Shoptaugh, 5860 Buena Vista Ave., Oakland, Calif. 94618
Filed Aug. 16, 1990, Ser. No. 568,333
Term of patent 14 years
U.S. Cl. D21—143



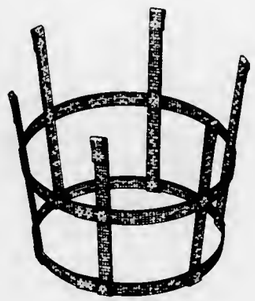
340,484
CHARACTER FIGURE
Terrance W. Sachetti, New Hope, Minn., assignor to 3V Development, Inc., Minneapolis, Minn.
Filed Nov. 29, 1991, Ser. No. 799,647
Term of patent 14 years
U.S. Cl. D21—148



340,485
ROPE CLIMBING EXERCISE APPARATUS
Anthony B. Fripps, 1301 E. Mt. Pleasant Ave., Philadelphia, Pa. 19150
Filed Apr. 17, 1992, Ser. No. 869,717
Term of patent 14 years
U.S. Cl. D21—191



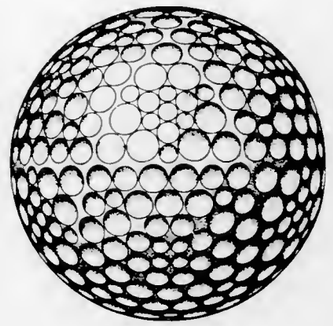
340,486
BASKETBALL NET
Robert K. Rothbard, 601 N. Clear Creek Dr., Friendswood, Tex. 77546
Filed Jun. 14, 1990, Ser. No. 537,139
Term of patent 14 years
U.S. Cl. D21—201



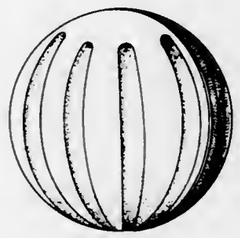
340,487
BALL
Barry Traub, Dunwoody, Ga., assignor to Sportime, Atlanta, Ga. and Ledraplatic, Osoppo, Italy
Filed Dec. 23, 1991, Ser. No. 812,378
Term of patent 14 years
U.S. Cl. D21—204



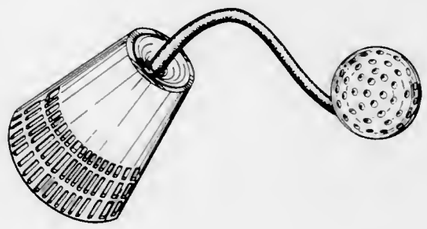
340,488
GOLF BALL
Steven Aoyama, Marion, Mass., assignor to Acushnet Company, New Bedford, Mass.
Filed Jun. 6, 1991, Ser. No. 711,443
Term of patent 14 years
U.S. Cl. D21—205



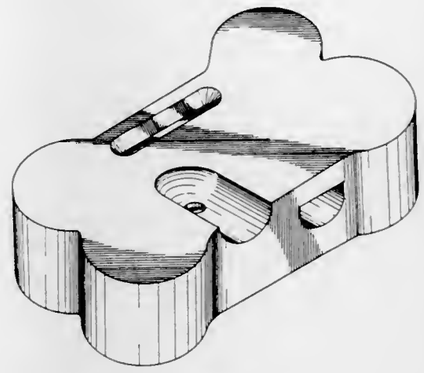
340,489
SOFT PLAY BALL
Rose Evangelista, New York, N.Y., assignor to Just Toys, New York, N.Y.
Filed Aug. 5, 1991, Ser. No. 740,465
Term of patent 14 years
U.S. Cl. D21—205



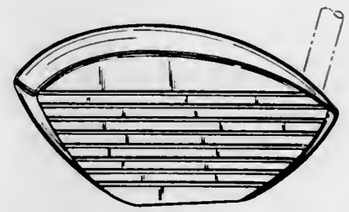
340,490
REDUCED FLIGHT GOLFBALL
Ralph Fowler, 6 Gay Hill Rd., Uncasville, Conn. 06382
Filed Nov. 5, 1991, Ser. No. 787,977
Term of patent 14 years
U.S. Cl. D21—205



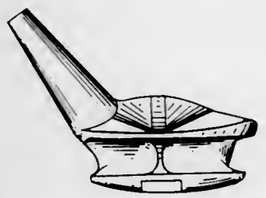
340,491
AUTOMATIC BALL THROWING MACHINE
Howard Nass, 233 8th St., Fairview, N.J. 07022
Filed Feb. 21, 1992, Ser. No. 838,010
Term of patent 14 years
U.S. Cl. D21—210



340,492
GOLF DRIVER HEAD
James J. Flood, San Diego, Calif., assignor to Odyssey Sports, Inc., Carlsbad, Calif.
Filed Sep. 17, 1990, Ser. No. 583,706
Term of patent 14 years
U.S. Cl. D21—214

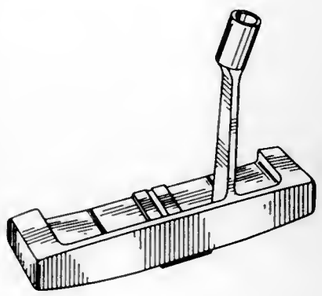


340,493
GOLF CLUB HEAD
Tom R. Murray, 1914 Carriage La., Crete, Ill. 60417, and Jack J. Murray, 9800 Olcott Ave., St. John, Ind. 46375
Filed Nov. 20, 1991, Ser. No. 795,092
Term of patent 14 years
U.S. Cl. D21—214

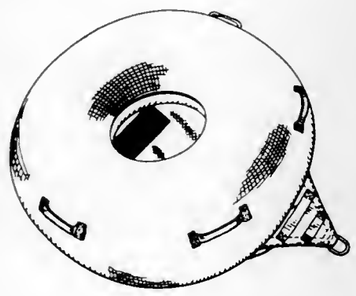


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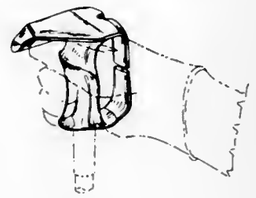
340,494
GOLF PUTTER HEAD
Frank D. Werner, Box SR9, Jackson, Wyo. 83001, and Richard C. Greig, Jackson, Wyo., assignors to Frank D. Werner, Jackson, Wyo.
Filed Mar. 18, 1991, Ser. No. 671,287
Term of patent 14 years
U.S. Cl. D21—219



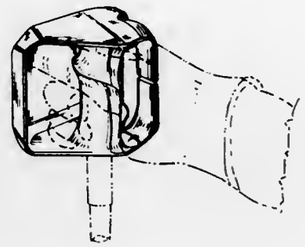
340,495
SKI TUBE
Joseph E. Mitch, and Klara D. Mitch, both of 25 Pamaron Way, Novato, Calif. 94949
Filed Oct. 28, 1991, Ser. No. 783,090
Term of patent 14 years
U.S. Cl. D21—229



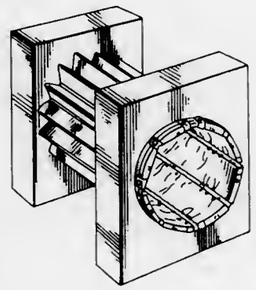
340,496
ABBREVIATED SHIELD SAFETY HANDLE FOR SKI POLE
Calvin L. Brewer, 2991 W. 81st Ave., Apt. D, Westminster, Colo. 80030
Filed May 28, 1992, Ser. No. 889,770
Term of patent 14 years
U.S. Cl. D21—230



340,497
FULL SHIELD SAFETY HANDLE FOR SKI POLE
Calvin L. Brewer, 2991 W. 81st Ave., Apt. D, Westminster, Colo. 80030
Filed May 29, 1992, Ser. No. 890,489
Term of patent 14 years
U.S. Cl. D21—230



340,498
PLAY EQUIPMENT INCLUDING A HORIZONTAL CYLINDER FOR CRAWLING
Mitchell R. Warren, Charlotte, and Dana W. Ingold, Salisbury, both of N.C., assignors to Restaurant Technology, Inc., Oak Brook, Ill.
Filed Feb. 4, 1992, Ser. No. 830,268
Term of patent 14 years
U.S. Cl. D21—242



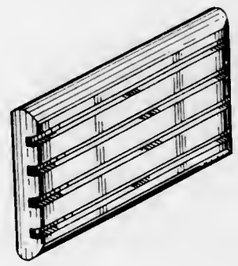
340,499
LINE GUIDE FOR FISHING ROD
Ryuichi Ohmura, Shizuoka, Japan, assignor to Fuji Kogyo Co., Ltd., Shizuoka, Japan
Filed Feb. 20, 1991, Ser. No. 658,358
Claims priority, application Japan, Aug. 30, 1990, 2-29186
Term of patent 14 years
U.S. Cl. D22—143



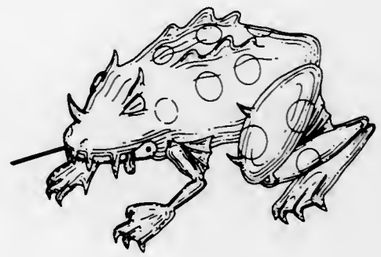
340,500
LINE GUIDE FOR FISHING ROD
Ryuichi Ohmura, Shizuoka, Japan, assignor to Fuji Kogyo Co., Ltd., Shizuoka, Japan
Filed Feb. 20, 1991, Ser. No. 658,359
Claims priority, application Japan, Aug. 30, 1990, 2-29185
Term of patent 14 years
U.S. Cl. D22—143



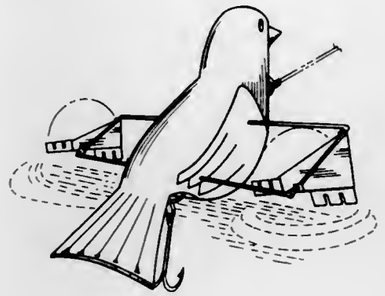
340,501
MOTH DETERRENT
Henry Mattesky, Cedar Grove, N.J., assignor to Herbert Glatt, Morristown, N.J.
Filed Mar. 26, 1991, Ser. No. 675,478
Term of patent 14 years
U.S. Cl. D22—122



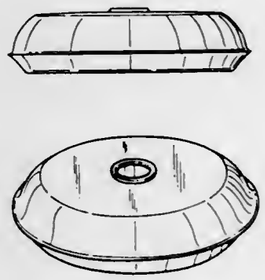
340,502
FISHING LURE
Michael J. Lynch, 6726 E. 19th St., Indianapolis, Ind. 46219
Filed Oct. 23, 1991, Ser. No. 781,294
Term of patent 14 years
U.S. Cl. D22—132



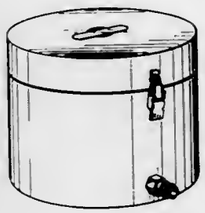
340,503
FISHING LURE
Jack R. Lee, P.O. Box 575, El Dorado, Kans. 67402
Filed Dec. 9, 1991, Ser. No. 804,211
Term of patent 14 years
U.S. Cl. D22—132



340,504
CONTAINER FOR LIQUEFIED GAS
Guy Verrue, Elbeuf, France, assignor to CMB Packaging S.A., Boulogne-sur-Seine, France
Filed Aug. 6, 1991, Ser. No. 740,476
Claims priority, application France, Feb. 20, 1991, 911 019
Term of patent 14 years
U.S. Cl. D23—202

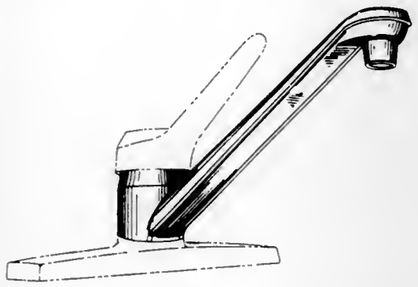


340,505
FILTER CANISTER FOR OUTDOOR PONDS
James L. Anderson, 1105 Holly La., Burnsville, Minn. 55337
Filed Aug. 16, 1991, Ser. No. 746,515
Term of patent 14 years
U.S. Cl. D23—209



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340,506
SPOUT
Bruce M. Sauter, Elgin, Ill.; Jackie J. Wolverton, Point Marion, Pa., and Kevin G. Short, Midlothian, Ill., assignors to Sterling Plumbing Group, Inc., Schaumburg, Ill.
Filed Jan. 10, 1992, Ser. No. 819,535
Term of patent 14 years
U.S. Cl. D23—255

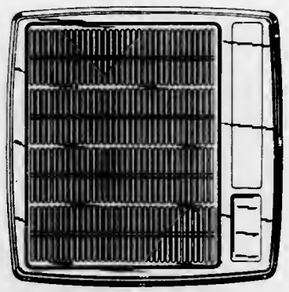


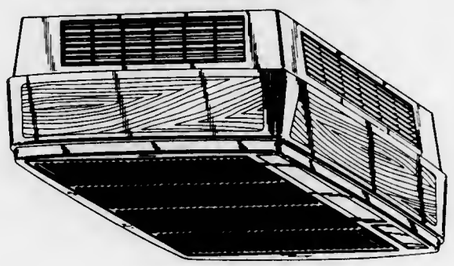
340,507
SPOUT
William C. McKeone, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Jan. 22, 1992, Ser. No. 824,493
Term of patent 14 years
U.S. Cl. D23—255

340,508
SHOWER FOOT REST
Debra S. Hocker, 609 Dorchester, Tyler, Tex. 75703
Filed Oct. 1, 1991, Ser. No. 774,090
Term of patent 14 years
U.S. Cl. D23—304

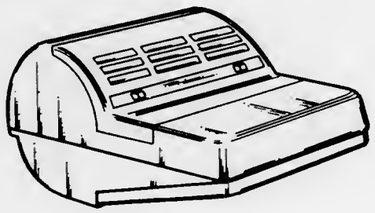


340,509
CEILING MOUNTED ELECTRONIC AIR CLEANER ENCLOSURE
James A. Odom, Apple Valley; Ralph E. Pasquarette, Jordan, and Mark R. Schoeneck, Bloomington, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Dec. 19, 1991, Ser. No. 810,666
Term of patent 14 years
U.S. Cl. D23—364

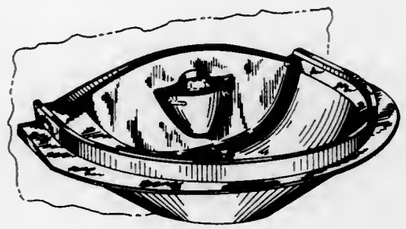




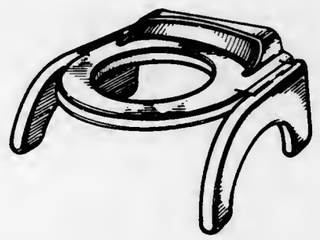
340,510
AIR CLEANER
William L. Wood, and Paul M. Thompson, both of Fort Collins, Colo., assignors to Teledyne Industries, Inc., Fort Collins, Colo.
Filed Jul. 13, 1992, Ser. No. 912,909
Term of patent 14 years
U.S. Cl. D23—364



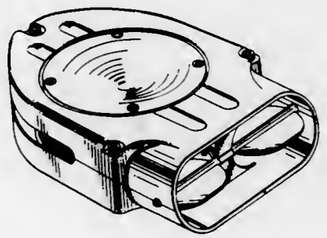
340,511
LAVATORY
Herbert V. Kohler, Jr., Kohler, Wis.; Pierre H. Paulin; Francois Kergoet, both of Paris, France, and Michel Chalard, Villemomble, France, assignors to Jacob Delafon, Paris, France
Division of Ser. No. 792,049, Nov. 8, 1991, Pat. No. D. 338,950.
This application May 6, 1993, Ser. No. 8,042
Term of patent 14 years
U.S. Cl. D23—294



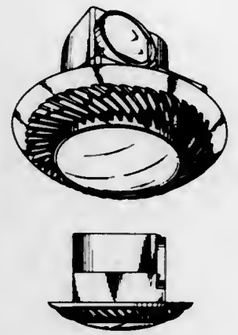
340,512
CHILD'S TRAINING TOILET
Francois M. Geneve; Luc M.D. Helligenstein; Stephen B. Melamed, all of Chicago, and Carl M. Cohen, Evanston, all of Ill., assignors to Sassy, Inc., Northbrook, Ill.
Filed May 7, 1991, Ser. No. 697,297
Term of patent 14 years
U.S. Cl. D23—296



340,513
MOTORCYCLE AIR CLEANER
Alwin J. Stahel, II, St. Paul, Minn., and Thomas H. Rudd, Hudson, Wis., assignors to KuryAkyn Holdings, Inc., Hudson, Wis.
Filed Feb. 28, 1992, Ser. No. 843,380
Term of patent 14 years
U.S. Cl. D23—364



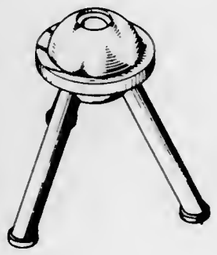
340,514
COMBINED LAMP AND VENTILATOR FAN
Hsin-Chia Liao, No. 17, Lane 47, Sec. 1, Hsingsheng N. Rd., Taipei, Taiwan
Filed Oct. 9, 1992, Ser. No. 258
Term of patent 14 years
U.S. Cl. D23—377



340,515
CEILING FAN MOTOR HOUSING
Ron Rezek, Los Angeles, Calif., assignor to Beverly Hills Fan Company, Woodland Hills, Calif.
Filed Jul. 10, 1992, Ser. No. 911,317
Term of patent 14 years
U.S. Cl. D23—411

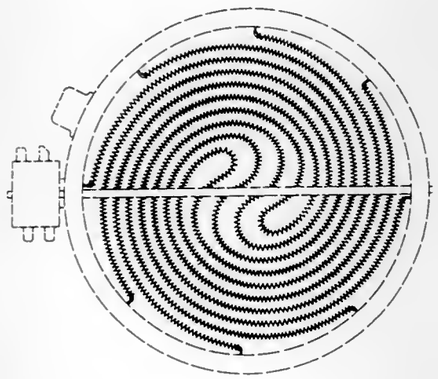


340,516
SUPPORTING BASE FOR AN ELECTRIC FAN
Charlie Too, No. 83, Pei Chuang Rd., Shern Kang Hsiang, Taichung Hsien, Taiwan, Taiwan
Filed Nov. 10, 1992, Ser. No. 1,334
Term of patent 14 years
U.S. Cl. D23—411



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340,517
HEATING COIL
Martin Gross, Kaempfelbach, Fed. Rep. of Germany, assignor to E.G.O. Elektro-Gerate Blanc u. Fischer, Fed. Rep. of Germany
Filed Jan. 15, 1991, Ser. No. 641,356
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1990, 9004720
Term of patent 14 years
U.S. Cl. D23—419



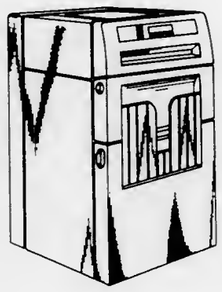
340,518
24-HOUR URINE SPECIMEN COLLECTOR
Albert H. Stahmer, Jr., Golden, Colo., and Fred Weston, Kittery, Me., assignors to Stahmer, Weston & Co., Inc., Portsmouth, N.H.
Filed Sep. 11, 1991, Ser. No. 757,494
Term of patent 14 years
U.S. Cl. D24—122



340,519
AMPOULE HOLDER
Brian L. Ogden, Sevenoaks; Christopher J. Griffin; Nicholas B. Verebelyi, both of London, and Gerard M. O'Brian, South Oxhey, all of United Kingdom, assignors to The Wellcome Foundation Limited, London, England
Filed Apr. 2, 1991, Ser. No. 679,241
Term of patent 14 years
U.S. Cl. D24—130



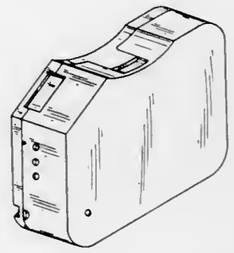
340,520
LOADING UNIT FOR X-RAY FILM CASSETTES
Michael Reibl, Boeblingen, Fed. Rep. of Germany, assignor to Eastman Kodak Company, Rochester, N.Y.
Filed May 23, 1991, Ser. No. 705,261
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1990, M0907935.3
Term of patent 14 years
U.S. Cl. D24—158



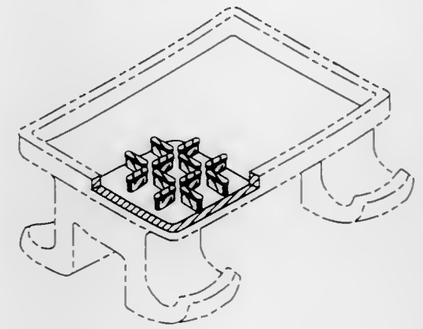
340,521
PERIODONTAL INSTRUMENT
Bert D. Heinzelman, Tenafly, N.J., and Paul D. Cesare, Norwalk, Conn., assignors to Colgate-Palmolive Company, New York, N.Y.
Filed Apr. 9, 1990, Ser. No. 507,056
Term of patent 14 years
U.S. Cl. D24—176



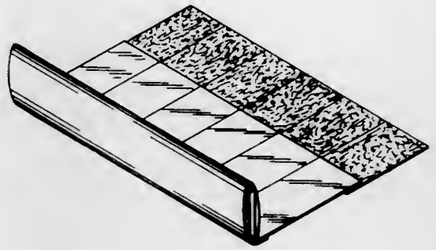
340,522
HEARING AID HOUSING
Jonnie Silbersky, Malmö , Sweden, assignor to Nobelpharma AB, Gotenburg, Sweden
Filed Dec. 3, 1991, Ser. No. 801,828
Claims priority, application Sweden, Jun. 3, 1991, 1142/91
Term of patent 14 years
U.S. Cl. D24—174



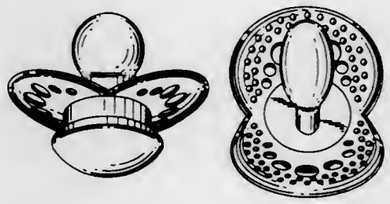
340,523
ORTHODONTIC BRACKET BASE
Conrad A. Barngrover, San Dimas, Calif., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Dec. 28, 1990, Ser. No. 635,331
Term of patent 14 years
U.S. Cl. D24—180



340,524
SURGICAL WRAP WITH ARM SPLINT
John P. Russell, Center Point, Ala., assignor to Infection Control Products, Inc., Gardendale, Ala.
Continuation-in-part of Ser. No. 386,680, Jul. 31, 1989, Pat. No. Des. 323,216. This application Aug. 19, 1991, Ser. No. 747,258
Term of patent 14 years
U.S. Cl. D24—190

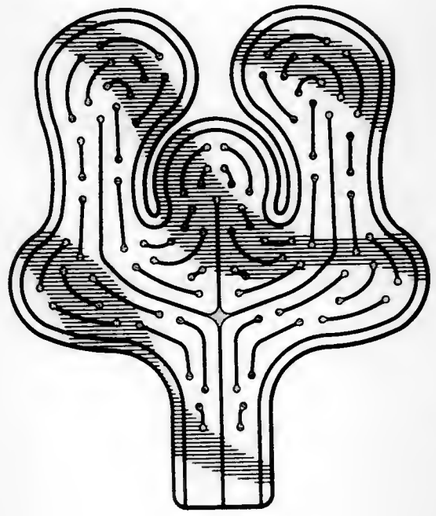


340,525
PACIFIER
Peter Röhrig, Vienna, Austria, assignor to Mam Babyartikel Gesellschaft m.b.H., Vienna, Austria
Filed Mar. 7, 1991, Ser. No. 665,714
Claims priority, application Austria, Sep. 7, 1990, 555.160-162; Sep. 7, 1990, 555.163
Term of patent 14 years
U.S. Cl. D24—194



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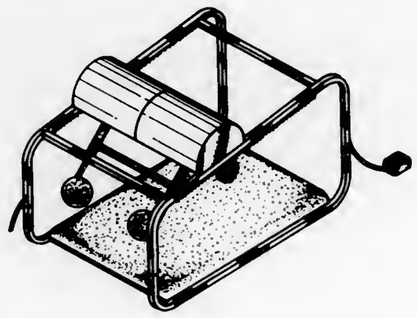
340,526
THERAPEUTIC PAD
Michael C. Molloy, Cincinnati, Ohio, assignor to Cincinnati Sub-Zero Products, Inc., Cincinnati, Ohio
Filed Sep. 6, 1991, Ser. No. 756,144
Term of patent 14 years
U.S. Cl. D24—206



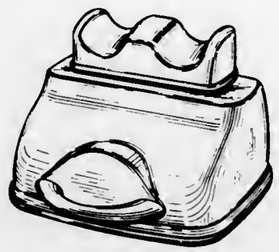
340,527
BACK MASSAGER
David Goodell, 6050 N. 22nd Rd., Arlington, Va. 22205
Filed Jul. 23, 1990, Ser. No. 556,214
Term of patent 14 years
U.S. Cl. D24—211



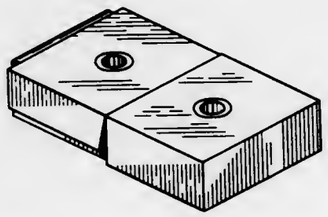
340,528
BACK MASSAGING MACHINE
William C. Broney, 7408 Catlow Ct., Ft. Worth, Tex. 76137
Filed Nov. 4, 1991, Ser. No. 792,072
Term of patent 14 years
U.S. Cl. D24—215



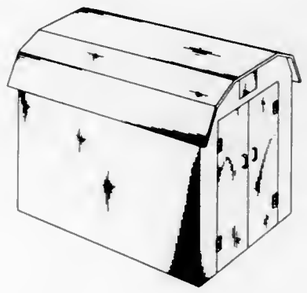
340,529
ELECTRIC MASSAGER
Keiichi Ohashi, Shizuoka, Japan, assignor to Skylite Industry Co., Ltd.
Filed Nov. 18, 1991, Ser. No. 793,688
Term of patent 14 years
U.S. Cl. D24—215



340,530
TONOMETER STERILIZATION CONTAINER
Gary Conrad, 90 Highland Ave., Apartment 115, Tarpon Springs, Fla. 33589
Continuation-in-part of Ser. No. 228,967, Aug. 5, 1988, Pat. No. Des. 326,922. This application Sep. 4, 1991, Ser. No. 754,681
Term of patent 14 years
U.S. Cl. D24—217



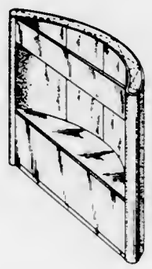
340,531
BICYCLE BARN
Mary E. Starkey, R.R. #1 Box 6F, Overton, Tex. 75684
Filed Jul. 22, 1991, Ser. No. 733,242
Term of patent 14 years
U.S. Cl. D25—33



340,532
FASCIA PANEL
James M. Jansen, Richmond, Australia, assignor to Stratco (Australia) Pty Ltd, Richmond, Australia
Filed Nov. 21, 1991, Ser. No. 795,634
Term of patent 14 years
U.S. Cl. D25—119



340,533
CURVED PANEL WITH COUNTER AND HEADER
Bryan Beaulieu, Burnsville, Minn., and Gordon P. Savoie, Long Beach, Calif., assignors to Skyline Displays, Inc., Burnsville, Minn.
Filed Apr. 8, 1991, Ser. No. 681,396
Term of patent 14 years
U.S. Cl. D25—58

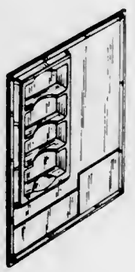


340,534
DOOR THRESHOLD
Michael J. McConnell, 3740 Martin Farm Rd., Suwanee, Ga. 30174, and James T. Slater, 2900 Spring Ridge Cir., Lithonia, Ga. 30058
Filed Nov. 13, 1991, Ser. No. 792,098
Term of patent 14 years
U.S. Cl. D25—119



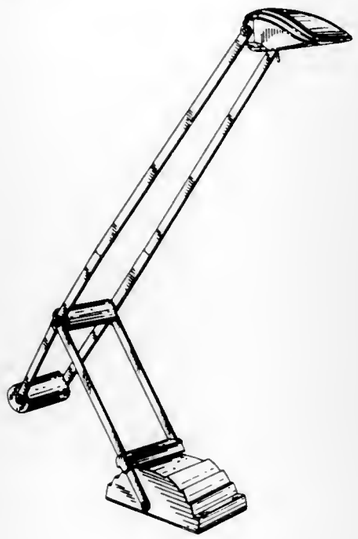
340,535
WINDOW INTERLOCK EXTRUSION
Douglas L. Cole, Seattle, Wash., assignor to Mikron Industries, Kent, Wash.
Filed May 30, 1991, Ser. No. 707,404
Term of patent 14 years
U.S. Cl. D25—124

340,536
WALL PANEL
Roger Adolfsson, Enebyberg, Sweden, assignor to Cederroth Nordic AB, Upplands Vasby, Sweden
Filed Jun. 12, 1991, Ser. No. 714,045
Claims priority, application Sweden, Dec. 20, 1990, 90-2702; Apr. 12, 1991, 91-0839
Term of patent 14 years
U.S. Cl. D25—138

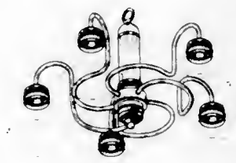


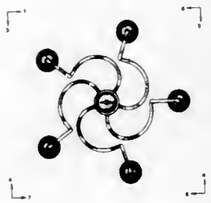
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340,537
COUNTERWEIGHTED LAMP
Rockwood T. Roberts, III, Midland Park, N.J., assignor to C. N. Burman Co., Paterson, N.J.
Filed May 28, 1992, Ser. No. 889,314
Term of patent 14 years
U.S. Cl. D26—65

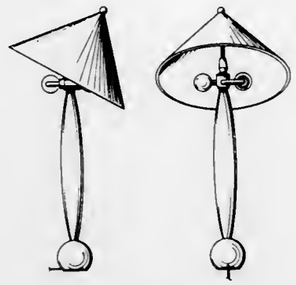


340,538
CHANDELIER
David H. Porter, Chagrin Falls, Ohio, assignor to The L. D. Kichler Co., Cleveland, Ohio
Filed Jun. 2, 1992, Ser. No. 894,216
Term of patent 14 years
U.S. Cl. D26—81

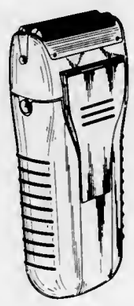




340,539
DESK LAMP
Douglas Smith, Upper Lake, Calif., assignor to Crackel, Upper Lake, Calif.
Filed Feb. 10, 1992, Ser. No. 833,409
Term of patent 14 years
U.S. Cl. D26—106



340,540
ELECTRIC SHAVER
Yoshiyuki Nakashima; Akio Goto; Shinji Yamamoto, and Etsushi Muramatsu, all of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Jun. 12, 1991, Ser. No. 718,842
Claims priority, application Japan, Dec. 18, 1990, 2-42268
Term of patent 14 years
U.S. Cl. D28—49



340,541
COMPACT
Shih-Ko Chen, Taipei, Taiwan, assignor to Misasa Enterprise Ltd., Taipei, Taiwan
Filed Nov. 21, 1991, Ser. No. 795,621
Term of patent 14 years
U.S. Cl. D28—83



340,542
PROTECTIVE VEST
Nicholas Marlowe, 120 N. Hill Dr., Westhampton, N.J. 09046
Filed Oct. 17, 1991, Ser. No. 778,599
Term of patent 14 years
U.S. Cl. D29—11



340,543
CATCHING VEST FOR TAG BALL GAME
Bradley H. Ashton, 810 Sherwick, Manchester, Mo. 63021
Filed Feb. 7, 1992, Ser. No. 831,336
Term of patent 14 years
U.S. Cl. D29—11



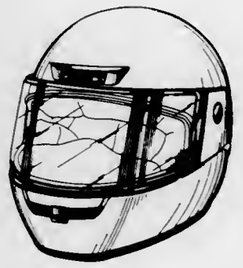
340,544
HELMET
Eitaro Kamata, Tokyo, Japan, assignor to Shoei Kako Kabushiki Kaisha, Tokyo, Japan
Filed May 23, 1991, Ser. No. 705,258
Claims priority, application Japan, Jan. 24, 1991, 3-1321
Term of patent 14 years
U.S. Cl. D29—12



340,545
HELMET
Eitaro Kamata, Tokyo, Japan, assignor to Shoei Kako Kabushiki Kaisha, Tokyo, Japan
Filed May 23, 1991, Ser. No. 705,250
Claims priority, applicatioo Japan, Jan. 24, 1991, 3-1322
Term of patent 14 years
U.S. Cl. D29—15

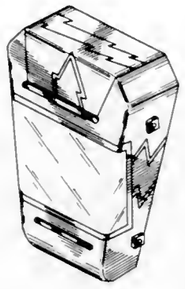


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HELMET
Eitaro Kamata, Tokyo, Japan, assignor to Shoei Kako Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 28, 1991, Ser. No. 723,014
Claims priority, application Japan, Feb. 8, 1991, 3-3235
Term of patent 14 years
U.S. Cl. D29—15

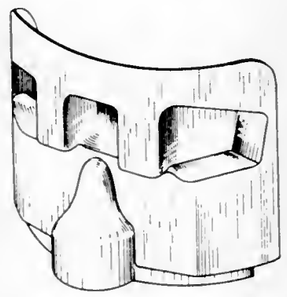


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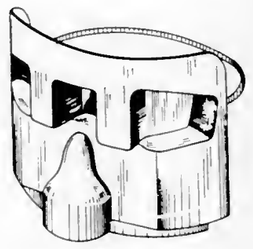
340,547
HELMET WITH VOICE ACTUATED VISOR
Russell N. Rekow, 1224 Sunset Dr., Emmett, Id. 83617
Filed Jun. 8, 1990, Ser. No. 534,856
Term of patent 14 years
U.S. Cl. D29—17



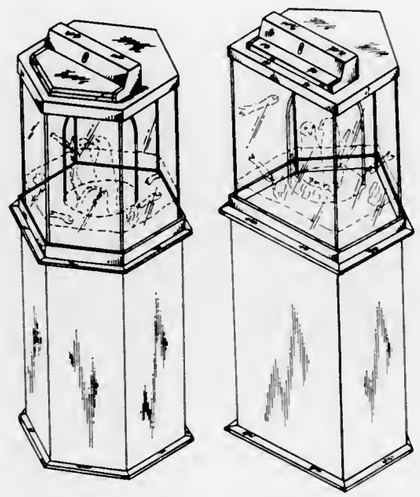
340,548
FACE SHIELD
John P. Russell, Center Point, Ala., assignor to Infection Control Products, Inc., Gardendale, Ala.
Filed Jul. 22, 1991, Ser. No. 733,385
Term of patent 14 years
U.S. Cl. D29—17



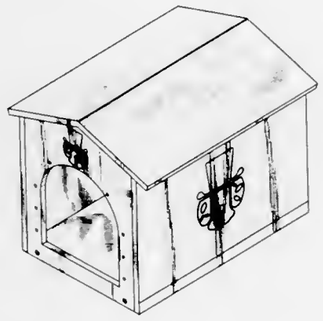
340,549
COMBINATION FACE SHIELD AND HEADBAND
John P. Russell, Center Point, Ala., assignor to Infection Control Products, Inc., Gardendale, Ala.
Filed Jul. 22, 1991, Ser. No. 733,386
Term of patent 14 years
U.S. Cl. D29—17



340,550
COMBINED AQUARIUM AND BIRD CAGE
Barbara Teats, 18 Gregory Dr., P.O. Box 47, Kenvil, N.J. 07847
Filed Jan. 10, 1991, Ser. No. 639,705
Term of patent 14 years
U.S. Cl. D30—104



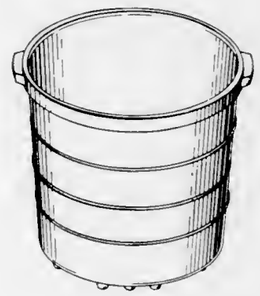
340,551
PORTABLE HEATED DOG HOUSE
James Mitchell, Sr., 2830 Mountain Ter., Memphis, Tenn. 38127
Filed Apr. 22, 1991, Ser. No. 688,986
Term of patent 14 years
U.S. Cl. D30—109



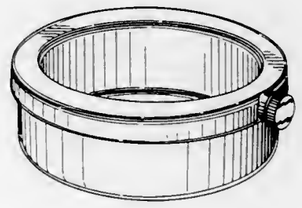
340,552
PET DISH
Dennis Smith, 3440 Baxter St., Napa, Calif. 94558
Filed Jun. 7, 1991, Ser. No. 711,751
Term of patent 14 years
U.S. Cl. D30—121



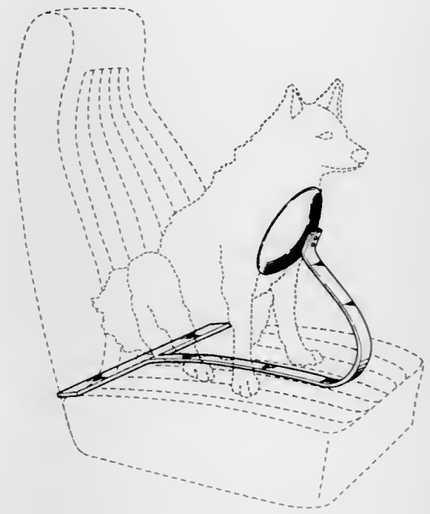
340,553
LIVESTOCK FEED TUB
Victor A. Sahm, Jr., 14910 Lake Forest Dr., Dallas, Tex. 75240
Filed Mar. 5, 1992, Ser. No. 845,462
Term of patent 14 years
U.S. Cl. D30—121



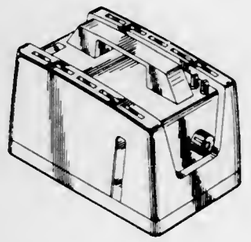
340,554
PET FOOD BOWL
David C. Wheeler, 240 Tower Rd., Barrington, Ill. 60010
Filed Jun. 22, 1992, Ser. No. 902,042
Term of patent 14 years
U.S. Cl. D30—129



340,555
CHEST REST FOR DOGS
Russell J. Ott, 9050 Briarclift Rd., Indianapolis, Ind. 46256
Filed Apr. 13, 1992, Ser. No. 868,285
Term of patent 14 years
U.S. Cl. D30—144

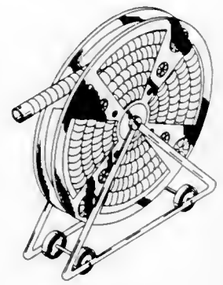


340,556
TANK FOR A PRESSURE WASHER
Robert C. Berfield, Jersey Shore; Ronald F. Meland, Muncy, and Craig A. Seasholtz, Avis, all of Pa., assignors to Shop-Vac Corporation, Williamsport, Pa.
Filed Jan. 15, 1991, Ser. No. 641,553
Term of patent 14 years
U.S. Cl. D32—1

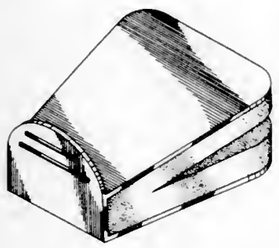


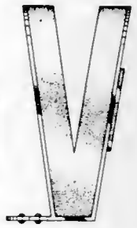
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340,557
SELF-RETRACTING HOSE FOR AN IN-WALL VACUUM SYSTEM
Paul M. Kardos, University of Tampa, Box 1030, Tampa, Fla. 33606
Filed Oct. 7, 1991, Ser. No. 772,589
Term of patent 14 years
U.S. Cl. D32—21

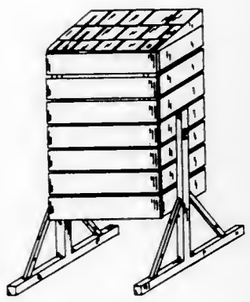


340,558
DIPSTICK CLEANER
Ronald Winters, #17-5931 Island Hwy. N., Nanaimo, BC, Canada V9T 1X1
Filed Dec. 13, 1991, Ser. No. 806,439
Term of patent 14 years
U.S. Cl. D32—40

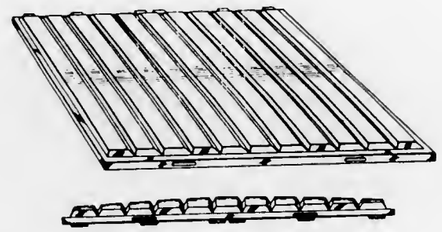




340,559
COMPOSTER
Laurie A. Taylor, St. Louis, Mo., assignor to Master Garden Products, Inc., St. Charles, Mo.
Filed Mar. 20, 1991, Ser. No. 672,612
Term of patent 14 years
U.S. Cl. D34—1



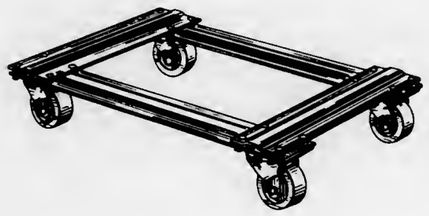
340,560
COMMERCIAL TRASH CONTAINER LID
Craig V. Taylor, 8924 Enfield Ave., Northridge, Calif. 91325
Filed Jan. 24, 1992, Ser. No. 826,174
Term of patent 14 years
U.S. Cl. D34—11



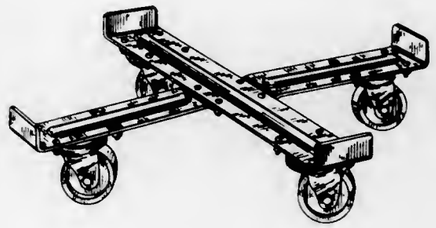
340,561
MOBILE CART
E. D. Dunn, Jr., Rte. 1, Box 122, Morgan, Ga. 31766
Filed Jun. 5, 1992, Ser. No. 893,694
Term of patent 14 years
U.S. Cl. D34—21



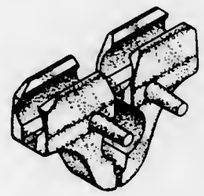
340,562
MOVER'S DOLLY
J. H. B. Kean, Marina Del Rey, Calif.; Everette A. Brumbelow; Henry C. Grimes, both of Rome, Ga.; Dennis Schultz, Cartersville, Ga., and Mickey Watson, Rome, Ga., assignors to The Fairbanks Company, Rome, Ga.
Filed Apr. 20, 1992, Ser. No. 871,210
Term of patent 14 years
U.S. Cl. D34—23



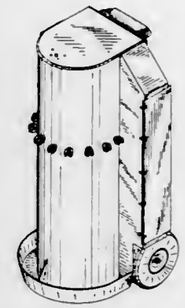
340,563
DRUM DOLLY
J. H. B. Kean, Marina Del Rey, Calif.; Everette A. Brumbelow; Henry C. Grimes, both of Rome, Ga.; Dennis Schultz, Cartersville, Ga., and Mickey Watson, Rome, Ga., assignors to The Fairbanks Company, Rome, Ga.
Filed Apr. 20, 1992, Ser. No. 871,211
Term of patent 14 years
U.S. Cl. D34—23



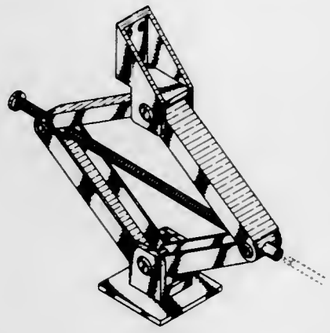
340,564
MOUNTING CLIP FOR CONVEYOR SYSTEM ELEMENTS
Stuart J. Ledingham, Coto de Caza, Calif., assignor to Valu Engineering, Inc., Morgan, Calif.
Filed Nov. 8, 1991, Ser. No. 792,090
Term of patent 14 years
U.S. Cl. D34—29



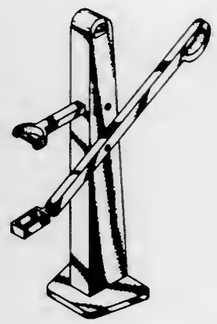
340,565
CART FOR BASEBALL AND SOFTBALL EQUIPMENT
Jacky R. Klopfenstein, N1677 Hwy. G, Brodhead, Wis. 53520
Filed Apr. 24, 1992, Ser. No. 874,562
Term of patent 14 years
U.S. Cl. D34—25



340,566
VEHICLE MOUNTED JACK
Robert L. Thomas, 842 Washington St., Jacksonville, Fla. 32206
Filed Aug. 22, 1991, Ser. No. 748,396
Term of patent 14 years
U.S. Cl. D34—31



340,567
DEVICE FOR DE-EARTHING STEEL FENCE POSTS
Leonard Maxted, 1918 Walnut Ave., Sheriden, Wyo. 82801
Filed Nov. 4, 1991, Ser. No. 786,995
Term of patent 14 years
U.S. Cl. D34—31



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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 19TH DAY OF OCTOBER, 1993

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Corporation: *See—*
Malmstrom, Rolf E., 5,254,320, Cl. 423-28.000.

AB Volvo Penta: *See—*
Bohlin, Stig F., 5,253,604, Cl. 114-144.00E.

ABB Lummus Crest Inc.: *See—*
Master, Bashir I.; and Weiner, Philip A., 5,253,703, Cl. 165-82.000.

Abbink, Henry C.; Sakaida, Daryl K.; and Wyse, Stanley F., to Litton Systems, Inc. Integrated accelerometer with coil interface spacer. 5,253,524, Cl. 73-497.000.

Abbott Laboratories: *See—*
Mimms, Larry T., 5,254,458, Cl. 435-5.000.

Abe, Hiroshi, to Asahi Seiko Kabushiki Kaisha. Coin feeding device. 5,254,032, Cl. 453-56.000.

Abe, Kimihiro: *See—*
Yagi, Sakai; Tsuji, Masanori; Abe, Kimihiro; and Kashiyama, Motohisa, 5,254,014, Cl. 439-353.000.

Abecassis, Max. User selectable numeric keycaps layout. 5,253,940, Cl. 400-495.000.

Abel, James C.: *See—*
Schmidt, Joseph H.; and Abel, James C., 5,253,707, Cl. 166-270.000.

Aberl, Heinrich; and Rubenzucker, Franz, to Voest-Alpine Industrieanlagenbau Gesellschaft m.b.H. Feedback control system for the impedance control of an electric arc furnace. 5,255,285, Cl. 373-105.000.

Abou-Gharbia, Magid A.; Yardley, John P.; and Childers, Wayne E., Jr., to American Home Products Corporation. Aryl-and heteroaryl piperazinyl carboxamides having central nervous system activity. 5,254,552, Cl. 514-252.000.

Aboumrad, Chafic: *See—*
Mazzocchia, Carlo; Tempesti, Ezio; and Aboumrad, Chafic, 5,254,779, Cl. 585-500.000.

Abowd, Peter S.: *See—*
Brewer, James E.; Abowd, Peter S.; and Raffaeli, Frank W., 5,255,324, Cl. 381-107.000.

Abowitz, Gerald; Bov, Raphael F., Jr.; Eakin, Paul W.; and Smith, Wayne R., to Xerox Corporation. Security of negotiable instruments thru the application of color to xerographic images. 5,254,196, Cl. 156-235.000.

Abramovich, Igor; and McKenna, Neil, to Magnetek Inc. Method of transmitting measured temperature and position parameters from a transducer. 5,253,521, Cl. 73-306.000.

Abrams, Sylvia: *See—*
Huang, Victor T.; Timm-Brock, Barbara J.; Sward, Rhonda S.; Abrams, Sylvia; and Gaertner, Karin C., 5,254,353, Cl. 426-94.000.

Abreu, Enrique: *See—*
Cotton, John M.; Olsen, Neil C.; Wissink, Alex T.; Pieper, Gary V.; Oswald, William A.; Necula, Nicholas; Abreu, Enrique; Mascarenhas, Maurice J.; and De Bruyn, Rudy, 5,255,264, Cl. 370-24.000.

Ace Novelty Co., Inc.: *See—*
Greenwood, W. Loren, 5,253,899, Cl. 283-106.000.

Acer Incorporated: *See—*
Wang, Ling-Ling; and Lee, Sheau-Jiung, 5,254,890, Cl. 307-542.100.

Achenbach Buschhutten GmbH: *See—*
Barten, Axel; and Moritz, Werner, 5,253,503, Cl. 72-239.000.

Ackermann, Carlton H.: *See—*
Barrons, James D.; Hunt, Morris D.; and Ackermann, Carlton H., 5,253,545, Cl. 74-561.000.

Acme Manufacturing Company: *See—*
Carlson, Don F.; and Koch, Richard, 5,253,454, Cl. 51-240.00R.

Acquaviva, Thomas; Agarwal, Vinod K.; Siegel, Robert P.; and Wong, Lam F., to Xerox Corporation. Adjustable normal force edge registering apparatus. 5,253,862, Cl. 271-251.000.

Actel Corporation: *See—*
El-Ayat, Khaled A.; Chan, King W.; and Plants, William C., 5,254,886, Cl. 307-465.000.

Ad rem Manufacturing, Inc.: *See—*
Williams, Ronald C.; Kettle, C. Donald; Stebbins, Earl E.; and McCullough, L. Marshall, 5,254,226, Cl. 204-128.000.

Adachi, Katsura; Usui, Makoto; Nishii, Kota; Muraya, Takashi; Kobayashi, Toshihiro; Tamura, Kazuyuki; and Sato, Junichi, to Fujitsu Limited; and Fujitsu Kasei Ltd. Injection molding process for producing a box-shaped plastic housing. 5,254,304, Cl. 264-328.100.

Adado, John G. Thermal drinking cup. 5,253,780, Cl. 220-711.000.

Adam, Gerard: *See—*
Wermuth, Camille-Georges; Bourguignon, Jean-Jacques; Morin, Isabelle; Renard, Pierre; Devissaguet, Michelle; de La Faverie, Jean-Francois R.; and Adam, Gerard, 5,254,548, Cl. 514-242.000.

Adams, Carl A., to Visa International Service Association. Payment card point-of-sale service quality monitoring system, apparatus, and method. 5,255,182, Cl. 364-405.000.

Adams, James M.: *See—*
McBride, Robert K.; Adams, James M.; Chang, Peter I.; and Ray, Carl D., 5,254,607, Cl. 524-52.000.

Adams, Robert J. Method for treating coal. 5,254,139, Cl. 44-626.000.

Adams, William A.: *See—*
Hale, D. Jeffrey; and Adams, William A., 5,255,125, Cl. 359-889.000.

Adir et Compagnie: *See—*
Malen, Charles; Lacoste, Jean-Michel; Vilaine, Jean-Paul; and Lenaers, Albert, 5,254,590, Cl. 514-613.000.
Wermuth, Camille-Georges; Bourguignon, Jean-Jacques; Morin, Isabelle; Renard, Pierre; Devissaguet, Michelle; de La Faverie, Jean-Francois R.; and Adam, Gerard, 5,254,548, Cl. 514-242.000.

Adobe Systems Incorporated: *See—*
Byron, Michael; and Malloy, Thomas, 5,255,357, Cl. 395-151.000.

Advanced Dielectric Technologies, Inc.: *See—*
Walters, Glenn J., 5,254,821, Cl. 219-10.55E.

Advanced Magnetics, Inc.: *See—*
Josephson, Lee; Menz, Edward T.; and Groman, Ernest V., 5,254,460, Cl. 435-7.250.

Advanced Micro Devices, Inc.: *See—*
Agrawal, Om P.; and Wright, Michael J., 5,255,203, Cl. 364-489.000.
AuYeung, David S., 5,254,500, Cl. 437-214.000.
DiNapoli, Antonio; Goff, Gerald L.; and Sikes, Roger A., 5,253,411, Cl. 29-559.000.

AEG Westinghouse Transportation Systems, Inc.: *See—*
Thakore, Prashant B.; Coulter, John L.; and Monaghan, William D., 5,255,208, Cl. 364-551.010.

Aerospatiale Societe Nationale Industrielle: *See—*
Henry, Jean-Pierre, 5,253,820, Cl. 242-99.000.

Agar, Keith W.: *See—*
Potucek, Martin; Hadley, Mary A.; Agar, Keith W.; Small, Jeffrey A.; Pham, Hieu T.; and Ng, Yee S., 5,253,934, Cl. 346-107.00R.

Agarwal, Vinay K.; and Cautis, Dan, to Western Digital (Singapore) Pte. Ltd. Seek system for sector servo disk drive. 5,254,920, Cl. 318-560.000.

Agarwal, Vinod K.: *See—*
Acquaviva, Thomas; Agarwal, Vinod K.; Siegel, Robert P.; and Wong, Lam F., 5,253,862, Cl. 271-251.000.

Agbodoe, Victor B.; Gallini, Edward L.; and David, Robert E., to Codman & Shurtleff, Inc. Head clamp. 5,254,079, Cl. 602-32.000.

Agee, Brian G.: *See—*
Gardner, William A.; and Agee, Brian G., 5,255,210, Cl. 364-574.000.

AGFA-Gevaert, N.V.: *See—*
Coppens, Paul J.; Tavernier, Serge M.; Janssens, Robert F.; Marksch, Paul; Stevens, Marc P.; and de Jaeger, Mikolaas C., 5,254,421, Cl. 430-49.000.
Kok, Piet; and Dewanckele, Jean-Marie O., 5,254,443, Cl. 430-401.000.
Uytterhoeven, Herman J.; Vermeersch, Joan T.; Timmerman, Daniel M.; and Monbaliu, Marcel J., 5,254,434, Cl. 430-203.000.
Verheijen, Johannes M.; Marien, August M.; De Saedeleer, Roger I.; Hellemans, Ludovicus M.; and Van Hove, Jan H., 5,254,288, Cl. 252-518.000.

Agrawal, Om P.; and Wright, Michael J., to Advanced Micro Devices, Inc. Interconnect structure for programmable logic device. 5,255,203, Cl. 364-489.000.

Aida Engineering, Ltd.: *See—*
Uehara, Tadayoshi; and Suzuki, Toshio, 5,253,572, Cl. 100-48.000.

Aijala, Martti: *See—*
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Kurauchi, Makoto; Hayasaki, Kiyoshi; Minami, Toshikazu; and Ohnishi, Mutsuhiko, to Shinko Kosen Kogyo Kabushiki Kaisha. Tendons for prestressed concrete structures and method of using such tendons. 5,254,190, Cl. 156-85.000.

Kurek, Paul R., to UOP. Fuel composition containing a quaternary ammonium salt. 5,254,138, Cl. 44-347.000.

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Kuroda, Toshiaki; and Inoue, Hiroyuki, to Toa Medical Electronics Co., Ltd. Apparatus for diluting and mixing a liquid specimen. 5,254,313, Cl. 422-100.000.

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Young, David H.: *See—*
Michelotti, Enrique L.; Raney, Robert R.; and Young, David H., 5,254,584, Cl. 514-514.000.
Young, Dorothy J.: *See—*
Young, J. Ronald; and Young, Dorothy J., 5,255,150, Cl. 361-107.000.
Young, J. Ronald; and Young, Dorothy J. Grounding device for power lines. 5,255,150, Cl. 361-107.000.
Young, Steven J.; and Wallgren, Markus, to Apple Computer, Inc. Power management system for battery powered computers. 5,254,928, Cl. 320-14.000.
Young, Wayne P.: *See—*
Green, David T.; Bolanos, Henry; Geiste, Robert J.; Young, Wayne P.; Gerry, Stephen W.; and Rende, Frank M., III, 5,253,793, Cl. 227-178.000.
Younger, Gilbert W. Methods and systems for improving the operation of automatic transmissions for motor vehicles. 5,253,549, Cl. 74-867.000.
Younger, Gregory A.: *See—*
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Youta, Masato: *See—*
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Yu, Zhilong; Yu, Zhipeng; and Newton, Perry B., III, to International Mould Engineering. Microcentrifuge tube. 5,254,314, Cl. 422-102.000.
Yu, Zhipeng: *See—*
Yu, Zhilong; Yu, Zhipeng; and Newton, Perry B., III, 5,254,314, Cl. 422-102.000.
Yuasa Battery Co., Ltd.: *See—*
Sato, Masakazu, 5,253,795, Cl. 228-174.000.
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Yung Rung, Chung; and Lee, S. C. Garbage disposal system. 5,254,265, Cl. 210-774.000.
Yung Shun Umbrella Co., Ltd.: *See—*
Huang, Shih-Chen, 5,253,666, Cl. 135-28.000.
Yuzawa, Jiro: *See—*
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Zablocki, Jeffery A.: *See—*
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Zabrocki, Vincent S.: *See—*
Kelch, Robert H.; and Zabrocki, Vincent S., 5,254,401, Cl. 428-317.100.
Zakoshansky, Vladimir M., to General Electric Company. Method for the decomposition of cumene hydroperoxide by acidic catalyst to phenol and acetone. 5,254,751, Cl. 568-798.000.
Zamojski, Marek R.: *See—*
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Frucco, Giuseppe; and Russo, Fernando, 5,253,494, Cl. 68-12.180.
Zardi, Umberto; and Pagani, Giorgio, to Ammonia Casale S.A.; and Zardi, Umberto. Reactors for heterogeneous synthesis. 5,254,316, Cl. 422-148.000.
Zarowin, Charles; and Bollinger, L. D., to Hughes Aircraft Company. System for removing material from semiconductor wafers using a contained plasma. 5,254,830, Cl. 219-121.430.
Zasloff, Michael; and Berkowitz, Barry, to Children's Hospital of Pennsylvania, The. Composition and treatment with biologically active peptides and antibiotic. 5,254,535, Cl. 514-12.000.
Zasloff, Michael, to Children's Hospital of Pennsylvania, The. Composition and treatment with peptide combinations. 5,254,537, Cl. 514-13.000.
Zaveruha, Alexander A., to McMellon Bros, Inc. Thread gaging tool and method. 5,253,422, Cl. 33-199.00R.
Zavisza, Daniel M.: *See—*
DeVido, John P.; Linsay, Ernest C.; and Zavisza, Daniel M., 5,254,161, Cl. 106-170.000.
Zdunek, Dietmar: *See—*
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Zeilinger, Karl: *See—*
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Zekan, Boze N.; and Dellasmirra, Luciano. Switched mode power supply for single-phase boost commercial AC users in the range of 1 kw to 10 kw. 5,255,179, Cl. 363-133.000.
Zellweger Uster AG: *See—*
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Zhang, Hongyong, to Semiconductor Energy Laboratory Co., Ltd. Method for manufacturing a semiconductor device. 5,254,208, Cl. 156-603.000.
Zhao, Zhong Z.; and Chu, Tjoei H., to Chu, Tjoei H. Textile-finishing agent. 5,254,134, Cl. 8-120.000.
Zielesch, Kenneth J.: *See—*
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Zigoris, Dean M.: *See—*
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Zimmer, Johannes. Apparatus for the multiple processing of a web. 5,253,495, Cl. 68-43.000.
Zimmer, Oswald; Vollenberg, Werner; and Schneider, Johannes, to Gruenenthal GmbH. Substituted 3,4-dihydronaphthalenes, pharmaceutical compositions containing them, and preparation processes. 5,254,731, Cl. 562-621.000.
Zimmerman, Robert L., to Texaco Chemical Company. Continuous preparation of secondary amines from nitriles using a two-step process. 5,254,737, Cl. 564-490.000.
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Boder, George B.; Ehlhardt, William J.; Grindey, Gerald B.; Toth, John E.; Worzalla, John F.; and Zimmermann, John L., 5,254,582, Cl. 514-469.000.
Zink, Rudolf; Mockli, Peter; and Rohringer, Peter, to Ciba-Geigy Corporation. Pressure-sensitive or heat-sensitive recording material. 5,254,522, Cl. 503-217.000.
Zirnheld, Richard A., to General Motors Corporation. Electrically conductive plastic speed control resistor for an automotive blower motor. 5,254,968, Cl. 338-50.000.
Zoback, Harry A., to Warminster Fiberglass Company. Secondary containment structures for hazardous materials. 5,254,798, Cl. 588-259.000.
Zook, Christopher P.: *See—*
Gill, Richard A.; and Zook, Christopher P., 5,255,272, Cl. 371-40.300.
Zuerner, Edwin C.; Petzeit, Robert R.; and Foster, Norman, to Nortru, Inc. Process for reclamation and treatment of paint overspray treatment compositions. 5,254,256, Cl. 210-639.000.
Zuest, Max. Dental implant system and method. 5,254,005, Cl. 433-173.000.
Zugni, Roberto: *See—*
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Zurecki, Zbigniew; Hayduk, Edward A., Jr.; North, John G.; Swan, Robert B.; and Mitchell, David L., Jr., to Air Products and Chemicals, Inc. Method of forming titanium nitride coatings on carbon/graphite substrates by electric arc thermal spray process using titanium feed wire and nitrogen as the atomizing gas. 5,254,359, Cl. 477-449.000.
Zweig, Konrad; Burkle, Erwin; Spotzl, Markus; and Karlinger, Peter, to Krauss-Maffei Aktiengesellschaft. System for molding a synthetic-resin using plastic scrap. 5,253,994, Cl. 425-130.000.

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LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 19TH DAY OF OCTOBER, 1993

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Arthur D. Little, Inc.: *See*—
McCullough, John E., Re. 34,413, Cl. 418-55.300.
Critikon, Inc.: *See*—
Lemieux, Francis P., Re. 34,416, Cl. 604-164.000.
Elsaesser, Dieter; and von der Heide, Johann, to Papst-Motoren GmbH & Co. KG. Disk storage drive having motor drive with non-corrodible hub. Re. 34,412, Cl. 360-99.080.
General Electric Company: *See*—
Traver, Frank J., Re. 34,415, Cl. 556-439.000.
Hakamata, Kazuo; Takagi, Tadao; and Hyodo, Yukio, to Nikon Corporation. Drive circuit for surface-wave driven motor utilizing ultrasonic vibration. Re. 34,409, Cl. 310-316.000.
Hughes Aircraft Company: *See*—
Rosen, Harold A., Re. 34,410, Cl. 343-781.00P.
Hyodo, Yukio: *See*—
Hakamata, Kazuo; Takagi, Tadao; and Hyodo, Yukio, Re. 34,409, Cl. 310-316.000.
Ishimaru, Takenori: *See*—
Okazaki, Hisayoshi; Ohta, Kazuhiko; and Ishimaru, Takenori, Re. 34,414, Cl. 514-562.000.
Lemieux, Francis P., to Critikon, Inc. I.V. catheter with self-locating needle guard. Re. 34,416, Cl. 604-164.000.
McCullough, John E., to Arthur D. Little, Inc. Synchronizer and unloading system for scroll fluid device. Re. 34,413, Cl. 418-55.300.
Nikon Corporation: *See*—
Hakamata, Kazuo; Takagi, Tadao; and Hyodo, Yukio, Re. 34,409, Cl. 310-316.000.
Nishioka, Kimihiko; and Yabe, Hisao, to Olympus Optical Co., Ltd. Electronic image pickup device for endoscopes. Re. 34,411, Cl. 358-98.000.
Ohta, Kazuhiko: *See*—
Okazaki, Hisayoshi; Ohta, Kazuhiko; and Ishimaru, Takenori, Re. 34,414, Cl. 514-562.000.
Okazaki, Hisayoshi; Ohta, Kazuhiko; and Ishimaru, Takenori, to Takeda Chemical Industries, Ltd. Physiologically active substance P-23924, its production and use. Re. 34,414, Cl. 514-562.000.
Olympus Optical Co., Ltd.: *See*—
Nishioka, Kimihiko; and Yabe, Hisao, Re. 34,411, Cl. 358-98.000.
Papst-Motoren GmbH & Co. KG: *See*—
Elsaesser, Dieter; and von der Heide, Johann, Re. 34,412, Cl. 360-99.080.
Rosen, Harold A., to Hughes Aircraft Company. Antenna system for hybrid communication satellite. Re. 34,410, Cl. 343-781.00P.
Takagi, Tadao: *See*—
Hakamata, Kazuo; Takagi, Tadao; and Hyodo, Yukio, Re. 34,409, Cl. 310-316.000.
Takeda Chemical Industries, Ltd.: *See*—
Okazaki, Hisayoshi; Ohta, Kazuhiko; and Ishimaru, Takenori, Re. 34,414, Cl. 514-562.000.
Traver, Frank J., to General Electric Company. Method for preparing carboxy functional silicones. Re. 34,415, Cl. 556-439.000.
von der Heide, Johann: *See*—
Elsaesser, Dieter; and von der Heide, Johann, Re. 34,412, Cl. 360-99.080.
Yabe, Hisao: *See*—
Nishioka, Kimihiko; and Yabe, Hisao, Re. 34,411, Cl. 358-98.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Bogert, Robert C.: *See*—
Rudy, Marion F., B1 4,219,945, Cl. 36-29.000.
Connector Manufacturing Co.: *See*—
Ottmann, David M., B1 8,309,129, Cl. D13-149.000.
Fougere, Guy L.; Greene, Walter J.; and Jeffreys, Dennis C., to Mars, Incorporated. Method and apparatus for coin selection utilizing a programmable memory. B1 3,918,565, 10-19-93, Cl. 194-317.000.
Greene, Walter J.: *See*—
Fougere, Guy L.; Greene, Walter J.; and Jeffreys, Dennis C., B1 3,918,565, Cl. 194-317.000.
Jeffreys, Dennis C.: *See*—
Fougere, Guy L.; Greene, Walter J.; and Jeffreys, Dennis C., B1 3,918,565, Cl. 194-317.000.
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Ottmann, David M., to Connector Manufacturing Co. L-shaped electrical connector. B1 8,309,129, 10-19-93, Cl. D13-149.000.
Rudy, Marion F., to Bogert, Robert C. Footwear. B1 4,219,945, 10-19-93, Cl. 36-29.000.
Seikosha Co., Ltd.: *See*—
Tajima, Akio, B1 5,050,854, Cl. 271-122.000.
Tajima, Akio, to Seikosha Co., Ltd. Paper feeder. B1 5,050,854, 10-19-93, Cl. 271-122.000.
Tooker, John C. Binding for soft cover books. B1 5,154,447, 10-19-93, Cl. 281-21.100.

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Addison, F. Clark; and Thorstensen, Peder J. Heat reduction volume compensator with curled fins for disposition between a coffee pot and hot plate. 340,383, 10-19-93, Cl. D7-407.000.
Adolfsson, Roger, to Cederroth Nordic AB. Wall panel. 340,536, 10-19-93, Cl. D25-138.000.
Aker, Kevin R.; Houry, Robert L.; and Martin, Jeffrey G., to Little Tikes Company, The. Doll house. 340,482, 10-19-93, Cl. D21-114.000.
Allibert S.A.: *See*—
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Anderson, Stephen P., to A & B Accessories, Inc. Hot tub cover bracket. 340,405, 10-19-93, Cl. D8-381.000.
Aoyagi, Yasuo, to Mazda Motor Corporation. Automobile. 340,427, 10-19-93, Cl. D12-92.000.
Aoyagi, Yasuo, to Mazda Motor Corporation. Automobile. 340,428, 10-19-93, Cl. D12-92.000.

Aoyama, Steven, to Acushnet Company. Golf ball. 340,488, 10-19-93, Cl. D21-205.000.
Ashton, Bradley H. Catching vest for tag ball game. 340,543, 10-19-93, Cl. D29-11.000.
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Axelsson, Stig, to AB Hammarprodukter. Multipurpose sign preparation tool. 340,392, 10-19-93, Cl. D8-51.000.
Baldwin, Raymond L.; and Moses, Rodney D. Bicycle rear swing arm. 340,433, 10-19-93, Cl. D12-117.000.
Ball, Edwin L., to Lexington Furniture Industries, Inc. Headboard for a bed. 340,372, 10-19-93, Cl. D6-505.000.
Bannigan, Francis R., to Kambrook Distributing Pty. Ltd. Basket for a beverage maker. 340,382, 10-19-93, Cl. D7-400.000.
Barngrover, Conrad A., to Minnesota Mining and Manufacturing Company. Orthodontic bracket base. 340,523, 10-19-93, Cl. D24-180.000.
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Beaulieu, Bryan; and Savoie, Gordon P., to Skyline Displays, Inc. Curved panel with counter and header. 340,533, 10-19-93, Cl. D25-58.000.
Beaumont, Thomas G.; Richards, Scott H.; and Claxton, Bruce A., to Motorola, Inc. Portable radio telephone. 340,451, 10-19-93, Cl. D14-138.000.
Belliere, Patrice; and Rousselin, Frank, to Von Roll Seilbahnen AG. Chair for chairlifts. 340,425, 10-19-93, Cl. D12-52.000.
Benarrouch, Jacques. Toiletry case. 340,353, 10-19-93, Cl. D3-39.000.
Berfield, Robert C.; Meland, Ronald F.; and Seasholtz, Craig A., to Shop-Vac Corporation. Tank for a pressure washer. 340,556, 10-19-93, Cl. D32-1.000.
Bessette, Brian P. Combined safety switch handle and mounting bracket. 340,442, 10-19-93, Cl. D13-168.000.
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Hines, David M., 340,375, Cl. D6-523.000.
Brazis, William E., to Rubbermaid Incorporated. Towel bar. 340,377, 10-19-93, Cl. D6-549.000.
Brewer, Calvin L. Abbreviated shield safety handle for ski pole. 340,496, 10-19-93, Cl. D21-230.000.
Brewer, Calvin L. Full shield safety handle for ski pole. 340,497, 10-19-93, Cl. D21-230.000.
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Kean, J. H. B.; Brumbelow, Everette A.; Grimes, Henry C.; Schultz, Dennis; and Watson, Mickey, 340,563, Cl. D34-23.000.
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Couillard, Thomas H.; and Couillard, Eileen. Taco plate. 340,384, 10-19-93, Cl. D7-504.000.
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5,253,380
408 5,254,135
549 5,254,136

CLASS 14
71.5 5,253,381

CLASS 15
22.1 5,253,382
88.3 5,253,383
98 5,253,384
104.061 5,253,385
206 5,253,386
228 5,253,387
250.20 5,253,388

CLASS 16
30 5,253,389
257 5,253,390
289 5,253,391

CLASS 19
66 CC 5,253,392

CLASS 24
301 5,253,393
303 5,253,394
387 5,253,395
600.9 5,253,396

CLASS 28
105 5,253,397
204 5,253,404

CLASS 29
25.03 5,254,137
33 A 5,253,398
33 M 5,253,399
55 5,253,400
91 5,253,401
163.6 5,253,403
173 5,253,402
213.1 5,253,405
240 5,253,406
266 5,253,407
280 5,253,408
424 5,253,409
436 5,253,410
559 5,253,411
566.3 5,253,412
599 5,253,413
740 5,253,414
827 5,253,415
888.08 5,253,417
888.3 5,253,416
888.43 5,253,418
889.72 5,253,419

CLASS 30
50 5,253,420

CLASS 33
27.03 5,253,421
199 R 5,253,422
265 5,253,423
361 5,253,424
373 5,253,425
429 5,253,426
501.08 5,253,427
559 5,253,428
568 5,253,429
702 5,253,430
810 5,253,431

CLASS 34
35 5,253,432
133 H 5,253,433

CLASS 36
29 B1 4,219,945
55 5,253,434
88 5,253,435
119 5,253,436
122 5,253,437

CLASS 37
446 5,253,449

CLASS 40
152 5,253,439
152.1 5,253,440
488 5,253,441
511 5,253,438

CLASS 42
50 5,253,442
103 5,253,443

CLASS 43
1 5,253,444
17 5,253,445
42.13 5,253,446
42.74 5,253,447
114 5,253,448
122 5,253,450

CLASS 44
347 5,254,138
626 5,254,139

CLASS 47
1.01 5,254,140

CLASS 49
139 5,253,451
212 5,253,452
377 5,253,453

CLASS 51
240 R 5,253,454
295 5,254,141
309 5,254,142

CLASS 52
1 5,253,455
11 5,253,456
202 5,253,457
233 5,253,458
235 5,253,459
252 5,253,460
408 5,253,461
484 5,253,462
5,253,463
508 5,253,464
643 5,253,465

CLASS 55
320 5,254,146
337 5,254,147

CLASS 56
335 5,253,466
372 5,253,467
503 5,253,468

CLASS 60
39.02 5,253,469
39.08 5,253,470
39.161 5,253,472
39.36 5,253,471
39.462 5,253,473
270.1 5,253,474
274 5,253,475
279 5,253,476
567 5,253,477
733 5,253,478

CLASS 62
24 5,253,479
78 5,253,480
126 5,253,481
175 5,253,482
181 5,253,483
239 5,253,484
262 5,253,485
296 5,253,486
353 5,253,487
382 5,253,488
476 5,253,523
505 5,253,489

CLASS 63
15.4 5,253,490
15.6 5,253,491

CLASS 65
3.11 5,254,148
29 5,254,149
225 5,254,150
335 5,254,151
348 5,254,152

CLASS 66
69 5,253,492

CLASS 68
4 5,253,493
12.18 5,253,494
43 5,253,495

CLASS 70
38 R 5,253,496
209 5,253,497

CLASS 72
25 5,253,498
34 5,253,499
84 5,253,500
167 5,253,501
213 5,253,502
239 5,253,503
350 5,253,504
361 5,253,505
402 5,253,506
414 5,253,507
431 5,253,508
457 5,253,509

CLASS 73
1 D 5,253,510
1 R 5,253,511
54.41 5,253,513
61.73 5,253,514
73 5,253,512
105 5,253,515
5,253,516
118.2 5,253,517
153 5,253,518
155 5,253,519
202 5,253,520
306 5,253,521
453 5,253,522
497 5,253,524
504 5,253,525
517 B 5,253,527
517 R 5,253,526
582 5,253,528
597 5,253,529
602 5,253,530
650 5,253,531
708 5,253,532
861 5,253,534
5,253,535
861.17 5,253,537
861.37 5,253,533
861.53 5,253,536
864.34 5,253,538
864.83 5,253,539

CLASS 74
6 5,253,540
41 5,253,541
61 5,253,542
501.5 R 5,253,543
551.1 5,253,544
561 5,253,545
567 5,253,546
604 5,253,547
718 5,253,548
867 5,253,549
868 5,253,550

CLASS 75
732 5,254,153

CLASS 81
3.09 5,253,551
3.42 5,253,552
3.48 5,253,553
9.3 5,253,554
9.51 5,253,555
53.2 5,253,556
427.5 5,253,557

CLASS 83
18 5,253,558
133 5,253,559
171 5,253,560
674 5,253,561

CLASS 84
322 5,253,562
453 5,253,563
609 5,254,803
626 5,254,804
5,254,805

CLASS 89
34 5,253,574

CLASS 91
44 5,253,575

CLASS 92
12.2 5,253,576
170.1 5,253,577

CLASS 95
12 5,254,154
46 5,254,143
280 5,254,144

CLASS 96
44 5,254,155
80 5,255,178
217 5,254,145

CLASS 99
275 5,253,578
328 5,253,564
374 5,253,565
403 5,253,566
404 5,253,567
458 5,253,568
476 5,253,569

CLASS D13
149 B1 8,309,129

CLASS 100
41 5,253,570
5,253,571
48 5,253,572
53 5,253,573

CLASS 101
40.1 5,253,580
121 5,253,581
366 5,253,582
401.1 5,253,579
409 5,253,583

CLASS 102
202.7 5,253,584
311 5,253,585
313 5,253,586
351 5,253,587
386 5,253,588

CLASS 104
28 5,253,589
138.1 5,253,590
281 5,253,591
5,253,592

CLASS 105
406.1 5,253,593

CLASS 106
1.11 5,254,156
20 D 5,254,157
20 R 5,254,158
22 H 5,254,159
22 K 5,254,160
170 5,254,161
419 5,254,162
477 5,254,163

CLASS 108
94 5,253,594
157 5,253,595

CLASS 110
211 5,253,596
346 5,253,597

CLASS 112
121.12 5,253,599
263.1 5,253,598
267.1 5,253,600
320 5,253,601

CLASS 114
20.1 5,253,603
144 E 5,253,604
227 5,253,602
259 5,253,605
5,253,606
357 5,253,607

CLASS 116
173 5,253,608

CLASS 118
58 5,254,164
60 5,254,165
63 5,254,166
108 5,254,167
666 5,254,168
718 5,254,169
719 5,254,170
723 MR 5,254,171
725 5,254,172
728 5,254,173

CLASS 119
19 5,253,612
61 5,253,609
215 5,253,610

CLASS 123
41.31 5,253,613
41.74 5,253,615
52 M 5,253,614
52 MC 5,253,616
52 MF 5,253,617
65 BA 5,253,618
90.12 5,253,619
90.16 5,253,620
5,253,621
90.17 5,253,622
193.4 5,253,625
339 5,253,623
5,253,624
352 5,253,626
435 5,253,627
516 5,253,628
519 5,253,629
682 5,253,630
696 5,253,631
5,253,632

CLASS 124
44.5 5,253,633

CLASS 126
25 A 5,253,634
85 B 5,253,635
299 R 5,253,636
696 5,253,637

CLASS 127
53 5,254,174

CLASS 128
6 5,253,638
25 R 5,253,639
200.14 5,253,641
200.24 5,253,640
205.29 5,253,642
207.14 5,253,643
633 5,253,645
5,253,646
653.1 5,253,647
681 5,253,648
691 5,253,649
712 5,253,650
716 5,253,651
756 5,253,652
772 5,253,653
779 5,253,654
782 5,253,655
5,253,656
845 5,253,657
859 5,253,658
898 5,253,659

CLASS 131
365 5,253,660

CLASS 132
321 5,253,661
325 5,253,662

CLASS 134
2 5,254,175
5,254,176
8 5,254,177
95.2 5,253,663
167 C 5,253,664
201 5,253,665

CLASS 135
28 5,253,666
103 5,253,667

CLASS 136
204 5,254,178
244 5,254,179

CLASS 137
12 5,253,668
14 5,253,669
247.25 5,253,670
315 5,253,671
489 5,253,672
512.4 5,253,673
559 5,253,674
614.05 5,253,675
625.61 5,253,676
888 5,253,677

CLASS 138
39 5,253,678
40 5,253,679
148 5,253,680

CLASS 139
192 5,253,681

CLASS 141
3 5,253,682
67 5,253,683
329 5,253,684

CLASS 144
242 R 5,253,685
363 5,253,686

CLASS 148
208 5,254,180
231 5,254,181
304 5,254,182
318 5,254,183
325 5,254,184
512 5,254,185

CLASS 149
19.4 5,254,186

CLASS 152
216 5,254,187
416 5,253,687
417 5,253,688
454 5,253,689
525 5,253,690
537 5,253,691
543 5,253,692

CLASS 156
53 5,254,188
64 5,254,189
85 5,254,190
89 5,254,191
94 5,254,192
157 5,254,193
176 5,254,194
184 5,254,195
235 5,254,196
272.2 5,254,197
307.3 5,254,198
5,254,199
344 5,254,200
5,254,201
345 5,254,202
391 5,254,203
401 5,254,204
538 5,254,205
542 5,254,206
601 5,254,207
603 5,254,208

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621 5,254,211
626 5,254,209
630 5,254,212
643 5,254,214
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655 5,254,213
656 5,254,217
662 5,254,218

CLASS 159

6.1 5,254,219

CLASS 160

7 5,253,693
133 5,253,694
370.2 R 5,253,695

CLASS 162

108 5,254,220
168.2 5,254,221

CLASS 164

48 5,253,696
97 5,253,697
269 5,253,698
463 5,253,699

CLASS 165

39 5,253,701
42 5,253,700
80.4 5,253,702
82 5,253,703

CLASS 166

53 5,253,704
123 5,253,705
135 5,253,706
270 5,253,707
278 5,253,708
284 5,253,709
298 5,253,710
300 5,253,711
330 5,253,712
372 5,253,713
376 5,253,714

CLASS 168

14 5,253,715

CLASS 169

70 5,253,716

CLASS 172

311 5,253,717

CLASS 174

52.2 5,254,807
65 R 5,254,808
68.1 5,254,809
69 5,254,810
133 R 5,254,806
268 5,254,811

CLASS 175

20 5,253,718
50 5,253,719
58 5,253,720
73 5,253,721
296 5,253,722
373 5,253,723

CLASS 177

262 5,254,812

CLASS 180

65 5,253,724
79.1 5,253,725
132 5,253,726
137 5,253,727
140 5,253,728
142 5,253,729
146 5,253,730

CLASS 182

63 5,253,731
116 5,253,732

CLASS 184

6.26 5,253,733

CLASS 187

6 5,253,734
130 5,254,813

CLASS 188

1.11 5,253,735
59 5,253,736
71.5 5,253,737
171 5,253,738

CLASS 190

18 A 5,253,739

CLASS 192

70.16 5,253,740

CLASS 193

29 5,253,741

CLASS 194

317 B1 3,918,565

CLASS 198

347.1 5,253,743
347.3 5,253,744
465.1 5,253,745
550.2 5,253,746
631 5,253,747
680 5,253,742
834 5,253,748
850 5,253,749

CLASS 200

17 R 5,254,814
84 C 5,254,815
144 AP 5,254,816
144 B 5,254,817

CLASS 202

248 5,254,222

CLASS 204

59 R 5,254,223
94 5,254,224
105 R 5,254,225
128 5,254,226
131 5,254,227
147 5,254,228
157.15 5,254,229
157.42 5,254,230
164 5,254,231
243 R 5,254,232
257 5,254,233
275 5,254,234
284 5,254,235
298.11 5,254,236
298.41 5,254,237

CLASS 205

67 5,254,239
155 5,254,238

CLASS 206

6.1 5,253,750
45.19 5,253,751
77.1 5,253,752
310 5,253,753
438 5,253,754
444 5,253,755
5,253,756
449 5,253,757
518 5,253,758
524.7 5,253,759
525 5,253,760
530 5,253,761
600 5,253,763

CLASS 208

112 5,254,240

CLASS 209

3 5,253,764
539 5,253,765
552 5,253,762
702 5,253,766

CLASS 210

86 5,254,241
91 5,254,242
94 5,254,243
95 5,254,244
150 5,254,245
195.4 5,254,246
222 5,254,247
321.62 5,254,249
321.67 5,254,248
5,254,250
490 5,254,251
602 5,254,252
607 5,254,253
616 5,254,254
634 5,254,255
639 5,254,256
5,254,257
643 5,254,258
650 5,254,259
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654 5,254,261
656 5,254,262
667 5,254,263
696 5,254,264
774 5,254,265
776 5,254,266
799 5,254,267

CLASS 211

40 5,253,767
65 5,253,768
126 5,253,769
133 5,253,770

CLASS 212

148 5,253,771

CLASS 219

10.55 A 5,254,818
10.55 B 5,254,819
10.55 E 5,254,820
5,254,821
10.55 R 5,254,822
5,254,823
10.57 5,254,824
10.87 5,254,825
69.13 5,254,826
69.14 5,254,827
110 5,254,828
121.39 5,254,829
121.43 5,254,830
121.64 5,254,831
121.66 5,254,832
121.68 5,254,833
121.72 5,254,834
125.11 5,254,835
146.23 5,254,836
200 5,254,837
270 5,254,838
494 5,254,839
544 5,254,840

CLASS 220

276 5,253,772
345 5,253,774
403 5,253,775
495 5,253,776
571 5,253,777
590 5,253,778
705 5,253,779
711 5,253,780
713 5,253,781

CLASS 221

15 5,253,782
131 5,253,783
267 5,253,784

CLASS 222

43 5,253,785
153 5,253,786
209 5,253,787
321 5,253,788
462 5,253,789

CLASS 223

109 R 5,253,790

CLASS 224

275 5,253,791
321 5,253,792

CLASS 227

178 5,253,793

CLASS 228

121 5,253,794
174 5,253,795
193 5,253,796
194 5,253,797

CLASS 229

92.1 5,253,798
108 5,253,799
109 5,253,800
113 5,253,801
114 5,253,802
305 5,253,803

CLASS 230

86.2 5,253,773

CLASS 235

379 5,254,841
382 5,254,842
449 5,254,843
462 5,254,844

CLASS 236

44 C 5,253,804

CLASS 237

2 B 5,253,805
12.3 C 5,253,806

CLASS 239

11 5,253,807
124 5,253,808
257 5,253,809
397.5 5,253,810
523 5,253,811

CLASS 241

21 5,253,812
24 5,253,813
171 5,253,814
186.1 5,253,815
227 5,253,816

CLASS 242

18 R 5,253,817
55.2 5,253,818
58.3 5,253,819
99 5,253,820
197 5,253,821
199 5,253,822

CLASS 244

3.15 5,253,823
108 5,253,825
123 5,253,824
147 5,253,826
158 R 5,253,827
199 5,253,828

CLASS 246

220 5,253,830

CLASS 248

27.3 5,253,831
123.1 5,253,832
168 5,253,833
179 5,253,834
220.2 5,253,835
225.31 5,253,836
250 5,253,837
311.2 5,253,838
354.1 5,253,839
452 5,253,840
638 5,253,841

CLASS 250

201.3 5,254,845
205 5,254,846
208.1 5,254,847
5,254,848
5,254,849
214 A 5,254,851
214 VT 5,254,852
214.1 5,254,850
221 5,254,853
234 5,254,854
239 5,254,855
310 5,254,856
5,254,857
339 5,254,858
560 5,254,859
566 5,254,860
573 5,254,861

CLASS 251

149.6 5,253,842
159 5,253,843

CLASS 252

8.6 5,254,268
8.8 5,254,270
5,254,271
32.7 E 5,254,272
34 5,254,273
45 5,254,274
47.5 5,254,275
49.8 5,254,276
51.5 R 5,254,277
62.9 5,254,278
67 5,254,279
68 5,254,280
86 5,254,269
108 5,254,281
143 5,254,282
174.12 5,254,283
174.15 5,254,284
175 5,254,285
180 5,254,286
186.27 5,254,287
518 5,254,288
520 5,254,289
545 5,254,290
5,254,291

CLASS 254

30 5,253,845

CLASS 257

18 5,253,844
77 5,254,862
191 5,254,863
273 5,254,864
344 5,254,865
369 5,254,866
411 5,254,867
432 5,254,868
485 5,254,869
659 5,254,870
666 5,254,871
751 5,254,872
5,254,873
754 5,254,874

CLASS 261

76 5,254,292

CLASS 264

1.3 5,254,293
4 5,254,294
14 5,254,295
22 5,254,296
5,254,297
23 5,254,298
40.2 5,254,299
40.4 5,254,300
46.2 5,254,301
129 5,254,302
181 5,254,303
328.1 5,254,304
328.9 5,254,305
572 5,254,306

CLASS 266

44 5,253,846
95 5,253,847
236 5,253,848

CLASS 267

36.1 5,253,849
64.24 5,253,850
103 5,253,851
162 5,253,852
256 5,253,853

CLASS 271

9 5,253,855
5,253,856
10 5,253,854
91 5,253,857
103 5,253,858
122 B1 5,050,854
176 5,253,859
5,253,860
213 5,253,861
251 5,253,862
265 5,253,863

CLASS 273

60 A 5,253,865
65 EE 5,253,866
80 R 5,253,867
5,253,868
80.1 5,253,869
187.2 5,253,870
228 5,253,871
232 5,253,872
324 5,253,873
346 5,253,874

CLASS 277

1 5,253,875
15 5,253,876
24 5,253,877
220 5,253,878

CLASS 279

62 5,253,879
106 5,253,880

CLASS 280

5.22 5,253,881
11.2 5,253,882
5,253,883
11.27 5,253,884
20 5,253,885
39 5,253,886
79.3 5,253,887
230 5,253,889
250.1 5,253,888
281.1 5,253,890
422 5,253,891
432 5,253,893
607 5,253,894
731 5,253,892
736 5,253,895
808 5,253,896

CLASS 281

21.1 5,253,897
B1 5,154,447

CLASS 283

62 5,253,898
106 5,253,899

CLASS 285

12 5,253,900
94 5,253,902
424 5,253,901

CLASS 290

55 5,254,876

CLASS 292

39 5,253,903
58 5,253,904
92 5,253,905
216 5,253,906
252 5,253,907
289 5,253,908

CLASS 294

82.11 5,253,909
116 5,253,910
5,253,911
119.1 5,253,912

CLASS 296

37.6 5,253,913
39.2 5,253,918
96.21 5,253,919
97.22 5,253,920
100 5,253,914
107 5,253,915
180.5 5,253,916
217 5,253,829
218 5,253,917

CLASS 297

32 5,253,921
344.16 5,253,922
440.21 5,253,923
452.1 5,253,924

CLASS 299

12 5,253,925
16 5,253,926

CLASS 300

2 5,253,927

CLASS 301

5.22 5,253,928

CLASS 303

3 5,253,929
15 5,253,930
95 5,253,931

CLASS 307

66 5,254,877
75 5,254,878
116 5,254,879
296.1 5,254,880
296.6 5,254,882
351 5,254,881
443 5,254,883
446 5,254,885
465 5,254,886
475 5,254,887
480 5,254,888
529 5,254,889
542.1 5,254,890
570 5,254,891

CLASS 310

49 R 5,254,892
90 5,254,893
114 5,254,894
156 5,254,895
263 5,254,896
316 Re.34,409
319 5,254,897
321 5,254,898
323 5,254,899
334 5,254,900

CLASS 312

140.3 5,253,932
351.7 5,253,933

CLASS 313

113 5,254,901
274 5,254,902
450 5,254,903
479 5,254,904
495 5,254,905
535 5,254,906

CLASS 315

77 5,254,907
293 5,254,909
312 5,254,908
313 5,254,910
366 5,254,911

CLASS 318

251 5,254,913
254 5,254,914
369 5,254,915
443 5,254,916
466 5,254,917
5,254,918
560 5,254,919
5,254,920
561 5,254,921
568.11 5,254,922
5,254,923
590 5,254,924
696 5,254,925
798 5,254,926

CLASS 320

2 5,254,927
14 5,254,928
15 5,254,929
5,254,930
22 5,254,931
23 5,254,932
35 5,254,933

CLASS 322

2 R 5,254,934
29 5,254,935
90 5,254,936

CLASS 323

283 5,254,937
369 5,254,938

CLASS 324

158 P 5,254,939

158 R 5,254,940
5,254,941
5,254,942
5,254,943
220 5,254,944
248 5,254,945
262 5,254,946
304 5,254,947
309 5,254,948
5,254,949
322 5,254,950
426 5,254,951
429 5,254,952
538 5,254,953
551 5,254,954

CLASS 328

155 5,254,955

CLASS 330

258 5,254,956
308 5,254,957

CLASS 331

10 5,254,958
12 5,254,959
46 5,254,960
116 FE 5,254,961

CLASS 333

193 5,254,962
208 5,254,963

CLASS 335

202 5,254,965
306 5,254,966

CLASS 337

165 5,254,967

CLASS 338

50 5,254,968
308 5,254,969

CLASS 340

328 5,254,970
458 5,254,971
545 5,254,972
547 5,254,973
572 5,254,974
589 5,254,975
605 5,254,976
825.44 5,254,986
988 5,254,987

CLASS 341

22 5,254,988
26 5,254,989
51 5,254,990
65 5,254,991
119 5,254,992
135 5,254,993
153 5,254,994
159 5,254,995
176 5,254,996

CLASS 342

44 5,254,997
173 5,254,998
197 5,254,999
442 5,255,000

CLASS 343

702 5,255,001
713 5,255,002
756 5,255,003
781 P Re.34,410
853 5,255,004
895 5,255,005
915 5,255,006

CLASS 345

84 5,254,980
107 5,254,981
113 5,254,979
144 5,254,984
147 5,254,983
148 5,254,982
150 5,254,977
5,254,978

CLASS 346

1.1 5,255,007
24 5,255,008
25 5,255,009
76 L 5,255,010
76 PH 5,255,011
5,255,012
107 R 5,253,934
5,255,013
108 5,255,014
5,255,015
140 R 5,255,016
5,255,017
5,255,018
5,255,019
5,255,020
5,255,021
5,255,022
160.1 5,255,023

CLASS 350

96.16 5,253,935

CLASS 351

158 5,255,024
205 5,255,025
206 5,255,026
211 5,255,027

CLASS 353

7 5,255,028
122 5,255,029

CLASS 354

94 5,255,030
106 5,255,031
149.11 5,255,032
5,255,033
173.1 5,255,034
195.12 5,255,035
229 5,255,037
266 5,255,038
275 5,255,039
5,255,040
288 5,255,041
319 5,255,042
402 5,255,043
5,255,044
403 5,255,045
412 5,255,046
416 5,255,047
419 5,255,048
439 5,255,049

CLASS 355

53 5,255,050
77 5,255,051
91 5,255,052
200 5,255,053
202 5,255,054
208 5,255,055
211 5,255,056
246 5,255,057
256 5,255,058
261 5,255,059
290 5,255,060
298 5,255,061
326 5,255,062
327 5,255,063

CLASS 356

1 5,255,064
5 5,255,065
152 5,255,066
301 5,255,067
351 5,255,068
354 5,255,069
417 5,255,070
5,255,071
432 5,255,072
437 5,255,073
445 5,255,074
5,255,075

CLASS 358

27 5,255,076
29 5,255,077
36 5,255,078
37 5,255,079
39 5,255,080
41 5,255,081
60 5,255,082
86 5,255,086
93 5,255,096
98 Re.34,411
5,255,087
101 5,255,088
5,255,089
133 5,255,090
140 5,255,091
160 5,255,092
164 5,255,093
165 5,255,094
172 5,255,095
181 5,255,097
183 5,255,098
213.23 5,255,099
231 5,255,100
340 5,255,101
342 5,255,102
5,255,103
400 5,255,106
403 5,255,104
426 5,255,105
427 5,253,936
474 5,255,107
527 5,255,083
5,255,084
5,255,085

CLASS 359

18 5,255,108
43 5,255,109
56 5,255,110
113 5,255,111
196 5,255,112
5,255,113
5,255,114
209 5,255,115
212 5,255,116
234 5,255,117
254 5,255,118
280 5,255,119
511 5,255,120
643 5,255,121
650 5,255,122
684 5,255,123
694 5,255,124
889 5,255,125

CLASS 360

27 5,255,126
29 5,255,127
40 5,255,128
5,255,129
41 5,255,130
48 5,255,131
51 5,255,132
67 5,255,133
70 5,255,134
75 5,255,135
77.02 5,255,136
97.02 5,255,137
98.04 5,255,138
99.08 Re.34,412
103 5,255,139
109 5,255,140
126 5,255,141
5,255,142
132 5,255,143
5,255,144
133 5,255,145

CLASS 361

56 5,255,146
93 5,255,147
5,255,148
103 5,255,149
107 5,255,150
154 5,255,151
160 5,255,152
234 5,255,153
680 5,255,154
749 5,255,155
760 5,255,158
770 5,255,159
783 5,255,156
5,255,157
798 5,255,160
826 5,255,161

CLASS 362

26 5,255,162
61 5,255,163
80 5,255,164
80.1 5,255,165
83.2 5,255,166
103 5,255,167
108 5,255,168
162 5,255,169
183 5,255,170
231 5,255,171
240 5,255,172
405 5,255,173

CLASS 363

17 5,255,174
81 5,255,175
95 5,255,176
5,255,177
133 5,255,179

CLASS 364

140 5,255,180
401 5,255,181
405 5,255,182
406 5,255,183
407 5,255,184
411 5,255,185
413.02 5,255,187
413.06 5,255,186
413.27 5,255,188
419.19 5,255,189
420 5,255,190
424.05 5,255,191
426.02 5,255,192
5,255,193
5,255,194
449 5,255,195
464.03 5,255,196
468 5,255,197
470 5,255,198
474.17 5,255,199
474.22 5,255,200
474.35 5,255,201
483 5,255,202
489 5,255,203
497 5,255,204
510 5,255,205
512 5,255,206
5,255,207
551.01 5,255,208
118 5,255,293

CLASS 376

204 5,255,294
247 5,255,295
299 5,255,296
352 5,255,297
412 5,255,298
421 5,255,299
423 5,255,300

CLASS 377

6 5,255,301

CLASS 378

55 5,255,302
177 5,255,303
181 5,255,304

CLASS 379

34 5,255,305
38 5,255,306
58 5,255,307
61 5,255,308
88 5,255,309
5,255,310
100 5,255,311
5,255,312
102 5,255,313
212 5,255,314
221 5,255,315
389 5,255,316
399 5,255,317

CLASS 380

7 5,255,318

CLASS 381

13 5,255,319
68.4 5,255,320
71 5,255,321
84 5,255,322
103 5,255,323
107 5,255,324
5,255,325
110 5,255,326
111 5,255,327
193 5,255,328

CLASS 382

8 5,255,329
18 5,255,330
50 5,255,331

CLASS 384

303 5,253,939

CLASS 385

17 5,255,332
33 5,255,333
41 5,255,334
43 5,255,335
46 5,255,336
135 5,255,337

CLASS 392

451 5,255,338

CLASS 395

2 5,255,339
5,255,340
5,255,341
5,255,342
2.51 5,255,343
3 5,255,344
13 5,255,345
23 5,255,346
5,255,347
24 5,255,348
27 5,255,349
109 5,255,350
5,255,351
125 5,255,352
126 5,255,353
133 5,255,354
145 5,255,355
148 5,255,356
151 5,255,357
153 5,255,358
161 5,255,359
162 5,255,360
5,255,361
163 5,255,362
164 5,255,363
5,255,364
5,255,365
5,255,366
166 5,255,367
200 5,255,368
5,255,369
250 5,255,370
5,255,371
325 5,255,372
5,255,373
5,255,374
5,255,375
5,255,376
5,255,377
400 5,255,379
425 5,255,380
5,255,381
5,255,382
5,255,383
5,255,384
575 5,255,385
600 5,255,386
5,255,387
5,255,388
5,255,389

CLASS 400

495 5,253,940
692 5,253,941

CLASS 401

176 5,253,942

CLASS 402

68 5,253,943

CLASS 403

13 5,253,944
258 5,253,945
268 5,253,946
274 5,253,947
289 5,253,948
317 5,253,949

CLASS 404

6 5,253,950
5,253,951
25 5,253,952

CLASS 405

63 5,253,953
127 5,253,954
147 5,253,955
154 5,253,956
229 5,253,957
232 5,253,958
279 5,253,959
302.2 5,253,960

CLASS 408

58 5,253,961

CLASS 411

34 5,253,962
75 5,253,963
79 5,253,964
82 5,253,965
399 5,253,966
432 5,253,967

CLASS 412

34 5,253,968

CLASS 414

17 5,253,969
24.6 5,253,970
412 5,253,971
469 5,253,972
558 5,253,973
623 5,253,974
786 5,253,975

CLASS 415

114 5,253,976
199.5 5,253,977

CLASS 416

190 5,253,978
223 R 5,253,979
231 A 5,253,980

CLASS 417

3 5,253,981
38 5,253,982
401 5,253,984
407 5,253,985
420 5,253,986
485 5,253,983
566 5,253,987

CLASS 418

1 5,253,988
55.2 5,253,989
55.3 Re.34,413
270 5,253,990

CLASS 420

66 5,254,307
422 5,254,308

CLASS 422

34 5,254,309
53 5,254,310
81 5,254,311
100 5,254,312
5,254,313
102 5,254,314
104 5,254,315
148 5,254,316
186.18 5,254,317

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197 5,254,318
249 5,254,319

CLASS 423

28 5,254,320
55 5,254,321
239.2 5,254,322
241 5,254,323
247 5,254,368
263 5,254,324
450 5,254,325
591 5,254,326
718 5,254,327

CLASS 424

1.1 5,254,328
9 5,254,329
46 5,254,330
59 5,254,331
66 5,254,332
70 5,254,333
5,254,334
5,254,335
5,254,336
76.1 5,254,337
78.35 5,254,338
88 5,254,339
92 5,254,340
401 5,254,342
5,254,343
405 5,254,344
426 5,254,345
449 5,254,346
5,254,348
473 5,254,349
495 5,254,347
570 5,254,350

CLASS 425

6 5,253,991
72.1 5,253,992
78 5,253,993
130 5,253,994
522 5,253,995
525 5,253,996
556 5,253,997
562 5,253,998
575 5,253,999
595 5,254,000

CLASS 426

23 5,254,351
92 5,254,352
94 5,254,353
106 5,254,354
285 5,254,355
553 5,254,356
590 5,254,357

CLASS 427

4 5,254,358
79 5,254,360
96 5,254,361
5,254,362
126.3 5,254,363
214 5,254,364
235 5,254,365
238 5,254,366
240 5,254,367
248.1 5,254,369
249 5,254,370
487 5,254,371
488 5,254,372
498 5,254,373
553 5,254,374

CLASS 428

14 5,254,375
29 5,254,376
34.1 5,254,377
5,254,378
35.7 5,254,379
5,254,380
40 5,254,381
57 5,254,661
64 5,254,382
68 5,254,383
71 5,254,384
76 5,254,385
95 5,254,386
113 5,254,387
120 5,254,388
131 5,254,389
156 5,254,390
195 5,254,391
212 5,254,392
5,254,393
5,254,394
217 5,254,395
225 5,254,396
245 5,254,397
255 5,254,398
288 5,254,399
305.5 5,254,400
317.1 5,254,401
317.7 5,254,402
323 5,254,403
327 5,254,404
5,254,405
328 5,254,406
343 5,254,407
383 5,254,408
392 5,254,409
402 5,254,410
447 5,254,411
473.5 5,254,412
633 5,254,413

CLASS 429

29 5,254,414
153 5,254,415
213 5,254,416

CLASS 430

5 5,254,417
5,254,418
5,254,419
7 5,254,420
49 5,254,421
5,254,422
58 5,254,423
112 5,254,424
115 5,254,425
124 5,254,426
137 5,254,427
138 5,254,428
162 5,254,429
166 5,254,430
171 5,254,431
192 5,254,432
203 5,254,433
5,254,434
260 5,254,435
264 5,254,436
273 5,254,437
296 5,254,438
326 5,254,439
5,254,440
382 5,254,441
393 5,254,442
401 5,254,443
491 5,254,444
501 5,254,445
503 5,254,446
510 5,254,447
523 5,254,448
533 5,254,449
538 5,254,450
558 5,254,451
567 5,254,452
569 5,254,453
5,254,454
584 5,254,455
611 5,254,456

CLASS 432

247 5,254,001

CLASS 433

8 5,254,002
9 5,254,003
129 5,254,004
173 5,254,005
189 5,254,006

CLASS 434

319 5,254,007
427 5,254,008

CLASS 435

5 5,254,457
5,254,458
6 5,254,459
7.25 5,254,460
7.9 5,254,677
34 5,254,461
69.1 5,254,462
69.4 5,254,463
116 5,254,464
140 5,254,465
142 5,254,466
158 5,254,467
162 5,254,468
188 5,254,469
225 5,254,470
240.23 5,254,471
312 5,254,472

CLASS 436

1 5,254,473
5,254,474
89 5,254,475
5,254,476
172 5,254,477
173 5,254,478
180 5,254,479

CLASS 437

2 5,254,480
4 5,254,481
8 5,254,482
22 5,254,483
24 5,254,484
31 5,254,485
5,254,486
34 5,254,487
40 5,254,488
5,254,489
44 5,254,490
47 5,254,491
56 5,254,492
60 5,254,493
69 5,254,494
70 5,254,495
133 5,254,496
173 5,254,497
190 5,254,498
192 5,254,499
214 5,254,500
5,254,501
225 5,254,502
228 5,254,503
231 5,254,504
235 5,254,505
241 5,254,506
247 5,254,507

CLASS 439

34 5,254,009
108 5,254,010
198 5,254,011
263 5,254,012
352 5,254,013
353 5,254,014
410 5,254,015
567 5,254,016
637 5,254,017
680 5,254,018
681 5,254,019
761 5,254,020
866 5,254,021
877 5,254,022

CLASS 440

38 5,254,023
42 5,254,024

CLASS 445

26 5,254,025

CLASS 446

48 5,254,077
220 5,254,026
250 5,254,027
297 5,254,028
362 5,254,029
430 5,254,030

CLASS 452

149 5,254,031

CLASS 453

56 5,254,032

CLASS 454

146 5,254,033
277 5,254,034
343 5,254,035

CLASS 460

71 5,254,036

CLASS 462

79 5,254,037

CLASS 464

111 5,254,038

CLASS 472

88 5,253,864
92 5,254,039
94 5,254,040

CLASS 474

14 5,254,041
69 5,254,042
5,254,043
70 5,254,044
92 5,254,045
101 5,254,046
110 5,254,047
135 5,254,048
205 5,254,049
260 5,254,050

CLASS 475

47 5,254,051
249 5,254,052
276 5,254,053
297 5,254,054
341 5,254,055

CLASS 476

10 5,254,056

CLASS 477

449 5,254,359

CLASS 482

37 5,254,058
52 5,254,059
60 5,254,060
63 5,254,061
83 5,254,062
107 5,254,063
126 5,254,064
129 5,254,065
137 5,254,066
5,254,067

CLASS 483

14 5,254,068

CLASS 492

16 5,254,070

CLASS 493

96 5,254,071
154 5,254,072
195 5,254,073
213 5,254,074

CLASS 494

35 5,254,075
37 5,254,076

CLASS 501

12 5,254,508
93 5,254,509
104 5,254,510
155 5,254,511

CLASS 502

52 5,254,512
55 5,254,513
62 5,254,514
64 5,254,515
84 5,254,516
110 5,254,517
241 5,254,518
252 5,254,519
307 5,254,520
432 5,254,521

CLASS 503

217 5,254,522
227 5,254,523
5,254,524
5,254,525

CLASS 504

119 5,254,526
270 5,254,527

CLASS 505

1 5,254,528
5,254,529
5,254,530

CLASS 507

131 5,254,531

CLASS 514

2 5,254,532
8 5,254,533
12 5,254,534
5,254,535
5,254,536
13 5,254,537
35 5,254,538
46 5,254,539
57 5,254,540
58 5,254,541
63 5,254,542
89 5,254,543
107 5,254,544
202 5,254,545
225.8 5,254,546
237.5 5,254,547
242 5,254,548
247 5,254,549
249 5,254,686
250 5,254,550
251 5,254,551
252 5,254,552
5,254,553
253 5,254,554
256 5,254,555
258 5,254,556
269 5,254,557
5,254,558
274 5,254,559
275 5,254,560
290 5,254,561
291 5,254,562
292 5,254,563
307 5,254,564
312 5,254,565
313 5,254,566
314 5,254,567
320 5,254,568
331 5,254,569
337 5,254,570
344 5,254,571
345 5,254,572
357 5,254,573
361 5,254,574
365 5,254,575
5,254,576
376 5,254,577
414 5,254,578
422 5,254,579
449 5,254,580
460 5,254,581
469 5,254,582
492 5,254,583
514 5,254,584
552 5,254,585
562 Re.34,414
5,254,586
563 5,254,587
573 5,254,588
592 5,254,589
613 5,254,590
616 5,254,591
617 5,254,592
635 5,254,593
648 5,254,594
652 5,254,595

CLASS 518

728 5,254,596

CLASS 521

51 5,254,597
54 5,254,598
65 5,254,599
125 5,254,600
131 5,254,601

CLASS 522

24 5,254,602
72 5,254,603
95 5,254,604

CLASS 523

428 5,254,605
522 5,254,606

CLASS 524

52 5,254,607
91 5,254,608
114 5,254,609
120 5,254,610
198 5,254,611
274 5,254,612
277 5,254,613
321 5,254,614
322 5,254,615
394 5,254,616
433 5,254,617
495 5,254,618
504 5,254,619
538 5,254,620
837 5,254,621

CLASS 525

80 5,254,622
100 5,254,623
133 5,254,624
165 5,254,625
166 5,254,626
203 5,254,627
237 5,254,628
247 5,254,629
261 5,254,630
278 5,254,631
309 5,254,632
327.4 5,254,633
330.3 5,254,634
332.7 5,254,635
369 5,254,636
386 5,254,637
389 5,254,638
398 5,254,639
423 5,254,640
424 5,254,641
438 5,254,642
445 5,254,643
478 5,254,644
479 5,254,645

CLASS 526

62 5,254,646
65 5,254,647
93 5,254,648
221 5,254,649
232.3 5,254,650
232.5 5,254,651
331 5,254,652
337 5,254,653

CLASS 528

14 5,254,654
15 5,254,655
5,254,656
17 5,254,657
37 5,254,658
45 5,254,659
49 5,254,660
67 5,254,662
86 5,254,663
137 5,254,664
254 5,254,665
272 5,254,666
306 5,254,667
323 5,254,668
342 5,254,669
373 5,254,670

CLASS 530

324 5,254,671
328 5,254,672
373 5,254,673

CLASS 534

765 5,254,674
829 5,254,675

CLASS 536

4.1 5,254,676
23.2 5,254,678

CLASS 540

221 5,254,679
230 5,254,680
355 5,254,681
451 5,254,682
523 5,254,683
535 5,254,684

CLASS 544

234 5,254,685
280 5,254,687
282 5,254,688
360 5,254,689

CLASS 546

302 5,254,690

CLASS 548

111 5,254,691
152 5,254,692
187 5,254,693
266.8 5,254,695
440 5,254,700
531 5,254,696
560 5,254,713

CLASS 549

313 5,254,697
369 5,254,698
380 5,254,699
475 5,254,701
5,254,702
510 5,254,703
546 5,254,694
552 5,254,704

CLASS 554

141 5,254,705
227 5,254,722

CLASS 556

402 5,254,706
413 5,254,707
436 5,254,708
439 Re.34,415

CLASS 558

96 5,254,709
266 5,254,710
341 5,254,711
368 5,254,712

CLASS 560

8 5,254,714
13 5,254,715
20 5,254,716
35 5,254,717
55 5,254,718
78 5,254,719
105 5,254,720
231 5,254,721
240 5,254,723
312 5,254,724

CLASS 562

444 5,254,725
445 5,254,726
470 5,254,727
496 5,254,728
554 5,254,729
575 5,254,730
621 5,254,731

CLASS 564

82 5,254,732
198 5,254,733
259 5,254,734
298 5,254,735
480 5,254,736
490 5,254,737
491 5,254,738

CLASS 568

346 5,254,739
399 5,254,740
454 5,254,741
463 5,254,742
5,254,743
601 5,254,744
613 5,254,745
626 5,254,746
650 5,254,747
697 5,254,748

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1153 O.G. 3, on Aug. 3, 1993.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1993, due to changes in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1154 O.G. 25, on Sept. 14, 1993.

International fees were changed, effective on May 1, 1993, due to changes in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1992, and were announced in the *Official Gazette* at 1141 O.G. 68, on Aug. 25, 1992.

The schedule of PCT fees (in U.S. dollars), effective Oct., 1, 1993, is as follows:

International Applications (PCT Chapter I) fees:	
Transmittal fee:	200.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	620.00
—Corresponding prior U.S. national application filed	410.00
—Supplemental search fee, per additional invention	170.00
European Patent Office as ISA	1415.00
International fees	
Basic fee	530.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
For the first 10 national or regional offices designated	128.00
For each designation fee in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
Designation fee	128.00
Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter 1	450.00
—Additional examination fee, per additional invention (payable only upon invitation	140.00
—USPTO was not ISA in PCT Chapter 1	670.00
—Additional examination fee, per additional invention (payable only upon invitation	230.00

U.S. National Stage fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
All claims presented satisfied provisions of PCT Article 33(2) to (4)	45.00	90.00
All claims presented did not satisfy provisons of PCT Article 33(2) to (4)	320.00	640.00
USPTO was ISA but not IPEA	355.00	710.00
USPTO was neither ISA nor IPEA		
Filed without a search report from the European Patent Office or the Japanese Patent Office	475.00	950.00
Filed with a search report from the European Patent Office or the Japanese Patent Office	415.00	830.00
Other National Fees		
—For each independent claim in excess of 3	37.00	74.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	115.00	230.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Sept. 13. 1993

BRUCE A. LEHMAN,
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d) provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on October 23, 1990 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,964,171 through 4,965,885
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on October 21, 1986 for which maintenance fees due at 7 years and

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six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,617,684 through 4,619,002
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on October 19, 1982 for which maintenance fees due at 11 years and six months may now be paid. the patents have patent numbers within the following ranges:

Utiility Patents 4,354,279 through 4,355,423
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks. Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after December 12, 1980, but before August 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months and 7 years and six months and 11 years and six months are set forth in 37 CFR 1.20(e) - (g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 , in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $465.00
By other than a small entity $930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $935.00
By other than a small entity $1,870.00

(g) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity(§ 1.9(f)) $1,410.00
By other than a small entity $2,820.00

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(h), and (i), which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been

(1) unavoidable $620.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED AUGUST 8, 1993 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,837	07/082,093	1/17/89
(4,533,827)	(06/457,277)	(8/06/85)
Re. 33,013	07/060,988	8/08/89
(4,533,584)	(06/596,103)	(8/06/85)
4,532,653	06/581,861	8/06/85
4,532,654	06/616,806	8/06/85
4,532,655	06/565,377	8/06/85
4,532,657	06/612,552	8/06/85
4,532,659	06/568,944	8/06/85
4,532,662	06/565,706	8/06/85
4,532,665	06/593,645	8/06/85
4,532,666	06/478,067	8/06/85
4,532,669	06/613,168	8/06/85
4,532,670	06/462,650	8/06/85
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4,532,672	06/613,331	8/06/85
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4,532,685	06/468,660	8/06/85
4,532,691	06/447,593	8/06/85
4,532,693	06/512,954	8/06/85
4,532,694	06/507,846	8/06/85
4,532,695	06/394,591	8/06/85
4,532,699	06/555,163	8/06/85
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4,532,704	06/548,810	8/06/85
4,532,706	06/518,123	8/06/85
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4,532,709	06/663,264	8/06/85
4,532,710	06/637,701	8/06/85
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4,855,989	07/070,425	8/08/89
4,855,997	07/135,902	8/08/89
4,856,022	07/253,497	8/08/89
4,856,028	06/855,678	8/08/89
4,856,036	07/224,121	8/08/89
4,856,037	07/073,435	8/08/89
4,856,044	07/075,048	8/08/89
4,856,049	07/170,380	8/08/89
4,856,054	07/141,943	8/08/89
4,856,059	07/120,067	8/08/89
4,856,063	07/148,930	8/08/89
4,856,065	07/160,981	8/08/89
4,856,066	06/927,380	8/08/89
4,856,070	07/075,639	8/08/89
4,856,077	07/138,031	8/08/89
4,856,078	07/172,734	8/08/89
4,856,085	07/028,936	8/08/89
4,856,097	07/174,868	8/08/89
4,856,098	07/144,220	8/08/89
4,856,104	07/092,544	8/08/89

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(c); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,394,370	06/304,367	7/19/88	9/21/81	5/28/93
4,521,677	06/557,626	6/04/85	12/02/83	8/27/93
4,679,330	06/808,037	7/14/87	12/12/85	8/30/93
4,761,281	06/854,853	8/02/88	4/22/86	3/31/93
4,763,709	06/881,592	8/16/88	7/03/86	8/27/93
4,796,174	07/032,560	1/03/89	4/01/87	8/31/93
4,823,072	07/043,040	4/18/89	4/27/87	8/27/93
4,831,794	07/164,681	5/23/89	3/07/88	8/30/93
4,838,028	07/186,776	6/13/89	4/25/88	8/27/93

Reissue Applications Filed

Notice under 37 CFR 1.11 (b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21 (b)).

4,410,917, Re. S.N. 08/116,263, Filed Sept. 3, 1993, Cl. 360/15, METHOD AND APPARATUS FOR RECORDING INFORMATION FROM A MASTER MEDIUM ONTO A SLAVE MEDIUM EMPLOYING DIGITAL TECHNIQUES, Ronald M. Newdoll, Owner of Record: *Duplitronics, Inc., Wheeling, Ill.*, Attorney or Agent: James A. LaBarre, Ex. Gp.: 2305

4,857,548, Re. S.N. 08/115,061, Filed Sept. 2, 1993, Cl. 514/469, METHOD OF PREVENTING OR REDUCING PLATELET LOSS DURING EXTRACORPOREAL CIRCULATION USING A THROMBOXANE A_2 RECEPTOR ANTAGONIST, Gary J. Grover, Owner of Record: *E.R. Squibb & Sons, Inc., Princeton, N.J.*, Attorney or Agent: Burton Rodney, Ex. Gp.: 1205

5,036,858, Re. S.N. 08/102,472, Filed Aug. 5, 1993, Cl. 128/732, METHOD AND APPARATUS FOR CHANGING BRAIN WAVE FREQUENCY, John L. Carter, et. al., Owner of Record: *Inventors*, Attorney or Agent: W. Thomas Timmons, Ex. Gp.: 3305

5,045,940, Re. S.N. 08/116,905, Filed Sept. 3, 1993, Cl. 358/143, VIDEO\AUDIO TRANSMISSION SYSTEM AND METHOD, Eric C. Peters, et. al., Owner of Record: *Avid Technology, Burlington, Mass.*, Attorney or Agent: A. Jason Mirabito, Ex. Gp.: 2602

5,057,009, Re. S.N. 08/101,516, Filed Aug. 2, 1993, Cl. 423/14, LIGHTWEIGHT AGGREGATE FROM FLYASH AND SEWAGE SLUDGE, Timothy Nechvatal, et. al., Owner of Record: *Wisconsin Electric Power Co., Milwaukee, Wis.*, Attorney or Agent: Thomas W. Ehrmann, Ex. Gp.: 3404

5,109,872, Re. S.N. 08/083,082, Filed June 25, 1993, Cl. 128/845, PATIENT LEG SUPPORT, David P. Conn, Owner of Record: *Inventor*, Attorney or Agent: Michael G. Petit, Ex. Gp.: 3301

5,140,015, Re. S.N. 08/098,180, Filed July 26, 1993. Cl. 514/46, 2-ARALKOXY AND 2-ALKOXY ADENOSINE DERIVATIVES AS CORONARY VASODILATORS AND ANTIHYPERTENSIVE AGENTS, Ray A. Olsson, et. al., Owner of Record: *Whitby Research Inc., Richmond, Va.*, Attorney or Agent: Richard J. Hammond, Ex. Gp.: 1803

5,181,716, Re. S.N. 08/111,595, Filed Aug. 25, 1993, Cl. 273/51, BOWLING ALLEY BUMPER SYSTEM, Michael W. Stephens, Owner of Record: *AMF Bowling, Inc., Richmond, Va.*, Attorney or Agent: David E. Dougherty, Ex. Gp.: 3304

Requests for Reexamination Filed

Notice under 37 CFR 1.11 (c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19 (a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

5,124,848, Reexam. No. 90/003,162, Requested Aug. 16, 1993, Cl. 361/215, COATED BRAIDED HOSE METHOD, Norman S. Martucci, Owner of Record: *Teleflex, Inc., Limerick, Pa.*, Attorney or Agent: Kenneth I. Kohn & Harold W. Milton, Reising, Ethington, Barnard, Perry & Milton,Troy, Mich., Ex. Gp.: 2104, Requester: Titeflex Corp., Springfield, Mass.

Notice of Expiration of Trademark Registrations Due to Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED SEPTEMBER 6, 1993 DUE TO FAILURE TO RENEW

Reg. No.	Serial Number	Reg. Date
39,374	70/039,374	12/02/1902
39,409	70/039,409	12/02/1902
89,213	71/060,676	12/03/1912
89,226	71/063,151	12/03/1912
89,231	71/058,141	12/03/1912
89,262	71/061,116	12/03/1912
89,284	71/050,659	12/03/1912
299,273	71/328,987	11/29/1932
299,275	71/329,064	11/29/1932
299,278	71/317,928	11/29/1932
299,298	71/328,455	11/29/1932
299,299	71/328,454	11/29/1932
299,303	71/327,026	11/29/1932
299,331	71/329,312	11/29/1932
299,340	71/328,777	11/29/1932
299,341	71/328,776	11/29/1932
299,352	71/328,935	11/29/1932
299,353	71/328,937	11/29/1932
299,354	71/328,939	11/29/1932
299,356	71/328,948	11/29/1932
567,282	71/554,106	12/02/1952
567,291	71/562,049	12/02/1952
567,296	71/572,367	12/02/1952
567,300	71/575,113	12/02/1952
567,305	71/578,872	12/02/1952
567,313	71/585,786	12/02/1952
567,318	71/593,850	12/02/1952
567,325	71/595,819	12/02/1952
567,327	71/596,837	12/02/1952
567,328	71/596,880	12/02/1952
567,330	71/597,097	12/02/1952
567,332	71/597,533	12/02/1952
567,338	71/599,590	12/02/1952
567,341	71/601,672	12/02/1952
567,358	71/604,403	12/02/1952
567,364	71/605,595	12/02/1952
567,369	71/607,150	12/02/1952
567,370	71/607,419	12/02/1952
567,378	71/608,600	12/02/1952
567,389	71/610,440	12/02/1952
567,390	71/610,710	12/02/1952
567,393	71/611,098	12/02/1952
567,394	71/611,099	12/02/1952
567,397	71/611,594	12/02/1952
567,403	71/612,173	12/02/1952
567,416	71/613,539	12/02/1952
567,423	71/614,340	12/02/1952
567,424	71/614,354	12/02/1952
567,425	71/614,355	12/02/1952
567,433	71/615,463	12/02/1952
567,441	71/616,163	12/02/1952
567,447	71/616,507	12/02/1952
567,448	71/616,623	12/02/1952
567,450	71/616,783	12/02/1952
567,451	71/616,873	12/02/1952
567,456	71/617,291	12/02/1952
567,460	71/617,961	12/02/1952
567,465	71/618,512	12/02/1952
567,467	71/618,632	12/02/1952
567,468	71/618,637	12/02/1952
567,471	71/618,811	12/02/1952
567,476	71/619,023	12/02/1952
567,483	71/619,979	12/02/1952
567,488	71/620,494	12/02/1952
567,510	71/622,499	12/02/1952
567,513	71/622,690	12/02/1952
567,516	71/622,991	12/02/1952
567,520	71/623,805	12/02/1952
567,526	71/624,064	12/02/1952
567,540	71/624,770	12/02/1952
567,541	71/624,819	12/02/1952
567,542	71/624,892	12/02/1952
567,543	71/624,904	12/02/1952
567,545	71/624,965	12/02/1952
567,558	71/627,265	12/02/1952
567,566	71/627,768	12/02/1952
567,567	71/628,383	12/02/1952
567,568	71/628,384	12/02/1952
567,569	71/628,385	12/02/1952
567,576	71/629,164	12/02/1952
567,577	71/629,658	12/02/1952
567,579	71/630,149	12/02/1952
567,587	71/621,320	12/02/1952
567,601	71/608,630	12/02/1952
947,774	72/408,378	11/28/1972
947,775	72/332,731	11/28/1972
947,778	72/408,317	11/28/1972
947,779	72/409,854	11/28/1972
947,784	72/352,482	11/28/1972
947,786	72/381,240	11/28/1972
947,787	72/383,555	11/28/1972
947,788	72/383,600	11/28/1972
947,793	72/399,596	11/28/1972
947,795	72/406,040	11/28/1972
947,796	72/376,007	11/28/1972
947,804	72/421,355	11/28/1972
947,806	72/347,569	11/28/1972
947,809	72/421,342	11/28/1972
947,810	72/421,343	11/28/1972
947,811	72/400,633	11/28/1972
947,812	72/366,740	11/28/1972
947,820	72/405,669	11/28/1972
947,822	72/385,629	11/28/1972
947,830	72/404,040	11/28/1972
947,842	72/399,645	11/28/1972
947,843	72/399,783	11/28/1972
947,848	72/384,174	11/28/1972
947,859	72/412,238	11/28/1972
947,874	72/416,441	11/28/1972
947,875	72/416,687	11/28/1972
947,879	72/380,490	11/28/1972
947,885	72/400,957	11/28/1972
947,890	72/409,565	11/28/1972
947,894	72/359,618	11/28/1972
947,896	72/388,341	11/28/1972
947,900	72/396,940	11/28/1972
947,901	72/399,722	11/28/1972
947,902	72/400,958	11/28/1972
947,903	72/401,025	11/28/1972
947,905	72/421,621	11/28/1972
947,910	72/410,654	11/28/1972
947,916	72/338,657	11/28/1972

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Reg. Number	Serial Number	Reg. Date
947,917	72/383,773	11/28/1972
947,918	72/386,458	11/28/1972
947,921	72/418,866	11/28/1972
947,922	72/386,290	11/28/1972
947,930	72/398,589	11/28/1972
947,932	72/387,440	11/28/1972
947,934	72/399,712	11/28/1972
947,936	72/404,496	11/28/1972
947,937	72/404,736	11/28/1972
947,944	72/398,644	11/28/1972
947,945	72/398,668	11/28/1972
947,947	72/402,660	11/28/1972
947,955	72/346,256	11/28/1972
947,956	72/351,487	11/28/1972
947,960	72/395,210	11/28/1972
947,965	72/404,658	11/28/1972
947,967	72/405,345	11/28/1972
947,969	72/405,603	11/28/1972
947,971	72/407,436	11/28/1972
947,975	72/386,391	11/28/1972
947,976	72/405,247	11/28/1972
947,977	72/400,333	11/28/1972
947,978	72/400,374	11/28/1972
947,980	72/400,695	11/28/1972
947,981	72/400,963	11/28/1972
947,986	72/361,345	11/28/1972
947,990	72/376,256	11/28/1972
947,993	72/379,338	11/28/1972
947,998	72/387,061	11/28/1972
947,999	72/387,504	11/28/1972
948,000	72/390,133	11/28/1972
948,003	72/393,419	11/28/1972
948,008	72/401,389	11/28/1972
948,009	72/401,390	11/28/1972
948,010	72/401,393	11/28/1972
948,012	72/401,691	11/28/1972
948,014	72/402,338	11/28/1972
948,015	72/402,552	11/28/1972
948,016	72/402,639	11/28/1972
948,017	72/410,526	11/28/1972
948,018	72/410,738	11/28/1972
948,022	72/412,083	11/28/1972
948,024	72/412,554	11/28/1972
948,026	72/412,964	11/28/1972
948,032	72/365,325	11/28/1972
948,033	72/383,936	11/28/1972
948,035	72/396,448	11/28/1972
948,036	72/396,449	11/28/1972
948,040	72/398,234	11/28/1972
948,041	72/398,235	11/28/1972
948,042	72/398,238	11/28/1972
948,043	72/398,242	11/28/1972
948,044	72/398,327	11/28/1972
948,045	72/374,529	11/28/1972
948,048	72/366,505	11/28/1972
948,058	72/398,142	11/28/1972
948,060	72/407,725	11/28/1972
948,064	72/339,149	11/28/1972
948,065	72/366,548	11/28/1972
948,066	72/369,697	11/28/1972
948,072	72/393,490	11/28/1972
948,075	72/404,285	11/28/1972
948,085	72/371,012	11/28/1972
948,088	72/397,541	11/28/1972
948,089	72/412,959	11/28/1972
948,090	72/419,364	11/28/1972
948,093	72/399,642	11/28/1972
948,096	72/384,431	11/28/1972
948,098	72/398,726	11/28/1972
948,099	72/402,978	11/28/1972
948,108	72/408,856	11/28/1972
948,109	72/419,324	11/28/1972
948,114	72/386,488	11/28/1972
948,121	72/364,246	11/28/1972
948,126	72/401,752	11/28/1972
948,128	72/355,761	11/28/1972
948,132	72/416,785	11/28/1972

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Allen Sportswear, Inc., New York, N.Y., Reg. No. 1,444,217 for the mark "RITCHIE'S AND DESIGN", Canc. No. 21,692.
Bob Cook, Inc., Wilder, Idaho, Reg. No. 999,432, for the mark "MULTI-GROW AND DESIGN", Canc. No. 21,438.
Bender Glick Sportswear Mfg. Co., Chicago. Ill., Reg. No. 1,146,213 for the mark "ROBBIE SPORT", Canc. No. 21,606.
Venture Industries, Inc., Atlanta, Ga., Reg. No. 977,380 for the mark "VENTURE", Canc. No. 21,532.
Redbanks Packing Co., Woodlake, Calif., Reg. No. 401,750 for the mark "OLD MISSION AND DESIGN", Canc. No. 21,721.

JEAN BROWN
Administrator, Trademark Trial and Appeal Board
For ROBERT M. ANDERSON
Acting Assistant Commissioner for Trademarks

Certificates of Correction for Week of Oct. 12, 1993

PP. 7,381	4,957,560	5,049,520	5,080,020
PP. 7,759	4,962,230	5,049,781	5,080,703
Re. 34,042	4,962,410	5,050,077	5,080,795
Re. 34,072	4,963,561	5,051,423	5,081,169
Des. 295,450	4,974,944	5,051,506	5,081,778
Des. 300,032	4,976,784	5,051,911	5,082,006
Des. 328,283	4,978,390	5,054,306	5,082,670
Des. 330,122	4,978,598	5,055,311	5,083,419
Des. 330,689	4,990,375	5,056,699	5,083,646
Des. 331,827	4,990,590	5,057,100	5,084,636
Des. 332,214	4,990,633	5,057,567	5,084,724
Des. 332,390	4,992,050	5,059,478	5,084,734
4,295,106	4,994,020	5,059,609	5,087,231
4,309,096	4,994,319	5,059,713	5,087,478
4,423,955	4,999,400	5,062,998	5,087,578
4,468,419	5,001,239	5,063,202	5,087,825
4,519,098	5,005,580	5,064,657	5,087,904
4,613,359	5,005,994	5,064,892	5,088,757
4,721,101	5,006,452	5,065,770	5,089,268
4,756,477	5,007,599	5,066,710	5,089,508
4,758,522	5,008,269	5,066,805	5,089,627
4,786,720	5,011,480	5,067,499	5,090,827
4,805,055	5,012,870	5,068,199	5,091,500
4,823,534	5,013,398	5,069,225	5,092,126
4,829,108	5,013,448	5,069,943	5,093,078
4,837,613	5,013,473	5,070,811	5,093,798
4,856,320	5,017,260	5,071,239	5,093,833
4,859,245	5,021,538	5,071,454	5,093,963
4,861,377	5,023,131	5,071,573	5,094,238
4,872,925	5,028,518	5,071,865	5,094,275
4,879,283	5,030,832	5,073,189	5,094,533
4,907,336	5,031,490	5,073,457	5,094,875
4,910,241	5,032,209	5,073,527	5,095,142
4,910,301	5,034,547	5,074,168	5,096,533
4,911,989	5,035,242	5,076,699	5,097,264
4,920,874	5,036,982	5,076,844	5,097,304
4,928,204	5,037,181	5,077,260	5,097,731
4,937,804	5,040,370	5,078,240	5,097,907
4,939,751	5,041,343	5,078,334	5,098,686
4,940,557	5,042,776	5,078,520	5,098,991
4,942,252	5,043,432	5,079,346	5,099,060
4,945,685	5,044,705	5,079,362	5,099,315
4,947,802	5,047,137	5,079,694	5,099,676
4,954,147	5,047,372	5,079,900	5,100,746
4,954,186	5,048,079	5,080,010	5,100,760

5,101,099	5,126,019	5,141,086	5,151,743	5,160,651	5,166,268	5,171,451	5,176,823
5,101,428	5,126,023	5,141,478	5,151,937	5,160,971	5,166,295	5,171,456	5,176,997
5,101,473	5,126,404	5,141,733	5,151,940	5,161,053	5,167,093	5,171,499	5,177,024
5,101,778	5,126,604	5,141,931	5,151,957	5,161,116	5,167,097	5,171,526	5,177,213
5,101,940	5,127,370	5,141,972	5,151,995	5,161,152	5,167,384	5,171,608	5,177,257
5,102,918	5,127,510	5,142,141	5,152,067	5,161,177	5,167,461	5,171,661	5,177,518
5,103,469	5,127,962	5,142,156	5,152,074	5,161,197	5,167,694	5,171,766	5,177,620
5,103,715	5,127,977	5,142,279	5,152,584	5,161,311	5,167,841	5,171,788	5,177,623
5,103,742	5,127,986	5,142,281	5,152,695	5,161,634	5,167,950	5,172,067	5,177,959
5,103,805	5,128,157	5,142,355	5,152,842	5,161,668	5,167,992	5,172,187	5,178,185
5,103,866	5,128,396	5,142,368	5,152,913	5,161,670	5,168,030	5,172,267	5,178,396
5,103,890	5,129,277	5,142,834	5,153,151	5,161,758	5,168,140	5,172,500	5,178,406
5,104,546	5,129,441	5,143,166	5,153,190	5,161,792	5,168,188	5,172,586	5,178,407
5,105,239	5,129,826	5,143,736	5,153,208	5,161,852	5,168,220	5,172,620	5,178,482
5,105,788	5,130,342	5,144,063	5,153,216	5,161,952	5,168,497	5,172,716	5,178,597
5,106,075	5,130,906	5,144,253	5,153,374	5,161,968	5,168,501	5,172,724	5,178,643
5,106,874	5,131,100	5,144,515	5,153,579	5,161,986	5,168,508	5,172,818	5,178,648
5,107,207	5,131,965	5,144,641	5,153,624	5,161,994	5,168,727	5,172,820	5,178,766
5,107,295	5,132,001	5,144,747	5,153,660	5,162,031	5,168,764	5,172,893	5,178,939
5,107,419	5,132,050	5,144,942	5,153,748	5,162,087	5,168,909	5,172,965	5,179,040
5,107,949	5,132,055	5,144,956	5,153,875	5,162,557	5,168,964	5,173,029	5,179,262
5,107,967	5,132,060	5,145,714	5,153,924	5,162,676	5,168,992	5,173,055	5,179,378
5,107,970	5,132,115	5,146,011	5,153,937	5,162,965	5,169,095	5,173,291	5,179,503
5,108,021	5,132,408	5,146,221	5,153,971	5,162,998	5,169,108	5,173,505	5,179,663
5,108,331	5,132,817	5,146,405	5,154,614	5,163,202	5,169,160	5,173,735	5,179,808
5,108,913	5,132,981	5,146,425	5,154,618	5,163,426	5,169,179	5,173,804	5,179,861
5,109,001	5,133,579	5,146,440	5,154,715	5,163,541	5,169,251	5,173,822	5,180,060
5,109,038	5,134,303	5,146,463	5,154,762	5,163,873	5,169,278	5,173,925	5,180,149
5,109,040	5,134,445	5,146,495	5,154,819	5,163,885	5,169,414	5,173,940	5,180,492
5,109,436	5,134,524	5,146,526	5,154,897	5,163,990	5,169,426	5,174,115	5,180,611
5,109,862	5,134,577	5,146,531	5,154,963	5,163,994	5,169,538	5,174,149	5,180,753
5,110,105	5,134,695	5,146,558	5,155,047	5,164,025	5,169,605	5,174,171	5,180,789
5,110,236	5,134,852	5,146,629	5,155,153	5,164,250	5,169,610	5,174,189	5,180,842
5,110,459	5,134,887	5,146,739	5,155,249	5,164,405	5,169,721	5,174,269	5,180,892
5,110,758	5,135,190	5,147,071	5,155,280	5,164,446	5,169,723	5,174,375	5,180,896
5,110,948	5,135,428	5,147,072	5,155,455	5,164,516	5,169,759	5,174,427	5,180,998
5,111,190	5,135,488	5,147,311	5,155,460	5,164,655	5,169,859	5,174,436	5,181,011
5,112,051	5,135,598	5,147,476	5,155,480	5,165,012	5,169,866	5,174,546	5,181,117
5,112,305	5,135,733	5,147,665	5,155,602	5,165,050	5,169,867	5,174,552	5,181,401
5,112,625	5,135,891	5,147,707	5,155,607	5,165,082	5,170,099	5,174,597	5,181,423
5,112,638	5,135,900	5,147,796	5,155,643	5,165,180	5,170,168	5,174,615	5,181,846
5,112,939	5,135,978	5,147,815	5,155,672	5,165,202	5,170,178	5,174,863	5,181,986
5,113,251	5,136,158	5,148,000	5,155,715	5,165,268	5,170,202	5,174,953	5,182,087
5,113,539	5,136,408	5,148,089	5,155,752	5,165,339	5,170,332	5,174,976	5,182,360
5,113,829	5,136,472	5,148,186	5,155,934	5,165,357	5,170,715	5,175,286	5,182,868
5,114,219	5,137,085	5,148,511	5,156,092	5,165,444	5,170,723	5,175,364	5,183,232
5,114,320	5,137,102	5,148,581	5,156,505	5,165,610	5,170,730	5,175,434	5,183,294
5,114,485	5,137,124	5,148,735	5,156,639	5,165,709	5,170,815	5,175,596	5,183,330
5,114,770	5,137,265	5,149,062	5,156,651	5,165,726	5,170,973	5,176,053	5,183,868
5,114,815	5,137,414	5,149,168	5,156,728	5,165,739	5,171,059	5,176,170	5,184,384
5,115,342	5,137,431	5,149,465	5,157,119	5,165,761	5,171,079	5,176,231	5,184,757
5,115,913	5,137,514	5,149,477	5,157,164	5,165,799	5,171,177	5,176,258	5,188,610
5,117,224	5,137,864	5,149,485	5,157,267	5,165,923	5,171,192	5,176,295	5,192,665
5,118,559	5,137,965	5,149,706	5,157,381	5,166,113	5,171,200	5,176,345	5,195,439
5,118,606	5,138,346	5,149,717	5,157,599	5,166,128	5,171,218	5,176,549	5,218,071
5,118,634	5,138,565	5,149,727	5,157,741	5,166,257	5,171,305	5,176,601	5,241,408
5,118,730	5,138,632	5,149,811	5,157,983	5,166,262	5,171,447	5,176,698	
5,118,856	5,138,676	5,149,989	5,158,299				
5,118,948	5,138,696	5,150,044	5,158,443				
5,119,212	5,138,785	5,150,090	5,158,474				
5,119,393	5,138,928	5,150,152	5,158,569				
5,119,480	5,139,137	5,150,210	5,158,583				
5,120,312	5,139,307	5,150,219	5,159,095				
5,121,029	5,139,352	5,150,389	5,159,166				
5,122,223	5,139,413	5,150,391	5,159,688				
5,122,596	5,139,476	5,150,559	5,159,704				
5,122,700	5,139,479	5,150,681	5,159,842				
5,122,753	5,139,631	5,150,707	5,159,876				
5,122,841	5,139,650	5,150,738	5,159,904				
5,123,921	5,139,880	5,150,740	5,160,036				
5,123,953	5,139,908	5,151,057	5,160,054				
5,123,955	5,139,987	5,151,079	5,160,152				
5,124,404	5,140,130	5,151,118	5,160,315				
5,124,611	5,140,136	5,151,177	5,160,328				
5,124,646	5,140,183	5,151,302	5,160,382				
5,125,033	5,140,380	5,151,313	5,160,483				
5,125,138	5,140,539	5,151,599	5,160,556				
5,125,572	5,140,540	5,151,606	5,160,577				
5,125,844	5,141,038	5,151,608	5,160,602				

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Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

September 20-24, 1993

Date Issued	Type of Proceeding (1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods of Registration Cited by Examining Atty.	Recommended for Publication
9-20	EX	74/174,463	Sparta Foods, Inc.	2(e)(1)	Refusal Affirmed		"TEX MEX" [tortilla chips]		No

(1) EX= EX PARTE APPEAL; OPP= OPPOSITION; C= CANCELLATION; CU= CONCURRENT USE; (R)= REQ. FOR RECONSIDERATION

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Box 9	Coupon orders for U.S. patent and trademark copies.
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Box 171	Vacancy Announcement Applications.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Assignment	All assignment documents except those filed with new applications.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
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Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee-Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box OED	Mail for the Office of Enrollment and Discipline
Box PATENT APPLICATION	New patent application and associated papers and fees.
Box TRADEMARK APPLICATION	New trademark application and associated papers and application fees.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

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New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 932-2895
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New York	Albany: New York State Library	(518) 474-5355
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	Toledo/Lucas County Public Library	(419) 259-5212
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Oregon	Salem: Oregon State Library	(503) 378-4239
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	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
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	Clemson University Libraries	(803) 656-3024
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	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext.2587
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PATENT EXAMINING CORPS

BRUCE LEHMAN, Commissioner
STEPHEN G. KUNIN, Acting Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone Number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100 — EDWARD E. KUBASIEWICZ, Director	308-0661	10/24/92
ORGANIC CHEMISTRY, GROUP 1200 — JOHN F. TERAPANE, JR., Director	308-1235	11/05/92
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300 —RICHARD V. FISHER, Director	308-0651	9/04/92
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 1500 — J. O. THOMAS, Director	308-2351	9/04/92
BIOTECHNOLOGY, GROUP 1800 — BARRY S. RICHMAN, Director	308-0196	7/27/92
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100 — D. G. KELLY, Director	308-1782	3/31/92
SPECIAL LAWS ADMINISTRATION, GROUP 2200 — ROBERT E. GARRETT, Director	308-0511	3/14/92
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300 — GERALD GOLDBERG, Director	305-9600	6/19/91
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400 — CARLTON CROYLE, Director	308-0771	12/12/91
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500 — JOSEPH J. ROLLA, Director	308-0956	8/24/92
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600 — BOBBY R. GRAY, Director	305-4700	3/07/92
DESIGN, GROUP 2900 — ROBERT E. GARRETT, Director	308-0511	6/02/91
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100 — F. R. SCHMIDT, Director	308-1113	8/29/92
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200 — N. GODICI, Director	308-1148	8/22/92
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300 — J. J. LOVE, Director	308-0858	10/13/92
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400 — JOHN KITTLE, Director	308-0861	8/15/92
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500 — A.L. SMITH, Director	308-1021	10/09/92

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during Sept. 1993 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151

Patents ..... Numbers 3,978,525 to 3,983,579 inclusive
Plant Patents ..... 3,949 to 3,952

TRADEMARK OPERATION

Bruce Lehman, Commissioner
Robert M. Anderson, Acting Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of September 1, 1993

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308-9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/19/93	8/18/93
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308-9104 Scientific Equipment. Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/17/93	6/28/93
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308-9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/19/93	6/03/93
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308-9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/14/93	7/19/93
Law Office 7—David Shallant, Managing Attorney, (703) 308-9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/10/93	6/21/93
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308-9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/27/93	6/21/93
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308-9109 Lubricants, Industrial Equipment, Materials & Musical Instruments-Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	4/13/93	7/09/93
Law Office 10—Jean Logan, Managing Attorney, (703) 308-9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Covering-Int. Classes 22, 23, 24, 25, 26, 27 Services-Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/24/93	7/16/93
Law Office-11—Thomas Howell, Managing Attorney, (703) 308-9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	4/23/93	5/14/93
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308-9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/24/93	8/17/93
Law Office 13—Craig Morris, Managing Attorney, (703) 308-9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/12/93	7/29/93
Law Office 14—Ron Williams, Managing Attorney, (703) 308-9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/14/93	7/27/93
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308-9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	5/24/93	5/17/93
** Collective Marks—Class 200		
** Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308-9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308-9500		
Affidavits Under Sections 8 & 15 (All Classes)	5/13/92	—0—
Renewals (All Classes)	12/29/92	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

1 ** Assigned to each law office

2. Applicants with inquiries concerning the status of their applications and a touch tone telephone should call (703) 305-8747 from 6:30 A.M. to Midnight Est, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure.*

3 * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner

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REEXAMINATIONS

OCTOBER 26, 1993

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,064,112 (2113th)

PROCESS FOR THE CONTINUOUS PRODUCTION OF HIGH MOLECULAR WEIGHT POLYETHYLENE TEREPHALATE

Hans J. Rothe, Maintal; Helmut Heinze, Frankfurt; Brian D. Whitehead, Friedrichsdorf, and Gunther Priepke, Nidderau, all of Fed. Rep. of Germany, assignors to Zimmer Aktiengesellschaft, Fed. Rep. of Germany

Reexamination Request Nos. 90/002,649, Feb. 18, 1992 and 90/002,977, Mar. 2, 1993.

Reexamination Certificate for Patent No. 4,064,112, issued Apr. 15, 1976, Ser. No. 677,503, Dec. 20, 1977.

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1975, 2559290

Int. Cl.[5] **C08G** *63/80*

U.S. Cl. 528—272

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–13** is confirmed.

1. A process for the continuous production of high molecular weight polyethylene terephthalate by polycondensation in the solid phase from a dried, granulated polyethylene terephthalate, having an intrinsic viscosity of at least 0.15, which comprises crystallizing the granulate to a density of at least 1.390 g/cm3 under forced motion at a temperature of 220° C. to 260° C. under an inert gas atmosphere, passing the crystallized granulate at a constant or reduced temperatuie to a continuous fixed bed reactor, and, continuously polycondensing the crystallized granulate in said reactor while in contact with an inert gas stream at a temperature equivalent to, or lower than, the crystallization temperature.

B1 4,575,742 (2114th)

EPITAXIAL WAFER FOR USE IN THE PRODUCTION OF AN INFRARED LED

Yasuji Kohashi, Tsuchiura, and Yoshinobu Tsujikawa, Kyoto, both of Japan, assignors to Mitsubishi Kasei Polytec Company, Japan

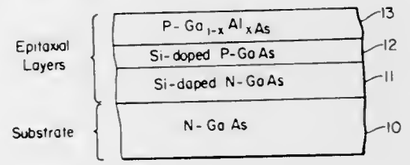
Reexamination Request No. 90/002,918, Dec. 17, 1992.

Reexamination Certificate for Patent No. 4,575,742, issued Mar. 11, 1986, Ser. No. 565,623, Dec. 27, 1983.

Claims priority, application Japan, Dec. 27, 1982, 57-232210; Mar. 17, 1983, 58-45094

Int. Cl.[5] **H01L** *33/00;* **H01S** *3/19*

U.S. Cl. 148—33.4



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–6** is confirmed.

1. In an infrared light-emitting diode, an epitaxial wafer comprising:

a single crystalline semiconductor substrate consisting of N-type GaAs;

an N-ype GaAs epitaxial layer consisting of N-type GaAs doped with Si, formed on said single crystalline semiconductor substrate, and having a thickness of from 20 μm to 100 μm and a carrier concentration in the range of from $1.0\times10^{17}.cm^{-3}$ to $2.0\times10^{18}.cm^{-3}$;

a P-type GaAs epitaxial layer consisting of P-type GaAs doped with Si, formed on said N-type GaAs epitaxial layer, and having a thickness of from 10 μm to 80 μm and a carrier concentration in the range of from $1.0\times10^{17}.cm^{-3}$ to $5.0\times10^{18}.cm^{-3}$; and

a mixed crystal layer consisting of P-type $Ga_{1-x}Al_xAs$ with a mixed crystal ratio "x", formed on said P-type GaAs epitaxial layer, and having a thickness of from 5 μm to 90 μm and a carrier concentration of from $1.0\times10^{17}.cm^{-3}$ to $5.0\times10^{18}.cm^{-3}$, the mixed crystal ratio of $Ga_{1-x}Al_xAs$ being in the range of from 0.03 to 0.8 at least in a region of the mixed crystal layer, which is at least 2 μm thick when measured from the interface betwee said mixed crystal layer and said P-type GaAs epitaxial layer.

B1 4,898,092 (2115th)

FEED GRAIN CONDITIONING APPARATUS

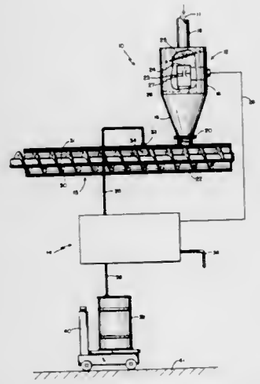
David G. Greer, Anoka, Minn., assignor to AgriChem, Inc., Anoka, Minn.

Reexamination Request No. 90/002,937, Jan. 25, 1993.

Reexamination Certificate for Patent No. 4,898,092, issued Feb. 6, 1990, Ser. No. 191,378, May 9, 1988.

Int. Cl.[5] **A23N** *17/00*

U.S. Cl. 99—487



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **3** and **25** is confirmed.

Claims **4–7, 15, 16, 18, 19** are cancelled.

Claims **1, 8, 9, 14, 17, 20** are determined to be patentable as amended.

Claims **2, 10–13, 21–24**, dependent on an amended claim, are determined to be patentable.

1. A feed grain conditioning apparatus for conditioning of feed grain to bring the moisture content to an approximate

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target moisture content through the addition of moisture derived at least in part from a water supply, as the feed grain moves in a downstream direction from a first location toward a second location, comprising:

grain conveying means for moving the grain in said downstream direction, having a sensing station and a wetting station located downstream of the sensing station;

a moisture sensor of the type to continuously monitor moisture content of grain and convert the measurement into an electronic signal, positioned at the sensing station located to intercept a sample of passing feed grain for substantially continuous measurement of the moisture content of the sample and translation of the measurement into an electronic signal;

liquid applicator means located at the wetting station positioned to disperse liquid derived at least in part from a water supply upon passing feed grain;

a liquid supply line connected to the liquid applicator means and for connection to the water supply;

an automatic valve connected in the liquid supply line having an electronically actuated valve control moveable between relatively open and relatively closed positions to regulate the amount of liquid flow to the liquid applicator means for application to passing feed grain;

means connecting the moisture sensor to the valve control so that the valve control operates responsive to the electronic signal generated by the moisture sensor according to the difference between the moisture content of the grain sample as sensed by the moisture sensor and the target moisture content, said means including calibrated means connected between the moisture sensor and the automatic valve control for regulation of the valve control by the signal from the moisture sensor calibrated according to a known moisture content of the type of feed grain to be conditioned;

a supply means to supply liquid additive for mixture with the water for application to the feed grain, means connecting the additive supply means to the liquid supply line for mixture of additive and water preparatory to application to feed grain, including an additive pump connected to an additive supply container, and an additive supply line connected between the additive pump and the liquid supply line to supply an additive in regulated amounts to the liquid supply line for mixing with the water preparatory to application to the feed grain;

said wetting station including a mixing chamber for transfer of grain from the sensing station past the wetting station, said liquid applicator means communicating with the mixing chamber, means for moving the grain through the mixing chamber and mixing the liquid with the feed grain and moving it toward the second location;

said mixing chamber being an auger housing, and said means for moving the feed grain in the auger housing comprising an auger.

B1 4,939,516 (2116th)
CHOPPER STABILIZED DELTA-SIGMA ANALOG-TO-DIGITAL CONVERTER

Adrian B. Early, Buda, Tex., assignor to Crystal Semiconductor Corporation, Austin, Tex.

Reexamination Request No. 90/002,884, Nov. 10, 1992.
Reexamination Certificate for Patent No. 4,939,516, issued Jul. 3, 1990, Ser. No. 205,996, Jun. 13, 1988.
Int. Cl.[5] H03M *3/02*
U.S. Cl. 341—143

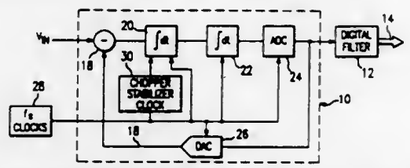
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–19** is confirmed.

New claims **20–36** are added and determined to be patentable.

1. An analog-to-digital converter, comprising:

a delta sigma analog modulator operating at a predetermined sampling frequency for receiving an analog input signal, and converting the received analog input signal to a digital output signal which is representative of the analog input signal, said analog modulator having undesirable low frequency noise associated therewith, said analog modulator including at least one stage of amplification;



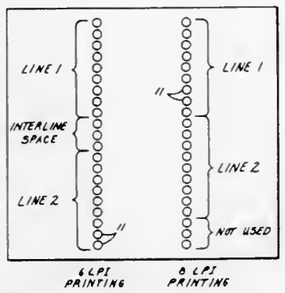
a digital filter for receiving the digital output of said analog modulator and having a predetermined frequency response and sampling rate for providing a predetermined amount of attenuation over a predetermined frequency range to reject unwanted signal; and

means for transposing the low frequency noise in the analog modulator to said predetermined frequency range.

B1 4,953,995 (2117th)
DOT MATRIX PRINTER AND METHOD FOR PRINTING MULTIPLE LINES AT DIFFERENT LINE SPACINGS

Louis Sims; Fred LeFriec, both of Spokane, Wash.; Joseph Dubner, Hayden Lake, Id., and Brian Peavey, Spokane, Wash., assignors to Output Technology Inc., Spokane, Wash.

Reexamination Request Nos. 90/002,409, Aug. 19, 1991 and 90/002,677, Mar. 18, 1992 and 90/002,782, Jul. 15, 1992.
Reexamination Certificate for Patent No. 4,953,995, issued Sep. 4, 1990, Ser. No. 185,452, Apr. 25, 1988.
Continuation of Ser. No. 924,352, Oct. 29, 1986, abandoned
Int. Cl.[5] B41J *2/51*
U.S. Cl. 400—121



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–23** are cancelled.

1. A dot matrix printer for simultaneously printing successive groups of multiple lines of characters on a recording medium within dot matrices of a common predetermined character height at a selected line spacing of one-sixth inch or one-eighth inch, while maintaining the predetermined character height constant independently of the selected line spacing, comprising:

a printhead having an uninterrupted array of functionally identical print elements arranged in positions for individually marking single dots within a column presentation on a recording medium during simultaneous printing of a group of two or more lines of characters generated within

dot matrices of a predetermined constant character height, the number of print elements being greater than twice the number of dots in the height of each dot matrix;

wherein the print elements are evenly spaced at a uniform print element pitch related to a "whole fraction" multiple of the difference between the one-sixth inch and one-eighth inch line spacing:

memory means for storing columnar data for two or more lines of characters;

control means for directing columnar data from the memory means to different selected sets of print elements to vary the character to character vertical spacing between the multiple lines in each group of lines while maintaining the character height constant independently of whether the one-sixth inch or one-eighth inch line spacing is chosen; and

means for advancing the recording medium, after printing of each group of multiple lines, by a distance that will space the successive groups of multiple lines by the selected character to character vertical line spacing with each group.

B1 5,068,734 (2118th)
APPARATUS FOR CONTROLLING A TELEVISION RECEIVER

Jack Beery, 907 6th St. SW., Apt. 815 C, Washington, D.C. 20024

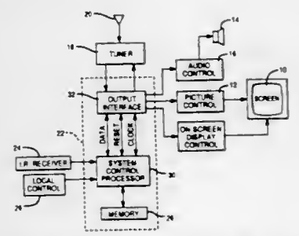
Reexamination Request No. 90/002,829, Sep. 8, 1992.
Reexamination Certificate for Patent No. 5,068,734, issued Nov. 26, 1991, Ser. No. 359,155, May 31, 1989.
Int. Cl.[5] H04N *5/50*
U.S. Cl. 358—191.1

1. In a television control system apparatus for selecting a television channel corresponding to a preassigned channel tuning designation, the system appartus comprising:

tuner means for receiving a processor signal and a multichannel input signal, and in response to said processor signal, tuning out all but one channel corresponding to a selected one of said preassigned channel tuning designations;

memory means for storing at least one operator-assigned channel select designation for at least one of said channel tuning designations;

operator-actuated control means for generating a control output signal *including a string of two or more label characters and* comprising one of (a) a first data set representative *at least in part* of a desired channel select designation for one of said channel tuning designations, and (b) a second data set *having as its initial character one of said label characters and* representative of a desired viewing channel



identified by an operator selected one of said channel select designations;

processor means for receiving said control output signal from said operator-actuated control means, and upon receipt of said first data set, causing said memory means to store said desired channel select designation as corresponding to said one channel tuning designation, and upon receipt *solely* of said second data set, retrieving from said memory means the one of said channel tuning designations corresponding to said operator selected channel select designation, and generating said processor signal to correspond to said one channel tuning designation.

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Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,417

MOWER HAVING SEPARATELY REPLACEABLE BEARING SUBASSEMBLY

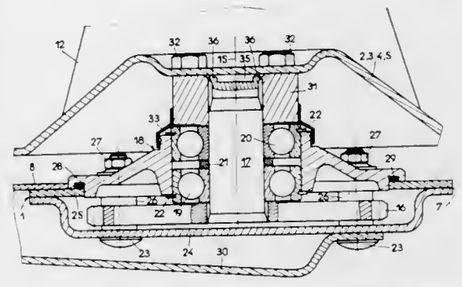
Anton Werner, and Horst Neuerburg, both of Saverne, France, assignors to Kuhn S.A., Saverne, France

Original No. 4,365,462, dated Dec. 28, 1982, Ser. No. 228,109, Jan. 26, 1981. Application for reissue Dec. 4, 1991, Ser. No. 802,217

Claims priority, application France, Feb. 4, 1980, 80 02639

Int. Cl.[5] **A01D** *34/82*

U.S. Cl. 56—255 **15 Claims**



11. In a mower having a frame and a plurality of subassemblies supported by said frame, each subassembly including a rotatable disk,

in combination

at least one of said subassemblies forming a unit comprising driving means, including a driving gear member operable to rotate the disk of said unit,

a shaft member in driven connection with said driving gear member,

coupling means in driven connection with said shaft member for coupling said disk to said shaft member, and

bearing means for guiding said shaft member including antifriction bearing means and a bearing block externally supporting said antifriction bearing means,

said [means and said members] *driving means, said shaft member, said coupling means, and said bearing means* constituting a unit which is replaceable without disassembly *of the unit* and free from any need to disassemble at least a portion of the frame of the mower.

Re. 34,418

APPARATUS AND METHOD FOR INTRODUCING SUBSTANCES INTO LIQUID METAL

Kenneth W. Bates, and William A. Griffiths, both of Chesterfield, England, assignors to Injectall Limited, Sheffield, England

Original No. 4,575,393, dated Mar. 11, 1986, Ser. No. 629,782, Nov. 21, 1983. Application for reissue Mar. 4, 1988, Ser. No. 164,432

Claims priority, application United Kingdom, Nov. 23, 1982, 8233300; Apr. 21, 1983, 8310814; Jun. 1, 1983, 8315025

Int. Cl.[5] **C21C** *7/00*

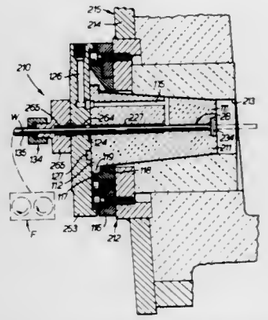
U.S. Cl. 75—414 **33 Claims**

1. Apparatus suitable for introducing selected substances into an elevated temperature liquid, comprising:

a refractory body adapted to be installed in a wall of a liquid container below the liquid surface, the body being traversed between outer and liquid-confronting ends of the body by a plurality of passages each for conveying different, selected substances to the liquid;

dislodgeable, refractory passage-closing means for each of said passages in the refractory body, and located at the liquid-confronting end of the body to prevent liquid in said container from entering the passages;

elements each movable independently of one another and located in a different one of said passages to engage with the closing means associated with the respective passage; and



a plurality of actuating means at said outer end of the refractory body and selectively operative to propel the corresponding movable elements toward the associated closing means to dislodge the closing means and open the corresponding passage so that feeding of a selected substance introduced within the passage into the liquid will commence;

said actuating means being operative to open the passages in a chosen order so that the selected substances can be fed into the liquid in said chosen order.

Re. 34,419

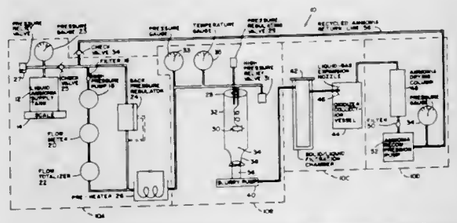
METHOD TO [DIMILITARIZE] *DEMILITARIZE*, EXTRACT, AND RECOVER AMMONIUM PERCHLORATE FROM COMPOSITE PROPELLANTS USING LIQUID AMMONIA

William S. Melvin, Huntsville, and James F. Graham, Decatur, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Original No. 4,854,982, dated Aug. 8, 1989, Ser. No. 296,557, Jan. 31, 1989. Application for reissue Jun. 25, 1990, Ser. No. 542,625

Int. Cl.[5] **D03D** *23/00*

U.S. Cl. 149—109.6 **9 Claims**



3. A method to dissolve and recover an ammonium salt from a

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solid composition containing an ammonium salt selected from the group of ammonium salts consisting of ammonium perchlorate and ammonium nitrate using liquid ammonia under pressure to dissolve said ammonium salt and to recover said ammonium salt during a phase change of said liquid ammonia to precipitate and chemically grind said dissolved ammonium salt, said method comprising:

(i) providing an extraction and recovery system which comprises a supply and high pressure spray system for liquid ammonia; an extraction system including an extraction pressure vessel for containing said solid composition to be extracted, said extraction pressure vessel being in communication with said supply and high pressure spray system for liquid ammonia; and an ammonium salt recovery system for receiving a solution of said ammonium salt;

(ii) placing a quantity of said solid composition in said extraction vessel;

(iii) admitting a continuous supply of liquid ammonia through said high pressure spray system; said liquid ammonia impinging upon said solid composition to form a solution of said ammonium salt in liquid ammonia;

(iv) passing said liquid ammonia solution containing said ammonium salt through a liquid-gos expansion nozzle contained in said ammonium salt recovery system wherein said liquid ammonia is gasified and said ammonium salt is precipitated and chemically ground; and,

(v) recovering said ammonium salt.

Re. 34,420

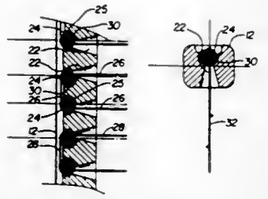
SPORTS RACQUET

James P. Darling, 316½ 8th St., Seal Beach, Calif. 90740

Original No. 4,786,055, dated Nov. 22, 1988, Ser. No. 876,982, Jun. 19, 1986. Application for reissue Nov. 21, 1990, Ser. No. 616,649

Int. Cl.[5] A63B *51/10*

U.S. Cl. 273—73 D **23 Claims**



1. A sports racquet comprising:

(a) a handle

(b) a frame attached to or integral with said handle, said frame having an inner perimeter and an outer perimeter, and having a plurality of spaced frame passages disposed in the frame and extending between the inner perimeter and the outer perimeter thereof for receiving strings;

(c) strings disposed within said frame in a generally cross-networked array to form a playing surface; said strings extending through said frame passages; and

(d) a plurality of elements contacting and resting on the outer perimeter of said frame, the surface of said elements that contacts the outer perimeter of said frame being convex, such that the location of each element with respect to the frame is fixed, each element having a passage extending through said element for receiving said strings, *each element having a bottom portion on its outer surface that is closest to the center of said playing surface and a top portion on its outer surface that is further from the center of said playing surface, each element having a rotational axis that is generally parallel to said playing surface and generally orthogonal to the string received in said element,* each of said elements being aligned with one of said frame passages such that each of said strings passes through said frame passage and said element passage so that said strings are prevented from contacting the frame, said elements being positioned such that, *when a sufficient force is applied to said playing surface in a direction generally perpendicular to said playing surface,* the axis of said element passage moves, but the location of said element with respect to the frame does not change, [when a sufficient force is applied to said playing surface in a direction generally perpendicular to said playing surface] *the top portion of said element rotating about the rotational axis of said element toward a direction opposite to the direction of application of the force.*

Re. 34,421

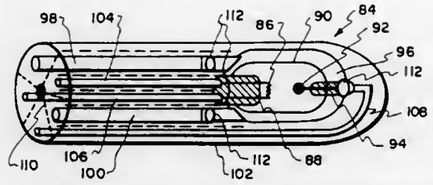
X-RAY MICRO-TUBE AND METHOD OF USE IN RADIATION ONCOLOGY

William J. Parker, 7016 Vicky Ave., West Hills, Calif. 91307, and Earl R. Parker, 862 W. Hillsdale Blvd., San Mateo, Calif. 94403

Original No. 5,090,043, dated Feb. 18, 1992, Ser. No. 616,397, Nov. 21, 1990. Application for reissue Apr. 17, 1992, Ser. No. 870,145

Int. Cl.[5] H01J *35/32*

U.S. Cl. 378—121 **19 Claims**



17. An apparatus for the treatment of a patient having a tumor, comprising:

an X-ray generating source insertable into the body of said patient to a location in close proximity to said tumor, said X-ray generating source comprising a substantially cylindrical glass X-ray tube having a diameter less than one inch and being operable at a voltage level in the range of approximately 10–60 KeV, thereby enhancing absorption of the generated X-rays by said tumor and minimizing the side effects of radiation therapy on the patient's normal tissue.

Re. 34,422

PORTABLE ELECTRONIC MEMORANDUM DEVICE

Fumikazu Aihara, Kita, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Original No. 4,751,668, dated Jun. 14, 1988, Ser. No. 711,077, Mar. 12, 1985. Application for reissue Jun. 12, 1990, Ser. No. 537,495

Claims priority, application Japan, Mar. 23, 1984, 59-54388; Mar. 28, 1984, 59-58340

Int. Cl.[5] G09G *3/00*; G06F *3/14*

U.S. Cl. 395—144 **24 Claims**

1. A portable electronic memorandum device, comprising:

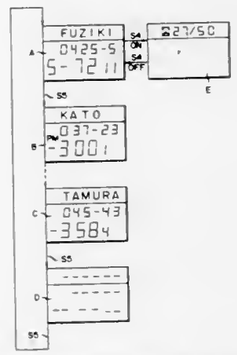
character data item input means for inputting character data items including at least character data;

character data item-storing means for storing the character data items inputted by said character data item input means;

operation switching means for sequentially designating the character data items in the character data item-storing means, and for sequentially reading out the character data items stored in the character data item-storing means in response to a switching operation;

optical display means for sequentially displaying the character data items sequentially read out by said operating switching means; [empty]

display control means (*a*) for enabling a last character data item stored in said character data item-storing means to be displayed on said optical display means when operating said operation switching means [and] (*b*) for thereafter, when operating said operation switching means, causing [a] display *of indicia on said optical display means* representing [a data empty state to be indicated on said optical display means when operating said operation switching means; and first character data display control means]



that the last character data item has been read out, and (*c*) for permitting a first character data item stored in said data item-storing means to be displayed on said optical [dispaly] *display* means when operating said operation switching means after [the data empty state is indicated] *said indicia have been displayed* by operation of said [empty] display control means.

Re. 34,423

SUBSTITUTED BENZENES USEFUL AS INTERMEDIATES

Norio Tanaka; Takuya Kakuta; Eiichi Oya, and Masatoshi Baba, all of Funabashi, Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

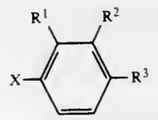
Original No. 5,087,724, dated Feb. 11, 1992, Ser. No. 519,727, May 7, 1990. Division of Ser. No. 360,468, Jun. 2, 1989, Pat. No. 4,942,246. Application for reissue May 20, 1992, Ser. No. 885,989

Claims priority, application Japan, Jun. 3, 1988, 63-137095; Apr. 18, 1989, 1-98284

Int. Cl.[5] C07C *323/09, 323/20, 323/62*

U.S. Cl. 558—425 **34 Claims**

1. A substituted benzene of the formula I':



selected from the group consisting of wherein:

a) X is I, R^1 is CN, R^2 is H and R^3 is SMe,
b) X is I, R^1 is OMe, R^2 is H and R^3 is SMe,
c) X is Br, R^1 is Cl, R^2 is CO_2Me and R^3 is SO_2Me,
d) X is Br, R^1 is Cl, R^2 is CO_2H and R^3 is SO_2Me,
e) X is I, R^1 is Cl, R^2 is CO_2Me and R^3 is SMe,
f) X is I, R^1 is Cl, R^2 is Co_2H and R^3 is SMe,
g) X is I, R^1 is Cl, R^2 is CO_2Pr-i and R^3 is SMe,
h) X is Br, R^1 is Me, R^2 is CO_2Me and R^3 is SMe,
i) X is Br, R^1 is Me, R^2 CO_2H and R^3 is SMe,
j) X is I, R^1 is Me, R^2 is CO_2Pr-i and R^3 is SMe,
k) X is I, R^1 is Me, R^2 is CO_2Me and R^3 is SMe,
l) X is I, R^1 is Me, R^2 is CO_2Me and R^3 is SO_2Me,
m) X is I, R^1 is Me, R^2 is CO_2Et and R^3 is SMe,
n) X is I, R^1 is Me, R^2 is CO_2Pr-i and R^3 is SMe,
o) X is I, R^1 is Me, R^2 is $CO_2CH_2CH_2OMe$ and R^3 is SMe,
p) X is I, R^1 is Me, R^2 is $CO_2CH_2CH_2Cl$ and R^3 is SMe,
q) X is I, R^1 is OMe, R^2 is CO_2Me and R^3 is SMe,
r) X is Br, R^1 is Cl, R^2 is CH_2OMe and R^3 is SO_2Me,
s) X is I, R^1 is Cl, R^2 is CH_2OMe and R^3 is SMe,
t) X is I, R^1 is Me, R^2 is CH_2OMe and R^3 is SO_2Me,
u) X is I, R^1 is Me, R^2 is CH_2OMe and R^3 is SMe,
v) X is I, R^1 is Me, R^2 is CH_2OEt and R^3 is SMe,
w) X is I, R^1 is Me, R^2 is CH_2OPr-i and R^3 is SMe,
x) X is I, R^1 is OMe, R^2 is CH_2OMe and R^3 is SMe,
y) X is I, R^1 is Me, R^2 is CHMeOMe and R^3 is SMe,
z) X is I, R^1 is Me, R^2 is CHMeOEt and R^3 is SMe,
aa) X is I, R^1 is Me, R^2 is CHEtOMe and R^3 is SMe,
bb) X is I, R^1 is Me, R^2 is OMe and R^3 is SMe,
cc) X is I, R^1 is Cl, R^2 is Cl and R^3 is SMe.
dd) X is I, R^1 is Me, R^2 is NO_2 and R^3 is SMe,
ee) X is Br, R^1 is Cl, R^2 is Me and R^3 is SO_2Me,
ff) X is Br, R^1 is Cl, R^2 is Me and R^3 is SMe,
gg) X is Br, R^1 is Cl, R^2 is CH_2OPr-i and R^3 is SO_2Me.

Re. 34,424

INTRAOCULAR LENS

Gerald B. Walman, 10615 W. Thunderbird Blvd. #D200, Sun City, Ariz. 85351

Original No. 4,504,981, dated Mar. 19, 1985, Ser. No. 306,326, Sep. 28, 1981. Application for reissue May 16, 1986, Ser. No. 863,966

Int. Cl.[5] A61F *2/16*

U.S. Cl. 623—6 **86 Claims**



33. An intraocular lens suitable for implantation in a human eye comprising:

(a) a lens for focusing the light;

(b) a first supporting loop extending in one direction from said lens, said first supporting loop including at least a first pair of fixation points for supporting said lens within the eye;

(c) a second supporting loop extending in a second direction from said lens and in opposed relationship to said first supporting loop, said second supporting loop including at least a second pair of fixation points for supporting said lens within the eye; and

(d) each of said first and second supporting loops including at least one segment for defining at least one of said pair of fixation points, each of said first and second supporting loops including at least a pair of segments, each segment of said pair of segments being generally non-aligned with a radial of said lens and each segment of said pair of segments which extends directly from said lens being oriented generally linearly non-parallel with any other segment which extends directly from said lens;

whereby, any compressive force applied between two generally opposed ones of said fixation points will result in lateral compression in the plate of the lens rather than anterior or posterior bowing of the affected ones of said segments.

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PLANT PATENTS

GRANTED OCTOBER 26, 1993

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,433

APRICOT TREE "GOLD BRINK"

Chris F. Zaiger, 537 Rosemore Ave.; Gary N. Zaiger, 1907 Elm Ave.; Leith M. Gardner, 1207 Grimes Ave., and Grant G. Zaiger, 4005 California Ave., all of Modesto, Calif. 95358

Filed Dec. 28, 1992, Ser. No. 997,528
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—39 1 Claim

1. A new and distinct variety of apricot tree, substantially as illustrated and described, characterized by its large size, vigorous, semi-spreading growth and a productive and regular bearer of large, yellow flesh, freestone fruit; the fruit is further characterized by having firm flesh with good flavor and eating quality, having good handling and shipping quality and in comparison to Flaming Gold Apricot (U.S. Plant Pat. No. 2,822) it has heavier fruit production and the fruit ripens approximately 9 days earlier.

8,434

GRAPVINE, NAMED 'VALPLATINTA'

Francisco Watlington, Santurce, P.R., assignor to Commonwealth of Puerto Rico, San Juan, P.R.

Filed Nov. 1, 1991, Ser. No. 786,516
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—47.1 1 Claim

1. A new and distinct variety of of grapevine, substantially as described and illustrated, characterized by its exceptional adaptation to tropical and subtropical environments, including superior resistance to common grape fungus pathogens, and unique usefulness for winemaking under such conditions.

8,435

CHRYSANTHEMUM NAMED RESPECTFUL

Rob Noodelijk, Woubrugge, Netherlands, assignor to Chrysanthemum Breeders Association, N.V., Netherlands Antilles

Filed Oct. 31, 1991, Ser. No. 785,823
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—82.1 1 Claim

1. A new and distinct cultivar of Chrysanthemum named Respectful as described and illustrated.

8,436

CHRYSANTHEMUM NAMED REWINNER

Rob Noodelijk, Woubrugge, Netherlands, assignor to Chrysanthemum Breeders Association, N.V., Netherlands Antilles

Filed Oct. 31, 1991, Ser. No. 785,824
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—82.1 1 Claim

1. A new and distinct cultivar of Chrysanthemum named Rewinner as described and illustrated.

8,437

IMPATIENS PLANT NAMED IMPULSE

Lyndon W. Drewlow, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Mar. 26, 1992, Ser. No. 858,393
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.6 1 Claim

1. A new and distinct Impatiens plant named Impulse, as illustrated and described.

8,438

CACTACEAE PLANT NAMED 'PASADENA'

Barnell L. Cobia, and Mark E. Cobia, both of P.O. Box 771369, Winter Garden, Fla. 34777-1369

Filed Aug. 24, 1992, Ser. No. 933,926
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—88.5 1 Claim

1. A new and distinct plant variety of the Cactaceae family as shown and described and which is mainly distinguished from its antecedents and known related varieties by growth characteristics that are similar to those of the 'Kris Kringle ' variety but as modified by the combination of the following characteristics:

1. a more erect posture at maturity than the 'Kris Kringle' variety;
2. phylloclades which, in comparison to the 'Kris Kringle' variety have (a) midribs with generally greater thickness dimensions, (b) wings with generally greater thickness and width dimensions, and (c) teeth with generally greater length dimensions and in larger number per phylloclade;
3. flowers which, in comparison to the 'Kris Kringle' variety, have (a) a tube laminating tepal series with generally greater width dimensions, (b) a perianth tube that at the throat has a generally longer major axis, (c) a tube forming series of tepals with generally greater width dimensions, (d) a tube attached group of stamens that are generally fewer in number and generally greater in length dimensions, and (f) an ovary that at the major and minor axis is generally greater in length.

8,439

PEACH TREE "SCARLET SNOW"

Chris F. Zaiger, 537 Rosemore Ave.; Leith M. Gardner, 1207 Grimes Ave.; Gary N. Zaiger, 1907 Elm Ave., and Grant G. Zaiger, 4005 California Ave., all of Modesto, Calif. 95358

Filed Jan. 8, 1993, Ser. No. 2,016
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—42.1 1 Claim

1. A new and distinct variety of peach tree, substantially as illustrated and described, characterized by its large size, vigorous, upright growth and being a regular and productive bearer of large, late maturing, white flesh, freestone fruit with excellent flavor and eating quality; the fruit is further characterized by having very firm flesh, good handling and shipping quality and having a white skin ground color overspread with an attractive red blush.

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PATENTS

GRANTED OCTOBER 26, 1993

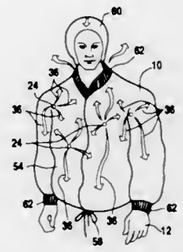
GENERAL AND MECHANICAL

5,255,390

GAS VENTILATED GARMENT HAVING A LOW GAS CONSUMPTION VALVING CONFIGURATION

Stanford A. Gross, Elkin Park, Pa., and Stanley Bauman, Dover, Del., assignors to Chem-Tex Corporation, Trenton, N.J.

Filed Dec. 3, 1992, Ser. No. 984,754
Int. Cl.[5] A62B *17/00*
U.S. Cl. 2—2 26 Claims



1. An improved gas ventilated garment to be worn by a user and having a low gas consumption valving configuration comprising;

A. a garment means of material adapted to be worn by a user;

B. a primary manifold means attached to said garment means and defining a plenum chamber means therein adapted to receive ventilation gas therein, said primary manifold means defining an inlet aperture means therein in flow communication with respect to said plenum chamber means and adapted to receive ventilation gas therethrough, said primary manifold means further defining a plurality of outlet aperture means therein in fluid flow communication with respect to said plenum chamber means to facilitate distribution of ventilation gas therefrom;

C. a plurality of gas conduit means positioned in fluid flow communication with respect to at least one of said outlet aperture means of said primary manifold means to receive ventilation gas therefrom;

D. a plurality of ventilation gas radial dispersion valves attached at multiple locations to said garment means with each being adapted to release ventilation gas radially in an area between said garment means and a user to facilitate cooling of a user, each of said ventilation gas radial dispersion valves comprising:

(1) a valve body defining a valve chamber means therein to receive ventilation gas therein for facilitating dispersion thereof radially, said valve body further defining a valve inlet aperture means being in fluid flow communication with respect to said valve chamber means to facilitate entry of ventilation gas therein, said valve inlet aperture means being in fluid flow communication with respect to at least one of said gas conduit means to receive ventilation gas therefrom, said valve body further defining a valve outlet aperture means in fluid flow communication with respect to said valve chamber means for facilitating distribution of dispersed ventilation gas therefrom; and

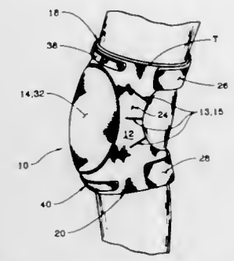
(2) a valve release control means movably secured to said valve body and positioned extending over said valve outlet aperture means to restrict the volume of ventilation gas released radially through each of said ventilation gas radial dispersion valve to less than one cubic foot per minute.

5,255,391

KNEE PAD

Norman D. Levine, P.O. Box 1867, Pompano Beach, Fla. 33061

Filed Jun. 2, 1992, Ser. No. 892,269
Int. Cl.[5] A41D *13/06*
U.S. Cl. 2—24 8 Claims



8. A knee pad for protecting the knee area of a wearer, comprising:

a waterproof, elastic neoprene body portion having first and second ends and concave first and second sides which define a nominal wall thickness therebetween, said body portion being bounded by a plurality of elongated side edges, said body portion adapted to fit over the knee area of said wearer;

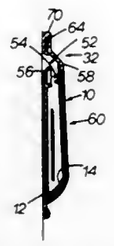
means for cushioning said knee area during impact, said means for cushioning comprising a resilient member rigidly secured to said body portion second side by an overlapping patch of material stitched to said body portion second side, said means for cushioning further comprising a flexible patch which integrally defines an aperture therethrough, said flexible patch rigidly attached to said first side of said body portion in the center thereof and disposed in general alignment with said resilient member; and

means for releasably securing said body portion over said knee area and around the leg of said wearer, said means for releasably securing comprising: a first patch of hook material rigidly attached to and integral with said second side of said body portion proximal to said first end thereof; a second patch of hook material rigidly attached to and integral with said second side of said body portion proximal to said second end thereof; a pair of transversely disposed first flaps unitarily formed in said body portion proximal to said first end thereof, one of said pair of first flaps having loop material disposed on one face thereof, and defining a slot extending through said loop material and the corresponding flap, respectively; a pair of transversely disposed second flaps unitarily formed in said body portion proximal to said second end thereof, one of said pair of second flaps having loop material disposed on one face thereof, and defining a slot extending through said loop material and the corresponding flap, respectively; and a pair of elongated, planar straps, each rigidly attached to one of said pair of first and second flaps, respectively, each strap having hook material and loop material disposed on opposing faces thereof, whereby said pairs of first and second flaps may be wrapped around said leg of said wearer and said elongated planar straps may be inserted through said slots such that said loop material on said straps releasably engages said first and second patches of hook material on said body portion, respectively, and said loop material on one of said first and second flaps releasably engages said hook material on one side of each of said elongated planar straps, whereby said body portion first side and said means for cushioning are maintained in

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intimate association with said knee area by wrapping said means for releasably securing around said leg, thereby forming a protective structure which is capable of cushioning and protecting said knee area from potential injurious falls which could be sustained while utilizing an athletic device.

5,255,392
CONCEALED POCKET
Thelma E. Stanislaw, St. Louis, Mo., assignor to Vacco Corporation, St. Louis, Mo.
Filed Jun. 7, 1991, Ser. No. 712,923
Int. Cl.[5] A41D *27/20*
U.S. Cl. 2—247 **18 Claims**



1. A concealed pocket assembly for attaching a pocket to a fabric portion, comprising:
pocket means for receiving an article, the pocket means including closing means for substantially sealing the pocket means;
outer panel means, the outer panel means attached to the pocket means;
inner panel means, the inner panel means attached to the pocket means, the inner and outer panel means forming an envelope for the pocket means;
a marginal portion provided by the inner and outer panel means, the marginal portion adjacent the closing means and providing purchase for opening the pocket means when closed; and
attachment means for attaching the envelope to a fabric portion with the outer panel means intermediate the fabric portion and the pocket means, the attachment means spaced away from an edge of the fabric portion and coextensive with the marginal portion.

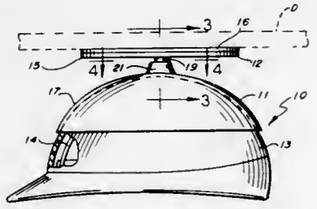
5,255,393
FORM FITTING GARMENT
Judy A. Brady, Mt. Airy, Md., assignor to THGKG Partnership, Silver Spring, Md.
Filed Jul. 18, 1991, Ser. No. 732,126
Int. Cl.[5] A41B *11/00*
U.S. Cl. 2—409 **20 Claims**

1. A form fitting garment which accommodates a large abdomen of a user and which is maintained in form fitting contact with the abdomen and other portions of the user covered thereby by being formed generally of a first stretchable material, said garment comprising:
a waistband which is expandable and which is also adjustable in size.
a front panel which covers the abdomen of the user, said front panel being made of an extra stretchable material which is more stretchable than the first stretchable material;
a back which covers the buttocks of the user;
a crotch area covering the crotch of the user; and
respective left and right sides covering respective left and right sides of the user,



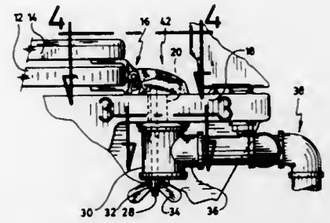
wherein said front panel is variable supportive from a maximum support adjacent a bottom thereof to a substantially reduced support adjacent a top thereof.

5,255,394
OVERHEAD LOAD HOLDING HELMET
James L. Long, Minneapolis, Minn., assignor to R. Eugene Goick, Excelsior, Minn., a part interest
Filed Nov. 13, 1992, Ser. No. 976,273
Int. Cl.[5] A42B *3/04*
U.S. Cl. 2—410 **7 Claims**



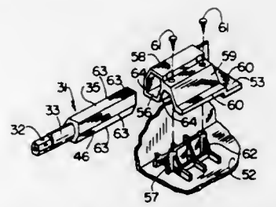
1. A device for supporting an overhead load in an overhead location from a workman's head, comprising
a helmet portion to be supported upon a workman's head and comprising a substantially rigid hard hat with a substantially dome-shaped interior and to be carried upon the workman's head, the helmet portion comprising an upper portion with a first rotary thrust bearing portion thereon, and
a turntable portion rotatably supported on the helmet portion, the turntable portion comprising an upper face and being substantially horizontally oriented to engage and support such an overhead load, the turntable portion comprising a lower portion facing the upper portion of the helmet portion and said lower portion also having a second rotary thrust bearing portion thereon, one of said first and second thrust bearing portions comprising an insert pin and the other of said first and second thrust bearing portions comprising a socket bearing portion, said insert pin being received in said socket bearing portion to permit the turntable portion and overhead load to be turned while the helmet portion and workman's head remain stationary, and to also permit the workman's head to be turned while the turntable portion and the overhead load remain stationary.

5,255,395
VENTILATING SYSTEM FOR TOILET BOWL
Gilles L. Millette, 84, Bellevue Est, Magog, Quebec, Canada J1X 3H5
Filed Jun. 15, 1992, Ser. No. 898,434
Int. Cl.[5] E03D *9/05*
U.S. Cl. 4—216 **6 Claims**



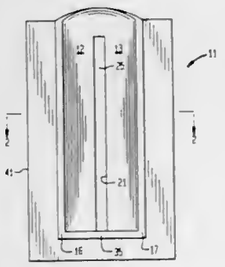
1. A toilet bowl ventilating kit for use with a conventional toilet bowl having a bowl portion with an upper rim and a generally flat apron portion extending rearwardly from a portion of the rim, a seat resting on the rim, a hinge member attached to a rear portion of said seat, said apron being provided with two vertical apertures extending therethrough for attachment of said hinge member, said kit comprising, a parapet-like housing having a peripheral wall member adapted to be mounted over and in contact with said apron and disposed to encircle both of said apertures, said housing having means for hingedly connecting said hinge member thereto so as to allow pivoting of said seat thereabout, two hollow couplings each being adapted to be mounted below and encircling one of said apertures with a mouth, and having an angularly disposed opening relative to said mouth adapted to be connected to an air suction device, connecting means extending through said apertures for retaining said parapet-like housing in position surrounding said apertures and for retaining said mouth encircling said aperture, as so to provide a stationary connection for said hinge member, a cover adapted to fit over said housing, said cover having a pending lip for facing said seat, said cover defining an air pathway extending from adjacent said bowl to the inside of said peripheral wall, whereby upon actuation of said suction device, air is withdrawn from said bowl below said seat through said housing, said apertures and said couplings.

5,255,396
SANITARY CLEANING DEVICE INCLUDING A ROTATION DECELERATION DEVICE
Shinjiro Miyahara, Yamatokoriyama, and Kazuaki Fujita, Nara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jul. 23, 1992, Ser. No. 918,367
Claims priority, application Japan, Jul. 26, 1991, 3-187358; Jul. 29, 1991, 3-188627; Aug. 22, 1991, 3-210652
Int. Cl.[5] A47K *13/10*
U.S. Cl. 4—246.2 **3 Claims**



1. A sanitary device for use with a toilet bowl, comprising:
a main body casing adopted to be attached to a toilet bowl, the main body casing including a mounting section therein which has a slanting portion projecting upward therefrom;
a fixing member fixed to the mounting section of the main body casing;
a rotation deceleration device including a cylinder fixed to the fixing member and a shaft rotatably mounted in the cylinder, a rotation dampening member operably connected between said cylinder and said shaft whereby the rotation of the shaft is dampened in one direction; and
a toilet cover attached to the rotation shaft,
wherein the fixing member includes a portion fixed to the mounting section of the main body casing, a side portion integrally formed with the top portion and shaped to mate with the slanting portion of the mounting section, and a bottom portion shaped to mate with a surface of the mounting section from which the mounting section is projected upward.

5,255,397
URINAL
Donald A. Poole, 23 Salvi Dr., Framingham, Mass. 01701
Filed Oct. 16, 1992, Ser. No. 961,800
Int. Cl.[5] E03D *13/00*
U.S. Cl. 4—310 **12 Claims**



1. A urinal comprising:
a pair of substantially vertical sidewalls having front edges lying in a plane defining an entrance opening of said urinal, and rear edges defining a substantially vertical slot, said pair of sidewalls converging inwardly so as to form a trough for guiding the flow of urine entering said entrance opening in a path transverse to said plane and toward said slot;
an internal wall defining a vertically oriented channel communicating with said trough via said slot, said internal wall comprising front edges terminating at said slot and said channel converging to a vertically oriented extremity displaced from said slot in a horizontal direction parallel to said plane; and
a bottom wall joined to bottom edges of said sidewalls and said internal wall and defining a drain opening.

5,255,398
FLOW CONTROL APPARATUS, SYSTEM AND METHOD
Raymond F. Flynn, and Margaret A. Flynn, both of 728 Great Fields Rd., Brewster, Mass. 02631
Continuation-in-part of Ser. No. 559,683, Jul. 30, 1990, Pat. No. 5,105,482. This application Jan. 7, 1992, Ser. No. 817,739
The portion of the term of this patent subsequent to Apr. 21, 2009, has been disclaimed.
Int. Cl.[5] E04H *3/19*; B65B *1/04*
U.S. Cl. 4—496 **3 Claims**

1. A flow control apparatus for servicing a swimming pool including filling water tubes comprising:
a) a source of water contained in a swimming pool;
b) a submersible pump having an outlet;
c) electrical switch means for controlled operation of the submersible pump;

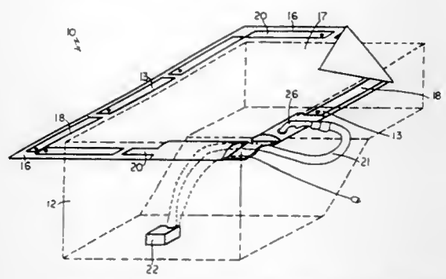
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d) a hose having an one end connected to a nozzle means and another end connected to a union check valve means mounted on the outlet of the submersible pump submerged in the swimming pool, comprising a flexible vacuum hose having an annular collar attached to said one end of the hose; and

e) nozzle means for controlling the flow of water through the hose and filling a water tube comprising:

i) a housing having an one end and another end, the one



end being adapted to fit into the annular collar attached to the one end of the hose, including an inner flow control chamber and having an inlet and an outlet;

ii) a check valve mounted within the inner flow control chamber; and

iii) control means for operating the check valve for opening and closing the check valve;

f) union check valve means for preventing back flow of water in the hose mounted on the outlet of the submersible pump and attached to another end of the hose.

5,255,399

FAR INFRARED RAYS SAUNA BATH ASSEMBLY

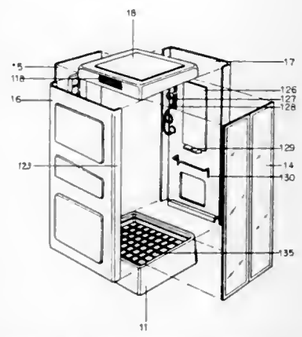
Hun C. Park, 923-35 Gyeisan-dong, Puk-gu, Inchun, Rep. of Korea

Filed Dec. 23, 1991, Ser. No. 812,448

Claims priority, application Rep. of Korea, Dec. 31, 1990, 22740/1990

Int. Cl.[5] A61H *33/06*

U.S. Cl. 4—525 **6 Claims**



1. A far infrared rays sauna assembly having a small box type prefabricated construction comprising:

a) a lower body supporting a well, each of said lower body and said well including a drain hole, each said drain hole connected by a drain hose, said lower body including a palette arranged in said well, said palette having a plurality of protrusions on an upper surface thereof, said lower body having a joining part extending along an upper periphery of said lower body;

b) a back cover plate and a pair of doors;

c) a left side cover plate and a right side cover plate, each said left side cover plate, said right side cover plate and said back cover plate having a folded lower bottom for connection to said joining part of said lower body using joining nuts;

d) a plurality of joining bodies for connecting together adjacent edges of each of said back cover plate, left side cover plate and right side cover plate;

e) an upper body, said upper body forming a chamber and having double wall construction along a lower peripheral edge for attachment to upper edges of at least said back cover plate and said left side and said right side cover plates, said upper body, said lower body, said back cover plate and said left side and said right side cover plates and said doors forming a sauna bath chamber;

f) air discharge openings formed in said upper body providing communication between said bath chamber and atmosphere; said air discharge openings including at least one door for controlling opening or closing of said communication;

g) an infrared ray lamp centrally mounted to said upper body on an under surface thereof;

h) a stereo music amplifier mounted within said chamber of said upper body and in spaced relation to said light lamp;

i) an air dryer mounted in a recess formed in an inside surface of said back cover plate;

j) a plurality of exothermic heaters mounted in recesses formed on inside surfaces of said left side cover plate;

k) a mirror, shower, soap tray and hanger installed on an inside surface of said right side cover plate; and

l) an instant thermal water machine communicating with said shower, a control box for controlling said lamp, amplifier, dryer and heaters and a stereo cassette, each mounted on an outside surface of one of said left or said right side cover plates.

5,255,400

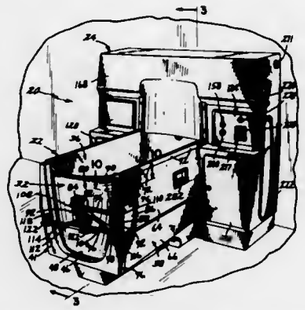
APPARATUS FOR CONTAINING A LIQUID

Adrian P. Sween, Rte. 3, Box 214B, Little Falls, Minn. 56345

Continuation of Ser. No. 555,661, Jul. 18, 1990, abandoned, which is a continuation of Ser. No. 298,821, Jan. 18, 1989, abandoned, which is a continuation of Ser. No. 45,768, Apr. 28, 1987, abandoned, which is a continuation of Ser. No. 834,112, Feb. 24, 1986, abandoned, which is a continuation of Ser. No. 552,670, Nov. 17, 1983, abandoned. This application Jul. 28, 1992, Ser. No. 921,363

Int. Cl.[5] A47K *3/02*

U.S. Cl. 4—556 **7 Claims**



1. Apparatus for containing a liquid, comprising a tub having a wall with a door therein, said door for entry by a person, said tub also including means for operating said door, said door operating means including hinge means for swinging said door between open and closed positions, said hinge means including first and second means for pivoting said door, said first pivoting means swinging said door between the open and closed positions about a first axis located near a tub sidewall, said second pivoting means having a second axis near a vertical centerline of said door for angularly orienting said door with respect to a door opening in said tub, said hinge means including a pair of parallel connecting members having opposite ends pivotally attached to said first and second pivoting means, respectively, thereby forming a parallelogram shaped assembly for raising and lowering said door with respect to said tub, said door operating means further including means for sealing between said door and said tub and means for locking said door closed thereby maintaining the integrity of said sealing means, said sealing means including a seal element and wherein said locking means includes means for forcing said door from inside said tub to outside said tub against said seal element.

5,255,401

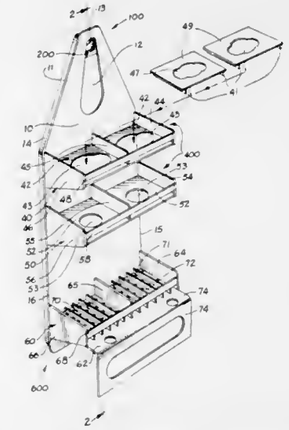
SHOWER CADDY

Samuel R. Sambrookes, and Sheryl R. Sambrookes, both of 19603 N. 36th Dr., Glendale, Ariz. 85308

Filed Jan. 4, 1993, Ser. No. 414

Int. Cl.[5] A47K *5/02*

U.S. Cl. 4—605 **19 Claims**



1. A shower caddy for hanging on a shower arm having a shower head attached thereto, comprising:

(a) a panel;

(b) a hanger mechanism connected to said panel and adapted to engage said shower arm; and

(c) a bottle drainer connected to said panel;

wherein said panel includes an opening sufficiently large to allow the pass-through of a shower head; and

wherein said bottle drainer includes an upper portion containing means for holding the body of at least one bottle and a lower portion containing corresponding means for holding the neck of at least one bottle; said upper portion comprising at least one bottle opening consisting of the superimposition of multiple geometrical shapes, so that said opening is able accommodate in a substantially vertical inverted position bottles of various cross-sectional geometries.

5,255,402

FASTENING ASSEMBLY FOR A SINK TRAP HAVING A REMOVABLE BOTTOM PORTION

Hooshang Kasbani, San Juan Capistrano, Calif., assignor to Cashew Consulting, Inc., Irvine, Calif.

Filed Feb. 24, 1992, Ser. No. 840,454

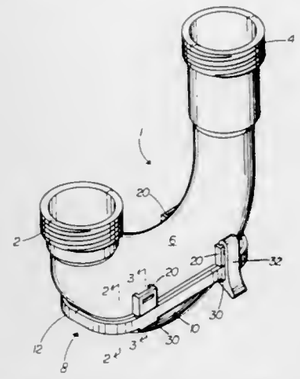
Int. Cl.[5] E03C *1/284*

U.S. Cl. 4—679 **9 Claims**

1. For use with a sink trap having an upper dip portion and a bottom portion detachably connected to said dip portion, fastening means by which to releasably attach said bottom portion to said dip portion, said fastening means comprising:

a first catch located at said dip portion and including a receptacle, said receptacle having a hollow interior and an opening formed therethrough to communicate with said interior;

a second catch located at said bottom portion; and



a locking clip having first and second ends respectively engaging said first and second catches, said first end including a U-shaped head having a locking finger projecting therefrom, said head removably received within the interior of said receptacle of said first catch such that said locking finger extends into said opening therethrough for preventing the inadvertent removal of said first end from said first catch.

5,255,403

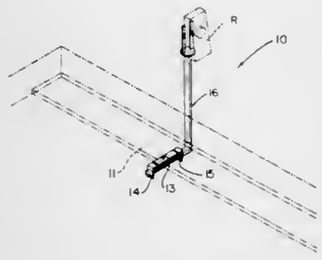
BED CONTROL SUPPORT APPARATUS

Camilo V. Ortiz, 1221 Astoria Pl., Oxnard, Calif. 93030

Filed Feb. 8, 1993, Ser. No. 14,746

Int. Cl.[5] A47C *21/00*

U.S. Cl. 5—503.1 **6 Claims**



1. A bed control support apparatus for mounting to a bed frame rail, wherein the apparatus comprises,

a U-shaped mounting bracket, the U-shaped mounting bracket including a base plate, the base plate having a first leg plate spaced from and parallel a second plate leg, with an L-shaped support shaft, the L-shaped support shaft including a first leg rotatably directed orthogonally through the first leg plate and the second leg plate, and a second leg fixedly and orthogonally mounted to the first leg, and

an abutment pin directed through the first leg between the first leg plate and the second leg plate, and

a spring member captured between the abutment pin and the second leg plate, and

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the second leg including a head plate, wherein the second leg is oriented about a second leg axis, and the head plate is orthogonally oriented relative to the axis, and

a first finger plate and a second finger plate orthogonally and fixedly mounted to the head plate arranged for receiving a remote control housing thereon.

5,255,404

ANTI-DECUBITUS MATTRESS PAD

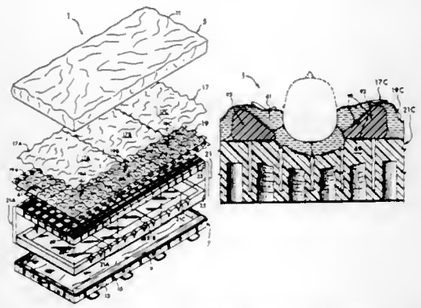
John C. Dinsmoor, III, Westminster; Grant C. Denton; Eric C. Jay, both of Boulder, and Richard R. Runkles, Englewood, all of Colo., assignors to Jay Medical, Ltd., Boulder, Colo.

Continuation of Ser. No. 756,320, Sep. 6, 1991, Pat. No. 5,201,780. This application Jan. 13, 1993, Ser. No. 4,080

The portion of the term of this patent subsequent to Apr. 13, 2010, has been disclaimed.

Int. Cl.[5] **A61G** *7/057;* **A47C** *27/18*

U.S. Cl. 5—451 **20 Claims**



1. A multi-layered pad primarily intended for use to reduce the development of decubitus ulcers in a patient using the pad, said pad including means for providing upward supporting pressure on the patient sufficiently low to avoid occluding capillary blood flow to areas of the patient supported on the pad, said means including:

first and second layers,

said first layer including bladder means containing a fluid, said first layer including a boundary bounding a first area,

said second layer being positioned beneath said first layer and including resilient means made of non-rigid, soft foam, said second layer of resilient means made of non-rigid, soft foam having a boundary bounding a second area, said second area being substantially smaller than said first area of said first layer, and

means for securing said first and second layers to each other substantially about and adjacent said boundaries of said first and second layers wherein said first area of said first layer is oversized relative to said second area of said second layer.

5,255,405

TOOL HOLDING APPARATUS

Soren Samuelsson, Palm Desert, and Patrick A. Smahlik, Pleasanton, both of Calif., assignors to Steccone Products Co., Oakland, Calif.

Filed Oct. 30, 1991, Ser. No. 784,477

Int. Cl.[5] **B25G** *3/38*

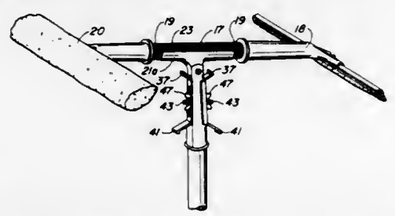
U.S. Cl. 15—144.1 **14 Claims**

7. A tool holding apparatus comprising

a longitudinal handle being substantially hollow and having an upper end and a lower open end for receiving and securing an end of a pole inserted into said lower open end;

a generally T-shaped base member secured to the upper end of said handle, said base member having a trough-like portion and a handle engaging portion projecting perpendicularly from said trough-like portion, said handle engaging portion being secured to the upper end of the longitudinal handle and being rotatable about an axis perpendicular to the longitudinal axis of the handle;

a tubular support member mounted longitudinally on the trough-like portion of the base member and rotatable with said base member relative to said handle, said tubular support member having tool-engaging portions disposed at each end thereof for engaging a handle of a tool;



means for rotating said base member relative to said handle; and

a pair of brackets slidably mounted longitudinally on opposite walls of said handle, each of said brackets having a stop projecting at an angle from said bracket into the path of rotation of the base member to limit the rotation of the tubular support member beyond a predetermined point.

5,255,406

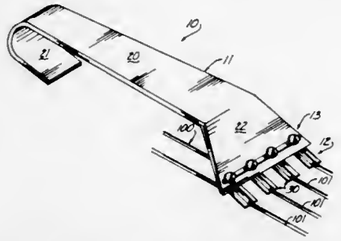
ADJUSTABLE BARBEQUE GRILL SCRAPER

Brenda A. Rood, 537 Third St. SE., Valley City, N. Dak. 58072

Filed Dec. 10, 1992, Ser. No. 988,595

Int. Cl.[5] **A47J** *49/00*

U.S. Cl. 15—236.06 **6 Claims**



1. An adjustable barbeque grill scraper for use with a variety of barbeque grills having different spacing between the rods that comprise the upper surface of the barbeque grill wherein the barbeque grill scraper comprises:

an elongated generally rigid main body member having a handle portion and a head portion;

a plurality of individual scraper tooth members operatively and adjustable secured to the head portion of the main body member for relative movement in at least the lateral plane both between the individual scraper tooth members relative to one another and the individual scraper tooth members relative to the main body member; and

securing means for captively engaging the individual scraper tooth members at a desired location relative to the main body member.

5,255,407

MULTI-SCRUBBER TYPE ROLLER WINDSHIELD WIPER

Ming-Tung Yang, No. 4-3, Lane 97, Lung Chuan St., Panchiao, Taipei Hsien, Taiwan

Filed Jun. 18, 1992, Ser. No. 900,301

Int. Cl.[5] **B60S** *1/28, 1/44*

U.S. Cl. 15—250.22 **4 Claims**



1. A windshield wiper for a vehicle having a windshield wiper frame comprising:

a) a pair of roller retainers each having an elongated, generally semi-cylindrical configuration defining an internal space;

b) attaching means to attach both of the pair of roller retainers to a single windshield wiper frame;

c) a pair of roller scrubbers, each having an elongated, generally cylindrical configuration with opposite ends of different diameters and a plurality of elongated scrubbing strips extending generally radially outwardly therefrom, each roller scrubber being rotatably attached to one of the roller retainers such that at least one scrubbing strip extends outwardly of the interior space; and,

d) stop means extending from each of the roller retainers into each interior space for contacting a scrubbing strip, said means preventing one of the pair of roller scrubbers from rotating in a first direction and the other of the pair of roller scrubbers from rotating in a second direction, said second direction being generally opposite to the first direction.

5,255,408

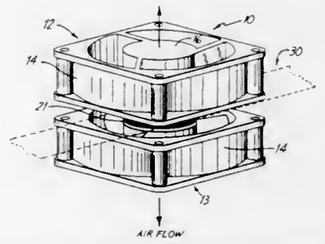
PHOTOGRAPHIC FILM CLEANER

Robert J. Blackman, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 11, 1992, Ser. No. 833,994

Int. Cl.[5] **B08B** *11/02*

U.S. Cl. 15—308 **24 Claims**



1. A photographic film cleaner having an aperture for receiving a length of film having first and second planar image retaining surfaces and apparatus for cleaning dust particles from said first and second planar image retaining surfaces of the film passed through the aperture and further comprising:

first and second rotatable brushes for sweeping the first and second planar film surfaces, respectively, each of the first and second rotatable brushes having an axis of rotation generally perpendicular to the first and second planar surfaces;

rotating means for rotating the first and second brushes; and

first and second fan means coupled to said rotating means and rotatable with said first and second rotatable brushes, respectively, for creating first and second respective air flows away from the first and second brushes, respectively, for drawing away dust particles cleaned by said first and second rotatable brushes from said first and second planar image retaining surfaces of the film.

5,255,409

ELECTRIC VACUUM CLEANER HAVING AN ELECTRIC BLOWER DRIVEN IN ACCORDANCE WITH THE CONDITIONS OF FLOOR SURFACES

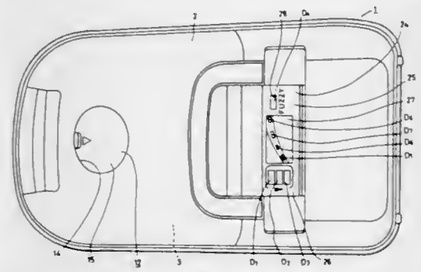
Masakatsu Fujiwara, Kasai; Yasuyuki Tsuchida, Hyogo; Yuji Nakanishi, Kasai, and Yoshikazu Morishita, Hyogo, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Jul. 17, 1991, Ser. No. 731,515

Claims priority, application Japan, Jul. 18, 1990, 2-191129; Jul. 18, 1990, 2-191130

Int. Cl.[5] **A47L** *9/28*

U.S. Cl. 15—319 **16 Claims**



1. An electric vacuum cleaner comprising:

a main body having an electric blower and a dust collecting chamber,

a floor nozzle coupled to said main body,

pressure sensing means for sensing a pressure difference from a suction side of said electric blower in relation to an ambient pressure and for sending a first signal responsive thereto,

floor sensing means for inferring the condition of a floor surface and for sending a second signal responsive thereto, and

control means for performing a plurality of prescribed mathematical operations on values of the magnitudes of said first and said second signals to control the amount of power supplied to said electric blower in a predetermined correlation with the value of a result of said operations.

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5,255,410
VACUUM CLEANER

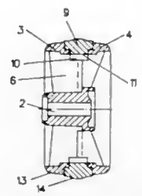
Klaus Stein, and Heinz Kaulig, both of Velbert, Fed. Rep. of Germany, assignors to Stein & Co. GmbH, Velbert, Fed. Rep. of Germany

Continuatioo-in-part of Ser. No. 747,185, Aug. 19, 1991. This application Feb. 26, 1992, Ser. No. 842,025

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1991, 4105996

Int. Cl.[5] A47L *5/30*

U.S. Cl. 15—351 **17 Claims**



1. A vacuum cleaner for vacuuming an object such as a floor, said vacuum cleaner comprising:

a housing, said housing having a first end and a second end;

said first end of said housing comprising a floor suction component, and said floor suction component comprising:

suction means for withdrawing at least air from vicinity of the floor;

rotating brush means for dislodging dirt and the like from the floor; and

at least one wheel means for movement of said housing along the floor;

said second end of said housing comprising a filter housing, and said filter housing comprising:

filter means for filtering at least the air withdrawn by said suction means; and

means for connecting said suction means to said filter means; and

said at least one wheel means comprising:

a wheel body, said wheel body having a circumference and an axis of rotation, the axis of rotation defining an axial direction of said wheel body, said wheel body comprising:

a first side portion and a second side portion, said second side portion being spaced apart from said first side portion in the axial direction to define an opening therebetween about the circumference of the wheel body;

each of said first side portion and said second side portion having a surface disposed about the circumference of the wheel body;

an elastomeric tire at least partially disposed within said circumferential opening, said elastomeric tire having a base portion disposed within said circumferential opening, and a protruding portion for protruding beyond the circumferential surface of each of said first side portion and said second side portion;

the circumferential opening between said first side portion and said second side portion extending radially from said base portion of said elastomeric tire towards said axis of rotation to form a circumferential space adjacent said base portion of said elastomeric tire and extending radially from said base portion of said elastomeric tire towards said axis of rotation;

said base portion of said tire being configured to deform radially into said space in a direction toward said axis of rotation upon application of a pressure on said protruding portion in a direction towards said axis of rotation, and said space being configured to accept the deformation of said elastomeric tire thereinto;

the circumferential surfaces of both of said first side portion and said second side portion define a curved profile of the wheel body in the axial direction of the wheel body;

said circumferential opening is disposed at the apex of the curved profile; and

said protruding portion of the elastomeric tire defines the apex of said wheel body.

5,255,411
LIFT-OFF MECHANISM FOR AN UPRIGHT VACUUM CLEANER

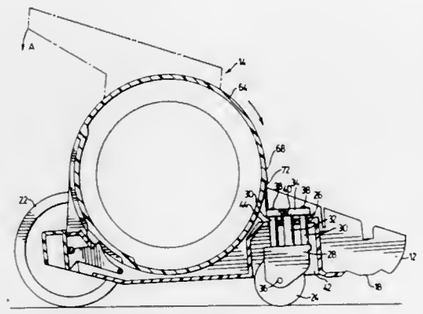
Philip M. Da Costa, Oakville, Canada, assignor to Iona Appliances Inc., Welland, Canada

Filed Jan. 17, 1992, Ser. No. 822,239

Claims priority, application Canada, Jul. 29, 1991, 2048098

Int. Cl.[5] A47L *5/34*

U.S. Cl. 15—333 **2 Claims**



1. A vacuum cleaner comprising:

(i) a base having a surface cleaning nozzle and a wheel housing, said wheel housing having a lower contiguous portion and an upper contiguous portion, said upper portion of said wheel housing comprising a substantially horizontal support platform, sand wheel housing being moveable between a raised position and a lowered position in each of which positions said nozzle is respectively in a lowered position or a raised position above the surface to be cleaned, said support platform being fixedly mounted above said lower contiguous portion;

(ii) wheel means rotatably mounted on said lower contiguous portion;

(iii) first abutment means which comprises at least one abutment arm attached to said support platform and fixed in position above said wheel means;

(iv) a handle structure pivotally mounted on said base and moveable between an upper storage position and a lower operating position, said handle structure having a lower portion which comprises a cylindrical housing;

(v) second abutment means attached to said handle structure, said second abutment means comprising at least one protrusion having a substantially flat surface, said at least one protrusion integrally formed as part of the peripheral surface of said cylindrical housing, said at least one abutment arm being attached to said support platform at a predetermined position to engage said at least one protrusion, said support platform being fixed in position by a plurality of supports which are located at the ends of said support platform which are adjacent and distant from said at least one protrusion, said wheel housing being located near said handle structure and said at least one abutment arm extends substantially vertically to engage said at least one protrusion; and,

(vi) spring means biasing said wheel housing to said raised position,

whereby, as said handle is pivoted from said lower operating position to said upper storage position, said at least one abutment arm engages said at least one protrusion moving said wheel housing from said raised position to said lowered position consequently raising said surface cleaning nozzle to its raised position.

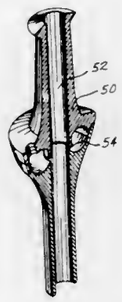
5,255,412
AIR AMPLIFIED MINI-VACUUM

Sujith N. V. Mally, 33353A 1st Pl. S., Federal Way, Wasb. 98003; David W. Sharpe, 712 220tb SW., Bothell, Wasb. 98021, and Jeffrey L. Colehour, 4760 130th Ave. SE., Bellevue, Wash. 98006

Filed Mar. 14, 1991, Ser. No. 669,263

Int. Cl.[5] A47L *5/18*

U.S. Cl. 15—409 **2 Claims**



1. A mini-vacuum comprising a monolithic housing; a cylindrical channel in said housing, said channel having an inlet at one end through which a vacuum is drawn and an outlet at the other end through which waste is carried on a positive pressure flow stream and which channel has a substantially smooth continuous cross section without protuberances into said flow stream; an annular plenum in said housing surrounding said channel; an inlet to said plenum through which positive pressure air is introduced and circulated within said plenum; a nozzle from said plenum which directs positive pressure air therefrom into said channel toward said channel outlet at an angle with respect to the surface of said channel such that said air adheres to the said channel surface downstream of said nozzle creating a vacuum at said channel inlet; and an air porous collection bag at said channel outlet.

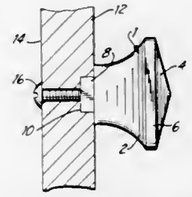
5,255,413
FURNITURE KNOB AND PROCESS FOR ATTACHING TO FURNITURE

Irving Sabo, Easton, Conn., assignor to Ethan Allen Inc., Danbury, Conn.

Filed Jun. 10, 1992, Ser. No. 896,192

Int. Cl.[5] E05B *1/00*

U.S. Cl. 16—121 **18 Claims**



1. A furniture knob having a front peripheral contour, the knob comprising a knob portion having a front face and a back face, part of the back face being adapted to be gripped by the fingers of a hand, and a shaped cross section shank portion at the back face for attachment to furniture having a complementarily shaped cavity therein, the shank portion having a longitudinal axis that is perpendicular to the back face, said longitudinal axis being adapted to include means for attaching said shank portion through the furniture.

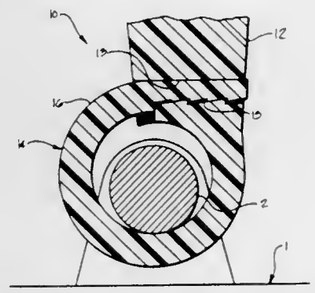
5,255,414
REPLACEMENT HANDLE FOR SUITCASE, ATTACHE CASE AND THE LIKE

Kenneth R. March, 2244 Carroll Mill Rd., Phoenix, Md. 21131

Filed Apr. 13, 1992, Ser. No. 867,536

Int. Cl.[5] B25G *3/28*; **E05B** *7/00*

U.S. Cl. 16—125 **10 Claims**



1. A handle for a suitcase and an attache case of the type having a pair of posts and links formed thereon, the handle comprised of:

a body portion including a pair of ends, each of the ends of the body portion having a respective opening formed therein;

each of the ends of the body portion having a respective tail formed thereon and integral therewith, so that each of the tails loops around the respective posts and links and is received in said respective openings;

means formed between each of the tails and the openings in which they are received for securing each of the tails in the respective openings.

5,255,415
INTEGRAL COMMON DUCT WITH SUCTION HOODS FOR WASTE REMOVAL

Ferdinand Leifeld, Kempen, and Konrad Temburg, Mönchengladbach, both of Fed. Rep. of Germany, assignors to Trützschler GmbH & Co. KG, Mönchengladbach, Fed. Rep. of Germany

Filed Sep. 17, 1991, Ser. No. 760,892

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1990, 4029414

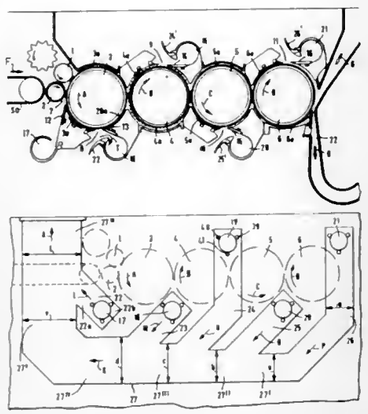
Int. Cl.[5] D01G *15/76, 9/06*

U.S. Cl. 19—107 **16 Claims**

1. In a fiber processing machine including clothed rolls for entraining fiber along a circular path, a housing surrounding the rolls; at least two waste discharge openings; a separate mote knife bounding each said waste discharge opening; a suction hood adjoining each waste discharge opening for receiving waste passing through the respective waste discharge opening; a separate suction conduit coupled to respective suction hoods for receiving waste therefrom; and a common

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suction duct coupled to each suction conduit for receiving the waste therefrom; the improvement wherein said suction con-

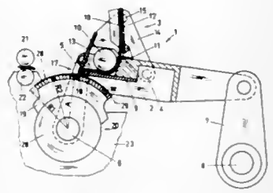


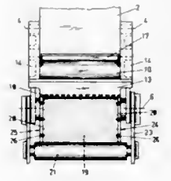
duits and said common suction duct form a one-piece component.

5,255,416
COMBING MACHINE WITH MEANS FOR LIMITING MOVEMENT OF TOP NIPPER

Hans-Ulrich Eichenberger; Giancarlo Mondini; Heinz Clement, all of Winterthur, and Walter Ackeret, Seuzach, all of Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed Mar. 26, 1991, Ser. No. 675,427
Claims priority, application Switzerland, Apr. 14, 1990, 01273/90
Int. Cl.[5] D01G *19/16*
U.S. Cl. 19—228 **6 Claims**





1. A combing machine comprising

a circular comb rotatably mounted on a axis of rotation and having a combing segment thereon with a plurality of projecting combing elements extending within an imaginary cylinder having a constant radius from said axis;

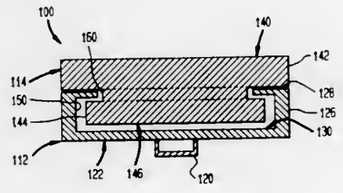
a nipper jaw unit for holding a leading end of a wadding in place for combing by said combing elements, said nipper jaw unit having a lower nipper, a top nipper for moving relative to said lower nipper between an open position spaced from said lower nipper and a closed position in contact with said lower nipper, and a nipper lip on said top nipper disposed in overlapping relation with said lower nipper with said top nipper in said closed position, said nipper lip being spaced from said axis of rotation of said comb a distance less than said radius of said imaginary cylinder in said closed position; and

means for limiting movement of said top nipper towards said closed position on said lower nipper to provide a safety clearance between said nipper lip and said imaginary cylinder, said means including at least one spacer segment secured to said comb segment and projecting radially through said imaginary cylinder.

5,255,417
DECORATIVE MULTI-PART ORNAMENTATIONS AND THE FABRICATION THEREOF

Michael Herman, Huntington, N.Y., assignor to Herman Pearl Button Co., Inc., New York, N.Y.

Continuation-in-part of Ser. No. 737,066, Jul. 29, 1991, abandoned, and a continuation-in-part of Ser. No. 805,322, Dec. 10, 1991, abandoned. This application Feb. 28, 1992, Ser. No. 843,457
Int. Cl.[5] A44B *1/04*
U.S. Cl. 24—113 MP **40 Claims**



1. An ornamental assembly comprising:

(a) base means including means for attaching said base means to an article;

(b) cap means for co-action with and mounting to said base means;

(c) said base means and said cap means together carrying securing means for non-removably securing said base means and cap means together into an ornamental assembly, said securing means including securing elements which readily snap together to secure said base means and cap means together and which prevent separation of said base means and said cap means, each of said base means and said cap means comprising a wall, and said securing elements comprising at least one protrusion extending outwardly from a wall of one of said base means and said cap means, and said securing elements further comprising at least one groove cooperating with said at least one protrusion, on the other of said base means and said cap means.

5,255,418
AUTOMATICALLY LOCKING SLIDER FOR CONCEALED ZIPPER

Shih-Chung Chen, No. 55, Ming Te Road, Te Yin Tsun, Wu-Guu Shiang, Taipei Hsien, Taiwan

Filed Nov. 10, 1992, Ser. No. 974,085
Int. Cl.[5] A44B *19/00*
U.S. Cl. 24—424 **4 Claims**

1. An automatically locking slider for a concealed zipper comprising:

a pull tab;

a slider body having a front end and a rear end;

a separator fixedly mounted at the center of the front end of said slider body, said separator being formed with a groove;

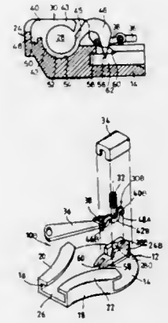
a substantially Y-shaped guide channel being defined by said slider body and said separator for guiding therethrough

rows of fastener elements during the act of coupling or uncoupling the zipper;

said slider being characterized in that a resilient locking member is received and nested in said groove of said separator and means for fitting said resilient locking member in said groove is positioned on the top of said resilient member to allow pressure to be applied to said locking member to prevent it from slipping out of said groove;

whereby said locking member can be pivotally held in said groove, said pull tab being coupled to a rear end of said locking member via a ring so that said rear end can be controlled by said pull tab and moved back and forth between a locking position and an unlocking position when said pull tab is pulled; and wherein

said locking member is integrally formed and includes a



front insert section, a middle C-shaped section, and a tail hook section, said middle C-shaped section having a first end, a second end spaced therefrom and a surface corresponding to said groove of said slider body, permitting said first and second ends to move toward and away from each other, said front insert section having an insert projection downwardly extending from said first end, the groove of said separator being formed with a front insert recess corresponding to said insert projection, said hook portion having a locking hook rearwardly and downwardly extending from said second end for automatically locking rows of fastener elements of the concealed zipper, whereby via the relative movement between said first and second ends, said locking hook can move back and forth between an automatically locking position and an unlocking position.

5,255,419
TENTERING APPARATUS AND METHOD

Peter P. Stanislaw, Bennington, Vt., and Sadao Yagi, Pittsfield, Mass., assignors to Morrison Berkshire, Inc., North Adams, Mass.

Filed Feb. 20, 1991, Ser. No. 658,006
Int. Cl.[5] D06C *3/02*
U.S. Cl. 26—89 **46 Claims**

1. A tentering system comprising:

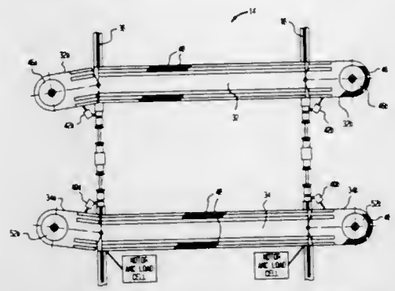
a. a pair of spaced tenter rails defining a first end, a second end and a tentering path between said tenter rails;

b. movable securement means carried by said tenter rails for holding material while such material is moved through said tentering path, such material having marginal edges and said securement means being adapted to hold such material substantially at such marginal edges;

c. first material guiding means at said first end of said tenter rails for guiding material into said tentering path from said first end so that such material can be moved in said tentering path in a first direction from said first end to said second end;

d. second material guiding means at said second end of said tenter rails for guiding material into said tentering path from said second end so that such material can be moved in said tentering path in a second direction from said second end to said first end; and

e. drive means for driving said movable securement means of each said tenter rail, said drive means being constructed and arranged to alternately and selectively drive said securement means in said first and second directions, said

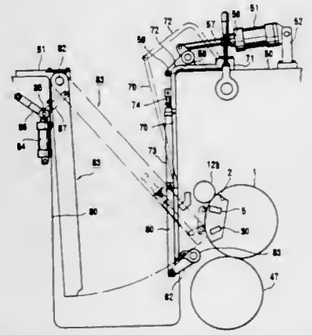


first material guiding means being operative to guide material into said tentering paths at least when said drive means is driving said securement means in said first direction, and said second material guiding means being operative to guide material into said tentering path at least when said drive means is driving said securement means in said second direction.

5,255,420
PLATE REPLACING APPARATUS FOR A PRINTING PRESS

Kazuhiro Maejima; Hisaaki Oyoshi, and Toshio Miyamoto, all of Ibaraki, Japan, assignors to Komori Corporation, Japan

Continuation of Ser. No. 633,080, Dec. 19, 1990, abandoned. This application Sep. 24, 1992, Ser. No. 950,747
Claims priority, application Japan, Dec. 26, 1989, 1-337338; Apr. 3, 1990, 2-87439; Dec. 26, 1990, 2-149750[U]
Int. Cl.[5] B23P *19/04;* **B41F** *27/00*
U.S. Cl. 29—240 **2 Claims**



1. A plate replacing apparatus for a printing press having a plate fixing apparatus consisting of a leading-side plate lockup device for gripping one end of a plate wound around a circumferential surface of a plate cylinder and a trailing-side plate lockup device for gripping the other end of the plate, said plate fixing apparatus being arranged in a gap in said circumferential surface of said plate cylinder, comprising:

a plate lockup opening/closing unit, connected to said leading- and trailing-side plate lockup devices through a cam shaft, for opening/closing said leading-and trailing-side

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plate lockup devices upon pivotal movement of said cam shaft;

a plate holding apparatus drive unit for driving a plate holding apparatus on said plate replacing apparatus between an operation position where a distal end portion of said plate holding apparatus comes close to said plate lockup devices and a storage position where said distal end portion of said plate holding apparatus is separated from said plate lockup devices;

a plate removal unit for gripping an old plate released from said plate lockup devices and inserted into said plate holding apparatus upon rotation of said plate cylinder, and for moving said old plate into said plate holding apparatus;

a plate supply unit for inserting a new plate loaded in said plate holding apparatus into said leading-side plate lockup device;

a plate press unit for pressing the new plate inserted into said leading-side plate lockup device and wound around said circumferential surface of said plate cylinder and for inserting the other end of the new plate into said trailing-side plate lockup device;

a predetermined plate position stop unit for pivoting said plate cylinder to stop at a plate gripper position; and

a controller for operating said plate lockup opening/closing unit, said plate holding apparatus drive unit, said plate removal unit, said plate supply unit, said plate press unit, and said predetermined plate position stop unit at predetermined timings.

5,255,421

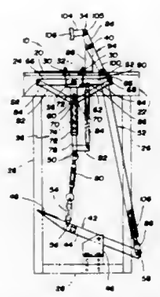
WREATH MAKING APPARATUS

Gerald J. Kamysiak, 9540 Bolton Rd., Posen, Mich. 49776

Filed Jan. 19, 1992, Ser. No. 5,579

Int. Cl.[5] B23P *11/00*

U.S. Cl. 29—243.56 **12 Claims**



1. Apparatus for making wreaths comprising:

a support;

a pair of jaws and one pivotal connector that mounts the pair of jaws for pivotal movement on the support for relative movement with respect to each other from an open position for receiving a generally U-shaped wreath wire therebetween toward a closed position to provide initial deformation of the wreath wire to a generally closed shape to capture greens;

a third jaw and another pivotal connector that mounts the third jaw for pivotal movement on the support for movement from an open position with respect to the pair of jaws toward a closed position to further deform the closed wreath wire to secure the greens; and

an actuating mechanism including a foot pedal having a pivotal mount and a foot actuated pad for pivoting the pedal, the actuating mechanism having one connection that connects the foot pedal to the pair of jaws to initially move the pair of jaws from the open position thereof toward the closed position to provide the initial deformation of the wreath wire, and the actuating mechanism having another connection that connects the foot pedal to the third jaw to move the third jaw from the open position thereof toward the closed position thereof to provide the further deformation of the wreath wire after the initial deformation to thereby secure the greens within the wreath wire.

5,255,422

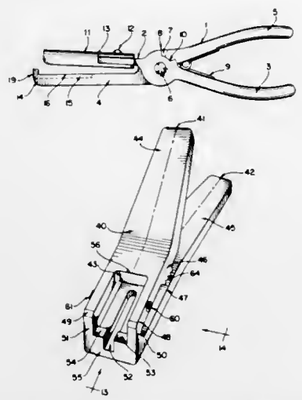
SCALPEL BLADE ON-OFF TOOL

Ronald D. Russo, 8 Candleberry Rd., Barrington, R.I. 02806, and Nancy A. Coyne, 85 Spring Lake Dr., DeBary, Fla. 32713

Continuation-in-part of Ser. No. 751,859, Aug. 29, 1991, abandoned. This application Nov. 17, 1992, Ser. No. 977,784

Int. Cl.[5] B23P *19/04*

U.S. Cl. 29—268 **33 Claims**



1. A tool for safely handling detachable blades of a removable blade scalpel wherein the blades include upper and lower opposed surfaces and an attachment slot, and the scalpel having a handle with a narrow forwardly projecting extension in turn having an upwardly projecting shoulder defined by a pair of inwardly directed longitudinally extending slots along said extension wherein said shoulder is adapted to receive the longitudinally directed attachment slot of a detachable blade, said tool comprising upper and lower longitudinally oriented jaws each having a distal and a proximal end connected for relative motion towards and away from each other to closed and open positions respectively, said lower jaw having a generally planar top surface adapted for engageable receipt of the lower surface of said blade with the distal end of said blade positioned between the proximal end portions of said jaws, said lower jaw being substantially longer than said upper jaw and a slotted recess formed in said lower jaw for receiving and repositioning said scalpel handle extension and for positioning said scalpel blade distal end for compressible engagement solely between said upper and lower jaw proximal ends in said closed position thereof, said lower jaw terminating at its outer distal end in a terminal face and said slotted recess extending through said terminal face and extending along a significant portion of said lower jaw.

5,255,423

PROCESS FOR INSTALLING A HELICAL ADDED THREAD IN AN INTERNALLY THREADED ORIFICE FOR REPAIRING THE INTERNAL THREADS OF THE ORIFICE

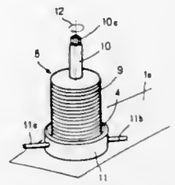
Jean P. Dworaczek, Le Breuil, and Daniel Grypczynski, Lyons, both of France, assignors to Framatome, Courbevoie, France

Filed Oct. 8, 1991, Ser. No. 772,796

Claims priority, application France, Oct. 8, 1990, 90 12363

Int. Cl.[5] B23P *6/00*

U.S. Cl. 29—402.14 **5 Claims**



1. Process for installing a helical added thread in a large diameter orifice for repairing an internal thread of said orifice, said process comprising the steps of

(a) providing a cylindrical drum having an at least partly threaded external surface;

(b) engaging and winding said added thread on a threaded part of said external surface of said drum;

(c) providing a centering ring having a threaded internal surface and an engagement end part;

(d) engaging and maintaining said engagement end part of said centering ring in an entry part of said orifice, so that said threaded internal surface of said centering ring constitutes an extension of said internal thread of said orifice;

(e) screwing said drum on which said added thread is wound onto said threaded internal surface of said centering ring and then into said internal thread of said orifice;

(f) laying said added thread against said internal thread of said orifice; and

(g) fastening said added thread in place by passing a pin through the thread and engaging said pin in an internal wall of said orifice.

5,255,424

MANUFACTURE OF A HEAVY DUTY ELASTOMERIC BEARING

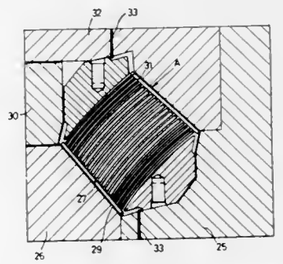
Kenneth W. J. Raines, Whetstone, England, assignor to Dunlop Limited, United Kingdom

Filed Jul. 24, 1991, Ser. No. 735,036

Claims priority, application United Kingdom, Jul. 28, 1990, 9016633

Int. Cl.[5] B32B *31/00*

U.S. Cl. 29—527.3 **19 Claims**



1. Method for the manufacture of a heavy duty elastomeric bearing of the kind comprising a plurality of elastomeric layers and a plurality of metal reinforcing layers arranged interposed with one another in a sandwich arrangement of alternating elastomeric and metal reinforcing layers and in which exposed edges of said metal layers are covered by a cover layer of curable material, said method comprising:

positioning said alternating layers in a mould having a cavity sufficiently large to enable moulding and cure of the elastomeric layers to occur simultaneously with moulding and cure of said cover layer of curable material;

covering said edges of said metal layers with said cover layer of curable material;

restraining relative transverse movement of successive metal layers by providing restraining means in a part of a space between said mould and said edges; and

curing said cover layer of curable material while compressing said alternating layers to result in compression of each of the elastomeric layers lying between successive metal reinforcing layers.

5,255,425

METHOD OF MANUFACTURING LAMINATED CORE FOR DYNAMO-ELECTRIC MACHINE

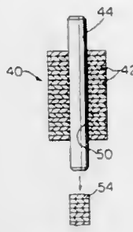
Kazunobu Kanno, Toyohashi, Japan, assignor to Asmo Co., Ltd., Kosai, Japan

Filed Sep. 30, 1992, Ser. No. 953,874

Claims priority, application Japan, Oct. 4, 1991, 3-283890

Int. Cl.[5] H02K *15/02*

U.S. Cl. 29—596 **17 Claims**



1. A method of manufacturing a laminated core for a dynamo-electric machine, having a shaft and a plurality of core sheets with through holes in the center thereof for insertion of said shaft therethrough and a plurality of slot holes in the peripheral portion of said core sheets, respectively, comprising the steps of:

(a) die-cutting said core sheets so that at least a part of scrap sections to be punched and then removed, including said through hole and said plurality of slot holes, can be formed as a half die-cut portion;

(b) laminating said core sheets on at least one of core sheets previously die-cut by the step (a), by fitting said respective half die-cut portions formed on each of said core sheets to each other; and

(c) forcing said shaft through said through holes of said core sheets and removing said respective half die-cut portions after said plurality of core sheets are laminated together.

5,255,426

METHOD OF MAKING A CARBON COMMUTATOR

Charles P. Farago, Cleveland, and D. Bruce Ramsey, Sr., Brunswick, both of Ohio, assignors to Kirkwood Industries, Cleveland, Ohio

Division of Ser. No. 808,942, Dec. 13, 1991, Pat. No. 5,175,463, which is a continuation of Ser. No. 390,202, Aug. 7, 1989, abandoned. This application Oct. 23, 1992, Ser. No. 965,175

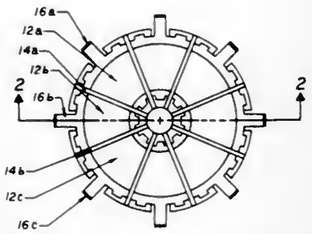
Int. Cl.[5] H01R *43/06*

U.S. Cl. 29—597 **8 Claims**

1. A method of making the commutator comprising the steps of:

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providing a planar substrate having a series of current-carrying regions;
providing a planar substrate having a series of current-carrying regions;
providing a carbon base having a brush-contacting surface and a second opposite surface;
substantially covering the second surface of the carbon base



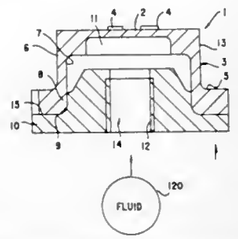
with a conductive plating to form an unslotted commutator body;
applying a conductive bonding layer to said conductive plating;
bonding the unslotted commutator body to the substrate; and
cutting corresponding slots in the commutator body to form a series of commutator segments.

5,255,427

CERAMIC HOLLOW BODIES AND METHOD OF MANUFACTURING SUCH BODIES

Hans W. Hafner, Aichach-Walchshofen, Fed. Rep. of Germany, assignor to Pfister GmbH, Augsburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 627,103, Dec. 13, 1990, abandoned. This application Aug. 16, 1991, Ser. No. 745,648
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1989, 3907202; Jun. 14, 1989, 3919411; Aug. 17, 1990, 4026044
Int. Cl.[5] G01R *3/00*
U.S. Cl. 29—621.1 **10 Claims**



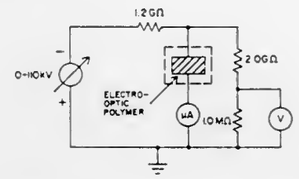
8. A method of manufacturing a ceramic sensor body comprising the steps:
forming a first of two green body portions of ceramic material, said first portion having integrally formed thereon a diaphragm confining a first side of a cavity formed within said first portion having an essentially cylindrical peripheral shape;
forming a second of said two green body portions of ceramic material having an essentially cylindrical outer peripheral shape complementary to said cylindrical shape of said cavity and being provided with a through-passage;
fitting said two green body portions together at their peripheral surfaces to form a combined green ceramic body; and
burning said so-formed green body, said two portions forming said ceramic sensor body having said cavity therein said through passage leading to said cavity for fluid path thereto; and
applying sensor means to said diaphragm.

5,255,428

ELECTROOPTIC POLYMER VOLTAGE SENSOR AND METHOD OF MANUFACTURE THEREOF

Allan Gottsche, Lynge, Denmark, and Joseph W. Perry, Pasadena, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Apr. 3, 1991, Ser. No. 680,651
Int. Cl.[5] H01B *19/00*; **G02F** *1/00*
U.S. Cl. 29—631.1 **9 Claims**



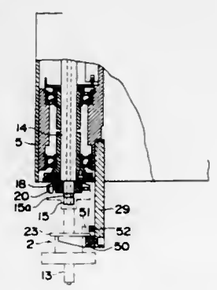
1. A method of fabricating an electrooptic polymer high voltage sensor; the method comprising the steps of:
a) preparing a fine powder form of purified electrooptic dye having a selected figure of merit;
b) dissolving said dye in a transparent epoxy and initiating the cure of said mixture;
c) pouring said mixture into a mold having first and second opposed electrodes in direct contact with said mixture;
d) applying a poling field to said mixture across said electrodes, during the curing of said mixture, to align the dye molecules therein; and
e) maintaining said poling field until said mixture is fully cured;
f) attaching wires to said electrodes for connecting said sensor to a power distribution system; and
g) placing a housing containing optical components and connected to optical fibers around said cured and poled mixture.

5,255,429

COMPONENT MOUNTING APPARATUS

Naomi Nishi, Osaka; Hideki Yoshihara, Moriguchi, and Setsuo Horimoto, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 7, 1992, Ser. No. 863,555
Claims priority, application Japan, Apr. 9, 1991, 3-075522
Int. Cl.[5] H05K *3/30*
U.S. Cl. 29—720 **10 Claims**



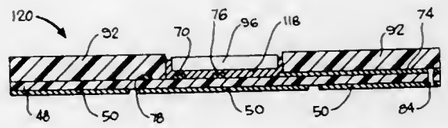
1. A component mounting apparatus, comprising:
a holding section holding a plurality of component mounting heads, each said component mounting head having a component sucking nozzle;
a component mounting section for receiving and mounting one of said component mounting heads;
a storage section provided on each said component mounting head for storing information about said mounting head; and
a reading section provided on said component mounting section for reading the information in said storage section;
wherein said storage section is capable of being both read and being written to by said reading section on said component mounting section.

5,255,430

METHOD OF ASSEMBLING A MODULE FOR A SMART CARD

Kent A. Tallaksen, Fountain, Colo., assignor to Atmel Corporation, San Jose, Calif.

Filed Oct. 8, 1992, Ser. No. 959,031
Int. Cl.[5] H01R *43/00*
U.S. Cl. 29—827 **18 Claims**



1. A method of assembling a module for attachment to a card comprising,
providing a leadframe such that a first surface of the leadframe has an array of first contact sites for electrical connection to an integrated circuit die, the leadframe including an array of second contact sites on a second surface thereof,
providing a die-alignment layer on the first surface of the leadframe such that the die-alignment layer includes an alignment cavity positioned to receive the integrated circuit die at the first contact sites,
mounting the integrated circuit die within the die-alignment layer, wherein the integrated circuit die has contact pads on an active side and has dimensions less than the dimensions of the alignment cavity, the providing of the die-alignment layer including framing the alignment cavity such that the contact pads of the integrated circuit die are positioned atop the first contact sites on the first surface when the integrated circuit die is inserted in the alignment cavity, the first side of the integrated circuit die facing the first surface of the leadframe, and
depositing conductive adhesive in the alignment cavity,
compressing the conductive adhesive between the first contact sites and the contact pads to provide electrical connection therebetween.

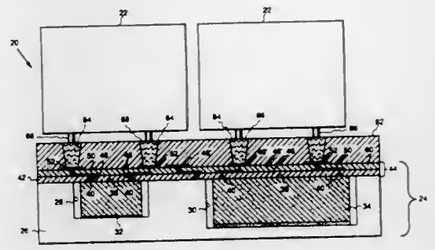
5,255,431

METHOD OF USING FROZEN EPOXY FOR PLACING PIN-MOUNTED COMPONENTS IN A CIRCUIT MODULE

William E. Burdick, Niskayuna, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 26, 1992, Ser. No. 904,719
Int. Cl.[5] H05K *3/34*
U.S. Cl. 29—840 **18 Claims**

1. A method of placing a predetermined quantity of uncured epoxy in a hole of predetermined dimensions within an electronic circuit module, said method comprising the steps of:
providing a body of uncured frozen epoxy of predetermined volume;
placing the body of uncured frozen epoxy in the hole;
placing the electronic circuit module and body of frozen epoxy in a chamber; and
warming the electronic circuit module and body of epoxy to thaw the body of epoxy while at least partially evacuating the chamber so that a pressure differential is created sufficient to cause the epoxy to be drawn into the hole as the body of frozen epoxy thaws.

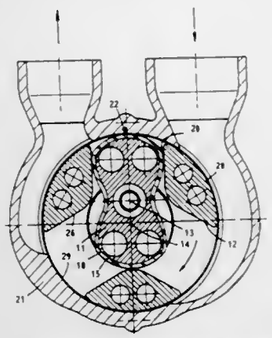


5,255,432

METHOD FOR MANUFACTURING A SEAL BETWEEN MACHINE PARTS

Frank Obrist, Dornbirn, Austria; Peter Kuhn, Weinheim, and Michael Frey, Lindau, both of Fed. Rep. of Germany, assignors to TES Wankel Technische Forschungsund Entwicklungsstelle, Lindau, Fed. Rep. of Germany

Continuation of Ser. No. 792,034, Nov. 13, 1991, Pat. No. 5,178,529. This application Aug. 20, 1992, Ser. No. 932,461
Claims priority, application Switzerland, Dec. 28, 1990, 04 138/90
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—888.3 **2 Claims**



1. A method for the manufacture of a seal between machine parts moving relative to one another through their sealing gap-forming approximation, with a plastic layer adhering to a base surface (**5**) on one of the sealing gap-forming facing surfaces, wherein outwardly open depressions (**8**) are provided in closely juxtaposed manner in the plastic layer (**1**, **18**, **32**, **32'**, **41**, **44**, **47**, **45**) and have the form of partly cut off voids of an expanded plastic structure, which extend at least close to the base surface (**5**) and at least most of the plastic layer (**1**, **18**, **32**, **32'** **41**, **44**, **47**, **55**) is substantially free from closed voids, the method comprising the steps of spraying, on one of the parts passing in sealing gap-forming approximation to another machine part, a plastic mixture prepared for foam formation following the preparation of the said part at least in an adjacent area, and removing the layer, following expansion and curing of the plastic, to such an extent that the voids formed in a bottom layer are open to the outside.

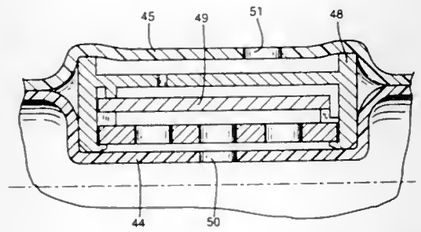
VOL 1155 ISS 4 OCT 26 1993 UMI

5,255,433
ENGINE BLOCK CYLINDER LINERS MADE OF ALUMINUM ALLOY COMPOSITES
Iljoon Jin; Paul W. Jeffrey; David J. Lloyd, all of Kingston, Canada, and Sergio Gallo, Turin, Italy, assignors to Alcan International Limited, Montreal, Canada
Continuation of Ser. No. 683,311, Apr. 10, 1991, abandoned.
This application Apr. 3, 1992, Ser. No. 863,399
Int. Cl.[5] B22D *19/14*
U.S. Cl. 29—888.061 5 Claims



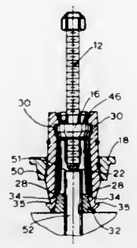
1. A method for preparing an engine block cylinder liner which comprises:
preparing a cast composite material of non-metallic ceramic particles and an aluminum alloy having a high melting temperature, and extruding the composite material into a tubular sleeve for use as an engine block cylinder.

5,255,434
PROCESS AND APPARATUS FOR THE CONTINUOUS PRODUCTION OF AN IRRIGATING TUBE
Fritz P. Sörgel, and Karl Dietrich, both of Rain am Lech, Fed. Rep. of Germany, assignors to Drossbach GmbH & Co., Rain am Lech, Fed. Rep. of Germany
PCT No. PCT/DE91/00228, § 371 Date Jan. 10, 1992, § 102(e) Date Jan. 10, 1992, PCT Pub. No. WO91/14549, PCT Pub. Date Oct. 3, 1991
PCT Filed Mar. 15, 1991, Ser. No. 778,883
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1990, 4009061
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—890.14 9 Claims



1. A process for the continuous production of an irrigating tube having trickling elements embedded between an inner tube and an outer tube, comprising the steps of: after extrusion and subsequent cooling of the inner tube, perforating the inner tube at regular intervals in the axial direction, subsequently reheating the inner tube, at least in the region of the perforations, pressing trickling elements into the surface of the inner tube at the heated perforation points to connect the trickling elements to the inner tube, subsequently extruding an outer tube around the inner tube provided with the trickling elements, thereby welding the outer tube with the trickling elements, and then perforating the outer tube at the points of the trickling elements using a further perforation device.

5,255,435
APPARATUS AND METHOD FOR REMOVING BEARINGS
William E. Shultz, 239 N. Main St., Lombard, Ill. 60148
Filed Oct. 14, 1992, Ser. No. 960,726
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—898.08 20 Claims

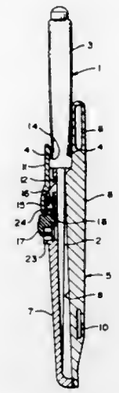


1. Apparatus for removing a bearing without removal of an internal mechanical part comprising:
an elongate bearing driving shaft;
contacting means for contacting an annular outer bearing surface, said contacting means having a tapered outer surface and including a bearing-contacting shoulder, said contacting means being connected to said elongated driving shaft when operatively assembled for removing a bearing;
adjusting means for adjusting said bearing driving shoulder to a desired dimension to contact at least a portion of said annular outer bearing surface; and
maintaining means for maintaining said bearing contacting shoulder in engagement with said outer bearing surface, said maintaining means having a tapered inner surface for contact against said tapered outer surface of said contacting means.

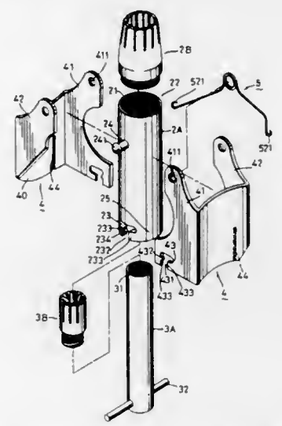
11. A method of removing a bearing in a device comprising:
expanding an expandable mandrel by inserting a mandrel expansion collar within the expandable mandrel, said expansion collar being threadedly mounted on a driving shaft and having an upper surface in contact with an interior drive shoulder within said mandrel;
disposing the mandrel about the exterior of the bearing so that one surface of said bearing is in contact with a driving shoulder of said mandrel;
compressing a lower portion of the mandrel to clamp the mandrel about the exterior of the bearing to secure the mandrel drive shoulder under an outwardly extending lip of said bearing;
threadedly extending said driving shaft within said mandrel so that a mandrel-received end of said driving shaft contacts a mechanical part extending upwardly from a longitudinal axis of said bearing;
continuing the extension of the driving shaft within the mandrel to lift the bearing upwardly, thereby removing the bearing from its seated position.

5,255,436
KNIFE AND SHEATH ASSEMBLY
Kazuo Yoshida, Hikari-Cho, Seki-City, Gifu Pref, Japan
Filed Dec. 4, 1992, Ser. No. 985,327
Int. Cl.[5] B26B *29/02*
U.S. Cl. 30—151 3 Claims

1. A knife and sheath assembly comprising:
a) a knife including a blade and a handle provided with at least one recess therein;
b) a sheath for receiving said blade, said sheath including a tang having a front end engageable within said recess for preventing withdrawal of said blade from said sheath and a second end engageable by a user for releasing said first end from said recess to permit withdrawal of said blade from said sheath, and a latch disposable between a first position for locking the front end within said recess and a second position for permitting release of said front end from said recess.

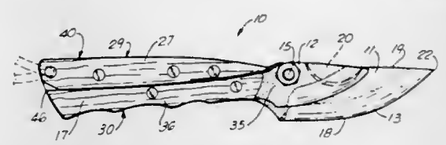


5,255,437
CLIPPER FOR TRIMMING HAIR IN A NOSTRIL
Chi-Fu Chen, No. 3; Alley 16, Lane 242 Chung-Cheng S. Rd., Chia-Ting Tsun, Yung-Kang Hsiang, Tainan Hsien, Taiwan
Filed Feb. 18, 1993, Ser. No. 19,050
Int. Cl.[5] B26B *19/14*
U.S. Cl. 30—29.5 3 Claims



1. A clipper for trimming hair in a nostril, comprising:
a first hollow cylindrical tube including a wall body that has an upper end provided with a first trimming device, a lower end, two diametrically opposed pivot rods extending radially outward from said wall body adjacent to said upper end, a pair of opposed oblong circumferential slots formed adjacent to said lower end, and a pair of opposed axial accesses, each of said axial accesses extending from the periphery of said lower end and being communicated with a respective one of said oblong circumferential slots, each of said axial accesses having two opposed faces, one of said opposed faces being provided with a projection which cooperates with a remaining one of said opposed faces to form a predetermined clearance therebetween;
a second hollow cylindrical tube having an upper end provided with a second trimming device and a lower end formed with a pair of diametrically opposed engaging rods that extends radially outward from said second hollow tube, said engaging rods having a diameter that is wider than said predetermined clearance;
a pair of pressing plates, each including a press portion with two parallel sides and first and second elongated flanges which extend perpendicularly and respectively from said parallel sides, each of said first and second elongated flanges having an upper portion provided with an engaging hole and a lower portion, said pivot rods of said first tube extending through said engaging holes of said first and second flanges to mount pivotally said pressing plates on said first tube, said lower portion of said first flange being formed with a notch, said second tube being inserted co-axially into said first tube such that said engaging rods of said second tube move past said clearance in said axial accesses to extend into said circumferential slots, said engaging rods of said second tube further extending outward through said notch of a respective one of said pressing plates; and
biasing means for biasing said pressing plates away from each other;
whereby, when said pressing plates are pressed toward each other against action of said biasing means, said engaging rods of said second tube are pushed by said pressing plates so as to rotate said second tube in a first direction relative to said first tube, thereby permitting said first and second tubes to trim cooperatively said hair, when said pressing force on from said pressing plates is removed, said biasing means expands to push said pressing plates away from each other, thereby pushing said engaging rods so as to rotate said second tube in a second direction opposite to said first direction relative to said first tube.

5,255,438
COMBINATION KNIFE AND SHEARS APPARATUS
Ronnie F. Morgan, 541 Mt. Sinai Rd., Foxworth, Miss. 39483
Filed Jan. 28, 1993, Ser. No. 10,612
Int. Cl.[5] B26B *13/00*
U.S. Cl. 30—254 15 Claims



1. A cutting knife apparatus comprising:
a) a knife main body having a first larger handle and a first larger blade member, the first larger blade member having a cutting edge along its length;
b) a knife secondary body having a second smaller handle and a second blade member that is shorter than the first larger blade member, the second blade member having a lower cutting edge and an upper edge that each terminate at a common point;
c) a pivot mounted on the knife main body for pivotally joining the main body and primary body;
d) the main and secondary bodies being pivotally movable relative to one another between folded and extended positions;
e) the main and secondary bodies each having cooperating abutting surfaces that closely engage when in the folded position;
f) the cutting edge of the second blade member and the upper edge of the first blade member having a pair of shearing surfaces for cutting objects placed therebetween in the extended position, and when the blade members are moved toward the folded position;
g) the first and second handles nesting together with the second smaller handle abutting a recess of the first larger

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handle in the folded position to form a single handle member with a generally continuous outer surface that can be gripped by the hand of a user and defining an envelope, each of the handle members having corresponding abutting surfaces that closely conform within the envelope substantially along the length of each handle member in the folded position;

h) wherein the first and second blades each have corresponding side portions that abut in the folded position; and

i) the larger blade having a concave recess that extends along its upper edge opposite the covering edge a partial distance from a position adjacent the pivot and forward the point of the larger blade, and the smaller blade extending beyond the concave Recess.

5,255,439

SPAGETTI TOOL

Olle G. Liss, Sturegatan 9, S-753 14 Uppsala, Sweden

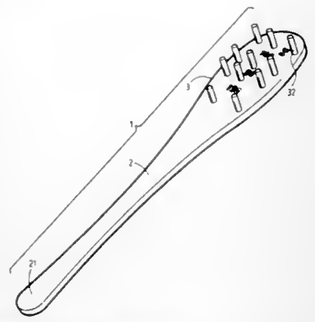
PCT No. PCT/SE90/00610, § 371 Date Mar. 26, 1992, § 102(e) Date Mar. 26, 1992, PCT Pub. No. WO91/04699, PCT Pub. Date Apr. 18, 1991

PCT Filed Sep. 25, 1990, Ser. No. 842,412

Claims priority, application Sweden, Sep. 26, 1989, 8903157

Int. Cl.[5] A47J *43/28, 43/00*

U.S. Cl. 30—322 **12 Claims**



1. A spaghetti tool, comprising:

a shaft with a lengthwise extending grippable portion and a base portion, which is located at a first end the shaft;

protruding elements that protrude from the base portion for grabbing of cooked spaghetti; and

measuring means for measuring predetermined portions of different serving amounts of uncooked spaghetti, said measuring means including:

for each predetermined portion, a corresponding measurement channel;

for each measurement channel, a marking, provided on the tool indicating the serving amount of uncooked spaghetti that fits in the measurement channel, corresponding to one of the predetermined portions.

5,255,440

ARCHERY ALIGNMENT METHOD

Karl G. Rogers, 308 E. 1700 South, Kaysville, Utah 84037

Filed Feb. 5, 1992, Ser. No. 831,554

Int. Cl.[5] F41G *1/467*

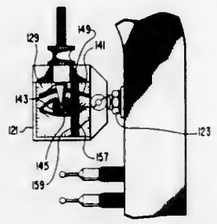
U.S. Cl. 33—265 **3 Claims**

1. A method for an archer for aligning an archery bow that has a tensioned bow string drawn by the archer, the method comprising:

(a) providing an alignment device mounted on the bow comprising a mounting means adapted to mount the device on the bow, a reflecting means attached to the mounting means, an alignment point proximate to the reflecting means, and a surface reference proximate to the reflecting surface, the reflecting means aligned in a manner such that when the device is mounted on the bow the reflecting means reflects an image of at least a portion of the archer and an image of at least a portion of the string to the aiming eye of the archer while the archer is in shooting position,

(b) assuming a shooting position,

(c) determining an archer reference point on the reflecting



means by reference to a distinctive feature in the reflected image of the portion of the archer, and a vertically aligned string axis on the reflecting means by reference to a distinctive portion in the reflected image of the portion of the string, and

(d) aligning the alignment point with the archer reference point, and the surface reference with the string axis.

5,255,441

PRISM POLE FOR A SURVEYING SYSTEM

Bradley C. Burgess, 527 Pembrook Ct. N., Crystal Lake, Ill. 60014, and Joseph D. Esker, P.O. Box 224, Teutopolis, Ill. 62467

Filed Feb. 16, 1993, Ser. No. 17,813

Int. Cl.[5] G01C *15/08*

U.S. Cl. 33—295 **2 Claims**



1. An improved prism pole for use in a surveying system, comprising:

a) a pole having a first point at one end thereof and a prism assembly at the opposite end thereof, said first point being engageable with a point being located to orient the prism assembly in a first position;

b) a second point mounted adjacent the prism assembly, said second point being engageable with the point being located to orient the prism assembly in a second position; and

c) first and second level vials mounted on said pole such that the first level vial is observable when said prism assembly is in the first position and said second vial is observable when said prism assembly is in the second position.

5,255,442

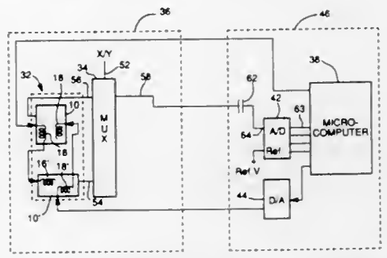
VEHICLE COMPASS WITH ELECTRONIC SENSOR

Kenneth L. Schierbeek, Zeeland, and Kenneth Schofield, Holland, both of Mich., assignors to Donnelly Corporation, Holland, Mich.

Filed Dec. 20, 1991, Ser. No. 811,578

Int. Cl.[5] G01C *17/28;* **G01R** *33/06*

U.S. Cl. 33—361 **25 Claims**



1. An electronic compass for use in a vehicle comprising:

a magnetoresistive sensor for detecting an external magnetic field and developing electronic signals representative of said external magnetic field, said external magnetic field being a combination of the earth magnetic field and a deviating field of the vehicle,

a digital electronic circuit for determining the strength and direction of the vehicle deviating magnetic field,

said sensor including means for nullifying said deviating magnetic field in said sensor,

said nullifying means being coupled with said electronic circuit and energized thereby in accordance with the strength and direction of said deviating magnetic field whereby said sensor develops a deviation compensated signal corresponding to the earth field.

5,255,443

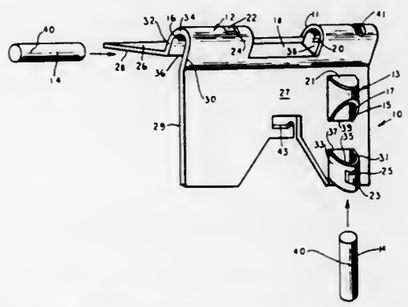
POST LEVEL WITH DETENT

Sheldon P. Schmidt, Paramus, N.J., assignor to Great Neck Saw Manufacturing, Inc., Mineola, N.Y.

Filed Oct. 30, 1992, Ser. No. 969,067

Int. Cl.[5] G01C *9/28*

U.S. Cl. 33—373 **17 Claims**



1. A level comprising a body member having a planar working surface;

a vial holder integrally attached to said body member;

said vial holder having a D-shaped channel extending therethrough;

a stop attached to said vial holder at a first end of said D-shaped channel;

a detent movably attached to said vial holder and spaced from said stop;

a level vial adapted to be pushed into said D-shaped channel with a first end of said vial resting against said stop and with said detent engaging a second end of said level vial.

5,255,444

MICROWAVE DRYING/MIXING APPARATUS

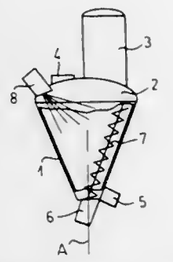
Jürgen Oess, Dachau, Fed. Rep. of Germany, assignor to Krauss-Maffei Aktiengesellschaft, Munchen, Fed. Rep. of Germany

Filed Feb. 4, 1992, Ser. No. 830,714

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1991, 4103455

Int. Cl.[5] B01K *5/00*

U.S. Cl. 34—1 P **3 Claims**



1. A drying apparatus comprising:

a generally upwardly flared housing having an upper end provided with a cover and a lower end provided with an outlet;

a mixing auger mounted on and extending upward from the lower housing end in the housing and rotatable to mix particulate material in the housing;

drive means on the lower housing end connected to the auger for rotating same in the housing;

an adapter ring on the upper end of the housing between the housing and the cover; and

a microwave magnetron mounted at the upper housing end on the adapter ring and directed downward inside the housing to irradiate and heat the particulate material in the housing.

5,255,445

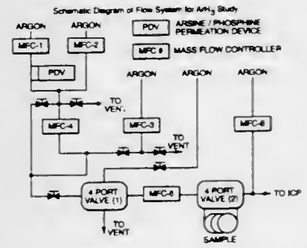
PROCESS FOR DRYING METAL SURFACES USING GASEOUS HYDRIDES TO INHIBIT MOISTURE ADSORPTION AND FOR REMOVING ADSORBED MOISTURE FROM THE METAL SURFACES

Yao-En Li, Buffalo Grove; John Rizos, Frankfort, and Gerbard Kasper, Downers Grove, all of Ill., assignors to American Air Liquide, Chicago Research Center, Countryside, Ill.

Filed Jun. 6, 1991, Ser. No. 713,395

Int. Cl.[5] F26B *3/00*

U.S. Cl. 34—22 **17 Claims**



1. A process for drying a metal surface to enhance the stabil-

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ity of a gas mixture containing one or more gaseous hydrides in low concentration in contact therewith, which comprises:

(a) purging gas in contact with said metal surface with inert gas to remove purged gas,

(b) exposing the metal surface to an amount of a drying agent comprising an effective amount of one or more gaseous hydrides selected from the group consisting of silicon, germanium, tin and lead, and for a time sufficient to dry the metal surface, and

(c) purging the drying agent using inert gas.

5,255,446

METHOD FOR ELIMINATING POLLUTANTS AND/OR BAD-SMELLING SUBSTANCES FROM A GASEOUS FLOW PRODUCED BY THE DRYING OF A DAMP SUBSTRATE

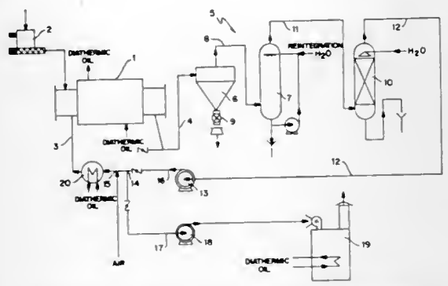
Corrado Vezzani, Milan, Italy, assignor to Vomm Impianti E Processi S.r.L., Milan

Filed Nov. 6, 1992, Ser. No. 972,634

Claims priority, application Italy, Nov. 6, 1991, MI 91 A 002944

Int. Cl.[5] F26B *21/00*

U.S. Cl. 34—32 **8 Claims**



1. (Amended) A method for eliminating pollutants and/or bad-smelling substances from a gaseous flow produced by the drying of a damp substrate, which comprises the following stages:

subjecting the said gaseous flow to a treatment for the separation of suspended solids and to dehumidification;

recycling the gaseous flow thus obtained to a drying apparatus, after extraction of a portion thereof and subsequent reintegration with an appropriate drying fluid, and heating of the reintegrated gaseous flow; and

subjecting the extracted portion of the gaseous flow to combustion with the simultaneous destruction of the pollutants and/or bad-smelling substances.

5,255,447

HEAT PROTECTION HOOD

Alfred Christ, Zürich, Switzerland, assignor to Sulzer-Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany

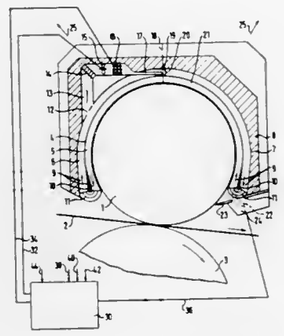
Filed Feb. 24, 1992, Ser. No. 840,769

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1991, 4105978

Int. Cl.[5] D06F *58/00*

U.S. Cl. 34—114 **23 Claims**

3. Heat protection hood for a heated roll comprising: an outer screen partially surrounding the roll and extending concentrically to the roll, the outer screen forming, together with a likewise concentrically extending partition screen disposed between the outer screen and the roll, an inner gap and an outer gap; and in that respective deflection zones for air drawn along by the roll in the inner gap adjoin the ends of the partition screen with inbuilt deflector units which are attached directing the air flow into the respective other gap the heat



protection hood being of two part construction and a partition joint being location in a region of an opening of an air injector.

5,255,448

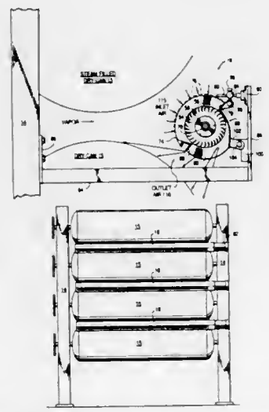
DRY CAN DRYING APPARATUS HAVING TANGENTIAL BLOWERS

Lynn Buckner, P.O. Box 609, Chickamauga, Ga. 30707

Filed Jun. 18, 1992, Ser. No. 900,565

Int. Cl.[5] F26B *3/08*

U.S. Cl. 34—114 **18 Claims**



1. Apparatus for drying material of indeterminate length, comprising:

a plurality of rollers around which the material is advanced, each roller having an axial length;

a source of heat to dry the material;

at least one tangential blower extending substantially parallel to and adjacent to one of said rollers, said tangential blower including an inlet opening, an outlet having a length substantially equal to the axial length of said rollers, and means for moving air through said tangential blower, said air moving means comprising air moving surfaces substantially parallel to said one of said rollers, said air moving surfaces each having a length substantially equal to the axial length of said rollers;

whereby said tangential blower moves a substantially equal volume and pressure of air throughout the axial length of said rollers.

5,255,449

CLOTH DRYER

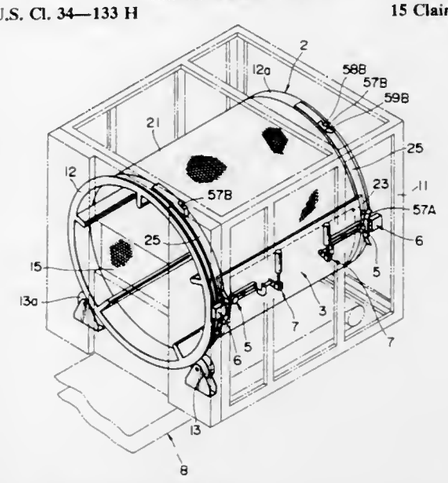
Yoshizo Nakamura, and Matashige Kanzaki, both of Takamatsu, Japan, assignors to Tokai Co., Ltd., Japan

Filed Sep. 28, 1992, Ser. No. 951,826

Claims priority, application Japan, Nov. 8, 1991, 3-293408

Int. Cl.[5] F26B *11/04*

U.S. Cl. 34—133 H **15 Claims**



1. A cloth dryer comprising:

a frame;

a cylindrical drum having a cylindrical wall and defining therewithin a drying chamber for cloths and rotatably supported by said frame about a central, horizontal axis thereof;

means for rotating said drum about said central axis;

an opening formed in said cylindrical wall of said drum for discharging the cloths from said drying chamber therethrough;

a cover plate supported on said drum and movable relative to said drum between first and second relative positions so that said opening is closed when said cover plate is positioned in said first relative position and is opened when said cover plate is positioned in said second relative position, whereby the cloths within said drying chamber are discharged by gravity therefrom through said opening when said drum is stopped with said opening in a downwardly oriented position and when said cover plate is located in said second relative position;

holding means supported on said frame for engaging and holding said cover plate in a predetermined position fixed with respect to said frame, whereby when said cover plate is held with said holding means in said predetermined position, said cover plate is movable between said first and second relative positions by rotation of said drum;

locking means for locking said cover plate in said closed position, said locking means comprising a latch member moveable relative to said cover plate between an extended position and a retracted position and latch receiving means for engaging and holding said latch member in said extended position, one of said latch member and said latch receiving means being mounted on said cover plate and the other of said latch member and said latch receiving means being mounted on said drum; and

means disposed adjacent to said drum for blowing air into said drying chamber.

5,255,450

Patent Not Issued For This Number

5,255,451

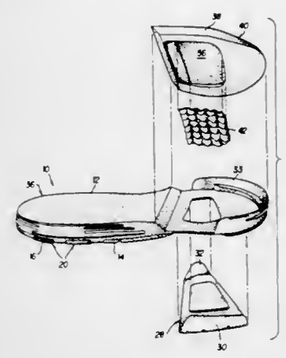
INSERT MEMBER FOR USE IN AN ATHLETIC SHOE

James K. Tong, San Gabriel, Calif.; David Cousin, Tualaxin, and Dan Richard, Portland, both of Oreg., assignors to Avia Group International, Inc., Portland, Oreg.

Continuation of Ser. No. 284,343, Dec. 14, 1988. This application Sep. 3, 1991, Ser. No. 754,157

Int. Cl.[5] A43B *13/18*

U.S. Cl. 36—30 A **19 Claims**



1. A sole for an athletic shoe comprising:

a. an outsole having a heel portion, and a metatarsal area, said heel portion including a central heel portion and a plurality of lugs forming the periphery of said heel portion for contacting the ground and maintaining said central heel portion at a spaced relationship from the ground; and

b. a midsole disposed above said outsole and including a forefoot component which includes a forefoot foam member defining a recess; and an insert member disposed within said recess, said insert member being formed from a resilient material which tends to return to its original shape when deformed, said insert member comprising a plurality of undulations, wherein undulations spread laterally when compressed by vertical forces.

5,255,452

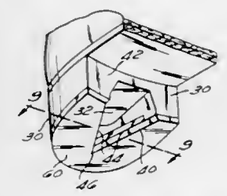
METHOD AND MEANS FOR CREATING ANTI-GRAVITY ILLUSION

Michael J. Jackson, Los Angeles; Michael L. Bush, and Dennis Tompkins, both of Hollywood, Calif., assignors to Triumph International, Inc., Los Angeles, Calif.

Filed Jun. 29, 1992, Ser. No. 905,479

Int. Cl.[5] A43B *5/00, 3/00*

U.S. Cl. 36—113 **13 Claims**



1. A system for engaging shoes with a hitch mans to permit a person standing on a stage surface to lean forwardly beyond his or her center of gravity, comprising:

at least one shoe having a heel with a first engagement means, said first engagement means comprising a recess formed in a heel of said shoe covered with a heel slot plane located at a bottom region of said heel, said heel slot plate having a slot formed therein with a relatively wide open-

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ing at a leading edge of said heel and a narrower terminal end rearward of said leading edge, said recess being larger in size above said terminal end of said slot than is said terminal end of said slot; and

a second engagement means, detachably engageable with said first engagement means, comprising a hitch member having an enlarged head portion connected by a narrower shank portion to a means for raising and lowering said head of said hitch member above and substantially level with or below said stage surface, said head portion being larger in size than said terminal end of said slot and said shank portion being narrower than said terminal end of said slot, wherein said hitch member can be moved through apertures in said stage surface between a projecting position raised above said stage surface and a retracted position at or below the stage surface, and when said head portion of said hitch member is raised above said stage surface, said first engagement means can be detachably engaged with said projecting hitch member, thereby allowing a person wearing the shoes to lean forwardly with his or her normal center of gravity beyond a front region of said shoes, and maintain said forward lean.

5,255,453

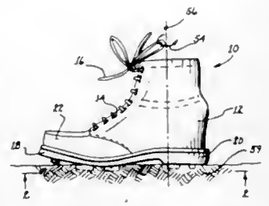
FOOTBALL SHOE AND METHOD THEREFOR

Harry M. Weiss, 6611 N. Central Ave., Phoenix, Ariz. 85012

Filed Feb. 1, 1990, Ser. No. 473,610

Int. Cl.[5] A43C *15/00*

U.S. Cl. 36—134 **10 Claims**



1. An athletic shoe comprising:

a vertical portion for enclosing a portion of a person's foot;

a sole located on the bottom portion of said shoe; and a plurality of cleats fixedlyconnected to a flat lower sruface of said sole;

each cleat having a bottom portion and a top portion; and

means connected to each sleat top portn and to an adjacent portion of the sole lower surface having a preselected level of shear failure stress for causing eachcleat to breakaway from said sole when the shear failure stress corresponding to at least the preselected shear force is applied at an angle to said cleat, the entire portion of each cleat being below the flat lower surfaace of said sole.

5,255,454

APPARATUS FOR PREPARING TRENCHES

Rice H. Pounds, Kenansville, Fla., assignor to Pounds Motor Company, Winter Garden, Fla.

Filed Jun. 29, 1992, Ser. No. 905,741

Int. Cl.[5] E02F *5/08*

U.S. Cl. 37—94 **9 Claims**

1. An apparatus for preparing trenches by removing earth in the ground, the apparatus comprising:

an elongated frame;

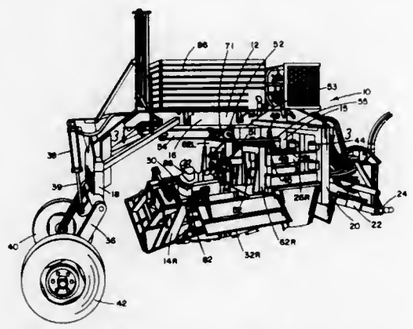
a left and a right support;

a link assembly pivotally carrying said supports with said frame;

a left and a right rotatable cutter, each cutter having an axis of rotation which is inclined with respect to horizontal and having a plurality of blades extending radially outward from said axis of rotation;

at least one motor operative to rotate said cutters about a respective axis to cut a trench out of the ground;

a left and a right cover pivotally connected to said respective left and right support at a preselected orientation and radially aligned with said blades, said cover orientation



being selected to control the angle at which earth is projected over the side of the trench when the cutter rotates to prepare a trench; and

means for remotely varying the orientation of said covers on said support to change the angle at which the earth is being projected.

5,255,455

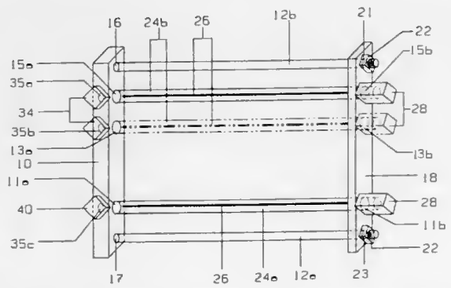
ADJUSTABLE FRAME FOR SCROLLING AND STRETCHING NEEDLEPOINT FABRICS

David G. Hopper, 131 E. Sandle Ave., Pittsburgh, Pa. 15237, assignor to David G. Hopper, Pittsburgh, Pa.

Filed Aug. 10, 1992, Ser. No. 927,457

Int. Cl.[5] D06C *3/08*

U.S. Cl. 38—102.1 **1 Claim**



1. A fabric stretching frame device comprising, in combination:

A) a pair of parallel upright frame members, one being a right side upright frame member and the other being a left side upright frame member, said upright members positioned such that the width of the fabric stretching frame device is defined by an area between said upright frame members;

B) a pair of parallel horizontal frame members, one being an upper horizontal frame member and the other being a lower horizontal frame member, said horizontal members positioned such that the height of the fabric stretching frame device is defined by an area between said horizontal frame members, and said horizontal frame members being attached to the aforementioned upright frame members, each horizontal frame member comprising a stop peg and said horizontal frame members are affixed to the aforementioned parallel upright frame members by clamping

said parallel upright frame members between said stop pegs and threaded nuts which thread onto the ends of said horizontal frame members forming a rigid frame structure and enabling said fabric stretching frame device to be effectively assembled and disassembled;

C) a pair of parallel horizontal rods, one being an upper horizontal rod and the other being a lower horizontal rod, said rods passing through and perpendicular to the aforementioned upright frame members, said rods having means for attaching and tensioning fabric thereto, said fabric being wrappable around said parallel horizontal rods and a work area of said fabric is defined by an area between said parallel horizontal rods;

D) a means for immobilizing the aforementioned parallel horizontal rods consisting of threaded rods passing through said upright frame members for applying pressure to said horizontal rods through direct physical contact, whereby fabric tension is maintained between said horizontal rods.

5,255,456

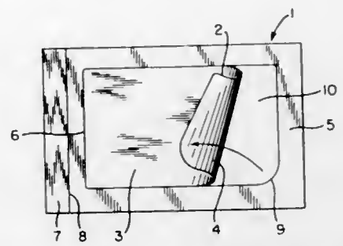
DOUBLE LAYER CARD

Roger Franklin, 237 Mamaroneck Ave., White Plains, N.Y. 10605-1377

Filed Mar. 25, 1988, Ser. No. 173,431

Int. Cl.[5] G09F *1/00*

U.S. Cl. 40—124.1 **18 Claims**



1. A double layer card comprising a printed front card and a rear card printed on both sides and each having top and side edges, said cards joined at the top and side edges, said front card having a removable printed perforated flap in the unjoined area, said printed perforated flap including at least one rounded continuously cut corner so as to permit easy removal of said perforated flap from the front card to reveal at least a portion of the printed rear card which is a postal reply card.

5,255,457

FIGURINE PICTURE FRAME

Erik Lipson, 213 S. Bonsall St., Philadelphia, Pa. 19103

Filed Nov. 8, 1991, Ser. No. 789,598

Int. Cl.[5] A47G *1/06*

U.S. Cl. 40—152.1 **10 Claims**



1. A combined figurine-picture frame comprising:

a body portion shaped to represent the body of a mammal,

said body portion comprising an elongated pair of arms, an elongated pair of legs and a torso, at least a portion of said body portion being formed from cylindrical tubing having at least a first end and a second end;

a head portion supported on the body portion, said head portion including a front section formed from cylindrical tubing, said front section comprising a peripheral framing member lying in substantially a single plane, and head portion further including a back section formed from cylindrical tubing, said back section abutting against said front section so as to form a groove in said frame for receipt of a picture; and

a picture insertion slot formed between the back section and the front section of the head portion, the picture insertion slot, and the back section and the front section of the head portion being adapted to engage opposite sides of a picture and thereby support and display said picture relative to said body portion.

5,255,458

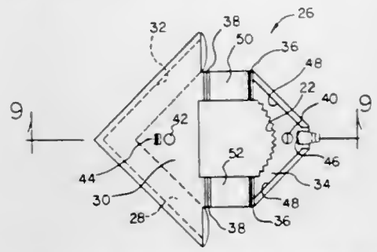
THREE-DIMENSIONAL PICTURE CORNERS

Alan R. Piel, P.O. Box 38, Watersmeet, Mich. 49969

Filed Nov. 21, 1991, Ser. No. 795,503

Int. Cl.[5] B44C *5/02*

U.S. Cl. 40—159.1 **2 Claims**



1. A three-dimensional corner mount for a planar element to be mounted on a wall comprising:

a corner mount having a triangular shaped backing member, a frame member and a wall connecting said triangular shaped backing member and said frame member in a spaced apart manner to define a space between said backing member and said frame member sufficient to receive therein a corner of said planar member to be mounted on a wall,

said triangular shaped backing member having an integral hinged portion extending from one edge thereof, said hinged portion having a connector portion attached thereof said hinged portion having a hinge axis parallel to said one edge wherein said connector portion is adapted to be bent back and positioned over the side of said backing member opposite to said frame member,

said backing member having an aperture therein,

said connector member having a protrusion thereon adapted to extend through said aperture when said connector portion is bent back and positioned over said one side of said backing member,

said backing member one side having an upstanding member and said connector portion having an engagement member adapted to cooperate with said upstanding member to maintain said connector portion bent back over said one side of said backing member with said protrusion extending through said aperture for engaging a planar member received in said corner mount and for frictionally engaging said planar member between said frame member and said backing member.

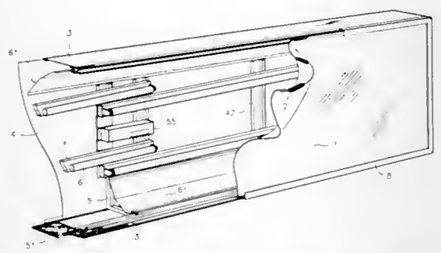
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5,255,459

FRAMING SYSTEM FOR SIGNS

Normand Verret, 68 P'tiso Park, Edmundston, N. B., Canada E3V 3X7

Filed Dec. 12, 1991, Ser. No. 805,680
Int. Cl.[5] G09F *17/00*
U.S. Cl. 40—603 3 Claims



1. A framing system for signs comprising in combination;
a generally rectangular casing having two end members, and top and bottom members, joining one another at corners,
said casing members defining a front plane, a rear plane, an inner zone, and an outer zone,
a slot along the said casing members, said slot facing forwardly and having a wall near the said outer zone,
said wall having an inner surface covered partly by serrations, said serrations being parallel with the axis longitudinal of said members,
a face material stretched across the said front plane by means of tensional devices installed on a border of the said face material,
said border being folded half a turn over each tensional device,
said tensional device having embossments to engage into the said serrations inside the said slot,
said embossments being slightly inclined rearwardly, providing engagement means to snappingly engage with successive serrations thereby stretching the said face material,
said fold, in reaction to tension in the said face material, applying a torsional moment on the said tensional devices and thus securing the said embossments from slipping from their positions on the said serrated wall,
a skeletal structure comprising; the said top and bottom members of the said casing, and a series of C-frames attached at regular intervals along the said top and bottom members,
said C-frame comprising a vertical stem located in the said rear plane, and two arms pointing towards the front plane, one at each extremity of the stem, said one being adjacent to the top member and said other one being adjacent to the bottom member,
wherein
said skeletal structure provides the means of strengthening said casing against the tension of the face material, without intersecting the inner zone of the said casing.

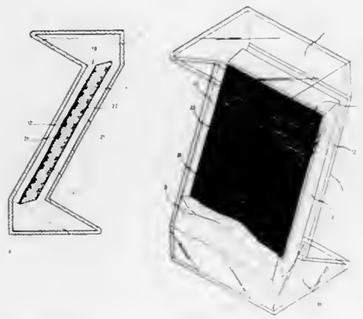
5,255,460

DIAGRAMMATIC INDICATOR PLATE ASSEMBLY

Vincent K. W. Lee, No. 44, Lane 458, Sheh Chung Street, Taipei, Taiwan

Filed Aug. 13, 1992, Ser. No. 929,135
Int. Cl.[5] G09F *19/00*
U.S. Cl. 40—409 3 Claims

1. A diagrammatic indicator assembly comprising:
a hollow, transparent housing which is substantially Z-shaped in side view with upper and lower terminal portions interconnected by an angled central portion, said angled central portion being defined by spaced, substantially parallel wall members, said terminal portion defining a first and second reservoirs within said housing and being adapted to support said housing in a first upright position and an inverted, upright position respectively;
a plate mounted within said housing, said plate having first and second opposed side surfaces that extend substantially parallel to said angled central portion, said plate being spaced from each of said wall members by a predetermined distance so as to define first and second passages located between said first and second side surfaces and said wall members respectively, each of said first and second passages opening into said first and second reservoirs, each of said first and second side surfaces including a plurality of holes therein; and



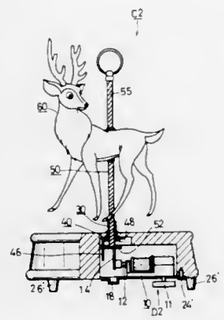
a sandy medium retained within said housing, said sandy medium being adapted to flow from said first reservoir, within said first passage and over said first side surface, toward the second reservoir while retaining at least a portion of the sandy medium in the holes provided in said first side surface when said housing is moved from said inverted upright position to said first upright position and to flow from said second reservoir, within the second passage and over said second side surface, toward said first reservoir while retaining at least a portion of the sandy medium in the holes provided in said second side surface when said housing is moved from said first upright position to said inverted, upright position.

5,255,461

SOUND PRODUCING DECORATIVE ARTICLE

Long-Fu Chiou, 3F, No. 15, Lane 47, Nan-Hsiao St., Changhua Hsien, Taiwan

Filed Oct. 27, 1992, Ser. No. 967,168
Int. Cl.[5] G09F *19/08*
U.S. Cl. 40—415 5 Claims



1. A sound producing decorative article, comprising:

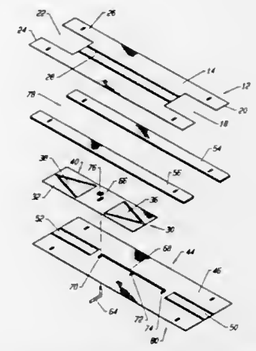
a decorative toy;
a housing having a top, a bottom, a surrounding wall connected to said top and said bottom, and a cavity being cooperatively formed thereby, said top having a first opening communicated with said cavity, said bottom having a second opening communicated with said cavity;
a tubular supporting member having a top portion, a bottom portion, an intermediate portion interconnecting said top and bottom portions, and a collar extending radially from said intermediate portion, said collar resting detachably on said top of said housing, said bottom portion passing through said first opening of said top of said housing and protruding into said cavity;
a guiding unit provided in said cavity of said housing, said guiding unit including a mounting member removably attached around said bottom portion of said tubular supporting member, and a guiding rod extending downwardly from said mounting member;
means for fastening said tubular supporting member and said mounting member of said guiding unit on said housing;
a toy supporting unit including an elongated first post that has a top end on which said decorative toy is to be detachably mounted and a bottom end, and an engaging member fixed to said first post adjacent to said bottom end, said engaging member having a notch formed thereon, said first post extending slidably through said tubular supporting member via said cavity of said housing and said notch of said engaging member slidably engaging said guiding rod when said toy supporting unit is mounted detachably on said housing; and
means for moving said toy supporting unit upward and downward, said moving means including a base plate, a sound generating unit mounted on said base plate, an eccentric wheel mounted rotatably on said base plate, and a driving mechanism mounted on said base plate to rotate said eccentric wheel and said sound generating unit to produce sound, said eccentric wheel having a periphery which supports said engaging member of said toy supporting unit while said eccentric wheel, said sound generating unit and said driving mechanism are received in said cavity when said base plate is mounted detachably on said bottom of said housing in order to close said second opening of said bottom.

5,255,462

SIGN WITH VARIABLE INDICATORS

Robert W. Rufenacht, 191 Elderwood Dr., Pleasant Hill, Calif. 94523

Filed Nov. 8, 1991, Ser. No. 789,280
Int. Cl.[5] G09F *7/00*
U.S. Cl. 40—488 6 Claims



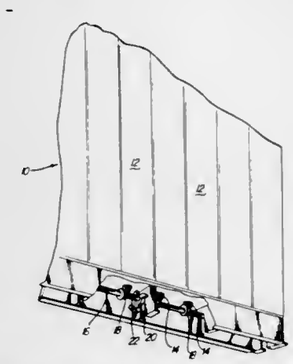
1. A sign having variable indicators comprising:
a. a static member having a first surface and a second surface and further comprising a first slot and a second slot spaced along said static member between said first and second surfaces;
b. a movable member including a first surface and a second surface, said first surface of said movable member including direction indicating indicia, said movable member first surface being capable of traveling adjacent said second surface of said static member such that said direction indicating indicia align with said static and second slots of said first member;
c. a backing member adjacent said movable member, said backing member having a channel therealong;
d. a structural element connected to said movable member and extending through said channel of said backing member said structural element being accessible adjacent said backing member;
e. hold means for removably fixing said structural element along said channel; and
f. guiding means for confining said movable member to the vicinity of said static member.

5,255,463

ROTATING SIGN ASSEMBLY

Paul H. Werner, 12326 E. McNichols, Detroit, Mich. 48205

Continuation of Ser. No. 389,635, Aug. 4, 1989, abandoned. This application Jan. 2, 1992, Ser. No. 815,859
Int. Cl.[5] G09F *11/02*
U.S. Cl. 40—505 14 Claims



11. An intermittent drive mechanism comprising:
a driven shaft;
a multi-armed cam attached to said driven shaft, each arm of said at least one multi-armed cam having a convex driving surface and a linear stop abutment surface;
means for alternately engaging opposite sides of each arm of said multi-armed cam in a predetermined sequence to respectively rotate and prohibit the rotation of said multi-armed cam; and
a motor having a rotary output rotating said means for ultimately engaging to intermittently rotate said multi-armed cam;
wherein said means for alternately engaging comprises:
a first plate and a second plate attached to said rotary output of said motor, said second plate being angularly offset relative to said first plate, said first plate and said second plate alternately engaging said multi-armed cam;
a first pin fixed adjacent to said first end of said first plate and a second pin fixed adjacent to said second end of said first plate, said first pin and said second pin alternately engaging one of said convex driving surfaces of an arm of said multi-armed cam to intermittently rotate said multi-armed cam, and said second plate engages said linear stop abutment surface of a next arm of said multi-arm cam to inhibit rotation of said multi-arm cam with a continued rotation of said first and second plates.

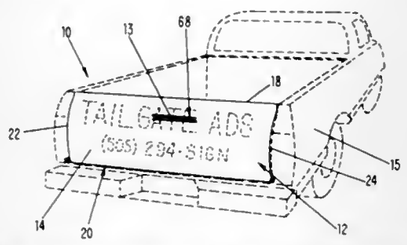
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5,255,464

TAILGATE SIGN

Robert L. Marecek, 12501 Prospect, NE., Albuquerque, N. Mex. 87112

Continuation of Ser. No. 409,532, Sep. 27, 1989, abandoned. This application Feb. 1, 1991, Ser. No. 649,155
Int. Cl.[5] G09F *21/04*
U.S. Cl. 40—591 22 Claims



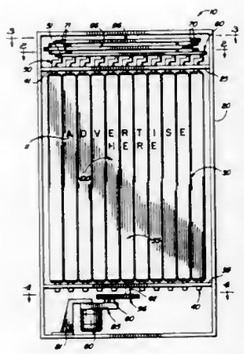
1. In combination, a removably attachable truck tailgate sign and a truck tailgate, said truck tailgate having predetermined size, outer and inner surfaces, sides, and top and bottom edges, said truck tailgate sign removably attachable to and movable with said truck tailgate, said truck tailgate sign comprising:
a generally rectangular display element comprising flexible planar material for traverse placement on said outer surface of said truck tailgate and movable and integral therewith, said display element having top and bottom edges and being large enough to overlap said top and bottom edges of said truck tailgate; and
means for securing said display element to said truck tailgate with said top and bottom edges of said display element overlapping said top and bottom edges of said truck tailgate, said means being secured to said overlapping edges of said display element and extending from said top and bottom edges of said display element along said inner surface from said top and bottom edges of said truck tailgate.

5,255,465

MULTIPLE DISPLAY SIGN ASSEMBLY

Hector Perez, 1946 NW. 93rd Ave., Miami, Fla. 33172

Filed Jun. 5, 1992, Ser. No. 894,457
Int. Cl.[5] G09F *11/02*
U.S. Cl. 40—505 5 Claims



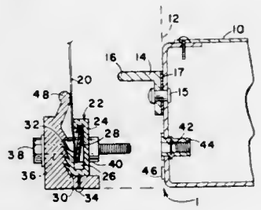
1. A multiple display sign assembly comprising:
a frame structure, said frame structure including a pair of spaced, parallel, horizontal support bars spanning said frame structure,
a plurality of elongate, lightweight triangule members,
said triangle members each including an axle bar ex tending longitudinally through a center thereof, a rotation of said axle bars resulting in a rotation of said triangle members,
said axle bars protruding through said pair of support bars so as to hold said triangle members rotatably between said support bars,
each of said axle bars including a crank member protruding from a distal end thereof
an elongate connector bar connected to a distal end of each of aid crank members such that when one of said crank members is caused to rotate, all of said crank members equally rotate, thereby resulting in all of said triangle members simultaneously turning,
a pair of parallel guide bars, said guide bars including a central guide bar and a fixed guide bar, said fixed guide bar being attached to said frame structure,
said central guide bar being pivotally attached to said connector bar and said fixed guide bar at each opposite distal end thereof, by a pair of scissor connectors,
a motor mounted within said frame structure, said motor being externally powered,
a reducer connected to said motor, said reducer being structured and disposed o regulate and lessen the RPM's resulting from said motor,
a drive gear, said drive gear connected to said motor through said reducer so as to turn at a predetermined number of RPM's,
a secondary group, said secondary gear being fixedly secured to a proximal end of one of said axle bars so as to result in a turning of said axle bar when said secondary gear turns,
said drive gear include teeth only along 120° of its exterior surfaced such that only when said teeth engage said secondary gear will said secondary gear rotate resulting in the turning of said triangle members 120° to expose a new face thereof every time said teeth engage said secondary gear,
said triangle members each including three of said faces, only one of said faces being outwardly disposed at one time as part of a display surface upon which indicia is positioned, all of said faces being rotatably positioneable as part of said display surface, thereby enabling three distinct display surfaces to be exhibited, and
wherein substantially all of the assembly may be formed of a lightweight, yet sturdy material so as to enable said frame structure o be hung and displayed in numerous locations incapable of holding heavy structures.

5,255,466

FLEXIBLE FACE SIGN

Delbert W. Synder, Columbus, Ohio, assignor to Sign Strut Ltd., Dublin, Ohio

Continuation-in-part of Ser. No. 699,342, May 13, 1991. This application Mar. 5, 1992, Ser. No. 847,754
Int. Cl.[5] G09F *17/00*
U.S. Cl. 40—603 29 Claims



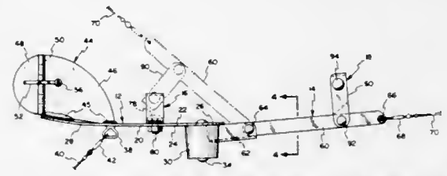
1. A flexible sign face comprising:
a relatively rigid and strong main frame having at least our face plane;
a low strength light weight cover frame removably mounted to the main frame at the face plane;
a flexible sign face for carrying a display and having a plurality of outer edges;
preliminary tensioning means connected between the outer edges of the flexible sign face and the cover frame for pretensioning the sign face across the cover frame for avoiding wrinkles in the sign face and for supporting the sign face in a planar configuration; and
final tensioning means connected between the cover frame and the main frame for fully engaging and rigidly attaching the cover frame to the main frame and for urging the sign face toward the face plane of the main frame and for completely tensioning and bracing the flexible sign face.

5,255,467

HYDRODYNAMIC FISHING SINKER

Robert K. Haskell, 825 Wikiup Dr., Santa Rosa, Calif. 95403

Filed Jul. 17, 1992, Ser. No. 914,393
Int. Cl.[5] A01K *91/00*
U.S. Cl. 43—43.13 20 Claims



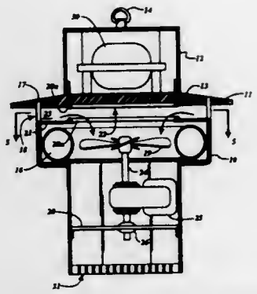
1. A hydrodynamic sinker for attachment to a fishing line and a leader to which a lure is attached, said sinker comprising:
a) a plate member having upper and lower surfaces connected to the leader;
b) weight means connected to one of said surfaces of said plate member for effecting a diving attitude of the plate member in the water;
c) an arm pivotally connected at one end to said plate member, the opposite end thereof being connected to the fishing line;
d) said arm being movable towards said plate member as the latter assumes a diving attitude when the line is slack;
e) clip means fixed to one of said plate member surfaces;
f) said clip means comprising a pair of spaced, opposed, resilient jaw members having front and rear faces;
g) latch means carried by said arm, and moving with said arm into locking engagement with said clip means when said arm approaches said plate member;
h) said latch means comprising a link pivotally engaged with said arm, a first portion of said link extending between said jaw members;
i) locking means carried by a second position of said link and sequentially engageable with the front and rear faces thereof, said locking means being larger in size than the space between said jaw members to normally prevent passage of said second portion between said jaw members; and,
j) spring means for normally urging said link into a position substantially at a right angle to said arm, said link pivoting against the tension of said spring as said locking means moves longitudinally of the front faces of said resilient jaw members;
k) said latch means being disengaged from said clip means under force exerted on said arm by a fish striking the lure or by a fisherman pulling on the fishing line.

5,255,468

INSECT ATTRACTING AND CAPTURING APPARATUS

Joseph M. Cheshire, Jr., Riverdale, Ga., assignor to Bugvac U.S.A., Inc., Atlanta, Ga.

Filed Jul. 26, 1991, Ser. No. 736,235
Int. Cl.[5] A01M *1/04*
U.S. Cl. 43—113 12 Claims



1. An insect attracting and capturing apparatus, comprising:
a body;
a light source for attracting insects to the vicinity of said body;
means defining an insect-receiving opening in said body, said opening having an upper edge and a lower edge, said opening extending into the interior of said body;
a plate positioned above said light source for defining said lower edge of said opening;
a fan positioned within said body operative for creating an air flow outside said body in the vicinity of said opening and for drawing air in through said opening; and
air flow directing means affixed to said body proximate to said upper edge and extending outwardly from said body to an outer rim, for capturing upwardly flying insects in said air flow and directing said insects into said opening.

5,255,469

IMPLEMENT FOR THE REMOVAL OF INSECTS OR THE LIKE FROM PLANTS

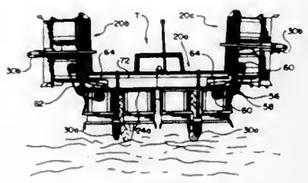
Eugene G. Sukup, Hampton; Charles E. Sukup, and Steven E. Sukup, both of Dougherty, all of Iowa, assignors to Sukup Manufacturing Company, Sheffield, Iowa

Filed Apr. 25, 1990, Ser. No. 513,960
The portion of the term of this patent subsequent to Jun. 1, 2010, has been disclaimed.
Int. Cl.[5] A01M *5/08*
U.S. Cl. 43—140 41 Claims

1. An implement which in operation removes and destroys insects or the like from plants arrayed in multiple parallel crop row units, comprising:
frame means for spanning a plurality of such crop row units and supporting a plurality of fan units;
a plurality of high velocity airflow fan units each of which includes an impeller and a housing surrounding said impeller and which defines an intake section which is open and extends in substantially coaxial alignment with said impeller throughout its length from said impeller to an open inlet end, said housing including outlet means which cause air discharged from said surrounding housing by said impeller to change direction as it exits from said housing, whereby each such fan unit in normal operation removes insects and the like from such crop row units and the adjacent environment and destroys substantially all such insets or the like passing through said fan unit by subjecting them to destructive physical forces in the course of such passage;
at least one of said fan units mounted on said frame means for each of said plurality of crop row units to be spanned by said frame means, and each said fan unit positioned to have

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said open inlet end thereof adjacent to the respective crop row unit, thereby permitting insects or the like to be





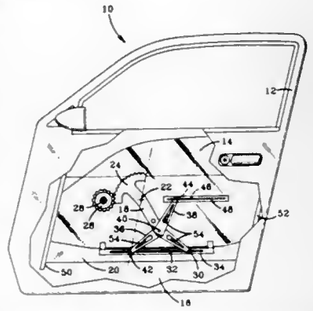
removed and destroyed from a plurality of crop row units simultaneously and the resulting debris to be freely discharged back into the environment.

5,255,470

VEHICLE DOOR GLASS REGULATOR

Ronald E. Dupuy, Wabash, Ind., assignor to GenCorp Inc., Fairlawn, Ohio

Filed Jun. 23, 1992, Ser. No. 902,628
Int. Cl.[5] E05F *11/52*
U.S. Cl. 49—227 **17 Claims**



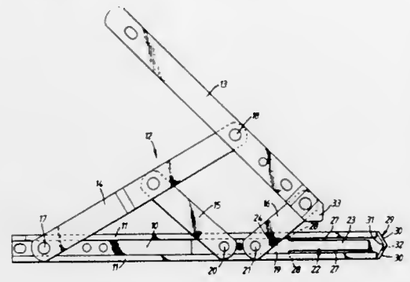
1. A vehicle door window regulator for a window having a rearward edge which tracks along a path parallel with the window opening edge of a B-pillar, comprising: a lift arm (**18**) pivotally connected to a fixed point (**22**) on the door at one end and pivotally and slidably engaging a guideway (**32**) secured to a window pane (**14**) at a sliding pivot point (**30**) on the other end, said lift arm (**18**) having two nonparallel, substantially linear segments which form an obtuse angle which defines a bend in said lift arm (**18**); a pair of balance arms (**36** and **38**), each of which is connected at one end to a central pivot point (**40**) near the bend of said lift (**18**), one of the balance arms (**36**) at its other end pivotally secured to the window pane (**14**), the second balance arm (**38**) at its other end pivotally and slidably engaging a guideway (**46**) secured to the door; and means for rotating said list arm (**18**) about said fixed pivot point (**22**) on the door to raise and lower the window pane (**14**); the regulator components being arranged so that regardless of the position of the window pane (**14**) relative to the door, the balance arms (**36** and **38**) form an angle approximately equal to the obtuse angle formed by the bend of the lift arm.

5,255,471

FRICTION STAYS

Michael S. Shaw, Coventry, and Kenneth G. Griffin, Gloucestershire, both of England, assignors to Feneseal Limited, West Midlands, England

Filed Sep. 6, 1991, Ser. No. 755,679
Claims priority, application United Kingdom, Sep. 7, 1990, 9019644; Sep. 25, 1990, 9020815; Feb. 1, 1991, 9102204
Int. Cl.[5] E05D *15/30*
U.S. Cl. 49—252 **6 Claims**



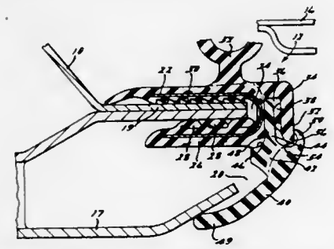
1. A friction stay mountable to a fixed window frame having first and second frame members, the friction stay comprising an elongate base member for attachment to the first frame member, a linkage including an arm for connection to an opening window leaf and a slider coupled to the arm, the arm being movable between a closed position in which the slider is carried by the base member and the arm overlies the base member and an open position in which the slider is carried by the base member and the arm extends at an angle relative to the length of the base member, and a lock mechanism which is coupled directly between the linkage and the second frame member and which, as the arm moves to and from the closed position, is movable into and out of a locking engagement, wherein the lock mechanism includes a keeper for attachment to the second frame member of the fixed window frame and a locking member coupled to the linkage, the locking member engaging the keeper in the closed position and thereby locking the stay to the fixed window frame.

5,255,472

TRIM LIP FOR A WEATHER SEAL

Douglas C. Larsen, Milford, and Robert A. Vaughan, Dearborn, both of Mich., assignors to The Standard Products Company, Cleveland, Ohio

Continuation of Ser. No. 495,482, Mar. 19, 1990, abandoned. This application Apr. 24, 1992, Ser. No. 873,883
Int. Cl.[5] F06B *7/16*
U.S. Cl. 49—490.1 **2 Claims**



1. A weather seal adapted to be secured on a flange of a vehicle to seal a gap defined by an end of the flange and a panel member which is fixedly disposed relative to said flange, comprising:

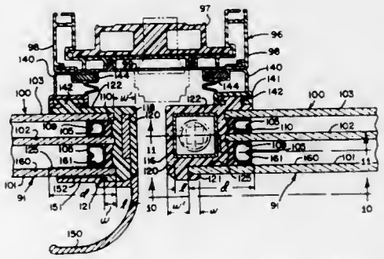
a core member configured to define a first channel;
an outer skin disposed about an interior and an exterior of said core member;
a plurality of retaining members extending from said outer skin and into said channel to secure said weather seal to the flange;
an attachment portion integrally formed with said outer skin, said attachment portion forming a second channel generally transverse to said first channel having an end portion extending generally transverse to said first channel;
said attachment portion having at least one second retaining member projecting into said second channel;
an independent trim lip having a base portion, an integrally formed primary lip and an integrally formed secondary lip extending longitudinally in a direction generally opposite said primary lip, and a male projection projecting from said base portion, said secondary lip and said male projection cooperating to define a recess;
said male projection being secured releasably within said second channel by said second retaining member when said sealing lip is removably coupled to said attachment portion such that said primary lip engages a portion of said panel member and said secondary lip engages a portion of said end portion of said attachment portion while said end portion extends into said recess to help secure said end portion within said recess; said trim lip thereby sealing said gap between said flange and said panel member disposed fixedly relative to said flange.

5,255,473

REFRIGERATOR DOOR ASSEMBLY WITH STYLIZED SUBSTANTIALLY ALL GLASS FRONT

Melvin Kaspar; Jeffery Kostos, both of LaGrange Park; Matthew Rolek, Chicago, and Paul Artwohl, Flossmoor, all of Ill., assignors to Ardco, Inc., Chicago, Ill.

Continuation of Ser. No. 668,135, Mar. 12, 1991, Pat. No. 5,111,618, which is a continuation-in-part of Ser. No. 602,791, Oct. 24, 1990, Pat. No. 5,024,023, which is a division of Ser. No. 448,328, Dec. 11, 1989, Pat. No. 4,998,382. This application Apr. 24, 1992, Ser. No. 873,475
The portion of the term of this patent subsequent to Mar. 12, 2008, has been disclaimed.
Int. Cl.[5] E06B *3/00*
U.S. Cl. 49—501 **37 Claims**



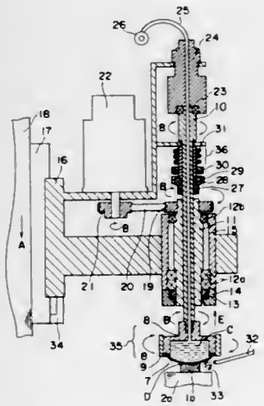
1. A refrigerator door assembly comprising a cabinet frame for mounting adjacent an opening of a refrigerator cabinet, an insulated glass door having an insulated glass unit with a plurality of glass panes disposed in side-by-side relation including a forward pane and at least one pane disposed rearwardly of said forward pane, a spacer interposed between said panes for maintaining said panes in parallel relation with an air space of predetermined width therebetween, said spacer including vertical spacer elements disposed adjacent opposite sides of said glass panes and top and bottom spacer elements connected to said vertical spacer elements and disposed adjacent top and bottom ends of said glass panes, said spacer elements each having an inner peripheral edge disposed inwardly from a respective outer peripheral edge of said forward glass pane, an outer structural door support frame about the periphery of said glass unit, said structural support frame including vertical frame support elements disposed adjacent opposite sides of said door and top and bottom frame support elements disposed adjacent top and bottom ends of said door and rigidly connected to said vertical frame support elements for supporting the weight of said glass unit, said vertical frame support elements being disposed outwardly of said vertical spacer elements and said top and bottom structural frame support elements being disposed outwardly of said top and bottom spacer elements, means supporting said structural support frame and hence the glass unit supported thereby for movement relative to said cabinet frame, said forward glass pane extending outwardly substantially to the outer perimeter of said door, said structural support frame having at least a portion located rearwardly of a peripheral portion of said forward glass pane in inward relation to an outer peripheral edge of said forward glass pane at a location forwardly of said rearwardly disposed pane and being without any portion which extends in overlapping relation to a forward side of said forward pane a distance greater than the distance said rearwardly located structural support frame portion is disposed inwardly from the outer peripheral edge of said forward glass pane, a trim portion about the peripheral edge of said forward glass pane without any portion thereof extending in overlapping relation to a forward side of said forward glass pane a distance greater than the distance said rearwardly located structural frame portion is disposed inwardly from the outer peripheral edge of said forward glass pane, and masking means about a peripheral portion of said forward glass pane and extending inwardly at least a distance corresponding to the inner peripheral edge of said spacer elements for preventing viewing of said spacer elements and the portion of said structural support frame located rearwardly of said forward glass pane through said forward glass pane from a front side thereof while permitting unobstructed viewing of an interior of the refrigerator cabinet within which said door assembly is mounted.

5,255,474

POLISHING SPINDLE

Tomohiro Gawa, Hirakata; Katsuyoshi Shingu, Moriguchi, and Kiyoshi Mayahara, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 740,614, Aug. 5, 1991, abandoned. This application Mar. 16, 1993, Ser. No. 31,927
Claims priority, application Japan, Aug. 6, 1990, 2-208600
Int. Cl.[5] B24B *5/16, 29/02*
U.S. Cl. 51—131.1 **7 Claims**



1. A polishing apparatus comprising:

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a base;
a nut rotatably mounted to said base;
an elongated shaft having a forward end and a rearward end, extending through said nut, and being fixed for rotation with said nut;
a rotary drive unit operably connected to said nut to rotate said nut relative to said base;
a polishing tool fixedly secured to said forward end of said shaft, said polishing tool comprising a casing having a chamber defined therein adapted to receive pressurized fluid, and a flexible elastic polishing sheet fixedly secured to said casing to close a forward end of said chamber;
biasing means for biasing said shaft forwardly relative to said base in order to press said elastic polishing sheet against a workpiece under a constant pressure; and
pressurized fluid supply means for supplying pressurized fluid to said chamber to cause expansion of said flexible elastic polishing sheet while allowing inward flexion of portions of said polishing sheet to accommodate an aspheric shape of the workpiece.

5,255,475

TOOL FOR GRINDING THE TEETH OF BEVEL GEARS HAVING LONGITUDINALLY CURVED TEETH

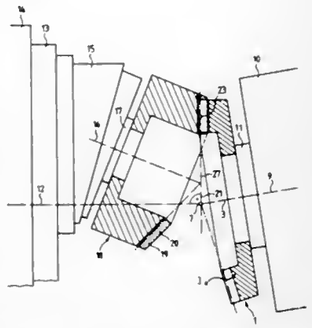
Erich Kotthaus, Hückeswagen, Fed. Rep. of Germany, assignor to Oerlikon Geartec AG, Zurich, Switzerland

Continuation-in-part of Ser. No. 245,283, Sep. 16, 1988, abandoned, which is a division of Ser. No. 936,155, Dec. 1, 1986, Pat. No. 4,799,337. This application Feb. 8, 1990, Ser. No. 476,940

Claims priority, application Switzerland, Dec. 13, 1985, 05330/85; Aug. 11, 1986, 03195/86

Int. Cl.[5] **B24B** *19/00*; **B23F** *19/05, 21/03*

U.S. Cl. 51—206 P **8 Claims**



1. A rotary form grinding tool for finish machining tooth flanks of a first number of longitudinally curved gear teeth of a rough machined bevel gear blank of one gear of a matched pair of helical bevel gears having a predetermined tooth curvature, comprising:
a tool body having the configuration of a helical bevel gear and containing a second number of gear teeth different from the first number of longitudinally curved teeth of said rough machined bevel gear blank;
said tool body being constructed as a hypoid helical bevel gear tool to said rough machined bevel gear blank of either one of (i) a non-hypoid bevel gear blank or (ii) a hypoid bevel gear blank for selectively finish machining the tooth flanks of said rough machined bevel gear blank;
each tool tooth of said second number of gear teeth of said hypoid helical bevel gear tool having longitudinally concave tooth flanks and longitudinally convex tooth flanks;
at least one of said longitudinally concave tooth flanks and said longitudinally convex tooth flanks being coated with an abrading medium;
each said tooth of said hypoid bevel gear tool having a predetermined tool tooth length;
said predetermined tool tooth length of each said tooth of said hypoid bevel gear tool being greater than a predetermined gear tooth length defined by each one of said longitudinally curved gear teeth of said bevel gear blank; and
said hypoid grinding bevel tool being constructed for permitting, during the finish machining operation, continuous abrading of the tooth flanks of the first number of the longitudinally curved teeth of the rough machined bevel gear blank at a finish machining rate within the range of surface speeds for normal grinding operations.

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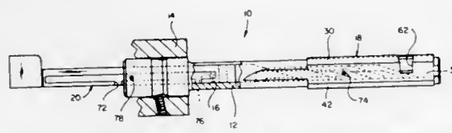
HONING MANDREL CONSTRUCTION

Harold T. Rutter, Kirkwood, Mo., assignor to Sunnen Products Company, St. Louis, Mo.

Filed Jan. 29, 1992, Ser. No. 827,280

Int. Cl.[5] **B24B** *33/02, 33/08*

U.S. Cl. 51—355 **21 Claims**



1. A honing mandrel comprising an elongated mandrel body having a central longitudinal axis, a passageway extending along at least a portion of the length of said mandrel body and a radial opening communicating with said passageway along at least a portion of the length thereof,
an abrasive assembly positioned in the radial opening for movement in a radial direction, said abrasive assembly having a radial outermost surface formed of an abrasive material and axially spaced inner surface portions located radially inwardly of said outermost surface and acutely angularly oriented relative to the axis of the mandrel body, each of said inner surface portions having a width measured in a direction perpendicular to said radial direction and said longitudinal axis, wherein the sum of the widths of said inner surface portions is at least equal to the width of the abrasive assembly
means on the abrasive assembly cooperatively engageable with means on the mandrel body to prevent relative axial movement therebetween,
an operator member formed of cast metal positioned for axial movement in the passageway of said mandrel body, said operator member having axially speed surface portions thereon acutely angularly oriented relative to the axis of the mandrel body and positioned to make slidable engagement with the respective inner surface portions on the abrasive assembly whereby axial movement of the operator member in one direction relative to the abrasive assembly will produce radial movement of the abrasive assembly in an outward radial direction, and
means on said operator member cooperatively engageable with means on said abrasive assembly for producing radial movement of the abrasive assembly in an inward radial direction when the operator member is moved in an axial direction opposite from said one axial direction relative to the abrasive assembly.

5,255,477

EASILY CLEANABLE ROOF GUTTERS

Byron L. Goodspeed, 203 White Rd., Castle Rock, Wash. 98611

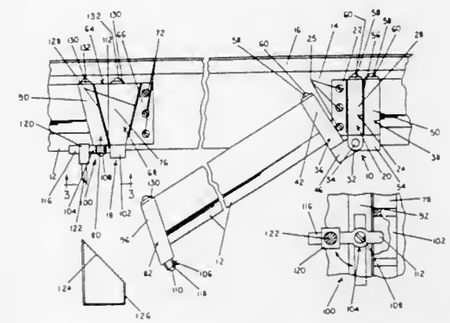
Filed Aug. 30, 1991, Ser. No. 753,419

Int. Cl.[5] **E04D** *13/00*

U.S. Cl. 52—11 **13 Claims**

1. A rain gutter support in combination with a water collecting elongated gutter member supported by said rain gutter

support on a structure, said gutter member having first and second ends separated longitudinally along said gutter member from one another, said gutter member being trough-shaped in cross section for enabling passage of water therealong, said rain gutter support comprising:
a hinge member connecting said first end of said through-shaped gutter member to said structure in pivoting relation to said structure such that said second end of said



gutter member may be lowered with respect to said first end for directing flow of contents of said gutter member downwardly along said gutter member, and
a releasable member located at said second end of said trough-shaped gutter member adapted to releasably interconnect said second end of said gutter member and said structure to enable pivoting of said gutter member about said hinge member when said gutter member is released.

5,255,478

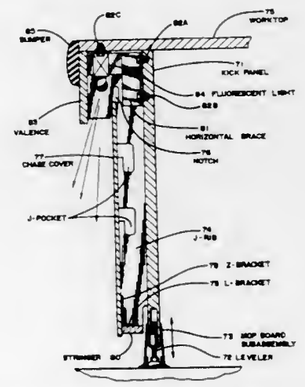
MODULAR INSTITUTIONAL WORKSTATIONS

James P. Baranowski, Waterford, Wis.; Daniel J. De Vries, Middleville, Mich., and Gene T. Plitt, Muskego, Wis., assignors to Bay View Industries, Inc., Oak Creek, Wis.

Filed Jul. 16, 1992, Ser. No. 915,083

Int. Cl.[5] **A47B** *5/00*

U.S. Cl. 52—36.1 **14 Claims**



1. A modular workstation suitable for institutional use, the workstation having the appearance of architectural millwork but with the reconfiguration flexibility of furniture systems, adapted for flat shipping and storage but facile on-site assembly with conventional hand tools, and designed and detailed for clean, sanitary maintenance, the workstation comprising a series of modular subassemblies and elements, including:
A. A horizontal work surface with forward and back and at least two straight side edges, wherein the forward edge faces a direction from which service is dispensed;
B. A forward, vertical support subassembly comprising: an inner kick panel, at least one generally rectangular inverted J-rib, a forward chase cover, a bottom stringer, and a valence, wherein:
1. The kick panel further comprises an upper and lower edge, inner and outer surfaces and at least one floor mount, and the floor mount both is securedly attached to the lower edge of the kick panel and supports the vertical support subassembly and workstation;
2. The J-rib includes a base, a short arm and forward, rear, and top surfaces of an extended arm, and is securedly attached to the inner wall of the kick panel in an inverted manner such that:
i. The base of the J-rib is proximate to the horizontal work surface and the top of the extended arm of the J-rib is proximate to the floor mount;
ii. The forward surface of the extended arm of the J-rib is shaped with at least one J-shaped pocket through which wiring and utilities can be strung and supported;
iii. The rear surface of the extended arm of the J-rib is securedly attached to the kick panel; and
iv. The base of the J-rib is notched such that the chase cover can be inserted and, in combination with a lower fastening means, can be removeably secured in close proximity to the forward surface of the extended arm of the J-rib;
3. The chase cover is a non-load supporting panel and may be easily removed from the J-rib in a manner not disruptive of the normal work activities of the work station;
4. The bottom stringer, comprising an upper and lower surface, is substantially parallel to the plane of the horizontal work surface, extends for the substantial length of the kick panel, and the upper surface of the stringer is securedly attached to the top of the inverted J-rib in a manner such that a toe space is formed between the bottom surface of the stringer and the floor; and
5. The valence is securedly attached to the forward surface of the short arm of the inverted J-rib;
in which the vertical support subassembly is adapted to mate with and provide support for the horizontal work surface at the rear edge of the horizontal work surface and to mate with at least one vertical end panels; and
C. a plurality of vertical end panels, each comprising at least one floor mount and each adapted to mate with and provide support for the horizontal work surface at the side edges of the horizontal work surface, and to mate with the forward vertical support subassembly.

5,255,479

EMERGENCY ESCAPE HATCH

Carl H. Shepherd, 9488 River Moon Ct., Inverness, Fla. 32650, assignor to Carl H. Shepherd and Edward L. Shepherd, both of Inverness, Fla.

Filed Dec. 6, 1991, Ser. No. 803,427

Int. Cl.[5] **E04B** *2/82*

U.S. Cl. 52—127.8 **11 Claims**

1. An escape hatch assembly to facilitate emergency exiting from a structure, comprising:
a hatch main body;
an exterior frame built into the structure;
a recessed catch means formed in said exterior frame;
a latch plate disposed in overlying relation to said recessed catch means;
a hatch frame, for framing said hatch body, slideably and releasably received within said exterior frame;
a latch means for interlocking said exterior frame and said hatch frame;
said latch means being accessible from the inside only of said structure;
said hatch main body and said hatch frame being slideably

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removable from said exterior frame when said latch means is unlocked;

said hatch main body and said hatch frame being slideably removable from said exterior frame in a single direction only, said single direction being from inside of the structure to the outside of the structure;

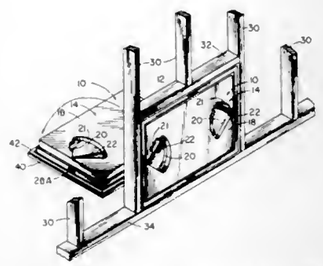
said latch means including a pair of pivotally mounted latch handle means that are laterally spaced apart from one another;

each latch handle means of said pair of latch handle means including a handle, an axis, and a locking bolt;

said handle, axis, and locking bolt being integrally formed with one another and being made of a substantially rigid but flexible and resilient material;

each axis being disposed perpendicular to a plane of said main hatch body, and each handle and locking bolt being disposed parallel to said plane of said main hatch body;

said latch plate including a circular opening, a horizontally elongated opening vertically spaced downwardly from said circular opening, and an elongate slot formed there-



between, said locking bolt traveling from said circular opening to said horizontally elongated opening as a handle is rotated about its axis;

said elongate slot being canted so that as said locking bolt travels along said elongate slot from said circular opening to said horizontally elongated opening, said axis is displaced and places said locking bolt under a bias due to the resiliency of said axis;

each locking bolt being disposed in its associated catch means when its associated handle means is in an unpivoted state and said locking bolt being disposed out of its associated catch means when its associated handle means is pivoted; and

each locking bolt, urged by the bias created by the resiliency of its associated axis, being disposed in its associated horizontally elongated opening when its associated latch handle is rotated about its axis, said horizontally elongated opening holding said locking bolt therein under the bias of its associated axis so that said locking bolt cannot inadvertently re-enter said catch means after said handles have been pivoted.

5,255,480

GROUND ANCHORING SYSTEM

Peter Alsop, Kent, Great Britain, assignor to Hydracor International, Inc., Alexandria, Va.

PCT No. PCT/GB90/00273, § 371 Date Aug. 15, 1991, § 102(e) Date Aug. 15, 1991, PCT Pub. No. WO90/10114, PCT Pub. Date Sep. 7, 1990

PCT Filed Feb. 21, 1990, Ser. No. 752,607

Claims priority, application United Kingdom, Feb. 23, 1989, 8904169

Int. Cl.[5] E02D *5/74*

U.S. Cl. 52—162 **15 Claims**

1. A ground anchor adapted to be connected to an end of a flexible anchor line and forcibly driven into the ground, said line being secured to an object being anchored, said ground anchor comprising a generally flat plate device folded into a U or V-shape against a resilient bias, a retaining arrangement connected to folded portions of said folded flat plate device for releasably retaining the plate device in the folded state while driving the anchor into the ground, and a release arrangement



connected to the flat plate device for releasing the retaining arrangement so that the plate device springs open to resist subsequent extraction.

5,255,481

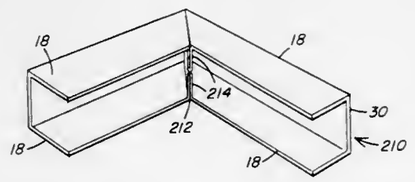
SPACER AND SPACER FRAME FOR AN INSULATING GLAZING UNIT AND METHOD OF MAKING SAME

Stephen C. Misera, Tarentum; Thomas P. Kerr, Pittsburgh, and William R. Siskos, Delmont, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 578,697, Sep. 4, 1990, Pat. No. 5,177,916. This application Jun. 30, 1992, Ser. No. 906,645

Int. Cl.[5] E04C *2/26, 2/38*

U.S. Cl. 52—172 **24 Claims**



1. A spacer frame for an insulating unit having at least one continuous bend, comprising:

an elongated piece having a generally U-shaped cross section formed by a first elongated member spaced from a second elongated member, said first and second elongated members interconnected by a base;

said base having a first major surface defined as an outer surface facing away from said first and second elongated members and an opposed second major surface defined as an inner surface, at least one of the major surfaces of said base at the at least one continuous bend being continuous, said base having a portion of said outer surface on one side of the at least one bend lying in a first plane and a portion of said outer surface on the other side of the at least one bend lying in a second plane with the first and second planes intersecting one another adjacent the at least one bend;

said first elongated member having an edge, a portion of the edge of said first elongated member at the at least one corner having a notch, with the portion of said first elongated member having the notch depressed over the inner surface of said base with a majority of the remaining portion of said first elongated member defining a first sidewall lying in a third plane;

said second elongated member having an edge, a portion of the edge of said second elongated member at the at least one corner having a notch, with the portion of said second elongated member having the notch depressed over said inner surface of said base with a majority of the remaining portion of said second elongated member defining a second sidewall lying in a fourth plane substantially parallel to the third plane and generally perpendicular to the first and second planes to provide the piece with the generally U-shaped cross section; wherein

said base at the at least one continuous bend and depressed portions of said first and second elongated members form the at least one continuous bend and the spaced distance between the depressed portions of said first and second elongated members extending over the inner surface of said base being greater than the spaced distance provided by depressed portions of said first and second elongated members without the notches.

5,255,482

TILE FLOORING STRUCTURE

Daniel C. Whitacre, Massillon, Ohio, assignor to Loretta A. Whitacre, Massillon, Ohio

Continuation-in-part of Ser. No. 433,656, Nov. 8, 1989, Pat. No. 5,052,161. This application Sep. 30, 1991, Ser. No. 768,025

The portion of the term of this patent subsequent to Oct. 1, 2008, has been disclaimed.

Int. Cl.[5] E04F *15/02*

U.S. Cl. 52—390 **7 Claims**

1. A flooring structure comprising:

(a) a generally horizontal base of hard rigid, coherent and essentially incompressible material;

(b) a top flooring layer comprising hard coherent fracturable material spaced from and generally parallel to said base;

(c) an essentially horizontal crack isolation layer between said base and said top flooring layer, said crack isolation layer having an essentially horizontal planar bottom surface, said crack isolation layer comprising a hard, essentially non-compressible rigid material which is in load bearing relationship with said base and said top flooring layer and which extends over from about 50% to about 80% of the surface area of the crack isolation layer as measured along said bottom surface; and

(d) means for bonding said rigid material of said crack isolation layer to said base, and

(e) rigid coherent bonding material above said crack isolation layer and below said top flooring system for bonding the rigid material of said crack isolation layer to said top flooring layer,

wherein the rigid material of said crack isolation layer is in direct load bearing engagement with the bonding material thereabove and in direct load transmitting relationship with hard rigid material there-below, said flooring structure being essentially devoid of any material between said crack isolation layer and said base or between said crack isolation layer and said flooring layer which substantially alters the load bearing characteristics of the structure.

5,255,483

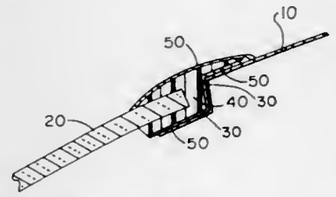
SQUEAK RESISTANT PANEL/WINDOW ASSEMBLY FOR VEHICLES

Raj K. Agrawal, and John F. Thomas, both of Holland, Mich., assignors to Donnelly Corporation, Holland, Mich.

Filed Aug. 30, 1991, Ser. No. 752,833

Int. Cl.[5] E04B *1/62*

U.S. Cl. 52—397 **11 Claims**



1. A vehicle panel/window assembly for incorporation into a vehicle, said panel/window assembly comprising:

a panel;

a polymeric gasket around the perimeter of said panel; and

a relatively thin coating of a squeak resistant composition on said polymeric gasket, said composition comprising a waxy binder having a relatively high softening point and a lubricant, applied onto at least portions of said gasket which will engage portions of the vehicle to which said panel/window assembly is to be joined.

5,255,484

METHOD FOR FASTENING OF ELASTOMERIC OR INSULATING MATERIALS BETWEEN TWO STRUCTURAL COMPONENTS

Dieter Karlsohn, Erftstadt, Fed. Rep. of Germany, assignor to Clouth Gummiwerke AG, Cologne, Fed. Rep. of Germany

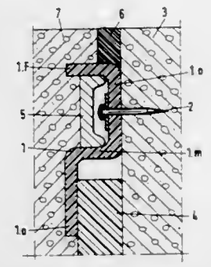
PCT No. PCT/EP89/00937, § 371 Date Oct. 10, 1991, § 102(e) Date Oct. 10, 1991, PCT Pub. No. WO90/04687, PCT Pub. Date May 3, 1990

PCT Filed Aug. 9, 1989, Ser. No. 681,504

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1988, 3836883

Int. Cl.[5] E04B *1/74*

U.S. Cl. 52—404 **5 Claims**



1. A method for fastening an elastomeric or insulating mat between two structural components comprising:

applying said elastomeric or insulating mat to a surface of a first of said structural components;

attaching a Z-shaped elastomer section onto said surface of said first structural component, said Z-shaped elastomer section comprising an upper and a lower vertical shank offset but parallel to one another, a horizontal web joining respective ends of said upper and lower vertical shanks and being oriented perpendicular to said shanks, and a horizontal flange orthogonally formed on said upper vertical shank and being parallel to said horizontal web,

VOL 1155 ISS 4 OCT 26 1993 UMI

thereby defining a chamber, and wherein said lower vertical shank extends over said mat;

securing said attached Z-shaped elastomer section by fastening same onto said surface with at least one nail driven through said upper vertical shank, said nail terminating in a head;

fitting a U-shaped cover element over said head of said at least one nail and mounted so that an open mouth of said U-shaped cover element faces said first of said structural elements and said head;

covering a combination of said mat, said Z-shaped elastomer section and said first structural component with a second of said structural components; and

positioning an elastic cord adjacent said horizontal flange along said surface of said first structural component, said positioning occurring at any time prior to said covering step.

5,255,485

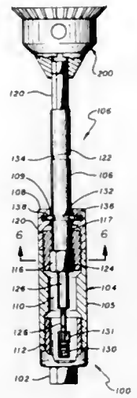
APPARATUS AND METHOD FOR INSTALLING ROOFING FASTENERS

Lorne R. Lemke; James A. Smith, and Stuart H. Lemke, 349 River Bluff, all of Mosinee, Wis. 54455, assignors to Stuart H. Lemke, Mosinee, Wis.

Continuation-in-part of Ser. No. 473,240, Jan. 31, 1990, abandoned, which is a continuation of Ser. No. 385,256, Jul. 25, 1989, Pat. No. 4,987,714, which is a continuation-in-part of Ser. No. 235,542, Aug. 25, 1988, abandoned, and a continuation-in-part of Ser. No. 236,666, Aug. 25, 1988, Pat. No. 4,834,600. This application Mar. 20, 1991, Ser. No. 672,353

Int. Cl.[5] E04B *5/00*

U.S. Cl. 52—410 **7 Claims**



1. An apparatus for installing a roofing fastener in a roof deck, said roofing fastener including a screw having a head and a threaded body, said body including an axial internal channel communicating with an opening in said head and at least one opening in the side wall of said body communicating with said internal channel and a mechanism for engaging said roof deck after threaded engagement of said screw and deck in response to an axial force applied thereto, said apparatus comprising:

a casing, said casing including an internal chamber and a casing head for engaging said screw;

a drive shaft disposed within said casing internal chamber for slidable motion between a retracted position and an extended position wherein said drive shaft includes a threaded tip and at least one thread stripper disposed above said threaded tip to facilitate removal of said shaft from said screw internal channel; and

means for selectively rotationally coupling and decoupling said casing and said shaft.

5,255,486

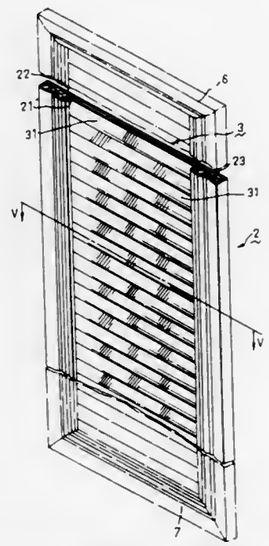
LOUVER DOOR CONSTRUCTION

David Wang, Kaohsiung Hsien, Taiwan, assignor to Eli Plastics Industrial Co., Ltd., Tainan Hsien, Taiwan

Filed Nov. 17, 1992, Ser. No. 977,769

Int. Cl.[5] E05B *7/08*

U.S. Cl. 52—473 **5 Claims**



1. A louver door construction, comprising:

a spaced pair of vertical stiles;

a louver unit formed as a one-piece extruded plastic sheet and secured between said vertical stiles, said louver unit including a plurality of integrally connected louver sections, each of said louver sections having an elongated inclined portion and an elongated horizontal portion, said inclined portion of one of said louver sections extending upwardly and rearwardly from a front edge of said horizontal portion of said one of said louver sections, said inclined portion of said one of said louver sections having a distal upper edge which is connected integrally with a rear edge of said horizontal portion of an adjacent one of said louver sections, said inclined portion of said one of said louver sections forming a first angle with said horizontal portion of said one of said louver sections, said horizontal portion of said one of said louver sections forming a second angle with said inclined portion of said adjacent one of said louver sections, said second angle being equal to said first angle, said inclined portions of said louver sections being parallel with one another, said horizontal portions of said louver sections being parallel with one another, said horizontal portion of some of said louver sections being formed with a series of slots which permit air flow through said louver unit; and

top and bottom rails mounted on and extending between upper and lower ends of said vertical stiles,

each of said vertical stiles having a rear side which is formed with a vertically extending first groove at a longitudinal edge thereof, said louver unit having vertical edges which respectively extend into said first groove of said vertical stiles,

said horizontal portion of each of said louver sections having a rear edge which is formed with an upwardly extending reinforcing strip.

5,255,487

DOOR REINFORCEMENT TUBE

Ing E. Wieting, Ratingen, and Ing J. Fischer, Mühlheim, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Aug. 13, 1991, Ser. No. 744,298

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1990, 4026459

Int. Cl.[5] E04C *3/30;* **B23P** *13/00*

U.S. Cl. 52—728 **9 Claims**



1. A hollow reinforcement beam having a high degree of stiffness for absorbing lateral impact in a passenger car door, comprising:

(a) a hollow base tube having ends, a length, a longitudinal bore, a central portion spaced from the ends, and an interior and exterior surface, said base tube being composed of steel; and

(b) a tubular reinforcing section composed of a steel having a higher strength, toughness, and capacity for deformation work than the steel of the base tube being attached to said exterior surface and extending along said central portion only of said base tube.

5,255,488

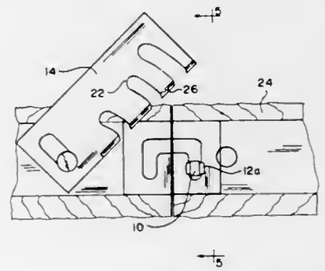
TIE-WIRE FOR CONCRETE FORM

Kevin Johnson, Box 64, Quitno Rd., Malta, Ill. 60150, and Brent Johnson, 2737 S. Daysville Rd., Oregon, Ill. 61061

Filed Apr. 20, 1992, Ser. No. 870,946

Int. Cl.[5] E04G *17/06*

U.S. Cl. 52—741.1 **1 Claim**



1. A method for using a tie-wire having flat areas adapted to engage locking means on a concrete form and including a stop member extending across an outer half of the flattened areas, said method including the steps of: aligning adjacent form members; engaging a wall tie to and between edges of parallel corresponding form members; causing the stop members to abut against the outwardly directed surface of the form members to keep same from encroaching thereover; and engaging locking means on one form member over said tie-wire and cooperating locking elements on an adjacent form; said locking means shearing said stop member away from the tie-wire upon engagement thereover.

5,255,489

CONSTRUCTION APPARATUS FOR BUILDINGS AND CONSTRUCTING METHOD THEREWITH

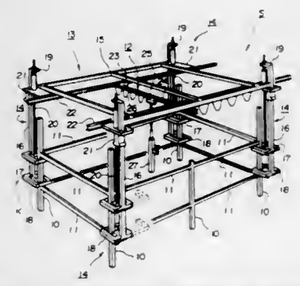
Takeji Matsumoto; Hiroki Muramoto; Mitoku Mukaidani; Yasuyuki Hashimoto; Motoetsu Ishii, all of Hiroshima; Hiroshi Kondoh, Tokyo; Nobuhiro Okuyama, Tokyo; Yoshio Abe, Tokyo; Junichiro Maeda, Tokyo; Yoichi Seki, Tokyo; Tadashi Okano, Tokyo; Michio Hakiri, Tokyo; Yoji Moroi, Tokyo; Masaaki Nakanishi, Tokyo, and Katuhiro Inada, Tokyo, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha and Shimizu Construction Co., Ltd., both of Tokyo, Japan

Filed Aug. 9, 1991, Ser. No. 743,229

Claims priority, application Japan, Aug. 9, 1990, 2-212310; Aug. 31, 1990, 2-230147; Sep. 7, 1990, 2-237745; Oct. 11, 1990, 2-272729; Oct. 19, 1990, 2-281599; Oct. 19, 1990, 2-281600; Oct. 19, 1990, 2-281601; Apr. 19, 1991, 3-115520; Jul. 1, 1991, 3-186898

Int. Cl.[5] E04B *1/19*

U.S. Cl. 52—745.17 **16 Claims**



1. A method for constructing a building, the building including a framework of permanent columns and permanent beams, the method comprising the steps of:

assembling a construction apparatus including a temporary framework located above the building under construction;

providing at least one lifting means for lifting the temporary framework;

supporting each lifting means by at least two of the permanent beams of the building;

clamping the lifting means to the building under construction at an intersection between at least one of the permanent columns and at least two of the permanent beams;

providing at least one hoisting means for vertically hoisting from the ground structural elements for the building, the structural elements including the permanent columns and the permanent beams;

horizontally transferring the structural elements to desired positions in one story of the building under construction by means of the hoisting means;

constructing the one story of the building under construction using the transferred structural elements;

supporting the construction apparatus on the building while raising the lifting means; and

lifting the temporary framework by means for the lifting means supported by the building.

5,255,490

SEALING AND DELIVERY DEVICE FOR DOUBLE-LAYERED CARTON SEALING MACHINE

Shao-Fa Chiu, No. 96, Ming Her Li, Ta Lin Chen, Chiayi Hsien, Taiwan

Filed Sep. 10, 1992, Ser. No. 942,849

Int. Cl.[5] B65B *7/20, 7/28, 59/02*

U.S. Cl. 53—136.4 **5 Claims**

1. An improved carton sealing machine particularly adapted for sealing double layered cartons each having an outer box and an inner box, comprising:

a) pivotally operated delivery means disposed at a front of

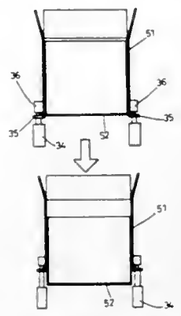
VOL 1155 ISS 4 OCT 26 1993

the machine for controllably feeding cartons into said carton sealing machine;

b) carton lifting means disposed adjacent to said pivotally operated delivery means to lift up the outer box of said double layered carton so as to facilitate a folding and sealing operation on foldable flaps of said outer box wherein said carton lifting means comprises;

i) a pair of spaced apart carton lifting units movably mounted on a pair of screw rods such that the distance therebetween is adjustable so as to permit cartons of different sizes to be fitted therein;

ii) each of said carton lifting units comprising a generally l-shaped mounting base on which is disposed a gener-



ally F-shaped guide bracket used to guide the fed cartons from said delivery means of the sealing machine and a cylinder actuated pushing board having a plurality of limiting rollers disposed thereon; and,

iii) cylinder means operatively connected to said pushing board so as to be pushed upward by said cylinder means such that the outer box of said double layered carton can be lifted up by said pushing board;

c) top folding means disposed adjacent to said carton lifting means to fold foldable flaps disposed at a top of said outer box so as to be ready for a sealing operation;

d) carton sealing means to seal said outer carton of said double layered carton so as to make said double layered carton integrally and tightly sealed.

5,255,491

METHOD AND APPARATUS FOR APPLYING BANDS TO CRATES

Harijs B. Marovskis, Plymouth; Thomas H. Peterman, Farwell, and Todd Wheeler, Alexandria, all of Minn., assignors to Tetra Alfa Holdings S.A., Pully, Switzerland

Filed Jan. 31, 1992, Ser. No. 830,303

Int. Cl.[5] B65B *13/04, 13/06, 27/00, 35/52*

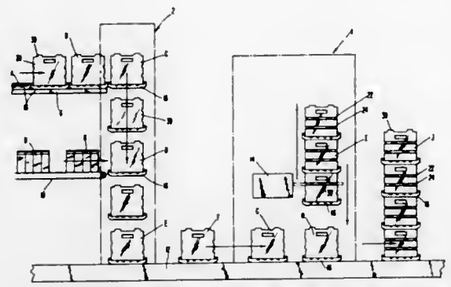
U.S. Cl. 53—399 **11 Claims**

1. Apparatus for banding filled crates, comprising:

banding means for applying a band around a filled crate, said banding means including track means arranged in a horizontal loop for guiding a band around a filled crate, said track means including segments movable between opened and closed positions, said banding means including means for applying tension to draw the band tightly around the crate and to seal the band;

means for positioning a filled crate within said track means when said segments are in the closed position; and

means for subsequently moving said segments to the opened position and moving a banded crate between said opened



segments, whereby a banded crate may be removed from the apparatus.

5,255,492

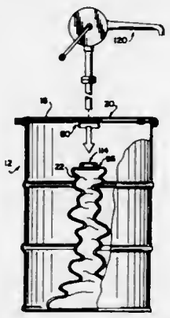
DETACHABLE COVER AND DRUM LINER FOR STORAGE AND TRANSPORT OF CONTROLLED MATERIALS

Douglas A. Larson, River Forest, Ill., assignor to Safety-Kleen Corporation, Elgin, Ill.

Division of Ser. No. 732,620, Jul. 19, 1991, Pat. No. 5,154,308. This application Oct. 13, 1992, Ser. No. 960,019

Int. Cl.[5] B65B *3/04, 3/16, 69/00*

U.S. Cl. 53—434 **6 Claims**



1. An improved method of handling materials requiring controlled handling and storage using a storage and transport drum assembly, said drum assembly comprising, in combination, a drum body having a bottom wall portion and a sidewall portion with an upper margin having means for receiving and positioning a drum cover in fluid tight relation, and a combination drum cover and liner bag assembly, said drum cover having an outer margin adapted for liquid tight sealing with said receiving and positioning means on said drum body, a main cover panel portion with an access opening formed there, cover panel plug-receiving fitting, said fitting including a positioning flange and an annular cylindrical sidewall with a threaded inner surface defining an opening for removably receiving a drum plug, securing said positioning flange in liquid tight relation to said main cover panel portion and with said opening in said fitting registry with said access opening and a generally cylindrical support unit for detachably securing a bag liner relative to said drum cover, said support unit having one portion fixed in relation to said fitting sidewall and another portion comprising an annular locating groove, said liner bag assembly including a liner bag sized for reception within said drum body and having bottom, side and top bag walls, an opening in said top wall and a collar assembly affixed

to said liner bag about said bag opening, said collar including at least one groove for positioning a bag collar retainer ring, and a retainer ring disposed in said retainer groove, sizing said locating groove and said collar for snug supporting attachment so as to resist unintentional separation during shipment, and forcibly separating said collar from said cover while said liner is positioned within said container.

5,255,493

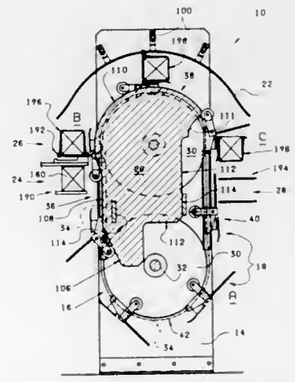
PACKAGE ASSEMBLY MACHINE AND METHOD

Robert E. Molison, and Rodger M. Palmer, both of Hanover, Pa., assignors to Elsner Engineering Works, Inc., Hanover, Pa.

Filed Oct. 27, 1992, Ser. No. 967,694

Int. Cl.[5] B65B *5/04, 39/12*

U.S. Cl. 53—473 **26 Claims**



21. The method of placing an article in an open-mouthed container to make a package comprising the steps of:

a) moving a stream of articles along a conveyor to position a lead article at an article pick up station;

b) moving a stream of inverted hollow open-mouthed containers along a conveyor to position a lead container at a package assembly station located above the article pick up station;

c) moving a first support member up under the lead article to raise the lead article above the article pick up station, place the article into the lead conveyor at the assembly station and form an inverted package on the first support member;

d) rotating the inverted package through an angle of substantially 180 degrees to move the mouth of the container from the bottom of the package to the top of the package so that the package is upright and the article is gravity-held within the container;

e) transferring the package from the first support member to a second support member holding the package in the upright position during step d); and

f) moving the second support member and held upright package to a takeaway station, disengaging the package from the second support member, placing the article on a conveyor at the takeaway station and moving the upright package from the takeaway station on the conveyor.

5,255,494

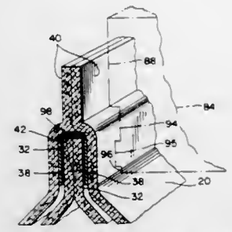
METHOD AND APPARATUS FOR FORMING CARTON OPENING ARRANGEMENT, AND CARTONS MADE THEREBY

Eric P. Doyle, St. Paul, Minn., assignor to Tetra Alfa Holdings S.A., Pully, Switzerland

Continuation-in-part of Ser. No. 804,603, Dec. 10, 1991, abandoned. This application May 1, 1992, Ser. No. 877,072

Int. Cl.[5] B65B *7/18*

U.S. Cl. 53—477 **10 Claims**



1. Apparatus for closing and sealing cartons of the type having a bottom, side walls, front and back walls, a gable-top heat-sealed closure in which the front and back walls are sealed together and the side walls have fin panels that are folded back and sealed between the front and back walls in a sealing fin along the ridge of the gable, and having an openable closure in which the sealing fin may be separated to expose the fin panels and by separating the fin panels from the front and back walls in the seal fin to form a pouring spout, the pouring spout having a reinforcing tape bonded by an adhesive to the interior surface along the edge of the fin panels, the apparatus comprising:

filling means for filling liquid content in the carton through the open top;

heater means for heating the front and back walls and the fin panels on one of the side walls while avoiding heating of the reinforcing tape;

closing means for closing the gable-top of the carton, said closing means including means for displacing the adhesive toward the edge of the fin panels while maintaining the position of the tape, said closing means including a pair of opposed sealing jaws, said sealing jaws being positioned for clamping the gable top of a carton between them, said sealing jaws each have clamping surfaces in position for clamping the gable top of a carton between them, said clamping surface each having a recess in said clamping surface, said recess overlying the edge of the fin panels and the upper edge of the reinforcing tape when a carton is clamped between the clamping surface, said clamping surfaces each including a second recess which overlies the lower edge of the tape.

5,255,495

ADJUSTABLE GIRTH FORMER

Lloyd Kovacs, Sheboygan, Wis., assignor to Hayssen Manufacturing Company, Sheboygan, Wis.

Filed Oct. 30, 1992, Ser. No. 969,751

Int. Cl.[5] B65B *9/06, 9/22, 5/06*

U.S. Cl. 53—504 **15 Claims**

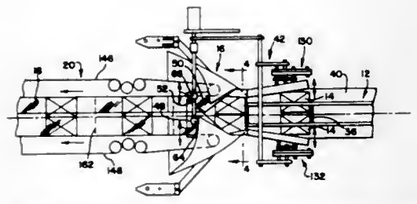
1. An adjustable girth control for a tube former in a packaging apparatus in which products comprising individual rolls or groups of rolls are conveyed continuously one after another and are packaged in a film, the tube former being situated to continuously form a sheet of film passing through the tube former into a tube encapsulating and transferring succeeding product, the adjustable grith control comprising

a. A forming body in the tube former, said forming body being shaped to internally accept and envelope product and film passing therethrough, said forming body having

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opposed adjustable forming elements defining a variable width gap between said forming elements, and



b. means secured to said forming elements for shifting the position of said forming elements to vary internal dimensions of said forming body.

5,255,496

DEVICE FOR TRANSFERRING OBJECTS AGAINST THE CURRENT OF A GAS STREAM

Jean F. Gregoire, Roux Mesnil Bouteilles, France, assignor to Kerplas S.N.C., Dieppe Cedex, France

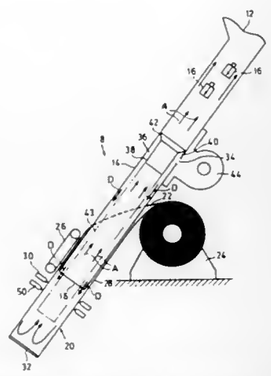
PCT No. PCT/FR91/00471, § 371 Date Feb. 7, 1992, § 102(e) Date Feb. 7, 1992, PCT Pub. No. WO91/19646, PCT Pub. Date Dec. 26, 1991

PCT Filed Jun. 12, 1991, Ser. No. 829,053

Claims priority, application France, Jun. 13, 1990, 90 07363

Int. Cl.[5] B65B *31/02, 9/20*

U.S. Cl. 53—511 **22 Claims**



1. A plant including an enclosure defining a first atmosphere, a chamber isolated from said enclosure and defining a second atmosphere, and at least one transfer device for transferring objects from said enclosure to said chamber, said transfer device comprising:

a tube extending from said enclosure to said chamber and having an open upper end to receive objects from said enclosure and an open lower end opening into a movable receptacle having solid walls and located in said chamber, said tube defining a space through which objects move by gravity in a defined direction of travel from said enclosure to said receptacle in said chamber, and said tube having in a sidewall thereof an opening into said space; and

a gas directing arrangement for directing gas through said opening into said tube and for causing a stream of said gas to flow within said tube in a direction opposite to said direction of travel of the objects.

5,255,497

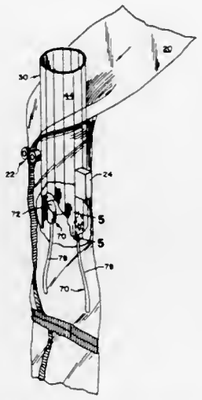
FLAT SIDED FORMING TUBE FOR A FORM-FILL-SEAL MACHINE

Maynard J. Zoromski, Elmburst, and Kraig L. Klopfenstein, Barrington, both of Ill., assignors to Triangle Package Machinery Co., Chicago, Ill.

Filed Nov. 4, 1991, Ser. No. 787,262

Int. Cl.[5] B65B *9/06*

U.S. Cl. 53—551 **30 Claims**



25. A machine for forming a sheet of sealable film into a bag, filling and then sealing the bag comprising:

a machine frame;

a roll, containing a continuous sheet of sealable film, mounted on said frame;

a forming shoulder, mounted on said frame, for shaping the sealable film into a generally tubular shape with overlapped edges;

a vertical forming tube including an upper end portion, said vertical forming tube being mounted on said frame relative to said forming shoulder such that said generally tubular shaped sealable film surrounds said upper end portion of the vertical forming tube as it moves off said forming shoulder, said vertical forming tube being fabricated from a generally rectangular shaped sheet of material that has a plurality of parallel bends formed therein, resulting in a vertical forming tube with a polygon cross section and a minimum of five longitudinal extending flat surfaces;

vertical sealing means formed to produce a seam along the overlapped edges of said sealable film;

advancing means formed to cooperate with at least one of said longitudinal extending flat surfaces for pulling said sealable film down said vertical forming tube and over said forming shoulder.

5,255,498

ENVELOPE STUFFING APPARATUS

Alan B. Hotchkiss, Westport, and Shahzad H. Malick, Fairfield, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Nov. 2, 1990, Ser. No. 608,515

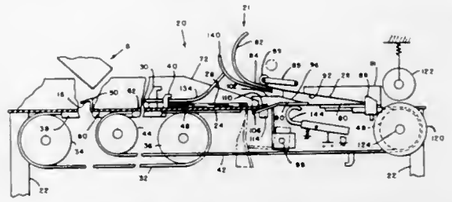
Int. Cl.[5] B65B *39/12, 43/34*

U.S. Cl. 53—569 **27 Claims**

1. In an envelope stuffing apparatus which has an enclosure inserting station and includes a deck and side guides mounted on the deck at the inserting station, and includes means for delivering the envelope in a path of travel to the inserting station and includes means for opening the envelope, and includes means for inserting an enclosure into the envelope and for removing the envelope from the inserting station, and

wherein said opening means includes means for supporting the flap of the envelope above the deck, an improvement in the envelope opening means, said improvement comprising:

throat opener means insertable into the envelope for stripping apart from each other the front and back panels of the envelope, said throat opener means including a side guide member for guiding the enclosure into the envelope and further including a ramp member for guiding the enclosure from the deck into the envelope.



5,255,499

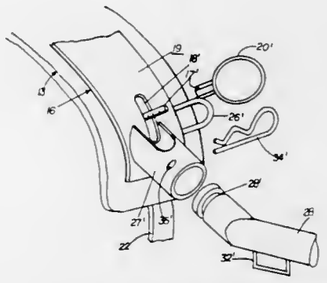
RACE HORSE HARNESS ATTACHMENT FOR SULKIES

Erwin P. Hodsdon, 1 Pleasant St., Bridgton, Me. 04009

Filed Oct. 19, 1992, Ser. No. 962,865

Int. Cl.[5] B68B *1/00*

U.S. Cl. 54—2 **6 Claims**



1. An attachment for securing a sulky by its thills to a harness piece secured by a girt strap about a horse comprising a curved base plate adapted to be extended over the top of the harness piece, and to be rigidly secured thereto, cup-shaped members respectively extending from the respective opposite side ends of the curved base plate horizontally with the ground and when secured to the harness piece, and inwardly-bent members adapted to be attached to the sulky thills and to be detachably connected to the respective cup-shaped members, said inwardly-bent members having grooves surrounding their connecting ends and cotter pins extendable through said cup-shaped members to lie in the grooves of the inwardly-bent members so as to prevent their axial separation from the cup-shaped members while permitting relative rotation therebetween.

5,255,500

CUTTER UNIT FOR COMBINES

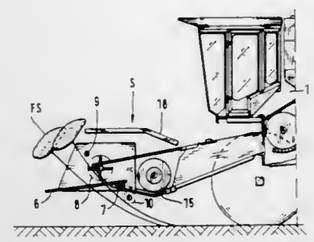
Wilhelm von Allwoerden, Gailingen, Fed. Rep. of Germany, assignor to Kloeckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Mar. 16, 1992, Ser. No. 851,749

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1991, 4108494

Int. Cl.[5] A01D *45/02, 45/30*

U.S. Cl. 56—63 **14 Claims**



1. A mechanism for harvesting standing crops for a combine comprising in combination:

a cutter unit for a harvesting machine extending transversely relative to a direction of travel of the machine, said unit being vertically adjustable;

draw-in and reaper elements on the cutter unit with said reaper elements having plant cutters;

a plurality of forwardly extending laterally spaced separating devices fashioned as ships defining a plurality of row receiving slots between them for separating crop plants arranged in rows;

and a laterally extending leading rotary shaft supporting on the cutter unit above and preceding the reaper elements relative to said travel direction.

3. A mechanism for harvesting standing crops for a combine constructed in accordance with claim 2:

wherein said draw-in drum is driven in rotation.

5,255,501

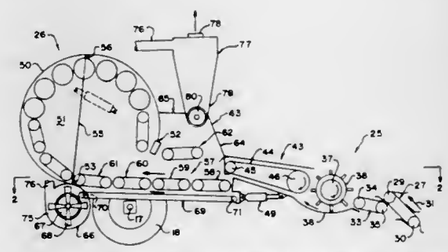
BALER FOR FORMING CYLINDRICAL BALES

Alexander McWilliams, Box 168, Pilot Mound Manitoba, Canada R0G 1P0

Filed Feb. 28, 1992, Ser. No. 842,324

Int. Cl.[5] A01D *39/00*

U.S. Cl. 56—341 **17 Claims**



1. A baler for forming cylindrical bales from crop material picked up from the field comprising a frame, ground wheels mounted on the frame for transportation of the frame across the ground in a working direction, a pickup mounted on the frame for picking up crop from the ground and forming a crop flow for baling, a main baler housing having a feed opening into which the picked up material is introduced and drive means mounted within the main baler housing for driving the

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material to rotate about an axis to form a bale which is cylindrical about said axis, means for releasing a formed bale from the baler housing, the housing being substantially closed except for said feed opening, fan means for drawing air from the housing such that air is drawn into the housing from at least one opening therein so as to tend to retain crop material within the housing and means for transporting crop material drawn by the fan means for return to the crop flow for baling in said main baler housing.

5,255,502

YARN PIECE METHOD AND YARN PIECING APPARATUS

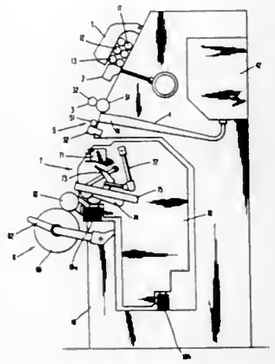
Takashi Iwade, Nara, and Tadahiko Okubo, Otsu, both of Japan, assignors to Toray Engineering Co., Ltd., Osaka, Japan

Continuation of Ser. No. 488,995, Mar. 6, 1990, abandoned. This application Dec. 18, 1991, Ser. No. 810,350

Claims priority, application Japan, Mar. 7, 1989, 1-55729

Int. Cl.[5] D01H *15/00*

U.S. Cl. 57—22 **2 Claims**



1. A yarn piecing apparatus comprising a unit traveling along a machine frame provided with at least a yarn forming means and yarn winding means thereon, said unit being provided with at least a yarn piecing means for performing a yarn piecing operation in which first yarn withdrawn from the yarn forming means is pieced to second yarn withdrawn from the yarn winding means, a first-yarn sucking means for withdrawing first yarn from the yarn forming means, a second-yarn sucking means for withdrawing second yarn from the yarn winding means, a yarn package driving means, and a second-yarn picking-up means, and including first-yarn storing means for storing first yarn withdrawn from said yarn forming means, said first-yarn storing means being disposed between the yarn forming means and the yarn piecing means, and second-yarn storing means provided on said unit between said yarn piecing means and said yarn winding means for storing second yarn withdrawn from said yarn winding means,

and including second-yarn gripping means located at an upper portion of said second-yarn storing means for gripping the second yarn withdrawn from the yarn winding means until completion of the yarn piecing operation.

5,255,503

FRICTIONAL FALSE-TWISTING UNIT WITH ELECTROMOTIVE DRIVE

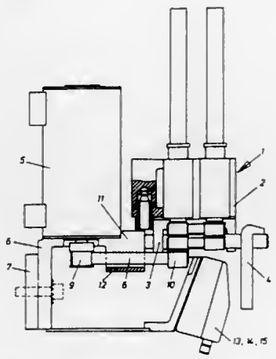
Wolfgang Räder, Schonungen, and Günther Paul, Hammelburg, both of Fed. Rep. of Germany, assignors to FAG Kugelfischer Georg Schafer KGaA, Fed. Rep. of Germany

Filed Feb. 6, 1992, Ser. No. 832,056

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1991, 4110464

Int. Cl.[5] D01H *7/92, 13/00*

U.S. Cl. 57—104 **17 Claims**



1. A frictional false twisting unit comprising:

a plurality of rotatable shafts to be driven to rotate for imparting a false twist, the shafts having a radius; one of the shafts having a driven pulley on it;

a drive motor for the unit radially spaced from the rotatable shafts; a drive pulley, and the motor being connected to drive the drive pulley;

an endless loop belt passing between the drive pulley and the driven pulley for driving the driven pulley and the respective shaft thereof to rotate;

driving means for driving the other shafts of the unit to rotate with the one shaft and connected to said driven pulley;

a carriage on which the rotatable shafts are mounted, the carriage being movable in the direction toward the motor which slackens the belt and thereby loosens the belt over the driven pulley such that the shafts, including the driven pulley thereof, can be removed away from the motor and the belt.

5,255,504

ELECTRICAL POWER GENERATION

Ronald C. Hodrien, Solihull; Philip A. Borrill, Warwick, and Deborah J. Brown, Solihull, all of United Kingdom, assignors to British Gas PLC, London, United Kingdom

Filed Feb. 26, 1992, Ser. No. 841,507

Claims priority, application United Kingdom, Mar. 6, 1991, 9104715

Int. Cl.[5] F02B *43/00*

U.S. Cl. 60—39.02 **8 Claims**

1. A method for combined cycle electrical power generation comprising—

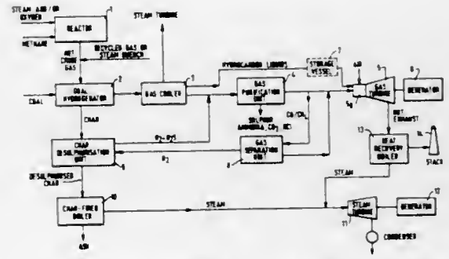
(i) introducing a methane-rich gas and at least one of steam and oxygen-containing gas into a reactor, reacting the methane-rich gas at an elevated temperature with the at least one of steam and oxygen-containing gas to form a hot hydrogen-containing gas;

(ii) introducing into a coal hydrogenator coal and at least a portion of the hydrogen-containing gas at an elevated temperature suitable for initiating and maintaining coal hydrogenation reaction, hydrogenating the coal with the hydrogen-containing gas in the hydrogenator to form a char and a first gaseous product; removing the char and removing the first gaseous product from the hydrogenator;

(iii) cooling the first gaseous product to form a condensed liquid hydrocarbon product and a remaining gaseous product; separating the liquid hydrocarbon product from the remaining gaseous product;

(iv) removing impurities from the remaining gaseous product;

(v) feeding at least a portion of the purified remaining gaseous product to the combustion chamber of a gas turbine to form gaseous combustion products to drive the turbine



whereby the gas turbine drives a first electrical generator to produce electrical power;

(vi) introducing at least some of the char into a boiler and combusting the char therein with air to produce steam to drive a steam turbine whereby the steam turbine drives a second electrical generator to produce electrical power, wherein a portion of the purified remaining gaseous product is separated into a first separated gas, which is a hydrogen-rich gas, and a second separated gas, which comprises methane and carbon monoxide, and wherein, prior to the char being introduced into the boiler, the char is contacted with the first separated hydrogen-rich gas to cause desulphurisation of the char.

5,255,505

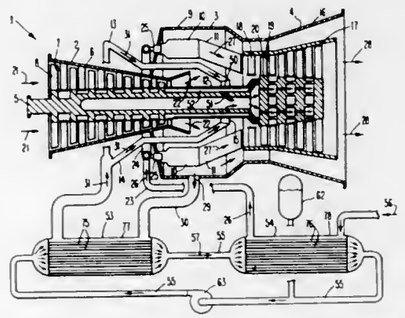
SYSTEM FOR CAPTURING HEAT TRANSFERRED FROM COMPRESSED COOLING AIR IN A GAS TURBINE

Scott T. Cloyd, Lake Mary; Robert A. Hindle, Cocoa Beach, and Stephen W. Brown, Oviedo, all of Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 21, 1992, Ser. No. 838,972

Int. Cl.[5] F02C *6/18*

U.S. Cl. 60—39.07 **13 Claims**



1. A combustion turbine system comprising a compressor system in which air is compressed to provide compressed air, a combustion section which is connected to said compressor section so as to receive compressed air therefrom and in which fuel is mixed with the compressed air and combusted to generate hot compressed gas and a turbine section in which the hot compressed gas is expanded to generate power, said system further including conduit means in communication with said compressor section and said turbine section for diverting a portion of said compressed air to said turbine section for cooling turbine components therein, heat transfer means connected so as to receive said diverted portion of said compressed air from said compressor section, and fluid supply means connected to said heat transfer means and said combustion section for injecting a first fluid into the compressed air in said combustion section, said heat transfer means containing a heat transfer fluid and having means for preventing contact between said first fluid and said heat transfer fluid and for allowing the transfer of heat from said diverted portion of said compressed air to said heat transfer fluid and from said heat transfer fluid to said first fluid before said first fluid enters said combustion section.

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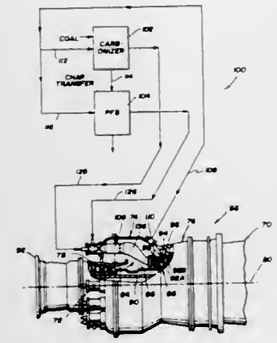
SOLID FUEL COMBUSTION SYSTEM FOR GAS TURBINE ENGINE

Colin Wilkes, Lebanon, and Hukam C. Mongia, Carmel, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 25, 1991, Ser. No. 796,959

Int. Cl.[5] F02C *3/28*

U.S. Cl. 60—39.12 **4 Claims**



1. In a gas turbine engine including

an engine case having a compressed air plenum therein,

a compressor rotatable about an axis of said engine case and discharging compressed air into said compressed air plenum, and

a turbine rotatable as a unit with said compressor and including a circumferential turbine blade stage in an annular gas flow path of said engine case,

a solid fuel, pressurized fluidized bed combustion system comprising:

a first conduit means connected to said engine case for transferring therefrom a first fraction of compressor discharge,

a second conduit means connected to said engine case for transferring therefrom a second fraction of compressor discharge,

a carbonizer means outside of said engine case connected to a supply of coal and to said first conduit means operative to produce from partial combustion of said coal in said first fraction of compressor discharge a continuous stream of low Btu combustible fuel gas and a residue of combustible solid char,

a pressurized fluidized bed means outside of said engine case receiving said char from said carbonizer means and connected to said second conduit means operative to produce

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from further combustion of said char in said second fraction of compressor discharge a continuous stream of vitiated air at a temperature not exceeding the slagging temperature of said char,

a topping combustor means inside said engine case in said compressed air plenum,

a third conduit means between said pressurized fluidized bed means and said topping combustor for introducing said continuous stream of vitiated air into said topping combustor,

a fourth conduit means between said topping combustor means and said carbonizer means for introducing said continuous stream of low Btu combustible fuel gas into said topping combustor,

air inlet means on said topping combustor for introducing compressed air from said compressed air plenum into said topping combustor for supporting complete combustion of said low Btu fuel gas in said topping combustor to increase the temperature of said continuous stream of vitiated air to above the slagging temperature of said char, and

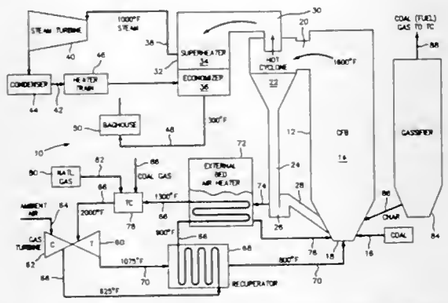
transition tube means for transferring said higher temperature vitiated air from said topping combustor to said annular gas flow path of said engine.

5,255,507

COMBINED CYCLE POWER PLANT INCORPORATING ATMOSPHERIC CIRCULATING FLUIDIZED BED BOILER AND GASIFIER

Ponnusami K. Gounder, San Diego, Calif., assignor to Ahlstrom Pyropower Corporation, San Diego, Calif.

Filed May 4, 1992, Ser. No. 877,808
Int. Cl.[5] F02C *3/28*
U.S. Cl. 60—39.12 **6 Claims**



1. In a combined cycle power generation system, having a fluidized bed boiler for combusting solid fuels to produce steam and a heated exhaust output, a hot separator for separating particulates from the heated exhaust output and returning the particulates to the fluidized bed boiler via a hot separator return path, a steam turbine powered by steam produced in the fluidized bed boiler and a gas turbine powered by heated compressed air, the improvement comprising:

an air compressor for providing a source of compressed air to the gas turbine;

a recuperator connected to said air compressor and to an exhaust output from the gas turbine for heating the compressed air to a first temperature prior to input to the gas turbine;

an external bed air heater connected to said recuperator and to the hot separator return path for heating the compressed air fluid to a second temperature prior to input to the gas turbine; a gas turbine combustor connected to said external bed air heater and to the gas turbine for heating the compressed air to a third temperature prior to input to the gas turbine;

a first fuel source including natural gas connected to the gas turbine combustor for providing fuel to the gas turbine combustor; and

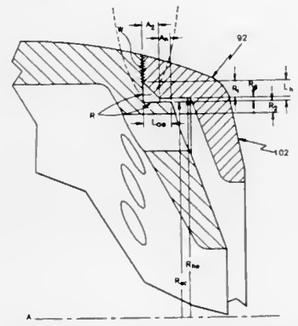
a second fuel source including coal gas fuel connected to the gas turbine combustor for providing fuel to the gas turbine combustor.

5,255,508

FUEL NOZZLE ASSEMBLY AND METHOD FOR MAKING THE ASSEMBLY

Franklin J. Davis, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 1, 1991, Ser. No. 786,619
Int. Cl.[5] F23R *3/30*
U.S. Cl. 60—39.32 **13 Claims**



1. In a fuel nozzle assembly of the type used in a gas turbine engine, the fuel nozzle assembly having a tip which is axially oriented, having a swirler housing assembly spaced radially from the tip leaving a passage for cooling air therebetween and having a plurality of swirl vanes which extend from the tip to the swirler housing assembly and which are integral with the swirler housing assembly, the swirler housing assembly including a shoulder having a radially extending and an axially extending surface which is adapted to receive a heat shield, the improvement which comprises:

a heat shield which is spaced radially over at least a portion of its axial length from the swirler housing assembly, which shields a portion of the swirler housing assembly and which is secured at its base only along the radially extending surface of the shoulder and is free to flow thermally in the axial direction with respect to the axially extending surface of the shoulder.

5,255,509

PARTICLE BED REACTOR-POWERED TURBINE ENGINE

James R. Powell, Shoreham, and Joseph A. Belisle, West Babylon, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Oct. 17, 1991, Ser. No. 777,928
Int. Cl.[5] F02K *11/00;* **G21D** *5/02*
U.S. Cl. 60—203.1 **1 Claim**

1. A jet engine comprising:

a turbo compressor for compressing air at its inlet;

a particle bed reactor located downstream of the turbo compressor for heating the compressed air, the reactor including

(a) a pressure vessel housing;

(b) a core having a plurality of fuel elements located in the vessel and positioned in parallel spaced relation with an axis of the housing;

(c) the elements having passages formed therein for admitting cold compressed air from the turbo compressor and expelling heated gas after across the elements; the fuel elements further including—

(d) a first porous pipe;

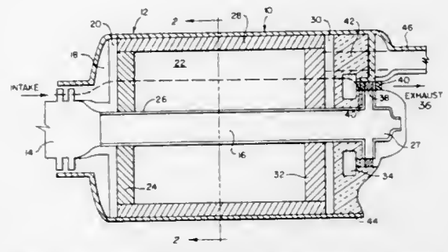
(e) a second porous pipe coaxially located in the first pipe and defining an annular space therebetween;

(f) ceramic coated fuel particles packed into the annular space between the pipes;

(g) wherein the cold compressed air radial enters the elements and is expelled axially outwardly, through the second porous pipe, as heated air;

a plurality of channels located in the reactor for directing heated compressed air through the reactor;

longitudinally movable control rods located between and around the fuel elements to control reactor reactivity;



safety rods located between the fuel elements for ensuring safety when the reactor is not operating;

a drive turbine located downstream of the channels, the heated compressed gas impinging upon rotor vanes of the drive turbine for causing rotation of a rotor;

an exhaust of the drive turbine located downstream of the rotor to expel the heated compressed gas and generate thrust therefrom; and

a shaft axially connected between the turbo compressor and the drive turbine rotor for translating output shaft rotation from the drive turbine to input shaft rotation of the turbo compressor.

5,255,510

THRUST REVERSER FOR A HIGH-BYPASS RATIO TURBOFAN ENGINE

Alain M. J. Lardellier, Melun, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A.", Paris, France

Filed May 19, 1992, Ser. No. 885,611
Claims priority, application France, May 23, 1991, 91 06197
Int. Cl.[5] F02K *3/02*
U.S. Cl. 60—226.2 **60 Claims**

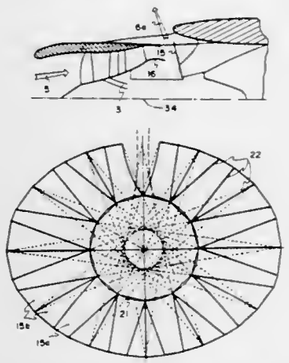
1. A thrust reverser for a turbofan type engine having a high bypass ratio comprising:

a) a gas turbine engine housing having an outer surface and extending around a longitudinal axis;

b) a fan housing extending about the gas turbine engine housing so as to define a cold flow air duct therebetween, the fan housing defining an upstream intake opening and a downstream cold flow exhaust opening;

c) a plurality of main baffles pivotally attached to the gas turbine engine housing and movable between first positions in which the main baffles are generally flush with the outer surface of the gas turbine engine housing, and second positions wherein the main baffles extend into the cold flow air passing through the cold flow air duct to deflect the cold flow air in a thrust reversing direction; and,

d) actuating means to move the main baffles between their first and second positions such that, in their second positions, a first plurality of main baffles extend at an angle "a_1" with respect to the outer surface of the gas turbine engine housing and a second plurality of main baffles extend at an angle "a_2" with respect to the outer surface of the gas turbine engine housing such that "a_1" is greater than "a_2", wherein the first plurality of main baffles are disposed on generally opposite first portions of the gas turbine engine housing and wherein the second plurality



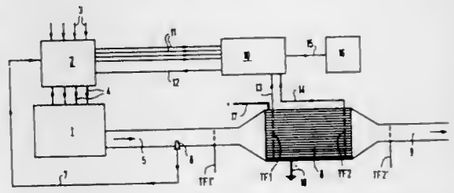
of main baffles are disposed on generally opposite second portions of the gas turbine engine housing, the second portions being circumferentially displaced approximately 90° around the gas turbine engine housing from the generally opposite first portions.

5,255,511

METHOD AND APPARATUS FOR OPERATIONAL MONITORING OF A CATALYTIC CONVERTER OF AN INTERNAL COMBUSTION ENGINE AND A CATALYTIC CONVERTER TO BE MONITORED

Wolfgang Maus; Helmut Swars, both of Bergisch Gladbach, and Rolf Brück, Overath, all of Fed. Rep. of Germany, assignors to Emitec Gesellschaft fuer Emissionstechnologie, Lohmar, Fed. Rep. of Germany

Filed Sep. 18, 1992, Ser. No. 947,722
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1990, 4008779
Int. Cl.[5] F01N *3/28*
U.S. Cl. 60—274 **39 Claims**



1. A method for operational monitoring of a catalytic converter of an exhaust system for exhaust gases of an internal combustion engine, which comprises:

selecting at least two measurement locations at respective three-dimensionally spaced-apart cross-sectional regions of an exhaust system for exhaust gases of an internal combustion engine, defining at least a partial volume of the catalytic converter of the exhaust system between the measurement locations being definitive for catalytic conversion of pollutants in the exhaust gas;

measuring and monitoring temperature at the at least two regions; and

measuring the temperature at least at one of the measurement locations integrally over an approximately represen-

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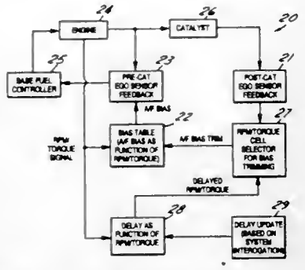
tative portion of at least one cross-sectional region and not spotwise.

5,255,512

AIR FUEL RATIO FEEDBACK CONTROL

Douglas R. Hamburg, Bloomfield; Thomas R. Culbertson, Redford, and Judith M. Curran, Northville, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 3, 1992, Ser. No. 970,910
Int. Cl.[5] F01N 3/20
U.S. Cl. 60—274 6 Claims



1. A method of oontrollinq air/fuel ratio using electronic engine controls for an internal combustipn engine including the steps of:

providing a pair of sensor means for characterizing at least one constituent of an exhaust gas in an exhaust stream from the internal combustion engine, a first sensor means being positioned upstream of a catalyst and a second sensor means being positioned downstream of the catalyst;

providing a control moduie having an input connected to the upstream and downstream sensors means and an output connected to the actuators controlling the engine, as to establish a first feedback loop including loop including the second downstream sensor means;

providing an air/fuel ratio bias table with individual cells in said first feedback loop to alter the transfer function of said first feedback loop; and

using a synchronized output of said second downstream sensor means to trim individual cells in the air/fuel bias table thereby compensating the first and second air/fuel ratio feedback loops for aging of said first upstream sensor means and providing the capability to stay within a catalyst window of operation as a function of engine speed and torque operating points.

5,255,513

METHOD OF OPERATING A SCRAMJET INCLUDING INTEGRATED INLET AND COMBUSTOR

Paul H. Kutschenreuter, Jr., Loveland, and John C. Blanton, West Chester, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

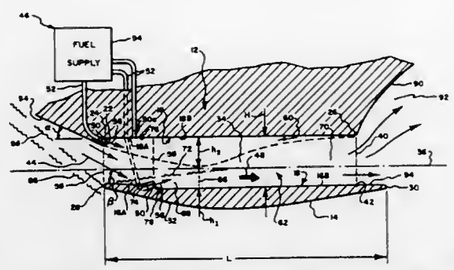
Division of Ser. No. 486,640, Feb. 28, 1990, Pat. No. 5,085,048. This application Jul. 12, 1991, Ser. No. 730,152
Int. Cl.[5] F02K 7/08, 7/10
U.S. Cl. 60—204 9 Claims

1. A method of operating a scramjet engine having a combustor defined between a first surface and a cowl upper surface and having a longitudinal axis, an inlet, an aft facing step extending from said first surface at said inlet, and an outlet, said cowl upper surface being disposed generally parallel to said first surface, said method comprising the steps of:

channeling supersonic airflow into said inlet of said combustor at an acute angle to said longitudinal axis;

turning said airflow channelled into said engine to flow generally parallel to said longitudinal axis;

injecting fuel into said combustor at said inlet generally parallel to said supersonic airflow being channelled at said acute angle and obliquely to said longitudinal axis to contact said supersonic airflow being channelled at said acute angle so that said injected fuel is transported by said supersonic airflow being channelled at said acute angle initially generally parallel thereto to form an arcuate fluid boundary extending from said step to define a subsonic fuel zone extending from said fluid boundary to said first



surface and a supersonic fluid zone extending from said fluid boundary to said cowl upper surface, said supersonic fluid zone having said fuel mixed with said supersonic airflow; and

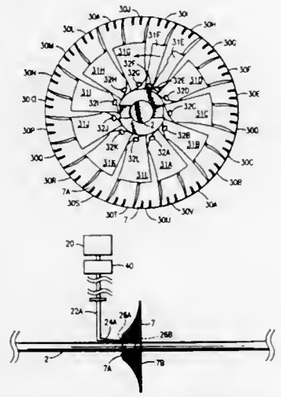
channelling said injected fuel and said supersonic airflow through said combustor to said outlet at a substantially constant flow area.

5,255,514

APPARATUS AND METHOD FOR IMPROVING THE PERFORMANCE OF A TURBOCHARGER-EQUIPPED ENGINE

Fred A. Wentworth, Jr., R.F.D. 4, 100 Brentwood Rd., Exeter, N.H. 03833

Filed Jul. 20, 1992, Ser. No. 916,538
Int. Cl.[5] F02B 33/44
U.S. Cl. 60—605.1 17 Claims



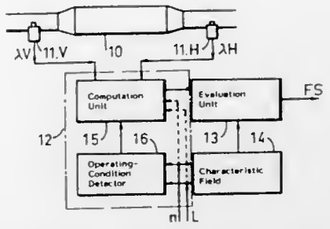
1. In apparatus for improving the performance of an engine having a turbocharger including a compressor wheel by supplying ion vapors to said engine from ion vapor producing means, the improvement comprising at least one conduit means capable of directing said ion vapors from said producing means to a region of negligible air pressure adjacent said compressor wheel.

5,255,515

METHOD AND ARRANGEMENT FOR OBTAINING AN EVALUATION VALUE FOR THE PERFORMANCE LOSS OF A CATALYTIC CONVERTER

Andreas Blumenstock, Ludwigsburg; Ernst Wild, Oberriexingen; Helmut Denz, Stuttgart, and Klaus Ries-Müller, Bad Rappenau, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 25, 1992, Ser. No. 981,844
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1991, 4139560
Int. Cl.[5] F07N 3/20
U.S. Cl. 60—274 10 Claims



1. A method of obtaining a value for evaluating the performance loss of a catalytic converter with the aid of a forward signal of a forward gas probe mounted forward of the catalytic converter and a rearward signal of a rearward gas probe mounted rearward of the catalytic converter, the catalytic converter being connected to an internal combustion engine, the method comprising the steps of:

carrying out the method during the steady-state operation of the engine;

multiplying said forward signal and said rearward signal with each other to form a plurality of products;

averaging said products over a plurality of oscillations of said forward signal to obtain a mean value; and,

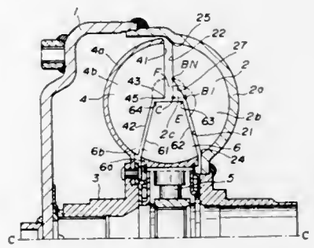
utilizing said mean value as a value for evaluating the performance loss of the catalytic converter.

5,255,516

CORELESS TORQUE CONVERTER

Eiji Ejiri, and Kazuhiro Takeda, both of Kanagawa, Japan, assignors to Nissan Motor Company, Ltd., Japan

Filed Apr. 27, 1992, Ser. No. 873,852
Claims priority, application Japan, May 10, 1991, 3-105862
Int. Cl.[5] F16D 33/00
U.S. Cl. 60—362 15 Claims



1. A coreless torque converter, comprising:

a turbine runner comprising turbine blades; and

a stator member comprising a stator shell and stator blades each comprising an exit edge extending from said stator shell to a first vertex point, and an entrance edge extending from said stator shell to a second vertex point; and

a pump impeller comprises an impeller shell, and impeller blades projecting from said impeller shell into a central space in which said turbine blades, wherein said stator blades and said impeller blades converge so that no core is formed in said central space, each of said impeller blades comprising an outer exit edge extending from said impeller shell to an intermediate point, and a slant edge extending from said intermediate point to a corner point corresponding to said first vertex point of said stator member, said intermediate point being approximately located on an imaginary core line which is so defined in said pump impeller that there is formed, outside said imaginary core line, a fluid passage having a cross-sectional area equal to a cross-sectional area of a fluid passage of said stator member, said slant edge extending along one of a straight line and a curved line;

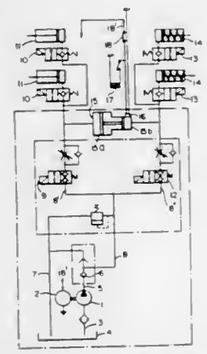
wherein said slant edge of each of said impeller blades is so inclined that said slant edge deviates in direction from an axial direction parallel to a center axis of said torque converter and from a radial direction perpendicular to said center axis.

5,255,517

CONTROL DEVICE FOR HYDRAULIC OPERATING CYLINDERS OF A COMBINED LIFTING PLATFORM AND A CLOSING WALL OF A VEHICLE

Günter Weber, Hauptplatz 23, A-2474 Gattendorf, Austria

PCT No. PCT/AT90/00090, § 371 Date Mar. 3, 1992, § 102(e) Date Mar. 3, 1992, PCT Pub. No. WO91/04169, PCT Pub. Date Apr. 4, 1991
PCT Filed Sep. 10, 1990, Ser. No. 838,406
Claims priority, application Austria, Sep. 13, 1989, 2139/89
Int. Cl.[5] F16D 31/02
U.S. Cl. 60—431 7 Claims



1. A control device for a hydraulic operating circuit of a combination loading and lifting platform and closing wall of a vehicle, having

a hydraulic fluid pump (1) communicating with a fluid supply (4) of pressure fluid;

a motor (2) driving said pump;

a hydraulic system including

a first branch line (8') hydraulically connected to said pump;

a lifting cylinder (11) coupled to said first branch line (8') for lifting said combination platform and closing wall;

a first control valve (9) controlling admission and drainage of pressurized fluid to said lifting cylinder (11);

a second branch line (8'') hydraulically connected to said pump;

a rotation cylinder (14) coupled to said second branch line (8'') for rotating the combination loading and lifting platform and closing wall between a downwardly tipped position, an essentially horizontal and vertical position,

a second control valve (12) for controlling admission and

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drainage of pressurized fluid to said rotation cylinder (**14**); and

a hydraulic pressure transformer piston-cylinder element (**15**) hydraulically connected across said first and second branch lines, and having a larger piston-cylinder chamber (**15***a*) and a smaller piston-cylinder chamber (**15***b*),

and comprising, in accordance with the invention,

means (**16**, **19**) for determining an overload or unbalance of load placed on the combination platform and closing wall upon application of hydraulic pressure to the second branch line (**8**'') for rotation of the combination platform by said rotation cylinder (**14**),

said means including pressure sensing means (**16**, **19**) coupled to the smaller piston-cylinder chamber (**15***b*), said pressure sensing means being connected to and controlling interruption of application of hydraulic pressure from said fluid pump (**1**) to said hydraulic system when the pressure sensing means (**16**, **19**) senses occurrence of a pressure beyond a predetermined limit in said smaller piston-cylinder chamber (**15***b*).

5,255,518

REVERSIBLE MECHANOCHEMICAL ENGINES COMPRISED OF BIOELASTOMERS CAPABLE OF MODULABLE INVERSE TEMPERATURE TRANSITIONS FOR THE INTERCONVERSION OF CHEMICAL AND MECHANICAL WORK

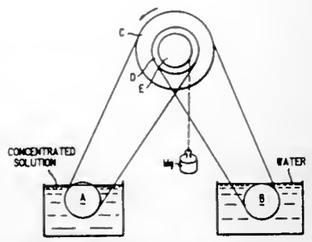
Dan W. Urry, Birmingham, Ala., assignor to UAB Research Foundation, Birmingham, Ala.

Continuation of Ser. No. 693,814, Apr. 30, 1991, Pat. No. 5,085,055, which is a division of Ser. No. 410,018, Sep. 20, 1989, Pat. No. 5,032,271, which is a continuation of Ser. No. 163,088, Mar. 2, 1988, Pat. No. 4,924,689, which is a continuation-in-part of Ser. No. 900,895, Aug. 27, 1986, Pat. No. 4,783,523, which is a continuation-in-part of Ser. No. 62,557, Jun. 15, 1987, Pat. No. 4,898,926. This application Dec. 24, 1991, Ser. No. 813,320

The portion of the term of this patent subsequent to Feb. 4, 2009, has been disclaimed.

Int. Cl.[5] **F03G** *7/06*

U.S. Cl. 60—527 **29 Claims**



1. A mechanochemical engine capable of converting chemical work to mechanical work, which comprises:

an elastomeric material capable of reversibly contracting and relaxing by an inverse temperature transition upon changing chemical potential of a surrounding medium;

means for changing the chemical potential of said surrounding medium; and

means for converting contracting or relaxing of said elastomeric material into mechanical work.

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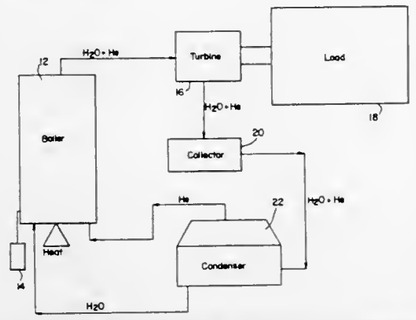
METHOD AND APPARATUS FOR INCREASING EFFICIENCY AND PRODUCTIVITY IN A POWER GENERATION CYCLE

Thomas Kakovitch, Herndon, Va., assignor to Millennium Technologies, Inc., Reston, Va.

Filed Aug. 14, 1992, Ser. No. 929,433

Int. Cl.[5] **F01K** *21/04*

U.S. Cl. 60—649 **15 Claims**



1. In a process for converting heat energy to mechanical energy, comprising:

applying heat energy to a working fluid in a reservoir sufficient to convert the working fluid from liquid to vapor form;

passing the working fluid in vapor form to a means for converting energy therein to mechanical work, with expansion and reduction in temperature of the working fluid; and

recycling expanded, temperature reduced working fluid in liquid form to the reservoir;

the improvement comprising adding to the working fluid in the reservoir, a gas having a molecular weight no greater than the approximate molecular weight of the working fluid; and

separating the gas from the working fluid external to the reservoir after the working fluid and gas have passed through said means for converting.

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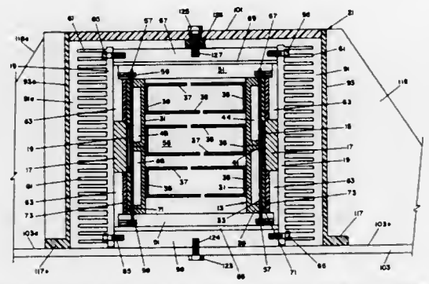
ADVANCED THERMOELECTRIC HEATING AND COOLING SYSTEM

Daniel R. O'Geary, and Larry D. Arnold, both of Albuquerque, N. Mex., assignors to Refir Technologies, Albuquerque, N. Mex.

Filed Dec. 20, 1991, Ser. No. 811,325

Int. Cl.[5] **F25B** *21/02*

U.S. Cl. 62—3.2 **38 Claims**



1. A thermoelectric heating and cooling system including a first load plate, a heat sink, and one or more thermoelectric devices interconnecting said first load plate with said heat sink to pump heat to or from said load plate, depending upon the direction of current through said thermoelectric devices, wherein said load plate includes a housing having a hollow cavity therein, said cavity filled with a phase change medium which changes temperature slower than said housing to thereby act as a sustaining reservoir to help maintain the desired temperature of said load plate.

5,255,521

GAS CYCLE ENGINE FOR REFRIGERATOR

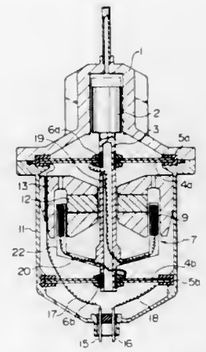
Norihisa Watanabe, Hiratsuka, Japan, assignor to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Filed Jun. 2, 1992, Ser. No. 892,360

Claims priority, application Japan, Jun. 13, 1991, 3-44427[U]

Int. Cl.[5] **F25B** *9/00*

U.S. Cl. 62—6 **30 Claims**



1. A gas cycle engine for use in a refrigerator, comprising:

a hermetic cylinder having a longitudinal direction;

a moving member disposed in said cylinder;

leaf spring means made of an electrical conductor for supporting said moving member so as to allow movement of said moving member in said longitudinal direction, and for supplying electric power therethrough; and

a linear motor for moving said moving member to perform a thermodynamic gas cycle.

5,255,522

VAPORIZATION OF LIQUID OXYGEN FOR INCREASED ARGON RECOVERY

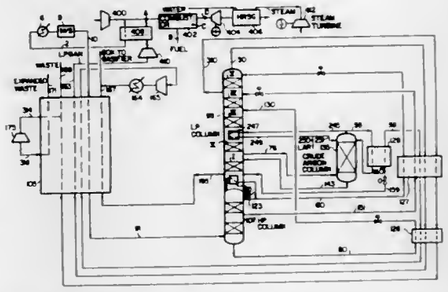
Rakesh Agrawal, Allentown, and Terrence F. Yee, Macungie, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Feb. 13, 1992, Ser. No. 835,642

Int. Cl.[5] **F25J** *3/04*

U.S. Cl. 62—22 **13 Claims**

1. In a cryogenic air distillation process producing argon from feed air using a multiple column distillation system comprising a high pressure column, a low pressure column and a crude argon column wherein a liquid oxygen bottoms is produced in the low pressure column and wherein the crude argon column has a condensing duty, the improvement for increasing argon recovery comprising satisfying a first portion of the crude argon column condensing duty with refrigeration provided from the vaporization of at least a portion of the liquid oxygen bottoms from the low pressure column at reduced pressure and satisfying a second portion of said duty with refrigeration provided from the vaporization of any other process liquid.



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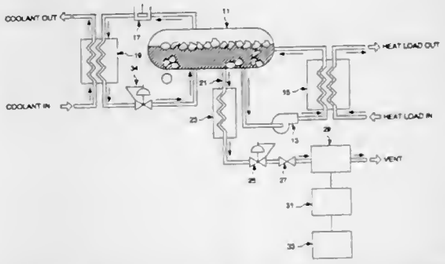
METHOD AND APPARATUS FOR DETERMINING THE SOLID FRACTION OF A STORED CRYOGENIC REFRIGERATION SYSTEM

Kenneth L. Burgers, Woodridge; Arif Y. Kiziltug, Naperville; Royce J. Laverman, South Holland, and William S. Schoerner, Plainfield, all of Ill., assignors to Liquid Carbonic Corporation, Oak Brook, Ill.

Filed Sep. 22, 1992, Ser. No. 949,426

Int. Cl.[5] **F25J** *5/00*

U.S. Cl. 62—12 **14 Claims**



1. A method for determining the mass fraction (F) of solid cryogen in a stored cryogenic refrigeration system containing a mass (S) of solid phase cryogen comprising:

adding mass (T) of a trace substance which is soluble in the liquid phase of said system;

determining the total mass (M) of the cryogen in said system;

determining the initial mass concentration (C_I) of the trace substance in said system by dividing (T) by (M);

extracting a liquid phase cryogen sample from said system;

heating said sample to a temperature sufficient to vaporize said sample;

analyzing said sample to determine the new mass concentration (C_N) of the trace substance in the sample which is dependent on the mass of solid cryogen which is present in said system;

dividing the initial mass concentration (C_I) by the new mass concentration (C_N) to provide a quotient; and

subtracting said quotient from 1 to determine the mass fraction (F) of solid cryogen in said system.

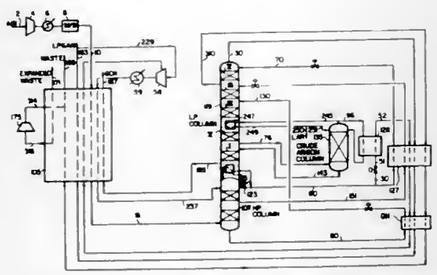
VOL 1155 ISS 4 OCT 26 1993 UMI

5,255,524

DUAL HEAT PUMP CYCLES FOR INCREASED ARGON RECOVERY

Rakesh Agrawal, Allentown, and Terrence F. Yee, Macungie, both of Pa., assignors to Air Products & Chemicals, Inc., Allentown, Pa.

Filed Feb. 13, 1992, Ser. No. 835,640
Int. Cl.[5] F25J 3/04
U.S. Cl. 62—22 14 Claims



1. In a cryogenic air distillation process producing argon from feed air using a multiple column distillation system comprising a high pressure column, a low pressure column and a crude argon column wherein the feed air is compressed in a main air compressor, cooled and at least a portion thereof is fed to the high pressure column; wherein in the high pressure column, the compressed, cooled feed air is rectified into a crude liquid oxygen bottoms and a high pressure nitrogen overhead; wherein the crude liquid oxygen is fed to the low pressure column; wherein in the low pressure column, the crude liquid oxygen is distilled into a liquid oxygen bottoms and a gaseous nitrogen overhead; wherein the low pressure column and the high pressure column are thermally linked such that a first portion of the high pressure nitrogen overhead is condensed in a reboiler/condenser against a first portion of vaporizing liquid oxygen bottoms; wherein an argon containing gaseous side stream is removed from a lower intermediate location of the low pressure column and fed to the crude argon column; and finally wherein in the crude argon column, the argon containing gaseous side stream is rectified into an argon-rich vapor overhead and an argon-lean bottoms liquid, and the argon-lean bottoms liquid is returned to the low pressure column; the improvement for increasing argon recovery comprising using a first heat pump cycle to transfer refrigeration from the bottom of the low pressure column to the top of the crude argon column and a second heat pump cycle to transfer refrigeration from the bottom of the low pressure column to the top of the low pressure column wherein the first heat pump cycle employs a heat pump fluid selected from the group consisting of nitrogen, argon, oxygen and mixtures thereof and wherein the second heat pump cycle also employs a heat pump fluid selected from the group consisting of nitrogen, argon, oxygen and mixtures thereof and wherein the first heat pump cycle is selected from the group consisting of an indirect reflux first heat pump cycle and a direct reflux first heat pump cycle and wherein the second heat pump cycle is selected from the group consisting of an indirect reflux second heat pump cycle and a direct reflux second heat pump cycle and finally wherein the indirect reflux first heat pump cycle comprises:

(a) condensing a first heat pump fluid by heat exchange against a second portion of vaporizing liquid oxygen bottoms;

(b) reducing the pressure of the first heat pump fluid;

(c) vaporizing the first heat pump fluid by heat exchange against at least a first portion of the argon-rich vapor overhead wherein an adequate temperature difference exists between the argon-rich vapor overhead and the vaporizing first heat pump fluid, thereby condensing said first portion of the argon-rich vapor overhead and returning at least a portion of the condensed argon to the top of the crude argon column to provide at least a first portion of liquid reflux for the crude argon column; and

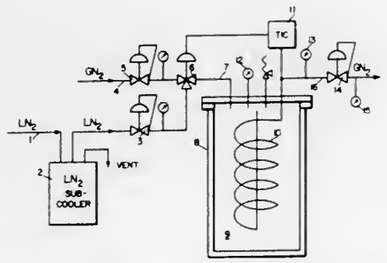
(d) compressing the first heat pump fluid.

5,255,525

SYSTEM AND METHOD FOR ATOMIZATION OF LIQUID METAL

Rolf H. Wieland, Norristown; Howard J. Obman, Souderton, both of Pa., and Alan B. Davala, Florence, N.J., assignors to MG Industries, Malvern, Pa.

Continuation-in-part of Ser. No. 780,924, Oct. 22, 1991, abandoned. This application May 29, 1992, Ser. No. 890,226
Int. Cl.[5] F17C 11/00
U.S. Cl. 62—46.1 29 Claims



1. A method of producing a cold gas, the method comprising the steps of:

a) providing a first stream of liquefied gas,

b) providing a second stream of warm gas, the first and second streams having the same pressure,

c) mixing said first and second streams in relative amounts sufficient to vaporize the first stream, and to produce a third stream which comprises a gas having a desired temperature,

d) directing said third stream into an insulated chamber, the chamber having an interior region,

e) directing said third stream into a coil disposed within the chamber, the coil being fluidly connected to the interior region of the chamber, the coil also being fluidly connected to an outlet line, and

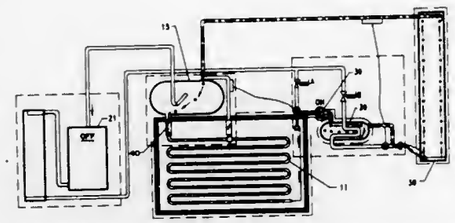
f) withdrawing said third stream from said outlet line.

5,255,526

MULTI-MODE AIR CONDITIONING UNIT WITH ENERGY STORAGE SYSTEM

Harry C. Fischer, Box 14, Moon, Va. 23119

Filed Mar. 18, 1992, Ser. No. 852,307
Int. Cl.[5] F25D 3/00
U.S. Cl. 62—59 11 Claims



1. A multi-mode air conditioning unit having a low temperature thermal storage system comprising:

a) an insulated tank containing water;

b) a plurality of cooling coils located in said insulated tank;

c) a top header having a first and second fluid lines for receiving and discharging refrigerant and further connected to said plurality of cooling coils;

d) an accumulator system for storing liquid refrigerant. for separating vapor from liquid, and for returning oil to a compressor comprising:

an insulated accumulator tank having a first port, a second port and a third port;

a one-way check valve directing flow to said top header connected to the first port;

a main suction line connected to the second port and further connected to an ice oil suction line having a one-way check valve directing flow from said top header to the main suction line; and

a vapor and oil return line having a J-tube configuration with a vapor inlet near the top of the accumulator and an oil return orifice located at the bottom of the J-tube, said vapor and oil return connected to the third port and leading a condensing unit;

e) a plurality of distributor lines connected to the lower ends of said cooling coils;

f) a side outlet distributor connected to said distributor lines;

g) a thermostatic expansion valve attached to said side outlet distributor;

h) a solenoid value receiving refrigerant from a liquid line from a condensing unit and connected to said thermostatic expansion valve;

i) a refrigerant pump connected to the side outlet of said side outlet distributor;

j) an insulated storage vessel having an inlet and high outlet and containing heat exchanger coils;

k) a solenoid valve controlling flow from the liquid line connected to the heat exchanger coils in said storage tank;

l) a second thermostatic expansion valve connected to the heat exchanger coils;

m) a second side port distributor having the side port connected to the high outlet of said storage vessel and having the primary port connected to said second thermostatic valve; and

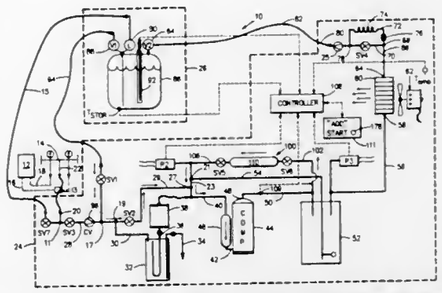
n) a plurality distributor lines connected to said second side port distribution and further leading a conventional indoor coil.

5,255,527

METHOD OF TESTING THE PURITY OF REFRIGERANT FLOWING THROUGH A REFRIGERATION SYSTEM

Lowell E. Paige, Pennellville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Jan. 2, 1992, Ser. No. 815,775
Int. Cl.[5] F25B 43/00
U.S. Cl. 62—85 3 Claims



1. A method of testing the purity of refrigerant flowing through a refrigeration system the refrigeration system having a normal non-testing mode of operation, the refrigeration system including, a compressor having an inlet port which has an inlet conduit associated therewith defining in part the low pressure side of the refrigeration system, an outlet port having an outlet conduit associated therewith defining in part the high pressure side of the refrigeration system, a refrigerant purity testing system including, a refrigerant purity testing holder for removably supporting a refrigerant purity testing tube in fluid flow relationship therewith, a first conduit for establishing fluid communication between one end of the tube holder and with the inlet conduit. and a second conduit for establishing fluid communication between the other end of the tube holder and the outlet conduit, the first and second conduits each having a flow control valve which may be open or closed, the method comprising;

a) installing an empty open ended testing tube in the tube holder;

b) closing the flow control valves in the first and second conduits;

c) starting the compressor;

d) operating the refrigeration system in a normal mode;

e) opening the flow control valves in the first and second conduits when it is desired to test the purity of the refrigerant in the refrigeration system;

f) operating the refrigeration system for a predetermined period of time with the flow control valves open, to thereby purge the refrigerant purity testing system;

g) closing the flow control valves in the first and second conduits after said predetermined time;

h) shutting off the compressor;

i) operating the refrigeration system in a pressure equalization mode for a predetermined period of time;

j) removing the empty open ended testing tube from the tube holder;

k) installing a fresh refrigerant purity testing tube in the tube holder;

l) starting the compressor;

m) opening the flow control valves in the first and second conduits;

n) operating the refrigeration system in a refrigerant purity sampling mode for a predetermined period of time; and

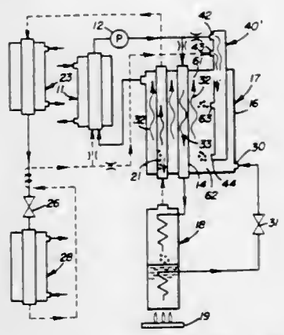
o) analyzing the refrigerant purity test tube after the predetermined period of time to determine the purity of the refrigerant in the refrigeration system.

5,255,528

METHOD AND APPARATUS FOR RECUPERATING WASTE HEAT IN ABSORPTION SYSTEMS

Kim Dao, 12 Nace Ave., Piedmont, Calif. 94611

Filed Jun. 3, 1992, Ser. No. 894,053
Int. Cl.[5] F25B 15/00
U.S. Cl. 62—101 24 Claims

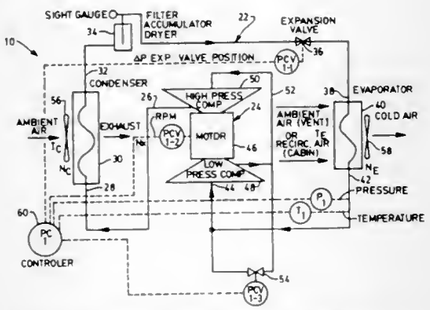


1. A method of recovering waste heat in an absorption system having working and absorbent fluids, comprising the steps of:

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(a) forming a concurrent fluid stream of liquid and vapor, which are fluids of said absorption system,
(b) heating said concurrent fluid stream with waste heat,
(c) delivering said heated fluid stream to an absorption process,
(d) cooling said absorption process to recover waste heat used in step (b).

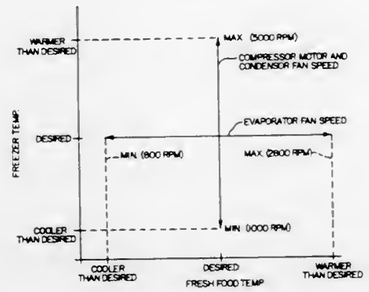
5,255,529
ENVIRONMENTAL CONTROL SYSTEM
James W. Powell, Hartland; Mark G. Voss, Brighton, both of Mich.; John F. Hurley, Easton, and Edward O. Hartel, Orange, both of Conn., assignors to Nartron Corporation, Reed City, Mich.
Division of Ser. No. 583,233, Sep. 14, 1990, abandoned. This application Jul. 8, 1992, Ser. No. 910,203
Int. Cl.[5] F25B *39/00*
U.S. Cl. 62—180 **2 Claims**



1. An environmental control system comprising:
a refrigeration loop including a variable speed compressor having an inlet and an outlet, a condenser having an inlet connected with said compressor outlet and an outlet, and an evaporator having an inlet connected with said condenser outlet and an outlet connected with said compressor inlet;
a variable speed condenser fan;
evaporator temperature sensing means for sensing the temperature in the vicinity of said evaporator;
condenser temperature sensing means for sensing the temperature in the vicinity of said condenser;
compressor speed control means for establishing the speed of said compressor as a function of the temperature sensed by said evaporator temperature means;
condenser fan speed control means for establishing the speed of said condenser fan as a function of the temperature sensed by said condenser temperature sensing means;
a variable speed evaporator fan and evaporator fan control means for controlling the speed of said evaporator fan; and
means for monitoring the superheat condition of the refrigerant at the compressor inlet wherein said evaporator fan control means controls the speed of said evaporator fan as a function of the value of said superheat condition.

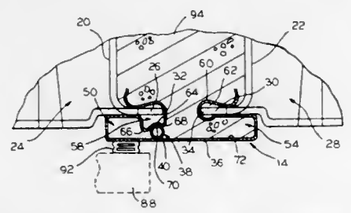
5,255,530
SYSTEM OF TWO ZONE REFRIGERATOR TEMPERATURE CONTROL
Donald E. Janke, Benton Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed Nov. 9, 1992, Ser. No. 973,861
Int. Cl.[5] F25D *17/08*
U.S. Cl. 62—180 **16 Claims**

1. In a refrigerator system having means forming a fresh food compartment, means forming a lower temperature freezer compartment, and a refrigeration system including an evaporator disposed within said freezer compartment, a condenser, and a compressor for compressing a refrigerant in the system, a control arrangement comprising:
a variable speed motor coupled with said compressor;
a variable speed evaporator fan for circulating an air stream in a substantially closed loop from said freezer compartment to said fresh food compartment;



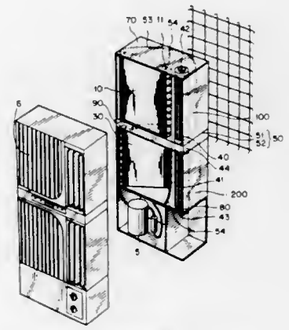
means for responding to the temperature within said fresh food compartment for varying the speed of said evaporator fan such that the temperature of said fresh food compartment is controlled; and
means for responding to the temperature within said freezer compartment for varying the speed of said compressor motor such that the temperature of said freezer compartment is controlled.

5,255,531
REFRIGERATOR MULLION ASSEMBLY WITH HOT GAS DEFROST TUBE
Stephen G. Williams, and Michael W. Greenwood, both of Ohio Township, Warrick County, Ind., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Jan. 5, 1993, Ser. No. 769
Int. Cl.[5] F25B *47/00*
U.S. Cl. 62—277 **12 Claims**



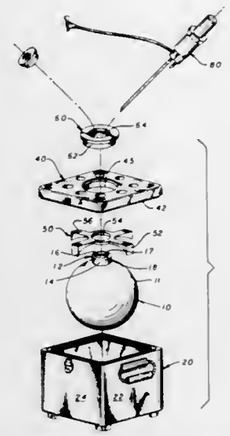
1. In a refrigeration apparatus cabinet including an outer shell having a front flange defining a rectangular opening, first and second liners in juxtaposed relation in said shell defining first and second storage compartments, respectively, each side liner including a generally rectangular, front peripheral flange with one side edge of each flange being adjacent one another, an improved heated mullion assembly, comprising:
an elongate conduit, said conduit carrying heating means for preventing condensation; and
a mullion rail comprising an elongate plate defining a centerline and opposite first and second longitudinal edges, said plate having a first reverse bend between said centerline and said first longitudinal edge to define a first channel, a second reverse bend between said centerline and said second longitudinal edge to define a second channel opening in a direction facing the first channel, a third reverse bend between said first reverse bend and said first longitudinal edge to define a third channel opening opposite the first channel, and a fourth reverse bend between said second reverse bend and said second longitudinal edge to define a fourth channel opening opposite the third channel, said third and fourth channels each receiving the one flange of one said liner, and said plate including a formed portion between said first and third reverse bends adapted to provide a surface complementary to said conduit and spaced a select distance from a front wall rear surface less than a thickness of said conduit to positively retain said conduit in said first channel in surface contact with said front wall rear surface to prevent condensation on said mullion rail.

5,255,532
AIR CONDITIONER
Yong B. Chae, Seoul, and Jong E. Park, Suweon-City, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon City, Rep. of Korea
Filed Sep. 28, 1992, Ser. No. 951,754
Claims priority, application Rep. of Korea, Sep. 27, 1991, 91-16831; Oct. 24, 1991, 91-17826[U]
Int. Cl.[5] F25B *29/00*
U.S. Cl. 62—325 **16 Claims**



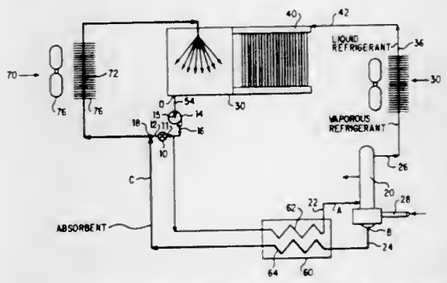
1. An air conditioner comprising:
an upper heat exchanger section including:
an upper fan for inducting an upper air flow through said upper heat exchanger section,
an upper heat exchanger through which the upper air flow travels, and
an upper wall shiftable between opposite sides of said upper heat exchanger section so that when said upper wall is disposed adjacent either of said sides, the upper air flow is drawn from and returned to the ambient air located adjacent the opposite side; and
a lower heat exchanger section positioned beneath said upper heat exchanger section and including:
a lower fan for inducing a lower air flow through said heat exchanger section,
a lower heat exchanger through which the upper air flow travels, and
a lower wall shiftable between opposite sides of said lower heat exchanger section so that when said lower wall is disposed adjacent either of said sides of said lower heat exchanger section, the lower heat exchanger section, the lower air flow is drawn from and returned to the ambient air located adjacent the opposite side of said lower heat exchanger section.

5,255,533
ICE BOX FOR SPHERICAL DRINK CONTAINER
Sean E. Reilly, 25346 Avenida Cappela, Valencia, Calif. 91355
Filed Dec. 17, 1992, Ser. No. 996,527
Int. Cl.[5] B67D *5/62*
U.S. Cl. 62—400 **12 Claims**



12. An ice box for storing a drink container that is essentially spherical in shape and also has a radial protrusion extending from its normally upper surface with a pair of openings for attachment of a pump thereto, comprising:
housing means for completely surrounding both the container and a quantity of ice in which it is packed;
first removable means forming an opening in said housing means for insertion of a pump therein;
spacing means on the interior of said housing means for ensuring that said pump-attachment protrusion is aligned with said opening; and
second removable means providing access to the interior of said housing means for adding ice thereto without disturbing the alignment of said pump-attachment protrusion.

5,255,534
SYSTEM AND PROCESS FOR OPERATING AND ABSORPTION CYCLE AROUND A CRYSTALLIZATION CURVE OF THE SOLUTION
William A. Ryan, Chicago, Ill., assignor to Gas Research Institute, Chicago, Ill.
Filed Jun. 25, 1992, Ser. No. 909,801
Int. Cl.[5] F25B *15/00*
U.S. Cl. 62—476 **33 Claims**



1. An absorption system that operates around a crystalliza-

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tion curve of a solution with a crystallization limitation, the system comprising:

generator means for heating the solution and separating an absorbent of the solution from a refrigerant of the solution, said generator means comprising a solution inlet and an absorbent discharge;

condensor means for condensing said separated refrigerant, said condenser means in communication with and downstream of said generator means;

evaporator means for evaporating said condensed refrigerant, said evaporator means in communication with and downstream of said condenser means;

absorber means for absorbing said evaporated refrigerant into said absorbent, said absorber means comprising an absorber inlet, a distributor passing a spray of said absorbent through a refrigerant vapor without cooling of said solution, and a solution discharge;

a first heat exchanger having a solution pass in communication between said solution discharge and said solution inlet, said first heat exchanger having an absorbent pass in communication between said absorber inlet and said absorbent discharge;

a second heat exchanger comprising an absorber solution cooler independent from said absorber means, said second heat exchanger having a first pass in communication between a mixing point and said absorber inlet, wherein flows of the solution and said absorbent are combined to form a mixed solution at said mixing point and are cooled below an equilibrium temperature of said mixed solution; and

control means for mixing at least a portion of the solution from said absorber discharge with said absorbent flowing to said absorber inlet and thereby diluting said absorbent.

5,255,535

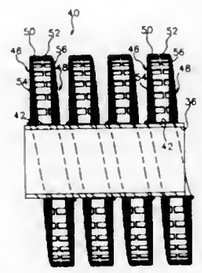
REFRIGERATOR WITH SPINE FIN EVAPORATOR

Adam C. Kennedy, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 26, 1991, Ser. No. 813,487

Int. Cl.[5] F25B *39/02*

U.S. Cl. 62—515 **8 Claims**



1. A refrigerator having at least one compartment to be refrigerated and a refrigerant evaporator normally operable to refrigerate said at least one compartment; said evaporator including an elongated evaporator tube to receive refrigerant and an elongated ribbon of heat transfer material; said ribbon including an elongated base wound in an open spiral about said tube and in intimate heat transfer relationship therewith and a continuous series of fingers formed along both edges of said base; each of said fingers including a root portion extending generally perpendicularly outward from said tubing and a distal end portion bent with respect to said root portion of that finger so that said distal end portions lie in an annular cylinder spaced about said tube.

5,255,536

DEFROST ASSEMBLY

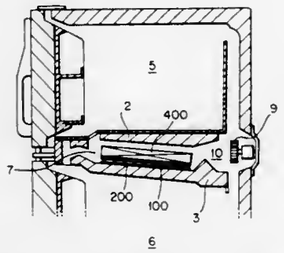
Gyoo H. Jung, Suweon; Man H. Kim, Seoul, and Kyung I. Lee, Suweon, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 30, 1991, Ser. No. 814,704

Claims priority, application Rep. of Korea, Dec. 31, 1990, 90-22045[U]; Jul. 4, 1991, 91-10218[U]; Jul. 15, 1991, 91-10930[U]; Jul. 16, 1991, 91-11088[U]

Int. Cl.[5] F25D *21/06*

U.S. Cl. 62—515 **9 Claims**



1. In a refrigerator comprising a freezer compartment, a refrigeration compartment vertically spaced apart from said freezer compartment by a space, a partition arranged to define a floor of said space, an evaporator and a defrost mechanism disposed in said space, said defrost mechanism comprising:

a thin substantially planar heating plate underlying said evaporator, said heating plate formed of a thermally conductive material, said evaporator seated on said heating plate,

a heater disposed beneath and in contact with said heating plate for heating said heating plate, and

a substantially planar thermal insulating board underlying said heater, said heating plate, together with said heater, being seated upon said thermal insulating board; said thermal insulating board being seated upon said floor of said space.

5,255,537

FLAT-BED KNITTING MACHINE

Reinhold Schimko, c/o Universal Maschinenfabrik Dr. Rudolf Schieber GmbH & Co. KG, Postfach 20 D-7084 Westhausen, Fed. Rep. of Germany

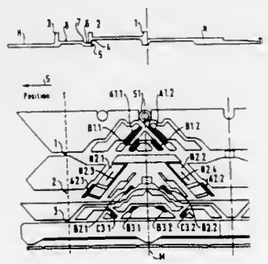
PCT No. PCT/EP89/01141, § 371 Date Apr. 26, 1991, § 102(e) Date Apr. 26, 1991, PCT Pub. No. WO90/04669, PCT Pub. Date May 3, 1990

PCT Filed Sep. 28, 1989, Ser. No. 681,508

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1988, 3836806

Int. Cl.[5] D04B *14/70, 15/36*

U.S. Cl. 66—75.1 **14 Claims**



1. A flat bed knitting machine, comprising: knitting needles arranged in needle channels of a needle bed, each of said knitting needles comprising a flexible shank, an anterior first needle butt projecting from the needle bed, and a posterior second needle butt which sinks into the needle bed;

displacing jacks located behind the knitting needles, each of said displacing jacks comprising an operating butt and a forward end, wherein said forward end has a first lifting surface for lifting the posterior second needle butt into a half-height working position and a contiguous second lifting surface for lifting the posterior second needle butt into a full-height working position; and

a cam system arranged symmetrically about a central axis in a cam plane, said cam system comprising at least two needle sinkers displaceable in the cam plane for engaging the posterior second needle butts, a control tongue located on the central axis within camming range of the anterior first needle butts and rockable by the anterior first needle butts, and a first group of cams arranged symmetrically about the central axis and moveable perpendicularly to the cam plane, said first group of cams comprising at least two first cams within camming range of the anterior first needle butts near the control tongue or within camming range of the posterior second needle butts and at least two second cams within camming range of the posterior second needle butts near the needle sinkers.

5,255,538

FABRIC AND KNITTING

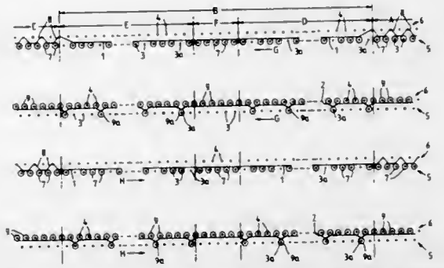
Gerald F. Day and Frank Robinson, both of Derbyshire, United Kingdom, assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 1, 1992, Ser. No. 891,048

Claims priority, application United Kingdom, Jun. 13, 1991, 9112762

Int. Cl.[5] D04B *1/22, 15/36*

U.S. Cl. 66—71 **17 Claims**



1. A method of knitting an upholstery fabric having at least two adjoined contiguous regions of different knitted structures located side-by-side in a wale-wise direction and having courses extending continuously through both regions, which comprises knitting said fabric on a machine having a pair of opposed independently operable needle beds, an operating cam box reciprocally movable along the needle beds and containing independently operable cam members for each direction of movement of the cam box, said members having camming surfaces independently adjustable to affect the loop length of stitches knitted on the needles operated by the cam, the needles in each bed being movable independently of one another in their beds into the path of said cam box, and in said knitting actuating the needles for one region by a cam surface of one length in the cam box so as to give stitches with a first loop length, actuating the needles for the adjacent region by a cam surface of a different length in the cam box to give a second loop length different from the first loop length, and adjusting the loop lengths of the two adjacent structures so that, in the relaxed condition of the fabric, the same number of courses of each of the two regions of different knitted structures in the wale-wise direction extend for substantially the same wale-wise distance.

5,255,539

APPARATUS FOR TREATING A WEB

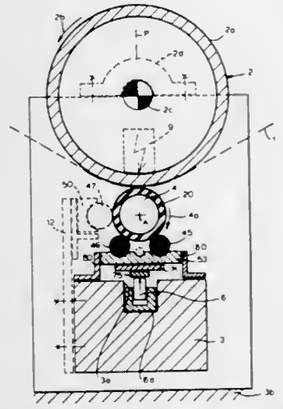
Johannes Zimmer, Ebentaler Strasse 133, A-9020 Klagenfurt, Austria

Filed Sep. 23, 1992, Ser. No. 949,696

Claims priority, application Austria, Sep. 23, 1991, 1913/91

Int. Cl.[5] D06B *1/14*

U.S. Cl. 68—43 **19 Claims**



1. An apparatus for treating a web, comprising:

means forming a countersurface along which said web is guided, said countersurface extending across a width of the web;

an elongated stiff support element spaced from said countersurface, extending over said width and being substantially nonbendable over a length of said support element;

a pressing-force generator on said support element and braced thereby for applying a pressing force generally in a direction of said countersurface; and

a bendable assembly interposed between said web and said pressing-force generator and adapted to bend upon the application of said pressing force thereto across said width to conform to said countersurface, said assembly comprising:

a working roll free from axial journals and floating relative to said countersurface juxtaposed with said countersurface and bearing upon said web, and

at least one force transmitting member bearing upon said working roll and acted upon by said pressing force generator, extending over a length of said working roll and supporting same while transmitting said pressing force to said working roll, both said working roll and said force transmitting member being bendable over said width.

5,255,540

PRESSURIZED DYNAMIC WASHER

Peter LeBlanc, Seminole, Fla., and Goda Rangamannar, Pittsfield, Mass., assignors to Beloit Technologies, Inc., Wilmington, Del.

Filed Jun. 29, 1990, Ser. No. 546,119

Int. Cl.[5] D06B *3/00*

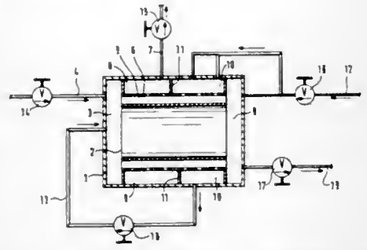
U.S. Cl. 68—181 R **17 Claims**

1. A wood pulp fiber washing device comprising:

a hollow body defining a pressurizable compartment for receiving a slurry flow of pulp fibers in a carrying liquid, said body having a slurry inlet means and a slurry outlet means;

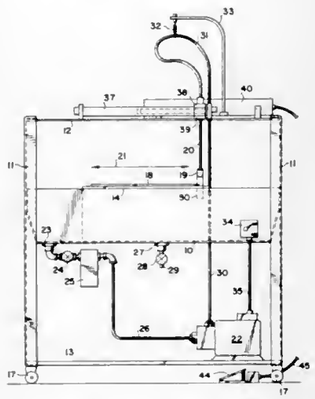
VOL 1155 ISS 4 OCT 26 1993 UMI

a stationary wash wire disposed in said compartment;
said slurry inlet and outlet means both being in flow relationship with one side of said wash wire such that pulp fibers entering said device from said slurry inlet means pass through said slurry outlet means without passing through said wire;
pulse means for generating pulses operationally disposed near, but spaced from said wash wire, for generating high frequency, low amplitude pulses in slurry passing along said wash wire, and for localized mixing of the slurry along said wash wire;



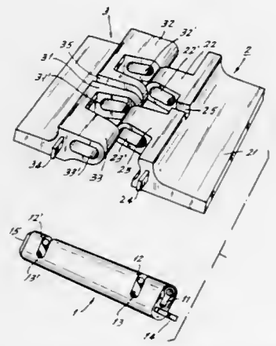
said wash wire being structured and arranged in cooperation with said pulse means so as to create a barrier to the passage of pulp fibers from said one side of said wire to an opposite side of said wire, but allowing carrying liquid to pass therethrough;
delivery means for delivering slurry to the space between said means for generating pulses and said wash wire;
supply means for introducing wash liquid to displace and replace liquid passing through said wash wire;
means for creating axial velocity in the direction from inlet to outlet in said washer; and
radial velocity generating means for dewatering the pulp stock traveling along the wire.

5,255,541
COLLAR LAUNDERING MACHINE
Ernest A. Porter, 900 Rio St. Johns Dr., Jacksonville, Fla. 92211, and Michael T. Porter, 10941 Putney Ct., Jacksonville, Fla. 32225
Filed Jul. 1, 1992, Ser. No. 907,504
Int. Cl.[5] D06B *1/02*
U.S. Cl. 68—205 R **9 Claims**



1. An apparatus for laundry spray cleaning comprising a housing containing a horizontally positioned open-top tub for containing a reservoir of cleaning liquid, a horizontal work table above said tub to support the item to be cleaned, a spray nozzle suspended closely above said work table and directed to spray said liquid downwardly against said item on the work table while moving in a horizontal reciprocating motion across said work table, a pump to receive said liquid from said tub, pressurize it and deliver, at a pressure of 500–2000 psig, the pressurized liquid to said nozzle, and means to selectively cause said spray nozzle to reciprocate.

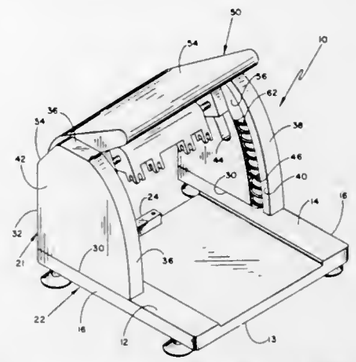
5,255,542
LOCKING DEVICE FOR CONTAINER DOORS
Jean Fortin, 480 rue de Verdun, 76600 Le Havre, France
Filed Sep. 19, 1990, Ser. No. 584,716
Claims priority, application France, Jan. 22, 1990, 90 00827
Int. Cl.[5] E05B *67/36*
U.S. Cl. 70—34 **6 Claims**



1. A device for locking a container door comprising a bar, said bar adapted to lock a first piece and a second piece, said first and second pieces each being attached to a respective leaf of said container door, each of said pieces including at least two rings separated by a space;
said rings of said second piece having holes, said holes and said bar having corresponding shapes, said rings of said first piece also having holes, said holes of said rings of said first piece having a shape corresponding to the shape of said bar but having substantially larger dimensions; and
said rings of said first piece being inserted in said space of said second piece when said container door is closed, said bar being inserted through said rings of said first and second pieces to lock said container door;
wherein said bar includes means for activating latches within said bar which, when activated, enter corresponding recesses in said rings of said second piece to lock said bar to said second piece.

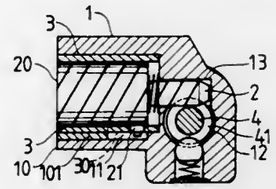
5,255,543
OPENER FOR SECURITY PACKAGE WITH SPRING LOADED KEYING MECHANISM
Boyd C. Wittman, Shorewood, Minn., assignor to Empak, Inc., Chanhassen, Minn.
Filed Aug. 14, 1991, Ser. No. 745,008
Int. Cl.[5] E05B *65/00*
U.S. Cl. 70—57.1 **3 Claims**

1. A device for opening a security package comprising:
(a) a main housing including a base, a stop plate projecting upwardly from the base, a first side rail projecting upwardly from one side of the base, a second side rail projecting upwardly from the opposite side of the base, said side rails having first opposing, aligned, elongated, parallel grooves;
(b) a slidable opening mechanism dimensioned to fit between the side rails, a pair of guide elements attached to each side of a block, said guide elements dimensioned to fit within said grooves on said side rails when said slidable opening mechanism is attached to the main housing, so that the slidable opening mechanism can move between up and down positions, said slidable opening mechanism further including a handle projecting rearwardly from said block,



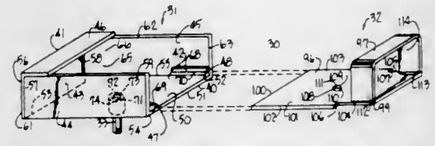
and means for mounting a key to said block, said housing and said slidable opening mechanism forming a channel into which the security package to be opened cam be inserted; and
(c) means for biasing said slidable opening mechanism toward its up position.

5,255,544
HOUSING FOR A LOCK IN AN AUTOMOBILE STEERING LOCK
Weo-Yin Wu, No. 22, Chung Chen 2nd Rd., 8th Fl. Room #2, Kaohsiung City, Taiwan
Filed Oct. 26, 1992, Ser. No. 966,519
Int. Cl.[5] B60R *25/02*
U.S. Cl. 70—209 **4 Claims**



1. In an automobile steering wheel lock having an elongated hollow tubular member with a rod member having a plurality of circumferential grooves slidably received in the elongated tubular member, an improved locking mechanism housing for locking the rod member in a desired position comprising:
a) the housing operatively associated with the elongated tubular member, the housing defining a passageway in alignment with the hollow tubular member such that the rod member extends through the passageway and the housing having a generally cylindrical wall defining a lock mechanism chamber in communication with the passageway, the chamber having a front opening;
b) a notch defined by the generally cylindrical wall opening into the lock mechanism chamber;
c) a generally cylindrical protective member formed of heat treated material fixed to the housing so as to line the lock mechanism chamber, the protective member defining a hole in general alignment with the notch; and,
d) a lock mechanism fixedly attached to the protective member by a projection extending through the hole defined by the protective member and into the notch and displaced inwardly from the front opening.

5,255,545
GOOSENECK TRAILER HITCH LOCKING DEVICE
James M. Wheeler, Rte. 1, Box 162, Willard, Mo. 65781, assignor to James M. Wheeler and Louise K. Wheeler, both of Willard, Mo.
Continuation-in-part of Ser. No. 693,817, Apr. 30, 1991, Pat. No. 5,181,405. This application Apr. 7, 1992, Ser. No. 864,570
The portion of the term of this patent subsequent to Jan. 26, 2010, has been disclaimed.
Int. Cl.[5] F16B *41/00*
U.S. Cl. 70—232 **5 Claims**



1. A locking device for use with a trailer gooseneck, the trailer gooseneck having a post with upper and lower ends, the upper end being attached to a trailer and the lower end being attached to a coupler, the coupler having front and rear facing portions and being adapted for releasable attachment to a towing vehicle, said locking device comprising:
(a) a first lock body adapted to receive the rear facing portion of said coupler, said first lock body having a bottom defining an aperture and an interior defining channels;
(b) a second lock body adapted to receive the front facing portion of said coupler, said second lock body having a bottom defining an aperture, said bottom being adapted to be slidably received in said channels in said first lock body such that the aperture in said bottom of said first lock body can be aligned with and below said aperture in said bottom of said second lock body;
(c) a projection defining a longitudinal bore extending completely therethrough, said projection attached to and extending down from said bottom of said first lock body such that said aligned apertures in said bottoms of said first and second lock bodies, respectively, can be further aligned with and above said bore when said first and second lock bodies are in cooperation with the coupler;
(d) a lock pin received by said projection and extending into said bore and said aligned apertures to prevent separation of the first and second lock bodies from said coupler, said lock pin having a length adapted to extend into said bore; and
(e) lock means at a bottom of said projection so as to prevent undesired access to the lock pin.

5,255,546
APPARATUS FOR INFLATING INFLATABLE ARTICLES AND SECURING MOBILE ARTICLES TO OTHER OBJECTS
Wayne E. Saunders, Sandy; Raymond C. Saunders, Midvale, and David W. Saunders, Salt Lake City, all of Utah, assignors to Striders, Inc., Salt Lake City, Utah
Continuation-in-part of Ser. No. 442,136, Nov. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 377,583, Jul. 10, 1989, abandoned, which is a continuation-in-part of Ser. No. 200,512, May 31, 1988, abandoned. This application Sep. 28, 1990, Ser. No. 590,371
Int. Cl.[5] E05B *71/00*
U.S. Cl. 70—233 **59 Claims**

1. A system for securing wheeled articles to immobile objects comprising:
a tubular housing having a first end;

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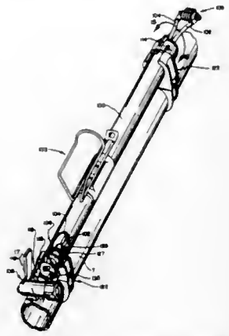
a first length of cable having proximal and distal ends, the proximal end being at least partially disposed within the tubular housing and the distal end extending out of the first end of the tubular housing;

a second length of cable having proximal and distal ends, the proximal end being at least partially disposed within the tubular housing and the distal end extending out of the first end of the tubular housing;

first locking means for locking the distal end of the first cable to another object, the first locking means being positioned at the distal end of the first length of cable;

second locking means for locking the distal end of the second cable to another object, the second locking means being positioned at the distal end of the second length of cable; and

means for holding the first length of cable and the second length of cable in a substantially side-by-side relationship



adjacent their proximal ends such that undue friction between the interior of the tubular housing and the first and second lengths of cable is avoided; and

means for guiding the first and second lengths of cable as they are withdrawn from, and retracted into, the tubular housing such that the first and second lengths of cable are maintained in a substantially side-by-side relationship as they move through the first end of the tubular housing, the first and second lengths of cable being maintained in a subtantially side-by-side and linear configuration for a distance equal to at least ten percent of the length of the lengths of cable and such that the lengths of cable are not required to bend in a arc greater than ten degrees for a distance of ten percent of the length of the lengths of cable as the cable exits through the first end of the tubular housing such that the lengths of cable can be retracted into, and withdrawn from, the tubular housing without entanglement and without undue effort.

5,255,547

IGNITION LOCK WITH DUAL UNLOCKING MODES

Larry W. Burr, Saginaw; James E. Rouleau, Bay City; Ricardo A. Pastor, Saginaw, and Christian E. Ross, Freeland, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 19, 1992, Ser. No. 932,121
Int. Cl.[5] E05B *47/06*
U.S. Cl. 70—252 **3 Claims**

1. A motor vehicle ignition lock comprising:

a housing adapted for rigid support on said motor vehicle,

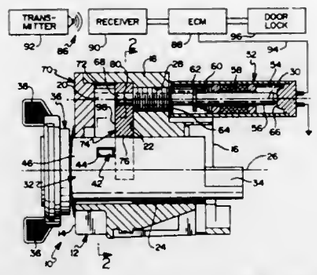
a lock barrel adapted for connection to an ignition switch of said motor vehicle and supported on said housing for rotation about a first axis between an OFF/LOCK position corresponding to said ignition switch being off and an ON position corresponding to said ignition switch being on,

a mechanical lock means on said lock barrel including a key slot nad a side bar having an extended position defining a raial abutment on said lock barrel and shiftable upon insertion of a key into said key slot from said extended position to a retracted position inside said lock barrel,

an electronic lock means on said hosing including an electric solenoid having aplunger aligned on and bodily shiftable in the direction of a second axis parallel to said first axis between an extended position when said electric solenoid is turned off and a retracted position when said electric solenoid is turned on,

a slide,

means mounting said slide on said housing with an edge of said slide juxtaposed said lock barrel and for boidly shiftable movement in a direction parallel to eachof said first



and said second axes between a locking position and an unlocking position,

means defining a notch in said ege of said slide receiving said side bar in said extended position of said side bar and in said locking position of said slide to prevent rotation of said lock barrel and being remote from said side bar in said extended position of said side bar and said unlocking position of said sldie to release said lock barrel for rotatin from said OFF/LOCK position to said ON position, and

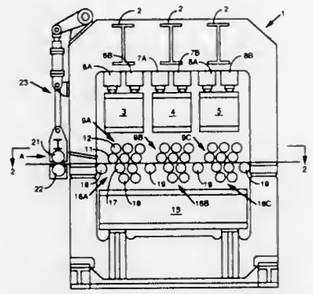
means connecting said slide to said solenoid plunger so that said plunger moves said slide between said locking and unlocking positions concurrently with movement of said plungr between said extending and said retracted positions.

5,255,548

METHOD FOR ROLLER LEVELLING OF HEAVY PLATE

Andrew E. Melzer, Bethel Park, Pa., assignor to Mesta International, Pittsburgh, Pa.

Division of Ser. No. 844,120, Mar. 2, 1992, Pat. No. 5,189,896.
This application Dec. 3, 1992, Ser. No. 984,965
Int. Cl.[5] B21D *1/02*
U.S. Cl. 72—13 **7 Claims**



1. A method of levelling metal plate having a predetermined width, hardness and yield strength in a leveller having at least three vertically opposed sets of separately driven upper and lower work rolls of predetermined diameter and mounted, respectively, in at least three generally rectangular upper roll

frames and a generally rectangular lower roll frame, the work rolls in each set being opposed to back-up rolls, each of the upper roll frames and the lower roll frames being mounted in a main frame, each of the upper roll frames being adjustably movable in the main frame with respect to the lower roll frame in a vertical direction and tiltable in a direction of a pass line of plate passed through the leveller, means to vertically and tiltably adjust the upper work frames to vary a gap between the upper and lower work rolls, and a pair of opposed and vertically spaced apart driven pinch rolls disposed in the pass line upstream of an entry roll set, said method comprising:

(a) operating the leveller at a predetermined rolling speed;

(b) soaking the plate in a furnace to a furnace soak temperature prior to entry of the plate into the leveller;

(c) measuring the temperature of the plate prior to entry of the plate into the pinch rolls and the time at which such temperature measurement is made;

(d) by means of said pair of pinch rolls, measuring the actual thickness of the plate and the corresponding roll separating force at the pinch rolls;

(e) inputting the plate width, hardness and yield strength, and the roll diameter and rolling speed into a computer;

(f) inputting to the computer the plate temperature and time data of step (c), and the plate thickness and roll separating force data of step (d) and calculating the variance of such measured plate temperature from the furnace soak temperature and the variance of such actual plate thickness from an expected plate thickness;

(g) using the computer, with the aid of the data input in steps (e) and (f), to calculate roll gap settings necessary to provide bending of the plate such that, in each work roll set, at least fifty percent of the plate thickness section is stressed to the yield point of the metal;

(h) transmitting the calculated roll gap settings of step (g) to the means to vertically and tiltably adjust the upper work roll frames to provide corresponding respective adjusted work roll gaps, and

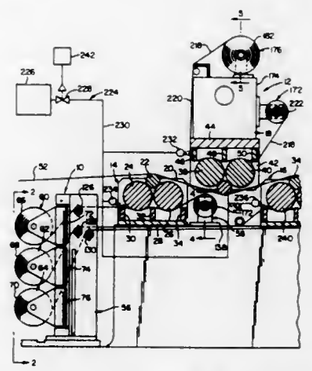
(i) passing the plate successively through the adjusted work roll gaps to level the plate.

5,255,549

TENSION LEVELER ROLL CLEANING SYSTEM AND METHOD

Robert A. Williams, Bath, Ohio, assignor to The Monarch Machine Tool Company, New Bremen, Ohio

Filed Jun. 10, 1992, Ser. No. 896,220
Int. Cl.[5] B21B *45/02*; B21D *1/02*
U.S. Cl. 72—40 **29 Claims**



1. For use in a tension leveler for metal strip of a type having a work roll and a backup roll supporting said work roll, a roll cleaning system comprising:

a strip of fabric media; and

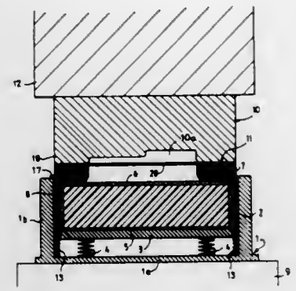
support means for holding said strip media in contact with said backup roll and conveying said strip media relative to said support means across said backup roll opposite of and out of contact with said work roll, whereby particles adhering to said backup roll are removed therefrom and transferred to said media.

5,255,550

DEVICE FOR DRAWING SHEET MATERIALS IN PARTICULAR SHEET BLANKS

Michel Dittlo, Courbevoie, France, assignor to Isoform, Puteaux, France

Filed Dec. 18, 1991, Ser. No. 809,161
Claims priority, application France, Dec. 18, 1990, 90 15866
Int. Cl.[5] B21D *26/00*
U.S. Cl. 72—57 **39 Claims**



1. Device for drawing a sheet material or blank, comprising;

an enclosure having lateral walls,

a cushion of elastic material having lateral faces and disposed in said enclosure,

means for forming said sheet material or blank comprising a die having a peripheral portion constituting an upper blank holder, and a lower blank holder which constitutes means for supporting and maintaining at least a portion of said sheet material or blank placed directly on said cushion and which is cooperative with said upper blank holder for clamping at least localized zones of said sheet material or blank, and

a slidable element disposed around said lateral faces of said cushion, said lower blank holder bearing against said slidable element, said slidable element comprising a peripheral sleeve disposed between said lateral walls of said enclosure and said lateral faces of said cushion, said peripheral sleeve and said lower blank holder being interconnected and slidable in said enclosure.

5,255,551

PRECIOUS METAL WIRE DRAWING MACHINE AND METHOD

Dennis Vetter, 6644 S. 196th Pl., T-104, Kent, Wash. 9803-2124

Filed Jun. 29, 1992, Ser. No. 905,430
Int. Cl.[5] B21C *1/30*
U.S. Cl. 72—290 **8 Claims**

1. A wire drawing machine with an electric motor with only a single drive shaft, comprising

a motor mounting block comprising

a motor support base having a first and a second end,

a rod support plate with a horizontal hole therethrough mounted on the support base first end,

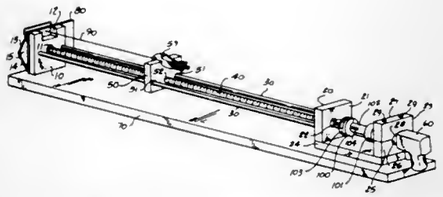
a motor support plate mounted on the support base second end to which the motor is mounted with the motor drive shaft directed toward and in line with the horizontal hole of the rod support plate, and

means to mount the motor to the motor support plate,

a clasp plate having one or more parallel horizontal support

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rod holes therethrough separated by a parallel horizontal threaded hole,
a clasp on the clasp plate for grasping wire,
a draw plate through which wire stock may be drawn,
a draw plate mounting block oriented vertically with a front face and a back face opposite the front face with the draw plate mounted on the front face and the back face oriented toward the clasp plate and having a recess therein suitable for mounting a bearing and further having a channel through which a wire may pass on a line from the draw plate to the clasp plate,
a bearing mounted in the draw plate mounting block recess,
one or more support rods having first and second ends non-rotatively attached to the draw plate mounting block on a



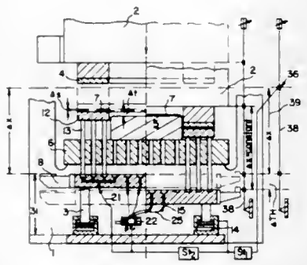
first end and the motor mounting block rod support plate on a second end and passing through the support rod holes of the clasp plate parallel to the wire line from the draw plate to the clasp plate,
a threaded rod rotatably mounted in the bearing in the draw plate mounting block and threaded through the clasp plate threaded hole parallel to the one or more support rods and passing through the motor mounting block rod support plate hole to the motor drive shaft,
means for connecting the motor drive shaft to the threaded rod
such that when the motor drive shaft turns the threaded rod, the clasp plate travels on the one or more support rods passing through the clasp plate.

5,255,552

HYDROELASTIC DEEP-DRAWING APPARATUS

Friedrich B. Bielfeldt, Eppingen, Fed. Rep. of Germany, assignor to Maschinenfabrik J. Dieffenbacher GmbH & Co., Eppingen, Fed. Rep. of Germany

Filed Feb. 12, 1992, Ser. No. 834,104
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1991, 4104136
Int. Cl.[5] B21D *24/08*
U.S. Cl. 72—351 **16 Claims**



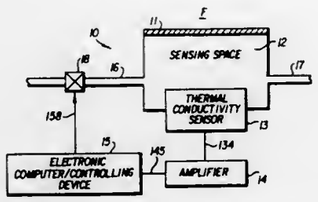
1. A hydroelastic deep-drawing apparatus for drawing sheet-metal shapes in presses, said apparatus comprising:
a ram;
a punch;
a plurality of short-stroke cylinders;
a plurality of drawing pins;
a sheet-holder plate supported by said apparatus in relation to said plurality of short-stroke cylinders;
a drawing die;
a platen having a grid division thereon with a plurality of intersecting points;
a plurality of hydraulic short-stroke pistons having multi-point control, each of said short-stroke pistons cooperating with a corresponding one of said plurality of short-stroke cylinders;
a common die-cushion plate wherein said drawing pins are 1) arranged according to the geometry of said drawing-die at respective intersecting points of said grid division, and 2) supported on said common die-cushion plate via said short-stroke pistons;
a position regulated and synchronous running differential cylinder/piston system which supports said die-cushion plate at its four outer corners;
means for interconnecting said plurality of short-stroke cylinders to create hydraulic force action zones according to the geometry of said sheet-holder plate or a workpiece;
means, during the downward travel of said ram and starting at a predetermined coupling point, for executing in the direction of said downward travel a preliminary stroke of said die cushion plate and said sheet-holder plate while simultaneously maintaining a safety spacing between said ram and said sheet-holder plate; and
means, which are operative subsequent to said preliminary stroke, for raising said sheet-holder plate a counterstroke distance relative to said die-cushion plate such that the workpiece is clamped in place;
wherein subsequent to the workpiece being clamped in place, said ram executes a drawing operation relative to said punch during the completion of the downward travel of said ram.

5,255,553

METHOD AND APPARATUS FOR DETERMINING SPECIFIC THERMAL CONDUCTIVITY PARAMETERS OF GASES

John M. Hale, Meinier; Eugen Weber, Hinwil, both of Switzerland, and Gérard R. Stehle, Machilly, France, assignors to Orbisphere Laboratories Neuchatel SA, Switzerland

Continuation-in-part of Ser. No. 614,133, Nov. 16, 1990, Pat. No. 5,144,831. This application Feb. 25, 1992, Ser. No. 840,943
Claims priority, application Switzerland, Nov. 17, 1989, 4145/89; European Pat. Off., Feb. 25, 1991, 91810122.1
Int. Cl.[5] G01N *25/18*
U.S. Cl. 73—19.1 **21 Claims**



1. A method of determining a specific thermal conductivity parameter of a gaseous constituent of interest having a known general thermal conductivity and being contained at a concentration of interest in a fluid medium, comprising the steps of:
(A) contacting said fluid medium with a membrane provided at an interface between said fluid medium and a sensing space containing a thermal conductivity sensor; said membrane being substantially impermeable for any liquid components of said fluid medium but having a known permeability for said gaseous constituent;
(B) filling said sensing space with a flushing gas having a general thermal conductivity which differs from said general thermal conductivity of said gaseous constituent;

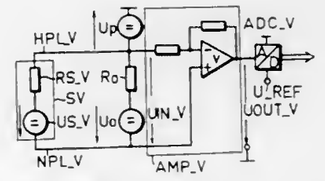
(C) permitting permeation of said gaseous constituent through said membrane into said sensing space;
(D) measuring at least one time-dependent parameter of said known general thermal conductivity of said gaseous constituent that has permeated into said sensing space;
(E) calculating said concentration of said gaseous constituent of interest from said at least one time-dependent value obtained in step (D) and said known permeability of said membrane for said gaseous constituent; and
(E) repeating steps A–E for a desired number of repetitions so as to periodically fill said sensing space with a flushing gas and to intermittently permit permeation of said gaseous constituent.

5,255,554

CONNECTING CIRCUIT FOR AN OXYGEN PROBE AND METHOD FOR CHECKING FOR A CORRECT PROBE CONNECTION

Georg Mallebrein, and Helmut Denz, both of Stuttgart, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 16, 1992, Ser. No. 977,028
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1991, 4137626
Int. Cl.[5] G01N *31/00, 27/416;* **F02D** *41/14, 41/22*
U.S. Cl. 73—23.32 **9 Claims**



$$U_{IN_V} = U_o + (R_O/(R_O + R_{S_V})/(U_{S_V} - U_O) \quad (1)$$
$$U_{OUT_V} = U_o - v \times U_{IN_V} \quad (2)$$
$$U_p < U_{REF} - v \times |U_{MIN}| - \Delta U \quad (3)$$
$$U_p > v \times |U_{MAX}| + \Delta U \quad (4)$$

1. A connecting circuit for a potential-free oxygen probe having a low-potential line and a high-potential line, the connecting circuit comprising:
an amplifier;
an offset voltage source connected to said high-potential line forward of said amplifier for applying an offset potential to said high-potential line;
said amplifier having an input connected across said high-potential and low-potential lines to receive the difference between the potentials on said lines as an input voltage;
said amplifier being adapted to amplify said input voltage and having an output for supplying an output voltage equal to the difference between said offset voltage and the amplified input voltage; and,
said offset voltage being selected so as to cause said output voltage to always be greater than zero but less than a pregiven threshold voltage.

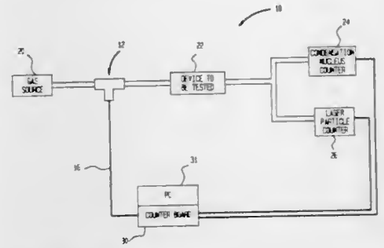
5,255,555

METHOD FOR DETERMINING PARTICLE RESPONSE CHARACTERISTICS

Kevin McKeique, New York, N.Y., assignor to The BOC Group, Inc., New Providence, N.J.

Filed Apr. 27, 1992, Ser. No. 874,465
Int. Cl.[5] G01D *21/00*
U.S. Cl. 73—28.01 **11 Claims**

1. A method of determining a particle response characteristic of a device, said method comprising the steps of:
(a) introducing an input pulse of particles into a flowing fluid;
(b) introducing the flowing fluid into the device after the introduction of the input pulse of particles so that an output pulse of particles is present in the fluid after the fluid has passed through the device;
(c) measuring an input count of particles produced by the input pulse of particles on a particle count versus time basis;
(d) recording the input count of particles;
(e) measuring an output count of particles produced by the output pulse of particles on the particle count versus time basis;
(f) recording the output count of particles;



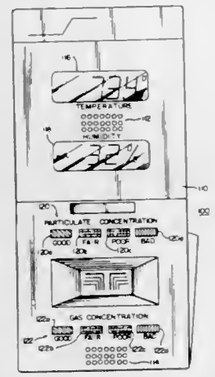
(g) repeating steps (a), (b), (c), (d), (e) and (f) such that a sufficient number of input and output counts of particles are produced that signal averaging of the input and output counts of particles produces statistically repeatable reference and response counts of particles, respectively, on the particle count versus time basis; and
(f) determining the reference and response counts of the particles from the recorded input and output counts of particles by signal averaging the input and output counts of particles, whereby a comparison between the reference and response counts of particles is the particle response characteristic of the device.

5,255,556

AIR QUALITY INDICATOR AND CONTROL FOR AIR QUALITY MACHINE

Vincent G. Lobdell, Pulaski, N.Y., assignor to Tec-Way Air Quality Products, Inc., East Syracuse, N.Y.

Filed Oct. 15, 1991, Ser. No. 775,570
Int. Cl.[5] G01W *1/04*
U.S. Cl. 73—31.02 **7 Claims**



1. A portable electronic device for sensing and indicating air quality within a given environmental air space, comprising a housing; particulate sensor means in said housing for detecting ambient concentration of aerosol and particulate in the space and comparing same with a predetermined particulate threshold limit value and providing a particulate sensor output; gas

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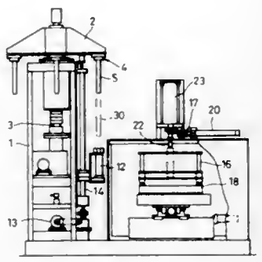
sensor means in said housing for detecting ambient concentration of a predetermined gas and comparing same with a gas concentration threshold limit value and providing a gas sensor output; temperature sensor means in said housing for sensing ambient temperature in said space in the vicinity of said device and providing a temperature output; humidity sensor means in said housing for detecting ambient relative humidity in said space in the vicinity of said device and providing a relative humidity output; particulate display means on an outer panel of said housing for providing a "good" indication when the ambient concentration level of particulates detected by said particulate sensor means is below said threshold limit value but providing an unsatisfactory indication when the detected ambient concentration is above said threshold limit value; gas concentration display means on an outer panel of said housing for providing a "good" indication when the detected ambient concentration of said predetermined gas is below said gas concentration threshold limit value, but providing an unsatisfactory indication when said detected ambient concentration is above said gas concentration threshold limit value; temperature display means on an outer panel of said housing for providing a display of the ambient temperature sensed by said temperature sensor means; humidity display means on an outer panel of said housing for providing a display of the ambient relative humidity detected by said humidity sensor means; and microprocessor means contained within said housing and having inputs respectively coupled to receive at least said particulate sensor output and said gas sensor output and outputs respectively connected to said particulate display means and said gas concentration display means, said microprocessor means assuming a low-power standby mode in which said gas and particulate sensor means are sampled at a relatively low rate when said particulate sensor means and said gas sensor means detect said ambient concentrations below said particulate threshold limit value and said gas value concentration threshold limit value respectively, but automatically assuming a high sensitivity mode in which said gas and particulate sensor means are sampled at a relatively high rate when either said detected particulate level is above said particulate threshold limit value or said detected gas concentration is above said gas concentration threshold limit value.

5,255,557

APPARATUS FOR TESTING A TUBE FOR ITS STRENGTH TO RESIST INTERNAL PRESSURE

Chikashi Ihara, and Michio Sekiguchi, both of Nagoya, Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Mar. 18, 1992, Ser. No. 853,614
Claims priority, application Japan, Mar. 20, 1991, 3-081786
Int. Cl.[5] G01M *3/02*
U.S. Cl. 73—37 **3 Claims**



1. An apparatus for testing a tube for its strength to resist internal pressure, comprising:

at least one expandable elastomer having a hollow body with one open end;

first means, connected to said at least one expandable elastomer, for providing said at least one expandable elastomer with pressure using fluid as a medium;

second means for moving a tube into a place in which said at least one expandable elastomer is inserted into a tube at a test position of the apparatus;

third means, disposed beside said second means, for providing said second means with a tube from a rack; and

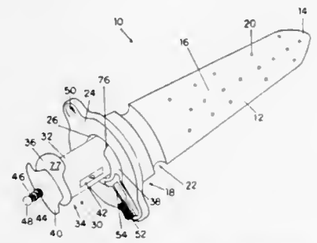
a plastic sheet, connected to said first means, surrounding an upper part of said at least one expandable elastomer.

5,255,558

METHOD AND DEVICE FOR TESTING CONDOMS

Terry W. Hamilton, P.O. Box 49, Bulverde, Tex. 78163-0049

Filed May 21, 1992, Ser. No. 886,736
Int. Cl.[5] G01M *3/04*
U.S. Cl. 73—40 **21 Claims**



1. A device for testing the integrity of the sheath of a resilient membrane condom, the device comprising:

a hollow cylindrical member having a body with walls defining a multiplicity of air holes therethrough, the hollow cylindrical member defining a head at a closed end thereof and a base at an open end thereof, the cylindrical member dimensioned to receive the sheath of the condom snugly on the outer surface thereof, said cylindrical member with walls defining an inner chamber;

means for affecting an air tight sealing of the membrane of the sheath to said cylindrical member; and

plunger assembly, said plunger assembly insertable into said cylindrical member to provide for the movement of air through the air holes of said cylindrical member thereby allowing inflation and deflation of the sheath of the condom;

wherein inspection of the condom is performed while the condom is unrolled on said cylindrical member and during inflation thereof, while the condom may be easily rerolled off said cylindrical member following deflation.

5,255,559

APPARATUS FOR TESTING THE GAS-TIGHTNESS OF A JOINT BETWEEN HOLLOW MEMBERS

Manfred Jansch, Garbsen, Fed. Rep. of Germany, assignor to Weatherford/Lamb, Inc., Houston, Tex.

Filed Mar. 25, 1992, Ser. No. 860,740
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1991, 4110271; Oct. 18, 1991, 4134489
Int. Cl.[5] G01M *3/28*
U.S. Cl. 73—46 **19 Claims**

1. An apparatus for testing the gas-tightness of a joint between hollow members, which apparatus comprises:

a) test gas applying means for applying a test gas to the outside of said joint; and

b) means for detecting test gas in said hollow members;

wherein said test gas applying means comprises:

c) a gas testing chamber;

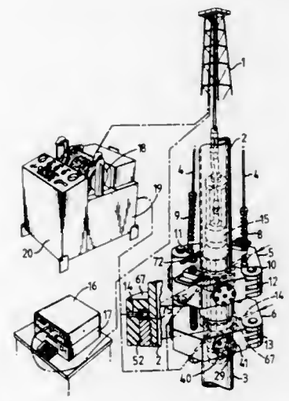
d) a sealing ring of elastomeric material for hermetically sealing said gas testing chamber;

e) a casing enclosing said sealing ring;

f) pressure applying means for applying pressure to said sealing ring;

g) means to supply a test gas to said gas testing chamber; and

h) said gas testing chamber partially bounded by a test ring which is embedded in said sealing ring and which, in use,



spans the joint to be tested and bears against the surfaces of the hollow members to either side of the joint.

5,255,560

APPARATUS AND PROCESS FOR MEASURING THE IRREGULAR RUNNING OF AN INTERNAL COMBUSTION ENGINE AND APPLICATION OF THE PROCESS

Martin Klenk, Backnang, and Winfried Moser, Ludwigsburg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE90/00346, § 371 Date Jan. 31, 1992, § 102(e) Date Jan. 31, 1992, PCT Pub. No. WO90/15235, PCT Pub. Date Dec. 3, 1990
PCT Filed May 14, 1990, Ser. No. 777,409
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1989, 3917978
Int. Cl.[5] G01M *15/00*
U.S. Cl. 73—116 **16 Claims**



1. A method for detecting a misfire in an internal combustion engine of a vehicle having a plurality of cylinders, comprising the steps of:

(a) measuring a first time period in which a crankshaft of the vehicle rotates by a predetermined angle for a first expansion stroke of the engine;

(b) measuring a second time period in which the crankshaft rotates by the predetermined angle for a second expansion stroke of the engine;

(c) measuring a third time period in which the crankshaft rotates by the predetermined angle for a third expansion stroke of the engine, at most two of the first, second, and third expansion strokes being adjacent;

(d) subtracting the second time period from the third time period to form a first value;

(e) subtracting the first time period from the second time period to form a second value;

(f) subtracting the first value from the second value to form a third value;

(g) multiplying the absolute value of the third value by a factor to form a running-irregularity value, the factor being based upon at least one of the first, second and third time periods;

(h) repeating steps (a)–(g) at least once to form a plurality of running irregularity values;

(i) changing at least one of the first, second and third expansion strokes of the engine to be measured to a different expansion stroke of the engine;

(j) repeating steps (1)–(i) at least once to form a plurality of groups of running-irregularity values;

(k) averaging the running-irregularity values in each of the plurality of groups to determine a corresponding plurality of average values;

(l) determining a maximum value of the average values;

(m) determining a minimum value of the rage values;

(n) determining the difference between the maximum value and the minimum value; and

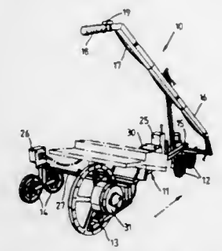
(o) indicating a misfire when difference value exceeds a predetermined threshold value.

5,255,561

APPARATUS FOR MEASURING SMOOTHNESS

Colin T. Fleming, and Zbigniew Rybak, both of 14 Henderson Street, Bulimba, Queensland 4171, Australia

Filed Feb. 18, 1992, Ser. No. 837,480
Claims priority, application Australia, Feb. 19, 1991, PK 4669
Int. Cl.[5] G01B *7/00*
U.S. Cl. 73—146 **12 Claims**



12. An apparatus for determining the smoothness of a surface such as a runway, the apparatus including a wheeled carriage, one of the wheels including an encoder for providing a pulse output indicative of distance travelled, drive means for driving said one wheel to propel the apparatus over the surface at substantially constant speed, two laterally spaced inclination sensors comprising pendulums mounted for pivotal movement about an axis transverse of the apparatus and having magnets and a hall effect device arranged at one end of the pendulum, the hall effect device providing an output indicative of the deviation of the pendulum, and circuitry responsive to the sensors and the encoder for providing a determination of the smoothness of locations along the surface.

5,255,562

MEASUREMENT OF INTERFACIAL STRENGTH OF A COMPOSITE MATERIAL

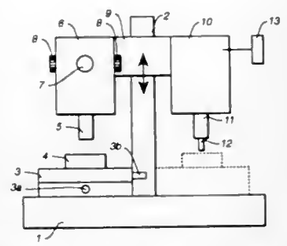
Yasunori Yamamoto, Nagaokakyo, and Tsukasa Nishimura, Kyoto, both of Japan, assignors to Shimadzu Corporation, Japan

Filed Oct. 7, 1992, Ser. No. 957,733
Claims priority, application Japan, Jan. 24, 1992, 4-034171
Int. Cl.[5] G01D *1/02;* **G01N** *3/24*
U.S. Cl. 73—160 **17 Claims**

1. An apparatus for measuring interfacial strength of a composite material, said apparatus comprising:

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selecting means for allowing a user to select a reinforcing fiber within a sample of said composite material;
diameter-measuring means for measuring the diameter of said selected fiber;
an indentator for compressing said selected fiber;
loading means for applying a load on said indentator and thereby causing said indentator to compress said selected fiber;



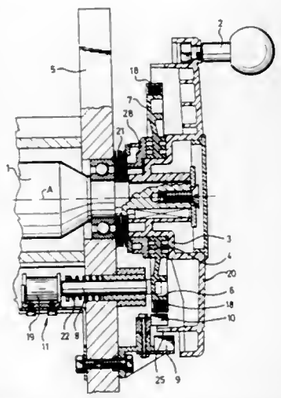
load-measuring means for measuring said load;
displacement-measuring means for measuring the magnitude of displacement of said indentator; and
calculating means for calculating surface shear strengths of said fiber from load and displacement data obtained by said load-measuring and displacement-measuring means and the diameter of said selected fiber measured by said diameter-measuring means.

5,255,563

APPARATUS FOR RETARDING THE MEASURING SPINDLE OF A BALANCING MACHINE

Horst Schmidt, Pfungstadt, Fed. Rep. of Germany, assignor to Hofmann Werkstatt-Technik GmbH, Pfungstadt, Fed. Rep. of Germany

Filed Aug. 27, 1991, Ser. No. 750,316
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1990, 4028335
Int. Cl.[5] G01M *1/02*
U.S. Cl. 73—462 12 Claims



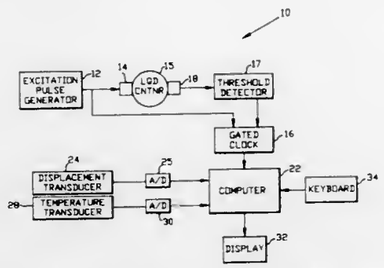
1. An apparatus for retarding a measuring spindle of a balancing machine having a balancing machine frame, where the measuring spindle is brought up to a measuring rotation speed by a hand crank, said apparatus comprising:
a measuring spindle;
first and second brake discs adapted to co-operate with each other;
means for non-rotatably connecting the first brake disc to the measuring spindle;
means for causing the second brake disc to rotate with the first brake disc during an unbalance measuring operation of the balancing machine without providing a braking effect to said first brake disc; and
means for fixing the second brake disc in a stationary position relative to the balancing machine during a retardation operation of the balancing machine to cause the second brake disc to provide a braking force to the rotating first brake disc, thereby producing a retardation effect at the measuring spindle, said fixing means comprising at least one engagement location on said second brake disc, a holding pin mounted on the balancing machine frame and displaceable at least in a direction substantially normal to a direction of rotation of the second brake disc, measuring means for determining a rotational angle position of said second brake disc and providing a signal indicative thereof and for determining a speed of rotation of said second brake disc and providing a signal indicative thereof, and actuating means for actuating said holding pin into an operative position of engagement with said at least one engagement location in a controlled fashion responsive to said signals provided by said measuring means after termination of an unbalance measuring operation.

5,255,564

APPARATUS FOR THE DISCRIMINATION OF CHEMICAL LIQUIDS VIA SOUND SPEED MEASUREMENTS

Wayne Glad, Chula Vista, and Robert K. Fogg, Jr., San Diego, both of Calif., assignors to The United States of America as represented by the secretary of the Navy, Washington, D.C.

Filed Aug. 22, 1991, Ser. No. 750,141
Int. Cl.[5] G01N *29/18*
U.S. Cl. 73—597 2 Claims



1. An apparatus for identifying an unknown liquid, comprising;
first means acoustically coupled to said liquid for generating an acoustic pulse through said unknown liquid, said first means including:
an excitation pulse generator for generating an electric pulse; and
a first acoustic transducer coupled to receive said electric pulse from said pulse generator and for generating said acoustic pulse through said unknown liquid, said transducer being acoustically coupled to said unknown liquid at a first location;
second means acoustically coupled to said unknown liquid and operably disposed for receiving said acoustic pulse, said second means including:
a second acoustic transducer acoustically coupled to said unknown liquid at a second location different than said first location, said second transducer operatively disposed to receive said acoustic pulse;
third means operatively coupled to said first and second means for determining the time required for said acoustic pulse to traverse a predetermined distance through said unknown liquid and for providing an output corresponding to said time;
fourth means for determining the temperature of said unknown liquid and providing an output corresponding to said temperature;
a computer operably coupled to receive said outputs from said third and fourth means for determining the speed of said acoustic pulse through said unknown liquid and for comparing said speed of said acoustic pulse with the sound speed of at least one known liquid at said temperature, said computer including a data base comprising a reference sound speed for each said known liquid at a reference temperature, where said sound speed of said known liquid at said temperature is determined in accordance with the relation:

$$V_{TEMP\ CORR} = V_{REF} + C(T_{MEAS} - T_{REF})$$

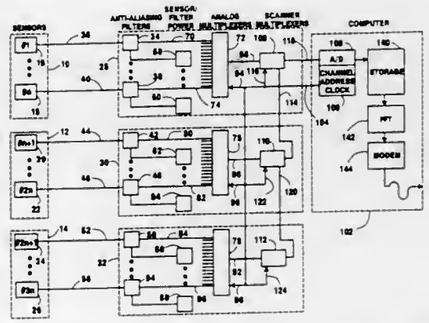
where:
$V_{TEMP\ CORR}$ is a sound speed of one said known liquid at said temperature;
V_{REF} is said reference sound speed;
C is a temperature correction coefficient of said known liquid; and
T_{MEAS} is said temperature of said unknown liquid;
a display for presenting the identity of each said known liquid having a sound speed within a predetermined interval of said speed of said acoustic pulse; and
a gated clock operatively coupled to said pulse generator and to said second acoustic transducer for providing an output to said computer corresponding to the time required for said acoustic pulse to travel from said first acoustic transducer to said second acoustic transducer.

5,255,565

METHOD AND APPARATUS FOR MONITORING MULTIPLE POINTS ON A VIBRATING STRUCTURE

John E. Judd, Hamden; Kenneth E. Appley, Orange, and Yi H. Lo, Hamden, all of Conn., assignors to Vibra-Metrics, Inc., Hamden, Conn.

Filed Nov. 12, 1991, Ser. No. 791,011
Int. Cl.[5] G01H *13/00*
U.S. Cl. 73—579 10 Claims



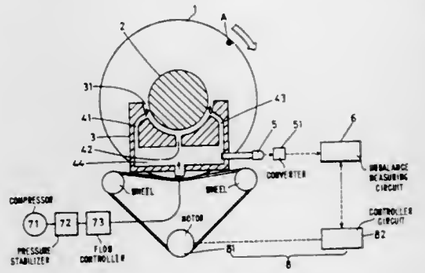
1. Apparatus for monitoring a vibrating structure comprising:
a plurality of motion sensors adapted for mounting in spaced relation at corresponding points along the structure, each of the plurality of sensors producing an analog raw data signal indicative of motion at the corresponding point;
a plurality of anti-aliasing filters, each of the plurality of filters having an input and an output, the input of each filter being connected to a corresponding motion sensor, the raw data signal from each motion sensor being filtered by the corresponding anti-aliasing filter to produce a filtered analog data signal at the filter output by removing substantially all frequency components of the raw data signal above a selected cutoff frequency, f_{co};
an analog multiplexer having a multiplexer output, an address input and a plurality of data input channels having addresses, each of the plurality of data input channels being connected to a corresponding output from an anti-aliasing filter, the filtered analog data signal from each of the plurality of data input channels being passed to the multiplexer output when the corresponding address of each data input channel is applied to the address input to produce an analog multiplexed data signal;
a channel address clock having an output connected to the address input of the analog multiplexer, the channel address clock being adapted to repeatedly generate a sequence of channel addresses to scan the data input channels at the multiplexer corresponding to the addresses in the sequence, the sequence of channel addresses being repeated at a frequency of at least twice the selected cutoff frequency, f_{co};
an analog-to-digital converter having an input connected to the output of the analog multiplexer and an output, the converter producing a multiplexed digital data signal at the output of the analog-to-digital converter corresponding to the analog multiplexed data signal at the input of the analog-to-digital converter; and
storage means connected to the analog-to-digital converter for storing digital data from the multiplexed digital data signal.

5,255,566

BEARING CONSTRUCTION AND VIBRATION DETECTING APPARATUS

Hiromitsu Okumura, Osaka, Japan, assignor to Denshi Seiki Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 10, 1992, Ser. No. 867,305
Claims priority, application Japan, Apr. 10, 1991, 3-106683
Int. Cl.[5] G01M *1/22*
U.S. Cl. 73—660 1 Claim



1. A vibration detecting apparatus comprising:
a bearing construction having an annular clearance provided between an outer surface of a rotary shaft of a rotatable object and an inner wall of a bearing assembly and a fluid feeding means for filling the clearance with a fluid to form a layer of the fluid; and
a shaft displacement detecting means for detecting a displacement of the rotary shaft during a rotating action and for converting an amount of the displacement to an electrical signal, wherein said shaft displacement detecting means comprises a pressure detecting means or detecting a change in a pressure of fluid flow supplied from the fluid feeding means which has an opening to the clearance, and an unbalance measuring circuit for calculating the shaft displacement based upon the change in pressure detected by the pressure detecting means.

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5,255,567

TORQUE TRANSDUCER

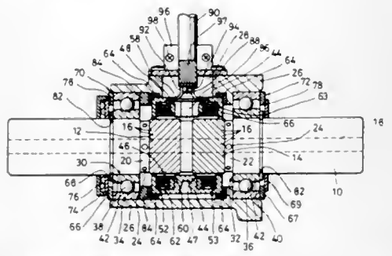
Katsuyuki Miyake, Shiga, and Tomoyoshi Sawada, Tsuyama, both of Japan, assignors to Nippon Densan Corporation, Kyoto, Japan

Filed Jun. 26, 1991, Ser. No. 721,147

Claims priority, application Japan, Jun. 30, 1990, 2-69787; Jun. 30, 1990, 2-173160; Jun. 30, 1990, 2-173161

Int. Cl.[5] G01L *3/02*

U.S. Cl. 73—862.333 5 Claims



1. A torque transducer comprising:

ferromagneto-stricting means provided on a rotational shaft acting to change the magnetic permeability in accordance with torque acting on the rotational shaft;

magnetic field supply coil means for supplying a magnetic field to the ferromagneto-stricting means;

a magnetic field supply coil bobbin for the magnetic field supply coil means to dispose the magnetic field supply coil means concentric the rotational shaft;

sensing coil means for sensing a change in magnetic permeability due to the torque acting on the rotational shaft and converting the change into an electrical signal which corresponds to the magnitude of the torque;

a sensing coil bobbin for the sensing coil means to dispose the sensing coil means concentric the rotational shaft, the sensing coil bobbin separately formed from the magnetic field supply coil bobbin for the magnetic field supply coil means;

a fixed housing for rotatably holding the rotational shaft via bearing means; and

electromagnetic shielding means for surrounding and electromagnetically shielding the magnetic field supply coil means and the sensing coil means,

one of the magnetic field supply coil bobbin and the sensing coil bobbin being a large-diameter bobbin and the other being a small-diameter bobbin having a smaller diameter than the large-diameter bobbin, the large-diameter bobbin and the small-diameter bobbin being disposed to overlap each other radially, the coil means would on the large-diameter bobbin being supported by the fixed housing via the large-diameter bobbin and the electromagnetic shielding means, and the coil means wound on the small-diameter bobbin being supported by the fixed housing via the small diameter bobbin, the large-diameter bobbin, and the electromagnetic shielding means.

5,255,568

LIQUID SAMPLE/REAGENT METERING AND DELIVERY METHOD

Roberto del Valle, Miami; Santos E. Vargas, Hialeah, and Pedro P. Cabrera, Miami, all of Fla., assignors to Coulter Corporation, Miami, Fla.

Continuation of Ser. No. 626,936, Dec. 13, 1992, Pat. No. 5,158,751. This application Oct. 22, 1992, Ser. No. 965,095

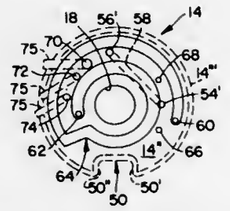
Int. Cl.[5] G01N *1/10, 1/20*

U.S. Cl. 73—863.73 12 Claims

1. In a method of sampling, isolating and delivering precise volume aliquot portions of selected liquids within a single sampling and transfer valve assembly having through fluid flow paths defined therein, including the steps of defining at least one sample flow path through the valve assembly, introducing liquid sample from a source thereof to said at least one sample flow path, isolating at least one precise volume aliquot sample portion by segmenting said at least one sample flow path, the improvement comprising the additional steps of:

defining first and second dedicated passages within the valve assembly at locations displaced one from the other and from the isolated aliquot sample portion,

introducing a first fluid from a source thereof to the isolated aliquot sample portion to force the isolated aliquot to the first dedicated passage at the displaced location thereof,



placing the first and second dedicated passages in communicating relationship with each other, and

introducing a second fluid from a source thereof to the second dedicated passage to force the isolated aliquot from the first dedicated passage with the second fluid to a predetermined location exterior of the valve assembly without contaminating any flow path within the valve assembly which has been traversed by the liquid sample or fluid other than said second fluid.

5,255,569

SLANT PLATE TYPE COMPRESSOR WITH VARIABLE DISPLACEMENT MECHANISM

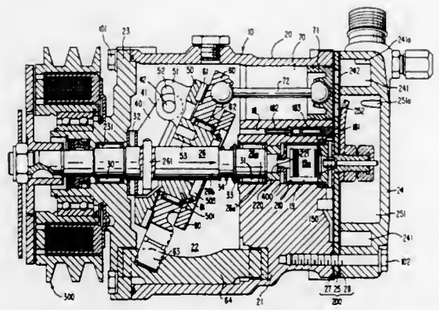
Kiyoshi Terauchi, Isesaki, and Shigemi Shimizu, Sawa, both of Japan, assignors to Sanden Corporation, Gunma, Japan

Filed Dec. 13, 1991, Ser. No. 806,291

Claims priority, application Japan, Dec. 15, 1990, 2-403384[U]

Int. Cl.[5] F04B *1/26*

U.S. Cl. 74—60 12 Claims



1. In a slant plate type compressor including a drive shaft and a slant plate disposed on said drive shaft, said slant plate moveable to various slant angles between a maximum and a minimum slant angle relative to a plane perpendicular to said drive shaft, said drive shaft including a first portion having a first diameter and a second portion having a second diameter, the improvement comprising:

a hub on said slant plate, said drive shaft extending through and in intimate contact with said hub;

a wobble plate nutatably mounted on said hub, and

a bias spring having an overall outer diameter which is greater than the second diameter, said bias spring disposed only on said first portion of said drive shaft to restore said slant plate back to said maximum slant angle when said slant angle is decreased below a predetermined angle.

5,255,570

SAFETY SHIFT-LOCK DEVICE FOR SELECTOR OF AUTOMATIC POWER TRANSMISSION

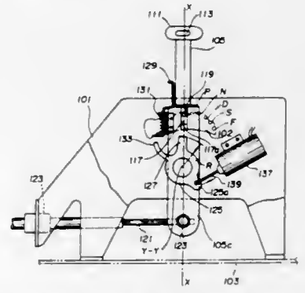
Katsunori Shirahama; Masaharu Ishizuki, both of Kanagawa; Yoshimi Yamamoto, Shizuoka; Yasushi Asano, Shizuoka; Hiroshi Sakon, Shizuoka, and Motohiro Saito, Shizuoka, all of Japan, assignors to Nissan Motor Company, Ltd. and Fuji Kiko Company, Ltd., Japan

Continuation of Ser. No. 500,169, Mar. 28, 1990, abandoned. This application Dec. 31, 1991, Ser. No. 815,851

Claims priority, application Japan, Mar. 31, 1989, 1-80854; Mar. 31, 1989, 1-80855

Int. Cl.[5] B60K *20/02, 41/26*

U.S. Cl. 74—475 5 Claims



5. In combination with an automotive vehicle having a vehicle cabin, a position plate mounted within the vehicle cabin, a floor-shift type selector mounted to the position plate for a pivotable movement about a pivot axis and having a cylindrical section, a selector knob mounted to the cylindrical section of the selector for shifting the selector from a non-drive range position to a drive range position, a selector knob button within the selector knob and formed with a tapered portion, a compression rod, within the cylindrical section, biased toward the selector knob button and having one end for engagement with the tapered portion and an opposite end, and pin and opening means for holding the selector in the non-drive range position until the compression rod moves in a predetermined axis upon depression of the selector knob;

a safety lock lever pivotable about a pivot axis crossing said predetermined axis generally at a right angle thereto, said safety lock lever having a radially extending locking arm and a lock releasing leg, said safety lock lever being pivotably movable between a lock position wherein said locking arm is in alignment with the path of said opposite end of said compression rod when the selector is placed in the non-drive range position and a lock releasing position wherein said locking arm is out of alignment with the path of said opposite end of said compression rod;

an actuator having an actuation rod operatively connected to said safety lock lever for actuating said safety lock lever between said lock position and said lock releasing position; and

a manually operable lock release member constructed and arranged to cooperate with said safety lock lever such that when said lock release member is manually depressed, said lock release member comes into contact with said lock releasing leg when said selector is placed at the non-drive range position, causing said safety lock lever to pivot to said lock releasing position.

5,255,571

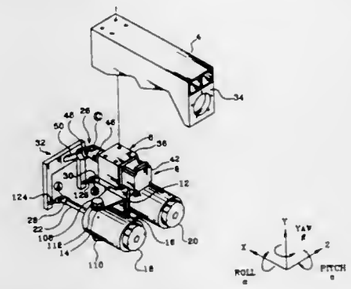
THREE DEGREE OF FREEDOM ACTUATOR SYSTEM

Steven L. Smith, Oxford, Conn., assignor to United Parcel Service of America, Inc., Atlanta, Ga.

Filed Jun. 25, 1992, Ser. No. 906,205

Int. Cl.[5] G05G *11/00;* B25J *17/02*

U.S. Cl. 74—479 BW 9 Claims



1. A robot wrist, comprising:

(a) a wrist input;

(b) a first actuator having a first actuator input pivotally attached to said wrist input, and a first actuator output slidably connected to said first actuator input and translationally driven along a first axis;

(c) a first joint having a first joint input rigidly attached to said first actuator output, and a first joint output pivotally attached to said first joint input;

(d) a second actuator having a second actuator input pivotally attached to said wrist input, and a second actuator output slidably connected to said second actuator input and translationally driven along a second axis;

(e) a second joint having a second joint input rigidly attached to said second actuator output, and a second joint output pivotally attached to said second joint input;

(f) a third joint having a third joint input and a third joint output pivotally attached to said third joint input;

(g) a third actuator having a third actuator input attached to said wrist input, and a third actuator output rotatably connected to said third actuator input and rotatably driven about a third axis, wherein said third actuator output is rigidly attached to said third joint input; and

(h) a wrist output rigidly attached to said first, second, and third joint outputs at three separate locations on said wrist output.

5,255,572

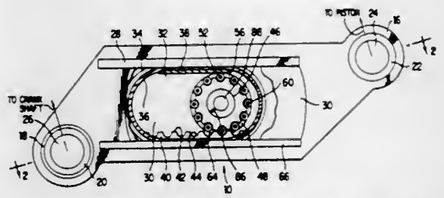
VARIABLE STROKE MECHANISM

William C. Pickens, P.O. Box 177, Flagler, Colo. 80815

Filed Mar. 12, 1992, Ser. No. 850,102

Int. Cl.[5] F16H *35/08, 21/20, 55/17*

U.S. Cl. 74—522 14 Claims

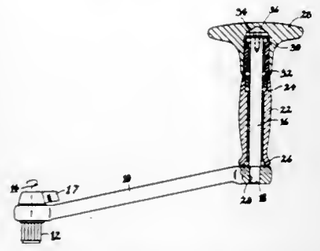


1. A mechanism for transferring power from a reciprocating power source to a power output device, the mechanism comprising a connecting member with a first end and a second end, a top, a bottom, and a central portion between the first and

VOL 1155 ISS 4 OCT 26 1993 UMI

second ends that is adapted to receive a fulcrum member about which the connecting member is pivotable, said fulcrum member being secured in a fixed position, adjusting means for variably adjusting the position of the connecting member with respect to the fulcrum member, and travel limiting means for maintaining a constant limit of travel in one direction of the first end of the connecting member when the travel distance and limits of travel of the second end remain constant while the position of the connecting member with respect to the fulcrum member is varied.

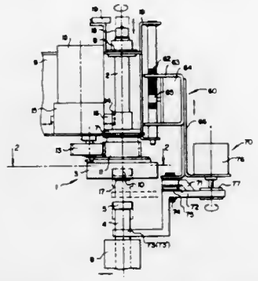
5,255,573
WINCH HANDLE
Tripp Estabrook, Newport, R.I., assignor to Harken, Inc., Pewaukee, Wis.
Continuation of Ser. No. 823,846, Jan. 22, 1992, abandoned. This application Oct. 15, 1992, Ser. No. 962,021
Int. Cl.[5] F16C *13/00*
U.S. Cl. 74—545 6 Claims



1. A sailboat winch crank for rotating a winch mechanism around an axis, said crank comprising a crank arm, one end of said arm being adapted for driving connection to the winch mechanism, the other end having a shaft extending parallel to said axis and terminating at a free end, the improvement comprising an elongated tubular handle rotatably mounted around said shaft adjacent to said arm and adapted to be grasped by the palm of a hand parallel to the axis of rotation, and a knob having an enlarged head separately and freely rotatably mounted on the free end of the shaft, said knob being adapted to be grasped with the palm perpendicular to the axis of rotation, said winch crank being operable by one hand operation of one of the handle and knob, and two hand operation of the handle and knob.

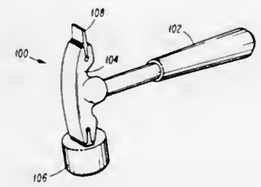
5,255,574
DEVICE FOR REMOVING AND INSERTING STOPPERS OF CONTAINERS FILLED WITH A LIQUID
Hans-Peter Wuerschum, Ostfildern, Fed. Rep. of Germany, assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 21, 1992, Ser. No. 823,223
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1991, 4102479
Int. Cl.[5] B67B *7/02*
U.S. Cl. 81—3.2 4 Claims

1. A device usable in an analyzer for removing and inserting a stopper from and into the opening of a container for liquids arranged in a tray and comprising
means for gripping a stoppered container,
a stopper gripper means frictionally interacting with the stopper,
means for feeding the container to the gripper means, the stopper gripper means comprising plural radially arranged clamping elements, and
means for radially moving said clamping elements into and out of engagement with a stopper; said means for moving said clamping elements having an inner and outer radial contact position and wherein said means for moving said clamping elements and said clamping elements remain coplanar to one another, said means for moving said clamping elements further comprising a plurality of control elements, each said control element including a first cam section having a small radius and defining said inner radial contact position, and a second cam section having a larger radius and defining said outer radial contact position, the control elements being coaxially arranged in the



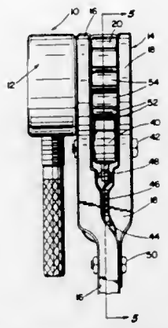
form of a ring, the device further comprising a carrier member and a cylindrical housing portion, said clamping elements being arranged on said carrier member and the control elements being coaxially mounted in said cylindrical housing section, the carrier member and the housing portion being rotatably mounted relative to each other and positively connected by means of a locking pin.

5,255,575
MULTI-PURPOSE HAND TOOL
Michael D. Williams, Box 350, Sedalia, Colo. 80135
Filed Jun. 29, 1992, Ser. No. 905,828
Int. Cl.[5] B25D *1/02*
U.S. Cl. 81—25 5 Claims



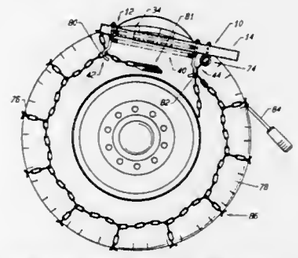
1. An improved hand held hammer comprising:
a hammer body, having a first side and a second side disposed on opposite sides of the hammer body coupled with a hammer handle;
said hammer body having a head end with a free end surface and a tail end disposed opposite each other;
said hammer body having a hammer head void therein disposed within said head end and extending from said first side said void having a tapered shape with a wider dimension at said free end surface, to said second side, and further having a tail end void therein disposed at said tail end and extending from said second side to said first side;
a hammer head having a hammer head tip thereon for insertion into said hammer head void; and,
a hammer tail having a hammer tail tip thereon for insertion into said tail end void.

5,255,576
ADJUSTABLE UNIVERSAL RATCHETING FIRE HYDRANT WRENCH
John R. Keith, 1845 Fay Dr., Parma, Ohio 44134
Filed Apr. 1, 1992, Ser. No. 861,925
Int. Cl.[5] B25B *13/00*
U.S. Cl. 81—63 4 Claims



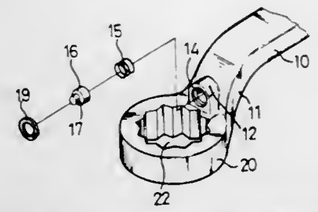
1. A ratcheting fire hydrant wrench comprising:
a. a handle having a head and a lever end;
b. a socket portion having a shank portion and an open end portion said open end portion defining a polygonal shape;
c. a ratchet gear secured to the shank portion of said socket and housed in the head of said handle;
d. a pawl means pivotally attached to said head in engagement with said ratchet gear and switchable between different positions;
e. a lever pivotally attached to said pawl means having a portion thereof extending laterally beyond the handle on both sides of the handle, wherein one laterally extending portion is longer than the other, said lever having means to engage said pawl means to cause said pawl means to pivot.

5,255,577
TIRE CHAIN TENSIONING
George L. Keefauver, 6480 Main Ave., Space 57, Orangevale, Calif. 95662
Filed Apr. 6, 1992, Ser. No. 864,214
Int. Cl.[5] B25B *27/22;* B60C *27/06*
U.S. Cl. 81—15.8 4 Claims



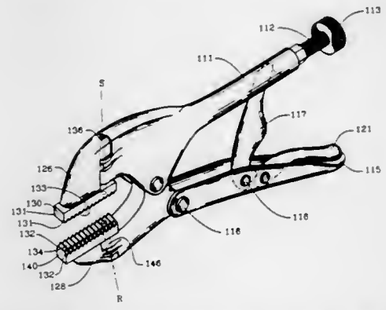
1. A tire chain tensioning device, comprising:
a. a first hollow elongate element;
b. a second hollow elongate element, said first element being movable relative to and extending into said second element;
c. a first catch connected to said first element, wherein said first catch includes a hook extending laterally through a distal end of the first element for engaging a first selected link of a tire chain;
d. a second catch connected to said second element, wherein said second catch includes a hook extending laterally through an end of the second element for engaging a second selected link of a tire chain;
e. spring means urging said first element toward said second element, said spring means being fixed to portions of said first and second catches and located inside said first and second elements;
f. a stop means to limit the extension of said first and second elements apart from each other; and,
g. a gripping handle extending from a distal end of the second element.

5,255,578
WRENCH HAVING A POSITIONING DEVICE
Mou-Tang Liou, No. 25, Lane 86, Tawei Rd., Tali Hsiang, Taichung Hsien, Taiwan
Filed Oct. 29, 1992, Ser. No. 968,163
Int. Cl.[5] B25B *13/06*
U.S. Cl. 81—125 7 Claims



1. A wrench for driving an object comprising a head portion including an engaging surfaced for engagement with said object to be driven, a handle portion formed integral with said head portion, a protrusion formed on said head portion and located beyond and said engaging surface of said head portion, and positioning means disposed in said protrusion and extended outward of said protrusion for engagement with said object, whereby, said object is retained in place relative to said head portion.

5,255,579
PIVOTING JAW LOCKING TOOL
Pierre Fortin, Ne. 33rd St., Pompano Beach, Fla. 33064
Continuation-in-part of Ser. No. 643,514, Jan. 15, 1991, abandoned. This application Aug. 20, 1992, Ser. No. 932,917
Int. Cl.[5] B25B *7/02*
U.S. Cl. 81—424 6 Claims



1. A clamping tool having a handle portion in association with a locking mechanism, said clamping tool producing a clamping force between an opposing first and second jaw, said first and second jaws pivotally connected whereby said first and second jaws may be moved between an opened and a clamped position, the improvement comprising:
(a) an upper pivoting work contacting member for contact-

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ing a work piece, said upper pivoting work contacting member having an upper gripping surface, said upper pivoting work contacting member pivotally and securely attached to said first jaw along an axis between said first and second jaws; and

(b) a lower pivoting work contacting member for contacting said work piece, said lower pivoting contacting member having a lower gripping surface, said lower pivoting work contacting member pivotally and securely attached to said second jaw along said axis between said first and second jaws;

wherein planes in which said upper and lower gripping surfaces lie can be moved relative to one another when in said open position;

whereby said upper and lower pivoting jaws may be pivoted around said axis between said first and second jaws into alignment with said work piece to be clamped between said upper and lower pivoting work contacting members;

wherein said upper pivoting work contacting member and said lower pivoting contacting member having beveled side gripping surfaces, said beveled side gripping surfaces having serrations.

5,255,580

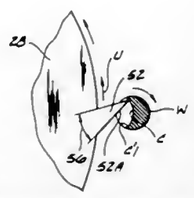
METHOD AND APPARATUS FOR TURNING A CONCAVE CUT IN A WORKPIECE

John T. Gentry, Springfield, Mo., assignor to Positronic Industries, Inc., Springfield, Mo.

Filed Oct. 15, 1992, Ser. No. 961,484

Int. Cl.[5] B23B *1/00, 5/44*

U.S. Cl. 82—18 **11 Claims**



1. A method for turning a concave cut in a workpiece on a screw machine, the method comprising the steps of:

supporting the workpiece for rotation generally about its longitudinal axis;

rotating the workpiece in a first direction about an axis generally corresponding to its longitudinal axis;

turning a rotary cutter having a tooth about an axis parallel to the axis of rotation of the workpiece in a second direction opposite to the first, the cutter tooth engaging the rotating workpiece for forming a generally concave cut in the workpiece.

5,255,581

PEELING MACHINE

Reiner Glomb, Velbert; Peter Maresch, and Ralf Wagner, both of Solingen, all of Fed. Rep. of Germany, assignors to TH. Kieserling & Albrecht GmbH & Co., Solingen, Fed. Rep. of Germany

Filed Jun. 17, 1991, Ser. No. 716,650

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1990, 4019286

Int. Cl.[5] B23B *5/12*

U.S. Cl. 82—130 **24 Claims**

1. A peeling machine for round stock such as bars and tubes, comprising:

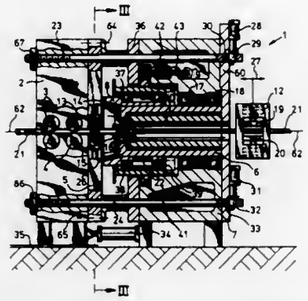
a machine frame casing;

a rotatably driven hollow shaft defining a rotation axis having a front side;

a rotating cutter head being disposed on an infeed front side of the hollow shaft;

means for pulling out and withdrawing the peeled workpiece from the hollow shaft;

an infeed first work guide assembly for the workpieces, which infeed first work guide assembly is attached to the machine frame casing and disposed on the infeed side thereof,



wherein the infeed first work guide assembly and the machine frame casing are movable relative to each other in a direction of the rotation axis of the hollow shaft for service purposes;

means for a disengageable and releasable tensioning and clamping together of the infeed first work guide assembly and of the machine frame casing including at least two guide rails disposed on the machine frame casing and extending parallel to the rotational axis of the cutter head.

5,255,582

TOOL HOLDER HAVING INTEGRAL WEDGE CLAMPING MECHANISM

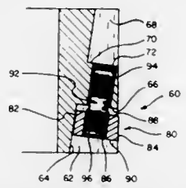
Robert J. Robertson, Raleigh, N.C., assignor to Kennametal Inc., Latrobe, Pa.

Division of Ser. No. 430,550, Nov. 1, 1989, abandoned, which is a division of Ser. No. 241,521, Sep. 7, 1988, Pat. No. 4,951,536. This application Jul. 2, 1992, Ser. No. 908,657

The portion of the term of this patent subsequent to Aug. 28, 2007, has been disclaimed.

Int. Cl.[5] B23B *29/04*

U.S. Cl. 82—158 **26 Claims**



1. A tool holder for use in a lathe turret formed with a tool holder slot including a bottom and a pair of parallel sidewalls, said tool holder comprising:

(a) a cutting unit for receiving and holding a cutting insert, said cutting unit including a rearwardly extending shank;

(b) a clamping unit insertable into the tool holder slot of said lathe turret for receiving and holding the cutting unit, said clamping unit including:

(i) a main body having a pair of parallel sidewalls disposed adjacent to respective sidewalls in the tool holder slot;

(ii) a tool shank bore formed in the main body of the clamping unit for receiving the shank of the cutting unit; and

(iii) means for securing the cutting unit to the clamping unit;

(c) wedge clamping means integral with the clamping unit for securing the clamping unit in the tool holder slot, said integral wedge clamping means including:

(i) a wedge cavity formed in at least one of the sidewalls in the clamping unit and including a bearing wall inclined toward the adjacent sidewall of the tool holder slot;

(ii) a wedge block mounted within said wedge cavity for movement between disengaged and engaged positions with respect to the adjacent sidewall of the tool holder slot, said wedge block including an inwardly facing surface slidably engaged with the bearing wall of the wedge cavity and a locking surface disposed in a plane parallel to the adjacent sidewall of the tool holder slot for engaging the adjacent sidewall of the tool holder slot when the wedge block is moved to the engaged position; and

(iii) screw means engaged with both the clamping unit and the wedge block for moving the wedge block along the bearing wall of the wedge cavity to the engaged position where the locking surface of the wedge block frictionally engages the adjacent sidewall of the tool holder slot and secures the clamping unit within the tool holder slot.

22. A tool holder assembly having an integral clamping wedge block for securing the same within a tool holder slot having a bottom and a pair of parallel sidewalls comprising:

(a) a clamping unit having a pair of parallel sidewalls insertable within the tool holder slot;

(b) means formed in the clamping unit for receiving and holding a cutting unit;

(c) wedge clamping means integral with the clamping unit for securing the clamping unit within the tool holder slot, and including:

(i) a wedge cavity formed in each of the pair of parallel sidewalls of the clamping unit and having a bearing wall inclined towards and adjacent sidewall of the tool holder slot;

(ii) a wedge block movably mounted within the wedge cavity for inward and outward movement with respect to the sidewall of the clamping unit between an inner-disengaged position and an outer-engaged position with respect to the adjacent sidewall of the tool holder slot;

(iii) the wedge including an inwardly facing surface engageable with the inclined bearing wall of the wedge cavity and slidable thereagainst as the wedge block moves from the disengaged position to the engaged position, and an outer locking surface disposed in a plane parallel to the adjacent sidewall of a tool holder slot for frictionally engaging the adjacent sidewall of the tool holder slot when the wedge block assumes the engaged position; and

(d) screw means engaged with both the clamping unit and the wedge block for moving the wedge from the disengaged position along the inclined bearing wall of the wedge cavity to the engaged position where the outer locking surface of the wedge block engages the adjacent sidewall of the tool holder slot and wedges the clamping unit between the parallel sidewalls of the tool holder slot.

5,255,583

METHOD OF PREPARING A SHAPED SUGAR CANE PRODUCT

Kevin R. Andrews, 41-745 Mooiki St., Waimanalo, Hi. 96795

Division of Ser. No. 787,637, Nov. 4, 1991, Pat. No. 5,200,228. This application Jan. 11, 1993, Ser. No. 2,750

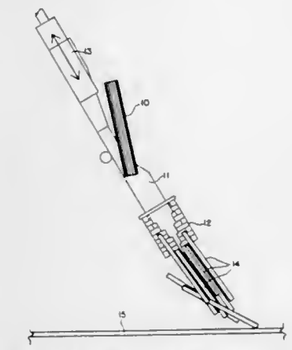
Int. Cl.[5] B26D *1/03, 3/00, 7/20;* **A23P** *1/00*

U.S. Cl. 83—39 **4 Claims**

1. A method for making a shaped sugar cane product which comprises:

a. billeting sugar cane stalks into lengths of from about 1½ inches to about 20 inches;

b. loading a tube with an opening on its one side and end with an individual billet; and



c. cutting the individual billet into sticks by pressing the billet lengthwise in the tube against a cutter comprising a grid of intersecting cutting blades with a reciprocating action for each individual billet.

5,255,584

DEVICE FOR CUTTING AND STACKING OF PRODUCTS PACKED IN A FOIL TUBE

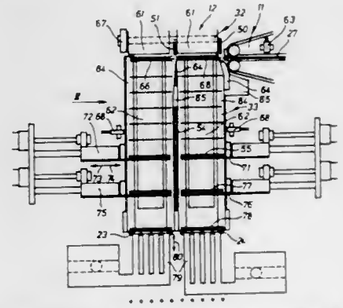
Eugen Fakler, Laupheim, Fed. Rep. of Germany, assignor to Natec, Reich, Summer GmbH & Co. KG, Fed. Rep. of Germany

Filed Mar. 9, 1992, Ser. No. 848,085

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1992, 4204987

Int. Cl.[5] B65B *61/06, 35/50;* **B65G** *57/14*

U.S. Cl. 83—94 **8 Claims**



1. A cutting and stacking apparatus for cutting a foil tube of individual product slices separated by transverse sealing seams along the seams to form separate product slices and stacking the slices vertically, comprising:

a cutting device comprising means for cutting the tube in a cutting direction through the sealing seams to form individual slices;

feed means for feeding the tube in a horizontal feeding direction into the cutting device;

a vertical stacking unit for stacking the cut slices, the stacking unit having an open upper end adjacent an outlet of said cutting device, and a pair of spaced vertical side walls, each side wall comprising an endless conveyor belt having a series of spaced, outwardly projecting fins with a take-up space between each adjacent pair of fins, the fins

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on one belt opposing the fins on the opposite belt, and each pair of adjacent fins on each belt comprising means for retaining one side edge of a product slice in the take-up space between the fins while the opposite side edge is taken up in the opposing space between an opposing pair of fins on the other belt, each belt having a downward run opposing the downward run of the other belt for conveying slices downwardly from the upper end of the stacking unit, each downward run having an upper end and a lower end;

guide means at the open upper end of the stacking unit for laterally guiding a slice in a horizontal orientation into the stacking unit;

an intermediate support located between the conveyor belts at a location intermediate the upper and lower ends of the downward run of belts, the intermediate support comprising means for releasably supporting an intermediate stack of slices; and

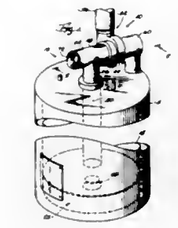
a hold down device above the open upper end of said stacking unit, the hold down device being movable in a direction parallel to said cutting direction into said open upper end and comprising means for moving a cut product slice into the stacking unit for take up in the take-up spaces of opposed pairs of fins on the conveyor belts.

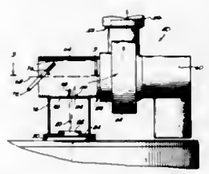
5,255,585

VACUUM SYSTEM FOR CRYOSTATS

Abraham Gordon, Teaneck, N.J., assignor to Instrumedics, Inc., Hackensack, N.J.

Filed Sep. 19, 1991, Ser. No. 762,619
Int. Cl.[5] B26D *7/18*
U.S. Cl. 83—100 **27 Claims**





13. A debris removal vacuum system for a cryostat and microtome, the microtome having a cutting edge for sample sectioning, comprising:

a vacuum collection nozzle, said nozzle positioned adjacent to the cutting edge of the microtome;

a collection nozzle assembly unit, wherein said assembly unit movably positions said nozzle near a plane with the cutting edge of the microtome;

at least one collection hose having two attachable ends;

a primary filter housing internal to the cryostat, wherein said housing contains debris-capturing filter media;

a bacteriological filter positioned downstream of said primary filter housing;

a vacuum hose having two attachable ends; and

a vacuum source;

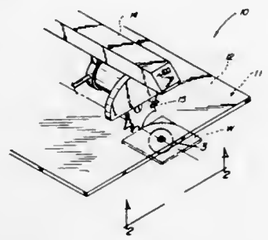
wherein the system is connected in series such that one end of said collection hose is attached to said nozzle assembly unit and the other end of said collection hose is attached to said primary filter housing; wherein debris arising from sectioning is transported by vacuum suction into said collection nozzle, through said collection assembly unit and said one collection hose, and onto the filter media inside of said primary filter housing; wherein said downstream bacteriological filter traps any microscopic debris that passes through said primary filter media; and wherein one end of said vacuum hose is attached to said bacteriological filter, and the other end of said vacuum hose is attached to said vacuum source.

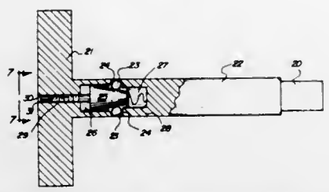
5,255,586

RADIAL ARM SAW CIRCLE CUTTING APPARATUS

Larry E. Newhausen, 9998 N. Leaf River Rd., Egan, Ill. 61047, and Steven W. Kloster, 9266 N. Leaf River Rd., Leaf River, Ill. 61047

Filed Jul. 30, 1992, Ser. No. 921,627
Int. Cl.[5] B27B *5/02*
U.S. Cl. 83—439 **2 Claims**





1. A radial arm saw circle cutting apparatus arranged for mounting to a support table, with the support table including a saw arm rotatably mounting a saw blade, with the table having a top surface and a bottom surface, with the saw arm positioned over the top surface, and the apparatus comprising:

a sleeve including an externally threaded sleeve portion, the externally threaded sleeve portion orthogonally directed through the support table,

the sleeve portion including a sleeve portion first end, the sleeve further including an abutment flange fixedly mounted to the sleeve portion first end orthogonally oriented relative to the sleeve portion, with the flange extending exteriorly of the sleeve portion for engagement with the table top surface,

a positioning rod inserted into the second end of the sleeve, the positioning rod adjustably and coaxially directed through the sleeve, with the positioning rod having a positioning rod first end and a positioning rod second end, the positioning rod first end extending beyond the abutment flange of the sleeve for receiving a workpiece thereon, the positioning rod second end including a handle, with the handle positioned below the table bottom surface, and

wherein,

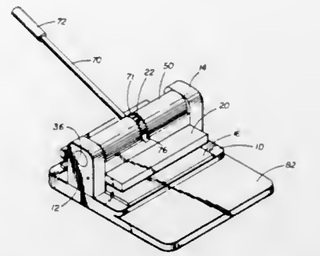
the positioning rod includes a plurality of sphere openings defined by a predetermined first diameter on diametrically opposed sides of the positioning rod, with each of the sphere openings cooperating with a locking sphere positioned within the rod and adjacent each sphere opening, with each of the locking spheres defined by a predetermined second diameter greater than the first diameter such that a portion of each sphere is extendable through its respective sphere opening, and a cylindrical cavity extending within the rod and intersecting the sphere openings, the cylindrical cavity having a cylindrical cavity floor and a cylindrical cavity roof, with the cylindrical cavity slidably receiving a conical abutment block therewithin, with the conical abutment block in engagement with the locking spheres, and the abutment block having an abutment block first end in confrontation with the cavity roof, and the spring member interposed between the abutment block first end and the cavity roof, and the abutment block second end including an externally threaded abutment rod coaxially aligned with the positioning rod directed through the cylindrical cavity floor and extending through the handle to permit rotation of the adjusting rod to effect axial displacement of the abutment block within the cylindrical cavity to cause the abutment block to force the position of each locking sphere through its respective sphere opening and contact an inside wall of the sleeve to lock the positioning rod in the sleeve.

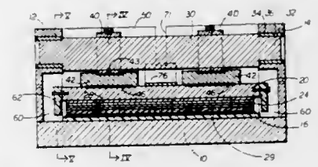
5,255,587

SHEET CUTTING DIE PRESS

Robert J. Eichenberg, and LaDorna E. Eichenberg, both of 17171 Daimler, Irvine, Calif. 92714

Filed May 8, 1992, Ser. No. 880,575
Int. Cl.[5] B26D *5/10, 5/16*
U.S. Cl. 83—628 **11 Claims**





1. A sheet cutting die press including

an upper platen,

a lower platen,

a support member holding the platens in a spaced, generally parallel relationship and permitting the platens to move relatively toward and away from one another, and

means for moving the upper and lower platens relatively toward and away from one another, one of the upper and lower platens constituting a first platen, the other constituting a second platen, said means including

a rotatable cam member adjacent to, but spaced from, the first platen,

a bearing member of a predetermined width received about the cam member, the bearing member including an inner race attached to the cam member,

a channel block means received between the cam member and the first platen to bear on and slide on the first platen, thereby to drive the first platen toward the second platen as the cam member rotates, the channel block means comprising a channel block having a groove formed therein to receive a portion of the outer race of the bearing member, the groove capturing the channel block between the first platen and the bearing member,

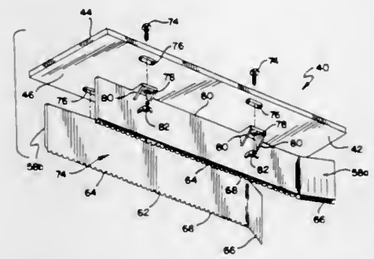
whereby a sheet cutting die received between the platens may be employed to cut one or more sheets by causing the platens to move relatively towards one another.

5,255,588

APPARATUS FOR MAKING ACCURATE CUTS IN THERMOFORMED ARTICLES

Douglas E. Foos, Barrington Hills, and Todd O. Buck, Carol Stream, both of Ill., assignors to Plastofilm Industries, Inc., Wheaton, Ill.

Filed Jun. 2, 1992, Ser. No. 892,151
Int. Cl.[5] B26F *1/02*
U.S. Cl. 83—879 **14 Claims**



13. An apparatus for making accurate cuts in at least one thermoformed article projecting vertically above a generally planar sheet from which said at least one article is formed, said apparatus comprising:

a base plate having a lower surface;

at least one pair of knives being mounted to said lower surface of said base plate to depend therefrom, and to be slidable to at least a limited extent relative to said base plate;

each said knife having a generally planar guiding portion and a generally planar portion having a cutting edge, said guiding portion being angled relative to said cutting portion;

means for lowering said knives in a first direction;

means for moving said sheet in a second direction;

wherein said portions of said knives having a cutting edge are parallel to said first direction and said second direction, and said guiding portion of said knives are parallel to the first direction and obliquely angled to the second direction; and

each said pair of knives being disposed on said base plate so that thermoformed articles advanced with the sheet toward said apparatus will engage said guiding portions of said knives and cause said knives to slidingly contact sides of said articles, and upon lowering said base plate toward the sheet, said cutting portions of said knives being positioned to create incisions in the sheet which are substantially flush with the sides of the articles.

5,255,589

CALLIOPE PIPE CONVERTER, ASSEMBLY, AND METHOD

Kenneth B. Caulkins, 4218 Jessup Rd., Ceres, Calif. 95307

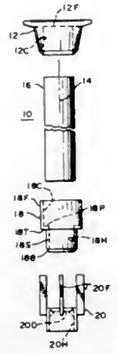
Filed Jan. 6, 1992, Ser. No. 817,072
Int. Cl.[5] G10D *7/00*
U.S. Cl. 84—330 **10 Claims**

1. A musical instrument comprising a first pipe assembly including:

a converter having a first portion with a generally cylindrical first hole therein, a second portion with a second hole

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therein, said second hole in line with said first hole, and an interior stop in between said first hole and said second hole, said second portion having a cylindrical outer edge which is beveled outwardly;



a pipe having a first end extending into said first hole and a closed second end; and a mouthpiece with a side wall and a disc mounted therein such that air may escape between the disc and the side wall for causing a resonance in said pipe, said mouthpiece mounted to said converter by offset members.

5,255,590

CONTROL DEVICE FOR THE LOAD- DEPENDENT CONNECTION OF A HYDRAULIC STAND BY MOTOR TO A BASE-LOAD MOTOR

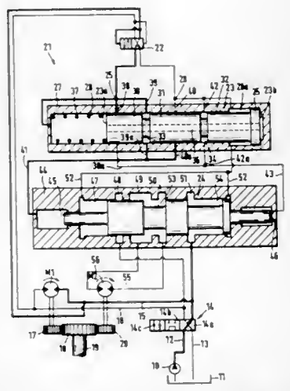
Guenter W. Klemm, Olpe, Fed. Rep. of Germany, assignor to Ing. Guenter Klemm Bohrtechnik GmbH, Fed. Rep. of Germany

Filed Jun. 20, 1991, Ser. No. 718,144

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1990, 4020111

Int. Cl.[5] F15B *11/00*; F16D *31/02*

U.S. Cl. 91—516 **8 Claims**



1. A control device comprising a hydraulic base-load motor (M1) supplied with a working pressure for driving a load, a hydraulic stand-by motor (M2) load-dependent connectable to the working pressure for assisting the base-load motor (M1) when the working pressure reaches an upper limit value, and switching device means (21) for responding to the working pressure at the base-load motor (M1) and activating the stand-by motor (M2) when the upper limit pressure P_o is reached and deactivating said stand-by motor (M2) when a lower limit pressure P_u is reached, said lower limit pressure being less than $P_1/(P_1+P_2)\times P_o$, where P_1 is the capacity of the base-load motor (M1) and P_2 is the capacity of the stand-by motor (M2) at the upper limit pressure.

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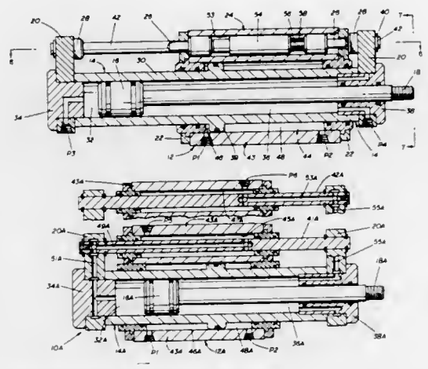
FLUID POWERED INDEXING APPARATUS

Theodore Gottlieb, Laguna Niguel, Calif., assignor to Nathan Gottlieb, West Bloomfield, Mich.

Filed Oct. 3, 1991, Ser. No. 770,318

Int. Cl.[5] F01B *7/20, 7/10*; F16J *15/18*

U.S. Cl. 92—52 **11 Claims**



1. An indexing apparatus comprising:

a pair of concentric fluid cylinders defining an outer cylinder of a relative short length receiving an inner concentric cylinder of a relative long length extending from opposed ends of said outer cylinder, said inner cylinder having a piston received within said outer cylinder to separate said outer cylinder into a pair of piston chambers;

said outer concentric cylinder being fixed against longitudinal movement and said inner concentric cylinder being mounted for back and forth longitudinal movement relative to said outer cylinder;

a single ram piston mounted within said inner concentric cylinder for reciprocal back and forth movement relative to said inner concentric cylinder and defining a pair of piston chambers therein adjacent opposite ends of said piston;

a piston rod secured to one end of said piston and extending from an end of said inner cylinder;

means operatively connected to the extending end of said piston rod for positioning at a plurality of predetermined positions;

a shock absorber carried by said fixed outer concentric cylinder;

means adjacent the ends of the strokes of said inner cylinder to activate said shock absorber to cushion the longitudinal movement of said inner cylinder at the end of its strokes; and

means to prevent rotative movement of said inner cylinder relative to said outer fixed cylinder during reciprocable movement of said inner cylinder relative to said outer cylinder;

said means to prevent rotative movement of said inner cylinder comprising a pair of abutments on opposed ends of said inner cylinder, and a rod extending between and secured to said abutments, said outer cylinder having means receiving said rod for maintaining the travel of said inner cylinder in a longitudinal direction and preventing rotative movement of said inner cylinder relative to said outer cylinder.

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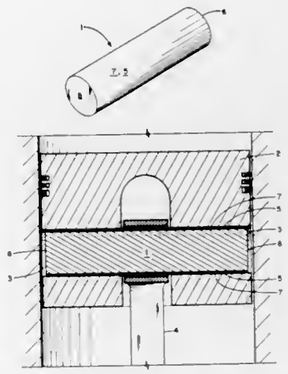
WRIST PIN AND METHOD FOR MANUFACTURING A WRIST PIN

Arthur J. Lewis, Jr., Grosse Ile, Mich., assignor to W. A. Thomas Co., Chelsea, Mich.

Filed Feb. 5, 1992, Ser. No. 831,691

Int. Cl.[5] F16J *1/04*

U.S. Cl. 92—223 **4 Claims**



1. A wrist pin for connecting a connecting rod to a piston, comprising a cylindrical aluminum pin having an outer cylindrical surface, said pin being matingly inserted into a bore of the piston, said outer cylindrical surface having an anodized coating applied thereto

3. A process for manufacturing a wrist pin, comprising the steps of:

a. machining a cylindrical pin, having an outer cylindrical surface, from aluminum stock; and

b. applying an anodized coating to said outer cylindrical surface.

5,255,593

AUTOMATIC BREWER

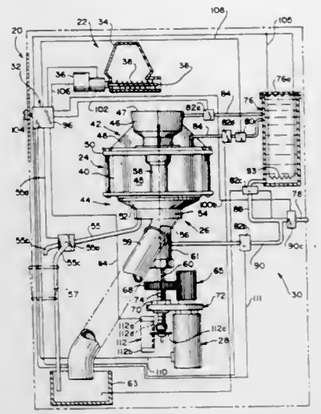
Arthur H. Bunn, Springfield; James H. Anson, Auburn, and David F. Ford, Springfield, all of Ill., assignors to Bunn-O-Matic Corporation, Springfield, Ill.

Continuation-in-part of Ser. No. 683,285, Apr. 10, 1991, Pat. No. 5,134,925. This application Jan. 10, 1992, Ser. No. 818,850

Int. Cl.[5] A47J *31/00*

U.S. Cl. 99—280 **16 Claims**

1. An apparatus for automatically brewing a beverage comprising a brew chamber having an inlet, a beverage dispensing outlet and a drain outlet, first valve means for selectively opening and closing said dispensing outlet, second valve means for selectively opening and closing said drain outlet, a water distribution system connected with said chamber for introducing heated water therein, means for supplying a quantity of a brewing substance into said chamber, control means for controlling said water distribution system and said first and second valve means for initially introducing a flow of water into said chamber with said dispensing and drain outlets closed and then stopping said flow and holding the water in said chamber during a predetermined steep time, said control means then causing additional water to flow into said chamber while opening said dispensing outlet and dispensing a brewed beverage therefrom.



5,255,594

AUTOMATIC COFFEE-MAKING MACHINE WITH DIRECT-CURRENT MOTOR DRIVE AND WORM SCREWS

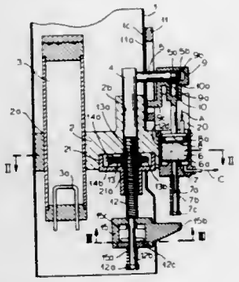
Lucio Grossi, Via Sylva 30, Bergamo, Italy

Filed Jul. 1, 1992, Ser. No. 907,503

Claims priority, application Italy, Jul. 3, 1991, MI91 A 001830

Int. Cl.[5] A47J *31/34*

U.S. Cl. 99—287 **9 Claims**



1. A coffee machine, comprising:

a support;

a direct current motor on said support provided with a motor shaft rotatable about a shaft axis;

a worm screw coaxial with said shaft and formed thereon;

means for supplying a hot water on said support;

a slider mounted displaceably between extreme positions on said support and extending along a slider axis perpendicular to said shaft axis and provided with a free end;

transmitting means for transmitting a rotational movement of said shaft to a linear movement of said slider displaceable between opposite extreme positions, said transmitting means including:

a slider shaft connected to said slider and formed with a threaded part operatively connected with said worm screw and an unthreaded stem formed with a stem free end,

a worm wheel meshing with said worm screw and thread-

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edly engaging said threaded part for driving said slider shaft in a direction perpendicular to said worm shaft on rotation of said worm wheel,

a pin mounted fixed on said stem and extending radially therefrom;

a shaped member operatively connected with said free end of said slider;

coupling means on said free end of said slider for connecting said slider with said shaped member;

a piston on said shaped member;

a cylinder on said support, positioned to receive said piston, receiving a powdered coffee and formed with a bottom, said piston being sealably movable into said cylinder toward said bottom for producing a coffee infusion in an inward position of said piston upon displacing of said slider to one of said extreme positions said piston being connected with said means for supplying hot water;

displaceable filter means in said cylinder for filtering the coffee infusion upon moving said piston inwardly into said cylinder, said filter means including a filter in said cylinder and a bar mounted fixed on said filter and alignable with said piston and extending axially oppositely thereto;

discharging means for ejecting spent powdered coffee from said cylinder upon producing the coffee infusion, said discharging means including:

an annular member mounted slidably on said stem of said slider shaft and housing said pin,

first spring means between said stem free end and said annular member for urging said annular member against said threaded part of the shaft,

an arm on said member extending radially outwardly therefrom,

a second spring means for yieldably holding said arm in alignment with said bar of said filter means, said bar and said arm being spaced apart in said inward position of said piston,

a spiral coaxial with said stem and formed in said annular member and engageable by said pin, said arm engaging said bar upon displacing said slider from said one extreme position, so that said filter with a cake of spent coffee move axially from said bottom of said cylinder; and

removing means for removing said cake of spent coffee from the cylinder, said pin engaging said spiral upon removing said cake and swinging said arm out of alignment with said bar, so that said filter means are displaced back toward said bottom of said cylinder.

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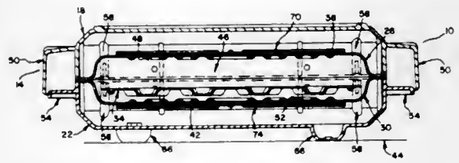
COOKIE MAKER

David T. Higgins, Lee's Summit, Mo., assignor to The Rival Company, Kansas City, Mo.

Filed Mar. 18, 1992, Ser. No. 854,431

Int. Cl.[5] A47J *37/00*

U.S. Cl. 99—378 **25 Claims**



1. A portable cookie maker, comprising:

a) a housing comprising a lid and a base;

b) a heat conducting element supported within the lid of said housing and comprising a groove therein;

c) a cookie pan disposed within the base of said housing, said cookie pan and said heat conducting element cooperative to define a baking cavity having a height in the range of 0.5 inches to 2 inches; and

d) a heating element secured within the groove of said heat conducting element and operative to heat said cookie pan.

5,255,596

SYSTEM FOR PROCESSING PRODUCTS, IN PARTICULAR FOOD

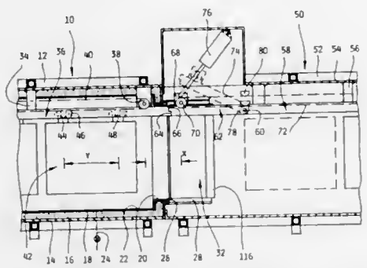
Klaus-Dieter Fessmann, Winnenden, Fed. Rep. of Germany, assignor to Germos-Fessmann GmbH & Co KG, Remshalden-Grunbach, Fed. Rep. of Germany

PCT No. PCT/EP90/00833, § 371 Date Jan. 21, 1992, § 102(e) Date Jan. 21, 1992, PCT Pub. No. WO91/17662, PCT Pub. Date Nov. 28, 1991

PCT Filed May 23, 1990, Ser. No. 809,500

Int. Cl.[5] A23B *4/044*

U.S. Cl. 99—477 **8 Claims**



1. A system for processing products, particularly food, comprising

a) at least one leak-proof treatment chamber (**10**) including at least one doorway (**20**), a door (**30, 32**) and door hinge means (**122, 124**) allowing movement of the door (**30, 32**) between an open position giving access to the doorway and a closed position, wherein the door co-operates with the doorway in a fluid tight manner; and

b) conveyor means (**36-48, 58-72**) extending through said doorway (**20**) and including

ba) at least one conveyor rail (**36, 58, 62**) as well as

bb) at least one product carrier (**42**) running on said conveyor rail (**36, 58, 62**),

bc) said conveyor rail (**36, 58, 62**) having a first stationary rail section (**36**) inside the treatment chamber (**10**), a second stationary rail section (**58**) arranged outside of the treatment chamber (**10**) at a distance from the doorway (**20**) and an intermediate rail section (**62**) movable between a conveying position, wherein it is aligned with the stationary rail sections (**36, 58**) of the conveyor rail (**36, 58, 62**), and a park position (**74**), wherein the door (**30, 32**) can be moved through an area occupied by the conveyor rail, the longitudinal dimension of the movable rail section (**62**) corresponding to the length of the interpenetration area of the path of the door (**30, 32**) and of the conveyor rail (**36, 58, 62**),

characterized in that

c) the movable rail section (**62**) is mounted for shifting movement in a vertical direction and

d) first return means (**38**) associated with a first flexible conveyor means (**40**) extending through the treatment chamber (**10**) and arranged in the immediate vicinity of the interior side of the doorway (**20**), and

e) second return means (**70**) associated with a second flexible conveying means (**72**) mounted at the exterior side of the doorway (**20**) and positioned on the respective stationary rail section (**58**) at a location adjacent to said end portion thereof neighboring the doorway (**20**).

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WIRE CATCH FOR A BALER

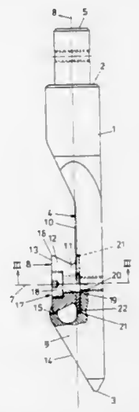
Dirk J. Vos, Veendam, Netherlands, assignor to Machinefabriek Bollegraaf Appingedam B.V., Veendam, Netherlands

Filed Apr. 24, 1992, Ser. No. 874,070

Claims priority, application Netherlands, Apr. 26, 1991, 9100731

Int. Cl.[5] B65B *27/12, 13/08*

U.S. Cl. 100—17 **6 Claims**



1. A wire catch for a baler comprising an elongated wire catch body having between a fixed end and a free end thereof a recess in which is suspended a wheel having an axis of rotation directed substantially transverse to the centerline of the wire catch body, while the recess on the side of the free end is closed and bounded by a portion of the wire catch body which screens the wheel and on the side of the fixed end comprises a first guide surface joining a circumferential portion of the wheel that faces the fixed end, a second guide surface being provided opposite the first guide surface, said second surface converging towards the first guide surface in the direction of the free end of the wire catch body, wherein the second guide surface is constituted by a portion, located remote from the first guide surface, of the circumferential portion of the wheel that faces the fixed end, and the wheel has an asymmetrical circumferential profile with a deepest portion between the first guide surface and a lateral face of the wheel facing away from the first guide surface, said deepest portion being located closer to the first guide surface than to the lateral face of the wheel, facing away from the first guide surface.

5,255,598

SCREEN PRINTING DEVICE WITH CONTINUOUS REGISTERING OF ROTATING STENCILS

Carolus T. J. A. van Sas, Helmond; Franciscus J. J. van Akkeren, Stramproy; Henricus J. Teeuwen, Weert; Robert J. van den Berg, Ewijk, and Jan H. Nekkers, Gennep, all of Netherlands, assignors to Stork Brabant B.V., An Boxmeer, Netherlands

Filed Jul. 2, 1992, Ser. No. 909,099

Claims priority, application Netherlands, Jul. 5, 1991, 9101176

Int. Cl.[5] B41L *13/00*

U.S. Cl. 101—118 **9 Claims**

1. A screen printing apparatus for printing a web of material, comprising

an endless belt,

means including a plurality of rollers mounting said endless belt for movement along an endless path of travel,

belt drive means coupled to at least one of said roller for driving said belt along said endless path of travel,

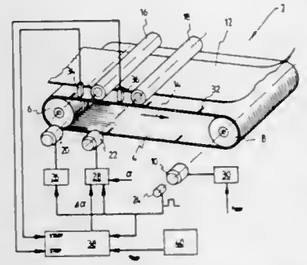
a plurality of stencils rotatably mounted about fixed axes which extend transversely to said direction of movement, and so that each stencil is adapted to apply a printed pattern to a web of material which moves with said belt and between said belt and said stencils,

stencil drive means coupled to each of said stencils for rotatably driving the same,

means coupling said belt drive means and said stencil drive means so as to maintain a predetermined speed relationship therebetween, and with each of said stencils having a predetermined angular orientation with respect to the other stencils so that the printed patterns are printed in registry on the web of material,

at least one indicium positioned on or in said belt,

signal generation means for producing a signal representative of a displacement of said belt,



detector means comprising a plurality of detectors fixedly mounted with respect to said screen printing apparatus for detecting the displacement of said at least one indicium from one detector to a next detector,

comparison means for comparing the signal from said signal generation means, during a displacement of said at least one indicium from said one detector to said next detector, with a predetermined reference signal, and for generating a correction signal representative of any difference therebetween, and

correction means for adjusting the angular orientation of at least one of said stencils with respect to the angular orientation of at least one other of said stencils in response to said correction signal and so as to maintain the registry of the printed pattern of the web of material under varying operating conditions.

5,255,599

STENCIL AND SCREEN ASSEMBLY FOR A PRINTER

Kazuyosi Kobayasi, Murata; Tomoya Otomo, Sendai, and Mitsuo Saté , Shibata, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 753,235, Aug. 30, 1991, Pat. No. 5,172,632. This application Sep. 28, 1992, Ser. No. 952,803

Claims priority, application Japan, Aug. 31, 1990, 2-232074; Dec. 7, 1990, 2-407377; Dec. 11, 1990, 2-402870; Feb. 18, 1991, 3-13684; Mar. 25, 1991, 3-60116

Int. Cl.[5] B41L *13/10*

U.S. Cl. 101—119 **3 Claims**

1. A printer for printing out an image formed in a stencil on a sheet, comprising:

a rotatable drum comprising a hollow cylindrical support constituted by a permeable zone which is formed with a number of apertures and a non-permeable zone;

mesh screen means covering an outer periphery of said support, a stencil being wrapped around an outer periphery of said screen means;

clamp means provided on said non-permeable zone of said support for clamping one edge of said stencil wrapped around said screen means;

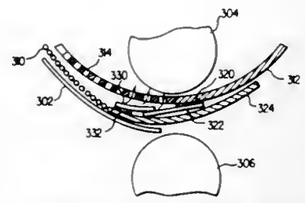
ink supply roller means disposed in said support for supply-

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ing ink to said stencil via said permeable zone of said support;

press roller means for pressing a sheet against said stencil;

a thin non-permeable first guide plate adhered by a first adhesive to an outside of a leading edge of the non-permeable zone with a tip thereof directed toward the permeable zone; and



a thin non-permeable second guide plate adhered by a second adhesive to said screen means at an inside of said screen means at a position such that a tip of said second guide plate is adjacent a trailing portion of said screen means, a portion of said second guide plate being located closer to said support than a portion of said first guide plate.

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REINFORCED PRINTING FRAME STRUCTURE

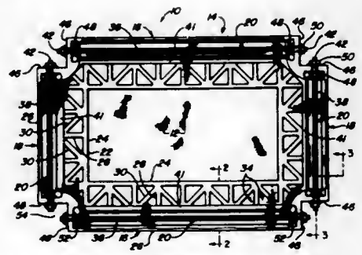
Kaino J. Hamu, 16061 Dominica Cir., Huntington Beach, Calif. 92649

Filed Jan. 30, 1992, Ser. No. 828,032

The portion of the term of this patent subsequent to Mar. 24, 2009, has been disclaimed.

Int. Cl.[5] B05C *17/08*

U.S. Cl. 101—127.1 **15 Claims**



1. A screen printing frame structure comprising:

an open rectangular fame having a normal printing position in which one side of the frame is lowermost and including frame members along the four sides, respectively, of said frame rigidly joined to one another at the frame corners and forming a rectangular opening through the frame,

the frame member along each of at least two opposite sides of said frame comprising an open truss having an open truss configuration and including an inner longitudinal load bearing truss portion extending along and bounding the adjacent side of said frame opening and rigidly joined at its ends to the frame members along the two remaining sides of said frame, each of said inner truss portions having an outer longitudinal load bearing truss portion laterally spaced from said inner truss portion in a direction away from said opening at least between the ends of said truss portions and rigidly joined at its ends to the frame members along said two remaining sides of said frame, and additional lateral load bearing truss portions extending between and integrally and rigidly joined to said inner and outer truss portions, and

screen gripping and tensioning means mounted on and extending along one longitudinal truss portion of each truss for stretching a printing screen edgewise across one side of said frame.

5,255,601

INTAGLIO PRINTING MACHINE WITH WIPING ROLL ADJUSTING DEVICE

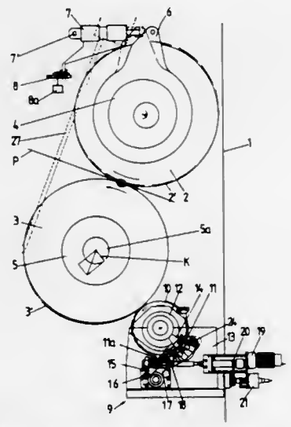
Ernst A. Blass, Margetshöchheim, and Hermann J. Kunh, Zellingen, both of Fed. Rep. of Germany, assignors to De la rue Giori S.A., Lausanne, Switzerland

Filed Jul. 24, 1992, Ser. No. 920,185

Claims priority, application Switzerland, Jul. 30, 1991, 2273/91

Int. Cl.[5] B41F *9/10*

U.S. Cl. 101—155 **7 Claims**



1. An intaglio printing machine comprising:

a plate cylinder (3),

an impression cylinder (2),

an actuator (7) for engagement and disengagement of said impression cylinder (2) by adjusting said impression cylinder between an operating position resting on said plate cylinder (3) and a resting position removed from said plate cylinder (3),

a wiping device 9) which includes a wiping cylinder (10) which interacts with said plate cylinder (3), an actuator (15), said wiping cylinder being adjustable by means of said actuator (15) between an operating position, in which said wiping cylinder rests on said plate cylinder (3) with a predetermined pressure, and a resting position removed from said plate cylinder,

wherein an angle between a connecting line of the axles of said impression cylinder and said plate cylinder and a connecting line of the axles of said plate cylinder and said wiping cylinder being other than 90 degrees,

an additional fine actuator, said wiping cylinder (10) being adjustable within a fine-adjustment range by said additional fine actuator (19), said additional fine actuator acting directly on said wiping cylinder,

an electric link between said actuator (7) for the impression cylinder and said fine actuator (19), said additional fine actuator (19) being actuated simultaneously with said actuator (7) for the impression cylinder by said electric link to maintain said predetermined pressure of said wiping cylinder (10) when said impression cylinder (2) is moved in and out of its operating position.

a journal of said plate cylinder, said journal being deflected by a large pressure force from engagement of said impression cylinder, whereby an original distance between the axle of said plate cylinder and the axle of said wiping cylinder is reduced, whereby reduction of said distance is compensated by said fine actuator (19) by displacing said axle of said wiping cylinder thereby maintaining said original distance and said predetermined pressure;

whereby when said impression cylinder (2) is moved to its rest position, deflection of said axle of said plate cylinder is eliminated and said fine actuator (19) displaces said wiping cylinder in an opposite direction thereto thereby keeping said original distance constant.

5,255,602

APPARATUS FOR THREADING WEBS IN ROTARY PRINTING MACHINES

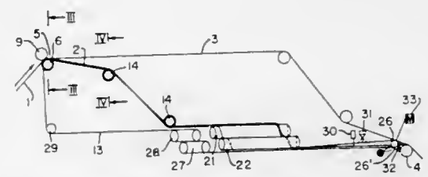
Hans Mamberer, Königsbrunn, and Johann Winterholler, Friedberg, both of Fed. Rep. of Germany, assignors to MAN Roland Druckmaschinen AG, Offenbach am Main, Fed. Rep. of Germany

Filed Sep. 8, 1992, Ser. No. 941,399

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1991, 4130678

Int. Cl.[5] B41F *13/02*

U.S. Cl. 101—228 **9 Claims**



1. An apparatus for threading webs in rotary printing machines with a belt system which is guided on a threading path along which a web is to be threaded, comprising:

a threading belt (13) in the form of one of a loop band and a hook band made of a "VELCRO" closure;

means for guiding said threading belt along the threading path;

a band comprising the other of the loop and hook bands of a "VELCRO" closure secured at a leading edge of the web; and

means for directing said band into automatic engagement with said threading belt to initiate threading of said web with said threading belt.

5,255,603

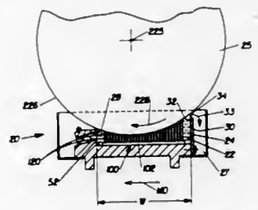
INK RESERVOIR BAFFLE

Stephen T. Sonneville, Cincinnati; Charles E. Eberhard, Mason, and Jeffery M. Vaughn, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 12, 1993, Ser. No. 16,647

Int. Cl.[5] B41F *31/06;* **B41L** *27/08*

U.S. Cl. 101—363 **19 Claims**



1. An apparatus for applying ink to a substrate, the apparatus comprising:

a reservoir containing ink;

a roller supported for rotation about a roller axis, the roller partially submerged in the ink in the reservoir and having a roller surface for transferring ink from the reservoir; and

a baffle comprising an array of flow restrictors at least partially submerged in the ink in the reservoir, the array of flow restrictors extending along first and second mutually perpendicular directions, each flow restrictor having a predetermined spacing from adjacent flow restrictors along the first and second mutually perpendicular directions, each flow restrictor extending from a fixed end to a free end closely spaced from the roller surface, and each flow restrictor extending in a direction having a vector component in a third mutually perpendicular direction.

5,255,604

PRESSURE FLUID SUPPLY VALVE ASSEMBLY

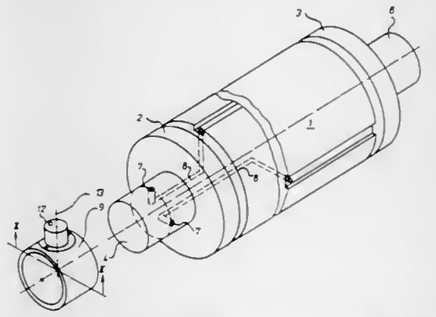
Reinbold R. Dürr, Würzburg, Fed. Rep. of Germany, assignor to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed Feb. 3, 1993, Ser. No. 12,647

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1992, 4203550

Int. Cl.[5] B41F *27/06, 27/12*

U.S. Cl. 101—389.1 **15 Claims**



1. A pressure fluid supply valve assembly which is usable with a rotatable cylinder, said pressure fluid supply valve assembly comprising:

a rotatable cylinder having first and second cylinder journals with peripheral surfaces at opposite ends of said cylinder;

at least a first radially extending, fluid medium conduit in a first of said cylinder journals;

a fixed cylindrical sleeve supported on said first cylinder journal and concentric therewith;

and first journal being rotatable within said sleeve

a generally cylindrical housing carried by said sleeve, and extending radially through said cylindrical sleeve;

a movable valve member supported in said cylindrical housing and having an outlet opening; and

means to supply a fluid under pressure to said cylindrical housing to move said movable valve member into engagement with said peripheral surface of said first cylinder journal and into fluid communication with said radially extending fluid medium conduit.

5,255,605

SHEET-GRIPPER DEVICE FOR SHEET-FED ROTARY PRINTING PRESSES

Alexander Pfisterer, Eppelheim, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Jul. 2, 1990, Ser. No. 547,593

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1989, 3921474

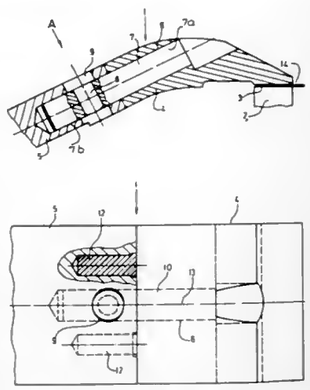
Int. Cl.[5] B41F *1/30*

U.S. Cl. 101—409 **10 Claims**

1. Sheet-gripper device for sheet-fed rotary printing presses formed of a sheet gripper and a sheet-gripper seat, the sheet gripper having a longitudinal axis and comprising a sheet-gripper head and a gripper support part mutually engageable in a

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common plane transverse to said longitudinal axis, the sheet gripper being displaceable so that said sheet-gripper head thereof is movable towards the sheet-gripper seat for gripping a sheet therebetween, and away from the sheet-gripper seat for



releasing the sheet, means for affording a swivelling of said sheet-gripper head and said gripper support part relative to one another about the longitudinal axis of the sheet gripper, and means for frictionally holding said sheet-gripperhead on said gripper support part.

5,255,606

DRAG ROLLER DEVICE FOR PRINTING APPARATUS

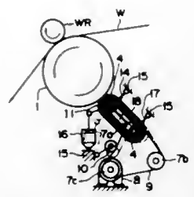
Takashi Iijima, Yokosuka; Mitsuo Kitai, Yokohama, and Hideo Ohta, Tokyo, all of Japan, assignors to Kabushikigaisha Tokyo Kikai Seisakusho, Tokyo, Japan

Filed Apr. 2, 1991, Ser. No. 679,207

Claims priority, application Japan, Apr. 2, 1990, 2-87702

Int. Cl.[5] B41F *35/00*; B41L *41/00*

U.S. Cl. 101—425 **3 Claims**



1. An apparatus for printing a continuous sheet, comprising:
(A) a roller having a circumferential surface;
(B) drive means for driving said continuous sheet through said apparatus; and
(C) a cleaning device which selectively cleans a part of said circumferential surface of said roller, said cleaning device including
(i) a rotary element which is driven by said drive means,
(ii) a stationary member,
(iii) a swing arm having a first end cooperating with said rotary element and a second end pivotally connected to said stationary member, and
(iv) a hydraulic cylinder which has a first end connected to said swing arm and a second end connected to said stationary member, said hydraulic cylinder selectively pivoting said swing arm and said rotary element form a first position in which said cleaning device contacts said circumferential surface of said roller to a second position in which said cleaning device is isolated from said circumferential surface of said roller;
wherein said cleaning device further comprises:
a link arm which extends axially through said rotary element and which has first and second ends, said first end being pivotally connected to said first end of said swing arm, and
a second swing arm having a first end which is pivotally connected to said second end of said link arm and a second end which is pivotally connected to said stationary member;
wherein said rotary element comprises a support roller, and further comprising an endless brush belt which is rotatably supported by said support roller and which contacts said circumferential surface of said roller when said cleaning device is in said first position; and
wherein said cleaning device further comprises:
a second support roller which is spaced from said support roller and which rotatably supports said endless brush belt,
a second link arm extending axially through said second support roller, and
third and fourth swing arms, each of which has a first end connected to a respective end of said second link arm and a second end which is pivotally connected to said stationary member.

5,255,607

METHOD AND APPARATUS FOR MAINTAINING REGISTRATION WHEN MAKING A PRINTING PLATE

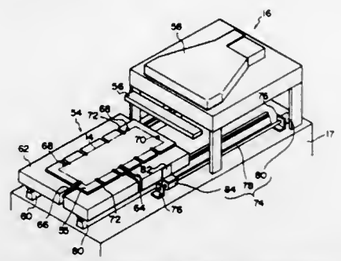
Mikio Nishiyama, and Hirokazu Okutsu, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 20, 1991, Ser. No. 811,111

Claims priority, application Japan, Dec. 21, 1990, 2-405222; Feb. 8, 1991, 3-017768

Int. Cl.[5] B41N *1/14*; G03F *7/26*

U.S. Cl. 101—463.1 **29 Claims**



3. A printing plate making apparatus comprising:
a recording section provided with a first positioning device for positioning a printing plate, for recording an image on a printing surface of said printing plate which has been positioned by said first positioning device;
a processing section for processing with a processing solution said printing plate on which said image has been recorded, while conveying said printing plate, and,
a punching section provided with a second positioning device for positioning said printing plate, for punching positioning notches on said printing plate which has been positioned by said second positioning device for positioning and winding said printing plate around a plate cylinder of a rotary press; wherein
said first positioning device comprises a first reference member for abutting against a side edge of said printing plate being moved in a first direction and positioning said printing plate in said first direction, and a second reference member for abutting against a side edge of said printing plate being moved in a second direction right-angled to said first direction and positioning said printing plate in said second direction, and said second positioning device comprises a third reference member for abutting against a side edge of said printing plate being moved in a third direction and positioning said printing plate in said third direction, and a fourth reference member for abutting against a side edge of said printing plate being moved in a fourth direction right-angled to said third direction and positioning said printing plate in said fourth direction, wherein
the positional relation between said first and second reference members and the positional relation between said third and fourth reference members are set identically.

5,255,608

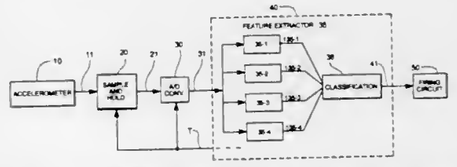
REAL-TIME IDENTIFICATION OF A MEDIUM FOR A HIGH-SPEED PENETRATOR

Kwang S. Min, and Hisook L. Min, both of Commerce, Tex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 16, 1992, Ser. No. 993,742

Int. Cl.[5] F42C *11/06*

U.S. Cl. 102—215 **4 Claims**



1. A programmable fuze for an intelligent hard-target weapon, which provides a real-time estimation of each of a plurality of media as the weapon is penetrating through it, for initiating a warhead detonation, comprising:
an accelerometer used as a primary sensor which provides analog input signals;
processing means including a feature extractor and a classifier, the classifier having a firing signal output;
means coupled between the accelerometer and the feature extractor for sampling the analog input signals at a given interval and converting them to a stream of data in digital form;
wherein the feature extractor comprises a plurality of extraction units in parallel, means for dividing the stream of data into windows of a given number (ws) of data, and means for broadcasting the data to the extraction units in parallel, wherein each extraction unit includes means for extracting a respective feature selected from categories comprising: (1) intensity of signals, (2) a magnitude of their derivatives, and (3) a measure of sudden changes, with the extraction units operating simultaneously;
wherein the classifier includes rule based means based on the features from the feature extractor for classifying the medium, and decision means based on the classification for determining if the weapon is in target, and if so for supplying a signal at the firing signal output to initiate warhead detonation.

5,255,609

SUSPENSION SUPPORT SYSTEM FOR AN OVERHEAD CONVEYOR SYSTEM WITH CLAMP TYPE CONNECTORS WHICH DO NOT PENETRATE EXISTING STRUCTURE

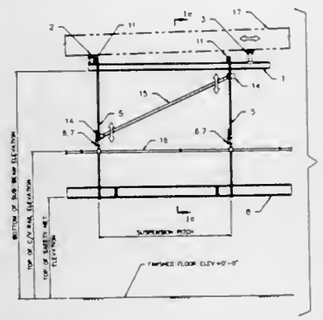
Kozo Miyagawa, Hendersonville, and Gregory A. Clark, Gallatin, both of Tenn., assignors to Tsubaki Conveyor of American, Inc., Portland, Tenn.

Filed Feb. 6, 1992, Ser. No. 831,920

Int. Cl.[5] E01B *25/24*

U.S. Cl. 104—111 **21 Claims**

1. An overhead conveyor suspension system for suspending a rail from existing structural members, said suspension system comprising:
a plurality of sub-beams suspended from said existing structural members, said sub-beams being suspended substantially horizontally by a plurality of girder brackets;
a plurality of track beams extending between at least two of sid plurality of sub-beams, said track beams are oriented perpendicular to said rail and are mounted on said sub-beams by track beams connectors;
a plurality of vertical suspension members suspended from said track beams by track beam brackets;



a plurality of horizontal suspension members extending between and connected to at least two of said plurality of vertical suspension members; and
an adjustable suspension bracket suspending said rail from said horizontal suspension member, wherein said adjustable suspension brackets include first adjustment means for adjustably suspending said rail from said horizontal suspension members, said first adjustment means comprising an adjustment bolt adapted to vary the distance said horizontal suspension members and said rail.

5,255,610

CONVEYOR FOR A SUSPENSION CONVEYOR SYSTEM WITH BEARING ARRANGEMENT FOR VERTICAL AND HORIZONTAL PIVOTING

Robby Enderlein, Landsberg/Lech, Fed. Rep. of Germany, assignor to RSL Logistik GmbH & Co., Landsberg/Lech., Fed. Rep. of Germany

Filed Jun. 2, 1992, Ser. No. 892,310

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1991, 9106797[U]

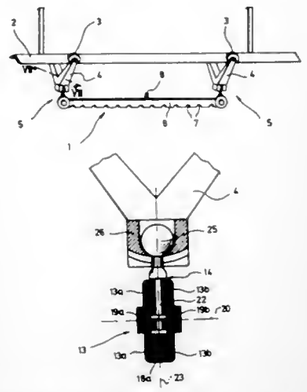
Int. Cl.[5] B61B *3/00*

U.S. Cl. 105—156 **16 Claims**

1. A conveyor for a suspension conveyor system comprising two trolleys and a carrier bar, said carrier bar having two ends and being adapted to receive thereon objects to be transported, each of said trolleys comprising a pair of rollers adapted to be suspended from for movement along a suspended rail and a yoke interconnecting said pair of rollers, one of each of said yokes being connected to one end of said carrier bar by a pivot pin, said pivot pin having a first end and a second end, means for connecting said first end of said pivot pin to said yoke and for connecting said second end of said pivot pin to said carrier bar to permit relative rotation of said yoke and said carrier bar with respect to each other about a vertical axis, the means for connecting said second end of said pivot pin to said carrier bar including a bearing shell on the end of the carrier bar having a guide means, said guide means permitting said carrier bar to

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also pivot relative to said yoke to which that end of the carrier bar is connected about a horizontal axis extending perpendicu-



lar to said pivot pin as well as transverse to said rail in a vertical plane over an angular range of at least about 90°.

5,255,611

TILT COMPENSATOR FOR HIGH-SPEED VEHICLES, IN PARTICULAR RAIL VEHICLES

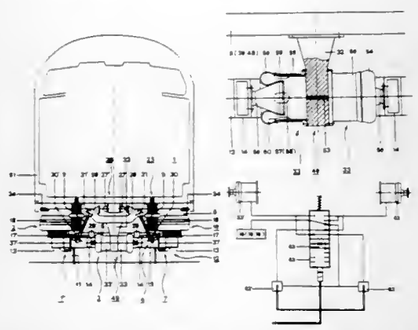
Richard Schneider, Neuhausen am Rheinfall, Switzerland, assignor to SIG Schweizerische Industrie-Gesellschaft, Switzerland

Division of Ser. No. 536,689, Jul. 13, 1990, Pat. No. 5,222,440. This application Aug. 5, 1992, Ser. No. 926,162

Claims priority, application Switzerland, Oct. 13, 1988, 3832/88

Int. Cl.[5] B61F *5/00*

U.S. Cl. 105—199.2 **14 Claims**



1. Device for compensating a tilt of a carriage body of a rail vehicle when travelling around bends at high speeds, comprising:

a passive tilting system, including:

a tilt compensator with a four-bar mechanism, and an energy store means, the tilt compensator being operationally connected to the energy store means to remove parasitic rigidities of the tilt compensator during travel of the device on bends in a superelevated track, the tendency of the carriage body to tilt outside of the bend being compensated, so that a carriage body contour of the vehicle, having an approximate shape of a parallelogram, complies to a predetermined outline profile, the four-bar mechanism including a transversely movable transverse support mounted in a floating manner and supported on a carriage body suspension for providing vertical cushioning for the carriage body, the energy store means including an air spring means displaceable laterally with respect to the carriage body to tilt the carriage body toward an inside of a bend when the carriage body travels around the bend.

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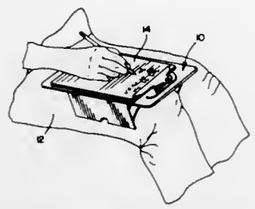
APPARATUS FOR SECURING AN ARTICLE TO A USER'S LEG

Rolf Anderson, 131 S. Clark, Forest City, Iowa 50436

Filed Oct. 23, 1992, Ser. No. 965,788

Int. Cl.[5] A47B *23/00*

U.S. Cl. 108—43 **17 Claims**



1. A securement device for releasable attachment to a user's leg, comprising:

(a) a table member having a centerline and a pair of opposing side portions to either side of said centerline and separated by a distance of at least the transverse width of the user's leg;

(b) a pair of in-folding leg members one each of which is attached for hinged movement to either side of said centerline of said table member, each of said leg members being of a length less than one-half the distance separating said opposing side portions and at least one-half the ventral-dorsal dimension of the user's leg;

(c) means for releasably securing said leg members in a position substantially flush with the bottom side of said table member;

(d) elastic means interconnecting a free end portion of each said leg member to said bottom side of said table member.

5,255,613

RACKABLE PLASTIC PALLET

Lyle H. Shuert, 70 Kingsley Manor Drive, Bloomfield Hills, Mich. 48304

Continuation of Ser. No. 524,299, May 15, 1990, abandoned, which is a continuation-in-part of Ser. No. 484,369, Feb. 26, 1990, abandoned. This application Mar. 12, 1992, Ser. No. 851,231

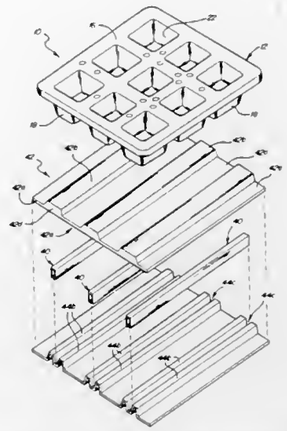
Int. Cl.[5] B65D *19/38*

U.S. Cl. 108—52.1 **18 Claims**

1. A pallet comprising:

a plastic upper structure including an upwardly facing load receiving surface, defined by a first upper plastic sheet including a plurality of downwardly extending hollow portions opening in said load receiving surface, and downwardly facing attachment surface means defined by a second lower plastic sheet including a plurality of downwardly extending upwardly opening hollow portions nestingly receiving said downwardly extending hollow portions of said first sheet with the lower portions of the hollow portions of said first sheet fused to the lower portions of the hollow portions of said second sheet; and

a base structure positioned beneath said upper structure and including a base plastic structure having a configuration generally corresponding to the configuration of said upper structure and a plurality of beam members incorporated in said base plastic structure and extending parallel to said load receiving surface, said base plastic structure including a third upper plastic sheet having an upper surface defining an upwardly facing detachment surface means fused to said attachment surface means of said upper structure and a fourth lower plastic sheet having a lower surface defining a flat lower surface to support the pallet on a support surface, selectively fused to the third upper sheet, and selectively spaced from the third upper sheet to accommodate said beam members.



5,255,614

KNOCK DOWN DISPOSABLE PALLET

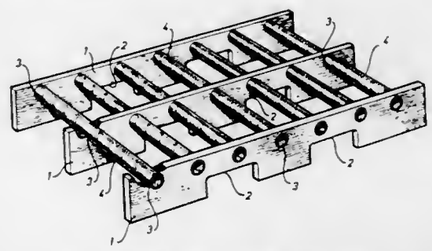
Bertil Voss-Schrader, Korshamnsviken, S-139 00 Värmdö, and Fred G. V. Atterby, Lidingö, both of Sweden, assignors to Bertil Voss-Schrader, Varmdo, Sweden

Continuation of Ser. No. 819,478, Jan. 16, 1986, which is a continuation of Ser. No. 552,129, Oct. 28, 1983, abandoned. This application Jul. 1, 1988, Ser. No. 214,819

Claims priority, application Sweden, Mar. 16, 1982, 8201648-6

Int. Cl.[5] B65D *19/26*

U.S. Cl. 108—56.1 **8 Claims**



1. A knock down disposable pallet comprising two outer non-tubular base members (1) and at least one intermediate non-tubular base member (1), each of which base member are identical, have a height which corresponds to the conventional pallet height, a thickness in the range of 20 to 100 millimeters, have two mutually parallel outer surfaces through which extend a number of cylindrical holes (3) and through which extend recesses (2) intended for the introduction of the forks of a forklift truck, the holes (3) being distributed along the length of the base members and perpendicular thereto, the base members (1) being united with each other by tubes (4) running through the cylindrical holes (3), the dimension of the holes relative to the dimension of the tubes being such that the tubes and base members are united by friction between the tubes and the inner surfaces of the cylindrical holes, the holes (3) being located a minor distance below the upper surface of the base members, and the tubes in their entirety, also being a minor distance below the upper surface of the base members, to provide load bearing surfaces which do not form a part of the substantially flat load bearing surface formed by the upper surface of the base members.

5,255,615

SYSTEM FOR DISCHARGING BOTTOM ASH FROM STEAM-PRODUCING BOILERS

Mario Magaldi, Viale del Bosco, 22, I-84100, Salerno, Italy

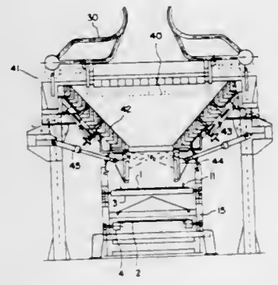
PCT No. PCT/EP91/00405, § 371 Date Oct. 29, 1991, § 102(e) Date Oct. 29, 1991, PCT Pub. No. WO91/13293, PCT Pub. Date Sep. 5, 1991

PCT Filed Mar. 4, 1991, Ser. No. 773,852

Claims priority, application Italy, Mar. 2, 1990, 19554A/90

Int. Cl.[5] F23B *7/00*

U.S. Cl. 110—234 **30 Claims**



1. A bottom ash dry discharge system for a steam-generating boiler, comprising a modular system having:

(a) an extractor including a conveyor belt resistant to high temperatures, constructed so as to allow expansion in any direction, the conveyor belt having two separate but joined elements for performing, respectively, the functions of load support and driving;

(b) a tight sealed box supporting the extractor;

(c) a transition hopper attached to a bottom of the boiler and united to the extractor; and

(d) apparatus for crushing, cooling, and transporting dry ash discharged from the extractor.

5,255,616

PROCESS AND DEVICE FOR WASTE INCINERATION

Franz Wintrich, Essen, and Michael Herbermann, Gladbeck, both of Fed. Rep. of Germany, assignors to RWE Entsorgung Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 769,540, Oct. 1, 1991, abandoned. This application Mar. 11, 1993, Ser. No. 29,470

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1990, 4031493

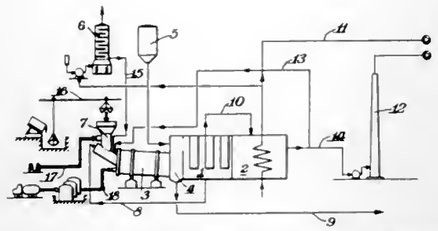
Int. Cl.[5] F23G *5/00*

U.S. Cl. 110—346 **6 Claims**

1. A process for waste incineration comprising the steps of providing a combustion zone, introducing waste into the combustion zone, suppyling a gas mixture to the combustion zone, the gas mixture containing oxygen at a concentration higher than the oxygen concentration present in air, incinerating the waste in the combustion zone, arranging a high temperature resistant filter selected from the group consisting of a ceramic filter and a filter of high temperature resistant fibers downstream of the combustion zone at such a distance to the combustion zone that dust and ash present in combustion gas are

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filtered off of the gas at a temperature higher than 400° to thereby prevent the formation of dioxines and dibenzofurans



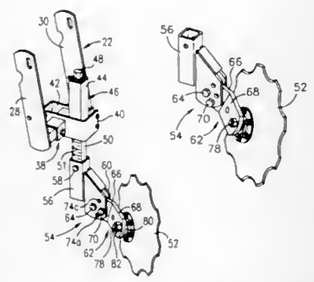
even in the presence of high oxygen concentrations, and subsequently cooling the combustion gas in a cooling zone.

5,255,617

RIDGE PREPARATION TOOL FOR SEED PLANTING EQUIPMENT

Robert A. Williams, and Patrick G. Lohmeier, both of Garden City, Kans., assignors to Acra-Plant, Inc., Garden City, Kans.

Filed Feb. 14, 1992, Ser. No. 837,032
Int. Cl.[5] A01C *5/06*; A01B *5/04*
U.S. Cl. 111—140 **11 Claims**



7. In an assemlby for the simultaneous adjustment of height and leans angle of the ridge working tool, the improvement comprising:

a flat, bent arm including a generally planar outer section having means for coupling with said tool, a generally planar inner section integrally connected to said outer section, and an oblique band intermediate said inner and said outer sections;

a base for mounting said arm; and

means for coupling said arm with the base in such a manner that said inner section is disposed in an upstanding condition within a normally upright, fore-and-aft plane with respect to the normal path of travel of the tool,

said coupling means being disposed to adapt said arm for up and down pivoting movement about a single, transverse axis with said inner section traveling in said upright plane and said outer section traveling along a conical arc oblique to said plane,

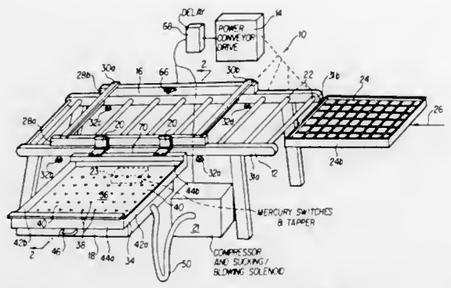
said base including means for releasably locking said arm in any one of a plurality of preset positions along said conical arc, said positions representing selective height and lean angle adjustments for said tool.

5,255,618

SEEDER APPARATUS

Steven S. Berry, Elizabeth City, N.C., assignor to Steve Berry Enterprises, Inc., Elizabeth City, N.C.

Filed Jan. 8, 1992, Ser. No. 818,087
Int. Cl.[5] B65B *1/08*
U.S. Cl. 111—200 **17 Claims**



1. A seeder apparatus of a type for holding and releasing seeds in a pattern, said seeder comprising:

a seeder plate defining a substantially-flat seeder sheet having seed holes therein arranged in said pattern, said seeder plate including a pressure means for selectively producing negative or not-negative pressures on a backside of said seeder sheet which are communicated through said seed holes to a front side of said seeder sheet;

a frame means for supporting the seeder plate of said seeder apparatus adjacent to a plating position at which said seeds are to be released;

hinge means at a hinge edge of said seeder plate for coupling said hinge edge of said seeder plate to said frame means and for allowing said seeder plate to be rotated through an angle of substantially 180° relative to said frame means between a loading position in which said seeder sheet is approximately horizontal with the backside facing downwards and the planting position in which the front side of said seeder sheet faces downwards, said hinge means being spring-biased toward a position intermediate of said loading and planting positions;

said pressure means including a control means for causing a negative pressure when said seeder plate is in said loading position and a not-negative pressure when said seeder plate is in said planting position.

5,255,619

PROCESS FOR MAKING LOOPED TEXTILE SLEEVES HAVING TRANSVERSE SEAMS FOR DRIVING BELTS

Renato Brunelli, Pescara; Giulio D'Alessandero, Cepagatti, and Alessandro Pisoni, Pescara, Italy, assignors to Pirelli Trasmissioni Industriale S.p.A., Chieti, Italy

Filed Oct. 29, 1991, Ser. No. 783,676
Claims priority, application Italy, Oct. 29, 1990, 21898 A/90; Oct. 29, 1990, 21899 A/90
Int. Cl.[5] D05B *35/10, 35/12*; B29C *53/36*
U.S. Cl. 112—63 **34 Claims**

1. A process for automatically manufacturing textile sleeves having transverse seams spaced apart from each other beyond a minimum predetermined distance, comprising the following steps:

forming a continuous textile band by a plurality of fabric pieces or cloths consecutively joined by transverse connecting seams;

longitudinally moving the band so as to dispose and secure a front end thereof according to a predetermined position:

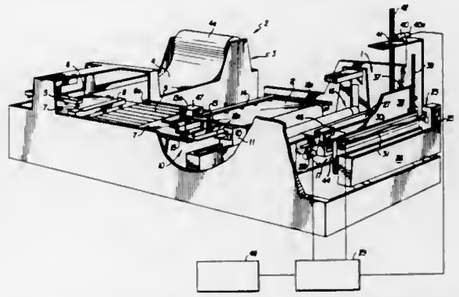
dragging along the band in a controlled manner over a portion thereof immediately upstream of said front end in order to form a loop having a predetermined length on a longitudinal extension of said band;

transversely cutting the band at a predetermined point upstream of said loop, in order to obtain a piece or length of the band having a predetermined longitudinal extension;

moving the ends of the length close to each other and joining them by a closing seam, so as to form a textile sleeve of the desired circumferential length;

scanning one surface of the band for the first time in order to detect, adjacent the cutting point, a passage of a first connecting seam during the moving and controlled dragging steps;

detecting for the first time a length of the leading portion of said band passing the cutting point from the moment at which the moving step begins to the detection of the passage of said first connecting seam, in order to selectively command execution of the controlled dragging step when the length of the leading portion exceeds a predeter-



mined minimum value and of an auxiliary band cutting step followed by a second longitudinal moving step, when the length of the leading portion is smaller than said minimum value;

scanning the surface of the band for a second time in order to detect, adjacent the cutting point, the passage of the previously detected connecting seam during the moving and controlled dragging step;

detecting for a second time the length of a trailing portion of said band passing the cutting point from the detection of the passage of the last connecting seam to the moment at which the controlled dragging step ends, in order to selectively command execution of the approaching and connecting steps when the length of the trailing portion exceeds said predetermined minimum value and execution of an auxiliary controlled dragging step in order to change the length of the loop and the length of the trailing portion when said trailing portion length is smaller than the minimum value.

5,255,620

APPARATUS FOR ADJUSTING THE SIZE OF A SEWING MACHINE PATTERN

Akiyoshi Sasano, and Haruhiko Tanaka, both of Tokyo, Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Oct. 8, 1992, Ser. No. 957,959
Int. Cl.[5] D05B *21/00*
U.S. Cl. 112—121.12 **7 Claims**

1. An apparatus for adjusting a size of a sewing machine pattern, said apparatus comprising:

a stitch forming arrangement including a vertically movable needle and a needle-thread capturing means which cooperates with said needle;

a central processing unit (CPU);

rotational phase detecting means, connected to the CPU, for generating a timing signal in synchronism with a vertical motion of said needle;

cloth moving means for relatively moving cloth relative to said needle in response to the timing signal;

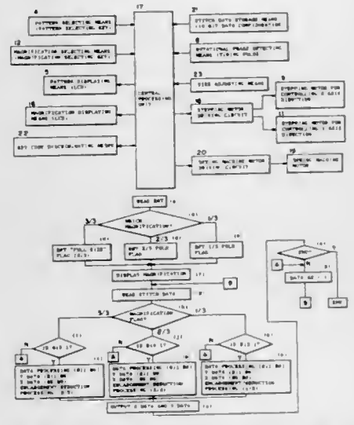
stitch data storage means, connected to the CPU, for storing stitch data corresponding to each of a plurality of embroidery patterns;

pattern selecting means, connected to the CPU, for selecting a desired one of said plurality of patterns stored in said stitch data storage means;

display means for displaying the pattern selected;

magnification selecting means, connected to the CPU and capable of being manually operated, for adjusting the size of the pattern;

magnification displaying means, connected to the CPU, for displaying an adjustment value selected by said magnification selecting means;



key code discriminating means, connected to the CPU, for determining whether the stitch data is valid or invalid on the basis of a relevant one of key codes respectively associated with a plurality of items of stitch data for forming the pattern in correspondence with the adjustment value selected; and

size adjusting means, connected to the CPU, for adjusting the size of the pattern in correspondence with the adjustment value selected,

wherein size adjustment is made with respect to stitch data which are consecutively read and determined to be valid.

5,255,621

TURRET POCKET SETTER FOR TUBULAR FABRICS

Ernst Schramayr, Barnefeld, and Tadeusz Olewicz, West Clinton, both of N.Y., assignors to Westpoint Pepperell Inc., West Point, Ga.

Filed Jun. 24, 1992, Ser. No. 903,596
Int. Cl.[5] D05B *21/00*
U.S. Cl. 112—121.12 **19 Claims**

5. A pocket setter apparatus for tubular shirt bodies and the like, which comprises,

(a) a central turret pedestal,

(b) an indexable work platform supported on said pedestal for incremental rotation,

(c) said indexable work platform having a plurality of uniformly spaced radially disposed work platforms thereon,

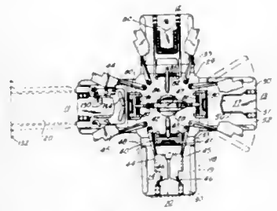
(d) said work platforms being sufficiently unobstructed at their outer ends to enable a tubular shirt body to be applied thereover in a loosely draped condition,

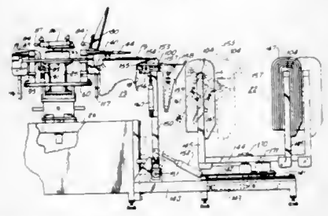
(e) each work platform having associated therewith a pair of laterally movable support panels movable to a load position for supporting a pocket ply above said each work platform and movable to a retracted position enabling said pocket ply to be placed on a shirt body supported on said each work platform,

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(f) said apparatus including, arrayed in angular succession about said central turret pedestal radially outward of said work support, a load station where shirt bodies and pocket plies are loaded onto a work platform, a pocket folding station where a pocket ply carried by a work platform is hem-folded for sewing, a sewing station where the hem-folded pocket ply is sewn to the shirt front, and a stacking station where the shirt body and the sewn pocket are removed from a work platform supporting them,

(g) each work platform further including a vertically movable pocket clamp operative when actuated to press and hold a folded pocket ply in position before and during sewing,





(h) non-indexing actuator means mounted on said central turret pedestal and operative with said support panels and said pocket clamps in selected index positions of said work platforms to effect temporary operation thereof from first positions to second positions, and

(i) means independent of said non-indexing actuator means and operative when said support panels or said pocket clamps are actuated from a first position to a second position to cause said support panels or said pocket clamps to be retained in said second position during predetermined subsequent rotary movement of said indexable work platform.

5,255,622

OVERLOCK SEWING MACHINE

Yasushi Baba, and Shiro Satoma, both of Tokyo, Japan, assignors to JUKI Corporation, Tokyo, Japan

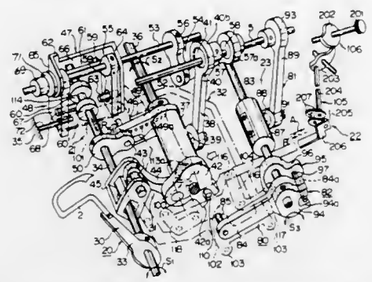
Filed Apr. 10, 1992, Ser. No. 866,404

Claims priority, application Japan, Apr. 12, 1991, 3-79670

Int. Cl.[5] D05B *1/20, 1/10*

U.S. Cl. 112—162 **9 Claims**

1. An overlock sewing machine comprising a lower looper, a lower looper shaft connected with said lower looper, said lower looper shaft having a longitudinal axis, lower looper oscillation drive means connected with said lower looper shaft for oscillating said lower looper shaft about the longitudinal axis of said lower looper shaft, a back-and-forth oscillating shaft having a longitudinal axis, drive means connected with said back-and-forth oscillating shaft for oscillating said back-and-forth oscillating shaft about the longitudinal axis of said back-and-forth oscillating shaft, lower looper shaft clutch means operable between first and second conditions, said lower looper shaft clutch means connecting said back-and-forth oscillating shaft with said lower looper shaft to reciprocate said lower looper shaft along its longitudinal axis when said lower lopper shaft clutch means is in the first condition, said lower looper shaft clutch means being ineffective to transmit force to reciprocate said lower looper shaft along its longitudinal axis when said lower looper shaft clutch means is in the second condition, and lock means for locking said lower looper



shaft against reciprocation along its longitudinal axis when said lower looper shaft clutch means is in the second condition while enabling said lower looper oscillation drive means to oscillate said lower looper shaft about its longitudinal axis.

5,255,623

WIPER FOR A SEWING MACHINE

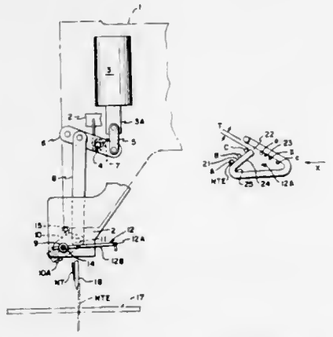
Shuichi Sato, and Shirou Ayusawa, both of Tochigi, Japan, assignors to The Singer Company N.V., Curacao, Netherlands Antilles

Filed May 11, 1992, Ser. No. 881,113

Claims priority, application Japan, Aug. 23, 1991, 3-074264[U]

Int. Cl.[5] D05B *65/06*

U.S. Cl. 112—286 **1 Claim**



1. A wiper for wiping an upper thread and fixed on an arm of a sewing machine, said wiper comprising:

an L shaped component having a long leg and a hook disposed at right angles to the long leg;

said hook consisting of first, second and third straight elongated members, one end of the first member being integral with one end of the long leg, the other end of the first member being connected to one end of the second member by an integral first inwardly curved corner, the other end of the second member being connected to one end of the third member by an integral second inwardly curved corner, the other end of the third member pointing toward the first member but spaced therefrom to form a gap therebetween, the third member being disposed at substantially right angles to the first member;

the outside surface of the third member defining an inclined portion for contacting the upper thread during a forward stroke of a wiping operation of the wiper from a rest position to a thread catching position so as to guide the upper thread to the other end of the third member;

the inside surface of the first member and the second member defining an inclined introduction portion for passing the upper thread through said gap and guiding the upper thread toward said second inner curved corner; and

the inner surface of the second corner defining a thread hooking recess for hooking the upper thread guided by the inclined introduction portion in a return stroke of the wiping operation of the wiper.

5,255,624

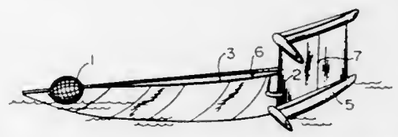
SAILBOAT MAST FLOATATION DEVICE

David J. Legare, 11 Bonnie Ave., New Hartford, N.Y. 13413

Filed Jun. 1, 1992, Ser. No. 890,721

Int. Cl.[5] B63H *9/04*

U.S. Cl. 114—68 **9 Claims**



1. A device for producing a buoyant force to a sailboat mast having upper and lower ends, said device comprising:

a) an inflatable balloon having an open end;

b) means connecting said balloon to said mast adjacent said mast upper end;

c) a source of compressed gas selectively actuable to emit said gas through an outlet, said gas source positioned adjacent said lower end of said mast;

d) an enclosed tube having opposite open ends respectively connecting said gas source outlet and said balloon for inflation of said balloon in response to actuation of said gas source;

e) a halyard extending substantially along said mast;

f) means connecting one end of said halyard to said balloon; and

g) a plurality of guide rings connecting said enclosed tube and said halyard to maintain said tube and halyard substantially adjacent one another.

5,255,625

WATERCRAFT

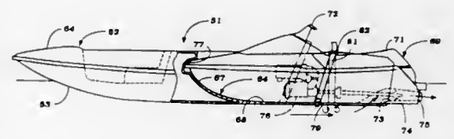
Toshiyuki Hattori, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Mar. 25, 1992, Ser. No. 857,624

Claims priority, application Japan, Mar. 26, 1991, 3-87803; Apr. 11, 1991, 3-108587; Jun. 5, 1991, 3-162035; Sep. 30, 1991, 3-251565

Int. Cl.[5] B63B *21/56*

U.S. Cl. 114—248 **56 Claims**



1. A watercraft comprised of a main hull defining a berthing area at the rear end thereof for receiving a smaller watercraft having a propulsion device, said berthing area being defined by an opening in the transom of said main hull, a front wall adapted to be engaged by the bow of said smaller watercraft, a pair of facing side walls and a lower wall, said smaller watercraft propulsion device comprising a jet propulsion unit having a downwardly facing water inlet opening formed in its lower hull and substantially rearwardly of its bow through which water is drawn for the propulsion of said smaller watercraft and additionally of said main hull when said smaller watercraft is in said berthing area, and a water inlet opening formed at least in part by a trailing edge of said lower wall of said main hull extending from a point substantially aft of said front wall and substantially forwardly of said water inlet opening of said smaller watercraft when said smaller watercraft is in said berthing area for drawing water into said smaller watercraft water inlet opening and reducing the effect of turbulence caused by the discontinuity between said trailing edge of said lower wall and the hull of said smaller watercraft upon the water entering said jet propulsion unit water inlet opening.

5,255,626

WATERCRAFT

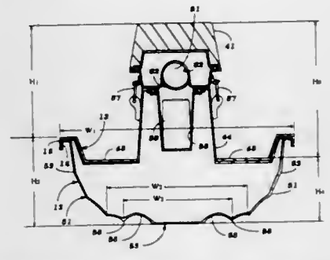
Toshiyuki Hattori, and Fumihiko Ebihara, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Nov. 1, 1991, Ser. No. 786,536

Claims priority, application Japan, Oct. 9, 1991, 3-262355

Int. Cl.[5] B63B *1/20*

U.S. Cl. 114—270 **5 Claims**



1. A hull for a small watercraft which facilitates leaning of the hull like a motorcycle when turning and which resists capsizing, said hull having a pair of widely spaced gunnels extending along its outer sides, a seat positioned between said gunnels and of a height to accommodate a rider in a partially standing posture, a pair of transversely spaced apart foot areas on opposite sides of said seat to accommodate the feet of a rider, a pair of generally downwardly converging side sections each extending from a respective gunnel to a lower hull area, the lower ends of said side sections being spaced apart a width substantially narrower in width than at said gunnels and disposed below the centers of said foot areas, said lower hull area being comprised of a flat central area and a pair of curved side portions connected at one side to said flat central area by a respective chine and connected at the other sides to said side sections, said side sections each being formed with a further chine spaced transversely outwardly from said foot areas and adjacent the respective of said gunnels and substantially above said lower ends.

5,255,627

FLAG AND FLAGPOLE ATTACHMENT

Herbert T. Williams, 7148 S. Poplar La., Englewood, Colo. 80112-1635

Filed May 22, 1992, Ser. No. 887,074

Int. Cl.[5] G09F *17/00*

U.S. Cl. 116—174 **18 Claims**

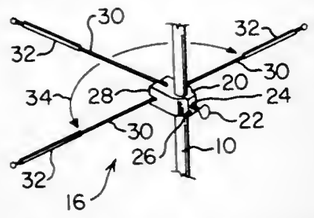
1. A flagpole attachment device for mounting on a flagpole and for releasable attachment to a portion of a flag, the flagpole attachment device preventing the flag from entanglement with an adjacent structure and preventing the flag from wrapping around the flagpole, the attachment device comprising:

a mounting bracket adapted for releasable attachment to a portion of a flagpole;

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a removable socket housing, including a socket, received in said mounting bracket in a press fit;

a control arm including a bal at one end thereof, said ball pivotally mounted within said socket in said removable socket housing on said mounting bracket, so that when said control arm pivots on said mounting bracket said ball pivots in said socket said control arm extending outwardly



from sad mounting bracket and adapted for disposition adjacent to the side of a flag;

flag attachment means for releasable attachment of a flag to said control arm; and

pivot limiting means on said mounting bracket for controlling the amount of pivot of said control arm on said mounting bracket in a range of less than about 360 degrees.

5,255,628

MILKING PULSATOR

Olofsson H. Kristoffer, Huddinge, Sweden, assignor to Alfa-Laval Agriculture International AB, Tumba, Sweden

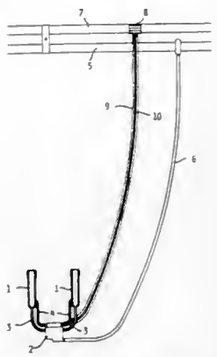
PCT No. PCT/SE91/00360, § 371 Date Oct. 15, 1992, § 102(e) Date Oct. 15, 1992, PCT Pub. No. WO91/18500, PCT Pub. Date Dec. 12, 1991

PCT Filed May 21, 1991, Ser. No. 938,125

Claims priority, application Sweden, May 31, 1990, 9001953

Int. Cl.[5] A01J *3/00;* **F16K** *31/00*

U.S. Cl. 119—14.15 **11 Claims**



1. A milking pulsator (**11**; **53**) for alternate connection of a source of vacuum to a number of teat cups (**1**), comprising a housing (**12**;**54**), forming a first chamber (**14**;**57**), a vacuum passage (**39**;**64**) to be connected to said source of vacuum and opening into the first chamber via a first opening (**40**), a second chamber communicating with the atmosphere, and a pulsation channel (**33**;**58**) to be connected to at least one of said teat cups and communicating with the first chamber and with the second chamber via a second opening (**35**;**60**), a first valve means (**22**;**72**,**74**) in the first chamber to close and open said first opening, a second valve means (**21**;**67**,**68**) in the second chamber to close and open said second opening, and means (**46**,**48**,**49**;**75–77**) for adjusting each valve means between an open position and a closed position, characterized in that each valve means comprises an elongated flexible membrane (**25**,**26**;**68**,**73**) with two ends, one of which is attached to the housing (**12**;**54**), and a pivoted member (**29**,**30**;**67**,**72**), to which the other end of the membrane is attached, said pivoted members of the first and second valve means being journalled in the housing for pivotal motion back and forth between closing positions, at which said first and second openings (**40** and **35**;**60**) are covered by the membrane (**26**,**73**) of the first valve means and the membrane (**25**;**68**) of the second valve means, respectively, and opening positions, at which said openings are uncovered from the membranes, and that said adjustment means (**46**,**48**,**49**;**75–77**) is adapted to adjust the pivoted members (**29**,**30**;**67**,**72**) of the first and second valve means, such that the first opening (**40**) is closed when the second opening (**35**;**60**) is uncovered and vice versa.

5,255,629

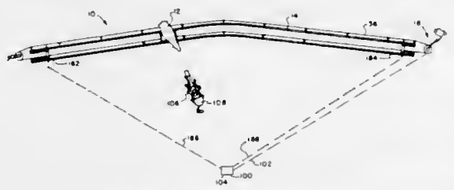
RIDER REMOTE-CONTROLLED CUTTING HORSE TRAINER

Jerry Paterson, 2160 Lois Rd. E., Sanger, Tex. 76266

Filed Mar. 9, 1992, Ser. No. 848,013

Int. Cl.[5] A01K *15/02*

U.S. Cl. 119—839 **6 Claims**



1. Apparatus for the training of cutting horses, comprising:

a calf replica mounted to a drive rope for traversing movements with the drive rope;

motive means for causing the calf replica to traverse with the drive rope, the motive means being reversible in two opposite directions; and

program means for causing the motive means to execute a programmed series of movements of the calf replica.

5,255,630

Patent Not Issued For This Number

5,255,631

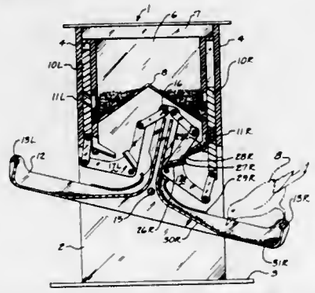
METERING BIRD FEEDER

Marvin E. Anderson, 23009 - 55th West, Mountlake Terrace, Wash. 98043

Filed Dec. 16, 1992, Ser. No. 991,572

Int. Cl.[5] A01K *39/01*

U.S. Cl. 119—52.2 **11 Claims**



1. A bird feeder for dispensing particulate feed comprising a housing including an upright hopper for the particulate feed, said hopper having an outlet opening in the lower portion thereof, a feed shaft closing said outlet opening, said feed shaft having a feed cavity, means mounting said shaft for movement

relative to said outlet opening between a first position in which said cavity of said shaft is registered with said outlet opening for receiving particulate feed through said outlet opening and a second position in which said cavity is out of registration with said outlet opening for conveying feed in said cavity away from said outlet opening for dispensing such feed, a feed trough, means mounting said feed trough on said housing for movement relative thereto and in position to receive feed dispensed when said feed shaft is moved from said first position to said second position, and means mechanically interconnecting said feed trough and said feed shaft such that movement of said feed trough relative to said housing effects movement of said feed shaft from said first position to said second position.

5,255,632

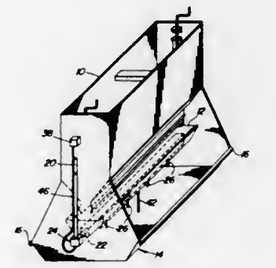
ANIMAL FEEDER HAVING LIQUID SENSOR CONTROLLING DRINKING WATER VALVE

Richard J. Thomas, Eddyville, and Larry L. Coleman, Broken Bow, both of Nebr., assignors to Gro Master, Inc., Omaha, Nebr.

Filed Apr. 14, 1992, Ser. No. 869,226

Int. Cl.[5] A01K *5/00, 7/06*

U.S. Cl. 119—51.5 **1 Claim**



1. In combination,

a source of water,

a feeder unit for animals comprising an elongate trough having a base and a side wall for receiving and containing feed and water and arranged such that the head of the animal can reach over an upper front edge of the side wall to the base for eating the feed and water, an elongate shelf extending substantially along a full length of the trough and providing a substantially horizontal surface for receiving feed, said horizontal surface of said shelf being arranged at a height above and rearwardly of said front edge so as to allow access by the head of the animal to said shelf for direct feeding therefrom, and between said shelf and said front edge to said base, hopper means for directly and continuously depositing feed onto said shelf, said shelf being arranged such that the deposited feed thereon remains on said shelf but can be removed to the trough by the animal, nozzle means for dispensing water into the trough arranged such that it avoids dispensing water onto the shelf and including means actuable by the animal for controlling the dispensing, said nozzle means being operatively connected to said source of water, an inlet valve positioned between said nozzle means and said source of water for controlling the flow of water to said nozzle means, liquid sensor means positioned below said shelf and above said base of said trough so that said liquid sensor means is disposed above the water and feed in said trough, electrical circuit means operatively connected to said liquid sensor means and said inlet valve means for shutting said inlet valve means when said liquid sensor means senses the presence of liquid in contact therewith to control the level of water in said trough.

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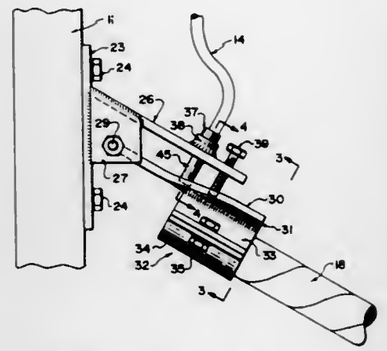
FLUID APPLICATOR FOR ANIMALS HAVING A METERING DISPENSING VALVE

Frank P. Laurenz, P.O. Box 359, Eagle Butte, S. Dak. 57625

Filed Jul. 5, 1991, Ser. No. 726,029

Int. Cl.[5] A01K *29/00*

U.S. Cl. 119—157 **5 Claims**



1. A device for dispensing liquid onto an animal comprising a rope, a bracket attached to a upper end of the rope, means for mounting the bracket at a position spaced from the ground for supporting the upper end at a location spaced from the ground, a tension spring attached to a lower end of the rope, means for coupling the tension spring to a support element at a position below the bracket and spaced away from a position beneath the bracket so that the rope is maintained taut at an angle to the vertical to allow an animal to pass under the rope and to rub its back against the rope, and means for dispensing a liquid onto the rope for transfer to the animal, said dispensing means comprising a fixed abutment member mounted on said bracket, a pivotal coupling member mounted on said bracket for pivotal movement relative to the fixed abutment member and connected to the upper end of the rope such that engagement of the rope by an animal rubbing its back causes the pivotal coupling member to be pivoted from a rest position to an abutment position in contact with the fixed abutment member, a container for receiving said liquid, and valve means for releasing said liquid onto the rope from the container in response to movement of the pivotal coupling member, wherein the valve means comprises a valve body defining a chamber therethrough, means on the valve body for connecting the valve body to the container at one end of the valve body, a discharge opening at an end of the body opposed to said one end, and a valve member mounted in the valve body and movable longitudinally of the chamber, the valve member including a first valve closure element at said one end movable to a closed position for closing the entry into the chamber of said liquid from the container and movable to an open position to release liquid into the chamber, means biassing the valve member into said closed position, the valve member further including a second closure element for closing the discharge opening and movable to an open position to release liquid from the chamber and from the open position to a closed position closing the discharge opening, the first and second valve elements being mounted on the valve member such that in a rest position of the pivotal coupling member the valve member is biassed to a position in which the first closure element is in a closed position and the second closure element is in the opened position and when the pivotal coupling member moves to the abutment position the valve member is moved longitudinally so that the first valve element is in the open position and the second valve element is in the closed position.

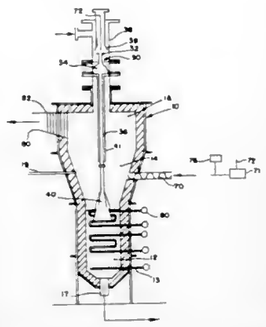
VOL 1155 ISS 4 OC 26 1993 UMI

5,255,634

PULSED ATMOSPHERIC FLUIDIZED BED COMBUSTOR APPARATUS

Momtaz N. Mansour, Columbia, Md., assignor to Manufacturing and Technology Conversion International, Inc., Md.

Continuation-in-part of Ser. No. 689,336, Apr. 22, 1991, Pat. No. 5,133,297. This application Apr. 22, 1992, Ser. No. 871,965
The portion of the term of this patent subsequent to Jul. 28, 2009, has been disclaimed.
Int. Cl.[5] B09B *3/00*; F22B *1/00*
U.S. Cl. 122—4 D 26 Claims



1. A pulsed fluidized bed apparatus comprising:
a) a reactor vessel;
b) means for feeding a fluidizable material into said vessel;
c) means for fluidizing said fluidizable material to create a fluidized bed of material within said vessel;
d) a pulse combustor unit in connection with said vessel, said pulse combustor unit comprising a combustion chamber and at least one opening associated therewith for admitting at least one fuel-air mixture into said combustion chamber, said pulse combustor unit further including a resonance chamber in communication with said combustion chamber, said resonance chamber being arranged so that gaseous products from said resonance chamber act on said fluidized bed;
e) means for transferring heat from said vessel; and
f) means for transporting combustion products away from said vessel.

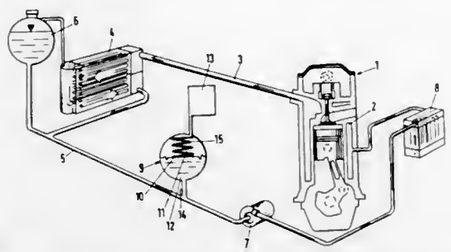
5,255,635

EVAPORATIVE COOLING SYSTEM FOR AN INTERNAL COMBUSTION ENGINE HAVING A COOLANT EQUALIZING TANK

Hans-Jürgen Schäfer, Braunschweig; Herbert Schäpertöns, Gifhorn, and Bodo Scheibner, Wolfsburg, all of Fed. Rep. of Germany, assignors to Volkswagen AG, Wolfsburg, Fed. Rep. of Germany

Filed Dec. 4, 1991, Ser. No. 803,348
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1990, 4040324
Int. Cl.[5] F01P *9/02*
U.S. Cl. 123—41.2 3 Claims

1. An evaporative cooling system for an internal combustion engine comprising an engine, a condenser for vaporized coolant, a condensate line to supply coolant from the condenser to the engine, a condensate pump int eh condensate line, and a rigid coolant equalizing tank divided by a yielding wall into a coolant chamber and an air chamber, wherein the equalizing



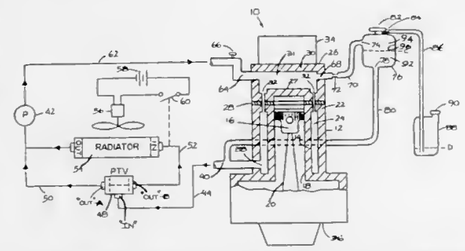
tank is connected to the suction side of the condensate pump and the air chamber is sealed from the atmosphere.

5,255,636

AQUEOUS REVERSE-FLOW ENGINE COOLING SYSTEM

John W. Evans, 253 Rte. 41 North, Sharon, Conn. 06069

Filed Jul. 1, 1992, Ser. No. 907,392
Int. Cl.[5] F01P *3/22*
U.S. Cl. 123—41.54 13 Claims



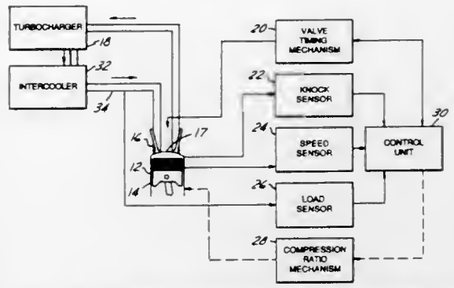
1. An aqueous reverse flow cooling system for an internal combustion engine comprising:
a coolant chamber for the combustion chamber of said engine, said coolant chamber having an inlet for the admission of coolant, a first outlet for the discharge of a major fraction of the coolant, and a second outlet disposed at a high point of said coolant chamber, for the discharge of a minor fraction of said coolant and a major portion of gases from said coolant chamber,
a coolant pump having an outlet in fluid communication with the inlet to said coolant chamber,
a gas separator/condenser having an inlet in fluid communication with the second outlet from said coolant chamber and an outlet at a point relatively low in said gas separator/condenser in fluid communication with the low pressure side of said pump, and
means disposed between the second outlet in said coolant chamber and said gas separator/condenser for controlling the flow of coolant and gases from said coolant chamber to said gas separator/condenser so as to maintain the pressure upon the coolant and gases in said coolant chamber above the pressure upon the coolant and gases in said gas separator/condenser.

5,255,637

INTERNAL COMBUSTION ENGINE WITH ADAPTIVE CONTROL OF COMPRESSION RATIO

Michael M. Schechter, Farmington Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 30, 1992, Ser. No. 876,154
Int. Cl.[5] F02D *13/02, 15/00*
U.S. Cl. 123—48 R 1 Claim



1. A reciprocating internal combustion engine comprising:
at least one piston slidably housed within a cylinder, with said piston and cylinder defining a clearance volume when said piston is at top dead center;
an intake valve and intake manifold for admitting air/fuel charge into said cylinder;
at least one turbocharger for increasing the amount of air/fuel mixture passing into said cylinder, with said turbocharger comprising a compressor driven by a turbine expander which receives all of the exhaust flowing from said engine under all operating conditions;
sensor means for sensing at least one operating parameter of the engine and for generating an output signal corresponding to the value of the sensed operating parameter;
a control unit for receiving said output signal and for operating a variable valve timing mechanism in response thereto; and
a variable compression ratio mechanism for adjusting the magnitude of said clearance volume, with said compression ratio mechanism being operated by said control unit so that as the pressure output of the turbocharger increases, the fraction of total compression work performed by the piston is decreased while the fraction of total compression work performed by the turbocharger is increased, such that the power output and fuel efficiency of the engine are increased.

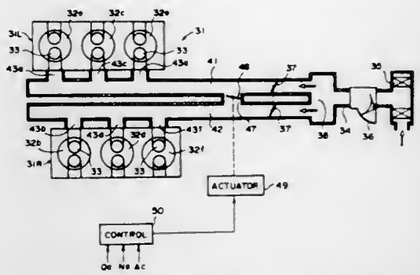
5,255,638

ENGINE OUTPUT CONTROL SYSTEM FOR VEHICLE

Junsou Sasaki; Susumi Mantoku, and Kazuaki Umezono, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed May 17, 1991, Ser. No. 701,874
Claims priority, application Japan, May 18, 1990, 2-128916
Int. Cl.[5] F02B *27/02*; F02D *23/00*
U.S. Cl. 123—52 M 8 Claims

1. An internal combustion engine output control system for an engine for a vehicle comprising
an engine speed detecting means for detecting an engine speed of the engine,
an acceleration detecting means for detecting that the vehicle is accelerating,
a torque characteristic changing means for changing a torque characteristic thereby reducing a maximum amount of burning constituent supplied to the engine, said torque characteristic changing means operating only when the engine speed is lower than a certain engine speed, and
a control means for operating the torque characteristic changing means if the engine speed detecting means detects a relatively low engine speed lower than said certain engine speed when the acceleration detecting means starts to detect the vehicle acceleration;
wherein said engine has an intake system which has first and second passages through which a pressure wave generated in the intake stroke of each cylinder propagates, the engine output torque being maximized in the low engine speed range by kinetic effect of intake air when the pressure wave propagates through the first passage and in the high engine speed range by kinetic effect of intake air when the pressure wave propagates through the second passage, and said torque characteristic changing means changes the first and second passages according to the engine speed.

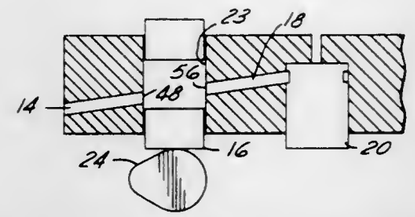


5,255,639

INTEGRAL EVT/CYLINDER HEAD ASSEMBLY WITH SELF-PURGING FLUID FLOW

Benjamin G. Shirey, Holly, and Martin A. Holland, Auburn Hills, both of Mich., assignors to Siemens Automotive L.P., Auburn Hills, Mich.

Filed Oct. 15, 1992, Ser. No. 961,609
Int. Cl.[5] F01L *1/34*
U.S. Cl. 123—90.16 1 Claim



1. An electronic valve timing control system having an hydraulic actuator having a housing mounted in a bore in the cylinder head of an internal combustion engine and coupled between a timing cam and an engine valve, a source of hydraulic fluid, at least one inlet means through the housing for receiving hydraulic fluid, a pump operatively coupled to the source of fluid for pumping fluid to the inlet means, an outlet means through the housing for discharging the fluid, a solenoid valve means for controlling the discharge of the fluid from the housing to the source of the fluid, an electronic control unit responding to various engine parameters for controlling the solenoid valve means the system characterized in that:
a first passageway having its inlet coupled to the pump means and its outlet coupled to the at least one inlet means, said first passageway supplying the fluid to the inlet means;
a second passageway having its inlet coupled to the outlet means for directing the flow of discharged fluid from the

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actuator and its outlet coupled to the source of hydraulic fluid;

said second passageway is inline with said first passageway and said inlet of said second passageway is displaced from and elevated above said outlet of said first passageway.

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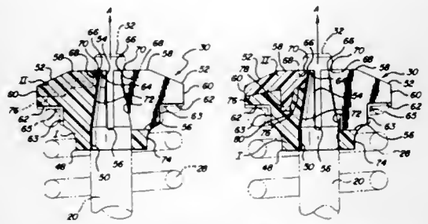
BI-PLASTIC SELF-LOCKING VALVE SPRING RETAINER

Daniel H. Pierce, Birmingham, Mich., assignor to D.P.I., Birmingham, Mich.

Filed Mar. 9, 1993, Ser. No. 28,234

Int. Cl.[5] F01L *3/10*

U.S. Cl. 123—90.67 **10 Claims**



1. A self-locking valve spring retainer (**30**) operatively retaining a return spring (**28**) on a stem (**20**) of a poppet valve (**16**) in an internal combustion engine, said retainer comprising:

an annular base ring (**48**) having a substantially cylindrical inner periphery defining a stem passage (**50**) surrounding a valve stem (**20**);

a plurality of arms (**52**) extending in cantilever fashion from said base ring (**48**) and surrounding said stem passage (**50**) for resiliently flexing outwardly from said base ring (**48**) as said retainer (**30**) is pressed over the end of the valve stem (**20**) to an operative position said arms having flanges engaging the return spring;

a locking step (**66**) projecting radially inwardly from each of said arms (**52**) for automatically engaging and interlocking with a mating projection (**68**) of the valve stem (**20**) when in the operative position;

said annular base ring (**48**) fabricated from a first organic polymeric material capable of flexing without fracturing thereby permitting said arms (**52**) to flex outwardly from said base ring (**48**); and

characterized by said locking steps (**66**) fabricated from a second organic polymeric material which is harder than said first material for forming a durable interface between the mating projection (**68**) of the valve stem (**20**) and each of said arms (**52**) to better distribute shear forces throughout said arms (**52**) and thereby extend the life of the retainer (**30**).

5,255,641

VARIABLE ENGINE VALVE CONTROL SYSTEM

Michael M. Schechter, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 720,115, Jun. 24, 1991, abandoned. This application Dec. 21, 1992, Ser. No. 993,746

Int. Cl.[5] F01L *9/02, 1/34*

U.S. Cl. 123—90.11 **15 Claims**

1. A hydraulically operated valve control system for an internal combustion engine, said system comprising:

a high pressure source of fluid and a low pressure source of fluid;

a cylinder head member adapted to be affixed to the engine and including an enclosed cavity;

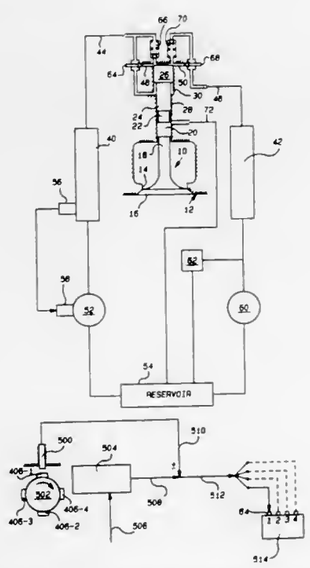
a poppet valve shiftable between a first and second position within said cylinder head member;

a hydraulic actuator including a piston coupled to the poppet valve and reciprocable within the enclosed cavity which thereby varies in displacement as the poppet valve moves;

said cylinder head member having a high pressure port extending between the enclosed cavity and the high pressure source of fluid and a low pressure port extending between the enclosed cavity and the low pressure source of fluid;

a high pressure valve and a low pressure valve for respectively regulating the flow of fluid in the high pressure and the low pressure ports; and

control means cooperating with the high and low pressure valves for selectively coupling the enclosed cavity to the high pressure and low pressure sources to oscillate the poppet valve in timed relation to engine operation, wherein during each oscillation, some of the high pressure fluid used to reciprocate the poppet valve is returned to the high pressure source, thereby allowing that the net fluid flow between the high pressure and low pressure sources may be substantially less than the volume swept by the piston.



11. In an internal combustion engine, an engine valve control system in which the valve stroke is controlled by varying timing and duration of electric signals sent to individually dedicated engine valve controlling means, the system comprising:

a controller programmed to send variable electric control signals to the said engine valve controlling means, said control signals duration comprising the algebraic sum of a basic signal duration and a correction signal duration;

means for generating a basic signal duration determined by the controller as a function of engine operating conditions and being equal for all engine intake valves and equal for all engine exhaust valves; and

means for generating a correction signal predetermined for each of the engine valve controlling means as a measure of the extent the performance of each engine valve controlling means varies from a predetermined standard, said correction signal generating means being operative in timed sequence to supply to the controller said predetermined correction signal just prior to a respective engine valve controlling means being activated.

5,255,642

METHOD AND ARRANGEMENT FOR A DELAYED SHUTOFF OF CONTROL APPARATUS OF AN INTERNAL COMBUSTION ENGINE

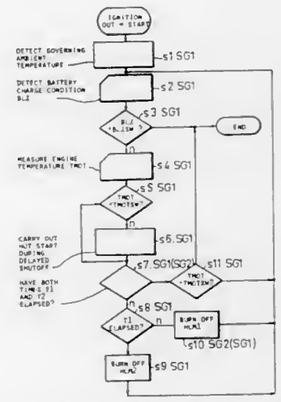
Jürgen Pischke, Weissach, and Herbert Arnold, Eberdingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 12, 1991, Ser. No. 805,958

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1990, 4039599

Int. Cl.[5] F02D *45/00*

U.S. Cl. 123—179.3 **13 Claims**



1. A method for operating at least one control apparatus in a delayed-shutoff phase after the ignition of an internal combustion engine of a motor vehicle equipped with a starter battery has been switched off wherein individual delayed-shutoff functions related to the engine are inhibited from the beginning of the delayed-shutoff phase or terminated thereafter to protect the battery from being run down to a level whereat the battery is rendered ineffective for restarting the engine, the method comprising the steps of:

presetting a threshold value of a variable which is so selected that, when the actual value of the variable reaches the threshold value, a particular delayed-shutoff function is terminated without significantly deteriorating the operability of the battery with said variable being indicative of the operational condition of said battery;

monitoring the value of the variable after said ignition is switched off and during said delayed-shutoff phase; and,

then, when the measured value of said variable reaches the threshold value, terminating said particular delayed-shutoff function.

5,255,643

INJECTION PUMP DRIVE FOR ENGINE

Norihisa Mochizuki; Toshio Kinoshita, and Takeshi Tanaka, all of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

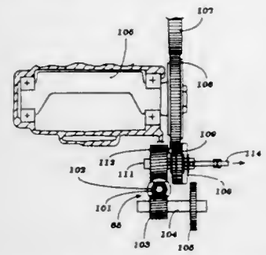
Continuation of Ser. No. 742,402, Aug. 8, 1991, abandoned. This application Nov. 6, 1992, Ser. No. 973,191

Claims priority, application Japan, Aug. 8, 1990, 2-211171

Int. Cl.[5] F02N *17/00;* **F02M** *33/00;* **F04B** *49/00*

U.S. Cl. 123—179.17 **8 Claims**

1. A fuel injection system for an internal combustion engine comprising starter means for starting said engine, a fuel/air injector, a fuel pump for supplying fuel under pressure to said fuel/air injector, an air pump for supplying air to said fuel/air injector, and drive means for driving said fuel pump and said air pump from said engine, said drive means for driving one of said pumps from said engine being effective for driving said pump at a first high speed ratio during operation of said starter means and at a different lower speed ratio during running of said engine and when said starter means is not being driven, said drive means for the other of said pumps driving said other pump at a constant speed ratio.



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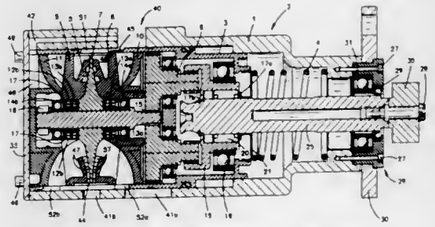
POSITIVE GEAR ENGAGEMENT MECHANISM

Floyd D. Mills, Valois, and Gregory A. Bartlett, Chemung, both of N.Y., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jun. 2, 1992, Ser. No. 889,937

Int. Cl.[5] F02N *7/08*

U.S. Cl. 123—179.310 **10 Claims**



1. A starting system for an engine comprising:

an elongate casing;

an elongate liner mounted for reciprocation within said casing from a first pre-engaged position to a second operating position;

a motor mounted within said liner having its rotary output transmitted to a pinion for selective engagement with a gear means for rotating said engine; and

means for supplying motive media to said motor at a reduced rate in said first pre-engaged position of said liner and for transporting said liner to a second operating position whereby said pinion engages said gear and said motor receives motive media at an increased rate.

5,255,645

ROTARY VALVE FOR AN INTERNAL COMBUSTION ENGINE

George W. Templeton, P.O. Box 424, Friendswood, Tex. 77546

Filed Feb. 18, 1992, Ser. No. 838,151

Int. Cl.[5] F01L *5/04*

U.S. Cl. 123—190.17 **16 Claims**

1. A rotary valve for an internal combustion engine, comprising:

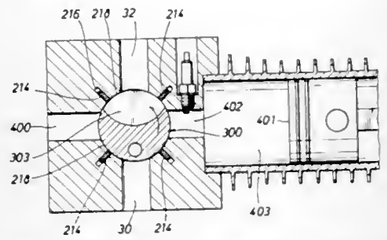
an outer stationary support member formed with a hollow interior and containing a plurality of openings therein for passing intake and exhaust gases to said hollow interior,

a rotatable inner member having a shaft about which it is rotatable, housed within said hollow interior, having an exterior passage for selectively connecting said openings with at least an opening for a combustion chamber and having material opposite said passage removed to rota-

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tionally balance said inner member for material removed to create said exterior passage,

bearing means disposed in said outer stationary member for supporting said shaft of said rotatable inner member for rotation, and



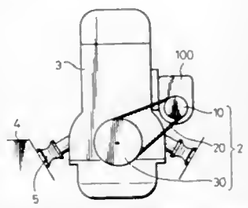
a plurality of sealing means disposed between the hollow interior of said outer stationary support member and said rotatable inner member.

5,255,646

TORQUE FLUCTUATION ABSORBING DEVICE FOR AN ENGINE

Mitsuo Inagaki; Mikio Matsuda, and Hiroki Ishii, all of Okazaki, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 12, 1992, Ser. No. 974,938
Claims priority, application Japan, Nov. 15, 1991, 3-300497
Int. Cl.[5] F02B *75/06*
U.S. Cl. 123—192.1 15 Claims



1. A torque fluctuation absorbing device for an engine comprising:

a torque absorber mounted on an engine for generating torque fluctuations;

a rotation transmitting means for transmitting rotation of a crank shaft of said engine to a rotation shaft of said torque absorber without changing the synchronous relationship.

said crank shaft being connected to the rotation shaft of said torque absorber by said rotation transmitting means so that torque fluctuations are generated in an opposite phase to a phase of the torque fluctuations generated at said crank shaft; and

said torque absorber is constituted by a crank mechanism for converting rotation of said rotation shaft to a reciprocating motion, a piston which has a reciprocating motion induced by said crank mechanism and a spring for applying a load to said piston.

5,255,647

ELASTOMERIC GROMMET-FASTENER ASSEMBLY

Casimir R. Kiczek, Novi, Mich., assignor to Freudenberg-NOK General Partnership, Plymouth, Mich.

Filed Feb. 8, 1993, Ser. No. 14,729
Int. Cl.[5] F02F *7/00*
U.S. Cl. 123—195 C 13 Claims

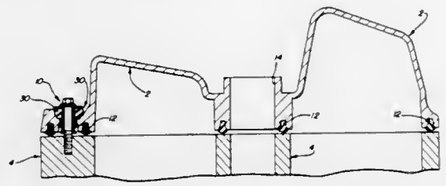
1. In a valve cover assembly for an automotive engine, an elastomeric grommet-fastener assembly for use in connecting a valve cover with at least a first aperture therein to the engine with at least a second aperture therein,

said fastener assembly comprising: a fastener, a washer means, and an elastomeric grommet means,

said fastener having a head with a clamping surface thereunder, a shank, and a reduced diameter entry portion,

said washer means including a radial flange portion and an axially extending washer sleeve, said washer means being telescopically associated with said fastener,

said elastomeric grommet means being molded from an



elastomer, and having an axially extending sleeve portion, and a radial rim portion extending laterally from an upper portion of said sleeve portion, said grommet means being telescopically positioned over said washer means,

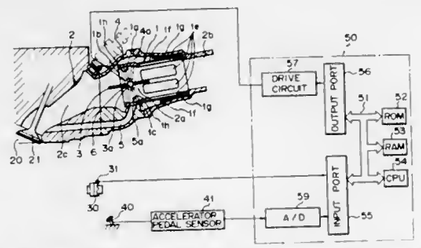
and the sleeve of said washer means having at least one or more holes therethrough such that the molded grommet means has a portion of its elastomer protruding through to the inside of said washer sleeve, thereby enabling the washer means and grommet means to be economically and efficiently held in proper position on the fastener prior to and during usage of said fastener assembly.

5,255,648

INTAKE AIR CONTROL DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Yuichi Hokazono, and Toshiaki Konomi, both of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed May 15, 1992, Ser. No. 883,352
Claims priority, application Japan, May 21, 1991, 3-116023; Jan. 22, 1992, 4-009371
The portion of the term of this patent subsequent to Jan. 19, 2010, has been disclaimed.
Int. Cl.[5] F02B *31/00*
U.S. Cl. 123—308 20 Claims



1. An intake air control-device for an internal combustion engine comprising:

a main intake passage leading to a combustion chamber and allowing an amount of intake air required in a high engine speed driving condition to pass therethrough;

a reed valve passage leading to said combustion chamber and having reed valves for allowing a sufficient amount of intake air required in a low engine speed and high engine load driving condition to pass therethrough only from upstream to downstream thereof;

a sub intake passage leading to said combustion chamber for creating a swirl therein;

detection means for detecting a current engine driving condition, all of the detected engine driving conditions being divided into a low engine speed and low engine load driving condition, a low engine speed and high engine load driving condition and a high engine speed driving condition, each corresponding to a required amount of intake air; and

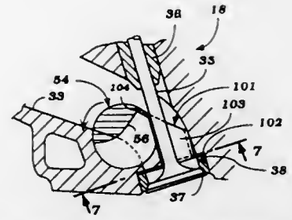
selection means for selecting a passage through which the intake air is passed in response to said current engine driving condition, by selecting said sub intake passage when the current engine driving condition is a low engine speed and low engine load driving condition, selecting said reed valve passage when the current engine driving condition is a low engine speed and high engine load driving condition, and selecting said main intake passage when the current engine driving condition is a high engine speed driving condition.

5,255,649

INTAKE AIR CONTROL SYSTEM FOR THE ENGINE

Yoshiharu Isaka, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Continuation-in-part of Ser. No. 834,604, Feb. 12, 1992. This application Jun. 3, 1992, Ser. No. 893,111
Claims priority, application Japan, Feb. 21, 1991, 3-047436; Apr. 8, 1991, 3-101789; Apr. 15, 1991, 3-111182; Jun. 28, 1991, 3-185400; Aug. 5, 1991, 3-218015; Aug. 30, 1991, 3-247018; Dec. 27, 1991, 3-360129
Int. Cl.[5] F02B *31/00*
U.S. Cl. 123—308 54 Claims



1. A cylinder head arrangement for an internal combustion engine comprising a passage extending from an opening in one surface area of said cylinder head to a valve seat formed in another surface area of said cylinder head which other surface defines in part a combustion chamber, a rectifier plate in said passage adjacent said valve seat and defining two separate flow paths in said passage, one of said flow paths terminating substantially at one side of said combustion chamber and the other of said paths terminating more centrally of said combustion chamber than said first path, and valve means supported in said cylinder head and movable between a first position permitting unrestricted flow through both of said flow paths and a second position engaged with said rectifier plate and restricting flow through only said one flow path for directing more flow centrally into said combustion chamber.

5,255,650

ENGINE BRAKING UTILIZING UNIT VALVE ACTUATION

James J. Faletti, Spring Valley, and Yung T. Bui, Peoria Heights, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Jun. 1, 1992, Ser. No. 891,597
Int. Cl.[5] F02D *13/04*
U.S. Cl. 123—322 14 Claims

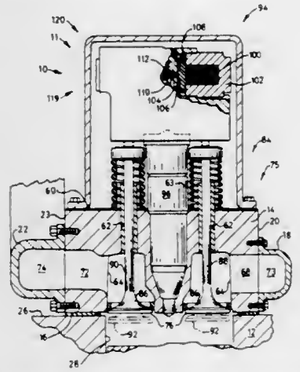
1. A braking system adapted for use with an engine including an exhaust passage, a pair of bores, a piston during operation of the engine being movably positioned within respective bores between a top dead center position and a bottom dead center position forming an intake stroke and the reciprocal movement of the piston forming a compression stroke;

a pair of valves each being operatively associated with each of the bores, interposed the exhaust passage and the respective bores and having a closed position and an open position;

means for opening each of the valves independently in response to receiving a control signal;

an electronic control system connected to the opening means and outputting the control signals to the opening means in a first predetermined logic pattern during normal engine operation wherein each of said pair of valves are closed during the compression stroke;

brake control means connected to the electronic control system for causing discrete control signals to be outputted



to the opening means in a second predetermined logic pattern to vary the operation of the valves so that one of each pair of valves associated with the respective bores is in the generally open position during the compression stroke when the piston is near the top dead center position, said discrete control signal to the opening means causing the respective valve to move to the open position increasing the fluid pressure in the exhaust passage and said discrete control signal to the opening means causing the respective valve to move to the open position when the piston is in the intake stroke and the increased fluid pressure in the exhaust passage enters into the respective bore.

5,255,651

GOVERNOR FOR FUEL INJECTION SYSTEM

Satoshi Wakasa, and Toru Okazaki, both of Oyama, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Continuation of Ser. No. 689,733, Apr. 24, 1991, abandoned, which is a continuation of Ser. No. 50,279, Jun. 30, 1987, abandoned. This application Jan. 23, 1992, Ser. No. 826,188
Claims priority, application Japan, Sep. 13, 1985, 60-139398
Int. Cl.[5] F02D *31/00*
U.S. Cl. 123—357 4 Claims

1. A governor control apparatus for a fuel injection system comprising:

a control rack by which movement an amount of fuel injection is controlled;

a power piston/cylinder mechanism connected to said control rack so as to control the movement of said rack and having a piston connected to said rack, a pressure input chamber on one side of said piston;

rack position detecting sensor producing a signal and being operatively associated with said control rack;

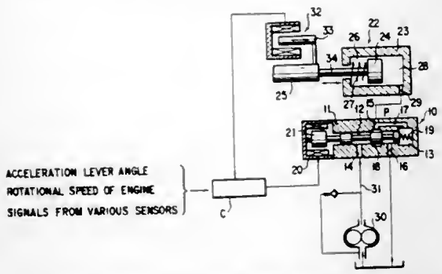
control means for controlling a supply of hydraulic fluid under pressure from a hydraulic pressure source to the pressure input chamber of said power piston/cylinder mechanism;

a controller receiving said signal from said rack position

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detecting sensor and connected to said control means for actuating the same according to said signal so as to control the position of said control rack by varying hydraulic pressure within said pressure input chamber; and

a proportional pressure control solenoid valve incorporated in said control means, interposed between said hydraulic pressure source and said pressure input chamber and being capable of conducting a self-regulation of an input hydraulic pressure applied to said pressure input chamber, said proportional pressure control solenoid valve being capable of independent said pressure control irrespective of said signal from said rack position sensor so that even when some malfunction occurs in said rack position detecting sensor or in the detecting signal transmitting path thereof, said control rack can be controlled by a provision of said proportional pressure control solenoid valve.



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SPEED GOVERNOR FOR FUEL INJECTION PUMPS

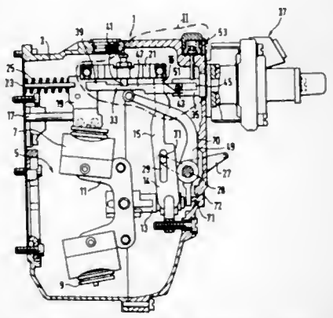
Martin Boehm, Stuttgart; Karsten Hummel, Beilstein-Schmidhausen, and Siegfried Ruthhardt, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 10, 1993, Ser. No. 28,878

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1992, 4209956

Int. Cl.[5] F02D *31/00*

U.S. Cl. 123—366 **20 Claims**



1. A speed governor for fuel injection pumps of internal combustion engines, having a governor sleeve (13) that is adjustable counter to a restoring force of a speed-dependent force of a speed governor (1) of the fuel injection pump, by means of which sleeve a governor lever (15) connected to a fuel quantity adjusting device is actuatable; a stop (39) is disposed on a stop lever (33) for limiting the quantity of injected fuel, the stop is adjustable about a bolt (43) in a direction of motion of the fuel quantity adjusting device, with which a counter stop (41) coupled to the governor lever (15) can be brought into contact in the direction of motion of the fuel quantity adjusting device; a control lever (49) engages the stop lever (33) and is pivotable counter to a pullback force by means of the governor sleeve (13) about a stationary axis (28) between two stops (70, 71), and a displacement position occupied by the governor sleeve (13) pivots the stop (39) out of its working position in an overlap area of the counter stop (41) when the engine is not running or below an idling speed of the engine, the stop lever (33) including first and second lever arms (47, 45) that are pivotable about a pivot (69), and that, in the same direction of rotation, the control lever (49) engages said first lever arm (47), and a temperature-dependently controlled governor member (53) engages said second lever arm (45).

5,255,653

ENGINE THROTTLE CONTROL SYSTEM

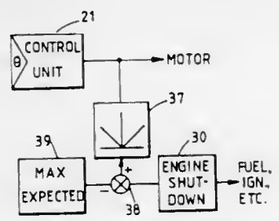
John M. Ironside; Peter M. Fox, both of Birmingham; Alistair M. McQueen, West Midlands, and David R. Price, Birmingham, all of England, assignors to Lucas Industries Public Limited Company, Solihull, England

Division of Ser. No. 775,643, Oct. 10, 1991, Pat. No. 5,193,506, which is a division of Ser. No. 509,111, Apr. 13, 1990, Pat. No. 5,074,267. This application Mar. 15, 1993, Ser. No. 31,755

Claims priority, application United Kingdom, Apr. 17, 1989, 8908661

Int. Cl.[5] F02D *41/22*

U.S. Cl. 123—399 **2 Claims**



1. An engine throttle control system for controlling a motor for actuating an engine throttle, said system comprising detecting means for detecting when a signal of said control system is outside a range of acceptable values;

a control circuit for supplying a control signal for controlling the motor, said detecting means being arranged to detect when a value of the control signal is outside the range of acceptable values;

a servo control loop including said control circuit, said detecting means being arranged to detect when a level of power supplied to the motor exceeds a maximum expected power value, in which said servo control loop comprises a plurality of parallel control elements including an integral control element, producing an integral output signal, said detecting means being arranged to compare the integral output signal with the maximum expected power level.

5,255,654

DEVICE TO REDUCE GAS EXCHANGE LOSSES OF AN INTERNAL COMBUSTION ENGINE

Jan Karlsson, Västra Frölunda, Sweden, assignor to AB Volvo, Goteborg, Sweden

PCT No. PCT/SE90/00634, § 371 Date Apr. 1, 1992, § 102(e) Date Apr. 1, 1992, PCT Pub. No. WO91/05152, PCT Pub. Date Apr. 18, 1991

PCT Filed Oct. 2, 1990, Ser. No. 844,645

Claims priority, application Sweden, Oct. 2, 1989, 8903220-5

Int. Cl.[5] F02D *9/08*

U.S. Cl. 123—403 **10 Claims**

1. A device for reducing pumping losses in an internal combustion engine comprising a throttle for controlling the combustion air pressure in the inlet manifold prior to said combustion air reaching the cylinders, characterized wherein the inlet manifold to every cylinder is provided with a separate throttle structure whereby the low-pressure side of the inlet manifold, relative to said throttle, is supplied with one of an air, or air-fuel mixture of higher pressure than said low-pressure side of said inlet manifold, by an inlet valve which is kept open at the start of every inlet stroke but which closes prior to the closing the said closing of the said inlet valve is controlled by the position of said throttle structure.

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FUEL INJECTION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

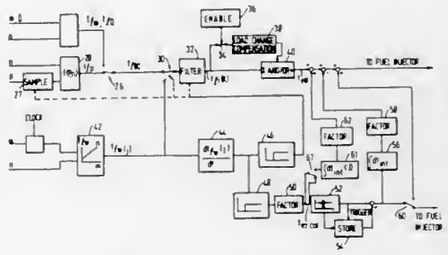
Helmut Deoz, Stuttgart; Andreas Roth, Mühlacker, and Ernst Wild, Oberriexingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/EP89/00673, § 371 Date Jan. 29, 1991, § 102(e) Date Jan. 29, 1991. PCT Pub. No. WO90/15921, PCT Pub. Date Dec. 27, 1990

PCT Filed Jun. 15, 1989, Ser. No. 640,369

Int. Cl.[5] F02D *41/10, 41/12, 41/22*

U.S. Cl. 123—479 **22 Claims**



1. A fuel injection system for an internal combustion engine, the system comprising:

(a) main engine load sensor, with the main engine load sensor producing a first signal;

(b) means for calculating a basic angle-synchronous fuel injection pulse width, $t_i(k)$, from signals received from the main engine load sensor;

(c) throttle valve angle sensor for monitoring the degree of opening (α) of an engine throttle valve, with the throttle valve angle sensor producing a second signal;

(d) engine speed sensor for monitoring the speed on the engine, with the engine speed sensor producing a third signal;

(e) means for calculating a fourth signal from the second and third signals, the fourth signal being a second angle-synchronous fuel pulse width $t_{iw}(j)$; and

(f) means for changing the calculation of the basic fuel injection pulse width made by the means at (b) when the rate of change of the fourth signal is at or above a first predetermined value.

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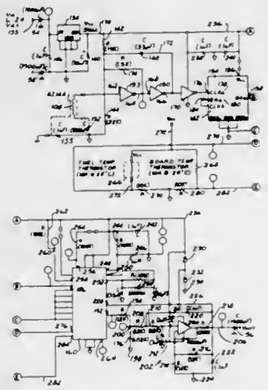
ALCOHOL CONCENTRATION SENSOR FOR AUTOMOTIVE FUELS

Richard K. Rader, Farmington Hills, Mich.; Rodney E. Barr, Cary, and Carl R. Vogt, Raleigh, both of N.C., assignors to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Continuation of Ser. No. 722,013, Jun. 27, 1991, abandoned. This application Feb. 28, 1992, Ser. No. 844,958

Int. Cl.[5] F02M *51/00*

U.S. Cl. 123—494 **34 Claims**



1. A fuel sensor for measuring concentration of an additive to liquid fuel in a fuel system for an internal combustion engine for a vehicle, said vehicle and said engine having a chassis ground, said fuel sensor comprising an electronic oscillator circuit including an inductance coil, a fuel sensor signal voltage source connected to said coil and a capacitor element surrounding said coil, said capacitor element being connected to chassis ground;

said circuit having a resonant frequency that is a function of the inductance and the capacitance of the circuit;

an air/fuel mixture controller for said engine, a fuel supply line for said engine communicating with said air/fuel mixture controller;

said fuel sensor communicating with said controller and having a non-metallic housing defining a fuel chamber in communication with and forming a part of said supply line;

said capacitor element and said coil being exposed to fuel in said chamber and cooperating to develop a capacitance as said fuel acts as a dielectric;

said resonant frequency being a function of changes in the dielectric constant of said fuel due to changes in the concentration of said additive whereby said air/fuel mixture controller receives a control signal from said fuel sensor that indicates a change in fuel composition;

wherein said capacitor element comprises a metallic plating on the interior of said fuel chamber, said plating and said coil defining an oscillator circuit capacitor as said fuel functions as a dielectric and said coil functions as an inductance portion of the oscillating circuit.

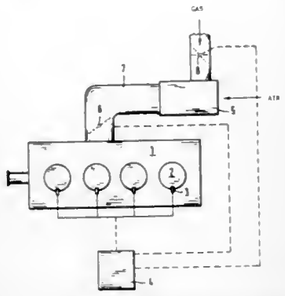
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5,255,657

GAS ENGINE

Karl Stellwagen, Mannheim, Fed. Rep. of Germany, assignor to Motoren-Werke Mannheim AG, Mannheim, Fed. Rep. of Germany

Filed Jun. 27, 1991, Ser. No. 721,973
Int. Cl.[5] F02B 43/00; F02M 21/04
U.S. Cl. 123—527 4 Claims



1. In a four cycle internal combustion-gas-engine having a plurality of cylinders (2) each with a combustion space and a mixture line (7) supplying fuel gas to said combustion spaces, the combination comprising: a mixer (5) in said mixer line (7) in which air is mixed into the fuel gas, a metering valve (8) in said mixer line (7) upstream of said mixer (5) for the metering of the fuel gas delivery, a controller (4) connected to said metering valve (8) and being operable to adjust said metering valve (8) to control pollutant emission, a throttle valve (6) in said mixture line (7) downstream of said mixer (5), means monitoring the position of said throttle valve (6) and sending a signal to said controller (4) indicative of the position of said throttle valve (6), said controller (4) adjusting the metering valve (8) in dependence on the position of said throttle valve (6) and in dependence on the mean temperature in at least one of said combustion spaces.

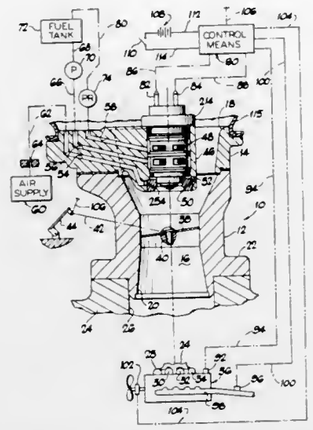
5,255,658

SYSTEM AND APPARATUS TO IMPROVE ATOMIZATION OF INJECTED FUEL

Peter Hoffer, Roseville, and Thomas J. Hemak, Troy, both of Mich., assignors to Coltec Industries Inc., New York, N.Y.

Filed Oct. 12, 1990, Ser. No. 596,441
Int. Cl.[5] F02M 23/00
U.S. Cl. 123—531 12 Claims

1. Apparatus for supplying rates of metered fuel flow to an associated engine having induction passage means, comprising fuel injector means for injecting rates of metered fuel flow into said induction passage means, air nozzle means being effective to direct a stream of air to impinge upon said metered fuel flow as has been injected by said fuel injector means to thereby atomize said metered fuel flow, wherein said air and said atomized metered fuel flow both flow to said engine, and air-flow supply means communicating with said air nozzle means, wherein said air-flow supply means comprises variable orifice means responsive to indica of engine operation for regulating the mass rate of flow of air to said air nozzle means, wherein said air-flow supply means comprises second orifice means of selected effective flow area, and wherein said



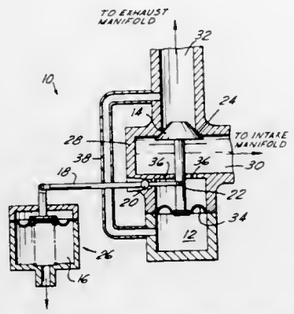
variable orifice means and said second orifice means are arranged in parallel flow relationship with each other.

5,255,659

PRESSURE BALANCED EXHAUST GAS RECIRCULATION VALVE

Michael A. Choma, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 28, 1992, Ser. No. 952,084
Int. Cl.[5] F02M 25/07
U.S. Cl. 123—568 2 Claims



1. An exhaust gas recirculation (EGR) system for an internal combustion engine having an exhaust manifold and an intake manifold, said valve comprising:

a valve body having a first passage connected with said intake manifold and a second passage connected with said exhaust manifold and having a linearly actuatable metering element positioned between said first and second passages such that the flow of exhaust gas through the valve is determined by the position of the metering element;

means for equalizing gas pressure forces acting on the metering element, with such means comprising a single two-sided diaphragm connected with the linearly actuatable valve along the line of action of the valve, with said diaphragm having one side operatively connected with said first passage and the other side operatively connected with said second passage, and with said diaphragm having a size selected such that the gas forces acting upon the metering element are balanced solely by the intake and exhaust gas forces acting upon the diaphragm; and

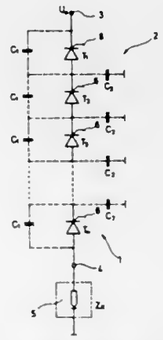
means for applying a control force to the linearly actuatable valve.

5,255,660

SEMICONDUCTOR SWITCH, IN PARTICULAR AS A HIGH-VOLTAGE IGNITION SWITCH FOR INTERNAL COMBUSTION ENGINES

Manfred Vogel, Ditzingen/Heimerdingen, and Werner Herden, Gerlingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE90/00123, § 371 Date Nov. 20, 1991, § 102(e) Date Nov. 20, 1991, PCT Pub. No. WO90/15242, PCT Pub. Date Dec. 13, 1990
PCT Filed Feb. 23, 1990, Ser. No. 777,543
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1989, 3917968
Int. Cl.[5] F02P 3/12
U.S. Cl. 123—643 16 Claims



1. A semiconductor switch adapted for use as an ignition voltage switch for applying an ignition voltage to a spark plug of an internal combustion engine, having

a cascade circuit formed of series-connected semiconductor components (T_1-T_n) for connecting an operating voltage u_o through to a load,

wherein the semiconductor components each have a depletion-layer capacitance (C_1), and said series connection existing between each two semiconductor components forms a parasitic ground capacitance (C_2) determined by the distribution of an electrical field generated by current flow through said series-connected semiconductor components,

characterized in that

a breakover current i_k flowing through the semiconductor components (T_1-T_n), prior to attainment of a conductive state by said semiconductor components, has a value which falls, relative to a displacement current i_{ver} within the range

$$i_{ver} < i_k < a \cdot i_{ver}$$

wherein said factor a has a value between 5 and 10, and

said displacement current is brought about by a voltage increase (du_o/dt) in the operating voltage u_o at the charge state, successively varying with the switching of the semiconductor components, of the depletion-layer and ground capacitance of the cascade circuit, and

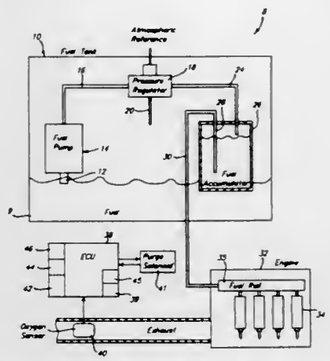
wherein said semiconductor components are so dimensioned that resulting values of said depletion-layer capacitance and said parasitic ground capacitance (C_1,C_2) confine the relative values of i_k and i_{ver} to the range set forth in the aforementioned equation.

5,255,661

METHOD FOR DETERMINING FUEL COMPOSITION USING OXYGEN SENSOR FEEDBACK CONTROL

Robert J. Nankee, II, Canton, and John E. Letcher, Chelsea, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Aug. 24, 1992, Ser. No. 933,551
Int. Cl.[5] F02M 7/00
U.S. Cl. 123—674 15 Claims



1. In a motor vehicle having an internal combustion engine with a throttle means; a fuel control system comprising a fuel tank for holding a fuel that may be gasoline or an alcohol, a fuel accumulator disposed within the fuel tank for receiving and storing fuel from the fuel tank, and a fuel rail and fuel injectors; the fuel control system working in conjunction with an engine control unit (ECU) including a non-erasable memory, microprocessing unit, an input/output (I/O) module and an adaptive memory feature; evaporative emission controls (purge system) including a purge solenoid; an oxygen sensor having an input and an output; a method for determining a value of percent alcohol content of a fuel for selectively controlling combustion parameters of an internal combustion engine, the method comprising:

regulating the pressure of the fuel entering the fuel accumulator;

maintaining the fuel within the fuel accumulator in a mixed state;

delivering a slowly changing composition of fuel from the fuel accumulator to the fuel injector; and

adjusting the amount of fuel supplied to the fuel injector based on changes in air/fuel ratio due to changing fuel composition.

5,255,662

ENGINE AIR-FUEL RATIO CONTROLLER

Yuki Nakajima, Yokosuka, Japan, assignor to Nissan Motor Company, Ltd., Japan

Filed Dec. 1, 1992, Ser. No. 983,958
Claims priority, application Japan, Dec. 3, 1991, 3-319437
Int. Cl.[5] F02B 75/08; F01N 3/00
U.S. Cl. 123—674 3 Claims

1. An air-fuel ratio controller for an engine provided with a fuel injector, an exhaust gas passage, and a catalytic converter using a three-way catalyst installed in an exhaust gas passage, said controller comprising:

a sensor for detecting engine running conditions,

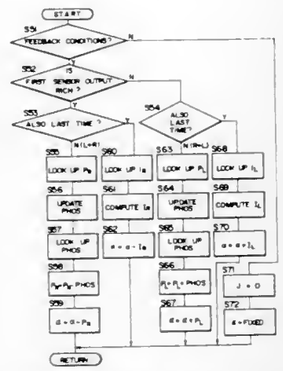
means for computing a basic fuel injection amount for the fuel injector based on said engine running conditions detected by said sensor,

a first oxygen sensor installed upstream of said catalytic converter in the exhaust passage,

means for determining from the output of said first oxygen

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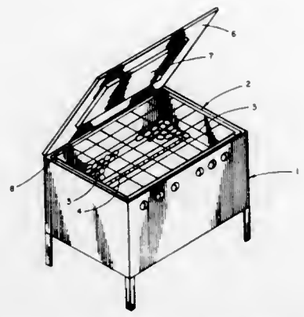
sensor whether the air-fuel ratio has varied beyond a predetermined theoretical air-fuel ratio,
means for computing a basic control constant of air-fuel ratio feedback based on the determining results,
a memory for storing correction values to be used for the correction of the basic control constant, each of said correction values being stored in each area defined in the memory according to said engine running conditions,
means for determining whether said engine running conditions detected by said sensor are in any of the defined areas,
means for retrieving from said memory a correction value corresponding to the defined area which covers said engine running conditions,
means for computing an air-fuel ratio feedback correction coefficient from the retrieved correction value and said basic control constant,



means for computing a target fuel injection amount from said basic fuel injection amount and said air-fuel feedback correction coefficient,
means for controlling the fuel injection amount supplied by the fuel injector to the target amount,
a second oxygen sensor installed downstream of the catalytic converter in the exhaust passage,
means for setting an updating amount of said correction value such that it becomes larger when the output of said second oxygen sensor deviates a predetermined amount from a value corresponding to said predetermined theoretical air-fuel ratio, and becomes smaller in the region of a predetermined intermediate value, and
means for updating said correction value stored in said memory corresponding to said defined area covering said engine running conditions detected by said sensor, by said set updating amount.

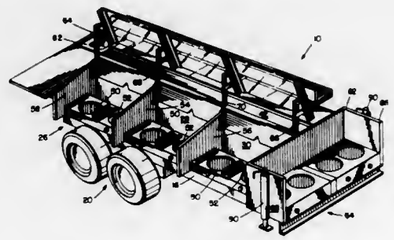
5,255,663
STOVE HEAT TRANSFER UNIT WITH IMPROVED ATTACHING MECHANISM
Larry M. Tate, 6017 Wessesley Way, Brentwood, Tenn. 37027, and James M. Smith, 1256 Meadow Rd., Cookeville, Tenn. 38501
Filed Aug. 12, 1992, Ser. No. 929,710
Int. Cl.[5] F24C *3/00*
U.S. Cl. 126—41 R **17 Claims**

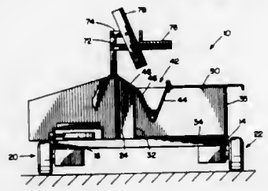
1. A stove comprising a grill, a top heating unit, said top heating unit hingedly connected to said stove at a hinge point so that said top heating unit may be rotated about said hinge point to overlie said grill, a platen shoe having a front side and a back side, said platen shoe connected to said top heating unit at multiple points, and means for connecting said platen shoe to said top heating unit at said multiple points comprising studs having an enlarged head at one end, a shank protruding therefrom and threads on an end of said shank opposite from said head, multiple holes in said upper heating unit, said studs passing through said holes, means for attaching said head of said studs to said platen shoe upon rotation in one direction and for



releasing said studs from said platen shoe upon rotation in an opposite direction said studs protruding from said back side of said platen shoe, and said front side of said platen shoe being a solid, continuous surface without any penetration therein.

5,255,664
MOBILE COOKING APPARATUS
Dominick E. Gurliacci, 11 Cindy La., Weston, Conn. 06883
Filed Oct. 26, 1992, Ser. No. 966,524
Int. Cl.[5] F24C *1/16*
U.S. Cl. 126—276 **4 Claims**

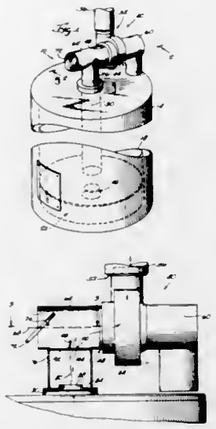




1. A vehicle trailer portable food preparation apparatus comprising;
a rectangular framework;
wheel means secured to the underside of the rectangular framework to facilitate moving the trailer to desired locations;
a line of a plurality of cooking stations secured to the framework and extending longitudinally on one side thereof;
each cooking station including a plurality of stoves;
a baffle plate separating each of the plurality of cooking stations and secured to the framework;
an elongated table secured to the framework and extending longitudinally on the side thereof opposite the line of cooking stations;
said elongated table being formed of a plurality of hinged plates;

a storage compartment located under said tables and being accessed by said hinged plates;
V-trough means extending the length of said trailer between the line of cooking stations and the elongated table means;
and an elongated windshield separating the line of cooking stations from the elongated table.

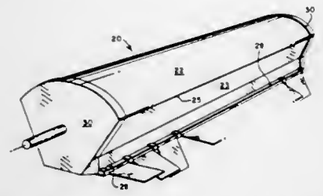
5,255,665
POWER VENT BLOWER ASSEMBLY FOR GAS WATER HEATER
Bradley N. Windon, Hartsville, S.C., assignor to AOS Holding Company, Wilmington, Del.
Filed Jul. 19, 1991, Ser. No. 732,983
Int. Cl.[5] A47J *27/00*
U.S. Cl. 126—389 **28 Claims**



28. A heater comprising a combustion chamber, gas burner means located within the combustion chamber for producing hot exhaust gases, heat exchanger means for heating fluid with the hot exhaust gases, a flue having a lower end communicating with said combustion chamber, and having an upper end, and a power vent blower assembly including a horizontal conduit extending along a generally horizontal axis, having a first end adapted to communicate with the ambient atmosphere of said water heater, and having a second end, a blower having an inlet communicating with said second end of said horizontal conduit, and having an outlet, a vertical conduit extending along a generally vertical axis, having a lower end communicating with said upper end of said flue, and having an upper end communicating with said horizontal conduit intermediate said first and second ends of said horizontal conduit, means located adjacent said lower end of said vertical conduit for restricting gas flow through said vertical conduit, and means located adjacent said upper end of said vertical conduit for mixing gases from said flue with air from the ambient atmosphere of said water heater.

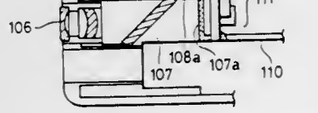
5,255,666
SOLAR ELECTRIC CONVERSION UNIT AND SYSTEM
Donald B. Curchod, 234 Eleanor Dr., Woodside, Calif. 94062
Filed Oct. 13, 1988, Ser. No. 257,506
The portion of the term of this patent subsequent to Nov. 28, 2007, has been disclaimed.
Int. Cl.[5] F24J *3/02, 2/08, 3/00*
U.S. Cl. 126—569 **36 Claims**

1. For use in a solar energy system of a type serving to convert solar energy to a different form of energy; an energy converting unit comprising an elongate extruded unitary body including an arcuate, elongate fresnel lens, side walls integral to and depending from the side edges of said fresnel lens and angled toward each other, the free edges of said side walls being spaced apart to form an open side to said unit opposite said fresnel lens; an elongate heat sink means carried by said



free edges to form a closure to the open side opposite said fresnel lens; and energy converting means carried by said heat sink means and responsive to receipt of solar energy thereon for generating energy in a different form.

5,255,667
ENDOSCOPE WITH COMPACT SCOPE END SECTION
Wataru Kameishi, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 12, 1991, Ser. No. 758,107
Claims priority, application Japan, Sep. 12, 1990, 2-240143
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 **6 Claims**



1. An endoscope having a scope section including a scope end section, the scope end section comprising:
an optical system for receiving optical image light beams;
an imaging element for converting the optical image light beams into electric signals;
electric components for processing the electric signals obtained by the imaging element; and
a flexible substrate through which the imaging element and the electric components are electrically connected, and on which the electric components are mounted, the flexible substrate being curved such that the electric components are located behind a side of the optical system facing away from an end of the scope section, the flexible substrate being fixedly attached to and mounted on said side of the optical system facing away from the end of the scope section.

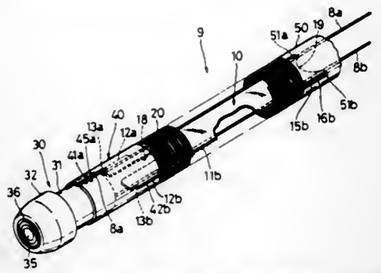
5,255,668
BENDING DEVICE
Hiroyuki Umeda, Saitama, Japan, assignor to Kabushiki Kaisha Machida Seisakusbo, Tokyo, Japan
Filed Mar. 20, 1992, Ser. No. 854,912
Claims priority, application Japan, Apr. 8, 1991, 3-103074
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 **7 Claims**

1. A bending device comprising:
(a) a bendable frame having a generally cylindrical shape as a whole;
(b) a tip member provided forwardly of said frame, said tip

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member having a rear end portion whose outer peripheral surface is cylindrical;

(c) a connecting tube of a cylindrical shape interconnecting said frame and said tip member, the rear end portion of said tip member being received in and fixed to a front end portion of said connecting tube, a slit being formed through the front end portion of said connecting tube and extending axially of said connecting tube, a rear end of said slit being disposed rearwardly of a rear end of said tip



member, and a receiving recess being defined by said slit of said connecting tube and the outer peripheral surface of the rear end portion of said tip member; and

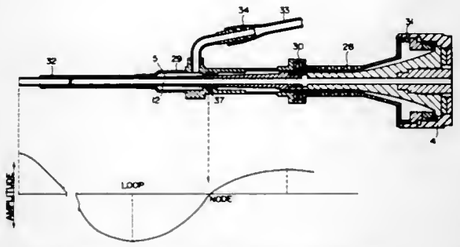
(d) an operating wire for receiving an operating force at its rear end so as to bend said frame, said operating wire passing axially through said frame and said connecting tube, a front end portion of said operating wire being received in said receiving recess and fixedly secured to said connecting tube.

5,255,669

ULTRASONIC TREATMENT APPARATUS

Tatsuya Kubota, Sagamihara; Kazuya Hijii, Hachioji; Tetsumaru Kubota, Hachioji, and Yuichi Ikeda, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 426,887, Oct. 23, 1989, abandoned.
This application Dec. 19, 1991, Ser. No. 811,881
Claims priority, application Japan, Apr. 12, 1989, 1-42014[U]; Apr. 27, 1989, 1-50005[U]; Apr. 28, 1989, 1-51232[U]; Jun. 20, 1989, 1-72179[U]; Jun. 20, 1989, 1-157150
Int. Cl.[5] A61H *1/00*
U.S. Cl. 128—24 AA **7 Claims**



1. An ultrasonic treatment apparatus comprising:

an ultraxonic probe having:

ultrasonic vibration generating means for generating ultrasonic vibrations;

vibration transmission means for transmitting generated vibrations, said vibration transmission means including a vibration transmission member detachably coupled to said generating means, said vibration transmission member having an outer peripheral surface; and

a distal end;

a sheath covering at least the outer peripheral surface of said vibration transmission member of said ultrasonic probe, said sheath being attachable to and detachable from said vibration transmission member, said sheath having a fluid supply attaching portion, and said sheath at least partly defining a fluid flow path between said sheath and said vibration transmission member;

fluid supply means, attached to said fluid supply attaching portion of said sheath, for supplying a fluid into said fluid flow path defined between said vibration transmission member and said sheath; and

seal means mounted on said sheath at a location nearer to said vibration generating means than said fluid supply attaching portion of said sheath, for preventing the fluid from flowing to said vibration generating means, said seal means cooperating with a portion of said vibration transmission member which corresponds to a node of vibration, and said portion of said vibration transmission member with which said seal means cooperates having a diameter which is not stepped but gradually decreases toward the distal end of the probe so as to form a tapered portion of said vibration transmission member, such that said seal means is arranged between said tapered portion of said vibration transmission member and said sheath covering an outer peripheral surface of said tapered portion;

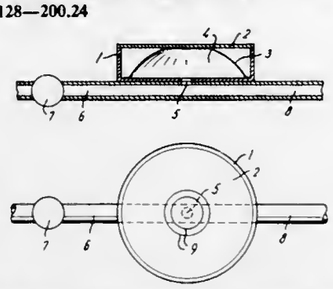
and a given portion of each of said vibration transmission member and said sheath being detachably attached to the vibration generating means at respective connecting portions thereof, and wherein the connecting portions of said vibration transmission member and sheath are located in close proximity to each other, wherein said seal means and sheath are removable together when removed from the apparatus.

5,255,670

AIR RESERVOIR

Vagn N. F. Lomholt, Lundevej 4, Allerod, Denmark 3450

PCT No. PCT/DK91/00011, § 371 Date Jul. 6, 1992, § 102(e) Date Jul. 6, 1992, PCT Pub. No. WO91/10465, PCT Pub. Date Jul. 25, 1991
PCT Filed Jan. 14, 1991, Ser. No. 910,082
Claims priority, application Denmark, Jan. 15, 1990, 0115/90
Int. Cl.[5] A61M *16/04*
U.S. Cl. 128—200.24 **5 Claims**



1. An air reservoir for control of the pressure in the sealing cuff of a respiration catheter, having a rigid supporting part and a wall consisting of an elastic membrane having an inner side and an outer side whose edges are connected with said rigid supporting part of the reservoir, characterized in that this rigid supporting part is firmly connected with a semitransparent plate so arranged with respect to the membrane that the outer side of the membrane is pressed into engagement with the plate by the pressure in the reservoir, and that a thin liquid layer is provided on the outer side of the membrane, said liquid layer changing the optical properties of the plate from semitransparent to transparent when the membrane engages the plate.

5,255,671

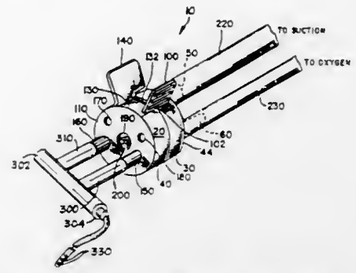
Patent Not Issued For This Number

5,255,672

DUAL-PURPOSE CATHETER ASSEMBLY

Walter J. Jinotti, 10 Scott St., New Brunswick, N.J. 08903

Filed Aug. 7, 1991, Ser. No. 741,571
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—200.26 **15 Claims**



1. A dual purpose catheter assembly comprising

valve means for supplying oxygen and suction to a patient, said valve means having first and second tube means, said first tube means being adapted to be connected to a source of oxygen and said second tube means being adapted to be connected to a source of suction,

said valve means having third and fourth tube means adapted to be coupled to a patient, said first tube means being aligned with said third tube means so that said valve means can be operated to feed oxygen from said source of oxygen to said third tube means, said fourth tube means being aligned with said second tube means so that said valve can apply suction from said source of suction to said fourth tube means,

rigid bosses inside said valve means positioned so that when said third tube means is coupled to a patient, one boss blocks said fourth tube means and when said fourth tube means is connected to a patient, the other boss blocks said third tube means,

a tubular coupling manifold having a first input coupling tube coupled to said third tube means and a second input coupling tube coupled to said fourth tube means, said manifold having a single output means for coupling to a patient, and

a tube assembly for coupling said manifold directly to a patient, said tube assembly consisting of a single small diameter tube of a diameter insertable into an infant coupled to said single output means of said coupling manifold,

said single tube having a patient end which has a plurality of holes for providing suction or oxygen to a patient, said single tube transporting both oxygen and suction separately under the control of said valve means.

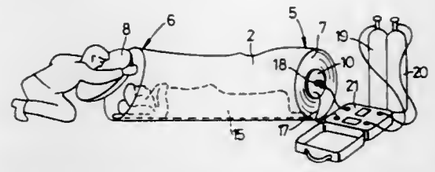
5,255,673

PRESSURE VESSELS

John F. Cardwell, Nuneaton; Simon C. Martin, Coventry; James H. C. Rowan, Worcester; Riyadh N. A. Alaka, Guildford, and John S. Selby, London, all of United Kingdom, assignors to Courtaulds Plc & SOS Limited, London, England

PCT No. PCT/GB90/00107, § 371 Date Jul. 26, 1991, § 102(e) Date Jul. 26, 1991, PCT Pub. No. WO90/08692, PCT Pub. Date Aug. 9, 1990
PCT Filed Jan. 26, 1990, Ser. No. 730,826
Claims priority, application United Kingdom, Jan. 27, 1989, 8901840
Int. Cl.[5] A62B *31/00*
U.S. Cl. 128—202.12 **8 Claims**

1. An inflatable decompression chamber of a size when inflated to accommodate a recumbent person comprising an elongate tubular casing having end members for closing the casing to form the chamber, at least one of the end members being removable to provide access to the interior of the chamber, the casing comprising a flexible tubular wall of a silicone



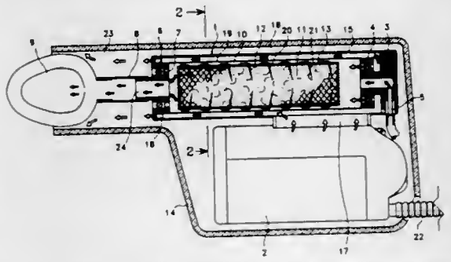
elastomer material incorporating continuous circumferential windings of filaments or yarns within the wall.

5,255,674

PORTABLE HEATING AND HUMIDIFYING DEVICE

Tor A. Oftedal, Oslo, and Odd Halsnes, Maastad, both of Norway, assignors to Forsvarets Forskningsinstitutt, Kjeller, Norway

Filed Sep. 27, 1991, Ser. No. 766,735
Claims priority, application Norway, Sep. 28, 1990, 904226
Int. Cl.[5] A61M *16/10;* **A62B** *7/00*
U.S. Cl. 128—203.16 **23 Claims**



22. Portable device for adding heat and humidity to oxygen-enriched breathing air, said device comprising

a breathing mask,

a source of oxygen enriched air,

a moisturized element in the form of a coaxial arrangement of

a body of water absorbent material,

a heat exchanging device surrounding said body of water absorbent material,

a first coaxial airspace defined by said body of water absorbent material and an inner wall of said heat exchanging device, said first coaxial airspace having a first inlet in communication with said source and a first outlet in communication with the breathing mask,

means for coupling said first outlet to the breathing mask,

a heater integrated with the heat exchanging device such that the oxygen enriched air is heated and humidified as it passes through the coaxial airspace,

a one-way valve between the heater and the first coaxial passage, arranged such that heated air may flow from the heater into the first coaxial passage but not from the first coaxial passage to the heater, and

a heat insulating housing surrounding an outer wall of the heat exchanging device and having an inner wall which cooperates with said outer wall to define a second coaxial airspace, said second coaxial airspace having an inlet directly coupled to the outlet of the heater for admitting heated air from the heater and a second outlet adjacent to said first outlet for expelling warm, dry air in the direction of the face of a person breathing the humidified air from the first outlet after it has passed through the second coaxial airspace and heated the oxygen enriched air in the first coaxial airspace.

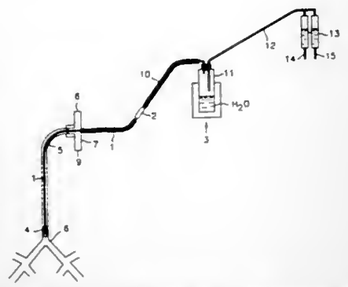
VOL 1155 ISS 4 OCT 26 1993 UMI

5,255,675

DEVICE FOR INTRATRACHEAL VENTILATION AND INTRATRACHEAL PULMONARY VENTILATION

Theodor Kolobow, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed Oct. 31, 1990, Ser. No. 606,967
Int. Cl.[5] A61M *16/00*; A62B *7/00, 9/06*; F15C *1/08*
U.S. Cl. 128—204.18 13 Claims



1. A method of providing ventilatory assistance to a patient which comprises:

providing a catheter having a diffuser tip at an end thereof;

positioning said diffuser tip in an area near the carina of a patient, the patient having an anatomical dead space;

estimating the anatomical dead space of the patient; and

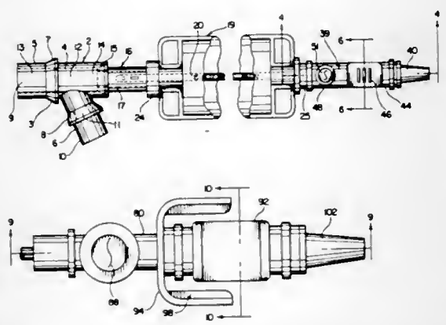
simultaneously supplying a constant supply of an oxygen containing gas mixture to the patient through the catheter and diffuser at a flow rate of 0.05 to 4 times the anatomical dead space of the patient per breath and mechanically ventilating the patient at a respiratory rate of 10–120 breaths per minute or higher.

5,255,676

SAFETY SEALED TRACHEAL SUCTION SYSTEM

Ronald D. Russo, 8 Candleberry Rd., Barringtoo, R.I. 02806

Filed Nov. 8, 1991, Ser. No. 789,315
The portion of the term of this patent subsequent to Jan. 28, 2009, has been disclaimed.
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—207.14 12 Claims



9. In combination with a medical device which is capable of applying suction to a patient by the operation of said device, a valve assembly comprising a one piece resiliently deformable body having front and rear ends and a longitudinal passageway extending therethrough and open at its rear end and means at the rear end of said body for receiving a source of suction and open at the front end and means at the front end of said body for connecting a means for accessing a patient with said suction source, said body including outside wall portions and an integral diaphragm extending across said passageway and normally closing said passageway and further dividing said passageway into a rear chamber and a front chamber, said rear chamber including said body rear end for receiving said suction source, said diaphragm movable to an open position by the manual application of external force to opposite outside wall portions of said body.

5,255,677

DISPOSABLE ELECTRODES FOR ELECTROMYOGRAPHY (EMG) AND NERVE CONDUCTION VELOCITY (NCV) AND KIT CONTAINING SAME

Alan J. Schaefer, Spring Valley; Arthur Blumenfeld, Brewster, both of N.Y.; Finn Pedersen, Stenlose, and Carsten Stabell, Bronshoj, both of Denmark, assignors to Vickers PLC, London, England

Division of Ser. No. 661,476, Feb. 26, 1991, Pat. No. 5,203,330.
This application Nov. 2, 1992, Ser. No. 969,499
Int. Cl.[5] A61B *5/04, 5/0492*
U.S. Cl. 128—640 1 Claim



1. A disposable elongate flexible electrode having a relatively narrow width to provide in use a wraparound digital ring electrode for electromyography (EMG) and/or nerve conduction velocity (NCV) testing, said electrode having a connector end and a rear end, said electrode laminated of a plurality of layers arrangeable on a backing sheet, and orientable from a patient's skin outward to comprise in combination:

a first layer comprising hydrogel conductive adhesive and a non-conductive sealing foil, the sealing foil positioned short of the connector end and the adhesive contiguous therewith and extending to the rear end of the electrode,

a second layer comprising conductive foil on the first layer and provided with a conducive tab at the connector end and extending beyond the sealing foil;

the sealing foil extending across the narrow width of the electrode and wholly bordering thereacross on one side the conductive foil and having a rearward end wholly bordering thereacross the hydrogel conductive adhesive.

whereby electricity communicates with the patients via the hydrogel conductive adhesive and via the conductive foil and via the conductive tab past the non-conductive sealing foil.

5,255,678

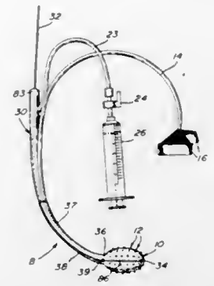
MAPPING ELECTRODE BALLOON

Antoine Deslauriers, Montreal; Pierre Savard, Ste-Therese; Pierre Pagé, Terrebonne; René Cardinal, Outremont, and Josée Rousseau, Montreal, all of Canada, assignors to Ecole Polytechnique, Quebec, Canada

Filed Jun. 21, 1991, Ser. No. 719,006
Int. Cl.[5] A61B *5/04*
U.S. Cl. 128—642 46 Claims

1. An electrode balloon for use in anatomical cavities for picking up bioelectrical signals from walls thereof simultaneously in a multitude of sites for the mapping of activation potentials thereof, comprising an inflatable tight member defining a chamber and having an opening at a proximal end thereof in connection with a flexible tube; an extensible cover means covering at least said chamber and provided with a plurality of sensor electrodes distributed thereon for contacting the walls of a cavity when said inflatable member is inflated by a fluid conveyed through said tube into said chamber; insulated electrical conductors connected to said sensor electrodes and

adapted for connection to means for recording and processing the signals picked up thereby; a flexible tutor means extending within said chamber from a distal end of said inflatable member through and past said proximal end thereof for providing said electrode balloon with a handle; and a flexible intubation guide



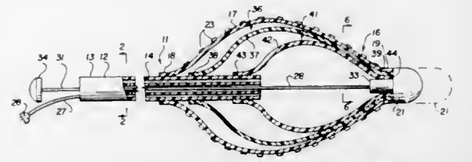
means adapted to be received in said tutor means and adapted for conferring a shape to said tutor means for facilitating an insertion of said inflatable member into the cavity, said cover means being adapted for conferring to said inflatable member a shape similar to that of the cavity.

5,255,679

ENDOCARDIAL CATHETER FOR MAPPING AND/OR ABLATION WITH AN EXPANDABLE BASKET STRUCTURE HAVING MEANS FOR PROVIDING SELECTIVE REINFORCEMENT AND PRESSURE SENSING MECHANISM FOR USE THEREWITH, AND METHOD

Mir A. Imran, Palo Alto, Calif., assignor to Cardiac Pathways Corporation, Sunnyvale, Calif.

Filed Jun. 2, 1992, Ser. No. 893,972
Int. Cl.[5] A61B *5/04*
U.S. Cl. 128—642 13 Claims



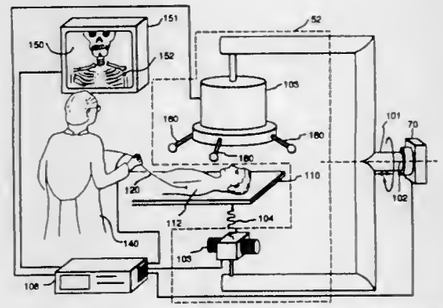
7. An endocardial catheter for mapping and/or ablation for use in a chamber of a heart defined by a wall, comprising a flexible elongate tubular member having proximal and distal extremities, a basket assembly mounted on the distal extremity of the flexible elongate member, said basket assembly being comprised of a plurality of longitudinally extending, circumferentially spaced apart arms having proximal and distal extremities, means securing the proximal extremities of the arms to the distal extremity of the flexible elongate tubular member, a push-pull element having proximal and distal extremities extending longitudinally of the tubular member and beyond the distal extremity of the tubular member and movable axially of the tubular member, means securing the distal extremities of the arms to the distal extremity of the push-pull element whereby upon axial movement of the push-pull element, the basket assembly can be moved between expanded and contracted positions, and means carried by the distal extremity of the flexible elongate tubular member and being disposed within the basket assembly and having portions movable into engagement with portions of the arms for providing selective reinforcement of the arms and for yieldably urging said arms outwardly and into engagement with the wall of the heart to aid in yieldably retaining the arms in engagement with the wall of the heart.

5,255,680

AUTOMATIC GANTRY POSITIONING FOR IMAGING SYSTEMS

Robert D. Darrow, Scotia, and Charles L. Dumoulin, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 3, 1991, Ser. No. 753,567
Int. Cl.[5] A61B *6/00, 5/00*
U.S. Cl. 128—653.1 18 Claims



1. A tracking and imaging system adapted for following a location of at least one invasive device within a subject, comprising:

a) an invasive device:

b) an electromagnetic (EM) field creation means adapted for creating an electromagnetic field of known geometry within the subject attached to the invasive device;

c) a radiofrequency (RF) receiver means adapted for detecting the electromagnetic field at a plurality of M selected locations;

d) a tracking means adapted for computing a position and an orientation of the EM field creation means at the M selected locations indicating the location of the invasive device, the tracking means being responsive to the detected electromagnetic field;

e) an imaging means adapted for acquisition of a medical diagnostic image of a region of interest of said subject;

f) positioning means adapted for controlling a position and an orientation of the imaging means responsive to the tracking means based upon the computed position and orientation of the electromagnetic field;

g) superposition means for superimposing, on the medical diagnostic image of the region of interest, a symbol at the computed position representing the EM field creation means resulting in a superimposed image; and

h) display means adapted for displaying the superimposed image.

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5,255,681

ULTRASONIC WAVE DIAGNOSING APPARATUS HAVING AN ULTRASONIC WAVE TRANSMITTING AND RECEIVING PART TRANSMITTING AND RECEIVING ULTRASONIC WAVES

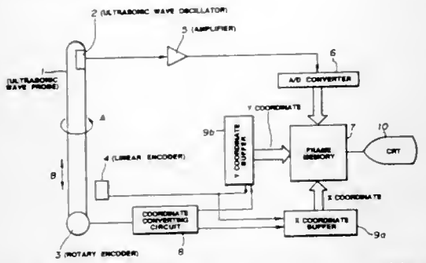
Toshiro Ishimura, Hachioji; Koichi Matsui, Tokyo; Takahiro Echizenya, Hachioji; Yosbihisa Taniguchi, Hachioji, and Akiko Mizunuma, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 27, 1991, Ser. No. 799,509

Claims priority, application Japan, Mar. 20, 1991, 3-057294; Mar. 20, 1991, 3-057295; Apr. 2, 1991, 3-070163; Apr. 18, 1991, 3-086767; May 2, 1991, 3-111993

Int. Cl.[5] A61B *8/12*

U.S. Cl. 128—660.09 21 Claims



1. An ultrasonic wave diagnosing apparatus, comprising:
an ultrasonic wave probe having an ultrasonic wave transmitting and receiving part which can be rotated, advanced and retreated and which transmits and receives ultrasonic waves;
a first driving means rotating said ultrasonic wave transmitting and receiving part;
a second driving means advancing and retreating said ultrasonic wave transmitting and receiving part;
an auxiliary recording means recording signals from said ultrasonic wave transmitting and receiving part; and
a record controlling means outputting to said auxiliary recording means a record controlling signal synchronized with input signals from said first driving means and said second driving means.

5,255,682

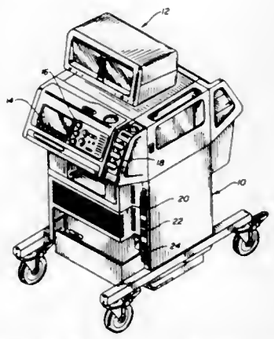
ULTRASONIC DIAGNOSTIC IMAGING SYSTEMS WITH SCANHEAD INDICATORS

Peter M. Pawluskiewicz, and Perry W. Kaminski, both of Seattle, Wash., assignors to Advanced Technology Laboratories, Inc., Bothell, Wash.

Filed Nov. 14, 1990, Ser. No. 613,334

Int. Cl.[5] A61B *8/00*

U.S. Cl. 128—662.03 19 Claims



1. A scanhead for an ultrasonic diagnostic imaging system which facilitates location of the scanhead in a darkened examination room, said scanhead comprising:
a connector end including a connector for electrical connection of said scanhead to said diagnostic imaging system;
a handle end including a piezoelectric transducer at a face which contacts a patient's body for receiving ultrasonic energy through said patient contact face and converting said energy to electrical signals which are used by said ultrasonic diagnostic imaging system to form an image of the internal structure of a portion of the patient's body which is located in front of said patient contact face;
a cable connecting said connector end and said handle end to enable transmission of electrical signals between said transducer and said diagnostic imaging system; and
an illumination mechanism located at said handle end of said scanhead in a predetermined position with respect to the spatial location of the plane of said image for emitting light from said scanhead, which light indicates a characteristic of said scanhead to a user during use of said scanhead.

5,255,683

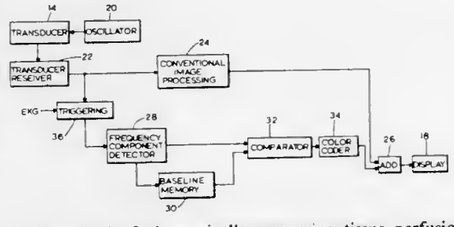
METHODS OF AND SYSTEMS FOR EXAMINING TISSUE PERFUSION USING ULTRASONIC CONTRAST AGENTS

Mark J. Monaghan, Croydon, England, assignor to Sound Science Limited Partnership

Filed Dec. 30, 1991, Ser. No. 816,640

Int. Cl.[5] A61B *8/06*

U.S. Cl. 128—662.02 48 Claims



1. A method of ultrasonically measuring tissue perfusion using an ultrasound contrast enhancing agent, the method comprising the steps of:
(a) insonating the tissue with ultrasonic energy during a first time period in the absence of the agent in the tissue and during a second time period in the presence of the agent in the tissue;
(b) detecting a frequency characteristic of ultrasonic energy reflected by the tissue during the first time period to obtain baseline frequency data;
(c) detecting the frequency characteristic of the ultrasonic energy reflected by the tissue during the second time period to obtain post-introduction frequency data; and
(d) using the baseline frequency data and the post-introduction frequency data while the agent is present in the tissue to obtain a real-time indication of spatial distribution of the contrast agent in the tissue.

5,255,684

ULTRASONIC PROBE ASSEMBLY

Michael J. Rello, Harleysville, Pa., assignor to Interspec, Inc., Ambler, Pa.

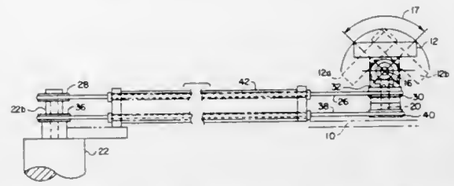
Filed Oct. 25, 1991, Ser. No. 782,678

Int. Cl.[5] A61B *8/00*

U.S. Cl. 128—662.06 15 Claims

1. An ultrasonic probe assembly comprising:
a first housing;

an ultrasonic transducer;
first mounting means for mounting said ultrasonic transducer for scanning movement of said transducer in a selected scan plane about a first axis;
second mounting means for mounting said first mounting means and sail ultrasonic transducer to said first housing for pivotal movement of said first mounting means with respect to said first housing about a second axis which is perpendicular to said first axis;
a second housing spaced from said first housing;
a drive motor rotatably mounted in said second housing and having a motor housing and an output driver;
selection means attached to said motor housing for setting a selected pivotal position of said first mounting means corresponding to said selected scan plane;



first coupling means, including first flexible connecting means, extending between said output driver of said drive motor and said ultrasonic transducer for imparting scanning movement to said transducer in response to movement of said output driver, said first flexible connecting means having a length which permits positioning said first housing and said transducer within a body cavity of a patient while said second housing remains outside the body of the patent;
and second coupling means, including second flexible connecting means, extending between said selection means and said second mounting means for positioning said first mounting means in response to movement of said selection means, said second flexible connecting means having a length substantially coextensive with said first flexible connecting means.

5,255,685

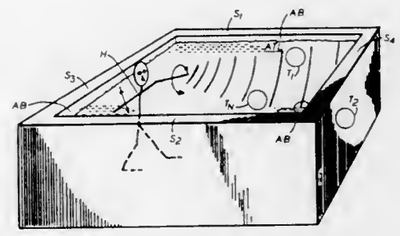
ACOUSTIC DIAGNOSTIC APPARATUS WITH SCAN CONTROL

Jorge M. Parra, 7332 Grand Blvd., New Port Richey, Fla. 34652

Continuation-in-part of Ser. No. 588,985, Sep. 26, 1990, Pat. No. 5,137,029, and a continuation-in-part of Ser. No. 569,121, Aug. 17, 1990, Pat. No. 5,031,637. This application Sep. 27, 1991, Ser. No. 766,247

Int. Cl.[5] B61B *7/02*

U.S. Cl. 128—670 4 Claims



1. A non-invasive medical apparatus comprising:
a vessel holding an acoustically transmissive liquid (ATL), said vessel being of sufficient size to hold at least a portion of the body of an animal therein such that said portion generates infrasonic acoustic signatures and launch same into said acoustically transmissive liquid, said vessel having a wall surface,
a plurality of acoustic transducer means sequentially mounted on said wall surface and immersed in said body of acoustically transmissive liquid for converting said infrasonic acoustic energy travelling in said acoustically transmissive body of liquid to electrical signals, there being primary acoustic paths between said body and one or more of said transducer means and one or more secondary paths between said body and said one or more transducer means,
means for scanning said acoustic transducers means, including electronic gate means, and a microprocessor means for controlling said gate means to allow the primary path acoustic signals to be selected over secondary path acoustic signals,
means connectable to said transducer means for detecting the acoustic signatures of parts of said body.

5,255,686

CONTINUOUS NONINVASIVE BLOOD PRESSURE MEASURING APPARATUS AND METHOD

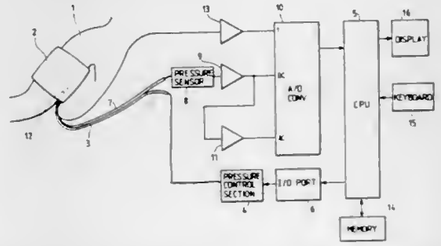
Sunao Takeda; Hideo Ozawa; Mitsushi Hyogo, and Yoshinobu Nakae, all of Tokyo, Japan, assignors to Nihon Kohden Corporation, Tokyo, Japan

Filed Jul. 2, 1992, Ser. No. 907,795

Claims priority, application Japan, Jul. 4, 1991, 3-189559

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—681 2 Claims



1. A continuous noninvasive blood pressure measuring apparatus for use in measuring blood pressure of a subject, the apparatus comprising:
a cuff to be put on the subject;
cuff control means for controlling a pressure of said cuff;
pressure sensor means for detecting a pressure of said cuff and for outputting a plurality of cuff pulse waves representative thereof;
temperature sensor means for detecting a temperature of said cuff;
calibration and measurement means for calibrating said pressure of said cuff and measuring a systolic pressure, a diastolic pressure and a mean arterial pressure in accordance with an output of said pressure sensor means, wherein said systolic pressure, said diastolic pressure and said means arterial pressure are used for calibration;
reference pulse wave forming means for calculating an arithmetic means of a plurality of cuff pulse waves provided by said pressure sensor means to form a reference pulse wave and for calculating a peak value, a bottom value and a cuff pressure mean value corresponding to a continuous wave component of said reference pulse wave;
coefficient calculating means for calculating coefficients to cause correspondence between said peak value, said bottom value, said cuff pressure mean value, as calculated by said reference pulse wave forming means, with said systolic pressure, said diastolic pressure, and said mean arterial pressure, respectively, as calculated by said calibration measurement means;
cuff pressure temperature compensation value calculating

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means for calculating a cuff pressure temperature compensation value in accordance with an output of said temperature sensor means, said cuff pressure temperature compensating value for use in compensating for an amount of variation of said cuff pressure with variation in temperature of said cuff; and

a blood pressure calculating means for compensating said cuff pressure with said cuff pressure temperature compensation value calculated by said cuff pressure temperature compensation value calculating means, and for continuously calculating a blood pressure by utilizing said cuff pressure thus compensated, said coefficient calculated by said coefficient calculating section, and said plurality cuff pulse waves.

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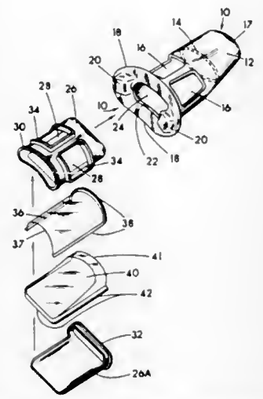
ZERO DEAD SPACE RESPIRATORY EXERCISE VALVE

Charles L. McKenna, 9744 1st St., Gerber, Calif. 96035

Filed Jan. 21, 1992, Ser. No. 827,085

Int. Cl.[5] A62B *9/02*; A61B *5/08*

U.S. Cl. 128—730 **4 Claims**



1. Respiratory level testing system comprising: a mouthpiece having a passageway with first and second open ends, an opening through a surface of said mouthpiece communicating with said passageway between said open ends and means for receiving a valve cartridge housing in said passageway;

a valve cartridge housing; said valve cartridge housing is removably inserted into said passageway through said first open end and secured by said means for receiving;

first and second valve means for forming first and second airflow passageways between said opening and said first open end and between said first open end and said second open end respectively, said valve means having zero deadspace and being inserted in said valve cartridge housing; and

an adapter sleeve means for selectively connecting the mouthpiece to a hose from an auxiliary oxygen tank, said adapter sleeve means having elastic strap means for removably securing said adapter sleeve means to said mouthpiece, said adapter sleeve means being secured to said mouthpiece such that a first open end of said adapter sleeve means overlies said opening through said surface of said mouthpiece and a second open end of said adapter sleeve means is adapted to receive said hose from said auxiliary oxygen tank.

5,255,688

INSTRUMENT FOR HANDLING BIOPSIES AND SPECIMENS

René Gilliard, Saint-Sulpice, Switzerland, assignor to Bredam Medical Distribution S.A., Switzerland

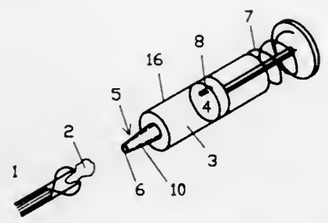
PCT No. PCT/CH90/00228, § 371 Date May 24, 1991, § 102(e) Date May 24, 1991, PCT Pub. No. WO91/04709, PCT Pub. Date Apr. 18, 1991

PCT Filed Sep. 26, 1990, Ser. No. 679,063

Claims priority, application Switzerland, Sep. 27, 1989, 3504/89; Aug. 6, 1990, 2557/90

Int. Cl.[5] A61B *10/00*

U.S. Cl. 128—753 **3 Claims**



1. An instrument for the handling of biopsies and specimens, comprising:

a syringe cylinder having a first and a second end, and defining a chamber of variable volume therebetween;

a piston moveable within the chamber to vary the volume of the chamber between a maximum volume when the piston is moved to the first end of the cylinder and a minimum volume when the piston is moved to the second end of the cylinder;

a means of recoil at the first end of the cylinder biasing the piston toward the first end of the cylinder;

a contact means at the second end of the cylinder for making contact with biopsies and specimens, including a contact area and a channel for air flow communicating the contact area with the chamber; and

a microchannel means, including at least one calibrated air channel permanently communicating the chamber with the atmosphere, providing a controlled flow of air into and out of the chamber such that when the piston is at the second end of the cylinder and the contact means is obturated by biopsies or specimens a sufficient volume of air flows into the chamber through the microchannel means to permit the means of recoil to bias the piston toward the first end of the cylinder, and such that when the piston is more rapidly moved from the first and to the second end of the cylinder an insufficient volume of air flows out of the chamber through the microchannel means to prevent the volume of air flowing out of the chamber through the channel for air flow from ejecting the biopsies or specimens from the contact area.

5,255,689

INTERCEPTING APPARATUS SAMPLING URINE FOR EXAMINATION PURPOSES

Rajko Kenda, Staniceva 5b, Ljubljana, Spratly Islands 61000

Filed Apr. 15, 1992, Ser. No. 869,131

Claims priority, application Yugoslavia, Apr. 20, 1991, 714/91

Int. Cl.[5] A61B *5/00*; A61F *5/44*

U.S. Cl. 128—762 **4 Claims**

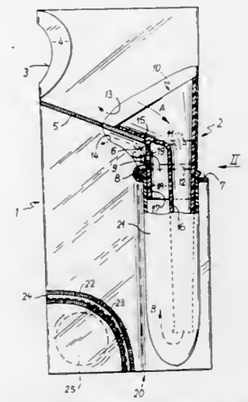
1. An intercepting apparatus for sampling urine for examination purposes and for separation of a last portion of urine from a first portion of urine of a single miction, comprising in combination:

a receptacle (**1**);

a test tube (**21**), and

an inflow funnel/duct insertion (**10**) connected to the test tube for physically dividing the total quantity of urine of a single motion into two portions,

wherein the inflow funnel/duct insertion (**10**) comprises a funnel part (**15**) matingly inserted into an entering chamber (**13**) of the receptacle (**1**) and a socket (**17**) adapted for receiving the test tube (**21**) extending from the receptacle



(**1**), said funnel part (**15**) comprising a duct (**16**) integral with said inflow funnel/duct insertion (**10**) extending longitudinally into said test tube (**21**), a neck portion and a bore (**19**) in said neck portion,

wherein said funnel part receives inflow of urine, a first portion of urine passing through said bore into said receptacle, and a last portion of urine remaining in said test tube.

5,255,690

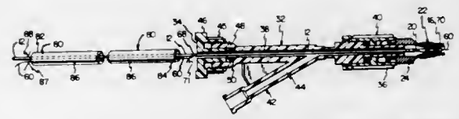
METHOD AND APPARATUS FOR PROXIMAL SUPPORT OF A GUIDE WIRE DURING CATHETER EXCHANGE

Peter T. Keith, Fridley, and Thomas V. Ressemann, St. Cloud, both of Minn., assignors to SciMed Life Systems, Inc., Maple Grove, Minn.

Filed Jul. 16, 1992, Ser. No. 914,873

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—772 **52 Claims**



1. In a catheter system having a guide catheter, a catheter and a guide wire, wherein the catheter includes a guide wire lumen in a distal portion of the catheter with a length of the guide wire lumen being shorter than a length of the catheter, and wherein the guide wire extends through the guide wire lumen and extends with the catheter through a lumen in the guide catheter, a method for withdrawing the catheter from the guide catheter lumen while leaving the guide wire in position through the guide catheter lumen, the method comprising:

providing constraining means positioned proximal to the guide catheter lumen and substantially encompassing the guide wire for preventing the guide wire from bowing and significantly moving laterally away from the catheter;

holding the guide wire proximally adjacent the constraining means to prevent the guide wire from moving longitudinally relative to the guide catheter lumen;

withdrawing the catheter from the guide catheter lumen in a proximal, axial direction until a distal end of the guide wire lumen is proximal of the guide catheter lumen;

holding the guide wire at a point distal of the guide wire lumen to prevent the guide wire from moving longitudinally relative to the guide catheter lumen;

releasing the guide wire proximally adjacent the constraining means; and

withdrawing the catheter in the proximal, axial direction until the guide wire lumen is free from the guide wire.

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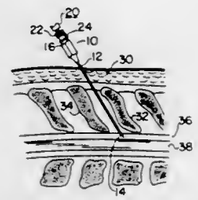
PERCUTANEOUS EPIDURAL LEAD INTRODUCING SYSTEM AND METHOD

Lynn M. Otten, Blaine, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Nov. 13, 1991, Ser. No. 790,928

Int. Cl.[5] A61N *1/05*

U.S. Cl. 607—117 **22 Claims**



1. A method of introducing a flexible member into the epidural space of the spinal column of a patient employing an introducer assembly for achieving access to the epidural space comprising an epidural needle assembly, including an elongated needle having a side opening at its distal tip, a hub at its proximal tip and a lumen extending therebetween, and a stylet removable insertable within the lumen of said needle through said hub and having a beveled tip and a hub, comprising the steps of:

inserting said stylet into the lumen of said needle such that said lumen is filled by said stylet;

providing a locking mechanism on the hub of said stylet and a hub of said needle, wherein locking is effected by rotation of said stylet and said needle until the beveled tip of said stylet is aligned with the side opening of said needle;

rotating and locking said locking mechanism to align said beveled tip of said stylet with said side opening of said needle;

percutaneously inserting the locked needle and stylet assembly between the vertebrae in the patient's spine so that the tip of the epidural needle and stylet assembly is within said epidural space;

unlocking and withdrawing said stylet from the lumen of said needle;

inserting a flexible lead member through the lumen of said needle until the flexible member is positioned in said epidural space; and

withdrawing said needle from the patient while leaving said flexible lead in said epidural space.

5,255,692

SUBCOSTAL PATCH ELECTRODE

Heinz Neubauer, Järfälla; Staffan Bowald, Almunge, and Jakub Hirschberg, Täby, all of Sweden, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 4, 1992, Ser. No. 940,542

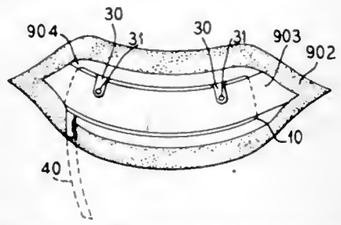
Int. Cl.[5] A61N *1/04*

U.S. Cl. 607—122 **21 Claims**

1. An electrode for implantation in a patient and for connection through a lead to a heart stimulation/sensing system, said electrode comprising an active electrode element of conductive material and having a shape and size conforming to an

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interspace between the periost and the bone at the inner side of a rib proximal to the heart of said patient for locating said

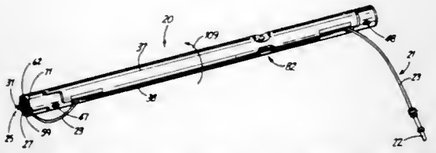


electrode at said interspace, and having fixing means for fixing said electrode element to said rib.

5,255,693
CARDIAC LEAD

Robert G. Dutcher; John C. Hill, and Robert J. Scott, all of Minneapolis, Minn., assignors to Possis Medical, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 707,681, May 30, 1991, Pat. No. 5,143,090, which is a continuation-in-part of Ser. No. 600,627, Oct. 22, 1990, Pat. No. 5,040,545, which is a division of Ser. No. 430,596, Nov. 2, 1989, Pat. No. 4,972,847. This application Jun. 10, 1992, Ser. No. 896,663
Int. Cl.[5] A61N *1/05*
U.S. Cl. 607—120 **18 Claims**

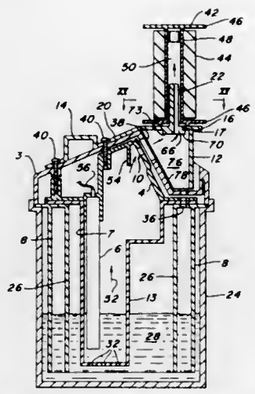


1. A cardiac lead connectable to a cardiac management device for transmitting electric current to and/or receiving electrical signals from the myocardium of the heart comprising: an elongated flexible conductor wire means, sheath means of non-electrical conductive material surrounding said conductor wire means, an electrical connector attached to the wire means adapted to be connected to a cardiac management device, a head of non-electrically conductive material connected to said conductor wire means and sheath means, a helical electrode having a first end section extended into said head and connected to said conductor wire means and a helical second end section extended from said head adapted to be screwed into the myocardium of a heart, said second end section having an outer helical surface terminating in a point, a layer of platinum black particles attached to substantially the entire outer helical surface of the second end section, said layer of platinum black particles having generally uniform particle size and generally uniform distribution on said outer surface of the second end section of the electrode whereby said layer has a continuous and generally uniform microporous outer platinum black surface locatable in surface contact with the myocardium of the heart whereby said layer of platinum black particles decreases electrical losses at the electrode-tissue interface, establishes intimate contact between the electrode and myocardium, and maximizes voltage applied to said myocardium and lowers stimulation thresholds and increases amplitude of sensed electrical signals from the myocardium.

5,255,694
HAIR CURLER STEAMER HAVING IMPROVED CURLER SUPPORT

Richard B. Caruso, 619 Croyden Rd., Cheltenham, Pa. 19102

Filed Sep. 5, 1991, Ser. No. 755,124
Int. Cl.[5] A45D *6/06*
U.S. Cl. 132—228 **17 Claims**



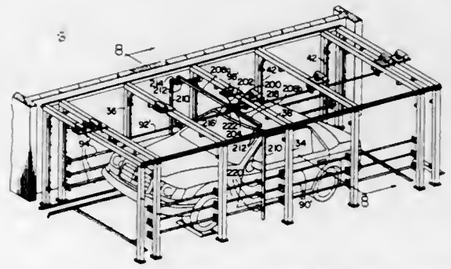
1. An apparatus for curling hair, comprising:
a) a vessel forming a cavity for containing water;
b) means for transforming at least a portion of said water contained in said cavity to steam;
c) a cover disposed atop said vessel;
d) a hair curler having a longitudinally extending core forming a steam passage, said core having a plurality of longitudinally extending openings spaced therearound for discharging steam flowing therein; and
e) a supply member for supporting said hair curler while said steam is introduced therein, said support member mounted on said cover and having a first steam discharge port formed therein in flow communication with said cavity, a portion of said support member forming a post disposed in said first steam discharge port, said post extending into said steam passage in said hair curler when said hair curler is supported on said support member, said post forming a longitudinally extending central portion having at least three longitudinally extending spokes extending radially outward therefrom, the number and circumferential spacing of said spokes and the number and circumferential spacing of said openings in said hair curler core being such that no more than one of said spokes can be adjacent said openings when said post extends into said hair curler steam passage.

5,255,695
VEHICLE WASHING APPARATUS

Emil Downey, 34 Connecticut Blvd., East Hartford, Conn. 06108

Continuation-in-part of Ser. No. 663,663, Mar. 1, 1991, abandoned. This application Dec. 17, 1991, Ser. No. 807,760
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—123 **11 Claims**

7. A vehicle washing apparatus comprising:
a frame including a plurality of generally U-shaped archways through which a vehicle to be washed can pass, each of said archways including two lateral, vertically mounted support posts, each having upper and lower ends, and a cross beam connected between the upper ends of the posts;
a source of washing fluid;
fluid conduit means mounted on the U-shaped archway and including a plurality of spray nozzles spaced along the conduit means for delivering a washing fluid in a spray onto a vehicle passing through the archway, the conduit means including first and second vertically disposed conduit sections with spray nozzles, the first section extending generally vertically along the one support post of the archway and the second section extending generally vertically along the other support post, each section being pivotally mounted to the respective support posts for pivotal rotation about the vertically extending axes of the conduit sections;
said fluid conduit means further including a third conduit section extending generally horizontally between the upper ends of the support posts and pivotally mounted to the archway for pivotal rotation about the horizontal axis of the section, the third conduit section having a plurality of spray nozzles and being connected in fluid communication with the pump means for spraying washing fluid in a vertical arc onto a vehicle adjacent the archway;
pump means connected between the source of washing fluid and the conduit means for pumping washing fluid under pressure through the conduit means and spray nozzles;



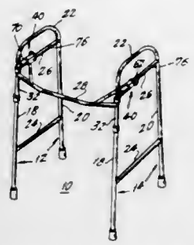
pivotal drive means connected with each of the conduit sections for pivotally rotating the vertically disposed conduit sections about the section axes and sweeping spray from each of the nozzles in a horizontal arc over a vehicle adjacent the archway;
a plurality of horizontally disposed conduits each being pivotally supported in said frame for rotation on horizontal axes, said plurality of horizontally disposed conduits having inwardly directed nozzles and being connected to said pump means for pumping washing fluid under pressure through each of said nozzles in a vertical arc;
said plurality of horizontally disposed conduits being arranged laterally inwardly of the vertical support posts of said plurality of archways such that at least two horizontal conduits extend along each side of the path followed by a vehicle passing through the archways; and
linkage means drivingly connecting each of said horizontally disposed conduits with said drive means for causing said horizontally disposed conduits to be oscillated by the same drive means as that provided for said vertically disposed conduit sections.

5,255,696
WALKER RELEASE BUTTON

Frederic Leonard, Summit, N.J., assignor to Diamond Medical Equipment Corp., Mount Vernon, N.Y.

Filed May 17, 1991, Ser. No. 702,614
Int. Cl.[5] A61H *3/00*
U.S. Cl. 135—67 **19 Claims**

1. walker, comprising:
a left side frame and a right side frame, each side frame having a generally vertically extending front leg and a generally vertically extending rear leg and a horizontally extending upper rib connected at one end thereof to said front leg and at another end thereof to said rear leg, said upper rib having a detent catch therein;
a front frame pivotally connected on opposed ends thereof to the left and right side frames, in a manner that enables the side frames to be moved between closed and open positions;
a first and a second corner brace connected respectively between the front frame and the left and right side frames;
each said corner brace including:

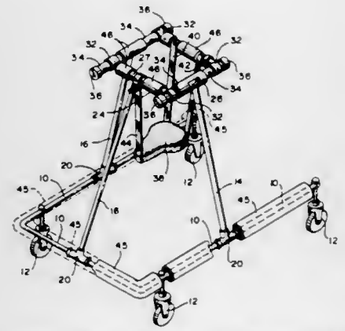


a locking sleeve slidable on the upper rib, said locking sleeve being substantially shorter than said upper rib and fully disposed thereon between said front leg and said rear leg;
a detent in the locking sleeve and biased to snap into the catch formed in the upper rib; and
a connecting rod connecting the locking sleeve to the front frame.

5,255,697
WALKING SUPPORT APPARATUS

William K. Grauer, Media, Pa., assignor to Working Inc., Media, Pa.

Filed Oct. 23, 1991, Ser. No. 781,415
Int. Cl.[5] A61H *3/00*
U.S. Cl. 135—67 **21 Claims**



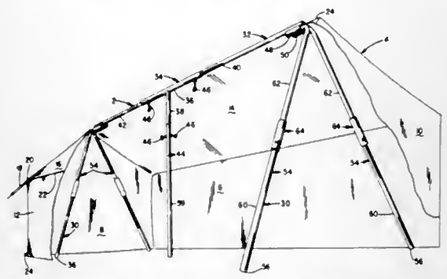
12. A walking support apparatus for at least partially supporting a user comprising:
a lower frame of a generally U shape having an open end and a closed end, said U shape being formed by first and second lateral members and a front member, said open end being at the rear of said frame and the closed end being at the front of said frame;
three vertical support members, each having an upper and a lower end, one of said vertical support members being attached at said lower end to a respective one of said lateral members of said lower frame and one attached at said lower end to the front member of said frame, said vertical support members being attached for rotation on their respective lower frame members;
an upper frame comprising first and second lateral members, a front member and a rear member, said upper frame members forming an enclosed area above said lower frame, said rear upper frame member being selectively removable to allow the user to enter said enclosed area formed by the assembled upper frame;

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means for releasably attaching said upper frame to said vertical support members whereby upon removal of said upper frame members from said vertical support members, said vertical support members may be rotated on their respective lower frame members to an approximate horizontal position forming a compact assembly for ease of transport; and

wheel means attached to said lower frame for rolling support of said apparatus.

5,255,698
COLLAPSIBLE TENT FRAME
Orville Riley, P.O. Box 817, Townsend, Mont. 59644
Filed Apr. 13, 1992, Ser. No. 867,508
Int. Cl.[5] E04H *15/38*
U.S. Cl. 135—103 **6 Claims**



1. An internally mounted tent support assembly for a tent having longitudinal ends and a longitudinal length, said tent support assembly comprising:

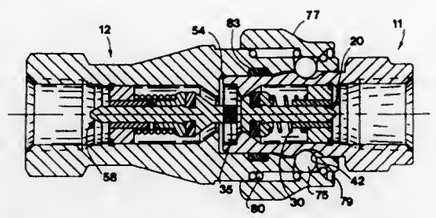
(a) first and second end support means for supporting each of the longitudinal ends and each comprising a bent end and a pair of first and second pole sections which mount in coaxial alignment with one another at a coupler means for supporting inner and outer end surfaces of the first and second poles;

(b) ridge support means for supporting a longitudinal length of the tent and including a ridge pole, first and second slip coupler means secured at opposite ends of the ridge pole for each slidably receiving said bent ends of ones of said first and second end support means, whereby an inverted V-shaped support is obtained at each end of the tent upon mounting said first and second end support means to the ridge pole; and

(c) vertical support means telescopically receiving said ridge pole and for adjusting the height of the ridge pole relative to the end support means.

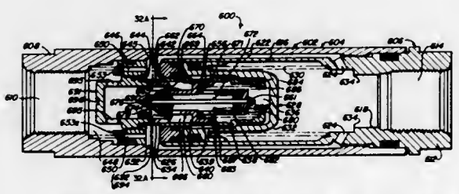
5,255,699
NIPPLE WITH INTEGRAL CROSSBAR ACTUATOR AND CHECK VALVE
Eugene H. Herzan, Minnetonka, and Dennis C. Giesler, Maple Grove, both of Minn., assignors to Parker-Hannifin Corporation, Cleveland, Ohio
Filed Dec. 7, 1992, Ser. No. 986,376
Int. Cl.[5] F16L *37/28*
U.S. Cl. 137—1 **20 Claims**

1. A quick-connect nipple for connecting with a quick-connect coupler including a normally closed poppet valve and a locking mechanism for locking said nipple in the coupler upon axial insertion of the nipple into the coupler, said nipple comprising a nipple body having a passage extending axially between front and rear ends thereof, a check valve mounted in said nipple body for movement between open and closed positions, and poppet valve actuator means separate from said check valve for mechanically engaging the poppet valve of the coupler upon insertion of said nipple into the coupler so as to open the coupler's poppet valve independently of said check valve, and said nipple body being configured with means en-



gageable by the locking mechanism of the coupler for releasably holding said nipple body in the coupler.

5,255,700
CAPACITY FUSE VALVE
Eric J. Saville, Alta Loma, Calif., assignor to Pneu-Draulics, Inc., Rancho Cucamonga, Calif.
Continuation-in-part of Ser. No. 470,867, Jan. 26, 1990, abandoned, which is a continuation-in-part of Ser. No. 229,848, Aug. 8, 1988, abandoned. This application Jun. 13, 1991, Ser. No. 714,931
Int. Cl.[5] F16K *21/16*
U.S. Cl. 137—101 **33 Claims**



1. A capacity fuse valve which closes in response to passage of a predetermined fluid volume through the valve, comprising:

a valve body having a fluid inlet and a fluid outlet,

flow proportioning means in said body including main flow port means and control flow orifice means for dividing the fluid entering said inlet into a main flow which passes through said port means to said outlet and a control flow which passes through said orifice means, and means for adjusting the effective areas of said port means and said orifice means in response to the pressure of the fluid entering through said inlet in such a way as to maintain a substantially fixed ratio of the control flow rate to the main flow rate regardless of the flow rate of the entering fluid,

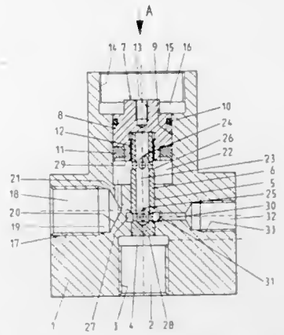
means for adjusting said flow rate ratio, and

shutoff valve means responsive to the total volume of said control flow for blocking main flow through the valve in response to a predetermined total control flow volume.

5,255,701
HYDRAULIC PRESSURE REGULATOR
Rolf Schiefer, Arnoldstrasse 14, D-4050 Mönchengladbach 2, Fed. Rep. of Germany
PCT No. PCT/DE91/00971, § 371 Date Jul. 30, 1992, § 102(e) Date Jul. 30, 1992, PCT Pub. No. WO92/10799, PCT Pub. Date Jun. 25, 1992
PCT Filed Dec. 2, 1991, Ser. No. 917,039
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1990, 9016844[U]
Int. Cl.[5] G05D *16/10*
U.S. Cl. 137—116.3 **5 Claims**

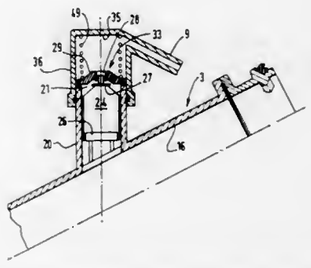
1. A hydraulic pressure regulator comprising a control piston disposed in a regulator housing comprising a control piston

disposed in a regulator housing between an inlet pressure chamber and an outlet pressure chamber for a hydraulic medium, characterised in that the control piston (7) is adapted to be doubly acted upon and the inlet pressure of the hydraulic medium to be regulated acts on the control piston (7) on the one hand and a resilient control pressure force (A) acts on the control piston (7) on the other hand, and that the control piston (7), on its side towards the inlet pressure, has a smaller piston surface (28) which is proved on a lower projecting piston part (6) and which is directly towards the inlet pressure medium and a larger piston surface (20) which is provided on an upper



piston part (8), and the lower piston part (6) has a flow duct (23) for the hydraulic medium, which opens beneath the larger piston surface (29) into an upper annular groove (26) in the control piston and which opens into a lower annular groove (27) at the lower piston part (6) laterally at a spacing relative to the smaller piston surface (28), and that upon a reduction in the resilient control pressure force (A) the control piston (7) is moved into a position in which the flow duct (23) is closed off relative to the inlet pressure chamber (2) and at the same time fluid pressure of the hydraulic medium obtaining in a relief chamber 22 on the outlet side of the control piston (7) adjacent the large piston surface (29) is released.

5,255,702
VENTING SYSTEM FOR A FUEL TANK
Maurice Journee, Reilly; Pierre-André Hyernard, Paris, and Christian Romanek, Noailles, all of France, assignors to Paul Journee S.A., Colombes Cedex, France
Filed May 20, 1991, Ser. No. 702,373
Claims priority, application France, May 23, 1990, 90 06434
Int. Cl.[5] F16K *24/00*
U.S. Cl. 137—202 **1 Claim**



1. A system for filling the tank of a motor vehicle with fuel and for venting fuel vapor comprising:

a filling pipe with a neck portion connected to said tank and an open end,

means for selectively closing and sealing the open end,

duct means and valve means joined to said neck portion, said duct means capable to discharge excess fuel to atmosphere and cooperating with said valve means to define a passage for continuously venting said tank while said filling pipe end is closed,

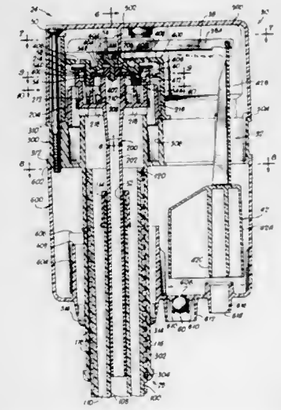
said valve means including a safety valve portion which is in the open position during normal operation for interconnecting the tank through said duct means to atmosphere and an auxiliary valve portion responsive to failure of said safety valve portion, for ensuring uninterrupted tank venting in the event said safety valve portion is in the closed position,

wherein said duct means includes a gas vent duct,

a fuel having an inlet and an outlet, said inlet communicating with the tank and the filling pipe neck portion and said outlet communicating with said fresh air duct,

said safety valve portion responding to fuel surging into the filling pipe by changing to the closed position so as to prevent escape of fuel while the vehicle is operated and said auxiliary valve portion allowing the correction of pressure differences between tank interior and outside air, said auxiliary valve portion continuing the correction during failure of the safety valve portion to return to the open position.

5,255,703
FLOAT OPERATED FILL VALVE
Dwight N. Johnson, 6327 Chorlito Dr., Carlsbad, Calif. 92008
Filed Jul. 8, 1992, Ser. No. 909,386
Int. Cl.[5] F16K *31/22, 33/00*
U.S. Cl. 137—428 **7 Claims**



1. A fill valve assembly for maintaining a liquid level in a tank, said assembly comprising:

a liquid inlet conduit;

a valve having an inlet communicating with said inlet conduit and an outlet communicating with said tank;

a float chamber within the tank, said float chamber including a bottom wall;

a dam spaced above said bottom wall permitting liquid communication between the tank and said float chamber when liquid level in the tank rises to the elevation of said dam;

a float mounted for floating movement between upper and lower positions within said float chamber;

connecting means connected between said float and said valve for opening said valve in response to downward movement of said float and for closing said valve in response to upward movement of said float;

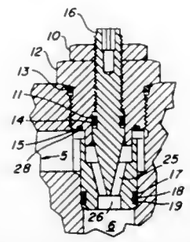
means for draining said float chamber when the

continuous liquid level in the tank is below said bottom wall; and

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means for providing a flow path in parallel flow relationship with said dam for permitting continuous liquid communication between the tank and said float chamber whenever said float is above said lower position.

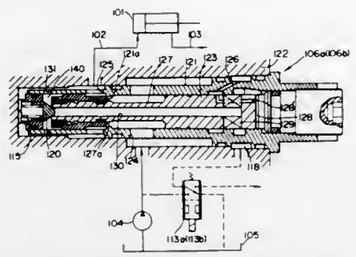
5,255,704
LEAKPROOF HYDRAULIC VALVE
Barry D. Bennett, Harleysville, Pa., assignor to Technical Products & Precision Manufacturing Co., Hatfield, Pa.
Filed Jan. 27, 1993, Ser. No. 9,663
Int. Cl.[5] F16K *25/00*
U.S. Cl. 137—454.5 **9 Claims**



1. A cartridge-type hydraulic valve, comprising:
a manifold cavity having entry and exit fluid ports;
a gland removably secured within said manifold cavity, said gland having a circular valve seat in the bottom thereof;
a valve stem having a piston at the bottom, said stem and piston being movable within said gland between open and closed valve positions, the top end of said piston being in contact with said valve seat when said valve is in the closed position;
a plurality of piston ports open through opposing top and bottom ends of said piston, said piston ports being radially divergent upward from a central point at the bottom end of said piston to points around the circumference of the top end of the piston in the area of the valve seat; and
said bottom of said piston being in fluid communication with said entry port and the top of said piston being in fluid communication with said exit port, whereby movement of said piston selectively restricts the flow of fluid through said manifold cavity.

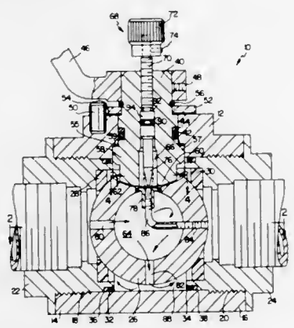
5,255,705
HYDRAULIC PRESSURE CONTROL SYSTEM
Kazuo Uehara, Tokyo; Tadao Karakama, Kawasaki; Sadao Nunotani, Hiratsuka; Naoki Ishizaki, Kamakura, and Masayuki Tanaami, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
Division of Ser. No. 8,386, Jan. 28, 1987, abandoned. This application Jun. 24, 1988, Ser. No. 210,245
Claims priority, application Japan, Jan. 30, 1986, 6-16934; Jun. 12, 1986, 61-135011; Sep. 30, 1986, 61-230029
Int. Cl.[5] F15B *13/042*; F16K *31/383*; G05D *7/01*
U.S. Cl. 137—489 **6 Claims**

1. A hydraulic pressure control system comprising:
a flow control valve including an input port connected to a hydraulic source, an output port connected to a hydraulic actuator, a valve body for opening and closing a path between the input port and the output port, a pilot input port for inputting pilot oil, a first oil chamber for energizing the valve body in an opening direction by introducing the pilot oil from the pilot input port, the first oil chamber being formed at one end of the valve body, a second oil chamber formed the other end of the valve body, and a variable throttle means fluidically coupling the pilot input port and the second oil chamber, for increasing the fluid flow therethrough as the valve body moves in the opening direction, the second oil chamber being fluidically coupled to the output port, whereby when hydraulic pressure at the output port exceeds that at the first oil chamber pressure in the second oil chamber will energize the valve body in a closing direction thereby reducing fluid flow through the variable throttle means and increasing pilot oil pressure in the first oil chamber, wherein said flow



control valve includes a check valve provided between the variable throttle and the second oil chamber for preventing adverse flow of oil from the second oil chamber; and
a pilot valve for controlling the supply of the pilot oil to the pilot input port.

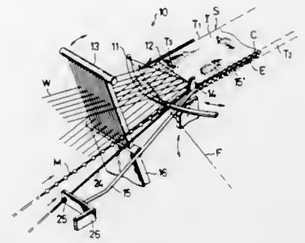
5,255,706
HIGH-PRESSURE BALL VALVE WITH INTERNAL PRESSURE EQUALIZATION
Stanislav Chudakov, Bethlehem, Pa., assignor to Hycon Corporation, Bethlehem, Pa.
Filed Nov. 20, 1992, Ser. No. 979,503
Int. Cl.[5] F16K *5/06*
U.S. Cl. 137—637.3 **9 Claims**



1. A fluid control valve comprising a valve body having an inlet and an outlet, a floating control member in the valve body externally operable by a separate movable operating member, the control member being pivotable between open and closed positions for selectably controlling fluid flow between the inlet and the outlet, the control member having a passage therethrough for selectably permitting substantially unrestricted fluid flow from the inlet to the outlet when the control member is in the open position, conduit means through the control member and having a first end and a second end, the first end being in fluid communication with the inlet through an annular space around said control member, said annular space being in fluid communication with said inlet end when said control member is in the closed position and the second end being in fluid communication with the outlet when the control member is in the closed position, and secondary valve means at the conduit first end and in sealing engagement between said conduit first end and said annular space, said secondary valve means being operable between open and closed positions for

selectably opening and closing the first end of the conduit means independent of movement of the operating member.

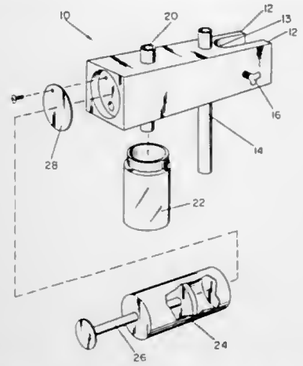
5,255,707
DOUBLE REED APPARATUS FOR MANUFACTURING A WOVEN SLIDE FASTENER STRINGER
Masaaki Kojima, and Yoshinori Nakada, both of Kurobe, Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan
Filed Oct. 9, 1992, Ser. No. 959,091
Claims priority, application Japan, Oct. 9, 1991, 3-327988
Int. Cl.[5] D03D *49/68*
U.S. Cl. 139—116.1 **14 Claims**



1. An apparatus for manufacturing a woven slide fastener stringer having a woven support tape an a continuous fastener element woven into and along a longitudinal edge thereof, said apparatus comprising:
(a) means of weaving a tape with warp threads and weft threads or filling yarns to form an elongate tape;
(b) a mandrel having a shaping portion extending substantially parallel with said warp threads beyond a fell of said tape and adapted to wind and shape thereon a monofilament into a helical coil structure having a row of successively interconnected convolutions each having a coupling head portion, a pair of upper and lower leg portions and a heel portion;
(c) a first reed having a first surface adapted and arranged for beating the weft threads or filling yarns in a warp shed against the fell of said tape;
(d) a second reed having a second surface adapted and arranged for beating each of said convolutions successively one after another into said row of convolutions in place along the longitudinal edge of said tape; and
(e) an actuating means for pivotally moving said first and second reeds toward and away from the fell of said tape, for alternately beating said weft-threads or filling yarns and said row of convolutions respectively by said first and second surfaces.

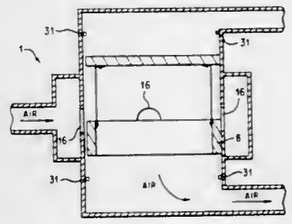
5,255,708
METHOD AND APPARATUS FOR FILLING MOTORCYCLE FORKS
Anthony G. Liparoto, 6528 Flynn, NW., Albuquerque, N. Mex. 87120, and Dominic Liparoto, Albuquerque, N. Mex., assignors to Anthony G. Liparoto, Albuquerque, N. Mex.
Filed Jan. 10, 1992, Ser. No. 819,382
Int. Cl.[5] B65B *3/00*
U.S. Cl. 141—67 **9 Claims**

1. Apparatus for accurately measuring and filling motorcycle front forks comprising:
means comprising a horizontally planar platform for mounting proximate a motorcycle front fork;
means adjustably mounted on said means comprising a horizontally planar platform for measuring fork fluid within a motorcycle front fork;
means mounted on said means comprising a horizontally planar platform for storing said fork fluid; and
means mounted on said means comprising a horizontally planar platform for pumping said fork fluid through said



means for measuring said fork fluid to said means for storing said fork fluid.

5,255,709
FLOW REGULATOR ADAPTABLE FOR USE WITH PROCESS-CHAMBER AIR FILTER
David Palmer, 200 Berkeley Rd., North Andover, Mass. 02174
Continuation-in-part of Ser. No. 669,746, Mar. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 405,835, Sep. 11, 1989, Pat. No. 5,000,221, which is a continuation-in-part of Ser. No. 178,505, Apr. 7, 1988, abandoned. This application Mar. 13, 1992, Ser. No. 852,084
Int. Cl.[5] G05D *7/01*
U.S. Cl. 137—501 **38 Claims**



1. A device for regulating the flow of fluid from a source, the device comprising:
an input, through which fluid from the source passes;
impedance means, movably mounted proximate to the input, for variably impeding at a constriction point fluid flowing from the source, wherein the impedance means is disposed so that fluid pressures acting directly on the impedance means exert a force on the impedance means substantially perpendicular to the impedance means's direction of movement;
a movably mounted piston having a distal face, exposed to a reference pressure, and a frontal face, exposed to fluid downstream from the constriction point, wherein the only fluid pressures acting on the piston in the direction of piston movement are the reference pressure and the fluid pressure downstream from the constriction point, the impedance means and the piston being attached to each other, so that an increase in pressure on the distal face of the piston tends to lessen the impedance on the fluid flow, and an increase in pressure on the frontal face of the piston tends to increase the impedance on the fluid flow; and
restoring means for exerting a force on the piston so as to

VOL 1155 ISS 4 OCT 26 1993 UMI

tend to cause the impedance means to lessen the impedance on the fluid flow.

5,255,710

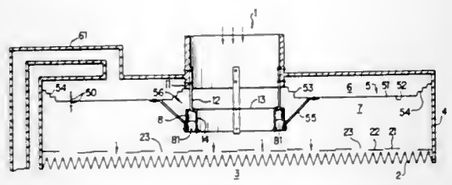
PROCESS-CHAMBER FLOW CONTROL SYSTEM

David Palmer, 200 Berkeley Rd., North Andover, Mass. 02174

Continuation-in-part of Ser. No. 669,746, Mar. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 405,835, Sep. 11, 1989, Pat. No. 5,000,221, which is a continuation-in-part of Ser. No. 178,505, Apr. 7, 1988, abandoned. This application Mar. 13, 1992, Ser. No. 851,017

Int. Cl.[5] G05D *7/01*

U.S. Cl. 137—501 5 Claims



1. A system for controlling air flow between an environment and a pressure source having a pressure that differs substantially from the environment's pressure and that varies more quickly than the environment's pressure, the system comprising:

a regulator, having a plenum disposed in a conduit between the environment and the pressure source, for maintaining in the plenum a pressure that is between the pressures of the environment and the pressure source and that is a constant amount different from the environment's pressure, the conduit having a rigidly mounted wall, the regulator including a movably mounted member, which includes a piston having a frontal face exposed to air in the plenum flowing between the environment and the pressure source, the piston further having a distal face exposed to the environment's pressure, the piston defining an aperture through which air may flow between the plenum and the pressure source, the member being mounted with respect to a portion of the conduit wall so as to variably constrict the conduit between the member and the conduit wall and variably impede the flow of air through the regulator, so that the weight of the member tends to move the member in a direction so as to lessen the member's impedance on the air flow, and so that changes in the pressure source's strength does not affect the plenum pressure; and

an adjustable valve, located between the regulator and the environment, for further impeding the flow of air.

5,255,711

SPRING-LOADED PRESSURE REGULATING VALVE INCLUDING ROLLING DIAPHRAGM AND COMPENSATION FOR VARIATION OF SPRING FORCE WITH DIAPHRAGM DISPLACEMENT

John W. Reeds, Thousand Oaks, Calif., assignor to Hughes Aircraft Company, Los Angles, Calif.

Filed Aug. 28, 1992, Ser. No. 936,974

Int. Cl.[5] G05D *16/02*

U.S. Cl. 137—505.41 4 Claims

1. A fluid pressure control mechanism, comprising:

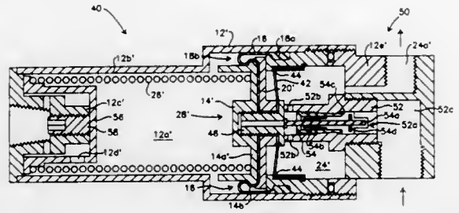
a rolling diaphragm having a first face exposed to a fluid whose pressure is to be controlled;

a spring for urging the diaphragm against said pressure; and

compensation means for varying the effective diameter of the diaphragm as a predetermined function of the longitudinal position of the diaphragm such that the force exerted on the diaphragm by said pressure is maintained in a predetermined relationship to the force exerted on the diaphragm by the spring, in which said compensation means varies the effective diameter of the diaphragm as a predetermined function of the longitudinal position of the diaphragm such that the force exerted on the diaphragm by said pressure is maintained substantially equal to the force exerted on the diaphragm by the spring, and

wherein said mechanism further comprises:

valve means actuated by the diaphragm for controlling said pressure, and the valve means controls communication between said first face of the diaphragm and a high pressure source of said fluid; and



bistable means for urging the diaphragm toward a first longitudinal position in which the valve means is open when said pressure drops below a first predetermined value; and toward a second longitudinal position in which the valve means is closed when said pressure rises above a second predetermined value which is higher than said first predetermined value.

5,255,712

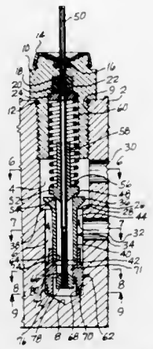
CHECK VALVE PULL ASSEMBLY

Raymond K. Foster, P.O. Box 1, Madras, Oreg. 97741

Filed Oct. 28, 1992, Ser. No. 967,752

Int. Cl.[5] F16K *15/18*

U.S. Cl. 137—522 10 Claims



1. In a check valve of a type having a housing defining an axially extending cavity divided by a valve orifice into a first portion and a second portion, first and second axially spaced ports communicating with said first and second portions of said cavity, respectively, a primary valve seat surrounding said orifice, a valve member positioned to be urged against said seat by pressure in said first port and to be moved away from said seat by pressure in said second port, and a control member positioned to engage said valve member to mechanically move said valve member away from said seat, the improvement comprising a passageway communicating with said first and second portions; a closure surface carried by said control member; and a spring normally biasing said closure surface to close said passageway; said control member being movable to pull said closure surface to open said passageway and thereby allow pressure on opposite ends of said valve member to substantially equalize, to facilitate movement of said valve member away from said seat in response to a pulling force on said valve member caused by continued movement of said control member.

5,255,713

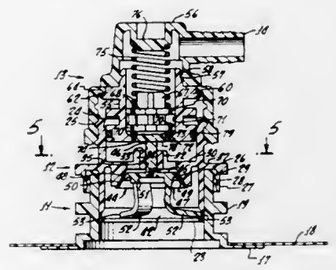
VALVE WITH INTEGRAL PLASTIC SPRING FOR POPPET

William J. Scholle, and Chester Savage, both of Irvine, Calif., assignors to Scholle Corporation, Irvine, Calif.

Filed Jan. 10, 1992, Ser. No. 819,268

Int. Cl.[5] F17D *1/08*

U.S. Cl. 137—614.04 20 Claims



1. A flow control device comprising

a valve body having a wall defining an internal passageway having an inlet end and an outlet end,

a valve seat in said passageway, and

a poppet engageable with said valve seat for controlling flow through said passageway,

said poppet being of plastic material and including a plurality of integral resilient elements projecting therefrom toward said inlet end,

said valve body having retention abutment means on said wall adjacent said inlet end,

said resilient elements being bent radially outwardly away from the longitudinal axis of said passageway so that the outer ends thereof engage said retention abutment means and are retained thereby, said resilient elements being remote from said wall other than at said outer ends thereof, and said resilient elements act as leaf springs which exert a resilient force biasing said poppet toward said valve seat for closing said passageway.

5,255,714

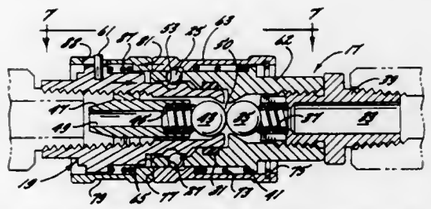
QUICK-ACTION FLUID COUPLING

Randall J. Mullins, Matthews, N.C., assignor to Perfecting Services, Inc., Charlotte, N.C.

Filed Nov. 13, 1992, Ser. No. 975,822

Int. Cl.[5] F16L *37/28*

U.S. Cl. 137—614.04 27 Claims



17. A quick-action fluid coupling for fluid conducting lines, characterized by push-to-connect, pull-to-disconnect features, said coupling comprising:

a generally cylindrical socket having an axial fluid flow passage therethrough;

a generally cylindrical mating plug defining a coupling end for being received in said socket in coaxial coupled relation therewith, said socket defining a plug receiving end, and said mating plug having a corresponding axial fluid flow passage therethrough so that when said mating plug is received in said socket a single fluid flow passage is defined through said plug and said socket;

a plurality of ball detents retained in ball retaining apertures defined by said socket adjacent said plug receiving end of said socket for securing said mating plug in coaxial coupled relation with said socket, said ball detents being movable radially inwardly and outwardly with respect to said mating plug;

an annular groove in said mating plug for engaging said ball detents when said socket and said mating plug are secured in coaxial coupled engagement;

an annular socket sleeve carried by said socket, said socket sleeve having an annular groove for engaging said ball detents in a radially outward position and an adjacent projecting shoulder for engaging said ball detents in a radially inward position, said annular socket sleeve being longitudinally movable for alternately maintaining said ball detents in a radially inward position and for engaging said ball detents in a radially outward position, said socket sleeve and said socket defining a first passage therebetween;

a first helical compression spring located in said first passage for biasing said socket sleeve against said socket toward said plug receiving end to provide for receipt of said ball detents in a radially outward position when said plug is inserted into said socket;

an annular plug sleeve carried by said plug, said plug sleeve defining at one end thereof an annular end abutment for engaging said socket sleeve, said socket sleeve also defining an annular end abutment for being engaged by said plug sleeve, said plug sleeve and said plug defining a second passage therebetween;

a second helical compression spring of greater strength than said first helical compression spring located in said second passage for biasing said plug sleeve against said plug toward said coupling end;

first and second annular ramps on said plug for urging said ball detents radially outwardly into engagement with said annular groove on said socket sleeve as said plug is being inserted into said socket and is being removed from said socket, respectively;

said first annular ramp urging said ball detents into engagement with said annular groove in said socket sleeve as said plug is inserted into said socket to hold said socket sleeve relative to said socket as said plug sleeve engages said socket sleeve to compress said second helical compression spring, so that when said annular groove in said plug comes into registry with said ball retaining apertures, said groove on said plug receives said ball detents, said socket sleeve is released, said second helical compression spring compresses said first helical compression spring, and said socket sleeve snaps under the bias of the second helical compression spring to bring said projecting shoulder into registry with said ball retaining apertures and to secure said plug and said socket in coaxial coupled relation, said socket and said plug sleeves being movable against the bias of said second helical compression spring when said plug and said socket are held in coaxial coupled relation to bring said annular groove in said socket sleeve into registry with said ball retaining apertures, said second ramp on said plug urging said ball detents radially outwardly into engagement with said annular groove on said socket sleeve under the bias of said second compression spring, so that said socket sleeve releases said plug from said socket.

21. The coupling of claim 17 wherein said plug and said

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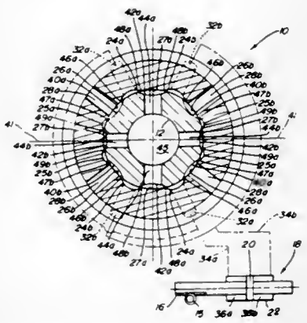
socket further comprise valves and means for biasing said valves for stopping flow through said axial flow passages when said socket and plug are not in coaxial coupled engagement, said valve means cooperating to define said single flow passage through said socket and plug when in coaxial coupled engagement, and said valve means further cooperating to urge said plug out of said socket when said plug is released from said socket.

5,255,715

CONTROL VALVE HAVING PARALLEL DIVERSIONARY SLOTS INTERCONNECTED BY FLOW SELECTIVE CONTROL ORIFICES

Edward H. Phillips, Troy, Mich., assignor to Techco Corporation, Troy, Mich.

Filed Sep. 16, 1992, Ser. No. 945,520
Int. Cl.[5] F15B *11/08*
U.S. Cl. 137—625.23 1 Claim



1. An open-center improved valving sub-assembly of the type used for power steering systems for motor vehicles, comprising:

a valve spool member having first and second sets of input slots and first and second sets of return slots,

a valve sleeve member circumferentially disposed about said valve spool member and having output slots linked fluidically to said first set of input slots by input flow control orifices comprising overlapping tangentially disposed areas therebetween and to said first set of return slots by return flow control orifices comprising overlapping tangentially disposed areas therebetween, and diversionary slots linked fluidically to said second set of input slots by input flow selective control orifices comprising overlapping tangentially disposed areas therebetween and to said second set of return slots by return flow selective control orifices comprising overlapping tangentially disposed areas therebetween wherein,

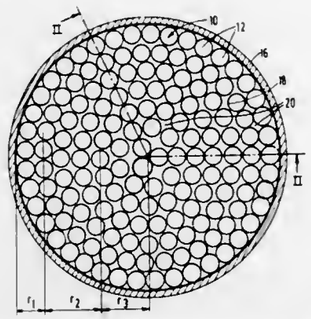
said input flow selective control orifices and said return flow selective control orifices are tangentially shorter in length than said input flow control orifices and said return flow control orifices whereby a first set of said input flow selective control orifices and said return flow selective control orifices closes before a corresponding first set of said input flow control orifices and said return flow control orifices as the valve spool member is moved in a first rotational direction with respect to the valve sleeve member and a second set of said input flow selective control orifices and said return flow selective control orifices closes before a corresponding second set of said input flow control orifices and said return flow control orifices as the valve spool member is moved in the opposite rotational direction with respect to the valve sleeve member.

5,255,716

PIPE RECTIFIER FOR STABILIZING FLUID FLOW

Paul L. Wilcox, Haugesund, Norway, assignor to Total Compagnie Francaise des Petroles, Paris, France and Den Norske Stats Oljeselskap AS, Stavanger, Norway

Continuation of Ser. No. 449,265, Dec. 12, 1989, abandoned. This application May 23, 1991, Ser. No. 707,252
Claims priority, application France, Dec. 13, 1988, 88 16380
Int. Cl.[5] F15D *1/00*
U.S. Cl. 138—44 5 Claims



1. A rectifier for stabilizing fluid flow in a pipe (16), comprising: a cylindrical element (10) of constant axial length and having a diameter equal to the interior diameter of the pipe (16), said cylindrical element defining a multiplicity of uniformly distributed, cylindrical, axially parallel, tubular through passages (12) and a multiplicity of interstices defined between adjacent passages by outer surfaces thereof, said passages having the same diameter and being equidistant from each other, fluid flow blockage means closing interstices (18) located between passages disposed in a median ring (r_2) of the rectifier, while interstices (20) located between passages disposed in an outer peripheral ring (r_1) and in a central zone (r_3) of the rectifier remain open to fluid flow to thereby establish a more uniform flow velocity distribution across the pipe.

5,255,717

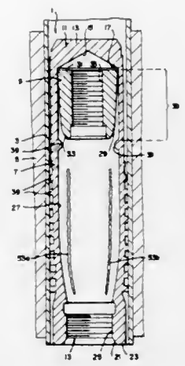
SYSTEM FOR REMOVING A PLUG FROM A HEAT EXCHANGER TUBE

Lawrence A. Nelson, Penn Township, Westmoreland County; George D. Fulmer, Hempfield Township, Westmoreland County; George G. Elder, Monroeville, and Robert F. Keating, Trafford, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 298,441, Jan. 18, 1989, abandoned, which is a division of Ser. No. 50,799, May 18, 1987, Pat. No. 4,829,660. This application Sep. 18, 1990, Ser. No. 584,369
Int. Cl.[5] F16L *55/10*
U.S. Cl. 138—89 6 Claims

1. An improved plug for plugging a conduit of the type formed from a plug shell having a shell interior that has a closed end, an open end, and a tapered inner wall section having distal and proximal ends terminating in said closed and open ends, respectively, and an expander element initially located at the distal end of said tapered inner wall section adjacent to said closed end that expands the outer wall of the plug shell into engagement with the inner wall of the conduit when the expander element is drawn from the distal end of the tapered wall section to the proximal end of said section, wherein the improvement comprises an expander receiving cavity in the interior of the shell that is separate from the tapered wall section and disposed between the distal end of said section and the closed end of said shell for receiving the

expander element when the element is pushed out of engagement with the tapered inner wall section, thereby affording clear mechanical access to the tapered wall section and facilitating the removal of the plug, wherein the portion of the walls of the plug shell that surround said cavity are not expanded when the expander element is moved within said walls for the first time.

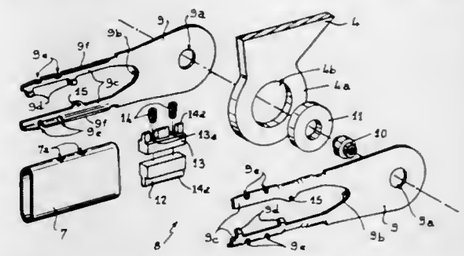


5,255,719

CONNECTORS FOR JOINING CONNECTING RODS WITH LEVERS FOR CONTROLLING HEDDLE FRAMES IN WEAVING LOOMS

Jean-Paul Froment, Doussard, France, assignor to S.A. Des Etablissements Staubli (France), Faverges, France

Filed May 13, 1992, Ser. No. 882,557
Claims priority, application France, May 15, 1991, 91 06066
Int. Cl.[5] D03C *9/00*
U.S. Cl. 139—82 10 Claims



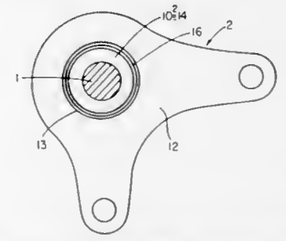
1. An apparatus for connecting a connecting rod to a lever for controlling the movement of a heddle frame in a weaving loom, wherein the connecting rod has an open end, the apparatus comprising, a connector having first and second ends, means for pivotally connecting said first end to said lever, said second end including a pair of spaced jaws which are deformable relative to one another, said jaws being of a size to be cooperatively received within the open end of the connecting rod, adjustable expander means disposed between said jaws of said second end of said connector, and means for adjusting said expander means toward said pair of spaced jaws to thereby force said spaced jaws outwardly relative to one another, whereby when said second end is placed within the open end of the connecting rod, said jaws may be selectively forced into secure engagement with said connecting rod.

5,255,718

CRANK LEVER FOR LOOM LINKAGES

Costantino Vinciguerra, Florence, Italy, assignor to Nuovopignone-Industrie Meccaniche e Fonderia S.p.A., Milan, Italy

Filed Sep. 15, 1992, Ser. No. 944,895
Claims priority, application Italy, Sep. 20, 1991, MI91 A 002517
Int. Cl.[5] D03C *1/14*
U.S. Cl. 139—66 A 1 Claim



1. A crank lever for loom linkages, comprising a lever body of high strength aluminum plate with a central hole, and a surface-hardened central annular rotation and thrust-bearing steel hub inserted into said central hole of the aluminum body, said hub including a front and rear face with a groove on each surface located adjacent to an annular outer edge, said body being locked to said edge by a rigid connection defined by a compressive plastic deformation of said edge facilitated by said grooves.

5,255,720

METHOD AND APPARATUS FOR DRIPLESS FILLING OF CONTAINERS

Dennis D. McPherson, Wharton, Tex., assignor to McPherson Dripless Systems Co., Inc., Missouri City, Tex.

Continuation-in-part of Ser. No. 503,830, Apr. 3, 1990, abandoned. This application Nov. 4, 1991, Ser. No. 787,415
Int. Cl.[5] B65B *1/04*
U.S. Cl. 141—86 19 Claims

1. A dripless filling valve mechanism for filling containers with a liquid composition comprising:

(a) a liquid supply tube adapted for communication with a supply source and capable of delivering liquid to a container during each filling cycle;

(b) means supporting said liquid supply tube in generally vertically oriented relation;

(c) a dispensing tip extending downwardly from the lower end of said liquid supply tube and defining a downwardly facing tapered external surface defining a downwardly facing substantially pointed lower end of sufficient taper to direct all external drippage to said substantially pointed lower end, said dispensing tip further defining an internal drip collection passage having a drip collection opening at said pointed lower end;

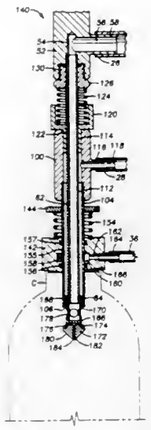
(d) a shroud tube being disposed in movable relation about said liquid supply tube and forming a valve seat, said shroud tube defining overflow passage means externally of said liquid supply tube for returning excess fluid to said liquid supply source;

(e) seal means being disposed for sealing relation between said dispensing tip and said valve seat, said seal means controlling opening and closing of said overflow passage

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means in response to relative positioning of said liquid supply tube and said shroud tube;

(f) a vacuum shroud being disposed in movable sealed relation about said shroud tube and defining a drip collection chamber about said shroud tube and a vacuum passage for communicating said drip collection chamber with a source of vacuum, said drip collection chamber adapted for communication with said internal drip collection passage of said dispensing tip in response to relative positioning of said vacuum shroud said shroud tube and said dispensing tip:



(g) means urging said vacuum shroud downwardly relative to said shroud tube and yielding in response to force applied thereto by a container to permit upward movement of said vacuum shroud relative to said shroud tube; and

(h) means supported by said vacuum shroud for wiping residual liquid from specific external surface portions of said shroud tube responsive to withdrawal of said shroud tube from said container.

5,255,721

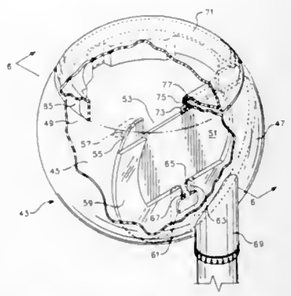
FUEL SPILLAGE CONTROL APPARATUS

Randolf W. Brand, P.O. Box 80828, Fairbanks, Ak. 99708

Continuation-in-part of Ser. No. 638,322, Jan. 7, 1991, Pat. No. 5,186,222. This application Jan. 28, 1993, Ser. No. 10,080

Int. Cl.[5] F16L *5/00*; B65B *3/06*

U.S. Cl. 141—86 **45 Claims**



1. A liquid spillage control apparatus adapted to be connected to a liquid tank which has a fill pipe and a ventilation opening, said liquid spillage control apparatus comprising:

a liquid holding chamber having a bottom and being adapted to be connected to the ventilation opening of the liquid tank;

a vent opening in said liquid holding chamber for venting vapor therefrom; and

a partition contacting said bottom of said liquid holding chamber and dividing said liquid holding chamber into a liquid transfer portion and a liquid retaining portion, said liquid transfer portion communicating with said liquid retaining portion whereby liquid from the liquid tank passes from said liquid transfer portion to said liquid retaining portion of said liquid holding chamber and is prevented from returning to said liquid transfer portion by said partition.

5,255,722

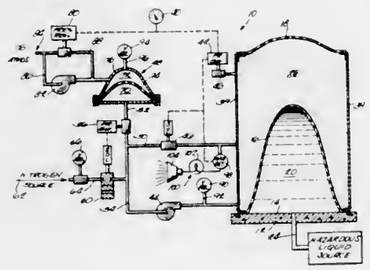
VAPORLESS LIQUID CONTAINMENT SYSTEM

John L. Furstenberg, Brookfield, Wis., assignor to Envirex Inc., Waukesha, Wis.

Filed Mar. 12, 1992, Ser. No. 849,755

Int. Cl.[5] B65B *3/16*

U.S. Cl. 141—114 **22 Claims**



1. An apparatus for forming a container for storing liquid and for preventing the formation of vapor in the container storing that liquid, the apparatus comprising:

a support structure having a supporting surface and a metallic wall structure surrounding and extending upward from the supporting surface,

a first membrane supported by the support structure, the first membrane and the sufforting surface defining therebetween a fluid containment space for storing liquid,

means for forming a fluid-tight gas containment space above the first membrane and between said wall structure, the gas containment space being adapted to house gas under pressure,

means for supplying the gas under pressure to the gas containment space, the means for supplying the gas under pressure supplying a fluid pressure on the first membrane sufficient to maintain the liquid in the fluid containment space in a liquid state and to prevent the formation of vapor in the fluid containment space.

5,255,723

VAPOR RECOVERY FUEL DISPENSING NOZZLE

Paul D. Carmack, Tipp City, Ohio, and Rodger P. Grantham, Springfield, Mo., assignors to Catlow, Inc., Tipp City, Ohio

Continuation of Ser. No. 735,829, Jul. 25, 1991, Pat. No. 5,141,037, which is a continuation of Ser. No. 503,464, Apr. 2, 1990, Pat. No. 5,035,271. This application Aug. 24, 1992, Ser. No. 934,028

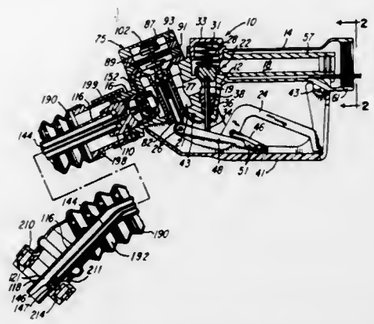
The portion of the term of this patent subsequent to Jul. 30, 2008, has been disclaimed.

Int. Cl.[5] B67D *5/06*

U.S. Cl. 141—206 **18 Claims**

1. A dispensing nozzle assembly adapted for use with a vapor recovery fuel dispensing system including flexible hoses

defining a liquid fuel supply passage and a return vapor passage, said nozzle assembly comprising a nozzle body, an elongated fuel supply spout extending from said body, means associated with said body and defining a primary fuel supply passage and a return vapor passage extending from said spout for forming extensions of the corresponding passages within the hoses, a fuel control valve within said fuel supply passage within said body, means for automatically closing said fuel control valve in response to the presence of fuel adjacent said spout, means defining a first venturi suction passage within said



nozzle body and connected to actuate said means for automatically closing said fuel control valve, means defining a second venturi suction passage within said nozzle body adjacent said first venturi passage, and means associated with said body and defining a fuel evacuation passage extending from said second venturi passage into the return vapor passage within the hoses for efficiently aspirating fuel condensed from vapor and accumulated within the return vapor passage within the hoses into the fuel flowing through said nozzle body and for minimizing the fuel flow restrictions within the hoses and said nozzle assembly.

5,255,724

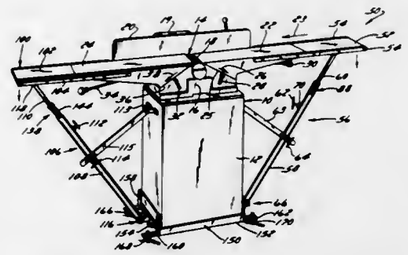
ADJUSTABLE EXTENSION ASSEMBLY

Gregory F. Butke, 322 W. South Park Ave., Oshkosh, Wis. 54901

Filed Nov. 12, 1992, Ser. No. 975,053

Int. Cl.[5] B27C *9/02*; B25H *1/04*

U.S. Cl. 144—329 **19 Claims**



1. An apparatus comprising:

(A) a machine including a frame, a base provided on said frame, a tool located above said base and connected to said frame, and a generally planar support surface located proximate said tool, said support surface being vertically adjustable;

(B) a horizontally adjustable bracket connected to said base;

(C) vertically adjustable leveling assemblies connected to said base; and

(D) an extension assembly which includes

(i) an extension table having opposed ends and a generally planar surface,

(ii) a connector rigidly connecting one of said opposed ends of said extension table to said support surface such that said extension table extends generally coplanar with said support surface,

(iii) a longitudinally adjustable support element having a first end pivotally connected to said bracket, a second end pivotally connected to said extension table between said opposed ends thereof, and a locking device which is actuatable to permit longitudinal adjustment of said support element upon motion of said support surface, and

(iv) a self-adjust mechanism which is connected to said support element and which supports at least a portion of the weight of said extension table during adjustment of said support surface.

5,255,725

PROCESS FOR THE ROTARY TRUING OF PLANKS AND THE LIKE

Siegmar Gönner, Oberkirch, Fed. Rep. of Germany, assignor to Gebruder Linck Maschinenfabrik "Gatterlinck" GmbH & Co. KG, Oberkirch, Fed. Rep. of Germany

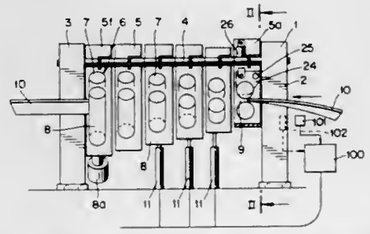
PCT No. PCT/EP90/01971, § 371 Date Jun. 5, 1992, § 102(e) Date Jun. 5, 1992, PCT Pub. No. WO91/08878, PCT Pub. Date Jun. 27, 1991

PCT Filed Nov. 19, 1990, Ser. No. 852,231

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1989, 3940614

Int. Cl.[5] B27B *1/00*

U.S. Cl. 144—356 **9 Claims**



1. A process for straightening wooden boards which are twisted about their longitudinal axes, comprising the steps of:

A) displacing said boards along a path of travel which is twisted about a longitudinal axis of said path, the twist direction of the panel being opposite the twist direction of the board, so that the board tends to become straightened as it travels along said path,

B) measuring the humidity of the boards, and

C) adjusting the degree of twist of said path as a function of the amount of measured humidity of said boards.

5,255,726

SUBSTANTIALLY UNCURVED AND UNWAVED PLYWOOD PRODUCED BY USING VENEERS WITH UNSTRAIGHT FIBERS AND METHOD FOR PRODUCING SUCH A PLYWOOD

Katsuji Hasegawa, Ohbu; Yoshinori Koba, Tokai; Norio Shibagaki; Akira Itob, both of Ohbu, and Matsunaga Tsuruta, Aichi, all of Japan, assignors to Meinan Machinery Works, Inc., Ohbu, Japan

Division of Ser. No. 464,415, Jan. 12, 1990, abandoned. This application Apr. 17, 1992, Ser. No. 870,805

Claims priority, application Japan, Jan. 13, 1989, 1-6589

Int. Cl.[5] B27C *1/00*

U.S. Cl. 144—365 **13 Claims**

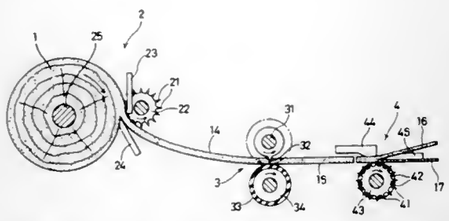
1. A method for continuously preparing pairs of veneers with identical unstraight grains, which comprises

(i) peeling from a cylindrical log with unstraight fibers a

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continuous sheet of twice a thickness of each one of a pair of veneers to be prepared,

(ii) cutting the sheet into a predetermined length to provide a thick veneer, and



(iii) slicing the thick veneer at a middle of a thickness thereof to prepare a pair of veneers with equal thicknesses and with identical unstraight grains.

5,255,727

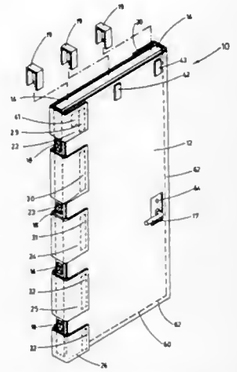
PROTECTIVE DOOR COVER AND METHOD OF MAKING

Ruby A. Saruwatari, and John B. Saruwatari, both of 1520 Washington Ave., Santa Ana, Calif. 92701

Filed Dec. 20, 1991, Ser. No. 811,567

Int. Cl.[5] B65D *75/28*

U.S. Cl. 150—154 **20 Claims**



1. A protective door cover adapted to cover and protect the front and back surfaces, and side edges of a door hung in a frame, said cover comprising:

first and second sections adapted to be secured together over and around said door;

each of said first and second sections having a substantially rectangular shaped portion dimensioned for covering substantially all of the front or back surface of said door on which it is mounted, and a plurality of extending portions fixed to the substantially rectangular shaped portion thereof;

the plurality of extending portions of said first section sized to wrap around one of the side edges of said door and cooperate with the substantially rectangular shaped portion of said second section, while the plurality of extending portions of said second section are sized to wrap around one of the side edges of said door and cooperate with the substantially rectangular shaped portion of said first section; and

securing means fixed to the substantially rectangular shaped portion of each of said first and second sections coacting with the holding complementary securing means fixed to said plurality of extending portions from the substantially rectangular shaped portion of the one of said first and second sections from which said plurality of extending portions did not extend to thereby hold said first and second sections together around said door.

5,255,728

AUTOMATIC SPEW TRIMMING METHOD AND APPARATUS USED THEREFOR

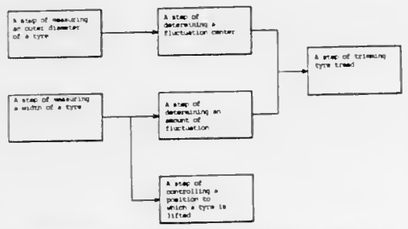
Yasushi Nojiri, Kobe; Masaaki Yoshida, Kakogawa, and Yojiro Miki, Kobe, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Filed May 7, 1992, Ser. No. 879,274

Claims priority, application Japan, May 16, 1991, 3-111465

Int. Cl.[5] B29D *30/00*

U.S. Cl. 157—1 **3 Claims**



1. An automatic spew trimming method comprising:

a step of measuring an outer diameter of a tire;

a step of measuring a width of the tire;

a step of controlling a position to which the tire is lifted, based on the measured tire width;

a step of determining a fluctuation center of a cutter for tire tread, based on the measured outer diameter of the tire;

a step of determining an amount of fluctuation of the cutter for tire tread, based on the measured tire width; and

a step of trimming the tire tread with the cutter for tire tread, based on the determined fluctuation center and on the determined amount of fluctuation.

5,255,729

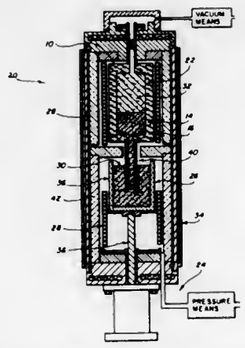
MATCHED CTE CASTING FOR METAL MATRIX COMPOSITES

Arnold J. Cook, 372 N. Craig St., Pittsburgh, Pa. 15213

Filed Nov. 20, 1991, Ser. No. 795,105

Int. Cl.[5] B22D *19/14, 19/02*

U.S. Cl. 164—97 **5 Claims**



1. A method of producing a mold having a specific coefficient of thermal expansion comprising the steps of:

determining the coefficient of thermal expansion of a component to be formed in the mold;

providing a first porous material having a coefficient of thermal expansion less than that of the component formed within said mold;

shaping the first porous material to form said mold;

melting a second material having a coefficient of thermal expansion greater than that of the component; and

infiltrating said mold with the second melted material in proportion such that their combined coefficient of thermal expansion essentially matches that of the component.

5,255,730

PROCESS FOR PRODUCING A CASTING CONSISTING OF A PRIMARY PIECE AND A SECONDARY PIECE USING THE CASTING-ON TECHNIQUE AND A CERAMIC INSULATING COMPOUND SUITABLE FOR THIS

Giselher Wall, Ludwigstrasse 18, D-8730 Bad Kissingen, Fed. Rep. of Germany

PCT No. PCT/DE90/00077, § 371 Date Oct. 1, 1991, § 102(e) Date Oct. 1, 1991, PCT Pub. No. WO90/08609, PCT Pub. Date Aug. 9, 1990

PCT Filed Feb. 6, 1990, Ser. No. 743,349

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1989, 3903427; Jan. 16, 1990, 4001057

Int. Cl.[5] B22D *19/04, 19/14*

U.S. Cl. 164—100 **25 Claims**

1. Process for the production of a casting consisting of a primary piece and a secondary piece using the casting-on technique, comprising the steps of:

a) placing a thin layer of a sinterable ceramic composition on the surface of the primary piece,

b) sintering the ceramic composition to form a thin ceramic interlayer on the surface of the primary piece, such that the interlayer isolates the primary piece against the secondary piece,

c) casting the secondary piece, which is a metal melt, on the interlayer formed on the primary piece,

d) separating the primary and secondary pieces, and

e) removing the interlayer from the surface of the primary piece.

5,255,731

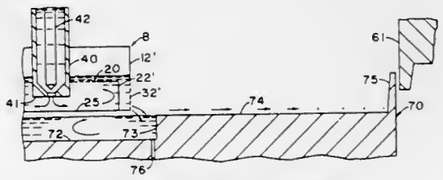
PARTITIONED RECEPTACLE FOR DISTRIBUTING MOLTEN METAL FROM A SPOUT TO FORM AND INGOT

David I. Yun, Murrysville, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Division of Ser. No. 737,197, Jul. 29, 1991, Pat. No. 5,207,974. This application Mar. 1, 1993, Ser. No. 24,446

Int. Cl.[5] B22D *11/10*

U.S. Cl. 164—135 **11 Claims**



1. A process for casting an ingot comprising:

(a) accepting incoming melt from a spout by positioning the discharge end thereof in a receptacle having a central distribution zone which has depth sufficient to submerge the discharge end of said spout in molten metal during the initial portion of a cast;

(b) pooling said incoming melt in said central distribution zone and submerging said spout in said melt in said central distribution zone until melt overflows said central distribution zone into a contiguous discharge zone;

(c) discharging overflowing melt from said discharge zone through symmetrical discharge outlet substantially without accumulating melt within said discharge zones so that at least some of the melt is discharged laterally into a mold cavity.

5,255,732

LOWER STRUCTURE OF A MOULD FOR THE PRESSURE CASTING OF FLAT PRODUCTS SUCH AS SLABS AND METHOD FOR MOUNTING AND REMOVING THE LOWER SPACER OF THIS MOULD

Robert A. Vatant, Saint-Chamond; Michel F. Courbier, Le Breuil, and Luc H. Bertin, Saint-Chamond, all of France, assignors to Creusot-Loire Industrie, Puteaux and Clecim, Cergy Pontoise, both of France

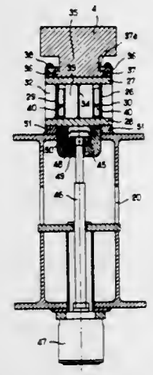
PCT No. PCT/FR90/00027, § 371 Date Sep. 10, 1991, § 102(e) Date Sep. 10, 1991, PCT Pub. No. WO90/08000, PCT Pub. Date Jul. 26, 1990

PCT Filed Jan. 15, 1990, Ser. No. 721,578

Claims priority, application France, Jan. 16, 1989, 89 00454

Int. Cl.[5] B22D *18/04*

U.S. Cl. 164—306 **10 Claims**



1. A lower structure of a mould for pressure casting thick flat products, the mould including three spacers, said structure comprising:

a longitudinal support;

a lower spacer disposed on said support, said lower spacer having a transverse dimension corresponding to a thickness of the flat product, said lower spacer defining a lower closing wall of a mould cavity and cooperating with said three spacers to define limits of the mould cavity, said lower spacer defining a passage at a front part thereof, said passage permitting metal therethrough for filling said mould cavity;

an intermediate beam member having first surface resting on said support over a length corresponding substantially to the length of said lower spacer, a surface of said beam member opposite said first surface carrying said lower spacer;

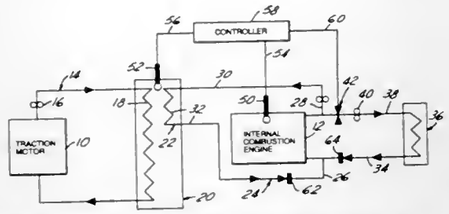
means for positioning said intermediate beam on said support disposed on a front portion of each said intermediate beam and said support;

means for releasably holding the intermediate beam on said support, said holding means being distributed over the length of said support, said holding means permitting said intermediate beam to be held on and released from said support; and

means for displacing the intermediate beam relative to said support in the longitudinal direction, said displacing means being connected to said front portion of said intermediate beam permitting said intermediate beam to be displaced so as to engage or release said positioning means with or from said holding means.

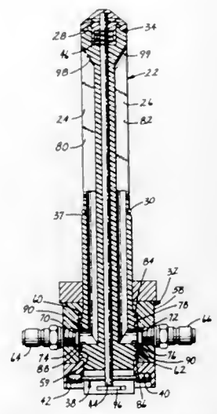
VOL 1155 ISS 4 OCT 26 1993 UMI

5,255,733
HYBIRD VEHICLE COOLING SYSTEM
Edward T. King, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Aug. 10, 1992, Ser. No. 926,626
Int. Cl.[5] F02N *17/06;* **B60L** *11/02*
U.S. Cl. 165—39 **17 Claims**



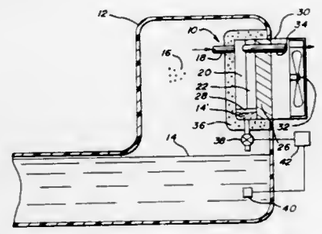
16. A cooling system for a hybrid vehicle having a traction motor having an energy supply input and an output operatively connected to the vehicle to drive the same, an ICE connected to the energy supply to drive the same, a pair of coolant systems, one for the traction motor and one for the ICE, and a heat exchanger interconnected to the coolant systems for the scavenging at times of the waste heat from the traction motor by the coolant of the ICE to prewarm the ICE when the ICE is below a predetermined temperature level and not running.

5,255,734
COMBINATION MOUNT AND FLUID PATH FOR HEAT EXCHANGER
Ronald J. Leonard; David B. Maurer, both of Ann Arbor, and Erin J. Lindsay, Manchester, all of Mich., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed May 27, 1992, Ser. No. 888,840
Int. Cl.[5] F28F *27/00;* **A61M** *1/36*
U.S. Cl. 165—96 **43 Claims**



1. A mounting assembly for holding a heat exchanger of the type having a passageway-defining surface defining at least a portion of a passageway through which heat-exchanging fluid is circulated, the mounting assembly comprising:
a bracket for mounting the mounting assembly on a support;
a body mounted on the bracket, the body being adapted to be received in the passageway of the heat exchanger, the body including heat-exchanging fluid inlet and outlet passageways for circulating heat exchanging fluid through the passageway of the heat exchanger;
fixing-sealing means on the body movable between operating and releasing positions, wherein in the operating position, the fixing-sealing means is adapted for sealing against the passageway-defining surface of the heat exchanger to seal the passageway of the heat exchanger and hold the heat exchanger on the body, and in the releasing position, the fixing-sealing means is adapted for releasing the heat exchanger from the body to allow the heat exchanger to be removed from the mounting assembly or to be mounted on the mounting assembly; and
valve means, operatively linked with the fixing-sealing means, for opening the heat-exchanging fluid inlet passageway when the fixing-sealing means is in its operating position, and closing the heat-exchanging fluid inlet passageway when the fixing-sealing means is in its releasing position.

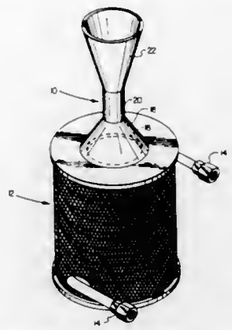
5,255,735
FUEL VAPOR RECOVERY DEVICE
Ram S. Raghava, Ann Arbor; Philip A. Langran, Northville, and Richard H. Wykoff, Livonia, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Dec. 21, 1992, Ser. No. 994,154
Int. Cl.[5] F28B *9/10, 9/08*
U.S. Cl. 165—111 **7 Claims**



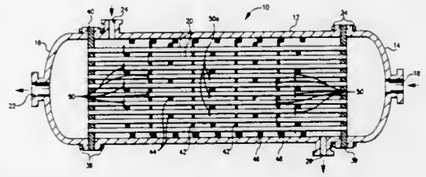
1. A fuel vapor recovery device comprising:
a condenser in communication with fuel vapor from a fuel tank, said condenser condensing fuel from said fuel vapor;
a reservoir collecting condensate from said condenser, said reservoir maintaining said condensate at a temperature sufficient to maintain said condensate liquid;
return means returning said condensate to said fuel tank;
a valve between said reservoir and said return means; and
a control means controlling the operation of said valve, said control means opening said valve and returning said condensate when the temperature of said fuel is sufficient to maintain said condensate liquid.

5,255,736
AIR FLOW ENHANCING STACK
Michael Kotlyar, Rancho Palos Verdes, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.
Filed Dec. 18, 1992, Ser. No. 992,665
Int. Cl.[5] F24H *9/02*
U.S. Cl. 165—128 **3 Claims**

1. In an air cooled heat exchanger of the type comprising heat exchanging tubing positioned about an air passage having an air exhaust opening at its top to allow air flow by convection, the improvement comprising:
an air flow enhancing stack having a lower conical section a larger end at least as large in diameter as the air exhaust opening of said heat exchanger attached to said opening, and positioned with its smaller end above its larger end;
a central cylindrical section having a diameter equal to the smaller end of said lower conical section, one end of said cylindrical section connected to the smaller end of said lower section;
an upper conical section having a smaller end having a diameter equal to the diameter of said central section, said smaller end connected to the upper end of said central section, and having its larger end positioned above its smaller end.



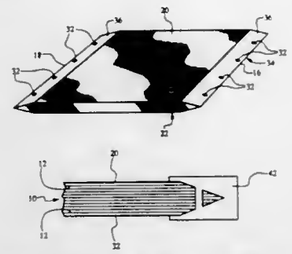
5,255,737
HEAT EXCHANGER WITH FLOW DISTRIBUTION MEANS
Cecil C. Gentry, and William A. McClintock, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Jul. 9, 1990, Ser. No. 549,879
Int. Cl.[5] F28F *9/24*
U.S. Cl. 165—159 **7 Claims**



1. A heat exchanger having an inlet end and a longitudinally spaced outlet end,
a plurality of heat transfer tubes extending longitudinally from said inlet end to said outlet end, and
a plurality of flow restricting disk means mounted on some of said heat transfer tubes for restricting the shell side flow in the area of said disk means and thereby producing a more uniform flow on the shell side of the exchanger and wherein said flow restricting disk means comprise a plurality of individual disks and each of said individual disks is mounted on not more than one of said heat transfer tubes.

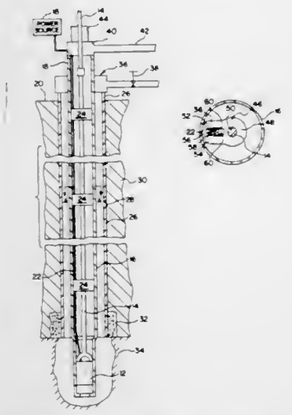
5,255,738
TAPERED THERMAL SUBSTRATE FOR HEAT TRANSFER APPLICATIONS AND METHOD FOR MAKING SAME
Mark B. Przilas, Greenville, Tex., assignor to E-Systems, Inc., Dallas, Tex.
Filed Jul. 16, 1992, Ser. No. 915,460
Int. Cl.[5] F28F *7/00*
U.S. Cl. 165—185 **16 Claims**

1. Apparatus for thermal transfer comprising:
an elongated composite core including a plurality of thermally conductive fibers oriented along a length of the core and terminating at a fiber end having a tapered shape exposing the thermally conductive fibers; and
a thermally conductive metal plating shaped to form a thermal tab anchored to the composite core and in thermal connection with the exposed conductive fibers of the core of the fiber end; and



the composite core having at least one filler hole adjacent the fiber end for receiving the metal plating and anchoring the thermal tab to the composite core.

5,255,739
CLAMP FOR ATTACHING ELECTRIC SUBMERSIBLE PUMP CABLE TO SUCKER ROD
David H. Neuroth, Tulsa, and Robert F. Bailey, Claremore, both of Okla., assignors to Hubbell Incorporated, Orange, Conn.
Filed Dec. 9, 1992, Ser. No. 987,620
Int. Cl.[5] E21B *17/00*
U.S. Cl. 166—65.1 **18 Claims**



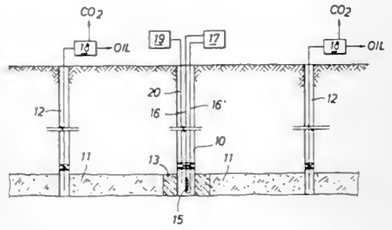
1. An apparatus for attaching a cable for an electric submersible pump to an oil well sucker rod, comprising:
a core portion;
a bore extending axially through said core portion for receiving the sucker rod; and
a pair of arms extending radially outwardly from said core portion, said arms having gripping means on facing surfaces of said arms for engaging the cable in a space between said arms.

5,255,740
SECONDARY RECOVERY PROCESS
Robert R. Talley, Katy, Tex., assignor to RRKT Company, Katy, Tex.
Filed Apr. 13, 1992, Ser. No. 867,420
Int. Cl.[5] E21B *43/24, 43/34*
U.S. Cl. 166—272 **9 Claims**

1. A method for enhancing the recovery of oil from a dolomite formation that is intersected by a well bore, comprising the steps of: heating the dolomite adjacent the well bore at a temperature in the range of from 1,400°–1,750° F. to produce

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an endothermic chemical reaction which has carbon dioxide as a reaction product: and allowing said carbon dioxide to satu-



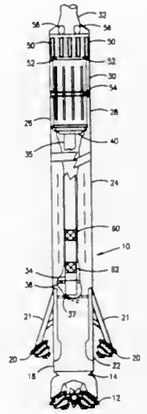
rate the oil in surrounding formations and thus make such oil more movable toward a recovery well.

5,255,741

PROCESS AND APPARATUS FOR COMPLETING A WELL IN AN UNCONSOLIDATED FORMATION

Steve L. Alexander, Bakersfield, Calif., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 11, 1991, Ser. No. 806,056
Int. Cl.[5] E21B *7/20, 10/32, 10/34, 43/04*
U.S. Cl. 166—278 **20 Claims**



1. A process for installing a slotted liner and gravel pack within an unconsolidated hydrocarbonaceous fluid-bearing formation in a single trip into the formation, the formation having at least one hydrocarbonaceous fluid producing zone, the formation further having a bore hole drilled to a first pre-determined depth above the hydrocarbonaceous fluid producing zone and a well casing installed in the bore hole to about the first pre-determined depth, the well casing having an internal diameter, comprising the steps of:

(a) lowering on a pipe string through the bore hole an apparatus for drilling and installing a gravel-packed liner, the apparatus including a drill bit for drilling a pilot hole, means for enlarging the pilot hole to a diameter larger than the pilot hole and sufficient for gravel packing, the pilot hole enlarging means being initially retracted and located above the pilot hole drill bit, a slotted liner having a first end and a second end, the first end joined to the apparatus above the pilot hole enlarging means and a drive assembly;

(b) rotating the apparatus to drill a pilot hole through the hydrocarbonaceous fluid producing zone;

(c) expanding the initially retracted pilot hole enlarging means upon exceeding the first pre-determined depth;

(d) enlarging the pilot hole to a diameter larger than the pilot hole and sufficient for gravel packing;

(e) continuing steps (b)-(d) until the first end of the slotted liner reaches a second pre-determined depth, the second pre-determined depth sufficient to place the slotted liner within the hydrocarbonaceous fluid producing zone; and

(f) injecting a gravel slurry into an annulus defined by the enlarged hole and slotted liner to gravel pack the annulus.

11. An apparatus for drilling and installing a slotted liner and gravel packing the liner in a single trip into a well, comprising:

(a) a drill bit for drilling a pilot hole;

(b) a housing mounted above said pilot hole drill bit;

(c) means for enlarging a pilot hole, said pilot hole enlarging means pivotally mounted within said housing and capable of pivoting between an initially retracted position to an expanded position for enlarging a pilot hole to a diameter larger than the pilot hole and sufficient for gravel packing;

(d) a slotted liner having a first end and a second end, the first end joined to the apparatus above said housing; and

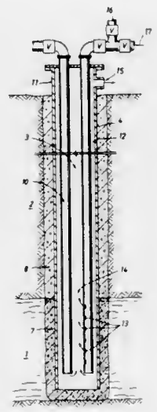
(e) a drive assembly joined to the second end of the slotted liner.

5,255,742

HEAT INJECTION PROCESS

Thomas Mikus, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jun. 12, 1992, Ser. No. 896,861
Int. Cl.[5] E21B *36/02*
U.S. Cl. 166—303 **8 Claims**



1. A method of heating a subterranean formation comprising at least one borehole providing communication from the surface to the subterranean formation to be heated, the method comprising:

combining a hydrocarbon fuel gas with a carbon formation suppressant;

passing the fuel gas and carbon formation suppressant mixture through a fuel gas conduit to a mixing point within the borehole juxtapose to the formation to be heated;

passing a combustion air stream though an air conduit to the mixing point;

preheating either the fuel gas and carbon formation suppressant mixture, the combustion air stream or both such that the temperature of a mixture of the streams exceeds an autoignition temperature of the mixture of the streams;

combining the preheated combustion air and fuel gas and carbon formation suppressant at the mixing point resulting in autoignition forming combustion products;

passing the combustion products through the borehole from the mixing point to the surface,

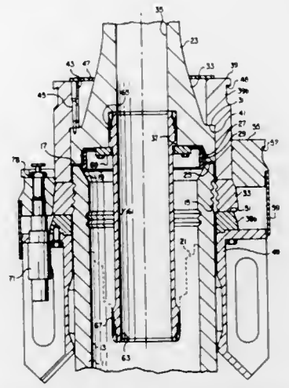
wherein the amount of the carbon formation suppressant combined with the fuel gas exceeds that which prevents carbon formation at the temperature of the preheated fuel gas and carbon suppressant mixture.

5,255,743

SIMPLIFIED WELLHEAD CONNECTOR

Leslie J. Adam; Walter J. Lacey, both of Aberdeen, Scotland, and Egil E. Rebne, Stavanger, Norway, assignors to ABB Vetco Gray Inc., Houston, Tex.

Filed Dec. 19, 1991, Ser. No. 810,222
Int. Cl.[5] E21B *33/038*
U.S. Cl. 166—345 **16 Claims**



1. In a subsea well having a wellhead housing of a type having an external grooved profile, an upper rim, and a longitudinal axis, a connector assembly for connecting the wellhead housing to a riser, comprising in combination:

a stress joint adapted to be connected to the riser, having a downward facing shoulder which is adapted to abut the upper rim of the wellhead housing, the stress joint having an external upward facing shoulder;

a seal located at the downward facing shoulder of the stress joint for engaging the upper rim of the stress joint to seal the stress joint to the wellhead housing;

a body having a lower cylindrical section which is adapted to extend over the wellhead housing, the body having an internal downward facing shoulder which abuts the upward facing shoulder of the wellhead housing;

a locking member mounted to the body for radial movement between a retracted position spaced outward from the grooved profile and an engaged position adapted to engage the grooved profile; and

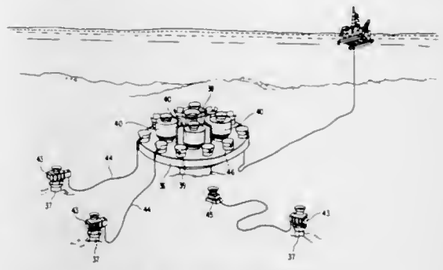
a cam ring mounted to the body in engagement with the locking member and for axial movement relative to the body to move the locking member between the retracted position and the engaged position, the locking member when in the engaged position exerting a downward force on the body which in turn pushes downward on the upward facing shoulder of the stress joint to exert a compressive force on the upper rim of the wellhead housing.

5,255,744

SUBSEA PRODUCTION SYSTEM AND METHOD FOR LINE CONNECTION BETWEEN A MANIFOLD AND ADJACENT SATELLITE WELLS

José E. M. Silva, Rio de Janeiro, Brazil, assignor to Petroleo Brasileiro S.A. Petrobras, Rio De Janeiro, Brazil

Filed Oct. 15, 1991, Ser. No. 775,900
Claims priority, application Brazil, Oct. 12, 1990, 9005129
Int. Cl.[5] E21B *43/013*
U.S. Cl. 166—347 **8 Claims**



1. A subsea production system comprising:

a base structure (**36**);

a removable manifold (**38**) mounted on said base structure, said base structure mounting thereon connection base (**46**), valve modules (**40**), connection system lines (**44**, **66**), and connection terminals (**39**, **45**) for interconnecting said valve modules (**40**);

said system further comprising:

a plurality of adjacent satellite wells (**37**) equipped with lay-away type wet christmas trees (WCT's) (**43**);

said connection terminals (**45**) comprising in a lower portion thereof a hydraulic type connector (**47**), a swivel (**48**) provided laterally on said hydraulic type connector (**47**) for connecting one of said lines (**44**) of the satellite wells (**37**) to said hydraulic type connector (**47**), said lines (**44**) including bending restrictors (**49**) and, said hydraulic type connectors each having in an upper portion thereof a reentry mandrel (**50**);

a supporting structure (**53**) for said connection terminals (**45**), said supporting structure comprising a lower mud mat (**54**), a central waiting mandrel (**55**) and a lateral structure (**56**), said lateral structure (**56**) being equipped with eyelets (**57**), and said supporting structure further comprising an upper reentry funnel (**58**); and wherein said connection system lines (**44**) are provided with flexible extremities facilitating the interconnection of said satellite wells (**37**) to said manifold (**38**).

6. A method for making line connections between a manifold (**38**) and adjacent satellite wells (**37**) comprising the following steps:

laying a well/manifold interconnection line (**66**) by means of a supply boat (**65**) by moving said supply boat towards a manifold (**38**);

abandoning said interconnection lines (**66**) with a connection terminal (**45**) and a supporting structure (**53**) at one extremity of said lines, after installing a WCT (**43**) by a rig (**64**) at a satellite well (**37**);

removing said supply boat (**65**) after the laying of the interconnection lines (**66**) with the connection terminal (**45**) and a supporting structure (**53**) at one extremity of said lines on the marine ground, while operating said rig (**64**) on said WCT (**43**) of the satellite well (**37**);

moving said rig (**64**) towards said manifold (**38**), once the line (**66**) connection is completed to fish said connection terminal (**45**) to a completion riser (**68**) and a WCT installation tool (**69**);

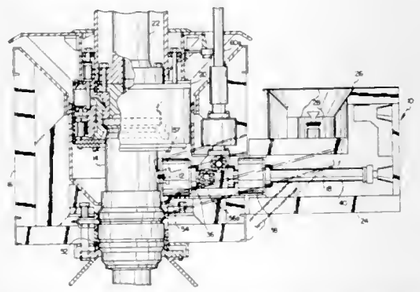
coupling said connection terminal (**45**) by the WCT installation tool (**69**) and the completion riser (**68**);

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hoisting said connection terminal (**45**) from said supporting structure (**53**) of said connection terminal, and coupling said connection terminal (**45**) to said manifold (**38**);
thereafter testing the line connection; and
retrieving the supporting structure (**53**) by the rig (**64**) via cables (**70**) through assistance of a ROV (**71**), thereby completing the line interconnection of an adjacent satellite well (**37**) to said manifold (**38**).

5,255,745
REMOTELY OPERABLE HORIZONTAL CONNECTION APPARATUS AND METHOD

Roman W. Czyrek, W. Yorkshire, England, assignor to Cooper Industries, Inc., Houston, Tex.
Filed Jun. 18, 1992, Ser. No. 900,888
Int. Cl.[5] **E21B** *43/013*
U.S. Cl. 166—347 **19 Claims**



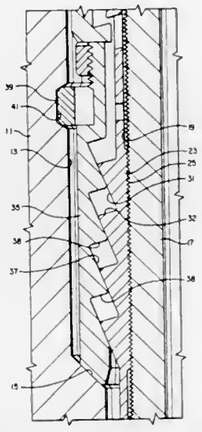
1. A remote horizontal connection apparatus, comprising:
a wellhead housing with an annulus port,
a valve with hydraulic connector adapted for preloaded connection to said annulus port,
a guide base adapted to receive said wellhead housing,
a ramp disposed on said guide base, and
an installation cradle for installing said valve and hydraulic connector adapted to utilize the incline of said ramp in connecting said valve to said annulus port.

18. A method for establishing an annulus connection comprising the steps of:
locating an annulus access port on a wellhead housing,
installing said wellhead housing in a guidebase in a preferred orientation with respect to an inclined ramp laterally disposed on said guidebase,
placing a valve with remotely operable connection means for sealingly engaging said annulus access port on a support frame,
lowering said valve and support frame into proximity with said inclined ramp,
observing the position of said valve and support frame while lowering said valve and support frame onto said inclined ramp,
allowing the horizontal component of the weight of said valve and support frame to urge said remotely operable connection means into engagement with said annulus access port, and
operating said remotely operable connection means to form a sealed connection between said valve and said annulus access port.

5,255,746
ADJUSTABLE MANDREL HANGER ASSEMBLY

Charles D. Bridges, Houston, Tex., assignor to ABB Vetco Gray Inc., Houston, Tex.
Filed Aug. 6, 1992, Ser. No. 927,025
Int. Cl.[5] **E21B** *43/10*
U.S. Cl. 166—348 **10 Claims**

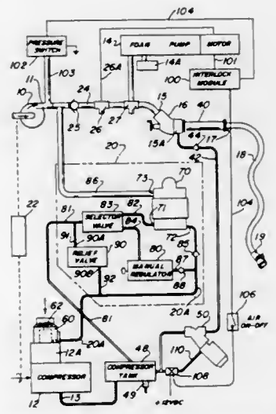
1. An adjustable mandrel hanger assembly for supporting in tension a section of casing extending from a subsea location to a surface wellhead housing, the wellhead housing having an internal load shoulder, comprising in combination:
a mandrel that secures to an upper end of the casing and has grooves on its exterior;
a collet having an inner diameter containing a set of grooves for mating with the grooves on the mandrel, the collet having an exterior containing a plurality of inclined load flanks; and
a load ring that lands on the load shoulder provided in the wellhead housing, the load ring having an interior containing a plurality of load flanks that mate with the load flanks of the collet, the collet being radially expansible so as to radially expand and contract to ratchet past the grooves of the mandrel as the load ring is moved downward relative to the mandrel and a pulling force exerted on the mandrel, the load flanks of the collet sliding on but remaining engaged with the load flanks of the load ring during the expansion and contraction of the collet, the load ring and the collet transferring a tension load on the mandrel to the load shoulder when the pull on the mandrel is relaxed.



5,255,747
COMPRESSED AIR FOAM SYSTEM

Richard E. Teske, Norristown, and Michael A. Laskaras, Collegeville, both of Pa., assignors to Hale Fire Pump Company, Conshohocken, Pa.
Filed Oct. 1, 1992, Ser. No. 955,322
Int. Cl.[5] **A62C** *35/00*
U.S. Cl. 169—15 **12 Claims**

1. A system for supplying compressed air and foam solution to produce a fire stream comprising an aerated foam comprising
a venturi means having an inlet, a discharge, and a constricted throat section,
a fire stream delivery means constructed and arranged to receive fluid flow from the discharge of said venturi means,
a fire pump means for delivering water under pressure from a discharge thereof,
a water supply conduit means for delivering water from the discharge of said pump means to the inlet of said venturi means,
a foam proportioner for delivering foam chemical to said water supply conduit means,
air conduit means for delivering air to the throat section of said venturi means,
an air compressor for delivering air at a delivery pressure to said air conduit means, said compressor having an inlet and a discharge,
an inlet throttling valve means for varying the flow of air to said compressor inlet to thereby control the compressor discharge pressure, said inlet throttling valve having a control chamber and a valve member responsive to the pressure in said control chamber for varying the flow of air to said compressor inlet, and
air control means for regulating the pressure of the air supplied to said control chamber of said inlet throttling valve means including
an air pressure regulator having an air inlet, an air outlet, and a water inlet,
a first conduit means for communicating the compressor discharge pressure to said air inlet of said air pressure regulator,

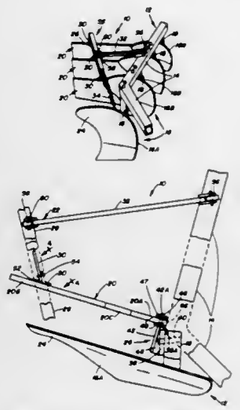


a second conduit means for communicating the air outlet of said air pressure regulator to said control chamber of said inlet throttling valve,
and a third conduit means for communicating said water supply conduit means to said water inlet of said air pressure regulator,
said air pressure regulator being constructed and arranged to vary the pressure of the air communicated by said second conduit means to said control chamber in response to the compressor pressure delivered to said air inlet through said first conduit means and the water pressure delivered to said water inlet through said third conduit means to automatically maintain the compressor air discharge pressure at a desired relationship relative to said fire pump water discharge pressure whereby said system automatically maintains a desired ratio of air and water delivered from the discharge of said venturi means.

5,255,748
TERRACING ATTACHMENT ASSEMBLY FOR A MOLDBOARD PLOW

Floyd E. Schuckman, Rte. 1, Box 26, Ransom, Kans. 67572
Filed Jan. 15, 1992, Ser. No. 821,485
Int. Cl.[5] **A01B** *17/00*
U.S. Cl. 172—203 **19 Claims**

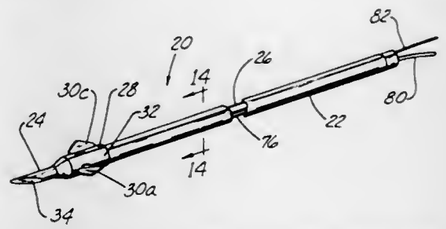
1. A terracing attachment assembly for use with a moldboard plow movable in a forward direction across a field and having a frame and a plurality of moldboard plow bottoms supported below the frame in a fore-and-aft spaced apart and laterally staggered relation to the direction of forward movement of the plow, said attachment assembly comprising:
(a) a plurality of elongated blades; and
(b) means attachable to the plow frame for mounting said elongated blades in a generally transverse relation to the direction of forward movement of the plow and adjacent to given ones of the plow bottoms as lateral extensions thereof such that outer end portions of said elongated blades are provided in spaced relation to one another and aligned generally along a line extending in a desired relationship to the direction of forward movement of the plow such that said transversely extending elongated blades can



move soil plowed by the given ones of the plow bottoms to the same lateral location for building a terrace on a plowed field;
(c) said plurality of elongated blades being one less in number than the number of plow bottoms and being attachable to given ones of the plow bottoms other than a lead one thereof.

5,255,749
STEERABLE BURROWING MOLE

Carl J. Bumpurs, and C. Gordan Baker, both of Racine, Wis., assignors to Steer-Rite, Ltd., Racine, Wis.
Filed Mar. 16, 1992, Ser. No. 851,821
Int. Cl.[5] **E21B** *7/08*
U.S. Cl. 175—26 **35 Claims**



1. In a burrowing mole of the type with an elongate body extending along an axis, a forward earth-penetrating tip, percussive drive means, and steering means, the improvement comprising:
the steering means being a tip-adjacent forward steering unit having an axially-aligned main portion and fins secured thereto about the axis, including at least two adjustable fins wherein the steering means facilitates three-dimensional maneuvering; and
means to adjust the adjustable fins between first and second angular orientations, the first orientations for inducing rotation of the elongate body in a first rotational direction about its axis during forward mole movement and the second orientations for inducing movement toward a first radial direction during forward mole movement.

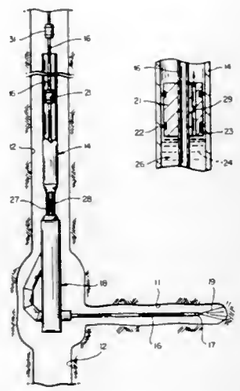
VOL 1155 ISS 4 OCT 26 1993 UMI

5,255,750

HYDRAULIC DRILLING METHOD WITH PENETRATION CONTROL

Robert D. Wilkes, Jr., Berkeley; Robert W. Dickinson, 40 Maplewood Dr., San Rafael, both of Calif. 94901, and Charles S. Mackey, Bakersfield, Calif., assignors to Ben W. O. Dickinson, III, San Francisco and Robert W. Dickinson, San Rafael, both of Calif.

Filed Jul. 30, 1990, Ser. No. 559,316
Int. Cl.[5] E21B 7/08, 7/18
U.S. Cl. 175—61 4 Claims



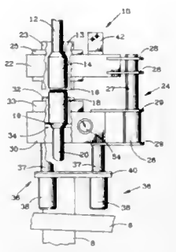
3. In a hydraulic drilling method utilizing an elongated tubular member having proximal and distal ends, a drill head at the distal end of the tubular member, and a chamber which decreases in volume with movement of the drill head in a forward direction, the steps of: driving the tubular member and the drill head in a forward direction with a pressurized drilling fluid, discharging a cutting jet of the drilling fluid from the drill head, entrapping a body of fluid in the chamber to resist movement of the drill head in the forward direction, permitting a first controlled amount of the entrapped fluid to pass from the chamber to thereby permit the drill head to advance at a predetermined rate for a predetermined distance, and therefore permitting a lesser amount of the entrapped fluid to pass from the chamber to reduce the rate at which the drill head advances.

5,255,751

OILFIELD MAKE-UP AND BREAKOUT TOOL FOR TOP DRIVE DRILLING SYSTEMS

Huey Stogner, P.O. Box 803, Houston, Tex. 77001

Continuation of Ser. No. 788,806, Nov. 7, 1991, abandoned. This application Oct. 9, 1992, Ser. No. 979,131
Int. Cl.[5] E21B 19/00
U.S. Cl. 175—203 10 Claims



1. A drill pipe tool joint box clamping apparatus, comprising:

an annular body receivable inside a threaded box end of the drill pipe, said body having a proximal flange end, a distal end and a side wall, said wall having a plurality of radially spaced slots therein, said flange end having a lip for engaging said side wall;

a mandrel comprising an upper cylindrical end, a mid conical section and a lower cylindrical end having a neck, wherein said conical section is received in said body;

a plurality of radially spaced arcuate wedges having an outer threaded radius, wherein said wedges are slideably affixed to said conical section of said mandrel in said slots in said side wall to form a nipple, wherein threads of said nipple complement said box threads;

a spring disposed on said neck of said lower mandrel end exterior to said body;

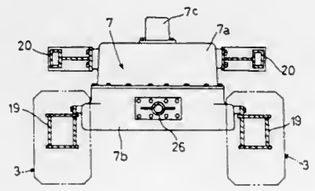
a cam rotatably fixed to said upper cylindrical end biased by said spring for longitudinally sliding said mandrel with respect to said body.

5,255,752

BODY FRAME STRUCTURE FOR CRAWLER TYPE WORKING VEHICLE

Norimi Nakamura; Mitsugu Kobayashi; Akio Matsui, and Tetsuo Yamaguchi, all of Sakai, Japan, assignors to Kubota Corporation, Osaka, Japan

Filed Sep. 6, 1991, Ser. No. 756,071
Claims priority, application Japan, Sep. 12, 1990, 2-243641
Int. Cl.[5] B62D 11/02
U.S. Cl. 180—6.7 11 Claims



1. A frame structure for a working vehicle having crawler running devices, comprising:

main frames extending longitudinally along right and left sides of a vehicle body,

track frames supported by said crawler running devices and extending below and along said main frames, respectively, and

an oil tank disposed between said main frames for rigidly interconnecting forward positions of said main frames and rigidly interconnecting said track frames.

5,255,753

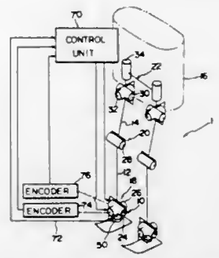
FOOT STRUCTURE FOR LEGGED WALKING ROBOT

Masao Nishikawa; Tomoharu Kumagai; Shoei Abe; Masato Hirose; Mitsuaki Hirakawa, and Hiroshi Gomi, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 627,728, Dec. 14, 1990, abandoned. This application May 19, 1992, Ser. No. 887,240
Claims priority, application Japan, Dec. 14, 1989, 1-324217
Int. Cl.[5] B62D 57/032
U.S. Cl. 180—8.6 17 Claims

1. A foot structure for a legged walking robot having a foot pivotally linked to a shank member about an axis a foot joint, comprising:

a substantially circularly curved toe section disposed on a sole portion of said foot, said curved toe section having a radius of curvature centered about a point located above said toe section and below said axis of the foot joint, said curved toe section having a convex shape along said sole portion such that the foot follows a predetermined curved path along a forward walking direction; and



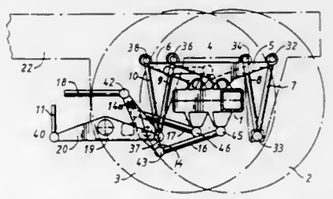
a substantially flat section disposed centrally on said sole portion adjoining and tangent to the toe section.

5,255,754

AXLE CONSTRUCTION FOR A COMMERCIAL VEHICLE

Joel Lauronen, Helsinki, Finland, assignor to Oy Sisu-Auto AB, Karjaa, Finland

PCT No. PCT/FI90/00070, § 371 Date Sep. 1, 1992, § 102(e) Date Sep. 1, 1992, PCT Pub. No. WO91/14587, PCT Pub. Date Oct. 3, 1991
PCT Filed Mar. 11, 1991, Ser. No. 927,654
Int. Cl.[5] B60G 9/00, 11/10; B62D 13/00
U.S. Cl. 180—24.01 3 Claims



1. An axle constructed for a commercial vehicle, comprising:

an axle (1);

wheels (2, 3) mounted in bearings at ends of the axle;

springs (5, 6) provided at both ends of the axle between the axle and a chassis frame (22) of the vehicle;

a triangular support (4) attached at one point by means of a joint centrally to the axle and journalled at two points to the chassis frame on its opposite sides;

longitudinal supports (16, 17) positioned on opposite sides of the chassis frame and each having one end attached by a joint to the axle (1) near the ends of the axle on an opposite side of a central axis of the axle relative to the point of the attachment (31) of the triangular support, and the other end attached by a joint to a steering axle (13) journalled to the chassis frame and fitted between the ends of the longitudinal supports (16, 17) eccentrically so that the points of attachment (43, 44) of the longitudinal supports on opposite sides of the chassis frame on the steering axle are positioned on opposite sides of the central axis of the steering axle at a distance from the central axis; and

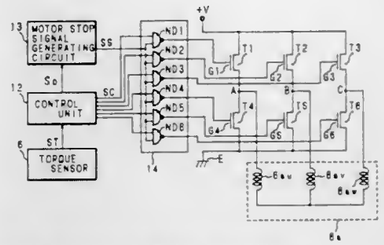
means (14a, 42, 18) attached to the steering axle (13) for pivoting it, the axle (1) being arranged to be turned by pushing and pulling movements to the longitudinal supports (16, 17) attached to the steering axle, characterized in that each spring (5, 6) is secured to the chassis frame (22) by means of two substantially downwardly directed suspension rods (7–10) positioned on the front and rear sides of the axle, respectively, the suspension rods (7–10) being at one end attached to the chassis frame and at the other end to the springs.

5,255,755

POWER STEERING APPARATUS

Jian-Guo Fu, Yamatokooiryama, Japan, assignor to Koyo Seiko, Co., Ltd., Osaka, Japan

Filed Mar. 30, 1992, Ser. No. 860,412
Claims priority, application Japan, Apr. 2, 1991, 3-98108
Int. Cl.[5] B62D 5/04
U.S. Cl. 180—79.1 2 Claims



1. A power steering apparatus comprising:

a sensor for detecting torque generated by rotating a steering wheel;

a motor for assisting steering force which has plural coils, one end of each coil being connected to a respective switch and another end of each of the coils connected in common, said motor being rotated by a current selectively supplied to said plural coils by opening and closing of said switches; and

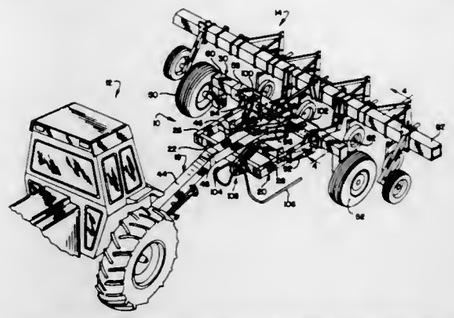
control means for driving said motor by commutation-controlling said switches in accordance with said detected torque, and for opening all of said switches to disconnect said one ends from each other upon stopping drive of said motor.

5,255,756

CADDY WITH GUIDANCE SYSTEM FOR AGRICULTURAL IMPLEMENTS

Richard L. Follmer, Hudson, and Donald L. O'Neall, Downs, both of Ill., assignors to Progressive Farm Products, Inc., Hudson, Ill.

Filed Apr. 22, 1992, Ser. No. 872,581
Int. Cl.[5] A01B 69/06; B62D 5/09
U.S. Cl. 180—131 20 Claims



7. A caddy adapted to be towed by a tractor and equipped to pull an agricultural implement therebehind, the caddy comprising:

attachment means for pivotally connecting the caddy to a single pivot hitch on a tractor;

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an axle having wheels mounted on the ends thereof and pivotally connected to said attachment means, said ends of said axle extending laterally away from said attachment means and said axle being rotatable around a vertical axis to vary the angular orientation of said axle relative to said attachment means;

a three-point hitch affixed to said axle, said hitch being rotatable around said vertical axis with said axle; and

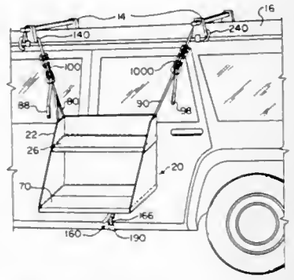
guidance means for rotating said axle around said vertical axis to steer the caddy along a desired path of travel when the caddy is towed behind a tractor.

5,255,757

COLLAPSIBLE LADDER

Martin Horowitz, Box 2622, Aspen, Colo. 80612, and Mark Joseph, Aspen, Colo., assignors to Martin Horowitz, Aspen, Colo.

Filed Sep. 9, 1992, Ser. No. 944,161
Int. Cl.[5] E06C 5/00
U.S. Cl. 182—127 22 Claims



1. A collapsible ladder for attachment to a vehicle, said ladder comprising:

a flexible body portion for compact folding for storage;

at least one outwardly-extending step;

means for affixing said at least one step to said flexible body portion; and

means affixed to said flexible body portion for removably engaging a vehicle or structure on a vehicle;

means for maintaining said collapsible ladder securely on the vehicle as said at least one step has weight applied thereon; said means for maintaining includes a lower strap assembly affixed to a lower portion of said collapsible ladder; and a lower engaging hook affixed to said lower strap assembly for engaging a lower portion of the vehicle; said lower strap assembly includes an elastic member for maintaining said lower engaging hook put against the lower portion on a vehicle while the weight on said at least one step changes.

5,255,758

PROTECTIVE LADDER ASSEMBLY FOR SCAFFOLDING STRUCTURE

Roy Hood, Jr., Holden, La., assignor to Cherokee Construction Co., Baton Rouge, La.

Filed Feb. 25, 1991, Ser. No. 660,568
Int. Cl.[5] E04G 5/00
U.S. Cl. 182—179 11 Claims

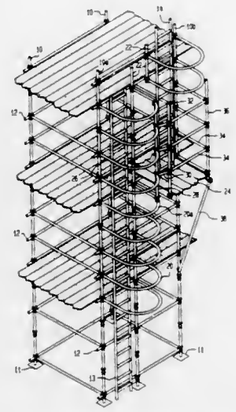
1. A scaffolding structure of the type which uses a connector/retention system for detachably securing horizontal members to rigid upright members, which structure is comprised of:

(a) a plurality of rigid upright members containing retention means at vertically spaced locations for receiving connector means secured to the ends of horizontal members;

(b) a plurality of horizontal members, each containing two ends, with each end having a connector means secured thereto which are detachably connected to said retention means of said rigid upright members, thereby forming a basic free standing scaffolding structure having three or more sides, said plurality of rigid upright and horizontal members being an integral part of the scaffolding structure:

(c) a ladder which is secured to the outside of the basic scaffolding structure in a vertical position being substantially parallel to said rigid upright members, such that there is a rigid upright member in the proximity of each side of said ladder; and

(d) curved horizontal members which are substantially U-shaped, wherein each end has secured thereto a connector means which is detachably connected to retention means



of said rigid upright members starting at a predetermined distance from the bottom of the ladder to provide unobstructed access of an operative to said ladder, which upright members are in the proximity of each side of said ladder, thereby enclosing the ladder with said curved horizontal members at the level of each connection, wherein the dimensions of said curved horizontal members are such that all portions of said curved horizontal members are in the proximity of an operative on said ladder; wherein the connector/retention system is selected from the group consisting of the wedge-type, the double-ring type, the peg/socket type, the lever/dish type, and the locking cup type.

5,255,759

APPARATUS FOR PREVENTING VIBRATION OF ELEVATOR TAIL-LINE

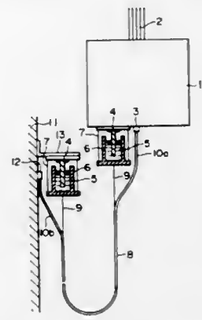
Hiroaki Kasai, Ibaraki, and Masayuki Shigeta, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 1, 1992, Ser. No. 907,042
Claims priority, application Japan, Jul. 1, 1991, 3-160461
Int. Cl.[5] B66B 17/12
U.S. Cl. 187—94 20 Claims

1. An apparatus for preventing a vibration of an elevator tail-line having a first stationarily held end and a second end connected to an elevator carriage to move together therewith, the apparatus comprising:

absorber means, in addition to said elevator tail-line, for absorbing a vibration of the elevator tail-line, said absorber means being substantially stationary relative to the elevator tail-line in a longitudinal direction of the elevator tail-line during ascent and descent of the elevator carriage, and

support means for bearing a weight of the elevator tail-line to prevent a weight of the elevator tail-line from being



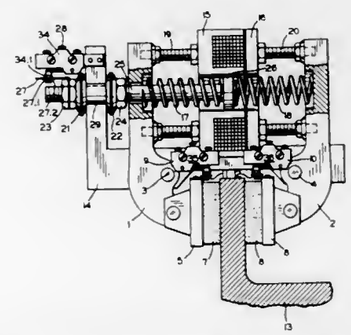
applied to the absorber means so that the absorber means does not bear a weight of the elevator tail-line.

5,255,760

APPARATUS FOR DETECTING AND SIGNALING THE FUNCTION AND STATUS OF AN ELEVATOR SAFETY BRAKE

Miles P. Lamb, Bedminster, N.J., and Herbert Bachmann, Ebikon, Switzerland, assignors to Inventio AG, Hergiswil, Switzerland

Filed Oct. 2, 1991, Ser. No. 771,044
Int. Cl.[5] F16D 66/00; B66B 5/16
U.S. Cl. 188—1.11 18 Claims



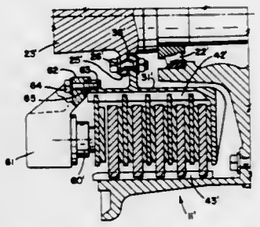
1. An apparatus for detecting and signaling the function and the status of an electromagnetically actuated two-circuit safety disk brake for elevators comprising: a first position sensor mounted on a safety disk brake, a spring centering bolt mounted on the safety disk brake and moveable in response to a change of an initial stressing force of a brake pressure spring of the safety disk brake for actuating said first position sensor, said spring centering bolt being retained on the safety disk brake in a first position independent of said initial stressing force and being moved to a second position for actuating said first position sensor in response to a change in said initial stressing force, and at least a second position sensor mounted on the safety disk brake and actuated by a brake shoe of the safety disk brake for signaling a limit of wear of a brake shoe lining attached to the brake shoe.

5,255,761

AIRCRAFT BRAKE

Gary J. Zaremsky, Yellow Springs, Ohio, assignor to The B.F. Goodrich Company, Akron, Ohio

Continuation of Ser. No. 454,480, Dec. 21, 1989, abandoned.
This application Nov. 18, 1991, Ser. No. 793,907
Int. Cl.[5] F16D 55/40
U.S. Cl. 188—71.5 11 Claims



1. In an aircraft multiple disc and brake assembly having an axle with a central axis of rotation; bearing means mounted on said axle; a rotatable cylindrical wheel member journaled on said bearing means; said cylindrical wheel member having an inner peripheral circumferentially extending portion and a radially disposed web portion for mounting on said bearing means for rotation thereon; said inner peripheral portion has a plurality of circumferentially spaced splines; a plurality of axially spaced rotor discs mounted on said axle and keyed to said splines for rotation therewith; said axle having a circular flange; a torque tube mounted on said axle to encompass a portion thereof; said torque tube having a flange lying closely adjacent to said circular flange; and torque tube having a plurality of axially extending ribs; a plurality of stator discs with circumferentially spaced slots engaging said ribs for axial movement thereon; said rotor discs interleaved between said stator disc to define a brake stack; motive means operative for moving said discs axially into frictional engagement with each other to provide a braking action to said cylindrical wheel member; an energy dissipating annular plate for dampening vibration and converting mechanical energy into heat energy mounted between said circular flange and said flange of said torque tube to abuttingly engage said circular flange and said flange of said torque tube and to completely isolate said circular flange and axle from said brake stack; means extending through and rigidly securing together said circular flange, said flange of said torque tube and said energy dissipating annular plate; and said annular plate being made from a viscoelastic material operative to convert mechanical energy into heat energy and to dampen vibration between said circular flange and said flange of said torque tube during frictional engagement of said stator discs and said rotor discs during braking action.

5,255,762

BRAKE SHOE ASSEMBLY WITH FASTENERS

Michael Beri, North York, Canada, assignor to Tennessee Gas Pipeline Company, Lincolnshire, Ill.

Filed Aug. 30, 1991, Ser. No. 753,118
Int. Cl.[5] F16D 69/04
U.S. Cl. 188—250 G 6 Claims

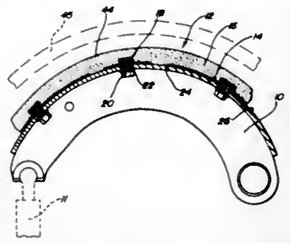
1. A brake system for a vehicle comprising:

(a) a rotatable brake drum coupled to said vehicle;

(b) at least one brake shoe member coupled to a portion of said vehicle;

(c) a friction member having a friction material with a generally continuous first surface, said friction material having a second surface rigidly affixed to a plate with a plurality of apertures such that said friction material extends into at least one of said apertures, said friction member further having a plurality of retainers disposed within said friction material such that each of said retainers is positioned

adjacent to one of said apertures thereby permitting access to said retainers through said plate, each of said retainers having a cylindrical portion that extends into said adjacent aperture and directly abuts a portion of said plate defining said adjacent aperture, each of said retainers further having a radial shoulder portion extending from said cylindrical portion that directly abuts said plate, and an extending portion that extends into said friction material in a direction generally perpendicular to said radial shoulder, said extending portion defining a groove to provide additional surface area in contact with said friction material;



(d) a plurality of fasteners which each pass through one of a plurality of bores in said brake shoe member, and further pass through one of said apertures in said plate to removably engage with one of said retainers thereby clamping said plate in direct abutting engagement against a surface on said brake shoe member; and

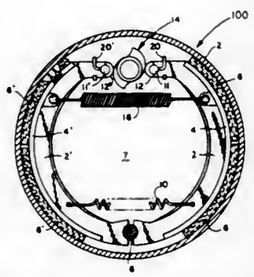
(e) means for displacing said brake shoe such that said first surface of said friction material engages said rotatable drum to retard rotation of said drum.

5,255,763

BRAKE CAM ROLLER FOLLOWER BRACKET

Christopher A. Redgrave, Portage, and Jay D. White, Galesburg, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jul. 8, 1992, Ser. No. 910,064
Int. Cl.[5] F16D *51/22*
U.S. Cl. 188—330 **5 Claims**



1. In combination:

a rotary vehicular brake cam roller follower support pin having trunnions respectively extending away from opposite sides thereof and mounted for rotation at the end of spaced-apart webs of a brake shoe,

at least one opening in at least one of the trunnions adjacent a side of a web that faces away from the other web, and

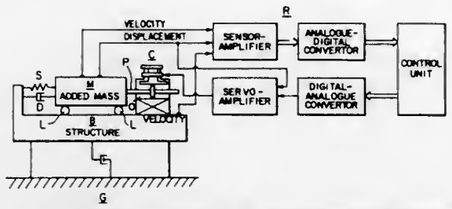
a bracket member having a free-end extending into the opening and wrapped about said web in a manner operative to enable the bracket to prevent the roller follower support pin from rotating.

5,255,764

ACTIVE/PASSIVE DAMPING APPARATUS

Hiroshi Kurabayashi; Toshio Omi; Hiroshi Miyano, all of Tokyo, Japan, and Takafumi Fujita, 575-28, Nakanokuki, Nagareyama-shi, Chiba, Japan, assignors to Takafumi Fujita, Chiba and Mitsubishi Steel, Tokyo, both of Japan

Continuation of Ser. No. 530,266, May 30, 1990, abandoned. This application Dec. 8, 1992, Ser. No. 989,471
Claims priority, application Japan, Jun. 6, 1989, 1-142070
Int. Cl.[5] F16F *7/10*; E04B *1/98*
U.S. Cl. 188—380 **4 Claims**



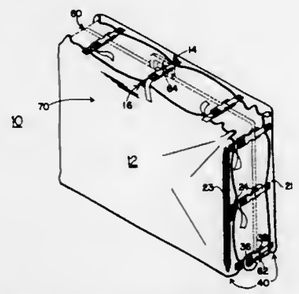
1. An active/passive damping apparatus suitable for mounting on large structures to damp vibrations generated by external disturbances, said apparatus comprising a damping mechanism including an added mass, spring means, damping means, hydraulic cylinders mounted to a structure and connected to said added mass, an electro-hydraulic servo mechanism to switch the mode of operation of said hydraulic cylinders between passive and active modes of operation, and a control unit for switching said electro-hydraulic servo mechanism between the passive and active modes of operation on a real time basis so as to respond on a timely basis with the most suitable mode of operation for a large structure for a particular type and phase of vibrations, whereby said damping mechanism is controlled to be operated in one of the passive and active modes of operation through said electro-hydraulic servo mechanism under the control of said control unit.

5,255,765

REMOVABLE LUGGAGE COVER

Deborah Schrecongost, Chicago, Ill., assignor to Loonatickle, Inc., Boise, Id.

Filed May 19, 1992, Ser. No. 885,518
Int. Cl.[5] A45C *13/30*
U.S. Cl. 190—26 **1 Claim**



1. A removable luggage cover consisting of:

a rectangular, one-piece, substantially planar fabric sheet having two opposing end edges and two opposing side edges, the side edges each having a left half and a right half, said sheet having tucks gathered and sewn in it near the center of each side edge so that the cover fits and conforms to a piece of luggage;

a plurality of straps attached to the sheet at approximately

equal intervals along the end edges, and at approximately equal intervals along the side edges; and

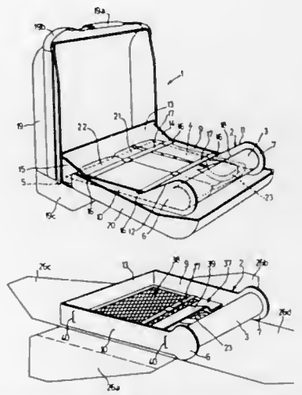
cooperating latch means adjustably attached to each strap so that straps at opposing end edges may be detachably engaged together, and straps at the left half of the side edges may be detachably engaged to straps at the right half of the same side edge.

5,255,766

TRAVELLING OR PACKING BAG

Norbert D. H. Deconinck, 31 Boulevard du Commandant Charcot, F-92200 Neuilly-sur-Seine, France

Filed Apr. 16, 1992, Ser. No. 869,456
Claims priority, application France, Apr. 18, 1991, 91 04802
Int. Cl.[5] A45C *5/12*
U.S. Cl. 190—36 **35 Claims**



1. A travelling bag for personal belongings including garments such as trousers, skirts and at least a jacket and other clothes such as shirts with collars, comprising:

an outer case having a top part and adapted to be carried in a vertical transport position;

a rigid inner tray having a packing wall which is at least partly solid and has a rigid hollow support edge disposed along one side thereof;

said support edge having a convex surface adapted to receive said garments laying astride the support edge;

said rigid inner tray being adapted to be readily pivotable between a horizontal packing position enabling clothes to be laid flat on the packing wall partly inside said hollow support edge, and a vertical transport position in which said rigid support edge is disposed horizontally in said top part of said outer case;

said rigid inner tray being provided with a securing means for securing clothes laid flat on said packing wall, said securing means including a flap having protection means for protecting collars of shirts from being crushed.

5,255,767

CORD REEL LICENSE-PLATE HOLDER

Wade K. D. Norwood, Scarborough, Canada, assignor to Noma Inc., Scarborough, Canada

Filed Aug. 31, 1992, Ser. No. 937,338
Int. Cl.[5] H02G *11/02*; B60R *11/00*
U.S. Cl. 191—12.2 R **11 Claims**

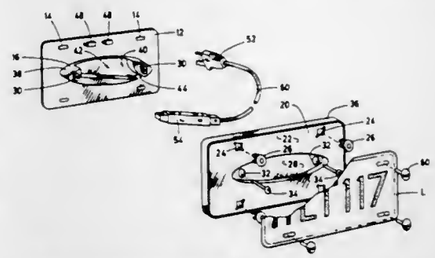
1. In a cord reel forming a license plate carrier for a vehicle, said reel including:

a hub portion having an axis and a peripheral wall, a pair of cheeks respectively disposed adjacent the axial ends of said hub portion,

one of said pair of cheeks being adapted to mount said cord reel to a license plate holder of said vehicle, the other of said pair of cheeks being adapted to carry a license plate for said vehicle,

an electrical extension cord coiled about said hub portion, said cord having connectors at opposed ends thereof;

the improvement wherein said hub portion is provided with a passageway therethrough interconnecting peripherally



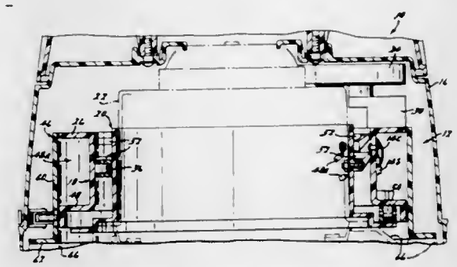
spaced apart portions of said peripheral wall, and wherein said cord is threaded through said passageway, at least a portion of said passageway being dimensioned so as to prevent the passage of either of said connectors therethrough while permitting the cord to be drawn therethrough along the length of the cord, thereby trapping said cord on said reel.

5,255,768

CORD WINDER APPARATUS FOR A VACUUM CLEANER SYSTEM

Gary A. Kasper, and Dean R. Rohn, both of Cadillac, Mich., assignors to Rexair, Inc., Troy, Mich.

Continuation of Ser. No. 766,055, Sep. 26, 1991, abandoned. This application Dec. 4, 1992, Ser. No. 986,876
Int. Cl.[5] H02G *11/02*; B65H *75/48*
U.S. Cl. 191—12.2 R **8 Claims**



1. A vacuum cleaner apparatus comprising:

a motor;

generally circular spool means positionable over said motor for enabling a power cord to be woundably retained thereon said spool means having a central opening so as not to cover said motor when positioned over said motor, said spool means including a generally vertical wall portion having first means for transmitting power from said power cord;

generally circular race means operable to fit coaxially at least partially within said spool means for enabling said spool means to rotate thereon, to thereby enable a power cord wound upon said spool means to be unwound therefrom and rewound thereupon, said race means further having a generally horizontal flange portion and a central opening so as not to cover said motor, said race means further having second means operably associated with a generally vertical sidewall portion thereof for receiving

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power transmitted from said first means and transmitting said received power to said motor;

cover means for enclosing said spool means, said cover means having an opening in a portion thereof;

brake means for holding said spool means stationary after said power cord has been unwound a desired amount from said spool means, said brake means including a brake wheel laterally moveable into a first position in response to movement of said spool means in a first direction, wherein in said first position said brake wheel allows said spool means to rotate freely, and laterally movable into a second position when said spool means is initially rotated in a second direction to frictionally engage said spool means, to thus stop rotation of said spool means and to hold said spool means stationary; and

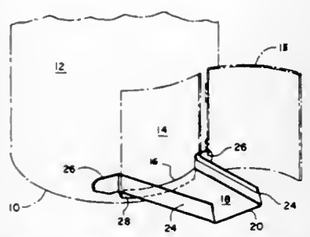
manually engageable brake release means protruding through said opening in said cover means for urging said brake wheel out of said frictional engagement with said spool means.

5,255,769

DISCHARGE CHUTE FOR TRASH RECEPTACLES

Michael G. Echelberger, Box 333, 608 N. 2nd St., Rockwell, Iowa 50469

Filed Mar. 4, 1992, Ser. No. 846,219
Int. Cl.[5] B65G *11/00*
U.S. Cl. 193—4 **1 Claim**



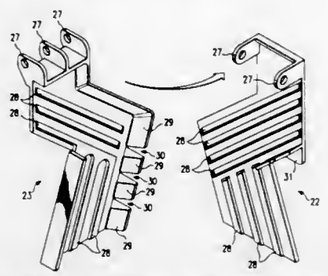
1. A detachable discharge chute for emptying debris from a trash receptacle having a side wall with a rectangular-shaped clean out opening in the side wall, said discharge chute comprising a bottom wall having a rear edge and a front edge, spaced apart side flanges extending upwardly from the bottom wall to form with the bottom wall a chute over which the debris can be removed, a rear portion of each side flange extending rearwardly from the rear edge of the bottom wall and then outwardly from the flange to form a retaining tab, the rear edge of the bottom wall being shaped to conform to the shape of the outside surface of the side wall of the trash receptacle, and a retaining lip extending downwardly from the bottom wall along the rear edge of the bottom wall forwardly of the retaining tabs, the retaining lip being engageable with the outside surface of the side wall of the receptacle just beneath and along the bottom edge of the clean out opening and the retaining tabs being engageable with the inside surface of the side wall of the receptacle inside of the clean out opening adjacent to the side edges of the opening so as to retain the discharge chute in place when installed in the clean out opening of the receptacle, the chute being formed of a single piece of material that is rigid but which has some resiliency to permit the chute to be bent a limited amount without deformation thereby allowing the chute to be repeatedly installed in and detached from the clean out opening of the receptacle.

5,255,770

COIN HANDLING SYSTEM

John A. Hird, Dallas, and Mark E. Kerr, Wylie, both of Tex., assignors to First City, Texas-Dallas, Dallas, Tex.

Continuation of Ser. No. 594,272, Oct. 9, 1990, Pat. No. 5,090,548. This application Sep. 11, 1991, Ser. No. 758,897
The portion of the term of this patent subsequent to Feb. 25, 2009, has been disclaimed.
Int. Cl.[5] G07F *1/04*
U.S. Cl. 194—345 **7 Claims**



1. A coin handling system for use in a coin operated machine with a coin validator, comprising:
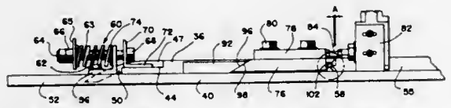
a chute for guiding coins into the entry of the coin validator, said chute comprising first and second chute pieces biased together to form said chute, wherein one of said first and second chute pieces comprises a rear edge with a bevel formed thereon so that if a foreign object forcibly impacts said rear edge having said bevel, said chute pieces divide and force the foreign object out of said chute and away from the entry of the coin validator and wherein said first and second chute pieces are pivotally connected at their ends to enable said chute pieces to divide.

5,255,771

COMBPLATE SAFETY DEVICE

Thomas R. Nurnberg, Bettendorf, Iowa, and Richard D. Rohret, East Moline, Ill., assignors to Montgomery Elevator Company, Moline, Ill.

Filed Jul. 18, 1991, Ser. No. 732,162
Int. Cl.[5] B65G *43/00*
U.S. Cl. 198—323 **6 Claims**



1. A combplate safety device for stopping a passenger conveyor in response to an obstruction to the motion of the conveyor, the conveyor including a combplate mounted on a frame and movable in response to the obstruction, the combplate safety device comprising:

a block fixed to the frame having a ramped surface, the ramped surface cooperating with the frame to define a rearwardly opening notch within which a complementary member on the combplate is received for releasably securing the combplate against the frame in a vertically downward direction; and

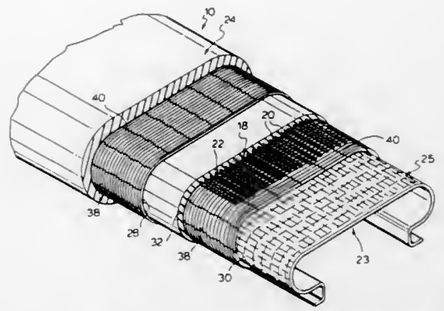
deactivation means operable to stop the passenger conveyor when a predetermined displacement of the combplate occurs.

5,255,772

HANDRAIL FOR ESCALATORS AND MOVING WALKWAYS WITH IMPROVED DIMENSIONAL STABILITY

Ronald H. Ball, Oshawa, and A. Stuart Caunce, Scarborough, both of Canada, assignors to Escalator Handrail Company, Ontario, Canada

Filed Dec. 22, 1992, Ser. No. 994,762
Int. Cl.[5] B66B *23/24*
U.S. Cl. 198—337 **14 Claims**



1. In an improved handrail construction adapted for use on escalators, moving walkways and the like, the improved handrail exhibiting increased lateral stiffness, dimensional stability and greater lip strength properties and having:

i) a C-shaped cross-section with a transverse portion and opposing inwardly directed lip portions, said opposing lip portions locating said handrail for use on escalators and moving walkways,

ii) a stretch inhibitor extending longitudinally of said handrail and through said transverse portion,

iii) multiple plies of reinforcing fabric being located in said transverse portion,

iv) said stretch inhibitor and multiple plies being molded in a first rubber composition to provide said C-shape cross-section,

v) a slider member being provided on the underside of said handrail,

the improvement which provides said increased lateral stiffness, dimensional stability and greater lip strength properties, comprising:

vi) two spaced apart plies of reinforcing woven fabric having stiff principal yarns which extend perpendicular to said stretch inhibitor and across said transverse portion and around said opposing lip portions to adjacent inner extremities of said opposing lip portions,

vii) said two spaced apart plies being interconnected by a second rubber composition which has a higher strength in terms of stiffness, hardness and viscosity than said first rubber composition,

viii) said two spaced apart plies with said transversely extending principal yarns and said interconnecting second rubber composition forming a structural sandwich construction which provides said increased properties,

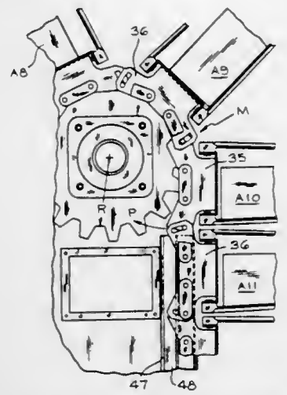
ix) said sandwich construction being molded within said first rubber composition to complete said improved handrail construction.

5,255,773

ACCUMULATOR FOR CONVEYOR SYSTEM

Daniel A. Pollock, Perrysburgh, Ohio, assignor to Roe Incorporated, Perrysburg, Ohio

Filed Jan. 21, 1993, Ser. No. 6,614
Int. Cl.[5] B65G *1/00*
U.S. Cl. 198—347.3 **7 Claims**



1. An accumulator for movably supporting an article comprising:

a frame;

a wheel rotatably supported upon said frame, said wheel defining a radius;

means for selectively rotating said wheel;

a member engaged with said wheel for movement when said wheel is rotated, said member including a plurality of spaced apart pins;

a link carried on said member for movement therewith, said link having at least one aperture formed therethrough and at least one slot formed therethrough, said aperture and said slot having first edges which define a straight line and having second edges which define a radius which is substantially equal to said radius defined by said wheel; and

means secured to said link for supporting an article thereon for movement with said link and said member when said wheel is rotated.

5,255,774

SORTING APPARATUS

Jyuji Yokoya, Tokyo, Japan, assignor to Yoyokanetsu Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 23, 1992, Ser. No. 980,874
Claims priority, application Japan, Dec. 12, 1991, 3-328952
Int. Cl.[5] B65G *47/46*
U.S. Cl. 198—365 **10 Claims**

1. A sorting apparatus which comprises a hollow rotating member rotatable at a predetermined inclined angle relative to a vertical direction on a flatcar running along a guide rail, and a tray fixed to an upper portion of said hollow rotating member for mounting a package thereon, so that said package is slid downward by tilting said tray, said sorting apparatus further comprising:

a pair of spherical cam plates each provided with a cam groove for controlling the rotation of said hollow rotating member;

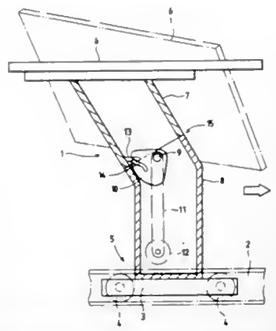
said cam plates rotatable about a support shaft disposed perpendicularly to a running direction;

drive levers swingable two-dimensionally together with said respective spherical cam plates for controlling the rotation thereof;

a pin projectingly provided on an inner circumferential

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surface of a lower portion of said hollow rotating member so as to be fitted in said cam grooves; and



said pin sliding along said cam groove in conjunction with the rotation of said spherical cam plate, thereby rotating and tilting said tray three-dimensionally.

5,255,775

APPARATUS FOR INDIVIDUALLY ORIENTING TEXTILE PACKAGES IN RESPONSE TO SENSING OF THE INITIAL ORIENTATION OF THE PACKAGE

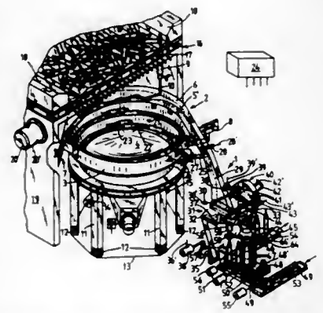
Heinz Boehren; Alfred Schmitz, and Norbert Bohnen, all of Moenchengladbach, Fed. Rep. of Germany, assignors to W. Schlafhorst AG & Co., Moenchengladbach, Fed. Rep. of Germany

Filed Apr. 16, 1992, Ser. No. 869,796

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1991, 4112435

Int. Cl.[5] B65G *47/24*

U.S. Cl. 198—395 **20 Claims**



1. An apparatus for orienting packages of textile material into predetermined individual orientations, the packages being of the type having textile material built on a tube with one portion of the package having at least one detectably different characteristic than another portion of the package axially spaced from the one package portion, comprising:

means for transporting packages along a delivery path to an orienting location;

means for classifying each package on the basis of its detectably different characteristic, the transporting means being operable to deliver each package to the classifying means and the classifying means classifying each package as either an end adjacent package having its one portion more closely adjacent a predetermined delivery path location than the other portion of the package or an end remote package having its one portion more remote from the predetermined delivery path location than the other portion of the package, the transporting means being operable to transport each package from the classifying means to the orienting location in a manner in which each package arrives at the orienting location in the same disposition as other packages similarly classified by the classifying means; and

means for disposing each package delivered to the orienting location in a predetermined individual orientation, the disposing means including:

a first package supporting element and a second package supporting element disposed in generally perpendicular intersecting relation to one another, each package supporting element having an open end through which a package travels to exit the package supporting element;

means for cyclically moving each of the package supporting elements between a receipt position at which the package supporting element receives a package delivered to the orienting location and a discharge position in which a supported package is discharged from the respective package supporting element through the open end thereof at least partially due to the operation of gravity on the package, the receipt and discharge positions being disposed relative to one another such that the orientation of each supported package changes by an angle substantially equal to ninety degrees between the receipt and discharge positions, the cyclically moving means being operable to alternately move the first and second package supporting elements between the receipt and discharge positions with the first package supporting element being disposed at one of the receipt and the discharge positions while the second package supporting element is disposed at the other of the receipt and the discharge positions, and

means for controlling the cyclically moving means to move the respective package supporting element at the receipt position to the discharge position by a selected one of a first element in which an end adjacent package supported by the respective package supporting element is discharged in the same predetermined orientation as the other end adjacent packages and a second movement of the respective package supporting element in which an end remote package supported by the respective package supporting element is discharged in the same predetermined orientation as the other end remote packages, the controlling means being operable to select the appropriate one of first and second movements in response to a signal from the classifying means indicating the respective end adjacent or end remote classification of the package which is to be moved from the receipt to the discharge position, whereby both the end adjacent and end remote packages can be disposed in the same predetermined orientation by movement of the respective package supporting element at the receipt position to the discharge position in a selected one of a clockwise and counterclockwise direction for discharge of end adjacent packages therefrom and movement of the respective package supporting element at the receipt position to the discharge position in the other of the clockwise and counterclockwise directions for discharge of end remote packages therefrom.

5,255,776

SYSTEM FOR INDEPENDENTLY TRANSPORTING DIFFERENTLY SIZED TEXTILE PACKAGES ON INDEPENDENT TUBE SUPPORT MEMBERS HAVING IDENTICAL BASE COMPONENTS

Hans Grecksch; Gregor Rüth, and Dietmar Englehardt, all of Moenchengladbach, Fed. Rep. of Germany, assignors to W. Schlafhorst AG & Co., Moenchengladbach, Fed. Rep. of Germany

Filed Dec. 23, 1991, Ser. No. 812,723

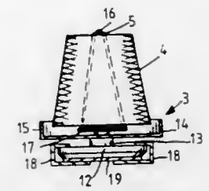
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1990, 4041715

Int. Cl.[5] B65G *29/00*

U.S. Cl. 198—465.1 **15 Claims**

1. A transport system for transporting packages of textile strand material to and between locations on at least one textile machine, each package including a tube and a body of textile material wound on the tube to a predetermined radial extent, the transport system comprising:

a plurality of tube support members for individually supporting the packages thereon, each tube support member and its associated package being movable as a single unit independently of the other tube support members and their associated packages and each tube support member including a base component and a post component projecting therefrom, said post component having an axis and said base component having a predetermined circumferential extent no greater than the radial extent of the package supported thereon, said post component being compatibly dimensioned with respect to the tube of a package for receiving the tube inserted thereover, and a bumper component extending radially from the post component to an extent at least equal to the radial extent of the package and disposed for engaging other tube support members or objects in the path of travel of the package to thereby prevent contact between the package and other packages or other tube support members or other objects; and



means for moving the tube support members to and between locations on the at least one textile machine.

5,255,777

APPARATUS FOR TRANSPORTING GROUPS OF ROD-SHAPED ARTICLES OF THE TOBACCO PROCESSING INDUSTRY

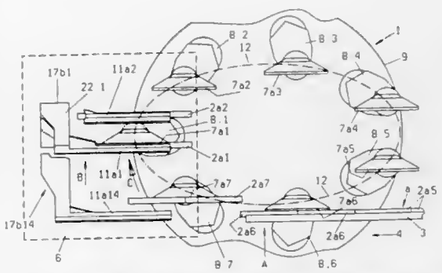
Karl-Heinz Pawelko, Marschacht, Fed. Rep. of Germany, assignor to Korber AG, Hamburg, Fed. Rep. of Germany

Filed Sep. 1, 1992, Ser. No. 938,794

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1991, 4129672

Int. Cl.[5] B65G *29/00*

U.S. Cl. 198—471.1 **19 Claims**



1. Apparatus for transporting rod-shaped articles of the tobacco processing industry, comprising means for supplying first and second files of coaxial articles along parallel first and second paths located in a substantially horizontal plane; a first conveyor having at least one circulating device including means for removing articles from said files and for conveying the removed articles along a third path located in a substantially vertical plane substantially at right angles to said horizontal plane; and a second conveyor having means for accepting the articles from said removing means and for moving the accepted articles sideways along a fourth path, said second conveyor further having means for moving said accepting means from said fourth path toward said third path to accept articles from said removing means and thereupon back to said fourth path.

5,255,778

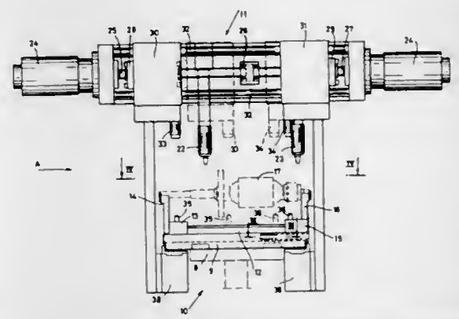
AUTOMATIC ADJUSTMENT OF PALLET WORKPIECE SUPPORT MEMBERS

Luciano Santandrea, and Massimo Lombardi, both of Florence, Italy, assignors to Axis S.p.A., Malborough, Mass.

Continuation of Ser. No. 699,913, May 14, 1991, abandoned, which is a division of Ser. No. 326,158, Mar. 20, 1989, Pat. No. 5,115,901, which is a continuation-in-part of Ser. No. 212,267, Jun. 27, 1988, abandoned. This application Dec. 21, 1992, Ser. No. 994,147

Int. Cl.[5] B65G *17/32*

U.S. Cl. 198—803.11 **1 Claim**



1. The apparatus for determining the location of a first and second support members on a pallet comprising:

a shaft arranged proximate to and in alignment with the first and second support members;

a first and a second movable sleeve mounted on the shaft, the first movable sleeve being associated with the first support member and having a first projection, the second movable sleeve being associated with the second support member and having a second projection;

first means for moving the first sleeve along the shaft between an outermost position and an innermost position, said first means having a stop means so that when the first sleeve is being moved from its outermost position toward its innermost position and contacts the first support member it stops movement of the first sleeve;

second means for moving the second sleeve along the shaft between an outermost position and an innermost position, said second means having a stop means so that when the second sleeve is being moved from its outermost position toward its innermost position and contacts the second support member it stops movement of the second sleeve;

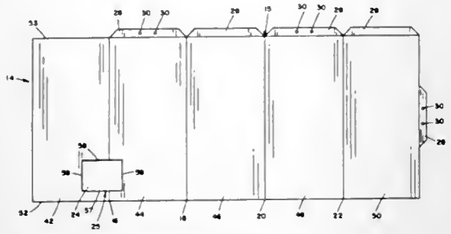
means for measuring the distance between the location of the first sleeve and its predetermined location;

means for measuring the distance between the location of the second sleeve and its predetermined location; and

means for determining the location of the first and second support members relative to the outermost locations of the first and second sleeves when the inward advancement of the first and second sleeves has stopped.

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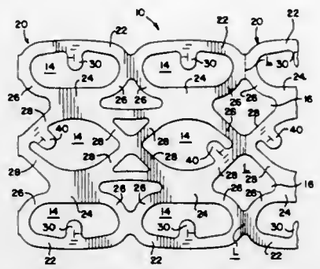
5,255,779
FILE FOLDER WITH DISK POCKET
C. Frederick Koenig, III, 55 Lenape La., Doylestown, Pa. 18901
Continuation of Ser. No. 422,654, Oct. 17, 1989. This application Jul. 29, 1992, Ser. No. 921,521
Int. Cl.[5] B65D *85/30*
U.S. Cl. 206—232 6 Claims



6. A file folder comprising:
first and second opposing covers joined along one edge for relative pivotal rotation for opening the folder from a closed position whereat said opposing covers are in substantially parallel planes atop each other through at least an arc of 180° whereat the said opposing covers are adjacent to each other in substantially the same plane;
said first cover including an outer cover portion, an inner cover portion and a spacer member disposed between said inner and outer cover portions;
said spacer member having a selected thickness and having an aperture therein to define compartment therethrough for receiving and retaining a computer diskette, said compartment being adjacent to said joined edge of said first cover;
said inner and outer cover portions cooperating with said spacer member to provide stiffness to said first cover so that when a diskette is disposed in said compartment it is protected from being bent, crushed and excessively moved;
an exposed slot defined in said inner cover portion of said first cover for accessing said compartment, said slot being adjacent and parallel to said joined edge of said first cover and configured such that the computer disk can only be slidably inserted into or removed from said compartment through movement in a plane substantially coplanar with said spacer member;
said second cover restricting access to said slot thereby serving to retain a diskette in said compartment until said opposing covers are opened at least 180°.

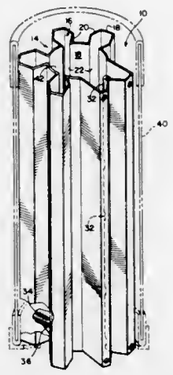
5,255,780
CARRIER STOCK WITH TEAR-OPEN TABS
Robert C. Olsen, Medinah, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.
Filed Nov. 17, 1992, Ser. No. 977,808
Int. Cl.[5] B65D *75/58*
U.S. Cl. 206—150 8 Claims

1. Carrier stock for machine application to substantially identical containers, said stock being formed from a single sheet of resilient polymeric material and being severable along transverse lines to form individual carriers with container-receiving apertures in longitudinal rows to receive the individual containers, said carrier stock being formed for each individual carrier with integrally joined band segments defining the container-receiving apertures, the band segments including generally diagonal band segments, each of which extends in a



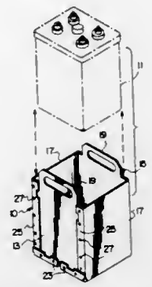
generally diagonal direction when said stock is unstressed and some of which have tear-open tabs.

5,255,781
CLUB ORGANIZER FOR GOLF BAGS
Kenneth W. Dulyea, Sr., 5159 Brookside Ct., Whitehall, Mich. 49461
Filed Jul. 6, 1992, Ser. No. 909,291
Int. Cl.[5] A63B *55/04*
U.S. Cl. 206—315.6 12 Claims



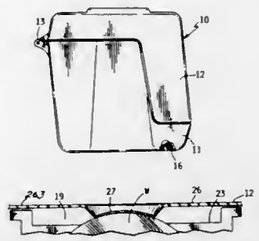
1. For use within a golf bag, a club organizer for receiving and positioning golf clubs relative to each other, said club organizer including a vertically elongate sheet of material folded into a vertically elongate generally cylindrical configuration and defining a central area, said sheet having opposed vertical edges with means thereon for interlocking said edges in said cylindrical configuration, said organizer having alternating inner and outer compartments around said central area therein and along the full vertical extent thereof, at least selected ones of said inner compartments including opposed side walls converging inwardly toward said central area and defining a mouth opening inwardly from the corresponding compartment to said central area along the full height of said organizer, said mouth of said at least selected ones of said inner compartments having a transverse width less than that of said opposed side walls for restricting access from said central area to said at least selected ones of said inner compartments.

5,255,782
BATTERY TRAY DEVICE
Joseph W. Carroll, Jr., West Chester, Pa., assignor to Kim Manufacturing Company, Downingtown, Pa.
Filed Jul. 31, 1992, Ser. No. 923,253
Int. Cl.[5] B65D *73/02*
U.S. Cl. 206—333 14 Claims



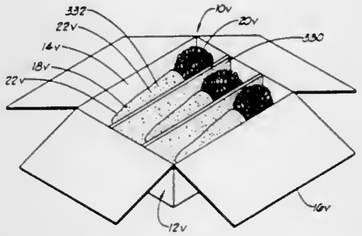
1. A tray device having a predetermined rectangular shape comprising:
a front panel, a rear panel and a pair of side panels, first and second bottom panels forming said predetermined rectangular shape;
each said side panel having a respective bottom panel folded thereto to form a bottom for said predetermined rectangular shape;
said bottom panels having bottom flanges and said side panel having side flanges, all of said flanges being folded transverse to the respective panels for parallel contact with said front and rear panels; and
a plurality of spot welds fixedly attaching said flanges to said front and rear panels without substantially altering said predetermined rectangular shape.

5,255,783
EVACUATED WAFER CONTAINER
John B. Goodman, and Kirk J. Mikkelsen, both of Chanhassen, Minn., assignors to Fluoroware, Inc., Chaska, Minn.
Filed Dec. 20, 1991, Ser. No. 811,783
Int. Cl.[5] B65D *85/48*
U.S. Cl. 206—334 3 Claims



1. A wafer storing and shipping container comprising
a readily transportable plastic container free of adjoining apparatus and formed of stiff material and comprising interior portions with spacer means supporting the individual wafers in spaced and confronting relation to each other, the container comprising a box bottom portion and a box cover portion bearing against each other and separable from each other for obtaining access to said interior portions, said box bottom and box cover portions being releasably and hermetically sealed together, the interior portion of the plastic container also comprising subatmospheric pressure obtaining retention of the box bottom and box cover portions against each other and one of said box bottom and box cover portions comprising a valve gas port facilitating withdrawing and adding portions of the gas atmosphere within said interior portions, and said box cover portion comprising a top wall portion with a flat main portion and a flexible panel portion comprising a flexible membrane, the flexible panel portion being recessed inwardly toward the interior portions of the plastic container relative to the flat main portion of the top wall portion, said flexible panel portion having reduced thickness relative to the main portion of the top wall portion, and said flexible panel portion flexing inwardly toward said interior portions in response to the subatmospheric pressure of the gas and releasably engaging and retaining wafers confined in the interior portions of the container.

5,255,784
SHIPPING CARTON FOR FLORAL GROUPING ASSEMBLIES
Donald E. Weder, Highland; William F. Straeter, Brease, and Joseph G. Straeter, Highland, all of Ill., assignors to Highland Supply Corporation, Highland, Ill.
Continuation of Ser. No. 868,068, Apr. 13, 1992, Pat. No. 5,195,637, which is a continuation of Ser. No. 831,767, Feb. 5, 1992, Pat. No. 5,148,918, which is a continuation-in-part of Ser. No. 692,392, Apr. 26, 1991, Pat. No. 5,092,465. This application Dec. 31, 1992, Ser. No. 999,442
The portion of the term of this patent subsequent to Sep. 22, 2009, has been disclaimed.
Int. Cl.[5] B65D *85/50, 85/52*
U.S. Cl. 206—423 8 Claims



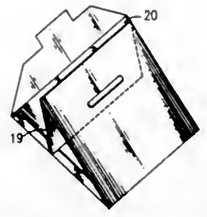
1. A shipping carton comprising:
a box assembly having an inner surface and an outer surface and at least partially enclosing a retaining space, comprising:
a box insert having an upper surface and a lower surface;
a plurality of floral groupings assemblies, each floral grouping assembly being disposed in the retaining space in the box assembly and each floral grouping assembly having an adhesive disposed on a portion thereof, the box insert being disposed in the retaining space in the box assembly and the adhesive on the floral grouping assemblies adhesively and removably engaging the box insert for removably and adhesively connecting the floral grouping assemblies to the box insert for substantially preventing movement of the floral grouping assemblies in the box assembly during movement of the box assembly.

5,255,785
SHIELDED FLOPPY DISK CARTRIDGE MAILING ENVELOPE
David L. Mackey, New Boston, N.H., assignor to Amherst International Corporation, Manchester, N.H.
Filed Jun. 11, 1992, Ser. No. 897,336
Int. Cl.[5] B65D *85/30*
U.S. Cl. 206—444 3 Claims

1. A protective envelope made of thin material and adapted to receive and contain a floppy disk cartridge assembly, said

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envelope comprising a rear wall and a front wall, each said wall having an inner and outer surface and a top edge, respectively, said walls being joined by a pivotal common bottom edge, said envelope also having side edge flaps pivotally joined along side edges of said rear wall such that said side edge flaps can be folded inwardly toward the inner surface of said rear wall, said front wall being likewise foldable inwardly toward the inner surface of said rear wall, the inner surface of said front wall being adherable to an outer surface of said side edge flaps when said side edge flaps are folded inwardly toward the inner surface of said rear wall to form a pocket having an opening, said top edge of said rear wall having a pivotally joined cover flap including a pivotally joined tab flap which extends outwardly from a top edge of said cover flap, an electrically conductive continuous film sandwiched between the



inner and outer surfaces of said front and rear walls of said envelope to form a continuous and puncture resistant barrier against ambient electromagnetic energy such that a floppy disk cartridge placed in said envelope is shielded from deleterious effects of said electromagnetic energy, slot means in said front wall providing a second opening such that said tab flap may be inserted therein to maintain said cover in closed position when said tab flap is inserted into said slot means to form a substantially electromagnetically secure shielded pocket, and an inwardly folding shielding pocket flap pivotally joined at said top edge of said front wall, said shielding pocket flap adhered at its marginal edges to said inner surface of said front wall to form a slot-shielding pocket such that said slot means opens into said slot-shielding pocket capable of preventing leakage of electromagnetic energy to said floppy disk cartridge when said tab flap is inserted in said slot means.

5,255,786

PACKAGE HAVING A SLIDING CLOSURE FOR DISPENSING PILL OR PELLET TYPE PRODUCTS

Gary E. McQuay, Watsontown, Pa., assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 8, 1992, Ser. No. 958,388

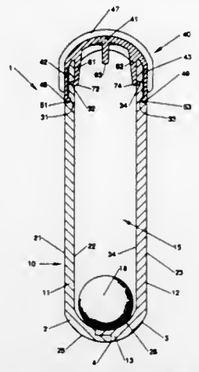
Int. Cl.[5] B65D *83/04*

U.S. Cl. 206—534.2 **12 Claims**

1. A dispensing package for pill or pellet type products of a substantially predetermined size, said package having an orifice to dispense said product, said package further comprising a sliding closure having an open position so as to expose said orifice and enable said product to be dispensed and a closed position so as to cover said orifice and prevent unwanted dispensing of said products, said package comprising:

(a) a container comprising two opposing side walls having interior and exterior surfaces and a peripheral wall joining said opposing side walls, said side walls and said peripheral wall defining an interior chamber for containing said products, said peripheral wall including an orifice therein for dispensing said products therefrom, said side walls each having at least one pair of grooves substantially parallel to and adjacent said orifice, one of said grooves extending along said exterior of said side wall and said other groove extending along said interior of said side wall; and

(b) said sliding closure comprising a top wall and two opposing end walls, each of said end walls having at least one exterior prong protruding therefrom, said exterior prongs extending along said end walls such that they slidingly engage said exterior grooves on said side walls of said container, said sliding closure further including two opposing attachment walls extending from said top wall and into said interior chamber, said attachment walls each having at least one interior prong protruding therefrom,



said interior prongs extending along said attachment walls such that they slidingly engage said interior grooves on said side walls of said container, whereby said sliding closure remains securely attached to said container even if said exterior prongs are disengaged from said exterior grooves.

5,255,787

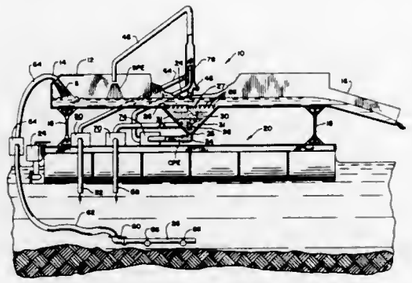
LEAD SHOT RECLAMATION DEVICE AND METHOD

John Sims, 710 Crescent Blvd., Glen Ellyn, Ill. 60137

Filed May 3, 1991, Ser. No. 695,150

Int. Cl.[5] B03B *7/00*

U.S. Cl. 209—17 **8 Claims**



1. A device for reclaiming high specific gravity solid pellets from a slurry of feed material containing the pellets and other solids having a lower specific gravity than the pellets, comprising:

a sluice box for permitting slurry flow therethrough and having a sluice inlet and a sluice outlet for the slurry;

an open-bottom riffle bed comprising a plurality of spaced apart riffles and located in a bottom portion of said sluice box between the sluice inlet and the sluices outlet, said riffles being generally horizontally disposed and extended lengthwise generally perpendicular to the flow of feed material;

a collection pit located beneath the riffle bed and for permitting liquid flow between the collection pit and the sluice box through the riffle bed, for collecting high specific gravity pellets, said pit including a discharge port at a bottom portion of the pit for allowing the pit to be emptied of fluid and high specific gravity pellets while the device is operating;

a clean water inlet port connected to the collection pit for providing fluid flow into the collection pit below the riffle bed for controlling fluid flow between the collection pit and the sluice box through the riffle bed to provide an apparent bottom for the riffle bed and causing the pellets in combination with the riffle bed to be selectively separated for the other solid materials in the slurry feed materials by passage through the riffle bed and into the collection pit; and 'a secondary separator connected to said discharge ports for separating residual undesired collection solid material from the pellets, said secondary separator including a vertical elongated separator vessel having a secondary clean water inlet port near its lower end and an effluent line near its upper end, a substantially coaxially oriented vessel influent pipe for discharging inlet material upwardly in said separator vessel, said influent pipe having one end connected to said discharge port and a second end terminating above said clean water inlet port and below said effluent line, and a secondary vessel below said clean water inlet of the separator vessel below said clean water inlet port and said influent pipe second end for discharging high specific gravity pellets from the separator vessel.

5,255,788

PRESSURE SORTER

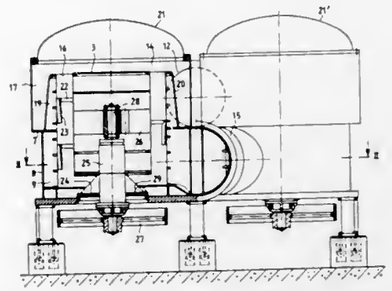
Reimund Rienecker, Heidenheim; Peter Schweiss, Langenau, and Theodor Bähr, Heidenheim, all of Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Jul. 10, 1992, Ser. No. 911,399

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1991, 4123112

Int. Cl.[5] B07B *1/04*

U.S. Cl. 209—273 **8 Claims**



1. A pressure sorter for a suspension flow, comprising:

a cylindrical housing having at least one inlet opening and at least one outlet opening with a defined pressure drop therebetween;

a rotationally symmetric screen basket disposed within said housing, said screen basket having a plurality of openings defining a total screen perforation passage area;

a rotor and suspension sorting space disposed centrically within said screen basket; and

an accepts space disposed radially outward of said screen basket between said screen basket and said housing, said accepts space having a cross section causing a pressure drop between said suspension sorting space and said accepts space resulting in a suspension flow through said screen openings having a maximum velocity of 2.5 m/s, and a deviation to higher suspension flow velocity values from an arithmetic mean value based on the total screen perforation passage area across the entire screen basket circumference amounting to a maximum of 25% of said arithmetic mean value, the pressure drop of the suspension flow in the accepts space smaller than the pressure difference between the suspension sorting space and the accepts space.

5,255,789

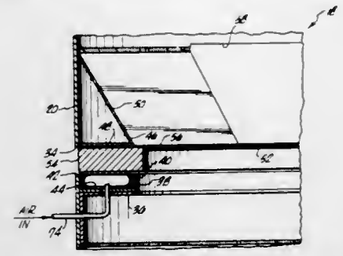
CIRCULAR VIBRATORY SCREEN SEPARATOR

Eduard X. J. Janssens, Patatestraat 54, 1861, Wolvertem, and Christian M. J. C. M. Minne, Du Chateau 18, 7110 Strepy-, Bracquegnies, both of Belgium

Continuation of Ser. No. 697,317, May 6, 1991. This application Jan. 21, 1993, Ser. No. 7,178

Int. Cl.[5] B07B *1/28*

U.S. Cl. 209—319 **8 Claims**



1. A circular vibratory screen separator, comprising

a resiliently mounted separator housing including a sidewall, circular in cross section, and having a slot in a plane perpendicular to the axial centerline of said sidewall;

a circular seat including an inflatable seal extending about the interior of said sidewall and a stop extending about the interior of said sidewall opposed to and displaced from said inflatable seal, said slot extending in a semicircle between said inflatable seal and said stop.

5,255,790

SCREENING APPARATUS

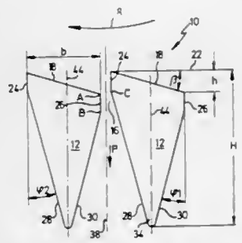
Norbert Einoder, Tegernheim, and Waldemar R. Knodel, Pentling, both of Fed. Rep. of Germany, assignors to Heinrich Fiedler GmbH & Co KG, Regensburg, Fed. Rep. of Germany

Filed Jan. 23, 1992, Ser. No. 824,365

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1991, 4121897

Int. Cl.[5] B07B *1/49*

U.S. Cl. 209—393 **11 Claims**



1. Screening apparatus for sorting and classifying a fluid flow; comprising a plurality of screen elements mounted on cross bars and defining a screen area, each of said screen elements having a top surface, a first side face including a plane wall section which extends from one end of said top surface transversely to the screen area, and a second side face including a plane wall section which extends from the other end of said top surface transversely to the screen area, wherein the plane wall section of said first side face of on screen element extends parallel to the plane wall section of said second side

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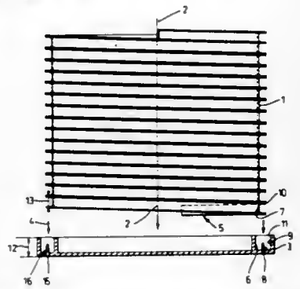
face of a successive screen element to define a screening slot therebetween through which fluid flows, with each of the plane wall sections of said first and second side faces defining a downstream edge, with the downstream edge of the plane wall section of said first side face of one screen element being provided in flow direction of the fluid through said screening slot ahead of the downstream edge of the opposing plane wall section of said second side face of said successive screen element.

5,255,791

END RIM OF CYLINDRICAL SIEVE FOR PAPER PULP STRAINER AND CLASSIFIER AND PROCESS, OF MAKING IT

Jean-Pierre Lamort, Vitry le Francois, France, assignor to E&M Lamort, Vitry le Francois, France

Filed May 1, 1992, Ser. No. 876,928
Claims priority, application France, May 3, 1991, 91 05453
Int. Cl.[5] B07B *1/49*
U.S. Cl. 209—406 **5 Claims**



1. A cylindrical basket sieve for a strainer or classifier comprising:

a metal element having a channel shaped cross-section forming a hollow cylinder, and

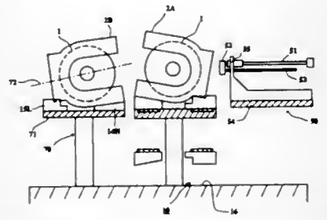
a rim of thermosetting plastic material molded onto each end of said cylinder, said rim having a U-shaped peripheral channel into which a respective end of the cylinder fully fits.

5,255,792

METHOD AND APPARATUS FOR SORTING DISKS DEPENDING UPON THEIR THICKNESS

Bruce M. Harper, San Jose, Calif., and Shinji Takane, Kumagaya, Japan, assignors to HMT Technology Corporation, Fremont, Calif.

Continuation of Ser. No. 605,113, Oct. 22, 1990, abandoned.
This application Dec. 10, 1992, Ser. No. 990,537
Int. Cl.[5] B07C *5/08*
U.S. Cl. 209—605 **4 Claims**



1. An apparatus for sorting discs into predetermined thickness ranks comprising:

(a) a supply cassette for containing a plurality of disks at spaced intervals, said supply cassette being supported at an upwardly inclined position at which disks carried in the cassette will return to a seated position in the cassette, when the disks are moved to a position which is partially out of the cassette;

(b) stepping means for conveying said supply cassette to position each of the disks contained in the supply disc at a sensor position;

(c) a first pusher means for pushing the periphery of each disk which is at said sensor position in a direction in the plane of the disc to move the disc partially out of the cassette so that a part of the disk is exposed from said supply cassette;

(d) a sensor for measuring the thickness of said exposed part of said disk;

(e) a receiving cassette which provides a plurality of disk-receiving means for receiving each disk of the corresponding rank, said receiving cassette being positioned with respect to the supply cassette such that disks in the supply cassette, when pushed fully out of the supply cassette in a direction in the plane of the disk, will fall into a seated position in a selected disk-receiving means in said receiving cassette; and

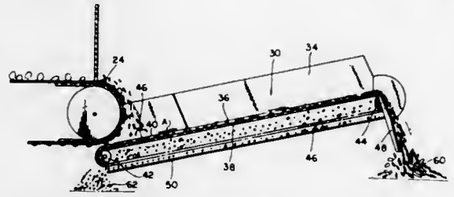
(f) at least one second pushing means disposed opposite to each of said disk-receiving means for pushing each disc of the corresponding rank fully out of the supply cassette, whereby the pushed disc falls into a seated position in the corresponding disc-receiving means in the disk-receiving cassette.

5,255,793

SEPARATOR FOR A MATERIAL REDUCER

Leroy E. DenBesten, Castleton, N.Y., assignor to Denbesten, Inc., South Schodack, N.Y.

Filed Apr. 20, 1992, Ser. No. 870,882
Int. Cl.[5] B07B *13/05*
U.S. Cl. 209—682 **10 Claims**



1. A separator apparatus comprising:

an elongated member with a plurality of orifices arranged to receive materials including large and small pieces and having a first discharge end and a second discharge end; and

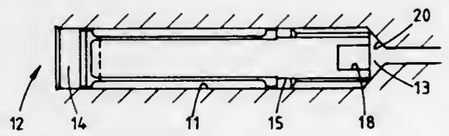
transport means comprising an endless belt disposed on said member for moving said large and small pieces toward respective discharge ends, whereby large pieces are delivered to said first discharge end, and small pieces fall thorough the orifices and are delivered to said second discharge end by said transport means.

5,255,794

FUEL FILTER

Roger C. Lloyd, Suffolk, England, assignor to Lucas industries public limited company, West Midlands, England

Filed Sep. 22, 1992, Ser. No. 949,431
Claims priority, application United Kingdom, Oct. 1, 1991, 9120863
Int. Cl.[5] B01D *29/44*
U.S. Cl. 210—232 **4 Claims**



4. An edge filter for liquids comprising:

an elongated member housed within a cylindrical bore in a filter body, said member having a longitudinal axis, said bore having ends forming an inlet and an outlet of the filter body, the end of the bore adjacent said outlet having a shoulder;

an outside surface of said member having cylindrical positions, an outside dimension of said cylindrical portions being substantially equal to an inside dimension of said cylindrical bore;

at least a pair of flat surfaces formed on the outside surface of said elongated member, said flats being positioned intermediate said cylindrical portions generally spacing said cylindrical portions apart from one another, an inlet end of said flat surfaces communicating with said inlet and an outlet end of said flat surfaces communicating with said outlet of the filter body;

a controlled clearance area being defined between said flat surfaces and the corresponding inside surface of said cylindrical bore, said controlled clearance area retaining contaminants in the liquid which passes therethrough which the larger than said controlled clearance area;

a first end of said elongated member adjacent said outlet of said filter body being shaped for engaging said shoulder of said cylindrical bore and a second end of said elongated member disposed opposite said first end, a slot being formed through said second end of the elongated member transverse to the longitudinal axis of said elongated member and communicating with at least one of said flat surfaces;

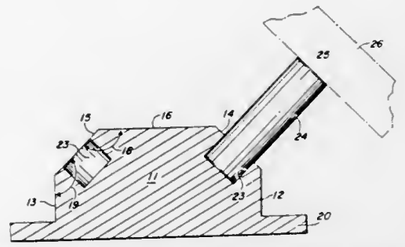
a first portion and a second portion of said elongated member being defined on each side of said slot, a projecting edge extending for an outside surface of each of said first and second portions, wherein each said displacement edge is formed by a first surface adjacent said second end which extends substantially perpendicularly of said longitudinal axis and a second surface which tapers radially inwardly towards said longitudinal axis in a direction toward said second end, wherein said first and second portions are displaceable inwardly relative to said slot when said elongated member is forced into said cylindrical bore and displaceable outwardly relative to said slot such that said projecting edges engage and dig into said inside surface of said bore to resist displacement of said member in a direction away from said shoulder.

5,255,795

TEST FIXTURE

Gamille Kitmitto, Gilbert, Ariz., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Dec. 5, 1991, Ser. No. 803,235
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—13 **10 Claims**



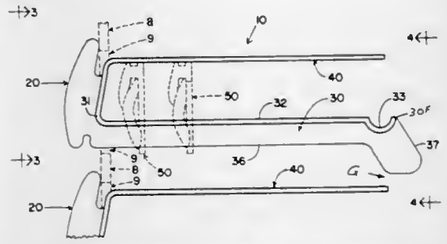
1. A fixture for supporting electronic parts in a fixed position for environmental testing comprising; a body portion, a vertical axis and a horizontal axis and first and second sloped surfaces disposed at a preselected angle relative to the said horizontal and said vertical axis; and means defined in each said sloped surface for magnetically supporting electronic parts in spaced generally parallel relationship to said sloped surfaces, said means comprising a plurality of holes defined in said surface to a preselected depth and a plurality of magnets, each said magnet adapted for insertion into a preselected one of said holes and having a length greater than said preselected depth.

5,255,796

EYEGLASSES SUPPORTING ASSEMBLY

Lawrence B. Josephson, 9465 Dewey Ave., Omaha, Nebr. 68114

Filed Nov. 23, 1992, Ser. No. 979,905
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—13 **4 Claims**



1. For the self-service merchandising of dual-lenses eyeglasses and which merchandising utilizes at least one upright display-panel and therewith at least one eyeglasses supporting assembly connectable to and horizontally extendable away from said upright display-panel, an improved eyeglasses supporting assembly that is centrally located along a vertical-plane and comprises:

(A) a rearwardly positioned connector means for connecting said eyeglasses supporting assembly to a said upright display-panel;

(B) extending horizontally and directionally forwardly from a lower portion of said connector means and along said vertical-plane, a horizontal supporting-bar having a forward-end and a horizontal upper-side directionally perpendicularly laterally flanking said vertical-plane and adapted to removably support eyeglasses thereupon, and a lower-side; and

(C) extending horizontally and directionally forwardly from an upper portion of said connector means and along said vertical-plane, a horizontal steadying-bar for topically steadying eyeglasses supported upon said supporting-bar, and said steadying-bar extending sufficiently horizontally bi-directionally from said vertical-plane to flank the supporting-bar horizontal upper-side therebeneath.

5,255,797

WAFER CARRIER WITH WAFER RETAINING CUSHIONS

Robert D. Kos, Victoria, Minn., assignor to Fluoroware, Inc., Chaska, Minn.

Filed Feb. 26, 1992, Ser. No. 842,225
Int. Cl.[5] B65D *85/48*; H77F *7/00*
U.S. Cl. 211—41 **13 Claims**

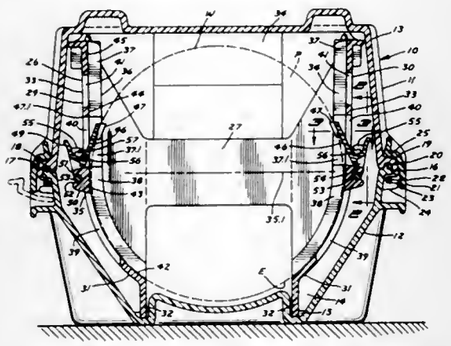
1. A wafer carrier for circular semiconductor wafers being stored and transported comprising,

sidewalls comprising wafer spacing means defining grooves in which the peripheral portions of the wafers are received, the sidewalls comprising lower portions supporting the wafers and upright upper portions accommodating insertion and removal of the wafers, and the sidewalls also comprising intermediate portions between said lower and upper portions and adjacent the horizontal diameters of the wafers, the sidewalls also comprising slots through said upper portions thereof and into said grooves adjacent the intermediate portions of the sidewalls, the edge portions of the peripheral portions of the wafers diverging

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from the sidewalls and out of the grooves adjacent said slots,

a multiplicity of wafer cushioning fingers extending inwardly through said slots and adjacent said intermediate portions of the sidewalls and comprising end portions engaging the diverging edge portions of the wafers to



retain the wafers against movement relative to the sidewalls, and

mounting means carrying the cushioning fingers and being tiltably mounted on the sidewalls for swinging the fingers away from the wafers and outwardly through the slots for releasing the wafers for removal of the wafers from the wafer carrier.

5,255,798

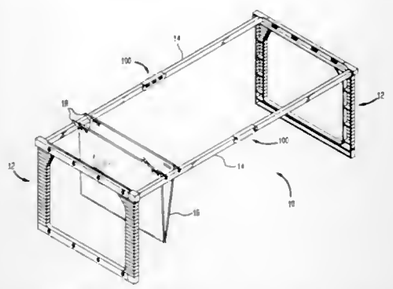
ADJUSTABLE SUSPENSION SYSTEM FOR HANGING FOLDERS AND PACKAGE THEREFOR

Eric R. Aaldenberg, Bayside; Andrew H. Wertheim, Old Bethpage; Theodore V. Kachel, Purchase, all of N.Y., and Jonathan B. Rivlin, East Brunswick, N.J., assignors to Esselte Pendaflex Corporation, Garden City, N.Y.

Filed Aug. 7, 1992, Ser. No. 927,095

Int. Cl.[5] A47F *5/00*

U.S. Cl. 211—46 **40 Claims**



1. A laterally adjustable frame for supporting a pair of support rails upon which hanging folders may be suspended, which comprises:

first and second frame elements each having a column member and at least one substantially horizontal bracket member extending away from the column member;

means for positioning a pair of support rails at a height which enables suspension of file folders thereon; and

means for adjustably connecting the first and second bracket members to position the column members in a spaced relation corresponding to a predetermined adjustable distance between the support rails positioning means, said adjustable connecting means comprising a plurality of apertures positioned in spaced relation along one of the horizontal bracket members and a plurality of locking elements positioned along the other horizontal bracket member, said locking elements positioned in spaced relation corresponding to the spaced relation of the apertures and wherein at least two locking elements engage two corresponding apertures to join said first and second frame elements to form said frame.

5,255,799

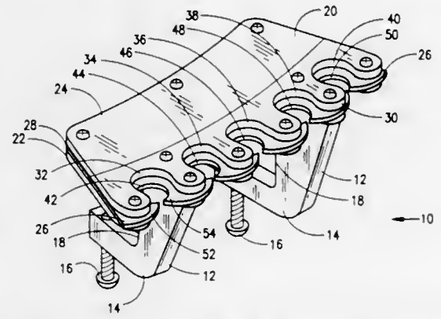
PORTABLE BILLARD CUE HOLDER

Jerry D. Haynes, R.R. 2, Box 59A, Skiatook, Okla. 74070

Filed Apr. 27, 1992, Ser. No. 873,803

Int. Cl.[5] A47F *7/00*

U.S. Cl. 211—68 **6 Claims**



1. A portable holder for at least one cue, said cue including a base end and a shaft having a circular cross-section, which holder comprises:

flexible, resilient retention means for surrounding the circumference of said shaft of said cue, said retention means including a pair of rigid parallel plates and a flexible, resilient member sandwiched therebetween;

at least a pair of clamps for removable attachment to a table, ledge or the like;

said clamps spaced from each other along said lower plate so that said lower plate will rest on said table, ledge or the like; and

means to receive said shaft of said cue radially into said retention means wherein said base end of said cue may be placed on a floor or other surface and said shaft of said cue may be inserted to be retained in said retention means.

5,255,800

SPARE TISSUE HOLDER ASSEMBLY

Keith N. Kelly, 2931 Wildflower Trail, Dublin, Ohio 43017

Filed Jul. 30, 1992, Ser. No. 921,626

Int. Cl.[5] A47F *5/08*

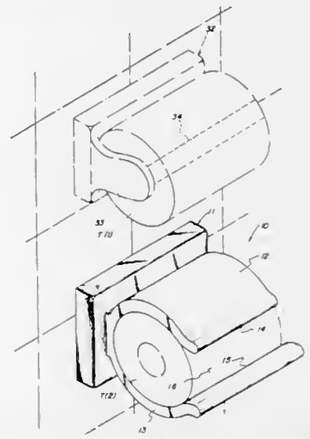
U.S. Cl. 211—89 **1 Claim**

1. A spare tissue holder assembly in combination with a tissue roll dispenser, with the tissue roll dispenser having an axle, the axle arranged for rotatably mounting a first tissue roll thereon, and the spare tissue holder assembly including a base plate, the base plate including a base plate front wall, the base plate front wall having a first arcuate finger and a second arcuate finger vertically spaced on said base plate and arranged in confronting coextensive relationship relative to one another, with a cylindrical cavity oriented between the first arcuate finger and the second arcuate finger, and

the first arcuate finger including a first linear edge, the second arcuate finger including a second linear edge, wherein the first linear edge and the second linear edge are arranged in a parallel spaced relationship having an access gap therebetween for access to a second tissue roll positioned within the cavity,

and

the base plate includes a base plate rear wall, the base plate rear wall including a base plate cavity, the base plate cavity having a plurality of cavity bores orthogonally oriented relative to the base plate rear wall, and a mounting plate, the mounting plate having a mounting plate front wall, the mounting plate front wall having a plurality of mounting plate front wall projections, wherein the bores are spaced apart a predetermined spacing, and the projections are spaced apart said predetermined spacing, and each of said projections is arranged for reception within one of said bores, and the base plate cavity includes



a base plate cavity floor, and the base plate cavity floor and the bores include a magnetic layer coextensive therewith, and the mounting plate and the mounting plate projections are formed of a ferrous metallic material,

and

each of the bores includes a bore floor, and each of the projections includes a projection forward pointed end, and each bore floor includes a membrane film, with an adhesive fluid contained between each membrane film and each bore floor, and each projection includes a pointed forward end for piercing the membrane film when each pointed forward end is directed into each membrane film.

5,255,801

FREE-STANDING MERCHANDISE DISPLAY

Barry D. Berger, New York, N.Y., assignor to RGA Accessories, Inc., Jersey City, N.J.

Filed Aug. 30, 1990, Ser. No. 575,163

Int. Cl.[5] A47F *5/00*

U.S. Cl. 211—131 **22 Claims**

1. A modular merchandise display including a series of central modules interconnectable to form an upstanding central support, individual outwardly projecting merchandise item support trays on the modules, keying means on the modules for establishing an offset angular relation between adjoining modules whereby trays of adjoining modules are offset circumferentially, and means for rotationally supporting the central modules for rotation;

the means for rotationally supporting including an upright central pole, each said modules having a central opening therethrough for receiving the pole;

the pole being a two-piece pole including means for joining the two pieces thereof centrally;

the means for joining the two pieces centrally including radial outward projections at adjoining ends of each of the two pieces, and fastening means for fastening together the



projections thereby to join the two pieces of the pole end-to-end.

5,255,802

MERCHANDISE DISPLAY SYSTEM

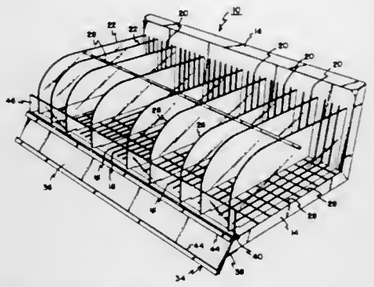
Wade H. Krinke, Marine-On-St. Croix; Richard A. Linn, and Edward J. Goldstein, both of Minneapolis, all of Minn., assignors to Padco, Incorporated, Minneapolis, Minn.

Continuation of Ser. No. 673,730, Mar. 22, 1991, abandoned.

This application Oct. 26, 1992, Ser. No. 966,581

Int. Cl.[5] A47F *7/00*

U.S. Cl. 211—184 **9 Claims**



1. A merchandise display system comprising:

a base member having a transverse and a longitudinal dimension and a first plurality of divider receiving slots formed therein, said first plurality being generally parallel and extending across said transverse dimension from a trailing edge of said slots of said first plurality to a leading edge, said base member having a solid vertical surface opposing each of said slots at said leading edge;

a back member having a second plurality of divider receiving slots formed therein;

said base member connected to said back member at said trailing edge and with said base member generally horizontal and said back member generally vertical, and with said first and second plurality of slots aligned to define complete divider receiving slots;

a plurality of dividers each having a bottom edge and a rear edge with said bottom edges sized to be received within

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said first plurality of slots and said rear edges sized to be received within said second plurality of slots;

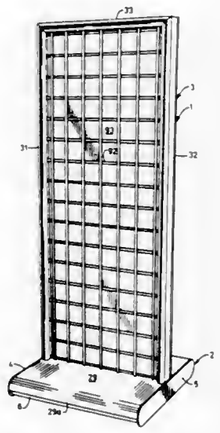
said base member having means defining a plurality of generally vertical forward wall segments at a leading edge of each said first plurality of slots;

each of said dividers including lock means at a leading end of said bottom edges to lock said dividers to said base member upon insertion of said divider in said base member, said lock means including a piercing member at said leading end, said lock member projecting generally horizontally and sized to break and pierce through said vertical surface of said base member upon insertion of said divider into one of said plurality of slots.

5,255,803
MERCHANDISING SYSTEM

Jerry D. Pavone; Paul D. Aubke, and Kevin P. Shatzer, all of Cincinnati, Ohio, assignors to Hamilton Fixture Company, Cincinnati, Ohio

Filed Apr. 3, 1991, Ser. No. 679,914
Int. Cl.[5] A47B *47/00*
U.S. Cl. 211—189 **28 Claims**

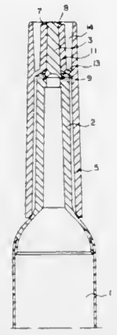


1. A display unit for items for sale, said display unit comprising a rectangular base assembly having sides and ends and an upright frame assembly removably mounted on said base assembly along the centerline thereof extending from end to end thereof, said base assembly comprising a pair of end members joined together by a pair of parallel spaced outer longitudinal members defining sides of said base and by a longitudinal intermediate base member centered between said outer longitudinal members, a replaceable cover for said base covering said outer longitudinal members and said intermediate base member and providing said base with a smooth upper surface, said upright frame assembly comprising at least a pair of first and second elongated upright frame members having lower ends removably affixed to said intermediate base member adjacent said base end members, said first and second upright frame members having upper ends, an elongated horizontal frame member being removably affixed to said first and second upright frame member upper ends, said first and second upright frame members having longitudinal sides and edges, each of said first and second upright frame member edges having a longitudinal recessed channel formed therein, whereby standard display hardware can be engaged in said recessed channels on either edge of said first and second upright frame members.

5,255,804
TUBE OF TAMPERPROOF CONSTRUCTION AND PROCESS FOR MAKING SAME

Gerhard Butterbrodt, Berlin, Fed. Rep. of Germany, assignor to Schering Aktiengesellschaft, Berlin, Fed. Rep. of Germany

PCT No. PCT/DE90/00537, § 371 Date Jan. 14, 1992, § 102(e) Date Jan. 14, 1992, PCT Pub. No. WO91/01254, PCT Pub. Date Feb. 7, 1991
PCT Filed Jan. 13, 1990, Ser. No. 793,448
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1989, 3923799
Int. Cl.[5] B65D *1/02, 41/62*
U.S. Cl. 215—32 **6 Claims**



1. A tube useful for containing a flowable material, the tube having a neck on which is initially fixed a breakoff neck projection closing an output opening through the neck with a frangible connection when the tube is in an initial sealed configuration, the tube including a superimposed cap fitting over the neck; the cap including an interior with an internal sleeve fixed therein, the sleeve having an upper end and lower end and having an opening therethrough for receiving the breakoff neck projection, the breakoff neck projection having a portion projecting through and out of the upper end of the sleeve and being deformed over the upper end of the sleeve to secure the breakoff neck projection within the sleeve when the tube is in said initial sealed configuration, whereby when the cap is rotated, the breakoff neck projection is detached from the neck but the cap may be loosely mounted on the neck to surround the neck without being fixed thereto to provide an indication that the tube has been opened.

5,255,805
SCREW CAP

Jürgen Weiss; Hans D. Dubs, both of Worms, and Hans J. Preuss, Monsheim, all of Fed. Rep. of Germany, assignors to Alcoa Deutschland GmbH, Worms, Fed. Rep. of Germany

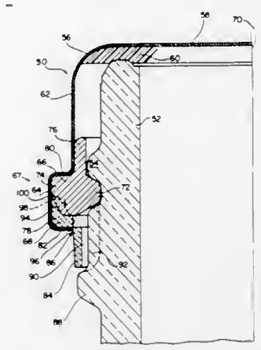
PCT No. PCT/EP89/01129, § 371 Date May 10, 1991, § 102(e) Date May 10, 1991, PCT Pub. No. WO90/03924, PCT Pub. Date Apr. 19, 1990
PCT Filed Sep. 27, 1989, Ser. No. 681,491
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1988, 3833945; Mar. 25, 1989, 3909857; May 25, 1989, 3916958; Aug. 23, 1989, 3927793
Int. Cl.[5] B65D *41/04, 45/30, 53/02*
U.S. Cl. 215—274 **7 Claims**

1. A screw cap for a container that has a thread, comprising:

a ring having a first projection held by a recess formed in the screw cap and a second projection that engages the thread of the container,

wherein the ring incorporates an upper first ring element that bears the first and second projections and a lower second ring element on which a safety ring is installed,

wherein the upper and lower ring elements are configured as separate rings, and

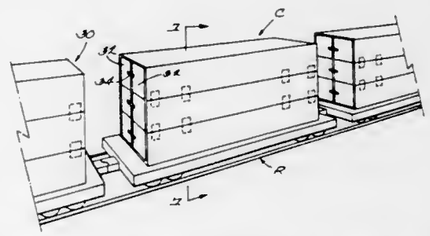


wherein the upper ring element and the lower ring element are joined to each other by one of friction, shape fit, welding, and adhesion.

5,255,806
REINFORCED PLASTIC COMPOSITE INTERMODAL VEHICLE HAULER

George Korzeniowski, Salt Lake City, Utah, and William B. Goldsworthy, Palos Verdes, Calif., assignors to Stoughton Composites, Inc., Springville, Utah

Filed May 3, 1991, Ser. No. 695,599
Int. Cl.[5] B65D *7/30*
U.S. Cl. 220—1.5 **12 Claims**



1. A reinforced plastic composite intermodal vehicle hauler for the transport and storage of automotive vehicles, said vehicle hauler comprising:

(a) a pair of opposed side walls,

(b) a pair of opposed ends extending between said side walls with an openable door at at least one of the ends,

(c) a floor formed of a reinforced plastic composite material, said floor extending between said side walls,

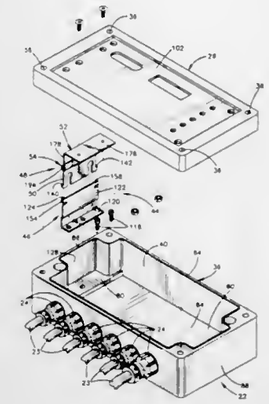
(d) a roof formed of a reinforced plastic composite material, said roof extending between said side walls, and

(e) said side walls each being comprised of a plurality of aligned and connected panels, each of said panels including integrally formed ribs, and each of said panels being formed of a reinforced plastic composite material having the characteristics and thickness so that said side walls are at least partially translucent to enable some light to pass through to the interior of said vehicle hauler for facilitating loading and unloading and chocking and unchocking of automotive vehicles.

5,255,807
CONTAINER

Keith O. Satula, New Berlin; Charles J. Turner, Milwaukee, and John P. Groves, Waukesha, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jun. 16, 1992, Ser. No. 899,350
Int. Cl.[5] H02G *3/00*
U.S. Cl. 220—3.8 **26 Claims**

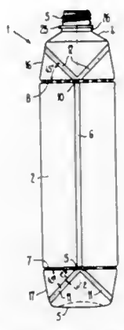


1. A container comprising a main section having surfaces for defining an opening, a cover section for blocking the opening in said main section, a hinge assembly interconnection said main and cover sections, said hinge assembly including a base portion fixedly connected with a first one of said main and cover sections, and a connector portion connected with a second one of said main and cover sections, said connector portion of said hinge assembly including first and second hinge plates and means for pivotally interconnecting said first and second hinge plates, said first hinge plate and said base portion being slidable relative to each other along a linear path from a retracted condition in which said cover section blocks the opening in said main section to an extended condition in which said cover and main sections are at least partially spaced apart from each other, said first and second hinge plates being pivotally movable relative to each other along an arcuate path about the pivot connection from a first condition to a second condition when said first hinge plate and base portion are in the extended condition, said cover section being disposed adjacent to and at least partially blocking the opening in said main section when said first and second hinge plates are in the first condition, said cover section being offset to one side of the opening in said main section when said first and second hinge plates are in the second condition to provide access to said main section through the opening, a first electrical circuit board mounted on said cover section, a second electrical circuit board mounted on said main section, and flexible conductor means for conducting electrical energy between said first and second electrical circuit boards, said flexible conductor means for conducting electrical energy between said first electrical circuit board adjacent to said hinge assembly and a second end portion connected with said second electrical circuit board adjacent to said hinge assembly, said first and second end portions of said flexible conductor means being spaced a first distance apart when said first hinge plate and base portion of said hinge assembly are in the retracted condition, said first and second end portions of said flexible conductor means being spaced a second distance apart when said first hinge plate and base portion of said hinge assembly are in the extended condition, said second distance being greater than said first distance, said first and second end portions of said flexible conductor means being spaced a third distance apart when said first and second hinge plates have been pivoted

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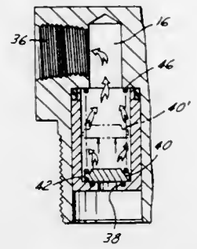
relative to each other about the pivot connection to the second condition, said third distance being greater than said second distance.

5,255,808
FOLDABLE BOTTLE
Viktor Tobler, Oberdurnten, Switzerland, assignor to Supermatic Kunststoff AG, Uster, Switzerland
Filed Aug. 27, 1992, Ser. No. 936,003
Int. Cl.[5] B65D *33/02*
U.S. Cl. 220—6 **8 Claims**



1. A foldable bottle having a closable pouring part, which bottle retains its shape during filling and during removal of the contents, having longitudinally extending folding lines provided in the outer surfaces of the bottle for the purpose of pressing the bottle substantially flat in an empty state, which comprises:
- an at least substantially flat bottom surface, at least an edge region of which forms a standing surface;
- a top surface having a closable pouring part;
- an upper portion which is bounded by a folding line running transversely to the folding lines of the outer surface and which contains the top surface with the pouring part;
- a lower portion which is bounded by a folding line running transversely to the folding lines of the outer surface and which contains the bottom surface;
- an outer surface which forms a central portion which connects the upper portion to the lower portion and which has an outer surface folding line for the central portion; wherein a first pair of folding lines, each of which include a bead curved outward, are provided which branch substantially in a V-shape for being folded outwardly and extend from the folding line running transversely to the folding lines of the outer surface down to the bottom of the lower portion;
- a second pair of folding lines, each of which include a bead curved outwardly, are provided which branch substantially in a V-shape for being folded outwardly and extend from the folding line running transversely to the folding lines of the outer surface up to the top surface of the upper portion; and
- the first and second pair of folding lines have a branching point thereof in each case on the folding line for the outer surface of the central portion, such that the upper portion and the lower portion as well as the outer surface of the central portion may be folded flat along said folding lines of the outer surface and be folded over into a common plane.

5,255,809
COMPRESSED GAS CONTAINER WITH SHAPE MEMORY ALLOY PRESSURE RELIEF MEMBER
Paul R. Ervin, Dearborn; Ronald C. Malec, Northville, and Alan J. Porter, Livonia, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed May 17, 1993, Ser. No. 61,945
Int. Cl.[5] B65D *51/16*
U.S. Cl. 220—89.1 **20 Claims**

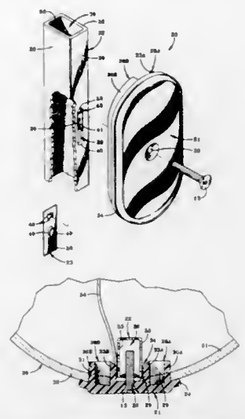


1. A container for compressed gas, the container having a body portion which entraps the gas, a neck portion in communication with the body portion, the neck portion defining a gas passageway through which the gas may escape from the container, the container having:
- a pressure relief member comprising a bimorph mounted at the neck portion, the bimorph being impermeable by the gas and comprising:
- a shape memory material having a shape which changes depending on temperature, such that below a critical temperature the bimorph assumes a first state and above the critical temperature the bimorph assumes a second state,
- the gas being entrapped within the container when the bimorph assumes the first state,
- the gas escaping through the gas passageway when the pressure thereof rises due to temperature increase above the critical temperature when the bimorph assumes the second state, thereby relieving gas pressure in the container.

5,255,810
CLOSURE HATCH ASSEMBLY FOR AN ACCESS PORT IN A HIGHWAY UTILITY POLE
Gregory S. Hosford, Columbia, S.C., assignor to Shakespeare Company, Newberry, S.C.
Filed Nov. 24, 1992, Ser. No. 980,922
Int. Cl.[5] B65D *45/00*
U.S. Cl. 220—243 **6 Claims**

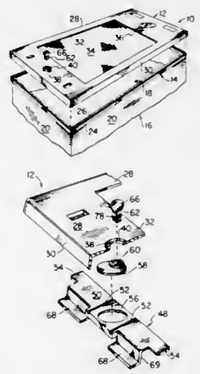
1. A hatch assembly for closing an access port in a housing for electrical wires, said hatch assembly comprising:
- a non-conductive hatch plate having a reverse face;
- laterally spaced, longitudinally oriented, protuberance means extending outwardly from said reverse face on said hatch plate;
- opposed walls on said protuberance means defining a channel therebetween;
- a non-conductive, hollow bracket member receivable within said channel to extend longitudinally beyond said hatch plate;
- nut means supported within said hollow bracket member;

- a threaded fastener extending through said hatch plate to be selectively tightened within said nut means to secure said



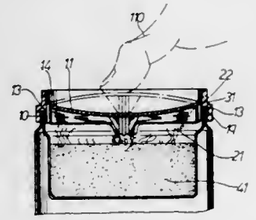
bracket member within said channel and thereby restrict access to said fastener.

5,255,811
CLOSURE FOR A FISH TANK
Allen Simon, East Northport, N.Y., assignor to Four Paws Products, Ltd., Hauppauge, N.Y.
Filed Sep. 24, 1992, Ser. No. 950,019
Int. Cl.[5] B65D *55/14*
U.S. Cl. 119—265 **11 Claims**



1. A closure for a fish tank having vertical walls defining the tank periphery, and a top tank opening, said closure comprising:
- a first flange portion and second flange portion for connecting respectively to the tank walls at opposite ends of said tank and for extending within said periphery;
- a top cover having a top surface, and a bottom surface for resting on said tank and covering at least said top opening;
- a slide mounted for reciprocal sliding motion on said cover bottom surface between an open first position and a closed second position, said slide including a latch spaced from said cover bottom surface, in said first position said first flange portion when connected at one of said tank ends and said latch being clear of each other when said cover rests on said tank and covers said top opening to permit raising of said cover from said tank, in said second position said latch extending beneath said first flange portion to prevent raising of said cover from said one tank end;
- means for unlocking and locking said cover by selectively moving said slide to said first position and to said second position, respectively; said means for unlocking and locking said cover including a cam eccentrically mounted to said cover on an axis and contacting a surface on said slide, said cam being accessible from said cover top surface for rotation about said axis, rotation of said cam moving said slide.

5,255,812
CONTAINER CAP
Yu T. Hsu, No. 221, Ming Der Rd., Ming Der Tsuen, Tour Woei Shiang, Miau Lih Hsien, Taiwan
Filed Jul. 1, 1992, Ser. No. 907,695
Int. Cl.[5] B65D *17/42, 43/06, 25/08;* **F24J** *1/00*
U.S. Cl. 220—277 **3 Claims**



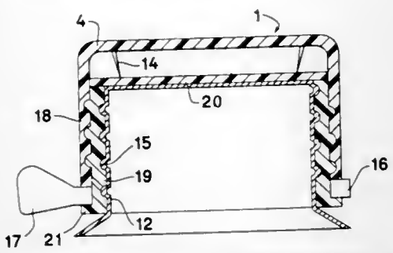
1. A container cap for use with a metal container having a peripheral lip comprising:
- a chemical compound contained in one end of the metal container; and
- a liquid catalyzer which is released into the chemical compound causing a reaction which releases heat; and wherein
- the cap comprising a ring-shaped base having an outer peripheral wall extending in a first direction, a peripheral flange extending in a second direction opposite said first direction, and an inner peripheral wall extending in said first direction and spaced from said outer peripheral wall to define a groove therebetween to facilitate attachment to the container lip, an elastic layer extending across the interior of said inner peripheral wall, a plurality of vent holes at the periphery of the elastic layer radially inwardly of said peripheral flange;
- the elastic layer having an inner surface facing in said first direction and an outer surface facing in said second direction, said elastic layer having a pointed member at the center of said inner surface and wherein
- a film covering is stretched across said inner peripheral wall to form a containment area for the liquid catalyzer; whereby
- pressure added to the elastic layer in said first direction causes the pointed member to rupture the film covering, permitting the liquid catalyzer to flow rapidly into the chemical compound contained in the metal container, initiating the chemical reaction which rapidly releases heat.

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5,255,813
OPENING ARRANGEMENT FOR A CONTAINER PACKAGE

Göran Berggren, Staffanstorp, and Ulf Nedstedt, Eslöv, both of Sweden, assignors to Tetra Alfa Holdings S.A., Pully, Switzerland

Filed Sep. 1, 1992, Ser. No. 937,678
Claims priority, application Sweden, Sep. 4, 1991, 9102533
Int. Cl.[5] B65D *41/04*
U.S. Cl. 220—278 13 Claims

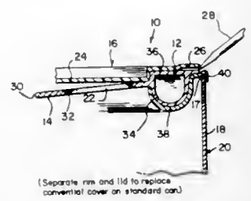


1. An opening arrangement for a container package comprising:
an inner sealing portion formed with an interior, right-hand threaded configuration, enclosed at the top, and a left-hand threaded exterior;
an outer sealing portion formed with a left-hand threaded interior conforming with the left-hand threaded exterior of the inner sealing portion, the outer sealing portion being disposed on the inner sealing portion, prior to opening the opening arrangement, such that an upper region of the outer sealing portion is formed between the outer sealing portion and the inner sealing portion;
a pouring spout, a first end of the pouring spout being attachable to a container package, a second end of the pouring spout forming a continuous, liquid-tight part, the pouring spout being formed with a right-hand threaded exterior conforming with the right-hand threaded configuration of the inner sealing portion, the pouring spout being inflexibly engaged with and at least partially surrounded by the inner sealing portion;
at least two penetration devices extending inwardly from the upper region of the outer sealing portion toward the pouring spout.

5,255,814
PAINT CAN RIM

Joseph Delagera, 139 West Ave., Hicksville, N.Y. 11801

Filed Feb. 12, 1986, Ser. No. 828,459
Int. Cl.[5] B65D *43/04, 43/08*
U.S. Cl. 220—352 6 Claims

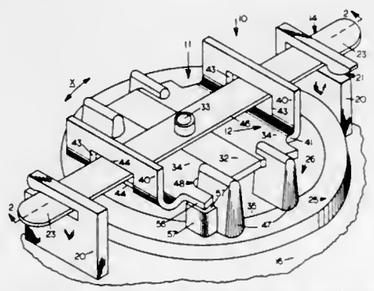


1. An improved paint can rim which comprises:
(a) a reusable ring-like member disposable on top of a body portion of a paint can;
a scraping lip having an eccentric pouring hole and being reusable and separate from said ring-like member, said scraping lip formed within said ring-like member extending at a slight angle downwardly into said paint can to allow a paint brush to remove excess paint therefrom while said eccentric pouring hole will allow said paint within said paint can to exit easily when said paint can is tipped over; and;
(c) a lid having a recess portion and a raised annular edge and being reusable and separate from said ring-like member and said scraping lip, said recess portion being removably attached to said ring-like member to close said paint can while said raised annular edge will allow a tool such as a screwdriver or the like to be inserted for prying off said lid.

5,255,815
FILLER CAP

Richard J. Renk, and Richard M. Ebert, both of Winona, Minn., assignors to Carol Ann Mackay and Helen Lou Kurtz, both of Winona, Minn.

Filed Dec. 19, 1990, Ser. No. 630,162
Int. Cl.[5] B65D *45/28*
U.S. Cl. 220—323 9 Claims



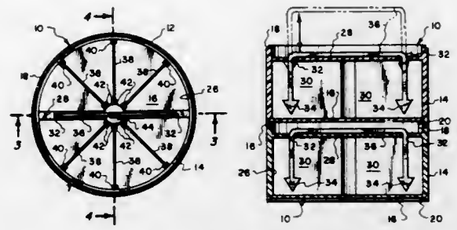
1. A traction motor gear case lubricant filler cap for use with a gear case provided with an opening having an inner wall and a rim area adjacent said opening comprising,
a top,
said top having a continuous deflectable portion moveable toward and away said opening,
said top having an integral depending lip projecting downwardly from said deflectable portion, said lip being a radially expandable and contractible continuous member adapted to extend into said opening,
a presser means approximately following the contour of said top carrier by said cap for engaging said top, and
resilient biasing means operably connected to and moveable toward said top for urging said presser means toward said top to cause said deflectable portion to move toward said opening and move said top toward said rim area.

5,255,816
ARTICLE STORING APPARATUS

Charles A. Trepp, 3885 Transport St., Ventura, Calif. 93003

Filed Dec. 21, 1992, Ser. No. 994,304
Int. Cl.[5] B65D *25/06*
U.S. Cl. 220—529 2 Claims

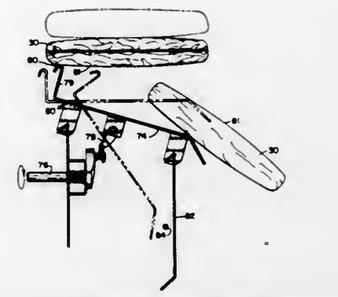
1. An article storing apparatus comprising:
a housing having an internal chamber, said internal chamber having an enclosing sidewall;
a main dividing wall mounted within said internal chamber, said main dividing wall dividing said internal chamber into two substantially equal sections;
a center post attached to said main dividing wall, said center post being mounted at the longitudinal midpoint of said main dividing wall;
a first dividing panel engaging means mounted on said center post, a second dividing panel engaging means mounted on said sidewall, a plurality of panels being removably mounted in a spaced apart arrangement between said first and said second dividing panel engaging means forming a plurality of separate article storage compartments within said internal chamber; and
a handle connected to said main dividing wall, said handle being movable between a retracted position and an extended position relative to said main dividing wall, said handle being rigid and being in the same shape when in said retracted position and in said extended position, with said handle in said extended position said handle to be used to facilitate manual carrying of said article storing apparatus.



5,255,817
SYSTEM AND METHOD FOR LOW COST DISPENSING OF SOFT PACKAGED ARTICLES

Kenneth H. Reiland; Mary J. Reiland, both of Apple Valley, and Ronald J. Herold, Little Canada, all of Minn., assignors to Four D, Incorporated, Burnsville, Minn.

Continuation of Ser. No. 196,984, May 20, 1988, Pat. No. 5,016,778, which is a continuation-in-part of Ser. No. 52,014, May 19, 1987, abandoned. This application Jul. 16, 1990, Ser. No. 553,724
The portion of the term of this patent subsequent to May 21, 2008, has been disclaimed.
Int. Cl.[5] G07F *11/24*
U.S. Cl. 221—1 14 Claims

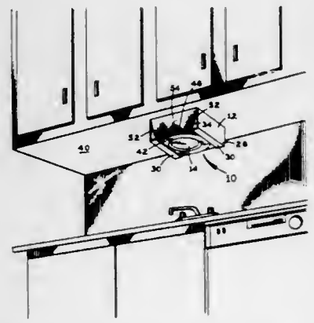


13. A low cost method for dispensing soft packaged articles from a dispenser, the method including the steps of:
(a) providing a precision dimensioned soft packaged article comprising:
(1) a precision cut forming member including a substantially flat plate with an upper surface, a lower surface, and faired corner portion;
(2) a pliant article to be dispensed which is folded over the forming member upper surface and lower surface;
(3) protective means tension wrapped and heat shrinked around the article and the forming member so that the soft packaged article is substantially equally shaped in the cross section above and below the forming member in the shape of a cambered crown;
(b) placing a plurality of uniformly dimensioned soft packaged articles in stacked relation so that the cambered crown portions of adjacent soft packaged articles are in contact;
(c) actuating flapper means to dispense one soft packaged while simultaneously retaining the remaining stacked articles by moving a portion of the flapper means beneath the cambered surface and contacting the crown of the next stacked article to be dispensed.

5,255,818
PLATE DISPENSER

Timothy P. Zeigler, 2202 Cypress Bend Dr., Apt. 305, Pompano Beach, Fla. 33069

Filed Sep. 18, 1992, Ser. No. 946,633
Int. Cl.[5] A47K *10/24*
U.S. Cl. 221—45 9 Claims



1. An apparatus for dispensing plates, comprising:
a housing for containing a stack of said plates, said housing comprising a side wall and plate supporting means, said plates in said stack having edges and being mutually parallel and essentially perpendicular to said side wall, said side wall having an open portion with a width of at least the diameter of one of said plates, and a top member extending above said open portion,
a retaining member extending downwardly from said top member and essentially perpendicular to and over the edges of said plates for blocking the withdrawal of all but the lowermost plate in said stack.

5,255,819
METHOD AND APPARATUS FOR MANUAL DISPENSING FROM DISCRETE VESSELS WITH ELECTRONIC SYSTEM CONTROL AND DISPENSING DATA GENERATION ON EACH VESSEL, DATA TRANSMISSION BY RADIO OR INTERROGATOR, AND REMOTE DATA RECORDING

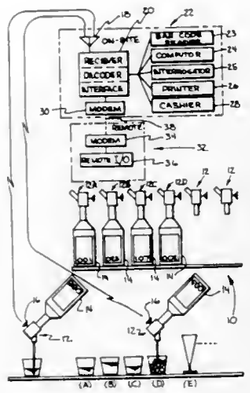
Arganious E. Peckels, R.R. 2, Box 489, Ogilvie, Minn. 56358

Continuation-in-part of Ser. No. 477,553, Feb. 9, 1990, Pat. No. 5,044,521. This application Mar. 18, 1991, Ser. No. 672,054
Int. Cl.[5] B67D *5/22*
U.S. Cl. 222—1 24 Claims

1. A method of dispensing beverage from a plurality of bottles comprising the steps of
a) connecting a discrete dispensing head to each bottle;
b) electronically reading the bottle and electronically identifying the specific beverage product therein; and

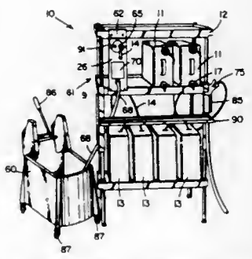
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c) electronically programming the head to pour a predetermined quantity of said specific beverage through said



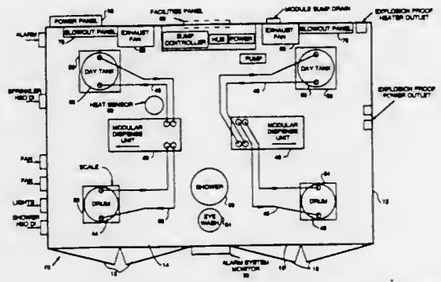
head, during manual inversion of the connected bottle and head.

5,255,820
APPARATUS FOR DILUTION OF LIQUID PRODUCTS
John E. Thomas, River Falls, Wis., assignor to Ecolab Inc., Saint Paul, Minn.
Filed Apr. 24, 1991, Ser. No. 690,505
Int. Cl.[5] B05B 7/30
U.S. Cl. 222—1 15 Claims



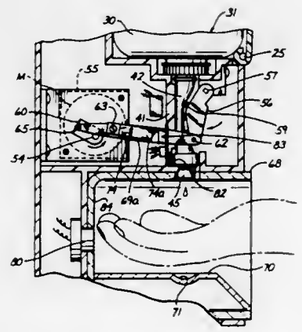
1. A dilution and dispensing apparatus, comprising:
(a) a dilution assembly having a first inlet port for a first liquid and a second inlet port for a second liquid, said inlet ports being in fluid communication with a proportioning means, said proportioning means outletting to a flexible discharge tube, said dilution assembly being mounted upon a vertical barrier means;
(b) a first inlet line for supplying said first liquid, said first inlet line being in fluid communication with a gun assembly which is removably interconnected to said first inlet port, said gun assembly having a flow actuator and a valve;
(c) a second inlet line for supplying said second liquid, said second inlet line being removably interconnected to said second inlet port and to a source of said second liquid, wherein said barrier means includes an aperture for said discharge tube and an aperture for said second inlet line.

5,255,821
TRANSPORTABLE ENVIRONMENTALLY SAFE CHEMICAL DISPENSE MODULE
James C. Hall, San Jose, Calif.; Jon P. Goodbread, Thornton, Colo., and Kenneth M. O'Connor, Fremont, Calif., assignors to Systems Chemistry, Inc., Milpitas, Calif.
Filed Dec. 10, 1992, Ser. No. 988,550
Int. Cl.[5] B67D 5/32
U.S. Cl. 222—39 10 Claims



1. A transportable chemical dispense module comprising:
means forming a rugged structural housing defining an interior work chamber having at least two separate closable openings for ingress and egress and means forming a containment chamber at the bottom of the housing covered by a perforated floor;
chemical supply reservoir means disposed within said work chamber;
chemical dispense means disposed within said work chamber and communicatively coupled to said supply reservoir means for dispensing chemicals contained in the reservoir means to an external user via internal plumbing and a plumbing interface formed in a wall of said module;
means for monitoring the amount of chemicals contained in said supply reservoir means and the amount dispensed therefrom; and
means for controlling the operation of said dispense means.

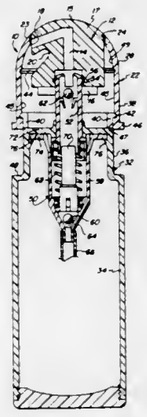
5,255,822
AUTOMATIC SOAP DISPENSER
Richard B. Mease, Carpinteria, and Robert E. Burridge, Arroyo Grande, both of Calif., assignors to M & D International Enterprises, Inc., Carpinteria, Calif.
Division of Ser. No. 803,543, Dec. 9, 1991, Pat. No. 5,186,360.
This application Nov. 25, 1992, Ser. No. 981,408
Int. Cl.[5] B67D 5/06
U.S. Cl. 222—63 11 Claims



1. An automatic soap dispenser comprising:

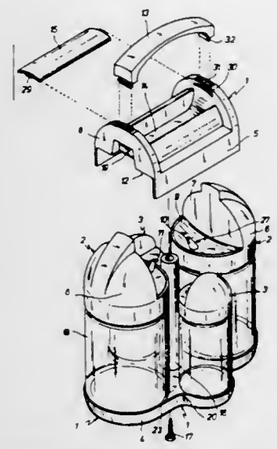
a horizontally disposed chamber having an open front end, a rear wall, sidewalls, and an upper wall with an opening therein:
a sensor on the rear wall of said chamber;
a container of liquid soap including a resilient tubular member having an outlet valve on an end portion thereof and connected at its other end to the interior of the container, said outlet valve positioned adjacent the opening in the upper wall of the chamber;
motor means for rotating a crank having a free end;
squeezer means pivotally mounted in front of the tubular member so as to have a free end;
connecting lever means for pivotally connecting the free end of the squeezer means to the free end of said crank; and
circuit means responsive to said sensor when a hand is placed in said chamber to energize said motor means to rotate said crank and thereby move said connecting lever means to cause said squeezer means to move from a rest position of press said tubular member to expel a quantity of liquid soap through the outlet valve into the palm of the hand of the user, said connecting lever means upon returning said squeezer means to its rest position providing a signal to deenergize said motor means.

5,255,823
ACTUATOR AND CAP FOR A FLUID DISPENSER
Edward Tichy, Trumbull; Craig R. Bures, Prospect; Brooks Markert, Harwinton; Lance A. Monje, Orange, and Stephen P. McNamara, Fairfield, all of Conn., assignors to Risdon Corporation, Naugatuck, Conn.
Filed May 21, 1992, Ser. No. 886,765
Int. Cl.[5] B67D 5/00
U.S. Cl. 222—153 18 Claims



1. An actuator for dispensing liquids from a container, comprising:
a substantially planar, actuator body having a generally rectangular cross-section and a channel extending therethrough to a nozzle end;
an outer cap, said cap having an aperture sized to snugly receive said actuator body, and being slidably retained on the container, and slidably movable from a raised position to a retracted position, said cap in said raised position being located with said actuator body fitted in said aperture and said cap enclosing said nozzle end of said actuator body, said cap in said retracted position being located such that said actuator body extends upwardly from said cap without obstruction of said nozzle end.

5,255,824
TABLE SERVICE FOR DISPENSING LIQUID AND SOLID CONDIMENTS
José Luis Filella Pablos, Barcelona, Spain, assignor to Industria Auxiliar Manodomesticos, S.A., Alforja, Spain
Filed Feb. 26, 1992, Ser. No. 841,796
Claims priority, application Spain, Feb. 28, 1991, 9100510
Int. Cl.[5] B67D 5/06
U.S. Cl. 222—179.5 13 Claims



1. A table service comprising:
a) a support and holding body member having an upper portion provided with holding means and a lower portion for support, the resting of said support and holding body member on a horizontal surface determining a first rest position of said support and holding body member; and
b) at least one dispensing container which has a bottom wall, which may be placed on said lower support portion and which is provided with a head member comprising dispensing means, the placing of said at least one container on said lower support portion determining a second inactive position of said at least one container, wherein at least one head member is provided with a concave recessed portion which, when the body member is in said first position and said at least one container is in said second position, determines a first generally horizontal area in which there are said dispensing means and a second generally vertical area, while the support and holding body member, for said at least one container, is provided with a front wall adapted to be engaged by said second area and having a bottom end which is limited by an edge which, when said support and holding body member is in said first position, is generally horizontal, immediately below which there is situated said first area when said at least one container is in the second position thereof, and in that said support and holding body member is provided, for said at least one container, with complementary means retaining said at least one container in said second position.

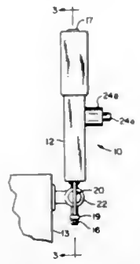
5,255,825
APPARATUS FOR DISPENSING DYE INTO A BEVERAGE CONTAINER
Christopher J. Hoff, 6234 Town Pl., Middletown, Conn. 06457
Filed Feb. 21, 1992, Ser. No. 839,509
Int. Cl.[5] B65D 37/00
U.S. Cl. 222—207 16 Claims

1. A dye dispensing apparatus which comprises:
a reservoir for a liquid;
a bellows having an interior;

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fluid communication means extending from the interior of said bellows to said reservoir;

a first check valve including means spring biasing said first check valve closed, said first check valve being connected to said fluid communication means, said first check opening in response to elevated pressure in said fluid communication means;



a second check valve, said second check being gravity biased to the closed position, said second check valve being connected to said fluid communication means, said second check valve opening responsive to decreasing fluid pressure in said fluid communication means, said apparatus further including a handle dimensioned and configured for engagement with an associated beverage dispensing valve.

5,255,826

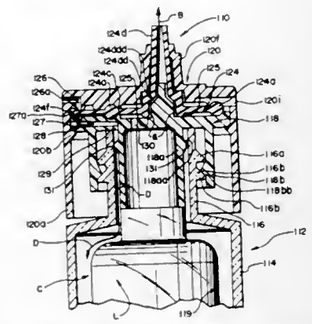
LIQUID DISPENSER NOZZLE ASSEMBLY

Joseph V. Ranalletta, Guntersville; Fred E. Williams, Jr., Arab, and Rowland W. Kanner, Guntersville, all of Ala., assignors to Ryder International Corporation, Arab, Ala.

Division of Ser. No. 664,347, May 4, 1991, Pat. No. 5,183,184, which is a continuation-in-part of Ser. No. 406,053, Sep. 11, 1989, Pat. No. 5,025,957, which is a continuation-in-part of Ser. No. 255,365, Oct. 7, 1988, abandoned. This application Nov. 5, 1992, Ser. No. 972,411

Int. Cl.[5] B05B *11/04*

U.S. Cl. 222—209 **7 Claims**



1. A liquid dispensing nozzle assembly for mounting on a liquid container and dispenser having a flexible wall and liquid storage cavity enclosed within an inner flexible envelope within said flexible wall for manually squeezed dispensing of liquid from the cavity through the nozzle assembly and for maintaining the liquid, such as contact lens saline solution, in sterile condition during storage and repeated dispensing of the liquid from said inner envelope, said nozzle assembly comprising: a liquid discharge port; liquid conduit means for communication from the storage cavity within said inner envelope to said liquid discharge port to enable dispensing of said liquid through said port during said manually squeezed liquid dispensing; and an air aspiration conduit means separate from said liquid conduit means for aspirating air within said flexible wall of said container; and a diaphragm structure arranged to control liquid flow through said liquid conduit means and including a tubular discharge portion and a valve portion which is deflectable to permit said liquid flow past said valve portion into said tubular discharge portion.

5,255,827

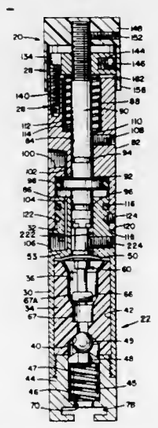
SEALLESS MODULAR POSITIVE DISPLACEMENT DISPENSER

John P. Breault, New Britain, and Ewald F. Dickau, Glastonbury, both of Conn., assignors to Loctite Corporation, Hartford, Conn.

Continuation of Ser. No. 379,405, Jul. 13, 1989, abandoned, which is a continuation-in-part of Ser. No. 176,875, Apr. 4, 1988, Pat. No. 4,858,789, which is a continuation-in-part of Ser. No. 57,614, Jun. 3, 1987, abandoned. This application Jul. 17, 1991, Ser. No. 732,334

Int. Cl.[5] F16D *1/00*; B05C *11/00*

U.S. Cl. 222—309 **6 Claims**



1. A modular system for dispensing precise quantities of a fluid product comprising:

a self-contained positive displacement type dispensing unit comprising a housing defining a reservoir for the fluid product, said housing having a distal and a proximal end; an inlet for delivery of the fluid product to said reservoir; a closure surface at the proximal end of said housing defining an outlet for dispensing the fluid product from said reservoir; a chamber intermediate said reservoir and said closure surface for receiving fluid product from said reservoir and for dispensing said fluid product through said closure surface; a stem member moveable between an inactive position within said reservoir, withdrawn from said chamber, and an active position sealingly, slidingly received within said chamber, said stem member, when in the inactive position, having a distal end away from said chamber and proximal end proximate said chamber; closure means normally biased to a closed position in engagement with said closure surface; an end member integral with the distal end of said housing; and a deformable diaphragm sealing means longitudinally transverse to said housing for sealingly isolating said fluid product within said reservoir;

a self-contained actuator unit comprising a cylindrical body having a cavity at one end and actuating means for effecting movement of said stem member between the active and inactive positions; and

two sets of mutually engageable locking means on said dispensing unit and on said actuator unit for releasably

fixedly attaching said dispensing unit to said actuator unit; said first set of mutually engageable locking means comprising a male connector on the distal end of said stem member and a reciprocally formed female receptive slot on said actuating means such that when the end member of said dispensing unit is inserted into the cavity of said actuator unit, the male connector, when aligned with the female receptive slot, is received by the slot, and the actuator unit is rotated 90° relative to the dispenser unit, withdrawal of the male connector from the female slot is thereby prevented and the stem member and actuating means are locked together and operate in a unitary manner; and said second set of mutually engageable locking means comprises an annular groove formed in said end member and at least one set-screw threadingly engaged through the cylindrical body of the actuator unit into the cavity such that when the end member is inserted into the cavity, said at least one set-screw engages the annular groove; and said dispensing unit further provided with means for maintaining said sealing means in sealing state during said dispensing unit being disconnected from said actuator unit.

5,255,828

LIQUID DEVELOPER SUPPLY SYSTEM WITH PUMP FOR DISCHARGING FIXED AMOUNTS OF LIQUID DEVELOPER

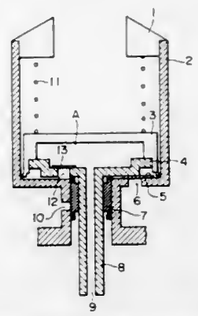
Hideo Ichikawa, Numazu, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 29, 1991, Ser. No. 800,490

Claims priority, application Japan, Nov. 30, 1990, 2-126475[U]; Mar. 27, 1991, 3-026080[U]

Int. Cl.[5] G01F *11/02*

U.S. Cl. 222—321 **2 Claims**



1. A pump-equipped liquid developer supply system comprising:

a liquid developer supply vessel which holds a liquid developer therein,

a cylinder, disposed within said supply vessel, with a bottom portion having a piston hole and a liquid developer suction hole with a liquid developer suction valve, said suction hole opening into said liquid developer supply vessel,

a piston device which is slidably disposed within said cylinder, said piston device comprising (1) a piston with a liquid developer inlet and a liquid developer inlet valve, (2) a piston cover which is provided above said piston to form an inner space therebetween to hold said liquid developer therein, (3) a piston shaft which, in a sealed state, passes through said piston hole formed in said bottom portion of said cylinder, and is integrally connected with said piston in such a manner as to slidably move said piston device along the inner side of said cylinder, when pressed upward or downward, said piston shaft including therein a developer discharge conduit which is connected to said inner space of said piston device and from which said liquid developer can be discharged for use, said bottom portion of said cylinder and said piston being capable of forming a lower space therebetween when said piston device is moved upward to draw said liquid developer thereinto through said liquid developer suction hole with said liquid developer suction valve from said liquid developer supply vessel, said liquid developer being fed into said inner space of said piston device from said lower space between said bottom portion of said cylinder and said piston and discharged through said liquid developer conduit for use when said piston device is moved downward, and (4) an air displacement port through which air is caused to flow into said supply vessel when said liquid developer is drawn into said lower space from said supply vessel, and

a spring member which urges said piston device downward.

5,255,829

DISPENSER FOR DISCHARGING PULVEROUS MATERIAL

Per T. Trumstedt, and Per N.C. Trumstedt, both of Dyarnevägen 5, S-198 00 Balsta, Sweden

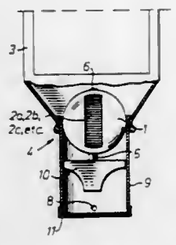
PCT No. PCT/SE90/00883, § 371 Date Jun. 18, 1992, § 102(e) Date Jun. 18, 1992, PCT Pub. No. WO91/09790, PCT Pub. Date Jul. 11, 1991

PCT Filed Dec. 28, 1990, Ser. No. 862,554

Claims priority, application Sweden, Jan. 5, 1990, 9000038

Int. Cl.[5] G01F *11/10*

U.S. Cl. 222—367 **8 Claims**



1. A dispenser for discharging fluent material from a substantially tight package, said dispenser comprising:

a rotatable apparatus disposed in an opening in said package and arranged to be rotatable in relation to said package, said rotatable apparatus being provided with dosage compartments disposed therein;

a knob coupled to said rotatable apparatus for rotating said rotatable apparatus relative to said package;

said rotatable apparatus being displaceable relative to said package between a first inoperative position and a second operative position, said rotatable apparatus blocking said opening and thereby preventing discharge of said material from said package in said first inoperative position, and said rotatable apparatus being oriented in said opening so at to be rotatable when in said second operative position such that a position of said rotatable apparatus is controlled by said knob to cause said dosage compartments to communicate the interior of said package with the exterior thereof and be progressively filled with and emptied of fluent by force of gravity.

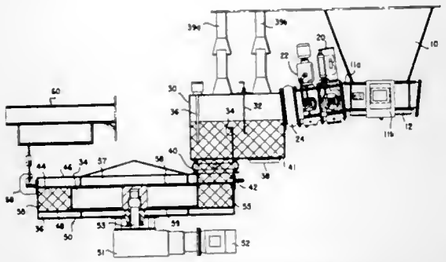
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5,255,830

GRAVIMETRIC METERING APPARATUS FOR POURABLE MATERIAL AND CONVEYING SYSTEM USING IT

Hans W. Häfner, Aichach-Walchshofen, Fed. Rep. of Germany, assignor to Pfister GmbH, Augsburg, Fed. Rep. of Germany

Filed Aug. 16, 1991, Ser. No. 745,673
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1990, 4026042
Int. Cl.[5] G01G *13/10*; B65G *53/04, 53/38*
U.S. Cl. 222—370 18 Claims



1. A continuous gravimetric metering apparatus for pourable material comprising:

a housing;

a predetermined measuring path including a rotor rotatably mounted in the housing immediately adjacent and between a top wall and a bottom wall thereof arranged in a parallel to each other so as to define peripherally distributed pockets, said top wall of said housing having a charging inlet for supplying pourable material to said pockets and said bottom wall having a discharging outlet offset in respect of said charging inlet in the direction of rotation of said rotor, said predetermined measuring path being represented by an angular distance between said charging inlet and said discharging outlet; and

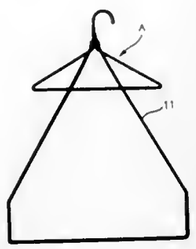
a pressurized gas space contiguous to said bottom wall, said bottom wall being porous at least in a region covered by said pockets for fluidizing the pourable material within said pockets.

5,255,831

APPARATUS FOR DISPLAY OF BRIDAL GOWN TRAINS

Marion K. Bellamy, 2273 Banbury La., Rock Hill, S.C. 29732

Filed Nov. 3, 1992, Ser. No. 970,864
Int. Cl.[5] A47G *25/16*
U.S. Cl. 223—88 1 Claim



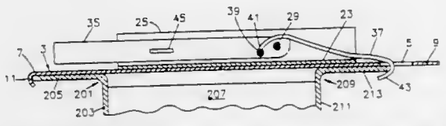
1. An apparatus for the display of bridal gowns in a bag such that the train is displayed without covering either the front or back of the bodice portion of the gown, said apparatus comprising in combination: a first garment hanger having a first suspending portion and a first body portion attached to the first suspending portion for supporting the bridal gown, and further comprising a second garment hanger having a second suspending portion and a second body portion attached to said second suspending portion for suspending the train of the gown, said second body portion having an enclosed opening therein, said second suspending portion attached to said first suspending portion, wherein a bridal gown is placed on said first garment hanger, with the train draped through said enclosed opening to support the train, and a garment bag containing said bridal gown, first garment hanger, and second garment hanger.

5,255,832

UNIVERSAL EQUIPMENT MOUNTS, ENCLOSED MOUNTS AND MOUNTING RAILS

David Christensen, 11 Moores Mill Rd., Pennington, N.J. 08534

Filed Dec. 4, 1991, Ser. No. 802,227
Int. Cl.[5] B60R *11/06*
U.S. Cl. 224—42.42 14 Claims



1. A universal equipment mount for attachment to mounting rails, which comprises:

(a) a base plate being substantially flat and being adapted to receive equipment by permanent or temporary attachment thereto, said base plate having a top and a bottom and a first end and an opposite, second end, said first end having a hooked portion curved downwardly and inwardly for fitting over a flat, horizontal mounting rail section, said second, opposite end having a cut-out portion for passing therethrough an attachment end of an over-the-center clamp;

(b) an over-the-center clamp permanently attached to the top of said base plate, said over-the-center clamp having two sidewalls, a pivot axle located between and movably attached to said sidewalls, a latch handle rotatably mounted on said axle and an anchor strap terminating with an attachment end having an anchor hook and, at its opposite end being attached to said latch handle to one side of side axle and extending over said axle to an opposite side, extending said attachment end through the cut-out portion of said base plate.

5,255,833

TRANSPARENT CARRIER

Rosalie McAllister, 219-24 121st Ave., Cambria Heights, N.Y. 11411

Filed Mar. 17, 1992, Ser. No. 854,472
Int. Cl.[5] A45F *3/02*
U.S. Cl. 224—202 10 Claims

1. An apparatus for carrying personal articles of a wearer comprising:

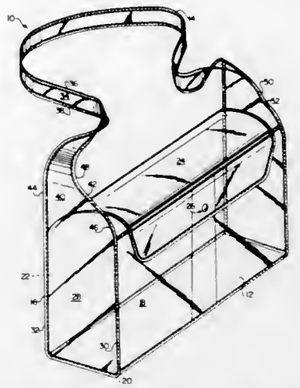
a substantially rectangular container portion of transparent plastic material having front, bottom, rear and top surfaces, each of said surfaces having side edges;

closure means between said top and front surfaces for closing said container portion;

a flexible shoulder strap, adapted to be received over the head and one arm of the wearer, said shoulder strap being dimensioned so as to continuously extend from one end of said bottom surface over the shoulder of the wearer to an opposite end of said bottom surface and adapted to lay flat against the body of the wearer; and

attaching means for attaching said shoulder strap to said side edges of said front, bottom, and rear surfaces of said container portion;

said shoulder strap including a wide portion at each end thereof and extending from said bottom surface to an upper edge of said front and rear surfaces, each wide portion including first and second edges, a narrow portion adapted to extend around the head of the wearer including first and second edges, and a pair of transitionary portions, each transitionary portion extending from one of said wide portions to one end of said narrow portion, each transitionary portion including a first edge disposed in an angular relationship with respective said first edges of each said wide portion and said narrow portion, and a second edge disposed in a straight line relationship with respective said second edges of each said wide portions and said narrow portion.

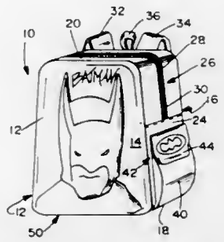


5,255,834

ARTICLE CARRIERS WITH INCORPORATED THREE-DIMENSIONAL GRAPHICAL DISPLAY PANELS

Edward S. Bendersky, Lake Forest, Ill., assignor to ERO Industries, Mt. Prospect, Ill.

Filed Dec. 13, 1991, Ser. No. 807,170
Int. Cl.[5] A45F *3/04*
U.S. Cl. 224—209 5 Claims



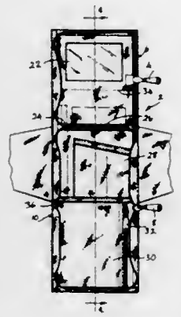
1. A soft walled book bag backpack carrier comprising a hollow carrier body defined by a pair of generally upstanding parallel panels including an inwardly facing panel adapted to lie adjacent a wearer's back and an opposing, spaced apart outwardly facing rear panel, a bottom panel and an opposing top panel extending generally perpendicular to and interconnecting said upstanding inwardly facing and outwardly facing panels and a pair of opposing side edge panels extending between and interconnecting said upstanding panels to define a hollow carrier body having an inner body cavity for receiving items to be carried, said carrier body including a reclosable access opening to said body cavity having a releasable fastener means, said carrier further including a pair of backpack shoulder straps affixed to said carrier body to lie adjacent said inwardly facing panel, said outwardly facing panel of said carrier body being a unitary, shock-absorbing, resilient flexible shaped thermoplastic molded foam member having an outwardly projecting three-dimensional graphical display shaped configuration portion and a peripheral edge portion, said outwardly facing rear panel being directly attached to said top, bottom and each of said side edge panels along said peripheral edge portion.

5,255,835

RUNNER'S WRITING PAD, PENCIL AND RECORDER POUCH

Rufus W. Burks, 620 Sberidan St. Apt. #307, Hyattsville, Md. 20783-3206

Filed Nov. 26, 1991, Ser. No. 797,934
Int. Cl.[5] A45P *3/00*
U.S. Cl. 224—228 21 Claims



1. A runner's writing pad, pencil and recorder pouch adapted for being carried at a user's waist while running and comprising:

a pouch comprising:

an upper section including an upper edge and a lower edge, wherein in closed position said upper edge of said upper section is folded forward and joined to and at said lower edge of said upper section and in open position said upper edge of said upper section is extended upward, away from said lower edge of said upper section, to expose access to a pocket adapted for receiving a writing pad or a mini-tape recorder, radio or pager,

a lower section including an upper edge adjacent said lower edge of said upper section and a lower edge, wherein in closed position said lower edge of said lower section is folded forward and joined to and at said upper edge of said lower section and in open position said lower edge of said lower section is extended downward away from said upper edge of said lower section,

wherein the upper and lower sections are separate and distinct from each other both in open and in closed positions, and

a waist belt for carrying the pouch; the waist belt having a tapered section connected to each of two opposite sides of the pouch, each tapered section having a wider end and a narrower end, with the wider end adjacent the pouch.

5,255,836

FLAME SPRAY GUN WITH WIRE FEED CONTROL

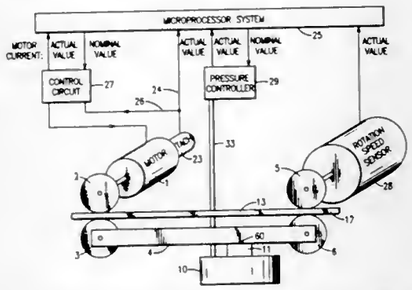
Ralph H. Herber, Mainz, and Karsten J. Eichborn, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Continuation of Ser. No. 466,368, Oct. 9, 1990, abandoned. This application Jan. 25, 1993, Ser. No. 8,258
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1988, 3825510
Int. Cl.[5] B65H *23/16*
U.S. Cl. 226—24 12 Claims

1. A wire flame spray apparatus comprising a motor, a wire feed pulley driven by the motor, a first counterpulley disposed

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to bias a wire into engagement with the feed pulley with a biasing force for the feed pulley to feed the wire, detector means for detecting actual wire feed rate, processor means for generating an error signal representative of the difference between the actual wire feed rate and a predetermined wire feed rate, motor control means responsive to the error signal



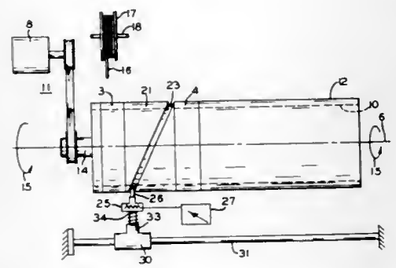
for controlling motor speed to drive the wire feed pulley so as to drive the wire at the predetermined wire feed rate, and pressure means responsive to the error signal for increasing the biasing force in response to a lagging of actual feed rate from the predetermined feed rate so as to reduce slippage of the wire on the feed pulley.

5,255,837

COIL LEAP LAP JOINT FOR SUPERCONDUCTING MAGNET

Bu X. Xu; Granville G. Ward; Winfield S. DeWitt, III, all of Florence; Gerhard S. Kohus, Effingham; Craig C. Duer, and Jimmy L. Turner, both of Florence, all of S.C., assignors to General Electric Company, Milwaukee, Wis.

Filed Aug. 3, 1992, Ser. No. 923,426
Int. Cl.[5] B23K *1/00, 1/19*
U.S. Cl. 228—102 **15 Claims**



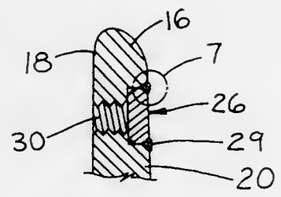
1. A method of producing long low resistance solder lap joints suitable for use on superconducting magnet coils comprising the steps of:
securing a first end of a first ribbon conductor to a support;
rotating said support to wind said conductor into a coil about said support providing a second end of said conductor;
baring a length of said second end of said first conductor;
baring a length of a first end of a second conductor;
sandwiching said second end of said first conductor and said first end of said second conductor on either side of a flatted length of solder to form a lap joint;
bringing a heat source into thermal contact with said lap joint to melt said solder and electrically connect said second end of said first conductor to said first end of said second conductor;
moving said heat source along said lap joint while controlling the pressure of said heat source against said lap joint and controlling the temperature of said heat source; and
controlling the speed of the movement along said lap joint to provide a uniform low electrical resistance joint.

5,255,838

METHOD OF PROVIDING A THREADED BORE IN A PROSTHETIC IMPLANT

Bennie W. Gladdish, Jr., Palm Harbor, Fla., and Timothy E. Porter, Warsaw, Ind., assignors to Zimmer, Inc., Warsaw, Ind.

Filed Dec. 17, 1992, Ser. No. 991,883
Int. Cl.[5] B23K *31/00*
U.S. Cl. 228—135 **4 Claims**



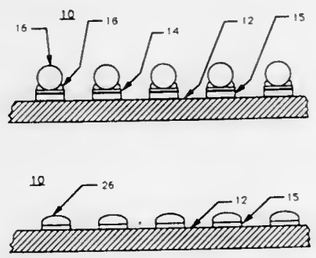
1. A method of forming a blind bore within a wall of an orthopaedic implant, the wall including an interior surface and an exterior surface, the method comprising the steps of:
a. forming a bore through said wall of the orthopaedic implant, the bore extending from the exterior surface to the interior surface of the wall;
b. forming threads in the bore from the exterior surface to the interior surface; and
c. providing a plug and plugging said bore at said interior surface and securing said plug to said exterior surface, said plug extending from said exterior surface toward said interior surface within said bore, said plug being spaced from said interior surface.

5,255,839

METHOD FOR SOLDER APPLICATION AND REFLOW

Francisco da Costa Alves, Boca Raton; Anthony B. Suppelsa, Coral Springs, and Kenneth R. Thompson, Sunrise, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 2, 1992, Ser. No. 816,684
Int. Cl.[5] B23K *31/02*
U.S. Cl. 228—180.21 **7 Claims**



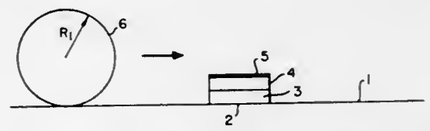
1. A method for soldering a component to a substrate, comprising the steps of:
(a) providing a substrate having predefined solderable metal pads;
(b) providing solder spheres for suitable placement on the solderable metal pads;
(c) applying a flux and a tacking media to the solderable metal pads;
(d) dipping the solder spheres in the tacking media;
(e) placing the solder spheres on the solderable metal pads;
(f) heating and melting the solder spheres onto the solderable metal pads of the substrate providing reflowed solder on the solderable metal pads;
(g) applying a layer of flux tacking media on the reflowed solder;
(h) placing a component on the reflowed solder and flux tacking media providing a circuit assembly; and
(i) heating the circuit assembly allowing the component to become soldered to the solder pad.

5,255,840

FLUXLESS SOLDER COATING AND JOINING

Mark S. Nowotarski, Ossining, N.Y., assignor to Praxair Technology, Inc., Danbury, Conn.

Division of Ser. No. 456,729, Dec. 26, 1989, abandoned. This application May 5, 1992, Ser. No. 880,162
Int. Cl.[5] B23K *1/00*
U.S. Cl. 228—254 **22 Claims**



1. An improved process in which a molten metal is to be coated onto at least one solid metal surface having a higher melting point than that of said molten metal, comprising:
(a) contacting at least one solid metal surface to be coated with a reservoir of said molten metal under inert, essentially fluxless conditions, so as to establish a controlled pressure across the surface of the coating of molten metal and the surface of said reservoir of molten metal essentially at a desired final pressure of said molten metal coating; and
(b) removing said reservoir from contact with the solid metal surface, a point of departure being formed between the reservoir and the metal coating remaining on the solid metal surface, the pressure of the molten metal in the coating being essentially the same as the pressure within the reservoir of molten metal at the point of departure both before and after actual separation of the coating from the reservoir, the coating thereby having a volume and shape such that its radius of curvature is essentially the same as that of the reservoir at the point of departure, whereby the coating process is carried out at close to equilibrium conditions without appreciable sensitivity to operating parameters pertaining to the coating process, the controlled pressure of the reservoir of molten metal enabling a desired coating volume and shape to be achieved.

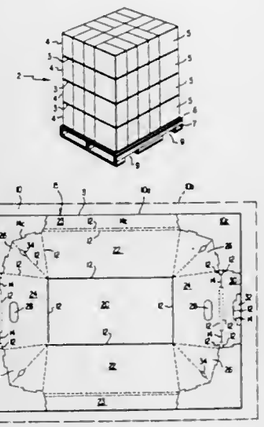
5,255,841

COMBINED TIER SHEET AND TOTE BOX

Dale L. Ritter, Memphis, Tenn., assignor to International Paper Company, Purchase, N.Y.

Filed Sep. 10, 1992, Ser. No. 942,879
Int. Cl.[5] B65D *5/22, 19/40*
U.S. Cl. 229—103 **5 Claims**

1. A dual function corrugated paperboard sheet dimensioned while in an initially flat and unfolded condition so as to be commensurate in an area with a pallet, said sheet having box blank forming panels and thereby being capable of serving first as a tier sheet separator between tiers of products loaded on a pallet and thereafter as a box blank, said sheet including:
a) a central panel for forming a box bottom,
b) side panels for forming box side panels,
c) end panels for forming box end panels,
d) score lines between and joining said panels and defining each panel and permitting folding as between them to effect erection into a box, said sheet having peripheral removable portions which when removed leave only said foldable box forming panels.

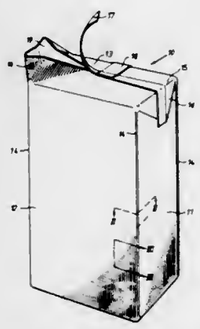


5,255,842

STRENGTHENED EDGE PACKAGING CONTAINERS

Ake Rosén, Helsingborg, Sweden, assignor to Tetra Alfa Holdings S.A., Pully, Switzerland

Filed Mar. 4, 1992, Ser. No. 845,585
Claims priority, application Sweden, Mar. 7, 1991, 9100678
Int. Cl.[5] B65D *5/42*
U.S. Cl. 229—137 **19 Claims**



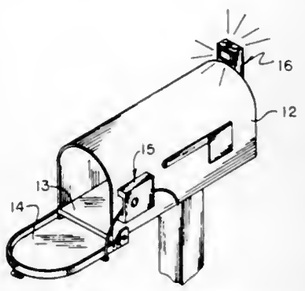
1. Packaging container, manufactured from a plastically deformable, flexible material, comprising:
a tubular container body having at least two longitudinal edges which delimit between them a mainly flat side wall; and
one or more reinforcing elements formed in the tubular container body in a corresponding number of regions near a corresponding number of the longitudinal edges, the reinforcing elements including one or more plastic deformations in the material which reinforce the corresponding number of longitudinal edges.

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5,255,843
MAILBOX ALERT APPARATUS

Robert S. Deakyne, 754 Madison Ave., Elizabeth, N.J. 07201

Filed Sep. 24, 1992, Ser. No. 950,189
Int. Cl.[5] B65D *91/00*
U.S. Cl. 232—35 4 Claims

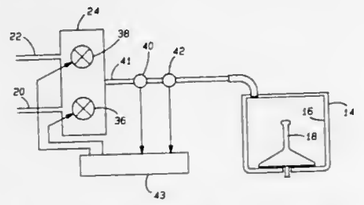


1. A mailbox alert apparatus, comprising in combination,
a rural mailbox, with the rural mailbox having mailbox spaced side walls and a mailbox floor, a mailbox entrance opening is directed into the mailbox at a first end of the mailbox between the side walls and the floor, and
a door plate is pivotally mounted to the mailbox floor in adjacency to the entrance opening, and
an alarm housing, the alarm housing mounted to one of the side walls, and
an alert housing mounted to the mailbox, with the alarm housing including an alarm housing mounting wall in contiguous communication with the side wall, and the alarm housing including an alarm housing cap, with the alarm housing cap having a cap top wall, a cap front wall, cap side walls, and a cap rear wall, with the cap front wall having a cap front wall opening, with the cap front wall opening positioned in adjacency to the mailbox entrance opening and the door plate, and
at least one battery member mounted to the alarm housing mounting wall, and
a switch member in electrical communication with the battery member, and
a contact plate reciprocatably mounted relative to the switch member, and
switch means in operative communication with the contact plate and the door plate for effecting closure of the switch member upon opening of the door plate to effect electrical communication between the battery and the alert housing, and
the switch means includes a support boss, the support boss integrally mounted to the alarm housing mounting wall, with the support boss having a support boss internally threaded central bore, and support boss radial splines directed from the central bore to an outer periphery of the support boss, and a mounting boss, wherein the mounting boss includes a mounting boss bore coaxially aligned with the central bore, and an annular array of mounting boss radial splines cooperative with the support boss radial splines to effect rotative positioning of the mounting boss relative to the support boss, with contiguous communication of the mounting boss radial splines with the support boss radial splines, and a bearing member mounted to the mounting boss, with the bearing member coaxially aligned with the mounting boss and the support boss, and an externally threaded fastener directed through the mounting boss bore and threadedly received within the support boss central bore to secure in a predetermined angular orientation the bearing member relative to the support boss, and a switch arm mounted to the bearing member, with the switch arm projecting exteriorly of the bearing member, with the cap front wall having a cap front wall opening and the switch member directed through the cap front wall opening, and the switch member having a switch arm roller, the switch arm roller in contiguous communication with the door plate, and a switch lug mounted to the bearing member longitudinally aligned with the switch arm, whereupon the switch arm roller is in contiguous communication with the door plate, whereupon pivoting of the door plate effects pivoting of the switch arm and the switch lug, and the switch lug arranged in adjacency to the contact plate to effect communication with the contact plate and closure of the switch member.

5,255,844
WATER TEMPERATURE CONTROL FOR AUTOMATIC WASHERS

James C. Miller, Lincoln Township, Berrien County; David A. Przygocki, Oronoko Township, Berrien County, and Lori S. Miller, Lincoln Township, Berrien County, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jul. 27, 1992, Ser. No. 918,753
Int. Cl.[5] G05D *23/13*
U.S. Cl. 236—12.12 7 Claims

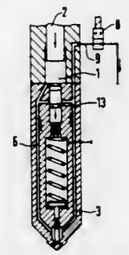


1. In an automatic washer having means for containing a wash bath, hot and cold water inlet valves connected to respective sources of hot and cold water, and conduit means for delivering a combined supply of water from said valves to said wash bath, the improvement in controlling the temperature of water delivered to said wash bath comprising:
a first sensing means for sensing the temperature of said combined supply of water through said conduit means to said wash bath; and
a first control means for maintaining the hot water inlet valve continuously open for a predetermined period of time and opening said cold water inlet valve in response to said first sensing means when the temperature of said combined supply of water through said conduit means is above a first predetermined temperature and for closing said cold water inlet valve in response to said first sensing means when the temperature of said combined supply of water through said conduit means is below said first predetermined temperature such that said cold water valve is cycled on and off for controlling the temperature of said flow of water to said first predetermined temperature, said first control means further including:
a first circuit for connecting said hot water inlet valve with a power supply for maintaining said hot water inlet valve continuously open for a predetermined period of time, said first circuit further including:
a cam driven switch having a first position and a second position, and
a first manual switch in series with said hot water valve, said first circuit being configured such that continuous power is supplied to said hot water inlet valve upon said cam driven switch being in said first position and said first manual switch being closed, and
a second circuit connecting said cold water inlet valve to said power supply in series with said first sensing means device.

5,255,845
FUEL INJECTION DEVICE FOR INTERNAL COMBUSTION ENGINES

Andre Brunel, St. Genis Laval, France, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 14, 1992, Ser. No. 882,796
Claims priority, application Fed. Rep. of Germany, May 31, 1991, 4117809
Int. Cl.[5] F02M *47/02*
U.S. Cl. 239—90 13 Claims

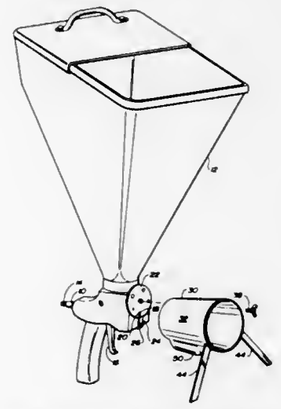


1. A fuel injection device for internal combustion engines, having an injection pump with a pump chamber in a housing;
an injection nozzle in the housing, a valve needle loaded by a closing spring for controlling injection ports branching off from a pressure chamber (7);
a pressure line between the pump work chamber and the pressure chamber; and
an electromagnetic valve that controls a fuel flow via a fuel inlet line (9) to the pump work chamber;
an additional final control element is provided which controls a direct fuel delivery path (10) via the fuel inlet line (9) into the pump work chamber (1) and said delivery path is closed by a rising pressure in the pump work chamber (1) against a compression spring (12).

5,255,846
SPRAY CONTROL APPARATUS FOR USE WITH TEXTURIZER MACHINES

Raymond A. Ortega, 941 4th Ave., Sacramento, Calif. 95818

Filed Sep. 21, 1992, Ser. No. 947,539
Int. Cl.[5] B05B *7/30, 15/06, 1/26*
U.S. Cl. 239—103 10 Claims

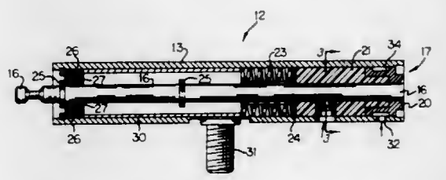


1. Spray control apparatus for use with texturizer sprayer means including a nozzle gun and a hopper connected to said nozzle gun for furnishing texturizing material to said nozzle gun, said nozzle gun having an air nozzle and an orifice plate defining an orifice in communication with said air nozzle, said orifice plate having an outer surface disposed adjacent to said air nozzle and radiating outwardly therefrom in a plane substantially perpendicular to the flow path of air emitted from said air nozzle, said nozzle gun operable to spray a diverging stream of air-entrained texturizing material through said orifice and away from said orifice plate, and said nozzle gun further including a mechanical fastener securing said orifice plate in fixed position relative to said air nozzle, said diverging stream having an angle of divergence of a predetermined magnitude, said spray control apparatus comprising, in combination:
deflector means of unitary construction including a tapered deflector wall defining a passageway and having an inner end and an outer end at opposed ends of said passageway, said deflector means being in the shape of a truncated cone, said inner end comprising a mounting wall defining a centrally located aperture and a mounting hole spaced from said aperture, and said outer end being open over substantially the full extend thereof with said tapered wall being generally uniformly spaced from said centrally located aperture and diverging away from said mounting wall in the direction of said air flow path; and
connector means for connecting said deflector means to said nozzle gun, said mounting wall being in engagement with said orifice plate when said deflector means is connected to said nozzle gun with said mounting wall aperture in at least partial registry with said orifice, said connector means including the mechanical fastener projecting through said mounting hole and through said orifice plate and in engagement with said nozzle gun to connect said deflector means to said nozzle gun, and said tapered deflector wall defining a second angle of divergence of a lesser magnitude than the angle of divergence defined by said diverging stream of air-entrained texturizing material whereby said air-entrained texturizing material will engage said tapered deflector wall and be redirected to form a more concentrated stream and focused spray pattern.

5,255,847
TIP FOR A FOAM IN PLACE INJECTION CARTRIDGE

Charles R. Sperry, Springfield, Vt.; Henry Ruddy, Sandy Hook, Conn., and Laurence B. Sperry, Brookline, Mass., assignors to Sealed Air Corporation, Saddle Brook, N.J.

Filed Sep. 26, 1991, Ser. No. 767,033
Int. Cl.[5] B05B *15/02*
U.S. Cl. 239—112 1 Claim



1. A tip for a foam-in-place injection cartridge for directing a frothing mixture of cleaning solvent and air to the exit portions of the cartridge and comprising:
a generally cylindrical body formed if a material that is porous to gases and liquids, but that is impermeable to the foaming compositions which otherwise exit the injection cartridge;
a cylindrical core in said body that defines a mixing chamber for foamable compositions and through which a valving rod can pass to valve the dispensing of foamable compositions from the cartridge; and
at least one circular face of said body forming a frusto-conical surface directed inwardly toward said body so that when a mixture of cleaning solvent and air is directed through said body, a frothing mixture of air and solvent

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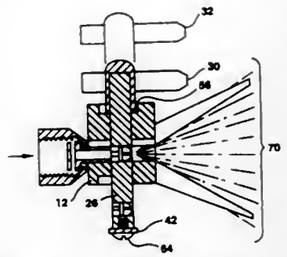
will exit said frusto-conical surface to provide cleaning action over a linear dimension at least as great as the distance said frusto-conical surface faces inwardly in said body.

5,255,848

MULTIPLE ORIFICE SPRAY DEVICE

Nolin C. Rhodehouse, 592 Reagan St., Idaho Falls, Id. 83401

Filed May 1, 1992, Ser. No. 877,209
Int. Cl.[5] B05B *15/02, 1/04, 1/16*
U.S. Cl. 239—119 **4 Claims**



1. A multiple orifice high pressure liquid spray device comprising:

a. a housing having a front section, a back section, a vertical bore, and a horizontal bore;

b. a spray guard and nozzle on the front section of the housing adjacent a horizontal bore front section said spray guard further comprising an upper and lower portion each having a slot, thereby permitting a vertically oriented, rectangular spray pattern;

c. a liquid inlet and hose connection on the back section of the housing adjacent a horizontal bore back section;

d. an orifice selection cylinder slidably fitted within the vertical housing bore, having a first and second spray operating position, wherein at least one of said first and second spray operating positions disperses vertically oriented, rectangular spray pattern;

e. a first and second orifice within the orifice selection cylinder wherein the first orifice is on an upper section of the orifice selection cylinder adjacent the nozzle in the first spray operating position and the second orifice is on a lower section of the orifice selection cylinder in a non-operating position, whereby sliding the orifice selection cylinder upward to the second spray operating position aligns the second orifice adjacent the nozzle, and wherein 180° rotation of the orifice selection cylinder within the housing bore from each spray operating position about a vertical cylinder axis, causes reverse flow through the orifice thereby clearing an orifice inlet portion of a particulate.

5,255,849

COOLING AIR TRANSFER APPARATUS FOR AIRCRAFT GAS TURBINE ENGINE EXHAUST NOZZLES

Jeffrey C. Mayer, Swampscott; Robert P. Sim, Topsfield, both of Mass., and Ananta K. Gopalan, Hampton, N.H., assignors to General Electric Company, Cincinnati, Ohio

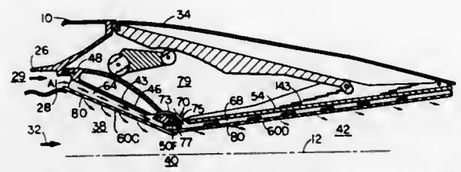
Filed Nov. 5, 1991, Ser. No. 787,869
Int. Cl.[5] B64D *33/04*
U.S. Cl. 239—127.3 **11 Claims**

1. A fluid transfer apparatus for transferring a primary fluid between relatively pivotable fluid source and receiver, said fluid transfer apparatus comprising:

a curved source transfer tube attached to and pivotable with the fluid source and operable to receive and transfer the primary fluid from the fluid source,

a curved receiver transfer tube attached to and pivotable with the fluid receiver,

wherein said receiver fluid transfer tube receives in slidable relation a portion of said fluid source transfer tube such



that primary fluid may be transferred from the fluid source to the fluid receiver, and

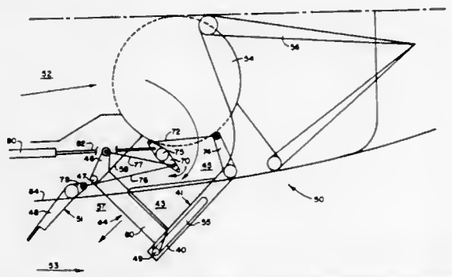
the relatively slidable portions of said transfer tubes concentrically curve about a relative pivot point between said relatively pivotable fluid source and receiver.

5,255,850

PIVOTING FLAPS AND VANE PACK IN A NOZZLE REVERSER ASSEMBLY

Jefre H. Cockerham, Jupiter, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 29, 1992, Ser. No. 908,676
Int. Cl.[5] F02K *1/70*
U.S. Cl. 239—265.29 **7 Claims**



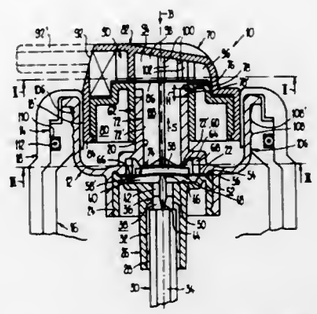
1. A reverser assembly for a nozzle of a gas turbine engine which has internal reverser flaps comprising, a reverser opening on at least one side of the nozzel, a forward door and a rearward door mounted over said opening having spaced-apart pivot points, which doors pivot toward each other into closed position and which pivot away from each other into an open position, projecting from the side of said engine to direct reverser gas flow away from said engine at a desired pitch angle in a fore and aft direction, a swinging vane pack pivotably mounted at one end proximate said forward door, between said pivot points, to said engine, said vane pack being mounted in sliding engagement at the other end thereof with said aft door so as to be swingably mounted across the reverser exhaust opening, which vane pack has a plurality of spaced vanes which can be oriented to splay reverser gas away from aircraft components in a laterally vectoring direction relative to said engine so as to provide multi-directional reverser flow control for said engine.

5,255,851

DEVICE FOR PRODUCING AND DISPENSING FOAM

Viktor Tobler, Oberduernten, Switzerland, assignor to Supermatic Kunststoff AG, Uster, Switzerland

Filed Aug. 24, 1992, Ser. No. 933,934
Claims priority, application Switzerland, Aug. 28, 1991, 02527/91
Int. Cl.[5] B05B *7/32*
U.S. Cl. 239—343 **10 Claims**



1. A device for producing and dispensing a foam, comprising:

a container having a neck and holding a foamable liquid, and being able to hold a gas under pressure;

a securing part fixed to the neck of the container and defining an axial bore extending therethrough;

a mixture part fitted in said axial bore and defining a gas passage and a liquid passage connected in parallel and leading from the interior of the container;

a mixing chamber arrangement positioned downstream of the gas and liquid passages in a flow direction such that the gas and the foamable liquid from the container may be mixed therein to form a foam;

a valve seat adjacent said mixing chamber arrangement;

a valve body positioned upstream of said valve seat in a foam flow direction;

an actuating element engageable with said valve body to separate said valve body from said valve seat and to form a gap therebetween;

limiting means for limiting a size of said gap;

a perforate refining element positioned between said mixing chamber arrangement and said valve body, whereby the foam is refined thereby, prior to reaching the gap between said valve body and said valve seat;

a channel arrangement downstream of said refining element for conveying the refined foam to an outlet; and

flow retarding means in said channel arrangement for retarding the flow of foam to the outlet.

5,255,852

SPRAY-TYPE DISPENSING APPARATUS

Adam P. Morrison, Rockford, Ill., assignor to The Testor Corporation, Rockford, Ill.

Filed Jul. 20, 1992, Ser. No. 916,548
Int. Cl.[5] B05B *7/24*
U.S. Cl. 239—346 **13 Claims**

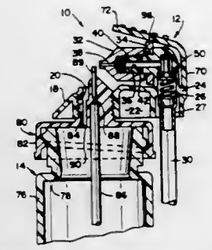
1. An air brush apparatus comprising:

a molded plastic frame including a collar portion with an integral support arm extending laterally therefrom and carrying a vertically positioned discharge nozzle support, a threaded opening extending axially through the collar portion;

a liquid container having a removable cap with an axially extending, externally threaded cylindrical mounting hub threadedly received inthe threaded opening in the collar portion for permitting vertical adjustment of the container;

an eductor tube extending from the interior of the container into the mounting hub and a liquid discharge tip having an upwardly open and extending axially outward of the mounting hub and communicating with the eductor tube;

a propellant outlet portion located to direct propellant transversely of the upwardly open end of the liquid discharge tip;



a propellant fluid supply passage extending through the discharge nozzle support and communicated with the propellant fluid discharge nozzle; and,

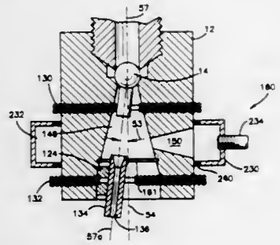
a valve assembly positioned in the nozzle support for controlling flow of propellant fluid throuhg the supply passage, the valve assemblyincluidng bieasing means biasing the valve to a closed position and hving an operating stem extending out of the nozzle support and an operating lever extending over the operating stem for permitting the operating stem to be selectively moved against the biasing means to move the valve to an open position.

5,255,853

ADJUSTABLE FLUID JET CLEANER

Jose P. Munoz, West Bloomfield, Mich., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Continuation-in-part of Ser. No. 679,279, Apr. 2, 1991. This application Jul. 13, 1992, Ser. No. 912,400
Int. Cl.[5] B24C *5/04*
U.S. Cl. 239—433 **8 Claims**



1. A fluid jet system comprising:

a nozzle body having an axis;

nozzle means adjustably mounted within the nozzle body for dispersing fluid along a first centerline, the first centerline having an adjustable angle with respect to the axis;

first adjustment means for adjusting the orientation of the nozzle means relative to the nozzle body;

a focusing tube adjustably mounted within the nozzle body and having a second centerline, the second centerline having an adjustable angle with respect to the axis; and

second adjustment means for adjusting the orientation of the second centerline of the focusing tube relative to the nozzle body, and into alignment with the nozzle means, so that said first and second centerlines may be aligned and

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wherein said first and second adjustment means are independent of one another.

5,255,854

BURNER HEAD FOR GAS BURNERS

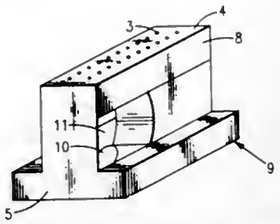
Norbert Keim, Bietigheim-Biss; Klaus Görner, Ratingen, and Martin Käss, Stuttgart, all of Fed. Rep. of Germany, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Nov. 6, 1991, Ser. No. 788,380

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1990, 4035502; Nov. 28, 1990, 4037751; Feb. 22, 1991, 4105608

Int. Cl.[5] B05B *1/14*

U.S. Cl. 239—556 23 Claims



20. A burner head for gas burners for the temperature treatment of a profile, particularly for the temperature treatment of an elongated profile, in which a relative movement between the profile and the burner head takes place, said burner head comprising:

a burner body having a plane surface;

a plurality of gas outlet nozzles formed in the plane surface and arranged in a rectangular area of the plane surface to produce a rectangular flame formation for temperature treatment of the profile; and

separating deflecting surfaces provided in the area of the gas outlet nozzles.

5,255,855

PLASTICALLY DEFORMED ARMATURE GUIDE PROTRUSIONS

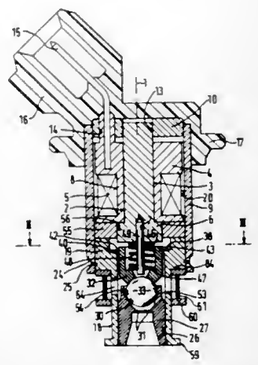
Stefan Maier, Schwieberdingen, and Jochen Hommel, Leonberg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 18, 1992, Ser. No. 978,012

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1991, 4137994

Int. Cl.[5] F02M *51/06*; F16K *31/02*

U.S. Cl. 239—585.4 12 Claims



1. An electromagnetically actuatable injection valve for fuel injection systems in internal combustion engines, having a nozzle holder, a coil winding disposed on a core, an armature, a nozzle body joined to the nozzle holder and including a valve seat, and a valve closing body joined to the armature and cooperating with the vale seat, said armature being radially guided and axially movably supported by at least one guide protrusion of a guide segment of the nozzle holder, said at least one guide protrusion protruding into a nozzle holder bore and being plastically deformed on one end thereof which extends at least partway around the guide segment of the nozzle holder bore.

5,255,856

ELECTROSTATIC SPRAY PAINTING APPARATUS

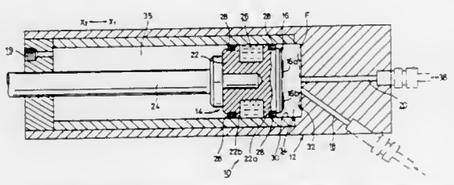
Ichirou Ishibashi; Nobunari Arai, and Toshio Kubota, all of Sayama, Japan, assignors to Honda Giken Kogyo Kaubshiki Kiasha, Tokyo, Japan

Filed Oct. 17, 1991, Ser. No. 778,269

Claims priority, application Japan, Nov. 8, 1990, 2-304465; Jan. 23, 1991, 3-001690[U]; Feb. 20, 1991, 3-007561[U]

Int. Cl.[5] B05B *5/16*

U.S. Cl. 239—691 14 Claims



1. An electrostatic spray painting apparatus comprising:

an electrically-insulated intermediate reservoir for storing therein conductive paint to which a high voltage is applied, said intermediate reservoir including:

a cylinder;

a piston reciprocatively and slidably disposed within said cylinder;

a fluid-flow straightening member protruding into one part of a cylinder chamber to be charged with the paint, said cylinder chamber being defined by said cylinder and said piston;

an injection hole defined proximate an outer peripheral edge of a wall of said cylinder so as to be connected to a paint and cleaning liquid feed source; and

a discharge hole centrally defined in said wall so as to be connected to a spray gun, said discharge hole being used to discharge the paint and the cleaning liquid;

wherein said fluid-flow straightening member comprises a plurality of crescent-shaped protrusions each having an outer and an inner circular arc extending in a same direction such that fluid injected from said injection hole forms a vortex flow.

5,255,857

PIVOT

Nickolas J. R. Hunt, Berkeley Farm, Kilmington, Worminster, Wiltshire BA12 6RR, United Kingdom

Filed Oct. 30, 1990, Ser. No. 605,384

Claims priority, application United Kingdom, Nov. 3, 1989, 8924796

Int. Cl.[5] B05B *3/12*

U.S. Cl. 239—731 16 Claims

1. A mobile irrigator comprising a plurality of moveable towers including at least one intermediate tower and an end tower, a plurality of elongate members connected between said towers and adapted to distribute liquid for irrigation, and an alignment device to maintain two of said members adjacent an intermediate tower in substantial alignment, each member having a respective first end and second end, the first end of one elongate member being adjacent the second end of another elongate member, each intermediate tower comprising:

(1) a flexible joint device:

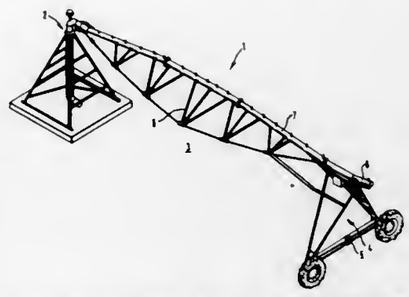
(2) sensor means to sense movement of said joint device and to correct any misalignment between said members whereby said members are maintained substantially in alignment by providing a commensurate electrical signal;

(3) said flexible joint device being mounted between said first end and said adjacent second end; and

(4) said flexible joint device having substantially freedom of rotation about an x-axis and y-axis and relatively limited freedom to rotate about the z-axis whereby to maintain the elongate members substantially in alignment;

said irrigator further comprising a microprocessor-based control system comprising:

(i) a master programmable microprocessor-based controller;



(ii) slave microprocessor-based controller situated at the joint device of the at least one immediate tower and having unique identification means so as to enable identification thereof by said master controller, said slave controller of said intermediate tower comprising a control means responsive to said electrical signal whereby to flex said flexible joint device and maintain desired alignment, the slave controller of an intermediate tower and the sensor means of that intermediate tower constituting said alignment device for that intermediate tower; and

(iii) a data communication means for providing continuous two-way communication of information between the master programmable microprocessor-based controller and the slave microprocessor-based controller based on said identification means.

5,255,858

MILLING METHOD AND MILLING DEVICE

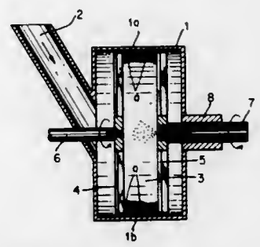
Morikazu Usami, 140, Hinode-cho, Fuji-shi, Shizuoka-ken, Japan

Filed Apr. 11, 1991, Ser. No. 684,052

Claims priority, application Japan, Aug. 30, 1990, 2-228956

Int. Cl.[5] B02C *19/06*

U.S. Cl. 241—5 5 Claims



1. A milling device comprising:

a body frame;

first and second rotary blades arranged opposite to each other within said body frame and defining, together with the inner walls of said body frame, a single pulverizing chamber;

a material feeding inlet formed on said body frame on a side of said first rotary blade and communicating with said pulverizing chamber;

and a collection outlet provided through and in axial alignment with said second rotary blade communicating directly with said pulverizing chamber, said collection outlet communicating with a suction device,

whereby material having a predetermined, substantially uniform, grain size is extracted.

5,255,859

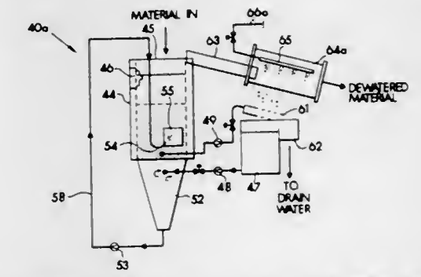
METHOD AND APPARATUS FOR SEPARATING AND CLASSIFYING SCRAP PLASTIC MATERIALS

Bobbie D. Peacock; Michael E. Stout, both of Peachtree City; Jeffrey H. Greene, Fayetteville; Jarl B. Lindroos, Peachtree City; Clive E. Hardy, Brooks, and James R. Jacobs, Thomaston, all of Ga., assignors to M.A. Industries, Inc., Peachtree City, Ga.

Filed Sep. 4, 1990, Ser. No. 577,287

Int. Cl.[5] B03B *7/00, 5/00, 9/06*; B08B *3/14*

U.S. Cl. 241—79.1 2 Claims



1. Apparatus for processing post-consumer scrap plastic materials comprising presorted constituent fractions containing at least some of colored HDPE, green PET, clear PET, and natural PET, some of which fractions have foreign matter adhered thereto, comprising in combination:

means receiving the fractions and separately reducing each fraction to fragments not exceeding a certain size;

means separately receiving the fragments making up each fraction known to contain foreign matter and operative to form a liquid slurry of the fragments;

means for receiving and agitating each slurry so that the foreign matter becomes detached from the fragments of scrap plastic contained in the slurry;

means for receiving and dewatering each agitated slurry to remove the fragments of the fractions from the separated foreign matter;

means for receiving and washing the separated fragments of each such fraction to remove contaminants; and

means for receiving and at least partially drying the plastic fragments of each previously-washed fraction;

the means to form a liquid slurry comprising an outer tank open at an upper end;

screen means located within the outer tank and having an open upper end to receive the fragments of the plastic, said screen means having a screen and defining a chamber which communicates with said outer tank only through said screen, so that the fragments are contained within the screen;

means for circulating a liquid through the outer tank;

the screen having openings sized to allow the liquid to enter and mix with the fragments within the screen to form a slurry but to prevent the fragments from migrating from the screen into the outer tank;

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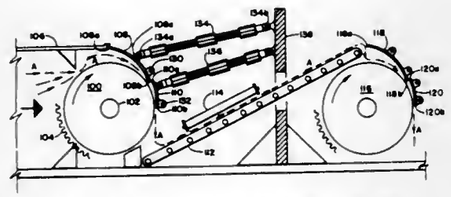
means defining a slurry outlet at an upper portion of the screen;
means for selectively adding liquid to the outer tank; and
means for selectively withdrawing liquid from the outer tank so as to maintain the slurry at a predetermined level within the screen and below the slurry outlet,
whereby the slurry level rises within the screen to overflow through the slurry outlet in a controlled manner when the means for withdrawing liquid is inoperative.

5,255,860

TIRE COMMUNICATIONS DEVICE

Charles T. Timmons, Bronte, Tex., assignor to Charles T. Timmons, Baytown, Tex.

Filed Aug. 14, 1992, Ser. No. 930,741
Int. Cl.[5] B02C *1/08*
U.S. Cl. 241—280 **19 Claims**



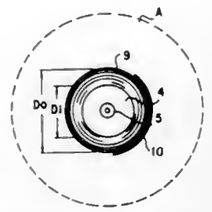
1. An apparatus for comminution of tires comprising:
a rotatable drum, said rotatable drum having an outer surface;
a bonding metal coated to said outer surface;
a plurality of bits attached to said bonding metal, wherein said bits comprise a first bit component and a second bit component, said first bit component comprising a cutting tool alloy; and said second bit component comprising metal similar in composition to said bonding metal
a means for forcing the tires against said bits.

5,255,861

TOILET PAPER HOLDER ASSEMBLY WITH AUXILIARY TISSUE ROLL

Saul Lerner, 3650 N. 36th Ave. #62, Hollywood, Fla. 33021

Filed May 26, 1992, Ser. No. 888,185
Int. Cl.[5] B65H *16/00, 18/00*
U.S. Cl. 242—55.2 **5 Claims**



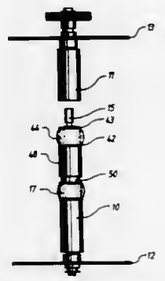
5. A toilet paper assembly, comprising a substantially cylindrical outer core having a core diameter, a substantially continuous web of toilet paper coaxially wound onto said outer core, a substantially cylindrical inner core to be rotatably supported in its cylindrical condition on a spindle of a toilet paper fixture, said inner core having an axis, a substantially continuous web of auxiliary toilet paper coaxially wound about said axis onto said inner core, said inner core and said auxiliary toilet paper defining an auxiliary roll with an inner diameter approximately corresponding to an outer diameter of the spindle of the toilet paper fixture and an outer diameter approximately corresponding to said core diameter of said outer core for allowing axial insertion of said auxiliary roll in a cylindrical space defined between the spindle of the toilet paper fixture and said outer core.

5,255,862

EXPANDABLE PAPER ROLL SUPPORT

Gerard Chenest, Le Haut Mouchel, Saint Paer, 76480 Duclair, France

Continuation of Ser. No. 532,690, Jun. 4, 1990, abandoned. This application Dec. 5, 1991, Ser. No. 801,589
Claims priority, application United Kingdom, Jun. 10, 1989, 8913410
Int. Cl.[5] B65H *75/24*
U.S. Cl. 242—72 R **1 Claim**



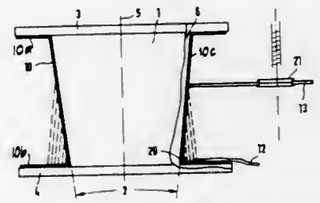
1. A support for both sides of a roll of material comprising, in combination:
a shaft whose diameter is less than the internal diameter of the roll extending from a journal at a first end of said shaft supporting a said first end of said shaft, to a second journal at a second end of said shaft supporting said second end of said shaft;
said shaft including at least three portions, one end of a first portion of the shaft including a first internally threaded recess adapted to receive a first externally threaded boss integral with one end of a second portion of the shaft so that the first and second portions of the shaft can be joined co-axially;
another end of the second portion of the shaft including a second internally threaded recess adapted to receive a second externally threaded boss integral with one end of a third portion of the shaft so that the second and third portions of the shaft can be joined coaxially;
a first annular elastomeric member being carried by said first boss, and a second annular elastomeric member being carried by said second boss;
each of said first and second annular elastomeric members having an uncompressed diameter which is less than the internal diameter of the roll; where
when the first and second portions of said shaft are assembled, said first and second portions of said shaft engage said first annular elastomeric member therebetween for pressure on said first annular elastomeric member from the adjacent ends of the said first and second portions of said shaft to increase the external diameter of said first annular elastomeric member at least to the internal diameter of the roll; where
when the second and third portions of said haft are assembled, said second and third portions of said shaft engage said second annular elastomeric member therebetween for pressure on said second annular elastomeric member from the adjacent ends of the said second and third portions of said shaft to increase the external diameter of said second annular elastomeric member at least to the internal diameter of the roll; and where
the compressed diameter of said first annular elastomeric member can be adjusted independently of the compressed diameter of said second annular elastomeric member.

5,255,863

METHOD FOR PRODUCING A COIL

Georg Hörndler, Barthelmesaurach, Fed. Rep. of Germany, assignor to Maschinenfabrik Niehoff GmbH & Co. KG, Schwabach, Fed. Rep. of Germany

Continuation of Ser. No. 612,148, Nov. 13, 1990, abandoned, which is a continuation of Ser. No. 326,610, Mar. 21, 1989, abandoned. This application Nov. 5, 1992, Ser. No. 972,065
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1988, 3809635
Int. Cl.[5] B65H *55/00, 54/10*
U.S. Cl. 242—159 **28 Claims**



1. A method of producing a coil of strand-like material wound in layers on a conical surface of a substantially cone-shaped winding spool having a cone-aperture angle, with the layers being inclined with respect to the conical surface, and in which a take-up apparatus is employed that moves approximately parallel to the longitudinal axis, comprising the steps of:
(a) beginning the winding process at a starting diameter on the portion of the winding spool having the smallest diameter;
(b) initially winding a first layer L_{1a} having a predetermined number of windings N_1 onto the conical winding spool at an acute angle relative to the conical surface, which is greater than one-half of the cone-aperture angle, by moving the take-up apparatus in a first direction, where the number N_1 is smaller than the maximum number N_{max} of windings that can be applied to the spool at a predetermined winding pitch;
(c) winding a second layer L_{1b} onto the first layer L_{1a} by reversing the movement of the take-up apparatus in a second direction opposite the first direction, with the second layer L_{1b} having substantially the same number of windings N_1 as the first layer L_{1a};
(d) winding additional pairs of layers L_{2a}, L_{2b}, L_{3a}, L_{3b}, . . . L_{xa}, L_{xb}, and so forth onto winding layers L_{1a} and L_{1b} such that the additional layers have a number of windings $N_2, N_3 \ldots N_x$, respectively, that increases for each pair of additional layers by a substantially constant winding factor ΔN until the maximum number N_{max} of windings are wound on the winding spool to form a double-cone shaped winding portion having an inner surface disposed parallel to the conical surface and an outer surface tapering toward the inner surface at an angle equal to the acute angle; and
(e) removing the winding spool from the coil.

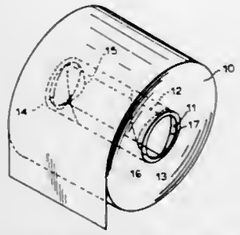
5,255,864

MULTI-FUNCTIONAL CORE FOR TOILET TISSUE OR THE LIKE

Pierre Lahaussois, 25-13 Old Kings Hwy. North, Darien, Conn. 06820

Filed Oct. 20, 1992, Ser. No. 963,653
Int. Cl.[5] B65H *75/02*
U.S. Cl. 242—68.5 **4 Claims**

1. A hollow core for toilet tissue, which comprises
(a) a hollow, thin-walled cylinder of finite length and of a flexible material,
(b) said cylinder having longitudinal fold lines therein extending over the full length of the cylinder along two diametrically opposed lines, enabling said cylinder to be compressed and partially flattened to form a hollow tube having a cross section generally in the form of two opposed arcs, joined along said longitudinal fold lines,



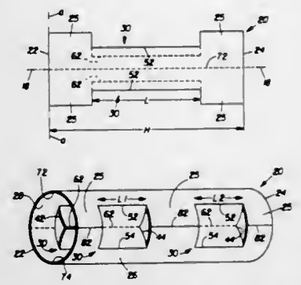
(c) said cylinder further having, at each end thereof, a pair of arcuate fold lines, each intersecting with said opposed longitudinal fold lines substantially at an end of said cylinder,
(d) said arcuate fold lines defining generally crescent shaped integral end flaps adapted to be folded inwardly to form opposed concave end closures at each end of the partially flattened hollow tube.

5,255,865

CORES PROVIDING REDUCED SPINDLE CLEARANCE FOR CORE WOUND PAPER PRODUCTS

Kenneth B. Buell, and Donald D. Dearwester, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 8, 1992, Ser. No. 986,955
Int. Cl.[5] B65H *16/02*
U.S. Cl. 242—68.5 **16 Claims**



3. A hollow core about which a paper product may be wound, the core adapted to be supported on a spindle for dispensing of the paper product, and the core being deformable from a generally rounded configuration to a generally flattened configuration, the core comprising:
an inner surface and an outer surface separated by a core wall having a finite thickness;
first and second longitudinally spaced apart core ends defining a longitudinal core axis and a core length;
at least one tab portion deformable to extend radially inward of the core surfaces when the core is in the generally rounded configuration, each tab portion comprising:
at least one longitudinally and circumferentially extending panel; longitudinally spaced apart and circumferentially extending first and second tab portion free edges; and
first and second longitudinally extending selectively

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weakened panel attachments to the core, the first and second selectively weakened panel attachments to the core extending intermediate the first and second free edges.

5,255,866

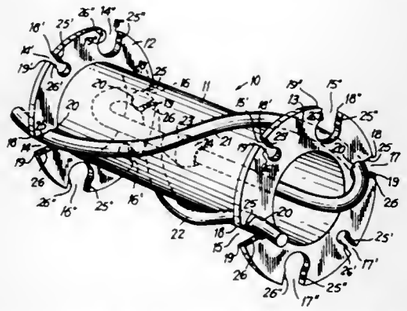
APPARATUS FOR ISOLATING A CORD SECTION FROM TENSION

Steve Campolo, Valley Stream, N.Y., assignor to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Continuation of Ser. No. 599,951, Oct. 19, 1990, abandoned. This application Jul. 15, 1992, Ser. No. 915,035

Int. Cl.[5] **B65H** *75/36;* **H01R** *13/62*

U.S. Cl. 242—85.1 **1 Claim**



1. An apparatus for isolating a cord section from tension, said apparatus comprising in combination:

a cord section comprising at least one cord;

a tension isolating device comprising:

a hollow generally cylindrical member;

first and second annular flanges at opposite ends of said cylindrical member, each of said first and second flanges having first and second slots positioned approximately 180 degrees from each other around each flange, said first and second slots on each flange being of substantially the same shape and area;

said first slot on said first flange being substantially axially aligned with said first slot on said second flange and said second slot on said first flange being substantially axially aligned with said second slot on said second flange;

said cord section having a protected section positioned inside said cylindrical member and two wrapped sections adjacent said protected section, each wrapped section emerging from a respective end of said cylindrical member, extending through one of said first slots, wrapping around the outer surface of said cylindrical member at least 180 degrees, and extending through one of said second slots in one of said flanges which is opposite to the flange having the first slot through which the wrapped section extends;

whereby tension on said wrapped sections results in frictional engagement of said wrapped sections with said outer surface of said cylindrical member and with said slots so that said tension on said wrapped sections is not transmitted to said protected section.

5,255,867

BALE RIPPER AND CONVEYOR

David Whittleton, 1401A-112th Street, North Battleford, Saskatchewan, Canada S9A 3B1 , and Leslie Burton-Bzowy, 9-34 Summers Place, Saskatoon, Saskatchewan, Canada S7H 3W4

Filed Feb. 6, 1992, Ser. No. 831,875

Claims priority, application Canada, Feb. 8, 1991, 2036053

Int. Cl.[5] **B02C** *18/22*

U.S. Cl. 241—101.7 **12 Claims**

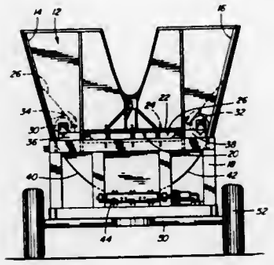
1. A device for unwrapping and disintegrating a round bale, said device having left and right sides and front and rear ends and comprising:

a support frame;

first ripping means for shredding said bale;

second ripping means for shredding said bale, spaced in a horizontal plane a predetermined distance from said first ripping means to at least accommodate said bale to be ripped therebetween;

bale support means on said frame disposed between said first and second ripping means and having a continuous movable support surface disposed in said horizontal plane for



supporting said bale thereon, said support surface being selectively movable in a direction toward either said first ripping means or said second ripping means;

said bale support surface being spaced from said first and second ripping means to that said shredded material is discharged through said space between said support surface and said respective one of said first or second ripping means; and

projections extending from said support surface for bearing into said bale to rotate and thereby unroll said bale while it is urged against said first or second ripping means as said support surface is selectively moved.

5,255,868

SELF-LOCKING SAFETY BELT REELING DEVICE WITH A SHOCK-ABSORBING DEVICE

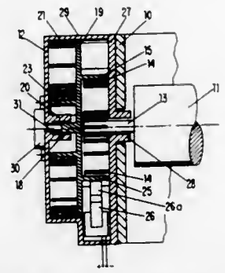
Hermann Reulein, Neuss, Fed. Rep. of Germany, assignor to Autoflug GmbH & Co. Fahrzeugtechnik, Rellingen, Fed. Rep. of Germany

Filed Mar. 6, 1992, Ser. No. 847,902

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1991, 9102691[U]

Int. Cl.[5] **B60R** *22/28, 22/34;* **A62B** *35/04*

U.S. Cl. 242—107 **5 Claims**



1. A self-locking safety belt reeling device with a reeling arbor disposed in a belt housing, said safety belt reeling device further comprising:

a spring housing connected to said belt housing;

a return spring and a shock-absorbing spring both arranged inside said spring housing, said return spring having a greater spring force than said shock-absorbing spring;

a coupling wheel having a wheel shaft and being rotatably supported inside said spring housing for coupling said return spring to said shock-absorbing spring such that, in a first operational state, said return spring and said shock-absorbing spring together function as said reeling spring, and, in a second operational state, only said shock-absorbing spring functions as a reeling spring, said coupling wheel being actuatable as a function of a reeling state of said safety belt reeling device; and

a rotational oil damper having a spindle and a damper housing, said oil damper being connected to said spring housing and said spindle being fixedly connected to said wheel shaft.

5,255,869

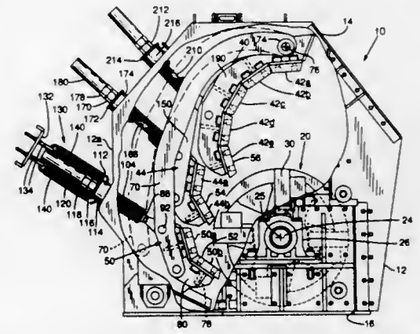
IMPACT CRUSHER WITH BIASED TERTIARY CURTAIN ASSEMBLY

Roger G. Smith, 17693 SW. Blue Heron Rd., Lake Oswego, Oreg. 97034

Filed Oct. 26, 1992, Ser. No. 966,506

Int. Cl.[5] **B02C** *13/00*

U.S. Cl. 241—189.1 **9 Claims**



1. In an impact crusher having a frame and a rotor rotatably supported on the frame for rotation about a rotor rotation axis, with hammers on the rotor for striking material, the improvement comprising:

primary and secondary curtain assemblies disposed above the rotor at locations spaced circumferentially thereabout,

a tertiary curtain assembly extending downwardly beyond the secondary curtain assembly,

said tertiary curtain assembly including a breaker plate structure spaced outwardly of the rotor and for contacting material moved thereagainst by the rotor and a pivot arm structure mounting the breaker plate structure, and

a pivot mounting for the tertiary curtain assembly pivotally supporting the pivot arm structure for movement about a pivot axis disposed above the breaker plate structure and spaced in a horizontal direction toward a vertical line perpendicular to the rotation axis of the rotor from the center of gravity of the tertiary curtain assembly,

whereby a gravity biasing of the tertiary curtain assembly toward the rotor is produced.

5,255,870

INTERLOCKING DYEING SUPPORT, FOR PARTICULAR USE ON OPEN-END SPINNING MACHINES AND OTHER MACHINERY

Mauro Romagnoli, Via dei Casini No. 53, Prato, Italy

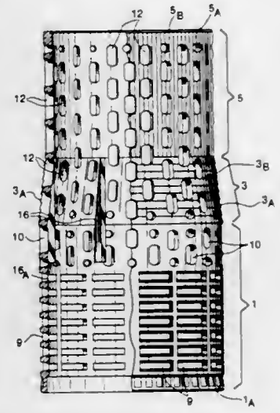
Filed Sep. 25, 1992, Ser. No. 950,956

Claims priority, application Italy, Oct. 1, 1991, FI/91/U-122

Int. Cl.[5] **B65H** *75/10, 75/20, 75/26*

U.S. Cl. 242—118.1 **14 Claims**

1. A dyeing support made of a synthetic material, for the building up of yarn in coils, for open-end type spinning machines, said support comprising: a center in three sections, a first section having a first axial length, tapering slightly from a larger base, a second section of a second axial length, said second section being frustoconical and having superficial serrations, a third section having a substantially cylindrical shape,



and an axial length intermediate relative to that of said first and second sections and starting at a smaller base end of said second section; said support having distributed perforations and having shoulders inside said first section for support of a terminal rim of the third section of an axially coupled and interlocking support.

5,255,871

HELICOPTER HAVING ROTORS EQUIPPED WITH FLAPS

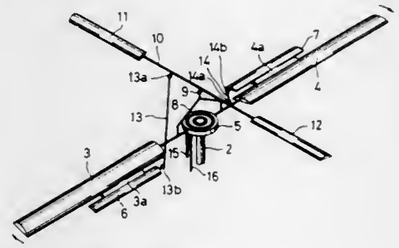
Minoru Ikeda, 526-3 Ohishi-machi, Kurume-shi, Fukuoka-ken, Japan

Continuation-in-part of Ser. No. 800,027, Nov. 29, 1991, abandoned. This application Apr. 8, 1993, Ser. No. 44,027

Claims priority, application Japan, Nov. 29, 1990, 2-335743

Int. Cl.[5] **B64C** *27/57*

U.S. Cl. 244—17.13 **6 Claims**



1. A helicopter comprising

a fuselage,

a rotor head supported at a position above the fuselage by a rotor shaft connected with and driven by an engine,

a pair of rotors fixed at their roots to the outer edge of the rotor head at a predetermined pitch angle and at positions spaced from each other by 180°,

a pair of flaps one of which is rotatably hinged to one edge of each rotor,

a generally wishbone-shaped supporting frame whose legs are attached to the rotor roots and extend upward to join at an apex,

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a seesaw rod supported by the supporting frame to be swingable about the apex thereof,

a pair of auxiliary wings fixed at a prescribed pitch angle to opposite ends of the seesaw rod and positioned above the pair of rotors, and

a pair of connectors each connected at one end with one of the flaps and at the other end with the seesaw rod positioned above the flap,

any difference in lift between the pair of auxiliary wings causing the seesaw rod to incline to change the angle of attack of the flaps for increasing the flap effect of the rotor on the side of the auxiliary wing producing smaller lift and decreasing the flap effect of the rotor on the side of auxiliary wing producing larger lift.

5,255,872

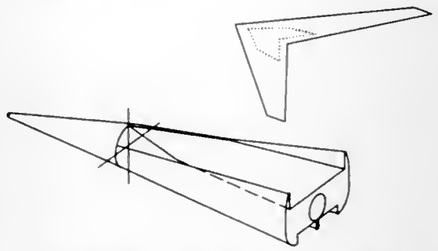
Patent Not Issued For This Number

5,255,873

FLYING WING SPACE LAUNCH ASSIST STAGE

Robert L. Nelson, 26005 Todd La., Los Altos Hills, Calif. 94022

Filed Oct. 19, 1992, Ser. No. 962,966
Int. Cl.[5] B64G *1/14, 1/62;* **F42B** *10/00*
U.S. Cl. 244—63 **2 Claims**



1. A system and process contributing to improving the efficiency and cost reduction of the delivery of payloads to orbit by making possible airfield runway takeoff of the delivery spacecraft, the system and process comprising:

(a) a wing without boast propulsion, attached to the upper surface of the delivery vehicle and sized for takeoff and climbout of the combined system;

(b) the wing released intact after takeoff at a point in the climbout when the spacecraft has the necessary aerodynamic lift and acceleration to continue to orbit,

(c) the wing having the shaping, appendages and controls to support stable controlled flight of the combined spacecraft-wing system;

(d) the wing having additional shaping, appendages, together with automatic control and communications required for safe separation from the spacecraft, and gliding, unmanned controlled flight back to the takeoff airfield.

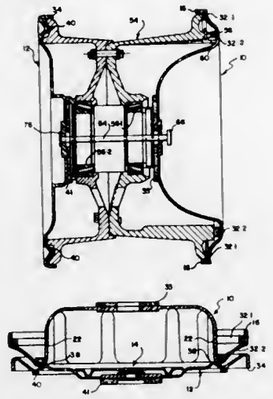
5,255,874

WHEEL PROTECTOR

Jean-Claude P. A. Roussel, 20 Tritonia Road, Table View, Cape Town, Cape Province, South Africa

Filed Jul. 9, 1992, Ser. No. 911,010
Int. Cl.[5] B64D *47/00*
U.S. Cl. 244—103 R **12 Claims**

1. A wheel protector for protecting a demounted aircraft wheel and its bearing sets, the wheel protector comprising an inboard cover disc for covering the inboard side of the wheel, and an outboard cover disc for covering the outboard side of the wheel, one of the cover discs comprising a first annular wall portion which defines a peripherally extending rim whereby the cover disc, in use, seats on the wheel and which first annular wall portion extends from the rim axially outwardly to a region of maximum axial extent, and a second annular wall portion disposed radially inwardly of the first annular wall portion and which extends from the region of maximum axial extent axially inwardly, to form on the inside of the cover disc an annular recess for accommodating an axially protruding part of the wheel, the first annular wall portion, for the greater part of the axial extent thereof, being inclined at an



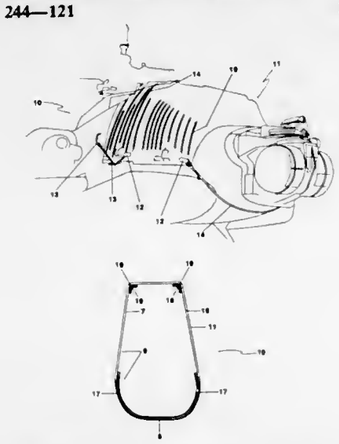
angle of at least 30° with respect to the axial direction so as to form an inclined deflecting surface for objects approaching the cover disc in a radial direction.

5,255,875

PROTECTIVE HARDSIDE COVERS FOR VEHICLE SURFACES

John M. Maglieri, Hayes, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 30, 1992, Ser. No. 876,536
Int. Cl.[5] B64D *7/00;* **B60J** *11/00*
U.S. Cl. 244—121 **22 Claims**



1. A removable, reusable protective hardside cover for vehicle surfaces comprising:

a. a hardside cover portion formed of a sheet of moldable, hard, semi-rigid material impermeable to moistur and resistant to penetration by ultraviolet radiation, shape and form that are congruent to the vehicle s which it fits so that an air space of substantially uniform w between the outer vehicle surface to be protected side surface of the hardside cover portion, the width of sidair space being not less than 0.5 inch nor more than 1.5 inch over most of the protected surface, and so that the perimeter of the hardside cover portion and the outer vehicle portion touch snugly to form a junction; and

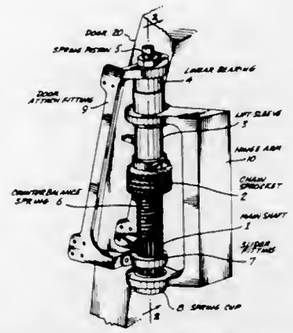
b. means or securing the cover to the vehicle being protected.

5,255,876

LINEAR LIFT AND COUNTERBALANCE AIRCRAFT PASSENGER DOOR

Michael A. Fleming, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jun. 8, 1992, Ser. No. 896,524
Int. Cl.[5] B64C *1/14*
U.S. Cl. 244—129.5 **2 Claims**



1. In combination in a vertically lifting aircraft door adapted to clear stop means and open outwardly:

a hollow shaft having a counterbalance spring means and piston disposed therein;

a hinge arm;

a drive chain;

said hollow shaft mounted in said hinge arm and rotated by said drive chain;

said shaft having splines for rotating said vertically lifting door;

a door attachment fitting;

said door attachment fitting secured to the top of said piston and capable of sliding on said splines during vertical movement of said door.

5,255,877

VARIABLE SPEED DROGUE

Matts Lindgren, Auburn, and William L. Kirkland, Walnut, both of Calif., assignors to West Coast Netting, Inc., Rancho Cucamonga, Calif.

Filed Oct. 21, 1992, Ser. No. 964,378
Int. Cl.[5] B64D *37/00*
U.S. Cl. 244—135 A **16 Claims**

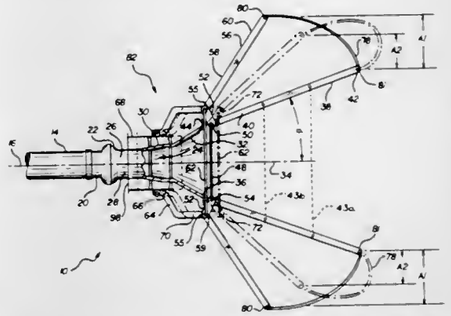
1. A variable speed drogue for use with an inflight aerial refueling system, said system including a fuel supply; a fuel line having leading and trailing ends and being in fluid communication with said fuel supply; and refueling coupling means for receiving a refueling probe, said refueling coupling means having a longitudinal axis, a forward end and a rearward end, and a trailing edge portion at said rearward end, said refueling coupling means forward end being mounted to said trailing end of said fuel line; said variable speed drogue comprising:

a plurality of trailing edge support arms pivotally mounted to said trailing edge portion of said refueling coupling means;

pivot linkage means pivotally connected to said trailing edge portion of said refueling coupling means, and pivotally moveable between a first forward position and a second rearward position;

a plurality of leading edge support arms pivotally mounted to said pivot linkage means and spaced apart from said trailing edge portion of said refueling coupling means by said pivot linkage means, said plurality of leading edge support arms each having a leading end and a trailing end, each said leading end pivotally mounted at a pivot point to said pivot linkage means, each said pivot point being moveable uniformly and symmetrically, longitudinally between said first forward position and said second rearward position of said pivot linkage means by movement of said pivot linkage means;

drogue canopy means attached to said trailing end of said leading edge support arms and said trailing end of said trailing edge support arms, said drogue canopy means having a projected area extending between said trailing end of said leading edge support arm and said trailing end of said trailing edge support arm that is adjustable by



movement of said pivot linkage means between said first and second positions; and

means for uniformly and symmetrically moving said pivot linkage means between said first and second positions to adjust said projected area of said drogue canopy means for refueling at different speeds, said means for uniformly and symmetrically moving said pivot linkage means comprising a slide means mounted external to said refueling coupling means for longitudinal relative movement therewith between a forward position and a rearward position, positioning arm means connected between said slide means and said pivot linkage means for moving said pivot linkage means between said first forward position and said second rearward position, and latch means connected to said slide means and said refueling coupling means for adjustably fixing said slide means in said forward and rearward positions.

5,255,878

SPIN REORIENTATION MANEUVER FOR SPINNING SPACECRAFT

Christopher D. Rahn, Pleasant Hill, Calif., assignor to Space Systems/Loral, Inc., Palo Alto, Calif.

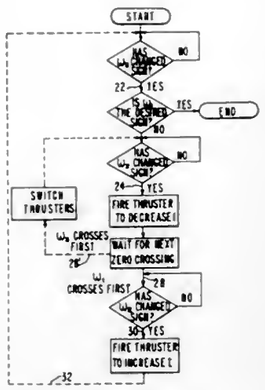
Division of Ser. No. 563,161, Aug. 3, 1990, Pat. No. 5,172,876.
This application Jul. 14, 1992, Ser. No. 913,596
Int. Cl.[5] B64G *1/24*
U.S. Cl. 244—164 **4 Claims**

1. A method for effecting spin transitioning of an object having a minor axis, an intermediate axis, and a major axis from a spin about the minor axis to a particular direction of spin about the major axis, said method comprising the steps of:

a) monitoring, without exerting active major spin axis direction control, the object for a transition of the spin of the object to a spin in a given direction about the major axis;

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b) determining that said given direction is a desired direction; and



c) aborting subsequent active major spin axis direction control.

5,255,879

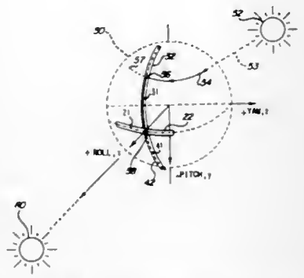
THREE AXES STABILIZED SPACECRAFT AND METHOD OF SUN ACQUISITION

John F. Yocum, Rancho Palos Verdes; Mike W. Tolmasoff, Whittier, and Thomas D. Faber, Woodland Hills, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 27, 1991, Ser. No. 800,659

Int. Cl.[5] B64G *1/36*

U.S. Cl. 244—171 **13 Claims**



1. A spacecraft stabilized in three mutually orthogonel x, y and z axes comprising:

a spacecraft body;

sensing means for detecting sunlight having a pair of sensing planes, a first sensing plane of said pair lying in the xz plane of the spacecraft and a second sensing plane of said pair lying in the xy plane of the spacecraft, said sensing planes intersecting at the x axis;

control means for controlling the orientation of the spacecraft to orient the x axis toward the sun, said control means including means for rotating said spacecraft about the y axis in one direction at a predetermined scan rate while maintaining rotation about the x and z axes at substantially zero, means for initializing a y axis angular position of a spacecraft relative to the sun line of sight when the sun line of sight is aligned with said second sensing plane, means for porpagating the spacecraft y axis angular position in time relative to the initialized y axis angular position by calculation from a y axis rate measurement means for rotating said spacecraft in the opposite direction about said y axis to return said spacecraft to a position with the sun line of sight aligned with the second sensing plane and for stopping rotation of the spacecraft about the y axis, means for rotating said spacecraft about said z axis in one direction at a predetermined scan rate, means for initializing a z axis angular position of the spacecraft relative to the sun line of sight once the sun line of sight is aligned with said first sensing plane, means for propagating the spacecraft z axis angular position in time relative to the initialized z axis angular position by calculation from a z axis rate measurement, means for rotating the spacecraft in the opposite direction about the z axis to return the spacecraft to a position with the sun line of sight aligned with the first sensing plane and to stop rotation of the spacecraft about the z axis.

5,255,880

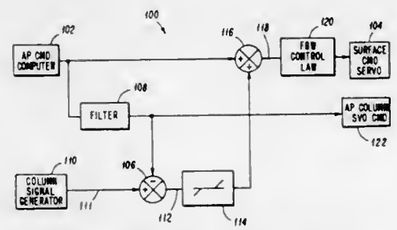
FLY BY WIRE/FLY BY LIGHT CONTROL SYSTEM WITH MANUAL OVERRIDE

Woon Lyloc, and David C. Pattison, both of Cedar Rapids, Iowa, assignors to Rockwell International Corporation, Seal Beach, Calif.

Continuation of Ser. No. 652,849, Feb. 8, 1991. This application Jul. 13, 1992, Ser. No. 912,407

Int. Cl.[5] G05D *1/00*

U.S. Cl. 244—197 **1 Claim**



1. An improved flight control system comprising:

a yoke for controlling an aircraft control surface,

an autopilot computer for generating autopilot command signals to operate control surfaces on an aircraft;

means for sensing the orientation of the yoke in an aircraft cockpit and generating an electronic yoke orientation signal which corresponds to the yoke orientation;

signal line means, coupled with the autopilot computer and sensing means, for transmitting the command signals and the orientation signals;

means for comparing the autopilot command signal and the yoke orientation signal and modifying without regeneration the autopilot command signal depending on a result of the comparing of the autopilot command signal and the yoke orientation signal, and

means for providing the modified signal to a surface command servo for controlling an aircraft control surface, without using a switch to turn off the autopilot command signals.

5,255,881

LIFT AUGMENTATION FOR HIGHLY SWEPT WING AIRCRAFT

Dhanvada M. Rao, Yorktown, Va., assignor to Vigyan, Inc., Hampton, Va.

Filed Mar. 25, 1992, Ser. No. 857,397

Int. Cl.[5] B64C *23/06, 21/04*

U.S. Cl. 244—199 **10 Claims**

1. In combination, a highly swept, delta wing aircraft and means to stimulate vortex lift on the aircraft comprising:

said highly swept, delta wing aircraft having a sharp nose and a substantially thick center line profile;

said thick center line profile tapering along portions of the aircraft length to highly swept, thin sharp leading edge wing surfaces;

said means to stimulate vortex lift on the delta wing aircraft including a pair of spaced slots disposed on each side of, and adjacent to, said substantially thick center line of said aircraft and directed along the upper surface of the wing toward said thin sharp leading edge wing surfaces;

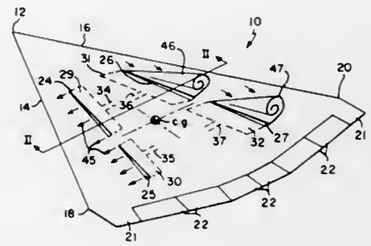
each said pair of spaced slots being positioned along an imaginary ray originating from and extending aft of the wing apex, swept substantially inboard of said thin sharp leading wing edges, and adjacently spaced from said substantially thick aircraft center line;

one member of each of said pair of spaced slots being disposed forward of the aircraft longitudinal center of gravity and the other member of each said pair of spaced slots being disposed aft of the aircraft longitudinally center of gravity;

a separate plenum chamber for each of said spaced slots disposed within said aircraft;

at least one compressed air source in fluid connection with each said plenum chamber; and

means to selectively provide compressed air from said compressed air source to one or more of said plenum chambers whereby a spanwise oriented jet sheet is tangentially directed to and along the upper surface of the wing by one or more of said spaced slots and thereby stimulate vortex lift on the wing surface of the delta wing aircraft.



5,255,882

SETTING DEVICE WITH A NUT CONTROLLABLE BY A SPINDLE

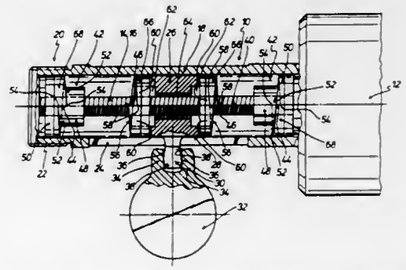
Werner Schroppel, Wendelstein, Fed. Rep. of Germany, assignor to Diehl GmbH & Co., Nürnberg, Fed. Rep. of Germany

Filed Jun. 12, 1991, Ser. No. 713,829

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1990, 4019482

Int. Cl.[5] F42B *10/64*

U.S. Cl. 244—3.24 **9 Claims**



1. Setting device for the control surface of a projectile, including a drivable spindle; a nut secured against rotation having said spindle screwed therethrough, end stops arranged on said spindle secured against rotation and being axially adjustable along said spindle, each said end stop consisting of two mating parts so as to form a locknut structure for limiting the axial extent of displacement of the nut, each said end stop including a contact surface rotatable with the spindle so as to contact in the direction of rotational movement against a contact surface formed from a single screwthread and axially projecting from one or another opposite end surface of the nut, contact surfaces on the ends of the end stops facing said nut which are complementary to the contact surfaces of the nut and which, upon contact between one of the contact surfaces and complementary contact surface, engage with an adjacent end surface of the nut.

5,255,883

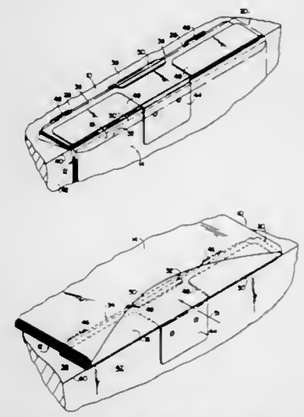
BAG PACK AND HOLDER THEREOF

Michael L. Greenfield, Newington, and Lawrence Greenfield, West Hartford, both of Conn., assignors to Connecticut Packaging Materials, Inc., New Britain, Conn.

Filed Jun. 23, 1992, Ser. No. 902,959

Int. Cl.[5] B65B *67/12*

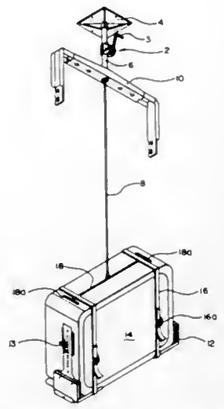
U.S. Cl. 248—95 **36 Claims**



1. The combination of a bag pack and a holder for supporting the bag pack for the successive removal of individual bags therefrom; said combination comprising a bag pack including a layered stack of flexible thermoplastic bags each having flat generally co-extensive front and rear panels integrally connected along transverse bottom and opposite longitudinal side edges, a header of relatively stiff material having opposing narrow transversely extending front and rear portions respectively overlying narrow transversely extending upper edge portions of front and rear bags in the pack, said opposing header portions being interconnected to capture and secure said upper edge portions of the bags in the pack therebetween, at least one of said front and rear header portions having a pair of transversely outwardly projecting narrow flat ears at opposite ends thereof, and each of the bags having a transversely extending tear line in at least one of its front and rear panels in spaced relationship with its transverse upper edge, and a holder including an elongated transversely extending body member adapted to be mounted adjacent and along a corner between intersecting substantially horizontal and vertical surfaces so as to releasably secure a header of a bag pack with the bags in the pack extending longitudinally therefrom along one of said surfaces, said holder including means at opposite ends thereof for respectively receiving said header ears in inwardly folded positions and for retaining the same and thus securing the header and the bag pack during the successive manual tearing of individual bags therefrom.

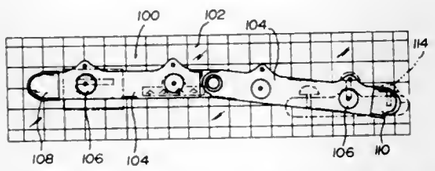
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5,255,884
REMOVABLE WINCH ASSEMBLY
Edward L. O'Neill, San Leandro, Calif., assignor to Lucasey Manufacturing Company, Oakland, Calif.
Filed Jan. 8, 1992, Ser. No. 817,909
Int. Cl.[5] A47H *1/10*
U.S. Cl. 248—329 **13 Claims**



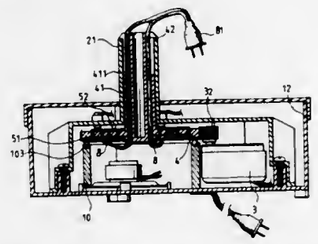
1. An apparatus for lifting and mounting equipment, comprising:
means for supporting said equipment;
means, attached to said support means, for mounting said equipment to said support means;
upper equipment retention means, attached to said support means, for securing said equipment;
lower equipment retention means, attached to said upper retention means, for securing said equipment;
winch means, removably attached to said mounting means, for lifting said equipment;
cable means wound about said winch means for connecting said winch means to said equipment; and
whereby said winch means is removable from said mounting means after said equipment has been mounted.

5,255,885
MOUNTING DEVICE FOR AN ITEM ON A WALL
Edward P. Iversen, 14 Woodview La., Algonquin, Ill. 60102
Filed May 21, 1992, Ser. No. 886,236
Int. Cl.[5] A47G *1/16*
U.S. Cl. 248—489 **17 Claims**



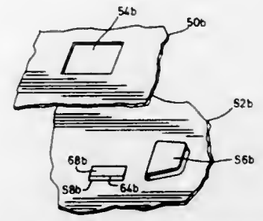
1. In combination a mounting device and an item receiving means for securing an item in a position on a wall, wherein:
a) said mounting device includes a wall side and an item receiving side;
b) said wall side is oppositely disposed from said item receiving side;
c) said wall side is securable adjacent to said wall;
d) said item receiving side includes at least one item mounting means capable of securely but removably securing an item adjacent to said wall;
e) said item mounting means includes a position means for adjusting a position of said item as desired;
f) said item receiving means includes means to receive said item mounting means;
g) said item mounting means includes a device mounting wheel;
h) said device mounting wheel is a raised, cylindrically-shaped portion of said elongated portion;
i) said raised, cylindrically-shaped portion includes a plurality of raised ridges;
j) said ridges are on the outside of said raised, cylindrically-shaped portion;
k) said receiving means is mateable with said raised, cylindrically-shaped portion; and
l) said raised cylindrically shaped portion includes a mounting means mounted coaxially therein.

5,255,886
ROTATING DEVICE FOR CHRISTMAS TREE
Hai C. H. Wang, 14-2, San-Sin Rd., Chao-Chou Chen, Ping-Tong Hsien, Taiwan
Filed Nov. 6, 1992, Ser. No. 972,553
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—522 **6 Claims**



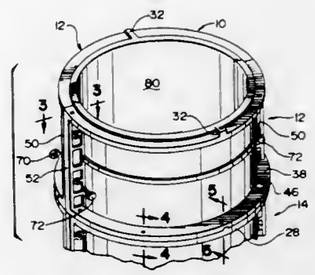
1. A rotating device for Christmas tree, comprising mainly
a shell composed of an upper shell element and a lower shell element, without any limitation on its shape;
a bracket, secured within the shell, having a cylindrical post, and two fixed conductors on two opposite sides of the cylindrical post for connecting to a power cord;
a reducing motor, secured to the bracket, incorporated with a driving gear engaging with a rotating gear; and
a rotating gear, made of non-electric conductive insulating material, having a shaft sleeve extended from a side of its center, an inner sleeve within the shaft sleeve, a plurality of longitudinal slots on the wall of the shaft sleeve, and two annular electric conductors secured to its surface and keeping contact with the fixed conductors on the bracket, and two conductor wires running through the longitudinal slots and connecting to the bottom of the annular electric conductors;
in which the shaft sleeve of the rotating gear is properly positioned within the cylindrical post of the bracket in a manner that the cylindrical post is extended out of the shell, the inner sleeve for fixing of a trunk for a Christmas tree, and the reducing motor, upon connecting to a power source, is to drive the rotating gear so as to rotate the Christmas tree accordingly.

5,255,887
SUPPORT FOR AIR CONDITIONING UNIT
J. Gunther Schumacher, and Maurizio Lattanzio, both of Richmond Hill, Canada, assignors to Spinnaker Industries Inc., Concord, Canada
Continuation-in-part of Ser. No. 731,108, Jul. 15, 1991, Pat. No. 5,188,333. This application May 28, 1992, Ser. No. 890,636
The portion of the term of this patent subsequent to Feb. 23, 2010, has been disclaimed.
Int. Cl.[5] F16M *3/00*
U.S. Cl. 248—676 **21 Claims**



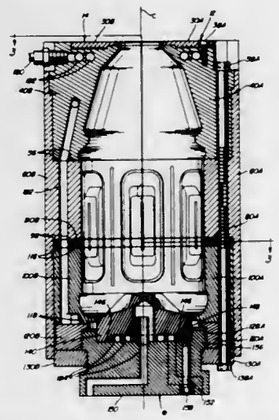
1. A frame comprising a plurality of substantially flat walls having portions overlapping with portions of the other walls, a plurality of spaced apart fastener means integral to the walls and located on the overlapping portions, each of said fastener means comprising a slot formed in one of said walls, a tongue formed on the other of said walls and spaced therefrom to receive said one wall, said tongue being adapted to slip into said slot and overlie a portion of said one wall adjacent to the slot and a latching member formed on said other wall adapted to lock into the slot when said tongue overlies said one wall, said latching member including an abutment surface engagable with a peripheral surface of said slot to inhibit relative sliding movement between said walls.

5,255,888
CONCRETE COLUMN FORM
Gary Workman, Lombard, Ill., assignor to Deslauriers, Inc., Bellwood, Ill.
Filed Jun. 7, 1991, Ser. No. 712,045
Int. Cl.[5] E04G *13/02*
U.S. Cl. 249—48 **5 Claims**



1. A concrete column form including a plurality of self-aligning, half-round sections secured together by a plurality of bolts, each said section comprising:
a semi-cylindrical wall having a top edge, a bottom edge and opposite side edges;
a semi-circular top flange connected to and extending radially outwardly from said top edge, including a semi-circular raised ridge and a radially extending raised ridge extending upwardly therefrom and a plurality of apertures therethrough;
a semi-circular bottom flange connected to and extending radially outwardly from said bottom edge and including a semicircular indented notch and a radially extending indented notch opening downwardly therefrom for receiving the raised ridges from the top flange of a subjacent section for aligning the same and a plurality of apertures therethrough circumferentially aligned with said top flange apertures for receiving said bolts to fasten the same to the top flange of said subjacent section; and
a pair of side flanges each connected to and extending radially outwardly from a respective one of said side edges between said top flange and said bottom flange, each said side flange including a plurality of aligned apertures therethrough for receiving said bolts to fasten the same to one side flange of an adjacent section to form a cylindrical column form.

5,255,889
MODULAR WOLD
Suppayan M. Krishnakumar, Nashua, N.H., assignor to Continental PET Technologies, Inc., Florence, Ky.
Filed Nov. 15, 1991, Ser. No. 792,449
Int. Cl.[5] B29C *33/30, 49/48*
U.S. Cl. 249—102 **2 Claims**



1. A modular mold assembly for forming a customized container of the type having shoulder, panel and base portions, the assembly comprising:
a central mold section having an inner molding surface for forming an upper panel portion of the container, the central mold section having upper and lower cavities for receiving upper and lower mold sections respectively;
a plurality of upper mold sections each having a different inner molding surface for forming a different shoulder portion of the container, the upper mold section being positionable within the upper cavity of the central mold section;
a lower mold section having an inner molding surface for forming a lower panel portion and a base portion of the container, the lower mold section being positionable within the lower cavity of the central mold section; and
a plurality of shims each having an inner molding surface for forming a middle panel portion of the container, one or more of the shims being positionable within the lower cavity of the central mold section and above the lower mold section in order to vary the panel height of the container.

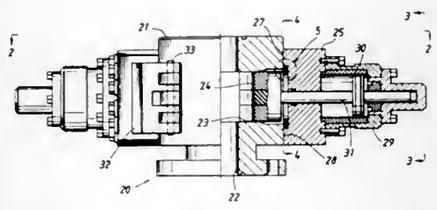
VOL 1155 ISS 4 OCT 26 1993

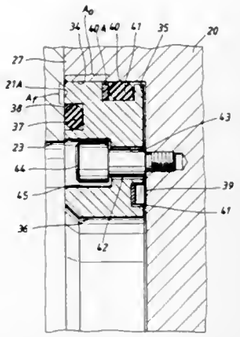
5,255,890

RAM TYPE BLOWOUT PREVENTER

Charles D. Morrill, Humble, Tex., assignor to Hydril Company, Houston, Tex.

Continuation of Ser. No. 975,271, Nov. 12, 1992, abandoned.
This application Feb. 11, 1993, Ser. No. 17,314
Int. Cl.[5] E21B *33/06*
U.S. Cl. 251—1.3 4 Claims





1. A ram type blowout preventer, comprising

a body having a bore therethrough and guideways extending radially outwardly from the bore,

rams each slidable within a guideway between inner positions engaging one another to close the bore and outer positions to open the bore,

bonnets mounted on the body each for movement between positions opening and closing the outer end of a guideway,

operating means including a rod extending through the bonnet for connection to each ram in order to move the ram between opened and closed positions,

bolts connecting the bonnets to the body for forcing an inner face of each bonnet against an outer face of the body about the outer end of the guideway, and

means for sealing between the faces of the body and each bonnet in the closed position of the bonnet, including

a peripheral wall on one and an end wall on the other of the bonnet and body faces,

a metal ring between the bonnet and body for limited axial and radial movement with respect thereto,

a first seal ring mounted on a side of the metal ring for sealing against the end wall,

means yieldably urging the side of the metal ring toward said end wall, and

a second seal ring mounted about the outer periphery of the metal ring for engaging the peripheral wall about an area which is greater than the area of the engagement of the first seal ring with the end wall and spaced axially therefrom,

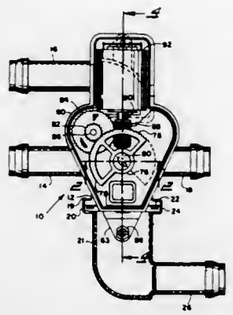
the axial length and radial thickness of the metal ring being so related that fluid pressure in the guideway will force its side tightly against the end wall prior to radial expansion of its periphery tightly against the peripheral wall.

5,255,891

ELECTRICALLY OPERATED BY-PASS WATER VALVE

James E. Pearson, Downers Grove, and Norman E. Zerndt, Palatine, both of Ill., assignors to Eaton Corporation, Cleveland, Ohio

Filed Apr. 29, 1991, Ser. No. 692,875
Int. Cl.[5] F16K *31/04, 31/53, 1/22*
U.S. Cl. 251—129.11 21 Claims



1. A servomotor actuated valve assembly comprising:

(a) housing means formed of non-metallic material defining a valving chamber with valve seating surfaces and defining an inlet and outlet communicating with said chamber;

(b) a valve member formed of non-metallic material disposed in said valving chamber and pivotally movable between an open position permitting fluid communication between said inlet and said outlet and a closed position contacting said seating surfaces and preventing fluid communication between said inlet and outlet, said valve member comprising a central hub portion with an integrally formed relatively thin resilient plate portion extending therefrom and having integrally formed therewith means providing torque transmitting stiffness between said hub and said plate, said plate portion having inherent resiliency and adapted to absorb any servomotor overtravel in said closed position;

(c) shaft means received through said valve member hub portion and extending exteriorly of said valving chamber, said shaft means operative to engage said hub portion and transmit torque to said valve member hub; and,

(d) motor means operatively connected to said shaft means, for, upon energization, effecting movement of said valve member between said first and second positions.

5,255,892

PLURAL COMPONENT AIR OPERATED SNUFF-BACK DISPENSE VALVE

Martin P. McCormick, Forest Lake, Ill., assignor to Graco Inc., Minneapolis, Minn.

Filed Apr. 30, 1992, Ser. No. 876,179
Int. Cl.[5] F16K *23/00*
U.S. Cl. 251—321 3 Claims

1. A snuff-back dispense valve comprising:

a housing:

at least one longitudinal passage in said housing, said passage comprising:

first and second ends;

an inlet intermediate said first and second ends;

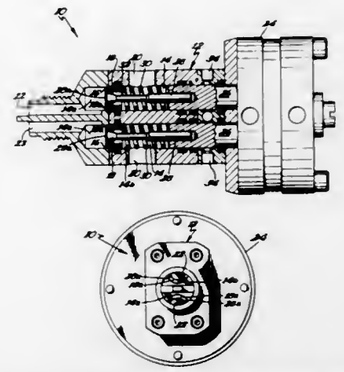
an outlet adjacent said first end; and

a step separating a reduced diameter first portion of said passage adjacent said passage first end and a larger diameter second portion of said passage extending toward said passage second end; and

at least one driver shaft having a shaft end, said shaft end extending into said passage from said passage second end;

an annular seat having first and second sides and slideably located in said passage second portion to seat against said step;

a spring located between said seat and said shaft end to bias said seat and said shaft end apart and said seat against said step; and



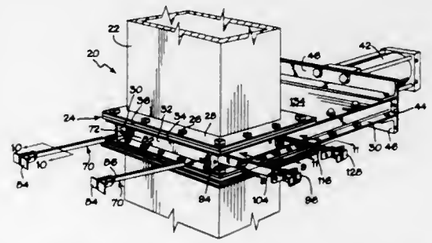
a needle connected to said driver shaft, said needle extending through said seat, said seat first side facing said passage first end and said needle removably seating against said seat first side.

5,255,893

GATE VALVE HAVING REMOVABLE SEALS

L. Neil Peterson, 3324 S. Simpson Rd., Salina, Kans. 67401

Filed Sep. 8, 1992, Ser. No. 941,956
Int. Cl.[5] F16K *3/02*
U.S. Cl. 251—328 23 Claims



1. A gate valve for controlling the flow of solid material particles, said gate valve comprising:

a valve housing presenting an opening through which the solid material particles may flow;

a gate coupled with the housing and moveable between a closed position blocking the opening and an open position in which the flow opening is unblocked, said gate having opposed faces, a leading edge and longitudinal side edges;

an actuator coupled with the gate for moving the gate between the open and closed positions;

a pair of longitudinal channels formed in said housing adjacent said opening and at opposite sides thereof;

longitudinal pressure loaded seals positioned within the longitudinal channels and in sealing contact with the longitudinal side edges of the gate when the gate is in the closed position; and

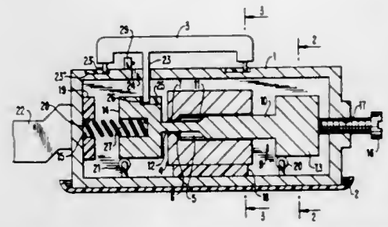
a pair of apertures in said housing, one of said pair of apertures in alignment with an end of one of said pair of longitudinal channels and the other of said pair of apertures in alignment with an end of the other of said pair of longitudinal channels, said apertures being sized to permit insertion of the longitudinal pressure loaded seals through said apertures and into said channels and removal therefrom.

5,255,894

ELECTROMAGNETIC CARPET STRETCHER DEVICE

Richard Guarneri, 12 W. Lincoln Ave., Valley Stream, N.Y. 11580

Filed Oct. 29, 1991, Ser. No. 784,385
Int. Cl.[5] A47G *27/04*
U.S. Cl. 254—200 11 Claims



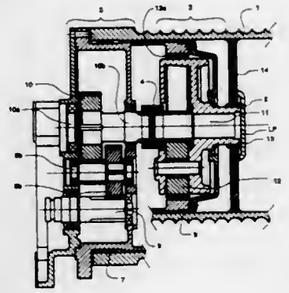
1. A carpet stretcher device comprising an engaging head adapted to engage carpet and having a rear end; a housing connected with said rear end of said engaging head; an electromagnetic coil arranged in said housing and adapted to generate an electromagnetic field; a plunger movable in said housing in a longitudinal direction under the action of the electromagnetic field of said electromagnetic coil and adapted to strike said housing so as to transmit its strike to said rear end of said engaging head, the electromagnetic coil having a throughgoing passage extending in the longitudinal direction, said plunger having a central portion extending through and guided in said passage of said electromagnetic coil and two end portions connected with two opposite ends of said central portion and located outwardly beyond two opposite ends of said coil.

5,255,895

GEAR TRANSMISSION IN A LIFTING MACHINERY

Olavi Jussilla, Hyvinkaa, Finland, assignor to Kone Oy, Hyvinkaa, Finland

Continuation of Ser. No. 349,308, May 9, 1989, abandoned, which is a continuation-in-part of Ser. No. 134,405, Dec. 17, 1987, abandoned. This application May 4, 1992, Ser. No. 879,532
Claims priority, application Finland, Dec. 23, 1986, 865293
Int. Cl.[5] B66D *1/22*
U.S. Cl. 254—344 5 Claims



I-I

1. A gear transmission for a lifting machine comprising:

a rope drum;

a combined gear transmission comprising a cylindrical gear transmission driven by a motor, said cylindrical gear transmission having at least a one step arrangement and an

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output splined shaft, and a planetary gear transmission having an input splined sun shaft and a planet carrier;

an intermediate disk, fixed transversely inside said rope drum, having a central internally toothed circular opening; and

a generally cylindrical drum, rotatably carrying said rope drum, containing at least partly said combined transmission, said cylindrical gear transmission being journalled on a support means of said cylindrical drum and said planetary gear transmission rotatably coupling with said intermediate disk,

said combined transmission including toothed coupling means comprising:

a) a cylindrical internally toothed sleeve loosely coupling within one end said output splined shaft; and within another end, said input splined sun shaft for driving said planetary gear transmission;

so that said internally toothed sleeve is able to assume an inclined position relative to said shafts during rotation thereof, when said sun shaft effects radial displacement; and

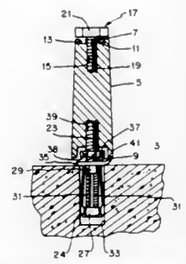
b) a cylindrical toothed end of said planet carrier, loosely coupled with the internal toothing of said intermediate disk.

5,255,896

ELECTRIFIED FENCE FOR CHASING PIGEONS AWAY

Lucien Letarte, Notre-Dame-des-Prairies, and Roméo Boyer, Verdun, both of Canada, assignors to Financiere Inter-Plus, Inc., Quebec, Canada

Filed Jul. 15, 1991, Ser. No. 731,130
Int. Cl.[5] H05C *1/00*
U.S. Cl. 256—10 20 Claims



1. A post for use in mounting an electric wire, in an electrified fence intended to chase away pigeons or the like undesired birds, said post comprising:

a body made of electrically insulating material having an upper end crossed with at least one groove having a depth of predetermined size, smaller than the diameter of an electric wire it is to receive, and being formed with a tapped hole adjacent to said groove;

a screw having a threaded stem for mounting into said tapped hole, and having a screwing head, and

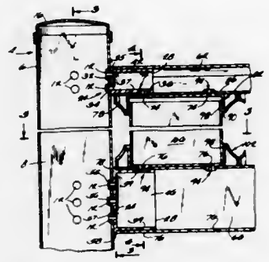
wherein said head has a width sufficient to overlap said electric wire in said groove, and when said screw is screwed into said tapped hole and the electric wire is in said groove, said head directly engages said electric wire which allows for movement of the wire in the groove to thus tighten it with respect to a neighboring post and then clamps said electric wire against said upper end said post.

5,255,897

MODULAR FENCE

Kenneth V. Pepper, Plymouth, Wis., assignor to Bemis Manufacturing Company, Sheboygan Falls, Wis.

Continuation of Ser. No. 667,190, Mar. 11, 1991. This application Mar. 5, 1993, Ser. No. 27,556
Int. Cl.[5] E04H *17/16*
U.S. Cl. 256—24 21 Claims



12. A modular fence comprising:

a vertical post,

a horizontal rail, and

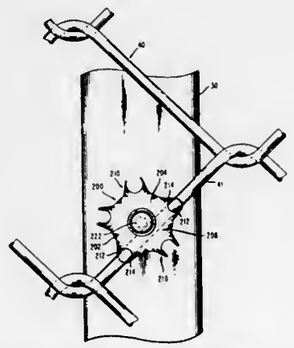
means for connecting said rail and said post and for allowing expansion and contraction of one of said post and said rail, said connecting means comprising a rail connector member which is separate from both said rail and said post, which engages said rail and which slideably engages said post.

5,255,898

METAL FASTENING APPARATUS FOR FASTENING METAL WIRE MESH TO METAL POLES

Paulino A. Cacicedo, 5 Tisbury Ct., Scotch Plains, N.J. 07076

Continuation-in-part of Ser. No. 523,482, May 15, 1990, abandoned, which is a continuation-in-part of Ser. No. 398,932, Aug. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 318,018, Mar. 2, 1989, abandoned. This application Jul. 16, 1991, Ser. No. 728,871
Int. Cl.[5] E04H *17/04*
U.S. Cl. 256—47 9 Claims



1. Fastening apparatus for fastening metal wire mesh to a metal pole, said metal wire mesh made of interwoven strands of metal wire of generally circular cross-section and including a plurality of straight lengths of said strands of metal wire, comprising:

a metal wire mesh engaging member comprising a generally semi-spherical shell-like member including a downwardly extending skirt portion provided with a plurality of generally inwardly and upwardly extending generally semi-spherical indentations and a top central portion provided with a hole formed generally centrally thereof, said skirt portion provided with a plurality of generally radially outwardly extending portions spaced circumferentially therearound, each portion including a pair of curved and downwardly extending spaced apart members and each portion and included pair of downwardly extending members being generally in the shape of a semi-circle to provide one of said indentations for receiving a straight length of said strands of metal wire, said semi-circle having an included angle greater than 180°, said strands of metal wire having a diameter and said pairs of downwardly extending members including downward terminal portions spaced apart a distance greater than said diameter of said strands to permit said pairs of downwardly extending members to be placed around said straight lengths of said strands of metal wire;

a metal nail-like member including a shank for being inserted downwardly through said hole, said metal nail-like member including a head larger than said hole and said shank provided with resistance means for resisting removal of said shank from said pole upon being driven therein; and

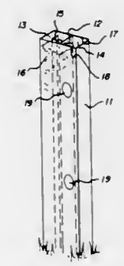
upon two generally diametrically opposed pairs of said pairs of downwardly extending members being placed around portions of one of said straight lengths of said strands of metal wire mesh, and upon said shank being inserted downwardly through said hole generally centrally interiorly of said skirt portion and being driven into said metal pole, said two pairs of downwardly extending members being deformed and wrapped around and substantially totally encircling said one of said straight lengths of strands of metal wire to fasten said metal wire mesh to said metal pole; and said metal wire mesh engaging member made of a predetermined metal sufficiently strong to maintain said strands of metal wire fastened to said metal pole upon said shank being driven into said metal pole.

5,255,899

FENCING SYSTEM

James F. G. von Grozny, Cornwall, United Kingdom, assignor to Duralock (UK) Ltd., Cornwall, England

Filed Jul. 21, 1992, Ser. No. 915,595
Int. Cl.[5] E04H *17/22*; E02D *27/42*
U.S. Cl. 256—59 16 Claims



1. A fencing system comprising post members and rails for spanning between adjacent post members in use, in which the post members comprise an enclosed hollow section, a web member transversely and longitudinally extending across said hollow section and defining an internal longitudinal first compartment in said hollow section having an opening at one end of said post member, and an internal longitudinal second compartment in said hollow section transversely separated from said first compartment by said web member, said second compartment having opposed outer walls which extend away from said web member, said second compartment outer walls having apertures formed therein of a size and configuration so as to be able to receive an end portion of the rails; and

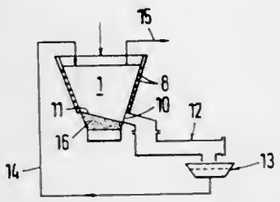
ground-engageable support elements which in use extend through said end opening into only said first compartment of said post members.

5,255,900

METHOD AND A DEVICE FOR PROCESSING HOT, LIQUID SLAGS

Hans-Klaus Schott, Dinslaken, Fed. Rep. of Germany, assignor to Kuettner GmbH & Co., K.G., Essen, Fed. Rep. of Germany

Filed Jul. 2, 1991, Ser. No. 724,719
Int. Cl.[5] C04B *5/02*
U.S. Cl. 266—44 54 Claims



1. A method for processing hot, liquid slag comprising the steps of:

conveying the slag to be processed to an upper region of a granular material forming a fluidized bed having a temperature below the solidification temperature of the slag;

cooling the slag to a temperature below its solidification temperature while simultaneously forming granules; and

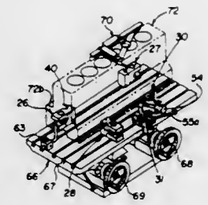
maintaining the temperature of the fluidized bed at a temperature below the solidification temperature of the slags.

5,255,901

FIXTURE SYSTEM FOR MOUNTING WORK PIECES TO BE MACHINED

Donald B. Rottler, 2617 W. Galer St., Seattle, Wash. 98199

Filed Jan. 5, 1993, Ser. No. 673
Int. Cl.[5] B25B *1/24*
U.S. Cl. 269—99 9 Claims



1. A fixture system for mounting a work piece such as an engine head or block on a table having several laterally-spaced parallel T-ways therealong, said fixture system comprising:

two rear support blocks, a front support block, and a front leveling block for supporting a work piece;

an additional block between said front support block and leveling block;

each of said blocks having a depending anchoring bolt with a matching T-nut for fitting into a selected one of said T-ways;

a respective vertical stem mounted on each of said rear support blocks in horizontally offset relation to the respective anchoring bolt whereby the orientation of the stem relative to said table can be adjusted by turning the respective rear support block around the longitudinal axis of its anchoring bolt when the anchoring bolt is loosened;

each said stem having an enlarged head with a bottom face sloping upwardly and outwardly from the stem for seating on a rear portion of the work piece;

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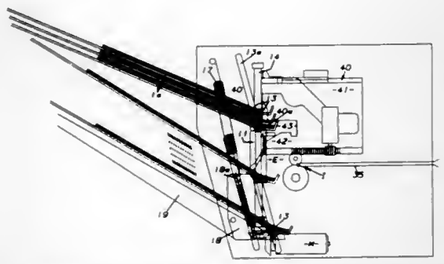
means for adjusting the height and orientation of each said head relative to the respective rear support block;
said leveling block having a vertical screw with a support head thereon;
said additional block having a front flat clamping face sloping upwardly in the rear direction and a threaded bore at right angles to said face;
an angularly adjustable bracket engaging said clamping face and having an elongated slot and a threaded hole therethrough which extends parallel to said threaded hole;
a locking bolt extending through said slot into said threaded bore in the additional block for securing said bracket against said clamping face in a selected position;
a threaded clamping element screwed through said threaded hole and having a rear head for engaging a front portion of the work piece, said clamping element in conjunction with said enlarged heads at the rear of the work piece being collectively operative to firmly hold said workpiece in a selected position on said table.

5,255,902

SORTER WITH SET DISPLACING IN-BIN STAPLER

Peter M. Coombs, Tustin, Calif., assignor to Gradco (Japan) Ltd., Tokyo, Japan

Filed Mar. 9, 1992, Ser. No. 848,489
Int. Cl.[5] B42B *39/02*
U.S. Cl. 270—53 **11 Claims**



1. A sheet receiver of the moving tray type with an in-bin stapler, comprising: a frame structure, a plurality of horizontally extended trays arranged in a vertical stack in said frame structure, cam means for vertically sequentially displacing ends of said trays adjacent a sheet entry location to provide an enlarged sheet entry space between an adjacent pair of trays, means for sequentially operating said cam means in opposite directions as sheets are fed into the sheet entry space to form sets of sheets in said trays, a stapler having hammer and anvil portions forming a throat to receive an edge portion of a set of sheets in said trays, means for shifting said stapler towards and away from said trays for selectively positioning said sets of sheets in said throat for application of a staple, with one of said portions of said stapler extending into said enlarged space and the other of said portions of said stapler engaged with and displacing a set of sheets in a tray vertically spaced from said enlarged space.

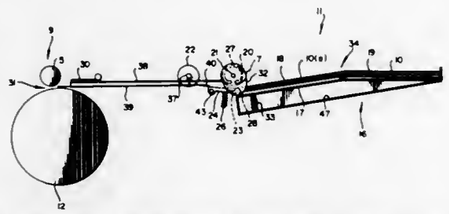
5,255,903

SHEET FEED AND ALIGNMENT APPARATUS

Michael H. Parsons, Rochester, and Steven M. Russel, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 790,794, Nov. 12, 1991, abandoned. This application Dec. 23, 1992, Ser. No. 997,155
Int. Cl.[5] B65H *5/00*
U.S. Cl. 271—10 **10 Claims**

1. A sheet feeding and aligning apparatus comprising:
tray means;
a biased platform for supporting a stack of sheets within the tray means;
feed means having a uniform surface for parallel feeding an uppermost sheet from the stack of sheets;
control means for regulating engagement of the sheets with the feed means;
retard means in pivotal contact with the stack of sheets for preventing other than the uppermost sheet from being fed from the stack of sheets;



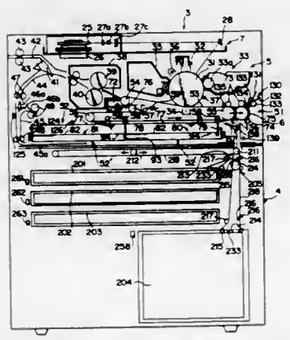
a first aligning means having a continuously rotating continuous surface cone-shaped roller rotating about an axis which forms an angle of 90° with the longitudinal path of the uppermost sheet for aligning the uppermost sheet in cross-track and skew alignment; and
a second aligning means, in cooperation with the first aligning means, for aligning the uppermost sheet is in-track alignment.

5,255,904

FEEDER OR IMAGE FORMING APPARATUS

Kazushige Taguchi, Warabi; Hiroshi Takahashi, Kawasaki; Kazunori Bannai, Tokyo; Tetsuya Fujioka, Yokohama, and Fumio Kishi, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 20, 1991, Ser. No. 795,021
Int. Cl.[5] B65H *3/18*
U.S. Cl. 271—18.1 **24 Claims**



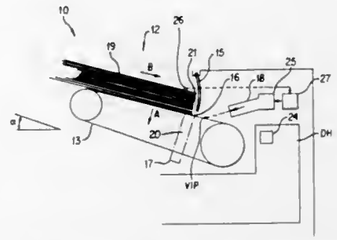
1. A feeder of an image forming apparatus comprising:
storing means for storing a stack of recording mediums;
an endless belt, disposed adjacent to said storing means and an image forming section for forming an image on a recording medium, for conveying the foremost recording medium of the stack in said storing means to said image forming section;
driving means for driving said endless belt in a prescribed direction for conveying a recording medium; and
speed controlling means for varying a speed of said endless belt driven by said driving means and passing by said storing means and for simultaneously maintaining a speed of said endless belt passing by at least said image forming section.

5,255,905

DOWNHILL BOTTOM VACUUM CORRUGATED FEEDER AND METHOD

Paula E. Reid, Rochester; Kendolph A. Thomas, Ontario; John R. Falvo, Rochester; Charles D. Rizzolo, Irondequoit; William D. Milillo, Ontario; James F. Smoak, Webster, and Michele D. Taber, Rochester, all of N.Y., assignors to Xerox Corporatioo, Stamford, Conn.

Filed Nov. 24, 1992, Ser. No. 981,049
Int. Cl.[5] B65H *3/12*
U.S. Cl. 271—94 **24 Claims**



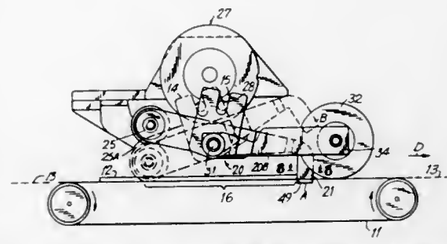
1. A document feeding apparatus for feeding documents from a stack of documents, comprising:
means for feeding a document from said said stack of documents in a feed direction, the documents each having two side edges parallel to the feed direction and lead and rear edges perpendicular to the feed direction;
a stack supporting tray located above the feeding means and having only a single side guide member for aligning one of said side edges of said documents of said stack, said stack supporting tray being disposed at a predetermined downhill angle with respect to the document feed direction;
air injection means disposed downstream of said stack supporting tray in the feed direction for injecting air between a document to be fed and the remainder of said stack; and
means for aligning the read edge of said documents of said stack without restraining the rear edge, said means for aligning disposed between said stack supporting tray and said air injection means.

5,255,906

DOCUMENT REGISTRATION APPARATUS

Michael D. Ballard, Sandy Hook; Sandra Graveson, Waterbury; Joseph H. Marzullo, Brookfield, and Curtis Mrozinski, Newtown, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 17, 1991, Ser. No. 808,863
Int. Cl.[5] B65H *9/04*
U.S. Cl. 271—246 **14 Claims**



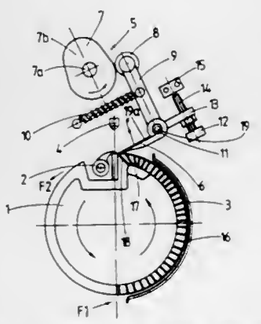
1. A document registration apparatus for use with a conveying means for transporting a document along a path from an upstream direction to a downstream direction through a document registration position,
a document registration unit positioned above the document path adjacent to the document registration position, having:
an upstream end, a downstream end and a pivoting axis positioned in between the upstream end and the downstream end,
a plurality of laterally-spaced registration stops at the downstream end of the unit positioned substantially perpendicularly to the document path for both stopping a document at the document registration position and for aligning the document relative to the document path as the document is driven by the conveying means into the registration stops when the downstream end of the unit is pivoted adjacent to the document path, and
at least one non driver urge roller at the upstream end of the unit for urging a stopped document against the conveying means when the upstream end of the unit is pivoted adjacent to the document path to move the document from the document registration position in the downstream direction; and
a pivoting means for pivoting the unit about its pivoting axis for selectively moving one of the upstream end and the downstream end into a position adjacent to the document path.

5,255,907

DEVICE FOR CONVEYING PRINTED SHEETS IN AN INSTALLATION FOR CHECKING THE QUALITY OF PAPER MONEY

Dante Orlandini, Milan, Italy, assignor to de la Rue Giori S.A., Lausanne, Switzerland

Filed Feb. 22, 1993, Ser. No. 20,771
Claims priority, application Switzerland, Mar. 3, 1992, 661/92
Int. Cl.[5] B65H *5/12*
U.S. Cl. 271—277 **9 Claims**



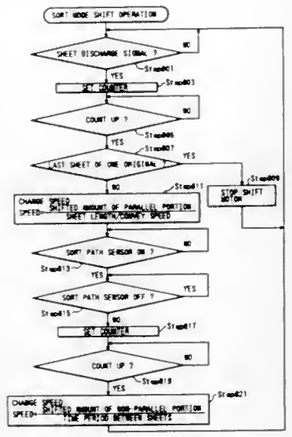
1. A device for conveying printed sheets in an installation for checking the quality of paper money, particularly bank notes, comprising a cylinder (**1**; **21**) and at least one detector (**4**) placed near the periphery of the cylinder, said cylinder being equipped with at least one bar of sheet-clamps (**2**; **22**) for grasping the front edge of the sheet (**3**) to be conveyed, wherein, in proximity to said detector (**4**), there is provided a calibrating strip (**6**) mounted in a movable manner with respect to the surface of the cylinder (**1**; **21**), means (**12–15**) for adjusting said strip (**6**) in order to set, in its operating position, the distance from this strip to the cylinder (**1**; **21**) to a value determined so that the sheet (**3**) to be examined hugs said cylinder (**1**; **21**), and a mechanism (**5**) for lifting said strip (**6**) intermittently when the clamps (**2**; **22**) pass below the strip (**6**) in order to avoid a collision between the clamp and said strip.

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5,255,908
SHEET SORTER WITH CONTROL FOR CONTINUOUS OPERATION

Masakazu Hiroi, Yokohama; Mitsuhiro Mukasa, Kawasaki, and Kenji Kobayashi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 597,335, Oct. 15, 1990, abandoned. This application Jul. 15, 1992, Ser. No. 914,035
Claims priority, application Japan, Oct. 18, 1989, 1-271146
Int. Cl.[5] B65H *39/10*
U.S. Cl. 271—293 **22 Claims**



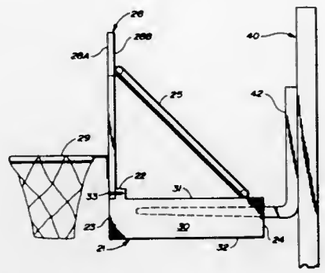
1. A sheet sorting apparatus comprising:
plural bin trays;
bin tray moving means for moving said bin trays stepwisely to cause each of the bin trays to face a sheet receiving position; and
control means for variably controlling the operating speed of said bin tray moving means according to sheet transporting information from an image forming apparatus to be connected to said sorting apparatus in such a manner that said bin tray moving means can be operated in a continuous manner even during discharge of a sheet into a bin tray, wherein said control means comprises calculation means for calculating the operating speed of said bin tray moving means based on the sheet transporting information supplied from said image forming apparatus so that the bin which is subject to receive the sheet faces the sheet receiving position until the sheet receiving has been completed, and the subsequent bin tray comes to the sheet receiving position before discharge of subsequent sheets is started.

5,255,909
BASKETBALL'S PORTABLE BASE

Edward O. Wendell, 728 58th St., Oakland, Calif. 94609, assignor to Edward O. Wendell, Oakland, Calif.

Filed Jun. 2, 1992, Ser. No. 892,323
Int. Cl.[5] A63B *63/08*
U.S. Cl. 273—1.5 R **1 Claim**

1. A portable basketball apparatus comprising:
A. A base having
1. a horizontal top surface having a front, a back and two side edges;
2. a horizontal bottom surface spaced from and co-extensive with said top surface;
3. a plurality of longitudinal spacer members extending vertically between said top and bottom surfaces, one of said spacer members extending from front to back adjacent each side edge of the top member and a third spacer member extending from front to back centrally between the side edges of said top member thereby defining at least two longitudinally extending channels between the top and bottom surfaces into which the tines of a lift fork may be inserted;
4. a lip secured to the top surface, said lip being positioned rearwardly from said front edge of said top surface, and extending upwardly therefrom;

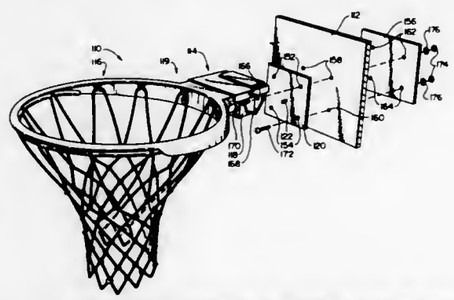


B. a basketball backboard having front and rear surfaces extending upwardly from and having a lower edge secured to said lip;
C. a diagonal brace secured to the rear surface of said backboard above said lip and to said top surface rearwardly of said lip; and
D. a basketball hoop secured to said backboard front surface and extending forwardly therefrom.

5,255,910
BASKETBALL GOAL ASSEMBLIES

John Simonseth, Snohomish, Wash., assignor to Basketball Products International, Inc., Everett, Wash.

Filed Jun. 16, 1992, Ser. No. 900,173
Int. Cl.[5] A63B *63/08*
U.S. Cl. 273—1.5 R **15 Claims**

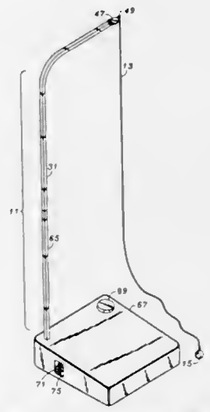


1. An apparatus for suspending a basketball goal assembly above a basketball playing surface, comprising:
a. a housing having an array of through holes formed therein;
b. a basketball ring attached to the housing;
c. a plurality of mounting plates each havrng an array of mounting holes formed therein;
d. a backboard having an array of holes formed therein;
e. a structural member having an array of holes formed therein, the structural member being suspended above the basketball playing surface; and
f. attachment means for allowing any one of the plurality of mounting plates to be attached to the housing; wherein the arrays of holes in the housing, the mounting plate attached thereto, the backboard, and the structural member are aligned to allow mounting means to be so inserted through the various holes that the housing is rigidly suspended above the basketball playing surface.

5,255,911
TETHERED BALL PITCHING APPARATUS AND METHOD

George D. Preston, San Dimas; Timothy E. Kearney, Diamond Bar; Thomas A. Phelan, Moreno Valley, and John W. Tulac, Covina, all of Calif., assignors to Preston Sports Product Corporation, San Dimas, Calif.

Division of Ser. No. 613,277, Nov. 14, 1990, Pat. No. 5,056,781. This application Oct. 2, 1991, Ser. No. 770,189
Int. Cl.[5] A63B *69/40*
U.S. Cl. 273—26 E **14 Claims**



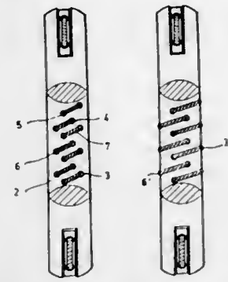
1. A pitching apparatus for pitching a ball to a batter comprising: a hollow rectangular shaped base, having a filler aperture, a filler cap fixably attachable over said filler aperture, a vertically oriented base portion having an open upper end and a lower end fixedly and non-rotatably attached near a corner of said base; an upper, davit-shaped member having a vertically oriented portion connected to the upper end of said vertically oriented base portion, and a horizontally oriented portion having an aperture at its end; an elastic cord having a first end secured to a ring, said ring extending through said aperture, and a second end attached to a ball, said elastic cord having a length at least equal to or greater than the combined length of the vertically oriented portion.

5,255,912
ARRANGEMENT OF STRINGING HOLES IN THE YOKE OF A RACKET

Kuni Tseng, 6F-1, No. 342, Keelung Road, Sec. 1., Taipei, Taiwan

Filed Mar. 13, 1992, Ser. No. 850,507
Int. Cl.[5] A63B *49/20*
U.S. Cl. 273—73 G **3 Claims**

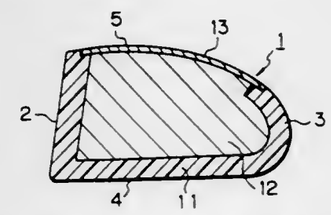
1. An arrangement of holes in a yoke of a racket through which strings of the racket are passed of four substantially parallel rows of holes in the yoke, wherein the rows are offset so that the string does not pass through the yoke in a plane parallel to or normal to the striking surface; wherein the first row consists of four holes, the second row consists of three holes, the third row consists of four holes, and the fourth row consists of three holes.



5,255,913
WOOD GOLF CLUB HEAD

Atsushi Tsuchida, Shizuoka, Japan, assignor to Yamaha Corporation, Japan

Continuation-in-part of Ser. No. 592,856, Oct. 4, 1990, abandoned. This application Sep. 6, 1991, Ser. No. 758,453
Claims priority, application Japan, Oct. 9, 1989, 1-263647
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—78 **2 Claims**



1. A wood golf club head comprising a face, a sole, a back, a crown, a toe and a heel, the crown being made of a first shell and the face, the sole, the back, the toe and the heel being made of a second shell, the first shell being made of a first material having an elastic modulus in a range from 2 to 10 GPa and a thickness in a range from 4 to 12 mm and the second shell being made of a material different from the first shell and having an elastic modulus in a range from 150 to 250 GPa and a thickness such that the rigidity of the second shell is greater than that of the first shell whereby the crown exhibits upward elastic deformation upon striking a ball and allows the face to incline rearwardly so as to control the loft of the face.

5,255,914
GOLF CLUB

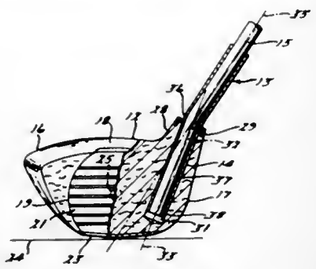
Edward W. Schroder, 37832 N. Laurel Park Dr., Livonia, Mich. 48152

Filed Aug. 31, 1992, Ser. No. 937,376
Int. Cl.[5] A63B *53/02*
U.S. Cl. 273—80.2 **8 Claims**

1. A golf club comprising a golf club head and a shaft assembly, said golf club head having a toe portion, a heel portion, a center of percussion substantially in the center of said club head, an upper surface contiguous with said toe portion and said heel portion, and a bored hole extending inwardly from said upper surface into said heel portion in an angular direction away from said center of percussion, said shaft assembly comprising a main elongated shaft portion and a lower shaft por-

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tion, the center axis of said lower shaft portion being angularly offset from the center axis of said main elongated shaft portion by an angle ranging from 7 to 15 degrees, and at least a part of said lower shaft portion being received in said bored hole, said



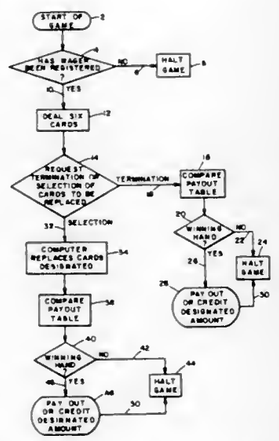
main elongated shaft portion remaining exterior of said club head, the center axis of said main elongated shaft portion when extended downwardly into said club head passing in close proximity of said center of percussion.

5,255,915

SIX-CARD DRAW-POKER-LIKE VIDEO GAME

Gary Miller, Las Vegas, Nev., assignor to United Gaming, Inc., Las Vegas, Nev.

Filed Oct. 23, 1991, Ser. No. 780,616
Int. Cl.[5] A63F *1/00*
U.S. Cl. 273—85 CP **16 Claims**



1. A method of playing a draw-poker-like game in which a winning hand generates a payout to a player using a computer and a video screen, which comprises:

providing a payout table defining a predetermined set of winning hands of different ranks and payout values selected from a single deck of cards, each card having a different face value and suit, with at least some of said winning hands being combinations of six cards, with the remaining hands from said deck not included within said predetermined set of winning hands not having any payout value;

registering a wager with said computer;

generating and displaying on said video screen a visual representation of a first hand of six cards randomly selected from said single deck of cards;

determining the rank of said first hand with respect to said payout table from the face value and suit of each represented card;

enabling said player to terminate the game or to designate at least one of said represented cards for replacement;

if said designation is registered, in response thereto replacing said at least one designated cards in said first hand with a corresponding number of other represented cards randomly generated from the remaining cards in said single deck and displayed on said video screen, the unreplaced cards from said first hand and said replacement cards forming a second hand of six cards, with said second hand replacing said first hand;

determining the rank of said second hand with respect to said payout table from the face value and suit of each represented card and thereafter terminating said game; and

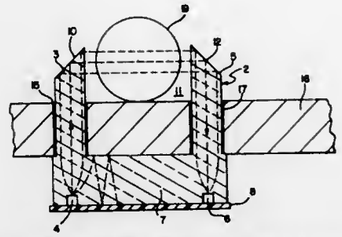
upon termination after said first or second hand providing said predetermined payout to said player according to the value of the remaining hand of cards as defined by the payout table.

5,255,916

OPTICAL BALL SENSOR

Charles R. Bleich, Cary, Ill., assignor to Williams Electronics Games, Inc., Chicago, Ill.

Filed Dec. 9, 1992, Ser. No. 988,244
Int. Cl.[5] A63F *7/30*
U.S. Cl. 273—118 D **20 Claims**



15. An optical ball sensor assembly for use in a pinball game having an inclined playfield supporting a plurality of play features and a rolling ball, comprising: p1 a) a light source;

b) a first light pipe associated with said light source including means for transmitting light from said light source externally of the light pipe along path on the playfield where the light can be interrupted by a ball;

c) a light detecting means or producing a signal in response to the absence o the light;

d) a second light pipe associated with said light detecting means for transmitting the light to the light detecting means absent a ball being located along said path; and

e) a transverse member connecting said first light pipe with said second light pipe to create a unitary assembly.

5,255,917

PUCK PROJECTING AND GUIDING APPARATUS

Jon Morrow, 3511 Wildwood Dr., Manitowoc, Wis. 54220; Saul Boast, Peoria, Ill., and Eric P. Hansotia, Marshfield, Wis., assignors to Jon Morrow, Manitowoc, Wis.

Filed Dec. 24, 1991, Ser. No. 813,351
Int. Cl.[5] A63B *69/00*; F41B *3/04*
U.S. Cl. 273—129 R **21 Claims**

6. A hockey puck projection system of the type for projecting hockey pucks having first and second substantially flat and parallel surfaces joined by a side surface, the system comprising:

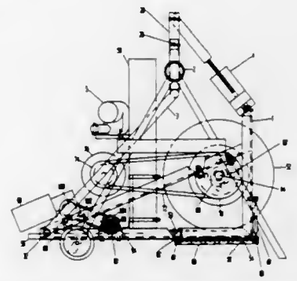
a hockey puck projector including a plurality of rollers, and a wheel including a periphery, where the rollers are disposed to support a puck at one of the first substantially flat surfaces, and the periphery of the wheel is disposed to engage the second substantially flat surface when the puck is projected;

a frame coupled to the projector such that the projector has at least first and second degrees of freedom;

a first feedback device disposed to produce a first signal representative of the location of the projector relative to the frame within the first degree of freedom;

a second feedback device disposed to produce a second signal representative of the location of the projector relative to the frame within the second degree of freedom;

a controller coupled to the feedback devices to monitor the first and second signals and produce first and second motion signals;



a first motive device coupled to the controller to move the projector relative to the frame substantially within the first degree of freedom, where the first motion signals are applied to the first motive device such that the controller selectively positions the projector relative to the frame within the first degree of freedom; and

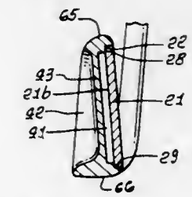
a second motive device coupled to the controller to move the projector relative to the frame substantially within the second degree of freedom, where the second motion signals are applied to the second motive device such that the controller selectively positions the projector relative to the frame within the second degree of freedom.

5,255,918

GOLF CLUB HEAD AND METHOD OF FORMING SAME

Donald A. Anderson, 6600 Werner Ave., #150, Huntington Beach, Calif. 92648, and Donald J. C. Sun, 4521 Ocean Valley La., San Diego, Calif. 92130, assignors to Donald A. Anderson, Huntington Beach, a part interest and Donald J. C. Sun, San Diego, both of Calif., a part interest

Continuation-in-part of Ser. No. 897,005, Jun. 11, 1992, which is a continuation-in-part of Ser. No. 806,398, Dec. 13, 1991, which is a continuation-in-part of Ser. No. 549,973, Jul. 9, 1990, Pat. No. 5,094,383, which is a continuation-in-part of Ser. No. 492,973, Mar. 13, 1990, Pat. No. 5,024,437, which is a continuation-in-part of Ser. No. 364,698, Jun. 12, 1989, abandoned. This application Aug. 31, 1992, Ser. No. 937,178
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—167 H **12 Claims**



1. A golf club head comprising

a) a main body portion formed by a metal casting,

b) a face plate formed of forged metal, and having a periphery, a ball striking front face, and a rear side,

c) means joining said periphery of said face plate to said main body portion to form a high strength, forged face plate for said golf club head,

d) said main body portion forming a first rearwardly re-entrant recess directly communicating with said face plate rear side over the major area of said rear side, said face plate being the only forged component of said head,

e) wherein said main body portion and said face plate completely enclose said recess,

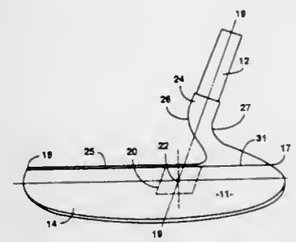
f) and said main body portion forming a second re-entrant recess at the rear side of the head, and a wall separating said first and second re-entrant recesses.

5,255,919

GOLF PUTTER

Alexander T. Johnson, 25 Hillview Rd., North Balwyn, Victoria, 3104, Australia

Division of Ser. No. 643,413, Jan. 18, 1991, Pat. No. 5,116,054. This application Jun. 28, 1991, Ser. No. 723,450
Claims priority, application Australia, Aug. 21, 1990, PK 1854/90
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—168 **6 Claims**



1. A blade type putter comprising a shaft having an axis and at one end thereof, a grip and a putter head having a hosel which mounts the head on one end of the shaft, the putter being characterized in that the head includes two oppositely facing ball striking faces each having a desired striking area having a center or centroid, said hosel having a first portion for attachment to said shaft wherein the shaft will be disposed so that the axis of the shaft intersects substantially at a right angle the midpoint of a straight line which passes through the centers or centroids of the desired striking areas, said hosel first portion being disposed above said top face and between the heel end of said putter head and the center of said putter head, said first portion being connected to said putter head by a second portion which is joined to said putter head top surface at an area extending from said heel end toward the center of said top surface but terminating short of a line through which the axis of the shaft extends, said second portion having a heel end part which extends inwardly toward the first part from the heel end and merges into the second portion in a concave curvilinear fashion and a second part which extends from the inner termination of said second portion and is curved rearwardly toward the heel end of the putter and then outwardly to merge into the first portion of the hosel so that the first portion of the hosel when viewed perpendicularly to the striking faces has a substantially lesser dimension than the base of the hosel where it is connected to said putter head top surface so that although the shaft axis intersects at a substantially right angle the midpoint of a straight line passing through the centers or centroids of the desired striking areas the second portion of the hosel does not encompass that area along the top face of the putter head so as to confine the area of the attachment of the shaft to the putter head in the area displaced toward the heel end of the putter head from the center or centroids of the desired striking areas.

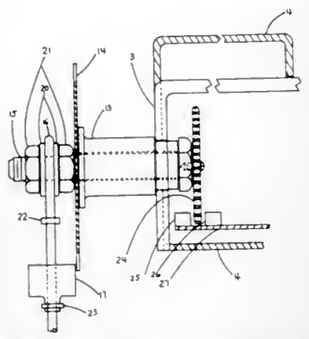
VOL 1155 ISS 4 OCT 26 1993 UMI

5,255,920

TRAINING DEVICE FOR GOLFERS

John J. Mangeri, 41 Yale Dr., Enfield, Conn. 06082

Filed Jul. 24, 1992, Ser. No. 920,091
Int. Cl.[5] A63B 69/36
U.S. Cl. 273—185 C 3 Claims



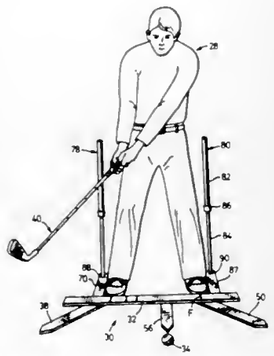
1. A golf practice and training system comprising: a platform, a base plate; means for firmly attaching said base plate to said platform; an upright arm; means for attaching said upright arm to said base plate; a housing; means for attaching said housing to said upright arm; a shaft; means for attaching said shift to said housing for unrestricted rotation of said shaft about a horizontal axis; an LED light source; a detector; means for attaching the LED light source and detector inside the housing; a slotted disk; means for attaching the slotted disk to the shaft and located between the LED and detector; a strain gaged flexible disk; means for attaching the strain gaged flexible disk to the housing; a golf ball; a disk deflector; a tether cord; means for attaching the golf ball and disk deflector to the tether cord; means for attaching the tether cord to said shaft; means for providing a digital readout of the theoretical ball carry; and means for providing a digital readout of the amount of theoretical deviation either right or left of a straight drive of said ball.

5,255,921

GOLF SWING TRAINING KIT

Brian M. Spence, 10 Simcoe Street East, Hamilton, Ontario, Canada L8L 3M9

Filed Jul. 6, 1992, Ser. No. 909,265
Int. Cl.[5] A63B 69/36
U.S. Cl. 273—187 A 20 Claims



1. A kit for training a golfer to obtain a proper swing, the kit comprising:

a base positionable on the ground and having markings to locate the feet and ball in correct relation to a target line to a target; and

a backswing guide member, means for securing said guide member to the base at a fixed angle thereto to indicate the direction a golf club should be pointing during a first step of a correct backswing when the golfer's wrists are substantially adjacent the leg furthest from the target, said direction indicated by the backswing guide member being at an angle of approximately 40° to the target line facing away from the target.

5,255,922

GOLF BALL WITH IMPROVED COVER

James R. Proudfit, Humboldt, Tenn., assignor to Wilson Sporting Goods Co., Chicago, Ill.

Continuation-in-part of Ser. No. 733,789, Jul. 26, 1991, abandoned. This application Nov. 23, 1992, Ser. No. 980,265
Int. Cl.[5] A63B 37/12
U.S. Cl. 273—235 R 16 Claims

1. A golf ball comprising a core and a cover wherein the cover having a different composition than the core is formed from a composition comprising:

(a) natural or synthetic balata;

(b) an elastomer which is crosslinkable with a metallic salt of an unsaturated fatty acid, said elastomer selected from the group consisting of polyoctenylene; homopolymers, copolymers or terpolymers of butadiene and homopolymers, copolymers, or terpolymers of chloroprene;

(c) a metallic salt of an unsaturated fatty acid as a crosslinking agent; and

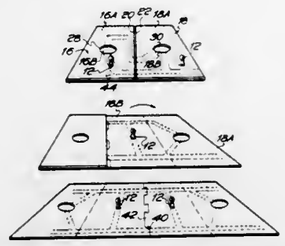
(d) a crosslinking initiator which provides a source of free radicals.

5,255,923

BOARD GAMES

Paul F. Bennett, Altrincham, England, assignor to Waddingtons Games Limited, Leeds, England

PCT No. PCT/GB90/00011, § 371 Date Oct. 24, 1991, § 102(e) Date Oct. 24, 1991, PCT Pub. No. WO90/15650, PCT Pub. Date Dec. 27, 1990
PCT Filed Jan. 4, 1990, Ser. No. 768,879
Claims priority, application United Kingdom, Jun. 16, 1989, 8913942
Int. Cl.[5] A63F 3/00
U.S. Cl. 273—284 10 Claims



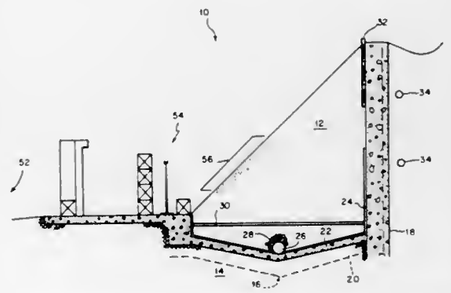
1. In a game comprising playing pieces and a game board having at least first and second board sections, defining first and second game sections, the first board section having an aperture or cut-out and said board sections being arranged to be part of a game wherein the first board section is superposed on the second board section and in the play of the game the player or players move playing pieces on the first game section on the first board section and on which play does or may lead the or one of the players to place the or one of the playing pieces in the aperture or cut-out so that it rests on the second board section, and the first board section can be moved clear of the second board section in order to reveal the second game section on which play can take place in the subsequent playing of the game, so that the portion of the second board section accessible through the aperture simultaneously forms part of both the first game section and the second game section, the improvement that the first board section comprises a reverse thereof, wherein at least part of the reverse of the first board section constitutes a part of, and extends, the second board section.

5,255,924

CONTAMINANT RECOVERY SYSTEM FOR A RIFLE RANGE

Craig C. Copius, 2365 S. Seaman Neck Rd., Seaford, N.Y. 11783

Filed Feb. 3, 1992, Ser. No. 829,500
Int. Cl.[5] F41J 1/14
U.S. Cl. 273—410 9 Claims



1. A contaminant recovery system for a rifle range, comprising:

an upstanding retaining wall which serves as a rear wall for the range;

a sloped berm disposed in front of said rear wall which serves as a target backstop;

drainage and collection means for diverting and collecting water which passes through said berm and for recovering contaminants in the water, said drainage and collection means additionally including a relatively horizontally disposed base wall located beneath said sloped berm which abuts said retaining wall, a drainage pipe located between said base wall and said sloped berm, and a catch basin located exteriorly of said sloped berm which is operatively connected to said drainage pipe, wherein said drainage pipe collects water which passes through said berm and diverts it to said catch basin where contaminants collect and are recovered and from which uncontaminated water passes through.

5,255,925

TELEPHONE SPELLING GAME METHOD

Maynard E. Small, 105 Ward Pkwy., Apt. 507, Kansas City, Mo. 64112

Continuation-in-part of Ser. No. 576,660, Aug. 31, 1990, Pat. No. 5,133,560. This application Jul. 13, 1992, Ser. No. 912,290
The portion of the term of this patent subsequent to Jul. 28, 2009, has been disclaimed.
Int. Cl.[5] A63F 9/22
U.S. Cl. 273—439 15 Claims

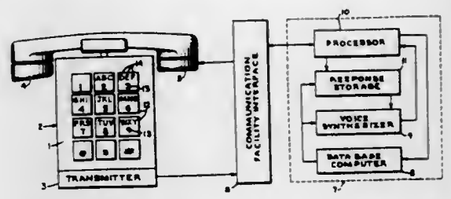
1. A method for conducting a spelling game wherein a player uses a common telephone, comprising the steps of:

(a) recording a bank of words to be spelled into a data base;

(b) programming an interactive audiotex voice communication device, which includes response storage and a processor, to respond to signals produced by the player, said response to the player signals including the delivery of synthesized voice messages through said telephone to the player, said voice messages including a first word of a plurality of words selected from said data base for the player to spell;

(c) programming said audiotex device to receive and store a sequence of signals produced by the player which are associated with letters of the alphabet in an attempt by the player to correctly spell said first word;

(d) programming said audiotex device to recognize said letter signal sequence as corresponding to the correct spelling of said first word and to measure the time taken for the player to enter said signal sequence;



(e) programming said audiotex device to provide the player by synthesized voice with another word to spell;

(f) programming said audiotex device to repeat the foregoing selection, transmission, reception, recognition and measurement steps for a predetermined plurality of words selected from said data base; and

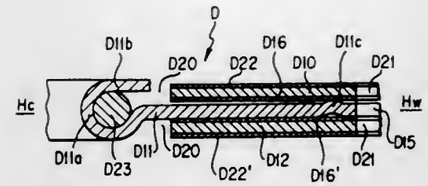
(g) programming said audiotex device to determine, following the last word of said plurality of words, whether the player has met predetermined criteria to be a game winner.

5,255,926

STEEL LAMINATE GASKET

Tsunekazu Udagawa, Ichikawa, Japan, assignor to Ishikawa Gasket Co., Ltd., Tokyo, Japan

Division of Ser. No. 449,216, Dec. 12, 1989, abandoned, which is a continuation-in-part of Ser. No. 231,303, Aug. 11, 1988, Pat. No. 4,898,396. This application Mar. 24, 1992, Ser. No. 856,759
Int. Cl.[5] F16J 15/08
U.S. Cl. 277—235 B 7 Claims



1. A steel laminate gasket for an internal combustion engine having at least one cylinder hole and at least one through hole therein, consisting essentially of first, second and third plates:

said first plate having at least one first hole larger than the cylinder hole of the engine, and at least one second hole corresponding to the through hole of the engine,

said second plate being situated under the first plate and having at least one third hole larger than the cylinder hole of the engine, and at least one fourth hole corresponding to the through hole of the engine, and

said third plate being situated under the second plate and having at least one fifth hole larger than the cylinder hole of the engine, and at least one sixth hole corresponding to the through hole of the engine,

said gasket further comprising:

first means for sealing around the cylinder hole of the engine, said first means being integrally formed with the second plate and located adjacent to the cylinder hole so that the first and third plates are located radially outside

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the first means relative to the cylinder hole so as not to be directly exposed to the cylinder hole and an area around the cylinder hole is securely sealed by the first means when the gasket is tightened, said first means including a base portion near the cylinder hole to surround the same and extending from the second plate, a curved portion situated around the cylinder hole and a flange situated near the cylinder hole to surround the same and spaced apart from the base portion, said curved portion interconnecting and being located between the flange and the base portion, said base portion and flange extending radially outwardly from the curved portion, said first means being directly exposed to the cylinder hole,

second means for sealing around the cylinder hole and having an annular shape, said second means being completely situated between the base portion and the flange of the first means around the curved portion and being disposed so that the second means is substantially located in a middle area in a direction of a thickness of the gasket when assemble, said second means being compressed equally, when the gasket is tightened, to help sealing around the cylinder hole,

third means for sealing around the through hole of the engine, said third means being formed on at least one of the first, second and third plates so that when the gasket is tightened, the third means is compressed equally to securely seal around the through hole, and

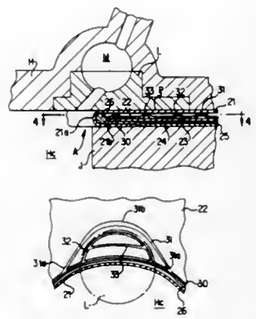
seal coatings located at least between the plates to seal therebetween, said seal coatings being provided radially outside the first and second means relative to the cylinder hole so that the seal coatings are not directly exposed to the cylinder hole and are not excessively heated by the second plate exposed to the cylinder hole to prevent creep relaxation of the seal coatings and fluid from flowing between the plates.

5,255,927

METAL LAMINATE TYPE CYLINDER HEAD GASKET

Yoshio Miyaoh, Tokyo, Japan, assignor to Ishikawa Gasket Co., Ltd., Tokyo, Japan

Filed May 26, 1992, Ser. No. 887,493
Claims priority, application Japan, May 30, 1991, 3-39822
Int. Cl.[5] F16J *15/08*
U.S. Cl. 277—235 B **10 Claims**



1. A metal laminate type cylinder head gasket to be installed in an internal combustion engine having a cylinder block with a cylinder bore, a cylinder head with an auxiliary combustion chamber and a mouth plate attached to the cylinder head for defining the auxiliary combustion chamber, comprising:

a first plate extending substantially throughout an entire area of the gasket, said first plate having a first hole corresponding to the cylinder bore of the cylinder block,

sealing means formed around the cylinder bore to seal thereabout, and

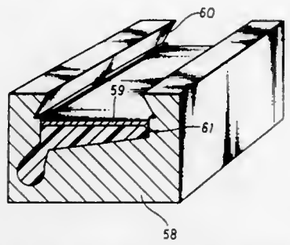
a second plate situated under the first plate to form a metal laminate gasket, said second plate having a second hole corresponding to the cylinder bore, a first bead extending at least partly around the second hole under the mouth plate to support the same, and a second bead located adjacent to and at a predetermined distance outwardly away from a part of a contour of the mouth plate, said second bead intersecting the first bead at intersecting portions and having a wide portion having a width wider than that of the intersecting portions, said width of the wide portion gradually increasing as a distance from one of the intersecting portions close to the wide portion increases so that when the gasket is tightened, tightening pressure applied to the second bead is substantially concentrated at the intersecting portion to thereby securely seal the cylinder bore.

5,255,928

ADJUSTABLE FASTENING DEVICE

Erkki Rinne, Espoo, Finland, assignor to Unicraft Oy, Helsinki, Finland

Division of Ser. No. 592,270, Oct. 3, 1990, Pat. No. 5,174,585.
This application Oct. 30, 1992, Ser. No. 969,797
Claims priority, application Finland, Oct. 3, 1989, 894671
Int. Cl.[5] B23B *31/30*
U.S. Cl. 279—4.01 **19 Claims**



1. An adjustable fastening device for transmitting a force in a linear direction against a workpiece, and device comprising:

a body section defining an opening surrounded by side walls and a bottom wall;

a clamp member mounted in the opening of the body section in slidable engagement with the side wall and for pressing against a workpiece, the clamp member and opening defining a space;

a pressure medium in the space for transmitting a force to the clamp member, wherein the pressure medium comprises a room-temperature vulcanizing silicone elastomer compound cast in situ in the space, the walls defining the space having a release agent for preventing the silicone from sticking to the walls and for allowing displacement of the silicone in the space, the silicone serving as a hydraulic fluid-replacing pressure medium; and

a pressure-creating member for applying pressure to the silicone, whereby the silicone, by way of its displacement and deformation, imparts a force to the clamp member, which force is, in turn, transmitted to the workpiece and, upon releasing said pressure, the silicone resumes its initial state, releasing the force on the workpiece.

5,255,929

BLADE FOR ICE SKATE

Jerome H. Lemelson, 48 Parkside Dr., Princeton, N.J. 08540

Continuation-in-part of Ser. No. 32,352, Mar. 31, 1987, Pat. No. 4,859,493. This application Mar. 16, 1990, Ser. No. 494,689
Int. Cl.[5] A63C *1/30*
U.S. Cl. 280—11.18 **15 Claims**

13. An ice skate blade for use in assembly with an ice skate to be secured to the foot of a person for ice skating therewith comprising:

(a) an elongated narrow rigid strip of metal having flat parallel side walls and a bottom wall extending between the lower extremities of an joining said parallel side walls,

(b) parallelly extending left and right edges of said strip formed between a respective of said side walls and said bottom wall,



(c) a coating formed of synthetic diamond material integrally bonded to said strip and extending along and between said bottom wall and said side walls,

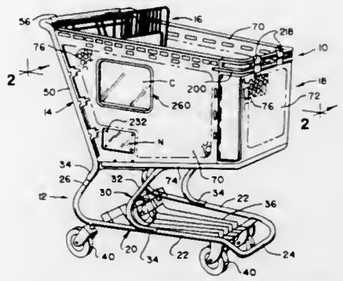
(d) said synthetic diamond coating having respective left and right edge portions extending parallel to each other and to said parallel left and right edges of said elongated rigid metal strip and defining the operating edges of said skate blade.

5,255,930

SHOPPING CART HAVING PLASTIC BASKET

Ronald J. Jones, Muskogee, and Lonnie W. Wright, Broken Arrow, both of Okla., assignors to UNR Industries, Inc., Chicago, Ill.

Filed Mar. 10, 1992, Ser. No. 848,755
Int. Cl.[5] B62D *39/00*
U.S. Cl. 280—33.992 **9 Claims**



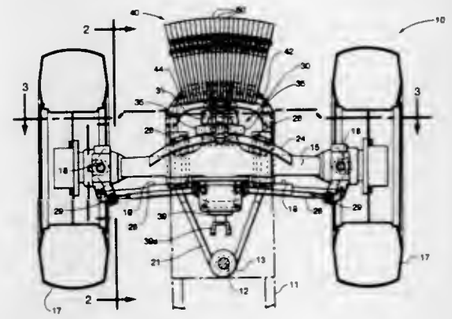
1. A shopping cart comprising a wheeled chassis, a handle structure, and a basket fastened to the wheeled chassis and to the handle structure, said basket comprising separate panel members molded from a plastic material, said panel members including two side panel members, a front panel member, and a bottom panel member, certain of the side, front, and bottom panel members having spaced tabs thereon and certain of the side, front, and bottom panel members having spaced slots therein, the spacing between the tabs corresponding to the spacing between the slots and the tabs being received by the slots to rigidly assemble and interlock the side panel members to the front panel member and to the bottom panel member and to rigidly assemble and interlock the front panel member to the bottom panel member, said handle structure having a pivotal back attached thereto providing a basket back member.

5,255,931

TRACTOR BALLAST MOUNTED TO FRONT AXLE OF COMPOUND STEERING APPARATUS FOR TRACTORS

Joseph C. Hurlburt, Lancaster, Pa., assignor to Ford New Holland, Inc., New Holland, Pa.

Filed Jul. 27, 1992, Ser. No. 919,326
Int. Cl.[5] B62D *5/26, 7/16;* **B60S** *11/00*
U.S. Cl. 280—97 **13 Claims**



7. A tractor comprising:

a chassis;

a transverse rear axle connected to said chassis and carrying a pair of laterally spaced ground engaging wheels;

a transverse front axle pivotally connected to said chassis for movement about a generally vertically extending pivot axis and having pivotally mounted thereon a pair of laterally spaced steerable wheels, said front axle being movable in a generally horizontal plane relative to said chassis;

steering means operably connected to said steerable wheels to control the pivotal movement thereof relative to said front axle;

control means operably interconnecting said steerable wheels and said chassis to effect pivotal movement of said front axle relative to said chassis in response to a corresponding pivotal movement of said steerable wheels;

ballast means mounted on a rack member detachably connected to said front axle to be pivotally movable therewith relative to said chassis and to position said ballast means forwardly of said chassis; and

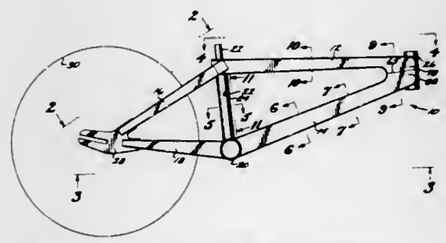
drive means supported on said chassis for operatively powering said tractor.

5,255,932

SUPEREFFICIENT BICYCLE STRUCTURE

James D. Moore, 1823 Border Ave., Torrance, Calif. 90501

Filed Jul. 11, 1991, Ser. No. 728,429
Int. Cl.[5] B62K *19/02*
U.S. Cl. 280—281.1 **7 Claims**



5. The superefficient cycle frame that comprises:

a head tube;

a seat tube brace having a bottom and top end;

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a circular bottom bracket coupled to said bottom end of said seat tube brace;

a rectangular top tube coupled at one end to said head tube and at the other end to said top end of said seat tube brace; and

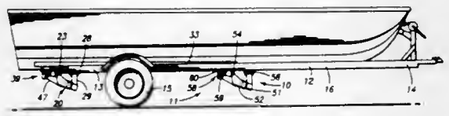
a rectangular double tapered down tube having two vertical walls and two horizontal walls coupled at one end to said head tube and at the other end to said circular bottom bracket and wherein said two vertical walls increase in vertical dimension from said head tube to said circular bottom bracket and wherein said two horizontal walls increase in horizontal dimension from said head tube to said circular bottom bracket.

5,255,933

WEIGHT DISTRIBUTING HULL AND KEEL SUPPORT FOR BOAT TRAILER FRAMES

Larry K. Carrick, Spokane, Wash., assignor to Calkins Manufacturing Company, Spokane, Wash.

Filed Feb. 3, 1992, Ser. No. 831,366
Int. Cl.[5] B60P *3/10*
U.S. Cl. 280—414.1 **26 Claims**



1. A weight distributing hull and keel support for an elongated boat trailer frame, comprising:

first and second cross members mounted to the boat trailer frame for pivotal movement thereon about first and second fulcrum axes transverse to the boat trailer frame and spaced apart longitudinally thereon;

a keel receiver on each cross member extending to one side of the associated fulcrum axis;

hull engaging members on each of the cross members, laterally spaced from the associated keel receiver;

gimbal means between the hull engaging members and cross members, mounting the hull engaging members for pivotal motion about first pivot axes arranged parallel to the fulcrum axes, and second pivot axes perpendicular to the fulcrum axes, to enable flush contact with a variety of boat hull configurations by the hull engaging member, the gimbal means including longitudinal displacement means for permitting longitudinal movement of the hull engaging members relative to the boat trailer frame, the longitudinal displacement means having elongated slot means for slidably connecting the hull engaging members to one of the cross members; and

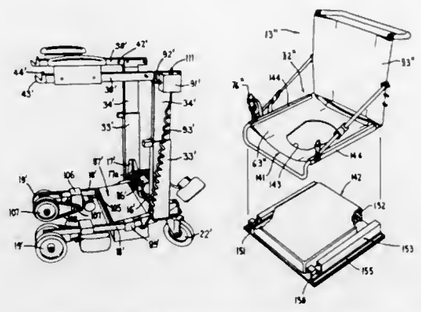
wherein the first pivot axes of the gimbal means are spaced from the respective fulcrum axes opposite the respective keel receivers such that the weight of a boat hull received on the hull engaging members and keel receivers is proportioned according to the respective distances of the hull engaging members and keel receivers from the respective fulcrum axes to thereby effect the percentage of the load carried by the keel receivers and associated hull engaging members.

5,255,934

WHEELCHAIR SEAT CONVERTIBLE TO TOILET SEAT

Harold R. Wilson, Holland, Mich., assignor to Love Lift, L.P., Holland, Micb.

Continuation-in-part of Ser. No. 484,570, Feb. 23, 1990, Pat. No. 5,112,076. This application Aug. 23, 1991, Ser. No. 749,153
The portion of the term of this patent subsequent to May 12, 2009, has been disclaimed.
Int. Cl.[5] A61G *5/10, 5/04*
U.S. Cl. 280—657 **23 Claims**



1. A wheelchair, such as for transporting an invalid or handicapped person, comprising:

a wheeled base assembly having a front, a rear and two sides;

an upright assembly mounted to and projecting upwardly from said base assembly, said upright assembly including a pair of upright post arrangements positioned adjacent opposite sides of said base assembly, said post arrangements being vertically extendible and retractable;

drive means drivingly coupled to said post arrangements for effecting raising and lowering thereof;

said upright assembly including a pair of elongate support arms mounted on said post arrangements adjacent upper ends thereof, said support arms being disposed adjacent opposite sides of said wheelchair and extending in generally horizontal and generally parallel relationship;

a seat assembly attached to said upright assembly and positioned between said support arms, said seat assembly including a seat portion which defines thereon an enlarged upwardly facing surface which is provided for engaging an occupant for permitting support of an occupant on the seat portion, said seat portion being positioned generally downwardly from the elevation of said support arms;

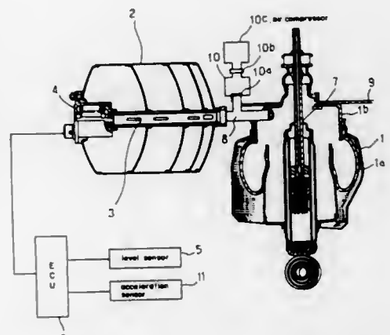
said seat portion having means associated therewith for permitting said seat portion to be positioned directly over and used in conjunction with a conventional toilet without requiring removal of the occupant from the wheelchair, said means including upper and lower seat subassemblies which are normally positioned in vertically superimposed relationship for supporting the wheelchair occupant, said upper subassembly including a horizontally enlarged seat member which defines thereon said upper surface and which has a large opening positioned centrally thereof and extending vertically therethrough, and said lower subassembly including an enlarged support member which is normally positioned in direct vertical superimposed relationship with said seat member for direct supportive engagement with an underside of said seat member, and releasable coupling means cooperating between said lower subassembly and said upper subassembly for permitting movement of said lower subassembly between an engaged support position wherein said support member is superimposed under said seat member and a released position, said releasable coupling means including means permitting the lower seat assembly in the released position to be manually moved to a laterally-spaced position so that the opening in the seat member can be aligned directly over and in direct communication with a conventional toilet.

5,255,935

AIR SUSPENSION SYSTEM

Yuichi Imani, Hamamatsu, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 665,798, Mar. 8, 1991, abandoned. This application Dec. 24, 1992, Ser. No. 997,120
Claims priority, application Japan, Mar. 9, 1990, 2-58818
Int. Cl.[5] B60G *15/12, 11/30*
U.S. Cl. 280—708 **8 Claims**



1. An air suspension system having plural secondary chambers, for providing a variable spring constant, comprising:

a primary air chamber disposed between a vehicle body and a vehicle wheel, configured as an air spring;

a plurality of secondary air chambers, selectively communicable with the primary air chamber;

a hollow outer cylindrical member extending through the plurality of secondary air chambers and having a first surface defining a circumference of the cylinder forming the outer cylindrical member, said first surface including a plurality of openings open to said plurality of secondary air chambers and having a central axis extending parallel to an axial length thereof, and forming a center of any circular cross-sectional area thereof;

an inner cylindrical member disposed within and coaxial with said hollow outer cylindrical member and having a second surface defining a circumference of the cylinder forming the inner cylindrical member, said second surface including a plurality of openings at locations corresponding to locations of said plurality of openings of said outer cylindrical member, said inner cylindrical member being hollow and having an interior in communication with said primary air chamber; and

means for rotating one of said hollow inner and outer cylindrical members around said axis with respect to the other so that one of said first and second surfaces is rotated relative to the other;

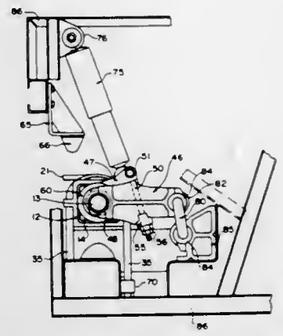
wherein at least either said plurality of openings of said inner cylindrical member or said outer cylindrical member have different lengths as measured along said circumference thereof, which is a direction of rotation by said rotating means, and a number of said secondary air chambers to communicate with the primary air chamber through said openings is adjustable by rotating said one of said hollow inner and outer cylindrical members.

5,255,936

REAR SUSPENSION ASSEMBLY

Alfonso B. Velazquez, Hidalgo, Mexico, assignor to Dina Autobuses, S.A. De D.V., Mexico

Filed Apr. 20, 1992, Ser. No. 871,798
Claims priority, application Mexico, Apr. 19, 1991, 25446
Int. Cl.[5] B60G *11/24*
U.S. Cl. 280—717 **14 Claims**



1. A rear torsion suspension assembly for a vehicle comprising:

an elongated shaft having first and second ends and a substantially circular cross-sectional shape;

first and second hexagonal lug means fixed to said shaft and spaced from said first and second ends;

a vulcanized, solid rubber torsion body surrounding and fixed to said shaft between said first and second lug means, said rubber body having a substantially square cross-section, four sheet steel angle members attached to said rubber body forming an inner sheath having a central groove extending around the perimeter;

a rigid sheath surrounding said inner sheath and said rubber body, said rigid sheath having a substantially square cross-section, said rigid sheath having at least two opposing faces and means defining an aperture in each of said faces;

bolt means extending through said aperture in said rigid sheath and through said central groove, said bolt means engaging said rubber body to resist longitudinal movement of the rubber body with respect to the sheath;

means for rigidly coupling said sheath to an axle of a vehicle;

first and second tension adjusting arms, each arm having a hexagonal orifice for removably coupling said arms to each of said lug means, said tension arms extending radially outward from said shaft;

first and second suspension arms having a first end coupled to each end of said shaft adjacent said lugs, and a second end of each suspension arm being further coupled to a frame of said vehicle; and

adjustable tension means coupled to said tension arm and to said suspension arm to adjust the angular position of said shaft with respect to said suspension arm.

5,255,937

VEHICLE AIR BAG WITH CONTINUOUS FRAME RETAINER

Ali S. EmamBakhsh, Flat Rock; William G. McPherson, Shelby Twp., Oceana County; Mark O. Olson, Rochester Hills, and Al A. Saberan, New Baltimore, all of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Mar. 16, 1992, Ser. No. 851,645
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—728 **26 Claims**

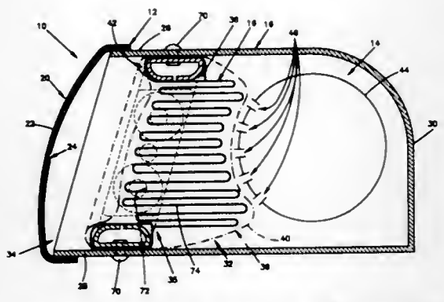
24. An air bag subassembly for installation in an air bag container having wall structure, a portion of said wall struc-

VOL 1155 ISS 4 OCT 26 1993 UMI

ture defining a deployment opening for an air bag, said air bag subassembly comprising:

an inflatable air bag and a retainer coupled with said inflatable air bag, said air bag having a portion defining a fluid opening, said retainer being coupled with the portion of the air bag defining the fluid opening to form a mouth of the air bag;

said retainer having a shape to enable the mouth of the air



bag to be located on the inside of the wall structure of the container;

said retainer comprising a plurality of frame components which form a continuous frame, selected portions of said plurality of frame components defining fastening structure which enables the continuous frame to be fastened to the wall structure of the container; and

each of said selected portions of said frame component having a tubular configuration.

5,255,938

TUBULAR GAS GENERATOR FOR AN INFLATABLE IMPACT CUSHION

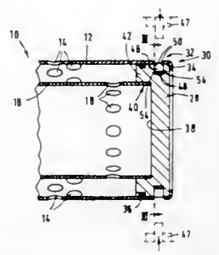
Uwe Brede, Furth; Josef Kraft, Berg, and Gerrit Scheiderer, Furth, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Nov. 29, 1991, Ser. No. 800,011

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1990, 4037768

Int. Cl.[5] B60R *21/26*; B21D *39/00*

U.S. Cl. 280—736 **8 Claims**



1. A tubular gas generator for an inflatable air bag, which comprises

an outer tube;

closure covers at both ends of the outer tube, said outer tube at least partially surrounding lateral portions of the closure covers, and

a peripheral groove on a peripheral surface of each closure cover, interior projections directed inwardly in an end section of the outer tube, surrounding a respective closure cover, said interior projections extending into said peripheral groove;

the interior projections comprising individual, punched, substantially V-shaped outer tube deformations, directed inwardly by multiple notching of each end section of the outer tube, surrounding a closure cover, in the region of the peripheral groove of the closure cover.

5,255,939

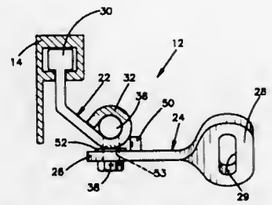
MECHANISM FOR OPERATIVELY CONNECTING SEAT BELT WEBBING TO A TRACK IN A VEHICLE

Louis R. Brown, Oxford, and Steven R. Loxton, Marysville, both of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Oct. 19, 1992, Ser. No. 963,065

Int. Cl.[5] B60R *22/06*

U.S. Cl. 280—804 **8 Claims**



1. A mechanism for connecting seat belt webbing to a track of a passive belt system of a vehicle, said structure comprising:

a slider for slidably engaging the track;

an anchor link including a first portion pivotally connectable to said slider and a second portion having an opening for receiving belt webbing, said first portion of said anchor link being flat and said second portion of said anchor link being flat, said first flat portion lying in a first plane and having a first longitudinal axis lying in said first plane, said second flat portion lying in a second plane and having a second longitudinal axis lying in said second plane, said first and second longitudinal axes extending coaxial with each other, said first and second planes having a predetermined angle between them; and

means for pivotally connecting said first portion of said anchor link to said slider to enable said anchor link to pivot about mutually perpendicular intersecting axes relative to said slider.

5,255,940

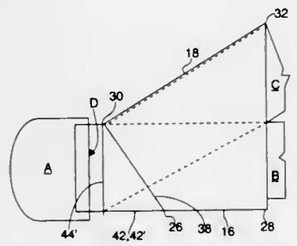
SEAT BELT REPOSITIONING DEVICE

Brian J. Kornblum, Ossining, and Paul H. Rosenthal, Yorktown Heights, both of N.Y.

Filed Mar. 9, 1992, Ser. No. 846,893

Int. Cl.[5] B60R *22/00*

U.S. Cl. 280—808 **4 Claims**



1. A shoulder belt repositioning device for use with a three-point vehicular safety belt system, comprising:

a pair of substantially planar sidewalls disposed in side by side relationship defining an elongate passageway between them;

said passageway extending from a first open end to a second open end spaced from said first open end;

said sidewalls being joined to each other along first and second spaced apart edges, said edges extending from said first open end to said second open end, on opposite sides of said passageway;

the dimension of said second open end, corresponding to the distance between the second ends of said first and second edges, measured in a direction substantially perpendicular to said first edge, being substantially greater than the dimension of said first open end, wherein the dimension of said first open end corresponds to the distance between the first ends of said first and second edges, and said dimension of said first open end is greater than the perpendicular distance between the first end of said second edge and the longitudinal axis of said first edge.

5,255,941

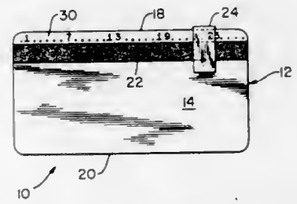
ANTIFRAUD CREDIT CARD ASSEMBLY

Guillermo Solomon, P.O. Box 310, Santiago, Dominican Republic

Filed Jun. 12, 1992, Ser. No. 897,836

Int. Cl.[5] B42D *15/00*

U.S. Cl. 283—82 **9 Claims**



1. An antifraud credit card assembly comprising a card member having first and second faces, a magnetic stripe on said first face, said magnetic stripe bearing magnetic information presentable to a sensing machine by a person seeking to consummate a transaction, movable means for changing the information provided by said magnetic stripe for selectively presenting any of a plurality of messages including a single legitimate message that allows consummation of the transaction and a plurality of illegitimate messages that deny such consummation, said magnetic stripe removable from and replaceable on said first face of said card member.

5,255,942

PIPE JOINTS

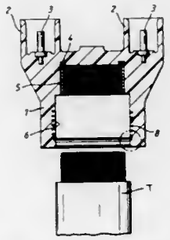
David M. A. Kenworthy, Sheffield, Great Britain, assignor to Fusion Group PLC, Chesterfield, Great Britain

Filed Jan. 23, 1992, Ser. No. 824,533

Claims priority, application United Kingdom, Jan. 29, 1991, 9101914

Int. Cl.[5] F16L *47/02*

U.S. Cl. 285—21 **8 Claims**



6. A closure means for closing a cutter guide tube of a pipe saddle fitting, comprising a screw thread for releasably securing said closure means with said guide tube for said closure means to seal closed the guide tube, the said means having a thermoplastic portion at a substantially cylindrical surface thereof spaced axially from the screw thread and arranged for contact with the tube, and an electrical resistance heating wire incorporated in said thermoplastic portion and connected to electric contact means for supplying current to the tube by welding.

5,255,943

WELDING SLEEVE AND METHOD FOR ITS MANUFACTURE

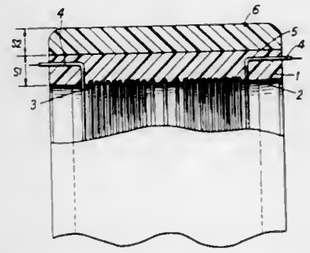
Friedhelm Keller, Donaueschingen, Fed. Rep. of Germany; Dirk Petry, Feuerthalen, and Helmut Hilger, Beringen, both of Switzerland, assignors to Georg Fischer Rohrleitungssysteme AG, Schaffhausen, Switzerland

Filed May 15, 1992, Ser. No. 883,826

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1992, 4203626

Int. Cl.[5] F16L *13/02*

U.S. Cl. 285—21 **5 Claims**



1. A welding sleeve, comprising:

a sleeve member formed of a thermoplastic weldable material and having internal and external surfaces;

a resistor wire winding provided at the internal surface of the sleeve member; and

a reinforcement ring having an inner diameter smaller than the diameter of said external surface of said sleeve member and formed of a thermoplastic material and force lockingly connected with the external surface of the sleeve member by a press fit.

5,255,944

COUPLER FOR A TEXTILE-REINFORCED RUBBER HOSE

Philippe Blin, Monts, and Jacques LaDouce, La Chapelle Blanche, both of France, assignors to Hutchinson, Paris, France

Filed May 29, 1992, Ser. No. 890,193

Claims priority, application France, May 30, 1991, 91 06504

Int. Cl.[5] F16L *39/04*

U.S. Cl. 285—149 **5 Claims**

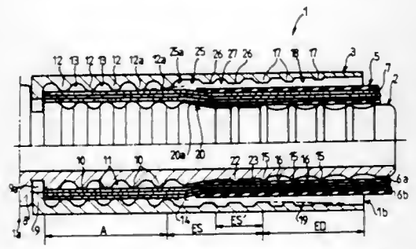
1. A coupler for a textile-reinforced rubber hose, comprising a metal end-fitting and a metal bush between which one end of the hose is crimped, a textile reinforcement of the hose extending between internal and external rubber layers, said rubber layers having a free end said end-fitting and said bush being formed with three separate zones therebetween corresponding respectively to a fastening zone, an intermediate static-sealing zone and a dynamic-sealing zone, wherein:

said fastening zone is formed from two complementary sets of generally uniformly-spaced, non-helical annular teeth and grooves, substantially each tooth and substantially each groove having, in cross section, a rounded shape, with the textile reinforcement only extending into

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crimped contact in said zone with the teeth and grooves in each of said fastening end-fitting and the bush;

said dynamic-sealing zone is formed from two series of other spaced annular teeth and grooves therebetween, said series respectively located on the end-fitting and the bush, with the internal and external rubber layers coming substantially into crimping contact in said dynamic sealing zone with the end-fitting and the bush, respectively; and



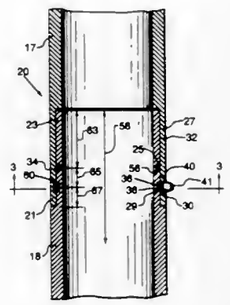
wherein said intermediate static-sealing zone is formed from at least one conical portion located on the end-fitting and an annular groove between two adjacent teeth located on the bush, which together defines a means for allowing creep of the free ends of the internal and external rubber layers about said conical portion and in said groove, respectively, during crimping, and an annular tooth located on the end-fitting which delimits, with an adjacent tooth thereto of said dynamic sealing zone, a groove having a flat bottom.

5,255,945

END-TO-END JOINTING SYSTEM FOR TUBES AND PIPES

Donald A. Toon, Burlington, Canada, assignor to Solinst Canada Limited, Ontario, Canada

Filed Dec. 2, 1991, Ser. No. 804,227
Int. Cl.[5] F16L *37/14*
U.S. Cl. 285—305 **12 Claims**



1. A jointing system for joining tubes together end-to-end, wherein:

a female end of one of the tubes is formed with a cylindrical sleeve;

a male end of an adjacent one of the tubes is formed with a complementary cylindrical nose, which is arranged to fit snugly inside the sleeve, and to be slidable into and out of the sleeve, and to be in direct locking engagement with the sleeve;

the nose on the male end is provided with an inner key-groove, which is formed radially inwards into the material of the nose;

the sleeve on the female end is provided with an outer key-groove, which is formed radially outwards into the material of the sleeve;

the outer key-groove in the sleeve and the inner key-groove in the nose are so arranged as to be in axial alignment when the nose is fitted into the sleeve, whereby the inner and outer key-grooves together form a composite key-groove;

the sleeve is provided with a key-hole right through the material of the sleeve, the key-hole being such that a key may be inserted therethrough,

the size and disposition of the key-hole are such that the key is insertable from outside the sleeve tangentially with respect to the composite key-groove;

the tubes are components of an elongate pipe assembly which is adapted and arranged for placing into a bore-hole in the ground, and is so arranged that, when the key is inserted into the key-groove, the weight of tubes below the joint is supported by the key;

the tubes are of the kind wherein the tubes are suitable, upon installation of the elongate pipe assembly into the bore-hole from the ground surface, to be passed down into the borehole one by one, each tube as it is added to the assembly tube being locked to the adjacent tube by the insertion of the key into the groove through the keyhole;

the shapes of the inner key-groove and the outer key-groove are such that, when the nose is assembled into the sleeve, the composite key-groove is square-sided;

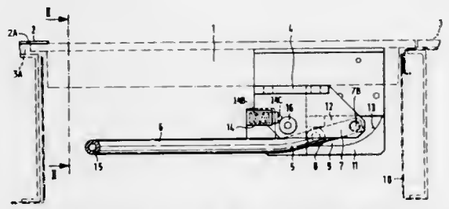
and the key is of a rectangular cross-sectional shape, which is complementary in size and shape to the composite key-groove.

5,255,946

APPARATUS FOR LOCKING AND UNLOCKING A FLAP DOOR

Volker Allerding; Thorsten Teichmann, both of Bremen, and Albrecht Seelhorst, Glashuetten-Schlossborn, all of Fed. Rep. of Germany, assignors to Deutsche Aerospace Airbus GmbH, Hamburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 825,627, Jan. 24, 1992, Pat. No. 5,180,199. This application Dec. 18, 1992, Ser. No. 992,611
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1991, 4102272; Dec. 20, 1991, 4142312
Int. Cl.[5] E05C *17/12*
U.S. Cl. 292—259 R **7 Claims**



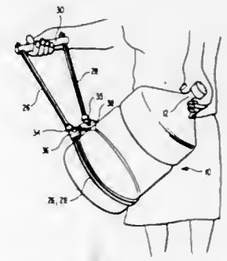
1. An apparatus for locking and unlocking a flap door located in a floor of a passenger cabin of an aircraft, said flap door leading to a space below the floor, comprising a door frame surrounding a door opening in said floor, at least one guide groove in said door frame, bearing block means (**4**, **4A**) secured to said flap door, lever means for tilting said flap door upwardly out of said door frame, journal means (**7B**) for securing a first end of said lever means to said bearing block means, roller means journalled to said lever means at a spacing from said journal means, said roller means engaging said guide groove when said flap door is being closed and during part of a flap door opening motion by said lever means, said lever means having a second end forming a handle extending away from said roller means, a stop member (**16**) mounted to said bearing block, latch means (**14**) mounted to said lever means for engaging said stop member (**16**) when said flap door is closed, and a spring (**14B**) biasing said latch means (**14**) against said stop member (**16**).

5,255,947

LIFTING AND INVERTING DEVICE FOR CYLINDRICAL CONTAINERS

Peter J. Schwartz, 5704 16th St. NW., Washington, D.C. 20011

Filed Sep. 25, 1992, Ser. No. 950,675
Int. Cl.[5] B65D *63/18;* **B65G** *7/12*
U.S. Cl. 294—31.2 **4 Claims**



1. A device for lifting and tilting a water bottle comprising:

a handle,

a pair of straps having their ends attached to said handle,

a pair of strap locking devices, each strap locking device having two portions of the same strap passing therethrough, and

a pair of strap adjusting devices slidably mounted on said straps, each of said straps passing through each of said strap adjusting devices, said strap locking devices positioned in proximity to said strap adjusting devices to limit sliding movement, whereby when said strap adjusting devices are positioned at opposite sides of said bottle, said bottle may be carried, and when said straps are repositioned on said bottle and said strap adjusting devices are repositioned adjacent each other, the bottle may be tilted.

5,255,948

DEVICE FOR USE IN POSITIONING AN ARTICLE PRECISELY IN A DESIRED LOCATION

Jacek Wiercienski, Oakville; Pawel Kuzan, Toronto; Krzysztof F. Szymczyk, Toronto; Andrew A. Goldenberg, Toronto, and Bruce L. Godkin, Walton all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Oct. 10, 1991, Ser. No. 774,506
Int. Cl.[5] B66F *11/00*
U.S. Cl. 294—86.41 **15 Claims**

8. A device for positioning an article precisely in a desired location and position of orientation comprising:

an article gripping means and a support for the gripping means,

the support having means for controllably moving the article gripping means between an upper position close to the support and a lower position spaced from the support, the means for controllably moving including a flexible shaft means by which the article gripping means is dependent from the support,

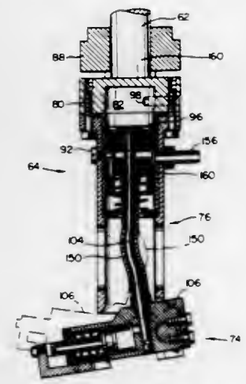
wherein in the lower position of the gripping means;

(a) the flexible shaft means is flexible to tilt the article gripping means in any desire direction in vertical planes; and

(b) the article gripping means is capable of free horizontal angular orientation around a vertical axis of the support;

the tilting flexibility and angular orientation capability being provided to enable the article gripping means to engage and then to become inclined according to the inclination of the upper surface of the article, and to orientate according to the horizontal angular orientation of the article, so as to enable the article gripping means, during gripping, to correctly engage the article before raising it;

and seating means for seating the article gripping means in a desired fixed location relative to the vertical axis and fixed angle of orientation horizontally around the vertical axis



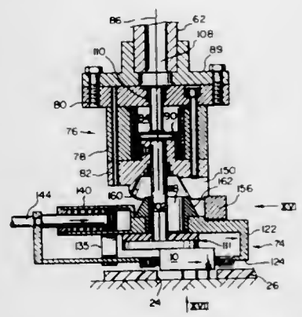
upon return of the article gripping means into its upper position whereby the article gripping means when gripping the article are disposed in desired fixed locations and in desired fixed angles of horizontal orientation relative to the vertical axis.

5,255,949

DEVICE FOR USE IN POSITIONING AN ARTICLE PRECISELY IN A DESIRED LOCATION

Krzystof F. Szymczyk; Andrew A. Goldenberg, both of Toronto; Jacek A. Wiercienski, Oakville, and Bruce L. Godkin, Walton, all of Canada, assignors to The Governing Council of the University of Toronto, Toronto and Northern Telecom Limited, Montreal, both of Canada

Filed Oct. 10, 1991, Ser. No. 774,505
Int. Cl.[5] B65G *35/00*
U.S. Cl. 294—86.41 **28 Claims**



9. A device for use in positioning an article precisely in a desired location and position of orientation comprising:

an article gripping means and a support carrying the article gripping means;

the article gripping means having at least two relatively movable gripping jaws and being movable between an upper position close to the support and a lower position spaced from the support;

the article gripping means and the support each having a registration surface means, the two registration surface means registering together when the article gripping

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means is in the upper position to retain the article gripping means in a specific horizontal and angular disposition relative to a vertical axis of the support, and when the article gripping means is in the lower position, the two registration surface means are disengaged to allow the article gripping means to be freely angularly orientable around the vertical axis and freely radially movable relative to the vertical axis to enable horizontal positioning of the jaws, during closing, to achieve gripping contact with the article before raising it;

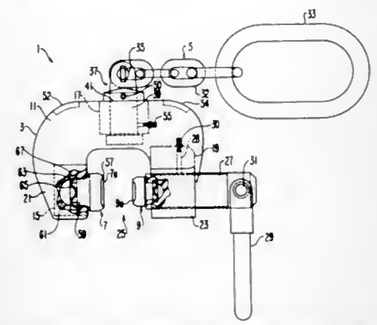
the two registration surface means cooperating during raising of the article gripping means into its upper position to return the article gripping means to the specific horizontal and angular disposition relative to the vertical axis with the gripping jaws holding the article.

5,255,950

CLAMP WITH FREELY ROTATABLE COUPLING AND ASSOCIATED METHOD OF ROTATABLY MANIPULATING A STRUCTURAL MEMBER

William Davies, Ponte Vedra Beach, Fla., assignor to J.C. Renfroe and Sons, Inc., Jacksonville, Fla.

Filed Nov. 8, 1991, Ser. No. 789,496
Int. Cl.[5] B66C *1/48*
U.S. Cl. 294—103.1 **39 Claims**



1. A clamp for gripping and lifting materials, comprising:

a clamp body having spaced, opposed, first and second body portions fixed relative to each other and defining therebetween a material receiving slot, said first and second body portions having attached thereto first and second material gripping surfaces, respectively;

adjusting means for adjusting the distance between said first and second material gripping surfaces such that a structural member positioned within said material receiving slot is gripped between said gripping surfaces when the distance between the gripping surfaces is reduced, to thereby enable a structural member to be lifted by the clamp; and

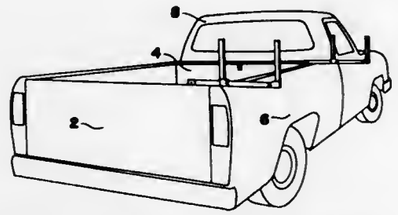
coupling means attached to said clamp body for coupling said clamp to a lifting device, said coupling means comprising (a) a coupling member protruding from said clamp body and being coupled with said clamp body so as to be rotatable 360° relative to the clamp body about an axis which, during lifting of a structural member gripped by the clamp, extends through the material receiving slot substantially perpendicularly to an advancing direction of said adjusting means, said coupling member having connector means for attachment to a lifting device, and (b) friction reducing means for reducing friction between said coupling member and said clamp body so as to ensure free 360° rotatability of the clamp body relative to the coupling member during lifting of a structural member gripped by the clamp, wherein said coupling member comprises a post which is rotatable about its longitudinal axis and extends outwardly from the clamp body, and said connecting means comprises a shackle arrangement provided at an end portion of said post, said shackle arrangement comprising a shackle pin extending between spaced flanges provided at the end portion of said post, at least one link of chain pivotally attached to said shackle pin, and a lifting ring attached to said at least one link of chain.

5,255,951

FOLDING SIDE RACKS FOR PICKUP TRUCKS

Byrd L. Moore, III, 151 Blue Island St., Fairhope, Ala. 36532

Filed Mar. 2, 1990, Ser. No. 487,617
The portion of the term of this patent subsequent to Aug. 19, 2008, has been disclaimed.
Int. Cl.[5] B60P *3/00*
U.S. Cl. 296—3 **2 Claims**



1. A folding side rack for a pickup truck comprising:

a. a flat pivot plate secured to the inside surface of the tailgate of a truck body by a plurality of threaded fasteners:

b. with an arm pivotally attached to said pivot plate by means of a threaded bolt and a self-locking nut and moveable from a first stored position, wherein it is approximately horizontal, to a second load carrying position approximately 180 degrees from the first;

c. lateral bracing achieved by use of a positioning clip permanently attached to the inside of the truck body, the arm adapted to rest in said clip when pivoted into the load carrying position;

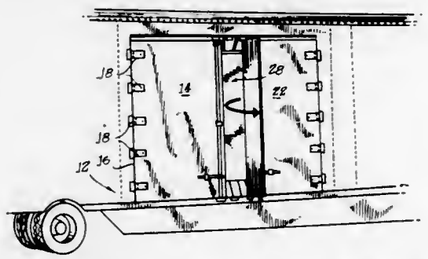
d. two posts which are in a first stored position horizontally along the arm and pivotally secured by threaded bolts and self-locking nuts to said arm, then raised to a second load retaining position wherein they are held in an approximate vertical position due to the off center pinning, on the arm, by pivot tabs which are permanently affixed to the posts.

5,255,952

VAN DOOR STRUCTURE

Rodney P. Ehrlich, Monticello, Ind., assignor to Wabash National Corporation, Lafayette, Ind.

Continuation of Ser. No. 789,350, Nov. 8, 1991, abandoned. This application Mar. 4, 1993, Ser. No. 26,273
Int. Cl.[5] B60J *5/04*
U.S. Cl. 296—146.13 **4 Claims**



1. A wheeled van structure having a front end and a back end for transportation of freight or the like, comprising: a

cargo compartment partially defined by opposing elongate side walls; a door structure installed for access through one of said side walls, said door structure comprising: first and second oppositely pivotal door panels respectively located toward said front end and toward said back end; said first door panel overlapping and engaging the second door panel in a sealed, closed position of both said door panels; said first door panel includes not more than first and second panel portions thereof in which said first panel portion is pivotally mounted on said second panel portion and arranged to define said overlap of the second door panel, said second door panel consisting of a single panel portion having a width substantially equal to the combined width of said first and second panel portions; said first panel portion being abbreviated and having a width less than one-half a corresponding width of said second panel portion and first, second and third separately operable locking means respectively associated with said first panel portion, said second panel portion and said second panel for enabling pivotal opening of said first panel portion from said overlapping closed position and thereafter to enable pivotal opening of said second door panel without requiring pivotal opening of said second panel portion of said first panel.

5,255,953

IMPACT GIRDER FOR VEHICLE DOORS

Simon Frank, Watterdingen, Fed. Rep. of Germany, assignor to Alusuisse-Lonza Services Ltd., Zurich, Switzerland

Filed Jul. 31, 1992, Ser. No. 923,250
Claims priority, application Switzerland, Aug. 12, 1991, 2376/91
Int. Cl.[5] B60J *5/04*
U.S. Cl. 296—146.6 **6 Claims**



1. A vehicle comprising:

a vehicle door with a vehicle door box;

an impact girder for said vehicle door, said girder extruded from a light metal alloy, having two ends, and first and second walls;

said girder extending in the vehicle door box in a direction substantially parallel to a substantially horizontal axis of said vehicle door;

means on both ends of said girder suitable for fixing both of said ends to said door so that said first wall faces towards a vehicle internal space as an inner flange and said second wall provided at a distance from the first wall forms an outer flange;

a hollow chamber profile extruded from a light metal alloy having at least two profile chambers;

means for fastening the hollow chamber profile on the impact girder;

the hollow chamber profile protruding into the door box below the impact girder, wherein the profile chambers extend parallel to the impact girder;

a first of said profile chambers being located farther away from said girder than a second of said profile chambers; and

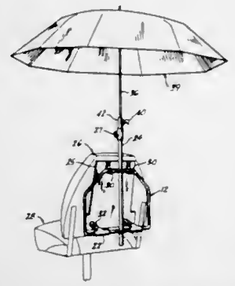
said first profile chamber being located when the vehicle door is closed partially below an uppermost, substantially horizontal surface of a door sill and at a distance from a first, substantially vertical surface of the door sill.

5,255,954

SUN SHADE UMBRELLA MOUNT FOR A CHAIR BACK

Bill L. Rogers, 412 E. Duncan, Jenks, Okla. 74037

Filed Oct. 15, 1991, Ser. No. 776,020
Int. Cl.[5] A47C *7/66*
U.S. Cl. 297—184.16 **3 Claims**



1. An umbrella support for a chair having a back characterized by an inclined planar rearward surface, comprising:

an open frame means disposed in a vertical plane,

said frame means comprising an endless rod-like member having a horizontal top rail and having a leg projecting laterally from its lower portion;

elongated sleeve means vertically supported by said frame means for telescopically receiving the shank of an umbrella;

means secured to said chair back rearward surface for removably supporting said frame means in a vertical plane;

said secured means comprising:

upwardly open hooks means near the upper limit of the chair back for supporting the frame top rail;

tube means forming a socket telescopically securing the end portion of said leg opposite the frame; and,

cam lever means supported by said sleeve means for gripping the umbrella shaft.

5,255,955

SAFETY HEADREST FOR VEHICLES

Adam P. Matosic, 37 Nevins Rd., Methuen, Mass. 01844

Filed Nov. 13, 1992, Ser. No. 975,813
Int. Cl.[5] A47C *16/00*
U.S. Cl. 297—395 **23 Claims**

1. A safety impact headrest device for a vehicle comprising:

a cushion means;

said cushion means comprising three inflatable triangular tubular members formed of flexible fluid impermeable material;

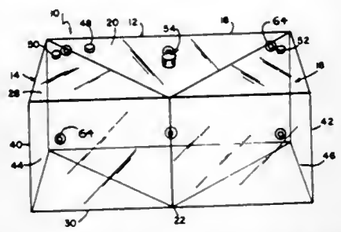
said triangular tubular members comprising; a rear center tubular member including a back side and first and second forward angular sides; a first triangular configured tubular member with one side equal to and attached to the first angular side of the rear tubular member; and a second triangular configured tubular member with one side equal to and attached to the second angular side of the rear tubular member;

a valve means attached to each of said tubular members for

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controlling the amount of fluid pressure value in the tubular member; and

a fluid expelling means attached to an upper surface of the



rear center tubular member whereby a selected amount of fluid is expired from the rear center tubular member at a controlled rate upon an impact upon the cushioning means.

5,255,956

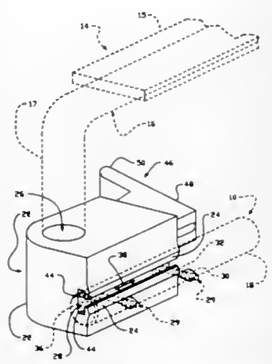
ADJUSTABLE ARMREST MOUNTING ASSEMBLY

Rex W. Stevens, Clovis, Calif., assignor to Quickie Designs Inc., Fresno, Calif.

Filed Feb. 14, 1992, Ser. No. 836,093

Int. Cl.[5] A47C *7/54*

U.S. Cl. 297—411.26 **10 Claims**



1. In an armrest mounting assembly for mounting an armrest to a wheel chair having frame means, and an armrest with a mounting post, said mounting assembly having a body with post receiving means for releasably receiving an end of said mounting post, and releasable fastener means coupling said body to a mounting surface of said frame means, the improvement in said armrest mounting assembly comprising:

a frame engaging surface on said body formed to supportably seat against said mounting surface at a plurality of locations along said mounting surface; and

a mounting groove defined by said body proximate and separate form said frame engaging surface, said groove being formed and dimensioned to receive an enlarged head of said fastener means for sliding movement along said groove through a plurality of positions when said fastener means is released relative to said mounting surface, said fastener means being formed for tightening against said body defining said groove to pull said frame engaging surface against said mounting surface at said plurality of positions to secure said mounting assembly to said mounting surface at a desired location therealong.

5,255,957

ARRANGEMENT IN A CHAIR, FOR EXAMPLE A COMBINED CHAIR

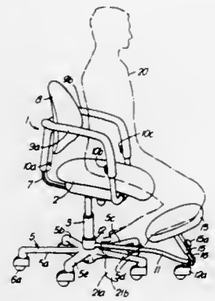
Peter Opsvik, Hogtunvelen 12, N-1370 Asker, Norway, and Hans C. Mengshoel, P.O. Box 31-33, Oslo, Norway 0207

PCT No. PCT/NO89/00130, § 371 Date Jun. 13, 1991, § 102(e) Date Jun. 13, 1991, PCT Pub. No. WO90/06704, PCT Pub. Date Jun. 28, 1990

PCT Filed Dec. 12, 1989, Ser. No. 689,893

Int. Cl.[5] A47C *7/50*

U.S. Cl. 297—423.12 **9 Claims**



1. A chair comprising:

a support column;

a chair seat having a back support connected thereto;

means coupling said chair seat to said support column to permit the chair seat to be tilted forward from a normal substantially level sitting position to one with the seat downwardly inclined;

link means rotatably mounted on said support column;

an elongated carrier means having one end connected to said link means;

support means at the other end of said carrier means for supporting a part of the leg of the person sitting in the chair seat;

means for pivotally mounting said support means to said carrier means to permit it to pivot from a use position to support the shin of the user in a kneeling-like position when the chair seat is in its forwardly inclined position and to support the foot or rear calf of the user with the chair seat in it s normal position, and at a position spaced away from said chair seat to give access to the chair seat; and

stabilizing means mounted to said carrier means for engaging a surface to prevent the chair from tilting when the support means is loaded.

5,255,958

BARRIER DEVICE FOR CHILDREN

Thomas G. Frischmann, 6793 Bauer Rd., Arena, Wis. 53503

Filed Mar. 23, 1992, Ser. No. 855,424

Int. Cl.[5] B60N *2/26*

U.S. Cl. 297—464 **7 Claims**

1. A barrier device for separating children comprising:

a. a sheet of flexible material of sufficient size to accommodate at least two seated children, the sheet having a substantially flat anterior surface and a substantially flat posterior surface; and

b. an upright wall of semirigid material, the upright wall having a sufficient size to block the struggling movements of children, the upright wall having an upper surface, a base surface of sufficient size to support the upright wall in a substantially vertical position, substantially vertical side surfaces and substantially vertical anterior and posterior upright surfaces, wherein the upright wall is joined to the sheet at the base surface, such that the upright wall is



substantially self-supporting in a vertical position to separate the children.

5,255,959

TWIN-JET PROCESS AND APPARATUS THEREFOR

Charles Loegel, 7 Rue des Cochers, F-67340 Lichtenberg, France

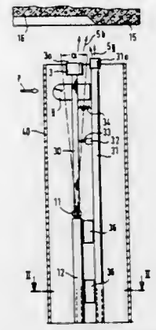
PCT No. PCT/EP90/00557, § 371 Date May 6, 1991, § 102(e) Date May 6, 1991, PCT Pub. No. WO90/14200, PCT Pub. Date Nov. 29, 1990

PCT Filed Apr. 9, 1990, Ser. No. 681,517

Claims priority, application Fed. Rep. of Germany, May 16, 1989, 3915933

Int. Cl.[5] E21B *10/60;* **E21C** *25/60*

U.S. Cl. 299—17 **21 Claims**



1. A process for removing material from an object, the process having a pressure medium and means for directing said pressure medium at high pressure towards an impact area on said object perferably in the form of a plurality of discrete narrow jets, said narrow jets removing particles from said object to form a channel therein, the improvement comprising:

providing means for cooling said impact area of said object, said means for cooling having a cooling medium and a means for directing said cooling medium in the form of at least one guiding jet, and

directing said at least one guiding jet relative to at least one of said narrow jets, said at least one guiding jet striking said impact area concurrently with said at least one narrow jet or striking said at least one narrow jet, said impact area being that area in contact with said narrow jet.

5,255,960

TUNNEL DRILLING APPARATUS WITH DRILL WASTE REMOVAL

Valto Ilomäki, Loilantie 8, SF-33470 Ylöjrvi, Finland

PCT No. PCT/FI90/00228, § 371 Date Mar. 17, 1992, § 102(e) Date Mar. 17, 1992, PCT Pub. No. WO91/05141, PCT Pub. Date Apr. 18, 1991

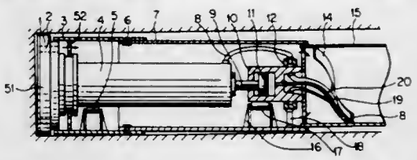
PCT Filed Sep. 27, 1990, Ser. No. 838,796

Claims priority, application Finland, Sep. 27, 1989, 894559

Int. Cl.[5] E21D *9/08*

U.S. Cl. 299—56 **8 Claims**

1. A drill head comprising a rotatable bit assembly and a cylindrical protecting tube, said bit assembly comprising a bit holder and a cylindrical drill bit, said bit assembly having a cylindrical surface for forming a continuous cylindrical lap joint with said protecting tube, said lap joint allowing relative longitudinal movement of said bit assembly and said protecting tube, and having at least one opening for removal, through the bit assembly, of drill cuttings from the face of the drill bit, said cylindrical protecting tube forming with said cylindrical surface of said drill bit assembly a continuous cylindrical lap joint



between said bit assembly and said protecting tube, said lap joint, in use of the drill head, allowing rotation of said drill bit assembly relative to said protecting tube and preventing access of said drill cuttings to the outside of said drill head.

5,255,961

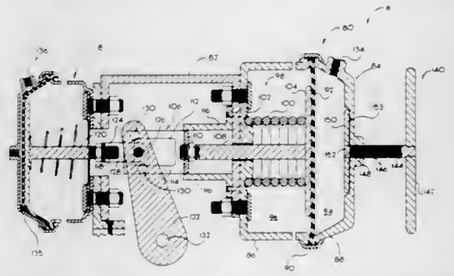
MULTI-CHAMBER BRAKE ACTUATOR

John M. Graham, 930 Peninsula Ave., #205, San Mateo, Calif. 94401

Continuation-in-part of Ser. No. 754,775, Sep. 4, 1991, Pat. No. 5,154,491, which is a continuation-in-part of Ser. No. 606,386, Oct. 31, 1990, abandoned, which is a continuation-in-part of Ser. No. 497,932, Mar. 22, 1990, abandoned, which is a continuation-in-part of Ser. No. 430,755, Nov. 1, 1989, Pat. No. 4,973,107. This application Jul. 20, 1992, Ser. No. 916,652

Int. Cl.[5] B60T *13/44*

U.S. Cl. 303—6.01 **14 Claims**



1. An improved multi-chamber brake actuator, for use with a source of pressurized fluid and a movable brake actuator element, comprising:

a service brake actuator including:

a push rod;

means for connecting the push rod to the brake actuator element so that any movement of the push rod immediately causes corresponding movement of the brake actuator element; and

an associated service brake chamber coupleable to the source of pressurized fluid when the service brakes are to be applied thereby moving the push rod from a brakes off position to a brakes on position; and a spring brake actuator including:

a brake application assembly coupled to the push rod and movable between a brakes free position and a brakes applied position;

a brake application spring normally biasing the brake application assembly to the brakes applied position;

the brake application assembly configured to pull on the push rod towards the brakes on position when the brakes applied position and to provide no substantial force on the push rod when in the brakes free position; and

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a spring brake chamber, coupleable to the pressurized fluid source, for deflecting the spring so to place the brake application assembly in the brakes free position when said spring brake chamber is pressurized by the pressurized fluid source.

5,255,962

ELECTRONIC BRAKE SYSTEM FOR ROAD VEHICLES

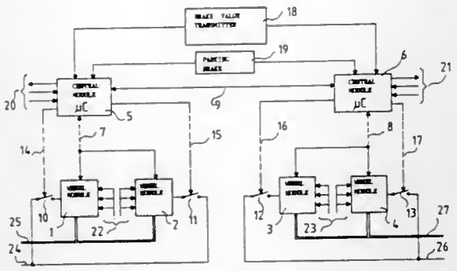
Detlev Neuhaus, and Wolfgang Stehr, both of Hanover, Fed. Rep. of Germany, assignors to WABCO Westinghouse Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Jul. 17, 1991, Ser. No. 731,628

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1990, 4022671

Int. Cl.[5] B60T *11/00*

U.S. Cl. 303—111 **40 Claims**



1. An electronic brake system for road vehicles comprising

a plurality of sensors with each of the plurality of sensors disposed near a respective wheel;

a plurality of brake-pressure modulators with each of the plurality of brake-pressure modulators disposed near the respective wheel;

a plurality of wheel modules, with each wheel module of the plurality of wheel modules including its respective own intelligence function, and with each wheel module of the plurality of wheel modules coordinated to the respective wheel, and with each wheel module including at least one microprocessor; wherein each wheel module of the plurality of wheel modules is disposed spatially in the neighborhood of the respective wheel, and wherein each wheel module of the plurality of the wheel modules receives at least a measurement value for a wheel spaced and for a brake pressure from a respective one of said plurality of sensors, and wherein the plurality of wheel modules generate electric output signals for control of said plurality of brake-pressure modulators;

an operating brake-value transmitter;

a parking brake;

a plurality of wheel module data bus lines;

two supervising central modules located at a central position of the vehicle and furnished with a microprocessor, wherein each of the two supervising central modules includes an individual intelligence function, and wherein the two supervising central modules are connected to and receive signal values from the operating brake-value transmitter and of a status of the parking brake, and wherein the two supervising central modules transfer brake pressure reference values to respective ones of the plurality of wheel modules, and wherein respective ones of the plurality of wheel modules transmit at least one of the measurement values received from the plurality of sensors to the respective supervising central modules, wherein the information exchange between the two supervising central modules and the plurality of the wheel modules is performed via at least one of the plurality of wheel module data bus lines with predetermined interfaces, and wherein the plurality of wheel modules and the two supervising central modules together form an electronic device serving to control the plurality of brake-pressure modulators,

wherein the two supervising central modules are disposed at a central location of a vehilce,

wherein an antilock function is furnished by an antilock braking system contained in the plurality of wheel modules,

wherein an antiskid function furnished by a drive slip control system is contained in the plurality of wheel modules,

wherein a vehicle reference speed for a antilock function is formed in the two supervising central modules, and the intelligence function of the wheel module is independent of inputs from the central modules.

5,255,963

HYDRAULIC VEHICLE BRAKE SYSTEM WITH ANTI-SKID APPARATUS

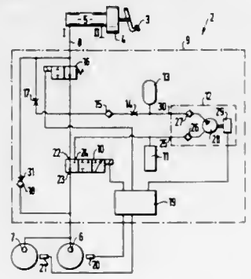
Rainer Altmann, Erligheim; Rainer Lauer, Muenchingen; Guenther Schmidt, Tamm-Hohenstange; Kasimir Stromski, Filderstadt; Anton V. Zanten, Ditzingen-Schoeckingen; Alfred Sigl, Sersheim; Harald Hellmann, Ludwigsburg; Karl Veil, Uhingen; Hans-Joerg Fees, Bietigheim-Bissingen; Wolf-Dieter Jonner, Beilstein Schmidhausen, and Reinhard Gutzeit, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 1, 1990, Ser. No. 561,649

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1989, 3926242; Feb. 13, 1990, 4004316

Int. Cl.[5] B60T *8/32*

U.S. Cl. 303—116.1 **19 Claims**



1. A vehicle brake system having a master brake cylinder, at least one wheel brake, and at least one anti-skid apparatus installed between them, further having at least one anti-skid valve assembly in a brake line between the master brake cylinder and at least one wheel brake, and connected with one inlet line of a return pump, said return pump having an outlet (**30**) connected with an outlet line followed downstream thereof by a damper chamber connected to said outlet line and a damper throttle in said outlet line, said outlet line with said damper throttle therein being connected with the brake line connected to the anti-skid valve assembly, a valve (**16**, **16***a*, **16***b*, **16***c*) which is at least partially closable during anti-skid operation being provided in said brake line between the master brake cylinder, the damper throttle (**14**) and the anti-skid valve assembly (**10**), and the damper chamber (**13**) is provided with an enlarged pressure fluid retention capacity.

5,255,964

SHOE OF CRAWLER BELT OR CHAIN

Yoshiaki Hara, Hadano, Japan, assignor to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed May 28, 1992, Ser. No. 889,395

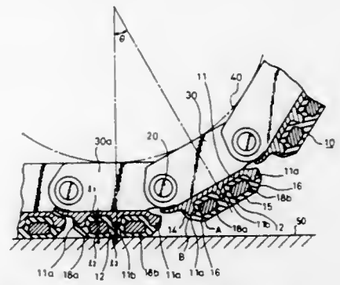
Claims priority, application Japan, May 29, 1991, 3-039399[U]

Int. Cl.[5] B62D *55/26*

U.S. Cl. 305—46 **5 Claims**

1. A crawler shoe for use with a plurality of other crawler shoes pivotally linked together to form a chain of shoes for use with an endless track vehicle, said crawler shoe having a ground contact side facing toward a ground surface and comprising a metal shoe having integrally formed thereon at least

two spaced projections projecting toward said ground contact side and an elastic shoe integrally molded and fixed to said metal shoe over said projections on its ground contact side, sad elastic shoe having a ground contact surface and a hard rein-



forced member embedded in said elastic shoe between two adjacent projections.

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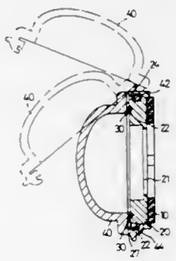
WATERPROOF STEREO COVER ASSEMBLY WITH HINGE PROVIDING MULTIPLE STOP POSITIONS

Ting P. Chen, 7th Fl.-1, No. 129, Sec. 2, Hsinhai Rd., Taipei, and Chao L. Lin, Taichung, both of Taiwan, assignors to Ting P. Chen, Taipei, Taiwan

Filed Feb. 13, 1992, Ser. No. 834,776

Int. Cl.[5] A47B *81/06;* **E05D** *11/10*

U.S. Cl. 312—7.1 **1 Claim**



1. A waterproof stereo cover comprising a stereo-mounting frame for mounting a stereo therein, a waterproof cover pivotally attached to said stereo-mounting frame, and sealing means mounted in said stereo-mounting frame for sealing said stereo-mounting frame, the improvement comprising: said stereo-mounting frame having a notch formed in and extending lengthwise along an upper frame thereof, defining two end walls, a polygonal socket being symmetrically formed in each of said two end walls of said notch, a slot having a width slightly less than that of said polygonal socket extending from each said polygonal socket to a front side of said upper frame, said waterproof cover having a flange extending on an upper edge thereof, being dimensioned to be fittingly received in said notch, said flange having a polygonal stub protruding from each of two side walls thereof, being dimensioned corresponding to said polygonal sockets so as to be pivotally received in said polygonal sockets and to optionally and frictionally retain said waterproof cover in one of a number of pre-set positions pursuant to angular positions of said polygonal stubs by means of a frictional force existing between said polygonal sockets and said polygonal stubs.

5,255,966

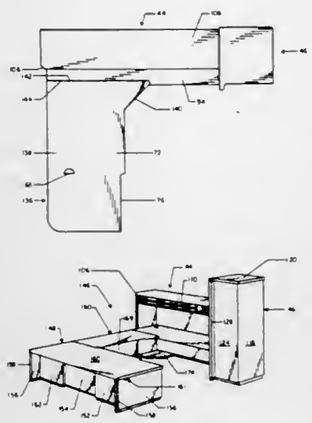
FREESTANDING FURNITURE ENSEMBLE

Thomas J. Newhouse, Grand Rapids, and Donald A. Shepherd, Spring Lake, both of Mich., assignors to Herman Miller, Inc., Zeeland, Mich.

Filed Feb. 8, 1991, Ser. No. 653,033

Int. Cl.[5] A47B *87/00*

U.S. Cl. 312—107 **14 Claims**



1. An ensemble of separate office furniture components having:

first and second horizontally disposed work surface panels of separate components at work surface height above the floor, each of said work surface panels having front edges and end edges bounding three sides of the work surfaces and portions of the front edges of rounded configuration;

the work surface panels being positioned in perpendicular relationship to each other with a first edge of one work surface panel abutting a front edge of a second work surface panel;

the front edge of the second work surface panel having a notch in confronting relationship with the end edge of the first work surface panel;

the notch extending to a first end edge of the second work surface panel and having a concavely curved surface portion at a first end of the notch joining said notch with said rounded front edge portion of said second work surface panel;

the surface of the notch and the end edge of the first work surface having complementary surfaces in abutting relationship with each other;

whereby the first and second work surfaces have rounded front edges converging in a flush jointed corner.

5,255,967

COFFEE TABLE FOR RECYCLERS

Craig Williams, 5218 Boyd Ave., Oakland, Calif. 94618

Filed Apr. 5, 1991, Ser. No. 682,101

Int. Cl.[5] A47B *63/00*

U.S. Cl. 312—193 **1 Claim**

1. A recycler's coffee table, comprising,

(a) a flat top of rigid material at least 104 cm by 61 cm in size,

(b) a plurality of side support members of equal height,

(c) means for joining said support members at equal angles at spaced locations to the underside of said top so as to be able to support top in a horizontal position,

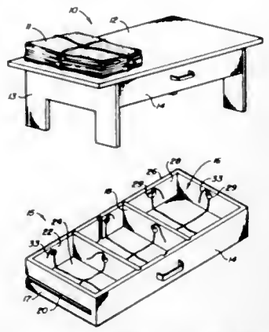
(d) a drawer for storing newspapers, said drawer having a bottom at least 42 cm by 71 cm, said drawer having an inner wall,

(e) means for attaching said drawer between and to said

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support members so as to enable user to open and close said drawer,

(f) means dividing said drawer into a plurality of sections, each section being at least 34 cm by 29 cm for holding respective stacks of newspapers, and



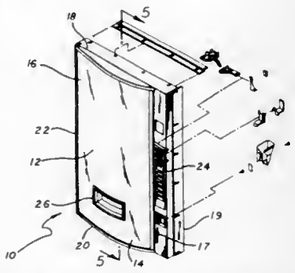
(g) a plurality of guides attached to said inner wall of said drawer, said guides being arranged to guide a string across the bottom and up the opposite sides of said drawer for enabling a user to tie a stack of newspaper in said drawer.

5,255,968

REPLACEABLE SIGN FACE

Herman R. Craven, Fresno, Calif., assignor to The Vendo Company, Fresno, Calif.

Filed Dec. 13, 1990, Ser. No. 627,069
Int. Cl.[5] A47B *81/00*
U.S. Cl. 312—234 **8 Claims**



1. A vending machine having a dispensing means therein, said vending machine comprising:

an outer door attached to the dispensing means, said outer door having an opening defined therein, said opening having a predetermined width and retaining means disposed at first and seconds ends thereof;

a rigid front protective panel formed from a tough, sturdy polymeric material having a transparent section, said front panel being mounted within said retaining means, said front panel providing a sturdy permanent cover; and

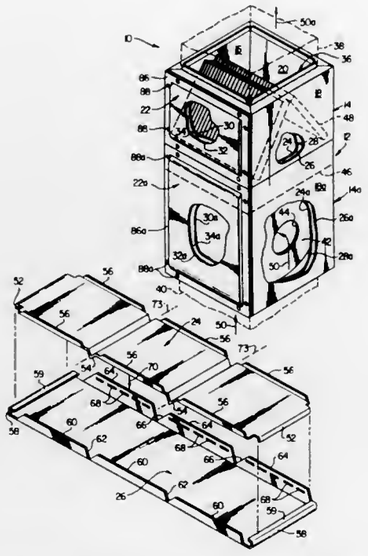
a replaceable flexible and resilient inner panel having a width greater than said predetermined width of said opening and bearing a visual display, said inner panel being mounted within said retaining means directly behind said front panel, said inner panel configured to be easily inserted into said retaining means in a position bowed away from said front panel and snapped into a position adjacent said front panel upon application of pressure.

5,255,969

DOUBLE-WALLED CABINET STRUCTURE FOR AIR CONDITIONING EQUIPMENT

Jimmy L. Cox, Greenwood; John B. Greenfield, and Kendall L. Ross, both of Fort Smith, all of Ark., assignors to Rheem Manufacturing Company, New York, N.Y.

Division of Ser. No. 662,358, Feb. 28, 1991, Pat. No. 5,170,550.
This application Sep. 4, 1992, Ser. No. 940,433
Int. Cl.[5] A47F *3/04*
U.S. Cl. 312—236 **7 Claims**



1. Cabinet for use in forming a air conditioning unit, comprising:

a one piece inner panel member and a one piece outer wall panel member each member each having opposite end portions interconnected by a central portion, said inner and outer wall panel members being positioned in a parallel, mutually opposed, generally straight orientation in which the central and opposite end portions of said inner wall panel member respectively face the central and opposite end portions of said outer wall panel member,

said inner and outer wall panel members in said mutually opposed, generally straight orientation thereof being operatively and bent to a generally U-shaped, nested orientation in which the central and opposite end portions of said inner wall panel member are respectively disposed in a parallel, inwardly adjacent, laterally facing relationship with the central and opposite end portions of said outer wall panel member and the facing central and opposite end portions of said inner and outer wall panel members are spaced apart from one another to form an insulating space therebetween;

first abutment means, formed on said outer wall panel members from integral portions thereof, for locking said inner and outer wall panel members in said nested orientation thereof in response to said operative and simultaneous bending thereof from said mutually opposed, generally straight orientation to said nested orientation; and

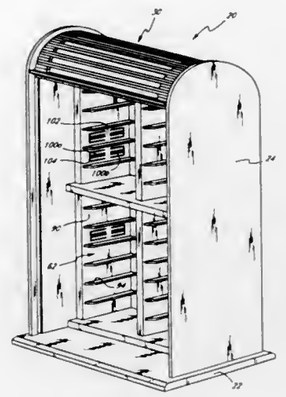
second abutment means, formed on said inner wall panel member from integral portions thereof, for holding said inner and outer wall panel members apart to maintain said insulation space therebetween.

5,255,970

STORAGE CABINET

Yos S. Theosabrata, Keboo Jeruk 18/1B, Jakarta-11160, Indonesia

Filed May 26, 1992, Ser. No. 888,967
Int. Cl.[5] E06B *9/00*
U.S. Cl. 312—297 **9 Claims**



1. A storage cabinet comprising:

a base,

two upstanding side panels, and

a sliding door having horizontal slats affixed to a continuous flexible backing and sized to slide within guide channels on the side panels as the door is raised or lowered for alternately exposing and covering the interior of said cabinet and a plurality of spacers between the edges of the slats that also slide within the channels but do not extend across the entire width of the door, said slats and spacers comprising an alternating sequence of slats and spacers, and said guide channels having an inverted U-shape so that said door is movable from a closed position to an open position by sliding the door along the upper arcuate portion of the channels to the rear of the cabinet, wherein said alternating sequence of slats and spacers cooperate to define a series of voids between said spacers which expose portions of said backing and said backing is sufficiently transparent that said portions of said backing provide visual access to the contents of said cabinet without opening said door.

5,255,971

MEDICINE CABINET

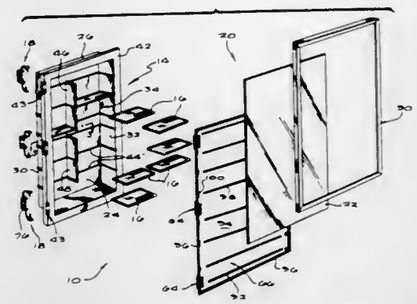
William J. Aisley, Malibu, Calif., assignor to ZACA Inc., Westlake Village, Calif.

Division of Ser. No. 864,328, Apr. 6, 1992, Pat. No. 5,189,760, which is a division of Ser. No. 576,069, Aug. 31, 1990, Pat. No. 5,139,322. This application Oct. 13, 1992, Ser. No. 959,969
Int. Cl.[5] A47B *67/00*
U.S. Cl. 312—351 **7 Claims**

1. A medicine cabinet, comprising:

a plurality of half width shelf members; and

a housing adapted for mounting onto a building wall, said housing including a rear wall joined to a forwardly projecting top wall, bottom wall, and a pair of side walls to define a forwardly open interior chamber, and shelf support bracket means for supporting said shelf members, said shelf support bracket means being positioned generally centrally within said housing and projecting forwardly from said rear wall, said shelf support bracket means being spaced from at least one of said top and bottom walls, said shelf support bracket means including at least two support brackets disposed generally in vertical alignment and in vertically spaced relation with each other to define a substantially uninterrupted full width region within said interior chamber and between said two support brackets; said shelf support bracket means and said housing side walls



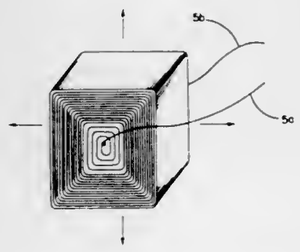
including cooperative means defining a plurality of shelf member mounting positions for removably supporting said shelf members in a plurality of selected ones of said shelf member mounting positions each to extend between said shelf support bracket means and one of said side walls.

5,255,972

ELECTROSTRICTIVE EFFECT ELEMENT AND THE PROCESS OF MANUFACTURING THE SAME

Tetsuo Shirasu, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 30, 1992, Ser. No. 828,161
Claims priority, application Japan, Jan. 30, 1991, 3-009497
Int. Cl.[5] F01B *29/10*
U.S. Cl. 60—528 **5 Claims**



1. An electrostrictive effect element comprising: a first electrostrictive effect ceramic sheet with a first conductor layer on one surface thereof, and a second electrostrictive effect ceramic sheet with a second conductor layer on one surface thereof, said first and second electrostrictive effect elements being laid one on the other and rolled together to electrically isolate said conductor layers from each other to form a rolled structure.

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5,255,973

PLASTIFIER WITH THROTTLE MEANS

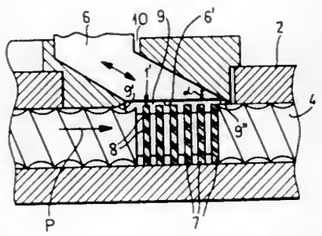
Alfred Nogossek, Salzgitter, Fed. Rep. of Germany, assignor to Friedrich Theysohn GmbH, Langenhagen, Fed. Rep. of Germany

Filed Jun. 11, 1992, Ser. No. 898,902

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1991, 4119145

Int. Cl.[5] B29B 7/72

U.S. Cl. 366—85 11 Claims



1. A plastifying apparatus for plastics, said apparatus comprising:

an elongated extruder housing;

a pair of meshing extruder screws rotatable in said housing in respective generally cylindrical screw-receiving chambers formed therein with annular peripheral walls in said chambers to advance plastic material to be plastified in a path along said screws through said housing; and

means forming a steplessly variable throttle for said plastic material along said path, said means forming said throttle including:

at least two slide plates guided toward and away from said screws in respective openings through said housing for movement in a direction inclined at an acute angle to axes of said screws,

each of said slide plates having a linearly extending surface turned toward said screws and generally parallel to said axes, and

respective compartments formed in said respective openings adjacent said screws said compartments widening toward the screws and having a trapezoidal axial cross section with mutually parallel long sides parallel to said axes,

said slide plates having a displacement between retracted and extended extreme positions equal substantially to a distance between the long sides of the respective trapezoidal cross section whereby the linearly extending surface is displaceable between the long sides of the respective compartments, said linearly extending surface being flush with said walls in said extended extreme position.

5,255,974

STATIC MIXER

Arno Signer, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Sep. 4, 1991, Ser. No. 754,739

Claims priority, application Switzerland, Sep. 19, 1990, 03036/90

Int. Cl.[5] B01F 5/06; F16L 55/00, 9/00

U.S. Cl. 366—336 17 Claims

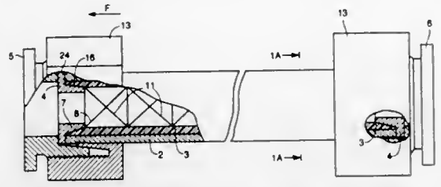
1. A static mixer comprising

a pressure-tight, load bearing tubular housing;

an interchangeable plastic tube mounted coaxially in said housing and extending substantially the entire length of said housing;

at least one mixing element mounted in said plastic tube; and being slidable for insertion of said mixing element into said plastic tube; and

a pair of rings, each ring being mounted at a respective end of said tubular housing having an outer annular surface in sealing contact with an inner annular surface of said plastic tube and an end surface in abutment with an end of a



mixing element in said plastic tube and, wherein each ring has a flange opposite said end surface for abutting against an end of the tubular housing.

5,255,975

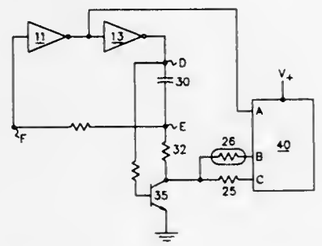
LOW COST CALIBRATION SYSTEM FOR FREQUENCY VARYING TEMPERATURE SENSING MEANS FOR A THERMOSTAT

John T. Adams, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 26, 1991, Ser. No. 798,453

Int. Cl.[5] G01K 15/00

U.S. Cl. 374—601 6 Claims



1. A self-calibrating thermostat for controlling the application of electrical power to a temperature modifying load, said thermostat utilizing a variable frequency signal having a characteristic dependent upon the ambient temperature to calculate the ambient temperature, comprising:

a microprocessor having first and second selectable ports, said ports capable of being selected as input or output, said input being a high impedance; and

means for generating a variable frequency signal having a characteristic which varies as a function of the ambient temperature, said means comprising an oscillator having a temperature dependent element, said temperature dependent element having a variable resistance dependent upon the ambient temperature wherein the frequency of the oscillator varies with respect to the variable resistance, and said oscillator further having a resistive calibration element, a first end of said temperature dependent element electrically connected to said first port and a first end of said calibration element electrically connected to said second port, a second end of said temperature dependent element electrically connected to a second end of said calibration element, said microprocessor interchangeably selecting said calibration element or said temperature dependent element by interchangeable selecting said first port and said second port as an input or an output port.

5,255,976

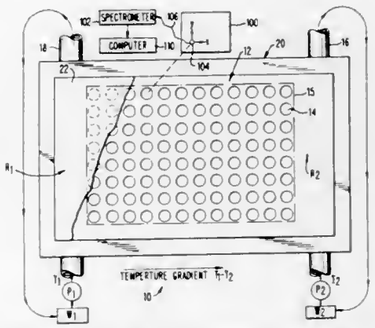
TEMPERATURE GRADIENT CALORIMETER

Patrick R. Connelly, Groton, Mass., assignor to Vertex Pharmaceuticals Incorporated, Cambridge, Mass.

Filed Jul. 10, 1992, Ser. No. 911,592

Int. Cl.[5] G01K 17/00

U.S. Cl. 374—31 24 Claims



1. Apparatus for monitoring reactions comprising:

(a) a two dimensional array of reaction chambers formed in a heat conductive substrate;

(b) a first heat transfer medium at a temperature T_1 in thermal contact with a first region of said substrate;

(c) a second heat transfer medium at a constant temperature T_2 in thermal contact with a second region of said substrate; whereby a thermal gradient is established across said array and between said first and second regions which is proportional to the difference in temperature, T_1-T_2, between the two mediums.

5,255,977

METHOD AND DEVICE FOR MONITORING THE EFFICIENCY OF A CONDENSER

Klaus Eimer, Ratingen, and Wolfgang Czolkoss, Dortmund, both of Fed. Rep. of Germany, assignors to Taprogge GmbH, Wetter-Ruhr, Fed. Rep. of Germany

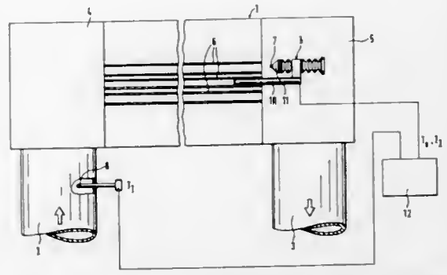
PCT No. PCT/EP90/00861, § 371 Date Jan. 13, 1992, § 102(e) Date Jan. 13, 1992, PCT Pub. No. WO90/15298, PCT Pub. Date Dec. 13, 1990

PCT Filed May 29, 1990, Ser. No. 651,339

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1989, 3918531

Int. Cl.[5] G01K 17/16, 17/10

U.S. Cl. 374—41 22 Claims



1. A method for monitoring the heat transfer and, therefore, efficiency of a condenser, in which water inlet temperature T_1 of cooling water flowing into a condenser tube having an inlet and an outlet is measured by means of a first temperature sensor, water outlet temperature T_2 of said cooling water flowing out of said condenser tube is measured by means of a second temperature sensor, steam temperature T_s, and water flow velocity are measured, in order to calculate a heat transmission coefficient on the basis of said temperatures T_1, T_2, T_s, and said water flow velocity, comprising the steps of:

temporarily interrupting water flow through said condenser tube so that a water column contained therein is heated up to said steam temperature T_s as measured at said outlet of said condenser tube,

resuming, after said water column reaches said steam temperature T_s, said water flow through said condenser tube, and

measuring velocity of said water flow through said condenser tube by monitoring said water outlet temperature T_2 and evaluating time elapsed between said resumption of said water flow and a point in time where said water outlet temperature T_2 reaches approximately a previous value prior to said temporary interruption of said water flow.

7. Apparatus for monitoring the heat transfer and therefore efficiency of a condenser, comprising:

a thermometer in a water entrance area for determining a water inlet temperature T_1 of water,

a temperature probe in an end region of a specific condenser tube for determining a water outlet temperature T_2 and a steam temperature T_s, and

means for evaluating said temperatures with respect to time, computing a water flow velocity therefrom, and computing a heat transfer from steam into said water, wherein said condenser tube (6) can be temporarily shut off with the aid of a sealing element (11).

5,255,978

APPARATUS FOR ANALYZING RELAXATION SPECTRA AND RESONANCES IN MATERIALS BY THERMAL STIMULATED RECOVERY

Jean-Pierre Ibar, New Canaan, Conn., assignor to Solomat Partners L.P., Stamford, Conn.

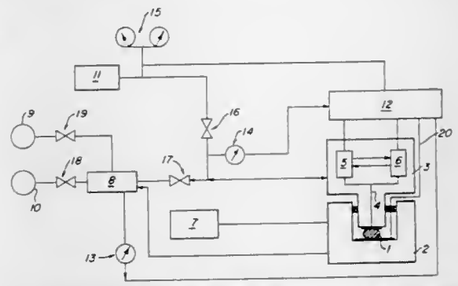
Continuation-in-part of Ser. No. 803,791, Dec. 6, 1991, Pat. No. 5,152,607, which is a continuation of Ser. No. 470,782, Jan. 26, 1990, abandoned. This application Jun. 22, 1992, Ser. No. 902,180

Claims priority, application France, Jan. 26, 1989, 89 00950

The portion of the term of tbis patent subsequent to Oct. 6, 2009, has been disclaimed.

Int. Cl.[5] G01N 25/00, 27/00

U.S. Cl. 374—45 7 Claims



1. An apparatus for analyzing relaxation spectra in materials, said apparatus comprises:

(a) means for varying the temperature of at least one sample of a material according to a predetermined temperature program;

(b) means for applying to the sample at least two coupled excitation fields simultaneously with said temperature program;

(c) means for varying the excitation fields according to a

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predetermined excitation program co-extensive in time with said temperature program; and

(d) means for measuring at least one sample parameter representative of the relaxation behavior of the sample during a portion of the temperature program.

5,255,979

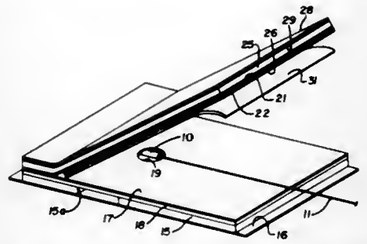
MEDICAL TEMPERATURE PROBE COVER

R. Keith Ferrari, 6525 Radcliff Dr., Nashville, Tenn. 37221

Filed Feb. 1, 1993, Ser. No. 11,910

Int. Cl.[5] G01K *1/08, 1/14;* **B65D** *85/38*

U.S. Cl. 374—158 **12 Claims**



1. A temperature probe cover for adhesively mounting a medical temperature probe on a body, the temperature probe having a temperature sensing head and insulated leads, the probe cover comprising:

a) a moisture barrier sheet having first and second sides and first aperture means for allowing at least a potion of the head of a temperature sensing probe to be inserted therethrough,

b) a layer of skin compatible hydrogel adhesive on the first side of the moisture barrier sheet, the first side of the moisture barrier sheet being oriented toward the body, said hydrogel adhesive layer having second aperture means in alignment with the first aperture means for allowing said at least a portion at the head of the temperature sensing probe to contact the body,

c) a water absorbent sheet having first and second sides,

d) a layer of water inactivatable pressure sensitive adhesive on the first side of the water absorbent sheet oriented toward the second side of the moisture barrier sheet,

e) a release sheet overlying at least a portion of said moisture barrier sheet and having a release agent facing said water inactivatable pressure sensitive adhesive to facilitate moving the water absorbent sheet away from the moisture barrier sheet when mounting a temperature probe between the water absorbent sheet and the second side of the moisture barrier sheet, wherein the water inactivatable pressure sensitive adhesive, upon removal of the release sheet, adheres to the second side of the moisture barrier sheet and to a temperature probe therebetween, and the water inactivatable pressure sensitive adhesive detackifies when the water absorbent sheet is saturated with water to facilitate removal of the temperature probe.

5,255,980

BLACK BODY TRD TEMPERATURE SENSOR

David C. Thomas, St. Paul; Stephen C. Jensen, Edina; Gerald R. Cucci, Minneapolis, all of Minn.; Charles M. Peterson, Cedar Rapids, Iowa; Shelle D. Tilstra, Eagan, Minn., and Steven J. Rychnovsky, North Liberty, Iowa, assignors to Rosemount Inc., Eden Prairie, Minn.

Division of Ser. No. 599,814, Oct. 18, 1990, Pat. No. 5,211,480. This application May 14, 1992, Ser. No. 882,826

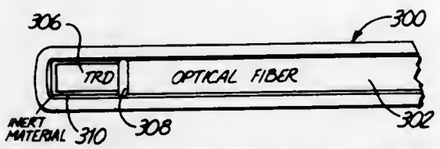
Int. Cl.[5] G01K *11/20, 17/00*

U.S. Cl. 374—161 **11 Claims**

1. A TRD temperature sensing probe comprising:

probe means adapted to be thermally coupled to an environment whose temperature is to be sensed, the probe means having

a luminescing means responsive to temperature in a first temperature range to luminesce with a thermally responsive time-rate-of-decay, and



a thin coating of inert material on the probe means responsive to temperature in a second temperature range to emit blackbody radiation, the second temperature range being different from the first temperature range; and

an excitation source coupled to the probe for repetitively emitting excitation radiation on the luminescing means.

5,255,981

TEMPERATURE SENSOR

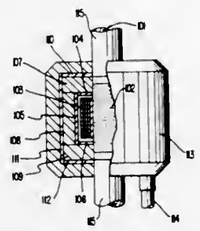
Edmund Schiessle, Schorndorf; Khaldoun Alasafi, Schwäbisch-Gmünd, and Ralf Gutöhrlein, Fellbach-Schmiden, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Jan. 29, 1993, Ser. No. 10,850

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1992, 4202537

Int. Cl.[5] G01K *7/38*

U.S. Cl. 374—163 **13 Claims**



1. A temperature sensor, comprising:

a body with a thermal expansion that is evaluated in the event of a change in temperature;

a coil arrangement having at least one coil has its magnetic flux modified when the body expands, said modification in the magnetic flux being evaluated and detected as a change in the inductance, a change in the length of said body and a change in temperature being deduced therefrom;

at least one layer deposited by atomic growth on said body, said layer having a layer structure containing less than 8% by weight of phosphorous, up to 2% by weight of an element of one of main groups IV and V, and up to 5% by weight of a transition metal element. said percentages by weight resulting from the sum being increased up to 100% with nickel, wherein the layer expands with said body and modifies the magnetic flux as a consequence of the change in permeability of the layer.

5,255,982

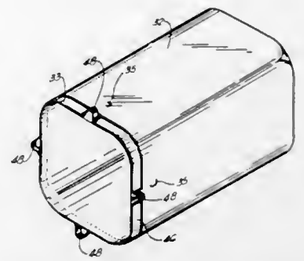
REVOLVING RECYCLING COMPACTOR HAVING MULTIPLE CONTAINERS

John Zimmer, P. O. Box 9708, New Iberia, La. 70562-9708

Division of Ser. No. 821,914, Jan. 16, 1992, Pat. No. 5,129,318, which is a continuation-in-part of Ser. No. 558,518, Jul. 27, 1990, abandoned. This application May 6, 1992, Ser. No. 879,955

Int. Cl.[5] B65D *33/28*

U.S. Cl. 383—75 **3 Claims**



1. A system for positioning a removable fabric bag within a container so that trash may be compacted within the container, the system comprising:

a) a container portion having side walls, a floor portion, and a top open end, for defining a container space therewithin;

b) a fabric bag portion positionable within the container space, the fabric bag portion further comprising;

i) side walls, a floor portion, and an open end portion;

ii) a draw string within a continuous channel;

iii) a plurality of openings formed in a wall of the continuous channel for allowing access to the draw string along spaced apart intervals in the channel wall;

iv) means on an outer container wall for attaching each of the portions of the draw string that is exposed in the openings in the channel wall so that upon the force of trash being compacted in the bag during a compaction process, the upper opening of the bag is constricted around the outer wall of a container and is prevented from moving into the container space.

5,255,983

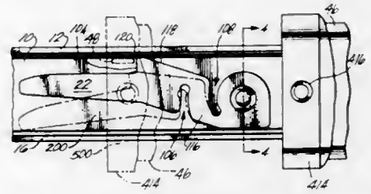
SHOCK ABSORBING DISCONNECT LATCH FOR BALL BEARING SLIDES

Jackie D. Parvin, Pomona, Calif., assignor to Accuride International, Inc., Santa Fe Springs, Calif.

Filed Jul. 28, 1992, Ser. No. 920,758

Int. Cl.[5] A47B *88/16*

U.S. Cl. 384—21 **18 Claims**



1. A disconnect latch for a slide assembly, the slide assembly including at least one elongated channel, the disconnect latch comprising the unitarily formed combination of:

means for locking and preventing unintentional disconnection of the channel; and

means for flexing the disconnect latch to clear the locking means such that the channel is released and for absorbing shock energy produced when the channel is stopped against the locking means.

5,255,984

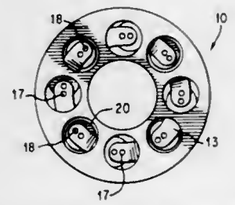
VARIABLE CHARACTERISTIC THRUST BEARING

Russell D. Ide, 122 Ridge Dr., Exeter, R.I. 02822

Continuation-in-part of Ser. No. 949,225, Sep. 23, 1992, which is a continuation-in-part of Ser. No. 541,131, Jun. 4, 1990, Pat. No. 5,125,754, which is a continuation-in-part of Ser. No. 516,781, Apr. 30, 1990, Pat. No. 5,054,938, and a continuation-in-part of Ser. No. 516,977, Apr. 30, 1990, Pat. No. 5,066,144, which is a continuation-in-part of Ser. No. 309,081, Feb. 8, 1989, Pat. No. 5,137,373, and a continuation-in-part of Ser. No. 283,529, Oct. 25, 1988, Pat. No. 5,112,143, and a continuation-in-part of Ser. No. 55,340, May 29, 1987, abandoned, said Ser. No. 949,225, Continuation-in-part of Ser. No. 685,148, and a continuation-in-part of Ser. No. 309,081. This application Sep. 30, 1992, Ser. No. 954,144

Int. Cl.[5] F16C *17/06*

U.S. Cl. 384—122 **20 Claims**



1. A thrust bearing for supporting a rotating shaft, the thrust bearing comprising:

a carrier and a plurality of substantially planar bearing pads supported in the carrier;

the carrier comprising a one-piece generally circular member having an axis which is substantially coincident with the axis of the rotating shaft to be supported, a plurality of groups of pad support openings formed in the carrier, the groups of openings being circumferentially spaced about the axis of the carrier, and each group of pad support openings including a plurality of openings all of which are capable of receiving a bearing pad, but only one of which receives a bearing pad at any one time, a support structure for supporting each of the groups of pad support openings in an identical manner, but supporting each opening within each group for different deflection under load, whereby deflection of the bearing pads under load depends on the opening in which the pad is located.

5,255,985

ROLLER BEARING SIGMA CAGE

Richard L. Alling, Torrington, Conn., assignor to The Torrington Company, Torrington, Conn.

Filed Nov. 17, 1992, Ser. No. 977,315

Int. Cl.[5] F16C *33/54, 33/46*

U.S. Cl. 384—575 **5 Claims**

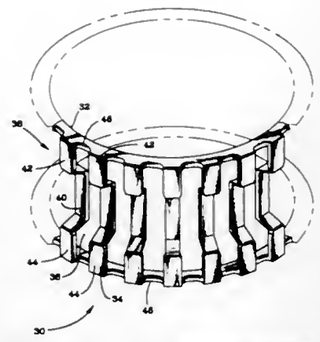
1. A roller bearing cage of sigma configuration, comprising:

annular first and second end rims, the end rims being axially spaced apart with respect to a common axis, each of the end rims having a surface aligned radially with respect to said axis and notches within said radially aligned surface corresponding to locations of rollers; and

crossbars joining the first end rim with the second end rim at locations between the notches, the crossbars and end rims forming slots for accommodating the rollers, the slots wrapping into the notches of the end rims, the crossbars having a central portion and laterally outward poriton, the central portion being offset radially with respect to the laterally outward portions such that a roller within one of

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said slots is retained in the radial direction by engagement with the central portion and laterally outward portion, the



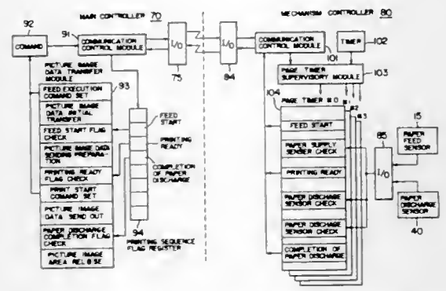
end rims, central portion and laterally outward portions comprising a sigma configuration.

5,255,986

PICTURE IMAGE FORMING APPARATUS WITH MECHANISM CONTROLLER

Masahiro Koiwai, Suwa, Japan, assignor to Seiko Epson Corporatioo, Tokyo, Japan

PCT No. PCT/JP91/00230, § 371 Date Dec. 16, 1991, § 102(e) Date Dec. 16, 1991, PCT Pub. No. WO91/12968, PCT Pub. Date Sep. 5, 1991
PCT Filed Feb. 22, 1991, Ser. No. 768,322
Claims priority, application Japan, Feb. 22, 1990, 2-41952
Int. Cl.[5] G06F *3/00*
U.S. Cl. 400—61 5 Claims



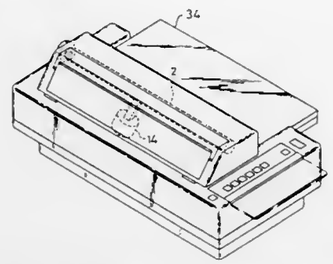
1. Picture image forming apparatus comprising: sensor means for detecting feeding and discharging sheets of paper; a mechanism controller for controlling mechanical members utilized to execute a sequence of operations including paper feeding, printing and paper discharging operations, a main controller for forming picture image data based on data supplied from an external host computer and for transferring said picture image data to said mechanical members, wherein there are provided communications means for effecting bidirectional communications between said mechanism controller and said main controller, and said mechanism controller includes timer means issuing information regarding a timing of said sequence of operations in response to output signals of said sensor means, said information issued from said timer means being informed to said main controller by said communication means, said main controller having a flag resistor means for registering said informed information and flag check means for checking said informed information registered by said flag register means so that said main controller is enabled to supervise said sequence of operations.

5,255,987

PAPER MARGIN DETECTING DEVICE FOR USE IN PRINTING APPARATUS

Toshiaki Mizuno, and Mamoru Imaizumi, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jun. 26, 1992, Ser. No. 904,607
Claims priority, application Japan, Jul. 25, 1991, 3-210270
Int. Cl.[5] B41J *5/30*
U.S. Cl. 400—61 8 Claims



1. A printing apparatus for printing an image on a printing medium having a printing medium margin detecting function, comprising:

a platen for supporting a printing medium;

a carriage having a print head which is reciprocatively movable along the platen;

a carriage driving means for reciprocatively driving the carriage;

an original position setting means for setting an original position for the reciprocative movement of the carriage;

a carriage position detecting means for detecting a displacement position of the carriage from an original position thereof;

a mark printing instruction means for instructing the print head to print a mark at a position which is spaced from the original position by a predetermined distance on a printing medium;

a sensor means provided on the carriage for detecting the mark printed based on a instruction of the mark printing instruction means and the margin of the printing medium; and

a correction amount generating means for generating a correction amount corresponding to a distance between the print head and the sensor means on the basis of the carriage displacement positions detected by the carriage position detecting means when the mark is printed by the instruction of the mark printing instruction means and when the mark is detected by the sensor means.

5,255,988

PRINTING HEAD FOR USE IN WIRE IMPACT DOT PRINTERS HAVING HEAD COOLING MEANS

Kazuhiko Yamamoto, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Mar. 12, 1991, Ser. No. 667,892
Claims priority, application Japan, Mar. 13, 1990, 2-61667; Aug. 31, 1990, 2-230323
Int. Cl.[5] B41J *2/235*
U.S. Cl. 400—124 54 Claims

1. A printing head for a wire impact dot printer comprising:

heat radiating means for dissipating heat from said printing head and formed with an opening;

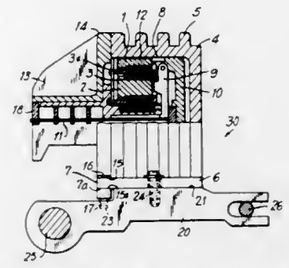
a core block which is inserted inside said heat radiating means through said opening;

nose frame means for closing said opening;

carriage means for supporting said heat radiating means and nose frame means and formed with a mounting reference surface;

mounting means including a contact surface formed on said heat radiating means for firmly and closely securing and engaging said carriage means to said heat radiating means so that at least a portion of said contact surface and said mounting surface are in close contact for heat transfer therebetween and for fixing the position of said heat radiating means in relation to said carriage means; and

positioning and fixing means formed on said nose frame means for directly joining said nose frame means to said heat radiating means and including a positioning surface



for engagement against at least a portion of said contact surface of said mounting means of said heat radiating means for positioning said nose frame means relative to said heat radiating means and said mounting reference surface of said carriage means;

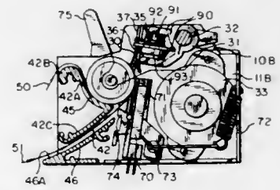
wherein the heat generated by said printing head is substantially released by said heat radiating means and the heat transferred from said mounting means of said heat radiating means to said mounting reference surface of said carriage means is substantially released by said carriage means.

5,255,989

PRINTER DEVICE WITH A THERMAL PRINT HEAD

Hans-Gerd Berthold, and Heinrich-Friedrich Baumann, both of Paderborn, Fed. Rep. of Germany, assignors to Data Techno GmbH, Salzkotten, Fed. Rep. of Germany

Filed Jun. 12, 1991, Ser. No. 715,097
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1990, 4027521
Int. Cl.[5] B41J *11/50*
U.S. Cl. 400—605 7 Claims



1. A printer device comprising:

a chassis (**1**) with lateral assembly plates (**11A**, **11B**);

a spring-loaded, pivotable thermal print head (**70**), a transport roller (**45**) for the material (**50**, **51**) to be printed and guide means for said material to be printed disposed between said lateral assembly plates (**11A**, **11B**);

said transport roller (**45**) forming a counter-pressure support which supports said material (**50**, **51**) to be printed against said spring-loaded pivotable thermal print head (**70**); a drive motor and a feed gear driven by said drive motor;

feed means consisting of only said transport roller (**45**) connected to said drive motor (**33**) through said feed gear (**44**) for generating a forward movement of said material to be printed;

said guide means located at an inlet side of said device consisting of a first profiled strip (**42A**, **42B**, **42C**) and a second profiled strip (**46**) each having a cross section in a plane perpendicular to the long axis of said transport roller (**45**);

said first profiled strip (**42A**, **42B**, **42C**) having a first leg (**42A**, **42B**) and a second leg (**42C**);

said first leg forming a first feed track, comprising a first portion (**42A**) which wraps approximately 90° around said transport roller (**45**) at a distance and a second portion (**42B**) which has a convexly rounded surface (**42***b*) producing a first inlet for said first feed track at said inlet side of said device;

said second portion creating a funnel which narrows in relation to said transport roller (**45**) as it approaches said first portion;

said second leg (**42C**) of said first profiled strip being acutely angled away to form the downstream end of said first portion (**42A**);

said second leg being convexly rounded as it approaches said inlet side of said device;

said second profiled strip (**46**) having a third leg connected to a base in the same plane as a bottom of said device;

said third leg being located at a distance and substantially parallel to said second leg (**42C**) to form a second feed track therewith;

said second feed track having a second inlet having a funnel-shaped opening into said second feed track;

said second feed track having a direction substantially tangential to a circumference of said transport roller (**45**); and

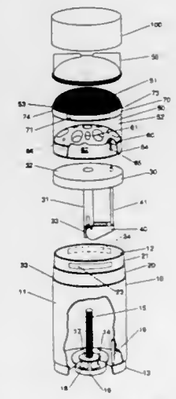
said first inlet and said second inlet being at different angles to each other with respect to said transport roller (**45**).

5,255,990

RESET ELEVATOR/THREADED SHAFT DISPENSING PACKAGE FOR STICK FORM PRODUCT AND A REFILL CARTRIDGE THEREFOR

Arthur H. Dornbusch, Cincinnati; Robert A. Paul, Fairfield, both of Ohio; Calvin S. Cook, Erie, Pa., and Stephen W. Harding, Hamilton, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 18, 1992, Ser. No. 900,638
Int. Cl.[5] A45D *40/06*, *40/04*
U.S. Cl. 401—68 14 Claims



1. An elevator/threaded shaft stick dispensing package for a solid stick-form product, said package having a cartridge designed to telescope into a base, said package comprising:

(a) said base, comprising a tubular body having an open top and a closed bottom having a central aperture disposed

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therein, said base having a threaded shaft axially oriented within its body and rotatably mounted on its bottom end through said central aperture wherein said shaft is connected to a hand wheel adjacent said bottom on the exterior of said body;

(b) said cartridge, comprising a tubular body for holding a solid stick-form product, said body having an open top and an open bottom, said bottom having a push plate disposed therein adjacent its bottom, said cartridge slidingly telescopes into said open top of said base;

(c) a telescoping elevator system disposed within said base, said elevator system comprising an internally threaded neck, adapted to receive said threaded shaft in threaded telescoping relation, and a platform above said neck designed to abut against said push plate of said cartridge, whereby when said hand wheel is turned in a predetermined direction said shaft rotates and advances said platform upwardly which advances said push plate upwardly and pushes said stick product out through said open top of said package; and

(d) a means for resetting said elevator system to its lowermost position when it is in its uppermost position without manually rotating said hand wheel.

5,255,991

LOCKABLE RING BINDER MECHANISM

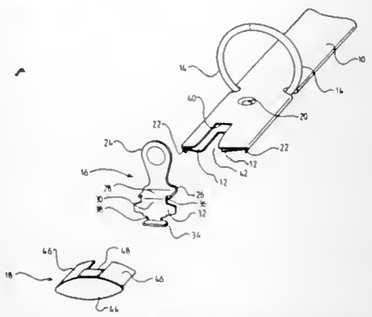
Anthony H. Sparkes, Gloucestershire, England, assignor to Bensons International Systems Limited, Gloucestershire, England

Filed Mar. 31, 1992, Ser. No. 861,070

Claims priority, application United Kingdom, Apr. 15, 1991, 9107961

Int. Cl.[5] B42F *13/26*

U.S. Cl. 402—38 **8 Claims**



1. A ring binder locking mechanism, comprising:

an elongated spring housing with a plurality of apertures and having a recess at an end thereof and having opposed edges which define said recess:

a pair of elongated blades each having a blade end portion, each of said blade end portions having an opposed edge facing each other and defining an axially extending recess between said opposed edges that is in alignment with said recess in the housing;

a plurality of half-rings mounted on and being movable with each of said blades between corresponding open and closed positions, said half-rings each extending through a respective one of said apertures in said housing, opposed ones of said half-rings each having an opposed end separated from each other in said open position, said opposed ends being in contact with each other in said closed position; and

means for locking said half-rings in said closed position, said locking means including a trigger having laterally extending edges defining laterally extending locking arms and laterally extending portions said trigger being movable between an unlocked position, in which said locking arms are free between said blades and said housing, and a locked position, in which said locking arms bear on said blades for preventing said blades from moving to said open position, the lateral edges of said trigger further defining first and second pairs of grooves separated from each other by said locking arms, a groove of each pair being on opposite sides of said trigger, the inner edges of the blades at the recess in said blades being engaged in the first groove and the recess in said housing being engaged in said second groove.

5,255,992

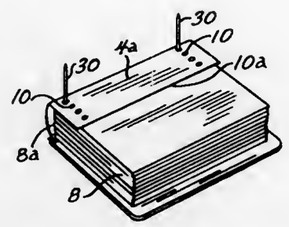
TWO PIECE EXPANDABLE LOOSE LEAF BINDER

Glenn Nickow, Winnetka, Ill., assignor to General Loose Leaf Bindery Co., Inc., Waukegan, Ill.

Filed Jan. 21, 1993, Ser. No. 6,792

Int. Cl.[5] B12F *13/00*

U.S. Cl. 402—74 **7 Claims**



1. An expandable loose leaf binder for retaining a plurality of punched sheets comprising

a first rigid cover member,

a second rigid cover member including an edge portion, said second cover member having an integral pliant flap extending in attached relationship from said edge portion of said second rigid cover member,

said pliant flap including a free edge and extending from said edge portion to said free edge, said pliant flap having an extent from said edge portion to said free edge greater than the thickness of the maximum number of punched sheets being retained,

said pliant flap further having a plurality of rows of a plurality of separate apertures arranged in perpendicular relationship to said edge portion, and

post means for retaining said plurality of sheets to said first and second rigid cover members, said post means having a plurality of post members arranged to be directed respectively through said first rigid cover member, through the plurality of punched sheets, and through aligned ones of said plurality of said apertures of each of said plurality of rows in accordance with the thickness of the plurality of the punched sheets.

5,255,993

PUSH BUTTON COUPLER

Austin Kovacs, Enfield, N.H., assignor to U.S. Government Represented by the Secretary of the Army, Washington, D.C.

Filed May 8, 1992, Ser. No. 880,263

Int. Cl.[5] F16B *7/00*

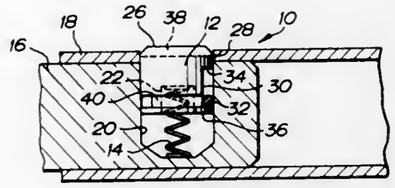
U.S. Cl. 403—328 **5 Claims**

1. Apparatus for joining a rod element and a tubular element, an end of the rod element being received within an end portion of the tubular element, the tubular element having an aperture formed therein and the rod element having a recess formed therein, comprising:

a push button received in and movable within the recess formed in the rod element, the push button having a detent recess formed therein and a locking slot formed adjacent to the detent recess adjacent that end of the push button located interiorly of the recess;

a spring disposed within the recess in the rod element, one end of the spring biasing against the push button and the other end of the spring biasing against floor portions of the recess in the rod element; and,

a pin fixedly mounted to the rod element with the longitudinal axis of the pin extending in a direction perpendicular to the longitudinal axis of the rod and having at least a portion extending into the recess formed in the rod element, at least a portion of the pin being received within the detent recess to control inward and outward move-



ment of the push button in the recess formed in the rod element, the push button being received into the aperture formed in the tubular element on alignment of the push button with said aperture to couple the rod element and the tubular element together, the pin contacting a portion of the detent recess to limit the extension of the push button into the aperture, rotation of the push button within the recess in the rod element causing engagement of the pin with the locking slot to lock the push button in that position coupling the rod element and the tubular element together.

5,255,994

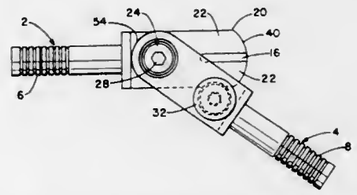
ADJUSTABLY TENSIONED SNAP-RELEASE JOINT FOR AN EXERCISE GOLF CLUB

Daniel R. Stein, 16504 West Course Dr., Tampa, Fla. 33624

Filed Jan. 23, 1992, Ser. No. 824,059

Int. Cl.[5] A63B *69/36, 53/12, 53/08*

U.S. Cl. 403—95 **5 Claims**



1. An adjustably tensioned snap-release joint for use as a golf club swing training device comprising:

(a) an upper shaft insert;

(b) a lower shaft insert;

(c) a screw inserted into a first bore in the lower shaft insert and inserted into a correspondingly threaded second bore in the upper shaft insert, the screw defining a rotation axis of the lower shaft member in relation to the upper shaft member to a transverse axis from a longitudinal axis defined by a linear alignment of the upper and lower shaft inserts in the golf club;

(d) an indentation positioned in a co-linear axis with the longitudinal axis of the golf club on an interior surface of the upper shaft insert; and

(e) an adjustable screw assembly which further comprises:

an externally threaded shaft having a bore partially extending therethrough;

a head at a first end of the shaft;

a ball positioned at an opposed second end of the shaft;

a biasing means inside the threaded shaft maintaining an outward force upon the ball; and

the adjustable screw assembly in the lower shaft insert positioned in communication with the positioning means of the upper shaft insert capable of exerting a variable amount of pressure on the groove thereby functioning to hold the upper and lower shaft inserts into a linear alignment and preventing rotation of the lower shaft until a torque is generated which exceeds a pressure on the indentation.

5,255,995

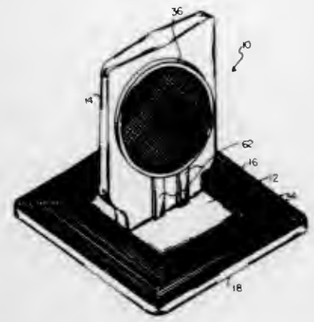
HIGHWAY REFLECTORS

Lester W. Branning, 2325 Ulmerton Rd., Ste. 16, Clearwater, Fla. 34622

Filed May 29, 1992, Ser. No. 890,695

Int. Cl.[5] F01F *11/00*

U.S. Cl. 404—14 **12 Claims**



1. A highway marker comprising:

an essentially horizontally positionable base having a lower face securable to the ground and an upper face thereabove and a generally rectangular periphery therebetween, the base also having tapering exterior walls with spaced parallel ribs extending downwardly from the lower face, the ribs being formed with thinner upper end integral with the lower face and with thicker lower free ends;

an essentially vertically extending body having a generally planar front face and a generally planar rear face defining a generally rectangular periphery with a free upper edge and a lower edge integrally formed with the upper face of the base, the body being thicker at its lower edge than its upper edge;

a circular projection formed integrally with, and extending outwardly from, the front face and the rear face of the body to define recesses, the edge of each projection remote from its associated face extending radially inwardly to define a locking lip;

a plurality of ribs formed integrally with, and extending outwardly from, the front face and the rear face of the body to strengthen the body, the ribs having a generally rectangular configuration and extending between the base and an associated projection; and

a circular reflector positioned in each recess and held in position by a locking lip, each reflector being formed of a circular interior component and a circular exterior component, the exterior surface of the exterior component being reflective;

the base, body, projections and ribs being molded integrally of a closed cell polyurethane foam at a temperature and time to create larger cells interiorly and smaller cells exteriorly whereby the exterior forms a hardened skin to provide a support whereby the base maintains itself erect from the base during extended use and whereby the interior imparts a reduced weight to the reflector.

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5,255,996

METHOD OF CONSTRUCTING A ROADWAY

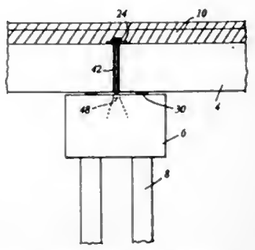
Ong S. Kiat, 36A Jalan SS 21/62, Damansara Utama, 47400 Petaling Jaya, Selangor, Malaysia; Lam H. Beng, deceased, late of Darul Ehsan, and by Yap S. Chee, personal representative, No. 108, Jalan SS30/26, Damansara Utama, Petaling Jaya, Selangor, Darul Ehsan, Malaysia

Filed Oct. 28, 1991, Ser. No. 783,008

Claims priority, application Malaysia, Dec. 27, 1990, P1-9002280; United Kingdom, Apr. 18, 1991, 9108272

Int. Cl.[5] E01C *3/00, 11/02*

U.S. Cl. 404—43 7 Claims



1. A method of constructing a roadway, comprising the steps of:

providing piles;

providing pile caps adapted to be installed upon upper ends of the piles;

placing the piles in the ground to a designed depth whereby pile caps installed upon the piles are at ground level;

installing the pile caps upon upper ends of the piles;

supporting preformed structural element on the pile caps at ground level, each preformed structural element comprising a web provided with flanges, the flanges projecting laterally and extending downwardly from the web, and diverging from each other in the downwards direction, and the preformed structural elements extending transversely of the longitudinal center line of the roadway; and

supporting preformed slabs on the preformed structural elements.

5,255,997

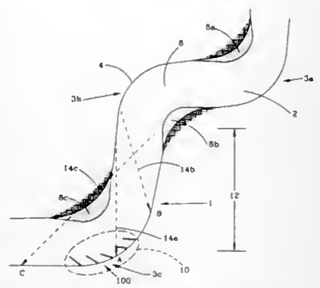
METHOD FOR EROSION CONTROL

Bert E. Bailey, New Braunfels; W. Al Pollock, Rosenberg, and W. Les Thompson, Kemah, all of Tex., assignors to Ercoo Development Co., Houston, Tex.

Filed Sep. 3, 1991, Ser. No. 705,745

Int. Cl.[5] F02B *3/04*

U.S. Cl. 405—16 38 Claims



1. A method for ascertaining the permeability effective for preventing and repairing scour or erosion in a control zone associated with a river or shoreline having one or more bends, a bank, a bed, a bar, a bank gradient, a bar gradient, a height of the bank above the bed, a height of the bar above the bed, a reach, a cross-over line and a cross-over point on the bank associated with a moving fluid, the method comprising the steps of:

(a) measuring the reach upstream of the control zone;

(b) evaluating the direction of the moving fluid in the bed;

(c) establishing the cross-over line associated with the measured reach and the direction of the moving fluid;

(d) ascertaining the cross-over point on the bank based upon the established cross-over line;

(e) locating the control zone for receiving the cross-over point at the center of the control zone;

(f) determining bank characteristics upstream of, within and downstream of the control zone;

(g) determining bed characteristics upstream of, within and downstream of the control zone;

(h) determining fluid characteristics upstream of, within and downstream of the control zone; and

(i) employing the determined characteristics for ascertaining an effective permeability for preventing and repairing scour or erosion in the control zone associated with the river or shoreline such that the effective permeability is operably at the center of the control zone and in contact with the cross-over point, and further such that the permeability is decreasing at locations upstream of the center of the control zone and the permeability is decreasing at locations downstream of the center of the control zone thereby providing the effective permeability at the center of the control zone.

5,255,998

MULTIPLE-LAYER NET STRUCTURE FOR FLUID DRAINAGE, PARTICULARLY FOR GEOTECHNICAL USE

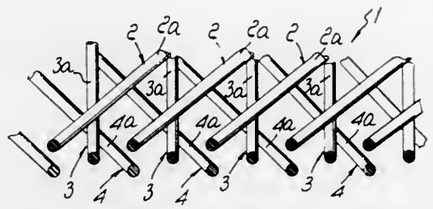
Mario Beretta, Sirtori, Italy, assignor to RDB Plastotecnica S.p.A., Brianza, Italy

Filed Nov. 6, 1992, Ser. No. 972,683

Claims priority, application Italy, Nov. 12, 1991, MI91A003004

Int. Cl.[5] E02D *5/00;* E02B *11/00*

U.S. Cl. 405—36 13 Claims



1. Fluid drainage net for geotechnical use comprising;

a first layer of sires arranged substantially parallel to each other and defining a plane of lay;

a second layer of wires arranged substantially parallel to each other and superimposed on said first layer of wires parallel to said plane of lay, said second layer of wires being inclined with respect to said first layer of wires, and connected thereto at a plurality of intersection nodes, said intersection nodes extending substantially perpendicular to said plane of lay;

a third layer of wires arranged substantially parallel to each other and superimposed on said second layer of wires, said third layer of wires being inclined with respect to said first layer of wires and said second layer of wires and connected to said second layer of wires at said intersection nodes;

wherein said first layer of wires is inclined by an angle of from 20 to 70 degrees with respect to said second layer of wires in one direction, wherein said third layer of wires is inclined by an angle of from 20 to 70 degrees with respect to said second layer of wires in an opposite direction.

5,255,999

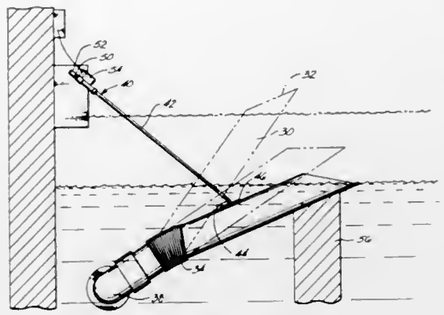
WATER-LEVEL CONTROL DEVICE

Johan A. Perslow, Seal Beach, Calif., assignor to Space Biospheres Ventures, Oracle, Ariz.

Filed Sep. 20, 1991, Ser. No. 763,123

Int. Cl.[5] E02B *7/00*

U.S. Cl. 405—87 19 Claims



1. A water-level control device comprising:

a diagonally-tiltable pipe having an open upper end;

a tilt connector at a lower end of the tiltable pipe;

a drain pipe attached to the tilt connector;

an actuator shaft connected to an upper portion of the drain pipe; and

means for retracting and extending the actuator shaft for cyclically tilting the pipe between an upper level and a lower level, respectively.

5,256,000

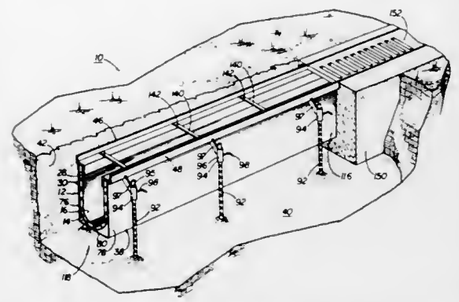
APPARATUS FOR FORMING A MULTI-WALLED TRENCH

John V. Beamer, Atlanta, Ga., assignor to Construction Casting Company, Atlanta, Ga.

Filed Aug. 17, 1992, Ser. No. 931,151

Int. Cl.[5] E02B *5/00*

U.S. Cl. 405—119 17 Claims



1. A multi-walled trench comprising:

a. an outer wall having an inside surface and an outside surface;

b. an inner member having an open top for receiving fluid along its length disposed within the outer wall and having an inside surface and an outside surface, a cavity being formed between the inside surface of the outer wall and the outside surface of the inner member; and

c. means in the cavity for maintaining a space between the inner member and outer wall to allow the expansion and contraction of the inner member and outer wall relative to each other and to allow fluid escaping from the inner member to gravitate to a low point for sensing or visual inspection.

5,256,001

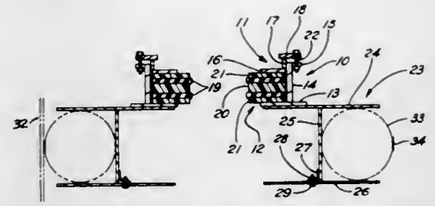
CYLINDRICAL SYSTEM FOR IN-SITU TREATMENT OF UNDERWATER CONTAMINATED MATERIAL

V. Dennis Millgard, Orchard Lake, Mich., assignor to Millgard Environmental Corporation, Livonia, Mich.

Filed Jan. 28, 1993, Ser. No. 10,156

Int. Cl.[5] B09B *5/00;* E02D *3/12*

U.S. Cl. 405—128 9 Claims



1. Water body treatment apparatus means for injection of treatment material for treating sedimentary silt, sludge, hazardous waste or other contaminated material which has settled at the bottom of a river, canal, pond, lagoon, or like water body, comprising hollow cylindrical casing means for substantially totally confining treatable portions of said material in-situ including circular cover means to provide enclosure confinement inserted within said cylindrical hollow casing to the upper level of said contaminated material prior to injection of said treatment material, means for injecting and mixing said treatment material during confinement in each portion comprising radial blade tool means having fluid discharge outlets radially spaced along said blade means, means for terminating each confinement, independently raising said cover means and said blade tool for movement with said casing to and confining successive adjacent portions to thereby effectively treat entire designated areas of a given water bed.

5,256,002

CABLE LAYING METHOD, DEVICE AND APPARATUS

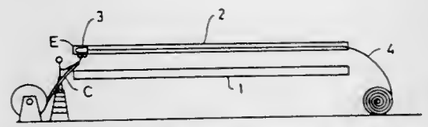
Shohachi Shimizu, Gifu, Japan, assignor to Mirai Industry Co., Ltd., Gifu, Japan

Continuation-in-part of Ser. No. 635,753, Dec. 28, 1990, Pat. No. 5,173,010. This application Oct. 19, 1992, Ser. No. 963,443

Claims priority, application Japan, Dec. 30, 1989, 1-344457

Int. Cl.[5] F16L *1/00*

U.S. Cl. 405—154 4 Claims



1. A method for laying cable comprising the steps of:

a) installing a cable receiver, and

b) installing at least one chute above said cable receiver, said chute having a slit extending substantially along the length of said chute in the longitudinal direction thereof,

said cable receiver and said chutes being separately attached

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to a wall or a ceiling and substantially parallel to each other;

c) inserting at one end of said chute a shuttle to which is connected a first rope hard enough to be pushed in said chute,

said shuttle having a cable connecting means, said shuttle travelling within said slit;

d) pushing said shuttle through said chute by means of said rope;

e) connecting a cable to said shuttle at the other end of said chute after said shuttle is sent through said chute;

f) drawing back said shuttle through said chute with said first rope and carrying said cable along said cable receiver, and

g) releasing said cable from said shuttle and laying said cable on said cable receiver.

5,256,003

METHOD FOR AUTOMATICALLY DRIVING GRAVEL DRAIN PILES AND EXECUTION APPARATUS THEREFOR

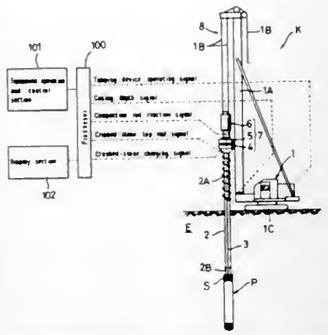
Katsuhiko Ito, Hunabashi; Rentaro Ikeda, Omiya; Tadao Koike, Konosu; Yntaka Nakajima, Kawasaki; Yasuharu Okita, Mino, and Haruo Ichikawa, Yachiyo, all of Japan, assignors to Konoike Constructioo Co., Ltd., Osaka and NKK Corporation, Tokyo, both of Japan

Continuation of Ser. No. 632,529, Dec. 24, 1990, abandoned. This application Jun. 5, 1992, Ser. No. 895,425

Claims priority, application Japan, Dec. 26, 1989, 1-337056

Int. Cl.[5] E02D *3/10, 3/08*

U.S. Cl. 405—232 **10 Claims**



1. An apparatus for driving gravel drain piles comprising: a casing raising device for raising a hollow casing which is vertically movably guided along a leader and varying a raising speed of said casing; a compaction rod driving device for vertically moving a compaction rod disposed within said casing; a compaction rod reaction detection device disposed halfway of said compaction rod to detect a reaction of the compaction rod and provide a value indicative thereof; a crushed-stone top end detection device for detecting a depth of crushed stones charged into said casing; a casing depth detection device for detecting a depth of interpenetration of said casing; and processing means for comparing, after said casing has reached said predetermined depth and the charging of the crushed stone has been confirmed, the detected value from said compaction rod reaction detection device with a set reaction value and controlling a raising speed of the casing through said casing raising device so as to increase, reduce or make constant the raising speed of the casing and determining a compacting degree of peripheral ground based on said compared value, said processing means being also responsive to said crushed-stone top end detection device and the casing depth detection device.

6. A method for automatically driving gravel drain piles comprising the steps of:

interpenetrating a hollow casing to a predetermined depth into a relatively loose sand layer saturated with water;

raising the casing while tamping crushed-stones charged into said casing by a compaction rod disposed within said casing;

driving gravel drain piles at regular intervals within the sand layer while continuously performing the steps of raising the casing and tamping the crushed-stones by the compaction rod;

detecting a magnitude of a crushed-stone tamping reaction by a reaction detecting device provided on said compaction rod and providing a real reaction value;

comparing the real reaction value with a set reaction value which is set in correspondence to the condition of the ground;

controlling a raising speed of the casing in response to said compared value so as to increase, decrease or make constant the raising speed of the casing;

determining a compacting degree of peripheral ground based on said compared value; and

compacting the peripheral ground.

5,256,004

METHOD OF FORMING CONSOLIDATED EARTH COLUMNS BY INJECTION AND THE RELEVANT PLANT AND COLUMN

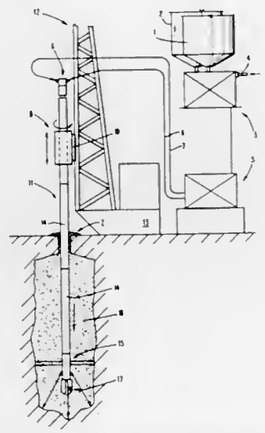
Bruno Gemmi, Basilicagoiano, and Antonio Sanella, Noceto, both of Italy, assignors to Fondazioni Speciali, S.r.l., Parma, Italy

Filed Jul. 26, 1991, Ser. No. 736,322

Claims priority, application Italy, Jul. 31, 1990, 40109 A/90; Jul. 31, 1990, 40113 A/90

Iot. Cl.[5] E02D *5/34*

U.S. Cl. 405—237 **35 Claims**



1. Method of forming a consolidated earth column by injection of a grout, comprising the steps of:

A. preparing a consolidating grout which includes aggregates with a granule size within the sand range, each constituent of the grout not exceeding about one third of the diameter of an opening through which a flow of the grout is injected into the earth;

B. drilling a preliminary hole into the earth, with a drill, to a penetration depth of at least one meter;

C. injecting a flow of consolidating grout via at least one jet rotating around an axis of the drill while the drill is moving downward, the grout being fed at a pressure and at a flow rate sufficient to widen at a substantially predetermined radius the preliminary hole drilled by the drill;

D. forming the consolidating earth column to a required penetration depth while the drill is moving downward.

5,256,005

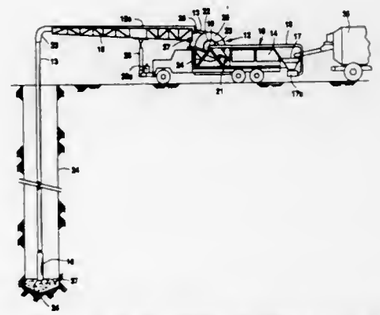
METHOD AND APPARATUS FOR PLACING CEMENTITIOUS MATERIALS IN EARTH EXCAVATIONS

August H. Beck, III, 206 Northcrest, San Antonio, Tex. 78213

Continuation of Ser. No. 672,366, Mar. 20, 1991, abandoned, which is a division of Ser. No. 379,429, Jul. 13, 1989, Pat. No. 5,026,214. This application Jun. 5, 1992, Ser. No. 874,824

Int. Cl.[5] E02D *15/00*

U.S. Cl. 405—240 **5 Claims**



1. A method for placing cementitious material into a foundation excavation using an elongate boom mounted on a mobile transport vehicle, comprising the steps of:

vertically pivoting, longitudinally extending and horizontally pivoting an elongate boom mounted on a mobile transport vehicle and supporting a flexible hose at the end of the boom to place the flexible hose over an excavation pour point at a desired location remote from the mobile transport vehicle;

unreeling the flexible hose from the end of the boom substantially vertically down into the excavation in the earth to a location where cementitious material is to be placed;

pumping cementitious material through the hose into the excavation;

reeling the flexible hose upwardly from the excavation as the cementitious material fills the excavation.

5,256,006

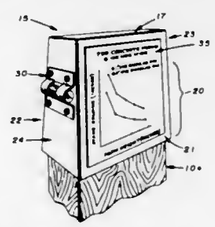
DRIVING CAP FOR STAKES AND POSTS

Daniel M. Harding, 5581 Honey View Ter., Paradise, Calif. 95969

Filed Sep. 23, 1991, Ser. No. 764,430

Int. Cl.[5] E02D *5/22;* **G01C** *9/28*

U.S. Cl. 405—255 **6 Claims**



5. A driving cap, comprising:

a. a substantially flat, horizontal hitting surface;

b. a sleeve member integrally attached to said hitting surface, said sleeve member having a front vertical surface, a back vertical surface, a first side vertical surface, and a second side vertical surface, said sleeve member having a central passageway formed therein capable of receiving the top portion of a stake or fence post;

c. a bubble level attached to said second side vertical surface of said sleeve member;

d. an information panel attached to said front vertical side surface, said information panel having stake spacing and form height information printed thereon, and;

e. a distance gauge pivotally attached to said first vertical side surface.

5,256,007

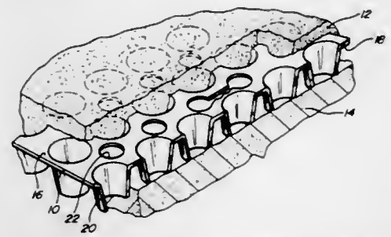
GROUND SUPPORT SYSTEM

Robert L. Allen, Kentwood, Mich., assignor to Robert Imhoff, Bloomfield Hills, Mich., a part interest

Filed Jun. 21, 1991, Ser. No. 718,581

Int. Cl.[5] E02D *3/00*

U.S. Cl. 405—258 **3 Claims**



1. A ground support system for stabilizing a surface of loose soil, said system comprising:

a substantially planar member, said planar member having a top side and a bottom side;

said planar member including a plurality of spaced apart projections depending therefrom; and

said planar member having a plurality of fluid-passing openings permitting the passage of water and waste liquid through said planar member;

means for anchoring said planar member to a layer of soil beneath said planar member; and

said anchoring means comprising an anchor stem having an upper end and a lower end; and a locking plug secured to and slidable along said anchor stem, said locking plug being cooperatively fittable within said inside of one of said projections, said locking plug having a top end and a bottom end.

5,256,008

CUTTING TOOL FOR A PEELING OPERATION

Sölve Hansson, and Yngve Dahllöf, both of Sandviken, Sweden, assignors to Sandvik AB, Sandviken, Sweden

Filed Mar. 4, 1992, Ser. No. 845,655

Claims priority, application Sweden, Mar. 4, 1991, 9100621

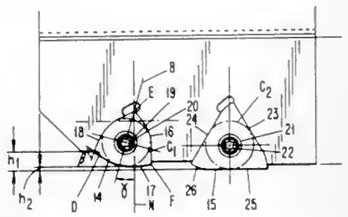
Int. Cl.[5] B23B *5/12*

U.S. Cl. 407—33 **20 Claims**

1. A cutting tool for bar peeling operations, comprising a rotatable cutter head equipped with a plurality of toolholders, each of said toolholders carrying both a multi-cornered polygonal roughing insert of wear resistant material, and a finishing insert, each of said roughing and finishing inserts including top and bottom surfaces and peripheral side surfaces extending therebetween, said side surfaces of each insert intersecting one

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another to define corners of said insert, said side surfaces of each insert intersecting said top surface to form cutting edges,

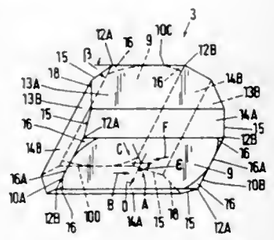


the roughing insert having three separate convexly curved cutting edges forming an obtuse angle at each of said corners.

5,256,009
CUTTING INSERT FOR TOOLS

Karl-Heinz Stoffels, Meerbusch, Fed. Rep. of Germany, assignor to Sandvik Aktiebolag, Sandviken, Sweden

PCT No. PCT/EP91/00825, § 371 Date Dec. 24, 1991, § 102(e) Date Dec. 24, 1991, PCT Pub. No. WO91/17014, PCT Pub. Date Nov. 14, 1991
PCT Filed Apr. 29, 1991, Ser. No. 778,840
Claims priority, applicatioo Fed. Rep. of Germany, Apr. 28, 1990, 4013717
Int. Cl.[5] B23C *5/06, 5/20*
U.S. Cl. 407—42 7 Claims

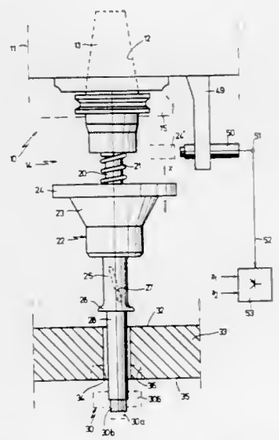


1. A cutting insert (3) for a tool (1) for chip removal treatment of a workpiece surface, said cutting insert (3) comprising;
a body, said body having first, second, third and fourth generally trapezoidal side surfaces (13A, 13B), said body having top and bottom lateral surfaces (9);
said first side surface (13A) intersecting said fourth side surface (13B) at a first edge, said first side surface (13A) intersecting said second side surface (13B) at a second edge, said second side surface (13B) intersecting said third side surface (13A) at a third edge, said third side surface (13A) intersecting said fourth side surface (13B) at a fourth edge,
said fourth side surface (13B) intersecting said bottom surface (9) at a fifth edge, said second side surface (13B) intersecting said bottom surface (9) at a sixth edge, said first side surface (13A) intersecting said top surface (9) at a seventh edge, said third side surface (13A) intersecting said top surface (9) at an eighth edge,
said first and third side surfaces (13A) being located on opposite sides of said body, said first and third side surfaces (13A) being inclined inwardly toward each other along a direction toward said bottom surface (9), said second and fourth side surfaces (13B) being located on opposite sides of said body, said second and fourth side surfaces (13B) being inclined inwardly toward each other along a direction toward said top surface (9);
said first side surface (13A) having a first chamfer (14A) adjacent said bottom surface (9), said second side surface (13B) having a second chamfer (14B) adjacent said top surface (9), said third side surface (13A) having a third chamfer (14A) adjacent said bottom surface (9), said fourth side surface (13B) having a fourth chamfer (14B) adjacent said top surface (9),
said first edge at the first chamfer (14A) being a first main cutter (15), said first edge at the fourth chamber (14B) being a second main cutter (15), said third edge at the third chamfer (14A) being a third main cutter (15), said third edge at the second chamfer (14B) being a fourth main cutter (15),
said top surface (9) having a parallelogram shape having four corners, said bottom surface (9) having a parallelogram shape having four corners, each of said corners on said top and bottom surfaces having a conical (16) chamfer such that each of said fifth to eighth edges are arcuate to form smoothing cutters (10A, 10B) for smoothing a portion of the workpiece surface previously cut by one of said main cutters (15).

5,256,010
MACHINE TOOL

Holger Hehl, Tuttlingen, and Rudolf Haninger, Seitingen-Oberflacht, both of Fed. Rep. of Germany, assignors to Chiron-Werke GmbH & Co. KG, Tuttlingen, Fed. Rep. of Germany

Filed May 28, 1992, Ser. No. 890,614
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1991, 4118021
Int. Cl.[5] B23B *49/00*
U.S. Cl. 408—11 4 Claims

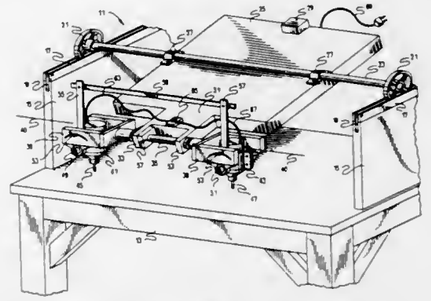


1. A machine tool having a rotatable tapered spindle socket with an inverted spotfacer tool chucked therein for providing workpieces with countersunk bores, said spotfacer tool comprising:
a tapered shank mating said tapered spindle socket;
an elongate actuation shaft having a longitudinal axis and an upper end being rigidly connected to said tapered shank, and having a lower end;
cutting means having a cutting edge and being arranged on said lower end of said actuation shaft, said cutting means being tiltable about an axis perpendicular to said longitudinal axis between a first stable operational position with said cutting edge extending perpendicular to said longitudinal axis, and a second stable operational position with said cutting edge extending parallel to said longitudinal axis;
a shoulder element being axially displaceable on said actuation shaft against the action of a spring means;
positive control means acting between said actuation shaft and said shoulder element for tilting said cutting means between said first and said second operational positions when said shoulder element is displaced in its axial position on said actuation shaft between two predetermined axial end positions;
sensor means for sensing said axial position of said shoulder element on said actuation shaft; and
electronic control means coupled to said sensor means for comparing said sensed axial position with a reference position value.

5,256,011
MACHINE TOOL

Philip W. Taylor, 230 S. MacArthur #515, Coppell, Tex. 75019

Filed Nov. 16, 1992, Ser. No. 976,956
Int. Cl.[5] B23C *1/16, 5/00*
U.S. Cl. 409—92 6 Claims



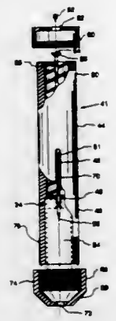
1. A machine tool, comprising:
a cutter for cutting a work piece;
a tracer for tracing a pattern;
means for moving the cutter and the tracer forward and backward together;
means for moving the cutter and the tracer left and right together;
means for moving the cutter and the tracer up and down together;
means for pivoting the cutter and the tracer together about a horizontal axis passing through the cutter and the tracer;
means for pivoting the cutter and the tracer together about a pair of parallel horizontal axes.

5,256,012
PACKAGING FORMAT AND A POSITIONING DEVICE FOR FASTENERS AND THE LIKE

Marshall E. Mikels, 115 15th Ave., San Mateo, Calif. 94402

Filed Dec. 10, 1991, Ser. No. 805,866
Int. Cl.[5] B23B *41/00*
U.S. Cl. 408—72 R 8 Claims

1. A packaging format for fasteners and the like comprising an elongated strip of interconnected fastener retainers, each retainer including a land for receiving a fastener therethrough such that the tip of the fastener protrudes beyond the land, and at least one support for supporting, in use, the land and the tip of the fastener clear of a working surface so as to allow the tip of the fastener to be visually aligned in use;
wherein the support for each land is in the form of at least one leg projecting therefrom and wherein legs are positioned between adjacent fasteners and their associated lands;
said packaging format including at one end thereof a drill locating formation for assistance in drilling suitable tapping holes for the fasteners retained in the strip and wherein the drill locating formation comprises a tab portion in which a suitably sized hole is formed and through which a taping drill can be passed; and
a drilling tool comprising a drill bit, a torque application end at which torque can be applied to the drill bit, a positioning end for positioning the tip of the drill bit, and a drill bit guide interposed between the torque application end and

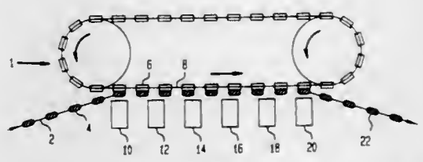


the positioning end, the positioning end being shaped to matingly engage the tab portion.

5,256,013
APPARATUS AND PROCESS FOR FORMING A COSMETIC STICK

Peter A. Divone, Sr., New City, N.Y.; Jesus A. Urbaez, Waterbury, Conn.; Joseph R. Faryniarz, Oxford, Conn.; Matthew Kuznitz, Branford, Conn., and Philip A. Stone, Spring City, Pa., assignors to Chesebrough-Pond's USA Co., Division of Conopo, Inc., Greenwich, Conn.

Filed Mar. 27, 1992, Ser. No. 858,725
Int. Cl.[5] B23C *3/16;* B26D *1/00*
U.S. Cl. 409—132 15 Claims



1. A process for shaping an end of a solid cosmetic stick supported within a container and at least partially protrudable therefrom comprising the steps of:
(i) conveying the stick supported within the container to a shaping apparatus;
(ii) registering the stick and container in alignment with a transport device for transporting the stick and container from one station to another along the apparatus;
(iii) transporting the stick and container to a trimming station provided with a knife rotating around an axis of rotation, the stick and rotating knife contacting one another over a nonlinear cutting path directed by a camming device for controlling the path;
(iv) removing portions of the cosmetic stick by cutting with the rotating knife to achieve a preselected shape directed by the camming device thereby forming a trimmed stick, the knife being rotated a multiplicity of times through 360° for each pass over the stick end, the axis of rotation being perpendicular to the cutting path; and
(v) further transporting the trimmed stick from the trimming station to a conveyor device for conveying the trimmed stick away from the shaping apparatus.

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5,256,014

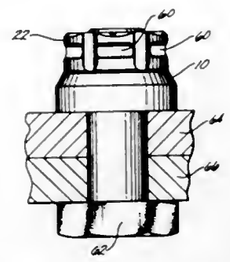
NUT THREADED FASTENER FOR APPLYING A PREDETERMINED PRELOAD

George S. Wing, 531 Esplanade, Apt. 515, Redondo Beach, Calif. 90277

Continuation of Ser. No. 546,533, Jun. 29, 1990, abandoned, which is a continuation of Ser. No. 225,649, Jul. 25, 1988, abandoned, which is a continuation of Ser. No. 846,302, Mar. 31, 1986, abandoned, which is a continuation-in-part of Ser. No. 702,811, Feb. 15, 1985, abandoned. This application Jan. 21, 1992, Ser. No. 822,779

Int. Cl.[5] F16B *31/00, 19/00*

U.S. Cl. 411—1 23 Claims



1. In a fastener having internal threads, an improvement in the means to wrench the fastener comprising:

a plurality of axially extending external lobes, each lobe having an external surface of arcuate curvature, the lobes being arranged in a pattern bounded by an imaginary regular geometric figure having straight sides with each side being tangent to the external surfaces of an adjacent pair of the lobes such that the lobes can accept a wrenching tool that has flat wrenching surfaces, the lobes having appropriate properties for failing in circumferential compression in response to the bearing of a spherically curved setting element at a first radius from the axis of the fastener to develop a circumferentially extending furrow through the lobes at a predetermined preload and for Brinelling the lobes in response to a spherically curved element at a smaller radius from the axis at the same preload and leaving a sufficient portion of the lobes for secondary wrenching; and

a trough between each of the lobes, each trough having a surface of radial dimension from the axis no more than any radial dimension from the axis to any of the arucate lobe surfaces and less than the minimum distance between a tangent to the surfaces of adjacent lobes and the axis of the fastener.

5,256,015

TORQUE LIMITING BOLT HAVING RETAINED SHEAR PINS

Kenneth A. St. Clair, Cincinnati, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 13, 1992, Ser. No. 835,155

Int. Cl.[5] F16B *31/00*

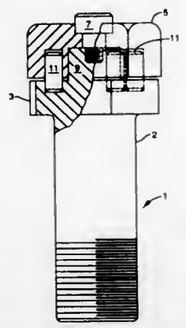
U.S. Cl. 411—4 20 Claims

1. A torque limiting bolt which is reusable comprising:

(a) a bolt body having a bolt removal means at an upper portion thereof for enabling removal of the torque limiting bolt after installation;

(b) a driving member coupled to the upper portion of said bolt body by a removable retaining means;

(c) at least one shearing member capable of being sheared upon the application of a predetermined shearing force applied thereto, said shearing member being freely positioned within both the upper portion of said bolt body and said driving member to enable subsequent removal therefrom, said shearing member having a first terminal portion completely enclosed within said driving member and having a second terminal portion, opposite said first terminal portion, said second terminal portion being completely enclosed within said bolt removal means, thereby to prevent sheared parts of the shearing member from escaping from the torque limiting bolt as long as the removable retaining means retains the driving member against the upper portion of the bolt body.



5,256,016

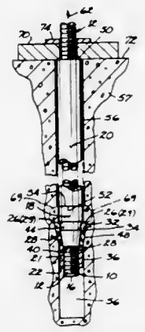
SWEDGE ANCHORING ASSEMBLY

Dwaine A. Godfrey, 10 Beechcrest La., Cincinnati, Ohio 45206

Filed Nov. 8, 1991, Ser. No. 790,255

Int. Cl.[5] F16B *13/04*

U.S. Cl. 411—32 20 Claims



1. An anchoring assembly for use in a hole bored inwardly from the surface of a receiving material, comprising:

a threading shaft having a leading end and a trailing end;

a spreader having a first end, a second end, an outer surface and a tapered portion, with said tapered portion tapering toward the first end of said spreader;

a swedge anchor having a first end, a second end and a plurality of fingers with ends, the ends of said fingers forming the second end of said swedge anchor, said swedge anchor being secured to said threaded shaft such that said fingers point toward the trailing end of said shaft and said spreader being slidable lengthwise along said shaft, with the tapered portion of said spreader being in position to engage the fingers of said swedge anchor; and

locking means for interlocking said spreader and said swedge anchor together, said locking means including at least one groove on the outer surface of said spreader adapted for receiving at least a portion of said swedge anchor during the setting of said anchoring assembly to thereby interlock said spreader and said swedge anchor, wherein said anchoring assembly is set into the hole by forcing said spreader and said swedge anchor together until said spreader and said swedge anchor engage and interlock.

5,256,017

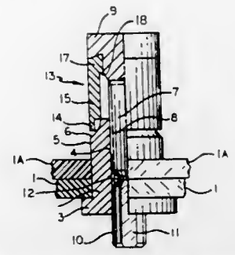
COMPOSITE BLIND RIVET ASSEMBLY

B. E. Smirnov, and S. G. Golinskikh, both of Nijney Novgorod, U.S.S.R., assignors to P/O Normal, U.S.S.R. and VSI Corporation, Chantilly, Va., a part interest

Filed Dec. 6, 1990, Ser. No. 622,435

Int. Cl.[5] F16B *13/04*

U.S. Cl. 411—43 1 Claim



1. A blind fastener rivet assembly for fastening a composite structure from one side thereof comprising:

a cylindrical body element of a diameter d and having an axial bore therethrough, said body element having an enlarged head at one end and a concave shaped face at the other end;

a bolt having a stem extending through said bore and having an enlarged head adjacent the concave shaped face on said body element;

a cylindrically shaped deformable element positioned on said bolt stem between said concave shaped face and said bolt head, said deformable element having first, second and third wall sections of differing thicknesses along the length thereof whereby the collapse of said deformable element during installation forms a buckle which contacts a surface of said structure, any damaging installation load being directed away from the composite structure to said deformable element and then to said cylindrical body element thus providing protection for the composite structure; and

wherein said first wall section is adjacent to the concave shaped face of said body element; and

wherein said second wall section is adjacent said first wall section and said third wall section is adjacent said second wall section; and

wherein the thickness of said third wall section is in the range from about 1.25 to about 1.4 times greater than the thickness of said second wall section; and

wherein the thickness of said second wall section is in the range from about 0.1 d to about 0.15 d; and

wherein the length of said second wall section is in the range from about 0.8 d to about 1.2 d.

5,256,018

CLIP-ON FASTENER

Hans R. Rattmann, Burlington, Canada; James P. Clinch, Farmington Hills, Mich., and James H. Laarman, Chicago, Ill., assignors to Eaton Corporation, Cleveland, Ohio

Filed Nov. 2, 1992, Ser. No. 971,007

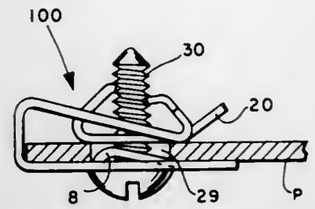
Int. Cl.[5] F16B *37/02, 37/04*

U.S. Cl. 411—175 2 Claims

1. A clip on type fastener having first and second spaced apart legs extending from a closed end to an open end operative to receive an edge of a panel member thereinto for securement of threaded member receivable through an opening through the panel member, said fastener having;

a centering tab extending angularly from a side of the first leg facing towards the second leg in a direction towards the closed end of the fastener, said centering tab having an opening operative to receive the threaded member therethrough upon registration of the centering tab with the panel member opening,

a pair of opposed resilient arms respectively extending from the second leg in overhanging relationship to a side of the second leg facing away from the first leg and ending thereover in respective spaced apart free ends adapted to threadingly engage the threaded member with one of said arms extending from the second leg in a direction towards the closed end of the fastener and the other of said arms



extending from the second leg in a direction towards the open end of the fastener,

an opening through the resilient arm that extends towards the closed end of the fastener, said opening substantially axially aligned with the centering tab opening and surrounded by a frusto-conical projection extending from a side of said resilient arm facing away from the first leg and ending in a helical edge surrounding the opening through the second leg that is operative to threadingly engage the threaded member, and

a guide tab extending from the resilient arm that extends towards the closed end of the fastener, said guide tab extending angularly from said arm in a direction away from the first leg and operative to engage the panel edge to enhance the receipt thereof into the opening of the fastener.

5,256,019

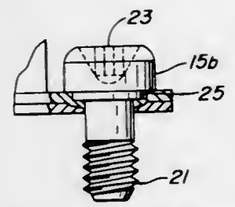
WASHERLESS SELF-CAPTIVATING SCREW

Ronald W. Phillips, II, Sellersville, Pa., assignor to Penn Engineering & Manufacturing Corp., Danboro, Pa.

Filed Nov. 24, 1992, Ser. No. 980,728

Int. Cl.[5] F16B *23/00, 35/06, 39/282;* B23P *11/02*

U.S. Cl. 411—187 8 Claims



1. A rotatable, captive screw loosely fitted into a sheet metal panel, comprising:

a planar sheet metal panel having a simple circular aperture formed there;

a screw fitted into said aperture, said screw comprising an elongate shank with a head at one end and a threaded portion at the opposite end, said head and said threaded portion being greater in diameter than said shank;

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said aperture being smaller than said head, but greater in diameter than said threaded portion of said screw;

a displacer collar located directly beneath said head, said collar being smaller in diameter than said head and having a portion forming a shoulder perpendicular to the axis of said screw; and

said screw being loosely captive within said panel without the aid of other parts by forcibly embedding said collar into said panel supported by an anvil having a circular recess less than the diameter of the displacer collar, thereby deformably constricting said panel about said shank.

5,256,020

FASTENING MEMBER, FASTENING MACHINE ELEMENT SET, AND METHOD OF CONNECTING FASTENING MACHINE ELEMENT

Katsumi Ikeda, and Katsuhiro Ikeda, both of 220-1 Motoichiba-sinden, Fuji, 417, Japan

Filed Jun. 29, 1992, Ser. No. 905,399

Claims priority, application Japan, Feb. 20, 1992, 4-033626; Apr. 1, 1992, 4-078099; Jun. 2, 1992, 4-140814

Int. Cl.[5] F16B *33/00*

U.S. Cl. 411—368 **11 Claims**



1. A fastening member adapted to be placed over a shaft, said shaft having a thread portion therearound and a predetermined diameter, comprising:

a body for forming the fastening member, said body being at least partly curved, and

a hole formed in the body, said hole having a first diameter measured along a curvature of the body and a second diameter measured linearly through the hole, said first diameter being larger than the diameter of the shaft and said second diameter being less than said first diameter and substantially the same as the diameter of the shaft so that when the curved body is engaged with the shaft, the body is not disengaged from the shaft, and when the curved body is flattened by tightening the shaft, the first and second diameters become equal and the body is disengaged from the shaft to move freely around the shaft.

5,256,021

TELESCOPE VEHICLE LOADING AND UNLOADING SYSTEM

James M. Wolf, 253 W. William St., Delaware, Ohio 43015, and Charles Keip, 5820 Canal Ave., Grandville, Mich. 49418

Filed Jun. 4, 1991, Ser. No. 710,143

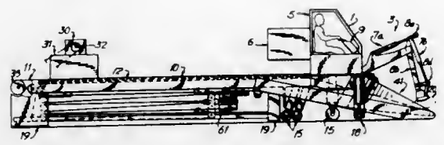
Int. Cl.[5] B65G *17/00*

U.S. Cl. 414—393 **13 Claims**

1. An apparatus for moving cargo between a load transport vehicle and a loading dock, comprising:

a telescoping conveyor means having a front loading end, and a rear discharge end that remains substantially fixed during operation and a driving means operably mounted on said conveyor means for transporting said cargo from said front loading end to said rear discharge end;

a manipulator means mounted adjacent said front loading end of said telescoping conveyor means having a frame means mounted on said manipulator means for supporting an operator above the front loading end of said conveyor means and a transport means operably mounted on said manipulator means for movement into close proximity with said cargo; and



an engaging means mounted on said manipulator means having a power means operably mounted on said engaging means for moving said cargo onto said front loading end of said telescoping conveyor means.

5,256,022

SUCTION DEVICE FOR REMOVING X-RAY SHEET FILMS

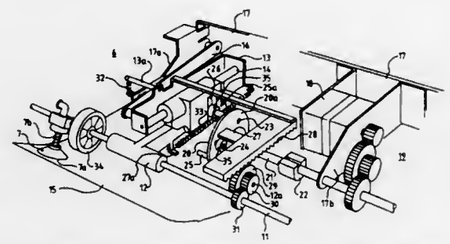
Karl Neudecker, München, Fed. Rep. of Germany, assignor to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Mar. 20, 1992, Ser. No. 854,248

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1991, 4109352

Int. Cl.[5] B65H *3/10*

U.S. Cl. 414—416 **5 Claims**



1. A suction device for removing X-ray sheet films from one of several dispenser magazines of an X-ray sheet film cassette loading and unloading device, comprising suction elements; a suction element axle on which said suction elements are arranged; two suction element axial bearings in which said suction element axle is rotatably supported; a lifting basket having a lifting surface; guides arranged in said lifting basket so that said suction element axial bearings are movable on said guides parallel to the plane of an X-ray sheet film to be removed; a base plate, said lifting basket being articulately connected with said base plate in a double-parallelogram fashion and is movable substantially perpendicular to a plane of the X-ray sheet film to be removed; a drive element arranged on said base plate; two drive pulleys driveable by said drive element and connected with one another, each of said drive pulleys having a guiding pin and lifting pin and a blocking pin and having a drive pulley side; a coulisse fixedly connected wit each of said suction element axial bearings, each of said guiding pins of each of said drive pulleys engaging in said coulisse, said lifting pins being arranged on said drive pulley surface which is opposite to said guiding pin and engaging said lifting surface of said lifting basket; a toothed rack fixedly arranged on said lifting basket; a first toothed gear engaging with said toothed rack, a second toothed gear extending coaxially to said first gear and fixedly connected with the latter; a third toothed gear fixedly connected with said suction element axle and engaging with said second toothed gear; a first pulling spring drawing said suction element axial bearings along said guides in direction toward said lifting basket; a second pulling spring arranged between said lifting basket and said base plate and loading said

lifting basket with a spring force during the removal of an X-ray sheet film so that said guiding pin, said lifting pin, said coulisse and said lifting surface remain in engagement with one another.

5,256,023

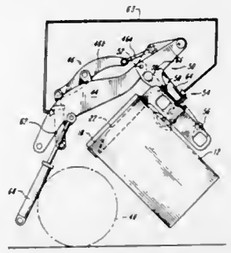
ROLL-OUT FORKLIFT FOR BULK MATERIALS TRANSPORTATION SYSTEM

Kenneth J. Patrick, Medfield, Mass., and Jerald R. Tinsman, Farmland, Ind., assignors to Intermodal Technologies, Inc., Nashua, N.H.

Division of Ser. No. 440,314, Nov. 22, 1989, Pat. No. 5,078,560. This application Sep. 10, 1991, Ser. No. 757,473

Int. Cl.[5] B65G *67/00*

U.S. Cl. 414—420 **5 Claims**



1. A forklift for transporting and over-the-side dumping of bulk material with a total weight as much as about thirty-five tons from an open-top box having at least one horizontal channel adapted to receive a lifting fork comprising,

a tractor,

an articulated frame assembly mounted on said tractor that includes fixed lift arms, a Z-bar linkage mounted at a forward end of said lift arms and operatively coupled to said Z-bar linkage to rotate said carriage assembly in a vertical plane extending longitudinally through said tractor and said frame assembly about a first axis of rotation, and a fork assembly pivotally mounted to said carriage assembly to execute a rotation in said vertical plane about a second axis of rotation that is generally parallel to said first axis and displaced forwardly of it,

at least one fork mounted on said fork assembly and adapted to engage said box in said horizontal channel, and

hydraulic means for actuating said articulated frame assembly to move said box through a generally vertical lifting motion and a forward roll-out dumping motion characterized by a total forward rotation of said box through at least 145° combined with backward movements of said box toward said tractor to maintain a stable center of gravity of said forklift during said lifting and dumping motions.

5,256,024

TILTABLE FLATBED TRAILER IMPROVEMENT FOR SIDE-BY-SIDE COUPLING

Ronald A. Ross, Box 138, Needhamville Rd., Fort Ann, N.Y. 12827

Filed Feb. 25, 1992, Ser. No. 841,341

Int. Cl.[5] B60P *1/28*

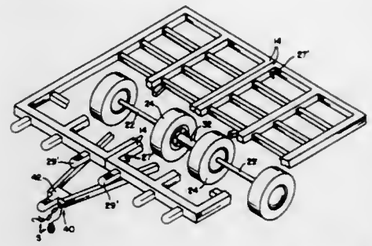
U.S. Cl. 414—483 **1 Claim**

1. In a tiltable flatbed sport vehicle transport trailer, the improved assembly for side-by-side coupling of two said trailers in order to acquire a common axle and a common drawage point, said assembly comprising:

a common drawage hitch in the form of a yoke for coupling thereto a pair of trailer drawbars;

an axle extender for coupling at least one axle of a first said trailer to an axle of an adjacent second said trailer, the extender comprising a tube flanged at each end thereof with the flanges having therein a plurality of lug holes;

two said trailers each of which comprises a tiltable flatbed frame mounted to a two-wheeled axle and having a rectangular shape with defined forward and rearward portions, to be towed in a forward direction and also tilted arcuately in a rearward direction on said axle, the frame subtending a center beam extending fixedly thereto along a forward-rearward centerline, the frame further subtending a left and a right beam, each separately and fixedly disposed to the frame on either side of the center beam and diverging angularly from a rearward, proximate-the-center beam position to a forward, distal-the-center beam position, the center, left and right beams each bearing a conventional hitch means respectively at a forward extreme thereof, the center beam having a hole therein proximate a rearward extreme thereof, the left and right diverging beams having slotted apertures proximate their rearward extremes; and



a trailer drawbar for each said trailer, the drawbar used for engagement with any of the left, center or right beams and for drawing said trailer, the drawbar having a rearwardly positioned bore for placement therein of a pin means to pivotally engage the center beam at said bore or pivotally and slidably engage the left or the right beams at said slotted apertures, the drawbar further having a fixed ball at a position to engage the left, center or right beam hitches when a hole of the drawbar is pinned through the center beam bore or left or right beam apertures, the drawbar including connection means at a forward extreme thereof for attachment to the common draw hitch, whereby a coupling of a first trailer to a second in side-by-side alignment with a joinment of individual axles by an axle extender, a right beam drawbar ball and hitch connection for the first and a similar but left beam connection for the second trailer and a drawbar-to-common draw hitch coupling at the forward extremes of the left and right drawbars effects said assembly.

5,256,025

HANDTRUCK

Gary Williamson, 14644 N. 83rd La., Royal Palm Beach, Fla. 33411

Filed Sep. 3, 1992, Ser. No. 940,013

Int. Cl.[5] B62B *1/10*

U.S. Cl. 414—490 **12 Claims**

1. An improved handtruck comprised of:

an elongated frame;

wheels mounted adjacent to an end of said frame;

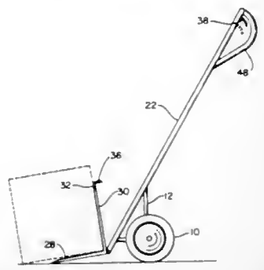
an open-sided cargo support pivotally mounted at the end of said frame adjacent to said wheels, said open-sided cargo support formed from a base plate and a pusher structure mounted substantially perpendicular to said base plate and adjacent to said frame, pivoting of said cargo support occurring substantially at an intersection of said base plate and said pusher structure; and

latching means for maintaining said cargo support in a fixed position relative to the frame when the cargo is trans-

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ported such that said base plate is substantially perpendicular to the elongated frame to support cargo;

said latching means capable of being unlatched to allow said cargo support to pivot with respect to said frame;



whereby cargo is removed from said cargo support when an upper portion of said pusher structure, combined with said pivoting, forces cargo down a downwardly and forwardly inclined plane formed by said base plate when the handtruck is angled downwardly away form the cargo.

5,256,026

ACCESSORY DETACHABLE MECHANISM OF CONSTRUCTION MACHINE

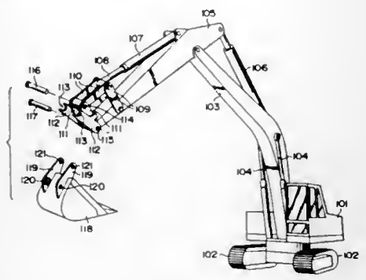
Mitsuhiro Kishi, Tochigi, Japan, assignor to Japanic Corporation, Tochigi, Japan

Filed Apr. 3, 1992, Ser. No. 863,404

Claims priority, application Japan, Apr. 9, 1991, 3-103295; Apr. 24, 1991, 3-119134; Apr. 26, 1991, 3-123083

Int. Cl.[5] F02F *3/32*

U.S. Cl. 414—723 **9 Claims**



1. In a construction machine including a mobile chassis, a boom swingably mounted on the chassis adjacent one end thereof, an elongate arm pivotally connected to said boom in spaced relationship from said one end and terminating in a tip end, an accessory detachable mechanism connected adjacent to the tip end of the arm and including a cylinder having a remote end pivotally connected to the arm and a front end pivotally attached to said accessory detachable mechanism, and an accessory adapted to be held by the detachable mechanism for swinging movement relative to the arm, said accessory having first and second attached bodies, said attached bodies defining generally parallel and spaced apart planes, said accessory detachable mechanism comprises:

rising links means pivotally connected at an upper end thereof to the front end of the cylinder and at a lower end thereof to said arm at a location adjacent to but spaced rearwardly from the tip end of the arm;

connecting links means pivotally connected at a rear end thereof to the front end of the cylinder;

operating links means pivotally connected at an upper end thereof to said connecting links means in the vicinity of a front end thereof, and pivotally connected at a lower end thereof to said arm closely adjacent the tip end thereof;

alignment means defining retaining grooves on an upper end thereof connected to said operating links means;

said attached bodies defining a first pair of pin holes having a first axial line perpendicular to said attached bodies and a second pair of pin holes defining a second axial line perpendicular to said attached bodies;

a first connecting means for supporting said accessory and defining a third pair of pin holes, defining a third axial line, in the vicinity of the front end of said operating links means and including a first connecting pin removably inserted through said first pair of pin holes and said third pair of pin holes when said first and third axial lines coincide; and

a second connecting means for supporting said accessory and defining a fourth pair of pin holes, defining a fourth axial line, in the vicinity of the lower end of said operating links means and including a second connecting pin removably inserted through said second pair of pin holes and said fourth pair of pin holes when said second and fourth axial lines coincide;

retaining means connected to said attached bodies and separate from said first and second connecting means adapted to cooperatively mate with said retaining grooves to align said first pair of pin holes with said third pair of pin holes and said second pair of pin holes with said fourth pair of pin holes, whereby attaching and detaching the detachable accessory is assisted.

5,256,027

LIFTING APPARATUS

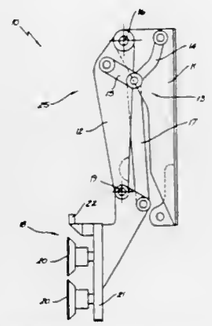
Stephen J. Guest, Leeton, Australia, assignor to Stevelift Pty Ltd A.C.N., South Wales, Australia

Filed Jun. 8, 1992, Ser. No. 847,073

Claims priority, application Australia, Oct. 12, 1989, PJ6835

Int. Cl.[5] B66C *23/00*

U.S. Cl. 414—737 **5 Claims**



1. Apparatus comprising:

lifting means to be attached to a vehicle,

object securing means mounted to said lifting means so as to be pivotally lifted thereby,

said lifting means being moveable between a retracted position wherein said object securing means is located adjacent an object to be lifted and an extended position wherein said object securing means is in a raised, essentially inverted position,

wherein said object securing means comprises suction fastening means connected to a vacuum supply and switch means located in a position adjacent said suction means so as to be activated or deactivated upon interaction with said object at a predetermined position during movement of said lifting means so as to supply or disconnect said vacuum, and

wherein said lifting means comprises a mounting member to be attached to said side of a vehicle in a generally vertical orientation,

and wherein said lifting means comprises a lifting arm pivotally mounted proximate a top end of said mounting member, the lifting arm being moveable relative to the mounting member between said retracted and extended positions such that in said retracted position, said lifting arm is generally co-extensive and parallel with the mounting member, and

further comprising a first member pivotally mounted at one end to said mounting member at a position spaced from a pivot axis of the lifting arm, a second member pivotally mounted at one end to the lifting arm at a position spaced from the said axis, and a third member pivotally mounted at one end to the object securing means at a position spaced from a pivot axis between the object securing means and the lifting arm, the other ends of the first, second and third members being mutually pivotally interconnected such that said second member, said third member, said lifting arm and said object securing means define a parallelogram linkage which maintains a particular orientation of the object securing means relative to the ground within a predetermined range of movement of the lifting arm.

5,256,028

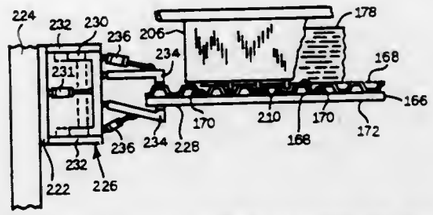
PROCESS FOR HANDLING MATERIAL

Ernest P. Winski, 5413 Nickels Dr., Rte. 4, Oshkosh, Wis. 54901, and Clifton B. McMurry, Rte. 4, 2692 Lakeview, Fond du Lac, Wis. 54935

Continuation of Ser. No. 102,386, Sep. 29, 1987, abandoned, which is a continuation-in-part of Ser. No. 888,511, Jul. 23, 1986, abandoned. This application Dec. 6, 1989, Ser. No. 449,235

Int. Cl.[5] B65G *59/02*

U.S. Cl. 414—786 **16 Claims**



13. A method of handling material on a pallet, said method comprising the steps of:

(a) palletizing said material by

(i) loading material on a pallet in layers and

(ii) placing a spacing sheet having a top and a bottom under each of said layers, said top being compatible with sliding removal of said layers, the top of each said spacing sheet being adjacent the bottom of a corresponding overlying layer, said top having a coefficient of friction "coft" due to intrinsic properties of said top, said bottom having friction elements thereon, whereby said bottom has a coefficient of friction "cofb" greater than the coefficient of friction of the respective said top, said friction elements extending over at least 30% of said bottom;

(b) depalletizing said material by

(i) pushing the top layer off said pallet, thereby exposing an underlying spacing sheet,

(ii) removing said exposed underlying spacing sheet from said pallet, and

(iii) repeating steps (b) (i) and (b) (ii) until the desired amount of material is removed from said pallet.

5,256,029

METHOD AND APPARATUS FOR FORMING ARTICLE GROUPS

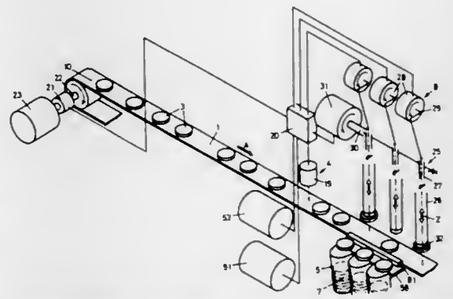
René Fluck, Schleitheim, Switzerland, assignor to Sig Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Continuation-in-part of Ser. No. 688,249, Apr. 22, 1991, Pat. No. 5,186,599. This application Jul. 29, 1992, Ser. No. 920,338

Claims priority, application Switzerland, Jul. 29, 1991, 2255/91-2

Int. Cl.[5] B05B *5/08*

U.S. Cl. 414—792.9 **10 Claims**



4. An apparatus for forming article groups from flat articles, comprising

(a) a belt conveyor for advancing thereon an article column formed of individual, flat-lying articles spaced from one another on a conveyor surface of said belt conveyor in said direction of advance;

(b) a sensor supported above the conveyor surface for sensing the presence of articles at predetermined locations on said conveyor surface and generating signals representing information on said presence;

(c) a plurality of grippers situated downstream of said sensor as viewed in said direction of advance and spaced from one another parallel to said direction of advance; each gripper including grasping means for grasping an article on said conveyor surface;

(d) means for shifting said grippers from above said conveyor surface to a position laterally of said conveyor surface;

(e) a group-forming device including

(1) a plurality of containers; and

(2) a mechanism for positioning the containers at a location in which the articles are released by said grippers and are deposited into said containers to form stacks of superposed articles therein; said mechanism includes means for moving the containers stepwise downwardly from said location; and

(f) a control apparatus having an input connected to said sensor for receiving said signals therefrom; said control apparatus further including outputs connected to said means for shifting said grippers and to said mechanism for operating said means for shifting said mechanism as a function of said signals.

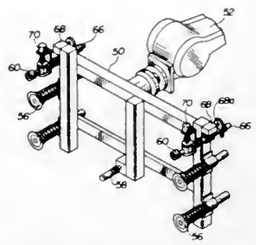
VOL 1155 ISS 4 OCT 26 1993 UMI

5,256,030

METHOD AND APPARATUS FOR TAKING AWAY GLASS PLATES STOOD ON A PALLET WHILE REMOVING SPACERS

Mamoru Tanaka; Takanori Toyoda, and Takao Tomioka, all of Mie, Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed Jun. 16, 1992, Ser. No. 899,272
Claims priority, application Japan, Jun. 18, 1991, 3-146317
Int. Cl.[5] B65G *59/00*
U.S. Cl. 414—798.9 **12 Claims**



9. An apparatus for taking away a plurality of glass plates standing on a pallet one after another, the glass plates being stood in a parallel arrangement by using at least one spacer to space two adjacent glass plates in their upper marginal areas, the spacer having a spacing plate part, a head part which is formed on and contiguous to an upper edge of the spacing plate part such that when the spacing plate part is inserted between the two glass plates the head part rests on the upper edges of the two glass plates and a magnetic part which is formed of an easily magnetizable magnetic material and fixed to the spacing plate part, the apparatus comprising:

a frame which provides a nearly vertical reference plane;

means for tilting said frame forward and rearward and swinging said frame toward the right and toward the left;

a plurality of suction pads which are mounted on said frame so as to come into contact with a target glass plate which is in the forefront of the parallel arrangement on said pallet when said frame approaches the target glass plate in such an attitude that said reference plane is parallel to the target glass plate;

an electromagnetic holder which comprises an electromagnet and is movably mounted on said frame such that, when said spacer rests on said target glass plate such that said spacing plate part of the spacer is on the front side of the target glass plate, the electromagnetic holder is directed toward said spacer;

means for advancing said electromagnetic holder toward said target glass plate and retreating the electromagnetic holder from an advanced position;

means for energizing and deenergizing said electromagnet of said electromagnetic holder; and

means for swinging said electromagnetic holder.

5,256,031

DEVICE AND METHOD FOR REDUCING ONE OR MORE RESONANT VIBRATIONS OF ROTOR BLADES IN TURBOMACHINES

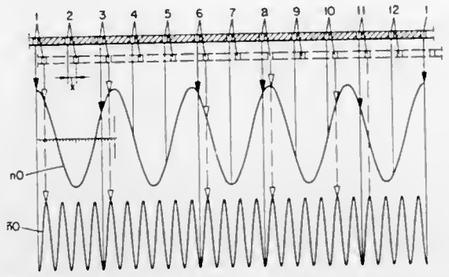
Mihaylo-Rüdiger Bothien, Waldshut-Tiengen, Fed. Rep. of Germany, and Christian Wüthrich, Fislisbach, Switzerland, assignors to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Sep. 28, 1992, Ser. No. 952,259
Claims priority, application Switzerland, Oct. 17, 1991, 3045/91
Int. Cl.[5] F01D *5/10*
U.S. Cl. 415—1 **2 Claims**

1. A method for operating a device for reducing one or more resonant vibrations of rotor blades in turbomachines including at least one cavity provided in a casing wall in the region of rotor blade tips for disturbing a flow between a rotating blade tip and the casing wall which bounds a flow duct, said cavities being arranged over a circumference of the casing, and arranged at least partially between axial planes bounded by an inlet edge and an outlet edge of the rotor blades at an open cross section of the circumference facing the flow duct,

comprising the steps of:

determining a rotary frequency causing the resonance;



selecting a blade vibration to be suppressed, said vibration being associated with a k^{5h} rotary frequency of the rotary; and,

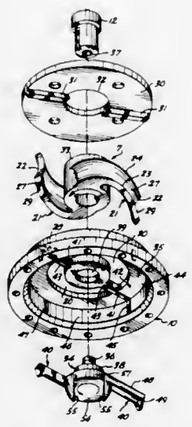
distributing the cavities for disturbing the flow over the circumference in such a way that an excitation with a kth multiple of the rotary frequency takes place, a sum of the angular positions of successive cavities in the circumferential direction being chosen so that the blade vibrations are reduced.

5,256,032

CENTRIFUGAL CHOPPER PUMP

Glenn R. Dorsch, Aberdeen, Wash., assignor to Vaugan Co., Inc., Montesano, Wash.

Filed May 26, 1992, Ser. No. 889,519
Int. Cl.[5] F04D *29/70*
U.S. Cl. 415—121.1 **15 Claims**



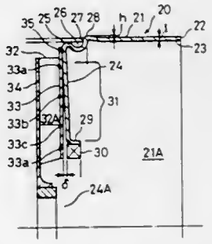
1. In a centrifugal pump having an impeller rotatable about an axis, a pump casing including a bowl receiving the impeller and having an inlet side for intake of material into the pump bowl and a closed side opposite the inlet side, the pump casing including an intake plate extending across the inlet side of the pump bowl, the improvement comprising the intake plate having an outward-opening recess, said recess including a base portion lying in generally a radial plane relative to the axis of rotation of the impeller and further including a peripheral wall portion, and an external cutter received in said recess and having at least one generally radially extending blade including a radially outer end portion, said cutter being rotated with the pump impeller, said intake plate including at least one external anvil rib projecting generally radially inward from the peripheral wall portion of the recess, said external anvil rib being in close cutting relationship to said blade of said external cutter as said cutter is rotated.

5,256,033

SHEET METAL INTERSTAGE CASING FOR A PUMP

Ken-ichi Kajiwara, Tokyo, Japan, assignor to Ebara Corporation, Tokyo, Japan

Filed Dec. 20, 1991, Ser. No. 811,068
Claims priority, application Japan, Nov. 25, 1990, 2-405851; Dec. 27, 1990, 2-402363
Int. Cl.[5] F01D *25/24*
U.S. Cl. 415—214.1 **11 Claims**



1. A sheet metal interstage casing for a pump having a central rotational axis and an impeller, said casing comprising:

a cyclindrical side wall for housing the impeller, said cylindrical side wall being adapted to be mounted coaxially with the central rotational axis of the pump;

an annular casing end wall joined to a first end of said cylindrical side wall and extending radially inwardly from said cylindrical side wall, such that said cylindrical side wall extends away from said casing end wall in a first direction;

a return blade fixed to an outer periphery of said casing end wall and extending radially inwardly, said return blade being disposed on an opposite side of said casing end wall relative to said cylindrical side wall; and

wherein a radially inner portion of said casing end wall is offset in said first direction from said outer periphery thereof and from said return blade, such that a gap is formed between said inner portion of said casing end wall and a radially inner portion of said return blade.

5,256,034

VARIABLE PITCH PROPELLER FOR USE IN CONJUNCTION WITH A VERTICAL AXIS WIND TURBINE

John S. Sultzbaugh, 25 Romberger La., Elizabethville, Pa. 17023

Filed Apr. 19, 1991, Ser. No. 687,640
Int. Cl.[5] F03D *3/02*
U.S. Cl. 416—91 **2 Claims**

1. In a vertical axis windmill, a variable pitch propeller mechanism comprising:

A) a hub having

a hollow housing that includes a base, a closed top end, a cylindrical wall connecting said base and said closed end, and a longitudinal axis extending between said base and said closed end,

bearing means on said base, and

power generator means connected to said housing;

B) three blade arms connected to said housing wall and extending radially outward from said housing wall, said blade arms being spaced apart from each other at equal angular spacings about said cylindrical wall, each blade arm including

two support struts each being connected at a proximal end thereof to said housing wall and extending to a distal end that is spaced radially outward from said wall, said support struts being spaced apart from each other along said housing longitudinal axis,

said support struts being parallel with each other,

each strut having a longitudinal axis extending between said distal and proximal ends,

a plurality of brackets mounted on each strut at locations that are spaced apart from each other along said strut longitudinal axis,

a pivot pin mounted on each bracket,

an airfoil-shaped blade mounted on each pivot pin, each airfoil-shaped blade including

(a) a curved top surface,

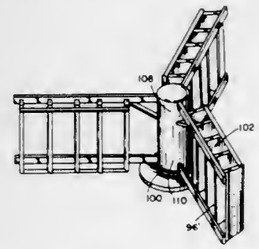
(b) a curved bottom surface,

(c) two ends,

(d) a longitudinal axis extending between said airfoil-shaped blade ends, said top and bottom surfaces being curved in the same direction relative to said airfoil-shaped blade longitudinal axis,

(e) said top and bottom surfaces being curved around said airfoil-shaped blade longitudinal axis at different curvatures, with said top surface having a greater degree of curvature than said bottom surface,

(f) said top and bottom surfaces intersecting each other and defining a leading edge adjacent to said brackets associated with said airfoil-shaped blade, and a trailing edge spaced from said leading edge, and



(g) said mounting brackets all being connected to said airfoil-shaped blades adjacent to the leading edge of each airfoil-shaped blade,

a first rigid connecting rod connected to one end of each of said airfoil-shaped blades near the trailing edge of each blade,

a second rigid connecting rod connected to another end of each of said airfoil-shaped blades near the trailing edge of each blade,

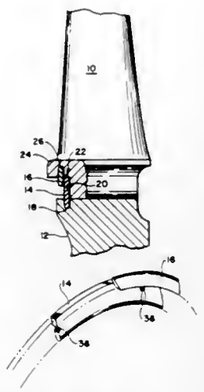
said rigid connecting rods connecting all of said airfoil-shaped blades together to move in unison,

each blade arm further including a gusset strut connecting one support strut to said housing, said gusset strut being located adjacent to said one strut proximal end and being angled with respect to said one strut, said blade arms all being spaced apart from each other by angles of 120°;

boundary layer control means for controlling air flow along said airfoil-shaped blade top surfaces, said boundary layer control means including suction means for drawing air into said airfoil-shaped blades, said suction means including a pump located inside each airfoil-shaped blade, an intake hole defined in said airfoil-shaped blade near said leading edge, an exhaust hole defined in said airfoil-shaped blade near said trailing edge, and means fluidically connecting said pump means to said intake and exhaust holes, said pump being supported on said means fluidically connecting said pump means to said intake and exhaust holes.

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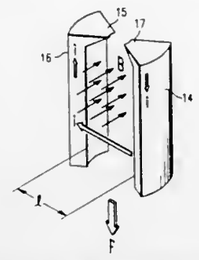
5,256,035
ROTOR BLADE RETENTION AND SEALING CONSTRUCTION
James W. Norris, Jupiter; James Hurchala, Stuart, both of Fla., and Noel H. Davis, Atlanta, Ga., assignors to United Technologies Corporation, Hartford, Conn.
Filed Jun. 1, 1992, Ser. No. 891,141
Int. Cl.[5] F01D 5/32
U.S. Cl. 416—220 R 4 Claims



1. A rotor for a gas turbine engine, said rotor having a plurality of notches about its periphery, rotor blades mounted in said notches about said rotor periphery, a circumferential groove around said rotor and immediately below said notches, each rotor blade having a root and platform means above said root, said root conforming in exterior shape to said rotor notches, said platform having at one end a portion overhanging said root and an underside surface having circumferentially extending groove means, a plurality of circumferentially extending segment plates for retaining said blades in position on said rotor, the lower edge of each segment plate being contained within said rotor groove, the back face of each segment plate being adjacent a face of said blade root and the upper edge of each segment plate being adjacent the underside surface of said overhanging platform portion between said platform groove means and said blade root face, each segment plate extending between the rotor midportion between two adjacent rotor notches and the rotor midportion between two other adjacent notches and covering at least two blade roots, segment plate anti-rotation means installed at at least one rotor location between adjacent rotor notches, the ends of said segment plates adjacent said anti-rotation means being contoured about said anti-rotation means, and circumferential ring means contained in part in said blade platform groove means and covering the outer periphery of said segment plates.

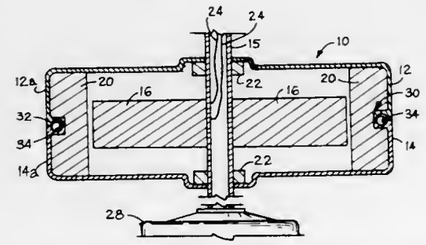
5,256,036
METHOD AND APPARATUS FOR PUMPING A MEDIUM
James J. Cole, San Antonio, Tex., assignor to Southwest Research Institute, San Antonio, Tex.
Filed Apr. 11, 1991, Ser. No. 685,233
Int. Cl.[5] H02K 44/02
U.S. Cl. 417—48 27 Claims

1. An apparatus for pumping a medium along a desired path of flow, comprising:
means for creating a plasma arc in the medium orthogonal to the desired path of flow of the medium; and
means for generating a magnetic field orthogonal to said plasma arc and orthogonal to the desired path of flow of



the medium for moving said plasma arc along the desired path of flow of the medium.

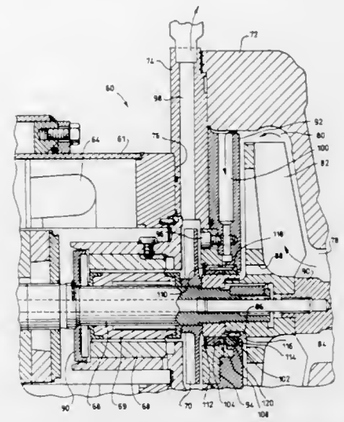
5,256,037
SELF BALANCING MOTOR
Michael R. Chatelain, P.O. Box 115, Hessmer, La. 71341
Filed Jun. 24, 1992, Ser. No. 903,145
Int. Cl.[5] F04D 29/32
U.S. Cl. 417—423.7 15 Claims



1. An apparatus for balancing a ceiling fan having an electric motor with a generally cylindrical rotating housing having a top and a generally cylindrical outside wall comprising, in combination:
a. a central stationary shaft for supporting said fan, said central shaft having a stationary stator for receiving electrical energy rigidly connected thereto,
b. a rotatable housing enclosing said stator and containing a rotor for forcing said housing to rotate around said central stationary shaft when said stator is receiving electrical energy, said rotatable housing being rotatably connected to said central shaft means,
c. a plurality of fan blades connected to said rotatable housing,
d. a hollow ring connected to said rotating housing for holding movable weight means, and
e. movable weight means located within said hollow ring for balancing said ceiling fan when said rotatable housing is rotating.

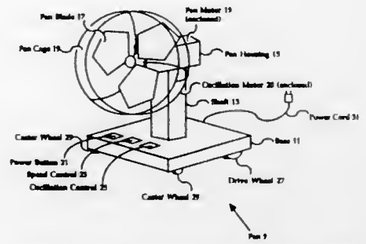
5,256,038
CANNED MOTOR PUMP
Kevin Fairman, Evergreen, Colo., assignor to Sundstrand Corp., Rockford, Ill.
Filed Nov. 12, 1991, Ser. No. 791,575
Int. Cl.[5] F04B 17/00, 35/04
U.S. Cl. 417—423.11 7 Claims

1. A canned motor pump comprising:
a motor housing connected to a supply of fluid;
a motor disposed within the motor housing and having an axially extending output shaft;
a pump housing abutting the motor housing and defining a pump inlet and pump outlet;
an impeller mounted on the motor output shaft in the pump housing for pumping a second fluid from the pump inlet to the pump outlet, said second fluid having a pressure which is increased from inlet pressure at said pump inlet to discharge pressure at said pump outlet;
a balance chamber between the impeller and the motor for receiving second fluid at inlet pressure to equalize thrust force acting on opposite sides of the impeller;



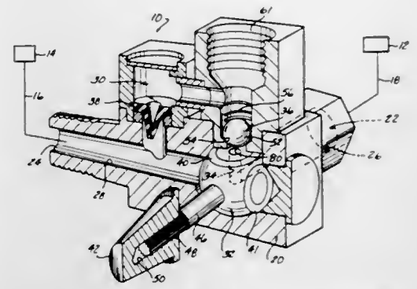
a seal assembly surrounding the motor output shaft and defining a reference cavity between the motor and the balance chamber; and
a fluid passageway connecting the pump outlet and the reference cavity for supplying a quantity of the second fluid at discharge pressure to the reference cavity and thereby restricting leakage from the motor housing into the pump housing without subjecting the impeller to said increased discharge pressure.

5,256,039
REMOTE CONTROLLED MOVEABLE FAN
Dale K. Crawford, 14030 Kronblum #212, Hawthorne, Calif. 90250
Filed Nov. 9, 1992, Ser. No. 953,741
Int. Cl.[5] F04B 21/00
U.S. Cl. 417—234 5 Claims



1. A remotely controlled moveable fan comprising:
a movable base in which the base further comprises a motor means for moving the fan;
a fan motor connected to the base for propelling fan blades; and
remote control signaling means for signaling the drive motor means and for thereby controlling the movement of the base.

5,256,040
PRIMING PUMP VALVE
Stephen D. Davis, Ann Arbor, and Willis E. Tupper, Pinckney, both of Mich., assignors to Davco Manufacturing Corp., Saline and Dapco Industries, Dexter, both of Mich.
Filed Oct. 9, 1992, Ser. No. 959,065
Int. Cl.[5] F02M 1/16
U.S. Cl. 417—440 2 Claims



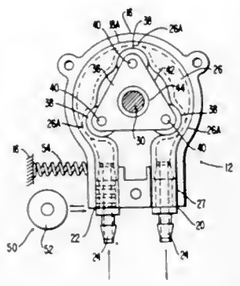
1. A pump for priming a fluid flow system comprising:
a housing including an inlet port and an outlet port, a first passage communicating with said inlet port, a second passage communicating with said outlet port, a bypass passage connectable with said second passage, valve control means movable between a first position connecting said first passage with said second passage and a second position connecting said first passage with said bypass passage, a first check valve means normally permitting flow only from said valve control means to said bypass passage, a second check valve means normally permitting flow only from said bypass passage to said second passage, and means communicating with said bypass passage for translating fluid from said first passage to said second passage via said first and second check valve means when said valve control means is in said second position;
a ball member including a valve inlet port, a valve outlet port and a passage communicating between said valve inlet and valve outlet ports, said valve inlet port located generally 90° from said valve outlet port referenced from the center of said ball member and said valve inlet port being connected to said first passage of said housing, said ball member being movable about an axis located along said first passage for allowing communication of said housing inlet port with said housing outlet port via said second passage when in said first position and communication of said housing inlet port with said bypass passage when in said second position;
sealing means for allowing unrestrained rotation of said ball member and for sealing flow between said ball member and said passages; and
handle means for rotating said ball member between said positions.

5,256,041
PERISTALTIC PUMP ARRANGEMENT
Robert D. Tucker, Memphis, Tenn., assignor to Auto-Chlor System, Incorporated, Memphis, Tenn.
Filed Feb. 5, 1993, Ser. No. 14,225
Int. Cl.[5] F04B 43/08
U.S. Cl. 417—477 7 Claims

1. A peristaltic pumping apparatus comprising: a support assembly; motor means having a drive shaft and connected to said support assembly; a pump housing assembly including means for freely mounting said pump housing assembly thereon for rotation thereabout; an occludable tubing cooperating with said pump housing assembly; said pump housing assembly including a tubing support surface against which said tubing is compressed and occluded; rotatable means mounted

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on said drive shaft and including a plurality of circumferentially spaced rollers for selective engagement with said tubing and being rotational in response to rotation of said drive shaft so as to selectively compress and occlude said tubing to thereby effect pumping of fluid through said tubing; and, mo-



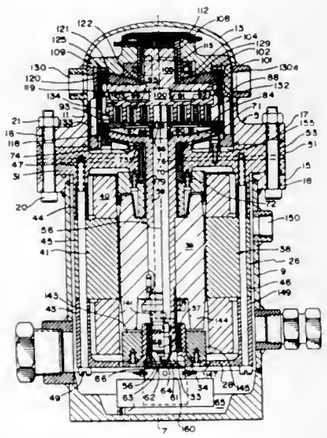
tion arresting means being positioned to be spaced from and engaged by said pump housing assembly after predetermined movement of said pump housing assembly means in response to rotation of said drive shaft to thereby allow said rotatable means to gain momentum sufficient to rotate relative to said tubing and thereby effect pumping of fluid through said tubing.

5,256,042

BEARING AND LUBRICATION SYSTEM FOR A SCROLL FLUID DEVICE

John E. McCullough, Carlisle; Ronald J. Forni, Lexington, and Robert M. Lucas, Lynnfield, all of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Filed Feb. 20, 1992, Ser. No. 837,979
Int. Cl.[5] F01C *1/04, 21/04*
U.S. Cl. 418—1 24 Claims



1. A scroll fluid device comprising:

a housing;

a pair of intermeshing axially extending involute spiral wraps mounted in the housing for relative orbital movement about an orbit center without relative rotation to provide at least one periodically and cyclically varying volume fluid transport chamber movable radially between the wraps;

axially spaced wrap support plates having said involute wraps disposed on respective opposing facing sides of said plates;

synchronizer means for maintaining said wraps in a predetermined rotational phase relationship;

means for supplying fluid to an intake zone associated with the wraps and for conveying transported fluid away from the wraps;

fluid bearing means for reacting axial thrust and radial side loads generated during operation of the scroll fluid device, said bearing means including at least one hydrostatic bearing;

drive means in the housing for driving the wrap support plates in relative orbital motion; and

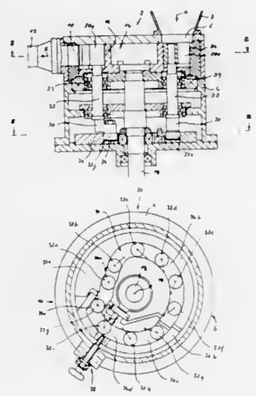
means for supplying pressurized lubricant to said fluid bearing means, said means for supplying pressurized lubricant being separate and distinct from said fluid supplying means.

5,256,043

VANE PUMP HAVING IMPROVED VANE SEALING

Heinz Rose, Blender, Fed. Rep. of Germany, assignor to Vemag Maschinenbau GmbH, Verden/Aller, Fed. Rep. of Germany

Filed Mar. 27, 1992, Ser. No. 859,085
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1991, 4110547
Int. Cl.[5] F01C *21/00*
U.S. Cl. 418—23 20 Claims



1. A vane pump for conveying bulk substances, in particular meat paste in the form of soupy, boiled or raw sausage base, or pieces of meat or other viscous bulk substances, comprising:

a housing having an inlet and an outlet for the bulk substance;

a rotor disposed inside the housing, wherein the rotor comprises a central driving element and several moving vanes, which are arranged one behind the other on the driving element in its direction of rotation, and are commonly surrounded by a limiting wall, the limiting wall running in the direction of movement of the vanes, said vanes forming conveying chambers defined by said limiting wall for picking up and transporting the bulk substance, and with rotation of the driving element being moved past the inlet and outlet in sequence;

control means for a defined approach of the vanes toward the limiting wall up to a minimum interval, through means of which is achievable a sufficient degree of sealing without physical contact between the vanes and the limiting wall; and

wherein said vanes are each one pivotably journaled about their own axis on said central driving element, and a free end of each vane facing said limiting wall has, between a leading and trailing edges, the form of a section of a cylinder allowing the pivoting of said vanes with keeping said

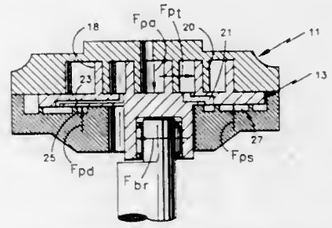
minimum interval at least from portions of said limiting wall for adjusting the volume of said conveying chambers.

5,256,044

SCROLL COMPRESSOR WITH IMPROVED AXIAL COMPLIANCE

Jeffrey J. Nieter, Coventry; Raymond L. DeBlois, Tolland; Anthony J. Marchese, Wethersfield, all of Conn., and Thomas R. Barito, E. Syracuse, N.Y., assignors to Carrier Corporation, Farmington, Conn.

Continuation of Ser. No. 763,691, Sep. 23, 1991, abandoned. This application Apr. 8, 1993, Ser. No. 44,905
Int. Cl.[5] F04C *18/04*
U.S. Cl. 418—55.5 6 Claims



1. A scroll compressor for compressing a fluid, comprising:

a first scroll means having a floor portion and a spiral wrap portion extending perpendicularly from said floor portion of said first scroll mean;

a second scroll means having a floor portion and a spiral wrap portion extending perpendicularly from said floor portion of said second scroll means, said spiral wrap of said second scroll means being similarly shaped to said spiral wrap of said first scroll means, said second scroll means positioned relative to said first scroll means such that said spiral wraps mesh with each other to form compression pockets therebetween;

shaft means for moving said first scroll means in an orbiting path relative to said second scroll means so that fluid compression is achieved in said compression pockets the fluid compression generating a resultant pressure force within said compression pockets having an axial component and a non-axial component;

bearing means disposed about said shaft means for supporting said shaft means whereby a reaction force is generated counteracting the non-axial component of the pressure force in said compression pockets, the reaction force and the non-axial component of the pressure force generating an overturning moment acting upon said first scroll means, said overturning moment having a magnitude which varies over an orbiting cycle; said scroll compressor characterized by;

a dynamic backpressure chamber disposed behind at least one of said first scroll means and said second scroll means, said dynamic backpressure chamber having a first volume; and

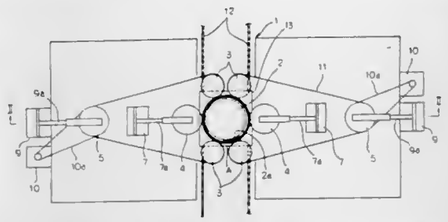
means for venting fluid into said dynamic backpressure chamber from a first selected one of said compression pockets at a selected location at which the fluid has a pressure which varies substantially over an orbiting cycle of said first scroll means thereby establishing a dynamic pressure therein which substantially varies over an orbiting cycle of said first scroll means in proportion to the overturning moment generated during the compression process thereby preventing the overturning moment, from tipping said first scroll means relative to said second scroll means, said means for venting having a first effective flow diameter with a ratio of said first effective flow diameter to the cube root of said first volume being on the order of at least about 0.2.

5,256,045

APPARATUS FOR VULCANIZING ENDLESS RUBBER BELTS

Ken-ichi Ohtani; Osamu Sakamoto; Masahiko Houzouji, and Hiroshi Yamamoto, all of Kobe, Japan, assignors to Bando Kagaku Kabushiki Kaisha, Kobe, Japan

Filed Sep. 5, 1991, Ser. No. 755,283
Claims priority, application Japan, Sep. 7, 1990, 2-237725
Int. Cl.[5] B29C *35/04*
U.S. Cl. 425—28.1 2 Claims



1. A vulcanizing apparatus for endless rubber belts comprising:

a cylindrical vulcanizing drum for winding and molding cylindrical unvulcanized rubber belt materials thereover, said vulcanizing drum being removably and rotatably supported on a transfer mechanism, said vulcanizing drum being rotatable around a vertical axis thereof;

a pair of endless pressurizing bands arranged to oppose each other with said vulcanizing drum between, said pressurizing bands being operable to arcuately surround and press opposing side portions of belt materials on the circumferential surface of said vulcanizing drum, said pressurizing bands each being placed over a pair of guide rolls and tension rolls with which said vulcanizing drum is surrounded, said cylindrical unvulcanized rubber belt materials having an area and said pair of bands pressing the majority of said area, said belt materials being uniformly bent by said drum;

means for heating the circumferential surface of said drum by introducing steam into the interior of said vulcanizing drum from a center bore at one end of said drum, said drum contacting and uniformly heating the entire area of said belt materials; and

means for pressing said bands against said vulcanizing drum and for synchronously, equidirectionally rotating said bands so as to turn said vulcanizing drum and continuously vulcanize the cylindrical unvulcanized rubber belt material.

5,256,046

PRESS FOR PRODUCING COATED-CORE TABLETS

Wolfgang Korsch, and Michael Schmett, both of Berlin, Fed. Rep. of Germany, assignors to Korsch oHG Maschinenfabrik, Berlin, Fed. Rep. of Germany

Filed Aug. 7, 1991, Ser. No. 741,142
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1990, 4025484
Int. Cl.[5] A23P *1/08*
U.S. Cl. 425—126.1 9 Claims

1. A press for producing tablets, the press comprising:

a rotor fixed to a drive shaft and rotating with said drive shaft;

a lower stamp section connected to said rotor, said lower stamp section including a lower punch;

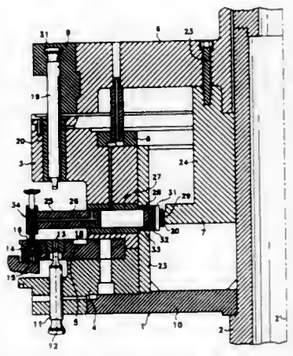
an upper stamp section connected to said rotor, said upper stamp section being positioned axially opposite said lower stamp section and including an upper punch;

a die table connected to said rotor and positioned axially between said upper and lower stamp sections, said die table including a plurality of dies aligned in a substantially

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partial circle, said die table also including a plurality of receiving pocket means for holding a tablet core;

radial arm means connected to said rotor and axially positioned between said die table and said upper stamp section, said radial arm means radially movable towards and away from said drive shaft;



transfer head means connected to and moving with said radial arm means, and for receiving and transferring the tablet cores from one of said receiving pocket means to one of said plurality of dies.

5,256,047

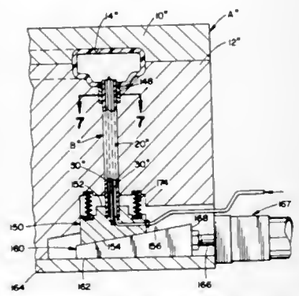
GAS ASSISTED INJECTION MOLDING APPARATUS UTILIZING SLEEVE AND PIN ARRANGEMENT

Jay F. Moldovanyi, Brecksville, Ohio, assignor to Nitrojection Corporation, Middlefield, Ohio

Filed Dec. 3, 1991, Ser. No. 801,949

Int. Cl.[5] B29C *45/23*

U.S. Cl. 425—130 **27 Claims**



1. An apparatus for use in fluid-assisted injection molding of plastic material so as to form an injection molded product, the apparatus comprising:

a pair of mold members defining, when closed, a sealed cavity;

a first opening provided in one of said mold members for allowing the injection of a plastic material into said cavity;

a second opening provided in one of said mold members, and spaced from said first opening, for allowing the injection of a fluid into said cavity;

a sleeve extending through said second opening, said sleeve having a longitudinally extending bore with an open first end;

a first means for rigidly securing said sleeve in relation to said one of said mold members;

a pin extending through said sleeve;

a second means for rigidly securing said pin in relation to said sleeve; and,

an annular fluid flow passage defined between a tip of said pin and a tip of said sleeve.

5,256,048

TOOL FOR THE MULTICOMPONENT INJECTION MOLDING OF BRUSH BODIES

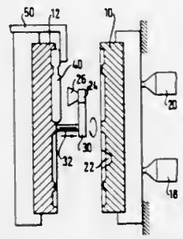
Gabriel Jacobs, Oostakker, and Leonel P. Boucherie, Izegem, both of Belgium, assignors to G. B. Boucherie N.V., Izegem, Belgium

Filed Mar. 6, 1992, Ser. No. 846,853

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1991, 9103533[U]

Int. Cl.[5] B29C *45/14*

U.S. Cl. 425—130 **8 Claims**



1. A tool for multicomponent injection molding of brush bodies, comprising first and second tools which are relatively movable towards and away from each other, said tools together forming at least a first mold cavity and at least a second mold cavity, a first injection device associated with said first mold cavity and a second injection device associated with said second mold cavity, a carrier associated with said first and second mold cavities, said carrier having an insert being located in said first mold cavity when said first injection device injects a first molten material into said first mold cavity forming a premolding, said carrier being operable to move said insert with said premolding from said first mold cavity to said second mold cavity when said first and second tools are separated and means for separating said premolding from said insert when said insert has positioned said premolding in said second mold cavity.

5,256,049

STORAGE HEAD FOR A BLOW MOLDING MACHINE

Peter Langos, St. Augustin, and Manfred Lehmann, Cologne, both of Fed. Rep. of Germany, assignors to Mauser-Werke GmbH, Bruehl, Fed. Rep. of Germany

PCT No. PCT/EP91/00985, § 371 Date Mar. 3, 1992, § 102(e) Date Mar. 2, 1992, PCT Pub. No. WO91/18732, PCT Pub. Date Dec. 12, 1991

PCT Filed May 28, 1991, Ser. No. 828,977

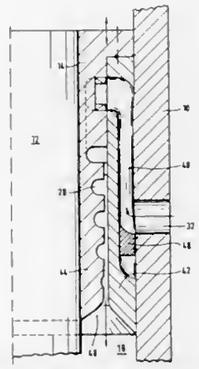
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1990, 4017699

Int. Cl.[5] B29C *47/20*

U.S. Cl. 425—131.1 **5 Claims**

1. A storage head for a blow molding machine for the discontinuous production of plastic hollow bodies, comprising: at least one extruder, connected to the storage-head housing, for feeding at least one molten plastic melt into the storage head; a centrally disposed shaft; and a distributor element, formed as a spiral channel and enclosing the shaft concentrically, to distribute the plastic melt over a circular circumference and conducting it into an annular storage space underneath an ejector piston, which is mounted in the storage-head housing so as to be movable axially, and by means of which the plastic melt accumulated in the storage space can be ejected intermittently by an annular nozzle which connects underneath to the storage space, wherein the ejector piston (**14**) is formed of at least two cylindrical tubular pieces (**42, 44**), and the spiral

channels of the spiral-channel distributor (**20**) are formed on one said tubular piece (**42, 44**) and are covered by another said tubular piece (**44, 42**), whereby the depth of the spirals of the spiral-channel distributor (**20**) decreases and the gap between the two tubular pieces (**42, 44**) becomes broader, in order to



distribute the plastic melt along the circumference, and such that the plastic melt which is distributed on the circumference of the cylindrical pieces exits from an annular gap (**46**) that is formed on the front face in the ejector piston (**14**), so as to enter into the storage space (**16**).

5,256,050

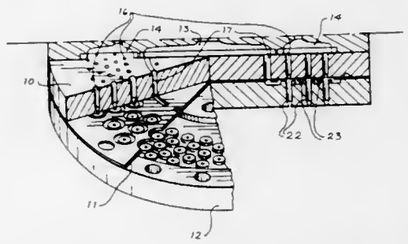
METHOD AND APPARATUS FOR SPINNING BICOMPONENT FILAMENTS AND PRODUCTS PRODUCED THEREFROM

Barrie L. Davies, Weddington, N.C., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Continuation of Ser. No. 454,217, Dec. 21, 1989, abandoned. This application Jun. 5, 1992, Ser. No. 895,412

Int. Cl.[5] B29C *47/00*; D01D *5/00*

U.S. Cl. 425—131.5 **5 Claims**



1. A filament spinneret assembly for the production of sheath/core bicomponent filaments consisting essentially of a distributor having a plurality of spaced core polymer flow passages and multiple sheath polymer flow passages, a spinneret having a plurality of spaced spinneret passages, each of said spinneret passages in coaxial alignment with the outlet of the respective core distributor flow passage, a plurality of recessed sheath channels and a plurality of raised buttons surrounding each spinneret passage and located between the spinneret passage and the sheath channels wherein each button has a flat top face, core polymer supply means for delivery of pressurized polymer to the inlet of each said distributor core polymer flow passage, and sheath polymer supply means for delivery of pressurized sheath polymer to the inlet of each said sheath polymer flow channel and a shim means positioned between said spinneret and said distributor for forming a gap having a height between the top face side of each button of the spinneret and said distributor at each spinneret passage whereby the thickness of the shim determines the height of said gap and effects a controlled pressure drop of the sheath polymer flow through the gap between the top face of each button and the distributor to the inlet of each said spinneret passage separately wherein said shim means has a shim thickness of less than 0.5 mm.

5,256,051

STORAGE HEAD FOR A BLOW MOLDING MACHINE

Peter Langos, St. Augustin, and Manfred Lehmann, Cologne, both of Fed. Rep. of Germany, assignors to Mauser-Werke GmbH, Bruehl, Fed. Rep. of Germany

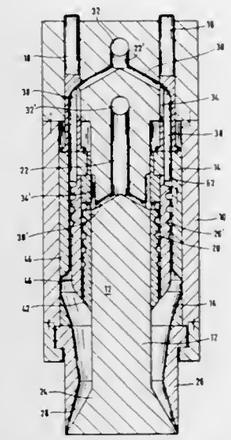
PCT No. PCT/EP91/00984, § 371 Date Mar. 30, 1992, § 102(e) Date Mar. 30, 1992, PCT Pub. No. WO91/18731, PCT Pub. Date Dec. 12, 1991

PCT Filed May 28, 1991, Ser. No. 828,981

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1990, 4017699

Int. Cl.[5] B29C *47/06*

U.S. Cl. 425—133.1 **11 Claims**



1. A storage head for a blow molding machine for the discontinuous production of multiple-layer high-volume plastic hollow bodies, comprising: at least two extruders connected to a storage-head housing (**10**) to feed at least two liquid plastic melts into an annular storage space of a storage head; a centrally disposed shaft (**12**); and at least two mutually independent distributor elements, concentrically surrounding the shaft (**12**) to distribute the plastic melts circumferentially of said shaft and to conduct them into said annular storage space (**16**) below an ejector piston (**14**), which is mounted in the storage-head housing (**10**) by means of one or more setbolts (**18**) so as to be movable axially, and by means of which a multiple-layer plastic melt which is distributed circumferentially of said shaft and which is stored in the storage space (**16**) is co-extruded through an annular nozzle gap (**28**) which is disposed below the storage space (**16**), wherein the ejector piston (**14**) consists of at least two tubular pieces (**42, 44, 46**) which surround one another concentrically, and a separate one of said distributor elements is located on each said tubular piece (**42, 44, 46**), each said distributor element being defined by a cylinder shaped spiral-channel distributor (**20**).

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5,256,052

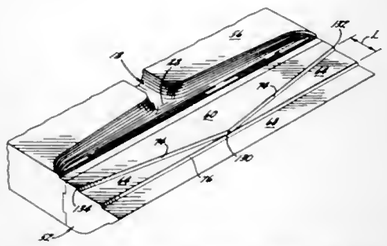
EXTRUSION PROCESS AND APPARATUS WITH MODIFIED PRELAND

Peter F. Cloeren, Orange, Tex., assignor to The Cloeren Company, Orange, Tex.

Continuation of Ser. No. 852,825, Mar. 13, 1992, abandoned, which is a continuation of Ser. No. 653,067, Feb. 8, 1991, abandoned, which is a division of Ser. No. 550,516, Jul. 10, 1990, abandoned. This application Feb. 25, 1993, Ser. No. 22,766

Int. Cl.[5] B29C *47/00*

U.S. Cl. 425—133.5 17 Claims



1. An extrusion process comprising passing a flow stream through a channel portion in which flow stream pressure drop and distribution occur thereafter providing said flow stream which has substantially unequal flow volume across the steam width, with substantially equal flow volume across the stream width, by passing said flow stream through a damming zone designed to be non-adjustable and to comprise different gaps and of a length designed to compensate for said pressure drop, said damming zone length being comprised of a primary damming stage, and a secondary damming stage of complementary damming effect compared to said primary damming stage, and in direct fluid communication therewith; and thereafter passing said flow stream through an exit orifice free of any contact with an intervening, adjustable flow-restricting member.

5,256,053

BRICK PRESS

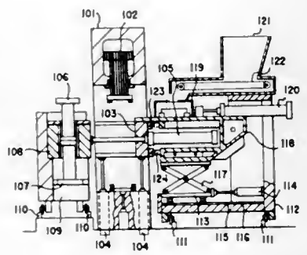
Hiroshi Haguchi, Okayama, Japan, assignor to Kabushiki Kaisha Mitsuishi Fukai Tekkosho, Bizen, Japan

Filed Dec. 19, 1991, Ser. No. 810,075

Claims priority, application Japan, Dec. 26, 1990, 2-402005[U]; Jun. 21, 1991, 3-047172[U]

Int. Cl.[5] B28B *3/08*

U.S. Cl. 425—186 14 Claims



1. A brick press comprising:

a brick forming die tooling set including a mold and an upper plunger and a lower plunger;

a press body;

a mold holder in said press body;

a plurality of first transfer trucks for mold exchange;

transfer means for transferring said brick forming die tooling set to said mold holder of said press body and for transferring said brick forming die tooling set to one of said first transfer trucks for mold exchange;

a plurality of second transfer trucks;

a raw material supply device provided on each of said second transfer trucks for supplying raw material to said mold when said mold is transferred to said mold holder; and

each of said second transfer trucks having a pin for positioning its respective raw material supply device to said press body.

5,256,054

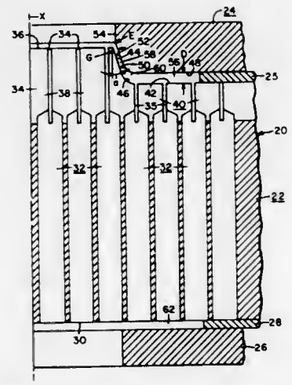
METHOD AND APPARATUS FOR FORMING A UNIFORM SKIN ON A CELLULAR SUBSTRATE

Joseph F. Cocchetto, Painted Post; Harry A. Kragle, Corning, and Floyd E. Stumpff, Elmira, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Division of Ser. No. 620,099, Nov. 30, 1990, Pat. No. 5,219,509. This application Aug. 10, 1992, Ser. No. 926,991

Int. Cl.[5] B29C *47/12*

U.S. Cl. 425—462 17 Claims



1. Apparatus for forming a cellular substrate with a desired skin which comprises:

a die body having an inlet face and a central outlet face;

central flow means for flowing batch material centrally through said die body substantially parallel to a longitudinal axis and for extruding a cellular structure from said outlet face centrally of said die body;

peripheral flow means for flowing a portion of said batch material through peripheral portions of said die body for forming a skin on the central cellular structure;

collector means for collecting such skin-forming batch material peripherally of said central cellular structure;

transition means for flowing such collected skin-forming batch material within said collector means from a first flow path transversely of said longitudinal axis and having a given flow depth perpendicular to the direction of flow, into a second flow path having a lesser flow depth perpendicular to the direction of flow;

passage means providing said second flow path for flowing said collected and transitioned skin-forming batch material at an acute angle to said longitudinal axis and for minimizing the distortion of peripheral web portions of said central cellular structure;

said passage means for flowing said collected skin-forming batch material at an acute angle also providing means for knitting such collected skin-forming batch material with peripheral web portions of said central cellular structure while said web portions are inwardly of said outlet face; and

discharge means for discharging said cellular structure with the desired skin formed thereon from the outlet face of said die body.

5,256,055

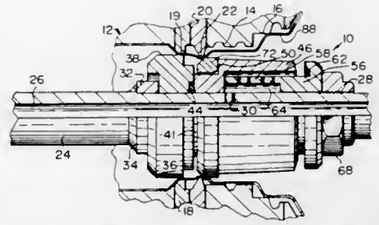
BLOWPIN WITH SELF ALIGNING SHEAR RING

Terry L. Morris, Jackson, Mich., assignor to Allied Tool Inc., Michigan Center, Mich.

Filed Dec. 14, 1992, Ser. No. 989,756

Int. Cl.[5] B29C *49/50*

U.S. Cl. 425—527 1 Claim



1. In a blowpin assembly for blow molding apparatus wherein the blowpin assembly is located within the neck of the molded article, the assembly including an elongated tubular pin having an air passage defined therein and an annular shearing ring for cooperation with a circular mold opening having an axis to shear the molded article, the improvement comprising, a first annular air seal mounted on the pin adjacent a second annular air seal mounted on the pin having a radial shoulder engaging said first air seal, an annular recess defined on said first air seal having an annular base surface, an annular shear ring mounted within said recess having an inner bore surface of a configuration corresponding to the configuration of said recess base surface and circumscribing said recess base surface, the diametrical dimension of said recess bore surface being less than the diametrical dimension of said shear ring bore surface whereby said shear ring will automatically radially align itself with the circular mold opening during article shearing, said annular recess having a first axial dimension defined by a radial shoulder formed on said first air seal and said second air seal radial shoulder, said shear ring having a second axial dimension less than said first axial dimension permitting limited tilting of said shear ring within said recess to aid in alignment of said shear ring with the circular mold opening, said shear ring having a longitudinal axis, an outer cylindrical surface, and a front face with respect to the direction of shear ring movement during shearing, said front face being obliquely related to said shear ring axis having a minimum dimension adjacent said second air seal and a maximum dimension equal to said shear ring outer cylindrical surface, said oblique front face directly intersecting said shear ring outer cylindrical surface.

5,256,056

SELF-CLAMPING MOLD ASSEMBLY

Robert L. Brown, Hartville, Ohio; Michael K. Parrent, Welland, Canada; David E. Baxter, Ravenna, and John C. White, Cuyahoga Falls, both of Ohio, assignors to GenCorp Inc., Fairlawn, Ohio

Continuation-in-part of Ser. No. 621,675, Nov. 30, 1990, abandoned. This application Aug. 28, 1991, Ser. No. 751,015

Int. Cl.[5] B29C *45/66*

U.S. Cl. 425—595 17 Claims

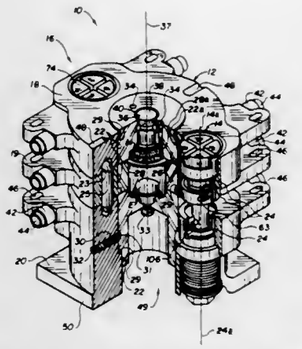
1. A self-clamping mold assembly for receiving molding material comprising,

a body and a lock mechanism housed within said body,

said body having at least two aligned, independent plates, each plate having a mold cavity portion and a lock bore portion with a central axis, and each mold cavity portion of each independent plate together forming a material cavity,

said lock mechanism including a tie rod assembly for engagement with one of said independent plates, and a force generator assembly for engagement with another of said independent plates, said tie rod and force generator assemblies engaged with said lock bore portion of said plates,

said tie rod assembly having a tie rod rotatably engaged within said assembly,



said force generator assembly having a lock shaft positioned for locking engagement with said tie rod and a spring biased member retained with respect to said lock shaft, whereby upon rotation of said tie rod into locking engagement with said lock shaft compressing said spring biased member, said independent plates are maintained in clamped condition and form said material cavity for receiving molding material.

5,256,057

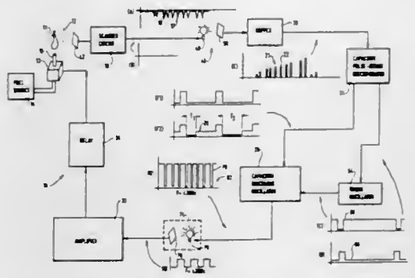
FUEL CONTROL CIRCUIT

Fred Grow, McHenry, Ill., assignor to Protection Controls Inc., Skokie, Ill.

Filed Jul. 10, 1992, Ser. No. 911,942

Int. Cl.[5] F23N *5/08*

U.S. Cl. 431—79 12 Claims



1. A multi-stage fail-safe fuel control circuit for monitoring a flame supplied through a valve to a burner, the flame emitting photons and having energy, the fuel control circuit including:

a) a flame scanner located adjacent the burner for generating a count signal including pulses provided at a rate proportional to the energy of the flame adjacent the burner;

b) a timer providing a timing signal which periodically shifts between a first and second state;

c) a capacitive pulse-height discriminator coupled to the flame scanner and to the timer, for measuring the rate of the pulses in the count signal during the first state of the

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timing signal, and for generating a discriminator signal if the pulses exceed a desired rate during the first state;

d) a capacitor discharge oscillator coupled to the pulse-height discriminator and the timer for charging a capacitor during said first state and for providing an oscillating signal powered by the capacitor at a first frequency if the count discriminator signal is generated during the first state;

e) an amplifier coupled to the oscillator and resonating at the first frequency for providing a maintaining voltage when said oscillating signal is at said first frequency and for providing a voltage less than the maintaining voltage when said oscillating signal is not at said first frequency;

a flame relay coupled to said amplifier for controlling said valve, wherein the flame relay closes said valve if stage a) does not generate said count signal, if stage b) does not generate said timing signal, if stage c) does not generate said discriminator signal, if stage d) does not generate said oscillating signal, and if stage e) does not generate said maintaining voltage.

5,256,058

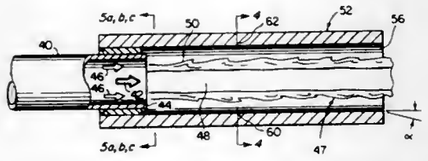
METHOD AND APPARATUS FOR OXY-FUEL HEATING WITH LOWERED NO_x IN HIGH TEMPERATURE CORROSIVE ENVIRONMENTS

Aleksandar G. Slavejkov, Allentown; Zbigniew Zurecki, Macungie, both of Pa.; Mahendra L. Joshi, Altamonte Springs, and James K. Nabors, Apopka, both of Fla., assignors to Combustion Tec, Inc., Orlando, Fla. and Air Products and Chemicals, Inc., Allentown, Pa.

Filed Mar. 30, 1992, Ser. No. 860,652

Int. Cl.[5] F23C *7/00*

U.S. Cl. 431—187 **5 Claims**



1. A system for heating a chamber to an elevated temperature comprising in combination:

a precombustor adapted for attachment to or mounting in a wall of said chamber, said precombustor having at least two generally parallel faces with one of said faces exposed to the inner volume of said chamber, said precombustor containing a generally cylindrical passage extending through said precombustor between said generally parallel faces, said passage adapted to position an oxy-fuel burner having a longitudinal axis, the axis of said burner coincident to the longitudinal axis of said passage; and

a generally cylindrical post mix oxy-fuel burner of the type having a front end containing a single central fluid aperture surrounded by one surrounding fluid aperture or a plurality of apertures disposed in a single circular array so that fluid exiting said surrounding fluid aperture surrounds said fluid exiting said central aperture as it exits said front of said burner disposed inside said passage in said precombustor so that said passage extends a distance beyond said front end of said burner, said distance being fixed by a ratio of between 2 and 6 determined by dividing the distance (length) between the front end of said burner and the end of said passage in said precombustor by the diameter of said front end of said burner where said burner is selected to have a firing rate of from 0.25 to 40 million Btu/hr.

means to introduce oxygen gas into said surrounding fluid aperture and gaseous fuel into said central fluid aperture, said means adapted to limit the velocity of said oxygen and said fuel at the front end of said burner to a maximum of 600 feet per second, wherein a coaxial flame is created inside said precombustor, said flame having a generally cylindrical fuel-rich phase surrounded by an oxygen-rich precombustor wall, cooling annular sheath through the entire length of said cylindrical passage so that the flame is discharged into said heating chamber without combustion occurring on the walls forming the precombustor passage.

5,256,059

TORCH OR CANDLE

Carlo M. Knippenberg, Mönchengladbach, Fed. Rep. of Germany, assignor to Constrade Aktiengesellschaft, Vaduz, Liechtenstein

Filed Mar. 20, 1992, Ser. No. 855,713

Claims priority, application European Pat. Off., Mar. 30, 1991, 91105120.9

Int. Cl.[5] F23D *3/16*

U.S. Cl. 431—289 **15 Claims**



1. Torch (10) or candle with a burning body formed from paraffin and a paper jacket (12) serving as the wick, characterized by a fire retarding coil (14), which is placed helically around the sheathed burning body in such a way that a helical gap (16) is formed.

5,256,060

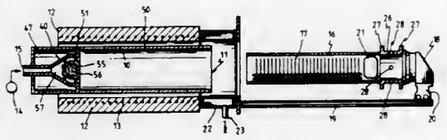
REDUCING GAS RECIRCULATION IN THERMAL PROCESSING FURNACE

Ara Philipossian, Stoneham, and Edward W. Culley, Leominster, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jan. 28, 1992, Ser. No. 827,003

Int. Cl.[5] F27D *3/00*

U.S. Cl. 432—152 **17 Claims**



1. A thermal processing furnace, comprising:

a) a furnace tube having an elongated cylindrical heated chamber open at one end for receiving articles to be processed;

b) a cantilever tube supported for movement into and out of said one end of said furnace tube, said cantilever tube containing said articles; said cantilever tube having an outer diameter which is less than an inner diameter of said chamber whereby an annular space exists between said cantilever tube and said chamber of said furnace tube when said cantilever tube is moved into said one end of said furnace tube;

c) an inlet for introducing reactant and/or inert gases into the other end of said cylindrical chamber;

d) and an annular barrier located in said chamber and affixed to and extending radially from an interior wall of furnace tube near said other end for preventing said gases from entering said annular space between said interior wall of said furnace tube and an exterior wall of said cantilever tube.

5,256,061

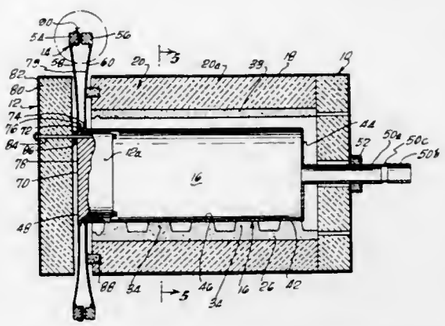
METHOD AND APPARATUS FOR VACUUM FURNACE WITH SELF SEALING EXPANSION DOOR MEMBERS

Steven B. Cress, P.O. Box 250, Glenbrook, Nev. 89413

Filed Mar. 2, 1992, Ser. No. 844,469

Int. Cl.[5] F27B *5/04*; **F27D** *1/18*

U.S. Cl. 432—205 **9 Claims**



1. A vacuum furnace comprising in cooperative arrangement: a furnace having an openable door means on a first end; a chamber located within said furnace, said chamber having a first open end and a second closed end; a conduit extending through said second closed end of said chamber and through a second closed end of said furnace; vacuum pump means connected to said conduit in such manner that vacuum may be drawn within said chamber through said conduit; sealing means connected to said door means to seal the first open end of said chamber, said sealing means comprising an annular disc carried by said door and having sealing means attached to its exterior circumference cooperable with an annular disc attached to said first open end of said chamber and having sealing means attached to its outer circumference cooperable with said sealing means on said annular disc attached to said door in such manner that the sealing means maintains a seal against passage of air during expansion and contraction of said chamber when temperature conditions are varied within said furnace; and means to heat the interior of said furnace.

5,256,062

COMBINATION METALLIC CERAMIC ORTHODONTIC BRACKER

Donald E. Griott, San Marcos, Calif., assignor to Johnson & Johnson Consumer Products, Inc., Skillman, N.J.

Filed Jun. 30, 1992, Ser. No. 906,602

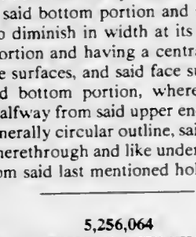
Int. Cl.[5] A61C *3/00*

U.S. Cl. 433—9 **8 Claims**

1. A dental bracket assembly comprising:

a non-metallic dental bracket, said bracket having a tooth facing surface; and

a metallic pad adherently connected to said tooth facing surface, said metallic pad having a first surface adapted to conform to said tooth facing surface, and a second surface



adapted to be placed on a tooth wherein said first surface has attached to it a coating of porcelain for attachment to said tooth facing surface.

5,256,063

DENTAL RETENTION PIN FOR PICK-UP MODELS AND IMPRESSION POURING

Avis J. Smith, 380 Cozine Ave., #4A, Brooklyn, N.Y. 11207

Filed Nov. 27, 1992, Ser. No. 982,458

Int. Cl.[5] A61C *19/00, 5/08*

U.S. Cl. 433—74 **3 Claims**

1. A one-piece dental retention pin that is symmetrical with respect to a central plane and having an upper end and a lower end and parallel first and second face surfaces, said pin having a top portion extending from said upper end toward said lower end and a bottom portion extending from said lower end to a location of juncture with said top portion and tapering from a location of minimum width at said lower end to a location of maximum width about half way between said lower end and the juncture of said bottom portion and said top portion and then tapering to diminish in width at its location of juncture with said top portion and having a central hole therethrough joining said face surfaces, and said face surfaces having serrations along said bottom portion, wherein said top portion extends about halfway from said upper end towards said lower end and is of generally circular outline, said top portion having a central hole therethrough and like undercut external recesses facing away from said last mentioned hole.

5,256,064

DENTAL PROSTHESIS PLACEMENT INSTRUMENT

Roy E. Riihimaki, Libertyville; James M. Kudla, Mount Prospect, and Jacqueline Dzierzak, Oak Park, all of Ill., assignors to Hu-Friedy Mfg. Co., Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 655,797, Feb. 14, 1991, abandoned. This application Mar. 19, 1992, Ser. No. 853,939

Int. Cl.[5] A61C *3/00*

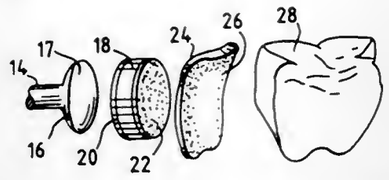
U.S. Cl. 433—141 **2 Claims**

1. A reusable prosthetic device placement instrument which employs a multiple adhesive system for manipulating prosthetic devices comprising

a handpiece with a tip having a mounting surface at one end; and

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a double-stick adhesive member having a pad with pressure-sensitive adhesive material on one side thereof adapted for releasable attachment to a prosthetic device and pressure-sensitive adhesive material on a second side thereof adapted for releasable attachment to said mounting surface;



wherein said pad includes a resiliently compressible material to facilitate a rolling action upon detachment of said prosthetic device and wherein said mounting surface is substantially convex to enhance said rolling action.

5,256,065

ACID ETCH FOR DENTAL TREATMENTS

James A. Nicholson, 120 S. 28th Ave., Hattiesburg, Miss. 39401

Continuation-in-part of Ser. No. 434,291, Nov. 13, 1989, Pat. No. 5,061,183. This application Oct. 29, 1991, Ser. No. 784,314
The portion of the term of this patent subsequent to Oct. 29, 2008, has been disclaimed.
Int. Cl.[5] A61C 5/00
U.S. Cl. 433—228.1 6 Claims

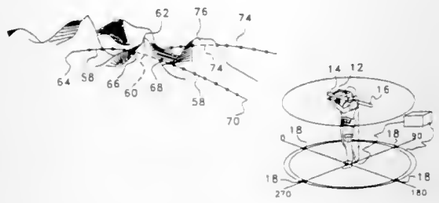
1. A method of etching the surface of a tooth in preparation for repair using dental restoratives comprising the steps of; applying to the surface of the tooth an acid etch solution having phosphoric acid present in solution in an amount between 0.51% to 5.40% by weight, thereafter rinsing the surface of the tooth and drying the surface of the tooth.

5,256,066

HYBRIDIZED TARGET ACQUISITION TRAINER

Joseph LaRussa, 451 Rutledge Dr., Yorktown Hgts., N.Y. 10598

Filed Mar. 14, 1991, Ser. No. 669,351
Int. Cl.[5] F41G 3/26
U.S. Cl. 434—21 11 Claims



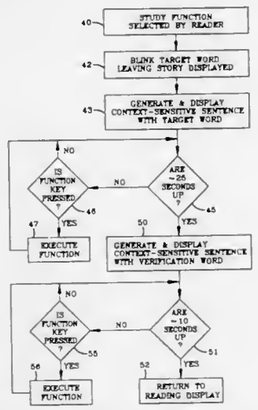
1. A simulator for recording a simulated target path and later displaying a target moving along said path during a playback sequence comprising:
(a) a simulated weapon;
(b) a sight secured to said simulated weapon;
(c) means for detecting the azimuth and elevation at which said simulated weapon is oriented;
(d) storage means, coupled to said means for detecting the azimuth and elevation of the simulated weapon, for storing said azimuth and elevation for a plurality of points at which said simulated weapon is aimed, as said simulated weapon is moved to define a path of a target to be simulated during a programming operation, and for outputting at an output port said azimuth and elevation information defining said path;
(e) image generating means coupled to said output port of said storage means to receive azimuth and elevation information output from said storage means and to convert said information during the playback sequence into an optical image on an optical display device, the position of said optical image being a function of said azimuth and elevation information;
(f) optical coupling means for receiving said image and introducing said image into said sight during said playback sequence.

5,256,067

DEVICE AND METHOD FOR OPTIMAL READING VOCABULARY DEVELOPMENT

Patricia M. Gildea, 39 Cranbury Neck Rd., Cranbury, N.J. 08512; Cheryl L. Wurtenberg, 4746 Lansing St., Philadelphia, Pa. 19136, and George A. Miller, 753 Prospect St., Princeton, N.J. 08540

Filed Apr. 25, 1990, Ser. No. 514,660
Int. Cl.[5] G09B 5/00
U.S. Cl. 434—169 8 Claims



1. An educational device for facilitating vocabulary development of a reader, comprising:
display means for displaying reading text; and,
processor means for selecting portions of said reading text and providing a context-sensitive sentence that is not a part of said reading text and includes said selected portions of said reading text illustrating the meaning of said selected portions of said reading text the reader having a comprehension of the meaning of said selected portions of said reading text, said processor means including
means for testing the reader's comprehension of the correct meaning of said selected portions of said reading text,
said display means receiving and displaying said context-sensitive sentence.

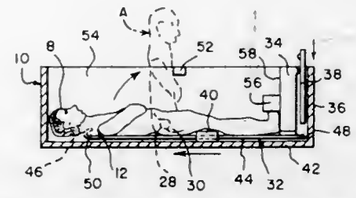
5,256,068

SAYING GOODBYE GAME

Sally K. Brocato, 1348 Thorpe La. #701, San Marcos, Tex. 78666, and George Spector, 233 Broadway Rm 702, New York, N.Y. 10279

Filed Mar. 5, 1993, Ser. No. 26,813
Int. Cl.[5] G09B 19/00; A63F 9/00; A63H 13/16, 3/33
U.S. Cl. 434—236 6 Claims

1. A good-bye game which comprises:
a) a miniature coffin;
b) a dead body doll to fit into said miniature coffin;
c) at least one miniature shovel to bury said coffin with said dead body doll within a miniature grave;
d) a miniature headstone to be placed at the grave; and



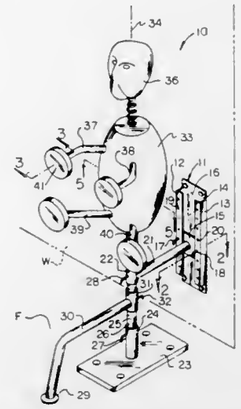
e) a plurality of cards, with a different saying on each said card, so that a child can read the sayings to said dead body doll, thereby teaching the child a way to confront death when a loved one dies.

5,256,069

BOXING DUMMY APPARATUS

Donald T. Snowden, Jr., and Yolanda R. Snowden, both of 54 Boerum St. #20A, Brooklyn, N.Y. 11206

Filed Sep. 28, 1992, Ser. No. 952,317
Int. Cl.[5] A63B 69/00; G09B 9/00
U.S. Cl. 434—247 6 Claims



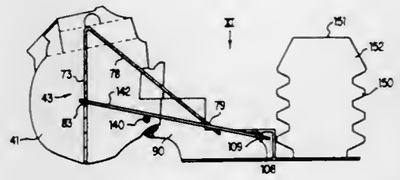
1. A boxing dummy apparatus for mounting to a support wall and simultaneously to a support floor, wherein the apparatus comprises,
a wall support bracket arranged for mounting to the support wall, and
floor support bracket means for mounting to the support floor, and
a positioning rod mounted to the wall support bracket and to the floor support bracket means, with the positioning rod having a particular rod upper distal end, and
a dummy torso member formed of a resilient material, with the torso member having a torso member lower distal end mounted to the positioning rod upper distal end, and
the torso member upper distal end having a torso spring, and the torso spring including a head member mounted to the torso spring, with the head member arranged in a spaced relationship relative to the torso member.

5,256,070

DUMMY FOR PRACTICING CARDIOPULMONARY RESUSCITATION (CPR) OF A HUMAN BEING

Geoffrey C. Garth; John Hamilton, both of Long Beach, and Charles A. Patterson, Westminster, all of Calif., assignors to Asmund S. Laerdal A/S, Stavanger, Norway

Filed Jul. 28, 1992, Ser. No. 920,715
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1992, 4201777
Int. Cl.[5] G09B 23/28
U.S. Cl. 434—265 36 Claims



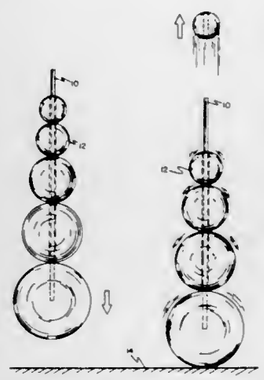
1. A dummy for practicing cardiopulmonary resuscitation (CPR) of a human being comprising simulations of the thorax, the head and the lungs of a human being, wherein the thorax simulation comprises a resistance device to simulate the compression resistance of the thorax and a three-dimensional structure with a thorax cavity, wherein the three-dimensional structure is cut out of a flat foldable web material along predetermined contour lines, wherein the web material is folded along predetermined fold lines to provide the three-dimensional structure, and wherein the three-dimensional structure is formed by joining the web material to itself at a predetermined overlap region after the folding operation.

5,256,071

MULTIPLE-COLLISION ACCELERATOR ASSEMBLY

Edward W. Hones, 129 Monte Rey Dr., Los Alamos, N. Mex. 87544; William G. Hones, 17953 Marine View Dr., Seattle, Wash. 98166, and Stirling A. Colgate, 422 Estante Way, Los Alamos, N. Mex. 87544

Filed Aug. 22, 1991, Ser. No. 748,804
Int. Cl.[5] G09B 23/08
U.S. Cl. 434—302 7 Claims



1. A multiple-collision accelerator assembly comprising a series of at least three objects of highly elastic material, each of a different mass, said objects being in contact with each other or in close proximity with their centers of mass arrayed in a straight line, the heaviest object at one end of the line of centers, said heaviest object having an arcuate surface defining an

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end portion of said assembly, the least heavy object at the other end of the line of centers with the masses decreasing monotonically from the heaviest object to the least heavy object, the arrangement of said assembly being maintained by a constraining element consisting of a guide-pin fixedly attached within the heaviest object, passing through holes in the remaining objects, which are freely slidable on said guide-pin, and extending a substantial distance beyond the least heavy of said objects.

5,256,072

CONNECTOR MOUNTING STRUCTURE

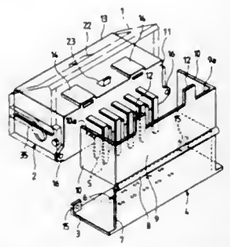
Yuji Hatagishi, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Nov. 27, 1992, Ser. No. 982,609

Claims priority, application Japan, Nov. 27, 1991, 3-097429[U]

Int. Cl.[5] H01R *9/09, 13/40*

U.S. Cl. 439—79 **3 Claims**



1. A connector mounting structure comprising:
a positioning plate mounted on a rear of a connector for positioning lead terminals of the connector, said connector and said positioning plate being disposed in a notched opening in a connector case; and
a cover means formed integrally with the positioning plate through a hinge member for enclosing the lead wires.

5,256,073

ELECTRICAL CONNECTORS FOR DIRECT CONNECTION TO PLATED THROUGH HOLES IN CIRCUIT BOARD

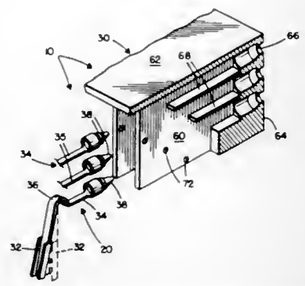
Welles K. Reymond, Waterbury, Conn., and Gregory L. Sorrentino, Brewster, N.Y., assignors to General DataComm, Inc., Middlebury, Conn.

Continuation of Ser. No. 605,521, Oct. 29, 1990, abandoned, which is a continuation of Ser. No. 366,546, Jun. 13, 1989, Pat. No. 4,966,556. This application May 27, 1992, Ser. No. 892,684

The portion of the term of this patent subsequent to Oct. 30, 2007, has been disclaimed.

Int. Cl.[5] H01R *23/70*

U.S. Cl. 439—79 **33 Claims**



1. An electrical connector for providing a substantially right angled connection between a first board and the conductive rims of holes of a second board, comprising:
a) a plurality of electrically isolated spring contact elements, each spring contact element having a first portion for electrically contacting said first board, a middle portion traversing approximately ninety degrees, and a second portion including a tapered contact portion for mating with a said conductive rim of a hole of said second board; and
b) a dielectric housing for housing said plurality of spring contact elements.

5,256,074

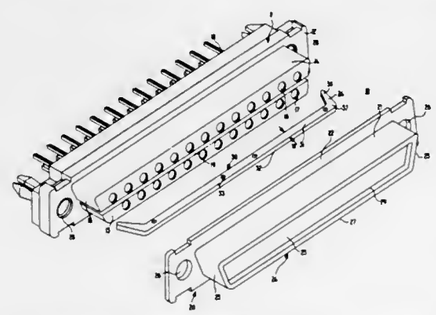
CONNECTOR HAVING IMPROVED ELECTROSTATIC DISCHARGE PROTECTION

Haw-Chan Tan, Diamond Bar, and Renee Chiang, Long Beach, both of Calif., assignors to Foxconn International, Inc., Sunnyvale, Calif.

Filed May 20, 1992, Ser. No. 886,070

Int. Cl.[5] H01R *4/66*

U.S. Cl. 439—108 **15 Claims**



1. A female connector including:
an insulative housing comprising an elongated base, an island protruding forward from the base, and two rows passageways extending therethrough to receive a plurality of corresponding contacts therein;
a conductive shell including a plate covering the base of the housing, and a circumferential fence covering the island of the housing; wherein the improvement includes:
said island of the housing defining a front surface and two side surfaces whereby between two rows of the passageways a groove of a depth extends along an entire length of the front surface of the island and successively backward extends along the side surfaces of the island;
said circumferential fence defining two side walls;
a unitary blade type conductive member having an elongated flat body defining a width positioned within the groove on the front surface of the island wherein at least one embossment is positioned on the flat body for interference engagement with the groove, and a pair of legs extending backward and obliquely outward from two ends of the flat body so that when assembling, a free end of each leg is pressed inward to be received within the groove on the side surface of the island and to provide an electrically reliable engagement with the corresponding side wall of the fence of the conductive shell for a grounding path.

5,256,075

CONNECTOR DEVICE

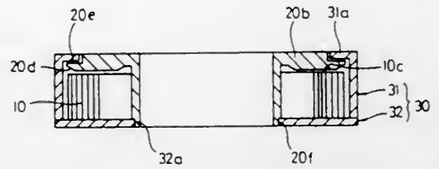
Masato Miyahara, and Hironori Suzuki, both of Kameyama, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Division of Ser. No. 819,576, Jan. 8, 1992, abandoned, which is a continuation of Ser. No. 668,359, Mar. 12, 1991, abandoned, which is a continuation of Ser. No. 529,949, May 29, 1990, abandoned. This application Nov. 6, 1992, Ser. No. 973,220

Claims priority, application Japan, May 31, 1989, 1-137826

Int. Cl.[5] H01R *35/04*

U.S. Cl. 439—164 **10 Claims**



1. In a connector device which comprises a flexible flat transmission line wound in a spiral form, a movable housing having an internal cylindrical shaft portion which acts as a rotation shaft and on which one end of said flat transmission line is fixed, and a fixed housing having an external cylindrical portion on which the other end of said transmission line is fixed, said movable and fixed housing being freely rotatably combined with each other to define an internal space therebetween for receiving said flat transmission line, and said movable and fixed housing being rotated relative to each other by a plurality of revolutions according to a tightening or loosening of said flat transmission line in said internal space,
the improvement wherein:
each of said movable and fixed housings has an internal surface facing said internal space and facing a corresponding one of side edge surfaces of said flat transmission line wound in said spiral form; and
a projecting portion is formed on at least one of said internal surfaces of said housings, said projecting portion projecting toward one of said side edge surfaces of said flat transmission line; and
a clearance is provided in an axial direction along said rotation shaft between said one side edge surface of said flat transmission line and said movable housing, or between another side edge surface of said flat transmission line and said fixed housing, said clearance being set to be smaller at an intermediate portion of said spirally wound flat transmission line than at at least one of the end portions of said spirally wound flat transmission line.

5,256,076

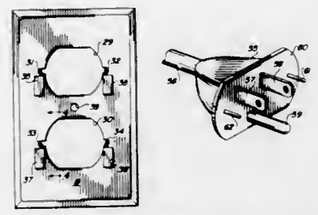
SAFETY ELECTRICAL RECEPTACLE

Jay T. Hamlin, 2314 W. Sagebrush Dr., Chandler, Ariz. 85224

Filed Apr. 10, 1991, Ser. No. 684,048

Int. Cl.[5] H01R *13/703*

U.S. Cl. 439—188 **3 Claims**



1. A safety electrical system having means for connecting incoming wires from a power source to outgoing wires to a power user comprising:
(a) an outlet receptacle having terminals posts to accept incoming wires, said receptacle having a plurality of slots, each having electrical contact means to receive the blades of an electrical plug;
(b) said plug having a plate pierced by said blades and elongated posts on said plate and disposed adjacent each said blade;
(c) a face plate fitted over said receptacle, said face plate having apertures to accept said receptacle and said posts;
(d) a plurality of normally open switches carried by said face plate connected in series between each of said incoming wires and said terminal posts, the said switches each having an operating arm arranged to be engaged and moved to a closed position by said elongated posts, whereby the electrical connection between the incoming and outgoing wires is complete only when the said plug and said plate are in their fully received positions.

5,256,077

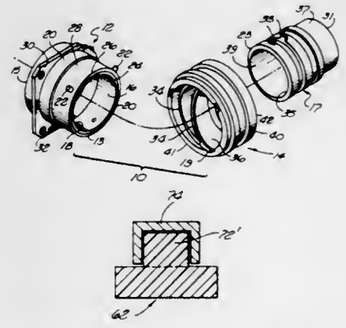
ELECTRICAL CONNECTOR SHELL REINFORCEMENT MEANS AND METHOD FOR FABRICATING SAME

William R. Mattingly, Santa Ana; Michael Blum, Hesperia, and Christopher Nasser, Fontana, all of Calif., assignors to Matrix Science Corporation, Torrance, Calif.

Continuation of Ser. No. 614,797, Nov. 14, 1990, abandoned. This application Mar. 18, 1992, Ser. No. 853,029

Int. Cl.[5] H01R *13/625*

U.S. Cl. 439—314 **7 Claims**



1. An electrical connector coupling ring comprising:
a coupling ring body formed of plastic material and having an interior and an exterior surface;
a metal layer formed along said interior surface; and
at least one interior surface annular groove defined into said metal layer and having bottom and side wall surfaces defined by said metal layer, said annular groove being metal-lined and thereby reinforced and extending helically from a pin-receiving entrance to a pin-receiving detent to receive thereinto and slidably therealong a bayonet pin of a first shell.

5,256,078

ELECTRICAL SOCKET

Nai H. Lwee, Fremont, Calif., and David J. Dutkowsky, Tokyo, Japan, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 5, 1992, Ser. No. 957,306

Claims priority, application Japan, Oct. 4, 1991, 3-283720

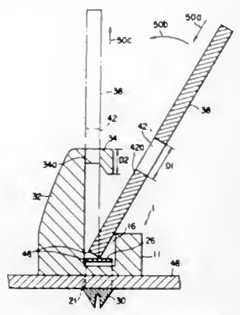
Int. Cl.[5] H01R *13/00*

U.S. Cl. 439—326 **7 Claims**

1. An electrical socket for connecting a first substrate which has engaging areas to a second substrate, comprising:

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an elongated housing of an elastic insulating material, mountable on the second substrate, the housing having a recess extending from proximate one end to proximate the other end thereof and is dimensioned to receive the first substrate therein and the first substrate to be rotated relative to the second substrate and engaging members extending along the first substrate, at the ends of the housing, the engaging members engaging the engaging areas of



the first substrate so that the first substrate is held at the predetermined rotation position;

a plurality of contacts positioned in the recess for electrically and mechanically connecting the first substrate to the second substrate; and

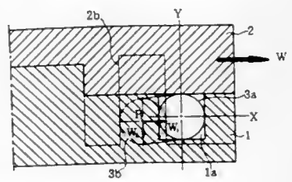
elastic means positioned in the recess and, with the engaging areas of the first substrate engaging the engaging members, elastically pushing the first substrate in a direction in which their engagement is urged.

5,256,079

IC SOCKET

Noriyuki Matsuoka, Yokohama, Japan, assignor to Yamaichi Electric Co., Ltd., Tokyo, Japan

Filed Apr. 8, 1992, Ser. No. 865,582
Claims priority, application Japan, Apr. 18, 1991, 3-115294
Int. Cl.[5] H01R *4/50*
U.S. Cl. 439—342 **14 Claims**



1. An IC socket comprising:

a socket body having a contact member;

a movable plate slidably mounted atop said socket body and adapted to receive an IC package having a lead, said movable plate being horizontally slidable along said socket body between a contact position which is adapted to cause the contact member and the lead to be in contact with one another, and a release position which allows the lead to be removed from contact with the contact member;

a crank lever pivotably mounted to said socket body, said crank lever defining a moving means for moving said movable plate between said contact position and said release position, said crank lever comprising a crank shaft portion rotatably mounted to said socket body and an operating shaft portion extending at a substantially right angle from said crank shaft portion;

wherein said crank shaft portion is rotatable about a rotational axis and includes an eccentric shaft portion which has a central axis offset eccentrically from said rotational axis and pivotable about said rotational axis upon rotation of said crank shaft portion;

wherein a rectangular coordinate system is defined by a horizontal X-axis extending perpendicularly through said rotational axis, and a vertical Y-axis extending perpendicularly through said rotational axis, a first quadrant being defined above the X-axis and to the right of the Y-axis, a second quadrant being defined above the X-axis and to the left of the Y-axis, a third quadrant being defined below the X-axis and to the left of the Y-axis, and a fourth quadrant being defined below the X-axis and to the right of the Y-axis;

wherein said operating shaft portion defines a means for pivoting said eccentric shaft portion clockwise about said rotation axis from a starting position at which said central axis of said eccentric shaft portion is disposed in said third quadrant, to a terminal position at which said central axis of said eccentric shaft portion is disposed above said X-axis, and for pivoting the eccentric shaft portion counterclockwise from said terminal position to said starting position;

wherein said moving means is operable to move said movable plate from said contact position to said release position when said central axis of said eccentric shaft portion is pivoted from said starting position, and is operable to move said movable plate from said release position to said contact position when said central axis of said eccentric shaft portion is pivoted from said terminal position to said starting position; and

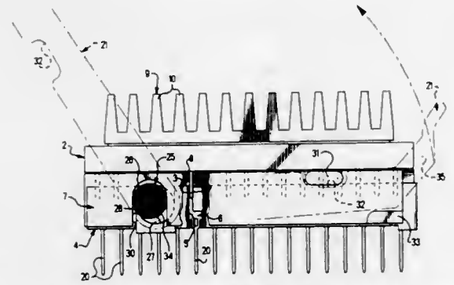
wherein said socket body defines a means for preventing said central axis of said eccentric shaft portion from being pivoted counterclockwise from said third quadrant toward said fourth quadrant.

5,256,080

BAIL ACTUATED ZIF SOCKET

Edward J. Bright, Middletown, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Jun. 12, 1992, Ser. No. 893,931
Int. Cl.[5] H01R *4/50*
U.S. Cl. 439—342 **15 Claims**



1. A socket for an electronic package having electrical leads, comprising:

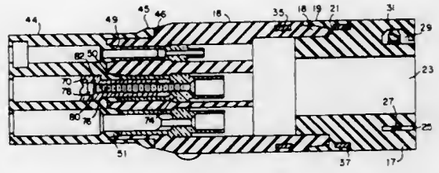
a housing having contact elements, a cover slidable along the housing, a lever pivotally attached to the housing, and a cam rotatable by pivoting the lever, the cam having a lobe rotatable against the cover for sliding the cover along the housing, the cover and the lever being moveable from respective open positions to respective closed positions for moving the leads of the electronic package into engagement with respective ones of the contact elements, the lever being disposed substantially horizontal when in the closed position, a latch comprised of interengaging latching structure on the lever and the cover for retaining the lever in the closed position, the latch being overcome by applying a force to pivot the lever, and the lever being pivotable upwardly from the closed position through an obtuse angle to the open position, wherein the lever is urged by gravity to remain in the open position.

5,256,081

ATTACHABLE AIRCRAFT GROUND POWER CONNECTOR

Robert G. Didier, Santa Rosa, Calif., assignor to BIW Connector Systems, Inc., Norwood, Mass.

Filed Dec. 22, 1992, Ser. No. 994,675
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—464 **5 Claims**



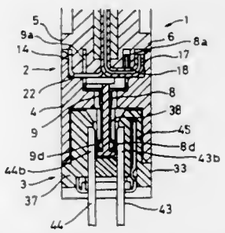
1. A system for connecting a power source by means of a power line to an aircraft having an input power socket comprising a connector having a body including a replaceable nose at one end thereof for insertion in said socket, a grommet having a passage formed therethrough to accommodate said power line, a peripheral adjustable clamp disposed in said grommet for gripping said power line, and means for attaching said grommet in sealed relationship to the other end of said body.

5,256,082

COAXIAL RIBBON CABLE CONNECTOR

Hirokatsu Yaegashi, and Tadahiro Fumikura, both of Tokyo, Japan, assignors to Hirose Electric Co., Ltd., Tokyo, Japan

Filed Mar. 9, 1992, Ser. No. 848,679
Claims priority, application Japan, Mar. 8, 1991, 3-20350[U]
Int. Cl.[5] H01R *9/07*
U.S. Cl. 439—497 **1 Claim**



1. A coaxial ribbon cable connector consisting of a cable connector and a substrate connector,

said cable connector comprising:

an insulating case having a partition wall;

a plurality of signal terminals to which signal lines of a coaxial ribbon cable are connected;

a plurality of ground terminals to which drain lines of said cable are connected;

said signal and ground terminals being disposed on said partition wall in a back-to-back relationship to form a microstrip line;

a plurality of shield terminals disposed between said signal terminals and each having a short-circuit portion brought into contact with one of said ground terminal; and

said substrate connector comprising:

an insulating case;

a plurality of signal terminals arranged within said insulating case;

a plurality of ground terminals arranged within said insulating case; and

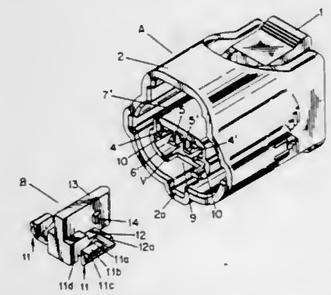
said signal, ground, and shield terminals of said substrate connector being brought into contact with said signal, ground, and shield terminals of said cable connector such that shield terminals are connected to said ground terminals via contact legs of said shield terminals when said cable connector is plugged into said substrate connector.

5,256,083

ELECTRICAL CONNECTOR

Takayuki Yamamoto, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Oct. 13, 1992, Ser. No. 960,495
Claims priority, application Japan, Oct. 28, 1991, 3-281383
Int. Cl.[5] H01R *13/40*
U.S. Cl. 439—595 **6 Claims**



1. An electrical connector comprising:

a housing having terminal accommodating cavities and a resilient locking arm for preventing a terminal accommodated in said terminal accommodating cavities each from slipping off backward, said terminal accommodating cavities each having opposing inner walls, said resilient locking arm extruding from one of said inner opposing walls toward a front open end of said terminal accommodating cavities each with a vacant space being formed between said one of the opposing walls and the resilient locking arm; and

a terminal extracting block having arm disconnecting pieces, said arm disconnecting pieces each having a tapered arm disconnecting face at a free end thereof,

wherein said terminal extracting block moves from a locking position to an arm disconnecting position to allow said arm disconnecting face of the arm disconnecting piece to slidably contact a tip of the resilient locking arm, which causes the resilient locking arm to bend toward said one inner wall so that the terminal is disconnected from the resilient locking arm.

5,256,084

CONNECTOR

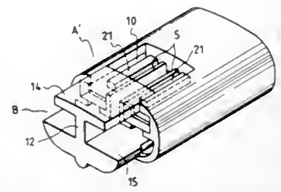
Shinji Kodama, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Oct. 16, 1992, Ser. No. 961,877
Claims priority, application Japan, Oct. 18, 1991, 3-85084[U]
Int. Cl.[5] H01R *13/40*
U.S. Cl. 439—595 **6 Claims**

1. A connector comprising a connector housing having terminal receiving chambers, metal terminals for being received respectively into said terminal receiving chambers, and a terminal fixing member connectable to a front portion of said connector housing in a two-stage manner, that is, in a provisionally-locked condition and a completely-locked condition;

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wherein a first retaining projection engageable with a rear shoulder of an electrical contact portion of said metal terminal inserted into a regular position is formed on one of opposed inner walls of each of said terminal receiving chamber, whereas a flexible arm for urging said electrical contact portion toward said one inner wall is formed on



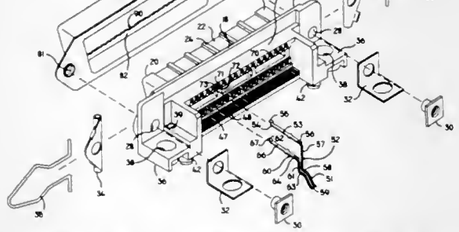
the other inner wall; a retainment release window which is opened in the provisionally-locked condition of said terminal fixing member is formed forwardly of said one inner wall; and a flexible terminal protection piece for covering said electrical contact portion is provided in said retainment release window.

5,256,085

CONNECTOR WITH IMPROVED ESD PROTECTION MECHANISM

Haw-Chan Tan; Frank Ma, both of Diamond Bar, and Yuan-Chieh Lin, Lake Forest, all of Calif., assignors to Foxconn International, Inc., Sunnyvale, Calif.

Filed Nov. 5, 1992, Ser. No. 972,159
Int. Cl.[5] H01R *13/648*
U.S. Cl. 439—607 **10 Claims**



1. A female electrical connector with improved ESD protection means including:

an elongated insulative housing having a plurality of passageways extending in a front-to-back direction therein, each of said passageways receiving a corresponding contact therein;

a mating portion projecting from a front face of the housing for matable electrical engagement with a complementary plug connector and having a mating face thereof in the front;

a central cavity positioned within the mating portion and extending through the mating face for receiving a blade of the complementary plug connector, said contacts projecting into said cavity for electrical engagement with a plurality of corresponding traces printed on the blade of the plug connector; and

a conductive metal shield covering the mating portion of the housing;

the improvement comprising;

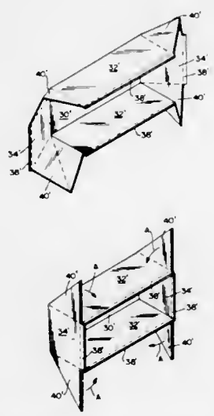
said metal shield including a set of flange vertically extending a distance from a periphery of a front end of the shield toward a front opening of the cavity wherein a front edge of the flange close to the front opening of the cavity is serrated to expose a series of projecting points thereon under a condition that said front edge of the flange is serrated in a vertical direction and the mating face of the mating portion has a circumferential recess generally configured by four straight lines to receive the flange of the metal shield therein whereby the flange of the shield is flush with the mating face thereabout, and wherein each contact has an arched section projecting into the cavity whereby for an electrostatic charge positioned in a distance from the front opening of the cavity, the distance to the arched section is generally longer from the electrostatic charge than to the front edge of the flange.

5,256,086

ELECTRICAL CONNECTOR SHIELD AND METHOD OF FABRICATING SAME

Timothy R. Ponn, Mentor, Ohio, assignor to Molex Incorporated, Lisle, Ill.

Filed Dec. 4, 1992, Ser. No. 985,786
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—607 **10 Claims**



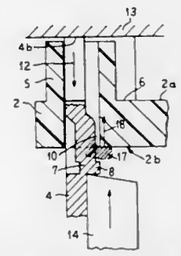
1. In a one-piece shield for an electrical connector which includes a dielectric housing with the shield substantially surrounding the housing, the shield being stamped and formed from sheet metal material and including a base wall integrally joined to a pair of opposite side walls and a pair of opposite end walls defining a generally box-like structure having an open side at a mating side of the connector housing opposite the base wall of the shield, wherein the improvement comprises said shield being void of open seams and including flap portions integrally joining the side walls to the end walls of the shield and each flap portion being disposed in a folded condition against one of the side walls and the end walls.

5,256,087

METHOD FOR FASTENING A FLAT PLUG IN THE BASE OF AN ELECTRICAL COMPONENT AND A BASE PRODUCED IN ACCORDANCE WITH THE METHOD

Horst Hendel, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich

PCT No. PCT/EP90/02076, § 371 Date Aug. 20, 1992, § 102(e) Date Aug. 20, 1992, PCT Pub. No. WO91/13453, PCT Pub. Date Sep. 5, 1991
PCT Filed Dec. 3, 1990, Ser. No. 920,457
Claims priority, application European Pat. Off., Feb. 20, 1990, 90103270.6
Int. Cl.[5] H01R *13/415*
U.S. Cl. 439—741 **9 Claims**



1. A method for fastening a flat plug in a base, formed of insulating material, of an electrical component, said flat plug being inserted through a perforation in a flat base floor of said base until said flat plug is supported by at least one integrally formed shoulder on a first surface of said base floor and is then clamped on an opposite second surface of said base floor by at least one projection formed out of said flat plug, the method comprising the following steps:

a) before said flat plug is inserted into said base, stamping from at least one of two flat sides of said flat plug at least one rib that extends out of the plane of the flat plug, is elongated in a direction of insertion, and is located at least partly extending through said second opposite surface after being inserted through said perforation, and

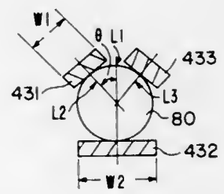
b) starting from an outer end of said at least one rib, peeling a part of said at least one rib projecting from said perforation in a direction towards the base and permanently deforming said peeled part against said opposite second surface of said base floor.

5,256,088

CONTACT FOR IC MEMORY CARD

Sidney Lu, Taipei, and Gwou-Jong Tseng, Taipei Hsien, both of Taiwan, assignors to Foxconn International, Inc., Sunnyvale, Calif.

Filed Nov. 30, 1992, Ser. No. 982,845
Int. Cl.[5] H01R *11/22*
U.S. Cl. 439—851 **8 Claims**



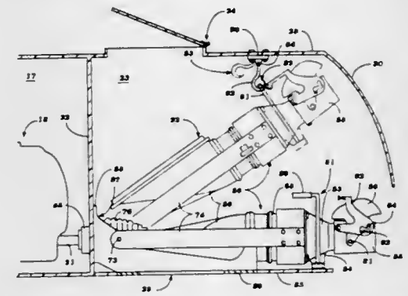
1. A female contact for use with an IC memory card comprising: a contact section in the front, a retention section in a medial region, and a biased tail in the rear wherein the contact section includes a front ring, a rear ring, and three parallel and spaced beams respectively connected therebetween, said three beams comprising a base beam and two auxiliary beams positioned above the base beam, each beam itself having an identical width along its entire length and following a formula: $2W1 \cos\Theta = W2$ wherein W1 is a width of the auxiliary beams, W2 is a width of the base beam, and Θ is defined between a first line perpendicular to the base beam and a second line perpendicular to the auxiliary beam.

5,256,089

WATER JET PROPULSION UNIT

Noboru Kobayashi, and Hirofumi Imaeda, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Sep. 9, 1991, Ser. No. 756,893
Claims priority, application Japan, Sep. 14, 1990, 2-244238
Int. Cl.[5] B63H *11/00*
U.S. Cl. 440—38 **21 Claims**



1. A water jet propulsion unit for a watercraft having a hull defining a tunnel on the underside thereof, said jet propulsion unit including a water inlet portion having a normally downwardly facing water inlet opening for drawing water from the body of water in which the watercraft is operating, an impeller portion for containing an impeller for drawing water through said water inlet portion and a discharge nozzle portion through which water pumped by said impeller may be discharged for powering an associated watercraft, an access opening in said hull for selectively offering access to said tunnel from within said hull, means for supporting said jet propulsion unit at least in major part within said tunnel for manual movement of at least said water inlet portion from a lowered, in-the-water position, to a raised, out-of-the water position, and latching means within said tunnel and accessible through said access opening for releasably retaining said water inlet portion in its raised, out-of-the water position.

5,256,090

VARIABLE-APERTURE JET NOZZLE FOR JET-PROPELLED WATERCRAFT

Russell C. Woolley, 4433 W. Avenida Del Sol, Glendale, Ariz. 85310

Filed Dec. 21, 1992, Ser. No. 994,513
Int. Cl.[5] B63H *11/107*
U.S. Cl. 440—40 **16 Claims**

1. A variable-aperture jet propulsion apparatus for a small jet watercraft having a cylindrical discharge nozzle, comprising:

(a) a cylindrical sleeve having a first end with an inside diameter sized for tight slidable connection over the cylindrical discharge nozzle of the watercraft, and having a second end facing backwards with respect to the forward direction of the watercraft;

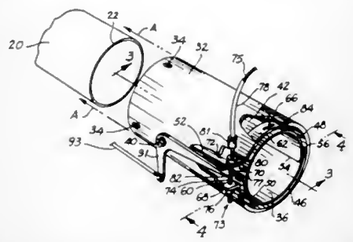
(b) retaining means, incorporated within said first end of the sleeve, for securing said sleeve to the cylindrical discharge nozzle;

(c) a substantially semi cylindrical lower shell mounted

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longitudinally within said sleeve, said lower shell having two straight edges substantially parallel to the sleeve, having a front portion hingedly connected thereto by means of two radial hinge-pins installed opposite to one another through the sleeve, and having a rear portion disposed toward said second end of the sleeve;

(d) a substantially semi-cylindrical upper shell disposed above said lower shell and having two straight edges



substantially parallel to the sleeve, said upper and lower shells forming a substantially cylindrical, clam-shell structure inside said sleeve and having some overlap along said straight edges, and said upper shell having a front portion hingedly connected to the sleeve and to the lower shell by means of said two radial hinge-pins; and

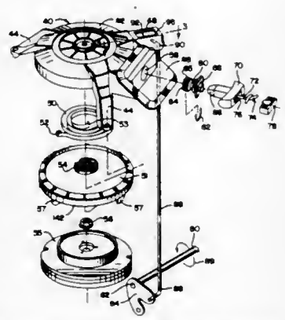
(e) means for clamping said upper and lower shells within said sleeve to produce a variable-aperture orifice in said second end of the sleeve.

5,256,091

SHIFT INTERLOCK SYSTEM

David F. Haman, Waukegan, and Chester G. DuBois, Zion, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Nov. 6, 1991, Ser. No. 788,507
Int. Cl.[5] F02N *15/06*
U.S. Cl. 440—85 **20 Claims**



1. A shift interlock system for an outboard motor having an engine, a starter housing, a starter pulley enclosed by the housing, and a transmission shift lever having a neutral setting, a reverse setting and a forward setting, said system comprising:

a subhousing secured to said starter housing;

a plunger mounted in said subhousing for reciprocal linear movement between a retracted position, and an extended position in which said plunger engages one of a plurality of engagement formations on the starter pulley to prevent the rotation of the pulley;

biasing means for biasing said plunger in said extended position;

a cam member securely fastened in said subhousing in operational engagement with said plunger to pivot between a neutral position in which said cam member overcomes said biasing means and retracts said plunger, and at least one drive gear position in which said cam member permits the extension of said plunger into one of said engagement formations, and

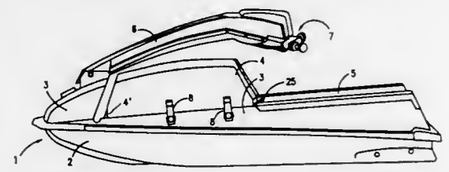
link means connected to the transmission shift lever and connected at an upper end to said cam member and being releasable from said cam member when said shift lever is in a setting other then forward, reverse, or neutral; for selectively positioning said cam member to extend said plunger into one of said engagement formations when said shift lever is in a forward or reverse setting, and when extended, said plunger preventing the starting of the engine when said plunger engages one of said engagement formations in the starter pulley.

5,256,092

CARBURETOR-ADJUSTING ACCESSORY HARNESS FOR PERSONAL JET-PROPELLED WATERCRAFT

Donald J. Jones, 3500 Edgecliff, Farmington, N. Mex. 87402

Filed Apr. 8, 1992, Ser. No. 865,323
Int. Cl.[5] B60K *41/00*
U.S. Cl. 440—87 **20 Claims**



1. A readily attachable and detachable carburetor-adjusting fine tuning control harness for use with a vehicle having a carburetor with operator controlled throttle and at least one adjustable needle valve for fine tuning, the vehicle having a deck comprising a stationary portion and a removable hood portion which covers an engine compartment opening, said deck having an interface between the hood and the stationary deck portion at the periphery of the opening, the harness having at least one coaxial structure comprising an outer casing and an inner flexible rotatable but essentially n on-twistable shaft, one end of the casing of each coaxial structure having a releasable mounting means to secure each such end in fixed relationship to the deck at the outside of the compartment when the compartment is closed by the hood, the inner shaft of each said structure extending throughout the length of the respective casing and having ends beyond the ends of the casing, one end of each shaft being manually accessible and extending beyond said one end of the casing and having a manually adjustable knob thereon for rotating the shaft within the casing, each said shaft having a carburetor needle valve adjusting member on its other end beyond but near the other end of the casing, anchoring means for releasably securing that other end of each casing in a fixed position relative to a carburetor structure for an engine in said compartment to hold each said carburetor needle valve adjusting member in operative engagement with a respective carburetor-adjusting needle valve to adjust the valve by rotation of the knob at the opposite end of the shaft, the releasable mounting means and said anchoring means enabling separable release of said control harness as a unit relative to said deck and said carburetor structure.

5,256,093

MARKING BUOY WITH SHOCK CORD

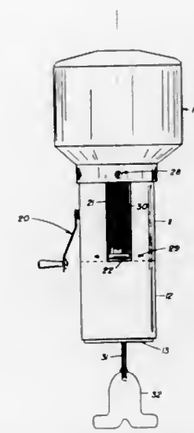
LeRoy Balstad, 1407 Monte Dr., Mandan, N. Dak. 58554

Filed Mar. 20, 1992, Ser. No. 855,275
Int. Cl.[5] B63H *21/52*
U.S. Cl. 441—25 **1 Claim**

1. A marker buoy for marking underwater locations, said buoy comprising:

a. a generally cylindrical float body with an overall density less than that of water;

b. a separate line recovery system including a rotatable spool containing a length of line attached at one end to said spool, and an active locking system for locking said spool against rotation,



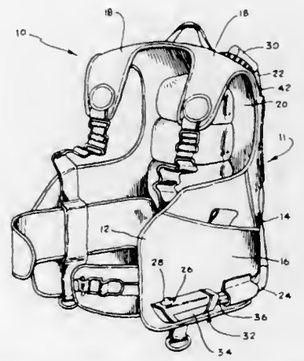
c. an energy absorbing device in the form of an elastic shock cord attached at one end to the other end of the line, and attached to a weight at the other end, whereby when said weight is resting on the bottom and said active locking system has locked said reel against rotation, said elastic cord may stretch allowing said float body to move about the surface of a body of water without lifting said weight from the bottom.

5,256,094

BUOYANCY COMPENSATOR FOR DIVERS

John S. Canna, Lockport, N.Y., assignor to The Sherwood Group, Lockport, N.Y.

Filed Apr. 22, 1991, Ser. No. 689,144
Int. Cl.[5] B63C *11/08*
U.S. Cl. 441—96 **3 Claims**



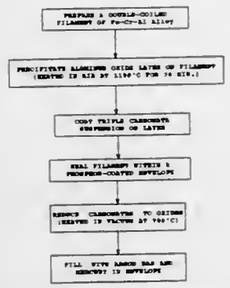
1. An improved buoyancy compensator for providing buoyancy to a diver which comprises a vest having front, rear, side and shoulder portions, which vest includes at least one compartment for holding a gas, and which compensator further comprises an automatic inflation means comprising a first portion of an inflation tube connecting the compartment to a remotely activated control valve and a second portion of said inflation tube for connecting the control valve to a regulating valve attached to a gas supply, so that opening of the control valve allows gas to flow from the gas supply through the regulating valve into the second portion of the tube to the control valve and through the first portion of the tube from the control valve into the compartment; wherein the improvement comprises, said compensator being further provided with an automatic air release means, in addition to the automatic inflation means, said release means comprising a remotely activated release valve connected to said compartment such that opening the release valve allows gas to leave the compartment to a surrounding environment, at a part of the shoulder portion proximate the rear portion, and a remote control activated by a trigger to open and close the release valve by means of a cable running from the remote control, and which is free of activation by pulling on any portion of said tube, said control valve and trigger being positioned relative to each other so that they each may be operated with one hand without repositioning of the hand.

5,256,095

METHOD OF FABRICATING AN ELECTRODE FOR A DISCHARGE LAMP AND THE ELECTRODE FORMED THEREBY

Yoshinobu Takegawa, Nara; Shigetoshi Sakon, Shijonawate, and Shuji Yamada, Ashiya, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Nov. 16, 1992, Ser. No. 976,582
Claims priority, application Japan, Nov. 25, 1991, 3-308992; May 25, 1992, 4-132527
Int. Cl.[5] H01J *9/04*
U.S. Cl. 445—6 **17 Claims**



1. A method of fabricating an electrode for a discharge lamp, said method comprising the steps of:

preparing an electrode substrate made of a Fe-Cr-Al alloy;

heating said electrode substrate in an oxidizing environment to form an aluminum oxide layer in the surface of said electrode substrate; and

coating an emitter material on the surface of the aluminum oxide layer.

5,256,096

FLUORESCENT LAMP WITH IMPROVED PHOSPHOR COATING AND RELATED PROCESS

Costas C. Lagos, 16 Linden Dr., Danvers, Mass. 01923

Continuation-in-part of Ser. No. 457,004, Dec. 22, 1989, Pat. No. 5,045,008. This application Jul. 12, 1991, Ser. No. 729,251
The portion of the term of this patent subsequent to Sep. 3, 2008, has been disclaimed.
Int. Cl.[5] H01J *9/22*
U.S. Cl. 445—26 **6 Claims**

1. A method of producing a fluorescent lamp of the type utilizing a alkaline earth halophosphate stir-in phosphor, said method comprising the steps of:

forming a uniform mixture of starting raw materials in suffi-

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cient amounts to produce a desired alkaline earth halophosphate;
firing said mixture in a non-reacting atmosphere at a temperature of from about 600 degrees Centigrade to about 1300 degrees Centigrade for a sufficient time to produce a fired material containing said phosphor;
milling said fired material in an aqueous medium,
wet screening the resulting milled material through a screen of greater than about 300 mesh, said wet screened phosphor powder having a large size particle distribution and a small size particle distribution;
attritor grinding said wet screened phosphor powder to form attritor phosphor powder having a reduced average particle size relative to the average particle size of said conventional phosphor powder, said attritor grinding being immediately after said wet screening wherein said attritor milling desirably decreases the amount of particles



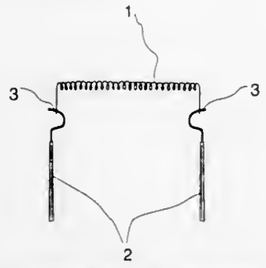
within said distribution of large size particles without substantially increasing the amount of particles in the small size distribution;
washing said attritor phosphor powder in an aqueous mineral acid and subsequently washing said acid washed attritor phosphor in an aqueous base having a pH of from about 7.0 to about 9.0;
suspending said attritor phosphor powder in a liquid;
coating the inside of a lamp bulb with said suspended attritor phosphor powder;
drying said coating of attritor phosphor powder;
baking said dried attritor phosphor powder;
attaching a discharge assembly including electrodes to said lamp bulb;
subjecting said lamp bulb to vacuum and introducing a fill material therein; and
sealing said lamp bulb.

5,256,097
PROCESS FOR PRODUCING A DIRECTLY HEATED CATHODE

Ulrich Herrmann, Seeden, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 6, 1991, Ser. No. 788,534
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1990, 4035361
Int. Cl.[5] **H01J** *5/50, 9/04*
U.S. Cl. 445—28 **7 Claims**

4. A process for producing a directly heated cathode for an X-ray tube, the process comprising the steps of:
providing a cathode coil consisting of tungsten and having characteristics to cause heating and emission of electrons for X-ray production;
providing support means for solely supporting said cathode coil, said support means including a molybdenum brace;
positioning an end of said cathode coil adjacent an end of said brace;
exclusively heating said brace and said end of said cathode coil with a laser beam used as a punctiform heat source, said heating of said end of said cathode coil being spaced from a remainder of said cathode coil to maintain said electron emission characteristics of said remainder of said cathode coil during use;

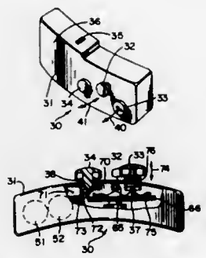


exclusively fastening said end of said cathode coil to said end of said brace in a loading-bearing and high temperature stable manner by brazing with platinum as a brazing filler and directing a protective gas stream at the brazing site to provide a protective gas atmosphere at the brazing site.

5,256,098
DOLL PLAYSET HAVING SIMULATED FETAL KICKING AND HEARTBEAT

Robin K. Smith, Long Beach, and Howard R. Stern, Redondo Beach, both of Calif., assignors to Mattel, Inc., El Segundo, Calif.

Filed Feb. 10, 1992, Ser. No. 833,189
Int. Cl.[5] **A63H** *33/00, 3/00;* **G09B** *23/28*
U.S. Cl. 446—28 **7 Claims**

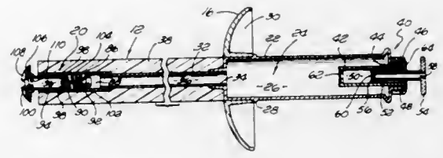


1. A doll playset comprising:
a pouch having a front surface, a rear surface and defining an interior pocket;
a doll removably supported within said interior pocket; and
a kick and heartbeat simulator external to and separate from said doll supported within said interior pocket having a means for producing a heartbeat-like sound and having a plurality of undulating members moving against the pocket interior to undulate said front surface to simulate a kicking movement therewithin,
said doll being removable from said interior pocket free of said kick and heartbeat simulator for play while said kick and heartbeat simulator remains within said interior pocket.

5,256,099
CONTACT-ACTIVATED PRESSURIZED WATER RELEASE TOY

Elliot A. Rudell, 6556 Sattes Dr., Rancho Palos Verdes, Calif. 90274; George T. Foster, Signal Hill, and Ian B. Osborne, Manhattan Beach, both of Calif., assignors to Elliot A. Rudell, Torrance, Calif.

Filed Mar. 19, 1992, Ser. No. 854,318
Int. Cl.[5] **A63H** *33/30, 3/52;* **B43K** *5/18, 5/10*
U.S. Cl. 446—473 **17 Claims**



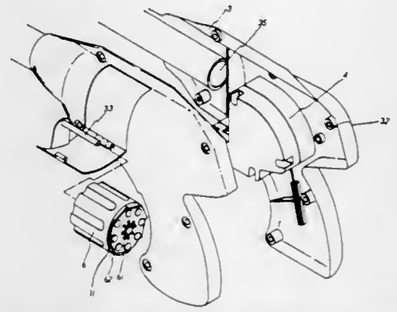
12. A toy, comprising:
a cylinder;
a fluid reservoir within said cylinder, said fluid reservoir being capable of containing a fluid;
a pump operatively connected to said cylinder and said fluid reservoir, said pump being constructed to manually pressurize said fluid within said fluid reservoir;
a valve piston operatively connected to said cylinder, said valve piston having a contact surface and a passage, said valve piston further having an aperture perpendicular to said passage and a tip that has a groove in fluid communication with said passage;
a valve attached to said valve piston, said valve piston and said valve being adapted to move between an open position and a closed position, wherein said passage is in fluid communication with said fluid reservoir when said valve is in said open position; and,
a first spring operatively connected to said valve piston to bias said valve piston and said valve into said closed position to prevent fluid communication between said fluid reservoir and said passage, wherein an external pressure applied to said contact surface moves said valve piston and said valve into said open position such that said fluid flows into said valve piston, aperture and tip groove passage.

5,256,100
TOY GUN HAVING A REPLACEABLE FIRING MECHANISM

Kun-Meng Wang, No. 2-2, Pei Hsing Road, Tai Pao City, Chiayi Hsien, Taiwan

Filed May 22, 1992, Ser. No. 886,898
Int. Cl.[5] **A63H** *33/30, 5/00;* **F41C** *3/06*
U.S. Cl. 446—473 **3 Claims**

1. A toy gun having a replaceable firing mechanism comprising:
left and right gun body halves;
a case having a pair of symmetric halves being detachably disposed between said left and right gun body halves;
a firing mechanism substantially housed within said case;
said firing mechanism comprising a spring-biased trigger and a spring-biased hammer each respectively rotatably mounted in said case;
wherein rotation of said trigger rotates said hammer against a spring until out of engagement;
a revolving cylinder having a plurality of chambers;
said revolving cylinder rotatably engaged to one of said left and right gun body halves;
each of said plurality of chambers housing confetti;
an explosive cap engaged at an end of said each of said plurality of chambers between said revolving cylinder and said case;
wherein, rotation of said trigger until out of engagement with said hammer releases said hammer through an opening in said case to permit ignition of an explosive cap in

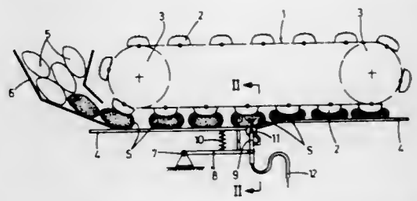


alignment with said hammer and discharge of confetti in a chamber of said plurality of chambers corresponding to said explosive cap in alignment with said hammer.

5,256,101
METHOD AND APPARATUS FOR CUTTING OPEN THE STOMACH OF A BIRD

Henderikus Koops, Oostzaan, Netherlands, assignor to Machinefabriek Meyn B.V., Oostzaan, Netherlands

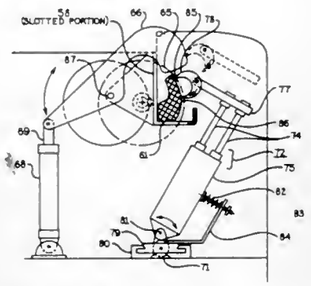
Filed Apr. 30, 1992, Ser. No. 876,409
Claims priority, application Netherlands, May 24, 1991, 9100895
Int. Cl.[5] **A22C** *21/06*
U.S. Cl. 452—120 **17 Claims**



1. A method for cutting open the stomach of a bird by cutting through one side of the stomach wall without causing damage to stomach wall opposite the cut, said method comprising the steps of:
orienting the stomach so that an area of the stomach wall is presented for cutting therethrough;
slicing through the stomach wall presented for cutting with a pressurized liquid jet, the pressurized liquid jet being of a pressure sufficient to cut through the stomach wall and thereafter dissipating within the stomach cavity so that the opposite stomach wall is not damaged; and
pressurizing the stomach cavity with the pressurized liquid jet so that the internal volume of the stomach increases causing the stomach wall to tear along the cut made by the pressurized liquid jet.

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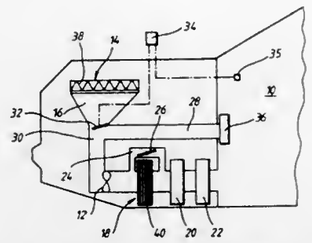
5,256,102
AUTOMATED EXCISION OF UNDESIRABLE MATERIAL AND PRODUCTION OF STARTING MATERIAL FOR RESTRUCTURED MEAT
Wolfgang K. Heiland, Trevose; Richard P. Konstance, Philadelphia, and James C. Craig, Jr., Maple Glen, all of Pa., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Division of Ser. No. 567,832, Aug. 15, 1990, Pat. No. 5,215,496, which is a division of Ser. No. 371,881, Jun. 27, 1989, Pat. No. 4,970,757. This application Apr. 16, 1991, Ser. No. 685,753
Int. Cl.[5] **A22B** *17/02*
U.S. Cl. **452—149** **7 Claims**



1. A multiple blade slicer comprising,
a cutting table dimensioned and configured to retain material to be sliced;
automatic clamping means, operatively associated with said cutting table, for securely clamping said material to be sliced with automatic adjustment to the shape of said material, while said material to be sliced is retained by said cutting table, wherein said clamping means includes,
pivotally mounted twin hydraulic or pneumatic cylinders each operatively associated with a piston rod,
a bar connected adjacent a first end thereof to both said piston rods, and
two jaws, each pivotally mounted on an opposite side of a second end of said bar; and
slicing means including a plurality of cutting blades for slicing said material to be sliced while it is retained by said cutting table and clamped by said automatic clamping means.

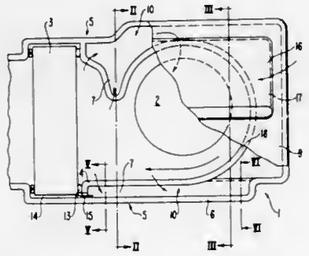
5,256,103
VENTILATION ARRANGEMENT FOR THE INTERIOR OF A VEHICLE, IN PARTICULAR A HEATING AND/OR AIR-CONDITIONING UNIT FOR A MOTOR VEHICLE
Jörg Abthoff, Plüdershausen; Hans-Dieter Schuster, Schorndorf; Friedhelm Nunnemann, Winnenden; Peter Bach, Stuttgart, and Michael Osswald, Ludwigsburg, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany
Filed Feb. 21, 1992, Ser. No. 838,859
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1991, 4105724
Int. Cl.[5] **B60H** *3/06*
U.S. Cl. **454—139** **7 Claims**

1. Ventilation arrangement for the interior of a vehicle comprising:
at least one of a heating unit and an air-conditioning unit;
a fan for air exchange in said interior;
an adsorption filter for the adsorption of odorous and/or harmful substances contained in an air stream delivered by the fan;
wherein said adsorption filter contains at least four plies of spherical active-charcoal adsorbers deposited on a carrier matrix,
wherein the spherical absorbers and the carrier matrix have a specific surface area of greater than 950 m^2/g, a partial size distribution of 0.6+/−0.05 mm statistical means, more than 85% of the particles being begwen 0.3 mm and 0.85 mm, more than 80% of the particles being betwen 0.5 mm and 0.7 mm, an absorber deposit on the carrir matrix of about 1400 g/m^2, a characteristic valve of the carrier matrix of approximately 22 ppi, and a micropore fractin in the carrier matrix exhibiting Benzene absorption of greater than 35% by weight at 10% saturation at a temperature of 20° C.



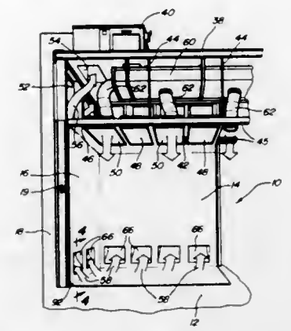
whereby, for the widest possible spectrum of odors and harmful substances, an initial adsorption nrate of said adsorption filter is so high and a desorption rate is so low that, on a sudden occurrence of an increased concentration of odorous and/or harmful substances in the air stream and during subsiding of increased concentration, a quantity of odorous or harmful substances passing with the air stream into the interior remains below a preset nuisance threshold.

5,256,104
MULTI-PART HOUSING OF A HEATING OR AIR-CONDITIONING SYSTEM IN A MOTOR CAR
Klaus Arold, Sindelfingen, Fed. Rep. of Germany, assignor to Mercedes-Benz AG, Fed. Rep. of Germany
Filed Aug. 13, 1992, Ser. No. 928,756
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1991, 4126713
Int. Cl.[5] **B60H** *3/06*
U.S. Cl. **454—158** **3 Claims**



1. Multi-part housing of a heating or air-conditioning system in a motor car of the type having a fan disposed on an air-intake side, downstream of which fan there is connected a filter which retains odors and is sealed in relation to the multi-part housing by filter seals, a suction housing mounted at a distance upstream of the multi-part housing, and the multi-part housing having joints therein,
wherein leakage air which enters at a joint in the multi-part housing and escapes at the filter seal passes into a space between the multi-part housing and the suction housing and is led to the suction side of the fan,
wherein the space receiving the leakage air is in each case formed by a wall area of the suction housing bottom part attached in one piece to a bottom part of the multi-part housing to provide a channel covered by an outwardly pointing flange area of the suction housing top part.

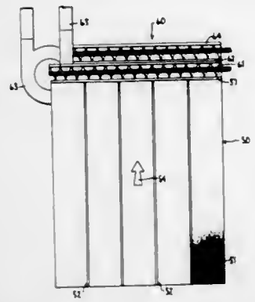
5,256,105
WASHABLE SEAMLESS CLEAN ROOM
Frank X. Austin, Plymouth, Mich., assignor to Clean Air Technology, Inc., Canton, Micb.
Filed Mar. 2, 1992, Ser. No. 844,308
Int. Cl.[5] **F24F** *7/10*
U.S. Cl. **454—187** **17 Claims**



1. Modular clean room to form an environment isolated from ambient atmosphere to enable air within the environment to be maintained substantially free from contamination and substantially sterile comprising:
a plurality of vertical side walls extending upwardly from a substantially horizontal floor, said side walls constructed of a plurality of vertical wall modules positioned in side by side abutting relation along vertical edges of said modules to form each side wall, said modules each having an inner panel with the inner panels of adjacent modules being butted together along vertical edges forming a seam therebetween, said side walls being oriented normal to adjacent side walls;
a horizontal deck at the upper ends of said side walls for supporting air cleaning equipment;
a modular ceiling suspended from said deck having a plurality of ceiling modules, each ceiling module having an inner panel with said inner panels being in abutting relationship with adjacent inner panels forming seams therebetween;
molding means at right angle corners formed where adjacent side walls meet one another, where said side walls meet the floor and where said side walls meet said ceiling, said molding means forming a radiused surface merging tangentially with the floor, side walls and ceiling; and
surface coating means on the floor, said inner panels, said molding means and said ceiling for forming a coating having a continuous inner surface in said room free from seams.

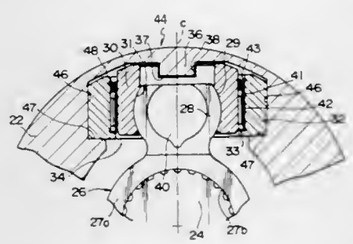
5,256,106
METHOD AND APPARATUS FOR AUTOMATIC CORN COB REDUCTION
Larry Shrawder, R.D. #2, Kempton, Pa. 19529
Continuation of Ser. No. 415,894, Oct. 2, 1989, abandoned. This application Apr. 8, 1991, Ser. No. 682,659
Int. Cl.[5] **A01F** *11/06*
U.S. Cl. **460—39** **16 Claims**

10. An improved combine cleaning and separating means comprising a chaff cleaning means, a cleaning she with a top screen having a line of travel, a discharge end and a plurality of vertical elongated fins disposed on the top screen parallel to the line of travel, a cob separating means located adjacent to and below the plane of the top screen of the cleaning shoe at the discharge end, the separating means having a line of travel perpendicular to the line of travel of the cleaning shoe and a



cob cleaning means adjacent to the cob separating means with a line of travel parallel to the line of travel of the separating means.

5,256,107
SLIDING TYPE CONSTANT VELOCITY UNIVERSAL JOINT HAVING REGULATING DEVICE FOR MAINTAINING POSITION OF ROLLER CONSTANT
Takumi Matsumoto; Yasuyoshi Yasui, and Tsuyoshi Togame, all of Toyota, Japan, assignors to Toyota Jidosha Kabusbiki Kaisha, Toyota, Japan
Continuation of Ser. No. 652,426, Feb. 7, 1991, abandoned. This application Feb. 9, 1993, Ser. No. 15,670
Claims priority, application Japan, Feb. 8, 1990, 2-27082; Mar. 1, 1990, 2-19462[U]; Mar. 1, 1990, 2-19463[U]; Jul. 6, 1990, 2-177347
Int. Cl.[5] **F16D** *3/205*
U.S. Cl. **464—111** **8 Claims**



1. A sliding type constant velocity universal joint, comprising:
an outside member connected to a first shaft having radial and axial directions and provided on an inner periphery thereof with at least three grooves extending in the axial direction of said first shaft at circumferentially equal intervals, each of said grooves having a rail extending in the axial direction of said first shaft and projecting inwardly in the radial direction of said first shaft;
an inside member connected to a second shaft having radial and axial directions, the inside member having roller shafts which have radial and axial directions extending outwardly in the radial direction of said second shaft so as to enter respectively into said grooves, each of the roller shafts being provided on its radially outward periphery with a convex spherical surface;
a cage having radial and axial directions and provided on its radially inward periphery with a concave spherical surface and on its radially outward periphery with a cylindrical surface, the cage being mounted on each of said roller

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shafts by fitting said concave spherical surface to said convex spherical surface and being provided in a portion facing said rail of the outside member with two notches receiving said rail;

a ring-like roller having radial and axial directions and rotatably supported by each cage and contacting said outside member, the roller being provided on its radially inward periphery with a cylindrical surface having a diameter larger than that of the cylindrical surface of the cage; and

regulating means including said rail for maintaining the position of each of said rollers relative to the axis of said first shaft constant when said first and second shafts are rotated under the condition that the axes of the first and second shafts cross each other, an inward surface of the rail coming into contact with an axially outward surface of the roller thereby preventing the roller from moving outwardly in the radial direction of said first shaft;

said cage and said roller being capable of moving relative to each other in the radial direction of said first shaft.

5,256,108

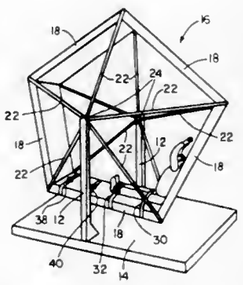
PASSENGER POWERED AMUSEMENT RIDE

Stacy I. Whitmore, 140 W. 200 South, and James A. Mayfield, 294 W. 2nd North, both of Richfield, Utah 84701

Filed Jul. 24, 1992, Ser. No. 918,076

Int. Cl.[5] A63G *1/12*

U.S. Cl. 472—16 **10 Claims**



1. A passenger powered, rotatable, amusement ride comprising

a multisided, peripheral frame having the general shape of a convex polygon, with said frame having at least 5 sides and a number of apexes equal to the number of sides in said frame, said apexes alternating with the sides around the periphery of said frame;

said frame having an open interior space bounded by internal surfaces of said sides of said frame;

means for mounting said frame to rotate like a wheel about a substantially horizontal axis through the central portion of said frame; and

means for seating a passenger within the open interior space of said frame and adjacent to one of the apexes of said frame such that the legs of said passenger can lie along an internal surface of one of the sides of said frame that extends from said one apex while the back of said passenger lies along an internal surface of another of the sides of said frame that extends from said one apex.

5,256,109

DRIVE DEVICE

Siegfried Winkelmann, Tettnang, and Horst Rögner, Friedrichshafen, both of Fed. Rep. of Germany, assignors to ZF Friedrichshafen AG, Fed. Rep. of Germany

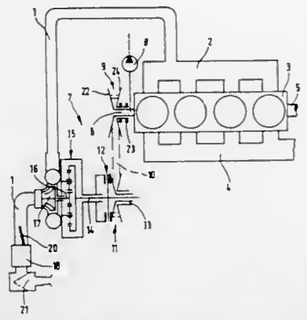
PCT No. PCT/EP91/01085, § 371 Date Dec. 9, 1992, § 102(e) Date Dec. 9, 1992, PCT Pub. No. WO91/19918, PCT Pub. Date Dec. 26, 1991

PCT Filed Jun. 11, 1991, Ser. No. 955,873

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1990, 4018938

Int. Cl.[5] F16H *59/00*

U.S. Cl. 474—28 **12 Claims**



1. A drive device (7) for transmitting torque between a drive shaft (6) having a first belt pulley (9) and a driven shaft (13) having a second belt pulley (11) wherein said first belt pulley (9) has an axially fixed flange (22) non-rotably connected with said drive shaft (6) and a flange (24) axially movable under the action of a pre-load apparatus (23) and said second belt pulley (11) consists of an axially fixed flange (25) non-rotably connected with said driven shaft (13) and an axially movable flange (26), said axially movable flange (26) forming, with a flange (31) of said driven shaft (13), a chamber (38) which is connected with a reservoir (30) for a hydraulic medium, and to which can be applied a supporting pressure regulatable in accordance with a performance characteristic of an internal combustion engine (3), characterized in that by changing, connecting and disconnecting said supporting pressure, said engine speed dependent upon the performance characteristic and/or pressure load of said internal combustion engine (3) is monitored by the transmission ratio of said drive device (7) corresponding to said speed and/or said pressure is varied together with change of the centrifugal action of said hydraulic medium.

5,256,110

CONTINUOUS INFINITE-RATIO POWER TRANSMISSION DEVICE

William K. Olsen, 215 S. Whitcomb, Fort Collins, Colo. 80521

Filed May 13, 1991, Ser. No. 699,978

Int. Cl.[5] F16H *59/00, 15/16*

U.S. Cl. 474—69 **5 Claims**

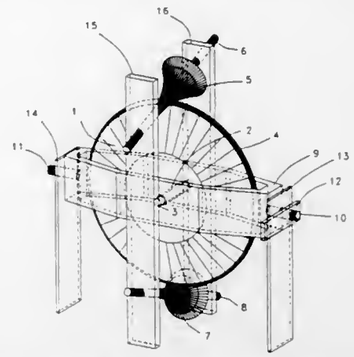
1. A continuous infinite-ratio power transmission device comprising:

(a) a power-transmitting drive wheel,

(b) a driving arc-shaped cone,

(c) a driven arc-shaped cone,

said drive wheel provided with a frictional surface on a circumference portion thereof and an axle said drive wheel by said axle within a holding frame, said holding frame supported for rotation by a pair of control shafts, each said control shaft located opposite the other along a common axis situated substantially perpendicular to and substantially bisecting said axle of said drive wheel, said driving arc-shaped cone and said driven arc-shaped cone each fixedly attached to a driving shaft and driven shaft respectively, each said arc-shaped cone comprised such that the arc surface of each said arc-shaped cone is substantially equal in measure to a respective second arc of equal dimensions, said second arc located on a circle about the circumference of said drive wheel, said driving shaft separated from said driven shaft by an angle about the circumference of said drive wheel and relative to the center of said drive wheel, said angle being substantially close to 180 degrees, wherein the axes of rotation of said driving shaft, said drive wheel and said driven shaft lie substantially in a single plane, said driving



arc-shaped cone and said driven arc-shaped cone further situated such that there is substantially equal contact between said drive wheel circumference and the respective arc-shaped cones, said contact being continuously maintained throughout travel of the drive wheel as incurred through means for pivoting of said holding frame,

whereby,

pivoting of said holding frame permits selection of any drive ratio within the range of drive ratios as provided by and limited by the relative size and orientation of said driving arc-shaped cone, said driven arc-shaped cone and said drive wheel.

5,256,111

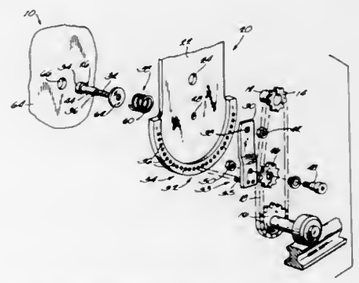
DRIVE CHAIN TENSIONER

James C. Muth, Eagle, Wis., and Thomas Haak-Frendscho, S. San Francisco, Calif., assignors to Spacesaver Corporation, Fort Atkinson, Wis.

Filed Sep. 29, 1992, Ser. No. 953,606

Int. Cl.[5] F16H *7/08*

U.S. Cl. 474—101 **12 Claims**



1. A mobile storage apparatus adapted for substantially linear movement along a track, comprising:

A) a driven shaft rotatable with respect to support means and connected to a wheel riding on said track;

B) drive means for rotating said shaft, said drive means including:

1) a prime mover connected by a drive shaft to a first sprocket, said first sprocket rotatable with respect to said support means,

2) a second sprocket, positioned on said driven shaft, and

3) a chain connecting and reeved about said first and second sprockets; and

C) apparatus for tensioning said chain, said tensioning apparatus including:

1) a base plate mounted to said support means;

2) a post mounted through a closely-sized aperture in said base plate;

3) an arm mounted to said post at a mounting point on said arm, such that said arm is rotatable with respect to said base plate;

4) an idler sprocket rotatably attached to said arm at a point spaced apart from the mounting point of said arm;

5) first engaging means on said arm at a point spaced apart from the mounting point of said arm;

6) second engaging means on said base plate for engaging said first engaging means with said arm in a plurality of positions with respect to said base plate.

5,256,112

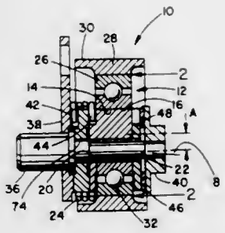
ECCENTRIC TYPE BELT TENSIONER

Henry W. Thomey, St. Clair Beach, and Andrezj Dec, Windsor, both of Canada, assignors to Gates Power Drive Products, Inc., Bloomfield Hills, Mo.

Filed Aug. 7, 1992, Ser. No. 926,735

Int. Cl.[5] F16H *7/10*

U.S. Cl. 474—112 **10 Claims**



1. In a tensioner of the type with a bearing having an inside bore and positioned substantially at a circumference of a stub shaft, a pivot arm formed as a portion of the stub shaft, a pivot bushing and cantilevered pivot-pin extending through and eccentric to the stub shaft at a radius defining a pivot arm length, and a spring means for biasing rotation of the pivot arm about the pivot-pin, the improvement comprising:

the pivot bushing having a wall thickness sufficiently sized for supporting a predetermined loading from the pivot-pin and wherein the pivot-bushing and pivot-pin are positioned relative to the stub shaft such that the radial dimension between the pivot-pin and stub shaft circumference is from zero to substantially equal said wall thickness of the pivot bushing.

5,256,113

AUTOMOTIVE ACCESSORY DRIVE BELT TENSIONER

Thomas S. Bushman, Dearborn; Thomas R. Lahvic, Ann Arbor; Richard J. Meckstroth, Northville; Robert G. Rebandt, II, Romulus, and Timothy T. Vaughn, Dearborn, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 29, 1992, Ser. No. 874,883

Int. Cl.[5] F16H *7/12*

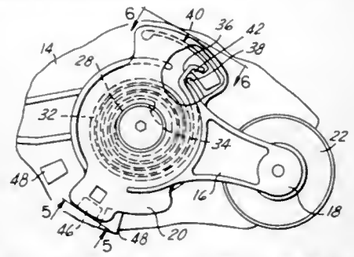
U.S. Cl. 474—135 **8 Claims**

1. A tensioner assembly for an automotive engine accessory drive belt, comprising:

a tensioner arm adapted for pivotable mounting to an engine; and

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a drive belt contact pulley mounted on said arm, with said pulley comprising a cup-shaped member with a base and a



rim for contacting a drive belt and having a plurality of acoustical apertures formed in the rim.

5,256,114

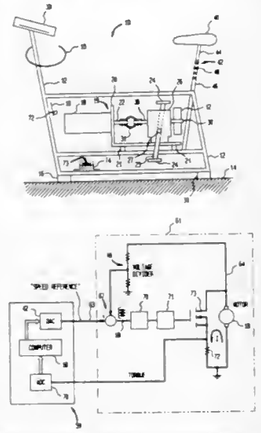
Patent Not Issued For This Number

5,256,115

ELECTRONIC FLYWHEEL AND CLUTCH FOR EXERCISE APPARATUS

William G. Scholder, Rockaway, N.J., and Donald A. Gilbrech, Fayetteville, Ark., assignors to William G. Scholder, Rockaway, N.J.

Filed Mar. 25, 1991, Ser. No. 675,082
Int. Cl.[5] A63B *21/005*
U.S. Cl. 482—6 **18 Claims**



1. A stationary exercise bicycle comprising:
a frame;
a seat and a pair of pedal-operated crank arms connected to said frame to enable a user to provide an input pedal torque at an input pedal speed; and
an electronic flywheel connected to said frame which performs equivalently to a large conventional flywheel, wherein said electronic flywheel comprises:
data input means to enable said user to input preset load torque;
speed reference command generator means to provide a time varying speed reference command signal as a function of difference between said input pedal torque and said preset load torque, wherein said speed reference command generator means comprising computer means for computing said time varying speed reference command signal according to the following equation:

$$S = \int (T_p - T_1)/J$$

where:
S is defined as said time varying speed reference command signal;
T_p is defined as said input pedal torque;
T_1 is defined as said preset load torque; and
J is defined as a selected valued which corresponds to inertia; and
speed servo control means for controlling said input pedal speed to equal said time varying speed reference command signal, the speed servo control means comprising a load torque means.

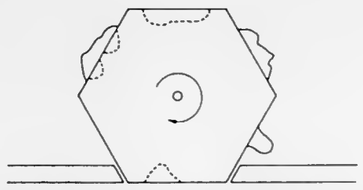
2. A stationary exercise bicycle comprising:
a frame;
an adjustable seat located on said frame to enable a user to sit on said adjustable seat;
power transmission means and a pair of pedal-operated crank arms connected to said frame to enable said user to provide an input pedal torque at an input pedal speed to drive a common input shaft of said power transmission means;
torque measuring means to measure said input pedal torque;
data input means to enable said user to input preset load torque;
speed reference command generator means connected to said frame to provide a time varying speed reference command signal as a function of difference between said input pedal torque and said preset load torque; and
speed servo control means connected to said frame for controlling said input pedal speed to equal said time varying speed reference command signal, the speed servo control means comprising a load torque means, speed detecting means to measure said input pedal speed, a summing amplifier to receive and compare summing difference between said input pedal speed and said time varying speed reference command signal, an amplifier to amplify said summing difference and to provide an amplified difference, filter means to filter said amplified difference and to provide a filtered amplified difference, and a power transistor connected across armature of said load torque means and controlled by said filtered amplified difference to provide a variable resistance across said armature to control current flowing through said load torque means and to force said input pedal speed to equal said time varying speed reference command signal.

5,256,116

CLIMBING EQUIPMENT

Donald Robinson, 39 Steps, Leeds Road, Old Pool Bank, Otley, West Yorkshire LS21 3BR, United Kingdom

Filed May 4, 1992, Ser. No. 878,356
Int. Cl.[5] A63B *69/00*
U.S. Cl. 402—37 **10 Claims**



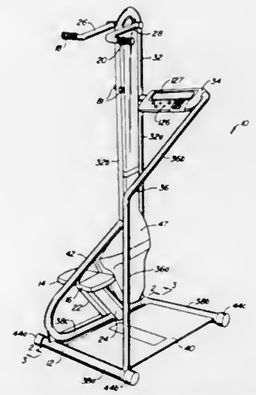
1. An artificial climbing hand and foot hold device for use with a climbing surface to simulate hand and foot holds in natural climbing conditions, said device comprising: a body having plurality of faces, a plurality of different artificial climbing hand and foot holds carried by at least predetermined ones of said faces, support means for supporting said body in a supported condition adjacent to the climbing surface, and drive means for moving said body relative to the climbing surface while said body is in its supported condition to selectively present one of said faces and any climbing hand and foot hold thereon at the climbing surface for engagement by a climber's hand or foot.

5,256,117

STAIRCLIMBING AND UPPER BODY, EXERCISE APPARATUS

Lanny Potts, deceased, late of Skiatook, by Edmond J. Farrell, legal representative, and Fred H. Holmes, Tulsa, both of Okla., assignors to Stairmaster Sports Medical Products, Inc., Kirkland, Wash.

Filed Oct. 10, 1990, Ser. No. 594,872
Int. Cl.[5] A63B *22/04, 22/12*
U.S. Cl. 482—52 **36 Claims**



1. Apparatus usable for stair-climbing simulation and upper body exercise comprising:
a base;
left and right pedals;
means for movably mounting said pedals with respect to said base to permit movement between an upper position and a lower, rearward position;
means for providing a first force opposing motion of said pedals from said upper position to said lower position;
mean for urging said left and right pedals from said lower to said upper position;
left and right handles; and
means for movably mounting said handles with respect to said base to permit movement between a first and a second position, said movement between said first and second position being substantially independent from said means for urging.

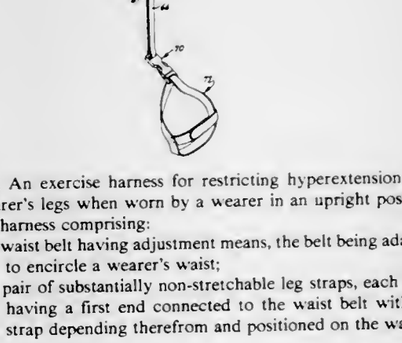
5,256,118

PEDAL EXERCISER

Ting-Hsing Chen, Tainan, Taiwan, assignor to Far Great Plastics Ind. Co., Ltd., Tainan Hsien, Taiwan

Filed Mar. 22, 1993, Ser. No. 35,264
Int. Cl.[5] A63B *22/04, 21/008*
U.S. Cl. 482—53 **2 Claims**

1. A pedal exerciser comprising:
a baseboard having two walls extending upwardly from one end of respective sides, a mounting on the top portion of said baseboard, an air inlet at the inner middle portion therein;
two pedals each having one end connected to said walls, respectively, and two rails located on the bottom surfaces of each pedals;
two bellows having one end of each connected to the bottom portions of said pedals, respectively, the other ends of said blasts being connected to said baseboard.
a linking means having a V-shaped linking rod swivably secured at its bottom to said mounting of said baseboard, and a regulating device secured to the bottom portion of said mounting; two pulleys rotatably secured to respective top ends of said linking rod and located within said respective rails of said pedals;



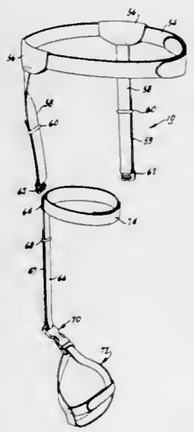
an air pressure means having a pressurized air container washer, a socket having two holes at one end adapted to receive a T fitting, a valve seat having a spindle extending from one end through a cap into a knob whereby said value seat is adjusted to vary the exercise resistance during pedal movement.

5,256,119

LEG EXTENSION EXERCISE DEVICE

E. Jess Tudor, 112 Henry Ct., Tracy, Calif. 95376

Filed May 15, 1991, Ser. No. 700,485
Int. Cl.[5] A63B *71/00*
U.S. Cl. 482—74 **8 Claims**



1. An exercise harness for restricting hyperextension of a wearer's legs when worn by a wearer in an upright position, the harness comprising:
a waist belt having adjustment means, the belt being adapted to encircle a wearer's waist;
a pair of substantially non-stretchable leg straps, each strap having a first end connected to the waist belt with the strap depending therefrom and positioned on the waisted

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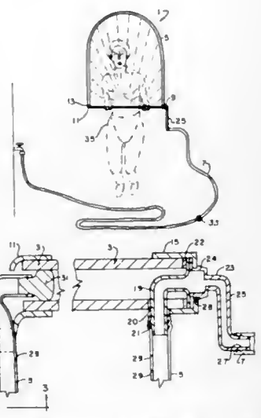
belt to depend against the back of a wearer's leg with a second end locatable proximate a wearer's ankle;

retaining means to retain each of depending leg straps against the back of the wearer's leg;

a pair of foot stirrups each engageable with a foot of the wearer with the second end of each leg strap being connectable to a foot stirrup, wherein the strap has a length preventing hyperextension of the wearer's legs; and

adjustment means for adjusting the effective connecting length of the leg straps wherein the degree of restricting hyperextension of the wearer's legs when standing or walking is varied.

5,256,120
JUMP ROPE SPRINKLER
Byron H. Howell, 3145 Market, East St. Louis, Ill. 62207
Filed Jul. 10, 1992, Ser. No. 911,899
Int. Cl.[5] A63B *5/20*
U.S. Cl. 482—82 **17 Claims**



11. The jump rope sprinkler of claim **10** wherein the first end of the spray tube is attached to a hollow barb at the first end of the rigid tube.

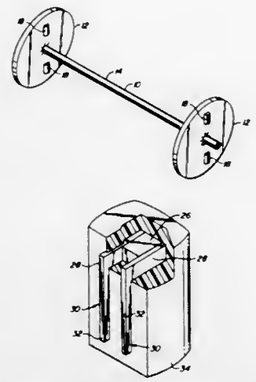
5,256,121
AUXILIARY MAGNETIC WEIGHTS
Eric M. Brotman, Box 1061, Nevada City, Calif. 95959
Continuation-in-part of Ser. No. 471,421, Jan. 29, 1990, Pat. No. 5,040,787, which is a continuation of Ser. No. 306,894, Feb. 6, 1989, abandoned. This application Aug. 19, 1991, Ser. No. 747,759
Int. Cl.[5] A63B *21/072*
U.S. Cl. 482—93 **1 Claim**

1. An incremental weight for use with graduated weight exercise apparatus of the type including a weight of specified weight value disposed to present a generally vertical surface during use, the vertical surface having a portion subject to magnetic attraction, said incremental weight comprising:

a magnet and a magnetically active contact member in contact with said magnet, said contact member being formed of a pair of generally rectangular parallel plates presenting a pair of parallel edges, said edges defining an engagement surface for engaging the generally vertical surface of the weight, and said magnet being sandwiched between said plates; and

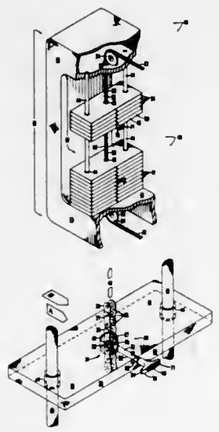
an elongate housing, having a substantially flat bottom portion and a convexly curved top portion of generally cylindrical-sector shape with cylinder axis along the long dimension of said elongate housing, said housing being dimensioned to be held in the user's hand to provide a grip for the user, wherein said magnet and said pair of parallel plates are fixed within said housing such that said pair of parallel edges protrudes from said substantially flat bottom portion of said housing so as to define an offset of said engagement surface from said housing;

wherein said incremental weight has an overall weight value



greater than about one-quarter pound and less than about three pounds, and wherein said magnet has a magnetic strength sufficient to maintain said incremental weight in engagement with the generally vertical surface during the movement encountered during use of the weight exercise apparatus.

5,256,122
RESISTANCE ENGAGEMENT SYSTEM
Michael J. Deden, 1530 Maurice Ave., Missoula, Mont. 59801
Continuation-in-part of Ser. No. 754,216, Aug. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 553,971, Jul. 17, 1990, abandoned. This application Apr. 22, 1992, Ser. No. 873,698
Int. Cl.[5] A63B *21/062*
U.S. Cl. 482—99 **24 Claims**



1. A resistance engagement system for exercising apparatuses comprising:

a frame means supporting components of said resistance engagement system;

a vertically stacked array of individual engageable weight plates;

a weight stack travel above said vertically stacked array of individual engageable weight plates for vertical oscillatory movement of selected said weight plates;

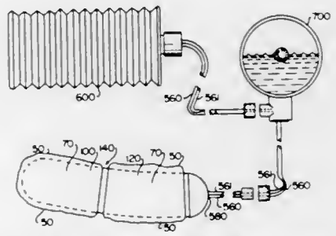
a guide means for guiding selected said weight plates for vertical oscillatory movement in said weight stack travel;

a flexible connector;

a flexible connector guide means for guiding said flexible connector from above said weight stack travel and below said vertically stacked array of individual engageable weight plates for a line of guide of vertical oscillatory movement about said vertically stacked array of individual engageable weight plates; and

an engaging means for selectively engaging said flexible connector at a selected point along its length to a selected said individual engageable weight plate.

5,256,123
FEMALE ABDOMINAL EXERCISE DEVICE
Marsha L. Reinbolt, 4335 Beck, Maumee, Ohio 43537
Filed Aug. 19, 1991, Ser. No. 746,711
Int. Cl.[5] A63B *21/008*
U.S. Cl. 482—113 **3 Claims**



1. A device for exercising vaginal muscles within a vaginal cavity, such apparatus comprising:

(a) an extending male member having a longitudinally extending central axis and a longitudinally extending hollow member said hollow member extending in the longitudinal direction of the longitudinally extending axis of the longitudinally extending male member, said hollow member having two chambers therein, each chamber being aligned along a common central axis, and wherein said hollow member has a plurality of openings therein which openings extend from the inside of the member to portion outside said member.

5,256,124
BODY EXERCISER USING DISTRIBUTED FRICTIONAL BRAKE MEANS AND CENTRAL ACTING BIASING MEANS
Paul G. Hughes, 1725 Caulfield La., Petaluma, Calif. 94954
Continuation-in-part of Ser. No. 668,591, Mar. 13, 1991, Pat. No. 5,158,519. This application Aug. 21, 1992, Ser. No. 933,340
Int. Cl.[5] A63B *21/015*
U.S. Cl. 482—118 **20 Claims**

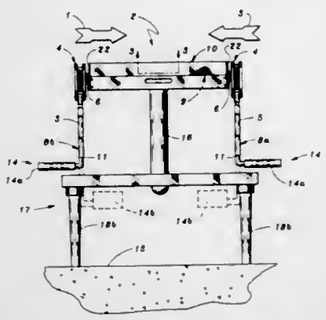
1. An exerciser which can be readily initialized for use while at the same time generate a large, distributed resistance load in which a user's limbs can be worked in both push-pull, pull only or push only directions, comprising

a central, fixed housing having an axis of symmetry and a plane of action normal to said axis of symmetry,

first and second cranks each having a lateral arm insertable within said fixed housing from opposite directions and having an axis of rotation coincident with said axis of symmetry for providing clockwise and counterclockwise rotation about said axis of symmetry, said cranks each having a forearm normal to said lateral arm and attached thereto through a ratchet mechanism,

first and second independently operatable friction brakes each journaled to said each lateral arm of said first and second cranks wherein said each brake and lateral arm operate in concert, said each brake including a centrally positioned push block and a series of stackable, laterally slidable rotatable and stationary members in edge relationship relative to said axis of symmetry and in broad surface contact with each other, said rotatable and stationary members being distributed over a finite length of said lateral arm of each first and second cranks,

a centrally positioned frictional biasing means in biasing contact with said push block of said each of said first and



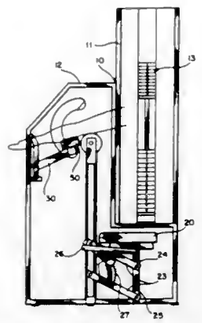
second friction brakes, said friction biasing means including centrally positioned wedge block having slanted side surfaces in operational contact with said push blocks of said brakes and an activation rod in operative contact with said wedge block for providing transverse movement to said wedge block relative to said housing, said transverse movement being converted into bi-directional longitudinal travel of said push blocks thereby generating bi-directional biasing squeezing pressure to said series of rotatable and stationary members of friction brakes whereby independent resistance to rotation of said lateral arm about said axis of symmetry is smooth over a full 360 degrees of rotation of either said first or second cranks individually or in tandem.

5,256,125
BICEPS CURL MACHINE
Arthur A. Jones, 1155 NE 77th St., Ocala, Fla. 32670
Continuation-in-part of Ser. No. 813,531, Dec. 26, 1991, Pat. No. 5,149,313, which is a division of Ser. No. 422,905, Oct. 18, 1989, Pat. No. 5,005,830, which is a division of Ser. No. 236,367, Aug. 25, 1988, Pat. No. 4,902,009, which is a continuation-in-part of Ser. No. 60,679, Jun. 11, 1987, Pat. No. 4,836,536, and Ser. No. 181,372, Apr. 14, 1988, Pat. No. 4,834,365. This application Jul. 7, 1992, Ser. No. 909,658
Int. Cl.[5] A63B *21/00*
U.S. Cl. 482—137 **12 Claims**

1. A machine for exercising the biceps of the arms, comprising in combination, a movement arm movable about a generally horizontal axis having means extending upwardly from a plane of the movement arm to be gripped by a user above said plane for pivoting the movement arm about said axis, a first pad at a fixed location to be engaged by the user's arms above the elbows when gripping said means to support the user's arms above the elbows in a generally horizontal plane against downward movement, a second pad located forwardly of said first pad and being mounted on said movement arm to engage the backsides of forearms of the user while the user is gripping said means with the user's elbows positioned between said pads and in general alignment with said axis, said second pad being movable with the movement arm about said axis to provide an

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unsupported space between the first and second pads for receiving the elbows of the arms and wherein the second pad is movable between a first position located adjacent and forwardly of the first pad and a second position raised above the first position and spaced from the first pad and wherein there is further included a seat located rearwardly of and below said first pad for receiving the user in seated position.



5,256,126

ABDOMINAL AND BACK EXERCISING DEVICE

Todd Grotstein, Pittsburgh, Pa., assignor to Grote Sport Inc., Pittsburgh, Pa.

Filed Feb. 5, 1992, Ser. No. 831,796
Int. Cl.[5] A63B *26/00*
U.S. Cl. 482—142 **6 Claims**



1. An apparatus for exercising the abdominal and back muscles of a human exerciser comprising:

a. a frame, said frame including a horizontal member, said horizontal member supported on each end thereof by a pair of legs, said horizontal member provided with a plurality of spaced apart apertures, at least one of said pair of legs being provided with an extension member, said extension member including a padded cross member;

b. a seat member adapted to be supported on said horizontal member, said seat member provided with means to adjust its position along said horizontal member;

c. a pivotable lever mounted on said horizontal member, said pivotable lever provided with means to adjust its position along said horizontal member;

d. resilient means connecting said pivotable lever and said horizontal member wherein a force applied against said pivotable lever in a direction opposite said seat member is opposed by said resilient means;

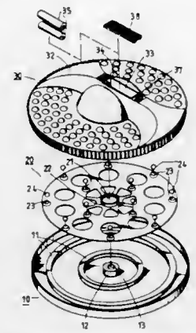
e. ar eccentric connecting means pivotally connecting said padded cross member to said extension for allowing said padded cross member to be eccentrically rotated about an axis thereby allowing a raising or lowering of said padded cross member against the knees of an exerciser.

5,256,127

AMUSEMENT TWISTER EQUIPPED WITH SOUND REPRODUCER

Peter Yeh, 6th. Floor, No. 210, An Ho Rd., Taipei, Taiwan

Filed Aug. 20, 1992, Ser. No. 932,594
Int. Cl.[5] A63B *23/00*
U.S. Cl. 482—146 **1 Claim**



1. An amusement twister equipped with a sound reproducer comprising:

a base disk with a hollow axle located at the center thereof and provided centrally with a circular hole;

said base disk having support rings concentric with said hollow axle;

a locking disk provided at the center thereof with a round hole dimensioned to permit said hollow axle to pass therethrough and with a plurality of slots located in the top surface thereof;

a steel ball bearing rotatably and correspondingly engaged in each of said plurality of slots;

a bottom surface of said locking disk mounted on said support rings when said hollow axle is engaged through said circular hole of said base disk;

a rotation disk having an underside with an engaging rod extending therefrom at the center thereof;

said underside mounted on each said steel ball bearing when said engaging rod is engaged in said circular hole of said base disk; and

said rotation disk having a protruded portion serving as a baffle and having therein a receiving space housing therein a speaker, sound-controlling circuit board means for storing and playing music or exercise commands on said speaker, a plurality of batteries, and a switch;

said receiving space sealed with a cap.

5,256,128

GRIPPER EXCHANGE MECHANISM FOR SMALL ROBOTS

Hans D. Neumann, Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 466,523, Jan. 17, 1990, abandoned. This application Apr. 20, 1992, Ser. No. 871,582
Int. Cl.[5] B23Q *3/155*
U.S. Cl. 483—1 **20 Claims**

1. A method for releasably attaching an end effector to an apparatus for handling objects, comprising the steps of:

(a) provided a tool depository comprising at least two guide pins extending from a surface connected to the tool depository that includes a keyhole plate for engaging a portion of said end effector;

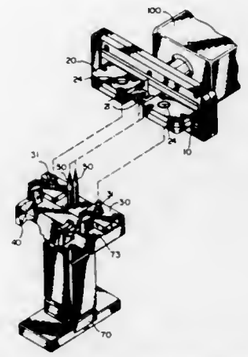
(b) providing a tool holder connected to the apparatus for handling objects comprising: a pair of bi-stable latches for engaging said guide pins and said end effector by activating a pinch rack connected to the latches for moving the latches between a closed position and an opened position;

(c) aligning said pair of latches substantially with said guide pins by manipulating said apparatus for handling objects;

(d) manipulating said apparatus for handling objects to engage said pair of latches with said guide pins;

(e) engaging the latches with said end effector by actuating said pinch rack to move the latches to a closed position, thereby disengaging the end effector from the keyhole plate; and

(f) withdrawing said tool holder means from said guide pins, whereby said end effector is releasably attached to said apparatus for handling objects.



4. Apparatus for releasably attaching an end effector to an apparatus for handling objects, comprising:

(a) a tool depository comprising a plate having an aperture for retaining a storage plug,; and at least two guide pin means disposed upon the plate;

(b) a tool holder comprising a pair of bi-stable latches for engaging said guide pin means and the end effector, said tool holder means attached to aid apparatus for handling objects; and

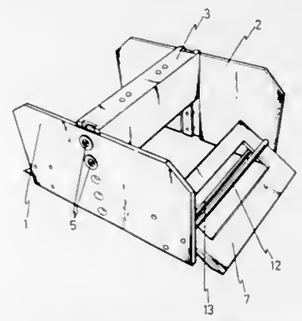
(c) pinch rack means connected to the latches for selectively manipulating the latches between an open position and a closed position.

5,256,129

BOX FORMING APPARATUS WITH EXTENSIBLE WING ELEMENTS

Jose Boix Jaen, Elche, Spain, assignor to Boix Maquinaria, S.A., Leche, Spain

Filed Jul. 1, 1992, Ser. No. 906,862
Claims priority, application Spain, Jan. 24, 1992, 9200153
Int. Cl.[5] B31B *3/44*
U.S. Cl. 493—171 **5 Claims**



1. A box forming apparatus for forming a box from a cardboard blank, said apparatus comprising:

two substantially rectangular end plates, said end plates lying in parallel planes;

a bridge element connecting said two end plates;

a first and second substantially rectangular wing plates, said wing plates pivotally attached to said end plates, said wing plates lying in planes orthogonal to said end plate planes;

a first pair of stops on said end plates, said first stops preventing rotation of said wing plates past a first predetermined angle with respect to a center line of said end plates; and

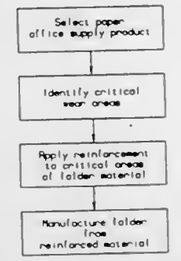
a second pair of stops on said end plates, said second stops preventing rotation of said wing plates past a second predetermined angle with respect to said center line of said end plates.

5,256,130

REINFORCED PAPER OFFICE SUPPLIES AND METHOD OF MAKING THEM

Theodore V. Kachel, Purchase, N.Y.; Jonathan B. Rivlin, East Brunswick, N.J.; Lee A. Boy, Jamestown, N.C.; Robert E. Hawes, Jr., Huntington Bay, N.Y.; Cheryl Dellacroce-Steinberg, Jericho, N.Y.; Eric Aaldenberg, Bayside, N.Y., and James J. Lynch, Berkley Heights, N.J., assignors to Esselte Pendaflex Corporation, Garden City, N.Y.

Continuation-in-part of Ser. No. 769,001, Sep. 30, 1991, which is a continuation of Ser. No. 483,094, Feb. 21, 1990, Pat. No. 5,066,045. This application Mar. 27, 1992, Ser. No. 859,183
Int. Cl.[5] B31B *1/90*
U.S. Cl. 493—210 **84 Claims**



1. A method for manufacturing paper office supply folders having extended useful service lives, which comprises:

determining at least two critical areas of the folder which are prone to wear and tear; and

applying separate plastic reinforcements upon or adjacent to at least two of the critical areas of the folder to form laminates therewith for increasing the strength and resistance of the folder to such wear and tear, wherein at least one reinforcement extends substantially completely across the full length or width of the folder.

5,256,131

BEVERAGE COOLING WRAP METHOD OF MANUFACTURE

Claudia R. Owens, West Jordan, and Dennis Thurman, Salt Lake City, both of Utah, assignors to Practical Products, Inc., Salt Lake City, Utah

Filed Aug. 17, 1992, Ser. No. 931,209
Int. Cl.[5] B31B *13/00*
U.S. Cl. 493—374 **16 Claims**

1. A method of manufacturing a flexible beverage cooling or warming wrap that may be wrapped around a beverage container for keeping a beverage cool or warm, comprising the steps of:

(a) providing a generally rectangular strip of material having a linear axis and inner and outer sides, two longitudinal edges, and first and second ends, wherein the width of the strip is about the same as the height of a beverage con-

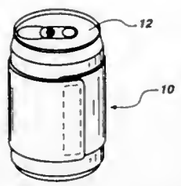
VOL 1155 ISS 4 OCT 26 1993 UMI

tainer and the length of the strip is sufficient so that the completed wrap will encircle a beverage container;

(b) superimposing a generally rectangular piece of insulation, having an end, two longitudinal edges, a width slightly less than the width of the strip, and a length about equal to the circumference of a beverage container, on the inner side of the strip so that the end of the piece of insulation is near the first end of the strip and the longitudinal edges of the piece of insulation are proximal to the longitudinal edges of the strip;

(c) attaching the insulation to the strip;

(d) folding the strip perpendicularly to the linear axis at a first fold, proximal to the second end, and at a second fold, proximal to the first end, so that a bundle having three layers of strip material (two exterior layers and an interior layer) is realized, wherein the length of the bundle is about one-third that of the strip, no part of the outer side of the



material is facing outwardly, the first end is on an exterior layer of the bundle, and the second end is on the interior layer of the bundle;

(e) securing the bundle along the longitudinal edges thereof, so that the two exterior layers and the interior layer are bound together, thus creating a first end-proximal opening on the exterior of the bundle and a second end-proximal opening hidden in the interior of the bundle;

(f) inverting the bundle about the axis of the second fold and slipping the bundle through the first end-proximal opening, wherein the second end-proximal opening appears on the exterior of the bundle after the inversion is completed;

(g) inverting the bundle about the axis of the first fold and slipping the bundle through the second end-proximal opening; and

(h) attaching fasteners to the product of step (g) so that the completed wrap may encircle a beverage container and be fastened in place.

5,256,132

CARDIAC ASSIST ENVELOPE FOR ENDOSCOPIC APPLICATION

Robert V. Snyders, 31 W. Brentmoor, Clayton, Mo. 63105

Filed Aug. 17, 1992, Ser. No. 930,985

Int. Cl.[5] A61M *1/12*

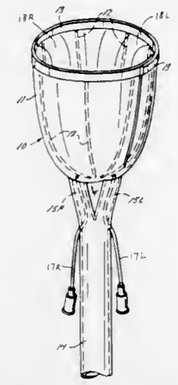
U.S. Cl. 600—16 **9 Claims**

1. A cardiac assist envelope suitable for endoscopic applications to a human heart, said envelope comprising:

a) a body formed of a medical grade elastomer that is highly flexible yet inelastic as an enclosure for a human heart, said body material being foldable to reduce the envelope for endoscopic applications;

b) a system of spring strips embedded in said body in position to spread the envelope and assure conformation of said body shape to a human heart;

c) flexible and elastic material sacs disposed in said body; and



d) a single driver conduit connected to said sacs in said body and formed with left and right gas flow divisions.

5,256,133

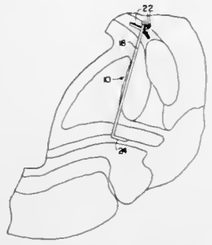
DEVICE FOR CORRECTING STRESS URINARY INCONTINENCE

Robert M. Spitz, 58 Gallup La., Waterford, Conn. 06385

Continuation-in-part of Ser. No. 578,124, Sep. 5, 1990, abandoned. This application Jan. 31, 1991, Ser. No. 648,654

Int. Cl.[5] A61F *2/00*

U.S. Cl. 600—29 **38 Claims**



1. Device for correcting stress urinary incontinence comprising implant means for supporting an associated portion of the vaginal wall in elevated position relative to the abdominal fascia to correct stress urinary incontinence including an axially elongate connecting member having a first end portion, retaining means for securing said first end portion of the connecting member proximate the abdominal fascia to support said implant means and including at least one resilient flexible retaining member having a deployed position wherein it projects laterally outwardly from said connecting member and an inserting position wherein it is disposed laterally inwardly of said deployed position in the direction of said connecting member, said at least one retaining member being resiliently self-biased toward said deployed position, and supporting means attached to said connecting member in axially spaced relation to said at least one retaining means for supporting said portion of the vaginal wall in said elevated position.

5,256,134

CONFORMABLE BANDAGE

Philip Ingham, Hebden Bridge, United Kingdom, assignor to Smith & Nephew plc, United Kingdom

PCT No. PCT/GB89/01065, § 371 Date Mar. 6, 1991, § 102(e) Date Mar. 6, 1991, PCT Pub. No. WO90/02539, PCT Pub. Date Mar. 22, 1990

PCT Filed Sep. 11, 1989, Ser. No. 663,875

Claims priority, application United Kingdom, Sep. 9, 1988, 8821223; Jan. 10, 1989, 8900437

Int. Cl.[5] A61F *5/04, 13/00*

U.S. Cl. 602—8 **8 Claims**

1. A conformable, hardenable, orthopaedic splinting bandage comprising a warp knitted fabric substrate coated with a curable resin wherein said fabric substrate contains individual wales, each individual wale comprising a repeating pattern of loops knitted from an elastic yarn and an inelastic yarn, said elastic yarn or inelastic yarn mislapping when not knitted to form said loops.

5,256,135

THORACIC-LUMBAR-SACRAL CORRECTIVE ORTHOSIS ("TLSO") CORRECTIVE BACK SUPPORTING BRACE AND CHAIR SIDE SUPPORT BUTTRESS

Eli Avihod, Studio City, Calif., assignor to Medisol U.S.A., Inc., South El Monte, Calif.

Filed Jan. 23, 1992, Ser. No. 825,648

Int. Cl.[5] A61F *5/00, 5/37*

U.S. Cl. 602—19 **18 Claims**



1. A thoracic-lumbar-sacral corrective orthosis brace for supporting, controlling and correcting poor structural and postural curvature and deformations of the spine of a patient wearing the brace, comprising:

a unitary, rigid back portion which arcuately extends between its top and bottom edges, and two side edges having a front and rear facing surface, said rigid back portion being curved generally rearwardly from said two side edges away from the patient's back said portion substantially overlying the patient's back, said top edge lying in the vicinity of the number five thoracic vertebra and said bottom edge lying in the vicinity of the sacrum; and

a flexible vest portion, said vest portion attached to said unitary, rigid back portion, said rigid back portion and said flexible vest portion having strap means affixed thereto with which to hold said rigid back portion against the patient's torso and back to apply controlling and corrective pressure to the patient's spine between the vicinity of the number five thoracic vertebra and the sacrum.

5,256,136

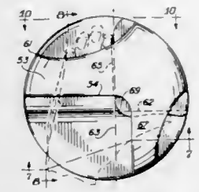
CARPAL TUNNEL APPLIANCE

Benjamin M. Sucher, 5261 E. Fanfol Dr., Paradise Valley, Ariz. 85253

Filed Sep. 28, 1992, Ser. No. 951,816

Int. Cl.[5] A61F *5/00*

U.S. Cl. 602—21 **13 Claims**



1. An orthopedic appliance for the self-treatment or prevention of carpal tunnel syndrome by stretching the transverse carpal ligament and pulling the thicker portions of the flexor tendons through the carpal canal, said appliance comprising:

a plate having a first contoured major surface for receiving a hand and having a peripheral edge;

a wall intersecting said surface and including a first wall portion for positioning the index finger of the hand and a second wall portion for positioning the thumb of the hand, said first wall portion and said second wall portion being connected by a corner located on said first contoured major surface, said first wall portion and said second wall portion extending from said corner toward said peripheral edge;

said major surface increasing in height along said first and second wall portions with increasing distance from said corner, for extending the fingers and abducting and extending the thumb of the hand.

5,256,137

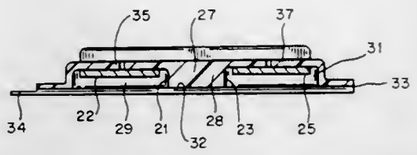
BIPHASIC POWER SOURCE FOR USE IN AN IONTOPHORETIC DRUG DELIVERY SYSTEM

Burton H. Sage, Jr., Raleigh, N.C., assignor to Becton Dickinson and Company, Franklin Lakes, N.J.

Filed Mar. 10, 1992, Ser. No. 848,217

Int. Cl.[5] H61N *1/30*

U.S. Cl. 604—20 **7 Claims**



1. An iontophoresis system for delivering therapeutic compounds to the skin of an animal, which comprises:

a transdermal drug delivery device attachable to the animal and in communication with the skin thereof, the device including a first electrode and a second electrode, and reservoirs for containing an electrolyte and a therapeutic drug in electrical communication with the first and second electrodes;

a biphasic power source connected to the first and second electrodes of the drug delivery device, the biphasic power source including means for providing a constant voltage, and means for providing a constant current, the constant current means and constant voltage means being connected to the electrodes of the drug delivery device;

means for switching between said constant voltage providing means and said constant current providing means

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when the skin impedance of the animal is less than a predetermined level;

wherein the biphasic power source is in a first mode and supplying a constant voltage to the first and second electrodes when the skin impedance of the animal is at least equal to a predetermined level, and wherein the biphasic power source is in a second mode and supplying a constant current to the first and second electrodes when the skin impedance of the animal is less than the predetermined level.

5,256,138

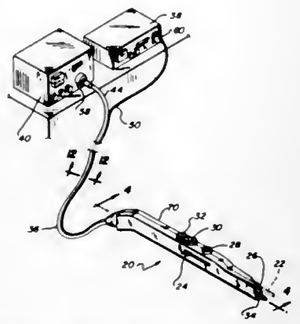
ELECTROSURGICAL HANDPIECE INCORPORATING BLADE AND CONDUCTIVE GAS FUNCTIONALITY

Paul P. Burek, Aurora, Colo., and William J. Bowers, Irvine, Calif., assignors to The Birtcher Corporation, Irvine, Calif.

Filed Oct. 4, 1990, Ser. No. 592,810

Int. Cl.[5] A61B *17/39*

U.S. Cl. 606—42 **34 Claims**



1. A handpiece for applying electrical energy from an electrosurgical apparatus to tissue during electrosurgery, comprising:

a housing adapted to be held in the hand of a surgeon during electrosurgery;

a blade electrode attached to the housing;

a nozzle and electrode assembly attached to the housing and including a nozzle for conducting gas and a transfer electrode positioned within the nozzle by which to transfer electrical energy to gas; and

signalling means attached to the housing and operative for selectively signalling the electrosurgical apparatus to supply blade electrosurgical electrical energy to the blade electrode and to supply gas to the nozzle and conductive gas electrocoagulation energy to the transfer electrode.

5,256,139

INTRA-ABDOMINAL ORGAN MANIPULATOR, IRRIGATOR, ASPIRATOR AND METHOD

Kamran Ghodsian, 1522 Valencia, Newport Beach, Calif. 92660

Division of Ser. No. 637,592, Jan. 3, 1991, Pat. No. 5,197,948. This application Feb. 18, 1992, Ser. No. 836,413

Int. Cl.[5] A61M *31/00*

U.S. Cl. 604—49 **2 Claims**

1. A method of manipulating organs or parts thereof within a patient's abdominal cavity and aspirating the interior of an organ, growth or cyst located within said cavity with a surgical probe having distal and proximal ends, a through lumen open at the distal end, an inflatable balloon affixed to the exterior of the probe adjacent the distal end thereof and means for inflating/deflating the balloon and for selectively connecting the through lumen to a low pressure source comprising the steps of:

a) manually inserting the distal end of the probe into the abdominal cavity so that the probe end is positioned outside of the organ to be manipulated;

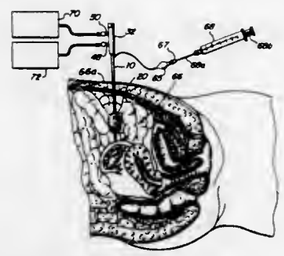
b) inflating the balloon;

c) positioning the balloon and distal end of the probe against the organ or part thereof to be moved;

d) moving the distal end of the probe until the organ or part thereof is repositioned as desired;

e) deflating the balloon;

f) manually inserting the distal end of the probe into the organ, growth or cyst to be aspirated;



g) inflating the balloon;

h) positioning the balloon against the interior wall of the organ, growth or cyst adjacent the point of entry to minimize the leakage of fluid from the organ growth or cyst into the abdominal cavity;

i) connecting the through lumen to the low pressure source to aspirate fluid from the organ growth or cyst;

j) deflating the balloon; and

k) withdrawing the probe.

5,256,140

COMPOSITION FOR LEVELLING SKIN

Harry Fallick, King of Prussia, Pa., assignor to Fallien Cosmeceuticals, Ltd., King of Prussia, Pa.

Filed Mar. 27, 1992, Ser. No. 859,327

Int. Cl.[5] A61M *31/00*

U.S. Cl. 604—51 **20 Claims**

1. A method for the injection and preparation of an injectable skin extract for a human patient which comprises the steps of:

A. excising a portion of skin from the patient to receive the extract;

B. pulverizing said skin;

C. denaturing and extracting said pulverized skin with an acid solution so as to obtain denatured collagen;

D. evaporating the acid solution from said extract containing denatured collagen so as to obtain a powder, and then,

E. solubilizing said powdered extract to form an injectable solution, whereby after injection the extract causes levelling of the skin where injected.

5,256,141

BIOLOGICAL MATERIAL DEPLOYMENT METHOD AND APPARATUS

Nelson Gencheff, 117 Lakeshore Rd., Grafton, Wis. 53024, and Carl W. Christensen, 7463 N. Beach Ct., Fox Point, Wis. 53217

Filed Dec. 22, 1992, Ser. No. 995,105

Int. Cl.[5] A61M *31/00, 29/00*

U.S. Cl. 604—53 **26 Claims**

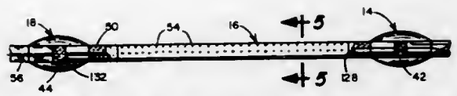
1. A system for the deployment of biologically active material in vascular wall tissue of a vascular segment of interest, the device being in the form of an elongated multi-lumen catheter having a plurality of serially situated functional zones comprising:

an externally accessed dispersion zone adapted to address a vascular segment and having a perforated dispersion lumen chamber subtending a major arc of the vascular

circumference provided with a pattern of openings for deploying biologically active materials in the vascular segment supplied through an externally connected lumen;

an electrode means with the dispersion zone for applying a controlled electrical charge to the biologically active material at the point of deployment;

a pair of spaced inflatable balloons defining a pair of occlusion zones for temporarily occluding normal vascular



blood flow in the vascular segment of interest during deployment of the biologically active materials;

flow bypass means comprising a lumen connecting proximal and distal infusion port zones for maintaining at least a minimum blood flow about and beyond the vascular segment of interest during the occlusion thereof; and

control interface means for controlling operation of the system including means capable of the time-variable modulation of the charge applied by the electrode means.

5,256,142

INJECTOR ADMINISTERING SUBCUTANEOUS INJECTIONS WITHOUT A NEEDLE AND WITH A ONE-SHOT CAP

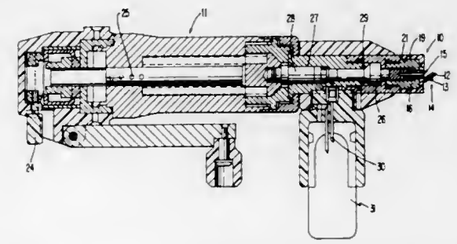
Antonio Colavecchio, Sagrado D'Isonzo, Italy, assignor to SICIM SpA, Romans D'Isonzo, Italy

Filed Jul. 17, 1992, Ser. No. 914,407

Claims priority, application Italy, Aug. 6, 1991, UD91A000128

Int. Cl.[5] A61M *5/30*

U.S. Cl. 604—68 **10 Claims**



1. An injector for administering subcutaneous injections without a needle, comprising:

an injection head having an aperture passing therethrough;

a chamber operably connected to said aperture, said chamber having a piston axially movable therein, said piston having a retracted position enabling charging of medicament into said chamber and an expulsion position whereby said medicament is expelled from said chamber through said aperture when said piston is thrusted axially from said retracted position to said expulsion position;

means for charging medicament into said chamber;

means for thrusting said piston from said retracted position to said expulsion position;

a replaceable, one-shot cap removably installed on said injection head, said cap having a removable stopper capable of being at least partly broken away from said cap and a hole through said removable stopper and cooperating with said aperture through which said medicament can pass; and

an axially movable striker positioned within said injection head and cooperating with said piston and having a retracted position between said piston and said removable stopper and a breakage position projecting from said injection head for at least partly breaking said removable stopper away from said cap when said piston is in said expulsion position.

5,256,143

SELF-VENTING BALLOON DILATATION CATHETER

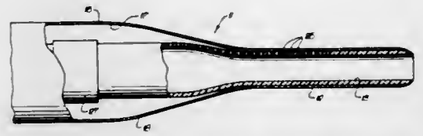
Gary H. Miller, Milpitas, and Wilfred J. Samson, Saratoga, both of Calif., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Continnation of Ser. No. 456,239, Dec. 27, 1989, abandoned, which is a continuation of Ser. No. 336,723, Apr. 12, 1989, abandoned, which is a continuation of Ser. No. 651, Jan. 6, 1987, Pat. No. 4,821,722. This application Dec. 28, 1990, Ser. No. 634,956

The portion of the term of this patent subsequent to Apr. 18, 2006, has been disclaimed.

Int. Cl.[5] A61M *29/00*

U.S. Cl. 604—96 **5 Claims**



1. A self-venting balloon dilatation catheter comprising:

a) an elongated catheter body having

a distal tubular portion with a distal end having an opening therein and with a guidewire receiving inner lumen extending therethrough to the opening in the distal end of the tubular portion,

an inflatable balloon sealingly disposed about the distal tubular portion of the catheter body with the distal tubular portion extending through the interior of the inflatable balloon and

an inflation lumen extending through the catheter body to the interior of the inflatable balloon; and

b) at least one flow restrictive passageway extending through the wall of the distal tubular portion which is in fluid communication with the interior of the balloon and the inner lumen of the distal tubular portion which permits the passage of air but not inflation liquid from the interior of the balloon to the inner lumen of the distal tubular portion and out the opening in the distal end of the distal tubular portion when the balloon is inflated with inflation liquid through the inflation lumen.

5,256,144

LOW PROFILE, HIGH PERFORMANCE INTERVENTIONAL CATHETERS

Jeff L. Kraus, San Jose, Calif., and Robert D. Lashinski, St. Michael, Minn., assignors to Danfortb Biomedical, Inc., Menlo Park, Calif.

Continuation-in-part of Ser. No. 430,702, Nov. 2, 1989, abandoned. This application Jul. 15, 1991, Ser. No. 730,240

Int. Cl.[5] A61M *29/00*

U.S. Cl. 604—96 **8 Claims**

1. A single-channel fixed-wire dilatation balloon catheter/-guidewire system, comprising:

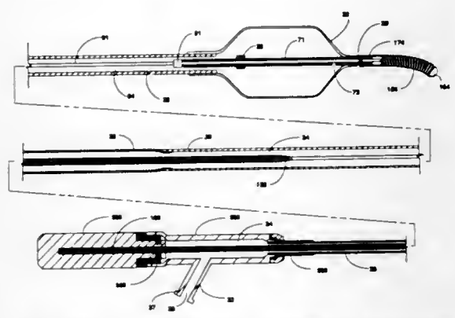
a tubular catheter shaft having a balloon secured to the distal end thereof and an opening at the distal end of said balloon;

a length of non-axially-collapsible inner tubing positioned inside said balloon, said inner tubing having distal and proximal ends, the distal end of said inner tubing secured to the distal end of said balloon, thereby preventing fluid passage through said opening other than through said inner tubing;

a guidewire extending through said tubular catheter shaft,

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said inner tubing and said balloon; said guidewire terminating in a tip distal to said opening with a diameter exceeding that of said opening, and said guidewire containing a shoulder abutting the proximal end of said inner tubing, thereby transmitting axial support from said guidewire to said balloon through said inner tubing, said tip and said shoulder preventing axial movement of said guidewire relative to said tubular catheter shaft;



said guidewire joined neither to said tubular catheter shaft, said inner tubing nor said balloon and thereby free to rotate to an unlimited degree relative to said tubular catheter shaft, said inner tubing and said balloon;

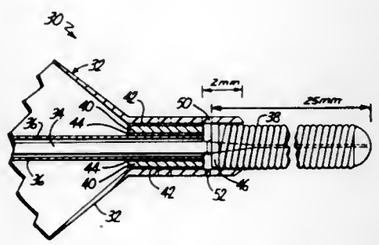
said inner tubing and a portion of said guidewire defining an annular space sufficiently narrow to prevent the passage of a liquid having a viscosity at least as great as that of water during inflation of said balloon with said liquid.

5,256,145

DILATATION CATHETER STRAIN RELIEF ASSEMBLY

Robert Atkinson, St. Anthony, and Richard C. Mattison, Plymouth, both of Minn., assignors to SciMed Life Systems, Inc., Maple Grove, Minn.

Filed Mar. 17, 1992, Ser. No. 852,548
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—96 **22 Claims**



1. In a catheter system having an inflatable balloon with a distal end, a guiding member and a spring tip having a proximal end, the spring tip being joined to the guiding member distally of the distal end of the balloon, the improvement comprising:

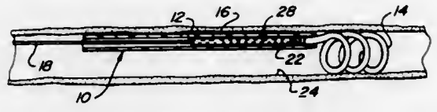
a strain relief member extending between the balloon and the spring tip and surrounding at least a portion of the guiding member between the distal end of the balloon and the proximal end of the spring tip, such that strain at the portion of the guiding member distally of the distal end of the balloon and proximally of the proximal end of the spring tip is reduced.

5,256,146

VASCULAR CATHETERIZATION SYSTEM WITH CATHETER ANCHORING FEATURE

William D. Ensminger, 2770 Parkridge Dr.; James C. Andrews, 3568 River Pines, and James A. Knol, 1059 Hasper, all of Ann Arbor, Mich. 48103, assignors to W. D. Ensminger; J. C. Andrews and J. A. Knol, all of Ann Arbor, Mich.

Filed Oct. 11, 1991, Ser. No. 775,045
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—104 **16 Claims**



1. An implantable vascular catheterization system comprising:

expandable anchoring means for engaging the walls of a blood vessel, said anchoring means having a segment of filament formed in a multi-turn helical coil, and defining a free diameter sufficiently large to engage the inside wall of said blood vessel,

an access catheter having said anchoring means affixed to said access catheter at one end of said access catheter, said access catheter having at least one lumen with a port for fluid communication between said access catheter lumen and said blood vessel, and

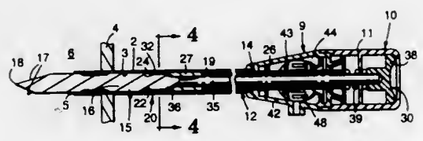
an introducer catheter having a lumen for receiving said anchoring means and said access catheter, said introducer catheter lumen receiving and constricting said anchoring means to deform said anchoring means to facilitate introduction of said anchoring means and said access catheter, whereby retraction of said introducer catheter from engagement with said anchoring means allows said anchoring means to expand to engage said blood vessel thereby anchoring said access catheter.

5,256,147

REUSABLE TROCAR WITH EASILY REPLACEABLE OBTURATOR

Claude Vidal, and Russell J. Redmond, both of Santa Barbara, Calif., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 17, 1992, Ser. No. 899,751
Int. Cl.[5] A61B *17/34*
U.S. Cl. 604—158 **18 Claims**



1. A trocar assembly for placement in a cannula to facilitate inserting the cannula through a wall having tissue defining a body cavity, which cannula comprises interior surfaces defining a lumen and a distal end having an opening, the trocar assembly comprising:

a handle;

an obturator extending from said handle and having an imaginary axis,

said obturator comprising:

a proximal portion, and

a distal end portion comprising a base part and having three generally planar surfaces intersecting to form three cutting edges and a point at the distal end of the obturator adapted to pierce the wall defining the body cavity, and

detent means for releasably connecting said proximal portion of said obturator to said distal end portion of said obturator and for restricting relative rotation between said distal end portion and said proximal portion comprising:

a groove part extending about the axis of the obturator located on one of the proximal and distal end portions and

a detent part situated on the other of the proximal and distal end portions and adapted to engage the groove part,

wherein when the obturator is placed within the cannula, the groove part and the detent part are situated within the lumen of the cannula and the cutting edges project beyond the distal end of the cannula.

5,256,148

VERRESS NEEDLE WITH ENHANCED ACOUSTICAL MEANS

Kevin W. Smith, Miami; Charles R. Slater, Fort Lauderdale; Frank A. Scarfone, Boca Raton; Gregory J. Murphy, Sunrise; Thomas O. Bales, Jr., Coral Gables, and Michael D. Bacon, Hialeah, all of Fla., assignors to Ethicon, Inc., Somerville, N.J.

Continuation of Ser. No. 695,367, May 3, 1991, Pat. No. 5,139,485. This application Apr. 13, 1992, Ser. No. 867,579
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—158 **13 Claims**



1. A verress-needle comprising:

a handle having proximal and distal ends connected to a hollow outer needle with an end portion for penetrating a body cavity, said hollow outer needle and said handle providing a conduit through which fluid may be passed to or from the body cavity, said hollow outer needle attached to said handle at the distal end of said handle;

a hollow inner needle having proximal and distal ends surrounding an elongated body, which extends through said hollow outer needle and into said conduit in said handle, said inner needle having an opening near its distal end, and an open portion at its proximal end within said handle;

a spring housed within said conduit of said handle at said proximal end of said handle and said inner needle for biasing said inner needle forwardly to a protective position, so that the distal end of said inner needle extends past the end portion of said outer needle absent resistance against said inner needle; and

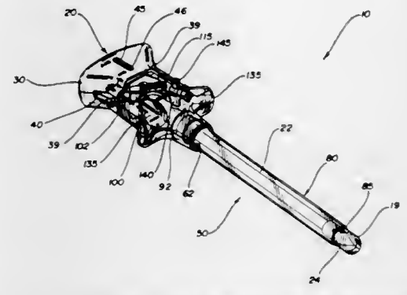
visual means indicating liquid flow within said needle and said inner needle wherein said visual means comprises a hollow cap attached to said handle, said hollow cap containing a window with floating member therein, such that said floating member indicates direction of fluid flow within said needle.

5,256,149

TROCAR HAVING TRANSPARENT CANNULA AND METHOD OF USING

Michael S. Banik, Cincinnati, and Randy R. Stephens, Fairfield, both of Ohio, assignors to Ethicon, Inc., Somerville, N.J.

Filed Feb. 14, 1992, Ser. No. 836,670
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—164 **48 Claims**



1. A trocar cannula having an interior passage therethrough, comprising

an elongate trocar cannula tube; and,

a trocar cannula handle for mounting said cannula tube,

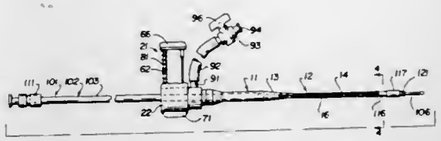
wherein the interior passages of said trocar cannula tube and trocar cannula handle are visible through the tube and handle.

5,256,150

LARGE-DIAMETER EXPANDABLE SHEATH AND METHOD

Dinah B. Quiachon, San Jose; Wesley D. Sterman, San Francisco; Ronald G. Williams, Menlo Park; David C. Dillow, Cupertino, and Steven G. Baker, Sunnyvale, all of Calif., assignors to EndoVascular Technologies, Inc., Menlo Park, Calif.

Filed Dec. 13, 1991, Ser. No. 807,089
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—171 **13 Claims**



1. In a large-diameter expandable sheath for use in introducing a catheter into a corporeal vessel,

an elongate sheath tube formed of a flexible material having proximal and distal extremities and having a passage extending therethrough of a maximum predetermined diameter;

the distal extremity of said sheath tube being folded longitudinally to a smaller folded diameter;

a backflow adapter secured to the proximal extremity of said sheath tube;

said backflow adapter having a central opening therein in registration with the passage in said sheath tube and having valve means disposed in the central opening of said backflow adapter and movable between open and closed positions;

wherein the valve means when open permits the catheter to be inserted into said sheath tube and when closed forms a hemostatic seal about the catheter;

wherein the valve means is in the form of a cylindrical member formed of a flexible material and having a bore

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therein in registration with the central opening of said backflow adaptor;

said back flow adaptor having means for engaging the opposite ends of the cylindrical member for causing relative rotation between the ends of the cylindrical member to cause the cylindrical member to be twisted to close the bore extending through the cylindrical member; and

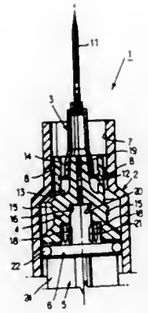
said means for causing rotation between the opposite ends of the cylindrical member includes a retaining ring, a sheath tube adapter secured to opposite ends of the cylindrical member, means for fixing the sheath tube adapter to prevent rotation of the same within said back flow adaptor, and means for rotating the retaining ring with respect to the sheath tube adapter.

5,256,151

SAFETY SYRINGE WITH RETRACTIBLE NEEDLE HOLDER

Bang Y. Chul, Seoul, Rep. of Korea, assignor to Mediverse, Inc., St. Paul, Minn.

Continuation of Ser. No. 885,903, May 18, 1992, abandoned, which is a continuation of Ser. No. 538,248, Aug. 30, 1990, abandoned. This application Nov. 9, 1992, Ser. No. 973,556
Claims priority, application Rep. of Korea, Jun. 15, 1989, 8290
Int. Cl.[5] A61M *5/32, 5/00*
U.S. Cl. 604—195 **2 Claims**



1. A safety syringe comprising:

(a) a cylindrical hollow barrel member adapted to contain a fluid and having first and second open ends and a female thread on the inside surface of said first end, said female thread being preselected to mate with a male thread on a needle holder body;

(b) a cylindrically shaped needle holder body having a longitudinal axis, first and second axial ends and further comprising:

(i) a male thread on the curved outer surface thereof and being preselected to mate with said female thread,

(ii) means on said first axial end for receiving and holding the hub of an elongated hollow needle,

(iii) a recess in said second axial end extending axially along said longitudinal axis to a depth part way toward said first axial end,

(iv) first means for transmitting rotational torque integral with said body and located in said recess, and

(v) a central bore extending through said holder body along said longitudinal axis;

(c) an elongated hollow needle including a hub, said hub exclusively held by said hub receiving and holding means;

(d) an elongated piston rod; and

(e) a piston having inner and outer axial ends and further comprising:

(i) means connecting said inner axial end thereof to one end of said piston rod,

(ii) an integral central axially extending protrusion on said outer axial end thereof constructed to fit within said recess of said needle holder body, and including;

(1) second means for transmitting rotational torque integral with said protrusion and constructed to coact with said first rotational torque transmitting means,

(2) snap locking means on said protrusion and said holder body for snap locking said protrusion to said holder body;

whereby said needle holder body may be initially positioned in said hollow barrel member with said female thread engaging said male thread, and said piston on said piston rod may be inserted into said second open end of said barrel member so that, upon relative axial displacement therebetween, fluid within said barrel is pumped through said central bore of said needle holder body and said hollow needle exclusively held thereon, and

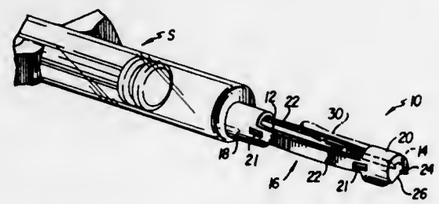
whereby, upon said piston being inserted, as aforesaid, and axially displaced, relative to said barrel member, to a position whereat said piston central axially extending protrusion is positioned within said recess of said body with said second rotational torque transmitting means thereon engaged with said first rotational torque transmitting means of said body and with said snap locking means locking said protrusion with said body, then upon rotational torque being applied to said piston rod, said torque is transmitted via said protrusion to said body to cause rotation of said body relative to said barrel member to thereby release said male thread from said female thread following which axial movement of said locked protrusion and said body relative to said barrel member is facilitated, said last mentioned axial movement being sufficient to withdraw said needle completely within said first open end of said barrel member, thus preventing accidental contact of said needle means by an errant body part.

5,256,152

SAFETY NEEDLE AND METHOD OF USING SAME

Lloyd A. Marks, 727 Great Springs Rd., Bryn Mawr, Pa. 19010

Continuation-in-part of Ser. No. 783,925, Oct. 29, 1991. This application Mar. 11, 1992, Ser. No. 850,959
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—198 **26 Claims**



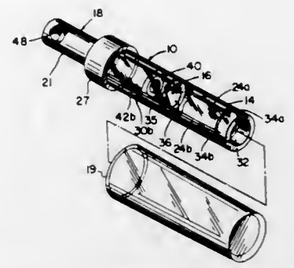
1. A safety needle for insertion into the body of a patient comprising a hypodermic needle having a needle axis and a needle point and being mounted in a needle support, a protective sheath having an axis and comprising a needle cup enclosing the needle point and a mounting sleeve for mounting said sheath to the needle support, flexible means for supporting said needle cup from said mounting sleeve, said flexible means comprising at least two ribs each having two ends, each rib being connected at one end to said mounting sleeve and at the other end to said needle cup, said needle being disposed between said two ribs, said needle cup having a needle opening through which the needle is adapted to pass, said ribs having an unflexed, at rest position and a flexed position such that in the unflexed position the needle axis is misaligned with the needle opening and the ribs are spaced from and disposed substantially parallel to the needle and in the flexed position the needle axis is aligned with the needle opening and the ribs are bowed outwardly away from each other on opposite sides of the needle, said ribs being automatically movable from the flexed position to the unflexed position when the needle is withdrawn from the body of the patient so as to automatically position the needle cup relative to the needle such that the needle axis is misaligned with the needle opening.

5,256,153

HYPODERMIC NEEDLE GUARD AND METHOD TO PREVENT NEEDLE STICK INJURIES

Lawrence W. Hake, R.R. #2, Box 108, Grand Island, Nebr. 68803

Continuation-in-part of Ser. No. 317,733, Mar. 2, 1989, Pat. No. 5,019,051. This application May 23, 1991, Ser. No. 704,359
Int. Cl.[5] H61M *5/32*
U.S. Cl. 604—198 **22 Claims**



1. A needle guard for a hypodermic syringe assembly, the assembly being of the type including a hypodermic needle and a syringe barrel having a needle hub portion adjacent the hypodermic needle, the needle guard comprising a separate assembly which is attachable to the syringe assembly and which in combination therewith maintains either a non-protective or an irreversible protective configuration for the needle, said needle guard comprising in combination:

a separate, attachable fitting having an exterior portion and an interior portion, the interior portion having deformable engagement means adapted to cooperatively mount the fitting in a fixed position on the needle hub portion of the syringe, the deformable engagement means including means to penetrate the surface of the needle hub portion of the syringe;

a hollow protective sleeve on the fitting, said sleeve having an interior surface adapted to slidably coact with the fitting, an exterior surface, a distal end and a proximal end;

guide means for slidably connecting the interior surface of said sleeve and the exterior portion of said fitting, said sleeve thereby being movable on the fitting axially in the direction of the length of the needle between a non-protective retracted position exposing the needle and a protective, extended position covering the needle; and

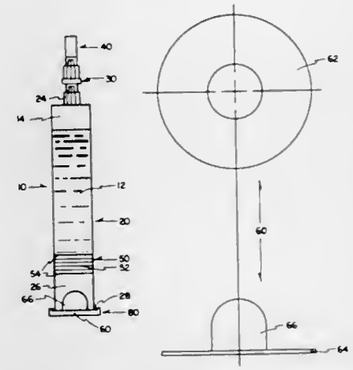
means for irreversibly locking said sleeve only in the protective, extended position relative to said fitting, whereby axial and rotational movement of the sleeve relative to the fitting is prevented, and the sleeve in the protective, extended position protrudes beyond the tip of the needle such that the sleeve defines a guard which irreversibly prevents further access to the needle once the sleeve has been moved to the extended position.

5,256,154

PRE-FILLED PLASTIC SYRINGES AND CONTAINERS AND METHOD OF TERMINAL STERILIZATION THEREOF

Richard T. Liebert, Ballston Spa; Neil H. Brown, Nassau; Randy E. Armbruster, Rochester, all of N.Y., and Thomas M. Pack, Lower Gwynedd, Pa., assignors to Sterling Winthrop, Inc., New York, N.Y.

Filed Jan. 31, 1992, Ser. No. 829,106
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—199 **7 Claims**



1. A pre-filled plastic syringe for autoclaving a sterilizable material contained therein comprising:

a barrel having a distal end terminating in a nozzle and a proximal end;

a one-way valve removably mounted onto said nozzle;

a slidable plunger in the barrel located in the proximity of the proximal end thereof;

an end cap removably connected to the proximal end of the barrel; and

an end cap restraining device removably mounted to the proximal end of the barrel over the end cap.

5,256,155

DROP DETECTION METHOD AND APPARATUS

Denis Y. Yerlikaya, Des Peres, and Randall J. Krohn, Ballwin, both of Mo., assignors to Sherwood Medical Company, St. Louis, Mo.

Filed Apr. 1, 1991, Ser. No. 678,639
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—246 **13 Claims**

1. In a drop flow detector of the type including a drop chamber, a light source for passing light through said chamber, and a light detector responsive to said light after it has passed through said chamber for producing an electrical output signal related thereto, and circuit means responsive to the output signal of said light detector for determining the existence of drop flow, the improvement comprising:

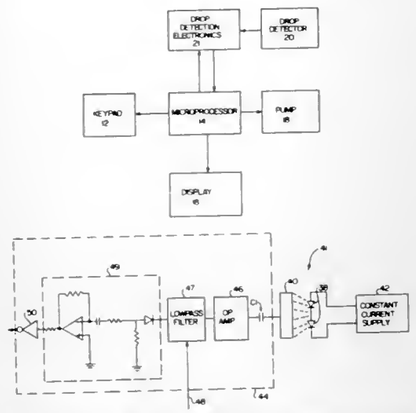
blocking means for blocking the DC component of the output signal of said light detector from transmission to said circuit means; to produce a filtered output signal;

means for amplifying said filtered output signal, said amplifying means having a predefined saturation level, the filtered output signal being amplified by said amplifying means to a level that does not saturate the same, said level of amplification being substantially higher than the highest level of amplification which would not produce saturation if said DC component were present; means for generating a control signal, and,

lowpass filtering means for blocking frequency components in said light detector output signal having a frequency above a cutoff frequency, said low pass filtering means

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located between said light detector and said circuit means, said cutoff frequency being variable in response to said



control signal, said filtering means having a control input for receiving said control signal which determines said cutoff frequency.

5,256,156

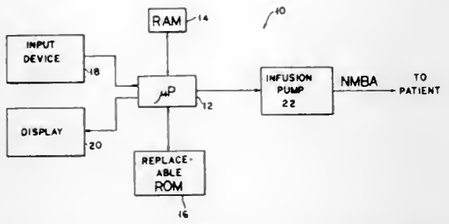
PHYSICIAN CLOSED-LOOP NEUROMUSCULAR BLOCKING AGENT SYSTEM

Steven E. Kern, Somerville; James G. Skakoon, Melrose, both of Mass., and Dwayne R. Westenskow, Salt Lake City, Utah, assignors to Baxter International Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 648,600, Jan. 31, 1991, abandoned. This application Jan. 13, 1992, Ser. No. 821,168

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—246 **15 Claims**



1. An apparatus for administering a neuromuscular blocking agent to a patient to induce paralysis, said apparatus comprising:

means for pumping a neuromuscular blocking agent to a patient;

means for controlling the operation of said means for pumping, including manual controls for manually setting the preliminary desired operation of said pumping means and further including means for entering the desired results of patient electro-stimulation test; and

means for periodically entering the actual results of patient electro-stimulation tests;

wherein said means for controlling alters the operation of said pumping means when said actual results differ from said desired results.

5,256,157

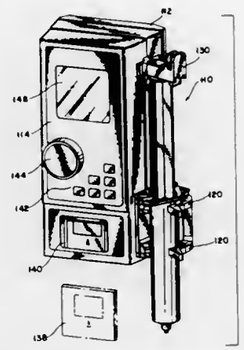
AUTOMATED INFUSION PUMP WITH REPLACEABLE MEMORY CARTRIDGES

Nicholas Samiotes, Westwood; Donald Johanson, Wayland, both of Mass., and Paul Tamura, Seattle, Wash., assignors to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 648,600, Jan. 31, 1991. This application Dec. 10, 1992, Ser. No. 989,949

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—246 **9 Claims**



1. A universal infusion pump assembly wherein a single type of infusion pump is used to emulate a large number of different pumps, said assembly comprising:

a. a single pump disposed in housing means for delivering a fluid to a patient;

b. a set of replaceable memory modules, including a first and a second memory module, each memory module containing information including a program describing a non-patient specific user interface set, including operational parameters and a specific delivery profile characteristic of a respective dedicated pump;

c. selection means mounted on said housing for generating patient-specific information for said patient; and

d. microprocessor means associated with said housing for operating said single pump, said microprocessor means being coupled to one of said memory module, wherein when coupled to said first memory module, said microprocessor means reads said information from said first memory module and operates said single pump to emulate a first dedicated pump; and wherein said microprocessor means, when coupled to said second memory module, reads said information from said secondary memory module and reconfigures the single pump to emulate a second dedicated pump.

5,256,158

DEVICE HAVING A RADIOPAQUE MARKER FOR ENDOSCOPIC ACCESSORIES AND METHOD OF MAKING SAME

M. Joshua Tolkoff, Brookline, and Fernando Alvarez de Toledo, Concord, both of Mass., assignors to ACT Medical, Inc., Watertown, Mass.

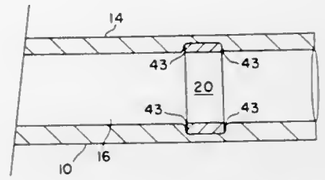
Filed May 17, 1991, Ser. No. 702,621

Int. Cl.[5] A61H *25/00*

U.S. Cl. 604—280 **6 Claims**

1. A device having a radiopaque marker ring for use with endoscopic accessories comprising:

a tube defining a lumen and a radiopaque ring, wherein said tube has a tube inner-diameter and a tube outer-diameter and said radiopaque ring has a ring inner-diameter and a ring outer-diameter, such that said ring inner-diameter is equal to said tube inner-diameter, but that said ring outer-diameter is less than said tube outer-diameter, wherein said ring is disposed completely within said lumen of the tube, a distance away from either end of said tube, and detached from objects other than the tube, wherein said ring, having an inner and outer surface, is positioned such that said inner surface of said ring is exposed to said lumen



of said tube and said outer surface of said ring is embedded within said tube, so that said tube with said radiopaque ring presents a continuous, non-obstructed, pathway and a smooth, bump-free inner and outer surface, and the overall thickness of said tube, caused by the inclusion therein of said marker ring, is minimized.

5,256,159

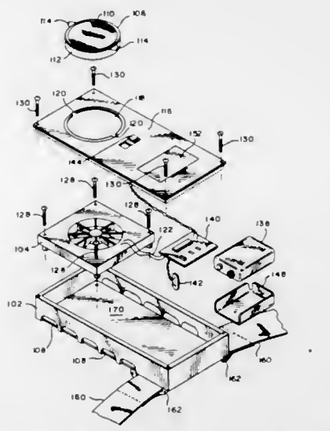
PERSONAL DEODORIZING APPARATUS FOR BODILY WASTE RESERVOIR

Arnold L. Newman, Kensington, Md., assignor to Synexus Corporation, Bethesda, Md.

Filed Feb. 18, 1992, Ser. No. 835,821

Int. Cl.[5] A61M *1/00*

U.S. Cl. 604—317 **17 Claims**



1. A method for deodorizing odors from a bodily waste reservoir containing odoriferous air, comprising the steps of:

a. providing a housing defining an air inlet, an air outlet, and an airflow passage connecting said inlet and said outlet, said housing having a fan for moving air into said inlet, through said airflow passage and out said outlet;

b. providing a deodorizing means disposed within said airflow passage;

c. securing said housing inconspicuously under clothing in removable association with said bodily waste reservoir;

d. moving said odoriferous air with said fan into said inlet;

e. contacting said odoriferous air with said deodorizing means to remove odors in the air; and

f. moving the thus deodorized air out said outlet.

2. A bodily waste reservoir deodorizer, comprising:

a. at least a first housing defining an air inlet, an air outlet and an airflow passage connecting said inlet and said outlet;

b. said first housing having a fan for moving air into said inlet, through said airflow passage, and out said outlet;

c. a deodorizing means disposed within said airflow passage for deodorizing air entering said inlet;

d. a means for removably associating said bodily waste reservoir deodorizer with a bodily waste reservoir; and

e. said bodily waste reservoir deodorizer sized to be worn under clothing of an individual.

5,256,160

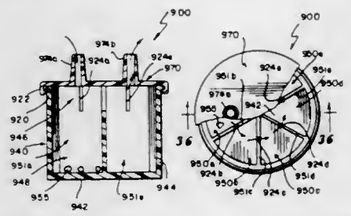
MEDICAL DEVICE VALVING MECHANISM

Thomas P. Clement, Bloomington, Ind., assignor to Mectra Labs, Inc., Bloomfield, Ind.

Continuation-in-part of Ser. No. 660,356, Feb. 22, 1991, Pat. No. 5,203,769, which is a continuation-in-part of Ser. No. 432,084, Nov. 6, 1989, Pat. No. 5,019,054. This application Sep. 23, 1991, Ser. No. 764,366

Int. Cl.[5] A61M *37/00;* **B65D** *1/24*

U.S. Cl. 604—319 **4 Claims**



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5,256,161

AQUEOUS DYESTUFF PREPARATION: LITHIUM BICARBONATE AND REACTIVE DYE

Joachim Grütze, Odenthal; Friedhelm Buse, Belm; Johannes Haas, Grevenbroich, all of Fed. Rep. of Germany, and Manfred Hobohm, Singapur, Singapore, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 28, 1992, Ser. No. 875,621

Claims priority, application Fed. Rep. of Germany, May 1, 1991, 4114214

Int. Cl.[5] D06P *1/38, 1/673, 3/62*

U.S. Cl. 8—527 9 Claims

1. Aqueous reactive dyestuff preparation for dyeing and printing comprising

a) 1 to 100 g of lithium bicarbonate

b) 0.5 to 150 g of alkali selected from the group consisting of sodium carbonate, water glass, sodium phosphate and sodium hydroxide

c) 0.1 to 200 g of reactive dyestuff per 1000 g of aqueous preparation and, optionally

d) dispersants, complexing agents and nucleation inhibitors.

5,256,162

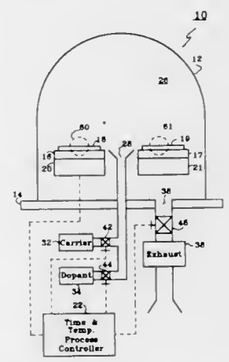
APPARATUS FOR FORMING SHALLOW ELECTRICAL JUNCTIONS

Clifford I. Drowley, Phoenix, Ariz., and John E. Turner, Woodside, Calif., assignors to Hewlett Packard Company, Palo Alto, Calif.

Filed May 1, 1991, Ser. No. 694,309

Int. Cl.[5] C23C *13/08;* H01L *21/223, 21/383*

U.S. Cl. 29—25.01 10 Claims



1. Apparatus for forming electrical junctions in semiconductor material comprising:

means for forming an oxide free region on the surface of a semiconductor material;

means for heating the oxide free region to a temperature in the range of about 750° C. to about 1100° C.;

means for exposing the oxide free region to a dilute concentration of dopant gas at a pressure over the range from about 10^{-1} Torr to atmospheric pressure; and

means for controlling the duration of exposure of the heated oxide free to the dopant gas in the range of about 0.5 to about 100 minutes.

5,256,163

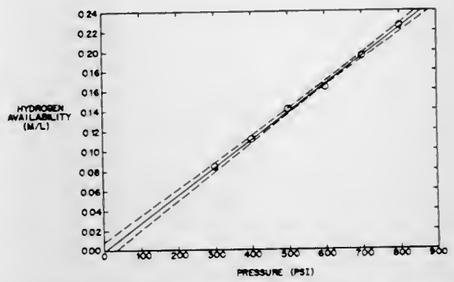
FLOW LIQUID-PHASE CHEMICAL REACTION PROCESS

Robert L. Augustine, Livingston, and Glen Wolosh, Randolph, both of N.J., assignors to Philip Morris Incorporated, New York, N.Y. and Philip Morris Products Inc., Richmond, Va.

Filed Sep. 11, 1991, Ser. No. 757,563

Int. Cl.[5] B01J *8/08;* C07C *5/05, 67/00*

U.S. Cl. 422—232 5 Claims



1. A flow liquid-phase chemical reaction process for hydrogenation or oxygenation of organic compounds which comprises (a) charging a reservoir container unit with a solvent solution of an organic reactant; (b) pressuring the reservoir unit with hydrogen or oxygen gas reactant to provide a controlled molar ratio of dissolved gas reactant saturation to organic reactant in the solvent solution; (c) passing the saturated solvent solution rom the reservoir unit through a solid catalyst reaction unit under controlled flow rate, temperature and pressure conditions; and (d) recovering a hydrogenated or oxygenated organic product solution stream from the reactor unit.

5,256,164

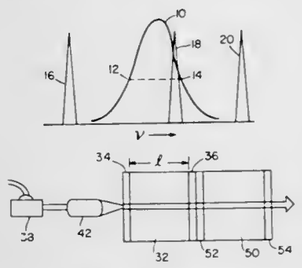
METHOD OF FABRICATING A MICROCHIP LASER

Aram Mooradian, Winchester, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 512,981, Apr. 23, 1990, abandoned, which is a division of Ser. No. 308,251, Feb. 9, 1989, Pat. No. 4,953,166, which is a continuation-in-part of Ser. No. 151,396, Feb. 2, 1988, Pat. No. 4,860,304. This application Dec. 30, 1992, Ser. No. 999,577

Int. Cl.[5] H01L *21/20*

U.S. Cl. 29—25.02 33 Claims



3. A method of generating a single frequency, single longitudinal mode of light oscillation comprising:

a) disposing a solid state gain medium between two mirrors forming a cavity in which the distance l_1 between the mirrors is selected such that the gain bandwidth of the gain medium is less than or equal to the frequency separation of the cavity modes of propagation and further wherein 1, satisfied the following: $1 \leqq c/2n\nu_g$ where c is

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the speed of light, n is the refractive index in the gain medium, and ν_g is the gain bandwidth of the gain medium and one cavity mode frequency falls within the gain bandwidth of the gain medium to produce such single frequency single longitudinal mode of light oscillation from said medium; and

b) pumping the gain medium with light.

5,256,165

GASOLINE DETERGENT ADDITIVE MIXTURE OF MONO-AND BIS-SUCCINIMIDES AND HEAVY OIL

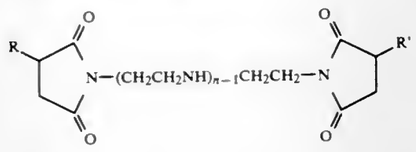
Sheldon Herbstman, New City; Benjamin J. Kaufman, Hopewell Junction; William H. Bitting, Chester, and Peter J. Choate, Fishkill, all of N.Y., assignors to Texaco Inc, White Plains, N.Y.

Filed Jan. 6, 1992, Ser. No. 817,219
Int. Cl.[5] C10L *1/22*
U.S. Cl. 44—347 **24 Claims**

1. A motor fuel additive composition which comprises:

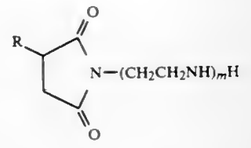
a first component comprising:

between about 65 wt % and about 95 wt. %, based upon the total weight of the first component, of a bis-succinimide of general formula:



and

between about 35 wt. % and about 5 wt. %, based upon the total weight of the first component, of a mono-succinimide of general formula:



where R and R' are polyalkenyl radicals with average molecular weights of about 300 to about 4000 and n and m are integers between about 2 and about 6; and

a second component comprising a heavy oil;

wherein the motor fuel additive composition comprises between about 25 wt. % and about 55 wt. % of the first component and between about 75 wt. % and about 45 wt. % of the second component, based upon the total weight of the motor fuel additive composition.

5,256,166

TERPOLYMER OF ETHYLENE, VINYL ACETATE AND ISOBUTYLENE USEFUL AS POUR POINT DEPRESSANTS IN DISTILLATE OILS

Joseph Fischer, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 678,945, Dec. 6, 1984, abandoned. This application Jun. 16, 1989, Ser. No. 368,122
Int. Cl.[5] C10L *1/18*
U.S. Cl. 44—393 **14 Claims**

7. A distillate fuel oil composition having improved pour and flowability characteristics comprising a major proportion of a distillate fuel oil and a pour point depressant effective amount of a terpolymer comprised of ethylene, vinyl acetate and isobutylene, said terpolymer having a number average molecular weight of from about 400 to about 1200, a weight average molecular weight of from about 1,500 to about 3,000, a vinyl acetate content of from about 30 weight percent to about 45 weight percent and an isobutylene content effective to provide a methyl/100 methylenes ratio of from about 2 to about 15, as determined by proton NMR.

5,256,167

GASOLINE

Takashi Kaneko; Koji Oyama, and Tatsuo Omata, all of Yokohama, Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed May 19, 1992, Ser. No. 885,463
Claims priority, application Japan, May 21, 1991, 3-144082
Int. Cl.[5] C10L *1/18*
U.S. Cl. 44—449 **5 Claims**

1. A specified gasoline comprising as essential components

(A) 3-30 vol. % of methyl-t.-butyl ether and

(B) 1-15 vol. % of light straight-run naphtha with the balance being a base gasoline, the amount of each of the components (A) and (B) being based on the amount of the specified gasoline and the volume ratio (V_B/V_A) of components (A) and (B) has a composition satisfying the following condition:

$$0.34 \leqq V_B/V_A \leqq 1.00$$

wherein V_A and V_B indicate contents (Vol. %) of the components (A) and (B) in the gasoline, respectively.

5,256,168

SULFOBENZOYL END-CAPPED ESTER OLIGOMERS USEFUL AS SOIL RELEASE AGENTS IN GRANULAR DETERGENT COMPOSITIONS

Stephen W. Morrall, Guilford, Ind.; Eugene P. Gosselink, Cincinnati, Ohio; Robert Y. Pan, Cincinnati, Ohio, and Bala C. Nayar, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 737,892, Jul. 25, 1991, Pat. No. 5,182,043, which is a continuation of Ser. No. 429,887, Oct. 31, 1989, abandoned. This application Sep. 22, 1992, Ser. No. 949,172
The portion of the term of this patent subsequent to Mar. 23, 2010, has been disclaimed.
Int. Cl.[5] C08G *63/688*; C11D *3/34, 3/37, 17/06*
U.S. Cl. 8—137 **14 Claims**

1. A granular detergent composition comprising, by weight:

(a) from about 5% to about 80% of detergent surfactant; and

(b) from about 0.1% to about 10% of an oligomeric or polymeric composition comprising a substantially linear, sulfobenzoyl end-capped ester; said ester comprising, per mole of said ester:

(i) from about 1 to about 2 moles of sulfobenzoyl endcapping units of the formula (MO_3S) $(C_6H_4)C(O)$— wherein M is sodium;

(ii) from about 2 to about 10 moles of oxyethyleneoxy units and oxy-1,2-propyleneoxy units in a mole ratio of oxyethyleneoxy units to oxy-1,2-propyleneoxy units of from about 2.5:1 to about 15:1; and

(iii) from about 1 to about 9 moles of terephthaloyl units;

wherein the mole ratio of said oxyalkyleneoxy units to said terephthaloyl units is from about 2:1 to about 1.1:1; and wherein said ester is at least about 90% by weight amorphous in form and access of free water to the ester is limited to maintain the amorphous form.

12. A method of laundering fabrics and concurrently providing a soil release finish thereto, comprising contacting said fabrics with an aqueous laundry liquor containing conventional detersive ingredients and providing to the laundering liquor from about 1 to about 50 ppm of a soil release agent in substantially amorphous form which is an oligomeric or polymeric composition comprising a substantially linear, sulfobenzoyl end-capped ester; said ester comprising, per mole of said ester:

i) from about 1 to about 2 moles of sulfobenzoyl endcapping units of the formula $(MO_3S)(C_6H_4)C(O)$— wherein M is sodium;

ii) from about 2 to about 10 moles of oxyethyleneoxy units and oxy-1,2-propyleneoxy units in a mole ratio of oxyethyleneoxy units to oxy-1,2-propyleneoxy units of from about 2.5:1 to about 15:1; and

iii) from about 1 to about 9 moles of terephthaloyl units;

wherein the mole ratio of said oxyalkyleneoxy units to said terephthaloyl units is from about 2:1 to about 1.1:1 and wherein said ester is at least about 90% by weight amorphous in form.

5,256,169

METHODS AND COMPOSITIONS FOR DEWATERING AND SUPPRESSING DUST DURING PROCESSING OF FINE COAL

Donald C. Roe, Tabernacle, N.J., assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed Jul. 12, 1991, Ser. No. 729,522
Int. Cl.[5] C10L *5/14*
U.S. Cl. 44—626 **2 Claims**

1. A method of dewatering fine coal and reducing residual moisture and the dissemination of fugitive dust from dewatered fine coal which comprises:

treating an aqueous slurry of fine coal with an emulsifiable process oil comprising a naphthinic or paraffinic process oil having an SUS viscosity at 100° F. of from about 100 to about 750 in combination with an elastomeric polymer and an anionic and/or nonionic surfactant;

dewatering the slurry of fine coal by filtration and/or centrifugation to form a filter cake wherein said emulsifiable process oil reduces residual moisture in the filter cake; and

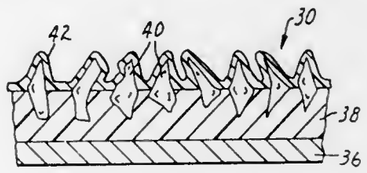
drying said filter cake wherein said emulsifiable process oil reduces the dissemination of fugitive dust from the dry filter cake.

5,256,170

COATED ABRASIVE ARTICLE AND METHOD OF MAKING SAME

Walter L. Harmer, Arden Hills; Robert J. DeVoe, Oakdale; Eric G. Larson, Lake Elmo, all of Minn.; Don H. Kincaid, Hudson, Wis.; Peggy S. Willett, Stillwater, and Jerry W. Williams, Cottage Grove, both of Minn., assignors to Minnetsota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 22, 1992, Ser. No. 823,762
Int. Cl.[5] B24D *3/00*
U.S. Cl. 51—293 **14 Claims**



1. A method for making a coated abrasive article comprising the steps:

(1) applying a make coat precursor to a backing, wherein the make coat precursor comprises:

(a) at least one ethylenically unsaturated monomer, and

(b) at least one of a cationically polymerizable monomer initiator or a polyurethane precursor, and

(c) a catalytically-effective amount of a curing agent comprising:

(i) at least one cationically polymerizable monomer or polyurethane precursor initiator,

(ii) optionally, at least one thermally decomposable ester reaction product of a tertiary alkyl alcohol and an acid that forms a chelation complex with a metal ion of an organometallic complex salt, provided component (b) is a cationically polymerizable monomer, and

(iii) optionally, at least one free radical initiator;

(2) exposing the make coat precursor to an energy source to activate a organometallic complex salt;

(3) partially polymerizing, either sequentially or simultaneously, the cationically polymerizable monomer or the polyurethane precursor; the ethylenically, unsaturated monomer; or both;

(4) applying a plurality of abrasive grains onto the make coat precursor;

(5) applying a size coat precursor;

(6) fully curing the make coat precursor; and

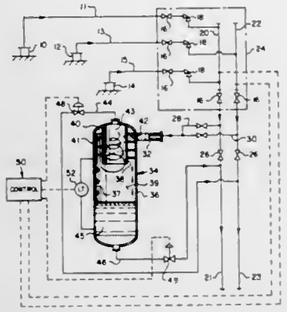
(7) fully curing the size coat precursor.

5,256,171

SLUG FLOW MITIGTION FOR PRODUCTION WELL FLUID GATHERING SYSTEM

Richard L. Payne, McKinney, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Sep. 8, 1992, Ser. No. 941,615
Int. Cl.[5] B01D *19/00*
U.S. Cl. 95—19 **13 Claims**



1. A method for reducing slug flow from a flowline conducting multiphase fluid flow from one or more production wells, said methods comprising the steps of:

conducting said multiphase fluid flow through separator means including means for separating gas from liquid therein, said separator means including a multiphase fluid inlet conduit, a gas discharge conduit and a liquid discharge conduit, flow control means interposed in said discharge conduits, respectively, and fluid transport conduit means connected to said discharge conduits;

sensing the level of liquid in said separator means during flow of fluid to said separator means and providing a liquid level control signal which varies with a change in liquid level from a set point; and

maintaining a predetermined level of liquid in said separator means and mitigating slug flow of fluid through said transport conduit means by controlling the flow of said fluids comprising gas and liquid discharged from said separator means with said flow control means.

5,256,172

THERMALLY COUPLED PRESSURE SWING ADSORPTION

Bowie G. Keefer, 4324 W. 11th Ave., Vancouver, British Columbia, Canada V6R 2M1

Filed Apr. 17, 1992, Ser. No. 870,322
Int. Cl.[5] B01D *53/04*
U.S. Cl. 423—230 **43 Claims**

1. A process for separating first and second components of a gas mixture, the first component being more readily adsorbed under increase of pressure relative to the second component

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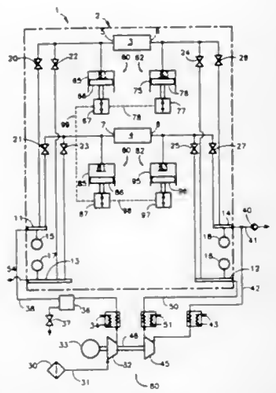
which is less readily adsorbed under increase of pressure over an adsorbent material, such that a gas mixture of the first and second components contacting the adsorbent material is relatively enriched in the first component at a lower pressure and is relatively enriched in the second component at a higher pressure when the pressure is cycled between the lower and higher pressures at a cyclic frequency defining a cycle period; providing for the process a plurality of adsorbent beds of the adsorbent material with a number "N" of substantially similar adsorbent beds, and said adsorbent beds having first and second ends; and the process including in each adsorbent bed the cyclically repeated steps at the cyclic frequency and in some sequence of:

(A) introducing the gas mixture to the adsorbent bed,

(B) generating cyclic pressure changes in the adsorbent bed, in a pressurization step increasing the working pressure of the adsorbent bed, and in a depressurization step decreasing the working pressure of the adsorbent bed, thus changing the working pressure of the adsorbent bed between the lower and higher pressures,

(C) generating cyclically reversing flow of the gas mixture in the adsorbent bed, while establishing a relative phase between the reversing flow and the said pressure changes in the adsorbent bed,

(D) generating gas flow in the adsorbent bed directed toward the first end of the adsorbent bed when the pressure is approximately the lower pressure, so that a first product gas enriched in the first component flows from the first end of the adsorbent bed at substantially the lower pressure,



(E) generating gas flow in the adsorbent bed directed toward the second end of the adsorbent bed when the pressure is approximately the higher pressure, so that a second product gas enriched in the second component flows from the second end of the adsorbent bed at substantially the higher pressure,

and the process is further characterized by:

(F) recovering energy from a depressurization step of the adsorbent bed to assist performing the pressurization step of another of the adsorbent beds,

(G) collecting as second product reflux gas a portion of the second product gas which has flowed from the second ends of the "N" adsorbent beds in above step (E) for each of the adsorbent beds, providing heat to the second product reflux gas at substantially the higher pressure, expanding the second product reflux from the higher to the lower pressure, and admitting the second product reflux gas to the second end of an adsorbent bed during step (D) for that adsorbent bed,

(H) recovering mechanical energy from expanding the second product reflux gas in above step (G), and

(I) maintaining the first end of the adsorbent bed at substantially a first temperature, and maintaining the second end of the adsorbent bed at substantially a second temperature.

29. Apparatus for separating first and second components of a gas mixture, the first component being more readily adsorbed under increase of pressure relative to the second component which is less readily adsorbed under increase of pressure over an adsorbent material, such that a gas mixture of the first and second components contacting the adsorbent material is relatively enriched in the first component at a lower pressure and is relatively enriched in the second component at a higher pressure when the pressure is cycled between the lower and higher pressures at a cyclic frequency, the apparatus including:

(a) a plurality of "N" substantially similar adsorbent beds of the adsorbent material, each adsorbent bed having a first end and a second end,

(b) means to generate cyclic pressure changes in each adsorbent bed at a cyclic frequency, in a pressurization step increasing the working pressure of the adsorbent bed, and in a depressurization step decreasing the working pressure of the adsorbent bed, so as to change the working pressure of the adsorbent bed between the lower and higher pressures,

(c) means to generate a cyclically reversing flow of the gas mixture in each adsorbing bed at the cyclic frequency, cooperating with the means to generate cyclic pressure changes so as to establish a relative phase between the reversing flow and the pressure changes in each adsorbent bed,

(d) means to generate gas flow in each adsorbent bed directed toward the first end of the adsorbent bed when the pressure is approximately the lower pressure, and means to generate gas flow in each adsorbent bed directed toward the second end of the adsorbent bed when the pressure is approximately the higher pressure,

(e) feed supply means to introduce the gas mixture to each of the said adsorbent beds,

(f) first product valve means to remove a first product gas enriched in the first component from the first end of each adsorbent bed, and second product valve means to deliver a second product gas enriched in the second component from the second end of each adsorbent bed,

(g) first inlet valve means to admit gas to the first end of each adsorbent bed at substantially the higher pressure, and second inlet valve means to admit gas to the second end of each adsorbent bed at substantially the lower pressure,

and the apparatus is further characterized by:

(h) work energy exchange means to recover energy from a depressurization step of an adsorbent bed to assist performing the pressurization step of another of the adsorbent beds,

(i) means to provide heat to a second product reflux gas at substantially the higher pressure, the second product reflux gas being a portion of the second product gas delivered from the second product valve means,

(j) expander means to expand the second product reflux gas which has been heated by the heater means, from substantially the higher to the lower pressure,

(k) compressor means cooperating with the first ends of the adsorbent beds, and cooperating with the work energy exchange means and the expander means to establish a pressure ratio between the higher and lower pressures,

(l) means to recover mechanical power from the expander means to assist driving the compressor means, and

(m) means to establish the first end of the bed at substantially a first temperature, and to establish the second end of the bed at substantially a second temperature.

5,256,173

PROCESS FOR REMOVING LIGHT ALCOHOLS FROM GAS STREAMS

Henry Rastelli, New Fairfield, Conn., assignor to UOP, Des Plaines, Ill.

Filed Mar. 19, 1993, Ser. No. 35,144

Int. Cl.[5] **C07C** *29/74, 29/76, 31/04, 31/08*

U.S. Cl. 95—141 **8 Claims**

1. In the process for selectively adsorbing light aliphatic alcohol from a gas stream by passage at a temperature of from 10° C. to 70° C. through a fixed adsorption bed containing a high-silica microporous synthetic zeolitic molecular sieve substantially free of organic moieties initially present as a consequence of its hydrothermal synthesis, said gas stream containing from about 1 to 10,000 ppm (wt.) of said light aliphatic alcohol and a relative humidity of at least 10 percent at the adsorption temperature, the improvement which comprises employing as the adsorbent a bonded agglomerate of said molecular sieve prepared by calcining at a temperature of from 400° C. to 700° C. a green form of said agglomerate comprising water, an inorganic oxide matrix and said molecular sieve in its as-synthesized form for a sufficient time to set the binder and activate the molecular sieve.

5,256,174

GAS SEPARATOR SYSTEM

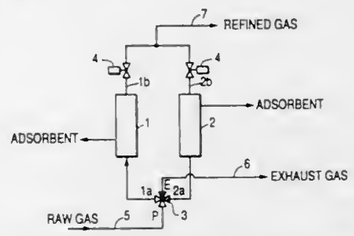
Norichika Kai; Shozo Kaneko, and Tsugiya Abe, all of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 3, 1992, Ser. No. 923,586

Claims priority, application Japan, Aug. 1, 1991, 3-192979; Sep. 12, 1991, 3-232757

Int. Cl.[5] **B01D** *53/04*

U.S. Cl. 96—116 **4 Claims**



1. A pressure-swing adsorption gas separator system comprising: two adsorption vessels containing adsorbent; a source of raw gas; means for feeding raw gas from said source under pressure; an exhaust gas line maintained under a reduced pressure; a four-port rotary valve having four ports respectively associated with and connected to said adsorption vessels, said exhaust gas line, and said source of raw gas, and a rotary element rotatable to a first position at which one of said adsorption vessels is placed by the valve in communication with said raw gas source while the other of said adsorption vessels is placed by the valve in communication with the exhaust gas line via the ports of the valve connected thereto and to a second position at which said other of said adsorption vessels is placed by the valve in communication with said raw gas source while said one of the adsorption vessels is placed by the valve in communication with the exhaust gas line via the ports of the valve connected thereto; a rotary drive source which has a continuous rotary output when actuated; and an intermittent transmission which has an intermittent rotary output when a continuous rotary force is input thereto, said intermittent transmission being operatively coupled to said rotary drive source and to the rotor of said rotary valve so as to rotate said rotor intermittently so as to sequentially assume said first and said second positions thereof when said rotary drive source is actuated, whereby a pressurized adsorption process in which a component of the raw gas is adsorbed and a reduced pressure desorption process in which an adsorbed component of the raw gas is desorbed are alternately carried out in each of said adsorption vessels.

5,256,175

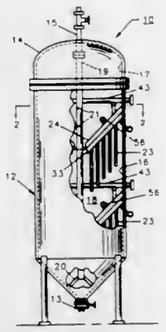
HOT GAS FILTER

James F. Zievers; Elizabeth C. Zievers, both of 1240 Carriage La., LaGrange, Ill. 60525, and Paul Eggerstedt, 25054 W. Pauline Dr., Plainfield, Ill. 60544

Filed Mar. 4, 1992, Ser. No. 845,627

Int. Cl.[5] **B01D** *35/16*

U.S. Cl. 55—302 **13 Claims**



1. A pressure filter, comprising in combination a tank having a generally circular horizontal cross-section

enclosing a pressurizable filter chamber, gas inlet means for supplying a gas in which particulate

matter is entrained to said filter chamber, gas outlet means extending through said tank from the

interior of said tank to the exterior of said tank, first and second sets of filter element support means mounted

in said tank in vertically spaced mutual relationship, a plurality of generally tubular filter elements each having

a porous wall for filtering gas passing therethrough, each of said filter elements enclosing an interior chamber such that particulate matter entrained in said gas will be deposited on an outer surface of said filter elements,

said filter elements being suspended within said filter chamber from said first and second sets of filter element support means,

means connecting said interior chambers in said filter elements to said gas outlet means,

each of said filter support elements being generally wedge-shaped and having an outer arcuate peripheral edge, and being interfitted in mutually assembled relationship such that said filter support elements in each of said first and second sets provide an assembly which has a circular outer periphery,

means for removing said particulate matter from said tank,

a plurality of cover means disposed below said filter elements supported by said first set of filter element support means and above said second set of filter element support means and having generally planer upper surfaces for intercepting particles falling toward said second set of filter element support means and for directing said particulate matter away from said second set of filter element support means,

said generally planer upper surfaces sloping downwardly at an angle between the horizontal and the vertical and having an upper edge and a lower edge, said lower edge positioned above said means for removing said particulate matter from said tank, and

means for dislodging particulate matter from said outer surfaces of said filter elements suspended from said first set of filter element support means to cause said particulate matter dislodged from said filter elements suspended from

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said first set of filter element support means to fall onto said generally planer upper surfaces,

whereby particulate matter which drops from the filter elements suspended from said first set of filter element support means and which falls on said generally planer upper surfaces flow downwardly along said upper surfaces toward said lower edge of said upper surfaces.

5,256,176

FILM ELECTRET AND AN ELECTRET FILTER

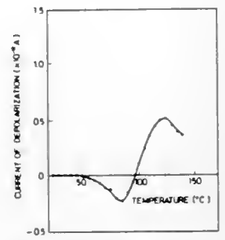
Satoshi Matsuura, and Yoshio Shinagawa, both of Kuga, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Mar. 12, 1991, Ser. No. 668,042

Claims priority, application Japan, Mar. 12, 1990, 2-60705; Nov. 19, 1990, 2-313182

Int. Cl.[5] B01D *39/16, 53/32*

U.S. Cl. 55—528 20 Claims



1. A film of resin electret that comprises a three-component composition comprising a nonpolar high-molecular weight compound, a polar high-molecular weight compound and a modified high-molecular weight compound, and that provides a TSDC curve having a homocharge peak temperature of at least 95° C. and a heterocharge peak temperature of at least 80° C.

5,256,177

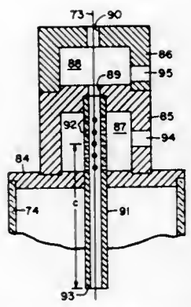
METHOD FOR COATING OPTICAL FIBERS

Randy L. Bennett, and Dale R. Powers, both of Painted Post, N.Y., assignors to Corning Incorporated, Corning, N.Y.

Division of Ser. No. 641,480, Jan. 15, 1991, Pat. No. 5,152,817. This application Aug. 6, 1992, Ser. No. 926,347

Int. Cl.[5] C03C *25/02*

U.S. Cl. 65—3.11 16 Claims



1. A method for producing a carbon coated optical fiber comprising the steps of

drawing an optical fiber from a heated glass body and through a reaction tube, the inside diameter of which is between about 0.3 and 1.0 cm,

flowing reactant gas into said tube and onto said fiber where it reacts to form a carbon coating on said fiber and to form reaction products, and

flowing said reactant gas and reaction products in the direction of movement of said fiber and out of an end of said tube and into a controlled atmosphere, the length of said tube being such that there is no substantial buildup of reaction product therein.

5,256,178

METHOD FOR PRODUCING AN OPTICAL FIBER OF HALIDE GLASS, PARTICULARLY AN INFRARED PERMEABLE FIBER OF HEAVY METAL FLUORIDE GLASS

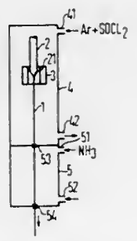
Hartmut Schneider, and Armin Staudt, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Division of Ser. No. 823,610, Jan. 17, 1992, Pat. No. 5,201,930, which is a continuation of Ser. No. 594,664, Oct. 10, 1990, abandoned, which is a continuation of Ser. No. 335,686, Apr. 10, 1989, abandoned, which is a continuation of Ser. No. 122,448, Nov. 19, 1987, abandoned. This application Feb. 10, 1993, Ser. No. 15,901

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1987, 3701977

Int. Cl.[5] C03B *37/025*

U.S. Cl. 65—3.11 7 Claims



1. A method of manufacturing infrared transmissive fibers of heavy metal fluoride glass comprising the steps of drawing a fiber from a glass mass while surrounding the mass and fiber in a gas atmosphere that includes a for reacting with the ambient moisture contained within the gas atmospher, the drying agent drying agent including at least one compound selected from the group consisting of: acid chlorides; acid fluorides, acid anhydrides; BF_3;C_2F_6; C_3F_8; hexafluoropropylene C_3F_6; octofluorocyclobutane C_4F_8; hexafluoroacetone C_2F_6O; NF_3; ClF_3; BrF_3; JF_5; SF_4; SF_6; chlorofluorocarbons; and freon, and then removing the fiber from said gas atmosphere and inserting the fiber into an acid neutralizing gas atmosphere.

5,256,179

METHOD OF MAKING A GLASS-CERAMIC ARTICLE HAVING AN ADHERENT COLORED GLAZE WITH CONTROLLED TEXTURE

David H. Crooker, Corning, and Lina M. Echeverria, Erwin, both of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Apr. 17, 1992, Ser. No. 870,676

Int. Cl.[5] C03C *25/02*

U.S. Cl. 65—60.2 19 Claims

1. A method for making a composite article consisting of a glass-ceramic body and an adherent colored glaze having a controlled texture comprising the steps of:

(a) melting a batch for a first glass containing a desired colorant;

(b) cooling said melt to a first glass body and comminuting said first glass body into finely-divided frit particles;

(c) blending said frit particles of said first glass into a liquid vehicle to form a slip;

(d) applying said slip of said frit particles of said first glass onto the surface of a glass-ceramic body or onto the surface of a precursor glass body to be crystallized into a glass-ceramic body and drying said slip to form a layer of said frit particles of said first glass on the surface of said body;

(e) melting a batch for a second glass having essentially the same basic composition as said first glass, but being colorless or containing a colorant different from that in said first glass;

(f) cooling said melt to a second glass body and comminuting said second glass body into finely-divided frit particles;

(g) blending said frit particles of said second glass into a liquid vehicle to form a slip;

(h) applying said slip of said frit particles of said second glass over the layer of frit particles of said first glass and drying said slip to form a layer of frit particles of said second glass atop the layer of frit particles of said first glass; and thereafter

(i) firing said two layers of frit particles at a temperature and for a time sufficient to fuse said frit particles of said two layers into an integral glaze coating.

5,256,180

APPARATUS FOR PRODUCTION OF HOLLOW GLASS MICROSPHERES

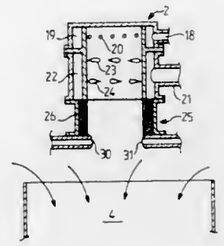
Patrick Garnier, Paris; Daniel Abrion, Gagny, both of France, and Jean-Jacques Gaudiot, Sao Paolo, Brazil, assignors to Saint Gobain Vitrage, Courbevoie, France

Continuation of Ser. No. 737,567, Jul. 26, 1991, abandoned, which is a division of Ser. No. 220,131, Jul. 18, 1988, abandoned, which is a division of Ser. No. 20,800, Mar. 2, 1987, Pat. No. 4,778,502, which is a continuation-in-part of Ser. No. 747,141, Jun. 20, 1985, Pat. No. 4,661,137. This application Jan. 29, 1993, Ser. No. 12,966

Claims priority, applicatioo France, Jun. 21, 1984, 84 09736; Mar. 3, 1986, 86 02929

Int. Cl.[5] C03B *19/10*

U.S. Cl. 65—142 15 Claims



1. An apparatus for the production of hollow microspheres from glass particles, comprising:

a) means for suspending glass particles in a gas current;

b) combustion chamber means having a reducing atmosphere for heating said particles and forming hollow glass microspheres therefrom;

c) tempering and cooling means, immediately following the combustion chamber means and open to the surrounding atmosphere for allowing ambient air to mix with the hollow microspheres; and

d) separation means to collect the hollow microspheres.

5,256,181

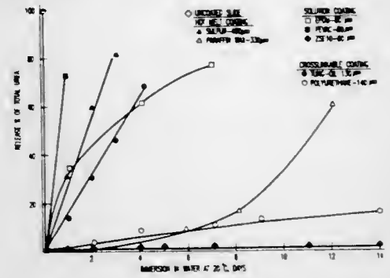
COATINGS WITH IONICALLY AND COVALENTLY CROSSLINKED SULFONATED POLYMERS

Pacifico V. Manalastas, Edison; Evelyn N. Drake, Bernardsville; Warren A. Thaler, Flemington; Edward N. Kresge, Watchung, Chester W. Elspass, Alpha, all of N.J., Albert J. Geiger, Fort Saskatchewan, Alberta, Canada; Vijay Swarup, Clinton, N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Mar. 28, 1991, Ser. No. 676,684

Int. Cl.[5] C05C *9/00;* C08F *210/16;* C05G *3/02, 5/00*

U.S. Cl. 71—28 9 Claims



1. A composite comprising (a) a fertilizer substrate and (b) an ionically and covalently crosslinked, neutralized sulfonic elastomeric coating for said substrate having a thickness of about 1–100 micrometers wherein the elastomeric coating is selected from the group consisting of:

(i) sulfonated polymers having a sulfonate content of about 4–200 meq./100 grams of neutralized sulfonate polymer, and

(ii) an interpolymeric complex of a sulfonated polymer and an amine containing polymer, having a sulfonate content of about 4–100 meq./100 grams of sulfonated polymer and wherein the nitrogen content of the basic nitrogen atoms ranges from about 4–50 meq./100 grams of amine containing polymer.

5,256,182

MICROBIOCIDAL COMBINATIONS OF MATERIALS AND THEIR USE

Lester A. Friedman, Jr., Atlanta, Ga., and Richard McFarlin, Lakeland, Fla., assignors to Lester Technologies Corp., Atlanta, Ga.

Continuation-in-part of Ser. No. 189,379, May 2, 1988, Pat. No. 4,975,109. This application Oct. 31, 1990, Ser. No. 607,045

Int. Cl.[5] A01N *43/80*

U.S. Cl. 504—124 22 Claims

1. A method of controlling microbial growth in an aqueous system comprising the steps of adding to the aqueous system at the time of use between approximately 1 part per million and approximately 500 parts per million of an inorganic oxidant capable of releasing nascent or singlet oxygen and a microbiocidally effective amount of 5-chloro-2-methyl-4-isothiazolin-3-one/2-methyl-4-isothiazolin-3-one.

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5,256,183

PROCESS FOR PRODUCTION OF REINFORCED COMPOSITE MATERIALS AND PRODUCTS THEREOF

Wolfgang W. Ruch, Logumkloster, Denmark; Lars Auran, Sunndalsora, and Nils Ryum, Trondheim, both of Norway, assignors to Norsk Hydro a.s., Oslo, Norway

PCT No. PCT/NO90/00116, § 371 Date Jan. 23, 1992, § 102(e) Date Jan. 23, 1992, PCT Pub. No. WO91/00789, PCT Pub. Date Jan. 24, 1991
PCT Filed Jul. 11, 1990, Ser. No. 820,628
Claims priority, application Norway, Jul. 11, 1989, 892873
Int. Cl.[5] C22C *29/00*
U.S. Cl. 75—230 8 Claims



1. Process for preparing a composite material comprising a base light metal matrix reinforced by dispersed particles to improve the mechanical properties of the material, wherein said process comprises the steps of

incorporating particulate non-metallic reinforcement into a molten light metal matrix material,

rapidly solidifying the melt to provide granules or needles of composite material,

providing granules of an unreinforced host metal matrix,

mixing the granules of the composite material and the host material in a predetermined ratio,

compacting the mixed granules and finally,

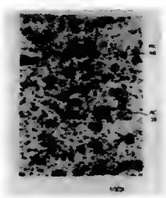
applying a shear deformation solid forming process on the compacted mixture of granules.

5,256,184

MACHINABLE AND WEAR RESISTANT VALVE SEAT INSERT ALLOY

John C. Kosco, Saint Mary, Pa., and William Neumann, Lakewood, Ohio, assignors to TRW Inc., Lyndhurst, Ohio

Continuation-in-part of Ser. No. 685,838, Apr. 15, 1991, abandoned. This application Oct. 16, 1991, Ser. No. 780,439
Int. Cl.[5] B22F *9/00*
U.S. Cl. 75—246 9 Claims



6. A valve seat insert comprising:

a tempered powder composition compacted and sintered to a density of at least about 7 grams per cc and having a like hardness throughout;

said powder composition consisting essentially of, on a weight basis, about 2.5% nickel, about 4.5% molybdenum, less than 0.1% copper, and about 0.8% carbon, the remainder being iron;

said nickel and molybdenum being present before compaction and sintering as a blend of elemental nickel powder, elemental molybdenum powder, and a pre-alloyed powder in which nickel and molybdenum are pre-alloyed with iron, wherein the pre-alloyed powder comprises about 0.5% by weight nickel and 0.6% by weight molybdenum.

5,256,185

METHOD FOR PREPARING BINDER-TREATED METALLURGICAL POWDERS CONTAINING AN ORGANIC LUBRICANT

Frederick J. Semel, Riverton, N.J., and Sydney Luk, Lafayette Hill, Pa., assignors to Hoeganaes Corporation, Riverton, N.J.

Filed Jul. 17, 1992, Ser. No. 915,116
Int. Cl.[5] B22F *1/00*
U.S. Cl. 75—255 24 Claims

1. An improved method for preparing a metallurgical powder composition of the kind containing an organic lubricant comprising the steps of:

(a) providing a dry admixture of (i) an ironbased powder, (ii) at least one alloying powder, and (iii) a first amount of an organic lubricant;

(b) providing a liquid mixture of an organic binding agent dissolved or dispersed in a solvent;

(c) wetting said dry admixture with said liquid mixture;

(d) removing the solvent, thereby forming a dry powder composition; and

(e) admixing a second amount of an organic lubricant selected from the group consisting of soaps and waxes with said dry powder composition to form said metallurgical powder composition;

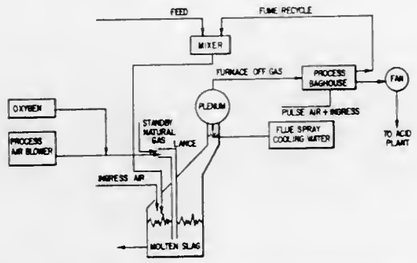
wherein said second amount of organic lubricant is up to about 25 percent by weight of the total of said first and second amounts of organic lubricant, and wherein the total of said first amount and said second amount of organic lubricant constitutes up to about 3 percent by weight of said metallurgical powder composition.

5,256,186

METHOD FOR THE TREATMENT OF DUSTS AND CONCENTRATES

Roger L. Player, and Steven P. Matthew, both of Mount Isa, Australia, assignors to Mount Isa Mines Limited, Brisbane, Australia

Filed Oct. 10, 1991, Ser. No. 773,320
Claims priority, application Australia, Oct. 12, 1990, PK2779
Int. Cl.[5] C21B *3/04*
U.S. Cl. 75—695 12 Claims



1. A method for the treatment of a mixture of lead dusts and pyritic concentrates said method including the steps of:

a) feeding a mixture of lead dust and pyritic concentrate to a furnace containing molten slag;

b) smelting the mixture by injecting air or oxygen enriched air into the slag by means of a submerged lance to produce a lead bearing slag;

c) recycling fume to the furnace; and

d) periodically or continuously tapping the furnace to recover a lead containing slag.

5,256,187

SEPARATION OF PRECIOUS METALS BY AN ION EXCHANGE PROCESS

David L. Gefvert, Dublin, Ohio, assignor to Sherex Chemical Company, Inc., Dublin, Ohio

Filed Nov. 12, 1992, Ser. No. 975,062
Int. Cl.[5] C22B *3/24*
U.S. Cl. 75—717 15 Claims

1. In the extraction and separation of one or more precious metals selected from the group consisting Ru, Os, Co, Rh, Ir, Ni, Pd, Pt, Cu, Ag, Au and mixtures thereof from a dilute aqueous chloride feed solution thereof which also contains contaminant metal values, by contacting said feed solution with an ion exchange resin to load said one or more precious metals and contaminant metal values onto said resin and subsequently stripping said one or more metals from the resin, the improvement comprising

a) selectively eluting said contaminant metal values from the metal-loaded ion exchange resin with deionized water or distilled water; and then

b) stripping the precious metals from said metal-loaded ion exchange resin with an acidic thiourea stripping solution.

5,256,188

PROCESS FOR THE SEPARATION OF RHODIUM FROM ORGANIC SOLUTIONS

Ingo Kleinwächter, Hanau; Karlheinz Kleiss, Linsengericht, and Roland Gerner, Rodenbach, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 2, 1992, Ser. No. 939,934
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1992, 4200844
Int. Cl.[5] C22B *3/46*
U.S. Cl. 75—722 7 Claims

1. A process for the separation of rhodium from rhodium containing organic solutions, organic-aqueous mixtures and aqueous solutions containing organic complexing compounds, by precipitation at elevated temperatures, said process comprising adding a precipitating agent selected from the group consisting of metallic bismuth, bismuth oxide, bismuth hydroxide, other bismuth compounds reducible to bismuth, metallic antimony, antimony oxide, antimony hydroxide, and other antimony compounds reducible to antimony, and optionally a reducing agent, to said organic solutions, organic-aqueous mixtures and aqueous solutions containing organic complexing compounds, at a temperature of 50° to 250° C., precipitating said rhodium and recovering said rhodium.

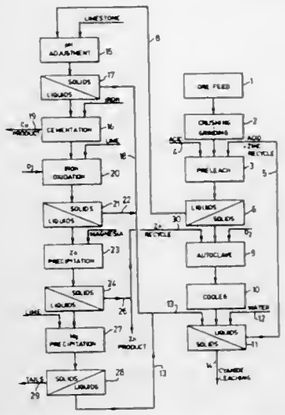
5,256,189

AQUEOUS OXIDATION OF SULFIDIC SILVER ORE

Chandulal P. Patel, West Vancouver, and Alfred S. Hayden, Richmond Hill, both of Canada, assignors to Prime Resources Group Inc., Vancouver, Canada

Filed May 20, 1992, Ser. No. 885,761
Int. Cl.[5] C22B *3/44*
U.S. Cl. 75—744 18 Claims

1. A method of aqueous oxidation of sulfidic silver material to render said silver extractable by cyanide leaching, comprising forming an aqueous slurry of particles of said material, maintaining said slurry in the presence of an oxidizing agent under super atomospheric pressure at temperature in the range of about 150° C. to 250° C. for a period sufficient to oxidize said sulfidic material to oxidized sulfur species, and adding to said material before oxidation an amount of zinc-bearing material such that said oxidation is conducted in the presence of a concentration of about 30 to about 160 g/L zinc dissolved in said slurry, based on the volume of the aqueous phase of the slurry, to thereby obtain an oxidized slurry, and recovering from said oxidized slurry an oxidized solids residue of greater



silver extractability by cyanide than said sulfidic silver material.

5,256,190

UNIVERSAL CHEMICAL SYSTEM FOR OFFSET PRINTING

Thomas M. Barth, 109 Chiroc Rd., Hendersonville, Tenn. 37075

Filed Mar. 16, 1992, Ser. No. 852,289
Int. Cl.[5] C09K *3/18*; B41N *31/08*
U.S. Cl. 106—2 7 Claims

1. A universal chemical system for offset printing comprising:

a. a plate coating comprising deionized water, citric acid, disodium phosphate, gum arabic, magnesium nitrate solution, glycerine, wherein said glycerine is more concentrated than said gum arabic by 18–45 percent, and propyl alcohol;

b. a fountain concentrate solution comprising water, citric acid, sodium citrate, disodium phosphate, sodium benzoate, gum arabic, glycerine, 2-ethyl-1,3-hexandiol and a green dye;

c. an alcohol replacement solution comprising deionized water, diethylene glycol, glycol, glycerine, and propylene glycol methyl ether;

d. a roller coating comprising deionized water, citric acid, disodium phosphate, gum arabic, glycerine, and propyl alcohol; and

e. a plate wash comprising water, citric acid, propylene glycol, propylene glycol methyl ether, a surfactant, phosphoric acid, and a glaucine dye.

5,256,191

CORRECTION FLUID COMPOSITIONS

John Thompson, 81 Pine St., Medfield, Mass. 02052; Kim H. Ng, 3 Annabell La., Franklin, Mass. 02038, and Edward J. Ferguson, 6 Forest Rd., Foxboro, Mass. 02035

Continuation-in-part of Ser. No. 606,961, Oct. 31, 1990, abandoned. This application Oct. 1, 1991, Ser. No. 769,861
Int. Cl.[5] C09D *10/00*
U.S. Cl. 106—19 A 58 Claims

1. A correction fluid composition comprising an opacifying pigment dispersed in a solution of a film-forming polymeric material and a volatile organosiloxane in a volatile solvent and where the volume ratio of the organosiloxane and the solvent provide an organosiloxane solvent mixture in which the value of the (δ_{p+h}) of the mixture is greater than about 2.0 cal$^{\frac{1}{2}}$ $cm^{-3/2}$ and less than about 7.35 cal$^{\frac{1}{2}}$ $cm^{-3/2}$ and the higher

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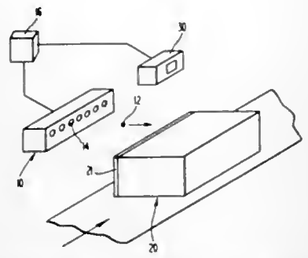
value is not exceeded at least until about 90 percent of the mixture has evaporated.

5,256,192

SOLVENT BASED FLUORESCENT INK COMPOSITIONS FOR INK JET PRINTING

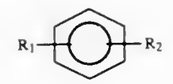
Clement Lin, Milford, Conn., and Stephanie S. Hinton, Cookville, Tenn., assignors to Dataproducts Corporation, Woodland Hills, Calif.

Filed May 15, 1992, Ser. No. 884,709
Int. Cl.[5] C09D *11/02*
U.S. Cl. 106—21 A **23 Claims**



1. A fluorescent ink composition for use in impulse ink jet printers, comprising:

(a) from about 5–75% wt. of an aromatic alcohol having the general structure:



where R_1 is hydroxyalkyl having from 1–5 carbon atoms and 1–2 oxygen atoms; R_2 is H, OH, or hdyroxyalkyl having from 1–5 carbon atoms and 1–2 oxygen atoms;

(b) from about 10–90% wt. of a glycol component;

(c) a fatty acid in an amount up to about 15% wt.; and

(d) a fluorescent pigment in an amount up to about 25% wt.

5,256,193

PORPHYRIN CHROMOPHORE AND DENDRIMER INK COMPOSITION

Francoise M. Winnik, Toronto; Anthony R. Davidson, Agincourt, and Marcel P. Breton, Mississauga, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 25, 1992, Ser. No. 904,318
The portion of the term of this patent subsequent to Jun. 9, 2009, has been disclaimed.
Int. Cl.[5] C09D *11/02*
U.S. Cl. 106—21 A **18 Claims**

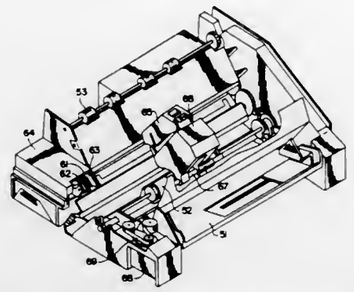
1. An ink composition comprised of a solution comprised of a dye comprised of a porphyrin chromophore and a dendrimer; and wherein the solution contains a liquid vehicle present in an amount of from about 85 to about 99.5 percent by weight, the dye is present in an amount of from about 0.0005 to about 1.0 weight percent, and the dendrimer is present in an amount of from about 0.05 to about 10 weight percent.

5,256,194

COLOR INK JET RECORDING METHOD

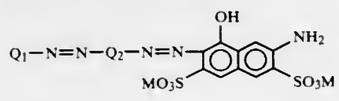
Osamu Nishiwaki; Kazuo Iwata; Shinichi Tochihara, and Hitoshi Sugimoto, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 892,933, Jun. 3, 1992, abandoned, which is a division of Ser. No. 739,411, Aug. 2, 1991, Pat. No. 5,137,570, which is a continuation-in-part of Ser. No. 466,602, Jan. 17, 1990, Pat. No. 5,125,969. This application Sep. 2, 1992, Ser. No. 938,520
Int. Cl.[5] C09D *11/02*
U.S. Cl. 106—22 K **5 Claims**

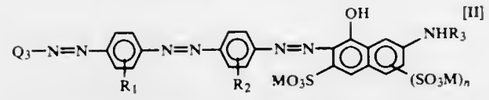


4. A set of ink compositions for use in a color ink jet printer, which comprises:

a first component ink composition comprising a first recording liquid which comprises: (a) a dye, (b) glycerine, said glycerine being present in said recording liquid in an amount between about 1 wt % and 30 wt % based on the total weight of said recording liquid, (c) an aliphatic monohydric alcohol, said aliphatic monohydric alcohol being present in said recording liquid in an amount between 0.1 wt % and 10 wt % based on the total weight of said recording liquid and (d) water, said dye being a mixture of C.I. Food Black 2 and at least one compound selected from compounds which are represented by the following general formulas [I] and [II]:



[I]

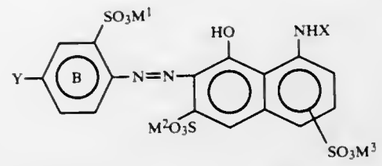


[II]

wherein Q1 is a phenyl group substituted with a lower alkylcarbonylamino group or a lower alkoxy group, a naphthyl group substituted with a lower alkylcarbonylamino group and a lower alkoxy group or a naphthyl group substituted with a SO_3M group, Q3 is a naphthyl group substituted with a SO_3M group or a phenyl group substituted with a lower alkoxy group, Q3 is a phenyl group, a naphthyl group, a phenyl group substituted with a SO_3M group or a naphthyl group substituted with a SO_3M group, R1 and R2 are each a lower alkyl group, a lower alkoxy group or a lower alkylcarbonylamino group, R3 is a hydrogen or a phenyl group substituted with a SO_3M group, n is 0 or 1, and M is an alkaline metal or an ammonium cation, wherein said Food Black 2 and said at least one compound represented by said general formulas [I] and [II] are mixed in a weight ratio from 8:2 to 2:8;

a second component ink composition comprising a second recording liquid which comprises: (a) a dye, (b) glycerine, said glycerine being present in said recording liquid in an amount between about 1 wt % and 30 wt % based on the total weight of said recording liquid, (c) an aliphatic monohydric alcohol, said aliphatic monohydric alcohol being present in said recording liquid in an amount between 0.1 wt % and 10 wt % based on the total weight of said recording liquid and (d) water, said dye containing at least one of C.I. Direct Yellow 86 and C.I. Acid Yellow 23;

a third component ink composition comprising a third recording liquid which comprises: (a) a dye, (b) glycerine, said glycerine being present in said recording liquid in an amount between about 1 wt % and 30 wt % based on the total weight of said recording liquid, (c) an aliphatic monohydric alcohol, said aliphatic monohydric alcohol being present in said recording liquid in an amount between 0.1 wt % and 10 wt % based on the total weight of said recording liquid and (d) water, said dye containing at least one of a dye represented by the following formula (A) and C.I. Acid Red 52:



(A)

wherein Y is a hydrogen atom, a methyl group, a methoxy group, an acetylamino group, a nitro group or forms a benzene ring together with the third carbon atom of the benzene ring B, X is an acetyl group, a benzoyl group, a paratoluenesulfonyl group, or a 4-chloro-6-hydroxy-1,3,5-triazine-2-yl group, and M1, M2 and M2 is each a base selected from a group consisting of an alkali metal, ammonium and an amine; and

a fourth component ink composition comprising a fourth recording liquid which comprises: (a) a dye, (b) glycerine, said glycerine being present in said recording liquid in an amount between about 1 wt % and 30 wt % based on the total weight of said recording liquid, (c) an aliphatic monohydric alcohol, said aliphatic monohydric alcohol being present in said recording liquid in an amount between 0.1 wt % and 10 wt % based on the total weight of said recording liquid and (d) water, said dye containing at least one C.I. Direct Blue 199 and C.I. Acid Blue 9.

5,256,195

BITUMEN EMULSION, PROCESS FOR ITS PREPARATION, BREAKING ADDITIVE FOR USE THEREIN AND THE USE OF SAID BITUMENT EMULSION

Per G. Redelius, Nynäshamn, Sweden, assignor to AB Nynas Pftroleum, Johanneshov, Sweden

Filed Dec. 2, 1991, Ser. No. 801,369
Claims priority, application European Pat. Off., Dec. 19, 1990, 90850415.2
Int. Cl.[5] C09D *195/00*
U.S. Cl. 106—277 **14 Claims**

1. A bitumen emulsion of the anionic or cationic type containing a breaking additive, said breaking additive being in the form of a water-in-oil emulsion comprising an aqueous solution of a neutralizing substance dispersed in an oil continuous phase by means of a non-ionic emulsifier.

10. A process for the preparation of a bitumen emulsion which process comprises

(a) preparing an aqueous solution of a neutralizing substance,

(b) emulsifying said aqueous solution of neutralizing substance in oil by means of a non-ionic emulsifier to thereby form an invert emulsion, and

(c) mixing the invert emulsion resulting from step (b) into a bitumen emulsion of the anionic or cationic type.

5,256,196

PRECIPITATED SILICA PASTE

Marian Chjonowski, Offenbach; Werner Nagel, Alzenau; Karl Meier, Alfter; Wolfgang Leonhardt, Frankfurt am Main, and Heinz Esch, Bonn, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 18, 1991, Ser. No. 808,804
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1990, 4041827
Int. Cl.[5] C04B *14/04*
U.S. Cl. 106—482 **3 Claims**

1. Precipitated silica paste consisting of 5 to 15% by weight precipitated silica and 85 to 95% by weight silicon oil.

5,256,197

ABRASION-RESISTANT SYNTHETIC ARTICLE AND METHOD OF MAKING

Charles L. Smith, Conshohocken, Pa., assignor to Conversion Systems, Inc., Horsham, Pa.

Filed Jun. 19, 1991, Ser. No. 717,399
Int. Cl.[5] C04B *18/06*
U.S. Cl. 106—708 **18 Claims**

1. A water-insoluble, abrasion-resistant, solid article having a shape of a mold and comprising the cured reaction product of an intimate mixture, based on the dry weight of fly ash, lime, FGD sludge and water, said mixture comprising 2.5% to 6.0% lime and a fly ash:sludge ratio in the range of 0.6:1.0 to 3.5:1, said article having an abrasion resistance, as tested by the Los Angeles abrasion resistance test, of below 60% and a cured unconfined compressive strength of above 1000 psi.

5,256,198

USE OF POLYMER/NITRATE COMPOSITIONS TO INCREASE THE POROSITY OF FLY ASH IN BAG HOUSE OPERATIONS

Rabindra K. Sinha, Coraopolis, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

Filed Oct. 13, 1992, Ser. No. 960,048
Int. Cl.[5] C04B *18/06*
U.S. Cl. 106—708 **7 Claims**

1. A method for increasing the porosity of fly ash prior to treatment of the fly ash in a bag house comprising adding to the fly ash an effective amount of a composition comprising: a) at least about 0.1%, based on the total weight of said composition, of at least one anionic or cationic polymer; b) at least about 1.0%, based on the total weight of said composition, of at least one nitrate; and c) the balance water, wherein said effective amount provides at least about 1 part of said polymer per about 200,000 parts fly ash.

5,256,199

CEMENT ADMIXTURE

Fuzio Yamato; Shuichi Fujita, both of Wakayama; Tatsuo Izumi, Osaka; Yoshiaki Tanisho, and Kazushige Kitagawa, both of Wakayama, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Jul. 30, 1991, Ser. No. 737,482
Claims priority, application Japan, Aug. 3, 1990, 2-206523; Sep. 26, 1990, 2-258300; Sep. 26, 1990, 2-258302
Int. Cl.[5] C04B *24/02, 24/12*
U.S. Cl. 106—823 **8 Claims**

1. An additive to cement comprising a condensation product of formaldehyde with:

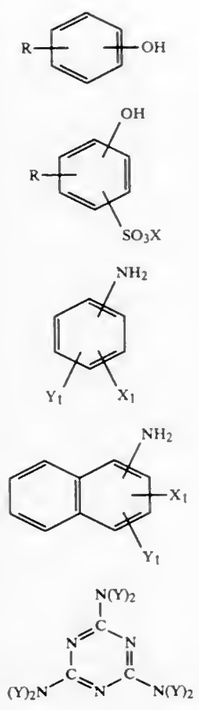
(I), (IIa) and (IIb);
(I), (IIa) and (IIc);
(I), (IIa) and (IVg);
(I), (IIa) and (IVh);
(I), (IIa), (IIb) and (IIc);

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(I), (IIa), (IIb) and (IVg);
(I), (IIa), (IIb) and (IVh);
(I), (IIa), (IIb), (IIc) and (IVg);
(I), (IIa), (IIb), (IVg) and (IVh);
(I), (IIa), (IIb), (IIc) and (IVh);
(I), (IIa), (IIb), (IIc), (IVg) and (IVh);
(I), (IIa), (IIc) and (IVg);
(I), (IIa), (IIc) and (IVh);
(I), (IIa), (IIc), (IVg) and (IVh);
(I), (IIa), (IVg) and (IVh);
(I), (IIb) and (IIIe);
(I), (IIc) and (IIIe);
(I), (IIb) and (IIIf);
(I), (IIc) and (IIIf);
(I), (IIb), (IIc) and (IIIe);
(I), (IIb), (IIc) and (IIIf);
(I), (IIb), (IIIe) and (IIIf);
(I), (IIc), (IIIe) and (IIIf);
(I), (IIb), (IIc), (IIIe) and (IIIf);
(I), (IIa) and (IIIe);
(I), (IIa) and (IIIf); or
(I), (IIa), (IIIe) and (IIIf)

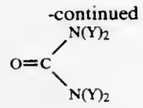
in which

(I) is a phenol compound having the formula (I),
(IIa) is a phenol sulfonate having the formula (IIa),
(IIb) is an aniline compound having the formula (IIb)
(IIc) is an aminonaphthalene compound having the formula (IIc);
(IIIe) is a melamine compound having the formula (IIIe);
(IIIf) is a urea compound having the formula (IIIf);
(IVg) is $H_2NCON(Z)CH_2SO_3M$; and
(IVh) is H_2NSO_3M,



(I)
(IIa)
(IIb)
(IIc)
(IIIe)

-continued



(IIIf)

wherein,

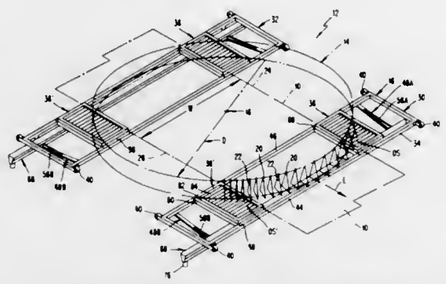
R is hydrogen or an alkyl group having 1 to 6 carbon atoms;
X is an alkali metal;
X_1 is hydrogen, an alkyl group having 1 to 6 carbon atoms, carboxylic acid group, an alkali metal carboxylate, a sulfonic acid group, an alkali metal sulfonate, hydroxy or methoxy;
Y_1 is a carboxylic acid or an alkali metal carboxylate, a sulfonic acid group or an alkali metal sulfonate;
Y is hydrogen or an alkali metal;
Z is hydrogen, an alkyl group having 1 to 6 carbon atoms or $-CH_2SO_3M$; and
M is hydrogen or an alkali metal.

5,256,200

SPRAYING DEVICE WITH MULTIPLE, MOVABLE, OVERSPRAY COLLECTION PANS

Tracy Poulson, Winchester; Lee H. Hirneisen, Cross Junction, and Jeffery L. Rezio, Stephens City, all of Va., assignors to O'Sullivan Corporation, Winchester, Va.

Division of Ser. No. 774,214, Oct. 10, 1991. This application Nov. 2, 1992, Ser. No. 970,024
Int. Cl.[5] B05B *1/04*
(1) **U.S. Cl. 118—323** **2 Claims**



(IIa)

(IIb)

(IIc)

(IIIe)

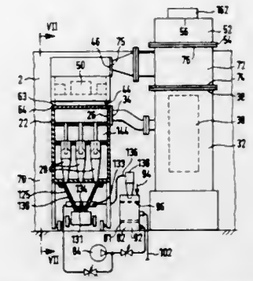
1. In an apparatus for spraying a sheet of material with a liquid substance by means of sprayers arranged to spray downwardly onto an upper surface of the sheet as relative movement is effected between the sheet and a carrier on which the sprayers are mounted, said sprayers arranged to overspray opposite edges of the sheet, and overspray means disposed beneath said edges for collecting the overspray, the improvement wherein said overspray collecting means comprises front and rear collection units spaced apart in the direction of sheet travel, each collection unit arranged to collect overspray from both edges of the sheet, said front and rear collection units being movable toward and away from one another to vary the locations where overspray is collected, said sprayers arranged to move in a circular pattern about an upright axis disposed between said front and rear collector units, wherein each of said collection units includes pans disposed beneath both of said sheet edges for collecting overspray, each of said pans having a drain in a floor thereof.

5,256,201

POWDER SPRAY COATING SYSTEM

Silvano Gelain, Abtwil; Bernhard Dinkel, St. Gallen, and Markus Beerli, Gossau, all of Switzerland, assignors to Gema Volstatic AG, St. Gallen, Switzerland

Filed Oct. 14, 1992, Ser. No. 960,633
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1991, 4134701
Int. Cl.[5] B05C *19/00*; B01D *46/36*
U.S. Cl. 118—326 **14 Claims**



1. Powder spray coating system with the following characteristics:

a cabin (**2**, **2/2**), through which objects **4** which are coated with powder in the cabin are transported, and which has a powder/air exhaust opening (**10**) essentially opposite a spray device (**104**, **108**);
a mobile first filter unit (**12**), which has a flow inlet (**14**) and a flow outlet (**16**) and at least one filter element (**18**) for powder in the flow path between them;
a mobile cyclone unit (**22**), which has a flow inlet (**24**) and a flow outlet (**26**) and a plurality of small cyclones (**28**) through which parallel flow occurs, for separation of powder, in the flow path between them;
a post-filter unit (**32**) arranged close to the cabin (**2**) next to it, which has a flow inlet (**34**) and a flow outlet (**36**) and at least one filter element (**38**) for post-filtering the powder-/air stream pre-filtered by the cyclone unit (**22**), in the flow path between them;
a compressed air cleaning unit (**42**) arranged on the cabin (**2**, **2/2**) above the exhaust opening (**10**) on the outside of the cabin, which has a flow path (**48**) with a flow inlet (**44**) and a flow outlet (**46**) and a device (**50**) for occasional generation of compressed air bursts, which it blows into the filter elements (**18**) of the first filter unit (**12**), counter to the flow direction of the flow path (**48**), (into these filter elements **18**), to clean these filter elements (**18**);
a fan (**52**), the suction intake (**54**) of which is arranged close to the flow outlet (**36**) of the post-filter unit (**32**) and close to the flow outlet (**46**) of the compressed air cleaning unit (**42**) and is connected with both outlets (**36**, **46**) simultaneously, in terms of flow;
a part (**60**) of the first filter unit (**12**) forms a closure element to close the flow inlet (**34**) of the post-filter unit (**32**);
a part (**63**) of the cyclone unit (**22**) forms a closure element to close the flow inlet (**44**) of the compressed air cleaning unit (**42**);
the first filter unit (**12**) and the cyclone unit (**22**) can alternatively be moved under the compressed air cleaning unit (**42**) on wheels, to bring them into an operating position in which the flow inlet (**14**) of the first filter unit (**12**) or the flow inlet (**24**) of the cyclone unit (**22**) is adjacent to the exhaust opening (**10**) of the cabin (**2**, **2/2**) and is connected with the interior (**70**) via the exhaust opening (**10**), in terms of flow;
the flow inlet (**44**) of the compressed air cleaning unit (**42**) and the flow inlet (**34**) of the post-filter unit (**32**) are fixed in place in such a way that only if
a) the first filter unit (**12**) was brought into the operating position will its flow outlet (**16**) align with the flow inlet (**44**) of the compressed air cleaning unit (**42**) and only then can these be connected, and at the same time, its closure element (**60**) aligns with the flow inlet (**34**) of the post-filter unit (**32**) and can close this flow inlet,
b) the cyclone unit (**22**) was brought into the operating position will its flow outlet (**26**) align with the flow inlet (**34**) of the post-filter unit (**32**) and only then can these be connected, and at the same time, its closure element (**63**) aligns with the flow inlet (**44**) of the compressed air cleaning unit (**42**) and can close this flow inlet,

while the first filter unit (**12**) and the cyclone unit (**22**), when they are moved away from the operating position, at the same time are also moved away from the flow inlet (**34**) of the post-filter unit (**32**) and the flow inlet (**44**) of the compressed air cleaning unit (**42**).

5,256,202

TI-A1 INTERMETALLIC COMPOUND SHEET AND METHOD OF PRODUCING SAME

Toshihiro Hanamura; Munetsugu Matsuo; Toshiaki Mizoguchi; Kenichi Miyazawa; Masao Kimura, and Naoya Masahashi, all of Kawasaki, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

PCT No. PCT/JP90/01691, § 371 Date Aug. 23, 1991, § 102(e) Date Aug. 23, 1991, PCT Pub. No. WO91/09697, PCT Pub. Date Jul. 11, 1991
PCT Filed Dec. 25, 1990, Ser. No. 752,628
Claims priority, application Japan, Dec. 25, 1989, 1-335794; Dec. 25, 1989, 1-335797
Int. Cl.[5] C22C *14/00*
U.S. Cl. 148—421 **7 Claims**



1. A Ti—Al intermetallic compound sheet of a thickness in the range of 0.25 to 2.5 mm formed by processing a thin cast plate of a Ti—Al intermetallic compound of 40 to 53 atomic percent of Ti, 0.1 to 3 atomic percent of at least one material selected from the group consisting of Cr, Mn, V and Fe, and the balance Al and unavoidable impurities, having in an as-cast solidified state, a columnar crystal structure which consists of the <111> crystal orientation oriented preferentially in the direction from the opposite surfaces of the cast plate toward the central portion of the same, and is formed of a refined composite structure of $L1_0$ structures and $D0_{19}$ structures.

5,256,203

APPARATUS FOR APPLYING A FLUID ADHESIVE TO THE INSIDE SURFACES OF CARTRIDGE CASES ADJACENT THEIR OPEN PROJECTILE-RECEIVING ENDS

Thomas B. Moore, Chesterfield; Kevin E. Craig, St. Ann, and Gerard J. Gragnani, Florissant, all of Mo., assignors to Thomas B. Moore Co. Inc., Maryland Heights, Mo.

Filed Aug. 26, 1991, Ser. No. 750,881
Int. Cl.[5] B05C *7/00*
U.S. Cl. 118—698 **12 Claims**

1. Apparatus for applying a fluid adhesive to the inside surface of cartridge cases adjacent their open projectile-receiving ends preparatory to insertion of projectiles therein to pro-

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vide a seal between said surface and the projectile, said apparatus comprising:

a set of adhesive dispensing nozzles at an adhesive applying station,

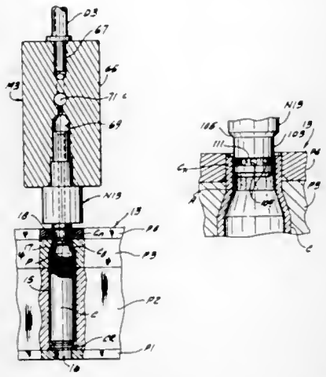
means mounting the set of nozzles for movement between a raised position for bringing a set of cases under the nozzles and a lowered position wherein the nozzles are entered at their lower ends in the open upper ends of said set of cases,

means for moving said nozzle mounting means up and down for raising and lowering the nozzles,

a source of adhesive under pressure,

means interconnecting said source and said nozzles including valve means for on-off control of flow of adhesive from the source to the nozzles,

means operable with the nozzles raised for bringing a set of cases into position under the nozzles at the adhesive applying station,



each nozzle being formed adjacent its lower end with a peripheral recess nd having passages for delivery of adhesive to said recess, and

means for controlling the valve means to deliver adhesive to the recess of each nozzle for wiping of the adhesive on said inside surfaces of the cases as the nozzles are raised,

and wherein each nozzle has a head having a lower end and a cylindrical tip extending down from the lower end of the head, the tip being of slightly smaller diameter than the inside diameter of the cartridge case at the open end of the case, the nozzle further having a chamfered root section between the upper end of the tip and the lower end of the head for mouth-ironing any case which may need it, the peripheral recess being in said tip, said passages providing for delivery of adhesive down through said head and tip to said recess.

5,256,204

SINGLE SEMICONDUCTOR WATER TRANSFER METHOD AND MANUFACTURING SYSTEM

Hong J. Wu, Hsin, Taiwan, assignor to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Dec. 13, 1991, Ser. No. 806,632

Int. Cl.[5] H01L *21/00, 21/02;* **C23C** *16/00*

U.S. Cl. 118—719 **24 Claims**

1. A manufacturing system for individually handling and processing semiconductor wafers through a plurality of processing stations that perform operations on the wafers comprising:

a plurality of processing stations, each of said stations capable of performing at least one processing operation in a controlled environment on a semiconductor wafer;

a canopy enclosing each of said processing stations to maintain a controlled environment within;

a plurality of sealable boxes for enclosing a single wafer;

a branched track providing a support surface leading to each of said processing stations;

a plurality of guided transport vehicles for carrying said sealable boxes, each adapted to operate on said branched track and move on said support surface, to any of said processing stations associated with said branched track;

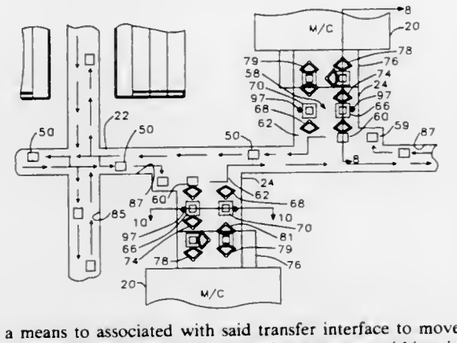
a transfer interface associated with each processing station adapted to preserve a controlled environment within said canopy and about the wafer as it is transferred from said box to within said canopy;

each of said processing stations provided with a transport vehicle buffer having an unload zone and a load zone;

a box load buffer;

a first box handling means adapted to transfer boxes between a transport vehicle at said transport vehicle buffer and said box load buffer;

a second box handling means to move boxes between said box load buffer and said transfer interface;



a means to associated with said transfer interface to move wafers from each box to processing apparatus within said canopy;

a memory storage means on each of said boxes capable of holding the desired wafer process sequence for the wafer associated with said box with the capability of updating the sequence for processing operations completed;

a means for directing said guided transport vehicle to move boxes sequentially to each processing station in accordance with the wafer process sequence stored in each of said memory storage means on said boxes;

a vehicle station having a box loading and unloading area where wafers to be processed are introduced into the system, and where

wafers that have been processed are removed from the system.

5,256,205

MICROWAVE PLASMA ASSISTED SUPERSONIC GAS JET DEPOSITION OF THIN FILM MATERIALS

Jerome J. Schmitt, III, New Haven, and Bret L. Halpern, Bethany, both of Conn., assignors to Jet Process Corporation, New Haven, Conn.

Division of Ser. No. 521,100, May 9, 1990. This application Jan. 7, 1992, Ser. No. 817,518

Int. Cl.[5] C23C *16/50, 16/54*

U.S. Cl. 118—723 **36 Claims**

1. A system for depositing a film upon a substrate, said system comprising:

a vacuum chamber having a port allowing for access to a vacuum chamber interior;

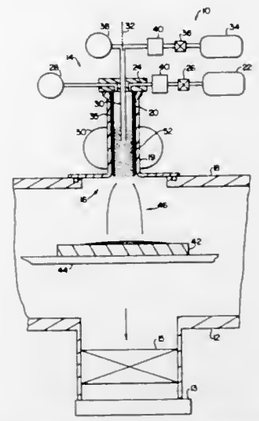
a positioning apparatus for locating a substrate within said vacuum chamber interior;

a gas jet apparatus affixed to said vacuum chamber port for providing controlled entry of gas into the interior of the vacuum chamber, said gas jet apparatus including;

a large nozzle having an interior cavity;

a means for providing carrier gas to said large nozzle interior cavity;

a small nozzle located within said large nozzle interior cavity for providing a supersonic jet of reagent gas from a small nozzle tip configured to provide said reagent gas directly to an outer surface of said substrate;



a discharge means configured about said gas jet apparatus for generating a discharge in said carrier and reagent gas in a position of said large nozzle interior cavity substantially displaced from said small nozzle tip towards said vacuum chamber; and

a pump means for evacuating gas from said vacuum chamber.

5,256,206

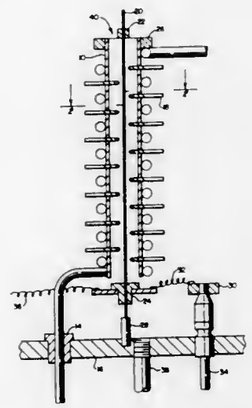
CVD DIAMOND FOR COATING TWIST DRILLS

Thomas R. Anthony, Schenectady; William F. Banholzer, Scotia; Robert H. Ettinger, Schenectady, and James F. Fleischer, Scotia, all of N.Y., assignors to General Electric Company, Worthington, Ohio

Division of Ser. No. 816,411, Dec. 30, 1991, abandoned, which is a continuation of Ser. No. 563,367, Aug. 7, 1990, Pat. No. 5,096,736. This application Aug. 14, 1992, Ser. No. 929,239

Int. Cl.[5] C23C *16/00*

U.S. Cl. 118—723 R **12 Claims**



1. In a CVD diamond reactor of a vacuum chamber, inlet for feed hydrogen/hydrocarbon mixtures, and outlet, the improvement for coating with CVD diamond the entire outer surface of at least a portion of a plurality of stationary elongate objects which comprises disposed within said reactor:

(a) an elongate metal tube having a plurality of apertures for holding elongate objects disposed readily inwardly and having a cooling pipe in thermal contact with and disposed about the outside of said metal tube; and

(b) a filament running within said tube along its lengthwise extent and being in electrical connection with the source of voltage for heating said filament to a temperature adequate to initiate hydrocarbon disassociation, the portions of said elongate objects within said tube surrounding said filament being heated thereby.

5,256,207

PROCESS FOR CLEANING A SWIMMING POOL

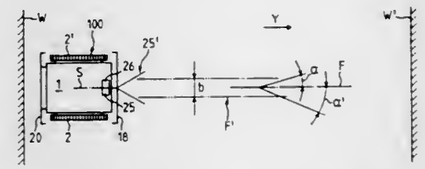
Peter Sommer, Villnachern, Switzerland, assignor to 3S Systemtechnik AG, Remigen, Switzerland

Filed Oct. 31, 1991, Ser. No. 784,931

Claims priority, application Switzerland, Oct. 31, 1990, 03470/90; Oct. 16, 1991, 03032/91

Int. Cl.[5] B08B *7/00, 7/04, 9/00;* **E04H** *4/16*

U.S. Cl. 134—18 **8 Claims**



1. A process for cleaning a swimming pool floor, comprising the steps of: moving a cleaning device back and forth over the floor whereby the device has a steering control connected to at least two driving gears or belts moving the device in one direction but which driving gears are reversible from forward to a backward motion; correcting movement of the device by generating direction-correction signals through making contacts between one of a contact rail located on a front side of the device and a switch rail located on a back side of the device and an obstacle on the floor; sending a direction-correction signal upon making contact to a control mechanism of one driving gear and stopping the one gear, while the other driving gear is still moving, until the switch rail receives a direction-correction signal to reverse the direction causing the device to turn into a new direction; monitoring movement of travel of the device relative to a line of travel (F) or an instantaneous travel strip (F') with at least one sensor and converting any deviation into a direction-correction signal; and monitoring vertical movement of the device relative to the line of travel (F) with at least one sensor and converting any deviation from a travel plane into a correction signal to stop or turn the device.

5,256,208

PROCESS FOR REMOVING VOLATILE CONTAMINANTS FROM GRANULAR MATERIALS

Harold J. Rafson, 1852 Dale Ave., Highland Park, Ill. 60035

Filed Oct. 1, 1991, Ser. No. 769,829

Int. Cl.[5] B08B *3/00*

U.S. Cl. 134—25.1 **32 Claims**

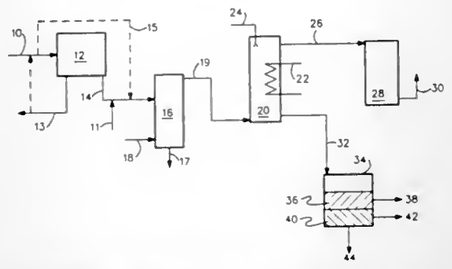
1. A process for treating soils contaminated with volatile organic compounds comprising the following sequential steps:

contacting the soil in a closed vessel with steam at superatmospheric pressure and allowing the steam and soil to reach a predetermined temperature objective;

reducing the pressure about said soil to a lower pressure

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level by rapidly flashing off steam and vaporized organic compounds;



condensing the flashed steam and volatile organic compounds contained therein; and

recovering a cleaned soil product.

5,256,209

METHOD FOR CLEANING ROSIN-BASE SOLDER FLUX

Machio Chihara, Nara; Jiro Mizuya, Osaka; Tatsuya Okumura, Osaka, and Takashi Tanaka, Osaka, all of Japan, assignors to Arakawa Chemical Industries, Ltd., Osaka, Japan

Filed Jun. 24, 1991, Ser. No. 720,148

Claims priority, application Japan, Jun. 27, 1990, 2-170657

Int. Cl.[5] B08B *3/08*

U.S. Cl. 134—38 **10 Claims**

6. A cleaning method for removing a rosin-base solder flux, the method comprising bringing s cleaning agent into contact with the flux on a substrate, the cleaning agent consisting of an aqueous solution of a mixture of

(A) at least one compound represented by the formula (1)



(1)

wherein R^1 is a hydrogen atom or an alkyl group having 1 to 5 carbon atoms, R^2 is an alkyl group having 1 to 5 carbon atoms, R^3 is a hydrogen atom or a methyl group and k is an integer of 2 to 4,

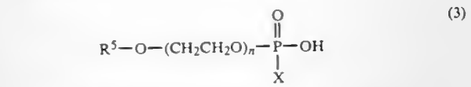
(B) at least one nonionic surfactant represented by the formula (2)



(2)

wherein R^4 is a straight- or branched-chain alkyl group having 6 to 20 carbon atoms, phenyl group or a phenyl group substituted with a straight- or branched-chain alkyl group having 7 to 12 carbon atoms and m is an integer of 2 to 20, and

(C) at least one phosphate anionic surfactant represented by the formula (3)



(3)

wherein R^5 is a straight- or branched-chain alkyl group having 5 to 20 carbon atoms, phenyl group, or a phenyl group substituted with a straight- or branched-chain alkyl group having 7 to 12 carbon atoms, n is an integer of 0 to 20 and X is a hydroxyl group or a group represented by the formula (4)



(4)

wherein R^6 is a straight- or branched-chain alkyl group having 5 to 20 carbon atoms, phenyl group, or a phenyl group substituted with a straight- or branched-chain alkyl group having 7 to 12 carbon atoms and n is as defined above, or a salt thereof, wherein said aqueous solution contains said mixture at a concentration of about 10 wt. % or more but less than 100 wt. %.

5,256,210

STRIPPING COMPOSITION FOR RESIN PAINT MATERIAL AND A METHOD OF REMOVING RESIN PAINT MATERIALS

Kaoru Asakawa; Atsushi Kato, and Hiroki Nagayama, all of Yokosuka, Japan, assignors to Nissan Motor Co., Ltd., Japan

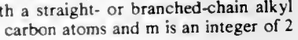
Filed Mar. 24, 1992, Ser. No. 856,794

Claims priority, application Japan, Mar. 25, 1991, 3-83009; Mar. 25, 1991, 3-84643; Jul. 1, 1991, 3-185833; Jul. 1, 1991, 3-185834; Jul. 1, 1991, 3-185835

Int. Cl.[5] B08B *7/00;* **C23D** *17/00;* **C11D** *1/18, 7/50*

U.S. Cl. 134—38 **4 Claims**

1. A method of removing resin paint material, which comprises spraying or applying a stripping composition comprising 8–65% by weight of thiocyanate represented by the following formula:



wherein M is an alkali metal ion (Group 1A), an alkaline earth metal ion (Group 2A), or a quaternary ammonium ion having an ionic value of n, 10–85% by weight of an alcohol having a boiling point under atmospheric pressure of not higher than 100° C., and 5–60% by weight of water onto a resin part coated with a resin paint at a temperature of room temperature to 160° C., or immersing the resin parts into said tripping composition at this temperature.

5,256,211

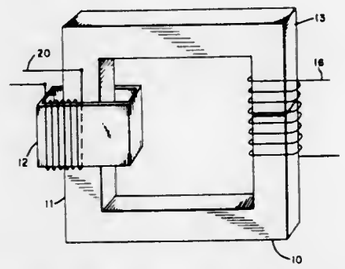
RAPID ANNEALING METHOD USING SHORTED SECONDARY TECHNIQUE

John Silgailis, Cedar Grove; Davidson M. Nathasingh, Hackettstown, and Carl H. Smith, Chatham, all of N.J., assignors to Allied Signal, Morris Township, Morris County, Del.

Filed Dec. 19, 1991, Ser. No. 810,595

Int. Cl.[5] C21D *8/12;* **H01F** *41/02*

U.S. Cl. 148—108 **13 Claims**



1. A process comprising the steps of;

applying alternating current through a magnetizing source to a magnetizing core sufficient to heat a second core which is ferromagnetic and which is disposed about a leg of said magnetizing core to form a signal turn secondary coil;

maintaining said current until a desired temperature is achieved in the second core and for a time sufficient to alter the magnetic properties of said second core; and

cooling said second core and applying a magnetic field via a second magnetizing source to said second core during said cooling step.

5,256,212

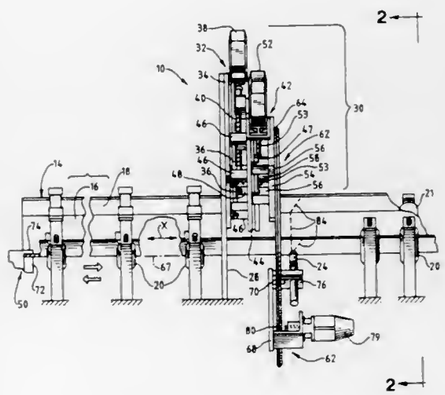
METHOD AND APPARATUS FOR FLAME CUTTING A WORKPIECE

James M. Magnuson, Kankakee, Ill., assignor to Peddinghaus Corporation, Bradley, Ill.

Filed Mar. 27, 1992, Ser. No. 859,111

Int. Cl.[5] B23K *7/10*

U.S. Cl. 148—194 **19 Claims**



1. A method for cutting an elongate workpiece along a cutting path in at least two planes seriatim with a flame from a single cutting torch, said method comprising the steps of:

(A) in a mutually orthogonal X, Y, and Z-axis coordinate system, supporting said workpiece oriented lengthwise along said X-axis;

(B) mounting said torch adjacent said workpiece and positioning said torch with said flame in a first orientation to impinge upon said workpiece at a first location on said cutting path;

(C) while maintaining the impingement of said flame on said workpiece, moving said workpiece along said X-axis during at least one of the following steps (D) and (F);

(D) moving said torch with said flame in said first orientation so as to include a component of flame motion along at least one of said Y and Z axes and to move said flame to a second location along said cutting path for cutting said workpiece between said first and second locations;

(E) while maintaining the impingement of said flame on said workpiece, swinging said torch in a circular arc to move said flame to a second orientation by pivoting said flame about the arc central axis which passes through said second location and which is parallel to said X-axis; and

(F) while maintaining the impingement of said flame on said workpiece, moving said torch with said flame in said second orientation so as to include a component of flame motion along at least one of said Y and Z axes and to move said flame to a third location along said cutting path for cutting said workpiece between said second and third locations.

5,256,213

BEARING STEEL

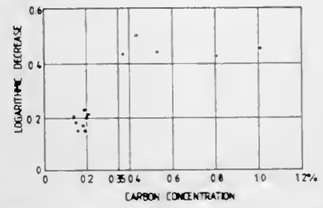
Hiroshi Narai, Fujisawa; Tsutomu Abe, Chigasaki, and Kazuhiro Uemura, Kanagawa, all of Japan, assignors to NSK Ltd., Tokyo, Japan

Filed Jul. 16, 1992, Ser. No. 913,699

Claims priority, application Japan, Jul. 18, 1991, 3-178192

Int. Cl.[5] C22C *38/00*

U.S. Cl. 148—320 **10 Claims**



1. A bearing steel comprising oxide-type nonmetallic inclusions, wherein the cumulative size distribution of said oxide-type nonmetallic inclusions comprises a logarithmic decrease in average particle size diameter per 1 μm of 0.4 to 0.6.

5,256,214

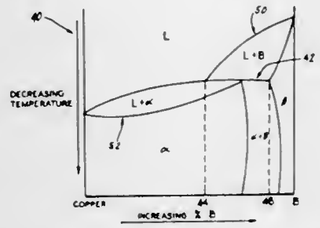
COPPER ALLOYS AND METHOD OF MANUFACTURE THEREOF

Sankaranarayanan Ashok, Bethany, Conn., assignor to Olin Corporation, Cheshire, Conn.

Division of Ser. No. 606,393, Oct. 31, 1990. This application Jun. 10, 1992, Ser. No. 896,523

Int. Cl.[5] C22C *9/00*

U.S. Cl. 148—411 **2 Claims**



1. A spray case copper base alloy having improved properties comprising:

one or more dispersoid producing first components in an amount of 80–200% of the solid solubility point concentration of the first components in copper;

one ore more solid state precipitates producing second components in an amount less than the solid solubility concentration limit of the second component copper;

and the balance copper;

said alloy having as a structure:

a copper based matrix;

a second phase of dispersions of the first component uniformly dispersed throughout said matrix, said dispersoids having a mean particle size of from about 0.1 micron to about 0.5 micron, said dispersoids being selected from the group consisting of iron, cobalt, niobium, vanadium, and mixtures thereof; and

a third phase of a solid state precipitate of the second component.

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5,256,215

PROCESS FOR PRODUCING HIGH STRENGTH AND HIGH TOUGHNESS ALUMINUM ALLOY, AND ALLOY MATERIAL

Hiroyuki Horimura, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 15, 1991, Ser. No. 775,597
Claims priority, application Japan, Oct. 16, 1990, 2-277058
Int. Cl.[5] C22F *1/04*
U.S. Cl. 148—561 **4 Claims**



3. A process for producing a high strength and high toughness aluminum alloy, comprising

a first step of preparing an alloy material which has a primary metallographic structure with a volume fraction of a single-phase structure of at least 90%, said single-phase structure is comprised of crystal particles having a particle size of less than 30 nm and an fcc structure, said alloy material having a composition represented by a chemical formula:

$$Al_a T_b X_c Z_d$$

wherein T is at least one element selected from a first group consisting of Y, La, Ce, Mm (misch metal) and Ca; X is at least one element selected from a second group consisting of Fe, Co and Ni; Z is at least one element selected from a third group consisting of Ti, V, Cr, Mn, Zr, Nb, Mo, Si and B; and each of a, b, c and d. represents an atom %, with the proviso that $85 \leqq a \leqq 97$, $1 \leqq b \leqq 10$, $2 \leqq c \leqq 15$, and $d \leqq 3$, and

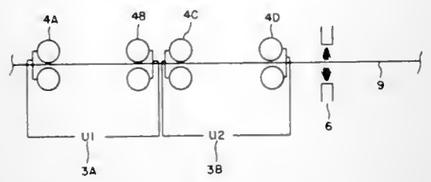
a second step of subjecting said alloy material to a thermal treatment at a temperature in a range of ±100° C. of the temperature of destruction of said single-phase structure to destroy said single-phase structure, thereby providing a second metallographic structure having a combined structure in which an intermetallic compound is uniformly dispersed in a matrix consisting essentially of crystal particles having a particle size of at most 400 nm.

5,256,216

CONTROLLED RESISTIVE HEAT TREATMENT FOR A CONTINUOUSLY MOVING ZIRCALOY SHEET

Gerard Bunel, Rugles; Charles Chauvel-Trepier, L'Aigle; Jean-Pierre Gros, and Daniel Charquet, both of Albertville, all of France, assignors to Compagnie Europeenne Du Zirconium Cezus, Courbevoie, France

Filed Feb. 19, 1992, Ser. No. 836,835
Claims priority, application France, Feb. 22, 1991, 91 023777
Int. Cl.[5] C22C *16/00*
U.S. Cl. 148—566 **9 Claims**



1. A method for treating a Zircaloy 2 or Zircaloy 4 strip by heating in the beta range followed by rapid cooling, comprising:

passing the strip at a predetermined velocity between a first and second roller pair, each said roller pair comprising two oppositely disposed rollers gripping the strip;

connecting each of said roller pairs to an electric current source so as to complete an electric circuit including the electric current source, the first and second roller pairs and the strip, said complete circuit and said predetermined velocity operating to heat the strip to the beta range at a rate less than 40° C./sec between 750° and 1000° C.;

passing the strip heated to the beta range between third and fourth roller pairs located between said second roller pair and said cooling, said third and fourth roller pairs connected to a further source of electric current, forming a completed circuit including said strip, said third and fourth roller pairs and said further source of electric current, said third and fourth roller pairs operating to hold the strip at 1000°–1100° C. for less than 2 minutes; and

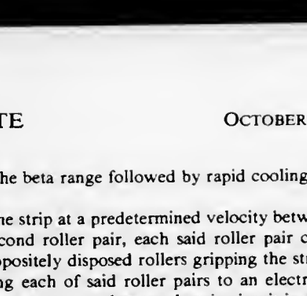
cooling the strip at a rate of at least 40° C./sec between 1000° C. and 600° C.

5,256,217

MULTI-SURFACE FLAME HARDENING MACHINE AND PROCESS

Robert L. Macheske, Tawas City, Mich., assignor to CMI International, Southfield, Mich.

Filed May 18, 1992, Ser. No. 885,290
Int. Cl.[5] B23K *7/10*
U.S. Cl. 148—642 **48 Claims**



1. An apparatus (10) for heat treat hardening multiple wear surfaces of a metal workpart (14), said apparatus (10) comprising:

heat treat hardening means (12) for heat treat hardening the multiple wear surfaces (24,26,28) of the workpart (14);

moveable support means (16) for moving said heat treat hardening means (12) in successive iterative trips along a travel path (13) (14) to heat treat harden successive wear surfaces of the workpart (14) placed within said travel path (13);

workpart support means (18) for supporting wear surfaces of the workpart (14) along said travel path (13) of said heat treat hardening means (12) and for selectively moving the workpart (14); and

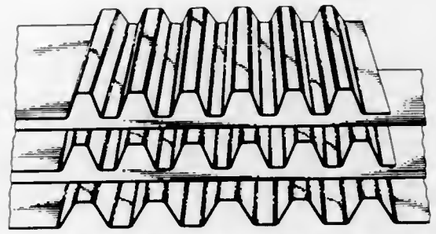
drive means (55) for intermittently rotating the workpart support means (18) in a partial revolution prior to each successive iterative trip of said heat treat hardening means (12) to remove a first heat-treated workpart surface from said travel path (13) while positioning a second untreated workpart surface along said travel path (13) for subsequent heat treat hardening thereof.

5,256,218

FORMING OF INTERMETALLIC MATERIALS WITH CONVENTIONAL SHEET METAL EQUIPMENT

Allen D. Bakalyar, El Segundo, and Peter Lydia, Inglewood, both of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Oct. 3, 1991, Ser. No. 770,252
Int. Cl.[5] C22C *14/00*
U.S. Cl. 148—670 **11 Claims**



1. A method for transforming a substantially planar sheet of titanium aluminide material into a structural component using a press brake machine, comprising:

locating one region of said sheet material where deforming is to take place,

heating said one region at said location at a temperature of no more than 600° F. for a predetermined period of time, and

deforming said heated region into a desired shape by pressing an upper die associated with said press brake machine against said region and toward a lower die associated with said press brake machine,

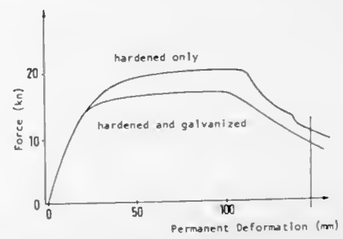
whereby the substantially planar sheet of material is transformed into a non-planar structural component.

5,256,219

STEEL REINFORCEMENT TUBE

Ingo von Hagen, Krefeld; Christoph Prasser, Essen, and Enno Wieting, Ratingen, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 602,514, Oct. 24, 1990, abandoned. This application May 4, 1992, Ser. No. 878,719
Int. Cl.[5] C22C *38/14*; B60J *5/04*
U.S. Cl. 148—909 **7 Claims**



1. A reinforcement tube for a motor vehicle door, said reinforcement tube comprising:

a fully killed, steel alloy, said steel comprising iron and the following elements:

0.15–0.25%	Carbon
3.40–6.10%	Manganese
0–1.0%	Nickel
0–1.0%	Chromium
0–1.0%	Molybdenum
0–0.15%	Vanadium
max. 0.03%	Phosphorous
max. 0.03%	Sulfur
max. 0.6%	Silicon
max. 0.05%	Aluminum

such that a sum total of the content of manganese, nickel, chromium and molybdenum, and ten times the vanadium content is greater than about 4.5 wt. % of the total percent of constituents of said alloy.

5,256,220

LIQUID MONOPROPELLANTS

Edward E. Baroody, Bryans Rd.; Horst G. Adolph, Silver Spring; Mortimer J. Kamlet, Rockville; Robert C. Gill, White Plains, and Herman S. Haiss, Forest Heights, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 3, 1979, Ser. No. 101,402
Int. Cl.[5] C06B *25/00*
U.S. Cl. 149—88 **8 Claims**

1. A liquid fuel formulation comprising a mixture of from about 5 to 40% of a high energy ingredient selected from the group consisting of bis(2-fluoro-2,2-dinitroethyl)amine, bis(2-fluoro-2,2-dinitroethyl)formal and bis(2,2,2-trinitroethyl)formal, and

from 60 to 95% of a mixture of propylene glycol dinitrate, 2-nitrodiphenylamine and di-n-butyl sebacate.

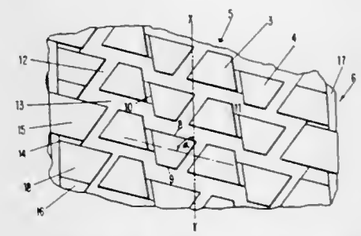
6. A liquid fuel composition comprising a mixture of a high energy ingredient selected from the group consisting of bis (2-fluoro-2,2-dinitroethyl) amine, bis(2-fluoro-2,2-dinitroethyl) formal and bis(2,2,2-trinitroethyl) formal mixed with a small quantity of a melting point depressant selected from the group consisting acetone, methyl ethyl ketone and diethyl oxalate.

5,256,221

PNEUMATIC VEHICLE TIRE WITH MIRROR SYMMETRICAL TREAD ELEMENTS

Hagen Trabandt, Sehnde, Fed. Rep. of Germany, assignor to Uniroyal Engelbert Reifen GmbH, Aachen, Fed. Rep. of Germany

Filed Sep. 4, 1991, Ser. No. 754,939
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1990, 9012612
Int. Cl.[5] B60C *11/11*
U.S. Cl. 152—209 R **8 Claims**



1. A pneumatic vehicle tire of a radial belt construction having a tire tread comprising:

first trapezoidal tread elements that are arranged in circumferential rows and slanted transverse rows, said circumferential rows and slanted transverse rows being separated from one another by circumferential grooves and slanted transverse grooves, respectively;

said first trapezoidal tread elements forming pairs that are enclosed by adjacent ones of said circumferential grooves and adjacent ones of said slanted transverse grooves;

said first trapezoidal tread elements of one said pair being

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arranged adjacent to one another within one of said slanted transverse rows and staggered relative to one another in a circumferential direction of said tire, said trapezoidal tread elements being symmetrical to a mirror plane relative to one another, with the mirror plane extending parallel to said slanted transverse grooves and with parallel sides of said trapezoidal tread elements forming slanted transverse edges and extending parallel to said mirror plane;

said first trapezoidal tread elements of one said pair being separated by a short circumferential groove at a bottom which a circumferential cross-piece is provided that connects said first trapezoidal tread elements of said pair; and

said slanted transverse rows having a respective transverse center line that is disposed at an angle of from 60° to 80° relative to a circumferential center line of said tire, with said slanted transverse edges of said first tread elements being essentially parallel to said transverse center line.

5,256,222

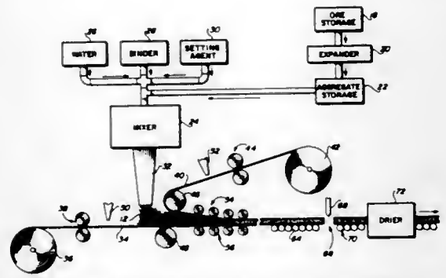
LIGHTWEIGHT BUILDING MATERIAL BOARD

Philip B. Shepherd, Sedalia, and Rick L. Dolin, Littleton, both of Colo., assignors to Manville Corporation, Denver, Colo.

Continuation-in-part of Ser. No. 579,754, Sep. 10, 1990, abandoned. This application Aug. 13, 1991, Ser. No. 744,543

Int. Cl.[5] **B32B** *31/06;* **C04B** *14/18*

U.S. Cl. 156—41 **15 Claims**



1. A process for manufacturing a lightweight building material board comprised of a core and facing sheets, comprising the steps of:

forming a mixture comprising the following ingredients, by weight of the mixture;

about 40% to 65% expanded siliceous inorganic particles having a density in the approximate range of 1.5 pcf to 4 pcf and being of a size in the approximate range of 100 to 1000 microns;

about 5% to 20% inorganic binder;

about 10% to 60% water; and

about 0% to 10% binder setting agent;

depositing a layer of the mixture on a moving lower web of facing sheet material, the amount of water in the mixture being such that the consistency of the mixture is that of slightly damp powder;

contacting the side of the layer opposite the lower web with an upper moving web of facing sheet material to form a sandwich of the webs and the mixture, both webs being sufficiently porous to permit the passage of moisture therethrough and both webs moving in the same direction;

continuously applying pressure in the range of 30 psi to 500 psi to the moving sandwich by means of press rolls to compact the expanded inorganic particles, a substantial number of the particles being broken by the pressure and a substantial number of the particles remaining intact; and

heating the compacted mixture in the range of 150° F. to 400° F. for a period of 0.25 to 6.0 hours to drive off water from the mixture through the facing sheet material and set the inorganic binder to form a core, whereby a board comprising the facing sheets and the core is formed;

the degree of compaction and heating being such that the dry density of the core is in the range of 10 pcf to 30 pcf.

5,256,223

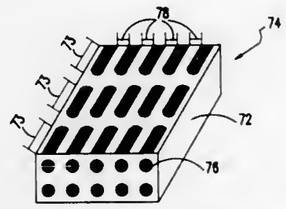
FIBER ENHANCEMENT OF VISCOELASTIC DAMPING POLYMERS

Thomas E. Alberts, Virginia Beach, Va., and Yung Chen, Chicago, Ill., assignors to The Center for Innovative Technology, Herndon, Va.

Filed Dec. 31, 1991, Ser. No. 816,886

Int. Cl.[5] **E04B** *1/98;* **D04H** *5/04*

U.S. Cl. 156—71 **10 Claims**



1. An apparatus for damping structural noise and vibration, consisting essentially of:

a viscoelastic polymer having length, width and height dimensions defining a volume and having at least one surface securable to a structure; and

a plurality of non-woven, spaced apart fibers uniformly distributed in-situ throughout said volume defined by said viscoelastic polymer with respect to said height dimension, said fibers being sized to induce strain in said viscoelastic polymer, said fibers being of a length which requires several of said fibers to span said length dimension of said viscoelastic polymer.

5,256,224

PROCESS FOR MAKING MOLDED, TUFTED POLYOLEFIN CARPET

Emile M. Gillyns, Sandweiler, Luxembourg; Didier R. Stochmel, Aumetz, France, and Ewald A. Ebers, Nordhorn, Fed. Rep. of Germany, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 31, 1991, Ser. No. 816,402

Int. Cl.[5] **D05C** *15/04*

U.S. Cl. 156—72 **9 Claims**

1. A process for making a molded carpet from a nonwoven sheet consisting essentially of 100% polyolefin filaments, comprising the steps of:

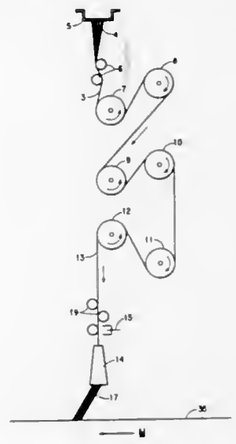
(a) melt spinning a bundle of polyolefin filaments from a plurality of spinnerets;

(b) drawing the filaments at a draw ratio of less than 2.0 and depositing the drawn filaments onto a moving collection device in both the machine and cross-machine directions to form a nonwoven sheet having a unit weight of 100 to 150 g/m^2;

(c) lightly bonding the nonwoven sheet to an extent sufficient to achieve sheet integrity but not to an extent where filament movement and sheet delamination are prevented when the nonwoven sheet is subsequently needed;

(d) needling the nonwoven sheet to cause sheet delamination and filament movement to occur and to substantially

increase the elongation of the resulting needled nonwoven sheet beyond that due to selection of the draw ratio, the



elongation of the sheet being increased to at least 40%; and

(e) molding the needled sheet of step (d) into a desired shape.

5,256,225

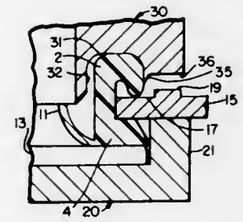
PAIL CLOSURE APPLICATION METHOD

Davis B. Dwinell, Carol Stream, Ill., assignor to Royal Packaging Industries Van Leer B.V., Amstelveen, Netherlands

Filed Jan. 13, 1992, Ser. No. 819,969

Int. Cl.[5] **B32B** *31/16*

U.S. Cl. 156—73.1 **6 Claims**



1. A method of securing a synthetic plastic closure assembly within a synthetic plastic pail cover opening wherein said closure assembly consists of a nozzle having a distal end portion and overlying cap comprising the steps of inserting said closure assembly into said pail cover opening so that the distal end portion of said nozzle extends axially therethrough and introducing said pail cover and closure assembly into the working zone of a sonic welding machine defined by a cap supporting structure and a sonic welding horn including a central sleeve portion, axially displacing said sonic welding horn relative to said cap supporting structure so as to engage said nozzle distal end portion and urge said closure cap against said cap supporting structure, energizing said sonic welding horn during said axial displacement so as to permanently deform said nozzle distal end portion radially outwardly forming a rivet connection within said pail cover opening, and tightly clamping said rivet connection against said closure cap creating a plastic to plastic resin bond with said cover at said deformed distal end portion.

5,256,226

PROCESS FOR REPAIRING EXPOSED OR DAMAGED PARTS OF A PLASTIC COATINGS ON METAL TUBING BY COATING OR PATCHING THE AREA WITH AN ADHESIVE POLYMER COMPOSITION

Roberto Marzola, and Gian L. Rigosi, both of Ferrara, Italy, assignors to Himont Incorporated, Wilmington, Del.

Filed Jan. 28, 1991, Ser. No. 646,569

Claims priority, application Italy, Feb. 6, 1990, 19271A/90

Int. Cl.[5] **B29C** *73/10;* **C09J** *5/00*

U.S. Cl. 156—95 **9 Claims**

1. A process for repairing exposed or damaged parts of a plastic coating on metal tubing by coating said parts with a coating material or affixing a patch or band thereto with an adhesive material, characterized in that the coating material or the adhesive material is an adhesive polymer composition comprising, by weight:

A) from 59% to 94% of a polypropylene, a propylene/ethylene random copolymer, or a propylene/ethylene/1-butene random copolymer, or mixtures thereof with one or more plastomeric polymers selected from the group consisting of ethylene/vinyl acetate copolymers, low density polyethylene, high density polyethylene, polyamides and polyurethanes;

B) from 5% to 40% of an elastomeric polymer or mixture of elastomeric polymers, selected from the group consisting of ethylene-propylene rubber, ethylene-propylene-diene monomer rubber, styrene-ethylene/butylene-styrene block copolymers, styrene-butadiene-styrene block copolymers and ethylene/ethyl acrylate copolymers;

C) from 1% to 10% of polypropylene modified with 1% to 10% maleic anhydride, isophorone bismaleamic acid or acrylic acid; and

D) from 0% to 3% of carbon black.

5,256,227

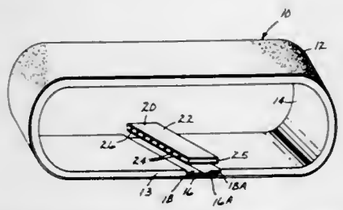
METHOD OF SPLICING ENDLESS ABRASIVE BELTS AND CONES

Glenn E. Roelofs, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 9, 1991, Ser. No. 697,703

Int. Cl.[5] **B32B** *31/12*

U.S. Cl. 156—157 **15 Claims**



1. Method of making an endless abrasive belt or cone and by splicing the ends of length of coated abrasive sheet material, part of which has been removed at each end to provide splicing surfaces, the splicing being done by the steps of

a) coating onto said splicing surfaces an aqueous adhesive dispersion that is substantially free from volatile organic matter, which aqueous dispersion comprises a blend of a polyurethane and a crosslinking agent,

b) juxtaposing the two ends, and

c) curing the adhesive coatings.

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5,256,228

HEAT SEAMABLE ROOF SHEETING WITH HIGHLY CRYSTALLINE THERMOPLASTICITY PROMOTERS AND METHODS FOR COVERING ROOFS

James A. Davis, Uniontown, and Joseph K. Valaitis, Brecksville, both of Ohio, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Dec. 6, 1991, Ser. No. 802,800
Int. Cl.[5] E04F *13/00*; C08L *53/00, 23/16*; C08K *03/22*
U.S. Cl. 156—157 3 Claims

I. A method for covering a roof with a heat seamable sheet material for roofing prepared from an uncured polymeric composition of matter comprising the steps of:

applying layers of self-adhering sheet material prepared from an uncured heat seamable polymeric composition of matter to the roof being covered;

overlapping adjacent edges of said layers;

heating the overlapped areas to slightly above the softening point of the sheet material and

seaming the overlapped areas using heat and under sufficient pressure to provide an acceptable seam strength, said composition of matter having sufficient self-adhesion without the use of an adhesive and comprising

100 parts by weight of an uncured polymer blend comprising

from about 50 to 90 parts by weight of a polymer selected from the group consisting of EPDM terpolymers having a number average molecular number of at least 30,000 and a weight average molecular weight of at least 100,000 and up to about 2 percent by weight crystallinity and mixtures thereof; and

from about 10 to 50 parts by weight of a highly crystalline thermoplasticity promoter having at least 2 percent by weight crystallinity selected from the group consisting of polyolefin polymers prepared from monomers containing from two to eight carbon atoms;

from about 50 to 250 parts by weight of a filler selected from the group consisting of reinforcing and non-reinforcing materials and mixtures thereof per 100 parts of said polymer blend and

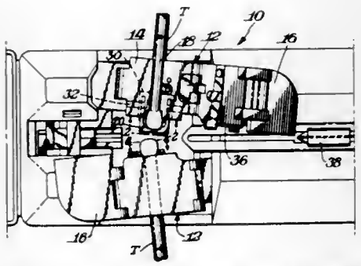
from about 20 to 150 parts by weight of a processing material and mixtures thereof per 100 parts of said polymer blend.

5,256,229

STERILE CONTAINMENT WELDING DEVICE FOR PLASTIC TUBES

Dudley W. C. Spencer, Wilmington, Del., assignor to Denco, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 965,875, Oct. 23, 1992. This application Mar. 11, 1993, Ser. No. 29,704
Int. Cl.[5] B29C *57/10, 65/20*
U.S. Cl. 156—158 18 Claims



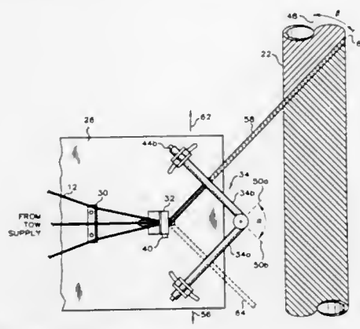
1. A sterile containment welding device for plastic tubes comprising a pair of side by side spaced tube holders, each of said tube holders including a clamp base and a clamp lid for selective clamping engagement with said clamp base, a pocket in said clamp base extending completely across clamp base for having a plastic tube inserted in said pocket and being clamped in said holder when said clamp lid is in a closed position, said pockets of said side by side tube holders being alignable with each other to permit a plastic tube in one of said holders to be welded to a plastic tube in the other of said holders, a tube locating member movably mounted at the end of each of said pockets in the space between said holders, said tube locating member having a wall disposed in said space beyond and across said pocket for positioning its plastic tube in the proper position for the later welding step when its tube is moved into contact with said wall, and an inactivating member mounted to a respective lid and movable into contact with each of said tube locating members for moving its said tube locating member out of contact with its plastic tube upon the closing of its lid to permit the tubes to be heated and welded together.

5,256,230

WINDING OF RESIN IMPREGNATED FIBERS USING A HEATED GUIDE

John D. Winkel, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 3, 1991, Ser. No. 725,710
Int. Cl.[5] B65H *81/00*
U.S. Cl. 156—175 12 Claims



I. A method comprising:

(a) supplying a plurality of tows of resin impregnated fibers from a supply means to a mandrel which has a rotational axis, wherein each of the tows is a prepreg tape having opposing edges;

(b) rotating the mandrel so as to wind the tows upon the mandrel;

(c) passing the tows, during steps (a) and (b), in contact with an exterior surface of one portion of a guide positioned between the supply means and the mandrel, wherein the guide comprises a first guide portion having a first longitudinal axis and a second guide portion having a second longitudinal axis defining an angle α with respect to the first longitudinal axis, and wherein the tows pass in contact with the exterior surface of said one guide portion so as to align and at least partially consolidate, upon said contact, adjacent tows along edges thereof in a side-by-side relationship to form a band which has a longitudinal axis and which is generally flat and planar, and further wherein the longitudinal axis of the band is generally perpendicular to the longitudinal axis of said one guide portion as the tows pass in contact with the exterior surface of said one guide portion, and the longitudinal axis of the band defines an acute angle with respect to the rotational axis of the mandrel which is about one-half α;

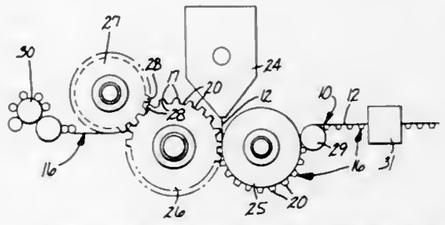
(d) heating the guide and the exterior surfaces of the respective guide portions during step (c) to a temperature at or above the melting point of the resin in the tows.

5,256,231

METHOD FOR MAKING A SHEET OF LOOP MATERIAL

Michael R. Gorman, White Bear Lake; Dennis L. Becker, Vadnais Heights; Donald W. Folske, Oakdale; William L. Melbye, Maplewood; Susan K. Nestegard, Woodbury, and Ronald L. Ott, Lake Elmo, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 517,409, Apr. 27, 1990, abandoned, which is a continuation of Ser. No. 193,832, May 13, 1988, abandoned. This application Jul. 18, 1990, Ser. No. 555,049
Int. Cl.[5] B32B *31/12, 31/30*
U.S. Cl. 156—178 61 Claims



1. A method for forming a sheet of loop material for use in fasteners of the type having releasably engageable hook and loop portions, said method comprising:

providing a nonwoven sheet of fibers;

forming the sheet of fibers to have arcuate portions projecting in the same direction from a surface defined by spaced anchor portions of the sheet of fibers, said forming step comprising the steps of:

providing first and second generally cylindrical corrugating members each having an axis and including a plurality of spaced ridges defining the periphery of the corrugating member, the ridges having outer surfaces and defining spaces between said ridges adapted to receive portions of the ridges of the other corrugating member in meshing relationship with the sheet of fibers therebetween; mounting the corrugating members in axially parallel relationship with portions of the ridges in meshing relationship;

rotating at least one of the corrugating members;

feeding the sheet of fibers between the meshed portions of the ridges to generally conform the sheet of fibers to the periphery of the first corrugating member and form the arcuate portions of the fibers in the spaces between the ridges of the first corrugating member and the anchor portions of the sheet of fibers along the outer surfaces of the ridges of the first corrugating member; and

retaining the formed sheet of fibers along the periphery of the first corrugating member for a predetermined distance after movement past the meshing portions of the ridges;

extruding a thin layer of molten thermoplastic material onto the spaced anchor portions of the fibers along the periphery of the first corrugating member within the predetermined distance to form at least a portion of a backing around the spaced anchor portions of the sheet of fibers with the arcuate portions of the sheet of fibers projecting from a front surface of the backing;

cooling and solidifying the layer of thermoplastic material to form the sheet of loop material; and

cutting the sheet of loop material into pieces to form loop portions for use in said fasteners of the type having releasably engageable hook and loop portions;

said forming step forming the arcuate portions of the sheet of fibers to have a height from the front surface of the backing of less than about 0.64 centimeters; and

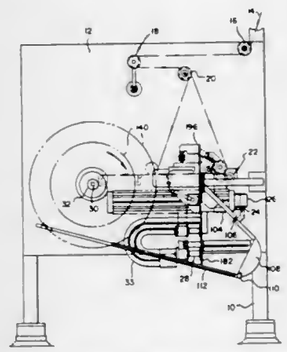
said step of providing fibers providing fibers in an amount so that the sheet of fibers has a basis weight in the range of 5 to 300 grams per square meter measured along the first surface of the backing to provide sufficient open area between the fibers along the arcuate portions to afford ready engagement of the fibers along the arcuate portions by the hook portion of the fastener.

5,256,232

APPARATUS AND METHOD FOR WINDING STRIPS OF WEB MATERIAL ONTO SPOOLS

Fred M. Fuss, Hamlin, and David E. Wenschhof, Victor, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 27, 1992, Ser. No. 920,400
Int. Cl.[5] B31C *1/00*; B32B *31/00*; B65H *21/00, 27/00*
U.S. Cl. 156—187 17 Claims



1. Apparatus for winding web material onto a spool, said apparatus comprising:

a source of web material to be wound;

a first frame;

means mounted on said first frame for rotating said spool about an axis to wind said web material onto said spool;

a second frame;

means mounted on said first frame for permitting said second frame to move toward or away from said axis;

roll means mounted on said second frame for engaging an outermost convolution of said web material during winding onto said spool;

means mounted on said first frame for moving said second frame on said means for permitting toward said axis to facilitate attachment of said leading end to said spool and away from said axis to allow continued winding of said web material onto said spool;

means mounted on said second frame for pressing said roll means against said outermost convolution as a trailing end of said web material nears said spool;

means for stopping said spool while maintaining torque thereon;

means mounted on said second frame for applying a tab of adhesive tape to a trailing end of said web material before said trailing end passes said roll means, said tab of adhesive tape having an adhesive portion extended beyond said trailing end, whereby said adhesive portion of said tab of adhesive tape is rolled by said roll means onto an underlying convolution of said web material to secure said trailing end; and

motor means for controllably rotating said roll means in contact with said outermost convolution and said tab of adhesive tape as said spool is rotated, in order to maintain tension in said web material as said tab of adhesive tape is applied to said underlying convolution.

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5,256,233

FLEXIBLE HOSE CONSTRUCTION AND METHOD OF MAKING THE SAME

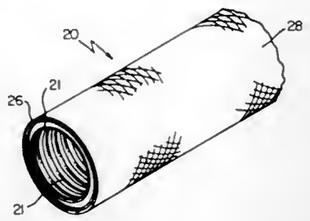
Jeffrey J. Winter, Ocala, Fla.; Homer N. Holden, Sylva, N.C., and James L. Lawrence, Ocala, Fla., assignors to Dayco Products, Inc., Dayton, Ohio

Continuation of Ser. No. 759,023, Sep. 13, 1991, Pat. No. 5,145,545, which is a continuation of Ser. No. 405,487, Sep. 11, 1989, Pat. No. 5,089,074. This application Jun. 30, 1992, Ser. No. 906,814

The portion of the term of this patent subsequent to Sep. 8, 2009, has been disclaimed.

Int. Cl.[5] B29C *47/06, 47/20*

U.S. Cl. 156—244.13 4 Claims



1. In a method of making a flexible hose construction comprising the steps of forming an inner corrugated hose of polymeric material to have a plurality of outwardly convex projections with recesses therebetween disposing an outer sleeve of reinforcing material in telescoping relation on said inner hose, and disposing an outer sleeve of polymeric material in telescoping relation on said sleeve of reinforcing material, the improvement comprising the steps of disposing a tube of polymeric material between said sleeve of reinforcing material and said inner hose by extruding said tube onto said inner hose before disposing said sleeve of reinforcing material thereon, the step of extruding causing said tube to have substantially constant inner and outer diameters whereby said tube extends in a generally straight-line manner from projection to projection of said inner hose so as to prevent said sleeve of reinforcing material from thereafter entering into said recesses of said inner hose an amount that would tend to substantially reduce the flexibility characteristics of said inner hose, forming said inner hose from thermoplastic material, forming said tube of polymeric material from thermoplastic material, forming said outer sleeve of polymeric material from thermoplastic material, the step of extruding causing said tube of polymeric material to be bonded to said projections of said inner hose, and bonding said sleeve of polymeric material to said tube of polymeric material through said sleeve of reinforcing material by extruding said sleeve of polymeric material onto said sleeve of reinforcing material whereby said tube of polymeric material holds said sleeves and said hose together.

5,256,234

LAMINATE AND PROCESS FOR PRODUCING IT

Yasuhiko Mutaguchi, Otsu; Shinichiro Miyaji, Koka, and Yukichi Deguchi, Otsu, all of Japan, assignors to Toray Industries, Inc., Japan

Division of Ser. No. 646,673, Jan. 28, 1991, Pat. No. 5,130,181. This application Mar. 18, 1992, Ser. No. 853,099

Claims priority, application Japan, Feb. 2, 1990, 2-24765

Int. Cl.[5] B29C *47/00*

U.S. Cl. 156—244.27 9 Claims

1. A process for producing a laminate comprising the steps of:

laminating a biaxially oriented polyphenylenesulfide film on at least one surface of a non-oriented polyphenylenesulfide film;

bonding the laminated films by thermocompression bonding at a temperature in the range of 180° to 270° C. and a pressure in the range of 1 to 20 kg/cm^2; and

cooling the bonded films to a temperature not higher than the crystallization temperature of said non-oriented polyphenylenesulfide film within 60 seconds.

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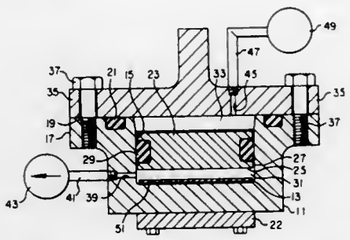
METHOD FOR FORMING LONG THIN FLEXIBLE LAMINATES

Richard E. Howell, 9000 Belle Haven Ave. Northeast, Albuquerque, N. Mex. 87112, and Weldoo M. Johnson, 5220 Byers, Fort Worth, Tex. 76107

Filed Aug. 13, 1991, Ser. No. 744,344

Int. Cl.[5] B32B *31/20*

U.S. Cl. 156—286 14 Claims



1. A method of forming a laminated strip, comprising in combination:

providing an elongated housing having a cavity therein with sidewalls and a base;

forming a laminate with a plurality of layers and a heat curing resin between the layers;

placing the laminate on the base within the cavity;

providing a rigid partition with a perimeter with dimensions coextensive with the base within the cavity;

placing a seal member around the perimeter of the partition;

placing the partition in the cavity parallel and above the base with the laminate sandwiched between the partition and the base and moving the partition downward with the seal member slidingly engaging the sidewalls of the cavity, causing the partition to move into contact with the laminate, the partition dividing the cavity into an upper section and a lower section with the seal member sealing the perimeter of the partition to the sidewalls in the cavity and allowing the partition to move sealingly downward in the cavity;

closing upper and lower sections of the cavity;

evacuating the lower section of the cavity to remove air bubbles form the laminate; then

pressurizing the upper section of the cavity to a pressure greater than ambient pressure on the housing to push the partition downward to apply pressure to the laminate; and

heating the base while pressure is maintained on the laminate to cure the resin of the laminate to cause the layers to bond together.

5,256,236

METHOD FOR MAKING A CUSHION

Thomas A. Woller, Jamestown, N.C., assignor to Baker, Knapp & Tubbs, Inc., Chicago, Ill.

Continuation of Ser. No. 502,979, Apr. 2, 1990, abandoned, which is a division of Ser. No. 374,888, Jul. 3, 1989, Pat. No. 4,930,173. This application Mar. 15, 1993, Ser. No. 32,153

Int. Cl.[5] B32B *1/06*

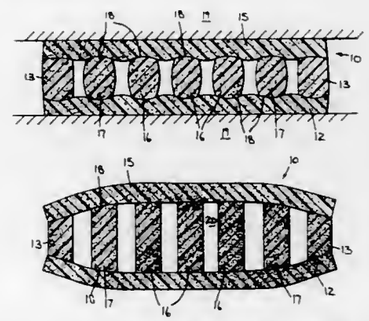
U.S. Cl. 156—290 1 Claim

1. A method of constructing a crowned cushion element that is adapted to be the support surface of a chair or the like, for supporting a seated user, the cushion element including a foam pan, a plurality of foam support slabs and a top cover wall, the method comprising the steps of:

forming a foam pan having a bottom wall and two opposed generally parallel side walls of substantially equal height, and further side walls which together with said two opposed side walls form a substantially closed foam perimeter, said side walls defining an internal cavity;

positioning a plurality of elongate foam support slabs in the cavity such that they extend between and generally parallel to the opposed side walls and are in contact with an upper surface of the bottom wall, at least one of the slabs in a central area of the cavity having a greater relaxed state height than the relaxed state height of said opposed side walls, wherein the walls and slabs are juxtaposed such that at least one slab causes an outward crowning in the cushion element;

wherein the one slab has a relaxed state height greater than at least one of:



(a) the width, transverse to an elongate slab direction of a first face of the one slab that is in contact with an upper surface of the bottom walls; and

(b) the width, transverse to the elongate slab direction, of a second face of the one slab opposing the first face;

spacing the slabs sufficiently from one another in at least a part of the cavity so that they remain separated from one another under normal compression caused by a user seated on the cushion element;

using an adhesive having a period of setting to affix the top surfaces of the support slabs to a top cover wall and also affixing the top cover wall to the top surface of at least one side wall using the adhesive and also affixing ends of the slabs to said further side walls;

compressing the cushion element before the adhesive has set to render the cushion element less crowned; and

thereafter removing the compression force so as to allow the cushion element to spring into a crown shape after the adhesive has set.

5,256,237

INNER SURFACE FIBER AFFIXATION FOR MANUFACTURING A SENSOR MANDREL

Steveo J. Maas, Simi Valley; Michael R. Layton, Clayton; A. Douglas Meyer, Canoga Park, and Dennis P. Bevan, Alhambra, all of Calif., assignors to Litton Systems, Inc., Woodland Hills, Calif.

Division of Ser. No. 512,853, Apr. 23, 1990, abandoned. This application Sep. 17, 1991, Ser. No. 762,737

Int. Cl.[5] H04R *31/00;* B32B *31/04, 31/14*

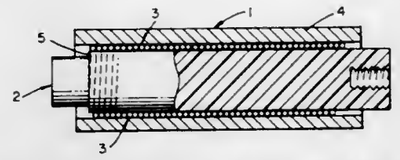
U.S. Cl. 156—293 12 Claims

1. A method for producing a sensor mandrel by affixing optical fibers to an inner surface of a hollow, cylindrical member comprising the steps of:

supporting said optical fibers in a desired arrangement on a cylindrical form;

positioning the cylindrical form and said optical fibers in a desired position within the hollow, cylindrical member;

expanding the circumference of said cylindrical form sufficiently to cause said optical fibers to engage said inner surface of said hollow, cylindrical member in said desired arrangement;



contracting the circumference of said cylindrical form sufficiently to cause said optical fibers to disengage from said cylindrical form;

securing said optical fibers to said inner surface at said desired position; and

removing said cylindrical form from sad hollow, cylindrical member.

5,256,238

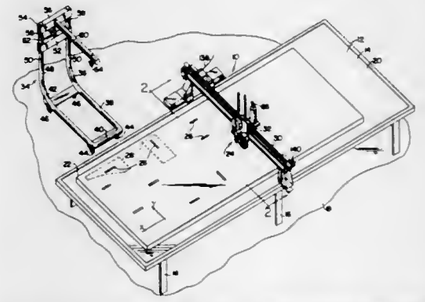
VERTICALLY REMOVABLE AND EMPLACABLE TOOL CARRIAGE FOR USE WITH A PLURALITY OF WORK SUPPORTING TABLES

H. Joseph Gerber, West Hartford; Richard S. Szewczyk, Madison, and Fredric K. Rosen, Weston, all of Conn., assignors to Gerber Garment Technology, Inc., Tolland, Conn.

Continuation of Ser. No. 639,789, Jan. 10, 1991. This application Nov. 30, 1992, Ser. No. 983,621

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—361 16 Claims



1. A work tool carriage for use at different times with different ones of a plurality of generally rectangular work tables supporting sheet material to be worked upon and each having a top, a bottom and two side surfaces, said carriage comprising:

a main frame which when the carriage is in working association with a work table extends transversely across the table,

a plurality of top wheels carried by said main frame and engageable with the top surface of a table for supporting said main frame for movement along the length of the table,

at least two side wheels carried by said main frame and engagable respectively with the two side surfaces of a table to restrain said main frame against lateral movement relative to the table,

at least one bottom wheel, and

a means mounting said at least one bottom wheel for movement relative to said main frame between an engaged position at which said bottom wheel is engagable with the bottom surface of the table to prevent said main frame

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from being moveable upwardly relative to the table and a disengaged position at which said at least one bottom wheel is positioned so as to free said main frame for vertical movement relative to a table to allow said carriage to be lifted vertically off of one table, to be then moved to a second table, and to be lowered onto said second table.

5,256,239

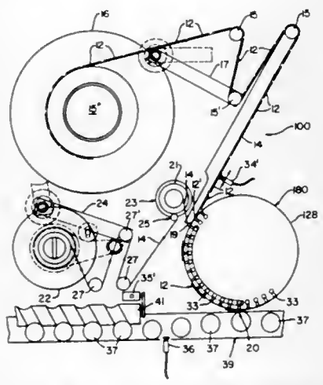
CONTINOUSLY MOVING WEB PRESSURE-SENSITIVE LABELER

Helmut Voltmer, Hackettstown, N.J., and Urs Reuteler, Lebanon, N.H., assignors to New Jersey Machine Inc., Lebanon, N.H.

Continuation-in-part of Ser. No. 695,425, May 3, 1991. This application Feb. 18, 1992, Ser. No. 837,754

Int. Cl.[5] B65C *9/00*

U.S. Cl. 156—362 **2 Claims**



1. A continuously moving web pressure-sensitive labeler for applying pressure-sensitive labels to articles moving in a given direction past a label applying station, wherein the labels are initially carried by the moving web, said labeler comprising label applying means for stripping labels from said moving web and delivering the stripped labels in said given direction onto articles as they pass said label applying station in said given direction, and means for generating a timing signal for timing the placing of labels in register on said label applying means,

wherein said stripping means include a peel plate,

further comprising a conveyor for carrying articles in said given direction past said label applying station and a rotatable timing screw for orienting articles on said conveyor in evenly spaced single file manner,

wherein said means for generating a timing signal include an encoder that is driven by said timing screw so that one revolution of said encoder corresponds to one revolution of said timing screw and hence to one pitch of said articles on said conveyor,

wherein said timing screw has an article exit end confronting said label applying station and said encoder is adjacent said article exit end of said timing screw,

wherein said vacuum drum is rotated such that its outer peripheral surface has a peripheral velocity that is related to the linear velocity of said conveyor in a predetermined ratio to achieve desired transfer of labels to the articles at said label applying station,

wherein while a terminal label is still adhered to the web, said outer peripheral surface of said vacuum drum is allowed to slip on said terminal label prior to complete release of said terminal label from said web at said peel plate,

further comprising a sensor that is movable along the path of the web in advance of said peel plate such that during initial setup of said labeler said movable sensor is positionable such that the leading edge of said terminal label is at said peel plate just as the leading edge of another label further back on said web covers said movable sensor and is thus in proper register therewith.

5,256,240

CORRUGATING MACHINE WITH A FLEXIBLE VESSEL PRESSURE APPLYING MEANS

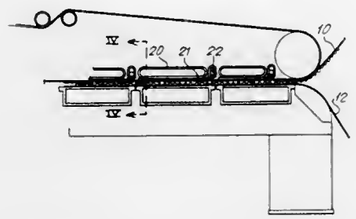
Frederick Shortt, Emilia, Italy, assignor to Simon Container Machinery Limited, Stockport, England

Continuation of Ser. No. 552,928, Jul. 13, 1990, abandoned. This application Mar. 25, 1992, Ser. No. 858,306

Claims priority, application United Kingdom, Jul. 18, 1989, 8916373; Oct. 25, 1989, 8924053

Int. Cl.[5] B31F *1/00*

U.S. Cl. 156—470 **8 Claims**



1. A corrugating machine in which a continuous single-faced corrugated board consisting of a corrugated sheet glued on one face to a first flat sheet and with glue applied to the exposed tips on the opposite face of the corrugated board, is to be brought together while continuously advanced through the machine with a second flat sheet to be adhered to said exposed tips, the machine comprising a stationary and substantially rigid hot plate surface over which the second flat sheet with the single-faced board superimposed thereon, is conveyed to cure the glue and produce a double faced board, and means to apply a load on a face of the double faced board which is remote from the hot plate surface to maintain thermal contact between the conveyed double faced board and the stationary hot plate surface; characterized in that said hot plate surface comprises a series of individual hot plates aligned in a direction of travel of the double faced board, in that said load applying means includes a series of flexible vessels aligned in the direction of travel of the double faced board and each separately containing a fluid medium and adapted to maintain said double faced board pressed uniformly against the hot plate surface as the double faced board is advanced over the hot plates during conveyance through the machine, thereby to conform to said surface irrespective of any undulation thereof, and wherein the fluid containing vessels rest upon at least one flexible plate which is fixed at one end thereof relative to said fluid containing vessels and which may assume a curvature about an axis extending in the direction of travel of the double faced boards.

5,256,241

METHOD FOR CONTROLLING PROTEIN CRYSTALLIZATION

David A. Noever, Belle Mina, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 28, 1992, Ser. No. 936,376

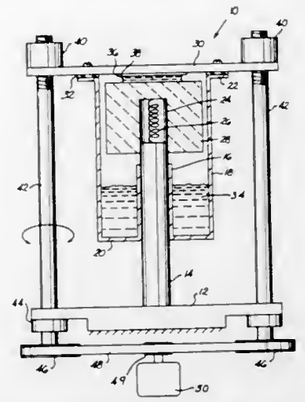
Int. Cl.[5] C30B *7/02*

U.S. Cl. 156—600 **2 Claims**

1. A method for controlling protein crystallization comprising:

(a) placing a drop of protein solution between two parallel plates so that the solution is engaged by both plates,

(b) evaporating a solvent from the protein solution engaged by both plates to crystallize the protein, and



(c) moving one of the plates relative to the other of the plates during evaporation of the solvent to vary the spacing therebetween while maintaining the contract of the drop with both plates thereby to vary a dimension of the drop between the plates and thus the surface area of the drop and the evaporation rate of solvent.

5,256,242

METHOD OF MANUFACTURING FERRITE CRYSTALS

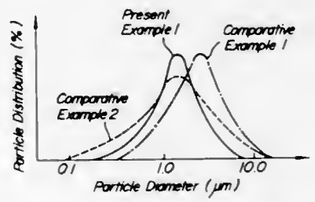
Minoru Imaeda; Emi Asai, and Katsunori Okamoto, all of Nagoya, Japan, assignors to NGK Insulators, Ltd., Japan

Filed Apr. 30, 1990, Ser. No. 516,907

Claims priority, application Japan, Apr. 28, 1989, 1-107791; Apr. 28, 1989, 1-107792; Aug. 29, 1989, 1-220178; Aug. 29, 1989, 1-220179; Apr. 20, 1990, 2-103194; Apr. 20, 1990, 2-103195

Int. Cl.[5] C04B *35/26*

U.S. Cl. 156—603 **7 Claims**



1. A method of manufacturing ferrite crystals with garnet structure, comprising the steps of:

preparing first and second ferrite powders each having garnet structure, said powders having components, the molar percentages of which are higher and lower, respectively, than a target composition;

mixing said first and second ferrite powders at a predetermined ratio to obtain a composition controlled ferrite powder such that the components of the composition controlled ferrite powder have molar percentages which are within 0.1 mol % of the target composition;

forming said composition controlled ferrite powder to obtain a formed body;

sintering said formed body to obtain a sintered body; and

subjecting said sintered body to a hot isostatic pressing treatment to obtain a ferrite polycrystal body.

5,256,243

PROCESS FOR PRODUCING TITANIUM CARBIDE WHISKER

Tohru Kida, Gotenba, Japan, assignor to Tokai Carbon Co., Ltd., Tokyo, Japan

Filed Nov. 12, 1991, Ser. No. 790,321

Claims priority, application Japan, Nov. 26, 1990, 2-323866

Int. Cl.[5] C01B *21/06*

U.S. Cl. 156—603 **3 Claims**

1. A process for producing a titanium carbide whisker, comprising the steps of: mixing 100 parts by weight of a titanium source comprising titanium dioxide and/or an alkali metal titanate with 50 to 22 parts by weight of a carbon source, 1 to 30 parts by weight of a transition metal chloride, and 10 to 100 parts by weight of an alkali metal chloride to produce a mixture; and heating the mixture at 1300° to 1700° C. in an inert gas atmosphere to produce a reaction product.

5,256,244

PRODUCTION OF DIFFUSE REFLECTIVE COATINGS BY ATOMIC LAYER EPITAXY

John F. Ackerman, Cheyenne, Wyo., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 10, 1992, Ser. No. 833,234

Int. Cl.[5] C30B *25/04*

U.S. Cl. 156—613 **6 Claims**

1. A method for depositing on a thermoplastic resin substrate a metal oxide coating which reflects light diffusely, which comprises subjecting said substrate to alternating feed pulses of a hydrolyzable chloride of said metal and of water at pressures in the range of about 180–1250 and about 150–650 millitorr respectively, with evacuation of the deposition system to a pressure in the range of about 80–100 millitorr between successive pulses; the pulse length being effective to produce a metal oxide layer with an average thickness of about 15–25 ÅAngstroms during a single pulse pair and the number of pulse pairs being effective to produce a coating with a thickness in the range of about 2–50 microns.

5,256,245

USE OF A CLEAN UP STEP TO FORM MORE VERTICAL PROFILES OF POLYCRYSTALLINE SILICON SIDEWALLS DURING THE MANUFACTURE OF A SEMICONDUCTOR DEVICE

David J. Keller, and Guy T. Blalock, both of Boise, Id., assignors to Micron Semiconductor, Inc., Boise, Id.

Filed Aug. 11, 1992, Ser. No. 928,922

Int. Cl.[5] H01L *21/306; B44C 1/22*

U.S. Cl. 156—643 **19 Claims**

8. A process to anisotropically etch a wafer on which a dielectric overlies a layer of silicide and silicon formed over a substrate in an etch chamber, the process comprising the steps of:

a) providing a parallel plate plasma etch reactor having a first electrode whereupon said substrate is mounted and a second electrode that is non-erodible by plasma;

b) providing a first atmosphere within said reactor, said atmosphere comprising CHF_3 and CF_4;

c) exposing said dielectric layer to a plasma wherein oxygen is liberated into said chamber;

d) providing, within said reactor, an atmosphere comprising He, O_2 and SF_6;

e) etching said silicide in said reactor by exposing the wafer to a plasma;

f) releasiing an oxygen-scavenging gas into said etch chamber;

g) exciting said oxygen-scavenging gas to chemically react said oxygen-scavenging gas with said liberated oxygen;

h) providing, within said reactor, an atmosphere comprising HBr and Cl_2;

i) etching said silicon in said reactor by exposing the wafer to a plasma.

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9. The process of claim 8, wherein said oxygen-scavenging gas is a carbonaceous gas.

5,256,246

METHOD FOR MANUFACTURING APERTURE ELECTRODE FOR CONTROLLING TONER SUPPLY OPERATION

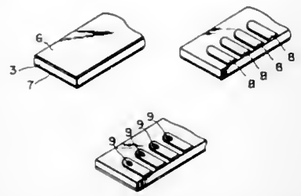
Tetsuya Kitamura, Gifu, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Division of Ser. No. 662,824, Mar. 1, 1991. This application Jan. 22, 1993, Ser. No. 8,567

Claims priority, application Japan, Mar. 5, 1990, 2-53351

Int. Cl.[5] B44C *1/22*; C23F *1/00*; C03C *15/00*

U.S. Cl. 156—643 13 Claims



6. A method of manufacturing an aperture electrode which has a plurality of apertures and equal plurality of control electrodes each being provided for each aperture, each of the control electrodes being selectively applied with an electrical voltage in accordance with an input image data for controlling flowing mode of toners passing through each of the apertures, the method comprising the steps of:

preparing a thin ceramic insulating substrate;

forming a plurality of metal layers each serving as the control electrodes on one surface of the substrate by a thin film forming process so as to be electrically separated from one another; and

forming the apertures substantially at a center of each control electrode so as to penetrate through the control electrodes and the substrate.

5,256,247

LIQUID ETCHANT COMPOSITION FOR THIN FILM RESISTOR ELEMENT

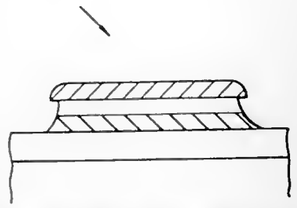
Takayoshi Watanabe, Fujisawa; Takashi Inoue, Yokohama; Hitoshi Oka, Yokohama, and Minoru Tanaka, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 21, 1991, Ser. No. 795,486

Claims priority, application Japan, Nov. 21, 1990, 2-314055

Int. Cl.[5] C23F *1/00*

U.S. Cl. 156—653 5 Claims



1. A method of forming a thin film resistor element comprising a laminate comprising a chromium, silicon and oxygen-containing film as a resistor and an aluminum film as a conductor on a substrate, which comprises preparing the chromium, silicon and oxygen-containing film on the substrate and subsequently the aluminum film on the chromium, silicon and oxygen-containing film to form a laminate, providing a photoresist pattern on the aluminum film, etching the aluminum film and then etching the chromium, silicon and oxygen-containing film with an aqueous etchant composition consisting of 1.92 to 2.64 mol/l of hydrochloric acid, 0.26 to 0.77 mol/l of phosphoric acid, 5 to 10 mol/l of hydrofluoric acid and 3.2 to 5.4 mol/l of ammonium fluoride.

5,256,248

METHOD FOR PATTERNING SEMICONDUCTOR

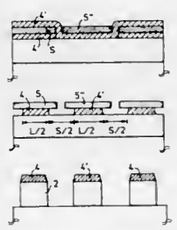
Young-Kwon Jun, Seoul, Rep. of Korea, assignor to GoldStar Electron Co., Ltd., Cheongju, Rep. of Korea

Filed Oct. 13, 1992, Ser. No. 959,852

Claims priority, application Rep. of Korea, Oct. 10, 1991, 91-17725

Int. Cl.[5] H01L *21/00*

U.S. Cl. 156—653 5 Claims



1. A method for patterning a layer on a semiconductor substrate comprising the steps of:

forming the layer to be patterned on the silicon substrate;

forming a first intermediate transcription layer on the layer to be patterned, the first intermediate transcription layer having a thickness of δ;

forming a first mask layer on the first intermediate transcription layer, the first mask layer having a large etch rate selectivity difference from that of the first intermediate transcription layer;

patterning the first mask layer and the first intermediate transcription layer to have a line width of L and a line space of S, where S is approximately equal to $L+2\delta$;

forming a second intermediate transcription layer with a thickness of approximately δ, the second intermediate transcription layer comprising the same material as the first intermediate transcription layer;

forming a second mask layer having a substantially flattened surface, the second mask layer comprising the same material as the first mask layer;

etching back the flattened second mask layer so as to expose a portion of the second intermediate transcription layer on the first mask layer;

forming a pattern of the first and second intermediate transcription layers with a line width and a line space approximately equal to L/2 and S/2, respectively, by isotropic etching partially the first and second intermediate transcription layers; and

removing the remaining portions of the first and second mask layers;

transcribing the pattern of the first and second intermediate transcription layers to the layer to be patterned by anisotropic dry etching the layer to be patterned, wherein the first and second intermediate transcription layers serve as a mask; and

removing the first and second intermediate transcription layers.

5,256,249

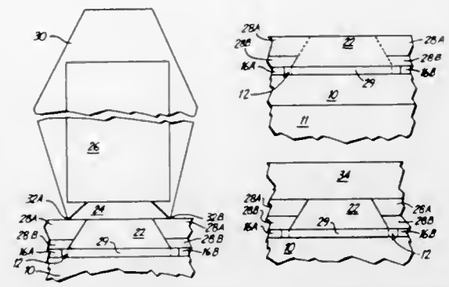
METHOD OF MANUFACTURING A PLANARIZED MAGNETORESISTIVE SENSOR

Wei C. Hsie, Edeo Prairie, and Michael M. Collver, Afton, both of Minn., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Sep. 17, 1991, Ser. No. 761,001

Int. Cl.[5] B44C *1/22*; C23F *1/00*

U.S. Cl. 156—656 13 Claims



1. A method of manufacturing a magnetoresistive sensor comprising:

depositing a magnetoresistive element having an active region upon a substrate;

depositing a track width oxide layer over the active region of the magnetoresistive element;

applying a sacrificial mask layer over the track width oxide layer;

depositing a contact material over the sacrificial mask layer and adjacent the track width oxide layer;

lifting off a portion of the contact material, thereby forming first and second contacts adjacent the active region and electrically coupled to the active region; and

removing the sacrificial mask layer.

5,256,250

THIN FILM EVAPORATOR

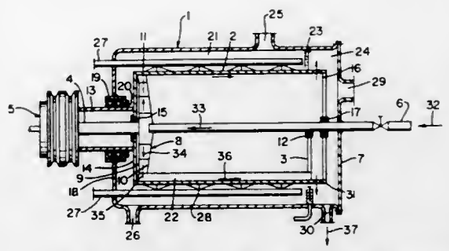
Rudolf Pelzer, Auf der Pief 37, Herzogenrath, Fed. Rep. of Germany

Filed Jul. 20, 1992, Ser. No. 916,411

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1991, 4124337

Int. Cl.[5] B01D *1/22*

U.S. Cl. 159—6.3 5 Claims



1. A thin film evaporator for the evaporation of solutions, colloids and suspensions, comprising:

a housing having an exit for removal of vapor and an exit for removal of concentrate,

a heatable, rotatable, evaporator casing within said housing having an interior cylindrical surface whose cylindrical axis is horizontally positioned,

a feed distributor whose distal edge is proximate to the interior surface of the evaporator casing,

a hollow pipe, for the feed into the evaporator of material to be evaporated,

a portion of said pipe being disposed inside the evaporator casing and extending substantially through the length of the evaporator casing, and having its axis coaxial with the cylindrical axis of the evaporator casing,

one end of the evaporator casing being rotatably supported by the feed pipe,

the other end of the feed pipe communicating with said feed distributor,

a rotatable member located within the evaporator casing and having an axis of rotation that is coaxial with the cylindrical axis of the evaporator casing,

at least one wiper element rotating with the rotatable member and positioned adjacent the interior surface of the evaporator casing,

the rotatable evaporator casing and the rotatable member being attached to a drive by a common planetary gear,

whereby the rate of rotation of the said casing and the rate of rotation of the said rotatable member can be selectively set to be the same as or to be different from each other.

5,256,251

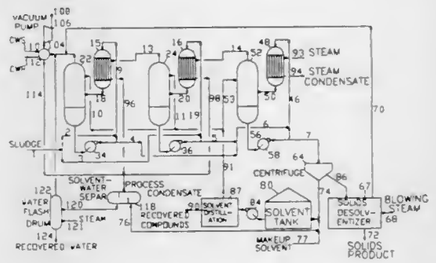
PROCESS FOR DRYING AND SOLVENT-EXTRACTION OF SOLIDS AND SLUDGES

Thomas C. Holcombe, Mountain Lakes, N.J., assignor to Hanover Research, East Hanover, N.J.

Filed Jun. 10, 1991, Ser. No. 712,723

Int. Cl.[5] B01D *1/26*; C02F *1/04*

U.S. Cl. 159—47.3 11 Claims



1. A continuous evaporation process comprising the steps of:

(a) Using a water immiscible solvent for drying water-containing waste solids into a dehydrated product, with virtually all of the water removed from the dehydrated product, and with minimal formation of sticky solids;

(b) forming a wet slurry mixture of said water containing waste solids and said water immiscible solvent, with said water immiscible solvent composed of a hydrocarbon compound having an atmospheric boiling point above 300° F. and a viscosity of less than 500 centipoise;

(c) passing said wet slurry mixture through a dehydration operation to remove virtually all of the water from said waste solids, with minimal formation of sticky solids, and with said dehydration operation including a plurality of at least three stages of evaporation;

(d) feeding said wet slurry mixture concurrently to at least the first two stages of evaporation arranged in parallel, and to the final stage of evaporation arranged in series;

(e) separating the dehydrated waste solids from the water immiscible solvent from the final stage of evaporation; and

(f) recycling said water immiscible solvent separated from said dehydrated waste solids in said continuous process for forming said wet slurry mixture.

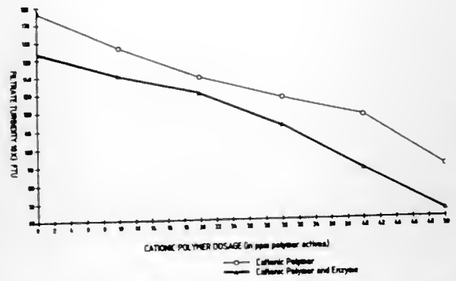
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5,256,252

METHOD FOR CONTROLLING PITCH DEPOSITS USING LIPASE AND CATIONIC POLYMER

Jawed M. Sarkar, Naperville, and Martha R. Finck, Countryside, both of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Jul. 15, 1992, Ser. No. 913,648
Int. Cl.[5] D21C 3/20
U.S. Cl. 162—72 20 Claims



1. A method of controlling pitch deposits in a pulp and papermaking process comprising:

adding lipase and a cationic polymer to a triglyceride-containing papermaking cellulosic slurry, said cellulosic slurry having an aqueous phase, wherein said lipase is added in an amount effective to reduce the content of said triglyceride in said cellulosic slurry by hydrolysis of said triglyceride to glycerol and fatty acids, wherein said triglyceride content reduction diminishes pitch deposits from said cellulosic slurry in a pulp and/or paper mill, and said cationic polymer is added in an amount effective to enhance said diminishing of pitch deposits activity of said lipase at least in part by diminishing the concentration of said fatty acids in said aqueous phase of said cellulosic slurry.

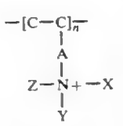
5,256,253

METHODS FOR INHIBITING BARIUM SULFATE DEPOSITION USING A POLY(AMINE)COMPOUND OR ITS SALTS IN PAPERMAKING SYSTEMS

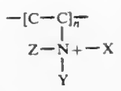
Davor F. Zidovec; Alexander D. Fisher, and David D. Dreisbach, all of Jacksonville, Fla., assignors to Betz PaperChem Inc., Jacksonville, Fla.

Filed Aug. 24, 1992, Ser. No. 934,841
Int. Cl.[5] D21H 17/56
U.S. Cl. 162—164.6 11 Claims

1. A method for inhibiting the formation and deposition of barium sulfate on the surfaces of papermaking systems comprising adding to said papermaking systems a poly(amine) compound or a salt thereof having the structure



or



where A is a hydrocarbon chain containing from I to 5 carbon atoms, n ranges from 3 to about 500, and X, Y and Z are hydrogen or alkyl groups.

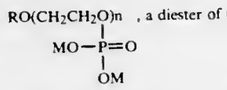
5,256,254

METHODS OF CONTROLLING DEPOSITION IN A PAPER MACHINE DRYER SECTION

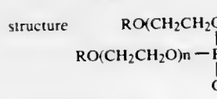
Jacqueline K. Pease; Dennis W. Barton, and Glenn J. Henderson, all of Jacksonville, Fla., assignors to Betz PaperChem, Inc., Jacksonville, Fla.

Filed Jul. 12, 1991, Ser. No. 729,524
The portion of the term of this patent subsequent to Dec. 1, 2009, has been disclaimed.
Int. Cl.[5] D21F 1/32
U.S. Cl. 162—199 3 Claims

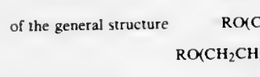
1. A method of inhibiting deposition and adherency of tacky materials from pulp in a pulpmaking or papermaking system comprising subjecting the pulp, in the form of a paper web to water sprays and showers, said water sprays or showers including a sufficient amount for purpose of a deposit control agent comprising a phosphate ester wherein said phosphate ester is a mono ester of the general structure



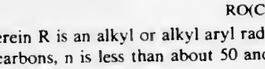
, a diester of the general



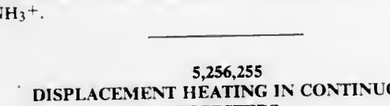
structure



, or a triester



of the general structure



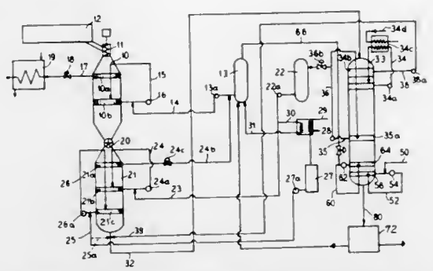
wherein R is an alkyl or alkyl aryl radical having up to about 30 carbons, n is less than about 50 and M is H, Na^+, K^+ or NH_3^+.

5,256,255

DISPLACEMENT HEATING IN CONTINUOUS DIGESTERS

Bertil K. E. Fagerlund, Ponte Vedra, Fla., assignor to Beloit Technologies, Inc., Wilmington, Del.

Continuation of Ser. No. 413,920, Sep. 28, 1989, abandoned. This application Mar. 24, 1992, Ser. No. 856,859
Int. Cl.[5] D21C 7/10, 7/14
U.S. Cl. 162—237 6 Claims



1. A digester apparatus for the liberation of cellulosic fibrous material for papermaking pulp using cookingliquor ata high pressure and a high temperature in a continuous process, comprising in combination:

a first chamber;

feed means for delivering cellulosic wood chips to said first chamber and for transporting said chips through said first chamber in continuous transport;

a low temperature black liquor tank connected to the first chamber for circulating low temperature black liquor through the chips in said first chamber, at least a portion fof the black liquor flowing counter-currently to the downward movement of the chip column, the exchange of heat energy to increase the temperature of the chips and to convey residual chemicals to the chips;

a second chamber connected to receiver chips preheated by said low temperature liquor from the first chamber;

a feed mechanism connected between said chambers for delivering the chips to the second chamber continuously;

a high temperature black liquor tank connected to said second chamber for circulating high temperature black liquor through the chips in at leasst one liquor flow circuit moving countercurrently through the chips in said second chamber, for the exchange of heat energy to bring the temperature of the chips near digesting temperature and to convey residual chemicals to the chips;

an outlet means leading from the second chamber for a continuous delivery of preheated chips to a continuous digester, and

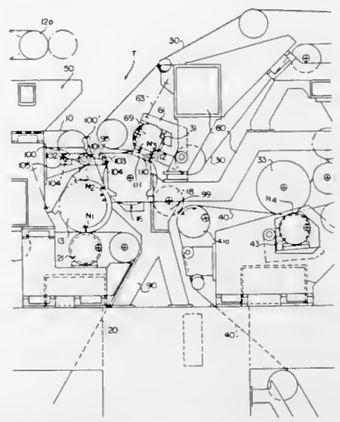
means for supplying low temperature liquor to said low temperature liquor tank, and high temperature liquor to said high temperature liquor tank, said low and high temperature liquors being displaced from pulp treated in said digester and being supplied to said low temperature liquor tank and said high temperature liquor tanks.

5,256,256

FRAME CONSTRUCTION FOR A PRESS SECTION OF A PAPER MACHINE

Markku Autio, Jyvaskyla, Finland, assignor to Valmet Paper Machinery Inc., Finland

Continuation of Ser. No. 490,753, Mar. 8, 1990, Pat. No. 5,049,239, which is a continuation-in-part of Ser. No. 181,739, Apr. 14, 1988, abandoned. This application Sep. 12, 1991, Ser. No. 758,763
Claims priority, application Finland, Apr. 14, 1987, 871649
The portion of the term of this patent subsequent to Sep. 17, 2008, has been disclaimed.
Int. Cl.[5] D21F 3/04
U.S. Cl. 162—274 32 Claims



1. A press section of a paper machine, said press section comprising, in a running direction of a paper web through the press section;

a front frame,

an intermediate frame having a central roll of a compact press roll combination mounted thereon; and

a rear frame separate from and not permanently connected to said front frame,

a plurality of press rolls mounted on said front and rear frames, at least some of which form said compact press roll combination in which there are press nips through which press fabric is passed, said compact press roll combination comprising said central roll and two other press rolls which each form a respective press nip with said central roll,

wherein a space is formed between said frames and above the press roll combination, said space being constantly at least partially open or openable such that respective ones of said press rolls of said press roll combination are accessible for removal from said paper machine,

the press rolls of the press combination being replaceable through said space which also facilitates replacement of the press fabric, and

one of said press rolls being mounted on an intermediate part separate from said front frame and pivotally mounted upon said rear frame at a rear part of said open space and being pivotable by an actuating device to an upper position for replacement of press rolls or fabric, said intermediate part extending above said one of said press rolls and terminating approximately in the same vertical plane as the front of said one of said press rolls when it is in a position forming one of said nips with said central press roll,

a lever element for openably interconnecting said front frame and said intermediate frame, said lever element being articulated to one of said front and intermediate frames so as to be pivotable between a closed operating position in which it interconnects said front and intermediate frames, and an open position in which it is disconnected from the other of said front and intermediate frames, such that an upper felt can be changed when said lever is in said open position, said lever element having first and second projection parts structured to respectively fit into first and second mating parts of said front and intermediate frames, said lever element having a pivot joint located approximately midway between said first and second projection parts.

5,256,257

PRESS BELT SUPPORT FOR COMPACT PRESS SECTION OF PAPER MAKING MACHINE

Christian Schiel, Heidenheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Fed. Rep. of Germany

Filed Jan. 27, 1992, Ser. No. 826,364
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1991, 4102356
Int. Cl.[5] D21F 3/04
U.S. Cl. 162—360.3 28 Claims

1. A press section for a machine for manufacturing a paper web, comprising:

a central roll having a periphery with a circumference; a first press roll engaging the central roll at a first circumferential location around the periphery of the central roll and defining a first press nip; a second press roll engaging the central roll at a second circumferential location around the periphery of the central roll and defining a second press nip; the periphery of the central roll rotating in a direction from the first press nip to the second press nip;

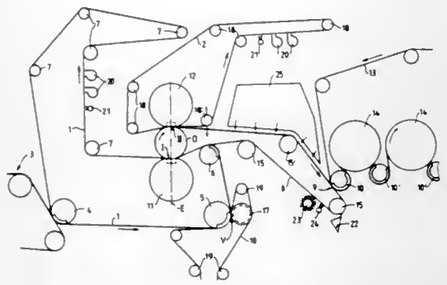
a substantially water impervious, endless press belt engaging the central roll in front of the first press nip, moving through the first nip, traveling around the central roll to and through the second press nip and leaving the central roll after the second press nip;

a removal place in the press section after the second nip at which the web being dewatered in the press section is to be removed from the press belt, and means at the removal place for removing the web from the press belt;

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means guiding the press belt so that the press belt can support the web while the press belt moves from in front of the first hip, to and through the first nip, around the periphery of the central roll, to and through the second nip, off the central roll and to the removal place at which the web is removed from the press belt;

the press belt being of a length and the removal place being so placed that the travel distance of the press belt from the second press nip to the removal place is at least the circumference of the central roll;



wherein said travel distance is sufficient to permit at least some web fibers which have been flattened in the first and second press nips to become at least partially erect so as to decrease contact between the fibers and the press belt and thereby decrease resistance of the web to removal from the press belt, thereby improving ease of removal of the web from the press belt at the removal place; and

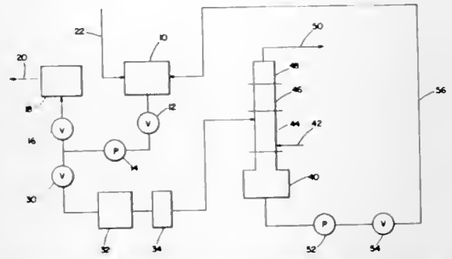
wherein the press belt supports the web from below, and the web is free of any applied pressure from above, during said travel distance from the second press nip to the removal place.

5,256,258

REMOVAL OF LOW-BOILING FRACTIONS FROM HIGH TEMPERATURE HEAT TRANSFER SYSTEMS

Walter F. Seifert; Gary R. Buske, and John B. Cuthbert, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 27, 1991, Ser. No. 800,783
Int. Cl.[5] B01D *3/34*
U.S. Cl. 203—49 **6 Claims**



1. A process for removing low-boiling constituents from an organic heat transfer fluid, the low-boiling constituents having a boiling point below that of the organic heat transfer fluid, comprising the steps of:

(A) removing a portion of an organic heat transfer fluid from a heat transfer system;

(B) passing countercurrently a stripping gas, in an amount sufficient to vaporize at least a portion of the low-boiling constituents, through a moving stream of the organic heat transfer fluid;

(C) separating the stripping gas containing low-boiling constituents from the organic heat transfer fluid;

(D) returning the organic heat transfer fluid to the heat transfer system;

(E) removing organic heat transfer fluid from the stripping gas containing low-boiling constituents of Step (C);

(F) combusting the stripping gas containing low-boiling constituents from Step (E); and

(G) returning the organic heat transfer fluid removed from the stripping gas containing obtained from Step (E) low-boiling constituents to the heat transfer system.

5,256,259

SEPARATION OF HEXANE FROM VINYL ACETATE BY AZEOTROPIC DISTILLATION

Lloyd Berg, and Randi W. Wytcherley, both of Bozeman, Mont., assignors to Lloyd Berg, Bozeman, Mont.

Filed Mar. 29, 1993, Ser. No. 38,497
Int. Cl.[5] B01D *3/36;* **C07C** *7/08, 67/54*
U.S. Cl. 203—57 **2 Claims**

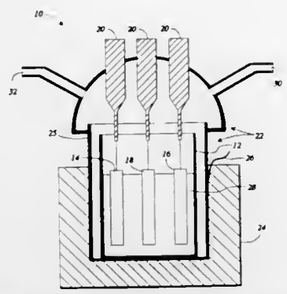
1. A method for recovering hexane from a mixture of hexane and vinyl acetate which comprises distilling a mixture of hexane and vinyl acetate in the presence of an azeotrope forming agent, recovering the hexane and the azeotrope forming agent as overhead product and obtaining the vinyl acetate from the stillpot, wherein said azeotrope forming agent comprises a material selected from the group consisting of acetone, methanol, acetonitrile, methyl acetate, ethyl formate and nitromethane.

5,256,260

METHOD AND APPARATUS FOR THE ELECTRODEPOSITION OF BISMUTH BASED MATERIALS AND SUPERCONDUCTORS

Michael L. Norton, Huntington, W. Va., and Horng-Yi Tang, Feng-Yuan, Taiwan, assignors to University of Georgia Research Foundation, Athens, Ga.

Filed Aug. 16, 1991, Ser. No. 745,925
Int. Cl.[5] C25C *3/02*
U.S. Cl. 204—71 **12 Claims**



1. A method for the electrochemical deposition of bismuth based materials and superconductors using molten salt electrocrystalization, comprising the steps of:

(a) providing a melt solution comprising a barium-based component and a bismuth-based component;

(b) maintaining said melt solution at a temperature which is sufficient to sustain said melt solution in a molten state and is below about 400° C.

(c) providing an anode and a cathode and a bismuth reference electrode and suspending said anode, said cathode and said electrode within said melt solution; and

(d) electrodepositing a bismuth based material onto said anode while maintaining a substantially constant potential at the anode with reference to the bismuth reference electrode.

5,256,261

MEMBRANE CELL OPERATION

Marek Lipsztajn, Rexdale, and John Rizzi, Mississauga, both of Canada, assignors to Sterling Canada, Inc., Houston, Tex.

Filed Aug. 21, 1992, Ser. No. 933,108
Int. Cl.[5] C25B *1/16*
U.S. Cl. 204—98 **7 Claims**

1. A method of operating an electrolytic cell wherein anode and cathode compartments are separated by an ion-exchange membrane, which comprises:

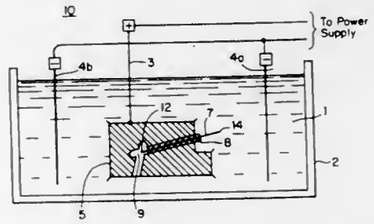
decreasing the operating voltage of said cell by maintaining a catholyte in said cathode compartment at a temperature which is at least 10° C. higher than an anolyte in said anode compartment.

5,256,262

SYSTEM AND METHOD FOR ELECTROLYTIC DEBURRING

Karl-Ingemar Blomsterberg, Nansensgatan 38, S-417 19 Gothenburg, Sweden

Filed May 8, 1992, Ser. No. 879,923
Int. Cl.[5] B23H *9/02*
U.S. Cl. 204—129.1 **18 Claims**



1. An electrolytic deburring system, comprising:

means for containing an electrolyte;

cathode means for applying a cathodic potential in said electrolyte;

means for connecting an anodic potential to a part to be deburred when in contact with said electrolyte; and

a conductive element within said container with at least a first end being between said cathode means and said part to change the current flow between said part and said cathode means for altering the deburring of the part; said first end being spaced from said cathode means to prevent direct connection to said cathode means.

5,256,263

METHOD OF PURIFYING LACUSTRINE WATER AND FILTHY WATER PURIFICATION

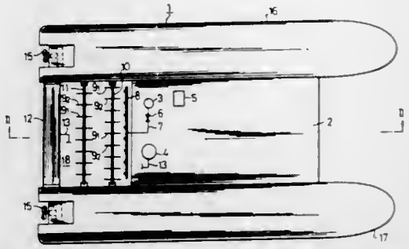
Masakuni Kanai, 108, Hayama Ekohaitsu, 1750, Issbiki, Hayama-machi, Miura-gun, Kanagawa, 240-01, Japan

PCT No. PCT/JP91/00469, § 371 Date Dec. 6, 1991, § 102(e) Date Dec. 6, 1991, PCT Pub. No. WO91/15431, PCT Pub. Date Oct. 17, 1991
PCT Filed Apr. 9, 1991, Ser. No. 777,293
Claims priority, application Japan, Apr. 9, 1990, 2-92335
Int. Cl.[5] C02F *1/46*
U.S. Cl. 204—149 **14 Claims**

6. A method of purifying a large body of lacustrine water with a boat that can be propelled across the water, the boat having means for dispensing a coagulant agent, an electrolyzing apparatus suspended from the boat in the water, and a chemical agent to be suspended in the water adjacent the electrolyzing apparatus so that it can be electrolyzed to produce ions to react with organic substances, comprising the steps of:

propelling the boat through the water;

suspending a quantity of chemical agent in a fixed position in the water relative to the propelled boat;



activating the electrolyzing apparatus to electrolyze the chemical agent to produce ions for reaction with organic substances in the water; and

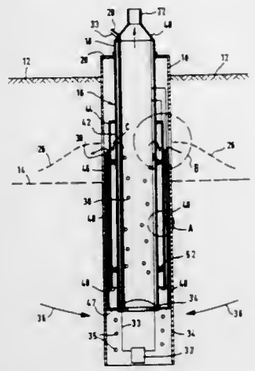
concurrently dispensing a coagulant upstream of a site of reaction of the ions with the organic substances to be propelled by the water relative to the boat for coagulating any resulting flocks formed by the reaction.

5,256,264

PROCESS AND APPARATUS FOR THE IN-SITU DECONTAMINATION OF GROUND WATER CONTAINING HEAVY METALS

Bernd Hundenborn, and Hubert Theissen, both of Berlin, Fed. Rep. of Germany, assignors to Santec GmbH Ingenieurburo fur Sanierungstechnologien, Berlin, Fed. Rep. of Germany

Filed Oct. 31, 1991, Ser. No. 785,747
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1990, 4035110
Int. Cl.[5] C02F *1/46*
U.S. Cl. 204—149 **7 Claims**



1. Process for the in-situ decontamination of ground water containing heavy metals, comprising:

introducing pressurized gas into the ground area beneath the water table to produce a local elevation of the ground water table in the area of gasification and create circulating flow of the ground water;

applying an electric potential to a portion of the ground water flow resulting from the circulation of the ground water; and

capturing in an ion exchanger the heavy metal ions migrating from the ground water flow under the influence of the electric potential.

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5,256,265

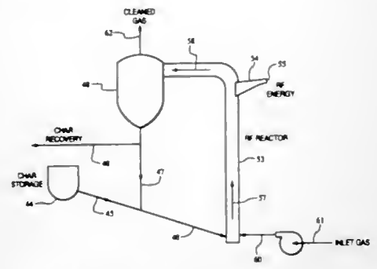
PROCESS FOR OXIDE REACTIONS BY RADIOFREQUENCY-CHAR CATALYSIS

Chang Y. Cha, 3807 Reynolds St., Laramie, Wyo. 82070

Continuation-in-part of Ser. No. 895,962, Jun. 9, 1992, which is a continuation-in-part of Ser. No. 670,842, Mar. 18, 1991. This application Nov. 12, 1992, Ser. No. 975,038

Int. Cl.[5] B01D *53/00*

U.S. Cl. 204—157.3 **11 Claims**



1. A process for the catalysis of conversion reactions comprising:

employing pyrolytic carbon;

bringing oxides in close proximity to said pyrolytic carbon; and

applying radiofrequency energy.

5,256,266

ALUMINA MATERIAL USEFUL WITH THIN FILM HEADS

Curtis N. Blanchette, Los Gatos; David P. Maddex, and Richard F. Shimek, both of San Jose, all of Calif., assignors to Read-Rite Corporation, Milpitas, Calif.

Filed Oct. 31, 1991, Ser. No. 786,095

Int. Cl.[5] C23C *14/34*

U.S. Cl. 204—192.3 **10 Claims**

1. A process for producing alumina having a crypto-crystalline structure with crystal size less than one micron without the application of external heat comprising the steps of:

positioning an aluminum oxide target within the chamber of a sputtering system;

positioning a ceramic substrate in juxtaposition to said target within said chamber;

presputtering said target by introducing argon gas into said system at a given pressure;

sputter etching said substrate in an atmosphere of said gas at said given pressure;

sputtering alumina on said substrate including the step of introducing a gas mixture of argon and air at a pressure greater than said given pressure without the addition of heat from an external source whereby a crypto-crystalline structure with crystal size less than one micron is produced.

5,256,267

RESISTORED SACRIFICIAL ANODE ASSEMBLY FOR METAL TANK

James S. Roden, Montgomery, Ala., assignor to Rheem Manufacturing Company, New York, N.Y.

Filed Jan. 14, 1993, Ser. No. 4,724

Int. Cl.[5] C23F *13/00*

U.S. Cl. 204—196 **10 Claims**

1. A sacrificial anode assembly insertable into a liquid storage vessel and operative to cathodically inhibit corrosion thereof, said sacrificial anode assembly comprising;

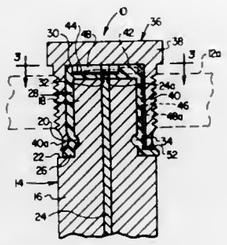
an elongated metal anode member having a core wire extending axially therethrough and projecting outwardly through an end of said anode member;

an insulating sleeve member receiving and being captively retained on said end of said anode member, said insulating sleeve member having:

an end wall portion with a central opening that receives an end portion of said core wire, and

an exterior surface groove formed in said end wall portion and having a first generally straight section extending into said central opening and having an end spaced apart therefrom, a second generally straight section offset from said first section and having an end spaced apart from said central opening, and a curved third section joining said ends of said first and second sections;

a hollow metal cap member receiving and captively retained on said insulating sleeve member; and



an electrical resistor having:

a cylindrical body portion received in said second section of said groove in a spaced apart relationship with said end thereof,

a first electrical lead wire extending from one end of said resistor body portion sequentially through a portion of said second groove section, said curved third groove section, said first groove section, and across said central opening, said first electrical lead wire having an outer end portion fixedly and conductively secured to said end portion of said core wire, and

a second electrical lead wire extending from the opposite end of said resistor body portion and being fixedly and conductively secured to said cap member.

5,256,268

WATER TREATMENT METHOD AND APPARATUS

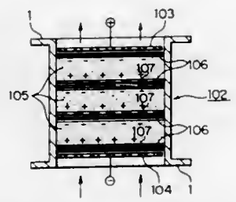
Nobutaka Goto, and Hiroyuki Hashimoto, both of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 730,209, Jul. 15, 1991, abandoned. This application Nov. 16, 1992, Ser. No. 976,685

Claims priority, application Japan, Jul. 18, 1990, 2-189737; Sep. 3, 1990, 2-232946; Nov. 30, 1990, 2-341139; Jan. 24, 1991, 3-22606

Int. Cl.[5] C02F *1/46;* **C25B** *9/00*

U.S. Cl. 204—268 **11 Claims**



1. An apparatus for the treatment of water comprising a container having an inlet and an outlet, said container adapted to permit said water to flow along a flow path from said inlet to said outlet,

an electrode array in said flow path and comprising an anode and a cathode, said array adapted to generate an electric field between said anode and said cathode, said anode and said cathode being perforated to permit passage of said water therethrough;

a first electrode having a rigid carbonaceous porous body between said anode and said cathode and adapted to distribute an electric charge therein, said electric charge generated by said electric field, said porous body having a first portion and a second portion, said first portion being directed toward said cathode so that a positive electric charge is induced therein, said second portion being directed toward said anode so that a negative electric charge is induced therein; and

a second perforated electrode on a surface of said first portion, wherein said second perforated electrode is stronger in tendency toward oxygen gas generation than said first portion.

5,256,269

METHOD AND APPARATUS FOR SEPARATING BIOLOGICAL SUBSTANCES AND ORGANIC COMPOUNDS IN SOLUTION

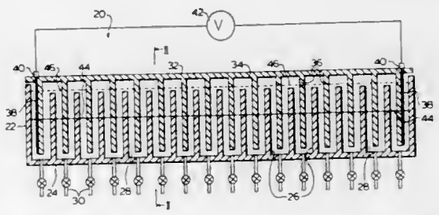
Otto Sova, Kosice, Czechoslovakia, assignor to 908098 Ontario Inc., Oakville, Canada

Filed Dec. 3, 1991, Ser. No. 801,759

Claims priority, application Canada, Dec. 14, 1990, 2032255

Int. Cl.[5] G01N *27/26, 27/447*

U.S. Cl. 204—299 R **29 Claims**



1. A static cell apparatus for separating materials in an electrically conductive fluid on the basis of differences in isoelectric points, comprising:

a) a plurality of separate, adjacent, non-conducting fluid containers arranged in a horizontal array and adapted to contain said electrically conductive fluid;

b) means for establishing a continuous current flow path through the fluid between the containers, said establishing means comprising fluid flow channels extending between adjacent fluid containers and located below top edges of the containers, the cross sectional area of the flow path being small compared to the cross sectional area of said containers perpendicular to the current flow path in order to suppress convection currents between adjacent containers when said fluid is contained therein;

c) valves provided in said flow channels for stopping flow of said fluid between adjacent fluid containers; and

d) two electrodes each located in a respective one of two of said containers wherein the electrodes are adapted to be coupled to an external power supply.

5,256,270

ELECTROSTATIC SEPARATING APPARATUS

Toshiyuki Tokumoto, 16-204, Minami Sojijicho 7-ban, Takatsuki-shi, Osaka, Japan

Filed Nov. 26, 1991, Ser. No. 798,218

Claims priority, application Japan, Nov. 29, 1990, 2-339804

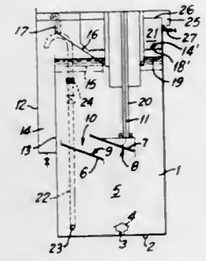
Int. Cl.[5] B03C *5/02;* **C02F** *1/46*

U.S. Cl. 204—302 **2 Claims**

1. An electrostatic separating apparatus comprising a tank which contains an insulating solvent solution and has a feed inlet at the bottom thereof for the liquid to be treated, and a pair of opposed electrodes which are provided in said solvent solution, and means for applying a high direct current voltage between said electrodes, a side wall of said tank being a double wall forming a main pocket between an inner wall and outer wall, an upper edge of said inner wall being formed above the upper surface of said solvent solution to overflow floated impurities of an intermediate layer formed on the upper surface of the solvent solution from the upper edge of said inner wall to said main pocket, characterized in that:

said electrodes are present eccentrically in said tank and are positioned toward said inner wall, upward against a horizontal plane at an angle of 25° to 40°,

a porous rectifying plate is provided substantially horizontally above said electrodes but below an upper edge of said inner wall,



a blind baffle plate is provided inclined upward from the center of the tank to the upper part of said main pocket above said porous rectifying plate, and a porous plate is provided substantially vertically to the upper part of said blind baffle plate,

a discharge outlet for treated water is provided on the upper part of a side wall of said tank opposite to said main pocket,

a water rectifier is provided over said feed inlet or the liquid to be treated, and

a pipe for automatic discharge of the solvent is provided in the tank such that a solvent suction opening at one end of said pipe is placed lower than the horizontal position of the water rectifier in said tank.

5,256,271

METHOD OF IMMOBILIZING BIOFUNCTIONAL MATERIAL, AND ELEMENT PREPARED THEREBY, AND MEASUREMENT BY USING THE SAME ELEMENT

Yoshihito Ikariyama, Tokorosawa; Shigeru Yamauchi, Tokyo, and Tomoaki Yukiashi, Funabashi, all of Japan, assignors to Japan as represented by President of National Rehabilitation and Sumitomo Cement Co., Ltd., both of Japan

Continuation-in-part of Ser. No. 294,660, Mar. 11, 1989, which is a continuation of Ser. No. 492,849, Mar. 13, 1990. This application Jun. 17, 1992, Ser. No. 714,901

Claims priority, application Japan, Mar. 17, 1987, 62-55387; Dec. 3, 1987, 62-304524

Int. Cl.[5] G01N *27/26*

U.S. Cl. 204—403 **20 Claims**

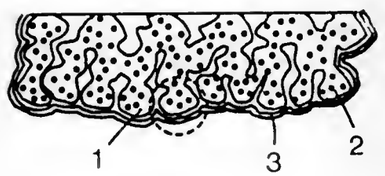
1. A microbioelectrode produced by direct immobilization of a biologically active substance on a surface of an electrically conductive material which comprises the steps of:

(a) depositing fine particles of noble metal or a compound selected from the group consisting of platinum black, gold black, particulate rhodium oxide, palladium black and iridium black on the surface of an electroconductive material so as to form a porous conductive material or a conductive fine particle layer on said surface;

(b) immersing the resulting porous conductive material or conductive fine particle layer in a solution containing an active substance so as to impregnate the active substance

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deeply into the conductive porous material or conductive fine particle layer; and



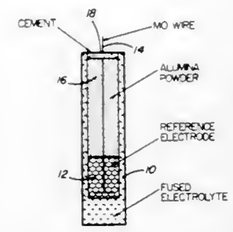
(c) treating said porous conductive material or conductive fine particle layer by anodic oxidation.

5,256,272

ELECTROCHEMICAL SENSOR FOR DETERMINING THE LEVEL OF A CERTAIN METAL IN METALS AND ALLOYS

Charles B. Alcock, 310 Runaway Bay, Apt. 3C, Michawaka, Ind. 46545, and Baozhen Li, 143 E. Cripe St., South Bend, Ind. 46637

Filed Mar. 10, 1992, Ser. No. 848,872
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—421 7 Claims



1. An electrochemical sensor for determination of the activity of a certain metal contained in a metal or alloy being tested comprising:

a solid electrolyte consisting of a solid solution of about 70% strontium fluoride and about 30% mol. lanthanum fluoride to which is added a dispersed phase of a fluoride of said certain metal, a reference electrode of known concentration of said certain metal having an activity to be determined placed in contact with one face of said electrolyte, an opposite face of said solid electrolyte being in contact with the metal or alloy being tested, and means for measuring the chemical potential difference between said reference electrode and said metal or alloy being tested.

5,256,273

MICRO FUEL-CELL OXYGEN GAS SENSOR

John P. Gallagher, deceased, late of Jupiter, Fla. by Janice M. Gallagher, legal representative , and Robert J. Masi, Littleton, Mass., assignors to Delta F Corporation, Woburn, Mass.

Filed Apr. 7, 1992, Ser. No. 864,491
Int. Cl.[5] G01A *27/26*
U.S. Cl. 204—424 14 Claims

1. A system for measuring in ppb the amount of oxygen in a gas which comprises:

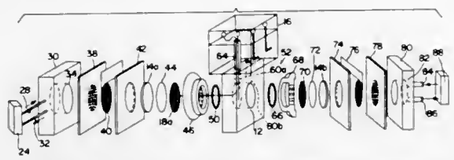
an electrochemical cell having an anode and a cathode catalytically specific for oxygen and an electrolyte;

means to establish an electrolytic path between the cathode and the anode;

means to meter the oxygen to the cathode based on gaseous phase diffusion to provide a measurement proportional to volumetric concentration;

means to reduce the oxygen at the cathode to form hydroxyl ions;

means to meter the hydrogen to the anode the hydrogen being substantially pure and metered at a stable delivery



pressure such that the hydrogen is always maintained in excess relative to the oxygen being reduced at the cathode;

means to oxidize the hydrogen at the anode to form water and to establish a current, which current is linear to the volumetric concentration of oxygen in the sample gas; and

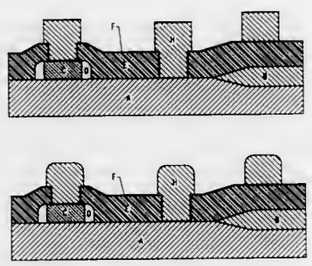
means to measure the oxygen reduced.

5,256,274

SELECTIVE METAL ELECTRODEPOSITION PROCESS

Jaime Poris, 409 Capitola Ave., Capitola, Calif. 95010

Continuation-in-part of Ser. No. 561,168, Aug. 1, 1990. This application Nov. 22, 1991, Ser. No. 799,734
Int. Cl.[5] C25D *1/00*
U.S. Cl. 205—123 9 Claims



3. A wafer level sub micron interconnect metallization process for electrodeposition of metal such as copper, silver or gold onto a semiconductor wafer having an active layer such as silicon, said process comprising the steps of

providing a semiconductor wafer with active device semiconductor,

depositing, using a diffusion barrier deposition process, an electrically conducting layer on said wafer to provide adequate adhesion to said wafer, to provide ohmic contact to said wafer and to prevent metal diffusion to said active device semiconductor or other semiconductor areas of said wafer,

depositing, using an electrically conducting nucleation layer deposition process, an ohmic contact to diffusion barrier layer which provides a sufficient adhesion surface and nucleation surface for the electrodeposited metal,

placing a non-conducting mask onto said diffusion barrier/-nucleation layer on said semiconductor wafer,

selectively depositing said metal onto said diffusion barrier/-nucleation layer on said semiconductor wafer to form one or more lines having corners and edges,

removing the non-conducting mask while not adversely affecting the electrodeposited metal, and

electrochemically etching to increase a radius of curvature of the corners and edges of metal lines to simplify planarization processing and decrease line to line capacitance.

5,256,275

ELECTROPLATED GOLD-COPPER-SILVER ALLOYS

William R. Brasch, Nesconset, N.Y., assignor to LeaRonal, Inc., Freeport, N.Y.

Filed Apr. 15, 1992, Ser. No. 869,244
Int. Cl.[5] C25D *3/62*
U.S. Cl. 205—247 35 Claims

1. A solution for electroplating a gold-copper-silver alloy which comprises:

a soluble gold compound present as a gold cyanide complex in the solution;

a soluble copper compound present as a copper cyanide complex in the solution;

a soluble silver compound present as a silver cyanide complex in the solution in an amount of at least about 0.1 gm/l; and

a solution soluble divalent sulfur compound of thiourea, imidazolidine-thione or thiobarbituric acid in an amount of at least about 0.075 gm/l to brighten alloys deposited by said solution during electroplating;

said solution having a pH of between about 8 and 11.

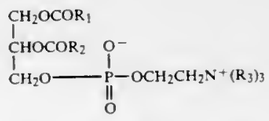
5,256,276

METHOD FOR THE INHIBITION AND REMOVAL OF AMMONIUM CHLORIDE DEPOSITION IN HYDROCARBON PROCESSING UNITS BY ADDING LECITHIN

Carl E. Weaver, Conroe, Tex., assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed May 18, 1992, Ser. No. 884,671
Int. Cl.[5] C10G *9/16*
U.S. Cl. 208—48 AA 3 Claims

1. A method for the inhibition of ammonium chloride deposition on the internal surfaces of a refinery processing hydrocarbon liquid to which ammonia has been added for the neutralizing of HCl comprising adding to the hydrocarbon liquid an effective ammonium chloride deposition inhibiting amount of lecithin having the formula:



wherein R_1=C_{10}-C_{30} alkyl, R_2=C_{10}-C_{30} alkyl and R_3=C_1 alkyl.

5,256,277

PARAFFIN ISOMERIZATION PROCESS UTILIZING A CATALYST COMPRISING A MESOPOROUS CRYSTALLINE MATERIAL

Kenneth J. Del Rossi, Woodbury; George H. Hatzikos, West Deptford, both of N.J., and Albin Huss, Jr., Chadds Ford, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jul. 24, 1991, Ser. No. 734,991
Int. Cl.[5] C10G *35/085, 35/095*
U.S. Cl. 208—138 30 Claims

1. A process for isomerizing paraffins, which comprises: isomerizing a paraffin feed in the presence of an isomerization catalyst comprising a hydrogenation/dehydrogenation component on a porous support material comprising an inorganic, non-layered, porous, crystalline phase material having pores with diameters of at least about 13 Å and which exhibits, after calcination, an X-ray diffraction pattern with at least one d-spacing greater than about 18 A with a relative intensity of 100.

5,256,278

DIRECT COAL LIQUEFACTION PROCESS

John R. Rindt, and Melanie D. Hetland, both of Grand Forks, N. Dak., assignors to Energy and Environmental Research Center Foundation (EERC Foundation), Grand Forks, N. Dak.

Filed Feb. 27, 1992, Ser. No. 843,909
Int. Cl.[5] C10G *1/00, 1/06*
U.S. Cl. 208—400 20 Claims

1. A method of liquefaction of coal material, said method comprising;

(a) treating subdivided coal material with a hydrocarbonaceous pasting solvent containing from about 10% to about 100wt. % phenolic solvents selected from the group consisting of C_6-C_{14} phenolics and alkyl phenolics having alkyl groups of from C_1 to C_6 at a temperature of from about 300° C. to about 400° C. for up to 120 minutes in the presence of carbon monoxide reductant to produce a product slurry; and thereinafter

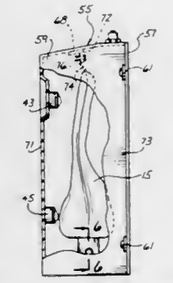
(b) hydrogenating the product slurry of step (a) at a temperature of from about 400° C. to about 460+ C. for from about 1 minute to about 20 minutes in the presence of hydrogen reductant and additional pasting solvent to provide a liquefied product.

5,256,279

LIQUID STORAGE SYSTEM WITH UNPRESSURIZED RESERVOIR ENGAGABLE WITH LEVEL SENSORS

Hal P. Voznick, Chino, and Robert S. Bosko, Downey, both of Calif., assignors to Carr-Griff, Inc., Santa Ana, Calif.

Filed Jul. 2, 1992, Ser. No. 905,578
Int. Cl.[5] B01D *17/12;* H01H *35/18*
U.S. Cl. 210—86 19 Claims



1. A liquid medium storage system comprising:

an assembly adapted for producing a liquid medium-containing material from a source of feed material;

a flexible, closed and expandable reservoir;

a supporting structure adjacent the reservoir;

a supply conduit for conducting liquid medium-containing material from the assembly to the reservoir whereby liquid medium-containing material can be supplied to the reservoir to expand the reservoir, the extent to which the reservoir expands providing an indication as to the level of liquid-medium containing material in the reservoir;

a control valve movable between an open position in which the control valve allows liquid medium-containing material to flow through the supply conduit to the reservoir and a closed position in which the control valve blocks flow of liquid medium-containing material through the supply conduit to the reservoir;

a discharge conduit for delivering liquid medium-containing material from the reservoir; and

a level sensor including first and second actuators carried by the supporting structure at different elevations, said first actuator being arranged such that it is engageable by the reservoir for activation in response to the liquid medium-containing material level being at about a first predetermined level to move the control valve to the closed posi-

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tion and the second actuator being engageable by the reservoir and activated by the reservoir when the liquid medium-containing material level is at about a second level, and said second level being below the first level.

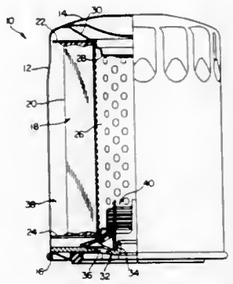
2. A system as defined in claim 1 wherein the assembly comprises a reverse osmosis module, the liquid medium-containing material is product water and the feed material is feed water, the reverse osmosis module being connectible to the source of feed water which is under pressure.

5,256,280

COMBINATION VALVE FOR LIQUID FILTER

Glenn C. Anderly, East Providence, R.I., and Joseph Machado, Attleboro Falls, Mass., assignors to Allied-Signal Inc., Morristown, N.J.

Filed Oct. 9, 1992, Ser. No. 958,894
Int. Cl.[5] B01D *35/147*
U.S. Cl. 210—130 **8 Claims**



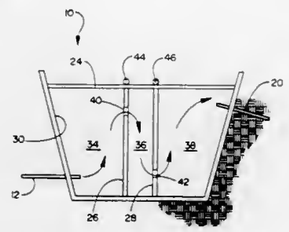
1. Liquid filter comprising a housing having an open end, an annular filter element within said housing, a closure member closing said open end, said closure member having an outlet opening and circumferentially spaced inlet openings circumscribing said outlet opening, and a combination relief and anti-drainback valve for preventing drainback of liquid from said housing through said inlet openings and for permitting liquid to bypass said filter to flow directly from said inlet openings to said outlet opening when the pressure differential across said filter element attains a predetermined level, said combination valve including a circumferentially extending valve seat circumscribing said outlet opening and having relief opening means therethrough, a circumferentially extending resilient gasket circumscribing said valve seat to normally close said relief opening means, said gasket projecting radially therefrom to cover said inlet openings, a circumferentially extending spring retainer circumscribing said valve seat and having a circumferentially extending gasket engaging portion for engaging said gasket at a gasket engaging area located radially between said relief opening means and said inlet openings and an opposite filter element engaging surface, said spring retainer and said valve seat include cooperating stop means, and a spring yieldably urging said spring retainer away from said gasket engaging area and into a position in which the stop means on the retainer engage the stop means on the valve seat, for engagement of said filter element engaging surface with said filter element upon installation of the element and the combination valve into said housing said spring retainer is urged away from the stop means on the valve seat and toward said gasket in opposition to said spring to permit the gasket engaging portion to engage the gasket engaging area.

5,256,281

BAFFLE SYSTEM FOR ANAEROBIC SEWAGE TREATMENT POND

Viet Ngo, Minneapolis, and Gary L. D'Heilly, Savage, both of Minn., assignors to The Lemna Corporation, Mendota Heights, Minn.

Filed Jun. 20, 1991, Ser. No. 717,973
Int. Cl.[5] C02F *3/32*
U.S. Cl. 210—151 **20 Claims**



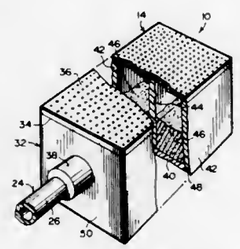
1. A system for treating sewage, comprising:
a pond for holding the sewage during treatment, the pond having an inlet for introduction of the sewage into the pond, an outlet for removal of the sewage from the pond;
a first baffle extending from a surface of the sewage in the pond to a bottom of the pond between the inlet and the outlet and having an opening located a first distance from the surface of the sewage so that sewage can pass through the opening; and
a second baffle, spaced from the first baffle and located between the inlet and the outlet and extending from the surface of the sewage to the bottom of the pond, the second baffle having an opening located a second distance from the surface of the sewage, the first and second baffles forming a flow region therebetween so that sewage flows generally away from the inlet and toward the outlet and from the opening in the first baffle to the opening in the second baffle.

5,256,282

AERATOR FOR AN AQUARIUM

Yichao Chang, and Luping Wand, both of 42-30 College Point Blvd., Flushing, N.Y. 11355

Filed Jan. 13, 1993, Ser. No. 4,054
Int. Cl.[5] A01K *63/04*
U.S. Cl. 210—169 **5 Claims**



1. In combination, a water holding aquarium and aerator means, placed beneath the water upon the bottom of said aquarium, for bubbling air up through the water so as to enhance the water and allow fish to better breathe. said aerator means comprising;
means, resting on the bottom of said aquarium, for introducing small air bubbles into the water;
an elongate flexible tube, extending from one side of said means for introducing air bubbles, for carrying a flow of air to said means for introducing air bubbles;

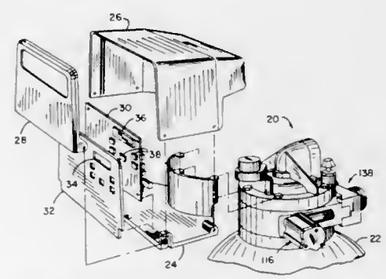
air pump means, coupled to a first end of said elongate flexible tube, for forcing air through said tube and into said means for introducing small air bubbles, wherein;
said means for introducing air bubbles further comprises;
an elongated hollow housing, generally E-shaped in cross section and having a open top, said housing including;
a bottom wall having elongated edges,
a pair of side walls upstanding from said elongated edges of said bottom wall,
an elongated central partition wall upstanding from said bottom wall between said side walls and substantially parallel to said side walls;
an elongated porous cover secured to said open top of said housing;
a connector extending from said elongated housing and coupled to a second end of said elongate flexible tube so that the flow of forced air can pass through said porous cover causing the small air bubbles to be introduced into the water within said aquarium.

5,256,283

WATER CONDITIONER SYSTEM WITH INJECTOR VALVE

Nick W. Buettner, Waterford, Wis., assignor to Erie Manufacturing Company, Milwaukee, Wis.

Division of Ser. No. 606,508, Oct. 31, 1990, Pat. No. 5,174,337.
This application Aug. 25, 1992, Ser. No. 934,958
Int. Cl.[5] C02F *1/42*
U.S. Cl. 210—190 **2 Claims**



1. A water conditioning system, comprising:
a mineral tank for conditioning water; a brine tank for supplying brine to recharge the mineral tank;
a conditioner valve mounted to the mineral tank and interconnected with an untreated water supply system and a treated water discharge system, the conditioner valve including a movable flow control member for controlling flow of water through the conditioner valve; and
an injector valve mounted to the conditioner valve and interposed between the conditioner valve and the brine tank for selectively drawing brine from the brine tank and for selectively supplying treated water from the conditioner valve through the injector valve and to the brine tank, the injector valve being responsive to water pressure within the conditioner valve controlled by the movable flow control member.

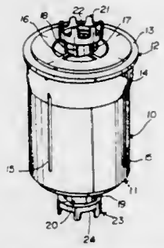
5,256,284

PLASTIC ELECTRIC FUEL INJECTION FILTER ASSEMBLY AND A WELDING METHOD FOR THE PREPARATION THEREOF

Albert Lee, 232 Margate Rd., Timonium, Md. 21093

Filed Mar. 12, 1992, Ser. No. 850,435
Int. Cl.[5] B01D *27/08*
U.S. Cl. 210—232 **6 Claims**

1. A spin welded plastic electric fuel injection filter assembly for use in the fuel injection system of an internal combustion engine. comprising:
a main body member having a longitudinal axis, said main body member including an open first end and a second end having an outlet stem formed therein, said main body member having a flange extending about a periphery of said open first end and extending radially outward of said body member relative to said longitudinal axis;
a filter disposed within said main body member;
a plurality of projections arranged on a side of said flange facing toward said second end;
a plurality of elongated first ribs aligned parallel to said longitudinal axis and arranged on an outer peripheral surface of said main body member;
a lid integrally spin welded to the open first end of said main body member, said lid including an inlet stem formed



therein and a plurality of second ribs projecting outwardly from an outer surface of said lid and extending radially outwardly from said inlet stem;
a plurality of edges formed on an external peripheral surface of said inlet stem, said edges extending in a direction parallel to said axis and
a universal inlet receptacle fixed to said inlet stem and a universal outlet receptacle fixed to said outlet stem, each of said universal inlet and outlet receptacle including means for selectively receiving an inlet pipe line and an outlet pipe line, respectively; and
wherein each of said projections and said elongated first ribs provide secure gripping surfaces on said main body and said edges and said second ribs provide secure gripping surfaces on said lid upon counter rotation of said main body with respect to said lid during spin welding.

5,256,285

FILTER CONTAINER WITH DOUBLE CONSTRUCTION

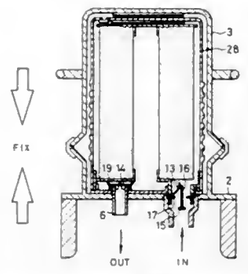
Yoji Tomita, Shimotsuga; Eiichi Oishi, Sashima; Masanori Kobayashi, Sashima; Kimiyasu Onda, Sashima, and Hiroshi Miyaji, Sashima, all of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

Filed Dec. 23, 1991, Ser. No. 811,935
Claims priority, application Japan, Dec. 27, 1990, 2-415252
Int. Cl.[5] B01D *27/10, 27/08*
U.S. Cl. 210—234 **24 Claims**

1. A filter container, comprising:
a sheath member, comprising a base having a liquid inlet pipe and a liquid exhaust pipe, said base being directly connectable to pipe lines, and a cap, said cap being integrally attached to said base;
a disposable unit container housed in said sheath member;
cartridge filters, housed in the interior of said disposable unit container and having opposite ends;
end caps in said disposable unit container on said opposite ends of said cartridge filters;
said disposable unit container having a liquid inlet port and a liquid outlet port therein engaged with said liquid inlet pipe and said liquid outlet pipe, respectively; and
said liquid inlet port and said liquid outlet port being pro-

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vided with respective shut-off valves, wherein a liquid flow path is opened by fitting said unit container on said



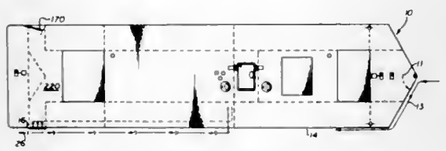
base and closed by detaching said unit container from said base.

5,256,286

SHALLOW WATER OIL-SKIMMING BARGE

Rudy Teichman, Rte. 2, Box 308, Galveston, Tex. 77554

Filed Jul. 27, 1992, Ser. No. 918,608
Int. Cl.[5] E02B *15/04*
U.S. Cl. 210—242.3 **1 Claim**



1. A water surface cleaning barge, comprising:
a. a hull;
b. said hull having a vertical bow line, and an obtuse bow angle of over 90 degrees, a flat bottom of shallow draft, parallel sides, a plurality of compartments and intake means for surface water and contaminants therein;
c. said intake means comprising a coarse mesh grill, one of said grills located toward the stern on each of said parallel vertical sides, said grills in alignment with an axis extending from side to side of said barge within one of said compartments of said barge;
d. said hull having pumping means for water and piping means from the pumping means to grill cleaning means and to surface waste thrusting means, said grill cleaning means ejecting water under pressure to clear the grill of debris, said surface waste thrusting means pushing waste sternward along said sides of said barge, said pushing action driving a larger portion of said waste into said grille, and a portion of said debris detached from said grill sternward out of suction range of said grill.

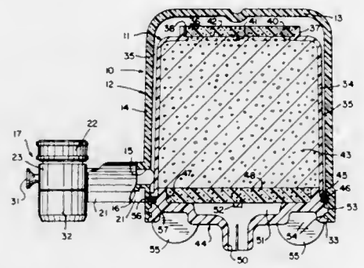
5,256,287

CARTRIDGE FILTER FOR FAUCET ATTACHMENT

David T. Underwood, Fort Worth, Tex., assignor to Ametek, Inc., Plymouth Products Division, Sheboygan, Wis.

Filed Nov. 12, 1992, Ser. No. 975,620
Int. Cl.[5] B01D *24/12*
U.S. Cl. 210—282 **10 Claims**

1. A faucet filter apparatus for filtering drinking water from a conventional faucet, said filter apparatus comprising:
an outer housing having an enclosed top and generally cylindrical outer wall;
an inlet opening in the outer wall for water from the faucet;
connector means for attaching the outer housing to the faucet to direct water from the faucet into the inlet opening;
the lower edge of the cylindrical outer wall defining a circular bottom opening;
a filter cartridge including means for demountably securing said cartridge in the circular bottom opening, said cartridge comprising a unitary subassembly including a closed outer cylindrical shell extending into the interior of the outer housing, said shell having an outer surface spaced radially from the interior of the housing to define an annular space providing open communication between the inlet opening and the top of the shell,
a filter inlet in the top of the shell for admitting water from the annular space, and an annular end cap permanently



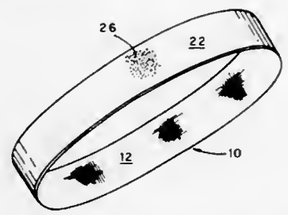
attached to the lower edge of the cylindrical shell, said end cap defining a filtered water outlet in the bottom of the shell, said outlet forming the final filtered water discharge outlet from the apparatus;
the interior of the shell between the filter inlet and the water outlet filled with a filter media; and,
wherein the means for demountably securing the filter cartridge in the housing comprises a threaded connection between the outer periphery of the end cap and said circular bottom opening, and continuous flexible sealing means adjacent said threaded connection for sealing the interface between the cartridge and the housing.

5,256,288

FILTRATION MEDIUM INCLUDING SUBSTRATE-SUPPORTED POROUS MEMBRANE AND METHOD FOR THE MANUFACTURE THEREOF

Charles A. Lee, Knoxville, Tenn., assignor to Cer-Wat, Inc., Knoxville, Tenn.

Filed Aug. 28, 1992, Ser. No. 937,365
Int. Cl.[5] B01D *67/00, 69/14*
U.S. Cl. 210—321.61 **9 Claims**



1. A filtration medium comprising a porous substantially planar substrate means having first and second substantially planar opposite surfaces defined by the cumulative effect of spaced apart portions and which provides support to the medium and further defines a plurality of open passageways between said opposite surfaces to define the gross filtration capacity of the medium, a thin porous membrane overlaid on one of said surfaces of said substrate, the pores of which define open passageways through the thickness.of said membrane of a size sufficient to permit the passage therethrough of a liquid

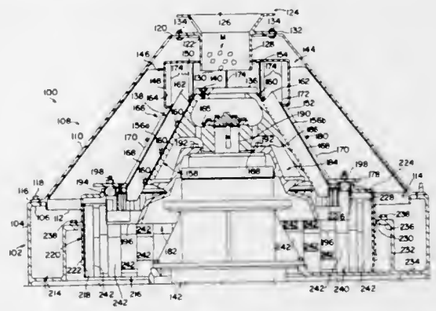
which is under the influence of a pressure differential across the thickness of said medium, and a plurality of discrete and substantially uniformly spaced-apart islands of thermoplastic resin of substantially uniform size disposed between said one of said surfaces of said substrate and said membrane and maintaining said substrate and said membrane in spaced apart relationship, said resin being bonded at fixed spaced apart locations to said substrate and to said porous membrane to integrate said substrate and said membrane in their spaced apart relationship.

5,256,289

CENTRIFUGAL SEPARATOR INCORPORATING STRUCTURE TO REDUCE ABRASIVE WEAR

Dewey M. Cope, St. Louis, Mo., and Harry E. Derton, St. Clair, Ill., assignors to Centrifugal & Mechanical Industries, Inc., St. Louis, Mo.

Filed Nov. 4, 1991, Ser. No. 787,814
Int. Cl.[5] B01D *33/00;* **B04B** *7/16*
U.S. Cl. 210—369 **20 Claims**



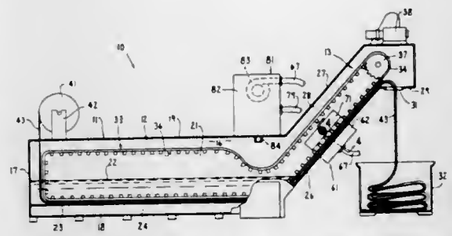
1. In a centrifugal separator comprising a vertical drive mechanism including a drive shaft rotatable about a vertical axis about which the centrifuge rotates, a flight assembly attached to the drive shaft and rotatably driven thereby, said flight assembly having an upper end, a screen assembly connected to the drive mechanism and rotatably driven thereby, the screen assembly being driven at a separate speed than the flight assembly and including a perforated screen installed radially outwardly of the flight assembly and said vertical axis, and an inlet assembly positioned above said flight assembly and said screen assembly whereby material to be separated is introduced into the separator through the inlet assembly and is captured between the flight assembly and the screen assembly whereat material separation occurs, the inlet assembly having a discharge port, the improvement comprising pocket structure positioned between the discharge port of the inlet assembly and the upper end of the flight assembly, the pocket structure extending radially outwardly from said vertical axis and above the upper end of the flight assembly, and a lower end of the pocket structure extending below the upper end of the flight assembly, an upper wall connecting with an upper end of the pocket structure and extending downwardly towards the vertical axis, a lower wall connecting with the lower end of the pocket structure and extending inwardly towards the vertical axis thereof, the upper end of the screen assembly being substantially co-terminous with the lower end of the pocket structure whereby the upper end of the screen assembly terminates below the upper end of the flight assembly, the pocket structure having a sidewall formed as a circular housing and having the upper and lower walls integrally connected therewith, the pocket structure acting as a manes for catching material entering into the separator through the inlet assembly, the material impacting against said sidewall of the pocket structure rather than against the screen assembly, thereby to extend the useful life of the screen assembly, the pocket structure being rotatable with the screen assembly, said pocket structure includes a plurality of vanes for insuring that solid material directed at the pocket structure is brought up to rotational speed of the screen assembly and does not slip with respect to the movement of said pocket structure.

5,256,290

COOLANT FILTRATION UNIT WITH SLUDGE DRYER

Roger T. Becker, Kalamazoo, and Leo Inman, Redford, both of Mich., assignors to Monlan, Incorporated, Kalamazoo, Mich.

Filed Apr. 15, 1992, Ser. No. 869,316
Int. Cl.[5] B01D *33/00*
U.S. Cl. 210—400 **12 Claims**



1. In a self-contained filtration unit for cleaning a quantity of liquid containing solid contaminants, said unit including a main housing structure defining both a tank section and a discharge section, said discharge section being joined to one end of said tank section, said tank section including a first bottom wall and upright side walls projecting upwardly from said first bottom wall and cooperating therewith to define a compartment for containing a quantity of liquid containing said solid contaminants which collect as a sludge layer on said first bottom wall, said discharge section including a second bottom wall and side walls projecting upwardly from opposite sides thereof, said second bottom wall being joined to said first bottom wall adjacent said one end of said tank portion and projecting outwardly away from said tank section, said second bottom wall being inclined upwardly as it extends outwardly away from said tank section with said second bottom wall inclining upwardly to an elevation significantly above the level of liquid in said compartment, said discharge section also including means defining a discharge opening for said sludge layer adjacent an upper end of said second bottom wall, and contaminant removing means associated with said second structure for effecting removal of the sludge layer which collects in the bottom if said compartment, said contaminant removing means including conveyor means positioned within said housing structure adjacent to and movable along said first and second bottom walls for moving said sludge layer along said first bottom wall and thence upwardly along the inclined second bottom wall for discharge of the sludge layer through said discharge opening, the improvement comprising dryer means associated with said discharge section for discharging streams of warm air transversely upwardly through the sludge layer for effecting removal of moisture from the sludge layer, said dryer means being disposed adjacent said second bottom wall at a location between said discharge opening and the point where said conveyor means moves the sludge layer upwardly above the level of the liquid in the compartment.

5,256,291

SCREEN FOR FILTERING UNDESIRABLE PARTICLES FROM A LIQUID

William S. Cagle, 7021 E. 77th Pl., Tulsa, Okla. 74133

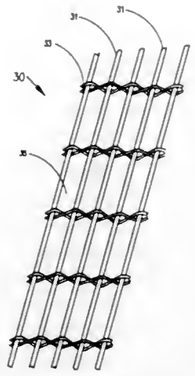
Filed Apr. 16, 1992, Ser. No. 870,486
Int. Cl.[5] B01D *39/10*
U.S. Cl. 210—499 **12 Claims**

1. A screen for filtering undesirable particles from a liquid comprising:
a first parallel array of non-precrimped filaments having

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spaces therebetween less than a preselected minimal linear dimension of said undesirable particles; and

a second parallel array of pairs of filaments thinner than said filaments of and transverse to said first array, said filaments of each pair being oppositely woven over and under



said filaments of said first array to secure said first array filaments and maintain said spaces therebetween, said pairs of filaments having spaces therebetween at least four times said preselected minimal linear dimension of said undesirable particles.

5,256,292

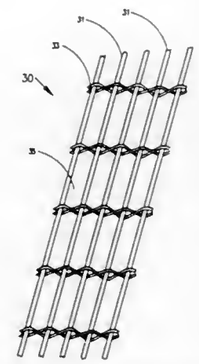
SCREEN FOR FILTERING UNDESIRABLE PARTICLES FROM A LIQUID

William S. Cagle, 7021 E. 77th Pl., Tulsa, Okla. 74133

Continuation-in-part of Ser. No. 870,486, Apr. 16, 1992. This application Jun. 5, 1992, Ser. No. 893,715

Int. Cl.[5] B01D *39/10*

U.S. Cl. 210—499 **12 Claims**



1. A screen for filtering undesirable particles from a liquid comprising:

a first parallel array of filaments having spaces therebetween less than a preselected minimal linear dimension of said undesirable particles; and

a second parallel array of pairs of filaments thinner than said filaments of and transverse to said first array, said filaments of each pair being oppositely woven over and under said filaments of said first array and twisted 180° between said filaments of said first array to secure said first array filaments and maintain said spaces therebetween, said pairs of filaments having spaces therebetween at least four times said preselected minimal linear dimension of said undesirable particles.

5,256,293

SEPARATION OF ENANTIOMERS OF NON-STEROIDAL ANTI-INFLAMMATORY DRUGS AND CHIRAL SELECTOR THEREFOR

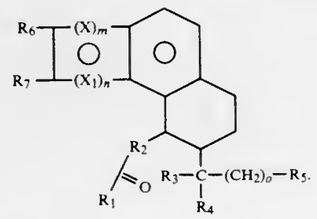
William H. Pirkle, Champaign; Christopher J. Welch, Northbrook, both of Ill., and Bo R. Lamm, Goteborg, Sweden, assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

Continuation-in-part of Ser. No. 763,043, Sep. 20, 1991, abandoned. This application Mar. 9, 1992, Ser. No. 847,449

Int. Cl.[5] B01D *15/08*

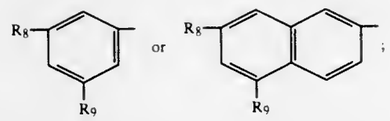
U.S. Cl. 210—635 **4 Claims**

1. A method of producing a stationary phase for a liquid chromatography column which comprises immobilizing an R or an S enantiomer of a compound having the formula:



wherein

R_1 is



R_2 is O, S or NH;

R_3 and R_4 are each independently hydrogen or lower alkyl;

R_5 is hydrogen or $CH{=}CH_2$;

R_6 and R_7 are each independently hydrogen, lower alkyl or R_6 and R_7 are attached to form a 6 member aromatic ring;

X is O, S, NH or CH;

X_1 is O, S, NH or CH;

m is 0 or 1;

n is 0 or 1; and

R_8 and R_9 are each independently NO_2, $N(R_{10})_3^+$, CN, $COOR_{11}$, SO_3H or COR_{12}, wherein R_{10}, R_{11} and R_{12} are each independently hydrogen or lower alkyl; and

o is 0 or an integer from 1 to 12;

on a support effective for use in chromatographic separation.

5,256,294

TANGENTIAL FLOW FILTRATION PROCESS AND APPARATUS

Robert D. van Reis, Redwood City, Calif., assignor to Genentech, Inc., South San Francisco, Calif.

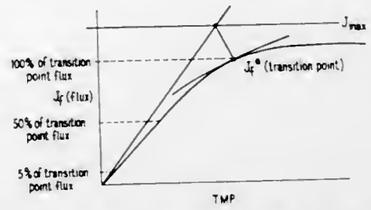
Filed Sep. 17, 1990, Ser. No. 583,886

Int. Cl.[5] B01D *61/22*

U.S. Cl. 210—637 **32 Claims**

8. A process for separating species of interest having a molecular weight of about 1 to 1000 kDa from a mixture, which process comprises: (a) filtering the mixture in a first tangential-flow filtration stage through a filtration membrane having a pore size that separates said species of interest from the mixture, while maintaining flux at a level ranging from about 5 to 100% of transition point flux in the pressure-dependent region

of the flux versus TMP curve, wherein transmembrane pressure is held substantially constant along the membrane at a level no greater than the transmembrane pressure at the transition point of the filtration, whereby the species of interest are selectively separated from the mixture (b) filtering the filtrate in a second tangential-flow ultrafiltration stage through an ultrafiltration membrane having a smaller pore size than the



membrane of the first filtration stage, and (c) filtering the filtrate from the second filtration stage in a third tangential-flow ultrafiltration stage through an ultrafiltration membrane having a pore size that is less than that of the second membrane, and recycling the filtrate from the third filtration stage back to a vessel for filtration in the first ultrafiltration stage, whereby the process is repeated.

5,256,295

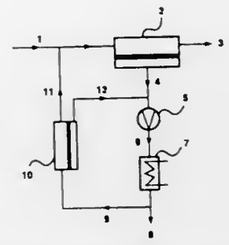
TWO-STAGE MEMBRANE PROCESS AND APPARATUS

Richard W. Baker, Palo Alto, and Johannes G. Wijmans, Menlo Park, both of Calif., assignors to Membrane Technology & Research, Menlo Park, Calif.

Continuation-in-part of Ser. No. 803,109, Dec. 5, 1991, Pat. No. 5,147,550, which is a continuation-in-part of Ser. No. 635,919, Dec. 28, 1990, Pat. No. 5,071,451. This application Sep. 11, 1992, Ser. No. 943,857

Int. Cl.[5] B01D *53/22*

U.S. Cl. 210—640 **29 Claims**



1. A method for increasing efficiency in a two-stage membrane separation system for removing a component from a fluid stream by gas separation, vapor separation or pervaporation, said system comprising:

a first membrane unit;

first driving means for said first membrane unit; and

a second membrane unit connected to said first membrane unit and said first driving means such that a permeate stream from said first membrane unit becomes a feed stream for said second membrane unit;

said method comprising:

(a) connecting a permselective membrane to said system in such a way that a driving force for permeation of said permselective membrane is provided by said first driving means;

(b) passing a residue stream from said second membrane unit across said permselective membrane, thereby producing a depleted stream depleted in said component compared with said residue stream and an enriched stream enriched in said component compared with said residue stream;

(c) passing said enriched stream to an inlet side of said first driving means.

5,256,296

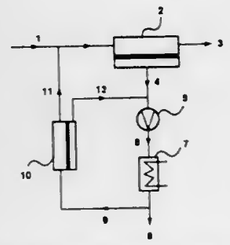
MEMBRANE PROCESS AND APPARATUS FOR REMOVING A COMPONENT FROM A FLUID STREAM

Richard W. Baker, Palo Alto, and Johannes G. Wijmans, Menlo Park, both of Calif., assignors to Membrane Technology & Research, Menlo Park, Calif.

Continuation-in-part of Ser. No. 803,109, Dec. 5, 1991, Pat. No. 5,147,550, which is a continuation-in-part of Ser. No. 635,919, Dec. 28, 1990, Pat. No. 5,071,451. This application Sep. 11, 1992, Ser. No. 943,923

Int. Cl.[5] B01D *53/22*

U.S. Cl. 210—640 **24 Claims**



1. A method for increasing efficiency in a membrane separation system for removing a component from a fluid stream by gas separation, vapor separation or pervaporation, said system including in series a membrane separation unit and a driving means for transmembrane permeation, said method comprising:

(a) connecting a permselective membrane to said system in such a way that a driving force for permeation of said permselective membrane is provided by said driving means;

(b) passing an exit stream from said driving means across said permselective membrane, thereby producing a depleted stream depleted in said component compared with said exit stream and an enriched stream enriched in said component compared with said exit stream;

(c) passing said enriched stream to an inlet side of said driving means, thereby mixing said enriched stream with a permeate stream from said membrane separation unit;

(d) continuing steps (b) and (c) at least until said exit stream has a desired concentration;

(e) withdrawing at least a portion of said exit stream at said desired concentration as a product stream.

5,256,297

MULTI-STAGE ULTRAFILTRATION PROCESS (OP-3711)

Joseph L. Feimer, and Leo T. DesJardine, both of Sarnia, Canada, assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Dec. 17, 1992, Ser. No. 992,052

Int. Cl.[5] E01D *61/14*

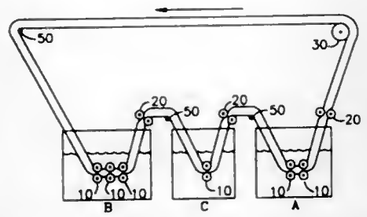
U.S. Cl. 210—651 **5 Claims**

1. A process comprising treating heavy hydrocarbon feeds containing detrimental quantities of metals, Conradson Carbon Residue (CCR) and asphaltenes, by ultrafiltering the heavy hydrocarbon feed through multiple ultrafiltration stages operating in series under ultrafiltration conditions wherein the permeate from each upstream separation stage in series is used as the feed to the next subsequent downstream separation stage so as to produce a subsequent permeate and a subsequent retentate, said subsequent permeate having a level of metals and Canradson Carbon Residue which is lower that the level

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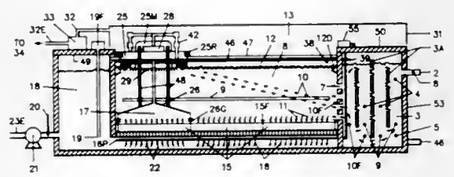
of said components in the permeate used as feed to that stage an wherein each separation stage uses identical ultrafiltration membrane material.

5,256,298
CONTINUOUS-BELT SEPARATOR/REACTOR AND METHOD
Paul E. Powell, 4159 Steck Ave. #125, Austin, Tex. 78759
Filed Apr. 22, 1992, Ser. No. 872,638
Int. Cl.[5] B01D *15/00, 15/02*
U.S. Cl. 210—660 **16 Claims**



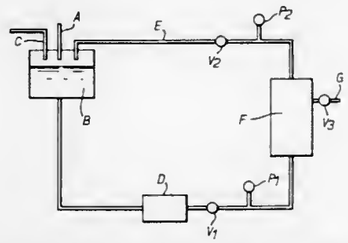
12. A method for facilitating mass transfer between fluid and solid phases, the method comprising the steps of:
(a) driving a continuous first belt of resilient open-cell foam polymer material such that a point along the length of the first belt passes first through a first fluid, and then through a second fluid contained in a separate second container, before returning to the first fluid;
(b) compressing and then releasing the first belt at a point at which the first belt is submerged in the first fluid; and
(c) compressing and then releasing the first belt at a point at which the first belt is submerged in the second fluid.

5,256,299
METHOD AND APPARATUS FOR LIQUID TREATMENT
Lawrence K. Wang, Latham, N.Y., and Lubomyr Kurylko, New Providence, N.J., assignors to International Enviroomental Systems, Inc., USA, Latham, N.Y.
Filed Jul. 2, 1990, Ser. No. 547,505
The portion of the term of this patent subsequent to Nov. 8, 2007, has been disclaimed.
Int. Cl.[5] C02F *9/00*
U.S. Cl. 210—664 **3 Claims**



1. A process for purifying contaminated ground water, surface water or process water containing volatile organic compounds and toxic substances comprising the following steps:
(a) feeding the contaminated water by either gravity or a pump into the inlet of a square or rectangular apparatus, containing a baffled mixing chamber;
(b) treating said contaminated water in said mixing chamber by ultra violet light, ozone, and flotation aids thereby producing a mixing chamber effluent and a first air effluent;
(c) discharging the mixing chamber effluent into a flotation chamber inside said apparatus, removing volatile organic compounds and surfactant from the mixing chamber effluent in said flotation chamber by contacting said mixing chamber effluent with coarse gas bubbles, and removing suspended solids and oil from the mixing chamber effluent in said flotation chamber by contacting said mixing chamber effluent with fine gas bubbles, thereby producing a flotation chamber effluent and a second air effluent;
(d) discharging the flotation chamber effluent downward through multiple automatic backwash granular activated carbon filter cells inside said apparatus thereby removing residual organic and inorganic contaminants from said flotation chamber effluent and producing a filter effluent;
(e) discharging the filter effluent into a holding/storage chamber comprising a chemical feeder means, and feeding disinfection chemical, pH adjustment chemical and corrosion control chemical into said filter effluent, thereby producing a holding/storage chamber effluent;
(f) removing floating oily substances, surface active substances and suspended solids from the water surface of said flotation chamber by a skimming/scooping means mounted on a moving bridge thereby producing waste sludges;
(g) backwashing the granular activated carbon filter cells, one cell at a time, by a backwash means comprising a moving carriage, a backwash hood, backwash pumps, a solid-liquid separator, a mechanical gear system, a timer control, a hydraulic headloss control, and a manual override, thereby producing a backwash wastewater;
(h) recycling the backwash wastewater to the mixing chamber;
(i) collecting the first and second air effluents in a gas hood and ducting system by the power of an air mover;
(j) purifying said collected first and second air effluents by passing said air effluents through a granular activated carbon filter, thereby producing a purified air effluent; and
(k) recycling said purified air effluent to said flotation chamber or to said mixing chamber for reproduction of gas bubbles.

5,256,300
ABSORPTION OF MATERIALS
Keith R. F. Cockett, Warrington; Martin Concannon, West Kirby, and Maurice Webb, Chester, all of Great Britain, assignors to Unilever Patent Holdings B.V., Vlaardingen, Netherlands
Filed Nov. 5, 1992, Ser. No. 971,644
Claims priority, application European Pat. Off., Nov. 5, 1991, 91310191.1
Int. Cl.[5] C02F *1/28*
U.S. Cl. 210—691 **2 Claims**



2. Process for absorbing organo-toxins from water, the organo-toxins being selected from the group consisting of pesticides, herbicides, insect resist agents, and organo-halogens, wherein an hydrotalcite-like material described by formula below:

$M_{k+m}N_{n+p}(OH)_2A_z^{y-}x.H_2O$

where:
M is any 1+ or 2+ cation or combination thereof
N is any 3+ or 4+ cation or combination thereof

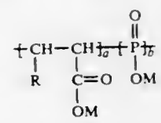
k is the sum of the individual mole fractions of the 1+ cations
m is the sum of the individual mole fractions of the 2+ cations
n is the sum of the individual mole fractions of the 3+ cations
p is the sum of the individual mole fractions of the 4+ cations where either but not both of k and m or n and p can be zero and $K+m+n+p=1$;
A_z^{y-} is any anion of charge y— and mole fraction z, or combination of anions of similar or differing y— and $K+2m+3n+4p-2-zy=0$ and x can range from 1 to 100;
is contacted with water containing organo-toxins to form a slurry, said hydrotalcite-like material absorbing said organo-toxins, the hydrotalcite-like material being then removed from the slurry.

5,256,301
CONTROL OF SALT PRECIPITATION FROM GEOTHERMAL BRINE
Darrell L. Gallup, Chino Hills, and Manuel E. Obando, Whittier, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.
Filed Mar. 31, 1992, Ser. No. 861,529
Int. Cl.[5] C02F *1/72*
U.S. Cl. 210—696 **24 Claims**

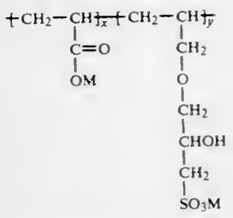
1. A method for disposing of ligaid brine concentrate and sulfide-containing steam condensate derived from the same geothermal brine source comprising:
adjusting the pH of the condensate to within 2 pH units of the liquid brine concentrate;
contacting the pH-adjusted condensate with air for a period of time sufficient to oxidize a substantial portion of the sulfide ion originally present in the condensate to sulfate, while allowing no more than 1 ppmw oxygen to dissolve in the condensate;
mixing the oxidized steam condensate with the liquid brine concentrate to prevent precipitation of soluble salts in said concentrate; and
injecting the mixture into the earth.

5,256,302
METHOD FOR CONTROLLING SILICA AND WATER SOLUBLE SILICATE DEPOSITION
Libardo A. Perez, Morrisville, Pa.; J. Michael Brown, The Woodlands, and Khac T. Nguyen, Houston, both of Tex., assignors to Betz Laboratories, Inc., Trevose, Pa.
Filed May 18, 1992, Ser. No. 884,668
Int. Cl.[5] C02F *5/14*
U.S. Cl. 210—699 **15 Claims**

1. A method for inhibiting the deposition of silica and silicate on the internal surfaces of a water system comprising adding to the water in the water system a sufficient amount for the purpose of a first copolymer, m, having the structure:

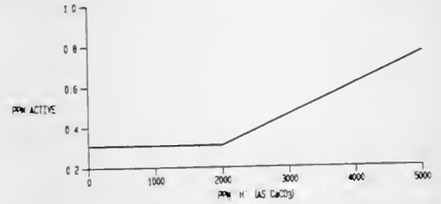


wherein R=H or COOM, M is H or a water soluble cation, the molar ratio of a:b is from about 30:1 to about 1:2 and the number average molecular weight of copolymer m is from about 150 to about 200,000 and a sufficient amount for the purpose of a second copolymer, n, having the structure:

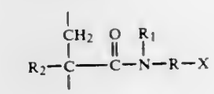


wherein M is H or a water soluble cation, the molar ratio of x:y is from about 30:1 to 1:20 and the number average molecular weight of copolymer n is from about 150 to about 200,000, wherein the ratio of m:n is from about 1:1.5 to 1:4, by weight.

5,256,303
METHOD FOR INHIBITING SCALE FORMATION AND/OR DISPERSING IRON IN REVERSE OSMOSIS SYSTEMS
E. H. Kelle Zeiher, Naperville; Cynthia A. Soderquist, Bolingbrook; Claudia C. Pierce, Lisle, and Kenneth P. Fivizzani, Naperville, all of Ill., assignors to Nalco Chemical Company, Naperville, Ill.
Filed Jul. 20, 1992, Ser. No. 916,905
Int. Cl.[5] C02F *5/14*
U.S. Cl. 210—700 **16 Claims**



1. A method for inhibiting calcium sulfate scale formation and deposition from a feedstream passing through a reverse osmosis system which comprises the steps of:
a. controlling the pH of said feedstream within the range between about 6.0 to about 7.0;
b. controlling the temperature of said feedstream within the range between about 50° to about 80° F.; and
c. adding a scale inhibitor to said feedstream in an amount between about 0.002 ppm per ppm hardness (as $CaCo_3$) of said feedstream to about 0.005 ppm per ppm hardness (as $CaCO_3$) of said feedstream, said scale inhibitor comprising a water-soluble organic phosphonate which comprises a 2-phosphonobutane-1,2,4-tricarboxylic acid and a 1-hydroxyethane-1,1-diphosphonic acid, and an N-substituted acrylamide polymer containing an amide structure as follows:



where R_2 is hydrogen or methyl, R_1 is a hydrogen or an alkyl, and R is alkylene or phenylene and X is sulfonate, (poly) hydroxyl, (poly) carboxyl or carbonyl, and combinations thereof, with the weight ratio of polymer to phosphonate being within the range of about 0.2:1 to about 2:1.

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5,256,304

METHODS OF REMOVING OIL AND METAL IONS FROM OILY WASTEWATER

Ellen M. Meyer, Doylestown, and Michael R. Wood, Philadelphia, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Jun. 5, 1992, Ser. No. 893,483
Int. Cl.[5] C02F *1/56*
U.S. Cl. 210—708 7 Claims

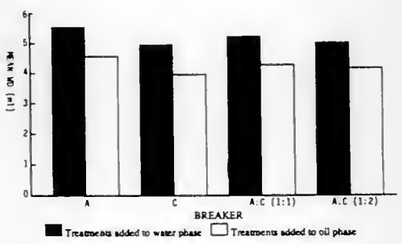
1. A method for removing oil and metal ions selected from the group consisting of Cu^{+2}, Cd^{+2}, Cr^{+6}, Pb^{+2}, Ni^{+2}, Zn^{+2}, and Hg^{+2}, present in wastewater comprising adding of a sufficient amount of an amphoteric tannin amine polymer to flocculate said oil and metal ions, then removing said flocculated oil and metal ions from said wastewater, wherein said tannin amine polymer is formed by reacting a tannin, diallyldimethyl ammonium chloride (DADMAC) and an aldehyde, and said aldehyde is condensed with said DADMAC.

5,256,305

METHOD FOR BREAKING EMULSIONS IN A CRUDE OIL DESALTING SYSTEM

Paul R. Hart, The Woodlands, Tex., assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed Aug. 24, 1992, Ser. No. 934,837
Int. Cl.[5] B01D *17/04*
U.S. Cl. 210—708 3 Claims



1. A method of resolving a water-in-oil emulsion in a crude oil desalting system wherein the crude oil forms a reverse (oil-in-water) emulsion at a temperature of 90°–150° C., which comprises mixing an oil-based demulsifier with the wash water feed of the desalting system at said temperature, thereafter contacting, in the desalter system, a crude oil feedstream with the wash water containing said demulsifier and thereafter separating the crude oil from the wash water wherein said demulsifier is selected from the group consisting of alkoxylates of the following: alkylphenols, alkylamines, alkylols and/or polyols with or without cross-linking with aldehydes, di- or multifunctional acids, epoxides, and isocyanates.

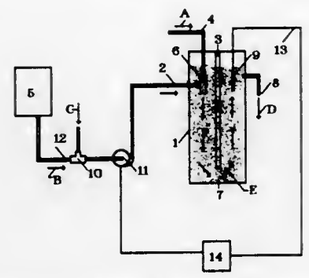
5,256,306

CONTINUOUS TREATMENT OF CHROMIUM BEARING WASTE WATER

Gus M. Griffin, 422 Country La., Louisville, Ky. 40207

Filed Oct. 7, 1991, Ser. No. 772,169
Int. Cl.[5] C02F *1/62*
U.S. Cl. 210—720 3 Claims

1. A method for treating wastewater containing chromium compounds in the +6 oxidation state, consisting essentially of the steps of mixing said wastewater with hydrazine which contains a selected concentration of a cobalt salt to provide cobalt ions which provide a catalytic effect for the reduction of chromium in said +6 state to chromium in the +3 state,



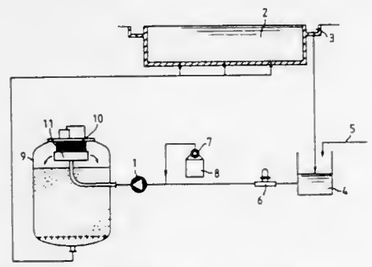
wherein sufficient hydrazine is introduced to maintain said mixture at a pH of at least about 7.

5,256,307

METHOD OF PROCESSING WATER, IN PARTICULAR BATH WATER

Bruno Bachhofer, Saentisstrasse 85, and Anton Locher, Bergstrasse 6, both of 7980 Ravensburg 1, Fed. Rep. of Germany

PCT No. PCT/DE90/00296, § 371 Date Oct. 24, 1991, § 102(e) Date Oct. 24, 1991, PCT Pub. No. WO90/13520, PCT Pub. Date Nov. 15, 1990
PCT Filed Apr. 21, 1990, Ser. No. 773,864
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1989, 3914024
Int. Cl.[5] C02F *1/52*
U.S. Cl. 210—709 12 Claims



1. Method of processing water including bath water and water employed in air treatment plants, which is conveyed in a circuit containing a contaminating point and a processing plant, the water exiting the contaminating point being contaminated water and having a redox potential which is measurable and the method comprising, in the order recited:

(a) continuously measuring the redox potential of the contaminated water at the inlet of the processing plant;

(b) introducing into the contaminated water an auxiliary processing agent which is a mixture comprised of a flocculating agent which promotes deposition of corpuscular pollutants and a halide which reduces ozone and disinfects the contaminated water as a function of the redox potential in such a way that the auxiliary processing agent is introduced in proportion to a drop in the redox potential;

(c) treating the water with ozone from an ozone generator in a spatial region defined within the processing plant and forming flocks including the corpuscular pollutants; and

(d) filtering the water to remove the flocks,

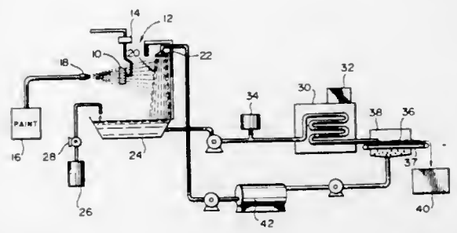
wherein the auxiliary processing agent is introduced in one of the spatial region or upstream of the spatial region.

5,256,308

METHOD FOR THE CURE AND REMOVAL OF OVERSPRAY PAINT FROM THE WATER WASH SYSTEM OF PAINT SPRAY BOOTHS

Michael T. Dulany, Souderton, Pa., assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed Aug. 19, 1992, Ser. No. 932,162
Int. Cl.[5] C02F *1/02, 1/30*
U.S. Cl. 210—712 5 Claims



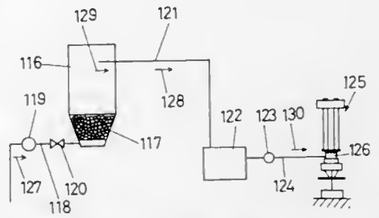
1. A method for treating overspray paint in the water of a paint spray booth water wash system comprising adding to the water from about 10 to 1000 ppm of a catalyst selected from the group consisting of substituted sulfonic acids, acid phosphate esters of salts thereof, morpholine, magnesium hexafluorsilicate, phosphoric acid and acetic acid subjecting the water containing the overspray paint and catalyst to thermal energy from a heat generating source in order to cure the overspray paint by cross-linking and form cured paint particles which are substantially free of water, and separating said cured paint particles from said water.

5,256,309

METHOD OF IMPROVING THE QUALITY OF LARGE AMOUNT OF WATER, AND QUANTITY OF DISSOLVED OXYGEN THEREIN

Masahiko Makino, Funabashi, Japan, assignor to Kaiyo Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 461,072, Jan. 4, 1990, abandoned. This application Nov. 25, 1991, Ser. No. 798,838
Claims priority, application Japan, Aug. 3, 1989, 1-202123; Sep. 25, 1989, 1-248522; Oct. 5, 1989, 1-261156
Int. Cl.[5] C02F *1/58*
U.S. Cl. 210—721 7 Claims



1. A method of improving the quality of a body of water which comprises:

a. dissolving slaked lime in water;

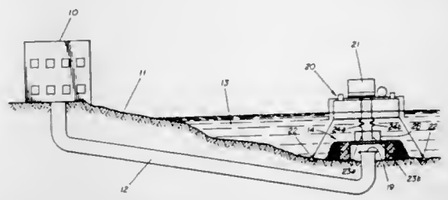
b. pumping said water with slaked lime dissolved therein into said body of water by an intermittent pneumatic pumping unit vertically disposed within said body of water, said pumping unit comprising at least one cylinder which intermittently generates bubbles of a diameter which is substantially that of said cylinder by introducing air into said pumping unit, to diffuse and circulate said water with slaked lime dissolved therein in said body of water by the rising action of said bubbles, to adjust the pH level of said body of water.

5,256,310

TREATMENT OF FRESH WATER FOR ZEBRA MUSSEL INFESTATION

Gary E. Brooks, Oklahoma City, Okla., assignor to Exxon Chemical Patents Inc., Linden, N.J.

Continuation-in-part of Ser. No. 861,290, Mar. 31, 1992, abandoned. This application Feb. 16, 1993, Ser. No. 18,924
Int. Cl.[5] C02F *1/76*
U.S. Cl. 210—747 12 Claims



1. A method of controlling infestation of zebra mussel in a water pumping facility having a suction crib located in a body of water, said method comprising:

(a) positioning a chlorine dioxide generator at the surface of the body of water at a site approximately above the crib;

(b) passing water through the chlorine dioxide generator to provide water discharged therefrom with from 500 to 3,000 milligrams per liter of chlorine dioxide dissolved therein;

(c) injecting an aqueous solution of chlorine dioxide generated in step (a) into or adjacent the crib while flowing water from the body of water through the crib and to the pumping facility, the injection being in accordance with a predetermined treating period extending over a predetermined period of time, the concentration of the chlorine dioxide in the water flowing through the crib being sufficient to kill at least 50% of the zebra mussels which are contacted thereby, but averaging not more than 4 mg/l over the predetermined treating period;

(d) discontinuing the generation of chlorine dioxide and the injection thereof into or adjacent the crib; and

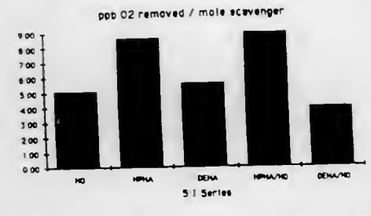
(e) repeating steps (a) through (d) at time intervals ranging from 1 month to 1 year.

5,256,311

HYDROXYALKYLHYDROXYLAMINE OXYGEN SCAVENGER IN AQUEOUS MEDIUMS

Anthony M. Rossi, Vincentown, N.J., and Paul R. Burgmayer, Wayne, Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Continuation-in-part of Ser. No. 369,384, Jun. 21, 1989, abandoned. This application Mar. 26, 1991, Ser. No. 675,376
Int. Cl.[5] C02F *1/68, 1/70;* C09K *15/20*
U.S. Cl. 210—750 10 Claims



1. A method of reducing the amount of oxygen in an oxygen containing aqueous medium comprising adding to said oxygen

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containing aqueous system a hydroxyalkylhydroxylamine having the formula $HO—N—CH_2—[CH(OH)—R]_2$ wherein R is selected from the group consisting of H and C_1 to C_{10} alkyl; wherein the initial rate of reaction between said hydroxyalkylhydroxylamine and dissolved oxygen is more than about 1.5 times the initial rate of reaction between dissolved oxygen and the corresponding non-hydroxylated alkylhydroxylamine.

5,256,312

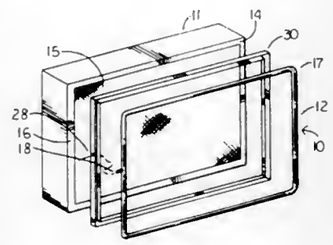
APPARATUS AND METHOD FOR FILTERING OUT PARTICULATES AND IMPURITIES USING AN INFLATABLE SEAL

Leonard A. Letersky, 139 North St., Bristol, Vt. 05443

Continuation-in-part of Ser. No. 588,230, Sep. 25, 1990, abandoned. This application Jul. 2, 1992, Ser. No. 907,584

Int. Cl.[5] **B01D** *29/13*

U.S. Cl. 210—767 **7 Claims**



1. Apparatus for filtering out particulates and impurities, comprising:

filter means for filtering out particulates and impurities;

said filter means having a channel portion, comprising two spaced apart walls, extending from a first side of said filter means, forming a closed curve around a central area, engagable with a side of an inflatable sealing means;

mounting means for receiving the filter means;

said inflatable sealing means being of substantially uniform thickness for creating a seal between the filter means and the mounting means, said inflatable sealing means having a filter side and a mounting side, the filter side being positioned against the filter means, and the mounting side being positioned against the mounting means, the inflatable sealing means preventing fluids from escaping between the mounting means and the filter means and thereby bypassing the filter means; and

said inflatable sealing means comprising pressure means limited to holding a maximum pressure of ten pounds per square inch.

5,256,313

SYSTEM AND PROCESS FOR TREATMENT OF CYANIDE-CONTAINING WASTE

Michael J. Craftoo, Columbus, Ind., assignor to Heritage Environmental Services, Inc., Indianapolis, Ind.

Filed Dec. 21, 1992, Ser. No. 993,425

Int. Cl.[5] **B01D** *35/18*

U.S. Cl. 210—774 **16 Claims**

7. A process for treating cyanide-containing waste to form a substantially detoxified reaction product in a reaction vessel having a heat exchange conduit extending therethrough, the process comprising the steps of

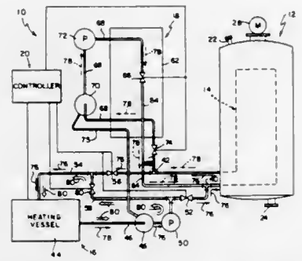
(a) loading the cyanide-containing waste into the reaction vessel,

(b) heating heat exchange fluid in a heating vessel to a temperature sufficient to initiate hydrolysis of cyanides in the cyanide-containing waste,

(c) circulating the hot heat exchange fluid between the heating vessel and the heat exchange conduit for a time sufficient to convert the cyanide-containing waste to the substantially detoxified reaction product,

(d) diverting the flow of heat exchange fluid from the heating vessel to a cooling apparatus,

(e) cooling the heat exchange fluid to a predetermined temperature by passage through the cooling apparatus, and



(f) circulating the cool heat exchange fluid between the cooling apparatus and the heat exchange conduit for a time sufficient to cool the substantially detoxified reaction product to a discharge temperature.

5,256,314

DEVICE AND METHOD FOR THE QUANTITATION OF A VOLUME OF A SEDIMENT OR OF A VOLUME OF A FLUID WHICH DOES NOT FLOW EASILY

Oscar M. J. Driessen, Rue de la Forge 23, B-4851 Sippenaeken, Belgium

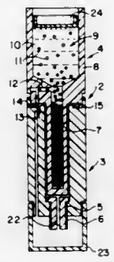
PCT No. PCT/NL90/00083, § 371 Date Dec. 13, 1991, § 102(e) Date Dec. 13, 1991, PCT Pub. No. WO90/15664, PCT Pub. Date Dec. 27, 1990

PCT Filed Jun. 14, 1990, Ser. No. 778,939

Claims priority, application Netherlands, Jun. 16, 1989, 8901530

Int. Cl.[5] **B01D** *21/26*

U.S. Cl. 210—787 **7 Claims**



7. A method for measuring off a volume of a flowable material in a centrifugable reservoir having a bottom, side walls and an entrance opposite the bottom and an occludable aperture which is spaced between said bottom and said entrance both when said aperture is open and when said aperture is closed, comprising introducing flowable material through said entrance into said reservoir in a quantity such that said flowable material extends on both sides of said aperture, centrifuging the reservoir with the aperture closed, opening the aperture, and applying overpressure to the flowable material in the reservoir so as to expel through said aperture material in excess of the material between said aperture and said bottom.

5,256,315

GELLABLE AQUEOUS COMPOSITIONS CONTAINING POLYMERS WITH SPECIAL CHELATING FUNCTIONAL GROUPS USEFUL FOR RECOVERING OIL FROM AN OIL FIELD

Thomas P. Lockhart, San Donato Milanese, and Fabrizio Bonaccorsi, Livorno, both of Italy, assignors to Eniricerche S.p.A. and AGIP S.p.A., both of Milan, Italy

Filed Nov. 18, 1991, Ser. No. 793,524

Claims priority, application Italy, Nov. 23, 1990, 22173 A/90

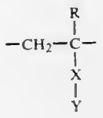
Int. Cl.[5] **E21B** *43/26, 43/16*

U.S. Cl. 252—8.551 **17 Claims**

1. An aqueous gellable composition comprising:

(a) water;

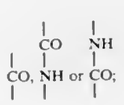
(b) a water-soluble organic polymer crosslinkable by means of a multi-valent ion, consisting of acrylamide units and units bearing chelating functional groups, and, optionally units which are copolymerizable with acrylamide, said units bearing chelating functional groups represented by the formula



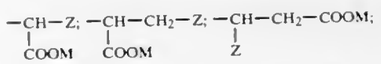
in which

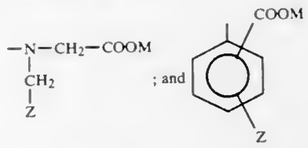
R is H or CH_3;

X is phenylene, $—(CH_2)_n—$ where n is within the range of 1 to 4,



Y is selected from the group consisting of





in which M is H, an alkali metal or NH_4; Z is OH or COOM, and the substituents on the benzene ring are in the ortho position to each other, wherein said polymer has a weight average molecular weight of from 200,000 to 20,000,000 and wherein said units of formula (I) are present in an amount within the range of from 0,7 to 20 mol percent with respect to the acrylamide units;

(c) a multi-valent ion capable of causing the polymer to crosslink selected from the group consisting of Cr^{3+}, Al^{3+}, Ti^{4+}, Zr^{4+}, Sn^{4+}, Zn^{2+}, Y^{3+} and B^{3+};

wherein the concentration of (b) in (a) is within the range of from 1000 to 50,000 ppm, the concentration of (c) in (a) is within the range of from 10 to 5000 ppm and the weight ratio of (b) to (c) is within the range of from 1:1 to 1000:1.

15. A process for modifying the permeability of an oil field comprising injecting the aqueous gellable composition according to claim **1** into the oil field.

16. A process for fracturing an oil field comprising injecting the aqueous gellable composition according to claim **1** and a support material into the oil field.

5,256,316

BRIGHTENING CHEMICAL POLISHING SOLUTION FOR HARDENED STEEL ARTICLE

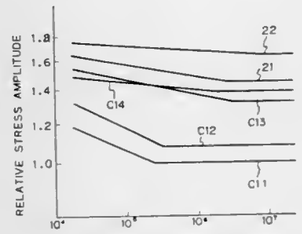
Kenichi Suzuki; Masaki Kajino, both of Nagoya; Kazuyoshi Ogawa, Kasugai; Takashi Asano, Ama; Mineo Ogino, Aichi; Hideo Aihara, Toyota; Fumio Shimizu, Aichi; Masazumu Onishi, and Yasuyuki Suzuki, both of Toyota, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi and Toyota Jidosha Kabushiki Kaisha, Toyota, both of Japan

Filed Nov. 27, 1991, Ser. No. 799,313

Claims priority, application Japan, Nov. 27, 1990, 2-328190; Nov. 28, 1990, 2-331257; Nov. 7, 1991, 3-321128

Int. Cl.[5] **H01L** *21/00*

U.S. Cl. 252—79.1 **8 Claims**



1. A brightening chemical polishing solution for brightening a hardened steel article consisting essentially of hydrofluoric acid having a molar concentration of from 0.2 to 2 mol/l, hydrogen peroxide having a molar concentration of from 0.4 to 4 mol/l, and water, a molar ration of said hydrofluoric acid to said hydrogen peroxide being from 1:1.5 to 1:2.8.

5,256,317

COMPOSITIONS FOR THE TREATMENT OF LEATHER AND FURS

Alain Lauton, Saint-Louis, France, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 612,749, Nov. 13, 1990, abandoned. This application Jul. 2, 1992, Ser. No. 908,646

Claims priority, application Switzerland, Nov. 13, 1989, 4070/89

Int. Cl.[5] **C14C** *9/00, 3/20*

U.S. Cl. 252—8.57 **10 Claims**

1. A composition for the treatment of pickled pelts or furs which is essentially free of an aluminium salt and essentially consisting of

(A) a formaldehyde condensation product of a 4,4'-dihydroxydiphenyl sulfone with a (hydroxy)arylsulfonic acid or a formaldehyde condensation product of a diaryl ethersulfonic acid and 4,4'-dihydroxydiphenylsulfone, and

(B) a polymer and/or a copolymer of an unsaturated C_3–C_5-mono- or dicarboxylic acid and/or a hydroxy derivative thereof, wherein components (A) and (B) are in a weight ratio of (A):(B) of 1:0.03 to 2.2.

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5,256,318
LEATHER TREATMENT AND PROCESS FOR TREATING LEATHER

Tetsuya Masutani; Masahiko Maeda; Norio Yanagisawa, and Masato Kuroi, all of Osaka, Japan, assignors to Daikin Industries Ltd., Osaka, Japan

Filed Apr. 3, 1991, Ser. No. 679,959
Claims priority, application Japan, Apr. 7, 1990, 2-92951
Int. Cl.[5] C14C *3/02*
U.S. Cl. 252—8.570 **32 Claims**

1. A leather treatment composition comprising a fatliquoring agent and a fluorine-containing oil, wherein said fluorine-containing oil is at least one stable oil selected from the group consisting of a perfluoropolyether comprising repeating units of the formula:

$$-(CFCF_2O)-,$$
(with CF_3 as a substituent)

a perfluoropolyether comprising repeating units of the formula:

$$-(CFCF_2O)_p-(CF_2O)_q-(CFO)_r-$$
(with CF_3 substituents)

wherein p, q and r are integers the sum of which is not smaller than 2 and not larger than 200, a poyfluoroether comprising repeating units of the formula:

$$-(CH_2CH_2CH_2O)_a-(CHClCF_2C-F_2O)_b-(CCl_2CF_2CF_2O)_c-$$
$$(CHFCF_2CF_2O)_d-(CFClCF_2CF_2O)_e-(CF_2CF_2CF_2)_f-$$

wherein a, b, c, d, e and f are 0 or positive integrs and satisfy the equations: $2 \leqq a+b+c+d+e+f \leqq 200$ and $a+c+d+f \geqq 1$, and a compound comprising repeating units of the formula:

$$[-(CF_2CFCl)_n-]-(CF_2CFCl)-$$

5,256,319
NEW THIOPHOSPHORETTED COMPOUNDS, THEIR PREPARATION AND THEIR USE AS ADDITIVES FOR LUBRICANTS

Guy Parc, Rueil-Malmaison; Nicole Thevenin, Paris; Maurice Born, Nanterre, and Jacques Lallement, Aubervilliers, all of France, assignors to Institut Francais Du Petrole, Rueil Malmaison, France

Division of Ser. No. 500,827, Mar. 29, 1990, Pat. No. 5,080,812. This application Oct. 23, 1991, Ser. No. 781,609
Claims priority, application France, Mar. 30, 1989, 89 04345
Int. Cl.[5] C10M *137/10, 139/00*
U.S. Cl. 252—32.7 R **19 Claims**

1. A composition of a thiophosphoretted additive obtained by a process comprising reacting a sodium or a calcium sulfonate surbasified by sodium or calcium carbonate, showing 0.9 to 10 basic equivalents per kilogram, with a phosphorus sulfide used in such proportion that the ratio of molar phosphorus to the basic equivalent of the surbasified sulfonate ranges from 0.002 to 0.15 and;

contacting resultant reaction product of the surbasified sulfonate and the phosphorus sulfide with at least one active hydrogen compound selected from the group consisting of water, an alcohol, a phenol, a carboxylic acid, an ester-acid, a mineral acid, a mineral base, an amine, an amide and mercaptan.

5,256,320
GREASE COMPOSITIONS

Patricia R. Todd, Chardon, and James N. Vinci, Mayfield Heights, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Jul. 10, 1992, Ser. No. 911,443
Int. Cl.[5] C10M *137/04*
U.S. Cl. 252—32.007 E **84 Claims**

1. An improved grease composition comprising a major amount of an oil-based, simple metal soap thickened base grease and

(A) from about 0.25% to about 10% by weight of an overbased metal salt of an organic acid;

(B) from about 0.25% to about 5% by weight of a phosphorus and sulfur containing composition selected from the group consisting of

(B-1) a compound represented by the formula

$$R_1(X_1)_a-\underset{\displaystyle (X_2)_bR_2}{\overset{\displaystyle X_4}{\overset{\|}{P}}}-X_3R_3 \qquad (I)$$

wherein each X_1, X_2, X_3 and X_4 is independently oxygen or sulfur provided at least one is sulfur; each a and b is independently 0 or 1; and

wherein each R_1, R_2 and R_3 is independently hydrogen, hydrocarbyl, a group of the formula

$$R_4(X_5)_a-\underset{\displaystyle (X_6)_bR_5}{\overset{\displaystyle X_8}{\overset{\|}{P}}}-X_7R_6- \qquad (II)$$

wherein each R_4 and R_5 is independently hydrogen or hydrocarbyl, provided at least one of R_4 and R_5 is hydrocarbyl,

R_6 is an alkylene or alkylidene group, each

a and b is independently 0 or 1, and

each X_5, X_6, X_7 and X_8 is independently oxygen or sulfur; or a group of the formula $-R_6OH$, where in R_6 is an alkylene or alkylidene group;

(B-2) an amine, an ammonium or a metal salt of (B-1) when at least R_3 is hydrogen;

(B-3) a compound represented by the formula

$$R_7(X_9)_a-\underset{\displaystyle H}{\overset{\displaystyle X_{11}}{\overset{\|}{P}}}-(X_{10})_bR_8 \qquad (III)$$

or

$$R_7X_9-\underset{\displaystyle (X_{10})R_8}{\overset{\displaystyle X_{11}R_9}{P}} \qquad (VI)$$

wherein each R_7, R_9 and R_9 is independently hydrogen or a hydrocarbyl group provided at least one is hydrocarbyl and each X_9, X_{10}, and X_{11} is oxygen or sulfur provided at least one is sulfur; and

(B-4) mixtures of two or more of (B-1) to (B-3) thereof: and

(C) from about 0.25% to about 5% by weight of a hydrocarbyl phosphite; wherein the dropping point of the base grease is increased by at least about 50° C. as measured by ASTM procedure D-2265.

5,256,321
GREASE COMPOSITIONS

Patricia R. Todd, Chardoo, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed Jul. 10, 1992, Ser. No. 911,833
Int. Cl.[5] C10M *137/04, 141/02*
U.S. Cl. 252—32.007 E **53 Claims**

1. An improved grease compositions substantially free of boron or boron-containing compounds, comprising a major amount of an oil based simple metal soap thickened base grease and a minor amount of at least one phosphorus and sulfur containing composition sufficient to increase the dropping point of the base grease, as determined by ASTM procedure D-2265, by at least 30° C., said phosphorus and sulfur containing composition selected from the group consisting of

(A-1) a compound represented by the formula

$$R_1(X_1)_a-\underset{\displaystyle (X_2)_bR_2}{\overset{\displaystyle X_4}{\overset{\|}{P}}}-X_3R_3 \qquad (I)$$

wherein

each X_1, X_2, X_3 and X_4 is independently oxygen or sulfur provided at least one is sulfur; each a and b is independently 0 or 1; and

wherein

each R_1, R_2 and R_3 is independently hydrogen, hydrocarbyl, a group of the formula

$$R_4(X_5)_a-\underset{\displaystyle (X_6)_bR_5}{\overset{\displaystyle X_4}{\overset{\|}{P}}}-X_7R_6- \qquad (II)$$

wherein

each R_4 and R_5 is independently hydrogen or hydrocarbyl, provided at least one of R_4 and R_5 is hydrocarbyl,

R_6 is an alkylene or alkylidene group, each a and b is independently 0 or 1, and

each X_5, X_6, X_7 and X_8 is independently oxygen or sulfur; or a group of the formula R_6OH, wherein R_6 is an alkylene or alkylindene group;

(A-2) an amine or an ammonium salt of (A-1) when at least R_3 is hydrogen;

(A-3) a compound represented by the formula

$$R_7(X_9)_a-\underset{\displaystyle H}{\overset{\displaystyle X_{11}}{\overset{\|}{P}}}-(X_{10})_bR_8 \qquad (III)$$

or

$$R_7X_9-\underset{\displaystyle R_{10}R_8}{\overset{\displaystyle X_{11}R_9}{P}} \qquad (IV)$$

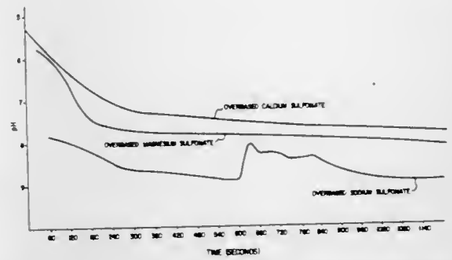
wherein each R_7, R_8 and R_9 is independently hydrogen or a hydrocarbyl group provided at least one is hydrocarbyl, each X_9, X_{10} and X_{11} is independently oxygen or sulfur provided at least one is sulfur, and each a and b is independently 0 or 1; and

(A-4) mixtures of two or more of (A-1) to (A-3) thereof.

5,256,322
LUBRICATING OIL FOR METHANOL FUELED ENGINES

Linda K. Cohu, Rancho Palos Verdes, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Feb. 27, 1989, Ser. No. 315,756
Int. Cl.[5] C10M *135/10*
U.S. Cl. 252—33.2 **20 Claims**



1. A lubricating oil for use in methanol fueled internal combustion engines, said lubricating oil having a total base number from about 9.0 to about 14.0 and consisting essentially of:

a) a suitable base oil;

b) overbased sodium sulfonate in an amount sufficient to provide a base number from about 1.0 to about 2.0 in said lubricating oil; and

c) at least one metal sulfonate selected from the group consisting of overbased calcium sulfonate, overbased magnesium sulfonate and mixtures thereof in an amount sufficient to provide a base number from about 8.0 to about 12.0 in said lubricating oil.

5,256,323
COMPOSITIONS CONTAINING 2,2',2''-NITRILOTRIETHANOL CYCLOMETALATES

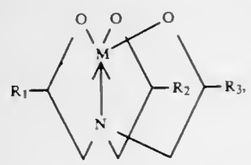
Hermann O. Wirth, Bensheim, and Hans-Helmut Friedrich, Lautertal, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 7, 1991, Ser. No. 638,601
Claims priority, application Switzerland, Jan. 11, 1990, 85/90
Int. Cl.[5] C10M *139/00*
U.S. Cl. 252—42.7 **9 Claims**

1. A composition comprising:

a) a functional fluid and

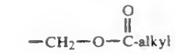
b) at least one compound represented by formula I



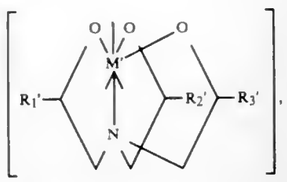
(I)

wherein R_1 is $-(CH_2-X)_n-R$, where X=—S— or —O—, n=1 and R is an alkyl group of 1 to 18 carbon atoms, a phenyl group, a phenyl group which is substituted by at least one C_1-C_{18}alkyl group, a phenyl-(C_1-C_4alkylene)- group or a phenyl-(C_1-C_4alkylene)- group which is substituted by at least one C_1-C_4alkyl group, or R_1 is an alkyl group of 1 to 18 carbon atoms which is substituted by at least one OH group, or R_1 is a

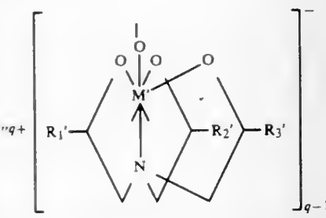
VOL 1155 ISS 4 OC 26 1993 UMI



in which the alkyl moiety contains 1 to 18 carbon atoms, and R_2 and R_3 are the same or different and are —H or, independently of R_1, have the same meanings as R_1, and M is B, Al, Fe, Cr, Sb or Bi, or M is a group M'—R' or a group M'—OR", where M' is Ti, Zr or Sn, and R' and R" are C_1–C_{18}alkyl or R' is



wherein M' is as defined above, and R_1', R_2' and R_3' have the meanings of R_1, R_2 and R_3, or R" is Li, Na or K or is



wherein M' is as defined above and M" is Mg, Ca, B, Al, Fe, Cr, Sb, Bi, Zn, Ti, Ni or Cu, q has the valency of M", and R_1', R_2' and R_3' have the respective meanings of R_1, R_2 and R.

5,256,324

MODIFIED SUCCINIMIDE OR SUCCINAMIDE DISPERSANTS AND THEIR PRODUCTION

Andrew G. Papay, Manchester, Mo., assignor to Ethyl Petroleum Additives, Inc., Richmond, Va.

Division of Ser. No. 601,240, Oct. 22, 1990, abandoned, and Ser. No. 313,021, Feb. 21, 1989, Pat. No. 5,164,103, said Ser. No. 313,021, is a continuation-in-part of Ser. No. 167,875, Mar. 14, 1988, Pat. No. 4,855,074. This application Sep. 27, 1991, Ser. No. 766,127

The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.

Int. Cl.[5] **C10M** *155/00, 153/00*

U.S. Cl. 252—49.9 **44 Claims**

1. A process which comprises heating a succinimide or succinamide dispersant with (i) a mixture comprising at least 0.4 part by weight of a water-hydrolyzable phosphorus ester per part by weight of said dispersant and at least 0.1 part by weight of water per part by weight of said ester, and (ii) a boron compound and removing water such that a phosphorus- and boron-containing succinimide or succinamide is formed.

5,256,325

POLYANHYDRIDE MODIFIED ADDUCTS OR REACTANTS AND OLEAGINOUS COMPOSITIONS CONTAINING SAME

Jacob Emert, Brooklyn, N.Y.; Robert D. Lundberg, Bridgewater, and Antonio Gutierrez, Mercerville, both of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 750,149, Aug. 26, 1991, abandoned, which is a division of Ser. No. 291,745, Dec. 29, 1988, Pat. No. 5,047,160, which is a continuation-in-part of Ser. No. 161,919, Feb. 29, 1988, abandoned. This application Feb. 2, 1993, Ser. No. 12,975

Int. Cl.[5] **C10M** *133/00*

U.S. Cl. 252—51.5 **49 Claims**

1. An oil soluble dispersant additive useful in lubricating oil containing oleaginous compositions comprising the reaction products of:

(i) at least one intermediate adduct comprised of the reaction products of

(a) at least one polyanhydride, and

(b) at least one polyamine; and

(ii) at least one

(a) long chain hydrocarbyl substituted unsaturated C_3–C_{10} monocarboxylic or unsaturated C_4–C_{10} dicarboxylic acid producing material.

5,256,326

METHODS FOR PREPARING MAGNETIC POWDER MATERIAL AND MAGNET, PROCESS FOR PREPARTION OF RESIN COMPOSITION AND PROCESS FOR PRODUCING A POWDER MOLDED PRODUCT

Hiroshi Kawato, and Tatsuya Tomioka, both of Kimitsu, Japan, assignors to Idemitsu Kosan Co. Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 639,293, Jan. 10, 1991, abandoned, and a continuation-in-part of Ser. No. 606,510, Oct. 31, 1990, abandoned, which is a division of Ser. No. 372,833, Jun. 29, 1989, abandoned, and Ser. No. 556,259, Jul. 23, 1990, abandoned, which is a division of Ser. No. 374,149, Jun. 30, 1989, abandoned. This application May 20, 1991, Ser. No. 702,396

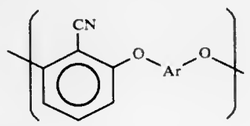
Claims priority, application Japan, Jul. 12, 1988, 63-171832; Jul. 14, 1988, 63-173792; Apr. 24, 1989, 1-101555; Apr. 24, 1989, 1-101556; Jan. 10, 1990, 2-1534; Aug. 14, 1990, 2-213703

Int. Cl.[5] **H10F** *1/00, 1/26*

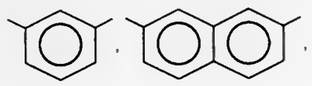
U.S. Cl. 252—62.54 **6 Claims**

1. A method for preparing a magnetic powder material comprising 99.5 to 60% by volume (99.9 to 85% by weight) of magnetic powder and 0.5 to 40% by volume (0.1 to 15% by weight) of a polymer having a repeating unit represented by the formula:

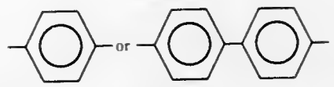
(I)



wherein Ar represents



-continued



and a limiting viscosity (η) in p-chlorophenol as a solvent at 60° C. of 0.2 dl/g or more, which comprises preparing a mixture of the magnetic powder and a solution of the polymer by dissolving the polymer in N-methylpyrrolidone at a temperature of at least 190° C. and by dispersing the magnetic powder within the solution, and then adding a precipitating solvent in which the polymer is insoluble or little soluble to the mixture, thereby precipitating the polymer onto the magnetic powder.

5,256,327

METHOD OF PREPARING A SEQUESTERING AGENT FOR A NON-PHOSPHATE CLEANING COMPOSITION

Rebecca Allen, Pleasanton, and Milton Palmer, Castro Valley, both of Calif., assignors to Shaklee Corporation, San Francisco, Calif.

Division of Ser. No. 738,822, Aug. 1, 1991. This application Jan. 27, 1992, Ser. No. 826,450

Int. Cl.[5] **C11D** *3/10, 1/66, 3/18*

U.S. Cl. 252—90 **6 Claims**

1. A method of preparing a sequestering agent, useful in formulating a substantially phosphate-free, granulated cleaning composition, the method comprising the steps:

(a) forming a reaction mass by intimately admixing dry particles of an alkali metal carbonate salt and dry particles of an hydroxycarboxylic acid, the carbonate salt being in a molar excess with respect to the hydroxycarboxylic acid;

(b) adding not greater than about 5 wt. % water to the admixture of step (a) and mixing the moistened reaction mass to convert the hydroxycarboxylic acid to an alkali metal hydroxycarboxylic acid salt; and

(c) incorporating the reaction products of step (b) into a surfactant blend.

5,256,328

LIQUID TOILET BOWL CLEANER AND SANITIZER CONTAINING HALOGEN DONATING NANOPARTICLES

James W. Cavanagh, Ramsey, N.J., and Robert P. Manzo, Chester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 16, 1992, Ser. No. 991,449

Int. Cl.[5] **C11D** *3/395, 3/48, 7/54, 17/08*

U.S. Cl. 252—102 **8 Claims**

1. A liquid toilet bowl cleaning and sanitizing composition comprising an aqueous dispersion of particles of at least one halogen donating compound wherein said particles have at least about 0.1 mg. per square meter surface area of the halogen donating compound of a surface modifier absorbed on the surface thereof in an amount sufficient to achieve a particle size of less than about 400 nanometers (nm), a surfactant, a dye and a fragrance wherein said particles are present in an amount of from 35 to 75 weight percent of the composition and the water is present in an amount of from 20 to 40 weight percent of the composition and said surface modifier physically adheres to the surface of the halogen donating compound but does not chemically bond to the halogen donating compound.

5,256,329

1,1-DICHLORO-1-FLUOROETHANE DEWATERING SYSTEMS

Chien C. Li, E. Aurora; Kane D. Cook, Buffalo; Rajat S. Basu, Williamsville, all of N.Y., and Stanley S. Seelig, Carol Stream, Ill., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Nov. 27, 1991, Ser. No. 799,594

Int. Cl.[5] **C23G** *5/02;* **B01D** *17/05;* **C09K** *3/18*

U.S. Cl. 252—194 **18 Claims**

1. A composition comprising:

(a) one or more volatile hydrochlorofluorocarbons selected from the group consisting of 1-chloro-1,1,2-trifluoropropane; 2-chloro-1,1-difluoropropane; 1,1-dichloro-1-fluoroethane; 1-chloro-1,2,2-trifluoropropane; 2,2-dichloro-1,1,1-trifluoroproane; 1,1-dichloro-1,2,2-trifluoropropane; 2,2-dichloro-1,1,3-trifluoropropane 1,2-dichloro-1,1,2-trifluoropropane; and 1,1-dichloro-1,2,2-trifluoropropane; and

(b) demulsifier wherein said demulsifier is selected from the group consisting of nonionic surfactant, fatty alcohol ethoxylate; telomer B monoether with polyethylene glycol; fluorinated polymethyl siloxane; and 2,5,8,11-tetramethyl-6-dodecyl-5,8-diol dipropylene glycol and ethylene glycol.

5,256,330

LACTONE COMPOUND AND COMPOSITION COMPRISING THE SAME

Susumu Koyama; Shinichi Saito; Hiromichi Inoue, and Masatoshi Fukushima, all of Chiba, Japan, assignors to Chisso Corporation, Ohsaka, Japan

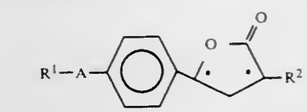
Filed Nov. 27, 1991, Ser. No. 799,074

Claims priority, application Japan, Nov. 27, 1990, 2-323710

Int. Cl.[5] **C09K** *19/34;* **G02F** *1/13*

U.S. Cl. 252—299.61 **8 Claims**

1. A lactone compound expressed by the formula



(I)

wherein R^1 represents a linear or branched alkyl group or alkoxy group of 1 to 15 carbon atoms, R^2 represents a linear or branched alkyl group of 1 to 16 carbon atoms, —A— represents a single bond, a 1,4-phenylene group or a 1,4-cyclohexylene group and * represents an asymmetric carbon atom.

5,256,331

WATER-IN-OIL EMULSIONS CONTAINING HYDROXYLAMINE

Howard I. Heitner, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed May 23, 1991, Ser. No. 704,478

Int. Cl.[5] **B01J** *13/00;* **C09K** *3/00*

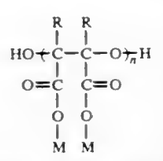
U.S. Cl. 252—309 **6 Claims**

1. A water-in-oil emulsion consisting essentially of, as the continuous phase, a hydrocarbon oil and an emulsifier having an HLB of from about 6.0 to about 9.0 and, as the discontinuous phase, an aqueous solution of a hydroxylamine or an at least partially neutralized hydroxylamine salt.

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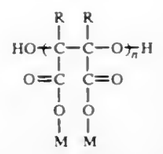
5,256,332
METHOD OF INHIBITING CORROSION IN AQUEOUS SYSTEMS
Stephen M. Kessler, Fairless Hills, Pa., assignor to Betz Laboratories, Inc., Trevose, Pa.
Filed Nov. 19, 1992, Ser. No. 978,831
Int. Cl.[5] C23F *11/12*; C02F *5/10*
U.S. Cl. 252—396 **8 Claims**

1. A process for inhibiting corrosion on metallic surfaces in contact with an aqueous medium comprising adding to the aqueous medium a corrosion inhibitor comprising approximately 1 to 6 ppm of orthophosphate, approximately 1 to 10 ppm of a substituted 1,2,3-triazole, selected from the group consisting of tolytriazole, benzotriazole, 4-phenol-1,2,3-triazole, 4-methyl-1,2,3,-triazole, 4-ethyl-1,2,3-triazole, 5-methyl-1,2,3-triazole, 5-ethyl-1,2,3-triazole, 5-propyl-1,2,3-triazole, and 5-butyl-1,2,3-triazole, approximately 1 to 40 ppm of a polyepoxysuccinic acid having the formula:



wherein M is hydrogen or a cation wherein the resultant salt is water soluble, R is the same or different and is hydrogen, C_{1-4} alkyl or C_{1-4} substituted alkyl and n is from about 2 to 15, approximately 1 to 40 ppm of an acrylic acid/allyl hydroxy propyl sulfonate ether copolymer wherein the molar ratio of acrylic acid to allyl hydroxy propyl sulfonate ether is between about 10 to 1 and 1 to 5 having an umber average molecular weight between 1,000 and 8,000.

7. A corrosion control composition comprising approximately 1 to 6 ppm of orthophosphate, approximately 1 to 10 ppm of a substituted 1,2,3-triazole selected from the group consisting of tolyltriazole, benzotriazole, 4-phenol-1,2,3-triazole, 4-methyl-1,2,3-triazole, 4-ethyl-1,2,3-triazole, 5-methyl-1,2,3-triazole, 5-ethyl-1,2,3-triazole, 5-propyl-1,2,3 triazole, and 5-butyl-1,2,3-triazole, approximately 1 to 40 ppm of a polyepoxysuccinic acid having the formula:



wherein M is hydrogen or a cation wherein the resultant salt is water soluble, R is the same or different and is hydrogen, C_{1-4} alkyl or C_{1-3} substituted alkyl and n is from about 2 to 15, approximately 1 to 40 ppm of an acrylic acid/allyl hydroxy propyl sulfonate ether copolymer wherein the molar ratio of acrylic acid to allyl hydroxy propyl sulfonate ether is between about 10 to 1 and 1 to 5 having a number average molecular weight between 1,000 and 8,000, and the remainder water.

5,256,333
STABILIZED POLYETHER POLYOL AND POLYURETHANE FOAM OBTAINED THEREFROM
Lawrence B. Barry, Newington, and Mark C. Richardson, Cheshire, both of Conn., assignors to Uniroyal Chemical Company, Inc., Middlebury, Conn.
Filed Mar. 25, 1993, Ser. No. 37,058
Int. Cl.[5] C09K *15/32, 15/16, 15/08*
U.S. Cl. 252—400.24 **14 Claims**

1. A liquid stabilizer composition comprising:
a) a diarylamine;
b) a hindered phenol; and,
c) a pentaerythritol disphosphite.

5,256,334
HOMOGENEOUS RADIOPAQUE POLYMER-ORGANOBISMUTH COMPOSITES
Johannes Smid, Lafayette; Yadollah Delaviz, and Israel Cahasso, both of Syracuse, all of N.Y., assignors to The Research Foundation of the State University of New York, Albany, N.Y.
Continuation of Ser. No. 619,026, Nov. 28, 1990, abandoned, which is a continuation of Ser. No. 243,246, Sep. 8, 1988, abandoned. This application Feb. 28, 1992, Ser. No. 843,126
Int. Cl.[5] C08F *4/06*
U.S. Cl. 252—478 **3 Claims**

1. A solid, optically lucent radiopaque composition comprised of a polymer and an organometallic compound which is triphenyl bismuth, said organometallic compound being soluble in said polymer or in a monomer from which said polymer can be formed and present in said composition in an amount from about 5 to 70 weight percent; and said organometallic compound being homogeneously distributed in the polymer at the molecular level.

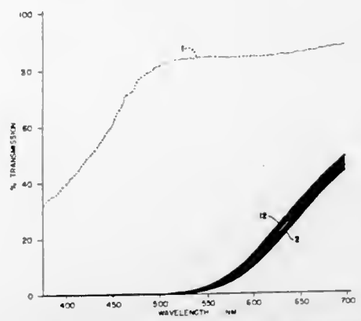
5,256,335
CONDUCTIVE POLYKETONE POLYMERS
Paul S. Byrd, Houston, and Richard L. Danforth, Missouri City, both of Tex., assignors to Shell Oil Company, Houston, Tex.
Filed Nov. 9, 1992, Ser. No. 973,867
Int. Cl.[5] H01B *1/06*; C08K *3/04*
U.S. Cl. 252—500 **20 Claims**

1. A conductive polymer blend composition, exhibiting a surface resistivity of less than about 700 ohms/square, comprising a linear alternating polyketone polymer and from about 5 wt % to about 20 wt % of a conductive carbon fiber, based on total blend composition.

5,256,336
STABLE AQUEOUS DISPERSIONS OF FLUORESCENT BRIGHTENING AGENTS OF THE COUMARINE TYPE AND METHOD OF PREPARING SAME ,
Thomas B. Beamish, Holland, Mich., and Rainer Dyllick, Weinheim, Fed. Rep. of Germany, assignors to BASF Corporation, Parsippany, N.J.
Continuation-in-part of Ser. No. 648,671, Jan. 31, 1991, Pat. No. 5,122,304. This application Mar. 6, 1992, Ser. No. 847,130
The portion of the term of this patent subsequent to Jun. 16, 2009, has been disclaimed.
Int. Cl.[5] C11D *3/42*; C09K *11/06*
U.S. Cl. 252—543 **2 Claims**

1. A storage-stable heat and frost resistant aqueous dispersion, comprising:
a range of from greater than about 10 up to about 25% by weight of a fluorescent brightener selected from the group consisting of 7-diethylamino, 4-methyl coumarine and 7-dimethylamino, 4-methyl coumarine;
from about 0.1 to about 25% by weight of at least one water soluble dispersant selected from the group consisting of anionic, cationic and nonionic surfactants;
from about 0 to about 30% by weight of at least one humectant selected from the group consisting of propylene glycol, glycerol, pentaerythritol and sorbitol;
from about 0 to about 3% by weight of one or more defoamers selected from the group consisting of silicone emulsions and a mixture of 2,5,8,11-tetramethyl-6-dodecyn-5,8-diol, dipropylene glycol and ethylene glycol; and
from about 20% to about 90% by weight of water.

5,256,337
PHOTOCHROMIC POLYMER MEMBRANE
Jerome L. Reid, 59 Old Sudbury Rd., Wayland, Mass. 01778, and Pauline Do, 130 Wiswall Rd., Newton, Mass. 02159
Continuation of Ser. No. 510,146, Apr. 17, 1990, abandoned, which is a continuation-in-part of Ser. No. 209,414, Jun. 20, 1988, Pat. No. 5,015,416. This application Aug. 5, 1992, Ser. No. 926,142
Int. Cl.[5] G02B *5/20, 5/08*; G03C *1/06*
U.S. Cl. 252—584 **17 Claims**

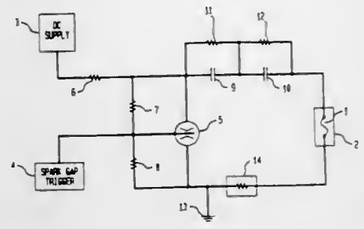


1. A photochromic emulsion for coating light transmissive materials comprising:
photosensitive silver halide particles having dimensions in the range of approximately 50 Angstroms to 800 Angstroms, said silver halide being surface-sensitized;
a polymeric colloidal suspending agent for protecting said silver halide particles, said agent being selected so as to not irreversibly bind halogens produced during photolysis of said silver halide particles: and
a secret agent for conferring electrical conductivity on said emulsion.

5,256,338
SOLIDIFYING MATERIALS FOR RADIOACTIVE WASTE DISPOSAL, STRUCTURES MADE OF SAID MATERIALS FOR RADIOACTIVE WASTE DISPOSAL AND PROCESS FOR SOLIDIFYING OF RADIOACTIVE WASTES
Takashi Nishi; Masami Matsuda, both of Hitachi; Itaru Komori, Katsuta; Tsutomu Baba; Koichi Chino, both of Hitachi; Takashi Ikeda, Katsuta, and Makoto Kikuchi, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 25, 1991, Ser. No. 796,829
Claims priority, application Japan, Nov. 28, 1990, 2-322866
Int. Cl.[5] G21F *9/16*
U.S. Cl. 252—628 **37 Claims**

1. A solidifying material for disposal of radioactive wastes in solidified waste form which comprises a mixture of a cement type hydraulic solidifying material and a fibrous material having a property to adsorb radioactive nuclides in the radioactive waste in the form of ion and/or molecule onto its surface, and to increase retention of the radioactive wastes within said waste form; the fibrous material also having a property to increase the tensile strength of the waste form, thereby increasing the waste loading within said waste form.

5,256,339
FABRICATION TECHNIQUE FOR SILICON MICROCLUSTERS USING PULSED ELECTRICAL POWER
Clareoce G. Thornton, Colts Neck; James F. Harvey, Tinton Falls; Robert A. Lux, Toms River; Robert J. Zeto, Eatontown; Hardev Singh, Robbinsville; Maurice Weiner; Terence Burke, both of Ocean, and Lawrence E. Kingsley, Shrewsbury, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Oct. 30, 1992, Ser. No. 968,882
Int. Cl.[5] B29C *9/00*
U.S. Cl. 264—10 **4 Claims**



1. A method of forming microparticles from bulk samples of semiconductive material comprising the steps of:
a. forming a pulse forming network capable of generating a fast, high voltage pulse;
b. electrically connecting a target sample of bulk semiconductive material to the pulse forming network;
c. irradiating the target sample with a predetermined intensity and wavelength of laser light so as to increase the conductivity of the target sample;
d. explosively vaporizing the target sample into a plasma by passing the fast, high voltage pulse through the target sample; and
e. collecting microparticles of the target sample as the plasma cools.

5,256,340
METHOD OF MAKING A THREE-DIMENSIONAL OBJECT BY STEREOLITHOGRAPHY
Joseph W. Allison, Valencia; Jan Richter, Los Angeles; Craig M. Childers, Santa Clarita; Dennis R. Smalley, Baldwin Park; Charles W. Hull, Santa Clarita, and Paul F. Jacobs, La Crescenta, all of Calif., assignors to 3D Systems, Inc., Valencia, Calif.
Continuation of Ser. No. 702,031, May 17, 1991, Pat. No. 5,182,055, and a continuation-in-part of Ser. No. 6,293, Oct. 30, 1990, which is a continuation-in-part of Ser. No. 429,435, Oct. 30, 1989, Pat. No. 5,130,064, which is a continuation-in-part of Ser. No. 331,644, Mar. 31, 1989, Pat. No. 5,184,307, which is a continuation-in-part of Ser. No. 269,801, Nov. 8, 1988, abandoned, and a continuation-in-part of Ser. No. 182,830, Apr. 18, 1988, Pat. No. 5,059,359. This application Jun. 25, 1992, Ser. No. 906,207
Int. Cl.[5] B29C *35/08, 41/02*
U.S. Cl. 264—22 **30 Claims**

1. In a method for stereolithographically forming a three-dimensional object with drainable walls on substantially a layer by layer basis comprising the steps of forming successive layers of building material in preparation for forming successive layers of building material in preparation for forming successive cross-sections of said three-dimensional object and selectively solidifying said successive layers of said building material to form successive cross-sections of said three-dimensional object by selectively exposing said successive layers to synergistic stimulation whereby the object is formed from a plurality of cross-section, the improvement comprising the steps of:
forming an internal portion of a first cross-section by expos-

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ing first spaced hatch paths to synergistic stimulation to form solidified first hatch lines wherein at least some unsolidified building material remains between said first hatch lines and wherein said first hatch lines have a first side and a second side; and

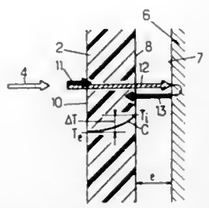
forming an internal portion of a second cross-section by exposing second spaced hatch paths to synergistic stimulation to form solidified second hatch lines wherein at least some unsolidified building material remains between said second hatch paths wherein at least some of said second hatch paths do not overlie said first hatch paths such that unsolidified material on said first side of said first hatch lines can travel to said second side of said first hatch lines.

5,256,341

METHOD AND APPARATUS FOR INFRARED HEATING OF PLASTIC PREFORMS

Gerard Denis, Turretot, and Rene Hudebine, Le Havre, both of France, assignors to Sidel, Le Havre Cedex, France

Filed Jun. 26, 1992, Ser. No. 904,585
Claims priority, application France, Jul. 1, 1991, 91 08158
Int. Cl.[5] B29C *35/08, 49/66*
U.S. Cl. 264—25 **14 Claims**



1. A method for heating preforms having a relatively thick wall made of plastic material for the manufacture by blow moulding or stretch-blow moulding of receptacles, said method comprising the steps of:

a) irradiating the preforms with infrared radiation emitted by at least one source, said at least one source located outside of the preforms to heat the preforms transverse to their longitudinal axes, said infrared radiation (4) including a first wavelength band (B_1) which is absorbed by the plastic material comprising the wall (2) of the preforms (1) and a second, shorter wavelength band (B_2), distinct from the first band, which is not absorbed by the plastic material and which penetrates inside the internal volume of the preforms,

b) inside the internal volume of the preforms, modifying the second wavelength band (B_2) of the infrared radiation (12) which reaches inside said internal volume so as to transform it into radiation (13) with wavelengths included in the first band, and

c) reemitting the infrared radiation with modified wavelengths back towards the walls of the preforms such that modified wavelengths are absorbed by the plastic material comprising the walls of the preforms in the vicinity of their internal surfaces, the infrared radiation exclusively heating the internal surfaces to a temperature T_i so that the temperature T_i of the internal surfaces of the preforms is greater than the temperature T_e of the external surface,

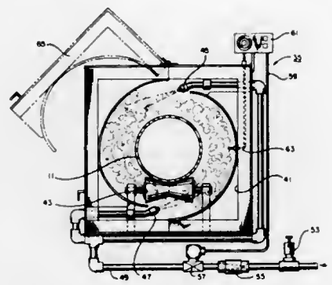
d) wherein the modification of the wavelengths of the radiation is implemented by introducing in said internal volume an elongate core having a treated surface that defines a gap (e) with the internal wall of the preform.

5,256,342

METHOD OF LINING A HOST PIPE WITH A LINER USING CRYOGENIC COOLING

Jim S. McMillan, Benbrook, and Simon Tarsha, Fort Worth, both of Tex., assignors to Pipe Rehab International, Inc., Memphis, Tenn.

Continuation of Ser. No. 672,831, Mar. 21, 1991, Pat. No. 5,114,634. This application May 18, 1992, Ser. No. 884,698
The portion of the term of this patent subsequent to May 19, 2009, has been disclaimed.
Int. Cl.[5] B29C *35/16, 43/46*
U.S. Cl. 264—28 **2 Claims**



1. A method of lining a host pipe with an elastomeric liner having an outside diameter which is initially greater than the inside diameter of the host pipe, the method being a continuous process comprising the steps of:

reducing a length of the liner to a downsized, generally cylindrical outside diameter at a downsizing station;

passing the downsized liner through a cooling station including a thermostatically controlled cooling chamber maintained at a supercooled temperature to thereby cryogenically cool the liner to a supercooled state, the step of supercooling the liner being effective to maintain the outside diameter of the liner in the downsized state and allow the liner to be inserted within the inside diameter of the host pipe;

inserting the downsized liner into the host pipe to be lined;

allowing the liner to expand with time to substantially its original outside diameter to thereby secure the liner within the host pipe.

5,256,343

METHOD FOR PRODUCING PITCH-BASED CARBON FIBERS

Yoshinori Suto; Hideyuki Nakajima, and Toshiyuki Ito, all of Kamisumachi, Japan, assignors to Petoca Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 386,085, Jul. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 148,825, Jan. 27, 1988, abandoned. This application Dec. 31, 1991, Ser. No. 815,216
Claims priority, application Japan, Jan. 28, 1987, 62-17509; Sep. 3, 1987, 62-219224
Int. Cl.[5] D01F *9/145, 11/14*
U.S. Cl. 264—29.2 **1 Claim**

1. In a method for producing pitch-based carbon fibers comprising melt-spinning a high softening point pitch, thermosetting the spun pitch fibers, and carbonizing the thermoset fibers, the improvement comprising coating the spun pitch fibers with a polyaminosiloxane spin finish oil which has a heat resistance of at least 500° C., thermosetting the fibers at a maximum thermosetting temperature of 200°–400° C., and carbonizing at a maximum carbonizing temperature of 500°–900° C. for 120 seconds or less while said fibers are carried on a transportation belt, so that said spin finish oil remains on the carbonized fibers in an amount of 0.1–2.0% by weight relative to the weight of said carbonized fibers.

5,256,344

PROCESS OF THERMALLY STABILIZING PAN FIBERS

Warren C. Schimpf, New Castle County, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 314,538, Feb. 23, 1989, abandoned. This application May 7, 1992, Ser. No. 908,720
Int. Cl.[5] D01F *9/22*
U.S. Cl. 264—29.2 **17 Claims**

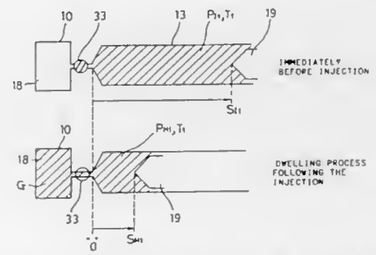
1. A method of manufacturing carbon fiber from a precursor comprising a polyacrylonitrile polymer in the form of one or more tows each comprising a multitude of filaments which comprises in sequence the steps of: heating said precursor in an atmosphere which is substantially free of oxygen so as to form a thermally stabilized precursor, wherein said thermally stabilized precursor has a residual heat of reaction in differential scanning calorimetry which is at least about ten percent lower than said residual heat of reaction prior to said heating in said atmosphere substantially free of oxygen; oxidizing said thermally stabilized precursor; and carbonizing said thermally stabilized precursor.

5,256,345

INJECTION CONTROL METHOD FOR INJECTION MOLDER

Akira Yokota, Hirakata, Japan, assignor to Komatsu Ltd., Tokyo, Japan

PCT No. PCT/JP91/00285, § 371 Date Nov. 4, 1991, § 102(e) Date Nov. 4, 1991, PCT Pub. No. WO91/13743, PCT Pub. Date Sep. 19, 1991
PCT Filed Mar. 4, 1991, Ser. No. 773,571
Claims priority, application Japan, Mar. 5, 1990, 2-53990
Int. Cl.[5] B29C *45/77*
U.S. Cl. 264—40.1 **8 Claims**



1. An injection control method for an injection molder comprising a cylinder having a screw therein for the injection of resin from the cylinder, for controlling the weight of the plasticized synthetic resin injected from the cylinder of the injection molder to fill the cavity of a mold and form a product of weight value G, the method comprising the steps of:

calculating the travel distance S_D of the screw from an initial stop position to inject an amount of plasticized synthetic corresponding to the weight value G of the product, at a constant molten resin temperature value T, on the basis of the detected or set molten resin pressure value P_I of plasticized synthetic resin immediately before injection, the detected or set molten resin pressure value P_H of plasticized synthetic resin during the dwelling process following the injection, the detected positional value S_I of the screw immediately before injection, and the PV property relation formula of plasticized synthetic resin, as follows:

$$S_D = S_I - S_H = V(P_H) \cdot \left\{ \frac{G}{A} - S_I \cdot \left[\frac{1}{V(P_I)} - \frac{1}{V(P_H)} \right] \right\}$$

wherein

S_H: the positional value of the screw during the dwelling process following the injection,

A: the projected sectional area of the screw,

$V(P_H)$: the molten resin specific volume value during the dwelling process following the injection, and

$V(P_I)$: the molten resin specific volume value immediately before injection;

presenting the thus-calculated travel distance S_D; and

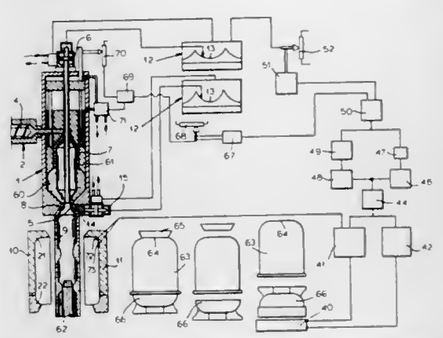
terminating the injection of the plasticized synthetic resin into the mold cavity when the screw has moved the preset travel distance S_D from its initial stop position immediately before injection.

5,256,346

METHOD OF EXTRUSION BLOW-MOLDING HOLLOW THERMOPLASTIC BODIES

Harald Feuerherm, Alfred-Delp-Strasse 1, D-5210 Troisdorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 701,650, May 15, 1991, Pat. No. 5,102,588, which is a continuation of Ser. No. 348,443, May 8, 1989, abandoned. This application Apr. 6, 1992, Ser. No. 864,285
Claims priority, application Fed. Rep. of Germany, May 12, 1988, 3816273
The portion of the term of this patent subsequent to Apr. 7, 2009, has been disclaimed.
Int. Cl.[5] B29C *49/04, 49/78*
U.S. Cl. 264—40.4 **13 Claims**



11. A method of forming thermoplastic hollow bodies by extrusion blow-molding comprising the steps of:

a) feeding thermoplastic material to an extrusion head having a displaceable accumulation piston with a variable piston stroke and a variable die slit,

b) extruding a tubular blank through the die slit of the extrusion head and varying the die slit in relation to a wall thickness program which includes at least one maximum value associated with a critical cross-section of a desired hollow body,

c) expanding the tubular blank in a blow mold into a blown body,

d) ejecting the blown body from the blow mold,

e) dividing the blown body at least into a hollow body, an upper waste slug and a lower waste slug,

f) measuring the net weight of the hollow body,

g) measuring the weight of the lower waste slug,

h) comparing the measured net weight of step f) with a desired hollow body reference weight, and comparing the measured weight of step g) with a desired waste slug reference weight, and in the event of deviations readjusting both the die slit and the piston stroke in such a manner that a subsequent blown body comprises a subsequent hollow body having a hollow body net weight which corresponds to the desired hollow body reference weight and that the subsequent blow body also comprises a subse-

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quent lower waste slug having a weight which corresponds to the desired waste slug reference weight,

i) adjusting the waste slug reference weight for the weight comparison of step h) to correct the position of yet further subsequent blown bodies within the blow mold in such a way that the critical cross-section of such further subsequent blown bodies arrives at a predetermined location in the blow mold.

5,256,347

METHOD OF FIRING CERAMIC HONEYCOMB STRUCTURE

Kazuhiro Miyahara, Nagoya, Japan, assignor to NGK Insulators, Ltd., Japan

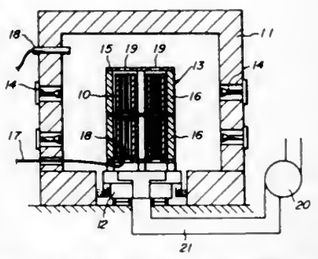
Continuation of Ser. No. 744,683, Aug. 9, 1991, abandoned, which is a continuation of Ser. No. 397,465, Aug. 18, 1989, abandoned. This application Sep. 28, 1992, Ser. No. 952,150

Claims priority, application Japan, Feb. 25, 1988, 63-40599

The portion of the term of this patent subsequent to Feb. 2, 2010, has been disclaimed.

Int. Cl.[5] **C04B** *35/64*

U.S. Cl. 264—40.6 **3 Claims**



1. A method of firing a ceramic honeycomb structure containing organic additives, said method comprising the steps of:

placing a first thermocouple inside the ceramic honeycomb structural body, and placing a second thermocouple directly adjacent to and outside the ceramic honeycomb structural body to detect temperatures at inside and outside portions of the ceramic honeycomb structural body;

detecting a differential temperature condition between said inside and outside portions of said ceramic honeycomb structure, said differential temperature condition resulting from non-uniform combustion of said organic additives at inside and outside portions of said ceramic honeycomb structure; and

controlling combustion of burner means based on the detected differential temperature condition.

5,256,348

TIRE SHAPING PRESSURE CONTROL SYSTEM AND METHOD

Michael V. Waller, 2 Heritage Trace, Newnan, Ga. 30263

Filed Jun. 13, 1991, Ser. No. 714,686

Int. Cl.[5] **B29C** *35/04*

U.S. Cl. 264—40.5 **13 Claims**

1. A method of adjusting the shaping fluid pressure in the molding press bladder of a tire press to a desired set point fluid pressure value as an uncured tire is being loaded into the tire press for shaping in preparation for curing using a pressure regulator controlled by a pneumatic controller and connecting a source of shaping fluid under pressure to the interior of the bladder comprising the steps of:

A. generating a first input to the pneumatic controller controlling the pressure regulator so that the pressure output of the pressure regulator is at a first selected output value;

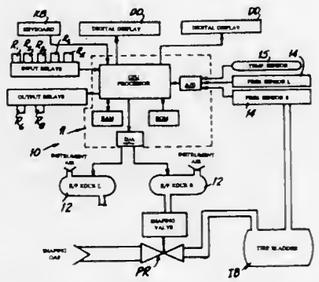
B. sensing the shaping fluid pressure in the interior of the bladder used to shape the tire while being loaded into the tire press;

C. comparing the sensed shaping fluid pressure in the bladder with the desired set point fluid pressure value to be maintained in the bladder to determine the compared difference between the sensed fluid pressure and the set point fluid pressure value;

D. adjusting the input to the pneumatic controller in response to said compared difference to adjust the output of the pressure regulator to an adjusted selected output value which is greater than said first selected output value if the sensed shaping fluid pressure in the bladder is less than said desired set point fluid pressure value and which is less than said first selected output value if the sensed shaping fluid pressure in the bladder is greater than said desired set point fluid pressure value;

E. repeating steps B–D until the desired set point fluid pressure value is achieved in the bladder and to cause the fluid pressure in the bladder to be maintained at the desired set point fluid pressure value; and,

F. changing the desired set point fluid pressure value to cause the bladder to be first inflated to a prescribed "inflate" pressure value to expand the bladder into the tire, then to be deflated to a prescribed "deflate" pressure value to cause the bladder to be deflated sufficiently to remove any folds therein, then to be reinflated to a prescribed "hold shape" pressure value while the tire loaders release the tire in the press, and finally to be inflated to a prescribed "first shape" pressure value while the tire press is being closed onto the tire being supported on the bladder.



9. A system for controlling the shaping fluid pressure within the interior of inflatable tire supporting bladders in a tire press supplied from a pressurized fluid source comprising:

pressure sensing means for sensing the fluid pressure within the interior the tire support bladder;

a pneumatically operated pressure regulator operatively connected to the pressurized fluid source and having a regulated output to the interior of the tire support bladder;

an electric-to-pneumatic controller operatively connected to said pressure regulator and having a pneumatic output controlling said regulated output of said pressure regulator; and

microprocessor means for repeatedly comparing the sensed fluid pressure in the tire support bladder with a prescribed set point fluid pressure value to be maintained in the interior of the tire support bladder and for adjusting said pneumatic output from said electric-to-pneumatic controller in response to the compared difference between the sensed fluid pressure and said prescribed set point fluid pressure value until the sensed pressure within the interior of the tire support bladder is substantially equal to and maintained at the prescribed set point fluid pressure, and for changing the desired set point fluid pressure value to cause the bladder to be first inflated to a prescribed "inflate" pressure value to expand the bladder into the tire, then to be deflated to a prescribed "deflate" pressure value to cause the bladder to be deflated sufficiently to remove any folds therein, then to be reinflated to a prescribed "hold shape" pressure value while the tire loaders release the tire in the press, and finally to be inflated to a prescribed "first shape" pressure value while the tire press is being closed onto the tire being supported on the bladder.

5,256,349

LIGHT WEIGHT FORMED BODY AND METHOD FOR PRODUCING THE SAME

Kazuyoshi Sato; Masakazu Hara, and Hisaya Kamura, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

PCT No. PCT/JP89/01337, § 371 Date Oct. 26, 1990, § 102(e) Date Oct. 26, 1990, PCT Pub. No. WO90/07472, PCT Pub. Date Dec. 7, 1990

Continuation of Ser. No. 571,533, Oct. 26, 1990, abandoned.

This PCT application Dec. 28, 1989, Ser. No. 934,905

Claims priority, application Japan, Dec. 28, 1988, 63-329148; Dec. 28, 1988, 63-329149; Jun. 12, 1989, 1-146667; Jun. 12, 1989, 1-146668; Jun. 12, 1989, 1-146669; Jun. 12, 1989, 1-146670; Sep. 6, 1989, 1-231294

Int. Cl.[5] **B28B** *1/26, 3/00;* **B29C** *43/02*

U.S. Cl. 264—86 **22 Claims**



1. A light weight formed body having a bulk specific gravity of 0.2 to 1 g/cm^3 and which can be cut, scraped and nailed comprising a (i) powder having a BET surface area of 100–140 m^2/g produced by reforming a glassy blast furnace slag powder with an alkali aqueous solution through a dissolution reaction and a hydration reaction of glass or comprising a (ii) powder having a BET surface area of 100–140 m^2/g produced by reforming a glassy blast furnace slag powder with an alkali aqueous solution through a dissolution reaction and a hydration reaction of glass and then dehydrating with heating, and comprising a polymer dispersion, wherein the light weight formed body comprises 3 to 20% of the polymer dispersion as ratio by weight of solid matter to the powder produced by reforming the glassy blast furnace slag powder, 2 to 10% of glass fiber as ratio by weight to the powder produced by reforming the glassy blast furnace slag powder and 0.05 to 0.2 part of a cationic polymer coagulant by weight per 1 part by weight to the solid matter of the polymer dispersion.

14. The process for producing a light weight formed body having a bulk specific gravity of 0.2 to 1 g/cm^3 and which can be cut, scraped, and nailed, which light weight formed body comprises a (i) powder having a BET surface area of 100–140 m^2/g produced by reforming a glassy blast furnace slag powder with an alkali aqueous solution through a dissolution reaction and a hydration reaction of glass or comprises a (ii) powder having a BET surface area of 100–140 m^2/g produced by reforming a glassy blast furnace slag powder with an alkali aqueous solution through a dissolution reaction and a hydration reaction of glass and then dehydrating with heating, and comprises a polymer dispersion, and wherein the light weight formed body comprises 3 to 20% of the polymer dispersion as ratio by weight of solid matter to the powder produced by reforming the glassy blast furnace slag powder, 2 to 10% of glass fiber as ratio by weight to the powder produced by reforming the glassy blast furnace slag powder and 0.05 to 0.2 part of a cationic polymer coagulant by weight per 1 part by weight to the solid matter of the polymer dispersion, which process comprises:

(a) adding the polymer dispersion, the glass fiber, and water to the powder produced by reforming the glassy blast furnace slag powder;

(b) kneading;

(c) further adding the cationic polymer coagulant;

(d) forming the light weight formed body by press dehydration; and

(e) drying.

5,256,350

METHOD AND DEVICE FOR MANUFACTURING TIRE FORMING BLADDERS

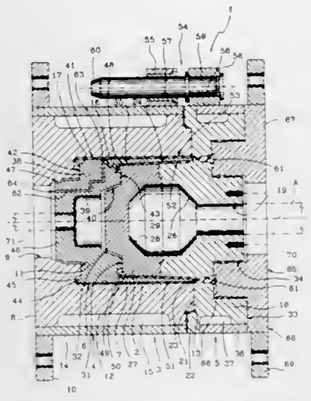
Marco Franzini, Cisterna Di Latina; Fabrizio Giovannocci, Rome; Attilio Pomenti, Rome, and Gordon M. Tomlinson, Rome, all of Italy, assignors to Bridgestone/Firestone, Inc., Akron, Ohio

Filed Oct. 9, 1991, Ser. No. 774,752

Claims priority, application Italy, Nov. 9, 1990, 67879-A/90

Int. Cl.[5] **B29C** *45/02, 45/16*

U.S. Cl. 264—102 **11 Claims**



1. A method of manufacturing tire forming bladders having a general V-shaped cross sectional configuration formed by a pair of generally straight tapered leg portions which join at one end to form an apex of the V-shaped bladder, including the steps of, providing a curing mold having first and second half molds and an inner core; inserting a first end of the inner core into an opening formed in the first half mold to form a first generally straight tapered leg portion of a substantially V-shaped inner molding chamber; inserting the second half mold into an opening formed in the inner core of form an annular groove and a generally straight tapered second leg portion of said molding chamber therebetween, with said second leg portion joining with the first leg portion at said annular groove; feeding a mass of uncured rubber into an annular outer chamber formed on the outside of the second half mold which communicates with the annular groove of said inner molding chamber via a number of injection duct means arranged in a generally circular pattern in said outer chamber; moving an annular piston into the annular outer chamber of the second mold half after said second mold half is inserted into the inner core and subjecting said mass of uncured rubber to sufficient pressure to inject said uncured rubber from said outer annular chamber into the annular groove of said inner chamber via said injection duct means whereby the uncured rubber flows into the annular groove and then into the straight tapered leg portions of the inner molding chamber communicating therewith to form the V-shaped bladder; curing said rubber inside said inner chamber so as to produce a finished bladder; and extracting said finished bladder from said mold by removing said second half mold from the inner core and extracting said inner core from the first half mold.

8. A device for manufacturing a tire forming bladder having

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a V-shaped cross sectional configuration formed by a pair of straight tapered legs terminating at one end in an apex; said device including a bladder curing mold having mutually movable first and second half molds and an extractable inner core, a first end of said inner core being inserted into an opening formed in the first half mold to form a first straight tapered leg portion of a substantially V-shaped inner molding chamber therebetween, with said second half mold being inserted into an opening formed in a second end of the inner core to form an annular groove and a second straight tapered leg portion of said molding chamber therebetween, with said second leg portion joining with the first leg portion of the molding chamber at said annular groove; an annular outer chamber formed on the outside of the second half mold for receiving a mass of uncured rubber; a number of injection duct means formed in the second half mold and arranged in a generally circular pattern and communicating between said annular groove of the inner molding chamber and the outer chamber; and pressure means traveling along said outer chamber for injecting said mass of uncured rubber from said outer chamber into the annular groove of said inner chamber and the outer for injecting said mass of uncured rubber from said outer chamber into the annular groove of said inner chamber through said number of duct means for subsequent flow into the first and second straight tapered leg portions of the inner chamber.

5,256,351

PROCESS FOR MAKING BIAXIALLY STRETCHED, HEAT SHRINKABLE VLDPE FILMS

Stanley Lustig, Park Forest; Nancy M. Mack, Chicago; Jeffrey M. Schuetz, Woodridge, and Stephen J. Vicik, Darien, all of Ill., assignors to Viskase Corporation, Chicago, Ill.

Division of Ser. No. 501,986, Mar. 28, 1990, Pat. No. 5,059,481, which is a continuation of Ser. No. 384,589, Jul. 25, 1989, Pat. No. 4,976,898, which is a division of Ser. No. 42,087, Apr. 24, 1987, Pat. No. 4,863,769, which is a continuation of Ser. No. 745,236, Jun. 17, 1985, abandoned. This application Oct. 21, 1991, Ser. No. 779,675

The portion of the term of this patent subsequent to Dec. 31, 2008, has been disclaimed.

Int. Cl.[5] **B29C** *35/10*

U.S. Cl. 264—22 **46 Claims**

1. A method of manufacturing a heat-shrinkable, puncture resistant, biaxially stretched, thermoplastic film comprising the steps of extruding a primary tube having a transverse and a machine direction, said tube comprising a very low density polyethylene which is a linear polymer of ethylene and at least one alpha-olefin selected from the group consisting of butene-1, pentene-1, hexene-1, 4-methyl pentene-1, heptene-1 and octene-1, said copolymer having a density of from about 0.86 g/cm^3 to 0.91 g/cm^3 and a 1% secant modulus about below about 140,000 kPa; heating the very low density polyethylene primary tube; biaxially stretching the heated primary tube in the transverse and machine directions under conditions wherein the biaxially stretched tube is heat shrinkable from about 30% to about 50% at a temperature of about 90° C. in at least one of the transverse and machine directions.

5,256,352

AIR-LIQUID MIXER

Timothy S. Snyder, Glastonbury, and Bruce V. Johnson, Manchester, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 2, 1992, Ser. No. 939,275

Int. Cl.[5] **B05B** *7/08*

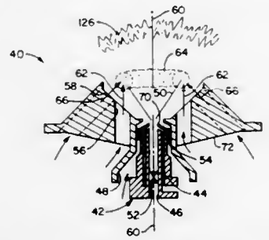
U.S. Cl. 261—78.2 **1 Claim**

1. A device for mixing a flow of liquid with a flow of gas, comprising

means for discharging the liquid into a mixing region as a downstream expanding, conical spray having a centerline;

first means for discharging a first portion of the flow of gas into the mixing region, said first gas discharging means including a first plurality of discharge outlets, disposed circumferentially about the centerline and surrounding the liquid discharge means, each of said first plurality of outlets oriented to discharge a corresponding first jet of gas axially into the conical spray within a torroidal interaction zone spaced downstream from the liquid discharge means; and

second means for discharging a second portion of the flow of gas into the mixing region, said second air discharge means including a second plurality of discharge outlets



disposed circumferentially about the centerline and surrounding both the liquid discharge means and the first gas discharge means, each of said second plurality of outlets oriented to discharge a second jet of gas into the conical spray within the torroidal interaction zone,

wherein each second jet of gas intersects a corresponding first jet of gas at an acute angle, the point of intersection of the first and second jets of gas being coincident with the conical spray and located within the torroidal interaction zone.

5,256,353

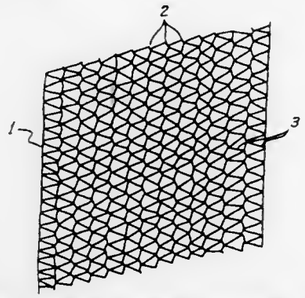
METHOD OF MAKING ELASTIC PLASTIC NETTING MADE OF ORIENTED STRANDS

Yuval Leiber, Megido; Ya'Acov Agavof, and Yonatan Arnon, both of Haemek, all of Israel, assignors to Tama Plastic Industry, Kibbutz Mishmar Ha'emek, Israel

Division of Ser. No. 444,057, Nov. 30, 1989, Pat. No. 5,104,714. This application Dec. 23, 1991, Ser. No. 813,140

Int. Cl.[5] **B28B** *11/16*

U.S. Cl. 264—103 **6 Claims**



1. A method of making a knitted thermoplastic netting having longitudinal ribbons and lateral ribbons, comprising the steps of:

producing a substantially unoriented primary film consisting essentially of linear low density polyethylene;

slitting the substantially unoriented primary film into longitudinal ribbons;

orienting by stretching the longitudinal ribbons to have a ratio of stretched oriented length to original substantially unoriented length of about 1:4 to 1:5; and

knitting said oriented longitudinal ribbons and the lateral ribbons into a knitted net;

wherein said knitted net has an elastic limit of more than about 6%, an elongation at break of more than about 60%, and an elasticity of more than about 15% when stretched more than 40%.

5,256,354

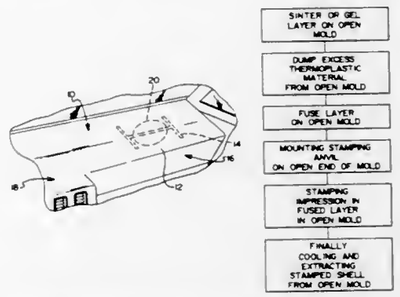
METHOD FOR FORMING AN INVISIBLE TEAR SEAM

Neil Chadwick, St. Clair Beach, Canada, assignor to Davidson Textron Inc., Dover, N.H.

Filed Nov. 12, 1992, Ser. No. 974,703

Int. Cl.[5] **B29C** *39/02*

U.S. Cl. 264—119 **8 Claims**



1. A method for making a cover member for a safety air bag assembly including the steps of heating an open thin metal mold and casting thermoplastic material either as a dry powder or as a liquid slurry against the casting surface of the heated thin metal mold and sintering or gelling a layer of the thermoplastic material on the thin metal mold by directing an excess charge of the thermoplastic material thereon and dumping any unfused thermoplastic material from the heated mold characterized by the further steps of:

fusing the sintered or gelled layer of thermoplastic material to a plastic state capable of maintaining a self-supporting impression; and

stamping a tear seam in the fused layer while the fused layer is still plastic and while the thin metal mold is still open and thereafter finally curing and cooling the fused layer and removing same from the open thin metal mold.

5,256,355

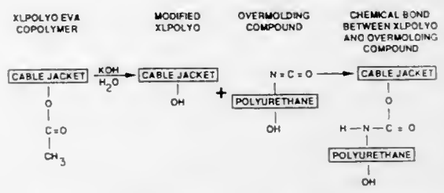
METHOD FOR BONDING A POLYURETHANE MOLDING COMPOSITION TO A CABLE JACKET OF AN OLEFIN/ESTER INTERPOLYMER

Thomas S. Ramotowski, East Lyme, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 23, 1992, Ser. No. 948,561

Int. Cl.[5] **B32B** *31/12*

U.S. Cl. 264—135 **10 Claims**



1. In a method for bonding a polyurethane molding composition to the surface of cables having jackets of an olefin/ester interpolymer to provide a water resistant seal thereabout, the steps comprising:

(a) providing a length of cable having a jacket of an olefin interpolymer containing functional ester groups;

(b) interacting the surface of the interpolymer jacket with an alkali metal hydroxide solution to hydrolyze the ester groups and thereby substitute hydroxyl groups for the organic acid groups of the ester in the interpolymer at the surface of said jacket;

(c) applying a diisocyanate primer to said surface of said jacket, said primer interacting with said substituted hydroxyl groups to produce pendant reactive groups; and

(d) applying about said primed surface at ambient temperatures a room temperature curing urethane prepolymer composition, said urethane prepolymer having unreacted hydroxyl groups along the prepolymer chain, said prepolymer composition reacting with said pendant reactive groups to produce a firmly bonded polyurethane overmolding on said jacket.

5,256,356

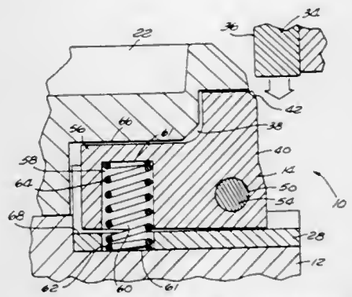
METHOD FOR FORMING AN OPENING IN A CONTAINER

George A. Grimes, Conyers, Ga., assignor to Dolco Packaging Corp., Sherman Oaks, Calif.

Division of Ser. No. 698,628, May 10, 1991, Pat. No. 5,162,123. This application Aug. 11, 1992, Ser. No. 928,558

Int. Cl.[5] **B29C** *43/40, 51/32*

U.S. Cl. 264—154 **2 Claims**



1. A method for forming a container with a latch opening from a sheet of deformable material, by using a mold having upper and lower mold portions that move toward each other to define a path of travel, comprising the steps of:

mounting an upper shear key having a first shear surface to the upper mold portion;

mounting a lower key having a second shear surface to the lower mold portion on a pivot axis normal to the path of travel such that said first and second shear surfaces face each other in parallel alignment;

advancing said upper shear key toward said lower key along the path of travel to press against the sheet of deformable material; and

spring orienting said lower key whereby to rotate said second shear surface of said lower key about said pivot axis to slideably contact said first shear surface of said upper shear key and form the latch opening as the upper and lower keys slidably contact each other.

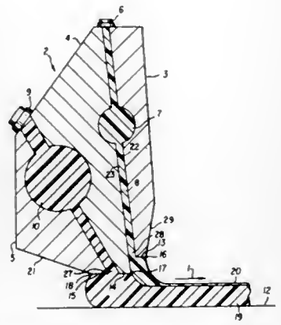
VOL 1155 ISS 4 OCT 26 1993 UMI

5,256,357

APPARATUS AND METHOD FOR COCASTING FILM LAYERS

Jack Hayward, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 28, 1992, Ser. No. 890,507
Int. Cl.[5] B29C 47/06
U.S. Cl. 264—171 11 Claims



1. An apparatus for the manufacture of polymeric films having two or more layers which comprises

a) a casting substrate which is adapted to move continuously in a downstream direction,

b) a cocasting die for extruding simultaneously two or more liquid casting compositions in contiguous layers onto the moving substrate,

said die having an upstream side and a downstream side and comprising an assembly of die elements which form an upstream extrusion slot on the upstream side of the die and a downstream extrusion slot on the downstream side of the die,

said die further comprising a plurality of cavities for receiving casting compositions and for feeding same at a constant rate to respective extrusion slots,

each of said slots having narrowly spaced-apart parallel walls extending from a cavity to lips which form an elongated slot exit, the slot exits being mutually parallel,

said die being so positioned that the slot exits are spaced close to the substrate, with the long dimensions of the slot exits being perpendicular to the direction of movement of the substrate,

the upstream slot exit having an outer lip comprising a first planar rectangular land which is coextensive in length with the slot exit,

said planar rectangular land forming an acute angle with the planar upstream wall of the slot and extending in the widthwise, upstream direction to a pinning line formed by the intersection of the land with an upstream outer surface of the die at an angle on the exterior of the die greater than 180°,

said upstream slot exit having an inner lip formed by a second narrow, elongated land which is coplanar and coextensive with the first land,

on the downstream side of the die, a downstream slot exit having a first lip formed by a land that is coplanar with the first planar land and a second lip formed by a downstream planar, rectangular land, said downstream land being coextensive in length with the downstream slot exit and extending in its widthwise direction to a pinning line formed by the intersection with another surface of the die,

said downstream land being spaced at a greater distance from the substrate than the other lands.

9. A method for simultaneously casting liquid polymeric casting compositions comprising a polymer and a volatile liquid as contiguous layers on a moving substrate by means of an extrusion die having a plurality of extrusion slots, to form a polymeric film having layers of uniform but different thicknesses which comprises,

feeding first and second liquid polymeric casting compositions to a first relatively wide extrusion slot and a second relatively narrow extrusion slot, respectively, in said die, the die being so positioned with respect to the moving substrate that said relatively narrow extrusion slot is downstream from said relatively wide extrusion slot,

and, before feeding the casting compositions to said slots, flowing said volatile liquid or a dilute mixture thereof with polymer to said slots, thereafter feeding said first casting composition to said relatively wide slot for a period of time sufficient to establish uniform flow and contact with a pinning line along a land upstream from said relatively wide slot and thereafter substituting said second casting composition as the feed for said relatively narrow slot.

5,256,358

METHOD OF MAKING STRETCHED FILAMENTS OF ULTRA-HIGH-MOLECULAR WEIGHT POLYETHYLENE

Takeshi Shiraki, Yamaguchi; Yoshihiro Yoshimura, Iwakuni, and Koji Nakashima, Hiroshima, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 663,771, Mar. 4, 1991, abandoned, which is a continuation of Ser. No. 561,484, Aug. 2, 1990, abandoned, which is a continuation of Ser. No. 117,414, Nov. 2, 1987, abandoned, which is a division of Ser. No. 822,517, Jan. 27, 1986, abandoned. This application Jul. 9, 1992, Ser. No. 911,360
Claims priority, application Japan, Jan. 29, 1985, 60-13624; May 31, 1985, 60-118213
Int. Cl.[5] D01F 6/04; D02J 1/22
U.S. Cl. 264—210.7 3 Claims

1. A method for producing an extruded stretched filament of ultra-high-molecular-weight polyethylene having an intrinsic viscosity [η] of at least 4 dl/g and a tensile strength at break of at least 35 kg/mm^2 consisting of the steps of:

melting ultra-high-molecular-weight polyethylene having an intrinsic viscosity [η] of at least 4 dl/g in a screw extruder;

extruding the molten ultra-high-molecular-weight polyethylene from a die having an L/D of at least 10 to form an extruded strand; and

taking-off the extruded strand at a draft ratio of at least 1 while gradually cooling the extruded strand; and stretching the strand at a draw ratio of at least 6 to form an extruded stretched filament.

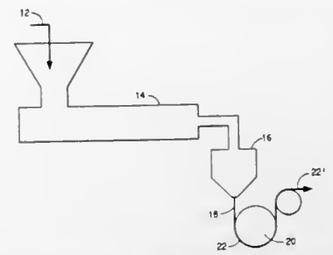
5,256,359

PROCESS FOR MANUFACTURING CAST AMORPHOUS FILM

Diane M. Hahm, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 6, 1992, Ser. No. 879,208
Int. Cl.[5] B29C 41/26
U.S. Cl. 264—211.12 7 Claims

1. A cast film process for the manufacture of amorphous film, said process comprising the step of heating a resin to a flowable state and extruding the heated resin through a die gap of about 3 millimeters or less, and immediately cooling the resin in an amorphous state using a quench roll having a temperature in the range of about 80°–199° F., wherein the distance of the die gap divided by the final thickness of the film is less than about 60, the Elmendorf tear strength in a TD and MD (grams per mil) ratio of TD/MD according to ASTM



1922 is less than about 10, and the final film thickness is about 1 mil or less.

5,256,360

METHOD OF MANUFACTURING A PRECISION MICRO-FILTER

Hong Li, Cambridge, Mass., assignor to Panasonic Technologies, Inc., Cambridge, Mass.

Filed Mar. 25, 1992, Ser. No. 857,323
Int. Cl.[5] B29C 33/42, 39/00
U.S. Cl. 264—219 10 Claims

1. A method of manufacturing a precision micro-filter, comprising the steps of:

micromachining a mold material to form a micro-filter mold comprising a base and a plurality of protrusions extending substantially perpendicular from said base wherein micromachining includes one of micro-electro-discharge machining, laser-beam micro-machining and electron-beam micro-machining;

introducing a liquid material into the micro-filter mold, said liquid material being a material selected from the group consisting of polymers and ceramics;

allowing the liquid material to solidify and to form the precision micro-filter; and

separating the precision micro-filter from the micro-filter mold.

5,256,361

METHOD FOR FORMING BODIES COMPRISING PREVIOUSLY CROSSLINKED THERMALLY STABLE RESIN AND PRODUCT MADE THEREBY

James F. Keys, West Bloomfield, Mich., assignor to The Standard Products Company, Cleveland, Ohio

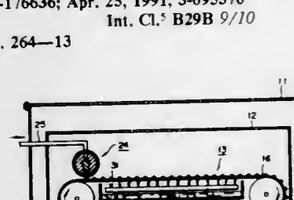
Filed May 22, 1992, Ser. No. 887,311
Int. Cl.[5] B29C 35/02, 65/02
U.S. Cl. 264—236 18 Claims

1. A method of forming a body comprising resin material which can be crosslinked to form a thermally stable resin, said method comprising the sequential steps of

(A) providing a body of resin which can be crosslinked to form a thermally stable resin;

(B) selectively crosslinking said body to provide a first zone of substantially uncrosslinked resin; a zone of substantially crosslinked resin and a transition zone therebetween;

(C) forming said first zone and transition zone; and



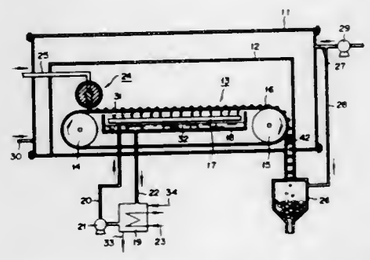
(D) substantially crosslinking said first zone and transition zone for providing a body substantially free of a visible joint line.

5,256,362

METHOD FOR PRODUCTION OF GRANULAR CYSTEAMINE HYDROCHLORIDE

Yuujiro Goto, Kawasaki; Akira Tamura, Kurashiki, and Hiromi Yokoyama, Yokohama, all of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 552,137, Jul. 13, 1990, abandoned. This application May 21, 1991, Ser. No. 703,744
Claims priority, application Japan, Jul. 14, 1989, 1-180181; Aug. 14, 1989, 1-207858; Aug. 15, 1989, 1-209597; Aug. 15, 1989, 1-209601; Sep. 11, 1989, 1-232720; Sep. 12, 1989, 1-234733; Sep. 13, 1989, 1-235564; Sep. 14, 1989, 1-236859; Sep. 18, 1989, 1-240169; Sep. 18, 1989, 1-240170; Jul. 3, 1990, 2-176635; Jul. 3, 1990, 2-176636; Apr. 25, 1991, 3-095370
Int. Cl.[5] B29B 9/10
U.S. Cl. 264—13 14 Claims



1. A method for the production of granular cysteamine hydrochloride having an average particle diameter in the range of 0.1 to 20 mm, comprising causing a powdery cysteamine hydrochloride to melt at a temperature of 68° to 150° C.; and dropping the molten cysteamine hydrochloride onto a corrosion-proof substrate maintained at a temperature of 10° to 40° C., thereby cooling and solidifying the drops of cysteamine hydrochloride.

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5,256,363
POLYETHYLENE TEREPHTHALATE AND USES THEREOF

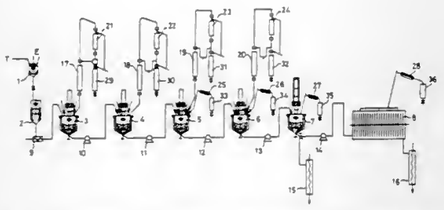
Mikio Hashimoto, Ootake; Hiroji Niimi, Iwakuni; Tadao Yatsu, Iwakuni, and Shigemi Shiraki, Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 662,978, Feb. 28, 1991, abandoned, which is a continuation of Ser. No. 538,698, Jun. 18, 1990, abandoned, which is a continuation of Ser. No. 439,011, Nov. 21, 1989, abandoned, which is a continuation of Ser. No. 173,100, Mar. 28, 1988, abandoned. This application Dec. 4, 1992, Ser. No. 985,752

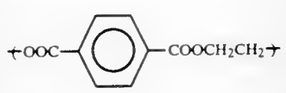
Claims priority, application Japan, Mar. 26, 1987, 62-70215

Int. Cl.[5] B29C *45/14*

U.S. Cl. 264—259 5 Claims

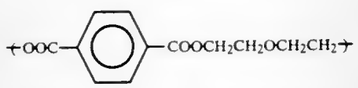


1. A polyethylene terephthalate characterized by having (A) an ethylene terephthalate repeating unit (a) represented by the general formula (I)



(I)

said unit (a) being in the range of from 97.0 to 98.6 mol %, and a dioxyethylene terephthalate repeating unit (b) represented by the general formula (II)



(II)

said unit (b) being in the range of from 1.4 to 3.0 mol %, and said two repeating units being random oriented,

(B) an intrinsic viscosity (η) as measured of 25° C. in o-chlorophenol being in the range of from 0.70 to 0.90 dl/g,

(C) a crystallizing temperature (Tcc) as measured at a heat-up rate of 10° C./min with a differential scanning calorimeter being at least 165° C., and said heat-up crystallizing temperature (Tcc) in relation to said intrinsic viscosity (η) being in the range represented by the following equation $67.5(\eta)+119.0 \leqq (Tcc) \leqq 67.5(\eta)+133.5$, and

(D) the number (a) of spherulites formed by isothermal crystallization of said polyethylene terephthalate at 200° C. after melting up to 290° C. being less than 10^8 pieces/cm^3, the difference ((b)–(a))l between said number (a) of the spherulites and the number (b) of spherulites formed by isothermal crystallization of said polyethylene terephthalate at 200° C. after melting up to 280° C. being less than 5×10^7 pieces/cm^3;

and

(E) a plate of 5 mm in thickness molded at 280° C. from said polyethylene terephthalate has a haze of from 2 to 15%.

5,256,364
PROCESS FOR DEMOLDING A MOLDED PART AS WELL AS A DEVICE FOR CARRYING OUT THE PROCESS

Richard Herbst, Freisinger Strasse 3b, 8057 Eching, Fed. Rep. of Germany

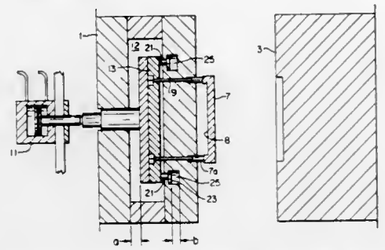
PCT No. PCT/EP91/00220, § 371 Date Aug. 3, 1992, § 102(e) Date Aug. 3, 1992, PCT Pub. No. WO91/11313, PCT Pub. Date Aug. 8, 1991

PCT Filed Feb. 5, 1991, Ser. No. 917,123

Claims priority, application Fed. Rep. of Germnny, Feb. 5, 1990, 4003371

Int. Cl.[5] B29C *45/40, 45/42*

U.S. Cl. 264—334 7 Claims



1. Process for demolding a molded part from a mold, in which the mold is opened by moving first and second mold halves apart and the molded part, which is located in the first mold half is moved by at least one ejector, which can be operated by an ejector plate, out of the first mold half to a removal position, in which the molded part can be gripped by a gripping tool which can be moved in between the opened mold halves, the ejector movement being carried out in at least two partial strokes and the molded part being moved in a first partial stroke to an intermediate position, in which it is still held by a mold contour of the first mold half, and is then moved in a second partial stroke to the removal position outside the mold contour, wherein the first partial stroke is commenced as early as during one of the opening movement of the mold and the moving-in movement of the gripping tool, the ejector plate is stopped at the end of the first partial stroke by at least one releasable stop, which defines the intermediate position of the mold part, and at the beginning of the second partial stroke, the stop is released and consequently the ejector plate is enabled for the second partial stroke.

5,256,365
IN-MOLDING LABELING METHOD

Jeffrey D. Gordon, Hanover, Pa., and Jean F. Rubie, Waterloo, Belgium, assignors to Graham Engineering Corp., York, Pa.

Division of Ser. No. 639,543, Jan. 10, 1991, Pat. No. 5,104,306. This application Nov. 7, 1991, Ser. No. 789,046

Int. Cl.[5] B29C *49/24*

U.S. Cl. 264—509 6 Claims

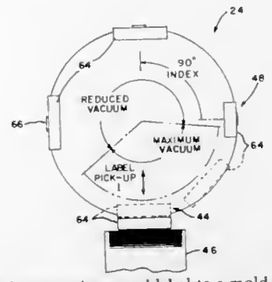
1. The method of labeling a mold cavity in a blow molding machine comprising the steps of:

a. extending a stationary first vacuum cup directly toward a label in a label magazine to engage the label while drawing a high vacuum through the cup, forming a high vacuum connection between the first cup and the label and then withdrawing the cup away from the magazine to remove the label from the magazine;

b. reducing the level of vacuum holding the label to the cup to low vacuum after removal of the label from the magazine and before transfer of the label to a second cup;

c. moving the first cup and held label to a label transfer position located away from the magazine;

d. moving by second vacuum cup into engagement with the label at the label transfer position and forming a high vacuum connection between the label and the second cup and then separating such second cup from the first cup which is at low vacuum to strip the label from the first cup and transfer the label to the second cup; and



e. moving the second cup and label to a mold part and placing the label in the cavity in the mold part.

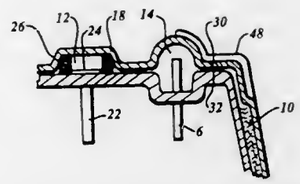
5,256,366
METHOD OF MOLDING FIBERGLASS

Richard Wejrock, P.O. Box 733, Hollywood, S.C. 29449, and Allen T. Curry, 629 Parish Rd., Charleston, S.C. 29401

Filed Jan. 8, 1991, Ser. No. 638,549

Int. Cl.[5] B29C *43/18, 43/56*

U.S. Cl. 264—510 8 Claims



1. A method of fiberglass molding, comprising:

a. removably affixing a glass fiber material to a male mask;

b. pouring a resin material into a female mold;

c. applying a vacuum to a gasket chamber formed within a perimeter gasket located between said male mask and said female mold so as to pull and seal said male mask against said female mold;

d. applying a vacuum within a main part chamber formed between said male mask and said female mold, and inside of the perimeter of said perimeter gasket, so as to pull said resin by vacuum means through said glass fiber until said glass fiber is saturated with resin;

e. terminating said vacuum to said main part chamber upon complete saturation of said glass fiber with resin, as resin begins to flow into a resin spillway;

f. terminating said vacuum to said gasket chamber to release said male mask from said female mold;

g. pulling said male mask from said female mold with a fiberglass part attached to said modem; and

h. removing said fiberglass part from said male mask.

5,256,367
PIPE AND SEWER LINING METHOD

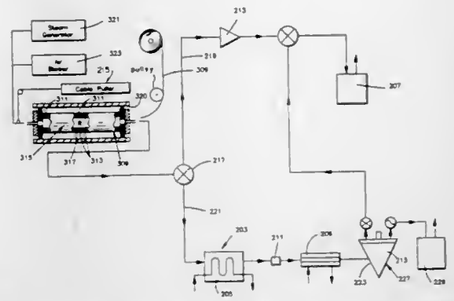
Cornell D. M. J. Cornish, Washington, D.C.; Robert J. Follini, New York, and Eugene J. Camali, Oyster Bay Cove, both of N.Y., assignors to Superliners USA, Inc., Bronx, N.Y.

Filed Oct. 25, 1991, Ser. No. 782,555

Int. Cl.[5] B29C *63/34;* B29D *23/22*

U.S. Cl. 264—516 14 Claims

1. A method of lining a surface at least partially defining a passageway wherein a laminate of non-woven felt is sandwiched between an outer membrane and an inner membrane is urged by fluid pressure so that said outer membrane lies against said surface, said method including the additional step of totally impregnating the felt with an uncured thermosetting resin so as to completely immerse the felt in the resin, and curing the resin while the laminate is held against said surface so as to form a hard, cured and self-supporting resin lining having embedded felt reinforcement, said resin containing styrene, and removing and capturing at least some of said styrene that is volatilized and released as a gas during at least a portion of the curing time, wherein one of said membranes has a small perforation at one end to release the gas from in between the inner and outer membranes so that the styrene can be removed and captured therefrom by stripping and entraining the same in the curing medium, said curing medium comprising air that is dried and filtered to recover the stripped styrene, or stream that is trapped, condensed, cooled and filtered to recover the stripped styrene.



5,256,368
PRESSURE-REACTION SYNTHESIS OF TITANIUM COMPOSITE MATERIALS

Laurance L. Oden; Thomas L. Ochs, and Paul C. Turner, all of Albany, Oreg., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Jul. 31, 1992, Ser. No. 922,412

Int. Cl.[5] B22F *3/14*

U.S. Cl. 419—10 15 Claims



1. A pressure-reaction synthesis process for producing increased stiffness and improved strength-to-weight ratio titanium metal matrix composite materials comprising:

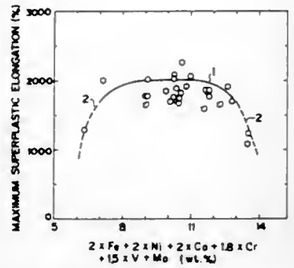
exothermically reacting a titanium powder or titanium powder alloys with non-metal powders or gas selected from the group consisting of C, B, N, BN, B_4C, SiC and Si_3N_4 at temperatures from about 900° to about 1300° C., for about 5 to about 30 minutes in a forming die under pressures of from about 1000 to 5000 psi.

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5,256,369
TITANIUM BASE ALLOY FOR EXCELLENT FORMABILITY AND METHOD OF MAKING THEREOF AND METHOD OF SUPERPLASTIC FORMING THEREOF

Atsushi Ogawa; Kuninori Minakawa, and Kazuhide Takahashi, all of Kawasaki, Japan, assignors to NKK Corporation, Tokyo, Japan

Continuation of Ser. No. 719,663, Jun. 24, 1991, Pat. No. 5,124,121, which is a continuation of Ser. No. 547,924, Jul. 3, 1990, abandoned. This application May 8, 1992, Ser. No. 880,743
Claims priority, application Japan, Jul. 10, 1989, 1-177759; Feb. 26, 1990, 2-044993
Int. Cl.[5] C22C *14/00*
U.S. Cl. 420—420 17 Claims



1. A titanium base alloy consisting of about 3.42 to 5.0 wt. % Al, 2.1 to 3.7 wt. % V, 0.85 to 3.15 wt. % Mo, at least 0.01 wt. % O, at least one element selected from the group consisting of Fe, Ni, Co, and Cr, and the balance being titanium, and satisfying the following equations;

0.85 wt. %≦X wt. %≦3.15 wt. %,

7 wt. %≦Y wt. %≦13 wt. %,

X wt. %=Fe wt. %+Ni wt. %+Co wt. %+0.9×Cr wt. %,

Y wt. %=2×Fe wt. %+2×Ni wt. %+2×Co wt. %+1.8×Cr wt. %+1.5×V wt. %+Mo wt. %.

5,256,370
LEAD-FREE ALLOY CONTAINING TIN, SILVER AND INDIUM

James A. Slattery, Sauquoit, and Charles E. T. White, Clinton, both of N.Y., assignors to The Indium Corporation of America, Utica, N.Y.

Filed May 4, 1992, Ser. No. 878,050
Int. Cl.[5] C22C *13/00*
U.S. Cl. 420—557 13 Claims

1. A lead-free solder alloy comprising effective amounts of tin, silver and indium, said composition having a solidus temperature between about 167° C. and about 212° C. and a liquidus temperature between about 179° C. and about 213° C.

5,256,371
METHOD AND ARRANGEMENT FOR DISINFECTING A DIALYSIS FLUID CIRCUIT

Manfred Pippert, Glashütten, Fed. Rep. of Germany, assignor to Medical Support GmbH, Rodgau, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 626,745, Dec. 13, 1990, abandoned. This application Mar. 24, 1992, Ser. No. 856,684
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1989, 3941103
Int. Cl.[5] A61L *2/00;* B01D *63/00*
U.S. Cl. 422—28 9 Claims

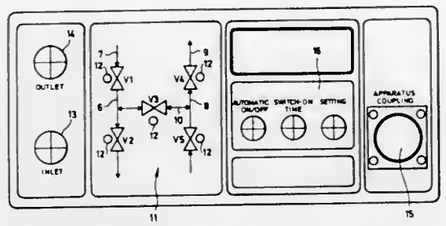
7. A method for disinfecting a dialysis apparatus, wherein the apparatus comprises an internal liquid flow circuit having an inlet and an outlet, said method comprising:

a. connecting an inlet and outlet of a dialysis apparatus, respectively to a water supply and a drain,

b. providing first and second spaced shutoff valves in each of an inlet and outlet conduits, with the first shutoff valves being adjacent to the inlet and outlet of the apparatus, respectively,

c. providing a transverse valve connecting the inlet and outlet conduit between the spaced first and second shutoff valves thereof,

d. closing the first valves, and opening the second valves and the transverse valve to provide an external flow circuit,



and flushing the external circuit and second valves with water,

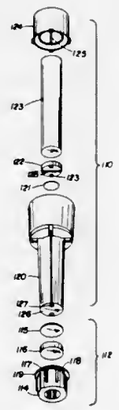
e. opening the first and second valves and closing the transverse valve to provide an internal flow circuit, and flushing the internal flow circuit of the apparatus with water, and

f. closing the first valves and opening the transverse and second valves and circulating heated water in the internal flow circuit of said apparatus.

5,256,372
DIPSTICK TEST DEVICE INCLUDING A REMOVABLE FILTER ASSEMBLY

Paul C. Brooks, Portland; Erwin F. Workman, Cape Elizabeth, and Quentin J. Tonelli, Portland, all of Me., assignors to Idexx Corporation, Portland, Me.

Continuation-in-part of Ser. No. 118,750, Nov. 6, 1987, abandoned. This application Dec. 5, 1989, Ser. No. 446,009
Int. Cl.[5] G01N *21/78*
U.S. Cl. 422—58 19 Claims



1. A dipstick test device for detecting an analyte in a liquid sample by treating the analyte with at least one liquid reagent to form a detectable reaction product, said dipstick of said test device comprising:

a) means defining an aqueous permeable, aqueous insoluble reaction zone, positioned at one end of an elongated dipstick and adapted to retain said detectable reaction product;

b) a control absorbent in liquid-transferring relation with the means defining the reaction zone, said control absorbent having a predetermined, limited liquid-absorbing capacity, said dipstick being sized and configured for insertion into a vessel containing said sample, whereby said control absorbent fills to capacity with sample and said means defining a reaction zone incubates with said sample;

c) a re-movable filter assembly positioned at said end of said dipstick; and

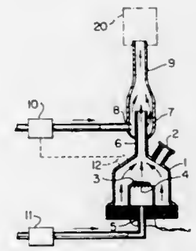
d) a reaction tray comprising a well adapted to receive said filter assembly on said dipstick and to retain said filter assembly as said dipstick is removed.

5,256,373
Patent Not Issued For This Number

5,256,374
SAMPLE INTRODUCTION FOR SPECTROMETERS

K. Nimalasiri De Silva, and Roger Guevremont, both of Ottawa, Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of Energy Mines and Resources, Ottawa, Canada

Filed Mar. 29, 1991, Ser. No. 677,095
Claims priority, application Canada, Apr. 4, 1990, 2013789
Int. Cl.[5] G01N *31/12*
U.S. Cl. 422—80 6 Claims



1. A system for introducing a sample to an analyzing device comprising:

a sample chamber having openable access means for receiving a sample, said sample chamber also having an inlet and outlet;

means for atomizing the sample within the sample chamber;

a flow combining portion connected with the outlet of the sample chamber, said flow combining portion further having an inlet for receiving a carrier gas and an outlet for connection to an analyzing device;

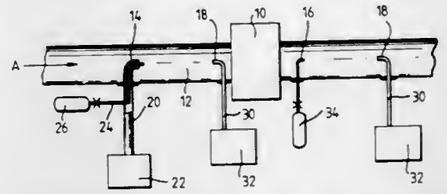
sampler gas supply means connected with the inlet of the sample chamber for transporting the sample from the sample chamber through the flow combining portion and to the analyzing device; and

flow control means responsive to the opening of the access means of the sample chamber for increasing the input of the carrier gas to the flow combining portion when the access means of the sample chamber is opened, such that the flow rate of gas to the analyzing device is maintained substantially constant while a portion of the carrier gas flows back through the outlet of the sample chamber to purge ambient air, said flow control means being disposed external to the flow path of the sample extending from the sample chamber to the analyzing device.

5,256,375
MIXING DEVICE

Keith Morris, Wantage, United Kingdom, assignor to United Kingdom Atomic Energy Authority, Didcot, England

Filed Mar. 19, 1991, Ser. No. 671,938
Claims priority, application United Kingdom, Apr. 6, 1990, 9007896
Int. Cl.[5] B01F *5/06;* F17D *3/12*
U.S. Cl. 422—101 10 Claims

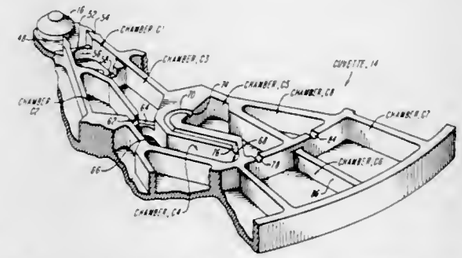


1. A mixing device comprising a pipe closed at one end and installed with the closed end within a duct carrying a turbulent flow of a gas and defining near the closed end one or more holes of width between 0.1 mm and 2.0 mm around the pipe, the open end of the pipe being connected to a source of the same gas at high pressure such as to create in operation a gas jet emerging through each hole so as to increase the scale of turbulence in the gas in the duct and so to enhance mixing of the gas flowing along the duct, the size and number of the holes and the pressure of the source being such that the flow rate of the gas through the jets is substantially less than the flow rate of the gas along the duct, in combination with an aerosol injector means comprising an aerosol generator and a tube to supply the aerosol from the generator to the duct, the closed end of the gas pipe being aligned coaxially with the end of the aerosol supply tube remote from the generator.

5,256,376
AGGLUTINATION DETECTION APPARATUS

Gerald W. Callan, Brewster; William D. Corry, Larchmont; Richard E. Scordato, Mount Kisco, and John G. Gorman, New York, all of N.Y., assignors to Medical Laboratory Automation, Inc., Pleasantville, N.Y.

Filed Sep. 12, 1991, Ser. No. 758,772
Int. Cl.[5] G02N *21/05;* G01N *21/07*
U.S. Cl. 422—102 34 Claims



30. An apparatus for analyzing reactants contained in a fluid and adapted for use with a device which will rotate the apparatus about a centrifugal axis comprising,

at least one cuvette, said cuvette having at least one cuvette chamber, said cuvette chamber having a radially outward wall which provides a base upon which reactants are pelleted when the apparatus is rotated about a centrifugal axis, means for introducing fluids into said cuvette chamber, and a channel positioned adjacent to said wall for removing fluid from said cuvette chamber;

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means for applying differential pressure to said cuvette chamber to force said fluids from said cuvette chamber through said channel during centrifugation; and

at least one fluid chamber for receiving said fluids forced by differential pressure from said cuvette chamber.

5,256,377

OZONE DECOMPOSING MATERIAL AND OZONE DECOMPOSING APPARATUS USING THE OZONE DECOMPOSING MATERIAL

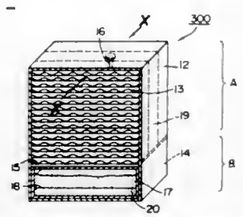
Susumu Nakamaru, Nagareyama; Ichiro Shibanai; Yuji Noritake, both of Tokyo, and Sakae Shimizu, Chigasaki, all of Japan, assignors to Ricoh Company, Ltd. and Japan Liquid Crystal Co., Ltd., both of Tokyo, Japan

Division of Ser. No. 613,928, Nov. 14, 1990, abandoned, which is a continuation of Ser. No. 347,024, May 4, 1989, abandoned, which is a division of Ser. No. 187,726, Apr. 29, 1988, abandoned. This application Aug. 11, 1992, Ser. No. 927,724

Claims priority, application Japan, Apr. 29, 1987, 62-105606; Aug. 28, 1987, 62-214519

Int. Cl.[5] A62B *11/00*

U.S. Cl. 422—122 7 Claims



1. An ozone decomposing apparatus, comprising:

an external wall enclosing an upper ozone material decomposing portion and a lower ozone decomposing agent holding portion positioned directly below said upper portion, said external wall having open sides to permit ozone bearing air to flow horizontally through the upper portion;

an activated carbon filter in said upper portion; and

a volatile ozone decomposing agent in said lower portion, whereby vapors of the ozone decomposing agent rise and are absorbed by the activated carbon filter, and whereby ozone in ozone bearing air is decomposed by the ozone decomposing agent absorbed in the activated carbon filter.

5,256,378

APPARATUS FOR COMPOSTING ORGANIC WASTE MATERIALS AND METHOD

Clinton R. Elston, Block 3, Lot 21, Tri-Valley Subdivision, Healy, Ak. 99743

Continuation of Ser. No. 517,398, Apr. 27, 1990, abandoned, which is a continuation of Ser. No. 193,878, May 13, 1988, abandoned, which is a continuation-in-part of Ser. No. 931,657, Nov. 17, 1986, abandoned. This application Apr. 9, 1992, Ser. No. 867,274

Int. Cl.[5] B09B *3/00*

U.S. Cl. 422—184 6 Claims

1. An arrangement for facilitating aerobic composting of organic material including human toilet wastes; said arrangement comprising:

(a) a compost tank with front and rear walls and having therein an interior, an interior including: an upper portion with a receiving volume; a central portion with a mixing and aeration volume; and a lower portion with a compost collection volume; the lower portion further including a bottom, a compost removal area, and a fluid collection area;

(i) said mixing and aeration volume being oriented beneath said receiving volume and above said compost collection volume, compost removal area and fluid collection area;

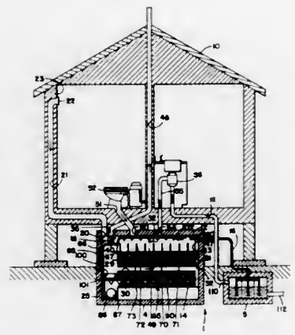
(ii) said fluid collection area having a lower wall oriented lower than, and laterally spaced relative to, said compost collection volume bottom;

(iii) said compost removal area being laterally spaced from said compost collection volume bottom;

(iv) said mixing and aeration volume being defined by front and rear baffles, said front baffle being spaced from said compost tank front wall to define an airflow inlet region therebetween, and said rear baffle being spaced from said rear wall to define a second airflow region therebetween, wherein said second airflow region is in direct airflow communication with said receiving volume;

(b) an airflow conduit arrangement mounted in said compost tank, between said front and rear baffles, and extending from said airflow inlet region to said second airflow region;

(c) a draw fan positioned in said receiving volume and separated from said airflow inlet region by said front baffle;



said draw fan being oriented to draw air: from said airflow inlet region; through said airflow conduit arrangement; through said second airflow region; and, from said rear baffles to said front baffles substantially across said receiving volume;

(d) conveyor means mounted in said compost collection volume for periodic transport of compost to said compost removal area;

(e) liquid circulation means in said compost tank including means for collecting liquid in said fluid collection area and deliverance of same to said mixing and aeration volume;

(f) horizontally oriented agitation means mounted in said mixing and aeration volume for periodic mixing of organic material received and retained therein; and

(g) a greywater treatment tank having a sludge removal system and a plurality of chambers therein, at least one of said chambers providing for the aeration, filtration, clarification, or any combination thereof, or greywater contained therein, wherein said sludge removal system includes sludge inlet means for transport of sludge from said greywater treatment tank to said compost tank mixing and aeration volume.

5,256,379

APPARATUS AND METHOD FOR REMOVING HYDROCARBONS FROM AIRSTREAM

Anthony DeLoach, 1630 Jewel Ave., Sarasota, Fla. 34240

Filed Dec. 23, 1991, Ser. No. 812,420

Int. Cl.[5] B01J *19/12*

U.S. Cl. 422—186.3 13 Claims

1. A method of removing hydrocarbon constituents from a contaminated airstream comprising the steps of:

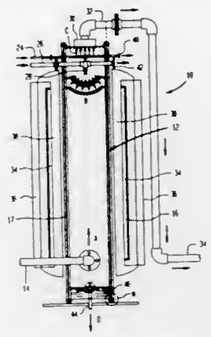
A. introducing said airstream into an inlet at one end of an elongated chamber;

B. simultaneously introducing an atomized air spray into said contaminated airstream through an atomizing nozzle within said chamber, said atomized spray including a liquid oxidizing agent;

C. simultaneously exposing said contaminated airstream mixed with said atomized spray within said chamber to an ultraviolet light source exterior to, and passing through a transparent panel of, said chamber and allowing at least a portion of said hydrocarbon constituents to become chemically reduced, in combination with said contaminated airstream and said atomized spray, to a purified airstream having reduced hydrocarbon constituents, carbon dioxide (CO_2) and water (H_2O);

D. exhausting said purified airstream and said carbon dioxide from another end of said chamber.

8. An apparatus for removing hydrocarbon constituents from a contaminated airstream comprising:



an elongated chamber having an inlet at one end for receiving said contaminated airstream and an outlet at an opposite end of said chamber;

means for delivering said contaminated airstream into said chamber through said inlet;

an atomizing nozzle means positioned within said chamber for dispersing an air pressure-atomized vapor including hydrogen peroxide (H_2O_2) into the path of said contaminated airstream;

means exterior to said chamber for emitting ultraviolet light through a transparent panel of, and into said chamber;

said hydrocarbon contaminants in said contaminated airstream chemically reacting with said atomized hydrogen peroxide in the presence of said ultraviolet light to form carbon dioxide (CO_2) and water (H_2O) and purified air;

said purified air and carbon dioxide produced with said chamber exiting said chamber through said outlet.

5,256,380

STARTUP OPENINGS IN A THREE-PHASE GASLIFT LOOP REACTOR

Arnold Mulder, Delft, and Rene Weltevrede, Rotterdam, both of Netherlands, assignors to Paques B.V., Balk, Netherlands

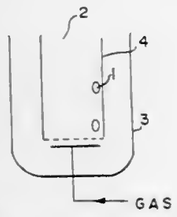
Continuation of Ser. No. 297,073, Jan. 13, 1989, abandoned. This application Apr. 22, 1991, Ser. No. 689,453

Claims priority, application European Pat. Off., Jan. 20, 1988, 08-200104.3

Int. Cl.[5] B01F *5/00*

U.S. Cl. 422—231 3 Claims

1. In a process for reducing the hysteresis effects in a gaslift loop reactor consisting essentially of a reaction vessel filled with at least 50 grams of suspended solid particles comprising immobilized microorganisms per liter of reaction vessel volume which are settled at the bottom of the reaction vessel before the startup of the gaslift loop process, wherein the improvement comprises providing a draft tube having at least one start up opening for establishing an additional circulation steam during the startup phase in order to stimulate the suspension of solids and means for introducing a gas at the bottom of



said reaction vessel for creating a suspension of solid particles at the bottom of a gaslift loop through the draft tube to reduce the energy necessary to obtain suspension.

5,256,381

APPARATUS FOR GROWING SINGLE CRYSTALS OF III-V COMPOUND SEMICONDUCTORS

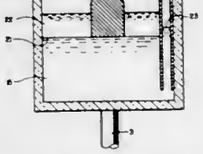
Koji Tada, and Masami Tatsumi, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 38,447, Apr. 14, 1987, Pat. No. 5,145,550, which is a continuation of Ser. No. 703,740, Feb. 21, 1985, abandoned. This application Feb. 28, 1992, Ser. No. 842,979

Claims priority, application Japan, Feb. 21, 1984, 59-31146

Int. Cl.[5] C30B *35/00*

U.S. Cl. 422—249 8 Claims



1. An apparatus for growing single crystals of III-V compound semiconductor comprising a tight sealable vessel, a crucible placed in the vessel, an upper shaft for pulling and rotating the grown crystal; a lower shaft for supporting and rotating the crucible to ensure rotation of the melt of starting materials contained therein; a plurality of heaters mounted around the vessel in its longitudinal direction to control a temperature distribution in the entire vessel,

said apparatus being characterized by further comprising:

a) a means for dividing the space in the crucible into two parts;

b) a melt contained within said crucible wherein the surface of said belt is divided into two sections by the dividing means of a); and

c) a liquid encapsulant located within one of the two parts partitioned by said dividing means wherein one section of the melt surface is covered with said liquid encapsulant and no liquid encapsulant is located within the other of the two parts partitioned by said dividing means so that the section of melt surface which is not covered by encapsulant is directly in contact with the atmosphere in the vessel.

VOL 1155 ISS 4 OCT 26 1993 UMI

5,256,382

VAPOUR-HEATED CHAMBER

Michael A. J. Ford, Bath, and Christopher R. Bailey, Chobham, both of United Kingdom, assignors to Autocar Equipment Limited, London, United Kingdom

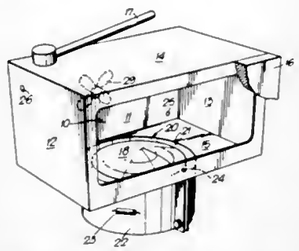
PCT No. PCT/GB90/00363, § 371 Date Jul. 23, 1991, § 102(e) Date Jul. 23, 1991, PCT Pub. No. WO90/10464, PCT Pub. Date Sep. 20, 1990

PCT Filed Mar. 9, 1990, Ser. No. 741,406

Claims priority, application United Kingdom, Mar. 10, 1990, 8905495

Int. Cl.[5] **A61L** *2/04, 2/20*

U.S. Cl. 422—307 **10 Claims**



1. In a heating appliance for cyclicly heating an article to a predetermined temperature during a heating phase of a cycle and then cooling the article during a condensation phase of the cycle, which appliance comprises a chamber having a lower part, a reservoir in the lower part of the chamber constructed to contain a vaporisable heating liquid, and heating means for heating said reservoir to vaporise any liquid therein to form vapour and to supply the vapour to the chamber, the reservoir having spaced-apart inner and outer walls defining therebetween a volume for the vaporisable heating liquid,

the improvement wherein said heating means comprises means to heat one of the inner and outer walls whereby to heat the liquid, said heating means being activated during the heating phase and

said apparatus comprises cooling means for cooling the other of said inner and outer walls whereby to cool the liquid, said cooling means being activated during the condensation phase.

5,256,383

PROCESS FOR THE SEPARATION OF ACTINIDES FROM LANTHANIDES BY THE SELECTIVE EXTRACTION OF THE ACTINIDES IN AN ORGANIC SOLVENT INCORPORATING A PROPANE DIAMIDE

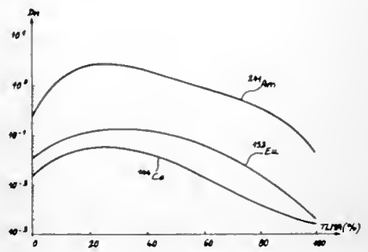
Pierres-Yves Cordier; Christine Cuillierdier, both of Paris, and Claude Musikas, Bures sur Yvette, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Aug. 13, 1992, Ser. No. 929,677

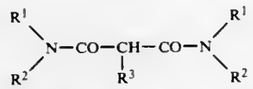
Claims priority, application France, Aug. 14, 1991, 91 10335

Int. Cl.[5] **B01D** *11/00*

U.S. Cl. 423—9 **14 Claims**



1. Process for the separation of the actinides from the lanthanides present in an aqueous nitric solution consisting of adding to the aqueous nitric solution a thiocyanate and then contacting the aqueous solution containing the thiocyanate with an immiscible organic solvent incorporating at least one propane diamide of formula:



(I)

in which R^1 and R^2, which can be the same or different, represents a straight or branched-chain alkyl radical having 1 to 15 carbon atoms or a radical of formula:

$$-(CH_2)_n-Z-(CH_2)_m-O-R^4$$

in which R^4 is an alkyl radical with 1 to 6 carbon atoms, n is equal to 0 or is an integer from 1 to 6, Z is a single bond or an oxygen atom and m is an integer from 1 to 6, provided that Z is a single bond when n is equal to 0 and R^3 represents a hydrogen atom, an alkyl radical having 1 to 25 carbon atoms or a radical of formula:

$$-(CH_2)_n-Z-(CH_2)_m-O-R^4$$

in which n, m, Z and R^4 have the meanings given hereinbefore, for the selective extraction of the actinides in an organic solvent.

5,256,384

ACTIVATED CARBON PROCESS FOR REMOVING HYDROGEN SULFIDE FROM GASES

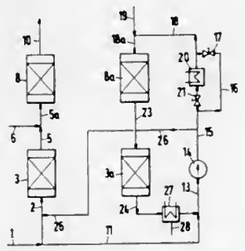
Dietrich Rolke, Hofheim; Peter Cornel, Frankfurt am Main; Rainer Lell, Nidderau; Klaus Stetzer, Dreieich, and Gabriele Neuroth, Frankfurt, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 26, 1992, Ser. No. 857,761

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1991, 4109892

Int. Cl.[5] **C01B** *17/16*

U.S. Cl. 423—220 **5 Claims**



1. A process for desulfurizing a Claus tail gas containing at least 1000 ppm of H_2S+SO_2, the H_2S being present in a stoichiometric excess according to the equation:

$$2H_2S+SO_2=3S+2H_2O.$$

said starting gas having a temperature in the range of 100° to 180° C., comprising the steps of:

(a) passing a first partial stream of said starting gas through a catalytic prepurification stage containing a metal oxide catalyst consisting essentially of Al_2O_3 or TiO_2, adsorbing elemental sulfur on said catalyst, and withdrawing from aid prepurification stage a prepurified gas containing H_2S and ate vapor;

(b) admixing oxygen with said prepurified gas from step (a) so that said prepurified gas contains 1 to 20 moles of O_2 per mole of H_2S, to produce an oxygen-containing prepurified gas;

(c) contacting said oxygen-containing prepurified gas with activated carbon at a temperature in the range of 50° to 180° C. to obtain the desulfurized gas and to load said activated carbon with elemental sulfur and at least 3% by weight of sulfuric acid;

(d) regenerating said activated carbon after the loading by contacting said activated carbon laden with elemental sulfur and sulfuric acid with a second partial stream of said starting gas, in a first regeneration step, said second partial stream being at about the same temperature in the range of 100° to 180° C. as the first partial stream of said starting gas being passed through said prepurification stage; in said first regenerating step sulfuric acid in the laden activated carbon is substantially reduced to elemental sulfur, and in a second regeneration step contacting said laden activated carbon with said second partial stream of starting gas at a temperature in the range of 200° to 400° C. to remove the elemental sulfur from the activated carbon; and

(e) removing elemental sulfur from the second partial stream of starting gas used for regeneration in step (d) and feeding the desulfurized second partial stream of starting gas into said catalytic prepurification stage of step (a).

5,256,385

ADSORBENT AND CLEANING METHOD OF WASTE GAS CONTAINING KETONIC ORGANIC SOLVENTS

Masashi Harada, Shinnanyo, and Takahiko Unoue, Tokuyama, both of Japan, assignors to Tosoh Corporation, Shinnanyo, Japan

Division of Ser. No. 766,112, Sep. 27, 1991, abandoned. This application Dec. 7, 1992, Ser. No. 987,538

Claims priority, application Japan, Dec. 13, 1990, 2-410097; Jan. 30, 1991, 3-27662

Int. Cl.[5] **C01B** *17/16*

U.S. Cl. 423—230 **4 Claims**

1. A method of cleaning waste gas containing ketonic organic solvents comprising contacting the waste gas containing ketonic organic solvents with an absorbent comprising zeolite with an amount of solid acid of not more than 0.05 mmol/g as determined by pyridine temperature programmed desorption method and with a SiO_2/Al_2O_3 molar ratio of not less than 50.

5,256,386

METHOD FOR PREPARATION OF SILICA PARTICLES

Mats Nyström, Kungälv; Wolgang Herrmann, Gothenburg, and Bernt Larsson, Hisings Backa, all of Sweden, assignors to Eka Nobel AB, Surte, Sweden

Continuation of Ser. No. 212,620, Jun. 28, 1988, abandoned. This application Jun. 14, 1990, Ser. No. 540,307

Claims priority, application Sweden, Jun. 29, 1987, 8702685-2

Int. Cl.[5] **C01B** *33/12*

U.S. Cl. 423—338 **12 Claims**

1. A process for the preparation of substantially spherical silica particles, comprising the steps of:

1) preparing at least one acid aqueous silica sol with an alkali metal content below 100 ppm and a particle size essentially below 3 nm;

2) heat treating the prepared sol in an ammonium or amine basic solution resulting in growth of the sol particles to a size corresponding to an area within the range of from about 50 to about 500 m^2/g;

3) emulsifying the sol, after optional concentration, in an organic medium which is not miscible with water, or has a limited miscibility or solubility with water, and in the presence of a surface active agent;

4) gelling the formed sol drops by dewatering at a temperature of from about 30° C. to about 100° C. and at a pH of from about 5 to about 9;

5) heat treating the produced gel particles for removal of substantially all organic material; and

6) post-treating the gel particles in a basic environment containing ammonium or an amine.

5,256,387

CATALYST FOR THE PRODUCTION OF NITRIC ACID BY OXIDATION OF AMMONIA

Larry E. Campbell, Knoxville, Tenn., assignor to Scientific Design Company, Inc., Little Ferry, N.J.

Continuation of Ser. No. 881,073, May 11, 1992, Pat. No. 5,217,939. This application Nov. 9, 1992, Ser. No. 973,964

Int. Cl.[5] **C01B** *21/26*

U.S. Cl. 423—392 **12 Claims**

1. A method of preparing nitric oxide comprising contacting ammonia and a free oxygen containing gas in vapor phase in the presence of a catalyst structure for the oxidation of ammonia to produce nitric oxide comprising a substrate of a reticulated ceramic foam or a reticulated metal foam having coated substantially uniformly thereover from 1 to 70 weight % cobalt, a noble metal or mixtures thereof.

5,256,388

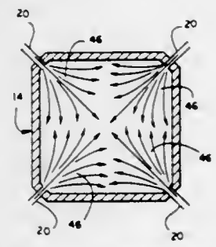
METHOD FOR CONSISTENTLY PRODUCING CARBON BLACK HAVING A HIGH TINT

Alan C. Berg, and William R. Jones, Jr., both of Monroe, La., assignors to Columbian Chemicals Company, Atlanta, Ga.

Division of Ser. No. 142,478, Jan. 11, 1988, Pat. No. 4,927,607. This application Apr. 4, 1990, Ser. No. 504,609

Int. Cl.[5] **C09C** *1/50*

U.S. Cl. 423—457 **1 Claim**



1. Method for producing carbon black having a high tint, comprising the steps of:

providing a reaction chamber having an inlet opening, an outlet opening, and a non-circular circumference characterized by:

(i) a plurality of discrete adjacent surfaces forming a non-circular cross-section, and

(ii) an intermediate circumferential surface interposed between adjacent surfaces of the reaction chamber, the intermediate surface being shorter than the adjacent surfaces and at an obtuse angle to the adjacent surfaces;

directing a flow of hot gas into the inlet opening of the reaction chamber, through the reaction chamber, and out the outlet opening; and

introducing feedstock hydrocarbon sprays directed radially into the reaction chamber between at least some of the discrete adjacent surfaces so as to form a non-circular feedstock hydrocarbon spray pattern which substantially conforms to the non-circular cross-section of the reaction chamber and introducing at least one of the feedstock hydrocarbon sprays radially inwardly from the intermediate surface along a path substantially perpendicular to the intermediate surface, with a feedstock hydrocarbon spray pattern which causes an outer extent of the spray to lie substantially alongside the adjacent surfaces,

thereby maximizing coverage of the cross-sectional area of the hot gas flow by the feedstock hydrocarbon spray.

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5,256,389

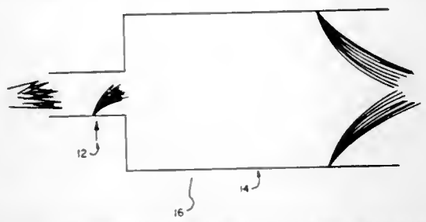
HIGH SURFACE AREA METAL OXIDE FOAMS

Merrill Jordan, deceased, late of Walpole by Marion Jordan, executrix ; Steven R. Reznek, Wellesley; Matthew Neville, Boston, all of Mass.; Brian A. Soucy, Hudson, N.H., and Bruce E. Mackay, Framingham, Mass., assignors to Cabot Corporation, Boston, Mass.

Continuation of Ser. No. 493,401, Mar. 14, 1990, abandoned, which is a division of Ser. No. 164,555, Mar. 7, 1988, Pat. No. 4,937,062. This application May 22, 1991, Ser. No. 704,918

Int. Cl.[5] C01B *13/18*

U.S. Cl. 423—592 **6 Claims**



1. An individual uncalcined metal oxide foam particle having walls bounding hollow cells, wherein said walls have a thickness between about 50 to about 200 angstroms and a specific surface area greater than 45 m^2/gram.

5,256,390

BIOCIDAL ZEOLITE PARTICLES

Patrick C. Hu, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Jul. 3, 1990, Ser. No. 548,484

Int. Cl.[5] C01B *33/34*

U.S. Cl. 423—700 **12 Claims**

1. A method for producing zeolite A particles suitable for impregnating with biocidal metal ions comprising effectively admixing zeolite particles having one or more carbonate species in association therewith with an acidic solution to remove substantially all of said one or more carbonate species from said particles.

5,256,391

METHOD FOR SYNTHESIZING MICROPOROUS CRYSTALLINE MATERIAL

Catherine S. H. Chen, Berkeley Heights; John L. Schlenker, Pennington, and Steven E. Wentzek, East Brunswick, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

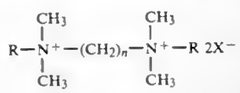
Filed Sep. 11, 1992, Ser. No. 943,644

Int. Cl.[5] C01B *33/34*

U.S. Cl. 423—706 **12 Claims**

1. A method for synthesizing a porous inorganic solid comprising the steps of:

(a) forming a reaction mixture containing water, an alumina source, a silica source, an alkali metal oxide source, and a diquaternary ammonium salt having the formula:



wherein R is a diamondoid group, n is from about 1 to about 50, and X is an anion which is not detrimental to the formation of said porous inorganic solid; and

(b) recovering a porous inorganic solid from said reaction mixture of step (a).

5,256,392

MODIFIED ZEOLITE BETA METHOD OF PREPARATION

Edwar S. Shamshoum, Houston, Tex., assignor to Fina Technology, Inc., Dallas, Tex.

Filed Jun. 23, 1989, Ser. No. 371,501

Int. Cl.[5] C01B *33/34*

U.S. Cl. 423—717 **5 Claims**

1. In a process for the preparation of a hydrogen zeolite beta derived by modification of sodium zeolite beta synthesized by the hydrothermal digestion of a reaction mixture comprising silica, alumina, sodium oxide and an organic templating agent, the steps comprising:

(a) treating said synthesized zeolite beta with an ion exchange medium comprising an aqueous solution of an ammonium salt to exchange a portion of the active sites in said zeolite beta by replacing sodium with ammonium ions;

(b) calcining under anhydrous conditions said ion exchanged zeolite beta at a temperature and for a period of time sufficient to remove at least a portion of the templating agent from said zeolite and arrive at a surface area based upon the crystalline structure of said zeolite beta which is at least twice the surface area of said zeolite beta in the as synthesized form;

(c) treating said calcined zeolite with an ion exchange medium comprising an aqueous solution of an ammonium salt to exchange another portion of the active sites in said zeolite beta by replacing sodium with ammonium ions;

(d) mixing said ion exchanged zeolite from step (c) with a binder to produce a mulled zeolite/binder mixture;

(e) pelletizing said zeolite/binder mixture and drying the resulting pellets;

(f) calcining said pellets at a temperature and for a time sufficient to decompose ammonium ions on the active sites of said zeolite to hydrogen.

5,256,393

USE OF AZEOTROPIC DISTILLATION IN PROCESS TO DRY 5-AMINO-N,N'BIS (2,3-DIHYDROXYPROPYL)-2,4,6-TRIIODOISPHTHALAMIDE

William Z. McCarthy, St. Louis; Mills T. Kneller, University City; Youlin Lin, Chesterfield, and David H. White, Florissant, all of Mo., assignors to Mallinckrodt Medical, Inc., St. Louis, Mo.

Filed Apr. 16, 1991, Ser. No. 686,104

Int. Cl.[5] A61K *49/04;* **C07C** *67/02, 233/64*

U.S. Cl. 424—5 **26 Claims**

1. A process for the production of 5-amino-N,N'-bis(2,3-diacetoxypropyl)-2,4,6-triiodoisophthalamide from 5-amino-N,N'-bis(2,3-dihydroxypropyl)-2,4,6-triiodoisophthalamide comprising the steps of:

a. drying the 5-amino-N,N'-bis(2,3-dihydroxypropyl)-2,4,6-triiodoisophthalamide by azeotropic distillation with a solvent,

b. acetylating 5-amino-N,N'-bis(2,3-dihydroxypropyl)-2,4,6-triiodoisophthalamide with an acetylating agent in N,N,-dimethylacetamide and a catalyst to produce 5-amino-N,N'-bis(2,3-diacetoxypropyl)-2,4,6-triiodoisophthalamide,

c. diluting said 5-amino-N,N'-bis(2,3-diacetoxypropyl)-2,4,6-triiodoisophthalamide with an organic solvent, and

d. extracting by-product from said 5-amino-N,N'-bis(2,3-diacetoxypropyl)-2,4,6-triiodoisophthalamide with an aqueous solution.

5,256,394

RADIOLOGICAL IMAGING METHOD, AND CONTRAST MEDIA REAGENTS THEREFOR

Bernard F. Spielvogel, Raleigh, N.C., assignor to Boron Biologicals, Inc., Raleigh, N.C.

Filed Oct. 23, 1991, Ser. No. 781,812

Int. Cl.[5] A61K *49/04*

U.S. Cl. 424—5 **7 Claims**

I. A cyclophosphazene of the formula:



wherein:

R_1 and R_2 may be the same or different, and are independently selected from hydrogen, halo, alkyl, alkoxy, haloalkyl, aryl, aryloxy, arylalkyl, alkenyl, amino, alkylamino, and arylamino groups; and

n is from 3 to 8;

with the proviso that at least one of the R_1 and R_2 groups comprises boroiodide functionality.

5,256,395

AFFINITY ENHANCEMENT IMMUNOLOGICAL REAGENTS FOR IN VIVO DETECTION AND KILLING OF SPECIFIC TARGET CELLS

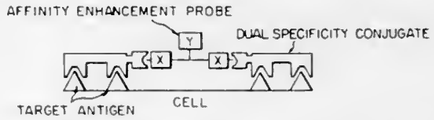
Jacques Barbet; Michel Delaage, and Jean-Marc Le Doussal, all of Marseilles, France, assignors to Immunotech Partners, Marseilles, France

Filed Sep. 10, 1987, Ser. No. 96,829

Claims priority, application France, Sep. 19, 1986, 86 13146

Int. Cl.[5] A61K *39/395, 49/02*

U.S. Cl. 424—9 **25 Claims**



1. A method for delivering to predetermined antigens of desired target cells, in vivo, a detectable substance or a toxic substance capable of killing target cells, comprising:

(a) administering a dual specificity antibody conjugate comprising a first monoclonal antibody or fragment conjugated to a second monoclonal antibody or fragment, said first monoclonal antibody or fragment having binding affinity for said predetermined antigen on the desired target cells, and said second monoclonal antibody or fragment having binding affinity for a predetermined hapten;

(b) without administration of a clearing agent intended to remove circulating antibody conjugates, administering an affinity enhancement probe comprising at least two of said predetermined haptens, said haptens being covalently linked together in a uniquely defined chemical structure, said affinity enhancement probe further having at least one said detectable substance or toxic substance bound thereto.

5,256,396

TOPICAL COMPOSITION

Stanley E. Piechota, Jr., Somerset, N.J., assignor to Colgate-Palmolive Company, Piscataway, N.J.

Filed Jan. 24, 1990, Ser. No. 469,198

Int. Cl.[5] A61K *7/16, 7/18, 7/22*

U.S. Cl. 424—49 **7 Claims**

1. An oral composition for the topical application of a water dispersible active ingredient to a surface of a warm blooded animal comprising:

(a) a water soluble, nonionic block copolymer of ethyleneoxide and propylene oxide of the formula $HO(C_2H_4O)a(C_3H_6O)b(C_2H_4O)cH$, wherein the ethylene oxide units comprise from about 65 to about 75% by weight of said copolymer and said copolymer has an average molecular weight of from about 11,000 to about 13,000; the copolymer comprising more than 10 to about 17% by weight of said composition;

(b) said active ingredient; and

(c) water; said composition being flowable at temperatures below 80° F. and forms a gel upon contact with said oral surface of said warm blooded animal.

5,256,397

2,2,5,5-TETRASUBSTITUTED-PYRROLIDINE-1-OXYL COMPOUNDS USEFUL AS MRI AGENTS

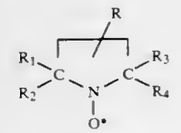
Gerald M. Rosen, Lutherville, Md., assignor to M.R.I., Inc., Lutherville, Md.

Continuation-in-part of Ser. No. 485,068, Feb. 26, 1990, Pat. No. 5,104,641, which is a continuation-in-part of Ser. No. 121,823, Nov. 6, 1987, abandoned, and a continuation-in-part of Ser. No. 836,867, Mar. 7, 1986, Pat. No. 4,834,964. This application Apr. 2, 1992, Ser. No. 862,031

Int. Cl.[5] G01N *24/08;* **A61K** *31/40;* **C07D** *207/46*

U.S. Cl. 424—9 **12 Claims**

1. A charged, stable organic nitroxide of the formula:



wherein R_1, R_2R_3 and R_4 each are alkyl of 1-4 carbon atoms; and R is —alk—COO^-M^+ or —B—$N^+(Alk)_3Hal^-$ in which alk is alkylene of 1-8 carbon atoms, B is a bond or alkylene of 1-8 carbon atoms, M^+ is an ammonium or metal ion, Alk is alkyl of 1-8 carbon atoms or a corresponding alkyl group substituted by a free or esterified hydroxy group, and Hal^- is Cl^-, Br^- or I^-.

5,256,398

COMPOSITION FOR DETERMINING VIABILITY OF TISSUE

Donald A. McAfee, Richmond, Va., and Luiz Belardinelli, Gainesville, Fla., assignors to Whithy Research, Inc., Richmond, Va.

Division of Ser. No. 610,544, Nov. 8, 1990, Pat. No. 5,117,830. This application Jan. 30, 1992, Ser. No. 828,115

Int. Cl.[5] A61K *31/52*

U.S. Cl. 424—9 **12 Claims**

1. A composition comprising adenosine or an adenosine agonist in combination with an A_1 adenosine receptor antagonist in an amount sufficient to alleviate all effects of adenosine or said adenosine agonist except coronary vasodilation when said composition is administered to a mammal.

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5,256,399

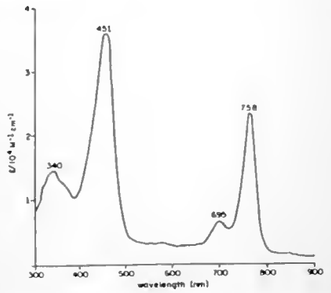
AROMATIC PENTADENTATE EXPANDED PORPHYRINS IN MAGNETIC RESONANCE IMAGING

Jonathan L. Sessler; Gregory W. Hemmi, both of Austin, Tex., and Toshiaki Murai, Gifu, Japan, assignors to Board of Regents, The University of Texas System, Austin, Tex.

Division of Ser. No. 539,975, Jun. 18, 1990, Pat. No. 5,162,509, which is a division of Ser. No. 320,293, Mar. 6, 1989, Pat. No. 4,935,498. This application May 7, 1992, Ser. No. 880,078

Int. Cl.[5] G01N *24/08*; A61K *31/555*; C07D *487/22*

U.S. Cl. 424—9 6 Claims



1. A method of magnetic resonance image enhancement comprising administering to a subject an effective amount of a texaphyrin-paramagnetic metal complex.

5,256,400

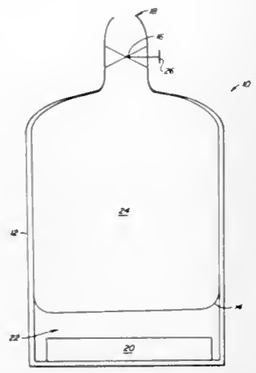
PRESSURIZED PRODUCT DELIVERY SYSTEMS

Michael Froix, Mountain View, Calif.; Larry Shipley, Lafayette, La.; Christine J. Y. Liau, La Palma, Calif.; Hien Nguyen, Los Osos, Calif., and Sok L. Khor, Palo Alto, Calif., assignors to Advanced Polymer Systems, Inc., Redwood City, Calif.

Filed Dec. 4, 1991, Ser. No. 803,298

Int. Cl.[5] A61L *9/04*

U.S. Cl. 424—45 7 Claims



1. A process for preparing a pellet for use in pressurized dispensing containers, said method comprising the following steps:

mixing substantially rigid crosslinked polymer macroporous particles with a binder to form a mixture of polymer macroporous particles and binder; and

compressing the mixture of polymer macroporous particles to form a pellet, wherein said polymer macroporous particles define a substantially non-collapsible pore network and said pellet defines interstitial spaces between said polymer macroporous particles, and wherein the interstitial spaces are substantially larger than the pore network.

5,256,401

ANTIBACTERIAL ANTIPLAQUE MOUTHWASH COMPOSITION

Joan Duckenfield, North Brunswick; Lori VanMeter, Bridgewater; Shannon Campbell, Monmouth Junction, and Nuran Nabi, N. Brunswick, all of N.J., assignors to Colgate-Palmolive Company, Piscataway, N.J.

Continuation-in-part of Ser. No. 398,592, Aug. 28, 1989, Pat. No. 5,188,821, which is a continuation-in-part of Ser. No. 291,712, Dec. 29, 1988, Pat. No. 4,894,220, which is a continuation-in-part of Ser. No. 8,901, Jan. 30, 1987, abandoned. This application Jun. 16, 1992, Ser. No. 899,412

Int. Cl.[5] A61K *7/16*

U.S. Cl. 424—49 10 Claims

1. A mouthwash composition having a vehicle comprising water and an aqueous nontoxic alkyl mono-or di-hydric alcohol and dissolved therein an effective antiplaque amount up of about 0.01 to about 0.09% of a substantially water insoluble noncationic antibacterial agent, said alcohol being a solvent for said antibacterial agent, wherein the weight amount ratio of water to alcohol is at least 10:1 and the amount of solvent is sufficient to completely dissolve the amount of said antibacterial agent in said mouthwash composition.

5,256,402

ABRASIVE TOOTH WHITENING DENTIFRICE OF IMPROVED STABILITY

Michael Prencipe, East Windsor, N.J., and Vincent Drago, Staten Island, N.Y., assignors to Colgate-Palmolive Company, Piscataway, N.J.

Filed Sep. 13, 1991, Ser. No. 759,244

Int. Cl.[5] A61K *7/20, 33/40*

U.S. Cl. 424—53 12 Claims

1. An aqueous abrasive toothpaste composition containing a peroxide compound which is stable with respect to active oxygen level and exhibits heightened and rapid whitening of teeth and stain removal which aqueous composition consists essentially of a mixture, stable and storable without a peroxide stabilizer, when filled into a closed container of at least 7% by weight water, and a combination of about 20 to about 60% by weight calcium pyrophosphate, at least about 1 to about 20% by weight of urea peroxide and about 0.5 to about 8.0% by weight of an alkali pyrophosphate salt, which combination is stable and effective to remove stain and whiten teeth in the oral cavity.

5,256,403

COMPOSITION AND METHOD FOR PROTECTING THE SKIN FROM UV-RAYS

Frances C. Gaskin, 298 State St., Albany, N.Y. 12210

Division of Ser. No. 263,039, Oct. 26, 1988, Pat. No. 5,006,331, which is a continuation-in-part of Ser. No. 600,635, Jan. 5, 1987, Pat. No. 4,806,344. This application Jan. 8, 1991, Ser. No. 638,695

The portion of the term of this patent subsequent to Feb. 21, 2006, has been disclaimed.

Int. Cl.[5] A61K *7/06, 7/42, 7/44, 7/48*

U.S. Cl. 424—59 11 Claims

1. A composition for protecting the skin against ultraviolet rays comprising:

an effective amount of melanin;

a substance for solubilizing melanin selected from the group consisting of triethanolamine and trypsin, the substance present in an amount sufficient to solubilize the melanin thereby producing melanin solubilized by the substance; and

a vehicle for topical application in which the melanin solubilized by the substance is distributed.

5,256,404

GRANULAR STARCH AS SUNSCREEN AGENT IN AQUEOUS COMPOSITIONS

Gary T. Martino, Plainsboro; Joseph Pasapane, Morristown, and Frank A. Nowak, Somerville, all of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Aug. 14, 1992, Ser. No. 930,865

Int. Cl.[5] A61K *7/42, 7/44, 7/48*

U.S. Cl. 424—59 18 Claims

1. A sunscreen composition comprising a pharmaceutically acceptable aqueous starch sunscreen carrier containing at least about 20% by weight of water, based on the weight of the composition and from about 0.5 to 30% by weight, based on the weight of the composition, of uncooked, granular starch as the sunscreen agent.

5,256,405

HERBAL DEODORANT

Katherine C. Chappell, Kennebunk, Me.; Pamela A. Scheeler, Portsmouth, N.H., and Gary Rittershaus, Kennebunkport, Me., assignors to Tom's of Maine, Kennebunk, Me.

Filed Dec. 30, 1991, Ser. No. 814,569

Int. Cl.[5] A61K *7/32, 35/82*

U.S. Cl. 424—65 26 Claims

1. A stick deodorant composition with active antibacterial constituents consisting essentially of (by weight based upon total weight of the composition):

a. about 1% to 6% Lichen Extract;

b. about 0.1% to 3% Coriander Oil; and

c. about 0.1% to 0.6% Glyceryl Monolaurate,

said composition being essentially free of petroleum derived constituents and alcohols.

5,256,406

TREATMENT OF HAIR LOSS AND DERMATOLOGICAL PROBLEMS

Henry J. Palacios, 8005 Algarve St., McLean, Va. 22102

Continuation-in-part of Ser. No. 727,861, Jul. 10, 1991, abandoned. This application Dec. 20, 1991, Ser. No. 810,863

Int. Cl.[5] A61K *7/06*

U.S. Cl. 424—70 19 Claims

1. A method of treating hair loss or abnormal oil distribution on the skin or hair comprising the steps of:

1) testing the patient for hypersensitivity to house dust and testosterone by administration of decreasing amounts of testosterone to the mucous membranes of the oral cavity and by administration of increasing doses of suspensions of house dust antigen;

2) administering to a patient shown to have hypersensitivity in the antigen test performed in step 1 doses of antigen to which the patient shows hypersensitivity until the desensitizing dosage level is reached; and

3) effecting treatment by the long-term administration of the desensitizing dose of antigen as determined in step 1.

5,256,407

HAIR STYLING COMPOSITION

Anthony D. Gough, Wirral, England, assignor to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed Dec. 12, 1991, Ser. No. 806,967

Claims priority, application European Pat. Off., Dec. 13, 1990, 90313607.5

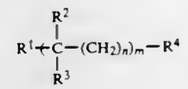
Int. Cl.[5] A61K *7/11, 7/06*

U.S. Cl. 424—71 14 Claims

1. A hair styling composition for imparting body and/or stylability to hair, comprising:

(a) at least one hair treatment material selected from the group consisting of a surfactant present in an effective amount to clean the hair, a conditioning agent present in an effective amount to condition the hair, and water or volatile solvent present in an effective amount as a carrier; and

(b) an effective amount to impart body and/or stylability to hair of a material consisting essentially of a per-alk(en)yl hydrocarbon mixture of materials with respective high and low weight average molecular weights ranging from 20,000 to 1,000,000 and from 70 to 5,000 in a relative weight ratio of 10:1 to 1:10, said hydrocarbon mixture of materials having the formula:



wherein:

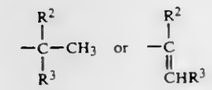
n=0–3;

m=an integer such that the weight average molecular weight is as defined above;

R^1 is —H or a C_{1-4} alkyl group;

R^2 is a C_{1-4} alkyl group;

R^3 is —H or a C_{1-4} alkyl group; and



5,256,408

AMINOSTEROIDS FOR OPHTHALMIC USE

John G. Babcock, Olga, Wash.; Jon R. Polansky, Mill Valley, Calif.; Lyle M. Bowman, Pleasanton, Calif.; Sheng-Wan Tsao, San Carlos, Calif.; Erwin C. Si, Alameda, Calif., and Santosh K. Chandrasekaran, Moraga, Calif., assignors to Insite Vision Incorporated, Alameda, Calif.

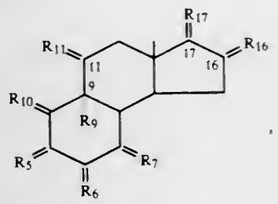
Division of Ser. No. 537,062, Jun. 12, 1990, Pat. No. 5,124,154. This application Feb. 19, 1992, Ser. No. 836,888

Int. Cl.[5] A61K *47/28, 31/58, 37/52*

U.S. Cl. 424—78.04 9 Claims

1. A composition for preventing or treating ophthalmic disease or disorder comprising:

(a) an amino-substituted steroid therapeutic agent selected from the C_{20} through C_{26} aminosteroids of the following formula XI:



(XI)

where:

(A-I)R_6 is α-R_{61}:β-R_{62}, R_{10} is α-R_{101}: βR_{102} and R_7 is α-H:β-H, where one of R_{61} and R_{62} is —H, and the other is —H, —F, or C_1-C_3 alkyl, R_{102} is $-CH_3$, R_{101} and R_5 taken together are $-(CH_2)_2-C(-R_{33})-CH=$or $-CH-CH-CO-CH=$, where R_{33} is =O or α-H:β—OR_{34} or α—OR_{34}:β—H, where R_{34} is —H, $-P(=O)(OH)_2$, $-CO-CH_3$, $-CO-C_2H_5$, $-CO-C_6H_5$, $-CO-O-CH_3$ or $-CO-O-C_2H_5$;

(A-II) R_5 is α—R_{53};β—R_{54}, R_6 is α—R_{63}:β—R_{64}, R_{10} is α—R_{103}:βR_{104} and R_7 is α-H:β-H, where one of R_{63} and R_{64} is —H, and the other taken toether with one of R_{53} and R_{54} forms a second bond between C_5 and C_6, R_{104} is $-CH_3$, R_{103} and the other of R_{53} and R_{54} taken together

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are $-(CH_2)_2-C(H)(OH)-CH_2-$or $-(CH_2)_2-C[H-][OP(=O)-(OH)_2]-CH_2-$;

(A—III) R_{10} and R_5 taken together are $=CH-CH=C(OR_3)-CH=$where R_3 is —H, $-P(=O)(OH)_2$, C_1-C_3 alkyl, —CO—H, C_2-C_4 alkanoyl or benzyl, R_6 is α-R_{65}:β-R_{66} where one of R_{65} and R_{66} is —H, and the other is —H, —F, or C_1-C_3 alkyl and R_7 is α-H:β-H;

(A-IV) R_5 is α-R_{57}:β-R_{58}, R_6 is α-R_{67}: βR_{68}, R_7 is α-H:β-H and R_{10} is α-R_{107}:β-R_{108}, where one of R_{57} and R_{58} is —H, R_{107} and the other of R_{57} and R_{58} taken together are $-(CH_2)_2-C(=R_{33})-CH_2$, where R_{33} is as defined above, R_{108} is $-CH_3$, where one of R_{67} and R_{68} is —H and the other is —H, —F, or C_1-C_3 alkyl;

(A-V) R_6 is R_{69}:R_{610}, R_7 is R_{79}:R_{710}, R_{10} is α-R_{109}:R_{1010}, where one of R_{69} and R_{610} is —H and the other taken together with one of R_{79} and R_{710} forms a second bond between C_6 and C_7, and the other of R_{79} and R_{710} is —H, R_{1010} is $-CH_3$, R_{109} and R_5 taken together are $-(CH_2-)_2-C(=R_{33})-CH=$or $-CH=CH-CO-CH=$, where R_{33} as defined above; where:

(C-I) R_{11} is α-R_{111}:β-R_{112}, where one of R_{111} and R_{112} is taken together with R_9 to form a second bond between C_9 and C_{11} and the other of R_{111} and R_{112} is —H;

(C-II) R_9 is —Cl and R_{11} is =O or α-H:β-R_{114} where R_{114} is —Cl or —OH;

(c-III) R_9 is —H or —F and R_{11} is =O or α-R_{115}:β-R_{116}, where one of R_{115} and R_{116} is —H, and the other of R_{115} and R_{116} is —H, —OH or C_1-C_{12} alkoxy;

(C-IV) R_9 is —H or —F and R_{11} is α—O—CO—R_{117}:β—H, where R_{117} is

(A) C_1-C_3 alkyl,

(B) C_1-C_{12} alkoxy,

(C) furanyl,

(D) $-NR_{122}R_{123}$, where one of R_{122} and R_{123} is —H, methyl or ethyl and the other is —H, C_1-C_4 alkyl or phenyl,

(E) $-X_3-X_1$, where X_3 is —O—or a valence bond, where X_1 is phenyl optionally substituted with 1 through 2 —Cl, —Br, C_1-C_3 alkoxy, —COOH, $-NH_2$, C_1-C_3 alkylamino, di(C_1-C_3)alkylamino, where the alkyl groups are the same or different 1-pyrrolidinyl-, 1-piperidinyl, 1-hexamethylenimino-, 1-heptamethylenimino-, C_2-C_4 acylamino and —NH—CHO or with 1 —F or $-CH_3$; where:

(D-I) R_{16} is R_{161}:R_{162} and R_{17} is R_{171}:R_{172}, where one of R_{161} and R_{162} is —H or $-CH_3$ and the other taken together with one of R_{171} and R_{172} forms a second bond between C_{16} and C_{17}, and the other of R_{171} and R_{172} is $-C(=Z)-(CH_2)_n-NR_{21}R_{210}$, where Z is $=O$, $=CH_2$ or R_{179}:—H where R_{179} is —H or $-CH_3$, where n is 0 through 6, where

(A) R_{21} is

(1) $-(CH_2)_m-NR_{211}-X_2$, where m is 2,3 or 4, where R_{211} is —H or C_1-C_3 alkyl, where X_2 is: [A]

(a) pyridin-2,3- or 4-yl or the N-oxide thereof optionally substituted by 1 or 2 R_{212}, being the same or different, where R_{212} is

(i) —F,

(ii) —Cl,

(III) —Br,

(iv) C_1-C_5 alkyl,

(v) $-CH_2-CH=CH_2$,

(vi) $-X_1$, where X_1 is as defined above,

(vii) $-NR_{213}R_{213}$ where the R_{213}'s are the same or different and are —H, C_1-C_3 alkyl or $-CH_2-CH=CH_2$,

(viiiα) $^{\bullet}CH_2-(CH_2)_q-CH_2-N^{\bullet}$—where the atoms marked with an asterisk (•) are bonded to each other resulting in the formation of a ring, where q is 1 through 5,

(viiiβ) $^{\bullet}CH_2-CH_2-(CH_2)_c-G-(CH_2)_d-CH_2-CH_2-N^{\bullet}$—where the atoms marked with an asterisk (•) are bonded to each other resulting in the formation of a ring, where G is —O—,—S—,—SO—, SO_2—or $-NHR_{214}$, where R_{214} is —H, C_1-C_3 alkyl, or X_1 as defined above, where c and d are the same or different and are 0 through 2 with the proviso that the total number of ring carbon atoms is 4,5 or 6=[a]

(ix) 3-pyrrolin-1-yl, [b]

(x) pyrrol-1-yl optionally substituted with C_1-C_3 alkyl, [c]

(xi) piperidin-1-yl optionally substituted with 1 or 2 C_1-C_3 alkyl, [d](xii) 1,2,3,6-tetrahydropyridin-1-yl, [e]

(xiii) 1-hexamethyleneimino containing a 3- or 4- double bond or 3-and 5- double bonds, [f]

(xiv) 1,4-dihydro-1-pyridinyl substituted in the 4 position by two C_1-C_3 alkyl being the same or different, [g]

(xv) —OH,

(Xvi) C_1-C_3 alkoxy,

(xvii) $-NR_{217}-(CH_2)_e-Q$ where Q is 2-pyridinyl where R_{217} is —H or C_1-C_3 alkyl and e is 0 through 3 (1)

(xviii) pyridin-2-,3-or 4-yl,

(b) 1,3,5-triazin-4-yl or the N-oxide thereof optionally substituted at the 2- anode/or 6- position with R_{212} is as defined above, (4)

(c) pyrimidin-4-yl or the N-oxide thereof optionally substituted at the 2- and/or 6- position with 1 or 2 R_{212} as is defined above, (5)

(d) pyrimidin-2yl optionally substituted at 4-position with 1 or 2 R_{212} as is defined above, (6)

(e) pyrazin-2-yl optionally substituted with 1 or 2 R_{212} as is defined above, (7)

(f) imidazol-2-yl optionally substituted in the 1 position with C_1-C_3 alkyl or $-X_1$, where X_1 is as defined above, and further optionally substituted with 1 or 2 R_{212} as defined above, (8)

(g) 1,3,4-triazol-2-yl optionally substituted in the 1 position with C_1-C_3 alkyl or $-X_1$, where X_1 is as defined above, and further optionally substituted with R_{212} as defined above, (9)

(h) imidazol-4- or 5-yl optionally substituted in the 1 position with C_1-C_3 alkyl or $-X_1$, where X_1 is as defined above, and further optionally substituted with 1 or 2 R_{212} as defined above, (10)

(i) benzo[b][thien-2-yl, (12a)

(j) indol-2-yl, (12b)

(k) benzo[b]thiazol-2-yl, (12c)

(l) benzimidazol-2-yl, (12d)

(m) 4-[2-[4-[2,6bis(1-pyrrolidinyl)-4-pyrimidinyl]-1-piperazinyl]ethyl]-piperazinyl, (13)

(n) 1,2,4-triazin-3-yl optionally substituted at the 5-and/or 6-position with R_{212} as is defined above, (14)

(2) (1-piperazinyl)(C_2-C_4)alkyl optionally substituted in the 4- position with $-X_1$ or $-X_2$ as defined above, [B]

(3) $-X_2$, as defined above, [O]

(4) $-(CH_2)_m-X_4$ where m is as defined above and where X_4 is

(a) $-O-CH_2CH_2-Y$, where Y is C_1-C_3 alkylamino, di(C_1-C_3)alkylamino where the alkyl groups are the same or different, C_3-C_6 alkyleneimino, optionally substituted with 1 or 2 C_1-C_3 alkyl,

(b) $-NR_{220}CH_2CH_2-Y$, where R_{220} is —H or C_1-C_3 alkyl and Y is as defined above,

(c) $-(CH_2)_g-N(R_{220})-X_2$, where g is 2, 3 or 4, and where R_{220} and X_2 are as defined above, [H]

(5) $-(CH_2)_m-NR_{222}R_{223}$, where R_{222} is —H or C_1-C_3 alkyl and R_{223} is $-X_1$ or $-X_2$ as defined above, or R_{222} and R_{223} are taken together with the attached nitrogen atom to form a saturated mono-nitrogen C_3-C_6 heterocyclic ring and where m is as defined above, [I]

(6) $-(CHCH_3)_b-(CH_2)_f-R_{224}$, where b is 0 and f is 1 through 3 or b is one and f is 0 through 3, where R_{224} is phenyl substituted with 1 through 3 —OH, C_1-C_3 alkoxy, $-NR_{225}R_{226}$ where R_{225} and R_{226} are the same or different and are —H, C_1-C_3 alkyl or are taken together with the attached nitrogen atom to form a C_4-C_7 cyclicamino ring, [J]

(7) $-(CH_2)_i-X_2$, where i is 1 through 4 and X_2 is as defined above, [K]

(8) (1-piperazinyl)acetyl substituted in the 4-position by X_2 where X_2 is as defined above, [L]

(9) (1-piperazinyl)carbonylmethyl substituted in the 4- position by $-X_2$ where X_2 is as defined above, and [M]

(B) R_{210} is

(1) —H,

(2) C_1-C_3 alkyl,

(3) C_5-C_7 cycloalkyl,

(4) $-(CH_2)_m-NR_{211}-X_2$, where m, R_{211} and X_2 are as defined above, [A]

(5) (1-piperazinyl)—(C_2-C_4)alkyl optionally substituted in the 4- position with $-X_1$ or $-X_2$ as defined above, [B]

(6) $-(CH_2)_m-X_4$, where m and X_4 are as defined above, [H]

(7) $-(CH_2)_m-NR_{222}R_{223}$, where m, R_{222} and R_{223} are as defined above, [I]

(8) $-(CHCH_{3b}-(CH_2)_f-R_{224}$, where b, f and R_{224} are as defined above, [J]

(C) R_{21} and R_{210} are taken together with the attached nitrogen atom to form a heterocyclic ring selected from the group consisting of

(1) 2-(carboxy)-1-pyrrolidinyl optionally as the C_1-C_3 alkyl ester or as a pharmaceutically acceptable salt, [C-1]

(2) 2-(carboxy)-1-piperidinyl optionally as the C_1-C_3 alkyl ester or as a pharmaceutically acceptable salt [C-2]

(3) 2-(carboxy)-1-hexamethyleneimino optionally as the C_1-C_3 alkyl ester or as a pharmaceutically acceptable salt, [C-3]

(4) 2-(carboxy)-1-heptamethyleneimino optionally as the C_1-C_3 alkyl ester or as a pharmaceutically acceptable salt, [C-4]

(5) 1-piperazinyl substituted in the 4-positon with $R_{228}-CO-(CH_2)_j-$where R_{228} is $-X_1$, $-NR_{229}X_1$ and 2-furanyl, where R_{229} is —H or C_1-C_3 alkyl, where j is 0 through 3 and X_1 is as defined above, [D]

(6) 1-piperazinyl substituted in the 4- position with $X_2-(CH_2)_j-$, where X_2 and j are as defined above, [E]

(7) 1-piperazinyl substituted in the 4- position with $X_1-(CH_2)_j-$, where X_1 and j are as defined above, [F]

(8) 4-hydroxy-1-piperidinyl substituted in the 4- position with X_1 as defined above, [G]

(9) 1-piperazinyl ubstituted in the 4- position with $X_2-NR_{229}-CO-(CH_2)_i-$, where X_2, R_{229} and i are as defined above; [N]

(D-II) R_{16} is α-R_{163}:β-R_{164} where one of R_{163} and R_{164} is —H and the other is —H, —F, $-CH_3$ or —OH, and R_{17} is $-CH-(CH_2)_p-NR_{21}R_{210}$, where p is 1 or 2, where R_{21} and R_{210} are as defined above.

(D-III) R_{16} is α-R_{165}:β-R_{166} and R_{17} is α-R_{175}:β-R_{176}, where R_{165} is —H, —OH, —F or $-CH_3$ and R_{166} is —H, —OH, —F, or $-CH_3$, with the proviso that at least one of R_{165} and R_{166} is —H, where R_{175} is —H, —OH, $-CH_3$, $-CH_2CH_3$, C_2-C_7 alkanoyloxy or —O—CO—X_1, where X_1 is as defined above, and where R_{176} is $-C(=Z)-(CH_2-)_n-NR21R_{210}$, where Z, n, R_{21} and R_{210} are as defined above;

(D-IV) the 16,17-acetonide of a compound where R_{165} is —OH, R_{166} is —H, R_{175} is —OH and R_{176} is $-C(=Z)-(CH_2)_n-NR_{21}R_{210}$, where Z, n, $-R_{21}$ and R_{210} as defined above;

and pharmaceutically acceptable salts thereof,

and hydrates and solvates thereof;

with the following overall provisos that:

(I) one of R_{161} or R_{162} is taken together with one of R_{171} or R_{172} to form a second bond between C_{16} and C_{17}, only when R_{10} is α-R_{101}:β-R_{102}, α-R_{103}:β-R_{104}, α-R_{107}:β-R_{108} or α-R_{109}:β-R_{1010},

(II) R_{17} is $-CH-(CH_2)_p-NR_{21}R_{210}$, only when R_{10} is α-R_{101}:β-R_{102}, α-R_{103}:β-R_{104}, α-R_{107}:β-R_{108} or α-R_{109}:β-R_{1010},

(III) R_5 and R_{10} taken together are $=CH-CH=C(OR_3-)-CH=$, only when R_{17} is α-R_{175}:β-R_{176} or the 16,17-acetonide of a compound where R_{16} is α—OH:β—H and R_{17} is α—OH:β—$C(=Z)-(CH_2)_n-NR_{21}R_{210}$, and

(IV) R_5 is α-R_{57}:β-R_{58}, only when R_{17} is α—R_{175}:β—R_{176} or α—OH:β—C—(=Z)—$(CH_2)_n-NR_{21}R_{210}$, or the 16,17—acetonide thereof, and

(b) an inert vehicle, suitable for topical ophthalmic or intraocular application, selected from polymeric solutions, suspensions, ointments or gels,

the composition having a viscosity of at least 5,000 cps and containing an ophthalmically, therapeutically effective amount of agent to arrest processes damaging to the eye for those in need thereof, any amount of agent present in dissolved form for immediate activity being present in an amount insufficient for local tissue damage, and at least some agent being present in suspension for activity upon dissolution.

5,256,409

IMMUNOGENIC COMPOSITION AGAINST TRICYCLIC ANTIDEPRESSANT DRUGS

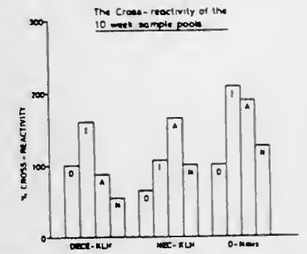
Stuart J. F. E. Blincko, Sussex, United Kingdom, assignor to Therapeutic Antibodies, Inc., Nashville, Tenn.

Filed Jan. 25, 1991, Ser. No. 645,799

Claims priority, application United Kingdom, Jan. 25, 1990, 9001694

Int. Cl.[5] **A61K** *39/395, 39/385;* **C07K** *17/06*

U.S. Cl. 424—85.8 **18 Claims**



1. An immunogenic composition for raising a cross-reactive antisera to tricyclic antidepressant drugs, wherein said composition comprises an immunogen, said immunogen comprising an immunologically active carrier protein to which is bound at least two types of hapten, each hapten comprising a drug molecule, wherein the drug molecule of one type of hapten is chosen from the desipramine/imipramine series of tricyclic antidepressant drugs and the drug molecule of a second type of hapten is chosen from the nortriptyline/amitriptyline series of tricyclic antidepressant drugs.

5,256,410

TREATMENT OF SQUAMOUS CELL CARCINOMA INTRALESIONALLY WITH RECOMBINANT HUMAN ALPHA INTERFERON

Daniel J. Tanner, Brooklyn; Edwin A. Peets, New York, both of N.Y., and Kenneth A. Smiles, Novato, Calif., assignors to Schering Corporation, Kenilworth, N.J.

Continuation of Ser. No. 278,315, Dec. 1, 1988, abandoned. This application May 20, 1991, Ser. No. 684,964

Int. Cl.[5] **A61K** *37/66*

U.S. Cl. 424—85.7 **5 Claims**

1. A method for treating human squamous cell carcinoma comprising intralesionally administering to a human in need of such treatment a sufficient amount of a purified recombinant human alpha-2 interferon to be effective as an anti-squamous cell carcinoma agent.

VOL 1155 ISS 4 OCT 26 1993 UMI

5,256,411

IMMUNE CELL PROLIFERATION INHIBITORS

Anthony E. Bolton, Sheffield, United Kingdom, and Alan Drizen, Downsview, Canada, assignors to Intermune Life Sciences, Inc., Ontario, Canada

Continuation-in-part of Ser. No. 295,734, Jan. 11, 1989, Pat. No. 5,039,521. This application Jun. 28, 1991, Ser. No. 720,591
The portion of the term of this patent subsequent to Aug. 13, 2008, has been disclaimed.
Int. Cl.[5] A61K *39/395, 37/00*
U.S. Cl. 424—85.8 28 Claims

1. A method for treating an immune system disorder in a human by administering to said human a therapeutically effective amount of an active substance selected from the group consisting of muteins of PP14, fragments of PP14, and subunits of PP14, to alleviate said immune system disorder, where said members retain the therapeutic activity of the unmodified PP14.

21. A method for treating an immune system disorder in a human by administering to said human a therapeutically effective amount of monoclonal antibodies directed agains a substance selected from the group consisting of derivatives of PP14, muteins of PP14, fragments of PP14, and subunits of PP14, wherein said members retain the therapeutic activity of the unmodified PP14.

5,256,412

ANTI-HIV AGENT

Hajime Tsunoo; Masao Takami, and Kenji Mizumoto, all of Odawara, Japan, assignors to Meiji Milk Products Co., Ltd., Tokyo, Japan

Division of Ser. No. 576,439, Sep. 10, 1990, Pat. No. 5,164,486. This application Aug. 17, 1992, Ser. No. 930,349
Claims priority, application Japan, Jan. 9, 1989, 1-2574; Jan. 27, 1989, 1-18790
Int. Cl.[5] A61K *37/02*
U.S. Cl. 424—85.8 4 Claims

1. A composition for inhibiting large cell formation comprising an effective amount of a plasma protein in which the polarity of an amino group of an amino acid residue constituting the plasma protein is chemically modified into a negative moiety and a pharmaceutically acceptable carrier.

5,256,413

METHOD AND USE FOR SITE-SPECIFIC ACTIVATION OF SUBSTANCES

Edgar Haber, Weston, and Gary R. Matsueda, Winchester, both of Mass., assignors to The General Hospital Corporation, Boston, Mass.

Continuation of Ser. No. 498,470, Mar. 26, 1990, abandoned, which is a continuation of Ser. No. 774,469, Sep. 10, 1985, abandoned, which is a continuation of Ser. No. 689,851, Jan. 8, 1985, Pat. No. 5,116,613. This application Sep. 15, 1992, Ser. No. 946,015
Int. Cl.[5] A61K *39/395;* C07K *15/28*
U.S. Cl. 424—85.8 2 Claims

1. A method of lysing a thrombus in a host, said method comprising:

administering to said host a conjugate consisting of a monoclonal antibody specific for fibrin and devoid of cross-reactivity with fibrinogen, said antibody coupled to a plasminogen activator, wherein upon contact with a thrombus said conjugate lyses the thrombus via the action of said plasminogen activator.

5,256,414

Patent Not Issued For This Number

5,256,415

VACCINE AGAINST BOVINE RESPIRATORY DISEASE (PASTEURELLOSIS)

Richard E. Corstvet, and Fred M. Enright, both of Baton Rouge, La., assignors to Louisiana State University, Baton Rouge, La.

Continuation of Ser. No. 325,866, Mar. 20, 1989, abandoned. This application Jul. 24, 1992, Ser. No. 919,706
Int. Cl.[5] A61K *39/02;* C12N *1/36*
U.S. Cl. 424—92 6 Claims

1. A vaccine against bovine respiratory disease comprising:

(a) an effective immunological system triggering concentration of live organisms having capsular antigens selected from the group consisting of a strain of ATCC #53839 and a strain of ATCC #53840; and

(b) a carrier.

5,256,416

EXTRACTS OF THE *ACANTHOSPERMUM HISPIDUM* PLANT

Klaus Eichmann, and Manuel Modolell, both of Freiburg, Fed. Rep. of Germany, assignors to Merck Patent GmbH Darmstadt 1, Germany

PCT No. PCT/EP90/01231, § 371 Date Apr. 15, 1991, § 102(e) Date Apr. 15, 1991, PCT Pub. No. WO91/01741, PCT Pub. Date Feb. 21, 1991
PCT Filed Jul. 27, 1990, Ser. No. 659,313
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1989, 3925109
Int. Cl.[5] A61K *35/78*
U.S. Cl. 424—195.1 13 Claims

1. An extract of the *Acanthospermum hispidum* plant which contains only the water-soluble components thereof with a molecular weight >2,000.

5,256,417

WATER DISPERSIBLE TOWELETTE IMPREGNATED WITH NON-AQUEOUS LOTION FORMULATIONS

Bernard M. Koltisko, Emmanus, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jan. 31, 1992, Ser. No. 830,045
Int. Cl.[5] A01N *25/34*
U.S. Cl. 424—402 10 Claims

1. In a packaged towelette composed of a sheet of non-woven fiber impregnated with a binder which is a polyvinyl alcohol or an emulsion polymer binder containing polyvinyl alcohol as a protective colloid, the sheet being maintained in a wet condition within the package, the improvement which comprises the sheet being maintained in a wet condition within the package by contact with a non-aqueous lotion composition comprising a liquid organic compound that is a nonsolvent for polyvinyl alcohol selected from the group consisting of hydrocarbons, halogenated hydrocarbons, C_1-C_3 alcohols, tetrahydrofuran, dioxane, ethylene glycol formal, ketones, carboxylic acids, esters, and ethyl lactate.

5,256,418

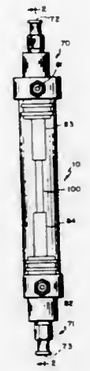
COLLAGEN CONSTRUCTS

Paul D. Kemp, Cambridge; Robert M. Carr, Jr., Boston, and John G. Maresh, Cambridge, all of Mass., assignors to Organogenesis, Inc., Canton, Mass.

Filed Apr. 6, 1990, Ser. No. 505,678
Int. Cl.[5] A61F *2/28;* A61K *9/14, 37/12;* C07K *15/20*
U.S. Cl. 424—423 34 Claims

1. A method of forming a construct comprising collagen, the method comprising the steps of:

(a) providing an aqueous solution comprising collagen adjacent a permeable member, the permeable member being substantially impermeable to collagen and in contact with a concentrating agent, wherein the concentrating agent has an osmotic pressure higher than that of the collagen solution and permits selective mass transfer of solvent from the collagen solution through the permeable member; and



(b) maintaining the collagen solution, permeable member and concentrating agent under conditions sufficient to enable the selective mass transfer of solvent from the collagen solution and the formation of the collagen construct at the permeable member.

5,256,419

BIOLOGICAL & DUST CONTROL METHODS FOR BULK/GRANULAR SOLIDS

Donald C. Roe, Tabernacle, N.J.; Dwight P. Davis, Holland; Kevin C. Manning, Richboro; Edmund J. Bockowski, Furlong, all of Pa., and Marc Verschoren, Ramsel, Belgium, assignors to Betz Laboratories, Inc., Trevose, Pa.

Continuation of Ser. No. 848,783, Mar. 10, 1992, abandoned, which is a continuation of Ser. No. 733,075, Jul. 17, 1991, abandoned, which is a continuation of Ser. No. 451,385, Dec. 15, 1989, abandoned. This application Feb. 25, 1993, Ser. No. 23,465
Int. Cl.[5] A01N *25/24*
U.S. Cl. 424—407 4 Claims

1. A method of reducing the dissemination of fugitive dust particles into the atmosphere from a bulk solid by applying a foam dust control agent to said bulk solid wherein said foam dust control agent consists of more than about 0.2% anionic, nonionic and/or cationic surfactant as foaming agent and a biocidally effective amount of a biocide consisting of a combination of methylene bisthiocyanate and bromo-nitrostyrene in a ratio of about 2 to 1.

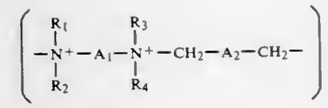
5,256,420

METHOD OF IMPARTING ANTIMICROBIAL ACITIVITY TO AN OPHTHALMIC COMPOSITION

Fu-Pao Tsao, Lawrenceville; Paul C. Nicolson, Dunwoody, and Susan A. Littlefield, Duluth, all of Ga., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 23, 1991, Ser. No. 812,780
Int. Cl.[5] A61K *31/14, 31/74*
U.S. Cl. 424—427 12 Claims

1. A method of imparting antimicrobial activity to an ophthalmic composition, in the presence of hydrogen peroxide comprising adding to the composition a quaternary ammonium salt in which the cationic units correspond to the formula



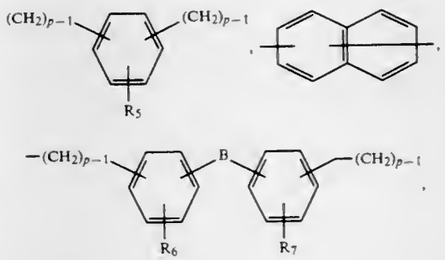
in which

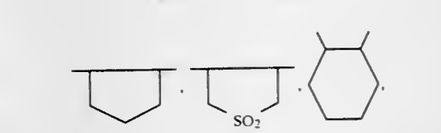
R_1 R_2, R_3 and R_4 are identical or different from one another and are selected from the group consisting of optionally substituted alkyl, cycloalkyl with at most 20 carbon atoms, aryl, aralkyl, and a substituted heterocyclic ring with 3 to 6 ring members,

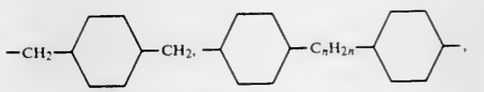
A_1 is $-(CH_2)_m-$, in which m is a number from 1 to 20 which is optionally interrupted by at least one



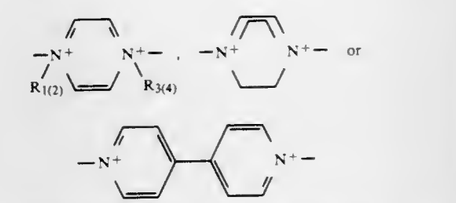
grouping or substituted by at least one of hydroxyl, halogen, nitrile, alkyl, hydroxyalkyl, alkoxy, carboxyl, carbalkoxy, a substituted aryl or aralkyl radical, polyoxyalkylene or a radical of the formula







or, together with the nitrogen atoms and at least one of the substituents bonded to each nitrogen atom, is a radical of the formula



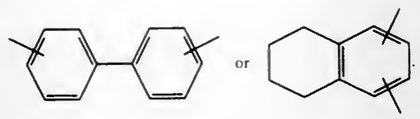
R_6 and R_7 are selected from the group consisting of hydrogen, alkyl, hydroxyalkyl or halogenoalkyl with 1 to 4 carbon atoms, hydroxyl, halogen, carboxyl, carbalkoxy and phenyl;

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B is selected from the group consisting of a direct bond, —O—, —SO_2—,



and optionally substituted alkylene;
n is a number from 1 to 6;
p is a number from 1 to 3; and
A_2 is a radical having the formula



5,256,421
HORMONE PREPARATION AND METHOD
Robert F. Casper, Toronto, Canada, assignor to Jencap Research Ltd., Toronto, Canada
Division of Ser. No. 874,016, Apr. 27, 1992, abandoned, which is a continuation of Ser. No. 515,691, Apr. 26, 1990, Pat. No. 5,108,995, which is a continuation of Ser. No. 247,861, Sep. 22, 1988, abandoned. This application Nov. 10, 1992, Ser. No. 974,182
Claims priority, application Canada, Sep. 24, 1987, 547743; Sep. 24, 1987, 547744
Int. Cl.[5] A61L *15/03;* A61K *31/565, 31/57, 31/58*
U.S. Cl. 424—449 11 Claims

1. A method of treating a female in need of hormone replacement therapy comprising transdermally administering to said female a pharmaceutical regimen arranged in alternating estrogen dominant phases and progestin dominant phases, each phase consisting of from one to four consecutive daily unit doses; wherein the daily unit doses of said estrogen dominant phases contain
(a) an amount of a substance exhibiting estrogen activity sufficient to promote the development of progestin receptors in the endometrium of said female, or
(b) an amount of a substance exhibiting estrogen activity sufficient to promote the development of progestin receptors in the endometrium of said female and an amount of a substance exhibiting progestin activity; and
wherein the daily unit doses of said progestin dominant phases contain an amount of a substance exhibiting estrogen activity and an amount of a substance exhibiting progestin activity sufficient to antagonize the effect of estrogen on the endometrium of said female.

5,256,422
LIPID VESICLE CONTAINING WATER-IN-OIL EMULSIONS
Elizabeth C. Albert, Nashua; Donald F. H. Wallach, Hollis, and Rajiv Mathur, Nashua, all of N.H., assignors to Micro Vesicular Systems, Inc., Nashua, N.H.
Continuation of Ser. No. 676,865, Mar. 28, 1991, abandoned. This application Jul. 8, 1992, Ser. No. 909,112
Int. Cl.[5] A61K *9/127*
U.S. Cl. 424—450 12 Claims

1. A water-in-oil emulsion comprising a continuous oil phase having a discontinuous aqueous phase dispersed therein, said discontinuous phase being in the form of droplets of an aqueous medium having intact liposomes dispersed therein, said emulsion further comprising a surfactant, exterior to said intact liposomes, to assist in stabilizing said emulsion.

5,256,423
METHOD FOR DESTROYING CYST OF NOXIOUS PLANKTON
Syuzo Egusa, Ichikawa, and Yasuo Fukuyo, Matsudo, both of Japan, assignors to Katayama Chemical, Inc., Osaka, Japan
Filed Oct. 4, 1991, Ser. No. 771,441
Claims priority, application Japan, Oct. 12, 1990, 2-274651
Int. Cl.[5] A61K *33/40;* A01N *39/00*
U.S. Cl. 424—616 9 Claims

1. A method of preventing contamination of navigable waters by cysts of noxious plankton contained in ballast water discharged from the ballast of a ship, said method comprising adding an amount of hydrogen peroxide, or a compound which produces hydrogen peroxide, to said ballast to create a concentration of hydrogen peroxide in the ballast water contained therein which is effective in destroying cysts, and holding said ballast water containing the hydrogen peroxide in the ballast for a period of time sufficient to destroy cysts of noxious plankton present in said ballast water prior to discharging said ballast water into navigable waters.

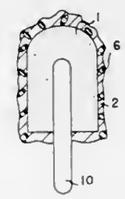
5,256,424
STABILIZED THIOCARBONATE SOLUTIONS
James A. Green, II, Chino, and Donald C. Young, Fullerton, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.
Continuation of Ser. No. 262,961, Oct. 28, 1988, Pat. No. 5,041,240, which is a continuation-in-part of Ser. No. 128,146, Dec. 3, 1987, Pat. No. 5,022,912, and a continuation-in-part of Ser. No. 931,517, Nov. 17, 1986, abandoned, and a continuation-in-part of Ser. No. 55,923, May 29, 1987, Pat. No. 5,013,350, and a continuation-in-part of Ser. No. 55,719, May 29, 1987, abandoned, and a continuation-in-part of Ser. No. 56,143, May 29, 1987, abandoned, said Ser. No. 128,146, is a continuation-in-part of Ser. No. 685,454, Apr. 30, 1984, Pat. No. 4,726,144, which is a continuation-in-part of Ser. No. 315,492, Oct. 27, 1981, Pat. No. 4,476,113, and a continuation-in-part of Ser. No. 490,461, May 2, 1983, abandoned, said Ser. No. 55,923, is a division of Ser. No. 490,461, May 2, 1983, said Ser. No. 55,719, is a division of Ser. No. 490,461, May 2, 1983, said Ser. No. 56,143, is a continuation-in-part of Ser. No. 490,461, May 2, 1983. This application May 31, 1991, Ser. No. 708,674
The portion of the term of this patent subsequent to Aug. 20, 2008, has been disclaimed.
Int. Cl.[5] A01N *59/04;* C01B *31/26*
U.S. Cl. 424—701 25 Claims

1. A composition comprising an aqueous solution comprising a thiocarbonate selected from the group consisting of alkali and alkaline earth metal tetrathiocarbonates, and combinations thereof, and a polysulfide selected from the group consisting of alkali and alkaline earth metal sulfides of the formula M_nS_x, wherein M is selected from alkali and alkaline earth metals and combinations thereof, x is greater than 1, n is 2 when M is alkali metal, and n is 1 when M is an alkaline earth metal, and combinations thereof, the concentration of said polysulfide corresponding to at least about 0.02 equivalent of said polysulfide per equivalent of carbon disulfide in said tetrathiocarbonate and being sufficient to increase the stability of said thiocarbonate in said solution.

5,256,425
ANTIBIOTIC RESISTANT STRAIN OF LACTOBACILLUS ACIDOPHILUS
Richard E. Herman, Redmond; Douglas R. Ware, Bothell, and Julia E. Clarke, Bellevue, all of Wash., assignors to Bio Techniques Laboratories, Inc., Redmond, Wash.
Division of Ser. No. 746,873, Aug. 19, 1991, Pat. No. 5,179,020. This application Sep. 29, 1992, Ser. No. 954,532
Int. Cl.[5] C12N *1/20*
U.S. Cl. 424—93 J 2 Claims

1. An oral composition suitable for administering to an animal comprising an orally acceptable carrier in admixture with a substantially pure culture of a strain of *L. acidophilus* having the identifying characteristics of ATCC No. 55221, in an amount sufficient to enhance the feed conversion of said animal over time.

5,256,426
COMBINATION POPSICLE, METHOD OF MAKING THE SAME, AND DEVICE THEREFOR
Hisahiro Tomioka, Takatsuki; Masakazu Shimazaki, Kawasaki; Susumu Makino, Takatsuki, and Kimitaka Takeno, Toyokawa, all of Japan, assignors to Kanebo, Ltd., Tokyo, Japan
PCT No. PCT/JP91/00762, § 371 Date Feb. 4, 1992, § 102(e) Date Feb. 4, 1992, PCT Pub. No. WO91/18519, PCT Pub. Date Dec. 12, 1991
PCT Filed Jun. 5, 1991, Ser. No. 828,996
Claims priority, application Japan, Jun. 6, 1990, 2-149107
Int. Cl.[5] A23G *9/00*
U.S. Cl. 426—100 3 Claims



1. A combination popsicle comprising a core of edible material and an ice layer over the core, the ice layer having protruded parts and recessed parts on its surface at random and on the outer periphery of the core, the mean difference in height between the protruded parts and the recessed parts of the ice layer being from 0.5 to 6 mm.

5,256,427
PAPERBOARD CONTAINER HAVING POLYMETHYLPENTENE COATING
James R. Quick, Greenwood Lake, N.Y., and James E. Martin, Mason, Ohio, assignors to International Paper Company, Purchase, N.Y.
Filed Aug. 21, 1991, Ser. No. 747,834
Int. Cl.[5] A21D *10/02*
U.S. Cl. 426—106 3 Claims

2. A paperboard food container formed from a unitary blank of paperboard, the container having a plurality of flat wall panels integrally joined along fold liens, a flap extending from the edge of one of two adjacent said wall panels, said flap overlapping the second of said two adjacent wall panels to form an overlapped joint, the interior of the container coated over at least a portion thereof with a laminate, that layer of the laminate most remote from the paperboard being of polymethylpentene and forming the interior surface of said container, one surface of said overlapped joint defined by said polymethylpentene layer, a portion of said polymethylpentene layer of said overlapped joint being flame treated, said overlapped joint being secured with a water based adhesive, said water based adhesive contacting both said flame treated polymethylpentene layer of said overlapped joint and a portion of the opposite surface of said unitary blank of paperboard.

5,256,428
PUNCTURE RESISTANT, HEAT-SHRINKABLE; FILMS CONTAINING VERY LOW DENSITY POLYETHYLENE
Stanley Lustig, Park Forest; Nancy M. Mack, Chicago; Jeffrey M. Schuetz, Woodridge, and Stephen J. Vicik, Darien, all of Ill., assignors to Viskase Corporation, Chicago, Ill.
Division of Ser. No. 501,986, Mar. 28, 1990, Pat. No. 5,059,481, which is a continuation of Ser. No. 384,589, Jul. 25, 1989, Pat. No. 4,976,898, which is a division of Ser. No. 42,087, Apr. 24, 1987, Pat. No. 4,863,769, which is a continuation of Ser. No. 745,236, Jun. 17, 1985, abandoned. This application Oct. 21, 1991, Ser. No. 779,676
The portion of the term of this patent subsequent to Oct. 21, 2009, has been disclaimed.
Int. Cl.[5] B32B *27/08;* B65D *85/72*
U.S. Cl. 426—127 34 Claims

1. A packaged article comprising:
(a) a food article; and
(b) a shrunken thermoplastic flexible film enclosing said article, said shrunken film comprising:
a biaxially stretched very low density polyethylene (VLDPE) which is a linear copolymer of ethylene and at least one alpha-olefin selected from the group of propylene, butene-1, pentene-1, hexene-1, 4-methyl pentene-1, heptene-1 and octene-1, said copolymer having a density of from about 0.86 g/cm^3 to about 0.91 g/cm^3 and a 1% secant modulus from about 600 kPa to about 140,000 kPa, said biaxially stretched film having a shrinkage value of from about 30 percent to about 50 percent at a temperature of 90° C. in at least one of the machine and transverse directions prior to shrinkage of said film onto said article.

5,256,429
COMPOSITE SHEET FOR ARTIFICIAL LEATHER
Yuzuru Honda, Kusatsu; Tateo Fujii, Otsu, and Koji Watanabe, Kusatsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan
Continuation of Ser. No. 606,941, Oct. 31, 1990, abandoned, which is a division of Ser. No. 336,606, Apr. 7, 1989, Pat. No. 5,112,421, which is a continuation of Ser. No. 912,125, Sep. 26, 1986, abandoned. This application Jun. 8, 1992, Ser. No. 895,235
Claims priority, application Japan, Sep. 27, 1985, 212279
Int. Cl.[5] D06N *3/00*
U.S. Cl. 428—225 17 Claims



1. A composite sheet comprising a woven or knitted fabric constructed at least partially of a high twist multifilament yarn, a non-woven layer, fibers of which are anchored to said fabric while keeping said fibers of said non-woven layers substantially free from intertwining with constituent filaments of said high twist multifilament yarn of said woven or knitted fabric, whereby substantially none of said fibers are needle punched into strands of said multifilament yarn, and a binder contacting both said woven or knitted fabric and said non-woven layer, wherein said high twist multifilament yarn has at least 700 t/m and the non-woven layer has a number of relatively long fibers of a length greater than 20 mm length, wherein the number is at least 10 fibers/cm^2.

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5,256,430

METHOD FOR GENERATING A DETONATION PRESSURE

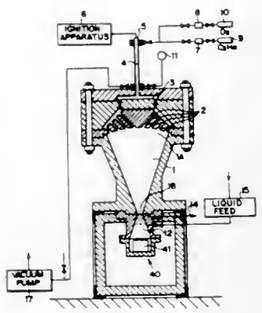
Minoru Suzuki; Katsumi Ikusawa; Kenji Araki; Naotake Yoshihara, and Yoshio Murayama, all of Kawasaki, Japan, assignors to NKK Corporation, Tokyo, Japan

Filed May 21, 1992, Ser. No. 886,717

Claims priority, application Japan, May 29, 1991, 3-152278; Jun. 17, 1991, 3-170326; Jun. 17, 1991, 3-170327; Jun. 17, 1991, 3-170328; Aug. 30, 1991, 3-244081; Aug. 30, 1991, 3-244082; Aug. 30, 1991, 3-244083; Oct. 25, 1991, 3-305651

Int. Cl.[5] A23L *3/00*

U.S. Cl. 426—237 23 Claims



1. A method for generating an underliquid shock pressure, comprising the steps of:

igniting a combustible mixture gas;

forming detonation waves responsive to ignition of said combustible mixture gas;

imploding said detonation waves in their advancing direction; and

propagating a pressure obtained by imploding of said detonation waves to a liquid and thereby converting the propagated pressure to an underliquid shock pressure.

8. The method of claim 1, which further comprises the steps of:

applying said underliquid shock pressure to food; and

pressing the food by means of the applied underliquid shock pressure.

5,256,431

PATTERNED WAFFLES

Heinrich Herting, Herne, Fed. Rep. of Germany, assignor to Firma Karl Oexmann, Inh. Wolfgang Oexmann, Gelsenkirchen, Fed. Rep. of Germany

Continuation of Ser. No. 755,640, Sep. 6, 1991, abandoned, which is a division of Ser. No. 750,276, Aug. 27, 1991, Pat. No. 5,142,967, which is a division of Ser. No. 609,386, Nov. 5, 1990, Pat. No. 5,079,015. This application Jun. 30, 1992, Ser. No. 908,448

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1989, 3941987; Jun. 9, 1990, 4018513

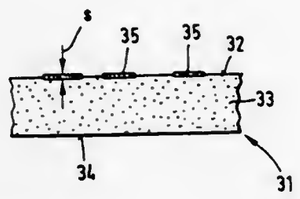
The portion of the term of this patent subsequent to Jan. 7, 2009, has been disclaimed.

Int. Cl.[5] A21D *13/00*

U.S. Cl. 426—249 5 Claims

1. A waffle comprising:

a thin skinlike outer layer of cooked pattern batter of a predetermined color, of a thickness of between 0.04 mm and 0.08 mm, and arranged in a predetermined pattern; and



a thick body of cooked battery of a color different from that of the outer layer, the body and thin layer having an overall thickness of between 1 and 10 mm.

5,256,432

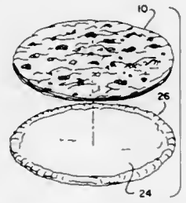
METHOD OF MAKING PIZZA WITH A PIZZA TOPPINGS DISK

Jane M. McDonald, Louisville, Ky.; Lynn R. Bingham, Sapulpa, Okla.; Lori B. Higgins, Coralville, Iowa; Kathryn M. Jennings, Madrid, Spain; Susan Koeppe, Omaha, Nebr., and Edward O'Neill, Fort Wayne, Ind., assignors to Pizza Hut, Inc., Wichita, Kans.

Continuation of Ser. No. 798,070, Nov. 20, 1991, abandoned, which is a continuation of Ser. No. 613,249, Nov. 13, 1990, abandoned. This application Sep. 30, 1992, Ser. No. 954,799

Int. Cl.[5] A23P *1/08*

U.S. Cl. 426—275 24 Claims



1. A method of making a pizza comprising the following steps:

combining a quantity of cheese with a plurality of pizza toppings selected from the group consisting of sliced meats, ground meats, and vegetables, as well as combinations thereof, into a layer on a surface, said layer being appropriately shaped to be placed on a pizza shell;

fusing and quantity of cheese and pizza toppings to thereby form a toppings disk;

storing said toppings disk for subsequent use;

providing a pizza shell;

assembling said pizza toppings disk and said pizza shell to form an uncooked pizza; and

baking said uncooked pizza.

5,256,433

PROCESS FOR IMPROVING FISH MEAT QUALITY

Makoto Nakamura; Norihisa Nishi; Hiroki Saeki, all of Tokyo; Satoshi Noguchi, Kodaira, Hirotada Ozaki, late of Yokohama, by Chiyoko Ozaki, legal representative, Yokohama, all of Japan

Filed Oct. 27, 1988, Ser. No. 263,638

Claims priority, application Japan, Jul. 28, 1987, 62-188588

Int. Cl.[5] A23L *1/325*

U.S. Cl. 426—289 17 Claims

1. A process for improving fish meat quality which comprises treating fish meat or minced fish meat with a 0.01 to 10 mM aqueous solution of a calcium salt, dehydrating said fish meat or minced fish meat to thereby result in a moisture content of 70 to 90%, and then adding 0.1 to 10%, in terms of dry matter, based on the weight of the fish meat or minced fish meat, of one or more materials selected from the group consisting of plasma protein, serum protein, albumen and cow's milk.

5,256,434

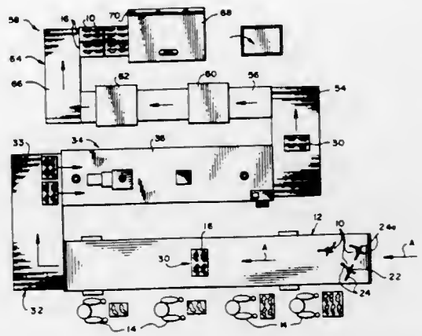
METHOD OF PROCESSING LIVE CRABS

Terrence N. Conway, Salisbury, Md., assignor to Taiyo Oil Company, Ltd., Tokyo, Japan

Filed Jul. 25, 1991, Ser. No. 735,818

Int. Cl.[5] A23B *4/00;* B65B *55/00*

U.S. Cl. 426—393 18 Claims



2. A method of processing live or fresh soft-shelled crabs comprising the steps of:

sorting the crabs by size;

placing the sorted crabs in trays;

cryogenic freezing of the sorted crabs in the trays to a temperature between −10° F. to 15° F. and without any intervening cooking step; and

wrapping the frozen crabs in a sheet material by tightly wrapping the sheet material over the trays and crabs.

5,256,435

PROCESS FOR THE PRODUCTION OF DRIED PASTAS

Herman J. Cuperus, Kuesnacht, Switzerland, assignor to Nestec S.A., Vevey, Switzerland

Filed Sep. 18, 1991, Ser. No. 761,673

Claims priority, application Switzerland, Nov. 8, 1990, 3548/90-4

Int. Cl.[5] A23L *1/16*

U.S. Cl. 426—557 8 Claims

1. A process for the production of a pasta product comprising preparing and forming a pasta from a mixture of a ground cereal product and water to obtain a formed pasta, steaming the formed pasta while intermittently spraying water having a pH of from 5 to 5.5 and a temperature of 90° C. onto the formed pasta, so that a temperature of the formed pasta steamed and sprayed does not fall below 97° C., to cook and hydrate the formed pasta to obtain a cooked pasta having a dry matter content of from 35% to 45% by weight and then drying the cooked pasta.

5,256,436

READY TO SERVE FROZEN DESSERT FOR SOFT SERVE DISPENSING

Michael J. Malone, and Joyce G. Sage, both of Houston, Tex., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed May 14, 1992, Ser. No. 882,729

Int. Cl.[5] A23G *9/02*

U.S. Cl. 426—565 8 Claims

1. A frozen dessert composition comprising at least about 0.1 weight percent lecithin, at least about 0.15 weight percent pectin, at least about 0.1 weight percent xanthan gum, at least about 0.12 weight percent albumin, about 0.66 weight percent lactic acid, about 64 weight percent skim milk, about 0.60 weight percent cream, about 5 weight percent nonfat dry milk, about 2 weight percent reduced lactose nonfat dry milk, about 8.5 weight percent corn syrup solids, about 16.5 weight percent high fructose corn syrup, and about 0.4 weight percent flavors.

5,256,437

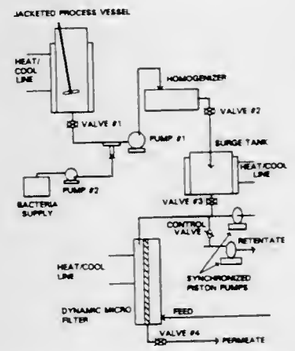
PRODUCT AND PROCESS OF MAKING STERILE MILK THROUGH DYNAMIC MICROFILTRATION

Peter J. Degen, Huntington, N.Y.; Tony Alex, Kendall Park, N.J., and Joseph W. Dehn, Jr., Great Neck, N.Y., assignors to Pall Corporation, East Hills, N.Y.

Filed Jun. 19, 1992, Ser. No. 901,238

Int. Cl.[5] A23C *7/04;* A01J *9/02*

U.S. Cl. 426—580 23 Claims



1. A method for treating raw milk to produce treated milk having a lower bacterial content than the raw milk, comprising homogenizing the milk and within about 5 minutes from the homogenization, subjecting the milk to dynamic microfiltration by passing the milk through a microfilter having an average pore size sufficient to reduce the bacterial content of the milk flowing therethrough, to yield a filtrate which has a lower bacterial content than the initial raw milk and a concentrate having a higher bacterial content than the initial raw milk.

5,256,438

NON-FREEZE FRUIT PRODUCTS AND PROCESSES

Victor M. Lewis, and David A. Lewis, both of Sydney, Australia, assignors to Byron Agricultural Company Pty. Ltd., Sydney, Australia

Filed Apr. 22, 1992, Ser. No. 872,153

Claims priority, application Australia, Apr. 24, 1991, PK5811

Int. Cl.[5] A23B *7/02, 7/04*

U.S. Cl. 426—615 11 Claims

1. A ready-to-eat preserved edible fruit product comprising dehydrated natural fruit or fruit pieces having a soluble solids content of 40% to 60%, a moisture content of 35% to 55% and a water activity of 0.75 to 0.90, said product containing no added water activity controlling solutes and said product remaining unfrozen, flexible and soft at temperatures of about −20° C.

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5,256,439

METHOD FOR STABILIZING TASTE-MODIFIER

Yoshie Kurihara, 4-7, Okuzawa 7-chome, Setagaya-ku, Tokyo 125; Hirosbige Kohno, Tokyo; Masaaki Kato, Tokyo; Kenji Ikeda, Tokyo, and Masako Miyake, Tokyo, all of Japan, assignors to Yoshie Kurihara and Asahi Denka Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Division of Ser. No. 598,799, Oct. 16, 1990, Pat. No. 5,178,900, which is a continuation of Ser. No. 362,871, Jun. 7, 1989, abandoned. This application Oct. 20, 1992, Ser. No. 963,916

Claims priority, application Japan, Jun. 21, 1988, 63-153143; Nov. 2, 1988, 63-277717; Nov. 11, 1988, 63-285473

Int. Cl.[5] A23L *1/22*

U.S. Cl. 426—655 8 Claims

1. A method for stabilizing a taste-modifier obtained from fresh *Curculigo latifolia* fruits or dried fruits thereof comprising

extracting the fresh or dried *Curculigo latifolia* fruits with an aqueous salt solution comprising 0.01M to 1.0M of a chloride, phosphate, carbonate, sulfate, sulfite, nitrate, lactate, alum, burnt alum, sodium acetate, pyrophosphate, propionate, sodium benzoate, sodium fumarate or sodium polyacetate salt; and thereafter

heating said taste-modifier to 50° to 90° C. for a time sufficient to inactivate proteases contained therein, without lowering the taste-modification activity of said taste-modifier.

5,256,440

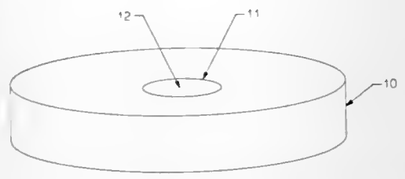
PROCESS FOR PRODUCING A TABLET CORE APERTURE

Leah E. Appel, and Gaylen M. Zentner, both of Lawrence, Kans., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 22, 1992, Ser. No. 902,187

Int. Cl.[5] A61K *9/44;* B05D *3/00*

U.S. Cl. 427—3 17 Claims



1. A process for producing a film coated dosage form, which comprises a dosage form core with a polymeric latex film coating, the film coating comprising a detachable zone and a fixed zone, wherein the detachable zone, when exposed to an environment of use, detaches from the dosage form to expose a portion of the surface of the dosage form core beneath the detachable zone of the film coating, and the fixed zone remains attached to the dosage form core, the process comprising:

(a) inscribing the surface of the dosage form core, so as to produce an intagliated dosage form core having a continuous groove which defines the boundary of and circumscribes the area of the core surrounding the site of the detachable zone;

(b) formulating the polymeric latex film coating; and

(c) coating the intagliated dosage form core of (a) with a latex polymeric dispersion of (b) so that the detachment of the circumscribed coating material occurs when the dosage form is placed in an environment of use, exposing the underlying surface of the dosage form core.

5,256,441

DUCTILE COPPER

Eric C. Huenger, Seaford; Stanley W. Tarry, Kings Park, both of N.Y., and Richard A. Mayernik, Newark, Del., assignors to AMP-AKZO Corporation, Newark, Del.

Filed Aug. 4, 1992, Ser. No. 924,846

Int. Cl.[5] C23C *26/00*

U.S. Cl. 427—8 11 Claims

1. In a method of manufacturing electrolessly deposited copper from a plating bath containing a copper compound, a complexing agent for copper, a reducing agent for copper, a pH-adjusting agent, and one or more addition agents; the improvement for producing a copper deposit on a printed wiring board capable of withstanding four repetitive 10 second solder floats at 288° C. without any cracks forming that are detectable at a magnification of 100×, comprising monitoring and maintaining the concentration of available iron and chromium and combinations thereof in the plating bath at a level below 125 mg per mole copper in the plating bath, and such that the content of iron and chromium and combinations thereof in the deposited copper layer is less than 2 mg per mole of copper.

5,256,442

SCREEN PRINTING METHOD FOR FORMING A MULTIPLICITY OF PRINTED WIRING BOARDS

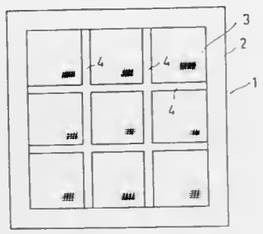
Shin Kawakami, Saitama, Japan, assignor to Nippon CMK Corp., Japan

Filed Mar. 16, 1992, Ser. No. 851,826

Claims priority, application Japan, Mar. 20, 1991, 3-081482

Int. Cl.[5] B05D *5/12*

U.S. Cl. 427—96 20 Claims



2. In a method of forming a multiplicity of printed wiring boards by screen printing a photosensitive ink through a screen over the entire surface of a plate material to be cut into the multiplicity of printed wiring boards, the improvement comprising the steps:

providing a plate material having a pattern of cutting areas which divide the plate material into a multiplicity of printed wiring board areas;

providing a screen suitable for screen printing over the plate material;

forming an emulsion pattern on the screen corresponding to the pattern of cutting areas of the plate material; and

applying a photosensitive ink over the entire surface of the plate material through the screen having the emulsion pattern formed thereon to thereby provide a photosensitive ink film of even thickness over surface portions of the plate material which correspond to the multiplicity of printed wiring boards.

5,256,443

METHOD OF PRODUCING METALLIC THIN FILM SENSORS

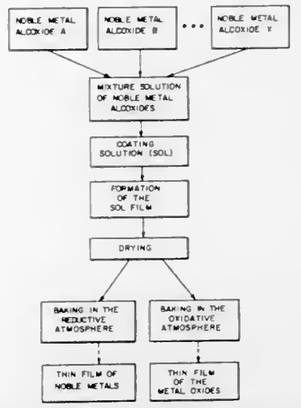
Katsuhiko Tomita, Ohtsu, Japan, assignor to Horiba, Ltd., Kyoto, Japan

Filed May 15, 1992, Ser. No. 883,666

Claims priority, application Japan, May 18, 1991, 3-142460

Int. Cl.[5] B05D *5/12*

U.S. Cl. 427—125 16 Claims



12. In a method for producing a metallic film, the improvement comprising:

providing a substrate;

preparing a sol solution containing at least a noble metal alkoxide dissolved in a solvent;

coating the substrate with the sol solution to provide a film layer on the substrate;

drying the film layer to a gelatinized state, and

heating the film layer in one of a reductive atmosphere and an oxidative atmosphere within an approximate temperature range of 300° to 600° C. to form a film made of the noble metal.

5,256,444

METHOD FOR SUPPRESSING DUST EMISSIONS FROM BULK SOLIDS

Donald C. Roe, Tabernacle, N.J., assignor to Betz Laboratories, Inc., Trevose, Pa.

Continuation-in-part of Ser. No. 574,636, Aug. 29, 1990, Pat. No. 5,128,178. This application Jan. 2, 1992, Ser. No. 816,199

The portion of the term of this patent subsequent to Jul. 7, 2009, has been disclaimed.

Int. Cl.[5] B05C *1/16*

U.S. Cl. 427—136 4 Claims

1. A method of suppressing fugitive dust dissemination from a dust producing material comprising contacting said dust producing material with a dust suppressing amount of an aqueous foam solution containing a foam generating agent comprising an anionic foaming agent comprising the sodium salts of alkyl ether sulfate and C-14 to C-16 alpha olefin sulfonate and a water-soluble cationic polymer comprising diethylaminetriamine/adipic acid/epichlorohydrin polymer.

5,256,445

METHOD AND APPARATUS FOR BUFFING AND PAINTING A ANNULATION

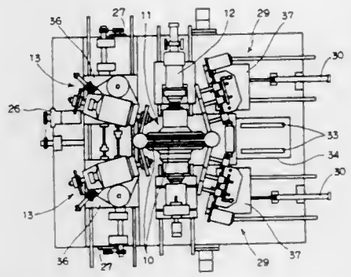
Yasushi Nojiri, and Takanori Kohda, both of Kobe, Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Filed May 29, 1992, Ser. No. 890,166

Claims priority, application Japan, May 31, 1991, 3-128138

Int. Cl.[5] B05D *3/12;* B24B *5/36*

U.S. Cl. 427—155 7 Claims



1. A method for buffing and painting an annulation comprising:

a step of rotating the annulation while holding the annulation;

a step of partially grinding a surface of the annulation with a grinder unit, the grinder unit having a rough grinder and a finishing grinder driven by one cooperating shaft, and being capable of pivoting by 180 degrees to alternately direct the rough grinder and finishing grinder to the surface of the annulation; and

a step of applying blue paint to the ground surface of the annulation with a transfer-roller paint unit.

5,256,446

PROCESS FOR THE MANUFACTURE OF REFLECTORS, IN PARTICULAR REFLECTORS FOR AUTOMOTIVE VEHICLE HEADLAMPS

Hans-Werner Bogen, Dormagen, Fed. Rep. of Germany, assignor to BASF Lacke + Farber Aktiengesellschaft-[DE/DE], Munster, Fed. Rep. of Germany

PCT No. PCT/EP90/00237, § 371 Date Sep. 12, 1991, § 102(e) Date Sep. 12, 1991, PCT Pub. No. WO90/10822, PCT Pub. Date Sep. 20, 1990

PCT Filed Feb. 14, 1990, Ser. No. 761,805

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1989, 3908119

Int. Cl.[5] B05D *5/06;* B32B *15/08, 15/20;* C08J *3/28*

U.S. Cl. 427—163 18 Claims

8. A process for the manufacture of reflectors, comprising the following steps:

1) a radiation-curable coating composition is first applied to a reflector base and is cured by UV or electron beams; and

2) a metallic film is applied to the radiation-cured coating as reflective coating,

in which the radiation-curable coating composition comprises:

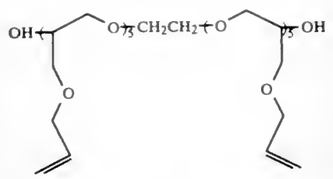
A) 10 to 50% by weight of an acrylate copolymer containing ethylenically unsaturated side chains and having a number average molecular weight of 6,000 to 14,000;

(B) 9 to 50% by weight of other compounds selected from the group consisting of ethylenically unsaturated monomeric and oligomeric compounds and mixtures thereof, comprising a mixture of

b1) 2 to 20% by weight of a compound selected from the group consisting of monomers and oligomers containing three acryloyl groups;

b2) 2 to 20% by weight of a polyethylenically unsaturated aliphatic oligomer of the formula (I),

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I

b3) 5 to 20% by weight of a difunctional acrylic carbonate monomer;

(C) 1 to 8% by weight of a photoinitiator;

(D) 0 to 5% by weight of additives selected from the group consisting of tertiary amines, flow control agents, plasticizers, driers and organosilanes; and

(E) 0 to 60% by weight of at lest one solvent inert toward components A-D,

the components A to E in each case totaling 100% by weight; and wherein the percent by weight of the components b1, b2, and b3 are based on the total weight of the coating composition.

5,256,447

ADHESIVE COMPOSITION AND METHOD

Joel D. Oxman, St. Louis Park, and Jon W. Fundingsland, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 31, 1991, Ser. No. 815,171

Int. Cl.[5] B05D *5/10;* **C08F** *230/02;* **C08L** *85/02, 33/02*

U.S. Cl. 427—207.1 **12 Claims**

1. A method of adhering a restorative material to a substrate, comprising the steps of:

(i) combining the components of an adhesive composition comprising:

(a) an ethylenically unsaturated phosphorylated compound;

(b) a carboxylic acid functional polymer in an amount effective to increase adhesion of amalgam to tooth structure when the composition is used as an intermediate layer between the amalgam and the tooth structure, compared to the adhesion obtained using a like composition absent the carboxylic acid functional polymer; and

(c) a curing agent in an amount sufficient to effect cure of the composition;

(ii) placing an intermediate layer of the composition from step (i) on one member of the restorative material/substrate pair;

(iii) optionally curing the intermediate layer; and

(iv) adhering the other member of the restorative material/-substrate pair to the first member by way of the intermediate layer.

5,256,448

SOL-GEL METHOD OF MAKING SILICON CARBIDE AND OF PROTECTING A SUBSTRATE

Luiz D. De Castro, Bradford on Avon, England, assignor to British Technology Group Ltd., London, England

Filed Oct. 11, 1991, Ser. No. 775,124

Claims priority, application United Kingdom, Oct. 25, 1990, 9023268

Int. Cl.[5] B05D *3/02*

U.S. Cl. 427—228 **12 Claims**

11. A method of protecting a substrate by applying to a surface of said substrate a sol-gel precursor of silicon carbide and causing the silicon carbide to form a coherent film on the surface, said method comprising the steps of:

forming a solution in a solvent of from 0.05 to 0.3 moles alkoxy silicon per mole of water, said solvent comprising 0.3 to 1.0 mole of acetone per mole of water, the solution also containing an acid catalyst and a carbonaceous material in the ratio 1 to 3 mole carbon per mole of silicon,

allowing hydrolysis to occur,

removing volatile material after hydrolysis,

at this or an earlier stage, applying the solution to the surface, and

thereafter heating the surface and solution thereon at at least 1300° C.

5,256,449

METHOD FOR PRODUCING DIES FOR EXTRUDING CERAMIC HONEYCOMB BODIES

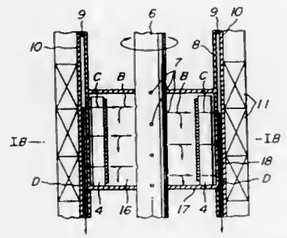
Kazuo Suzuki, Inazawa; Kenji Arai, Nagoya, and Hiroshi Ueda, Tokyo, all of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Mar. 23, 1992, Ser. No. 855,860

Claims priority, application Japan, Mar. 25, 1991, 3-82998

Int. Cl.[5] C23C *16/00*

U.S. Cl. 427—248.1 **2 Claims**



1. In a method for producing dies for extruding ceramic honeycomb structural bodies including the steps of forming die members having extrusion grooves and a plurality of holes for supplying a batch of ceramic raw materials respectively communicated with the extrusion grooves, and coating the die members with an abrasive-resistant material by a chemical vapor deposition operation in a space defined by a circumferential side wall, wherein the improvement comprises:

forming the coating of the abrasive-resistant material on a plurality of die members simultaneously by the chemical vapor deposition operation, by flowing a raw material gas for the chemical vapor deposition operation from gas discharge holes of a rotatable raw material gas inlet pipe through the extrusion grooves of the die members and then through the ceramic batch supplying holes of the die members.

5,256,450

PROCESS FOR IMPREGNATING POROUS METAL ARTICLES USING WATER MISCIBLE ANAEROBIC SEALANTS

Willaim J. Catena, Lake Hiawatha, N.J., assignor to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 574,826, Aug. 29, 1990, abandoned. This application Jul. 13, 1992, Ser. No. 912,446

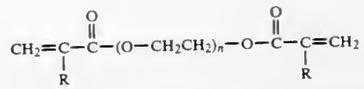
Int. Cl.[5] B05D *3/00;* **C09J** *4/02*

U.S. Cl. 427—295 **16 Claims**

1. A process for impregnating and sealing a porous article comprising the steps of:

A) impregnating the article with a water miscible, anaerobic polymerizable acrylate composition which contains no organic solvents or surfactants and comprises:

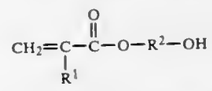
1) from about 75-90% by weight of a mixture of acrylate or methacrylate monomers having the formula:



(I)

in which each **R** is hydrogen or methyl and n is an integer as defined below, the mixture containing: a) from about 25 to 50% by weight of the monomers of formula (I) where n is from about 7 to 11 and b) from about 50 to 75% by weight of the monomers of formula (I) where n is from about 1 to 4;

2) from about 10 to 25% by weight of an hydroxy-terminated acrylate or methacrylate having the formula:



In which R^1 is hydrogen or methyl and R^2 is ethyl or propyl; and

3) an effective amount of a free radical initiator to initiate cure of the monomers upon exclusion of oxygen;

B) washing the surface of the article with water to remove any excess impregnant; and

C) permitting the anaerobic sealant to cure.

5,256,451

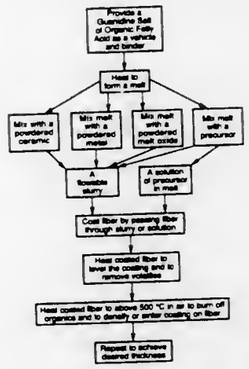
GUANIDINE BASED VEHICLE/BINDERS FOR USE WITH OXIDES, METALS AND CERAMICS

Warren H. Philipp, Olmsted Township, Cuyahoga County; Lisa C. Veitch, Westlake, and Martha H. Jaskowiak, Grafton, all of Ohio, assignors to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 13, 1992, Ser. No. 842,313

Int. Cl.[5] B05D *5/00*

U.S. Cl. 427—374.2 **36 Claims**



1. A method of coating substrates selected from the group consisting of materials selected from the group consisting of aluminum, copper, iron, steel, zinc, magnesium, cobalt, nickel, ceramics, metal nitrides, metal oxides, metal carbides and carbon using guanidine salts of organic fatty acids as the coating medium comprising the steps of:

providing one or more guanidine salts of organic fatty acids;

liquifying said guanidine salts of organic fatty acids to form a liquid;

mixing said liquid guanidine salts of organic fatty acids with one or more powdered materials selected from the group consisting of powdered ceramics, powdered metals selected from the group consisting of aluminum, copper, iron, steel, zinc, magnesium, cobalt, nickel, powdered noble metals and powdered metal oxides, to form a slurry;

flowing said slurry onto said substrate to produce a coated substrate; and

heating said coated substrate to drive off said guanidine salts of fatty acids and to bond said material to said substrate leaving a substrate coated with an uncontaminated coating of said material.

5,256,452

ONE PACKAGE STABLE ETCH RESISTANT COATING PROCESS

Susan U. McMonigal, Allison Park; Debra L. Singer, Pittsburgh; Dennis A. Simpson, Wexford; Joseph A. Klanica, Sarver, and Michael A. Mayo, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 692,885, Apr. 29, 1991, Pat. No. 5,196,485. This application Nov. 13, 1992, Ser. No. 976,062

Int. Cl.[5] B05D *1/36, 7/14, 7/04*

U.S. Cl. 427—407.1 **13 Claims**

1. A process for applying a composite coating to a substrate, comprising:

(a) applying an acid-catalyzed thermosetting film-forming composition to said substrate to form a basecoat; and

(b) applying a stable one package etch-resistant liquid film-forming composition to said basecoat wherein said etch-resistant liquid film-forming composition comprises:

(i) a polyepoxide having a weight average molecular weight of less than 10,000, an epoxy equivalent weight on resin solids of less than about 600;

(ii) a polyacid curing agent having an average acid functionality of 3 or greater;

(iii) wherein said film-forming composition is substantially free of basic esterification catalyst; and

(iv) wherein said film-forming composition has a cured softening point of 44.8° C. and higher; said composition is stable for at least 16 hours at 140° F. such that the composition has less than a 25 second gain in No. 4 Ford cup viscosity.

5,256,453

PROCESS FOR THE PRODUCTION OF A MULTI-LAYER PAINT COATING AND BASE PAINT FOR THE BASE COAT OF A MULTI-LAYER PAINT COATING

Monika Heithorn, Senden; Stefan Wieditz, Sylvania; Gerold Mahr, Münster, and Arnold Dobbelstein, deceased, late of Münster, all of Fed. Rep. of Germany by Hildegard Dobbelstein executor , assignors to BASF Lacke + Farben Aktiengesellschaft, Münster, Fed. Rep. of Germany

PCT No. PCT/EP90/00994, § 371 Date Dec. 31, 1991, § 102(e) Date Dec. 31, 1991, PCT Pub. No. WO91/00895, PCT Pub. Date Jan. 24, 1991

PCT Filed Jun. 22, 1990, Ser. No. 793,413

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1989, 3922363

Int. Cl.[5] B05D *1/36;* **C08L** *1/14*

U.S. Cl. 427—415 **7 Claims**

1. A process for the production of a multi-layer paint coating on a surface of a substrate, comprising

(1) applying a liquid, pigmented base paint containing at least one binder, crosslinked polymer microparticles, and a cellulose ester to the surface of the substrate;

(2) forming a base coat from the liquid, pigmented bas paint applied in state (1):

(3) then applying a transparent finish to the base coat thus obtained; and then

(4) the base is baked, together with the transparent finish; wherein the base paint contains 5 to 20 percent by weight of crosslinked polymer microparticles, 2 to 15 percent by weight of a cellulose acetobutyrate or of a mixture of at least two different cellulose acetobutyrates, and 5 to 20 percent by weight of an epoxidized fatty acid ester or of a mixture of

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epoxidized fatty acid esters, based on the total weight of non-volatile constituents, excluding pigments and inorganic fillers, wherein the crosslinked polymer microparticles are obtained by subjecting a mixture of

(A) an ethylenically unsaturated monomer containing only one ethylenically unsaturated group per molecule or a mixture of such monomers; and

(B) an ethylenically unsaturated monomer containing at least two ethylenically unsaturated groups in the molecule or a mixture of such monomers;

to an emulsion polymerization, and subsequently transferring an aqueous dispersion of polymer microparticles obtained in this way into an organic solvent or a mixture of organic solvents, and

wherein the cellulose acetobutyrate or mixture of cellulose acetobutyrates is so chosen that a 15% by weight solution in a mixture of acetone and ethanol (9:1 by weight) has a viscosity of 200 to 600 mPa.s at 23° C.

5,256,454

METHOD FOR SUPPRESSION OF ELECTRIFICATION

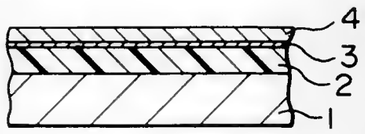
Fumio Murai, Tokyo; Yasunori Suzuki, Hachioji; Hideki Tomozawa, Tokyo; Ryuma Takashi, Tokyo; Yoshihiro Saida, Tokyo, and Yoshiaki Ikenoue, Tokyo, all of Japan, assignors to Hitachi, Ltd. and Showa Denko K.K. Corporations, both of Tokyo, Japan

Filed May 30, 1991, Ser. No. 707,819

Claims priority, application Japan, May 30, 1990, 2-138467

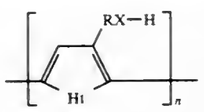
Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—498 **19 Claims**

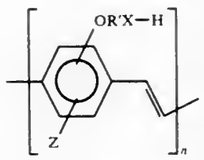


1. A method for suppression of electrification which comprises a step of forming on a substrate a water-soluble electrification-suppressing film having an electron conductivity and a step of irradiating a charged particle beam on the substrate;

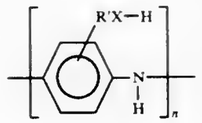
the electrification-suppressing film comprising a conducting polymer having a monomeric structure unit represented by the following formula (I), (II), (III), (III'), OR (III''):



(I)

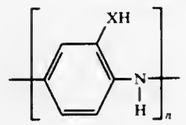


(II)

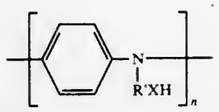


(III)

-continued



(III')



(III'')

wherein Ht represents NH, S or O; R represents R' or OR' in which R' represents a linear or branched divalent hydrocarbon group having 1 to 10 carbon atoms or a divalent hydrocarbon group containing an ether linkage; X represents SO_3; Z represents OR'X—H, OR'H, H or OH in which R' and X have the same meanings as above; and n represents a number of 5 or more.

5,256,455

METHOD OF FORMING FILM OF TANTALUM OXIDE BY PLASMA CHEMICAL VAPOR DEPOSITION

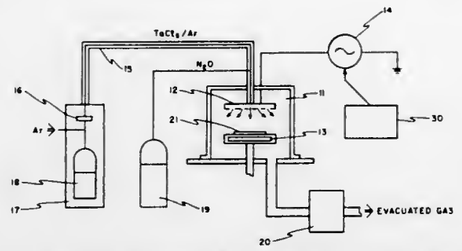
Youichirou Numasawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 27, 1992, Ser. No. 825,975

Claims priority, application Japan, Feb. 7, 1991, 3-016208

Int. Cl.[5] B05D *3/06;* **C23C** *16/00*

U.S. Cl. 427—576 **7 Claims**



1. A method of forming a film of tantalum oxide on a substrate by using a plasma chemical vapor deposition in a plasma which is generated by a high-frequency energy and with a gas containing tantalum chloride and dinitrogen oxide, said method comprising the steps of:

increasing the intensity of the high-frequency energy from the start of a formation of the tantalum oxide film until the end of formation of the tantalum oxide film, and

maintaining said intensity of the high-frequency at levels which do not decrease during said formation of the film before the termination of said film formation wherein the oxidation of the substrate is reduced during the formation of the film of tantalum oxide.

5,256,456

LIQUID CRYSTAL ALIGNMENT FILM AND METHOD OF MANUFACTURING THE SAME

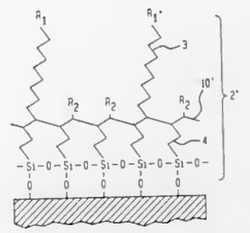
Kazufumi Ogawa, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 760,998, Sep. 17, 1991, Pat. No. 5,186,986. This application Nov. 5, 1992, Ser. No. 972,151

Claims priority, application Japan, Sep. 17, 1990, 2-248183

Int. Cl.[5] G02F *1/1337*

U.S. Cl. 428—1 **19 Claims**



1. A liquid crystal display apparatus, which comprises a pair of opposed electrodes, a liquid crystal alignment film formed on at least one of the electrodes and a liquid crystal provided between the opposed electrodes, said liquid crystal alignment film comprising a monomolecular film having straight carbon chains, said straight carbon chains having one end directly or indirectly chemically absorbed to an electrode through a —Si—O— covalent bond and being crosslinked in a state of alignment in a particular direction.

5,256,457

SERVING MAT WITH FLOATING FIGURINES THAT ARE ALIGNABLE WITH GRAPHICS IN THE BASE OF THE SERVING MAT

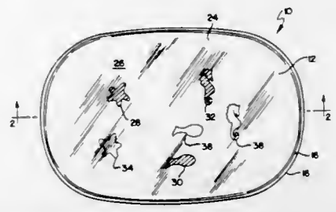
Terese A. Pantaleo, 7854 Redondo La., Orland Park, Ill. 60462, and Donald E. Perrin, 255 N. 6th St., Clinton, Iowa 52732

Filed Jun. 4, 1991, Ser. No. 710,157

The portion of the term of this patent subsequent to Apr. 14, 2009, has been disclaimed.

Int. Cl.[5] B32B *3/18*

U.S. Cl. 428—13 **2 Claims**



1. A device comprising a pair of superimposed pliable plastic sheets having a continuous seal-forming interconnection therebetween along their respective peripheral edges forming an inner, liquid-filled sealed chamber, one of said sheets constituting a top sheet and being transparent and pliable so as to be pressable toward the other sheet, at least one movable article in said chamber of a thickness less than the spacing between the uncompressed sheets so that said article is suspended for movement in said chamber, said liquid being movable by manipulating the device to cause movement of said movable article in said chamber, the position of said movable article being fixable in position by pressing said pliable top transparent sheet toward the other with the fingers to trap said article between said sheets, and graphics on said other sheet which corresponds in shape and size to said movable article and presents a readily discernible outline corresponding in size and shape to that of said movable article so that the margins of said movable article can be aligned with the margins of said graphics by manipulating said device before said sheet is pressed to trap the article when aligned with said graphics.

5,256,458

SHIRRED THERMOPLASTIC CASING HAVING EXTERNAL NON-OIL BASED LUBRICATING COATING

Jeffery A. Oxley, Naperville, and Darrel L. Wilhoit, Joliet, both of Ill., assignors to Viskase Corporation, Chicago, Ill.

Filed Sep. 18, 1990, Ser. No. 584,563

Int. Cl.[5] A22C *13/00*

U.S. Cl. 428—34.8 **49 Claims**

1. A shirred tubular thermoplastic casing article comprising at least one layer which comprises an ethylene polymer film wherein said ethylene polymer comprises a low density polyethylene, high density polyethylene, very low density polyethylene, linear low density polyethylene, ethylene vinyl acetate copolymer, ethylene methyl acrylate copolymer, ethylene ethyl acrylate copolymer, ethylene homopolymers, copolymers of ethylene with one or more alpha-olefins, ethylene vinyl ester copolymers, ethylene alkyl ester copolymers, or copolymers of ethylene having at least 80% of their polymeric units derived from ethylene, and said tubular casing having an outside surface and an inside surface, with a lubricating amount of polyhydric alcohol, a monosaccharide, a disaccharide, or a soybean derived phospholipid, or mixtures thereof in a substantially oil-free liquid lubricating coating on said outside surface of said casing, and said coating being in contact with said ethylene polymer film.

5,256,459

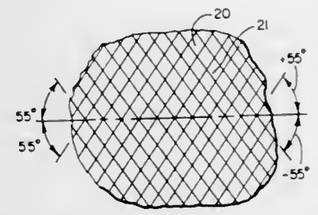
WOUND PRINTING SLEEVE

James R. Carlson, Racine, Wis., assignor to American Roller Company, Union Grove, Wis.

Continuation of Ser. No. 695,191, May 3, 1991, abandoned. This application Jun. 17, 1992, Ser. No. 900,510

Int. Cl.[5] B41F *27/10, 13/10*

U.S. Cl. 428—36.3 **4 Claims**



1. An expandable printing sleeve which is axially mountable on and dismountable from a printing cylinder and which comprises a substantially non-permeable cylindrical tube having a cross-sectional diameter, the tube having a wall with a thickness of about 0.015 to about 0.120 inches and a flexural modulus of at least about 6×10^5 lbs/in^2, said wall of the tube comprising at least one individual layer of polymeric thermosetting material reinforced by first and second fibrous strands, said first fibrous strand being wound a plurality of turns around a cylindrical mandrel at a positive wind angle of about 35° to about 55° with respect to a central axis of the cylindrical mandrel to form a first helical coil within the layer of polymeric thermosetting material, and said second fibrous strand being wound a plurality of turns around the cylindrical mandrel at a negative wind angle of about 35° to about 55° with respect to the central axis of the cylindrical mandrel to form a second helical coil within the layer of polymeric thermosetting material, one of the first and second helical coils being formed in non-interwoven fashion around the other of the first and sec-

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ond helical coils within the individual layer of polymeric thermosetting material.

5,256,460
POLYMERIC BLEND WITH HIGH RESISTANCE TO FUEL

Davei Yu, Merrimack, N.H., assignor to SNIA Tecnopolimeri S.p.A., Ceriano Laghetto, Italy

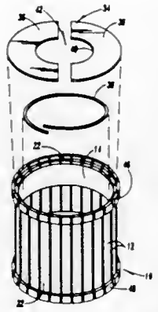
Filed Sep. 14, 1992, Ser. No. 944,485
Int. Cl.[5] C08L 77/00; B65D 1/00
U.S. Cl. 428—36.9 25 Claims

1. A blend having improved resistance to fuel, comprising:
(a) a copolymer obtained from copolymerization of ϵ-caprolactam, and a substance selected from the group consisting of:
an aminocarboxylic acid having a carbon atom number not lower than 9,
a lactam corresponding to said aminocarboxylic acid and
a mixture of hexamethylenediamine with a dicarboxylic acid having a carbon atom number not lower than 9, a weight ratio of said ϵ-caprolactam with respect to said hexamethylenediamine plus said dicarboxylic acid being of from 4 to 9; and
(b) a polyolefin polymer with functional groups selected from the group consisting of carboxyl groups, esters, anhydrides, and carboxylates.

5,256,461
COLLAPSIBLE FLOWER POT AND CHRISTMAS TREE STAND COVER

Kevin P. Johnson, 3923 Merced, Des Moines, Iowa 50310

Filed Apr. 2, 1992, Ser. No. 862,302
Int. Cl.[5] B32B 3/10, 3/06
U.S. Cl. 428—55 13 Claims

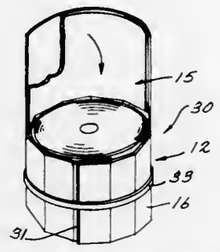


1. A collapsible cover for surrounding a flower pot, Christmas tree stand, or other object, comprising:
a plurality of slats positioned adjacent one another;
means for connecting adjacent slats so as to form a flexible sheet of interconnected slats, the sheet having opposite ends;
fastening means for releasably securing the opposite ends of the sheet together so as to form a sidewall adapted to surround the pot, stand, or other object, the sidewall having opposite inside and outside surfaces and opposite upper and lower edges;
a lid removably mounted on the upper edge of the sidewall and having an opening through which the plant, tree or the like extends;
the sheet be selectively movable between a flat storage position and an upright enclosing position, and
ring means for maintaining the sidewall in the enclosing position.

5,256,462
WATERPROOF THERMAL RESISTANT PACKAGING WRAP

William S. Callahan, 86 S. Silver La., McKees Rocks, Pa. 15136, and Karl B. Shields, 282 Alamo Dr., Pittsburgh, Pa. 15241

Filed Feb. 5, 1991, Ser. No. 650,855
Int. Cl.[5] B32B 1/04, 3/12
U.S. Cl. 428—76 6 Claims

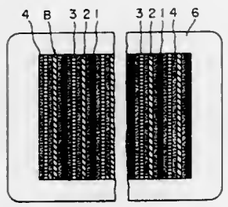


1. A waterproof, thermal resistant, packaging wrap, comprising:
a) a first layer of a flexible, hydrophobic polymeric fabric material;
b) a second layer of a flexible, hydrophobic, cellular polymeric sheet material, in face-to-face relationship with said first layer;
c) a layer intermediate said first and second layers comprising a plurality of substantially non-hygroscopic, parallel, elongated reinforcing and stiffening members having adjacent edges separated from each other by no more than ¼ inch, each said member comprising a thermoplastic material extruded in rod form, wrapped in a protective sheet, and calendered to a final thickness of at least about 1/10 inch and width of about 3–4 inches; and
d) a hot melt or non-aqueous pressure sensitive adhesive adhering together said first and intermediate and said second and intermediate layers, with said second layer under tension.

5,256,463
METHOD FOR MANUFACTURING COLOR PHOSPHOR SURFACE

Norihisa Osaka, and Yukihiro Ikegami, both of Nagoya, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

PCT No. PCT/JP90/01219, § 371 Date May 31, 1991, § 102(e) Date May 31, 1991, PCT Pub. No. WO91/05362, PCT Pub. Date Apr. 18, 1991
PCT Filed Sep. 21, 1990, Ser. No. 687,858
Claims priority, application Japan, Oct. 6, 1989, 1-261635
Int. Cl.[5] B32B 3/14
U.S. Cl. 428—77 18 Claims

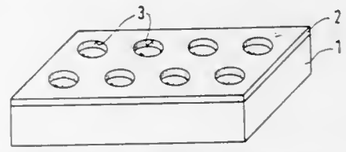


7. A color phosphor screen comprising:
a multilayered thin film prepared from a multilayered phosphor containing block having a plurality piece multilayered of red phosphor, green phosphor and blue phosphor layers with non-luminescent resin layers between each adjacent pair of said layers on a glass panel, whereby to form a front panel of a color CRT after burning non-luminescent material from said thin film.

5,256,464
SUBSTRATE

Hans Hecht, Korntal, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 11, 1991, Ser. No. 728,584
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1990, 4026225
Int. Cl.[5] B32B 3/00
U.S. Cl. 428—137 14 Claims

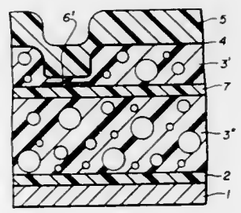


1. A substrate for electronic components comprising:
a layer of material covering at least a portion of a surface of the substrate; and
a plurality of recesses formed in the layer of material and located in a pattern relative to each other to maintain constant temperature distribution across the layer of material.

5,256,465
TENSION FLOOR COVERING HAVING ENHANCED EMBOSSING AND DURABILITY

Pamela H. Martin, Lititz; William J. Kauffman, Manheim, and Bruce F. Dietrich, Lancaster, all of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Mar. 28, 1990, Ser. No. 500,552
Int. Cl.[5] B29D 9/00; B32B 3/26, 27/08
U.S. Cl. 428—158 7 Claims

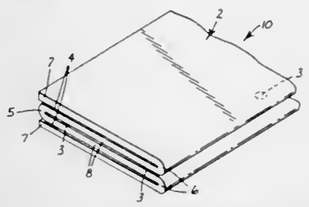


1. A floor covering comprising a resilient tension floor structure including an upper foamed thermoplastic layer, a lower foamed thermoplastic layer, an unfoamed plastic inner layer disposed between the upper and the lower foamed thermoplastic layers, and a foam growth-controlling agent applied to the interface between the inner layer and the upper foamed thermoplastic layer whereby the upper foamed thermoplastic layer is embossed and the lower foamed thermoplastic layer is not embossed.

5,256,466
ARTICLE FOR LIQUID CONTAINMENT AND RECOVERY

Michael R. Berringan, Oakdale, and Harold J. Seppala, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 30, 1992, Ser. No. 876,394
Int. Cl.[5] B32B 3/06
U.S. Cl. 428—166 14 Claims



1. A liquid sorbent article comprising at least two contiguous layers formed from a single sheet, said layers being joined at a fold in said sheet and being intermittently releasably bonded together such that the area of the sheet contacted by bonding does not exceed about 5%,
said article has a sorbency ratio, SR, such that

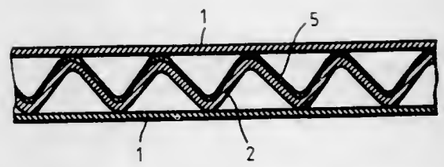
$$SR = \sqrt[3]{T/V}\,(C^1 - C^2H - C^3W)$$

where SR is the sorbency ratio in grams liquid sorbed per gram sorbent;
T is the time in minutes for sorption of a given weight of liquid;
V is the viscosity in centipoise of the fluid being sorbed;
H is the height in centimeters of the sorbent article;
W is the width of the sorbent article;
C^1 is a constant dependent on the permeability
c^2 is a geometric constant dependent on the height of the sorbent article; and
c^3 is a geometric constant dependent on the width of the sorbent article.

5,256,467
HEAT-INSULATING CORRUGATED CARDBOARDS AND METHOD FOR MAKING THEM

Eiji Kato, No. 2-11, Higashiteraokitadai, Tsurumi-ku, Yokohama-shi, Kanagawa-ken, Japan, assignor to Nihon Dimple Carton Co., Ltd., Tokyo and Eiji Kato, Yokohama, both of Japan

Filed May 13, 1991, Ser. No. 699,337
Claims priority, application Japan, May 14, 1990, 2-121160; Jan. 9, 1991, 3-11629
Int. Cl.[5] B32B 3/28
U.S. Cl. 428—182 5 Claims



1. A heat-insulating corrugated cardboard comprising a 0.7 to 7.0 mm thick corrugated core sheet of foamed plastic and paperboard liners bonded on both sides of the corrugated core sheet, said corrugated core sheet including a core sheeting and a 100 to 700 μpm thick cellular skin layer formed on at least

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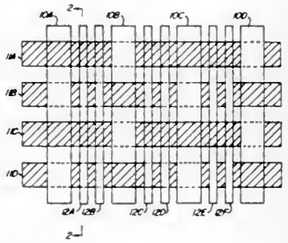
one side of said core sheeting, said skin layer being 4 to 150 μm in sectional mean cell diameter, said core sheeting being 10 to 1,000 μm in sectional mean cell diameter, and said core sheet having an overall average foaming factor of 8 to 40 and a closed-cell content of at least 70%.

5,256,468

SMART SKIN ARRAY WOVEN FIBER OPTIC RIBBON AND ARRAYS AND PACKAGING THEREOF

Patricia Wiener, La Honda, Calif., assignor to Page Automated Telecommunications Systems, Inc., Palo Alto, Calif.

Filed Mar. 19, 1991, Ser. No. 671,582
Int. Cl.[5] B32B *5/08*; D03D *5/00, 25/00*
U.S. Cl. 428—193 10 Claims



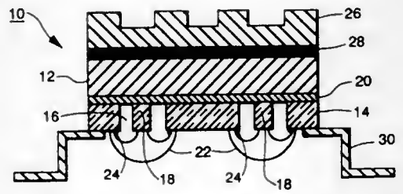
1. A woven structure comprising:
a plurality of first strands positioned in a warp direction in the structure;
a plurality of second strands positioned in a woof direction in the structure, the second strands being woven with the first strands; and
a plurality of optical fibers positioned with zero warp in channels in the structure, the channels being defined by the first strands.

5,256,469

MULTI-LAYERED, CO-FIRED, CERAMIC-ON-METAL CIRCUIT BOARD FOR MICROELECTRONIC PACKAGING

Stayam C. Cherukuri, North Brunswick; Lubomyr S. Onyshkevych, Lawrenceville; Ashok N. Prabhu, East Windsor, and Barry J. Thaler, Lawrenceville, all of N.J., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 18, 1991, Ser. No. 809,371
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—210 16 Claims



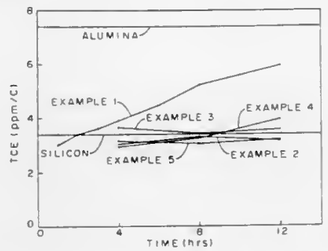
1. A co-fired, multi-layered, ceramic-on-metal circuit board comprising a structure having a metal base, a bonding layer of glass on said base, and a ceramic formed from multiple layers of a ceramic tape on said bonding layer, each layer of said multiple layers of ceramic tape comprising a glass-ceramic/-filler composition wherein the composition of the glass ceramic is within a range 10–20 wt % SiO_2, 20–35 wt % B_2O_3, and 25–50 wt % MgO.

5,256,470

CRYSTAL GROWTH INHIBITOR FOR GLASSY LOW DIELECTRIC INORGANIC COMPOSITION

Jau-Ho Jean, Export, and Tapan K. Gupta, Monroeville, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation of Ser. No. 756,736, Sep. 9, 1991, abandoned, which is a division of Ser. No. 595,986, Oct. 11, 1990, Pat. No. 5,079,194. This application Mar. 29, 1993, Ser. No. 39,543
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—210 18 Claims



I. A multilayer ceramic circuit board having a coefficient of thermal expansion of less than about 4.2 and a thermal expansion coefficient of less than about 4.0, said multilayer ceramic formed of a plurality of laminated ceramic circuit board units, at least one said unit including a ceramic insulating layer, a patterned electrical conductor layer supported on said ceramic insulating layer and electrical conductors for connecting said patterned electrical conductor layers of said respective ceramic circuit board units to form a predetermined wiring circuit, said electrical conductor layers and said electrical conductors selected from the group of gold, silver and palladium, said ceramic insulating layer comprising:
a sintered mixture of 25–50 wt. % borosilicate glass, 50–75 wt. % high silica glass and 1–25 wt. % of crystalline ceramic material to inhibit the formation of crystalline forms of silica, said crystalline ceramic material selected from the group consisting of alumina, cordierite, mullite, magnesia, spinel, forsterite, steatite, aluminum phosphate ($AlPO_4$), aluminum nitride and alumnum titanate, barium oxide, titania, magnesium titanate, dolomite, anorthite, wollastonite, talc, sillmanite, silicon nitride, aluminum oxynitride, $CaZrO_3$, Al_3N_4, $MgO.Al_2O_3$, $ZnO.SiO_2$, ZrO_2 and $ZrO_2.SiO_2$, said ceramic insulating layer sintered at a temperature below the melting temperature of said patterned electrical conductor layers and said electrical conductors.

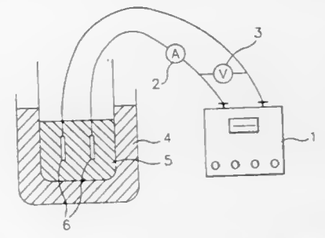
5,256,471

COMPOSITE POLYESTER FILM

Tohru Morita, Tagata; Akihiko Nagahama, Mishima; Toshiaki Ueda, Mishima, and Masaaki Ono, Mishima, all of Japan, assignors to Toray Industries, Inc., Japan

PCT No. PCT/JP90/01233, § 371 Date May 23, 1991, § 102(e) Date May 23, 1991, PCT Pub. No. WO89/09586, PCT Pub. Date Oct. 19, 1989
PCT Filed Sep. 25, 1990, Ser. No. 689,847
Claims priority, application Japan, Sep. 27, 1989, 1-256029
Int. Cl.[5] B32B *27/36*; B29C *47/88*; G11B *5/704*; B29K *67/00*
U.S. Cl. 428—213 14 Claims

1. A composite polyester film comprising a main layer and at least a sublayer, wherein the specific resistance in a melt state of the polyester constituting said sublayer is less than 5×10^8 Ω-cm and is less than the specific resistance in a melt state of the polyester constituting said main layer, and the thickness of



the sublayer is from 1/200 to 4/10 of the overall thickness of said composite film.

5,256,472

FLUORINE RESIN TYPE WEATHER-RESISTANT FILM

Yoshihisa Moriya; Mikio Shimizu, and Masami Inoue, all of Machida, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 595,804, Oct. 10, 1990, Pat. No. 5,132,164. This application Apr. 24, 1992, Ser. No. 873,192
The portion of the term of this patent subsequent to Jul. 21, 2009, has been disclaimed.
Int. Cl.[5] B32B *27/08*
U.S. Cl. 428—215 8 Claims

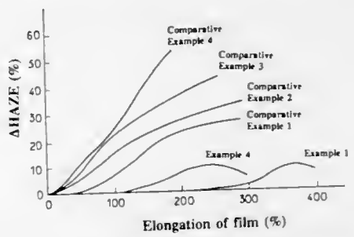
I. A weather-resistant fluorine-containing resin film of a multi-layer structure, comprising a front surface layer made of a composition, comprising, as main components, from 50 to 95 parts by weight of a vinylidine fluoride resin and from 5 to 50 parts by weight of a methacrylate resin and a rear surface layer made of a composition (B) comprising, as main components, from 50 to 95 arts by weight of a methacrylate resin, from 5 to 50 parts by weight of a vinylidine fluoride resin and from 0.1 to 15 parts by weight of an ultraviolet absorber, wherein the overall thickness of the film of multi-layer structure is from 10 to 150 μm, and the thickness of the front surface layer of the film was from 2 to 50 μm.

5,256,473

INFRARED ABSORBING FILM IMPROVED IN TRANSPARENCY

Kozo Kotani, Toyonaka, and Hideo Negawa, Shiga, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Sep. 23, 1991, Ser. No. 764,195
Claims priority, application Japan, Oct. 3, 1990, 2-267300
Int. Cl.[5] A01G *9/20*
U.S. Cl. 428—218 22 Claims



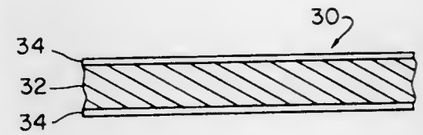
1. An infrared absorbing transparent film comprising a synthetic resin containing silicon oxide particles in an amount of about 2 to 25% by weight based on the synthetic resin, and wherein the silicon oxide particles are produced by underwater grinding, and have an average particle size of not more than 4 μm and a specific surface area of not more than 20 m^2/g, said film being substantially free of silicon oxide particles exceeding 20 μm.

5,256,474

METHOD OF AND APPARATUS FOR MANUFACTURING PRINTED CIRCUIT BOARDS

James A. Johnston, 29 Castle Hill Rd., Windham, N.H. 03087

Continuation of Ser. No. 202,091, Aug. 25, 1988, abandoned, which is a continuation of Ser. No. 929,753, Nov. 13, 1986, abandoned. This application Nov. 13, 1989, Ser. No. 435,769
Int. Cl.[5] B32B *15/08*
U.S. Cl. 428—220 10 Claims



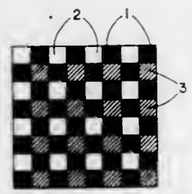
1. A dual purpose separator-release plate for use initially in the lamination and, subsequently, in drilling of printed circuit boards, comprising:
a substrate sheet of aluminum foil;
a layer of release material covering both sides of the substrate sheet, such that both sides may releaseably engage a printed circuit board simultaneously during manufacture; and
the release material comprising a siloxazane polymer which is thermally stable to at least 375° C.

5,256,475

FABRIC FOR FIBER-REINFORCED THERMOPLASTIC COMPOSITE MATERIAL

Ryota Koyanagi; Mikiya Fujii, both of 2-2, Aza-Hino, Toyano, Fukushima-shi, Fukushima, Japan; Shoichi Watanabe, 67-14-44, Hourai-cho, Fukushima-shi, Fukushima, Japan, and Hirokazu Inoguchi, 57-9, Hourai-cho, Fukushima-shi, Fukushima, Japan

Filed Oct. 28, 1992, Ser. No. 967,821
Claims priority, application Japan, Oct. 31, 1991, 3-311339
Int. Cl.[5] D03D *3/00*
U.S. Cl. 428—225 17 Claims



1. A fabric for a fiber-reinforced thermoplastic composite material, said fabric comprising warp and weft, wherein said warp comprises reinforcing fiber and said weft comprises high molecular weight grade polyether ether ketone resin yarns and low molecular weight grade polyether ether ketone resin yarns.

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5,256,476

FAN BLADE COMPRISING ADSORBENT PARTICLES, FINE PLASTIC PARTICLES AND REINFORCING FIBERS

Eiji Tanaka; Ken Tanii, both of Okayama, and Yohichi Fujii, Tsukubo, all of Japan, assignors to Kuraray Chemical Co., Ltd., Bizen, Japan

Continuation of Ser. No. 606,955, Oct. 31, 1990, abandoned. This application Nov. 16, 1992, Ser. No. 974,835
Claims priority, application Japan, Nov. 2, 1989, 1-287179; Aug. 14, 1990, 2-215239; Oct. 15, 1990, 2-277116
Int. Cl.[5] B32B *5/16*; B01D *39/00*; B63H *1/26*
U.S. Cl. 428—241 2 Claims

1. A blade for propeller fans or sirocco fans, of molded adsorbent comprising a mixture of (1) adsorbent particles wherein said adsorbent particles are of at least one member selected from the group consisting of activated carbon, zeolite and silica; (2) fine plastic particles wherein said fine plastic particles are of at least one member selected from the group consisting of polyethylene, polypropylene, and ethylene-vinyl acetate copolymer, a major portion of said fine plastic particles having a particle diameter of 0.5 to 100 μm, and of a blended ratio of 1 to 50 parts by weight based on 100 parts by weight of the adsorbent particles; and (3) a reinforcing fiber,

said mixture being consolidated by said fine plastic particles and part of said reinforcing fiber being fused. to act as a binder.

5,256,477

ABSORBENCY ALGINATE FABRIC, USE AS WOUND AND BURN DRESSINGS, AND A METHOD FOR ITS PREPARATION

Peter M. J. Mahoney, Llys Berwyn, Wales, assignor to BritCair Limited, Aldershot, England

Filed Sep. 16, 1991, Ser. No. 760,297
Int. Cl.[5] B32B *5/16, 3/26*; A61F *13/15*
U.S. Cl. 428—283 11 Claims

1. A non-woven fabric of alginate staple fibers comprising a mat of alginate staple fibers wherein said fibers are entangled through from 60% to 99% of the thickness of said mat, wherein the absorbency of the fabric is greater than 25.0 grams of deionized water per gram of fabric, said absorbency determined by contacting the fabric with a first end of a water absorbent strip, wherein a second end of the water absorbent strip contacts a deionized water source.

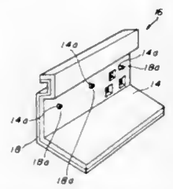
5,256,478

CORK CHIP MOULDING

Kazuo Tanabe, Gifu, Japan, assignor to Ikeda Bussan Co., Ltd., Ayase, Japan

Filed Mar. 17, 1992, Ser. No. 852,568
Claims priority, application Japan, Mar. 29, 1991, 3-28371[U]
Int. Cl.[5] B32B *9/00*
U.S. Cl. 524—16 16 Claims





1. A cork chip moulding comprising:

cork chips;

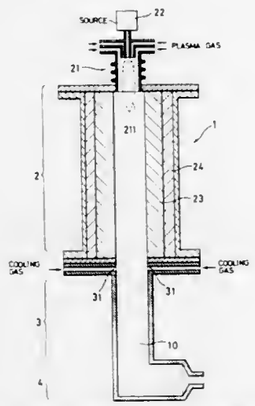
a polyurethane mixed with a mixture of said asphalt and said cork chips, the mixture being dispersed in said polyurethane.

5,256,479

FERROMAGNETIC ULTRAFINE PARTICLES, METHOD OF MAKING, AND RECORDING MEDIUM USING THE SAME

Yasumichi Tokuoka, and Jiro Yoshinari, both of Saku, Japan, assignors to TDK Corporation, Tokyo, Japan

Division of Ser. No. 459,124, Dec. 29, 1989. This application Mar. 23, 1992, Ser. No. 856,300
Claims priority, application Japan, Dec. 29, 1988, 63-334196; Dec. 30, 1988, 63-331486; Aug. 10, 1989, 1-207555
Int. Cl.[5] G11B *5/00, 5/02*; G03G *19/00*
U.S. Cl. 428—328 6 Claims



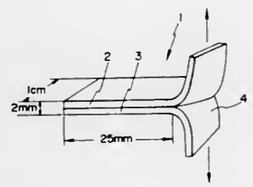
1. A magnetic recording medium comprising a recording layer including ferromagnetic ultrafine substantially hexagonal crystalline Fe_2P particles of substantially spherical shape having a means particle size of 0.005–0.1 μm consisting essentially of iron, cobalt, and phosphorus in a Fe/Co atomic ratio of from 95/5 to 70/30 and a (Fe+Co)/P atomic ratio of from 85/15 to 60/40, the particles being prepared by gas phase reaction, and wherein at least one of carbon and nitrogen stabilize said hexagonal Fe_2P structure.

5,256,480

SILICONE RUBBER LAMINATE AND METHOD OF MAKING

Yoshio Inoue, and Masaharu Takahashi, both of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Oct. 8, 1991, Ser. No. 774,540
Claims priority, application Japan, Oct. 11, 1990, 2-270341
Int. Cl.[5] B32B *9/04*
U.S. Cl. 428—331 11 Claims



1. A silicone rubber laminate comprising a conductive layer of cured silicone rubber containing carbon black and a dielectric layer of cured silicone rubber stacked and laminated to each other, said dielectric layer comprising the cured product of a silicone rubber composition comprising:

(a) an organopolysiloxane of the general formula:

$$R_aSiO_{(4-a)/2} \quad (1)$$

wherein R is a hydroxyl group or a substituted or unsubstituted monovalent hydrocarbon group, 0.0001 to 0.5 mol % of R being an alkenyl group, and letter a is a number of 1.95 to 2.05, having a degree of polymerization of at least 200 and containing at least two alkenyl groups per molecule,

(b) an organopolysiloxane containing at least two SiH groups per molecule,

(c) reinforcing silica,

(d) an organic silicon compound having an alkenyl group per molecule, and

(e) a platinum catalyst,

the molar ratio of the SiH group in component (b) to the total alkenyl group in components (a) and (d) ranging from 1:1 to 4:1, and wherein the molar ratio of the SiH group in component (b) to the alkenyl group in component (a) ranges from 6:1 to 20:1.

5,256,481

MAGNETIC RECORDING MEDIUM

Akira Miyake, Kyoto; Mikio Kishimoto; Masaya Funahashi, both of Osaka; Teruhisa Miyata, and Hitoshi Nagatani, both of Kyoto, all of Japan, assignors to Hitachi Maxell, Ltd., Ibaraki, Japan

Continuation of Ser. No. 145,927, Jan. 20, 1988, abandoned, which is a continuation of Ser. No. 28,652, Mar. 20, 1987, abandoned. This application Jul. 31, 1991, Ser. No. 740,877
Claims priority, application Japan, Mar. 20, 1986, 61-63173
Int. Cl.[5] H01F *10/02*
U.S. Cl. 428—336 7 Claims

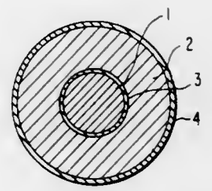
1. A magnetic recording medium comprising a substrate, an under coat layer consisting essentially of an electrically conductive material dispersed in a binder resin which is formed on at least one surface of the substrate, and a magnetic layer containing hexagonal system ferrite magnetic powder, in which a part of the iron atoms thereof are replaced with cobalt and titanium atoms, said powder being dispersed in a binder resin and having a thickness of not larger than 0.7 μm which is formed on the under coat layer.

5,256,482

CROSS-LINKED POLYETHYLENE INSULATED CABLES

Shosuke Yamanouchi; Sadao Fukunaga, and Hironaga Matsubara, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Osaka, Japan

Continuation-in-part of Ser. No. 68,799, Jun. 29, 1987, abandoned, which is a continuation of Ser. No. 503,400, Jun. 13, 1983, abandoned. This application Dec. 28, 1990, Ser. No. 635,056
Claims priority, application Japan, Jun. 23, 1982, 57-108959
Int. Cl.[5] D02G *3/00*
U.S. Cl. 428—375 4 Claims



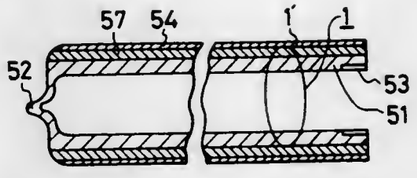
1. A cross-linked polyethylene insulated cable which is prepared by extrusion coating a polyethylene composition on a conductor, the polyethylene composition comprising polyethylene, more than 10% to less than 30% by weight of an ethylenevinyl acetate copolymer having a vinyl acetate (hereinafter referred to as VA) content of about 28% to about 33% by weight, the ethylene-vinyl acetate copolymer having an average particle diameter of from 0.8 to 1.4 μm (average of maximum 5 values), and an organic peroxide, and thereafter cross-linking the thus coated polyethylene composition.

5,256,483

PLASMA PROCESSING METHOD AND APPARATUS

Shunpei Yamazaki; Mitsunori Tsuchiya; Atsushi Kawano; Shinji Imatou; Kazuhisa Nakashita; Toshiji Hamatani; Takashi Inushima, all of Atsugi, and Kenji Itou, Zama, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 522,129, May 11, 1990, Pat. No. 4,987,004, which is a division of Ser. No. 303,240, Jan. 30, 1989, Pat. No. 4,971,667. This application Oct. 31, 1990, Ser. No. 606,185
Claims priority, application Japan, Feb. 5, 1988, 63-25919; Feb. 5, 1988, 63-25920; May 13, 1988, 63-117792; Aug. 26, 1988, 63-212890; Oct. 11, 1988, 63-255489
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—408 28 Claims



1. A printing drum having:

a metallic substrate;

an organic photoconductive film provided on said metallic substrate; and

a protective layer comprising carbon including sp^3 carbon bonds formed on said organic photoconductive film, said protective layer having a thickness of 0.1 to 8 μm,

wherein said protective layer is formed by plasma chemical vapor deposition and said metallic substrate is given a sufficient amount of bias voltage during the deposition so that the substrate functions as a cathode.

5,256,484

SUBSTRATE HAVING A TRANSPARENT COATING THEREON

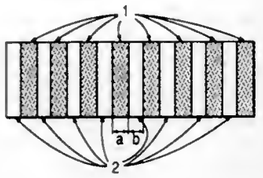
Goro Sato, Fukuoka; Michio Komatsu, Tokyo; Toshiharu Hirai; Yoneji Abe, both of Fukuoka, and Keiichi Mihara, Chiba, all of Japan, assignors to Catalysts & Chemicals Industries, Co., Ltd. and Asahi Glass Company, both of Tokyo, Japan

Division of Ser. No. 298,607, Oct. 11, 1988, Pat. No. 5,078,915. This application Aug. 16, 1991, Ser. No. 746,406
The portion of the term of this patent subsequent to May 7, 2008, has been disclaimed.
Int. Cl.[5] B32B *17/06*
U.S. Cl. 428—426 16 Claims

1. A substrate having a transparent conductive coating thereon which has a total light transmittance of at least 80%, a haze of less than 10%, a surface resistivity of 10^3–10^{11} Ω/□, and a glossiness of less than 190% as measured at an angle of 60° in accordance with the glossiness measuring method stipulated in JIS K 7150-81 wherein the transparent conductive coating is essentially composed of zirconium oxide and a conductive substance formed by using a coating liquid which consists essentially of a binder substance, a conductive substance and a stabilizer dissolved or dispersed homogeneously

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in a mixed solvent of water and an organic solvent, wherein the binder substance comprises a zirconium compound selected



from the group consisting of zirconium oxychloride, zirconium oxynitrate, zirconium oxyacetate and zirconium oxyoxalate.

5,256,485

COATED GLASS AND METHOD OF MANUFACTURING SAME

Robert Terneu, Thiméon, and Michel Hannotiau, Jodoigne, both of Belgium, assignors to Glaverbel, Brussels, Belgium

Filed Aug. 19, 1991, Ser. No. 747,006

Claims priority, application United Kingdom, Sep. 1, 1990, 9019117

Int. Cl.[5] B32B *17/06*

U.S. Cl. 428—426 **10 Claims**

1. A coated glass substrate, comprising:

a glass substrate;

a metal oxide undercoat which is provided on the glass substrate and which is a pyrolytically formed oxidized metal coating whose metal constituents consist essentially of aluminum atoms and vanadium atoms in an amount ranging from about 2% to about 10% of the aluminum atoms; and

a tin oxide overcoat which is provided on the metal oxide undercoat and which is a pyrolytically formed tin oxide coating,

wherein the metal oxide undercoat has an optical thickness selected to reduce reflected visible light optical interference effects due to the tin oxide overcoat.

5,256,486

HEAT-VULCANIZABLE ORGANOPOLYSILOXANE COMPOSITIONS AND PROTECTIVE SHEATHING OF ELECTRICAL CONDUCTORS THEREWITH

Daniel Ariagno, Chaponne; Pierre Barruel, Tassin La Demi-Lune, and Alain Viale, Luzinay, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Jul. 19, 1991, Ser. No. 732,772

Claims priority, application France, Jul. 19, 1990, 90 09472

Int. Cl.[5] B32B *9/04*; **C08K** *3/34*

U.S. Cl. 428—447 **13 Claims**

1. A heat-vulcanizable silicone elastomer composition of matter comprising (a) at least one polydiorganosiloxane polymer, (b) a reinforcing filler material, (c) a vulcanizing agent therefor, and including a fireproofing and mechanical strength-enhancing amount of (d) mica and (e) zinc oxide.

5,256,487

HIGH CHAR YIELD SILAZANE DERIVED PRECERAMIC POLYMERS AND CURED COMPOSITIONS THEREOF

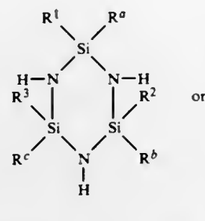
Ronald E. Myers, Strongsville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 447,931, Dec. 8, 1989, Pat. No. 5,136,007. This application Jul. 31, 1992, Ser. No. 923,711

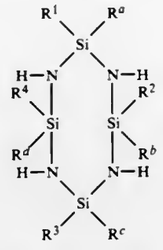
Int. Cl.[5] B32B *9/04*

U.S. Cl. 428—447 **16 Claims**

1. A reaction product of a polysilazoxane polymer prepared by the hydrolytic condensation polymerization of cyclic silicon-nitrogen monomers of structure:



or



; wherein R^1, R^2, R^3, and R^4 are independently alkyl groups containing from 1 to 4 carbon atoms, R^a, R^b, R^c, and R^d are independently alkenyl or alkyl groups containing from 2 to 6 carbon atoms with the proviso that at least one of R^a, R^b, R^c, or R^d group is an alkenyl group;

with vinyl or allyl substituted compounds containing boron or silicon or both in the presence of a free radical source; wherein vinyl or allyl substituted compounds are of the formula $R^1R^2R^3B$, where R^1, R^2, and R^3 are individually hydrogen, alkyls of 1–6 carbon atoms, or alkenyls of 2–6 carbon atoms, or said compounds are $R^1R^2R^3SiR^4$, where R^1, R^2, R^3 and R^4 are individually hydrogen, alkyls of 1–6 carbon atoms, or alkenyls of 2–6 carbon atoms,

or said vinyl or allyl substituted compounds have molecular weights between 200 and 3000 and are vinyl or allyl containing polysilanes, polycarbosilanes, polysiloxanes, poly(thio) ureasilazanes, polysilazanes, or polysiloxazanes.

5,256,488

NON-TARNISHING FLAME RETARDANT INSULATION COMPOSITIONS

James W. Biggs, Lebanon, Ohio, assignor to Quantum Chemical Corporation, Cincinnati, Ohio

Division of Ser. No. 721,041, Jun. 26, 1991. This application Mar. 29, 1993, Ser. No. 37,971

Int. Cl.[5] B32B *27/30*

U.S. Cl. 428—463 **12 Claims**

1. A copper conductor coated with an insulating layer of a flame retardant composition comprising:

(a) a polymer selected from the group consisting of copolymers of ethylene and vinyl esters of C_{2-6} aliphatic carboxylic acids, copolymers of ethylene and C_{1-6} alkyl acrylates, copolymers of ethylene and C_{1-6} alkyl methacrylates, or mixtures thereof;

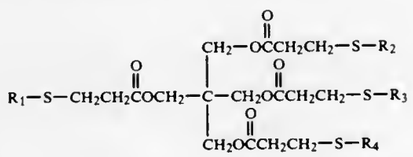
(b) 80 to 400 phr hydrated inorganic filler;

(c) 0.5 to 5 phr alkoxysilane;

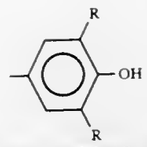
(d) 1 to 8 phr chemical crosslinking agent;

(e) 0.25 to 8 phr processing additive; and

(f) 1 to 8 phr antioxidant consisting of a combination of (1) a pentaerythritol betaalkylthiopropionate of the formula:



wherein R_1, R_2, R_3, and R_4 are alkyl groups having from 8 to 22 carbon atoms and (2) a hindered phenol containing one or more groups of the formula



where R is an alkyl group containing from 1 to 4 carbon atoms, with the weight ratio of (1) to (2) ranging from about 5:1 to 1:1.

5,256,489

FLAME RETARDANT POLYMERIC COMPOSITIONS

Melvin F. Maringer, Cincinnati, and James W. Biggs, Lebanon, both of Ohio, assignors to Quantum Chemical Corporation, Cincinnati, Ohio

Division of Ser. No. 921,617, Aug. 3, 1992, Pat. No. 5,225,469, which is a continuation of Ser. No. 562,762, Aug. 3, 1990, abandoned. This application Mar. 29, 1993, Ser. No. 37,838

Int. Cl.[5] B32B *27/32*

U.S. Cl. 428—450 **16 Claims**

1. A electrical conductor coated with an insulating layer of a crosslinkable polymer composition comprising

(a) a polymer selected from the group consisting of copolymers of ethylene and vinyl esters of C_{2-6} aliphatic carboxylic acids, copolymers of ethylene and C_{1-6} alkyl acrylates, copolymers of ethylene and C_{1-6} alkyl methacrylates, or mixtures thereof;

(b) 80 to 400 phr inorganic filler selected from the group consisting of hydrated aluminum oxide, hydrated magnesia, hydrated calcium silicate, and hydrated magnesium carbonate;

(c) 0.5 to 5 phr of a lower alkyl-, alkenyl-, alkynyl- or aryl-alkoxysilane having from 1 to 3 C_{1-6} alkoxy substituents;

(d) 0.5 to 8 phr antioxidant; and

(e) 0.25 to 8 phr low molecular weight polymeric processing additive comprised of aliphatic resins having an average molecular weight less than 2000 and containing ester functional groups.

5,256,490

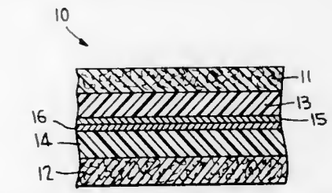
HIGH OPACITY FLEXIBLE COMPOSITE MATERIAL

Richard J. Pierce, Plymouth, Mass., assignor to Bainbridge/Aquabatten, Inc., Canton, Mass.

Filed Jul. 10, 1992, Ser. No. 911,614

Int. Cl.[5] B32B *15/08*

U.S. Cl. 428—458 **13 Claims**



1. High opacity flexible composite material receptive to print ink on opposing outer surfaces of the material without the print ink on one of the outer surfaces being visible from the other surface thereof and without the print ink on the other outer surface being visible from the one outer surface, the material comprising a pair of outer ink printable layers, an intermediate polyester film layer adhesively bonded to one of said outer layers, said intermediate layer consisting of polyethylene terephthalate, a metallized coating of aluminum on said intermediate layer, said metallized layer being adhesively bonded to the other of said outer layers, and the metallized layer having a thickness approximately equivalent to a total optical density in the range of 1.700 to 9.99.

5,256,491

MOLDED ARTICLE OF CRYSTALLINE THERMOPLASTIC RESIN WITH HIGH GAS BARRIER PROPERTY AND PRODUCTION THEREOF

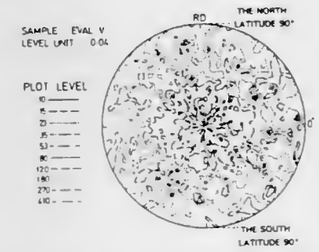
Takashi Ishida, Yokohama; Masato Kimura, Fujisawa, and Tomonori Takahashi, Chigasaki, all of Japan, assignors to Nippon Petrochemicals Co., Ltd., Japan

Filed Feb. 18, 1992, Ser. No. 838,494

Claims priority, application Japan, Jun. 15, 1990, 2-157194

Int. Cl.[5] B32B *27/00*

U.S. Cl. 428—500 **14 Claims**



1. A molded article of crystalline thermoplastic resin with high gas barrier property of which the resin has crystalline and non-crystalline regions, wherein the crystal molecular chain axis direction of crystallites of said crystalline regions orients uniaxially and uniplanarly, and

wherein the crystallites orientation is characterized by the following (a) and (b):

(a) the degree of the uniaxial orientation of the crystal molecular chain axis direction is less than 60° in the half-height width of the longitudinal peak, and

(b) the degree of the uniaxial-uniplanar orientation of the crystal plane which orients in the direction perpendicular to the molecular chain axis is more than 3 in terms of the equatorial intensity ratio, said crystal plane being characteristic of the individual resin.

5,256,492

THERMAL TRANSFER RECORDING SHEET

Takao Hirota, Machida; Yukichi Murata, Sagamihara; Tsutomu Taki, Tokyo, and Hideo Shinohara, Yokohama, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

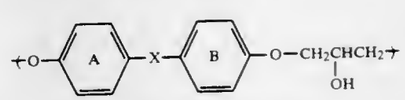
Filed Aug. 3, 1990, Ser. No. 562,629

Claims priority, application Japan, Aug. 7, 1989, 1-204408; Apr. 13, 1990, 2-98128

Int. Cl.[5] B32B *9/00*

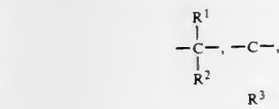
U.S. Cl. 428—524 **10 Claims**

1. A thermal transfer recording sheet comprising a base film and an ink layer comprising at least a heat transferable colorant and a binder resin, formed on one side of the base film, wherein the binder resin consists essentially of a phenoxy resin having repeating structural units of the following formula (I) and a glass transition temperature of at least about 100° C.:



(I)

wherein X is a bivalent group represented by



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—O—, —S—, —SO— or —SO_2—, each of R^1 and R^2 is a hydrogen atom, an alkyl group or an aryl group, R^3 is an alkylene group, and each of benzene rings A and B may have an alkyl group or a halogen atom as a substituent.

5,256,493

SULFONIMIDE CATALYSTS FOR COATINGS

Jeno G. Szita, 45 Oakwood Ave., Norwalk, Conn. 06850; Subban Ramesb, 900 Hope St. #6B, Stamford, Conn. 06907; William Jacobs, III, 9 Old Latern Dr., Bethel, Conn. 06801, and John C. Brogan, 21 Nelson St., Stamford, Conn. 06902

Continuation-in-part of Ser. No. 512,041, Apr. 26, 1990, abandoned. This application Apr. 19, 1991, Ser. No. 688,022

Int. Cl.[5] B05D *1/06*

U.S. Cl. 428—524 **46 Claims**

11. An improved method of coating substrates by contacting said substrates with a powder coating composition and thereafter heat curing said composition, wherein the improvement comprises:

contacting said substrate with a curable powder coating composition comprising:

(i) a sulfonimide cure catalyst,

(ii) a crosslinkingly effective amount of an aminoplast crosslinking agent containing at least 2 crosslinkable groups, and

(iii) a polyfunctional material capable of reacting with aminoplast crosslinking agents.

5,256,494

SLIDING MEMBER WITH A SINTERED COPPER ALLOY LAYER

Tadashi Tanaka, Konan; Masaaki Sakamoto, Nagoya; Koichi Yamamoto, Komaki, and Tsukimitsu Higuchi, Kani, all of Japan, assignors to Daido Metal Company Ltd., Nagoya, Japan

Filed Nov. 26, 1991, Ser. No. 798,442

Claims priority, application Japan, Nov. 29, 1990, 2-333283

Int. Cl.[5] B22F *7/04*

U.S. Cl. 428—552 **17 Claims**

1. A sliding member comprising a backing steel and a sintered copper alloy layer mounted integrally on one surface of the backing steel wherein the sintered copper consists essentially of, by weight, 1 to 15% Sn, 1 to 20% Ni-B compound containing 7 to 15% boron, 1% or less phosphorous, and the balance of Cu and impurities.

5,256,495

PIN TYPE BEARING RETAINER

James R. Holtz, Bristol, and Stephen M. Mondak, Watertown, both of Conn., assignors to The Torrington Company, Torrington, Conn.

Divisioo of Ser. No. 740,119, Aug. 5, 1991. This application Oct. 27, 1992, Ser. No. 966,982

Int. Cl.[5] F16C *33/30*

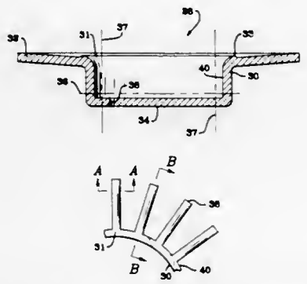
U.S. Cl. 428—579 **6 Claims**

1. A partially formed pin retainer for a bearing having rollers, the retainer comprising:

a cup formed of a unitary piece of material, said cup having a first end being open and a second end being closed;

a broad flange ringing said first end and having regular portions removed therefrom to form an array of evenly spaced projecting pins radiating from the broad flange, the pins forming axles for the rollers; and

abutment means formed in, and unitary with, the broad flange adjacent to and surrounding the first end to restrict



motion of the rollers along the pins, whereby the pin retainer is of a unitary material devoid of any bonds.

5,256,496

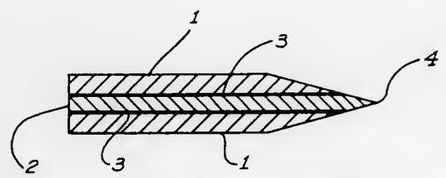
TITANIUM-STEEL LAMINATE KNIFE

Mathew L. Kluczynski, 22018 Lemarsh St., Chatsworth, Calif. 91311

Filed Nov. 15, 1991, Ser. No. 792,606

Int. Cl.[5] B32B *15/00*

U.S. Cl. 428—661 **1 Claim**



1. A knife made from a laminate consisting of two outside layers of pure titanium metal and one hardened, inner layer of steel having a hardness of 56 R/C minimum on the Rockwell hardness scale and wherein said inner layer forms the cutting edge.

5,256,497

MAGNETIC TAPE CONTAINING ABRASIVES

Albrecht Koller, Munich, and Hans-Heinrich Credner, Hobenschaeftlarn, both of Fed. Rep. of Germany, assignors to BASF Magnetics GmbH, Mannbeim, Fed. Rep. of Germany

Filed Jun. 24, 1991, Ser. No. 720,060

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1990, 4022221

Int. Cl.[5] G11B *5/66;* **B32B** *5/16*

U.S. Cl. 428—694 **3 Claims**

1. A magnetic tape having an abrasive and cleaning effect for those parts of a magnetic tape cassette and a recording/playback unit which come into contact with the magnetic layer of the tape, comprising a non-magnetic layer support and a dispersion layer applied thereto which contains hard magnetic pigments and non-magnetic pigments of cubic Al_2O_3 dispersed in a polymeric binder, wherein one of the magnetic pigments is acicular CrO_2 having a BET value of at least 26 m^2/g, said acicular CrO_2 being present in an amount of at least 85% by weight of the magnetic pigments, said non-magnetic pigment having a Mohs+ hardness of at least 9, an average particle size of 0.3 to 2.0 μm, a BET value of 5 to 25 m^2/g, and being present in an concentration of 1.1–4.4% based on the weight of CrO_2, the magnetic layer of the magnetic tape having a surface Ra of less than 0.02 μm.

5,256,498

MOLTEN CARBONATE FUEL CELL

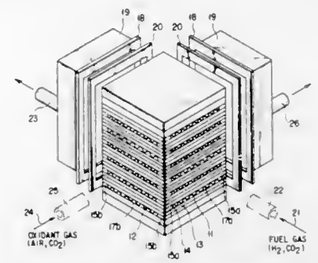
Hideyuki Ohzu, Yokohama; Yoshihiro Akasaka, Sagamihara; Kazuaki Nakagawa, Urayasu, and Hiroshi Tateishi, Zushi, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 8, 1992, Ser. No. 865,239

Claims priority, application Japan, Apr. 8, 1991, 3-073452; Jun. 10, 1991, 3-137768; Jan. 28, 1992, 4-013059

Int. Cl.[5] H01M *8/14, 4/86*

U.S. Cl. 429—16 **15 Claims**



1. A molten carbonate fuel cell comprising:

a pair of conductive electrodes;

an electrolyte body sandwiched between the pair of electrodes and constituted by a porous body and an electrolyte comprising an alkali carbonate mixture impregnated in said porous body, said porous body containing a filler consisting essentially of a first group of particles having a particle size of not more than 1 $\mu$and a function of retaining said electrolyte, and second group of particles having a particle size of 5 to 100 μm and a function of reinforcing said porous body, the particles of said first group and the particles of said second group being made of at least one material selected from the group consisting of $LiAl_xO_y$ ($4.5 \leqq x \leqq 5.5$ and $7.25 \leqq y \leqq 8.75$), $LiAl_aO_b$ ($0.89 \leqq a \leqq 1.11$ and $1.80 \leqq b \leqq 2.20$) lithium zirconate and stabilized zirconia, but being different in material from each other;

fuel gas supplying means for supplying a fuel gas to one of the pair of electrodes; and

oxidant gas supplying means for supplying an oxidant gas to the other of the pair of electrodes.

5,256,499

MONOLITHIC SOLID OXIDE FUEL CELLS WITH INTEGRAL MANIFOLDS

Nguyen Q. Minh, Fountain Valley, and Thomas L. Stillwagon, Long Beach, both of Calif., assignors to Allied Signal Aerospace, Morris Township, Morris County, N.J.

Filed Nov. 13, 1990, Ser. No. 613,430

Int. Cl.[5] H01M *11/10*

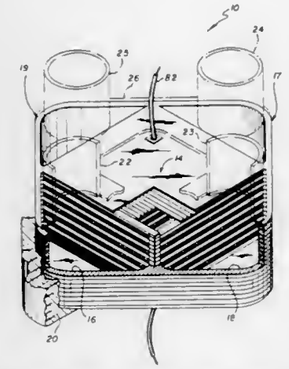
U.S. Cl. 429—33 **14 Claims**

1. A method of fabricating a crossflow solid oxide fuel cell comprising the steps of:

forming thin tapes of anode, cathode, electrolyte, interconnect and gasket materials;

shaping said tapes into net shape elements, said anode and cathode elements being shaped to include fuel and oxidant passageways, said interconnect, electrolyte and gasket elements being shaped to include cutouts for fuel and oxidant manifolds passageways;

assembling and interbonding a plurality of said elements such that said elements are arranged in the sequential and repeated order of an interconnect element, an anode element bounded by an anode gasket element, an electrolyte element, and a cathode element bounded by a cathode



gasket element, said cutouts being aligned to form said manifold passageways; and

heating the assembled elements to full densification.

5,256,500

BATTERY HAVING LIFETIME INDICATOR

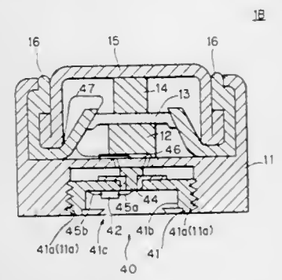
Shin-ichi Ishimoto, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 21, 1992, Ser. No. 822,949

Claims priority, application Japan, Jan. 28, 1991, 3-008560

Int. Cl.[5] H01M *10/48*

U.S. Cl. 429—93 **8 Claims**



1. A battery, comprising:

a battery unit including a power source for generating electric power, positive and negative containers connected to said power source, and an insulating member inserted between said positive and negative containers for attaining insulation therebetween; and

a lifetime indicator, provided on said battery unit for indicating the lifetime of said battery unit, comprising

an indication element having first and second electrodes, said indication element having a characteristic for indicating changes in the indication element according to a voltage difference between said first and second electrodes,

first connection means for connecting said first electrode to said positive container, and

second connection means for connecting said second electrode to said negative container,

wherein said indication element is made of a liquid crystal material.

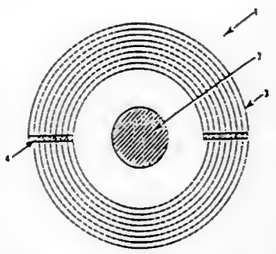
VOL 1155 ISS 4 OCT 26 1993 UMI

5,256,501

SEA WATER BATTERY

Oistein Hasvold, Oslo, and Tor Garshol, Frei, both of Norway, assignors to Forsvarets forskningsinstitutt, Kjeller, Norway

Filed Apr. 10, 1992, Ser. No. 866,978
Claims priority, application Norway, Aug. 21, 1989, 893338
Int. Cl.[5] H01M 6/10, 6/34
U.S. Cl. 429—94 16 Claims



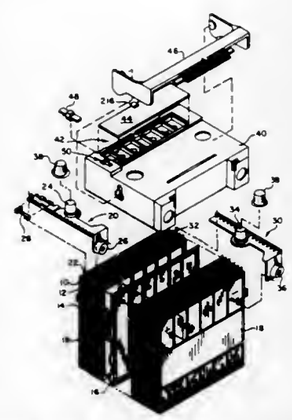
1. Saltwater galvanic cell based on using oxygen dissolved in seawater as oxidant and comprising a coaxial arrangement of a metal anode and a separate metal cathode structure, said cathode structure comprising at least two turns of spirally wound perforated or expanded metal sheet.

5,256,502

MODULAR, MULTICELL LEAD-ACID BATTERIES

William H. Kump, St. Paul, Minn., assignor to GNB Incorporated, Mendota Heights, Minn.

Filed Sep. 17, 1991, Ser. No. 762,814
Int. Cl.[5] H01M 2/28
U.S. Cl. 429—150 46 Claims



1. A modular multicell lead-acid battery comprising a first assembly of frames, a second assembly of frames, partition means interposed between said first and second assemblies of frames for electrochemically isolating said first and second assemblies from one another so that said battery comprises a first and second multicell battery, each of said first and second assemblies of frames comprising a plurality of terminal and floating frames secured together in side-by-side relation, each frame of each assembly having space division elements defining within the perimeter of the frame a plurality of active material support areas arranged side-by-side across the width of the frame, the perimeter and division elements of the frames in the respective assemblies being secured together in sealed relation so that the perimeters form outer walls of the battery and the division elements form partitions between adjacent cells of the battery, the frame having the perimeter and division elements thereof secured in sealed relation to respective opposite sides of the partition means, an electrically conductive grid embedded in, and supported by, the frame to provide support for active material, said grid having a frame positive and negative tab extending through the perimeter of the frame, active material located in said support areas so that each support area forms a plate of the battery, said active material being selected so that adjacent areas in the same frame form plates of opposite polarity and corresponding support areas in adjacent frames of the same assembly form plates of opposite polarity, an electrolyte separator positioned between the active material of opposite polarity in said corresponding areas in adjacent frames, a positive busbar having a series of slots and said frame positive tabs protruding through said slots and electrically connected thereto, a negative busbar having a series of slots and accepting the frame negative tabs and electrically connected thereto, each of said positive and negative busbars having at least one terminal formed thereon, electrolyte fill holes allowing access for electrolyte to each cell of the battery, electrolyte contained in each cell, a cover overlying the top perimeter of the battery and being sealed to said frames, said terminals extending through said cover, and switch means electrically connected to one of said busbars for allowing current to be drawn from at least one of the first and second multicell batteries.

5,256,503

PROCESS FOR MAKING A COMPOSITE MEMBRANE

John A. Cook, Oxfordshire; Iain S. Smith, Swindon, and Raymond W. Singleton, Gloucestershire, all of United Kingdom, assignors to Scimat Limited, United Kingdom

PCT No. PCT/GB87/00237, § 371 Date Dec. 3, 1987, § 102(e) Date Dec. 3, 1987, PCT Pub. No. WO87/06395, PCT Pub. Date Oct. 22, 1987
Continuation of Ser. No. 284,749, Dec. 12, 1988, abandoned, which is a continuation of Ser. No. 133,106, Dec. 3, 1987, abandoned. This PCT application Apr. 6, 1987, Ser. No. 869,856
Claims priority, application United Kingdom, Apr. 7, 1986, 8608430
Int. Cl.[5] H01M 2/16; C08D 5/20
U.S. Cl. 429—249 26 Claims

1. A process for making a composite polymer membrane, which comprises:

(a) providing a membrane comprising a first polymeric material which defines a microporous matrix and a second material which includes a photoinitiator and which at least partially fills, and thereby blocks, the pores of the matrix; and

(b) exposing a surface of said membrane to ultraviolet radiation and polymerizing and crosslinking said second material, said membrane having a thickness of no more than about 250 micrometers.

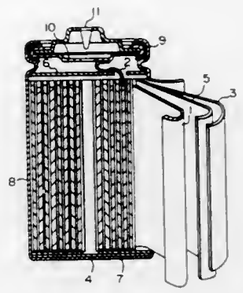
5,256,504

MONAQUEOUS ELECTROLYTE SECONDARY BATTERIES

Hiromi Okuno, Osaka; Hizuru Koshina, Neyagawa; Katsuaki Hasegawa, Yokkaichi, and Takayuki Kawahara, Abiko, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka and Mitsubishi Petrochemical Company Limited, Tokyo, both of Japan

Filed Apr. 24, 1992, Ser. No. 872,980
Claims priority, application Japan, Sep. 13, 1991, 3-234377; Sep. 13, 1991, 3-234378
Int. Cl.[5] H01M 6/16, 4/58
U.S. Cl. 429—197 8 Claims

1. A nonaqueous electrolyte secondary battery which is provided with an anode comprising a carbon material capable of doping and undoping lithium ions, a nonaqueous electrolyte comprising a solute and a solvent, and a cathode comprising a lithium-containing oxide, said solvent being a mixed solvent comprising an aliphatic carboxylate represented by the formula RCOOR' wherein R represents an ethyl group and R' represents an alkyl group of 1–3 carbon atoms, a cyclic carbonate and a chain carbonate, wherein said aliphatic carboxylate is one of methyl propionate and ethyl propionate, said cyclic carbonate is ethylene carbonate and said chain carbonate is diethyl carbonate.

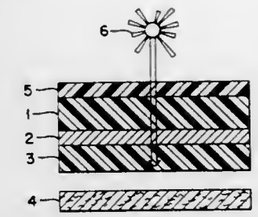


5,256,506

ABLATION-TRANSFER IMAGING/RECORDING

Ernest W. Ellis, Leverett; Diane M. Foley, and Dana R. Arnold, both of Northampton, all of Mass., assignors to Graphics Technology International Inc., South Hadley, Mass.

Division of Ser. No. 707,039, May 29, 1991, Pat. No. 5,171,650, which is a continuation-in-part of Ser. No. 592,790, Oct. 4, 1990, abandoned. This application Feb. 26, 1992, Ser. No. 841,489
Int. Cl.[5] G03C 5/54, 1/10
U.S. Cl. 430—20 45 Claims



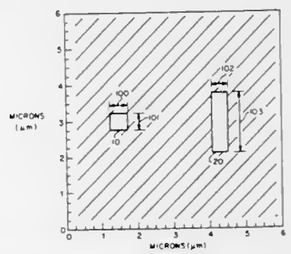
38. The composite ablation-transfer imaging medium, which comprises a support substrate (i), at least one intermediate dynamic release layer (ii) essentially coextensive therewith and a non-laser radiation-reflecting, laser radiation-ablative carrier topcoat (iii) also essentially coextensive therewith, said laser radiation-ablative carrier topcoat (iii) including an imaging amount of a contrast imaging material contained therein, and said at least one dynamic release layer (ii) comprising Ge or a sensitized liquid crystal material and absorbing but not reflecting such laser radiation at a rate sufficient to effect the image ablation mass transfer of at least said carrier topcoat (iii).

5,256,505

LITHOGRAPHICAL MASK FOR CONTROLLING THE DIMENSIONS OF RESIST PATTERNS

Jang F. Chen, San Jose, and James A. Matthews, Milpitas, both of Calif., assignors to Microunity Systems Engineering, Sunnyvale, Calif.

Filed Aug. 21, 1992, Ser. No. 933,393
Int. Cl.[5] G03F 9/00
U.S. Cl. 430—5 10 Claims



1. A mask for optically transferring a lithographic pattern onto a semiconductor substrate by exposing a layer of radiation sensitive material disposed on said semiconductor through said mask by a radiation source, said pattern including at least one feature having an associated intensity level on said layer of radiation sensitive material for a corresponding energy level of said radiation source, said mask comprising:

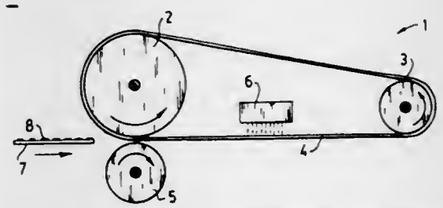
at least one intensity modulating feature disposed within said at least one feature, having the opposite transparency of said at least one feature and having a dimension sufficiently small so as not to be transferred onto said substrate, said at least one intensity modulating feature altering the intensity level on said layer of radiation sensitive material for said at least one feature.

5,256,507

METHOD OF FUSING ELECTROSTATOGRAPHIC TONERS TO PROVIDE DIFFERENTIAL GLOSS

Muhammed Aslam; Lawrence P. Demejo, both of Rochester, and Dinesh Tyagi, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 1, 1992, Ser. No. 862,653
Int. Cl.[5] G03G 13/01, 13/20
U.S. Cl. 430—42 14 Claims



1. A method of fusing an electrostatographic toner pattern to provide differential gloss in the pattern, which method comprises:

a. providing an element having a support bearing the unfused pattern which comprises a first image comprising toner particles that exhibit a loss tangent (tan δ) up to about 1.2 upon fusing the pattern with heat and pressure and a second image comprising toner particles for which such loss tangent is at least 1.6;

b. passing the element successively through a fusing zone, a cooling zone and a release zone;

c. within the fusing zone, bringing the image pattern into pressure contact with a surface of a fusing member at a temperature that is sufficient (1) to cause discrete toner particles that form the first image to fuse to form a sintered mass and to adhere the fused image to the support and (2) to cause discrete particles that form the second image to

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flow to form a fused image in which the toner particles substantially lose their particulate identity;

d. maintaining contact between the fused image pattern and the fusing member within the cooling zone while reducing the temperature of the fusing member; and

e. separating the fused image pattern from the fusing member within the release zone at a temperature where no toner image offset occurs.

3. The method of claim 1, wherein the loss tangent for the second toner image particles is in the range of about 1.6 to 5.5.

5. The method of claim 3, wherein the first image is a black toner image.

6. The method of claim 5, wherein the second image is a cyan toner image.

5,256,508

HYDRAZONE COMPOUND AND PHOTOSENSITIVE MATERIAL USING SAID COMPOUND

Yasuyuki Hanatani, Sakai, and Hiroaki Iwasaki, Hirakata, both of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Mar. 23, 1992, Ser. No. 855,504

Claims priority, application Japan, Mar. 28, 1991, 3-064985

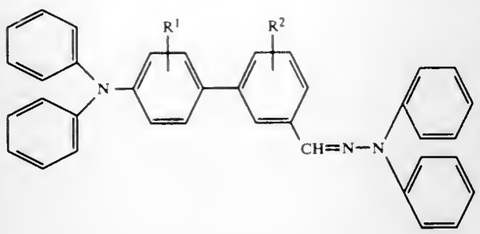
Int. Cl.[5] G03G *15/02*

U.S. Cl. 430—59 **9 Claims**

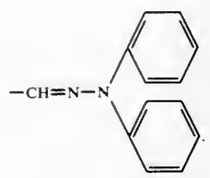
1. A photosensitive material comprising:

a conductive substrate;

a photosensitive layer on the conductive substrate, which photosensitive layer contains a hydrazone compound as an electric charge transferring material, wherein the hydrazone compound is represented by the following formula:



wherein R^1 is a hydrogen atom, a halogen atom, an alkyl group or an alkoxy group, and R^2 is a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group or the following group:



5,256,509

IMAGE-FORMING MEMBER FOR ELECTROPHOTOGRAPHY AND MANUFACTURING METHOD FOR THE SAME

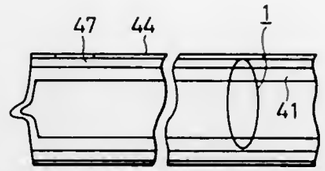
Shigenori Hayashi, Atsugi, and Shunpei Yamazaki, Tokyo, both of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Filed Nov. 19, 1990, Ser. No. 615,281

Claims priority, application Japan, Nov. 20, 1989, 1-302398; Nov. 20, 1989, 1-302400

Int. Cl.[5] G03G *5/147*

U.S. Cl. 430—66 **33 Claims**



1. An image forming member for electrophotography comprising:

an organic photoconductive layer formed on a conductive substrate; and

a protective layer formed on said organic photoconductive layer,

wherein a positive photoresist insulating material is provided to fill only hollow regions in said organic photoconductive layer in order to make smooth the surface of the photoconductive layer.

5,256,510

PHOTOELECTROGRAPHIC IMAGING WITH NEAR-INFRARED SENSITIZING DYES

Douglas E. Bugner; William Mey, both of Rochester, and Dennis R. Kamp, Spencerport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

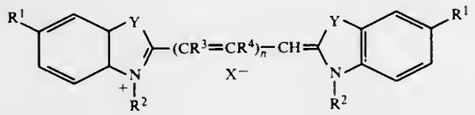
Continuation-in-part of Ser. No. 632,304, Dec. 21, 1990, abandoned. This application Mar. 2, 1992, Ser. No. 844,082

Int. Cl.[5] G03G *15/09*

U.S. Cl. 430—83 **25 Claims**

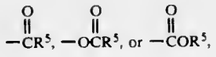
1. A photoelectrographic element for electrostatic imaging comprising a conductive layer in electrical contact with an acid photogenerating layer which is free of photopolymerizable materials and comprises an electrically insulating binder and an acid photogenerator, wherein the improvement comprises:

a dye in said photoelectrographic element which absorbs near-infrared radiation, thereby making said photoelectrographic element capable of being exposed with near-infrared radiation, said dye selected from the group consisting of compounds having the formula:



Where:

R^1=—H, $—NO_2$, alkyl, aryl, $—SO_2R^5$, halo, $—OR^5$,



where: R^5=alkyl, aryl, or substituted alkyl or aryl;

R^2=—H, -alkyl from 1–12 carbons;

R^3, R^4=



halo, alkyl, or aryl;

R^3, R^4 may be the same or different or may be linked with 1–3 carbon atoms to form a ring;

where: R^6 is alkyl, aryl or substituted alkyl or aryl, or may be a link of 0–3 carbons to form a ring;

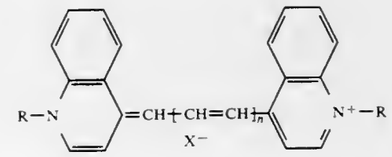
Y=—S—, —O—, or $—C(R^1)_2—$

where R^7 is H or an alkyl group of 1–3 carbons.

X- is an anion

n is an integer from 1–3;

compounds having the formula:



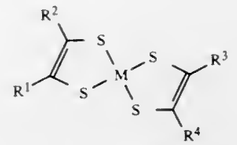
Where

X=an anion,

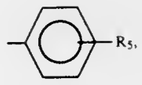
R=a 1 to 3 carbon alkyl group, and

n=1 to 3; and

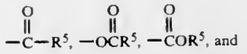
compounds having the formula:



where: R^1–R^4 are the same or different and are alkyl,



halo, $—NO_2$, $—OR^5$, SO_2R^5,



where R^5 is H, -alkyl, -aryl, substituted alkyl or aryl, or $—N(R^6)_2$

where R^6 is alkyl from 1–3 carbons;

M is Pt, Pd, or Ni; and mixtures thereof.

5,256,511

CARRIER FOR DEVELOPING ELECTROSTATIC LATENT IMAGE AND PROCESS FOR PRODUCING THE SAME

Yasuo Matsumura; Hiroshi Takano; Masahiro Takagi, and Mamoru Yoshimura, all of Minami-ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Feb. 18, 1992, Ser. No. 836,385

Claims priority, application Japan, Feb. 20, 1991, 3-26276; Feb. 20, 1991, 3-26277; Feb. 25, 1991, 3-29816

Int. Cl.[5] G03G *9/113*

U.S. Cl. 430—108 **6 Claims**

1. A carrier for developing an electrostatic latent image comprising core particles having formed thereon a resin coating layer, said resin coating layer comprising a fluorine-containing resin and a second resin having a softening point lower than that of said fluorine-containing resin by an amount sufficient to cause said fluorine-containing resin and said second resin each to be partially exposed on the surface of said resin coating layer so as to form a sea-island structure thereon.

6. A carrier for developing an electrostatic latent image, said carrier providing excellent image quality and comprising core particles having formed thereon a resin coating layer, said resin coating layer comprising a methylphenylsilicone polymer having a softening point of 50° C. or higher, said resin coating layer excluding fluorine-containing resins.

5,256,512

COLOR TONER AND TWO-COMPONENT DEVELOPER CONTAINING SAME

Hiroyuki Kobayashi, Yokohama; Mitsuru Uchida, Chofu, and Kenji Okado, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 504,696, Apr. 5, 1990, which is a continuation of Ser. No. 117,753, Nov. 6, 1987, abandoned. This application Dec. 24, 1991, Ser. No. 813,099

Claims priority, application Japan, Jan. 19, 1987, 62-9467

Int. Cl.[5] G03G *9/09, 9/107, 9/113, 9/097*

U.S. Cl. 430—106 **39 Claims**

1. A yellow developer for developing electrostatic latent images comprising:

(1a) a yellow toner composition containing a yellow toner which in turn contains at least a binder resin and a yellow colorant, and a hydrophobic silica fine powder, and

(2a) a ferrite carrier coated with a mixture of a fluorine-containing resin and a styrenic resin in a weight ratio of 9:10 to 20:80, wherein the binder resin comprises a styrene-acrylic acid ester resin, a styrene-methacrylic acid ester resin or a polyester resin, the ferrite carrier has an average particle size of 30 to 65 microns, and the ferrite carrier is coated with 0.01 to 5 wt. % based on the carrier of the mixture of the fluorine-containing resin and a the styrene type resin;

the yellow toner having a volume-average particle size of 11.0 to 14.0 microns containing 30% by number or less of particles having sizes below 6.35 microns and containing 9% by weight or less of particles having sizes above 20.2 microns;

the yellow toner composition having an agglomeration degree of 25% or below and an apparent density of 0.2 to 1.5 g/cm^3;

the yellow toner having an apparent viscosity at 100° C. of 10^4 to 5×10^5 poise, an apparent viscosity at 90° C. of 5×10^4 to 5×10^6 poise, a DSC heat-absorption peak at 58° to 72° C., and a gloss of 5.0% or higher;

the yellow toner containing 0.5 to 7.0 wt. parts of the yellow colorant per 100 wt. parts of binder resin.

the yellow toner having chromatically values of $a^*=-6.5$ to -26.5, $b^*=73.0$ to 93.0, and $L^*=77.0$ to 97.0;

the yellow toner showing a triboelectric charge of -5 to -20 micro-C/g with respect to the ferrite carrier coated with the mixture of the fluorine-containing resin and the styrenic resin containing 70 wt. % or more of carrier

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particles having sizes of 250 mesh-pass and 350 mesh-on; and

the yellow toner having a spectral reflectance of 60% or more in an infrared region of 900 to 1000 nm.

4. A yellow developer according to claim **1**, wherein the yellow colorant is a colorant selected from the group consisting of C.I. Pigment Yellow 17, C.I. Pigment Yellow 15, C.I. Pigment Yellow 13, C.I. Pigment Yellow 14 and C.I. Pigment Yellow 12.

5,256,513

ELECTROCONDUCTIVE MAGNETIC CARRIER, DEVELOPER USING THE SAME AND IMAGE FORMATION METHOD

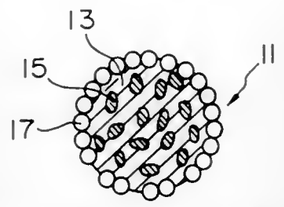
Takao Kawamura, 17-11, 1-cho, Takakuradai, Sakai-shi, Osaka-fu; Yasuo Nishiguchi, Tokyo; Yoshio Ozawa, Watarai; Yukio Ikeda, Watarai; Katsuhiro Yoshioka, Watarai, and Hiroshi Itoh, Yohkaichi, all of Japan, assignors to Kyocera Corporation, Kyoto and Takao Kawamura, Osaka, both of Japan

Filed Dec. 30, 1991, Ser. No. 815,805

Claims priority, application Japan, Dec. 28, 1990, 2-417074; Jul. 23, 1991, 3-207554; Oct. 1, 1991, 3-280870

Int. Cl.[5] G03G *9/083*

U.S. Cl. 430—106.6 **34 Claims**



1. An electroconductive magnetic carrier for use with a developer, comprising basic particles, each of said basic particles comprising a binder resin and a magnetic material dispersed in said binder resin, and an electroconductive layer formed on the surface of said basic particle.

5,256,514

TONER COMPOSITIONS WITH HALOGENATED SALICYLIC ACID CHARGE ENHANCING ADDITIVES

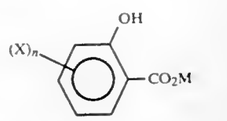
Kock-Yee Law, Penfield, and Ihor W. Tarnawskyj, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 19, 1992, Ser. No. 978,584

Int. Cl.[5] G03G *9/083, 9/097*

U.S. Cl. 430—106.6 **20 Claims**

1. A negatively charged toner composition comprised of resin particles, pigment particles, optional surface additives, and a halogenated salicylic acid charge enhancing additive of the following formula



wherein X is halogen, M is hydrogen, an alkaline earth, an alkali metal, or NR_4 wherein R is alkyl, and n is the number 1 or 2.

15. A toner composition in accordance with claim **1** wherein the pigment particles are carbon black, magnetites, or mixtures thereof, cyan, magenta, yellow, red, blue, green, or brown pigments, and mixtures thereof.

5,256,515

TONER COMPOSITIONS WITH HALOGENATED METAL SALICYCLIC ACID COMPLEX CHARGE ENHANCING ADDITIVES

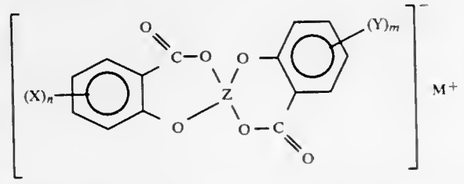
Kock-Yee Law, Penfield, and Ihor W. Tarnawskyj, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 19, 1992, Ser. No. 978,572

Int. Cl.[5] G03G *9/083, 9/097*

U.S. Cl. 430—106.6 **20 Claims**

1. A negatively charged toner composition comprised of resin particles, pigment particles, optional surface additives, and a halogenated salicyclic acid complex charge enhancing additive of the following formula:



wherein Z is zinc or chromium; M is hydrogen, an alkali metal, an alkaline earth metal, NH_4, or NR_4 wherein R is alkyl; X and Y are independently selected from the group consisting of chloride, iodide and bromide; and n and m are the numbers **1** or **2**.

15. A toner composition in accordance with claim **1** wherein the pigment particles are carbon black, magnetites, or mixtures thereof, cyan, magenta, yellow, red, blue, green, or brown, or mixtures thereof.

5,256,516

TONER COMPOSITIONS WITH DENDRIMER CHARGE ENHANCING ADDITIVES

Francoise M. Winnik, Toronto; James M. Duff, Mississauga; Guerino G. Sacripante, Oakville, and Anthony R. Davidson, Agincourt, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 31, 1992, Ser. No. 922,420

Int. Cl.[5] G03G *9/057, 9/093*

U.S. Cl. 430—110 **4 Claims**

1. An encapsulated toner composition comprised of a core comprised of a resin and pigment particles, and a polymer shell, and thereover coated with a dendrimer charge enhancing additive.

3. An in situ toner composition comprised of a core comprised of a resin and pigment particles, and a surfactant coating, and thereover a coating of a dendrimer charge enhancing additive.

5,256,517

POSITIVE-WORKING RADIATION-SENSITIVE MIXTURE AND RECORDING MATERIAL FOR EXPOSURE TO DUV RADIATION CONTAINING POLYFUNCTIONAL COMPOUND HAVING α-DIAZO-β-KETO ESTER UNITS AND SULFONATE UNITS

Horst Roeschert, Ober-Hilbersheim; Georg Pawlowski, Wiesbaden, both of Fed. Rep. of Germany; Hans-Joachim Merrem, Basking Ridge, N.J.; Ralph Dammel, Klein-Winternheim, and Walter Spiess, Dieburg, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

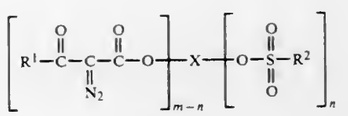
Filed May 1, 1991, Ser. No. 694,353

Claims priority, application Fed. Rep. of Germany, May 8, 1990, 4014648

Int. Cl.[5] G03F *7/022, 7/023*

U.S. Cl. 430—165 **59 Claims**

1. A positive-working radiation-sensitive mixture comprising in amounts sufficient to form a positive working, radiation sensitive mixture (a) a binder which is insoluble in water and soluble or at least swellable in aqueous alkaline solution, and (b) a photoactive effective amount of a polyfunctional compound comprising α-diazo-β-keto ester units and sulfonate units according to the formula I



(I)

in which

R^1 and R^2, independently of one another, are an unsubstituted or substituted aliphatic, cycloaliphatic, araliphatic or aromatic radical having 4 to 20 carbon atoms, it being possible for individual CH_2 groups to be replaced by oxygen or sulfur atoms or by N or NH groups and/or to contain keto groups,

X is an unsubstituted or substituted aliphatic, cycloaliphatic, carbocyclic, heterocyclic or araliphatic radical having 2 to 22 carbon atoms, it being possible for individual CH_2 groups to be replaced by oxygen or sulfur atoms or by the groups $—NR^3—$, $—C(O)—O—$, $—C(O)—NR^3—$, $—C(O)—N—$, $—NR^3—C(O)—NR^4—$,

$$—O—C(O)—\underset{|}{N}R^3—,\quad —O—C(O)—\underset{|}{N}—$$

or —O—C(O)—O—, or CH groups to be replaced by

$$—\underset{|}{N}—,$$

in which Ser. No. 07/694,353

R^3 and R^4, independently of one another, are hydrogen or an unsubstituted or substituted aliphatic, carbocyclic or araliphatic radical,

m is an integer from 3 to 8,

n is an integer from 1 to 3, and m>n.

5,256,518

INFORMATION STORAGE DISK EMPLOYING A REFLECTIVE LAYER HAVING GOOD MALLEABILITY

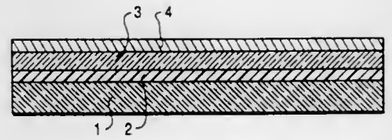
Tetsuya Akiyama; Hidemi Isomura, both of Osaka; Takeo Ohta, Nara, and Shigeaki Furukawa, Shiki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 396,214, Aug. 21, 1989, abandoned. This application Apr. 27, 1992, Ser. No. 874,228

Claims priority, application Japan, Aug. 19, 1988, 63-207033

Int. Cl.[5] G03C *1/00, 1/76*

U.S. Cl. 430—273 **9 Claims**



1. An information storage disk which has on a substrate a recording layer which reversibly causes an amorphous-crystal phase change under irradiation of light, a reflective layer comprising a metal layer for efficiently utilizing the irradiating light, and a spacer layer inserted between the recording layer and the reflective layer, the spacer layer being a layer of ZnS or SiO_2 or Si_3N_4 or a mixture of ZnS and SiO_2, wherein the reflective layer consists of an alloy of Ni—Cr and 2 to 30 at % of Au or Ag or Cu.

4. An information storage disk which has on a substrate a recording layer which reversibly causes an amorphous-crystal phase change under irradiation of light, a reflective layer comprising a metal layer for efficiently utilizing the irradiated light, and a spacer layer inserted between the recording layer and the reflective layer, the spacer layer being a layer of ZnS or SiO_2 or Si_3N_4 or a mixture of ZnS and SiO_2, wherein the reflective layer consists of an alloy of Cr and 10 to 30 at % of Au or Ag or Cu.

7. An information storage disk which has on a substrate a recording layer which reversibly causes an amorphous-crystal phase change under irradiation of light, a reflective layer comprising a metal layer for efficiently utilizing the irradiated light, and a spacer layer inserted between the recording layer and the reflective layer, the spacer layer being a layer of ZnS or SiO_2 or Si_3N_4 or a mixture of ZnS and SiO_2, wherein the reflective layer consists of an alloy of Ti and 5 to 30 at % of Au or Ag or Cu.

5,256,519

NUCLEATED HIGH CONTRAST PHOTOGRAPHIC ELEMENTS CONTAINING TETRAAZAINDENES WHICH INHIBIT PEPPER FOG

Anthony Adin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 2, 1992, Ser. No. 844,337

Int. Cl.[5] G03C *1/06*

U.S. Cl. 430—264 **19 Claims**

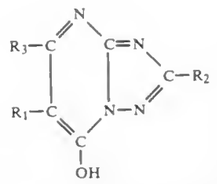
1. A silver halide photographic element adapted to form a high contrast image when developed with an aqueous alkaline developing solution; said element comprising:

(1) a hydrazine compound that functions as a nucleator,

(2) an amino compound that functions as an incorporated booster, and

(3) a tetraazaindene compound that functions as a pepper fog inhibitor, said tetraazaindene compound being a 2-substituted-4-hydroxy-1,3,3a,7-tetraazaindene of the formula:

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wherein R_1 is halogen, R_3 is hydrogen, halogen or alkyl and R_2 is alkyl of at least 7 carbon atoms or thioalkyl of at least 6 carbon atoms.

5,256,520

VISIBLE PHOTOSENSITIZERS FOR PHOTOPOLYMERIZABLE COMPOSITIONS

William K. Smothers, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 810,997, Dec. 20, 1991, Pat. No. 5,204,467. This application Nov. 10, 1992, Ser. No. 974,195

Int. Cl.[5] G03C *1/72;* **G03F** *7/031*

U.S. Cl. 430—281 **7 Claims**

1. A photopolymerizable composition comprising:

(1) at least one ethylenically unsaturated monomer capable of free radical initiated addition polymerization; and

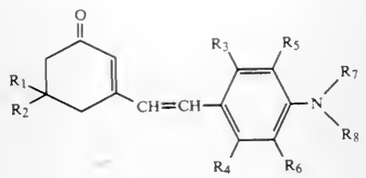
(2) a photoinitiator system, capable of being activated by actinic radiation, said photoinitiator system comprising:

(a) a hexaarylbisimidazole;

(b) a chain transfer agent;

(c) a sensitizer, said sensitizer selected from the group consisting of:

A



wherein:

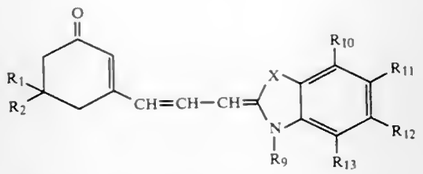
R_1 and R_2 are independently alkyl from 1 to 4 carbon atoms;

R_3 and R_4 are independently hydrogen, alkyl of 1 to 6 carbon atoms, or alkyloxyl of 1 to 6 carbon atoms;

R_5 is hydrogen or methyl and R_7 is alkyl from 1 to 6 carbon atoms, or (R_5+R_7) are $—(CH_2)_2—$ or $—(CH_2)_3—$;

R_6 is hydrogen or methyl and R8 is alkyl from 1 to 6 carbon atoms, or (R_6+R_8) are $—(CH_2)_2—$ or $—(CH_2)_3—$, with the proviso that (R_5+R_7) and (R_6+R_8) may not be $—(CH_2)_2—$ at the same time; and

B



wherein:

R_1 and R_2 are independently alkyl from 1 to 4 carbon atoms;

X is O, S, NR_{14}, or $CR_{15}R_{16}$, where R_{14}, R_{15}, and R_{16} are each an alkyl group of 1 to 6 carbon atoms or substituted or unsubstituted phenyl;

R_9 is a substituted or unsubstituted alkyl group of 1 to 7 carbon atoms or substituted or unsubstituted phenyl;

R_{10}, R_{11}, R_{12}, and R_{13} are each independently hydrogen, substituted or unsubstituted alkyl and alkyoxyl of 1 to 6 carbon atoms, halogen, or substituted or unsubstituted phenyl; or (R_{10} and R_{11}), (R_{11} and R_{12}), or (R_{12} and R_{13}) are joined to form a six-membered substituted or unsubstituted aromatic ring;

wherein said photoinitiator system is present in an amount sufficient to initiate polymerization of said monomer on exposure to actinic radiation.

5,256,521

PROCESS OF DEVELOPING A POSITIVE PATTERN IN AN O-QUINONE DIAZIDE PHOTORESIST CONTAINING A TRIS-(HYDROXYPHENYL) LOWER ALKANE COMPOUND SENSITIVITY ENHANCER

Tripunitbura V. Jayaraman, East Greenwich, R.I., assignor to OCG Microelectronic Materials, Inc., Cheshire, Conn.

Division of Ser. No. 409,221, Sep. 19, 1989, Pat. No. 5,215,856. This application Feb. 1, 1993, Ser. No. 11,572

Int. Cl.[5] G03F *7/30, 7/023*

U.S. Cl. 430—296 **6 Claims**

1. The process of developing an image-wise exposed photoresist-coated substrate comprising:

(a) coating said substrate with a radiation-sensitive composition useful as a photoresist, said composition comprising an admixture in a solvent of: at least one alkali-soluble binder resin, at least one o-quinonediazide photoactive compound and an effective sensitivity enhancing amount of at least one tris(hydroxyphenyl) lower alkane compound; the amount of said binder resin being about 60% to 95% by weight, the amount of said photoactive component being about 5% to about 40% of weight, based on the total solids content of said radiation-sensitive composition;

(b) subjecting said coating on said substrate to an image-wise exposure of radiant light energy; and

(c) subjecting said image-wise exposed coated substrate to a developing solution to remove the image-wise exposed areas and to form a positive image-wise pattern in the coating.

5,256,522

IMAGE REVERSAL NEGATIVE WORKING O-NAPHTHOQUINONE DIAZIDE AND CROSS-LINKING COMPOUND CONTAINING PHOTORESIST PROCESS WITH THERMAL CURING

Mark A. Spak, Edison; Donald Mammato, Lebanon, both of N.J.; Dana Durham, East Greenwich, R.I., and Sangya Jain, Bridgewater, N.J., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Continuation of Ser. No. 530,544, May 25, 1990, abandoned, which is a continuation-in-part of Ser. No. 268,639, Nov. 8, 1988, Pat. No. 4,929,536, which is a continuation of Ser. No. 895,609, Aug. 11, 1986, abandoned, which is a continuation-in-part of Ser. No. 889,032, Jul. 23, 1986, abandoned, which is a continuation-in-part of Ser. No. 764,700, Aug. 12, 1985, abandoned. This application Dec. 30, 1991, Ser. No. 815,645 The portion of the term of this patent subsequent to May 29, 2007, has been disclaimed.

Int. Cl.[5] G03F *7/30*

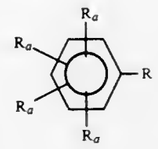
U.S. Cl. 430—325 **21 Claims**

13. A process for preparing and using a negative working photographic element which comprises in order:

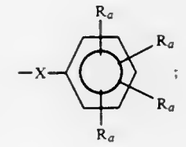
a) forming a composition which consists essentially of in admixture

i) from about 1% to about 25% based on the weight of the solid parts of the composition of a photosensitive compound represented by the general formulae (1), (2) or (3):

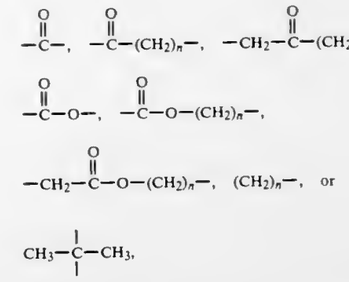
(1)



wherein R is H, $—X—R_b$ or

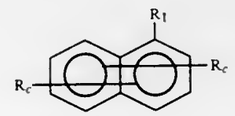


X is a single C—C bond, —O—, —S—, $—SO_2—$,

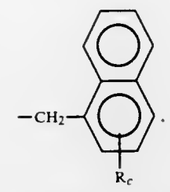


n is 1 or 2, R_a is H, —OH, —OY, —OZ, halogen or lower alkyl, with at least one R_a radical being —OY and at least one thereof being —OZ, R_b is H, alkyl, aryl, substituted alkyl, or substituted alkyl, or substituted aryl;

(2)

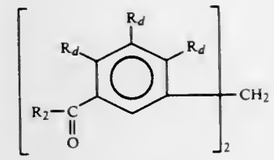


wherein R is H, or



Rc is H, —OH, —OY or —OZ, with at least one R_c radical being —OY and at least one thereof being —OZ; and

(3)



wherein R_2 is H, alkyl, aryl, substituted alkyl, or substituted aryl, R_d is —OH, —OY or —OZ with at least one R_d radical —OY and at least one thereof being —OZ; wherein Y is 1,2-naphthoquinonediazide-4-sulfonyl and Z is 1,2-naphthoquinonediazide-5-sulfonyl or $—W—R_3$, where W is



or $—SO_2—$, and R_3 is alkyl, aryl, substituted alkyl or substituted aryl;

ii) from about 75% to about 99% based on the weight of the solid parts of the composition of a novolak resin; and

iii) from about 0.5% to about 20% based on the weight of the solid parts of the composition of a crosslinking compound which, when in the presence of that amount and strength of the acid generated when said diazide is exposed to actinic radiation, is capable of crosslinking said resin under the application of the heating conditions of step (e), said crosslinking compound has the formula

$$(R_1O—CHR_3)_n—A—(CHR_4—OR_2)_m$$

wherein A has the formula B or B—Y—B, wherein B is a substituted or unsubstituted mononuclear or fused polynuclear aromatic hydrocarbon or a oxygen or sulfur containing heterocyclic compound, Y is a single bond, C_1-C_4-alkylene or -alkylenedioxy, the chains of which may be interrupted by oxygen atoms, —O—, —S—, $—SO_2—$, —CO—, CO_2, —CONH— or phenylenedioxy, R_1 and R_2 are H, C_1-C_6-alkyl, cycloalkyl, substituted or unsubstituted aryl, alkaryl or acyl; R_3, R_4 are independently H, C_1-C_4-alkyl or substituted or unsubstituted phenyl and n ranges from 1 to 3 and m ranges from 0–3, provided that n+m is greater than 1; and

iv) sufficient solvent to dissolve the foregoing composition components; and

b) coating said composition on a substrate; and

c) heating said coated substrate at a temperature of from about 20° C. to about 100° until substantially all of said solvent is dried off; and

d) imagewise exposing said composition to actinic, electron beam, ion beam or x-ray radiation; and

e) heating said coated substrate at a temperature of at least about 95° C. to about 160° C. for from about 10 seconds or more to crosslink said resin; then flood exposing the composition overall to actinic radiation in the range of from about 200 to about 500 nm in an amount sufficient to react said coating; and

f) removing the radiation unexposed non-image areas of said composition form step d) with a developer.

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5,256,523

PHOTOGRAPHIC ELEMENT AND PROCESS

Richard P. Szajewski, and Jerrold N. Poslusny, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 602,038, Oct. 23, 1990, abandoned, which is a continuation of Ser. No. 230,397, Aug. 10, 1988, abandoned. This application Jun. 17, 1991, Ser. No. 716,416

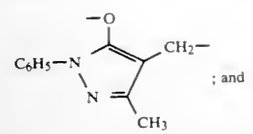
Int. Cl.[5] G03C 7/00

U.S. Cl. 430—362 16 Claims

1. A photographic element comprising a support and at least one silver halide emulsion layer having associated therewith at least one compound (I) having a carrier moiety (CAR) and a releasable development inhibitor (INH) capable of being released during photographic processing of the element by means of at least one timing group (T) bonded to and releasable from the carrier moiety,

wherein the releasable development inhibitor moiety (INH) comprises (R^1) a non-aromatic, sterically hindered substituent group having (a) a tertiary carbon atom bonded directly to the releasable development inhibitor moiety or (b) a secondary carbon atom bonded directly to the releasable development inhibitor wherein the secondary carbon atom is not part of an unsubstituted carbocyclic ring containing at least 6 carbon atoms;

wherein the timing group (T) is other than a pyrazolone group of the formula

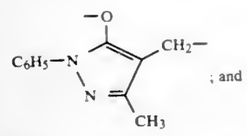


; and

wherein the combination of the timing group (T) and the development inhibitor (INH) enable increased acutance and interimage effects upon exposure and processing of the element.

13. A process of developing an image in an exposed photographic element comprising a support and at least one silver halide emulsion layer containing an imagewise distribution of developable silver halide grains, wherein the process comprises the step of developing the element with a silver halide color developing agent in the presence of at least one photographic coupler and at least one compound (I) having a carrier moiety (CAR) and a releasable development inhibitor (INH) capable of being released during photographic processing of the element by means of at least one timing group (T);

wherein the timing group (T) is other than a pyrazolone group of the formula



; and

wherein the releasable development inhibitor moiety (INH) comprises (R^1) a non-aromatic, sterically hindered substituent group having (a) a tertiary carbon atom bonded directly to the releasable development inhibitor moiety or (b) a secondary carbon atom bonded directly to the releasable development inhibitor moiety wherein the secondary carbon atom is not part of an unsubstituted carbocyclic ring containing at least 6 carbon atoms;

wherein the combination of timing group (T) and the development inhibitor moiety (INH) enable increased acutance and interimage effect upon processing of the element.

5,256,524

PROCESSING METHOD FOR SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Hiroshi Yoshimoto; Shigeharu Koboshi; Masao Ishikawa, and Mayumi Emoto, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Sep. 3, 1991, Ser. No. 753,873

Claims priority, application Japan, Sep. 5, 1990, 3-234776; Sep. 5, 1990, 3-234780; Sep. 7, 1990, 3-238025; Oct. 24, 1990, 3-286753; Oct. 24, 1990, 3-286754; Nov. 9, 1990, 3-302784; Nov. 22, 1990, 3-318839

Int. Cl.[5] G03C 7/40

U.S. Cl. 430—372 3 Claims

1. A processing method for a silver halide color photographic light-sensitive material comprising

(a) processing said material with a fixing solution,

(b) processing said material with a stabilizing solution having a pH of 7.5 to 10, and then about 270 ml to about 800 ml of the overflow from the said stabilizing solution are allowed to enter into said fixing solution and said stabilizer contains substantially no formaldehyde but contains a compound represented by Formula I or Formula II, wherein

said silver halide color photographic light-sensitive material comprising:

(I) a coupler represented by Formula 2eq-1,

(II) the total amount of silver coated in said silver halide color photographic light sensitive material is not less than 2 g per m^2 of said light-sensitive material; and

(III) a compound represented by Formula B-3;

Formula 2eq-1



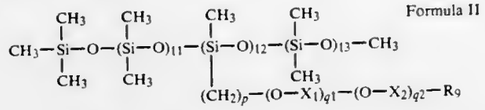
wherein Cp represents a coupler residue; • represents a coupler coupling site; X represents a group which splits off upon dye formation by coupling with the oxidation product of an aromatic primary amine based color developing agent;

Formula I

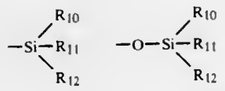
$$R_1—O—(R_2—O)_m—X_1$$

wherein R_1 represents a monovalent organic group, R_2 represents an ethylene group, a trimethylene group or a propylene group, m represents an integer of 4 to 50, X_1 represents a hydrogen atom, $—SO_3M$ or $—PO_3M_2$, wherein M represents a hydrogen atom, an alkali metal or an ammonium group:

Formula II

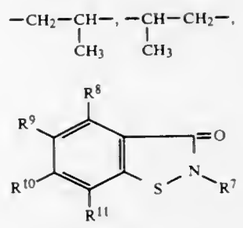


wherein R_9 represents a hydrogen atom, a hydroxyl group, a lower alkyl group, an alkoxyl group, or



R_{10}, R_{11}, and R_{12} independently represent a hydrogen atom or a lower alkyl group, whether identical or not; 11 through 13 independently represent an integer of 0 to 30; p, q^1 and q^2 independently represent an integer of 0 to 30;

X_1 and X_2 independently represent $—CH_2CH_2—$, $—CH_2CH_2CH_2—$,



Formula B-3

wherein R_7 represents a hydrogen atom, a halogen atom, an alkyl group, an aryl group, a halogenated alkyl group, an arylalkyl group, $—R^{15}—OR^{16}$, $—CONHR^{17}$, (where R^{15} represents an alkylene group, R_{16} and R_{17} each represent a hydrogen atom, or an alkyl group; and R_8, R_9, R_{10} and R_{11} each represent a hydrogen atom, a halogen atom, a hydroxyl group, an alkyl group, an amino group, or a nitro group.

5,256,525

BLOCKED INCORPORATED DEVELOPERS IN A PHOTOGRAPHIC ELEMENT

David T. Southby; Jared B. Mooberry; John Texter, and John L. Pawlak, all of Rochester, N.Y., assignors to Eastman Kodak Company

Filed Dec. 19, 1991, Ser. No. 810,944

Int. Cl.[5] G03C 5/30, 7/305, 7/388

U.S. Cl. 430—380 25 Claims

1. A photographic element comprising a support bearing at least one photographic silver halide emulsion layer and at least one non-photosensitive layer between said emulsion layer and said support, wherein said non-photosensitive layer comprises at least one blocked developing agent.

14. A process for developing an image in a photographic element comprising a support, a photographic silver halide emulsion layer containing an imagewise distribution of developable silver halide grains, and a non-photosensitive layer between said emulsion layer and said support containing at least one blocked developing agent, said process comprising the step of contacting said element with a processing solution comprising a nucleophile.

5,256,526

CYAN IMAGE FORMING METHOD AND SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL CONTAINING CYAN COUPLER

Makoto Suzuki; Tadahisa Sato; Kozo Sato; Yoshio Ishii; Hideaki Naruse, and Yasuhiro Shimada, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 29, 1991, Ser. No. 800,082

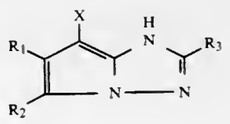
Claims priority, application Japan, Nov. 30, 1990, 2-334786; Aug. 13, 1991, 3-226325

Int. Cl.[5] G03C 7/38

U.S. Cl. 430—384 28 Claims

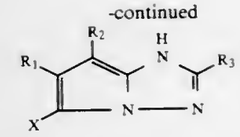
1. A silver halide color photographic material comprising a support having thereon at least one red-sensitive silver halide emulsion layer containing at least one 1H-pyrrolo[1,2-b][1,2,4]triazole cyan coupler represented by the following general formula (I) or (II):

(I)



-continued

(II)



wherein R_1 and R_2 each represents an electron withdrawing group having a Hammett's substituent constant σp value of 0.20 or more; R_1 and R_2 may be bonded to form a ring; the sum of a Hammett's substituent constant σp value of R_1 and R_2 is 0.65 or more; R_3 represents a hydrogen atom or a substituent; and X represents a hydrogen atom or a substituent capable of being released upon coupling with an oxidation product of an aromatic primary amine color developing agent; said coupler may be in a form of a bis-compound or a polymer formed at R_1, R_2, R_3 or X.

15. A cyan image forming method as claimed in claim 14, wherein the 1H-pyrrolo[1,2-b][1,2,4]triazole cyan coupler is incorporated in a color developing solution containing the aromatic primary amine color developing agent.

5,256,527

STABILIZATION OF PRECIPITATED DISPERSIONS OF HYDROPHOBIC COUPLERS

Krishnan Chari, and James T. Beck, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 544,720, Jun. 27, 1990, Pat. No. 5,087,544.

This application Sep. 9, 1991, Ser. No. 756,954

Int. Cl.[5] G03C 7/388

U.S. Cl. 430—449 4 Claims

1. A storage stable dispersion comprising at a pH of about 5.2, water, particles of a coupler having ballast comprising straight chain hydrocarbons of up to 15 carbon atoms, a surfactant comprising a head group of sulfate or sulfonate and having no oxyethylene groups, and a nonionic water soluble polymer that is attracted to said surfactant with the proviso that said dispersion has a concentration of at least 4% w/w coupler and a viscosity of less than 20 cp at a shear rate of 100 reciprocal seconds at 25° C.

5,256,528

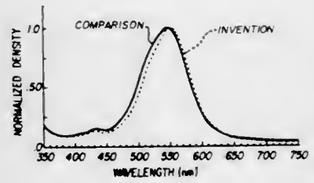
MAGENTA IMAGE-DYE COUPLERS OF IMPROVED HUE

Paul B. Merkel, Rochester; Stephen P. Singer, Spencerport, both of N.Y.; Bernard Arthur Clark, Maidenhead, England, and Paul Louis R. Stanley, Wealdstone, United Kingdom, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 23, 1992, Ser. No. 872,880

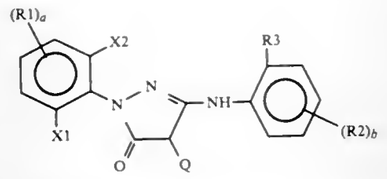
Int. Cl.[5] G03C 1/08, 7/26, 7/32

U.S. Cl. 430—555 17 Claims



1. A photographic material comprising a support bearing at least one photosensitive silver halide emulsion layer having associated therewith a magenta dye-forming coupler having the formula:

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wherein

(a) at least one of X1, X2 and R1 and at least one of R2 and R3 is a substituent individually selected from carbamoyl, alkoxycarbonyl, aryloxycarbonyl, sulfamoyl, alkylsulfonyl, arylsulfonyl, alkoxysulfonyl, aryloxysulfonyl, alkylsulfoxyl, arylsulfoxyl, acyloxy, cyano, nitro and trifluoromethyl;

(b) the substituents X1, X2, R1, R2 and R3 not selected from the (a) group may be selected from halogen, alkyl, alkoxy, aryloxy, acylamino, alkylthio, arylthio, sulfonamido, alkylureido, arylureido, alkoxycarbonylamino, and aryloxycarbonylamino, and in the case of R3 hydrogen;

(c) substituents R1 and R2 are para or meta to the carbon attached to the nitrogen atom;

(d) a and b are 1 to 3;

(e) Q is an alkylthio or arylthio coupling-off group.

5,256,529

SILVER HALIDE PHOTOGRAPHIC MATERIALS CONTAINING SULFONAMIDO-SOLUBILIZED PYRAZOLOTRIAZOLE COUPLERS

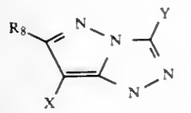
Robert F. Romanet; Hans G. Ling, and David Hoke, all of Rochester, N.Y., assignors to Eastman Kodak Company

Filed Jul. 27, 1992, Ser. No. 919,435

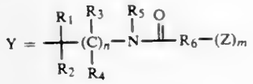
Int. Cl.[5] G03C *1/08, 7/26, 7/32*

U.S. Cl. 430—558 **27 Claims**

1. A photographic element comprising a support and a silver halide emulsion layer having associated therewith a magenta dye-forming coupler having the structure



wherein



and

R_1, R_2, R_3, and R_4 and R_5 are independently hydrogen, substituted or unsubstituted alkyl groups, or substituted or unsubstituted aryl groups;

n is 0, 1, 2, 3, or 4;

R_6 is a substituted or unsubstituted arylene or substituted or unsubstituted heterocyclic group;

Z is $—NHSO_2-R_7$;

R_7 is an n-alkyl group containing 1 to 4 carbon atoms, an unsubstituted phenyl or a phenyl substituted with neutral or electron withdrawing groups, or a heterocyclic group with may be unsubstituted of substituted with a neutral or electron withdrawing group;

m is 1 or 2, with the proviso that if m is 2 then the Z groups are present meta to each other;

R_8 is a substituted or unsubstituted alkyl group, or a substituted or unsubstituted aryl group, and

X is hydrogen, or a coupling off group which may include a photographically useful group.

5,256,530

PHOTOGRAPHIC SILVER HALIDE EMULSION CONTAINING CONTRAST IMPROVING GRAIN SURFACE MODIFIERS

Eric L. Bell, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 12, 1993, Ser. No. 3,184

Int. Cl.[5] G03C *1/035, 1/09*

U.S. Cl. 430—567 **14 Claims**

1. A photographic silver halide emulsion comprising silver halide grains having at least two grain surface, modifiers; wherein, the first of said grain surface modifiers is a transition metal complex containing a transition metal selected from Group VIII of the periodic table; and wherein the second grain surface modifier is a transition metal complex comprising a nitrosyl or thionitrosyl ligand and a transition metal chosen from Groups V to X, inclusive, of the periodic table.

5,256,531

PHOTOGRAPHIC PROCESSING COMPOSITION AND PROCESSING METHOD USING THE SAME

Hisashi Okada, and Shigeru Nakamura, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

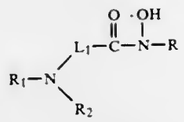
Continuation of Ser. No. 695,658, May 6, 1991. This application Jun. 25, 1992, Ser. No. 904,326

Claims priority, application Japan, May 9, 1990, 2-119250; May 18, 1990, 2-128588; Jul. 2, 1990, 2-175026

Int. Cl.[5] G03C *7/42*

U.S. Cl. 430—393 **20 Claims**

1. A photographic processing composition for processing an imagewise exposed silver halide color photographic material, said processing composition containing a metal chelate compound formed from a compound represented by formula (I) and a metal salt selected from the group consisting of the salts of Fe(III), Mn(III), Co(III), Rh(II), Rh(III), Au(III), Au(II) and Ce(IV) in an amount of from 0.05 to 1 mol/liter:



(I)

wherein R, R_1 and R_2 each represent a hydrogen atom, a substituted or unsubstituted alkyl group or a substituted or unsubstituted aryl group; and L_1 represents a substituted or unsubstituted alkylene group or a substituted or unsubstituted arylene group.

5,256,532

METHODS, REAGENTS AND TEST KITS FOR DETERMINATION OF SUBPOPULATIONS OF BIOLOGICAL ENTITIES

Meryle J. Melnicoff, Cherry Hill, N.J.; Katharine A. Muirhead, West Chester, and Paul K. Horan, Downingtown, both of Pa., assignors to Zynaxis Technologies, Inc., Malvern, Pa.

Continuation-in-part of Ser. No. 189,192, May 2, 1988, abandoned. This application May 1, 1989, Ser. No. 345,436

Int. Cl.[5] C12Q *1/70*

U.S. Cl. 435—5 **49 Claims**

1. A method for determining the presence or quantity of analyte selected from the group consisting of eucaryotic cells, procaryotic cells and viruses, having lipid-containing membranes and at least one characteristic determinant, in a test sample suspected of containing said analyte, comprising the steps of:

(i) coupling a detectable reproter substance non-selectively with said analyte in said test sample, said detectable reporter substance having a lipophilic moiety, which stably associates with said lip-containing membrane of said analyte;

(ii) contacting said test sample with a specific binding substance which binds specifically to said at least one characteristic determinant of said analyte, under conditions causing complex formation between said analyte and said specific binding substance;

(iii) after said coupling step and said contacting step, separating said test sample into a portion containing said complex and a portion substantially free of said complexs; and

(iv) detecting the occurrence of said reporter substance in one of said separated portions to provide an indication of the presence or quantity of said analyte having said at least one characterstic determinant in said test sample.

5,256,533

AS A PROBE OF SEROTONIN UPTAKE HARMALINE

B. Eric Jones, Huffman, and Dianna A. Redburn, Houston, both of Tex., assignors to Board of Regents, The University of Texas System

Filed Mar. 16, 1990, Ser. No. 494,727

Int. Cl.[5] C12Q *1/00;* **C12N** *13/00;* **G01N** *21/76*

U.S. Cl. 435—7.24 **2 Claims**

1. A method for evaluating a serotonin uptake system in mammalian platelet or monocyte tissue as a measure of specific harmaline fluorescence of serotonin uptake sites, the method comprising the steps of:

preincubating a control sample and a test sample of the platelet or monocyte tissue with an α-2 inhibitor;

adding harmaline to the preincubated test sample;

fluorescently imaging the control sample and the test sample to determine specific harmaline fluorescent localization at serotonin uptake sites; and

comparing the amount of fluorescence in the test tissue to the amount of fluorescence in the control tissue,

wherein the difference between the fluorescence in the control tissue and the test tissue is a measure of the serotonin uptake system of the mammalian platelet or monocyte tissue.

5,256,534

$CD4^+$, LATENTLY HIV-1-INFECTED HEMATOPOIETIC PROGENITOR CELLS

Salvatore T. Butera, Stone Mountain; Thomas M. Folks, Lithonia, both of Ga., and Victor L. Perez, Rio Piedras, Puerto Rico, assignors to the United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Aug. 9, 1991, Ser. No. 742,750

Int. Cl.[5] C12Q *1/70*

U.S. Cl. 435—5 **10 Claims**

1. A purified and isolated cell line which is derived from a hematopoietic cell and wherein the cells of said cell line are $CD4^+$ and comprise a latent HIV-1 provirus.

5,256,535

HYBRIDIZATION ASSAY AND MEANS TO BE USED IN THE ASSAY

Jyrki Ylikoski, Paimalantie 11, SF-20380 Turku; Pertti Hurskainen, Kuikankatu 15 A 20, SF-20760 Piispanristi; Patrik Dahlén, Rakuunatie 62 I 90, SF-20720 Turku; Christian Sund, Rieskalähteentie 33, SF-20300 Turku; Timo Lövgren, Valtaojantie 34, SF-20810 Turku, and Marek Kwjatkowski, Hämeenkatu 14 C 54, SF-20500 Turku, all of Finland

PCT No. PCT/SE87/00474, § 371 Date Jun. 16, 1988, § 102(e) Date Jun. 16, 1988, PCT Pub. No. WO88/02784, PCT Pub. Date Apr. 21, 1988

PCT Filed Oct. 16, 1987, Ser. No. 207,159

Claims priority, application Sweden, Oct. 17, 1986, 8604436

Int. Cl.[5] C12Q *1/68;* **G01N** *33/20, 33/533*

U.S. Cl. 435—6 **9 Claims**

1. A hybridization assay method for the detection of a nucleotide sequence of a nucleic acid in a sample, said method comprising the steps:

(i) contacting under hybridization conditions the single stranded form of the sample nucleotide sequence with a single stranded nucleic acid probe, wherein:

a) said probe has a nucleotide sequence complementary to the sequence to be detected,

b) said probe has a water-soluble polymer bearing a plurality of chelating structures covalently linked to said polymer, wherein said water-soluble polymer is of non-nucleic acid structure and is covalently linked to said nucleotide sequence complementary to the sequence to be detected, and

c) said probe has a plurality of rare earth metal ions that together with said chelating structures forms a plurality of chelate groups covalently bound to said water-soluble polymer, and said rare earth metal is selected from the group consisting of Eu^{3+}, Tb^{3+}, Sm^{3+}, and Dy^{3+}, wherein said probe and covalently bound chelate groups are stable under hybridization assay conditions:

(ii) allowing a nucleotide sequence to be detected in said sample and the nucleotide sequence of said probe to form a double stranded nucleic acid; and

(iii) detecting the formation of double stranded nucleic acid containing said probe by measuring the time-resolved fluorescence from the rare earth metal ions incorporated as a chelate in said double stranded nucleic acid.

5,256,536

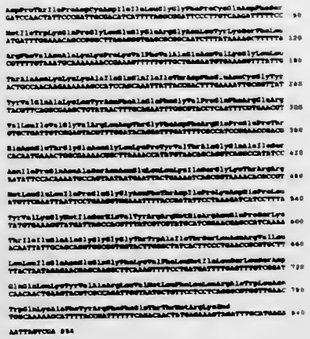
NUCLEOTIDE PROBE FOR *NEISSERIA GONRRHOEAE*

Charles G. Miyada, Mountain View, and Teresa L. Born, Los Angeles, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Nov. 9, 1990, Ser. No. 611,528

Int. Cl.[5] C12G *1/68;* **C12D** *12/34;* **C12Q** *1/10;* **C07M** *15/12*

U.S. Cl. 435—6 **60 Claims**



1. A sequence of nucleotides specific for *Neisseria gonorrhoeae* consisting essentially of about seventeen or more contiguous nucleotides of the sequence having the formula of FIG. 1 (SEQ ID NO:1) or its complement.

5,256,537

CULTURETTE SAFETY SLEEVE

Robert E. Phillips, Studio City, Calif.; David M. Mathis, El Paso, Tex.; Ray Edwards, Jr., El Paso, Tex., and Albert Lopez, El Paso, Tex., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Dec. 11, 1991, Ser. No. 806,940

Int. Cl.[5] G01N *33/569*

U.S. Cl. 435—7.1 **8 Claims**

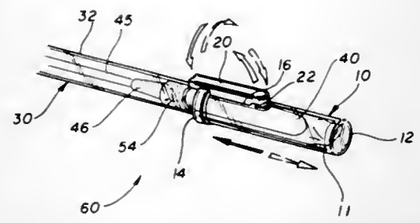
1. An apparatus for collecting and transporting biological specimens comprising:

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an elongated tubular housing extending from an open end to an opposite closed end;

a specimen collector comprising a cap, a shaft connected to said cap, and a swab connected to an end of said shaft opposite said cap, wherein said shaft and swab are adapted to lie within said tubular housing and said cap closes the open end of said tubular housing;

an ampoule containing a culture sustaining medium disposed within the closed end of said tubular housing;



a plug of absorbent material disposed within said tubular housing between said swab and said ampoule; and

a sleeve removably disposed on said closed end of said tubular housing comprising a tubular body member longitudinally extending from an open end to an opposite closed end extremity with a slot at said open end extremity and a lever movably attached to said slot by at least one flexible connection, whereby said lever when actuated provides appropriate pressure to said tubular housing to break said ampoule.

5,256,538

DETECTION OF EARLY PLATELET ACTIVATION AND PREDIAGNOSIS OF THROMBOTIC EVENTS

Martha L. Aiken, and Richard G. Painter, both of Tyler, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Filed Mar. 8, 1991, Ser. No. 668,272

Int. Cl.[5] C12O *1/00*

U.S. Cl. 435—7.9 **31 Claims**

1. A method for early identification of a thrombotic event in a patient consisting essentially of obtaining a blood sample from a patient and isolating the platelets therein; monitoring the thrombospondin on the resting platelets in the sample; and identifying an early thrombotic event in a patient with elevated resting platelet thrombospondin.

5,256,539

METHOD OF SCREENING FOR INFERTILITY OF SPERM

Richard A. Bronson, Huntington, N.Y., assignor to The Research Foundation of State University of New York, Albany, N.Y.

Filed Aug. 1, 1991, Ser. No. 740,042

Int. Cl.[5] C12Q *1/02*

U.S. Cl. 435—7.21 **10 Claims**

1. A method for detecting the presence of infertility in a mammaliam male test animal comprising:

potentiating a sample of spermatozoa obtained from said animal by subjecting it to conditions suitable for inducing capacitation of said sample; and

contacting said sample to at least one of a polyclonal and a monoclonal antibody to fibronectin for a sufficient period of time and under conditions suitable to permit binding of said antibody with said sample in order to determine the extent of antibody binding, wherein a relative increase in antibody binding is indicative of whether the sperm has undergone capacitation and wherein a lack of antibody binding is ndicative of the absence of fertility.

6. A method for detecting the inability of a sample of mammaliam spermatoxoa to undergo capacitation comprising:

potentiating a sample of spermatozoa obtained from said animal by subjecting it to conditions suitable for inducing capacitiation of said sample; and

contacting said sample to at least one of a polyclonal and a monoclonal antibody to fibronectin for a sufficient period of time and under conditions suitable to permit binding of said antibody with said sample in order to determine the extent of antibody binding, wherein a relative increase in antibody binding is indicative of whether the sperm has undergone capacitation and wherein a lack of binding is indicative of the absence of capacitation.

5,256,540

IMMUNOASSAY FOR SMALL CELL LUNG CARCINOMA

Vanda A. Lennon, Rochester; Edward H. Lambert, Minneapolis; Thomas Kryzer, and Guy E. Griesmann, both of Rochester, all of Minn., assignors to Mayo Foundation for Medical Education and Research, Rochester, Minn.

Filed Dec. 28, 1990, Ser. No. 636,066

Int. Cl.[5] C12Q *1/00;* **G01N** *33/53;* **C07K** *15/00*

U.S. Cl. 435—7.23 **6 Claims**

1. A method for detecting small cell lung carcinoma voltage-gated calcium channel antigen (SCC-VGCC antigen) in a sample of a human physiological fluid comprising:

(a) adding a preselected amount of an antibody specific for SCC-VGCC antigen to said sample of a human physiological fluid;

(b) adding a preselected amount of labelled SCC-VGCC antigen to said sample; so that steps (a) and (b) result in the formation of antigen-antibody complexes;

(c) precipitating the antibody-antigen complexes present in said sample with anti-immunoglobulin; and

(d) measuring the amount of label in said precipitate.

5,256,541

DETECTION OF SOLUBLE ALLOANTIGEN IMMUNE COMPLEXES

Philippe J. Pouletty, Atherton, and Chin-Hai Chang, Los Altos, both of Calif., assignors to SangStat Medical Corporation, Menlo Park, Calif.

Filed Nov. 6, 1991, Ser. No. 788,488

Int. Cl.[5] G01N *33/539, 33/543, 33/564*

U.S. Cl. 425—7.24 **5 Claims**

1. A method for detecting in a sample of a mixture of antibodies, an antibody that reacts with a selected soluble HLA antigen, said method comprising:

separating from said sample a fraction comprising a portion of said antibodies by means of adding a soluble immune complex precipitating agent to form a precipitate in said sample, said fraction being substantially free of the selected HLA antigen unassociated with antibody; and,

detecting the presence of said selected HLA antigen in said fraction;

wherein said presence of said selected HLA antigen correlates with the presence in said sample of said antibody which reacts with said selected HLA antigen.

5,256,542

SELECTING LOW FREQUENCY ANTIGEN-SPECIFIC SINGLE B LYMPHOCYTES WITH CORRECTION FOR BACKGROUND NOISE

Tse W. Chang, Houston, Tex., assignor to Tanox Biosystems, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 848,249, Mar. 9, 1992. This application Jun. 26, 1992, Ser. No. 905,040

The portion of the term of this patent subsequent to May 25, 2010, has been disclaimed.

Int. Cl.[5] G01N *21/64, 33/58, 33/536*

U.S. Cl. 435—7.24 **15 Claims**

1. A method of selecting antigen-specific B lymphocytes from a mixture of cells using a fluorescence activated cell sorting apparatus which has several channels, each of said channels capable of viewing a different fluorochrome, comprising:

a) labeling B lymphocytes in the mixture with at least two different antigen probes, wherein each of said probes comprises an antigen which binds the antibodies on the target B lymphocyte surface, said antigen conjugated with a fluorochrome wherein said fluorochromes yield different colors upon activation;

b) introducing an additional probe conjugated with an additional different fluorochrome, such probe being specific for cell populations which are not B lymphocytes wherein the additional fluorochrome adheres to and labels cells with a sticky cell membrane;

c) selecting B lymphocytes which are positive for the fluorochromes attached to the antigen probes, but eliminating and not selecting those cells which are positive for the additional fluorochrome, or which display a fluorescence level greater than a specified level in the channel in which the additional fluorochrome is viewed.

5,256,543

HLA TYPING

Philippe Pouletty, Atherton, and Peter Chun, South San Francisco, both of Calif., assignors to Sangstat Medical Corporation, Menlo Park, Calif.

Filed May 10, 1991, Ser. No. 698,319

Int. Cl.[5] G01N *33/543, 33/577*

U.S. Cl. 435—7.94 **17 Claims**

2. A method for determining the presence of soluble HLA-B27 in a physiological sample, said method comprising:

combining said physiological sample with a first binding moiety binding to HLA-B7, but having substantially no binding affinity to HLA-B27 and separating said sample from complexes formed with said binding moiety to provide an HLA-B7 depleted sample;

combining said HLA-B7 depleted sample with a second binding moiety cross-reactive with HLA-B7 an HLA-B27, but substantially not cross-reactive with other HLA, whereby complexes form between HLA-B27 present and said second binding moiety; and

determining the presence of said HLA-B27 by detecting the presence of HLA-B27 complexes with said second binding moiety.

5,256,544

MICROBIAL SOLUBILIZATION OF PHOSPHATE

Robert D. Rogers, and James H. Wolfram, both of Idaho Falls, Id., assignors to EG&G Idaho, Inc., Idaho Falls, Id.

Filed Jan. 27, 1992, Ser. No. 826,563

Int. Cl.[5] C12R *1/01, 1/645;* **C12P** *3/00, 39/00*

U.S. Cl. 435—42 **11 Claims**

1. A continuous bioprocess for separating insoluble phosphate from an ore body, the steps comprising:

(a) forming phosphate ore particles;

(b) forming an aqueous mixture which comprises (i) said phosphate ore particles formed in step (a), and (ii) an effective amount of microorganisms operable for separating said phosphate ore particles into soluble phosphate;

(c) maintaining continuously said aqueous mixture for a predetermined period of time under conditions of temperature and pressure and under an atmospheric environment, operable for solubilizing from said phosphate ore particles at least a major part of phosphate by the microbial activity of said microorganisms;

(d) separating said aqueous mixture into (i) an aqueous phase containing said soluble phosphate and which is substantially free of undissolved solids, and (ii) a slurry fraction which contains undissolved solids;

(e) separating said aqueous phase containing said soluble phosphate into (i) phosphate, and (ii) an aqueous solution containing an amount of said microorganisms.

5,256,545

STEROL REGULATORY ELEMENTS

Michael S. Brown; Joseph L. Goldstein; David W. Russell, and Thomas C. Sudhof, all of Dallas, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation of Ser. No. 33,332, Mar. 30, 1987, Pat. No. 4,935,363, and a continuation of Ser. No. 33,081, Mar. 30, 1987. This application Oct. 20, 1989, Ser. No. 425,852

The portion of the term of this patent subsequent to Jun. 19, 2007, has been disclaimed.

Int. Cl.[5] C12N *15/11, 15/63, 5/10*

U.S. Cl. 435—69.1 **24 Claims**

1. A substantially purified segment of DNA comprising a functionally translocatable sterol regulatory element capable of conferring sterol mediated regulation of structural gene transcription to a selected heterologous structural gene when located upstream from and proximal to a transcription initiation site of such a gene, provided that said segment is free of the structural gene ordinarily under the transcriptional control of said sterol regulatory element, the element including a nucleotide sequence selected from one of the following:

5′-C-A-C-C-C-C-A-C-3′

5′-C-A-C-A-C-C-A-C-3′

5′-C-A-C-C-G-C-A-C-3′

5′-C-A-C-C-C-T-A-C-3′

or the complement of such a sequence.

5,256,546

BACTERIAL EXPRESSION OF PORCINE GROWTH HORMONE

Haim Aviv; Marian Gorecki, both of Rehovot; Avigdor Levanon, Netania; Amos Oppenheim, Jerusalem; Tikva Vogel, Rehovot; Elisha Zeelon, Hashiva, and Menachem Zeevi, Ramat Gan, all of Israel, assignors to Bio-Technology General Corp., New York, N.Y.

Continuation of Ser. No. 388,010, Jul. 31, 1989, abandoned, which is a continuation of Ser. No. 821,830, Jan. 23, 1986, abandoned, which is a continuation-in-part of Ser. No. 514,188, Jul. 15, 1983, abandoned. This application Feb. 24, 1992, Ser. No. 840,579

The portion of the term of this patent subsequent to Jun. 30, 2009, has been disclaimed.

Int. Cl.[5] C12P *21/02;* **C12N** *15/18, 15/73, 15/03*

U.S. Cl. 435—69.4 **12 Claims**

1. A plasmid for production of met porcine growth hormone or met-asp-gln porcine growth hormone which upon introduction into an *Escherichia coli* host cell containing the thermolabile repressor C_I renders the host cell capable, upon increasing the temperature of the host cell to a temperature at which the repressor is inactivated, of effecting expression of DNA encoding the met porcine growth hormone or met-asp-gln procine growth hormone, such expression resulting in the production of the met porcine growth hormone or met-asp-gln procine growth hormone, the plasmid comprising a double-stranded DNA molecule which comprises in 5′ to 3′ order the following:

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1) a DNA sequence which contains the promotor and operator P_LO_L from λ bacteriophage;
(2) an N utilization site for binding antiterminator N protein produced by the *Escherichia coli* host cell;
3) a DNA sequence containing the mutant C_{II} ribosomal binding site from λ bacteriophage having the sequence:

TAAGGAAGTACTTACAT

ATTCCTTCATGAATGTA;

4) an ATG initiation codon;
5) DNA encoding the met porcine growth hormone or met-asp-gln procine growth hormone;
and which additionally includes a DNA sequence which contains an origin of replication from the bacterial plasmid pBR322 capable of autonomous replication in the *Escherichia coli* host cell and a DNA sequence which contains a gene encodir·g a selectable or identifiable phenotypic trait which is manifested when the plasmid is present in the host cell.

5,256,547

PROCESS FOR MAKING AND ISOLATING CYCLOSPORIN A BY FERMENTATION

Wolf-Ruediger Rudat, Dresden; Ernst-Joachim Bormann, Jena, and Guenter Arnold, Weimar, all of Fed. Rep. of Germany, assignors to Arzneimittel Dresden GmbH, Radebeul, Fed. Rep. of Germany

Filed Apr. 22, 1991, Ser. No. 689,157
Int. Cl.[5] C12P *21/00, 21/04;* C12R *1/645*
U.S. Cl. 435—71.1 16 Claims

1. Method of fermentative production and isolation of Cyclosporin A by aerobic fermentation of a fungus microorganism in a medium containing a salt and a nitrogen-containing substrate, comprising the steps of:
a. using a producer strain selected from the group consisting of Wb 6-5 of *Tolypocladium inflatum,* IMET 43 899, *Sesquicilliopsis rosariensis* G.ARNOLD, IMET 43 888, *Sesquicilliopsis rosariensis* G.ARNOLD F 605, IMET 43 887, mutants thereof and strains obtained therefrom by selection;
b. culturing said producer strain in a culture medium containing an ammonium salt as a single source of nitrogen;
c. after the culturing step b), mixing the culture medium with a filter aid to form a suspension;
d. after said mixing step c), filtering the suspension to form a filter cake containing moist biomass and filter aid;
e. drying the filter cake after the filtering;
f. after the drying step e), extracting the filter cake with an extraction means to form an extract;
g. distributing the extract between aqueous methanol solution and petroleum ether to remove fats and form a purified extract; and
h. chromatographing the purified extract by preparative HPLC using a member selected from the group consisting of silica gel and aluminum oxide to obtain the cyclosporin A.

5,256,548

ANTIVIRAL ANTIBIOTIC BU-4344V

Masahisa Oka, Yokabama; Koji Tomita, Tokyo; Osamu Tenmyo, Yokohama, and Nobuaki Naruse, Chiba, all of Japan, assignors to Bristol-Myers Squibb Company, New York, N.Y.

Division of Ser. No. 616,518, Nov. 21, 1990, Pat. No. 5,140,101.
This application Apr. 27, 1992, Ser. No. 874,775
Int. Cl.[5] C12P *21/04;* C12R *1/03;* C07K *7/54;* C12N *1/12*
U.S. Cl. 435—71.3 2 Claims

1. A biologically pure culture of the microorganism *Actinomadura parvosata* subsp. kistnae ATCC No. 55076, which is capable of producing the antiviral antibiotic BU-4344V in a recoverable quantity upon cultivation in a culture medium containing assimilable sources of carbon and nitrogen under submerged aerobic conditions.

5,256,549

PURIFICATION OF SYNTHETIC OLIGOMERS

Michael S. Urdea, Alamo, and Thomas Horn, Berkeley, both of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Continuation of Ser. No. 229,475, Aug. 3, 1988, abandoned, which is a continuation-in-part of Ser. No. 891,789, Jul. 30, 1986, abandoned, which is a continuation-in-part of Ser. No. 845,290, Mar. 28, 1986, abandoned. This application Apr. 27, 1990, Ser. No. 517,526
Int. Cl.[5] C12P *19/34;* C07K *1/04, 1/06, 1/14*
U.S. Cl. 435—91 29 Claims

1. In a method for preparing a polynucleotide containing a plurality of nucleotide monomers in a preselected order, in which (a) an individual terminal hydroxyl-blocked, O- and N-protected nucleotide monomer is added to available terminal hydroxyl groups on a fraction of a plurality of identical support-bound growing oligonucleotide chains, (b) terminal hydroxyl groups on the remaining fraction of growing oligonucleotide chains to which nucleotide monomer did not add and which chains thus constitute failure sequences, are capped with a capping group, (c) the terminal hydroxyl blocking group is selectively removed from the added terminal hydroxyl-blocked nucleotide monomer, steps (a), (b) and (c) are repeated serially until the last nucleotide in the preselected order has been added, and synthesis of the desired polynucleotide sequence is complete, and (d) thereafter the polynucleotide is cleaved from the support, the improvement which comprises:
employing as the terminal hydroxyl blocking group, a group which (a) is retained when removing the capping group and (b) prevents enzymatic hydrolysis of the completed polynucleotide;
employing as the capping group for capping the failure sequences, a group which is selectively removable while retaining the terminal hydroxyl blocking group;
after the last repetition of step (a), wherein the last terminal hydroxyl-blocked nucleotide monomer is added, removing the capping group, thereby forming decapped failure sequence oligonucleotides and terminal hydroxyl-blocked polynucleotide bound to the support;
contacting the decapped failure sequence oligonucleotides and terminal hydroxyl-blocked polynucleotide bound to the support with an enzyme capable of hydrolyzing the decapped failure sequence oligonucleotides under conditions effective to degrade the decapped failure sequence oligonucleotides and give rise to a support having substantially pure terminally blocked polynucleotide bound thereto; and
removing the terminal blocking group and directly cleaving the polynucleotide in substantially pure form from the support.

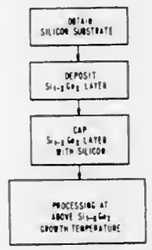
18. In a method for preparing and purifying polypeptides employing terminal blocked amino acids, where the polypeptide is prepared by the sequential addition of terminally blocked O-, S- and N-protected amino acids, where the growing polypeptide is bound to a support through a selectively cleavable linkage, each sequential addition followed by removal of the terminal blocking group and the addition of the next amino acid, where after the final amino acid addition, the terminal blocking group and any protective groups are removed and the polypeptide cleaved from the support;
the improvement which comprises:
prior to each sequential addition, capping terminal groups which are not blocked with a capping group which may be selectively removed while retaining the terminal blocking group and linkage to the support;
after the last monomer addition, removing capping groups and any enzymatic hydrolysis interfering protective groups, while retaining the linkage to the support; and
enzymatically hydrolyzing polypeptides lacking a terminal blocking group, prior to removal of the terminal blocking group and cleavage from the support.

5,256,550

FABRICATING A SEMICONDUCTOR DEVICE WITH STRAINED $SI_{1-x}GE_x$ LAYER

Stephen Laderman, Menlo Park; Martin Scott, San Francisco; Theodore I. Kamins, Palo Alto; Judy L. Hoyt, Palo Alto; Clifford A. King, Palo Alto; James F. Gibbons, Palo Alto, and David B. Noble, Sunnyvale, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 344,634, Apr. 27, 1989, abandoned, which is a continuation-in-part of Ser. No. 277,593, Nov. 29, 1988. This application Jun. 12, 1991, Ser. No. 715,054
Int. Cl.[5] H01L *21/205*
U.S. Cl. 437—106 18 Claims



1. A method of fabricating a device having at least one heteroepitaxial layer under strain, wherein processing of the device subsequent to growth of the heteroepitaxial layer is done at temperatures higher than the growth temperature of said heteroepitaxial layer and wherein the thickness of the strained heteroepitaxial layer is more than two times the equilibrium critical thickness for an uncapped heteroepitaxial layer upon a crystalline substrate, calculated from equilibrium theory for the uncapped layer, the method comprising the steps of:
(a) providing a first crystalline substrate layer that comprises silicon;
(b) forming a second heteroepitaxial layer upon the surface of the first crystalline layer, where the second layer is comprised of a material selected from the group consisting of silicon-germanium, gallium-arsenide, germaniumtin, indium-phosphide and indium-antimonide;
(c) providing the second layer with oxygen atoms of concentration approximately 10^{20} cm^{-3};
(d) forming a thin third crystalline layer, which comprises silicon, upon the surface of the second heteroepitaxial layer so that the third layer substantially continuously binds to the crystal structure of the second heteroepitaxial layer while the second heteroepitaxial layer remains under strain; and
(e) subsequently processing the resultant structure at temperatures higher than the growth temperature of the second heteroepitaxial layer;
whereby the presence of the third crystalline layer prevents substantial formation of misfit dislocations at the interface between the first crystalline layer and the second heteroepitaxial layer which would occur in the absence of the third crystalline layer.

5,256,551

METHOD OF TREATING MICROORGANISM CELLS CONTAINING TRYPTOPHANASE OR TREATED PRODUCT THEREOF

Masato Terasawa; Mitsunobu Shimazu; Fuzio Endo, and Hideaki Yukawa, all of Ami, Japan, assignors to Research Association for Utilization of Light Oil, Tokyo, Japan

Continuation of Ser. No. 177,945, Apr. 5, 1988, abandoned. This application Jul. 17, 1991, Ser. No. 731,309
Claims priority, application Japan, Apr. 8, 1987, 62-84627
Int. Cl.[5] C12P *13/22;* C12N *1/04, 1/20*
U.S. Cl. 435—108 11 Claims

10. A method of producing L-tryptophan by reacting indole, pyruvic acid or its salt, and ammonia or ammonium ion in the presence of *Escherichia coli* selected from the group consisting of *Escherichia coli* K-12 YK-3002, *Escherichia coli* K-12 YK3003, *Escherichia coli* ATCC 27325, *Escherichia coli* ATCC 25019 and *Escherichia coli* IFO 3301, and harvesting L-tryptophan from the reaction mixture, wherein said *Escherichia coli* has been subjected to heat-treatment at a temperature of 50° to 70° C. in the presence of ammonium ion at a concentration of 100 to 10,000 mg/liter.

5,256,552

PROCESS FOR THE PRODUCTION OF OPTICALLY ACTIVE 2-HYDROXY-4-PHENYLBUTYRIC ACID

Akinobu Matsuyama; Teruyuki Nikaido, and Yoshinori Kobayashi, all of Niigata, Japan, assignors to Daicel Chemical Industries, Ltd., Japan

Continuation of Ser. No. 415,324, Sep. 21, 1989, abandoned. This application Jul. 17, 1992, Ser. No. 913,990
Claims priority, application Japan, Feb. 8, 1988, 63-25738; Apr. 28, 1988, 63-105893; Apr. 28, 1988, 63-105894
Int. Cl.[5] C12P *7/42, 41/00;* C12R *1/465, 1/245*
U.S. Cl. 435—146 9 Claims

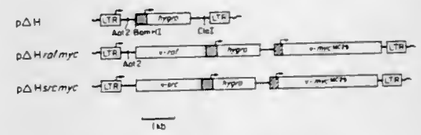
1. A process for the production of optically active 2-hydroxy-4-phenylbutyric acid which comprises treating 2-oxo-4-phenylbutyric acid with a microorganism, which has been optionally treated, capable of asymmetrically reducing 2-oxo-4-phenylbutyric acid into either (R)-2-hydroxy-4-phenylbutyric acid or (S)-2-hydroxy-4-phenylbutyric acid, said treatment of 2-oxo-4-phenylbutyric acid being conducted in a medium containing as a source of nitrogen at least one of the substances selected from the group consisting of ammonium salts of inorganic acids, ammonium fumarate, ammonium citrate, ammonium salts of an organic acid, meat extract, yeast extract, corn steep liquor, casein hydrolysate, and urea, and collecting the (R)-2-hydroxy-4-phenylbutyric acid or (S)-2-hydroxy-4-phenylbutyric acid thus formed.

5,256,553

MULTIPLE PROMOTER TRANSFORMING RETROVIRAL VECTORS

Robert W. Overell, Seattle, Wash., assignor to Immunex Corporation, Seattle, Wash.

Continuation of Ser. No. 554,160, Jul. 16, 1990, abandoned, which is a continuation of Ser. No. 107,126, Oct. 9, 1987, abandoned. This application Oct. 8, 1991, Ser. No. 772,637
Int. Cl.[5] C12N *15/86, 5/10, 7/01, 15/48*
U.S. Cl. 435—172.2 17 Claims



1. A recombinant DNA provirus comprising:
(a) retroviral long terminal repeat sequences, LTR, including a 5' LTR comprising a transcriptional control sequence tcs1 and additional elements enabling integration of the provirus into cellular DNA of the host cell, and a 3' LTR;
(b) a second transcriptional control sequence tcs2;
(c) a third transcriptional control sequence tcs3;
(d) a first viral or cellular oncogene onc1;
(e) a second viral or cellular oncogene onc2; and
(f) a heterologous DNA sequence het;
wherein onc1 and onc2 are different and onc1, onc2, and het are operably linked to tcs1, tcs2, and tcs3 such that expression of each of the DNA sequences onc1, onc2 and het in a host cell stably transformed as a result of infection with a retrovirus harboring RNA transcribed from said DNA

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provirus is activated by an independent transcriptional control sequence without deletion or rearrangement of proviral DNA; and

wherein tsc2 and tcs3 are internal transcriptional control sequences located between the 5'LTR and the 3'LTR.

5,256,554

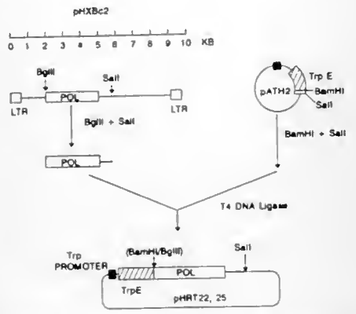
EXPRESSION OF HUMAN IMMUNODEFICIENCY VIRUS (HIV) REVERSE TRANSCRIPTASE

Stephen P. Goff, Tenafly, N.J.; Naoko Tanese, New York, N.Y., and William A. Haseltine, Cambridge, Mass., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y. and The Dana Farber Cancer Institute, Boston, Mass.

Continuation of Ser. No. 552,848, Jul. 12, 1990, abandoned, which is a continuation of Ser. No. 865,156, May 20, 1986, abandoned. This application Dec. 2, 1991, Ser. No. 800,682

Int. Cl.[5] C12N *9/00, 15/49*

U.S. Cl. 435—183 **1 Claim**



1. A method for producing a polypeptide having HTLV-III reverse transcriptase activity, the activity being higher in the presence of Mg^{++} than in the presence of Mn^{++}, which comprises (a) growing *E. coli* host cells containing a plasmid designated pHRT25 (ATCC Accession No. 67117), which plasmid consists essentially of DNA encoding the polypeptide under the control of the trp promoter, and about half of the trp E gene, in minimal medium, (b) starving for tryptophan, (c) exposing the cells so starved to indoleacrylic acid so as to derepress the trp promoter and thereby permit expression of the polypeptide in the cells, and (d) recovering the polypeptide from the cells.

5,256,555

COMPOSITIONS AND METHODS FOR INCREASING THE YIELDS OF IN VITRO RNA TRANSCRIPTION AND OTHER POLYNUCLEOTIDE SYNTHETIC REACTIONS

Susan C. Milburn, Austin; Marianna Goldrick, Pflugerville, and Matthew Winkler, Austin, all of Tex., assignors to Ambion, Inc., Austin, Tex.

Filed Dec. 20, 1991, Ser. No. 810,968

Int. Cl.[5] C12N *9/14;* **C07H** *15/12*

U.S. Cl. 435—195 **9 Claims**

1. A reaction mixture comprising:

(a) a total nucleotide concentration of greater than 16 mM;

(b) a molar concentration of Mg^{++} that is not more than 10% greater than the total molar nucleotide concentration; and

(c) inorganic pyrophosphatase.

5,256,556

PROCESS FOR OBTAINING INVERTASE FROM YEAST

Helmut Hustedt; Kay Büntemeyer; Karl-Heinz Kroner, and Bernhard Börner, all of Braunschweig, Fed. Rep. of Germany, assignors to Gesellschaft fur Biotechnologische Forschung GmbH (GBF), Braunschweig, Fed. Rep. of Germany

PCT No. PCT/EP90/00757, § 371 Date Aug. 13, 1990, § 102(e) Date Aug. 13, 1990, PCT Pub. No. WO90/13636, PCT Pub. Date Nov. 15, 1990

PCT Filed May 10, 1990, Ser. No. 573,222

Claims priority, application Fed. Rep. of Germany, May 12, 1989, 3915616

Int. Cl.[5] C12N *9/26*

U.S. Cl. 435—201 **4 Claims**

1. In a process for obtaining invertase from yeast, in which the yeast cells are disrupted to produce a disrupted cell suspension, the disrupted cell suspension is adjusted to an acidic pH, and denatured undesired proteins are removed with cell detritus, and then the invertase is isolated, the improvement which comprises subjecting the disrupted cell suspension prior to removing undesired proteins and cell detritus, at a pH of less than 4.5 to a heat treatment in a continuous thermal denaturation system at a temperature in a range of from 44° C. to about 51° C.

5,256,557

PURIFIED ALKALINE PROTEASE CONCENTRATE AND METHOD OF PREPARATION

Jayarama K. Shetty, Elkhart; Chimanbhai P. Patel, Mishawaka, both of Ind., and Mary A. Nicholson, Portazi, Mich., assignors to Solvay Enzymes, Inc., Houston, Tex.

Filed Dec. 27, 1991, Ser. No. 813,705

Int. Cl.[5] C12N *9/56, 9/54*

U.S. Cl. 435—222 **8 Claims**

1. A method for the isolation of highly purified alkaline protease from a fermentation broth, wherein said alkaline protease is derived from either *Bacillus licheniformis* or *Bacillus alcalophilus*, comprising:

(i) forming an alkaline protease solution by separating the alkaline protease from cells and suspended solids in said fermentation broth;

(ii) concentrating said alkaline protease solution;

(iii) adding to said concentrated alkaline protease solution hydrolytic enzymes capable of hydrolyzing starch and pectins and sodium chloride in an amount effective to precipitate said alkaline protease;

(iv) incubating the mixture to separate said alkaline protease from hydrolyzed polymeric impurities and dissociate said alkaline protease from pigments, at a temperature of at least 20° C. and for a time effective to precipitate said alkaline protease; and

(v) collecting a purified alkaline protease precipitate;

wherein said alkaline protease defines a galactosyl polymer content of less than 1.00 mg/g of enzyme protein.

5,256,558

GENE ENCODING PLANT ASPARAGINE SYNTHETASE

Gloria M. Coruzzi, and Fong-Ying Tsai, both of New York, N.Y., assignors to The Trustees of Rockefeller University, New York, N.Y.

Continuation-in-part of Ser. No. 347,302, May 3, 1989, abandoned. This application Apr. 26, 1990, Ser. No. 514,816

Int. Cl.[5] C12N *5/10, 1/19, 1/21, 15/52*

U.S. Cl. 435—240.1 **33 Claims**

12. A cultured cell containing a recombinant nucleotide sequence encoding plant asparagine synthetase which is capable of selectively hybridizing to the nucleotide sequence of

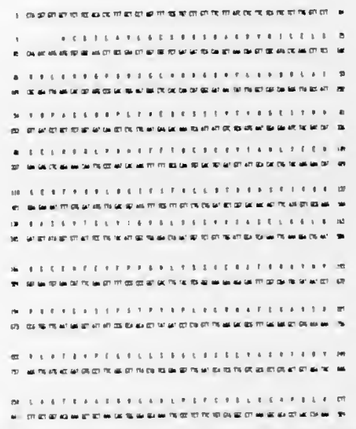


FIG. 2*a* or 2*b*, or which encodes substantially the same amino acid sequence of FIG. 2*a* or 2*b*.

5,256,559

METHODS AND COMPOSITIONS FOR INHIBITING PLATELET AGGREGATION

John M. Maraganore, Tewksbury, Mass., and Joseph A. Jakubowski, Indianapolis, Ind., assignors to Biogen, Inc., Cambridge and Trustees of Boston University, Boston, both of Mass.

Continuation of Ser. No. 314,755, Feb. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 280,618, Dec. 5, 1988, abandoned, which is a continuation-in-part of Ser. No. 251,150, Sep. 29, 1988, abandoned, which is a continuation-in-part of Ser. No. 164,178, Mar. 4, 1988, abandoned. This application Mar. 27, 1991, Ser. No. 677,609

Int. Cl.[5] C12N *5/06;* **A61K** *37/02, 39/395;* **C07K** *7/06*

U.S. Cl. 435—240.2 **16 Claims**

1. A method for inhibiting platelet aggregation in stored platelets comprisnig the step of storing platelets in the presence of a composition comprising:

(a) a pharmaceutically effective amount of a peptide sufficient to inhibit platelet aggregation in stored platelets, said peptide consisting of the formula: Y-Phe-Glu-Glu-Ile-Pro-Glu-Glu-Tyr-Z, or D-retro forms of said peptide; wherein Y is selected from the group consisting of H, an amino protecting group, Asp, any sequential portion of the amino acid sequence: Val-Thr-Gly-Glu-Gly-Thr-Pro-Lys-Pro-Gln-Ser-His-Asn-Asp-Gly-Asp, said sequential portion comprising at least two C-terminal amino acids of said amino acid sequence; and any sequential portion of the amino acid sequence: Val-Thr-Gly-Glu-Gly-Thr-Pro-Asn-Pro-Glu-Ser-His-Asn-Asn-Gly-Asp, said sequential portion comprising at least two C-terminal amino acids of said amino acid sequence; Z is selected from the group consisting of OH, Leu and Leu-Gln; and the tyrosine residue contains a negatively charged side group; and

(b) a pharmaceutically acceptable carrier.

15. The method according to claim 1, wherien said composition additionally comprises a pharmaceutically effective amount of a compuond sufficient to inhibit platelet aggregation in stored platelets, said compound being selected from the group consisting of metal chelaters, prostaglandins, theophylline, small peptide platelet inhibitors, inhibitors of platelet surface components, antibodies against platelet surface components, analogs thereof which display antiplatelet activity and combinations thereof.

5,256,560

PRIMITIVE CELL COLONY STIMULATING FACTORS AND LYMPHOHEMATOPOIETIC PROGENITOR CELLS

Michael J. P. Lawman, Gainsville, Fla.; Helle B. Ohmann; Samuel K. Attah-Poku, and Janette Heise-Qualtiere, all of Saskatchewan, Canada, assignors to University of Saskatchewan, Saskatoon, Canada

Continuation of Ser. No. 255,088, Oct. 7, 1988, abandoned. This application Mar. 27, 1991, Ser. No. 677,617

Int. Cl.[5] C12N *5/00, 5/02*

U.S. Cl. 435—240.2 **8 Claims**

1. A suspension of mammalian, non-murine, non-human cells comprised of pluripotent lymphohematopoietic non-adherent progenitor stem cells (NA cells) substantially free of mature lymphoid and myeloid cells wherein said NA cells

(a) are capable of producing PC-CSF;

(b) substantially lack T cell specific antigens, MHC class II antigens, macrophage/monocyte markers and B cell markers; and

(c) are not induced to differentiate in vitro into cells of the lymphoid or myeloid series with gamma-interferon, alpha-interferon, alpha-tumor necrosis factor, or interleukin 2.

2. A suspension of pluripotent lymphohematopoietic non-adherent progenitor stem cells (NA cells) derived from a human, wherein said NA cells

(a) are not immunologically reactive with a monoclonal antibody directed against My10 antigen, said monoclonal antibody being produced by hybridoma cell line ATCC Accession No. HB-8483;

(b) are capable of producing PC-CSF;

(c) substantially lack T cell specific antigens, MHC class II antigens, macrophage/monocyte markers and B cell markers; and

(d) are not induced to differentiate in vitro into cells of the lymphoid or myeloid series with gamma-interferon, alpha-interferon, alpha-tumor necrosis factor, or interleukin 2.

5,256,561

MONOCLONAL ANTIBODY TO HIV-2 AND USES THEREOF

Jade Chin, Edison, N.J., assignor to Abbott Laboratories, Abbott Park, Ill.

Filed Dec. 20, 1991, Ser. No. 811,592

Int. Cl.[5] C07K *15/28;* **C12N** *5/20*

U.S. Cl. 435—240.27 **2 Claims**

1. A monoclonal antibody that specifically binds to HIV-2 gp36 antigen and does not bind to HIV-1 antigens, which is secreted by the cell line A.T.C.C. Deposit No. HB 10908.

5,256,562

METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE USING A CIRCUIT TRANSFER FILM

Duy-Phach Vu, Taunton; Brenda D. Dingle; Jason E. Dingle, both of Mansfield, and Ngwe Cheong, Boston, all of Mass., assignors to Kopin Corporation, Taunton, Mass.

Continuation-in-part of Ser. No. 874,588, Apr. 24, 1992, which is a continuation-in-part of Ser. No. 834,849, Feb. 13, 1992, which is a continuation-in-part of Ser. No. 636,602, Dec. 31, 1990, Pat. No. 5,206,749, and a continuation-in-part of Ser. No. 643,552, Jan. 18, 1991. This application Nov. 4, 1992, Ser. No. 970,675

Int. Cl.[5] H01L *21/20, 21/22, 21/304, 21/52*

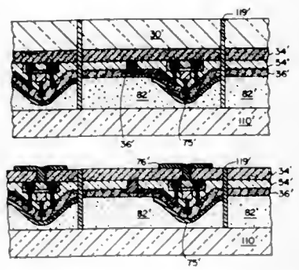
U.S. Cl. 437—86 **16 Claims**

11. The process of forming transistors and pixel electrodes for an active matrix liquid display comprising the steps of:

a) forming a plurality of transistors in a first semiconductor film formed on a first substrate;

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b) dividing the substrate into circuit tiles and transferring said tiles to a common body;



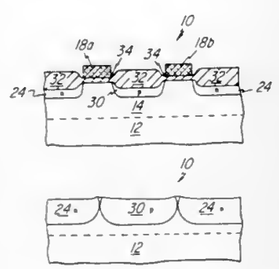
c) removing the substrates from the tiles leaving the transistors on the body;
d) forming electrodes on the tiles adjacent the transistors.

5,256,563

DOPED WELL STRUCTURE AND METHOD FOR SEMICONDUCTOR TECHNOLOGIES

Mehrdad M. Moslehi, and John W. Kuehne, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 16, 1992, Ser. No. 869,423
Int. Cl.[5] H01R *21/22*; H01L *21/302*
U.S. Cl. 437—152 **19 Claims**



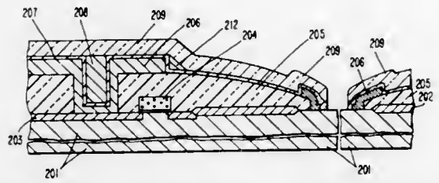
1. A method of forming a doped well in a semiconductor layer comprising the steps of:
forming a first doped well region in said semiconductor layer adjacent a separation region;
forming a resist layer over a portion of said semiconductor layer including said first doped well region and said separation region;
forming a second doped well region in said semiconductor layer and aligned with said resist layer, said second doped well region spaced from said first doped well region by said separation region;
removing said resist layer;
forming an oxide layer over said first and second doped well regions but not over said separation region such that an upper surface of said separation region comprises an exposed semiconductor surface; and
heating said semiconductor layer in a nitridizing environment such that dopants in said doped well region diffuse vertically at a higher rate than said dopants diffuse laterally.

5,256,564

METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICE HAVING A CONTACT STRUCTURE

Kaoru Narita, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 22, 1992, Ser. No. 886,938
Claims priority, application Japan, May 24, 1991, 3-149534
Int. Cl.[5] H01L *21/44*
U.S. Cl. 437—195 **16 Claims**



1. A method of manufacturing a contact structure, comprising the steps of:
forming an insulating film on a conductive member;
providing a contact hole in said insulating film to expose a portion of said conductive member through said contact hole;
forming a wiring layer continuously covering a side surface of said contact hole, said conductive member exposed through said contact hole and a surface portion of said insulating film;
forming a first passivation film on said wiring layer;
burying at least a space in said contact hole surrounded by said first passivation film and painting said first passivation film with a solution containing base material of a soft material;
removing a portion of said solution containing base material of said soft material on a scribing line of a substrate by lithography;
heat-treating said solution containing base material of said soft material to harden and convert it into said soft material;
selectively removing said soft material except a portion thereof hardened within said contact hole; and
forming a second passivation film on said first passivation film and on said soft material burying said space in said contact hole.

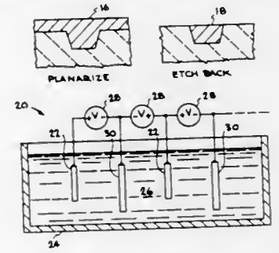
5,256,565

ELECTROCHEMICAL PLANARIZATION

Anthony F. Bernhardt, Berkeley, and Robert J. Contolini, Pleasanton, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 8, 1989, Ser. No. 348,982
Int. Cl.[5] H01L *21/465*
U.S. Cl. 437—228 **12 Claims**

1. Method of forming a planarized thin film metal interconnect in a dielectric layer on a substrate, comprising:
forming a trench or via in the dielectric layer for the metal interconnect;
forming on the dielectric layer a metal layer with a substantially flat surface which fills the trench or via without voids and extends substantially flat over the surface overlying both the trench or via and the surrounding dielectric layer by substantially isotropically depositing by electroplating or electroless plating on the dielectric layer a metal layer in sufficient depth to create said flat surface;



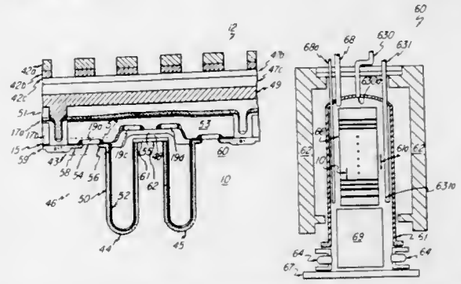
etching back by electropolishing the flat metal layer to the dielectric layer to form a substantially flat surface of metal embedded in and flush with the dielectric layer.

5,256,566

METHOD FOR IN-SITU DOPING OF DEPOSITED SILICON

Dane E. Bailey, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 8, 1991, Ser. No. 697,635
The portion of the term of this patent subsequent to Oct. 31, 2006, has been disclaimed.
Int. Cl.[5] H01L *21/469, 21/223*
U.S. Cl. 437—233 **17 Claims**



1. A method of forming a layer of doped silicon, comprising the steps of:
heating a reaction chamber to a temperature of 540–570 degrees centigrade;
evacuating the reaction chamber to a pressure of 200–200 mTorr; and
introducing a ratio of dopant source/silane of about 0.0008 into the reaction chamber.

5,256,567

Patent Not Issued For This Number

5,256,568

VECTORS AND TRANSFORMED MOST CELLS FOR RECOMBINANT PROTEIN PRODUCTION WITH REDUCED EXPRESSION OF SELECTABLE MARKERS

Nikos Panayotatos, Orangebourg, N.Y., assignor to Regeneron Phamaceuticals, Inc., Tarrytown, N.Y.

Filed Feb. 12, 1990, Ser. No. 478,338
Int. Cl.[5] C12N *1/21, 15/70, 15/01, 15/31*
U.S. Cl. 435—252.33 **54 Claims**

38. *Escherichia coli* W3110lacI[q] containing plasmid pV1k1, as deposited with the NRRL and assigned accession number B-18600.

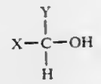
5,256,569

TRANSESTERIFICATION PROCESS FOR OTEREOSELECTION OF ENANTIOMERS OF SECONDARY ALCOHOLS USING PSEUDOMONAS LIPASE WITH NO ADDED SOLVENT

Naoyuki Yoshida, Kamakura, and Hiroshi Morita, Yokohama, both of Japan, assignors to Chisso Corporation, Osaka, Japan

Continuation of Ser. No. 609,108, Nov. 2, 1990, abandoned, which is a continuation of Ser. No. 517,531, May 1, 1990, abandoned, which is a continuation of Ser. No. 3,284, Jan. 14, 1987, abandoned. This application Aug. 24, 1992, Ser. No. 931,418
Claims priority, application Japan, Jan. 21, 1986, 61-8997
Int. Cl.[5] C12P *41/00, 7/62*
U.S. Cl. 435—280 **4 Claims**

1. A process for producing an optically active alcohol using a lipase powder from Pseudomonas genus, which consists of mixing (a) an (R,S)-alcohol of the formula:



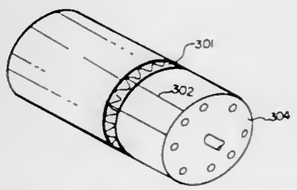
wherein X is an alkyl group of 2–20 carbon atoms, Y is an alkyl group of 1–3 carbon atoms, CF_3, or CN, and X and Y are different, with (b) a triglyceride and (c) said lipase powder and allowing said (R,S) alcohol and said triglyceride to react in the presence of the said lipase powder under substantially anhydrous conditions and resolving the resulting mixture to obtain an optically active alcohol or ester which is enriched in either the R-or S-configuration.

5,256,570

BIOREACTOR CONFIGURED FOR VARIOUS PERMEABLE CELL SUPPORTS AND CULTURE MEDIA

Robert A. Clyde, P.O. Box 740644, New Orleans, La. 70174

Filed Oct. 20, 1992, Ser. No. 964,071
Int. Cl.[5] C12M *3/04*
U.S. Cl. 435—285 **5 Claims**



1. A bioreactor configured for various permeable cell supports and culture media, comprising:
a jacket having first and second ends, said jacket configured to form a somewhat cylindrical interior, said interior having an internal diameter;
liquid infusion means for infusing liquid into said jacket;
oxygen infusion means for infusing oxygen into said jacket;
a generally cylindrically configured infusion rotation unit containing a corrugated sheet media having drain holes formed therein, said infusion rotation unit having an outer diameter slightly less than the internal diameter of said jacket, said infusion rotation unit further including support means to support said corrugated sheet media in place.

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5,256,571
CELL PRESERVATIVE SOLUTION

Anne A. Hurley, Carver; Daniel C. Lapen, Lancaster, botb of Mass., and Peter S. Oud, Bennebroek, Netherlands, assignors to Cytyc Corporation, Marlboro, Mass.

Filed May 1, 1991, Ser. No. 694,452
Int. Cl.[5] G01N *31/00;* A01N *1/02*
U.S. Cl. 436—17 15 Claims

1. An aqueous alcohol-buffer solution for maintaining the structural integrity of mammalian cells in vitro, said solution comprising

A. a water-miscible alcohol in an amount sufficient to fix mammalian cells,

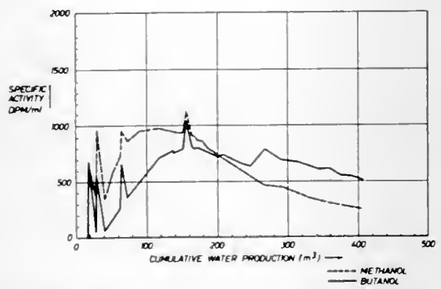
B. an anti-clumping agent in an amount sufficient to prevent the mammalian cells from clumping in said solution, and

C. a buffering agent which maintains said solution, with the mammalian cells, at a pH range of between about two to about seven.

5,256,572
METHOD FOR DETERMINING RESIDUAL OIL SATURATION OF A WATERED-OUT RESERVOIR

Joseph S. Tang; Kelvin N. Wood, and Harold G. Taylor, all of Calgary, Canada, assignors to Exxon Production Research Company, Houston, Tex.

Filed Jun. 6, 1991, Ser. No. 711,285
Int. Cl.[5] G01N *33/24, 33/26*
U.S. Cl. 436—27 8 Claims



1. A method for determining residual oil saturation of a watered-out reservoir, comprising:

(a) selecting at least two tracers from the group consisting of alcohols, ketones, aldehydes, water and oil insoluble inorganic and organic radioactive isotopes such that said tracers are tritiated or carbon **14** tagged and such that the partition coefficient, K1, of a first tracer is lower than the partition coefficient, K2, of a second tracer, and

ti K1•So/Sw<5.0 and

$$0.2<K2\cdot So/Sw<5.0 \text{ and}$$

$$1.2<\{1+K2\cdot So/Sw\}/\{1+K1\cdot So/Sw\}$$

where Si is oil saturation and Sw is water saturation;

(b) injecting into an injector well a mixture comprising at least said tracers;

(c) producing said mixture from a production well in communication with said injection well;

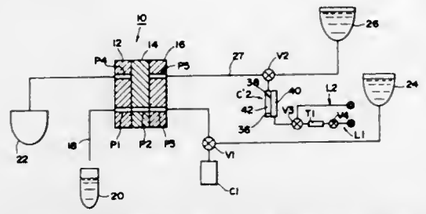
(d) collecting samples of said produced mixture; and

(e) analyzing said samples for the presence of said tracers to correlate the presence of said tracers and to determine residual oil saturation.

5,256,573
METHOD FOR DILUTING AND MIXING LIQUID SPECIMEN

Toshiaki Kuroda, Takasagoshi, and Hiroyuki Inoue, Kakogawashi, both of Japan, assignors to Toa Medical Electrooics Co., Ltd., Kobe, Japan

Filed Jan. 21, 1992, Ser. No. 822,896
Claims priority, application Japan, Apr. 24, 1991, 3-122553; Aug. 9, 1991, 3-224615
Int. Cl.[5] G01N *1/10, 1/18*
U.S. Cl. 436—179 1 Claim



1. A method for diluting and mixing a liquid specimen for preparing a mixed solution of the liquid specimen and a reagent at a specific ratio, using a sampling valve, the method comprising the steps of:

shifting the sampling valve to a suction mode and aspirating a specific volume of liquid specimen into the sampling valve;

shifting the sampling valve to a delivery mode; and

discharging the liquid specimen from the sampling valve by an initial pulse of a predetermined reagent volume until the liquid specimen is out of the sampling valve and thereafter by a further pulse, wherein the flow rate associated with the further pulse is greater than the flow rate associated with the initial pulse.

5,256,574
METHOD FOR SELECTIVE DETECTION OF LIQUID PHASE HYDROCARBONS

Glen G. Neuburger, Jackson, and Paul C. Warren, Far Hills, both of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Division of Ser. No. 584,894, Sep. 20, 1990, which is a continuation-in-part of Ser. No. 371,542, Jun. 26, 1989, abandoned. This application Apr. 10, 1992, Ser. No. 866,615
Int. Cl.[5] G01N *27/12*
U.S. Cl. 436—143 1 Claim

1. A method for selectively distinguishing the presence of the liquid phase of a hydrocarbon in an environment containing the vapor phase of said hydrocarbon, said method comprising:

a) providing a sensor consisting essentially of a normally electrically conductive blend of a silicone polymer and a high structure carbon black of fine particle size, said carbon black being present in an amount ranging from 10–30 weight percent based on the weight of said blend;

b) determining the electrical resistivity of said sensor when in contact with said hydrocarbon vapor phase;

c) determining the electrical resistivity of said sensor when in contact with said hydrocarbon liquid phase;

d) disposing said sensor in said environment in a manner which will ensure contact with any liquid phase of said hydrocarbon that may enter said environment;

e) monitoring the electrical resistivity of said sensor; and

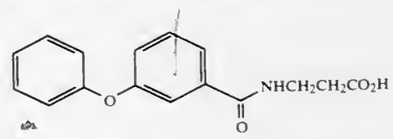
f) signaling the presence of said hydrocarbon liquid phase when the electrical resistivity of said sensor increases to a preselected threshold level intermediate said vapor phase and liquid phase resistivities.

5,256,575
GEMINAL DIPHENYL DERIVATIVES AND THEIR USE IN IMMUNOASSAYS

Mae W. Hu, Los Altos Hills; Kirk Schulkamp; Cheng-I Lin, both of San Jose, and Edwin F. Ullman, Atherton, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 289,998, Dec. 22, 1988, Pat. No. 5,063,165. This application Sep. 4, 1991, Ser. No. 755,203
Int. Cl.[5] G01N *33/566, 33/53*
U.S. Cl. 436—501 1 Claim

1. A kit for conducting an assay for an analyte comprising in packaged combination (a) a compound of the formula:

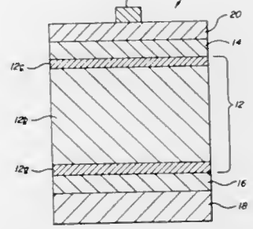


and (b) reagents for conducting said assay wherein said reagents include an antibody capable of binding said analyte but not said compound.

5,256,576
METHOD OF MAKING PIN JUNCTION SEMICONDUCTOR DEVICE WITH RF DEPOSITED INTRINSIC BUFFER LAYER

Subhendu Guha; Chi C. Yang, both of Troy, and Arindam Banerjee, Madison Heights, all of Mich., assignors to United Solar Systems Corporation, Troy, Mich.

Filed Feb. 14, 1992, Ser. No. 836,225
Int. Cl.[5] H01L *31/18, 31/075*
U.S. Cl. 437—4 12 Claims



1. A method of making an improved semiconductor device of the type having a junction between a layer of intrinsic semiconductor material and a layer of doped semiconductor material, said method including the steps of:

providing a deposition apparatus;

disposing a substrate in said apparatus;

introducing a first intrinsic semiconductor precursor gas into the apparatus for depositing an intrinsic semiconductor material having a first band gap;

introducing microwave energy into the apparatus, said energy operative to form a first plasma form, and decompose, said intrinsic semiconductor precursor gas so as to deposit a base layer of intrinsic semiconductor material of a first band gap on the substrate;

introducing a second intrinsic semiconductor precursor gas into the apparatus for depositing an intrinsic semiconductor material having a second band gap which is greater than said first band gap;

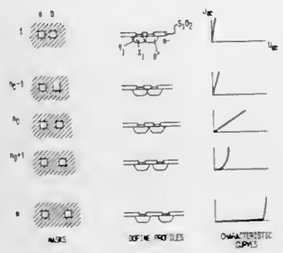
introducing radio frequency energy into the apparatus, said radio frequency energy operative to form a second plasma from, and decompose, said second intrinsic semiconductor precursor gas so as to deposit a first buffer layer of intrinsic semiconductor material on the base layer, said first buffer layer having a band gap which is greater than the band gap of said base layer; and

depositing a layer of doped semiconductor material on said first buffer layer of intrinsic semiconductor material.

5,256,577
PROCESS FOR DETERMINING THE POSITION OF A P-N TRANSITION

Christian Pluntke, Hechingen; Christoph Thienel, Reutlingen, and Volkmar Denner, Pfullingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 2, 1992, Ser. No. 853,768
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1989, 3942861
Int. Cl.[5] H01L *21/66*
U.S. Cl. 437—8 9 Claims



1. Method of determining the lateral and vertical depth of penetration of tubs made in the semiconductor material by indiffusion of a dopant, respectively forming a p-n junction against the semiconductor material, in the case of semiconductor devices produced by planar technology, a mask with windows being formed on the semiconductor material and the dopant for forming the tubs being diffused in through the windows in the semiconductor material and, furthermore, at the same time as the indiffusion of the said tubs, a test pattern being incorporated in the semiconductor material, characterised in that the test pattern contains N pairs of further tubs, formed by the same dopant, and N pairs of windows, through which the dopant for forming the further tubs is introduced and which are arranged such that the spacing of the two windows of a pair increases from pair to pair, so that in the first pair (n=1) there is the smallest spacing and in the last pair (n=N) there is the greatest spacing, in that the spacing of the pairs of windows is chosen such that the tubs produced in the planar process overlap in the first pair of windows (n=1) and are separate from each other in the last pair of windows (n=N), so that in between there lies a pair of windows ($n=n_o$) in which the two tubs are approximately still just touching, in that, after producing the p-n junction, the current-voltage characteristic is measured by contacting in the windows of in each case one pair and, with the aid of this measurement, that pair of windows ($n=n_o$) in which the tubs are still just touching is established, and in that from this the lateral depth of penetration (Y_j) is established as half the spacing (d) of the windows of the pair ($n=n_o$)

$$Y_j = \frac{d}{2}$$

and from this the vertical depth of penetration (X_j) is established by means of the relationship

$$X_j = C \cdot Y_j$$

where C describes the relationship between the lateral depth of penetration (Y_j) and the vertical depth of penetration (X_j), in which method, in the resistance measurement for establishing the pair of windows ($n=n_o$), the current-voltage relationship

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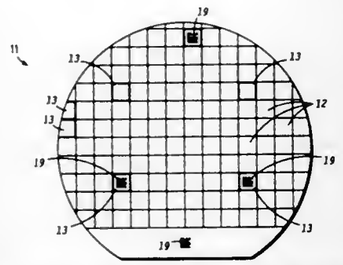
of the pairs of windows is analysed, the tubs overlapping, or touching in pairs of windows ($n \leqq n_o$) having relatively small spacings and, as a result, there is a resistance behaviour with a linear current-voltage relationship, and the conducting connection between the tubs in pairs of windows ($n > n_o$) having relatively great spacings only being possible by punch-through of the space-charge zone of the blocking p-n junction to the other tub, with a non-linear current-voltage relationship, so that the transition from the linear to the non-linear current-voltage relationship determines the pair of windows ($n = n_o$).

5,256,578

INTEGRAL SEMICONDUCTOR WAFER MAP RECORDING

Dean Corley, Tempe, and Hugh W. Littlebury, Chandler, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 23, 1991, Ser. No. 812,344
Int. Cl.[5] H01L 21/66
U.S. Cl. 437—8 8 Claims



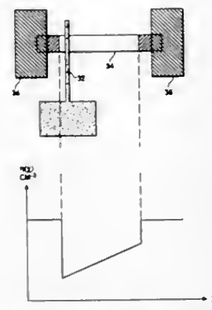
1. A method for integral semiconductor wafer map recording, comprising:
providing a semiconductor wafer;
fabricating a plurality of active die and a plurality of inactive die on a surface of the semiconductor wafer;
testing the active die;
summarizing the results of the testing in a wafer map;
compressing the wafer map to produce a binary code; and
recording the binary code by laser scribing within at least one of the inactive die.

5,256,579

TUNABLE-FREQUENCY GUNN DIODES FABRICATION WITH FOCUSED ION BEAMS

Henri Lezec, and Khalid Ismail, both of Cambridge, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Apr. 3, 1989, Ser. No. 332,695
Int. Cl.[5] H01L 21/265
U.S. Cl. 437—22 39 Claims



3. A method of making a planar Gunn diode capable of continuous wave oscillations in the transit-time mode of operation, such method comprising steps of:
a. providing a semiconductor substrate terminated at a first location by a cathode electrode and terminated at a second location by an anode electrode;
b. implanting in the semiconductor substrate ions of an impurity using an ion beam; and
c. annealing the semiconductor for a suitable time and at a suitable temperature whereby at least some of the implanted ions are activated to form charge carriers in the device.

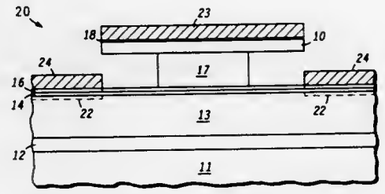
26. A method of making a planar Gunn diode capable of frequency-tunable and continuous-wave oscillations in the transit-time mode of operation, such method comprising the steps of:
a. providing a semiconductor substrate terminated at a first location by a cathode electrode and terminated at a second location by an anode electrode;
b. selecting, for the semiconductor substrate, a doping profile having a doping concentration which varies as a function of the distance from the first location;
c. implanting in the semiconductor substrate ions of an impurity by using a focused ion beam, such that the concentration of the implanted ions varies along a path between the first location and the second location according to the selected doping profile; and
d. annealing the semiconductor for a suitable time and at a suitable temperature whereby at least some of the implanted ions are activated to form the charge carriers of the device.

5,256,580

METHOD OF FORMING A LIGHT EMITTING DIODE

Craig A. Gaw; Ronald W. Slocumb, both of Scottsdale, and Curtis D. Moyer, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 6, 1992, Ser. No. 864,101
Int. Cl.[5] H01L 21/20, 21/265
U.S. Cl. 437—23 20 Claims



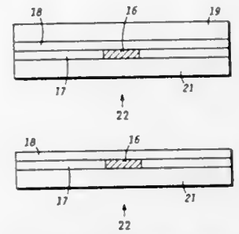
14. A method of making an optical semiconductor device comprising:
providing a III-V compound substrate having an injection layer on the substrate, a cladding layer on the injection layer, a contact layer on the cladding layer wherein the contact layer is a material that is not etched by hydrofluoric acid (HF), and a sacrificial layer on the contact layer;
removing exposed portions of the sacrificial layer, underlying portions of the contact layer, and an amount of the cladding layer;
doping exposed portions of the optical semiconductor device with a P-type dopant; and
removing the sacrificial layer by etching the sacrificial layer while simultaneously etching exposed portions of the cladding layer thereby forming a "T" shaped structure wherein the contact layer forms a cross member of the "T" structure and the cladding layer forms a pedestal supporting the cross member.

5,256,581

SILICON FILM WITH IMPROVED THICKNESS CONTROL

Juergen A. Foerstner, Mesa; Henry G. Hughes, and Frank S. D'Aragona, both of Scottsdale, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 28, 1991, Ser. No. 751,001
Int. Cl.[5] H01L 21/306, 21/84
U.S. Cl. 437—24 7 Claims



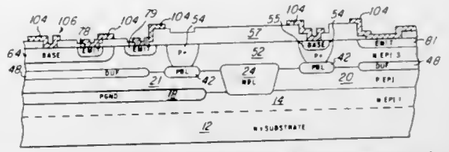
1. A method of fabricating a silicon film with improved thickness control, comprising:
providing an active wafer of silicon material;
implanting the active wafer with hydrogen ions to produce a layer of n-type silicon having a precisely controlled thickness;
providing a handle wafer having at least one oxidized surface;
bonding the n-type silicon layer to the oxidized surface of the handle wafer using a temperature of 200 degrees Celsius;
etching the active wafer to the boundary of the n-type layer; and
annealing the n-type silicon layer to drive out the hydrogen ions, leaving a silicon film on top of a silicon dioxide insulating layer.

5,256,582

METHOD OF FORMING COMPLEMENTARY BIPOLAR AND MOS TRANSISTOR HAVING POWER AND LOGIC STRUCTURES ON THE SAME INTEGRATED CIRCUIT SUBSTRATE

Dan M. Mosher; Cornelia H. Blanton; Joe R. Trogolo, all of Plano; Larry Latham, Garland; David R. Cotton, and Bob Todd, both of Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 671,625, Mar. 19, 1991, abandoned, which is a continuation of Ser. No. 561,490, Aug. 1, 1990, abandoned, which is a continuation of Ser. No. 309,515, Feb. 10, 1989, abandoned. This application Nov. 27, 1991, Ser. No. 800,869
Int. Cl.[5] H01L 21/00, 21/02, 21/22, 21/26
U.S. Cl. 437—31 1 Claim



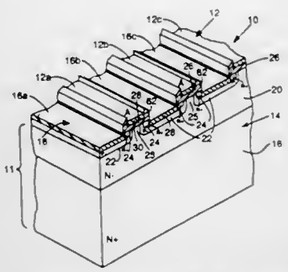
1. The method for manufacturing a semiconductor integrated device, comprising the steps of:
providing a semiconductor substrate of a first impurity conductivity type;
forming a first semiconductor layer of said first impurity conductivity type over said semiconductor substrate;
forming a second semiconductor layer of a second impurity conductivity type over said first semiconductor layer;
forming a third semiconductor layer of said first impurity conductivity type over said second semiconductor layer;
forming a first buried region of said second conductivity type between said semiconductor substrate and said third semiconductor layer;
forming a second buried region of said second conductivity type between said semiconductor substrate and said second semiconductor layer;
forming a first set of isolation regions corresponding to said first buried region, said set including first and second pillars extending between and contacting a surface of said third semiconductor layer and said first buried layer,
said pillars defining an area for formation of a bipolar transistor;
forming a second set of isolation regions corresponding to said second buried region, said set including third and fourth pillars extending between and contacting a surface of said third semiconductor layer and said second semiconductor layer, said pillars defining an area for formation of a field effect transistor;
forming a third buried region of said second conductivity type between said second and third semiconductor layers between said second set of isolation regions;
forming a lightly doped impurity region of said conductivity type extending between and contacting a surface of said third semiconductor layer and said third buried region;
forming emitter, base and collector regions corresponding to said bipolar transistor;
forming source and drain regions of said second conductivity type within said second set of isolation regions for forming a field effect transistor of said second conductivity type; and
forming source and drain regions of said first conductivity type within said lightly doped impurity region for forming a field effect transistor of said first conductivity type.

5,256,583

MASK SURROGATE SEMICONDUCTOR PROCESS WITH POLYSILICON GATE PROTECTION

Theodore G. Hollinger, Redmond, Oreg., assignor to Advanced Power Technology, Inc., Bend, Oreg.

Division of Ser. No. 467,947, Jan. 22, 1990, Pat. No. 5,089,434, which is a division of Ser. No. 194,874, May 17, 1988, Pat. No. 4,895,810, which is a continuation-in-part of Ser. No. 842,771, Mar. 21, 1986, Pat. No. 4,748,103. This application Jan. 7, 1992, Ser. No. 817,867
The portion of the term of this patent subsequent to Feb. 18, 2009, has been disclaimed.
Int. Cl.[5] H01L 21/70
U.S. Cl. 437—41 10 Claims



1. A method, employing no more than one independent mask to form a mask-surrogate pattern definer, of producing a field-effect power MOS semiconductor device in a substrate structure including a gate oxide layer on an upper surface of a semiconductor substrate, the method comprising:
forming a dopant protective layer over the gate oxide layer;

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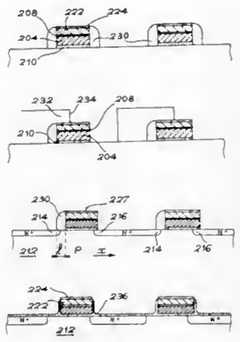
masking and patterning the dopant protective layer to form a mask-surrogate pattern-definer having a defined outline characteristic so that the pattern-definer protects an underlying gate oxide region and a first portion of the upper surface of the substrate;
selectively removing a portion of the dopant protective layer and of the oxide layer to expose a second portion of the upper surface of the substrate within a region defined by the defined outline characteristic;
performing a first doping step to introduce first dopant into said exposed second upper surface portion of the substrate so as to form a first region of a first conductivity type, defining a MOS body region, said first region extending to an extent under a peripheral edge of the protective layer;
performing a second doping step to introduce second dopant into said exposed second upper surface portion so as to form a second region of a second conductivity type, opposite the first conductivity type, defining a MOS source region;
said second MOS region being wholly contained in said first MOS region and not extending to said extent along the upper surface of the substrate, thereby to define a MOS channel beneath said gate oxide region;
the dopant protective layer including a dopant opaque polysilicon layer of a sufficient thickness to prevent the introduced dopants from penetrating the underlying gate oxide region, the polysilicon layer having an exposed upper surface; reducing the thickness of the polysilicon layer; and
depositing a conductive material layer to form a gate conductive layer over the gate oxide region without a second masking step.

5,256,584

METHOD FOR PRODUCING A NON-VOLATILE MEMORY CELL USING SPACERS

Joël Hartmann, Claix, France, assignor to Commissariat A L'Energie Atomique, France

Filed May 22, 1992, Ser. No. 877,082
Claims priority, application France, Jun. 7, 1991, 91 06944
Int. Cl.[5] H01L *21/266*
U.S. Cl. 437—43 **10 Claims**



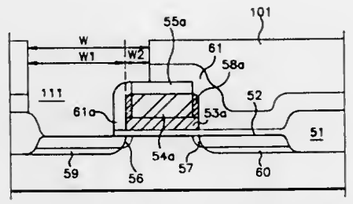
1. Method for producing a non-volatile memory cell on a semiconductive substrate with a given type of conductivity and comprising :
a) - a matrix of memory points electrically isolated from one another and each provided with a stacking of one floating gate and one control gate, both gates electrically isolated from each other, one gate nonconductor inserted between the floating gate and the substrate, one source and one drain both formed in the substrate on both sides of the stacking, one channel situated under the floating gate and having a length orientated along a direction extending from the source to the drain, and one access transistor connected in series to the stacking of gates,
b) - lines of words constituted by conductive strips parallel to this direction, this method including the following stages :
1) - embodying on the substrate a stacking of one electric nonconductive film and one conductive film respectively intended to form the gate nonconductors and the floating gates,
2) - etching of this stacking of films so as to form the strips of said stacking, said strips being perpendicular to said direction,
3) - embodying of spacing strips on the flanks of the strips of said stacking made of a nonconducting material able to be selectively etched with respect to the conductive film of the stacking and to the substrate,
4) - elimination of the spacing strips on the side of the drains to be embodied,
5) - implantation of ions with a type of conductivity differing from that of the substrate by using the remaining spacing strips and the strips of said stacking as a mask so as to form the sources and drains of the transistors, respectively offset and aligned with respect to the strips of said stacking,
6) elimination of the remaining spacing strips,
7) formation of a thin electric nonconductive film on the sources and drains of the transistors and on the strips of said stacking,
8) - embodying of conductive strips on the strips of said stacking, these conductive strips being parallel to said direction and thus forming the control gates and the lines of words, and
9) - etching of the strips of said stacking by using said conductive strips as a mask so as to fix the dimensions of the floating gates and the gate nonconductors.

5,256,585

PROCESS FOR FABRICATING A GATE-DRAIN OVERLAPPED SEMICONDUCTOR

Dong-Joo Bae, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwan, Rep. of Korea

Filed May 30, 1991, Ser. No. 707,591
Claims priority, application Rep. of Korea, Apr. 10, 1991, 1991-5708
Int. Cl.[5] H01L *21/336*
U.S. Cl. 437—44 **23 Claims**



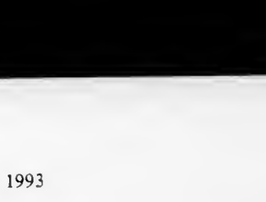
1. A method for fabricating a semiconductor device on a semiconductor substrate having a first oxide layer comprising a field oxide layer and a gate oxide layer, said method comprising the steps of:
sequentially depositing a first conductive layer and a second conductive layer and then forming a second oxide layer on said second conductive layer;
after forming said second oxide layer, performing a first etching of portions of said second oxide layer and said second conductive layer by forming a first photoresist pattern on said second oxide layer;
after said first etching, performing a first ion-implantation of impurities into first selected portions of a top surface of said semiconductor substrate by utilizing the remainder of said second oxide layer and the remainder of said second conductive layer as a mask;
after performing said first ion-implantation, selectively depositing a third conductive layer;
after depositing said third conductive layer, performing a second etching of portions of said first conductive layer and said third conductive layer to form electrode means comprising remaining portions of said first conductive layer, said second conductive layer and said third conductive layer;
after said second etching, performing a second ion-implantation of impurities into second selected portions of said top surface of said semiconductor substrate by utilizing said electrode means as a mask;
after said second ion-implantation, depositing an insulating interlayer over an entire surface of said semiconductor substrate; and
after depositing said insulating interlayer, producing a contact hole by performing a third etching after forming a second photoresist pattern on said insulating interlayer.

5,256,586

GATE-TO-DRAIN OVERLAPPED MOS TRANSISTOR FABRICATION PROCESS

Young-Seok Choi, Pucheon; Kwang-Dong Yu, Incheon, and Tae-Young Won, Seoul, all of Rep. of Korea, assignors to SamSung Electronics., Ltd., Suwon, Rep. of Korea

Filed Jul. 5, 1991, Ser. No. 726,189
Claims priority, application Rep. of Korea, May 23, 1991, 1991-8363
Int. Cl.[5] H01L *21/336*
U.S. Cl. 437—44 **15 Claims**



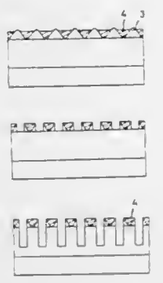
1. A method for fabricating a gate-to-drain overlapped MOS transistor having a semiconductor substrate of a first conductivity type, diffusion regions of a second conductivity type isolated from each other by a channel region formed within the substrate, and a first conductive layer formed on a first gate insulation layer formed on the surface of said channel region, said first gate insulating layer extending over said diffusion regions, said method comprising steps of:
(a) forming a first insulation layer over exposed surfaces of said first conductive layer and said first gate insulation layer, and forming a photoresist on said first insulation layer;
(b) carrying out a first etching process to etchback said photoresist to expose a part of said first insulation layer, said part being that part of the first insulation layer that was formed on a top surface of said first conductive layer and on an upper portion of both sidewalls of said first conductive layer, and to etch said exposed part of said first insulation layer to expose an upper portion of said first conductive layer and to remove the remaining photoresist to expose the remaining portions of said first insulation layer;
(c) forming a second conductive layer over said exposed remaining portions of said first insulation layer and over said exposed upper portion of said first conductive layer, and forming a second insulation layer over said second conductive layer; and
(d) performing a second etching process by removing part of said second insulation layer and part of said second conductive layer until the top surface of said first conductive layer is exposed, and removing part of the remaining portions of said second insulation layer and part of remaining portions of said second conductive layer formed over said diffusion regions to form gate sidewall spacers having a conductive layer therein.

5,256,587

METHODS OF PATTERNING AND MANUFACTURING SEMICONDUCTOR DEVICES

Young K. Jun; Sa K. Ra; Dong W. Kim; Hyun H. Seo, all of Seoul; Sung C. Kim, Sungnam, and Jun K. Kim, Seoul, all of Rep. of Korea, assignors to GoldStar Electron Co., Ltd., Cheongju, Rep. of Korea

Filed Jul. 10, 1992, Ser. No. 911,594
Claims priority, application Rep. of Korea, Jul. 11, 1991, 11803/1991; Aug. 21, 1991, 14388/1991
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—52 **36 Claims**



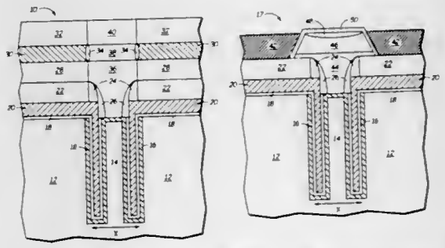
1. A patterning method for a semiconductor device comprising the steps of:
(a) forming a hemisphere particle layer having hills and valleys on a first layer to be etched;
(b) filling the valleys of the hemisphere particle layer with a second layer;
(c) etching the hills of the hemisphere particle layer to expose portions of the first layer, wherein the second layer is used as a mask; and
(d) etching the exposed portions of the first layer.

5,256,588

METHOD FOR FORMING A TRANSISTOR AND A CAPACITOR FOR USE IN A VERTICALLY STACKED DYNAMIC RANDOM ACCESS MEMORY CELL

Keith E. Witek; Carlos A. Mazuré, and Jon T. Fitch, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 23, 1992, Ser. No. 856,411
Int. Cl.[5] H01L *21/70, 27/00*
U.S. Cl. 437—52 **18 Claims**

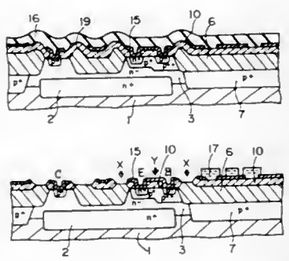


4. A method for forming a transistor comprising the steps of:
providing a base layer having a surface;

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forming a dielectric layer overlying the base layer, the dielectric layer having an opening which exposes the surface of the base layer;
forming a first current electrode within the opening and electrically connected to the surface of the base layer;
forming a channel region overlying the first current electrode and overlying the dielectric layer, the channel region having a channel sidewall that overlies the dielectric layer;
forming a second current electrode overlying the channel region;
forming a sidewall dielectric layer laterally adjacent the channel sidewall; and
forming a control electrode laterally adjacent the sidewall dielectric layer, the control electrode being formed by depositing a layer of polysilicon and planarizing the layer of polysilicon to form the control electrode.

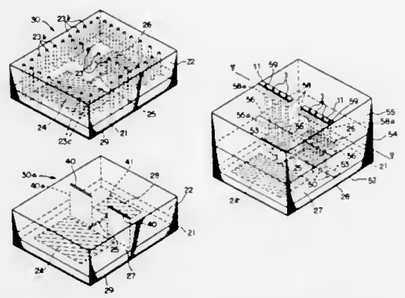
5,256,589
METHOD OF IMPROVING THE FLATNESS OF WIRING LAYER
Hiroki Hozumi, Kagoshima, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed May 8, 1992, Ser. No. 880,555
Claims priority, application Japan, May 10, 1991, 3-105604
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—60 **1 Claim**



1. A semiconductor device fabricating method comprising steps of: forming device isolating regions on a silicon substrate by a recessed LOCOS process; forming an insulating layer over the entire surface; and simultaneously forming contacts of a polycrystalline silicon film between the device isolating regions and forming resistors of the polycrystalline silicon film over the device isolating regions;
wherein the portions of the polycrystalline silicon film corresponding protrusions formed in the edges of the device isolating regions are removed selectively, exposed portions of the insulating layer and the protrusions formed in the edges of the device isolating regions are removed sequentially by etching, using the polycrystalline silicon film as a mask.

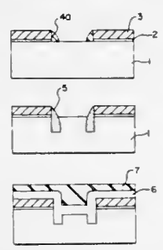
5,256,590
METHOD OF MAKING A SHIELDED SEMICONDUCTOR DEVICE
Akira Inoue, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 616,366, Nov. 21, 1990, Pat. No. 5,151,770.
This application Apr. 20, 1992, Ser. No. 870,951
Claims priority, application Japan, Nov. 24, 1989, 1-305125
Int. Cl.[5] H01L *21/76*
U.S. Cl. 437—61 **1 Claim**

1. A method of forming a shielded semiconductor device comprising the steps of:
forming a plurality of integrated circuits on a first surface of a substrate,
interconnecting the integrated circuits to be shielded from each other in such a fashion that the interconnection leaves an area between the integrated circuits for interposition of a shielding means,
forming an insulator layer on the semiconductor substrate overlying the integrated circuits,
forming apertures in the insulator film at least in said area intermediate the integrated circuits, the apertures being



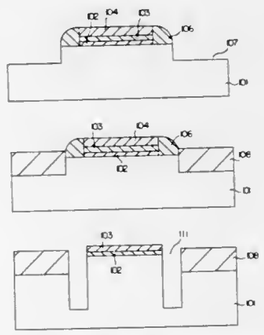
sufficiently densely packed to be displaced from each other by substantially less than a wavelength of the operating frequency of the semiconductor device, and
depositing metallic conductors in the apertures, the metallic conductors rising to a sufficient height above the substrate surface to block electromagnetic interference between the first and second integrated circuits.

5,256,591
METHOD FOR FORMING ISOLATION REGION IN SEMICONDUCTOR DEVICE USING TRENCH
Young K. Jun, Seoul, Rep. of Korea, assignor to Gold Star Electron Co., Ltd., Chungcheongbuk, Rep. of Korea
Filed Jun. 12, 1992, Ser. No. 898,209
Claims priority, application Rep. of Korea, Jun. 17, 1991, 9971/1991; Jun. 18, 1991, 10104/1991
Int. Cl.[5] H01L *21/76*
U.S. Cl. 437—67 **22 Claims**



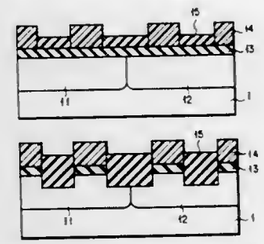
1. A method for forming an isolation region in a semiconductor device using a trench comprising the steps of:
forming a reaction restraining layer on a semiconductor substrate;
removing a portion of said reaction restraining layer in a trench region to form a trench mask window;
forming a reaction film on the entire exposed surface;
etching said reaction film to form side wall reaction films at opposite side walls of said trench mask window;
heat treating said side wall reaction films and said substrate at a sufficient to form reaction product films at the side wall reaction films and portions of the substrate located beneath the side wall reaction films;
removing said reaction product films and then etching a portion of the substrate located in said trench region, to form a trench halving a depth in the substrate less than a depth of the reaction product film into the substrate;
forming an insulation film for an element isolating region on the entire exposed surface such that it fills the trench including a recess formed by the removal of the reaction product films;
forming a surface smoothing insulation film on said insulation film for the element isolating region;
etching back both the insulation films such that portions located above a set height from the surface of the substrate are removed; and
removing the remaining reaction restraining layer.

5,256,592
METHOD FOR FABRICATING A SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE
Ikuya Matsushita, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 720,503, Jun. 20, 1991, abandoned.
This application Aug. 11, 1992, Ser. No. 927,726
Claims priority, application Japan, Oct. 20, 1989, 1-271453
Int. Cl.[5] H01L *21/76*
U.S. Cl. 437—67 **2 Claims**



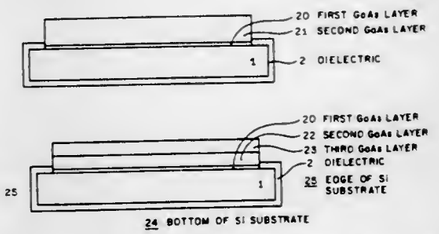
1. A method for fabricating a semiconductor integrated circuit device comprising
(a) the step of forming, on an element forming region on a surface of a silicon substrate, a three-layered film comprising of a first silicon nitride film, a first silicon oxide film and a second silicon nitride film;
(b) the step of forming a third silicon nitride film on side walls of the three-layered film;
(c) the step of anisotropically etching an exposed silicon substrate through the second and third silicon nitride films as a mask to form a first groove having substantially vertical side walls with respect to the semiconductor substrate and refilling the first groove with a second silicon oxide film; and
(d) the step of removing the second and third silicon nitride films and forming a second groove having side walls substantially vertical with respect to the semiconductor substrate exposed by the removal of the third silicon nitride film by anisotropic etching through the first and second silicon oxide films as a mask.

5,256,593
METHOD OF MAKING ISOLATION STRUCTURE IN SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE
Masaaki Iwai, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Oct. 2, 1992, Ser. No. 955,456
Claims priority, application Japan, Oct. 3, 1991, 3-281910
Int. Cl.[5] H01L *21/76*
U.S. Cl. 437—70 **18 Claims**



1. A method of making an isolation structure in a semiconductor integrated circuit device comprising the steps of:
preparing a semiconductor substrate having an active region to be formed;
forming an insulating film over said semiconductor substrate;
forming a mask on said insulating film so as to cover said active region therewith;
depositing an LPD SiO_2 film on unmasked portions of said insulating film by using a hydrofluoric acid solution containing silicon dioxide so as to be supersaturated; and
removing said mask from said insulating film to provide a field oxide region on said semiconductor substrate.

5,256,594
MASKING TECHNIQUE FOR DEPOSITING GALLIUM ARSENIDE ON SILICON
Albert T. Wu, San Jose, Calif.; Shinji Nozaki, Tokyo, Japan; Thomas George, Albany; Sandra S. Lee, Los Altos, both of Calif., and Masayoshi Umeno, Nagoya, Japan, assignors to Intel Corporation, Santa Clara, Calif.
Filed Jun. 16, 1989, Ser. No. 367,547
Int. Cl.[5] H01L *21/205*
U.S. Cl. 437—89 **29 Claims**



1. A process for the formation of gallium arsenide on a silicon substrate in which silicon contamination of the GaAs layer is inhibited comprising the steps of:
depositing a dielectric layer on said substrate to substantially cover the top, bottom and edge of said substrate;
exposing a predetermined region of said substrate by removing portions of said dielectric layer;
forming a gallium arsenide layer on said predetermined region of said substrate.

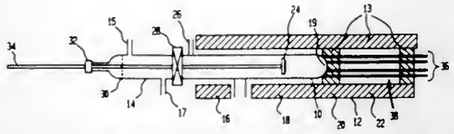
VOL 1155 ISS 4 OC 26 1993 UMI

5,256,595

METHOD OF GROWING DEVICE QUALITY INP ONTO AN INP SUBSTRATE USING AN ORGANOMETALLIC PRECURSOR IN A HOT WALL REACTOR

Joseph R. Flemish, Westfield; Kenneth A. Jones, Brick, and Vladimir S. Ban, Princeton, all of N.J., assignors to The United States of America as represented by the Secretary of the Army., Washington, D.C.

Filed Feb. 19, 1993, Ser. No. 19,508
Int. Cl.[5] H01L *21/205*
U.S. Cl. 437—104 2 Claims



1. Method of growing device quality InP onto an InP substrate using an organometallic precursor in a hot-wall reactor, said method comprising coinjecting into the reactor in a hydrogen carrier gas and then reacting trimethyl indium, (TMI) and HCl, to form gaseous $InCl_4$ and CH_4, and then reacting InCl with PH_3 to deposit high quality InP epitaxially on the InP substrate, wherein the hot-wall reactor includes a fused silica reactor tube housed in a multiple temperature zone furnace and wherein the reactor also includes a loading chamber and four separate zones including a preheat zone at a first temperature, a deposition zone at a second temperature, a mixing zone at a third temperature and a source zone at a fourth temperature and wherein the mixing zone at a third temperature is modified to serve as an injection region for the reactants, the third temperature varying between 500° C. and 700° C., four narrow injection tubes made of fused silica being attached to the main furnace tube to provide an injection region, the injection region being insulated to create a sharp transition in temperature at the injection site, the following gas mixtures being injected through separate tubes,

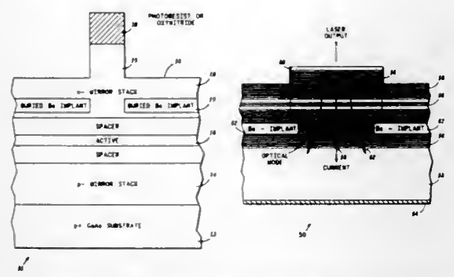
I. a mixture of (TMI) and hydrogen
II. a mixture of HCl and hydrogen,
III. a mixture of phosphine and hydrogen and an
IV. optional input line for dopant gases, the injection tubes being maintained at a fourth temperature below about 200° to 300° C. to prevent the decomposition of (TMI), and the injection tubes being of relatively narrow diameter to ensure a high gas velocity, the high gas velocity being required to prevent the decomposition of (TMI) at the reactor inlet, before the (TMI) can react with HCl.

5,256,596

TOP EMITTING VCSEL WITH IMPLANT

Donald E. Ackley, and Chan-Long Shieh, both of Paradise Valley, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 26, 1992, Ser. No. 857,877
Int. Cl.[5] H01L *21/20*
U.S. Cl. 437—129 11 Claims



1. A method of fabricating a top emitting VCSEL including first and second stacks of mirrors deposited on either side of an active layer comprising the steps of:

defining an emitting area in the second stack of mirrors;

etching the second stack of mirrors to form a trench surrounding the emitting area and extending the depth of the trench sufficiently to reduce reflectivity below an amount required to support lasing in a non-lasing volume of the laser between the trench area and the active layer; and

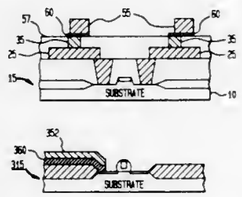
implanting an impurity in the non-lasing volume of one of the first and second stacks of mirrors to form an implant volume having a different conductivity than the one of the first and second stacks in which the implant is formed, and forming the implant volume so as to define a lasing volume axially aligned with the emitting area.

5,256,597

SELF-ALIGNED CONDUCTING ETCH STOP FOR INTERCONNECT PATTERNING

Jeffrey P. Gambino, Gaylordsville, Conn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 4, 1992, Ser. No. 941,346
Int. Cl.[5] H01L *21/44*
U.S. Cl. 437—189 13 Claims



1. A process for fabricating an interconnect for a semiconductor structure, comprising the steps of:

depositing a conductive etch stop layer on a structure;

depositing a sacrificial alloying layer on said conductive etch stop layer, and depositing an interconnect layer on the sacrificial alloying layer, said conductive etch stop layer having etch selectivity to said sacrificial alloying layer and said interconnect layer;

etching said sacrificial alloying layer and said interconnect layer, stopping on said conductive etch stop layer, so as to form an interconnect from said interconnect layer;

reacting said conductive etch stop layer with said sacrificial alloying layer so as to form a metal alloy which electrically connects said interconnect with said structure, wherein portions of said conductive etch stop layer not in contact with said interconnect do not react; and

etching and removing the portions of said conductive etch stop layer which do not react.

5,256,598

SHRINK ACCOMMODATING LEAD FRAME

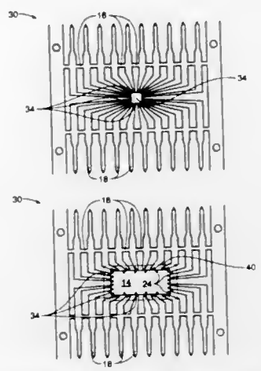
Warren M. Farnworth, Nampa, and Alan G. Wood, Boise, both of Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Apr. 15, 1992, Ser. No. 869,654
Int. Cl.[5] H01L *21/60*
U.S. Cl. 437—220 11 Claims

1. A method of forming a semiconductor assembly, comprising the steps of:

a) selecting a semiconductor die of a specific size for assembly;

b) excising a portion of lead fingers from a lead frame to establish an inset of the lead fingers and to produce a paddleless lead frame, whereby the established inset of the lead fingers conforms to external dimensions of the selected die such that the selected die may be located within the inset, the amount of lead finger material excised depending on the size of a semiconductor die to be attached thereto.

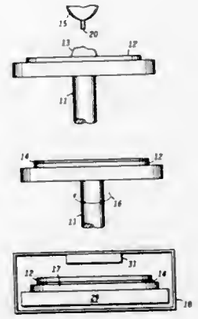


5,256,599

SEMICONDUCTOR WAFER WAX MOUNTING AND THINNING PROCESS

Paul D. Asetta, Mesa; Rajiv Bajaj, Gilbert; Lawrence R. Gardner; Michael P. Norman, both of Chandler, and James J. Wang, Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 1, 1992, Ser. No. 891,111
Int. Cl.[5] H01L *21/302, 21/463*
U.S. Cl. 437—225 15 Claims



1. A semiconductor wafer mounting for thinning process comprising:

providing a semiconductor wafer;

providing a submount;

placing a wax dissolved in solvent on one or both of the semiconductor wafer and the submount;

spinning the semiconductor wafer or the submount having wax thereon to remove solvent and to spread the wax uniformly;

heating the semiconductor wafer or the submount having wax thereon to remove solvent;

bonding the semiconductor wafer to the submount, wherein the wax on the semiconductor wafer or the submount or on both forms a bond holding the semiconductor wafer to the submount;

heating the submount, the wax, and the semiconductor wafer in a vacuum to remove air trapped in the wax; and

cooling the submount, the wax, and the semiconductor wafer then annealing at atmospheric pressure, the submount, the wax, and the semiconductor wafer to reduce stress on the semiconductor wafer.

5,256,600

GLASS-CERAMICS AND COLOR METHODS

Robert W. Pfitzenmaier, Canisteo, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Jul. 24, 1992, Ser. No. 919,592
Int. Cl.[5] C03L *10/14*
U.S. Cl. 501—4 15 Claims

1. A method of producing a glass-ceramic that is capable of having a variety of colors induced therein which comprises formulating and mixing a batch for a base glass that is capable of being thermally crystallized to a glass-ceramic having a beta-quartz solid solution as a predominant crystal phase, including TiO_2 in the batch in an amount effective as a nucleating agent and sufficient to provide up to about 6% in the glass including Al_2O_3, Fe_2O_3, and Co_3O_4 in the glass batch in amounts sufficient to provide 19–20% Al_2O_3, 700–900 ppm Fe_2O_3, and not over 15 pp. Co_3O_4 in the glass, melting the batch in a melting unit, and delivering the molten glass through a forehearth.

5,256,601

SLOW FADING PHOTOCHROMIC GLASS

David J. Kerko, Corning; Theodore R. Kozlowski, Horseheads; David W. Morgan, and Theresa A. Winer, both of Corning, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Oct. 7, 1992, Ser. No. 957,359
Int. Cl.[5] C03C *4/06, 3/23*
U.S. Cl. 501—13 17 Claims

1. A photochromic glass having the following light transmitting properties across the visible portion of the spectrum when free of tint,

a. a clear luminous transmittance of about 90%,

b. a darkened luminous transmittance at 20° C. below about 25%,

c. a fading rate at 20° C. such that, after a five minute fading interval, the glass exhibits a percent faded luminous transmittance that is no more than the darkened luminous transmittance percentage plus 15 percentage units, having an $R_2O—Al_2O_3—B_2O_3—SiO_2$ base composition, and containing as additives, in percent, by weight, 0.1–0.3% Ag, 0.25–1.0% Cl, 0–0.2% Br, 0.25–1.0% Cl+Br, the ratio by weight of Ag:Cl+Br being 0.15–0.65, 0.003–0.015% CuO, 0.1–1.0% PbO and 8–13.5% total R_2O, wherein R_2O consists of $Li_2O+Na_2O+K_2O$, the Na_2O being present in an amount less than 2%.

5,256,602

FOREHEARTH COLORANT

Paul S. Danielson, and Sheryl L. Hultman, both of Corning, N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Jul. 8, 1992, Ser. No. 910,538
Int. Cl.[5] C03C *6/08, 10/14*
U.S. Cl. 501—17 14 Claims

1. A non-melted, forehearth color concentrate in particle form consisting essentially of a flux, a binder and a colorant oxide, the flux being an alkali metal borate present in an amount sufficient to enable the concentrate to melt at 1300° C., but not over 30% by weight the binder being an alkali metal silicate, and the colorant oxide being 35–60% by weight V_2O_5, the flux, binder and colorant oxide constituting at least 90% of the forehearth color concentrate.

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5,256,603

GLASS BONDED CERAMIC COMPOSITES

Ronald L. Andrus, Corning; John F. MacDowell, Penn Yan, and Linda R. Pinckney, Corning, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Nov. 19, 1992, Ser. No. 979,050
Int. Cl.[5] C03C *14/33*
U.S. Cl. 501—32 **7 Claims**

1. Sintered glass bonded ceramic composite bodies consisting essentially of hard refractory ceramic particulates bonded together by a glass, said glass consisting essentially, expressed in terms of weight percent on the oxide basis, of 15–35% CaO, 35–55% B_2O_3, and 10–35% SiO_2, the sum of $CO+B_2O_3+SiO_2$ constituting at least 80% of the total composition with the molar ratio $CaO:B_2O_3$ being less than 1, and up to 20% total of optional components in the indicated proportions selected from the group consisting of

MgO	0–15	Na_2O	0–20	ZrO_2	0–10
SrO	0–20	K_2O	0–20	WO_3	0–10
BaO	0–20	Al_2O_3	0–20	MoO_3	0–10
Li_2O	0–15	F	0–8	Nb_2O_5	0–20.
P_2O_5	0–20				

5,256,604

LOW MELTING, DURABLE PHOSPHATE GLASSES

Bruce G. Aitken, Erwin, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Apr. 24, 1992, Ser. No. 873,096
The portion of the term of this patent subsequent to Jun. 4, 2008, has been disclaimed.
Int. Cl.[5] C03C *3/17*
U.S. Cl. 501—45 **4 Claims**

1. A glass exhibiting an annealing point between 290°–325° C., an index of refraction between 1.57–1.66, a linear coefficient of thermal expansion (25°–300° C.) between $130–160\times10^{-7}$/°C., and a weight loss after exposure to boiling water for six hours no greater than 0.1% consisting essentially, expressed in terms of mole percent on the oxide basis, of

Li_2O	0–10	CaO + SrO + BaO(RO)	0–20
Na_2O	0–10	ZnO	26–50
$Li_2O + Na_2O$	1–20	RO + ZnO	26–50
K_2O	0–8	SnO	0–5
$Li_2O + Na_2O + K_2O(R_2O)$	5–25	Sb_2O_3	0–8
Ag_2O	0–13	Al_2O_3	0.25–5
Tl_2O	0–12	P_2O_5	30–36
$Ag_2O + Tl_2O$	1–14	B_2O_3	0–5
$R_2O + Ag_2O + Tl_2O$	15–30	CuO	0–5
CaO	0–20	Bi_2O_3	0–3
BaO	0–10	CeO_2	0–2
SrO	0–10	PbO	0–10

with the proviso that, in the presence of SnO and/or Bi_2O_3, Ag_2O will be essentially absent.

5,256,605

METHOD OF MANUFACTURING A HEAVY METAL FLUORIDE GLASS COMPOSITION

Emmanuel W. J. L. Oomen; Anne-Marie A. Van Dongen, and Hendrik Veenvliet, all of Eindhoven, Netherlands, assignors to U.S. Philips Corp., New York, N.Y.

Filed Feb. 28, 1992, Ser. No. 845,117
Claims priority, application Netherlands, Mar. 4, 1991, 9100387
Int. Cl.[5] C03C *3/112*
U.S. Cl. 501—57 **5 Claims**

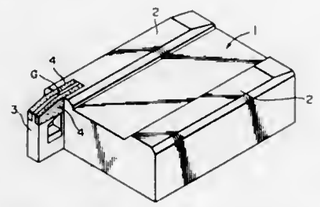
1. A method of manufacturing a fluorozirconate glass composition, in which starting materials including zirconium fluoride are mixed in the presence of a fluoridizing reagent and melted together to form the glass composition, characterized in that the starting materials are mixed with solid xenon fluoride as the fluoridizing reagent, after which the mixture is heated to temperatures between 200° and 400° in an inert atmosphere for a time which is sufficient to bring about fluoridation of the starting materials, whereupon the intermediate product thus obtained is melted to form the fluorozirconate glass composition.

5,256,606

MOISTURE RESISTANT LOW MELTING POINT GLASS FOR MAGNETIC HEAD AND MAGNETIC HEAD

Satoshi Maki, Nagaoka, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed May 28, 1992, Ser. No. 891,481
Claims priority, application Japan, Jun. 13, 1991, 3-142157
Int. Cl.[5] C03C *3/102, 3/70, 3/72, 3/108*
U.S. Cl. 501—60 **4 Claims**



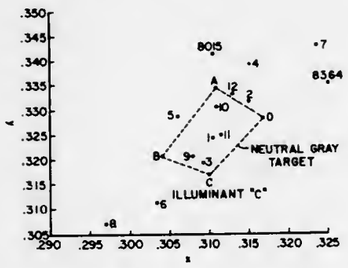
1. A moisture resistant low melting point glass composition consisting essentially of:
(a) between 28 and 35% by molar ratio PbO,
(b) between 38 and 50% by molar ratio SiO_2,
(c) between 3 and 10% by molar ratio two oxides selected from the elements consisting of Na_2O, K_2O and Li_2O,
(d) between 0 and 6% by molar ratio ZnO,
(e) between 3 and 8% by molar ratio TeO_2, and
(f) between 1 and 5% by molar ratio TiO_2.

5,256,607

NEUTRAL, ULTRAVIOLET ABSORING, FIXED TINT LENSES

David J. Kerko, and David W. Morgan, both of Corning, N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Nov. 27, 1992, Ser. No. 982,561
Int. Cl.[5] C03C *3/089, 4/08*
U.S. Cl. 501—65 **3 Claims**



1. A transparent glass which, at a thickness of 2 mm, does not transmit more than about 1% of ultraviolet radiation at a wavelength of 380 nm and exhibits a neutral gray, fixed tint bounded by apices A, B, C, D, A of the drawing, a purity no higher than 6, and a luminous transmittance between 10–16, said glass having a composition consisting essentially, expressed in terms of weight percent on the oxide basis, of

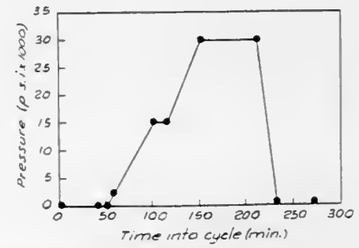
SiO_2	65–72	CaO	0–1.5
B_2O_3	2–6	Al_2O_3 + CaO	0.2–2.25
Na_2O	6–10	As_2O_3	0–0.3
K_2O	10–16	Fe_2O_3	4.8–6.2
$Na_2O + K_2O$	17–23	Co_3O_4	0.012–0.02
$K_2O:Na_2O$	1.25–2.25	NiO	0.16–0.21
Al_2O_3	0–2.25	ZnO	0–1.5.

5,256,608

HIGH HARDNESS, WEAR RESISTANT MATERIALS

Ellen M. Dubensky; Edward E. Timm; Ann M. McCombs, all of Traverse City, and Julie L. Board, Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 573,433, Aug. 27, 1990, abandoned, which is a continuation-in-part of Ser. No. 512,716, Apr. 23, 1990, abandoned, which is a division of Ser. No. 403,209, Sep. 1, 1989, Pat. No. 4,945,073, which is a continuation-in-part of Ser. No. 247,054, Sep. 20, 1988, abandoned. This application Dec. 13, 1991, Ser. No. 806,984
Int. Cl.[5] C04B *35/56, 35/58*
U.S. Cl. 501—94 **33 Claims**



1. A method of preparing a material suitable for use in fabricating articles of manufacture requiring high degrees of hardness or wear resistance, the method comprising subjecting a powdered admixture of AX, a source of B and, optionally, X, AX and the source of B each having a melting point, to conditions of temperature and pressure sufficient to produce a substantially fully dense, consolidated product of an incomplete reaction between AX and the source of B, said consolidated product having minimal grain growth and comprising at least one compound AX and at least one compound (A, B)X, a product of varying stoichiometry wherein A and B are different materials selected from the group consisting of titanium, zirconium, hafnium, vanadium, niobium, tantalum, chromium, molybdenum and tungsten and X is selected from the group consisting of boron, carbon, silicon and nitrogen, the temperature being less than about three fourths of the lesser of the melting points of AX and the source of B.

5,256,609

CLEAN BURNING GREEN CERAMIC TAPE CAST SYSTEM USING ATACTIC POLYPROPYLENE BINDER

Leonard E. Dolhert, Clarksville, Md., assignor to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Dec. 18, 1991, Ser. No. 809,748
Int. Cl.[5] C04B *35/56*
U.S. Cl. 501—96 **12 Claims**

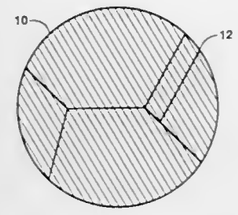
1. A method of forming a dense ceramic article, said method comprising:
a) forming a slip consisting essentially of ceramic particles, a dispersant, a plasticizer, a solvent and a binder selected from the group consisting of atactic polypropylene and atactic polypropylene copolymers,
b) casting said slip onto a sheet to form a tape,
c) drying said tape,
d) separating said dried tape from said sheet to recover said tape, and
e) heating said recovered tape in a reducing atmosphere to remove said binder and densify said ceramic.

5,256,610

SINTERING SILICON NITRIDE

Narottam P. Bansal, North Olmsted; Stanley R. Levine, Rocky River, and William A. Sanders, Westlake, all of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 27, 1992, Ser. No. 982,535
Int. Cl.[5] C04B *35/58*
U.S. Cl. 501—97 **14 Claims**



1. In a silicon nitride structural ceramic material of the type that is sintered at a reduced temperature below about 2100° C., the improvement comprising
a plurality of oxides for aiding said sintering at said reduced temperature, and
SrO for stabilizing the formation of a stable monoclinic celsian phase in the grain boundaries.

5,256,611

COLORED CORUNDUM COMPOSITE AND PROCESSES FOR ITS PRODUCTION AND ITS USE

Paul Möltgen, Laufenburg; Gerhard Winter, Goslar, and Fister Dietmar, Murg-Niederhof, all of Fed. Rep. of Germany, assignors to H. C. Starck GmbH & Co. KG, Goslar, Fed. Rep. of Germany

Filed Jul. 8, 1992, Ser. No. 910,439
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1991, 4124630
Int. Cl.[5] C04B *35/10*
U.S. Cl. 501—127 **7 Claims**

1. An abrasion resistant α-Al_2O_3-based colored sintered corundum with an essentially transparent corundum matrix containing metal oxides integrally formed therewith in the sinter mass and homogeneously distributed therein and imparting intense color thereto, the metal oxides being inorganic colored pigments and the quantity of said metal oxides, expressed as metal ions, being 0.1 to 30% by weight based on the Al_2O_3 matrix.

5,256,612

METHOD FOR TREATING A CATALYST

Shun C. Fung, Bridgewater, N.J., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 551,378, Jul. 12, 1990, Pat. No. 5,106,798. This application Mar. 4, 1992, Ser. No. 845,578
The portion of the term of this patent subsequent to Apr. 21, 2009, has been disclaimed.
Int. Cl.[5] B01J *38/44, 29/38, 29/12*; C10G *35/085*
U.S. Cl. 502—37 **16 Claims**

1. A method of treating a Group VIII noble metal-containing catalyst selected from the group consisting of fresh catalysts and coke-contaminated catalysts comprising the steps of:

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(a) removing substantially all of the coke from said Group VIII noble metal-containing catalyst when said catalyst is a coke-contaminated catalyst;
(b) redispersing the noble metal(s), the redispersion being carried out by contacting the Group VIII noble metal-containing catalyst in a reaction-vessel with a halogen or halide-containing gas with a source of oxygen present, and carbon dioxide, the amount of carbon dioxide being maintained at a partial pressure of at least 2 kPa in the reaction vessel substantially throughout the period in which the catalyst is in contact with the halogen or halide containing gas;
(c) stabilizing the Group VIII noble metal-containing catalyst by treatment with an inert or oxygen containing gas;
(d) substantially removing carbon dioxide and carbon monoxide so that the amount of carbon dioxide and carbon monoxide in the reaction vessel during the chemical reduction step (e) is less than 0.05 kPa partial pressure;
(e) chemically reducing the Group VIII noble metal-containing catalyst.

5,256,613

PROCESS FOR REGENERATING SPENT BLEACHING EARTH

Pieter J. A. Maes, Harelbeke, and Albert J. Dijkstra, Kortrijk, both of Belgium, assignors to N.V. Vandemoortele International, Kortrijk, Belgium

Filed Aug. 27, 1992, Ser. No. 935,975
Claims priority, application European Pat. Off., Aug. 28, 1991, 91202192.0
Int. Cl.[5] B01J *20/34, 38/30, 38/38;* **C11B** *3/10*
U.S. Cl. 502—41 **6 Claims**

1. A process for regenerating spent bleaching earth particles containing organic material resulting from processing edible oil, said process comprising feeding said spent bleaching earth particles and oxygen into a fluidized bed of inert granulate material, the height of said fluidized bed being such that a sufficient residence time is provided to oxidize essentially all of said organic material and being such that the temperature in the freeboard above said fluidized bed is less than 1000° C., the amount of said oxygen fed to said fluidized bed being in excess of the stoichiometric amount required for complete oxidation of said organic material.

5,256,614

CATALYST FOR PURIFICATION OF EXHAUST GAS

Takashi Itoh, and Hiroyuki Yamaguchi, both of Ichikawa, Japan, assignors to N. E. Chemcat Corporation, Tokyo, Japan

Filed Sep. 18, 1992, Ser. No. 946,859
Claims priority, application Japan, Apr. 27, 1992, 4-134243
Int. Cl.[5] B01J *29/06*
U.S. Cl. 502—61 **2 Claims**

1. A catalyst for purification of exhaust gases containing nitrogen oxides in the co-existence of oxygen in excess of stoichiometric amount, which catalyst comprises (a) a carrier consisting of a crystalline metallosilicate whose anhydrous state is represented by the following chemical formula

$$[(x+y)/n]R\ (M_xAl_ySi_z)O_2$$

wherein R is at least one cation having a valence n; x, y and z are, respectively, mole fractions of different metal elements M, Al and Si present as a tetrahedral oxide in the skeletal structure; M is at least one metal selected from the group consisting of Ga, Fe, Y and rare earth elements: $X+Y+z=1,000$, $x \geqq 0$, $y>0$ and $0.990 \geqq z \geqq 0.882$, and (b) a co-precipitated compound oxide of copper and gallium, supported on said carrier in a dispersed state.

5,256,615

GRANULAR INORGANIC EXCHANGERS

Takuya Oomura, Tokyo; Hideki Kato, Tokushima; Nobuhiko Aiba, Aichi; Noriyuki Yamamoto, Aichi; Toshiro Hirose, Aichi, and Kenichi Ishizaki, Aichi, all of Japan, assignors to Toagosei Chemical Industry, Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 766,977, Sep. 27, 1991, abandoned, which is a continuation of Ser. No. 538,254, Jun. 14, 1990, abandoned. This application May 6, 1992, Ser. No. 879,740
Claims priority, application Japan, Jun. 21, 1989, 1-158531; Jun. 21, 1989, 1-158532
Int. Cl.[5] B01J *20/12, 20/22*
U.S. Cl. 502—62 **7 Claims**

1. A granular inorganic ion exchanger which is obtained by firing a granular mixture containing a metal alkoxide or a hyrolyzate thereof, a inosilicate mineral and an inorganic ion exchanger.

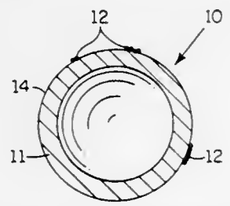
3. An ion exchanger according to claim 1, wherein said metal alkoxide or hydrolyzate thereof is an alkoxide of silicon or a hydrolyzate thereof.

5,256,616

MATERIALS AND METHODS FOR PHOTOCATALYZING OXIDATION OF ORGANIC COMPOUNDS ON WATER

Adam Heller, and James R. Brock, both of Austin, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Division of Ser. No. 412,317, Sep. 25, 1989, Pat. No. 4,997,576. This application Dec. 14, 1990, Ser. No. 629,664
Int. Cl.[5] C03C *3/06*
U.S. Cl. 502—350 **26 Claims**



1. A bead comprising an enclosed shell defining a cavity, and having an exterior surface which is at least partially coated with a photocatalytic material that under illumination and in the presence of air accelerates the oxidation of organic compounds floating on water during use, the coated bead being water floatable and having an equivalent diameter of less than about 2 mm.

5,256,617

VACANCY TITANATES INTERCALATED WITH CATIONIC HYDROXY ALUMINUM COMPLEXES

Ahmad Moini, Lawrenceville, N.J., assignor to Mobil Oil Corp., Fairfax, Va.

Continuation-in-part of Ser. No. 636,856, Jan. 2, 1991, Pat. No. 5,155,076. This application Jun. 12, 1992, Ser. No. 896,850
Int. Cl.[5] B01J *21/00*
U.S. Cl. 502—351 **5 Claims**

1. A method for intercalating a layered metal oxide material, wherein each layer of the metal oxide has the general formula

$$[\square_yTi_{2-y}O_4]^{-q}$$

where $\square$ represents a vacancy site, $0<y<2$ and $q=4y$, said method comprising the steps of:
(i) swelling the said layered material by contacting said layered material with organoammonium cations; and

(ii) contacting the swollen layered material of step (i) with a cationic hydroxy aluminum complex.

5,256,618

THERMOSENSITIVE RECORDING MATERIAL

Yoshiyuki Takahashi, Kawasaki; Akiko Iwasaki, Urawa, and Kunitaka Toyofuku, Sakura, all of Japan, assignors to Oji Paper Co., Ltd., Tokyo, Japan

Filed Oct. 2, 1992, Ser. No. 955,193
Claims priority, application Japan, Oct. 4, 1991, 3-257864; Apr. 30, 1992, 4-111286; May 1, 1992, 4-112838
Int. Cl.[5] B41M *5/30*
U.S. Cl. 503—216 **6 Claims**

1. A thermosensitive recording material comprising:
a sheet substrate and
a thermosensitive colored image-forming layer formed on a surface of the sheet substrate and comprising a substantially colorless dye precursor, a color developing agent reactive with the dye precursor upon heating to thereby develop a color, and a binder,
said color developing agent comprising at least one compound of the formula (1):

$$(R-SO_2NHC(=X)NH\rightarrow_n A \quad (1)$$

wherein X represents a member selected from the group consisting of oxygen and sulfur atoms, R represents a member selected from the group consisting of unsubstituted aromatic hydrocarbon groups and substituted aromatic hydrocarbon groups having at least one substituent selected from the group consisting of lower alkyl groups and halogen atoms; A represents a multivalent group, and n represents an integer of 2 or more.

5,256,619

HEAT-SENSITIVE RECORDING MATERIAL

Masatoshi Yoshida, Osaka; Katsuyuki Kono, Kyoto, and Kiyoshi Kawamura, Mishima, all of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Filed Jul. 3, 1991, Ser. No. 725,527
Claims priority, application Japan, Jul. 5, 1990, 2-176339
Int. Cl.[5] B41M *5/40*
U.S. Cl. 503—226 **5 Claims**

1. A heat-sensitive recording material with a heat-sensitive color-developing layer formed on a supporting member characterized in that there is provided on surface of said heat-sensitive color-developing layer a protective coating containing crosslinked microfine particles (B) obtained by emulsion-polymerizing vinyl-containing polymeric monomers containing not less than 15 weight % of polymeric multifunctional monomers together with aqueous resin dispersion (A) selected from the group consisting of acrylic emulsion, styrene-acrylic emulsion, styrene-vinyl acetate emulsion and styrene-butadiene-styrene emulsion.

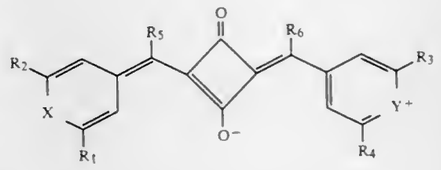
5,256,620

IR ABSORBER FOR LASER-INDUCED THERMAL DYE TRANSFER

Mitchell S. Burberry, Webster; Lee W. Tutt, and Michael R. Detty, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 17, 1992, Ser. No. 992,233
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 **18 Claims**

7. In a process of forming a laser-induced thermal dye transfer image comprising:
a) contacting at least one dye-donor element comprising a support having thereon a dye layer comprising an image dye in a binder having an infrared-absorbing material associated therewith, with a dye-receiving element comprising a support having thereon a polymeric dye image-receiving layer;
b) imagewise-heating said dye-donor element by means of a laser; and
c) transferring a dye image to said dye-receiving element to form said laser-induced thermal dye transfer image,
the improvement wherein said infrared-absorbing material is a telluro- or seleno-squarylium dye having the following formula:



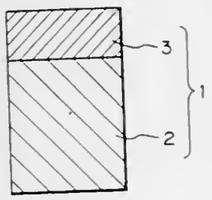
wherein:
R_1, R_2, R_3 and R_4 each independently represents hydrogen or a substituted or unsubstituted alkyl, aryl or hetaryl group;
R_5 and R_6 each independently represents hydrogen, halogen, cyano, alkoxy, aryloxy, acyloxy, aryloxycarbonyl, alkoxycarbonyl, sulfonyl, carbamoyl, acyl, acylamido, alkylamino, arylamino, or a substituted or unsubstituted alkyl, aryl or hetaryl group;
X represents Se or Te; and
Y represents O, S, Se, Te, $TeCl_2$ or $TeBr_2$, with the proviso that when X and Y are both Se and R_1, R_2, R_3 and R_4 each represents t-butyl, then R_5 and R_6 cannot both be hydrogen at the same time; and with the second proviso that when X is Se and Y is O and R_1, R_2, R_3 and R_4 each represents t-butyl, then R_5 and R_6 cannot both be hydrogen at the same time.

5,256,621

THERMAL TRANSFER IMAGE-RECEIVING SHEET

Kenji Yasuda, Yachiyo; Toshihiro Minato; Masaru Kato, both of Tokyo; Akira Umemoto, Kasugai; Toshie Uriu, Tokyo, and Norio Yamamura, Yokohama, all of Japan, assignors to Oji Paper Co., Ltd., Tokyo, Japan

Filed Apr. 23, 1991, Ser. No. 689,567
Claims priority, application Japan, Apr. 24, 1990, 2-106539; Apr. 26, 1990, 2-108839; May 31, 1990, 2-139816
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 **24 Claims**



1. A thermal transfer image-receiving sheet comprising:
a substrate sheet; and
at least one image-receiving resinous layer formed on at least one surface of the substrate sheet and comprising a dye-receiving resinous material,
a surface of said image-receiving resinous layer having a surface roughness wave form with a maximum wave height (R_{max}) of 1.0 μm or less at a wave length of 0.1 to 2 mm.

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5,256,622

HIGH VISCOSITY BINDERS FOR THERMAL DYE TRANSFER DYE-DONORS

Richard P. Henzel, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 18, 1991, Ser. No. 781,058
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 **20 Claims**

10. In a process of forming a thermal dye transfer image comprising:

a) contacting at least one dye-donor element comprising a support having thereon a dye layer comprising a dye dispersed in a polymeric binder with a dye-receiving element comprising a support having thereon a polymeric dye image-receiving layer,

b) imagewise-heating said dye-donor element; and

c) transferring a dye image to said dye-receiving element to form said thermal dye transfer image, the improvement wherein said polymeric binder has an intrinsic viscosity of at least 1.6.

5,256,623

THERMAL SUBLIMABLE DYE TRANSFER IMAGE RECEIVING SHEET

Kozo Fukuda, Tokyo, Japan, assignor to Nisshinbo Industries, Inc., Tokyo, Japan

Filed Dec. 9, 1991, Ser. No. 803,952
Claims priority, application Japan, Dec. 12, 1990, 2-409860
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 **5 Claims**

1. A thermal sublimable dye transfer image receiving sheet having a dye receiving layer on the surface of a base thereof, wherein said dye receiving layer contains a resin and an organic agent selected from the group consisting of an acetylene glycol, an acetylene alcohol, poly(oxyethylene.oxypropylene) glycol.monoether, polyoxyethylene sorbitan fatty acid ester and a fatty acid metal salt for improving dye transfer density and an inorganic adsorbent.

5,256,624

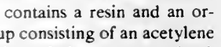
TRANSFER OF METHINE DYES

Karl-Heinz Etzbach, Frankenthal, and Ruediger Sens, Mannheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 30, 1992, Ser. No. 860,156
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1991, 4112654
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 **4 Claims**

1. A process for transferring a methine dye from a transfer to plastic-coated paper by diffusion, which comprises

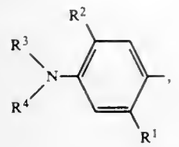
selecting a transfer on which there is or are located one or more dyes of the formula I



(I)

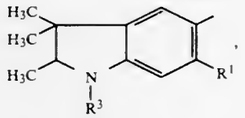
where

K is a radical of the formula

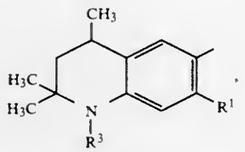


(IIIa)

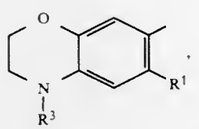
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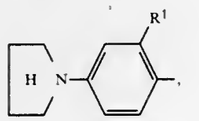
(IIIb)



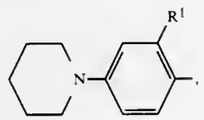
(IIIc)



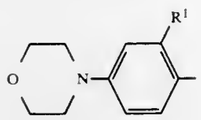
(IIId)



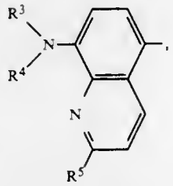
(IIIe)



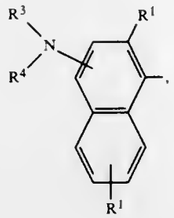
(IIIf)



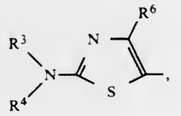
(IIIg)



(IIIh)

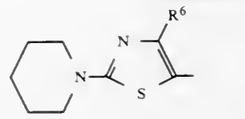


(IIIi)

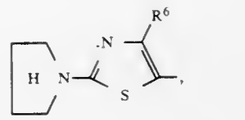


(IIIj)

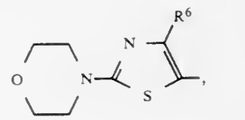
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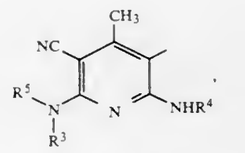
(IIIk)



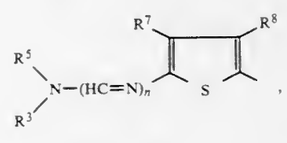
(IIIl)



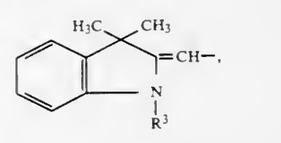
(IIIm)



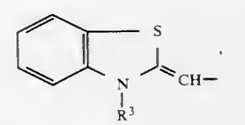
(IIIn)



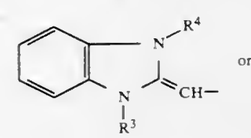
(IIIo)



(IIIp)

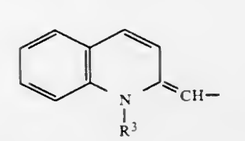


(IIIq)



or

(IIIr)



(IIIs)

where

n is 0 or 1,

R^1 is hydrogen, methyl, methoxy, mono- or di-C_1-C_4-alkylaminosulfonylamino, C_1-C_4-alkylsulfonylamino or the radical —NHCOR[9] or —$NHCO_2R^9$, where R^9 is phenyl, benzyl, tolyl or C_1-C_8-alkyl which may be interrupted by one or two oxygen atoms in ether function,

R^2 is hydrogen, methyl, methoxy or ethoxy,

R^3 and R^4 are identical or different and each is independently of the other hydrogen, C_1-C_8-alkyl, which may be substituted and which may be interrupted by one or two oxygen atoms in ether function, or C_5-C_7-cycloalkyl,

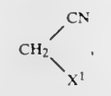
R^5 is C_1-C_8-alkyl, which may be substituted and which may be interrupted by one or two oxygen atoms in ether function, C_5-C_7-cycloalkyl, phenyl or tolyl,

R^6 is hydrogen, halogen, C_1-C_6-alkyl, unsubstituted or C_1-C_4-alkyl- or C_1-C_4-alkoxy-substituted phenyl, unsubstituted or C_1-C_4-alkyl- or C_1-C_4-alkoxy-substituted benzyl, cyclohexyl, thienyl, hydroxyl or C_1-C_8-monoalkylamino,

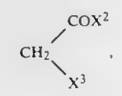
R^7 is cyano, carbamoyl, mono- or di-C_1-C_6-alkylcarbamoyl or C_1-C_6-alkoxycarbonyl, and

R^8 is halogen, hydrogen, C_1-C_4-alkyl, C_1-C_4-alkoxy, C_1-C_4-alkylthio or unsubstituted or C_1-C_4-alkyl-substituted phenyl, and

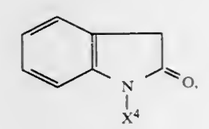
B is the radical of an acidic CH compound which is derived from nitromethane, nitroethane, benzimidazol-2-ylacetamide or a compound of the formula



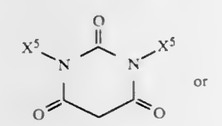
(IIa)



(IIb)

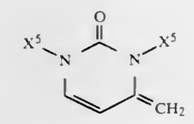


(IIc)



or

(IId)



(IIe)

where

X^1 is cyano, nitro, C_1-C_4-alkanoyl, unsubstituted or C_1-C_4-alkyl-, C_1-C_4-alkoxy- or halogen-substituted benzoyl, C_1-C_4-alkylsulfonyl, unsubstituted or C_1-C_4-alkyl-, C_1-C_4-alkoxy-or halogen-substituted phenylsulfonyl, carboxyl, C_1-C_6-alkoxycarbonyl, monooxa- or dioxa-C_1-C_6-alkoxyarbonyl, C_5-C_7-cycloalkoxycarbonyl, unsubstituted or C_1-C_4-alkyl-, C_1-C_4-alkoxy- or halogen-substituted phenoxycarbonyl, carbamoyl, mono- or di-C_1-C_5-alkylcarbamoyl, monooxa- or dioxa-mono- or -di-C_1-C_6-alkylcarbamoyl, mono- or di-C_5-C_7-cyclo-alkylcarbamoyl, unsubstituted or C_1-C_4-alkyl-, C_1-C_4-alkoxy- or halogen-substituted phenylcarbamoyl, unsubstituted or C_1-C_4-alkyl-, cyano-, C_1-C_4-alkoxy-, halogen- or nitro-substituted phenyl, 2-benzothiazolyl, 2-benzimidazolyl, 5-phenyl-1,3,4-thiadiazol-2-yl or 2-hydroxyquinoxalin-3-yl,

X^2 is C_1-C_4-alkyl or C_1-C_4-alkoxy,

X^3 is C_1-C_4-alkoxycarbonyl, phenylcarbamoyl or 2-benzimidazolyl,

X^4 is C_1-C_4-alkyl, and

X^5 is hydrogen, C_1-C_4-alkyl or phenyl with the proviso that when K is a radical of formula IIIa, IIIc or IIIi, X^1 is not

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unsubstituted or C_1–C_4-alkyl-, C_1–C_4-alkoxy-or halogen-substituted benzoyl, and

heating the transfer to induce dye transfer to plastic-coated paper.

5,256,625

SAFENING IMIDAZOLINONE HERBICIDES

Brett H. Bussler, St. Louis Park, Minn., and Ronald J. Brinker, Ellisville, Mo., assignors to Monsanto Company, St. Louis, Mo.

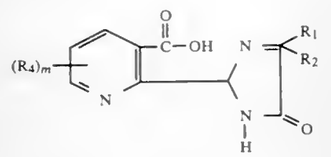
Continuation-in-part of Ser. No. 212,621, Jul. 1, 1988, which is a continuation-in-part of Ser. No. 84,786, Aug. 13, 1987, abandoned. This application Dec. 29, 1989, Ser. No. 459,393

Int. Cl.[5] A01N *25/32, 43/50*

U.S. Cl. 504—107 **17 Claims**

1. Composition comprising

(a) a herbicidally-effective amount of a compound according to Formula IA



IA

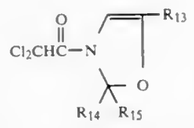
wherein

R_1 and R_2 are C_{1-4} alkyl;

R_4 is C_{1-6} alkyl and

m is 1 and

(b) an antidotally-effective amount of a compound of Formula III



III

wherein

R_{13} is a saturated or unsaturated heterocyclic radical having C_{5-10} ring atoms and containing O, N or S ring atoms and R_{14} and R_{15} are C_{1-4} alkyl radicals.

5,256,626

HERBICIDAL COMPOSITIONS SAFENED BY 5-HETEROCYCLIC-SUBSTITUTED OXAZOLIDINE DIHALOACETAMIDES COMPOUNDS

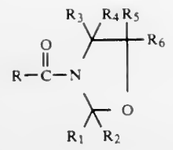
Eric L. Williams, St. Peters; Steven M. Massey, Maryland Heights; Brett H. Bussler, St. Peters, and Ronald J. Brinker, St. Louis, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 212,621, Jul. 1, 1988, which is a continuation-in-part of Ser. No. 84,786, Aug. 13, 1987, abandoned. This application Jul. 3, 1991, Ser. No. 725,136

Int. Cl.[5] A01N *25/32*

U.S. Cl. 504—107 **81 Claims**

1. Compositons comprisinga herbicidally-effective amount of a herbicidal compound selected from the group consisting of 2-haloacetanilides, thiocarbamates, dinitroanilines, sulfonylureas, imidazolidinones, pyridinecarboxylic acid methyl esters, pyrrollidinones, benzoic acid salts and esters, triazinones, pyridazinones, isoxazolidinones, imidazoles and phenoxypyrazoles and an antidotally-effective amount of a compound according to the formula



and agriculturally-acceptable salts thereof wherein

R is halomethyl;

R_1 is C_{1-4} alkyl, haloalkyl or phenyl;

R_2–R_5 are H or C_{1-4} alkyl;

R_6 is a saturated or unsaturated C_{5-10} oxygen, nitrogen or sulfur atoms, optionally substituted with a C_{1-4} alkyl or haloalkyl radical or halogen atom or with oxygen on a ring nitrogen atom and

R_5 and R_6 may be combined to form a spiroheterocyclic ring as defined for the R_6 radical.

5,256,627

USE OF MICROORGANISM TO PRODUCE TOXIN

Thomas A. Bewick, Gainesville, Fla., assignor to University of Florida, Gainesville, Fla.

Continuation-in-part of Ser. No. 278,685, Dec. 1, 1988, abandoned. This application Jun. 24, 1991, Ser. No. 720,098

Int. Cl.[5] A01N *63/04*

U.S. Cl. 504—117 **5 Claims**

1. A process for independently controlling yellow and purple nutsedge, said process comprising the application of a lethal amount of phytotoxin-producing fungus to said yellow or purple nutsedge or its situs, wherein said fungus is a *Curvularia lunata* var. *aeria*, ATCC 74070.

5,256,628

BIOLOGICAL CONTROL OF WEEDS USING AAL-TOXIN

Hamed K. Abbas, Greenville, and Clyde D. Boyette, Leland, both of Miss., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Aug. 31, 1992, Ser. No. 936,991

Int. Cl.[5] A01N *63/04*

U.S. Cl. 504—117 **6 Claims**

1. A method of controlling weeds of the group consisting of duckweeds, jimsonweed, redroot pigweed, northern jointvetch, prickly sida, and black nightshade comprising applying to said weeds a phytotoxic amount of AAL-toxin.

5,256,629

3-(SUBSTITUTED KETONE AND ALCOHOL)-2-(2-IMIDAZOLIN-2-YL) PYRIDINE COMPOUNDS USEFUL AS HERBICIDAL AGENTS

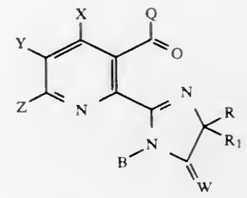
Peter J. Wepplo, Princeton, N.J., and Alvin D. Crews, Yardley, Pa., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jun. 3, 1992, Ser. No. 893,180

Int. Cl.[5] A01N *43/40;* **C07D** *213/30*

U.S. Cl. 504—130 **9 Claims**

1. A compound having the structure



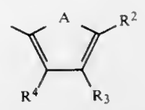
(I)

wherein

R is C_1–C_4 alkyl;

R_1 is C_1–C_4 alkyl or C_3–C_6 cycloalkyl; and when R and R_1 are taken together with the carbon to which they are attached they may represent C_3–C_6 cycloalkyl optionally substituted with methyl;

Q is



R_2, R_3 and R_4 are each independently hydrogen, halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy or phenyl optionally substituted with one or two halogen atoms, C_1–C_4 alkyl or haloalkyl groups or C_1–C_4 alkoxy or haloalkoxy groups;

A is O or S;

B is hydrogen, COR_6 or SO_2R_7;

R_6 is C_1–C_{11} alkyl, chloromethyl or phenyl optionally substituted with one chloro, one nitro or one methoxy group;

R_7 is C_1–C_4 alkyl or phenyl optionally substituted with one methyl group;

W is O or S;

X is hydrogen, halogen or methyl;

Y and Z are each independently hydrogen, halogen, C_1–C_6 alkyl, C_1–C_4 alkoxymethyl, C_1–C_6 alkoxy, C_1–C_4 alkylthio, phenoxy, C_1–C_4 haloalkyl, nitro, cyano, C_1–C_4 alkylsulfonyl or phenyl optionally substituted with one C_1–C_4 alkyl, C_1–C_4 alkoxy or halogen;

or when R and R_1 are not the same, the optical isomers thereof.

5,256,630

SAFENING MIXTURES OF SULFONYLUREA AND ACETANILIDE HERBICIDES

Brett H. Bussler, St. Louis Park, Minn., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 212,621, Jul. 1, 1988, which is a continuation-in-part of Ser. No. 84,786, Aug. 13, 1987, abandoned. This application Dec. 29, 1989, Ser. No. 459,228

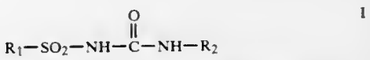
The portion of the term of this patent subsequent to Jul. 6, 2010, has been disclaimed.

Int. Cl.[5] A01N *43/48*

U.S. Cl. 504—134 **19 Claims**

1. Herbicidal composition comprising

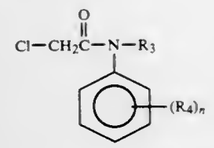
(a) a herbicidally-effective amount of a sulfonylurea of the formula



I

wherein R_1 and R_2 are independently phenyl, a heterocyclic radical containing up to 10 ring members of which 4 may be O, S or N atoms or said phenyl and heterocyclic radical optionally substituted with halogen, C_{1-4} alkyl, haloalkyl, alkoxy, carboxyl or carboalkoxy radicals;

(b) a herbicidally-effective amount of an acetanilide of the formula



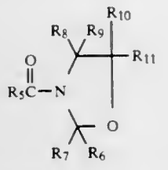
II

R_3 is hydrogen, C_{1-8} alkyl, haloalkyl, alkoxy or alkoxyalkyl, alkenyl, haloalkenyl, alkynyl or haloalkynyl or acylamidoalkyl, having up to 6 carbon atoms, C_{5-10} heterocyclyl or heterocyclylmethyl having O, S and/or N atoms and which may be substituted with halogen, C_{1-4} alkyl, carbonylalkyl or carbonylalkoxyalkyl, nitro, amino or cyano groups;

R_4 is hydrogen, halogen, nitro, amino, C_{1-6} alkyl, haloalkyl, alkoxy or alkoxyalkyl; and

n is 0–5 and

(c) an antidotally-effective amount of a compound of the formula



III

and agriculturally-acceptable salts thereof

wherein R_5 is halomethyl;

R_6 and R_7 are H, C_{1-4} alkyl, haloalkyl, alkoxy or phenyl;

R_{8-10} are H or C_{1-4} alkyl;

R_{11} is a saturated or unsaturated heterocyclic radical containing up to 10 ring atoms of which 3 may be O, S or N atoms, optionally substituted with halogen, C_{1-4} alkyl, haloalkyl, alkoxy or alkoxyalkyl or with oxygen on a ring N atom or R_{11} may be a bicyclic hydrocarbon radical containing up to 10 carbon atoms; and

R_{10} and R_{11} may be combined to form a spiroheterocyclic ring as defined for R_{11}.

5,256,631

SUBSTITUTED 1,2,4-TRIAZINEDIONES, AND THEIR USE

Werner Lindner, Köln, and Axel Haberkorn, Wuppertal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

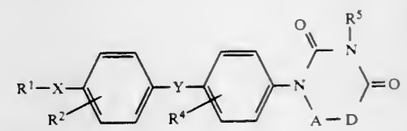
Filed Jan. 17, 1992, Ser. No. 822,482

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1991, 4120138

Int. Cl.[5] C07D *253/07, 253/06;* **A01N** *43/707*

U.S. Cl. 504—229 **8 Claims**

1. A compound selected from compounds of the formula (I)



(I)

in which

A–D represents —N=CH— or

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$-N(R^6)-CH_2-$,

X represents O or S, SO or SO_2,
Y represents O, S, CO,

$-CH(OH)-$ or $-CR^3(CN)-$,

R^1 represents C_{1-4}-halogenoalkyl,
R^2 represents hydrogen, halogen or C_{1-4}-halogenoalkyl,
R^3 represents hydrogen or C_{1-4}-alkyl,
R^4 represents one or more identical or different radicals selected from the group consisting of hydrogen, halogen, halogen-C_{1-4}-alkyl and C_{1-4}-alkyl, and
R^5 and R^6, independently of one another, represent hydrogen, C_{1-4}-alkyl, halogen-C_{1-4}-alkyl, or phenyl-C_{1-4}-alkyl or lower alkinyl.

5,256,632

HERBICIDAL SULPHONYLATED CARBOXAMIDES

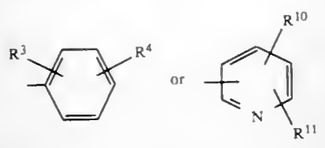
Hilmar Wolf, Langenfeld; Rolf Kirsten, Monheim; Hans-Joachim Santel, Leverkusen; Klaus Lürssen, and Robert R. Schmidt, both of Gladbach, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 704,544, May 23, 1991, Pat. No. 5,205,853. This application Jun. 18, 1992, Ser. No. 900,867
Claims priority, application Fed. Rep. of Germany, May 30, 1991, 4017338; May 14, 1992, 4215878
Int. Cl.[5] A01N *43/48*; **C07D** *413/02, 271/04, 271/06*
U.S. Cl. 504—252 **11 Claims**

1. A sulphonylated carboxamide of the formula

$$R^1-CO-NH-SO_2-(A)_n-R^2 \quad (I)$$

in which
n represents the number 0 or 1,
A represents oxygen, imino (NH) or methylene (CH_2),
R^1 represents a five-membered heretoaryl radical from the group consisting of oxazolyl, isoxazolyl, thiazolyl, isothiazolyl, oxadiazolyl and thiadiazolyl, which is optionally monosubstituted or polysubstitututed by identical or different halogen or by optionally halogen-substituted C_1–C_6-alkyl, phenyl, C_1–C_6-alkoxy, C_1–C_6-alkylthio, C_1–C_6-alkylsulphinyl, C_1–C_6-alkylsulphonyl, C_1–C_6-alkylamino or di-(C_1–C_6-alkyl)amino, and
R^2 represents the radical



in which
R^3 and R^4 are identical or different and represent hydrogen, fluorine, chlorine, bromine, iodine, cyano, nitro, carboxyl or C_1–C_6-alkyl which is optionally substituted by fluorine, chlorine, bromine, cyano, carboxyl, C_1–C_4-alkoxycarbonyl, C_1–C_4-alkylamino-carbonyl, di-(C_1–C_4-alkyl-)aminocarbonyl, hydroxyl, C_1–C_4-alkoxy, formyloxy, C_1–C_4-alkyl-carbonyloxy, C_1–C_4-alkoxycarbonyloxy, C_1–C_4-alkylamino-carbonyloxy, C_1–C_4-alkylthio, C_1–C_4-alkylsulphinyl, C_1–C_4-alkylsulphonyl, di-(C_1–C_4-alkyl-)aminosulphonyl, C_3–C_6-cycloalkyl or phenyl, or R^3 and R^4 furthermore independently of one another represent C_2–C_6-alkenyl which is optionally substituted by fluorine, chlorine, bromine, cyano, C_1–C_4-alkoxycarbonyl, carboxyl or phenyl, or R^3 and R^4 additionally independently of one another represent C_2–C_6-alkinyl which is optionally substituted by fluorine, chlorine, bromine, cyano, C_1–C_4-alkoxy-carbonyl, carboxyl or phenyl; C_1–C_4-alkoxy which is optionally substituted by fluorine, chlorine, bromine, cyano, carboxyl, C_1–C_4-alkoxyacarbonyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-alkylsulphinyl or C_1–C_4-alkylsulphonyl; C_1–C_4-alkylthio which is optionally substituted by fluorine, chlorine, bromine, cyano, carboxyl, C_1–C_4-alkoxycarbonyl, C_1–C_4-alkylthio, C_1–C_4-alkylsulphinyl or C_1–C_4-alkylsulphonyl; C_3–C_6-alkenyloxy which is optionally substituted by fluorine, chlorine, bromine, cyano or C_1–C_4-alkoxy-carbonyl, C_2–C_6-alkenylthio which is optionally substituted by fluorine, chlorine, bromine, cyano, nitro, C_1–C_3-alkylthio or C_1–C_4-alkoxy-carbonyl; C_3–C_6-alkynyloxy, C_3–C_6-alkylthio or the radical $-S(O)_p-R^5$, or
R^3 and R^4 furthermore represent phenyl or phenoxy, C_1–C_4-alkylcarbonylamino, C_1–C_4-alkoxycarbonylamino, C_1–C_4-alkylamino-carbonylamino, di-(C_1–C_4-alkyl)-amino-carbonylamino, or the radical $-CO-R^6$, or R^3 and R^4 furthermore represent C_1–C_4-alkylsulphonyloxy, di-(C_1–C_4-alkyl)-aminosulphonylamino or the radical $-CH=N-R^7$, in which
p represents the numbers 1 or 2 and
R^5 represents C_1–C_4-alkyl which is optionally substituted by fluorine, chlorine, bromine, cyano or C_1–C_4-alkoxycarbonyl, or R^5 represents C_1–C_4-alkoxy, C_1–C_4-alkoxy-C_1–C_4-alkylamino or di-(C_1–C_4-alkyl)-amino,
R^6 represents C_1–C_6-alkyl, C_1–C_6-alkoxy which is optionally substituted by fluorine, chlorine, methoxy or ethoxy; C_3–C_6-cycloalkoxy, C_3–C_6-alkenyloxy, C_1–C_4-alkylthio, amino, C_1–C_4-alkylamino, C_1–C_4-alkoxyamino, C_1–C_4-alkoxy-C_1–C_4-alkyl-amino or di-(C_1–C_4-alkyl)amino which are optionally substituted by fluorine or chlorine and
R^7 represents C_1–C_6-alkyl which is optionally substituted by fluorine, chlorine, cyano, carboxyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-alkylsulphinyl or C_1–C_4-alkylsulphonyl, benzyl which is optionally substituted by fluorine or chlorine, C_3–C_6-alkenyl or C_3–C_6-alkynyl which are optionally substituted by fluorine or chlorine, phenyl which is optionally substituted by fluorine, chlorine, bromine, C_1–C_4-alkyl, C_1–C_4-alkoxy, trifluoromethyl, trifluoromethoxy or trifluoromethylthio, C_1–C_6-alkoxy, C_3–C_6-alkenyloxy, C_3–C_6-alkynyloxy or benzyloxy which are optionally substituted by fluorine or chlorine, or R^7 furthermore represents amino, C_1–C_4-alkylamino, di(C_1–C_4-alkyl)-amino, phenylamino, C_1–C_4-alkyl-carbonylamino, C_1–C_4-alkoxycarbonylamino, C_1–C_4-alkyl-sulphonylamino or phenyl sulphonylamino which is optionally substituted by fluorine, chlorine, bromine or methyl,
R^{10} and R^{11} are identical or different and represent hydrogen, fluorine, chlorine, bromine, nitro, cyano, or C_1–C_4-alkyl which is optionally substituted by fluorine or chlorine; C_2–C_4-alkenyl which is optionally substituted by fluorine or chlorine, C_1–C_4-alkoxy which is optionally substituted by fluorine or chlorine; C_1–C_4-alkylthio, C_1–C_4-alkylsulphinyl or C_1–C_4-alkylsulphonyl which are optionally substituted by fluorine or chlorine; and di-(C_1–C_4-alkyl)-aminosulphonyl, C_1–C_4-alkoxy-carbonyl, dimethylaminocarbonyl or dioxolanyl;
or a salt thereof with the exclusion of the compound 2-(dimethylamino)-N-[(4-methylphenyl)sulphonyl]-5-thiazole carboxamide.

5,256,633

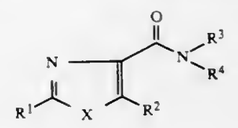
OXAZOLE-AND THIAZOLECARBOXYAMIDES AS HERBICIDES

Klaus Ditrich, Bad Duerkheim; Volker Maywald, Ludwigshafen; Gerhard Hamprecht, Weinheim; Albrecht Harreus, Ludwigshafen; Bruno Wuerzer, Otterstadt, and Karl-Otto Westphalen, Speyer, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 830,326, Dec. 26, 1991, which is a continuation of Ser. No. 587,853, Sep. 25, 1990, abandoned. This application Apr. 17, 1992, Ser. No. 870,386
The portion of the term of this patent subsequent to Sep. 14, 2010, has been disclaimed.
Int. Cl.[5] A01N *43/78*
U.S. Cl. 504—266 **3 Claims**

1. Process for combatting unwanted plant growth which comprises treating the unwanted plants and/or the area to be kept free from unwanted plant growth with a herbicidally effective amount of a thiazolecarboxamide of the formula IA

Ia



where
X is sulfur;
R^1 is hydrogen; halogen; C_1–C_6-alkyl which can carry from one to five halogen atoms and/or one or two of the following: C_3–C_6-cycloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio or cyano; benzyl which can carry from one to three of the following: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio, halogen, cyano or nitro; C_3–C_8 cycloalkyl which can carry from one to three of following: C_1–C_4-alkyl or halogen; C_2–C_6-alkenyl which can carry from one to three of the following: halogen, C_1–C_3-alkoxy and/or one phenyl which in turn can carry form one to three of the following: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio, halogen, cyano or nitro; C_2–C_6-alkynyl which can carry from one to three of the following: halogen, C_1–C_3-alkoxy and/or one phenyl which in turn can carry from one to three of the following: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio, halogen, cyano or nitro; C_1–C_4-alkoxy; C_1–C_4-alkylthio; C_1–C_4-haloalkoxy; C_1–C_4-haloalkylthio; phenoxy or phenylthio, which can carry from one to three of the following: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio, halogen, cyano or nitro; a 5- to 6-membered heterocyclic radical containing one or two hetero atoms selected from the group consisting of oxygen, sulfur and nitrogen, it being possible for the ring to carry one or two of the following: C_1–C_3-alkyl, halogen, C_1–C_3-alkoxy or C_1–C_3-alkoxycarbonyl; phenyl which can carry from one to three of the following: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio, halogen, nitro and cyano;
R^2 is formyl, 4,5-dihydro-2-oxazolyl or $-COYR^5$;
Y is oxygen or sulfur;
R^5 is hydrogen; C_1–C_6-alkyl which can carry from one to give halogen atoms or hydroxyl groups and/or one of the following: C_1–C_4-alkoxy, C_2–C_4-alkoxy-C_1–C_4-alkoxy, cyano, trimethylsilyl, C_1–C_3-alkylthio, C_1–C_3-alkylamino, di-C_1–C_3-alkylamino, C_3–C_7-cycloalkylamino, C_1–C_3-alkylsulfinyl, C_1–C_3-alkylsulfonyl, carboxyl, C_1–C_3-alkoxycarbonyl, di-C_1–C_3-alkylaminocarbonyl, di-C_1–C_3-alkoxyphosporyl, alkaneiminoxy, thienyl, furyl, tetrahydrofuryl, phthalimido, pyridyl, benzyloxy or benzoyl, it being possible for the cyclic radicals in turn to carry from one to three of the following: C_1–C_3-alkyl, C_1–C_3-alkoxy or halogen; benzyl which can carry from one to three of the following: C_1–C_3-alkyl, C_1–C_3-alkoxy, C_1–C_3-haloalkyl, halogen, nitro and cyano; C_3–C_8-cycloalkyl; phenyl, which can carry from one to three of the following: C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy, C_1–C_4-alkoxycarbonyl, halogen, nitro and cyano; C_3–C_8-alkenyl, C_5–C_6-cycloalkenyl or C_3–C_8-alkynyl, it being possible for these radicals to carry one of the following: hydroxyl, C_1–C_4-alkoxy, halogen or a phenyl ring which in turn can carry from one to three of the following: C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkyl, halogen, nitro and cyano; a 5- to 6-membered heterocyclic radical containing one or two hetero atoms selected from the group consisting of oxygen, sulfur and nitrogen or a benzo-triazolyl radical; phthalimido; tetrahydrophthalimido; succinimido; maleimido; one equivalent of a cation from the group consisting of the alkali metals or alkaline earth metals, manganese, copper, iron, ammonium and substituted ammonium;

$-N=CR^6R^7$;

R^6 and R^7 are hydrogen; C_1–C_4-alkyl; C_3–C_8-cycloalkyl; phenyl or furyl, or together form a methylene chain $-(CH_2)_m-$ with m=4 to 7;
R^3 is hydrogen; C_1–C_4-alkyl which can carry from one to three of the following: hydroxyl, halogen, C_1–C_4-alkoxy, C_1–C_4-alkylthio or di-C_1–C_3-alkylamino; C_3–C_8-cycloalkyl which can carry from one to three of the following: C_1–C_4-alkyl, halogen and C_1–C_4-haloalkyl;
R^4 is hydroxyl; C_1–C_4-alkoxy; C_1–C_8-alkyl which can carry from one to three of the following: C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio, di-C_1–C_4-alkylamino, halogen, C_3–C_8-cycloalkyl or phenyl which in turn can carry from one to three of the following: halogen, cyano, nitro, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio or C_1–C_4-haloalkylthio; C_3–C_8-cycloalkyl which can carry from one to three of the following: C_1–C_6-alkyl, C_1–C_6-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, halogen, nitro or cyano; C_3–C_6-alkenyl or C_3–C_6-alkynyl, which can be substituted from once to three times by halogen and/or once by phenyl which in turn can carry from one to three of the following: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio, halogen, cyano or nitro; a 5- to 6-membered heterocyclic radical which contains one or two hetero atoms selected from the group consisting of oxygen, sulfur or nitrogen, and which can carry from one to three of the following: C_1–C_4-alkyl or halogen; phenyl which can carry from one to four of the following: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio, halogen, nitro, cyano, formyl, C_1–C_4-alkanoyl, C_1–C_4-haloalkanoyl or C_1–C_4-alkoxycarbonyl; naphthyl which can be substituted from once to three times by C_1–C_4-alkyl or halogen, or R^3 and R^4 together form $-(CH_2)_n-Y_p-(CH_2)_q-$ when n and q are each 1, 2 or 3, p is 0 or 1 and Y is oxygen, sulfur or N-methyl, or $-(CH_2)_3-CO-$, and the environmentally compatible salts thereof.

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5,256,634

HERBICIDAL AGENTS BASED ON PYRAZOLE DERIVATIVES

Otto Schallnor, Monheim; Reinhold Gehring, Wuppartal; Erich Klauke, Odenthal; Jörg Stetter, Wuppertal; Heinz-Jürgen Wroblowsky, Langenfeld; Robert R. Schmidt, Bergisch-Gladbach, and Hans-Joachim Santel, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 569,493, Aug. 20, 1990, Pat. No. 5,104,439, which is a continuation of Ser. No. 298,880, Jan. 18, 1989, abandoned, which is a continuation of Ser. No. 887,290, Jul. 21, 1986, abandoned, which is a continuation-in-part of Ser. No. 785,927, Oct. 9, 1985, abandoned, which is a division of Ser. No. 690,347, Jan. 10, 1985, Pat. No. 4,614,533. This application Aug. 12, 1991, Ser. No. 744,195

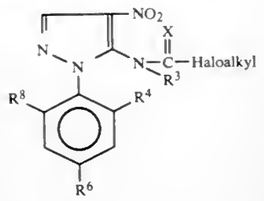
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1984, 3402308

The portion of the term of this patent subsequent to Aug. 16, 2005, has been disclaimed.

Int. Cl.[5] A01N *43/56;* C07D *231/16*

U.S. Cl. 504—282 10 Claims

1. A 5-amino-1-phenyl-pyrazole of the formu.a



in which

X is O or S,

R^3 is H or alkyl,

R^4, R^6 and R^8 independently of one another represent cyano, nitro, halogen, alkyl, alkoxy, alkoxycarbonyl, halogenoalkyl, halogenoalkoxy or a radical $—S(O)_n—R^{13}$, and

R^{13} represents alkyl, halogenoalkyl, amino, alkylamino or dialkylamino.

5,256,635

HIGH TEMPERATURE SUPERCONDUCTOR SYSTEM COMPRISING $TL_2BA_2CUO_{6+\delta}$

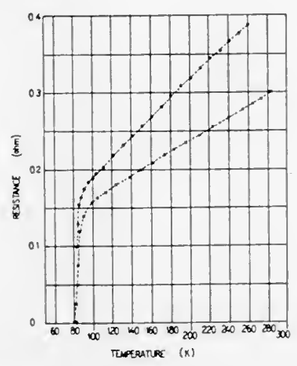
Zhengzhi Sheng, and Allen M. Hermann, both of Fayetteville, Ark., assignors to University of Arkansas, Little Rock, Ark.

Continuation-in-part of Ser. No. 144,114, Jan. 15, 1988, abandoned. This application Jan. 13, 1989, Ser. No. 297,119

Int. Cl.[5] C01F *11/02;* C01G *3/02, 15/00;* H01L *39/12*

U.S. Cl. 505—1 3 Claims

1. A high temperature superconductor wherein a phase of the superconductor has the following approximate stoichiometry:



$Tl_2Ba_2CuO_{6+\delta}$.

5,256,636

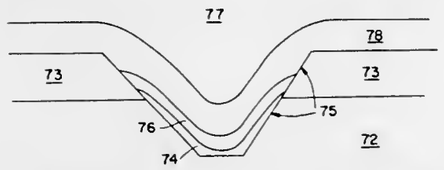
MICROELECTRONIC SUPERCONDUCTING DEVICE WITH MULTI-LAYER CONTACT

Frederick C. Wellstood, Berkeley; John J. Kingston, Oakland, and John Clarke, Berkeley, all of Calif., assignors to The Regents of the University of Calif., Oakland, Calif.

Filed Sep. 21, 1990, Ser. No. 586,435

Int. Cl.[5] H01L *39/22;* B05D *5/12;* H01B *12/00*

U.S. Cl. 505—1 4 Claims



1. A microelectronic device comprising a substrate; a first thin film of high T_c metal oxide superconductor material deposited on said substrate; a second thin film deposited on said first thin film, said second thin film having at least one hole, said second thin film being comprised of a material having high resistivity at temperatures below T_c, and having a microstructure which is epitaxial; and a plurality of layers deposited within said hole.

5,256,637

SUPERCONDUCTING COIL BEARINGS FOR ROTOR LOAD

Dantam K. Rao, Niskayuna, N.Y., assignor to Mechanical Technology Inc.

Filed Jul. 22, 1991, Ser. No. 733,304

Int. Cl.[5] H01B *12/00;* H02K *55/00, 7/09*

U.S. Cl. 505—1 11 Claims

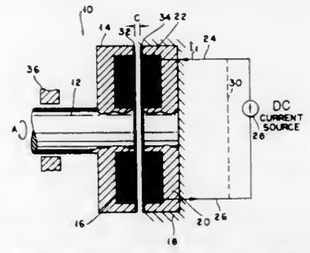
1. An active magnetic bearing comprising:

a stator;

primary coil disposed on said stator, said primary coil means including a first and a second superconducting coil and a non-superconducting coil, said superconducting coil coupled to an external source for generating a stator current;

a rotor under a load including a static load component and a dynamic load component, said rotor being rotatable with respect to said stator; and

secondary means axially symmetrically attached to said rotor and cooperating with said second superconducting coil to generate a biasing force on said rotor; said secondary means cooperating with said superconducting coil to



generate a static force substantially symmetric about a longitudinal axis of said rotor for substantially counteracting said static load; said secondary means cooperating with said non-superconducting coil to generate a dynamic force to counteract said dynamic load;

said secondary means including means for generating a rotor current in response to said stator current.

5,256,638

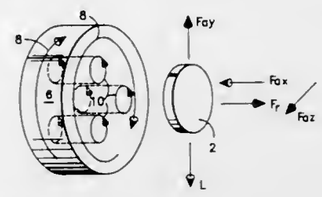
MAGNETICALLY LEVIATED SUPERCONDUCTING BEARING

Bernard R. Weinberger, Avon, and Lahmer Lynds, Jr., Glastonbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 14, 1991, Ser. No. 791,834

Int. Cl.[5] H02K *7/09;* G11B *5/55*

U.S. Cl. 505—1 22 Claims



1. A magnetically leviated superconducting bearing, comprising:

(a) a shaft rotatable around an axis of rotation, wherein the shaft is subject to a load,

(b) a magnet mounted to the shaft,

(c) a stator in proximity to the shaft,

(d) a Type II superconductor supported by the stator in proximity to the magnet such that when the superconductor is cooled to its superconducting state in the presence of a magnetic field, the magnet and superconductor interact with each other to produce a noncanceled attractive force parallel to the load that leviates the magnet and supports the load, the surface screening currents that generate a repulsive force perpendicular to the load that is canceled by a component of the attractive force perpendicular to the load, wherein the magnet and superconductor are oriented to enhance the magnetic field to which the superconductor is exposed, and

(e) means for maintaining the superconductor at a temperature below its critical temperature.

5,256,639

DIELECTRIC CERAMIC COMPOSITION

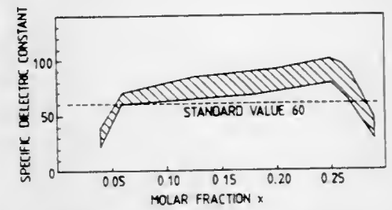
Takuya Fujimaru; Takehiko Yoneda; Hiromi Tokunaga, and Hiromitsu Taki, all of Miyazaki, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 820,815, Jan. 15, 1992, abandoned. This application Sep. 21, 1992, Ser. No. 947,814

Claims priority, application Japan, Jan. 21, 1991, 3-4976

Int. Cl.[5] C04B *35/46, 35/49*

U.S. Cl. 501—137 12 Claims



1. A dielectric ceramic composition represented by the compositional formula: $_xBaO$-$_yTiO_2$-$_zNd_2O_3$-$_tSm_2O_3$-$_wBi_2O_3$ having the following compositional ranges when expressed in molar fractions:

$0.06 \leqq x \leqq 0.25$

$0.60 \leqq Y \leqq 0.80$

$0.05 \leqq z \leqq 0.18$

$0 < t \leqq 0.07$

$0 < w \leqq 0.05$,

provided that;

$x+y+z+1+w=1$,

and wherein when y is less than 0.68, z can not be greater than 0.15 and when z is greater than 0.15, y can not be less than 0.68, said dielectric ceramic composition exhibiting an unloaded Q valve greater than 2000 and a temperature coefficient of resonant frequency less than 100 τf.

5,256,640

GALLSTONE MITIGATION BY NUTRIENT STIMULATED GALLBLADDER CONTRACTION

Francis J. Peterson, Apple Valley, Minn., and Louis J. Arrone, Pelham Manor, N.Y., assignors to Sandoz Ltd., Basel, Switzerland

Filed Sep. 30, 1991, Ser. No. 768,142

Int. Cl.[5] A61K *37/18, 31/70, 31/715, 31/525*

U.S. Cl. 514—2 15 Claims

1. A method of contracting the gallbladder to prevent the buildup of biliary sludge and gallstones which comprises administering a nutritional supplement comprising from about 20 g to about 35 g of protein; from about 5 g to about 15 g of fat; and from about 6 g to about 15 g of carbohydrate per daily serving.

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5,256,641

COVALENT POLAR LIPID-PEPTIDE CONJUGATES FOR IMMUNOLOGICAL TARGETING

Milton B. Yatvin, Portland, Oreg.; Michael H. B. Stowell, Pasadena, Calif., and Miroslav Malkovsky, Madison, Wis., assignors to State of Oregon, Portland, Oreg.

Continuation-in-part of Ser. No. 607,982, Nov. 1, 1990, Pat. No. 5,149,794. This application Jul. 9, 1992, Ser. No. 911,209

Int. Cl.[5] A61K *31/00, 31/685, 31/19, 37/02*

U.S. Cl. 514—2 23 Claims

1. A composition of matter comprising a peptide, a polar lipid carrier, two linker functional groups and a spacer, wherein the spacer has a first end and a second end and wherein the polar lipid is attached to the first end of the spacer through a first linker functional group and the peptide is attached to the second end of the spacer through a second linker functional group.

5,256,642

COMPOSITIONS OF SOLUBLE COMPLEMENT RECEPTOR 1 (CR1) AND A THROMBOLTIC AGENT, AND THE METHODS OF USE THEREOF

Douglas T. Fearon, Baltimore, Md.; Lloyd B. Klickstein, Brookline, Mass.; Winnie W. Wong, Newton, Mass.; Gerald R. Carson, Wellesley, Mass.; Michael F. Concino, Newton, Mass.; Stephen H. Ip, Sudbury, Mass.; Savvas Makrides, Bedford, Mass., and Henry C. Marsh, Jr., Reading, Mass., assignors to The Johns Hopkins University, Baltimore, Md.; Brigham and Women's Hospital, Boston and T Cell Sciences, Inc., Cambridge, both of Mass.

Continuation-in-part of Ser. No. 412,745, Sep. 26, 1989, abandoned, which is a continuation-in-part of Ser. No. 332,865, Apr. 3, 1989, abandoned, which is a continuation-in-part of Ser. No. 176,532, Apr. 1, 1988, abandoned. This application Sep. 24, 1990, Ser. No. 588,128

Int. Cl.[5] A61K *37/02, 37/547;* C12N *9/72;* C07K *13/00*

U.S. Cl. 514—8 13 Claims

1. A method of treating thrombotic conditions in humans and animals, which method comprises administering to a human or animal in need thereof a complement inhibitory amount of a soluble CR1 protein and a thrombolytically effective amount of a thrombolytic agent, which soluble CR1 protein has the characteristics of the protein expressed by a Chinese hamster ovary cell DUX B11 carrying plasmid pBSCR1c/pTCSgpt as deposited with the ATCC and assigned accession number CRL 10052, which characteristics are (i) electrophoretic migration, (ii) C3b and C4b binding activity; (iii) immune complex binding activity; (iv) complement regulator activity; (v) effects on phagocytosis; (vi) effects on immune stimulation; (vii) antigenic properties; and (viii) lack of a transmembrane region.

5,256,643

HUMAN CRIPTO PROTEIN

Maria G. Persico, Naples, Italy, and David S. Salomon, Germantown, Md., assignors to The Government of the United States, Washington, D.C.

Filed May 29, 1990, Ser. No. 530,165

Int. Cl.[5] C07K *13/00;* A61K *37/36*

U.S. Cl. 514—12 4 Claims

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                10                  20                  30
MHAAISKVFELGLVAGLGHQEFARPSRGYL
            40                  50                  60
AFRDDSIWPQEEPAIRPRSSQRVPPMGIQH
        70                  80                  90
SKELNRTCCLNGGTCMLGSFCACPPSFYGR
    100                 110                 120
NCEHDVRKENCGSVPHDTWLPKKCSLCKCW
130                 140                 150
HGQLRCFPQAFLPGCDGLVMDEHLVASRTP
            160                 170
ELPPSARTTTFLMVGICLSIDSYY
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1. An isolated, substantially pure, recombinant CRIPTO protein having the amino acid sequence shown in FIG. 2.

5,256,644

WOUND HEALING USING IGF-II AND TGF

Harry N. Antoniades, Newton, and Samuel E. Lynch, Beverly, both of Mass., assignors to Institute of Molecular Biology, Inc., Worcester and President and Fellows of Harvard College, Cambridge, both of Mass.

Continuatioo of Ser. No. 530,649, May 30, 1990, abandoned, which is a continuation-in-part of Ser. No. 196,975, May 20, 1988, Pat. No. 4,983,581. This application Mar. 25, 1992, Ser. No. 857,713

The portion of the term of this patent subsequent to Jan. 8, 2008, has been disclaimed.

Int. Cl.[5] A61K *37/36*

U.S. Cl. 514—12 13 Claims

1. A method for healing an external wound of a mammal comprising applying to said wound a wound-healing amount of a composition consisting essentially of purified Insulin-like growth factor-II and transforming growth factor beta.

5,256,645

AMINO ACID DERIVATIVES

Quirico Branca, Basel, Switzerland; Werner Neidhart, Freiburg im Breisgau, Fed. Rep. of Germany; Henri Ramuz, Birsfelden; Heinz Stadler, Rheinfelden, both of Switzerland, and Wolfgang Wostl, Grenzach-Wyhlen, Fed. Rep. of Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

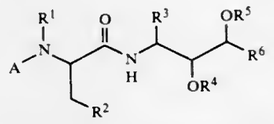
Division of Ser. No. 318,576, Mar. 3, 1989, Pat. No. 5,134,123. This application Apr. 22, 1992, Ser. No. 872,736

Claims priority, application Switzerland, Mar. 4, 1988, 820/88; Sep. 16, 1988, 3469/88; Dec. 28, 1988, 4824/88

Int. Cl.[5] A61K *37/00*

U.S. Cl. 514—18 10 Claims

1. A compound of the formula



I

wherein R^1 signifies hydrogen or methyl, R^2 signifies ethyl, propyl, isopropyl, imidazol-2-yl, pyrazol-3-yl, thiazol-4-yl, thien-2-yl or t-butoxy, R^3 signifies isobutyl, cyclohexylmethyl or benzyl, R^4 and R^5 each independently signify hydrogen, alkanoyl, which is optionally mono- or multiply-substituted by amino, monoalkylamino, dialkylamino, alkanoylamino, alkanoyloxyamino, carboxy, alkoxy or hydroxy, or an O-protecting group or together signify a cyclic O-protecting group, R^6 signifies one of the groups



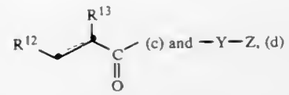
(a)

and



(b)

and A signifies one of the groups



(c) and —Y—Z, (d)

wherein D signifies a methyne group or a nitrogen atom, R^7 signifies alkyl, aryl or arylalkyl and R^8 signifies hydrogen, alkyl, aryl or arylalkyl or R^7 and R^8 together with the two atoms to which they are attached signify aryl, heteroaryl, cycloalkenyl or heterocycloalkenyl, R^9 signifies hydrogen or alkyl and R^{10} and R^{11} each independently signify alkyl, aryl, arylalkyl, cycloalkyl or the group

$$—CH_2—X—R^{14} \quad \text{(e)}$$

or, together with the carbon atom to which they are attached, cycloalkyl or heterocycloalkyl, with the proviso that, where R^9 signifies alkyl, R^{10} and R^{11} also signify alkyl, the dotted line can signify an additional bond, R^{12} signifies phenyl, substituted phenyl, benzyl or naphthyl and R^{13} signifies hydrogen, alkoxycarbonyalkyl, alkylcarbonylalkyl, cycloalkylcarbonylalkyl, heterocycloalkylcarbonylalkyl, arylcarbonylalkyl, aminocarbonylalkyl, substituted aminocarbonylalkyl, alkoxycarbonylhydroxyalkyl, alkylcarbonylhydroxyalkyl, cycloalkylcarbonylhydroxyalkyl, heterocycloalkylcarbonylhydroxyalkyl, arylcarbonylhydroxyalkyl, aminocarbonylhydroxyalkyl, substituted aminocarbonylhydroxyalkyl, dialkoxyphosphoroxyalkyl, diphenyloxyphosphoroxyalkyl, arylalkyl, alkoxycarbonylamino, arylalkoxycarbonylamino, alkylthioalkyl, alkylsulphinylalkyl or alkylsulphonylalkyl, with the proviso that R^{13} can not signify alkoxycarbonylamino or arylalkoxycarbonylamino when R^{12} signifies phenyl, benzyl or α-naphthyl, Y signifies the bivalent residue of optionally N- and/or α-methylated phenylalanine, cyclohexylalanine, tyrosine, O-methyltyrosine, α-naphthylalanine or homophenylalanine linked with Z at the N-terminal, Z signifies acyl, X signifies an oxygen or sulphur atom or the group —NH— and R^{14} signifies hydrogen, alkyl, cycloalkyl, arylalkyl, cycloalkylalkyl, alkylcarbonyl, arylcarbonyl or arylalkylcarbonyl, in the form of an optically pure diastereomer, a diastereomeric racemate, or mixtures thereof as well as pharmaceutically usable salts thereof.

5,256,646

ANTIVIRAL ANTIBIOTIC BU-4224V

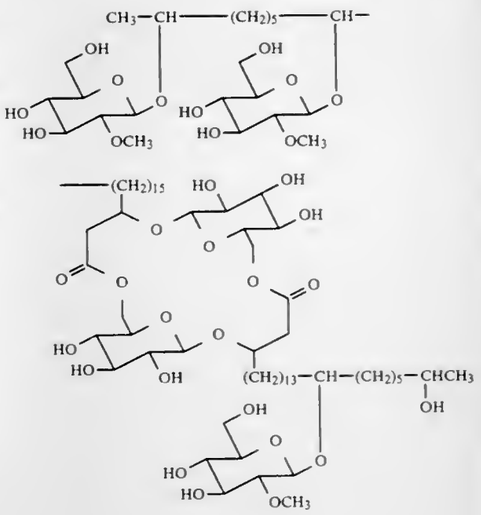
Mitsuaki Tsunakawa; Tetsuro Yamasaki, both of Kanagawa; Koji Tomita, Tokyo, and Osamu Tenmyo, Kanagawa, all of Japan, assignors to Bristol-Myers Squibb Company, New York, N.Y.

Filed Jul. 27, 1990, Ser. No. 559,864

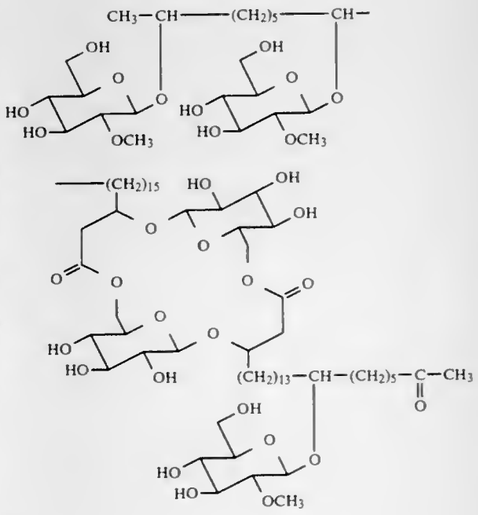
Int. Cl.[5] A61K *31/71;* C07H *3/00*

U.S. Cl. 514—32 4 Claims

1. The compound BU-4224V B_1 having the structure



2. The compound BU-4224V B_2 having the structure



3. A method for treating a mammalian host affected by herpes simplex virus type 1, which method comprises administering to said host an effective amount of the compound of claim 1 or 2.

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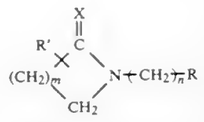
5,256,647

COMPOSITIONS COMPRISING 1-SUBSTITUTED AZACYCLOALKANES

Gevork Minaskanian, Irvine; James V. Peck, Costa Mesa, and Eric L. Nelson, Santa Ana, all of Calif., assignors to Whitby Research, Inc., Richmond, Va.

Continuation of Ser. No. 341,320, Apr. 19, 1989, Pat. No. 4,992,422. This application Nov. 13, 1990, Ser. No. 611,612
Int. Cl.[5] A01N *43/04;* A61K *31/70, 7/42, 7/44, 9/02, 9/06, 9/10, 9/12*
U.S. Cl. 514—24 4 Claims

1. A method for topically administering an antibacterial agent to a human or animal in need thereof which comprises contacting said antibacterial agent with the skin or other membrane of the human or animal in the presence of a non-toxic, effective penetrating amount of a compound having the structural formula



wherein X is two hydrogen; atoms; m is 4; n is 4–17R is $—CH_3$, and R′ is H.

5,256,648

SELECTIVE INHIBITION OF GENE EXPRESSION BY PHOTOACTIVATABLE OLIGONUCLEOTIDES

Francis P. Gasparro, Hamden, and Richard L. Edelson, Westport, both of Conn., assignors to Yale University, New Haven, Conn.

Continuation-in-part of Ser. No. 299,265, Jan. 23, 1989, abandoned, which is a continuation-in-part of Ser. No. 146,571, Jan. 21, 1988, abandoned. This application Sep. 21, 1989, Ser. No. 410,622
Int. Cl.[5] C12N *15/00;* C07H *21/04*
U.S. Cl. 514—44 40 Claims

1. A method of inhibiting the function of targeted DNA in a viable cell comprising:
(a) administering to a viable cell containing targeted DNA a therapeutically effective amount of a photoactivatable composition comprising the UVA irradiation product of (a) a compound that has two photoactivatable functional groups, and (b) an oligonucleotide of DNA whose sequence of bases contains at least one TA or AT sequence and is substantially complementary to a segment of cellular DNA of said targeted DNA in said cell; and
(b) irradiating said cell with UVA light.

5,256,649

COSMETIC COMPOSITION AGAINST AGING OF THE SKIN

Gérard Le Fur, Montmorency, and Michel Sabadie, Bernay, both of France, assignors to Elf Sanofi, Paris, France

Continuation of Ser. No. 527,210, May 23, 1990, abandoned. This application May 22, 1992, Ser. No. 887,604
Claims priority, application France, May 23, 1989, 89 06747
Int. Cl.[5] A61K *31/70*
U.S. Cl. 514—46 16 Claims

1. A cosmetic composition which comprises a mixture of
(a) betaine ($(CH_3)_3N^+CH_2COO^-$) or hydrated betaine or an addition salt or hydrated addition salt thereof with a dermocompatible acid,
(b) ATP or an ATP generating system,
(c) a magnesium salt, and
(d) a potassium salt,
in a cosmetically acceptable vehicle for topical administration, said mixture being contained in said composition in an amount effective to improve the appearance of ageing skin.

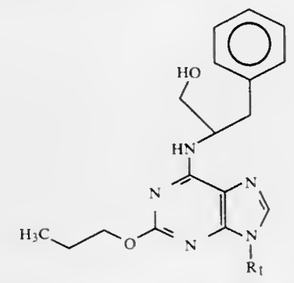
5,256,650

SELECTIVE ADENOSINE RECEPTOR AGENTS

Norton P. Peet, Cincinnati, and Nelsen L. Lentz, West Chester, both of Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

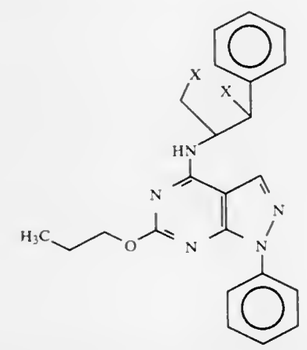
Continuation-in-part of Ser. No. 873,660, Apr. 22, 1992, abandoned, which is a continuation of Ser. No. 734,024, Jul. 22, 1991, abandoned, which is a continuation of Ser. No. 551,686, Jul. 9, 1990, abandoned, which is a continuation of Ser. No. 329,919, Mar. 29, 1989, abandoned. This application Sep. 30, 1992, Ser. No. 954,178
Int. Cl.[5] C07H *19/06;* C07D *473/30;* A61K *31/70*
U.S. Cl. 514—46 11 Claims

1. A compound according to the formula:



wherein R_1 is hydrogen, phenyl or β-D-ribofuranosyl.

5. A compound of the formula:



wherein each X is independently either hydrogen or hydroxy.

5,256,651

HYDROPHILIC-HYDROPHOBIC DERIVATIVES OF POLYGALACTOMANNANS CONTAINING TERTIARY AMINE FUNCTIONALITY

Martha A. Phelps, and Michael E. Morgan, both of Louisville, Ky., assignors to Rhone-Poulenc, Inc., Cranbury, N.J.

Continuation of Ser. No. 643,343, Jan. 22, 1991, abandoned. This application May 27, 1992, Ser. No. 890,293
Int. Cl.[5] A61K *31/715;* C08B *37/00;* C07H *15/04*
U.S. Cl. 514—53 24 Claims

6. An aqueous fluid comprising a polygalactomannan containing three different ether substituents wherein the polygalactomannan is a dialkylaminoalkyl ether - hydroxyalkyl ether - long aliphatic chain ether of a polygalactomannan wherein each of the alkyl groups in the dialkylaminoalkyl ether substituent contains from 1 to 6 carbon atoms and wherein the total number of carbon atoms in the alkyl groups does not exceed 12, wherein the alkyl group of the hydroxyalkyl ether substituent contains 2 to 4 carbon atoms, and wherein the aliphatic chain in the long aliphatic chain ether substituent contains 8 to 28 carbon atoms with or without a hydroxy group substituent.

5,256,652

TOPICAL COMPOSITIONS AND METHODS FOR TREATMENT OF MALE IMPOTENCE

Ragab El-Rashidy, Deerfield, Ill., assignor to Pharmedic Co., Wheeling, Ill.

Continuation-in-part of Ser. No. 119,799, Nov. 12, 1987, abandoned. This application Aug. 27, 1990, Ser. No. 573,518
Int. Cl.[5] A61K *31/47, 31/715*
U.S. Cl. 514—58 21 Claims

1. An aqueous topical composition suitable for enhancing the maintenance of penis erection by a male patient which comprises a peripheral vasodilator and hydroxypropyl-β-cyclodextrin present in a molar ratio in the range of about 1 to 0.8 to about 1 to 1.4, respectively, and in a pharmacologically acceptable topical vehicle for said vasodilator; said peripheral vasodilator being present in an amount sufficient to enhance penis erection.

5,256,653

PHARMACEUTICAL PREPARATIONS CONTAINING PLATINUM COMPLEXES/PHOSPHONIC ACID LIQUID AND PROCESSES FOR THEIR USE

Bernhard Keppler, Schwetzingen, and Helmut Blum, Duesseldorf, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Deusseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 399,467, Aug. 18, 1989, abandoned. This application Mar. 26, 1991, Ser. No. 675,209
Claims priority, application Switzerland, Feb. 19, 1987, 00638/87
Int. Cl.[5] A61K *31/685, 31/27;* C07F *15/00;* C07D *225/00*
U.S. Cl. 514—79 20 Claims

1. A pharmaceutical preparation comprising at least 0.5% by weight of a pharmaceutical vehicle and also comprising a platinum complex or a salt, with a pharmacologically acceptable acid or base, of said platinum complex, wherein said platinum complex has the general formula I:

$$\{(R^1NH_2)_nPt)_qYX_p \text{ TM (I)},$$

in which:
(A) R^1NH_2 is selected from the group consisting of NH_3, methylamine, ethylamine, propylamine, isopropylamine, butylamine, hexylamine, cyclohexylamine, ethylenediamine, 1,2-diaminopropane, cis 1,2-diaminocyclohexane, and 1,1-bis(aminomethyl)cyclohexane;
(B) Y is selected from the group consisting of:
(a) phosphonic acids of the general formula II:

$$R^2—C(R^3)—(PO_3H_2)_2 \text{ TM (II)},$$

in which:
(i) R^2 is selected from the group consisting of: (i.1) hydrogen, (i.2) C_1–C_3 alkyl, (i.3) C_5–C_6 cycloalkyl, (i.4) hydroxyl substituted C_5–C_6 cycloalkyl, (i.5) phenyl, (i.6) hydroxy phenyl, (i.7) halogen, (i.8) —CH(COOH)—CH_2—COOH, and (i.9) $R^4R^5N—(CH_2)_r—$, where (i.9.1) each of R^4 and R^5 independently denotes (i.8.1.1) a hydrogen or (i.8.1.2) a C_1–C_3 alkyl group; and (i.9.2) r denotes an integer from 2 to 4; and
(ii) R^3 is amino or mono- or di-C_1–C_3 alkylamino; and
(b) phosphonic acids of the general formula III:

$$R^6—N(CH_2—PO_3H_2)_2 \qquad \text{(III)},$$

in which R^6 is selected from the group consisting of (i) —CH2—PO3H2, (ii) —CH2—COOH, and (iii) $—(CH_2)_s—N(CH_2—PO_3H_2)_2$, where s is a number from 2 to 6,
(c) iminobis(methylenephosphonic acid);
(d) ethylenediaminetetramethylenephosphonic acid; and
(e) azacycloheptanediphosphonic acid;
(C) X denotes a singly negatively charged anion;
(D) n denotes one of the numbers 0, 1, or 2, but denotes the number 1 only if R^1 has a nitrogen functionality which is able to coordinate with the central Pt ion;
(E) p denotes one of the numbers 0 or 2, but denotes the number 2 only if the Pt is in oxidation state IV; and
(F) q denotes the number 1 or 2 if n is not zero and the number 1 if n is 0.

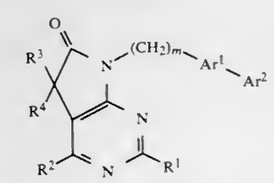
5,256,654

SUBSTITUTED PYRROLOPYRIMIDINES, AZEPINOPYRIMIDINES AND PYRIDOPYRIMIDINES USEFUL AS ANGIOTENSIN II ANTAGONISTS

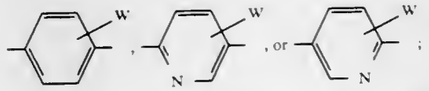
John W. Ellingboe, Princeton; Madelene Nikaido, Plainsboro, and Jehan Bagli, Princeton, all of N.J., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 782,025, Oct. 24, 1991, Pat. No. 5,149,699. This application Jun. 25, 1992, Ser. No. 901,485
Int. Cl.[5] A61K *31/505, 31/55;* C07D *487/04, 471/04*
U.S. Cl. 514—186 8 Claims

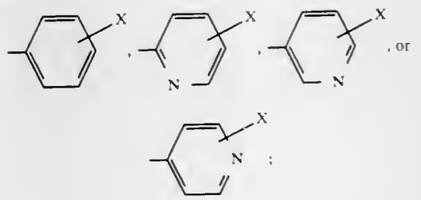
1. A compound of formula I



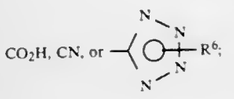
wherein R^1, R^2, R^3, and R^4 are independently H, lower alkyl containing 1 to 6 carbon atoms, or perfluoroalkyl containing 1 to 6 carbon atoms; m is 0 to 3; Ar^1 is



wherein W is H, lower alkyl containing 1 to 6 carbon atoms, halogen, hydroxy, or lower alkoxy containing 1 to 6 carbon atoms; Ar^2 is



wherein X is



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wherein R^6 is H, tert-butyl, tri-n-butylstannyl, or triphenylmethyl; or a pharmaceutically acceptable salt thereof.

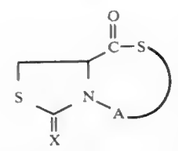
5,256,655

BICYCLIC SULFUR-CONTAINING COMPOUNDS

Takakazu Morita, Toyonaka; Shiro Mita, Ashiya, and Yoichi Kawashima, Kyoto, all of Japan, assignors to Santen Pharmaceutical Co., Ltd., Osaka, Japan

Division of Ser. No. 718,220, Jun. 20, 1991, Pat. No. 5,183,816. This application Oct. 30, 1992, Ser. No. 969,405
Claims priority, application Japan, Jul. 3, 1990, 2-175782
Int. Cl.[5] A61K *31/55*; C07D *281/18, 513/04*
U.S. Cl. 514—211 12 Claims

1. A compound of the formula [I] and salts thereof,



[I]

wherein

X is oxygen or sulfur; and

A is straight C_{14}-C_4 alkylene which can be substituted by one or more lower alkyl groups.

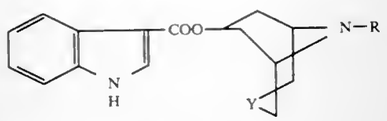
5,256,656

AZABICYCLO DERIVATIVES

Haruhiko Kikuchi; Hiroaki Satoh; Nobuhiro Yahata; Kiochiro Hagihara, all of Saitama; Toru Hayakawa, Kawagoe; Setsuko Mino, Fujimi, and Makoto Yanai, Saitama, all of Japan, assignors to Nissbin Flour Milling Co., Ltd., Tokyo, Japan

Division of Ser. No. 730,699, Jul. 16, 1991, Pat. No. 5,187,166. This application May 12, 1992, Ser. No. 853,521
Claims priority, application Japan, Jul. 31, 1990, 2-201453; Oct. 31, 1990, 2-292000; Dec. 28, 1990, 2-418549; Mar. 26, 1991, 3-84473
Int. Cl.[5] A61K *31/54, 31/535*; C07D *265/36, 498/02*
U.S. Cl. 514—224.2 5 Claims

1. A compound of the formula



wherein Y is O or S and R is C_{1-4}-alkyl.

5,256,657

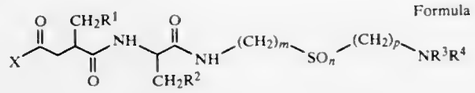
SUCCINAMIDE DERIVATIVE MATRIX-METALLOPROTEASE INHIBITORS

Jasbir Singh, Albany; Barry A. Morgan, Colonie; James A. Gainor, Bethlehem; Thomas D. Gordon, Schodack, and Robert C. Wahl, Rochester, all of N.Y., assignors to Sterling Winthrop, Inc., New York, N.Y.

Filed Aug. 19, 1991, Ser. No. 747,887
Int. Cl.[5] A61K *31/215, 31/38, 31/405, 31/415, 31/16, 31/44*; C07D *279/16, 413/12, 409/12, 401/12*; C07C *321/04, 235/02*
U.S. Cl. 514—228.2 11 Claims

1. A compound having the structural formula

Formula I



wherein

X is HONH or HO;

R^1 is alkyl having from one to six carbon atoms;

R^2 taken together with CH_2 is the side chain of a natural amino acid or taken alone is alkyl having from one to six carbon atoms, phenyl or phenyl-lower-alkyl wherein phenyl is unsubstituted or substituted by hydroxy or lower-alkoxy, pyridyl, pyridyl-lower-alkyl, thienyl, thienyl-lower-alkyl, imidazolyl, imidazolyl-lower-alkyl, indolyl or indolyl-lower-alkyl;

R^3 taken alone is alkyl having from one to six carbon atoms;

R^4 taken alone is H or alkyl having from one to three carbon atoms; or,

when R^3 and R^4 are both alkyl, the tertiary amine N-oxide; or

R^3 and R^4 taken together with N are pyrrolidino, piperidino, azepino, morpholino or thiomorpholino or the N-oxide thereof or piperazino or N-methylpiperazino;

m is an integer from 2 to 6;

n is 0, 1 or 2;

p is an integer from 2 to 6; or

a pharmaceutically acceptable acid addition salt or solvate or acid addition salt-solvate thereof.

5,256,658

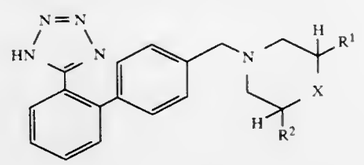
ANGIOTENSIN II INHIBITORS

Jeffrey D. Hsi, Flemington, and William V. Murray, Belle Mead, both of N.J., assignors to Ortbo Pharmaceutical Corporation, Raritan, N.J.

Filed Jan. 15, 1993, Ser. No. 6,093
Int. Cl.[5] A61K *31/445, 31/535*; C07D *401/10, 413/10*
U.S. Cl. 514—236.2 5 Claims

1. A compound of the general structure (I):

I



where

X is CH_2, O, S, N-R^4, NH, NCHO, $NCOCH_3$ or NCO_2R^4;

R^1 and R^2 are the same or different and are C_{1-6}alkyl; and

R^4 is C_{1-6}alkyl;

including the pharmaceutically acceptable salts thereof.

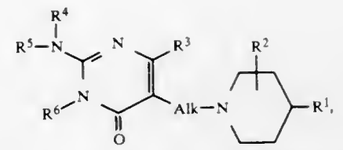
5,256,659

2-AMINOPYRIMIDINONE DERIVATIVES

Ludo E. J. Kennis, Turnhout; Jan Vandenberk, Beerse, and Jozef M. Boey, Vosselaar, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

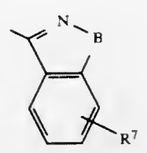
Division of Ser. No. 643,867, Jan. 18, 1991, Pat. No. 5,140,029, which is a continuation-in-part of Ser. No. 456,319, Dec. 26, 1989, abandoned. This application Jun. 19, 1992, Ser. No. 901,465
Claims priority, application United Kingdom, Jan. 9, 1989, 8900382
Int. Cl.[5] A61K *31/505*; C07D *471/04, 487/04*
U.S. Cl. 514—258 8 Claims

1. A compound of the formula:



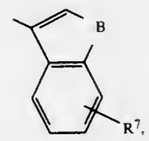
a pharmaceutically acceptable acid addition salt thereof, or a stereochemically isomeric form thereof, wherein:

R^1 is a radical of the formula:



(a-2)

or



(a-3),

wherein:

R^7 is hydrogen, C_{1-4}alkyl or halo; and

B is O, S or NR^8 wherein R^8 is hydrogen, C_{1-4}alkyl or ArC_{1-4}alkyl;

R^2 is hydrogen or C_{1-6}alkyl;

Alk is C_{1-6}alkanediyl;

R^3 is hydrogen or C_{1-6}alkyl;

R^4 is hydrogen, C_{1-6}alkyl optionally substituted with C_{1-6}alkyloxy, Ar, pyridinyl, furanyl or 5-methyl-2-furanyl; and

R^5 and R^6 taken together form a bivalent radical of the formula:

—CH_2—CH_2— (b-1);

—CH_2—CH_2—CH_2— (b-2);

—CH=CH— (b-3);

—CH=N— (b-4);

—N=CH— (b-5);

or

—N=CH—CH_2— (b-6),

wherein one or where possible two hydrogen atoms of said radicals (b-1) to (b-6) each independently from one another may be replaced by C_{1-6}alkyl; or wherein one hydrogen atom of radical (b-3) may be replaced by phenyl;

wherein in the foregoing each Ar independently is phenyl or phenyl substituted with 1, 2 or 3 substituents each independently selected from the group consisting of halo, hydroxy, nitro, cyano, trifluoromethyl, C_{1-6}alkyl, C_{1-6}alkyloxy, C_{1-6}alkylthio, mercapto, amino, mono- and di(C_{1-6}alkyl)amino, carboxyl, C_{1-6}alkyloxycarbonyl and C_{1-6}alkylcarbonyl.

5,256,660

SYNTHETIC BUFFER COMPOSITION FOR CLINICAL USE

(I) Henry Swan, Lakewood, Colo., assignor to Henry Swan II Trust, Lakewood, Colo.

Continuation-in-part of Ser. No. 683,241, Apr. 10, 1991, abandoned, which is a continuation-in-part of Ser. No. 383,929, Jul. 21, 1989, abandoned, which is a continuation-in-part of Ser. No. 132,594, Dec. 14, 1987, abandoned. This application Mar. 17, 1992, Ser. No. 852,659
Int. Cl.[5] A61K *31/185, 31/495, 31/535*
U.S. Cl. 514—238.8 32 Claims

1. A method for treating acidosis in a patient, said method comprising administering to a patient in need thereof an effective amount of a buffering solution, said buffering solution comprised of:

(a) water;

(b) at least one N-substituted aminosulfonic acid selected from the group consisting of BES, DIPSO, HEPES, MOPS, MOPSO, TAPSO and TES; and

(c) at least one sodium salt of an N-substituted aminosulfonic acid selected from the group consisting of NaBES, NaDIPSO, NaHEPES, NaMOPS, NaMOPSO, NaTAPSO and NaTES where the N-substituted aminosulfonic acid from which the sodium salt is formed is different than the N-substituted aminosulfonic acid selected in (b).

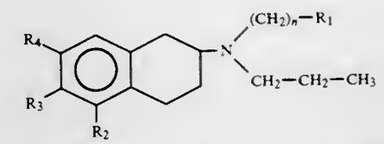
5,256,661

SUBSTITUTED 2-AMINOTETRALINS AND PHARMACEUTICAL USE

Alan S. Horn, AW Groningen, Netherlands, assignor to Whitby Research, Inc., Richmond, Va.

Division of Ser. No. 757,336, Sep. 10, 1991, Pat. No. 5,177,112, which is a continuation of Ser. No. 371,207, Jun. 26, 1989, abandoned, which is a continuation-in-part of Ser. No. 891,223, Jul. 28, 1986, abandoned, which is a continuation-in-part of Ser. No. 811,768, Dec. 20, 1985, Pat. No. 4,657,925, which is a continuation-in-part of Ser. No. 640,685, Aug. 13, 1984, Pat. No. 4,564,628, which is a continuation-in-part of Ser. No. 455,144, Jan. 3, 1983, abandoned, said Ser. No. 891,223, is a continuation-in-part of Ser. No. 839,976, Mar. 17, 1986, Pat. No. 4,722,933, which is a continuation-in-part of Ser. No. 640,685, Aug. 13, 1984, Pat. No. 4,564,628, which is a continuation-in-part of Ser. No. 455,144, Jan. 3, 1983, abandoned. This application Sep. 28, 1992, Ser. No. 951,993
Int. Cl.[5] A61K *43/08, 43/10, 43/38, 43/42*
U.S. Cl. 514—248 19 Claims

1. Optically active or racemic compounds having the general formula:



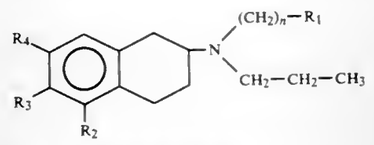
wherein R_2, R_3 and R_4 are each selected from the group consisting of H and OA; A is selected from the group consisting of hydrogen, hydrocarbyl radicals, and radicals represented by the general formula —C(O)—R_5, wherein R_5 is selected from the group consisting of hydrocarbyl radicals, n is 2 or 3 and R_1 is selected from the group consisting of benzofuranyl, indazolyl, benzotriazolyl, triazolopyridinyl, benzoxazolyl, benzothiazolyl, benzoxadiazolyl, benzopyranyl, quinolyl, phthalazinyl, purinyl, naphthothienyl, indolizinyl, quinolizinyl, naphthyridinyl, quinoxalinyl, quinazolinyl, cinnolinyl, and substituted derivatives thereof wherein the substituents have no more than 12 carbon atoms and are selected from the group consisting of hydroxy, nitro, azido, sulfonamido, sulfate, halogen, hydrocarbyl and heteroatom-substituted hydrocarbyl

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wherein said heteroatoms are selected from the group consisting of halogen, nitrogen, sulfur and phosphorus; and wherein at least one of R_2, R_3 and R_4 is H, and at least one of R_2, R_3 and R_4 is not H, and R_2 and R_4 are not both OA and pharmaceutically-acceptable salts thereof.

11. A method comprising:

inducing a dopaminergic response in a patient by administering a pharmacologically-effective amount of a compound represented by the general formula:



wherein R_2, R_3 and R_4 are each selected from the group consisting of H and OA; A is selected from the group consisting of hydrogen, hydrocarbyl radicals, and radicals represented by the general formula—C(O)—R_5, wherein R_5 is selected from the group consisting of hydrocarbyl radicals, n is 2 or 3 and R_1 is selected from the group consisting of benzofuranyl, indazolyl, benzotriazolyl, triazolopyridinyl, benzoxazolyl, benzothiazolyl, benzoxadiazolyl, benzopyranyl, quinolyl, phthalazinyl, purinyl, naphthothienyl, indolizinyl, quinolizinyl, naphthyridinyl, quinoxalinyl, quinazolinyl, cinnolinyl, and substituted derivatives thereof wherein the substituents have no more than 12 carbon atoms and are selected from the group consisting of hydroxy, nitro, azido, sulfonamido, sulfate, halogen, hydrocarbyl and heteroatom-substituted hydrocarbyl wherein said heteroatoms are selected from the group consisting of halogen, nitrogen, sulfur and phosphorus; and wherein at least one of R_2, R_3 and R_4 is H, and at least one R_2, R_3 and R_4 is not H, and R_2 and R_4 are not both OA and pharmaceutically-acceptable salts thereof.

5,256,662

QUINOLINECARBOXYLIC ACID ANTIBACTERIAL AGENTS

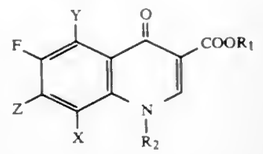
John M. Domagala, Canton; Mark J. Suto, and William R. Turner, both of Ann Arbor, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 835,651, Feb. 13, 1992, Pat. No. 5,175,356, which is a division of Ser. No. 687,254, Apr. 18, 1991, Pat. No. 5,116,834, which is a division of Ser. No. 508,886, Apr. 12, 1990, Pat. No. 5,047,538. This application Sep. 11, 1992, Ser. No. 943,958

Int. Cl.[5] A61K *31/495, 31/47;* **C07D** *401/10*

U.S. Cl. 514—249 **13 Claims**

1. A compound of the formula



wherein

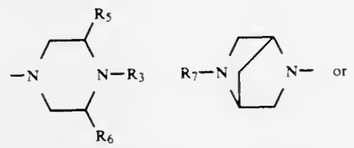
X is alkenyl from two to ten carbon atoms, alkynyl from two to eight carbon atoms, cycloalkyl from three to six carbon atoms or cycloalkyl substituted by alkyl in which alkyl is one to four carbon atoms;

Y is hydrogen, fluoro or amino;

R_1 is hydrogen, alkyl of from one to six carbon atoms or a cation;

R_2 is alkyl of from one to four carbon atoms, vinyl, haloalkyl or hydroxyalkyl of from one to four carbon atoms, cycloalkyl of from three to six carbon atoms, phenyl or phenyl substituted by one or more halogen atoms;

Z is a secondary cyclic amino group of the formulae;



wherein

n''' is 0 or 1;

R_3 is hydrogen, alkyl of from one to four carbon atoms or a cycloalkyl of from three to six carbon atoms;

R_5 and R_6 are each independently hydrogen or alkyl of from one to three carbon atoms;

R_7 is hydrogen, alkyl of from one to three carbon atoms, hydroxyalkyl of from two to three carbon atoms, benzyl, or p-aminobenzyl;

R_{10} and R_{11} are each independently hydrogen, methyl, ethyl, or benzyl;

R_{12}, R_{13}, and R_{14} are each independently hydrogen or methyl;

or a pharmaceutically acceptable acid addition salt thereof.

5,256,663

COMPOSITIONS COMPRISING ECTEINASCIDINS AND A METHOD OF TREATING HERPES SIMPLEX VIRUS INFECTIONS THEREWITH

Kenneth Rinehart; Sakai Ryuichi, both of Urbana, Ill., and Tom G. Holt, Westfield, N.J., assignors to The Board of Trustees of the University of Illinois, Champaign, Ill.

Continuation-in-part of Ser. No. 620,427, Nov. 30, 1990, Pat. No. 5,149,804, and a continuation-in-part of Ser. No. 548,060, Jul. 5, 1990, Pat. No. 5,089,273, which is a continuation-in-part of Ser. No. 278,629, Dec. 1, 1988, abandoned, which is a continuation of Ser. No. 1,226, Jun. 1, 1987, which is a continuation-in-part of Ser. No. 6,395, Jan. 23, 1987, abandoned, which is a continuation-in-part of Ser. No. 898,906, Aug. 21, 1986, abandoned, which is a continuation-in-part of Ser. No. 872,189, Jun. 9, 1986, abandoned. This application Feb. 18, 1992, Ser. No. 838,149

Int. Cl.[5] A61K *31/495*

U.S. Cl. 514—250 **10 Claims**

1. A pharmaceutical composition comprising one or more ecteinascidin species selected from the group consisting of Et 736, Et 722, Et 743, Et 729, Et 745, Et 759(a), Et 770 and Et 729, in combination with a pharmaceutically acceptable carrier, diluent or excipient.

5,256,664

ANTIDEPRESSANT 3-HALOPHENYLPIPERAZINYLPROPYL DERIVATIVES OF SUBSTITUTED TRIAZOLONES AND TRIAZOLDIONES

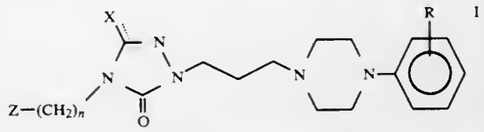
Robert F. Mayol, Durham, Conn., and George M. Luke, LaFayette, N.Y., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Filed Apr. 28, 1992, Ser. No. 875,044

Int. Cl.[5] A61K *31/495;* **C07D** *403/06*

U.S. Cl. 514—252 **14 Claims**

1. A compound of Formula I



or a pharmaceutically acceptable acid addition salt and/or hydrate thereof wherein

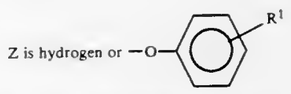
R is halogen or trifluoromethyl;

X is oxygen or acetyl;

the single and dotted lines represent either a covalent single or double bond;

n is an integer from 2 to 4; and

Z is hydrogen or



in which R^1 is hydrogen, halogen, C_{1-4} alkoxy or trifluoromethyl.

5,256,665

PROCESS FOR PREPARING NEW 2-PIPERAZINYLBENZIMIDAZOLE

Aurelio Orjales-Venero; Neftalí Garcia-Dominguez; Victor Rubio-Royo, and Rosa Rodes-Solanes, all of Vizcaya, Spain, assignors to Fabrica Espanola de Productos Quimicos y Farmaceuticos, S.A., Lejona, Spain

Continuation of Ser. No. 735,931, Jul. 25, 1991, abandoned. This application Sep. 15, 1992, Ser. No. 946,012

Claims priority, application Spain, May 10, 1991, 9101147

Int. Cl.[5] A61K *31/495;* **C07D** *403/04*

U.S. Cl. 514—254 **4 Claims**

4. A method of inhibiting vomiting induced by anticancerous agents comprising antagonizing the action of serotonin at serotonin receptors by administering an effective amount of a compound selected from the group consisting of 1-methyl-2-(1-piperazinyl)-1H-benzimidazole, 1-phenylmethyl-2-(1-piperazinyl)-1H-benzimidazole, 1-(4-fluorophenylmethyl)-2-(1-piperazinyl)-1H-benzimidazole, 1-ethyl-2-(1-piperazinyl)-1H-benzimidazole, 1-propyl-2-(1-piperazinyl)-1H-benzimidazole, 1-methyl-2-[(4-ethoxycarbonyl)-1-piperazinyl]-1H-benzimidazole, 1-methyl-2-[(4-diphenylmethyl)-1-piperazinyl]-1H-benzimidazole, 1-phenylmethyl-2-[(4-diphenylmethyl)-1-piperazinyl]-1H-benzimidazole, and 1-methyl-2-[4(4-hydroxymethyl)-1-piperazinyl]-1H-benzimidazole, or a pharmaceutically acceptable salt thereof.

5,256,666

3-ISOXAZOLYLPHENYL COMPOUNDS, THEIR PREPARATION AND THEIR USE

Stefan Mueller, Speyer; Hans Theobald, Limburgerhof; Harald Rang, Ludwigshafen, and Volker Harries, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 13, 1992, Ser. No. 975,733

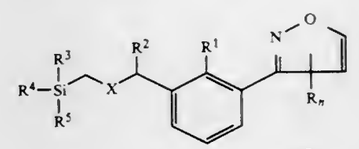
Claims priority, application Fed. Rep. of Germany, Nov. 18, 1991, 4137940

Int. Cl.[5] A01N *43/54, 43/80;* **C07D** *231/12, 231/16*

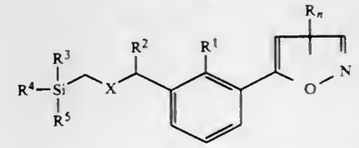
U.S. Cl. 514—256 **8 Claims**

1. A 3-isoxazolylphenyl compound of the formula Ia or Ib

Ia



Ib



where

R is halogen; C_1–C_4-alkyl; C_1–C_4-haloalkyl; C_1–C_4-alkoxy; C_1–C_4-haloalkoxy; C_2–C_4-alkenyl; C_2–C_4-haloalkenyl; phenylethenyl which may carry from one to five halogen atoms; C_2–C_4-alkynyl; C_3–C_8-cycloalkyl; aryl; hetaryl; CO_2R^6 or $CONR^7R^8$,

where R^6 is hydrogen, C_1–C_6-alkyl, C_3–C_5-cycloalkyl or benzyl and

R^7 and R^8 independently of one another are each hydrogen, C_1–C_6-alkyl, C_3–C_6-cycloalkyl or benzyl or, together with the nitrogen atom to which they are bonded, form a 3-membered to 8-membered, saturated or monounsaturated or diunsaturated heterocyclic radical consisting of carbon ring members, where this cyclic structure may furthermore contain one or two further hetero atoms selected from the group consisting of oxygen, sulfur and nitrogen;

n is 0, 1 or 2, and the radicals R may be different when n is 2;

R^1 is halogen or C_1–C_4-alkyl;

R^2 is hydrogen; C_1–C_4-alkyl; C_2–C_4-alkenyl; C_2–C_4-alkynyl or cyano;

R^3 and R^4 independently of one another are each C_1–C_4-alkyl or C_2–C_8-alkenyl, where these radicals may carry from one to nine halogen atoms or one of the following groups:

C_3–C_8-cycloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio, phenyl, phenoxy and phenylthio, and the aromatic groups in turn may carry from one to five halogen atoms or from one to three of the following C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio and C_1–C_4-haloalkylthio;

C_3–C_8-cycloalkyl which may carry from one to three of the following groups: halogen, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio and C_1–C_4-haloalkylthio;

phenyl, naphthyl, pyridyl or pyrimidyl, where the aromatic radicals may carry from one to seven halogen atoms or from one to four of the following groups: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio and C_1–C_4-haloalkylthio;

or R^3 and R^4 together form C_2–C_5-alkylene which may carry from one to three C_1–C_3-alkyl groups;

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R^5 is hydrogen;
C_5-C_{18}-alkyl which may carry from one to nine halogen atoms or one of the following groups: C_3-C_8-cycloalkyl, C_1-C_4-alkoxy, C_1-C_4-haloalkoxy, C_1-C_4-alkylthio, C_1-C_4-haloalkylthio, phenyl, phenoxy and phenylthio, where the aromatic groups in turn may carry from one to five halogen atoms or from one to three of the following groups C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_1-C_4-alkoxy, C_1-C_4-haloalkoxy, C_1-C_4-alkylthio and C_1-C_4-haloalkylthio; or one of the groups stated for R^3;
X is CH_2, O, S or NR^9, where
R^9 is hydrogen, C_1-C_4-alkyl, C_3-C_6-cycloalkyl, C_2-C_4-alkenyl, C_2-C_4-alkynyl or benzyl, and the benzyl radical in turn may carry from one to five halogen atoms or from one to three of the following groups: C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_1-C_4-alkoxy, C_1-C_4-haloalkoxy, C_1-C_4-alkylthio and C_1-C_4-haloalkylthio.

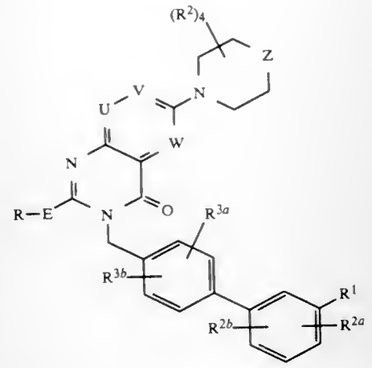
5,256,667

QUINAZOLINONES AND PYRIDOPYRIMIDINONES

Eric E. Allen, Somerset, N.J., and Richard E. Olson, Wilmington, Del., assignors to Merck & Co., Inc., Rahway, N.J. and E. I. Du Pont De Nemours & Co., Willmington, Del.

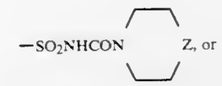
Continuation-in-part of Ser. No. 765,626, Sep. 25, 1991, Pat. No. 5,202,322. This application Jul. 31, 1992, Ser. No. 923,273
Int. Cl.[5] **A61K** *31/505;* **C07D** *413/12, 487/04, 471/04*
U.S. Cl. 514—259 **7 Claims**

1. A compound of structural formula:



or a pharmaceutically acceptable salt thereof, wherein:
E is
(1) a single bond,
(2) —CH(OH)—,
(3) —O—,
(4) —CO—,
(5) —$S(O)_x(CH_2)_S$—wherein x is 0, 1, or 2, and s is 0–5, or
(6) —$NR^3(CH_2)_S$—wherein R^3 is
(a) —H,
(b) C_{2-4} alkanoyl,
(c) C_{1-6} alkyl,
(d) C_{2-6} alkenyl,
(e) C_{3-7} cycloalkyl,
(f) phenyl, or
(g) benzyl;
R is
(1) aryl,
(2) C_{3-7} cycloalkyl,
(3) polyfluoro-C_{1-4} alkyl,
(4) —H,
(5) C_{2-6} alkenyl,
(6) C_{2-6} alkynyl,
(7) C_{1-6} alkyl, either unsubstituted or substituted with:
(a) aryl,
(b) C_{3-7} cycloalkyl,
(c) halo,
(d) —NH_2,
(e) —$NH(C_{1-4}alkyl)$,
(f) —$N(C_{1-4}alkyl)_2$,
(g) —OR^4, wherein R^4 is
(i) —H,
(ii) aryl,
(iii) C_{1-6} alkyl,
(iv) aryl-C_{1-6} alkyl,
(iv) aryl-C_{1-6} alkyl, or
(v) C_{3-7} cycloalkyl;
(h) —$COOR^4$,
(i) —$NHSO_2R^4$, or
(j) —SO_2NHR^5, wherein R^5 is
(i) —H,
(ii) C_{1-5} alkyl,
(iii) aryl or
(iv) —CH_2-aryl;
R^1 is
(1) —CO_2R^4
(2) —SO_3R^6, wherein R^6 is
(a) —H,
(b) —$CH(R^4)$—O—CO—R^{4a} wherein R^{4a} is
(i) C_{1-6} alkyl,
(ii) aryl or
(iii) —CH_2-aryl;
(3) —$P(O)(OR^6)_2$,
(4) —$CONHNHSO_2CF_3$,
(5) —SO_2NHCN,
(6) ——$P(O)(OR^6)(OR^4)$,
(7) —SO_2NHR^7, wherein R^7 is
(a) —H,
(b) aryl,
(c) C_{3-7} cycloalkyl,
(d) polyfluoro-C_{1-4} alkyl, or
(e) C_{1-10} alkyl, either unsubstituted or substituted with:
(i) aryl,
(ii) —OH,
(iii) —SH,
(iv) C_{1-4} alkoxy,
(v) C_{1-4} alkylthio,
(vi) halo,
(vii) —NO_2,
(viii) —CO_2R^{11}, wherein R^{11} is —H or C_{1-4} alkyl,
(ix) —NH_2,
(x) —$NH(C_{1-4}$ alkyl),
(xi) —$N(C_{1-4}$ alkyl)$_2$,
(xii) —PO_3H_2,
(xii) —$P(O)(OH)(OC_{1-4}$alkyl), or
(xiv) —$P(O)(OR^4)(R^8)$, wherein R^8 is
(a) —H,
(b) —C_{1-5} alkyl,
(c) —aryl,
(d) —CH_2-aryl, or
(xv) C_{3-7}cycloalkyl;
(8) —$NHSO_2R^7$,
(9) —SO_2NHCOR^7,
(10) —$CH_2SO_2NHCOR^7$,
(11) —$CONHSO_2R^7$,
(12) —$CH_2CONHSO_2R^7$,
(13) —$NHSO_2NHCOR^7$,
(14) —$NHCONHSO_2R^7$,
(15) —$SO_2NHCONR^4R^7$,
(16) —$CH_2SO_2NHR^7$,
(17) —$C(OH)(R^8)$-$P(O)(OR^6)_2$,
(18) —$P(O)(R^8)(OR^6)$,
(19) tetrazol-5-yl, substituted with R^9 wherein R^9 is
(a) H,
(b) C_{1-6} alkyl,
(c) C_{2-4} alkenyl,
(d) C_{1-4} alkoxy-C_{1-4} alkyl,
(e) benzyl, either unsubstituted or substituted with
(i) —NO_2,

(ii) —NH_2,
(iii) —OH, or
(iv) —OCH_3,
(20) —CH_2-tetrazol-5-yl substituted with R^9,
(21) —CONH-tetrazol-5-yl substituted with R^9,
(22) -1,3,4-triazol-2-yl substituted with R^{10} wherein R^{10} is
(a) —CN,
(b) —NO_2,
(c) —CF_3 or
(d) —CO_2R^4;
(23) 1,2,3-triazol-4-yl substituted with R^{10},
(24) —$SO_2NHSO_2R^7$,
(25) —OH,
(26)



(27) —$SO_2NHCO_2R^7$.
R^2 is:
(1) —H,
(2) —CO-aryl,
(3) C_{3-7} cycloalkyl,
(4) halo,
(5) —OH,
(6) —OR^7,
(7) polyfluoro-C_{1-4} alkyl,
(8) —$S(O)_xR^7$,
(9) —$COOR^4$,
(10) —SO_2H,
(11) —NR^4R^7,
(12) —$NHCOR^7$,
(13) —$NHCO_2R^7$
(14) —$SO_2NR^8R^{11}$, wherein R^{11} is
(a) —H or
(b) C_{1-4} alkyl,
(15) —NO_2,
(16) —$NHSO_2R^7$,
(17) —$NHCONR^4R^7$,
(18) —$OCONR^7R^8$,
(19) aryl,
(20) —$NHSO_2$polyfluorophenyl,
(21) SO_2NHCOR^7,
(22) $CONHSO_2R^7$,
(23) —$PO(OR^4)_2$,
(24) —$PO(OR^4)R^8$,
(25) tetrazol-5-yl,
(26) —CONH(tetrazol-5-yl),
(27) —COR^4,
(28) —SO_2NHCN,
(29) —$NHSO_2NR^7R^8$,
(30) —$CON(R^5)_2$ wherein the R^5 groups are the same or different or
(31) C_{1-6} alkyl, either unsubstituted or substituted with
(a) —OH,
(b) -guanidino,
(c) —C_{1-4} alkoxy,
(d) —$N(R^4)_2$,
(e) —CO_2R^4,
(f) —$CON(R^4)_2$,
(g) —O—COR^4,
(h) —aryl,
(i) —$S(O)_xR^7$,
(j) —tetrazol-5-yl,
(k) —$CONHSO_2R^7$,
(l) —SO_2NHCOR^7,
(m) —$PO(OR^4)_2$,
(n) —$PO(OR^4)R^9$,
(o) —SO_2NHCN,
(p) —$NR^{11}COOR^7$,
(q) —morpholino,
(r) —$N(C_{1-6}$, alkyl)piperazine or
(s) —COR^4,
with the proviso that the R^2 groups can be the same or different, or two R^2 groups joined to the same carbon taken together represent
(a) =O
(b) =S or
(c) —$[(CH_2)_{2-6}]$—;
R^{2a}, R^{2b}, R^{3a} independently represent
(1) C_{1-5} alkyl,
(2) polyfluoro-C_{1-5} alkyl,
(3) halo,
(4) hydroxy,
(5) C_{1-5} alkoxy,
(6) hydrogen or
(7) COOH;
U, V and W are independently —CH— or N=provided one of U, V and W is —N=,
Z is:
(1) —$N(R^{12})$—wherein R^{12} is
(a) —H or
(b) —R^{13} wherein R^{13} is
(i) C_{1-4} alkyl,
(ii) C_{3-7} cycloalkyl
(iii) aryl,
(iv) polyfluoro-C_{1-4}alkyl,
(v) polyfluoro-C_{3-7} cycloalkyl, or
(vi) polyfluorophenyl;
(2) —$N(COR^{13})$—,
(3) —$N(CONHR^{13})$—,
(4) —$N(CON(R^{13})_2)$—,
(5) —$N(CO_2R^{13})$—,
(6) —$N(SO_2NHR^{13})$—,
(7) —$N(SO_2N(R^{13})_2)$—,
(8) —$N(SO_2R^{13})$—, or
(9) —$C(R^2)_2$—C

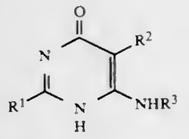
5,256,668

AMINOPYRIMIDINE DERIVATIVES AS ANTIVIRAL AGENTS FOR RESPIRATORY SYNCYTIAL VIRUS

Kuo-Hom L. Hsu, Fort Washington, Pa.; Daniel M. Teller, Columbus, Ohio; Alan R. Davis, Wayne; Michael D. Lubeck, Glenmoore, both of Pa., and Jehan F. Bagli, Princeton, N.J., assignors to American Home Products Corporation, New York, N.Y.

Filed Mar. 17, 1993, Ser. No. 32,065
Int. Cl.[5] **A61K** *31/505*
U.S. Cl. 514—269 **10 Claims**

1. A method of treating viral infections in mammals caused by respiratory syncytial virus which comprises administration to a mammal in need thereof a therapeutically effective amount of a compound of the formula:



wherein:
R^1 is C_1-C_6 lower alkyl;
R^2 is halogen or cyano;
R^3 is C_1-C_6 alkyl or —$(CH_2)_nR^4$ where n is 1 or 2 and R^4 is phenyl, phenyl substituted by 1 to 2 groups selected from lower alkoxy, lower alkenyloxy, halogen, and methylenedioxy; pyridinyl, pyridinyl substituted by halogen or cyano, thienyl, or —NR^1R^2 when R^1 and R^2 are C_1-C_6 alkyl or —NR^1R^2 is a cyclic amine of 4–6 atoms;
or a pharmaceutically acceptable salt thereof.

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5,256,669

METHODS AND COMPOSITIONS FOR TREATING ACUTE OR CHRONIC PAIN AND DRUG ADDICTION

Jeffrey Askanazi, Haworth, N.J.; David P. Katz, Dobbs Ferry, N.Y., and Tuula Manner, Turku, Finland, assignors to Aminotek Sciences, Inc., Demarest, N.J.

Filed Aug. 7, 1992, Ser. No. 926,719
Int. Cl.[5] A61K *31/44, 31/195*
U.S. Cl. 514—282 11 Claims

1. A method for treating acute or chronic pain in a mammal comprising administering to the mammal a therapeutically effective amount of an analgesic solution comprising at least one branched chain amino acid selected from the group consisting of leucine, isoleucine, and valine, wherein the branched chain amino acid is present in an amount of about 1 to 100% by weight of the analgesic solution and an opioid in a dosage amount of about from 0.2 to 30 mg/kg of body weight/day.

5,256,670

N-ARYL-3-ARYL-4-SUBSTITUTED-2,3,4,5-TETRAHYDRO-1H-PYRAZOLE-1-CARBOXAMIDES, INSECTICIDAL COMPOSITIONS CONTAINING SUCH COMPOUNDS AND METHODS OF CONTROLLING INSECTS SUCH COMPOUNDS

Richard M. Jacobson, Chalfont, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 785,138, Oct. 30, 1991, abandoned, which is a continuation-in-part of Ser. No. 624,808, Dec. 10, 1990, Pat. No. 5,109,014. This application Oct. 30, 1992, Ser. No. 969,547
Int. Cl.[5] A01N *47/38;* C07D *231/54, 401/10, 403/10, 413/10*
U.S. Cl. 514—304 31 Claims

1. A compound having the formula



wherein
A and B independently selected from a group consisting of are selected from pyridyl, furyl, thiazolyl, naphthyl, each of which is unsubstituted or substituted by one or two independently chosen substituents selected from nitro, (C_1-C_6)alkyl, halo(C_1-C_6)alkyl and halo;
phenyl and phenyl substituted by one to three substituents independently selected from (C_1-C_6)alkyl, halo(C_1-C_6)alkyl, halo, (C_1-C_6)alkoxy, halo(C_1-C_6)alkoxy, (C_3-C_6)alkenyloxy, (C_3-C_6)alkynyloxy, (C_1-C_6)alkoxy(C_1-C_6)alkoxy, phenyl(C_1-C_6)alkoxy, phenyloxy, pyridyloxy, mono(C_1-C_6)alkylaminocarbonyloxy, di(C_1-C_6)alkylaminocarbonyloxy, (C_1-C_6)alkanoyloxy, (C_1-C_6)alkoxycarbonyloxy, (C_1-C_6)alkylsulfonyloxy, (C_1-C_6)alkylthio, halo(C_1-C_6)alkylthio, (C_1-C_6)alkoxy(C_1-C_6)alkyl, (C_1-C_6)alkanoyl, (C_1-C_6)alkoxycarbonyl, nitro, (C_1-C_6)alkylsulfonyl, halo(C_1-C_6)alkylsulfonyl, phenyl, hydroxy, cyano, isocyano, amino, mono(C_1-C_6)alkylamino, di(C_1-C_6)alkylamino, formylamino, (C_1-C_6)alkanoylamino, halo(C_1-C_6)alkanoylamino, (C_1-C_6)alkoxycarbonylamino, phenylcarbonylamino, mono(C_1-C_6)alkylaminocarbonylamino, and di(C_1-C_6)alkylaminocarbonylamino;
except that not more than one of A and B can be phenyl or phenyl substituted;
U is oxygen or sulfur;
V is hydrogen, (C_1-C_6)alkyl, (C_1-C_6)alkoxy(C_1-C_6)alkyl, formyl, (C_1-C_6)alkylcarbonyl, (C_1-C_6)alkylaminocarbonyl, (C_1-C_6)alkoxycarbonyl, (C_3-C_6)alkenyloxycarbonyl, phenyloxycarbonyl, (C_1-C_6)alkoxycarbonylcarbonyl, cyano(C_1-C_6)alkylthio, (C_1-C_6)alkylthio, phenylthio, (C_1-C_6)alkoxycarbonyl(C_1-C_6)alkylthio or (C_1-C_6)alkoxycarbonylthio;
D is hydrogen, phenylcarbonyl, halophenylcarbonyl, phenylsulfonyl, halophenylsulfonyl, (C_1-C_6)alkylsulfonyl, (C_1-C_6)alkanoyl, halo(C_1-C_6)alkanoyl, (C_1-C_6)alkoxycarbonyl or (C_1-C_6)alkyl; or
D and V together form E wherein
E is alkylidene, carbonyl, dicarbonyl or carbonyl(C_1-C_6)alkylidene;
Y is phenyl, halophenyl, (C_1-C_6)alkyl, halo(C_1-C_6)alkyl, hydroxy(C_1-C_6)alkyl, (C_1-C_6)alkoxy(C_1-C_6)alkyl, (C_1-C_6)alkoxy(C_1-C_6)alkoxy(C_1-C_6)alkyl, (C_1-C_6)alkylcarbonyloxy(C_1-C_6)alkyl, $((C_1-C_6)$alkylthio$)(C_1-C_6)$alkyl, (C_1-C_6)alkylsulfinyl(C_1-C_6)alkyl, cyano(C_1-C_6)alkyl, carboxy(C_1-C_6)alkyl, (C_1-C_6)alkoxycarbonyl(C_1-C_6)alkyl, (C_2-C_6)alkenyl, halo(C_2-C_6)alkenyl, formyl, (C_1-C_6)alkylcarbonyl, halo(C_1-C_6)alkylcarbonyl, phenylcarbonyl, (C_1-C_6)alkoxycarbonylcarbonyl, halocarbonyl, aminocarbonyl, N-(C_1-C_6)alkylaminocarbonyl, N,N-di(C_1-C_6)alkylaminocarbonyl, pyrrolidin-1-ylcarbonyl, piperidin-1-ylcarbonyl, morpholin-1-ylcarbonyl, pyrazol-1-ylcarbonyl, imidazol-1-ylcarbonyl, pyrrol-1-ylcarbonyl, hydroxy(C_1-C_6)alkylaminocarbonyl, thio(C_1-C_6)alkylaminocarbonyl, phenylaminocarbonyl, carboxy, (C_1-C_6)alkoxycarbonyl, (C_1-C_6)alkoxy(C_1-C_6)alkoxycarbonyl, (C_1-C_6)alkoxy(C_1-C_6)alkoxy(C_1-C_6)alkoxycarbonyl, halo(C_1-C_6)alkoxycarbonyl, cyano(C_1-C_6)alkoxycarbonyl, (C_1-C_6)alkylthio(C_1-C_6)alkoxycarbonyl, $((C_1-C_6)$alkylthio$)$thiocarbonyl, pyridyl, oxazol-2-yl, 2-benzoxazolyl, isothiocyanato, isocyano, $-NR^1R^2$, (C_1-C_6)alkanoyloxy, (C_1-C_6)alkoxy, phenyloxy, (C_1-C_6)alkylthio, (C_1-C_6)alkylsulfonyl or phenylthio;
wherein R^1 and R^2 are independently hydrogen, cyano, (C_1-C_6)alkyl, halo(C_1-C_6)alkyl, cyano(C_1-C_6)alkyl, phenyl(C_1-C_6)alkyl, (C_3-C_6)alkenyl, halo(C_3-C_6)alkenyl, (C_3-C_6)alkynyl, phenyl, halophenyl, formyl, (C_1-C_6)alkylcarbonyl, halo(C_1-C_6)alkylcarbonyl, (C_2-C_6)alkenylcarbonyl, halo(C_2-C_6)alkenylcarbonyl, (C_1-C_6)alkoxy(C_1-C_6)alkylcarbonyl, phenylcarbonyl, phenyl(C_2-C_6)alkenylcarbonyl, carboxy, (C_1-C_6)alkoxycarbonyl, halo(C_1-C_6)alkoxycarbonyl, cyano(C_1-C_6)alkoxycarbonyl, (C_2-C_6)alkenyloxycarbonyl, (C_3-C_6)alkynyloxycarbonyl, (C_1-C_6)alkanoyl(C_1-C_6)alkoxycarbonyl, (C_1-C_6)alkoxycarbonyl(C_1-C_6)alkoxycarbonyl, carboxy(C_1-C_6)alkoxycarbonyl, phenyloxycarbonyl, phenyl(C_1-C_6)alkoxycarbonyl, $((C_1-C_6)$alkylthio$)$carbonyl, N-(C_1-C_6)alkylaminocarbonyl, N,N-di(C_1-C_6)alkylaminocarbonyl, N-phenyl-N-(C_1-C_6)alkylaminocarbonyl, N-(phenylcarbonyl)aminocarbonyl, di(C_1-C_6)alkylphosphoryl, (C_1-C_6)alkylsulfonyl, (C_2-C_6)alkenylsulfonyl, N,N-di(C_1-C_6)alkylaminosulfonyl, phenylsulfonyl, pyridyl or pyrazinyl; or
R^1 and R^2 together with the nitrogen to which they are attached form a 5- or 6-membered ring selected from 2-oxazolidonyl, pyrrolidinonyl, piperidonyl and succinimidyl; and
Z_1 is hydrogen or (C_1-C_6)alkyl;
Z_2 is hydrogen or (C_1-C_6)alkyl;
Z_3 is hydrogen or (C_1-C_6)alkyl; or
agronomically acceptable salts thereof.

5,256,671

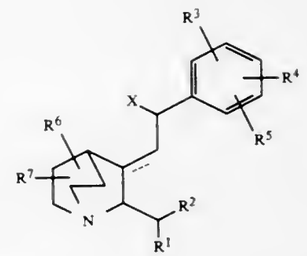
AZABICYCLIC COMPOUNDS, PHARMACEUTICAL COMPOSITIONS CONTAINING THEM AND THEIR USE IN THERAPY

Tamara Ladduwahetty, Buckhurst Hill, and Christopher J. Swain, Duxford, both of England, assignors to Merck Sharp & Dohme, Limited, Hoddesdon, England

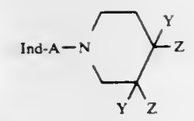
Filed Jun. 29, 1992, Ser. No. 905,974
Int. Cl.[5] A61K *31/435;* C07D *453/02*
U.S. Cl. 514—305 12 Claims

1. A compound of formula (IC), or a salt or prodrug thereof:

(IC)



wherein
the dotted line represents an optional double bond;
X is selected from H, —OH, =O and halo;
R^1 is selected from H, phenyl and thienyl, which phenyl or thienyl groups may be optionally substituted by a substituent selected from halo and trifluoromethyl;
R^2 is selected from phenyl, thienyl and benzyl, any of which groups may be optionally substituted by a substituent selected from halo and trifluoromethyl;
R^3, R^4 and R^5 are independently selected from H, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, halo, cyano, nitro, trifluoromethyl, trimethylsilyl, $—OR^a$, SR^a, SOR^a, SO_2R^a, $—NR^aR^b$, $—NR^aCOR^b$, $—NR^aCO_2R^b$, $—CO_2R^a$ and $—CONR^aR^b$;
R^6 and R^7 independently represent H, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, halo, hydroxy, C_{1-4} alkoxy, carboxy or (C_{1-4} alkoxy)carbonyl; or R^6 and R^7 together represent carbonyl; and
R^a and R^b are independently selected from H, and C_{1-6} alkyl, phenyl and trifluoromethyl.



wherein
Ind is 5-carboxyindol-3-yl or 5-carbamoylindol-3-yl,
A is $—(CH_2)_4—$ or $—CH_2—S—CH_2CH_2—$,
the two Y groups together are a C-C bond, one Z is Ar, and the other Z is H, and
Ar is phenyl in the 4-position,
or a physiologically acceptable acid addition salt thereof.

5,256,672

6,7-DIHYDRO-3-PHENYL-1,2-BENZISOXAZOL-4(5H)-ONE, COMPOSITION AND USE

David G. Wettlaufer, Phillipsburg; Gregory M. Shutske, Flemington, and Peter A. Nemoto, Piscataway, all of N.J., assignors to Hoechst-Roussel Pharmaceuticals Incorporated, Somerville, N.J.

Division of Ser. No. 843,330, Feb. 28, 1992, Pat. No. 5,180,834, which is a division of Ser. No. 692,341, Apr. 26, 1991, Pat. No. 5,114,936, which is a continuation-in-part of Ser. No. 571,482, Aug. 23, 1990, abandoned. This application Dec. 13, 1992, Ser. No. 964,539
Int. Cl.[5] A61K *31/445;* C07D *413/02*
U.S. Cl. 514—324 5 Claims

1. The compound which is 6,7-dihydro-5-[3-(4-(4-fluorobenzoyl)-1-piperidinyl)-propyl]-3-methyl-1,2-benzisoxazol-4(5H)-one.

5,256,673

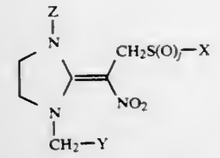
INDOLE-3-YL-A-TETRAHYDROPYRIDYL OR PIPERIDYL COMPOUNDS

Henning Böttcher, Darmstadt; Hans-Heinrich Hausberg, Ober-Ramstadt; Christoph Seyfried, Seeheim-Jugenheim, and Klaus-Otto Minck, Ober-Ramstadt, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

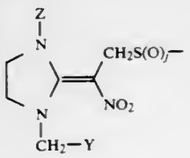
Continuation-in-part of Ser. No. 674,635, Nov. 26, 1984, abandoned. This application Jul. 10, 1989, Ser. No. 377,343
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1983, 3342632
Int. Cl.[5] C07D *401/06;* A61K *31/44*
U.S. Cl. 514—338 11 Claims

1. An indole compound of the formula

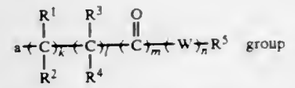
(I)



wherein X is C_2-C_6 alkenyl group or C_2-C_6 alkynyl group in which the alkenyl or alkynyl group may be substituted with a halogen atom or



group, or

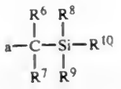


group

in which each or R^1, R^2, R^3 and R^3 is independently a hydrogen atom or C_1-C_6 alkyl group; R^5 is C_1-C_6 alkyl group which may be substituted with a halogen atom; C_3-C_6 cyclo alkyl group which may be substituted with a halogen atom, C_1-C_6 alkyl group or halo C_1-C_6 alkyl group; a phenyl group which may be substituted with a substituent selected from the group consisting of a halogen atom, C_1-C_6 alkyl group, C_2-C_6 alkenyl group, C_2-C_6 alkynyl group, C_1-C_6 alkoxy group, C_1-C_6 alkoxycarbonyl group in which the alyl, alkenyl, alkynyl, alkoxy or alkoxycarbonyl group may be substituted with a halogen atom, phenoxy group, phenyl group and pyridyloxy

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group in which the phenoxy, phenyl or pyridyloxy group may be substituted with a halogen atom, C_1–C_6 alkyl group or halo C_1–C_6 alkyl group; W is an oxygen atom or a sulfur atom; and each of k, l, m and n is independently an integer of 0 or 1, provided that (a) case where all of k, l and m are 0 at the same time and (b) case where m and n are 0 at the same time and R^5 is C_1–C_6 alkyl group which may be substituted with a halogen atom, are excluded, or



group in which each of R^6 and R^7 is independently a hydrogen atom or C_1–C_6 alkyl group; each of R^8 and R^9 is independently C_1–C_6 alkyl group; R^{10} is a C_1–C_6 alkyl group which may be substituted with a halogen atom or a phenyl group; a phenyl group, a naphthyl group or a pyridyl group in which the phenyl, naphthyl or pyridyl group may be substituted with the same substituents as mentioned in the phenyl group as R^5, C_2–C_6 alkenyl group or C_2–C_6 alkynyl group in which the alkenyl or alkynyl group may be substituted with a halogen atom; Y is a 6-chloro-3-pyridyl group Z is a hydrogen atom, C_1–C_6 alkyl group or C_1–C_6 acyl group; and j is 0.

5,256,675

THIAZOLE DERIVATIVES, PROCESSES FOR PRODUCTION THEREOF AND PHARMACEUTICAL COMPOSITIONS COMPRISING THE SAME

Masaaki Matsuo, Toyonaka; Takashi Ogino, Kobe; Norihiro Igari, Amagasaki; Hachiro Seno, Kadoma, and Kyoichi Shimomura, Suita, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

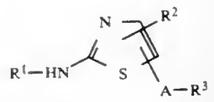
Continuation of Ser. No. 554,413, Jul. 19, 1990, abandoned. This application Apr. 14, 1992, Ser. No. 867,085

Claims priority, application United Kingdom, Aug. 7, 1989, 8918045; Feb. 21, 1990, 9003930

Int. Cl.[5] A61K *31/44;* **A01N** *43/40;* **C07D** *409/00, 411/00*

U.S. Cl. 514—342 **11 Claims**

1. A compound of the formula:



wherein

R^1 is hydrogen or acyl which may be substituted with halogen,

R^2 is hydrogen, lower alkyl, hydroxy(lower)alkyl, halogen or carboxy,

A is



wherein

m is 0, 1 or 2, and

R^3 is pyridyl, which may be substituted with lower alkyl, amino, hydroxy, or halo(lower)alkyl,

and pharmaceutically acceptable salts thereof.

5,256,676

3-HYDROXY-PYRIDIN-4-ONES USEFUL FOR TREATING PARASITIC INFECTIONS

Robert C. Hider, Clacton; Timothy E. A. Peto, Oxford; Surinder Singh, West Croyden, and Susan Whitebead, Hull, all of England, assignors to British Technology Group Limited, London, England

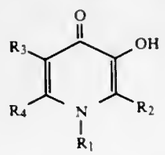
Filed Jul. 24, 1992, Ser. No. 918,080

Claims priority, application United Kingdom, Apr. 27, 1992, 9209078

Int. Cl.[5] C07D *211/74;* **A61K** *31/44*

U.S. Cl. 514—348 **10 Claims**

1. A method for the treatment of a patient having a condition caused by an iron dependent parasite which comprises administering to that patient a therapeutically effective amount of a 3-hydroxypyridin-4-one of formula (I)



(I)

in which R_1 is a C_3 or C_4 hydroxyalkyl group in which the hydroxy group is terminally substituted on the alkyl group, R_2 is methyl or ethyl and R_3 and R_4 are each separately hydrogen, methyl or ethyl but with the proviso that the total number of carbon atoms in R_1 to R_4 is no more than six, the compound optionally being in the form of a physiologically acceptable salt and/or pro-drug thereof.

5,256,677

RETROVIRAL PROTEASE INHIBITING COMPOUNDS

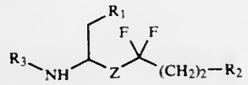
Hing L. Sham, Gurnee; Daniel W. Norbeck, Lindenhurst; Dale J. Kempf, Libertyville, and Cheo Zhao, Gurnee, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 675,780, Mar. 27, 1991, Pat. No. 5,151,438, which is a continuation-in-part of Ser. No. 518,730, May 9, 1990, Pat. No. 5,142,056, which is a continuation-in-part of Ser. No. 456,124, Dec. 22, 1989, abandoned, which is a continuation-in-part of Ser. No. 405,604, Sep. 8, 1989, abandoned, which is a continuation-in-part of Ser. No. 355,945, May 23, 1989, abandoned. This application Jun. 19, 1992, Ser. No. 901,057

Int. Cl.[5] A61K *31/44;* **C07D** *213/30*

U.S. Cl. 514—351 **13 Claims**

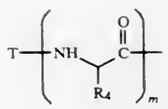
1. A compound of the formula:



wherein R_1 is loweralkyl, cycloalkyl, phenyl, substituted loweralkyl, substituted cycloalkyl or substituted phenyl wherein the loweralkyl, cycloalkyl or phenyl group is substituted with one or two substituents independently selected from group is substituted with one or two substituents independently selected from hydroxy, alkoxy, thioalkoxy and halo;

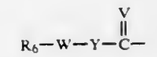
R_2 is phenyl or substituted phenyl wherein the phenyl ring is substituted with one or two substituents independently selected from hydroxy, alkoxy, thioalkoxy and halo;

R_3 is



wherein m is 1 and R_4 is hydrogen, loweralkyl, cycloalkylalkyl, haloalkyl, hydroxyalkyl, alkoxyalkyl, thioalkoxyalkyl, aminoalkyl, alkylaminoalkyl, dialkylaminoalkyl, carboxyalkyl, alkoxycarbonylalkyl or aminocarbonylalkyl and

T is



wherein R_6 is pyridyl or substituted pyridyl wherein the pyridyl ring is substituted with one or two substituents independently selected from hydroxy, alkoxy, amino, alkylamino, dialkylamino, polalkoxy, haloalkyl, cycloalkyl, aryl, arylalkyl, —COOH, —SO_3H, loweralkyl and halo, V is O or S, W is CH_2, —CH_2CH_2—, —CH=CH— or —D—CH=CH— wherein D is O, S or NH and Y is absent, O, S or N(R_7) wherein R_7 is hydrogen or loweralkyl; and Z is —C(O)— or —CH(OH)—; or a pharmaceutically acceptable salt thereof; wherein the term aryl as used herein refers to phenyl, naphthyl, tetrahydronaphthyl or indanyl.

5,256,678

NORMAL-PENTADECYL NICOTINATE N-OXIDE AND HAIR RESTORER COMPRISING THE SAME

Osamu Nakaguchi, Toyonaka, Japan, assignor to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed May 22, 1992, Ser. No. 886,803

Claims priority, application Japan, May 27, 1991, 3-225433

The portion of the term of this patent subsequent to Jun. 18, 2008, has been disclaimed.

Int. Cl.[5] A61K *31/425;* **C07D** *213/89*

U.S. Cl. 514—356 **3 Claims**

1. n-Pentadecyl nicotinate N-oxide.

5,256,679

SUBSTITUTED GUANIDINE DERIVATIVES, THEIR PREPARATION AND USE

Isao Minamida; Yasuyuki Kando; Hitoshi Ishizuka, all of Ibaraki; Tetsuo Okauchi, Osaka, and Hideki Ueme, Ibaraki, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

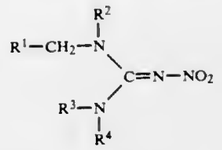
Filed Aug. 14, 1991, Ser. No. 745,245

Claims priority, application Japan, Aug. 17, 1990, 2-217356; Aug. 20, 1990, 2-219628; Oct. 15, 1990, 2-276628; Mar. 1, 1991, 3-036108; May 16, 1991, 3-111987

Int. Cl.[5] C07D *277/28, 277/30, 213/26;* **A01N** *43/78*

U.S. Cl. 514—357 **42 Claims**

1. A compound of the formula:



[I]

wherein R^1 is a heterocyclic group having a single or fused ring with 5 to 8 ring members in each ring and having from 1 to 5 heteroatoms in each ring independently selected from the group consisting of oxygen, nitrogen, and sulfur, wherein said heterocyclic group may optionally be substituted with 1 to 5 substituents which may be the same or different selected from the group consisting of $C_{1\text{-}15}$ alkyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, $C_{1\text{-}4}$ alkoxy, and $C_{1\text{-}4}$ alkylthio; $C_{3\text{-}10}$ cycloalkyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, $C_{1\text{-}4}$ alkyl, $C_{2\text{-}4}$ alkenyl, $C_{2\text{-}4}$ alkynyl, $C_{6\text{-}10}$ aryl, $C_{1\text{-}4}$ alkoxy, phenoxy, $C_{1\text{-}4}$ alkylthio, and phenylthio; $C_{2\text{-}10}$ alkenyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, $C_{1\text{-}4}$ alkoxy, and $C_{1\text{-}4}$ alkylthio; $C_{2\text{-}10}$ alkynyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, $C_{1\text{-}4}$ alkoxy, and $C_{1\text{-}4}$ alkylthio; $C_{3\text{-}10}$ cycloalkenyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, $C_{1\text{-}4}$ alkyl, $C_{2\text{-}4}$ alkenyl, $C_{2\text{-}4}$ alkynyl, $C_{6\text{-}10}$ aryl, $C_{1\text{-}4}$ alkoxy, phenoxy, $C_{1\text{-}4}$ alkylthio, and phenylthio; $C_{6\text{-}10}$ aryl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, $C_{1\text{-}4}$ alkyl, $C_{2\text{-}4}$ alkenyl, $C_{2\text{-}4}$ alkynyl, $C_{6\text{-}10}$ aryl, $C_{1\text{-}4}$ alkoxy, phenoxy, $C_{1\text{-}4}$ alkylthio, and phenylthio; $C_{7\text{-}10}$ aralkyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, $C_{1\text{-}4}$ alkyl, $C_{2\text{-}4}$ alkenyl, $C_{2\text{-}4}$ alkynyl, $C_{6\text{-}10}$ aryl, $C_{1\text{-}4}$ alkoxy, phenoxy, $C_{1\text{-}4}$ alkylthio, and phenylthio; nitro; hydroxyl; mercapto; oxo; thioxo; cyano; carbamoyl; carboxyl; $C_{1\text{-}4}$ alkoxycarbonyl; sulfo; halogen; $C_{1\text{-}4}$ alkoxy optionally substituted with 1 to 5 substituents selected from the group consisting halogen, hydroxyl, $C_{1\text{-}4}$ alkoxy, and $C_{1\text{-}4}$ alkylthio; $C_{6\text{-}10}$ aryloxy optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, $C_{1\text{-}4}$ alkyl, $C_{2\text{-}4}$ alkenyl, $C_{2\text{-}4}$ alkynyl, $C_{6\text{-}10}$ aryl, $C_{1\text{-}4}$ alkoxy, phenoxy, $C_{1\text{-}4}$ alkylthio, and phenylthio; $C_{1\text{-}4}$ alkylthio optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, $C_{1\text{-}4}$ alkoxy, and $C_{1\text{-}4}$ alkylthio; $C_{6\text{-}10}$ arylthio optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, $C_{1\text{-}4}$ alkyl, $C_{2\text{-}4}$ alkenyl, $C_{2\text{-}4}$ alkynyl, $C_{6\text{-}10}$ aryl, $C_{1\text{-}4}$ alkoxy, phenoxy, $C_{1\text{-}4}$ alkylthio, and phenylthio; $C_{1\text{-}4}$ alkylsulfinyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, $C_{1\text{-}4}$ alkoxy, and $C_{1\text{-}4}$ alkylthio; $C_{6\text{-}10}$ arylsulfinyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, $C_{1\text{-}4}$ alkyl, $C_{2\text{-}4}$ alkenyl, $C_{2\text{-}4}$ alkynyl, $C_{6\text{-}10}$ aryl, $C_{1\text{-}4}$ alkoxy, phenoxy, $C_{1\text{-}4}$ alkylthio, and phenylthio; $C_{1\text{-}4}$ alkylsulfonyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, $C_{1\text{-}4}$ alkoxy, and $C_{1\text{-}4}$ alkylthio; $C_{6\text{-}10}$ arylsulfonyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, $C_{1\text{-}4}$ alkyl, $C_{2\text{-}4}$ alkenyl, $C_{2\text{-}4}$ alkynyl, $C_{6\text{-}10}$ aryl, $C_{1\text{-}4}$ alkoxy, phenoxy, $C_{1\text{-}4}$ alkylthio, and phenylthio; amine optionally substituted with 1 to 2 substituents selected from the group consisting of halogen, hydroxyl, $C_{1\text{-}4}$ alkoxy, and $C_{1\text{-}4}$ alkylthio; $C_{2\text{-}6}$ acylamino; mono- or di-$C_{1\text{-}4}$ alkylamino optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, $C_{1\text{-}4}$ alkoxy, and $C_{1\text{-}4}$ alkylthio; $C_{3\text{-}6}$ cycloalkylamino optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, $C_{1\text{-}4}$ alkoxy, and $C_{1\text{-}4}$ alkylthio; $C_{6\text{-}10}$ arylamino optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, $C_{1\text{-}4}$ alkyl, $C_{2\text{-}4}$ alkenyl, $C_{2\text{-}4}$ alkynyl, $C_{6\text{-}10}$ aryl, $C_{1\text{-}4}$ alkoxy, phenoxy, $C_{1\text{-}4}$ alkylthio, and phenylthio; $C_{2\text{-}4}$ acyl; $C_{6\text{-}10}$ arylcarbonyl; and 5 to 6 membered heterocyclic containing from 1 to 4 heteroatoms selected from the group consisting of oxygen, sulfur, and nitrogen optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, $C_{1\text{-}4}$ alkyl, $C_{2\text{-}4}$ alkenyl, $C_{2\text{-}4}$ alkynyl, $C_{6\text{-}10}$ aryl, $C_{1\text{-}4}$ alkoxy, phenoxy, $C_{1\text{-}4}$ alkylthio, and phenylthio;

R^2 is cyano;

—CO—OR^6 wherein R^6 is a hydrocarbon group selected from the group consisting of $C_{1\text{-}15}$ alkyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, $C_{1\text{-}4}$ alkoxy, and $C_{1\text{-}4}$

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alkylthio; C_{3-10} cycloalkyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{6-10} aryl, C_{1-4} alkyl, C_{1-4} alkylthio, and phenylthio; C_{2-10} alkenyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkoxy, and C_{1-4} alkylthio; C_{2-10} alkynyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkoxy, and C_{1-4} alkylthio; C_{3-10} cycloalkenyl optionally substituted with 1 to 5 substitutents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{6-10} aryl, C_{1-4} alkoxy, phenoxy, C_{1-4} alkylthio, and phenylthio; C_{6-10} aryl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{6-10} aryl, C_{1-4} alkoxy, phenoxy, C_{1-4} alkylthio, and phenylthio; and C_{7-10} aralkyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{6-10} aryl, C_{1-4} alkoxy, phenoxy, C_{1-4} alkylthio, and phenylthio; or R^6 is a heterocyclic group as defined for R^1;

or —CO—NR^7R^8 wherein R^7 and R^8, which are the same or different, are each independently hydrogen, a hydrocarbon group selected from the group consisting of C_{1-15} alkyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkoxy, and C_{1-4} alkylthio; C_{3-10} cycloalkyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{6-10} aryl, C_{1-4} alkoxy, phenoxy, C_{1-4} alkylthio, and phenylthio; C_{2-10} alkenyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkoxy, and C_{1-4} alkylthio; C_{2-10} alkynyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkoxy, and C_{1-4} alkylthio; C_{3-10} cycloalkenyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{6-10} aryl, C_{1-4} alkoxy, phenoxy, C_{1-4} alkylthio, and phenylthio; C_{7-10} aralkyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{6-10} aryl, C_{1-4} alkoxy, phenoxy, C_{1-4} alkylthio, and phenylthio; or a heterocyclic group as defined for R^1;

or R^7 or R^8, taken together with the nitrogen atom to which they are attached are a cyclic amino group selected from the group consisting of aziridino, azetidino, pyrrolidino, piperazino, piperidino, morpholino, and thiomorpholino which may optionally be substituted with 1 to 4 C_{1-4} alkyl groups;

R^3 is hydrogen, a hydrocarbon group except for one substituted with an oxo group at the binding site selected from the group consisting of C_{1-15} alkyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkoxy, and C_{1-4} alkylthio; C_{3-10} cycloalkyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{6-10} aryl, C_{1-4} alkoxy, phenoxy, C_{1-4} alkylthio, and phenylthio; C_{2-10} alkenyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkoxy, and C_{1-4} alkylthio; C_{2-10} alkynyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkoxy, and C_{1-4} alkylthio; C_{3-10} cycloalkenyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkenyl, C_{6-10} aryl, C_{1-4} alkoxy, phenoxy, C_{1-4} alkylthio, and phenylthio; C_{6-10} aryl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{6-10} aryl, C_{1-4} alkoxy, phenoxy, C_{1-4} alkylthio, and phenylthio; and C_{7-10} aralkyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{6-10} aryl, C_{1-4} alkoxy, phenoxy, C_{1-4} alkylthio, and phenylthio;

—$S(O)_n$—R^{13} wherein n is an integer selected from the group consisting of 0, 1, and 2 and R^{13} is selected from the group consisting of a heterocyclic group as defined for R^1; C_{1-15} alkyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxy, C_{1-4} alkoxy, and C_{1-4} alkylthio; C_{3-10} cycloalkyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{6-10} aryl, C_{1-4} alkoxy, phenoxy, C_{1-4} alkylthio, and phenylthio; C_{2-10} alkenyl optionally substituted with 1 and 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkoxy, and C_{1-4} alkylthio; C_{2-10} alkynyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkoxy, and C_{1-4} alkylthio; C_{3-10} cycloalkenyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{6-10} aryl, C_{1-4} alkoxy, phenoxy, C_{1-4} alkylthio, and phenylthio; C_{6-10} aryl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{6-10} aryl, C_{1-4} alkoxy, phenoxy, C_{1-4} alkylthio, and phenylthio; and C_{7-10} aralkyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{6-10} aryl, C_{1-4} alkoxy, phenoxy, C_{1-4} alkylthio, and phenylthio;

—$P(=O)R^{14}R^{15}$ wherein R^{14} and R^{15} are each independently a heterocyclic group as defined for R^1; C_{1-15} alkyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkoxy, and C_{1-4} alkylthio; C_{3-10} cycloalkyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{6-10} aryl, C_{1-4} alkoxy, phenoxy, C_{1-4} alkylthio, and phenylthio; C_{2-10} alkenyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkoxy, and C_{1-4} alkylthio; C_{2-10} alkynyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkoxy, and C_{1-4} alkylthio; C_{3-10} cycloalkenyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{6-10} aryl, C_{1-4} alkoxy, phenoxy, C_{1-4} alkylthio, and phenylthio; C_{6-10} aryl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{6-10} aryl, C_{1-4} alkoxy, phenoxy, C_{1-4} alkylthio, and phenylthio; and C_{7-10} aralkyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{6-10} aryl, C_{1-4} alkoxy, phenoxy, C_{1-4} alkylthio, and phenylthio;

cyano;

—CO—R^9 wherein R^9 is hydrogen, a hydrocarbon group selected from the group consisting of C_{1-15} alkyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkoxy, and C_{1-4} alkylthio; C_{3-10} cycloalkyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{6-10} aryl, C_{1-4} alkoxy, phenoxy, C_{1-4} alkylthio, and phenylthio; C_{2-10} alkenyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkoxy, and C_{1-4} alkyl-

thio; C_{3-10} cycloalkenyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{6-10} aryl, C_{1-4} alkoxy, phenoxy, C_{1-4} alkylthio, and phenylthio; C_{6-10} aryl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{6-10} aryl, C_{1-4} alkoxy, phenoxy, C_{1-4} alkylthio, and phenylthio; and C_{7-10} aralkyl optionally substituted with 1 to 5 substituents selected from the group consisting of halogen, hydroxyl, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{6-10} aryl, C_{1-4} alkoxy, phenoxy, C_{1-4} alkylthio, and phenylthio; or R^9 is a heterocyclic group as defined for R^1;

—CO—OR^6 as defined above; or

—CO—NR^7R^8 as defined above; and

R^4 is hydrogen or a lower alkyl group; or a salt thereof.

5,256,680

3,5-DI-TERTIARY-BUTYL-4-HYDROXYPHENYL-1,3,4-THIADIAZOLES, AND OXADIAZOLES AND 3,5-DI-TERTIARY-BUTYL-4-HYDROXY-PHENYL-1,2,4-THIADAZOLES, OXADIAZOLES AND TRIAZOLES AS ANTIINFLAMMATORY AGENTS

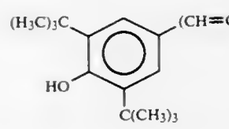
David T. Connor, Ann Arbor, Mich.; Daniel L. Flynn, Mundelein, Ill.; Catherine R. Kostlan, Saline, Mich.; Michael D. Mullican, Ypsilanti, Mich.; Gary P. Shrum; Paul C. Unangst, both of Ann Arbor, Mich., and Michael W. Wilson, Ypsilanti, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 753,015, Aug. 23, 1991, Pat. No. 5,155,122, which is a continuation of Ser. No. 426,814, Oct. 30, 1989, abandoned, which is a continuation-in-part of Ser. No. 277,171, Nov. 29, 1988, abandoned. This application Jun. 29, 1992, Ser. No. 906,255

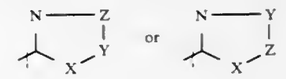
Int. Cl.[5] **C07D** *271/10, 27/113;* **A61K** *31/41*

U.S. Cl. 514—364 **38 Claims**

1. A compound of the formula (I)



a pharmaceutically acceptable acid addition or base salt thereof or hydrates; wherein n is zero or one, and W is



wherein X is O;

Z is N;

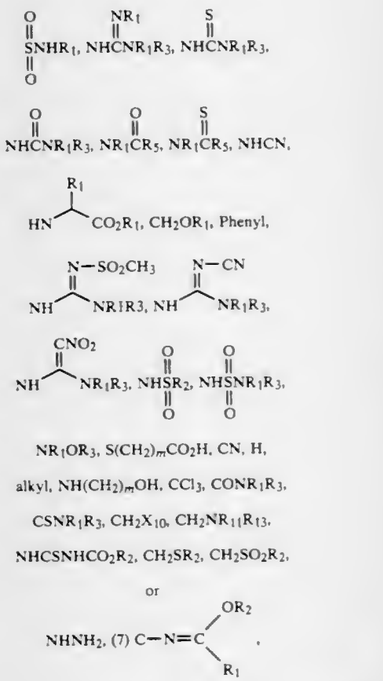
Y is (1) C—SR_1 wherein R_1 is hydrogen or lower alkyl, (2)



wherein R_2 is lower alkyl, (3)



wherein R_2 is as defined above, (4) C—NR_3R_3 wherein R_1 is independently as defined above and R_3 is hydrogen or lower alkyl, (5) COR_1 wherein R_1 is independently as defined above, (6) CR_4 wherein R_4 is halogen, CF_3, CO_2R_1, or



wherein m is 1, 2, or 3; R_{11} and R_{13} are hydrogen, lower alkyl or taken together with N form a saturated ring having from 4 to 6 carbons; X_{10} is halogen or NO_2; R_5 is H, lower alkyl or OR_1 and R_1, R_2, and R_3 are independently as defined above; and m is 1, 2, or 3.

5,256,681

[5(6)-(BENZISOXA-,BENZISOTHIA-OR INDAZOL-3-YL)-1H-BENZIMIDAZOL-2-YL]CARBAMATES

Alfons H. M. Raeymaekers, Beerse; Eddy J. E. Freyne, Rumst, and Gustaaf M. Boeckx, Oud-Turnhout, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

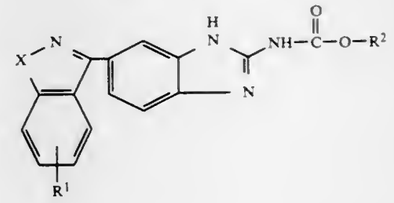
PCT No. PCT/EP90/00373, § 371 Date Aug. 27, 1991, § 102(e) Date Aug. 27, 1991, PCT Pub. No. WO90/10630, PCT Pub. Date Sep. 20, 1990

PCT Filed Mar. 15, 1989, Ser. No. 752,521

Int. Cl.[5] **C07D** *413/04, 403/04, 417/04;* **A61K** *31/415*

U.S. Cl. 514—373 **7 Claims**

1. A chemical compound of formula



VOL 1155 ISS 4 OCT 26 1993 UMI

an acid addition or a metal substitution salt thereof, or a stereochemically isomeric form thereof, wherein

R^1 is hydrogen, C_{1-4}alkyl, halo, hydroxy or C_{1-4}alkyloxy;

R^2 is C_{1-4}alkyl; and

X is O, S, SO, SO_2 or NR^3, said R^3 being hydrogen, C_{1-4}alkyl, aryl or arylC_{1-4}alkyl;

wherein aryl is phenyl optionally substituted with 1 or 2 substituents each independently selected from C_{1-4}alkyl, halo, hydroxy or C_{1-4}alkoxy.

5,256,682

ISOXAZOLYLIMIDAZOLE DERIVATIVES, PROCESS FOR THEIR PRODUCTION AND THEIR USE IN PHARMACEUTICAL AGENTS

Martin Krüger; Rolf Russe; Herbert Schneider; Ralph Schmiechen, and Lechoslaw Turski, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

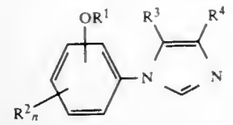
Filed Apr. 13, 1992, Ser. No. 866,644

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1991, 4112451

Int. Cl.[5] A61K *31/42, 31/425, 31/505, 31/495*

U.S. Cl. 514—378 **7 Claims**

1. An imidazole derivative of Formula I



(I)

in which

R^1 is hydrogen; a C_1–C_{10}-alkenyl or alkynyl radical optionally substituted by halogen, hydroxy, C_1–C_4 alkoxy or amino, which amino is optionally mono- or di-substituted by C_1–C_6 alkyl group(s); a C_3–C_{10}-cycloalkyl, cycloalkenyl, cycloalkylalkyl or cycloalkenylalkyl radical; or a hydrocarbyl aryl, hydrocarbyl aralkyl, isoxazolyl, pyridinyl, pyrimidinyl, pyrazinyl, pyridazinyl, furanyl, thiopheneyl, pyrrolyl, imidazolyl or thiazolyl radical each optionally mono- to tri-substituted with halogen, nitro, cyano, hydroxy, mercapto, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} alkylthio, C_{1-4} alkylsulfinyl, C_{1-4} alkylsulfonyl or an amino group(s) which amino is optionally monosubstituted or disubstituted with C_{1-4} alkyl, C_{1-6} alkanoyl or sulfonyl groups(s); or a C_{3-10} cyclic ether radical,

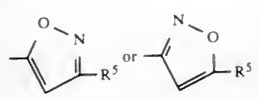
R^2 is hydrogen, halogen, amino, which amino is optionally mono- or di-substituted with C_1–C_4 alkyl or C_1–C_4 alkanoyl group(s), nitro, azido, thiocyanato, cyano, C_{1-10} alkyl optionally substituted with halogen or an —OR^1 group wherein R^1 is as defined above,

n is 1–4 and each R^2 can be the same or different from the others, or

R^1 and R^2 together with the oxygen atom from a 1 to 3 carbon bridge optionally containing a further oxygen heteroatom in the bridging chain,

R^3 is hydrogen, C_{1-6} alkyl or C_{1-4} alkoxy-C_{1-2} alkyl and

R^4 is



in which R^5 is hydrogen, C_{1-6} alkyl, C_{3-7} cycloalkyl, C_{1-6} alkoxy, C_{1-4} alkoxy-C_{1-2} alkyl, C_{2-6} alkoxycarbonyl, benzyl or phenyl

or a pharmacologically acceptable acid addition salt thereof.

5,256,683

FUNGICIDAL COMPOSITIONS CONTAINING (BENZYLIDENE)-AZOLYLMETHYLCYCLOALKANE

Jean Hutt, Lyon; Jacques Mugnier, de Sillingy; Alfred Greiner, Au Mont D'or, and Regis Pepin, Rilleux La Pape, all of France, assignors to Rhone-Poulenc Agrochimie, Lyon, France

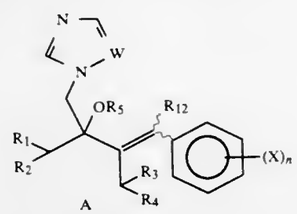
Division of Ser. No. 458,222, Dec. 28, 1989, abandoned. This application Nov. 1, 1991, Ser. No. 786,566

Claims priority, application France, Dec. 29, 1988, 88 07580; Jun. 30, 1989, 89 09079; Jul. 13, 1989, 89 09741

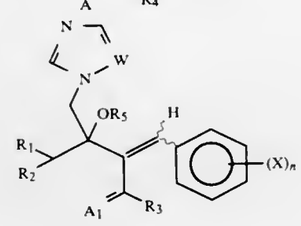
Int. Cl.[5] A01N *43/653;* **C07D** *249/08*

U.S. Cl. 514—383 **22 Claims**

1. A (benzylidene)-azolylmethylcycloalkane or -alkene of formula:



IA



IB

in which

A is —CR_6R_7— or —$CR_6R_7CR_8R_9$— or —$CR_6R_7CR_8R_9CR_{10}R_{11}$—;

A_1 is CR_7=, —CR_6R_7—CR_9= or —CR_6R_7—CR_8-R_9—CR_{11}=;

X is a halogen atom, or a cyano or nitro group, or a C_1–C_4 alkyl or C_1–C_4 alkoxy group, optionally halogenated;

n is a positive integer or zero, less than 6, it being possible for the groups X to be identical or different when n is greater than 1;

W denotes a trivalent group consisting of a nitrogen atom =N—;

R_1 and R_2, which may be identical or different, denote a hydrogen atom; a C_1–C_4 alkyl radical, optionally substituted with one or more atoms or radicals selected from the group consisting of halogen atoms, C_1–C_4 alkoxy, mono- or polyhalo(C_1–C_4 alkoxy), C_2–C_4 alkenyl, C_2–C_4 alkynyl, mono- or polyhalo(C–C_4 alkenyl) and mono- or polyhalo(C_2–C_4 alkynyl) radicals; a C_1–C_4 alkoxy radical optionally substituted with one or more atoms or radicals selected from the group consisting of halogen atoms, C_1–C_4 alkoxy, mono- or polyhalo(C_1–C_4 alkoxy), C_2–C_4 alkenyl, C_2–C_4 alkynyl, mono- or polyhalo(C_2–C_4 alkenyl) and mono- or polyhalo(C_2–C_4 alkynyl) radicals; or C_3–C_7 cycloalkyl, C_6–C_{10} aryl or C_7–C_{11} aralkyl radicals, it being possible for these various radicals to e optionally substituted with one or more atoms or radicals selected from the group consisting of halogen atoms, C_1–C_4 alkyl radicals, mono- or polyhalo(C_1–C_4 alkyl) radicals, C_1–C_4 alkoxy radicals and mono- or polyhalo(C_1–C_4 alkoxy) radicals; R_1 and R_2 together can form a C_2–C_5 hydrocarbon chain making a ring with the carbon to which R_1 and R_2 are attached, this chain optionally being substituted as for the C_6–C_{10} aryl radicals mentioned above, or R_1 and R_2 together can from a C_2–C_5 dioxaolane hydrocarbon chain with the carbon to which R_1 and R_2 are attached, this chain optionally being substituted as for the C_6–C_{10} aryl radicals mentioned above;

R_3 and R_6 to R_{11}, which may be identical or different, denote a hydrogen atom; a C_1–C_4 alkyl radical optionally substituted with one or more atoms or radicals selected from the group consisting of halogen atoms, C_1–C_4 alkoxy and mono- or polyhalo(C_1–C_4 alkoxy) radicals; or C_3–C_7 cycloalkyl, C_6–C_{10} aryl or C_7–C_{11} aralkyl radicals, it being possible for these various radicals to be optionally substituted with one or more atoms or radicals selected from the group consisting of halogen atoms, C_1–C_4 alkyl radicals, mono- or polyhalo(C_1–C_4 alkyl) radicals, C_1–C_4 alkoxy radicals and mono- or polyhalo(C_1–C_4 alkoxy) radicals; or alternatively two adjacent radicals of the chain A, together with the atoms of A to which they are attached, form a benzene ring fused to the cycloalkane;

R_5 denotes a hydrogen atom; a C_1–C_4 alkyl radical, optionally substituted with one or more atoms or radicals selected from the group consisting of halogen atoms, C_1–C_4 alkoxy, mono- or polyhalo(C_1–C_4 alkoxy), C_2–C_4 alkenyl, C_2–C_4 alkynyl, mono- or polyhalo(C_2–C_4 alkenyl) and mono- or polyhalo(C_2–C_4 alkynyl) radicals; or C_3–C_7 cycloalkyl, C_6–C_{10} aryl or C_7–C_{11} aralkyl radicals, it being possible for these various radicals to be optionally substituted with one or more atoms or radicals selected from the group consisting of halogen atoms, C_1–C_4 alkyl radicals, mono- or polyhalo(C_1–C_4 alkyl) radicals, C_1–C_4 alkoxy radicals and mono- or polyhalo(C_1–C_4 alkoxy) radicals; or R_5 denotes a group C(=O)—R_{13}, R_{13} denoting a C_1–C_4 alkyl radical, optionally substituted with one or more atoms or radicals selected from the group consisting of halogen atoms, C_1–C_4 alkoxy, mono- or polyhalo(C_1–C_4 alkoxy), C_2–C_4 alkenyl, C_2–C_4 alkynyl, mono- or polyhalo(C_2–C_4 alkenyl) and mono- or polyhalo(C-$_2$–C_4 alkynyl) radicals; or C_3–C_7 cycloalkyl, C_6–C_{10} aryl or C_7–C_{11} aralkyl radicals, it being possible for these various radicals to be optionally substituted with one or more atoms or radicals selected from the group consisting of halogen atoms, C_1–C_4 alkyl radicals, mono- or polyhalo(C_1–C_4 alkyl) radicals, C_1–C_4 alkoxy radicals and mono- or polyhalo(C_1–C_4 alkoxy) radicals; R_{12} has one of the meanings or R_5, with the exception of C(=O)—R_{13}; and

R_4 denotes a hydrogen atom, a halogen atom, a C_1–C_4 alkyl radical, optionally substituted with one or more atoms or radicals selected from the group consisting of halogen atoms, C_1–C_4 alkoxy, mono- or polyhalo(C_1–C_4 alkoxy), C_2–C_4 alkenyl, C_2–C_4 alkynyl, mono- or polyhalo(C_2–C_4 alkenyl) and mono- or polyhalo(C_2–C_4 alkynyl) radicals; or C_3–C_7 cycloalkyl, C_6–C_{10} aryl or C_7–C_{11} aralkyl radicals, it being possible for these various radicals to be optionally substituted with one or more atoms or radicals selected from the group consisting of halogen atoms, C_1–C_4 alkyl radicals, mono- or polyhalo(C_1–C_4 alkyl) radicals, C_1–C_4 alkoxy radicals and mono- or polyhalo(C-$_1$–C_4 alkoxy) radicals; and the agriculturally acceptable salified forms of these compounds.

5,256,684

METHODS AND COMPOSITIONS FOR THE TREATMENT OF GASTROINTESTINAL DISORDERS

Barry J. Marshall, Charlottesville, Va., assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 62,271, Jun. 15, 1987, abandoned, which is a continuation of Ser. No. 744,841, Jun. 13, 1985, abandoned. This application Jul. 26, 1991, Ser. No. 737,573

Int. Cl.[5] A61K *31/415, 33/24, 31/70, 31/65, 31/61, 31/43, 31/545, 31/29*

U.S. Cl. 514—398 **49 Claims**

1. A method, for the treatment of a human or lower animal subject having an infectious upper gastrointestinal tract disorder caused or mediated by a Campylobacter pyloridis infection in said subject, comprising administering to said subject a pharmaceutically-acceptable bismuth agent and a pharmaceutically-acceptable antimicrobial agent in amounts safe and effective for combatting the Campylobacter pyloridis infection.

5,256,685

MITOMYCIN DERIVATIVES

Hitoshi Arai, Sunto; Yutaka Kanda, Machida; Motomichi Kono, Sunto; Masaji Kasai, Fujisawa; Tadashi Ashizawa, Numazu, and Katsushige Gomi, Susono, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

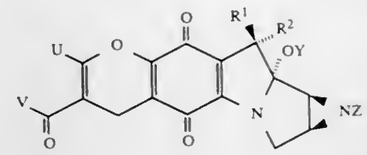
Filed Mar. 26, 1992, Ser. No. 857,427

Claims priority, application Japan, Mar. 26, 1991, 3-61838

Int. Cl.[5] C07D *491/22;* **A61K** *31/40, 31/33*

U.S. Cl. 514—410 **14 Claims**

1. A mitomycin derivative represented by the formula:



wherein U and V independently represent a substituted or unsubstituted lower alkyl having 1 to 6 carbon atoms, lower alkenyl having 2 to 6 carbon atoms or lower alkoxy group having 1 to 6 carbon atoms, a substituted or unsubstituted phenyl, naphthyl or lower alkenyloxy group having 2 to 6 carbon atoms, or U and V together form —$(CH_2)_m$—CR^3R^4—CH_2—, wherein m represents an integer of 0 to 1, R^3 and R^4 independently represent hydrogen, a lower alkyl having 1 to 6 carbon atoms or a substituted or unsubstituted phenyl or naphthyl; Y represents hydrogen or methyl; Z represents hydrogen, methyl, a lower alkanoyl having 2 to 7 carbon atoms or an allyloxycarbonyl; one of R^1 and R^2 represents CH_2OCONH_2 and the other represents hydrogen, or R^1 and R^2 together form methylene (=CH_2)

wherein the substituent on the respective groups is lower alkoxy having 1 to 6 carbon atoms, lower alkanoyl having 2 to 7 carbon atoms, alkoxycarbonyl having 2 to 7 carbon atoms, aroyl having 7 to 11 carbon atoms, oxo, halogen, alkanoylamino having 2 to 7 carbon atoms, or nitro.

5,256,686

PHENYLALKAN(EN)OIC ACID

Mitoshi Konno; Takahiko Nakae, and Nobuyuki Hamanaka, all of Osaka, Japan, assignors to Ono Pharmaceutical Co., Ltd., Tokyo, Japan

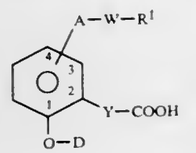
Division of Ser. No. 760,043, Sep. 13, 1991, Pat. No. 5,155,104, which is a division of Ser. No. 524,521, May 17, 1990, Pat. No. 5,086,065. This application Jul. 29, 1992, Ser. No. 921,342

Claims priority, application Japan, Jun. 27, 1989, 1-164213; Dec. 1, 1989, 1-310545; Jan. 9, 1990, 2-1799

Int. Cl.[5] A61K *31/40;* **C07D** *209/90*

U.S. Cl. 514—417 **4 Claims**

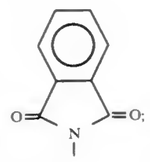
1. A phenylalkan(en)oic acid of the formula:



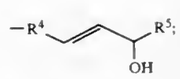
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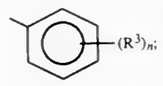
wherein
A, taken together with W and R^1, is



Y is ethylene or vinylene;
D is:
i) —Z—B or
ii)



Z is C3–11 alkylene or alkenylene
B is:



or
Z, taken together with B, is C3–22 alkyl;
R^3 is:
i) hydrogen,
ii) halogen,
iii) C1–8 alkyl, alkoxy or alkylthio or
iv) C2–8 alkenyl, alkenyloxy or alkenylthio;
n is 1–3;
R^4 is C1–7 alkylene;
R^5 is:
i) C1–12 alkyl,
ii) C2–12 alkenyl,
iii) C5–7 cycloalkyl or
iv) phenethyl or phenethyl wherein the ring is substituted by one C1–4 alkoxy;
with the proviso that:
—A—W—R^1 should bind to 3- or 4-carbon in benzene ring, and non-toxic salts thereof.

5,256,687

PHARMACEUTICAL COMPOSITION FOR THE TREATMENT OF HIGH BLOOD PRESSURE

Reinhard Becker, Wiesbaden; Rolf Geiger, Frankfurt am Main; Rainer Henning, Hattersheim am Main; Volker Teetz, Holheim am Taunus, and Hansjörg Urbach, Kronberg/Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 776,699, Oct. 16, 1991, abandoned, which is a continuation of Ser. No. 519,026, May 4, 1990, abandoned, which is a continuation of Ser. No. 287,529, Dec. 19, 1988, abandoned, which is a continuation of Ser. No. 903,950, Sep. 5, 1986, abandoned. This application Nov. 19, 1992, Ser. No. 979,390

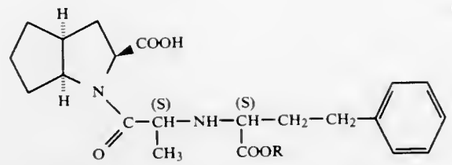
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1985, 3532036

Int. Cl.[5] **A61K** *31/40, 31/405, 31/34*

U.S. Cl. 514—419 **12 Claims**

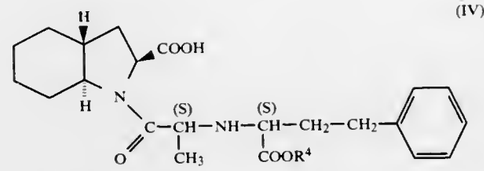
1. A pharmaceutical composition containing a synergistically effective amount of:

(a) an angiotensin converting enzyme inhibitor, or its physiologically tolerated salt, of formula (III):



(III)

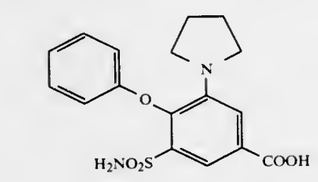
in which R denotes hydrogen, methyl, ethyl or benzyl, or of formula (IV):



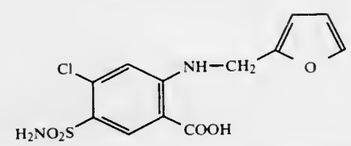
(IV)

in which R^4 denotes hydrogen, (C_1–C_4)-alkyl or benzyl; and

(b) a loop diuretic, or its physiologically tolerated salt, of formula (II) or of formula (II'):



(II)



(II')

wherein said loop diuretic is present in a subdiuretic dose and wherein the combination of (a) and (b) is synergistically effective to lower blood pressure.

5,256,688

METHOD FOR INHIBITING MYOCARDIAL CELL NECROSIS AND PRESERVING HEART FUNCTION DURING MYOCARDIAL ISCHEMIA AND/OR REPERFUSION

Gary J. Grover, Stockton, N.J., and Karnail Atwal, Newtown, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 411,137, Sep. 22, 1989, abandoned, which is a continuation-in-part of Ser. No. 220,866, Jul. 18, 1988, abandoned. This application Oct. 29, 1991, Ser. No. 784,482

Int. Cl.[5] **A61K** *31/40*

U.S. Cl. 514—422 **7 Claims**

1. A method of inhibiting myocardial cell necrosis and improving myocardial function during myocardial ischemia and/or reperfusion in a mammalian species, which comprises locally administering to the heart of a mammalian species in need of such treatment an effective amount of a potent potassium channel activator which is cromakalin in the range of from about 0.001 to about 30 mg/kg per treatment, to reduce or eliminate myocardial cell necrosis, ischemia injury and/or reperfusion injury, wherein the potent potassium channel activator exhibits potent inhibition of spontaneous mechanical activity in rat portal vein and has an IC_{50} of less than about 2 μM.

5,256,689

CHOLESTEROL LOWERING COMPOUNDS

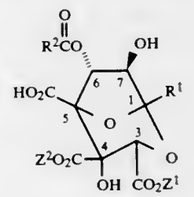
Yuan-Ching P. Chiang, Scotch Plains, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 866,749, Apr. 15, 1992, which is a continuation-in-part of Ser. No. 805,602, Dec. 9, 1991, which is a continuation-in-part of Ser. No. 698,766, May 10, 1991, abandoned. This application Oct. 26, 1992, Ser. No. 966,764

Int. Cl.[5] **A61K** *31/335;* **C07D** *319/04*

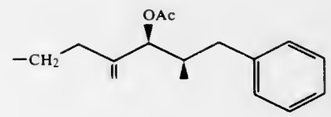
U.S. Cl. 514—452 **10 Claims**

1. A compound of structural formula (I):

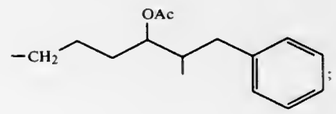


(I)

wherein:
R^1 is
(1)



or
(2)

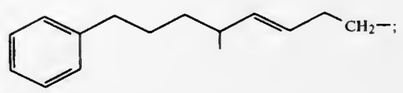


;

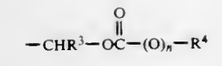
R^2 is
(1)



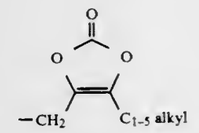
or
(2)



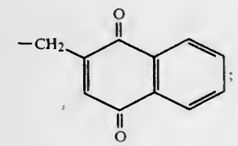
Z^1 is C_{1-3}alkyl or $—CH_2—CH=CH_2$;
Z^2 is
(1)



or
(2)



or
(3)



and
X and Y are each independently selected from:
(1) hydrogen,
(2) hydroxy,
(3) halogen,
(4) trifluoromethyl,
(5) C_{1-4}alkyl,
(6) C_{1-4}alkyl—O—,
(7) C_{1-4}alkyl—C(O)—O—,
(8) $—CO_2C_{1-4}$alkyl,
(10) $—CO_2H$, and
(11) nitro;
or a pharmaceutically acceptable salt thereof.

5,256,690

METHOD FOR TREATING AND CONTROLLING THE SYMPTOMS OF NEURODEGENERATIVE DISEASE AND NEUROPSYCHOPHARMACOLOGICAL DISORDERS

Robert D. Sofia, Willingboro, N.J., assignor to Carter-Wallace, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 518,892, May 4, 1990, Pat. No. 5,055,489, and a continuation-in-part of Ser. No. 753,748, Sep. 3, 1991, abandoned. This application Oct. 26, 1992, Ser. No. 966,965

Int. Cl.[5] **A61U** *31/27*

U.S. Cl. 514—483 **4 Claims**

1. A method for treating and controlling the symptoms of neuropsychopharmacological disorders associated with or resulting from excessive activation of the N-methyl-D-aspartate receptor complex which comprises administering to a human or other warm-blooded animal from about 1 to about 500 milligrams of the compound 2-phenyl-1,3-propanediol dicarbamate which possesses agonist properties for the strych-

VOL 1155 ISS 4 OCT 26 1993 UMI

nine-insensitive glycine modulatory site of the N-methyl-D-aspartate receptor complex.

5,256,691

OIL-IN-WATER TYPE EMULSIFIED COMPOSITION COMPRISING NON-STEROIDAL ANTIPHLOGISTIC AND ANALGESIC DRUG

Takashi Suzuki, Yokohama, Japan, assignor to Shiseido Company Ltd., Tokyo, Japan

PCT No. PCT/JP91/00280, § 371 Date Oct. 22, 1991, § 102(e) Date Oct. 22, 1991, PCT Pub. No. WO91/12821, PCT Pub. Date Sep. 5, 1991

PCT Filed Mar. 2, 1991, Ser. No. 768,698

Claims priority, application Japan, Mar. 2, 1990, 2-49452

Int. Cl.[5] A61K *31/19*

U.S. Cl. 514—510 **4 Claims**

1. An oil-in-water type emulsified composition containing a diclofenac salt, wherein the composition comprises a stabilizing-effective amount of a monoalkylglyceryl ether and hydrophilic surface-active agent.

5,256,692

SULFUR-CONTAINING HMG-COA REDUCTASE INHIBITORS

Eric M. Gordon, Pennington, and Jelka Pluscec, Trenton, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

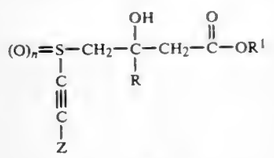
Filed Jan. 7, 1992, Ser. No. 817,875

Int. Cl.[5] A01N *37/10*; C07C *317/00*

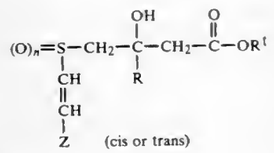
U.S. Cl. 514—532 **13 Claims**

1. A compound having the following formula I or II:

(I)



(II)



(cis or trans)

where:

n is 0, 1 or 2;

R is hydrogen or lower alkyl;

Z is a substituted or unsubstituted biphenyl group; and

R^1 is hydrogen, alkyl or aryl; or a salt thereof.

5,256,693

GERMICIDAL COMPOSITION

Ryoji Funatsu, Tokyo; Kazuyuki Nishizawa, Matsudo, and Susumu Mitsui, Koshigaya, all of Japan, assignors to Somar Corporation, Japan

Filed Apr. 13, 1992, Ser. No. 867,367

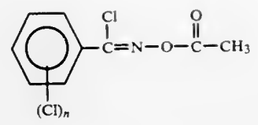
Claims priority, application Japan, Jul. 26, 1991, 3-210156

Int. Cl.[5] A01N *33/24, 37/02*

U.S. Cl. 514—547 **3 Claims**

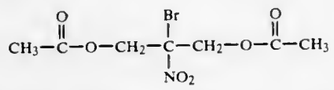
1. A germicidal composition comprising a synergistic germicidally effective amount of a derivative of α-chlorobenzaldoxime acetate of the formula (I):

(I)



wherein n is an integer of 0 to 2, and 2-bromo-2-nitro-1,3-diacetyloxypropane of the formula (II):

(II)



wherein the synergistic weight ratio of the α-chlorobenzaldoxime acetate derivative to the 2-bromo-2-nitro-1,3-diacetyloxypropane is 1:10 to 10:1.

5,256,694

DIARYLACETYLENES, THEIR PREPARATION AND THEIR USE

Hans-Heiner Wuest, Dossenheim; Fritz-Frieder Frickel, Deidesheim, and Axel Nuerrenbach, Gruenstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 569,869, Aug. 20, 1990, Pat. No. 5,126,371, which is a division of Ser. No. 222,901, Jul. 22, 1988, Pat. No. 4,994,489, which is a division of Ser. No. 778,256, Sep. 20, 1985, Pat. No. 4,806,558. This application May 22, 1992, Ser. No. 888,691

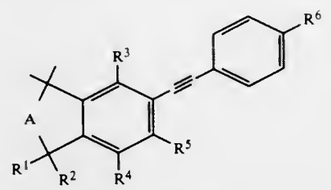
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1984, 3434946

Int. Cl.[5] A61K *31/235*; C07C *69/76*

U.S. Cl. 514—549 **3 Claims**

1. A diarylacetylene of the formula I

I



where R^1 and R_2 are each hydrogen or methyl, R^3 is hydrogen, methyl, hydroxy or C_1-C_6-alkoxy, R^4 is hydrogen, methyl or methoxy, R^5 is hydrogen, halogen, methoxy or C_1-C_4-alkyl, A is methylene or ethylene radical which is unsubstituted or substituted by C_1-C_4 alkyl or is —CH=CH—, —CHOH—CH_2— or —CO—CH_2— and R^6 is C_2-C_{10}-acetal group or C_5-C_6-cyclic acetal or —CH—$COOR^{13}$, where R^{13} is C_1-C_8-alkyl, and its physiologically tolerated salts.

5,256,695

ACYL AMIDINE AND ACYL GUANIDINE SUBSTITUTED BIPHENYL DERIVATIVES

Michael A. Poss, Lawrenceville, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

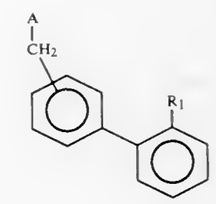
Division of Ser. No. 735,398, Jul. 24, 1991, Pat. No. 5,177,097. This application Sep. 16, 1992, Ser. No. 945,570

Int. Cl.[5] A01N *37/18*

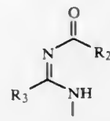
U.S. Cl. 514—563 **8 Claims**

1. A compound of the formula

I

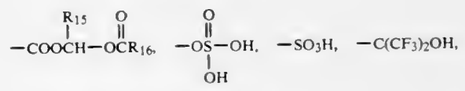


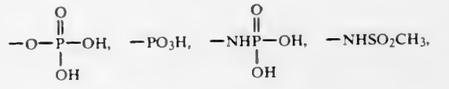
where A is

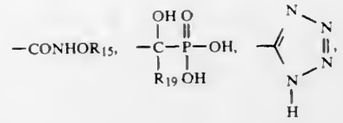


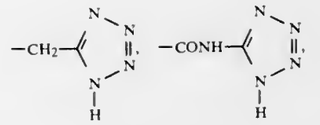
and pharmaceutically acceptable salts thereof; where

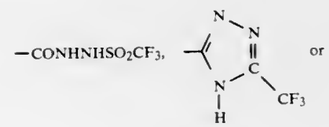
R_1 is H, —COOH, —$NHSO_2CF_3$,

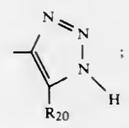




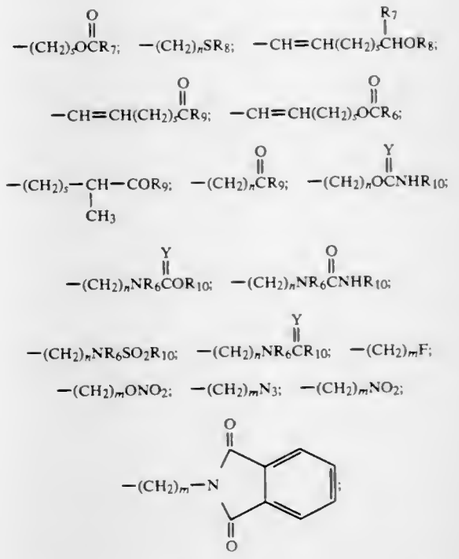








R_2 is H, alkyl of 1 to 10 carbon atoms, alkenyl of 3 to 10 carbon atoms, or the same groups substituted with F; phenylalkenyl wherein the aliphatic portion is 2 to 6 carbon atoms; —$(CH_2)_m$-imidazol-1-yl; —$(CH_2)_m$-1,2,3-triazolyl optionally substituted with one or two groups selected from CO_2R_7 or alkyl of 1 or 4 carbon atoms; —$(CH_2)_m$-tetrazolyl; —$(CH_2)_nOR_6$;



R_3 is alkyl of 2 to 10 carbon atoms, alkenyl or alkynyl of 3 to 10 carbon atoms or the same groups substituted with F or CO_2R_7; cycloalkyl of 3 to 8 carbon atoms, cycloalkylalkyl of 4 to 10 carbon atoms; cycloalkylalkenyl or cycloalkylalkynyl of 5 to 10 carbon atoms; —$(CH_2)_sZ(CH_2)_mR'$ (wherein R' is H, C_{1-6}alkyl, C_{3-6}cycloalkyl, C_{2-4}alkenyl or C_{2-4}alkynyl) optionally substituted with F of CO_2R_7; benzyl or benzyl substituted on the phenyl ring with 1 or 2 halogens, alkoxy of 1 to 4 carbons atoms, alkyl of 1 to 4 carbon atoms or nitro;

R_6 is H, alkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, phenyl or benzyl;

R_7 is H, alkyl or perfluoroalkyl of 1 to 8 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, phenyl or benzyl;

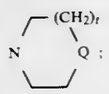
R_8 is H, alkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, phenyl, benzyl, acyl of 1 to 4 carbon atoms, phenacyl;

R_9 is H, alkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, $(CH_2)_pC_6H_5$, OR_{11} or $NR_{12}R_{13}$;

R_{10} is alkyl of 1 to 6 carbon atoms or perfluoroalkyl of 1 to 6 carbon atoms, 1-adamantyl, 1-naphthyl, 1-(1-naphthyl-)ethyl, or $(CH_2)_pC_6H_5$;

R_{11} is H, alkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, phenyl or benzyl;

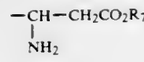
R_{12} and R_{13} independently are H, alkyl of 1 to 4 carbon atoms, phenyl, benzyl, α-methylbenzyl, or taken together form a ring of the formula



Q is NR_{14}, O or CH_2;

R_{14} and R_{15} are independently H, alkyl, aryl, aralkyl or cycloalkyl;

R_{16} is C_{1-6}-alkyl, —$NR_{17}R_{18}$ or



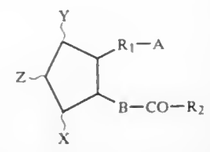
VOL 1155 ISS 4 OCT 26 1993 UMI

R_{17} and R_{18} a are independently H, C_{1-6}alkyl, benzyl or taken together are 3 to 6 carbon atoms forming a 4- to 7-membered ring with the nitrogen atom to which they are attached;
R_{19} is H, C_{1-5}alkyl, phenyl;
R_{20} is —CN, $—NO_2$ or $—CO_2R_7$;
Y=O or S;
Z=O, NR_6 or S;
m is 1–5;
n is 1–10;
p is 0–3;
s is 0–5; and
t is 0 or 1.

5,256,696
TREATMENT OF CARDIAC DYSFUNCTION WITH 15-KETOPROSTAGLANDIN COMPOUNDS
Ryuji Ueno, and Hiroyoshi Osama, both of Hyogo, Japan, assignors to Kabushikikaisha Ueno Seiyaku Oyo Kenkyujo, Osaka, Japan
Continuation of Ser. No. 616,952, Nov. 21, 1990, abandoned. This application Jun. 2, 1992, Ser. No. 892,640
Claims priority, application Japan, Nov. 22, 1989, 1-303840
Int. Cl.[5] A61K *31/19, 31/557*
U.S. Cl. 514—573 **14 Claims**

1. A method for treatment of a cardiac dysfunction which comprises administering, to a subject in need of such treatment, a cardiac dysfunction treatment effective amount of a 15-keto-prostaglandin compound represented by formula (I):

(I)



wherein
X and Y are hydrogen, hydroxy, halo, lower alkyl, hydroxy(lower)alkyl, or oxo, with the proviso that at least one of X and Y is a group other than hydrogen, and 5-membered ring may have at lest one double bond, Z is hydrogen or halo, A is $—CH_2OH$, $—COCH_2OH$, —COOH or its functional derivative, B is $—CH_2—Ch_2$, —CH=CH— or —C≡C—, R_1 is bivalent saturated or unsaturated, lower or medium aliphatic hydrocarbon residue which is unsubstituted or substituted with halo, oxo or aryl, R_2 is saturated or unsaturated, lower or medium aliphatic hydrocarbon residue which is unsubstituted or substituted with halo, hydroxy, oxo, lower alkoxy, lower alkanoyloxy, cyclo(lower)alky, aryl or aryloxy, and said compound represented by formula (I) having at least one of (i) a halogen atom at position 5 or 16 or at positions 5 and 16 and (ii) a lower alkyl at position 19.

5,256,697
METHOD OF ADMINISTERING PYRUVATE AND METHODS OF SYNTHESIZING PYRUVATE PRECURSORS
Robert H. Miller, Worthington; Nickki L. Parlet, Columbus; Kent L. Cipollo, Westerville, all of Ohio; Madhup K. Dhaon, Mundelein, Ill.; John A. Houbion, Vernon Hills, Ill., and Edwin O. Lundell, Libertyville, Ill., assignors to Abbott Laboratories
Filed Apr. 16, 1992, Ser. No. 868,891
Int. Cl.[5] A61K *31/16*
U.S. Cl. 514—625 **8 Claims**

1. A method for administering pyruvate to mammals, which method comprises orally ingesting a therapeutically effective amount of a pyruvate precursor, said precursor being in the form of a covalently linked pyruvyl-amino acid compound.

5,256,698
TREATMENT OF PSYCHOSIS USING CYCLOHEXYL-PHENYL-LOWER ALKYL AMINE DERIVATIVES
Ronald D. Schoenwald; Charles F. Barfknecht, both of Iowa City, Iowa, and Roger E. Newton, River Edge, N.J., assignors to University of Iowa Research Foundation, Oakdale, Iowa
Continuation-in-part of Ser. No. 257,826, Oct. 14, 1988, which is a continuation of Ser. No. 168,680, Mar. 16, 1988, Pat. No. 4,820,737, which is a continuation of Ser. No. 15,117, Feb. 17, 1987, abandoned. This application Jul. 24, 1990, Ser. No. 557,581
Int. Cl.[5] A61K *31/135*
U.S. Cl. 514—649 **7 Claims**

1. A method of treating psychotic disorders, treatable by compounds having a strong degree of affinity for sigma binding cites, said method comprising:
administering to a patient a small but pharmacologically active amount of a psychoactive drug selected from the group consisting of N-cyclohexyl-N-ethyl benzylamine, N-cyclohexyl-N-ethyl 2-phenylethylamine, and suitable salt forms thereof.

5,256,699
DISPERSIBLE TABLET FORMULATION OF DICLOFENAC ACID FREE BASE
Lorraine M. Murphy, and Graham P. Matthews, both of Horsham, England, assignors to Ciba-Geify Corporation, Ardsley, N.Y.
Continuation of Ser. No. 691,156, Apr. 24, 1991, abandoned, which is a continuation of Ser. No. 421,578, Oct. 16, 1989, abandoned. This application Apr. 12, 1992, Ser. No. 869,087
Claims priority, application United Kingdom, Oct. 18, 1988, 8824392
Int. Cl.[5] A61K *31/135, 9/20*
U.S. Cl. 514—658 **8 Claims**

1. A dispersible solid drug formulation in the form of a tablet comprising finely divided diclofenac in the free acid form having a particle size diameter of from about 4 to about 100 μm, from 5 to 25% by weight of a superdisintegrant selected from the group consisting of croscarmellose, crospovidone, and sodium starch glycollate and a pharmaceutically acceptable diluent.

5,256,700
CARNOSIC ACID OBTENTION AND USES
Robert Aeschbach, Vevey, and Georges Philippossian, Lausanne, both of Switzerland, assignors to Nestec S.A., Vevey, Switzerland
Filed Sep. 18, 1991, Ser. No. 761,669
Claims priority, application European Pat. Off., Oct. 6, 1990, 90119218.7
Int. Cl.[5] A61K *31/05*
U.S. Cl. 514—732 **21 Claims**

1. A process for obtaining carnosic acid comprising extracting a vegetable material selected from the group consisting of sage and rosemary with an apolar solvent to obtain an extract containing apolar compounds including carnosic acid, contacting the extract with an adsorbent material having an affinity for polar compounds for adsorbing the carnosic acid to separate the carnosic acid from the apolar compounds of the extract, desorbing the adsorbent material with a polar solvent to obtain the carnosic acid in the solvent and then evaporating the polar solvent from the carnosic acid to obtain a residue containing the carnosic acid.

5,256,701
DISINFECTANT COMPOSITION
Zenzo Tamura, 17-11, Sanno 2 chome, Ota-ku, Tokyo; Kuniko Shoji, Kanagawa; Chieko Azegami, Kanagawa; Takao Kunisada, Kanagawa; Kaoru Hosoi, Kanagawa; Kiwa Suzuki, Tokyo, and Shikifumi Kitazawa, Chiba, all of Japan, assignors to Zenzo Tamura and Meiji Seika Kaisha Ltd., both of Tokyo, Japan
Filed Nov. 19, 1991, Ser. No. 794,248
Claims priority, application Japan, Nov. 19, 1990, 2-311400
Int. Cl.[5] A01N *25/00, 59/12*
U.S. Cl. 514—781 **3 Claims**

1. An aqueous disinfectant composition consisting essentially of 0.5–10 w/v % of hydroxypropyl cellulose, 0.01–1.0 w/v % of iodine, 0–0.5 w/v % of an iodide, 0–83 v/v % of an alcohol and water in an amount to make up the balance.

5,256,702
METHOD OF FOAMING THERMOPLASTIC POLYCARBONATE
Ernst Grigat, Leverkusen; Wolfgang Ebert, Krefeld; Burkhard Köhler, Krefeld; Wolfgang Beer, Krefeld; Ralf Dujardin, Willich-Anrath, and Klaus Horn, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Division of Ser. No. 989,391, Dec. 11, 1992, Pat. No. 5,223,548. This application Apr. 14, 1993, Ser. No. 46,325
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1991, 4142186
Int. Cl.[5] C08J *9/14*
U.S. Cl. 521—84.1 **5 Claims**

1. A foamable thermoplastic molding composition comprising a thermoplastic aromatic polycarbonate resin and about 0.01 to 10% of a saccharide compound, said percent being relative to the total weight of polycarbonate resin and saccharide compound, said saccharide being at least one member selected from the group consisting of amine group-containing polysaccharide, amide group-containing polysaccharide, amine group-containing oligo-saccharide, and amide group-containing oligo-saccharide.

5,256,703
ABRASIVE PROPELLANT FOR CLEANING OF SURFACES AND MACHINERY
Paul F. Hermann, Boothbay, Me., and William R. Lynn, Dover, N.H., assignors to Sponge Jet Inc., Dover, N.H.
Continuation-in-part of Ser. No. 376,764, Jul. 7, 1989, abandoned, and a continuation-in-part of Ser. No. 606,169, Oct. 31, 1990, abandoned. This application Sep. 12, 1991, Ser. No. 757,977
Int. Cl.[5] C08L *75/04*
U.S. Cl. 521—120 **48 Claims**

1. Composition comprising the reaction product of a water foamable prepolymer abrasive, inorganic mineral and water to increase abrasiveness or density.

5,256,704
POLYURETHANE RIM ELASTOMERS OBTAINED WITH HYDROXYL-CONTAINING ORGANOTIN CATALYSTS
John E. Dewhurst, Macungie, and James D. Nichols, Fogelsville, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Continuation-in-part of Ser. No. 626,604, Dec. 12, 1990, abandoned. This application Sep. 8, 1992, Ser. No. 941,459
Int. Cl.[5] C08G *18/14*
U.S. Cl. 521—126 **19 Claims**

1. A reaction injection molded elastomer made by reacting in a closed mold a composition comprising a polyether polyol greater than 500 average molecular weight, an aromatic diamine chain extender, an aromatic polyisocyanate and an organotin catalyst of the following general formula

$$R_2Sn+X—R^1—OH]_2$$

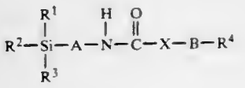
where
R is a C_1–C_8 alkyl group or an aryl group,
R^1 is a C_2–C_{22} divalent hydrocarbyl group which may also contain a hydroxyl substituent; and
X is a linking group which is —S— or $—O_2C$.

5,256,705
COMPOSITION WITH TACKIFIER FOR PROTECTING COMMUNICATION WIRES
Clarence S. Freeman, Channelview, Tex., assignor to Water-Guard Industries, Inc., Houston, Tex.
Continuation of Ser. No. 181,833, Apr. 15, 1988, abandoned, which is a continuation-in-part of Ser. No. 45,889, May 1, 1987, abandoned, which is a continuation-in-part of Ser. No. 939,007, Dec. 8, 1986, Pat. No. 4,752,997, which is a continuation-in-part of Ser. No. 844,144, Mar. 26, 1986, Pat. No. 4,711,022. This application Aug. 28, 1989, Ser. No. 401,563
Int. Cl.[5] H02G *15/00*
U.S. Cl. 523—173 **8 Claims**

1. A composition for protecting the wires of telecommunications and other cables carrying direct current from shorts caused by moisture comprising:
a gel matrix which is relatively non-conductive to a small dc current selected from the group consisting of olefins, petroleum gels, and mixtures of olefins and petroleum gels;
a water absorbent polymer having a hydrocarbon backbone with anionic carboxylate groups attached thereto; and
a tackifier, said water absorbent polymer being dispersed in said gel matrix whereby the anionic carboxylate groups of said water absorbent polymer cause said water absorbent polymer, when exposed to direct current from a wire in a condition of short caused by the presence of moisture, to be attracted to the wire, the wire acting as an anode to draw the anionic groups of said water absorbent polymer into electrochemical association with the wire, the accumulated water absorbent polymer insulating the wire to exclude moisture from the wire and eliminate the short, restoring current flow through the wire.

5,256,706
CROSS-LINKAGE SURFACE-MODIFED MICACEOUS PARTICULATES AND COATING COMPOSITIONS CONTAINING THE SAME
Clint W. Carpenter, Plymouth, and Thomas G. Savino, Northville, both of Mich., assignors to BASF Corporation, Southfield, Mich.
Continuation of Ser. No. 386,376, Jul. 27, 1989, Pat. No. 5,013,770. This application Feb. 11, 1991, Ser. No. 900,803
Int. Cl.[5] C08K *9/06*
U.S. Cl. 523—213 **21 Claims**

1. A compound for use in the surface-modification of micaceous particulates in coating compositions comprising a compound having the formula



wherein
R^1, R^2, and R^3 may be the same or different and are selected from
alkyl of from one to ten carbon atoms,
alkoxyl of from one to ten carbon atoms,
alkoxylalkoxyl of from two to ten carbon atoms,
alkanoyloxy of from two to ten carbon atoms, or
halogen,

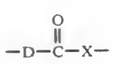
VOL 1155 ISS 4 OCT 26 1993 UMI

with the proviso that R^1, R^2, and R^3 may not all be alkyl;

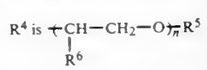
A is a divalent radical selected from straight or branched alkylene of from one to twelve carbon atoms, phenylene, or phenylene substituted with halogen, alkyl of from one to four carbon atoms, or alkoxyl of from one to four carbon atoms;

X is a divalent radical selected from —O— or —NH—;

B is a direct valence bond or is a divalent group having the formula



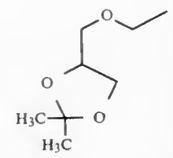
wherein D is a residue derived from the hypothetical removal of the two isocyanate groups from a diisocyanate molecule, and X is a divalent group selected from —O— and —NH—;

R^4 is 

wherein

n is an integer of from zero to one thousand,

R^6 is hydrogen, alkyl of from one to eight carbon atoms, or



R^5 is selected from polyols having at least one hydroxyl group, and blocked polyols wherein said hydroxy groups are blocked by hydroxy protecting groups.

5,256,707

CONTINUOUS PROCESS FOR CONCENTRATING POLYMER SOLUTIONS UP TO A REQUIRED SPECIFICATION LEVEL OF RESIDUAL SOLVENTS

Clemens Casper, and Jörgen Weinschenck, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 22, 1991, Ser. No. 673,731

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1990, 4011383

Int. Cl.[5] **C06L** *31/00*

U.S. Cl. 523—318 **5 Claims**

1. Continuous process for concentrating polymer solutions up to a required specification level of residual solvent, the product being heated up under pressure and then being expanded in a restrictor element (3, 33) with vapour formation into a heated flow pipe (7, 37) and concentrated therein, characterised in that the concentrating is taken as far as possible in this first flow pipe (7, 37), and that the product is then introduced at an angle into a second heatable flow pipe (9, 39) immediately downstream, which contains self-cleaning elements (10;11;41,42,43) and has at least 50 times the flow cross-section of the first flow pipe (7, 37), and is brought to the desired end concentration, and the separation of the vapour stream from the polymer stream taking place only downstream of the second flow pipe (9, 39).

5,256,708

UNSATURATED POLYESTER RESIN COMPOSITIONS CONTAINING COMPATIBLE COMPOUNDS HAVING SULFUR-CONTAINING SUBSTITUENTS

Louis R. Ross, and Edward L. Wilson, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Technology, Inc., Summit, Ill.

Filed Jul. 22, 1991, Ser. No. 733,518

The portion of the term of this patent subsequent to Feb. 18, 2009, has been disclaimed.

Int. Cl.[5] **C08K** *5/00;* **C08L** *67/00*

U.S. Cl. 523—507 **10 Claims**

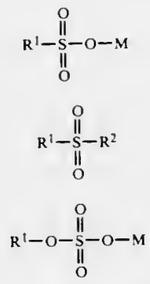
1. A four component resinous system for a sheet molding composition comprising:

(a) an unsaturated polyester comprising a polycondensation product of one or more dihydric alcohols and one or more ethylenically unsaturated polycarboxylic acids;

(b) one or more low-profile thermoplastic polymers which cause phase separation and porosity during a curing reaction;

(c) one or more olefinically unsaturated monomers which copolymerizes with the unsaturated polyester, and,

(d) one or more components which are compatible with the reacted unsaturated polyester and monomer during cure wherein the compatible component is selected from the group of compounds containing one or more sulfate, sulfonate or sulfone substituents having the general structures:



wherein R^1 and R^2 are selected from the group consisting of hydrogen, cycloalkyl, lower alkyl, phenyl, phenyl substituted by halogen, lower alkyl, cyl, or lower alkoxy; R^1 and R^2 may be the same or different, and M is selected from the group of lithium, sodium, potassium, calcium, or magnesium.

5,256,709

UNSATURATED POLYESTER RESIN COMPOSITIONS CONTAINING COMPATIBLE COMPOUNDS HAVING AROMATIC SUBSTITUENTS

Louis R. Ross, and Edward L. Wilson, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Technology, Inc., Summit, Ill.

Filed Jul. 22, 1991, Ser. No. 733,520

The portion of the term of this patent subsequent to Jul. 22, 2008, has been disclaimed.

Int. Cl.[5] **C08K** *5/06, 5/13;* **C08L** *67/00*

U.S. Cl. 523—510 **10 Claims**

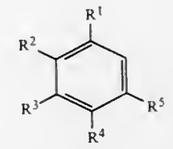
1. A four component resinous system for a sheet molding composition comprising:

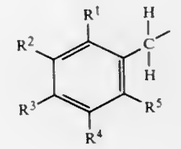
(a) an unsaturated polyester comprising a polycondensation product of one or more dihydric alcohols and one or more ethylenically unsaturated polycarboxylic acids;

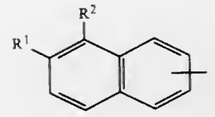
(b) one or more low-profile thermoplastic polymers which cause phase separation and porosity during a curing reaction;

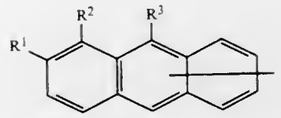
(c) one or more olefinically unsaturated monomers which copolymerizes with the unsaturated polyester, and,

(d) one or more components which are compatible with the reacted unsaturated polyester and monomer during cure wherein the compatible component is selected from the group of compounds containing one or more aromatic substituents described as phenyl, benzyl, naphthyl, and anthracenyl and having the following general structures:

I 

II 

III 

IV 

wherein R^1, R^2, R^3, R^4 and R^5 are selected from the group consisting of hydrogen, cycloalkyl, lower alkyl, phenyl, phenyl sunbstituted by halogen, lower alkyl, acyl, or lower alkoxy; R^1, R^2, R^3, R^4 and R^5 may be the same or different.

5,256,710

METHOD OF PRODUCING, USING AND COMPOSITION OF PHENOLIC-TYPE POLYMER MODIFIED ASPHALTS OR BITUMENS

Dennis Krivohlavek, Claremore, Okla., assignor to Asphalt Technology & Consultants, Inc., Claremore, Okla.

Filed Jul. 17, 1992, Ser. No. 916,217

Int. Cl.[5] **C08L** *95/00*

U.S. Cl. 524—59 **9 Claims**

1. A method of producing cross linked polymer modified asphalt or bitumen, which method comprises:

(a) combining by agitation polymers chosen from the group consisting of styrene rubber, styrene butadiene rubber, polydiene rubber and polyolefin diene rubber, 80 to 99% by weight of asphalt or bitumen, with said asphalt or bitumen at temperatures of 130° to 230° C. to form a homogeneous mixture;

(b) adding 0.05 to 2.0% by weight of asphalt of a reactive phenol-aldehyde resin to the mixture; and

(c) continuing agitation of the mixture to complete the reaction.

5,256,711

STARCH-CONTAINING BIODEGRADABLE PLASTIC AND METHOD OF PRODUCING SAME

Yutaka Tokiwa, Tsuchiura; Sigeyuki Takagi, and Masatoshi Koyama, both of Tsukuba, all of Japan, assignors to Director-General of Agency of Industrial Science; Technology Research Institute of Innovative Technology for the Earth and Chuo Kagaku Co., Ltd., all of Japan

Filed Oct. 1, 1992, Ser. No. 955,025

Claims priority, application Japan, Oct. 4, 1991, 3-283847; Nov. 7, 1991, 3-319899

Int. Cl.[5] **525** *411, 415, 450;* **C08J** *1/26*

U.S. Cl. 524—47 **11 Claims**

1. A biodegradable plastic material comprising a mixture of gelatinized starch with a biodegradable, aliphatic polyester resin having a melting point of 45°–130° C.

5,256,712

PROCESS FOR OBTAINING BITUMENS CONTAINING AT LEAST ONE ELASTOMER AND PRODUCTS OBTAINED

Georges Langumier, Saint Germain en l'Hay, and Pierre Montmory, Fontenay le Fleury, both of France, assignors to Colas, Societe Ainonyme, Paris, France

Continuation of Ser. No. 341,374, Apr. 21, 1989, abandoned. This application Jun. 10, 1992, Ser. No. 897,612

Claims priority, application France, Apr. 25, 1988, 88 05478

Int. Cl.[5] **C08L** *95/00*

U.S. Cl. 524—71 **16 Claims**

1. A process for obtaining storage stable bitumens containing at least one elastomer, which process comprises two steps, according to which, in the first step, a homogeneous dispersion comprising said elastomer and a selected bitumen, said selected bitumen containing less than about 6% of saturated products and less than about 7% asphaltenes, is prepared by blending said elastomer with said selected bitumen until a master solution is obtained, and, in the second step, said master solution is diluted with a roadmaking bitumen, said roadmaking bitumen containing greater than about 8% by weight asphaltenes, until a homogeneous product is obtained in the form of a storage stable elastomeric bitumen.

5,256,713

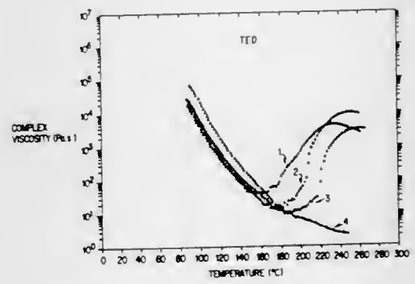
GLYCOLURIL POWDER COATING COMPOSITIONS

William Jacobs, III, Bethel; Donna A. Foster, Stratford, and Sami M. Sansur, Darien, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 16, 1992, Ser. No. 869,695

Int. Cl.[5] **C08K** *5/3435, 5/09, 3/26, 3/22*

U.S. Cl. 524—99 **32 Claims**



1. A curable powder coating composition comprising (i) a solid glycoluril amino resin crosslinker, (ii) a solid hydroxyl functional resin, (iii) a strong acid catalyst and (iv) an amount of a rheology improving additive effective to reduce the number of pinholes in films produced from said curable powder coating composition, wherein said rheology improving addi-

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tive is selected from the group consisting of alkali metal oxides, alkali metal hydroxides, alkali metal carbonates, alkaline earth metal carbonates, alkaline earth metal oxides, alkaline earth metal hydroxides, aluminum oxides, aluminum hydroxides, aluminum carbonates, zinc salts of long chain fatty acids, aluminum salts of long chain fatty acids, 2,2,6,6-tetramethyl-4-piperidinol, diamines, mixtures thereof, and mixtures thereof with one or more monoamines other than 2,2,6,6-tetramethyl-4-piperidinol.

5,256,714

FLAME RETARDANT POLYESTER BLENDS

Ping Y. Liu, Naperville, Ill., and Nan-I Liu, Mt. Vernon, Ind., assignors to General Electric Company, Pittsfield, Mass.

Continuation-in-part of Ser. No. 574,377, Aug. 29, 1990, abandoned, which is a continuation of Ser. No. 138,861, Dec. 29, 1987, abandoned. This application Sep. 10, 1991, Ser. No. 759,126

Int. Cl.[5] C08K *5/533*

U.S. Cl. 524—120 **24 Claims**

1. A flame retardant thermoplastic composition comprising:

(A) a poly(butane terephthalate) resin; and

(B) a flame retardant effective amount of a mixture comprising (i) a polyphosphonate ester, (ii) an ammonium polyphosphate (iii) a halogenated benzosulfonate; wherein said halogenated benzosulfonate component ranges from about 0.5 to about 10 weight parts said polyphosphonate ester component ranges from about 30 to about 75 weight parts, and said ammonium polyphosphate component ranges from about 25 to about 70 weight parts, for every 100 weight parts of the mixture.

5,256,715

POLY(ARYLENE SULFIDE) RESIN COMPOSITION

Nathaniel Harry, South Field, Mich., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 19, 1991, Ser. No. 762,835

Int. Cl.[5] C08K *5/54*

U.S. Cl. 524—188 **18 Claims**

1. A composition consisting essentially of a poly(arylene sulfide) polymer, a fibrous reinforcement, and an amount of at least one azidosilane in the range of about 0.005–10 wt. % based on the total weight of said composition.

5,256,716

COATING FOR FOAMS AND PLASTICS

Scott Haasl, Coon Rapids, and Mark Kenow, Circle Pines, both of Minn., assignors to PDI, Inc., Circle Pines, Minn.

Filed Aug. 20, 1990, Ser. No. 569,437

Int. Cl.[5] C08L *91/06*

U.S. Cl. 524—279 **1 Claim**

1. A formulation for applying relatively thick films to the surface of an article and consisting of the following formulation:

Component	Generic Description	Weight % Range
Acrylic emulsion	A mixture of monomers consisting essentially of 2-hydroxyethyl acrylate, hydroxypropyl acrylate, methacrylate, and acrylonitrile monomers	65%–75%
Plasticizer	Dibutylphthalate.	1%–3%
Coalescing agent	Dipropylene glycol methyl ether and ethylene glycol N-butyl ether	5%–6.5%
Polyacrylate thickener/	An anionic acrylic copolymer containing	2.5%–3.5%

-continued

Component	Generic Description	Weight % Range
Rheology modifier	emulsion system wherein the emulsion contains about 28 percent solids and having a specific gravity (25° C.) of 1.106 and a pH of between about 2.1 and 4	
Dispersing agent	An anionic polymer dispersing agent utilized to deflocculate pigments in the system, when a pigment is utilized in the system and consisting essentially of the sodium salt of polymeric carboxylic acid having a specific gravity at 25° C. of 1.104 in 25% aqueous solution	.5%
Defoamer	A petroleum-base defoamer consisting essentially of 2-octanol	.5%–.75%
Surfactant	An anionic wax emulsion containing Carnauba/microcrystalline wax blend	5%–10%
Pigment, as required		2%–10%
Ammonium hydroxide		.4%–.75%
Water		balance.

5,256,717

HOT MELT ADHESIVES USEFUL IN TEMPORARY BONDING OPERATIONS

Daniel Stauffer, Kane, Pa., and Paul Puletti, Pittstown, N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Dec. 19, 1990, Ser. No. 630,461

Int. Cl.[5] C08K *5/10*

U.S. Cl. 524—293 **19 Claims**

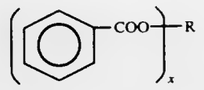
1. A hot melt adhesive composition having long open time and delayed but increasing crystallinity comprising:

a) from about 5 to 50% by weight of a polymer selected from the group consisting of:

i) an isotatic thermoplastic polybutene-1/ethylene copolymer containing from 5.5 to 10% by weight of ethylene, and

ii) low density polyethylene;

b) from about 3 to 65% by weight of a solid benzoate plasticizer having the formula:



where R is an organic residue and x is 2 to 8;

c) from about 20 to 90% by weight of a tackifer; and

d) from about 0 to 2% by weight of an antioxidant.

5,256,718

FLAME RETARDANT POLYAMIDE THERMOPLASTIC RESIN COMPOSITION

Sanehiro Yamamoto; Hideki Sakai; Hirotaka Aso; Kazuo Ishiwatari, and Fumitoshi Ikejiri, all of Yamaguchi, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Feb. 12, 1991, Ser. No. 654,004

Claims priority, application Japan, Feb. 14, 1990, 1-33447; Feb. 23, 1990, 1-43535; Aug. 14, 1990, 1-214586; Nov. 26, 1990, 1-322198

Int. Cl.[5] C08K *3/10, 5/02, 5/17, 5/51*

U.S. Cl. 524—411 **28 Claims**

1. A thermoplastic resin composition which comprises a polyamide thermoplastic resin, a halogenated organic compound, an antimony-containing compound and a phosphorus-containing compound selected from the group consisting of a metal salt of phosphoric acid, a metal salt of alkylphosphoric ester, and a metal salt of alkylether-phosphoric ester, and mixtures thereof.

5,256,719

FLAME RETARDANT PLASTICS COMPOSITION BASED ON A POLYAMIDE, A POLYOLEFIN, AND MAGNESIUM HYDROXIDE

Chi K. Sham, Arnhem, and Frederik J. Rietmeijer, Westervoort, both of Netherlands, assignors to DSM N.V., Heerlen, Netherlands

Filed Sep. 11, 1992, Ser. No. 943,680

Claims priority, application Netherlands, Sep. 12, 1991, 9101540

Int. Cl.[5] C08G *63/48;* **C08J** *3/10*

U.S. Cl. 524—436 **12 Claims**

1. A flame retardant plastics composition based on a polyamide, a polyolefin, and magnesium hydroxide which comprises a blend not reinforced with fibres of:

(1) 5 to 52 wt. % of a polyamide (PA);

(2) 8 to 55 wt. % of a polyolefin (PO) composition comprising polypropylene and at least partially functionalised with a compound containing an ethylenically unsaturated group and a group chosen from a carboxylic acid, acid anhydride, acid amide, imido, carboxylic ester, amino or hydroxyl group, and

(3) 40 to 70 wt. % of magnesium hydroxide particles in platelet form having a specific surface area of not more than 18 m^2/g.

5,256,720

POLYPROPYLENE RESIN COMPOSITION

Satoshi Kuwata, and Toshio Shiobara, both of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed May 27, 1992, Ser. No. 888,712

Claims priority, application Japan, May 27, 1991, 3-151030

Int. Cl.[5] C08K *3/36, 9/06*

U.S. Cl. 524—492 **11 Claims**

1. A polypropylene resin composition which is a uniform blend comprising:

(a) 100 parts by weight of a homopolymeric polypropylene resin or a copolymeric resin consisting essentially of propylene moieties; and

(b) from 0.01 to 10 parts by weight of an inorganic oxide powder which is produced by the deflagration, of an inorganic oxidizable powder comprising silicon, in an oxidizing atmosphere.

5,256,721

POLYMER COMPOSITION FOR USE AS FLEXIBLE DIMENSIONALLY STABLE COATING; AND METHOD

Bruce B. Wilson, Mounds View, and Raymond E. Grunzinger, New Scandia Township, Washington County, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation of Ser. No. 640,231, Jan. 11, 1991, abandoned, which is a division of Ser. No. 239,950, Sep. 2, 1988, Pat. No. 5,008,142. This application Mar. 11, 1993, Ser. No. 25,330

Int. Cl.[5] C08J *3/18;* **C08K** *5/01;* **C08L** *51/00, 67/00*

U.S. Cl. 524—539 **17 Claims**



1. A curable composition useful in preparing a semi-interpenetrating polymer network; said composition comprising a mixture of:

(a) a reactive polymer component selected from the group consisting of polyvinyl acetals, acrylic copolymers, polyurethanes, polyesters, polyamides, and polyester-amides, and having a weight average molecular weight of about 30,000 to 200,000 and a hydroxyl number of 100–200; and

(b) a non-reactive polymer component having a weight average molecular weight of between about 7,000 and about 30,000; said non-reactive polymer component being at least 40% extractable upon cure of said composition.

5,256,722

BLENDS BASED ON VINYL AROMATIC POLYMERS HAVING HIGH MOLDING FLUIDITY AND HIGH THERMO RESISTANCE

Gianfranco Biglione, and Gian Claudio Fasulo, both of Mantova, Italy, assignors to Montedipe S.r.l., Italy

Continuation of Ser. No. 588,502, Sep. 24, 1990, abandoned, which is a continuation of Ser. No. 364,532, Jun. 12, 1989, abandoned, which is a continuation of Ser. No. 120,665, Nov. 16, 1987, abandoned. This application Aug. 6, 1992, Ser. No. 924,588

Claims priority, application Italy, Nov. 21, 1986, 22421 A/86

Int. Cl.[5] C08L *25/08, 25/12, 25/14, 25/06*

U.S. Cl. 524—513 **11 Claims**

1. Blends having high fluidity and flowability for molding and high thermoresistance, comprising:

(a) about 75% to 95% by weight of at least one vinyl-aromatic thermoplastic polymer containing at least 40% by weight of a vinyl aromatic monomer; and

(b) about 5 to 25% by weight of at least one copolyester having a melting point lower than the molding temperature of the thermoplastic polymer (a), and between 100° and 200° C., a melt viscosity between 20 and 40 Pa.S. at 232° C., a second order transition temperature (Tg) between −30° and +50° C., and obtained from at least one aromatic dicarboxylic acid, at least one aliphatic dicarboxylic acid, and at least one glycol.

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5,256,723

CARTRIDGE HAVING HARDENABLE CYCLOALIPHATIC DERIVATIVES FOR BORE HOLE-FILLING MASSES

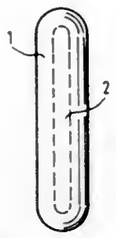
Ulrich Hense, Landsburg am Lech; Rudolf Hinterwaldner, Munich, and Peter Mauthe, Türkheim, all of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Furstentum, Liechtenstein

Continuation-in-part of Ser. No. 623,239, Dec. 4, 1990, Pat. No. 5,157,072. This application Sep. 10, 1992, Ser. No. 943,276

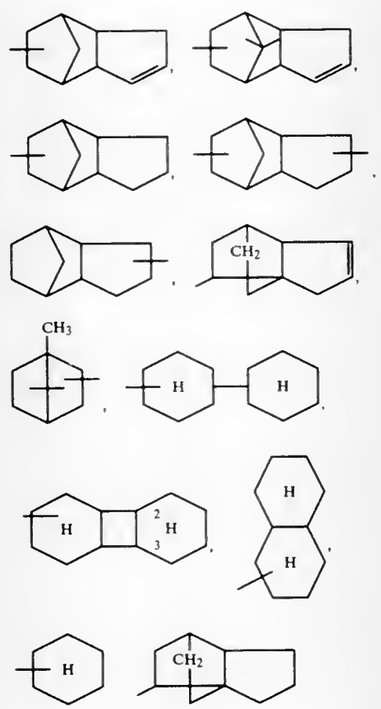
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1990, 3940183

Int. Cl.[5] C08L *55/00;* B65D *25/08;* C08F *218/14, 236/00, 218/04*

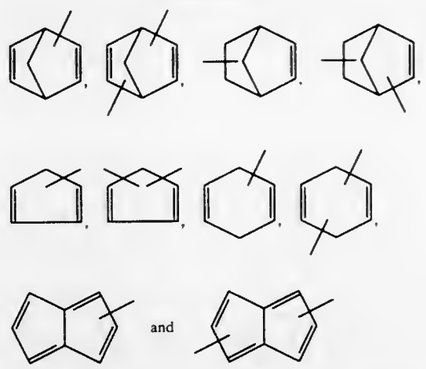
U.S. Cl. 524—553 11 Claims



1. A cartridge for fastening anchor elements in holes of a support structure, comprising a separator separating a first chamber containing a reaction initiator from a second chamber containing a polymerizable compound, said polymerizable compound being a member (A) selected from the group consisting of



-continued



said member being substituted by at least one ethylenically unsaturated group.

5,256,724

HIGH-GLOSS LATEX PAINTS AND POLYMERS FOR USE THEREIN

John Biale, Anaheim, Calif., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 628,712, Dec. 17, 1990, Pat. No. 5,182,327, which is a continuation-in-part of Ser. No. 278,248, Nov. 30, 1988, abandoned. This application Sep. 15, 1992, Ser. No. 945,167

Int. Cl.[5] C08L *31/02*

U.S. Cl. 524—556 20 Claims

1. A composition formed by drying a paint comprising a binder, wherein (I) the binder comprises water and solids; (II) about 1 to about 30 weight percent of the solid content of the binder is a polymer comprising:

(a) about 3 to about 20 weight percent olefinic carboxylic acid;

(b) about 80 to about 97 weight percent non-functional non-ionic monomer selected from the group consisting of acrylonitrile, vinyl acetate, alkenyl aromatic monomers, acrylic monomers having the formula

and mixtures thereof, R_1 being selected from the group consisting of hydrogen and methyl and R_2 being an alkyl group comprising up to 6 carbon atoms; and (III) the polymer has a weight average molecular weight of about 15,000 to 150,000.

5,256,725

POLYMERIZABLE LUMINESCENT FLUID COMPOSITION AND ITS USE

Armand Eranian, Sevres, and Eric Jacquinot, Attichy, both of France, assignors to Societe Francaise Hoechst, Puteaux, France

Filed Jun. 4, 1992, Ser. No. 894,326

Claims priority, application France, Jun. 14, 1991, 91 07312

Int. Cl.[5] C08F *2/30*

U.S. Cl. 524—558 14 Claims

1. Polymerizable luminescent fluid composition, consisting essentially of by weight (a) 30 to 45% of one or more inorganic luminescent pigments, (b) 10 to 30% of silica particles, having a diameter comprised between 7 and 1000 nm, not linked to each other by siloxane bonds, and (c) the complement to 100%

of 2-hydroxy ethyl acrylate and/or 2-hydroxy ethyl methacrylate.

5,256,726

REACTIVE SYSTEMS AND A PROCESS FOR THE PREPARATION OF POLYURETHANE PLASTICS

Hanns-Peter Müller, Bergisch Gladbach; Joachim Franke, Cologne, and Renate Bulan, Langenfeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 13, 1991, Ser. No. 760,047

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1990, 4029888

Int. Cl.[5] C08J *9/00;* C08K *5/01;* C08L *75/00;* C08G *18/00*

U.S. Cl. 524—589 7 Claims

1. A reactive system comprising:

a) a storage-stable mixture of (i) a polyisocyanate component comprising at least one organic polyisocyanate and (ii) an epoxide component comprising at least one organic epoxide, the storage stability having been ensured by a heat treatment of the epoxide component (ii) in the presence of an alkylating agent, optionally in the presence of at least some of the polyisocyanate component (i), the ratio of the amounts of components (i) and (ii) being chosen so that 0.005 to 0.4 mol of epoxide groups is present in 100 g of component a),

b) and NCO-reactive component comprising at least one organic compound which contains at least two to eight groups which are reactive towards isocyanate groups in the sense of an addition reaction and has an OH number range from 28 to 1800, with the proviso that at least 10 percent by weight of component b) comprises a compound containing at least 0.05 mol of tertiary amine nitrogen per 100 g, and

c) a plasticizer mixture of c1) and c2), in an amount sufficient to form a two-phase or multi-phase system in the hardened stage and is employed in an amount of not more than 200 percent by weight, based on the reactive resin wherein c1) is a phosphorus ester or alkylsulfonic acid ester selected from the group consisting of triethyl phosphate, diethyl phosphate and trichlorethyl phosphate, and c2) is selected from the group consisting of an alkylbenzene, alkyl sulfonic acid, alkyl anisole and long chain alkyl acetate which is characterized in that it initially gives a homogeneous mixture after mixing of the reactive resin, and

d) optionally an auxiliary and an additive,

the amount of component b) being chosen so that 0.1 to 0.95 groups of component b) which are reactive towards isocyanate groups are present per isocyanate group of component a).

5,256,727

RESINS WITH REDUCED EPICHLOROHYDRIN HYDROLYZATES

Margaret A. Dulany, and Clay E. Ringold, both of Decatur, Ga., assignors to Georgia-Pacific Resins, Inc., Atlanta, Ga.

Filed Apr. 30, 1992, Ser. No. 876,621

Int. Cl.[5] C08J *3/03;* C08L *77/06*

U.S. Cl. 524—608 17 Claims

1. A process for preparing a polyamide-epichlorohydrin resin solution product exhibiting low levels of epichlorohydrin hydrolyzates, said process comprising:

contacting an aqueous solution comprising epichlorohydrin polyamidoamine resin and greater than 1500 ppm combined weight of epichlorohydrin and its hydrolyzates with a nucleophile selected from the group consisting of (a) dibasic phosphate salts having the general formula M_2HPO_4 where M represents Na, K, or NH_4, and (b) a nucleophilic alkanolamine, wherein the contacting occurs in a reaction solution having a pH within the range from about 8 to about 11 at a temperature of less than about 50° C. for a time sufficient to produce a resin product solution which, after stabilization with a stabilizing amount of an acid, exhibits less than 1500 ppm of 1,3-dichloro-2-propanol and 3-chloro-1,2-propanediol.

5,256,728

POLYCARBONATE-TITANIUM DIOXIDE COMPOSITIONS AND METHOD

David M. Dardaris, Ballston Spa; Gary R. Faler, Scotia, and Patrick J. McCloskey, Watervliet, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 23, 1992, Ser. No. 979,738

Int. Cl.[5] C08G *64/42*

U.S. Cl. 524—611 6 Claims

1. A method for preparing a pigmented polycarbonate composition which comprises:

melt equilibrating a linear or branched polycarbonate in the presence of a catalytic amount of a carbonate redistribution catalyst selected from the group consisting of bases and Lewis acids, to form a redistributed polycarbonate; and

blending said redistributed polycarbonate with an amount effective for pigmentation of titanium dioxide free from polysiloxane coating.

5,256,729

NITRILE DERIVATIVE FOR SAND CONTROL

Helmuth Kutta, Richardson, Tex., and Robin Wiser-Halladay, Huntsville, Ala., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Division of Ser. No. 754,550, Sep. 4, 1991, Pat. No. 5,199,491. This application Jan. 22, 1993, Ser. No. 7,472

Int. Cl.[5] C08G *18/80*

U.S. Cl. 524—700 4 Claims

1. A composition comprising:

a. an admixture of proppant, diluent diol and a capped diisocyanate selected from the class consisting of adipodinitrile carbonate, adipodinitrile sulfate, and adipodinitrile oxylate.

5,256,730

METHOD OF PRODUCING CONDUCTIVE POLYMERS IN MICROEMULSIONS

Leong-Ming Gan; Hardy S. O. Chan; Chwee-Har Chew, and Liren Ma, all of Singapore, Singapore, assignors to National University of Singapore, Singapore

Filed Jun. 30, 1992, Ser. No. 906,846

Int. Cl.[5] C08L *75/04*

U.S. Cl. 524—800 8 Claims

1. A method for producing conductive polymers, said conductive polymers being polyaniline and substituted polyanilines, which method comprises the steps of:

(a) producing said conductive polymers in a water-in-oil microemulsions by polymerizations of aniline and substituted anilines using potassium persulfate as an oxidant;

(b) recovering said conductive polymers from the microemulsions; and

(c) doping said conductive polymers with the protonating acids to render the polymers more conductive.

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5,256,731

FLOROURETHANE GROUP-CONTAINING POLYMERS MADE FROM ETHYLENICALLY UNSATURATED MONOMERS, PROCESS FOR THEIR PREPARATION AND THEIR USE

Hans-Ullrich Huth, Egelsbach, and Karl-Hans Angelmayer, Eltville, both of Fed. Rep. of Germany, assignors to Hoechst AG, Fed. Rep. of Germany

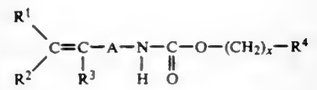
Filed Feb. 25, 1991, Ser. No. 661,053

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1990, 4006098

Int. Cl.[5] C08L *35/02;* **C08F** *120/22*

U.S. Cl. 524—805 **9 Claims**

1. A polymer based on ethylenically unsaturated monomers which contains units of ethylenically unsaturated, fluorine-containing urethane derivatives and has been prepared by emulsion, suspension, bead, solution, block or precipitation polymerization or copolymerization, and contains at least 0.1% by weight, based on the polymer or copolymer, of monomer units of ethylenically unsaturated, fluorine-containing urethane derivatives of the formula I

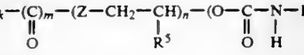


in which R^1 to R^4, A and the numerical index x have the following meanings:

R^1, R^2 and R^3, which may be identical or different, are H or $-CH_3$,

x is 1 or 2,

A is $-(CH_3)_y-$ where y is 1 to 6,
tert.-butylphenylene—$[C_6H_3-C(CH_3)_2]$— or
$-[C_6H_4C(CH_3)_2]-$ or



where

Z is oxygen or NH,

R^5 is H, $-CH_3$ or $-C_2H_5$,

B is (C-C_{16})-arylene which may contain (C_1-C_{10})-alkyl radicals, (C_2-C_{12})-alkylene or (C_6-C_{10})-cycloalkylene,

k, m and p are 0 or 1,

n is 1 to 5,

R^4 is $-(C_2F_4)_qH$, $-(CF_2)_rH$, or $-C_rF_{2r}-O-R^6$, where

q is 1 to 6,

r is 1 to 9,

R^6 is (C_1-C_{12})-alkyl which may be partially or fully substituted by fluorine atoms, or is (C_6-C_{12})-aryl or (C_7-C_{12})-alkaryl, each of which may be partially or fully substituted by fluorine atoms,

or an aqueous dispersion of this polymer or copolymer.

5,256,732

METHOD FOR THE CONTINUOUS BULK POLYMERIZATION FOR IMPACT RESISTANT STYRENE RESIN

Tsuyoshi Morita, Chiba, and Kimikazu Nakamura, Sakura, both of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Filed Aug. 12, 1991, Ser. No. 743,895

Claims priority, application Japan, Aug. 13, 1990, 2-211589

The portion of the term of this patent subsequent to Aug. 28, 2007, has been disclaimed.

Int. Cl.[5] C08F *27/02*

U.S. Cl. 525—52 **27 Claims**

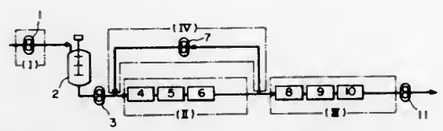
1. In a method for preparing an impact resistant styrene resin by continuous bulk polymerization of a styrene monomer in the presence as a second component of polybutadiene, styrene-butadiene copolymerization rubber or a mixture thereof, in which the continuous bulk polymerization is carried out using a polymerization line composed of

(a) a material feed line (I),

(b) an initial-stage polymerization line (II) following the material feed line (I) and comprising at least one tubular reactor inside which plural mixing elements having no moving parts are fixed,

(c) a main polymerization line (III) connected to an outlet of the initial-stage polymerization line (II) and comprising at least one tubular reactor inside which plural mixing elements having no moving parts are fixed, and

(d) a recycle line (IV) which branches between the initial-stage polymerization line (II) and the main polymerization line (III) and returns inside the initial-stage polymerization line (II), and



recycling a major part of the initial-stage polymerization liquid flow from the initial-stage polymerization line (II) through the recycle line (IV), and polymerizing the non-recycled initial-stage polymerization liquid flow in the main polymerization line (III),

the improvement which comprises

providing a reactor having a dynamic mixing structure and having an inlet and outlet and connected to the material feed line (I) by said inlet and to the initial-stage polymerization line (II) by said outlet and carrying out preliminary polymerization while dynamically mixing the polymerization mixture in the reactor having a dynamic mixing structure and wherein the second component has a 5 wt % styrene solution viscosity of 10 to 50 cps.

5,256,733

THERMOPLASTIC POLYOXYMETHYLENE MOLDING COMPOSITION OF HIGH TOUGHNESS AND ITS USE

Dietrich Fleischer, Darmstadt, and Helmut Schlaf, Kelkheim (Taunus), both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Aug. 7, 1991, Ser. No. 741,359

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1990, 4025219

Int. Cl.[5] C08L *59/02, 59/04, 51/04*

U.S. Cl. 525—64 **20 Claims**

1. A thermoplastic molding composition comprising

A) 50 to 95% by weight of polyoxymethylene, and

B) 5 to 50% by weight of a rubber-elastic graft copolymer having bimodal particle size distribution,

in each case based on the sum of the components A) and B), and optionally additives, wherein component B) comprises

1) a rubber-elastic, at least partially crosslinked core based on at least one polydiene having particle diameters of 0.05 to 1 μm, based on the following rubbers:

a) 15–85% by weight (based on the sum of a+b) of a rubber latex having an average particle diameter d_{50} of 0.05–0.2 μm, and

b) 85–15% by weight (based on the sum of a+b) of a rubber latex having an average particle diameter of d_{50} of 0.2–1 μm, with the proviso that

i) the particle diameter d_{50} (rubber b) is larger than the particle diameter d_{50} (rubber a) by a factor of 1.5–8,

ii) the quotient $Q=(d_{90}-d_{10})/d_{50}$ of the particular rubbers is at most 2 and

iii) the difference d_{10} (b) $-d_{90}$ (a) is 0.01 to minus 0.10, and

2) at least one hard graft shell comprising at least one vinyl monomer selected from the group comprising styrene, (meth)acrylonitrile, (meth)acrylate and vinyltoluene.

5,256,734

POLYPROPYLENE RESIN COMPOSITION AND METHOD FOR MANUFACTURING COATED MOLDED ARTICLE OF THE RESIN COMPOSITION

Eiichi Sugihara; Keigo Suehiro; Katsumi Sekiguchi, and Minoru Hoshino, all of Kanagawa, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Feb. 11, 1992, Ser. No. 833,755

Claims priority, application Japan, Feb. 15, 1991, 3-021956

Int. Cl.[5] C08L *53/02, 9/06, 23/12*

U.S. Cl. 525—98 **8 Claims**

1. A resin composition which comprises 100 parts by weight of a polypropylene and 20 to 100 parts by weight of a hydrogenated styrene/butadiene or styrene/isoprene elastomeric block copolymer having a melt index of not less than 25 g/10 min as determined at a temperature of 230° C. and a load of 2.16 kg/cm^2.

5,256,735

PROCESS FOR PREPARING AROMATIC POLYESTER-POLYSTYRENE BLOCK COPOLYMERS

Hiroshi Ohishi; Masao Kimura; Shinji Inaba, and Masanao Kawabe, all of Kawasaki, Japan, assignors to Nippon Steel Corporation and Nippon Steel Chemical Co., Ltd., both of Tokyo, Japan

Filed Oct. 17, 1991, Ser. No. 774,984

Claims priority, application Japan, Oct. 18, 1990, 2-277861; Nov. 16, 1990, 2-308829; Nov. 27, 1990, 2-321239; Dec. 12, 1990, 2-409871

Int. Cl.[5] C08G *63/81*

U.S. Cl. 525—132 **6 Claims**

1. A process for preparing aromatic polyester-polystyrene block copolymers which comprises polycondensing in solution styrene polymers (A), aromatic dihydroxy compounds (B), and aromatic dicarboxylic acid dihalides (C) in a weight ratio (A)/[(B)+(C)] of 5/95 to 80/20, wherein said styrene polymers have terminal phenolic hydroxyl groups or terminal amino groups.

5,256,736

TAPERED BLOCK COPOLYMERS OF CONJUGATED DIENES AND MONOVINYLARENES

William J. Trepka; George A. Moczygemba, and Ralph C. Farrar, Jr., all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 8, 1991, Ser. No. 697,130

Int. Cl.[5] C08F *297/04*

U.S. Cl. 525—314 **17 Claims**

1. A method of preparing a polymer comprising:

(1) charging a monovinylaromatic monomer and an initiator in the presence of a randomizer and allowing polymerization to occur until essentially no free monomer is present; thereafter

(2) charging an initiator and a mixture of monovinylaromatic monomer and conjugated diene monomer, and allowing polymerization to occur until essentially no free monomer is present; thereafter

(3) charging an initiator and a mixture of monovinylaromatic monomer and conjugated diene monomer, and allowing polymerization to occur until essentially no free monomer is present; and thereafter

(4) charging the reaction mixture with a coupling agent.

5,256,737

THICKENING AGENTS, PROCESSES FOR THE PREPARATION THEREOF AND USE THEREOF

Massimo Barzaghi, Bergamo, Italy, assignor to Sigma Prodotti Chimici S.p.A., Bergamo, Italy

Continuation of Ser. No. 578,689, Sep. 7, 1990, abandoned. This application Oct. 29, 1991, Ser. No. 784,683

Claims priority, application Italy, Mar. 5, 1990, 19565 A/90

Int. Cl.[5] C08F *16/12, 8/12*

U.S. Cl. 525—328.9 **8 Claims**

1. A process for the neutralization of a free acid form of cross-linked polymers or copolymers of acrylic acid so as to obtain the corresponding salts, comprising:

(1) preparing a solution or dispersion of a neutralizing agent consisting of sodium hydroxide in methanol, sodium in methanol or potassium hydroxide in ethanol;

(2) adding to the neutralizing agent with mixing the free acid form of the polymers or copolymers or acrylic acid to form the solid salts thereof; and

(3) recovering the salts by filtration or evaporation as a free-flowing powder.

5,256,738

FUNCTIONAL RUBBER-BASED STRUCTURAL ADHESIVE COMPOSITIONS

Anthony M. Chasser, Glenshaw, and John R. Schneider, Allison Park, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 474,604, Feb. 5, 1990, abandoned. This application Dec. 16, 1991, Ser. No. 807,737

Int. Cl.[5] C08C *19/20*

U.S. Cl. 525—330.9 **15 Claims**

1. A one package stable rubber based curable composition, comprising:

(a) a functional rubber polymer selected from the group consisting of functional homopolymer of butadiene, isoprene or neoprene; and functional copolymer of butadiene, isoprene and/or neoprene; and functional copolymer of butadiene, neoprene or isoprene with an aliphatic or alicyclic unsaturated hydrocarbon; and

(b) a vulcanization system comprising sulfur, wherein the composition contains at least 15 parts of functional rubber polymer per 100 parts of composition and at least 15 parts of sulfur per 100 parts of total amount of all rubber polymers in the composition, with the proviso that the cured composition has an elongation not exceeding 15 percent; wherein said composition is substantially free of solid rubber and wherein said composition is substantially free of chemical groups which are reactive with the functional groups of said functional rubber polymer; said functional groups being selected from the class consisting of hydroxyl and anhydride.

5,256,739

GRAFT COPOLYMER, METHOD OF PRODUCING THE SAME, AND COVERING COMPOSITION CONTAINING THE SAME AS MAIN COMPONENT

Icbiro Ono, Gunma, and Hiroshi Yoshioka, Tokyo, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Mar. 27, 1991, Ser. No. 676,006

Claims priority, application Japan, Mar. 28, 1990, 2-82036

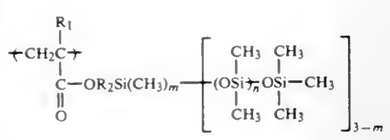
Int. Cl.[5] C08F *265/04*

U.S. Cl. 525—412 **12 Claims**

1. A graft copolymer comprising a vinyl polymer as a trunk polymer, and both organopolysiloxane and polylactone as branch polymers wherein said branch polymers, respectively, exhibit units represented by formulae (a) and (b), respectively:

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(a)



wherein

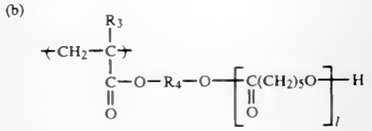
R_1 is hydrogen or methyl;

R_2 is a divalent hydrocarbon containing 1–11 carbon atoms, whose carbon chain may be interrupted by an oxygen atom;

m is 0, 1 or 2; and

n represents an average degree of polymerization, and is 0–200;

(b)



wherein

R_3 is hydrogen or methyl;

R_4 is a divalent hydrocarbon containing 2–4 carbon atoms;

l represents an average degree of polymerization, and is 3–20; and

wherein the fraction of unit (a) is 5–80 wt. %, and that of unit (b) is 2–50 wt. %.

5,256,740

AMINO-SUBSTITUTED POLYMERS AND THEIR USE AS ADDITIVES FOR MODIFYING THE COLD PROPERTIES OF MIDDLE HYDROCARBON DISTILLATES

Jacques Denis, Charbonniere les Bains; Alain Forestiere, Vernaison; Béatrice Bonardi, Lyons, and Bernard Damin, Oullins, all of France, assignors to IFP et Elf France, France

Filed Apr. 30, 1992, Ser. No. 876,312

Claims priority, application France, May 2, 1991, 91 05497

Int. Cl.[5] C08G *63/66, 63/68;* **C09K** *7/06;* **B01F** *17/16*

U.S. Cl. 525—419 **20 Claims**

1. A polymer with a number average molecular weight of 400 to 20,000 containing amino-substituted groups in its molecule, resulting from the reaction of at least one compound having a secondary amine function and containing 2 to 61 carbon atoms in its molecule and complying with the general formula:

R—NH—R' (I)

in which R and R', which can be the same or different, in each case represent an aliphatic hydrocarbon group having 1 to 60 carbon atoms, with an unsaturated polyester resulting from the condensation of at least one unsaturated dicarboxylic compound having at least one alpha ethylene unsaturation of one of the carboxylic groups with at least one aliphatic epoxidized compound, the molar ratio of the epoxidized compound to the dicarboxylic compound being approximately 0.4:1 to 1.8:1 and the molar ratio of the amino function compound to the dicarboxylic compound is approximately 0.2:1 to 1.5:1.

5,256,741

METHOD FOR THE MANUFACTURE OF BRANCHED POLYSILOXANE

Takuya Ogawa, and Toshio Suzuki, both of Kanagawa, Japan, assignors to Dow Corning Japan, Ltd., Tokyo, Japan

Filed Feb. 18, 1993, Ser. No. 19,406

Claims priority, application Japan, Feb. 26, 1992, 4-039568

Int. Cl.[5] C08F *283/00*

U.S. Cl. 525—477 **15 Claims**

1. A method for the manufacture of a branched polysiloxane described by formula

$$(SiO_{4/2})_K(R^4ASiO_{1/2})_y(R^5{}_2R^6SiO_{1/2})_Z(RO_{1/2})_W;$$

the method comprising: reacting a linear polysiloxane described by formula

$$R^1(R^2R^3SiO)_aM$$

with a reactive polysiloxane described by formula

$$(SiO_{4/2})_X(R^4{}_2QSiO_{1/2})_y(R^5{}_2R^6SiO_{1/2})_Z(RO_{1/2})_W;$$

where R is selected from a group consisting of hydrogen atom and alkyls comprising one to eight carbon atoms; each R^1, R^2, R^3, and R^6 is independently selected from a group consisting of hydrogen atom, alkyls comprising one to eight carbon atoms, haloalkyls comprising one to eight carbon atoms, alkenyls comprising two to eight carbon atoms, and aryls; each R^4 and R^5 is independently selected from a group consisting of alkyls comprising one to eight carbon atoms, haloalkyls comprising one to eight carbon atoms, alkenyls comprising two to eight carbon atoms, and aryls; Q is a halogen; M is selected from a group consisting of hydrogren atoms and alkali metals; A is described by formula $(OSiR^2R^3)_aR^1$, where R^1, R^2, and R^3 are as previously described and $1 \leqq a \leqq 1000$; $2 \leqq x \leqq 500$; $2 \leqq y+z+w \leqq 150$; $2 \leqq y$; $0 \leqq z$; $0 \leqq w \leqq 15$; $0.3 \leqq (y+z+w)/x \leqq 3$; and $0 \leqq w/(y+z+w) \leqq 0.1)$.

5,256,742

PREPARATION OF POLY(ARYLENE SULFIDE)S FROM POLY(ARYLENE SULFIDE DISULFIDE)

William E. Sattich, Bartlesville, Okla.; Owen H. Decker, West Reading, Pa.; Dwayne R. Senn, and Darryl R. Fahey, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 8, 1992, Ser. No. 957,854

Int. Cl.[5] C08G *75/16*

U.S. Cl. 525—537 **31 Claims**

1. A process for producing a poly(arylene sulfide) and a copolymer thereof from a poly(arylene sulfide disulfide) comprising contacting said poly(arylene sulfide disulfide) with a polyhalo-substituted cyclic compound having unsaturation between adjacent ring carbon atoms and having halogen atoms attached to said ring carbon atoms in a polar organic compound and a basic compound at an elevated temperature.

5,256,743

POLY(ARYLENE THIOETHER) RESIN COMPOSITIONS AND EXTRUDED PRODUCTS THEREOF

Toshio Enoki, and Yasuo Sakaguchi, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo K.K., Tokyo, Japan

Filed Feb. 13, 1991, Ser. No. 654,464

Claims priority, application Japan, Mar. 5, 1990, 2-53344

Int. Cl.[5] C08L *81/06*

U.S. Cl. 525—537 **4 Claims**

1. A poly(arylene thioether) resin composition comprising:

3 100 parts by weight of a poly(arylene thioether) (A) having a shear rate dependence value of melt viscosity at 310° C. of 2.2–3.0 and a crystallization temperature of 175°–210° C., wherein the shear rate dependency value of melt viscosity at 310° C. means a ratio, η_{200}/η_{1200} of a melt viscosity, η_{200} at 310° C. and a shear rate of 200 sec^{-1} to a melt viscosity, η_{1200} at 310° C. and a shear rate of 1,200 sec^{-1}; and

20–400 parts by weight of a poly(arylene thioether) (B) having a shear rate dependence value of melt viscosity at 310° C. of 1.0–2.0 and a crystallization temperature of 220°–260° C.,

the resin portion consisting of the poly(arylene thioethers) (A) and (B) in said resin composition having a melt viscosity of 1,400–3,500 poises as measured at 310° C. and a shear rate of 1,200 sec^{-1}, a shear rate dependence value of melt viscosity at 310° C. of 1.5–2.3, and a crystallization temperature of 205°–230° C.

5,256,744

DRYING TEMPERATURE INDEPENDENT POLYTETRAFLUOROETHYLENE

Walter G. Mellish, Livingston, N.J., assignor to ICI Americas Inc., Wilmington, Del.

Division of Ser. No. 643,409, Jan. 18, 1991, Pat. No. 5,185,414. This application Oct. 28, 1992, Ser. No. 967,605

Int. Cl.[5] C08F *214/26*

U.S. Cl. 526—87 **7 Claims**

1. A method of making a coagulated dispersion of an extrudable copolymer of tetrafluoroethylene and from 0.03 to 1.0 weight percent of a comonomer selected from the group consisting of perfluoroalkenes, chlorotrifluoroethylene, dichlorodifluoroethylene, hexafluoropropene, perfluoro(n-propyl vinyl ether), perfluoroalkyl trifluoroethylene of 3 to 10 carbon atoms and oxyperfluoroalky/trifluoroethylenes of 3 to 10 carbon atoms, said method comprising charging tetrafluoroethylene and water to an autoclave, adding said comonomer in a plurality of incremental intervals to said autoclave while polymerizing under conditions so as to produce polymer dispersed as fine particles of from −0.05 to 1.3 microns in diameter, and coagulating the dispersed polymer.

5,256,745

FLUORINE-CONTAINING POLYMERS AND PREPARATION AND USE THEREOF

Werner M. Grootaert, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 869,943, Apr. 17, 1992, Pat. No. 5,208,305. This application Jan. 15, 1993, Ser. No. 6,062

Int. Cl.[5] C08F *4/16*

U.S. Cl. 526—194 **9 Claims**

1. A fluorine-containing polymer comprising a fluorine-containing, saturated, carbon-carbon backbone chain comprising interpolymerized units derived from a fluorine-containing ethylenically unsaturated monomer, and an organometallic group, derived from a non-free-radically polymerizable organometallic group, comprising a silicon atom and an aliphatic carbon atom bonded directly to said silicon atom.

5,256,746

LOW MOLECULAR WEIGHT MONOALKYL SUBSTITUTED PHOSPHINATE AND PHOSPHONATE COPOLYMERS

Robert M. Blankenship, Harleysville, and Scott L. Egolf, Lansdale, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Apr. 25, 1991, Ser. No. 691,260

Int. Cl.[5] C08F *2/38*

U.S. Cl. 526—233 **13 Claims**

1. A process for preparing a polymer mixture containing polymeric monoalkyl phosphinates and polymeric monoalkyl phosphonates comprising:

i) forming a reaction mixture by feeding linearly into an aqueous solution of at least one C_4–C_8 monoethylenically unsaturated dicarboxylic acid which is up to about 50 percent neutralized, anhydride, or C_1–C_4 mono-ester thereof, at a temperature of from 60° to 120° C.

a) hypophosphorous acid chain transfer agent or a salt thereof,

b) at least one monoethylenically unsaturated monocarboxylic acid or salts thereof, and optionally

c) non-carboxylic acid monomers;

wherein the at least one C_4–C_8 monoethylenically unsaturated dicarboxylic acid which is up to about 50 percent neutralized, anhydride, or C_1–C_4 mono-ester thereof, is present at a level of from about 5 to about 95 percent by weight based on the total weight of the at least one C_4–C_8 monoethylenically unsaturated dicarboxylic acid which is up to about 50 percent neutralized, anhydride, or C_1–C_4 mono-ester thereof, the at least one monoethylenically unsaturated monocarboxylic acid or salts thereof, and the optional non-carboxylic acid monomers;

ii) polymerizing the reaction mixture to provide a polymer mixture in which at least 40 percent of incorporated phosphorus is in the form of polymeric monoalkyl phosphinate and polymeric monoalkyl phosphonate and wherein the residual monomer level, based on the total amount used, of the at least one C_4–C_8 monoethylenically unsaturated dicarboxylic acid which is up to about 50 percent neutralized, anhydride, or C_1–C_4 mono-ester thereof is less than 1 percent by weight.

5,256,747

SOLUBLE PERFLUOROELASTOMERS

Leo Ojakaar, 8 Jacqueline Dr., Hockessin, Del. 19707, and Anestis L. Logothetis, 2816 Kennedy Rd., Wilmington, Del. 19810

Continuation-in-part of Ser. No. 703,220, May 20, 1991. This application Dec. 23, 1991, Ser. No. 812,718

Int. Cl.[5] C08F *16/24*

U.S. Cl. 526—247 **5 Claims**

1. A perfluoroelastomer prepared from tetrafluoroethylene (TFE) and perfluoro (alkyl vinyl ether) and at least one cure site monomer, the perfluoroelastomer having a molecular weight characterized by an Inherent Viscosity of about from 0.3 to 0.5, containing less than about 200 ppm of color-forming impurities and having at least about 0.25 weight % cure site, calculated as the cure site monomer, the perfluoroelastomer having been prepared by pyrolyzing the copolymer of TFE, perfluoro (alkyl vinyl ether) and at least one cure site monomer at a temperature of about from 320°–350° C. for a period of about from 10–14 hours.

5,256,748

PRECURSORS OF POLYMERS CONTAINING ISOCYANURATE UNITS

Didier Vanhoye, Forbach, and Paul Grosius, Petite-Rosselle, both of France, assignors to Autochem, Paris, France

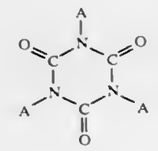
Filed Jul. 2, 1991, Ser. No. 722,495

Claims priority, application France, Jul. 2, 1990, 90 08316

Int. Cl.[5] C08F *26/08*

U.S. Cl. 526—261 **19 Claims**

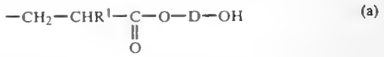
1. At least one oligomer containing isocyanurate units, of the formula:



wherein:

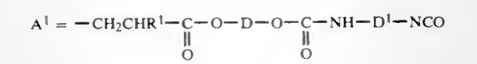
(1) at least one A' residue is of the formula (a):

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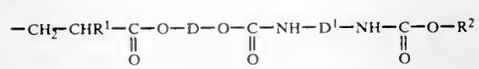
(a)

wherein R^1=H or CH_3 and D=C_1-C_4 alkylene, residue, any remaining A residues denote H or C_1-C_4 alkyl, and optionally at least a part of the A residues of the formula (a) represent



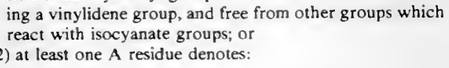
wherein D^1 is a divalent organic radical free from groups which react with isocyanate groups and is obtained by elimination of 2 NCO groups from a polyisocyanate, or at least a part of the A^1 residues represent groups

A^2 =



wherein R^2 is a monovalent radical obtained by elimination of the hydroxyl group from a monoalcohol containing a vinylidene group, and free from other groups which react with isocyanate groups; or

(2) at least one A residue denotes:



(b)

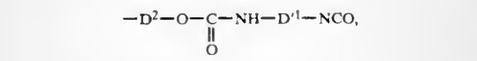
wherein

D^2 is a a residue $—D^3—(—O—D^3—)_n—$ wherein D^3 is a C_1-C_4 alkylene residue optionally substituted by halogen, and n is an integer from 1 to 12;

D'^1 is D^1 defined above;

R'^2 is R^2 defined above, and

any remaining A residue(s) denote



D^2 and D'^1 being as defined above.

5,256,749

AMPHIPHILIC POLYMERS CONTAINING SILANE UNITS AND FILM COMPRISING AT LEAST ONE MONOMOLECULAR LAYER PRODUCED THEREFROM

Werner Hickel, Mannheim; Donald Lupo, Eppstein/Taunus; Werner Prass, Mainz; Ude Scheunemann, Liederbach, and Peter Wilharm, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

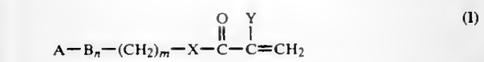
Filed Mar. 13, 1992, Ser. No. 850,581

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1991, 4108359

Int. Cl.[5] **C08F** *230/08, 220/54, 220/10*

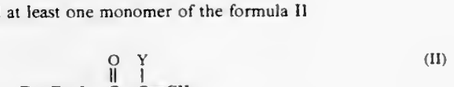
U.S. Cl. 526—279 **8 Claims**

1. An amphiphilic copolymer containing silanyl groups and structural units derived from at least one monomer of the formula I



(1)

and at least one monomer of the formula II



(II)

in which

A— is CH_3— or CF_3—,

—B— is $—CH_2—$ or $—CF_2—$,

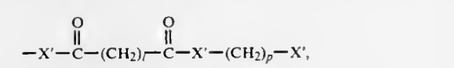
n is an integer from 5 to 25,

m is an integer from zero to 12,

—X— is —O—, $—NR^1—$ or —Z—, in which

R^1— is H—, $CH_3—(CH_2)_n—$or $CF_3—(CF_2)_n—(CH_2)_m—$

—Z— is $—X'—(CH_2)_p—X'$ or



p is an integer from 2 to 10,

l is an integer from 1 to 10 and

—X'— is —O— or $—NR^1—$,

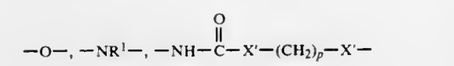
—Y is —H, $—CH_3$, —CN, —Cl, —Br or —F,

—D is $—SiR^2(SiR^2_3)_2$, $—Si(SiR^2_3)_3$, $—SiR^2_2—SiR^2_3$ or $—(SiR^2_2)_2—SiR^2_3$,

in which R^2 is C_1-C_3-alkyl,

—E— is C_1-C_4-alkylene and

—L— is



or

5,256,750

HYDROGENATED LIQUID PETROLEUM RESIN AND HOT MELT PRESSURE-SENSITIVE ADHESIVE COMPOSITION CONTAINING THE SAME

Hajime Yoshida; Akira Uekusa, both of Kanagawa; Takashi Satoh, Ibaraki, and Ryoji Ohnishi, Kanagawa, all of Japan, assignors to Mitsubishi Oil Co., Ltd., Tokyo, Japan

Filed May 28, 1992, Ser. No. 889,435

Claims priority, application Japan, May 29, 1991, 3-152206

Int. Cl.[5] **C08F** *10/14*

U.S. Cl. 526—290 **8 Claims**

1. A hydrogenated liquid petroleum resin obtained by hydrogenating an aromatic liquid petroleum resin having a structure in which aromatic rings are linked by the medium of a methylene group.

5,256,751

OPHTHALMIC LENS POLYMER INCORPORATING ACYCLIC MONOMER

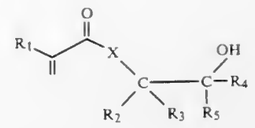
Douglas G. Vanderlaan, Jacksonville, Fla., assignor to Vistakon, Inc., Jacksonville, Fla.

Filed Feb. 8, 1993, Ser. No. 14,903

Int. Cl.[5] **C08F** *20/58*

U.S. Cl. 526—304 **14 Claims**

1. A polymer comprising the reaction product of a hydrophilic monomer and an acyclic monomer represented by the following formula:



Wherein

R_1 is hydrogen or methyl;

each of R_2, R_3, R_4 and R_5 is hydrogen or an acyclic monovalent alkyl radical, provided the total number of carbon atoms of $R_2+R_3+R_4+R_5$ is between 4–20, inclusive;

X is O, NH or NR_6; and

R_6 is a straight or branched alkyl radical.

5,256,752

NITROGEN-FREE ESTER OF CARBOXY CONTAINING INTERPOLYMERS

Dennis M. Dishong, South Euclid, and Richard M. Lange, Euclid, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 515,786, Apr. 25, 1990, abandoned, which is a continuation of Ser. No. 30,412, Mar. 25, 1987, abandoned. This application Dec. 22, 1992, Ser. No. 995,302

Int. Cl.[5] **C08F** *220/18*

U.S. Cl. 526—329.5 **13 Claims**

1. An oil soluble, nitrogen-free mixed ester of a carboxy-containing interpolymer prepared by reacting an alpha, beta-unsaturated dicarboxylic anhydride, acid or derivative with a vinyl aromatic monomer, wherein the interpolymer has an inherent viscosity of from about 0.05 to about 1.5, said ester having pendant polar groups consisting of (A) and (B) wherein:

(A) is a relatively high molecular weight carboxylic ester group from the reaction of a carboxy group with an alkyl alcohol having about 8 to about 24 aliphatic carbon atoms; and

(B) is a relatively low molecular weight carboxylic ester group from the reaction of a carboxy group with an alkyl alcohol having no more than seven aliphatic carbon atoms;

wherein the molar ratio of (A):(B) is (1-10):(1).

5,256,753

BORAZINE DERIVATIZED POLYCARBOSILANE POLYMERS AND THE CERAMICS DERIVED THEREFROM

Gregg A. Zank, 500 Sylvan La., Midland, Mich. 48640; Larry G. Sneddon, 813 Briarwood Rd., Newtown Square, Pa. 19073, and Kai Su, 4315 Larchwood Ave., Third Floor, Philadelphia, Pa. 19104

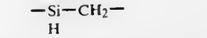
Filed Nov. 2, 1992, Ser. No. 970,517

Int. Cl.[5] **C08G** *79/08*

U.S. Cl. 528—7 **20 Claims**

1. A method of forming a borazine modified polycarbosilane polymer comprising:

reacting a material comprising at least one borazine ring having a hydrogen atom attached to at least one nitrogen or boron thereof, with a polycarbosilane polymer having at least one unit of the structure:



at a temperature of below about 300° C. for a time sufficient to form the borazine modified product polymers, wherein R^3 is independently selected from the group consisting of methyl radicals and silicon substituted alkyl radicals.

5,256,754

HYDROGENPOLYSILOXANES AND METHODS OF MAKING

Mitsuhiro Takarada; Yuji Yoshikawa, and Kenichi Isobe, all of Annaka, Japan, assignors to Sbin-Etsu Chemical Co., Ltd., Tokyo

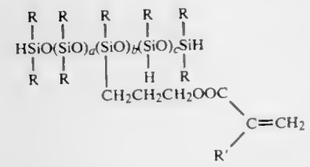
Division of Ser. No. 785,770, Oct. 31, 1991, abandoned. This application Apr. 13, 1992, Ser. No. 867,464

Claims priority, application Japan, Oct. 31, 1990, 2-294963

Int. Cl.[5] **C08G** *77/10*

U.S. Cl. 528—31 **4 Claims**

1. A method for producing a hydrogenpolysiloxane having a (meth)acryloxypropyl group of the following average composition formula (1):



(1)

wherein

R is an alkyl group having 1 to 6 carbon atoms or phenyl group,

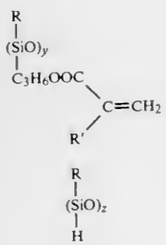
R' is a hydrogen atom or methyl group, and letters a, b, and c are positive numbers within the range: $0<a<20$, $0<b<3$, and $0<c<10$, comprising the step of effecting equilibration reaction of compounds of the following formulae (3), (4), (5), and (6):



(3)



(4)



(5)

(6)

wherein x, y, and z are integers of from 3 to 10.

5,256,755

PROCESS FOR THE PRODUCTION OF ORGANOSILICON COMPOUNDS

Stephen Westall, Barry, Wales, assignor to Dow Corning Limited, Barry, Wales

Continuation of Ser. No. 715,284, Jun. 14, 1991, abandoned. This application Aug. 3, 1992, Ser. No. 923,640

Claims priority, application United Kingdom, Jun. 28, 1990, 9014450

Int. Cl.[5] **C08G** *77/06*

U.S. Cl. 528—14 **6 Claims**

1. A process for the production of organosiloxanes which comprises reacting at a temperature from about 30° C. to 200° C.

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(A) at least one organosilicon compound having in the molecule at least one silanol group and wherein the silicon-bonded organic substituents are selected from the group consisting of monovalent hydrocarbon groups having 1 to 14 carbon atoms and monovalent substituted hydrocarbon groups having from 1 to 10 carbon atoms, said substituted hydrocarbon groups being non-acidic in character, by contacting said organosilicon compound with

(B) one or more compounds selected from the group consisting of rubidium carbonate, cesium carbonate, and carboxylates of rubidium and cesium of the general formula Q.CO.OM, which are present dispersed on or in a particulate solid which is substantially inert under the reaction conditions; wherein M represents Rb or Cs and Q represents an alkyl group having from 1 to 6 carbon atoms or an alkenyl group having from 2 to 5 carbon atoms; and thereafter separating the resulting organosiloxane from catalyst (B) and recovering said organosiloxane.

5,256,756

THERMOSETTING COATING COMPOSITIONS

Thauming Kuo, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 883,079, May 15, 1992, which is a continuation-in-part of Ser. No. 712,380, Juo. 10, 1991, abandoned. This application Oct. 1, 1992, Ser. No. 954,992
The portion of the term of this patent subsequent to Sep. 14, 2010, has been disclaimed.
Int. Cl.[5] C08G *63/00*
U.S. Cl. 528—176 **17 Claims**

1. A curable enamel composition which when applied to a substrate and cured provides a coating having a pencil hardness of greater than 4H, an impact resistance of greater than 140 lb.-in., and being substantially resistant to acidic corrosion and weathering, said composition comprising

(I) about 15 to about 40 weight percent of a curable polyester having a number average molecular weight of about 1500 to about 3000 and a weight average molecular weight of about 5000 to about 40,000, comprising

(a) about 20 to about 36 mole percent of diol residues, based on the total moles of (a), (b), (c), (d) and (e);

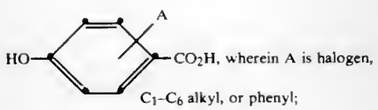
(b) about 10 to about 21 mole percent of triol residues, based on the total moles of (a), (b), (c), (d) and (e);

(c) about 0 to about 16 mole percent, based on the total moles of (a), (b), (c), (d) and (e), of residues of a linear aliphatic diacid;

(d) about 24 to about 40 mole percent of cylohexanedicarboxylic acid residues based on the total moles of (a), (b), (c), (d) and (e);

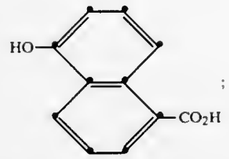
(e) about 12 to about 20 mole percent, based on the total moles of (a), (b), (c), (d) and (e), of hydroxy acid residues selected from residues of

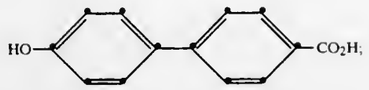


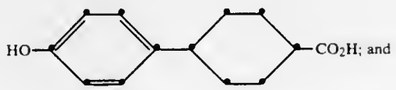


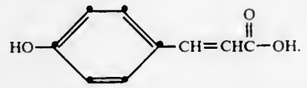
-continued











wherein substantially all of said hydroxy acid residues are located at the ends of the polymer chains to which they are attached;

(II) about 10 to about 50 weight percent of a solvent; and

(III) about 5 to about 20 weight percent of a cross-linking agent.

5,256,757

THERMOSETTING COATING COMPOSITIONS

Thauming Kuo, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 883,509, May 15, 1992, which is a continuation-in-part of Ser. No. 712,380, Jun. 10, 1991, abandoned. This application Oct. 1, 1992, Ser. No. 954,993
Int. Cl.[5] C08G *63/00*
U.S. Cl. 528—176 **16 Claims**

1. An enamel composition which when applied to a substrate and cured provides a coating having a pencil hardness of greater than 4H, an impact resistance of greater than 140 lb.-in., and being substantially resilient to acidic corrosion, said composition comprising

(I) about 25 to about 65 weight percent of a curable polyester having a number average molecular weight of about 1500 to about 3500 and a weight average molecular weight of about 10,000 to about 70,000, comprising

(a) about 20 to 36 mole percent of diol residues, based on the total moles of (a), (b), (c), (d), and (e);

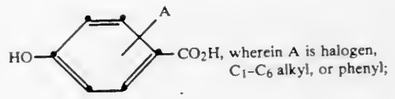
(b) about 10 to about 21 mole percent of triol residues, based on the total moles of (a), (b), (c), (d), and (e);

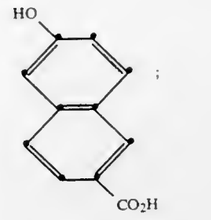
(c) about 5 to about 18 mole percent, based on the total moles of (a), (b), (c), (d), and (e), of residues of an aliphatic diacid;

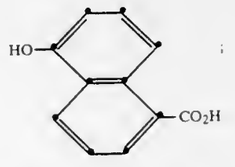
(d) about 25 to about 35 mole percent of aromatic dicarboxylic acid residues based on the total moles of (a), (b), (c), (d), and (e);

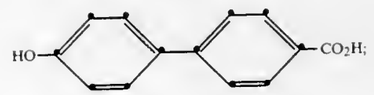
(e) about 12 to about 20 mole percent, based on the total moles of (a), (b), (c), (d), and (e), of hydroxy acid residues selected from residues of

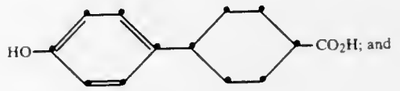


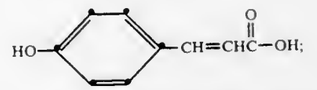












wherein substantially all of said hydroxy acid residues are at the ends of said curable polyester;

(II) about 5 to about 20 weight percent of an amino crosslinking agent; based on the total weight of (I), (II), and (III);

(III) about 30 to about 70 weight percent of an organic solvent, based on the total weight of (I), (II), and (III), the total being 100 percent.

5,256,758

THERMOSETTING COATING COMPOSITIONS

Thauming Kuo, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 712,380, Jun. 10, 1991, abandoned. This application May 15, 1992, Ser. No. 883,509
Int. Cl.[5] C08G *63/00*
U.S. Cl. 528—176 **30 Claims**

1. An enamel composition which when applied to a substrate and cured provides a coating having a pencil hardness of greater than 4H, an impact resistance of greater than 140 lb. in., and being substantially resistant to acidic corrosion, said composition comprising

(I) about 25 to about 65 weight percent of a curable polyester having a number average molecular weight of about 800 to about 3500 and a weight average molecular weight of about 3000 to about 70,000, comprising

(a) about 35 to 45 mole percent of diol residues, based on the total moles of (a), (b), (c), (d), (e), and (f);

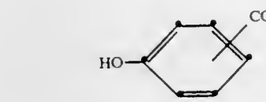
(b) about 4 to about 8 mole percent of triol residues, based on the total moles of (a), (b), (c), (d), (e), and (f);

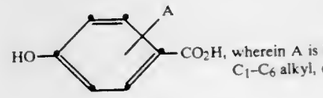
(c) about 5 to about 18 mole percent, based on the total moles of (a), (b), (c), (d), (e), and (f), of residues of an aliphatic diacid

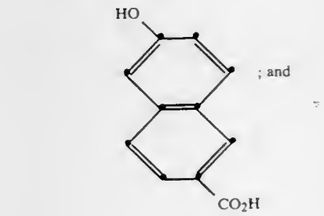
(d) about 0 to about 30 mole percent of aromatic dicarboxylic acid residues based on the total moles of (a), (b), (c), (d), (e), and (f);

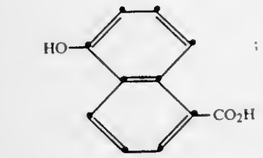
(e) about 5 to about 35 mole percent of terephthalic acid residues based on the total moles of (a), (b), (c), (d), (e), and (f);

(f) about 12 to about 20 mole percent, based on the total moles of (a), (b), (c), (d) (e), and (f) of hydroxy acid residues selected from residues of

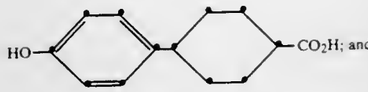


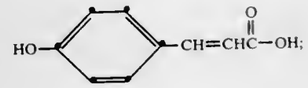












VOL 1155 ISS 4 OCT 26 1993

wherein substantially all of said hydroxy acid residues are at the ends of said curable polyester;

(II) about 5 to about 20 weight percent of an amino crosslinking agent; based on the total weight of (I), (II), and (III);

(III) about 30 to about 70 weight percent of an organic solvent, based on the total weight of (I), (II), and (III), the total being 100 percent.

5,256,759

THERMOSETTING COATING COMPOSITIONS

Thauming Kuo, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 883,079, May 15, 1992, which is a continuation-in-part of Ser. No. 712,380, Jun. 10, 1991, abandoned. This application Apr. 1, 1993, Ser. No. 41,111

Int. Cl.[5] **C08G** *63/00*

U.S. Cl. 528—176 **11 Claims**

1. A curable polyester having a number average molecular weight of about 800 to about 3000 and a weight average molecular weight of about 3000 to about 40,000 comprising

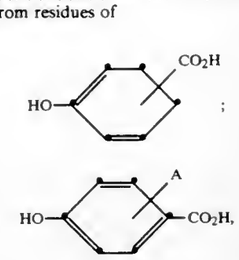
(a) about 35 to about 45 mole percent of diol residues, based on the total moles of (a), (b), (c), (d) and (e);

(b) about 4 to about 8 mole percent of triol residues, based on the total moles of (a), (b), (c), (d) and (e);

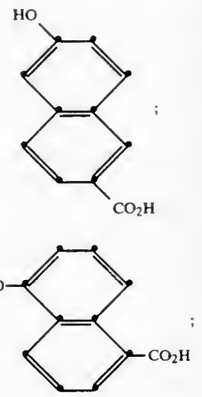
(c) about 0 to about 16 mole percent, based on the total moles of (a), (b), (c), (d) and (e), of residues of a linear aliphatic diacid;

(d) about 24 to about 40 mole percent of 1,3- and/or 1,4-cyclohexanedicarboxylic acid residues based on the total moles of (a), (b), (c), (d) and (e);

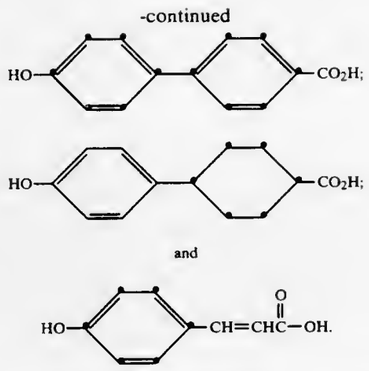
(e) about 12 to about 20 mole percent, based on the total moles of (a), (b), (c), (d) and (e), of hydroxy acid residues selected from residues of



wherein A is halogen, C_1-C_6 alkyl, or phenyl;



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and

wherein substantially all of said hydroxy acid residues are located at the ends of the polymer chains to which they are attached.

5,256,760

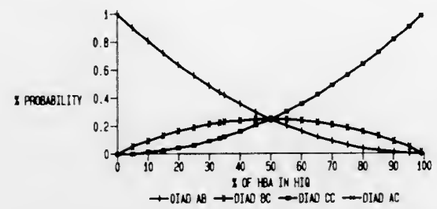
CONDENSATION COPOLYMERS WITH SEQUENCED MER STRUCTURE

Michael J. Jaffe, Maplewood; Marie Borzo, Basking Ridge; Edward C. Chenevey, North Plainfield; Eui W. Choe, Randolph; M. Ishaq Haider, Bernardsville, and Subhash Makhija, Chatham, all of N.J., assignors to Hoechst Celanese Corp., Somerville, N.J.

Filed May 15, 1992, Ser. No. 884,965

Int. Cl.[5] **C08G** *63/00, 63/02*

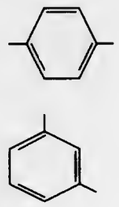
U.S. Cl. 528—183 **20 Claims**



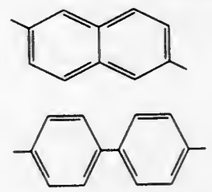
1. A method of making a controlled sequence condensation polymer comprising the steps of:

(a) selecting a first monomer wherein said first monomer is a diacid, diol, diamine, hydroxy-acid or aminophenol with the proviso that diacids include a structural unit from Group I, diols include a structural unit from Group II, hydroxy-acids include a structural unit from Group III and the aminophenol includes the structural unit of Group IV wherein:

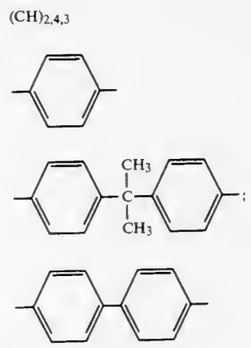
Group I is



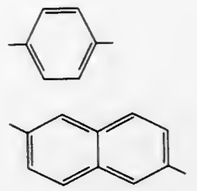
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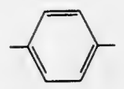
Group II is



Group III is



Group IV is



(b) selecting one or more comonomers capable of copolymerizing with said first monomer such that there are at least two unique first and second recurring units;

(c) polymerizing by way of condensation polymerization said first monomer and said comonomers so that said first and second recurring units occur in non-random sequence in the polymer so made.

5,256,761

POLYESTER COATINGS CONTAINING COVALENTLY-BOUND MESOGENIC MONOMERS

William W. Blount, Jr., Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

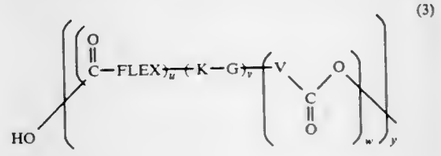
Continuation-in-part of Ser. No. 763,841, Sep. 23, 1991, abandoned. This application Sep. 28, 1992, Ser. No. 951,613

Int. Cl.[5] **C08G** *63/127, 63/133, 63/137, 63/191*

U.S. Cl. 528—272 **18 Claims**

3. A thermosetting coating composition which comprises

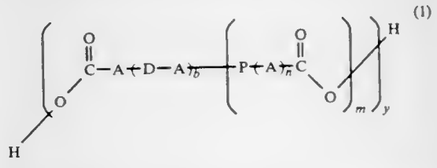
(A) about 15 to about 45 weight percent, based on the weight of the total composition, of a curable polyester comprising repeating units of residue of Formula (3);



(3)

wherein

FLEX is the residue of an oligomer of Formula (1) or (2):



(1)

wherein

A is the residue of a dicarboxylic acid selected from the group consisting of cis-1,4-cyclohexylenedicarboxylate; cis-1,3-cyclohexylenedicarboxylate; trans-1,4-cyclohexylenedicarboxylate; 1,2-phenylenedicarboxylate; 1,3-phenylenedicarboxylate; 1,4-phenylenedicarboxylate; trimethylenedicarboxylate; tetramethylenedicar-boxylate; pentamethylenedicarboxylate; and hexamethylenedicarboxylate;

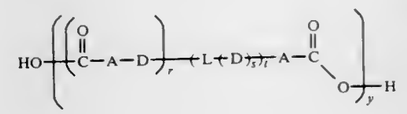
D is the residue of a diol selected from the group consisting of residues of 2,2-dimethyl-1,3-propanediol; 2-methyl-1,3-propanediol; 1,2-propanediol; 1,3-propanediol; 1,6-hexanediol; 2,2,4,4-tetramethyl-1,3-cyclobutanediol; 1,4-cyclohexanedimethanol; 2,2,4-trimethyl-1,3-pentanediol; and 2,2-dimethyl-3-hydroxypropyl-2,2-dimethyl-3-hydroxypropionate;

P is the residue of a branch-inducing poly(hydroxyl group)-containing reactant;

b is 1 to about 6;

m is equal to one less than the number of hydroxyl groups present on reactant P and is greater than 1;

n is 0 to 3;



(2)

wherein

A is the residue of a dicarboxylic acid selected from the group consisting of cis-1,4-cyclohexylenedicarboxylate; cis-1,3-cyclohexylenedicarboxylate; trans-1,4-cyclohexylenedicarboxylate; 1,2-phenylenedicarboxylate; 1,3-phenylenedicarboxylate; 1,4-phenylenedicarboxylate; trimethylenedicarboxylate; tetramethylenedicarboxylate; pentamethylenedicarboxylate; and hexamethylenedicarboxylate;

D is the residue of a diol selected from the group consisting of residues of 2,2-dimethyl-1,3-propanediol; 2-methyl-1,3-propanediol; 1,2-propanediol; 1,3-propanediol; 1,6-hexanediol; 2,2,4,4-tetramethyl-1,3-cyclobutanediol; 1,4-cyclohexanedimethanol; 2,2,4-trimethyl-1,3-pentanediol; and 2,2-dimethyl-3-hydroxypropyl-2,2-dimethyl-3-hydroxypropionate;

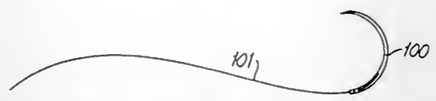
L is the residue of a branch-inducing poly(carboxyl group)-containing reactant;

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VOL 1155 ISS 4 OC 26 1993 UMI

r has an average value of about 1 to about 6;
s is equal to one less than the number of hydroxy groups present on reactant (P) and is greater than 1;
t has an average value of about 0 to 3; and
wherein the number average molecular weight of the residue of Formula (2) is about 300 to about 3000 which defines y; and
u is about 1 to 6;
K is the residue of a mesogenic diol or its acyl ester selected from the group consisting of residues of hydroquinone; hydroquinone diacetate; toluhydroquinone; mono-chlorohydroquinone; mono-tert-butylhydroquinone; mono-chlorohydroquinone dipropionate; phenylhydroquinone; or a mixture thereof;
G is the residue of a mesogenic diacid selected from the group consisting of residues of trans-1,4-cyclohexanedicarboxylic acid; terephthalic acid; methylterephthalic acid; phenylterephthalic acid; 2,6-naphthalenedicarboxylic acid; or mixtures thereof;
v is about 1 to 6; and
V is the residue of a mesogenic monomer containing one hydroxyl group or its acyl ester selected from the group consisting of residues of p-hydroxybenzoic acid; p-acetoxybenzoic acid; methyl p-hydroxybenzoate; 2-hydroxy-4-carboxynaphthalene; 2-hydroxy-6-carbomethoxynaphthalene; or mixtures thereof;
w is about 0 to 4; and
wherein the ratio of the total moles of polyester monomeric residues in said curable polyester to the total equivalents of free hydroxyl groups in said curable polyester is about 1.04 to about 1.50;
(B) about 0 to about 85 weight percent, based on the weight of the total composition, of a solvent; and
(C) about 1 to about 40 weight percent, based on the weight of (A), of a cross-linking agent.

5,256,762
POLYESTERS HAVING PREDETERMINED MONOMERIC SEQUENCE
Matthew E. Hermes, Easton, and Ross R. Muth, Brookfield, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed Jul. 14, 1992, Ser. No. 914,179
The portion of the term of this patent subsequent to Sep. 28, 2010, has been disclaimed.
Int. Cl.[5] C08G *69/00*
U.S. Cl. 528—361 **40 Claims**



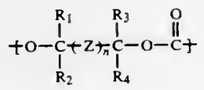
1. A composition comprising a polyester having a predetermined monomeric sequence.

5,256,763
PROCESS FOR PRODUCTION OF POLY(ARYLENE THIOETHER) COPOLYMER
Mitsuru Hoshino; Yukichika Kawakami, and Takayuki Katto, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo K.K., Tokyo, Japan
Filed Nov. 26, 1991, Ser. No. 797,869
Claims priority, application Japan, Dec. 13, 1990, 3-410082
Int. Cl.[5] C08G *63/68, 75/00*
U.S. Cl. 528—364 **7 Claims**

1. A process for the production of a granular poly(arylene thioether) copolymer by reacting an alkali metal sulfide with a dihalo-aromatic component in a polar solvent containing water, which comprises using, as the dihalo-aromatic component, 98–70 mole % of a dihalo-aromatic compound free of any carboxyl group and 2–30 mole % of a dihalo-aromatic carboxylic acid containing 1–2 carboxyl groups, and performing polymerization by adding the dihalo-aromatic carboxylic acid to a polymerization reaction system in accordance with one process selected from the following processes:
(1) at least 50 mole % of the dihalo-aromatic carboxylic acid is converted into an alkaline earth metal salt prior to its addition to the polymerization reaction system, and the amount of the dihalo-aromatic carboxylic acid which is not converted into an alkaline earth metal salt and is added to the reaction system is less than 2 mole % of the dihalo-aromatic component;
(2) at least one compound selected from the group consisting of the hydroxides and oxides of alkaline earth metals is added together with the dihalo-aromatic carboxylic acid to the polymerization reaction system, wherein the alkaline earth metal compound is added to the reaction system in a stoichiometric amount sufficient to convert at lest 50 mole % of the dihalo-aromatic carboxylic acid into an alkaline earth metal salt and the amount of the dihalo-aromatic carboxylic acid which is not converted into an alkaline earth metal salt in the reaction system is less than 2 mole % of the dihalo-aromatic component; and
(3) at least one compound selected from the group consisting of the hydroxides and oxides of alkaline earth metals is added to the reaction system together with a mixture of a preformed alkaline earth metal salt of a portion of the dihalo-aromatic carboxylic acid, and the remainder of the dihalo-aromatic carboxylic acid, wherein the alkaline earth metal compound is added to the reaction system in a stoichiometric amount such that at least 50 mole % of the charged dihalo-aromatic carboxylic acid will be converted into an alkaline earth metal salt in the reaction system and the amount of the dihalo-aromatic carboxylic acid which is not converted into an alkaline earth metal salt in the reaction system is less than 2 mole % of the dihalo-aromatic component.

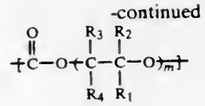
5,256,764
MEDICAL DEVICES FABRICATED FROM HOMOPOLYMERS AND COPOLYMERS HAVING RECURRING CARBONATE UNITS
Reginald T. Tang, Warren; Frank Mares, Whippany; William J. Boyle, Jr., Parsippany; Tin-Ho Chiu, Millburn, and Kundanbhai M. Patel, Landing, all of N.J., assignors to United States Surgical Corporation, Norwalk, Conn.
Division of Ser. No. 833,206, Feb. 10, 1992, Pat. No. 5,152,781, which is a division of Ser. No. 466,109, Jan. 16, 1990, Pat. No. 5,145,945, which is a division of Ser. No. 227,386, Aug. 2, 1988, Pat. No. 4,920,203, which is a continuation-in-part of Ser. No. 134,290, Dec. 17, 1987, abandoned, and a continuation-in-part of Ser. No. 134,321, Dec. 17, 1987, Pat. No. 4,891,263, and a continuation-in-part of Ser. No. 134,339, Dec. 17, 1987, Pat. No. 5,120,802. This application Jul. 22, 1992, Ser. No. 916,751
Int. Cl.[5] C08G *63/00, 63/08, 64/00*
U.S. Cl. 528—370 **22 Claims**

1. A medical device comprising a body, said body formed totally or in part of one or more biopolymers selected from the group consisting of homopolymers having recurring monomeric unit selected from the group consisting of General Structures I or II:



Structure I

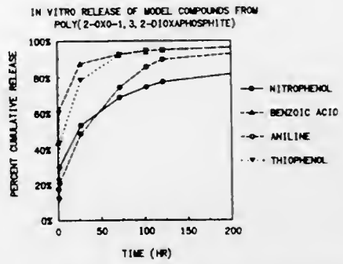
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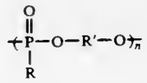
Structure II

wherein:
—Z— is —C(R_5R_6)—, —O— or a combination thereof; where Z is selected such that there are no adjacent heteroatoms;
n is from 1 to about 8;
m is from 1 to about 8;
R_1, R_2, R_3, and R_4 are the same or different at each occurrence and are hydrogen, aryloxyalkyl, alkyoxyaryl, aryloxyaryl, arylalkyl, alkylarylalkyl, arylalkylaryl, alkylaryl, arylcarbonylalkyl, alkyl, aryl, alkylcarbonylalkyl, cycloalkyl, arylcarbonylaryl, alkylcarbonylaryl, alkoxyalkyl, or aryl or alkyl substituted with one or more substituents selected from the group consisting of alkyl, aryl, alkoxy, aryloxy, dialkylamino, diarylamino and alkylarylamino; and
R^5 and R_6 are the same or different and are R_1, R_2, R_3, R_4, dialkylamino, diarylamino, alkylarylamino, alkoxy, aryloxy, alkanoyl, or arylcarbonyl, or any two of R1 to R5 together may form an alkylene chain completing a 3, 4, 5, 6, 7, 8 or 9 membered alicyclic fused, spiro, bicyclic or tricyclic ring system or a combination thereof, which system may optionally include one or more non-adjacent carbonyl, oxa, alkylaza or arylaza groups;
with the proviso that when the said biopolymers are homopolymers having recurring units of the Structure II derived from ethylene carbonate or propylene carbonate then m is other than 1.

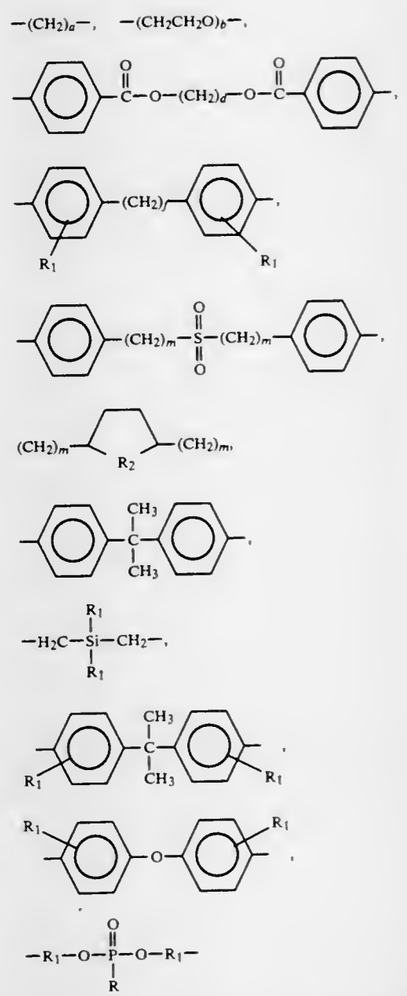
5,256,765
BIODEGRADABLE POLY(PHOSPHATE ESTERS)
Kam W. Leong, Perry Hall, Md., assignor to The Johns Hopkins University School of Medicine, Baltimore, Md.
Division of Ser. No. 321,360, Mar. 9, 1989, Pat. No. 5,194,581.
This application Mar. 24, 1992, Ser. No. 856,469
Int. Cl.[5] C08G *79/02*
U.S. Cl. 528—398 **7 Claims**



1. A pharmaceutical composition comprising an effective amount of a therapeutic agent, together with a delivery vehicle, wherein the vehicle comprises a polymer represented by the formula:



wherein n ranges from about 10 to 10^5, R is a therapeutic agent capable of being released in a physiological environment, and R' is selected from the group consisting of:



wherein R_1 is alkyl, halogen, nitro, hydroxyl, amino, carboxyl, alkoxy, or combinations thereof, R_2 is oxygen or N—CH_3, and a ranges from 2 to 6, b ranges from 10 to 100, d ranges from 2 to 16, f ranges from 1 to 6, and m ranges from 1 to 2.

5,256,766
RECOMBINANT THROMBIN RECEPTOR AND RELATED PHARMACEUTICALS
Shaun R. Coughlin, San Francisco, Calif., assignor to The Regents of the University of California, Oakland, Calif.
Filed Feb. 19, 1991, Ser. No. 657,769
Int. Cl.[5] A61K *37/02*
U.S. Cl. 530—327 **16 Claims**

1. A purified or isolated peptide capable of activating thrombin receptor which is selected from the group consisting of SFLLRNPNDKYEPF; SFLLRNPNDKYEP; SFLLRNPNDKYE; SFLLRNPNDKY; SFLLRNPNDK; SFLLRNPND; SFLLRNPN; SFLLRNP; SFLLRN; SFLLR; SFLL; and SFL, and the amidated forms thereof.

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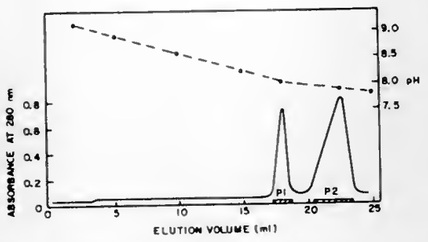
5,256,767
RETROVIRAL ANTIGENS
Jonas Salk, La Jolla, and Dennis J. Carlo, Rancho Santa Fe, both of Calif., assignors to The Immune Response Corporation, Carlsbad, Calif.
Continuation of Ser. No. 200,752, May 31, 1988, abandoned, which is a continuation-in-part of Ser. No. 60,280, Jun. 10, 1987, abandoned. This application Nov. 10, 1992, Ser. No. 975,899
Int. Cl.[5] C07K *5/00, 3/00;* C12N *7/04, 7/06*
U.S. Cl. 530—350 7 Claims

1. An immunogen comprising a non-infectious intact HIV virus devoid of outer envelope proteins.

5,256,768
EXPRESSION OF ANTIGENIC EPSTEIN-BARR VIRUS POLYPEPTIDES IN BACTERIA AND THEIR USE IN DIAGNOSTICS
Gregory Milman, Potomac, Md., assignor to The Johns Hopkins University, Baltimore, Md.
Continuation of Ser. No. 170,696, Mar. 14, 1988, abandoned, which is a continuation of Ser. No. 808,634, Dec. 13, 1985, abandoned. This application Sep. 5, 1990, Ser. No. 578,480
Int. Cl.[5] A61K *39/245;* C07K *15/04, 13/00*
U.S. Cl. 530—350 6 Claims

1. A bacterially synthesized polypeptide encoded by the Epstein-Barr Virus BamH1 K-fragment consisting essentially of the carboxyl-terminated one third of the Epstein-Barr Virus Nuclear Antigen ("EB-NA"), said polypeptide being recognized by human antibodies to nuclear antigens of Epstein-Barr Virus.

5,256,769
MUTUAL SEPARATION OF PROTEINS
Koichi Kato, Kawabe; Takao Yamada, Matsubara, and Kenji Kawahara, Izumi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
Filed Sep. 11, 1985, Ser. No. 774,811
Claims priority, application Japan, Sep. 26, 1984, 59-00460; May 21, 1985, 60-00274
Int. Cl.[5] C07K *13/00, 3/28*
U.S. Cl. 530—351 32 Claims

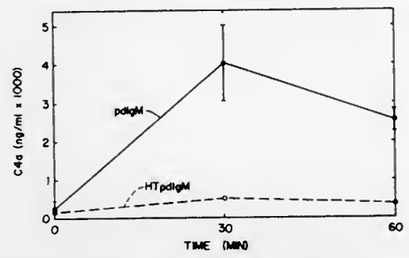


1. A method of separating a protein or a Met-protein from a mixture comprising the protein and the Met-protein, the Met-protein comprising an amino acid sequence which is sufficiently similar to the amino acid sequence of the first protein to provide a physiological activity provided by the first protein and the Met-protein bearing an additional methionine residue at its amino terminus as compared to the first protein, which comprises subjecting the mixture to a separation procedure utilizing the difference in the isoelectric points between the first protein and the second protein.

5,256,770
OXIDATION RESISTANT THROMBOMODULIN ANALOGS
Charles B. Glaser; Michael J. Morser, both of San Francisco, and David R. Light, San Mateo, all of Calif., assignors to Schering AG, Berlin, Fed. Rep. of Germany
Filed Apr. 9, 1990, Ser. No. 506,325
Int. Cl.[5] C07K *13/00*
U.S. Cl. 530—381 3 Claims

1. A thrombomodulin analog peptide that retains biological activity after exposure to oxidants at a concentration and under conditions which eliminate biological activity of native thrombomodulin said peptide having the native methionine at position 388 replaced with a leucine wherein position 388 refers to the amino acids as provided in Table 1.

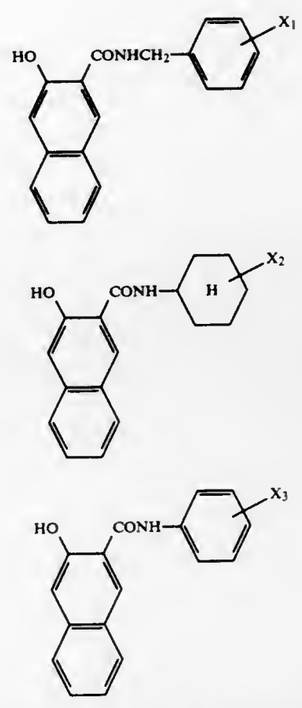
5,256,771
HEAT TREATMENT OF IGM-CONTAINING IMMUNOGLOBULINS TO ELIMINATE NON-SPECIFIC COMPLEMENT ACTIVATION
Grace C. Tsay, Walnut Creek, and Gary Jesmok, Pinole, both of Calif., assignors to Miles Inc., Berkeley, Calif.
Filed Apr. 3, 1990, Ser. No. 504,161
Int. Cl.[5] A61K *39/395;* C07K *3/12, 15/06*
U.S. Cl. 530—390.5 3 Claims



1. A method of treating an antibody preparation comprising antibodies of the IgM type, the method comprising the step of subjecting the preparation to a gentle heating step at a temperature ranging from 45° C. to 55° C. in an aqueous solution having a pH of 4.0 to 5.0 for at least 10 minutes to minimize any non-specific complement activation without substantial reduction of the specific complement activation activity of the IgM.

5,256,772
MONOAZO LAKE PIGMENT AND USES THEREOF
Yoshitaka Ohtomo, Tokyo, Japan, assignor to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan
Filed Nov. 7, 1991, Ser. No. 789,077
Claims priority, application Japan, Nov. 14, 1990, 2-307510
Int. Cl.[5] C09B *67/22, 63/00;* C09D *11/02, 17/00*
U.S. Cl. 534—573 6 Claims

1. A monoazo lake pigment prepared by a process which comprises
(a) diazotizing a mixture of
(1) an aminonaphthalene- or aminobenzene-sulfonic acid or carboxylic acid, and
(2) 0.1 to 20 mol % based upon component (1) of a naphthalene amine or benzene amine containing no soluble group
to form a diazo component,
(b) reacting the diazo component in a coupling reaction with a coupler component containing
(1) β-naphthol or β-oxynaphthoic acid, and
(2) 0.1 to 30 mol % based upon component (1) of at least one member selected from the group consisting of compounds of the following formulae (I) to (III):

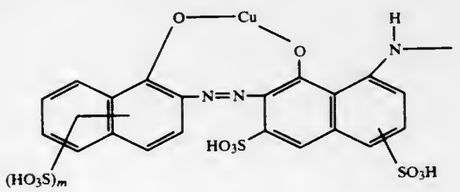


wherein each of X_1, X_2 and X_3 is at least one water-insoluble group selected from the group consisting of a halogen atom, lower alkoxy, lower alkyl, nitro and amino substituted with lower alkyl, and

(c) subjecting the coupling reaction product to a lake-forming reaction, said lake-forming reaction being conducted during or after completion of said coupling reaction.

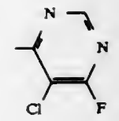
5,256,773
COPPER COMPLEXES OF 4-FLUORO-5-CHLOROPYRIMIDIN-6-YL CONTAINING RACTIVE MONDAZO DYES
Klaus Kunde, Neunkirchen; Hermann Henk, Cologne; Karl-Heinz Schündehütte, deceased, late of Leverkusen by Eva Schündehütte, heir , and Frank-Michael Stöhr, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Continuation of Ser. No. 697,869, May 9, 1991, abandoned. This application Dec. 14, 1992, Ser. No. 990,631
Claims priority, application Fed. Rep. of Germany, May 18, 1990, 4016058
Int. Cl.[5] C09B *62/255;* D06P *1/382*
U.S. Cl. 534—627 4 Claims

1. A reactive dye of the formula:



-continued

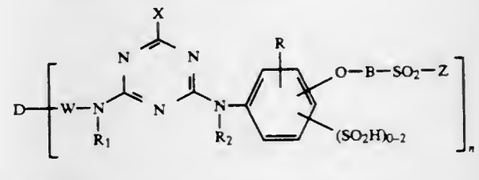
(I)



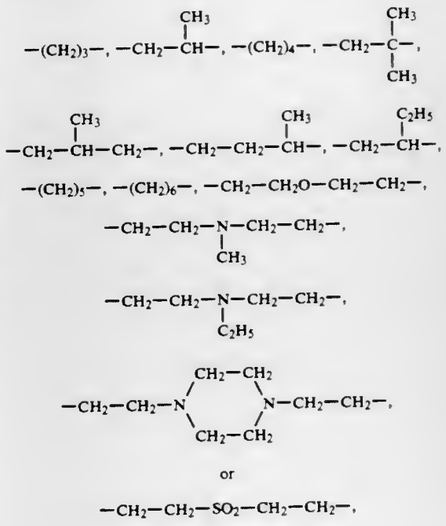
in which
m represents 1, 2 or 3.

5,256,774
(II) BIFUNCTIONAL REACTIVE DYESTUFFS CONTAINING THE 2-(N-SUBSTITUTED AMINO)-4-(N-PHENYLAMINO)-1,3,5-TRIAZINYL MOIETY
Wolfgang Harms, Odenthal, and Thomas Eizenhöfer, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Feb. 20, 1992, Ser. No. 839,460
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1991, 4106255
Int. Cl.[5] C09B *62/503, 62/04;* D06P *1/38*
(III) U.S. Cl. 534—612 5 Claims

1. A reactive dyestuff of the formula

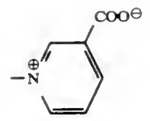


in which
D denotes a radical of an organic dyestuff,
W denotes a direct bond or bridging member,
R_1 denotes H or alkyl,
R_2 denotes H or alkyl,
R denotes H, C_1–C_2-alkyl, halogen, or C_1–C_4-alkoxy,
B denotes



X denotes F, Cl,

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Z denotes $-CH=CH_2$, $-CH_2-CH_2-OSO_3H$, $-CH_2-CH_2-Cl$, $-CH_2-CH_2-Br$, $-CH_2-CH_2-S_2O_3H$, $-CH_2-CH_2-O-CO-CH_3$, $-CH_2-CH_2-OPO_3H_2$, or $-CH_2-CH_2-OH$,

n denotes 1 or 2.

5,256,775

EXONUCLEASE-RESISTANT OLIGONUCLEOTIDES

Brian C. Froehler, Belmont, Calif., assignor to Gilead Sciences, Inc., Foster City, Calif.

Continuation-in-part of Ser. No. 361,045, Jun. 5, 1989, abandoned. This application Jun. 5, 1990, Ser. No. 555,522

Int. Cl.[5] **C07H** *21/02*

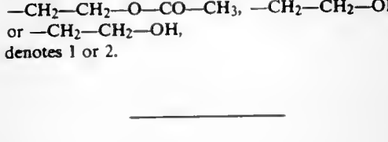
U.S. Cl. 536—25.6 **20 Claims**

1. An oligonucleotide resistant to degradation under physiological conditions, which oligonucleotide is a modified form of an oligonucleotide consisting essentially of nucleosides linked through phosphodiester linkages so that said phosphodiester linkages at the 3' terminus, or the 5' terminus, or both the 3' and 5' termini are replaced with N-substituted phosphoramidate linkages, the number of said replaced linkages being 1 to 10, wherein the phosphoramidate has the formula:

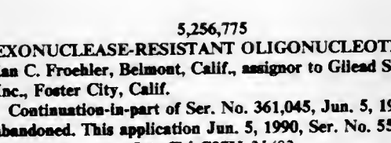


wherein R^1 and R^2 are independently selected from the group consisting of hydrogen, hydrocarbyl substituents of 20 carbon atoms or less, and oxyhydrocarbyl substituents of 20 carbon atoms or less containing 1 to 3 oxy groups, and wherein said hydrocarbyl or oxyhydrocarbyl substituents are linear or branched alkyl of 1 to 20 carbon atoms, linear or branched alkenyl of 2 to 20 carbon atoms, cycloalkyl or cycloalkenyl of 3 to 20 carbon atoms, linear or branched alkoxy of 1 to 20 carbon atoms, or aryl of 6 to 18 carbon atoms, provided that R^1 and R^2 are not both hydrogens.

12. The oligonucleotide having the formula selected from the group consisting of:

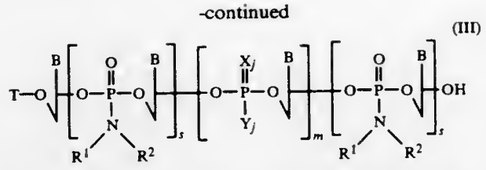


(I)



(II)

-continued



(III)

wherein each n, m, i, j and s is independently an integer and each s is in the range of about 2 to 10; each n and m is independently from 1 to about 50; s+n in formulas I and II is less than 100; and s+s+m in formula is less than 100; each i varies from 1 to n; each j varies from 1 to m; T is hydrogen or a hydroxyl-protecting group; R^1 and R_2 are independently selected from the group consisting of hydrogen, hydrocarbyl substituents of 20 carbon atoms or less, and oxyhydrocarbyl substituents of 20 carbon atoms or less containing 1 to 3 oxy groups, and wherein said hydrocarbyl or oxyhydrocarbyl substituents are linear or branched alkyl of 1 to 20 carbon atoms, linear or branched alkenyl of 2 to 20 carbon atoms, cycloalky or cycloalkenyl of 3 to 20 carbon atoms, linear or branched alkoxy of 1 to 20 carbon atoms, or aryl of 6 to 18 carbon atoms, with the proviso that R^1 to R^2 are not both hydrogen,

each B is independently a protected or unprotected heterocyclic base;

each X_i and X_j is independently O or S; and

each Y_i and Y_j is independently R, —SR or —OR, where R is as defined for R^1 and R^2.

5,256,776

WATER-SOLUBLE PHTHALOCYANINE DYESTUFFS, PROCESSES FOR THEIR PREPARATION AND THEIR USE

Thomas Beck, Bad Soden am Taunus; Werner H. Russ, Flöshelm am Main; Hartmut Springer, Königstein/Taunus, and Marcus Bänfer, Bad Soden am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

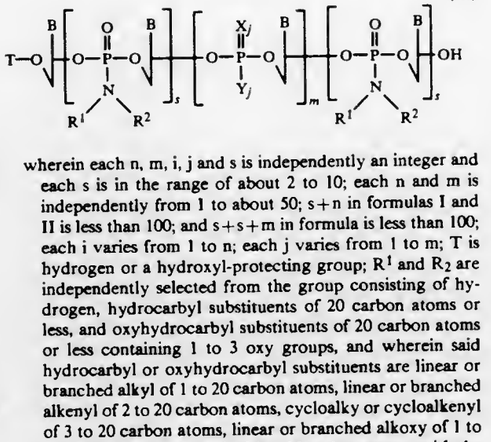
Filed Aug. 27, 1992, Ser. No. 936,138

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1991, 4128511

Int. Cl.[5] **C09B** *62/016;* **D06P** *1/38, 3/10, 3/66*

U.S. Cl. 540—126 **18 Claims**

1. A water soluble phthalocyanine dyestuff of the formula (I)



(I)

in which:

Pc is the radical of phthalocyanine, of a copper phthalocyanine, cobalt phthalocyanine or nickel phthalocyanine, in which the carboxy, carboxamide, sulfonamide and sulfo groups are bonded in the 3- and 4-positions, or both, of the carbocyclic aromatic rings of the phthalocyanine, and in which the phthalocyanine is unsubstituted or substituted in the 3- or 4-positions, or both, of the carbocyclic aromatic rings of the phthalocyanine by one or more other substituents selected from the group consisting of halogen and phenyl radicals;

R^1 is hydrogen or alkyl of 1 to 6 carbon atoms unsubstituted or substituted by hydroxy, alkoxy of 1 to 6 carbon atoms, chlorine, sulfato, cyano, sulfo, carboxy, phenyl, sulfonphenyl and carboxyphenyl;

R^2 is hydrogen or alkyl of 1 to 6 carbon atoms unsubstituted or substituted by hydroxy, alkoxy of 1 to 6 carbon atoms, chlorine, sulfato, cyano, sulfo, carboxy, phenyl, sulfophenyl and carboxyphenyl;

R^3 is hydrogen or alkyl or 1 to 4 carbon atoms;

R^4 is hydrogen or alkyl of 1 to 6 carbon atoms unsubstituted or substituted by hydroxy, alkoxy of 1 to 6 carbon atoms, chlorine, sulfato, cyano, sulfo, carboxy, phenyl, sulfophenyl and carboxyphenyl, or is cyclalkyl of 5 to 8 carbon atoms;

R^5 is hydrogen or alkyl of 1 to 6 carbon atoms unsubstituted or substituted by hydroxy, alkoxy of 1 to 6 carbon atoms, chlorine, sulfato, cyano, sulfo, carboxy, phenyl, sulfophenyl and carboxyphenyl, or is naphthyl unsubstituted or substituted by sulfo, or is phenyl unsubstituted by substituted by substituents selected from the group consisting of methyl, ethyl, methoxy, ethoxy, chlorine, carboxy and sulfo, or is cyano; or

R^4 and R^5, together with the nitrogen atom and an alkylene having 3 to 8 carbon atoms or with a further hetero atom selected from the group consisting of nitrogen and oxygen and two alkylenes of 1 to 4 carbon atoms form the radical of 4- to 8-mentioned heterocyclic ring, or

$-NR^4R^3$ is a radical of the formula (2),

(2)

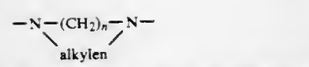
in which R^3 is as defined above and A, Y, Z and m have one of the meanings given below;

G is alkylene having 1 to 6 carbon atoms, or is phenylene unsubstituted or substituted by 1 to 4 substituents selected from the group consisting of alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, halogen, sulfo, carboxy and nitro, or the grouping $-N(R^1)-G-N(R^2)-$ together forms the 1,4-piperazidinylene group;

W is halogen, alkoxy having 1 to 4 carbon atoms, aryloxy, sulfo, phenylsulfonyl, alkylsulfonyl having 1 to 4 carbon atoms or an amino group of the formula $-NR^6R^7$, in which R^6 has one of the meanings given above for R^4, and R^7 has one of the meanings given above for R^5, or W is a group of the abovementioned formula (2) in which R^3 is as defined above and A, Y, Z and m have one of the meanings given below;

A is phenylene or naphthylene each unsubstituted or substituted by 1 to 3 substituents selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halogen, carboxy, nitro and sulfo, or is alkylene of 1 to 8 carbon atoms, or alkylene of 2 to 8 carbon atoms which is interrupted by 1 or 2 hetero groups selected from the group consisting of —O— and —NH—, or is a group of the formula -alkyl-phenylene-, in which alk is an alkylene of 1 to 4 carbon atoms and phenylene is a phenylene group, or

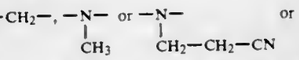
A is a group of the formula (3)



(3)

in which n is an integer from 2 to 4 and alkylen is an alkylene having 1 to 6 carbon atoms;

Y is in the case where A is an aromatic radical a direct bond or a group of the formula [-CO-NH-alkylene-]—CO—CN-alkylen- where alkylen has the above meaning, or a group of the formula



or

Y is alkylene having 1 to 6 carbon atoms in which case —A— is necessarily a direct bond and m is 2;

Z is vinylsulfonyl or is ethylsulfonyl which contains, in the β-position, a substituent which is eliminated under alkaline conditions,

a is an integer from zero to 4,

b is an integer from zero to 3;

c is an integer from zero to 3;

d is an integer from zero to 3;

e is an integer from zero to 2;

the sum of (a+b+c+d+e) is not more than 4;

the sum of (a+b) is 1 to 4;

the sum of (a+d) is 1 to 4;

the sum of (c+d) is zero to 4;

m is the number 1 or 2; and

M is a hydrogen atom or an alkali metal.

5,256,777

2-PHENYL-CARBAPENEMS

Frank DiNinno, Old Bridge, and Ravindra N. Guthikonda, Edison, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 17, 1991, Ser. No. 777,959

Int. Cl.[5] **C07D** *487/04*

U.S. Cl. 540—302 **7 Claims**

1. A compound of the formula:

wherein R is H or CH_3, R^2 is (R) $CH_3CH(OP)$— or (R) $CH_3CH(F)$—,P is, independently, hydrogen or a readily removable protecting group for hydroxy, M is a readily removable carboxyl protecting group and R^{a3} is 1, —SMe, SO_2Me or Br.

5,256,778

Patent Not Issued For This Number

5,256,779

SYNTHESIS OF MANGANESE OXIDATION CATALYST

Judith L. Kerschner, Ridgewood, and Lisa DelPizzo, Bloomfield, both of N.J., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

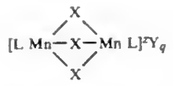
Filed Jun. 18, 1992, Ser. No. 900,861

Int. Cl.[5] **B01J** *31/22;* **C07D** *255/02*

U.S. Cl. 540—465 **8 Claims**

1. A process for the preparation of a compound having the formula:

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wherein
Mn is manganese in a III or IV oxidation state;
X is independently selected from a coordinating or bridging species selected from the group consisting of:
H_2O, O_2^{2-}, O_2-, OH^-, HO_2^-, SH^-, S^{2-}, SO, Cl^-, N_3^-, SCN^-, N^{3-}, $HCOO^-$, NH_2^- and NH_3;
L is an organic ligand that is at least a nine-membered ring wherein at least two nitrogen atoms form part of the ring and coordinate with the Mn;
z is an integer ranging from −4 to +4;
Y is a monovalent or multivalent counterion leading to charge neutrality selected from the group consisting of halides, sulphates, sulphonates, nitrates, boron and phosphorus salt counterions; and
q is an integer from 1 to 4;
the process comprising the steps of:
(i) reacting in an aqueous medium a manganese (II) salt with the ligand L to form a manganese coordinated substance, a counterion salt M_zY_q being present wherein M is selected from the group consisting of metallic and ammonium ions; and
(ii) oxidizing the manganese coordinated substance with an oxidizing agent while simultaneously maintaining a pH of at least 12 to thereby form the compound.

5,256,780

PYRIMIDOINDOLE DERIVATIVES AND PROCESSES FOR PREPARATION THEREOF

Masayuki Kato, Kyoto; Shigetaka Nishino, Osaka; Kiyotaka Ito, Ikeda, and Hisashi Takasugi, Sakai, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation of Ser. No. 662,434, Feb. 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 572,247, Aug. 27, 1990, Pat. No. 5,180,728. This application Feb. 18, 1992, Ser. No. 835,027

Claims priority, application United Kingdom, Sep. 25, 1989, 8921634.5; Jul. 30, 1990, 9016704.0

The portion of the term of this patent subsequent to Jan. 19, 2010, has been disclaimed.

Int. Cl.[5] **A61K** *31/505;* **C07D** *487/04*

U.S. Cl. 544—252 **1 Claim**

1. The compound (+)-3,4-dihydro-5-methyl-2-[1-(5-methyl-1H-imidazol-4-yl)ethyl]pyrimido-[1,6-a]indol-1(2H)-one or its hydrochloride.

5,256,781

SUBSTITUTED QUINAZOLINES AS ANGIOTENSIN II ANTAGONISTS

John L. Primeau, Princeton, and Lloyd M. Garrick, Plainsboro, both of N.J., assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 927,032, Aug. 6, 1992, which is a division of Ser. No. 782,850, Oct. 24, 1991, Pat. No. 5,187,168. This application Mar. 22, 1993, Ser. No. 34,030

Int. Cl.[5] **C07D** *487/04, 491/048, 495/04;* **A61K** *31/505*

U.S. Cl. 544—293 **1 Claim**

1. The compound 2-[5-[[[2-(trifluoromethyl)-4-quinazolinyl-]amino]methyl]-2-thienyl]benzoic acid and the pharmaceutically acceptable salts, solvates and hydrates thereof.

5,256,782

THIENOPYRIDINE DERIVATIVES WHICH ARE INTERMEDIATES

Kanji Meguro, Nishinomiya; Hiroyuki Tawada, Takatsuki, and Hitoshi Ikeda, Higashiosaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 744,492, Aug. 13, 1991, Pat. No. 5,143,919. This application May 20, 1992, Ser. No. 886,081

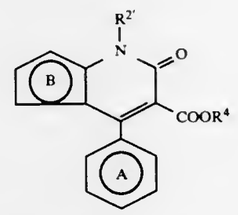
Claims priority, application Japan, Aug. 17, 1990, 2-217309; May 23, 1991, 3-118444

Int. Cl.[5] **C07D** *495/02, 495/14*

U.S. Cl. 546—114 **7 Claims**

I. A compound of the formula

(XIX)



wherein the ring A is a benzene ring which may be substituted with same or different 1 to 4 substituents selected from the group consisting of a halogen atom, optionally halogenated C_{1-6} alkyl, optionally halogenated C_{1-6} alkoxy, optionally halogenated C_{1-6} alkylthio, C_{1-3} acyloxy, hydroxyl, di-C_{1-6} alkylamino and mono-C_{1-6} alkylamino group, the ring B is thiophene or thiophene having 1 to 2 substituents selected from the group consisting of halogen, C_{1-6} alkyl, C_{3-6} cycloalkyl, nitro, amino and C_{1-7} acylamino, or adjacent carbon atoms on the ring B may bind to a group $-(CH_2)_q-$ (wherein q is an integer of 3 to 5) to form a 5 to 7 membered ring, R^2 is a hydrogen atom or a C_{1-4} alkyl group, and R^4 is a hydrogen atom or a C_{1-4} alkyl group, or a salt thereof.

5,256,783

METHOD FOR PRODUCING 2-ISOQUINOLINE COMPOUNDS

Surendra Gokhale, Basel, and Markus Schlageter, Bottmingen, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Sep. 2, 1992, Ser. No. 938,750

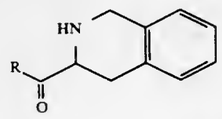
Claims priority, application Switzerland, Sep. 18, 1991, 2752/91; Jul. 6, 1992, 2130/92

Int. Cl.[5] **C07D** *217/16*

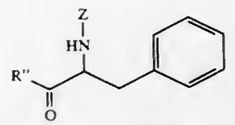
U.S. Cl. 546—146 **11 Claims**

I. A process for the manufacture of 1,2,3,4-tetrahydro-2-isoquinoline derivatives of the formula

I

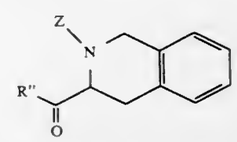


wherein R signifies hydroxy, lower alkylamino, lower alkoxy or phenyl-$C_{(2-6)}$-alkoxy, the phenyl group can be substituted with one or more lower alkyl or lower alkoxy groups, which process comprises reacting a phenethylamine derivative of the formula



IV

wherein Z signifies benzyloxycarbonyl and R'' signifies hydroxy, lower alkylamino, lower alkoxy or phenyl-lower-alkoxy, the phenyl group can be further substituted with one or more lower alkyl or lower alkoxy groups, in an inert solvent with formaldehyde in the presence of sulphuric acid in acetic acid at a temperature between about room temperature and about 50° C. to produce



V

and cleaving off the group Z in the compound of formula V to form the compound of formula 1.

5,256,784

NONLINEAPHORES AND POLYMERS INCORPORATING SUCH NONLINEAPHORES

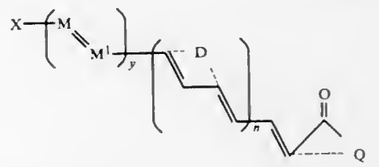
Cecil V. Francis, Woodbury; Elisa M. Cross, St. Paul; Roberta E. Harelstad, Bloomington; Paul F. Korkowski, Hastings; Peter C. Leung, Woodbury; David W. Macomber, St. Paul; and John E. Trend, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 16, 1992, Ser. No. 822,168

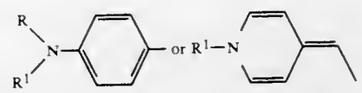
Int. Cl.[5] **C09B** *62/245, 23/04, 23/02, 23/06*

U.S. Cl. 544—294 **23 Claims**

1. An NLO-active composition having the formula:



wherein:
X is



R and R^1 are independently an alkyl group having 1 to 10 carbon atoms, an alkyl group having 1 to 10 carbon atoms terminated with a group having an active hydrogen, R and R^1 taken together with a nitrogen atom form a heterocyclic ring containing five or six atoms in the ring, or R and R^1 taken together with a nitrogen atom form a heterocyclic ring containing five or six atoms in the ring substituted with an alkyl group substituted with an active hydrogen;
y is 0 to 2;
M and M^1 are independently an olefinic carbon atom or a nitrogen atom;
D is carbon atoms or heteroatoms necessary to form a 5- or 6-membered ring, wherein the heteroatoms are selected from the group consisting of nitrogen, oxygen, or sulfur;
n is 0 or 1; and
Q ia the non-metallic atoms necessary to form an indandione ring, an isoxazolone ring, a 2,4,6-triketohexahydropyrimidine ring, or a 2-thio-4-thiazolidinone (rhodanine) ring.

5,256,785

SMOKING COMPOSITIONS CONTAINING AN OXALATE FLAVORANT-RELEASE ADDITIVE

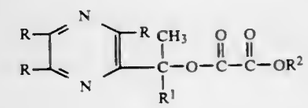
W. Geoffrey Chan, Chesterfield, Va., assignor to Philip Morris Incorporated, New York, N.Y. and Philip Morris Products Inc., Richmond, Va.

Division of Ser. No. 822,695, Jan. 21, 1992, Pat. No. 5,172,706. This application Sep. 9, 1992, Ser. No. 942,394

Int. Cl.[5] **C07D** *241/12, 403/12, 213/55*

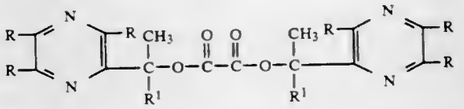
U.S. Cl. 544—336 **6 Claims**

1. An oxalate ester corresponding to the formula;



where R is hydrogen or a C_1–C_4 alkyl substituent; R^1 is a C_1–C_4 alkyl substituent; R^2 is a C_1–C_8 alkyl substituent.

2. An oxalate ester corresponding to the formula:



where R is hydrogen or a C_1–C_4 alkyl substituent; and R^1 is a C_1–C_4 alkyl substituent.

5,256,786

CATALYTIC REFORMING OF CYCLIC ALKYLENEAMINES

Robert G. Bowman; David C. Molzahn, and George E. Hartwell, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 2, 1992, Ser. No. 844,816

Int. Cl.[5] **C07D** *295/023, 295/13;* **C07C** *209/16, 209/64*

U.S. Cl. 544—402 **30 Claims**

1. A process of reforming cyclic alkyleneamines or aminoalkyl-substituted cyclic alkyleneamines comprising contacting in the liquid phase and in the absence of reactive alcohols a cyclic alkyleneamine, an aminoalkyl-substituted cyclic alkyleneamine, or a mixture thereof with a catalyst under reaction conditions such that a mixture of amine-extended cyclic alkyleneamines or amine-extended aminoalkyl-substituted cyclic alkyleneamines is formed in a combined selectivity of at least about 45 weight percent, the catalyst being selected from the group consisting of:
(a) Group VB metal oxides;
(b) Group VB metal phosphates;
(c) silicates of Groups IIA, IIIB, IVB, and VB, with the proviso that the metal silicate is essentially free of aluminum; and
(d) binary compounds of tungsten and oxygen and salts thereof, and binary compounds of tungsten and oxygen wherein a portion of the tungsten atoms are replaced by vanadium, niobium, or tantalum.

VOL 1155 ISS 4 OCT 26 1993 UMI

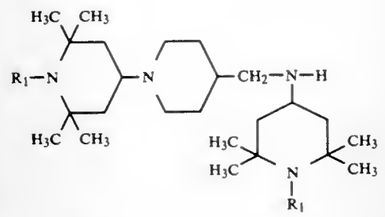
5,256,787

TRI-PIPERDINE COMPOUNDS AS STABILISERS FOR ORGANIC MATERIALS

Valerio Borzatta; Roberto Scrima, both of Bologna, and Graziano Vignali, Sasso Marconi, all of Italy, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 769,982, Sep. 30, 1991, Pat. No. 5,187,275. This application Nov. 4, 1992, Ser. No. 971,446
Claims priority, application Italy, Sep. 3, 1990, 21632 A/90
Int. Cl.[5] C07D *211/98, 211/94, 211/58, 227/10*
U.S. Cl. 546—187 **1 Claim**

1. A compound of the formula (VIIIa-1)



(VIIIa-I)

wherein

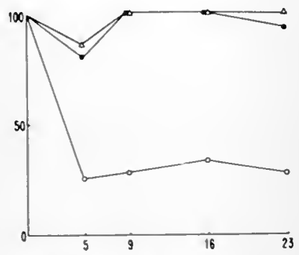
R_1 is hydrogen, C_1–C_8alkyl, O·, OH, NO, CH_2CN, C_1–C_8alkoxy, C_5–C_{12}cycloalkoxy, C_3–C_6alkenyl, C_7–C_9phenylalkyl unsubstituted or substituted on the phenyl radical by 1, 2 or 3 C_1–C_4alkyl; or R_1 is alkanoyl of 1 to 8 carbon atoms, alkenoyl of 3 to 8 carbon atoms or benzoyl.

5,256,788

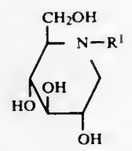
MORANOLINE DERIVATIVES AND THEIR PRODUCTION AND THE USE OF MORANOLINE AND ITS DERIVATIVES AS A STABILIZING AGENT FOR ENZYMES

Yohji Ezure, Otsu; Shigeaki Maruo, Ibaraki; Hiroshi Yamashita, Kyoto; Katsunori Miyazaki, Kyoto, and Makoto Sugiyama, Kyoto, all of Japan, assignors to Nippon Shinyaku Co. Ltd., Japan

Filed Feb. 5, 1990, Ser. No. 475,158
Claims priority, application Japan, Feb. 13, 1989, 1-33480; Feb. 13, 1989, 1-33481
Int. Cl.[5] C07P *211/36*
U.S. Cl. 546—242 **6 Claims**



1. A stabilizing agent for an enzyme which comprises an enzyme stabilizing amount of an N-substituted moranoline derivative of the formula (III):



(III)

wherein R^1 is phenyl lower alkynyl, phenoxy lower alkenyl or phenoxy lower alkynyl, wherein the phenyl moiety is unsubstituted or substituted, or a glucose oligomer thereof.

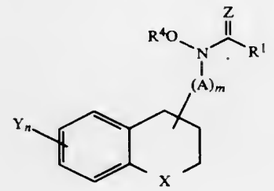
5,256,789

ANTIINFLAMMATORY HYDROXAMIC ACIDS AND N-HYDROXYUREAS

Rodney W. Stevens; Takafumi Ikeda, both of Handa; Hiroaki Wakabayashi, Chita, and Masami Nakane, Nagoya, all of Japan, assignors to Pfizer Inc., New York, N.Y.

Filed Feb. 18, 1992, Ser. No. 835,934
Int. Cl.[5] C07D *25/14;* **A61K** *31/47*
U.S. Cl. 514—311 **12 Claims**

1. A compound of the formula



wherein

R^1 is C1 to C4 alkyl or $—NR^2R^3$;

R^2 and R^3 are each independently hydrogen or C1 to C4 alkyl;

R^4 is hydrogen, a pharmaceutically acceptable cation, aroyl or C1 to C12 alkanoyl;

X is NR^5;

R^5 is hydrogen, C1 to C6 alkyl, C3 to C6 alkenyl, C1 to C6 alkanoyl, aryl, arylalkyl or aroyl;

m is 0 or 1;

n is 1;

A is C1 to C6 alkylene, C2 to C6 alkenylene or C2 to C6 alkylidene;

each Y is independently hydrogen, halogen, hydroxy, cyano, C1 to C12 alkyl, halosubstituted alkyl, hydroxysubstituted alkyl, C2 to C12 alkenyl, C1 to C12 alkoxy, C1 to C12 alkenyloxy, C1 to C8 cycloalkyl, C1 to C8 thioalkyl, C1 to C12 alkoxycarbonyl, C1 to C12 arylalkoxycarbonyl, aminocarbonyl, C1 to C12 alkylaminocarbonyl, C1 to C12 dialkylaminocarbonyl, C1 to C12 arylalkylamino, C1 to C12 arylalkylaminocarbonyl, alkoxyalkyl, aryl, aryloxy aroyl, C1 to C12 arylalkyl, C2 to C12 arylalkenyl, C1 to C12 arylalkoxy or C1 to C12 arylthioalkoxy wherein said aryl, aryloxy, aroyl, arylalkyl, arylalkenyl, arylalkoxy or arylthioalkoxy may be optionally substituted with a substituent or substituents selected from the group consisting of halo, nitro, cyano, C1 to C12 alkyl, halosubstituted alkyl and C1 to C12 alkoxy; and

Z is oxygen or sulfur.

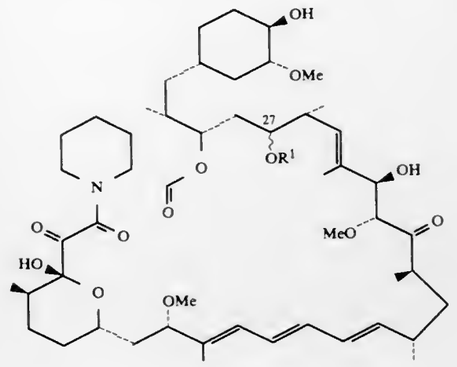
5,256,790

27-HYDROXYRAPAMYCIN AND DERIVATIVES THEREOF

Frances C. Nelson, Yardley, Pa., assignor to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 930,124, Aug. 13, 1992, abandoned. This application Jan. 27, 1993, Ser. No. 9,605
Int. Cl.[5] C07D *498/16;* **A61K** *31/695*
U.S. Cl. 514—291 **11 Claims**

1. A compound of the formula



II

wherein

R^1 is



and

R^2 is alkyl of 1–10 carbon atoms, arylalkyl of 7–10 carbon atoms, or aryl wherein the aryl group may be optionally mono-, di-, or tri-substituted with a group selected from alkyl of 1–6 carbon atoms, arylalkyl of 7–10 carbon atoms, alkoxy of 1–6 carbon atoms, cyano, halo, nitro, carbalkoxy of 2–7 carbon atoms, trifluoromethyl, amino, dialkylamino of 1–6 carbon atoms per alkyl group, alkylthio of 1–6 carbon atoms, $—SO_3H$, $—PO_3H$, and $—CO_2H$;

or a pharmaceutically acceptable salt thereof.

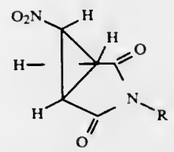
5,256,791

PREPARATION OF INTERMEDIATES IN THE SYNTHESIS OF QUINOLINE ANTIBIOTICS

Tamim F. Braish, Ledyard, Conn., assignor to Pfizer Inc., New York, N.Y.

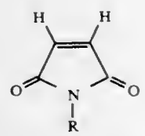
Filed Mar. 2, 1992, Ser. No. 844,367
Int. Cl.[5] C07D *209/02, 209/52*
U.S. Cl. 548—452 **18 Claims**

1. A process for preparing a compound of the formula



(III)

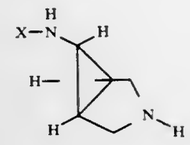
wherein R is $(C_1$–$C_6)$ alkyl, $(C_3$–$C_8)$ cycloalkyl or benzyl, wherein the phenyl moiety of said benzyl group may be substituted, optionally, with one or more substituents independently selected from halo, nitro, $(C_1$–$C_6)$ alkyl, $(C_1$–$C_6)$ alkoxy, amino and trifluoromethyl, comprising reacting a compound of the formula



(II)

wherein R is defined as above, with a halonitromethane in the presence of a base.

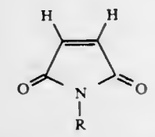
18. A process for preparing a compound of the formula



(VII)

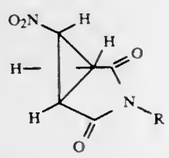
wherein X is a nitrogen protecting group, comprising:

(a) reacting a compound of the formula



(II)

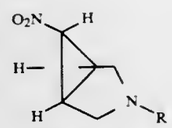
wherein R is $(C_1$–$C_6)$alkyl, $(C_3$–$C_8)$cycloalkyl or benzyl, wherein the phenyl moiety of said benzyl group may be substituted, optionally, with one more substituents independently selected from halo, nitro, $(C_1$–$C_6)$alkyl, $(C_1$–$C_6)$alkoxy, amino and trifluoromethyl, with a halonitromethane in the present of a base to form a compound of the formula



(III)

wherein R is defined as above;

(b) reacting said compound of formula III formed in step "a" with a reducing agent to form a compound of the formula

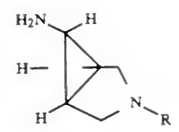


(IV)

wherein R is defined as above;

(c) reacting said compound of formula IV formed in step "b" with zinc and an inorganic acid to form the corresponding amine having the formula

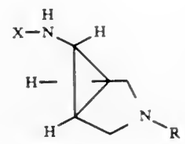
VOL 1155 ISS 4 OCT 26 1993 UMI



(V)

wherein R is defined as above;

(d) adding a nitrogen protecting group to said compound of formula V formed in step "c", to form a compound of the formula



(VI)

wherein R is defined as above and X is a nitrogen protecting group; and

(e) subjecting said compound of the formula VI, if R is benzyl or substituted benzyl, to hydrogenolytic removal of the R group.

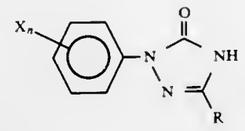
5,256,793

TRIAZOLINONE RING FORMATION IN TERT-BUTANOL

Allan R. Bailey, St. Louis, Mo.; Marc Halfon, Cranbury, N.J., and Eric W. Sortore, Trenton, N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed May 13, 1992, Ser. No. 882,653
Int. Cl.[5] C07D *249/12*
U.S. Cl. 548—263.2 **12 Claims**

1. A process for the production of an aryl triazolinone of the formula



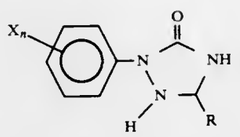
wherein

R is lower alkyl;

X is independently halogen, lower alkyl, nitro, hydroxy, $NHSO_2R'$, $-N(SO_2R')_2$, $-N(R')SO_2R'$ where R' is lower alkyl, and n is an integer from 0 to 3;

which comprises treating in a tert-butanol medium, an aryl triazolidinone of the formula

Formula II



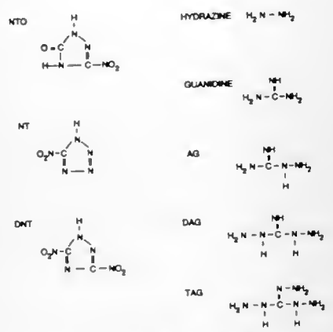
with a hypohalous acid or a salt thereof, or a halogen of the group consisting of chlorine, bromine, and iodine.

5,256,792

AMINE SALTS OF NITROAZOLES

Kien-yin Lee, and Mary M. Stinecipher, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 450,788, Dec. 14, 1989, abandoned.
This application Aug. 26, 1991, Ser. No. 752,892
Int. Cl.[5] C07D *249/12*
U.S. Cl. 548—263.8 **1 Claim**



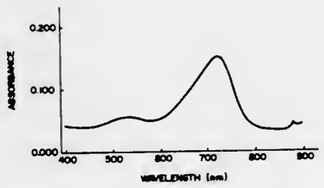
1. Compositions which are salts of 3-nitro-1,2,4-triazol-5-one, where a salt is formed from 3-nitro-1,2,4-triazol-5-one and a compound selected from a group consisting of hydrazine, guanidine, aminoguanidine, diaminoguanidine, and triaminoguanidine.

5,256,794

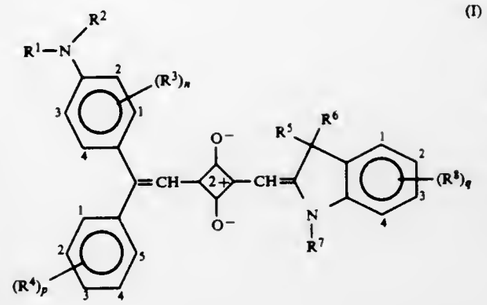
SQUARYLIUM COMPOUNDS

Tsutomu Satoh, Yokohama; Ikuo Shimizu, and Yukiyoshi Ito, both of Yokkaichi, all of Japan, assignors to Ricoh Company, Ltd. and Kyowa Hakko Kogyo Co. Ltd., both of Tokyo, Japan

Filed Jul. 9, 1990, Ser. No. 550,309
Claims priority, application Japan, Dec. 7, 1989, 1-179631
Int. Cl.[5] C07D *209/12*
U.S. Cl. 548—491 **8 Claims**



1. A squarylium compound having formula (I):



(I)

in which

R^1 and R^2 independently represent hydrogen, an alkyl group having 1 to 4 carbon atoms, an aryl group which may have a substituent, or an aralkyl group having 7 to 10 carbon atoms, which may have a substituent;

R^3 represents a halogen, an alkyl group having 1 to 4 carbon atoms, an alkoxyl group having 1 to 4 carbon atoms, a nitro group, or a hydroxyl group; n is an integer of 0 to 4 and R^3s may be the same or different when n is 2 to 4;

R^4 represents a halogen, an alkyl group having 1 to 4 carbon atoms, an alkoxyl group having 1 to 4 carbon atoms, a hydroxyl group, a nitro group, a cyano group, a trifluoromethyl group, or



in which R^9 and R^{10} are the same defined in R^1; p is an integer of 0 to 5 and R^4s may be the same or different when P is 2 to 5;

R^5 and R^6 independently represent an alkyl group having 1 to 4 carbon atoms;

R^7 represents an alkyl group having 1 to 4 carbon atoms, an aryl group which may have a substituent, or an aralkyl group having 7 to 10 carbon atoms, which may have a substituent;

R^8 represents a halogen, an alkyl group having 1 to 4 carbon atoms, an alkoxyl group having 1 to 4 carbon atoms, an aryl group which may have a substituent, or an aralkyl group having 7 to 10 carbon atoms, which may have a substituent; and q is an integer of 0 to 4 and when q is 2 to 4, R^8s may be the same or different and form an aromatic ring which may have a substituent, in combination with two adjacent carbon atoms in the ring to which R^8s are bonded,

wherein said substituent of said aryl group and said aralkyl group represented by R^1, R^2, R^7, R^8, R^9 and R^{10} is selected from the group consisting of halogen, an alkyl group having 1 to 4 carbon atoms, and an alkoxyl group having 1 to 4 carbon atoms.

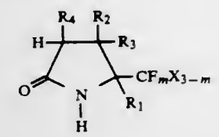
5,256,795

N-ACYL-PYRROLIDINONE DERIVATIVES

Michael Negele, Cologne; Bernd Bessner, Bergisch-Gladbach; Heinz-Jürgen Bertram, Holzmünden, and Jürgen Hartwig, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 754,883, Sep. 4, 1991, Pat. No. 5,171,355.
This application Jul. 22, 1992, Ser. No. 918,827
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1990, 4029054
Int. Cl.[5] C07D *207/12, 207/16*
U.S. Cl. 548—531 **3 Claims**

1. A pyrrolidinone derivative of the formula

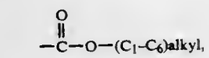


(VI)

in which

R_1, R_2 and R_3 independently of one another represent hydrogen, halogen, optionally substituted C_1–C_6-alkyl or optionally substituted C_6–C_{10}-alkyl,

R_4 represents hydrogen, halogen, cyano, optionally substituted C_1–C_6-alkyl, optionally substituted C_6–C_{10}-alkyl or



X represents halogen, and

m represents 1, 2, or 3,

the optional substituents on alkyl in the definitions of R_1, R_2, R_3 and R_4 being selected from the group consisting of fluorine, chlorine, bromine, hydroxyl, methoxy and ethoxy, and the optional substituents on aryl in the definitions of R_1, R_2, R_3 and R_4 being selected from the group consisting of fluorine, chlorine, bromine, C_1–C_4-alkyl and C_1–C_4-alkoxy.

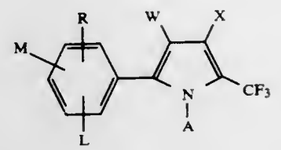
5,256,796

METHOD FOR THE PREPARATION OF 2-ARYL-5-TRIFLUOROMETHYLPYRROLE COMPOUNDS

Venkataraman Kameswaran, Princeton Junction, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Dec. 11, 1992, Ser. No. 989,271
Int. Cl.[5] C07D *207/36, 207/327, 207/34*
U.S. Cl. 548—531 **8 Claims**

1. A method for the preparation of a compound of formula I



(I)

wherein

A is hydrogen or C_1–C_6alkyl optionally substituted with phenyl;

W is CN, NO_2 or SO_2R_2;

X is hydrogen or $COOR_1$;

L is hydrogen or halogen;

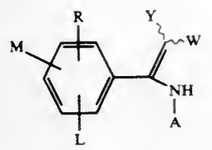
M and R are each independently hydrogen, C_1–C_4alkyl, C_1–C_4alkoxy, C_1–C_4alkylthio, C_1–C_4alkylsulfinyl, C_1–C_4alkylsulfonyl, CN, NO_2, Cl, Br, F, I, CF_3, R_3CF_2Z, R_4CO or NR_5R_6 and when M and R are on adjacent

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positions they may be taken together with the carbon atoms to which they are attached to form a ring in which MR represents the structure

$-OCH_2O-$, $-OCF_2O-$ or
$-CH=CH-CH=CH-$;

R_1 is C_1–C_4alkyl;
R_2 is C_1–C_6alkyl, C_3–C_6cycloalkyl or phenyl;
R_3 is hydrogen, F, CHF_2, CHFCl or CF_3;
R_4 is C_1–C_4alkyl, C_1–C_4alkoxy or NR_5R_6;
R_5 is hydrogen or C_1–C_4alkyl;
R_6 is hydrogen, C_1–C_4alkyl or R_7CO;
R_7 is hydrogen or C_1–C_4alkyl;
Z is $S(O)_n$ or oxygen and
n is an integer of 0, 1 or 2;
which comprises reacting a compound of formula II

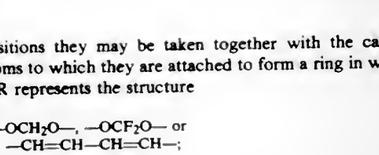


(II)

wherein A, W, L, M and R are as described hereinabove and Y is Cl or Br with about one molar equivalent of C_1–C_4alkyl trifluoroacetoacetate in the presence of an acid and optionally in the presence of a solvent at an elevated temperature.

5,256,797
PROCESS FOR SEPARATING 2-DEOXY-2,2-DIFLUORO-D-RIBOFURANOSYL ALKYLSULFONATE ANOMERS
Ta-Sen Chou, Indianapolis, and Timothy J. McCarthy, Flora, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
Filed Jun. 22, 1992, Ser. No. 902,303
Int. Cl.[5] C07D *307/20*
U.S. Cl. 549—478 **11 Claims**

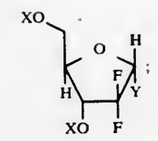
1. A process for separating an anomeric mixture of alpha and beta anomers of the formula:



wherein each X is independently selected from hydroxy protecting groups and R is an alkyl or substituted alkyl; comprising contacting the anomeric mixture with a solvent; heating; adding a countersolvent; and lowering the temperature.

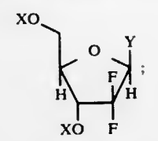
5,256,798
PROCESS FOR PREPARING ALPHA-ANOMER ENRICHED 2-DEOXY-2,2-DIFLUORO-D-RIBOFURANOSYL SULFONATES
Ta-Sen Chou, and Charles D. Jones, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
Filed Jun. 22, 1992, Ser. No. 902,305
Int. Cl.[5] C07D *307/20*
U.S. Cl. 549—478 **22 Claims**

1. A process for providing an alpha-anomer enriched ribofuranosyl sulfonate of the formula



(I)

from a beta-anomer ribofuranosyl sulfonate of the formula

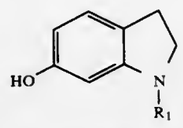


(II)

wherein Y is a sulfonate and each X is independently selected from hydroxy protecting groups; comprising treating a beta-anomer ribofuranosyl sulfonate of formula II with a source of a conjugate anion of a sulfonic acid, at elevated temperatures, in an inert solvent.

5,256,799
PREPARATION OF 6-HYDROXYINDOLINES AND THEIR USE FOR PREPARATION OF NOVEL LASER DYES
George F. Field, Danville, and Peter R. Hammond, Livermore, both of Calif., assignors to The United States of Americas as represented by the United States Department of Energy, Washington, D.C.
Filed Jul. 14, 1992, Ser. No. 913,084
Int. Cl.[5] C07D *215/20*
U.S. Cl. 548—469 **11 Claims**

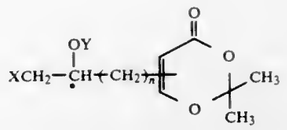
1. A method of preparing 6-hydroxyindolines of the formula:



where R_1 is hydrogen or lower alkyl, comprising the steps of:
(a) treating phenethyl acetate with a nitrating agent to form an intermediate of 2-(2,4-dinitrophenyl)-acetate;
(b) converting said intermediate to 2-(2,4-dinitrophenyl)-ethanol;
(c) reducing said 2-(2,4-dinitrophenyl)-ethanol to form 2-(2,4-diaminophenyl)-ethanol; and
(d) reacting said 2-(2,4-diaminophenyl)-ethanol with a strong aqueous acid and at a temperature of from about 140° C. to 180° C. to form 6-hydroxyindoline.

5,256,800
OPTICALLY ACTIVE 2,2-DIMETHYL-1,3-DIOXIN-4-ONES AND METHOD FOR PREPARING SAME
Chikara Kaneko, and Masayuki Sato, both of Sendai, Japan, assignors to Chisso Corporation, Osaka, Japan
Filed Feb. 18, 1992, Ser. No. 836,425
Claims priority, application Japan, Feb. 21, 1991, 3-047285
Int. Cl.[5] C07D *319/06*
U.S. Cl. 549—274 **3 Claims**

1. An optically active 1,3-dioxin-4-one represented by the formula:

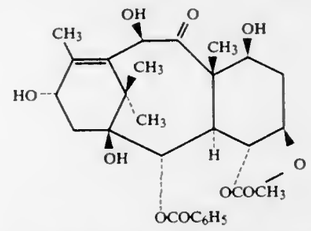


(I)

wherein n is a value of 1 to 3, X is a benzyloxy group, a chlorine atom or N_3, Y is a hydrogen atom or an acetyl group, and the substituent is present at the 5-position or 6-position; when, n is 1, X is the benzyloxy group, the chlorine atom or N_3, and the substituent is present at the 6-position; when n is 2, X is the hydrogen atom, and the substituent is present at the 5-position; and when n is 3, X is the hydrogen atom, and the substituent is present at the 6-position; and the symbol * represents an asymmetric carbon atom.

5,256,801
PROCESSES OF CONVERTING TAXANES INTO 10-DEACETYLBACCATIN III
David R. Carver; Timothy R. Prout, both of Boulder; Hernita A. Ewald, Denver, and Donia L. Henderson, Boulder, all of Colo., assignors to NaPro BioTherapeutics, Inc., Boulder, Colo.
Continuation-in-part of Ser. No. 930,840, Aug. 14, 1992, Pat. No. 5,202,448. This application Dec. 4, 1992, Ser. No. 986,852
Int. Cl.[5] C07D *305/14*
U.S. Cl. 549—510 **11 Claims**

1. A process for the preparation of a compound of formula (I)



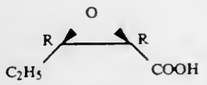
comprising contacting a mixture containing at least one taxane compound having an ester linkage at the C-13 position with at least one borohydride reducing salt in a reaction solvent in the presence of a Lewis acid.

5,256,802
PROCESS FOR THE PRODUCTION OF OXIRANES
Jeffrey D. Macke, Kansas City, Mo.; Peter E. Newallis, and Karl G. Steinbeck, both of LeaWood, Kans., assignors to Miles Inc., Pittsburgh, Pa.
Filed Apr. 3, 1990, Ser. No. 504,784
Int. Cl.[5] C07D *301/14*
U.S. Cl. 549—519 **12 Claims**

1. A process for the production of an oxirane from a ketone comprising heating (a) a ketone in the presence of (b) an aqueous potassium hydroxide solution in which at least 61% by weight of the solution is potassium hydroxide, (c) a sulfonium salt and (d) a quaternary ammonium salt to a temperature of from about 60° to about 90° C.

5,256,803
PROCESS FOR THE PREPARATION OF (2R,3R)-CIS)-β-PHENYLGLYCIDIC ACID
Jean-Pierre Duchesne, Lyons, and Michel Mulhauser, Ecully, both of France, assignors to Rhone-Poulenc Rorer S.A., France
PCT No. PCT/FR91/00133, § 371 Date Aug. 21, 1992, § 102(e) Date Aug. 21, 1992, PCT Pub. No. WO91/13066, PCT Pub. Date Sep. 5, 1991
PCT Filed Feb. 20, 1991, Ser. No. 920,509
Claims priority, application France, Feb. 21, 1990, 90 02098
Int. Cl.[5] C07D *301/32, 303/12*
U.S. Cl. 549—541 **6 Claims**

1. Process for the preparation of (2R,3R)-cis-β-phenylglycidic acid of formula:

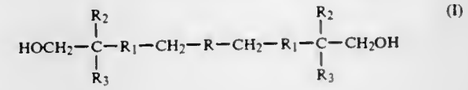


(I)

optionally in salt or ester form, comprising crystallizing selectively the salt of (2R,3R)-cis-β-phenylglycidic acid with (R) (+)-α-methylbenzylamine in a suitable solvent in a solution of a mixture of the salts of (R) (+)-α-methylbenzylamine with (2R,3R)-β-phenylglycidic, (2S,3S)-β-phenylglycidic, (2R,3S)-β-phenylglycidic and (2S,3R)-β-phenylglycidic acids, and isolating the product obtained and optionally converting it into alkali metal salt or into ester.

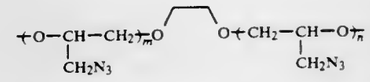
5,256,804
GLYCIDYL AZIDE POLYMER
Guy Ampleman, St-Augustin de Desmaures, Canada, assignor to Her Majesty the Queen as represented by the Ministry of National Defence of Her Majesty's Canadian Government, Ottawa, Canada
Filed Oct. 2, 1992, Ser. No. 955,995
Claims priority, application Canada, Oct. 3, 1991, 2052728
Int. Cl.[5] C07C *247/04*
U.S. Cl. 552—10 **4 Claims**

1. A linear glycidyl azide polymer of the formula



(I)

where R is



wherein m and n are different from zero, and m+n is 4 to 60, R_1 is a single bond or the group $-CH_2OCH_2-CHOH-$; when R_1 is a single bond, R_2 is a hydroxyl group and R_3 is hydrogen, and when R_1 is the group $-CH_2OCH_2-CHOH-$, R_2 is CH_3 or CH_2OH and R_3 is CH_2OH.

5,256,805
SILICONE AMIDO AMINE SALTS
Anthony J. O'Lenick, Jr., Lilburn, Ga., assignor to Siltech Inc., Norcross, Ga.
Filed Nov. 25, 1992, Ser. No. 981,531
Int. Cl.[5] C07F *7/10*
U.S. Cl. 554—39 **17 Claims**

1. A silicone amidoamine which conforms to the following structure;

UMI

VOL 1155 ISS 4 OCT 26 1993 UMI



wherein
R is methyl;
R^1 is $N(H)—(CH_2)_3—N(CH_3)_2$
Q is $—(CH_2)_a—$;
a is an integer ranging from 3 to 17;
A is either —R or —Q—C(O)—R^1,
m is an integer ranging from 1 to 200;
n is an integer ranging from 1 to 10.
R^4 is H or CH_3.

5,256,806

INTERMEDIATES FOR THE PREPARATION OF OPTICALLY ACTIVE CYCLOBUTANE NUCLEOSIDE

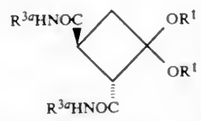
Gregory S. Bisacchi, Lawrenceville, and Toomas Mitt, Plainsboro, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 770,390, Oct. 3, 1991, Pat. No. 5,198,583, which is a division of Ser. No. 451,664, Dec. 18, 1989, Pat. No. 5,064,961. This application Nov. 12, 1992, Ser. No. 975,256

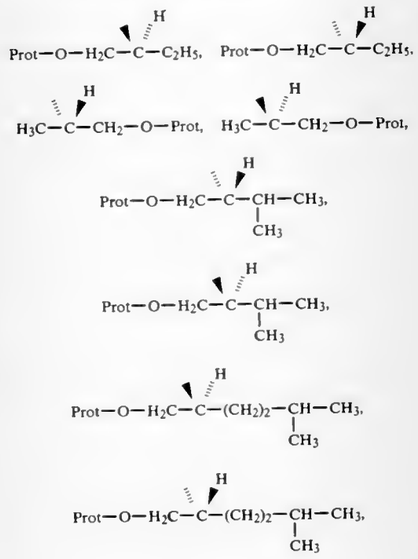
Int. Cl.[5] **C07C** *235/40;* **C07F** *7/18*

U.S. Cl. 556—419 **4 Claims**

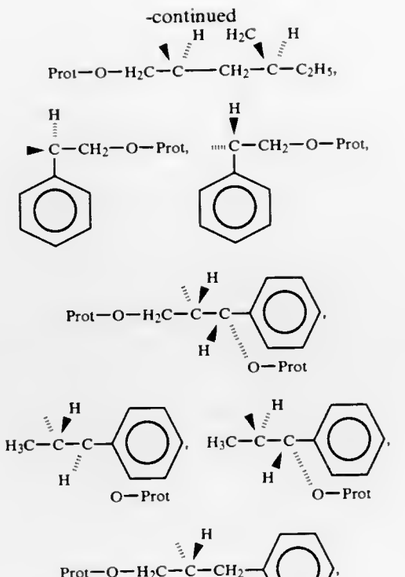
1. A compound having the formula

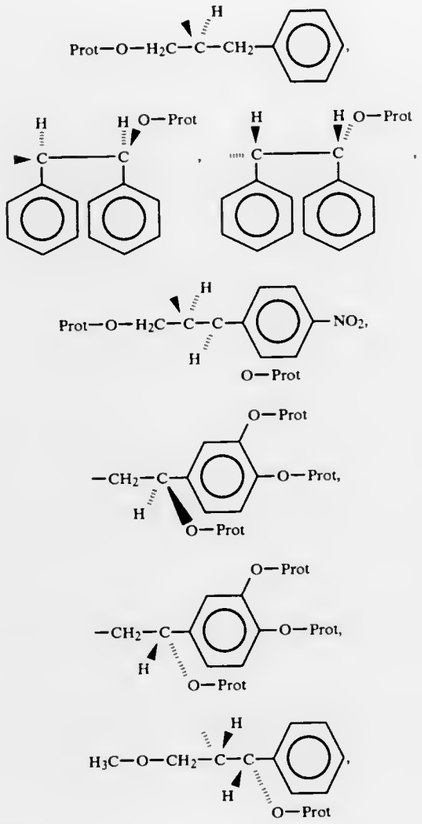


wherein
R^1 is straight or branched chain lower alkyl or 1 to 5 carbon,
R^{3a} is a chiral moiety of the formula

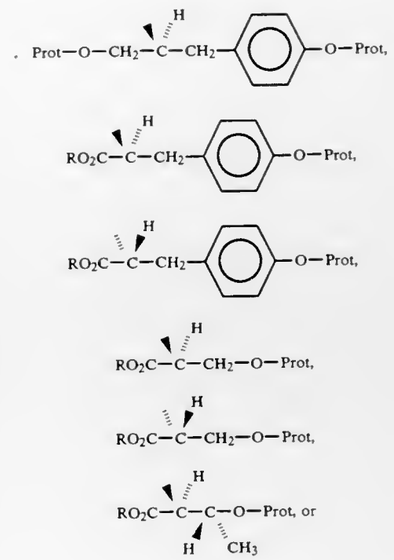


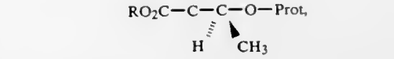
-continued





-continued





R is straight or branched chain lower alkyl of 1 to 5 carbons, and
Prot is t-butyldimethylsily, t-butyldiphenylsilyl, triisopropylsily, acetyl, benzoyl, triphenylmethyl, or 4'-methoxyphenyldiphenylmethyl.

5,256,807

PROCESS AND INTERMEDIATES FOR CHIRAL EPOXIDES

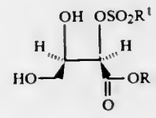
Leland O. Weigel, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 770,676, Oct. 3, 1991, Pat. No. 5,183,910, which is a division of Ser. No. 518,384, May 3, 1990, Pat. No. 5,097,049. This application May 12, 1992, Ser. No. 881,913

Int. Cl.[5] **C07C** *309/08*

U.S. Cl. 558—52 **3 Claims**

1. A compound of the formula



wherein R^1 is C_1–C_6 alkyl, trifluoromethyl, benzyl, phenyl or tolyl and R is C_1–C_8 alkyl, C_2–C_8 alkenyl or benzyl.

5,256,808

SYNTHESIS OF TETRAALKYL VINYLIDENE DIPHOSPHONATE MONOMER

Spiro D. Alexandratos, Knoxville, Tenn., assignor to The University of Tennessee Research Corp., Knoxville, Tenn.

Filed Dec. 4, 1992, Ser. No. 985,974

Int. Cl.[5] **C07F** *9/40*

U.S. Cl. 558—142 **23 Claims**

1. A method of making a monomer of tetraalkyl vinylidene-1, 1-diphosphonate, comprising the steps of:
(a) combining a secondary amine, a formaldehyde and a tetra (alkyl) methylene diphosphonate to form a first aqueous mixture;
(b) maintaining the pH of said aqueous mixture above about 6 while reaction occurs in said mixture; and
(c) refluxing said aqueous mixture to obtain a refluxed product of said monomer of tetraalkyl vinylidene-1, 1-diphosphonate.

5,256,809

METHOD FOR PREPARING A SALT OF 4-HYDROXYSTYRENE AND FOR PREPARING 4-TERTIARY-BUTOXYCARBONYLOXYSTYRENE THEREFROM

George Kvakoyszky; James H. Rea; Michael T. Sheehan, all of Corpus Christi, Tex., and Brad L. Smith, Matthews, N.C., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Continuation-in-part of Ser. No. 614,766, Nov. 16, 1990. This application Sep. 3, 1992, Ser. No. 940,424

The portion of the term of this patent subsequent to Aug. 31, 2010, has been disclaimed.

Int. Cl.[5] **C07C** *69/96, 37/00*

U.S. Cl. 558—270 **18 Claims**

1. A method of preparing 4-tertiary-butoxycarbonyloxystyrene, comprising the step of reacting a salt of 4-hydroxystyrene with di-tertiary-butyl-dicarbonate.

5,256,810

METHOD FOR ELIMINATING NITRIDING DURING ACRYLONITRILE PRODUCTION

Steven J. Rowe; John T. Shultz, both of Medina; Robert J. Mack, Elida, all of Ohio, and Susan L. Dio, Port Lavaca, Tex., assignors to The Standard Oil Company, Cleveland, Ohio

Filed Oct. 14, 1992, Ser. No. 960,653

Int. Cl.[5] **C07C** *253/26*

U.S. Cl. 558—320 **11 Claims**

9. A process for the preparation of an unsaturated nitrile from the corresponding unsaturated olefin comprising introducing the gaseous olefin, ammonia and oxygen into a fluid bed reactor through at least one conduit to react in the presence of a fluid bed catalyst to produce the corresponding nitrile wherein the improvement comprises maintaining the temperature of the inside surface of the conduit which contacts the ammonia gas at a temperature below the temperature at which any dissociated nitrogen can react with the conduit to form a nitride.

5,256,811

CERTAIN INTERMEDIATES FOR THE PREPARATION OF NEUINIC ACID DERIVATIVES

Richard S. Todd, Buckinghamshire, and Maxwell Reeve, Oxford, both of England, assignors to British Bio-Technology Limited, Oxford, United Kingdom

Filed Dec. 6, 1991, Ser. No. 804,075

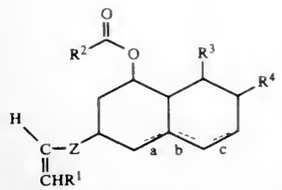
Claims priority, application United Kingdom, May 23, 1991, 9111192.2

Int. Cl.[5] **C07C** *321/22, 69/608*

U.S. Cl. 560—10 **2 Claims**

1. A compound of general formula 1

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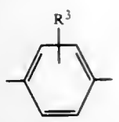
wherein R^1 represents a C_{1-8} alkyl group;
R^2 represents C_{1-8} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, C_{3-8} cycloalkyl (C_{1-8})alkyl, C_{1-8} hydroxyalkyl, C_{1-8} alkylthio, phenyl or substituted phenyl group wherein the phenyl is substituted by one to four substituents each of which independently is C_{1-6} alkyl, C_{1-6} alkoxy, hydroxy thiol, amino, halogen, trifluoromethyl or nitro;
R^3 represents C_{1-8} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, CO_2(C_{1-8})alkyl, $CO_{2(2-8)}$ alkenyl, C_{1-8} alkylthio, (C_{1-2}) alkyl CO_2(C_{1-8}) alkyl or C_{1-8} aldehydroalkyl where the aldehyde function is protected by a dimethyl acetal protecting group.
R^4 represents a hydrogen atom, C_{1-8} alkyl or C_{2-8} alkenyl;
Z represents a group $(CH_2)_n$ or a branched alkyl chain;
n is 0 to 8
and each of a, b and c s independently a single r a double bond except that when a or c is a double bond, b is a single bond.

5,256,812
CARBOXAMIDES AND SULFONAMIDES
Leo Alig, Kaiseraugst; Albrecht Edenhofer, Riehen; Marcel Müller, Frenkendorf, all of Switzerland; Arnold Trzeciak, Schopfheim, Fed. Rep. of Germany, and Thomas Weller, Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Division of Ser. No. 465,858, Jan. 16, 1990, Pat. No. 5,084,466. This application Sep. 6, 1991, Ser. No. 755,960
Claims priority, application Sweden, Jan. 31, 1989, 362/89; Nov. 13, 1989, 4069/89
Int. Cl.[5] C07C *143/67*
U.S. Cl. 560—35 **86 Claims**

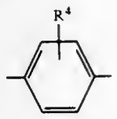
1. A compound of the formula

$$R^1—A—(W)_a—X—(CH_2)_b—(Y)_c—B—Z—COOR \quad (I)$$

in which
A is



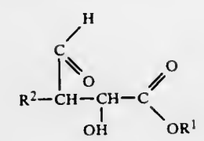
B is



W is selected from the group consisting of $—CH_2$, $—CH_2CH_2—$, or —=CH—;
X is selected from the group consisting of $—CONR^2—$, $—NR^2CO—$, or $—SO_2NR^2—$;
Y is selected from the group consisting of $—CH_2CH_2O—$, $OCH_2—$, $—CH(CH_3)CH_2—$, —CH=CH—, $—C(Q^1,Q^2)—CO(CH_2)_d—$, $—CH_2CH_2CH_2—$, $—C(Q^1, Q^2)—CH(OH)—$, $—C(Q^1,Q^2)—CH(SSCH_3)$, $—CH(CH_2OH)CH_2—$ or $—CH(COOR)CH_2—$, wherein the carbonyl groups may be in the form of oxime, oxime ether, ketal or thioketal or enol ether and the hydroxyl groups may be in the form of lower alkyl ether, di(lower alkyl)amino-lower-alkyl-ether or of ester of lower alkanecarboxylic acids;
Z is selected from the group consisting of $—OCH_2—$, $—NR^6CH_2—$, $—CH_2CH_2—$, $—CH(CH_3)CH_2—$, $—CH_2—$, or $—C(CH_3)=CH—$;
R is selected from the group consisting of hydrogen, lower alkyl, phenyl or phenyl-lower alkyl;
Q^1 and Q^2 are hydrogen or lower alkyl or form, together with the C atom to which they are bonded, a 3- to 6-membered saturated ring;
R^1 is selected from the group consisting of amidino or guanidino;
R^2 is selected from the group consisting of hydrogen, lower alkyl, phenyl-lower-alkyl, phenyl-lower alkyl which is substituted in the phenyl moiety of amino, amidino or —COOR, or a radical $—Ch_2COOR$ or —Y—B—Z—COOR;
R^3 is selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, halogen, lower carbalkoxy, amino, lower alkylamino, di-lower-alkylamino or amidino;
R^4 is selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, halogen, lower carbalkoxy, amino, lower alkylamino, di-lower-alkyl-amino or a radical —Z—COOR or $—CH=CH—(CH_2)_nCOOR$;
R^6 is selected from the group consisting of hydrogen, lower alkyl or benzyl;
n is an integer from 0–4;
a, c and d are 0 or 1;
b is 0 or 1 or 2, provided that a and b are 0 when c is 1, and c is 0 when a or b is different from 0.

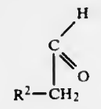
5,256,813
3-SUBSTITUTED 2-HYDROXY-3-FORMYLPROPIONIC ESTERS, THE PREPARATION THEREOF AND THE USE THEREOF FOR PREPARING 3-SUBSTITUTED 3-FORMYLACRYLIC ESTERS
Franz Merger, Frankenthal, and Juergen Frank, Limburgerhof, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany
Division of Ser. No. 593,891, Oct. 5, 1990, Pat. No. 5,202,461. This application May 15, 1992, Ser. No. 883,342
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1989, 3933334
Int. Cl.[5] C07C *69/675, 69/732*
U.S. Cl. 560—177 **5 Claims**

1. A process for preparing a 3-substituted 2-hydroxy-3-formylpropionic ester of the formula I:



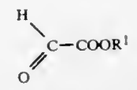
(I)

where
R^1 is alkyl of 1 to 4 carbon atoms, and
R^2 is straight-chain or branched alkyl of 1 to 10 carbon atoms,
which comprises an alkanal of the formula II



(II)

and an alkyl glyoxylate of the formula III



(III)

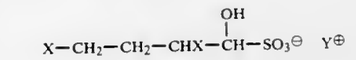
where R^1 and R^2 have the above-mentioned meanings, being added simultaneously to a catalyst system composed of a salt of a secondary amine with a carboxylic acid or an approximately equimolar mixture of a secondary amine and a carboxylic acid, or a compound which contains a secondary amino group and a carboxyl group, in such a way that the temperature does not exceed 90° C., or else the alkanal of the formula II being added slowly to a mixture of the catalyst system described above and the glyoxylic ester in such a way that the temperature does not exceed 90° C., where the catalyst system is used in an amount of from 0.01 to 10 mol %, based on the glyoxylic ester.

5,256,814
EXCITATORY AMINO ACID ANTAGONISTS
Greg S. Hamilton, Catonsville, Md., assignor to Scios Nova Inc., Mountain View, Calif.
Continuation of Ser. No. 624,168, Dec. 7, 1990, abandoned. This application Jul. 24, 1992, Ser. No. 919,633
Int. Cl.[5] C07F *9/38*; A61K *31/66*
U.S. Cl. 562—11 **3 Claims**

1. The 2R, 4R, 5S isomer of the compound 2-amino-4,5-(1,2-cyclohexyl)-7-phosphonoheptanoic acid or any pharmaceutically acceptable salt or hydrate of the isomer wherein the isomer or salt or hydrate of the isomer is substantially free from other stereoisomers of the compound.

5,256,815
BISULFITE ADDUCTS OF 2,4-DIHALOBUTRALDEHYDE
Hans-Ruedi Känel, Bubendorf, and John G. Dingwall, Nuglar, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Division of Ser. No. 575,458, Aug. 30, 1990, Pat. No. 5,189,227, which is a division of Ser. No. 472,677, Jan. 30, 1990, Pat. No. 4,968,836. This application Nov. 12, 1992, Ser. No. 975,035
Claims priority, application Switzerland, Feb. 2, 1989, 365/89
Int. Cl.[5] C07C *317/18*
U.S. Cl. 562—108 **2 Claims**

1. Bisulfite adducts of formula

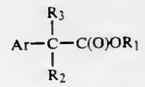


(IV)

in which X is halogen and Y is an alkali metal or alkaline earth metal ion.

5,256,816
ENANTIOMERIC RESOLUTION
William T. Murray, Orangeburg; Robert E. Young, West Columbia; Azfar A. Choudhury, and Deepak R. Patil, both of Orangeburg, all of S.C., assignors to Ethyl Corporation, Richmond, Va.
Filed Oct. 14, 1992, Ser. No. 960,989
Int. Cl.[5] C07B *57/00*
U.S. Cl. 562—401 **11 Claims**

1. A process for producing a substantially pure enantiomeric salt of an aryl-substituted aliphatic carboxylic acid having the formula:



where R_1 is hydrogen or alkyl; R_2 and R_3 are different and are hydrogen, alkyl, cycloalkyl, phenyl, naphthyl, substituted phenyl, substituted naphthyl, haloalkyl, hydroxyalkyl, alkoxyalkyl, acyloxyalkyl, carboxyalkyl, alkoxycarbonylalkyl or cyanoalkyl and Ar is phenyl, naphthyl, substituted phenyl or substituted naphthyl; which comprises:
i) reacting in an inert solvent an aryl-substituted aliphatic carboxylic acid enriched with one of its enantiomers with an inorganic base and a precipitation-enhancing amount of an organic base thereby forming a salt of said aryl-substituted aliphatic carboxylic acid enriched with said enantiomer, said organic base sufficient to enhance the precipitation of said salt, said salt having: a) at least one eutectic point; b) a composition that is not at the eutectic point; and c) a eutectic composition that is closer to the racemic composition of said salt than is the composition of said aryl-substituted carboxylic acid enriched with one of its enantiomers;
ii) separating the salt of the substantially pure enantiomer of the aryl-substituted aliphatic carboxylic acid.

5,256,817
METHOD FOR PURIFYING A NAPHTHALENEDICARBOXYLIC ACID
David L. Sikkenga, Wheaton, and Stephen V. Hoover, Aurora, both of Ill., assignors to Amoco Corporation, Chicago, Ill.
Filed Jun. 18, 1992, Ser. No. 900,618
Int. Cl.[5] C07C *51/487*
U.S. Cl. 562—487 **22 Claims**

1. A method for purifying a naphthalenedicarboxylic acid comprising
a) contacting a naphthalenedicarboxylic acid with hydrogen in the presence of a hydrogenation catalyst and a solvent comprising a low molecular weight carboxylic acid, at a temperature of at least about 500° F., and a pressure sufficient to maintain the solvent at least partially in the liquid phase, and thereafter
b) recovering purified naphthalenedicarboxylic acid.

5,256,818
METHOD FOR MAKING β-MERCAPTOPROPIONIC ACID
Tetsuzo Tomioka, 24-11, Senriyama Nishi 6-chome, Suita-shi, Osaka-fu, Japan
Filed Nov. 12, 1991, Ser. No. 790,369
Claims priority, application Japan, Nov. 19, 1990, 2-314795; Nov. 19, 1990, 2-314796
Int. Cl.[5] C07C *148/00*
U.S. Cl. 562—512 **2 Claims**

1. A method for making β-mercaptopropionic acid, which comprises:
adding alkaline hydroxide to thiodipropionic acid isolated in the solid state to generate alkaline thiodipropionate; mixing thus obtained alkaline thiodipropionate with an aqueous solution of alkaline sulfide;
heating the mixed solution to the temperature that a reaction takes place, and acidifying the resultant solution with a strong acid.

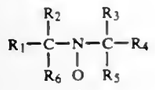
5,256,819
PREPARATION OF POLYOXYALKYLENE-ALPHA, OMEGA-DICARBOXYLIC ACIDS
Herbert E. Fried, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.
Filed Dec. 24, 1992, Ser. No. 996,268
Int. Cl.[5] C07C *51/16, 51/235*
U.S. Cl. 562—537 **22 Claims**

1. A process for the preparation of a polyoxyalkylene-alpha,omega-dicarboxylic acid of the formula

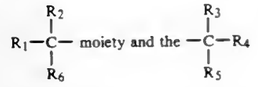
$$HO_2CCH_2O(CH_2CHR'O)_nCH_2CO_2H$$

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wherein R' is hydrogen or methyl or mixtures thereof (on the individual molecule) and n is an integer of from 0 to about 5,000, which comprises reacting the corresponding polyoxyalkylene glycol with a stable free radical nitroxide having the formula:



wherein (1) (a) each of R_1, R_2, R_3 and R_4 is an alkyl, aryl or heteroatom substituted alkyl group having 1 to about 15 carbon atoms, and (b) R_5 and R_6 (i) each is an alkyl group having I to about 15 carbon atoms provided that R1–R6 are not all alkyl groups, or a substituted alkyl group having 1 to about 15 carbon atoms wherein the substituent is hydrogen, cyano, —CONH —OCOCH, $OCOC_2H_5$, carbonyl, alkenyl wherein the double bond is not conjugated with the nitroxide moiety, or —COOR wherein R of the —COOR group is alkyl or aryl, or (ii) together form part of a ring having at least two carbon atoms and up to two heteroatoms of O or N, or (2) the


moiety and the

moiety individually are aryl, in the presence of a NO_x-generating compound and an oxidant at a temperature in the range of from about 0° C. to about 100° C. and thereafter separating out the polyoxyalkylene-alpha,omega-dicarboxylic acid.

5,256,820

1-ALKYL-2-ACYL-1,2-DISULFONYLHYDRAZINES

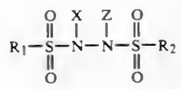
Alan C. Sartorelli, Woodbridge; Krishnamurthy Shyam, Hamden, and Philip G. Penketh, New Haven, all of Conn., assignors to Yale University, New Haven, Conn.

Filed Nov. 8, 1991, Ser. No. 790,689

Int. Cl.[5] **C07C** *311/02, 311/14, 311/15;* **A61K** *31/18*

U.S. Cl. 564—81 **14 Claims**

1. A composition of matter comprising a compound having the formula



where R_1 and R_2 are; X is



and R_3 is $—CH_3$, $—C_2H_5$, —n—C_3H_7, t—$C(CH_3)_3$, $—CH_2—O—CH_3$, or $—C_6H_5$; and Z is $—CH_3$ or $—CH_2CH_2Y$, where Y is a halo group.

5,256,821

METHOD OF SYNTHESIS OF SULPHONYLIMIDES

Michel B. Armand, Saint Martin d Uriage, France, assignor to Societe Nationale Elf Aquitaine, Courbevole, France and Hydro-Quebec, Quebec, Canada

Continuation of Ser. No. 830,749, Feb. 7, 1992, abandoned, which is a continuation of Ser. No. 460,138, Jun. 1, 1990, abandoned. This application Jan. 5, 1993, Ser. No. 587

Claims priority, application France, Oct. 5, 1988, 88/13005

Int. Cl.[5] **C07C** *303/38*

U.S. Cl. 564—82 **22 Claims**

1. A one-step method for synthesizing a sulphonylimide of the formula

$$M((RSO_2)_2N)_y$$

wherein M is a metal or an ammonium radical $N(R_1)_4$, wherein the symbols R_1, which are identical or different, denote a hydrogen atom or a C_1–C_8 hydrocarbyl radical,

R denotes a monovalent C_1–C_{12} organic radical, and

y is a number equal to the valency of M, said method comprising:

(A) reacting

(i) a silazane compound of the formula

$$M(((R_2)_3Si)_2N)_y$$

wherein R_2 is a C_1–C_4 alkyl and

M and y have the above-mentioned meanings, and

(ii) a sulphonyl fluoride of the formula

$$RSO_2F$$

wherein R has the above-mentioned meaning in a molar ratio of said sulphonyl fluoride to said silizane compound substantially equal to 2y:1,; and

(b) recovering said sulphonylimide.

5,256,822

IMINE DERIVATIVES AND PROCESS FOR PRODUCTION THEREOF

Ichiki Takemoto, Kawanishi; Takeo Fujii, Toyonaka; Hideyuki Goto, Takatsuki, and Ritsu Okajima, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Feb. 5, 1993, Ser. No. 13,923

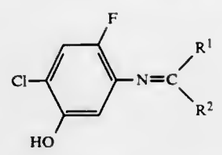
Claims priority, application Japan, Feb. 7, 1992, 4-22479

Int. Cl.[5] **C07C** *251/24*

U.S. Cl. 564—276 **8 Claims**

1. An imine derivative of the general formula:

(I)



wherein R^1 and R^2 are the same or different and are hydrogen, C_1–C_6 alkyl or aryl, with the proviso that R^1 and R^2 are not simultaneously hydrogen; or R^1 and R^2 are joined together to from C_4–C_6 alkylene.

5,256,823

QUARTERNIZED MONOALKYLENEDIAMINE NITROBENZENE COMPOUNDS AND THEIR USE AS DYES FOR KERATINACEOUS FIBERS

Alexander Chan, Mineola, N.Y., and Yuh-Guo Pan, Stamford, Conn., assignors to Clairol Incorporated, New York, N.Y.

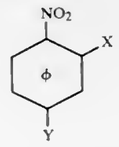
Division of Ser. No. 762,167, Sep. 19, 1991, Pat. No. 5,135,543, which is a continuation of Ser. No. 459,031, Dec. 29, 1989, abandoned. This application Jun. 10, 1992, Ser. No. 896,242

Int. Cl.[5] **C07C** *211/63*

U.S. Cl. 564—284 **10 Claims**

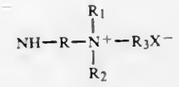
1. Quaternized monoalkylenediamine nitrobenzene compounds of formula

I



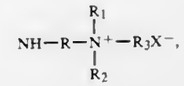
wherein:

(a) Z is a radical selected from the group consisting of H, alkyl, hydroxyalkyl, hydroxyalkoxy and



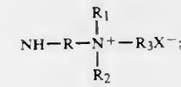
and

(b) Y is radical selected from the group consisting of H, alkyl, hydroxyalkyl, hydroxyalkoxy and



wherein

(1) only one of Y or Z is the radical



(2) R is a divalent alkylene radical;

(3) R_1, R_2, and R_3 are alkyl or hydroxyalkyl, and

(4) X^- is a halide, OH^- or $SO_4^=$ anion.

5,256,824

SUBSTITUTED-AMINE COMPOUND AND A PROCESS FOR THE PREPARATION THEREOF

Youichi Shiokawa, Ibaraki; Kazuo Okumura, Osaka; Kazuhiko Take, Toudsbayashi, and Kazunori Tsubaki, Suita, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Mar. 7, 1991, Ser. No. 665,669

Claims priority, application United Kingdom, Mar. 8, 1990, 9005247; Oct. 8, 1990, 9021806

Int. Cl.[5] **C07C** *211/40*

U.S. Cl. 564—307 **1 Claim**

1. (−)-N-t-butyl-4,4-diphenyl-2-cyclopentenylamine or its hydrochloride.

5,256,825

NITROGEN-CONTAINING PERFLUORALKANOYL PEROXIDE AND METHOD FOR PRODUCTION THEREOF

Haruhiko Fukaya, Oobu; Takashi Abe, Kasugai; Eiji Hayashi, Konan, and Yoshio Hayakawa, Jinmokujimachi, all of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, Tokyo, Japan

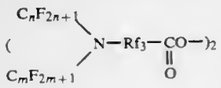
Division of Ser. No. 941,884, Sep. 8, 1992, Pat. No. 5,208,339. This application Dec. 28, 1992, Ser. No. 997,360

Claims priority, application Japan, Nov. 15, 1991, 3-355487

Int. Cl.[5] **C07C** *211/15*

U.S. Cl. 564—510 **3 Claims**

1. A nitrogen-containing perfluoroalkanoyl peroxide represented by the formula:



wherein Rf_3 stands for a perfluoroalkylene group of 1 to 3 carbon atoms, and n and m each stand for an integer of from 1 to 5.

5,256,826

PREPARATION OF AROMATIC CARBONYL OR SULFONYL COMPOUNDS WITH AN ARYL ETHER STRUCTURE

Erwin Hahn, Heidelberg; Heinrich J. Eilingsfeld, Frankenthal; Helmut Reichelt; Alexander Aumueller, both of Neustadt, and Bernd Hupfeld, Speyer, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 31, 1992, Ser. No. 937,416

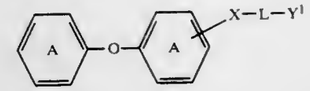
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1991, 4131144

Int. Cl.[5] **C07C** *315/04, 45/61, 67/24*

U.S. Cl. 568—33 **6 Claims**

1. A process for preparing an aryl ether of the formula I

(I)



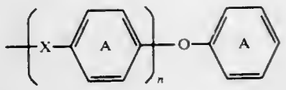
wherein

the ring A is unsubstituted, substituted or benzo-fused;

X is carbonyl or sulfonyl;

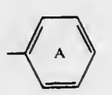
L is a chemical bond or a linking group; and

i) when L is a linking group, Y^1 is halogen or a radical of the formula



where n is 0 or 1 and X and the ring A have the above-mentioned meanings;

ii) when L is a chemical bond and X is carbonyl, Y^1 is hydrogen, C_1–C_4-alkyl, C_1–C_4-alkoxy or a radical of the formula



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where the ring A has the above-mentioned meansings; or

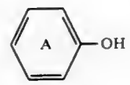
iii) when L is a chemical bond and X is sulfonyl, Y^1 is a radical of the formula



where the ring A has the above-mentioned meanings,, comprising:

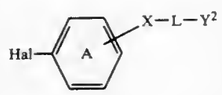
reacting a phenol of the formula II

(II)



where the ring A has the above-mentioned meanings, with a halogen compound of the formula III

(III)

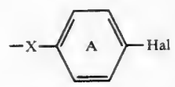


wherein

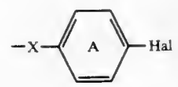
Hal is chlorine or bromine;

L is a chemical bond or a linking group; and

Y^2 is a radical of the formula



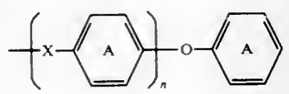
wherein when L is a linking group, Y^2 is a radical of the formula



or the above-mentioned radical Y^1,

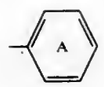
wherein

i) when L is a linking group, Y^1 is halogen or a radical of the formula



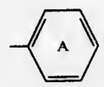
where n is 0 or 1 and X and the ring A have the above-mentioned meansings;

ii) when L is a chemical bond and X is carbonyl, Y^1 is hydrogen, C_1-C_4-alkyl, C_1-C_4-alkoxy or a radical of the formula



where the ring A has the above-mentioned meanings; or

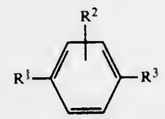
iii) when L is a chemical bond and X is sulfonyl, Y^1 is a radical of the formula



where the ring A has the above-mentioned meanings, where X, Hal and the ring A each have the above-mentioned meanings,

in a dipolar aprotic solvent in the presence of a base, at a reaction temperature of from 60° to 240° C., in the presence of a catalytically effective amount of a compound selected from the group consisting of an alkali metal nitrite compound, a compound of the formula IV

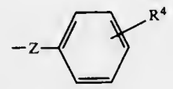
(IV)



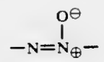
and a mixture thereof; wherein

R^1 and R^2 are identical or different and each independently is hydrogen, C_1-C_{12}-alkyl which is unsubstituted or substituted by phenyl, or is C_1-C_{12}-alkoxy, halogen or nitro, and

R^3 is nitro, nitroso, or a radical of the formula



where R^4 is hydrogen, C_1-C_4-alkyl or halogen and Z is a radical of the formula —N=N,



or —NH—NH—, with the proviso that when R^3 is nitro, at least one of the two radicals R^1 and R^2 is halogen.

5,256,827

PROCESS FOR MAKING 3-HYDROXYPROPANAL AND 1,3-PROPANEDIOL

Lynn H. Slaugh, Houston, Tex., and Paul R. Weider, Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Feb. 5, 1993, Ser. No. 13,834

Int. Cl.[5] **C07C** *45/50*

U.S. Cl. 568—454 **21 Claims**

1. A process for making 3-hydroxypropanal and 1,3-propanediol which comprises intimately contacting

(a) ethylene oxide,

(b) tertiary phosphine-complexed cobalt carbonyl catalyst, wherein said phosphine, prior to being complexed with said cobalt carbonyl catalyst, is partially oxidized to provide an oxygen to phosphorus ratio no more than about 0.5,

(c) carbon monoxide, and

(d) hydrogen, the molar ratio of carbon monoxide to hydrogen being from about 4:1 to about 1:6,

in liquid-phase solution in an inert reaction solvent, at a temperature of from about 30° C. to about 150° C. and a pressure of from about 50 psi to about 10,000 psi.

5,256,828

HETEROGENEOUS CATALYST FOR ALKOXYLATION OF ALCOHOLS

Michael Cuscurida; John F. Knifton, both of Austin, and Pei-Shing E. Dai, Port Arthur, all of Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Continuation-in-part of Ser. No. 896,841, Jun. 12, 1992, abandoned. This application Feb. 25, 1993, Ser. No. 22,843

Int. Cl.[5] **C07C** *41/03*

U.S. Cl. 568—620 **13 Claims**

1. A process for producing narrow molecular weight range glycols which comprises:

reacting an alkylene glycol with ethylene oxide in the presence of a heterogeneous catalyst

selected from the group consisting of an alkali metal from Group IA of the Periodic Table, a halide of an alkali metal, an alkaline earth metal from Group IIA of the Periodic Table or an oxide of an alkaline earth metal impregnated or exchanged into an inorganic solid oxide consisting of a zeolite selected from the group consisting of pentasils, ferrierite, mordenite and zeolite L having pores less than about 10 Å in size, or an oxide of an element of Group III of the Periodic Table, or mixture thereof at a temperature of about 80° C. to 200° C. and a pressure of atmospheric to 100 psig.

5,256,829

DEBROMINATION OF DIBROMONAPHTHOLS

Roland Jacquot, Sainte Foy Les Lyon, France, assignor to Potasse et Produits Chimiques, Thann, France

Filed Oct. 2, 1992, Ser. No. 955,421

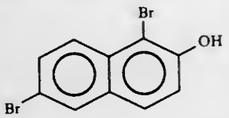
Claims priority, application France, Oct. 4, 1991, 91 12268

Int. Cl.[5] **C07C** *39/38*

U.S. Cl. 568—737 **16 Claims**

I. A process for the monodebromination of a dibrominated naphthol compound, comprising reacting (i) a dibrominated naphthol compound having the formula (1):

(1)



with (ii) molecular hydrogen or a precursor compound that generates nascent hydrogen in the medium of reaction, in an acidic organic solvent and in the presence of a catalytically effective amount of a tungsten carbide-based catalyst.

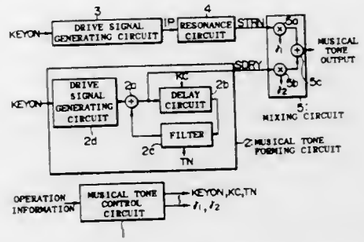
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5,256,830

MUSICAL TONE SYNTHESIZING APPARATUS

Chifumi Takeuchi, and Toshifumi Kunimoto, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed Sep. 11, 1990, Ser. No. 581,310
Claims priority, application Japan, Sep. 11, 1989, 1-235101; Sep. 11, 1989, 1-235102; Sep. 11, 1989, 1-235103; Sep. 11, 1989, 1-235104; Sep. 19, 1989, 1-242494; Sep. 21, 1989, 1-245678
Int. Cl.[5] G10H *1/08*
U.S. Cl. 84—625 6 Claims



1. A musical tone synthesizing apparatus comprising:
(a) musical tone control means for generating performance information;
(b) musical tone drive signal generating means, connected to receive performance information from the musical tone control means, for generating a drive signal in accordance with said performance information;
(c) musical tone forming means, connected to receive performance information from the musical tone control means, for forming a musical tone signal in response to said performance information;
(d) first resonance means for imparting a resonance effect to said musical tone signal to thereby produce a first resonant sound signal;
(e) second resonance means for imparting a resonance effect to said drive signal to thereby produce a second resonant sound signal; and
(f) mixing means for mixing said musical tone signal, said first resonant sound signal and said second resonant sound signal together in accordance with said performance information,
wherein an output of said mixing means is picked up as a synthesized musical tone signal.

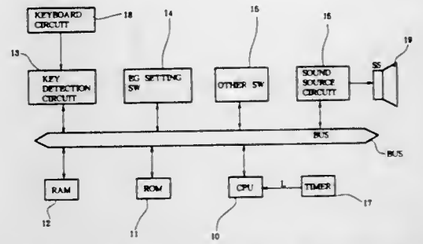
5,256,831

ENVELOPE WAVEFORM GENERATION APPARATUS

Koichi Kozuki; Kazuhisa Okamura, and Tetsuji Ichiki, all of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed Jul. 9, 1991, Ser. No. 727,548
Claims priority, application Japan, Jul. 10, 1990, 2-180666; Jul. 10, 1990, 2-180667; Jul. 10, 1990, 2-180668
Int. Cl.[5] G10H *1/057*
U.S. Cl. 84—627 14 Claims

1. An envelope waveform generation apparatus for generating an envelope waveform, comprising:
envelope waveshape forming means for forming, in response to a key-on event, a key-on envelope waveshape which changes with a lapse of time, and for forming, in response to a key-off event, a first key-off envelope waveshape which decays with a lapse of time;
specific position setting means for setting a specific position on the key-on envelope waveshape which corresponds to a lapse of time from the key-on event, the specific position having a corresponding specific envelope level;
detection means for detecting, when a key-off event occurs, whether a corresponding key-off position on the key-on envelope waveshape, at a timing of the key-off event, is before the specific position, and for detecting whether an envelope level of an envelope waveshape formed by the envelope waveshape forming means at said timing is higher than the specific envelope level; and
key-off control means for causing the envelope waveshape forming means to generate, on the basis of a detection result of said detection means, a second key-off envelope



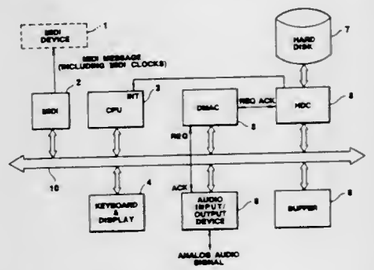
waveshape in place of the first key-off envelope waveshape until the detected envelope level of the second key-off envelope waveshape reaches the specific envelope level, and for causing the envelope waveshape forming means to generate the first key-off envelope waveshape after the detected envelope of the second key-off envelope waveshape reaches the specific envelope level.

5,256,832

BEAT DETECTOR AND SYNCHRONIZATION CONTROL DEVICE USING THE BEAT POSITION DETECTED THEREBY

Atsushi Miyake, Tachikawa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Apr. 17, 1992, Ser. No. 870,589
Claims priority, application Japan, Jun. 27, 1991, 3-156790
Int. Cl.[5] G10H *7/00*
U.S. Cl. 84—636 18 Claims



1. A beat detector comprising:
audio recording and reproducing means for recording and reproducing an audio signal and including storage means for recording the audio signal;
head beat position designating means, operable by a user, for designating a head beat position in the audio signal recorded in said storage means;
beat timing designating means, operable by a user, for designating each beat timing for a predetermined interval of the audio signal while causing said audio recording and reproducing means to reproduce the audio signal;
reference beat interval calculating means for calculating a reference beat time interval for one beat from the beat timings designated by said beat timing designating means; and
beat position detecting means for detecting each beat position on the basis of a reproduction position where a value related to the amplitude of the audio signal exceeds a predetermined threshold in a retrieval interval of a prede-

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termined range the center of which is a reproduction position advancing by the reference beat interval from an already obtained beat position using the head beat position as an initial value in the audio signal recorded in said storage means.

5,256,833

METAL HOUSING FOR ELECTRONIC DEVICES AND METHOD OF PRODUCING SUCH A HOUSING

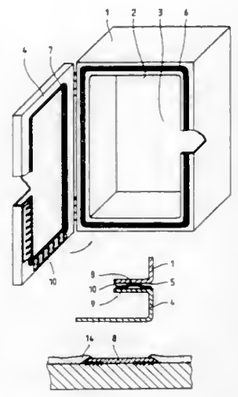
Hans M. Schwenk, Straubenhardt, Fed. Rep. of Germany, assignor to Schroff GmbH, Straubenhardt, Fed. Rep. of Germany

Filed Jan. 9, 1992, Ser. No. 820,068

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1991, 4102019

Int. Cl.[5] H05K *9/00*

U.S. Cl. 174—35 R **16 Claims**



1. A metal housing for electronic devices, the housing including

a housing body composed of electrically conductively interconnected housing components and provided with at least one opening for access to the interior of the housing;

a closing element which closes the opening;

metal contact faces provided at the housing body around the opening as well as corresponding contact faces provided at a closing element for sealing the groove between the housing body and the closing element against interfering electromagnetic radiation and provide a good electrically conductive connection, characterized in that thin contact strips of a metal that is more electrically conductive and more corrosion resistant than the metal of the housing are applied to the contact faces.

5,256,834

JUNCTION CENTER

Stephen A. Gehring, W1294 Hwy. 60, Rubicon, Wis. 53078

Filed Nov. 25, 1991, Ser. No. 797,222

Int. Cl.[5] H02G *9/06*

U.S. Cl. 174—37 **5 Claims**

1. A junction center for enclosing electrical wires comprising:

a. a main tube having a wall with a predetermined outer diameter and first and second ends and a longitudinal axis;

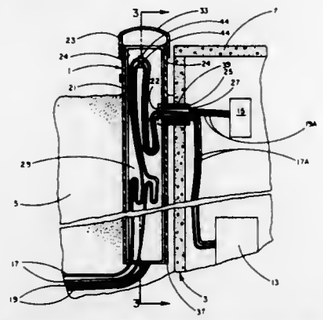
b. a branch tube extending through the main tube wall at generally right angles to the longitudinal axis thereof, the branch tube having an outer diameter less than the outer diameter of the main tube, wherein:

i. the branch tube has a first end located in he interior of the main tube and a second end located outside the main tube; and

ii. the branch tube first end is formed with a slot;

c. a bushing of flexible insulative material inserted into the branch tube;

d. a cap snugly fit over the main tube first end; and



e. a divider located in the main tube interior and received within the branch tube slot,

so that first wires can enter the main tube from the second end thereof and second wires can enter the main tube through the branch tube and the first and second wires can be connected together inside the main tube, and the main tube interior is divided into two passages by the divider.

5,256,835

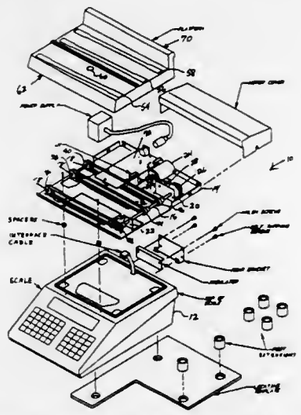
SOFTWARE CONTROL OF A WEIGH AND FEED TRANSPORT IN A WEIGHING MODULE

Stanley Rydzak, Brookfield, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Jul. 31, 1992, Ser. No. 922,892

Int. Cl.[5] G01G *19/00, 19/40*

U.S. Cl. 177—145 **8 Claims**



1. A transport apparatus for a scale, the scale comprising a deck connected to a scale base for weighing an object placed on the deck, the deck having at least one slot therein; the transport apparatus comprising a dual thickness belt arranged below the deck in substantial registration with the slot and means for driving said dual thickness belt, the dual thickness belt being positioned with respect to the slot such that in a home position a thinner section of the belt does not protrude through the slot whereby the belt does not interfere with

weighing of the object on the deck, the means for driving the dual thickness belt being operative to drive the dual thickness belt such that a thicker section of the belt protrudes through the slot as the dual thickness belt is being driven to thereby lift the object from the deck onto the thicker section of the belt to transport the object on the belt, detector means in the transport apparatus for monitoring the velocity of the belt, and means connected to the detector means for shutting off the driving means in the event that the travel time of the belt is too slow.

5,256,836

THICK FILM HYBRID CIRCUIT BOARD DEVICE AND METHOD OF MANUFACTURING THE SAME

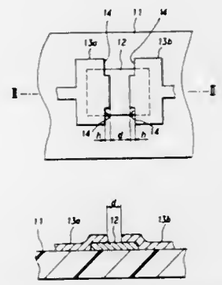
Shiro Ezaki, Yokohama, Japan, assignor to Toshiba Lighting & Technology Corporation, Tokyo, Japan

Division of Ser. No. 522,146, May 11, 1990, abandoned. This application Sep. 24, 1991, Ser. No. 764,062

Claims priority, application Japan, Jun. 9, 1989, 1-145277

Int. Cl.[5] H05K *1/00*

U.S. Cl. 174—260 **2 Claims**



1. A method of manufacturing a thick film hybrid circuit board device comprising the steps of:

preparing an insulative base board as a base plate;

screen printing one paste-like circuit forming material on a surface of insulative base board to form a first layer;

firing the thus formed first layer;

screen printing another differently composed paste-like circuit forming material on top of at least part of the surface of said first layer and said insulative base board so as to overlap said first layer and said insulative base board in such a manner as to form another layer which has a portion recessed inwardly and located at a cross portion where a peripheral edge portion of said first layer and a peripheral edge portion of the other layer are crossed; and

firing the thus formed other layer to form a second layer, thereby said recessed portion being almost filled up with bleedings generated from another paste-like circuit forming material printed on the first layer.

5,256,837

PAPER CONE FOR CONE TYPE SPEAKER

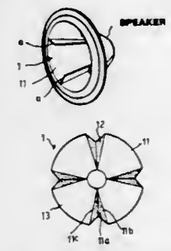
Il Y. Pak, 15743 E. Valley Blvd., City of Industry, Calif. 91744

Filed Oct. 30, 1991, Ser. No. 787,319

Int. Cl.[5] G10K *13/00*

U.S. Cl. 181—164 **4 Claims**

1. A cone formed from paper as a diaphragm including wing portions formed of angular folds, said folds being bonded together to reinforce the cone, said wing portions selectively arranged and extending from an outer edge to the center of the



cone, said cone having a frusto-conical shape and further having a coating layer applied to the entire surface of the cone.

5,256,838

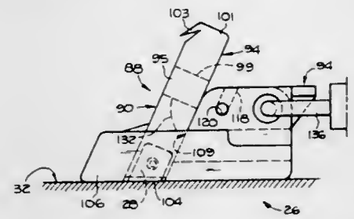
LOCK OUT FOR CIRCUIT BREAKERS HAVING HOLE IN ACTUATING LEVER

Steven J. Benda, P.O. Box 782, Cokato, Minn. 55321

Filed Jul. 2, 1992, Ser. No. 907,811

Int. Cl.[5] H01H *9/28*

U.S. Cl. 200—43.15 **19 Claims**



1. A lock out adapted for use on a switch having a front surface, and an actuating lever extending through the front surface to the exterior of the switch, and movable between opposite ON and OFF positions angularly space apart, and in at least the OFF position being disposed at an acute angle to the front surface, and the actuating lever having holes therein on opposite sides, at said exterior, comprising,

said lock out having a longitudinal direction and having a front end and a rear end,

a slide element having an upper body portion, and a pair of downwardly extending legs movable toward and from each other, the legs having pins extending toward each other,

a blocking element having a vertical passage therethrough,

the slide element being mounted in the vertical passage, and the two elements being relatively slidable between an upper retracted position and a lower active position of the slide element,

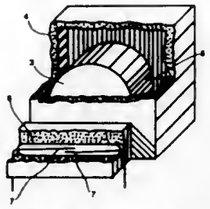
the lower ends of the legs, when in the retracted position, being capable of being spread apart and positioned on opposite sides of the actuating lever and, then released for inserting the pins in the holes in the actuating lever,

the blocking element, in the active position of the slide element, being operable for confining the arms against spreading,

the blocking element, when the elements are in the active position, having interaction between the actuating lever and the front surface of the switch and thereby operable for preventing the switch lever form being moved out of its OFF position.

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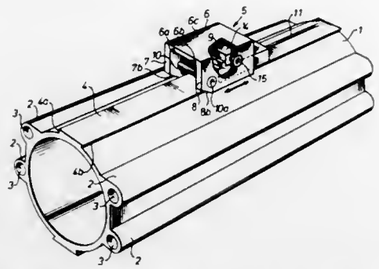
5,256,839
TILT SWITCH RESPONSIVE TO ACCELERATION OR DECELERATION
Shawn Gallagher, 375 Glendening Rd., Orange Park, Fla. 32073
Filed Mar. 5, 1992, Ser. No. 847,750
Int. Cl.[5] H01H *35/14*
U.S. Cl. 200—61.52 **4 Claims**



1. In a device capable of altering an electrical circuit in response to rotational and linear movement, comprising a housing having a cavity in which a substantially cylindrical shaped magnet is allowed to roll within a single plane in response to gravity of inertia, the cylindrical magnet having north and south poles aligned axially whereby said north and south poles are oriented on opposite end of said cylindrical magnet, a reed switch immovably secured within said housing in a position which is substantially longitudinally parallel to said single plane of said cylindrical magnet and substantially perpendicular to the axial direction of magnetism of said cylindrical magnet, said reed switch having a least two reed contacts, said cylindrical magnet and said reed switch positioned relative to each other inside said housing such that upon tilting or accelerating said housing in one direction causes the cylindrical magnet to move to one of two positions, said one position of said cylindrical magnet is such that the magnetic field is sufficiently aligned to cause said reeds of said reed switch to become flux carriers thus producing attractive polarities between said reeds causing contact to be made by said reeds, thus allowing an electric current to pass, tilting or accelerating said housing in a reverse direction causes said cylindrical magnet to move to the other of said two positions, wherein said magnetic field from said cylindrical magnet is insufficiently aligned to cause said reeds of said reed switch to become attracted to each other, therefore not making contact, thus not enabling said electrical current to pass.

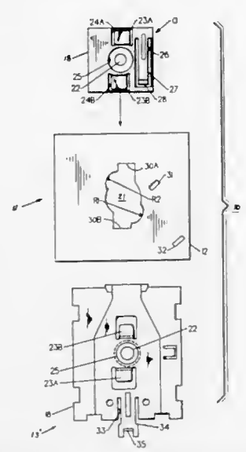
5,256,840
HOLDING DEVICE FOR PISTON POSITION DETECTOR
Ebrahim Pirhadi, Enskede, Sweden, assignor to AB Mecman, Stockholm, Sweden
PCT No. PCT/SE90/00787, § 371 Date Jun. 2, 1992, § 102(e) Date Jun. 2, 1992, PCT Pub. No. WO91/10070, PCT Pub. Date Jul. 11, 1991
PCT Filed Nov. 28, 1990, Ser. No. 852,221
Claims priority, application Sweden, Dec. 22, 1989, 8904356
Int. Cl.[5] H01H *35/38*
U.S. Cl. 200—82 R **13 Claims**

1. A device for securing a piston position detector to a cylinder tube having two parallel longitudinal guides rigidly attached to the outside of the cylinder tube, and the piston position detector being disposed in a casing, the device comprising:
an essentially U-shaped yoke having two shanks with shank ends adapted to be positioned against the two mutually parallel guides, the yoke being sized so that the casing of the piston position detector is at least partly insertable between the two shanks;
first means for fastening the yoke to the two guides, the first fastening means bringing the shank ends towards each other and into frictional contact with the guides;
second means for fastening the piston position detector at least partly between the two shanks in an inserted position, said second fastening means including a fastening screw extending between the shanks in the inserted position, said fastening screw locking the casing against displacement in the longitudinal direction of the cylinder when tightened; and



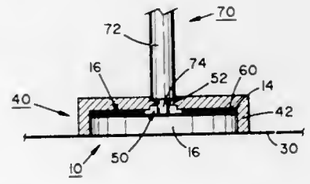
a sleeve made of an elastic material, the sleeve being inserted between the shanks and having a through hole which contains the fastening screw, the sleeve being caused to expand radially upon tightening of the fastening screw for positioning the casing without play.

5,256,841
SELF-LOCKING SWITCH UNIT
John H. Zanella, Oxford, Conn., assignor to General Electric, New York, N.Y.
Filed Jul. 1, 1992, Ser. No. 907,274
Int. Cl.[5] H01H *9/02*
U.S. Cl. 200—296 **7 Claims**



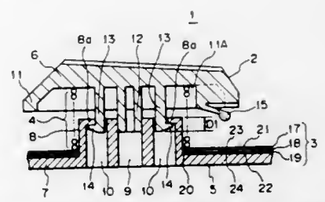
1. An electric switch assembly with self-contained mounting structure comprising:
a unitary mounting base having a centrally located circular aperture adapted for receiving an electric switch shaft;
means extending above one surface of said base adapted for attaching said base to a switch body;
a first raised tab lanced along a perimeter of said aperture and extending a first predetermined distance above said base;
a second raised tab lanced along said perimeter extending said first predetermined distance above said base, said first and raised tabs adapted for holding said switch body to a support panel; and
an elongated lever extending a second predetermined distance along said base, said lever including an up-turned retention tab at one end thereof, said support panel being adapted for receiving said switch shaft on one side thereof and said switch base on an opposite side thereof, said support panel including a double-ended key-hole slot formed therein, said key-hole slot terminating in a pair of first and second rectangular slots having first and second corresponding widths.

5,256,842
COVER FOR A SENSOR BUTTON
James S. Bianco, 217 Brainard Rd., Enfield, Conn. 06082
Filed Jun. 29, 1992, Ser. No. 905,443
Int. Cl.[5] H01H *9/02*
U.S. Cl. 200—333 **5 Claims**



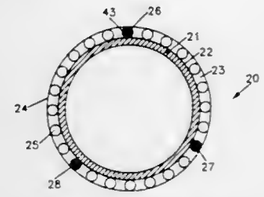
1. A cover for a sensor button having a shell portion and a touch zone on an upper surface of said sensor button, said cover comprising:
(a) an electrically conductive wall portion surrounding said shell portion;
(b) an electrically conductive upper portion attached to said wall portion and substantially overlying said upper surface of said sensor button; and
(c) an opening defined in said upper portion to expose a small portion of said touch zone, said opening being sized so as to accept therein a touch probe having a cylindrical shell with a contact disposed concentrically therein and extending from an end thereof.

5,256,843
KEYBOARD SWITCH AND METHOD OF MANUFACTURING THE SAME
Toshimi Chiba; Sadao Tachibana, and Zenzou Tozuka, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Feb. 19, 1992, Ser. No. 836,980
Claims priority, application Japan, Feb. 27, 1991, 3-058049
Int. Cl.[5] H01H *3/12*
U.S. Cl. 200—517 **7 Claims**



1. A keyboard switch comprising a membrane contact point sheet and a push button key for pressing down a contact point portion of the membrane contact point sheet, wherein the keyboard switch further comprises:
a housing including a base portion and a casing portion,
a key top which is slidably supported in the casing portion and has a contact point pressing portion formed as part of the keytop and projecting toward the base portion in an area extending outside a periphery of the casing portion, and
a biasing member for biasing the key top toward a home position,
wherein the membrane contact point sheet is disposed on the base portion of the housing so that the contact point portion is confronted with the contact point pressing portion,
wherein the membrane contact point sheet is formed in a three-layered structure, including an upper contact point sheet, a spacer, and a lower contact point sheet
wherein the contact point portion of the membrane contact point sheet has a window hole provided in the spacer,
wherein a first contact point is formed on a lower surface of the upper contact point sheet at a place corresponding to the window hole,
wherein a second contact point is formed on an upper surface of the lower contact point sheet at a place corresponding to the window hole,
wherein the contact point pressing portion directly presses the contact point portion of the membrane contact point sheet thereby pressing the first and second contact points together, and
wherein the biasing member comprises a spring member disposed between the casing portion and the contact point pressing portion formed on the key top.

5,256,844
ARRANGEMENT IN A PIPELINE TRANSPORTATION SYSTEM
Magne Grosvik, Stord, and Kjell Ronningen, Fjellhamar, both of Norway, assignors to Aker Engineering A/S and Standard Telefon og Kabelfabrik A/S, both of Norway
Continuation-in-part of Ser. No. 407,918, Sep. 15, 1989, abandoned, which is a continuation of Ser. No. 114,780, Oct. 30, 1987, abandoned. This application Jan. 2, 1991, Ser. No. 636,900
Claims priority, application Norway, Nov. 7, 1986, 864468
Int. Cl.[5] H05B *6/00*
U.S. Cl. 219—10.51 **12 Claims**



1. Apparatus for transmitting a fluid selected from gas, oil or a mixture of gas and oil and electrical energy between spaced apart locations comprising:
a) at least one single chamber pipe means made of a strong, electrically conductive steel material for transmitting said fluid therethrough, said pipe means being provided with at least one outer layer of a corrosion resisting material; and
b) a plurality of high voltage alternating current transmitting elements arranged along, and non-electrically connected to said pipe means and adapted to transmit alternating current at a voltage level of at least 12 kilovolts passing through said elements from a source of alternating current to a location spaced apart from said source of alternating current, said elements being in close proximity to an outer surface of the pipe means so as to enable heat arising from a loss of electrical energy in said elements to be transferred from said high voltage alternating current transmitting elements to the fluid in said pipe means.

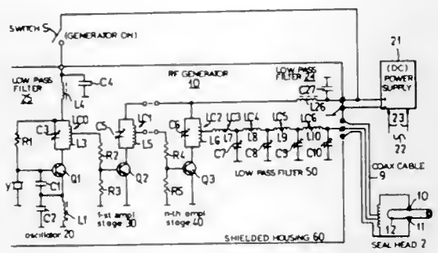
VOL 1155 ISS 4 OCT 26 1993 UMI

5,256,845

APPARATUS FOR SEALING MEDICAL PLASTIC TUBING WITH HIGH FREQUENCY DIELECTRIC HEATING

Alex Schippers, TC Exloo, Netherlands, assignor to NPBI Mederlands Produktielaboratorium Voor Bloedtransfusieapparatunr en Infusievloeistoffen B.V., Emmer-Compascuum, Netherlands

Filed Jan. 21, 1992, Ser. No. 823,568
Int. Cl.[5] H05B *6/50*
U.S. Cl. 219—10.53 **4 Claims**



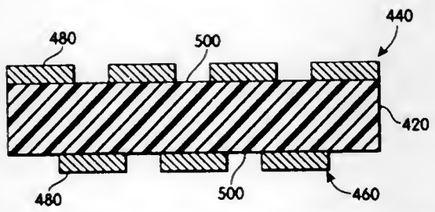
1. An apparatus for sealing medical tubing, comprising:
a radio-frequency generator having an oscillator circuit, a plurality of amplifier stages forming an amplifier circuit, and respective circuits tuned to said fundamental frequency coupling said amplifier stages;
a sealing head connected to said radio-frequency generator and having a pair of electrodes adapted to clamp medical tubing between them and excited by RF energy from said radio-frequency generator;
at least one resonant circuit between said electrodes and said oscillator circuits and including at least one coil and at least one capacitor connected to said coil and tuned to a fundamental frequency of said source;
a resonant circuit tuned to said fundamental frequency provided at an output of said oscillator circuit and ahead of said amplifier circuit; and
a radiation-shielded housing enclosing said generator and preventing emission of spurious radiation.

5,256,846

MICROWAVEABLE BARRIER FILMS

Glenn J. Walters, Duxbury, Mass., assignor to Advanced Dielectric Technologies, Inc., Taunton, Mass.

Filed Sep. 5, 1991, Ser. No. 755,082
Int. Cl.[5] H05B *6/80*
U.S. Cl. 219—10.55 E **21 Claims**



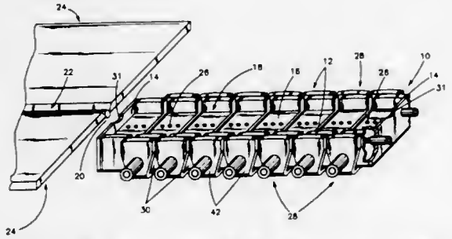
1. A microwave barrier film for use in shelf stable packaging, comprising:
a first substrate that is substantially transparent to microwave energy, the substrate having a first surface for receiving incident microwave energy and a second surface in facing relation to the first surface;
microwave-reflective means deposited as a pattern on each said first and second surfaces for barring oxygen, water vapor and ultraviolet energy from passing through the film, the microwave-reflective means on said first surface displaced relative to said microwave-reflective means on said second surface, said microwave-reflective means substantially incapable of generating heat when exposed to microwave energy and capable of allowing only a portion of the incident microwave energy to pass through the film so that arcing does not occur.

5,256,847

TIG SHIELDED ATMOSPHERE WELDING SYSTEM

Miguel A. Aleman R., Caracas, Venezuela, assignor to Intevep, S.A., Caracas, Venezuela

Filed Aug. 12, 1992, Ser. No. 928,288
Int. Cl.[5] B23K *9/16*
U.S. Cl. 219—74 **24 Claims**



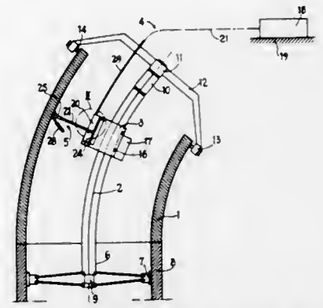
23. A system for providing a gas shielded atmosphere for welding operations, wherein the workpiece is a tubular article having an inside surface, the system comprising:
a chamber having a bottom, sides, ends and an open top;
means for supplying shield gas to the chamber; and
means for positioning the open top of the chamber in close proximity to a portion of the workpiece being welded, the positioning means comprising a central base, a plurality of bars mounted to the central base through levers, the chamber being mounted on at least one of the plurality of bars, a plurality of contact bearings being mounted tot he bars, wherein the levers are mounted in crossed pairs, a first lever of each pair having a first end and a second end, the first end of the first lever being slidably mounted to a respective bar of the plurality of bars, the second end of the first lever being mounted to the central base, the contact bearings being mounted tot he first end of the first lever, a second lever of each pair having a first end and a second end, the first end of the second lever being pivotally mounted to the first lever, the second end of the second layer being fixedly connected to a guide base, and means for actuating the lever members, whereby the contact bearings can be disposed for slidable contact with the inside surface of the tubular article, the actuating means including a threaded rod rotatably mounted in a longitudinally fixed manner in the central base, the guide base being threadedly mounted to the threaded rod, whereby radial position of the contact bearings can be adjusted through rotation of the threaded rod.

5,256,848

APPARATUS FOR WORKING BY LASSER, ESPECIALLY FOR THE DECONTAMINATION OF A PIPE OF A NUCLEAR REACTOR

Jean-Pierre Cartry; Georges Clar, both of Lyon, and Alain Martin, Caluire, all of France, assignors to Framatome, Courbevole, France

Filed Sep. 12, 1991, Ser. No. 758,102
Claims priority, application France, Sep. 12, 1990, 90 11281
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.6 **7 Claims**



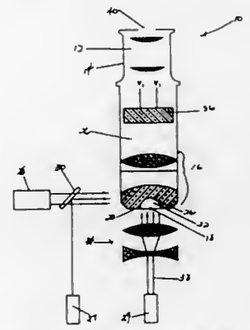
1. Apparatus for working by laser, especially for the decontamination of the internal wall of a pipe of a steam generator of a nuclear power station, said apparatus comprising
(a) a laser source (**18**);
(b) an optical fiber having an input connected to an output of said laser source;
(c) a laser beam amplifier (**20**) having an input connected to an output of said optical fiber; and
(d) means for transporting a laser beam emitted by said amplifier through air to a working point.

5,256,849

APPARATUS AND METHOD FOR MAKING AND USING HIGH INDEX OF REFRACTION MATERIALS

Marlan O. Scully, Irving, Tex., assignor to Biolight, Inc., Tucson, Ariz.

Filed Oct. 3, 1991, Ser. No. 771,397
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.68 **19 Claims**



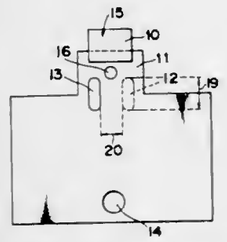
1. A method of making a material having a high index of refraction comprising the steps of:
a. irradiating a composition of matter with a coupling radiation and thereby establishing atomic phase coherence between various energy levels of the composition of matter;
b. minimizing absorbance of the composition of matter; and
c. irradiating the composition of matter with a probe frequency which is responsive to and affected by a high index of refraction material which is generated by atomic phase coherence.

5,256,850

AZIMUTH ADJUSTING METHOD FOR MAGNETIC HEAD

Takaaki Maegawa, Neyagawa; Akio Murata, Ibaraki; Hideaki Mukae, Sanda, and Masaru Higashionji, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 18, 1992, Ser. No. 947,770
Claims priority, application Japan, Sep. 18, 1991, 3-237670
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.69 **2 Claims**



1. An azimuth adjusting method for a magnetic head, which comprises the steps of forming first and second depressions respectively on a main surface and a reverse surface of said main surface of a magnetic head base for a magnetic head including a magnetic head chip and the magnetic head base so as to reduce thickness of said magnetic head base thereat, projecting heat rays to the first depression to obtain a displacement in a direction opposite to the projecting direction, also projecting the heat rays to a flat plane portion at a bottom of the second depression which is laterally neighboring said first depression, thereby to effect the azimuth adjustment of the magnetic head, with a reduced thickness of the magnetic head base in a direction of depth for the projection of heat rays due to formation of the depression at the reverse face side of the projection, and also effecting the azimuth angle adjustment in the reverse direction by laterally exchanging said first and second depressions for the projection of heat rays.

5,256,851

MICROLENSES FOR COUPLING OPTICAL FIBERS TO ELLIPTICAL LIGHT BEAMS

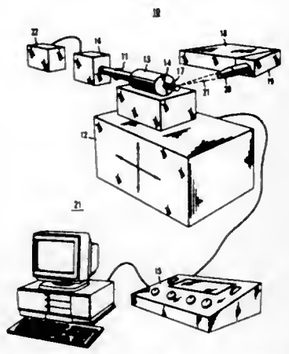
Herman M. Presby, Highland Park, N.J., assignor to AT&T Bell laboratories, Murray Hill, N.J.

Filed Feb. 28, 1992, Ser. No. 843,481
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.69 **16 Claims**

1. A process for fabricating an optical fiber microlens for coupling an optical power between an optical device having an asymmetric output light distribution and an optical fiber, the ellipticity ratio of the asymmetric modal area of the device being greater than 1.5:1.0, which comprises:
laser micromachining an end portion of an optical fiber by ablating and heating the material of the end portion of the optical fiber by means of a laser beam, in which
said micromachining is conducted by removing a greater

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proportion of the material at opposite ends of one orthogonal axis of the optical fiber than at opposite ends of the



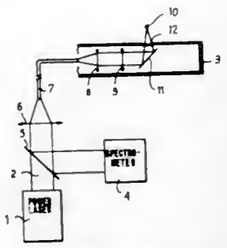
other orthogonal axis, such as to produce a microlens having a given ellipticity ratio.

5,256,852

PROCESS AND DEVICE FOR LASER WORKING WITH REMOTE CONTROL

Cécile Boudot, Chalons Sur Saone, France, assignor to Framatome, Courbevoie, France

Filed Oct. 10, 1991, Ser. No. 774,357
Claims priority, application France, Oct. 10, 1990, 9012515
Int. Cl.[5] B23K *26/02*
U.S. Cl. 219—121.83 **7 Claims**



1. Process for laser welding in which a laser beam (2) is carried to the vicinity of a working point (10) on which it is focused, said process comprising the steps of

(a) drawing light emitted by said working point during the welding separately from the laser beam reflected by said working point; and

(b) analyzing during welding a spectrum of drawn light by comparing said spectrum with a standard spectrum corresponding to a satisfactory weld.

5,256,853

METHOD FOR SHAPING CONTACT LENS SURFACES

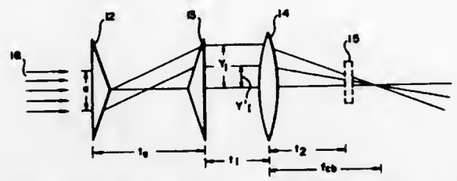
Kevin J. McIntyre, Rochester, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Jul. 31, 1991, Ser. No. 738,704
Int. Cl.[5] B23K *26/06*
U.S. Cl. 219—121.75 **5 Claims**

1. A method for modifying the surface of an optical target, said method comprising the steps of:

a) addressing a ring of laser radiation to said surface of the optical target, said laser radiation being of sufficient fluency and energy to photoablate material from the surface of said optical target;

b) orienting the ring of laser radiation at the edge of the optical target; and



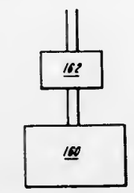
c) sweeping the laser beam over the optical target by decreasing the radius of the ring of laser radiation such that the surface of said optical target is scanned and predictably altered.

5,256,854

TUNABLE PLASMA METHOD AND APPARATUS USING RADIO FREQUENCY HEATING AND ELECTRON BEAM IRRADIATION

Leslie Bromberg, Sharon; Daniel R. Cohn, Chestnut Hill; William C. Guss, Arlington; Barton G. Lane, Belmont, and Donna L. Smatlak, Arlington, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Dec. 18, 1990, Ser. No. 629,424
Int. Cl.[5] B23K *9/00*
U.S. Cl. 219—121.52 **20 Claims**



1. Method for energy transfer to a gaseous medium comprising simultaneously and continuously coupling radio frequency energy to the gaseous medium and irradiating the gaseous medium with electron beam energy, whereby a simultaneous and continuous combination of radio frequency heating and electron beam irradiation creates a plasma and controls plasma chemistry.

5,256,855

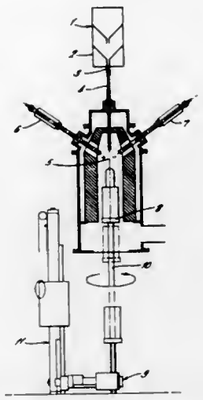
SILICA PRODUCTION

Charles P. Heanley; John K. Williams, both of Faringdon, United Kingdom; Takumi Fukunishi, Sagamihara, and Takao Matsuoka, Tokyo, both of Japan, assignors to Tetronics Research & Development Co. Ltd., Faringdon, United Kingdom and Nippon Silica Glass Co., Ltd., Tokyo, Japan

Filed Mar. 30, 1992, Ser. No. 859,001
Claims priority, application United Kingdom, Apr. 25, 1991, 9108891
Int. Cl.[5] B23K *9/00*
U.S. Cl. 219—121.59 **11 Claims**

1. A method for the production of fused silica which method comprises passing a particulate silica feedstock material from a silica feed tube through or near a plasma arc coupling zone in which at least two plasma arcs of opposite polarity are disposed, each torch having two electrodes, at least one torch acting anodically and at least one torch acting cathodically, the

plasma arc torches forming plasma arcs of opposite polarity which are coupled in the plasma arc coupling zone, thereby



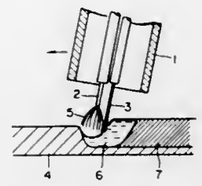
raising the temperature of the feedstock material and collecting the material as fused silica.

5,256,856

WELDING METHOD FOR ALUMINUM ALLOYS

Hideaki Takano; Jitsuo Nakata, both of Wakayama; Yuji Nakahara, Kainan; Keizoh Nanba, Nagoya, and Yoshibiko Sugiyama, Kasugai, all of Japan, assignors to Kyodo Oxygen Co., Ltd. and Sumitomo Light Metal Industries, Ltd., Japan

Filed Apr. 15, 1992, Ser. No. 869,463
Claims priority, application Japan, Apr. 15, 1991, 3-111096
Int. Cl.[5] B23K *9/173*
U.S. Cl. 219—137 WM **8 Claims**



1. A method of producing an arc weld in an aluminum base metal containing alloying materials that includes the steps of providing a consumable electrode wire being formed of pure aluminum, striking an arc between the consumable electrode and the base metal to produce a molten bath of metal on said base materials providing a filler wire containing aluminum and the alloy materials contained in the base metal, the amount of alloy materials in the filler wire being greater in percentage by weight than that contained in the base material, inserting the filler wire into the molten bath to form a bath material of aluminum having the same percentage by weight of alloy materials as the base material.

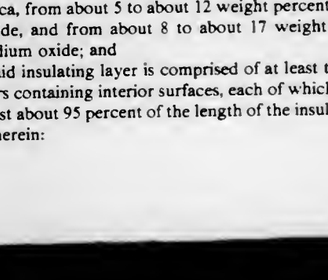
5,256,857

FINNED PTC AIR HEATER ASSEMBLY FOR HEATING AN AUTOMOTIVE PASSENGER COMPARTMENT

Jeffrey A. Curhan, Medway; Daniel R. Pimentel, Seekonk, and Peter G. Berg, Attleboro Falls, all of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 22, 1990, Ser. No. 571,379
Int. Cl.[5] H05B *1/02, 3/14;* **H01C** *7/02;* **F24H** *3/04*
U.S. Cl. 219—202 **6 Claims**

1. An automotive passenger compartment heater comprising a housing unit having a pair of housing members disposed in spaced relation to each other at opposite sides of an opening extending through the housing unit; said housing members having slots therein adjacent respective opposite ends thereof, a pair of electrically conductive terminal means accessible from an exterior part of the housing unit and extending therein, a plurality of electrically conductive heat-exchanging fin means in electrical conductive relation to said terminal means disposed in the housing unit defining a plurality of fluid flow passage portions extending through the fin means for passing fluid through the housing unit opening through the fin means in heat-transfer relation to the fin means for heating the fluid, and self-regulating electrical resistance heater means having at least one body of ceramic material of positive temperature coefficient of resistivity with electrical contact means on two opposite sides thereof disposed in the housing unit between one



pair of immediately adjacent fine means, thermally conducting grease disposed between the heater means and the immediately adjacent fin means for enhancing heat-transfer from the at least one body of the heater means to the fin means, spring means detachably mounted in the slots and extending between the pair of housing members at opposite end thereof for forming said housing unit, said spring means resiliently positioning the fin means, terminal means and the at least one body of the heater means with grease in thermally and electrically conductive engagement to be retained in the housing means and to define an electrical circuit electrically connecting the terminal means through the adjacent fin means and the at least one body of the heater means in sequence for electrically energizing the at least one body of the heater means to provide heat to the fin means for heating the fluid.

5,256,858

MODULAR INSULATION ELECTRICALLY HEATED BUILDING PANEL WITH EVACUATED CHAMBERS

Richard H. Tomb, 130 Davis St., Painted Post, N.Y. 14870

Filed Aug. 29, 1991, Ser. No. 752,076
Int. Cl.[5] H05B *1/00*
U.S. Cl. 219—213 **20 Claims**

1. An insulating, substantially rectilinear laminated building panel comprised of a reflective outer layer adhesively joined to a first surface of an insulating inner layer, and a shatter shield bonded to a second surface of said insulating inner layer, wherein:

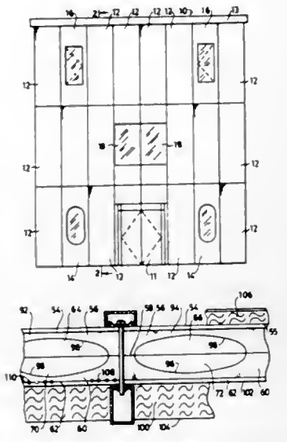
(a) said reflective outer layer has a reflectivity of from about 40 to about 100 percent;

(b) said insulating layer consists essentially of glass which is comprised of from about 66 to about 75 weight percent of silica, from about 5 to about 12 weight percent of calcium oxide, and from about 8 to about 17 weight percent of sodium oxide; and

(c) said insulating layer is comprised of at least three chambers containing interior surfaces, each of which extends at least about 95 percent of the length of the insulating layer, wherein:

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1. the pressure within each of said chambers is less than about 100 millimeters of mercury, and



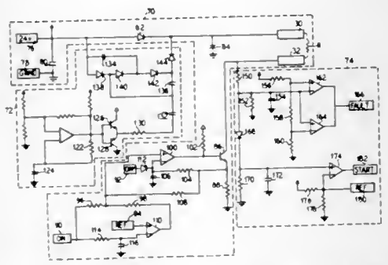
2. each of said interior surfaces has a reflectivity of at least about 80 percent.

5,256,859

POWER SUPPLY FOR BINDING APPARATUS

Nicholas M. Nanos, Morton Grove, and Alfredo J. Vercillo, Harwood Heights, both of Ill., assignors to General Binding Corporation, Northbrook, Ill.

Filed Jun. 14, 1991, Ser. No. 715,575
Int. Cl.[5] H05B *1/02*
U.S. Cl. 219—492 **11 Claims**



1. A power supply for a binding apparatus for use with binder covers each having resistance heating element and a heat activated binder material heatable by the heating element, where different resistance heating elements may be of mutually different resistance values, comprising:

means for supplying current to a heating element of a binder cover for a predetermined period of time corresponding to a binding cycle; and

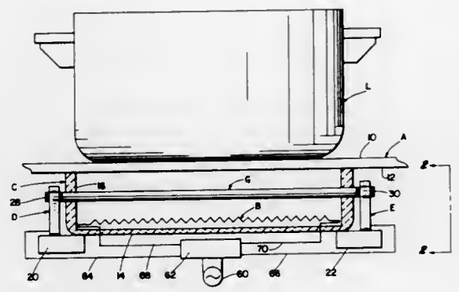
means for controlling the current supplied by said means for supplying so that an average current supplied to one of the heating elements over one of said binding cycles is substantially the same as an average current supplied to another of heating elements over a previous or subsequent binding cycle regardless of differences in resistance of the heating elements.

5,256,860

CONTROL FOR GLASS COOKTOPS UTILIZING ROD-SHAPED THERMISTOR

Robert L. Newman, Mansfield, and James A. Tennant, Perrysville, both of Ohio, assignors to Therm-O-Disc, Incorporated, Mansfield, Ohio

Filed Jan. 22, 1993, Ser. No. 7,853
Int. Cl.[5] H05B *3/72*
U.S. Cl. 219—464 **7 Claims**



1. In a cooking appliance:

a substantially horizontal glass cooktop;

heater means spaced below said glass cooktop for heating same;

a heater housing receiving said heater means and including a bottom wall positioned below said heater means and a peripheral wall extending upwardly from said bottom wall into engagement with said glass cooktop;

an elongated thermistor rod extending across said housing between said glass cooktop and said heater means, said rod having opposite end portions located outside of said housing peripheral wall; and

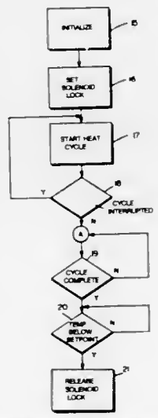
connecting means for connecting said thermistor end portions in a control circuit for controlling said heater means.

5,256,861

METHOD AND APPARATUS FOR ENCAPSULATION AND STERILIZATION OF MEDICAL WASTE SHARPS

Frank H. Anthony, 326 Atherton Dr., Metaire, La. 70005

Filed Apr. 9, 1991, Ser. No. 682,069
Int. Cl.[5] H05B *1/02*
U.S. Cl. 219—494 **15 Claims**



11. A method of heat treating potentially infectious waste products which include plastic elements, said method comprising the steps of:

placing said waste products in a container;

heating said container at a first temperature below the melting point of said plastic elements for a first time period sufficient to vaporize residual fluids contained in said waste products;

heating said waste products for a second time period at a second temperature above the melting point of said plastic elements but below the flash points of said waste products;

said first and second temperatures and uninterrupted time periods, in combination, being sufficient to sterilize said waste products and melt said plastic elements;

detecting an interruption and restoration of power supplying said heating, and

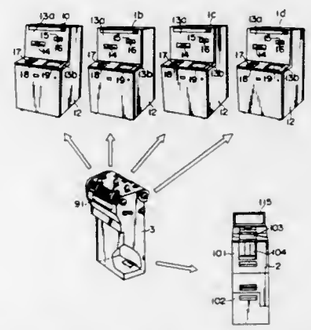
upon detecting the restoration of power again heating said container at said first and second temperatures for the full first and second time periods, respectively.

5,256,862

CASH MANAGING SYSTEM

Hiroshi Watanabe, Chigasaki, and Hajime Watanabe, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 27, 1991, Ser. No. 766,407
Claims priority, application Japan, Sep. 28, 1990, 2-256968
Int. Cl.[5] G06F *15/30*
U.S. Cl. 235—379 **7 Claims**



1. A cash managing system comprising:

a plurality of automatic teller machines, each comprising first storage means for storing bank notes, and means for dispensing the bank notes stored in the storage means to a customer;

data transfer means, selectively coupled to each of the automatic teller machines and comprising:

data receiving means for receiving bank note storage data, indicating an amount of the bank notes stored in the storage means of a respective one of the automatic teller machines, from each of the automatic teller machines;

data storing means for storing the bank note storing data of each of the automatic teller machines; and

a note storage portion for storing at least one of the bank notes; and

an arrangement device comprising:

second data receiving means for receiving, from the data transfer means, the bank note storage data of the automatic teller machines stored in the data transfer means

means for calculating a total of the bank notes stored in the plurality of automatic teller machines in accordance with the bank note storage data received by the second data receiving means; and

means for supplying a portion of the bank notes to the note storage portion when the data transfer means is coupled to the arrangement device;

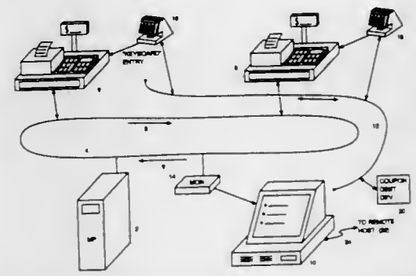
each of the automatic teller machines comprising means for conveying bank notes between the note storage portion of the data transfer means and the storage means of the automatic teller machine when the data transfer means is coupled to the automatic teller machine.

5,256,863

IN-STORE UNIVERSAL CONTROL SYSTEM

William L. Ferguson, Walnut Creek, and Mark H. Wallis, Long Beach, both of Calif., assignors to Comark Technologies, Inc., Elk Grove Village, Ill.

Filed Nov. 5, 1991, Ser. No. 788,288
Int. Cl.[5] G06K *15/00;* **G07G** *1/12*
U.S. Cl. 235—383 **19 Claims**



1. A system for automating data acquisition and processing at a checkstand point of sale (POS) in a retail outlet comprising:

a first local area network of POS terminals for initiating merchandise purchase transactions;

means for passively monitoring all of said purchase transactions in said first local area network to acquire primary purchase data;

a second local area network of lane terminal devices for inputting secondary data, said secondary data including purchase discount information and/or payment verification information;

means for receiving and processing said primary and said secondary information, said receiving and processing means mirroring said primary information and generating output information to said POS terminals of said first local area network via said lane terminal devices of said second local area network, said output information including discount information and/or verification data.

5,256,864

SCANNING SYSTEM FOR PREFERENTIALLY ALIGNING A PACKAGE IN AN OPTIMAL SCANNING PLANE FOR DECODING A BAR CODE LABEL

Joseph F. Rando, Los Altos Hills, Calif.; Howard N. Roberts, and Thomas C. Arends, both of Eugene, Oreg., assignors to Spectra-Physics, San Jose, Calif.

Filed Sep. 24, 1991, Ser. No. 764,527
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—462 **37 Claims**

1. A scanning system for preferentially orienting and optimally scanning items moving through an item path including a scanning region, comprising:

scanner means for scanning faces of an item and for producing a signal representative of the identity of the item;

transport means having a supporting surface for supporting a first side of an item and moving the item along the item path; and

means for stabilizing at least a second side of the item, the stabilizing means being angularly oriented with respect to the transport means,

wherein one of said transport means and said stabilizing

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means is tipped at some angle above horizontal for allowing gravity to move the item downward toward a prefer-



ential orientation and in position for one or more focal planes of scan lines from the scanner means.

5,256,865

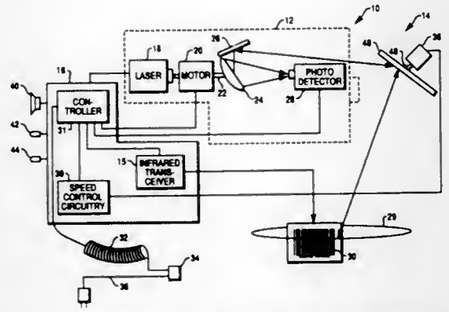
AUTOMATIC SENSING AND PROGRAMMING CIRCUIT AND PROGRAMMING METHOD FOR OPTICAL SCANNERS

Charles K. Wike, Jr., Sugar Hill; Stephen J. Ames; William M. Belknap, both of Lawrenceville; Rex A. Aleshire, Buford, and Deborah A. Detwiler, Lawrenceville, all of Ga., assignors to NCR Corporation, Dayton, Ohio

Filed Nov. 5, 1991, Ser. No. 788,053

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—462 **18 Claims**



1. A sensing circuit for an optical scanner comprising:

means for emitting a diffuse infrared signal occupying a first volume of space adjacent the scanner;

means coupled to the emitting means for generating a modulation signal for modulating the infrared signal;

means for receiving the modulated infrared signal after it has reflected from an item within the first volume and for generating an output signal; and

means for energizing the optical scanner in response to the output signal from the receiving means;

wherein the first volume of space substantially encompasses a second volume of space occupied by the scan pattern emitted by the optical scanner.

5,256,866

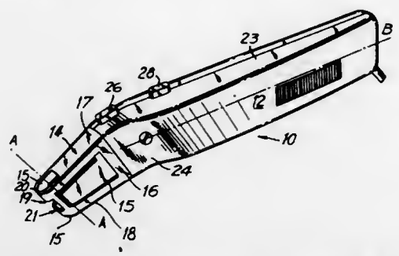
HAND HELD SCANNER

Giuseppe R. Conversano, and David G. Mateer, both of Boulder, Colo., assignors to Soricon Corporation, Boulder, Colo.

Continuation of Ser. No. 438,175, Nov. 16, 1989, abandoned. This application Nov. 25, 1991, Ser. No. 798,880

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—472 **21 Claims**



1. A wand for scanning information extending in a given direction in a given object plane, said wand having a given maximum detection zone in said given object plane, said wand comprising:

a transparent tip having surfaces defining said given object plane, said tip having an aperture therein defining a target zone in the maximum detection zone of said given object plane, and a slit extending perpendicular to said given direction through said aperture to permit said tip to be guided by a user along said surface with said target zone lying in said maximum detection zone, said tip also having viewing window apertures extending therethrough in said given direction and perpendicular to said given direction to permit the user to observe said target zone therethrough.

5,256,867

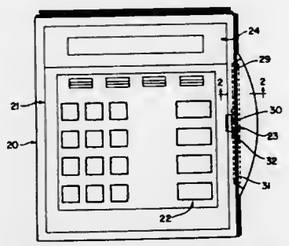
CARD READER APPARATUS

Harold Chen, Taipei, Taiwan, assignor to Verifone, Inc., Redwood City, Calif.

Filed Dec. 30, 1991, Ser. No. 814,896

Int. Cl.[5] G06K *13/06, 13/24*

U.S. Cl. 235—484 **19 Claims**



1. In a reader assembly for reading a data carrier having at least one data track located at a prearranged data track position thereon:

a transducer means having at least one data pickup element on a front face thereof;

guide means defining a guide slot having first and second side wall members and a bottom wall member adapted to guide a data carrier through said reader assembly, said first side wall member having an access window formed therein for permitting communication between said transducer means and said data carrier; and

frame means for carrying said transducer means in a prearranged location thereon;

said guide means and said frame means including:

a cooperative registration means, including a set of first position registration elements formed on said first side wall member and a set of second position registration elements formed on said frame means and cooperatively engaging said first position registration elements for establishing an accurately registered mounting relationship between said frame means and said guide means and thereby defining an accurate position location for said transducer means relative to said access window such that said data pickup element is accurately aligned with said data track; and

at least a pair of resilient hook arms carried on said first side wall member and cooperating with a pair of hook engaging surfaces on said frame means to mount said frame means to said guide means.

5,256,868

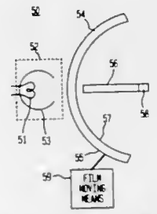
CONTACT SCANNERS FOR SCANNING IMAGES OF AN ILLUMINATED FILM ONTO A PHOTOSENSOR ARRAY

Martin C. Kaplan, Rochester; James R. Milch, Pittsford, and Clarke K. Eastman, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 11, 1992, Ser. No. 880,776

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—208.1 **19 Claims**



1. A contact scanner for scanning a film comprising:

a source of light for illuminating a portion of a first side of the film;

an array of a plurality of N photosensors disposed in a predetermined gapped relationship to a second side of the film opposing the first side of the film, each photosensor is representative of a pixel of an image received from the film and receives light directly from a separate point on the film without the use of an imaging lens system that images light from the illuminated portion of the film onto the array of photosensors, and

means for moving the film relative to the array of photosensors.

5,256,869

FREE-SPACE OPTICAL INTERCONNECTION USING DEFORMABLE MIRROR DEVICE

Tsen-Hwang Lin, and Gregory A. Magel, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 30, 1992, Ser. No. 907,758

Int. Cl.[5] G01J *1/20*

U.S. Cl. 250—201.9 **19 Claims**

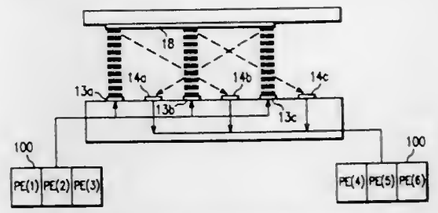
1. A free space optical interconnect, comprising:

at least one spatial light modulator located on a deflection plane for deflecting and focussing light to a receiving plane, wherein each spatial light modulator has an array of mirror elements each having a reflective surface that is movable;

means for addressing each of said reflective mirror elements with an applied voltage such that each mirror element may be attracted toward said deflection plane while said voltage is applied;

at least one coherent light source for illuminating said reflective surfaces of said mirror elements; and

one or more detectors located on said receiving plane, wherein each of said mirror elements is positionable such that the phase of a deflected light beam from said mirror



element is programmable, thereby determining which of said detectors receive said light beam.

5,256,870

INPUT SCREEN OF A RADIOGRAPHIC IMAGE INTENSIFYING TUBE HAVING A RADIALLY VARIABLE THICKNESS INTERMEDIARY LAYER

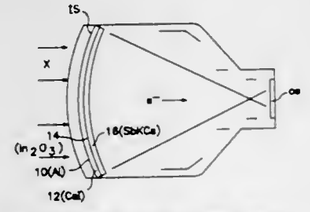
Yves Raverdy, Bas Bernin; Gérard Vieux, Grenoble; Francois Chareyre, St Egreve, and Alain Tranchant, St Martin d'Heres, all of France, assignors to Thomson Tubes Electroniques, France

Filed Feb. 24, 1992, Ser. No. 840,770

Claims priority, application France, Aug. 31, 1990, 90 10870

Int. Cl.[5] H01J *31/50*

U.S. Cl. 250—214 UT **9 Claims**



1. An image intensification tube, comprising

a curved input screen which comprises a substrate which receives input radiation and a photocathode supported on said substrate, said photocathode emitting electrons when illuminated, and

an output screen which converts said electrons into a visible image,

said input screen further including an intermediary layer located between said substrate and said photocathode, said intermediary layer having a radially variable thickness, said intermediary layer being made from a transparent material which modifies the intrinsic electron emitting characteristics of said photocathode as a function of the thickness of said intermediary layer so that variations in the luminosity of the output screen are compensated for by the radially variable thickness of the intermediary layer.

5,256,871

MACHINE FOR VIDEO INSPECTION OF GLASS CONTAINERS WITH INTERSECTING LIGHT BEAMS

Leo B. Baldwin, Horsebeads, N.Y., assignor to Emhart Glass Machinery Investments Inc., Wilmington, Del.

Filed Dec. 22, 1992, Ser. No. 994,658

Int. Cl.[5] G01N *21/32;* **B07C** *5/342*

U.S. Cl. 250—223 B **3 Claims**

1. An inspection machine for inspecting the profile of a vertically standing glass container comprising:

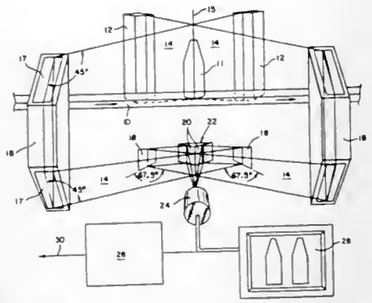
a conveyor for horizontally displacing a vertically standing glass container through an inspection location,

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a pair of diffused light sources located behind said conveyor for forwardly directing angularly related beams of light substantially horizontally at a container located at the inspection location, said beams being sufficiently large so that said light beams will pass around the entire profile of a container located at the inspection station,

a mirror pair located in front of said conveyor for receiving each of the light beams and redirecting the beams horizontally rearwardly,

a reflecting prism having a pair of angularly related reflecting surfaces, one of said prism reflecting surfaces facing one of said mirror pairs and the other one of said prism



reflecting surfaces facing the other one of said mirror pairs,

a two-dimensional camera having an imaging surface,

a pair of redirecting mirrors, one of said redirecting mirrors receiving the beam from said one mirror pair and redirecting the received beam to reflect off said other prism reflecting surface onto one half of said imaging surface, and the other one of said redirecting mirrors receiving the beam from said other mirror pair and redirecting the received beam to reflect off said one prism reflecting surface onto the other half of said imaging surface, and

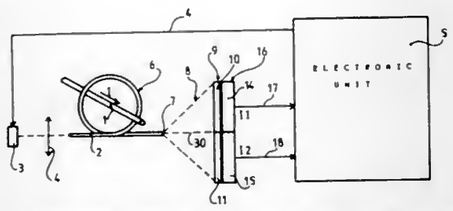
means for evaluating the profile of both container images on said imaging surface.

5,256,872

DEVICE FOR MEASURING CURRENT BY OPTIC FIBER AND DUAL POLARIZATION ANALYSIS

Michel Barrault, St. Ismier; Pascal Royer, and Antoine Kevorkian, both of Grenoble, all of France, assignors to Merlin Gerin, France

Filed May 14, 1992, Ser. No. 883,204
Claims priority, application France, May 27, 1991, 91 06485
Int. Cl.[5] H01J *5/16*
U.S. Cl. 250—227.17 **9 Claims**



1. A device for measuring the current intensity of current flowing in a conductor, comprising:

a monomode optic fiber making a predetermined number of turns around the conductor;

an emitting laser diode for generating and flowing a linearly polarized light beam through the optic fiber; and

a measuring device located at the output end of the optic fiber to measure the angle rotation of the linear polarization direction of the light beam due to the effect of the magnetic field created by the current, the angle rotation being representative of the current intensity to be measured, the measuring device comprising:

a separator-polarizer formed by at least two pieces of polarizing film through which the light beam coming from the output end of the optic fiber passes, wherein the polarization directions of the pieces of film form predetermined angels between each other; and

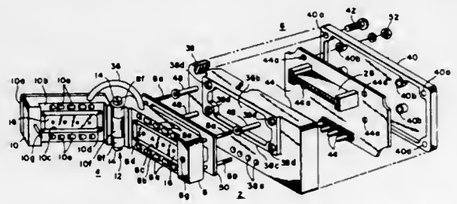
a respective photodiode associated with each of the pieces of film to emit a respective current corresponding to the intensity of the light received by each respective photodiode, each of the photodiodes being connected to an electronic unit capable of calculating the angle rotation and to deduce therefrom the value of the current intensity.

5,256,873

MULTIPLE STATION THROUGH BEAM PHOTOELECTRIC SENSOR

Charles J. Turner, Milwaukee; Frank W. Camps, West Allis; Akbar Saffari, Milwaukee, and Gregory L. Nadolski, Brookfield, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Sep. 3, 1992, Ser. No. 940,130
Int. Cl.[5] H01J *5/02*
U.S. Cl. 250—239 **16 Claims**



1. A multiple station through beam photoelectric sensor comprising:

a sensor housing comprising a plurality of through beam photoelectric sensor units mounted at spaced locations in said housing, said locations corresponding to stations at which sensing is required, and one portion of plug-in electrical connector means electrically connected to said sensors;

a base comprising a mating portion of said plug-in electrical connector means and electric circuit means electrically connected to said mating portion for transmitting electric power to and receiving electric signals from said sensors through said plug-in connector means; and

means for attaching said sensor housing to said base in a selected one of two operating positions rotationally spaced 180 degrees, said mating portion of said electrical connector means being plugged into said one portion of said connector means in each of said two operating positions.

5,256,874

GRIDDED ELECTRON REVERSAL IONIZER

Ara Chutjian, La Crescenta, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Mar. 25, 1992, Ser. No. 857,378
Int. Cl.[5] H01J *49/04*
U.S. Cl. 250—288 **10 Claims**

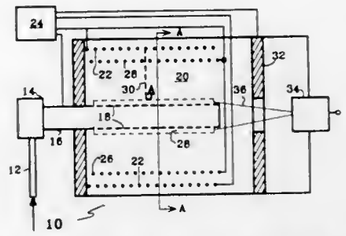
1. An electron reversal ionizer for detecting trace quantities of materials to be detected, comprising:

hollow filament means having a central cavity for generating a cloud of electrons in said central cavity;

an inlet for receiving a gas sample containing the material to be detected;

central electrode means in said central cavity, coupled to said inlet, for applying the gas sample to the cavity;

grid means for accelerating the cloud of electrons towards the central electrode means;



means for controlling the potential of the central electrode means so that the cloud of electrons accelerated towards said central electrode means achieves zero and near-zero energy in an elongated reversal volume surrounding said central electrode means; and

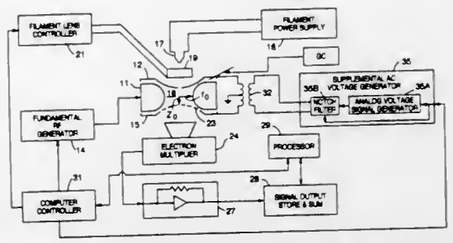
mass analyzer means for detecting ions created by attachment of the zero and near-zero energy electrons to the material to be detected.

5,256,875

METHOD FOR GENERATING FILTERED NOISE SIGNAL AND BROADBAND SIGNAL HAVING REDUCED DYNAMIC RANGE FOR USE IN MASS SPECTROMETRY

Doneil J. Hoekman, Gilray, and Paul E. Kelley, San Jose, both of Calif., assignors to Teledyne MEC, Mountain View, Calif.

Continuation-in-part of Ser. No. 884,455, May 14, 1992. This application Aug. 11, 1992, Ser. No. 928,262
Int. Cl.[5] B01D *59/44;* **H01J** *49/40*
U.S. Cl. 250—282 **28 Claims**



16. A signal generation method, including the steps of:

(a) iteratively varying phases of trial frequency components of a broadband signal to identify a set of optimal frequency components which, when summed together, determine a broadband signal having an optimized dynamic range;

(b) generating said broadband signal having said optimized dynamic range from the optimal frequency components;

(c) generating the filtered noise signal by notch-filtering the broadband signal; and

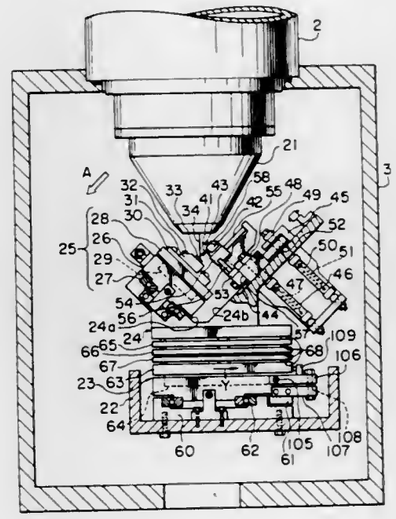
(d) employing the filtered noise signal during performance of a mass spectrometry method.

5,256,876

SCANNING TUNNEL MICROSCOPE EQUIPPED WITH SCANNING ELECTRON MICROSCOPE

Eiichi Hazaki, Tsuchiura; Osamu Yamada; Yasushi Nakaizumi, both of Katsuta; Shigeyuki Hosoki, Hachioji; Sumio Hosaka, Nishitama, and Akira Hashimoto, Tsuchiura, all of Japan, assignors to Hitachi Ltd. and Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

Filed May 7, 1991, Ser. No. 696,787
Claims priority, application Japan, May 8, 1990, 02-118058
Int. Cl.[5] H01J *37/28*
U.S. Cl. 250—306 **7 Claims**



1. A scanning tunnel microscope comprising:

a scanning electron microscope stage provided in a specimen chamber of a scanning electron microscope and having therein a scanning electron microscope stage movement means for moving the scanning electron microscope stage in a two dimensional manner along a surface substantially perpendicular to an electron beam emitted from an electron beam source of said scanning electron microscope;

a specimen stage provided on said scanning electron microscope stage and provided with means for holding a specimen so that a surface of said specimen makes a predetermined angle with the electron beam from said electron beam source, and for moving said specimen in a two dimensional manner only in directions of the surface of said specimen;

a scanning tunnel microscope scanning mechanism provided on said scanning electron microscope stage and provided with a probe held substantially perpendicular to the surface of said specimen, a coarse movement mechanism for making said probe approach to a position at a desired distance from the surface of said specimen, and a probe fine movement mechanism for making said probe scan along the surface of said specimen; and

at least one display unit for displaying thereon an image by said scanning electron microscope together with an image of said probe on the basis of signals obtained from a secondary electron detector provided in said specimen chamber, and for displaying thereon an image by said scanning tunnel microscope on the basis of signals outputted by said probe fine movement mechanism.

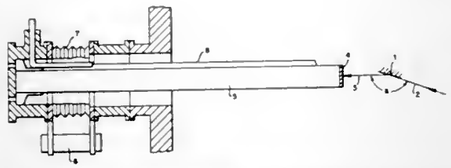
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5,256,877

METHOD AND APPARATUS FOR IMAGING DISLOCATIONS IN MATERIALS USING A SCANNING ELECTRON MICROSCOPE

Jan T. Czernuszka, and Neil J. Long, both of Oxford, England, assignors to Isis Innovation Limited, Oxford, England

Filed May 7, 1992, Ser. No. 894,764
Int. Cl.[5] H01V *37/28*
U.S. Cl. 250—310 **3 Claims**



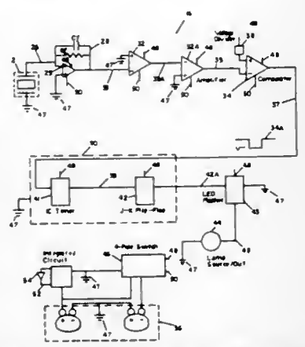
1. Apparatus for imaging dislocations in materials comprising a scanning electron microscope with a field emission electron gun; a tiltable specimen stage for holding a specimen in the electron beam; a probe for receiving electrons back-scattered from a specimen at the specimen stage, the probe comprising a scintillator screen, a light guide coupled to the screen and no retarding field filter, the screen being positioned so as to accept primary electrons which are back-scattered to travel from the specimen at an obtuse angle with respect to the incident electron beam and which have lost little of their initial energy; translation means for advancing the probe to the immediate proximity of the specimen and for retracting the probe; a photomultiplier coupled to the light guide and an electron image enhancement system connected to the photomultiplier and to the microscope scanning system so as to produce an enhanced image of near-surface dislocations in the specimen.

5,256,878

SELF POWERED DETECTOR BASED MONITOR FOR RADIOGRAPHIC CAMERAS

Francis E. LeVert, Knoxville, Tenn., assignor to K.E.M.P. Corporation, Knoxville, Tenn.

Filed Jan. 24, 1992, Ser. No. 825,119
Int. Cl.[5] G01T *1/24*
U.S. Cl. 250—370.04 **6 Claims**



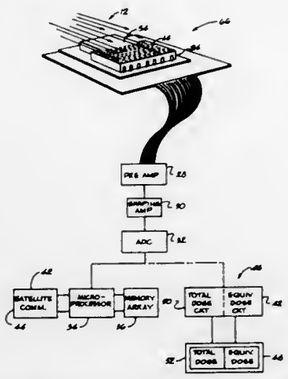
1. An apparatus for monitoring the position of sealed photon sources of radiographic units during their use in nondestructive inspection of industrial components comprises:
self powered photon detection means;
signal conditioning means connected to said photon detection means for conversion of the charge output of the photon detection means into a voltage;
analog logic means electrically connected to said signal conditioning means designed to provide a temporal voltage signal when a radiographic source is moved into and out of a radiographic camera;
integrated circuit means connected to said analog logic means for providing an oscillatory voltage at its output that is used to power a source/out alarm annunciator;
direct current power supply means for electrically energizing the signal conditioning means, said analog logic means, said integrated circuit means, and said source/out alarm annunciator;
an enclosure for housing the photon detection means, signal conditioning means, analog logic means, integrated circuit means, said direct current power supply means and the source/out alarm annunciator;
and,
mechanical means connected to said enclosure for mounting the enclosure onto a radiographic camera.

5,256,879

MICRODOSIMETRY RADIATION ANALYSIS METHOD AND DEVICE

Peter J. McNulty, Seneca; W. Joseph Beauvais, Central, and David R. Roth, Clemson, all of S.C., assignors to Clemson University, Clemson, S.C.

Filed Oct. 10, 1991, Ser. No. 774,467
Int. Cl.[5] G01T *1/24*
U.S. Cl. 250—370.06 **40 Claims**



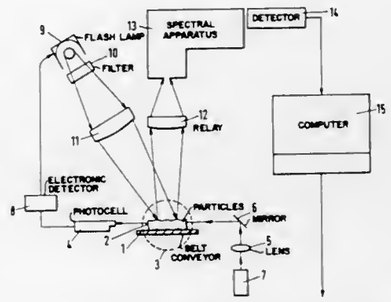
1. A microdosimetry device for qualitatively analyzing radiation incident thereon in a complex radiation field, comprising:
a detector array of microstructure parallel p-n junctions, each said p-n junction defining a predetermined sensitive volume within which a voltage pulse is produced responsive to incident radiation; and
circuitry means in communication with said detector array for generating digital pulse signals representative of the voltage pulses induced within said sensitive volumes responsive to incident radiation, said circuitry means also providing summations of the digital pulse signals occurring at particular energies over a period of time; said circuitry means translating said respective summations into a radiation dose equivalent estimate.

5,256,880

PROCESS FOR THE QUALITATIVE ANALYSIS OF PLASTIC PARTICLES

Thomas R. Loree, Santa Fe, and Robert E. Hermes, Los Alamos, both of N. Mex., assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jan. 24, 1992, Ser. No. 825,485
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1991, 4102767
Int. Cl.[5] G01N *21/64*
U.S. Cl. 250—461.1 **13 Claims**



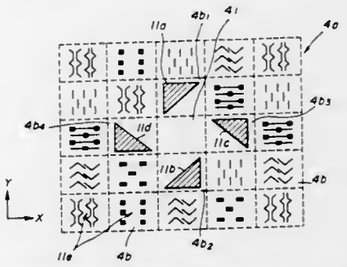
7. An apparatus for the qualitative analysis of particles of various kinds of plastic comprising means for passing said particles serially in a predetermined path to an analyzer and for withdrawing said particles from said analyzer, said analyzer comprising
a) a light source for generating short-wavelength light pulses,
b) a spectral apparatus for generating an emission spectrum,
c) a detector for converting the radiation intensities to electric signals, and
d) a computer for processing the electric signals for a generation of sorting signals.

5,256,881

MASK AND CHARGED PARTICLE BEAM EXPOSURE METHOD USING THE MASK

Satoru Yamazaki; Hiroshi Yasuda, and Kiichi Sakamoto, all of Kanagawa, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Jun. 10, 1992, Ser. No. 896,715
Claims priority, application Japan, Jun. 12, 1991, 3-139858
Int. Cl.[5] H01J *37/302*
U.S. Cl. 250—492.23 **22 Claims**



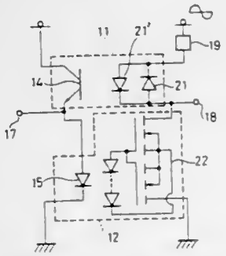
1. A transmission mask adapted for use in exposing patterns by a charged particle beam which passes therethrough, said transmission mask comprising:
a plate; and
a plurality of rectangular blocks formed on a surface of said plate and having an area approximately equal to a cross sectional area of the charged particle beam irradiated thereon,
said blocks including a first block in which at least one transmission hole is provided and a second block in which no transmission hole is provided,
the transmission hole of said first block being partly irradiated by the charged particle beam when varying the size of the exposing pattern,
a single second block being provided immediately adjacent to at least two first blocks, so that an irradiating position of the charged particle beam can be varied with respect to both said two first blocks from said single second block.

5,256,882

SIGNAL TRANSMISSION CIRCUIT HAVING A LATCH-UP FUNCTION

Hironobu Miyasaka, Kitakyusyu, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 17, 1992, Ser. No. 945,939
Claims priority, application Japan, Sep. 17, 1991, 3-235914
Int. Cl.[5] G02B *27/00*
U.S. Cl. 250—551 **11 Claims**



1. A signal transmission circuit, comprising:
first light emitting means;
first light receiving means which is triggered to conduct by a light emitted from said first light emitting means;
second light emitting means which is series-connected with said first light receiving means between a high voltage supply and a low voltage supply;
second light receiving means which are triggered to conduct by a light emitted from said second light emitting means, and which are series-connected with said first light emitting means between said high voltage supply and said low voltage supply;
a load which is inserted between said first light emitting means and said high voltage supply;
a signal input terminal which is provided at the connecting point between said first light receiving means and said second light emitting means; and
a signal output terminal which is provided at the connecting point between said first light emitting means and said second light receiving means.

5,256,883

METHOD AND SYSTEM FOR BROAD AREA FIELD INSPECTION OF A MOVING WEB, PARTICULARLY A PRINTED WEB

Armin Weichmann, Kissing, and Theodor Tatarczyk, Gröbenzell, both of Fed. Rep. of Germany, assignors to MAN Roland Druckmaschinen AG, Offenbach am Main

Filed Oct. 13, 1992, Ser. No. 959,747
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1991, 4136461
Int. Cl.[5] G01N *21/86*
U.S. Cl. 250—559 **18 Claims**

1. A method of continuous broad-area field inspection of image areas (7) on a moving substrate (8), particularly a printed

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substrate web received from a rotary printing machine during operation of the printing machine, in which measured values representative of the respective image elements (3) of image elements of the measured areas are obtained in form of electrical signals, for comparison with reference or setting signals and derivation of comparison signals, said method comprising, in accordance with the invention,

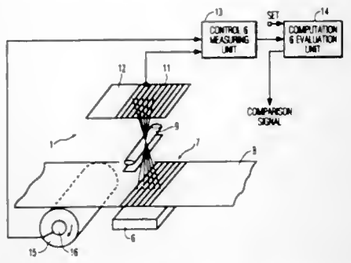
determining a sensing or operating cycle;

subdividing the image area (7) into image elements (3) and arranging the image elements in a two-dimensional matrix having n columns (4) and m rows or lines (5),

so that said m rows or lines and said n columns of the image areas will define a sensing field (11);

obtaining, in any sensing cycle, in parallel, the measured values of the sensing field (11);

generating, during any sensing or operating cycle, at least



one repetitively recurring line transfer pulse, synchronized with the movement of the web;

shifting, under control of said line transfer pulse the measured values of the image elements (3) by one row or line (5);

storing the n image elements of the mth line after m line transfer or shift pulses in a first line of a two-dimensional matrix store or memory (12), said two-dimensional store or matrix having n columns (4) and m rows or lines (5), whereby any line m', after m line transfer pulses, will be stored at a storage location line of m+m' in the memory (12),

wherein, for each operating or sensing cycle, at least one line transfer or shift pulse is generated; and

reading out the measured values representative of the signals derived from the image elements (3) from the store or memory (12), line-by-line.

5,256,884

METHOD AND APPARATUS FOR THE ALIGNMENT OF PAPER STACKS IN A PRINTING PRESS BY OPTICAL BEAMS REFLECTED THEREFROM

Helmut Buck, Schriesheim, and Ludwig Bergann, Berlin, both of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen A.G., Heidelberg, Fed. Rep. of Germany

Filed Mar. 25, 1992, Ser. No. 857,517

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1991, 4110187; Sep. 6, 1991, 4129702

Int. Cl.[5] G01N *21/86*

U.S. Cl. 250—561 **19 Claims**

1. Method for aligning paper stacks in a printing press, the printing press comprising means for holding a first stack of paper for supplying sheets of paper to the printing press, means for holding at least one additional stack of paper for replacing the first stack of paper, and means for moving the at least one additional stack of paper relative to the first stack of paper to align the at least one additional stack of paper with the first stack of paper, said method comprising the steps of:

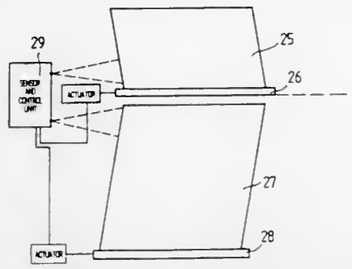
directing a beam onto each of the first stack of paper and the at least one additional stack of paper;

reflecting said beam off of each of the first stack of paper and the at least one additional stack of paper;

directing said reflected beam from each of the first stack of paper and the at least one additional stack of paper onto a single detector means, said detector means comprising a position sensitive receiver for detecting said reflected beams;

detecting each of said reflected beams with said detector means;

generating a signal with said detector means for each of said



reflected beams, said signals for each of said reflected beams corresponding to the relative position of each of the first stack of paper and the at least one additional stack of paper; and

moving said at least one additional stack of paper with said means for moving in response to said signals to align said at least one additional stack of paper with said first stack of paper.

5,256,885

DOPPLER VELOCIMETER HAVING A DIFFRACTION GRATING AND DUAL LENS GROUPS WITH IDENTICAL FOCAL DISTANCES

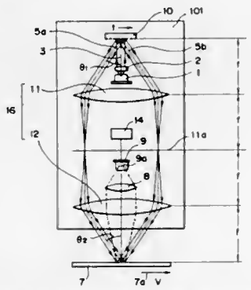
Makoto Takamiya, Kawasaki; Hidejiro Kadowaki, Yokohama; Yasuhiko Ishida, Tokyo, and Hiroshi Sugiyama, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 702,378, May 20, 1991, abandoned. This application Dec. 24, 1992, Ser. No. 997,129

Claims priority, application Japan, May 21, 1990, 2-130590

Int. Cl.[5] G01V *9/04*

U.S. Cl. 250—561 **11 Claims**



1. An apparatus for detecting a velocity information of an object, including:

light source means;

optical means for irradiating a beam from said light source onto an object to be measured, which comprises a diffraction grating for diffracting a beam from said light source and a first lens or lens group and a second lens or lens group with identical focal distance, said first lens or lens group and said second lens or lens group being apart from each other substantially two times said focal distance along a direction of an optical axis, a sum of a distance

from said diffraction grating to said first lens or lens group and a distance from the object to be measured to said second lens or lens group being equal to a distance two times said focal distance and the distance from said diffraction grating to said first lens or lens group being smaller than the distance from the object to be measured to said second lens or lens group, at least one beam diffracted by said diffraction grating being irradiated onto said object to be measured through said first lens or lens group and said second lens or lens group; and

detecting means for detecting a light from the object to be measured to which said beam has been irradiated by means of said optical means, whereby the velocity information of the object to be measured is detected by said detecting means.

5,256,886

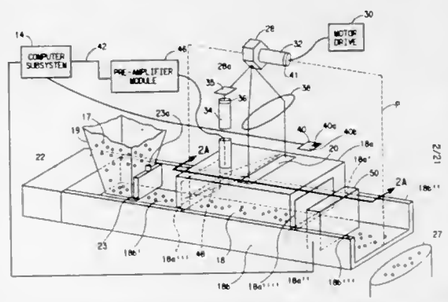
APPARATUS FOR OPTICALLY DETECTING CONTAMINATION IN PARTICLES OF LOW OPTICAL-LOSS MATERIAL

William E. Wolf, Chesapeake, Md.; Robert H. Livermore, Horten, Norway; David D. Dreyfuss, Kettering, Ohio; John J. Majeski, Aston, Pa.; Eugene F. Palecki, Wilmington, Del., and Thomas W. Simpson, Boothwyn, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 693,523, Apr. 30, 1991, abandoned, and a continuation-in-part of Ser. No. 693,524, Apr. 30, 1991, abandoned. This application Apr. 10, 1992, Ser. No. 863,961

Int. Cl.[5] G01N *15/06*

U.S. Cl. 250—574 **37 Claims**



1. An apparatus for optically detecting light-absorbing contamination in at least one particle of low optical-loss material, comprising:

(a) an optical integrating chamber for containing a particle of low-optical loss material, the optical integrating chamber having a plurality of interior walls;

(b) a laser for emitting a laser beam to illuminate the particle;

(c) a scanning assembly mounted in optical alignment with the laser for reflecting the laser beam and for causing the laser beam to scan the particle in the optical integrating chamber;

(d) a focusing assembly mounted in optical alignment with the laser for focusing the scanning laser beam onto the particle in the chamber, the focusing assembly operating in conjunction with the scanning assembly so that light from the laser beam is reflected from the particle and is repeatedly scattered onto the interior walls of the integrating chamber; and

(e) a light sensing assembly for generating an intensity signal indicative of the intensity of the repeatedly scattered light, wherein a decrease in the intensity of the repeatedly scattered light is a function of the presence of light-absorbing contamination in the material.

5,256,887

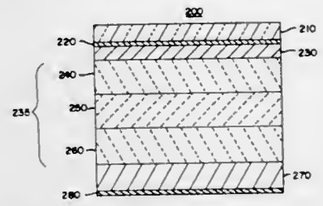
PHOTOVOLTAIC DEVICE INCLUDING A BORON DOPING PROFILE IN AN I-TYPE LAYER

Liyou Yang, Lawrenceville, N.J., assignor to Solarex Corporation, Rockville, Md.

Filed Jul. 19, 1991, Ser. No. 733,172

Int. Cl.[5] H01L *27/14, 31/00*

U.S. Cl. 257—53 **21 Claims**



1. A photovoltaic cell, comprising:

a p-type layer of a semiconductor compound including silicon

an i-type layer of a single amorphous semiconductor compound including silicon, said i-type layer including

an undoped first sublayer formed on said p-type layer,

a doped second sublayer doped with a p-type dopant and formed on said first sublayer, and

an undoped third sublayer formed on said second sublayer; and

an n-type layer of a semiconductor compound including silicon formed on said i-type layer.

5,256,888

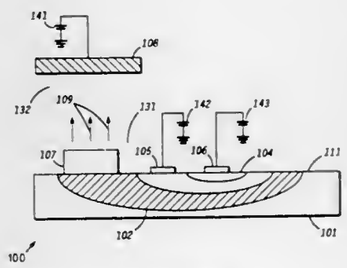
TRANSISTOR DEVICE APPARATUS EMPLOYING FREE-SPACE ELECTRON EMISSION FROM A DIAMOND MATERIAL SURFACE

Robert C. Kane, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 4, 1992, Ser. No. 878,270

Int. Cl.[5] H01L *29/72, 27/02*

U.S. Cl. 257—77 **18 Claims**



1. An electron device comprising:

A a supporting substrate having a major surface;

B a transistor disposed in the supporting substrate substantially at the major surface and comprised of at least a transistor collector, a transistor base; and a transistor emitter;

C a transistor base conductor operably coupled to the transistor base;

D a transistor emitter conductor operably coupled to the transistor emitter;

E a diamond material layer, having an electron emitting surface for emission of electrons, disposed on the major surface of the supporting substrate and operably coupled to the transistor collector; and

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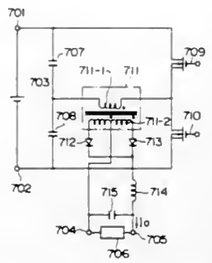
F an anode distally disposed with respect to the diamond material layer.

5,256,889

SEMICONDUCTOR RECTIFYING DIODE WITH PN GEOMETRY

Hiroshi Kozaka, Hitachi; Susumu Murakami, Katsuta; Masanori Takata, Hitachi; Takao Yaginuma, Hitachiota, and Naofumi Kohno, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 580,534, Sep. 11, 1990, Pat. No. 5,081,509. This application Jan. 9, 1992, Ser. No. 818,515
Claims priority, application Japan, Sep. 20, 1989, 1-242035
The portion of the term of this patent subsequent to Jan. 14, 2009, has been disclaimed.
Int. Cl.[5] H01L *29/90*
U.S. Cl. 257—212 2 Claims



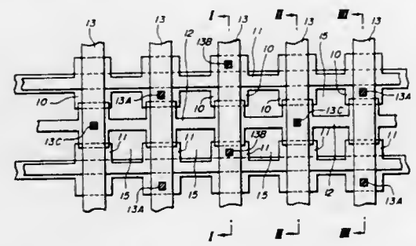
1. A power supply apparatus comprising:
a pair of input terminals connected to a DC power supply;
a pair of output terminals connected to a load;
a series of first and second dividing capacitors connected in series between said pair of input terminals so that a DC voltage between said input terminals is divided by said dividing capacitors;
a series of first and second switching elements connected in series between said pair of input terminals, said first and second switching elements alternately performing a switching operation;
a transformer having a primary winding connected between the junction of said first and second dividing capacitors and the junction of said first and second switching elements, and a secondary winding having a middle tap-point which is connected to one of said output terminals; and
first and second diodes having anodes connected to the opposite ends of said secondary winding of said transformer, respectively, and having cathodes connected to the other terminal of said output terminals;
each of said first and second diodes comprising:
a semiconductor substrate having a pair of main surfaces, a first semiconductor region of a first conductivity type provided between said pair of main surfaces and adjacent to one main surface of said pair of main surfaces, a second semiconductor region of said first conductivity type provided adjacent to the other main surface of said pair of main surfaces and to said first semiconductor region, said second semiconductor region having a higher impurity concentration than said first semiconductor region, and a third semiconductor region of a second conductivity type provided to extend from said one main surface into said first semiconductor region, the first semiconductor region penetrating the third semiconductor region and being exposed at a plurality of portions of said one main surface, wherein said exposed portions, surrounded by the third semiconductor region, each having substantially the same size at said one main surface;
a first main electrode provided on said one main surface of said semiconductor substrate to form Schottky junctions with the exposed portions of said first semiconductor region, and to be in ohmic contact with said third semiconductor region; and
a second main electrode provided on said other main surface of said semiconductor substrate to be in ohmic contact with said second semiconductor region;
wherein a relation of $2wo < W \leqq 3D$ is satisfied, where W is the width of said exposed portions of said first semiconductor region, D is the depth of said third semiconductor region, and wo is the width of a depletion layer spread to said first semiconductor region by a diffusion potential of a pn junction formed between said first semiconductor region and said third semiconductor region when said diode is in a predetermined forward biased condition.

5,256,890

NON-INTERLACING CHARGE COUPLED DEVICE OF A FRAME INTERLINE TRANSFER TYPE

Junichi Furukawa, Kagoshima, and Hideo Kanbe, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 30, 1991, Ser. No. 753,076
Claims priority, application Japan, Sep. 5, 1990, 2-235367
Int. Cl.[5] H01L *29/78, 27/14, 31/00*
U.S. Cl. 257—233 14 Claims



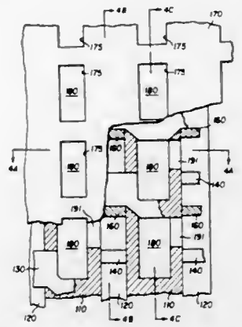
1. A non-interlacing charge coupled device of a frame interline transfer (FIT) type comprising:
a plurality of picture elements being aligned in the vertical direction, rows of said vertically aligned picture elements being arranged parallel and adjacent to each other;
first, second and third polysilicon electrodes extending in the horizontal direction, each of said polysilicon electrodes being arranged on a surface of a substrate covered with an insulating layer, each of said polysilicon electrodes being used as electrodes for vertical transfer of signal charges;
a plurality of metal wiring films extending in the vertical direction, said metal wiring films being arranged in parallel, traversing each of said polysilicon electrodes covered with the insulating layer, said metal wiring films being used as electrodes for applying a clock pulse for vertical transfer of signal charges to each of said polysilicon electrodes;
a plurality of first openings being formed through the insulating layer such that said metal wiring films contact said first polysilicon electrodes;
a plurality of second openings being formed through the insulating layer such that said metal wiring films contact said second polysilicon electrodes;
a plurality of third openings being formed through the insulating layer such that said metal wiring films contact said third polysilicon electrodes wherein said third polysilicon electrodes comprise:
a gate portion extending in the vertical direction;
first branched portions extending along said first polysilicon electrode toward said second polysilicon electrode; and
second branched portions extending along said second polysilicon electrode toward said first polysilicon electrode; and
a base portion extending in the horizontal direction so that said gate portion and said first and second branched portions are connected thereto.

5,256,891

CCD ELECTRODE STRUCTURE FOR IMAGE SENSORS

David L. Losee, Fairport, and Eric G. Stevens, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 711,826, Jun. 7, 1991, abandoned. This application Aug. 21, 1992, Ser. No. 937,456
Int. Cl.[5] H01L *29/78, 27/14, 31/00*
U.S. Cl. 257—233 4 Claims



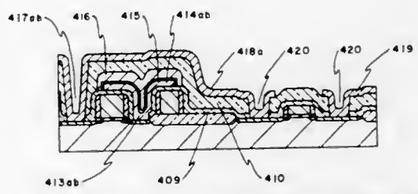
1. An interline transfer type area image sensor comprising:
a plurality of photocollection sites arranged in an array of rows and columns, each of the photocollection sites being capable of collecting charge therein;
a separate CCD extending along each column of the photocollection sites and adapted to receive therein the charge from the photocollection sites in the adjacent column, each of the CCDs comprising:
a series of sets of electrodes with at least one set of the electrodes being formed of a single continuous layer of an opaque conducting material extending over all of all the CCDs; and
one voltage clock connected to the one set of the electrodes and a separate voltage clock connected to the other sets of electrodes.

5,256,892

SEMICONDUCTOR MEMORY DEVICE WHEREIN GATE ELECTRODE THICKNESS IS GREATER IN THE MEMORY CELLS THAN IN THE PERIPHERAL CELLS

Naoyuki Yoshida, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jun. 28, 1991, Ser. No. 722,847
Claims priority, application Japan, Jun. 29, 1990, 2-171476
Int. Cl.[5] H01L *29/68, 29/78, 29/92*
U.S. Cl. 257—306 26 Claims



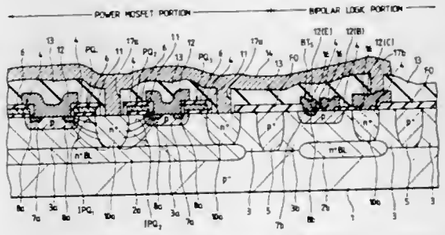
1. A semiconductor memory device comprising a silicon substrate of one conductivity type, a field oxide film formed on a surface of said substrate, said field oxide film defining active areas for memory cells formed on the surface of said substrate and surrounded by said field oxide film, gate insulating films for memory cells formed on said active areas, a plurality of word lines formed substantially parallel to one another on said gate insulating films and said field oxide film, a pair of opposite conductivity type diffused layers selectively formed in said active areas for memory cells in a manner which is self-aligning with respect to said word lines, a stacked capacitor for storing electric charges, said stacked capacitor having a storage node electrode which is connected to one of said opposite conductivity type diffused layers via a node contact hole in the gate insulating film covering said one opposite conductivity type diffused layer, said storage node electrode having a first end portion which extends over at least a part of a first one of said word lines formed on the gate insulating films for memory cells and a second end portion which extends over at least a part of a second one of said word lines formed on said field oxide film, a plurality of bit lines which are substantially parallel to each other and which intersect said word lines substantially orthogonally, said field oxide film further defining active areas for peripheral circuitry, gate insulating films for peripheral circuitry formed on said active areas for the peripheral circuitry, gate electrodes for peripheral circuitry formed on said gate insulating films for peripheral circuitry and being elongated over said field oxide film, and opposite conductivity type diffused layers selectively formed in said active areas for peripheral circuitry in a manner which is self-aligning with respect to said gate electrodes for peripheral circuitry, wherein at least a part of said word lines on said active areas for memory cells has a film thickness which is greater than a thickness of said gate electrode for the peripheral circuitry.

5,256,893

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE WITH POWER MOSFET INCORPORATED

Hideki Yasuoka, Takasaki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 779,855, Oct. 21, 1991, abandoned, which is a continuation of Ser. No. 528,897, May 29, 1990, abandoned, which is a continuation of Ser. No. 221,372, Jul. 19, 1988, abandoned. This application Dec. 22, 1992, Ser. No. 995,051
Claims priority, application Japan, Jul. 22, 1987, 62-181101
Int. Cl.[5] H01L *29/10, 27/02*
U.S. Cl. 257—335 20 Claims



1. A semiconductor device having a MOSFET comprising:
a semiconductor substrate of a first conductivity type;
an epitaxial semiconductor layer of a second conductivity type, opposite to said first conductivity type, formed on said semiconductor substrate, said epitaxial semiconductor layer being used as a common drain region of said MOSFET and having a main surface;
an insulated gate electrode of said MOSFET formed on said main surface of said epitaxial semiconductor layer, said insulated gate electrode having a mesh-like pattern and dividing said main surface of said epitaxial semiconductor layer into plural main surface areas, with respect to a plan view thereof, corresponding to a plurality of first regions, respectively;
a plurality of first semiconductor layers of said first conductivity type formed at said main surface in first selected regions from among said plurality of first regions, each of said first semiconductor layers having a portion which is

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extended so as to at least partially underlie said insulated gate electrode in an orthogonally overlapping fashion and which is used as a channel region of said MOSFET;

a plurality of second semiconductor layers of said second conductivity type formed in said first semiconductor layers, each of said second semiconductor layers being used as a source region of said MOSFET; and

a plurality of third semiconductor layers of said second conductivity type formed at said main surface in second selected regions from among said plurality of first regions, said second selected regions being different from said first selected regions, each of said third semiconductor layers having an impurity concentration higher than that of said epitaxial semiconductor layer and being used as a drain contact region of said MOSFET,

wherein said second selected regions in which said third semiconductor layers are formed, are selected from among said first regions so that a plurality of drain contact regions are disposed close to each of said first semiconductor layers formed in said first selected region.

5,256,894

SEMICONDUCTOR DEVICE HAVING VARIABLE IMPURITY CONCENTRATION POLYSILICON LAYER

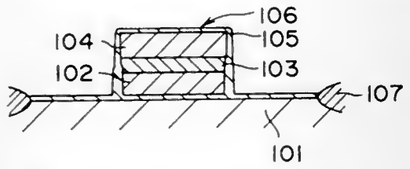
Katsuya Shino, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 12, 1991, Ser. No. 729,027

Claims priority, application Japan, Jul. 13, 1990, 2-185604

Int. Cl.[5] H01L *29/04, 21/44*

U.S. Cl. 257—388 **7 Claims**



1. A semiconductor device having a multilayer structure used as at least one of a gate electrode and an interconnection, said multilayer structure comprising:

a polysilicon layer doped with an impurity and deposited on a semiconductor substrate; and

a refractory metal silicide layer deposited on said polysilicon layer,

said impurity included in said polysilicon layer having a profile in which the concentration is lower in the vicinity of the boundary between the polysilicon and the refractory metal silicide layer than the concentration in a portion away from the boundary.

5,256,895

PAD OXIDE PROTECT SEALED INTERFACE ISOLATION

Frank R. Bryant, Denton; Yu-Pin Han, Dallas, and Fu-Tai Liou, Carrollton, all of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation of Ser. No. 579,143, Sep. 7, 1990, abandoned, which is a division of Ser. No. 279,343, Dec. 2, 1988, Pat. No. 4,981,813, which is a continuation of Ser. No. 17,357, Feb. 24, 1987, abandoned. This application Mar. 31, 1992, Ser. No. 863,519

Int. Cl.[5] H01L *27/12, 23/48, 29/40*

U.S. Cl. 257—501 **6 Claims**

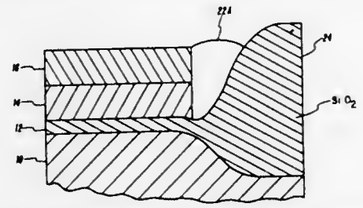
1. An insulating structure in a semiconductor integrated circuit having a reduced bird's beak, such structure being formed by the steps of:

forming a first layer of silicon oxide on a first surface of a silicon substrate;

forming a first layer of silicon nitride over the first layer of silicon oxide;

forming a second layer of silicon oxide over the first layer of silicon nitride;

forming apertures through the first and second layers of silicon oxide and the first layer of silicon nitride, and extending to a first bottom portion below the first surface



of the silicon substrate by a predetermined amount, such apertures having substantially vertical sidewalls;

forming spacer portions of silicon nitride on the aperture sidewalls so that the first bottom portion is exposed;

etching a second bottom portion into the first bottom portion, such second bottom portion also having substantially vertical sidewalls; and

oxidizing the second bottom portion of the silicon substrate.

5,256,896

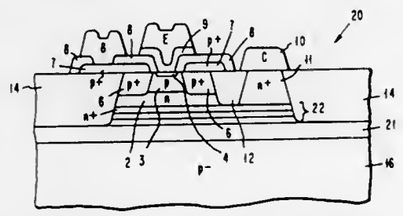
POLYSILICON-COLLECTOR-ON-INSULATOR POLYSILICON-EMITTER BIPOLAR TRANSISTOR

Tak H. Ning, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 30, 1991, Ser. No. 753,278

Int. Cl.[5] H01L *29/72*

U.S. Cl. 257—585 **16 Claims**



1. A bipolar transistor, having an emitter region, a base region and a collector region, capable of operating in normal or inverse operating modes, said bipolar transistor having a subcollector, comprising:

a first single crystal semiconductor region of a first conductivity type,

a second single crystal semiconductor region of second conductivity type disposed in said first region forming a p-n junction with said first region,

a third single crystal semiconductor region of said first conductivity type having a given dopant concentration therein forming a p-n junction with said second region, and,

a layer of polycrystalline semiconductor material of said first conductivity type having a dopant concentration therein much higher than said given concentration forming an abrupt junction with said third region.

5,256,897

OXIDE SUPERCONDUCTING DEVICE

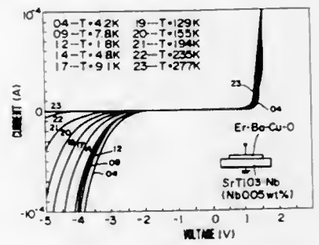
Harubiro Hasegawa, Kokubunji; Toshiyuki Aida, Chofu; Toshikazu Nishino, Kawasaki; Mutsuko Hatano, Kodaira; Hideaki Nakane, Hachioji, and Tokuumi Fukazawa, Tachikawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 442,258, Nov. 28, 1989, abandoned. This application Jul. 10, 1991, Ser. No. 729,867

Claims priority, application Japan, Nov. 28, 1988, 68-298094; Mar. 10, 1989, 1-056419; Jul. 19, 1989, 1-184639; Sep. 25, 1989, 1-246284

Int. Cl.[5] H01L *39/22, 29/48, 29/56, 29/161*

U.S. Cl. 257—613 **28 Claims**



1. An oxide superconducting device comprising at least a junction structure comprising at least one oxide superconductor and at least one solid material which has inherent insulative characteristics in which charge carriers have been generated,

wherein the crystal structure of said solid material is either a perovskite type crystal structure or a pseudoperovskite type crystal structure, wherein ion(s) constituting a B site of either the perovskite type crystal structure or the pseudoperovskite type crystal structure is ion(s) of at least one element selected from the element group consisting of Ga, Ta, Nb and Al.

5,256,898

SEMICONDUCTOR DEVICE WITH A DIFFERENT EPITAXIAL THICKNESS BETWEEN ADJACENT CIRCUIT REGIONS

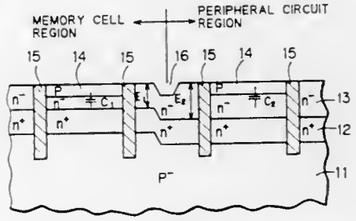
Kakutaro Suda, Itami, Japan, assignor to Mitsubishi Denki Kabusbiki Kaisha, Tokyo, Japan

Filed Oct. 22, 1991, Ser. No. 793,942

Claims priority, application Japan, Nov. 6, 1990, 2-301543

Int. Cl.[5] H01L *29/72, 27/02*

U.S. Cl. 257—653 **10 Claims**



1. A semiconductor device, comprising:

a first conductivity type semiconductor substrate having a first region formed with a relatively high surface and a second region adjacent to the first region and formed with a relatively low surface;

a second conductivity type buried semiconductor layer of a relatively high impurity concentration with substantially uniform thickness continuously formed on said semiconductor substrate in said first and second regions so that a surface height of said buried semiconductor layer is relatively high in said first region and relatively low in said second region; and

a second conductivity type epitaxial layer of a relatively low impurity concentration formed on said buried semiconductor layer,

wherein said epitaxial layer has a surface which is the same height in said first and second regions and which is formed with a concave step in a boundary portion between said first and second regions.

5,256,899

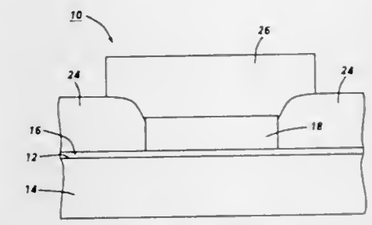
INTEGRATED CIRCUIT FUSE LINK HAVING AN EXOTHERMIC CHARGE ADJACENT THE FUSE PORTION

Anikara Rangappan, Torrance, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 24, 1991, Ser. No. 813,176

Int. Cl.[5] H01L *29/34, 23/48;* **G11C** *17/00;* **H01H** *37/76*

U.S. Cl. 257—665 **4 Claims**



1. An integrated circuit fuse link, including:

a fuse portion capable of generating heat in response to an applied current; and

an exothermic charge positioned adjacent to the fuse portion for blowing the fuse portion, the exothermic charge including exposed photoresist and explosive material, the explosive material being capable of detonating in response to heat generated by the fuse portion.

5,256,900

PACKAGE FOR SEMICONDUCTOR DEVICE WITH AT LEAST ONE THROUGH HOLE

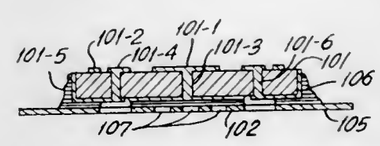
Shoji Hashizume, and Masayoshi Nasu, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed May 22, 1991, Ser. No. 703,268

Claims priority, application Japan, May 22, 1990, 2-131822

Int. Cl.[5] H01L *23/02*

U.S. Cl. 257—678 **3 Claims**



1. A package for semiconductor devices comprising:

a semiconductor element;

an insulated substrate having first and second main surfaces opposed to each other and a through hole;

a plurality of metallized lead patterns formed on said first main surface;

a metallized mounting pattern formed on said first main surface to mount said semiconductor element thereon, said metallized mounting pattern extending through said through hole to said second main surface; and

a metallic frame brazed to said metallized mounting pattern on said second main surface of said insulating substrate by a brazing material, said metallic frame having at least one

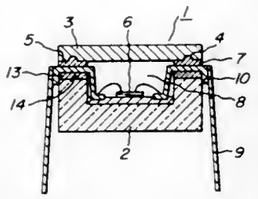
VOL 1155 ISS 4 OCT 26 1993 UMI

through hole at a location under said semiconductor element to expose said brazing material and thereby reduce warping of the package.

5,256,901
CERAMIC PACKAGE FOR MEMORY SEMICONDUCTOR

Toshio Ohashi, Komaki, and Masaki Wakayama, Kasugai, both of Japan, assignors to NGK Insulators, Ltd., Japan

Continuation of Ser. No. 455,230, Dec. 22, 1989, abandoned.
This application Jul. 20, 1992, Ser. No. 915,404
Claims priority, application Japan, Dec. 26, 1988, 63-167871[U]
Int. Cl.[5] H01L *39/02, 23/28, 23/02*
U.S. Cl. 257—680 **8 Claims**



1. A ceramic package for a memory semiconductor, comprising:

a ceramic package body having substantially flat shoulder portions which define a recess to accommodate said memory semiconductor;

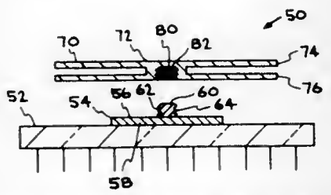
a ceramic lid comprising ultraviolet ray-transmissible polycrystalline alumina, a portion of said ceramic lid being fixed to said substantially flat shoulder portions of said ceramic package body through glass sealing means, said portion of said ceramic lid having at least one continuous groove of rectangular cross-section formed therein; and

electrical leads for providing electrical communication between said memory semiconductor and an exterior of said ceramic package.

5,256,902
METAL HEATSINK ATTACH SYSTEM

Robbyn M. Culver, San Jose, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Aug. 14, 1991, Ser. No. 744,862
Int. Cl.[5] H01L *23/02, 39/02*
U.S. Cl. 257—722 **5 Claims**



1. A cooling system for attachment of an external heatsink to an external mounting surface of a ceramic integrated-circuit package, comprising:

a slug, or attachment plate, having a surface adapted for attachment to the external mounting surface of said ceramic integrated-circuit package;

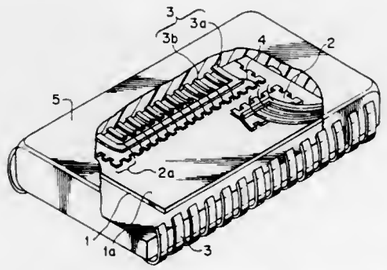
a molybdenum stud attached to and extending from said slug, said molybdenum stud having external threads formed thereupon, wherein the molybdenum material of the stud and the slug material have similar thermal coefficients of expansion, providing reduced thermal stress at the interface therebetween;

an aluminum heatsink having a hole formed therein and with internal threads formed in the peripheral wall surrounding said hole for receiving the threaded molybdenum stud, wherein the external threads of said molybdenum stud engage and deform the threads formed in the softer aluminum heatsink to provide mechanical and thermal bonding between the harder material of the stud and the softer material of the heatsink.

5,256,903
PLASTIC ENCAPSULATED SEMICONDUCTOR DEVICE

Maya Obata, Ishioka; Asao Nishimura, Ushiku; Makoto Kitano, Tsuchiura; Akibiro Yaguchi, Niihari; Ryuji Kohno, Niihari; Nae Yoneda, Niihari; Ichiro Anjoh, Koganei, and Gen Murakami, Tama, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 662,617, Feb. 27, 1991. This application Nov. 26, 1991, Ser. No. 797,964
Claims priority, applicatioo Japan, Feb. 28, 1990, 2-045412; Nov. 28, 1990, 2-326332
Int. Cl.[5] H01L *23/30*
U.S. Cl. 257—787 **15 Claims**



1. A plastic encapsulated semiconductor device comprising: a semiconductor element; a plurality of leads electrically connected with said semiconductor element; one or more of insulating members respectively provided, in an overlapping manner, between said semiconductor element and said plurality of leads and are extended to cover only a limited portion of a main surface area of said semiconductor element; and an encapsulating resin covering a part of said plurality of leads, said insulating members and said semiconductor element, wherein at least a part of peripheral edge surfaces of at least one of said insulating members includes uneven surfaces.

5,256,904
COLLISION DETERMINING CIRCUIT HAVING A STARTING SIGNAL GENERATING CIRCUIT

Shigeo Tobbaru, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

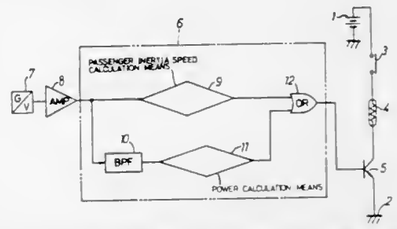
Filed Jan. 10, 1992, Ser. No. 819,178
Claims priority, application Japan, Jan. 29, 1991, 3-9004
Int. Cl.[5] B60R *21/32*
U.S. Cl. 307—10.1 **5 Claims**

1. A collision determining circuit for outputting a starting signal based on an output signal from an acceleration sensor which detects an acceleration generated due to a collision of a vehicle, said collision determining circuit comprising:

a passenger inertial speed calculation means, operably coupled to said acceleration sensor, for calculating a passenger inertial speed of an occupant by integration of an output signal from said acceleration sensor;

a power calculation means, operably coupled to said acceleration sensor, for calculating a power of said output signal of said acceleration sensor within a specific frequency range;

a band pass filter means for filtering frequency components of said output signal of said acceleration sensor, prior to being inputted into said power calculation means, which are: (a) less than or equal to a first reference value, and (b) greater than or equal to a second reference value, said second reference value being greater than said first reference value; and

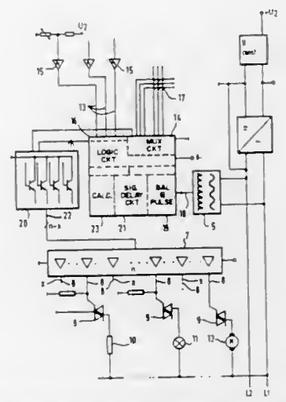


a starting signal generating circuit means, operably coupled to said passenger inertial speed calculation means and said power calculation means, for outputting said starting signal when at least one of the following conditions is established: (a) said passenger inertial speed exceeds a reference value; and (b) said power within said specific frequency range exceeds another reference value.

5,256,905
METHOD AND CIRCUIT FOR SEQUENTIALLY CONNECTING PLURAL LOADS TO AN A.C. VOLTAGE WITHOUT DAMAGING THE LOW VOLTAGE CONTROL CIRCUITRY THEREFOR

Ralf-Jürgen Striek, and Peter Müller, both of Berlin, Fed. Rep. of Germany, assignors to The Coca-Cola Company, Atlanta, Ga. and Bosch-Siemens Hausgerate GmbH, Fed. Rep. of Germany

Filed Dec. 21, 1990, Ser. No. 631,976
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1989, 3942710
Int. Cl.[5] H02P *3/18*
U.S. Cl. 307—34 **20 Claims**



1. In apparatus including a plurality of discrete loads driven by an A.C. drive voltage switched by plural triac type control devices, a method of controlling the switching of the plural triac type control devices with a low voltage control circuit comprising:

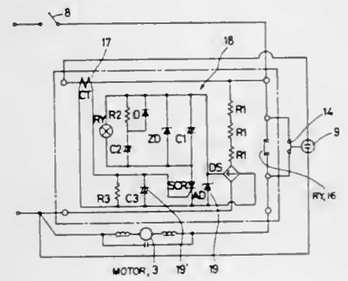
generating a switching pulse sequence having a plurality of substantially simultaneous yet relatively closely spaced non-overlapping switching pulses within a single A.C. half-wave; and

switching each triac type control device on individually in coincidence with a respective different switching pulse of said sequence to thereby distribute the switching load of said plural triac type control devices on said low voltage control circuit such that the peak load on said low voltage control circuit does not exceed the peak load caused by switching on a single triac type control device.

5,256,906
MECHANISM FOR SWITCHING FROM INDEPENDENT TO SYNCHRONOUS, OR VICE VERSA THE OPERATIONAL SETTING OF A DUST COLLECTOR WITH A RECEPTACLE FOR SUPPLYING ANOTHER POWER TOOL WITH WHICH THE DUST COLLECTOR IS TO BE OPERATED SYNCHRONOUSLY

Kazunori Tsuge, Okazaki, and Yukimi Amano, Anjo, both of Japan, assignors to Makita Corporation, Japan

Filed Oct. 31, 1991, Ser. No. 785,941
Claims priority, application Japan, Apr. 19, 1991, 3-36249[U]
Int. Cl.[5] H02J *3/00*
U.S. Cl. 307—39 **4 Claims**



1. In a mechanism for switching from independent to synchronous or vice versa an operational setting of a dust collector having a receptacle for supplying another power tool with which the dust collector is to be operated synchronously, said mechanism including (a) a first switch connected in series both to a power switch of the dust collector and to an electric motor thereof for independent operation of the dust collector, (b) a second, switch connected in series both to said power switch and to said electric motor, but arranged in parallel with the first switch, and (c) means for closing the second switch to operate the dust collector synchronously with the other power tool when electric current is supplied to the other power tool through the receptable,

an improvement comprising safety means which is provided in conjunction with said receptacle and which can be operated to close the first switch when the other power tool is not plugged into said receptacle and to open the first switch when the other power tool is plugged into said receptacle.

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5,256,907

ELECTRIC POWER SUPPLY APPARATUS

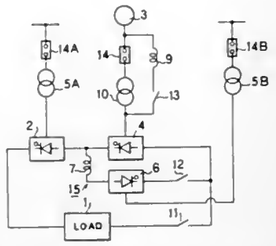
Ryuichi Shimada; Tatsuya Matsukawa, both of Ibaraki, and Yasuo Yoshida, Hyogo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Hyogo and Japan Atomic Energy Research Institute, Ibaraki, both of Japan

Continuation of Ser. No. 363,730, Jun. 9, 1989. This application Jun. 3, 1992, Ser. No. 892,498

Claims priority, application Japan, Jun. 13, 1988, 63-145232; Jun. 5, 1989, 1-142456

Int. Cl.[5] H02K *7/02*

U.S. Cl. 307—82 16 Claims



1. An electric power supply apparatus having a flywheel generator capable of regenerating energy to supplement electric power from a utility line and supply electric power to a varying load, the apparatus comprising:

a first power converter having a terminal connected to the flywheel generator;

a power conversion circuit including a second power converter having a terminal connected to the utility line wherein the first power converter and the power conversion circuit are connected in parallel with the varying load;

a switching arrangement coupled to disconnect the load from at least one of the first and second power converters; and

a third power converter connected in series with the load between the load and the connection of the first power converter and the power conversion circuit, the third power converter having a terminal connected to the utility line.

5,256,908

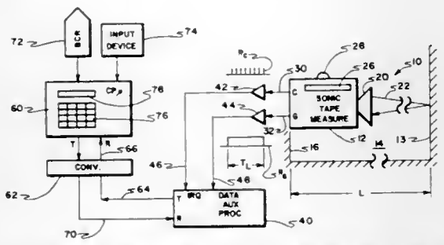
FACILITY SPACE DATA LOGGING DEVICE

Aaron J. Averbuch, Champaign; Roger L. Brauer, Tolono; Michael G. Edwards, Weldon, and William A. Mikucki, Champaign, all of Ill., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 16, 1992, Ser. No. 961,798

Int. Cl.[5] G01S *15/00*

U.S. Cl. 367—99 7 Claims



1. A portable data logging device for logging data concerning room identification and room dimensions of a facility comprising:

a microprocessor based portable computer for logging the data, said computer having manual and automated input means for logging data including data for room dimensions;

an electronic distance measuring device for producing an output indicative of a measured room dimension in digital format and an auxiliary processor responsively coupled to the output of the distance measuring device for converting the output to a coded format compatible to said microprocessor, said auxiliary processor coupled to a data port of the microprocessor.

5,256,909

ELECTRONIC, PREFERABLY ZERO-CONTACT SWITCH

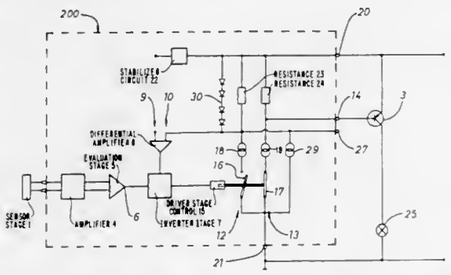
Burkhard Tigges, Balve, and Herbert Sowa, Schwarzenberg, both of Fed. Rep. of Germany, assignors to Werner Turck GmbH & Co. KG, Halver, Fed. Rep. of Germany

Filed Aug. 30, 1991, Ser. No. 755,495

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1990, 4027386

Int. Cl.[5] H01H *35/00, 36/00*

U.S. Cl. 307—116 9 Claims



1. An electronic zero contact switch for use in opening, closing or antivalent modes comprising:

a sensor stage;

a first load switch controllable in response to a sensed state of the sensor stage; and

an IC coupling the sensor stage to the first load switch including an evaluation stage coupled to the sensor stage with the evaluation stage having an output which provides an input signal to an inverter, the inverter being responsive to a control signal having first and second states controlling whether an output signal of the inverter is an inversion of the input signal to the inverter, a first driver stage having an input coupled to the output of the inverter which produces an output signal at a first output terminal of the IC, a control signal source producing the control signal having an input connected to an output of a second driver stage and the control signal source changing the state of the control signal in response to an output signal from the second driver stage and having an output coupled to a control input of the inverter and the second driver stage having an input coupled to the output of the inverter which produces an output signal at a second output terminal of the IC with the output signals from the first and second driver stages having opposite states; and wherein

an output signal from one of the first and second output terminals is coupled to the first load switch and controls the first load switch.

5,256,910

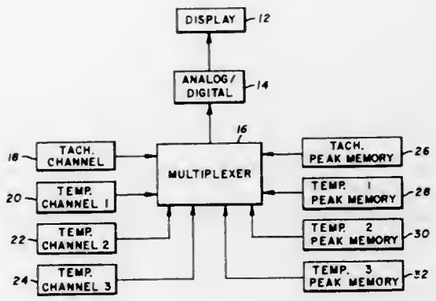
MONITORING APPARATUS

William E. Sukow, 13216 Birchwood La., Burnsville, Minn. 55337; Peter Beagan, 1870 Eagle Ridge Dr., #6, Mendota Heights, Minn. 55118; Dennis D. Ikola, 2866 Lakeshore Ave., Maple Plain, Minn. 55359, and Troy D. Nelson, 3850 Plymouth Blvd., No. 124, Plymouth, Minn. 55446

Filed Nov. 18, 1991, Ser. No. 793,465

Int. Cl.[5] H02J *4/00*

U.S. Cl. 307—125 11 Claims



1. Monitoring apparatus comprising:

a) an operator controllable switch;

b) a first control means for controlling electrical circuits having a first and a second state, being connected to said switch and arranged such that said first control means will toggle between the first and the second state whenever said switch is closed for a first time interval of a predetermined length; and

c) a second control means for controlling electrical circuits having a first and a second state, being connected to said switch and arranged such that said second control means will toggle between the first and the second state whenever said switch is closed momentarily; and

d) first circuit means for logic control having a first and second state, being connected to said first control means and being controlled thereby such that said first circuit means will have the same state as said first control means, and

e) counting means for counting the changes of state of said second control means, said counting means being connected to said second control means and arranged such that the count will increment upward by one upon each change of state of said second control means to a predetermined maximum count and will reset to zero and begin a new count on the next subsequent change of state; and

f) multiplexer means having multiple inputs and a single output for selecting one of the inputs as an output, having as inputs a first class and a second class of voltage inputs with the number of each class of inputs being equal to the maximum count of said counter means; and

g) said multiplexer means inputs, said multiplexer means, said first circuit means and said counter means being connected and arranged such that when said first circuit means is in the first state the multiplexer means output will be selected from among the first class of multiplexer means input voltages, and when said first circuit means is in the second state the multiplexer means output will be selected from among the second class of multiplexer means input voltages, and such that the individual multiplexer output of the selected class of inputs will determined by the count of said counting means.

5,256,911

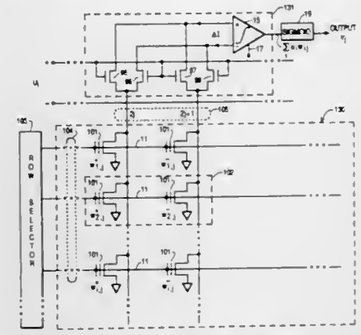
NEURAl NETWORK WITH MULTIPLEXED SNYAPTIC PROCESSING

Mark A. Holler, Palo Alto, and Simon M. Tam, Redwood City, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jun. 10, 1992, Ser. No. 896,204

Int. Cl.[5] G06F *15/18*

U.S. Cl. 307—201 22 Claims



1. An artificial neuron synapse network for forming the vector dot-product of an input data vector and stored reference weighting vector, comprising:

(a) memory means for differentially storing the values of the reference vector components by adjusting the output current values of pairs of current sources;

(b) means for selecting said current source pairs;

(c) differential transconductance multiplier means using said current source pairs, as a differential current source for forming a differential current output representative of the product of a differential input data vector component value and its corresponding reference vector component value; and

(d) means for accumulating said differential currents to produce an output voltage representative of the vector dot-product of the input and reference vectors.

5,256,912

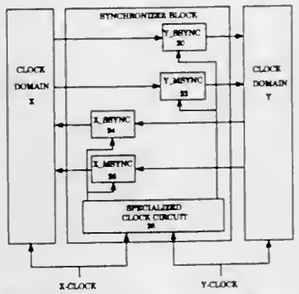
SYNCHRONIZER APPARATUS FOR SYSTEM HAVING AT LEAST TWO CLOCK DOMAINS

Jorge C. Rios, San Jose, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Dec. 19, 1991, Ser. No. 812,070

Int. Cl.[5] H03K *5/13, 3/01;* H04L *7/00*

U.S. Cl. 307—269 9 Claims



1. A synchronizer for synchronizing signals coupled from a first clock domain operating in accordance with a first clock with a first clock signal having a first frequency, to a second clock domain operating in accordance with a second clock

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with a second clock signal having second clock pulses at a second frequency, said synchronizer comprising:

clock circuit means for generating a plurality of different clock signals, said plurality of different clock signals including a first master clock signal having at least one first master clock pulse in phase with said second clock signal, and a first slave clock signal having at least one first slave clock pulse 180 degrees out of phase with said second clock signal;

synchronizer circuit means, coupled to said clock circuit means, wherein said synchronizer circuit means utilizes said plurality of different clock signals to synchronize said signals to be synchronized, said synchronizer circuit means having:

a first synchronizer cell circuit comprised of a first plurality of transparent latches;

a second synchronizer cell circuit comprised of a second plurality of transparent latches;

wherein said first synchronizer cell circuit is coupled to said second synchronizer cell circuit.

5,256,913

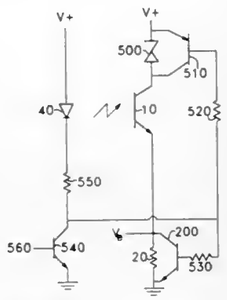
LOW POWER OPTOELECTRONIC DEVICE AND METHOD

René Sommer, Prilly, Switzerland, assignor to Logitech, Inc., Redwood City, Calif.

Continuation of Ser. No. 580,359, Sep. 10, 1990, abandoned, which is a continuation of Ser. No. 357,653, May 25, 1989, abandoned, which is a continuation of Ser. No. 83,511, Aug. 7, 1987, abandoned. This application Jun. 18, 1991, Ser. No. 717,187

Int. Cl.[5] H03K *17/78, 3/42*

U.S. Cl. 307—311 **2 Claims**



1. A circuit comprising

an LED,

a phototransistor having parasitic capacitances, the LED and phototransistor being arranged so that light from the LED impinges on the phototransistor when the LED is on,

means for switching the LED on and off,

offset voltage means connected to the collector of the phototransistor for imposing an offset voltage,

load means connected to the emitter of the phototransistor for loading the phototransistor,

first switchable means having high impedance and low impedance states connected in parallel with the offset voltage means for selectively shunting the offset voltage means, and

wherein the first switchable means is switched to the low impedance state when the LED is on, and the first switchable means is switched to the high impedance state when the LED is off.

5,256,914

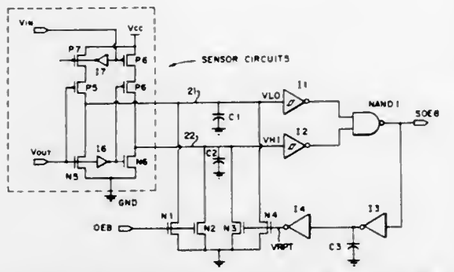
SHORT CIRCUIT PROTECTION CIRCUIT AND METHOD FOR OUTPUT BUFFERS

James B. Boomer, Falmouth, Me., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 3, 1991, Ser. No. 771,400

Int. Cl.[5] H03K *17/16, 19/00*

U.S. Cl. 307—443 **25 Claims**



1. A method of protecting an output buffer circuit (**10,11**) from short circuit conditions of the output (V_{OUT}) shorted to either a high potential power rail (V_C) or a low potential power rail (GND), said output buffer circuit normally delivering output signals with high (H) and low (L) potential states at the output (V_{OUT}) in response to respective input signals at an input (V_{IN}), and having a tristate enable circuit with tristate enable circuit input (**14**) for tristating the output buffer circuit with a high impedance third state (Z) and the output (V_{OUT}) comprising:

detecting occurrence of a short circuit condition of the output (V_{OUT}) shorted to either the high potential power rail (V_{CC}) or low potential power rail (GND) by sensing and comparing the respective states of signals at the input (V_{IN}) and output (V_{OUT}) in a sensing signal circuit (**21,22**);

detecting occurrence of an out of state condition between the input (V_{IN}) and output (V_{OUT}) for a specified sensing time delay period (tC1, tC2) longer than characteristic propagation delay times (tpHL, tpLH) for high to low (HL) and low to high (LH) transitions at the output (V_{OUT}) and measuring the sensing time delay period by charging a charge integrator (C1, C2) in the sensing signal circuit (**21,22**);

generating a short circuit sensing signal (VLO, VHI) in the sensing signal circuit (**32, 33**) in response to detection of an out of state condition for said specified sensing time delay period;

and tristating the output buffer circuit (**10,11**) in response to the short circuit sensing signal (VLO, VHI).

5,256,915

COMPOUND SEMICONDUCTOR INTEGRATED CIRCUIT

Yoshiro Nakayama, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 6, 1992, Ser. No. 817,092

Claims priority, application Japan, Jan. 8, 1991, 3-305

Int. Cl.[5] H03K *11/094*

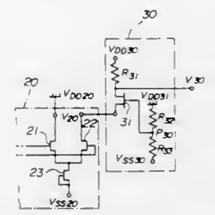
U.S. Cl. 307—450 **7 Claims**

1. A semiconductor integrated circuit which receives an input signal of a first voltage level and produces in response thereto, and outputs, a driving signal of a second voltage level, higher than the first voltage level, for driving a load, said semiconductor integrated circuit comprising:

a compound semiconductor substrate;

a logic part operable at a first source voltage level correlated to the first voltage level of the input signal, the logic part receiving the input signal and comprising at least a first field effect transistor, formed on said compound semiconductor substrate, which is responsive to the input signal and outputs a first signal;

a driver part, operable at a second source voltage level correlated to the second voltage level of the driving signal and which is coupled to said logic part for receiving the first signal, the driver part comprising at least a second field effect transistor, formed on said compound semiconductor substrate, which is responsive to the received first signal and outputs the driving signal;



said first field effect transistor being a self-aligned type field effect transistor having a first gate electrode and first and second impurity regions which are formed in self-alignment with respect to the first gate electrode; and

said second field effect transistor being a non-self-aligned type field effect transistor having a second gate electrode and third and fourth impurity regions which are formed in non-self-alignment with respect to the second gate electrode.

5,256,916

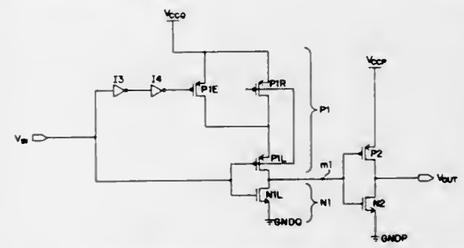
TTL TO CMOS TRANSLATING INPUT BUFFER CIRCUIT WITH DUAL THRESHOLDS FOR HIGH DYNAMIC CURRENT AND LOW STATIC CURRENT

Brian W. Thurston, Cumberland, Me., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Feb. 18, 1992, Ser. No. 838,394

Int. Cl.[5] H03K *19/20, 19/0175*

U.S. Cl. 307—451 **25 Claims**



1. A TTL to CMOS translating input buffer circuit having an input (V_{IN}) for receiving data signals of high (H) and low (L) potential levels, and an output node (m1) for passing data signals, said input buffer circuit comprising a first stage having a pullup circuit coupled for sourcing current to an output node (m1) and a pulldown circuit coupled for sinking current from the output node (m1), said pullup and pulldown circuits having control gate nodes coupled to the input (V_{IN}), the improvement comprising:

said pullup and pulldown circuits being constructed to provide dual switching thresholds at the input (V_{IN}) including a data input stage (P1R,P1L,N1L) coupled to the input (V_{IN}) having a relatively lower first switching threshold voltage level for switching dynamic current at the output node (m1) and a current enhancement stage (**13**) coupled to the input (V_{IN}) having a relatively higher second switching threshold voltage level for switching static current at the output node (m1).

5,256,917

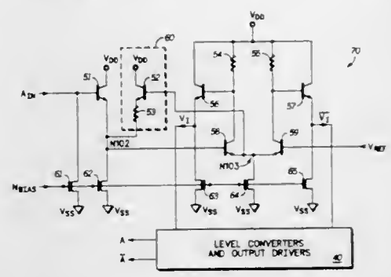
ECL LOGIC GATE WITH VOLTAGE PROTECTION

Stephen T. Flannagan, and John D. Porter, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 3, 1992, Ser. No. 863,623

Int. Cl.[5] H03K *19/003, 19/086, 19/0175*

U.S. Cl. 307—455 **20 Claims**



50

1. An ECL logic gate with voltage protection, comprising:

an input stage including a first emitter-follower bipolar transistor having a base for receiving an input signal, and an emitter for providing a first signal;

a differential amplifier stage including second and third bipolar transistors having bases for respectively receiving said first signal and a reference voltage and having emitters coupled together, collectors of said second and third transistors respectively providing second and third signals; and

means coupled between said emitters of said second and third bipolar transistors and said emitter of said first emitter-follower transistor, for providing a voltage at said emitter of said first emitter-follower bipolar transistor substantially half of a voltage difference between said input signal and a voltage at said emitters of said second and third bipolar transistors when said input signal reverse biases said first emitter follower bipolar transistor and said second bipolar transistor.

5,256,918

PROGRAMMABLE LOGIC CIRCUIT

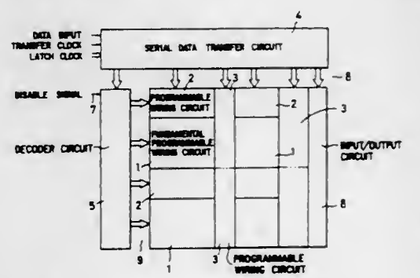
Hiroaki Suzuki, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 21, 1992, Ser. No. 838,889

Claims priority, application Japan, Feb. 27, 1991, 3-32979

Int. Cl.[5] H03K *19/173*

U.S. Cl. 307—465 **8 Claims**



1. A programmable logic circuit comprising:

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a data transfer circuit for outputting serial program data in a parallel manner;

a plurality of fundamental programmable logic circuits each including first data storage sections arranged in a matrix pattern, said first data storage sections having signal output states which are programmed in accordance with parallel data supplied from the data transfer circuit, and a logic circuit pattern being programmed in accordance with at least outputs of the first data storage sections;

a plurality of programmable wiring means, arranged in adjacent to the fundamental programmable logic circuits, for providing connection lines between the fundamental programmable logic circuits, said programmable wiring means including second data storage sections arranged in a matrix pattern, said second data storage sections having signal output states which are programmed in accordance with the parallel data supplied from the data transfer circuit, and switches located between the connection lines being selected or controlled in accordance with outputs of the second storage sections;

a decoder circuit for causing the first and second storage sections to store data output from the data transfer circuit in response to address designation; and

an input/output circuit for receiving and outputting a signal supplied through the fundamental programmable logic circuits and the programmable wiring means,

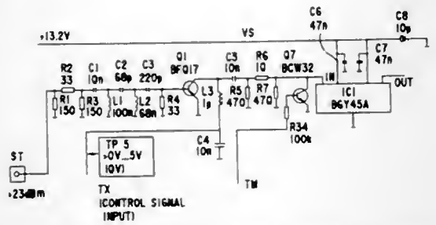
at least said fundamental programmable logic circuits and said programmable wiring means being arranged in a matrix pattern.

5,256,919

METHOD FOR PREVENTING THE OSCILLATION OF AN RF POWER MODULE

Jukka Vesterinen, Äänekoski, Finland, assignor to Heikka Marttila Oy, Jyvaskyla, Finland

Continuation of Ser. No. 701,241, May 16, 1991, abandoned. This application Feb. 11, 1993, Ser. No. 15,895
Claims priority, application Finland, Jun. 5, 1990, 902812
Int. Cl.[5] H03K *17/16, 19/003*
U.S. Cl. 307—557 **4 Claims**



3. A circuit for preventing oscillation of an RF power module when an operating voltage of said module is permanently connected during operation, comprising:

a control means connected to an input of said module;

a coupling element operably connected to said input of said module for connecting or disconnecting said input of said module to or from ground, wherein said control means is coupled to said coupling element,

wherein said coupling element connects said input of said module to said ground when said control means turns OFF said module,

wherein said coupling element disconnects said input of said module from said ground when said control means turns ON said module, and

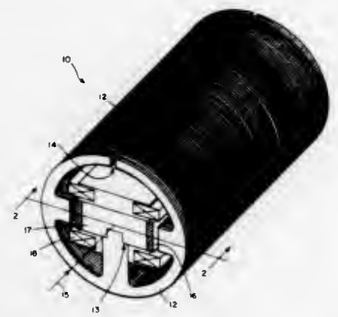
wherein a control signal in said control means is a logical negation of another signal in said controls means, wherein said control signal and said another signal are substantially formed via a common circuit.

5,256,920

ACOUSTIC TRANSDUCER

Raymond Porzio, Amherst, N.H., assignor to Lockheed Sanders, Inc., Nashua, N.H.

Filed Dec. 21, 1990, Ser. No. 633,729
Int. Cl.[5] H02K *41/02;* **H01L** *41/09;* **H02N** *02/00;* **H04R** *11/14*
U.S. Cl. 310—13 **21 Claims**



1. An acoustic transducer, comprising:

an elongated outer shell made of magnetic material and having a slot directed in the elongated direction thereof for allowing the shell to oscillate flexurally from a portion of the shell generally opposite the slot;

permanent magnet means, located within the shell, for forming a static magnetic field which passes through the outer shell and normal to the elongated direction thereof; and

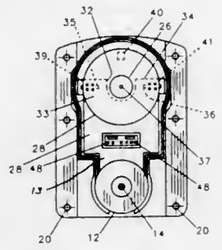
field coil means, located within the shell, for introducing alternating magnetic flux into the static magnetic field of the permanent magnet means for causing the outer shell to oscillate flexurally.

5,256,921

GEAR MOTOR WITH ROTARY SWITCH

Harry Pruis, 13537 Garden Plane Rd., Morrison, Ill. 61270, and Donald H. Hardey, 1103 Mary, Dixon, Ill. 61021

Filed Jun. 3, 1992, Ser. No. 892,778
Int. Cl.[5] H02K *11/00, 7/06, 7/10*
U.S. Cl. 310—68 B **16 Claims**



2. The combination comprising:

a reversible direct current electric motor,

a reduction gear train in an enclosure having two opposing surfaces and an output shaft extending through one of said opposing surfaces, said shaft having a longitudinal axis, and said output shaft for conveying rotational power to a dispensing device of a vending machine.

said electric motor drivingly connected to said gear train,

two magnetically operated switches fixedly positioned adjacent said output shaft, said switches being radially spaced a given distant from said output shaft and having a given angular spaced relationship relative to said axis of said output shaft, and said switches being in a plane substantially perpendicular to said axis of said output shaft,

carrier means mounted on said output shaft, said carrier for retaining a plurality of permanent magnets in a plane perpendicular to said axis of said output shaft,

a plurality of permanent magnets mounted to said carrier means and spaced from said output shaft a distance equal to said given distance said switches are radially spaced from said output shaft,

two of said permanent magnets being angularly spaced relative to said axis of said output shaft equal to said given angular spaced relationship of said switches, and

means connected to said magnetically operated switches to reverse the polarity of current applied to said electric motor when one of said switches is actuated and to terminate said current applied to said electric motor when both of said switches are actuated whereby said output shaft will be caused to rotate through said given angular space in either of two directions, reverse and return to standby position.

3. The combination of claim 2 further comprising

a first magnet and a second magnet, said first and said second magnets mounted on said carrier means and spaced angularly around said output shaft at an angle equal to said angular spaced relationship of said switches,

a third magnet angularly spaced midway between said first and said second magnet, and

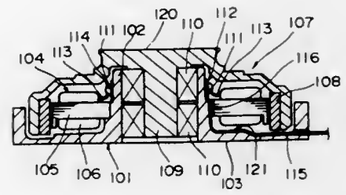
said motor in a stand-by position when said output shaft and said carrier are oriented with said first magnet adjacent one of said magnetically operated switches and said second magnet adjacent the other of said magnetic switches, whereby the polarity of DC current applied to said electric motor is reversed when said third magnet is rotated on said carrier to a position adjacent one of said magnetically operated switches.

5,256,922

SPINDLE MOTOR

Tadahiro Tanaka, Ina; Hiroyuki Yonei; Yoichi Mori, both of Shiga, and Yoshiyuki Kodaira, Takamori, all of Japan, assignors to Nippon Densan Corporation, Kyoto, Japan

Filed Apr. 8, 1992, Ser. No. 865,086
Claims priority, application Japan, Apr. 12, 1991, 3-108383
Int. Cl.[5] H02K *11/00, 7/14*
U.S. Cl. 310—71 **8 Claims**



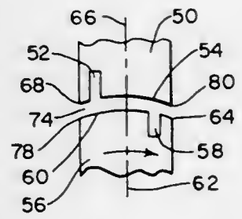
1. A spindle motor comprising a housing, a hub arranged for rotation on the housing, bearing means interposed between the housing and the hub, a rotor magnet mounted to the hub, a stator mounted to the housing so as to face the rotor magnet, and a flexible printed circuit film for supply of electric currents to an armature coil of the stator, the improvement characterized in which said flexible printed circuit film comprises a land portion coupled electrically to the armature coil of said stator and a lead portion extending from the land portion, said land portion being disposed above said stator and said lead portion extending between said stator and said housing to an outside of the housing.

5,256,923

SWITCHED RELUCTANCE MOTOR WITH SENSORLESS POSITION DETECTION

Ronald P. Bartos, Menomonee Falls; Timothy H. Houle, Wauwatosa, both of Wis., and J. Herbert Johnson, Tipp City, Ohio, assignors to A. O. Smith Corporation, Wilmington, Del.

Filed May 11, 1992, Ser. No. 880,934
Int. Cl.[5] H02K *17/00*
U.S. Cl. 310—166 **13 Claims**



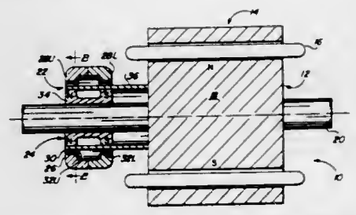
1. A switched reluctance motor providing position detection without a shaft position sensor, comprising a stator comprising a plurality of circumferentially spaced stator poles having windings therearound, each stator pole having an inner pole face subtending an arc along a first circumference, a rotor rotational about a motor shaft axis and comprising a central annular hub having a plurality of circumferentially spaced rotor poles extending radially outwardly from said hub, each rotor pole having an outer pole face subtending an arc along a second circumference concentric with and spaced slightly radially inwardly of said first circumference by a small clearance gap, said rotor producing an inductance profile in each of said stator poles as each of said rotor poles comes into and out of alignment with said stator poles when said rotor is rotated, a shape irregularity in one of said rotor and said stator poles, said irregularity, for at least one energizing of a stator pole per each rotor revolution, producing a relatively constant, measurable and accurate signal in the inducatance profile of said one energized stator pole with varying motor speed and torque indicative of rotor position relative to said stator.

5,256,924

SUPERCONDUCTING COMMUTATOR FOR DC MACHINES

Richard L. Fischer, Rolling Hills Estates, Calif., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Aug. 10, 1992, Ser. No. 927,902
Int. Cl.[5] H02K *13/00*
U.S. Cl. 310—233 **14 Claims**



1. A commutator for commutating current in field windings of a dc machine having a dc link high and a dc link return, said commutator, comprising:

first and second pluralities of members made of a superconducting material that loses its conductivity when exposed to a magnetic field above a critical magnetic field, each member in said first plurality coupling a commutation point on said windings to said dc link high, each member in said second plurality coupling a commutation point on said windings to said dc link return; and

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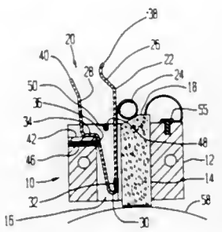
magnetic means for generating a first magnetic field that is greater than said critical magnetic field and a second magnetic field that is less than said critical magnetic field, said members of said first and second pluralities being exposed to said first and second magnetic fields in a sequence that causes said current to be commutated in said field windings.

5,256,925

BRUSH HOLDER WITH IMPROVED SPRING CLIP ARRANGEMENT

David L. Cutsforth, Rte. 1, Box 501, Grand Rapids, Minn. 55721

Filed Mar. 24, 1992, Ser. No. 858,337
Int. Cl.[5] H01R *39/40*; H02K *13/00*
U.S. Cl. 310—247 **16 Claims**



11. A brush holder for use with electrical brushes comprising a brush holder body and a spring clip assembly, said brush holder body including a brush pocket sized to slidably guide an electrical brush disposed therein, a spring clip pocket for receiving said sprint clip assembly therein, and stop means for positively stopping said spring clip assembly in a seated position in said spring clip pocket, said spring clip assembly including a generally V-shaped spring clip having first and second legs joined at an apex and shoulder means formed by an offset in one of said first and second legs for engaging said stop means when said spring clip reaches the seated position, said offset creating a dimension for said spring clip assembly to thereby prevent insertion of said spring clip assembly beyond said seated position, means disposed in a position crossing said spring clip pocket for controlling separation of said spring clip assembly from the brush holder body while permitting retraction of said spring clip assembly from the spring clip pocket and pivoting of said spring clip assembly relative to the brush holder body, means for releasably securing said spring clip assembly relative to said brush holder body when said spring clip assembly is in the seated position, and biasing means carried by said spring clip assembly for engaging and biasing an electrical brush disposed in said brush pocket relative to said brush holder body.

5,256,926

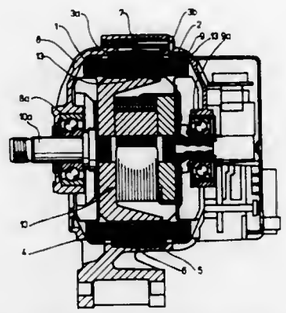
ALTERNATING-CURRENT GENERATOR WITH STATOR CENTER LAMINATION AND METHOD FOR PRODUCING THE CENTER LAMINATION

Walter Hagenlocher, Stuttgart, and Manfred Frister, Schwieberdingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE90/00360, § 371 Date Jan. 31, 1992, § 102(e) Date Jan. 31, 1992, PCT Pub. No. WO91/02398, PCT Pub. Date Feb. 21, 1991
PCT Filed May 16, 1990, Ser. No. 828,930
Int. Cl.[5] H02K *1/16, 15/02*
U.S. Cl. 310—259 **8 Claims**

1. Alternating-current generator comprising a housing including two end shields, a stator bundle and a rotor mounted in the housing so as to be rotatable in the stator bundle, said stator bundle including two bundle halves and at least one center lamination between the bundle halves, the at least one center lamination being clamped between the end shields of the housing by attachment means, and wherein

said at least one center lamination has an outer diameter larger than an outer diameter of the stator bundles at least in the vicinity of the attachment means, each of said at



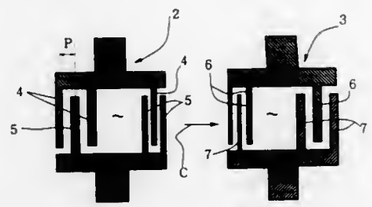
least one center laminations being made from a plurality of individual interlocking segments, said interlocking segments being provided with interlocking means for interlocking to form each of said at least one center laminations.

5,256,927

SURFACE ACOUSTIC WAVE ELEMENT HAVING A WIDE BANDWIDTH AND A LOW INSERTION LOSS

Shunji Kato, Ageo; Kazuhiko Yamanouchi, 37-13, Matsugaoka, Taihaku-ku, Sendai-shi, Miyagi-ken, and Junichi Ogata, Sendai, all of Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo and Kazuhiko Yamanouchi, Miyagi, both of Japan

Filed Mar. 26, 1992, Ser. No. 858,333
Claims priority, application Japan, Mar. 29, 1991, 3-091180
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—313 B **19 Claims**



1. A surface acoustic wave element wherein a first surface acoustic wave transducer for exciting a surface acoustic wave and a second surface acoustic wave transducer for receiving the surface acoustic wave are provided on a piezoelectric or electrostrictive substrate in a manner where said transducers are opposed to each other in the propagation direction of the surface acoustic wave and wherein:

the first surface acoustic wave transducer comprises a first interdigital electrode constituted by positive and negative electrodes alternately arranged in a manner whereby the electrode width and the period thereof are gradually decreased in the direction of propagation of the surface acoustic wave;

the second surface acoustic wave transducer comprises a second interdigital electrode constituted by positive and negative electrodes alternately arranged in a manner whereby the electrode width and the period thereof are gradually increased in the direction of propagation of the surface acoustic wave;

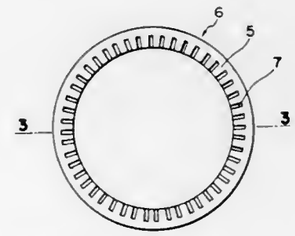
Zm/Zg of each of said first and second surface acoustic wave transducers is smaller than 1 wherein Zm is the acoustic impedance of a metal film constituting the positive and negative electrodes and Zg is the acoustic impedance of an electrode gap between the positive and negative electrodes.

5,256,928

ULTRASONIC MOTOR WITH A VIBRATOR HAVING RECESSES

Takahiro Nishikura, Ikoma; Katsu Takeda, Osaka; Masanori Sumihara, Moriguchi, and Osamu Kawasaki, Tsuzuki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 28, 1991, Ser. No. 783,192
Claims priority, application Japan, Oct. 26, 1990, 2-288686; Oct. 26, 1990, 2-288689
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—323 **13 Claims**



1. An ultrasonic motor comprising:

a circular vibrator including a circular elastic member and a piezoelectric element attached to said elastic member, said circular vibrator being adapted to have elastic circumferentially travelling waves generated therein as a result of an electric field being applied to said piezoelectric element; and

a movable member mounted relative to said circular vibrator and having a contact face adapted to be pressed into contact with a contact face of said circular elastic member such that said movable member can be moved by said circular vibrator when the elastic circumferentially travelling waves are generated therein;

wherein a plurality of recesses are formed in said contact face of said circular elastic member in such a manner that said contact face includes a contact face portion which extends continuously about a circumference of said circular elastic member;

wherein said circular elastic member of said circular vibrator includes an inner peripheral edge and an outer peripheral edge; and

wherein said recesses extend radially outwardly from said inner peripheral edge but do not reach said outer peripheral edge.

5,256,929

VIBRATOR SUPPORT STRUCTURE

Kokichi Terajima, Tokyo, Japan, assignor to AKAI Electric Co., Ltd., Tokyo, Japan

Filed Sep. 25, 1992, Ser. No. 951,666
Claims priority, application Japan, Oct. 8, 1991, 3-260225
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—326 **6 Claims**

1. A vibrator support structure for a vibrator having a vibrating body, comprising:

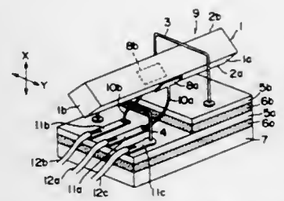
a support stand,

a first damper material disposed on top of said support stand,

a first substrate disposed on top of said first damper material,

a second damper material, disposed on top of, but only partially covering, said first substrate,

a second substrate disposed on top of said second damper material,



a first support filament connected to said vibrating body and mounted on an exposed portion of said first substrate, and

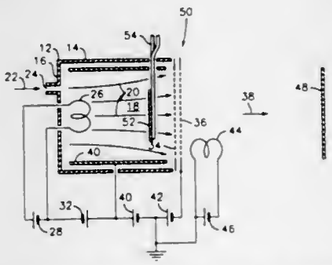
a second support filament connected to said vibrating body and mounted on said second substrate.

5,256,930

COOLED PLASMA SOURCE

William E. Hughes, Annandale, Va., assignor to Commonwealth Scientific Corporation, Alexandria, Va.

Filed Feb. 10, 1992, Ser. No. 833,049
Int. Cl.[5] H05H *1/28, 1/54*; H01J *7/24*
U.S. Cl. 313—30 **16 Claims**



1. In a plasma source including a chamber having an open end and within which thermal radiation is developed, wherein ions are produced by means of electrical discharge and then propelled outwardly toward a target substrate, and wherein the improvement comprises a cooled plate positioned in said chamber to reduce escape of said thermal radiation from said chamber.

5,256,931

ELECTRON SOURCE HAVING A MATERIAL-RETAINING DEVICE

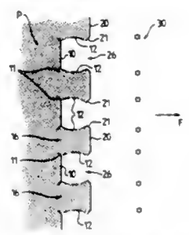
Henri Bernadet, Paris, France, assignor to U.S. Philips Corp., New York, N.Y.

Filed Oct. 10, 1991, Ser. No. 775,654
Claims priority, application France, Oct. 12, 1990, 90 12613
Int. Cl.[5] H05H *1/03*
U.S. Cl. 313—360.1 **8 Claims**

1. A vacuum arc electron source comprising a plasma source having an anode and a cathode facing each other such that they produce a plasma after an appropriate voltage difference has been applied between the anode and the cathode, an electron extractor device and a material-retaining device arranged between the extractor device and the plasma source, characterized, in that, the material-retaining device includes, arranged in the electron extraction direction, at least an upstream baffle

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and a downstream baffle which are both electrically conducting and have apertures arranged, such that when the baffles



and are brought to a given potential, the plasma does not extend to downstream of the downstream baffle.

5,256,932

COLOR CATHODE RAY TUBE

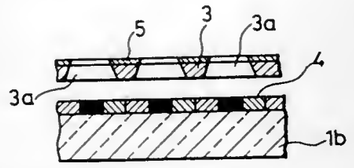
Tetsuya Watanabe; Morio Yamamoto, both of Nagaokakyo; Tohru Hanada, Amagasaki; Hiroshi Kimura, Amagasaki, and Masayasu Koitabashi, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 12, 1990, Ser. No. 536,767

Claims priority, application Japan, Jun. 15, 1989, 1-154914

Int. Cl.[5] H01J *29/07*

U.S. Cl. 313—402 3 Claims



1. A color cathode ray tube comprising:
an electron gun;
a fluorescent screen which emits light when contacted by electron beams emitted from said electron gun;
a shadow mask arranged between said electron gun and said fluorescent screen, having a plurality of through holes through which said emitted electron beams travel; and
an electron beam reflecting film formed on an electron beam irradiated surface of said shadow mask, the electron beam reflecting film including tungsten powder to which at least a metal, that is less likely to be oxidized than tungsten, is added or coated.

5,256,933

ELECTRON GUN FOR A CATHODE RAY TUBE

Gwan C. Jeon, Chungcheongbuk, Rep. of Korea, assignor to Samsung Electron Devices Co., Ltd., Kyungki-Do, Rep. of Korea

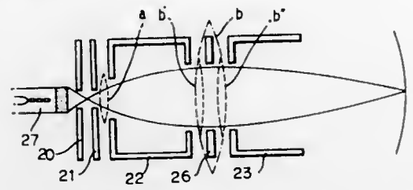
Filed Dec. 30, 1991, Ser. No. 814,488

Claims priority, application Rep. of Korea, Dec. 31, 1990, 90-22539

Int. Cl.[5] H01J *29/51*

U.S. Cl. 313—414 2 Claims

1. An in-line-type electron gun for a color-displaying cathode ray tube, comprising:
a cathode for emitting a beam of electrodes towards a screen;
a series of beam-condensing electrodes arranged in axial alignment in a series in front of said cathode; said electrodes including a first set of two electrodes having a first difference in voltage applied thereto for thereby effectively providing a pre-focusing lens for said electron beam; said electrodes further including a second set of two electrodes, axially neighboring one another in said series with a gap located axially between them, said electrodes of said second set being more distant from said cathode than said first set and having a second difference in voltage applied thereto for thereby effectively providing a



spherically curved electrostatic condensing lens for said electron beam; and
at least one floating electrode disposed in said gap, axially between said two electrodes of said second pair, each said floating electrode having no applied voltage.

5,256,934

DISPLAY TUBE COMPRISING AN ELECTRON GUN WITH A RESISTIVE FOCUSING LENS

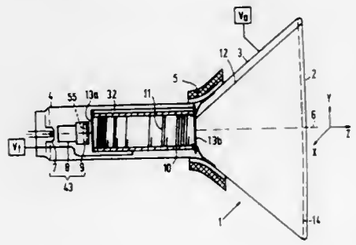
Jeroen Van Eogelsboven; Ger-Wim J. Goorhuis; Gerardus J. A. Hellings; Gerardus A. H. M. Vrijssen, and Tjerk G. Spanjer, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 651,898, Feb. 6, 1991, abandoned. This application May 13, 1992, Ser. No. 883,819

Claims priority, application Netherlands, Feb. 14, 1990, 9000349

Int. Cl.[5] H01J *29/62*

U.S. Cl. 313—450 27 Claims



1. A picture display device comprising a display tube having a display screen and an electron gun arranged on an electron-optical axis for producing an electron beam directed along said axis toward said screen, said electron gun comprising, arranged along said axis, an electron beam producing part for producing the electron beam and a tubular structure, through which the electron beam passes, for effecting focusing the electron beam to form a luminescent spot for deflection across the screen, characterized in that said tubular structure comprises:
a. at least one tubular member of insulating material having an inner surface bearing a resistive layer means forming a predetermined pattern for producing a focusing lens;
b. first conductive means electrically connected to axially spaced portions of said resistive layer means;
c. second conductive means electrically connected to a portion of said resistive layer means which is disposed between said axially spaced portions; and
d. means for applying to said first and second conductive means respective voltages for effecting static and dynamic focusing of the electron beam.

5,256,935

LOW PRESSURE MERCURY VAPOR DISCHARGE LAMP HAVING COLD CATHODE

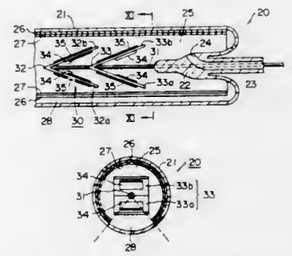
Yoshitomi Dobashi, Fujisawa, and Hisayuki Kobayashi, Iwase, both of Japan, assignors to Toshiba Lighting & Technology Corporation, Tokyo, Japan

Filed Aug. 28, 1991, Ser. No. 751,073

Claims priority, application Japan, Aug. 30, 1990, 2-229314; Nov. 26, 1990, 2-322022

Int. Cl.[5] H01J *61/067, 61.35*

U.S. Cl. 313—491 11 Claims



1. A cold cathode mercury vapor discharge lamp comprising a bulb having a transparent wall portion and containing mercury vapor, an electrode sealed within said bulb, a luminescent coating material disposed on an interior surface of said bulb, and a first electrode support provided within said bulb, said support being secured to a section of a wall of said bulb and extending in a direction from said wall section, said electrode comprising first and second parallel plates spaced apart along said direction and secured to respective portions of said support spaced apart along said direction, and said parallel plates being inclined to said support.

5,256,936

IMAGE DISPLAY DEVICE

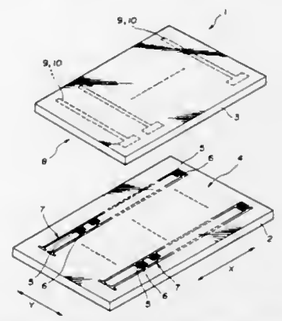
Shigeo Itoh; Teruo Watanabe; Hisashi Nakata; Norio Nishimura, all of Mobara; Junji Itoh, and Seigo Kanemaru, both of Tsukuba, all of Japan, assignors to Futaba Denshi Kogyo K.K., Mobara, Japan

Filed Sep. 27, 1991, Ser. No. 766,071

Claims priority, application Japan, Sep. 27, 1990, 2-255054

Int. Cl.[5] H01J *17/49*

U.S. Cl. 313—495 5 Claims



1. An image display device comprising: a first insulating substrate formed with a plurality of recesses; a plurality of emitters provided in the recesses, each emitter being substantially rectangular in shape; a U-shaped gate provided at the periphery of each emitter on the first substrate; a second insulating, light transparent substrate forming a vacuum envelope in cooperation with the first substrate; and an anode phosphor combination lamined onto an inner surface of said second substrate at a position opposite to the emitters.

5,256,937

FLAT PANEL FLUORESCENT SCREEN DISPLAY TUBE

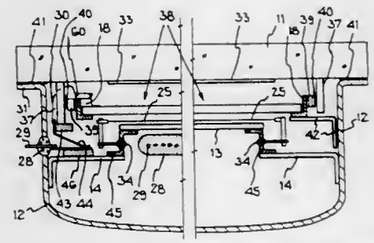
Gottbold Bubeck, Erkenbrechtsweiler; Stefan Speh, Ulm-Gögglingen, and Kurt-Manfred Tischer, Wendlingen, all of Fed. Rep. of Germany, assignors to Nokia (Deutschland) GmbH, Pforzheim, Fed. Rep. of Germany

Continuation of Ser. No. 503,479, Apr. 2, 1990, abandoned. This application Jan. 30, 1992, Ser. No. 827,902

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1989, 3911343

Int. Cl.[5] H01J *31/12*

U.S. Cl. 313—495 9 Claims



1. A flat panel fluorescent screen display tube having a plurality of substantially parallel rectangular planar components closely arrayed face-to-face within a substantially rectangular hollow envelope which has a rear housing (12) and a transparent front faceplate (11) sealingly joined to the rear housing, said planar components including:
a fluorescent raster screen of pixels (33) arrayed on the interior face of the faceplate;
a control assembly (38) incorporating an anode (19) and orthogonal pluralities of arrayed row electrodes (20) and arrayed column electrodes (21);
and an area cathode assembly incorporating a reflector (13) supporting an orthogonal arrayed plurality of segment electrodes (27) with an overlying arrayed plurality of heated wires (25) spaced therefrom, producing a large plurality of generally parallel electron streams traveling directly from the area cathode assembly through the control assembly perpendicularly toward the fluorescent screen with no major angular deflections,
with no electron gun, no reversing lens and no diversion or deflection devices producing major electron beam deflections of between 90° and 180°,
characterized in that the control assembly (38) is mounted spanning a substantially rectangular supporting frame (18) positioned inside said hollow envelope, with the area cathode assembly (13-27-25) and the control assembly (38) being arrayed sequentially between the rear housing(12) and the fluorescent raster screen pixels (33), and with the control assembly (38) being aligned with the fluorescent screen pixels.

5,256,938

ECR ION SOURCE WITH ELECTRON GUN

Zu Q. Xie, El Cerrito, and Claude M. Lyneis, Berkeley, both of Calif., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Feb. 28, 1992, Ser. No. 843,335

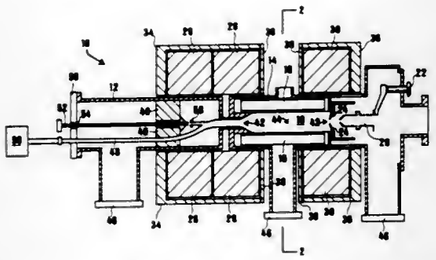
Int. Cl.[5] H01J *17/26*

U.S. Cl. 315—111.81 4 Claims

1. In an electron cyclotron resonance ion source, the improvement comprising:
an electron gun for emitting electrons into the electron cyclotron resonance ion source, wherein;

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a bias power source provides bias voltage between said electron gun and the electron cyclotron resonance ion



source such that electrons are provided with potential for moving from said electron gun into the electron cyclotron resonance ion source.

5,256,939

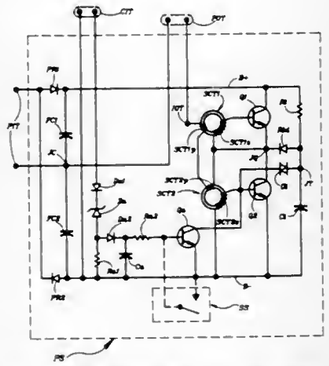
MAGNETIC ELECTRONIC FLUORESCENT LAMP BALLAST

Ole K. Nilssen, Caesar Dr., Rte. 5, Barrington, Ill. 60010

Continuation of Ser. No. 515,369, Apr. 30, 1990, abandoned, which is a continuation of Ser. No. 791,057, Oct. 24, 1985, abandoned. This application Mar. 18, 1992, Ser. No. 853,876

Int. Cl.[5] H05B *41/14*

U.S. Cl. 315—244 **15 Claims**



1. An arrangement characterized by comprising:

inductor means connected with an ordinary electric utility power line and operative to provide a manifestly current-limited AC voltage at a pair of output terminals; the frequency of the AC voltage being substantially equal to the frequency of the voltage normally present on said power line;

gas discharge lamp connected with these output terminals and operative, but only after having been ignited, to be properly powered by the current-limited AC voltage provided therefrom, the lamp having thermionic cathodes;

cathode power supply means connected in circuit with the power line and operative to provide low-voltage heating power for the thermionic cathodes; and

ignition power supply means connected in circuit with the power line and operative to provide an ignition voltage across the lamp, this ignition voltage being: i) of frequency substantially higher than that of the AC voltage, ii) capable, but only after the cathodes have become hot, of causing lamp ignition, and iii) provided independently of any current flowing through the inductor means;

thereby causing the lamp to ignite by way of the ignition voltage and, after having been ignited, to be properly powered from the AC voltage.

5,256,940

HIGH INTENSITY DISCHARGE LAMP DEVICE

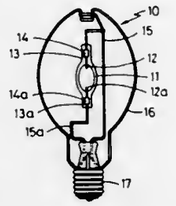
Shigeaki Wada; Atsunori Okada, and Shingo Higashisaka, all of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Continuation of Ser. No. 603,297, Oct. 25, 1990, abandoned. This application Feb. 25, 1992, Ser. No. 857,072

Claims priority, application Japan, Nov. 8, 1989, 1-290373

Int. Cl.[5] H05B *41/16;* **H01J** *61/20*

U.S. Cl. 315—248 **8 Claims**



1. A high intensity discharge lamp device comprising an arc tube enclosing therein an arc discharge, wherein a rare gas, a metal halide selected from the group consisting of Li halide, Tl halide, In halide, Al halide, Sn halide and mixtures thereof, with the proviso that Li halide is always present, and a substance which forms a complex halide with at least said Li halide are enclosed in said arc tube.

5,256,941

COLOR DISPLAY TUBE HAVING A SUSPENSION MEANS FOR A COLOR SELECTION ELECTRODE

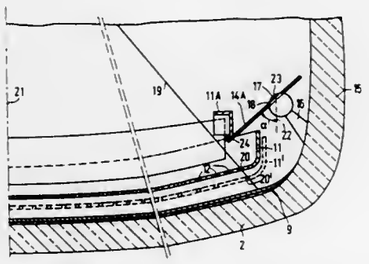
Johannes H. N. Gijrath, and Theodoor C. A. Hens, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 29, 1991, Ser. No. 706,825

Claims priority, application Netherlands, Jun. 29, 1990, 9001490

Int. Cl.[5] H01J *29/07*

U.S. Cl. 313—404 **13 Claims**



1. A color display tube comprising

(a) an evacuated envelope having a display window with a phosphor pattern on an interior surface, said display window having corners,

(b) means for generating a plurality of electron beams onto said display window, said means being disposed within said evacuated envelope,

(c) color selection electrode means having a large number of apertures for passing said electron beams, said color selection electrode means being disposed within said evacuated envelope in front of said display window, said color selection electrode means having corners.

(d) supporting elements fixed at said corners of said display window,

(e) suspension means being connected to said color selection electrode means for suspending said color selection electrode means from said supporting elements, said suspension means including

resilient sheet material means for enabling movement of said corners of said color selection electrode means along paths making an angle α with a normal to said color selection electrode means, where the angle α equals 90° minus one-half of a maximum deflection angle of said electron beams minus an angle in the range between 1.5° and 6.5°.

5,256,942

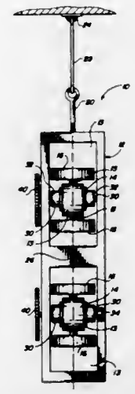
STABILIZATION SYSTEM FOR A FREELY ROTATABLE PLATFORM

Ross C. Wood, 633 California St., El Segundo, Calif. 90245

Filed May 7, 1992, Ser. No. 879,612

Int. Cl.[5] G01C *19/08*

U.S. Cl. 318—649 **21 Claims**



1. Apparatus for controlling the orientation of a body about a selected directional axis comprising:

a frame which is rotatable about said selected axis;

a plurality of gyroscopic units pivotably mounted to said frame for rotation about respective pivot axes which are orthogonal to said selected axis, each unit including at least one rotatable disk and a motor coupled to selectively drive said disk in rotation about a central axis of said unit;

means for orienting the units with their central axes generally aligned with said selected axis;

means for subsequently energizing said motors to drive said disks in like-direction rotation about said selected axis, thereby applying torque in the opposite direction to said frame to develop rotation of said frame in said opposite direction about said selected axis; and

means for simultaneously pivoting said units in opposite directions about their respective pivot axes while said disks are rotating, thereby developing opposing precessional forces from the interaction of the gyroscopic inertia of said units to stop further rotation of said frame.

5,256,943

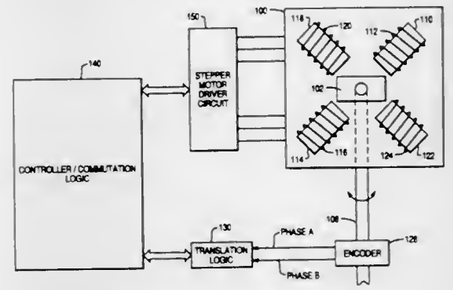
ZERO ADJUSTMENT SHAFT ENCODER CONTROL FOR STEPPING MOTORS

Trevor J. German, Waterloo, Canada, assignor to NCR Corporation, Dayton, Ohio

Filed Apr. 3, 1992, Ser. No. 862,928

Int. Cl.[5] G05B *19/40*

U.S. Cl. 318—685 **6 Claims**



1. A drive circuit for a stepper motor, comprising:

a shaft encoder having a resolution which is a multiple of the resolution of said stepper motor, wherein said shaft encoder is a two-phase encoder providing first and second binary square wave output signals, said first and second signals differing in phase by 90 degrees;

translation logic connected to receive said first and second signals from said encoder for reordering the sequence of signal pulses received from said encoder, wherein said translation logic is responsive to at least one configuration signal to select a reordering sequence of said signal pulses received from said encoder.

5,256,944

MOTOR SPEED CONTROL METHOD AND APPARATUS WITH DROOPING COMPENSATION INDEPENDENT OF ACCELERATION OR DECELERATION CURRENT AND TIME CONSTANT OF MOTOR

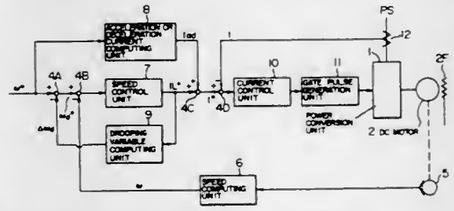
Masahiro Tobise; Itsuo Shimizu, both of Katsuta; Yuji Yamasawa, Hitachiota, and Toshihiko Chino, Chiba, all of Japan, assignors to Hitachi, Ltd., Tokyo and Kawasaki Steel Corporation, Kobe, both of Japan

Filed Sep. 9, 1991, Ser. No. 757,049

Claims priority, application Japan, Sep. 7, 1990, 02-235523

Int. Cl.[5] H02F *7/00*

U.S. Cl. 318—799 **38 Claims**



1. A motor speed control apparatus comprising:

a motor;

a power conversion unit for supplying current to the motor to drive the motor;

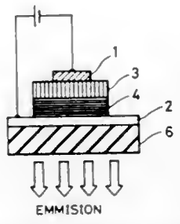
detecting means for detecting a speed of the motor;

first deriving means for deriving a first current command value for driving the motor at a constant speed based on at least the detected speed of the motor and a speed command value representing a desired speed of the motor;

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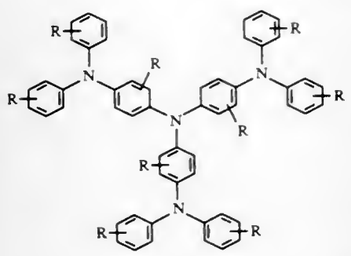
second deriving means for deriving an acceleration or deceleration current value for accelerating or decelerating the motor based on the speed command value;
third deriving means for deriving a second current command value based on at least a sum of the first current command value and the acceleration or deceleration current value; and
controlling means for controlling the power conversion unit to control the current supplied to the motor based on at least the second current command value.

5,256,945
ORGANIC ELECTROLUMINESCENCE ELEMENT
Kunio Imai; Masanao Shinkai; Takeo Wakimoto, all of Saitama, and Yasuhiko Shirota, Toyonaka, all of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan
Filed Dec. 13, 1991, Ser. No. 806,287
Claims priority, application Japan, Apr. 8, 1991, 3-075212
Int. Cl.[5] H05B *33/14*; H01J *1/62*
U.S. Cl. 313—504 **12 Claims**



1. An organic electroluminescence element, comprising a cathode, an EL layer of organic compound, a first hole transport layer of organic compound, a second hole transport layer of organic compound and an anode which are laminated in sequence, wherein the second hole transport layer is made of a substance represented by the following chemical formula 1:

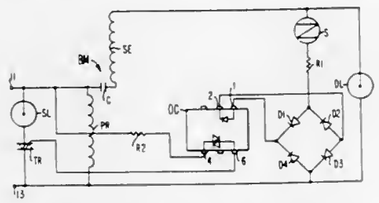
(Chemical formula 1)



where R each independently represents a hydrogen atom, an alkyl group of from 1 to 6 carbon atoms, a halogen group, a cyano group, a nitro group, a primary, secondary or tertiary amino group, or an aryl group of from 6 to 15 carbon atoms.

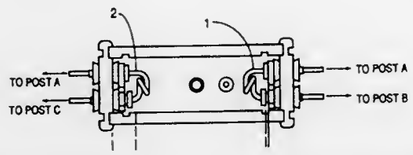
5,256,946
GASEOUS DISCHARGE LAMP SYSTEM WITH AUXILIARY LAMP
Glenn D. Garbowicz, Rosemont, and Edmond Daniel, Chicago, both of Ill., assignors to North American Philips Corporation, New York, N.Y.
Filed Mar. 24, 1992, Ser. No. 856,771
Int. Cl.[5] H05B *39/10*
U.S. Cl. 315—88 **5 Claims**

1. A lighting system, comprising:
a power source for producing power at an associated voltage;
a first lamp for connection to said power source;
ballast means for ballasting said first lamp;
a second lamp;
control means responsive to the voltage across said first lamp for producing a control signal and adapted to consume power only when producing said control signal, said control means including a recitifier in series circuit with a



semiconductor switching device, said series circuit being connected in parallel with said first lamp; and
switching means responsive to said control signal for placing said second lamp across said power source whereby said second lamp is lit, said switching means including a triac connected in series with said second lamp and being turned on in response to said control signal;
wherein said triac includes a gate and wherein said control means further includes an opto-coupler connected between the gate of said triac and said rectifier.

5,256,947
MULTIPLE FILAMENT ENHANCED ION SOURCE
Stephen W. Toy, Alta, and David V. Alexander, Elk Grove, both of Calif., assignors to NEC Electronics, Inc., Mountain View, Calif.
Filed Oct. 10, 1990, Ser. No. 595,077
Int. Cl.[5] H01J *27/02*
U.S. Cl. 315—111.81 **8 Claims**

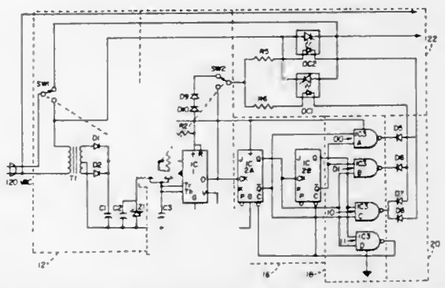


1. An ion source powered by a current source comprising:
an arc chamber;
a first filament and a second filament mounted in said arc chamber;
means for connecting each of said filaments to said current source, wherein said means for connecting comprises means for selectively determining which one of said first and second filaments carries current.

5,256,948
TRI-COLOR FLASHER FOR STRINGS OF DUAL POLARITY LIGHT EMITTING DIODES
Charles D. Boldin, 5115 Pine Knob La., Clarkston, Mich. 48346, and Maurice R. Carter, 2801 Maplewood Rd., Richmond, Va. 23228
Filed Apr. 3, 1992, Ser. No. 863,714
Int. Cl.[5] H05B *37/00*; 315 *159, 200 A, 313, 314, 315, 360, 362, 185 S, 193*
U.S. Cl. 315—313 **9 Claims**

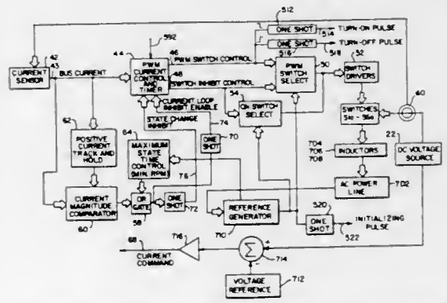
1. An electronic control unit connectable to a source of AC power for driving a string of dual-polarity dual-color LEDs to produce a sequential plurality of colors, comprising:

clock means to generate a plurality of timing pulses;
counting means receiving said timing pulses and producing a plurality of binary signals establishing a plurality of sequential states;
decoding means receiving said plurality of binary signals and actuating selected output lines corresponding to said binary signals and to said plurality of sequential states;
waveform conversion means receiving said selected output lines and generating control signals capable of selectively controlling a plurality of optocouplers according to said plurality of sequential states;



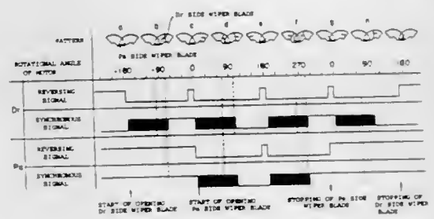
a plurality of optocouplers having their controlled path operatively connected with differing AC conduction characteristic between said source of AC power and said string of LEDs, and their controlling input operatively connected to said waveform conversion means for selectively providing power to said LEDs according to said plurality of sequential states;
whereby the combined conduction through said plurality of optocouplers between said source of AC power and said string of LEDs establishes a plurality of differing AC conduction characteristics during each of said plurality of sequential states; thereby producing a sequential plurality of colors in said string of LEDs.

5,256,949
AC POWER LINE CURRENT REGENERATION
John G. Reichard, Hubertus, and Joseph R. Pottebaum, Brookfield, both of Wis., assignors to Thor Technology Corporation, Menomonee Falls, Wis.
Continuation-in-part of Ser. No. 403,308, Aug. 31, 1989, Pat. No. 5,079,494, which is a continuation-in-part of Ser. No. 356,375, May 23, 1989, abandoned, which is a continuation-in-part of Ser. No. 400,460, Aug. 29, 1989, Pat. No. 4,988,939, which is a continuation-in-part of Ser. No. 389,874, Aug. 4, 1989, Pat. No. 5,015,927. This application Jan. 3, 1992, Ser. No. 817,283
Int. Cl.[5] H02P *6/02*
U.S. Cl. 318—254 **21 Claims**



1. An AC power line current regeneration method comprising energizing an AC power line from a DC power source through pulse width modulated switch means to apply energization voltage to said AC power line in an on condition of said switch means until line regeneration current reaches a given peak value, and then turning off said switch means such that line regeneration current decreases, and then turning said switch means back on until line regeneration current again increases to said peak value, and then turning off said switch means, and so on, to regulate line regeneration current, each pair of on and off conditions of said switch means constituting a PWM cycle, sampling the required peak line regeneration current value from a previous PWM cycle and calculating the required peak line regeneration current value for the present PWM cycle, to provide high speed fast response PWM line regeneration current control regulation.

5,256,950
WINDSHIELD WIPER ASSEMBLY AND SYNCHRONOUS SIGNAL GENERATING DEVICE FOR WINDSHIELD WIPER
Hiroshi Matsumoto, Hamamatsu; Hiroyuki Furukoshi, Toyohashi, and Akio Oshiro, Hamamatsu, all of Japan, assignors to ASMO Co., Ltd., Osai, Japan
Filed Jul. 30, 1991, Ser. No. 738,256
Claims priority, application Japan, Nov. 29, 1990, 2-332153; Feb. 22, 1991, 3-028811; May 10, 1991, 3-105976
Int. Cl.[5] B60S *1/08*
U.S. Cl. 318—443 **16 Claims**



1. A windshield wiper assembly comprising:
a pair of wiper blades for wiping windshield glass;
driving means for reciprocating said pair of wiper blades, respectively, independently of each other within wiping zones which partially overlap with each other in the vicinity of lower reversing positions of said pair of wiper blades;
detecting means for detecting respective positions of said pair of wiper blades;
determining means for determining on the basis of results of detection by said detecting means which of said wiper blade moving toward a upper reversing position in the wiping zone and said wiper blade moving toward the lower reversing position precedes the other; and
control means for controlling said driving means on the basis of results of determination by said determining means in such a manner as to move said pair of wiper blades to effect wiping, and for controlling said driving means in such a manner that said wiper blade moving toward the lower reversing position is stopped when said wiper blade moving toward the lower reversing position has preceded said wiper blade moving toward the upper reversing position by a first predetermined value or more, and said wiper blade moving toward the upper reversing position is stopped when said wiper blade moving toward the upper reversing position has preceded said wiper blade moving toward the lower reversing position by a second predetermined value or more exceeding the first predetermined value.

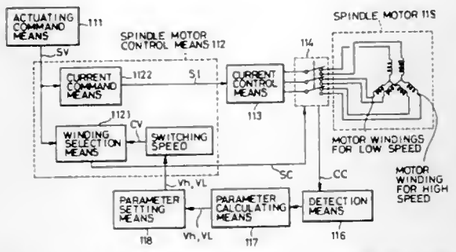
VOL 1155 ISS 4 OCT 26 1993 UMI

5,256,951

NUMERICAL CONTROL APPARATUS HAVING FUNCTION FOR CHANGING CONTROL PARAMETERS

Masayuki Nashiki; Hisashi Kondo, and Takeshi Hayakawa, all of Niwa, Japan, assignors to Okuma Corporation, Aichi, Japan

Filed Jul. 21, 1992, Ser. No. 916,251
Claims priority, application Japan, Jul. 22, 1991, 3-205427
Int. Cl.[5] G05B *19/33*
U.S. Cl. 318—575 **4 Claims**



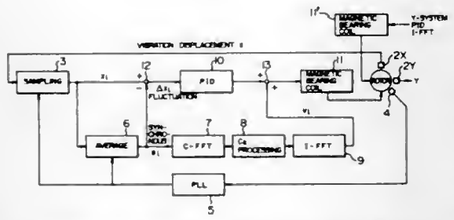
1. A numerical control apparatus for controlling feed shafts and a spindle of a machine tool, the numerical control apparatus comprising:
- a motor having windings for high speed and low speed;
- a switching means for switching the windings;
- a current command means for outputting a current command;
- a current control means for receiving the current command and for outputting current for the motor through the switching means;
- a winding selection means for switching the switching means;
- a detection means for detecting a switching state of the switching means;
- a parameter calculating means for calculating a switching speed according to the switching state; and
- a parameter setting means for setting the switching speed in the winding selection means.

5,256,952

MAGNETIC BEARING CONTROL METHOD AND APPARATUS

Mitsuho Yoneyama; Osami Matsushita; Naohiko Takahashi, all of Ibaraki, and Yasuo Fukushima, Tsuchiura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 29, 1992, Ser. No. 889,997
Claims priority, application Japan, May 31, 1991, 3-157914
Int. Cl.[5] H02K *7/09;* **F16C** *32/04*
U.S. Cl. 318—629 **10 Claims**



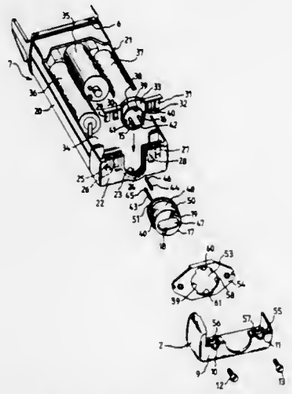
1. A magnetic bearing control method comprising the steps of:
- sampling a vibration waveform at pulses which are synchronized with the rotation of a rotor;
- averaging vibration waveform values at each revolution;
- extracting only the frequency components synchronized with the rotation frequency of said rotor from said vibration waveform;
- subjecting the extracted components to Fourier transform;
- processing said Fourier-transformed components in a frequency region;
- subjecting said processed components to Fourier reverse transform; and
- controlling a magnetic bearing by a signal obtained by a sequence of said signal processes given above so that vibration components can be suppressed.

5,256,953

ELECTRICAL APPLIANCE WITH BATTERY CHARGING CAPABILITY AND CONNECTION MEANS

Jochen Cimbal, Friedberg; Horst Schinke, Kronberg/Ts., and Robert Jung, Friedberg, all of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Feb. 12, 1992, Ser. No. 835,700
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1991, 4104883
Int. Cl.[5] H01R *13/62*
U.S. Cl. 320—2 **27 Claims**



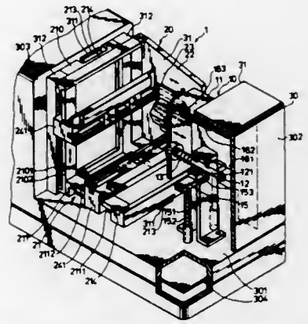
1. An electrical appliance comprising housing structure for accommodating at least one functional component and a compartment for at least one rechargeable storage cell adapted to be connected to said functional component, storage cell charging circuitry, appliance plug structure on said electrical appliance, said appliance plug structure having receiving aperture structure for positive engagement with a mating connector for supplying a line voltage, contact pin structure disposed in said receiving aperture structure and connected to said storage cell charging circuitry, a latching element carried by at least one of said contact pin structure and said receiving aperture structure, detachable housing structure, cooperating latch structure on said detachable housing structure for latching engagement with said latching element, said contact pin structure and said receiving aperture structure being relatively movable between a first position in which said mating connector can be electrically connected to said contact pin structure and said latching element and said cooperating latch structure are in latching engagement and a second position in which electrical interconnection of said mating connector and said contact pin structure is blocked and said latching element and said cooperating latch structure are released from latching engagement, said latch element and said latch structure being in latched relation when said contact pin structure and said receiving aperture structure are in said first position and in released relation when said contact pin structure and said receiving aperture structure are in said second position so that said detachable housing structure may be removed form said housing structure to allow access to said storage cell compartment.

5,256,954

BATTERY PACK CHARGING DEVICE

Jeff Chen, 3F, No.15, Alley 1, Lane 30, Teng-Kung Rd., Tansui Chen, Taipei Hsien, Taiwan

Filed Jul. 9, 1992, Ser. No. 911,210
Int. Cl.[5] H02J *7/00;* **H01M** *10/46*
U.S. Cl. 320—2 **9 Claims**



1. A battery pack charging device, comprising:
- a housing having a base plate, a first upright wall extending upwardly from said base plate and a second upright wall similarly extending upwardly from said base plate and being disposed opposite to said first upright wall, said first and second upright walls and said base plate defining a receiving space to receive a battery pack;
- a movable wall assembly provided in said receiving space adjacent to said first upright wall, said movable wall assembly including a positioning wall member facing said second upright wall and being spaced from said second upright wall, said positioning wall member being movable towards or away from said first upright wall so as to vary the space between said positioning wall member and said second upright wall in order to correspond with the width of the battery pack, said movable wall assembly further including a retaining means for releasably retaining said positioning wall member at a desired position relative to said first upright wall; and
- a movable electrical contact assembly including: a frame mounted on at least one of said second upright wall and said base plate; an elongated carriage movably mounted along a respective said frame; a positioning means for releasably retaining said carriage at a desired position relative to the respective said frame; and a pair of terminal seats movably mounted on said carriage and having a respective electrical contact provided thereon, said terminal seats being movable along said carriage and said carriage being movable along the respective said frame so as to align said electrical contacts with corresponding contact terminals of the battery pack.

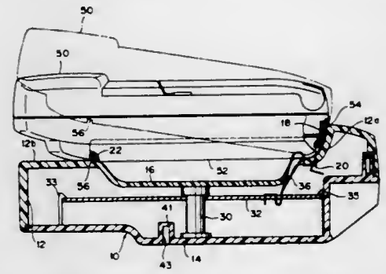
5,256,955

HOUSEHOLD AND ONBOARD VEHICLE POWER OUTLET-BASED BATTERY CHARGER FOR PORTABLE TELEPHONE

Masashi Tomura, and Tatsuzi Shigeta, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 28, 1992, Ser. No. 967,378
Claims priority, application Japan, Oct. 30, 1991, 3-284889
Int. Cl.[5] H02J *7/00;* **H01M** *10/46*
U.S. Cl. 320—2 **6 Claims**

1. A battery charger for use with a portable telephone set and for charging a first battery pack of a large capacity and a second battery back of a small capacity used by said portable telephone set, said first battery pack having a convex portion at the bottom thereof, said portable telephone set having a concave portion at one end thereof, said first battery pack and said second battery pack each having a concave portion common to the two packs, said battery charger comprising:
- a case having a concave portion on the top thereof, a first convex portion at one end of said top and a second convex portion at the other end of said top, said concave portion of said top being structured to engage with said convex portion of said first battery pack, said first convex portion being structured to engage with said concave portion of said portable telephone set, said second convex portion being structured to engage with the common concave portion of said first battery pack and said second battery pack;
- a printed circuit board included in said case and containing charging circuits;
- a pair of charging terminals projecting from said top of said case and connected to said charging circuits of said printed circuit board; and
- a battery pack holder removably attached to said case to hold from above any one of said first battery pack and said second battery pack selectively mounted on said case in order to keep the selected battery pack in place.

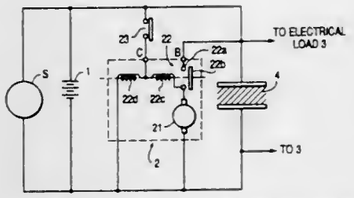


5,256,956

POWER SUPPLY APPARATUS FOR AUTOMOTIVE VEHICLES

Yoshinobu Tsuchiya, Fujisawa; Ken Kurabayashi, Chigasaki, and Hiroyoshi Moroboshi, Yokohama, all of Japan, assignors to Isuzu Motors Limited, Tokyo, Japan

Continuation of Ser. No. 652,485, Feb. 8, 1991, abandoned, which is a continuation of Ser. No. 454,257, Dec. 21, 1989, abandoned. This application Oct. 17, 1991, Ser. No. 776,882
Claims priority, application Japan, Dec. 27, 1988, 63-329846
Int. Cl.[5] H02J *7/00*
U.S. Cl. 320—15 **7 Claims**



1. A vehicular power supply apparatus for driving an engine starter by electrical power, said vehicular power supply apparatus being operatively connected to a battery for providing electrical power, said apparatus comprising:
- a large-capacity capacitor operatively connected to the battery;

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a starter switch operatively connected to the battery and in parallel with said large-capacity capacitor; and

energizing means for delivering electric charge from said large-capacity capacitor to the engine starter in response to closure of said starter switch, said energizing means including a first electromagnetic relay including:

a coil having first and second ends, the first end being operatively connected to said starter switch;

first and second main contacts, the first main contact being operatively connected to said large-capacity capacitor and the second main contact being operatively connected to the engine starter; and

a movable contact for connecting said first and second main contacts by energization of said coil.

5,256,957

PROCESS AND CIRCUIT VERSIONS FOR CHARGING ACCUMULATORS

Gerhard Wiesspeiner, Rudolfstrasse 14, A-8010 Graz, Austria

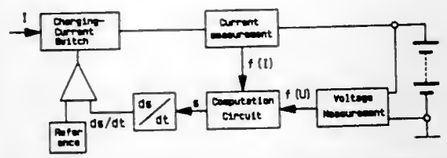
PCT No. PCT/AT89/00027, § 371 Date Sep. 10, 1990, § 102(e) Date Sep. 10, 1990, PCT Pub. No. WO89/08940, PCT Pub. Date Sep. 21, 1989

PCT Filed Mar. 10, 1989, Ser. No. 474,837

Claims priority, applicatioo Austria, Mar. 11, 1988, 654/88

Int. Cl.[5] H02J *7/10*

U.S. Cl. 320—20 **16 Claims**



1. A process for quickly charging at least one accumulator to a terminal voltage with a variable charging current comprising the steps of:

characterizing the accumulator by an equivalent circuit including an inner variable resistance having a value which is a function of the charging state of the accumulator during the charging process;

applying the charging current at a selected terminal voltage to the accumulator;

at least one of measuring both the charging current and the terminal voltage and adjusting at least one of the both to a known value and measuring the other;

calculating from a temporal time course of the charging current and the terminal voltage a parameter (S) representative of at least one of the inner resistance and the inner accumulator voltage, and calculating dS/dt, the gradient of (S) with respect to time;

reducing the applied charge when the gradient is substantially equal to zero at a maximum value of the inner resistance indicative of a full charge state of the accumulator.

5,256,958

CONCENTRATOR-BASED GROWABLE PACKET SWITCH

Kai Y. Eng, Atlantic Highlands; Mark J. Karol, Fair Haven, both of N.J., and Mark A. Pashan, Wheaton, Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

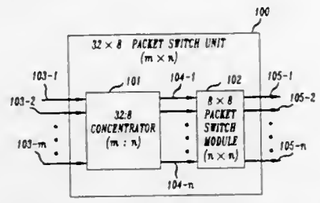
Filed Nov. 26, 1991, Ser. No. 797,849

Int. Cl.[5] H04Q *11/04*

U.S. Cl. 370—56 **10 Claims**

1. An m×n (m>n) packet switch unit, where m is an integer of at least two (2) and n is an integer of at least one (1), comprising:

a packet cell concentrator having m inputs and n outputs including means for temporarily storing arriving packet cells on the m concentrator inputs and means for supplying all of said arriving packet cells in a prescribed repetitive sequence to the n concentrator outputs, said means for temporarily storing arriving packet cells including means for temporarily storing arriving packet cells on the m concentrator inputs in arriving packet cell time slots in excess of available packet cell positions in the n concentrator outputs in output packet cell output time slots so that



packet cells of any such excess of said arriving packet cells are not lost or discarded; and

a packet switch module having n inputs and n outputs for supplying the packet cells being supplied from the n outputs of the concentrator to the n inputs of the packet switch module to appropriate ones of the n outputs of the packet switch module in accordance with an assigned destination address carried by the individual packet cells.

5,256,959

CONTROL SYSTEM FOR GENERATOR MOUNTED ON VEHICLE

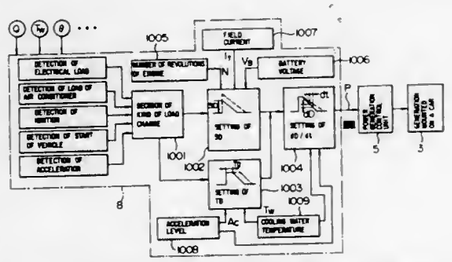
Masami Nagano; Takeshi Atago; Masahide Sakamoto, and Yuichi Mori, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 15, 1991, Ser. No. 670,285

Claims priority, application Japan, Mar. 19, 1990, 2-067076

Int. Cl.[5] H02J *7/00*

U.S. Cl. 322—25 **14 Claims**



1. A control system for controlling the field current of a generator, driven by an internal combustion engine, so as to vary the output power of said generator, comprising:

storage means charged by said power generated by said generator; field current control means for controlling the field current of said generator in response to an output voltage of said storage means; and engine control means responsive to operation parameters of said internal combustion engine for controlling at least one of a fuel supply and an ignition timing for said internal combustion engine, including means for determining a kind of change of a load applied to said internal combustion engine when said load has changed and for controlling the field current of said generator in accordance with a predetermined control pattern corresponding to said kind of change of the load.

5,256,960

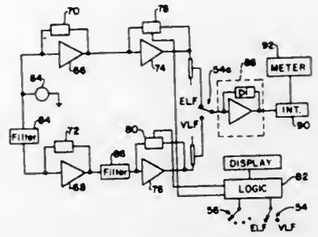
PORTABLE DUAL BAND ELECTROMAGNETIC FIELD RADIATION MEASUREMENT APPARATUS

Amir R. Novini, 600 N. Hametown Rd., Akron, Oblo 44333

Filed Apr. 9, 1991, Ser. No. 682,696

Int. Cl.[5] G01R *33/02, 29/08, 31/02, 13/00*

U.S. Cl. 324—72 **22 Claims**



1. A portable magnetic or electric field radiation measurement apparatus for measurement of radiation in the extremely-low-frequency (ELF) and very-low-frequency (VLF) ranges to which a person may be exposed, comprising:

a sensing means positioned within magnetic or electric fields in the extremely-low-frequency (ELF) or very-low-frequency (VLF) ranges which are emitted from electronic equipment, said sensing means generating a first signal proportional to the strength of said fields,

measurement circuit means coupled to said sensing means for developing an output signal indicative of the strength of said magnetic or electric fields in a selected one of the ELF or VLF ranges, said measuring circuit means including at least two discrete signal processing circuits, and means for frequency compensation of said first signal generated by said sensing means, wherein said means for frequency compensation will produce a second signal having a substantially flat frequency response over said selected one of the ELF or VLF ranges respectively, at least one of said processing circuits for processing signals of a frequency within the ELF range, and at least one of said processing circuits for processing signals of a frequency in the VLF range,

said measurement circuit means further including switch means to select the output from one of said at least two processing circuits for processing of said second signal to measure fields in said selected one of said ELF or VLF ranges and generate said output signal, wherein each of said at least two processing circuits includes means to discriminate against signals outside of the selected ELF or VLF frequency ranges respectively so as to allow measurement of fields in the selected one of the ELF or VLF frequency ranges to determine exposure levels of a person in said fields of the selected frequency range, and

indicating means coupled to said at least two processing circuits through said switch means to provide an indication of the strength of the field detected.

5,256,961

METHOD FOR MEASURING VARIOUS MEASURABLE VARIABLES, AND MULTIMETER FOR PERFORMING THE METHOD

Dieter Henkelmann, Nuremberg, Fed. Rep. of Germany, assignor to ABB Patent GmbH, Mannheim, Fed. Rep. of Germany

Filed Sep. 3, 1991, Ser. No. 754,460

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1990, 4027802; Sep. 1, 1990, 4027804

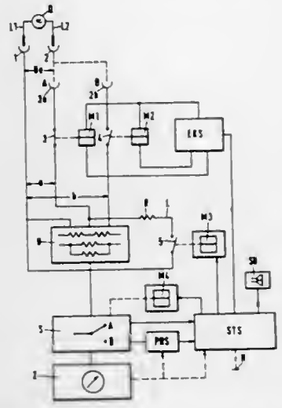
Int. Cl.[5] G01R *15/12*

U.S. Cl. 324—115 **22 Claims**

1. A method for measuring various measurable variables with a multimeter, which comprises:

specifying one of a plurality of measurable variables to be determined and to which a respective one of a plurality of input circuits is assigned;

performing a preliminary test for at least one of the measurable variables to check if one of the plurality of input circuits is suitable for picking up an applied test signal, before an actual main measurement is carried out;



defining one of the plurality of input circuits as a given input circuit;

enabling the given circuit for picking up the test signal only if the preliminary test has shown that the test signal is suitable for the given input circuit; and

issuing an error signal if a test signal being unsuitable for the given input circuit ensues.

5,256,962

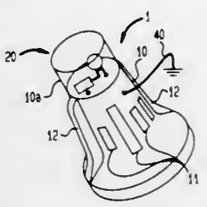
METHOD OF TROUBLESHOOTING ELECTRICAL CIRCUITS USING TWIST-ON LIGHT

Theodore Munniksma, R.D. 3, Box 45A, Washington, N.J. 07882, and Michael J. Codis, 739 Columbus Ave., Phillipsburg, N.J. 08865

Continuation of Ser. No. 715,472, Jun. 14, 1991, Pat. No. 5,179,253. This application Sep. 28, 1992, Ser. No. 951,915

Int. Cl.[5] G01R *19/14*

U.S. Cl. 324—133 **3 Claims**



1. A method of troubleshooting an electrical circuit comprising visually observing a voltage indicator light visibly located inside a twist-on connector directly connected to two or more wires wherein said voltage indicator light being lighted signifies the presence of voltage among said wires with respect to ground.

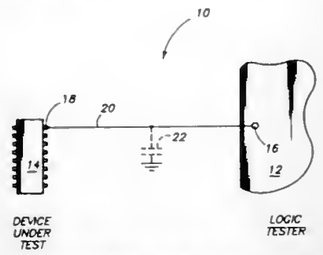
VOL 1155 ISS 4 OCT 26 1993 UMI

5,256,963

DIGITAL TESTING FOR HIGH-IMPEDANCE STATES IN DIGITAL ELECTRONIC CIRCUITS

Joseph F. Johnson, Boise, Id., assignor to Micron Technology Inc., Boise, Id.

Filed Nov. 2, 1990, Ser. No. 608,575
Int. Cl.[5] G01R *31/28*; G06F *11/00*
U.S. Cl. 324—158 R 27 Claims



1. A method for testing a digital electronic memory chip using a binary logic testing apparatus to determine whether a signal terminal of the memory chip produces a selected logic state or a high-impedance state, the selected logic state being defined by a selected logic state voltage, the method comprising:

precharging the signal terminal to a precharge logic state voltage which defines a precharge logic state, said precharge logic state being logically different from said selected logic state;

stimulating the memory chip to produce a test signal state at the signal terminal which is variable between said selected logic state and said high-impedance state;

determining a logical state existing at the signal terminal using the binary logic testing apparatus to determine whether the signal terminal is in the selected logic state or the high impedance state;

concluding that the signal terminal is producing the selected logic state if the selected logic state exists thereat, and that the signal terminal is producing the high-impedance state if the precharge logic state exists thereat.

5,256,964

TESTER CALIBRATION VERIFICATION DEVICE

Imtiaz K. Ahmed, Pleasant Valley, and Nitin B. Gupta, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 31, 1992, Ser. No. 923,408
Int. Cl.[5] G01R *31/28*
U.S. Cl. 324—158 R 12 Claims

1. A device for verifying the accuracy of a test system, the test system having inputs and outputs for receiving and generating electrical signals, respectively, said device comprising:

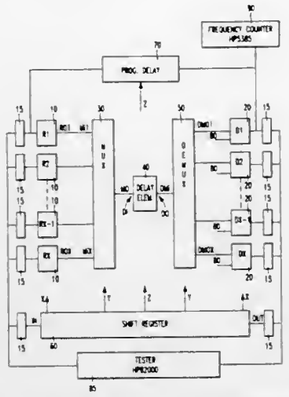
delay means provided with one input and one output;

first selector means having a plurality of inputs and one output, said inputs adapted for connection with said test system inputs for receiving signals generated by the test system and said output is connected to said input of said delay means;

second selector means having a plurality of outputs and one input, said input is connected to said output of said delay means and said outputs are adapted for connection with said test system inputs to provide signals to the test system; and

means for linking one of said outputs of said second selector means to one input of said first selector means, said linking means thereby providing a feedback path to enable an oscillation,

wherein the measurement of a time delay between a signal generated by the test system and received by said first selector means and the signal at the output of said second selector means when compared to a frequency domain



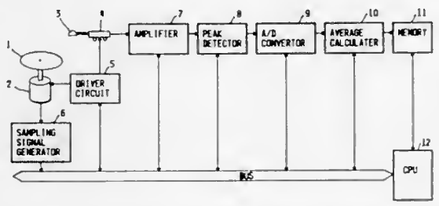
measurement of the same, provides an indication of the accuracy of said test system.

5,256,965

QUALITY INSPECTING METHOD AND APPARATUS FOR DETECTING DEFECTS IN MAGNETIC DISKS BY DIVIDING A PLURALITY OF CONCENTRIC TRACKS INTO NUMBERED SECTORS

Shinichi Nomura, Narashino, Japan, assignor to Seiko Seiki Kabushiki Kaisha, Japan

Filed Jul. 16, 1991, Ser. No. 731,744
Claims priority, application Japan, Jul. 30, 1990, 2-80942[U]
Int. Cl.[5] G01R *33/12*; G01N *27/82*
U.S. Cl. 324—212 9 Claims



1. A magnetic disk inspection apparatus for use with a magnetic disk defining a plurality of circular concentric tracks divided into angularly-spaced sectors for recording and reproducing inspection signals onto and from each sector of track when the magnetic disk is mounted on a spindle and for inspecting the magnetic disk for rejectable defect on the basis of the reproduced inspection signals, said apparatus comprising:

sampling signal generation means for generating a sampling signal having a frequency such that several sampling signals are generated within a predetermined sector interval in accordance with a rotation of said spindle;

maximum value detection means for detecting a maximum value from the inspection signals reproduced from said magnetic disk in synchronism with said sampling signal;

average calculation means for calculating the average value of maximum values detected in synchronism with said sampling signal by said maximum value detection means for each sector of track;

change ratio calculation means for determining a difference between said average values in the same sector number of adjacent tracks and calculating a change ratio based on this difference; and

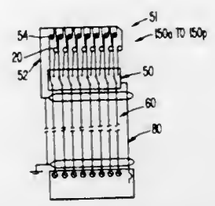
quality judgement means for judging quality of said magnetic disk on the basis of said change ratio.

5,256,966

METHOD FOR DETECTING FLAWS IN A STEAM GENERATOR TUBE USING A FLEXIBLE EDDY CURRENT PROBE HAVING COIL BANK SWITCHING

Lawrence J. Edwards, Suffield, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 19, 1991, Ser. No. 687,750
Int. Cl.[5] G01N *27/82*
U.S. Cl. 324—220 2 Claims



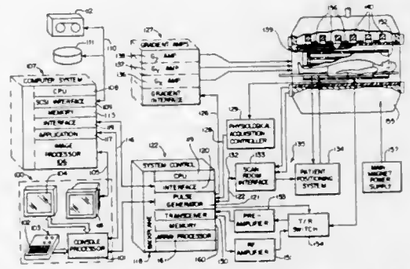
1. A method of detecting flaws in a tube, comprising the steps of providing a probe assembly having a probe head with a plurality of coils, dividing said plurality of coils into a first set and a second set of coils, spacing said first set and said second set about a circumference thereof, switching between said first set and said second set of coils with a bank switch, and receiving at remotely located instrumentation output signals, which are transmitted over conductors from said coils, representative of said flaws.

5,256,967

FAST NMR IMAGE ACQUISITION WITH SPECTRALLY SELECTIVE INVERSION PULSES

Thomas K. Foo, Waukesha, Wis., and Patrick L. Le Roux, Gif/Yvette, France, assignors to General Electric Company, Milwaukee, Wis.

Filed Oct. 1, 1992, Ser. No. 955,097
Int. Cl.[5] G01K *3/00*
U.S. Cl. 324—311 5 Claims



1. In an NMR system, a method for conducting a scan in which a set of steady-state free precession pulse sequences are preceded by a contrast preparation pulse sequence which comprises:

a) producing a first spectrally selective RF inversion pulse which is tuned to the Larmor frequency of a first selected spin species to be suppressed in the reconstructed image and which occurs at a first inversion recovery interval TI_1, prior to the execution of the set of steady-state free precession pulse sequences, and

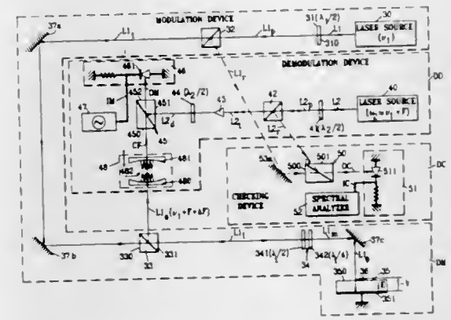
b) producing a second spectrally selective RF inversion pulse which is tuned to the Larmor frequency of a second selected spin species to be suppressed in the reconstructed image and which occurs at a second inversion recovery interval TI_2 prior to the execution of the set of steady-state free precession pulse sequences.

5,256,968

MEASUREMENT OF HIGH-FREQUENCY ELECTRICAL SIGNALS BY ELECTRO-OPTICAL EFFECT

Slimane Loualiche, and Fabrice Clerot, both of Lannion, France, assignors to France Telecom, Paris, France

Filed Jul. 30, 1992, Ser. No. 922,207
Claims priority, application France, Aug. 9, 1991, 91 10164
Int. Cl.[5] G01R *23/16*
U.S. Cl. 324—96 9 Claims



2. A system for measuring a high-frequency input electrical signal (V) having a frequency bandwidth, comprising:

(a) first emitting means (**30**) for emitting a first monochromatic light wave (L1) having a first frequency;

(b) first polarizing means (**31**) for rectilinearly-polarizing said first light wave successively into first and second rectilinearly-polarized light waves having different polarizations therebetween;

(c) means (**33, 34**) for amplitude-modulating said second polarized light wave by said input electrical signal to define an amplitude-modulated light wave (L1*a*);

(d) frequency tunable means (**48**) for filtering said amplitude-modulated light wave into different frequency light components lying within said frequency bandwidth of said electrical signal;

(e) second emitting means (**40**) for emitting a second monochromatic light wave (L2) having a second frequency substantially different from said first frequency;

(f) second polarizing means (**41**) for rectilinearly polarizing said second monochromatic wave successively into third and fourth rectilinearly-polarized light waves having polarizations different therebetween and respectively parallel with said polarizations of said first and second polarized light waves;

(g) first combining means (**50**) for combining said first and third polarized light waves to define a checking light wave (OC) when said first and second polarizing means polarize simultaneously said first and second light waves into said first and third polarized light waves;

(h) means (**52**) for deriving from said checking light wave the difference between said first and second frequencies of said first and second monochromatic light waves;

(i) second combining means (**45**) for combining said frequency light components and said fourth polarized wave to define a measurement light wave (OM) when said first and second polarizing means polarize simultaneously said first and second light waves into said second and fourth polarized light waves; and

(j) means (**46**) for detecting said measurement light wave in a frequency range substantially equal to the bandwidth of the input electrical signal to produce an output electrical signal (IM) that is representative of the frequency and

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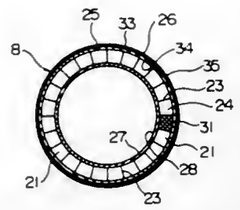
phase of the measurement light wave, thereby to indicate the frequency components of said input electrical signal as transposed by said beat frequency.

5,256,969

GRADIENT MAGNETIC FIELD COIL FOR MAGNETIC RESONANCE IMAGING SYSTEM

Goh Miyajima, and Yoshiki Igarashi, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 3, 1990, Ser. No. 620,612
Claims priority, application Japan, Dec. 4, 1989, 1-314596
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—318 15 Claims



1. A gradient magnetic field coil for use in a magnetic resonance imaging system for imaging a virtual cross-section of a desired portion of a subject to be inspected utilizing a magnetic resonance phenomenon, said gradient magnetic field coil comprising:

(a) a coil bobbin including (i) a substantially rigid tubular main body portion having means for delimiting a plurality of openings in said tubular main body portion for suppressing noise, material constituting said tubular main body portion extending continuously in both axial and circumferential directions thereof; (ii) a continuous sheet-like outer peripheral portion having at least one layer and fixedly secured to an outer peripheral surface of said tubular main body portion to reinforce said tubular main body portion; and (iii) a sheet-like inner peripheral portion having at least one layer and fixedly secured to an inner peripheral surface of said tubular main body portion to reinforce said tubular main body portion; and

(b) coil windings fixedly mounted on an outer surface of said sheet-like outer peripheral portion of said coil bobbin so as to be mechanically supported therethrough by said tubular main body portion of said coil bobbin for producing an intermittent gradient magnetic field.

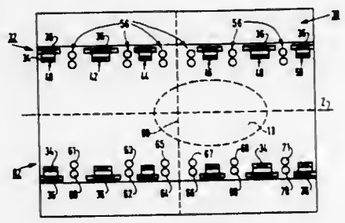
5,256,970

MAGNETIC RESONANCE APPARATUS

Cornelis L. G. Ham, and Wilhelmus R. M. Mens, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 26, 1991, Ser. No. 797,847
Claims priority, application Netherlands, Nov. 27, 1990, 9002574
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—318 17 Claims

1. A magnetic resonance apparatus comprising a magnet for producing a uniform magnetic field in a z direction in a space for receiving a region of an object to be examined and a gradient coil system comprising a plurality of field arc conductors forming a z-gradient coil for selectively producing a z-gradient magnetic field in said space directed in said z direction and having a linearity range in said z direction, x-gradient and y-gradient coils for selectively producing x-gradient and y-gradient magnetic fields in said space directed in said z direction and having respective linearity ranges in mutually orthogonal x and y directions which are mutually orthogonal to said z direction, and a further coil for producing an additive uniform magnetic field directed in the z direction in said space, said further coil being adapted to be selectively driven in synchronism with a drive of at least one of the gradient coils



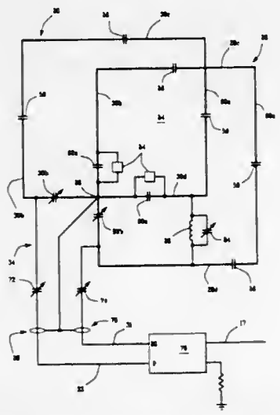
formed by said coil system, whereby the linearity range of said at least one of the gradient coils is selectively displaced in said space.

5,256,971

MULTIPLE LOOP COIL WITH IMPROVED DECOUPLING

Eddy B. Boskamp, Menomonee Falls, Wis., assignor to Medical Advances, Inc., Wauwatosa, Mich.

Filed May 18, 1992, Ser. No. 884,676
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—318 10 Claims



1. An NMR probe for obtaining a signal from precessing nuclei within an imaging volume, the probe comprising:

a first loop responsive to a uniform magnetic field to have a first reception pattern which couples to a magnetic field of a first orientation within the imaging volume to produce a first signal;

a second loop responsive to the uniform magnetic field, positioned to be isolated from the first loop and having a second reception pattern which couples to a magnetic field of a second orientation within the imaging volume to produce a second signal, the second orientation having an angular separation from the first orientation of θ measured in the direction of the precession of the nuclei;

a phase shift network connected to the second loop for shifting the second signal by θ to produce a shifted second signal

a combiner receiving and for combining the first signal and the shifted second signal;

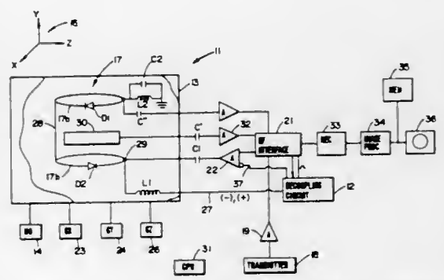
and wherein the first and second loops are joined electrically at a virtual ground point and wherein the first signal is a voltage measured between a point on the first loop and the virtual ground and the second signal is a voltage measured between a point on the second loop and the virtual ground.

5,256,972

BODY COIL DECOUPLING CIRCUIT

Hanan Keren, Kfar Saba; Noam Shalev, and Zeev Harel, both of Natanya, all of Israel, assignors to Elscint, Ltd., Haifa, Israel

Continuation of Ser. No. 647,928, Jan. 30, 1991, abandoned. This application Jan. 12, 1993, Ser. No. 3,877
Claims priority, application Israel, Jan. 30, 1990, 93214
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—318 11 Claims



1. A circuit for decoupling the body coil of a magnetic resonance (MR) system from the system, said MR system comprising:

a large magnet including an opening for receiving a patient therein to subject the patient to a large static magnetic field,

said body coil included in said magnet,

said body coil including a plurality of oppositely disposed loops,

X, Y and Z gradient coils included in said magnet,

a transmitter for transmitting radio frequency (RF) pulses through said body coil,

a receiver for receiving free induction decay (FID) signals from said body coil.

an image processor for using said received signals to provide a display image,

said circuit for decoupling the body coil of the MR system from the system comprising:

a switch in each loop of said plurality of loops of said body coil,

said switches having a conducting condition and an non-conducting condition,

means for normally maintaining said switches in the conducting condition to couple said body coil to said system,

means for switching said switches to the non-conducting condition to decouple said body coil from said system,

said means for maintaining said switches in the conducting condition comprising means responsive to said body coil being used for receiving FID signals from a patient being examined in the MR system.

means responsive to passive coils being used for receiving FID signals from the patient for operating said means for switching to the non-conducting condition, and

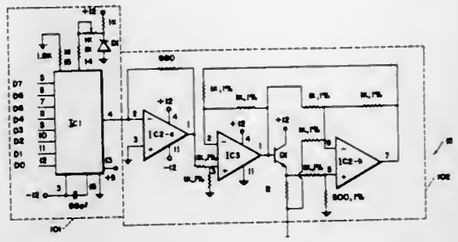
means for enabling the transmitter to transmit RF pulses to the body coil only when the body coil is coupled to the system.

5,256,973

RELAY TESTER HAVING A CIRCUIT TO SENSE THE VOLTAGE SPIHE CAUSED BY THE ARMATURE MOVEMENT

Michael Thee, 1900 Dallas St., Aurora, Colo. 80010, and William Shurmantine, 1800 E. Prathersville Rd., Lot 70, Columbia, Mo. 65202

Filed Jun. 28, 1991, Ser. No. 723,213
Int. Cl.[5] G01R *31/60, 31/00*
U.S. Cl. 324—418 16 Claims



1. A relay tester for sensing a shifting of a relay armature in a relay under test, comprising:

applying means for applying a ramped, time varying voltage potential to the relay;

first signal generating means for generating a first electrical signal representative of an actual voltage potential being developed across the relay while the ramped, time varying voltage potential is being applied;

reference signal generating means for modifying the first signal to generate a reference signal, wherein the generated reference signal has a waveform characteristic which both lags a corresponding waveform characteristic of the first signal by a predetermined time period and is greater in amplitude than the corresponding waveform characteristic of the first signal; and

voltage spike determining means, responsive to the first electrical signal and the reference electrical signal, for producing an output signal indicative of the shifting of the relay armature when magnitude of the first electrical signal passes a magnitude of the reference electrical signal, thus indicating an occurrence of an inductive voltage spike.

5,256,974

METHOD AND APPARATUS FOR A FLOATING REFERENCE ELECTRIC FIELD SENSOR

Robin R. Padden, Roy, Utah, assignor to Iomega Corporation, Roy, Utah

Filed Jun. 27, 1991, Ser. No. 724,544
Int. Cl.[5] G01R *29/12*
U.S. Cl. 324—458 20 Claims

1. Apparatus for sensing electric field gradients, said apparatus comprising:

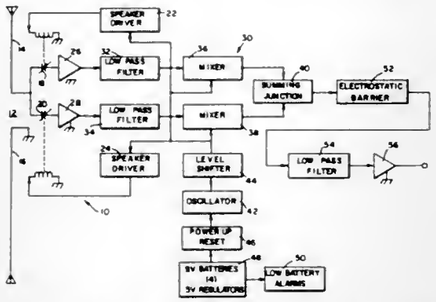
an antenna for measuring the potential between two points in an electric field to produce an antenna signal representative of a gradient of said electric field;

signal generator means for generating mixing signals having known characteristics;

variable capacitor means, connected to receive said antenna signal and said mixing signals, for generating first output signals representative of said antenna signal, wherein the capacitance of said variable capacitor means is varied by said mixing signals such that said antenna signal is frequency translated; and

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signal processing means, connected to receive said first output signals, for processing said first output signals to



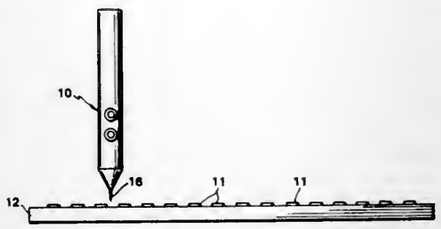
generate a second output signal representative of the electric field gradient sensed by said antenna.

5,256,975

MANUALLY-OPERATED CONTINUITY/SHORTS TEST PROBE FOR BARE INTERCONNECTION PACKAGES

Richard I. Mellitz, Pepperell, and Ellsworth W. Stearns, Hudson, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 1, 1992, Ser. No. 891,632
Int. Cl.[5] G01R *31/02*
U.S. Cl. 324—519 **18 Claims**



1. A hand-held test device for detecting continuity or shorts in conductors of printed circuit boards or the like, comprising:

a manually operated probe having a conductive point for scanning along one of a preselected set of patterns of said conductors in a regular rate;

means connected to said point for measuring capacitance of each conductor touched and for producing an electrical output corresponding thereto;

first memory means for storing said electrical output as a sequence of values, one value for each conductor touched;

means for scanning said first memory and detecting maximums in the stored electrical outputs and for storing in a second memory an indication of said sequence of maximums;

a third memory for storing a sequence of maximums of capacitance values for a known-good circuit board having said one of a preselected set of patterns of said conductors;

a comparator responsive to the contents of said second memory and the contents of said third memory for comparing said indications of said maximums with said sequence of maximums and producing a error indication for differences; and

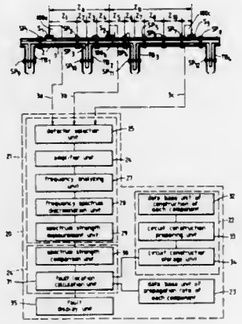
said device including a scan memory for separately storing a sequence of maximums of capacitance values for each one of said preselected set of patterns of said conductors for said known-good circuit board.

5,256,976

POWER APPARATUS AND METHOD OF LOCATION OF A FAULT IN A POWER APPARATUS ON THE BASIS OF ATTENUATION COEFFICIENTS OF ELECTROMAGNETIC COEFFICIENTS OF FAULT GENERATED ELECTROMAGNETIC WAVES

Toshio Ishikawa; Fumihiro Endo; Shuzo Iwaasa; Tomoaki Utsumi; Tokio Yamagiwa, and Yoshinori Tagawa, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 1, 1991, Ser. No. 663,440
Claims priority, application Japan, Mar. 9, 1990, 2-56368
Int. Cl.[5] G01R *31/08*; H02G *15/28*
U.S. Cl. 324—522 **32 Claims**



1. A power apparatus comprising:

a plurality of high voltage conductors supported by insulating supporting members within metal containers;

a plurality of spaced apart detectors disposed in the metal containers, each of said detectors being arranged to detect electromagnetic waves generated by a fault of electric insulation belonging to at least one of said high voltage conductors between any pair of said detectors, and to generate corresponding outputs; and

analyzing means for analyzing the location of said fault on the basis of attenuation coefficients of the electromagnetic coefficients of the electromagnetic waves propagated between said any pair of said detectors and said outputs of said detectors.

5,256,977

HIGH FREQUENCY SURGE TESTER METHODS AND APPARATUS

Carlo Domenichini, Siena, and Massimo Linari, Tavarnelle Val di Pesa, both of Italy, assignors to Axis USA, Inc., Marlborough, Mass.

Filed Nov. 22, 1991, Ser. No. 796,643
Int. Cl.[5] G01R *31/02*
U.S. Cl. 324—546 **19 Claims**

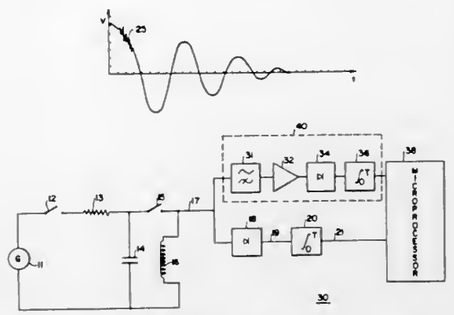
1. The method of detecting microfracture defects in the insulation of a wire which has been formed into a coil during manufacturing of a wound coil device comprising the steps of:

applying an electrical potential difference across said coil during said manufacturing of said wound coil device, said applied electrical potential difference having a relatively low frequency or oscillation and having a relatively higher than normal supply potential, thereby causing overstimulation of said coil;

detecting the potential at a predetermined point in said coil in response to said applied electrical potential difference.

producing a first signal indicative of said potential at said predetermined point; and

analyzing said first signal to determine whether or not said first signal includes a component of at least a predetermined magnitude having a frequency which is substantially higher than said relatively low frequency in order to



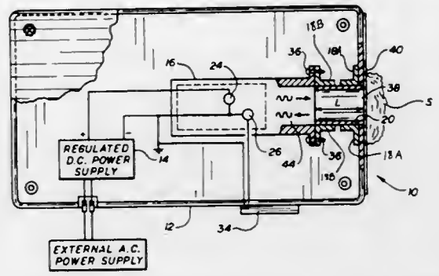
indicate that said insulation has microfracture defects if said first signal includes said component.

5,256,978

MICROWAVE MOISTURE CONTENT ANALYZER

Mitchell Rose, 3718 Silsby Rd., University Heights, Ohio 44118

Filed Apr. 27, 1992, Ser. No. 874,084
Int. Cl.[5] G01R *27/04*
U.S. Cl. 324—601 **10 Claims**



1. A device for measuring the moisture content of a sample, comprising:

a microwave transceiver comprising a microwave oscillator for outputting a microwave signal toward the sample and a microwave detector for outputting a voltage signal which is related to the intensity of the microwave energy reflected from said sample, both said oscillator and said detector housed in a single cavity;

a microwave transmitting waveguide with a calibrated length having one end set against said cavity;

said waveguide calibrated length being determined by first placing a calibrating sample in close proximity to the other end of said waveguide, then measuring the voltage signal while incrementally reducing said waveguide length until said voltage signal is maximized.

5,256,979

METHOD AND APPARATUS FOR MEASURING AN UNKNOWN VOLTAGE, AND POWER METER EMPLOYING THE SAME

Michael C. Moorman, Princeton, N.J., assignor to ABB Power T&D Company Inc., Blue Bell, Pa.

Filed Feb. 21, 1992, Ser. No. 839,789
Int. Cl.[5] G01R *27/00*
U.S. Cl. 324—713 **33 Claims**

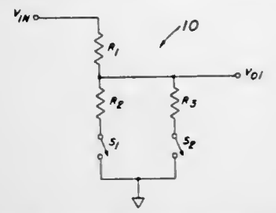
13. An apparatus for measuring an unknown voltage (V_{IN}), comprising:

(a) voltage divider means for dividing the said unknown voltage into at least three fractional voltages;

(b) measuring means for measuring said fractional voltages; and

(c) computing means for computing said unknown voltage on the basis of said fractional voltages; wherein:

said voltage divider means comprises first, second and third resistor means; and



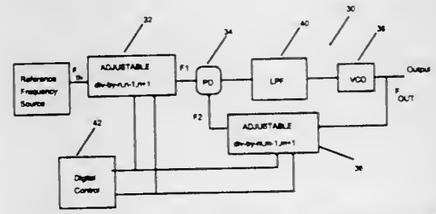
said measuring means comprises means for measuring a first voltage (V_{o1}) across said second resistor means, measuring a second voltage (V_{o2}) across said third resistor means and measuring a third voltage (V_{o3}) across a parallel combination of said second and third resistor means.

5,256,980

FREQUENCY SYNTHESIZER INCORPORATING VERNIER PHASE ADJUSTER

Benedict A. Itri, Huntington Beach, Calif., assignor to PairGain Technologies, Inc., Calif.

Filed Jul. 9, 1991, Ser. No. 727,642
Int. Cl.[5] H03B *19/00*; H03K *5/13*
U.S. Cl. 328—104 **15 Claims**



1. A frequency synthesizer including means for previously adjusting the phase of a periodic output signal of frequency F_{OUT}, said synthesizer comprising:

source means providing a periodic input signal of frequency F_{IN};

first divider means responsive to said input signal F_{IN} for producing a signal of frequency F1 where $F1=F_{IN}/N$;

second divider means responsive to said output signal F_{OUT} for producing a signal of frequency F2 where $F2=F_{OUT}/M$;

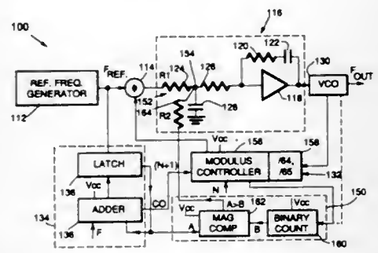
phase detector means responsive to said signals F1 and F2 for producing a control signal V_c;

oscillator means for producing said output signal F_{OUT} as a function of said signal Vd; and

phase adjusting means for selectively temporarily simultaneously incrementing the values of M and N to shift the phase of said output signal in one direction or decrementing the values of M and N to shift the phase of said output signal in an opposite direction, while maintaining said output signal frequency F_{OUT} fixed.

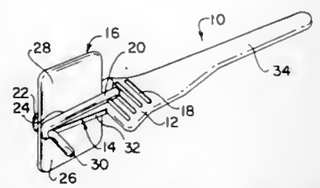
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5,256,981
DIGITAL ERROR CORRECTED FRACTIONAL-N SYNTHESIZER AND METHOD
Erik C. Fountain, Fullerton, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Feb. 27, 1992, Ser. No. 843,800
Int. Cl.[5] H03B *19/00*; H03L *7/00*
U.S. Cl. 328—14 **15 Claims**



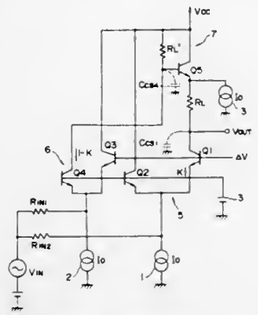
1. A digital error corrected synthesizer comprising:
means for providing a reference frequency signal;
detector means for providing an error voltage at an output terminal proportional to a phase difference between said reference frequency signal and a feedback signal;
means for guiding an output signal having a frequency equal to a fractional multiple of said reference frequency signal and proportional to said error voltage;
means for dividing said output signal by one of a plurality of divisors to provide said feedback signal to said detector means, said plurality of divisors creating a residual error signal at said output terminal of said detector means;
means for generating a correction signal to cancel said residual error signal, said correction means being coupled between said means for providing a reference frequency and said dividing means; and
canceling means coupled between said correction signal means and the output of said detector means, wherein said canceling means comprises a resistor summing network for scaling the total energy in said correction signal to be equal to the total energy in said residual error signal.

5,256,982
RADIOGRAPHIC FILM RETAINING DEVICE
Timothy G. Willis, 310 Evergreen, Yreka, Calif. 96097
Filed Apr. 3, 1992, Ser. No. 862,817
Int. Cl.[5] G03B *42/02*
U.S. Cl. 378—168 **12 Claims**



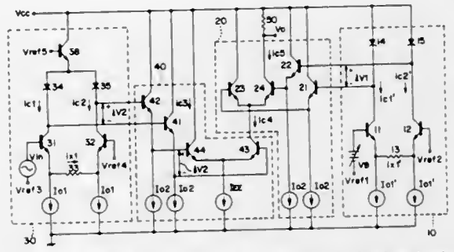
1. A radiographic film retaining device for holding a film packet while producing a radiographic image of selected teeth of a patient's mouth, said film packet comprising a substantially rectangular piece of radiographic film enclosed within a protective polymeric envelope, said retaining device comprising:
(a) a bite portion configured for placement between upper and lower teeth of the patient's mouth, said bite portion having a thickness such that when said bite portion is gripped between said upper and lower teeth, the patient's mouth is in a substantially closed position; and
(b) retaining means positioned distally of said bite portion having film packet gripping means for retaining a portion of said film packet such that when said bite portion is gripped between said upper and lower teeth, said retaining means holds said film packet lingually adjacent said selected teeth, said retaining means comprising an extension of a portion of said bite portion, said film packet gripping means comprising a slit formed in said retaining means, said slit extending through the distal end of said retaining means and toward said bite portion, said slit having a terminus at a marginal edge of said retaining means, said terminus being formed to receive said film packet for insertion of said film packet into said slit through said terminus, said slit being formed to selectively retain said film packet in said slit with a portion of said film packet extending through said terminus and projecting from said slit.

5,256,983
WIDE BAND AMPLIFIER
Seiichi Nishiyama, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Oct. 15, 1991, Ser. No. 775,838
Claims priority, application Japan, Oct. 15, 1990, 2-277056
Int. Cl.[5] H03F *3/45*; H03G *3/30*
U.S. Cl. 330—254 **5 Claims**



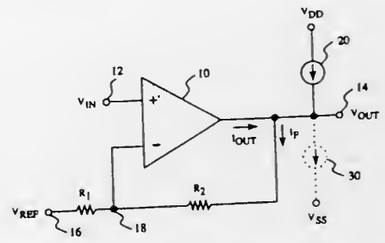
2. A wide band amplifier comprising:
a first differential connection circuit made of a first and a second transistor differentially interconnected;
a second differential connection circuit made of a third and a fourth transistor differentially interconnected; and
a level shift circuit interposed between a load resistance and a power supply, said load resistance being connected to the collector of said first transistor;
the bases of said first and said third transistors being supplied with a voltage for gain determination;
the bases of said first and said third transistors being further supplied with a predetermined operating voltage;
first and second input resistors for respectively connecting an input signal voltage to each of said first and second differential connection circuits;
each of said first and second differential connection circuits being provided with an individual current source connected to its respective input resistor;
said level shift circuit being connected to the collector of said fourth transistor;
a voltage at said load resistance and at the collector of said first transistor being varied depending on the magnitude of the current flowing through said fourth transistor.

5,256,984
AMPLIFIER FOR CONTROLLING LINEAR GAIN OF WIDE BAND USING EXTERNAL BIAS
Ga H. Lee, Bucheon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Mar. 30, 1992, Ser. No. 859,979
Claims priority, application Rep. of Korea, Apr. 17, 1991, 91-6146
Int. Cl.[5] H03F *3/45*; H03G *3/00*
U.S. Cl. 330—254 **20 Claims**



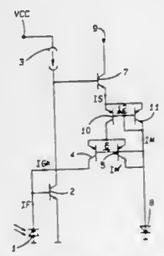
1. An amplifier for controlling linear gain of wide band using external bias in a high-frequency application, comprising:
first voltage generator means coupled to receive an external bias voltage, for generating a first voltage with an inverse hyperbolic tangent function of said external bias voltage;
first voltage-to-current converter means for generating a first current with a hyperbolic tangent function of said first voltage so that said first current is linearly proportional to said external bias voltage;
second voltage generator means coupled to receive an input signal, for generating a second voltage with an inverse hyperbolic tangent function of said input signal;
second voltage-to-current converter means for controlling said first current by generating a second current with a hyperbolic tangent function of said second voltage so that said second current is linearly proportional to said input signal; and
current-to-voltage converter means for converting said first current to a linear output voltage.

5,256,985
CURRENT COMPENSATION TECHNIQUE FOR AN OPERATIONAL AMPLIFIER
Charles A. Brown, Corvallis, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Aug. 11, 1992, Ser. No. 929,875
Int. Cl.[5] H03F *1/34*
U.S. Cl. 330—260 **12 Claims**



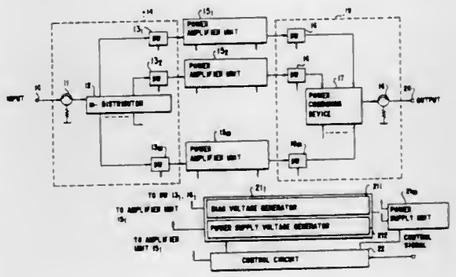
12. A method of accurately amplifying a voltage signal comprising:
providing an op-amp having a positive input, a negative input, and an output for providing an output voltage;
coupling a feedback network to the positive input, negative input and output of the op-amp, the feedback network having a known operating current requirement;
coupling an input voltage to the feedback network; and
coupling a current source to the output of the op-amp to provide at least a portion of the operating current requirement of the feedback network.

5,256,986
CIRCUIT ARRANGEMENT FOR AMPLIFYING WEAK SENSOR CURRENTS
Heiner Flocke, Berlinerstrasse 8, D-6501 Bodenheim, and Manfred Herz, Riedweg 45, D-6500 Mainz 43, both of Fed. Rep. of Germany
Filed Jul. 23, 1991, Ser. No. 734,519
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1990, 4023435
Int. Cl.[5] H03F *1/34*
U.S. Cl. 330—293 **16 Claims**



1. A circuit arrangement for amplifying weak sensor currents in which the current is passed to the base electrode of a transistor (2) which is operated in an emitter circuit configuration and in whose collector circuit is disposed a constant current source (3), and with a negative feedback between the collector and base electrode of the transistor (2), characterised in that the negative feedback includes a current step-down circuit using a current mirror (6) and further comprising in that a sum current of the current mirror is passed to the current step-down circuit using a further current mirror (12) whose sum current is coupled out as the signal current (I_S).

5,256,987
POWER AMPLIFIER DEVICE HAVING A PLURALITY OF POWER AMPLIFIER UNITS CONNECTED IN PARALLEL
Toshimitsu Kibayashi, Kawasaki, and Yoshifumi Toda, Tokyo, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Jun. 21, 1991, Ser. No. 717,835
Claims priority, application Japan, Jun. 22, 1990, 2-164395
Int. Cl.[5] H03F *3/68*
U.S. Cl. 330—295 **28 Claims**



1. A power amplifier device comprising:

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m power amplifier units provided in parallel where m is an integer, each amplifier unit connected to a power supply line;

distributing means, operatively coupled to said m power amplifier units, for distributing an input signal to said m amplifier units;

combining means, operatively coupled to said m power amplified units, for combining m amplified input signals output by said m power amplifier units to generate an amplified output signal; and

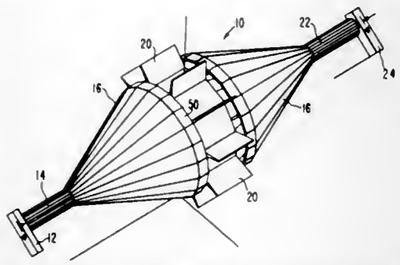
switch means, operatively coupled to said power amplifier units, for gradually disconnecting said m power amplifier units from said distributing means and said combining means and for gradually connecting said m power amplifier units to said distributing means and said combining means wherein the disconnecting and reconnecting of said power amplifier units occurs over a finite predetermined period of time by a gradual change in a voltage bias supplied to said switch means so that the occurrence of harmonic waves and the superimposition of noise on the power supply lines is substantially prevented.

5,256,988

CONICAL TRANSVERSE ELECTROMAGNETIC DIVIDER/COMBINER

Jamaledin Izadian, San Jose, Calif., assignor to Loral Aerospace Corp., New York, N.Y.

Filed Sep. 1, 1992, Ser. No. 938,943
Int. Cl.[5] H03F *3/68, 3/60*
U.S. Cl. 330—295 **13 Claims**



1. An apparatus for amplifying a microwave source signal, said apparatus comprising:

a first circular waveguide having an input and an output for transmitting TM_{01} mode signals and converting them to coaxial TEM mode signals;

a conical dividing waveguide having an input and an output for transmitting conical TEM mode signals, the input of the conical dividing waveguide coupled to the output of the first circular waveguide;

a first ring having an input and an output for transmitting TEM mode signals, the input of the first ring coupled to the output of the conical dividing waveguide, said first ring comprising a plurality of local parallel plate waveguides arranged in a band;

a plurality of amplifiers, each amplifier having an input and an output;

a first plurality of striplines coupling the inputs of the plurality of amplifiers to the output of the first ring;

a second ring having an input and an output for transmitting TEM mode signals, said second ring comprising a plurality of local parallel plate waveguides arranged in a band;

a second plurality of striplines coupling the outputs of the plurality of amplifiers to the input of the second ring;

a conical combining waveguide having an input and an output for transmitting TEM mode signals, the input of said conical combining waveguide coupled to the output of the second ring; and

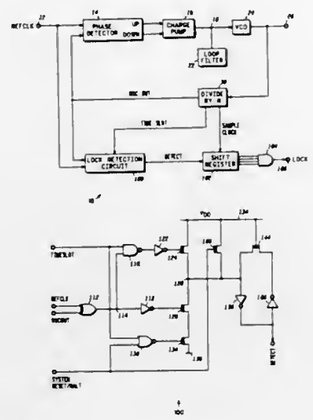
a second circular waveguide having an input and an output for converting coaxial TEM mode signals to TM_{01} mode signals, the input of the second circular waveguide coupled to the output of the conical combining waveguide.

5,256,989

LOCK DETECTION FOR A PHASE LOCK LOOP

Lanny L. Parker, Mesa; Ahmad H. Atriss, Chandler; Benjamin C. Peterson, Tempe, all of Ariz., and Dean W. Mueller, Portland, Oreg., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 3, 1991, Ser. No. 695,118
Int. Cl.[5] H03L *7/00*
U.S. Cl. 331—1 A **14 Claims**



1. A lock detection circuit, comprising:

first means responsive to first and second digital input signals for generating a first digital output signal having a first logic state from a mutually exclusive combination of said first and second digital input signals; and

second means for comparing said first logic state of said first digital output signal with a time slot window formed by a control signal and generating a true lock detection signal when said first logic state of said first digital output signal occurs within said time slot window and a false lock detection signal when said first logic state of said first digital output signal occurs outside said time slot window, said second means including,

(a) a NAND gate having first and second inputs and an output, said first input being coupled for receiving said control signal, said second input being coupled for receiving said first digital output signal,

(b) a first inverter having an input coupled to said output of said NAND gate and having an output,

(c) a second inverter having an input coupled for receiving said first digital output signal and having an output,

(d) a first transistor having a gate, a drain and a source, said drain being coupled to a first source of operating potential, said gate being coupled to said output of said first inverter, and

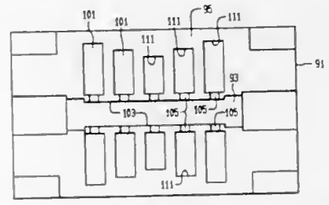
(e) a second transistor having a gate, a drain and a source, said drain being coupled to said source of said first transistor at a first node, said source being coupled to a second source of operating potential, said gate being coupled to said output of said second inverter.

5,256,990

COMPACT, DIE-CAST PRECISION BANDSTOP FILTER STRUCTURE

Lock R. Young, Palm Bay, Fla., assignor to Skydata, Inc., Melbourne, Fla.

Filed May 8, 1992, Ser. No. 880,900
Int. Cl.[5] H01P *1/207, 1/209*
U.S. Cl. 333—208 **11 Claims**



1. A method of forming an electromagnetic energy bandstop filter structure comprising the steps of:

(a) providing first and second conductive substrates, each of which has a first generally planar surface;

(b) in each of said substrates,

(b1) forming a generally longitudinal slot which extends from said first surface to a prescribed depth in the substrate,

(b2) forming a plurality of channels which are transverse to and intersect spaced apart locations of said generally longitudinal slot, thereby defining a first and second sets of parallel conductive substrate webs, respective interior surfaces of which are disposed on opposite sides of and transverse to said generally longitudinal slot,

(b3) providing first and second conductive plates, each of which has a plurality of parallel recesses, adjacent ones of which are spaced apart from one another by land portions therebetween, said recesses being sized to engage one of said sets of parallel conductive webs, and wherein each of said land portions has an opening therethrough,

(b4) affixing said first and second conductive plates within said slot such that the recesses of a respective plate receives and abuts against a respective set of webs, whereby the openings through the land portions of s id plates define respective irises from said slot into said channels, and

(b5) providing, in each of said channels, a conductive element that is spaced apart from the iris thereof; and

(c) joining said first and second conductive substrates together at the first surfaces thereof.

5,256,991

BROADBAND MICROWAVE ACTIVE INDUCTOR CIRCUIT

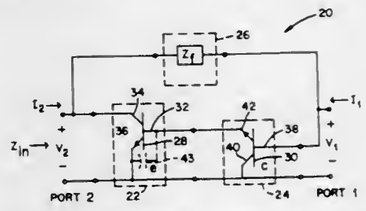
Charles F. Campbell, Ames, and Robert J. Weber, Boone, both of Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed May 15, 1992, Ser. No. 883,690
Int. Cl.[5] H03H *11/50*
U.S. Cl. 333—215 **17 Claims**

1. A broadband microwave active inductor circuit for producing a flat inductive response versus frequency comprising:

a pair of bipolar transistors connected in a gyrator configuration for producing an active inductance, the transistors exhibiting intrinsic characteristics which influence the inductive response of the active inductor circuit, with one of the transistors including a parasitic capacitance serving as a load for the gyrator configuration to produce the active inductance; and

a feedback network connected to the gyrator configuration to compensate for the intrinsic characteristics of the transistors so that the active inductor circuit realizes a flat



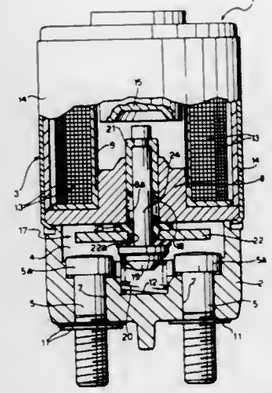
inductive response over a wide range of frequencies including microwave frequencies.

5,256,992

ELECTRICAL SWITCH, PARTICULARLY FOR CONTROLLING THE SUPPLY OF CURRENT TO THE ELECTRIC STARTER MOTOR OF AN INTERNAL COMBUSTION ENGINE

Giancarlo Fasola, Milan; Giovanni Cerizza, Lodi, and William T. Hyder, Milan, all of Italy, assignors to Industrie Magneti Marelli SpA, Milan, Italy

Filed Oct. 29, 1991, Ser. No. 784,542
Claims priority, application Italy, Dec. 4, 1990, 67965 A/90
Int. Cl.[5] H01H *67/02*
U.S. Cl. 335—126 **3 Claims**



1. An electrical switch, particularly for controlling the supply of current to the electric starter motor of an internal combustion engine, comprising:

a support structure and two fixed contacts carried upon said support structure,

a movable device and a movable contact carried upon said movable device, said movable device being movable relative to said support structure between a rest position in which the movable contact, carried upon the movable device, is separated from the fixed contacts and an operating position in which the movable contact is brought to bear against the fixed contacts, said movable contact having the form of a resiliently deformable beam subject to damped oscillations, and

control means for moving the movable device between its rest position and its operating position;

whereby, in the operating position of the moveable device, the movable contact oscillates after it has struck the fixed contacts, the magnitude of the oscillation bounded by an undeformed configuration of said movable contact, so as to maintain engagement of the movable contact with the two fixed contacts.

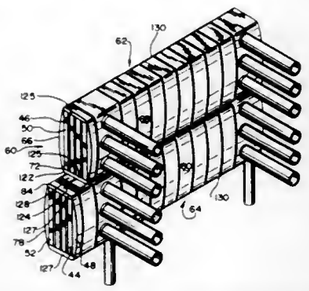
VOL 1155 ISS 4 OC 26 1993 UMI

5,256,993

COIL CONTAINMENT VESSEL FOR SUPERCONDUCTING MAGNETIC ENERGY STORAGE

Robert J. Walter, Batavia, and Stephen W. Meier, Bolingbrook, both of Ill., assignors to Chicago Bridge & Iron Technical Services Company, Oak Brook, Ill.

Filed Jul. 16, 1990, Ser. No. 553,047
Int. Cl.[5] H01F 7/22
U.S. Cl. 335—216 58 Claims



1. A modular coil containment vessel comprising a top module positioned above a bottom module:
(a) the top module comprising spaced apart inner and outer substantially endless walls defining a vessel space therebetween, the inner and outer walls having top and bottom edges, a top closure means connected to the top edges of the module walls;
(b) the bottom module comprising spaced apart inner and outer substantially endless walls defining a vessel space therebetween, the inner and outer walls having top and bottom edges, a bottom closure means connected to the bottom edges of the bottom module walls;
(c) the top module and the bottom module each being capable of holding a fluid;
(d) interfacing means for transferring coil forces between the top and bottom modules;
(e) a top superconducting magnetic coil positioned in the vessel space of the top module and supported therein; and
(f) a bottom superconducting magnetic coil positioned in the vessel space of the bottom module and supported therein.

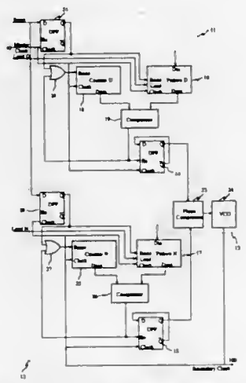
5,256,994

PROGRAMMABLE SECONDARY CLOCK GENERATOR

Brian K. Langendorf, El Dorado Hills, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Sep. 21, 1992, Ser. No. 948,215
Int. Cl.[5] H03L 7/199
U.S. Cl. 331—16 6 Claims

1. A clock signal generating apparatus for generating a second clock signal equal to the product of a first clock signal and a desired ratio, said ratio having a numerator and a denominator, said clock signal generating apparatus comprising:
frequency divider means for dividing the frequency of said first clock signal by the denominator of said ratio to yield a first divided clock signal, said frequency divider means comprising:
a first storage means for storing the value of the denominator of said ratio, said first storage means being selectively programmable;
a first incremental counting means responsive to said first clock signal, said first counting means incrementing for each clock cycle of said first clock signal; and
a first comparator means coupled to said first storage means and said first incremental counting means for comparing the value in said first storage means to the incrementing value of said first counting means, said first comparator outputting said first divided clock signal when said first storage means and said first incremental counting means have equal values and for signaling said first incremental counting means to reset at the same time;
frequency multiplier means responsive to said first divided clock signal for multiplying said first divided clock signal by the numerator of said ratio to yield said second clock signal at a frequency of said first clock signal multiplied by said ratio, said frequency multiplier means comprising:
a second storage means for storing the value of the denominator of said ratio, said second storage means being selectively programmable;
a second incremental counting means responsive to said second clock signal, said second counting means incrementing for each clock cycle of said second clock signal;
a second comparator means coupled to said second storage means and said second incremental counting means for comparing the value in said second storage means to



the incrementing value of said second counting means, said second comparator outputting a second divided clock signal when said second storage means and said second incremental counting means have equal values and for signaling said second incremental counting means to reset at the same time;
a phase locked loop (PLL), said PLL receiving said first divided clock signal and said second divided clock signal as inputs, said PLL outputting said second clock signal; and
first and second divide-by-two means, said first divide-by-two means being coupled between said first comparator means and said PLL, and said second divide-by-two means being coupled between said second comparator means and said PLL, said first and second divide-by-two means for providing approximately a 50/50 duty cycle for said PLL and each of said divide-by-two means approximately canceling any skew introduced by the other.

5,256,995

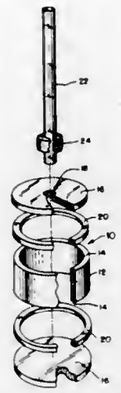
LOW HELIUM PERMEABILITY ATOMIC FREQUENCY STANDARD CELL AND METHOD FOR FORMING SAME

Addison B. Scholes, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.

Filed Jul. 17, 1992, Ser. No. 914,394
Int. Cl.[5] H03L 7/26
U.S. Cl. 331—94.1 21 Claims

1. A method for forming an atomic frequency standard cell with low helium permeability, said method comprising the following steps:
a) providing first and second windows and a cell body, said body defining first and second annular sealing surfaces,

one of the windows and the body defining an opening, said windows and body all formed of glasses having respective helium permeabilities less than $K(T)=1\times10^{-11}$ for T=100° C., where K(T) is helium permeability expressed in cc's of helium per second at 760 torr and 25° C. for 1 cm^2 of glass having a thickness of 1 mm when a helium partial pressure difference of 1 torr is applied across the glass;



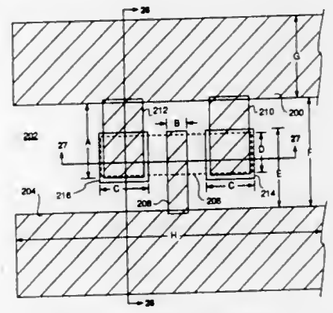
b) providing a tube sized to fit adjacent the opening;
c) sealing the first and second windows to the respective sealing surfaces of the body to form a cell having a volume no greater than about 60 cc; and
d) sealing the tube to the cell adjacent the opening to form a fill tube for the cell.

5,256,996

INTEGRATED COPLANAR STRIP NONLINEAR TRANSMISSION LINE

Robert A. Marsland, Cupertino; Mark J. W. Rodwell, Goletta, and David M. Bloom, Portola Valley, all of Calif., assignors to The Board of Trustees of the Leland Stanford, Junior University, Stanford, Calif.

Continuation of Ser. No. 558,356, Jul. 26, 1990, abandoned, which is a continuation-in-part of Ser. No. 259,027, Oct. 17, 1988, which is a continuation-in-part of Ser. No. 106,554, Oct. 6, 1987, Pat. No. 5,014,018. This application Jul. 6, 1992, Ser. No. 912,081
The portion of the term of this patent subsequent to May 7, 2008, has been disclaimed.
Int. Cl.[5] H03K 3/313
U.S. Cl. 333—20 35 Claims



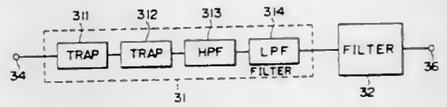
1. A nonlinear transmission line comprising:
a substrate of semiconductor material;
first and second parallel conductors formed on a surface of said substrate so as to form an integrated coplanar strip transmission line;
a plurality of semiconductor junctions electrically isolated from each other and distributed along said integrated coplanar strip transmission line and formed in said substrate, each said junction having one side coupled to said first conductor and having the other side coupled to said second conductor and each said junction having a junction capacitance which varies with the voltage existing between said first and second conductors at any particular time at the location of said junction.

5,256,997

LINEAR PHASED FILTER FOR REDUCING RIPPLE IN GROUP DELAY

Ryosuke Inagaki, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Jan. 15, 1992, Ser. No. 820,800
Claims priority, application Japan, Jan. 31, 1991, 3-031510
Int. Cl.[5] H03H 7/01
U.S. Cl. 333—28 R 8 Claims



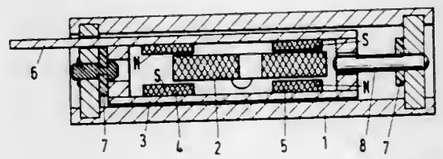
1. A filter device, comprising:
a first filter having a predetermined pass band and a group delay characteristic having a ripple therein; and
a second filter connected to an output of said first filter and having a pass band within the pass band of the first filter, said second filter having a gain which decreases gradually and continuously from a maximum at a predetermined frequency in the pass band of the second filter into the higher and lower frequency regions, and said second filter having a group delay which decreases gradually and continuously from a maximum at said predetermined frequency into the higher and lower frequency regions so as to reduce the ripple of the group delay of the first filter.

5,256,998

ACTUATOR

Klaus Becker; Rüdiger Ostholt, botn of Wetter, and Nikolaus Petershagen, Dortmund, all of Fed. Rep. of Germany, assignors to Technische Entwicklungen Dr. Becker GmbH, Wetter

Filed Oct. 26, 1992, Ser. No. 966,803
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1991, 9113469[U]
Int. Cl.[5] H01F 7/16, 7/13
U.S. Cl. 335—229 6 Claims



1. An actuator comprising a housing and a stationary, annular magnet coil mounted in the housing, means for supplying reversible direct current to the magnet coil, a displacement member linearly moveable within the housing, the displacement member extending so as to partially surround the magnet coil, first and second pairs of permanent magnets mounted in the displacement member, the pairs of permanent magnets

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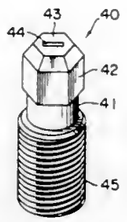
being mounted so as to partially overlap the magnet coil and being arranged diametrically opposite to each other relative to the magnet coil, the magnet coil having a top and a bottom, wherein a north pole of the first pair of permanent magnets is located above the top of the magnet coil and a south pole of the first pair of permanent magnets is located below the bottom of the magnet coil, and wherein a south pole of the second pair of permanent magnets is located above the top of the magnet coil and a north pole of the second pair of permanent magnets is located below the bottom of the magnet coil, whereby when a current is applied to the magnet coil the displacement member is linearly displaced within the housing relative to the stationary magnet coil, and further comprising at least one connecting piece attached to the displacement member and extending out of the housing through an opening defined in the housing.

5,256,999

THREAD TYPE MAGNETIC CORE STRUCTURE

Shoichi Utsugi; Yasunori Mamiya, and Tatsushi Shinoda, all of Tsurugashima, Japan, assignors to Tokyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 3, 1992, Ser. No. 923,627
Claims priority, application Japan, Aug. 9, 1991, 3-071183[U]; Oct. 25, 1991, 3-095849[U]
Int. Cl.[5] H01F *21/06*
U.S. Cl. 336—136 **2 Claims**



1. A thread type magnetic core structure, comprising:
a magnetic core having a thread formed on the outer surface of said core;
a resin structure of a rod type fixedly mounted on one end surface of said magnetic core in the longitudinal direction of said core, and
an engaging member provided at the top portion of said resin structure, said engaging member being adapted to couple to a driver for rotating said magnetic core,
wherein said engaging member is formed in a polygonal shape in section including a triangle, and the outer periphery of said resin structure having said polygonal engaging member is set within the circumference of said magnetic core.

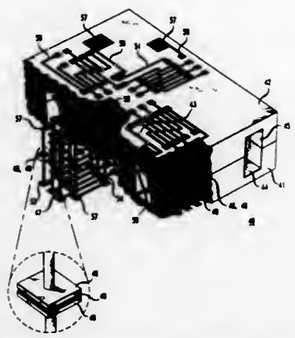
5,257,000

CIRCUIT ELEMENTS DEPENDENT ON CORE INDUCTANCE AND FABRICATION THEREOF

Robert L. Billings, Richardson, Tex.; Donald W. Dahringer, Glen Ridge, and Alan M. Lyons, New Providence, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 14, 1992, Ser. No. 835,793
Int. Cl.[5] H01F *5/00*
U.S. Cl. 336—200 **18 Claims**

1. Fabrication entailing construction of at least one magnetic circuit element comprising at least one winding consisting essentially of at least one turn of electrically conductive material about an ungapped core of soft magnetic material, said at least one turn being produced by joinder of turn members,
characterized in that said element is supported by sandwiching boards at least one of which is recessed to enclose such core, in that each such turn consists essentially of electrically conductive segments including a first surface-supported segment on one such board and a second surface-supported segment on the second such board, together with two board-penetrating segments, so positioned that sandwiching accomplishes electrical joinder of segment portions to result in electrical completion of such turn, and in that joinder entails adhesion of at least regions of mating surfaces of said boards by use of a vehicle, said vehicle consisting essentially of adhesive containing electrically conductive particles of such size and distribution as to statistically join such segment portions, while adhesively bonding such sandwiching boards, so as to complete such turn, while avoiding unwanted electrical interconnection entailing any such segment, at least one said region including at least two segment portions to be electrically joined, further in which board-penetrating segments consist essentially of holes rendered electrically conductive by end-to-end inner plating, and in which segment portions to be joined are provided with conductive pads of enlarged area relative to cross-sectional area of board-penetrating segments.



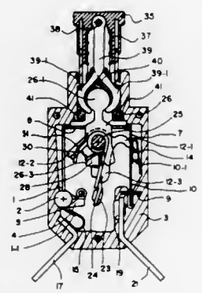
18. Article produced by the fabrication of any of claims 1-17.

5,257,001

DEVICE FOR ADJUSTING THE BIMETAL BLADE OF A CIRCUIT BREAKER

Bernard Truchet, Besayes, and Jean-Marie Vergnes, Valence, both of France, assignors to Sextant Avionique, Cedex, France

Filed Jul. 24, 1992, Ser. No. 918,097
Claims priority, application France, Jul. 25, 1991, 91 09685
Int. Cl.[5] H01H *71/16*
U.S. Cl. 337—57 **7 Claims**



1. A circuit breaker comprising:
a housing;
a bimetal blade having an adjustable inclination;
an isolating axle being rotatably mounted in said housing, parallel to a plane of said bimetal blade, and having an end of said bimetal blade embedded therein;

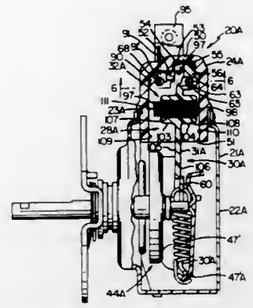
a lever perpendicular, and attached to, said isolating axle;
a screw parallel to said isolating axle, and having a tapered tip communicating with said level; and
a connector communicating with said bimetal blade;
wherein rotation of said axle is adjusted by said screw.

5,257,002

TEMPERATURE OPERATED SWITCH CONSTRUCTION AND METHOD OF MAKING THE SAME

Thomas M. Buckshaw, Indiana, and David D. Martin, Dunbar, both of Pa., assignors to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 861,476, Apr. 1, 1992, Pat. No. 5,166,657.
This application Sep. 16, 1992, Ser. No. 945,490
The portion of the term of this patent subsequent to Nov. 24, 2009, has been disclaimed.
Int. Cl.[5] H01H *37/76, 37/64*
U.S. Cl. 337—329 **20 Claims**



1. In a temperature operated switch construction comprising a housing means, a movable switch arm carried in said housing means, temperature actuated means disposed in said housing means and being operatively interconnected to said switch arm to cause movement of said arm between operating positions thereof in relation to the temperature being sensed by said temperature actuated means, said housing means carrying a switch means that is operatively associated with said switch arm so that said switch means is in a first condition thereof when said switch arm is in a first operating position thereof and said switch means is in a second condition thereof when said switch arm is in a second operating position thereof, said switch means comprising a reed switch means, said switch arm carrying a magnet means for operating said reed switch means to said conditions thereof as said switch arm is moved to said positions thereof, the improvement wherein said switch arm carries spring means having opposed end means one of which engages said housing means while the other of which is out of engagement with said housing means when said switch arm is in said first operating position thereof and said other opposed end means engages said housing means while said one opposed end means is out of engagement with said housing means when said switch arm is in said second operating position thereof.

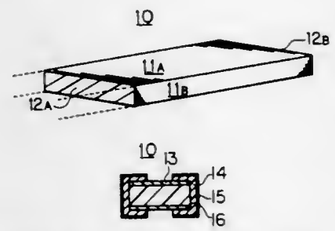
5,257,003

THERMISTOR AND ITS METHOD OF MANUFACTURE

John J. Mahoney, 4062 Kingswood Cir., Boise, Id. 83704

Filed Jan. 14, 1992, Ser. No. 821,748
Int. Cl.[5] H01C *7/10*
U.S. Cl. 338—22 R **18 Claims**

1. A method for making a thermistor which comprises:
(a) applying a single resistive film on a thermistor element to completely cover four axial surfaces thereof;
(b) fixing the said thermistor element and applied resistive film to produce a fixed product of a resistive film completely covering said four axial surfaces of said thermistor element;



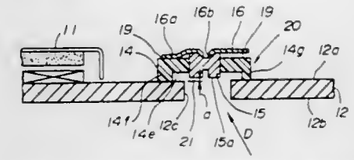
(c) cutting the said thermistor element covered with fixed resistive film to produce terminal surfaces of thermistor element not covered with fixed resistive film; and
(d) applying conductor material to said terminal surfaces.

5,257,004

VARIABLE PASSIVE ELEMENT

Takahiro Sakaguchi, Kodaira, and Michiaki Nagai, Koganei, both of Japan, assignors to TEAC Corporation, Japan

Filed Jun. 22, 1992, Ser. No. 901,855
Claims priority, application Japan, Jun. 24, 1991, 3-47640[U]
Int. Cl.[5] H01C *10/40*
U.S. Cl. 338—188 **7 Claims**



1. A variable passive element suitable for mounting on a board of conductive material having an opening for insertion of an adjusting tool, said element comprising:
a main part fitting on a mounting face of said board proximate to the opening, said main part being formed of an insulating material and having a face opposing the mounting face of said board; and
a conductive adjusting member by which an adjusting operation is performed from the direction of said opposing face through said opening,
said main part having a protuberance surrounding said adjusting member that protrudes from said opposing face of said main part,
said protuberance fitting into said opening, and being interposed between said adjusting member and an inside periphery of said opening of said board.

5,257,005

SMALL VALUE PRECISION INTEGRATED CIRCUIT RESISTORS

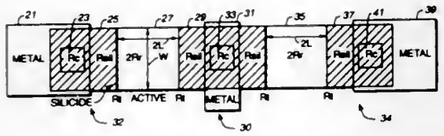
Alan R. Desroches, 5735 Seifert Ave., San Jose, Calif. 95118, and Domingo A. Figueredo, 101 NE. Conifer Blvd., #U, Corvalis, Oreg. 97330

Filed Aug. 18, 1992, Ser. No. 931,615
Int. Cl.[5] H01C *1/14, 1/012*
U.S. Cl. 338—325 **8 Claims**

1. An integrated circuit resistor comprising:
n terminal contacts where $n \geq 3$; and
means for connecting a plurality of said terminal contacts less than n to form one resistor terminal and means for

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connecting terminal contacts other than said plurality to form another resistor terminal;



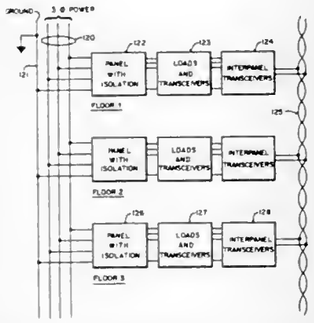
whereby a parasitic end resistance effect of the integrated circuit resistor is reduced.

5,257,006

METHOD AND APPARATUS FOR POWER LINE COMMUNICATIONS

Martin H. Graham, Berkeley, and Howard W. Johnson, Sunnyvale, both of Calif., assignors to Echelon Corporation, Palo Alto, Calif.

Filed Sep. 21, 1990, Ser. No. 586,458
Int. Cl.[5] H04M *11/04*
U.S. Cl. 340—310 A **4 Claims**



1. In a power distribution system having a plurality of power distribution panels connected to receive power from a common power source, each of said panels being connected to supply power to a corresponding power distribution network, a communications apparatus comprising:

a plurality of inductors, at least two for each of said panels, said inductors being coupled to power lines for isolating high frequency communications signals in each of said networks from said common power source;

a plurality of first transceivers, one for each of said networks, each of said first transceivers being coupled to its respective network so as to receive and transmit communications signals onto its network;

a communication link coupled to each of said first transceivers for allowing communication signals from one of said networks to be communicated through its respective first transceiver to another of said networks via said link and said other networks first transceiver; and

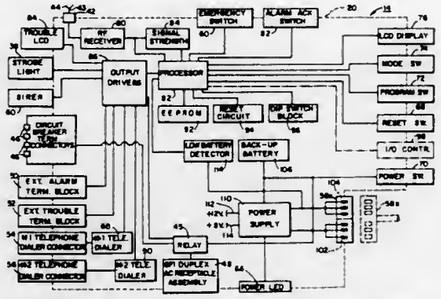
a plurality of second transceivers, one for each of said networks, each of said second transceivers for communicating signals within each of said networks and with each of said first transceivers, each of said first and second transceivers being connected so as to transmit communications signals in a common mode in said networks.

5,257,007

PORTABLE SECURITY SYSTEM

David J. Steil, Yardley, and Gregory J. Borsos, Langhorne, both of Pa., assignors to M-Tec Corporation, Pennsauken, N.J.

Filed Oct. 1, 1991, Ser. No. 769,605
Int. Cl.[5] G08B *1/08*
U.S. Cl. 340—539 **22 Claims**



1. A portable central controller for a portable security system comprising:

a hand portable housing;

a radio receiver circuit within the housing;

a signal processor circuit within the housing configured to analyze radio signals received by the receiver circuit to identify an alarm report signal transmitted by any of a plurality of separate, radio signal transmitting detectors and to identify the detector of the plurality transmitting any alarm report signal identified, the signal processor circuit being further configured to generate an operator alarm device activation signal in response to an identified alarm report signal; and

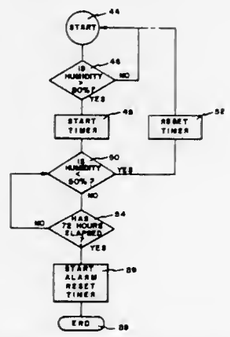
a power circuit in the housing configured to selectively power the controller from either a DC power source external to the housing or an AC power source external to the housing.

5,257,008

COMPRESSED AIR SYSTEM WITH WARNING MECHANISM FOR AIR DRYER SERVICE LIFE INDICATION

Naman A. Elamin, Avon, Ohio, assignor to Allied-Signal Inc., Morristown, N.J.

Filed Sep. 26, 1991, Ser. No. 765,853
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—540 **11 Claims**



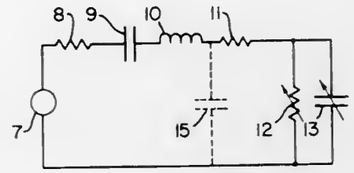
8. Method of warning the operator of a compressed air system that the desiccant within an air dryer for drying the compressed air should be replenished, said compressed air system comprising a compressed air source, and a storage reservoir for receiving compressed air, said air dryer having an inlet connected to said source, an outlet connected to said reservoir, and a flowpath between said inlet and outlet, said desiccant being located in said flowpath, comprising the steps of establishing the condition of the compressed air downstream of the desiccant and actuating a warning device when the condition of the compressed air downstream of the desiccant is indicative of a nearly depleted desiccant that should be replaced or of a system malfunction.

5,257,009

RERADIATING EAS TAG WITH VOLTAGE DEPENDENT CAPACITANCE TO PROVIDE TAG ACTIVATION AND DEACTIVATION

Doug Narlow, Coral Springs, Fla., assignor to Sensormatic Electronics Corporation, Deerfield Beach, Fla.

Filed Aug. 26, 1991, Ser. No. 749,578
Int. Cl.[5] G08B *13/18*
U.S. Cl. 340—572 **39 Claims**



1. A tag for use in an article surveillance system in which a plurality of signals at a plurality of preselected frequencies are established in a surveillance zone, said plurality of signals including a firs signal at a first frequency and a second signal at a second frequency lower than the first frequency, and an alarm is initiated upon detection of a predetermined tag signal reradiated by the tag at a frequency related to the plurality of preselected frequencies, the tag comprising:

circuit means responsive to said plurality of signals for reradiating said predetermined tag signal, said circuit means being substantially resonant at said first frequency and including: means for receiving said plurality of signals; and means responsive to said receiving means for establishing said predetermined tag signal;

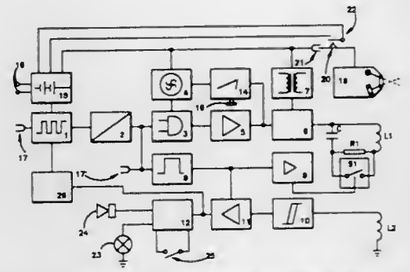
and voltage dependent capacitance means in circuit with said circuit means and having a capacitance which can be switched with a change in voltage to selectively enable said circuit means and disable said circuit means from being able to reradiate said tag signal, said voltage dependent capacitance means being arranged relative to said receiving means and establishing means of said circuit means such that, when said voltage dependent capacitance means is switched to a first capacitance value, said voltage dependent capacitance means inhibits said second signal in said plurality of signals from passing from said receiving means to said establishing means to a significantly lesser degree than when said voltage dependent capacitance means is switched to said second capacitance value, thereby enabling said establishing means to establish said tag signal when said capacitance means is at said first capacitance value and disabling said establishing means for being able to establish said tag signal when said capacitance means is at said second capacitance value.

5,257,010

PROCESS FOR THE DEACTIVATION OF A REASONANCE LABEL AND CIRCUIT ARRANGEMENT FOR THE EXECUTION OF THE PROCESS

Jurgen Rehder, Bexbach-Hochen, Fed. Rep. of Germany, assignor to Actron Entwicklungs, Rotreuz, Switzerland

Continuation of Ser. No. 690,692, Apr. 24, 1991. This application Jan. 19, 1993, Ser. No. 6,165
Claims priority, application Switzerland, Apr. 25, 1990, 1396/90
Int. Cl.[5] G08B *13/24*
U.S. Cl. 340—572 **20 Claims**



1. A process for the deactivation and subsequent proof of a resonance label which has a resonant circuit with a certain Q factor and a center frequency, the resonant circuit being energized with and disabled by a deactivation energy during said deactivation process, said process comprising the steps of:

dividing time into a continuous alternating sequence of first and second time periods which are directly following one another;

transmitting, by means of at least one transmission antenna, a deactivation energy during each of the first periods of time in the form of a sequence of separate deactivation impulses, the height and the width of each of the deactivation impulses and the number of the deactivation impulses within the impulse sequence being such that the impulse sequence delivers sufficient energy to deactivate the resonance label for causing the resonant circuit of the resonance label to oscillate in a resonant mode;

stopping said transmission and disabling the at least one transmission antenna for each of said second periods of time; and

activating, at the beginning of such of the second periods of time, receiving means for receiving decaying oscillations of a resonant label which is present and which has not successfully been deactivated during the preceding of the first time periods.

5,257,011

DATA ALTERING MEANS FOR MULTI-MEMORY ELECTRONIC IDENTIFICATION TAG

Michael L. Beigel, Corona, Calif., assignor to Avid Corporation, Norco, Calif.

Continuation of Ser. No. 801,749, Dec. 3, 1991, Pat. No. 5,214,409. This application Jan. 19, 1993, Ser. No. 6,251
Int. Cl.[5] H04Q *1/18*
U.S. Cl. 340—572 **5 Claims**

1. An apparatus for altering data in the memory of an electronic identification tag, said apparatus having a data entry mode and a data transmission mode, said apparatus comprising:

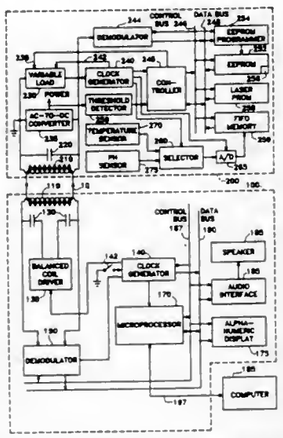
a data entry device that enables a user by physical interactions with said data entry device to enter data into said apparatus when said apparatus is in the data entry mode;

a means for communicating data entered into said apparatus by said user to said tag when said apparatus is in the data transmission mode, the communication process being initiated by a start signal;

a transmit control means that enables the user by physical

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interactions with said transmit control means to generate said start signal;



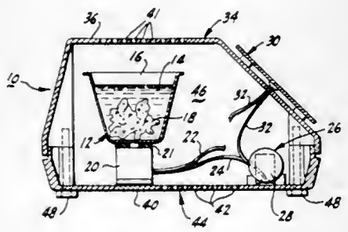
a mode control means that places said apparatus in either the data entry mode or the data transmission mode as a result of the user's physical interactions with said apparatus.

5,257,012

DEVICE FOR REPELLING PESTS

Steve M. Metcalf, Sand Point La., West Pittsburg, Calif. 94565

Filed Aug. 19, 1991, Ser. No. 747,142
Int. Cl.[5] G08B *23/00*
U.S. Cl. 340—573 8 Claims



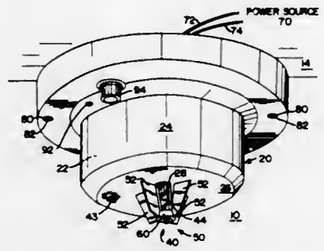
1. A device for repelling pests utilizing a liquid comprising:
a. a container for holding the liquid;
b. means for vibrating said container to promote evaporation of the liquid held within the container, and to produce sound;
c. means for providing power to said means for vibrating said container, including a transducer for converting solar energy into electrical energy;
d. an initiator for said means for providing power to said means for vibrating said container; and
e. a housing for at least partially enclosing said container, said housing including an opening for permitting vapor originating from the liquid held within the container to pass from the interior to the exterior of said housing.

5,257,013

PROTECTING UV FLAME DETECTING APPARATUS

Mike Lewkowicz, Wayside, N.J., assignor to Life Light, Inc., Oakhurst, N.J.

Continuation of Ser. No. 617,627, Nov. 26, 1990, abandoned.
This application Jan. 21, 1993, Ser. No. 6,696
Int. Cl.[5] G08B *17/12;* G01J *1/42*
U.S. Cl. 340—578 25 Claims



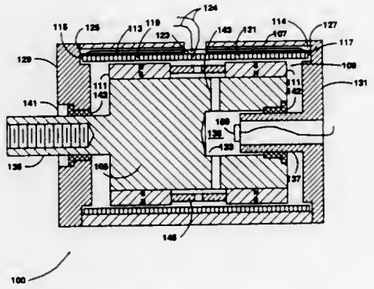
1. Flame detecting apparatus for detecting the presence of UV radiation from a fire comprising:
(a) a housing having an interior, an exterior, and at least one aperture in said housing;
(b) flame detecting means including alarm means and UV detecting means disposed relative to and extending through said aperture for triggering said alarm means upon the detection of a predetermined amount of UV radiation, said UV detecting means having a longitudinal axis coincident with a longitudinal axis of said housing; and
(c) protective means on said exterior of said housing, said protective means including a plurality of wing members each disposed substantially coplanar with a respective straight line projecting radially from said longitudinal axis of said UV detecting means, whereby said plurality of wing members do not significantly interfere with the detecting by said UV detecting means, and a hollow ring member extending circumferentially around said UV detecting means and attached to said plurality of wing members so that said UV detecting means is protected while being sufficiently exposed to detect said predetermined amount of UV radiation.

5,257,014

ACTUATOR DETECTION METHOD AND APPARATUS FOR AN ELECTROMECHANICAL ACTUATOR

Daniel E. Zimmermann, Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Oct. 31, 1991, Ser. No. 785,724
Int. Cl.[5] G08B *21/00;* G01B *7/14*
U.S. Cl. 340—686 20 Claims



1. An electromagnetic actuator, comprising:
a core having a bore defining a cylindrical space;

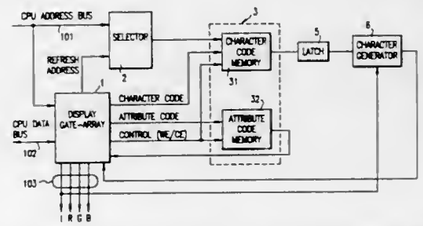
a cylindrical shell disposed around said core defining an annular space therebetween and having first and second ends;
signal means for producing a desired position signal;
driving means for transmitting an energization signal in response to said desired position signal;
a coil disposed in said annular space having a plurality of windings, said coil being adapted to receive said energization signal and responsively produce a magnetic field about said coil proportional to the magnitude of said energization signal causing one of said coil and said core to move relative to the other;
a sensing device disposed in the bore of said core and adapted to detect the magnetic field introduced in the cylindrical space and responsively produce a sensed position signal proportional to the magnetic flux density passing through the cylindrical space, the magnetic flux density passing though the cylindrical space being proportional to the movement of one of said coil and said core; and
signal conditioning means for receiving said sensed position signal and responsively producing an actual position signal indicative of the position of the moving one of said coil and said core relative to the other of said coil and said core.

5,257,015

FLAT PANEL DISPLAY CONTROL APPARATUS

Akifumi Inoue, Fusso, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 298,852, Jan. 18, 1989, Pat. No. 4,922,237, which is a continuation of Ser. No. 69,216, Jul. 2, 1987, abandoned. This application Dec. 21, 1989, Ser. No. 454,453
Claims priority, application Japan, Jul. 3, 1986, 61-156596
The portion of the term of this patent subsequent to May 1, 2007, has been disclaimed.
Int. Cl.[5] G09G *5/30*
U.S. Cl. 345—26 10 Claims



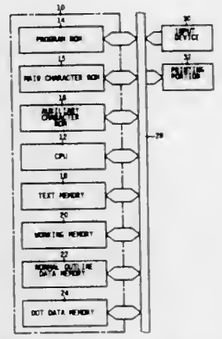
1. A display control apparatus for converting a CRT display signal to a flat panel display signal, comprising:
a video memory for storing character codes and associated attribute code data relating to a color CRT display;
a character generator connected to the video memory and for generating a character font data correspondent to the character code;
an attribute control means for providing an output signal for a flat panel display from the output of the character generator under the control of said attribute code data, said attribute control means including a means for checking the attribute code data supplied through said video memory and modifying the attribute code data if color assigned state of the foreground and the background among the displayed attributes latched on said video memory fulfill a predetermined requirement, and producing said output signal on the basis of the modified attribute data.

5,257,016

APPARATUS FOR CONVERTING ORIGINAL CHARACTER OUTLINE DATA INCLUDING ABRIDGED SPECIAL SEGMENT DATA, INTO NORMAL CHARACTER OUTLINE DATA

Norihisa Fujii, Tokoname, and Kazuma Aoki, Kasugai, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jul. 18, 1991, Ser. No. 732,398
Claims priority, application Japan, Jul. 25, 1990, 2-196525
Int. Cl.[5] G09G *1/06*
U.S. Cl. 340—735 15 Claims



1. A data converting apparatus for converting original outline data into normal outline data, comprising:
an original outline data memory storing a batch of original outline data indicative of at least one closed-loop outline of each of a plurality of characters, each of said at least one outline of said each character consisting of a plurality of successive segments, said plurality of characters including characters each of which comprises at least one outline each of which consists of at least one ordinary segment, and at least one special chain of segments each chain defining a specific pattern, said batch of original outline data indicative of each outline which has said at least one special chain of segments including at least one set of abridged special segment data indicative of said at least one special chain of segments, and at least one set of ordinary segment data representative of said at least one ordinary segment;
segment chain data generating means for generating a group of segment chain data based on each of said at least one set of abridged special segment data, said group of segment chain data being representative of all segments of each of said at least one special chain of segments; and
outline data output means for outputting a batch of normal outline data which consists of said at least one set of ordinary segment data stored in said original outline data memory, and said group of segment chain data generated by said segment chain data generating means.

5,257,017

ELECTRONIC BILLBOARD

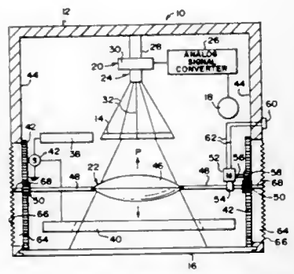
Bruce Jones, c/o Universal Advancement Inc. P.O. Box 1148, Elizabeth, N.J. 07207, and George Spector, 233 Broadway Rm 702, New York, N.Y. 10279

Filed Feb. 27, 1992, Ser. No. 843,270
Int. Cl.[5] G09G *1/08*
U.S. Cl. 345—13 2 Claims

1. An electronic billboard sign which comprises:
a) a housing having an interior display screen and a large front billboard screen;
b) an electronic cartridge having advertising information therein, said cartridge disposed within said housing;

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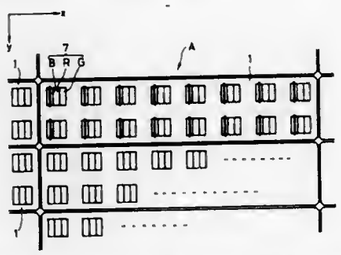
c) an electronic visual means for transferring the advertising information from said cartridge to the interior display screen in the form of images;
d) means for enlarging and transferring the images from the interior display screen to the large front billboard screen for viewing, wherein said electronic visual means includes a visual display unit comprising:
e) an analog signal convertor for receiving the advertising information from said cartridge;
f) an electron gun having a deflecting yoke for receiving the advertising information from said convertor and sending a scanning electron beam to the interior display screen;
g) the interior display screen including a plurality of microdots which are activated in grid patterns by the scanning electron beam from said electron gun to form the images;
h) a first screen lamp for supplying light onto the microdots which will light up when activated by the scanning electron beam from said electron gun;
i) a second screen lamp for supplying light onto the large front billboard screen which will light up the advertising information to be viewed therefrom; and



j) a switch for varying amount of light from said screen lamps to compensate for degree of surrounding brightness on the interior display screen and the large front billboard screen, wherein said enlarging and transferring means includes;
k) a pair of horizontal gear tracks, each formed on an opposite interior side wall of said housing;
l) a large lens having a support arm extending from each side thereof;
m) a pair of gears, each freely rotatably disposed on one end of the support arm to travel along one of said gear tracks;
n) a motor connected to the support arm, said motor having a shaft with gear drive thereon, the gear drive in cooperation with one of said gears on the support arm;
o) a control knob electrically connected to said motor motor so as to operate the shaft;
p) said housing having elongated slot in each of the side walls adjacent each of said gear tracks;
q) a scale on exterior of each of the side walls along each of the elongated slots; and
r) a pointer extending from each end of the support arm through each of the slots to indicate amount of movement of the support arm with respect to said scales.

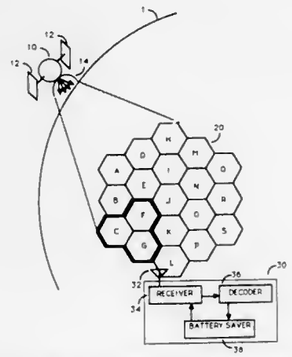
5,257,018
DISPLAY DEVICE
Takehiro Kakizaki, and Minoru Ohzeki, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Feb. 1, 1990, Ser. No. 473,405
Claims priority, application Japan, Feb. 2, 1989, 1-24511
Int. Cl.[5] G09G *3/20, 1/28*
U.S. Cl. 345—30 **19 Claims**

19. A display device, comprising
a) a plurality of picture cells in each of which are mounted a plurality of fluorescent trios, each being formed of red, green and blue fluorescent segments, and which are aligned on an inner surface of a front panel of each picture cell at a predetermined alignment pitch; and
b) a shading material for controlling the color temperature of the white color formed on an outer surface of said front



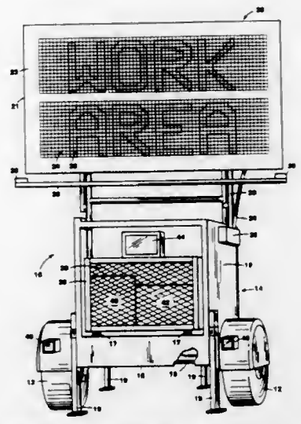
panel at a position corresponding to a predetermined fluorescent segment so that when all of the fluorescent trios are driven, the color temperature of the white color on the entire display surface will be uniform.

5,257,019
SATELLITE SELECTIVE CALL SIGNALLING SYSTEM
Robert J. Schwendeman, Pompano Beach, and Michael J. DeLuca, Boca Raton, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Continuation-in-part of Ser. No. 431,410, Nov. 3, 1989, abandoned. This application Jan. 17, 1992, Ser. No. 824,755
Int. Cl.[5] H04Q *7/00*
U.S. Cl. 340—825.49 **11 Claims**



1. A satellite based transmission system including a satellite having a directing means for directing, in a predetermined sequence, the synchronous transmission of selective call messages to a plurality of geographic areas corresponding to a sequence of transmission time intervals, said satellite based transmission system comprising:
means for identifying message traffic levels for selective call receivers operating in each of the geographic areas, and for generating at least a first receiver control signal in response thereto when the message traffic level for a particular geographic area exceeds a predetermined message traffic level;
means for encoding the selective call messages to include the first receiver control signal; and
means for transmitting the selective call messages to the satellite;
the directing means being responsive to the first receiver control signal for directing to the particular geographic area the transmission of a portion of the selective call messages directed thereto during at least a portion of the transmission time interval assigned for another geographic area.

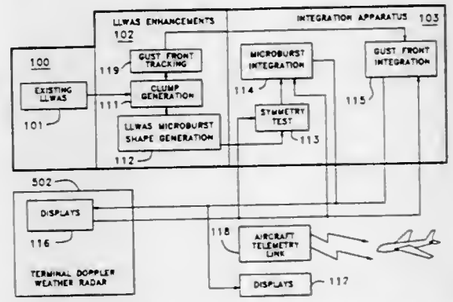
5,257,020
VARIABLE MESSAGE TRAFFIC SIGNALLING TRAILER
Robert H. Morse, Westborough, Mass., assignor to Fiber-Optics Sales Co., Inc., Worcester, Mass.
Filed Jun. 12, 1991, Ser. No. 714,259
Int. Cl.[5] B60Q *7/00*
U.S. Cl. 340—908.1 **36 Claims**



1. A moveable traffic signalling trailer device, comprising
a trailer having wheels and adapted to be towed to a remote, exposed site and left in unattended, message-displaying operation for periods of time, and a message board supporting structure mounted on said trailer,
a general purpose message board supported by said message board supporting structure of said trailer, for communicating to drivers of passing vehicles a user-selected alphanumeric message, said message board including a plurality of picture elements (pixels) for displaying the message, said plurality of picture elements include light emitting diodes,
an operator interface mounted on said trailer, for programming the message to be displayed at the remote site at which said trailer is to be left in unattended, message-displaying operation, and
a controller supported by said trailer, connected to interact with said operator interface and connected to provide the programmed message to said message board.

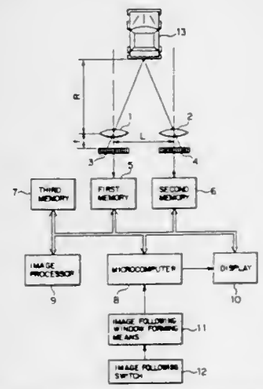
5,257,021
LOW-LEVEL WIND-SHEAR ALERT SYSTEM
Lawrence B. Cornman, Boulder, Colo., assignor to University Corporation for Atmospheric Research, Boulder, Colo.
Filed Jun. 19, 1991, Ser. No. 718,345
Int. Cl.[5] G08B *23/00*
U.S. Cl. 340—968 **13 Claims**

1. Apparatus for identifying the presence and locus of wind shear in a predefined area comprising:
in-situ wind sensing system for producing data indicative of wind shear activity in close proximity to ground level within a predefined area as measured by a plurality of sensors, each of which is located at one of a plurality of predefined points in said predefined area;
weather radar wind sensing system for producing data indicative of wind activity up to a predetermined altitude above said predefined area; and
means for combining said data from said in-situ wind sensing system with said data from said weather radar wind sensing system, including:
means, responsive to said wind data from said in-situ wind



sensing system and said data from said weather radar wind sensing system, for determining the validity of data from either said in-situ wind sensing system and said weather radar wind sensing system.

5,257,022
METHOD AND APPARATUS FOR FOLLOWING A VEHICLE
Tatsuji Irie, Himeji, Japan, assignor to Mitsubishi Denki K.K., Tokyo, Japan
Filed Mar. 18, 1991, Ser. No. 670,559
Claims priority, application Japan, Mar. 20, 1990, 2-71383
Int. Cl.[5] G08G *1/123*
U.S. Cl. 340—988 **7 Claims**



1. A method for following a vehicle comprising the steps of:
successively sensing and generating images of objects including a preceding vehicle ahead of a trailing vehicle from each of two different points;
measuring a distance to the preceding vehicle based on the images generated from the two points;
determining, based on the measured distance, a size of an image-following window to be set within a screen of a display used for following the preceding vehicle;
finding the image of the preceding vehicle among various images of objects displayed on the screen and setting a position of the window on the screen so as to contain therein the image of the preceding vehicle;
temporarily storing the thus set window in a memory;
detecting, from various images of objects generated from

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one of the two points, a new image of an object which most resembles the image of the preceding vehicle in a previous window stored in the memory, and setting, based on the new image, a new window containing the new image on the screen;

adjusting the position of the new window to a location at which the best symmetry of the image within the new window is obtained while shifting the window stepwise; and

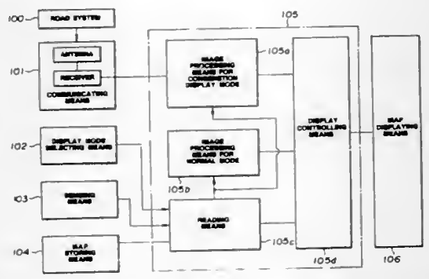
repeating all the above steps.

5,257,023

ONBOARD ROAD MAP DISPLAY SYSTEMS

Hiroaki Furuya, Kanagawa, Japan, assignor to Nissan Motor Co., Ltd., Japan

Filed Mar. 19, 1992, Ser. No. 854,033
Claims priority, application Japan, Mar. 28, 1991, 3-90045
Int. Cl.[5] G08G 1/123
U.S. Cl. 340—995 15 Claims



1. An onboard road map display system mounted on a vehicle, said display system comprising:

a communicating means for performing road-vehicle communication to receive traffic information on traffic congestion on monitored roads in which traffic conditions are monitored a map storing means for storing map data representing a map of roads;

a map displaying means for displaying a road map around a current vehicle position of the vehicle and congested road sections;

a display mode selecting means for selecting one of a first display mode in which said monitored roads around said current vehicle position of the vehicle are displayed in a map together with unmonitored roads in which traffic conditions are not monitored, and a second display mode in which a map of only said monitored roads around the current vehicle position is displayed; and

a processing means for causing said map displaying means to display a road map image according to a selected one of said first and second display modes;

wherein said processing means comprises a discriminating means for discriminating between said monitored roads and said unmonitored roads by using one of said traffic information received by said communicating means and said map data stored in said map storing means.

5,257,024

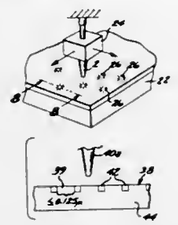
SEARCH POSITION ENCODER

Paul E. West, Glendale, Calif., assignor to Quan-Scan, Inc., Pasadena, Calif.

Continuation-in-part of Ser. No. 199,008, May 26, 1988, Pat. No. 4,956,817. This application Feb. 20, 1990, Ser. No. 482,042
Int. Cl.[5] H03M 1/22; G11C 13/00
U.S. Cl. 341—16 13 Claims

1. A search position encoder apparatus having a search probe capable of movement in a plane parallel to a planar medium to be searched, said probe being spaced apart from said medium; and means for moving said probe parallel to a portion of said medium to a predetermined location; said search position encoder apparatus comprising:

indexing means for locating a position of said probe relative to a fixed location on said medium, said indexing means including a plurality of gratings consisting of alternating strips of conductive material and material which is not



conductive arranged orthogonally relative to said medium;

means for sensing movement of said probe in a plane parallel to said gratings; and

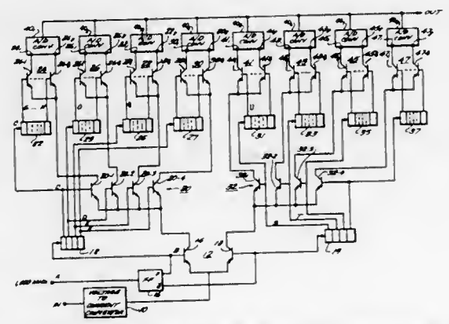
means for reading the location of said probe based upon the sensing of said movement of said search probe relative to said gratings.

5,257,025

HIGH-SPEED SAMPLING ARRANGEMENT AND APPARATUS USING SAME

Walter O. LeCroy, Jr., Piermont, N.Y., assignor to LeCroy Corporation, Chestnut Ridge, N.Y.

Continuation of Ser. No. 367,374, Apr. 12, 1982, abandoned. This application Jun. 11, 1985, Ser. No. 743,695
Int. Cl.[5] H03M 9/00
U.S. Cl. 341—100 11 Claims



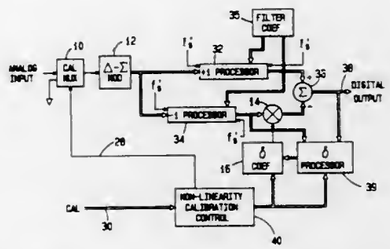
1. High-speed commutating apparatus for commutating an input current, comprising a plurality of cascaded sets of current switching means, including an input set and an output set, each set including at least one current switching circuit having an input and plural outputs and responsive to clock signals supplied thereto for switching a current applied to said input to predetermined ones of said outputs, the input of a current switching circuit in one set being coupled to a respective output of a current switching circuit in a preceding set to receive the current switched to said respective output; current converting means for converting an input signal to a corresponding current, said current converting means being coupled to the input of the current switching circuits of said input set of current switching means; capacitance means coupled to the respective outputs of the current switching circuits of said output set of current switching means to store the currents switched to the respective outputs of said output set; reset means for resetting each said capacitance means in advance of switching current to the respective output of said output set to which said capacitance means is coupled; read-out means coupled to said capacitance means for reading out the values of said stored currents; and clock signal generating means for generating plural sets of clock signals, each set of clock signals being supplied to the current switching circuits of a respective set of said current switching means.

5,257,026

METHOD AND APPARATUS FOR CALIBRATING A MULTI-BIT DELTA-SIGMA MODULAR

Charles D. Thompson; Salvador R. Bernadas; Nicholas R. van Bavel, all of Austin, Tex., and Eric J. Swanson, Buda, Tex., assignors to Crystal Semiconductor, Inc., Austin, Tex.

Filed Apr. 17, 1992, Ser. No. 870,270
Int. Cl.[5] H03M 1/06
U.S. Cl. 341—118 33 Claims



1. A calibrated analog-to-digital converter, comprising:

a delta-sigma analog modulator for converting an analog input signal to an m-level digital output signal representing the analog input signal at a sampling rate, said delta-sigma modulator having non-linearities associated therewith;

a digital decimation filter driven by the m-level output of said delta-sigma modulator for filtering out-of-band frequency components and outputting a filtered digital value at a decimated sampling rate, said digital filter operating in accordance with stored filter coefficients;

a memory device for storing said filter coefficients and also for storing non-linearity compensation parameters;

a non-linearity compensation device for controlling said digital filter to compensate for non-linearities in said delta-sigma modulator in accordance, with said stored non-linearity compensation parameters; and

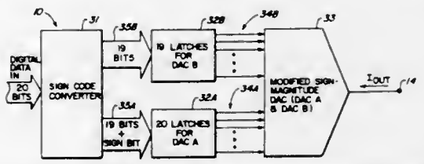
a calibration device for operating said delta-sigma analog modulator and said digital filter in a calibration mode and determining said non-linearity compensation parameters for storage in said memory device.

5,257,027

MODIFIED SIGN-MAGNITUDE DAC AND METHOD

Toshio Murota, Kanagawa, Japan, assignor to Burr-Brown Corporation, Tucson, Ariz.

Filed Jul. 20, 1992, Ser. No. 916,595
Int. Cl.[5] H03M 1/80
U.S. Cl. 341—153 8 Claims



1. A sign-magnitude DAC receiving an input word including a sign bit and a digital data word, comprising in combination:

(a) first internal DAC circuitry including a first number of bit switch circuits responsive to the input word, each bit switch circuit being coupled to a corresponding current source transistor, and second internal DAC circuitry including the first number of bit switch circuits responsive to the input word, each bit switch circuit of the second internal DAC circuitry being coupled to a corresponding current source transistor; and

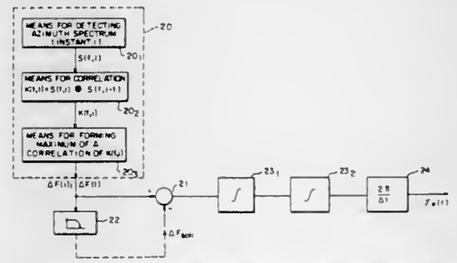
(b) a first number of binarily weighted bit current determining resistor circuits corresponding to bits of the digital data word, respectively, each bit current determining resistor circuit being coupled between a reference voltage conductor and the emitters of the current source transistors of the first internal DAC circuitry and the second internal DAC circuitry corresponding to that bit.

5,257,028

METHOD OF EXTRACTING PHASE ERRORS CAUSED BY THE ATMOSPHERE IN THE BACKSCATTER SIGNAL OF A COHERENT IMAGING RADAR SYSTEM CARRIED BY A CARRIER FROM RADAR RAW DATA AND APPARATUS FOR CARRYING OUT THE METHOD

Wolfgang Keydel, Hechendorf, and Joao R. Moreira Neto, Landsberg, both of Fed. Rep. of Germany, assignors to Deutsche Forschungsanstalt für Luft- und Raumfahrt e.V., Cologne, Fed. Rep. of Germany

Filed Jul. 8, 1992, Ser. No. 910,589
Claims priority, application Fed. Rep. of Germany, Jul. 19, 1991, 4124062
Int. Cl.[5] G01S 13/90
U.S. Cl. 342—25 2 Claims



1. A method of extracting phase errors caused by the atmosphere in the backscatter signal of a coherent imaging radar system carried by a carrier from radar raw data in which

for imaging areas with different backscatter ratios over a predetermined period of time successive azimuth spectra are continuously formed and

a frequency offset ($\Delta F(t)$) of the backscatter ratio component is obtained by determining the position of the maximum of the correlations between two respective immediately successively formed azimuth spectra,

wherein;

performing a double integration of the difference of the frequency offset ($\Delta F(t)$) and a desired value (ΔF_{soll}) of the frequency offset, the frequency offset desired value (ΔF_{soll}) being determined either from the carrier forward velocity (V_v) or by a low-pass filtering of the frequency offset ($\Delta F(t)$), and

standardizing a result of the double integration by multiplying said result with a constant of $(2\pi/\Delta t)$ to obtain the phase error ($\phi_e(t)$).

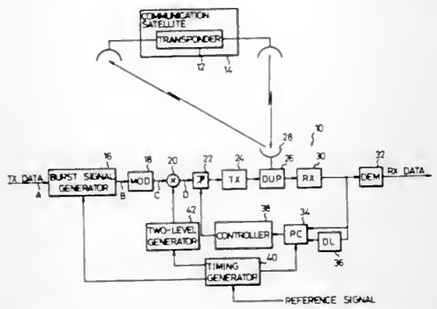
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5,257,029

TRANSMISSION POWER CONTROL METHOD AND APPARATUS IN SATELLITE COMMUNICATION

Tokihiro Miyo, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Jun. 18, 1992, Ser. No. 900,352
Claims priority, application Japan, Jun. 21, 1991, 3-150219
Int. Cl.[5] H04B 7/185
U.S. Cl. 342—352 14 Claims



1. A method of controlling the transmission power of a transmitter for communicating through, a satellite in order to stabilize a received power of the satellite, comprising the steps of:

generating a first signal having a first power level and a second signal having a second power level different than said first power level of said first signal;

transmitting said first signal and said second signal from said transmitter to said satellite;

receiving return signals of said first signal and said second signal from said satellite;

measuring a phase difference between said return signals of said first signal and said second signal from said satellite; and

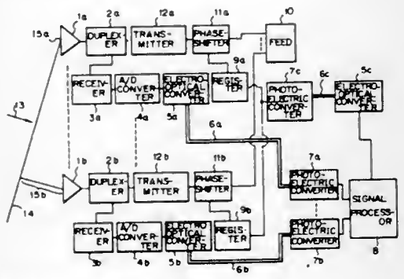
controlling said transmission power so that said phase difference becomes equal to a predetermined value.

5,257,030

ANTENNA SYSTEM

Toshihiko Aoki; Takashi Katagi; Nobutake Orime; Susumu Hishinuma; Koushi Ogiso, and Yasuhiko Nishioka, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 762,647, Sep. 19, 1991, abandoned, which is a continuation of Ser. No. 526,691, May 21, 1990, abandoned, which is a continuation of Ser. No. 246,858, Sep. 20, 1988, abandoned. This application Mar. 5, 1993, Ser. No. 27,926
Claims priority, application Japan, Sep. 22, 1987, 62-238414
Int. Cl.[5] H01Q 3/22, 3/24
U.S. Cl. 342—368 4 Claims



1. An antenna system comprising:

a plurality of transmitting/receiving element antennas;

a plurality of transmitting/receiving means, each respectively coupled to one of said antennas, for transmitting and receiving radio waves, each of said transmitting-/receiving means comprising:

a receiver responsive to said one antenna for receiving radio waves,

a transmitter coupled to said one antenna for transmitting radio waves,

a duplexer, coupled to said one antenna, for alternately coupling one of the transmitter and receiver to said one antenna,

an analog-to-digital converter, coupled to the receiver, for converting the received radio waves into digital signals,

an electro-optical converter, coupled to the analog-to-digital converter, for converting said digital signals into optical signals,

a first optical transmission means, coupled to the electro-optical converter, for transmitting said optical signals,

a photo-electric converter, coupled to said optical transmission means, for converting the optical signals into digital signals representative of the received radio waves,

a phase-shifter, coupled to the transmitter, for supplying phase-shifted radio waves to the transmitter, and

a register, coupled to the phase-shifter, for supplying digital control signals to the phase-shifter;

a signal processor, responsive to each of the photo-electric converters for simultaneously processing said digital signals from each of said transmitting/receiving means, said signal processor comprising control signal computing means for generating a plurality of control signals to control the phase shifter in each of the transmitting-/receiving means so that beams of transmitted radio waves may be radiated in the same direction as the direction of arrival of received radio waves, and an identification code insertion means for adding an identification code to each of said control signals and then forming the control signals in series, each of said identification codes identifying one of said transmitting/receiving means;

a system electro-optical converter, coupled to the signal processor, for converting the control signals into optical control signals;

a second optical transmission means, coupled to the system electro-optical converter, for transmitting said optical control signals and associated data;

a system photo-electric converter, coupled to the second optical transmission means, for converting the optical control signals to digital control signals;

control signal allocation means for allocating each of the digital control signals to the register of a transmitting-/receiving means in accordance with the identification codes; and

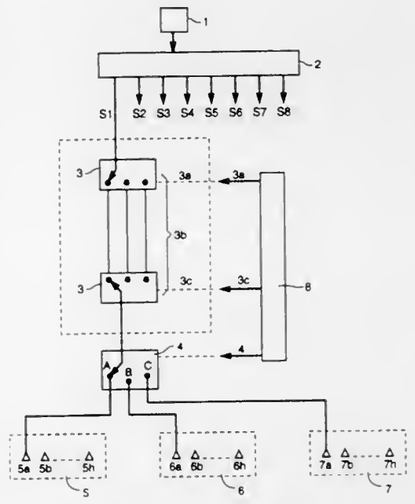
a feed means, coupled to the phase-shifter of each of the transmitting/receiving means, for feeding the radio waves to be transmitted.

5,257,031

MULTIBEAM ANTENNA WHICH CAN PROVIDE DIFFERENT BEAM POSITIONS ACCORDING TO THE ANGULAR SECTOR OF INTEREST

Rosario Scarpetta, and Pasquale Russo, both of Rome, Italy, assignors to Selenia Industrie Elettroniche Associate S.p.A., Rome, Italy

PCT No. PCT/IT85/00015, § 371 Date May 12, 1986, § 102(e) Date May 12, 1986, PCT Pub. No. WO86/00760, PCT Pub. Date Jan. 30, 1986
Continuation of Ser. No. 769,590, Oct. 2, 1991, abandoned, which is a continuation of Ser. No. 660,921, Feb. 27, 1991, abandoned, which is a continuation of Ser. No. 523,254, May 14, 1990, abandoned, which is a continuation of Ser. No. 323,177, Mar. 15, 1989, abandoned, which is a continuation of Ser. No. 212,144, Jun. 27, 1988, abandoned, which is a continuation of Ser. No. 852,954, May 12, 1986, abandoned. This PCT application Jul. 3, 1985, Ser. No. 959,180
Claims priority, application Italy, Jul. 9, 1984, 48534 A/84
Int. Cl.[5] H01Q 3/02
U.S. Cl. 342—374 2 Claims



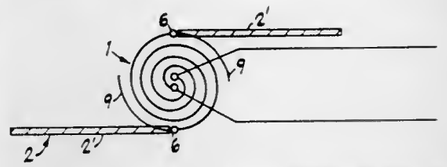
1. A multibeam antenna system for providing a plurality of different beam positions in the entire 0°–180° azimuth hemispace, the system comprising three separate subarrays which comprise the same number of radiating elements and are arranged to transmit signals in a respective one of three angle sectors covering the whole hemispace, one beam forming network which includes a power splitter (2) having a number of outputs corresponding to the number of radiating elements in each subarray and delay line phase shifters (3) respectively coupled to each one of the power splitter outputs, a subarray selector (4) coupled between the delay line phase shifter (3) and said subarrays (5,6,7), and a pilot circuit (8) wherein said pilot circuit (8) controls the delay line phase shifters (3) and the subarray selector (4) to delay the signal supplied from the phase shifters to the corresponding radiating element of a selected one of said subarrays (5,6,7) in such a way that said selected subarray transmits a signal of higher RF power in the desired direction, wherein each subarray comprises a phase correcting dielectric lens (9) located over the radiating elements and a polarization converter (10) in line with the lens to provide directivity in the vertical plane for providing sufficient gain for each beam to establish the necessary effective radiating power.

5,257,032

ANTENNA SYSTEM INCLUDING SPIRAL ANTENNA AND DIPOLE OR MONOPOLE ANTENNA

James A. Diamond, Harrison, N.Y., and Maurice Diamond, Sharon, Mass., assignors to RDI Electronics, Inc., New Rochelle, N.Y.

Continuation of Ser. No. 645,585, Jan., 1991, abandoned. This application Aug. 31, 1992, Ser. No. 938,321
Int. Cl.[5] H01Q 1/36, 1/00
U.S. Cl. 343—730 9 Claims



1. An antenna system for receiving transmitted signals, comprising:

a spiral antenna including two interleaved radiating elements, said radiating elements each originating at an inner termination point of said spiral antenna and spiralling outwardly in a spiral path to an outer termination point of said spiral antenna;

a dipole antenna including two elements, each of said elements of said dipole antenna being coupled to a corresponding one of said outer termination points of said spiral antenna;

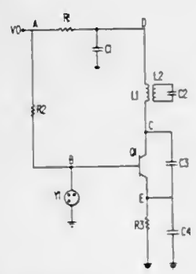
wherein said spiral antenna further includes spiral extensions disposed along a spiral curve defined by said spiral antenna, connected to and continuing beyond said outer termination points of said spiral antenna.

5,257,033

TRANSMITTER WITH A REDUCTION OF POWER OF SIGNALS TRANSMITTED AT HARMONICS

Thomas Roche, Spotslyvania, Va., assignor to Design Tech International, Inc., Springfield, Va.

Filed Apr. 16, 1991, Ser. No. 685,674
Int. Cl.[5] H01Q 11/12, 1/24
U.S. Cl. 343—742 19 Claims



1. A transmitter comprising:

means for generating a signal to be transmitted at a predetermined frequency;

a first radiating loop for receiving the signal to be transmitted from the means for generating and for developing said signal to be transmitted and thereby transmitting said signal to be transmitted;

a second radiating loop inductively coupled to said first loop;

a capacitor connected in series with said second loop and having a value such that said second loop and capacitor operate to cancel transmission of signals at harmonics of said predetermined frequency, wherein said first loop is an

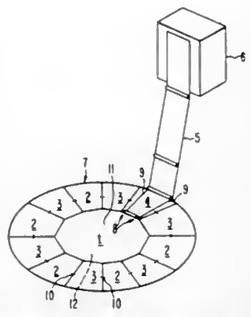
VOL 1155 ISS 4 OCT 26 1993 UMI

outer loop and said second loop is an inner loop inside said outer loop.

5,257,034
COLLAPSIBLE APPARATUS FOR FORMING A PARABOLOID SURFACE

Stephen Turner, Fremont; Perry Ciampaglia, Mountain View, and Dan Montesanto, Palo Alto, all of Calif., assignors to Space Systems/Loral, Inc., Palo Alto, Calif.

Filed Jul. 29, 1992, Ser. No. 921,911
Int. Cl.[5] H01Q *15/20*
U.S. Cl. 343—915 **18 Claims**



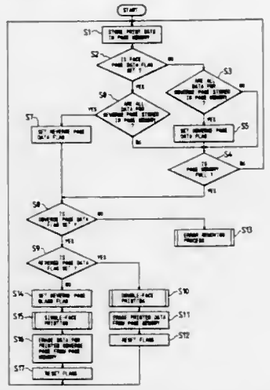
1. A paraboloid shaped assembly apparatus comprising:
a central base having a first side and a second side;
a plurality of outer panels rotatably coupled about a periphery of the central base; wherein at least one of the outer panels is foldable to a collapsed position on the second side of the central base, while remaining outer panels are foldable to collapsed positions on the first side of the central base, in order to form a collapsed configuration for compact storage of the paraboloid assembly; and the outer panels are moveable to expanded positions, in order to form an expanded configuration of the paraboloid assembly; and
wherein the edges of the outer panels in their expanded positions are adjacent to each other to form an assembly roughly in the shape of a paraboloid, having a focal point and a center; said apparatus further comprising;
a plurality of latching means for connecting adjacent outer panels when the outer panels are in the extended configuration.

5,257,035
PERFECTING PRINTER AND METHOD FOR CONTROLLING DOUBLE-FACE PRINTING OPERATION THEREOF

Hiroyuki Funahashi, Seto; Toru Tsuzuki, Okazaki; Masahiro Murakami, Hekinan; Hajime Usami, Nagoya, and Kiyoshi Takahashi, Aichi, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Feb. 12, 1990, Ser. No. 478,512
Claims priority, application Japan, Feb. 14, 1989, 1-34273
The portion of the term of this patent subsequent to Nov. 13, 2007, has been disclaimed.
Int. Cl.[5] G01D *9/00*; G03D *21/00*
U.S. Cl. 346—1.1 **12 Claims**

1. A perfecting printer for printing images on obverse and reverse faces of at least one sheet according to a series of print data including first print data and second print data to be printed on obverse and reverse faces of the sheet, respectively, the print data being an input from an external device, comprising:
memory means having an empty area for successively storing the series of the print data input from the external device;
printing means for printing the first and second print data stored in said memory means on the obverse and reverse faces of the sheet, respectively;
judging means for judging as to whether the empty area is no longer available to store one of the first and second print data while the series of the print data are being stored into said memory means; and
control means for controlling said printing means to print the first and second print data on both of the obverse and reverse faces of the sheet, respectively, when the first and second print data are completely stored in said memory means, and to forcibly print only the first print data on one of the obverse and reverse faces of the sheet when said judging means judges that the empty area is no longer



available for storing the second print data and when the first print data is completely stored in said memory, said control means further including clearing means for clearing the first and second print data stored in said memory means when both of the first and second print data are printed, and for clearing only the first print data stored in said memory means when the first print data and a part of the second print data are stored in said memory means and said empty area is no longer available for storing a remainder of said second print data, the first print data is cleared after being printed, and then the remainder of the second print data is store after forcibly printing the first print data on the obverse face of the sheet.

5,257,036
INK JET RECORDING PROCESS EMPLOYING INK CONTAINING WATER-SOLUBLE DYE

Shoji Koike, Yokohama, and Yasuko Tomida, Atsugi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 506,525, Apr. 9, 1990, Pat. No. 5,053,078, which is a continuation of Ser. No. 128,264, Dec. 1, 1987, abandoned. This application Jun. 21, 1991, Ser. No. 719,153
Claims priority, application Japan, Dec. 2, 1986, 61-287064; Dec. 2, 1986, 61-287065; Dec. 2, 1986, 61-287066; Dec. 2, 1986, 61-287067; Dec. 2, 1986, 61-287068
Int. Cl.[5] B41J *2/01*; G01D *9/00*
U.S. Cl. 346—1.1 **11 Claims**

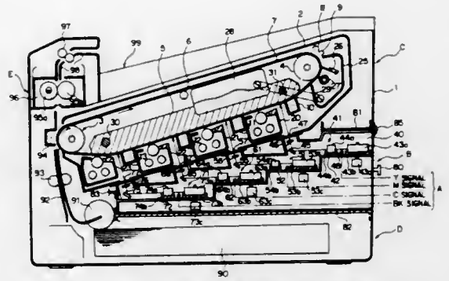
1. An ink-jet recording process in which ink is ejected from an orifice in accordance with a recording signal, comprising the step of:
adhering ink on a recording medium having a recording face on which fibers are exposed, wherein said ink comprises
(1) at least a water-soluble dye selected from the group consisting of a solubilized vat dye, a solubilized sulfur dye, a leuco salt of a vat dye, and a leuco salt of a sulfur dye, and
(2) an antioxidant, wherein said antioxidant is contained in an

amount ranging between 0.1 to 10% by weight based on the total weight of the ink.

5,257,037
COMPACT IMAGE FORMING APPARATUS WITH COLOR POSITION ADJUSTMENT

Satoshi Haneda; Hisao Satoh; Tadayashi Ikeda, all of Hachioji; Shizuo Morita, Tachikawa, and Masakazu Fukuchi, Hachioji, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Aug. 20, 1991, Ser. No. 747,324
Claims priority, application Japan, Aug. 22, 1990, 2-220723
Int. Cl.[5] G01D *15/10*
U.S. Cl. 346—76 L **6 Claims**



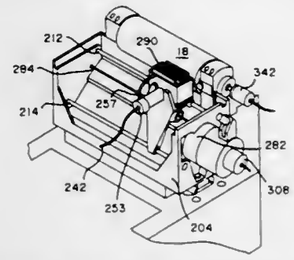
1. A color image forming apparatus comprising:
(a) an image forming means including a moving image carrying member on which an image is formed, and a plurality of exposure means disposed around said moving image carrying member, each of said plurality of exposure means adapted for forming exposures for developing a corresponding color toner;
(b) detecting means having a color separation function for detecting a plurality of specific image patterns formed through the exposures from each of said plurality of exposure means and the development of the color toner corresponding with each of the exposures;
(c) means for calculating positional differences between the exposures formed by each of said plurality of exposure means by determining positional differences between the plurality of specific image patterns detected by said detecting means; and
(d) means for compensating positions of said plurality of exposure means, based on the calculated positional differences.

5,257,038
FOCUSING LASER DIODE MOUNT ON A WRITE HEAD

Michael S. Ferschl, Rochester, and Erich Zielinski, Bergen, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 23, 1991, Ser. No. 749,222
Int. Cl.[5] G01D *15/14*
U.S. Cl. 346—76 L **2 Claims**

1. Thermal imaging apparatus comprising a support member arranged to mount a receiver member and a donor member in superposed relationship thereon, means for generating a modulated coherent light beam and for projecting said light beam onto said donor member mounted on said support member to transfer an image onto said receiver member by transfer of a dye from said donor member, said means for generating said light beam comprising a diode laser mounted stationarily in said apparatus, means for moving said light beam relative to the donor member on said support member comprising a translator member arranged to be moved with respect to said donor member on said support member s member including a lens and means for adjustably focusing said lens, means for transmitting said light beam from said diode laser to said lens including an optical fiber, said focusing means comprising a diode laser and an optical fiber for transmitting a focusing beam of light to said lens, and means for mounting said focusing diode laser on said

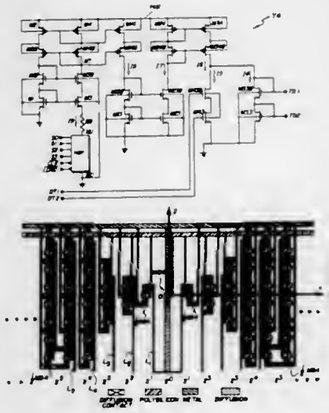


translator whereby said focusing optical fiber is not moved relatively of said focusing diode laser and said lens as said translator is moved.

5,257,039
NON-IMPACT PRINTHEAD AND DRIVER CIRCUIT FOR USE THEREWITH

Jeremy K. Chung; Kenneth D. Kieffer, and Pin S. Tschang, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 23, 1991, Ser. No. 764,268
Int. Cl.[5] G01D *15/00*; H03M *1/80*; G05F *3/16*
U.S. Cl. 346—107 R **38 Claims**



17. A printhead comprising:
a recording element energizable for emitting radiation used in recording, and
driver circuitry for providing driving current to energize the recording element; the driver circuitry including a digital-to-analog converter for modifying a level of current to the recording element, the converter including a plurality of unit transistors arranged in a common centroid configuration to define a centroid, wherein the unit transistors of the converter are connected in groups to form binary weighted transistor groups, and wherein ones of the binary weighted groups of progressively higher binary weight are located progressively farther from the centroid.

28. A driver circuitry for providing driving currents to energize a plurality of recording elements, the driver circuitry comprising:
a plurality of master-slave current mirror means for generating driving currents to energize respective recording

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elements, each current mirror means including a transistor for driving a respective one of said recording elements and forming a part of a respective slave leg of each current mirror means and each current mirror means including a respective master circuit that is in master-slave relationship with said respective slave leg so that the master circuit is associated with only one recording element;

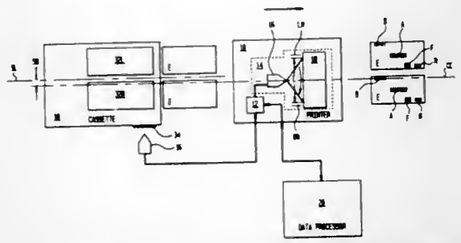
and wherein the driver circuitry further includes a plurality of MOS transistors arranged as a cascode current mirror and biased in a weak-inversion saturated region to generate a first current with a generally linear temperature profile and said plurality of current mirror means are responsive to said first current for generating the driving currents.

5,257,040

SYSTEM FOR PRINTING ASYMMETRICALLY POSITIONED PAIRS OF ENVELOPES

Roman Czernik, Trumbull, and Steven A. Supron, Norwalk, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Nov. 14, 1991, Ser. No. 792,112
Int. Cl.[5] G01D *9/42*; B65H *5/00*
U.S. Cl. 346—108 **11 Claims**



1. A printing system for printing two envelopes simultaneously in one mode of operation and for printing another type of item in a second mode of operation, comprising:

a) a printer of the type which prints successive scan lines on a substrate as said substrate is transported through said printer, said scan lines having a predetermined length, and has a capability to shift said scan lines transversely to the direction of motion of said substrate;

b) a cassette for selective engagement with said printer for successive input of pairs of envelopes simultaneously, said cassettes further comprising:

b1) a pair of input means for successively presenting said pairs of envelopes for input to said printer, said input means being offset towards one side of said cassette by a first predetermined amount; and

b2) identification means for identifying said cassette; wherein

c) said printer further including means responsive to said identification means when said cassette is engaged for controlling said printer to operate in said one mode and shift said scan line a second predetermined amount towards the opposite side of said cassette; and wherein,

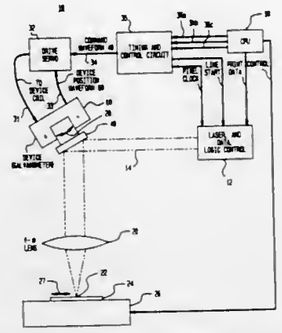
d) said first and second predetermined amounts are selected so that the end of said scan line nearest said opposite side and the edge of said envelopes nearest said opposite side substantially coincide during printing.

5,257,041

METHOD AND CIRCUIT FOR DRIVING AN ELECTROMECHANICAL DEVICE RAPIDLY WITH GREAT PRECISION

John M. Kresock, Elba; David M. Orlicki, Rochester; Jasper S. Chandler, Rochester, and Timothy E. Neale, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 28, 1991, Ser. No. 722,753
Int. Cl.[5] H94N *1/21*
U.S. Cl. 346—109 **17 Claims**



1. A method of repeatedly driving an electro-mechanical device through a cycle of operation which comprises a forward scan portion occurring in a first time period and a subsequent re-trace portion occurring in a second time period that is shorter than the first time period, said method comprising the steps of:

generating a command waveform which is characterized by a forward scan segment which defines a desired forward motion for the device and by a re-trace segment which is non-linear and is shorter than the forward scan segment;

generating a position waveform which is indicative of the position of the electro-mechanical device during a cycle of operation thereof;

applying the command and position waveforms to a servo drive which generates at an output thereof a drive signal waveform; and

applying the servo drive signal waveform to an input of the electro-mechanical device to control the position and movement of the electro-mechanical device such that the electro-mechanical device moves during the forward scan portion of the cycle of operation in a desired manner consistent with the forward scan segment of the command waveform, and moves during the re-trace portion of the cycle of operation so as to cause the electro-mechanical device to move back to an initial starting point of the forward scan portion of the cycle of operation without introducing any overshoot and/or ringing at the beginning of the forward scan portion of the next cycle of operation.

5,257,042

THERMAL INK JET TRANSDUCER PROTECTION

Steven A. Buhler, Redondo Beach, Calif., assignor to Xerox Corporation, Stamford, Conn.

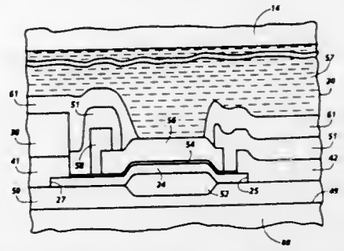
Filed Jul. 9, 1991, Ser. No. 727,493
Int. Cl.[5] B41J *2/05*
U.S. Cl. 346—140 R **7 Claims**

1. In an ink jet printhead having at least one ink channel, a heating element, and an interconnect, the ink channel having an open end that serves as a nozzle, the heating element being positioned in the ink channel for ejecting ink droplets from the nozzle by selective application of current pulses along the interconnect to the heating element, said printhead further comprising:

ink contained within the ink channels;

a conductive protective region positioned adjacent the heating element and having a portion thereof exposed to the ink channel for protecting the heating element from said ink;

a dielectric region positioned between the heating element and said conductive protective region for electrically



insulating the heating element from said conductive protective region;

a bias voltage having a magnitude equal to or less than the difference in work functions of the conductive protective region and the ink; and

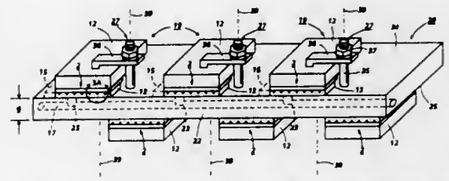
means for connecting said bias voltage to said conductive protective region so that said conductive protective region is provided with anodic protection.

5,257,043

THERMAL INK JET NOZZLE ARRAYS

Gary A. Kneezel, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 9, 1991, Ser. No. 803,929
Int. Cl.[5] B41J *2/05, 2/155*
U.S. Cl. 346—140 R **8 Claims**



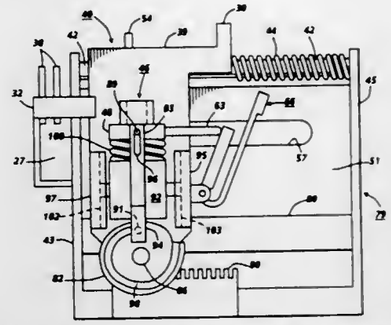
1. A thermal ink jet nozzle array comprising a support bar having two major faces parallel to each other and spaced apart by a known thickness, each face supporting a linear series of printhead modules which include multi-nozzle printhead die, each printhead die having a linear series of uniformly spaced nozzles through which drops of ink are ejected on demand, the modules being spaced apart from each other by equal and known distances, the two series of modules being in a staggered relationship to each other, whereby each end nozzle of each intermediate module in one of the series is spaced laterally from an orthogonal projection of a respective end nozzle of the nearest module in the other series by a distance equal to the nozzle spacing of each module, wherein each module is accurately positioned on the support bar by use of the printhead die against an alignment element, so that the linear series of nozzles provided by the printhead die of each module on one face of the support bar are aligned precisely with the linear series of nozzles of the modules on the other face of the support bar, and means for releasably holding each printhead module in place on said support bar.

5,257,044

CAP ACTUATION MECHANISM FOR CAPPING INK JET PRINTHEADS

Michael Carlotta, Sodus; William R. Smith, Fair Haven, both of N.Y., and Takashi Norigoe, Shizuoka, Japan, assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 12, 1992, Ser. No. 974,762
Int. Cl.[5] B41J *2/165*
U.S. Cl. 346—140 R **1 Claim**



1. A cap actuation mechanism for use in a maintenance station for an ink jet printer, the printer including a bidirectionally translatable carriage supporting a print cartridge having a printhead with nozzles in a nozzle face, the printhead printing ink droplets onto a recording medium in a printing zone in the printer, the translatable carriage being controlled by drive means under the control of the printer controller, the maintenance station being positioned at one side of the printing zone for translation of the print cartridge thereto by the translatable carriage, the cap actuation mechanism comprising:

a movable cap carriage having a catch for intercepting the translatable carriage entering the maintenance station for providing movement of the cap carriage in unison with the translatable carriage, the cap carriage being slidably mounted on at least one guide rail for movement therealong;

a movable cap means slidably mounted on the cap carriage for movement in a direction perpendicular to the movement of the cap carriage, the cap means being movable from a position spaced from the printhead nozzle face to a position in which the cap means seals against the printhead nozzle face and surrounds the nozzles therein;

cam means having an axis of rotation and parallel opposing surfaces, the cam means being rotatably mounted in the cap carriage for rotation about the cam means axis, the axis of rotation being perpendicular to the direction of movement by the cap carriage, the cam means having a curvilinear recess in one surface of the cam means;

a pinion gear integral with the cam means and having an axis of rotation coincide with that of the cam means, the pinion gear having a shaft coaxially extending therefrom for rotational mounting in the cap carriage;

the cap means having a cam follower extending therefrom and residing in the curvilinear recess in the cam means, whereby rotation of the cam means causes the cam follower to move in the curvilinear recess and move the cap means; and

the maintenance station having a fixed rack gear, the rack gear being parallel to the direction of movement of the cap carriage with the pinion gear of the cam means meshed with the rack gear, so that movement of the cap carriage causes the cap to move into sealing engagement with the printhead nozzle face and to move away from the printhead nozzle face.

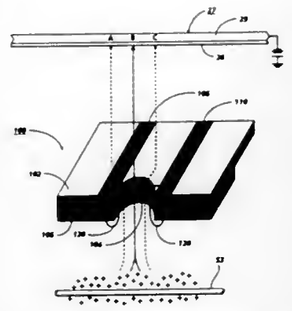
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5,257,045

IONOGRAPHIC PRINTING WITH A FOCUSED ION STREAM

Richard F. Bergen, Ontario; Joseph A. Chizuk, Jr., Webster, and Robert W. Gundlach, Victor, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 26, 1992, Ser. No. 887,943
Int. Cl.[5] G01D *15/06*
U.S. Cl. 346—159 17 Claims



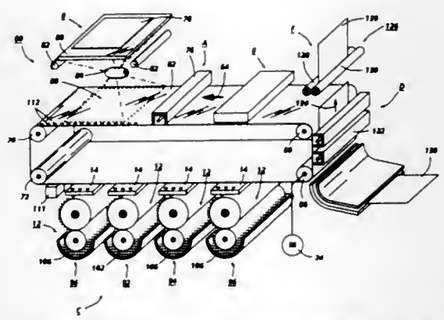
1. An ionographic image printing apparatus, comprising:
an ion source;
a charge receptor; and
an ion deposition control device operatively interposed between the ion source and the charge receptor, the control device being adapted to narrow ions emitted from the ion source into an ion stream of a predetermined cross-sectional area, and to displace the ion stream to a predetermined position on the charge receptor, the ion deposition control device including
a substrate defining an aperture therethrough for the passage of ions from the ion source to the charge receptor, and
a field generator for creating an electric field passing from a surface of the substrate adjacent the ion source through the aperture in the substrate.

5,257,046

DIRECT ELECTROSTATIC PRINTING WITH LATENT IMAGE ASSIST

Fred W. Schmidlin, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 31, 1992, Ser. No. 937,573
Int. Cl.[5] G01D *15/06*; G03G *15/01*
U.S. Cl. 346—159 20 Claims



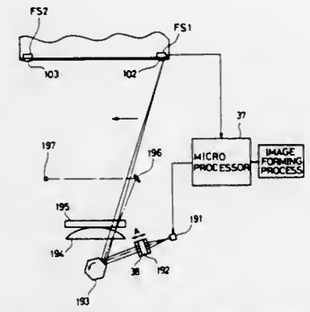
1. A method of printing toner images, said method including the steps of:
forming a latent image on a photoconductive surface; and using Direct Electrostatic Printing (DEP) to deposit a toner image on said latent image.

5,257,047

CONTROL APPARATUS AND METHOD FOR IMAGE-FORMING SYSTEM

Satoshi Haneda, and Masakazu Fukuchi, both of Tokyo, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Oct. 9, 1991, Ser. No. 775,149
Claims priority, application Japan, Oct. 16, 1990, 2-277347
Int. Cl.[5] G01D *15/14*
U.S. Cl. 346—160 20 Claims



1. A control apparatus for an image-forming system for light-exposing and scanning an optical beam on an image-forming medium, said control apparatus comprising:
a standard pattern formed on the image-forming medium;
said standard pattern having optical beam-transmitting and non-transmitting portions arranged alternately or optical beam-reflecting and non-reflecting portions arranged alternately on the image-forming medium in a main scanning direction of said optical beam;
light-detecting means for detecting at least one of an intensity of the optical beam transmitted through at least one optical beam-transmitting portion of the standard pattern and an intensity of the optical beam reflected from at least one optical beam-reflecting portion of the standard pattern;
dislocation-detecting means for determining a dislocation of a focal point of the optical beam, based on said at least one of the light intensity detected by said light-detecting means; and
adjusting means for adjusting a position of the focal point of the optical beam based on the dislocation determined by said dislocation-detection means for substantially eliminating the dislocation of the focal point, whereby the standard pattern enables accurate and rapid focusing of the optical beam by providing preset focusing limits defined by the respective light transmitting and non-transmitting portions of the standard pattern or the respective light reflecting and non-reflecting portions of the standard pattern.

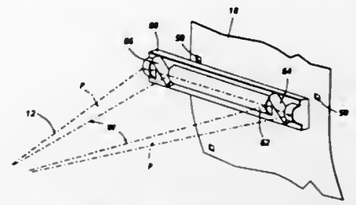
5,257,048

OPTICAL ELEMENT AND PHOTORECEPTOR REGISTRATION SYSTEM FOR A RASTER OUTPUT SCANNER IN AN ELECTROPHOTOGRAPHIC PRINTER

Frank C. Genovese, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 16, 1993, Ser. No. 17,890
Int. Cl.[5] G01D *9/42, 15/14*
U.S. Cl. 346—160 15 Claims

1. An optical element, comprising a main cylinder lens having a longitudinal axis, and a redirecting cylinder lens disposed adjacent one end of the main cylinder lens, the redirecting



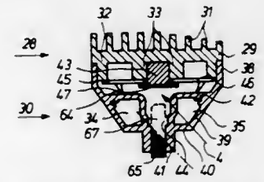
cylinder lens having a longitudinal axis oriented obliquely relative to the longitudinal axis of the main cylinder lens.

5,257,049

LED EXPOSURE HEAD WITH OVERLAPPING ELECTRIC CIRCUITS

Willy F. Van Peteghem, Edegem, Belgium, assignor to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Jun. 28, 1991, Ser. No. 723,201
Claims priority, application European Pat. Off., Jul. 3, 1990, 90201779.7
Int. Cl.[5] G01D *15/14*; H05K *7/20*
U.S. Cl. 346—107 R 8 Claims



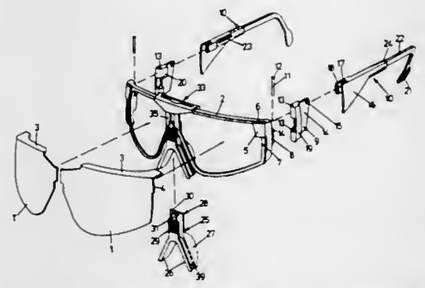
1. In a light emitting diode exposure head for linewise recording information on a photoreceptor in a recording apparatus, in which the head is elongated in length and comprises an assembly of a plurality of generally rectangular-shaped diode modules mounted on a common base in alignment along a common axis extending lengthwise of the head length, each said diode module of said assembly having two opposite side edges located laterally of said axis, each module comprising a substantially rigid generally rectangular base plate, an elongated row of LED dice mounted on a generally centrally-located locus of the base plate extending lengthwise of the head, each said dice row having two opposite sides, a row of integrated circuit chips disposed on said base plate laterally of each side of the LED dice row, each row of said circuit chips having one side adjacent one side of said LED dice row and an opposite side remote from said LED dice row, and a circuit board in common to the integrated circuit chips of each of said rows of integrated circuit chips arranged on said base plate along the remote side of each said row of circuit chips, each circuit board having a side adjacent said remote side of each chip row and an opposite side spaced laterally of said remote side; and wherein an elongated interconnection circuit strip extends over substantially the length of said exposure head adjacent to the laterally spaced opposite side of each of the circuit boards, in combination, the improvement wherein a) said rectangular base plate of each module has two opposite side edges thereof that are parallel to the axis of the LED row of said module and located proximate to the laterally spaced opposite sides of said circuit boards, whereby said circuit boards are supported respectively on opposite side margins of said base plate; b) said common base of the head has an elongated central region defined between opposite side limits that are spaced apart a predetermined distance transversely of the head length, said central region having a generally flat surface lying in a given plane, and side regions on opposite sides of said central region beyond the side limits of the central region, each side region defining a generally flat surface that lies in a plane that is generally parallel to the plane of said central region and spaced therefrom in a direction perpendicular to said plane to define a clearance space between the plane of said central region and the plane of each of said side regions, whereby the flat surface of each side region is depressed relative to the flat surface of the central region; c) said generally rectangularly-shaped modules are mounted on the flat surface of said central region of said base; d) each of said modules has a dimension perpendicular to the length of the head that is sufficiently larger than said predetermined distance between the side limits of said elongated central region of said base that the opposite side margins of each said base plate carrying said circuit boards thereon project in cantilevered fashion beyond said side limits of said elevated central region of the base, e) said elongated interconnection circuit strips are disposed on the depressed flat surfaces of said opposite side regions of the base so that each side margin of each of said module base plates overlaps in spaced relation with a portion of one of said interconnection circuit strips with a clearance space therebetween while another portion of said strip is free of said overlap; f) each of said interconnection circuit strips has bonding pads located on the portion of said circuit strip that is free of said overlap; and g) each of said circuit boards has bonding pads generally adjacent said opposite side margin thereof, said bonding pads of each of said circuit boards being connected by wire-bonding to bonding pads on one of said interconnection strips.

5,257,050

GOGGLES, ESPECIALLY PROTECTIVE GOGGLES FOR WORKERS

Klaus Wiedner, Fürth/Bay, Fed. Rep. of Germany, assignor to Uvex Winter Optik GmbH, Fed. Rep. of Germany

Filed Dec. 30, 1991, Ser. No. 814,709
Claims priority, application Fed. Rep. of Germany, Jan. 1, 1991, 4118018
Int. Cl.[5] G02C *1/00, 5/12*
U.S. Cl. 351—86 5 Claims



1. A pair of goggles, in particular protective goggles, with a frame, which accommodates two sight pieces, a bridge-like nose rib being formed on the frame between the two sight pieces, and a holder being placeable onto the nose rib, and the sight pieces being laterally fixed on undercuts of the frame and cooperating with the holder in a vicinity of the nose rib, said sight pieces having appendages extending at their upper side rearwardly from a plane of the sight pieces, said appendages fitting over an upper side of the frame, in the inserted position, a locking part arranged on the upper side of the frame, said sight pieces being fixed by said frame by said locking part and said holder.

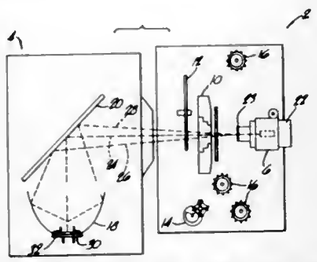
VOL 1155 ISS 4 OCT 26 1993 UMI

5,257,051

METHOD AND APPARATUS FOR ADJUSTING THE OPTICAL ALIGNMENT OF A FILM PROJECTION SYSTEM

Frederick N. Bushroe, Redondo Beach, Calif., assignor to The Walt Disney Company, Burbank, Calif.

Filed Dec. 24, 1992, Ser. No. 996,670
Int. Cl.[5] G02B *11/26*
U.S. Cl. 353—122 12 Claims



1. A method for adjusting the optical alignment of a film projection system having a film gate with a central opening, a lens mount having lenses optically aligned along an optical axis of the lens mount, a light source, a generally ellipsoid collector for reflecting light from the light source along an optical axis of the collector and a folding mirror for reflecting light from the light source and the collector to the gate, the system when correctly adjusted having a system optical axis formed by the optical axes of the collector, the gate and the lens mount in which the film gate opening is centered with respect to the optical axis of the lens mount and the illumination from the light source and collector reflected by the folding mirror is centered on the film gate opening distributed evenly across it, the method comprising the steps of,

removing the light source from the collector;

mounting a target adjacent the base of the collector with a center marking on the target centered coincident with the optical axis of the collector;

projecting a laser beam in alignment with the optical axis of the lens mount;

splitting the laser beam into a center beam aligned with the optical axis of the lens mount and at least two side beams equally inclined divergently from the center beam on opposite sides thereof, said center beam being reflected by the folding mirror, the side beams reflecting successively from the folding mirror and from interior reflecting surfaces of the collector;

adjusting the position of the collector in a plane perpendicular to the center beam path to move the center marking of the target into coincidence with a spot of light produced thereon by the center beam reflected from the folding mirror, thereby centering the collector relative to the optical axis of the lens mount;

placing an intercept sheet temporarily in the reflected paths of the side beams from the collector and of the center beam from the folding mirror to create visible side beam light spots and a center beam light spot on the intercept sheet;

adjusting the tilt between the collector and the folding mirror to move the side beam light spots into coincidence with the center beam light spot on the intercept sheet, thereby bringing the optical axis of the collector and the optical axis of the lens mount into coincidence with the system optical path.

7. An apparatus for adjusting the optical alignment of a film projection system having a film gate with a central opening, a lens mount having lenses optically aligned along an optical axis of the lens mount, a light source, a generally ellipsoid collector for reflecting light from the light source along an optical axis of the collector, and a folding mirror for reflecting light from the light source and the collector to the gate, the system when correctly adjusted having a system optical axis formed by the optical axes of the collector, the gate and the lens mount in which the film gate opening is centered with respect to the optical axis of the lens mount and the illumination from the light source and collector reflected by the folding mirror is centered on the film gate opening distributed evenly across it, an intercept sheet being temporarily interposed between the folding mirror and the position normally occupied by the light source during use of the apparatus, the apparatus comprising,

a target surface releasably mounted to the collector adjacent its base after temporary removal of the light source, said target having a center marking coincident with the optical axis of the collector;

a laser source releasably mounted in the lens mount in place of the projection lens assembly, said laser source projecting a laser beam;

a beam splitter connected with the laser source splitting the beam into a center beam aligned with the optical axis of the lens mount and two side beams inclined at equal angles of divergence from said central beam on opposite sides thereof, said side beams reflecting successively from the folding mirror and from interior reflecting surfaces of the collector, said center beam being reflected by the folding mirror to create a center beam light spot on said target, adjustment of the collector relative to the folding mirror in a plane perpendicular to the center beam moving said center marking on said target into alignment with said center beam light spot to center the collector relative to the optical axis of the lens mount; and

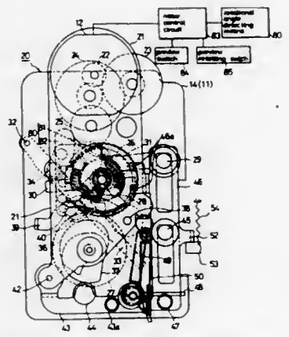
the intercept sheet being temporarily positioned to intercept said center beam and produce a center beam light spot thereon; said side beams, subsequent to their reflection by the collector, producing side beam light spots on the intercept sheet; tilting adjustment of the collector relative to the folding mirror bringing said side beam light spots into coincidence with said center beam light spot on the intercept sheet thereby bringing the optical axis of the collector and the optical axis of the lens mount into coincidence with the system optical path.

5,257,052

ELECTRICALLY DRIVING APPARATUS OF MIRROR IN SINGLE-LENS REFLEX CAMERA

Masahiko Kurosaki, and Toshiyuki Kitazawa, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 403,383, Sep. 6, 1989, abandoned. This application Dec. 16, 1991, Ser. No. 807,814
Claims priority, application Japan, Sep. 7, 1988, 63-117465[U]; Sep. 13, 1988, 63-229258
Int. Cl.[5] G03B *19/12*
U.S. Cl. 354—153 20 Claims



1. An apparatus for driving a mirror of a single-lens reflex camera, comprising:

a mirror box that is associated with a mirror box mechanism;

a mother plate for supporting said mirror box;

a spur gear train that is rotatably connected to said mother plate; and

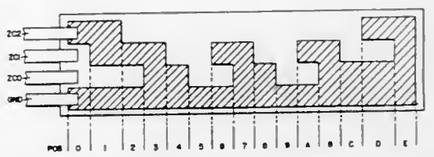
a motor having a drive shaft with a spur gear pinion that is integral therewith for driving said gear train, said motor being located outside of said mirror box, so that said drive shaft is positioned perpendicular to a plane of said mother plate, said motor being driven in a first direction to shift said mirror from an initial position, said motor being driven in a second direction to shift said mirror back to said initial position.

5,257,053

POSITION DETECTING DEVICE

Takeo Kobayashi, Tokyo; Yasushi Tabata, Chiba; Norio Numako, Tochigi, and Katsutoshi Nagai, Saitama, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 374,347, Jun. 30, 1989, abandoned.
This application Apr. 30, 1992, Ser. No. 877,399
Claims priority, application Japan, Jun. 30, 1988, 63-87118; Jun. 30, 1988, 63-87119; Jun. 30, 1988, 63-87120; Jun. 30, 1988, 63-163895; Jun. 30, 1988, 63-163896; Jun. 30, 1988, 63-163897; Jun. 30, 1988, 63-163898; Jun. 30, 1988, 63-163899
Int. Cl.[5] G03B *1/18, 13/00*
U.S. Cl. 354—195.1 50 Claims



1. A position detecting apparatus for detecting a position of a movable member relative to a reference position, said position detecting apparatus comprising:

(a) a code information carrier having means associated therewith indicative of a plurality of relative codes and at least one absolute code representing a position of said movable member having a predetermined positional relation with said reference position, said at least one absolute code and said relative codes representing a code-change pattern of said code information carrier;

(b) a code identifying device, operatively associated with said code information carrier, for movement relative thereto, and for identifying said codes;

(c) means for recognizing changes of code information identified by said code identifying device as said movable member moves relative to said reference position;

(d) code-check means for checking whether a respective one of said changes of code information coincides with said code-change pattern; and

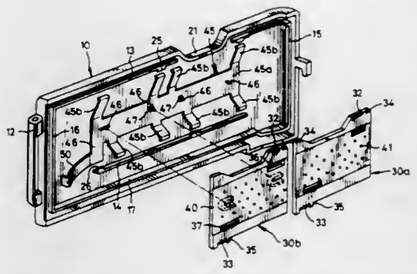
(e) means for discriminating whether said code identifying device has malfunctioned when said change of code information does not coincide with said code-change pattern, said change of code information being ignored when said discriminating means discriminates that said code identifying device has malfunctioned.

5,257,054

FILM PRESSURE STRUCTURE FOR AN ELONGATED EXPOSURE STATION OF A CAMERA

Nobuyuki Kameyama, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 4, 1992, Ser. No. 924,474
Claims priority, application Japan, Aug. 5, 1991, 3-69211
Int. Cl.[5] G03B *17/00*
U.S. Cl. 354—203 25 Claims



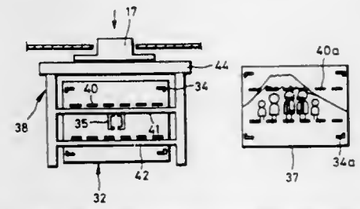
1. In an elongated camera for creating a picture on a photographic film in an exposure station, said picture frame having a size defined by alignment of N frames of a full size, N being an integer which is at least 2, and a film pressure structure disposed behind said exposure station for holding said film flat in said exposure station; the improvement wherein said film pressure structure comprises N pressure plates each having a size corresponding to one frame of said full size.

5,257,055

VIEW FINDER FOR CAMERA WITH DIFFERENT SELECTABLE FINDER FIELD FRAMES

Michio Cho, and Kazuo Kamata, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 611,665, Nov. 13, 1990, abandoned.
This application Jul. 13, 1992, Ser. No. 912,712
Claims priority, application Japan, Nov. 13, 1989, 1-131887[U]; Jan. 29, 1990, 2-7746[U]; Jun. 8, 1990, 2-60778[U]
Int. Cl.[5] G03B *13/10*
U.S. Cl. 354—222 13 Claims



1. A view finder having an objective lens, a half-mirror, and an eyepiece respectively disposed along a finder optical path, comprising:

at least first and second finder field frames of different types, each finder field frame indicating a photography area and being disposed between said eyepiece and said half-mirror;

said first finder field frame comprising marks in four corners of a photographer's field of view through the view finder for indicating the field of view in a first photography mode;

said second finder field frame comprising two lines of spaced apart marks extending across a photographer's field of view in the view finder and spaced between said corner marks, to indicate the field of view in a second photography mode; and

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a blocking member disposed adjacent said finder field frames between said finder field frames and said half-mirror for selectively masking said second finder field frame from observation by a user of the view finder looking through said eyepiece;

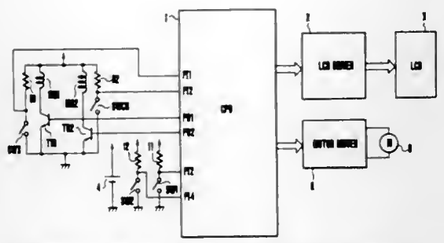
said blocking member having spaced apart blocking portions integral with each other and movable together in the same direction for simultaneously blocking or exposing said second finder field frame, said blocking portions comprising two light-shielding bars that are spaced apart and that expose the field of view in said first photography mode on opposite sides of said light-shielding bars and between said light-shielding bars and that cover both of said lines of spaced apart marks in said first photography mode and that expose both of said lines of spaced apart marks in said second photography mode.

5,257,056

CAMERA

Jiro Kazumi, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 30, 1992, Ser. No. 921,762
Claims priority, application Japan, Aug. 2, 1991, 3-194135
Int. Cl.[5] G03B *9/08*
U.S. Cl. 354—234.1 6 Claims



1. A camera having a shutter device including a leading curtain and a trailing curtain, comprising:

a) first switch means for detecting a ready-to-travel state and a travel-completed state of said leading curtain;

b) second switch means for detecting a ready-to-travel state and a travel-completed state of said trailing curtain; and

c) decision means arranged to determine before an operation of said shutter device that said shutter device is abnormal, when at least one of the ready-to-travel state of said leading curtain is not detected by said first switch means and the ready-to-travel state of said trailing curtain is not detected by said second switch means, and said decision means determining that said shutter device is abnormal after completion of control over the traveling states of said leading and trailing curtains by said shutter device, when the travel-completed state of said leading curtain is not detected by said first switch means within a predetermined period of time after the travel-completed state of said trailing curtain is detected by said second switch means.

5,257,057

MAGAZINE FOR A STACK OF FILM SHEETS

Matthew DiPietro, Webster; Thomas J. Kausch, and Vincent B. Dethier, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 22, 1992, Ser. No. 902,350
Int. Cl.[5] G03B *17/26*
U.S. Cl. 354—276 22 Claims

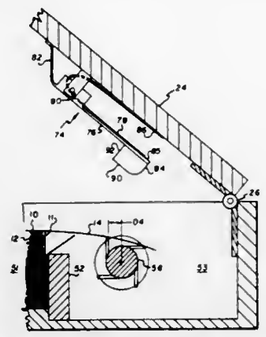
1. A supply magazine for use in an apparatus for removing individual sheet film, the sheet film being arranged in a stack and placed within a light-tight pouch having a leader secured to the leading edge, said supply magazine comprising;

a base having a receiving section for holding and retaining the stack of sheet film within the light-tight pouch;

a cover secured to said base by hinges along one side permitting said cover to move between a closed position and an open position on said base;

a take up spindle rotatably secured within said base for winding of the pouch thereon;

hook means secured to the spindle for engaging the leader of the pouch; and



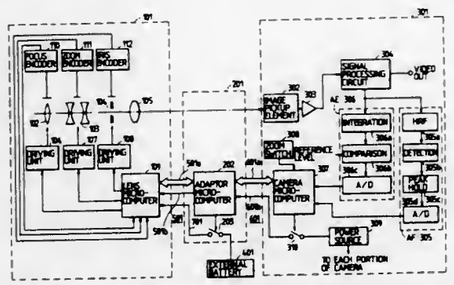
a clamp pad secured to the cover, said clamp pad is positioned such that when the cover is in the closed position said clamp pad is biased against the leader of the pouch placed in the base so as to cause the leader to be pressed against the spindle in the area in which said hook means rotates, said clamp pad having a configuration such that a resistive wall section is formed in the leader so that when said spindle is rotated said hook means engages the leader at the resistive wall section allowing the pouch to be wound around the spindle.

5,257,058

INTERCHANGEABLE LENS SYSTEM

Toshiaki Mabuchi, Tama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 800,573, Nov. 27, 1991, abandoned. This application Jan. 21, 1993, Ser. No. 7,363
Claims priority, application Japan, Nov. 30, 1990, 2-333836; Nov. 30, 1990, 2-333837
Int. Cl.[5] G03B *17/00*
U.S. Cl. 354—286 17 Claims



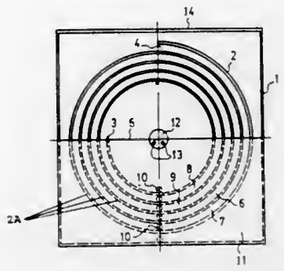
5. A conversion adapter for connecting a first control device including first electric power supply means with a second control device adapted for receiving electric power supply, thereby enabling electric power supply from said electric power supply means to said control device, wherein second electric power supply means controllable independently from said first control device is rendered connectable to said conversion adapter, and comprising control means for enabling electric power supply from said second electric power supply means to said second control device only when said first control device is connected to said conversion adapter.

5,257,059

DEVELOPING PROCESSOR

Gregorio Ramos, 13 Plaza Simón Bolivar, 01003-Vitoria, Spain

Filed Mar. 25, 1992, Ser. No. 857,155
Claims priority, application Spain, Mar. 26, 1991, 9100780
Int. Cl.[5] G03D *3/08*
U.S. Cl. 354—322 12 Claims



1. A developing processor comprising;

a helicoidal spiral body (2) forming a plurality of tubs therein,

an outer casing (1) having walls housing said helicoidal spiral body,

said plurality of tubs being arranged coaxially around a rotatable shaft (12) and spaced along a longitudinal length from said walls of said outer casing (1),

a rear end of said casing closing a first end of said helicoidal spiral body and said plurality of tubs, and having a front end extending upward a certain distance and height,

a second end of said helicoidal spiral body having a front edge (2A) extending laterally therefrom around each of said plurality of tubs,

a second end of said each of said plurality of tubs being closed up from said front edge to said certain distance and height of said front end of said casing by respective parallel front walls (28) to form concentric independent chambers (6, 7, 8, 9) for developing liquids in said plurality of tubs,

a space above said front end of said casing permitting access to a center of said plurality of tubs,

two rods (13) extending past said parallel front walls, from a free end of said rotatable shaft (12),

said two rods being symmetrically spaced from a longitudinal axis of said plurality of tubs,

holding and carrying arm means slideably engaged on said two rods for holding material to be developed and consecutively moving said material through each of said chambers when said shaft (12) is rotated and said holding and carrying arm means is engaged between said front edge and a front wall of said parallel front walls,

material holder means for material (34, 37) to be developed, secured to said holding and carrying arm means,

temperature, filling and draining control means located in said chambers for controlling a temperature and volume of developing liquids, and

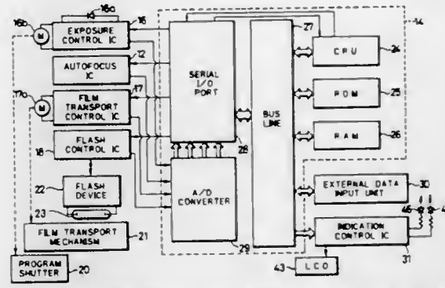
cover or lid (52) means hinged on said casing for closing an interior of said developing processor from an exterior while providing access to work and handle material or elements in said developing processor.

5,257,060

AUTOFOCUS CAMERA AND A METHOD OF REGULATING THE SAME

Takaaki Kotani; Seiji Takada, both of Tokyo; Shigeoori Goto, and Tatsuo Saito, both of Saitama, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa and Fuji Photo Optical Co., Ltd., Saitama, both of Japan

Filed Oct. 21, 1991, Ser. No. 779,881
Claims priority, application Japan, Oct. 20, 1990, 2-282916; Oct. 20, 1990, 2-282917
Int. Cl.[5] G03B *13/36*
U.S. Cl. 354—402 34 Claims



1. An autofocus camera comprising a rangefinding device, a microcomputer for calculating distance data for positioning a taking lens in accordance with measurement data produced by said rangefinding device, and indicator means for indicating scene-taking information, said camera further comprising:

memory means for storing data obtained in a rangefinding calculation, said stored data including said measurement data; and

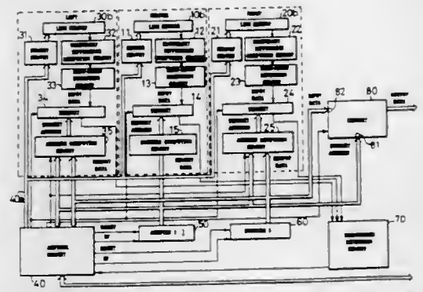
means for reading said stored data out of said memory means during an inspection mode so as to indicate said stored data in said indicator means.

5,257,061

RANGE FINDER FOR PASSIVE-TYPE AUTOFOCUSING DEVICE

Minoru Ishiguro, Ohmiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Ohmiya, Japan

Continuation-in-part of Ser. No. 834,636, Feb. 12, 1992. This application Oct. 8, 1992, Ser. No. 958,665
Claims priority, application Japan, Oct. 15, 1991, 3-295205; Oct. 15, 1991, 3-295206; Oct. 15, 1991, 3-295207
Int. Cl.[5] G03B *13/36*; G01C *3/08*; H01J *40/14*
U.S. Cl. 354—402 14 Claims



1. A range finder for a passive-type autofocusing device comprising:

three photosensors to pick up a luminance distribution on a scene to be photographed;

secondary difference computing circuits coupled to said

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photosensors to compute secondary differences of output signals from the respective photosensors;

zero-cross detecting circuits coupled to said secondary difference computing circuits to detect zero-cross points of output signals from the respective secondary difference computing circuits so long as these zero-cross points are those appearing when primary differences derived from computation of the secondary differences have absolute values larger than a predetermined value;

zero-cross memory circuits coupled to said detecting circuit, for storing zero-cross behavior signals obtained by the respective zero-cross detecting circuits; and

a coincidence detecting circuit coupled to said memory circuits to compare the zero-cross behavior signals stored in the respective zero-cross memory circuits with one another and thereby to detect a coincidence of these zero-cross behavior signals; wherein one of those three photosensors is selected as the reference photosensor and the zero-cross behavior signals obtained from the other two photosensors are successively shifted relative to the zero-cross behavior signal obtained from the reference photosensor until a coincidence of these three zero-cross behavior signals is detected by the coincidence detecting circuit and a range to the scene is computed based on an amount of such shifting.

5,257,062

FOCUSING DETECTION APPARATUS

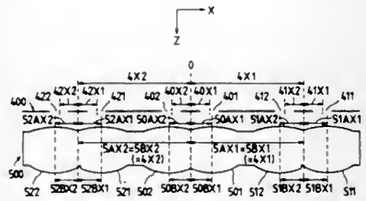
Keiji Moriyama, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Sep. 4, 1992, Ser. No. 941,319

Claims priority, application Japan, Sep. 10, 1991, 3-258477

Int. Cl.[5] G03B *13/36;* **G01J** *1/20;* **G02B** *7/28*

U.S. Cl. 354—408 **8 Claims**



1. A focusing detection apparatus having at least a focusing detection area on an optical axis of a photographing lens and a focusing detection area off the optical axis of the photographing lens in a photo-graphing field and having a focusing detection optical system including at least a pair of apertures and a pair of refocusing lenses provided one set for each of said focusing detection areas,

wherein said focusing detection optical systems are arranged such that a positional relation between centers of the pair of apertures in the off-axis focusing detection optical system and optical axes of the pair of refocusing lenses corresponding to the apertures is different from that of the on-axis focusing detection optical system.

5,257,063

FLASHING CONTROLLER

Toshiaki Ishimaru, Hino, and Satoshi Kawakami, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 30, 1992, Ser. No. 954,499

Int. Cl.[5] G03B *15/05*

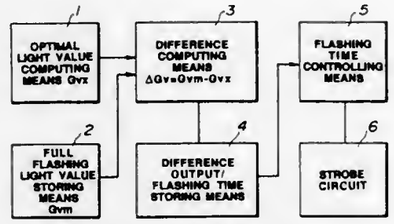
U.S. Cl. 354—416 **20 Claims**

1. A flashing controller, comprising:

a flashing apparatus made up of a power circuit, a main capacitor charged by the power circuit, a flash discharge tube into which the main capacitor is discharged, a switching device for controlling on and off operations for a discharge current flowing in the flash discharge tube, and control circuits for controlling the switching device;

a nonvolatile storing means for storing a first table listing a maximum flashing guide number for maximum flashing measured actually for each product of said flashing apparatus and flashing times associated with differences from the guide number for maximum flashing of said flashing apparatus;

a distance measuring means for detecting a distance to a subject; and



a microcomputer for computing an optimal light value guide number specifying an optimal quantity of light according to a distance to a subject said distance measuring means detects, computing a difference between quantities of light specified with a maximum flashing guide number stored in said nonvolatile storing means and with said optimal light value guide number, retrieving a flashing time from said first table existent in said nonvolatile storing means according to the difference between quantities of light, and controlling control circuits of said flashing apparatus according to the flashing time.

5,257,064

COPYING MACHINE PROVIDED WITH A RECIRCULATING DOCUMENT FEEDER APPARATUS

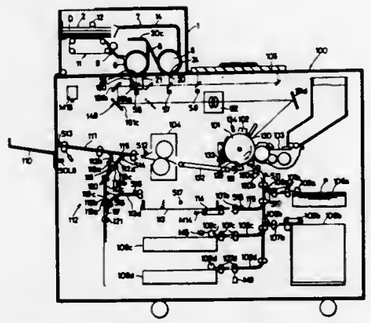
Yuji Okamoto, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 685,934, Apr. 16, 1991. This application Aug. 25, 1992, Ser. No. 935,453

Claims priority, application Japan, Apr. 17, 1990, 2-102638; Mar. 22, 1991, 3-058750

Int. Cl.[5] G03B *27/32, 27/52;* **G03G** *21/00*

U.S. Cl. 355—24 **3 Claims**



1. A copying machine for making duplex copies from a series of simplex documents, comprising:

means for selecting one of a plurality of copying modes including standard, reduction and enlargement;

means for setting a desired copying magnification;

a rotatable photoreceptor for receiving an image from a document at a first reading station;

a recirculating document feeding apparatus for transporting

sheets of documents placed in containing means sequentially to the first reading station at a speed determined by the copying magnification set by said setting means and the copying mode selected by said selecting means and for returning the document to the containing means;

controlling means for performing a counting operation of said series of simplex documents beginning with a last one of said simplex documents, said controlling means performing said counting operation by operating said recirculating document feeding apparatus at a speed higher than a speed corresponding to the reduction mode with minimum magnification; and

means for determining whether copying of the last one of said series to simplex documents should begin on a first side of a copy of a second side of the copy depending on whether the count obtained in said counting operation is odd or even;

wherein said recirculating document feeding apparatus comprises an endless transport belt mounted on a plurality of rollers beneath the containing means and having an upper portion stretched between two of said rollers, said upper portion serving as a placing member for returning documents to and supporting documents in said containing means;

wherein said copying machine may also be used for copying duplex documents, said copying machine further comprising a second reading station and a document inverting means for inverting documents between said first reading station and said second reading station.

5,257,065

APPARATUS FOR TRANSPORTING EXPOSED PHOTOGRAPHIC FILMS THROUGH AND BEYOND A DEVELOPING UNIT

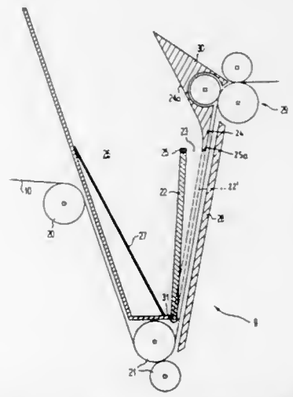
Erich Nagel, Anzing, Fed. Rep. of Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 29, 1992, Ser. No. 922,051

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1991, 4126579

Int. Cl.[5] G03B *29/00*

U.S. Cl. 355—28 **18 Claims**



1. Apparatus for processing successive exposed webs containing a photosensitive material and having leading ends, comprising a developing unit; a copying unit; and means for transporting successive webs in a predetermined direction along a first path first through said developing unit and thereupon into said copying unit, said transporting means comprising substantially sheet-like leaders connectable to the leading ends of successive webs, means for advancing the leaders and the respective webs along a first portion of said first path through said developing unit, means for separating the leaders from the leading ends of the respective webs in a second portion of said first path downstream of said first portion and upstream of said copying unit, and means for conveying separated leaders along a second path.

5,257,066

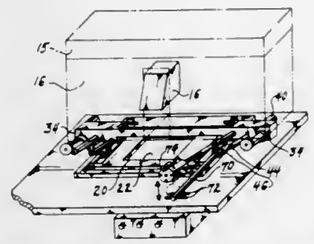
PIVOTING FILM DRIVE MOUNT

Ray Hicks, 2605 Corunna Rd., Flint, Mich. 48503

Continuation of Ser. No. 815,398, Dec. 31, 1991, Pat. No. 5,146,266. This application Jul. 27, 1992, Ser. No. 919,914

Int. Cl.[5] G03B *27/62*

U.S. Cl. 355—75 **6 Claims**



1. A mounting assembly for a film drive unit used with commercial photographic equipment of the type including an optical stage defining an optical centerline, the film drive unit including an elongated frame member, a film feed spool mounted on one end of the frame member, a take-up spool mounted on the other end of the frame member, and guide means for moving the film between the spools along a longitudinal path, the mounting assembly comprising:

a mount base having a central aperture therein and adapted to be secured proximate the optical stage of the photographic equipment;

a pair of rails attached to opposite sides of said mount base;

a carrier block mounted for sliding movement on each rail and having an upwardly projecting cradle portion; and

means on each carrier block for pivotally supporting a respective end of the frame member of the film drive unit with the longitudinal film path positioned over the base aperture, whereby the film drive unit may be slide laterally along the rails on the carrier blocks to adjust the lateral position of the longitudinal centerline of the film path relative to the optical centerline of the photographic equipment and the film drive unit may be pivoted relative to the mount plate in any position of lateral adjustment of the film drive unit to facilitate access to the film.

5,257,067

APPARATUS FOR PLACING FILM MASK IN CONTACT WITH OBJECT

Haruo Sakamoto, Saitama; Shigeo Nagashima, Yokohama, and Katuya Sangu, Tokyo, all of Japan, assignors to Adtec Engineering Co., Ltd., Tokyo and Canon Components Kabushiki Kaisha, Saitama, Japan

Filed Nov. 22, 1991, Ser. No. 797,133

Claims priority, application Japan, Dec. 26, 1990, 2-414646

Int. Cl.[5] G03B *27/20*

U.S. Cl. 355—91 **7 Claims**

1. An apparatus for placing a film mask in contact with an object comprising:

means for supporting a back side of a film mask,

means for fastening said film mask to said supporting means at fringe thereof so as to secure said film mask to said supporting means,

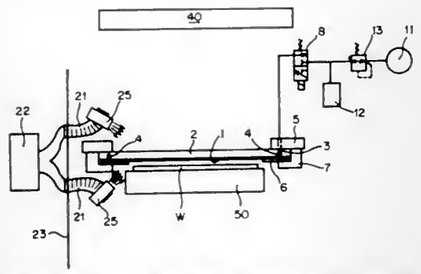
means for abutting a front side of the film mask to an object,

means for introducing a fluid beteen the film mask and the

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means for supporting so as to press the film mask to be placed in contact with the object,

said means for introducing a fluid having an accumulator **12** which prevents a rapid variation of the pressure of the



fluid introduced into the gap between the film mask and the means for supporting, so that the film mask and the means for supporting are prevented from elogation and deformation.

5,257,068

CLAMSHELL-TYPE ELECTROPHOTOGRAPHIC DUPLEX PRINTER

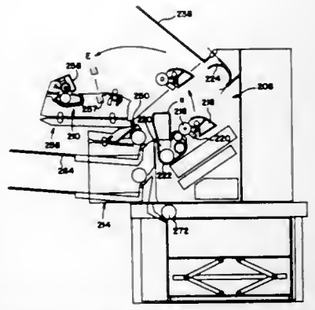
Shigeru Sawada; Mitsuaki Maruyama, and Hiroshi Niki, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Division of Ser. No. 508,713, Apr. 16, 1990, abandoned. This application Oct. 10, 1991, Ser. No. 774,612

Claims priority, application Japan, Apr. 14, 1989, 1-95005; May 2, 1989, 1-113076; Jun. 22, 1989, 1-161847; Jun. 29, 1989, 1-167381

Int. Cl.[5] **G03G** *15/00*

U.S. Cl. 355—200 **2 Claims**



1. An electrophotographic recording apparatus, comprising:

a body having a sheet feed roller, a fixing unit, discharge rollers, and a sheet forwarding path, a portion of said sheet forwarding path extending from a position where an image is transferred to a first side of a sheet to a fixing position;

an image forming device including first, second and third units, said first unit comprising a photosensitive drum for transferring said image to said first side of said sheet, said first and second units being bounded by said sheet forwarding path, and said third unit being provided outside of said second unit so that said third unit is separated from said second unit by a return forwarding path, said second and third units being pivotally coupled to said body with respect to a common axis so as to be openable; and

means for reversing and forwarding said sheet into said sheet forwarding path at the time of a second printing operation to enable said photosensitive drum to transfer a second image to a second side of said sheet, said reversing means receiving said sheet from said return forwarding path.

5,257,069

COPYING MACHINE CONTROL SYSTEM CONTROLLING A PLURALITY OF COPYING MACHINES THROUGH COMMUNICATION NETWORK

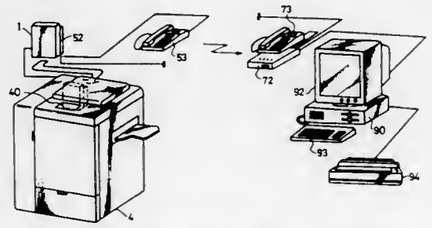
Sumiaki Hirata, Aichi; Kazunobu Maekawa, Toyokawa, and Kenzo Nagata, Okazaki, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 4, 1992, Ser. No. 971,302

Claims priority, application Japan, Nov. 6, 1991, 3-319855

Int. Cl.[5] **G03G** *15/00*

U.S. Cl. 355—200 **8 Claims**



1. A method of controlling a plurality of copying machines through a communication network, comprising the steps of:

receiving data from one of said copying machines;

detecting the state of trouble occurrence as to the particular portion of the copying machine based on said received data;

determining whether or not the use of said particular portion should be prohibited based on said detected state of trouble occurrence; and

transmitting to the copying machine a prohibition signal instructing prohibition of the use of said particular portion, when it is determined that the use of said particular portion should be prohibited.

5,257,070

SELECTIVE CONTROL OF DISTRIBUTED DRIVES TO MAINTAIN INTERDOCUMENT GAP DURING JAM RECOVERY PURGE

Donald L. Miller, Penfield; Ronald P. Booth, Sr., Pittsford; Gary W. Roscoe, Fairport, and Prashant K. Phadnis, Henrietta, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 8, 1992, Ser. No. 941,621

Int. Cl.[5] **G03G** *21/00*

U.S. Cl. 355—207 **13 Claims**

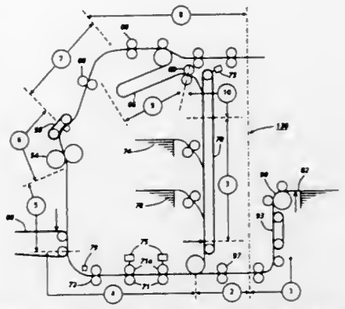
1. In an image processing apparatus for producing images on copy sheets including a copy sheet path having a plurality of zones, a plurality of copy sheet drives, and a controller for directing the image processing apparatus, the method of recovery from a copy sheet jam comprising the steps of:

detecting a machine malfunction,

responding to the malfunction to inhibit operation of the machine,

activating a first copy sheet drive to purge a first copy sheet from a first zone of the copy sheet path,

selectively activating a second copy sheet drive to purge a second copy sheet from a second zone of the paper path, and



operating a third copy sheet drive to purge a third copy sheet from a third zone of the paper path, the first, second, and third drives being independently driven.

5,257,071

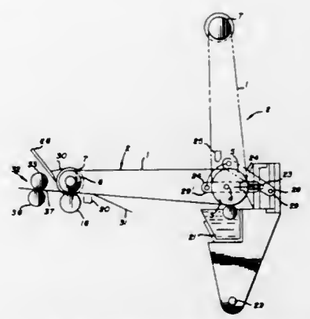
PIVOTAL PHOTOCONDUCTOR BELT ASSEMBLY

Edwin A. Hediger, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 24, 1991, Ser. No. 705,406

Int. Cl.[5] **G03G** *5/00*

U.S. Cl. 355—212 **5 Claims**



1. An improved electrophotographic apparatus of the type having:

a sensitizing charger station,

an exposure station,

a development station,

a transfer station,

a fusing station and means for moving an endless photoconductive belt through at least one of the stations, with the photoconductive belt being supported by a plurality of rollers, the improvement comprising means for pivoting the photoconductive belt about a first pivotal point which is an axis of one of the plurality of rollers into and out of operational engagement with at least one of said stations and means for pivoting the developer and exposure station as one unit about a second pivotal point, into and out of operational engagement with the photoconductive belt and at least a portion of the transfer station travels with photoconductive belt as said belt is pivotal about the first pivot point.

5,257,072

DISCHARGING DEVICE FOR COPYING APPARATUS

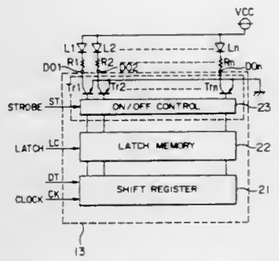
Shigeo Maeda, Hino, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Apr. 3, 1992, Ser. No. 863,430

Claims priority, application Japan, Apr. 8, 1991, 3-075121

Int. Cl.[5] **G03G** *21/00*

U.S. Cl. 355—218 **3 Claims**



1. A neutralizer for use in an image forming apparatus for eliminating, by a light beam emission, an electric charge from a non-image area of a surface of an image carrying member, said neutralizer comprising:

light emitting means, having a plurality of light emitting elements arrayed facing the surface of the image carrying member and in an order along a line across a width of the image carrying member, for emitting a light beam from each light emitting element and being adapted to eliminate an electric charge on a selectively predetermined portion of the surface along the line by selectively emitting a light beam form each of the light emitting elements;

a shift register for storing a binary data, said shift register having a plurality of register cells corresponding one-to-one to the light emitting elements, wherein a bit of the binary data stored in each said register cell instructs a selective light beam emission from its corresponding light emitting element, and wherein the shift register shifts the binary data bit by bit through said register cells in synchronization with a clock pulse during a first time period and holds the binary data during a second time period, said first and second time periods each comprising a plurality of clock pulse periods; and

driving means for making each light emitting element selectively emit the light beam based on a binary data in the shift register during both the first time period and the second time period.

5,257,073

CORONA GENERATING DEVICE

Robert A. Gross, Penfield; Raymond E. Bailey, Webster, both of N.Y., and Joseph H. Lang, Stamford, Conn., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 1, 1992, Ser. No. 907,082

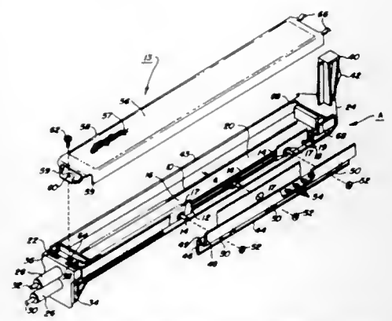
Int. Cl.[5] **G03G** *15/02*

U.S. Cl. 355—221 **26 Claims**

1. A corona generating device, comprising;

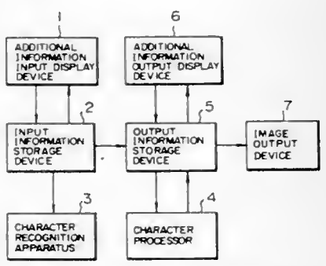
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a support frame;
an electrode mounted on said support frame; and



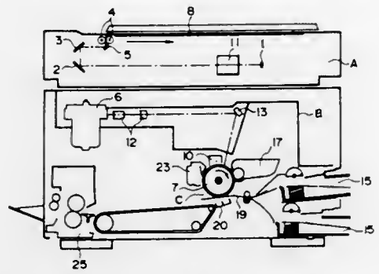
an element mounted on said support frame proximate to said electrode, said element including a substantially continuous layer of boron electroless nickel.

5,257,074
IMAGE FORMING APPARATUS
Masafumi Kamei, Shakujii, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 9, 1992, Ser. No. 866,194
Claims priority, application Japan, Apr. 9, 1991, 3-103386
Int. Cl.[5] G03G *15/04*
U.S. Cl. 355—244 **13 Claims**



1. An image forming apparatus comprising:
input means for inputting handwritten characters;
character recognition means for recognizing hand written characters inputted from said input means;
generating means for generating character pattern data representing the character recognized by the character recognition means, said generating means generating character pattern data in a desired one of a plurality of typefaces for said recognized character;
scanning means for generating scanned image data by scanning an original document;
combining means for combining the generated character pattern data of a desired typeface with the scanned image data into combined image data; and
image forming means for forming an image from the combined image data.

5,257,075
IMAGE FORMING APPARATUS
Shigeru Ohki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 4, 1992, Ser. No. 845,669
Claims priority, application Japan, Mar. 5, 1991, 3-038661
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—246 **10 Claims**

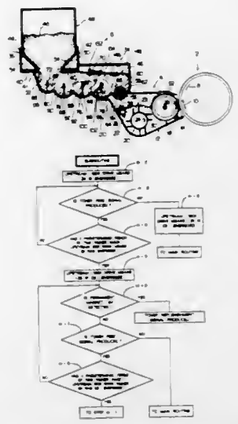


1. An image forming apparatus comprising:
an electrophotographic photosensitive member;
a light source;
developing means for developing with a developer an electrostatic latent image formed on said photosensitive member by light from said light source, wherein the developer is a one component non-magnetic developer, wherein said developing means comprises a developer carrying member for carrying the developer to a developing zone to supply it to said photosensitive member in the developing zone, and a voltage source for applying a bias voltage to the developer carrying member, and wherein said voltage source applied to said developer carrying member a bias voltage in the form of a DC biased AC voltage; and
control means responsive to image information to control a continuous light emitting period of said light source per one picture element, wherein said control means operates in a high contrast potential region, wherein the contrast potential is a difference between a potential of the bias voltage and an average potential of a latent image corresponding to a predetermined image density, and wherein the potential of the bias voltage is equal to a potential of a DC component of the DC biased AC voltage.

5,257,076
TONER FEEDING DEVICE CAPABLE OF SIGNALLING NEED TO REPLENISH TONER
Toshinori Nishimura, Hirakata; Hidekazu Sakagami, Goze, and Hiromi Sakata, Suita, all of Japan, assignors to Mita Industrial Co., Ltd., Chuo, Japan
Filed May 19, 1992, Ser. No. 885,377
Claims priority, application Japan, May 20, 1991, 3-142706
Int. Cl.[5] G03G *15/08, 21/00*
U.S. Cl. 355—246 **20 Claims**

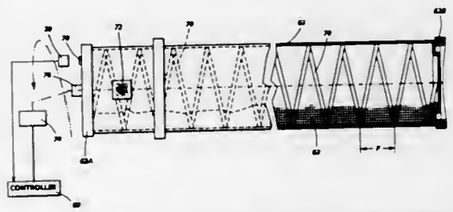
1. A toner feeding device for an electrostatic latent image developer of an electrostatic image forming machine, said toner feeding device comprising:
a housing adapted to be mounted on the electrostatic latent image developer and to support a toner container disposed at the upstream end of said housing for discharging toner into said housing,
toner sending means disposed at the downstream end of said housing for sending toner into the electrostatic latent image developer,
toner conveying means for conveying the toner discharged from the toner container toward said toner sending means through said housing,
drive means for driving said toner conveying means,
toner amount detector means for detecting the amount of toner in the downstream portion of said housing, and

control means for controlling the energization and de-energization of said drive means,
wherein:
said toner conveying means includes at least one upstream-side toner conveying means disposed in the upstream portion of said housing and at least one downstream-side toner conveying means disposed in the downstream portion of said housing;



said drive means includes an upstream-side drive means for driving said upstream-side toner conveying means and a downstream-side drive means for driving said downstream-side toner conveying means; and
said control means includes means for preventing energization of said upstream-side drive means when the amount of toner detected by said toner amount detector means is greater than a predetermined amount.

5,257,077
TONER DISPENSING APPARATUS FOR A XEROGRAPHIC REPRODUCTION MACHINE
Henry B. Peters, Jr., Webster; John M. Wysocky, Rochester, and Anthony C. Fornalik, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Jan. 31, 1992, Ser. No. 829,094
Int. Cl.[5] G03G *15/06*
U.S. Cl. 355—260 **6 Claims**



1. In a xerographic reproduction machine which includes:
a movable recording member on which latent electrostatic images are created,
developing means for developing said images with toner, and
transfer means for transferring the developed images to a copy substrate material,
said developing means including a developer housing adjacent said recording member with means in said housing to bring developer from a sump in said housing into developing relation with said recording member to develop images on said recording member, said developing means characterized by including a toner dispensing apparatus for periodically dispensing toner into said sump comprising in combination:
a cylindrical toner cartridge enclosed at both ends and positioned above said sump and containing a supply of toner therein, said cartridge having a plurality of toner discharge ports located along the length of the cartridge,
drive means for periodically rotating said cartridge, and
a single relatively stiff, coiled spring member having a coil diameter slightly less than the diameter of the cartridge thus causing the spring member to remain fixedly in place along the length of the cartridge and contacting the inside wall surfaces of the cartridge, said coiled spring member adapted to transport the toner within the cartridge towards the discharge ports during rotation of the cartridge while simultaneously mixing the toner and making the consistency of the toner more fluid like.

5,257,078
IMAGE HEATING APPARATUS REGULATING SHIFT OF ENDLESS FIXING FILM
Akira Kuroda, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 16, 1992, Ser. No. 913,712
Claims priority, application Japan, Jul. 19, 1991, 3-203250
Int. Cl.[5] G03G *15/20;* **H05B** *1/00*
U.S. Cl. 355—290 **6 Claims**



1. An image heating apparatus comprising:
a heating body;
an endless film moving together with a recording sheet;
a pressurizing member cooperating with said heating body to form a nip therebetween with the interposition of said endless film; and
a regulating member for regulating at least one edge of said endless film; and wherein
an image on said recording sheet is heated by heat from said heating body via said endless film and said regulating member has a regulating surface at a downstream side of said nip in such a manner that a distance of said regulating surface and said endless film is gradually decreased toward the downstream side in a film moving direction.

5,257,079
ELECTROSTATIC BRUSH CLEANER WITH A SECONDARY CLEANER
Clark V. Lange, Ontario; Bruce E. Thayer, Webster; N. Kedarnath, Fairport; Samuel P. Mordenga, and Darryl L. Pozzanghera, both of Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Sep. 17, 1992, Ser. No. 946,225
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—303 **5 Claims**

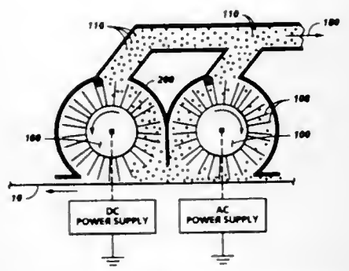
1. An apparatus for removing residual particles from an imaging surface, comprising:
a housing defining an open ended chamber;
means for discharging the particles on the imaging surface;
a first brush, rotatably mounted in the chamber of said housing, for removing the discharged particles from the imaging surface;
said discharging means includes a corona generating device

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located downstream of said first brush in the direction of movement of the imaging surface;

means for electrically biasing said first brush with an alternating current;

a second brush, located upstream of said first brush;



means for electrically biasing said second brush with a direct current; and

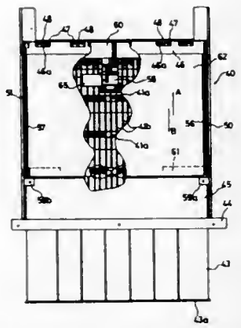
means, connected to said housing for generating an air flow that forces the particles away from said first brush and said second brush toward an outlet from said housing.

5,257,080

IMAGE FORMING APPARATUS AND ITS DISCHARGE SYSTEM

Kazuo Johroku, Sakai, and Masami Taniguchi, Osaka, both of Japan, assignors to Mita Industrial Co., Ltd., Japan

Filed Jul. 17, 1992, Ser. No. 914,558
Claims priority, application Japan, Jul. 24, 1991, 3-208666
Int. Cl.[5] G03G *21/00, 15/00*
U.S. Cl. 355—321 **48 Claims**



1. A discharge system of an image forming apparatus for discharging out of a body of said image forming apparatus a sheet on which an image has been formed in an image forming section thereof, comprising;

means for transporting said image-bearing sheet in a transverse direction of the image forming apparatus,

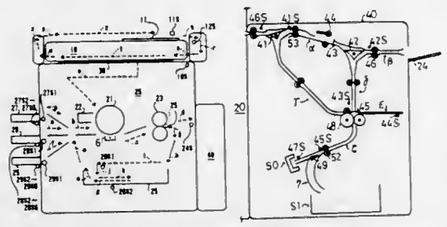
discharge means for acquiring the sheet transported by said transport means in an acquiring plane, and for transporting the acquired sheet in a plane substantially parallel with said acquiring plane and in a direction substantially perpendicular to said transverse direction, toward a user-directed side of the image forming apparatus, in order to discharge the sheet out of the apparatus body.

5,257,081

IMAGE FORMING DRIVE HAVING TWO COVER MODES AND A STAPLER FOR STAPLING A GROUP OF CONTENT PAGES AND A COVER PAGE

Tomokazu Kato, and Yoshihito Hirano, both of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 27, 1992, Ser. No. 858,499
Claims priority, application Japan, Apr. 22, 1991, 3-118000
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—324 **13 Claims**



1. An image forming apparatus comprising:

original feeding device which stacks a plurality of original documents and feeds them one by one to an exposure platen, said original documents including one cover page original and a plurality of content page originals;

image forming device which forms an image of the original fed to said exposure platen on a copy paper;

first paper feeder which feeds a first size copy paper to said image forming device;

second paper feeder which feeds a second size copy paper to said image forming device, said second size being smaller than said first size;

paper feed control device which operates said first paper feeder when said image forming device forms an image of said cover page original and operates said second paper feeder when said image forming device forms images of said content page originals; and

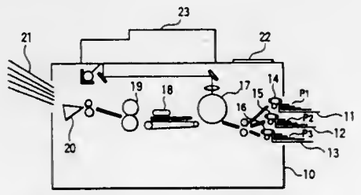
mode selector means which selects one of either a first cover mode or a second cover mode, wherein said original feeding device changes the set position of the original document on said exposure platen in accordance with the selected cover mode.

5,257,082

COPIER WITH AUTOMATIC INSERT FEED HAVING AN INTERRUPT FUNCTION

Chiharu Kobayashi, Tachikawa; Masaru Ushio, Hachioji, and Tomoya Motoyoshi, Sagamihara, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Sep. 21, 1990, Ser. No. 586,283
Claims priority, application Japan, Sep. 25, 1989, 1-246385
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—325 **3 Claims**



1. An electrophotographic copying apparatus for copying a document, the copying apparatus being capable of inserting at least one inter-sheet between two successive pages of a copy of the document to distinguish preceding pages of the copy from

subsequent pages, wherein an image on the document is not recorded on the inter-sheet, the copying apparatus comprising:

input means for presetting a position at which the inter-sheet is to be inserted in the copy of the document and presetting the number of inter-sheets to be inserted at that position;

control means for controlling the insertion of the inter-sheet by generating an insertion signal when sheets of the document preceding the preset position have been copied and by generating a restart signal when the preset number of inter-sheets have been conveyed to be inserted into the copy;

an automatic document feeder for feeding the document, sheet by sheet, to an exposure location, the automatic document feeder inhibiting feeding of a subsequent sheet of the document in response to the insertion signal and restarting feeding of the subsequent sheet of the document in response to the restart signal;

a tray exchanger for changing a copy sheet supply tray to be used in copying between a regular copy sheet tray and an inter-sheet tray, the tray exchanger changing to the inter-sheet tray in response to the insertion signal and changing to the regular copy sheet tray in response to the restart signal;

detector means for detecting the width of the inter-sheet contained in the inter-sheet tray;

means for inhibiting the insertion of the inter-sheet into the copy of the document by generating an inhibition signal when the detected width of the inter-sheet in the inter-sheet tray is not within a predetermined width range; and

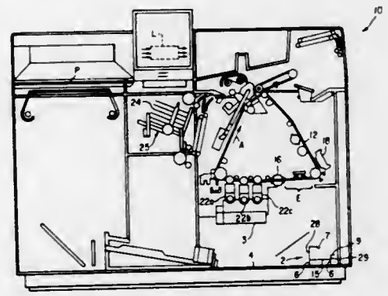
display means for displaying, in response to receiving the inhibition signal, that the width of the inter-sheet in the inter-sheet tray is outside of the predetermined width range.

5,257,083

STORAGE ASSEMBLY FOR DEVELOPMENT STATIONS IN AN ELECTROSTATOGRAPHIC REPRODUCTION APPARATUS

Hugh Chisholm, Churchville, and John F. Stoffel, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 27, 1992, Ser. No. 936,706
Int. Cl.[5] G03G *15/01*
U.S. Cl. 355—326 **10 Claims**



1. An image forming apparatus comprising:

a housing,

a removable developer station, and

a storage support assembly for temporary storage of the removable developer station,

the storage support assembly including,

base means having openings for allowing passage of debris,

support means for retaining the removable developer station removed from the base means, and

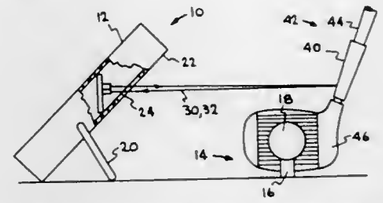
means for maintaining the base means removed from the housing.

5,257,084

GOLF SWING MEASUREMENT SYSTEM

James T. Marsh, Mission Viejo, Calif., assignor to Golf Tempo, Inc., Los Gatos, Calif.

Filed Sep. 25, 1992, Ser. No. 951,187
Int. Cl.[5] G01P *3/36;* **A63B** *69/36*
U.S. Cl. 356—28 **55 Claims**



1. A golf swing-monitoring system for measuring clubhead speed, comprising:

a first IR transmitter which transmits a first infrared (IR) beam along a predetermined line toward a tee area;

a first IR sensor for receiving the first IR beam which is reflected from a reflection means mounted to the golf club, said first IR sensor providing a first-sensor output signal indicative of the passage of the golf club through the first IR beam;

a second IR transmitter which transmits a second IR beam along a predetermined line toward the tee area, wherein said second IR beam is substantially parallel to the first IR beam;

a second IR sensor for receiving a second IR beam which is reflected from the reflection means mounted to the golf club, said second IR sensor providing a second-sensor output signal indicative of the passage of the golf club through the second IR beam;

means for detecting the presence of a second-sensor output signal followed by a first-sensor output signal;

means for measuring the difference in time between the second-sensor output signal and the following first-sensor output signal;

means for converting the difference in time to a clubhead-speed value indicative of the clubhead speed;

compensation means for adjusting the clubhead-speed value to a predetermined compensated clubhead-speed value; and

means for displaying the clubhead-speed value.

5,257,085

SPECTRALLY DISPERSIVE IMAGING LIDAR SYSTEM

Bobby L. Ulich; Duane Smith, both of Tucson, Ariz., and R. Norris Keeler, McLean, Va., assignors to Kaman Aerospace Corporation, Bloomfield, Conn.

Filed Apr. 24, 1991, Ser. No. 690,767
Int. Cl.[5] G01N *21/64, 21/65;* **G01J** *3/44*
U.S. Cl. 356—73 **59 Claims**

1. A method for remotely and non-destructively probing the spectrally, temporally and distance-dependent optical properties of a target volume using a single integrated optical sensor having multiple modes of operation including an imaging mode and a spectral analysis mode, including the steps of:

selecting a mode of operation for the optical sensor to operate in an imaging mode or a spectral analysis mode with said imaging mode including steps (a)–(e) and said spectral analysis mode including steps (f)–(i);

(a) selectively generating short pulses of light using laser transmitter means;

(b) projecting said short pulses of light toward the backscattering medium and at a target volume enveloped by the medium;

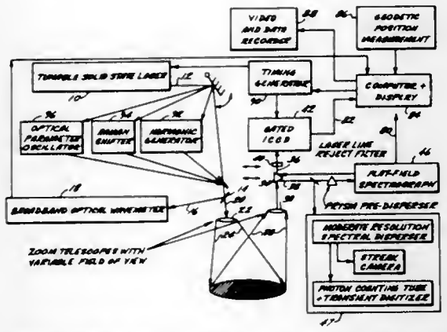
(c) receiving said pulses of light backscattered from said target volume after a time delay corresponding to the

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round-trip propagation time of said light pulses to and from said target volume using receiver means;

(d) converting said received pulses of light to a video image of said target defining a target volume image, said target volume image having an image intensity pattern associated therewith; and

(e) scanning the wavelength of the laser transmitter means to identify the wavelength-dependent differences in said image intensity pattern to thereby improve said video image of said target volume image;



(f) generating short pulses of light from laser transmitter means;

(g) projecting said generated short pulses of light toward a target volume;

(h) detecting said pulses of light backscattered from said target volume after a selected time delay using gated detector means; and

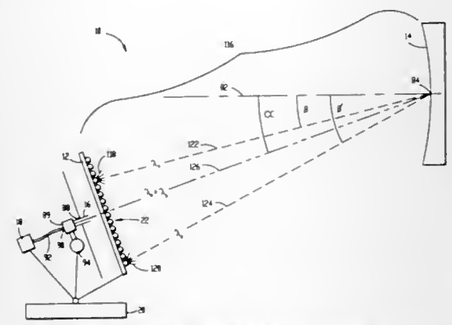
(i) spectrally analyzing said detected pulses of light in spectrometer means to create a selected spectra of said target volume.

5,257,086

OPTICAL SPECTROPHOTOMETER HAVING A MULTI-ELEMENT LIGHT SOURCE

William G. Fateley; Andrzej Rys, and Radoslaw Sobczynski, all of Manhattan, Kans., assignors to D.O.M. Associates Int'l, Manhattan, Kans.

Filed Jun. 9, 1992, Ser. No. 895,585
Int. Cl.[5] G01J *3/28, 3/10, 3/32*
U.S. Cl. 356—328 **34 Claims**



1. A spectrophotometer apparatus comprising:

an electromagnetic radiation source array having a plurality of activatable radiation source elements configured for activation in a plurality of multiplexing encodement patterns, said elements having a solid state construction;

means including a detector for detecting radiation emissions from said elements, and for producing detector signals representative thereof;

structure defining an optical pathway for directing said emissions from said array to said detecting means; and

control means including

means coupled with said array for selectively activating said elements in order to produce a plurality of sequential multiplexing encodement patterns at a pattern rate of at least one patter per second, at least certain of said encodement patterns including simultaneous activation of a number of source elements and generation of a plurality of discrete emissions having different characterizing parameters, said pathway-defining structure including means for combining said different emissions and directing the combined emissions to said detector, and

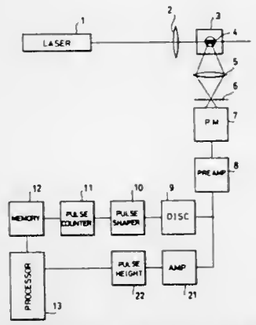
means coupled with said detecting means for receiving and processing said detector signals, including detector signals representative of said combined emission, for storing a plurality of values respectively representative of said detector signals produced by said detector during said encodement patterns, and for performing a multiplex analysis of said values in correspondence with said encodement patterns in order to determine the individual intensities of emissions from each of said elements as received by said detecting means.

5,257,087

METHOD AND APPARATUS FOR MEASURING PARTICLES IN A FLUID

Yoshiyuki Furuya, Tokyo, Japan, assignor to Kowa Company Ltd., Japan

Filed May 16, 1991, Ser. No. 701,185
Claims priority, application Japan, May 21, 1990, 2-129123
Int. Cl.[5] G01N *15/02, 15/14*
U.S. Cl. 356—336 **3 Claims**



1. A method for measuring particles in a fluid flowing in a measurement cell by irradiating the fluid containing the particles with a laser beam, detecting the laser light scattered by the particles and using the intensity of the scattered light to derive the diameter and size distribution of the particles, comprising the steps of:

determining from the value of a signal output by a photomultiplier that detects scattered light from particles whether or not a particle is a fine particle that does not exceed a prescribed value;

deriving particle diameter and size distribution by using photon counting when the particles are determined as being fine particles with a photoelectron pulse count that does not exceed a prescribed value, and by using analog processing when the particles are determined as exceeding the prescribed value; and

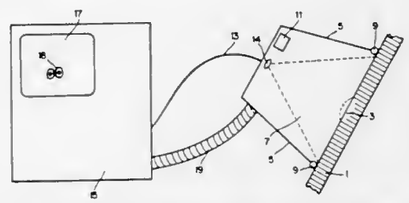
when analog processing of signals is applied, determining particle diameter by applying a threshold value which is varied in accordance with the refractive index of the fluid containing the particles.

5,257,088

APPARATUS AND METHOD FOR NONDESTRUCTIVE INSPECTION OF A VEHICLE

John Tyson, II, Wayne, and John W. Newman, Berwyn, both of Pa., assignors to Laser Technology, Inc., Norristown, Pa.

Filed Mar. 27, 1992, Ser. No. 858,416
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—353 **32 Claims**



1. Apparatus for nondestructive inspection of a vehicle, the apparatus comprising:

a) means defining a hood, the hood having an open end, the open end being closable by placement of the hood against an outside surface of the vehicle,

b) a source of coherent radiation disposed to emit said radiation from inside the hood towards the surface of the vehicle,

c) an interferometer mounted within the hood and disposed to receive radiation reflected from the surface of the vehicle, and

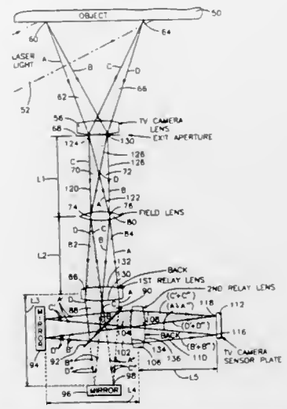
d) means for varying the pressure within the hood when the hood is positioned against the surface of the vehicle.

5,257,089

OPTICAL HEAD FOR SHEAROGRAPHY

Karl A. Stetson, Coventry, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 15, 1992, Ser. No. 898,590
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—353 **9 Claims**



1. An optical head for performing shearography on a test object illuminated by coherent light, comprising:

primary imaging means, capable of forming an input image of a predetermined region of the test object at an image plane located a predetermined primary image plane distance from said primary imaging means;

redirecting means, disposed in the path of light emitted from said primary imaging means approximately at said primary image plane distance, for providing redirected divergent light;

collimating means, disposed in the path of light emitted from said redirecting means, having a first front focal plane and a first back focal plane, for converting said redirected divergent light from said redirecting means to collimated input light;

said redirecting means redirecting substantially all the light of said input image emitted from said primary imaging means through said collimating means, thereby allowing said collimating means to emit light related to said image at said primary image plane having uniform brightness;

shearing means, located in the path of said collimated input light emitted from said collimating means, for providing collimated output light representing two laterally displaced interfered images related to said input image from said primary imaging means, said collimated output light having minimal aberrations, and said shearing means having a predetermined size;

whereby said size of said shearing means is independent of the size of the predetermined region;

focusing means, disposed in the path of said collimated output light emitted from said shearing means, having a second front focal plane and a second back focal plane, for converting said collimated output light from said shearing means to focused light; and

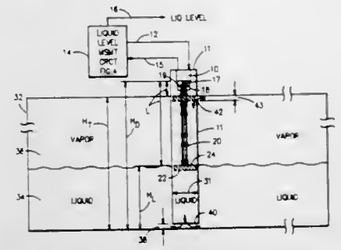
image sensing means, disposed in the path of said focused light emitted from said focusing means substantially at said back focal plane of said focusing means, for detecting an output image represented by said focused light incident thereon.

5,257,090

LASER DIODE LIQUID-LEVEL/DISTANCE MEASUREMENT

Richard A. Meinzer, and Bruce E. Zepke, both of Glastonbury, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 27, 1991, Ser. No. 800,336
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—358 **14 Claims**



1. A laser-based distance measuring device for measuring the distance to a cooperative target having predetermined highly reflective properties, comprising:

a laser assembly, having a laser with a variable optical operating frequency, emitting an output light toward the target;

collimating means, disposed in the path of the output light, for providing a collimated light, the collimated light being incident on the target and being reflected by the target back into said laser assembly;

said laser assembly also providing a feedback signal having a magnitude related to the distance from said laser assembly to the target based on coherent interference within said

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laser between light reflected from the target and light within said laser;

the collimated light from said collimating means together with the highly reflective properties of the target providing reduced speckle noise and substantially constant speckle noise floor over the travel range of the target;

laser drive means, for providing a variable laser drive signal to said laser assembly for varying the optical operating frequency of said laser; and

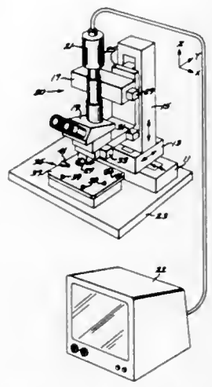
distance measurement means, responsive to said feedback signal from said laser assembly, for providing a distance signal indicative of the distance to the target.

5,257,091

OPTICAL ALIGNMENT SYSTEM FOR ALIGNING A MULTIPLE GAP TAPE HEAD ASSEMBLY

Gustavo Caicedo, Jr., Westminster, and Scott L. Hanson, Costa Mesa, both of Calif., assignors to Archive Corporation, Costa Mesa, Calif.

Filed Feb. 19, 1992, Ser. No. 837,728
Int. Cl.[5] G01B *11/14*
U.S. Cl. 356—358 **10 Claims**



1. An optical alignment system for aligning a multiple gap tape head assembly of a tape drive having fixed position locators that define a reference plane, comprising:

reference means insertable in the tape drive for defining an optical reference plane that is parallel the reference plane when the reference means is inserted in the tape drive and engaged with the fixed position locators;

imaging means for providing images of the head gaps of the multiple gap tape head assembly;

optical detection means fixedly secured to said imaging means for detecting changes in the distance between said optical detection means and said optical reference plane;

means for moving said imaging means and said optical means;

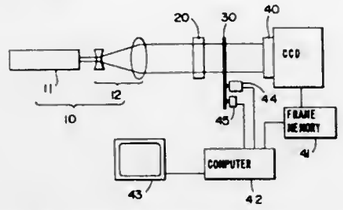
controlling means responsive to said optical detection means for controlling said moving means to maintain said optical detection means at a constant distance relative to said optical reference plane as said moving means moves said imaging means and optical detection means from one position to another, whereby said imaging means moves in a plane that is parallel to said reference plane, and misalignment of the tape head assembly is detectable from the images of the head gaps.

5,257,092

APPARATUS FOR MEASURING POLARIZATION AND BIREFRINGENCE

Masato Noguchi, and Tsuyoshi Ishikawa, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 26, 1991, Ser. No. 721,694
Claims priority, application Japan, Jun. 27, 1990, 2-170998; Jun. 27, 1990, 2-170999; Jun. 27, 1990, 2-171000
Int. Cl.[5] G01N *21/23*
U.S. Cl. 356—367 **16 Claims**



1. A polarization and birefringence measuring device, comprising:

an optical source which causes a wide polarized light beam to impinge on a specimen;

a photodetecting means for detecting a light beam, said photodetector means having picture elements in two dimensions which detects a light beam containing information about said specimen;

an analyzer which is situated in front of said photodetecting means and which is rotated to vary an amount of light which is transmitted;

means for sampling an intensity of each picture element in said photodetecting means when said analyzer is set at no less than three different angles; and

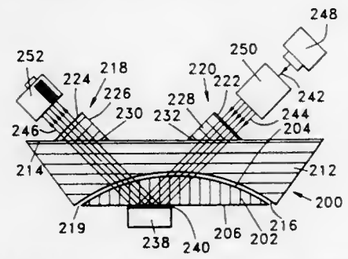
means for analyzing a polarization state of parts of said specimen corresponding to said intensity of each picture element sampled, said intensity of said light detected by said photodetecting means varying sinusoidally when said analyzer is rotated, wherein said specimen comprises a lens, and an adjusting lens is interposed between said optical source and said specimen that causes said polarized light beam to impinge on said specimen lens such that said polarized light beam emerges in the same way as said polarized light beam would in actual use.

5,257,093

APPARATUS FOR MEASURING NANOMETRIC DISTANCES EMPLOYING FRUSTRATED TOTAL INTERNAL REFLECTION

Michael Mager, San Jose, and Boris Slutsky, Palo Alto, both of Calif., assignors to Guziktechnical Enterprises, Inc., San Jose, Calif.

Filed Nov. 12, 1991, Ser. No. 791,038
Int. Cl.[5] G01B *11/14*
U.S. Cl. 356—375 **14 Claims**



1. An apparatus, employing the phenomenon of frustration of total internal reflection, for measuring nanometric distances between two objects, comprising:

a transparent annular disk having an axis of rotation, a flat surface, a concave spherical surface, a convex spherical surface, and a central opening, said flat surface being orthogonal to said axis of rotation;

an electric motor output shaft, said central opening of said transparent annular disk being mounted onto said output shaft;

a transducing head of a computer disk drive, said transducing head being positioned in close proximity to said flat surface of said transparent annular disk; and

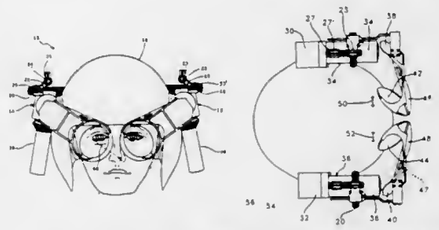
light-guiding means for manipulating light-beams, said light-guiding means including a white-light source, a beam expander, a system of lenses, and an image sensor, said white-light source being aimed at said concave spherical surface, said white-light source being followed by said beam expander, said image sensor being positioned opposite said convex spherical surface of said transparent annular disk, whereby said apparatus provides elevated measurement accuracy, high calibration resolution, and the ability to measure flight elevation and to test dynamic behavior of an actual transducing head for purposes of production and quality control.

5,257,094

HELMET MOUNTED DISPLAY SYSTEM

Joseph LaRussa, 451 Rutledge Dr., Yorktown Heights, N.Y. 10598

Filed Jul. 30, 1991, Ser. No. 738,213
Int. Cl.[5] G02B *27/10, 5/32*
U.S. Cl. 359—13 **12 Claims**



1. A wide field of view reflective composite holographic imaging element possessing optical power, comprising:

a) a curved optically transparent substrate having an outer reflection side curved to impart a desired optical power and having an inner side;

b) a first holographic optical element reflective at a first wavelength, said first holographic element comprising a planar holographic mirror when said holographic optical element is formed into a planar configuration, said first holographic optical element being adhered at a first surface to said outer reflection surface and deformed to conform to said curved outer reflection side to have said desired optical power, said first holographic optical element having an outer surface opposite said first surface; and

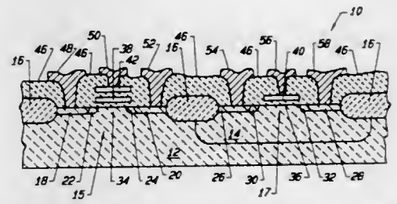
c) a second holographic optical element reflective at a second wavelength, said second wavelength being different from said first wavelength, said second holographic element comprising a planar holographic mirror when said second holographic optical element is formed into a planar configuration, said second holographic optical element being adhered to said outer surface of said first holographic optical element and deformed to conform to said curved outer surface to have said desired optical power, whereby the focal point and orientation of said deformed first and second holographic optical elements can focus images which are in registration with one another.

5,257,095

COMMON GEOMETRY HIGH VOLTAGE TOLERANT LONG CHANNEL AND HIGH SPEED SHORT CHANNEL FIELD EFFECT TRANSISTORS

Yow-Juang (Bill) Liu, San Jose, and Salvatore Cagnina, Los Altos, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 370,088, Jun. 21, 1989, abandoned, which is a continuation of Ser. No. 120,719, Nov. 5, 1987, abandoned, which is a continuation of Ser. No. 805,162, Dec. 4, 1985, abandoned. This application Apr. 19, 1990, Ser. No. 511,853
Int. Cl.[5] H01L *29/10, 29/78, 29/68*
U.S. Cl. 257—315 **17 Claims**



1. A field effect transistor geometry, including a gate structure having a gate electrode and a gate oxide layer, suitable for realizing both high-speed and high-voltage transistors on a common monolithic substrate through simultaneous fabrication of said gate electrode and said oxide layer with minimal additional fabrication steps required, said transistor geometry comprising:

a) a semiconductor substrate having a major surface, said substrate being of a first conductivity type;

b) first and second regions disposed within said substrate, adjacent the major surface thereof, and having a junction depth of less than about 0.8 micrometers, said first and second regions being spaced apart from one another by a channel region, said channel region being in a first range of lengths of approximately 0.75 microns to 1.5 microns or a second range of lengths of approximately 1.5 microns to 3.0 microns, said first and second regions being of a second conductivity type and having a doping density greater than that of said channel region;

c) third and fourth regions provided within said substrate and adjacent the major surface thereof, said third and fourth regions being of said second conductivity type, having a doping density greater than that of said first and second regions and having a junction depth substantially the same as that of said first and second regions, portions of said first and second regions being respectively associated with and interposed between said third and fourth regions such that the electric field at the substrate interface with said third and fourth regions is less than a predetermined intensity;

d) a gate structure including a gate electrode and a gate oxide layer, said gate oxide layer provided adjacent said major surface of said substrate and overlying said channel region, said gate oxide layer having a thickness of less than about 300 Angstroms;

wherein said transistor geometry defines a transistor with said first range of channel lengths suitable for operation at a predetermined bias potential difference selected from any in the range of seven (7) to thirteen (13) volts, and a transistor with said second range of channel lengths suitable for operation at a predetermined bias potential difference selected from any in the range from thirteen (13) to twenty-one (21) volts.

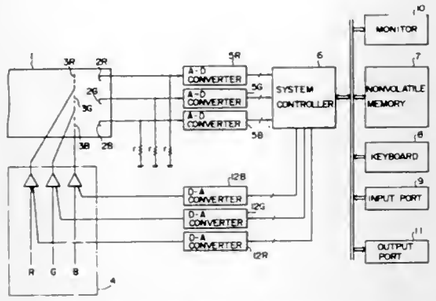
VOL 1155 ISS 4 OCT 26 1993 UMI

5,257,096

MONITOR TELEVISION RECEIVER

Junichi Oshima, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 11, 1991, Ser. No. 728,278
Claims priority, application Japan, Jul. 13, 1990, 2-184227
Int. Cl.[5] H04N 17/02
U.S. Cl. 358—10 2 Claims



1. Apparatus for displaying or supplying a video output, comprising:

a color television monitor including a cathode ray tube;

current measuring means for measuring the cathode currents of electron guns for three primary colors in said cathode-ray tube;

memory means for storing at least coefficients to form functional expressions relative to the cathode currents and the luminances in said color television monitor, and also storing chromaticity points of three-color fluorescers therein;

input means for receiving arbitrary color temperature data and luminance data from external sources;

arithmetic means for calculating, in accordance with the luminance data and the color temperature data obtained from said input means and also with the chromaticity points of said three-color fluorescers stored previously in said memory means, the luminances of said three-color fluorescers corresponding to the input luminance data and color temperature data and for calculating, in accordance with the luminances of said three-color fluorescers and the coefficients stored in said memory means, the cathode currents of said three-color electron guns corresponding to the color temperature data and the luminance data obtained from said input means; and

control means for controlling a CRT drive circuit in such a manner that the cathode currents measured by said current measuring means are rendered coincident with the cathode currents calculated by said arithmetic means;

whereby white balance can be achieved without the aid of an optical sensor.

5,257,097

METHOD AND APPARATUS FOR SELECTIVE INTERCEPTION OF A GRAPHICS RENDERING OPERATION FOR EFFECTING IMAGE DATA MODIFICATION

Richard A. Pineau, North Andover; Timothy K. Rodgers, Concord, and Mitchell S. Allen, Billerica, all of Mass., assignors to Eastman Kodak Company, Rochester, N.Y.

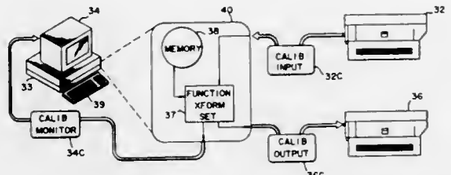
Filed Sep. 27, 1991, Ser. No. 767,282
Int. Cl.[5] H04N 1/46
U.S. Cl. 358—500 13 Claims

1. In a color imaging system, a method for modification of image data representative of a selected color image to be rendered on an image reproduction means by one or more graphics rendering routines, comprising the steps of:

implementing a system initialization program executable for installing first and second resources;

executing the system initialization program to install the first and second resources,

the first resource being executable for intercepting process control otherwise directed to the graphics rendering routine and for redirecting the process control to the second resource, the second resource being executable for determining whether or not an invocation of the graphics rendering routine fulfills predetermined criteia;



upon an invocation of the graphics rendering routine, executing the first and second resources respectively to intercept the process control and to perform said determination;

in response to the criteria being met, processing selected image data to provide modified image data;

directing process control to the graphics rendering routine; and

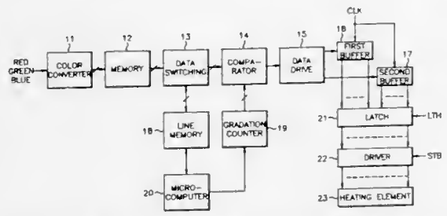
rendering at least the modified image data on the image reproduction means.

5,257,098

PRINTING METHOD OF COLOR VIDEO PRINTER

Jae-Gyun Lee, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jan. 2, 1992, Ser. No. 815,514
Claims priority, application Rep. of Korea, Feb. 13, 1991, 1991-2393
Int. Cl.[5] H04N 1/23
U.S. Cl. 358—500 8 Claims



3. A thermal print apparatus having a thermal head assembly comprising an array of thermal elements for printing a video image on a printable medium, comprising:

means for receiving video signals on a line-by-line basis;

memory means having a plurality of addresses for storing a corresponding plurality of gradation levels representative of density levels of single image lines of video signals received on a line-by-line basis;

processor means for searching for a maximum value of gradation levels of each image line of said video signals to provide print gradation data representative of a printing time for each image line of said video signals by initializing an address designation variable within said plurality of addresses storing corresponding gradation levels of each line of said video signals, setting a designated gradation level of said address designation variable, and comparing the gradation levels of each of said plurality of addresses with said designated gradation level to detect the maximum value of gradation levels of each image line of said video signals;

comparator means for generating printing signals in dependence upon comparison of each image line of said video signals with corresponding print gradation data; and

driver means for enabling transmission of said printing signals and for driving the thermal head assembly to print symbols representative of said printing signals on a line-by-line basis in dependence upon said print gradation data corresponding to each image line of said video signals.

6. A thermal print apparatus having a thermal head assembly for printing a video image on a printable medium, comprising:

means for receiving video signals on a line-by-line basis;

memory means having a plurality of addresses for storing a plurality of corresponding gradation levels representative of density levels of single image lines of said video signals on a line-by-line basis;

means for counting a number of gradation levels of each print image line of said video signals stored in said plurality of addresses, for searching for a maximum value of gradation levels of each print line to provide print gradation data by initializing an address designation variable within said plurality of addresses, setting a designated gradation level of said address designation variable, and successively comparing the gradation levels of each of said plurality of addresses with said designated gradation level to detect the maximum value of gradation levels of a print image line of said video signals;

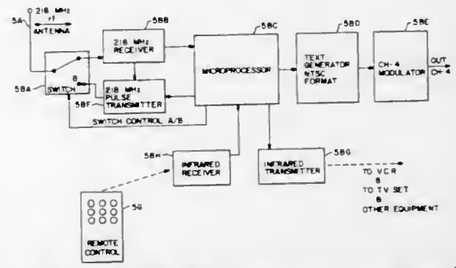
means for driving said video signals to the thermal head assembly to print symbols representative of said video signals on a line-by-line basis during a printing time period in dependence upon said print gradation data corresponding to each image line of said video signals.

5,257,099

CENTRAL DATA PROCESSING STATION FOR SATELLITE COMMUNICATION WITH LOCAL AREA AUDIENCE RESPONSE STATION

Fernando Morales-Garza, Monterrey, Mexico, assignor to TV Answer, Inc., Reston, Va.

Continuation of Ser. No. 390,073, Aug. 7, 1989, abandoned. This application Jul. 26, 1991, Ser. No. 741,249
The portion of the term of this patent subsequent to Mar. 31, 2009, has been disclaimed.
Int. Cl.[5] H04B 17/00
U.S. Cl. 358—84 4 Claims



1. In an audience response communication system comprising a satellite communication channel, a set of local area repeater stations and a set of local area audience response stations processed by the repeater stations, the combination comprising:

a central audience response processing station facility for communicating interactively over said satellite communication channel with individual ones of a plurality of widely dispersed local area audience response stations for processing interactively data derived from the individual audience response stations, having,

data processing means responsive to interactive audience communications received from said network of said audience response stations from said plurality of local area repeater stations, and

communication analysis means for processing received audience communications to extract and disburse interactive data contained in said audience responses,

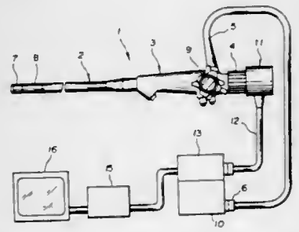
wherein said communication analysis means processes audience response "beep" signals superimposed on a carrier frequency in the order of 218 MHz.

5,257,100

APPARATUS FOR REDUCING NETWORK PATTERNS FROM THE IMAGE OF A FIBER SCOPE

Shinichiro Hattori, Akishima, and Yuji Ikuno, Ome, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 24, 1991, Ser. No. 765,081
Claims priority, application Japan, Sep. 28, 1990, 2-259219
Int. Cl.[5] H04N 7/18; A61B 1/04
U.S. Cl. 358—98 22 Claims



1. A network pattern reducing apparatus comprising:

an electronic endoscope comprising an elongate insertable section, an illuminating light emitting means emitting an illuminating light from a tip section of said insertable section, an objective optical system provided in the tip section of said insertable section, an image guide inserted through said insertable section, having one end surface arranged in a focal plane of said objective optical system and formed of a fiber bundle transmitting an optical image formed on said one end surface to the other end surface and an imaging means having the optical image transmitted to said other end surface arranged in the image forming position of said other end surface, photoelectrically converting it and producing an image signal corresponding to said optical image and the pattern of said other end surface;

a region separating means separating an image formed of said image signal into a representative region representing a light transmitting region included in said light transmitting section of each fiber forming said fiber bundle and a non-representative region other than this representative region; and

a replacing means for replacing the image data of said non-representative region in the image formed by said image signal with other image data,

wherein each fiber forming said fiber bundle has said light transmitting section provided with a characteristic of transmitting a light incident upon one end surface to the other end surface and a cover member covering said light transmitting section on the peripheral side surface and formed of a material of a refractive index different form the refractive index of said light transmitting section.

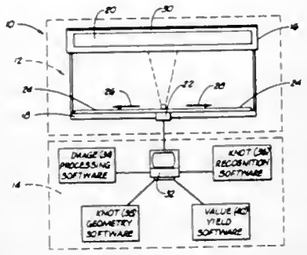
VOL 1155 ISS 4 OCT 26 1993 UMI

5,257,101

APPARATUS AND METHOD FOR SELECTING A LOG ORIENTATION AND PATTERN FOR SAWING

Samuel C. Lee, Norman, Okla., assignor to Board of Regents of the University of OK, Norman, Okla.

Filed Jun. 1, 1992, Ser. No. 891,350
Int. Cl.[5] H04N *7/18*
U.S. Cl. 358—101 **17 Claims**



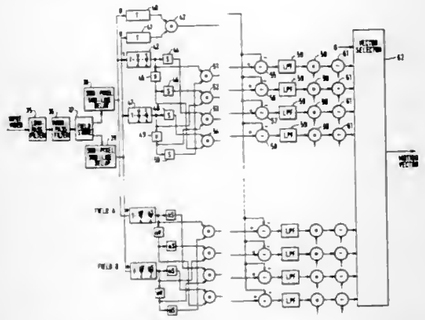
1. An apparatus for determining location, size and shape of knots in a log to be cut into lumber products, the apparatus comprising:
- a log holder adapted to display the surface of a log to be cut into boards;
- a light source adapted to illuminate the log;
- a camera positioned to produce optical images of the surface of the log;
- a computer connected to the camera and adapted to receive the optical images of the surface of the log from the camera; and
- computer means, operable within the computer, for creating from the optical images of the outer surface of the log a three-dimensional computer model of the log with locations, sizes and shapes of knots in the log.

5,257,102

TELEVISION STANDARDS CONVERTERS USING MOTION VECTORS CORRESPONDING TO CORRELATION OF HORIZONTAL AND VERTICAL PIXEL OFFSETS

James H. Wilkinson, Tadley, United Kingdom, assignor to Sony United Kingdom Limited, Staines, United Kingdom

Filed Jan. 15, 1992, Ser. No. 820,768
Claims priority, application United Kingdom, Feb. 4, 1991, 9102333
Int. Cl.[5] H04N *7/01*
U.S. Cl. 358—140 **11 Claims**



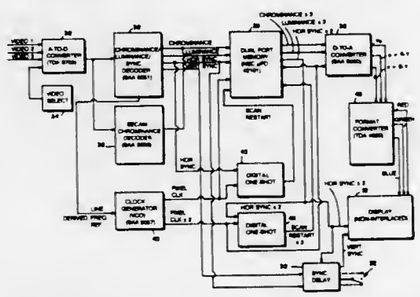
1. A television standards converter for converting an input digital video signal from one television standard to another, the standards converter comprising:
- a first low-pass filter for filtering said input video signal;
- a high-pass filter for filtering said low-pass filtered input video signal horizontally and vertically;
- a plurality of parallel processing channels comprising respective means for determining pixel by pixel of the high-pass filtered video signal the correlation magnitudes for a range of horizontal and vertical pixel offsets;
- respective second low-pass filters for filtering the resulting said correlation magnitudes;
- means for determining for each pixel of said video signal the motion vector corresponding to the maximum correlation magnitude; and a temporal interpolator for deriving interpolated fields or frames by combining sample values offset by said motion vectors.

5,257,103

METHOD AND APPARATUS FOR DEINTERLACING VIDEO INPUTS

James H. Vogeley, Yorktown; Garth S. Jones, Virginia Beach; Kenneth Kosin, Hampton, and Stephen S. Trani, Virginia Beach, all of Va., assignors to nView Corporation, Newport News, Va.

Filed Feb. 5, 1992, Ser. No. 830,409
Int. Cl.[5] H04N *7/01*
U.S. Cl. 358—140 **29 Claims**



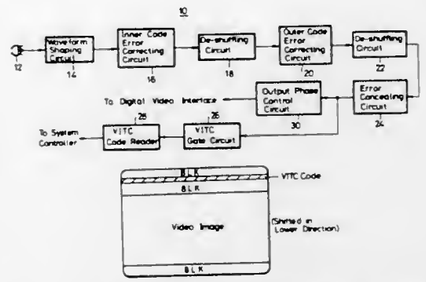
1. An apparatus for converting at least one interlaced video input to an output for use in a non interlaced input display device, said apparatus comprising:
- decoder means, responsive to said video input, for providing a vertical synchronization signal output to said display device, and for providing digitized luminance and chrominance signal outputs, a horizontal synchronization signal output, and as line derived frequency reference;
- clock means, responsive to said line derived frequency reference, to said horizontal synchronization signal output from said decoder means, and to a twice horizontal synchronization signal output, for providing a pixel clock output, a twice pixel clock output, a scan restart output and a twice scan restart output;
- dual port memory means, responsive to said pixel clock output and said scan restart output, for temporarily storing a line of data including said digitized luminance, chrominance, and horizontal synchronization signal outputs from said decoder means, where said storing is synchronized with said scan restart output, and for twice reading out as an output said stored digitized luminance, chrominance and horizontal synchronization signal outputs where said reading out is synchronized with said twice scan restart output, said twice horizontal synchronization signal output supplied to said display device and fedback to said clock means; and
- converter means, responsive to said twice pixel clock output and said twice luminance and chrominance output signals, for providing red, green, blue video output to said display device input.

5,257,104

VIDEO SIGNAL PROCESSING APPARATUS

Toshiya Asai, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed Apr. 6, 1992, Ser. No. 863,963
Claims priority, application Japan, Apr. 9, 1991, 3-076537
Int. Cl.[5] H04N *7/04, 7/08, 5/04*
U.S. Cl. 358—147 **6 Claims**



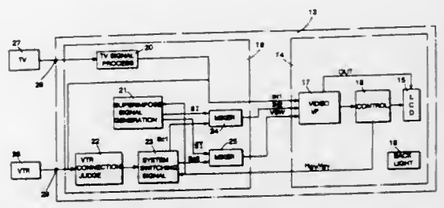
1. A video signal processing apparatus for processing an input video signal, said video signal including ancillary data inserted into a predetermined period within a vertical blanking period, comprising:
- a control circuit for controlling an output phase of said video signal, said control circuit including a variable phase shifting circuit for phase-shifting said video signal by a variable phase amount a fixed phase shifting circuit for phase-shifting said video signal by a constant amount, and switching means for providing a switched output video signal switching between an output video signal from said variable phase shifting circuit and an output video signal from said fixed phase shifting circuit, whereby said switched output video signal includes ancillary data output from said fixed phase shifting circuit regardless of the output phase amount.

5,257,105

DISPLAY DRIVING METHOD AND APPARATUS WITH NOISE SIGNAL PROCESSING

Masaru Tanaka; Masanobu Okano; Katsuya Mizukata, all of Tenri, and Makoto Takeda, Nara, all of Japan, assignors to Sharp Kabushiki Kaishi, Osaka, Japan

Continuation of Ser. No. 589,649, Sep. 28, 1990, abandoned. This application Nov. 30, 1992, Ser. No. 983,293
Claims priority, application Japan, Sep. 29, 1989, 1-256289
Int. Cl.[5] A04N *5/262*
U.S. Cl. 358—167 **21 Claims**



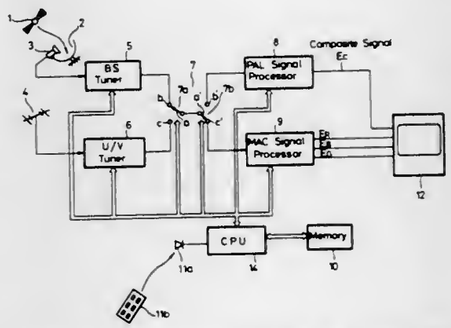
1. A display apparatus comprising:
- signal processing means for processing video signals from at least an image reproducing apparatus;
- display means for displaying images based on said processed video signals;
- wherein said signal processing means comprises judging means for judging whether said signal processing means is receiving video signals from said image reproducing apparatus or TV signals; and,
- wherein said display means comprises signal replacing means for replacing a predetermined portion of said video signals with a signal having a predetermined level, in response to a signal received from said judging means.

5,257,106

TELEVISION SIGNAL RECEIVER WITH MEMORY FOR STORING DATA ON DIFFERENT TELEVISION SYSTEM

Kazuhisa Maruoka, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 13, 1991, Ser. No. 744,251
Claims priority, application Japan, Aug. 28, 1990, 2-225758
Int. Cl.[5] H04N *5/50, 5/262, 5/267*
U.S. Cl. 358—191.1 **1 Claim**



1. A television signal receiver for receiving ordinary television signals and high-definition television signals in a plurality of available channels, said television signal receiver comprising:
- memory means for storing ID data indicating whether each of the plurality of channels contains an ordinary television signal of a high-definition television signal;
- selector means for selecting an ordinary or high-definition television signal one at a time;
- first processing means connected to said selector means for processing ordinary television signals; second processing means connected to said selector means for processing high-definition television signals; and
- control means connected to said memory means and to said selector means for controlling said memory means to read the ID data with respect to an indicated channel and for controlling said selector means to connect an ordinary television signal to said first processing means or a high-definition television signal to said second processing means based on the data read from said memory means, and wherein said control means further comprises means for monitoring a signal from said first processing means and for monitoring a signal from said second processing means and for rewriting the ID data stored in said memory means based on the monitored signals.

5,257,107

DIGITAL SIGNAL RECORDING SYSTEM FOR RECORDING DIGITAL SIGNALS ON VIDEO TAPE

Seong-ha Hwang, Suwon, and Seong-do Lee, Seoul, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyunggi, Rep. of Korea

Filed Dec. 28, 1990, Ser. No. 634,556
Int. Cl.[5] H04N *9/79*
U.S. Cl. 358—310 **5 Claims**

1. A digital signal recording system comprising:
- an A/D converter for converting NTSC composite analog signals into digital signals:

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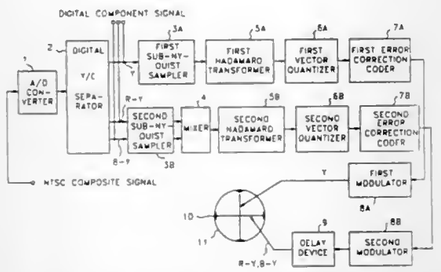
a Y/C separator for separating a luminance signal and first and second chrominance difference signals from the digital output of the A/D converter;

first and second sub-Nyquist samplers for compressing a data transmission bit rate of the luminance signal and the first and second chrominance difference signals output from the Y/C separator;

a mixer for arranging the first and second chrominance difference signals compressed and output from the second sub-Nyquist sampler in alternating sequence with each other;

first and second Hadamard transformers for further compressing the luminance signal and the first and second chrominance signals respectively output from the first sub-Nyquist sampler and the mixer;

first and second vector quantizers for classifying data components transformed in the first and second Hadamard



transformers into a plurality of groups and for reducing a number of bits by a predetermined bit by two-dimensional vector quantization of each of the groups;

first and second error correction codes for adding an error correction bit using a Reed-Solomon code to the output of the first and the second vector quantizers, and for outputting data having a predetermined transmission bit rate with respect to each of the channels;

first and second modulators for converting 8-bit data output from the first and the second error correction codes into 10-bit data by using an 8–10 block code system;

a delay device for delaying the first and second chrominance difference signals output from the second modulator for a predetermined time; and

a head drum for recording the luminance signal and the first and second chrominance difference signals of one frame output from the second modulator and the delay device, respectively, on eight tracks of the tape with four heads.

5,257,108

VIDEO SIGNAL PROCESSING CIRCUIT FOR IMPROVING CONTRAST FOR AN LCD DISPLAY

Koji Muraoka, 1-17-403, Goryo 3-Chome, Daito-shi, Osaka, Japan, assignor to Koji Muraoka, Daito, Japan

Filed Aug. 5, 1991, Ser. No. 740,169

Claims priority, application Japan, Aug. 6, 1990, 2-209620; Aug. 31, 1990, 2-231671; Apr. 16, 1991, 3-112503

Int. Cl.[5] H04N *5/16*

U.S. Cl. 358—164 **3 Claims**

1. A video signal process circuit, including at least a luminance signal comprising:

a black stretching circuit for stretching the black level of said video signal;

a white stretching circuit for stretching the white level of said video signal;

a circuit for detecting an average picture level of said video signal;

control means for controlling stretching of the black and white level of said video signal by said black stretching circuit and white stretching circuit according to the average picture level of said video signal; and

wherein said control means comprises:

means for driving said white stretching circuit when said average picture level is higher than a first predetermined value;

means for driving said black stretching circuit when said average picture level is lower than a second predetermined value; and

means for driving both the while and black stretching circuits when said average picture level is between said first and second predetermined values.

2. A video signal process circuit, including at least a luminance signal comprising:

a black stretching circuit for stretching the black level of said video signal;

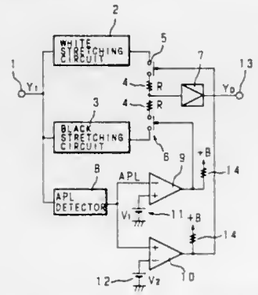
a white stretching circuit for stretching the white level of said video signal;

a circuit for detecting an average picture level of said video signal;

control means for controlling stretching of the black and white level of said video signal by said black stretching circuit and white stretching circuit according to the average picture level of said video signal; and

further comprising:

means for controlling the magnitude of a gain applied to said video signal so as to produce an output signal



having an extended dynamic range, which applies a smaller gain when only the white or black level of said video signal is stretched according to said average picture level than when both the white level and the black level of said video signal is stretched according to said average picture level.

3. A video signal process circuit for processing a color video signal at least including a luminance signal, comprising:

an input terminal for receiving said luminance signal;

a detecting circuit connected to said input terminal, for detecting an average picture level of said luminance signal;

a correcting circuit connected to said input terminal in parallel with said detecting circuit to receive said luminance signal and also connected to receive an output signal from said detecting circuit, for correcting the tone of said color video signal by stretching only the black level of said luminance signal in a first case where the detected average picture level is relatively low, by stretching only the white level of said luminance signal in a second case where said detected average picture level is relatively high, and by stretching both the black and white levels of said luminance signal in a third case where said detected average picture level is medium; and

color gain control means receiving the output of said tone correction circuit, for applying a larger gain to said color video signal in said first case or said second case than in said third case.

5,257,109

MAGNETIC RECORDING AND REPRODUCING APPARATUS

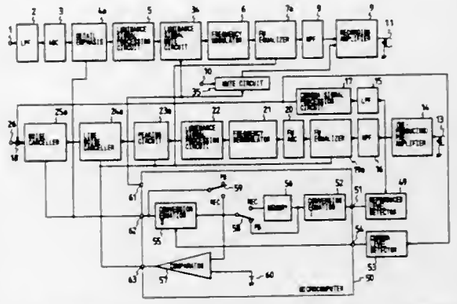
Tokuichi Minakawa, Tokyo, Japan, assignor to Akai Electric Co., Ltd., Tokyo, Japan

Filed Jun. 28, 1991, Ser. No. 721,349

Claims priority, application Japan, Jul. 2, 1990, 2-175131; Jul. 4, 1990, 2-176593; Jul. 11, 1990, 2-183198; Jul. 12, 1990, 2-184918; Jul. 23, 1990, 2-194613

Int. Cl.[5] H04N *9/79*

U.S. Cl. 358—327 **2 Claims**



1. A magnetic recording/reproducing apparatus in which a luminance signal of a video signal to be recorded is subjected to frequency modulation and then to single-sideband recording and, when reproducing a recorded video signal, a frequency-modulated luminance signal of a reproduced video signal is frequency-demodulated to obtain a luminance signal, said apparatus comprising:

a detail emphasis circuit for receiving a luminance signal of a video signal to be recorded and for providing an output signal in which a small-level signal component of a high-frequency component of said luminance signal is emphasized;

a frequency modulator for frequency modulating said output signal of said detail emphasis circuit to output a frequency modulated luminance signal;

a recording system FM equalizer, receiving said output signal of said frequency modulator, for providing an output signal in which low frequencies of the frequency-modulated luminance signal are boosted;

reproducing means for reproducing a luminance signal of a video signal recorded on a recording medium to provide a reproduced frequency-modulated luminance signal;

a reproducing system FM equalizer, receiving said reproduced frequency modulated luminance signal, for providing an output signal in which high frequencies of the reproduced frequency-modulated luminance signal are boosted;

a frequency demodulator for frequency demodulating said output signal of said reproducing system FM equalizer to provide a frequency demodulated luminance signal;

a peaking circuit for providing an output signal in which high frequencies of said frequency-demodulated luminance signal are boosted;

a line noise canceler, receiving said output signal from said peaking circuit, for (i) providing a delayed signal constituting said output signal from said peaking circuit delayed for a single horizontal scanning period, (ii) subtracting the delayed signal from a non-delayed signal constituting said output signal from said peaking circuit which is non-delayed, to provide a first substraction result signal, (iii) extracting only a small-level signal from the first subtraction result signal, the small-level signal constituting a noise component in said non-delayed signal, and (iv) subtracting the small-level signal from said non-delayed signal to output a luminance signal having said noise component canceled therefrom;

a noise canceler, receiving said luminance signal output by said line noise canceler, for providing a first signal comprising high-frequency components containing much noise extracted from said luminance signal output from said line noise canceler and a second signal in which high-frequency components whose levels are greater than a predetermined level are removed from said first signal, and subtracting said second signal from the luminance signal output by said line noise canceler to provide a second subtraction result signal;

a reproduced level detector, receiving said reproduced luminance signal from said reproducing means, for detecting a level of said reproduced luminance signal and outputting a signal indicating said level;

a memory for storing said signal-indicating said level output by said detector; and

control means (a) operable in a pre-standard recording mode to cause (i) a reference video signal to be recorded in advance on a recording medium, (ii) said reproducing means to reproduce a luminance signal of said reference video signal to provide a reproduced reference signal, (iii) said reproduced level detector to detect a level of said reproduced reference signal to provide a first indication representing a level of the reproduced reference signal to said memory to be stored therein and (iv) said first indication stored in said memory to be provided to said detail emphasis circuit and said recording system FM equalizer, whereby an amount of emphasis of said detail emphasis circuit and an amount of equalization of said recording system FM equalizer are controlled during a standard recording mode in accordance with said first indication of said level, and (b) operable in a standard reproducing mode to cause (i) said reproduced level detector to detect a level of said reproduced frequency modulated luminance signal to provide a second indication representing a level of said reproduced frequency modulating luminance signal to be provided to said line noise canceler, said noise canceler and one of said reproducing system FM equalizer and said peaking circuit, whereby an amount of cancellation of said line noise canceler, an amount of cancellation of said noise canceler and one of an amount of equalization of said reproducing system FM equalizer and a peaking amount of said peaking circuit are respectively controlled during said standard reproducing mode in accordance with said second indication.

5,257,110

IMAGE INFORMATION TRANSMISSION SYSTEM

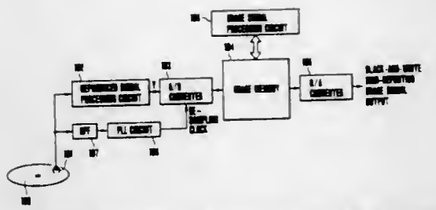
Kazuhito Ohashi, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 18, 1991, Ser. No. 794,494

Claims priority, application Japan, Nov. 22, 1990, 2-319497; Nov. 22, 1990, 2-319498; Nov. 22, 1990, 2-319499; Nov. 22, 1990, 2-319500

Int. Cl.[5] H04N *5/95*

U.S. Cl. 358—339 **26 Claims**



1. An image information transmission system for transmitting image information, comprising:

(A) digital-image-data forming means for receiving a trans-

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mitted analog image signal, sampling the received analog image signal, and forming digital image data;

(B) transmission-path-characteristic setting means for setting a transmission-path characteristic by performing discrete Fourier transform operations on data which constitute a predetermined part of the digital image data formed by said digital-image-data forming means; and

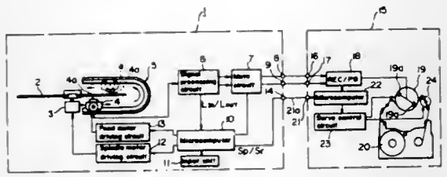
(C) waveform equalization correcting filter means for applying waveform equalization correction processing to the digital image data formed by said digital-image-data forming means, in accordance with the transmission-path characteristic set by said transmission-path-characteristic setting means.

5,257,111

CONTINUOUS BOTH-SIDE PLAYBACK TYPE VIDEO DISC APPARATUS

Shinji Kakuyama, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 2, 1991, Ser. No. 679,314
Claims priority, application Japan, Apr. 6, 1990, 2-91504
Int. Cl.[5] G11B *7/00*
U.S. Cl. 358—342 **4 Claims**



1. Apparatus for effecting playback of both sides of a video disc without turning the disc over and for generating in response to the playback recording signals for recording on an external recorder, wherein the disc has a lead-out signal recorded on a first side thereof and a lead-in signal recorded on second side thereof and wherein the apparatus comprises:

signal read means for reading from the video disc signals including the lead-out and lead-in signals;

a feed mechanism for moving the signal read means relative to the disc to enable the signal read means to read signals from the first and second sides of the disc in sequence;

an external command signal generator for generating an external command signal; and

an external command signal output terminal for supplying the external command signal to the external recorder;

the external command signal including:

a pause signal for effecting a pause in the recording by the external recorder generated in response to reading out of the lead-out signal on the first side while the feed mechanism moves the signal read means to the second side; and

a pause release signal generated in response to reading out of the lead-in signal on the second side to restart the recording by the external recorder.

5,257,112

FACSIMILE MAIL SYSTEM WITH MAIL CENTER EQUIPMENT

Akihiro Okada, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 11, 1992, Ser. No. 929,170
Claims priority, application Japan, Aug. 14, 1991, 3-204490
Int. Cl.[5] H04N *1/32*
U.S. Cl. 358—402 **6 Claims**

1. A facsimile mail system having mail center equipment, a plurality of telephone sets connected to said mail center equipment via lines and a telephone exchange, and a plurality of facsimile machines each connected to said respective telephone sets, said facsimile mail system comprising:

means for setting beforehand distribution condition information for facsimile information received per calling line;

first storage means for storing said distribution condition information;

means for recognizing a calling line;

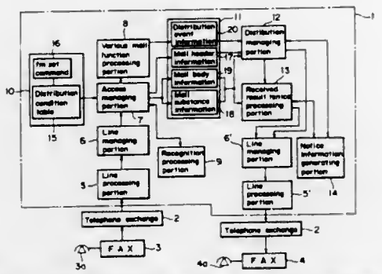
push-button signal recognizing means for recognizing push-button signal designation made by a telephone set;

means for making automatic transition to optical mark reader sheet mode when said push-button signal recognizing means does not recognize any push-button signal designation within a predetermined time;

recognition processing means for performing optical mark reader sheet recognition processing;

receiving means for receiving said facsimile information;

judging means for checking to see if, with said facsimile information received in full, the first page that arrives is an optical mark reader sheet;



reading means for reading said distribution condition information stored in said first storage means based on said calling line if said judging means has found that the first page is not an optical mark reader sheet;

means for distributing said facsimile information received by said receiving means in accordance with said distribution condition information read by said reading means;

means for transmitting, when said push-button signal recognizing means recognizes push-button signal-based designation, said facsimile information received by said receiving means to each appropriate destination according to the instructions designated by the push-button signal; and

means for transmitting, when said judging means finds that the first page of said facsimile information received by said receiving means is an optical mark reader sheet, said facsimile information to each appropriate destination according to the instructions of said optical mark reader sheet.

5,257,113

VIDEO MIXING TECHNIQUE USING JPEG COMPRESSED DATA

Mon-Song Chen, Katonah, and Zon-Yin Shae, South Salem, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 20, 1991, Ser. No. 763,103
Int. Cl.[5] H04N *1/41, 4/415*
U.S. Cl. 358—426 **8 Claims**

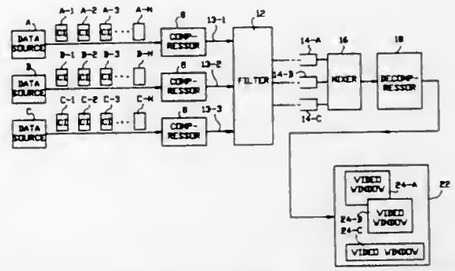
1. A method of displaying a plurality of video windows, on a display screen, with each video window being generated from a corresponding stream of image data from a unique data source, said method comprising:

(a) dividing each said stream of image data into coding intervals, each of said coding intervals having image data for a corresponding portion of a corresponding one of said windows, with each window being generated from a unique source;

(b) compressing each of said coding intervals of image data so as to produce a first set of compressed data for each of said coding intervals;

(c) mixing each said first set of compressed data generated from multiple sources to generate at least one second set

of compressed data for each said corresponding portion to be displayed on said display screen; and



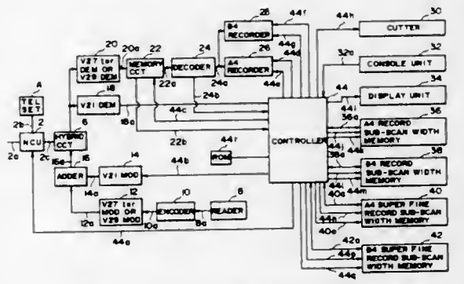
(d) decompressing each second set of data to generate pixel data for each said corresponding portion to be displayed on said display screen.

5,257,114

IMAGE COMMUNICATION APPARATUS WITH ROLLED RECORD SHEET CUTTER

Takehiro Yoshida, Tokyo, and Satoshi Wada, Atsugi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 3, 1991, Ser. No. 695,401
Claims priority, application Japan, May 10, 1990, 2-118669
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—448 **13 Claims**



1. An image communication apparatus comprising:

means for recording an image on a rolled record sheet;

means for cutting said record sheet;

means for detecting a length of a received image;

means for setting a length for a predetermined size; and

control means for comparing the length for the predetermined size set by said setting means and the length of the received image detected by said detection means to control said cutting means in accordance with the comparison results

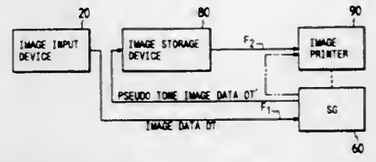
wherein said control means cuts said record sheet to the predetermined size when the length of the received image is substantially equal to the length for the predetermined size and cuts the record sheet to a non-predetermined size having the length determined by the length detected by said detection means when the length of said detection means and the length for the predetermined size are different.

5,257,115

IMAGE RECORDING APPARATUS USING PSEUDO TONE GENERATED IMAGES

Hiroshi Takayanagi, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 10, 1990, Ser. No. 595,614
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—455 **10 Claims**



1. An image recording apparatus, comprising:

an image input means for reading-in graphic information and for outputting the read-in graphic information as multi-tone image data;

a pseudo tone generating means, having an image output portion, for reducing the number of tones in said multi-tone image data from said image input means by processing a group of said multi-tone image data to produce pseudo tone image data; and

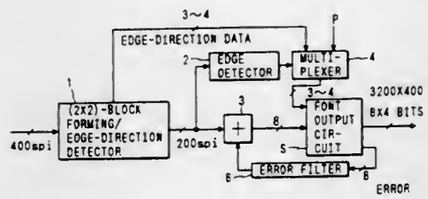
an image printing means, having an image input portion, for printing the pseudo tone image data, said pseudo tone generating means being incorporated in said image printing means.

5,257,116

HIGH DEFINITION IMAGE GENERATING SYSTEM FOR IMAGE PROCESSING APPARATUS

Yuzuru Suzuki, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Dec. 24, 1990, Ser. No. 631,683
Claims priority, application Japan, Dec. 25, 1990, 1-335747
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—465 **9 Claims**



1. A high definition image generating system comprising:

block forming means for forming as one block a plurality of adjacent pixels having multi-level density data and for calculating a density average value of the block, each pixel being subdivided into minute pixels;

maximizing means for selecting a maximum threshold value based on a comparison of said density average value of the block and a predetermined density threshold value;

edge-direction detecting means for calculating an edge-direction value for said block by comparing the density data for each pixel of the block with said maximum threshold value;

storage means for storing font patterns for each of the minute pixels and said predetermined density threshold value, said font patterns corresponding to said edge-direction value contained in said block; and

output means for selecting a font pattern stored in said storage means based on the edge-direction value of said edge-direction detecting means and for outputting density out-

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put data of each of said minute pixels of the selected font pattern.

5,257,117

COMPUTER-FACSIMILE SYSTEM HAVING SEPARATELY A SENDING DEVICE AND A RECEIVING DEVICE

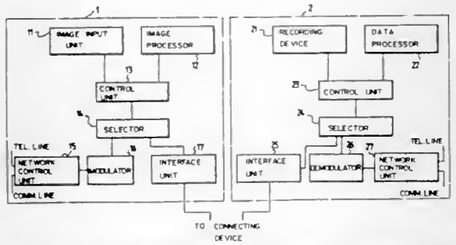
Seung I. Kang, Gangnam; Joon W. Lee, Songpa, and Yong W. Kim, Migum, all of Rep. of Korea, assignors to Sindo Ricoh Co., Ltd., Seoul, Rep. of Korea

Filed Oct. 15, 1991, Ser. No. 778,465

Claims priority, application Rep. of Korea, Oct. 15, 1990, 1990-16398

Int. Cl.[5] H04N *1/32*

U.S. Cl. 358—468 **2 Claims**



1. A modular computer-facsimile system comprising a modular sending device, a modular receiving device, and a connecting device:

(a) said modular sending device comprising:

an image input unit for scanning an original document and converting the document into image data;

an image processor compressing and encoding the image data inputted from the image input unit;

sending device control and selection means comprising a CPU (Central Processing Unit) chip connected to the image input unit and the image processor;

a modulator connected to the control and selection means, for modulating the encoded image data to produce a modulated signal;

a network control unit connected to the modulator, for outputting the modulated signal to a remote facsimile through a communication line; and

a sending interface unit connected to the sending device control and selection means, for transmitting the encoded image data to said connecting device or said receiving device, said sending control and selection means deciding to send the encoded image data to either said modulator or said sending interface unit;

(b) said modular receiving device comprising:

recording means;

a data processor for regenerating the encoded image data into image data for recording;

receiving device control and selection means comprising a CPU chip connected to the recording means and the data processor, for deciding to receive the encoded image data from either a demodulator or a receiving interface unit,

the receiving interface unit connected to the receiving device control and selection means, for receiving the encoded image data from the connecting device or the sending device;

a demodulator connected to the receiving device control and selection means, for demodulating the modulated signal for the encoded image data through the communication line from a remote facsimile device; and

(c) said connecting device detachably connected to the sending device and the receiving device, comprising:

a sending device interface unit connected to the sending interface unit of the sending device for forming a first data path;

a receiving device interface unit connected to the receiving interface unit of the receiving device for forming a second data path;

a switching circuit connected to the sending device interface unit and the receiving device interface unit, for switching selectively between the data paths according to a control signal;

a controller connected to the switching circuit;

memory means connected to the switching circuit;

buffer means connected to the switching circuit; and

a computer interface unit connected to the controller, the memory means and the buffer means, for transmitting the encoded image data to and from a computer;

wherein the sending device interface unit, the receiving device interface unit, and the switching circuit comprise a first bus buffer connected to a first four signal lines and a second four signal lines, a second bus buffer connected to the second four signal lines and a third signal lines, and a third bus buffer connected to the first four signal lines and the third four signal lines.

5,257,118

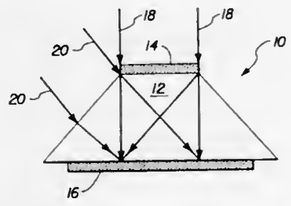
METHOD FOR HOLOGRAPHICALLY COMBINING LASER BEAMS

Arnold W. Lungershausen, West Henrietta, and Stephen C. Arnold, Honeoye Falls, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 29, 1992, Ser. No. 827,671

Int. Cl.[5] G03H *1/04*

U.S. Cl. 359—10 **9 Claims**



1. A method for holographically combining a plurality of laser beams, comprising the steps of:

1) providing an optical device comprising:

a) a support substrate having entrance and exit faces and comprising a monolithic block;

b) means providing a diffusion surface on the entrance face; and

c) means providing a light sensitive recording medium on the exit face;

2) constructing a holographic recording by simultaneously:

(i) directing a reference laser beam to the light sensitive recording medium; and

(ii) directing an input laser beam through the diffusion surface of the entrance face for interfering with the reference beam at the exit face; and

3) reconstructing a conjugate of the input beam by directing a plurality of conjugate reference laser beams to the holographic recording.

5,257,119

IMAGE PROCESSING APPARATUS WHICH ADDS APPARATUS IDENTIFICATION DATA TO IMAGES

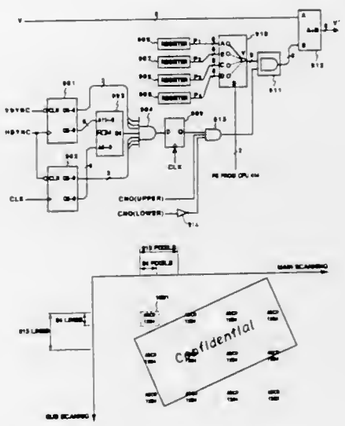
Masahiro Funada, Yokohama; Toshiyuki Kitamura; Mitsuhiro Yamamoto, both of Kawasaki, and Eiji Ohta, Fujisawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 24, 1992, Ser. No. 856,996

Claims priority, application Japan, Mar. 25, 1991, 3-060248; May 8, 1991, 3-102354; May 29, 1991, 3-124345; Jul. 1, 1991, 3-160560

Int. Cl.[5] H04N *1/32, 1/44*

U.S. Cl. 358—438 **24 Claims**



1. An image processing apparatus comprising:

input means for inputting image data;

processing means for processing the image data input by said input means and for outputting a reproduction data for reproducing the image represented by the image data;

addition means for adding information for identifying the apparatus, with which the image data is processed, to the image represented by the reproduction data,

wherein the information is added so as to be difficult to discriminate with human eyes, and wherein the information relates to the apparatus identification data given by a supplier who supplies the apparatus.

5,257,120

IMAGE PROCESSING APPARATUS

Yoshihiko Hirota, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 20, 1989, Ser. No. 453,976

Claims priority, application Japan, Dec. 22, 1988, 63-324267; Dec. 22, 1988, 63-324268; Dec. 22, 1988, 63-324269; Dec. 22, 1988, 63-324270; Dec. 22, 1988, 63-324271

Int. Cl.[5] H04N *1/40, 1/393, 1/36*

U.S. Cl. 358—443 **3 Claims**

1. An image processing apparatus having a plurality of image reading elements arranged one dimensionally, reading an original image by relatively moving these elements in a direction intersecting the direction of arrangement of the elements to output read image data to printer means, comprising:

first and second memory means each storing at least one line of image data in said direction of arrangement of the elements;

clock generating means for outputting a writing clock signal and a reading clock signal;

writing address generating means for generating a writing address for writing said image data to said first memory means or said second memory means in accordance with said writing clock signal;

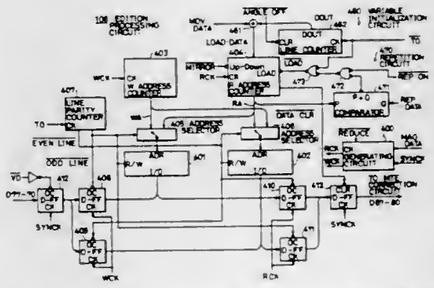
reading address generating means for generating a reading address for reading said image data from said first memory means or said second memory means in accordance with said reading clock signal;

synchronized signal generating means for generating a signal synchronized with said image reading line by line;

controlling means for controlling said first memory means and said second memory means such that one of said first and second memory means carries out writing operation in accordance with said writing address while the other carries out reading operation in accordance with the reading address;

switching means for switching writing operation and reading operation of said first memory means and said second memory means in accordance with said synchronized signal;

changing means for making different the address generated from said writing address generating means from that generated from said reading address generating means, wherein said changing means includes means for changing



at least one of a first initial address generated from said writing address generating means and a second initial address generated from said reading address generating means; and

gate mean for receiving image data read out from said first and second memory means and for outputting only image data corresponding to an effective image region;

wherein said first memory means and said second memory means have a first capacity,

said read address generating means has a second capacity,

said second capacity being selected to be larger than said first capacity whereby

address of said first memory means and said second memory means are allotted a part of address of said reading address generating means, and

said changing means reads said image data from address other than the initial address of said first memory means and said second memory means allotted in said address generating means.

5,257,121

MULTI-RESOLUTION SPATIAL INTEGRATION SIGNAL PROCESSOR AND METHOD

Richard A. Steinberg, Columbia, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Filed Aug. 29, 1990, Ser. No. 574,027

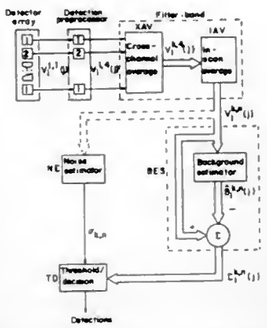
Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—447 **26 Claims**

1. A signal processor for detecting a rectangular or nearly-rectangular target of known orientation in a digitized two-dimensional input image, wherein said target's size, aspect ratio and position in said input image are unknown, and wherein said target has minimum contrast relative to its background in said input image, said signal processor comprising means for gener-

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ating a plurality of reduced resolution, rectangular images as output from said input image, said input image being generated



by an imaging sensor comprised of an array of detector elements and having a higher resolution than said output images.

5,257,122

FERROELECTRIC LIQUID CRYSTAL DISPLAY HAVING GRAY STEPS OR A CONTINUOUS GRAY SCALE

Hans-Rolf Dübal, Königstein/Taunus; Claus Escher, Mühltal; Gerhard Illian, Frankfurt am Main, all of Fed. Rep. of Germany; Mikio Murakami, Kakegawa, Japan, and Dieter Oblendorf, Liederbach, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

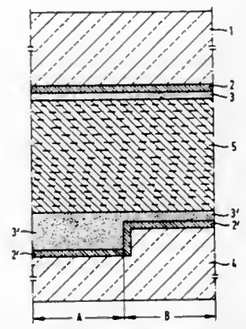
PCT No. PCT/EP90/00761, § 371 Date Nov. 27, 1991, § 102(e) Date Nov. 27, 1991, PCT Pub. No. WO90/15360, PCT Pub. Date Dec. 13, 1990

PCT Filed May 11, 1990, Ser. No. 777,245

Claims priority, application Fed. Rep. of Germany, May 30, 1989, 3917472

Int. Cl.[5] G02F *1/133*

U.S. Cl. 359—75 **6 Claims**



1. A ferroelectric liquid crystal switching or display device having a liquid crystal film between two sheets, in which the liquid crystal film has a constant thickness, and wherein one of the sheets in the device is planar and the other sheet has at least one step.

5,257,123

FERROELECTRIC LIQUID CRYSTAL DEVICE WITH TEMPERATURE COMPENSATION BY ROTATION OF COMPENSATOR

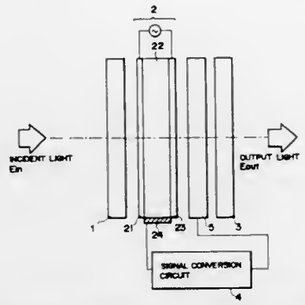
Junko Shingaki, Atsugi, and Hideaki Mitsutake, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 20, 1991, Ser. No. 795,047

Claims priority, application Japan, Nov. 21, 1990, 2-314245

Int. Cl.[5] G02F *1/13, 1/133, 1/1335*

U.S. Cl. 359—86 **2 Claims**



1. An optical modulating device which comprises a polarizer, an analyzer, and liquid crystals which an aligning axis positioned between said polarizer and said analyzer, and which controls the birefringence of said liquid crystals by applying an electric field to said liquid crystals so as to change the light polarization direction of said device, said optical modulating device further comprising:

a rotatable halfwave plate which is positioned between said liquid crystals and said analyzer or between said liquid crystals and said polarizer in such a manner that the optical axis of said halfwave plate will be rotated around the optical axis of light coming into said optical modulating device, and the aligning axis of said liquid crystals,

wherein rotational angles of said halfwave plate have one-to-one correspondence with a temperature of said liquid crystals or the environment thereof and said liquid crystals comprise ferroelectric liquid crystals.

5,257,124

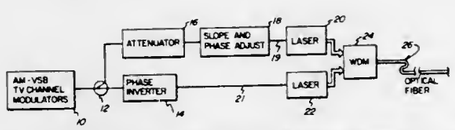
LOW DISTORTION LASER SYSTEM FOR AM FIBER OPTIC COMMUNICATION

Joseph B. Glasb, New Hope, and David R. Huber, Warrington, both of Pa., assignors to General Instrument Corporation, Hatboro, Pa.

Filed Aug. 15, 1991, Ser. No. 745,539

Int. Cl.[5] H04J *14/00*

U.S. Cl. 359—124 **17 Claims**



1. Apparatus for communicating analog signals over an optical fiber transmission path comprising:

means for producing a first optical carrier;

means coupled to receive an analog information signal carried on a first path for modulating said first optical carrier by said analog information signal;

means for inverting the phase of said analog information signal for output on a second path;

adjustment means provided in at least one of said first and second paths for providing the analog information signals

in said paths at equal magnitudes and opposite phases with respect to each other;

means for producing a second optical carrier;

means coupled to receive the inverted analog information signal from said second path for modulating said second optical carrier by said inverted analog information signal; and

means coupled to receive the modulated first and second optical carriers for multiplexing them into a single optical signal with reduced second order distortion for communication over an optical fiber path.

5,257,125

AFOCAL OPTICAL SYSTEM FOR FOCUS ERROR CORRECTION IN LASER SCANNING SYSTEMS

Patrick Y. Maeda, Redondo Beach, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 27, 1991, Ser. No. 982,324

Int. Cl.[5] G02B *26/08*

U.S. Cl. 359—196 **10 Claims**



1. A raster scanning system with focus error correction system comprising;

a light source emitting a light beam;

collimating means in the path of the light beam for substantially collimating the light beam;

a scanning means;

an axially adjustable afocal means in the path of the light beam being located between said collimating means and said scanning means for altering the diameter of the substantially collimated light beam received thereby;

an axially adjustable optical means being located between said afocal means and said scanning means in the path of the substantially collimated beam from said axially adjustable afocal means;

said axially adjustable optical means being cylindrical in a sagittal plane for converging said substantially collimated light beam from said axially adjustable afocal means in the sagittal plane;

said axially adjustable optical means being planar in a tangential plane whereby the substantially collimated light beam in the tangential plane is substantially unaltered;

a medium; and

a post scanning optical means being located between said scanning means and said medium for receiving said light beam from said scanning means and focusing said light beam onto said medium in both the tangential and sagittal planes.

5,257,126

COHERENT OPTICAL FIBER COMMUNICATIONS SYSTEM USING POLARIZATION MODULATION

Riccardo Calvani, Pino Torinese; Renato Caponi, and Giuseppe Marone, both of Turin, all of Italy, assignors to CSELT-Centro Studi e Laboratori Telecommunicazioni S.p.A., Turin, Italy

Filed May 15, 1992, Ser. No. 883,822

Claims priority, application Italy, Jul. 4, 1991, TO91 A000518

Int. Cl.[5] H04B *10/04, 10/06*

U.S. Cl. 359—181 **4 Claims**

1. A method of transmitting optical signals polarization modulated by a binary information signal, said method comprising the steps of:

(a) complementarily frequency modulating two sources of linearly polarized radiation with a binary information signal having first and second logic levels so that a first of said sources emits radiations at a first and a second frequency in correspondence with said first and second logic levels of said information signal and a second of said sources emits radiations at a third and a fourth frequency in correspondence with said second and first logic levels of said information signal, respectively, said third and fourth frequencies being substantially the same as said first and second frequencies;

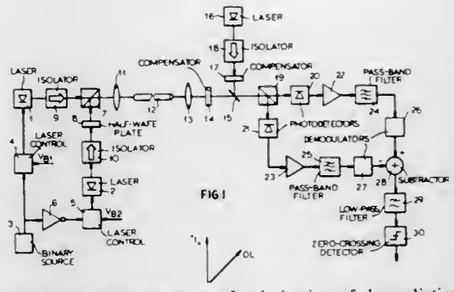


FIG. 1

(b) orthogonalizing states of polarization of the radiations emitted by said first and second of said sources so that the states of polarization are rendered orthogonal in correspondence with each bit of the information signal; and

(c) combining the two orthogonally polarized radiations to send out on a transmission line for each of said bits a signal comprising two orthogonally polarized components at different frequencies.

5,257,127

DEVICE FOR DOUBLING THE FREQUENCY OF A LIGHT WAVE USING A THREE DIMENSIONAL POLYMER NETWORK

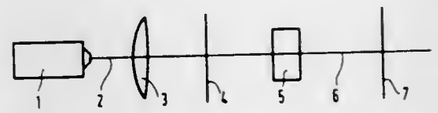
Rifat A. M. Hikmet, Eindhoven, Netherlands, assignor to U.S. Philips Corp., New York, N.Y.

Filed Feb. 18, 1992, Ser. No. 837,518

Claims priority, application Netherlands, Feb. 26, 1991, 9100336

Int. Cl.[5] H03F *7/00*

U.S. Cl. 359—328 **6 Claims**



1. A device for doubling the frequency of a light wave, in which device a fundamental light wave is guided through a nonlinear optical medium while forming a second harmoic wave, comprising said nonlinear optical medium being formed from a three dimensional polymer network and elements having a great hyperpolarizability, the polymer network having a liquid crystalline material with a helical structure, the refractive indices and the pitch of the helical structure being adjusted such that phase matching takes place.

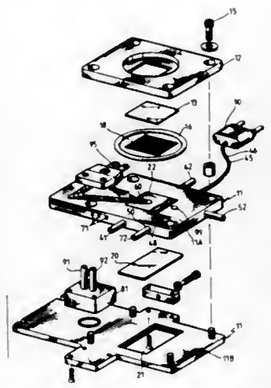
VOL 1155 ISS 4 OCT 26 1993 UMI

5,257,128

FREEZING/PERFUSION MICROSCOPE STAGE

Kenneth R. Diller, Austin, Tex., and Douglas B. Walcerz, Medford, N.Y., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation-in-part of Ser. No. 210,088, Jun. 22, 1988, abandoned. This application Aug. 4, 1989, Ser. No. 389,614
Int. Cl.[5] G02B *21/28, 21/30, 21/34*
U.S. Cl. 359—395 30 Claims



1. A stage assembly for use in combination with a magnification apparatus to permit viewing of an object being retained in said assembly, comprising:
(a) a sample chamber for retaining said object and receiving fluid therein;
(b) means for illuminating said object;
(c) temperature control means for heating and cooling said object; and
(d) fluid control means for controlling and altering the fluid in said chamber retaining said object, comprising:
(i) fluid inlet and outlet channels for fluid communicating directly with said chamber, said outlet channel comprising a copper tube positioned within a larger channel such that a coolant fluid can be circulated over the exterior surface of said copper tube;
(ii) a reservoir connected to said fluid inlet channel, said reservoir having an inlet and an outlet channel;
(iii) a suction means for causing movement of fluid between said fluid inlet channel and said fluid outlet channel; and
(iv) said fluid inlet channel for communicating directly with said sample chamber being located physically lower than said inlet and outlet channels to said reservoir, in an arrangement to trap bubbles in said reservoir.

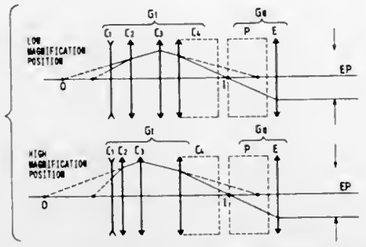
5,257,129

REAL IMAGE TYPE VARIABLE MAGNIFICATION VIEWFINDER OPTICAL SYSTEM

Masaru Morooka, Hachiouji, and Shinichi Yoshii, Urawa, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 22, 1992, Ser. No. 823,472
Claims priority, application Japan, Jan. 22, 1991, 3-021630; Jul. 31, 1991, 3-191911; Oct. 2, 1991, 3-255410
Int. Cl.[5] G02B *15/14, 23/00, 9/34*
U.S. Cl. 359—432 19 Claims

1. A real image type variable magnification viewfinder optical system comprising, in order from the object side:
an objective lens system comprising a first lens unit having negative refractive power, a second lens unit having positive refractive power, a third lens unit having positive refractive power, and a fourth lens unit comprising at least one reflecting surface and having positive refractive power as a whole;
a visual field frame arranged on an intermediate image surface on which an intermediate image is to be formed by said objective lens system, and



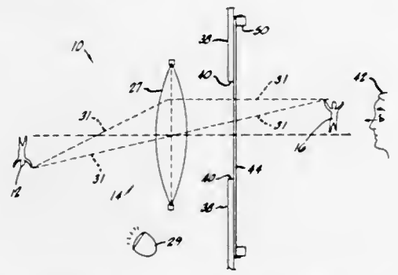
an eyepiece lens system having positive refractive power as a whole;
said first lens unit and said fourth lens unit being stationary, and said second lens unit and said third lens unit being moved along the optical axis to perform variation of magnification and adjustment of diopter.

5,257,130

APPARATUS AND METHOD FOR CREATING A REAL IMAGE ILLUSION

Marshall M. Monroe, Glendale, Calif., assignor to The Walt Disney Company, Burbank, Calif.

Filed Jan. 30, 1992, Ser. No. 829,698
Int. Cl.[5] G02B *27/22*
U.S. Cl. 359—478 53 Claims



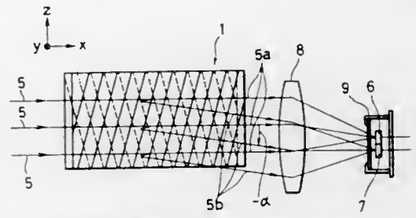
1. An apparatus for creating a real image illusion, comprising:
(a) a selectively transparent screen having a plurality of apertures;.
(b) a real object source and a device behind the screen for producing light rays, corresponding to the real object source, which pass through the apertures in the screen and converge to form a real image in front of the screen; and
(c) a light source for projecting light rays onto the screen and creating the appearance of a solid and non-transparent surface which prevents visual access behind the screen.

5,257,131

POLARIZATION DIFFRACTION ELEMENT AND POLARIZATION DETECTOR EMPLOYING THE SAME

Yoshio Yoshida; Takahiro Miyake, both of Tenri; Yasuo Nakata, Kashihara, and Yukio Kurata, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 12, 1991, Ser. No. 713,840
Claims priority, application Japan, Jun. 13, 1990, 2-158076; Aug. 27, 1990, 2-226320
Int. Cl.[5] G02B *5/18, 5/30;* G11B *7/12*
U.S. Cl. 359—485 7 Claims



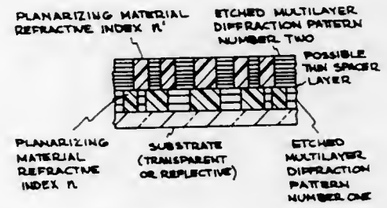
1. A polarization diffraction element comprising:
a flat-shaped transparent substrate having a plurality of faces;
a first diffraction grating formed on one of the plurality of faces of the substrate; and
a second diffraction grating formed on one of the plurality of faces different from that of the first diffraction grating;
the first diffraction grating and the second diffraction grating being formed such that a grating pitch of the first diffraction grating and a grating pitch of the second diffraction grating are equal, and such that a direction of grating lines of the first diffraction grating and a direction of grating lines of the second diffraction grating form a predetermined slight angle such that none of said diffraction gratings operate as a phase compensation grating.

5,257,132

BROADBAND DIFFRACTIVE LENS OR IMAGING ELEMENT

Natale M. Ceglio, Livermore; Andrew M. Hawryluk, Modesto; Richard A. London, Oakland, and Lynn G. Seppala, Livermore, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 587,699, Sep. 25, 1990, Pat. No. 5,071,207. This application Apr. 9, 1991, Ser. No. 683,592
The portion of the term of this patent subsequent to Dec. 10, 2008, has been disclaimed.
Int. Cl.[5] G02B *5/18*
U.S. Cl. 359—565 43 Claims



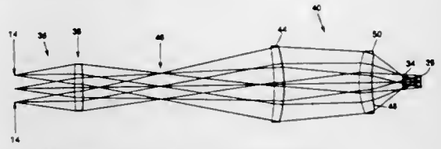
33. Apparatus comprising:
an amplitude or intensity modulating multilayer thin film stack comprising a plurality of layers wherein the number, thickness and indices of refraction of the layers is selected to produce high reflectivity at a resonant wavelength λ_o within a narrow band $\Delta\lambda$ and to transmit radiation outside $\Delta\lambda$;
a diffraction pattern formed in the multilayer thin film stack, the diffraction pattern being selected to focus or image radiation in the band $\Delta\lambda$ to a focal length f.

5,257,133

RE-IMAGING OPTICAL SYSTEM EMPLOYING REFRACTIVE AND DIFFRACTIVE OPTICAL ELEMENTS

Chungte W. Chen, Irvine, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Sep. 11, 1991, Ser. No. 757,795
Int. Cl.[5] G02B *3/08, 5/18*
U.S. Cl. 359—565 18 Claims



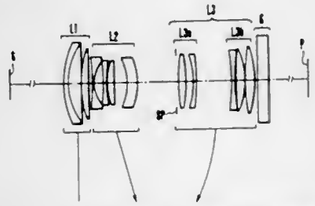
1. A re-imaging optical system comprising:
an objective lens means for focusing an incoming beam of light to a first image plane;
a relay lens means for refocusing said beam of light in a second image plane after it has passed through said first image plane; and
said relay lens means including a binary optical element which introduces magnifying power in addition to any magnifying power introduced by refraction in the relay lens, the binary optical element also correcting aberrations introduced by said objective and relay lens means.

5,257,134

ZOOM LENS

Saburo Sugawara, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 3, 1992, Ser. No. 906,933
Claims priority, application Japan, Jul. 12, 1991, 3-198777
Int. Cl.[5] G02B *15/14, 9/14*
U.S. Cl. 359—679 6 Claims



1. A zoom lens comprising, in order from a first conjugate point, a first lens unit of positive refractive power, a second lens unit of negative refractive power and a third lens unit of positive refractive power, wherein the first conjugate point is at a longer distance from said lens units than a second conjugate point, and wherein zooming from a wide-angle end to a telephoto end is performed by axially moving said second and third lens units in such a manner than an air separation between said first and second lens units increases and an air separation between said second and third lens units decreases, and wherein the following conditions are satisfied:

$$1 < -\beta 3w < 1.5$$

$$0.8 < -\beta 2w < 1.2$$

$$0.25 < -f2/fw < 0.45$$

$$0.7 < e2w/fw < 1.1$$

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where $\beta 2w$ and $\beta 3w$ represent image magnifications for an infinitely distant object of said second and third lens units in the wide-angle end, respectively, f2 represents the focal length of said second lens unit, e2w represents a principal point interval between said second lens unit and said third lens unit in the wide-angle end, and fw represents the shortest focal length of the entire lens system.

5,257,135

COMPACT ZOOM LENS SYSTEM

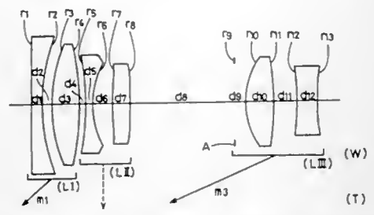
Tetsuo Kohno, Toyonaka; Takashi Okada; Tetsuya Arimoto, both of Osaka, and Hiroyuki Matsumoto, Wakayama, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 30, 1991, Ser. No. 770,085

Claims priority, application Japan, Oct. 2, 1990, 2-265513; Oct. 2, 1990, 2-265514; Apr. 16, 1991, 3-112446; Apr. 16, 1991, 3-112447; Apr. 19, 1991, 3-116734

Int. Cl.[5] G02B *15/14, 13/18*

U.S. Cl. 359—689 **28 Claims**



1. A compact zoom lens system comprising, from the object side to the image side:

a first lens component of a positive refractive power, said first lens component being shifted toward the object side monotonously in a zooming operation from a shorter focal length side to a longer focal length side;

a second lens component of a negative refractive power; and

a third lens component of a positive refractive power, said third lens component being shifted toward the object side monotonously in the zooming operation from the shorter focal length side to the longer focal length side and having at least two aspherical surfaces;

and wherein the zoom lens system fulfills the following conditions:

$$0.3<\phi_1/\phi_W<1.0$$

$$0.8<\phi_3/\phi_W<1.8$$

wherein, ϕ_1 and ϕ_3 represent refractive powers of the first and third lens components, respectively, and ϕ_W represents a refractive power of the zoon lens system at the shortest focal length condition.

5,257,136

REVERSE TELEPHOTO AGRON OBJECTIVE LENS

Joshua M. Cobb, Millbrook, and Franz Topolovec, Accord, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1991, Ser. No. 813,243

Int. Cl.[5] G02B *13/04*

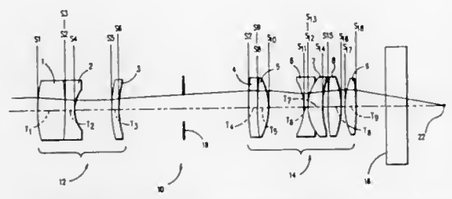
U.S. Cl. 359—753 **6 Claims**

1. An air spaced reverse telephoto type/objective lens for use in a laser chemical vapor deposition system having a quartz window, said objective lens comprising, from the object side to the image side:

a negative component including a first air-spaced doublet wherein each doublet element is made of crown glass having an Abbe' V number greater than 50 and a negative meniscus crown glass element spaced from said first air-spaced doublet;

an aperture stop; and

a positive component including second and third air-spaced doublet components for effecting color correction and a



pair of bi-convex elements for effecting spherical aberration correction;

said objective lens providing a common focal plane for both illuminating light and laser light passing through said objective lens and said quartz plate window.

5,257,137

PHOTO-TAKING LENS FOR AN UNDERWATER CAMERA

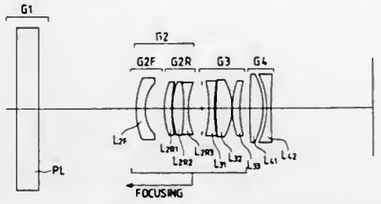
Fumio Suzuki, Yokohama, and Yosbinari Hamanishi, Wako, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Mar. 23, 1992, Ser. No. 855,665

Claims priority, application Japan, Apr. 1, 1991, 3-092626

Int. Cl.[5] G02B *9/34, 15/14*

U.S. Cl. 359—771 **13 Claims**



1. A photo-taking lens for an underwater camera including, in succession from the object side;

a first lens unit having no refractive power or having weak positive or negative refractive power and fixed relative to the image plane;

a second lens unit comprising a forward unit having negative refractive power and a rearward unit having positive refractive power, and having weak positive or negative refractive power as a whole;

a third lens unit having positive refractive power; and

a fourth lens unit having negative refractive power;

said second lens unit and said third lens unit being designed to be moved together along the optical axis for the focusing from infinity to a close distance so that the on-axis air space between said first lens unit and said second lens unit is reduced and the on-axis air space between said third lens unit and said fourth lens unit is enlarged.

5,257,138

OPTICAL UNIT FOR USE IN AN IMAGE FORMING APPARATUS

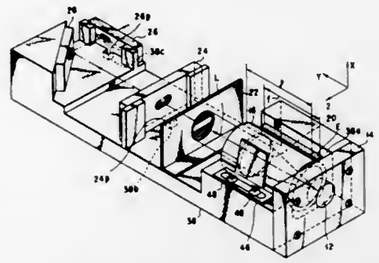
Masao Yamaguchi, Kawaguchi; Ken Omura, Tokyo; Kimiaki Furukawa, Tokyo, and Yutaka Yoshida, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 2, 1992, Ser. No. 907,530

Claims priority, application Japan, Jul. 4, 1991, 3-164509

Int. Cl.[5] G02B *7/02*

U.S. Cl. 359—819 **9 Claims**



1. An optical unit comprising:

means for converting a beam spot size of a light beam emitted from a light source to a predetermined beam spot size;

means, having a vertical reference surface, for holding the converting means;

means for urging the converting means onto the vertical reference surface of the holding means in one direction; and

means, put on a region between the converting means and the reference surface of the holding means above a contact point between the converting means and the reference surface, for bonding the converting means and the holding means,

wherein the condition, $100<F<400$, is satisfied, where F [gf/mm] is the urging force per unit contact length by which the urging means urges the converting means.

5,257,139

REFLECTION REDUCTION PROJECTION OPTICAL SYSTEM

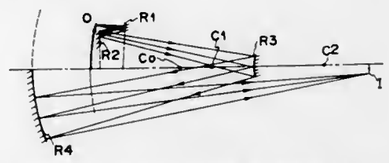
Akira Higuchi, Matsudo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed May 1, 1992, Ser. No. 877,422

Claims priority, application Japan, May 9, 1991, 3-104260

Int. Cl.[5] G02B *17/06;* **G03B** *27/53;* **G21K** *5/00*

U.S. Cl. 359—859 **4 Claims**



1. A reflection reduction optical apparatus for reduction projection of predetermined pattern on an object surface, onto an image surface, comprising:

first convex, second, third convex, and fourth concave reflective surfaces to reflect light rays from said object surface;

wherein said third convex and fourth concave reflective surfaces are concentrically disposed; and

wherein at least one of said object and image surfaces is of concave sphere with respect to the optical system for reduction projection.

5,257,140

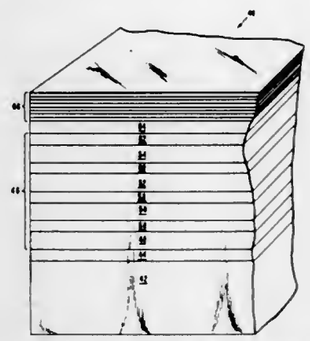
MIRROR FOR INFRARED AND VISIBLE WAVELENGTH RADIATION

James E. Rogers, Woodland Hills, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 3, 1982, Ser. No. 374,220

Int. Cl.[5] G02B *5/28*

U.S. Cl. 359—884 **22 Claims**



1. A high reflectance mirror for at least first and second beams of respective longer and shorter wavelengths comprising:

a substrate;

a first plurality of layers on said substrate defining a first reflector for the longer wavelength first beam;

a second plurality of layers of reflector material defining a second reflector for the shorter wavelength second beam; and

a semiconductor layer positioned between said first and second plurality of layers, said semiconductor layer comprising material which is substantially transparent to the first beam and substantially opaque to the second beam effectively to optically decouple said first and second plurality of layers.

5,257,141

METHOD OF RECORDING A DIGITAL VIDEO SIGNAL

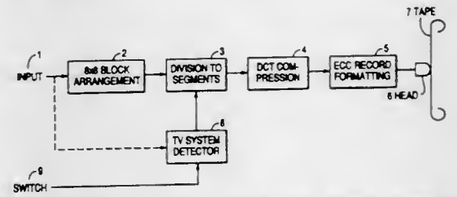
Chiyoko Matsumi, Suita, and Tatsuro Juri, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 26, 1991, Ser. No. 736,059

Claims priority, application Japan, Jul. 30, 1990, 2-202127

Int. Cl.[5] G11B *5/09*

U.S. Cl. 360—32 **7 Claims**



1. A method of recording digital video signals of two or more of different TV systems in the common format onto recording tracks of a recording medium, comprising the steps of:

for recording the data of one frame of an input digital video signal, dividing effective pixels corresponding to the one frame data into segments of a multiple of 27;

compressing the data rate of a digital video signal component of each segment to a given range; and

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recording the compressed digital video signal in the format of 27 segments per track.

5,257,142

VIDEO CASSETTE RECORDER WHICH STORES SIGNAL DURING TAPE REPLACEMENT AND RECORDS STORED SIGNAL WITH NEXT SIGNAL IN PICTURE-IN-PICTURE FORMAT

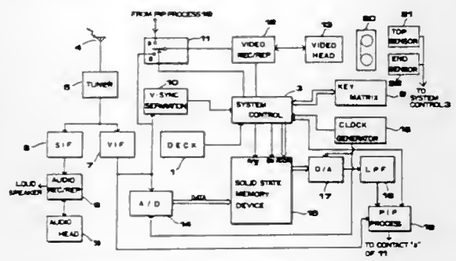
Kwun P. Hong, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Apr. 27, 1992, Ser. No. 874,012

Claims priority, application Rep. of Korea, Apr. 30, 1991, 91-6950

Int. Cl.[5] **H04N** *5/78, 5/262, 5/272;* **G11B** *27/02*

U.S. Cl. 360—33.1 **7 Claims**



1. A video cassette recorder comprising:

recording means for recording a video signal on a recording medium of a video cassette;

first detector means for detecting an end portion of a recording medium of a video cassette operatively inserted in said recorder;

memory means for storing video signals therein;

image mixing means for mixing first and second image signals and outputting a mixed image signal which contains said first and second image;

second detector means for detecting a beginning or an operational portion of a recording medium of a video cassette operatively inserted in said recorder; and

control means operative to store for a time interval an input video signal in said memory means when said first detector means detects at a first time point an end portion of a first recording medium during recording of the input video signal thereon; and to record subsequently on a second recording medium for said time interval a mixed image signal output by said image mixing means when said second detector means detects at a second time point a beginning or an operational portion of said second recording medium: the first and second images of said mixed image signal comprising respectively the current input video signal and the video signal stored in the memory means, and said time interval comprising the interval between said first and second time points.

5,257,143

METHOD AND APPARATUS FOR POSITIONING HEAD OF DISK DRIVE USING ZONE-BIT-RECORDING

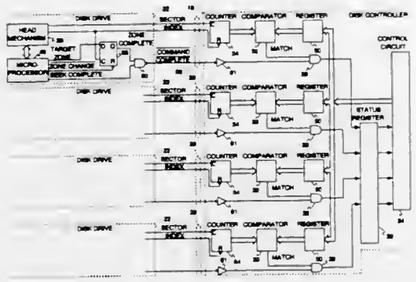
Saied Zangenehpour, Lincoln Township, Berrien County, Mich., assignor to Zenith Data Systems Corporation, Buffalo Grove, Ill.

Filed Jan. 15, 1991, Ser. No. 641,264

Int. Cl.[5] **G11B** *5/09*

U.S. Cl. 360—48 **6 Claims**

1. An apparatus comprising: a zone-bit-recording disk drive having a rotating platter and having a head movable relative to a surface of said platter which is divided into two zones each having a respective different number of angularly spaced sectors therein; first means for maintaining a count of the number of sectors which pass said head after said platter passes a predetermined angular orientation; second means responsive to said count of said first means for determining when said count corresponds to a specified sector to be accessed by said head; and third means for disabling said second means during an interval when said head moves out of a first of said zones toward a second of said zones which contains said specified sector and until said head has entered said second zone and said platter has thereafter passed a predetermined angular orientation; wherein said disk drive includes means for generating a sector pulse each time one of said sectors on said rotating



platter moves past said head and for generating an index pulse each time said platter is in one of said predetermined angular positions; and wherein said third means includes means for determining whether the specified sector to be accessed is in the zone in which said head is currently positioned and for generating a zone change signal when said specified sector and said head are in different zones, and for generating a target zone signal after said head reaches said zone containing said specified sector, said third means disabling said second means during an interval from said zone change signal until one of said index pulses occurs after said target zone signal.

5,257,144

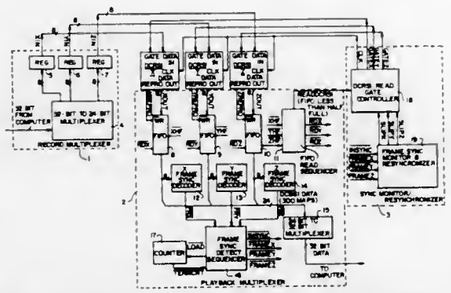
SYNCHRONIZATION AND AUTOMATIC RESYNCHRONIZATION OF MULTIPLE INCREMENTAL RECORDERS

Joseph B. Curasi, Melbourne Beach, and Frank D. Wright, Palm Bay, both of Fla., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Mar. 6, 1992, Ser. No. 846,875

Int. Cl.[5] **G11B** *5/09*

U.S. Cl. 360—51 **12 Claims**



1. A system for synchronizing and automatically resynchronizing multiple incremental data recording units, comprising:

at least one input/output control circuit for each of a plurality of data recording units;

data input means for transferring portions of a data stream to said data recording units, said portions of said data steam including simultaneously inserted frame sync words;

read gate control means for causing one of said input/output control circuits to output said portions of said data including said simultaneously inserted frame sync words;

frame sync decoder means connected to said input/output circuit for detecting said frame sync words;

frame sync detect sequencer means connected to outputs of said frame sync decoder means for determining whether said frame sync words occur simultaneously in said data output by said input/output circuits;

a sync monitor/resynchronizer including offset counter initiation sequencer means connected to an output of said frame sync detect sequencer means for receiving sequenced frame sync word gate signals from said frame sync detect sequencer means, difference counter means for determining a difference value based on an amount by which the frame sync word signals are offset, and offset counter means for controlling said read gate control means to vary said data output in response to said difference value.

5,257,145

OPTICAL DATA RECORDING AND REPRODUCING APPARATUS

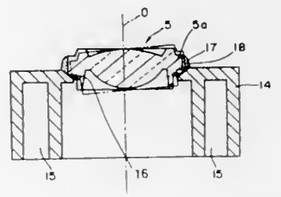
Hiroshi Kanazawa; Isao Okuda; Shinpei Shinozaki, and Suguru Takishima, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 12, 1992, Ser. No. 928,313

Claims priority, application Japan, Aug. 13, 1991, 3-71536[U]

Int. Cl.[5] **G02B** *7/02*

U.S. Cl. 359—819 **16 Claims**



1. An optical data recording and reproducing apparatus comprising:

an objective lens for converging light onto an optical disc; and,

a lens holder which supports the objective lens and which has a circular opening and a lens holding surface provided on a periphery of the circular opening;

wherein one of either the objective lens or the lens holding surface of the lens holder is provided with a symmetrically tapered surface which is adapted to contact the other of either the lens holding surface or objective lens, respectively.

5,257,146

MAGNETIC HEAD SWING CLAMP AND CROSS-TALK ELIMINATOR FOR READ/WRITE PREAMPLIFIER

John J. Price, Jr., Edina, and Craig M. Brannon, Golden Valley, both of Minn., assignors to VTC Inc., Bloomington, Minn.

Continuation of Ser. No. 545,272, Jun. 28, 1990, abandoned. This application May 4, 1992, Ser. No. 879,554

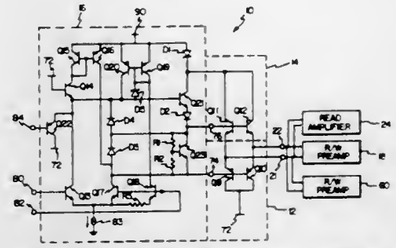
Int. Cl.[5] **G11B** *5/02*

U.S. Cl. 360—67 **21 Claims**

7. A magnetic head swing clamped read/write preamplifier system of the type responsive to mode signals which drive a read/write preamplifier between read mode operation and write mode operation, the magnetic head swing clamped read/write preamplifier system comprising:

a plurality of read/write preamplifiers with each of the plurality having a write circuit connected to an inductive magnetic head for providing a write current thereto and a read circuit having a read differential transistor pair connected to the inductive magnetic head, the transistors in the plurality of read differential transistor pairs having collectors which are connected together in parallel thereby providing first and second read output signals at first and second read output terminals;

a reference voltage generator comprising a first reference



voltage output terminal, the reference voltage generator generating a first reference voltage level at the first reference voltage output terminal; and

a negative voltage clamp circuit electrically connected to the first reference voltage output terminal and to each of the collectors of the read differential pair of the plurality for limiting negative going voltage swings in each of the first and second read output signals as a function of the first reference voltage level.

5,257,147

METHOD FOR SETTING TRACKING DATA OF VARIABLE SPEED MODES IN A VIDEO TAPE RECORDER

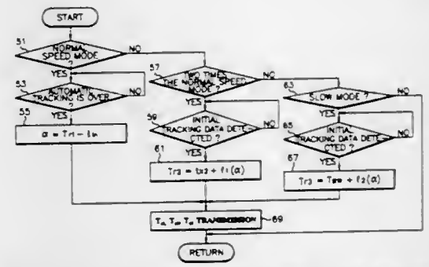
Sang-Beom Hong, Seoguipo, Rep. of Korea, assignor to Sam-Sung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 1, 1991, Ser. No. 786,703

Claims priority, application Rep. of Korea, Dec. 21, 1990, 1990-21538

Int. Cl.[5] **G11B** *15/46*

U.S. Cl. 360—73.08 **6 Claims**



1. A method for setting tracking data of variable speed reproducing modes in a video tape recorder comprising an automatic tracking circuit, the method comprising the steps of:

detecting current tracking data at a normal speed reproducing mode after performing automatic tracking;

determining a tracking data variation value by subtracting initial tracking data at the normal speed reproducing mode from said current tracking data at the normal speed reproducing mode;

determining a data variation function corresponding to an other speed reproducing mode in dependence upon said tracking data variation value; and

setting current tracking data at said other speed reproducing mode by adding initial tracking data at said other speed

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reproducing mode and said data variation function corresponding to said other speed reproducing mode.

5,257,148

METHOD AND APPARATUS FOR POSITIONING A MAGNETIC HEAD IN A MAGNETIC LAYER MEMORY SYSTEM USING TRACKING BY READING A SPACED PAIR OF CORRESPONDING SUBTRACKS

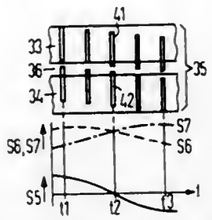
Erik Solhjell, and Nicolai W. Christie, both of Oslo, Norway, assignors to Tandberg Data AS, Norway

Continuation of Ser. No. 527,436, May 23, 1990, abandoned. This application Aug. 6, 1992, Ser. No. 924,615

Claims priority, application European Pat. Off., May 30, 1989, 89109717.2

Int. Cl.[5] **G11B** *5/584, 5/265*

U.S. Cl. 360—77.06 **7 Claims**



5. A method for positioning a magnetic head with reference to a center of a recorded track and reading information from the recorded track, comprising the steps of:

providing the recorded track as two subt5-racks of equal width with a narrow space therebetween, each of the sub-tracks having a same information recorded thereon;

providing the magnetic head with a write head divided into two equal width sub-heads, a width of each of the sub-heads being the same as a width of each of the sub-tracks, and a gap between the two write sub-heads being the same as said narrow space, and also providing said same magnetic head with a read head formed of two sub-heads each of which have a width which is less than a width of each of said sub-tracks and said write sub-heads and which are spaced apart from one another at a gap therebetween, said read sub-heads and said write sub-heads being aligned relative to one another such that the gaps between the sub-heads are in alignment over a center of said narrow space between the sub-tracks when the sub-heads are positioned over the sub-tracks;

reading the information signal on the sub-tracks by combining outputs from both of the read sub-heads and outputting said information signal based on the combined outputs; and

when reading the information, centering a middle of the gap between the two read sub-heads above a center of said narrow space between the sub-tracks by comparing read signals from each of the read sub-heads and moving the head relative to the two sub-tracks until the read signals are equal, the read signal from one of the read sub-heads increasing and the read signal from the other read sub-head decreasing when the center of the gap between the read sub-heads is displaced from the center of the narrow space between the sub-tracks.

5,257,149

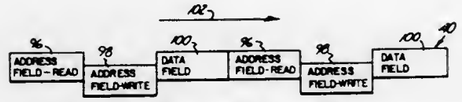
DISC DRIVE WITH OFFSET ADDRESS FIELD

Forrest C. Meyer, Eden Prairie, Minn., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Feb. 13, 1991, Ser. No. 654,900

Int. Cl.[5] **G11B** *5/596*

U.S. Cl. 360—78.14 **17 Claims**



1. A magnetic storage disc drive comprising:

a magnetic storage disc having plurality of information carrying tracks;

a dual gap magnetic transducer for reading and writing information on the magnetic storage disc;

a read address field incorporated in the information carrying tracks of the magnetic storage disc for carrying address information for use during a readback operation;

a write address field incorporated in the information carrying tracks of the magnetic storage disc and laterally offset from the read address field, the write address field for carrying address information for use during a write operation; and

a data field incorporated in the information carrying tracks of the magnetic storage disc, the data field substantially aligned with the read address field.

5,257,150

MAGNETIC TAPE CASSETTE APPARATUS HAVING A TILTABLE TRANSPORT MEMBER FOR SWITCHING TAPE TRANSPORT DIRECTION

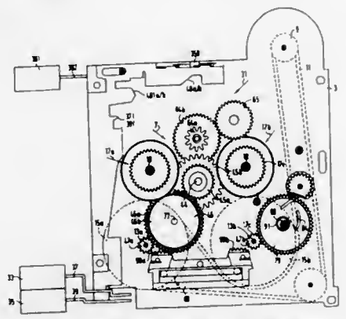
Norbert Kunze, Ehringshausen, and Georg Weber, Lohra, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 614,327, Nov. 15, 1990, abandoned. This application Sep. 14, 1992, Ser. No. 945,423

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1989, 3937908

Int. Cl.[5] **G11B** *5/008*

U.S. Cl. 360—96.3 **6 Claims**



1. A magnetic-tape-cassette apparatus comprising

a deck for transporting a tape of a magnetic-tape cassette in a first and a second, opposite tape transport direction, said deck including a first and a second selectively drivable reel disc for the magnetic tape, a first and a second capstan drivable in different directions of rotation, and reel-disc drive means including a motor, said reel-disc drive means being switchable for alternately driving said capstans, and

a switching mechanism comprising a movable transport member for switching said reel-disc drive means from one said reel disc to the other said reel disc in order to change the tape-transport direction, said transport member having axially spaced toothed-rack portions, wherein the improvement comprises:

a pair of oppositely rotatable toothed drive wheels selectively engageable with respective ones of said toothed rack portions of said transport member for moving said transport member;

said transport member is translatable between first and second opposite end positions in which said toothed-rack portions are in engagement with a respective said toothed drive wheel and is pivotable transversely of its direction of translation in such a way that the meshing between one of said toothed-rack portions and a respective one of said drive wheels is cancelled in a final stage of translation of said transport member in said end positions with said respective drive wheel by a tilting movement of the transport member to disengage the teeth of said drive wheel and said transport member; and

a return spring coupled to said transport member such that it is pretensioned during the transverse movement of said transport member for tilting said transport member in said final stage of translation and for returning said transport member into a neutral center position in which said transport member is disengaged from said drive wheels.

5,257,151

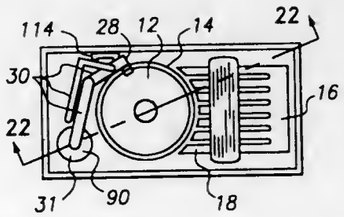
DISC-DRIVE WITH A RIM-MOTOR

William L. Cooper, 2-1171 E. Cliff Dr., Santa Cruz, Calif. 95062; Robert W. Herman, 1034 Baja St., Laguna Beach, Calif. 92651, and Timothy J. Elliott, 6172 Kimberley Dr., Huntington Beach, Calif. 92674

Continuation-in-part of Ser. No. 714,561, Jun. 13, 1991. This application Aug. 23, 1991, Ser. No. 749,301

Int. Cl.[5] **G11B** *17/02, 5/31, 5/37, 5/55*

U.S. Cl. 360—98.07 **4 Claims**



1. A disk file which comprises:

two disks rotatably mounted concentric with one another;

a ring of permanently magnetizable ferromagnetic material secured around a periphery of each said disk;

each ring including ring sectors, each sector joined end to end to a neighboring one of said sectors and magnetized in a direction parallel to an axis of said disks and opposite to a direction of said neighboring sector;

a plurality of electromagnets, each electromagnet including a core with a gap and a coil and secured at a location where said gap is adjacent to a sector of each said ring;

a sheet conductor of magnetic material positioned between and parallel to said disks;

each electromagnet, said rings and magnetic conductor arranged in operable combination with on another to form a magnetic flux path through said core, said rings and said magnetic conductor providing that when alternating current is passed through said coil of said electromagnetic, one of said sectors magnetized in one direction will be drawn toward said gasp then repelled from said gap thereby causing rotation of said disks as said alternating current changes direction of flow in said coil;

said location of each said electromagnet positioned in operable combination to provide that said electromagnets act in unison to rotate said disks.

5,257,152

DISK DRIVE APPARATUS HAVING A SPINDLE PERMITTING A THINNER DISK DRIVE

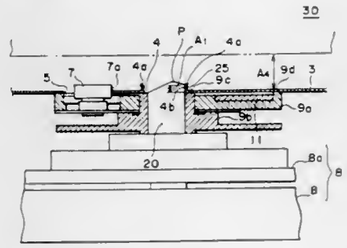
Fumio Nagase, Tama, Japan, assignor to TEAC Corporation, Tokyo, Japan

Filed Jul. 31, 1991, Ser. No. 738,454

Claims priority, application Japan, Aug. 3, 1990, 2-206025

Int. Cl.[5] **G11B** *17/02*

U.S. Cl. 360—99.08 **5 Claims**



1. A disk drive apparatus comprising:

a drive pin, for rotationally driving a disk, inserted into a chucking hole provided in a hub of a disk; a spindle for positioning said hub of said disk at a center position;

said spindle having a top point positioned at a distal end portion thereof and which is away from a center of rotation of said spindle,

an inclined surface provided from said top point of said spindle to a position lower than a height of an inner wall side portion of said chucking hole; and

a drive source for rotating said drive pin and said spindle.

5,257,153

DISC CASE

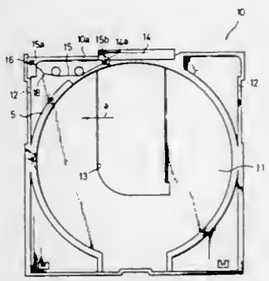
Masataka Sakurada, Tokorozawa, Japan, assignor to Toppan Printing Co., Ltd., Japan

Continuation of Ser. No. 869,263, Apr. 15, 1992, abandoned, which is a continuation of Ser. No. 540,160, Jun. 19, 1990, abandoned. This application Mar. 1, 1993, Ser. No. 24,784

Claims priority, application Japan, Jun. 22, 1989, 1-73259

Int. Cl.[5] **G11B** *23/03*

U.S. Cl. 360—133 **5 Claims**



1. A disc case for releasably receiving a disc comprising: a housing having a disc receiving portion formed therein, said housing also having a front wall including a window and a first side wall perpendicular to said front wall, said first side wall and said front wall forming a first corner, said first corner including a groove; a shutter adapted to slidably move along said front wall of said housing to open and close said window to expose a part of said disc; and a spring member having a first turn portion and a second turn portion, said first and second turn portions each comprising a plurality of annular loops defining a coil and being bendable within said disc case and

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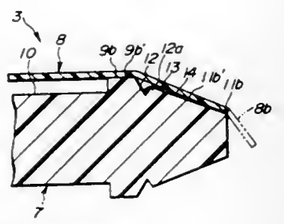
said spring member being adapted to generate a resilient force active in a direction of closing said shutter, said spring member having a first end and a second end said first end of said spring member being engaged with said groove formed at said first corner and said second end of said spring member being engaged with said shutter; said first turn portion located adjacent said first side wall of said housing; said spring member also including a first extended portion disposed between said first turn portion and said first end, said first extended portion comprising a first linear portion proximate to said first turn portion and a second linear portion proximate to said first end disposed at an angle with respect to said first linear portion so as to create a bend in said first extended portion.

5,257,154

RECORDING MEDIUM DISK WITH CLEARANCE FOR ADHESIVE BOND

Mitsuyoshi Sato, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 543,662, Jun. 25, 1990, abandoned. This application Jun. 11, 1992, Ser. No. 897,588
Claims priority, application Japan, Jun. 23, 1989, 1-74004[U]
Int. Cl.[5] G11B *5/82*
U.S. Cl. 360—135 **3 Claims**



1. A disk comprising:
a recording medium sheet;
a disk base having a center portion including a center hub and a circumferential portion extending substantially along the outer periphery of said disk base, at least one of said center portion and said circumferential portion defining an installation surface lying in a first plane in which said recording medium sheet lies and a bonding surface to which a corresponding portion of said recording medium sheet is bonded with a predetermined magnitude of radial tension,
said bonding surface being contoured so that it forms a clearance with the corresponding portion of said recording medium sheet, and said clearance being substantially coextensive with both said bonding surface and said corresponding portion of said recording medium sheet.

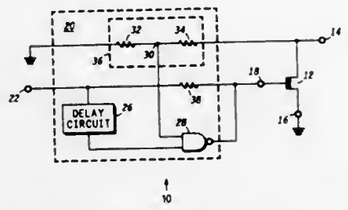
5,257,155

SHORT-CIRCUIT PROOF FIELD EFFECT TRANSISTOR

Stephen P. Robb, and Robert E. Rutter, both of Tempe, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 23, 1991, Ser. No. 749,020
Int. Cl.[5] H02H *7/10*
U.S. Cl. 361—18 **12 Claims**

1. A protection circuit for a field effect transistor, the field effect transistor having gate, source and drain electrodes, the protection circuit comprising:
single-ended sensing means having an input and an output, said input of said sensing means being coupled to the drain electrode of the field effect transistor for detecting when a voltage appearing at the drain electrode of the field effect transistor exceeds a predetermined voltage, said sensing means including:
a first resistor having first and second terminals, said first terminal of said first resistor being coupled to said input of said sensing means, said second terminal of said first resistor being coupled to said output of said sensing means; and
a second resistor having first and second terminals, said first terminal of said second resistor being coupled to said second terminal of said first resistor, said second terminal of said second resistor being coupled to a first supply voltage terminal;
a delay circuit having an input and an output, said input of said delay circuit being coupled to receive a control signal;



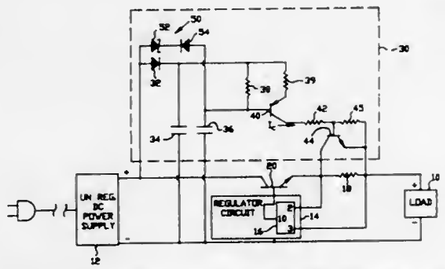
gate circuit means having first and second inputs and an output for turning off said first field effect transistor when said voltage appearing at said drain electrode of said first field effect transistor is in a similar logic state as a voltage applied to said gate electrode of said first field effect transistor, said first and second inputs of said gate circuit means being respectively coupled to said outputs of said delay circuit and said sensing means, said output of said gate circuit means being coupled to the gate electrode of the field effect transistor; and
a third resistor coupled between said input of said delay circuit and said output of said gate circuit means.

5,257,156

TURN-ON TRANSIENT OVERCURRENT RESPONSE SUPPRESSOR

Thomas I. Kirkpatrick, La Jolla, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 18, 1992, Ser. No. 855,362
Int. Cl.[5] H02H *3/06, 3/093*
U.S. Cl. 361—18 **8 Claims**



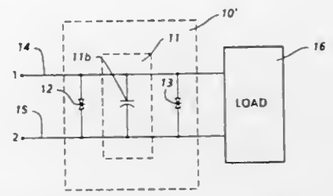
1. A turn-on transient overcurrent response suppressor comprising:
a first charging circuit connected to a DC power supply for simultaneous charging therewith, the power supply providing an input voltage to a serially connected load, wherein a regulator circuit is connected between the power supply and load for interrupting the supply of power to the load in the event of an overcurrent condition, the regulator circuit including a current sensing resistor for sensing the overcurrent condition;
a second charging circuit connected to said first charging circuit for delayed charging therewith;
means, connected between said first and second charging circuits for providing a low impedance discharge path for said second charging circuit while preventing discharge of said first charging circuit when the power supply is no longer providing the input voltage;
a first transistor circuit having a base-emitter junction connected to said second charging circuit; and
a second transistor circuit having a base-emitter junction connected to a collector of said first transistor circuit, said second transistor circuit further having a collector and emitter connected across the current sensing resistor whereby said first and second transistor circuits are turned on during the charging and discharging of said second charging circuit and turned off when said second charging circuit is fully charged.

5,257,157

PROTECTOR NETWORK FOR A-C EQUIPMENT

Barry M. Epstein, 1400 S. Sherman #202, Richardson, Tex. 75081

Filed May 4, 1990, Ser. No. 519,180
Int. Cl.[5] H02H *9/00, 1/04*
U.S. Cl. 361—111 **27 Claims**



1. In a system wherein a-c power is supplied to a load from an a-c voltage source which includes a protector network disposed between said voltage source and said load, said protector network comprising a first voltage suppressor at the source side of said network connected across the supply lines from said source, a second voltage suppressor at the load side of said network connected across the supply lines to said load, the minimum breakdown voltage of said first suppressor being that voltage, above which would damage the load, whereby the breakdown of the first voltage suppressor results in the voltage across the load being below that which would damage the load and protecting said load from power surges and voltage transients occurring at said source side; and filter means disposed between said first and second voltage suppressors for filtering the power to said load, said second voltage suppressor being effective to protect the load from conditions occurring at the load side, the improvement in combination therewith comprising:
said filter means being an inductive/capacitive type filter, said filter means including a line connecting said first and second voltage suppressors together with said line having a self-inductance, said line self-inductance being the only inductance of said filter means and attenuates high frequency disturbances.

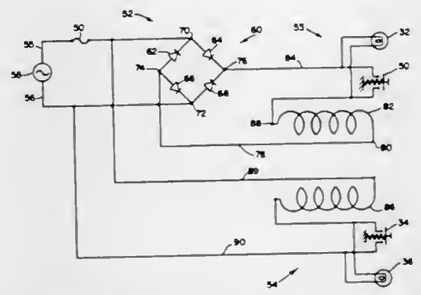
5,257,158

APPARATUS FOR MAGNETIZING AND DEMAGNETIZING A TOOL

Mack A. Smith, Rte. 4, Box 138, Hamilton, Ala. 35570

Filed Oct. 25, 1991, Ser. No. 782,594
Int. Cl.[5] H01F *13/00*
U.S. Cl. 361—143 **9 Claims**

1. Apparatus for selectively magnetizing and demagnetizing a magnetically permeable article, said apparatus comprising:
a. an enclosure;
b. an electrical circuit contained within the enclosure and including a magnetizing loop and a demagnetizing loop, each of the magnetizing and demagnetizing loops adapted to be coupled with a unitary source of alternating current electrical power, wherein the magnetizing loop includes a rectifier for converting alternating current to substantially direct current and provides a substantially constant intensity magnetic field, and wherein the demagnetizing loop provides an alternating magnetic field, the enclosure including a first opening positioned adjacent the magnetizing loop and a second opening positioned adjacent the demagnetizing loop, the first and second openings each having a size sufficient to permit the passage therethrough and into the interior of the enclosure of a magnetically



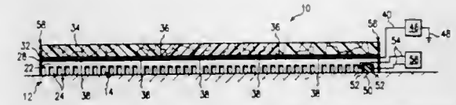
permeable article to be magnetized or demagnetized by inserting the article into the first or second openings, respectively;
c. a first switch coupled with the magnetizing loop and a source of electrical power for selectively energizing the magnetizing loop to provide the substantially constant intensity magnetic field; and
d. a second switch coupled with the demagnetizing loop and the source of electrical power for selectively energizing the demagnetizing loop to provide the alternating intensity magnetic field.

5,257,159

ELECTRONICALLY MONITORED AND CONTROLLED ELECTROSTATIC DISCHARGE FLOORING SYSTEM

William D. Wallace, Fort Worth, and Larry E. Smith, Dallas, both of Tex., assignors to Loral Vought Systems Corporation, Grand Prairie, Tex.

Continuation-in-part of Ser. No. 357,299, May 26, 1989, Pat. No. 5,043,839. This application Apr. 29, 1991, Ser. No. 693,959
Int. Cl.[5] H05F *3/00*
U.S. Cl. 361—220 **7 Claims**



1. An electrostatic charge controlling flooring structure system having a ground continuity check, comprising:
a flooring structure for dissipating electric charge but which is electrically isolated from any base surface which the flooring structure covers;
a primary current path for dissipating charge from the flooring structure to electrical ground, comprising a series-connected variable resistance and normally-closed switch, wherein the normally-closed switch is connected to a first node and the variable resistance is connected to a second node;
a first lead wire connected between the first node and electrical ground and a second lead wire connected between the second node and the flooring structure;

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a secondary current path for directly coupling the flooring structure to electrical ground comprising a normally-open switch coupled between the flooring structure and electrical ground; and

a resistance monitor connected between the first node and the second node, wherein, upon activation of the resistance monitor, the normally-closed switch is opened and the normally-open switch is closed so that the resistance monitor measures the resistance of a continuity check current path comprising the first node, the first lead wire, the secondary current path, the second lead wire and the second node, such that an infinite resistance value is measured by the resistance monitor if there is a discontinuity in the first lead wire or the second lead wire.

5,257,160

SERIAL SIGNAL TRANSMISSION DEVICE AND CONTROL METHOD FOR DETERMINING POLARITY

Koji Yokohama; Fumio Aoi; Kanji Isomichi, all of Nagoya; Atsushi Hirose, Nishikasugai; Hitoshi Yasuda, Nishikasugai, and Chuzo Ninagawa, Nishikasugai, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

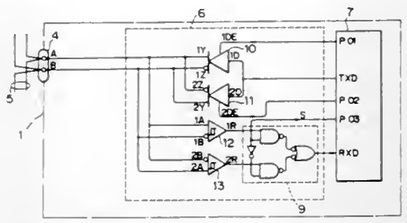
PCT No. PCT/JP90/00490, § 371 Date Apr. 11, 1991, § 102(e) Date Apr. 11, 1991, PCT Pub. No. WO91/07034, PCT Pub. Date May 16, 1991

PCT Filed Apr. 12, 1990, Ser. No. 651,260

Claims priority, application Japan, Oct. 25, 1989, 1-276048

Int. Cl.[5] H04B *3/02;* **H04L** *25/00*

U.S. Cl. 361—246 **7 Claims**



1. A serial signal transmission device for transmitting signals between a plurality of control devices using two transmission wires with fixed polarity, comprising a serial transmission interface for each of said plurality of control devices, each of said serial transmission interfaces including a pair of differential drivers and a pair of receivers wherein driver outputs of different polarity of said pair of differential drivers are interconnected.

5,257,161

COUPLING SYSTEM FOR ELECTRIC SWITCHGEAR MODULES IN TRANSFORMATION CENTERS AND THE LIKE

Javier O. Ocerin, Barrio Mendieta, 48330 Lemona - (Vizcaya), Spain

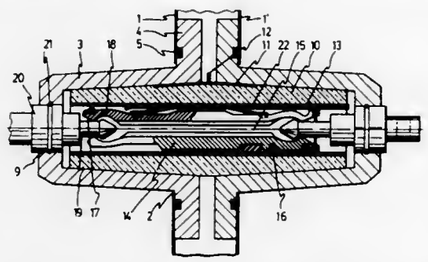
Filed Jun. 26, 1992, Ser. No. 907,918

Claims priority, application Spain, Jun. 26, 1991, 910510

Int. Cl.[5] H02B *7/01;* **H01R** *13/74, 11/09*

U.S. Cl. 361—605 **3 Claims**

1. An electric switchgear system comprising modules electrically connected in transformation centers, each module having a hole which faces the hole of an adjacent module, the system further comprising cup-shaped cover-guards each having a base portion and an enlarged portion opposite to said base portion and each being fitted in each said hole so that two enlarged portions of two cover-guards fitted in two adjacent coupled modules face each other; flange members retaining said cover-guards to said modules; sealing gaskets sealing said enlarged portions to walls of said adjacent modules, each over-guard having a hole in the base portion thereof; tow contactor elements each terminating with a conductive tab and being fixed in said hole in the base portion of the respective cover-guard each tab being positioned inside the respective cover-guard; means on each contactor element for sealing the respective conductive tab inserted in the cover-guard, the



conductive tabs inserted in the two cover-guards of the two adjacent modules extending towards each other and coaxially facing each other, the conductive tabs being electrically connected by connecting means.

5,257,162

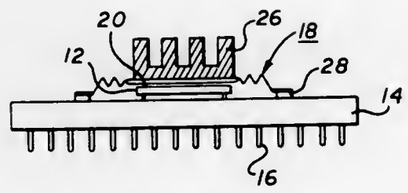
BELLOWS LID FOR C4 FLIP-CHIP PACKAGE

Douglas Crafts, San Jose, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Nov. 20, 1992, Ser. No. 979,636

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—704 **8 Claims**



1. An electronic package, comprising:

a substrate;

an electrical device coupled to said substrate; and,

a lid that has a plate portion contiguous with said electrical device, an outer frame portion attached to said substrate and a bellows portion coupled to said outer frame portion and said plate portion, said lid being attached to said substrate so that said plate portion applies a pressure to said electrical device, said bellows portion extending between said plate portion and said outer frame portion in both an axial and longitudinal direction relative to said substrate.

5,257,163

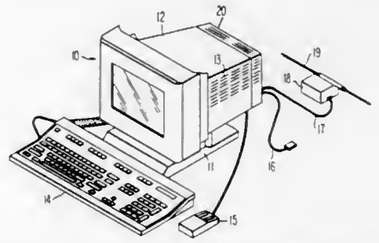
COMPUTER SYSTEM HAVING MONITOR WITH DETACHABLE MODULE FOR PROVIDING DIVERSE FUNCTIONALITY

Kevin S. Buist, Belle Mead; Robert J. Campesi, Flemington; Randolph W. Raine, Belle Mead; Jeffrey A. Walck, Lebanon; John Weinschenk, Edison, all of N.J., and Elisa E. Zappacosta, Media, Pa., assignors to Unisys Corporation, Blue Bell, Pa.

Continuation of Ser. No. 882,242, Jan. 17, 1992, abandoned, which is a continuation of Ser. No. 648,695, Jan. 31, 1991, Pat. No. 5,097,388. This application Aug. 28, 1992, Ser. No. 936,059

Int. Cl.[5] H05K *5/02;* **G06F** *1/16*

U.S. Cl. 361—729 **21 Claims**



1. A digital computer system having personality attributes comprising:

a monitor having monitor electrical connector means accessible at the exterior thereof,

said monitor including an internal power supply and said monitor electrical connector means including a power output connector coupled to said internal power supply,

personality module means having circuit card means therein for imparting said personality attributes to said system and for providing display signals for said monitor, said personality module means having module electrical connector means accessible at the exterior thereof for mating with said monitor electrical connector means, said module electrical connector means being electrically coupled to said circuit card means,

said module electrical connector means including a power input connector for mating with said power output connector to receive power for said personality module means from said internal power supply of said monitor,

said power input connector being electrically coupled to said circuit card means, and

coupling means for coupling said personality module means to said monitor so that said module electrical connector means engages with said monitor electrical connector means to couple said display signals from said module to said monitor, and to couple said power from said power supply in said monitor to said module.

5,257,164

COUNTER-TOP TOUCH-SCREEN INTERFACE TERMINAL CHASSIS HAVING A PLURALITY OF POSITIONS

Juan M. Perez, and Thomas R. Mast, both of Austin, Tex., assignors to Compuadd Corporation, Austin, Tex.

Filed Oct. 13, 1992, Ser. No. 960,535

Int. Cl.[5] H05K *5/02*

U.S. Cl. 361—395 **8 Claims**

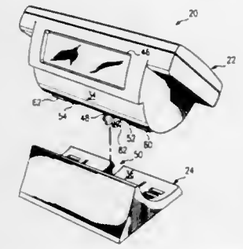
1. A chassis for a counter-top touch-screen interface terminal associated with a central processing unit, comprising:

a lower housing; and

an upper housing engaging with and resting on said lower housing, said upper housing, comprising: a touch-screen for communicating information with the central processing unit;

slide bar means protruding from said upper housing for slidably engaging said upper housing with said lower housing; and

an adjustment bar protruding from said upper housing for selectively engaging one of a plurality of adjustment detents in said lower housing as said upper housing engages and rests on said lower housing to provide one



of a variety of selectable fixed viewing angles of said touch-screen;

said lower housing, further comprising a slide bar slot for receiving said slide bar means so that said slide bar means slidably engages said upper housing with said lower housing.

5,257,165

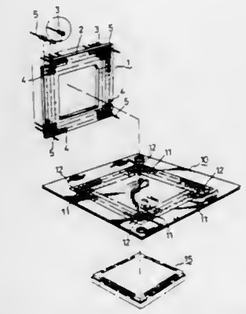
PIN GRID ARRAY ADAPTOR MOUNTING HARDWARE

Jung-Shan Chiang, Taipei, Taiwan, assignor to Jaton Technology Co., Ltd., Taipei, Taiwan

Filed Feb. 13, 1992, Ser. No. 834,841

Int. Cl.[5] H05K *1/00*

U.S. Cl. 361—748 **2 Claims**



1. A pin grid array (PGA) adaptor mounting hardware comprising a PGA adaptor and a printed circuit board comprising:

said PGA adaptor comprises a body made from a flat plate having a plurality of double-head fastening pins at corners thereof and a plurality of contact pins at suitable locations, said contact pins being respectively vertically inserted through said body with contact terminals thereof disposed on a top edge on said body; said printed circuit board comprises a plurality of apertures for fastening said double-head fastening pins, a plurality of conductive points of a printed circuit on a top edge thereof for connecting the contact terminals of said contact pins, a transistor circuit on a bottom edge thereof at a location opposite to said printed circuit for mounting an IC, said transistor circuit being electrically connected to the conductive points of the printed circuit on the top edge thereof; and

said printed circuit board is covered with a layer of tin paste over the apertures and the conductive points of said printed circuit, permitting said PGA adaptor to be connected thereto by inserting said double-head fastening pins

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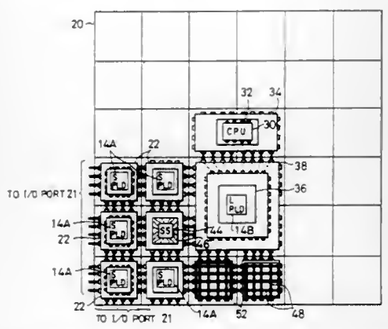
into said apertures and soldering the contact terminals of said contact pins to the conductive points of said printed circuit.

5,257,166

CONFIGURABLE ELECTRONIC CIRCUIT BOARD ADAPTER THEREFOR, AND DESIGNING METHOD OF ELECTRONIC CIRCUIT USING THE SAME BOARD

Tomohiro Marui, Fuchuu; Yoshihiro Ishida, Chiba; Hiroyuki Oka, Chiba, and Izumi Hayashibara, Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Continuation of Ser. No. 531,061, May 31, 1990, abandoned.
This application Oct. 22, 1992, Ser. No. 966,904
Claims priority, application Japan, Jun. 5, 1989, 1-142381; Jun. 5, 1989, 1-142382; Jun. 5, 1989, 1-142383
Int. Cl.[5] H05K *7/02, 7/10*
U.S. Cl. 361—760 **11 Claims**



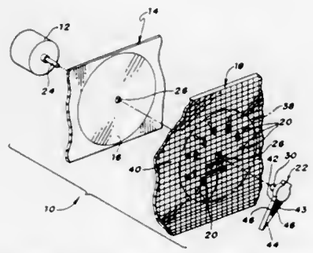
1. A configurable electronic circuit board comprising:
(a) a board including a plurality of modular sockets in a minimum unit, each of said modular sockets having a standardized size and a standardized number of pins, said modular sockets being arranged in parallel relationship with one another and connected at terminals thereof to one another through simple wirings;
(b) a pin adapter having a size which is a positive integer multiple of that of said modular sockets and composed of adapter pins insertable into said modular sockets, of an adapter socket into which electronic circuit parts are insertable, and of socket wiring for connecting said adapter socket with said adapter pins;
(c) a switching station adapter having a size which is a positive integer multiple of that of said modular sockets and composed of adapter pins insertable into said modular sockets, and of wiring determining means for determining the connection of wiring among said adapter pins; and
(d) a bypass adapter having a size which is a positive integer multiple of that of said modular sockets and being inserted into one of said modular sockets which is not used, composed of adapter pins insertable into said modular sockets, and of fixed wiring for simply bypass connecting among said adapter pins,
whereby an arbitrary circuit is realizable by inserting each said adapter and said electronic circuit parts into an arbitrary modular socket.

5,257,167

SILHOUETTE ILLUMINATED VEHICLE DISPLAY APPARATUS

James M. Clem, Macy, Ind., assignor to Delco Electronics Corporation, Kokomo, Ind.

Filed Aug. 24, 1989, Ser. No. 399,563
The portion of the term of this patent subsequent to Feb. 5, 2008, has been disclaimed.
Int. Cl.[5] G01D *11/28*
U.S. Cl. 362—27 **4 Claims**



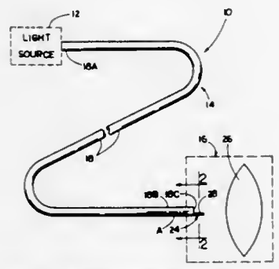
1. Motor vehicle instrument panel display apparatus adapted to be viewed by a vehicle occupant during both high and low ambient lighting conditions, comprising:
instrument panel mounted film means including a translucent display region and bright opaque graphic symbols formed on a surface of said display region which faces toward the viewing occupant so that in high ambient lighting conditions, the occupant perceives the bright opaque graphic symbols against the translucent display region; and
electroluminescent lamp means having an active region which when activated emits diffuse light onto the surface of the film means which faces away from the occupant, at least in the vicinity of said translucent display region, so that when the lamp means is activated during low ambient lighting conditions, the occupant perceives the graphic symbols in silhouette against the lighted translucent display region of said film means.

5,257,168

PROJECTION HEADLAMP LIGHTING SYSTEM USING A LIGHT CONDUCTOR HAVING STEPPED TERMINATION

John M. Davenport, Lyndhurst, and Richard L. Hansler, Pepper Pike, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 30, 1992, Ser. No. 982,911
Int. Cl.[5] F21V *8/00;* **F21M** *3/05*
U.S. Cl. 362—32 **18 Claims**



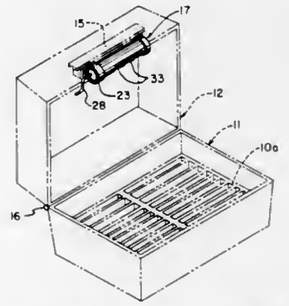
1. A projection headlamp system, comprising:
(a) means for generating light;
(b) means for receiving the light from said generating means and for distributing the light to a preselected lighting position, said light distributing means including at least one elongated optical light conductor having respective input and output ends; and
(c) means for receiving the light at said preselected lighting position from said output end of said optical light conductor and being operable for projecting the light therefrom in a desired light pattern;
(d) said light receiving and projecting means including
(i) an optical structure in a configuration of at least one step attached to and protruding axially outwardly from an end face on said output end of said light conductor, and
(ii) an optical lens being spaced from said outer end of said light conductor, said lens also being spaced from an outer terminal end of said protruding step at a distance substantially equal to a focal length of said lens such that said outer terminal end of said step of said structure is at a distance from said lens substantially equal to said focal length of said lens such that said lens is capable of gathering light projected from said output end of said light conductor and from said optical structure and of producing said desired light pattern having a first portion focussed by said optical structure and a second portion widely spread by said end face of said light conductor.

5,257,169

BARBECUE GRILL LIGHTING APPARATUS

Richard W. Walendziak, 243 Lancaster St., West Boylston, Mass. 01583

Filed Jun. 19, 1992, Ser. No. 900,668
Int. Cl.[5] F21V *33/00*
U.S. Cl. 362—92 **3 Claims**



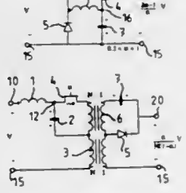
1. A barbecue grill lighting apparatus, comprising,
a barbecue grill including a lower housing and an upper housing, the upper housing and lower housing include an intercommunicating hinge member to pivotally mount the upper housing relative to the lower housing, and
the lower housing including a barbecue grill grate positioned therewithin below the upper housing, and
the upper housing including an upper housing front wall, the lower housing including a lower housing front wall, the upper housing front wall including a handle, and
a first handle flange and a second handle flange fixedly mounted to the upper housing front wall in a spaced relationship, with the handle secured to the first handle flange and the second handle flange spaced relative to the upper housing front wall, and
an illumination housing mounted to the first handle flange and the second handle flange below the handle, and illumination means mounted within the illumination housing for effecting selective illumination from within the illumination housing, and
the illumination housing includes a cylindrical housing, the cylindrical housing including a first end wall spaced from and parallel a second end wall, and the first end wall plate mounted to the first end wall, a second end wall plate mounted to the second end wall, the first end wall plate including an end wall plate aperture directed therethrough, and the first end wall including a direct current generator socket directed through the first end wall, and a direct current generator mounted within the cylindrical housing in adjacency to the first end wall having the direct current generator socket directed therewithin, and a crank handle directed through the wall plate aperture into the direct current generator socket.

5,257,170

ELECTRIC CONVERTER WITH SEVERAL INDUCTION COILS

Herman J. Spruijt, Wassenaar, Netherlands, assignor to Agence Spatiale Europeenne, Paris, France

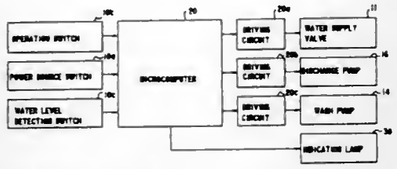
PCT No. PCT/EP90/00904, § 371 Date Mar. 25, 1991, § 102(e) Date Mar. 25, 1991, PCT Pub. No. WO90/15469, PCT Pub. Date Dec. 13, 1990
PCT Filed May 28, 1990, Ser. No. 640,375
Claims priority, application France, Jun. 2, 1989, 89 07562
Int. Cl.[5] H02M *3/155*
U.S. Cl. 363—16 **17 Claims**



1. An electric converter comprising:
at least three reactive elements connected in series, said three reactive elements comprising a first induction coil, a second induction coil, and a first capacitor, said first capacitor being connected between said first induction coil and said second induction coil thereby forming a first connection point between said first induction coil and said first capacitor and a second connection point between said first capacitor and said second induction coil; and
a switching device, said switching device comprising a switching transistor, a diode, a second capacitor, and a third induction coil, said switching transistor having a source electrode and a drain electrode, said transistor being capable of operating at a high frequency so that it becomes conducting for a fraction of each period of said frequency, said second capacitor and a first one of said diode and said transistor being connected in series with each other and with a first one of said first and second connection points, the other one of said diode and said transistor being connected to the other one of the first and second connection points, the connection of said second capacitor and said first one of said diode and said transistor forming a third connection point, said third induction coil being connected between said third connection point and said other one of the first and second connection points, so that the diode is conducting only when the transistor is non-conducting and so that the diode is non-conducting each time the transistor becomes conducting.

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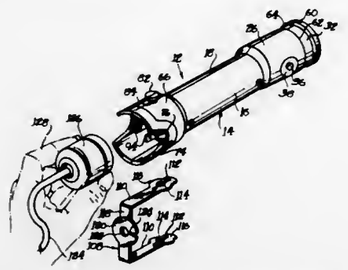
5,257,171
ELECTRIC CONTROL APPARATUS FOR DISHWASHING MACHINE
Yasuo Hara, Shimane, Japan, assignor to Hoshizaki Denki Kabushiki Kaisha, Aichi, Japan
Filed Feb. 18, 1992, Ser. No. 836,440
Claims priority, application Japan, Feb. 15, 1991, 3-044343
Int. Cl.[5] G06F 15/46; G05B 19/04
U.S. Cl. 364—143 3 Claims



1. An electric control apparatus for a dishwashing machine having a washing chamber, a water supply pipe arranged to supply hot water from a supply source of hot water into the washing chamber, an electrically operated water supply valve disposed within the water supply pipe to permit the supply of hot water into the washing chamber therethrough when activated, a wash tank arranged to be supplied with the hot water through the washing chamber, a wash pump arranged to pump up the hot water from the wash tank when activated, a revolving wash arm arranged within the washing chamber to direct jet streams of the hot water supplied from the wash pump to a rack of tableware placed in the washing chamber, and a discharge pump arranged to discharge the hot water from the wash tank when activated, comprising:
a power source switch;
means for successively measuring first, second, third and fourth predetermined times in response to operation of said power source switch;
means for activating said water supply valve in response to operation of said power source switch to supply hot water into said wash tank from said supply source of hot water through said water supply pipe and said washing chamber and maintaining the supply of hot water into said water tank during the first and second predetermined times;
means for activating said discharge pump upon lapse of the first predetermined time to discharge the hot water from said wash tank during the second predetermined time;
means for deactivating said water supply valve and said discharge pump upon lapse of the second predetermined time and maintaining said water supply valve and said discharge pump at their deactivated conditions during the third predetermined time; and
means for activating said discharge pump upon lapse of the third predetermined time to discharge the hot water from said wash tank during the fourth predetermined time and deactivating said discharge pump upon lapse of the fourth predetermined time.

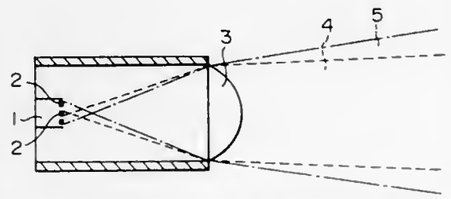
5,257,172
TROUBLE LIGHT
Clifford C. Erickson, 621 Prairie Ave., Janesville, Wis. 53545
Filed Oct. 23, 1991, Ser. No. 780,952
Int. Cl.[5] F21V 23/06
U.S. Cl. 362—226 7 Claims

1. A trouble light for use with an extension cord comprising an elongated housing of insulating material, an electric lamp socket within said housing and opening outwardly thereof for receipt of an electric light bulb, a standard set of male electrical contact prongs extending from a portion of said housing, a portion of said housing being spaced from said set of male electrical prongs and extending in the same direction as said prongs in shielding relation thereto, and electrical conducting means within said housing electrically interconnecting said set of prongs and said electric lamp socket, said shielding portion having recesses therein for finger and thumb access to an



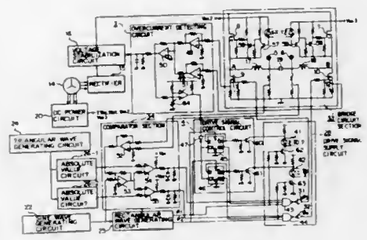
extension cord female socket temporarily associated with said set of prongs.

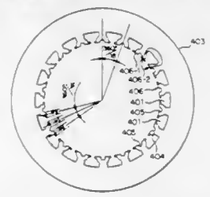
5,257,173
LIGHT IRRADIATING APPARATUS HAVING LIGHT EMITTING DIODE USED AS LIGHT SOURCE
Yukio Ohmamyuda, Sagamihara; Shigeru Kimura, Yokohama; Toru Tanabe, Machida; Kazuhisa Iwasaki, Yokohama; Takao Seto, Yokohama; Hideki Kitamura, Yokohama; Kazuhiko Sugimura, Yokohama, and Yasushi Senoo, Yokohama, all of Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan
Filed Dec. 3, 1991, Ser. No. 801,943
Claims priority, application Japan, Dec. 7, 1990, 2-401774; Dec. 17, 1990, 2-403505; Dec. 17, 1990, 2-403506; Dec. 21, 1990, 2-404101; Dec. 22, 1990, 2-404364
Int. Cl.[5] F21V 5/04
U.S. Cl. 362—235 6 Claims



1. A light source for illuminating an object with a light beam of selected divergence angle, the light source comprising:
a lens;
a plurality of light emitting units arranged in a given array, said light emitting units being arranged opposite to said lens such that a light beam having a divergence angle is output from said lens upon activation of said light emitting units; and
means for varying the divergence angle of said light beam which is output from said lens, said means for varying including activation means for simultaneously activating a selected number of said light emitting units said selected number including less than all of said light emitting units, so that light emission from less than all of said light emitting units can be changed to light emission from all of said light emitting units, and vice versa to selectively change the divergence angle of the light beam output from said lens; whereby said light emission from less than all of said light emitting units produces a given light beam output from said lens having a given divergence angle at an output side of said lens, and light emission from all of said light emitting units produces a light beam output from said lens having a wider divergence angle than that of said given light beam.

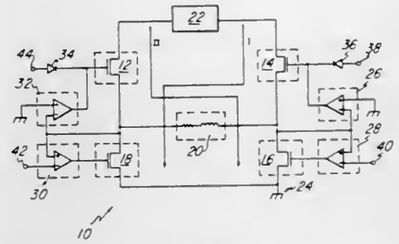
5,257,174
ENGINE-DRIVEN POWER GENERATING SYSTEM WITH OVER-CURRENT PROTECTION AND STATOR TEETH WITH GROOVES ON A TOP SURFACE
Kazuyuki Ogiwara; Keisuke Okada, and Hiroshi Kobiyama, all of Nitta, Japan, assignors to Sawafuji Electric Co., Ltd., Tokyo, Japan
Filed Feb. 27, 1991, Ser. No. 661,900
Claims priority, application Japan, Feb. 28, 1990, 2-19966[U]; Feb. 28, 1990, 2-48006
Int. Cl.[5] H02M 5/458
U.S. Cl. 363—36 6 Claims





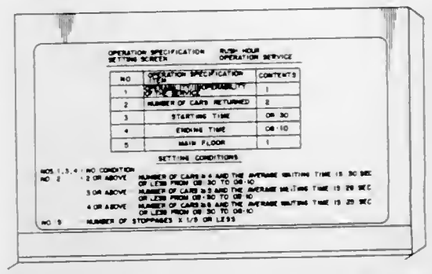
1. An engine-driven power generating system, comprising a bridge circuit section in which low-frequency switching elements are alternately driven by low-frequency drive signals, and high-frequency switching elemnts are driven by high-frequency drive signals during an ON period of said low-frequency switching elements; a drive signal supply circuit for supplying said low-frequency and high-frequency drive signals to said low-frequency and high-frequency switching elements, both of said switching elements forming pairs; an engine-driven a-c generator including main rectifier means for converting a-c voltage into d-c voltage; said bridge circuit section then converting said d-c voltage into a predetermined low-frequency a-c voltage said a-c generator has a stator in which grooves are provided on a top surface of teeth between slots on which generating windings are wound;
an overcurrent detecting circuit for detecting overcurrent flowing in said bridge circuit section at a level above a pre-determined current level, said overcurrent-detecting circuit including current-detecting resistors connected in series to each of said high-frequency switching elements, said overcurrent-detecting circuit measuring terminal voltages of each of said current-detecting resistors at each half-wave of said pre-determined low-frequency a-c, said overcurrent-detecting circuit indicating an overcurrent condition if said terminal voltages are above a threshold value;
a drive signal control circuit for outputting to said drive signal supply circuit a signal which, when said overcurrent detecting circuit detects said overcurrent during any one half-cycle of low-frequency signal in which low-frequency switching elements are turned on, turns off at least one of low-frequency and high-frequency switching elements being driven in the ON state during said half-cycles after the detection of said overcurrent; and
a low-pass filter on an output end of said bridge circuit section is provided for obtaining a sine-wave waveform.

5,257,175
ANALOG CONTROL OF INDUCTIVE FLYBACK VOLTAGES IN A FULL BRIDGE CIRCUIT
Dale J. Skelton, Plano; Kuok Y. Ling, Webster, and Myron G. Manternach, Houston, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed May 8, 1992, Ser. No. 880,956
Int. Cl.[5] H02M 7/5387
U.S. Cl. 363—56 5 Claims



1. A voltage regulation circuit, comprising:
four semiconductor switches connected in an H-bridge configuration:
four feedback circuit networks, wherein the feedback circuit networks are composed of single operational amplifiers with each feedback circuit network connected from the output of each semiconductor switch to the control terminal of each semiconductor switch; and
a load connected between the outputs of the four semiconductor switches.

5,257,176
CONTROL OPERATION SPECIFICATION SETTING APPARATUS FOR AN ELEVATOR
Kenichi Uetani, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 26, 1990, Ser. No. 514,741
Claims priority, application Japan, May 19, 1989, 1-124487
Int. Cl.[5] G05B 13/02, 17/42
U.S. Cl. 364—148 16 Claims



1. An apparatus for setting a control operation specification for an elevator comprising:
operation specification storage means for storing a plurality of operation specifications used to control the elevator;
alteration range data storage means for storing alteration range data indicating which of the operation specifications can be reset;
setting condition storage means for storing setting conditions for the operation specifications that can be reset;
display means for displaying the operation specifications that can be reset as well as the setting conditions corresponding to the operation specifications that can be reset;

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input means for enabling a human operator to select one of the operation specifications and to input a new value for the selected operation specification;

determination means for determining whether or not the selected operation specification is one of the operation specifications that can be reset based on the alteration range data and whether the selected operation specification can be reset to the new value input by the operator based on the setting condition for the selected operation specification stored in the setting condition storage means and a current value of the selected operation specification; and

resetting means for resetting the selected operation specification stored in the operation specification storage means to the new value input by the operator only when the determination means determines that the selected operation specification is one of the operation specifications that can be reset and that the selected operation specification can be reset to the new value.

5,257,177

APPARATUS FOR CONTROLLING THE MOVEMENT OF HYDRAULICALLY MOVABLE WORK EQUIPMENT AND A PATH CONTROL ARRANGEMENT

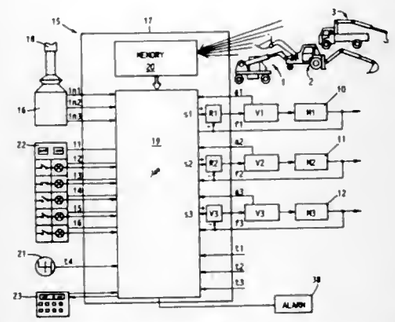
Michael Bach; Kjeld Aagaard; Torben Juul, all of Nordborg, Denmark; Hans E. Fogh, Nacka, Sweden; Svend E. Thomsen, Nordborg, Denmark; Helge S. Plougsgaard, Sydals, Denmark; John Kristensen, Sønderborg, Denmark, and Bent Larsen, Augustenborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Sep. 23, 1991, Ser. No. 763,891

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1990, 4030954

Int. Cl.[5] G06F *15/20*; E02F *3/32*

U.S. Cl. 364—167.01 **17 Claims**



1. A path control arrangement for hydraulically movable work equipment that is arranged at one end of a length-adjustable arm that is pivotable about an axis fixed with respect to the carrier, with hydraulic drive elements, comprising a drive unit for length for changing the length of the arm and a drive unit for angle for pivoting the arm, a control device which comprises a data memory and a processing arrangement, an operating device which is connected to the control device and generates input control signals depending on its position, position sensors which ascertain the length of the arm and its angle in relation to a predetermined plane, said control device having means operable from an actual starting position for ascertaining a sequence of desired positions and delivering a drive signal to the hydraulic drive units in order to move the work equipment from its current position into the next desired position, said control device having means for preventing the release of the next desired position until said position sensors report that the work equipment is located within a predetermined spacing about the current desired position.

5,257,178

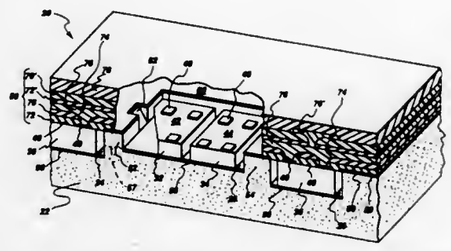
METHOD OF OPTIMALLY OPERATING A COMPUTER NUMERICAL CONTROL MILLING MACHINE TO MILL OPTIMAL HIGH DENSITY INTERCONNECT SUBSTRATES

William T. Hatfield, Schenectady; William W. Rohling, Scotia; Wolfgang Daum, Schenectady, and Carl L. Chalek, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 19, 1991, Ser. No. 810,793

Int. Cl.[5] G05B *19/18*

U.S. Cl. 364—191 **8 Claims**



1. A method for optimally operating a computer numerical control (CNC) milling machine to form in a substrate at least one cavity for a plurality of electronic components of a high density interconnect structure to be interconnected by a multilayer interconnect structure overlying and bonded to the substrate and the components based on locations and dimensions of the components and thus locations and dimensions of an initial set of cavities corresponding to the components on a one-for-one basis, particular neighboring cavities of the initial set either overlapping or being separated by walls, said method comprising the steps of:

forming a representation of the location and dimensions of each of the cavities of the initial set;

enhancing the representation to represent locations and dimensions of cavities of an optimized set; and

generating CNC program instructions for forming the cavities of the optimized set.

5,257,179

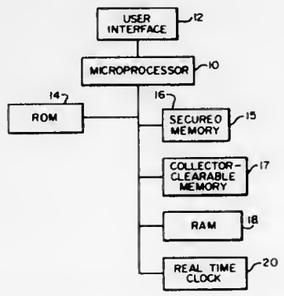
AUDIT AND PRICING SYSTEM FOR COIN-OPERATED GAMES

Lawrence DeMar, Chicago, Ill., assignor to Williams Electronics Games, Inc., Chicago, Ill.

Filed Oct. 11, 1991, Ser. No. 776,088

Int. Cl.[5] G06F *15/28*; G06K *5/00*

U.S. Cl. 364—410 **3 Claims**



1. A coin operated, stand alone amusement game comprising:

a) a microprocessor for controlling the game responsive to player inputs and game rules;

b) read only memory means in which the game rules are stored;

c) a collector clearable memory means in which selected game play statistics are stored for readout by a collector to determine the revenue generated by the game and its popularity with players;

d) a secured memory means which cannot be cleared by the collector;

e) resettable clock means for generating the current time and date;

f) means for storing in said secured memory means the time and date: (i) when the clock means was last set, and (ii) each time the clearable memory means is cleared;

g) bus means for electrically interconnecting the microprocessor to the various memory means and said resettable clock;

whereby unauthorized alteration of the statistics stored in said clearable memory means is detected.

5,257,180

CONTROLLING SYSTEM FOR PARALLEL OPERATION OF AC OUTPUT INVERTERS WITH RESTRAINED CROSS CURRENTS

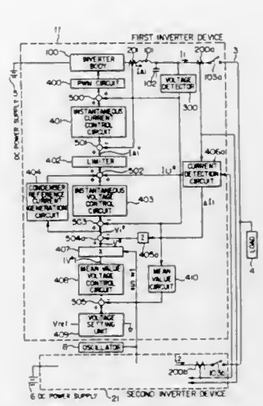
Nobuo Sashida, and Yushin Yamamoto, both of Kobe, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 21, 1992, Ser. No. 871,682

Claims priority, application Japan, Apr. 22, 1991, 3-118032; Apr. 25, 1991, 3-122671; Jun. 14, 1991, 3-169476; Jun. 25, 1991, 3-180344

Int. Cl.[5] H02M *7/48*

U.S. Cl. 363—71 **15 Claims**



1. A parallel operation system comprising:

a plurality of three-phase AC output inverters each including a reference sine wave generating circuit for controlling an instantaneous value of output voltages by causing arms of the plurality of three-phase AC output inverters to effect switching in respective phases a plurality of times during one cycle, including the use of two components of synchronous rotational coordinates and for generating a sine wave signal serving as a reference for a coordinate transform;

an additional power supply system;

a bus for sharing a load current between respective inverters of the plurality of three-phase AC output inverters and said additional power supply system by connecting outputs of said respective inverters and said additional three-phase AC power supply to a load;

a detection circuit for detecting a cross current component of an electric current flowing between said respective inverters and said additional three-phase AC power supply; and

a control circuit for controlling the output voltages of said respective inverters to restrain the cross current component detected by said detection circuit and adjusting a phase of the sine wave signal generated from a reference sine wave generating circuit within each of said inverters.

5,257,181

PROGRAMMABLE CONTROL SYSTEM

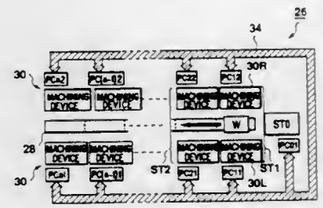
Fuyuhiko Yoshikura, Nagoya, and Teiji Uno, Kariya, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Mar. 22, 1991, Ser. No. 673,513

Claims priority, application Japan, Mar. 24, 1990, 2-74522

Int. Cl.[5] G06F *13/14*

U.S. Cl. 364—140 **3 Claims**



1. A programmable control system having a plurality of programmable controllers which are connected to each other through a link bus for controlling pieces of equipment in parallel while transmitting and receiving link data therebetween under the condition that any one of said plurality of programmable controllers has received link data from another one of said plurality of programmable controllers, wherein each of said programmable controllers comprises:

program storing means for storing a sequence program;

link control table storing means for storing a link table in which numbers are stored which uniquely identify each of the plurality of programmable controllers to which said link data is to be supplied at a specific step when executing said sequence program;

link data file creating means for creating a link data file in which a code is listed for each of the plurality of programmable controllers, the code indicating said link data required to be supplied from said another one of the plurality of programmable controllers at a specific step when executing said sequence program;

link data file supplying means for supplying the created link data file to said link bus; and

link control table writing means for receiving said link data file which is supplied from said another one of the plurality of programmable controllers and writing into said link control table numbers uniquely identifying each of the programmable controllers to which said link data is to be supplied in accordance with the contents of the received link data file.

5,257,182

MORPHOLOGICAL CLASSIFICATION SYSTEM AND METHOD

Randall L. Luck, Brooklyn, and Richard Scott, New York, both of N.Y., assignors to Neuromedical Systems, Inc., Suffern, N.Y.

Filed Jan. 29, 1991, Ser. No. 647,438

Int. Cl.[5] G06F *15/00*

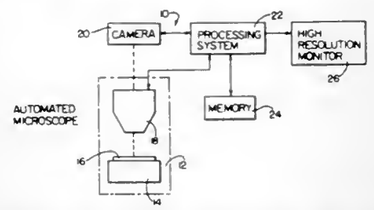
U.S. Cl. 364—413.1 **21 Claims**

1. A method of classifying objects in a cytological specimen, comprising the steps of:

a) obtaining a first image of at least part of such cytological specimen;

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b) classifying objects in such first image on the basis of a predetermined criteria;
c) selecting at least one object for display based on said classifying;



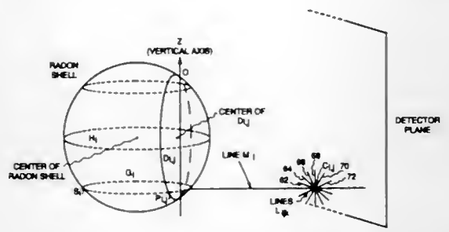
d) obtaining a second image of at least part of such cytological specimen containing said at least one selected object; and
e) displaying at least part of such second image to produce a visual display of said at least one selected object.

5,257,183

METHOD AND APPARATUS FOR CONVERTING CONE BEAM X-RAY PROJECTION DATA TO PLANAR INTEGRAL AND RECONSTRUCTING A THREE-DIMENSIONAL COMPUTERIZED TOMOGRAPHY (CT) IMAGE OF AN OBJECT

Kwok C. Tam, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 21, 1990, Ser. No. 631,815
Int. Cl.[5] G06F *15/42*
U.S. Cl. 364—413.19 **8 Claims**



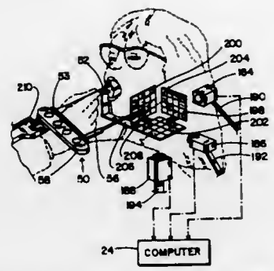
1. Method of producing a three-dimensional computerized tomography image of an object, comprising:
employing a cone beam x-ray source and a corresponding normalized detector plane having an origin and positioned with reference to said source to scan the object and obtain cone beam projection data, said cone beam projection data being in the form of line integrals through the object organized, for each of a plurality of x-ray source positions, as a two-dimensional data set on said detector plane, wherein each of said line integrals are perpendicular to a line defined between one of said source positions and said origin,
determining values representing planar integrals on a set of planes ϕ_j in Radon space by, for each of the source positions S_i,
defining in Radon space a corresponding spherical shell on which Radon data can be determined, intersections of the planes ϕ_j with the spherical shell corresponding to the source position S_i defining a set of circles D_{ij} on the spherical shell, and
for each of the circles D_{ij},
defining a rotation axis as a line through the source position S_i, intersecting the circle D_{ij}, and orthogonal to the plane of the circle D_{ij},
defining a set of coaxial integration planes Q_{ijk}, each of the integration planes Q_{ijk} containing the rotation axis and intersecting the circle D_{ij} to define the location of a Radon datum point R_{ijk}, and the integration planes Q_{ijk} intersecting the normalized detector plane on respective first lines L_{ijk}, and
for each of the first lines L_{ijk} on the normalized detector plane,
rotating the corresponding integration plane Q_{ijk} by a small rotation angle $\delta\beta$ to define a plane Q_{ijk}', intersecting the normalized detector plane on a corresponding first line L_{ijk}',
integrating along the first lines L_{ijk} and L_{ijk}' to determine respective weighted first line integrals J_{ijk} and J_{ijk}', and
dividing the difference between the weighted first line integrals J_{ijk} and J_{ijk}' by the rotation angle $\delta\beta$ to yield the radial derivative of the Radon datum at the point R_{ijk}; and
performing an inverse Radon transform on said values representing planar integrals on the set of planes ϕ_j to reconstruct an image of the object.

5,257,184

METHOD AND APPARATUS WITH MULTIPLE DATA INPUT STYLII FOR COLLECTING CURVILINEAR CONTOUR DATA

David R. Mushabac, 919 Ocean Ave., Brooklyn, N.Y. 11226

Continuation-in-part of Ser. No. 507,162, Apr. 10, 1990. This application May 1, 1991, Ser. No. 694,101
Int. Cl.[5] G06F *15/42*; A61C *19/04*
U.S. Cl. 364—413.28 **19 Claims**



1. A device for providing a computer with electrically encoded data specifying curvilinear contours of an object, said device comprising:
a manipulable frame member;
reference position establishing means for transmitting to said computer an electrical signal encoding a location of a reference point on said frame member;
a plurality of stylus elements each slidably mounted to said frame member for motion along respective axes extending at least partially parallel to one another; and
a stylus displacement measuring means operatively connected to said stylus elements for transmitting to said computer electrical signals encoding displacements of said stylus elements along the respective axes.

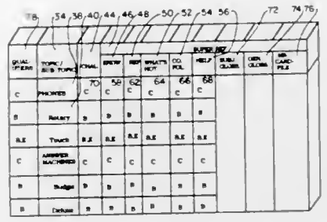
5,257,185

INTERACTIVE, CROSS-REFERENCED KNOWLEDGE SYSTEM

Ann W. Farley, 319 Ridgewood Rd., West Hartford, Conn. 06107; Clifford I. Waggoner, East Granby, Conn.; James W. Dutton, West Hartford, Conn., and David C. Allabaugh, East Granby, Conn., assignors to Ann W. Farley, West Hartford, Conn.

Filed May 21, 1990, Ser. No. 526,398
Int. Cl.[5] G06F *15/18*
U.S. Cl. 364—419.19 **24 Claims**

1. In a knowledge system for making available to each of a plurality of end users in an organization, a shared digital database of content information concerning a plurality of subjects relevant to the organization, the knowledge system having a computer and related hardware including means for storing a plurality of programs including an operating program for carrying out digital processing functions of the knowledge system and a plurality of application programs interacting with user interface means for selectively accessing and presenting information in the data base to the end users, the knowledge systems having a plurality of program modules including a combination of stored program instructions and computer hardware for performing a specified application function in the knowledge system, the improvement wherein the plurality of program modules comprises:
a subject outline module for,
defining a plurality of said subjects,
defining a plurality of topics, each topic being associated with one of the subjects,
defining a plurality of subtopics, each subtopic being associated with one of the topics,
wherein each topic and subtopic is digitally stored and associated as a node in a hierarchical outline of a subject;
an information content module having predetermined information content associated with each node, said information content being digitally stored as a plurality of information units, each information unit being a predetermined, associated subset of a category of information, and each category of information being a predetermined subset of



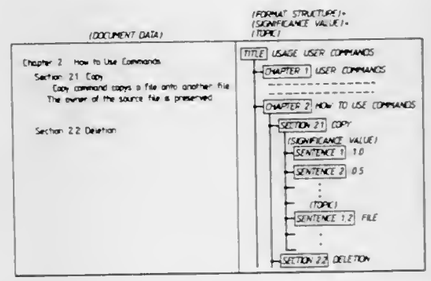
one of at least to two types of information, the types of information including,
a cross reference type which includes a plurality of cross-referenced categories in which each information unit is associated with only one node and with all other cross reference category information units that are associated with said one node, and
a general type which includes at least one general category in which each of the information units which is not in the cross reference categories, is associated with all nodes of a subject;
a navigation module responsive to the user interface means and interacting with the subject outline module and the information content module for the end user to,
select a subject and node for which the associated information units are to be presented,
select a particular information category associated with the selected node to be presented, such that the knowledge system presents to the end user a particular information unit in the selected category that is associated with the selected node,
select one of a plurality of options while said particular information unit is presented to the end user, including
accessing and being presented with at least one of the information units in a cross-referenced type category, which is associated only with the selected node, and then returning to said particular information unit, and
accessing and being presented with at least one of the information units in a general type of category and then returning to said particular information unit.

5,257,186

DIGITAL COMPUTING APPARATUS FOR PREPARING DOCUMENT TEXT

Teruhiko Ukita; Kazuo Sumita, and Satoshi Kinoshita, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed May 21, 1991, Ser. No. 702,809
Claims priority, application Japan, May 21, 1990, 2-129226
Int. Cl.[5] G06F *15/38*
U.S. Cl. 364—419.1 **26 Claims**



1. Digital computing apparatus for preparing document text from document data input by a user, the document text including a series of sentences, said apparatus comprising:
means for preparing document text from the document data input by the user; and
sentence significance means for determining a significance value of each sentence of the series of sentences of the document text, according to a function of a determined relation between each sentence and the immediately preceding sentence in the series of sentences, wherein a predetermined word or phrase at the beginning of a sentence in the series of sentences is a connector of that sentence with respect to the immediately preceding sentence, said sentence significance means including
means for assigning an initial significance value to each sentence in the series of sentences, and
means for computing an updated significance value for each sentence in the series of sentences according to a function of the connector of the sentence and a current significance value of the immediately preceding sentence.

5,257,187

TRANSLATION MACHINE SYSTEM

Hitoshi Suzuki; Shinobu Shiotani; Shinji Tokunaga, all of Nara; Tokuyuki Hirai, Yamatokoriyama; Yoji Fukumochi, Nara; Shuzo Kugimiya, Nara, and Ichiko Sata, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

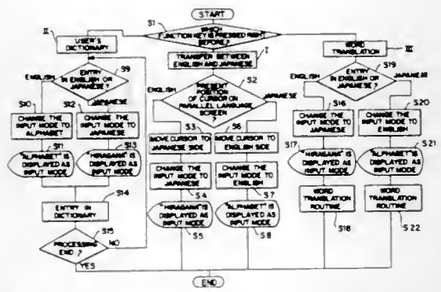
Continuation of Ser. No. 497,829, Mar. 22, 1990, which is a continuation of Ser. No. 125,369, Nov. 25, 1987, abandoned. This application Sep. 30, 1991, Ser. No. 768,339
Claims priority, application Japan, Nov. 28, 1986, 61-284493
Int. Cl.[5] G06F *15/38*; G06G *7/60*
U.S. Cl. 364—419.2 **7 Claims**

1. A translation machine system comprising:
a key board for inputting data into said system in first and second languages;
a plurality of function keys for selecting one of a corresponding plurality of processing modes of said system;
means, responsive to actuation of any one of said plurality of function keys, for automatically and selectively setting data input by said keyboard to operate in one of said first

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and second languages according to a selected one of said plurality of processing modes; and

means for automatically changing input in one of said first



and second languages only if a processing step of a selected one of said plurality of processing modes is processing in an alternate language from a processing step of the prior processing mode.

5,257,188

ENGINE BRAKE CONTROL OF CONTINUOUS VARIABLE TRANSMISSION RESPONSIVE TO VEHICLE BRAKE

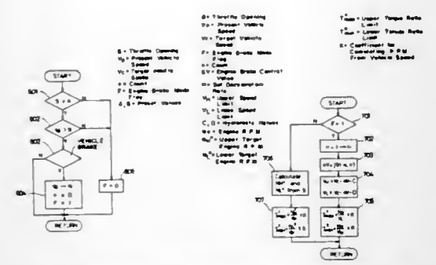
Shiro Sakakibara, and Kazuo Kamiya, both of Anjo, Japan, assignors to Aisin AW Co., Ltd., Japan

Filed Dec. 28, 1990, Ser. No. 633,357

Claims priority, application Japan, Dec. 29, 1989, 1-343895

Int. Cl.[5] B60K *41/22*

U.S. Cl. 364—424.1 **2 Claims**



1. In a continuously variable transmission for a vehicle, the transmission having an input shaft and an output shaft and means for continuously varying and transmitting the revolutions of an engine to wheels by changing the torque ratio between the input shaft and the output shaft, a control system of the continuously variable transmission comprising:

vehicle speed detecting means for detecting the running speed of the vehicle;

throttle opening detector means for detecting a throttle opening of the engine, said throttle opening being commanded by a driver of the vehicle;

brake signal detecting means for detecting a brake signal of the vehicle;

engine brake control means for setting an engine brake control value for the vehicle to a value based on the throttle opening and the vehicle running speed;

means for setting a target speed for the vehicle at a target value determinedly based on the present vehicle running speed when said detected vehicle running speed is higher than a first preset value, said throttle opening is lower than a second preset value, and said brake signal is absent;

said means for setting the target speed of the vehicle setting said target value determinedly based on the present vehicle running speed and said engine brake control value when said vehicle running speed is higher than the first preset value, said throttle opening is lower than the second preset value, and said brake signal is detected; and

torque ratio control means for controlling the torque ratio between the input shaft and the output shaft of said continuously variable transmission, in accordance with said target value and said throttle opening.

5,257,189

SPEED STAGE SHIFTING OF AUTOMATIC TRANSMISSION OF AUTOMOBILE IN RELATION TO YAW RATE IN STEERING

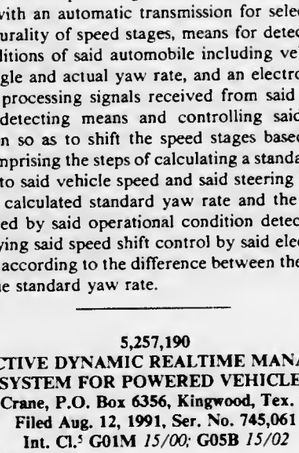
Toshiyuki Asada, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 26, 1991, Ser. No. 736,244

Claims priority, application Japan, Aug. 7, 1990, 2-208665; Aug. 9, 1990, 2-210649

Int. Cl.[5] G06F *15/50, 7/70*

U.S. Cl. 364—424.1 **7 Claims**



1. A method of speed stage shift control of an automobile equipped with an automatic transmission for selectively providing a plurality of speed stages, means for detecting operational conditions of said automobile including vehicle speed, steering angle and actual yaw rate, and an electronic control means for processing signals received from said operational condition detecting means and controlling said automatic transmission so as to shift the speed stages based upon said signals, comprising the steps of calculating a standard yaw rate according to said vehicle speed and said steering angle, comparing the calculated standard yaw rate and the actual yaw rate detected by said operational condition detecting means, and modifying said speed shift control by said electronic control means according to the difference between the actual yaw rate and the standard yaw rate.

5,257,190

INTERACTIVE DYNAMIC REALTIME MANAGEMENT SYSTEM FOR POWERED VEHICLES

Harold E. Crane, P.O. Box 6356, Kingwood, Tex. 77325

Filed Aug. 12, 1991, Ser. No. 745,061

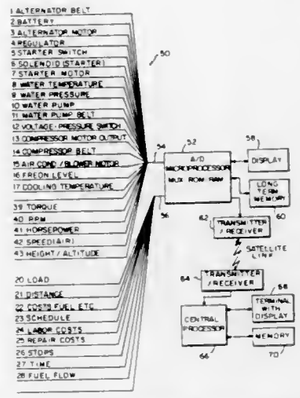
Int. Cl.[5] G01M *15/00;* **G05B** *15/02*

U.S. Cl. 364—424.03 **9 Claims**

1. A dynamic realtime management system for managing the condition of a powered vehicle comprising:

a microprocessor for sensing a plurality of realtime parameters associated with said powered vehicle and having means for receiving condition information relating to battery charging components of said powered vehicle, said realtime parameters selected to determined battery condition, said realtime parameters being battery voltage, starter switch voltage, and ignition input; p1 a memory for storing sensed values of said realtime parameters and storing a plurality of programs for defining relationships between certain of said sensed values of said realtime parameters;

a display interconnected to said microprocessor, said display for producing a humanly perceivable signal, said microprocessor programmed to automatically determine a plurality of unknown values relative to the conditions of said powered vehicle as a function of said sensed values of said realtime parameters by individually selecting said unknown values to be determined, said microprocessor for determining interactions between said sensed values using said stored programs, said microprocessor producing an interaction indication result, said microprocessor producing a condition output indicative of the relationship of said



condition information and said interaction indication result, said condition output being a battery condition, said microprocessor for transmitting said condition output to said display; and

a plurality of input sensor connected to said microprocessor so as to transmit said condition information to said microprocessor, said input sensors being interactively connected to a battery of said powered vehicle such that said microprocessor senses battery voltage, to an alternator motor such that said microprocessor senses alternator output voltage, to a starter switch such that said microprocessor senses starter switch voltage, and to a starter motor such that said microprocessor senses starter motor voltage.

5,257,191

STEERING DEVICE FOR REAR VEHICLE WHEELS

Shin Takehara, Higashi; Ryuya Akita, Hiroshima, and Hiroshi Ohmura, Hatsukaichi, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Sep. 25, 1991, Ser. No. 765,529

Claims priority, application Japan, Sep. 25, 1990, 2-258488; Sep. 25, 1990, 2-258489

Int. Cl.[5] B62D *7/15*

U.S. Cl. 364—424.05 **9 Claims**

1. A steering device for rear wheels of a vehicle, comprising:

a first motor operated in response to a steering angel of a steering wheel;

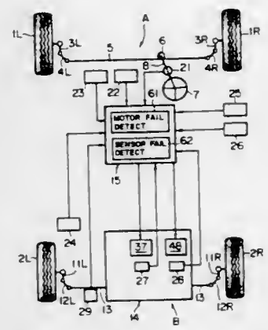
a gear change mechanism for changing a gear ratio;

a second motor for driving the gear change mechanism and controlling the gear ratio;

a steering mechanism for steering the rear wheels by transmitting a portion of steering power, obtained by multiplying a drive force of the first motor by a drive force of the second motor, to the rear wheels;

motor failure determination means which, when a rotational amount that an output shaft of one of the first and second motors is driven reaches zero, detects a failure in said one of the first and second motors and engages the other of the first and second motors; and

control means for controlling both the first and second



motors so that when the motor failure determination means detects a failure in said one of the first and second motors, a rotational amount that an output shaft of the other of the first and second motors is driven is set to zero.

5,257,192

BRAKE PRESSURE CONTROL SYSTEM FOR MOTOR VEHICLES

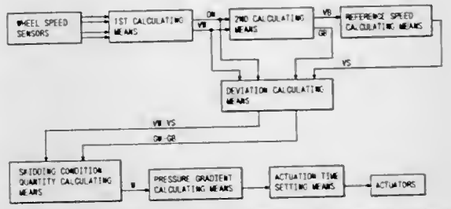
Shouichi Masaki, Chiryu, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 552,121, Jul. 13, 1990, abandoned. This application May 14, 1992, Ser. No. 884,460

Claims priority, application Japan, Jul. 14, 1989, 1-183504

Int. Cl.[5] B60T *8/50*

U.S. Cl. 364—426.02 **18 Claims**



1. A brake pressure control system for a motor vehicle having wheels, comprising:

skidding condition detecting means for detecting a skidding condition of at least one of the wheels based on at least a rotational speed of said at least one wheel and a speed of the motor vehicle in each of predetermined periodic cycles;

control means for determining a continuous pressure-changing gradient according to a difference between said skidding condition detected by said skidding condition detecting means and a target skidding condition, said pressure-changing gradient representing one of a continuous pressure-increasing gradient and a continuous pressure-reducing gradient, and for increasing and reducing a braking pressure applied to said at least one wheel according to said pressure-changing gradient representing a continuous pressure-increasing gradient and said pressure-changing gradient representing a continuous pressure-reducing gradient, respectively, so that the skidding condition detected by said skidding condition detecting means will approach said target skidding condition;

timer means for monitoring periods of time in which the braking pressure is continuously increased and reduced, respectively, by said control means,

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first correcting means for correcting said pressure-changing gradient representing a pressure-increasing gradient depending on said period of time, monitored by said timer means, in which the braking pressure is continuously increased; and

second correcting means for correcting said pressure-changing gradient representing a pressure-reducing gradient depending on said period of time, monitored by said timer means, in which the braking pressure is continuously reduced.

5,257,193

METHOD OF AUTOMATICALLY CHANGING THE SPEED STAGE OF A CONSTRUCTION VEHICLE BASED ON VEHICLE LOADING

Kohei Kusaka, Tokyo; Kiyoshi Kaneko, Kanagawa; Yoshiaki Kato, Tokyo, and Takeo Kato, Kanagawa, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Japan

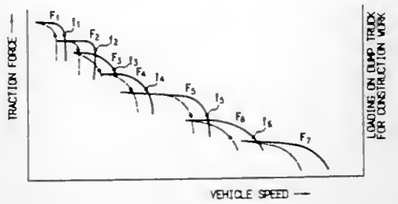
PCT No. PCT/JP88/00106, § 371 Date Oct. 3, 1988, § 102(e) Date Oct. 3, 1988, PCT Pub. No. WO88/05732, PCT Pub. Date Aug. 11, 1988

Continuation of Ser. No. 279,219, Oct. 3, 1988, abandoned. This PCT application Feb. 4, 1988, Ser. No. 742,282

Claims priority, application Japan, Feb. 4, 1987, 62-022492; Feb. 16, 1987, 62-031624; Feb. 16, 1987, 62-031625; Feb. 16, 1987, 62-031626; Feb. 16, 1987, 62-031627; Feb. 19, 1987, 62-034646

Int. Cl.[5] **B60K** *41/06*

U.S. Cl. 364—431.07 **8 Claims**



1. A method for automatically changing the speed of a construction vehicle wherein an output side of an engine is connected to a torque converter provided with a lock-up clutch, wherein an output side of said torque converter is connected to an input side of a power transmission having a plurality of hydraulically actuated clutches, and wherein an output side of the power transmission is connected through a differential gear mechanism to left and right hand drive wheels, comprising the steps of:

when the vehicle is running in a heavy load condition, determining automatic speed change timing by setting a speed change point at each speed stage at an engine speed at which a maximum engine output is developed, and when the vehicle is running in a light load condition, placing the engine in a partial output developing condition to allow said vehicle to run at a selected constant vehicle speed;

inputting the amount of fuel injected into the engine and the current engine speed when the vehicle is running at the selected constant vehicle speed, to said controller so as to compute a currently developed engine output and an engine speed which corresponds to a point of intersection of an equi-horsepower curve for the currently developed engine output and an engine characteristic curve corresponding to that developed by the engine at its maximum output condition; and

comparing the product of the computed engine speed and the speed reduction ratio at a corresponding next higher speed stage with the product of the current engine speed and speed reduction ratio at a current speed stage and if the former product is larger than the latter product, outputting a shift-up signal to said controller so that a speed stage is selected which is higher than that which would be selected by said automatic speed change in the event the vehicle was running in a heavy load condition.

5,257,194

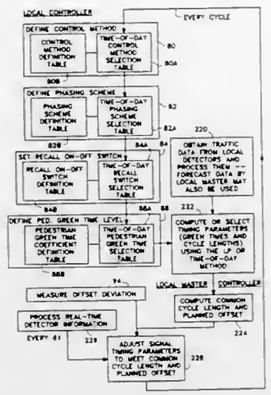
HIGHWAY TRAFFIC SIGNAL LOCAL CONTROLLER

Masami Sakita, Menlo Park, Calif., assignor to Mitsubishi Corporation, Tokyo, Japan

Filed Apr. 30, 1991, Ser. No. 694,013

Int. Cl.[5] **G06F** *15/48*

U.S. Cl. 364—436 **38 Claims**



1. A signal indication switching method for use in controlling traffic signal indicators for control of traffic movements at an intersection, which method includes linear programming solutions for maximum, optimum and minimum cycle lengths and maximum, optimum and minimum phase times, said method comprising;

generating a movement-phase matrix, M, having data elements for defining the relationship between movements and phases where $M_{ij}=1$ indicates that movement i is included in phase j, and $M_{ij}=0$ indicates that movement i is not included in phase j, wherein each of said movements identifies a green display of said traffic signal indicators for a single traffic movement at said intersection and each of said phases identifies a green display of said traffic signal indicators given to a combination of traffic movements at said intersection,

constructing linear constraints using data elements from the movement-phase matrix, M, incoming and saturation flow rates, and lost time constants for each movement to be implemented during the next cycle of traffic movements,

computing said maximum, optimum and minimum cycle lengths and maximum, optimum and minimum phase times using the said linear constraints in linear programming solutions thereof,

using said computed maximum, optimum and minimum phase times for determining maximum, optimum and minimum movement green times for movements to be implemented, and

using the maximum, optimum and minimum green times and said maximum, optimum and minimum cycle lengths, to obtain signal timing parameters for control of said signal indicators at the intersection.

5,257,195

ON-BOARD VEHICLE POSITION DETECTOR

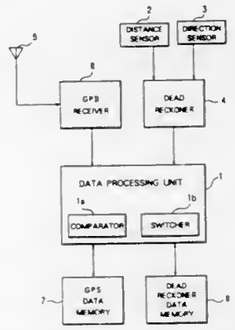
Seiichiro Hirata, Sanda, Japan, assignor to Mitsubishi Denki K.K., Tokyo, Japan

Filed Sep. 10, 1991, Ser. No. 757,421

Claims priority, application Japan, Sep. 12, 1990, 2-239929; Sep. 12, 1990, 2-239930

Int. Cl.[5] **G06F** *15/50*

U.S. Cl. 364—449 **5 Claims**



1. A vehicle position detector mounted on a vehicle, comprising:

GPS receiver means for receiving GPS signals from GPS satellites and for determining at a predetermined cycle a current position of the vehicle on the basis of said GPS signals received from the GPS satellites;

dead reckoning position detector means for determining a current position of the vehicle at a predetermined cycle on the basis of data obtained by sensors mounted on the vehicle;

first memory means for storing position data obtained by the GPS receiver means;

second memory means for storing position data obtained by the dead reckoning position detector means;

comparator means for comparing, exclusively, a position of the vehicle as determined by the GPS receiver means at a current determination cycle with a position of the vehicle as determined by the GPS receiver means at an immediately preceding determination cycle, said comparator means calculating a distance between the position of the vehicle determined at the current determination cycle and the position of the vehicle determined at the immediately preceding determination cycle; and

switcher means for switching a present output of the vehicle position detector esclusively in accordance with a result of said comparison by the comparator means, wherein said switcher means selects as the present output of the vehicle position detector a position obtained by the dead reckoning position detector means when said distance exceeds a predetermined reference value, said comparator means otherwise selecting a position obtained by the GPS receiver means.

5,257,196

APPARATUS AND METHOD FOR THE PROCESSING OF MAIL

Ronald P. Sansone, Weston, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

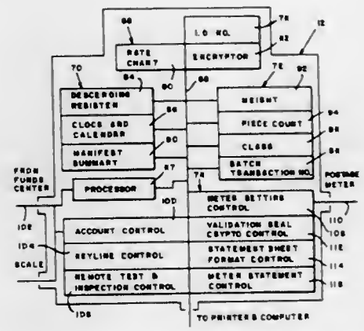
Filed Dec. 13, 1988, Ser. No. 282,713

Int. Cl.[5] **G07B** *17/02*

U.S. Cl. 364—464.02 **3 Claims**

1. A system for processing mail, comprising:

an electronic postage metering device having a first descending register, an unsecured interface device in communication with said electronic postage metering device, said interface device having means for communicating with a plurality of devices and a second descending register for tracking the data stored in said first descending register, a printer in communication with said interface device, said printer having means for printing postage information, and a funds center, said interface device



being in selective communication with said funds center, said interface including means for providing communication between said funds center and said electronic postage metering device whereby said first descending register can be refreshed.

5,257,197

FRANKING MODULE

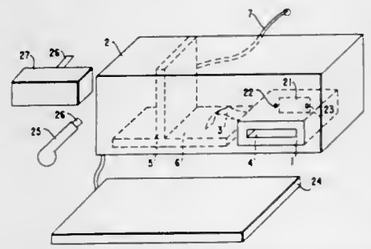
Stephan Günther; Werner Hesshaus, both of Berlin; Hanspeter Reichelt, Weilburg; Jürgen Volle, Dietzenbach; Hans-Peter Rogge, Berlin, and Hans-Jürgen Hudetzka, Leonberg, all of Fed. Rep. of Germany, assignors to Francotyp-Postalia GmbH, Berlin, Fed. Rep. of Germany

Filed Jun. 3, 1991, Ser. No. 709,653

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1990, 4018166

Int. Cl.[5] **G07B** *17/00*

U.S. Cl. 364—464.02 **14 Claims**



1. In a personal computer having a housing; a drive bay in the housing with a slot for a disk drive; and an internal information and power supply network in the housing, the improvement comprising a franking module assembly having:

a franking module disposed in the slot of the drive bay for franking mail, said franking module including a printing mechanism, and a processor system for controlling said printing mechanism, for storing information to be printed and for accounting of charges; and lines in the housing connecting said processor system to the internal information and power supply network.

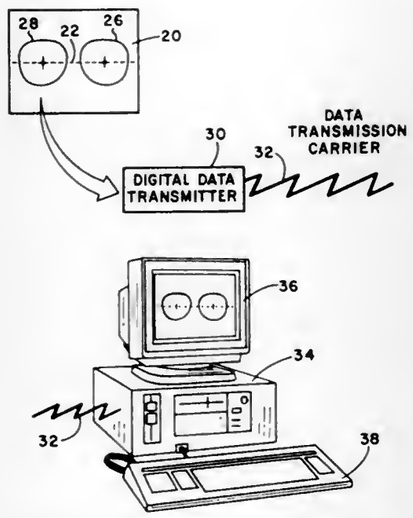
VOL 1155 ISS 4 OCT 26 1993 UMI

5,257,198

METHOD OF TRANSMITTING EDGER INFORMATION TO A REMOTE NUMERICALLY CONTROLLED EDGER

Carol G. van Schoyck, 3112 E. 71 St., Tulsa, Okla. 74136

Filed Dec. 18, 1991, Ser. No. 809,973
Int. Cl.[5] G06F *15/46;* B24B *7/00*
U.S. Cl. 364—474.02 5 Claims



1. A method by which an eye care professional can convey edger information to a remotely located optician in which the eye care professional has eyeglass frames selected by or for the user, the eyeglass frames having demonstration lenses therein, the optician having a numerically controlled edger capable of shaping and beveling lenses in response to digital information signals, comprising the steps of:

(a) marking a horizontal axis on said demonstration lenses with an ophthalmoscopic while said demonstration lenses are in said eyeglass frames;

(b) removing each said demonstration lens having said horizontal axis marked thereon from said eyeglass frames;

(c) placing said demonstration lenses on a lens pattern scale having a horizontal axis line thereon and aligning said horizontal axis marked on each demonstration lens with the lens pattern scale horizontal axis line;

(d) tracing an outline of each of said demonstration lens onto said lens pattern scale;

(e) placing said lens pattern scale having said demonstration lenses outline marked thereon into an optical scanning digital data transmitter wherein the patterns of the lenses are converted to digital information signals, steps (a) through (e) being carried out at the location of said eye care professional;

(f) transmitting said digital information signals by a data transmission carrier to a computer at the location of said optician, the data being received and stored in said computer; and

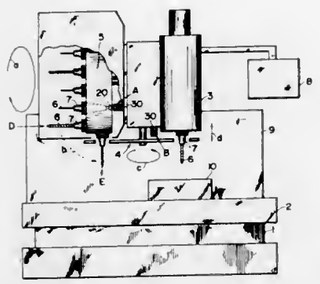
(g) processing said digital information signals in said computer to provide operating instruction signals for use in said numerically controlled edger to cause said edger to shape and bevel eyeglass lenses to clone said demonstration lenses, the shaped and beveled lenses then being ready for delivery to said eye care professional for insertion into said eyeglass frames.

5,257,199

APPARATUS FOR IDENTIFYING TOOLS AND FOR MANAGING TOOL DATA

Koichi Tsujino, Kyoto, and Hiroyuki Yamada, Suita, both of Japan, assignors to Omron Tateisi Electronics, Kyoto, Japan

Continuation of Ser. No. 700,051, Nov. 8, 1988, abandoned, which is a continuation of Ser. No. 904,483, Sep. 8, 1986, abandoned. This application Feb. 17, 1993, Ser. No. 22,619
Claims priority, application Japan, Sep. 11, 1985, 60-200980; Sep. 11, 1985, 60-200981
Int. Cl.[5] G06F *15/46;* G05B *23/00*
U.S. Cl. 364—474.02 19 Claims



1. An apparatus for identifying tools for use in a machine tool having an automatic tool changing apparatus, the automatic tool changing apparatus having tool keeping means for holding a plurality of tool holders to which the tools are respectively fixed, each of said tool holders having an associated pull stud, said tool changing apparatus automatically exchanging a tool attached to a spindle of the machine tool for a desired tool in said tool keeping means, by using the pull stud of the tool holders for the exchanged tools to hold the tools, said tool identifying apparatus comprising:

a plurality of transmitting means respectively provided for each of said tool holders, each of said transmitting means being provided in a respective pull stud of a respective tool holder and having data setting means for setting tool data including tool discrimination data indicative of the kind of tool which is held in said respective tool holder, each said transmitting means transmitting a signal representative of said tool data, each said pull stud being a self-contained unit which is attachable to and detachable from a respective tool holder to permit exchange of a respective transmitting means; and

receiving means, fixed to said machine tool, for receiving a signal transmitted from one of said transmitting means when said one transmitting means approaches said receiving means to thereby discriminate at least the kind of tool held by the tool holder associated with said one transmitting means.

5,257,200

OPTIMIZATION SYSTEM

Charles F. Machala, III, and James E. Flowers, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

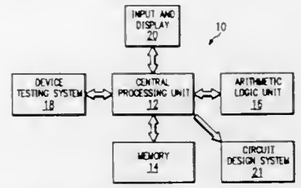
Continuation of Ser. No. 632,288, Dec. 21, 1990, abandoned. This application Dec. 8, 1992, Ser. No. 988,385
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—488 10 Claims

1. A modeling system operable for generating a computer model of a transistor comprising a plurality of modeling parameters given a plurality of measured values of operating variables associated with various operating points of the transistor to be modeled by the modeling system, certain ones of said plurality of modeling parameters having constraints associated with final values for said certain ones of the parameters, the system comprising:

calculation circuitry operable for calculating initial calculated values of the operating variables at the various operating points using an initial set of modeling parameters such that for each of the operating points there is a measured value and initial calculated value;

memory circuitry operable for storing said initial calculated values and the measured values;

said calculation circuitry operable for calculating an initial objective function as a measure of the error between said calculated values and the measured values;



said calculation circuitry operable for calculating a next set of modeling parameters from said objective function;

said calculation circuitry operable for determining if any particular parameters within said next set of modeling parameters violates a constraint associated with said particular parameter; and

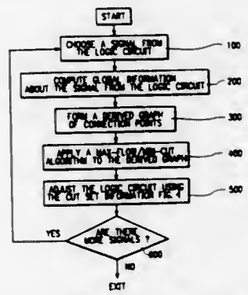
said calculation circuitry, responsive to said circuitry for calculating a new set of modeling parameters if any particular parameter violates a constraint associated with said parameter, said new set of modeling parameters calculated by ignoring said particular parameter.

5,257,201

METHOD TO EFFICIENTLY REDUCE THE NUMBER OF CONNECTIONS IN A CIRCUIT

Charles L. Berman, New York, and Louise H. Trevillyan, Katonah, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 28,277, Mar. 20, 1987, abandoned. This application Aug. 14, 1989, Ser. No. 394,247
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—489 8 Claims



1. A method of operating a computer to take a provided network configuration including n signals and m nodes and producing therefrom a final network configuration which is the functional equivalent of, and contains fewer connections than, said provided network configuration, said method comprising the steps of:

computing global information relative to a given one of said n signals;

generating a derived graphical representation of connections between said m nodes from said computed global information; deriving from said derived graphical representation of connections a list of nodes that separates a source node from a sink node, and providing a reduced number of connections between said nodes in an intermediate network configuration as determined from the derived list of nodes; and

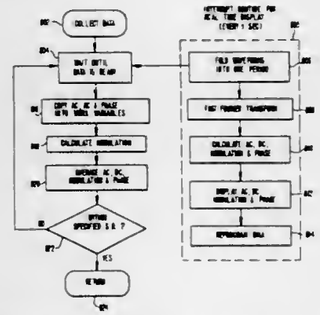
repeating the above steps for each of the remaining ones of said n signals, with the completion of the repetition of steps providing the reduced number of connections in said final network configuration.

5,257,202

METHOD AND MEANS FOR PARALLEL FREQUENCY ACQUISITION IN FREQUENCY DOMAIN FLUOROMETRY

Brett A. Feddersen; Enrico Gratton, both of Urbana, Ill., and David W. Piston, Ithaca, N.Y., assignors to Research Corporation Technologies,Inc., Tucson, Ariz.

Continuation-in-part of Ser. No. 310,404, Feb. 13, 1989, abandoned. This application Nov. 27, 1990, Ser. No. 619,290
Int. Cl.[5] G01N *21/64*
U.S. Cl. 364—498 65 Claims



1. A digital frequency domain system for measuring the light emitted by a sample when excited by a light source having harmonic content, said system comprising:

(a) means for exciting said sample to emit a light signal, said means including a light source having a harmonic content and a predetermined fundamental frequency thereof;

(b) a first means for detecting the light emitted by the sample to generate a first electrical signal containing information representative of the response of said sample at said fundamental and harmonic frequencies;

(c) a second means for generating a second electrical signal representative of said fundamental frequency and a predetermined correlation frequency;

(d) cross-correlation means for mixing said first and second electrical signals to generate a third electrical signal having a response at the fundamental and harmonic frequencies imposed on said correlation frequency; (e) means for digitizing said third electrical signal to obtain a plurality of data values for each period of the correlation frequency;

(f) a data processing means for simultaneously calculating from said plurality of data values the phase and modulation values of the response of the sample at the fundamental and a predetermined number of said harmonic frequencies.

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5,257,203

METHOD AND APPARATUS FOR MANIPULATING COMPUTER-BASED REPRESENTATIONS OF OBJECTS OF COMPLEX AND UNIQUE GEOMETRY

Donald R. Riley, Edina; Yang Zhu, St. Paul; Elizabeth D. Rekow, Fridley; Jeong-Ho Ahn, Lauderdale; Barney Klamecki, Minneapolis; Arthur G. Erdman, New Brighton, all of Minn.

Division of Ser. No. 365,139, Jun. 9, 1989, Pat. No. 5,121,333. This application Apr. 16, 1992, Ser. No. 869,764

Int. Cl.[5] G06F *15/46, 15/60*

U.S. Cl. 364—474.05 **34 Claims**



1. A method of generating at least one parting line in a computer such that a surface representation of a 3-dimensional first object is divided into a plurality of regions, comprising:

(a) finding a parting point having an X,Y,Z coordinate on a radial scan line nearest the center of a first object;

(b) finding a point on said radial scan line with a largest Y distance from the Z axis;

(c) clipping coordinates on said radial scan line below said parting point; and

(d) repeating the finding step (a) through the clipping step (c) until all said radial scan lines have been processed in the computer.

5,257,204

AUTOMATIC MEASURING APPARATUS FOR MEASURING A THREE-DIMENSIONAL CONTOUR

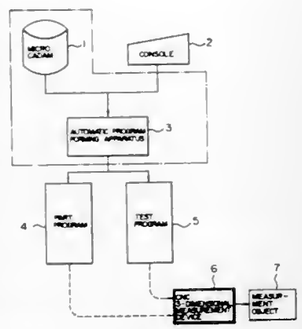
Mihoko Sawada, Chigasaki, and Hiromichi Kinoshiro, Yokohama, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 21, 1991, Ser. No. 672,919

Claims priority, application Japan, Apr. 5, 1990, 2-91603

Int. Cl.[5] G05B *19/42;* G06F *15/46*

U.S. Cl. 364—474.24 **4 Claims**



1. An automatic measuring apparatus for measuring a three-dimensional contour of a measurement object, said automatic measuring apparatus comprising:

means for forming a part program which determines a movement locus of a probe of a computer numerical control (CNC) three-dimensional measurement device along a first path from an approach point through an entering point to a start point and a second path along a contour of a standard object designed by a CAD device from said start point to an end point on the basis of position data indicative of respective positions of said approach point, said entering point, said start point, and said end point and contour data indicative of the contour of said standard object and represented by given three dimensional XYZ coordinates, said start and end points being predetermined so as to be disposed on a periphery of a cross-section of said standard object along a given cross-sectional plane, said entering point being predetermined so as to be disposed on said plane of cross-sectional plane and separated from said start point by a predetermined distance in a predetermined direction, said approach point being predetermined so as to be separated from said entering point by a predetermined distance in a selected direction, and at least a part of said position data indicative of the positions of said start and end points and said contour data being stored preliminarily in a memory of said CAD device and used when said part program is formed;

means for forming a test program to simulate a part of said part program which determines a part of the first path of said movement locus of the probe from said approach point to an intermediate point disposed between the entering point and the start point; and

means for measuring a three-dimensional contour of a measurement object using a said part program.

5,257,205

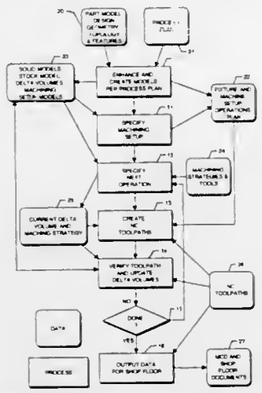
METHOD AND APPARATUS FOR SOLIDS-BASED MACHINING

Richard M. Sowar, Boulder; William C. Heiny, Arvada; Paul C. Olsen, Broomfield; Mark R. Hotchkiss, Louisville; Thomas L. Dixon, Broomfield; Charles W. Richard, Jr., and Michael D. Raines, both of Boulder, all of Colo., assignors to Spatial Technology, Inc., Boulder, Colo.

Filed Mar. 15, 1991, Ser. No. 669,943

Int. Cl.[5] G06F *15/46*

U.S. Cl. 364—474.24 **64 Claims**



1. A process for manufacturing a part comprising the steps of:

(1) obtaining a computer model of the part using a solid modeler;

(2) obtaining a computer model of a stock piece using the solid modeler;

(3) obtaining a process plan for manufacturing the part;

(4) associating manufacturing attributes with the model of the part;

(5) determining at least one delta volume to be removed from the stock piece by subtracting the model of the part from the model of the stock and migrating the manufacturing attributes from the model of the part to a corresponding face of the at least one delta volume;

(6) obtaining a model of a manufacturing setup;

(7) obtaining a machining strategy;

(8) computing tool paths for numerically controlled manufacturing equipment having a cutting tool from the at least one delta volume in accordance with the machining strategy and the model of the manufacturing setup;

(9) computing at least one tool volume representing the total volume of space swept out by the cutting tool;

(10) subtracting the at least one tool volume from the at least one delta volume to obtain a new delta volume;

(11) subtracting the at least one tool volume from the model of the stock piece, thus modeling the machining of the tool paths and verifying that the tool paths have not intruded into the model of the part and thus that the cutting tool will not gouge the part;

(12) repeating steps (7) through (11) until the removal of the at least one delta volume has been modeled; and

(13) manufacturing the part according to the process plan by transferring the tool paths to the numerically controlled manufacturing equipment, wherein steps (1) through (7) may generally be carried out in any order provided that step (1) must precede step (4), steps (1) and (2) must precede step (5), and steps (1) through (7) must precede step (8).

5,257,206

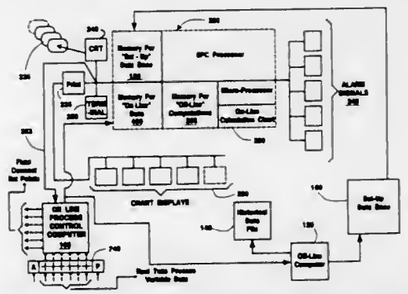
STATISTICAL PROCESS CONTROL FOR AIR SEPARATION PROCESS

Thomas C. Hanson, Buffalo, N.Y., assignor to Praxair Technology, Inc., Danbury, Conn.

Filed Apr. 8, 1991, Ser. No. 663,595

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—502 **11 Claims**



1. Statistical process control method for an air separation process for the production of one or more constituents of the air feed to the process wherein historical data for each of a plurality of pre-determined process variables of said process is electronically available, said method comprising:

(i) providing computer means under program control;

(ii) computer generating with said computer means control chart parameters and alarm thresholds for a distribution type based on the probability density function (PDF) of said historical data for at least one of said process variables;

(iii) providing an electronic data base interactive with said computer means and storing said control chart parameters in a data file of said data base;

(iv) storing in a data file of said data base continuous data for at lest one of said process variables in a time series of predetermined data sample groups;

(v) computer generating with said computer means alarm criteria based on said control chart parameters;

(vi) storing said alarm criteria in a data file of said data base;

(vii) computer generating with said computer means a stationary auto-regressive integrated moving average (ARIMA) type series model based on said time series of predetermined data sample groups stored in a data file of said data base for calculating a forecast of the variable data;

(viii) storing said ARIMA model in a data file of said data base;

(ix) computer generating on-line with said computer means the residuals of real-time process variable data from said air-separation process on-line for said at least one of said process variables and the forecast of the variable data from said ARIMA model;

(x) computer generating on-line with said computer means a control chart based on said residuals, said alarm criteria and said forecast;

(xi) computer generating the trend of a predetermined number of said residuals of consecutive variable data values on-line with said computer means and displaying said trend on said control chart; and

(xii) computer generating a visual display of an alarm indication on-line with said computer means based on said alarm criteria when the trend for a predetermined number of said residuals for consecutive variable data values continuously increases or continuously decreases.

5,257,207

METHOD FOR MONITORING GASKET COMPRESSION DURING FASTENER TENSIONING

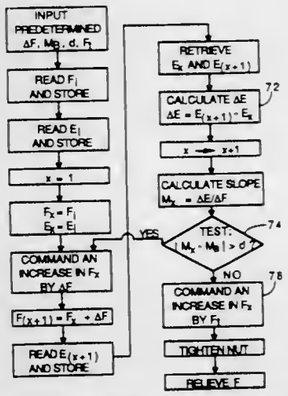
Richard P. Warren, 673 Oakridge Dr., San Luis Obispo, Calif. 93405

PCT No. PCT/US89/03109, § 371 Date Mar. 12, 1991, § 102(e) Date Mar. 12, 1991

PCT Filed Jul. 14, 1989, Ser. No. 659,417

Int. Cl.[5] G05D *17/02*

U.S. Cl. 364—508 **6 Claims**



1. A method for determining the tension of a threaded fastener at which a specific limited amount of gasket compression takes place, the threaded fastener extending from a first member and passing through a clearance hole in a second member, a nut retaining the second member on the threaded fastener with an end portion of the threaded fastener extending beyond the nut, a gasket having a sealing portion included between opposing surfaces of the first and second members with the sealing portion being progressively compressed as the first and

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second members are drawn together but having compression mechanically limited to a desired amount, the method comprising the steps of:

a) imposing a known force F between the second member and the end portion of the threaded fastener, the force F being in such direction as to draw together the first and second members;

b) measuring a dimension signal E that is a function of the separation of the first and second members, such that changes in signal E indicate gasket compression and metal deformation;

c) increasing the known force F by a known increment ΔF;

d) measuring again the dimension signal E;

e) determining the change ΔE in the dimension signal E resulting from the increase in step c) of the known force F; and,

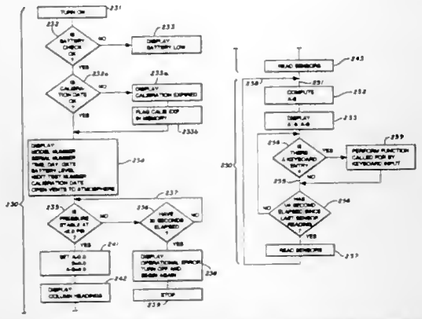
f) comparing the change ΔE with the change that would be expected if the first and second members had reached their mechanical limit of gasket compression.

5,257,208

COMPUTERIZED PORTABLE TESTING DEVICE FOR BACKFLOW VALVES

Arthur E. Brown, Santa Ana; Cecil L. Pearson, Irvine, and Howard G. Corlett, Gardena, all of Calif., assignors to Fire & Safety Electronics Inc., Santa Ana, Calif.

Continuation of Ser. No. 513,424, Apr. 23, 1990, abandoned.
This application Sep. 8, 1992, Ser. No. 941,862
Int. Cl.[5] G01L *15/00*
U.S. Cl. 364—510 **24 Claims**



1. A backflow-valve testing device, for testing a backflow valve that is, when in service, connected between a fluid source and a fluid-discharge port; said testing device being for use by testing personnel in determining whether the backflow valve interconnects the source to the discharge port only if pressure at a source side of the valve exceeds pressure at a discharge side of the valve by at least a specified increment; said testing device being for said use during variation of said source or discharge pressure, or both, in such a way that the source pressure sometimes exceeds the discharge pressure by the specified increment, and sometimes do not; and said testing device comprising:

first and second pressure sensors;

means for connecting the first and second sensors to monitor, respectively, two of the following three pressures: (1) pressure at such source side of such backflow valve, (2) pressure at such discharge side of such backflow valve and (3) differential pressure between such suorce and discharge sides of such backflow valve;

means, responsive to the first and second sensors, for deriving values of at least two of said three pressures, said deriving means comprising:

at least one analog-to-digital converter, but not more than two, connected to respond to analog electrical signals from the sensors and to develop digital electrical signals corresponding to the analog signals from the sensors respectively, and

digital electronic processor means, including a programmed digital microprocessor and responsive to the at least one converter, for digitally processing the digital signals, including making at least one logic decision that depends upon said digital signals, to derive said values of the at least two pressures and for controlling the display means; and

means, responsive to both sensors and to the deriving means, for substantially simultaneously displaying values, including said at least two derived values, of all three pressures while at least one pressure is varied in such a way that the differential pressure is sometimes less and sometimes more than such specified increment;

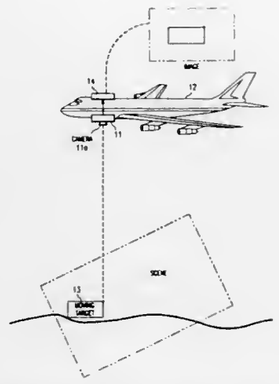
whereby testing personnel can follow values of all three pressures, together with concurrent operation of such backflow valve, during variation of pressure in such a way that the differential pressure is sometimes less and sometimes more than such specified increment.

5,257,209

OPTICAL FLOW COMPUTATION FOR MOVING SENSORS

Vishal Markandey, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 543,622, Jun. 26, 1990, abandoned.
This application Aug. 10, 1992, Ser. No. 928,521
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—516 **9 Claims**



1. A method for determining motion of an object viewed with a moving imaging system having a camera, comprising the steps of:

obtaining a first image of a first scene including the object;

obtaining a second image of a second scene including said object, said second image being separated by a predetermined time interval from said first image, the motion of said object corresponding to apparent optical flow parameters and true optical flow parameters, and the camera of said moving imaging system having camera motion values;

expressing the apparent optical flow parameters as equations having said true optical flow parameters with coefficients in terms of said camera motion values and of said predetermined time interval;

determining said camera motion values from rotational and translational velocities of said camera and from the geometry of a projection to said image;

solving said equations for said true optical flow parameters; and

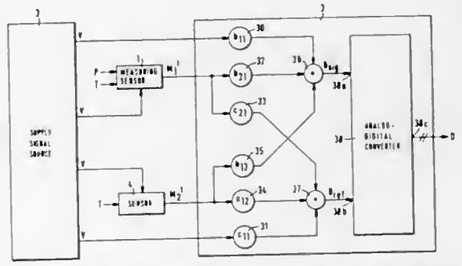
using said true optical flow parameters to determine said motion of an object.

5,257,210

PROCESSOR FOR PROCESSING SENSOR SIGNALS TO OBTAIN A DESIRED TRANSFER BEHAVIOR

Georg Schneider, Schopfheim-Langenau, and Richard Wagner, Maulburg, both of Fed. Rep. of Germany, assignors to Endress u. Hauser GmbH u. Co., Fed. Rep. of Germany

Filed Sep. 17, 1990, Ser. No. 583,820
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1989, 3932479; Dec. 7, 1989, 3940537
Int. Cl.[5] G06F *15/332*
U.S. Cl. 364—553 **25 Claims**



1. A processor of sensor signals which are supplied by a measuring sensor fed by a source of a supply signal, which measuring sensor in response to a physical action of a physical measured quantity to be determined and in response to one or more physical disturbance variables generates a measuring effect M_1 which depends on the physical measured quantity to be determined and on the physical disturbance variables, and which sensor signals are also supplied by one or more further sensors which generate measuring effects $M_2 \ldots M_n$ which depend only on the physical disturbance variables, wherein the measuring sensor and each physical disturbance sensor generate output signals proportional to the product of one of the measuring effects with a supply signal supplied to the sensors, the processor comprising:

first weighting means for weighting the output signal of the measuring sensor and at least one signal related to its supply signal with first adjustable coefficients, second weighting means for weighting the output signal of the further sensors and at least one signal related to their supply signals with second adjustable coefficients, first summing means for summing the output signals of the first weighting means to generate a first sum:

$$S = b_{11} + b_{12} \cdot M_2 + \ldots + b_{1n} \cdot M_n + (b_{21} + b_{22} \cdot M_2 + \ldots + b_{2n} \cdot M_n) \cdot M_1$$

and second summing means for summing the output signals of the second weighting means to generate a second sum:

$$S_{ref} = C_{11} + C_{12} \cdot M_2 + \ldots + C_{1n} \cdot M_n + (C_{21} + C_{22} \cdot M_2 + \ldots + C_{2n} \cdot M_n) \cdot M_1$$

and an analog to digital converter having a signal input, a reference input, and an output, said signal input being coupled to an output of the first summing means and the reference input being coupled to an output of the second summing means, the analog to digital converter supplying at its output a digital signal which corresponds to the ratio between the analog signals supplied to the signal input and the reference input and, therefore, corresponds to the transfer function

$$\frac{S}{S_{ref}} =$$

-continued

$$\frac{b_{11} + b_{12} \cdot M_2 + \ldots + b_{1n} \cdot M_n + (b_{21} + b_{22} \cdot M_2 + \ldots + b_{2n} \cdot M_n) \cdot M_1}{c_{11} + c_{12} \cdot M_2 + \ldots + c_{1n} \cdot M_n + (c_{21} + c_{22} \cdot M_2 + \ldots + c_{2n} \cdot M_n) \cdot M_1}$$

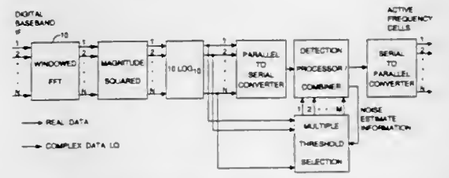
the coefficients $b_{11} \ldots b_{2n}$ and $c_{11} \ldots c_{2n}$ being adjustable for obtaining a desired transfer behavior in dependence upon the properties of the measuring sensor.

5,257,211

ADJUSTABLE BANDWIDTH CONCEPT (ABC) SIGNAL ENERGY DETECTOR

Andrew J. Noga, Rome, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 20, 1991, Ser. No. 702,553
Int. Cl.[5] G01C *25/00*
U.S. Cl. 364—571.04 **5 Claims**



1. An adjustable bandwidth concept signal energy detector apparatus comprising in combination:

a parallel to serial converter receiving a plurality of parallel complex digital signals, said parallel to serial converter converting said parallel complex digital signals to serial frequency data,

a multiple threshold selection unit receiving said plurality of parallel complex digital signals and generates a set of threshold signals which is based respectively upon single channel noise estimation for said plurality of parallel complex digital signals,

a detection processor/combiner unit receiving said serial frequency data from said parallel to serial converter, said detection processor/combiner unit receiving said set of threshold signals from said multiple threshold selection unit, said detection processor/combiner unit detecting and processing said serial frequency data respectively with said set of threshold signals to determine signal energy distribution in said serial frequency data, said detection processor/combiner unit generating an N-point set of binary numbers which indicates where signal energy has been detected in said serial frequency data, and,

a serial to parallel converter receiving said N-point set of binary numbers from said detection processor/combiner unit, said serial to parallel converter converting said N-point set of binary numbers to N-sets of parallel frequency data.

5,257,212

NORMALIZING ANALYZER SYSTEMS TO A STANDARD ANALYZER

Paul A. Kildal-Brandt, Webster; Thomas A. Weber, Rochester, and Charles E. Heckler, Rush, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 672,976, Mar. 21, 1991, abandoned. This application Feb. 18, 1992, Ser. No. 836,694
Int. Cl.[5] G06F *15/42, 15/20*
U.S. Cl. 364—582 **8 Claims**

1. In a method of quantitatively determining an analyte in a liquid sample applied to a slide element by measuring in a read

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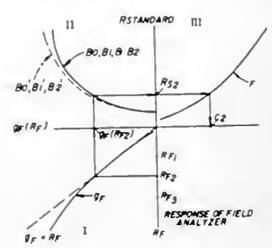
station of a field analyzer a response developed in the slide element and correlating said response to an analyte concentration using a calibration curve produced from calibrators having known concentrations, such slide elements being selected from a set of slide elements that all produce the same response in said field analyzer except for deviations selected from the group consisting of lot-to-lot variations and aging, said same response being a function of the kind of analyzer used;

the improvement wherein said response on said analyzer is corrected substantially to the response that would have been detected on a standard analyzer of a type different from said field analyzer and having one of said calibration curves for correlating the response to an analyte concentration, by the steps of:

a) applying at least one level of said calibrators on at least one of said set of slide elements and reading the response in said standard analyzer,

b) repeating step a) but by reading said response created in said field analyzer by said at least one level of calibrator;

c) correlating the relationship of the different responses in said two analyzers by using the equation (I):



$$R_{standard} = B_0 + B_1 \cdot g_F(R_F) + B_2 \cdot g_F(R_F)^k \quad (I)$$

where $R_{standard}$ is the response detected in said standard analyzer, R_F is the response detected in said field analyzer; $g_F(R_F)$ is a spline function used to transform the responses R_F: B_0, B_1 and B_2 are standardizing coefficients; and k is an exponent corresponding to the nonlinearity of the equation,

d) incorporating said correlated relationship into said field analyzer so that it is available for use with an unknown patient liquid,

e) applying an unknown patient liquid sample to a slide element selected from said set of slide elements and reading a response in said read station of said field analyzer;

f) ascertaining from said correlation of step c) what said read response in said field analyzer in step e) would produce as the corresponding response in said standard analyzer, and

g) correlating said ascertained corresponding response to a predicted analyte concentration using said calibration curve of said standard analyzer.

5,257,213

METHOD AND CIRCUIT FOR TWO-DIMENSIONAL DISCRETE COSINE TRANSFORM

Gye-Jong Kim, Suwon; Sang-Yook Lee, and Nam-Ik Cho, both of Seoul, all of Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed May 30, 1991, Ser. No. 707,859

Claims priority, application Rep. of Korea, Feb. 20, 1991, 1991-2721[U]

Int. Cl.[5] G06F 7/38

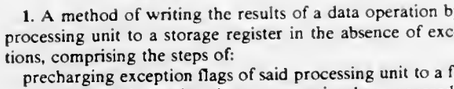
U.S. Cl. 364—725 **25 Claims**

2. A device for calculating discrete cosine transforms on N×N two-dimensional input data, comprising:

means for re-arranging the N×N input data represented by input electrical signals, to render the input data identical to kernels of one-dimensional discrete cosine transform of a cosine function to transform a multiplying form of said cosine function, said multiplying form being kernels of a two-dimensional discrete cosine transform, into a summation form;

means for generating N/2 summed data groups by adding together even groups and odd groups in the re-arranged data, and generating N/2 subtracted a data groups by calculating a difference between said even groups and said odd groups;

means for carrying out one-dimensional discrete cosine



transforms on said summed data groups and said subtracted data groups to generate one-dimensional discrete cosine transform data; and

means coupled to the one-dimensional discrete cosine transform means, for generating output electrical signals representing two-dimensional discrete cosine transform data by performing summations and subtractions on said one-dimensional discrete cosine transform data in $\log_2 N$ butterfly stages, and then for shifting results of said summation and subtraction by multiplying by $\frac{1}{2}$.

5,257,214

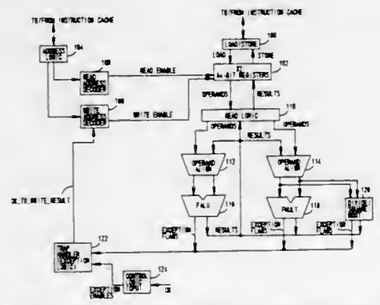
QUALIFICATION OF REGISTER FILE WRITE ENABLES USING SELF-TIMED FLOATING POINT EXCEPTION FLAGS

Russell W. Mason, and Steven T. Mangelsdorf, both of Ft. Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 16, 1992, Ser. No. 899,202

Int. Cl.[5] G06F 7/00

U.S. Cl. 364—736.5 **4 Claims**



1. A method of writing the results of a data operation by a processing unit to a storage register in the absence of exceptions, comprising the steps of:

precharging exception flags of said processing unit to a first logic level indicating that an exception has occurred or can still occur during a present clock cycle;

initiating an operation by said processing unit during the present clock cycle;

checking for exceptions caused by said operation which require exception handling;

changing said exception flags of said processing unit to a second logic level indicating the absence of an exception when it is determined in said checking step that no exceptions have been or can be generated in the present clock cycle by said operation which require exception handling;

generating a glitch free control signal indicating that said exception flags of said processing unit have changed to said second logic level; and

writing the results of said operation to said storage register during the present clock cycle in response to said glitch free control signal.

5,257,215

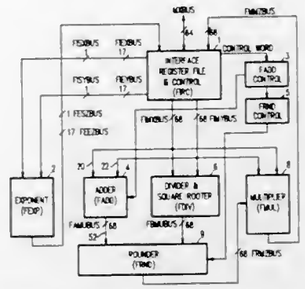
FLOATING POINT AND INTEGER NUMBER CONVERSIONS IN A FLOATING POINT ADDER

Jack T. Poon, Fremont, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Mar. 31, 1992, Ser. No. 860,987

Int. Cl.[5] G06F 7/38

U.S. Cl. 364—745 **2 Claims**



1. Apparatus for converting from a floating point number which includes a mantissa field, an exponent field, and a sign field to an integer of n-bit size including a sign bit, in accordance with a control word specifying a particular rounding mode, comprising:

floating point number storage means for storing said floating point number;

control word storage means for storing said control word;

first means for shifting said mantissa field right to thereby denormalize said mantissa resulting in a shifted mantissa;

second means connected to said first means for subtracting zero from said shifted mantissa to produce a first result mantissa field that is a two's complement number, upon the condition that said sign field indicates that said floating point number is a negative number;

said second means including third means for adding zero to said shifted mantissa to produce a second result mantissa field, upon the condition that said sign field indicates that said floating point number is a positive number;

fourth means connected to said second means for detecting overflow of said result mantissa field with respect to said integer of n-bit size;

fifth means connected to said floating point number storage means and to said second means for setting said sign bit of said integer to reflect the fact that said sign field of said floating point number is a negative or positive number, and,

sixth means connected to said second means and to said control word storage means for rounding said integer in accordance with a rounding mode specified in said control word provided that said sign field indicates that said floating point number is a positive number and for rounding said integer in accordance with a logic table provided that said sign field indicates that said floating point number is a negative number.

5,257,216

FLOATING POINT SAFE INSTRUCTION RECOGNITION APPARATUS

Jonathan B. Sweedler, Sunnyvale, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Jun. 10, 1992, Ser. No. 896,424

Int. Cl.[5] G06F 7/38, 7/02

U.S. Cl. 364—748 **8 Claims**

1. A floating-point two-operand pipelined arithmetic processor system incorporating safe instruction recognition apparatus for the detection of potential arithmetic overflow and underflow, the pipelined processor apparatus comprising:

(a) a pipelined floating-point arithmetic processor comprising:

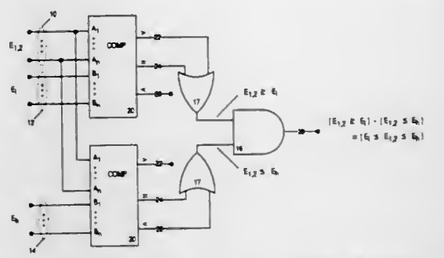
(i) a floating-point two operand pipelined arithmetic unit;

(ii) a controller for controlling the pipelined operation of the arithmetic unit, for fetching an decoding program instructions and operand addresses from a program memory, and for fetching an operand from a data memory; and

(iii) a program memory for storing instructions including a current instruction and a next instruction coupled to the controller for fetching and delivering programmed arithmetic instructions to the pipeline arithmetic unit;

(b) a data memory for storing floating point operands comprising a sign bit, an exponent value, and a fraction value, coupled to the controller for fetching and delivering a current and next first and second operands associated with the current and the next instruction to the arithmetic unit; and

(c) a safe instruction recognition network coupled to the data memory for access to the current operands, for operating on the first and second operand exponent values, for



detecting safe instructions, and for stalling the next processing instruction if the current arithmetic operation is found unsafe, comprising:

(i) a first comparator means for comparing the first operand exponent value to a prescribed low-limit value and to a prescribed upper-limit value, producing a true output signal if the first operand exponent value falls within the range of the lower and upper limit; otherwise, producing a false output signal;

(ii) a second comparator means for comparing the second operand exponent value to a prescribed lower-limit value and to a prescribed low-limit value, producing a true output signal if the second operand exponent value falls with the range of the lower and upper limit, otherwise producing a false output signal; and

(iii) a logic circuit for accepting the first and the second comparator means output signals causing a true output if both the first and the second comparator means output signals are true, otherwise causing a false output, the output coupled to the controller for stalling the pipeline processor execution of the next arithmetic instruction but allowing completion of the current arithmetic instruction.

5,257,217

AREA-EFFICIENT MULTIPLIER FOR USE IN AN INTEGRATED CIRCUIT

Chiao-Er A. Chiu, Sunnyvale, Calif., assignor to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 877,562, May 1, 1992. This application Apr. 16, 1993, Ser. No. 46,716

Int. Cl.[5] G06F 7/52

U.S. Cl. 364—760 **1 Claim**

1. A method of operating multiplier hardware, having a first carry-save adder (CSA), a second CSA coupled to the first

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CSA, first, second, third, and fourth registers coupled to the second CSA, a third CSA coupled to the first, second and third registers, a fourth CSA coupled to the fourth register and the third CSA, fifth and sixth registers coupled to the fourth CSA, and a carry-propagate adder coupled to the fifth and sixth registers, comprising the steps of:

during a first phase of a first clock cycle:

producing first, second, third and fourth booth coded partial products;

during a second phase of said first clock cycle:

receiving said first, second and third booth coded partial products in the first CSA to produce a first carry signal and a first sum signal;

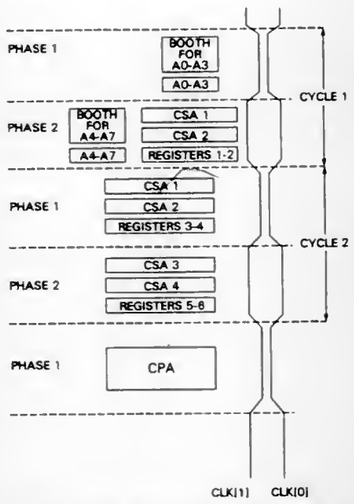
receiving said fourth booth coded partial product and said first carry signal and said first sum signal in the second CSA to produce a second carry signal and second sum signal;

storing said second sum signal in the first register;

storing said second carry signal in the second register;

producing fifth, sixth, seventh and eighth booth coded partial products;

during a first phase of a second clock cycle:



receiving said fifth, sixth and seventh booth coded partial products in the first CSA to produce a third carry signal and a third sum signal;

receiving said eighth booth coded partial product and said third carry signal and said third sum signal in the second CSA to produce a fourth carry signal and a fourth sum signal;

storing said fourth sum signal in the third register;

storing said fourth carry signal in the fourth register;

during a second phase of said second clock cycle:

receiving said second carry signal, said second sum signal and said fourth sum signal in the third CSA to produce a fifth carry signal and a fifth sum signal;

receiving said fourth carry signal, said fifth carry signal and said fifth sum signal in the fourth CSA to produce a sixth carry signal and a sixth sum signal;

storing said sixth sum signal in the fifth register;

storing said sixth carry signal in the sixth register; and

during a first phase of a third clock cycle:

receiving said sixth carry signal and sixth sum signal in the carry-propagate adder to generate a final product.

5,257,218

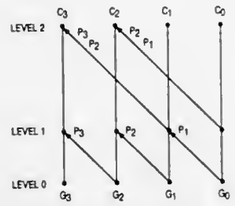
PARALLEL CARRY AND CARRY PROPAGATION GENERATOR APPARATUS FOR USE WITH CARRY-LOOK-AHEAD ADDERS

Jack T. Poon, Fremont, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 820,304, Jan. 6, 1992, abandoned. This application Feb. 3, 1993, Ser. No. 13,256

Int. Cl.[5] G06F *7/50*

U.S. Cl. 364—787 **11 Claims**



1. An N-bit two operand carry generator logic array operating on corresponding operand bit pairs comprising:

(a) a zero level (I=0) multiplicity of N gates in parallel for the logical AND-ing of the corresponding operand bit pairs producing at each gate output the carry term associated with the operand input bit pairs, said gate outputs being arranged in ascending order corresponding to the ascending order of significance of the operand input bit pairs;

(b) a carry generator processor having a first, second and third input, said first and second inputs connected to distinct partial carry terms of the next lower level and said third input connected to an associated propagation carry term provided by a carry propagation generator for producing at the processor output a next level partial carry input term;

(c) a first level (I=1) multiplicity of N-1 carry generator processors arranged in ascending order of significance, each processor having a first, second and third input, each said first input connected to one corresponding zero level gate output for all said N gate outputs except that associated with the least significant of the input bit pairs, said second input of each processor connected to the output of the zero level gate associated with the next lower significant operand bit pairs, each said third processor input connected to the corresponding zero level output of a carry propagation generator, producing at each processor output a partial first level carry term arranged in ascending order; and

(d) additional higher levels (I=2, 3, . . . , L) of carry generator processors, each level having $N-2^{I-1}$ processors with each said first carry generator processor input connected to one corresponding next lower level carry generator processor output for all outputs in ascending order beginning at the 2^{I-1} output, said second input of each processor connected to the output of the next lower level processor at 2^{I-1} positions below the corresponding next lower level processor input to said first input, and said third processor input connected to a corresponding I^{th} level carry propagation generator output.

5,257,219

SPECTRUM EQUALIZATION ARRANGEMENT

Philippe Marchand, Paris, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 18, 1991, Ser. No. 762,525

Claims priority, application France, Sep. 18, 1990, 90 11492

Int. Cl.[5] G06G *7/02*

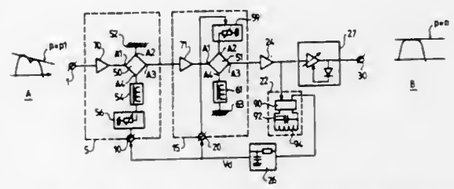
U.S. Cl. 364—825 **11 Claims**

1. An equalization arrangement for receiving an input signal to be equalized and for producing an equalized output signal, said arrangement comprising:

a. correction means having an input for receiving said input signal, having an output at which said equalized output signal is produced, and having a control input for receiving a control signal representing control information for determining the correction to be made; and

b. equalization measuring means having an input coupled to the correction means for measuring the equalization effected by the correction means and having an output for producing said control signal in response to said measurement;

the correction means including hybrid circuit means and variable signal reflecting means, said hybrid circuit means having a first access coupled to the correction means input, having a second access coupled to the correction means output, and having a third access coupled to the variable signal reflecting means, said variable signal reflecting means being coupled to the equalization measuring means output and having a variable reflection coefficient which varies as a function of the control signal.



5,257,220

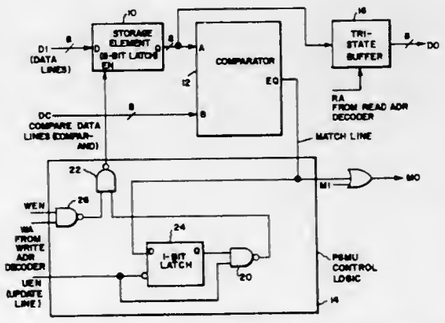
DIGITAL DATA MEMORY UNIT AND MEMORY UNIT ARRAY

Yong-Chul Shin, Amherst; Ramalingam Sridhar, East Amherst; Victor Demjanenko, North Tonawanda; Paul W. Palumbo, East Amherst, and Sargur N. Srihari, Williamsville, all of N.Y., assignors to Research Foundation of the State Univ. of N.Y., Buffalo, N.Y.

Filed Mar. 13, 1992, Ser. No. 850,644

Int. Cl.[5] G11C *15/00*

U.S. Cl. 365—49 **11 Claims**



1. A content controlled updatable data memory unit, which is updatable during an update pulse cycle, and which comprises means for storing a first input dataword; and means for enabling said storing means to be updated to store a second input dataword which comprises means connected to said storing means for comparing said first word with a third word, and control means responsive to an update enable pulse which changes state during said cycle for enabling said storing means to be updated to store said second word when said first and third word match.

5,257,221

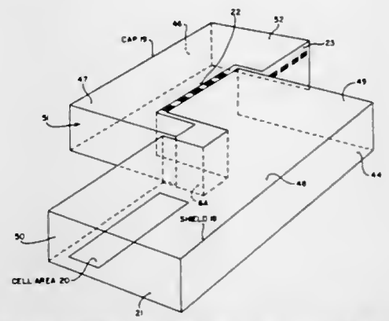
APPARATUS FOR SELECTING MUMBER OF WAIT STATES IN A BURST EPROM ARCHITECTURE

David A. Leak, Rancho Cordova; Joseph H. Salmon, Placerville, and Robert E. Larsen, Shingle Springs, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 523,820, May 15, 1990, abandoned. This application Nov. 25, 1992, Ser. No. 981,949

Int. Cl.[5] G11C *5/00*

U.S. Cl. 365—53 **6 Claims**



1. In a MOS integrated EPROM circuit which is fabricated on a substrate and which contains radiation sensitive areas, a shielding structure for protecting at least two EPROM cells from radiation, comprising:

a first upper cover disposed above said at least two EPROM cells;

a first upstanding member disposed about said at least two EPROM cells and extending from said substrate to said first upper cover, said first upstanding member defining a first opening above said substrate so as to allow the passage of conductors from said at least two EPROM cells;

said conductors coupled to combinatorial logic of a state machine used to control the EPROM circuit, said state machine generating a predetermined number of wait states based upon programming of said at least two EPROM cells, wherein the wait states generated by the state machine enable the EPROM circuit to have an access time compatible with a clock speed and read cycle times of a microprocessor utilizing said EPROM circuit;

whereby said at least two EPROM cells are protected from radiation when said integrated circuit is exposed to radiation for erasing EPROM cells outside said shielding structure.

5,257,222

ANTIFUSE PROGRAMMING BY TRANSISTOR SNAP-BACK

Roger R. Lee, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Jan. 14, 1992, Ser. No. 821,501

Int. Cl.[5] G11C *17/00*

U.S. Cl. 365—96 **22 Claims**

1. A method to program a one time programmable element in an integrated circuit, said method comprising the steps of:

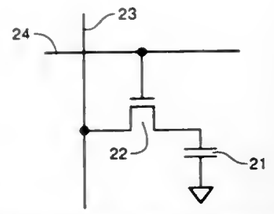
a) applying a first biasing voltage to a first terminal of said transistor;

b) applying a first voltage pulse to a second terminal of said transistor, said applications of first biasing voltage and said first voltage pulse cause said programmable element to rupture;

c) applying a second biasing voltage to said transistor's first

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terminal, said second biasing voltage is at a potential less than that of said first biasing voltage; and



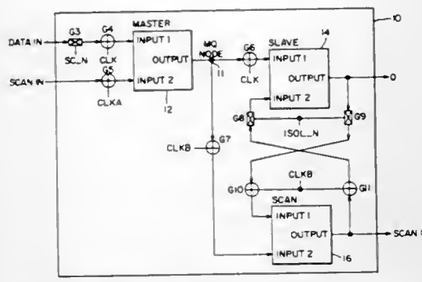
d) applying a second voltage pulse to said transistor's second terminal thereby causing transistor snap-back which allows a surge of current to flow through said ruptured element.

5,257,223

FLIP-FLOP CIRCUIT WITH CONTROLLABLE COPYING BETWEEN SLAVE AND SCAN LATCHES

Bulent I. Dervisoglu, Framingham, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 13, 1991, Ser. No. 791,868
Int. Cl.[5] G11C *19/00;* H03K *3/289*
U.S. Cl. 365—154 19 Claims



1. A scannable flip-flop circuit comprising:
a master latch circuit responsive to a system clock to latch a first input and responsive to a first scan clock to latch a second input;
a slave latch circuit responsive to the system clock to latch a value from the master latch;
a scan latch circuit responsive to a second scan clock to latch a value from the master latch; and
a copying circuit by which one of the slave latch and scan latch receives and latches a value from the other.

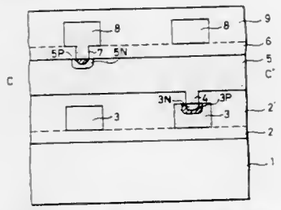
5,257,224

SEMICONDUCTOR DEVICE WITH MULTIPLE LAYERS OF MEMORY CELL ARRAYS

Isao Nojiri, and Masahide Kaneko, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 3, 1991, Ser. No. 751,933
Claims priority, application Japan, Sep. 5, 1990, 2-238693
Int. Cl.[5] H01L *27/08, 27/10*
U.S. Cl. 365—175 3 Claims

1. A semiconductor memory device having at least two layers of memory cell arrays built upon each other, comprising:
a semiconductor substrate;
a plurality of first conductive layers formed on said semiconductor substrate with an insulating film therebetween and arranged in parallel to each other;
a plurality of second conductive layers formed on said first conductive layers with an insulating film therebetween, said second conductive layers being arranged in parallel to each other and disposed to be crossing said first conductive layers;
a plurality of first contact holes formed selectively at crossing points of said first conductive layer and said second conductive layers for contacting said first conductive layers and said second conductive layers;
a plurality of first PN junction means formed on surface layers of said first conductive layers in contact with said first contact holes for permitting conduction in only one selected direction between said first conductive layer and said second conductive layers;
a plurality of third conductive layers formed on said second conductive layers with an insulating film therebetween and arranged in parallel to each other, crossing said second conductive layers;



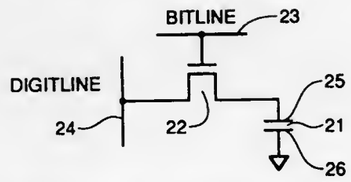
a plurality of second contact holes formed selectively at the crossing points of said second conductive layers and said third conductive layers for contacting said second conductive layers and said third conductive layers; and
a plurality of second PN junction means formed on the surface layers of said second conductive layers in contact with said second contact holes for permitting conduction in only one selected direction between said second conductive layers and said third conductive layers,
said first and second conductive layers, said first contact holes, and said first PN junction means forming a memory cell array of a first layer,
said second and third conductive layers, said second contact holes, and said second PN junction means forming a memory cell array of a second layer.

5,257,225

METHOD FOR PROGRAMMING PROGRAMMABLE DEVICES BY UTILIZING SINGLE OR MULTIPLE PULSES VARYING IN PULSE WIDTH AND AMPLITUDE

Roger R. Lee, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Mar. 12, 1992, Ser. No. 850,739
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—185 25 Claims



1. A method to program a programmable device in a semiconductor device using varying programming pulses comprising the steps of:
a) applying a first programming pulse train to a first access terminal electrically coupled to said programmable device; and
b) applying a second programming pulse train to a second access terminal electrically coupled to said programmable device;

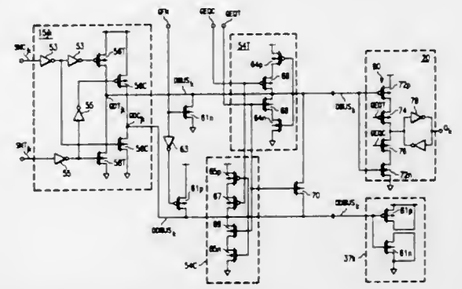
wherein said applications of first and second programming pulse trains cause said programmable device to take on a determined programmed state.

5,257,226

INTEGRATED CIRCUIT WITH SELF-BIASED DIFFERENTIAL DATA LINES

David C. McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Dec. 17, 1991, Ser. No. 809,733
Int. Cl.[5] G11C *00/00*
U.S. Cl. 365—189.09 17 Claims



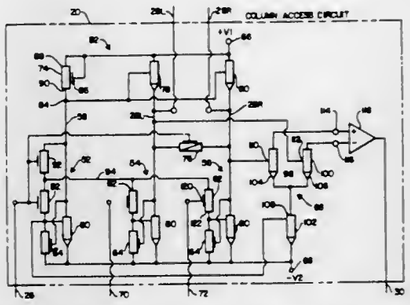
1. An integrated circuit, comprising:
functional circuitry;
a data bus comprising first and second data conductors, for communicating a differential signal thereon;
first and second data drivers, each having an input coupled to said functional circuitry for receiving information therefrom, and having an output, for driving said first and second data conductors to a differential voltage corresponding to said information;
means for generating a control signal upon the initiation of a memory operation;
a transistor having a conduction path connected between said first and second data conductors, and having a control terminal receiving said control signal, for connecting said first and second data conductors together responsive to said control signal;
first and second self-biasing circuits coupled to said first and second data conductors, respectively, each biased by first and second bias voltages and comprising:
a pull-up transistor having a conduction path coupled between its associated data conductor and said first bias voltage, and having a control terminal connected to its associated data conductor, said pull-up transistor being of a conductivity type such that it is conductive responsive to its associated data conductor being at a voltage near said second bias voltage; and
a pull-down transistor having a conduction path coupled between its associated data conductor and said second bias voltage, and having a control terminal connected to its associated data conductor, said pull-down transistor being of a conductivity type such that it is conductive responsive to its associated data conductor being at a voltage near said first bias voltage.

5,257,227

BIPOLAR FET READ-WRITE CIRCUIT FOR MEMORY

Vilnis Klimanis, and Frank A. Montegari, both of Wappingers Falls, N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jan. 11, 1991, Ser. No. 640,275
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—190 9 Claims



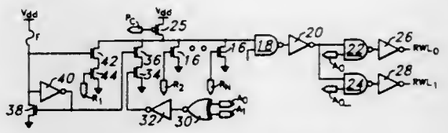
1. A semiconductor memory circuit comprising
a memory cell having a pair of complementary cell terminals for accessing the cell;
a first write circuit having a bipolar transistor connected to a first of said cell terminals for driving electric current through said first cell terminal;
a second write circuit having a bipolar transistor connected to a second of said cell terminal, each of said write circuits further including an FET base drive circuit comprising two field-effect transistors connected serially to each other via a junction point and connected via said junction point to a base terminal of said bipolar transistor, a first of said field-effect transistors serving to place said bipolar transistor in a state of conduction, and the second of said field-effect transistors connecting with an emitter terminal of said bipolar transistor and serving to place said bipolar transistor in a state of nonconduction;
a first control terminal for applying an activation signal to said first field-effect transistor in each of said base drive circuits, the gate terminal of said first field-effect transistor in the first of said write circuits serving as a first write terminal, the gate terminal of said first field-effect transistor in the second of said write circuits serving as a second write terminal; and
wherein application of said activation signal to said control terminal concurrently with application of complementary logic signals to said first and said second write terminals accomplishes a writing of data into said memory cell.

5,257,228

EFFICIENCY IMPROVED DRAM ROW REDUNDANCY CIRCUIT

Shunichi Sukegawa, Ibaraki, Japan, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 16, 1991, Ser. No. 701,233
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—200 7 Claims



1. A memory redundancy scheme comprising;
a logic gate;

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a logic function circuit;

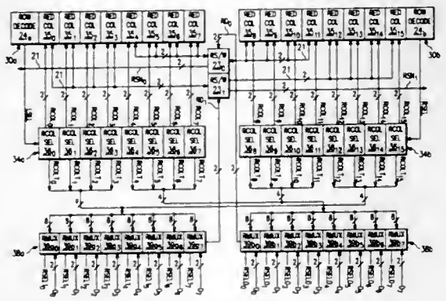
a plurality o transistors coupled to an input of said logic gate, a controlling terminal of at least one transistor of said plurality of transistors being operable to receive a signal generated from the output of said logic function circuit, said logic function circuit being operable to receive a predetermined number of address bits from the memory current address, the remaining controlling terminals of said plurality of transistors being operable to receive an associated address factor, each said address factor being generated from processing of a corresponding address bit of both said address for which a defect exists and the memory current address.

5,257,229

COLUMN REDUNDANCY ARCHITECTURE FOR A READ/WRITE MEMORY

David C. McClure, Carrollton, and Narasimhan Iyengar, Plano, both of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Jan. 31, 1992, Ser. No. 830,314
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—200 **20 Claims**



1. An integrated circuit, comprising:

a plurality of memory cells, arranged in rows and columns, and grouped into a plurality of primary array blocks according to a plurality of column address ranges;

address terminals for receiving a row address and a column address;

a first output terminal for presenting data from said memory cells;

row selecting means for selecting a row of said memory cells in one of said primary array blocks responsive to the row address and to a block portion of said column address;

column selecting means for selecting a memory cell in said selected row responsive to a column portion of said column address;

primary sensing means for sensing the data state of the memory cell selected by said column selecting means, and having an output for presenting the sensed data state;

a plurality of redundant memory cells, arranged in a redundant column;

a first redundant column decoder, coupled to said address terminals, for storing a column address responsive to which said redundant column is to be accessed instead of a memory cell in said plurality of memory cells, said stored column address corresponding to both the block portion and the column portion of the column address, and for comparing the column address received at said address terminals with the stored column address, said first redundant column decoder having an output for presenting a signal indicating the result of the comparing of the received column address with the stored column address, said signal coupled to said redundant column for selecting a redundant memory cell therein responsive to the received column address matching the stored column address;

first redundant sensing means for sensing the data state of the redundant memory cell selected by the redundant column decoder, and having an output for presenting the sensed data state; and

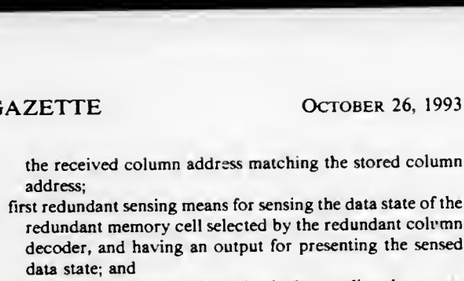
a first output multiplexer for selectively coupling the output of said primary sensing means or the output of said first redundant sensing means to said first output terminal responsive to the output of said first redundant column decoder indicating a match.

5,257,230

MEMORY DEVICE INCLUDING REDUNDANCY CELLS WITH PROGRAMMABLE FUEL ELEMENTS AND PROCESS OF MANUFACTURING THE SAME

Kazuhiko Nobori; Taira Iwase, both of Kawasaki; Masamichi Asano, Tokyo; Makoto Takizawa, Kawasaki; Shigefumi Ishiguro, Chigasaki; Kazuo Yonehara; Satoshi Nikawa, both of Yokohama, and Koji Saito, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 13, 1990, Ser. No. 565,820
Claims priority, application Japan, Aug. 11, 1989, 1-209169; Apr. 5, 1990, 1-91104
Int. Cl.[5] G11C *17/16*
U.S. Cl. 365—200 **3 Claims**



1. A semiconductor memory device having a regular memory cell array and a spare memory cell array, wherein:

each spare memory cell constituting said spare memory cell array comprises a first transistor selected by a read word line, whose drain is connected to a spare bit line and whose source is connected via a fuse to a power supply, and a second transistor connected between said source and a ground;

wherein: said fuse is selectively blown out by flowing a blow out current through said second transistor selected by a write line, thereby to disconnect a discharge current path of said spare bit line; and wherein

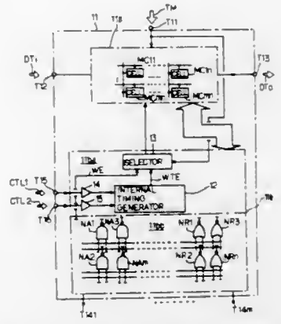
said second transistor has a threshold voltage higher than a potential difference between a potential generated at a write line connected with other spare memory cells and a ground potential when one of said second transistors of said other spare memory cells is selected to be made conductive to flow said blow out current therethrough for blowing out said fuse.

5,257,231

SEMICUSTOM-MADE INTEGRATED CIRCUIT WITH BUILT-IN MEMORY UNIT ASSOCIATED WITH INTERNAL TIMING GENERATOR FOR INTERNAL WRITE ENABLE SIGNAL

Hajime Masuda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 22, 1991, Ser. No. 748,716
Claims priority, application Japan, Aug. 22, 1990, 2-220201
Int. Cl.[5] G11C *7/00, 29/00*
U.S. Cl. 365—201 **3 Claims**



1. A semicustom-made integrated circuit fabricated on a single semiconductor chip, comprising:

a) an array of cells associated with a predetermined wiring pattern for achieving a predetermined task; and

b) a memory unit having a plurality of memory cells and selectively entering a testing mode and a usual mode of operation, said memory unit being associated with an internal timing generator located in the vicinity of said memory unit and responsive to external controlling signals for producing an internal write enable signal shiftable between an active level and an inactive level, a data bit being written into one of said plurality of memory cells while said internal write enable signal remains in said active level in said testing mode of operation, a data bit being read out from one of said plurality of memory cells while said internal write enable signal is in said inactive level in said testing mode of operation, said internal timing generator comprising c-1) a first flip flop circuit having an input node coupled to the output node of a first inverting circuit, a clock node supplied with one of said external controlling signals for memorizing a logic level at the input node thereof, and an output node, c-2) a second flip flop circuit having an input node coupled to the output node of said first flip flop circuit, a clock node supplied with the other of said external controlling signals for memorizing a logic level at the input node thereof, and an output node coupled to the input node of said first inverting circuit, and c-3) an exclusive-OR gate having two input nodes respectively coupled to the output nodes of said first and second flip flop circuits.

5,257,232

SENSING CIRCUIT FOR SEMICONDUCTOR MEMORY WITH LIMITED BITLINE VOLTAGE SWING

Sang H. Dhong, Mahopac, N.Y.; Koji Kitamura, Kusatsu, Japan; Toshiaki Kirihata, Yachiyo, Japan, and Toshio Sunaga, Kusatsu, Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 5, 1992, Ser. No. 847,769
Int. Cl.[5] G11C *13/00*
U.S. Cl. 361—203 **5 Claims**

1. A dynamic random access memory structure comprising:

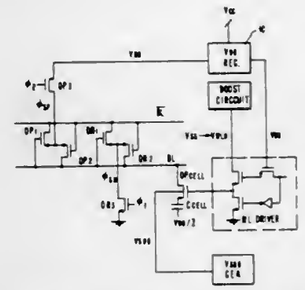
means for supplying a voltage VCC,

a switching means having first and second sides, said first side of said switching means connected to said voltage supply means VCC,

a first bitline having a first voltage level signal thereon, said first voltage level on said first bitline periodically swinging in a first, high going direction to a second high bit swing voltage level,

a sense amplifier circuit connected to said first bitline, said sense amplifier including a node connected to said second side of said switching means and responsive to said voltage VCC from said voltage supply means when said switching means is activated,

and control means connected to said switching means for selectively activating said switching means and connecting said voltage supply means VCC to said sense amplifier node for a given period of time for limiting the high going bit swing of said signal on said first bitline to a third voltage level V_{BH} higher than said first voltage level and lower than said second high voltage level.

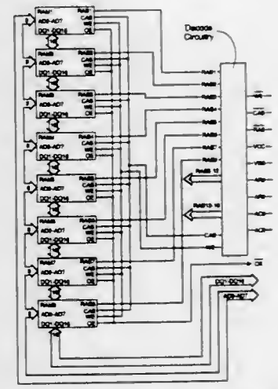


5,257,233

LOW POWER MEMORY MODULE USING RESTRICTED RAM ACTIVATION

Scott Schaefer, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Oct. 31, 1990, Ser. No. 608,125
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—227 **9 Claims**



1. A logic array for storing bits of information comprising:

a) a plurality of storage devices wherein each storage device comprises multiple data out signals and a plurality of subarrays, the number of subarrays on each storage device corresponding to the number of data out signals on said storage device, and each subarray comprising a plurality of storage locations wherein each storage location in one

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of said subarrays has a unique coordinate, said coordinates repeated across subarrays and across storage devices, wherein accessing data from said storage locations results in a significant increase in consumption of current by that storage device;

b) means for accessing a selected number of said storage devices in said logic array to receive multiple bits of data; and

c) means for selecting said number of said storage devices;

whereby said accessing substantially changes an amount of current used by said accessed storage device without substantially changing an amount of current used by any unaccessed storage device in said logic array.

5,257,234

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

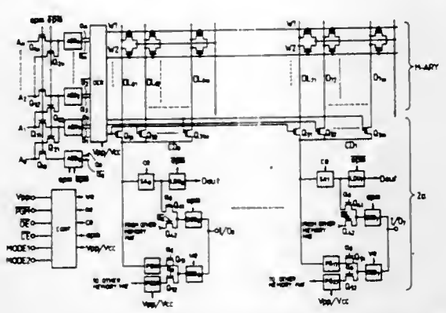
Akinori Matsuo, Higashiyamato; Masashi Watanabe, Kokubunji; Michio Fujimoto, Akishima; Masashi Wada, Fuchuu; Yoshiharu Nagayama, Fuchuu, and Kazuo Naito, Fuchuu, all of Japan, assignors to Hitachi, Ltd. and Hitachi VLSI Engineering Corp., Tokyo, Japan

Continuation of Ser. No. 621,643, Dec. 4, 1990, Pat. No. 5,105,389, which is a continuation of Ser. No. 219,736, Jul. 15, 1988, Pat. No. 4,989,185. This application Feb. 26, 1992, Ser. No. 842,887

Claims priority, application Japan, Jul. 15, 1987, 62-174703; Aug. 24, 1987, 62-208145

Int. Cl.[5] **G11C** *13/00*

U.S. Cl. 365—230.01 **7 Claims**



1. A single-chip microcomputer including a microprocessor and an electrically programmable read only memory (EPROM) for storing data to be fed to the microprocessor when the single-chip microcomputer is in a first operating mode, wherein the data stored in the EPROM is written from outside of the single-chip microcomputer when the single-chip microcomputer is in a second operating mode, the single-chip microcomputer comprising:

a first external terminal for receiving an externally generated input signal;

a mode control circuit coupled to the first external terminal and responsive to the externally generated input signal for setting the single-chip microcomputer to one of the first and second operating modes;

second external terminals for receiving externally generated data to be fed to the EPROM when the single-chip microcomputer is in the second operating mode; and

the EPROM further including:

a memory array having a plurality of memory cells, a plurality of word lines and a plurality of data lines, the plurality of word lines and the plurality of data lines being coupled to the plurality of memory cells so that each memory cell is coupled to one word line and to one data line,

a word line selecting circuit for selecting one of the plurality of word lines,

first data line selecting means for selecting first ones of the plurality of data lines, the first data line selecting means being operated in the first operating mode,

a second data line selecting means for selecting second ones of the plurality of data lines, the second data line selecting means being operated in the second operating mode, wherein a number of the second ones of the plurality of data lines is smaller than a number of the first ones of the plurality of data lines,

a read-out circuit coupled to the first ones of the plurality of data lines for providing data based on read-out data appearing on the first ones of the plurality of data lines to the microprocessor when the single-chip microcomputer is in the first operating mode, and

an input circuit for providing data based on the externally generated data to the memory array via the second ones of the plurality of data lines when the single-chip microcomputer is in the second operating mode.

5,257,235

SEMICONDUCTOR MEMORY DEVICE HAVING SERIAL ACCESS MODE

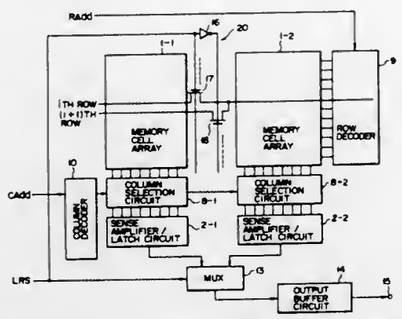
Junichi Miyamoto, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 514,266, Apr. 25, 1990, abandoned. This application Apr. 6, 1992, Ser. No. 864,380

Claims priority, application Japan, Apr. 25, 1989, 1-105294

Int. Cl.[5] **G11C** *8/04*

U.S. Cl. 365—230.03 **11 Claims**



1. A semiconductor memory device having a serial access mode for reading data therefrom, said semiconductor memory device comprising:

a plurality of substantially corresponding memory cell block arrays $MCA_1 \ldots MCA_S$ wherein s is greater than or equal to two, each memory cell block array comprising a plurality of memory cells arranged in a respective row and column matrix;

row lines respectively coupled to memory cells which are disposed in a same row;

column lines respectively coupled to memory cells which are disposed in a same column;

sense amplifier means respectively coupled to each of said column lines for amplifying data from memory cells coupled thereto;

latch means respectively coupled to said sense amplifier means for latching data amplified by said sense amplifier means;

addressing means for addressing said memory cells;

control means for controlling the latching of data from said memory cells in a serial access mode such that data from memory cells coupled to a first row line and in a first memory cell block array containing an addressed memory cell coupled to the first row line is latched simultaneously with data from memory cells coupled to a second row line different than the first row line and in a second memory cell block array.

5,257,236

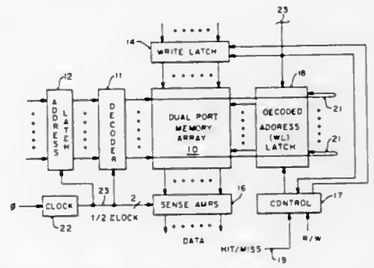
STATIC RAM

P. Owen Sharp, Aptos, Calif., assignor to Silicon Engineering, Inc., Scotts Valley, Calif.

Filed Aug. 1, 1991, Ser. No. 738,921

Int. Cl.[5] **G11C** *7/00*

U.S. Cl. 365—230.05 **10 Claims**



1. A memory apparatus comprising:

a dual port memory array having first and second data ports, and first and second select lines;

address decoder means for decoding address signals and for providing decoded address signals, said decoded address signals being coupled to said first select lines; and,

circuit means coupled to said second select lines for selectively providing said decoded address signals from said address decoder means, to said second select lines to access said memory array upon occurrence of a predetermined event.

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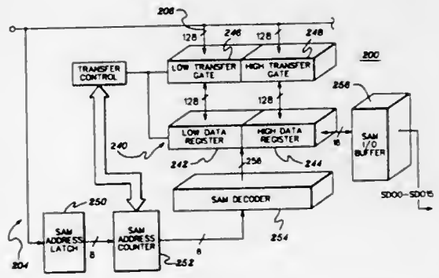
SAM DATA SELECTION ON DUAL-PORTED DRAM DEVICES

Michael A. Aranda; Andrew D. Bowen, both of Saugerties; Timothy J. Ebbers, Shokan; Randall L. Henderson, West Hurley, all of N.Y.; Nathan R. Hiltebeitel, Essex Junction, and Robert Tamlyn, Jericho, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 352,442, May 16, 1989, Pat. No. 5,065,368. This application Nov. 12, 1991, Ser. No. 791,666

Int. Cl.[5] **G11C** *8/00*

U.S. Cl. 365—230.05 **18 Claims**



1. A dual-port memory, comprising:

a random access memory means having a plurality of rows and columns of data elements, each of said rows being accessed at random by a row address;

a first serial access memory means, said first serial access memory means receiving a first portion of an accessed row of the data elements from said random access memory means;

a second serial access memory means, said second serial access memory means receiving a second portion of the accessed row of the data elements from said random access memory means;

means for selecting one of said first serial access memory means and said second serial access memory means for serial data readout;

means for generating a first address to access a first plurality of data elements from said selected serial access memory means such that a first sequence of access elements is provided;

means for generating a second address to access a second plurality of data elements from said selected serial access memory means such that a second sequence of accessed elements is provided, said first and second sequences being provided during a single clock cycle;

means for selecting one of said first sequence and said second sequence of accessed elements to be output on a serial output port, said means for selecting one of said first sequence and said second sequence including means for arbitrarily selecting on successive clock cycles a particular one of said first sequence and said second sequence of access elements; and

means for outputting said selected sequence of elements on said serial output port.

5,257,238

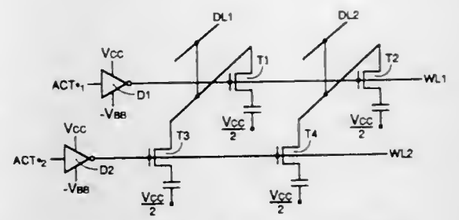
DYNAMIC MEMORY HAVING ACCESS TRANSISTOR TURN-OFF STATE

Ruojia Lee, and Fernando Gonzalez, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Jul. 11, 1991, Ser. No. 728,486

Int. Cl.[5] **G11C** *8/00;* **H03K** *17/687*

U.S. Cl. 365—230.06 **11 Claims**



1. A dynamic random access memory comprising:

a) a plurality of wordlines;

b) a plurality of bitlines which intersect said plurality of wordlines;

c) a plurality of memory cells, the location of each corresponding to the intersection of a single wordline and a single bitline which are associated with that particular cell, each cell having a capacitor for storing a bit of information represented by charge or no charge thereon, an access transistor gated by its associated wordline through which the cell's capacitor may accessed for charging or discharging for the purpose of reading, writing or refresh;

d) a signal-inverting driver for each wordline, each driver having a first-conduction-type driver transistor, a second-conduction-type driver transistor, an input coupled to the control elements of both driver transistors for the receipt of a timing control signal, an output coupled to 1) the driver's associated wordline, 2) to a first voltage at least equal to the threshold voltage of the access transistors through the first-conduction-type driver transistor, and 3) to a second voltage having a polarity opposite to that of said first voltage through the second-conduction-type driver transistor, said timing control signal being in a high state during the period when the capacitors of memory cells associated with that particular wordline are not being accessed, and being in a low state during the period when the capacitors of memory cells associated with that particular wordline are being accessed.

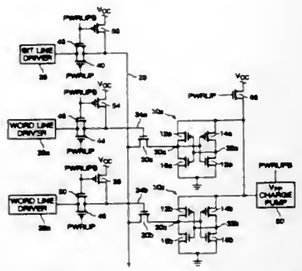
VOL 1155 ISS 4 OCT 26 1993

5,257,239

MEMORY CELL WITH KNOWN STATE ON POWER-UP

Ta-Pen Guo, Cupertino, and Adi Srinivasan, Fremont, both of Calif., assignors to Aptix Corporation, San Jose, Calif.

Filed Jul. 14, 1992, Ser. No. 913,692
Int. Cl.[5] G11C 11/40
U.S. Cl. 365—230.06 4 Claims



1. In an integrated circuit including a random access memory cell, said memory cell having an output node connectable to a bit line through a select device, said select device driven by a signal from a word line driver on a word line and said bit line driven by a bit line driver, apparatus for setting said memory cell to a known state during a power-up interval of said integrated circuit while a potential difference powering said integrated circuit increases from zero volts to an operating value, said apparatus comprising:

first means for disconnecting said bit line driver from said bit line during said power-up interval;

second means for disconnecting said word line driver from said bit line during said power-up interval;

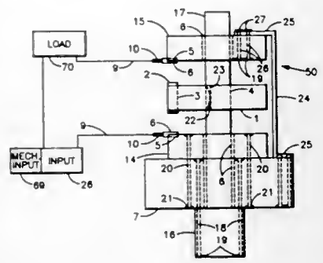
third means for writing a selected state into said memory cell during said power-up interval.

5,257,240

WAVE RESTRUCTURER/NON-VOLATILE COMPUTER MEMORY BIT

Daniel J. Lewis, 250 Powderhouse Rd., Vestal, N.Y. 13850

Filed Nov. 7, 1990, Ser. No. 610,038
Int. Cl.[5] G11C 13/00
U.S. Cl. 365—244 4 Claims



1. In combination with a power source and a power drawing element:

a) an input wire means operatively attached to a means for a current disk and operatively connected with said power source;

b) an output wire means operatively attached to a means for a frequency disk and operatively connected with said power drawing element;

c) a wedge means operatively attached to a means for a transconductive disk;

d) a means for mechanical power input operatively connected to said transconductive disk;

e) said wedge, said mechanical power input rotates said transconductive disk, said wedge makes simultaneous and momentary electrical contact with both said input wire and said output wire once during a complete revolution of said transconductive disk; and

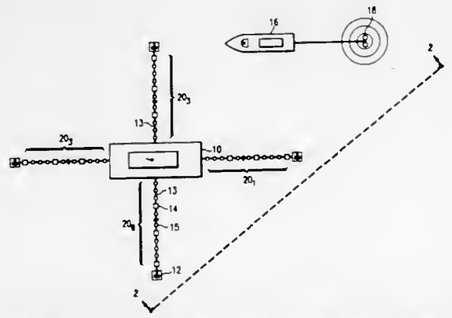
f) an operative circuit between said power source and said power drawing element where said circuit is complete when said wedge makes said electrical contact with said input wire and said output wire thus providing said power drawing element with a single pulse of digital current once during said complete revolution.

5,257,241

METHOD AND SYSTEM FOR ACQUISITION OF 3-DIMENSIONAL MARINE SEISMIC DATA

Gerald J. Henderson; Peter C. Johnson; Peter G. Rigsby, and Lawrence B. Sullivan, all of Plano, Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed May 8, 1991, Ser. No. 697,573
The portion of the term of this patent subsequent to May 12, 2009, has been disclaimed.
Int. Cl.[5] G01J 1/38
U.S. Cl. 367—15 44 Claims



14. A method of acquiring seismic survey data in a marine survey area, comprising:

positioning a plurality of array groups at a fixed location in the survey area, each of said array groups comprising:

a plurality of receiver arrays, each receiver array comprising:

a cable;

a plurality of receivers mounted to said cable; and

means, attached to an end of said cable, for fixing the position of said array in such a manner that the plurality of receivers mounted to said cable overlie a plurality of laterally-spaced locations of the seafloor; and

a platform, connected to each of said receiver arrays and disposed near a central location away from which each of said receiver arrays and its plurality of receivers laterally extend;

generating seismic energy along a path in the survey area, said path at a selected angle relative to one or more of the receiver arrays of one of said array groups; and

receiving signals from said receiver arrays in said plurality of array groups corresponding to seismic energy detected thereby.

5,257,242

METHOD OF GEOPHYSICAL EXPLORATION

Steven R. Clawson, Lakewood, Colo., assignor to Amoco Corporation, Chicago, Ill.

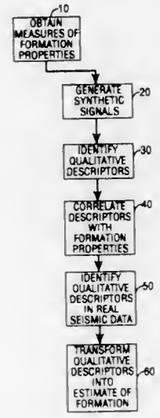
Filed Jul. 24, 1991, Ser. No. 735,142
Int. Cl.[5] G01V 1/28
U.S. Cl. 367—38 12 Claims

1. A method of geophysical exploration, comprising the steps of:

(a) obtaining measures of at least one formation property at a plurality of locations in a basin;

(b) generating a set of synthetic seismic signals employing the measures of at least one formation property for the basin;

(c) identifying at least one attribute quantitatively descriptive of the waveforms of seismic events in the set of synthetic seismic signals and obtaining therefrom qualitative descriptors descriptive of relative differences in the quantitative attributes for a seismic event in the set of synthetic seismic signals by comparing and contrasting the quantitative attributes for the seismic event;



(d) producing a histogram correlating the frequency of occurrence of at least one of the qualitative descriptors as a function of a range of the formation property;

(e) identifying at least one attribute quantitatively descriptive of the waveforms of seismic events in a set of seismic data obtained in the basin and obtaining therefrom qualitative descriptors descriptive of relative differences in the quantitative attributes for a seismic event in the set of seismic data by comparing and contrasting the quantitative attributes for the seismic event; and

(f) obtaining an estimate of the formation property by correlating the qualitative descriptor for the seismic event in the seismic data with a range of the formation property depicted in the histogram.

5,257,243

FLEXIBLE ACOUSTIC ARRAY WITH POLYMER HYDROPHONES

Robert A. DeChico, Pennington, N.J.; James F. McEachern, Newtown, and Timothy L. Kraynak, Ambler, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

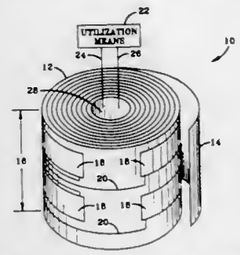
Filed Sep. 28, 1992, Ser. No. 954,107
Int. Cl.[5] H04R 17/00
U.S. Cl. 367—169 10 Claims

1. An arrangement of transducers into a variety of preselectable arrays, said transducers transforming compression waves in a liquid medium into electric waves in an electrical circuit, said preselectable array comprising:

(a) a roll of tubular plastic material having predetermined lengthwise and widthwise dimensions and with an inner and an outer surface, said plastic material having a characteristic of being pliant so as to readily assume a predetermined shape and also having a characteristic that produces a strong tendency to uncoil from said predetermined shape;

(b) a plurality of said transducers each being of a polymer piezoelectric material having a characteristic of being pliant so as to readily assume said predetermined shape, said plurality of transducers being affixed to one of said surfaces of said roll, said plurality of transducers being predeterminedly located on said one surface so as to be arranged into one of said variety of preselectable arrays; and

(c) a plurality of electrodes respectively connected to said plurality of said transducers, each of said electrodes having a characteristic of being pliant so as to readily assume



said predetermined shape, each of said electrodes having provisions so that one of its ends may be connected to an external utilization means of said array;

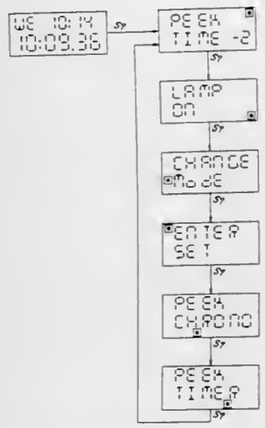
whereby each of said pliant tubular roll, transducers and electrodes readily assume a stowed condition having a shape corresponding to said predetermined shape when said tubular roll is coiled-up, and said transducers being arranged into said variety of preselectable arrays when said tubular roll is uncoiled.

5,257,244

MENU DISPLAY OF OPERATING INSTRUCTIONS WITH INDICIA FOR MULTIMODE ELECTRONIC TIMEPIECE

Tom Thinsen, Sunnyvale, Calif., assignor to Timex Corporation, Middlebury, Conn.

Filed Apr. 10, 1992, Ser. No. 866,581
Int. Cl.[5] G04B 45/00, 17/12
U.S. Cl. 368—41 8 Claims



1. Improvement in a multimode electronic timepiece having a display, a case, a plurality of manually actuated actuators disposed about said case, and an integrated circuit programmed to keep time and to provide a plurality of modes for performing a plurality of timepiece functions, including a first and second modes, said integrated circuit being programmed

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to permit an operator to sequentially cycle said timepiece through said plurality of modes by selectively and repetitively actuating a first of said plurality of said actuators, wherein said improvement comprises:

operating instruction subroutine means, including a program for said integrated circuit adapted to provide first and second operating instruction subroutines, said program being responsive to selective actuation by a timepiece operator of a second of said plurality of actuators and further adapted to dispose said timepiece out of said first and second modes respectively into said first and second operating instruction subroutines in response to a first actuation of said second actuator,

said first and second operating instruction subroutines respectively comprising first and second sets of operating instructions, said operating instruction subroutines being adapted to allow a timepiece operator to cycle said timepiece through said first and second sets of operating instructions in response to continuous uninterrupted actuation of said second actuator, and further repeated to display said first and second sets of operating instructions on said timepiece display,

said first and second sets of operating instructions comprising messages and indicia describing the operation of said plurality of actuators when said timepiece is respectively disposed in said first and second mode,

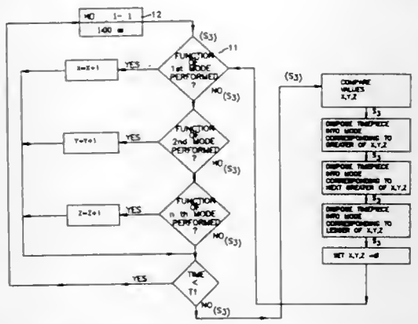
said indicia being displayed on a portion of said timepiece display adjacent to one of said plurality of actuators which is adapted to perform the timepiece function corresponding to said message.

5,257,245

AUTOMATIC MODE SEQUENCING TO LAST USED MODE FOR MULTIMODE ELECTRONIC TIMEPIECE

Tom Thinesen, Sunnyvale, Calif., assignor to Timex Corporation, Middlebury, Conn.

Filed Feb. 25, 1993, Ser. No. 22,206
Int. Cl.[5] G04C *17/00*; G04B *19/00*
U.S. Cl. 368—70 **15 Claims**



1. Improvement in a multimode electronic timepiece having a display, a plurality of manually actuated actuators, including first and second actuators, and an integrated circuit programmed to keep time and to provide a current sequence of a plurality of modes for performing a plurality of timepiece functions, including at least first and second modes, said integrated circuit being programmed to permit an operator to sequentially cycle said timepiece through said plurality of modes, by selectively and repetitively actuating a first of said plurality of actuators, wherein said improvement comprises:

first automatic mode selection means, including a program for said integrated circuit adapted to provide at least first and second values respectively comprising the number of times the respective timepiece functions of said first and second modes are performed by a timepiece operator in said current sequence, and to provide a next sequence of said plurality of modes, including said first and second modes of said current sequence;

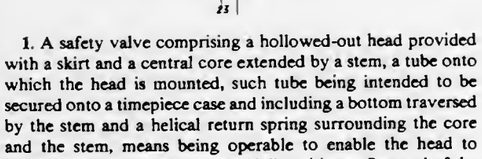
second automatic mode selection means, including a subroutine of said program adapted to determine the order of said plurality of modes within said next sequence in response to said first and second values.

5,257,246

TIMEKEEPING DISPLAY

Patricia M. Ehsman, 32 Ocean View Parade, Charlestown, New South Wales, 2290, Australia

Filed Mar. 6, 1992, Ser. No. 847,385
Claims priority, application Australia, Mar. 8, 1991, 72778/91
Int. Cl.[5] G04B *37/00*
U.S. Cl. 368—282 **4 Claims**



1. A timekeeping display of the type in which a set of hands rotate about an origin and sweep across a face to indicate the time in an analog fashion;

wherein the face is divided into a plurality of part-faces which are in spaced relation from each other while retaining their respective spatial relationships to the origin, wherein the origin is divided into a plurality of spatially separated, notional, origins;

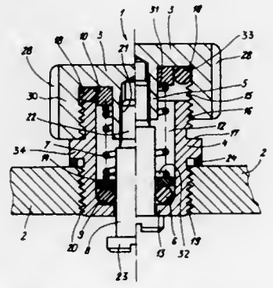
and in use, the set of hands appear to rotate about each spatially separated, notional origins and each hand sweeps across each part face in every revolution.

5,257,247

SAFETY VALVE FOR DIVER'S TIMEPIECE

Marc-André Miche, and Gérard Palix, both of Bienne, Switzerland, assignors to SMH Management Services AG, Biel, Switzerland

Filed Jan. 25, 1993, Ser. No. 8,584
Claims priority, application Switzerland, Feb. 7, 1992, 356/92
Int. Cl.[5] G04B *29/00, 37/00*
U.S. Cl. 368—290 **4 Claims**



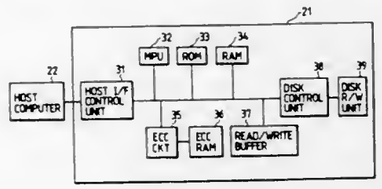
1. A safety valve comprising a hollowed-out head provided with a skirt and a central core extended by a stem, a tube onto which the head is mounted, such tube being intended to be secured onto a timepiece case and including a bottom traversed by the stem and a helical return spring surrounding the core and the stem, means being operable to enable the head to occupy an "out" position or an "in" position, a first end of the spring bearing under the head and a second end onto a ring which in turn compresses a first packing arranged on said bottom, a second packing being arranged under the head in line with the tube in a manner such when the head is in the "in" position said second packing is pressed against the tube, the valve then being inoperative and totally sealed, and when the head is in the "out" position said first packing is able to rise up against the return force of the spring if the fluid pressure prevailing within the case is higher than that prevailing on the exterior so as to avoid excessive pressure capable of damaging the case.

5,257,248

INFORMATION RECORDING APPARATUS CAPABLE OF EFFICIENTLY VERIFYING RECORDING INFORMATION

Yutaka Ogasawara, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 26, 1990, Ser. No. 498,621
Claims priority, application Japan, Mar. 28, 1989, 1-75417
Int. Cl.[5] G11B *7/013*
U.S. Cl. 369—32 **8 Claims**



1. An information recording apparatus for recording information on a recording medium having plural tracks, each of which contains plural sectors, said apparatus comprising:

recording means for recording, on the recording medium, information on a basis of a data unit having a capacity corresponding to a predetermined number of sectors;

verifying means for verifying the information recorded by said recording means after the recording of the unit of information;

track jump means for performing a track jump in order for said verifying means to verify the recorded information; and

control means for determining the predetermined number of sectors of the unit so as to minimize a number of sectors between a sector to which the track jump is performed and a first sector in which the information of the unit is recorded, except for a number of sectors which are required to prepare for verifying the recorded information.

5,257,249

OPTICAL INFORMATION RECORDING REPRODUCING APPARATUS FOR RECORDING AND REPRODUCING INFORMATION ON A RECORD MEDIUM AND FOR GENERATING TRACK ERROR SIGNALS

Takao Rokutan, Higashimurayama, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

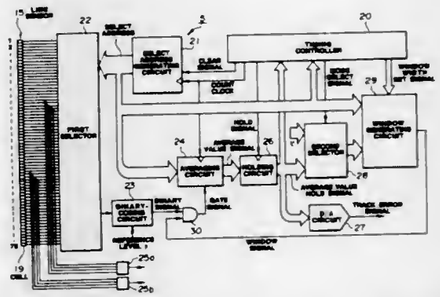
Filed Mar. 25, 1992, Ser. No. 857,239
Claims priority, application Japan, Mar. 28, 1991, 3-064595; May 10, 1991, 3-106088
Int. Cl.[5] G11B *27/10*; G06K *7/10*
U.S. Cl. 369—44.11 **15 Claims**

1. An optical information recording/reproducing apparatus for performing at least one of recording and reproducing of information by applying an optical spot to a record medium having a plurality of guide tracks and a plurality of information tracks, said apparatus comprising:

optical detection means which is disposed at a position to which an imaging spot of the light reflected from said record medium is applied and which has a plurality of optical detection portions arranged in a line in the direction vertical to an image of said guide tracks so as to detect the reflected light by said optical detection portions and output a signal;

address position specification means for specifying address positions of said plurality of optical detection portions for scanning said optical detection means;

detector output selecting means for selecting the output of said plurality of optical detection portions in accordance with an output from said address position specification means;



detection region setting means for setting a guide track detection region having a predetermined width for detecting said guide tracks;

track position detection means for detecting the address positions of said optical detection portions corresponding to the position of at least one guide track on the basis of an output from said detector output selecting means and said detection region setting means; and

track error generating means for generating a track error signal on the basis of the output from said track position detection means.

5,257,250

TRACKING-CONTROL TARGET-POSITION ADJUSTMENT METHOD

Mitsuro Moriya, Neyagawa; Masayuki Shibano, Izumisano; Hiroyuki Yamaguchi; Shinichi Yamada, both of Hirakata, and Katsuya Watanabe, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 15, 1989, Ser. No. 450,992
Claims priority, application Japan, Dec. 16, 1988, 63-319031; Dec. 21, 1988, 63-322618
Int. Cl.[5] G11B *7/09, 7/007*
U.S. Cl. 369—44.25 **16 Claims**

1. A tracking-control target position adjusting method used in an apparatus for selectively retrieving information recorded on a plurality of information tracks formed on a recording carrier by using a light beam which forms a light spot on the recording carrier, the recording carrier having a target position adjusting track formed between adjoining areas which have respectively recorded therein first and second adjusting signals which are optically detectably when the light spot is on the target position adjusting track, the apparatus being operable in a tracking control mode in which a tracking error signal indicative of a position of the light spot relative to an information track is produced from a reflected light beam reflected from the recording carrier at a position where the light spot is formed, and the position of the light spot is controlled so that the tracking error signal becomes equal to a target position value indicative of a target position where the light spot is to be positioned on the information track, said method including:

a target position adjusting signal producing step which comprises the substeps of:

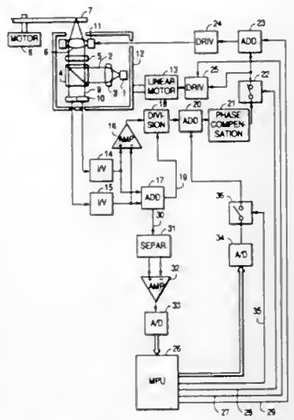
positioning the light spot on the target position adjusting

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track while operating the apparatus in the tracking control mode so as to position the light spot on a target position on the target position adjusting track;

detecting the first and second adjusting signals from the reflected light beam; and

detecting a difference in amplitude between the detected first and second adjusting signals to obtain a target position adjusting signal indicative of the difference; and



a target position adjusting step responsive to said target position adjusting signal producing step for operating the apparatus in the tracking control mode for the light spot positioned on the target position adjusting track while adjusting a relative relationship between the tracking error signal and the target position value based on the target position adjusting signal to thereby adjust the target position to an optimum target position.

5,257,251

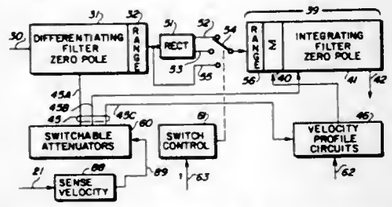
SINGLE LOOP SERVO-POSITIONING SYSTEMS HAVING MEANS FOR CHANGING THE DYNAMIC RANGE OF A POSITION-ERROR SIGNAL WITH SPEED OF THE RELATIVELY MOVABLE MEMBERS

W. Wai-Chung Chow, and Alan A. Feonema, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 528,527, May 25, 1990, abandoned. This application Sep. 23, 1991, Ser. No. 764,264

Int. Cl.[5] **G11B** *7/095*

U.S. Cl. 369—44.25 **11 Claims**



11. In a single-loop velocity-controlled positioning servo system,

an actuator to be controlled, position sensing means coupled to the actuator for generating a tracking error signal (TES) that indicates by a predetermined null signal amplitude that the actuator is at a center line of an elongated track of a disk data storage member and indicates by a sinusoid that the position sensing means is radially crossing said tracks of said disk data storage member, said TES having a first dynamic range while indicating said null and the sinusoid having variable dynamic range related to a speed of said track crossing, means for supplying a velocity reference signal;

the improvement including, in combination:

an input adjustable differentiating filter (zero-pole), having a predetermined transfer function, connected to the position sensing means for receiving TES for differentiating TES to produce a differentiated TES, termed variable TES', and having means for limiting the variable dynamic range of said variable TES' to said first predetermined dynamic range for producing a compressed TES';

a rectifier connected to the input adjustable filter for receiving TES' for supplying positive and negative rectified TES' signals;

a single-pole triple-throw electronic switch means having one output terminal and three input terminals, an input terminal (F) being connected to said input filter for receiving said TES', an input terminal (**52**) being connected to the rectifier for receiving said negative rectified signal and an input terminal (**53**) being connected to the rectifier for receiving said positive rectified signal;

switch control means connected to the electronic switch means and operative to actuate the electronic switch means to connect the input terminal (F) to said output terminal for effecting track following by the actuator, to connect the input terminal (**52**) to the output terminal for effecting inward radial seeks by the actuator and to connect the input terminal (**53**) to the output terminal for effecting radially outward seeks by the actuator;

summing means, including range expanding means, connected to the output terminal of the electronic switch for receiving the compressed TES' and for expanding the compressed TES' to the original dynamic range of the variable TES' and having an input reference terminal for receiving a control signal to be compared with the received compressed TES' and an output means for supplying an error signal representative of the comparison of the velocity reference signal and the variable TES';

an output adjustable integrating filter connected to the summing means for receiving said error signal and having a transfer function that is an inverse of said predetermined transfer function of said input filter means for supplying a position error signal (PES);

circuit means coupling the output adjustable filter to said actuator for transferring said PES to the actuator for controlling position of the actuator with respect to said tracks and including an integrating function for integrating the PES; and

range control means connected to said adjustable filters, speed sensing and indicating means in the range control means and connected to the position sensing means to detect and indicate said radial track-crossing speed of the actuator with respect to said tracks, filter adjusting means connected to both said adjustable filters and to said speed sensing and indicating means for responding to the indicated radial speed for actuating the adjustable filters to change the dynamic range of signals flowing through the respective filters to be decreased and increased in dynamic range, respectively for increasing and decreasing radial speed of said actuator whereby the dynamic range of said flowing signals in said summing means is always within said first predetermined dynamic range irrespective of said indicated radial speed of said actuator.

5,257,252

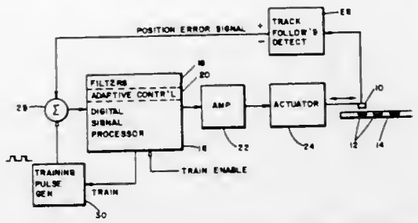
ADAPTIVE CONTROL SYSTEM FOR A DISK DRIVE ACTUATOR

Ted W. Barnes, Star, and Richard B. Wells, Boise, both of Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 18, 1991, Ser. No. 812,231

Int. Cl.[5] **G11B** *7/00, 21/08*

U.S. Cl. 369—44.29 **10 Claims**



1. In a disk drive, a servo loop for controlling an actuator and read head, the combination comprising:

means for applying a training signal to said servo loop, said actuator responding to a training signal to move said read head;

track error means for producing an error signal upon a movement of said head to a track on a disk, said error signal indicating a positioning error of said actuator and read head;

controllable filter means exhibiting an initial filter parameter value; and

processor means responsive to a first training signal to alter said filter means' initial filter parameter value in a first sense from said initial filter parameter value, to cause said controllable filter means to modify said first training signal in accordance with an altered filter parameter value, and further responsive to a second training signal to alter said controllable filter means' initial filter parameter value in a second sense opposite to said first sense to cause said controllable filter means to modify said second training signal in accordance with said altered initial filter parameter value, said track error means producing first and second error signals in response to said first and second training signals, said processor means responsive to said first and second error signals to adjust said controllable filter means' initial filter parameter value int he first sense if said first training signal causes said track error means to produce a lower error signal than an error signal produced as a result of said second training signal, or in the second sense if said first training signal causes said track error means to produce a larger error signal than an error signal produced as a result of said second training signal.

5,257,253

LASER VISION DISC WITH DIGITAL SOUND (LDD) DISC PLAYER FOR REPRODUCING ANALOG AUDIO SIGNALS MIXED WITH DIGITAL AUDIO SIGNALS

Hiroshi Otsubo; Seiji Ohmori; Tasuku Tsuruga; Eisaku Kawano; Takeshi Mawatari, and Tetsuo Shimizu, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 481,272, Feb. 20, 1990, abandoned. This application Dec. 17, 1992, Ser. No. 994,077

Claims priority, application Japan, Mar. 7, 1989, 1-54199

Int. Cl.[5] **G11B** *7/00*

U.S. Cl. 369—48 **10 Claims**

1. A disc player capable of playing back recording mediums loaded in the disc player, including a Laser vision Disc with Digital sound (LDD) disc in which video signals, digital stereo audio signals, and analog audio signals formed of a plurality of channels, are recorded in different frequency bands in a predetermined format, wherein said video signals include a control code for initiating a mixing operation, said player comprising:

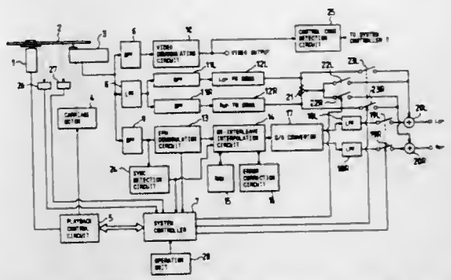
pickup means for reading signals recorded on a loaded recording medium;

first reproduction means for reproducing a plurality of channels of analog audio signals from signals which are read by said pickup means;

second reproduction means for reproducing digital stereo audio signals from signals which are read by said pickup means;

video reproduction means for reproducing video signals from signals which are read by said pickup means;

identifying means for identifying whether or not the recording medium loaded in the playback position is an LDD disc;



detecting means for detecting the control code from the video signals reproduced by said video reproduction means; and

mixing means for automatically mixing, in response to both said identifying means identifying the recording loaded at the playback position as being an LDD disc and also said detecting means detecting the control code from the video signals reproduced by said video reproduction means, at least one of the plurality of channels reproduced by said first reproduction means with said digital stereo audio signals reproduced by said second reproduction means.

5,257,254

APPARATUS FOR CONTROLLING CD AUDIO PLAYER TO PLAYBACK CD-ROM

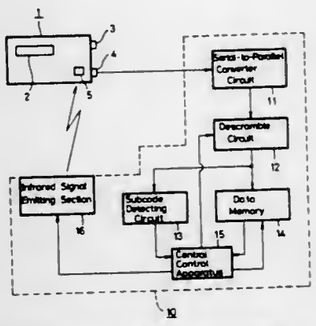
Ken Kutaragi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 24, 1990, Ser. No. 633,327

Claims priority, application Japan, Dec. 29, 1989, 1-341956; Dec. 29, 1989, 1-341958; Dec. 29, 1989, 1-341959; Dec. 29, 1989, 1-341968; Jan. 22, 1990, 2-012067

Int. Cl.[5] **G11B** *5/09*

U.S. Cl. 369—50 **6 Claims**



1. A data reproducing apparatus comprising:

a reproducing section for reproducing digital data and having an infrared signal input for receiving an infrared con-

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trol signal, in which a reproducing state is controlled by an infrared control signal transmitted in a wireless fashion, so that reproduced data is output as digital data in response thereto; and

a control section connected to receive the digital data from the reproducing section and having an infrared signal emitting section for transmitting the infrared control signal including reproducing position information to said infrared signal input of said reproducing section in a wireless fashion, said control section decoding the digital data from said reproducing section and memory means for storing a necessary potion of decoded digital data from said means for decoding, wherein track number information near the position in which said necessary portion of data is recorded is transmitted from said infrared signal emitting section to said reproducing section by the infrared control signal to thereby reproduce said necessary portion of data.

5,257,255

RECORDING AND/OR REPRODUCING APPARATUS WITH SENSOR FOR DETECTING HEAD SPEED OR ACCELERATION

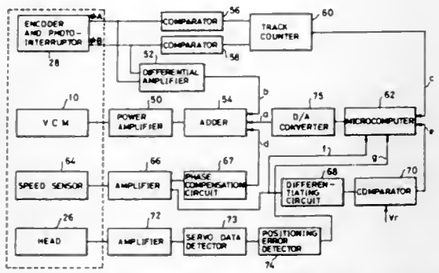
Masao Morimoto, Chichibu; Hitoshi Kurihara, Yoi-machi; Ryuichi Negishi, Chichibu; Toru Okada, Kumagaya, and Masae Ikeda, Chichibu, all of Japan, assignors to Canon Denshi Kabushiki Kaisha, Chichibu, Japan

Continuation of Ser. No. 329,761, Mar. 28, 1989, abandoned. This application Jul. 31, 1992, Ser. No. 921,439

Claims priority, application Japan, Mar. 30, 1988, 63-74615; Apr. 1, 1988, 63-78086; Apr. 28, 1988, 63-108809; May 6, 1988, 63-109106; May 6, 1988, 63-109107; May 12, 1988, 63-114550

Int. Cl.[5] G11B *19/04, 27/36*

U.S. Cl. 369—53 19 Claims



1. A recording and/or reproducing apparatus, comprising:

a head means for writing data into and/or reading data out of a recording medium;

a displacing means for displacing said head means along a path to a write or read region on said recording medium, said displacing means including a motor having a first moving member that is disposed on one side of said path, and joining means for joining said head means to said first moving member;

a speed sensor means for detecting the displacement speed of said head means, said speed sensor means including a second moving member that is disposed on the other side of said path, said second moving member being coupled to said displacing means; and

control means for permitting or inhibiting a write operation by said head means in response to the displacement speed of said head means detected by said speed sensor means, said control means inhibiting the write operation by the head means if the displacement speed of said head means exceeds a predetermined value.

5,257,256

RECORDING WAVEFORM FOR MARK-LENGTH MODULATION OPTICAL RECORDING

Motoyasu Terao, Tokyo; Tetsuya Nishida, Koganei; Hiroshi Yasuoka, Kokubunji; Keikichi Andoo, Musashino, and Norio Ohta, Iruma, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

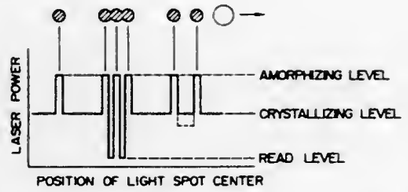
Continuation of Ser. No. 598,811, Oct. 17, 1990, Pat. No. 5,038,338, which is a continuation of Ser. No. 185,690, Apr. 22, 1988, abandoned. This application Jun. 10, 1991, Ser. No. 712,544

Claims priority, application Japan, Apr. 24, 1987, 62-99749

The portion of the term of this patent subsequent to Aug. 6, 2008, has been disclaimed.

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—116 22 Claims



1. A method of recording information on a recording medium, which is capable of achieving a first state by application of an energy beam at a first power level and a second state by application of the energy beam at a second power level, by projecting on the recording medium pulses of the energy beam so as to record the information on the recording medium in a form of dots where the recording medium takes the first state, said method comprising the steps of:

moving the recording medium relative to the energy beam and projecting on the recording medium the energy beam of the second power level when no dot is to be recorded; and

projecting a plurality of consecutive pulses of the energy beam, each having the first power level, where a sum of the pulse widths is equal to a predetermined time length when a dot having a length not less than a predetermined dot length is to be recorded, said predetermined time length corresponding to a time length which is shorter than a time interval required for the energy beam, in its relative movement, to move from one end to an opposite end of the dot to be recorded, and said predetermined dot length corresponding to a length twice as long as that of a shortest one of the dots which are recordable by the energy beam.

5,257,257

METHOD OF CONTROLLING THE OPERATION OF A PACKET SWITCHED CDMA COMMUNICATION NETWORK FOR CONTROLLING THE OPERATION OF TRANSMITTERS AND RECEIVERS

Xiao H. Chen, and Juhani Oksman, both of Oulu, Finland, assignors to Nokia Mobiltelefoner AB, Salo, Finland

Filed Apr. 3, 1992, Ser. No. 863,026

Claims priority, application Finland, Apr. 5, 1991, 911649

Int. Cl.[5] H04J *13/00, 11/00, 3/02*

U.S. Cl. 370—18 9 Claims

1. A method of controlling transmitters in a packet switched DCMA telecommunication network having N network users ($U_{i,j}$) connected to the network by a respective one of N terminals (TER_i, TER_j, i,j=1→N), wherein each terminal (TER_i) communicates by means of a transmitter (T_i, i=1→N) and a receiver (R_i, i=1→N) with a receiver (R_j) and a transmitter (T_j) of another one of N terminals (TER_j, j=1→N) via a CDMA channel transmission path, and wherein a substantially orthogonal receiver code ($r_{i,j}$) is pre-assigned to said each terminal (TER_i, TER_j) for addressing and/or encoding packets to another one of said N terminals, and a substantially orthogonal transmitter code ($t_{i,j}$) is also pre-assigned to said each terminal and used thereby to encode packets to said another one of N terminals, the method comprising the steps of:

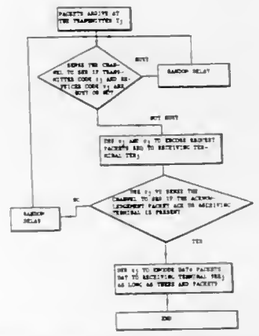
a terminal (TER_i) sensing the channel transmission path for the presence of a receiver code (r_j) or a transmitter code (t_j) associated with receiving terminal (TER_j) to be communicated to; p

after sensing the channel transmission path, said terminal (TER_i) entering a wait state so as to continuously repeat the sensing step at fixed increments of time, and until at least one of the receiver code (r_j) and the transmitter code (t_j) is no longer present in the channel transmission path;

after not detecting the presence of said at least one of the receiver code (r_j) and the transmitter code (t_j) in the channel transmission path, said terminal (TER_i) encoding both the receiver code (r_j) associated with the receiving terminal (TER_j), and its own transmitter code (t_i), as well as terminal (TER_j)'s address with respect to its position in the network, onto a request packet (REQ) sent to receiving terminal (TER_j) via the channel transmission path;

after sensing the request packet (REQ), said terminal (TER_i) sensing the channel transmission path and detecting the presence of an acknowledgement packet (ACK) from receiving terminal (TER_j) which was seen in response to the request packet (REQ), said acknowledgement packet (ACK) including the transmitter code (t_j) associated with receiving terminal (TER_j); and

after detecting the acknowledgement packet (ACK), a transmitter (T_i) in the terminal (TER_i)initiating a transmission of data packets (DAT), respectively encoded with the transmitter code (t_i), via the channel transmission path to the receiving terminal (TER_j).



5,257,258

"LEAST TIME TO REACH BOUND" SERVICE POLICY FOR BUFFER SYSTEMS

Alexander Birman, Chappaqua; Harry R. Gail, Jr., Ossining, and Sidney L. Hantler, Peekskill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 15, 1991, Ser. No. 656,934

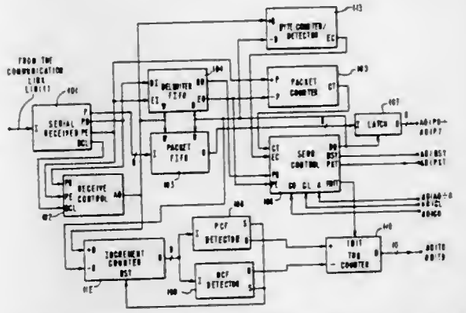
Int. Cl.[5] H04J *3/26*

U.S. Cl. 370—60 25 Claims

1. In a buffer system connected to N links, with each link j of said links being associated with a distinct corresponding buffer j, with x links of said links being input links and with N−X links of said links being output links, said system thus having N buffers, a method of serving said buffers comprising:

a) determining θ_M where θ_M is the minimum value of θ_j for a subset of said N buffers, where each buffer in said subset has at least an essentially complete packet therein if bits are arriving in said each buffer from its associated input link of said links, and where each buffer in said subset has essentially sufficient free storage if bits are departing from said each buffer and onto its associated output link of said links, where θ_j is the time needed for the j-th buffer to reach its bound if bits are arriving in said j-th buffer from its associated input link of said links, and where θ_j is the time needed for the j-th buffer to become empty continuously arrive in or if bits depart from said j-th buffer at a constant link speed of said j-th buffer's associated link; and

b) serving any of said N buffers of said subset having a value of $\theta_j=\theta_M$, where serving a buffer comprises taking bits out of a buffer associated with an input link and where serving a buffer comprises storing bits in a buffer associated with an output link.



5,257,259

RING-TYPE LOCAL AREA NETWORK

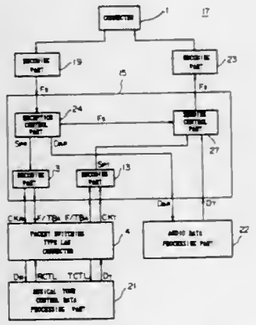
Kanehisa Tsurumi, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Jun. 5, 1991, Ser. No. 710,826

Claims priority, application Japan, Jun. 6, 1990, 2-148051; Jun. 6, 1990, 2-148052; Jun. 6, 1990, 2-148053; Jun. 6, 1990, 2-148054; Jun. 6, 1990, 2-148055; Jun. 6, 1990, 2-148056; Jun. 6, 1990, 2-148057

Int. Cl.[5] H04L *12/56*

U.S. Cl. 370—60.1 4 Claims



1. A ring-type local area network (LAN) which conducts data transmission along a plurality of communication stations which are connected in a ring form by means of a transmission path,

in which said plurality of communication stations are provided with:

decoding means for decoding a symbol series from signals transmitted through said transmission path, detecting a synchronization symbol synchronizing said symbol series, synchronizing said decoded symbol series with said syn-

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chronization symbol, and outputting said decoded and synchronized symbol series as a first symbol series;

a plurality of dividing means for inputting said first symbol series thereinto, extracting only specific symbols from said first symbol series which are used in a plurality of LANs which process said data by means of different protocols, creating a second symbol series based on said specific symbols, and outputting said second symbol series;

a plurality of LAN connecting means, into which said second symbol series are inputted, for processing and replacing said second symbol series by means of previously determined protocols and outputting a new symbol series;

combining means, into which said new symbol series outputted from each of said plurality of LAN connecting means are inputted, for combining said new symbol series and outputting a combined symbol series; and

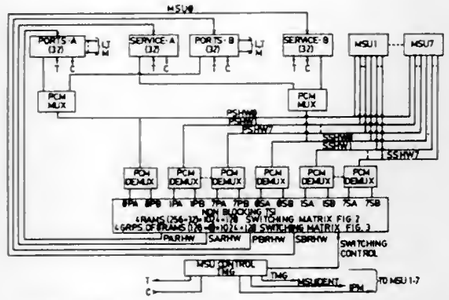
encoding means for encoding a synchronization symbol into said combined symbol series outputted from said combining means at regular intervals, or in the case in which there is no symbol series, for providing a symbol indicating that there are no symbols to thereby create a new symbol series, and for encoding said new symbol series into a transmission signal and outputting said encoded symbol series.

5,257,260

EXPANDING SWITCHING CAPABILITY OF A TIME DIVISION COMMUNICATION SYSTEM BY MULTIPLEXING GROUPS OF CIRCUITS INTO SUCCESSIONS

Charles J. Breidenstein, Rochester; Jerome S. Caplan, Henrietta, and Klaus Gueldenpfennig, Penfield, all of N.Y., assignors to Redcom Laboratories Inc., Victor, N.Y.

Filed Dec. 18, 1991, Ser. No. 809,662
Int. Cl.[5] H04J *3/22*
U.S. Cl. 370—84 **12 Claims**



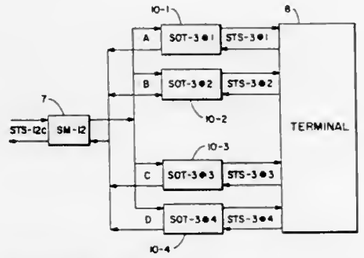
1. In a TDM digital communication system using a switching system having a switching unit with a send highway carrying cyclically repetitive frames of a certain number of successive multi-bit digital signals in successive time slots, a time slot interchange for switching digital signals in selected ones of said time slots to a receive highway to provide interconnections between different ones of a plurality of circuits equal in number to the number of said time slots in each of said frames which generates said digital signals and which receives said digital signals, the improvement for expanding the number of said circuits connectible by means of said unit without increasing the number of time slots in each of said frames which comprises means for multiplexing digital signals from said circuits into a plurality of successions equal in number to the number of bits of said multi-bit digital signal in each of said time slots to provide said plurality of successions of said digital signals each with a plurality of digital signals from a different group of said circuits, said time slot interchange comprising a memory with separate groups of locations for each multi-bit signal in a frame from each group of said circuits, and means for transmitting said successions along said send highway at a second rate which is a multiple of a first rate which equals the number of bits in each succession, and demultiplexing means for applying said digital signals from said successions separately to different ones of said groups of locations at said first rate.

5,257,261

METHODS AND APPARATUS FOR CONCATENATING A PLURALITY OF LOWER LEVEL SONET SIGNALS INTO HIGHER LEVEL SONET SIGNALS

Bidyut Parruck, Stratford, and Robert W. Hamlin, Jr., Huntington, both of Conn., assignors to TranSwitch Corporation, Shelton, Conn.

Continuation-in-part of Ser. No. 559,636, Jul. 27, 1990, Pat. No. 5,142,529, which is a continuation-in-part of Ser. No. 848,384, Mar. 9, 1992. This application May 1, 1992, Ser. No. 877,653
Int. Cl.[5] H04J *14/08*
U.S. Cl. 370—84 **9 Claims**



1. An apparatus for concatenating a plurality of STS-m type signals having SPEs into an STS-n type signal having POH bytes, where m is at least 1, and n is at least three, and n is a multiple of m, comprising:

(a) at least three substantially identical STS-m type signal terminating apparatus, wherein one of said plurality of substantially identical STS-m signal terminating apparatus is a master apparatus, and the others of said terminating apparatus are slave apparatus;

(b) in each of said STS-m type signal terminating apparatus,

(1) memory means for storing respective STS-m type signals,

(2) writing means and reading means coupled to said memory means for writing said STS-m type signals into said memory means

and for reading said STS-m type signals from said memory means,

(3) means for generating a first control signal related to a predetermined byte which is synchronous with the POH bytes,

(4) means for calculating a B3 parity value for the SPE of the STS-m type signal in conjunction with the B3 parity value of an adjacent STS-m type signal terminating apparatus, if any,

(c) control signal generating means in said master apparatus for generating a transmit SPE control signal when said STS-n SPE is to be transmitted;

(d) means for making a logical AND from said first control signals of said STS-m type signal terminating apparatus and generating therefrom a composite control signal,

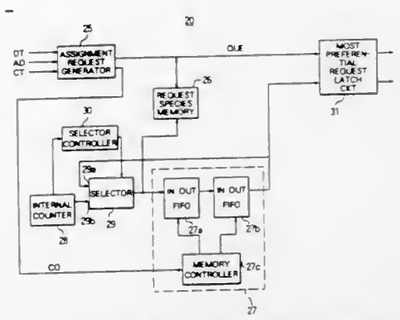
wherein said reading means of each of said STS-m type signal comprises logic means for receiving said composite control signal and said STS-n SPE control signal such that reading from said memory means is under control of said logic means.

5,257,262

DCME UNIT CAPABLE OF PROCESSING A WIDE VARIETY OF INPUT INFORMATION SIGNALS

Masashi Shioka, and Selichiro Shigaki, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Feb. 22, 1991, Ser. No. 658,895
Claims priority, application Japan, Feb. 22, 1990, 2-39752
Int. Cl.[5] H04J *3/02*
U.S. Cl. 370—112 **11 Claims**



1. A digital circuit multiplexing equipment unit which receives a plurality of input signals in a respective plurality of input channels, each input channel being given an input channel number, and which assigns the input signals to a plurality of output channels after being encoded at selected bit rates, said unit comprising:

detecting means responsive to said input signals for detecting whether each of said input signals is present in its respective input channel, to thus produce a channel state signal;

request producing means responsive to said channel state signal for producing assignment request sequentially appearing with time, said assignment requests each corresponding to a respective input signal and each indicating a respective degree of priority of its respective input signal amongst all of the input signals;

selecting means for selecting said assignment requests in the sequential order according to the respective degree of priority of said input signals;

bit rate determining means responsive to the selected assignment request for determining said bit rates to be used in said output channels; and

multiplexing means for connecting the input signals to the output channels in accordance with the selected assignment requests selected by said selecting means;

wherein each of said assignment requests being specified by a time sequence of occurrence of the assignment request and including the input channel number of the input channel in which the assignment request occurs and a request species indicative of the particular type of input signal corresponding to the assignment request;

said selecting means comprising:

priority deciding means (**26–30**) for deciding the degree of priority on the basis of said request species and said time sequence of the occurrence of the assignment request; and

selected request producing means (**31**) for producing, as said selected request, the input channel number and said request species;

said priority deciding means comprising:

first memory means (**27**) for memorizing the input channel number and the time sequence;

second memory means (**26**) for memorizing the request species; and

preferential request selection means (**28–30**) for selecting a higher degree of priority by monitoring said first and said second memory means.

5,257,263

CIRCUIT FOR DECODING CONVOLUTIONAL CODES FOR EXECUTING THE SURVIVOR PATH STORAGE AND REVERSE SCANNING STAGE OF A VITERBI ALGORITHM

André Bazet, Clichy, and Philippe Sadot, Paris, both of France, assignors to Alcatel Transmission Par Faisceaux Hertziens, Paris, France

Filed Jun. 26, 1991, Ser. No. 721,008
Claims priority, applicatioo France, Jun. 28, 1990, 90 08178
Int. Cl.[5] G06F *11/10*
U.S. Cl. 371—43 **2 Claims**



1. A convolutional code decoding circuit for executing the stage of a Viterbi algorithm which involves reverse scanning of a plurality of paths of a trellis representing a diagram of possible transitions resulting from encoding by an encoder comprising ν flip-flops, each node of the trellis being represented by a word of $N=2^{\nu}$ bits, said circuit selecting from a plurality of possible survivor paths that having the lowest metric, so as to reconstitute the trellis path determined during encoding and to recover the sequence of information bits causing said path to be adopted,

said circuit comprising:

a memory storing a plurality of said words of $N=2^{\nu}$ bits and

connected to the output of said memory, a cascade of ν groups of 2-in-1 multiplexers progressively combining the 2^{ν} outputs of the memory into a single output, a D type flip-flop being provided at the output of each multiplexer, the single final flip-flop outputting in sequence the information bits representing the required path and the select signal for each multiplexer being the output of said final flip-flop.

5,257,264

AUTOMATICALLY DEACTIVATED NO-OWNER FRAME REMOVAL MECHANISM FOR TOKEN RING NETWORKS

Henry S. Yang, Andover, and Kadangode K. Ramakrishnan, Maynard, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation-in-part of Ser. No. 558,961, Jul. 27, 1990, which is a continuation-in-part of Ser. No. 400,072, Aug. 29, 1989, abandoned. This application Jul. 29, 1991, Ser. No. 736,836
Int. Cl.[5] H04L *12/42*
U.S. Cl. 370—85.5 **26 Claims**

1. A station for purging no-owner frames from a token ring network, comprising:

receiving means for receiving information on the ring network;

token capturing means for removing from the ring network a token received by the receiving means;

data frame transmitting means, for transmitting data frames, if any, onto the ring network;

marker transmitting means for transmitting a predetermined number of purge marker frames onto the ring network after capturing the token;

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token transmitting means for transmitting a token onto the ring network after the purge marker frames have been transmitted;

purging means, including means for determining whether to initiate a purge cycle based on the occurrence of selected conditions, wherein the purge cycle, if initiated, begins when the received token is removed from the ring network and ends when a terminate-purge flag is set, and wherein during the purge cycle the purging means removes all data frames and fragments of frames received by the receiving means; and

means for generating the terminate-purge flag, responsive in part to the detection of at least one purge marker frame received by the receiving means;

and wherein the means for determining whether to initiate a purge cycle includes means for determining when the ring network is not idle, wherein the purge cycle is initiated only when the ring network is not idle.

5,257,265

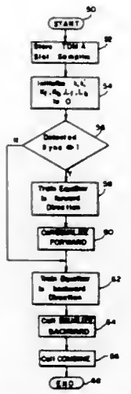
METHOD AND APPARATUS FOR REDUCING MULTIPATH DISTORTION

Chun-Meng Su, Lafayette; Chanchai Poonpol, San Diego, and George M. Peponides, Encinitas, all of Calif., assignors to Pacific Communications, San Diego, Calif.

Filed Aug. 7, 1991, Ser. No. 741,310

Int. Cl.[5] H04J *3/06*

U.S. Cl. 370—100.1 **24 Claims**



1. A method for reducing multipath propagation in a signal, comprising the steps of:

a) sampling said signal to obtain a plurality of sampled symbols;

b) equalizing the time delay characteristics of at least a first subset of said sampled signals by processing said first subset in a first direction and detecting a first prescribed condition, whereby the length of said first subset of sampled symbols is adaptively determined by the detection of said first prescribed condition; and

c) equalizing the time delay characteristics of at least a second subset of said sampled symbols by processing said second subset in a second direction and detecting a second prescribed condition, whereby the length of said second subset of sampled symbols is adaptively determined by the detection of said second prescribed condition.

5,257,266

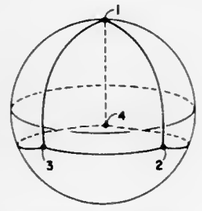
COMPUTER AND COMMUNICATIONS SYSTEMS EMPLOYING UNIVERSAL DIRECT SPHERICS PROCESSING ARCHITECTURES

Stanley C. Maki, San Diego, Calif., assignor to General Dynamics Corporation, Space Systems Division, San Diego, Calif.

Filed Feb. 27, 1991, Ser. No. 766,537

Int. Cl.[5] G06F *13/40*

U.S. Cl. 371—8.2 **4 Claims**



1. An improved communication network for a fault tolerant communication system for interconnecting in a computer a maximum plurality of independent node devices comprising:

at least two or more busses in the shape equivalent of a continuous circle;

a plurality of connectors electrically interconnected to said at least two or more busses with each connection forming a site node, a plurality of site nodes are directly linked to at least one other node, each of the nodes being electrically connectable to each other, to a computer internal communication layer, processing layer, memory layer and an input/output layer; and

means for selectively interconnecting said plurality of site nodes to each other, said communication layer, processing layer, memory layer and input/output layer.

5,257,267

VARIABLE LENGTH SCAN STRING AND CELL FOR SAME

Yoshiyuki Ishizaka, Tokyo, Japan, assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Feb. 25, 1991, Ser. No. 660,532

Claims priority, application Japan, Feb. 26, 1990, 2-47099

Int. Cl.[5] G01R *31/28*

U.S. Cl. 371—22.3 **13 Claims**

1. A variable length, serial scan string having a plurality of serial scan cells coupled in series to define said serial scan string, at least one of the serial scan cells comprising:

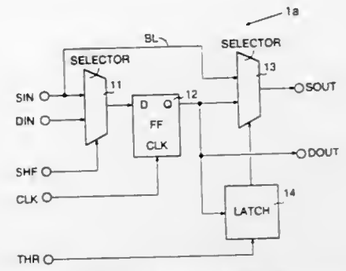
a scan-in node for receiving first serial scan data, the first serial scan data including a bypass control signal;

a scan-out node for outputting second serial scan data;

a flip flop having an input operatively coupled to receive the first serial scan data from the scan-in node and an output for outputting a time delayed version of the first serial scan data received at the flip flop input;

a controllable scan-out selector having a first input coupled to the scan-in node, a second input coupled to the flip flop output, a control terminal, and an output coupled to the scan-out node for selectively outputting to the scan-out

node a selected one of first and second signals respectively applied to the first and second scan-out selector inputs in response to a scan-out control signal supplied to the scan-out selector control terminal; and



scan-out selector control means, operatively coupled to the scan-in node and to the controllable scan-out selector, for receiving the bypass control signal from the scan-in node and for outputting the received bypass control signal to the control terminal of the controllable scan-out selector as said scan-out control signal.

5,257,268

COST-FUNCTION DIRECTED SEARCH METHOD FOR GENERATING TESTS FOR SEQUENTIAL LOGIC CIRCUITS

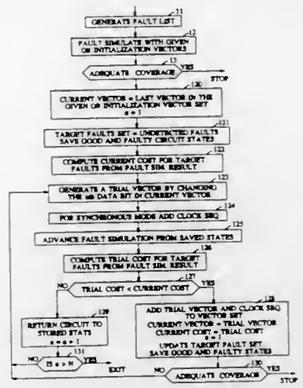
Prathima Agrawal; Vishwani D. Agrawal, both of New Providence, N.J., and Kwang T. Cheng, Berkeley, Calif., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 182,001, Apr. 15, 1988, abandoned.

This application Mar. 22, 1990, Ser. No. 497,824

Int. Cl.[5] G01R *31/28*

U.S. Cl. 371—27 **2 Claims**



1. A method for manufacturing a sequential circuit comprising

a step of fabricating said circuit; and

a step of testing the operational integrity of said circuit with a test comprising a sequence of input signals created through iterative use of a simulation of said circuit with a cost-directed process of selecting signal members of the sequence in accordance with a distance measure that, when no signal that creates a fault effect at a circuit output can be determined, selects for inclusion in said sequence the signal which creates a fault effect having a non-zero distance to any of the circuit outputs, that is not longer than the distance to an output of the circuit of any other fault effect created by other signals due to any of the given faults within the circuit simulation.

5,257,269

ERROR CONTROLLER FOR USE IN DEBUGGING MICROPROCESSOR

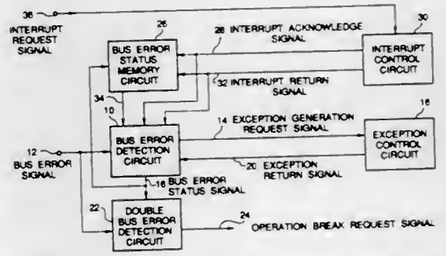
Tetsuji Hamauchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 4, 1990, Ser. No. 622,245

Claims priority, application Japan, Dec. 4, 1989, 1-315794

Int. Cl.[5] G06F *11/00*

U.S. Cl. 371—29.5 **4 Claims**



1. An error controller for use in a debugging microprocessor comprising:

an external input terminal for receiving a bus error signal and a debug interrupt request terminal for receiving an interrupt request signal;

bus error detection means connected to said external input terminal for receiving a bus error signal and for generating a bus error status signal and an exception request signal when said bus error signal is detected;

exception control means connected to said bus error detection means for receiving said exception request signal and controlling an exception processing in said microprocessor;

interrupt control means connected to said debug interrupt request terminal for receiving an interrupt request signal and generating an interrupt acknowledge signal when said debug interrupt request signal is received and generating an interrupt return signal when at an end of an interrupt processing routine;

bus error status saving means connected to said bus error detection means and responsive to said interrupt acknowledge signal for saving said bus error status signal, said bus error detection means also being connected to said interrupt control means and responsive to said interrupt acknowledge signal for clearing said bus error status signal and responsive to said interrupt return signal for restoring said bus error status signal to said bus error detection circuit; and

double bus error detection means connected to said external input terminal for receiving said bus error signal and to said bus error detection means for receiving said bus error status signal, said double bus error detection means stopping an operation of said microprocessor when an external bus error signal is detected at a time when said bus error status signal is present.

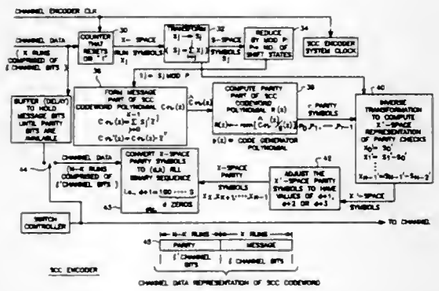
VOL 1155 ISS 4 OCT 26 1993 UMI

5,257,270

SHIFT-CORRECTION CODE RATE-ENHANCING PARITY ENCODING/DECODING

Hugh M. Hilden, Honolulu, Hi.; Dennis G. Howe, Pittsford, N.Y., and Edward J. Weldon, Jr., Honolulu, Hi., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 26, 1990, Ser. No. 633,879
Int. Cl.[5] H03M 13/00, 7/46
U.S. Cl. 371—37.1 18 Claims



1. A method of processing channel encoded data encoded by a channel code, said channel encoded data being transmitted and received on a channel, said method comprising:

encoding said channel encoded data prior to its being transmitted on said channel in accordance with a first code in an algebraic coding field, whereby successive runs of channel bits in said channel encoded data are transformed to corresponding message elements of said algebraic coding field from which redundant check elements of said field are computed in accordance with said first code, said message elements and said check elements comprising a codeword of said first code;

wherein said encoding step comprises:

transforming groups of p of said redundant check elements of said field to groups of q runs of said channel code wherein p and q are non-zero integers at least as great as unity and p is greater than g, wherein said transforming step includes the step of mapping each group of p elements of said field to a unique one of a set of allowable runs of said channel code, and

transmitting said check symbols with said message symbols in said channel, whereby to minimize the number of channel code runs and also channel bits representing said check elements of said field.

5,257,271

SAMPLE DATA TRANSMISSION APPARATUS

Roger Lagadec; Keisuke Sekiguchi; Hiroyuki Yamauchi; Masaru Tezuka; Satoru Tobita, all of Kanagawa; Yoichiro Sako, Chiba, and Hiroyuki Hara, deceased, late of Kanagawa, all of Japan by Minoru Hara, legal representative , assignors to Sony Corporation, Tokyo, Japan

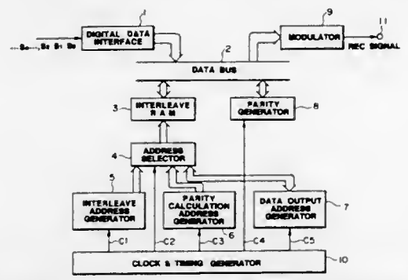
Continuation of Ser. No. 556,461, Jul. 24, 1990, abandoned. This application Sep. 1, 1992, Ser. No. 939,406
Claims priority, application Japan, Jul. 29, 1989, 1-197341
Int. Cl.[5] H04L 1/14
U.S. Cl. 371—37.4 6 Claims

4. A sampled data transmitting apparatus in which data samples making up a sequence of data samples to be transmitted are arranged as respective elements in a two-dimensional data array having rows and columns, and in which error correction code data are annexed to each row and to each column of said two-dimensional data array, said apparatus comprising:

an interleaving memory having addressed locations for storing said data samples and said error correction code data at respective addressed locations in accordance with respective storage addresses and for reading out said data samples and said error correction code data from said respective addressed locations in accordance with respective read addresses,

interleaving address generating means for generating and supplying storage addresses to said interleaving memory so that no two adjacent data samples of said sequence are stored in respective addressed locations corresponding to the same row of said two-dimensional data array,

error correction code computing means for computing error correction code data for the rows and columns of said two-dimensional data array stored in said interleaving



memory, and for supplying said error correction code data to said interleaving memory for storage therein,

said interleaving address generating means also generating and supplying storage addresses for said error correction code data to said interleaving memory, and

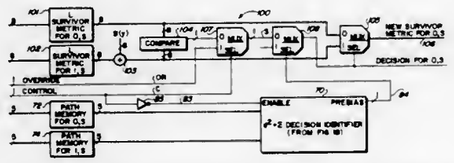
output address generating means for generating and supplying read addresses to said interleaving memory so that the data samples and the error correction code data are read out from the respective addressed locations corresponding to said read addresses in an order according to the columns and rows of said two-dimensional data array.

5,257,272

TIME-VARYING MODULO N TRELLIS CODES FOR INPUT RESTRICTED PARTIAL RESPONSE CHANNELS

Lyle J. Fredrickson, Sunnyvale, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 15, 1992, Ser. No. 869,286
Int. Cl.[5] G06F 11/10
U.S. Cl. 371—43 21 Claims



1. A method for maximum likelihood detection of a high rate trellis code, comprising the steps of:

using an encoder, encoding sequences of digital electrical signals constituting input data into sequences of coded bits;

inputting said sequences of coded bits to a partial response channel;

supplying a channel response to the coded bits, corrupted by noise, to a Viterbi detector constructed by interconnecting N copies of a trellis structure associated with the channel;

using the detector to provide as output sequences maximum likelihood estimates of the sequences of the coded bits; and

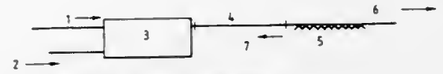
tracking with the detector a predetermined attribute of each sequence of coded bits modulo N for increasing minimum distance between said output sequences.

5,257,273

AMPLIFIER/FILTER COMBINATION

Mark C. Farries, Northampton; Douglas C. J. Reid, Rugby, and Catherine M. Ragdale, Towcester, all of England, assignors to GEC-Marconi Limited, Stanmore, England

Filed Feb. 28, 1992, Ser. No. 843,164
Claims priority, application United Kingdom, Mar. 27, 1991, 9106518
Int. Cl.[5] H01S 3/30
U.S. Cl. 372—6 7 Claims



1. A fiber optic device comprising:

a fiber amplifier having a broad absorption bandwidth with at least one absorption frequency receiving an optical input signal having an input signal frequency bandwidth, and an input pump light signal from a pump light source at frequencies within the broad absorption bandwidth of the fiber amplifier, said fiber amplifier absorbing a portion of the input pump light at said at least one absorption frequency and thereby amplifying the optical input signal and producing an output amplified signal, said fiber amplifier passing an unabsorbed portion of the input pump light at frequencies adjacent to said at least one absorption frequency with the output amplified signal; and

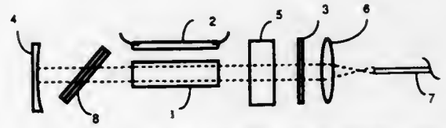
a fiber filter coupled to said fiber amplifier having a reflection and transmission characteristic for filtering out the unabsorbed portion of the input pump light and reflecting the unabsorbed portion back to the amplifier for absorption therein, and for transmitting the output amplified signal.

5,257,274

HIGH POWER LASER EMPLOYING FIBER OPTIC DELIVERY MEANS

Joseph J. Barrett, Morris Plains; Jerry W. Kuper, Martinsville; Timothy C.-K. Chin, Lebanon, all of N.J., and Paul Papanestor, Milford, Pa., assignors to AlliedSignal Inc., Morristownship, Morris County, N.J.

Continuation-in-part of Ser. No. 698,047, May 10, 1991, abandoned. This application Jan. 10, 1992, Ser. No. 818,934
Int. Cl.[5] H01S 3/10
U.S. Cl. 372—20 13 Claims



1. A high power, pulsed solid state laser apparatus comprising, in combination:

(a) a low gain tunable laser medium;

(b) means for exciting said laser medium to emit coherent radiation at a fundamental wavelength;

(c) reflecting means associated with said laser medium defining a resonant laser cavity for supporting coherent oscillation within said laser medium, said reflecting means comprising at least one output coupling means;

(d) means for narrowing the frequency distribution of the coherent radiation emitted by the excited laser medium;

(e) non-linear frequency conversion means within said resonant laser cavity, for transforming a portion of the coherent oscillation generated and supported within said laser cavity from its fundamental wavelength to a frequency-shifted derivative thereof, to generate a mixed wavelength laser beam;

(f) fiber optic means for delivering said mixed wavelength laser beam to a point of use; and

(g) means associated with said output coupling means for coupling said mixed wavelength laser beam generated within said resonant laser cavity into said fiber optic means;

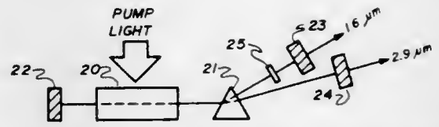
wherein said output coupling means has a higher degree of reflectivity for said fundamental wavelength than for said frequency-shifted wavelength, so that the frequency-shifted wavelength is preferentially emitted from said resonant laser cavity, whereby, in operation, the spatial and temporal build-up of regions of high intensity of said fundamental wavelength is minimized.

5,257,275

MULTIPLE OUTPUT WAVELENGTH SOLID STATE LASER AND TECHNIQUE

C. Ward Trussell, Woodbridge, and James A. Hutchinson, Lorton, both of Va., assignors to The U.S. Government as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 30, 1992, Ser. No. 921,787
Int. Cl.[5] H01S 3/11
U.S. Cl. 372—23 9 Claims



1. A multiple output wavelength laser emission technique comprising:

applying pump energy to a solid state lasing material having multiple energy level transitions;

populating multiple excited states of said lasing material in successive transitions;

emitting laser light at multiple wavelengths from at least one laser cavity such that there is no losses due to gain competition or a divided output power.

5,257,276

STRAINED LAYER INP/INGAAS QUANTUM WELL LASER

Siamak Forouhar, Pasadena, Calif.; Anders G. Larsson, Billdal, Sweden; Alexander Ksendzov, Burbank, and Robert J. Lang, Altadena, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Apr. 3, 1992, Ser. No. 862,722
Int. Cl.[5] H01S 3/19
U.S. Cl. 372—45 24 Claims

1. A strained layer quantum well laser, comprising:

an InP substrate;

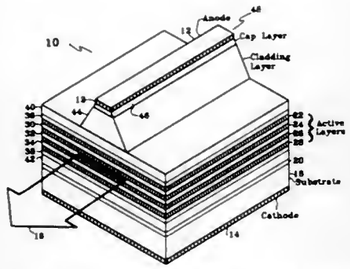
a pair of lattice-matched InGaAsP quarternary layers epitaxially grown on the substrate;

one or more strained active layers of epitaxially grown, lattice-mismatched InGaAs within the quarternary layers; and

means for injecting current into the one or more active

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layers to produce laser output, the level of strain in the one or more active layers controlling the bandgap energy to



produce laser output having a wavelength in the range of about 1.6 to about 2.5 μm.

5,257,277

SEMICONDUCTOR-LASER-PUMPED, SOLID-STATE LASER

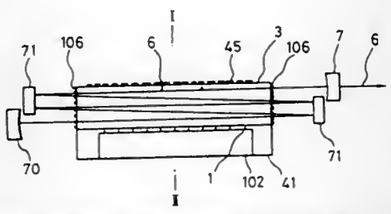
Shigenori Yagi; Takashi Yamamoto; Mayumi Fujimura, all of Amagasaki; Toyohiro Uchiumi, Nagaokakyo, and Akira Ishimori, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 641,279, Jan. 15, 1991, Pat. No. 5,159,605. This application Jul. 15, 1992, Ser. No. 914,750

Claims priority, application Japan, Jan. 19, 1990, 2-11559; Jul. 31, 1990, 2-205793; Oct. 15, 1990, 2-278250

Int. Cl.[5] H01S *3/094*

U.S. Cl. 372—75 **6 Claims**



1. A semiconductor-laser-pumped, solid-state laser comprising:

a plurality of semiconductor lasers for emitting respective divergent pumping light beams, each beam having an optical axis and a width that broadens with distance from the respective laser due to divergence of the beam;

a solid-state laser medium on which the divergent pumping light beams, each beam having a width equal to a respective broadened width, are incident, the solid-state laser medium including opposed first and second facets; and

a laser resonator structure having an optical axis along which laser light is emitted for confining light in said solid-state laser medium, wherein said solid-state laser medium is plate shaped and has a thickness less than the broadened width of the pumping light in said solid-state laser medium, said semiconductor lasers are arranged parallel to the optical axis of said laser resonator structure, close to said solid-state laser medium, and the optical axis of said laser resonator structure is perpendicular to the pumping light beams.

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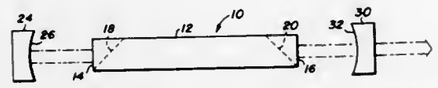
HELIUM-CADMIUM LASER FOR 353.6 NM LINE

Alexander J. Laymon, Santa Clara, Calif.; William T. Silfvast, Winter Springs, Fla., and Terrance L. Erisman, San Jose, Calif., assignors to Liconix, Santa Clara, Calif.

Filed May 13, 1992, Ser. No. 883,427

Int. Cl.[5] H01S *3/08*

U.S. Cl. 372—99 **24 Claims**



1. A HeCd laser for lasing at 353.6 nm, having a HeCd laser tube including means to cause cadmium atoms to be ionized within said HeCd laser tube and the cadmium ions to emit electromagnetic radiation, comprising:

a laser oscillation control means including a first radiation reflecting means and a second radiation reflecting means, said first radiation reflecting means and said second radiation reflecting means being disposed proximate a first end and a second end of said HeCd laser tube respectively and functioning in combination to inhibit the laser oscillation of said HeCd laser tube at 325.0 nm and to promote the laser oscillation of said HeCd laser tube at 353.6 nm.

5,257,279

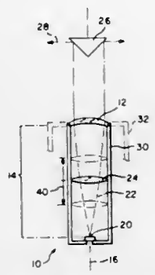
ADJUSTABLE FOCUS TECHNIQUE AND APPARATUS USING A MOVEABLE WEAK LENS

John P. Dugan, Cincinnati, James N. Hayes, Urbana, both of Ohio; Steve Elliott, South Hamilton, Mass.

Filed Jun. 4, 1992, Ser. No. 893,260

Int. Cl.[5] H01S *3/08*

U.S. Cl. 372—101 **24 Claims**



1. In a laser instrument, an assembly for producing a plane of laser light, said assembly comprising:

a nearly collimating lens having a back focus distance defined along the focal axis thereof;

a small laser light source substantially positioned at the back focus distance of said nearly collimating lens and oriented such that said collimated lens receives at least a portion of the laser light from said laser light source;

a weak focusing lens disposed along said focal axis and spaced from said nearly collimating lens to receive said portion of said laser light and to finely control the focus of said portion of laser light; and

a reflective cone positioned along said focal axis to reflect at least some of said portion of laser light substantially radially in an arc to produce a plane of light;

whereby the spacing between said weak focusing lens and said nearly collimating lens provides fine control over the focus of said portion of laser light and, thereby, provides fine control over the planarity of said plane of light.

5,257,280

GAS INTRODUCING AND STIRRING APPARATUS OF METALLURGICAL VESSEL

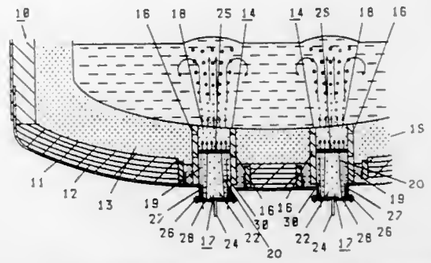
Nobuyuki Mimura, Pittsburgh, Pa., and Minoru Ususaka, Ako, Japan, assignors to Kawasaki Refractories Co., Ltd., Hyogo, Japan

Filed Sep. 10, 1991, Ser. No. 756,791

Claims priority, application Japan, Apr. 12, 1991, 3-108677

Int. Cl.[5] F27D *23/04*

U.S. Cl. 373—85 **8 Claims**



1. A gas introducing and stirring apparatus for a metallurgical vessel, wherein a lining on a furnace bottom of the metallurgical vessel comprises:

a gas permeable ramming mass;

a cylindrical refractory sleeve provided in said gas permeable ramming mass and extended through an upper surface of the furnace bottom;

a gas introducing nozzle of porous material for introducing a refining gas therethrough buried in the cylindrical refractory sleeve to about one half a height of the sleeve;

a gas pool disposed within said sleeve and on an upper surface of said gas introducing nozzle; and

a ramming mass having a gas permeability at least greater than the gas permeable ramming mass of the furnace bottom filled within said sleeve and above said gas pool, said ramming mass disposed substantially up to an upper end of said sleeve.

5,257,281

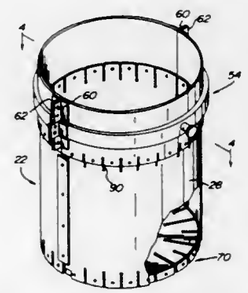
INDUCTION HEATING APPARATUS AND METHOD

Nicolas P. Cignetti, Canton, Ohio; Richard U. Swaney, Tarentum, Pa., and John H. Mortimer, Medford, N.J., assignors to Inductotherm Corp., Rancocas, N.J.

Filed Jan. 31, 1990, Ser. No. 473,000

Int. Cl.[5] H05B *6/22*

U.S. Cl. 373—155 **38 Claims**



7. Induction heating apparatus comprising means for holding material to be heated, induction coil means surrounding the holding means for generating en electromagnetic induction field, and a substantially continuous metallic shell means comprises a metallic wall disposed between the holding means and the coil means for mechanically reinforcing the holding means, the shell means having integral current limiting means for limiting electric currents induced in the shell by the coil means and for causing the shell means to be substantially transparent to the electromagnetic induction field.

5,257,282

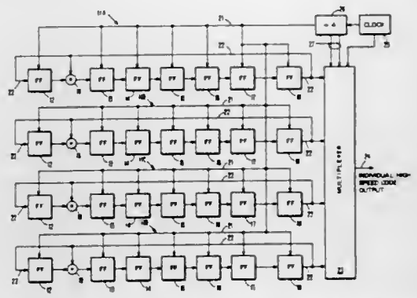
HIGH SPEED CODE SEQUENCE GENERATOR

Willis B. Adkisson; Glen D. Rattlingourd, both of Salt Lake City; Billie M. Spencer, Bountiful, and John W. Zscheile, Jr., Farmington, all of Utah, assignors to Unisys Corporation, Blue Bell, Pa.

Filed Jun. 28, 1984, Ser. No. 625,497

Int. Cl.[5] H04L *9/00*

U.S. Cl. 375—1 **12 Claims**



1. A high speed code sequence generator for generating pseudo random spread spectrum codes comprising:

a high speed clock,

a divide by n circuit coupled to said high speed clock,

a plurality of low speed code sequence generators coupled to said divide by n circuit,

each said code generator providing as an output a sequential set of vector states,

each said code generator having a different length PN code,

each said PN code being relatively prime in length to the code of the other code generators of said plurality of code generators,

a vector generator coupled in series between the output and the input of each low speed code sequence generator,

a plurality of algebraic combiners each having as an input the same vector state of each of the outputs of the low speed code sequence generators,

a multiplexer for multiplexing the outputs of said algebraic combiners into a serial high speed composite code sequence providing a PN code epoch length which is the product of the lengths of the individual PN codes of said low speed code sequence generators.

5,257,283

SPREAD SPECTRUM TRANSMITTER POWER CONTROL METHOD AND SYSTEM

Klein S. Gilhousen; Roberto Padovani, both of San Diego, and Charles E. Wheatley, III, Del Mar, all of, assignors to Qualcomm Incorporated, San Diego, Calif.

Continuation of Ser. No. 433,031, Nov. 7, 1989, Pat. No. 5,056,109. This application Aug. 23, 1991, Ser. No. 749,249

Int. Cl.[5] H04L *27/30;* **H04J** *13/00;* **H04B** *7/204*

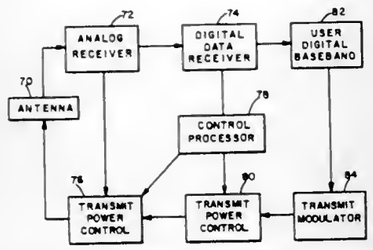
U.S. Cl. 375—1 **30 Claims**

7. In a remote station transceiver having a receiver for receiving a base station transmitted outbound spread spectrum signals wherein one of said outbound spread spectrum signals contains first user information and for demodulating said one outbound spread spectrum signal to provide said first user information to a first user, and a transmitter for transmitting to

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said base station an inbound spread spectrum signal containing second user information, said transceiver having a power control system for controlling at said transceiver the transmission signal power of said inbound spread spectrum signal wherein the signal power of said inbound spread spectrum signal as received at said base station is maintained about a predetermined average signal power level, and wherein said base station measures the signal power of said inbound spread spectrum signal as received at said base station, generates power adjustment commands according to variations in said measured signal power of said inbound spread spectrum signal with respect to said predetermined average signal power level and transmits said power adjustment commands in said one outbound spread spectrum signal, said power control system comprising:

control processor means coupled to said receiver for receiving from said receiver said power adjustment commands in said one outbound spread spectrum signal, accumulat-



ing values corresponding to said power adjustment commands with respect to a predetermined first power level value, and generating a corresponding first power level control signal, said control processor means further for generating a power level set signal;

automatic gain control means coupled to said receiver for measuring signal power of all of said outbound spread spectrum signals received by said receiver, and providing a corresponding power measurement signal;

comparator means for receiving and comparing said power measurement signal and said power level set signal, and providing a corresponding second power level control signal; and

amplification means coupled to said transmitter for receiving said first and second power level control signals and amplifying said inbound spread spectrum signal at a gain level determined by said first and second power level control signals.

5,257,284

CIRCUIT FOR ACCURATELY MEASURING PHASE RELATIONSHIP OF BPSK SIGNALS

William J. Skudera, Jr., Oceanport, and Vasilios Alevizakos, Highland Park, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 16, 1992, Ser. No. 976,799

Int. Cl.[5] G01S *5/02*; G01R *23/16*

U.S. Cl. 375—1 **8 Claims**

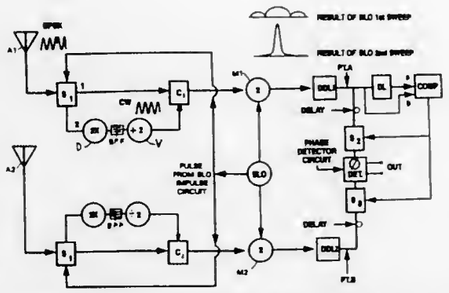
1. A system for measuring the phase relationship of first and second BPSK signals received at a pair of receiving antennas, comprising:

first and second converting means which are operable for converting BPSK signals into CW signals, for receiving said received signals and outputting first and second CW signals;

first and second chirp-Z processing means for receiving and processing said first and second CW signals

and outputting first and second chirp-Z transforms; and

phase detecting means for detecting the phase relationship of said first and second chirp-Z transforms and thereby de-



tecting the phase relationship of said first and second received BPSK signals.

5,257,285

TRANSIMPEDANCE PRE-AMPLIFIER AND A RECEIVER INCLUDING THE PRE-AMPLIFIER

Stuart C. Thorp, Aldeburgh, England, assignor to BT&D Technologies Limited, Suffolk, England

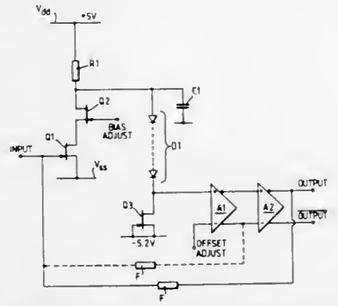
PCT No. PCT/GB88/01099, § 371 Date Aug. 8, 1989, § 102(e) Date Aug. 8, 1989, PCT Pub. No. WO89/05543, PCT Pub. Date Jun. 15, 1989

PCT Filed Dec. 12, 1988, Ser. No. 382,638

Claims priority, application United Kingdom, Dec. 10, 1987, 8728853

Int. Cl.[5] H04B *10/06*

U.S. Cl. 375—11 **19 Claims**



12. An integrated circuit transimpedance pre-amplifier suitable for use in the signal path from the detector means of a high bit rate optical signal receiver to the pre-decision point amplification of the receiver, the transimpedance pre-amplifier comprising:

an input,

an output-to-electrical converter coupled to said input,

a reactive impedance load,

an output connected to said reactive impedance load,

amplifier means connected to amplify signals applied to the input and supply such amplified signals to the output, and

feedback means connecting said output back to said input and causing with said load a complex pole interaction in the response of the transimpedance pre-amplifier which enables the small signal bandwidth of subsequent cascaded gain stages to be reduced compared to that which would be required for similar receiver performance in the absence of said complex pole interaction.

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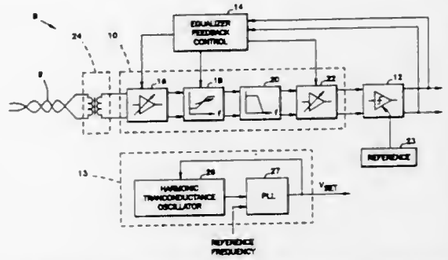
HIGH FREQUENCY RECEIVE EQUALIZER

Daniel L. Ray, Fair Oaks, Calif., assignor to Level One Communications, Inc., Folsom, Calif.

Filed Nov. 13, 1990, Ser. No. 612,321

Int. Cl.[5] H04B *3/14*

U.S. Cl. 375—12 **13 Claims**



13. A method for restoring a dispersed received pulse into a recoverable form in a baseband data recovery receiver, comprising the steps of:

(a) providing gain enhancement with flat frequency gain and frequency selective gain to the received pulse, the flat frequency gain and frequency selective gain having discrete switchable capacitive elements;

(b) monitoring the gain enhanced received pulse for amplitude variations; and

(c) adjusting the flat frequency gain and the frequency selective gain in step (a) by switching the capacitive elements in and out until the gain enhanced received pulse amplitude reaches a predetermined level.

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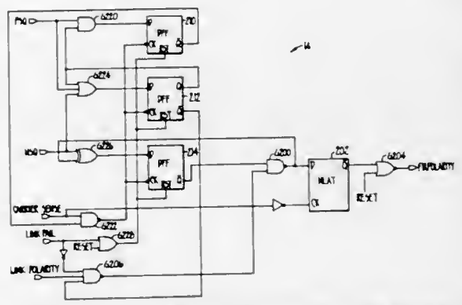
AUTOMATIC POLARITY DETECTION AND CORRECTION METHOD AND APPARATUS EMPLOYING LINKPULSES

Jeffrey M. Blumenthal, Austin, Tex.; Nader Vijeh; John M. Wincn, both of Cupertino, Calif., and Ian S. Crayford, San Jose, Calif., assignors to Advanced Micro Devices Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 480,426, Feb. 15, 1990, Pat. No. 5,164,960. This application Nov. 30, 1990, Ser. No. 620,980

Int. Cl.[5] H04L *25/34*

U.S. Cl. 375—19 **45 Claims**



1. A differential signal polarity reversal detection apparatus, comprising:

means for receiving a differential signal from a first and second input with said differential signal having a prespecified signal format;

means, coupled to said first and second inputs, for sampling said differential signal and recognizing said prespecified signal format, said sampling and recognizing means asserting a recognition signal upon recognition of said prespecified format; and

means, coupled to said receiving means and to said sampling and recognizing means and responsive to said recognition signal, for detecting an incorrect polarity of said differential signal received on said first and second inputs.

5,257,288

DATA TRANSMISSION SYSTEM

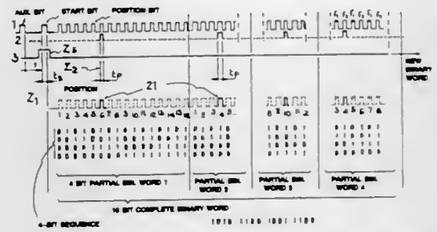
Helmut Moser, Heilbronn, Fed. Rep. of Germany, assignor to Telefunken electronic GmbH, Heilbronn, Fed. Rep. of Germany

Filed Apr. 9, 1991, Ser. No. 682,233

Claims priority, application Fed. Rep. of Germany, May 10, 1990, 4014931

Int. Cl.[5] H04B *14/04*

U.S. Cl. 375—25 **25 Claims**



1. In a data transmission system in which digitalized information is transmitted via a data transmission link in complete binary words from a transmitter to a receiver; the improvement wherein said transmitter includes means for subdividing a complete binary word with a defined total bit number into one or more partial binary words, with the bit number of the respective said partial binary words being variable; means for storing, for each individual partial binary word, all binary bit sequences that can be formed with the total number of bits of the respective partial binary word, and with the various bit sequences being coded at respectively different positions within a respective partial binary word; and means for transmitting to said receiver, in each partial binary word, a signal corresponding to the coded position of exactly one binary bit sequence indicative of the information to be transmitted.

5,257,289

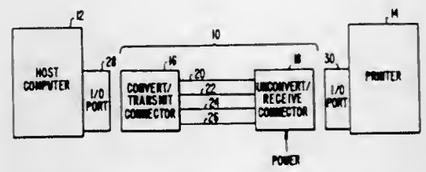
HIGH-SPEED HYBRID TRANSMISSION INTERFACE

Charles M. Jopson, Boise, Id., assignor to Extended Systems, Inc., Boise, Id.

Filed Jul. 11, 1991, Ser. No. 728,449

Int. Cl.[5] H04L *29/10*

U.S. Cl. 375—36 **11 Claims**



1. A hard-wired hybrid interface for coupling a data sending device to a data receiving device, the data sending device sending data to the interface in parallel format, the data receiv-

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ing device receiving data from the interface in parallel format, comprising:

first means coupled to said data sending device for receiving parallel data from the data sending device and converting said parallel data to serial data;

data signal path forming means coupled to said first means, said first means transmitting said serial data over said data signal path forming means;

second means coupled to said data signal path forming means and said data receiving device for receiving said transmitted serial data, unconverting said serial data back to parallel data and outputting said unconverted parallel data to said data receiving device;

status signal path forming means coupled to said first means and said second means for routing status information from said data receiving device through said second means and said first means to said data sending device;

ground signal path forming means coupled to said first means and said second means;

wherein one of said first and second means derives power parasitically from the other of said first means and second means via said status signal path forming means, said one of said first and second means comprising means for deriving power from a power signal carried on said status signal path forming means and means for storing charge derived from said power signal.

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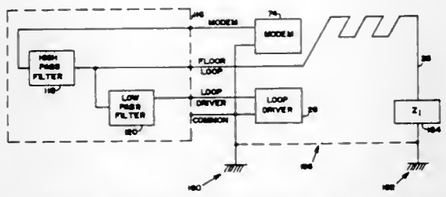
TRANSMISSION LINE TERMINATION OF GUIDE-COMMUNICATIONS WIRE FOR GUIDED VEHICLES

Lawrence W. Hill, Arlington, and Frederick W. Sarles, Lexington, both of Mass., assignors to ComSource Systems Corporation, Hollis, N.H.

Continuation-in-part of Ser. No. 708,109, May 28, 1991, which is a continuation of Ser. No. 115,245, Oct. 30, 1987, abandoned, which is a continuation-in-part of Ser. No. 846,924, Apr. 1, 1986, abandoned, which is a division of Ser. No. 586,863, Mar. 6, 1984, Pat. No. 4,597,082. This application Feb. 10, 1989, Ser. No. 309,272

Int. Cl.[5] H04K *1/10*

U.S. Cl. 375—38 **20 Claims**



1. A system for digital communication along a wire for defining the path of wire guided vehicles comprising:

A) a wire defining said path;

B) a modem having two terminals for providing high frequency signals, one of said modem terminals connected to one end of said wire and the other of said modem terminals connected to a first earth ground;

C) a loop driver having two terminals for providing low frequency control signals, one of said loop driver terminals connected to said one end of said wire and the other of said loop driver terminals connected to said first earth ground; and

D) an impedance matching network having two terminals, one of said network terminals connected to the other end of said wire and the other of said network terminals connected to a second earth ground, said impedance matching network providing an impedance approximately equal to the impedance of said wire at the frequency of said high frequency signals.

5,257,291

CIRCUIT FOR EVALUATING FREQUENCY DIFFERENCE

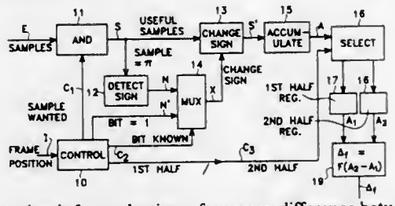
Lydie Desperben, Bois Colombes, and Ouélid Abdesselem, Paris, both of France, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Apr. 30, 1991, Ser. No. 693,400

Claims priority, application France, May 4, 1990, 90 05660

Int. Cl.[5] H04L *27/14, 27/22, 27/06*

U.S. Cl. 375—83 **9 Claims**



1. A circuit for evaluating a frequency difference between a local signal and the carrier wave of a receive signal which are close together in frequency, the receive signal having been subjected to phase state modulation by a modulation signal and thus having a phase shift that includes a transmission phase shift, a modulation phase shift corresponding to one of a plurality of phase states, and a synchronization phase shift due to said frequency difference, said circuit comprising

a demodulator unit for producing samples of said receive signal from which said transmission phase shift has been eliminated,

means responsive to the demodulator unit for detecting said modulation phase shift of said samples in order to eliminate said modulation phase shift,

means for producing a mean phase of a series of said samples, and

means for producing said frequency difference on the basis of said means phase of at least two series of said samples and on the basis of a time interval between middles of said series.

5,257,292

CIRCUIT ARRANGEMENT FOR INFLUENCING THE FREQUENCY RESPONSE OF A DIGITAL AUDIO SIGNAL

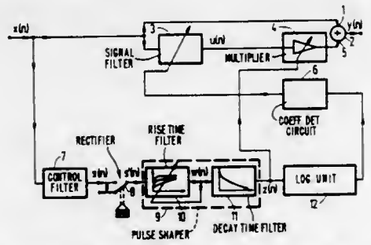
Ulrich Sauvagerd, and Bernd Strassenburg, both of Hamburg, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 16, 1992, Ser. No. 851,457

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1991, 4109211

Int. Cl.[5] H04B *1/10*

U.S. Cl. 375—103 **16 Claims**



1. A digital circuit arrangement for influencing the frequency response of a digital audio signal, dependent on the frequency or amplitude, characterized in that an input signal of the digital circuit arrangement is applied to a signal filter having variable filter coefficients, while an output signal of the signal filter represents the frequency response-influenced output signal of the digital circuit arrangement after addition to the input signal of the digital circuit arrangement, wherein the coefficients for the signal filter are selected in dependence upon the output signal of a control branch which receives the input signal of the digital circuit arrangement and comprises a control filter coupled to an input of the control branch; a rectifier coupled to receive an output signal of said control filter for suppressing negative values in the output signal of said control filter; a pulse shaper stage coupled to receive an output signal of said rectifier for giving time constants to a rise time and a decay time in the output signal of said rectifier; a logarithmation means coupled to receive an output signal of said pulse shaper stage for applying a logarithm function to the output signal of said pulse shaper stage; and a circuit for determining said variable filter coefficients in response to an output signal of said logarithmation means, said variable filter coefficients determining circuit supplying said variable filter coefficients for the signal filter.

5,257,293

PHASE LOCKED LOOP FOR EXTRACTING CLOCK PULSES THROUGH WAVE DIFFERENTIAL METHOD

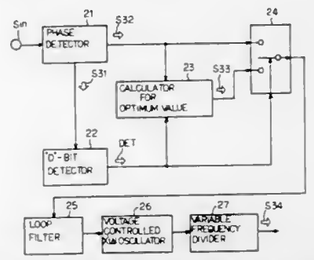
Masayuki Taguchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 4, 1992, Ser. No. 893,446

Claims priority, application Japan, Jun. 13, 1991, 3-140558

Int. Cl.[5] H03D *3/24*

U.S. Cl. 375—119 **6 Claims**



1. A phase locked loop for extracting a clock signal from an input signal through a waveform differential method, comprising:

a) a phase detector supplied with a sampled signal indicative of a variable discrete level of said input signal, and producing a first output signal indicative of a waveform difference calculated from a plurality of variable discrete levels of said sampled signal and a second output signal indicative of an integral calculated from waveform differences;

b) a detector operative to monitor said first output signal to see whether or not said waveform difference is less than a reference value, and producing a detecting signal indicative of continuation of said waveform differences less than said reference value;

c) a calculator operative to calculate a virtual integral from integrals sequentially indicated by said second output signal, and producing a third output signal indicative of said virtual integral, said virtual integral and integrals previously calculated forming in combination a convergent series;

d) a selector operative to transfer said second output signal in the absence of said detecting signal and said third output signal in the presence of said detecting signal; and

e) an extracting means responsive to said second and third output signals for producing a clock signal.

5,257,294

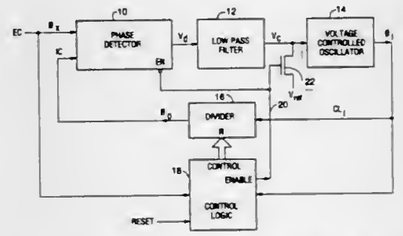
PHASE-LOCKED LOOP CIRCUIT AND METHOD

Victor Pinto, Tel-Aviv, and Rafael Fried, Haifa, both of Israel, assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Nov. 13, 1990, Ser. No. 614,008

Int. Cl.[5] H03D *3/24*

U.S. Cl. 375—120 **25 Claims**



1. A phase-locked loop circuit for producing an output signal which is phase locked with respect to an input signal, said phase-locked loop circuit comprising:

phase detector means for producing a detector output in response to a phase difference between the input and output signals;

controlled signal generating means for generating the output signal, said controlled signal generating means including:

(a) coarse adjust means for selecting the frequency of the output signal from a group of discrete operating frequencies in response to the frequency of the input signal and independent of said phase detector means; and

(b) fine adjust means for continuously adjusting the frequency and phase of the output signal in response to the detector output.

5,257,295

CORE BAFFLING DEVICE FOR NUCLEAR REACTORS

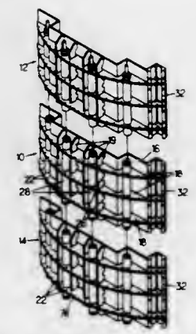
Gérard Chevereau, Le Rainey; Jean-Claude Bougis, Courbevoie, and Christian Borrell, Carrieres s/Seine, all of France, assignors to Framatome, Courbevoie, France

Filed Aug. 21, 1991, Ser. No. 747,995

Claims priority, application France, Aug. 21, 1990, 90 10526

Int. Cl.[5] G21C *11/00, 15/10*

U.S. Cl. 376—302 **11 Claims**



1. In a nuclear reactor having a prismatic shaped core, a cylindrical casing and a core support plate, a core baffling device located in an annular space between the core and casing, said core baffling device comprising:

a plurality of panels distributed so as to be distributed in an array having circumferential rows of said panels and vertical columns of said panels, all the panels of a same

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one of said circumferential rows being mutually identical and each of said panels comprising:

a plurality of vertical baffling plates welded together and secured to mutually crossed horizontal reinforcements and vertical reinforcements bearing on the casing, and

a plurality of vertical tubes projecting through and secured to said horizontal reinforcements of said panel, each said tube having substantially the same length as the respective panel, whereby the vertical tubes of those of said panels which belong to a same one of said columns are stacked and form posts resting on the core support plate;

a plurality of solid vertical keys each fixed to said casing and each joining two mutually adjacent ones of said panels belonging to a same one of said rows and belonging to mutually adjacent columns for achieving circumferential continuity of said core baffling device; and

means disposed between mutually adjacent edges of mutually adjacent panels belonging to a same one of said columns for achieving vertical continuity of said core baffling device.

5,257,296

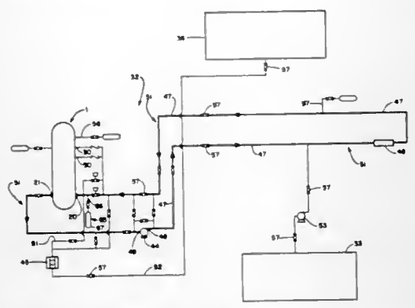
STEAM GENERATOR CHEMICAL SOLVENT MIXING SYSTEM AND METHOD

Albert C. Buford, III, Rte. 4, Box 170A, Cabot, Ark. 72023; Donal W. Moore, 609 S. Phoenix, Russellville, Ark. 72801; Sterling J. Weems, 3933 Oliver St., Chevy Chase, Md. 20815, and John B. Mason, 10120 W. Argent, Pasco, Wash. 99301

Filed Oct. 25, 1991, Ser. No. 783,621

Int. Cl.[5] G21C *19/42*

U.S. Cl. 376—310 **6 Claims**



1. In nuclear a steam generator, including:

i. a plurality of generator tube support plates, each said generator tube support plate having a plurality of openings;

ii. a plurality of generator tubes forming a tube bundle, each said generator tube passing through aligned said openings in said support plates;

iii. an outer casing surrounding said tube bundle and generator tube support plates, said outer casing having an upper end and a lower end, upper access openings between said upper and lower ends, and lower access openings near said lower end; and

iv. a tube bundle shroud, having an upper end and a lower end and a plurality of passageways in said lower end, surrounding said tube bundle between said outer casing and said tube bundle, said tube bundle shroud forming an annulus between said outer casing and said shroud;

a chemical solvent mixing system, comprising:

a. a pump, having a discharge port fluidly connected to a discharge line and a suction port fluidly connected to a suction line;

b. a discharge line, fluidly connected to said discharge port of said pump;

c. an upper level injector, including an injector nozzle extending through one said upper access opening and extending into said annulus, said upper level injector being fluidly connected to said discharge line;

d. a lower access eductor, including an eductor nozzle extending through one said lower access opening and adapted to discharge solvent through one said passageway in said tube bundle shroud and into said tube bundle, said lower access eductor being fluidly connected to said discharge line;

e. a gas injection line, fluidly connected at one end to a gas source and at the other end to said lower access eductor; and

f. a return line, fluidly connected at one end to a second said lower access opening and at the other end to said suction port of said pump.

5,257,297

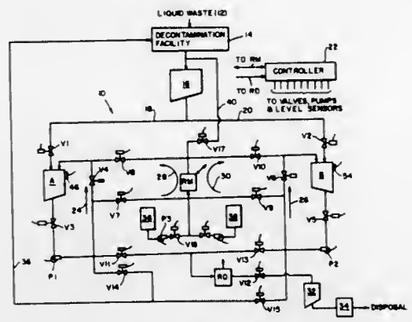
SYSTEM FOR MONITORING THE RADIOACTIVITY OF LIQUID WASTE

Ralph J. Reda; Frank W. Cloudman, Jr., both of Wilmington; Ralph K. Furches, Leland; Ronald V. Ryan, and Joel L. Pickett, both of Wilmington, all of N.C., assignors to General Electric Company, San Jose, Calif.

Filed Jan. 14, 1992, Ser. No. 820,464

Int. Cl.[5] G21C *19/46*

U.S. Cl. 376—310 **14 Claims**



1. A system for monitoring a liquid waste stream for the presence of radionuclides, said system comprising, in combination:

A. first and second tanks;

B. a first external conduit loop connected with said first tank for recirculating the contents thereof;

C. a second external conduit loop connected with said second tank for recirculating the contents thereof;

D. intake and discharge conduits connected with said first and second tanks;

E. a radioactivity monitor having a chamber connected into said first and second conduit loops and at least one detector positioned externally of said chamber to respond to radiation emitted by radionuclides in liquid waste recirculating through said chamber and said first and second conduit loops;

F. remotely operated valves included in said intake and discharge conduits and in said first and second conduit loops;

G. a controller operatively connected to said valves and electrically connected to said detector, said controller selectively positioning said valves to direct the liquid waste stream to fill said first and second tanks, to recirculate the liquid waste through said first and second conduit loops and said monitor chamber, and empty said first and second tanks, all in alternating fashion, said controller receiving radioactivity measurement responses of said detector while liquid waste flows through said chamber to determine therefrom the radionuclide concentrations therein; and

H. third and fourth tanks, said third tank containing distilled water and said fourth tank containing an acid, said controller initiating distilled water and acid flushes of said monitor chamber during periods when no liquid waste is being recirculated therethrough.

5,257,298

NUCLEAR FUEL PELLETS HAVING AN ALUMINOSILICATE DEPOSITION PHASE

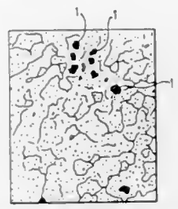
Ryoichi Yuda, Mito; Kenichi Ito, Katsuta, and Hiroshi Masuda, Mito, all of Japan, assignors to Nippon Nuclear Fuel Development Co., Ltd., Ibaraki, Japan

Filed Mar. 4, 1992, Ser. No. 845,490

Claims priority, application Japan, Mar. 4, 1991, 3-037267; Nov. 11, 1991, 3-294413

Int. Cl.[5] G21C *3/62*

U.S. Cl. 376—421 **10 Claims**



1. Nuclear fuel pellets including a fission substance of UO_2, the nuclear fuel pellets comprising UO_2 grains and an aluminosilicate deposition phase, the deposition phase being a glassy state, a crystalline state or a combination thereof, said grains having an average grain diameter of about 20 μm through about 60 μm, said aluminosilicate deposition phase having a composition including SiO_2 of about 60 wt % through about 80 wt % and Al_2O_3 of the residual on average, the amount of alumina plus silica being about 10 ppm through about 500 ppm with respect to the total amount of said nuclear fuel pellets, said pellets having a porosity of 5 vol % at a maximum.

5,257,299

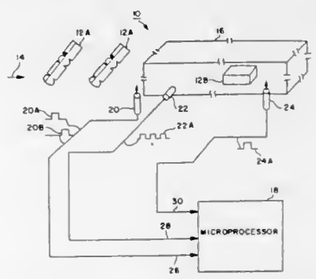
METHOD AND SYSTEM FOR COUNTING IRREGULARLY SHAPED MOVING ARTICLES

William J. Wilson, Holland, Pa., assignor to The Langston Corporation, Cherry Hill, N.J.

Continuation of Ser. No. 710,731, Jun. 4, 1991, abandoned. This application Jun. 2, 1992, Ser. No. 896,483

Int. Cl.[5] G06M *7/04, 3/02*

U.S. Cl. 377—6 **32 Claims**



1. In a machine for forming a box from a blank having a system for counting blanks being moved into the machine and for counting formed boxes being moved out of the machine, said counting system comprising:

(a) a microprocessor responsive to input signals;

(b) detecting means, located at the input stage of said machine, for detecting the leading and the trailing edges of each of said blanks being moved into said machine and generating respective start and stop events that are applied to said microprocessor as input signals;

(c) distance sensing means for generating pulses each representative of an incremental change in the linear distance that said blanks are being moved, such pulses being applied to said microprocessor as input signals; and

(d) counting means, located at the output stage of said machine, for detecting the boxes formed from said blanks and which are being moved out of said machine, said counting means generating an exit event for each such detected box;

whereby said microprocessor, in response to the first start event, initiates the first counting of the incremental changes of movement and terminates such counting in response to the first occurring stop event, said accumulated count being decremented by at least one incremental change of movement and which decremental count serves as a reference length for comparing against subsequent blanks, said microprocessor in response to the first exit event incrementing by one the counting of the formed boxes and then disabling the monitoring of such exit event, said microprocessor then initiating the counting of the incremental changes of movement signals until the amount of such second occurring incremental changes corresponds to the said reference length, whereupon the microprocessor enables the monitoring of said exit event, said microprocessor in, response to each subsequent exit event, incrementing its count of formed boxes and initiating its counting of said incremental changes.

5,257,300

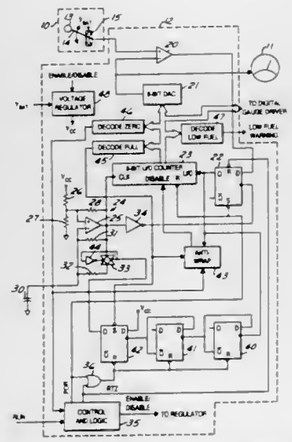
DIGITAL ANTI-SLOSH SYSTEM

Robert M. Bennett, Monument, Colo., and James T. Beaudry, Plymouth, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 23, 1991, Ser. No. 812,558

Int. Cl.[5] G01F *23/36;* **G06M** *3/02*

U.S. Cl. 377—21 **17 Claims**



1. An anti-slosh circuit for a liquid level signal from a liquid level sensor in a vehicle, said liquid level signal having a voltage varying within a first range of voltages according to a sensed liquid level, said circuit comprising:

a voltage comparator for receiving said liquid level signal at one comparator input and for providing a bistable comparator output signal;

up/down counter means for counting a clock signal to provide a count, said up/down counter means being coupled to said voltage comparator and being responsive to said

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comparator output signal to determine an up or down counting direction;

digital-to-analog converter means coupled to said up/down counter means for converting said count to an analog voltage substantially within said first range, said analog voltage being coupled to the other comparator input;

clock means coupled to said up/down counter means for generating said clock signal at a selectable frequency in response to a selection signal; and

delay means coupled to said clock means for generating said selection signal to a) select a first selectable frequency for said clock signal when said anti-slosh circuit is first activated and for a predetermined delay thereafter, and b) select a second selectable frequency lower than said first selectable frequency after said predetermined delay, said delay means including a delay counter for counting transitions of said counting direction and wherein said predetermined delay ends when said delay counter reaches a predetermined count.

5,257,301

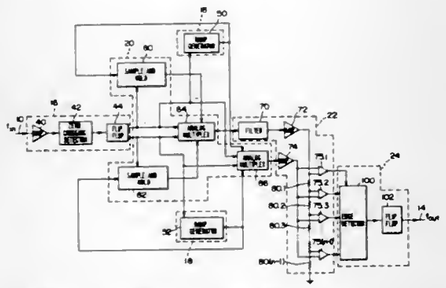
DIRECT DIGITAL FREQUENCY MULTIPLIER

Paul E. Vanderbilt, San Diego, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Mar. 30, 1992, Ser. No. 860,467

Int. Cl.[5] H03K *3/78*

U.S. Cl. 377—47 **13 Claims**



1. A frequency multiplier, comprising:

input means, connected to an input signal whose frequency is to be multiplied;

sensing means, coupled to said input means, for sensing the frequency of said input signal;

dual ramp generator means, coupled to said sensing means, for producing a sawtooth voltage signal on alternative halves of a period of said input signal thereby providing a frequency of at least twice the input frequency;

storage means, coupled to said ramp generator means, for storing a peak voltage of said sawtooth voltage;

comparison means, coupled to said ramp generator means and said storage means, for comparing an instantaneous magnitude of said sawtooth voltage with said peak voltage and creating an output voltage transition; and

logic means, coupled to said comparison means, for producing an output signal whose frequency is a desired multiple of said input signal frequency as a function of the magnitude of said output voltage transition of said comparison means.

5,257,302

FLUORESCENT X-RAY ANALYZING SYSTEM

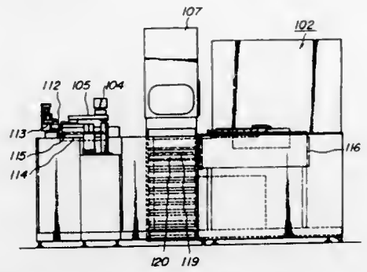
Akira Narukawa, Yokkaichi, Japan, assignor to NGK Insulators, Ltd., Japan

Division of Ser. No. 471,628, Jan. 29, 1990, Pat. No. 5,137,410, which is a division of Ser. No. 235,560, Aug. 24, 1988, Pat. No. 4,919,342. This application Mar. 20, 1992, Ser. No. 854,566

Claims priority, application Japan, Aug. 31, 1987, 62-215181; Aug. 31, 1987, 62-215182; Aug. 31, 1987, 62-215184; Aug. 31, 1987, 62-215186; Sep. 9, 1987, 62-224160; Oct. 19, 1987, 62-261769

Int. Cl.[5] G01N *23/223;* **B02C** *23/06*

U.S. Cl. 378—45 **2 Claims**



1. A fluorescent X-ray analyzing system comprising:

an automatic crusher for crushing a sample into a predetermined size, said automatic crusher comprising:

(a) a first cup pooling unit for drivingly holding a sample rack including sample vessels, each of said sample vessels holding a sample;

(b) a sample introducing unit for selecting a predetermined sample vessel from the sample rack and supplying the sample from the predetermined sample vessel to a crushing vessel of the automatic crusher to form a crushed sample; and

(c) a second cup pooling unit for temporarily storing the crushed sample;

an automatic press for forming the crushed sample into a formed sample having a predetermined shape;

a crushed sample transferring unit for transferring the crushed sample from the automatic crusher to the automatic press;

a fluorescent X-ray analyzing apparatus for determining amounts of elements in the formed sample;

a formed sample supply unit for supplying the formed sample from the automatic press to the fluorescent X-ray analyzing apparatus; and

control means for controlling respective operations of the automatic crusher, the crushed sample transferring unit, the automatic press, the formed sample supply unit and the fluorescent X-ray analyzing apparatus.

5,257,303

SURFACE CHANNELED X-RAY TUBE

Kamalaksha Das Gupta, 2918 69th St., Lubbock, Tex. 79413

Filed Aug. 3, 1992, Ser. No. 923,827

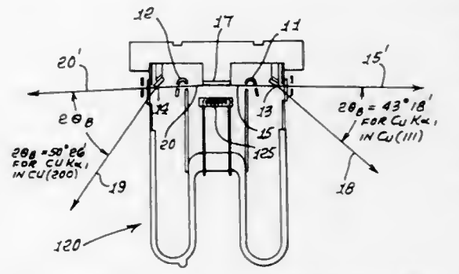
Int. Cl.[5] H01J *35/08*

U.S. Cl. 378—85 **26 Claims**

1. In beam generating apparatus, the combination comprising

a) a first binary alloy target crystal consisting essentially of an alloy of copper and silver, for producing a primary x-ray beam,

b) a second target crystal consisting essentially of copper in the path of said first x-ray beam and oriented to produce a



CuKα, radiation in response to impingement of said primary beam.

5,257,304

HIGH-VOLTAGE POWER DEVICE AND POWER PACK FOR X-RAY TUBE

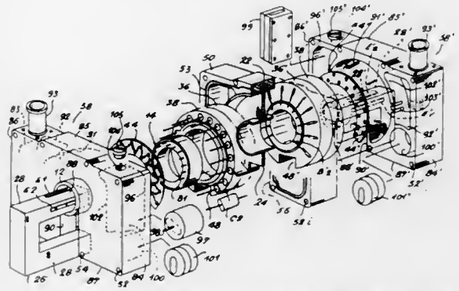
Jacques Sireul, Wissous; Hans Jedlitschka, Chatillon, and Dominique Poincloux, Guyancourt, all of France, assignors to General Electric CGR S.A., Mouloineaux, France

Filed Aug. 28, 1992, Ser. No. 936,381

Claims priority, application France, Sep. 3, 1991, 91 10888

Int. Cl.[5] H05G *1/10;* **H01F** *15/02;* **H02M** *7/10*

U.S. Cl. 378—101 **18 Claims**



1. A high-voltage power device for an X-ray tube having a transformer that comprises at least one primary winding, a plurality of secondary windings each having two output terminals and a magnetic coupling circuit, the two output of terminals of each of said secondary windings being connected to a voltage rectifier-doubler circuit that is constituted by two diodes and two filtering capacitors, said rectifier-doubler circuits being connected to each other so that their output voltages get added up, the primary and secondary windings being formed by concentric coils, the output terminals of said secondary windings being distributed on each lateral side of said coils, the capacitors being positioned on the external periphery of said coils and the diodes being positioned on a lateral side of said coils, wherein:

- the plurality of said secondary windings is split up into two series each of which corresponds to a separate secondary circuit;
- the coils of said secondary windings of one series are separated axially from the coils of the secondary windings of the other series;

said filtering capacitors of each separate secondary circuit are positioned on the external periphery of said coils of the associated series of secondary windings, and

- said diodes are positioned on a lateral side of said coils of the associated series of secondary windings.

5,257,305

SLIT RADIOGRAPHY DEVICE PROVIDED WITH ABSORPTION ELEMENTS, AND PROCEDURE FOR PRODUCING ABSORPTION ELEMENTS

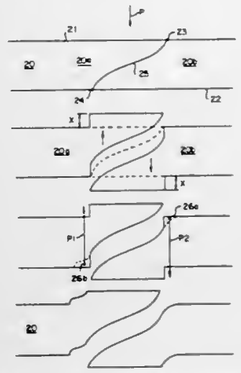
Hendrik J. van Elburg, Haarlem; Frederik J. Boelens, Delft, and Gijsbertus G. Nouwen, Bosschenhoofd, all of Netherlands, assignors to 38 BV Optische "De Oude Delft, Delft, Netherlands

Division of Ser. No. 852,682, Mar. 17, 1992, abandoned, which is a continuation of Ser. No. 613,498, Oct. 31, 1990, Pat. No. 5,134,642. This application Nov. 25, 1992, Ser. No. 981,238

Claims priority, application Netherlands, Jun. 22, 1988, 8801589

Int. Cl.[5] G21K *5/10*

U.S. Cl. 378—146 **3 Claims**



1. A method for producing absorptione elements for a slit radiography assembly, which comprises:

forming a template of a cross-sectional shape for said absorption elements by defining at least two cut lines between two equidistant lines of absorption thickness of absorption material, said cut lines being non perpendicularly transverse to said equidistant lines; by defining two edge regions with a boundary line on either side of each cut line, each of said edge regions being bounded by said cut lines, said boundary line extending transversely to said equidistant lines and a part of at least one of said equidistant lines; and by moving said edge regions on either side of each said cut lines a distance in an opposite direction along said boundary lines to produce a gap at a position of each of said cut lines thereby forming said cross-sectional shape between respective gaps; and

forming an absorption element of said cross-sectional shape from said template.

5,257,306

VIDEO TELECONFERENCING SYSTEM

Satoru Watanabe, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed May 26, 1992, Ser. No. 888,186

Int. Cl.[5] H04N *7/14;* **H04M** *11/00*

U.S. Cl. 379—53 **11 Claims**

1. A video teleconferencing system comprising:

a plurality of terminals;

a server including storage means for storing input information; and

a network coupling said terminals to said server,

said input information being supplied from each terminal to other terminals from said server,

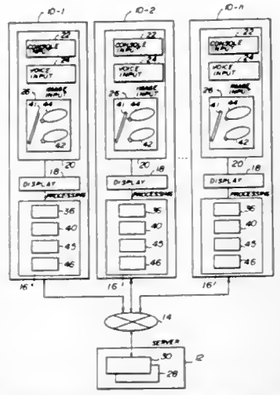
each of said terminals comprising:

input means including a first input part for inputting voice information, and a second input part for inputting image information, said voice information and said image

VOL 1155 ISS 4 OCT 26 1993 UMI

information forming the input information of said input means, said second input part including a first camera for generating a front image and a second camera for generating an oblique image of a certain user of the terminal to which said input means belongs;

display means coupled to said input means for displaying images of users of the terminals other than the terminal to which said display means belongs; and



processing means coupled to said display means including first means for accepting specifying information which specifies a terminal, and second means for determining one of a front image and an oblique image to be displayed on the display means of each terminal other than the terminal to which said processing means belongs.

5,257,307

RADIO PAGER SYSTEM WHICH TRANSMITS SECRET CODED MESSAGES FROM A CALLER TO A PAGER TERMINAL APPARATUS

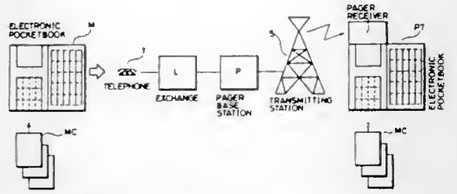
Masahiro Ise, Kashihara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 4, 1991, Ser. No. 650,094

Claims priority, application Japan, Feb. 7, 1990, 2-28684; Feb. 7, 1990, 2-28685; Feb. 7, 1990, 2-28686

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—57 15 Claims



13. A pager system comprising:

a central station for transmitting a pager signal including destination information representing a destination and coded message information for the destination;

transmission terminal means for generating and supplying said destination and said coded message information to said central station; and

pager terminal means for receiving said pager signal and for displaying a message in accordance with said coded message information when said pager terminal means is the destination represented by said destination information of said pager signal,

said coded message information being encoded in accordance with a code conversion table prepared by a caller and a pager terminal subscriber, said code conversion table being stored within said transmission terminal means and said pager terminal means,

said transmission terminal means comprising

electronic pocketbook means having storage means for storing said code conversion table,

display means for displaying said code conversion table,

keyboard mean for accessing said code conversion table,

RAM storage means, coupled to said keyboard means, for storing said destination information and a sequence of said coded message information input by the caller,

said sequence of coded message information being displayed on said display means along with corresponding ones of said caller message information and said destination information, for inspection by the caller,

transmission buffer means, coupled to said RAM storage means, for temporarily storing said sequence of coded message information upon activation of a transmission start switch by the user of said transmission terminal means,

transmission control means, coupled to said transmission buffer means and said keyboard means, for converting said sequence of coded message information and said destination information into a transmission signal, and

speaker means, coupled to a telephone handset, for generating sound in accordance with said transmission signal, handset generating an analog electrical signal representative of said pager signal in response thereto.

5,257,308

PAIR FACSIMILE DEVICES

Michiyoshi Washio, Shiga, and Minoru Ando, Nagoya, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

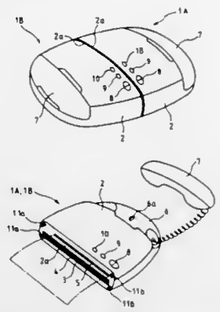
Continuation of Ser. No. 624,187, Dec. 6, 1990, Pat. No. 5,128,986. This application Oct. 31, 1991, Ser. No. 785,818

Claims priority, application Japan, Dec. 11, 1989, 1-43494

The portion of the term of this patent subsequent to Jul. 7, 2009, has been disclaimed.

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—100 1 Claim



1. A facsimile device, comprising:

a first independently operable facsimile device capable of transmitting and receiving facsimile communications to and from a remote facsimile machine, the first facsimile device including a scanner, and

a second independently operable facsimile device capable of transmitting and receiving facsimile communications to and from the remote facsimile machine, the second facsimile device including a scanner,

wherein the first facsimile device comprises coupling means for mechanically and revocably coupling the first facsimile device to the second facsimile device and wherein the first and second facsimile devices are of the same type.

5,257,309

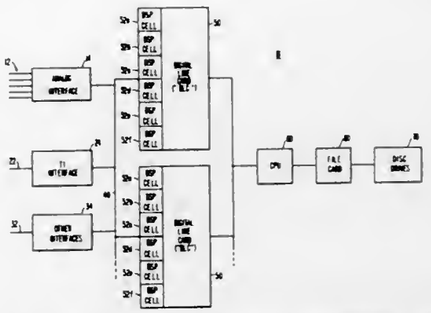
DUAL TONE MULTIFREQUENCY SIGNAL DETECTION AND IDENTIFICATION METHODS AND APPARATUS

Yigal Brandman, Palo Alto, and Manoj Puri, Sunnyvale, both of Calif., assignors to Octel Communications Corporation, Milpitas, Calif.

Filed Dec. 11, 1990, Ser. No. 625,366

Int. Cl.[5] H04M *3/00*; H03D *3/00*

U.S. Cl. 379—283 32 Claims



1. The method of detecting a dual tone multifrequency pulse in an applied signal, said pulse comprising at least two tones having frequencies which are respectively approximately equal to the frequencies of two reference tones, said method comprising the steps of:

bandpass filtering the applied signal using first and second bandpass filters, the pass band of said first filter including the frequency of a first of said reference tones, and the pass band of said second filter including the frequency of a second of said reference tones;

determining the envelope of the output signal of each of said filters;

monitoring the smoothness of the envelope associated with each of said filters over a predetermined first time interval in order to determine whether each envelope satisfies a predetermined smoothness criterion; and

if the envelopes associated with both of said filters satisfy said smoothness criterion, then for the envelope associated with each of said filters, comparing the envelope value during a predetermined second time interval which is prior to said first time interval to envelope values subsequent to said second time interval in order to produce an indication that said pulse has been detected if said subsequent envelope values exceed said envelope value during said second time interval by at least a predetermined amount for the output signal of at least one of said filters.

5,257,310

PORTABLE TELEPHONE

Hisamitsu Takagi, Inagi; Hideharu Suzuki, Kawasaki; Masashi Tomura, Tokyo, and Akihide Nishiyama, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

PCT No. PCT/JP91/00253, § 371 Date Oct. 17, 1991, § 102(e) Date Oct. 17, 1991, PCT Pub. No. WO91/13507, PCT Pub. Date Sep. 5, 1991

PCT Filed Feb. 26, 1991, Ser. No. 773,644

Claims priority, application Japan, Feb. 27, 1990, 2-44641; Aug. 7, 1990, 2-207596

Int. Cl.[5] H04M *1/00*

U.S. Cl. 379—433 10 Claims

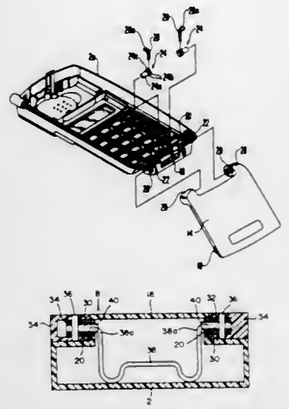
1. A portable telephone comprising:

a body (2) including a speaker, a microphone, and switch means;

a cover (14) rotatably mounted to said body (2), said cover (14) covering at least said switch means when said cover (14) is in a closed condition; and

cover holding means for rotatably holding said cover (14) with respect to said body (2), said cover holding means including biasing means (26) for exerting a biasing force to said cover so as to maintain said cover at a stable position in a rotational direction when said cover is in an open condition;

said cover holding means comprising a cover mounting projection (18) integrally formed with said body (2) and



having a pair of holes (20); a pair of shafts (24) rotatably inserted through said holes (20), respectively, each of said shafts (24) having one end (24*a*) fixed to said cover (14) and having a plate portion 24*c* with flat sides formed near its other end; and a pair of U-shaped springs (26) fixed to said body (2) so as to respectively nip said plate portions (24*c*) of said shafts (24).

5,257,311

SYSTEM FOR MONITORING ATM CROSS-CONNECTING APPARATUS BY INSIDE-APPARATUS MONITORING CELL

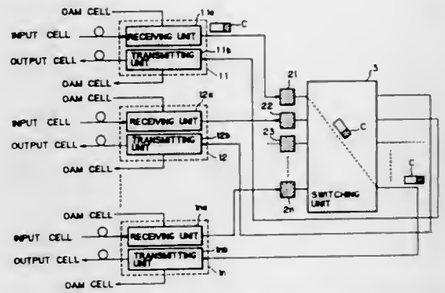
Hidetoshi Naito; Masaaki Kawai; Hisako Watanabe; Yuji Takizawa; Kazuyuki Tajima, and Haruo Yamashita, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 30, 1992, Ser. No. 876,417

Claims priority, application Japan, Apr. 30, 1991, 3-128633

Int. Cl.[5] H04L *9/00*

U.S. Cl. 380—48 11 Claims



1. A monitoring system for an asynchronous transfer mode cross-connecting apparatus, for re-writing a virtual path identifier of an input cell and outputting the input cell from an output port corresponding to the re-written virtual path identifier, comprising:

a setting portion which sets an initial value of a pseudo-noise

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pattern and the pseudo-noise pattern, based on the initial value, in an information field in a monitoring cell, which is input into said asynchronous transfer mode cross-connecting apparatus; and

a detecting portion which detects an error in the cell by extracting the pseudo-noise pattern and the initial value from the cell, as output by said asynchronous transfer mode cross-connecting apparatus, and compares the extracted pseudo-noise pattern with a pseudo-noise pattern based on the extracted initial value.

5,257,312

TIME-DISCRETE STEREO DECODER

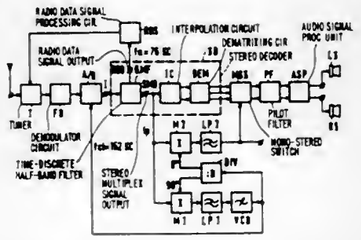
Dieter E. M. Therssen, and Johan K. J. Van Ginderdeuren, both of Hasselt, Belgium, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 23, 1992, Ser. No. 872,569

Claims priority, application European Pat. Off., May 3, 1991, 91201051.9

Int. Cl.[5] H04H *5/00*

U.S. Cl. 381—4 **7 Claims**



1. A receiver having a signal path incorporating a tuner, a demodulator circuit for supplying a stereo multiplex signal comprising a baseband stereo sum signal (L+R), a 19 kHz stereo pilot and a stereo difference signal (L−R) which is double sideband amplitude-modulated on a suppressed 38 kHz subcarrier, a sampler for converting an analog signal into a time-discrete signal and a stereo decoder for time-division multiplex decoding of a time-discrete stereo multiplex signal into time-discrete left and right stereo signals, characterized in that the stereo decoder comprises a time-discrete halfband low-pass filter circuit having a finite impulse response and a substantially constant group delay time, said time-discrete halfband low-pass filter including a low-pass edge in the amplitude transfer characteristic having a transition band which has at least a part in common with the frequency range of said modulated stereo difference signal, and a half-value of the amplitude transfer characteristic located in frequency, at said 38 kHz stereo subcarrier, whereby, with respect to the frequency of said half-value of said amplitude transfer characteristic, low-pass edge is substantially point-symmetrical, said receiver also including an interpolation circuit which is coupled to an output of the filter circuit for converting time-sequential even and odd sampling values of the output signal of the filter circuit into time-sequential pairs of simultaneously occurring sampling values, and a dematrixing circuit coupled to the interpolation circuit for a linear combination of said pairs of sampling values and a compensation of the crosstalk between the left and right stereo signals caused by the filter circuit.

5,257,313

SURROUND AUDIO APPARATUS

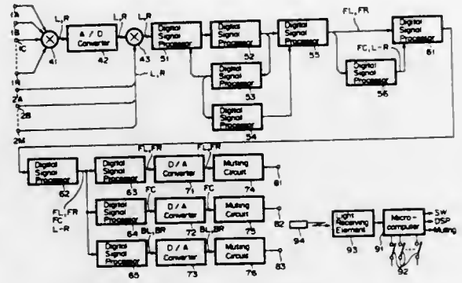
Kaneaki Fujishita, Kanagawa, and Kazuhiro Sato, Tokyo, both of Japan, assignors to Sony Corporation, New York, N.Y.

Filed Jul. 3, 1991, Ser. No. 725,454

Claims priority, application Japan, Jul. 9, 1990, 2-180892; Apr. 22, 1991, 3-118099

Int. Cl.[5] H04S *5/02*

U.S. Cl. 381—18 **2 Claims**



1. A surround audio apparatus comprising:

input terminals to which a plurality of digital audio signals encoded for surround reproduction are supplied;

a first digital signal processor for generating a test tone signal and for adjusting level balances between selected ones of said plurality of digital audio signals;

a switching circuit connected to said input terminals and said first digital signal processor for supplying selected ones of said plurality of digital audio signals to said first digital signal processor;

a second digital signal processor connected to said first digital signal processor for decoding an output signal of said first digital signal processor in a surround stereo reproduction fashion and producing a feedback signal fed to said first digital signal processor for adjusting said level balances between selected ones of said plurality of digital signals;

a third digital signal processor connected to said second digital signal processor for processing an output signal of said second digital signal processor so as to create or correct a sound field;

digital-to-analog converter means connected to said third digital signal processor for converting an output signal from said third digital signal processor into an analog audio signal; and

an output terminal connected to said digital-to-analog converter from which said analog audio signal is delivered.

5,257,314

VOICE RECOGNITION SYSTEM HAVING WORD FREQUENCY AND INTERMEDIATE RESULT DISPLAY FEATURES

Shinta Kimura, Kanagawa, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 5, 1990, Ser. No. 622,598

Claims priority, application Japan, Dec. 6, 1989, 1-316991

The portion of the term of this patent subsequent to Oct. 9, 2007, has been disclaimed.

Int. Cl.[5] G10L *5/06*

U.S. Cl. 381—43 **10 Claims**

1. A voice recognition system, comprising:

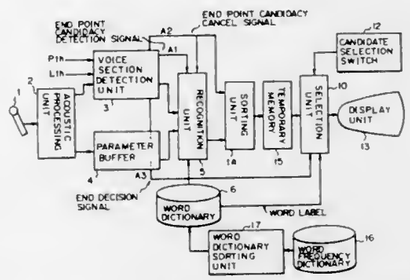
a microphone for converting a voice to an electrical voice signal having a voice sound portion and a non-voice portion;

acoustic processing means for detecting a power and spectrum of the electrical voice signal in accordance with a predetermined sampling time interval, and outputting power time-series data and spectrum time-series data at the predetermined sampling time interval to produce feature time-series data;

voice section detection means for receiving the power time series data from the acoustic processing means, detecting a start point and an end point of the voice sound portion, and outputting an end decision signal when an end of the voice sound portion is determined;

a word dictionary for storing, corresponding to words, word labels, word numbers corresponding to the word labels, and word templates comprising the feature time-series data corresponding to the word labels, the word labels being ordered in accordance with a frequency of use of the words;

verification means for receiving the feature time-series data of the voice to be verified, verifying the feature time-series data with the word template stored in the word dictionary, and calculating a degree of similarity between the voice and the word template;



sorting means for sorting the words in accordance with the degree of similarity, the data being sorted in order of the higher degree of similarity;

selection means for selecting one or more words having a higher degree of similarity from the words sorted in the sorting means;

display means for displaying the words;

a word frequency dictionary for storing the word labels, the word numbers corresponding to each word label, the word templates comprising the feature time-series data corresponding to each word label, and frequency data attached to each word label; and

word dictionary sorting means, provided between the word dictionary and the word frequency dictionary, for sorting the word labels of the word frequency dictionary in order of higher degree of frequency to obtain sorted words, and outputting the sorted words to the word dictionary.

5,257,315

HEARING AID TO BE WORN IN THE EAR

Christof Haertl, Neunkirchen, and Jochen Mueller, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

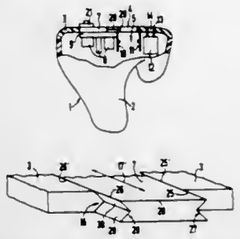
Filed May 26, 1992, Ser. No. 887,872

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1991, 4121312

Int. Cl.[5] H04R *25/00*

U.S. Cl. 381—68.6 **11 Claims**

1. A hearing aid for in-the-ear, said hearing aid comprising a housing having a face plate that has a first opening for a battery compartment and a second opening which is connected to the first opening and receives a lamina constructed as a carrier for hearing aid components, said lamina and said second opening together comprising two holding means which have portions extending parallel to each other so that the lamina can be



displaceable along a path proceeding parallel to the plane of the face plate.

5,257,316

ACOUSTIC CONDUCTANCE AND SILENCER UTILIZING SAME

Hiroaki Takeyama, Kobe; Masao Taki, Tokyo, and Takuji Mori, Tokorozawa, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka and Nishiwaki Laboratory, Tokyo, both of Japan

Filed Oct. 24, 1991, Ser. No. 782,098

Claims priority, application Japan, Oct. 31, 1990, 2-291892; Mar. 22, 1991, 3-058805

Int. Cl.[5] H03B *29/00*

U.S. Cl. 381—71 **22 Claims**

1. An acoustic conductance comprising a secondary noise source having an acoustical impedance and including an oscillatory plane facing an interior of a duct, said duct having an axis, an area, a circumference, and an acoustical impedance and coupled to a primary noise source, said secondary noise source being disposed on the circumference of the duct along a plane perpendicular to the axis, the oscillatory plane having a total area substantially more than twice the area of the duct.

5,257,317

SOUND RECORDING CONSOLE

Michael P. Stavrou, 95 Muston Street, Mosman, NSW 2088, Australia

PCT No. PCT/GB89/01015, § 371 Date Apr. 29, 1991, § 102(e) Date Apr. 29, 1991, PCT Pub. No. WO90/03073, PCT Pub. Date Mar. 22, 1990

PCT Filed Aug. 31, 1989, Ser. No. 659,377

Claims priority, application United Kingdom, Sep. 1, 1988, 8820625

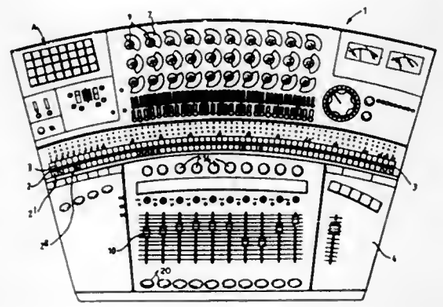
Int. Cl.[5] H04B *1/00*

U.S. Cl. 381—119 **9 Claims**

1. A control console for use in electronic control operations including sound recording or recording effects from a plurality of channels, said console comprising a plurality of channel indicators equal to said plurality of channels and corresponding to each thereof, said plurality of channel indicators being distributed across said control console, and a plurality of control devices being substantially less in number than the plurality of channels, and said control console further comprising a

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touch sensitive channel selector means interconnected with said plurality of channels and said channel indicators for selecting a desired number of channels from among said plurality of channels, up to the number of said plurality of control devices, and to allocate a corresponding one of said plurality of control



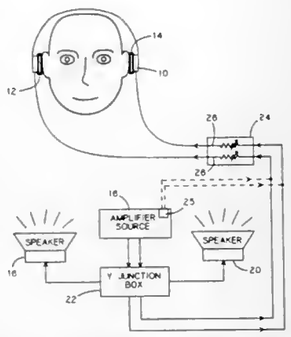
devices to each said selected channel and to activate the indicator corresponding to each said selected channel, whereby the selected channel to the control device allocation substantially reduces the overall dimensions of the control console relative to a control console having one control device for each channel.

5,257,318

EARPHONE SPACER WITH ELECTRONICALLY VARIABLE SOUND LEVEL

Robert J. Carroll, 207 Highland Ave., Winchester, Mass. 01890

Continuation-in-part of Ser. No. 295,493, Jan. 11, 1989, Pat. No. 4,993,074. This application Feb. 11, 1991, Ser. No. 653,187
The portion of the term of this patent subsequent to Feb. 12, 2008, has been disclaimed.
Int. Cl.[5] H04R *1/28*
U.S. Cl. 381—187 **5 Claims**



1. A system for creating an increased presence in the reproduction of sound by an amplifier, a pair of speakers, and a pair of earphones comprising in combination:

a. a pair of spacers for holding said earphones a selected distance from the ear, said spacers having at least one port covering a substantial portion of said transverse surface of said spacer to allow the unimpeded transmission of ambient sound to the ear; and

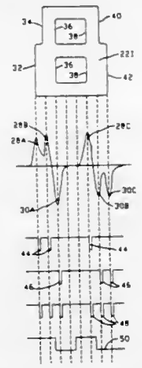
b. a variable volume control positioned between said amplifier and said earphones for adjusting the level of sound emanating from said earphones.

5,257,319

CHARACTER RECOGNITION APPARATUS

Jeane Pierre Canu, Yvetot; Bernard Desforges, Darhetal, and Gerard Heutte, Rouen, all of France, assignors to Unisys Corporation, Blue Bell, Pa.

Filed Jun. 14, 1991, Ser. No. 689,080
Claims priority, application United Kingdom, Oct. 24, 1989, 8923960
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—7 **12 Claims**



1. An apparatus for identifying a scanned character from among a predetermined set of characters, said apparatus comprising;

edge detector means **70** for detecting and generating a first electrical output signal **48** indicative of the position of the edges in the scanned character;

signal level detector means **72** for detecting and generating a second output signal **50** indicative of the polarity of the rate of change of intensity of the scanned character with respect to position;

controller means **76** coupled to said output signals and being operative to generate a character record signal which includes the position of each edge and the polarity of the rate of change of intensity of a predetermined reference character;

said controller means **76** comprising a stored set of character record signals, one for each respective one of the characters in said predetermined set of characters; and

said controller means being operative to compare each stored character record signal with said output signals and to provide an indication of that character from said predetermined set of characters with whose signals the output signals match.

5,257,320

SIGNATURE VERIFICATION SYSTEM

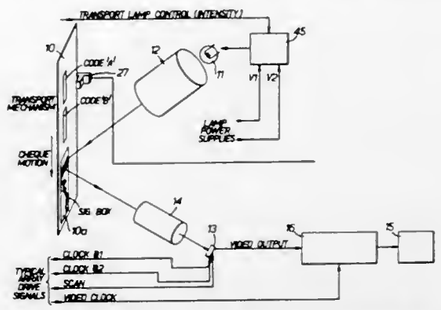
Harry J. C. Etherington, Godalming; Paul C. Joslin, Bracknell, and Timothy J. Stevenson, Ascot, all of United Kingdom, assignors to ROCC Computers Limited, Sussex, United Kingdom

Continuation-in-part of Ser. No. 502,999, Jun. 10, 1983, abandoned. This application Feb. 4, 1986, Ser. No. 825,835
Claims priority, application United Kingdom, May 31, 1983, 8314889
Int. Cl.[5] G06K *9/46*
U.S. Cl. 382—3 **12 Claims**

1. A signature verification system including:

a) an encoding apparatus comprising means for illuminating a predetermined area on a carrier medium where at least a portion of a sample signature would be expected to be, means for scanning said predetermined area to produce signals representing the sample signature, means for processing said signals to produce a black and white pixel representation of the sample signature within the predetermined area, means for analysing the black and white pixel representation and evaluating the number of pixels which satisfy criteria associated with each of a plurality of preselected features of the sample signature, said preselected features including a ratio of numbers of pixels in the black and white pixel representation satisfying different criteria, means for scaling each of said numbers of pixels to produce a measure value for each of said plurality of preselected features, and means for producing a set of reference measure values representative of at least one sample signature from the measure values produced representative of at least one sample signature; and

b) verification apparatus comprising means for illuminating a predetermined area on a further carrier medium where at least a portion of an offered signature would be expected



to be, means for scanning said predetermined area to produce signals representing the offered signature, means for processing said signals to produce a black and white pixel representation of the offered signature within the predetermined area, means for analysing the black and white pixel representation and evaluating the numbers of pixels which satisfy criteria associated with each of said plurality of preselected features of the offered signature, said preselected features including a ratio of numbers of pixels in the black and white pixel representation satisfying different criteria, means for scaling each of said numbers of pixels to produce a measure value for each of said plurality of preselected features the measure values forming a set which is representative of the offered signature, means for comparing the set of reference measure values for the at least one sample signature with the set of measure values for the offered signature and indicating the result of the comparison.

5,257,321

Patent Not Issued For This Number

5,257,322

METHOD AND APPARATUS FOR PATTERN RECOGNITION AND DISPLAY WITH OPTICAL CORRELATOR

Katunori Matsuoka, Toyonaka; Kazuo Ohtani, Ikeda, and Hironobu Okuyama, Nara, all of Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

Continuation of Ser. No. 584,674, Sep. 19, 1990. This application Jan. 29, 1992, Ser. No. 827,526
Claims priority, application Japan, Sep. 20, 1989, 1-245756
Int. Cl.[5] G06K *9/76*
U.S. Cl. 382—31 **4 Claims**

1. A pattern recognition method comprising the steps of:

forming an input pattern, such as a letter or picture, on a first spatial light modulator;

irradiating coherent light to the first spatial light modulator and thereby reading out the inputted pattern;

forming a correlation pattern between the inputted pattern and an array including a plurality of reference patterns preparatively stored in a correlation filter by a first optical correlator including the correlation filter and first and second lenses, the plurality of reference patterns being in several sub-groups, each containing more than one pattern which represent the same letter or picture;

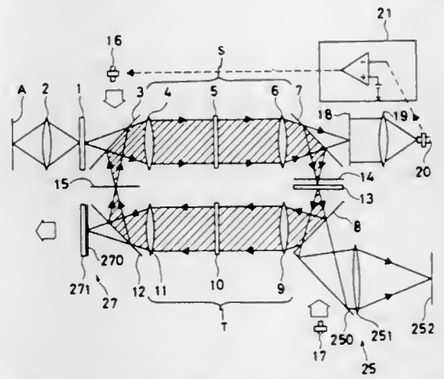
forming the formed correlation pattern in a second spatial light modulator having a non-linear input-output response characteristic for magnifying differences among a plurality of inputted values;

reading out by coherent light the non-linearly transformed correlation pattern formed on the second spatial light modulator;

correlating together an array including a plurality of display patterns preparatively stored in a display filter and the correlation pattern read out from the second spatial light modulator, using a second optical correlator including the display filter and third and fourth lenses;

feeding back the light passed through the second optical correlator to the first optical correlator and mixing the fed-back light with the read-out light of the inputted pattern;

detecting a sum of the light intensities of the correlation pattern formed by the first optical correlator and adjusting the intensity of the coherent light to be irradiated to the



first spatial light modulator so that the sum of the light intensities can always be substantially constant; and

detecting the position of a strongest optical peak of the correlation pattern appearing on the second spatial light modulator by the light read out by the coherent light and thereby determining the correspondence of the input pattern to a reference pattern,

wherein the step for forming a correlation pattern includes the step of storing in the correlation filter Fourier transforms of the plurality of reference patterns in the array, each of the plurality of reference patterns including a plurality of patterns having a display pattern which form a sub-group for identifying a pattern category and form on a predetermined position on the input plane of the second spatial light modulator a bright correlation peak for each pattern category, and

wherein the correlating step for forming a display pattern includes the step of storing in the display filter Fourier transforms of display patterns in the array included in the sub-group representing each pattern category, the array of display patterns converting each bright correlation peak formed by the correlation filter on the output plane of the second spatial light modulator to said display pattern included in the pattern category represented by the position of the correlation peak.

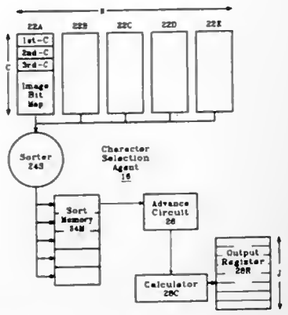
VOL 1155 ISS 4 OCT 26 1993 UMI

5,257,323

SELECTION AGENT FOR A SYMBOL DETERMINATION SYSTEM WITH MULTIPLE CHARACTER RECOGNITION PROCESSORS

Roger D. Melen, and Harry T. Garland, both of Los Altos Hills, Calif., assignors to Canon Kabushiki Kaisha, Palo Alto, Calif.

Filed May 29, 1991, Ser. No. 707,035
Int. Cl.[5] G06K 9/62
U.S. Cl. 382—39 24 Claims



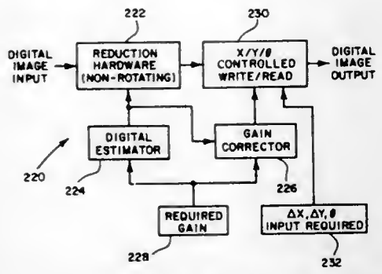
1. A character selection agent receiving input character codes (ICCs) from a plurality of OCR processors and for selecting the mathematically most probable code (MPC) from among the plurality of ICCs based on a confidence factor (CF) associated with each ICC, comprising:
input register having a plurality of input positions for receiving the ICCs and the associated CFs;
sort means for sorting the ICCs into groups of identical codes;
sort memory for storing the groups of sorted ICCs at memory locations within the sort memory;
joint confidence factor (JCF) calculator for determining the JCF of each group of identical codes based on the CFS of the ICCs in each group;
advance means for advancing each group of ICCs in the sort memory to the JCF calculator for determination of the group JCF; and
output register for receiving the JCFs from the JCF calculator and selecting the MPC based on the relative JCFs.

5,257,324

ZERO-TIME-DELAY VIDEO PROCESSOR CIRCUIT

Jon H. Bumgardner, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 1, 1991, Ser. No. 786,634
Int. Cl.[5] G06K 9/36; H04N 7/01
U.S. Cl. 382—44 9 Claims



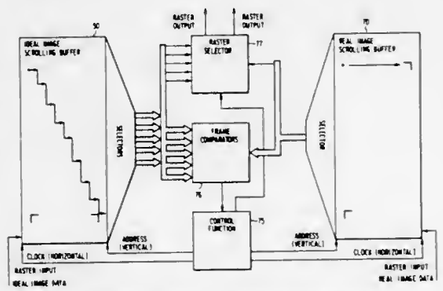
1. A zero-time-delay video processor circuit, comprising:
reduction means for receiving a digital image input and simultaneously providing a reduced present frame digital image output signal and a next frame reduced digital image output signal;
a controlled write/read memory for providing a digital image output, the controlled write/read memory having a first input connected to the reduction means to receive presented next frame reduced digital image output signals;
a digital estimator connected to the reduction means for providing a next frame estimated gain that is clamped to have a maximum value of unity;
a gain corrector circuit connected to the controlled write/-read memory for compensating for errors/differences in the estimated gain, the gain corrector having a first input connected to an output of the digital estimator to receive the estimated gain therefrom; and
means for providing a signal indicative of the required gain to the digital estimator and to the gain corrector.

5,257,325

ELECTRONIC PARALLEL RASTER DUAL IMAGE REGISTRATION DEVICE

Mark A. Casparian, Poughkeepsie, and Donald C. Forslund, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 11, 1991, Ser. No. 806,944
Int. Cl.[5] G06K 9/32
U.S. Cl. 382—44 19 Claims



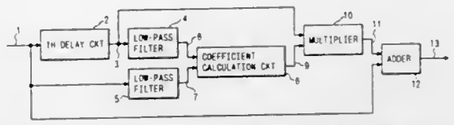
1. An electronic image alignment apparatus which electronically registers ideal image raster data to real image raster data for subsequent processing comprising:
first and second input means for respectively receiving rasterized binary ideal and real image data streams;
first and second scrolling buffers respectively receiving said rasterized ideal and real image data streams, said scrolling buffers being wide enough to hold the width of an image and high enough to hold a skewed image to account for misalignment or distortion;
first and second selector means respectively connected to said first and second scrolling buffers for randomly accessing sets of contiguous image rasters in a vertical direction, each scrolling buffer image swath raster set being moved horizontally of a lower swath and into a new position in an adjacent upper swath, horizontal movement of each scrolling buffer being independent such that adjustable sequential access by said first and second selector means in the horizontal direction is available; and
control means for generating addresses to said first and second selector means and clock signals to said first and second scrolling buffers, real image data stream addressing being held fixed and real image data stream clocking being held constant during a registration phase while ideal image data stream addressing and clocking are varied to align said ideal image raster data to said real image raster data.

5,257,326

METHOD AND APPARATUS FOR INTERPOLATING A VIDEO SIGNAL OF A PICTURE ELEMENT WHICH HAS NOT BEEN SAMPLED AND TRANSMITTED BY AN INTERLEAVE SAMPLING OPERATION

Naoki Ozawa, Akishima; Kenji Takahashi, Tsukui; Toshiyuki Akiyama, Tokorozawa; Itaru Mimura, Sayama, and Takahiro Matsumoto, Hachiouji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 22, 1991, Ser. No. 688,265
Claims priority, application Japan, Apr. 20, 1990, 2-103000
Int. Cl.[5] G06K 9/36
U.S. Cl. 382—54 6 Claims



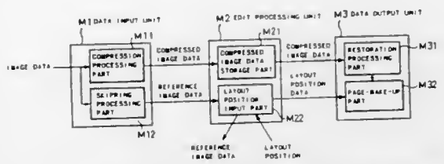
1. A method of interpolating a signal corresponding to a picture element to be interpolated comprising the steps of:
obtaining a first signal representing a first picture element which is in a first scanning line including said picture element to be interpolated, and which is adjacent to said picture element to be interpolated;
obtaining a second signal representing a second picture element which is in a second scanning line adjacent to said first scanning line in the same field, and which is adjacent to said picture element to be interpolated;
obtaining a coefficient signal representing a ratio of a level of said first signal of said first scanning line to a level of said second signal of said second scanning line;
multiplying a level of said second signal by said coefficient signal so that the level of said second signal is correlated; and
adding the second signal whose level has been corrected to the first signal of said first scanning line as a signal corresponding to said picture element to be interpolated.

5,257,327

METHOD OF AND APPARATUS FOR FORMING A ONE-PAGE-IMAGE

Makoto Hirosawa, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed May 31, 1991, Ser. No. 708,018
Claims priority, application Japan, Jun. 27, 1990, 2-168962
Int. Cl.[5] G06K 9/36
U.S. Cl. 382—56 4 Claims



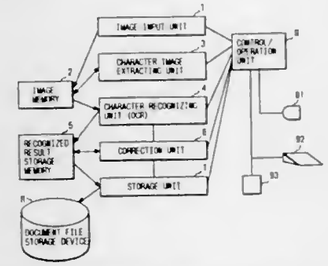
1. An image processing system for forming a one-page-image including a picture element, comprising:
input means for obtaining original image data of a picture element to be laid out as a part of a one-page-image;
compression means for compressing said original image data to produce compressed image data;
skipping means for skipping data of said original image data to produce reference image data representing a skipped image;
data storage means for storing said compressed image data;
layout means for to selectively positioning said skipped image on a representation of said one-page-image to produce layout data representing the position of said skipped image on the representation of said one-page-image, said layout data further including parameters for affine conversion of said skipped image in said one-page-image, said layout means comprising a monitor for displaying the representation of said one-page-image and a coordinate input device for specifying positions of the skipped image on the representation of said one-page-image, said layout means obtaining said layout data from a position of said skipped image on the representation of said one-page-image specified with said coordinate input device, wherein said layout means also produces cutout data representing a shape of a cutout area of said skipped image, part of said skipped image within said cutout area being laid out on the representation of said one-page-image;
means for storing said layout data and said cutout data as a data set for the picture element;
management data production means for producing management data to indicate a method of data compression in said compression means;
restoration means for restoring said compressed image data stored in said data storage means to produce restored image data, wherein said restoration means restores said compressed image data according to a method indicated by said management data; and
page-make-up means for forming said one-page-image based on said restored image data, said layout data and said cutout data.

5,257,328

DOCUMENT RECOGNITION DEVICE

Noboru Shimizu, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

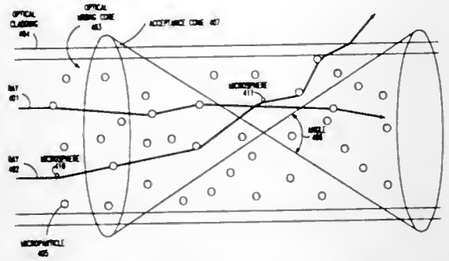
Filed Apr. 1, 1992, Ser. No. 861,600
Claims priority, application Japan, Apr. 4, 1991, 3-098014
Int. Cl.[5] G06K 9/20
U.S. Cl. 382—61 8 Claims



1. A document recognition device comprising:
character recognizing means for recognizing a character image;
a correction data base in which correction information on mis-recognized characters which were targets to be corrected by an operator has been registered;
automatic correction means for using said correction data base to correct characters mis-recognized by said character recognizing means;
operator correction means by which the operator corrects characters uncorrected by said automatic correction means; and
correction data base updating means for registering, in said correction data base, correction information obtained from the characters recognized by said character recognizing means and the characters corrected by said operator correction means.

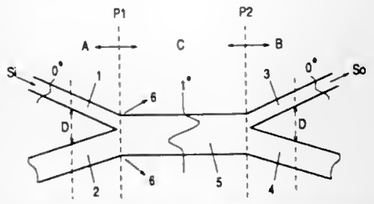
VOL 1155 ISS 4 OCT 26 1993 UMI

5,257,329
DEPOLARIZATION OF LIGHT IN AN OPTICAL SWITCHING SYSTEM
Lee L. Blyler, Jr., Basking Ridge; Robert W. Filas, Bridgewater, both of N.J., and Gary J. Grimes, Thornton, Colo., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Nov. 27, 1991, Ser. No. 800,792
Int. Cl.[5] G02B 6/16
U.S. Cl. 385—11 **8 Claims**



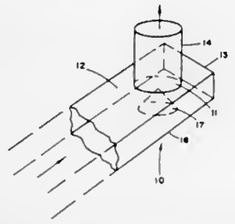
1. An optical device for the depolarization of light, comprising:
an optical cladding structure;
an optical core within said optical cladding structure for communicating light from an input of said optical core to an output of said optical core; and
said optical core comprising a plurality of particles suspended in a suspension material for depolarizing said light by scattering said light and said plurality of particles having an index of refraction approximately equal to an index of refraction of said suspension material so as to reduce the amount of said light being lost through said cladding structure.

5,257,330
POLARIZATION FILTER WITH INTERMEDIATE OPTICAL WAVEGUIDE WHICH IS MONOMODAL FOR ONE POLARIZATION AND BIMODAL FOR THE OTHER
Johannes J. G. M. van der Tol, Zoetermeer, Netherlands, assignor to Koninklijke PTT Nederland N.V., Groningen, Netherlands
Filed Jul. 1, 1992, Ser. No. 907,149
Claims priority, application Netherlands, Jul. 11, 1991, 9101226
Int. Cl.[5] G02B 6/12, 6/26
U.S. Cl. 385—11 **6 Claims**



1. A polarization filter for filtering an optical signal entering via a monomodal input channel and containing both the TE and the TM polarization modes to produce an optical signal emerging via a monomodal output channel and exclusively containing, at least essentially, one of said two polarization modes, the polarization filter comprising
an input section including a first incoming monomodal optical waveguide and a second incoming monomodal optical waveguide which mutually converge to within their interaction range and have a difference in propagation constant as a consequence of a mutual first asymmetry,
an output section including a third, outgoing monomodal optical waveguide, and
an intermediate optical waveguide, at the input of which the first optical waveguide and second optical waveguide debouch and at the output end of which the third optical waveguide is connected, characterized in that
the intermediate optical waveguide is monomodal for one of said polarizations and bimodal for the other,
said mutual first asymmetry between the first and second waveguide is of the same sign for both of the polarization modes, the optical waveguide having the lowest propagation constant forming said monomodal input channel, and
the output section includes a fourth, outgoing monomodal optical waveguide which is connected at said output end of said intermediate optical waveguide and which mutually diverges from said third waveguide at least to a location outside the interaction range of said third and fourth waveguides, said third and fourth waveguides having a difference in propagation constant as a consequence of a mutual second asymmetry, which is of the same sign for both of the polarization modes, the optical waveguide having the lower propagation constant forming said monomodal output channel.

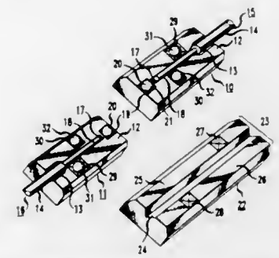
5,257,331
JUNCTION BETWEEN A RECTANGULAR AND A CIRCULAR WAVEGUIDE
Itzhak Shapir, Haifa, Israel, assignor to State of Isreal, Ministry of Defence, Rafael Armament, Tel-Aviv, Israel
Filed Jul. 15, 1992, Ser. No. 914,711
Claims priority, application Israel, Jul. 18, 1991, 98879
Int. Cl.[5] G02B 6/26
U.S. Cl. 385—25 **17 Claims**



1. A junction for coupling between a TE transmission mode in the rectangular waveguide and a TE transmission mode in the circular waveguide, the rectangular waveguide having broad sides A and narrow sides B, one of sides A having at its middle line a circular opening being of a diameter which is equal to or less than the diameter of the circular waveguide and the other of sides A having a tapered member protruding from its inside surface opposite said circular opening, an end of said circular waveguide abutting the rectangular waveguide over said opening.

5,257,332
OPTICAL FIBER EXPANDED BEAM COUPLER
Richard J. Pimpinella, Hampton, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Sep. 4, 1992, Ser. No. 941,289
Int. Cl.[5] G02B 7/26, 6/26
U.S. Cl. 385—59 **7 Claims**

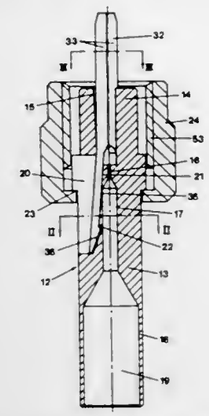
1. Apparatus for connecting one or more optical fibers of a first set of fibers to corresponding optical fibers of a second set, comprising:
first and second fiber-receiving substrates each said substrate comprising:
one or more fiber-receiving V-grooves formed on a exterior flat surface of each said substrate;
an indent formed between the end of each said V-groove and the adjacent end of the substrate;
a lensing element fixedly placed in each said indent in a position which extends the axis of an optical fiber through the center of said lensing element;
first and second wells formed into said flat surface of each said substrate;
an alignment element disposed in each said well; and
a planar exterior surface;
one or more fiber alignment grooves disposed lengthwise along said surface;



first and second reference zones defined within said exterior surface, each said zone containing a one of said wells;
one alignment element of each said substrate adapted to engage into said well of said first reference zone; and
the other of said alignment elements adapted to engage the surface of said second reference zone; whereby when said first and second substrates are placed into mating engagement on said coupler, the two said exterior surfaces of said substrates are coplanar and are both parallel to said reference zones; and the extended axes of corresponding said fibers are coaxial and pass through the centers of said lensing elements.

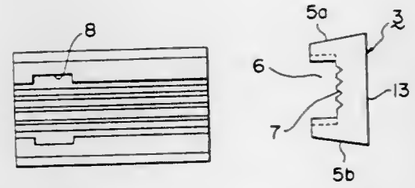
5,257,333
CONNECTING DEVICE FOR INTERCONNECTION OF OPTICAL FIBRES
Anders Nodfelt, Lingonstigen 7, S-578 00 Aneby, Sweden
PCT No. PCT/SE90/00651, § 371 Date May 26, 1992, § 102(e) Date May 26, 1992, PCT Pub. No. WO91/06023, PCT Pub. Date May 2, 1991
PCT Filed Oct. 10, 1990, Ser. No. 847,094
Claims priority, application Sweden, Oct. 13, 1989, 8903366
Int. Cl.[5] G02B 6/26, 6/38
U.S. Cl. 385—64 **8 Claims**

1. Connection device for connecting the end portions of axially opposite to each othe situated optical fibres (30) and comprising insertion (12) and receiving means (11) designed for cooperation with at least a centering means (37), in form of a conical sleeve (47) provided with guiding elements (39) extending in the longitudinal direction of the sleeve cooperating with conical seats (50) of the receiving means (11) for radial and axial centering of the end portions of the optical fibres relatively each other, characterized therein, that the insertion means (12) comprises at least three cylindrical rods (33), which between themselves form a central channel (34) for receiving of the optical fibres (30), and which rods with their internal end portion are fixed in the retainer (13) of the insertion means (12) and with their external end portion are situated outside this forming its connection pin (32), designed for cooperation with the centering means (37), and that the attachement end is provided to be bent radially outward and fixed in these positions during simultaneous compression of the rods in a direction towards the center axis of the insertion means (12), and that the conical sleeve (47) is closed in cross section by the resilient sectors (48) which consist of material weakened axial portions (49) along the entire length of the sleeve, which sectors are



elastically deformable and/or in section curved, folded or in an other way elastically compliant.

5,257,334
RIBBON TYPE OPTICAL FIBER CONNECTOR
Mitsuo Takahashi, Matsudo, Japan, assignor to Seikoh Giken Co., Ltd., Matsudo, Japan
Filed Sep. 23, 1992, Ser. No. 949,216
Claims priority, application Japan, Sep. 24, 1991, 3-272124
Int. Cl.[5] G02B 6/36
U.S. Cl. 385—65 **3 Claims**



1. A ribbon type optical fiber connector comprising:
an optical connector plug main body whose transverse section is a trapezoid having a groove of a rectangular transverse section on an upper face of the of the main body in a longitudinal direction, and in a longitudinal direction of a bottom of the groove having V-shaped grooves for aligning a plurality of optical fiber elements,
a plate member of a rectangular transverse section having a groove of a rectangular transverse section in a longitudinal direction of a bottom of the plate member into which a cover portion of the ribbon type optical fiber is inserted, the rectangular groove being connected with the bottom of the member at a slope thereof, and
an alignment sleeve, of rectangular transverse section, having a groove provided in a longitudinal direction with respect to the upper face of the alignment sleeve and into which the optical connector plug main body is pressedly put while contacting two inclined faces of the optical connector plug main body, one of the two inclined faces and the bottom face being made reference faces,
the plate member being engaged at its portion in the rectangular groove of the optical connector plug main body and bonded therewith, ends of the ribbon type optical fibers are inserted from one end of the rectangular groove of the

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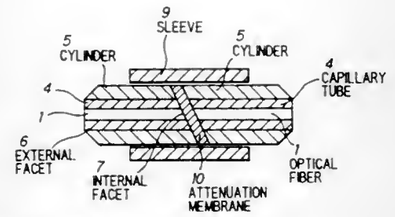
plate member and the fibers of the ribbon type optical fiber being guided into the V-shaped grooves, thus assembling into an integral body, whereby two integral bodies thus assembled are engaged while being faced with each other at the respective end surfaces in the groove of the alignment sleeve.

5,257,335

SINGLE MODE OPTICAL FIBER DEVICE INCLUDING A SHORT LENS OPTICAL FIBER

Kazuhiro Kurata; Koya Komatsu, and Koji Yamamoto, all of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Jan. 23, 1992, Ser. No. 824,078
Claims priority, application Japan, Jan. 23, 1991, 3-021354
Int. Cl.[5] G02B *6/36*
U.S. Cl. 385—78 **4 Claims**



4. An optical attenuator, comprising:

two optical terminal structures each comprising a single mode optical fiber having a short length, and a cylindrical member in which said single mode optical fiber is fixed, said cylindrical member having the co-axis as that of a core of said single mode optical fiber, each of both facets of said cylindrical member being polished to have a mirror surface, and said core and a clad of said single mode optical fiber having refractive indexes so that the normalized frequency in operation state of said single mode optical fiber becomes at most 2.405 as a value converted at a wavelength in use of 1.28 μm; and

an attenuating membrane sandwiched between said two optical terminal structures;

wherein each of said two optical terminal structures has a facet having a predetermined angle to the right angle, and said attenuating membrane is sandwiched on both sides between said facets of said two optical terminal structures.

5,257,336

OPTICAL SUBASSEMBLY WITH PASSIVE OPTICAL ALIGNMENT

Mindaugas F. Dautartas, Alburtis, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 21, 1992, Ser. No. 933,418
Int. Cl.[5] G02B *6/00, 6/36*
U.S. Cl. 385—93 **13 Claims**

1. An optical subassembly comprising

an active optical device;

an optical fiber; and

a lens for providing coupling between said active optical device and said optical fiber

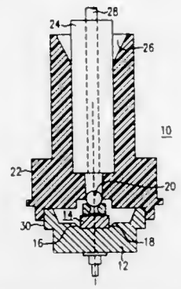
CHARACTERIZED IN THAT

the subassembly further comprises

a first substrate for supporting the active optical device and including a plurality of alignment fiducials disposed at predetermined locations with respect to said active optical device location;

a second substrate, comprising top and bottom major surfaces, the top major surface formed to inculde a plurality of alignment fiducials which align with the first substrate alignment fiducials upon attachment of said second substrate to said first substrate and further including an opening to accommodate said active optical device upon mating, and the bottom major surface including an aperture, aligned with and exposing the top surface opening, the bottom surface aperture for holding the coupling lens;

an optical header for supporting the combination of said first and second substrates and providing electrical connections to said active optical device; and



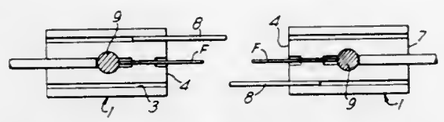
an optical fiber receptacle including an axial bore for accommodating the optical fiber, said receptacle formed to attach to the optical header in a manner such that the coupling lens is captured within the axial bore and the optical fiber is optically aligned with the combination of said first and second substrates.

5,257,337

METHOD OF AND APPARATUS FOR EFFECTING AN END-TO-END FUSION SPLICE BETWEEN OPTICAL FIBRES

Richard Grigsby, Tarvin, and Philip C. Longhurst, Bunbury, both of England, assignors to Bicc Public Limited Company, England

Filed Mar. 2, 1992, Ser. No. 844,517
Claims priority, application United Kingdom, Mar. 8, 1991, 9104951
Int. Cl.[5] G02B *6/38*
U.S. Cl. 385—99 **22 Claims**



18. Apparatus for use in effecting an end-to-end fusion splice between at least one pair of optical fibres, which apparatus comprises a pair of preformed substantially rigid support members each having an open-ended longitudinally extending throughbore and a preformed elongate body having in a surface of the elongate body a longitudinally extending channel in which the support members are sliding fits and are constrained to move towards or away form one another with their throughbores in substantially axial alignment, the throughbore of each support member over at least a part of the length of the throughbore near the end of the throughbore nearer the other support member being of such a diameter that an optical fibre will be a sliding fit therein, the bottom wall of the channel of the elongate body having intermediate of the ends of the elongate body a hole to enable fusion splicing of at least one pair of optical fibres to be effected, the elongate body constituting one part of a preformed sleeve which is divided longitudinally of its length into two separately formed parts, and the elongate body and the other part of the sleeve being so shaped with respect to one another and with respect to the pair of support members that the two parts of the sleeve can be locked together around the pair of support members in such a way that

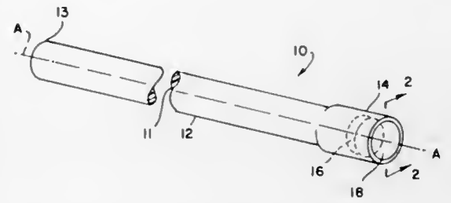
relative lengthwise movement between the support members and the surrounding two-part sleeve is prohibited.

5,257,338

DEVICE FOR TRANSMITTING AND RETURNING LIGHT AND APPARATUS AND METHOD OF MANUFACTURE

David R. Markle, Paoli, Pa., assignor to Biomedical Sensors, Ltd., High Wycombe, England

Filed May 22, 1992, Ser. No. 887,457
Int. Cl.[5] G02B *6/20*
U.S. Cl. 385—125 **12 Claims**



1. A device for transmitting and returning light comprising:

an elongate light transmissive member having an axis along the longitude thereof, which elongate light transmissive member is a flexible polymer fiber having first and second ends substantially normal to the axis for passing light therebetween, and

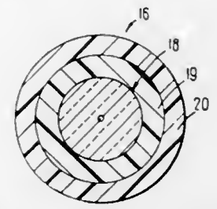
a returner shaped and sized to fit the second end with a face positioned for returning light transmitted through the elongate light transmissive member, the face disposed substantially normal to the axis and embedded within the second end.

5,257,339

PACKAGE OF OPTICAL FIBER SUITABLE FOR HIGH SPEED PAYOUT

Ralph J. Darsey, Lawrenceville, Ga., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 29, 1992, Ser. No. 921,546
Int. Cl.[5] G02B *6/22*
U.S. Cl. 385—128 **5 Claims**



1. A package of optical fiber which is suitable for high speed payout, said package comprising:

means for supporting a mass of convolutions;

a length of optical fiber which is disposed in convolutions and supported by said means, said optical fiber including a light transmitting portion;

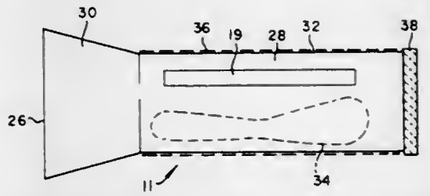
a coating material which is disposed about said light transmitting portion, said coating material being effective to protect said light transmitting portion against microbending and mechanical damage and including a constituent which when cured causes adhesion between the coating material of contiguous convolutions.

5,257,340

LINEAR COATED CORE/CLAD LIGHT SOURCE/COLLECTOR

Martin C. Kaplan, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 1, 1992, Ser. No. 891,895
Int. Cl.[5] G02B *6/02;* **F21V** *7/04;* **G03G** *15/04*
U.S. Cl. 385—128 **37 Claims**



1. A solid, linear, light integrator of the type comprising elongated light integrating means having a port at one end thereof and a light exiting or entrance strip extending along the length thereof for emitting light entering the end port in a line, or admitting light for reflection through the port, the light integrating means further comprising:

a core of transparent light conductive material having a first index of refraction;

a cladding layer covering the core, except in a first elongated strip extending longitudinally and parallel with the axis of the core, of a material having a second index of refraction; and

a coating of diffusely reflective material over the cladding and the first elongated strip and on the end port, except in a second elongated strip extending longitudinally and parallel with the axis of the core, wherein the first and second elongated strips do not overlap one another and are radially displaced from one another and with respect to the axis of the core sufficiently that light entering the second elongated strip and passing through the axis of the core does not directly impinge on the first elongated strip, or light reflected by the coating of diffusely reflective material over the first elongated strip and passing through the axis of the core does not directly exit through the second elongated strip,

whereby light propagates axially down the core by internal reflection off the cladding/core interface, but is diffusely scattered at the coating/core interface of the first elongated strip and at the coating/cladding interface so that light admitted at the end port is scattered and the scattered light escapes through the second elongated strip to provide a line of diffusely scattered light or light admitted through the second elongated strip is collected and directed through the end port.

5,257,341

COMPACT IN-LINE THERMOSTATICALLY CONTROLLED ELECTRIC WATER HEATER FOR USE WITH DENTAL INSTRUMENTS

George K. Austin, Jr., and Andrew G. Schaefers, both of Newberg, Oreg., assignors to A-Dec, Inc., Newberg, Oreg.

Filed Jun. 19, 1992, Ser. No. 901,557
Int. Cl.[5] H05B *1/02;* **F24H** *1/14*
U.S. Cl. 392—487 **9 Claims**

1. A water heater for use with dental equipment, comprising:

a cylindrical inner vessel;

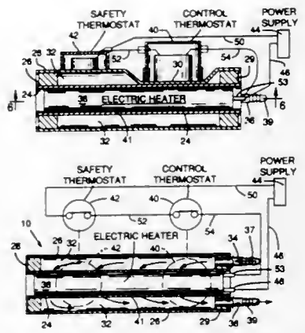
a cylindrical outer vessel dimensioned for receiving said inner vessel in concentrically spaced relationship thereto to define a chamber; said chamber having first and second closed ends, and means defining a fluid inlet and a fluid outlet to said chamber;

a heating device disposed in said inner vessel for heating fluid flowing through said chamber so that fluid flowing

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out through said outlet has a higher temperature than fluid flowing in through said inlet; and

a first thermostat mounted to said outer vessel responsive to a temperature of said vessel operatively connected to said



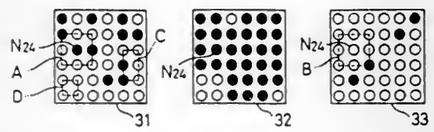
heating device for activating said heating device in response to the temperature of said outer vessel being below a first predetermined temperature, said outer vessel including a flattened area in contact with said inner vessel, said flattened area receiving said first thermostat.

5,257,342

LEARNING METHOD FOR A DATA PROCESSING SYSTEM WITH NEIGHBORHOODS

Sunao Takatori, and Makoto Yamamoto, both of Tokyo, Japan, assignors to Yozan, Inc., Tokyo, Japan

Filed Apr. 3, 1991, Ser. No. 680,117
Claims priority, application Japan, Apr. 4, 1990, 2-88163
Int. Cl.[5] G06F *15/18*
U.S. Cl. 395—23 6 Claims



1. A learning method for transforming an untrained network to a trained network, said network comprising an input layer, a middle layer and an output layer, each said layer including a plurality of neurons, each said neuron being a signal processing element, said middle layer being arranged between said input and output layers wherein each neuron in said middle layer is connected to each neuron in said input and output layers, said method comprising the steps of:

determining an activation pattern of said neurons in said input layer;

determining an activation pattern of said neurons in said output layer;

defining a neighborhood of said neurons in said input and output layers corresponding to a neuron in said middle layer;

determining a rate of activation in said neighborhood of neurons, said rate being the total number of neurons activating in said neighborhood in said input and output layers divided by the total number of neurons in said neighborhood in said input and output layers;

comparing said rate to a threshold value;

determining that said neuron in said middle layer has a tendency to activate when said rate is greater than said threshold value;

increasing the value of weights applied to all neurons in said input layer which are connected to said neuron in said middle layer and weights applied to all neurons in said output layer which are connected to said neuron in said middle layer, in order to increase the likelihood of activation of said neuron in said middle layer; and

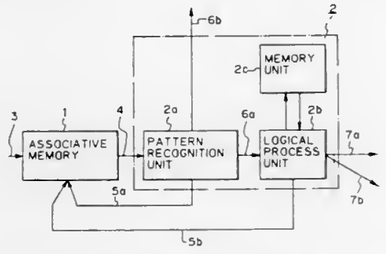
repeating the above steps for each said neuron in said middle layer, thereby generating a desired activation pattern of neurons in said middle layer corresponding to said trained network.

5,257,343

INTELLIGENCE INFORMATION PROCESSING SYSTEM

Kazuo Kyuma; Shuichi Tai; Jun Ohta; Masaya Oita, all of Hyogo; Nagaaki Ohyama, Kanagawa, and Masahiro Yamaguchi, Tokyo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 14, 1991, Ser. No. 744,991
Claims priority, application Japan, Sep. 26, 1990, 259332
Int. Cl.[5] G06F *15/18, 15/347*
U.S. Cl. 395—22 12 Claims



1. An intelligence information processing system using a serial processing-type computer, comprising:

associative memory means comprising a neutral network responsive to input pattern information for providing an associated pattern output;

pattern recognition means disposed in the serial computer and responsive to the associative memory means for evaluating whether the associated pattern output corresponds to correct pattern information;

means, responsive to an evaluation that the associated output pattern does not correspond to correct pattern information, for adding an associative and restrictive condition to an energy function of said neural network and converging said associative pattern output on said correct pattern information;

memory means for storing intelligence information;

logical processing means responsive to the converged associative pattern output for verifying the converged associated pattern output with said intelligence information; and

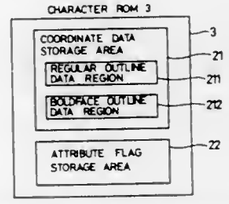
means, responsive to the logical processing means when the converged associative pattern output differs from the intelligence information, for repeatedly adding an associative and restrictive condition to said energy function of said neural network so as to match said converged associative pattern output with said intelligence information.

5,257,344

CHARACTER OUTLINE PROCESSOR USING RELATIVELY SMALL MEMORY STORING COORDINATE DATA GROUPS FOR DIFFERENT OUTLINES OF SAME CHARACTER, AND COMMON ATTRIBUTE FLAG DATA

Ichiro Sasaki, Aichi, and Kazuma Aoki, Kasugai, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Apr. 29, 1992, Ser. No. 875,403
Claims priority, application Japan, May 8, 1991, 3-132000
Int. Cl.[5] G06K *15/00*
U.S. Cl. 395—110 12 Claims



1. A data processing apparatus for processing a batch of outline data representative of outlines of a plurality of characters each consisting of at least one stroke, each of said outlines consisting of a plurality of segments which consist of at least one straight line and/or at least one curved line, said apparatus including outline data memory means for storing said batch of outline data, each of said segments being represented by coordinate data sets representative of coordinate values which define each said segment, and attribute flags indicative of whether each said segment is a straight line or a curved line, wherein the improvement comprises:

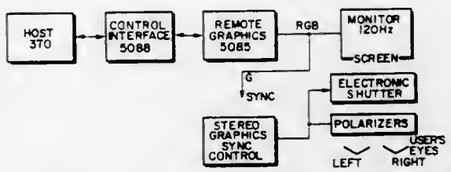
said outline data memory means including a first storage area storing a plurality of groups of coordinate data sets for respective different outlines of each character which define respective different stroke widths of said each character, and a second storage area storing a common group of attribute flags common to said plurality of groups of coordinate data sets.

5,257,345

COMPUTER SYSTEM AND METHOD FOR DISPLAYING FUNCTIONAL INFORMATION WITH PARALLAX SHIFT

Richard L. Malm, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 11, 1990, Ser. No. 522,434
Int. Cl.[5] G06F *5/72*
U.S. Cl. 395—119 2 Claims



2. An apparatus for analyzing functional information of an electrical circuit on a computer, including a memory and a graphic display employing depth perception, comprising:

(a) means for receiving functional information of the electrical circuit into a computer memory;

(b) means for computing a parallax shift for each portion of the functional information;

(c) means for storing the computed parallax shift information;

(d) means for displaying a schematic of a circuit card or chip as a background on the graphic display; and

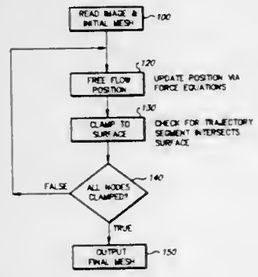
(e) means for displaying the functional information from the computer memory with the appropriate computed parallax shift against the circuit card or chip background on the graphic display.

5,257,346

WIRE-MESH GENERATION FROM IMAGE DATA

William A. Hanson, Mountain View, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 24, 1990, Ser. No. 587,312
Int. Cl.[5] G06F *15/72*
U.S. Cl. 395—125 16 Claims



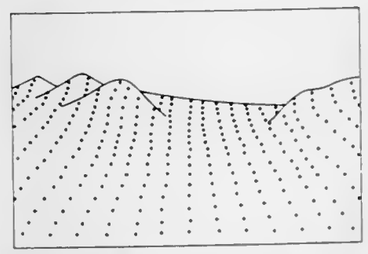
9. The method of claim 8, further comprising the step of storing, using the processor, the wire-mesh data set in a non-volatile storage.

5,257,347

DISPLAY METHODS AND APPARATUS

Michael L. Busbridge, Rochester, and David J. Puleston, Canterbury, both of England, assignors to GEC - Marconi Limited, England

Continuation of Ser. No. 416,543, Oct. 3, 1989, abandoned, which is a continuation-in-part of Ser. No. 20,459, Mar. 2, 1987, abandoned. This application Jun. 6, 1991, Ser. No. 711,667
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—129 12 Claims



1. A method of using data representing a three-dimensional surface to produce a two-dimensional display constituting a perspective view of said surface, comprising the steps of: performing three-dimensional translational and rotational transformations on said data to produce first signals representing the positions in a three-dimensional coordinate system of points in said surface, each said point being spaced in a given direction from a respective intersection of lines of a theoretical regular grid of lines lying in a base plane of the surface; utilizing a transformation algorithm to transform said first signals to display signals representing the positions of said points in a said two-dimensional perspective view of said surface; and using said display signals to produce a said two-dimensional display

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which comprises discrete elements of identical size and shape whose positions are so spaced relative to one another as to correspond to respective said points in said surface thereby to model said surface.

5,257,348

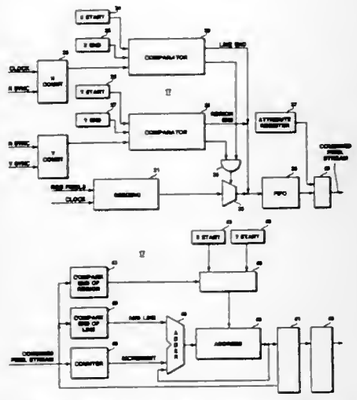
APPARATUS FOR STORING DATA BOTH VIDEO AND GRAPHICS SIGNALS IN A SINGLE FRAME BUFFER

Steven G. Roskowski; Elizabeth A. Clough, both of Menlo Park, and Anthony D. Masterson, Cupertino, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 528,703, May 24, 1990, abandoned. This application Sep. 17, 1992, Ser. No. 947,099

Int. Cl.[5] G06F *3/153*

U.S. Cl. 395—157 **19 Claims**



1. A computer subsystem for a computer system having a central processing unit and a frame buffer capable of presenting both interlaced video and non-interlaced graphic information at a computer output device comprising

means for providing video input signals representing a full frame of video data;

means for selecting those video input signals representing a rectangular portion of the full frame of video input data;

means for converting the video input signals representing the selected rectangular portion of the frame of video data into a stream of digitized pixels; and

means for storing the stream of digitized pixels in a rectangular portion of the frame buffer,

said means for storing including means for selecting said rectangular portion of the frame buffer, said rectangular portion being a selected rectangle of the frame buffer, and means for labelling each pixel position in the selected rectangle of the frame buffer as an area for storing pixels representing said video information and each pixel position outside of any selected rectangle of the frame buffer as an area for storing said graphics information; and

means for presenting the data stored in the frame buffer on output displays handling either interlaced or non-interlaced frames, wherein each of said output displays receives the data stored in the frame buffer, such that both graphic and video information are capable of being displayed on each output display simultaneously.

5,257,349

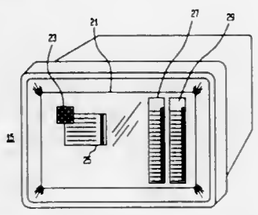
INTERACTIVE DATA VISUALIZATION WITH SMART OBJECT

Joanna R. Alexander, Montgomery Township, Somerset County, N.J., assignor to David Sarnoff Research Center, Inc., Princeton, N.J.

Filed Dec. 18, 1990, Ser. No. 628,872

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395;159 **25 Claims**



1. An interactive method for visualizing a multiplicity of different physical attributes of a data object residing in at least one database in computer memory, said method comprising the steps of:

generating a visual attribute icon on the screen of a display monitor, said visual attribute icon displaying values of a sub-set of said physical attributes in terms of different graphic characteristics;

generating a physical attribute icon for said data object, identifying all of said multiplicity of physical attributes;

displaying said physical attribute icon on the screen of said display monitor;

selecting, from said physical attribute icon, a sub-set of said multiplicity of physical attributes to be displayed in said visual attribute icon;

assigning respectively different graphic characteristics in said visual attribute icon to each member of said selected sub-set; and

displaying values of said selected sub-set of physical attributes in said visual attribute icon in accordance with said assigned graphic characteristics.

5,257,350

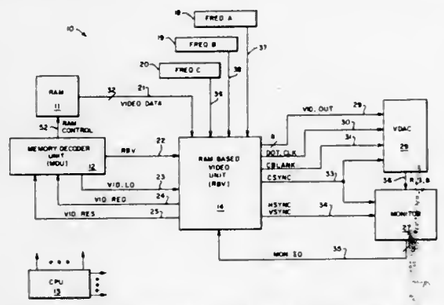
COMPUTER WITH SELF CONFIGURING VIDEO CIRCUITRY

Brian D. Howard, Menlo Park, and Robert L. Bailey, San Jose, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 392,111, Aug. 10, 1989, abandoned. This application Dec. 13, 1991, Ser. No. 807,611

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—162 **7 Claims**



1. A computer configurable to a plurality of monitors, each monitor having a different set of monitor display parameters

required for its use, said computer for displaying video data on said plurality of monitors, said computer comprising:

a central processing unit (CPU) for executing a program to provide video data for display on a given one of said monitors;

a random-access memory (RAM) for storing said video data;

means for transferring said video data from said RAM to said given one monitor for display thereon, said given one monitor providing a signal which identifies said given one monitor;

a register means for decoding said signal and selecting a set of monitor parameters associated with said given one monitor;

a frequency source providing a plurality of frequency references;

dot clock generator means for producing a dot clock signal from said plurality of frequency references in response to said monitor signal, said dot clock signal being compatible with said given one monitor;

video circuitry for producing video display signals to said given one monitor, such that said circuitry being configured by said monitor signal such that video display signals are compatible with said given one monitor.

5,257,351

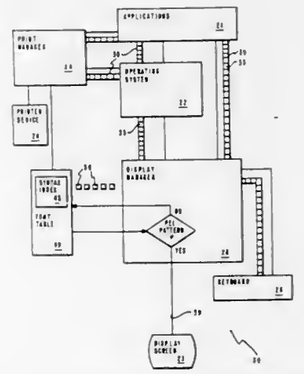
SELECTIVE PROCESSING OF A DATA STREAM BASED ON FONT FORMAT

Anne G. Leonard, and Richard L. Verburg, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 99,469, Sep. 22, 1987, Pat. No. 4,987,550. This application Jul. 16, 1990, Ser. No. 553,470

Int. Cl.[5] G09G *1/00*

U.S. Cl. 395—150 **34 Claims**



1. A processing system for displaying graphical symbols comprising:

means for defining in each one of a plurality of fonts a processing model of one of a plurality of data streams; and

means for concurrently processing the plurality of data streams having at least one different syntax.

5,257,352

INPUT/OUTPUT CONTROL METHOD AND SYSTEM

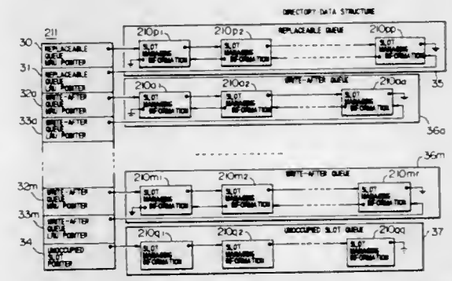
Akira Yamamoto, Sagamihara; Toshiaki Tsuboi, Kawasaki; Takao Sato, Sagamihara; Yoshihiro Asaka, Hiratsuka; Shigeo Honma, Odawara; Shigeru Kishiro, Odawara; Michio Miyazaki, Odawara; Yoshiaki Kuwahara, Odawara, and Hiroyuki Kitajima, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Microcomputer Engineering Ltd., Kodaira, both of Japan

Filed Jul. 5, 1990, Ser. No. 548,228

Claims priority, application Japan, Jul. 5, 1989, 1-171812

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—275 **25 Claims**



1. In a control apparatus connected to a plurality of input and output units and internally provided with a memory divided into a plurality of storage areas, a method of controlling a data input/output operation comprising the steps of:

loading data from said input units into said plurality of storage areas;

storing said data loaded from said input units in said storage areas, said stored data to be output to said output units in response to an output request issued to said output units from a host system;

writing data to corresponding ones of said output units in response to said output request; and

correspondingly grouping those of said storage areas in which said data outputted in response to said output are stored but from which said data has not yet been written to said output units, to a group of said output units to which said data outputted in response to said output request are to be written, thereby allowing each of said respective groups of storage areas to be managed as a writing attribute group.

5,257,353

I/O CONTROL SYSTEM HAVING A PLURALITY OF ACCESS ENABLING BITS FOR CONTROLLING ACCESS TO SELECTIVE PARTS OF AN I/O DEVICE

Greg J. Blanck, Santa Clara, and Rakesh K. Agarwal, Palo Alto, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 722,395, Jun. 19, 1991, Pat. No. 5,146,565, which is a continuation of Ser. No. 469,755, Jan. 3, 1990, abandoned, which is a continuation of Ser. No. 886,918, Jul. 18, 1986, abandoned. This application Jun. 2, 1992, Ser. No. 892,149

The portion of the term of this patent subsequent to Sep. 8, 2009, has been disclaimed.

Int. Cl.[5] G06F *13/20, 13/00*

U.S. Cl. 395—275 **10 Claims**

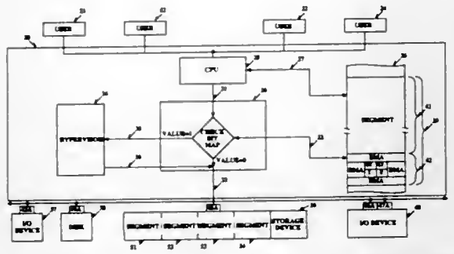
1. A method of operating a digital computer apparatus, wherein said digital computer apparatus performs a plurality of substantially simultaneous tasks, and wherein said digital computer apparatus has a plurality of I/O ports for accessing a plurality of I/O devices and stores for each of said tasks an I/O bit map, where each I/O map contains a plurality of I/O access

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enabling bits corresponding to at least some of said plurality of I/O ports, said method comprising the steps of:

executing an I/O request instruction for accessing a selected one of said I/O devices via a selected one of said I/O ports, said executing step performed by one of said tasks;

accessing one of said I/O bit maps, said one of said I/O bit maps corresponding to said one of said tasks, to determine the content of a plurality of I/O access enabling bits for said selected one of said I/O devices in said one of said



I/O bit maps, wherein each of said I/O access enabling bits is assigned to a corresponding one of said plurality of I/O ports;

permitting access of said selected one of said I/O devices by said one of said tasks if said content of any said plurality of I/O access enabling bits is of a first value; and

prohibiting access of said selected one of said I/O devices by said one of said tasks if said content of all said plurality of I/O access enabling bits is of a second value.

5,257,354

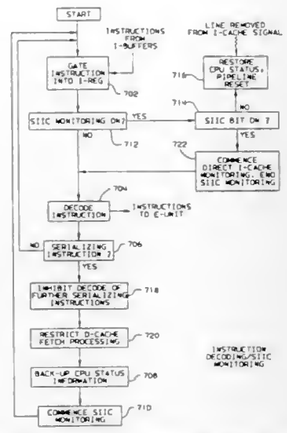
SYSTEM FOR MONITORING AND UNDOING EXECUTION OF INSTRUCTIONS BEYOND A SERIALIZATION POINT UPON OCCURRENCE OF IN-CORRECT RESULTS

Steven T. Comfort, Poughkeepsie; John S. Liptay, Rhinebeck, and Charles F. Webb, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 16, 1991, Ser. No. 641,987

Int. Cl.[5] G06F *11/28, 11/30, 9/30*

U.S. Cl. 395—375 **13 Claims**



9. A method for processing serializing instructions, comprising:

a monitoring step of continuously monitoring validity of data in a cache memory of a central processor;

a decoding step of decoding a serializing instruction;

a status storing step of storing data indicative of a state of the central processor, responsive to decoding of the serializing instruction;

a fetching step of fetching at least one instruction following the serializing instruction; and

a status restoring step of, after the fetching step, restoring the central processor to conditions existing just after the decoding step, when the monitoring step indicates that at least a subset of the data in the cache memory has changed or has been removed during a time interval after a serializing instruction is present in processor data flow up to a point when stores for that serializing instruction have been processed.

5,257,355

METHOD AND APPARATUS FOR GENERATING NON-LINEARLY INTERPOLATED DATA IN A DATA STREAM

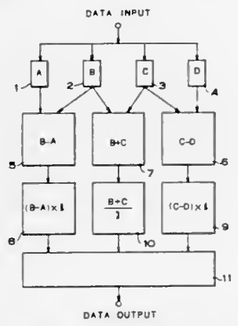
Norio Akamatsu, Tokushima, Japan, assignor to Just Systems Corporation, Tokushima, Japan

Continuation of Ser. No. 371,673, Jun. 23, 1989, abandoned, which is a continuation of Ser. No. 102,637, Sep. 30, 1987. This application May 20, 1992, Ser. No. 885,238

Claims priority, application Japan, Oct. 1, 1986, 61-235084

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—142 **4 Claims**



1. In a computer controlled display device in which an interpolated graphic display image is formed automatically by determining locations of interstitial graphic display pixels of the display device located between a plurality of given graphic display pixels of the display device and then combining the interstitial graphic display pixels and the given graphic display pixels to display the interpolated graphic display image, the improvement comprising:

a memory having graphic point data stored therein, said graphic point data denoting display information for said plurality of given display pixels of said display device;

a hardware implemented parallel processing circuit, coupled to said memory, having hardware configured to receive first, second, third and fourth graphic point data from said memory, said first, second, third and fourth graphic point data respectively denoting first, second, third and fourth display pixel locations of said display device, to conduct a first bit-shifting operation to obtain a first 4-bit-shifted difference of said first graphic point data from said second graphic point data, to conduct a second bit shift operation to obtain a second 4-bit-shifted difference of said fourth graphic point data from said third graphic point data, to conduct a third bit-shifting operation to obtain a one-bit-shifted summation of said second graphic point data and said third graphic point data, and to conduct a summation

of said first 4-bit-shifted difference and said second 4-bit-shifted difference and said one-bit-shifted summation to obtain interstitial graphic point data, said interstitial graphic point data denoting an interstitial display pixel of said display device located in an interval between said second and third display pixels.

5,257,356

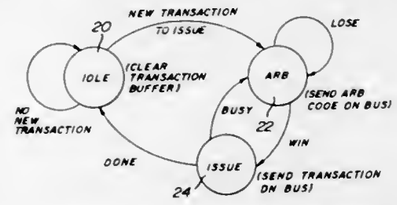
METHOD OF REDUCING WASTED BUS BANDWIDTH DUE TO SLOW RESPONDING SLAVES IN A MULTIPROCESSOR COMPUTER SYSTEM

Russell C. Brockmann; William S. Jaffe, and Leith Johnson, all of Fort Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 28, 1991, Ser. No. 705,873

Int. Cl.[5] G06F *13/36*

U.S. Cl. 395—725 **15 Claims**



I. In a computer system having a plurality of master devices (masters) that communicate with a plurality of slave devices (slaves) over a shared bus, and wherein masters having operations to be conducted by slaves arbitrate to win bus control to permit a winning master to communicate with a selected one of the slaves, a method of reducing wasted bus bandwidth resulting from slow responding slaves, said method comprising the steps of:

a) issuing from the winning master to the selected slave a request for service to be performed by the selected slave;

b) signalling the winning master from the selected slave, when the selected slave is either unavailable to service the request or unable to complete the request within a first predetermined time period, that the winning master should relinquish control of the bus;

c) relinquishing control of the bus from the winning master in response to the signalling from step (b), the winning master becoming a relinquished master;

d) arbitrating for bus control at the selected slave, on the relinquished master's behalf, when the selected slave either becomes available to service the request issued in step (a) or has completed the request issued in step (a); and,

e) detecting at the relinquished master that the selected slave has arbitrated for bus control on the relinquished master's behalf, and, in response, arbitrating for bus control at the relinquished master, the relinquished master, upon obtaining bus control, reissuing to the selected slave the request previously issued in step (a);

the bus thereby being available for communications between other masters and slaves during times that selected slaves are busy or cannot service requests within the first predetermined time period.

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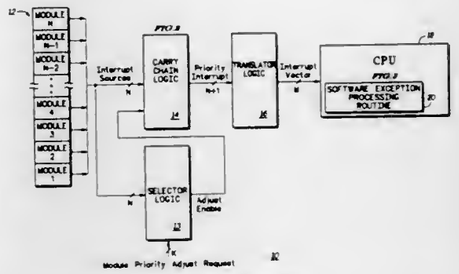
METHOD AND APPARATUS FOR IMPLEMENTING A PRIORITY ADJUSTMENT OF AN INTERRUPT IN A DATA PROCESSOR

Oded Yishay; Eytan Hartung, both of Austin, Tex., and David Shamir, Tel-Aviv, Israel, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 22, 1991, Ser. No. 644,142

Int. Cl.[5] G06F *13/00, 13/24*

U.S. Cl. 395—725 **13 Claims**



1. A digital data processor comprising:

a central processing unit having an input;

a plurality of modules, each of the plurality of modules having an output for providing a priority level signal specifying a priority level of the module;

first logic means having a first input coupled to the output of each of the plurality of modules and having a second input for receiving a module priority adjust signal which specifies a particular priority level, the first logic means having an output for providing an adjust enable signal if the first input receives a priority level signal from one of the plurality of modules which corresponds to the particular priority level specified by the module priority adjust signal; and

second logic means having a first input coupled to the output of each of the plurality of modules and a second input coupled to the output of the first logic means, the second logic means having an output for providing an interrupt vector to the input of the central processing unit, the interrupt vector corresponding uniquely to the priority level of a one of the plurality of modules which is presently requesting an interrupt and which has a highest priority level of all the modules presently requesting an interrupt when the adjust enable signal is not asserted, the interrupt vector indicating that the priority level of one of the plurality of modules has been adjusted when the adjust enable signal is asserted, the interrupt vector not corresponding to the priority level of any of the plurality of modules when the adjust enable signal is asserted.

5,257,358

METHOD FOR COUNTING THE NUMBER OF PROGRAM INSTRUCTION COMPLETED BY A MICROPROCESSOR

Paul E. Cohen, Hopkinton, Mass., assignor to NEC Electronics, Inc., Mountain View, Calif.

Continuation of Ser. No. 339,770, Apr. 18, 1989, abandoned. This application Nov. 20, 1992, Ser. No. 979,347

Int. Cl.[5] G06F *1/04, 9/26, 9/30, 9/40*

U.S. Cl. 395—375 **5 Claims**

5. A system for executing computer program instructions including:

a control register having an execution level bit and a count trap enable bit;

a decoder, operatively coupled to said execution level bit in said control register, having an input line coupled to said execution level bit and an output line wherein an output

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signal on said output line of said decoder has a first level upon said execution level bit being set and a second level otherwise;

a control unit having a force exception input line and an instruction complete output line wherein:

said control unit has a normal mode of operation and an exception mode of operation;

said control unit executes said computer program instructions in said normal mode of operation and upon completion of execution of each computer program instruction generates an instruction complete signal on said instruction complete output line; and

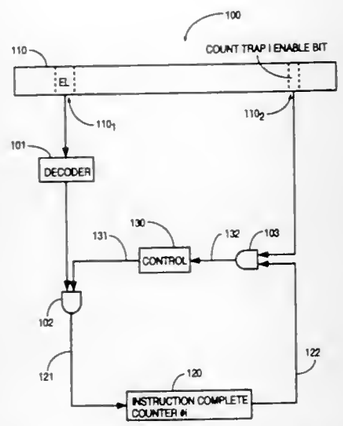
said control unit enters said exception mode of operation upon receiving a signal on said force exception input line;

a first logic gate having first and second input terminals and an output line wherein:

said first input terminal is connected to said decoder output line;

said second input terminal is connected to said control unit instruction complete output line; and

said first logic gate generates an active signal on said output line in response to said decoder first level signal



on said first terminal in combination with an instruction complete signal on said second input terminal;

a counter having an input line and an output line wherein:

said counter input line is connected to said first logic gate output line;

said counter changes value in response to said active output signal of said first logic gate; and

said counter generates a signal on said counter output line upon the value of said counter equaling a predetermined value; and

a second logic gate having first and second input terminals and an output line wherein:

said first input terminal is connected to said count trap enable bit;

said second input terminal is connected to said counter output line; and

said output line is connected to said force exception line of said control unit

wherein said second logic gate generates a signal on said output line of said second logic gate in response to said count trap enable bit being set in combination with said output signal from said counter and in response, to said second logic gate output signal, said control unit enters said exception mode of operation.

5,257,359

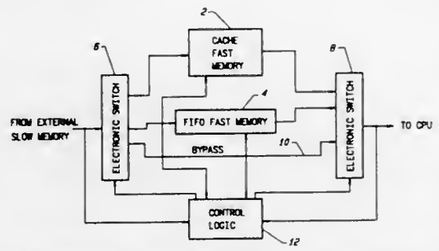
INSTRUCTION CACHE BUFFER WITH PROGRAM-FLOW CONTROL

Richard Blasco, Auburn; Basant Khaitan, Palo Alto; Tony J. Chiang, and Tahir Sheikh, both of Fremont, all of Calif., assignors to Hitachi Microsystems, Inc., San Jose, Calif.

Continuation of Ser. No. 764,981, Sep. 23, 1991, abandoned, which is a continuation of Ser. No. 308,139, Feb. 8, 1989, abandoned. This application Jul. 7, 1992, Ser. No. 908,803

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—425 **22 Claims**



I. An intelligent program-flow controlled memory buffer for buffering program instructions from an external memory made up of relatively slow speed memory elements to a processor which operates at relatively high speeds, said program-flow controlled memory buffer comprising:

at least one cache memory made up of relatively high speed memory elements;

at least one first-in-first-out memory made of relatively high speed memory elements, said first-in-first-out memory being substantially smaller than said cache memory;

a direct program instruction path;

means for writing program instructions from said external memory selectively to one of said cache memory, said first-in-first-out memory, and said direct program instruction path, in response to a first control signal;

means for reading said program instructions selectively from one of said cache memory, said first-in-first-out memory, and said direct program instruction path, to said processor in response to a second control signal; and

control means for sensing a condition of each of a predetermined plurality of indicia of said program instructions to determine what type of instruction is currently being prefetched and based on predetermined rules and said condition of each of said predetermined plurality of indicia of said program instructions being transferred for selecting a processor program instruction buffering path for a particular processor program by dynamically generating said first and second control signals, said first control signal having first characteristics that depend on said program instructions, said second control signal having second characteristics that depend on said program instructions, said first and said second characteristics indicating to said means for writing and said means for reading respectively, which one of said cache memory, said first-in-first-out memory, or said direct program instruction path is selected.

5,257,360

RE-CONFIGURABLE BLOCK LENGTH CACHE

Paul G. Schnizlein, and Donald M. Walters, Jr., both of Austin, Tex., assignors to Advanced Micro Devices,Inc., Austin, Tex.

Filed Mar. 23, 1990, Ser. No. 497,967

Int. Cl.[5] G06F *12/00, 12/06;* **G11C** *8/00*

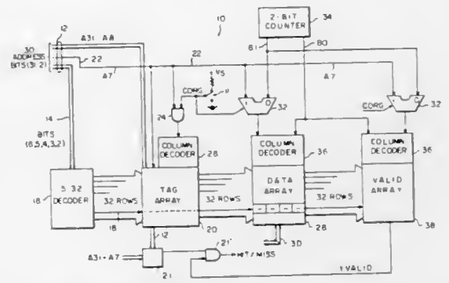
U.S. Cl. 395—425 **6 Claims**

1. A cache comprising:

cache memory storage means for storing a plurality of data words such as instruction words;

means for receiving a cache organization signal; and

selecting means responsive to said cache organization signal and connected to said cache memory storage means for selecting between a first cache organization defining blocks of memory in said cache memory storage means having a first number of data words per block and a second cache organization defining blocks of memory in said cache memory storage means having a second number of data words per block, said second number being different than said first number and said data words having a constant word length, said selecting means including



a counter providing a plurality of output signals;

a multiplexer connected to receive at least some of said counter output signals and connected to receive said cache organization signal as a select signal thereto, said multiplexer producing an output signal; and

a decoder connected to receive said output signal from said multiplexer and connected to said cache memory storage means to access said data words in said first and second cache organizations.

5,257,361

METHOD AND APPARATUS FOR CONTROLLING ONE OR MORE HIERARCHICAL MEMORIES USING A VIRTUAL STORAGE SCHEME AND PHYSICAL TO VIRTUAL ADDRESS TRANSLATION

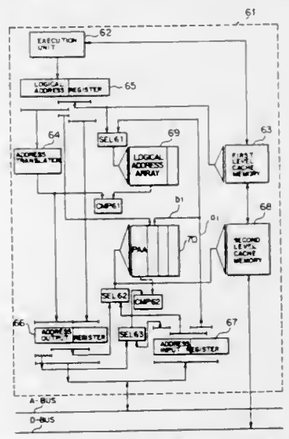
Toshio Doi, Kokubunji; Takeshi Takemoto, Sagamihara, both of Japan, and Yasuhiro Nakatsuka, Palo Alto, Calif., assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 26, 1990, Ser. No. 603,620

Claims priority, application Japan, Oct. 30, 1989, 1-282664

Int. Cl.[5] G06F *12/00, 12/08, 12/10*

U.S. Cl. 395—425 **14 Claims**



1. A processing system including an execution unit operative on the basis of a virtual storage scheme and a cache memory having entries designated by logical addresses from said execution unit, comprising:

a first address array having entries designated by the same logical addresses as said cache memory and storing first control information indicating whether each entry of the cache memory is valid;

a second address array having entries designated by physical addresses and storing at each entry partial physical address information indicating a part of a physical address which is not used for designating the entry, translation information for translating a physical address into a logical address and second control information indicating whether the entry of said cache memory is valid;

logical address providing means cooperatively coupled to said first address array and said second address array and responsive to inputting of a physical address at which invalidation is performed in response to an invalidation request to said cache memory for providing a logical address of an entry to be invalidated when the inputted physical address matches partial physical address information of any entry in said second address array and the matched entry is determined to be valid based on said second control information; and

means for supplying said logical address to said first address array for making access thereto to perform an invalidation processing on said first control information for a relevant entry in said first address array.

5,257,362

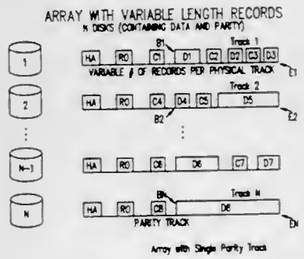
METHOD AND MEANS FOR ENSURING SINGLE PASS SMALL READ/WRITE ACCESS TO VARIABLE LENGTH RECORDS STORED ON SELECTED DASDS IN A DASD ARRAY

Jaishankar M. Menon, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 8, 1991, Ser. No. 666,289

Int. Cl.[5] G06F *11/10*

U.S. Cl. 395—425 **6 Claims**



1. In a system comprising an array of N DASDs for storing records in row major order on counterpart tracks of N−1 of said DASDs and for storing a parity image of the counterpart tracks on the Nth DASD of said array, and a control unit responsive to externally supplied read or write requests for accessing records on said array,

a method for write updating selected ones among a set of variable length records sorted on DASD tracks, each record including at least a count field and a variable length data field, the fields within a record and between records on each DASD track being spaced apart by a predetermined track extent termed a "gap", any arbitrarily addressable DASD track being denominated as an "ith track", comprising the steps by said control unit of:

(a) generating a byte level exclusive OR simple parity image of the fields and gaps included within each of the variable length records from each counterpart ith track across N−1 DASDs, and, storing said image on an ith track of the Nth DASD, each gap being coded as an arbitrary constant value (000); and

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(b) responsive to each write request to a record stored on a selected DASD,

(1) establishing a byte position offset of the record to be modified on the ith track of the selected DASD and the record identify within the parity image on the ith track of the Nth DASD,

(2) obtaining and modifying said record from the ith track of the selected DASD and parity from the ith track of the Nth DASD, said parity being modified as the exclusive OR image of the old record, the record modification, and the old parity; and

(3) rewriting said modified record and parity back to the ith track on the selected and Nth DASDs respectively.

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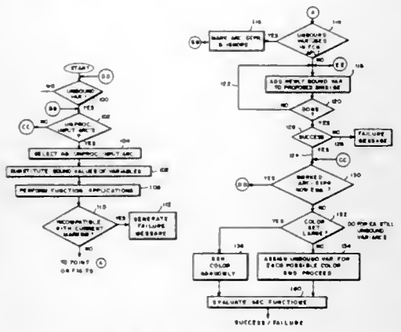
COMPUTER-AIDED GENERATION OF PROGRAMS MODELLING COMPLEX SYSTEMS USING COLORED PETRI NETS

Robert M. Shapiro, Cambridge; Jawahar Malhotra, Waltham, both of Mass.; Kurt Jensen, Hojbjerg; Soren Christensen, Arhus, both of Denmark, and Peter Huber, Cambridge, Mass., assignors to Meta Software Corporation, Cambridge, Mass.

Filed Apr. 9, 1990, Ser. No. 507,119

Int. Cl.[5] G06F *15/20*

U.S. Cl. 395—500 **2 Claims**



1. In a method for using a digital computer to generate, responsive to graphical input, a computer program constituting an executable model of a system represented by a plurality of Petri nets which in turn are represented to the computer as one or more data bases of known structure, each Petri net being assembled from places, transitions, arcs, arc-expressions which are related in terms of variables, arc inscriptions, tokens and other constituent elements, each such constituent element being represented in the data bases by appropriate computer program code, said model being executable to allow both analysis and simulation of said system, the steps of operating the computer to:

a. determine whether there are any unbound variables in the nets and, if not, proceeding with step j, but otherwise proceeding with step b;

b. determine whether there are any unprocessed input arcs and, if not, skipping to step g;

c. select an unprocessed input arc;

d. substitute for all bound variables occurring in an input arc-expression corresponding to the selected input arc the values to which those variables are bound;

e. perform any function applications that may now be carried out;

f. pattern-match said input arc-expression against each of the tokens in a current marking of a selected input place associated with the corresponding selected input arc, and

(i) if any constants and/or already bound variables in the arc-expression are incompatible with the current marking, to return a failure message, and continue processing with step b but treating a previously bound variable as now unbound,

(ii) if the arc-expression contains function applications (including infix operators) which cannot yet be evaluated due to the presence of unbound variables, to mark and ignore the arc-expression, and continue processing with step b,

(iii) if the pattern match succeeds, to add newly bound variables to a proposed binding, recursively calling steps b–f for each matchable value and for each match found, to return a success message and continuing with step g, but otherwise to return a failure message and return to step a;

g. check each marked arc-expression to determine if it is now evaluable and, if so, to branch to step a and repeating steps a–f until there are no more unbound variables or no more evaluable arc expressions;

h. determine, if there are no evaluable marked arc-expressions, for each still-unbound variable, whether the variable (a) only occurs in output arc expressions or (b) occurs in input arc expressions that are marked and remain unevaluable;

i. generate for the latter, if the variable is of a color set (i.e. type) with only a small number of values, a possible binding as if there had been a match, and if the variable is of a large color set, to generate a possible value by a random selection; and

j. evaluate arc functions.

5,257,364

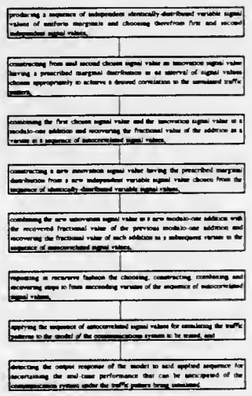
METHOD FOR GENERATING A CORRELATED SEQUENCE OF VARIATES WITH DESIRED MARGINAL DISTRIBUTION FOR TESTING A MODEL OF A COMMUNICATIONS SYSTEM

Benjamin Melamed, Warren, and David Jagerman, Crawford, both of N.J., assignors to NEC Research Institute, Inc., Princeton, N.J.

Filed Sep. 12, 1990, Ser. No. 581,522

Int. Cl.[5] G06F *15/31, 15/336, 15/48, 7/58*

U.S. Cl. 395—500 **3 Claims**



1. A computer-implemented method for testing a model of a communications system by applying a simulated traffic pattern having a desired correlation and detecting a response to such application, the method comprises the steps:

producing a sequence of independent identically-distributed variable signal values of uniform marginals and choosing therefrom first and second independent signal values,

constructing from said second chosen signal value an innovation signal value having a prescribed marginal distribution in an interval of signal values chosen appropriately to achieve a desired correlation in the simulated traffic pattern,

combining the first chosen signal value and the innovation signal value in a modulo-one addition and recovering the fractional value of the addition as a variate in a sequence of autocorrelated signal values,

constructing a new innovation signal value having the prescribed marginal distribution from a new independent variable signal value chosen from the sequence of identically-distributed variable signal values,

combining the new innovation signal value in a new modulo-one addition with the recovered fractional value of the previous modulo-one addition and recovering the fractional value of such addition as a subsequent variate in the sequence of autocorrelated signal values,

repeating in recursive fashion the choosing, constructing, combining and recovering steps to form succeeding variates of the sequence of autocorrelated signal values,

applying the sequence of autocorrelated signal values for simulating the traffic patterns to the model of the communications system to be tested, and

detecting the output response of the model to said applied sequence for ascertaining the real-time performance that can be anticipated of the communication system under the traffic pattern being simulated.

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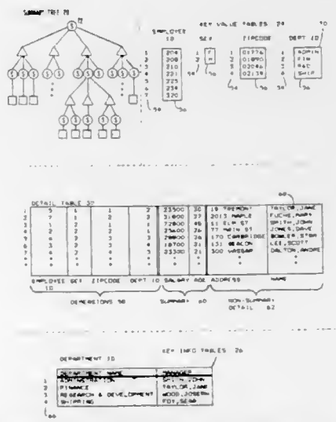
DATABASE SYSTEM WITH MULTI-DIMENSIONAL SUMMARY SEARCH TREE NODES FOR REDUCING THE NECESSITY TO ACCESS RECORDS

Frederick A. Powers, 131 Longfellow Rd., Sudbury, Mass. 01776, and Stanley R. Zanarotti, 170 Gore St. #302, Cambridge, Mass. 02141

Filed Mar. 16, 1990, Ser. No. 495,360

Int. Cl.[5] G06F *15/40*

U.S. Cl. 395—600 **10 Claims**



1. A database management system comprising:

a memory for storing data structures, including

a detail table means for storing a plurality of records, each of the plurality of records being addressable by record pointers and including dimension fields and summary fields, the dimension fields including dimension values, and the summary fields including numeric information;

a summary table means including summary nodes for storing summary information of the summary fields for summary sets of the plurality of records;

a detail index means including detail index nodes for storing the record pointers for index sets of the plurality of records, wherein

each index set of the plurality of records includes

a plurality of records having a common combination of dimension values for the associated dimension fields, and wherein

each summary set of the plurality of records includes

a plurality of index sets having a common combination of dimension values for the associated dimension fields;

a dimension node means for storing information identifying the summary table means and the detail index means;

an input means for providing an input set of dimension values for identifying a desired set of the plurality of records;

a processor means connected to the memory and from the input means for accessing the memory and performing operations upon data structures; and

a control means connected to the processor means for controlling operations of the processor means,

the control means including,

a search means connected from the processor means and responsive to the input set of dimension values for

directing the processor means to read the dimension node means to identify the summary table means and the detail index means, and

responsive to the identifications of the summary table means and the detail table means,

directing the processor means to search

the summary table means to find a summary node having a set of dimension values corresponding to the input set of dimension values or

the detail index means to find an index set having a set of dimension values corresponding to the input set of dimension values

and to provide as an output

the summary values stored in a summary node having a set of dimension values corresponding to the input set of dimension values, or

a record pointer for an index set having a set of dimension values corresponding to the input set of dimension values;

a gather means connected from the processor means and responsive to a record pointer provided as an output by the processor means for directing the processor means to read the index set of records and provide as an output

the records of the index set of records identified by the record pointers contained in the detail index means found by the processor means;

a summarize means connected from the processor means and responsive to the records of the index set of records provided by the processor means for directing the processor means to extract summary information from the records of the index set of records read by the processor means; and,

a display means

connected from the processor means and responsive to

the summary values stored in a summary node having a set of dimension values corresponding to the input set of dimension values or

the summary information extracted from the records of the index set of records

for directing the processor means to generate an output presenting

the summary values stored in a summary node having a set of dimension values corresponding to the input set of dimension values, or

the summary information extracted from the records of the index set of records.

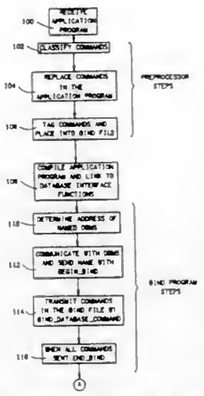
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5,257,366

QUERY LANGUAGE EXECUTION ON HETEROGENEOUS DATABASE SERVERS USING A BIND-FILE BRIDGE BETWEEN APPLICATION AND DATABASE LANGUAGES

John G. Adair, Austin, Tex.; Richard A. Demers, Rochester, Minn.; Dusan Ecimovic, Orinda, Calif.; Robert J. Grafe, Austin, Tex.; Robert D. Jackson; Bruce G. Lindsay, both of San Jose, Calif.; Michael E. Murphy, Durham, N.C.; Roger A. Reinsch, Cupertino, Calif.; Robert P. Resch, Byron; Richard R. Sanders, Rochester, both of Minn.; Patricia G. Selinger, San Jose, Calif.; Robert L. Sunday, Sharon, Canada, and Melvin R. Zimowski, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 27, 1990, Ser. No. 500,032
Int. Cl.[5] G03F *9/44, 15/20*
U.S. Cl. 395—600 13 Claims



1. A method for accessing a server database in a database computing system in response to a request by an application program executing in an application computing system which is separate and remote from, and which uses a different language than, the database computing system, wherein a communications facility is connected to the application computing system and to the database computing system and the application computing system, and wherein the application computing system includes access means for providing application programs executing at the application computing system with an interface to the database computing system, the access means including:

preprocessor means for analyzing application programs which are in a first computing language native to the application computing system and which contain database commands in a second computing language native to the database computing system;

bind means for binding database commands at the database computing system to the application computing system; and database interface means for invoking execution of database commands at the database computing system;

the method comprising the steps of:

(a) using the access means at the application computing system, extracting database commands written in the second computing language from the application program, removing said database commands from the application program and inserting into the application program requests in the first computing language for execution of said database commands;

(b) using the bind means at the application computing system, placing the database commands in a bind file and transmitting said database commands in said bind file to the database computing system;

(c) at said database computing system, binding said database commands in said bind file to the application program;

(d) at said application computing system, compiling the application program, linking the application program to the database interface means, and executing the application program;

(e) during execution of the application program, transmitting a request for execution of a database command from the application computing system to the database computing system; and

(f) obtaining the database command from the bind file at the database computing system in response to the request for execution; and

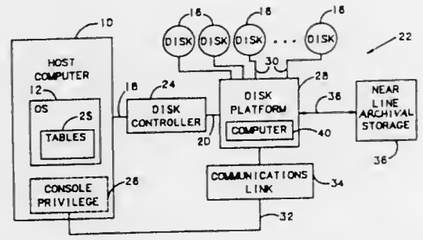
(g) executing the database command at the database computing system.

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DATA STORAGE SYSTEM WITH ASYNCHRONOUS HOST OPERATING SYSTEM COMMUNICATION LINK

Theodore J. Goodlander; Raul Kacirek, both of Nashau, N.H.; Andras Sarkozy, Milton, Mass.; Tamas Hetenyi, and Janos Selmeczi, both of Concord, Mass., assignors to Cab-Tek, Inc., Nashua, N.H.

Continuation-in-part of Ser. No. 317,048, Feb. 27, 1989, Pat. No. 4,942,579, which is a continuation of Ser. No. 57,346, Jun. 2, 1987, abandoned. This application Jul. 17, 1990, Ser. No. 554,127
Int. Cl.[5] G06F *13/12*
U.S. Cl. 395—600 29 Claims



1. In a computer system including a host computer (**10**) connected to access a plurality of data storage units (**16,36**) and including an operating system (**12**) having tables of file locations (**25**) of data stored on said data storage units, the improvement comprising:

a) data storage unit access control means (**28**) connected between the host computer (**10**) and the plurality of data storage units (**16,36**), for receiving read and write requests from the host computer, said read and write requests including data file manipulation commands and associated data file storage locations, for reading and writing data from and to the plurality of data storage units, and for transferring data to and from the host computer;

b) host computer link means (**18,24,20**), connected between said data storage access control means (**28**) and said host computer (**10**), for establishing a first read and write request data path between said host computer and said data storage access control means, for providing said data storage access control means (**28**) with said read and write requests from said host computer (**10**), and for transferring data to and from said host computer (**10**);

c) host computer operating system communications link means (**34,32**), connected between said data storage unit access control means (**28**) and a console privilege interface (**26**) to the host computer operating system (**12**), for establishing a second read and write request data path between said host computer and said data storage access control means, for obtaining and providing said data storage unit access control means (**28**) with data file manipulation commands from said operating system (**12**) and associated data file storage locations from said operating system tables of file locations (**25**) of data stored on said data storage units (**16,36**), said data file manipulation commands for directing said data storage units to manipulate predetermined data stored in said data file storage locations associated with said data file manipulation commands; and,

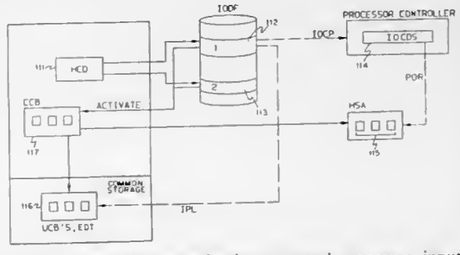
d) computational logic means (**40**) contained in said data storage unit access control means (**28**) and responsive to at least said data file manipulation commands and associated data file storage locations received over said host computer operating system communications link means (**34,32**), for providing data storage unit command signals directing said data storage units to manipulate said predetermined data stored in said data file storage locations associated with said data file manipulation commands asynchronously with and independent of said read and write requests from said host computer over said first read and write request data path established by said host computer link means (**18,24,20**), whereby the host operating system provides transparency about data file manipulation commands to user programs operating within the host computer and reading and writing data to and from the plurality of data storage units over said host computer link means (**34,32**).

5,257,368

SYSTEM FOR DYNAMICALLY CHANGING A SYSTEM I/O CONFIGURATION BY DETERMINING DIFFERENCES BETWEEN CURRENT AND FUTURE CONFIGURATIONS AND DESCRIBING DIFFERENCES TO SOFTWARE AND HARDWARE CONTROL BLOCKS

S. Michael Benson, Highland; Richard Cwiakala, Wappingers Falls; Mark J. Fantacone; Jeffrey D. Haggar, both of Poughkeepsie; Dennis D. Koren, Fishkill; Allan S. Merritt, Poughkeepsie, all of N.Y.; Michael Schulte, Tübingen, Fed. Rep. of Germany, and Harry M. Yudenfriend, Wappingers Falls, N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Mar. 28, 1991, Ser. No. 676,603
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—600 6 Claims



1. In a computer system having a central processor, input-/output units in an input/output subsystem attached to the central processor, and an operating system, a system for dynamic reconfiguration of one or more of said input/output units comprising:

A) definitional means for creating, on a configuration definitional file, one or more configuration instances, each configuration instance representing an associated configuration of said one or more of said input/output units;

B) a current configuration instance, created by said definitional means, and representing a first associated configuration;

C) a future configuration instance, created by said definitional means, and representing a second associated configuration;

D) system initialization means for creating, for said current configuration instance, one or more dynamically changeable software control blocks describing the first associated configuration to the operating system;

E) hardware initialization means for creating, from said current configuration instance, one or more dynamically changeable hardware control blocks describing the first associated configuration to the input/output subsystem;

F) activate means for creating from said current configuration instance and said future configuration instance, a configuration change block describing changes to be made to said software control blocks and said hardware control blocks when changing from said first associated configuration to said second associated configuration; and

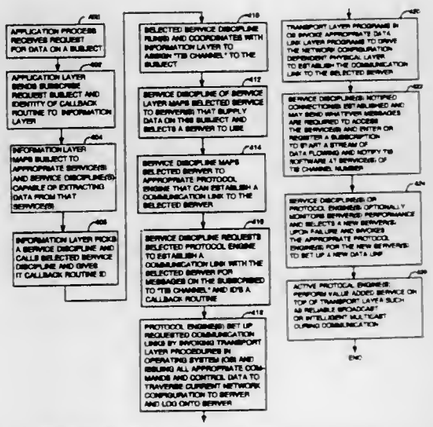
G) dynamic actuation means for creating, from said configuration change block, changes to said hardware control blocks and said software control blocks so that, if said creating changes is successful, said software control blocks describe the second associated configuration to the operating system, and said hardware control blocks describe the second associated configuration to the input-/output subsystem and if said creating changes is not successful, a change creation error indication is set.

5,257,369

APPARATUS AND METHOD FOR PROVIDING DECOUPLING OF DATA EXCHANGE DETAILS FOR PROVIDING HIGH PERFORMANCE COMMUNICATION BETWEEN SOFTWARE PROCESSES

Marion D. Skeen, 3826 Magnolia Dr., Palo Alto, Calif. 94306, and Mark Bowles, 30 Tripp Ct., Woodside, Calif. 94062

Filed Oct. 22, 1990, Ser. No. 601,117
Int. Cl.[5] G06F *15/16, 15/62*
U.S. Cl. 395—650 27 Claims



5. An apparatus for coupling data between processes running in a computing environment, comprising:

one or more data consuming processes programmed into said at least one computer and having therein at least one software routine for generating a subscription request for data on a particular subject;

one or more service processes programmed into one or more of said at least one computer, each having an associated communication protocol and each for supplying data on a particular subject or group of subjects when in execution on said at least one computer;

one or more data exchange media such as shared memory, and/or shared distributed memory, and/or local area networks and/or wide area networks coupling processes in execution on said at least one computer together;

one or more service discipline programs programmed into said at least one computer;

one or more subject-based addressing programs programmed into said at least one computer and coupled at least to said data consuming and service processes for

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execution on said at least one computer, for receiving subscribe requests from said data consuming processes, each subscribe request requesting data on a particular subject, said subject-based addressing programs including means programmed into said at least one computer having data consuming processes in execution thereon for mapping the subject of each said subscribe request to the network address and/or identity of one or more of said service processes which supply data on said subject and to a service discipline program capable of communicating with said service process with the appropriate communication protocol, and for generating a link request to establish a communication link per subscribe request to at least one service process on each said subject with said communication link being established with at least some of the service processes identified in the mapping process, said service discipline programs which are programmed into a computer on which a service process is in execution including means for recording said subscribe requests received by said at least one computer on a list of active subscriptions, and for making available for communication over said data exchange media all data available from said service process relevant to said active subscription whenever data on the subject of said active subscription is published to the service process and for continuing to supply said data until said subscription is cancelled;

each said service discipline program including means programmed into said at least one computer upon which a data consuming process is in execution for receiving said one or more link requests to establish a communication link on each said subject with a particular service process, and for accessing the desired data by establishing a communication link to the service process identified by the subject based addressing program and sending a subscription request to said service discipline program coupled to said service process or processes identifying the subject on which data is requested and including information regarding where to send the requested data, said communication link and transmission of the subscription request being accomplished using appropriate access and communication protocols for traversing the appropriate data exchange media and for logging onto the service process which will supply the requested data so as to establish a subscription for data on each said subject with the appropriate service process or processes, said service discipline programs for continuing to assist in passing data on each said subject for which there is an active subscription to the appropriate data consuming process that originated the subscription request and filtering out all data published by said service process which is not on a subject for which there is an active subscription until said subscription request on said subject is canceled.

5,257,370

METHOD AND SYSTEM FOR OPTIMIZING DATA CACHING IN A DISK-BASED COMPUTER SYSTEM

James G. Letwin, Kirkland, Wash., assignor to Microsoft Corporation, Redmond, Wash.

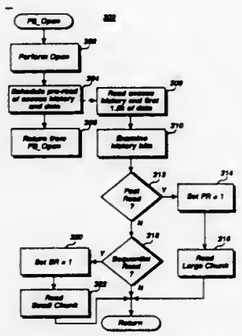
Filed Aug. 29, 1989, Ser. No. 401,315
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—650 **11 Claims**

1. A method, performed by a computer having a cache, for caching data from a file stored on disk, the method comprising the steps of;

monitoring, upon opening the file, file access behavior in reading data from the file;

maintaining, upon closing the file, access information corresponding to the file indicating the file access behavior monitored;

obtaining, upon reopening the file, the access information maintained; and



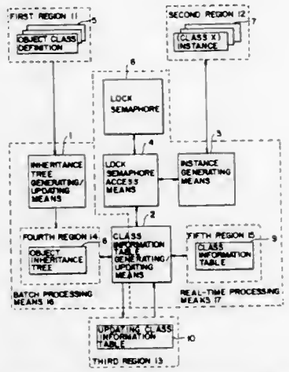
reading an amount of the data from the file into the cache, the amount based on the access information obtained.

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SYSTEM PACKAGING OBJECT CLASS DEFINING INFORMATION

Akihiro Anezaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 6, 1991, Ser. No. 650,575
Claims priority, application Japan, Feb. 6, 1990, 2-28106
Int. Cl.[5] G06F *9/44*
U.S. Cl. 395—650 **7 Claims**



1. A computerized installing system for installing object class defining information in a network management system, said computerized installing system comprising:

a first storage region for storing a plurality of object class definitions;

a second storage region for storing instances of a class for which generation is requested;

a third storage region for storing an updating class information table;

batch processing means for generating/updating contents of said third storage region by batch processing by using contents of said first storage region;

real time processing means for generating/updating contents of said second storage region by using contents of said third storage region, said real time processing means including

a fifth storage region for storing a class information table, said class information table including characteristics of a particular class including characteristics inherited by said particular class and

instance generating means for generating/updating contents of said second storage region by using contents of said fifth storage region; and

class information table generating/updating means for generating/updating said updating class information table stored in said third storage region and for generating/updating said class information table stored in said fifth storage region;

said real time processing means further including

a lock semaphore for performing exclusive control for avoiding contention relative to said fifth storage region between said class information table generating/updating means, when generating/updating said class information table stored in said fifth storage region, and said instance generating means, when generating/updating contents of said second storage region by using contents of said fifth storage region, respectively, and

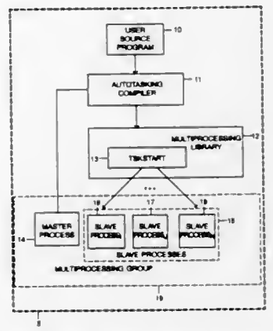
lock semaphore access means, actuated by said class information table generating/updating means and by said instance generating means, for accessing said lock semaphore.

5,257,372

METHODS FOR EFFICIENT DISTRIBUTION OF PARALLEL TASKS TO SLAVE PROCESSES IN A MULTIPROCESSING SYSTEM

Mark Furtney; Frank R. Barriuso, Both of Apple Valley; Clayton D. Andreasen, Rosemont; Timothy W. Hoel, Eagan; Suzanne L. LaCroix, Shorewood, and Steven P. Reinhardt, Eagan, all of Minn., assignors to Cray Research, Inc., Eagan, Minn.

Filed Dec. 19, 1990, Ser. No. 630,301
Int. Cl.[5] G06F *9/00, 9/38, 9/46*
U.S. Cl. 395—650 **14 Claims**



10. In a multiprocessor system having an Operating System, a method for parallel processing of parallel regions of code, comprising the steps of:

(a) establishing a master process and one or more slave processes;

(b) establishing a data buffer conduit including a thread structure and a context structure for each said slave process, each said thread structure including a WAKEUP flag and a GIVEUP flag;

(c) the master process setting the WAKEUP flag for a slave process when a parallel region of code is encountered;

(d) the Operating System polling said WAKEUP flags and, upon detection of a WAKEUP flag for a slave process, activating a slave process and the slave process obtaining a task to execute;

(e) the Operating System setting the GIVEUP flag for the running slave process if the Operating System desires to interrupt the process;

(f) the running slave process polling the GIVEUP flag at the completion of its task and returning control to the Operating System if the GIVEUP flag is set; and

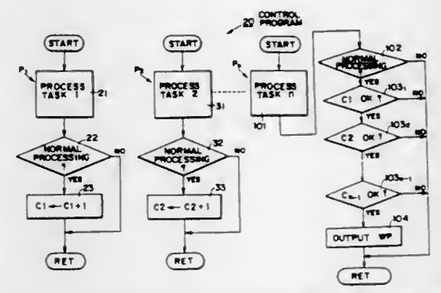
(g) the Operating System interrupting the slave process for which it has set the GIVEUP flag if the slave process does not return control to the Operating System within a predetermined time slice.

5,257,373

SYSTEM BY DETERMINING IF ALL MULTIPLE TASKS WERE PROCESSED NORMALLY

Kazumasa Kurihara, and Shigeru Yajima, both of Higashimatsuyama, Japan, assignors to Zexel Corporation, Tokyo, Japan

Filed Apr. 2, 1991, Ser. No. 679,226
Claims priority, application Japan, Apr. 5, 1990, 2-91169
Int. Cl.[5] G06F *11/30*
U.S. Cl. 395—650 **6 Claims**



1. A machine implemented method for detecting a malfunction in a microcomputer system, wherein a given job is divided into a plurality of tasks, and a plurality of task-programs for processing the tasks are executed in a multiple task processing manner, said method comprising the steps of:

discriminating whether or not each processing of the tasks was executed normally after each execution thereof;

changing the count of counter means provided for each of the task-programs except for a prescribed task-program by a prescribed value each time the processing of the corresponding task is determined to be normal in response to the result of said discriminating step; and,

at the time of executing the prescribed task-program, checking a property of each count of all counter means on the basis of the activation interval for repeated execution of the task-programs to determine whether or not all of the corresponding tasks were processed normally.

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BUS FLOW CONTROL MECHANISM

William E. Hammer, Rochester; Walter H. Schwane, Kasson, and Frederick J. Ziecina, Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 542,677, Jun. 25, 1990, abandoned, which is a continuation of Ser. No. 122,292, Nov. 18, 1987, abandoned. This application May 24, 1991, Ser. No. 707,176
Int. Cl.[5] G06F *9/00*
U.S. Cl. 395—650 **22 Claims**

1. A method of controlling the flow of work related messages between groups of processes wherein each group resides on a processor in a loosely coupled distributed processor network, and wherein the processes within each group share processor resources, comprising the steps of:

sending a work request message from a requestor processor containing a requestor process in one group to a server processor containing a server process in another group to initiate work in the server processor containing the server process;

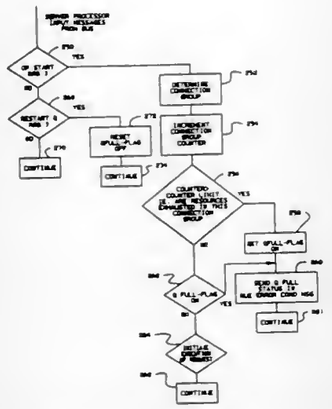
receiving the work request message to initiate work in the server processor;

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recognizing a condition in the server processor where there are insufficient resources available within the server processor to allow the server processor to initiate work from the requestor process;

sending an insufficient resources message from the server processor to the requestor processor indicating the condition that resources in the server processor where insufficient;

placing work request messages received by the server processor into a queue after the server processor has sent an insufficient resources message;



sending a resource available message from the server processor to the requestor processor when resources become available in the server processor;

sending a restart message from the requestor processor to the server processor in response to the resource available message; and

sending the work request messages in the queue to the server processor in response to the server processor receiving the restart message from the requestor processor.

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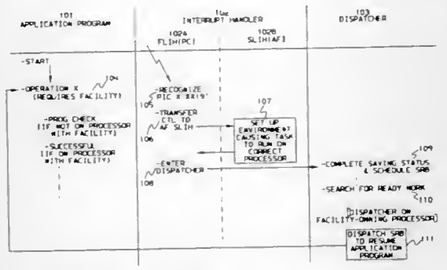
METHOD AND APPARATUS FOR DISPATCHING TASKS REQUIRING SHORT-DURATION PROCESSOR AFFINITY

Carl E. Clark, Poughkeepsie, and Jeffrey A. Frey, Highland, both of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Aug. 23, 1991, Ser. No. 749,069

Int. Cl.[5] G06F *15/16, 12/00*

U.S. Cl. 395—650 **11 Claims**



1. A computer implemented method for dispatching a task requiring short affinity for a resource-owning processor in a processor complex comprising the steps of:

a) issuing an instruction on a first processor by said task, said instruction requiring a resource to complete execution, said resource not being available on said first processor;

b) suspending execution of said task at a point of interruption after said issuing of said instruction, and enqueueing a task-related control block, associated with said task, on a processor-related queue associated with said resource-owning processor; and

c) dequeueing said task-related control block from said processor-related queue, and resuming said task on said resource-owning processor at said point of interruption, said task thereafter being freely dispatchable within said processor complex without regard to said resource.

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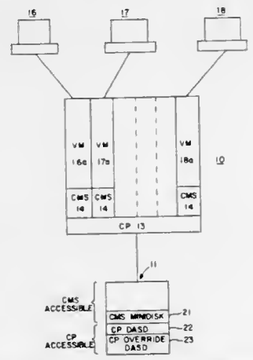
METHOD AND APPARATUS FOR CONFIGURING A CONTROL PROGRAM NUCLEUS WITH A MINIMUM IMPACT ON SYSTEM AVAILABILTIY

Gary S. Beck, Endicott; Warren K. Jones, Endwell, and Dennis R. Musselwhite, Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 4, 1990, Ser. No. 577,299

Int. Cl.[5] G06F *9/00, 12/06*

U.S. Cl. 395—700 **21 Claims**



1. A method for configuring a multiple user vertical machine computing system by a system administrator comprising:

installing in a system processor a control program for dividing operation of said processor into a plurality of virtual machines;

installing a CMS application program in said computing system for providing a plurality of VM operating systems for said users;

providing as part of said control program operating system DASD disk files, said disk files being allocated for control program access, VM mini-disk storage, and control program override source files storage;

storing in said VM mini-disk storage override files having changeable operating data for said control program; and,

formatting data stored in said VM minidisk files and forwarding said data via a diagnose instruction to said control program operating system, and storing said forwarded data on said control program override source files storage area of said DASD disk files.

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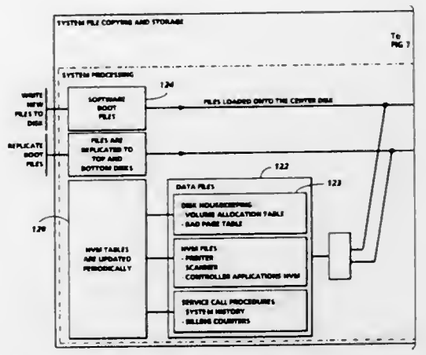
PROCESS FOR AUTOMATICALLY MIGRATING A SUBSET OF UPDATED FILES FROM THE BOOT DISK TO THE REPLICATED DISKS

Kitty Sathi, Pittsford; Ronald A. Ippolito, Rochester; Colleen R. Enzien, Penfield; Christopher Comparetta, Pittsford, and Lyssa E. Menard, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 1, 1991, Ser. No. 678,924

Int. Cl.[5] G06F *15/00*

U.S. Cl. 395—700 **3 Claims**



1. A process for upgrading current system software with a new software release in a printing system having plural disks providing permanent memory for storing system software, a first of said disks serving as a boot disk on starting of said system, comprising the steps of:

a) dedicating an area on each of said disks for storing the software revision level of the software on said disks;

b) inputting said new software release to said system;

c) upgrading a particular subset of software files on said boot disk from said new software;

d) marking said particular subset of upgraded software files on said boot disk as inconsistent;

e) updating said software revision level on said boot disk after completing the upgrading of said particular subset of software files, to identify that the software on said boot disk has been upgraded;

f) terminating said software upgrading process, for said boot disk, when upgrading of said boot disk is completed;

g) booting said system from said boot disk, when possible;

h) upon successfully booting said system to an operating state, from said boot disk, automatically migrating the particular subset of software files, marked as inconsistent, from said boot disk to the remaining ones of said disks to upgrade the software on said remaining disks;

i) when booting is successful from said boot disk, updating said software revision level on said remaining disks at the conclusion of the migrating process, to identify that the particular subset of software files on said remaining disks has been upgraded;

j) where said system cannot be booted from said boot disk, booting said system from a second one of said plurality of disks;

k) restoring all software files on said boot disk back to the preupgraded software by writing the current software release from said second disk to said boot disk whereby to enable said system to be operated without interruption using said current software; and

l) changing the revision level of the system software on said boot disk in response to returning said system software on said boot disk to the same system software level of said second disk.

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NETWORK COMPUTER WORKSTATION WITH INITIAL PROGRAM LOAD CONTROL

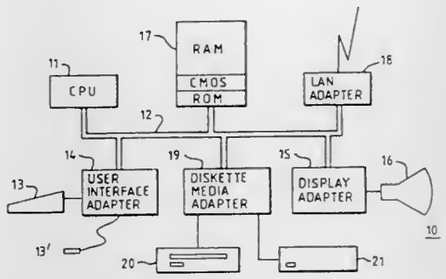
Robert A. Sideserf, Eastleigh, and Dirk W. H. Heintze, Winchester, both of United Kingdom, assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jul. 22, 1991, Ser. No. 733,904

Claims priority, application United Kingdom, Nov. 16, 1990, 90310280

Int. Cl.[5] G06F *15/00*

U.S. Cl. 395—700 **12 Claims**



1. A computer comprising:

a central processing unit,

a network adapter having the capability of enabling initial program load from a location remote from the computer and operatively interconnected with said central processing unit;

non-volatile read/write memory for storing data at a range of storage locations and operatively interconnected with said central processing unit;

an initial program load (IPL) determinator held at a predetermined location in said non-volatile read/write memory for indicating the source of initial program load instructions to be executed by said central processing unit, said IPL determinator normally having a default initial program load interrupt vector;

read only memory for nonvolatile storage of data at a range of storage locations and operatively interconnected with said central processing unit;

permanently resident initialization control code held at a predetermined location in said read only memory and being operable for setting the IPL determinator only when said network adapter is present; and

random access memory for storing data at a range of storage locations and operatively interconnected with said central processing unit;

said initialization control code being operable with said central processing unit at power on of the computer (a) for detecting whether said default initial program load interrupt vector has been overwritten by a network adapter with remote initial program load enabling capability and, when such overwriting is detected, saving the content of the default interrupt vector and replacing it with the address of the initial program load control instructions, and (b) for interrogating said non-volatile read/write memory and determining from the initial program load determinator the source of initial program load control instructions, and (c) for setting at a predetermined location within said random access memory an initial program load source indicator indicative of the source from which initial program load instructions are to be drawn, and (d) for passing control of the computer to initial program load instructions stored at the indicated source.

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5,257,379

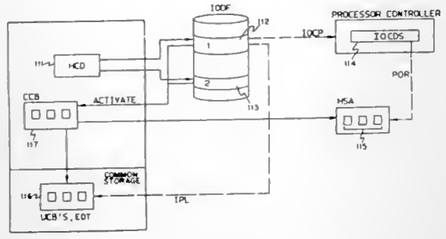
ESTABLISHING SYNCHRONIZATION OF HARDWARE AND SOFTWARE I/O CONFIGURATION DEFINITIONS

Richard Cwiakala, Wappingers Falls; Jeffrey D. Haggar, Pleasant Valley; Charles E. Shapley, Salt Point; Timothy J. Spewak, Hyde Park; David E. Stucki, Poughkeepsie, and Harry M. Yudenfriend, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 4, 1991, Ser. No. 754,813

Int. Cl.[5] G06F *3/00, 13/00*

U.S. Cl. 395—700 **44 Claims**



1. In a data processing I/O system having a main storage for storing data including a software configuration definition and data processing instructions arranged in programs including an operating system, a storage device for storing I/O definition files including hardware configuration information and at least one operating system I/O configuration definition, a processor controller for containing said hardware configuration information, and a hardware storage area connected to said processor controller for storing a hardware configuration definition, computer implemented a method for determining if the software configuration definition corresponds to the hardware configuration definition comprising:

building an I/O definition file (IODF) on said storage device with a hardware configuration definition program (HCD) for a processor I/O configuration definition, said IODF containing a hardware token for identifying said processor I/O configuration definition in the IODF;

transferring hardware configuration information for said processor I/O configuration from said IODF to said processor controller with an I/O configuration program (IOCP), said hardware configuration information containing a copy of said hardware token;

establishing in said HSA, said hardware configuration definition from said hardware configuration information, said hardware configuration definition containing said copy of said hardware token;

specifying to said operating system, the operating system I/O configuration definition in said IODF for establishing said software configuration definition;

establishing in said main storage with said operating system, said software configuration definition specified by said system I/O configuration definition;

fetching said copy of said hardware token from said HSA; and

searching said IODF for a hardware token matching said copy of said hardware token fetched from said HSA for determining if said software configuration definition corresponds with said hardware configuration definition.

5,257,380

INITIALIZATION ROUTINE IN AN EEPROM

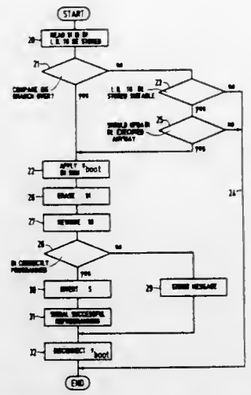
Georg Lang, Sulzbach-Rosenberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Feb. 14, 1992, Ser. No. 836,138

Claims priority, application European Pat. Off., Feb. 25, 1991, 91102757

Int. Cl.[5] G06F *9/22*

U.S. Cl. 395—700 **10 Claims**



1. A read-only memory having an electrical overwrite capability comprising:

a) at least one contact adapted for connection to a line and adapted to accept address signals;

b) at least one contact adapted for connection to a line and adapted to accept and receive data signals;

c) at least one contact adapted for connection to a line and adapted to accept control signals;

d) a first storage area for storing an internal state variable, said internal state variable having a first state and a second state;

e) a second storage area including a first plurality of storage cells, each of said first plurality of storage cells having a unique address, on the basis of which individual ones of said first plurality of storage cells may be written to and read from; and

f) a third storage area including a second plurality of storage cells, each of said second plurality of storage cells having a unique address, corresponding to the addresses of said first plurality of storage cell, on the basis of which individual ones of said second plurality of storage cells may be written to and read from,

wherein when said internal state variable stored in said first storage area is at said first state, said first plurality of storage cells may be accessed only for reading and when said internal state variable stored in said first storage area is at said second state, said second plurality of storage cells may be accessed only for reading.

5,257,381

METHOD OF INTERCEPTING A GLOBAL FUNCTION OF A NETWORK OPERATING SYSTEM AND CALLING A MONITORING FUNCTION

Colin Cook, Orem, Utah, assignor to Intel Corporation, Santa Clara, Calif.

Filed Feb. 28, 1992, Ser. No. 843,549

Int. Cl.[5] G06F *9/40, 12/14*

U.S. Cl. 395—700 **17 Claims**

4. In a digital computer executing network operating system software, a method of intercepting a global function of the network operating system and calling a monitoring function, the method comprising the computer implemented steps of:

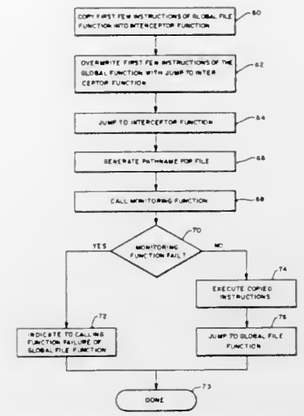
a) copying a first set of instructions of the global function into an interceptor function;

b) overwriting the first set of instructions of the global function with an instruction to jump to the interceptor function;

c) a calling function calling the global function to perform an operation on a file;

d) jumping to the interceptor function from the global function;

e) calling the monitoring function from the interceptor function;



f) the monitoring function determining whether the global function should be executed, the monitoring function indicating success if the global function should be executed and indicating failure if the global function should not be executed;

g) indicating failure of the global function to the calling function if the monitoring function fails;

h) if the monitoring function is successful;

A) returning to the interceptor function and executing the first set of instructions copied from the global function; and

B) jumping from the interceptor function to the global function at an instruction after the instruction to jump to the interceptor function.

5,257,382

DATA BANK PRIORITY SYSTEM

Larry L. Byers, Apple Valley; Wayne A. Michaelson, Circle Pines, and Howard A. Koehler, Minneapolis, all of Minn., assignors to Unisys Corporation, Blue Bell, Pa.

Division of Ser. No. 246,509, Sep. 19, 1988, Pat. No. 5,032,984. This application Mar. 11, 1991, Ser. No. 667,790

Int. Cl.[5] G06F *13/18*

U.S. Cl. 395—725 **8 Claims**

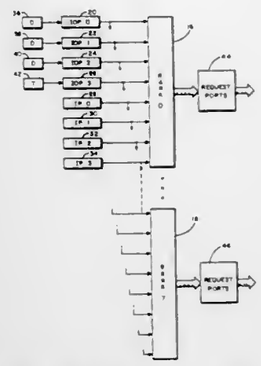
1. In a priority access system formed of a combination of elements comprising,

(a) at least one access requesting means,

(b) a plurality of n accessible means which are to be accessed by said access requesting means in a fixed priority sequence during successive access periods during each of which access periods m of said accessible means may be accessed by said access requesting means, where n is a positive integer that may vary from access period to access period, and during any given access period may have a value from 1 to n,

(c) clock means constructed to supply clock pulses in a repetitive clock pulse train, and

(d) access means coupled to said access requesting means, to all of said accessible means and to said clock means constructed to provide access for said access requesting means to each of said accessible means to which said access requesting means has requested access during each of said access period in order of said priority sequence, and such that access to each one of said accessible means is accomplished upon each occurrence of a different one of said clock pulses of said repetitive clock pulse train during said access period,



the improvement wherein said access means comprises digital electronic circuit means for providing access to said accessible means such that when access to m of said accessible means has been granted by said access requesting means for any given access period, then only m consecutive clock pulses of said clock pulse train will have been utilized by said access means to provide said requested accesses for said m accessible means regardless of the value of n.

5,257,383

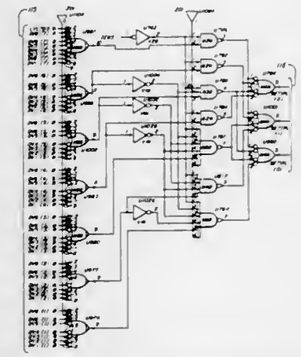
PROGRAMMABLE INTERRUPT PRIORITY ENCODER METHOD AND APPARATUS

Joseph M. Lamb, Hopedale, Mass., assignor to Stratus Computer, Inc., Marlboro, Mass.

Filed Aug. 12, 1991, Ser. No. 743,691

Int. Cl.[5] G06F *9/46*

U.S. Cl. 395—725 **8 Claims**



1. In a digital data processor of the type having a plurality of devices, each said device being capable of asserting an interrupt and producing a signal representative thereof, and

a central processing unit (CPU) for processing said inter-

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rupts, each having associated therewith an interrupt value, to determine an interrupt value to be processed, and means for generating a query signal representative of that interrupt value to be processed,

the improvement including an interrupt priority encoder comprising:

a plurality of coupled ICB elements, each connected to an associated one of said devices, at least one ICB element including

i) programmable level storage means for programmably storing an operator-selectable interrupt value for the associated device;

ii) means responsive to assertion of said interrupt by the associated device for generating a signal (DVL) representative of said stored interrupt value of the associated device,

iii) means responsive to a query signal generated by said central processing unit in response to at least one said DVL signal, said query signal being representative of an interrupt value to be processed, for generating a signal (DEV ACK) representative of a

(a) match between said query signal and said stored interrupt value of said associated device, and

(b) receipt of a said interrupt.

5,257,384

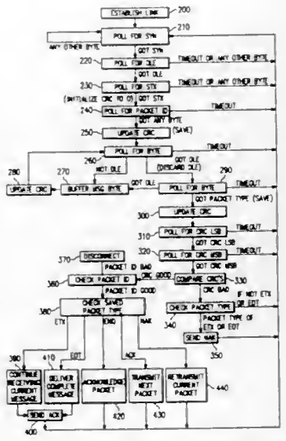
ASYNCHRONOUS PROTOCOL FOR COMPUTER SYSTEM MANAGER

Scott C. Farrand, Tomball; Thomas J. Hernandez, Houston; Ronald A. Neyland, Spring; Richard A. Stupek; Andrew J. Miller, both of Houston; Patrick E. Dobyns, Garland, and Stephen R. Johnson, Jr., Plano, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Sep. 9, 1991, Ser. No. 756,509

Int. Cl.[5] C06F *13/14*

U.S. Cl. 395—725 **14 Claims**



1. A protocol for communicating messages between a system manager for a computer system and a remote facility asynchronously connected with said system manager, said protocol comprising:

means for determining whether said system manager is ready to exchange messages with said remote facility;

means for determining whether said remote facility is ready to exchange messages with said system manager; and

means for exchanging messages between said system manager and said remote facility;

said means for exchanging messages comprising:

means for transmitting a command message which includes a first field for identifying a command transmitted by said command message and a second field for identifying said command message; and

means for transmitting a command reply message which includes a first field for identifying said command to which said command reply message is in response to, a second field for matching said command reply message to said command message and a third field for transmitting a response to said command message,

said means for transmitting a command reply message further comprising:

means for generating said first field of said command reply message to be a variant of said first field of said command message, said first field of said command reply message identifying said transmitted command and that said third field is a response to said transmitted command; and

means for generating said second field of said command reply message to match said second field of said command message, said second field of said command message identifying the transmitted command and that said third field is a response to said transmitted command;

said first field of said command message and said first field of said command reply message each comprised of a plurality of bits, said plurality of bits of said first field of said command message identifying the transmitted command and the high bit of said plurality of bits of said first field of said command reply message is set to identify said third field as a response and said remaining bits of said first field identifies the command being responded to;

wherein said remote facility transmits command messages to said system manager and said system manager transmits command message responses to said remote facility, said command messages being issued by said remote facility to support activity of said system manager; and

said command message is a reboot command message and said remote facility transmits said command message to said system manager to initiate rebooting of said system manager, said command message further including a third field for specifying a type of reboot said system manager is to perform.

5,257,385

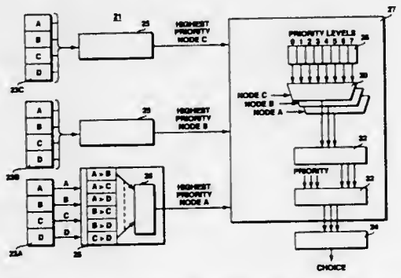
APPARATUS FOR PROVIDING PRIORITY ARBITRATION IN A COMPUTER SYSTEM INTERCONNECT

Steven G. Roskowski, Sunnyvale; Dean M. Drako, Cupertino, and William T. Krein, San Jose, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Dec. 30, 1991, Ser. No. 815,825

Int. Cl.[5] G06F *13/14*

U.S. Cl. 395—725 **18 Claims**



1. A circuit for use with an interconnect for a computer which interconnect includes a plurality of nodes for connection to components of the computer and in which data is transferred between nodes based on a plurality of priority levels, the circuit comprising means for determining at a node of the interconnect a highest priority level of data present for transfer to that node, means for storing information indicating a las node from which a transfer of data occurred at each priority level, means for selecting for each priority level of data available at a node a last node from which a transfer of data occurred at each priority level, means for weighting data at each priority level depending on which data was last chosen at that level of priority, and means for selecting from all of a plurality of data available at a node data having both a highest priority level and having been chosen least recently at that priority level of data at that node based on the weights obtained.

5,257,386

DATA TRANSFER CONTROL SYSTEM FOR VIRTUAL MACHINE SYSTEM

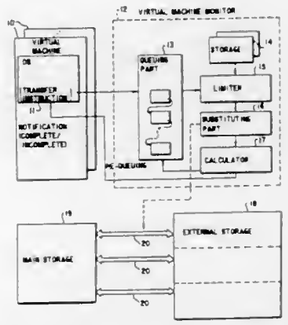
Masaru Saito, Yokohama, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Apr. 3, 1991, Ser. No. 679,853

Claims priority, application Japan, Apr. 5, 1990, 2-90590

Int. Cl.[5] G06F *9/30*

U.S. Cl. 395—775 **18 Claims**



1. A data transfer control system for a virtual machine system which includes a plurality of virtual machines, a main storage and an external storage which is accessible by each of the virtual machines, said data transfer control system comprising:

storage means for storing at least transfer priorities of each of the virtual machines;

queuing means for making a queue of data transfer requests which request data transfers between the main storage and the external storage and are received from operating systems which operate on each of the virtual machines;

limiting means coupled to said storage means and said queuing means for limiting a transfer data length of one data transfer which is requested by each data transfer request in the queue of said queuing means depending on the transfer priority of the virtual machine from which the data transfer request is received, so that a data transfer is made in divisions if the requested transfer data length exceeds a length limit determined by the transfer priority;

generating means coupled to said limiting means for generating a first data transfer request in place of each operating system with the transfer data length determined by said limiting means so as to start a first data transfer between the main storage and the external storage; and

calculating means coupled to said generating means for calculating a data length of a remaining transfer data which remains to be transferred when the first data transfer is completed and for automatically generating a second data transfer request requesting transfer of the remaining transfer data, said second data transfer request being inserted in the queue of said queuing means so that the remaining transfer data is transferred between the main storage and the external storage in one or a plurality of second data transfers.

5,257,387

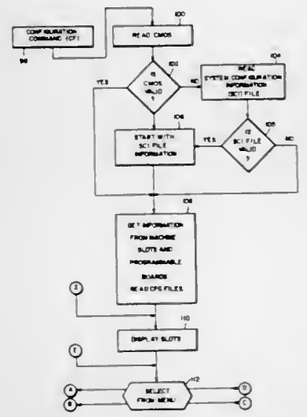
COMPUTER IMPLEMENTED METHOD AND APPARATUS FOR DYNAMIC AND AUTOMATIC CONFIGURATION OF A COMPUTER SYSTEM AND CIRCUIT BOARDS INCLUDING COMPUTER RESOURCE ALLOCATION CONFLICT RESOLUTION

Martin D. Richek; Robert S. Gready, both of Houston, and Curtis R. Jones, Jr., Cypress, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 293,315, Jan. 4, 1989, which is a continuation-in-part of Ser. No. 242,734, Sep. 9, 1988, abandoned. This application Sep. 5, 1989, Ser. No. 403,297

Int. Cl.[5] G06F *15/76*

U.S. Cl. 395—800 **64 Claims**



1. For use with a computer system that provides for circuit boards to be interchangeably inserted in a plurality of system slot locations, with the circuit boards having the capability to be configured to utilize one or more common computer resources, the common computer resources comprising slot locations, interrupt request lines, direct memory access channels, input/output port addresses and memory address ranges, a method for dynamically and automatically configuring the computer system and the circuit boards without user intervention comprising the computer implemented steps of:

determining based upon a configuration of each of said circuit boards the common computer resources capable of being utilized by the circuit boards to be installed in the computer system;

allocating the common computer resources to be utilized by the circuit boards based on said determination of the common computer resources capable of being utilized by the circuit boards to be installed in the computer system;

detecting conflicts as to the common computer resources allocated to the circuit boards to be installed in the computer system;

resolving conflicts as to the common computer resources to be utilized by the circuit boards to be installed in the computer system and re-allocating the common computer resources based upon said resolution of said common computer resource conflicts; and

storing configuration information as part of a system configuration for each of the circuit boards and the computer system based on said allocation of the common computer resources to be utilized by the circuit boards.

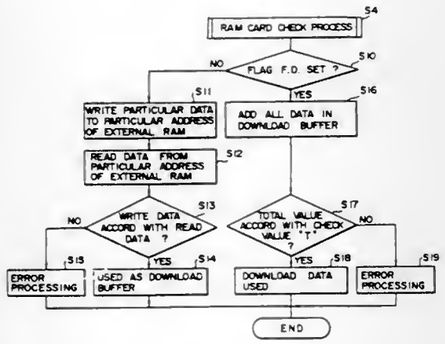
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5,257,388

DEVICE FOR DETECTING WHETHER AN ATTACHED EXTERNAL MEMORY STORES VALID DATA, IF NOT, WHETHER THE EXTERNAL MEMORY IS CAPABLE OF STORING DATA

Kazuhiro Hayamizu, Hashima, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Apr. 26, 1990, Ser. No. 514,702
Claims priority, application Japan, Apr. 27, 1989, 1-108526
Int. Cl.[5] G06F *11/00, 7/04*
U.S. Cl. 395—800 **13 Claims**



1. A data processing device adapted to attachably and detachably couple with an external memory unit to which data are written and from which data are read, said external memory unit storing data even when not coupled to said data processing device, said data processing device comprising:

discriminating means for determining whether said external memory unit is coupled to said data processing device;

judging means for judging if a predetermined kind of data are stored in said external memory unit when said discriminating means determines that said external memory unit is coupled to said data processing device;

another judging means for judging if said predetermined kind of data stored in said external memory unit are usable when said judging means judges that said predetermined kind of data are stored in said external memory unit, said another judging means including means for performing a sum check on said predetermined data and comparing said sum check result with a sum result stored in said external memory unit;

error indicating means for indicating that said predetermined kind of data are not usable when said another judging means judges that said predetermined kind of data are not usable; and,

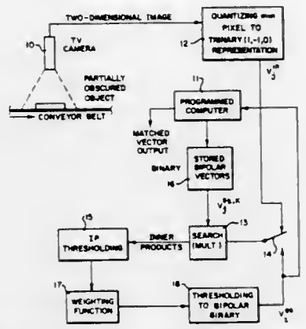
third judging means for judging whether said external memory unit is capable of storing data when said judging means judges that said predetermined kind of data are not stored in said external memory unit, said third judging means including means for writing test data to said external memory unit, means for reading said test data from said external memory unit and means for comparing said test data read from said external memory unit with said known test data whereby to check the integrity of said external memory unit.

5,257,389

IMER-PRODUCT ARRAY PROCESSOR FOR RETRIEVAL OF STORED IMAGES REPRESENTED BY BIPOLAR BINARY (+1,−1) PIXELS USING PARTIAL INPUT TRINARY PIXELS REPRESENTED BY (+1,−1)

Hua-Kuang Liu, Pasadena, Calif.; Abdul A. S. Awwal, Kettering, and Mohammad A. Karim, Centerville, both of Ohio, assignors to California Institute of Technology, Pasadena, Calif.

Filed Apr. 27, 1990, Ser. No. 515,247
Int. Cl.[5] G06F *15/62*; G11C *15/00*
U.S. Cl. 395—800 **11 Claims**



1. In an inner-product array processor system for associative retrieval of a stored image from among a plurality of different images stored in a digital memory using a partial image input, each pixel elements of said stored images being represented by bipolar binary values of +1 and −1, where a +1 is represented by a fixed positive value of voltage and a −1 is represented by a fixed negative value of voltage, a method comprised of

representing each known pixel element of said partial image by said bipolar binary values of +1 and −1, and setting the value of each unknown pixel element of said partial image to 0, where a 0 is represented in said system by a zero voltage,

forming an inner product for each trial comparison with stored images in an iterative search process for the closest estimated image with the initial inner products corresponding to the known pixel elements of the partial image input,

forming an estimated image which is a linear combination of the bipolar binary stored image weighted by said inner products,

feeding back each of said estimated images represented in bipolar binary values of +1 and −1 as the input image for the next iteration, thereby using the maximum inner products of each successive iteration as weights which generate an input image for the next iteration, and

repeating the process until convergence is reached, thereby retrieving a stored image from said memory which corresponds to a best match of a stored image with said partial image input.

5,257,390

EXTENDED RANGE COMPUTER COMMUNICATIONS LINK

Robert R. Asprey, Harvest, Ala., assignor to Cybex Corporation, Huntsville, Ala.

Filed Jul. 26, 1991, Ser. No. 736,508
Int. Cl.[5] G06F *3/00, 3/14*
U.S. Cl. 395—800 **18 Claims**

1. A system for transmitting at least one discrete analog video signal from a computer video output, via a common cable to a remotely located monitor, comprising:

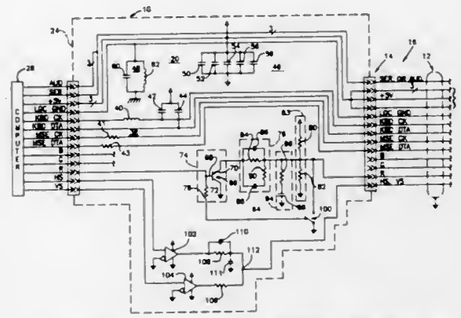
a first signal conditioning network comprising:

signal current transfer means having an input coupled to said video output and responsive to said video signal for providing an output,

an anti-ringing circuit having both reactive and resistive components coupled to said output of said transfer means,

a reactive anti-reflective circuit coupled to said output of said transfer means,

a first voltage divider coupled at an intermediate point to said anti-ringing circuit and disposed for referencing the video signal from said last-named output about a first selected voltage level, and wherein the signal is attenuated to a selected amplitude, and



a cable having a plurality of insulated conductors up to about 800 feet in length, with a first of said conductors coupled at one end to said point of said first voltage divider; and

a second signal conditioning network comprising:

a second voltage divider having an intermediate point coupled to an opposite end of said first conductor, for receiving said video signal and referencing said video signal at a selected voltage level and said signal at a selected amplitude, and

amplifier means responsive to said video signal from said second voltage divider, for amplifying said video signal with a characteristic which varies directly in amplitude with frequency and providing an amplified said video signal as an output.

5,257,391

DISK CONTROLLER HAVING HOST INTERFACE AND BUS SWITCHES FOR SELECTING BUFFER AND DRIVE BUSSES RESPECTIVELY BASED ON CONFIGURATION CONTROL SIGNALS

Keith B. DuLac, Derby, and Bret S. Weber, Wichita, both of Kans., assignors to NCR Corporation, Dayton, Ohio

Filed Aug. 16, 1991, Ser. No. 746,399
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—800 **14 Claims**

13. A disk array controller for interfacing a host computer system with a plurality of disk drives associated with a disk array, comprising:

a host bus;

a plurality of buffer busses;

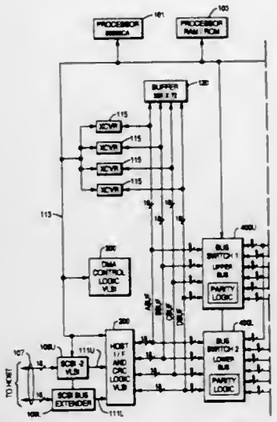
host interface means connected between said host bus and said plurality of buffer busses and responsive to a first configuration control signal for selecting buffer busses based on a configuration of said disk array and transferring data between said host bus and at least one buffer bus selected from said plurality of buffer busses; and

a plurality of drive busses;

bus switch means connected between said plurality of buffer busses and said plurality of drive busses and responsive to a second configuration control signal for selecting drive busses based on the configuration of said disk array and coupling said selected buffer busses to said selected drive busses;

control means responsive to instructions received from a host system for generating said first and second configuration control signals;

buffer storage means connected to said plurality of buffer busses for storing data received from said buffer busses and placing stored data onto said buffer busses; and



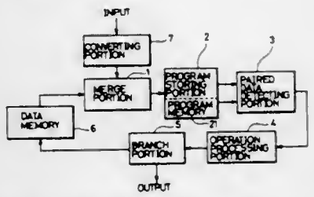
a parity generation circuit having a plurality of inputs, each one of said inputs being connected to a corresponding one of said buffer and drive busses; an exclusive-OR circuit; first switch means for connecting said exclusive-OR circuit to receive data from selected ones of said buffer and drive busses for combining data received from said selected busses; and second switch means for providing the output of said exclusive-OR circuit to a selected one of said buffer and drive busses.

5,257,392

SYSTEM FOR LOADING AND DUMPING DATA IN A DATA FLOW PROCESSOR BASED ON PAIRED PROGRAM DATA AND DATA TO BE PROCESSED

Toshiya Okamoto, Kyoto, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 302,454, Jan. 27, 1989, abandoned. This application Dec. 16, 1991, Ser. No. 807,735
Claims priority, application Japan, Jan. 29, 1988, 63-20187
Int. Cl.[5] G06F *9/00, 9/30, 9/445*
U.S. Cl. 395—800 **1 Claim**



1. A system of loading and dumping data in an information processor which utilizes a reduced number of bits to effectively process data, comprising;

formatting means for formatting bytes of information from exterior of the system into an execution packet, said bytes of information excluding a conventional execution field, thereby reducing a number of bits required to process data effectively, the conventional execution field conveying

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either a normal state of execution or a data load/dump procedure;

program control means, operatively connected to said formatting means and having a program memory to store a data flow program, for fetching an instruction from said program memory in response to said execution packet and for producing paired program data and data from the fetched instruction and said execution packet;

paired data detecting means, operatively connected to said program control means, for detecting whether said paired program data and data to be processed are inputted from said program control means;

operation processing means, responsive to the detection by said paired data detecting means, for executing an operation based on said paired program data and data to be processed and said fetched instruction;

data memory means for storing data processed by said operation processing means;

merge means, operatively connected to said formatting means and said data memory means, for applying either data from said data memory means or said execution packet from said formatting means to said programs control means; and

branch means for dumping to the exterior of the system said data to be processed in response to said operation processing means;

said execution packet including a destination information field showing a destination of said execution packet, an identifier field for enabling said paired data detecting means to identify data having a same queue address, an instruction information field, and an address information field for identifying the paired program data;

said address information field and said identifier field together informing said paired data detecting means of the paired program data and said program control means of a next instruction to fetch;

said identifier field being used as a part of an address for sending data and a number for identifying the information processor, said number being contained in a part of the queue address.

5,257,393

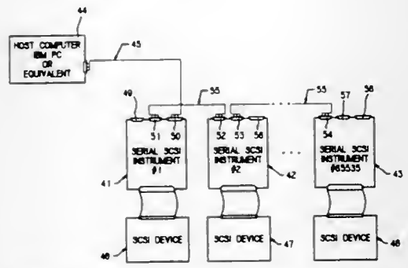
SERIALLY CONTROLLED PROGRAMMABLE TEST NETWORK

Jon R. Miller, Goleta, Calif., assignor to JRM Consultants, Inc., Santa Barbara, Calif.

Continuation of Ser. No. 341,162, Apr. 19, 1989, abandoned. This application Mar. 12, 1992, Ser. No. 850,221

Int. Cl.[5] **G06F** *11/00, 11/34*

U.S. Cl. 395—800 **5 Claims**



1. A network system for serially connecting a host processing system to plurality of computer peripherals, for testing said plurality of computer peripherals, the network comprising:

a host processing system for sending and receiving tokens, wherein the received tokens include resultant test reports, which are further processed and displayed, and the sent tokens include instructions defining a test sequence and configuration commands, N programmable test systems,

a first serial connection between the host processing system and a first of the N programmable test systems,

N - 1 serial connections, providing a serial connection between the first of the N programmable test systems and a next programmable test system, each such programmable test system connected to a next one of said programmable test systems, until all N of said programmable test systems are connected one-to-one by a serial connection,

a bus attached to each of said programmable test system, and the bus is connected to one or more of said plurality of computer peripherals to be tested,

each programmable test system comprising:

a network processing system, wherein the network processing system includes:

means for receiving, sending and regenerating the tokens,

means for performing network addressing function and maintaining logical continuity along all of said serial connections,

first means for generating test information in response to said instructions defining a test sequence,

second means or generatin a resultant test report in response to result information generated by a test processing system,

means for signaling the host processing system, that the resultant test report is ready for sending and sending upon the host processing system request,

means or interfacing with the test processing for sending at least the test information and the configuration commands and receiving at least the result information, and

test processing system including:

first means for interfacing with the network processing system for sending at least the result information and receiving at least the test information and the configuration commands,

means or reconfiguring in response to the configuration commands sent by the host processing system,

means for generating test patterns on the bus,

means or verifying a response from the bus to the test patterns,

means for logging errors, in response to the verification, as a part of the result information,

a second means for interfacing with the bus, including means for operating under the protocol of the bus.

5,257,394

LOGICAL EXPRESSION PROCESSING PIPELINE USING PUSHDOWN STACKS FOR A VECTOR COMPUTER

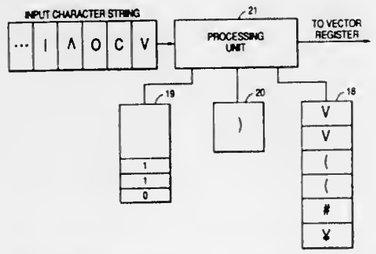
Kiyoshi Asai, Ibaraki, Japan, assignor to Japan Atomic Energy Research Institute, Tokyo, Japan

Division of Ser. No. 421,343, Oct. 13, 1989. This application Apr. 22, 1992, Ser. No. 872,147

Claims priority, applicatioo Japan, Oct. 18, 1988, 63-262071

Int. Cl.[5] **G06F** *15/347, 15/52*

U.S. Cl. 395—800 **5 Claims**



1. A processing pipeline for processing a logical expression including operand elements and operator elements successively supplied from a first vector register of a computer, and

for outputting a result of said processing to a second vector register, said processing pipeline comprising:

a first pushdown stack for storing operand elements of the logical expression;

a character register for temporarily storing an operator element of the logical expression;

a second pushdown stack for storing operator elements of the logical expression;

a processing unit including means for supplying the operand elements of the logical expression to said first pushdown stack, means for supplying the operator elements of the logical expression to said character register, means for storing a table of data based on combinations of operator elements of the logical expression, and processing means for processing a first operator element in said character register and a second operator element at the top of said second pushdown stack in accordance with the data in said table, said processing means including means for pushing down and popping up operator elements of said second pushdown stack and for supplying an operator element in said character register to said second pushdown stack based on the combination of the first and the second operator elements and error detecting means for detecting errors in the logical expression based on the combination of the first and the second operator elements; and

outputting means for outputting the result of the processing of the logical expression to said second vector register.

5,257,395

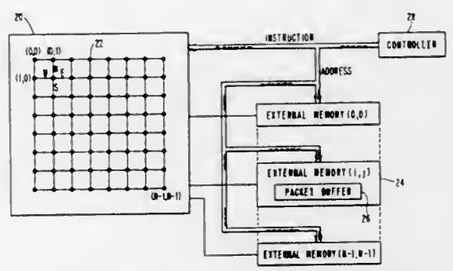
METHODS AND CIRCUIT FOR IMPLEMENTING AND ARBITRARY GRAPH ON A POLYMORPHIC MESH

Hungwen Li, Pleasantville, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 193,990, May 13, 1988, abandoned. This applicatioo May 26, 1992, Ser. No. 890,281

Int. Cl.[5] **G06F** *15/80*

U.S. Cl. 395—800 **12 Claims**



1. A polymorphic-mesh array processing system in which a packet of information containing address information and related data information is transferred during an operating cycle from one individually addressable processing element to another individually addressable processing element comprising:

a plurality of N individually addressable processing elements configured in a single instruction multiple datastream mode where N is an integer greater than one;

controller means for providing a signal containing an instruction and an address for said processing elements during sequential operating cycles for transferring a respective packet from a first one of said processing elements to a second one of said processing elements in response to said instruction and said address according to an arbitrary graph; and

single instruction multiple address means, including content addressable packet buffer memory and connected to said controller means and to said processing elements, for causing during one of the sequential operating cycles said second processing element to access the respective packet in said buffer memory associated with said first processing element, in responses to the address from said controller means, whereby the system transfers the respective packet from said first processing element to said second processing element to implement the arbitrary graph.

5,257,396

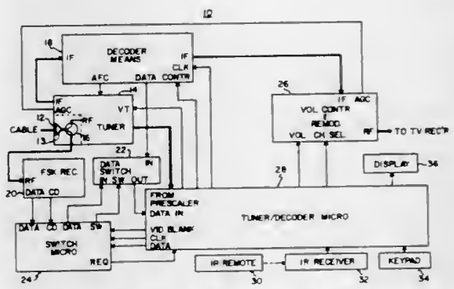
DUAL IN-BAND/OUT-OF-BAND CATV SYSTEM

Frederick H. Auld, Jr., Barrington; Michael E. Long, Oakbrook, and Larry K. Moreland, McHenry, all of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Sep. 17, 1991, Ser. No. 761,106

Int. Cl.[5] **H04B** *17/00*

U.S. Cl. 455—2 **7 Claims**



1. A cable television signal decoder having a cable input comprising:

first means, coupled to said cable input, for recovering data encoded in a cable television channel signal;

second means, coupled to said cable input, for recovering data received independent of cable television channel signals;

a data switch for selectively coupling recovered data from said first means and from said second means to a data output; and

control means for operating said data switch in response to recovered data from one of said first and said second means.

5,257,397

MOBILE DATA TELEPHONE

Farhad Barzegar, Hillsborough; Can A. Eryaman, Frankford; Jesse E. Russell, Piscataway, and Robert E. Schroeder, Flanders, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 13, 1990, Ser. No. 566,733

Int. Cl.[5] **H04Q** *7/00*

U.S. Cl. 455—33.1 **8 Claims**

5. A wireless data transmission system for operation with mobile radiotelephones in a transmission environment subject of frequently occurring fading conditions including signal level attenuations and mobile movement-related signal degradations, comprising:

a transceiver apparatus including a voice and data processing unit, a transceiver controller for controlling throughput of the voice and data processing unit, and including channel condition monitoring means for detecting substandard channel conditions;

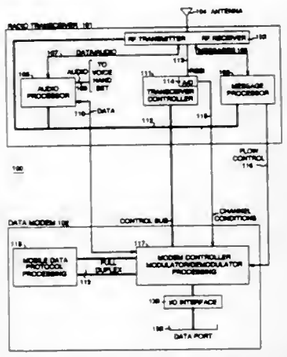
a data modem apparatus including a data input/output port, a data processing circuit including a modulator/demodulator, and a data modem controller for constructing frames of data signals for transmission;"

the data modem controller responsive to the channel signal condition monitoring means for selecting a data path for controllably coupling the data input/output port to the voice and data processing unit via,

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a first means for coupling the data modem throughput to the voice and data processor via a direct connection between the data modem controller and the voice and data processor during acceptable signal conditions,

a second means for coupling the data modem throughput to the voice and data processor via a connection including a



sending of data to the data processing circuit for encoding the signal to enhance its accuracy during adverse signal conditions and coupling the encoded signal to the data modem controller and from thence to the voice and data processor; and

means for controlling the first and second means for coupling in response to system conditions.

5,257,398

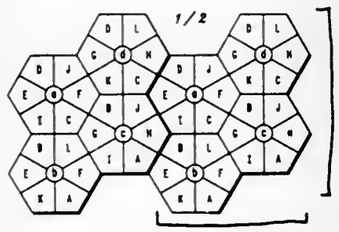
HOPPED-CARRIER DYNAMIC FREQUENCY REUSE

Dennis R. Schaeffer, Buffalo Grove, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 27, 1990, Ser. No. 485,718

Int. Cl.[5] H04Q *7/00*

U.S. Cl. 455—33.1 **21 Claims**



1. A method of dynamic frequency reuse comprising:

allocating according to one reuse pattern during one time interval at least one of a plurality of carriers

and allocating according to another reuse pattern during another, substantially non-overlapping time interval that carrier, all in substantially non-interfering time synchronism with any proximal reuse of that carrier.

5,257,399

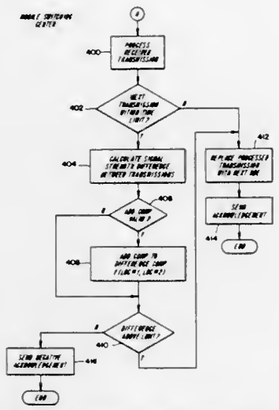
MULTIPLE ACCESS HANDLING IN A CELLULAR COMMUNICATIONS SYSTEM

Harald Kallin, Sollentuna, and Roland Bodin, Spånga, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Nov. 28, 1990, Ser. No. 618,963

Int. Cl.[5] H04Q *7/00*

U.S. Cl. 455—33.1 **28 Claims**



1. A method of operating a cellular system, wherein a mobile station transmits a mobile generated transmission which is received by at least two base stations, said method comprising the steps of:

measuring the signal strength of the received mobile generated transmission;

sending the mobile generated transmission and the measured signal strength of the mobile generated transmission to a processing means from the at least two base stations;

storing in a memory the respective mobile generated transmissions and measured signal strengths received from the at least two base stations within a predetermined time period; and

determining which of the mobile generated transmissions to accept based on time of receipt by the processing means and the stored signal strengths of the mobile generated transmissions, wherein the step of determining comprises the steps of:

comparing signal strengths to yield a difference value;

if the difference value is greater than or equal to a predetermined threshold, accepting the mobile generated transmission having the strongest relative signal strength; and

if the difference value is below the predetermined threshold, accepting one of the received mobile generated transmissions according to a predetermined priority order.

5,257,400

CELLULAR MOBILE TELEPHONE SYSTEM

Ikio Yoshida, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jan. 30, 1991, Ser. No. 647,792

Claims priority, application Japan, Jan. 30, 1990, 2-20328

Int. Cl.[5] H04Q *7/02, 9/02;* **H04B** *7/00*

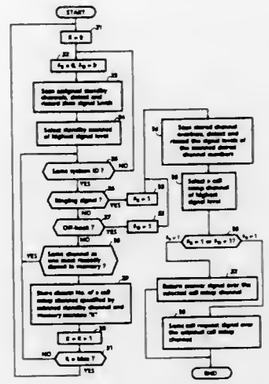
U.S. Cl. 455—33.1 **8 Claims**

1. A method for selecting channels in a mobile station for a cellular mobile telephone system serving a plurality of cells, each of the cells being assigned a unique standby channel, and said mobile station is assigned a plurality of standby channels and a system identifier identifying said system, the method comprising:

a) scanning said standby channels to detect signal levels and selecting one of the scanned standby channels having a highest signal level;

b) detecting whether there is a match between a system identifier contained in the selected standby channel and the system identifier of said mobile station;

c) if said match is detected, detecting whether there is an originating call from or an incoming call to the mobile station;



d) if there is no originating or incoming call detected by the step (c), storing a channel number of a call setup channel specified by the selected standby channel into a successive location of a memory;

e) repeating the steps (a) to (d); and

f) if there is an originating or incoming call detected by the step (c), selecting one of the call setup channels stored in said memory.

5,257,401

METHOD OF MAINTAINING AN ESTABLISHED CONNECTION IN A MOBILE RADIO SYSTEM COMPRISING BOTH ANALOG AND DIGITAL RADIO CHANNELS

Jan E. Åke S. Dahlin, Järfälla, and Jan E. Uddenfeldt, Vällingby, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Continuation-in-part of Ser. No. 371,126, Jun. 26, 1989, Pat. No. 5,042,082. This application Apr. 11, 1990, Ser. No. 507,469

Claims priority, application Sweden, Apr. 17, 1989, 8901385-8

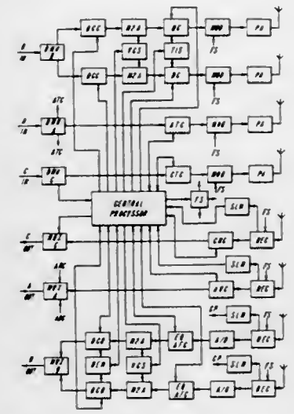
Int. Cl.[5] H04Q *7/00*

U.S. Cl. 455—33.2 **32 Claims**

1. In a multi-channel mobile radio system comprising a base station and a mobile station designed both for digital transmission of information using digitally modulated radio signals on a digital radio channel and for analog transmission of information using analog-modulated radio signals on an analog radio channel, which mobile station comprises an equalizer designed for a particular maximum time dispersion of digitally modulated radio signals, a method of maintaining a connection started on the digital radio channel comprising the steps of:

estimating time dispersion of the digital radio channel used by the mobile radio station for the connection; and

comparing the estimated time dispersion with criteria for handoff to an available analog radio channel and when the estimated time dispersion corresponds to the criteria for handoff, transmitting to the mobile station information on the available analog radio channel and performing handoff of the connection to the available analog radio channel.



5,257,402

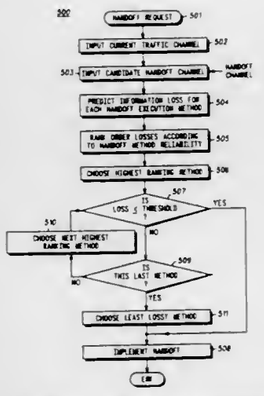
METHOD FOR EFFECTING HANDOFF IN A MULTI-SITE COMMUNICATION SYSTEM

Kenneth J. Crisler, Wheaton, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 28, 1991, Ser. No. 676,991

Int. Cl.[5] H04Q *7/00*

U.S. Cl. 455—33.2 **15 Claims**



1. A method of effecting handoff of a communicating communication unit from a first communication resource to a second communication resource, comprising the steps of:

A) determining that a handoff from the first communication resource to the second communication resource should likely be made;

B) determining a level of communication degradation that will likely occur if handoff occurs to the second communication resource pursuant to a first handoff methodology;

C) determining a level of communication degradation that will likely occur if handoff occurs to the second communication resource pursuant to at least a second handoff methodology, which second handoff methodology is different than the first handoff methodology;

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D) selecting one of the handoff methodologies as a function of:

i) likely reliability; and

ii) acceptable communication degradation to provide a selected handoff methodology.

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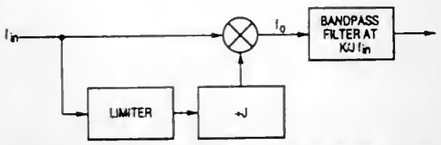
METHOD OF SUBCARRIER MULTIPLICATION WHICH PRESERVES AM INFORMATION IN FM SYSTEMS

Luis A. Rovira, Atlanta; David P. Womble, Doraville; Allen Walter, Lilburn, all of Ga., and Robert Dennison, Cherry Hinton, England, assignors to Scientific-Atlanta, Inc., Norcross, Ga.

Continuation of Ser. No. 382,773, Jul. 20, 1989. This application Dec. 3, 1991, Ser. No. 800,721

Int. Cl.[5] H04B *7/00*

U.S. Cl. 455—45 **18 Claims**



1. A circuit for processing a signal including a carrier which has been amplitude and frequency modulated to alter carrier frequency and frequency deviation of the signal by a selected factor while preserving the amplitude modulation of the signal, said circuit comprising:

means for removing the amplitude modulation from the signal to generate a second signal which includes the carrier frequency and the frequency modulation;

means for mixing the signal with said second signal to generate at an output of said mixing means a plurality of mixing products which include at least sum and difference products of the signal and said second signal; and

means for filtering said output of said mixing means to select the mixing product which includes the carrier frequency and frequency deviation altered by the selected factor along with the amplitude modulation.

5,257,404

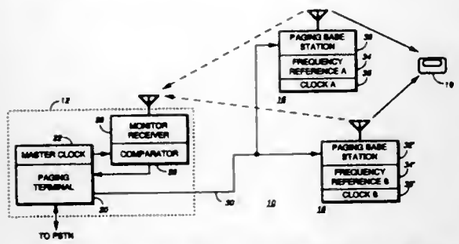
SIMULCAST SYNCHRONIZATION AND EQUALIZATION SYSTEM AND METHOD THEREFOR

Steven A. Goreham, Mount Prospect, and Jan P. Vanderspool, II, Woodstock, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 4, 1991, Ser. No. 771,577

Int. Cl.[5] H04B *7/00*

U.S. Cl. 455—51.2 **19 Claims**



1. A simulcast transmission system having means for time synchronizing data transmissions therefrom, comprising:

a plurality of transmission stations, each having means for receiving system timing signals from a control station, transmitting means for transmitting synchronization timing signals and data, and timing means for controlling the time of transmission of the synchronization timing signals and the data, the synchronization timing signals indicating a local time of transmission thereof and being transmitted therefrom in response to the system timing signal received from the control station; and

said control station comprising means for generating and distributing the system timing signals to said plurality of transmission stations, means for receiving the synchronization timing signals transmitted from said plurality of transmission stations, means responsive to the received synchronization timing signals for generating time adjustment factor signals and means of distributing the time adjustment factor signals to said transmission stations for effecting adjustment of said timing means for controlling the time of transmission of the synchronization timing signals and data therefrom.

5,257,405

METHOD AND SYSTEM FOR SETTING UP LOS-RADIO COMMUNICATION BETWEEN MOBILE OR STATIONARY REMOTE STATIONS

Peter Reitberger, Munich, Fed. Rep. of Germany, assignor to Rohde & Schwarz GmbH & Co. KG, Fed. Rep. of Germany.

Filed May 28, 1991, Ser. No. 706,256

Claims priority, application Fed. Rep. of Germany, May 29, 1990, 4017234

Int. Cl.[5] H04B *1/18, 17/02, 7/005*

U.S. Cl. 455—54.1 **1 Claim**



1. A method for setting up an LOS radio link between at least one mobile calling transmitting/receiving station and at least one remote transmitting/receiving station, both located in a predetermined operating area, comprising the steps of:

providing the mobile station with an electronic memory and an associated processor;

storing at least geographical or topographical data of the operating area in the memory at the mobile station;

prior to establishing the radio link, based on a current location of the mobile calling station and location of the remote station, calculating a transmission loss between the calling station and the remote station based on at least the geographical or topographical data stored in the memory at the mobile station by inputting into the processor at least the current location of the mobile calling station; and

adjusting operation characteristics of the mobile station in accordance with the calculated transmission loss.

5,257,406

SYSTEM AND METHOD FOR CONTROLLING RADIO COMMUNICATION BASE ON A STORED SCHEDULE

Koichi Ito, Hino, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 3, 1991, Ser. No. 680,234

Claims priority, application Japan, Apr. 4, 1990, 2-89543

Int. Cl.[5] H04B *7/26*

U.S. Cl. 455—56.1 **20 Claims**

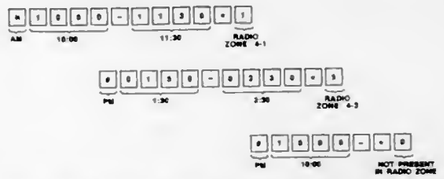
15. A radio communication system comprising:

a radio control station connected to a wired line network;

a plurality of base stations each having a different radio zone and being connected through a wired line to the radio control station;

a plurality of groups of radio mobile terminals, each group of radio mobile terminals assigned to a different one of the base stations, the radio mobile terminals being movable among the radio zones;

memory means provided in the radio control station, for storing schedule data including data on the radio zones in which the radio mobile terminals are to be located and time periods during which the radio mobile terminals are to be located in the radio zones; and



call control means, when an incoming call is received from the wired line network to one of the radio mobile terminals, for checking in which radio zone the one radio mobile terminal is located at the time the incoming call is received by referencing the schedule data stored in the memory means of the radio control station, and for calling the one radio mobile terminal through the base station having the radio zone in which the one radio mobile terminal is located.

5,257,407

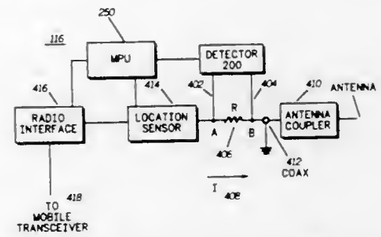
AUTOMATIC ANTENNA COUPLER FAULT DETECTOR AND INDICATOR

David W. Heinzelmann, Bedford, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 20, 1990, Ser. No. 585,749

Int. Cl.[5] H04B *17/00*

U.S. Cl. 455—67.1 **6 Claims**



1. In a communication system having a plurality of transmitters for transmitting signals with pre-determined time intervals, also having a plurality of vehicles each having an antenna coupled to a receiver via an active transformation device being biased by a supply current from said receiver, said receiver intended for receiving and decoding said signals with pre-determined time intervals, a processor coupled to said receiver for processing said signals with pre-determined time intervals to determine geographical location of said plurality of vehicles, a transceiver coupled to said processor for transmitting signals containing said geographical location of said plurality of vehicles to a dispatch center, comprising:

a circuit for analyzing the coupling status of said receiver to said antenna, comprising:

measurement means for measuring said bias current;

comparator means coupled to said measurement means for comparing said bias current to pre-determined levels of current levels for determining the coupling status of said antenna to said receiver; and

indicator means coupled to said comparator means for indicating said coupling status of said antenna to said receiver to said transceiver.

5,257,408

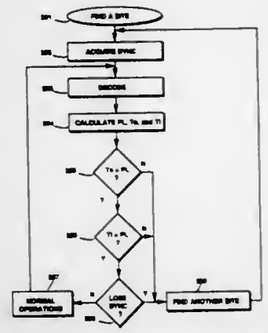
METHOD FOR SEEKING A COMMUNICATION SYSTEM

Carl B. Olson, San Carlos, Calif., and Gary W. Grube, Palantine, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 30, 1992, Ser. No. 875,948

Int. Cl.[5] H04B *17/00, 7/26*

U.S. Cl. 455—67.6 **6 Claims**



1. In a network of communication systems that comprises a plurality of communication systems, wherein each communication system includes a plurality of communication units that are arranged into communication groups, a limited number of communication resources that are transceived via a limited number of repeaters, and a communication resource allocator that allocates the limited number of communication resources among the plurality of communication units, wherein, a method that allows a communication unit, that is seeking a communication system, to monitor integrity of both transmit and receive communication paths, the method comprises the steps of:

a) acquiring synchronization with a communication system;

b) receiving transmission parameters of the communication system;

c) calculating talk-out gain of the transmit communication path and talk-in gain of the receive communication path;

d) calculating a transmit communication path loss and a receive communication path loss; and

e) when the talk-out gain of the transmit communication path is above the transmit communication path loss and when the talk-in gain of the receive communication path is above the receive communication path loss, monitoring the communication system.

5,257,409

FREQUENCY SYNTHESIZER WITH PROGRAMMING FEEDBACK

Robert J. Sarocka, Lombard; David D. Neperud, Roselle; Peter P. Walter, Schaumburg; Tim J. Manczko, Hanover Park, and David H. Spensley, Jr., West Chicago, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 18, 1991, Ser. No. 779,553

Int. Cl.[5] H04B *1/40*

U.S. Cl. 455—76 **19 Claims**

1. A programmable frequency synthesizer arrangement having a programming feedback capability, adaptable to avoid undesirable operation due to random hard and soft faults, comprising:

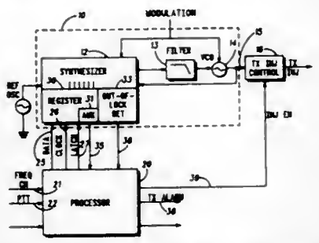
controller means, responsive to a programming request, for generating appropriate programming information suitable for controlling an operation of a programmable frequency synthesizer, said operation including generation of a desired frequency signal;

means, coupled to said controller means and said programmable frequency synthesizer, for receiving said programming information and directing, in response thereto, said

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operation of said programmable frequency synthesizer, which information is susceptible to corruption due to an occurrence of a random hard or soft fault within the synthesizer arrangement;

said means for receiving further generating a feedback signal representative of said programming information as applied to said programmable frequency synthesizer, said feedback signal coupled to said controller means; and



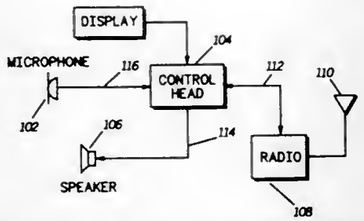
deterrence means, coupled to said controller means, for generating a reference signal indicative of said programming information, comparing said reference signal to said feedback signal to provide a comparison, and then blocking an undesirable operation of said programmable frequency synthesizer whenever said comparison indicates said occurrence of said random hard or soft fault.

5,257,410

COMMUNICATION DEVICE WITH ISDN INTERFACE

William R. Meszko, Fort Worth, and Graham G. Haddock, III, Bedford, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 22, 1991, Ser. No. 673,443
Int. Cl.[5] H04B *1/44, 1/38*
U.S. Cl. 455—78 **12 Claims**



1. A communication device for receiving a carrier signal modulated with an information signal comprising a voice signal, the device having a plurality of units interconnected via a single pair of wires for communicating information signals and control data signals and comprising:

(a) a first unit including;

(i) receiver means for receiving the carrier signal and recovering the information signal;

(ii) digitizer means for digitizing the voice signal of the recovered information signal;

(iii) first processor means for encoding the digitized voice signal and the control data signals to ISDN format; and

(iv) means for simultaneously coupling the ISDN formatted signal to the single pair of wires, the means for simultaneously coupling includes means for carrying DC current from the first unit to power the second unit;

(b) a second unit, including;

(i) second processor means for receiving the ISDN formatted signal from the single pair of wires;

(ii) decoder means for decoding the digitized voice signal, and the control data signals of the ISDN formatted signal; and

(iii) audio output means for outputting the voice signal;

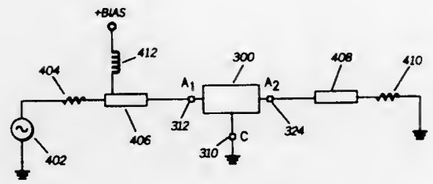
(c) display means coupled to the second unit for displaying the decoded data portions of the information signal.

5,257,411

RADIO FREQUENCY SWITCHING DEVICE

David H. Minasi, Plantation, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 8, 1991, Ser. No. 741,911
Int. Cl.[5] H04B *1/46*
U.S. Cl. 455—80 **7 Claims**



1. A PIN diode package having first, second, and third package terminals, comprising:

a PIN diode having a cathode and anode, the first package terminal being coupled to the cathode;

a first electrically conductive connection means coupled between the anode and the second package terminal; and

a second electrically conductive connection means coupled between the anode and the third package terminal;

wherein the first, second and third package terminals are all leadframes; and

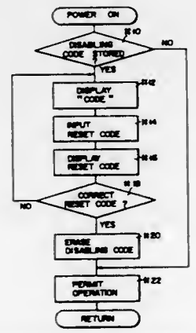
wherein the first and second electrically conductive means are both wirebonds.

5,257,412

RADIO TELECOMMUNICATION APPARATUS HAVING AN OPERATION DISABLING SYSTEM

Munehisa Tomioka, and Shinya Takahashi, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 30, 1991, Ser. No. 707,817
Claims priority, application Japan, May 31, 1990, 2-142954
Int. Cl.[5] H04B *1/40*
U.S. Cl. 455—89 **17 Claims**



1. A radio telecommunication apparatus, comprising:

a memory;

detecting means for detecting a presence or an absence of data at a predetermined location in said memory;

operation control means for disabling operation of said apparatus if the presence of data at the predetermined location is detected, and for enabling operation of said apparatus if the absence of data at the predetermined location is detected; and

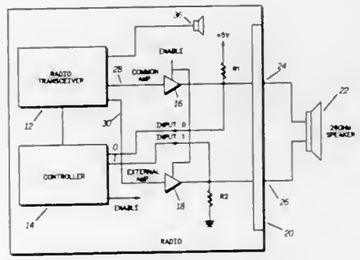
erasing means for erasing data the predetermined location whereby said detecting means detects an absence of data at the predetermined location.

5,257,413

OPTION SELECTION METHOD AND APPARATUS

Shawn A. Warner, Margate; Eric D. Brooks, Pompano Beach, and Joseph Patino, Plantation, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 10, 1991, Ser. No. 774,425
Int. Cl.[5] H04B *1/38, 1/20*
U.S. Cl. 455—89 **9 Claims**



1. A radio communication device having a connector comprising first and second terminals for connecting to an external optional accessory which includes a speaker, the radio communication device comprising:

receiver means for receiving radio signals, the receiver means comprising first and second outputs coupled to the first and second terminals, respectively, for providing an audio output signal representing the radio signals received by the receiver means; and

controller means, coupled to the receiver means, for controlling the receiver means and for establishing at least one mode of operation for the radio communication device;

the controller means comprising first and second inputs coupled to the first and second terminals, respectively, for charging the at least one mode of operation for the radio communication device in response to sensing the external optional accessory being connected to at least one of the first and second terminals.

5,257,414

APPARATUS FOR ACCEPTING AND RETAINING A MEMORY CARD

David W. Trahan, Palatine; John F. Rojc, Glen Ellyn, and Robert J. Stinauer, Arlington Heights, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 26, 1990, Ser. No. 618,125
Int. Cl.[5] H04B *1/08, 1/38;* **G06K** *7/04*
U.S. Cl. 455—90 **13 Claims**

1. A memory card reader having at least a first electrical contact electrically coupled to an electronic apparatus disposed within an interior of a structural housing, the memory card reader accepting a memory card having at least a second electrical contact disposed on the memory card and information stored in the memory card, the memory card reader comprising:

a memory card chamber for aligning the first electrical contact with the second electrical contact upon loading the memory card into the memory card reader, such that the information stored on the memory card is readable, the memory card chamber comprising:

a planar first platform coupled to an interior surface of the structural housing,

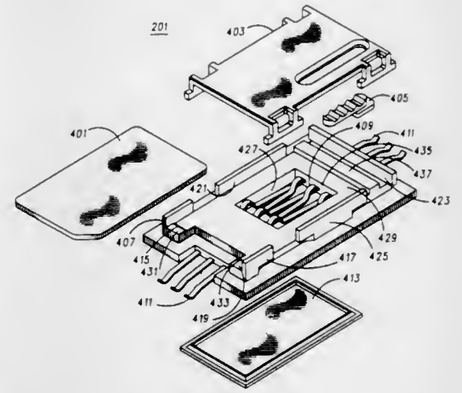
a planar second platform raised from the plane of, disposed within, joined to and parallel to said planar first platform,

an opening essentially in the center of said planar second platform surrounding a first end of the first electrical contact,

a first inclined plane disposed at a first edge of said planar second platform,

a planar third platform raised from the plane of, joined to, and parallel to said planar second platform, said planar third platform being triangular in shape, disposed in a first corner formed by said first edge and a second edge of said planar second platform, said second edge adjacent to and perpendicular to said first edge,

a second inclined plane disposed at a third edge of said planar second platform, said third edge created by said planar third platform,



a fourth platform raised from the plane of, joined to, and perpendicular to said planar first platform, disposed parallel to said second edge of said planar second platform,

a fifth platform raised from the plane of, joined to, and perpendicular to said planar first platform, disposed parallel to a fourth edge of said planar second platform, said fourth edge opposite said second edge of said planar second platform,

a sixth platform raised from the plane of, joined to, and perpendicular to said planar first platform, disposed parallel to a fifth edge of said planar second platform, said fifth edge adjacent to said second and fourth edges and opposite said first edge of said planar second platform, and

a first cover raised from the plane of and parallel to said planar first platform, interlocked to said fourth, fifth and sixth platforms;

means for retaining the alignment of the first electrical contact with the second electrical contact;

means for sealing the interior of the structural housing from the memory card reader.

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5,257,415

AUTOMATIC TRANSMISSION LEVEL CONTROL DEVICE

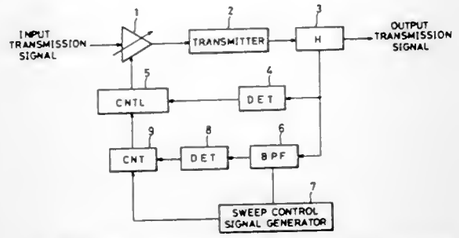
Yoshiaki Kumagai; Eiji Itaya, and Yoichi Endo, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 16, 1992, Ser. No. 851,614

Claims priority, application Japan, Mar. 20, 1991, 3-057302; Mar. 20, 1991, 3-082020

Int. Cl.[5] H04B *1/04*

U.S. Cl. 455—126 14 Claims



1. An automatic transmission level control device used in a multi-carrier communication system, comprising:

gain control means for controlling a level of a transmission signal;

transmission means, coupled to said gain control means for amplifying the transmission signal;

hybrid circuit means, coupled to said transmission means, for extracting a part of power of the transmission signal from said transmission means;

level control means, coupled to said gain control means and said hybrid circuit means, for adjusting a gain of said gain control means on the basis of a magnitude of the transmission signal and data indicating a number of carriers included in the transmission signal; and

carrier detection means, coupled to said hybrid circuit means and said level control means, for filtering the transmission signal and for generating said data indicating the number of carriers included therein.

5,257,416

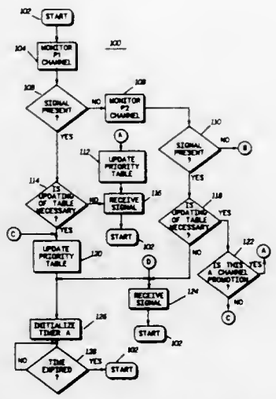
METHOD FOR DYNAMICALLY CHANGING CHANNEL PRIORITY FOR SCAN IN A RECEIVER

Gregory L. Cannon, Coconut Creek, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 4, 1991, Ser. No. 650,124

Int. Cl.[5] H03J *7/18*

U.S. Cl. 455—166.2 15 Claims



8. A method for dynamically updating a priority table in a receiver that receives a carrier signal modulated with an information signal containing priority information of the channel, comprising the steps of:

detecting the presence of a carrier signal in a channel to produce a detected channel;

decoding the information signal of the carrier signal;

determining whether the detected channel, in response to the decoding of the information signal, has the classifications of the highest priority channel;

updating the priority table accordingly; and

monitoring the channel which has the classifications of the highest priority channel.

DESIGN PATENTS

GRANTED OCT. 26, 1993

ERRATA

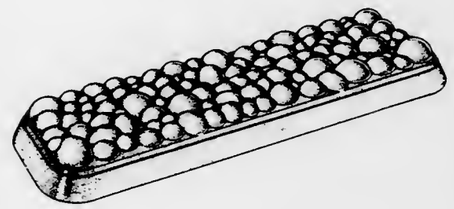
For CLASS	See PATENT NO.
607-117	5,255,691
607-122	5,255,692
607-120	5,255,693
139-116	5,255,707
141-067	5,255,708
119-265	5,255,811
241-101	5,255,867
241-189	5,255,869
060-528	5,255,972
606-042	5,256,138
422-232	5,256,163
008-137	5,256,168
423-230	5,256,172
504-124	5,256,182
148-421	5,256,202
428-225	5,256,429
524-016	5,256,478
437-106	5,256,550
435-252	5,256,567
435-252	5,256,568
435-280	5,256,569
435-285	5,256,570
501-137	5,256,639
546-114	5,256,782
546-146	5,256,783
514-311	5,256,789
514-291	5,256,790
548-469	5,256,799
177-145	5,256,835
367-099	5,256,908
313-404	5,256,941
313-504	5,256,945
370-056	5,256,958
378-168	5,256,982
335-126	5,256,992
335-216	5,256,993
331-016	5,256,994
331-094	5,256,995
345-026	5,257,015
345-013	5,257,017
345-030	5,257,018
257-315	5,257,095
359-010	5,257,118
359-819	5,257,145
363-016	5,257,170
364-143	5,257,171
363-071	5,257,180
371-043	5,257,263

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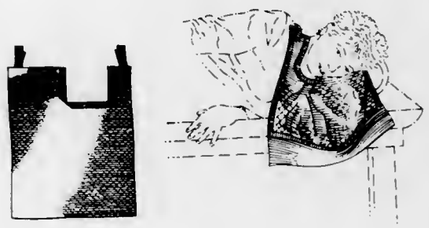
DESIGNS

OCTOBER 26, 1993

340,568
FOOD PRODUCT
Gordon S. Lane, Baldwinsville, N.Y., assignor to Nestec S.A., Vevey, Switzerland
Filed Mar. 12, 1992, Ser. No. 850,439
Term of patent 14 years
U.S. Cl. D1—121



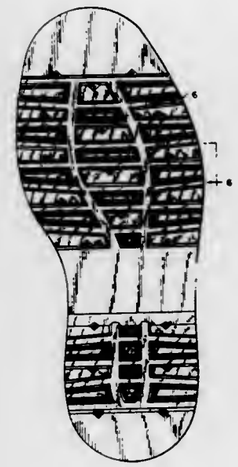
340,569
ENDOSCOPIC BIB
Frank W. Jackson, Mechanicsburg, Pa., assignor to Chek-Med Systems, Inc., Harrisburg, Pa.
Filed Sep. 26, 1991, Ser. No. 765,869
Term of patent 14 years
U.S. Cl. D2—229



340,570
MAPLE LEAF SUN VISOR
Scott S. Gray, 401 Alexandria Colony E., Columbus, Ohio 43215
Filed Dec. 19, 1991, Ser. No. 810,800
Term of patent 14 years
U.S. Cl. D2—248



340,571
TREAD SURFACE AND PERIPHERY OF A FOOTWEAR UNIT SOLE
James R. Novy, Framingham, Mass., assignor to Quabaug Corporation, North Brookfield, Mass.
Filed Apr. 28, 1992, Ser. No. 875,119
Term of patent 14 years
U.S. Cl. D2—320

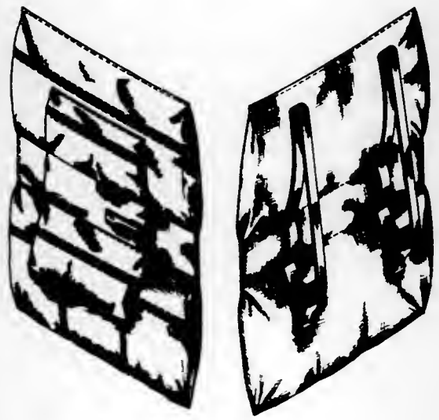


340,572
GLOVE
Christopher L. Richard, Elk Grove Village, and Gary J. Moss, Oak Park, both of Ill., assignors to Marmon Holdings, Inc., Chicago, Ill.
Filed Jan. 10, 1992, Ser. No. 818,984
Term of patent 14 years
U.S. Cl. D2—610



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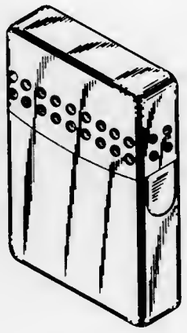
340,573
BACKPACK FOR A FIRST-AID KIT
Francois J. Badeau, Laguna Niguel, and William R. Brion, San Clemente, both of Calif., assignors to Sunburst Products, Inc., Camarillo, Calif.
Filed Nov. 15, 1990, Ser. No. 615,002
Term of patent 14 years
U.S. Cl. D3—32



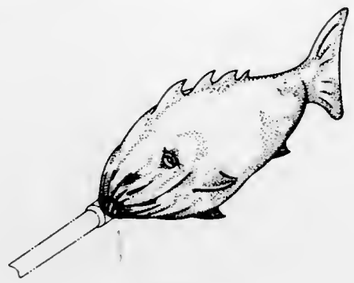
340,574
ACCESSORY BAG FOR A CAMERA AND LENS
Robert Weinreb, 510 Broadway, New York, N.Y. 10012
Filed Oct. 10, 1991, Ser. No. 775,236
Term of patent 14 years
U.S. Cl. D3—33



340,575
CASE FOR A MAGNETIC TAPE CASSETTE
Miya Suwa, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jun. 25, 1991, Ser. No. 721,213
Claims priority, application Japan, Dec. 28, 1990, 2-43959
Term of patent 14 years
U.S. Cl. D3—35



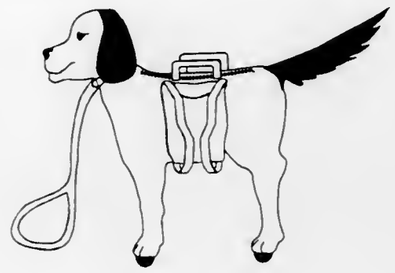
340,576
PROTECTIVE COVER FOR FISHING REEL
Susan E. Delagarza, and Raymond O. Delagarza, both of 8 W. Terrace #2 South, Villa Park, Ill. 60181
Filed Nov. 8, 1991, Ser. No. 789,467
Term of patent 14 years
U.S. Cl. D3—38



340,577
TOTE BAG
Mazie I. Andrews, 6844 Kimesville Rd., Liberty, N.C. 27298
Filed Mar. 14, 1991, Ser. No. 669,342
Term of patent 14 years
U.S. Cl. D3—42



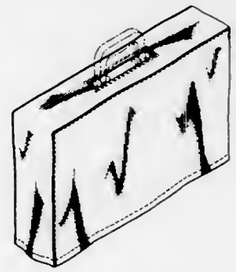
340,578
CHILDREN'S ANIMAL SUITCASE
Gloria J. Winkos, 114 Union St., Montgomery, N.Y. 12549
Filed Feb. 20, 1992, Ser. No. 839,224
Term of patent 14 years
U.S. Cl. D3—45



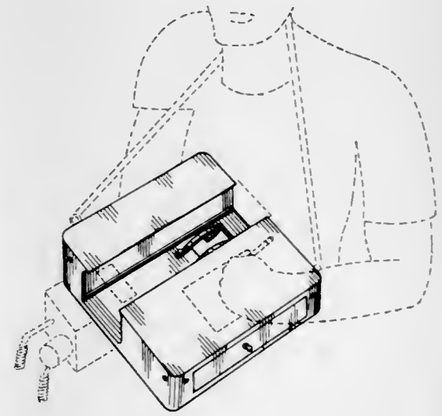
340,579
HANDBAG
Michael Romano, Wakefield, Mass., assignor to MJP Manufacturing Company, Inc., Marlboro, Mass.
Filed Jan. 17, 1992, Ser. No. 822,571
Term of patent 14 years
U.S. Cl. D3—53



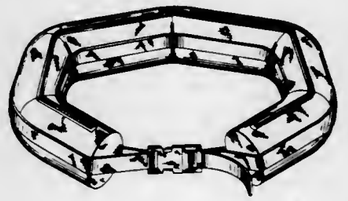
340,580
BRIEFCASE COVER
Kevin L. Hirschy, 1403 Glenwillow Dr., Arlington, Tex. 76018
Filed Mar. 4, 1991, Ser. No. 663,692
Term of patent 14 years
U.S. Cl. D3—76



340,581
BODY SUPPORTED HOLDER
Byron J. Plonk, 9115 Marlboro Pike, #76, Upper Marlboro, Md. 20772
Filed Apr. 30, 1991, Ser. No. 693,417
Term of patent 14 years
U.S. Cl. D3—100



340,582
BEVERAGE CAN BELT
Gary G. Pressentin, 1344 Morrison St., Madison, Wis. 53703-3812
Filed Jul. 23, 1991, Ser. No. 734,855
Term of patent 14 years
U.S. Cl. D3—106

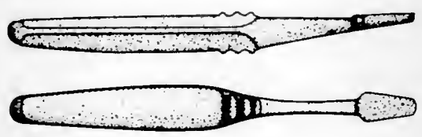


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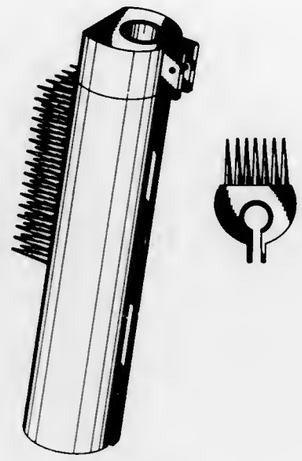
340,583
BOTTLE CARRIER
Kerri J. Kahn, 666 Greenwich St. #730, New York, N.Y. 10014
Filed Jan. 29, 1993, Ser. No. 4,239
Term of patent 14 years
U.S. Cl. D3—106



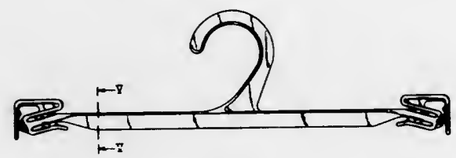
340,584
BRUSH HANDLE
Shelley E. Handel, Franklin; Thomas J. Hall, Cincinnati; Emily M. Kokenge, Loveland, and George Markus, Fairfield, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jan. 10, 1992, Ser. No. 819,528
Term of patent 14 years
U.S. Cl. D4—104



340,585
SKI BOOT BRUSH
Kevin F. Kirk, 3213 Green Oak Dr., Walled Lake, Mich. 48390
Filed Mar. 6, 1991, Ser. No. 665,183
Term of patent 14 years
U.S. Cl. D4—136



340,586
CLOTHES HANGER
Gerhard Fildan, Kriehubergasse 31, A-1050 Vienna, Austria
Filed Jun. 19, 1991, Ser. No. 717,701
Term of patent 14 years
U.S. Cl. D6—326



340,587
STOOL WITH COLLAPSIBLE STEPS AND BACK
Thomas H. Spencer, 3 Dunedin Road, Ramsgate Kent, United Kingdom CT12 6NH
Filed Jun. 15, 1990, Ser. No. 538,483
Term of patent 14 years
U.S. Cl. D6—335



340,588
ARM CHAIR
Brian R. Lee, Glendora, Calif., assignor to O. W. Lee Company, Inc., Calif.
Filed Sep. 11, 1991, Ser. No. 757,497
Term of patent 14 years
U.S. Cl. D6—370



340,589
CHAIR
Zooey C. Chu, Holland, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.
Continuation-in-part of Ser. No. 150,093, Jan. 29, 1988. This application Oct. 11, 1989, Ser. No. 419,634
Term of patent 14 years
U.S. Cl. D6—366



340,590
CHAIR
Elinor S. McGuire, San Francisco, Calif., and Alex W. Mitchell, Grand Rapids, Mich., assignors to The McGuire Furniture Company, San Francisco, Calif.
Filed Jan. 9, 1992, Ser. No. 819,142
Term of patent 14 years
U.S. Cl. D6—369



340,591
BENCH
Christian Lamalle, Saint Ismier, France, assignor to Allibert S.A., Grenoble, France
Filed Dec. 13, 1990, Ser. No. 626,862
Claims priority, application Hague, Jun. 14, 1990, DM/016 919
Term of patent 14 years
U.S. Cl. D6—370



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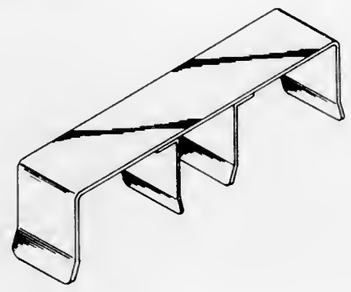
340,592
CHAIR FRAME
Stephen C. Hess, Birmingham, Ala., assignor to Winstoo Furniture Company, Birmingham, Ala.
Filed Nov. 21, 1991, Ser. No. 795,629
Term of patent 14 years
U.S. Cl. D6—370



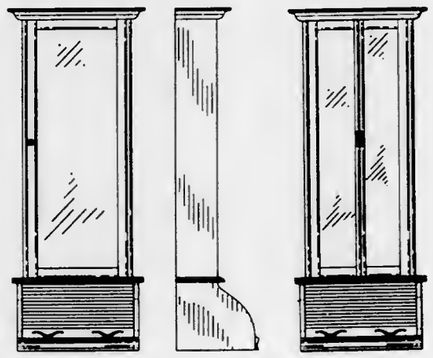
340,593
POST BED
Gerald M. Black, High Point, N.C., assignor to Lexington Furniture Industries, Inc., Lexington, N.C.
Filed Sep. 6, 1991, Ser. No. 756,110
Term of patent 14 years
U.S. Cl. D6—393



340,594
LEG SUPPORT FOR WHEELCHAIR OCCUPANTS
Stanley R. Lambert, 22319 Mossy Oaks Rd., Spring, Tex. 77389
Filed Apr. 4, 1991, Ser. No. 680,270
Term of patent 14 years
U.S. Cl. D6—406



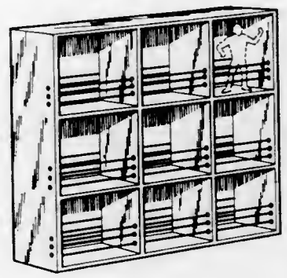
340,595
GUN CABINET
Lawrence E. Jacquinot, St. Paul, Kans., assignor to First Neodesha Bank, Neodesha, Kans.
Filed Apr. 4, 1991, Ser. No. 680,277
Term of patent 14 years
U.S. Cl. D6—433



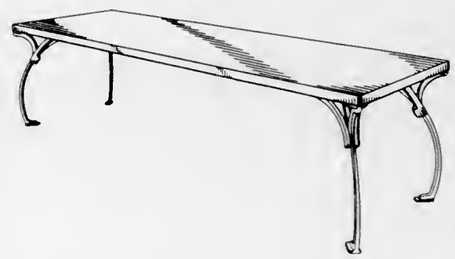
340,596
BOOK DISPLAY RACK
Hal Sandy, 4937 Glendale Rd., Shawnee Mission, Kans. 66205
Filed Jul. 20, 1992, Ser. No. 915,365
Term of patent 14 years
U.S. Cl. D6—449



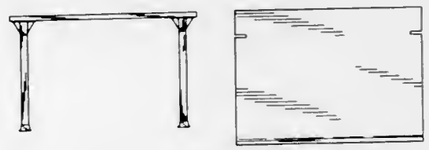
340,597
WRESTLING FIGURINE DISPLAY UNIT
Jonathan B. Klock, 8406 MacLaws Dr., Spotsylvania, Va. 22553
Filed Jul. 31, 1992, Ser. No. 922,959
Term of patent 14 years
U.S. Cl. D6—478



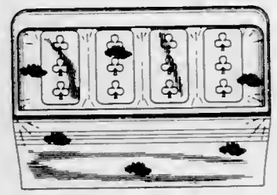
340,598
TABLE
Achille Castiglioni, and Michele DeLucchi, both of Milano, Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy
Filed Apr. 25, 1991, Ser. No. 692,038
Claims priority, application Italy, Oct. 25, 1990, 53332/90
Term of patent 14 years
U.S. Cl. D6—480

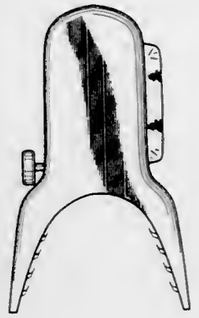


340,599
TABLE
Geoffrey A. Hollington, London, England, assignor to Herman Miller, Inc., Zeeland, Mich.
Filed Sep. 30, 1992, Ser. No. 954,924
Term of patent 14 years
U.S. Cl. D6—484

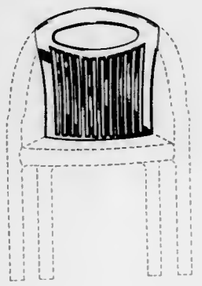


340,600
HEADREST
Brian Stout, 5203 Villa Del Mar Rd. #2316, Arlington, Tex. 76017, and Gordon T. Bland, II, 6492 Central Ave., Fort Worth, Tex. 76180
Filed Oct. 19, 1990, Ser. No. 600,085
Term of patent 14 years
U.S. Cl. D6—501



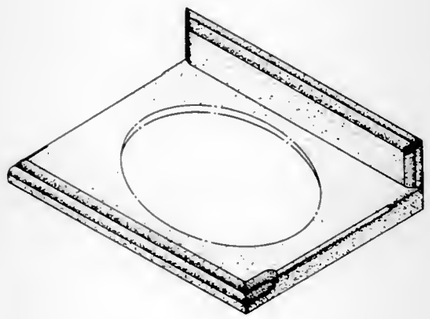


340,601
CHAIR BACK
Raymond Grosfillex, Oyonnax, France, assignor to Grosfillex Sarl, Oyonnax, France
Filed Oct. 24, 1991, Ser. No. 781,950
Claims priority, application Ireland, Apr. 25, 1991, DM/019496
Term of patent 14 years
U.S. Cl. D6—502

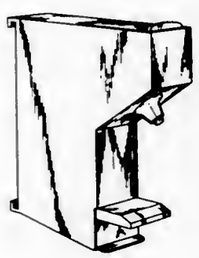


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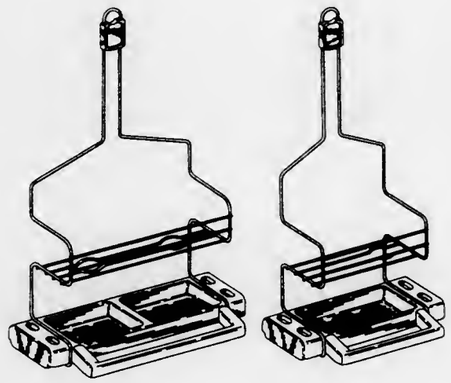
340,602
BATHROOM COUNTER TOP
Richard W. Wood, Jr., Villa Park, Calif., assignor to Gaylan Industries, Inc., Anaheim, Calif.
Filed Jul. 26, 1991, Ser. No. 736,118
Term of patent 14 years
U.S. Cl. D6—511



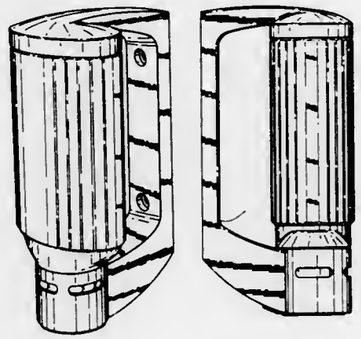
340,603
VITAMIN TABLET DISPENSER
Paul B. Ellison, 1216 Franklin Cir., Clearwater, Fla. 34616
Filed Sep. 30, 1991, Ser. No. 767,977
Term of patent 14 years
U.S. Cl. D6—515



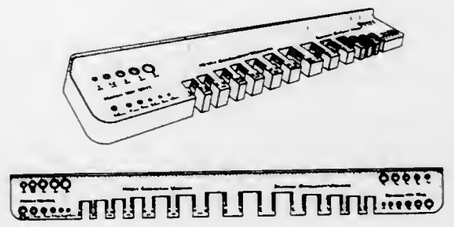
340,604
SHOWER CADDY
Brian J. Conaway, Wooster, and Tyrone M. Keyes, Cincinnati, both of Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Jan. 3, 1992, Ser. No. 816,928
Term of patent 14 years
U.S. Cl. D6—525



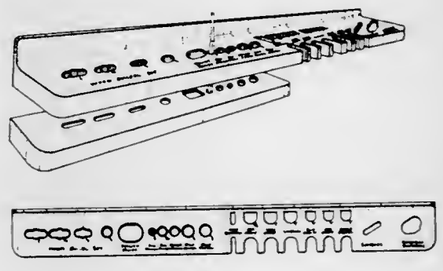
340,605
DISPENSER FOR LIQUID SOAP
Robert Feigenbaum, Neuried, Fed. Rep. of Germany, assignor to Ada Hotelcosmetic GmbH, Kehl-Bodersweier, Fed. Rep. of Germany
Filed Mar. 4, 1992, Ser. No. 845,430
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1991, M9106413.9
Term of patent 14 years
U.S. Cl. D6—545



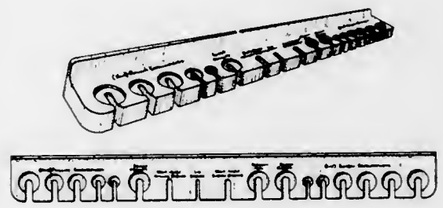
340,606
TOOL HOLDER
Norman F. Hubbard, Scranton, Pa., assignor to Tool Deck, Inc., Moosic, Pa.
Filed Jan. 10, 1992, Ser. No. 818,980
Term of patent 14 years
U.S. Cl. D6—567



340,607
TOOL HOLDER
Norman F. Hubbard, Scrantou, Pa., assignor to Tool Deck, Inc., Moosic, Pa.
Filed Jan. 10, 1992, Ser. No. 818,981
Term of patent 14 years
U.S. Cl. D6—567

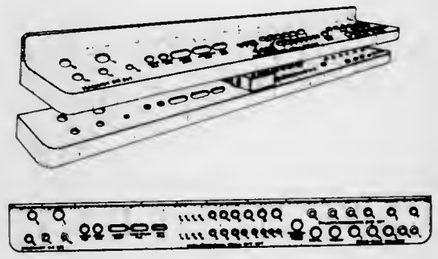


340,608
TOOL HOLDER
Norman F. Hubbard, Scranton, Pa., assignor to Tool Deck, Inc., Moosic, Pa.
Filed Mar. 23, 1992, Ser. No. 855,344
Term of patent 14 years
U.S. Cl. D6—567



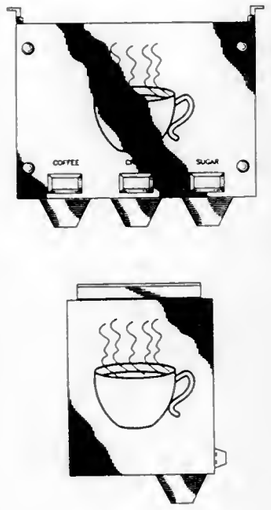
340,609
TOOL HOLDER ASSEMBLY
Norman F. Hubbard, Scrantou, Pa., assignor to Tool Deck, Inc., Moosic, Pa.
Filed Mar. 23, 1992, Ser. No. 855,347
Term of patent 14 years
U.S. Cl. D6—567

340,610
TOOL HOLDER ASSEMBLY
Norman F. Hubbard, Scranton, Pa., assignor to Tool Deck, Inc. Moosic, Pa.
Filed Mar. 23, 1992, Ser. No. 855,934
Term of patent 14 years
U.S. Cl. D6—567

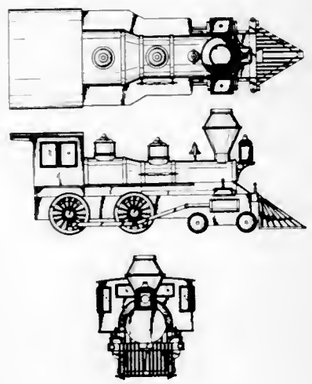


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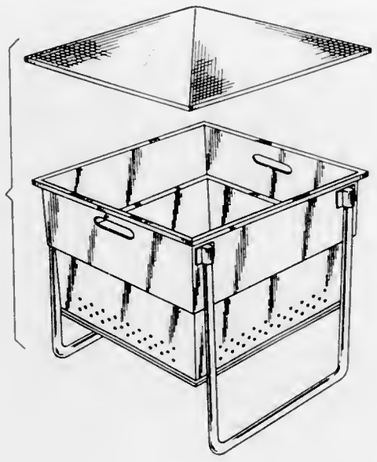
340,611
COFFEE DISPENSER
Billy H. Hoover, Rt. 2, Box 571, Grottoes, Va. 24441
Filed Jul. 22, 1991, Ser. No. 733,273
Term of patent 14 years
U.S. Cl. D7—301



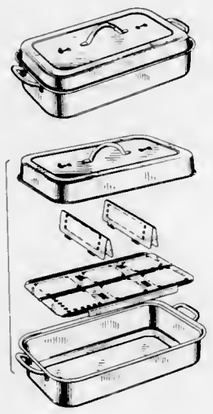
340,612
COMBINED BARBEQUE SMOKER AND COOKER
Thomas Birmingham, Rt. 3, Box 101, Buna, Tex. 77612
Filed Apr. 14, 1992, Ser. No. 868,589
Term of patent 14 years
U.S. Cl. D7—334



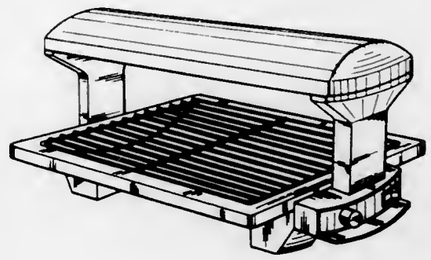
340,613
COLLAPSIBLE PORTABLE STOVE
Donald W. Kesling, 12735 Tustin St., Poway, Calif. 92064
Filed Jul. 3, 1991, Ser. No. 725,822
Term of patent 14 years
U.S. Cl. D7—337



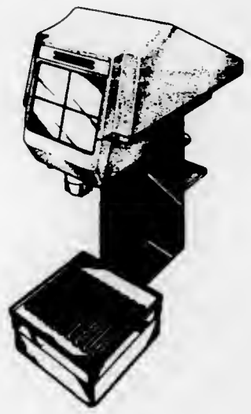
340,614
STEAMER/ROASTER COMBINATION
Edward P. Kaeding, Floral Park, N.Y., assignor to Himark Enterprises, Inc., Hauppauge, N.Y.
Filed Sep. 5, 1991, Ser. No. 755,354
Term of patent 14 years
U.S. Cl. D7—360



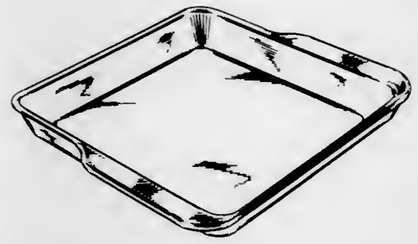
340,615
GRILL
Didier Guerrier, Rumilly, and Denis Gruaz, Annecy, both of France, assignors to Tefal S.A., Rumilly, France
Filed Apr. 21, 1992, Ser. No. 871,639
Claims priority, applicatioo France, Nov. 20, 1991, 91 7279
Term of patent 14 years
U.S. Cl. D7—365



340,616
BEVERAGE DISPENSING HEAD
Graham Williams, Alcester; Charles Boughtflower, High Wycombe Bucks, and Derek Roberts, Maidenhead, all of Great Britain, assignors to The Coca-Cola Company, Atlanta, Ga.
Filed Nov. 20, 1991, Ser. No. 796,125
Term of patent 14 years
U.S. Cl. D7—398



340,617
CASSEROLE DISH
Lee F. Douglas, 4804 Haverwood La., No. 513, Dallas, Tex. 75287
Filed Feb. 12, 1992, Ser. No. 834,639
Term of patent 14 years
U.S. Cl. D7—543



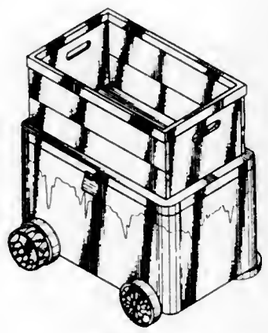
340,618
SHAKER
Larry G. Zimmerman, Champaign, Ill., assignor to Dart Industries Inc., Deerfield, Ill.
Filed Aug. 1, 1991, Ser. No. 740,194
Term of patent 14 years
U.S. Cl. D7—591

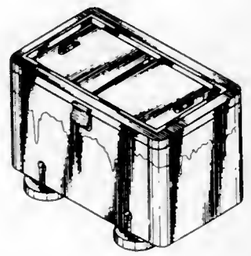


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Patent Not Issued For This Number

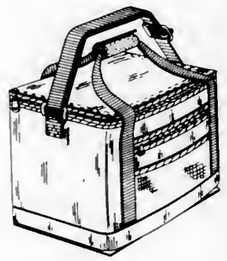
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340,620
WHEELED PICNIC COOLER
Calvin R. Peters, 351 N. Hardwick SW., Grand Rapids, Mich. 49548
Filed Mar. 6, 1992, Ser. No. 845,477
Term of patent 14 years
U.S. Cl. D7—605

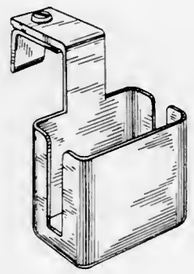




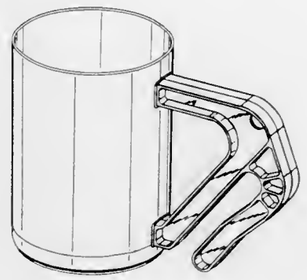
340,621
FLEXIBLE COOLER
Thomas J. Melk, Chicago, Ill., assignor to Outer Circle Products, Ltd., Chicago, Ill.
Filed Jan. 9, 1992, Ser. No. 820,052
Term of patent 14 years
U.S. Cl. D7—607



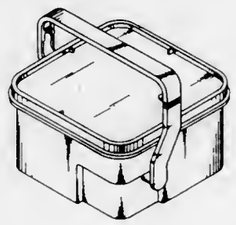
340,622
DRINK HOLDER
Cynthia C. Park, and Heather Park, both of 912 Army Trail Rd., Addison, Ill. 60101
Filed Feb. 14, 1992, Ser. No. 836,083
Term of patent 14 years
U.S. Cl. D7—620



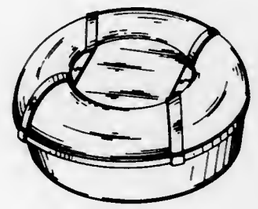
340,623
HOLDER FOR A DRINK CONTAINER
Maxim J. Ryan, 4 Paravista Street, Kerrydale QLD 4226, Australia
Filed Jan. 23, 1992, Ser. No. 824,262
Claims priority, application Australia, Jul. 25, 1991, 2141/91
Term of patent 14 years
U.S. Cl. D7—622



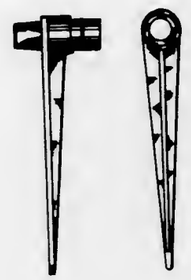
340,624
LUNCH BOX WITH HANDLE
Chie-Chou Chen, 340 Fu Lien Rd., Tainan, Taiwan
Filed Feb. 6, 1992, Ser. No. 832,481
Term of patent 14 years
U.S. Cl. D7—626



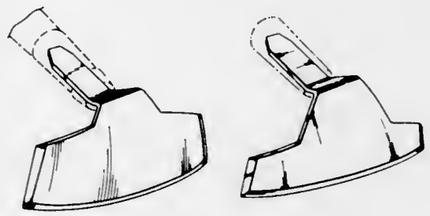
340,625
CEREAL CONTAINER
Paul S. Wang, 22428 Steeple Chase La., Diamond Bar, Calif. 91765
Filed Mar. 2, 1992, Ser. No. 844,691
Term of patent 14 years
U.S. Cl. D7—629



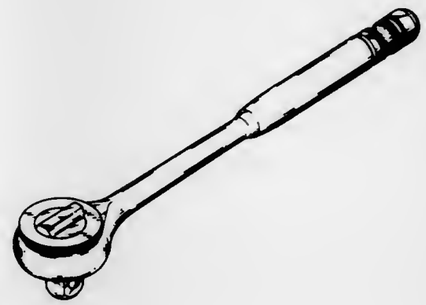
340,626
STAKE FOR ATTACHMENT TO DRIP OR RELATED IRRIGATION TUBING
David Zeman, c/o Disco, P.O. Box 42040, Las Vegas, Nev. 89116
Division of Ser. No. 465,882, Jan. 16, 1990. This application Jun. 5, 1992, Ser. No. 894,791
Term of patent 14 years
U.S. Cl. D8—1



340,627
HOE BLADE
Loren G. Kisby, Rt. 1, Box 22, Munden, Kans. 66959
Filed Jun. 18, 1991, Ser. No. 717,120
Term of patent 14 years
U.S. Cl. D8—11



340,628
RATCHET WRENCH
Jessie Chow, No. 18, Houchuang Rd., Peltwen Districts, Taichung, Taiwan
Filed Apr. 29, 1982, Ser. No. 876,208
Term of patent 14 years
U.S. Cl. D8—25

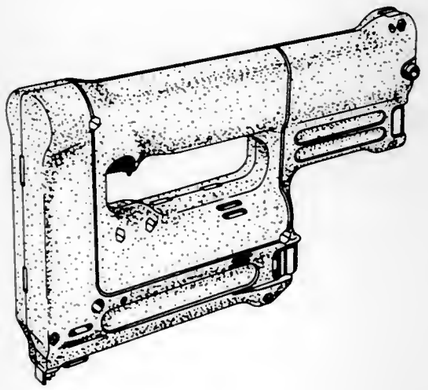


340,629
SANDER
Angelo Sanchez, 25 Pippin Pl., New City, N.Y. 10956; Michael J. Ferdinand, 163 Hunt Ave., Pearl River, N.Y. 10965, and Robert J. Buchalski, Jr., Washingtonville, N.Y., assignors to Angelo Sanchez; Michael J. Ferdinand and Marie Ferdinand, Pearl River, N.Y., a partnership
Filed Dec. 23, 1991, Ser. No. 812,953
Term of patent 14 years
U.S. Cl. D8—62

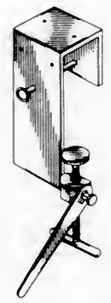


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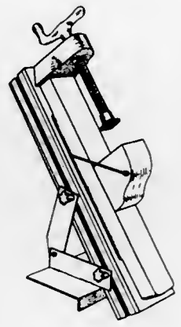
340,630
ELECTRIC STAPLER
Akihito Hara, Aichi, Japan, assignor to Makita Corporation, Anjo, Japan
Filed Apr. 9, 1992, Ser. No. 866,247
Claims priority, application Japan, Oct. 18, 1991, 3-31728
Term of patent 14 years
U.S. Cl. D8—69



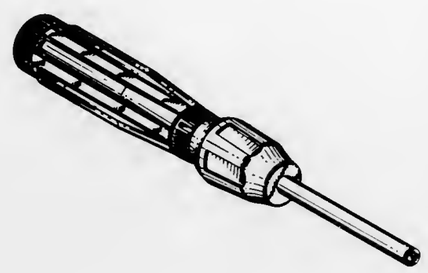
340,631
FASCIA HOLDING AIDE
David E. Hatcher, 3120 W. Wethersfield Rd., Phoenix, Ariz. 85029
Filed May 28, 1991, Ser. No. 706,069
Term of patent 14 years
U.S. Cl. D8—72



340,632
WOODCARVING VISE
David G. Easley, P.O. Box 773, Forsyth, Mo. 65653
Filed Apr. 8, 1991, Ser. No. 682,023
Term of patent 14 years
U.S. Cl. D8—74



340,633
SCREWDRIVER
John A. Badiali, 10 Opal Ave., Middleboro, Mass. 02346
Filed Jan. 21, 1992, Ser. No. 823,550
Term of patent 14 years
U.S. Cl. D8—85



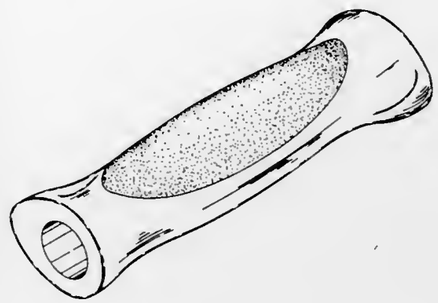
340,634
COMBINED SCREWDRIVER AND MAGNET
Joseph G. Lipic, St. Louis, Mo., assignor to Alexander Manufacturing Company, St. Louis, Mo.
Filed Dec. 11, 1991, Ser. No. 805,829
Term of patent 14 years
U.S. Cl. D8—87



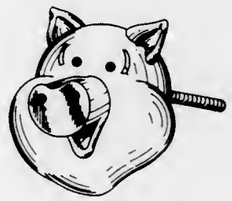
340,635
TOILET SEAT POSITIONING HANDLE
John Paglia, 1680 Narcissa Rd., Blue Bell, Pa. 19422
Filed Apr. 3, 1992, Ser. No. 868,267
Term of patent 14 years
U.S. Cl. D8—317



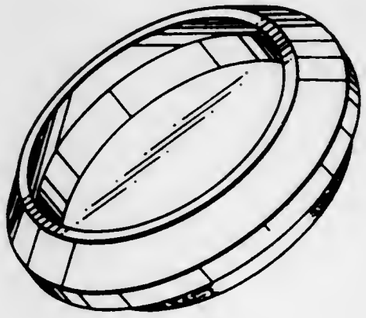
340,636
BICYCLE HANDLEBAR GRIP
Chen Ming-Chang, No. 48, Huan Kung Road, Yung Kang Hsiang Tainan Hsien, Taiwan
Filed Oct. 22, 1991, Ser. No. 780,324
Term of patent 14 years
U.S. Cl. D8—303



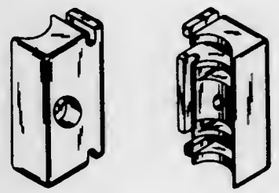
340,637
DECORATIVE DOOR OR CABINET KNOB
Mark D. Campbell, and Carl S. Ostuni, both of 91 Ocean Parkway Apt. #1-D, Brooklyn, N.Y. 11218
Filed Mar. 27, 1991, Ser. No. 676,227
Term of patent 14 years
U.S. Cl. D8—305



340,638
FURNITURE LEG SHOE
John A. Campbell, 527 Park N. Ct., Winter Park, Fla. 32789
Filed Mar. 16, 1992, Ser. No. 851,772
Term of patent 14 years
U.S. Cl. D8—374



340,639
SHELF CONNECTOR
Lee E. Remmers, Ocala, Fla., assignor to Vermont American Corporation, Louisville, Ky.
Filed Oct. 15, 1991, Ser. No. 776,756
Term of patent 14 years
U.S. Cl. D8—381

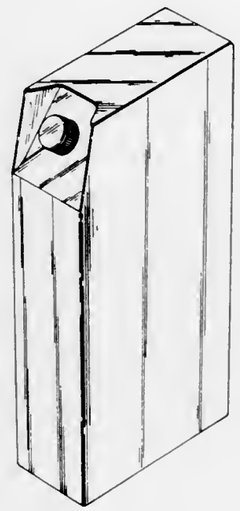


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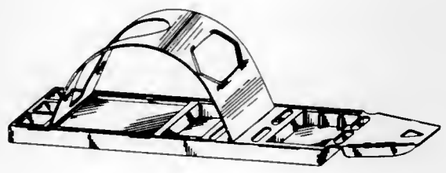
340,640
GASOLINE CONTAINER
John Ferguson, Erin, and Luigi Smali, Rexdale, both of Canada, assignors to Scepter Manufacturing Company Limited, Don Mills, Canada
Filed May 30, 1990, Ser. No. 530,245
Claims priority, application Canada, Dec. 19, 1989, 19-12-89-10
Term of patent 14 years
U.S. Cl. D9—524



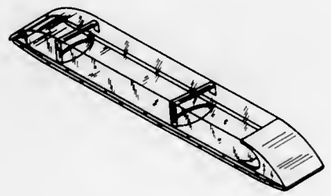
340,642
LIQUID CARTON
Josef Detzel, Kempten; Jürgen Matzel, Hamburg; Rudolph Kraus, Osterreinen, and Hans D. Peissl, Bad Dürkheim, all of Fed. Rep. of Germany, assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.
Filed Jan. 8, 1991, Ser. No. 639,170
Claims priority, application United Kingdom, Jul. 9, 1990, 2008113
Term of patent 14 years
U.S. Cl. D9—417



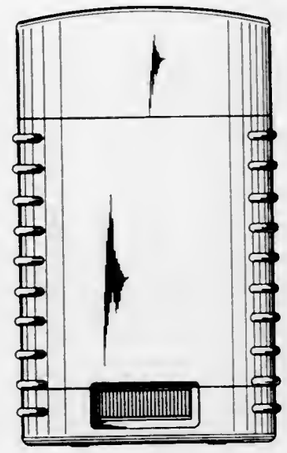
340,641
RECEPTACLE CONSOLE
Benn R. Pittman, 206 Freeman St., Rutherfordton, N.C. 28139
Filed Oct. 16, 1991, Ser. No. 778,689
Term of patent 14 years
U.S. Cl. D9—415



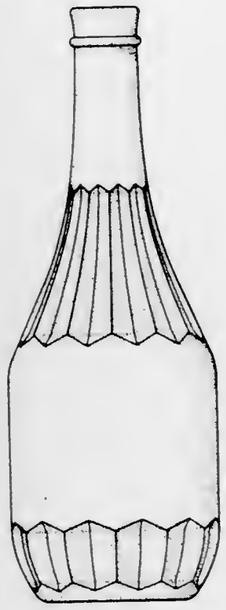
340,643
SHIPPING CONTAINER FOR JEWELRY ITEMS AND WATCH BANDS
Hermann Hirsch, Klagenfurt, Austria, assignor to Hirsch Armbander Gesellschaft mbH, Klagenfurt, Austria
Filed Aug. 23, 1991, Ser. No. 748,915
Claims priority, application Austria, Feb. 26, 1991, MU400/91
The portion of the term of this patent subsequent to Oct. 19, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—418



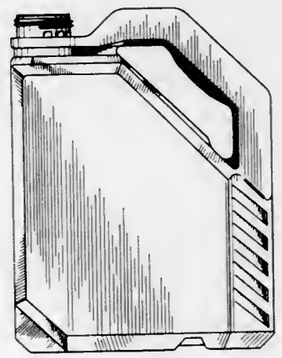
340,644
DISPENSING CONTAINER FOR A COSMETIC PRODUCT
Kenneth W. Hirst, New York, N.Y., assignor to The Gillette Company, Boston, Mass.
Continuation-in-part of Ser. No. 648,427, Jan. 24, 1991, abandoned. This application Jul. 3, 1991, Ser. No. 725,749
Term of patent 14 years
U.S. Cl. D9—424



340,646
CARAFE
Bernard Jeanjean, Cabrials, France, assignor to Maison Jeanjean, France
Filed Oct. 9, 1991, Ser. No. 773,293
Claims priority, application France, Jun. 18, 1991, 913783
Term of patent 14 years
U.S. Cl. D9—545



340,645
BOTTLE
Peter E. W. Bridger, Berkshire, England; John T. Klette, Annandale, Va.; Jule G. Lambeck, Wayne, Ill., and Elena Portoles, Alexandria, Va., assignors to Mobil Oil Corporation, Fairfax, Va.
Filed Jul. 31, 1991, Ser. No. 738,500
Term of patent 14 years
U.S. Cl. D9—528

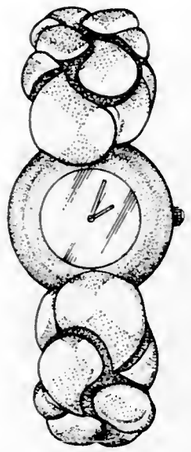


340,647
WRISTWATCH
Gilles Robert-Tissot, Geneva, Switzerland, assignor to Gilles Robert, SA, Geneva, Switzerland
Filed Feb. 8, 1991, Ser. No. 653,798
Term of patent 14 years
U.S. Cl. D10—32



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340,648
COMBINED WRISTWATCH AND BRACELET
Caroline Scheuffle, Prangins, Switzerland, assignor to Le petit-fils de L. U. Chopard & Cie SA, Meyrin, Switzerland
Filed Mar. 28, 1991, Ser. No. 676,239
Claims priority, application Hague, Oct. 1, 1990, DMA/001351
Term of patent 14 years
U.S. Cl. D10—32



340,649
WRISTWATCH
Michihiro Iwamura, Saitama, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan
Filed Apr. 18, 1991, Ser. No. 687,402
Term of patent 14 years
U.S. Cl. D10—32



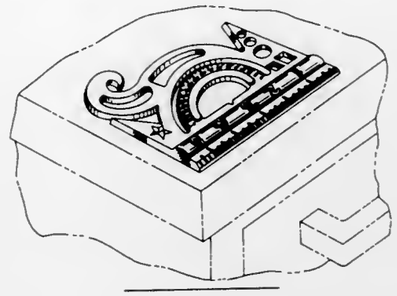
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WRISTWATCH
Michihiro Iwamura, Saitama, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan
Filed Apr. 18, 1991, Ser. No. 687,403
Term of patent 14 years
U.S. Cl. D10—32



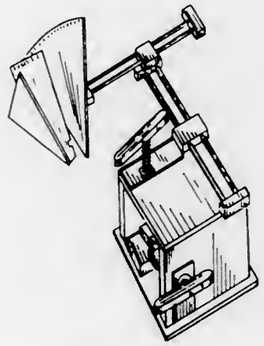
340,651
COMBINED WRISTWATCH AND BRACELET
Patrick J. Lassigne, Bienne, Switzerland, assignor to Ultima Brands S.A. (Ultima Brands AG), Bienne, Switzerland
Filed Mar. 15, 1991, Ser. No. 671,281
Claims priority, application Hague, Sep. 28, 1990, DMA/001348
Term of patent 14 years
U.S. Cl. D10—32



340,652
MULTI PURPOSE DRAWING IMPLEMENT
Bruce Shapiro, Northbrook, Ill., assignor to Creative Works, Inc., Northbrook, Ill.
Filed Jan. 27, 1992, Ser. No. 825,861
Term of patent 14 years
U.S. Cl. D10—64



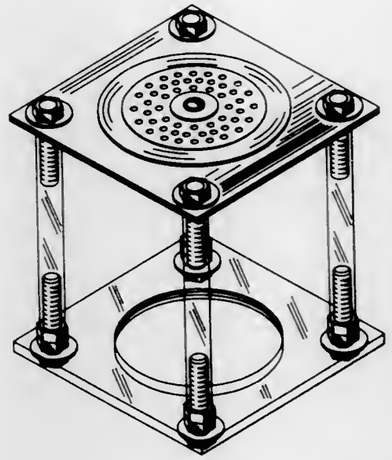
340,653
GOLF CLUB ADJUSTING MACHINE FOR METAL AND WOOD SHAFTS
Viktor Cukon, 1902 Golden Circle Dr., Escondido, Calif. 92026
Filed Apr. 4, 1991, Ser. No. 680,273
Term of patent 14 years
U.S. Cl. D10—65



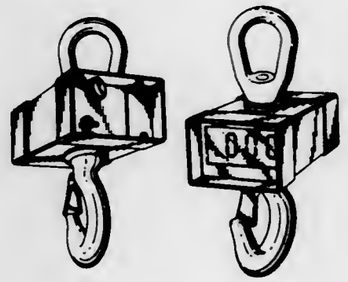
340,654
LEFT HANDED MEASURING EQUIPMENT
Robert V. Knight, 1251 E. 13th St., Delta, Colo. 81416
Filed May 31, 1991, Ser. No. 708,634
Term of patent 14 years
U.S. Cl. D10—72



340,655
COMBINED X-RAY QUALITY ASSURANCE TEST PHANTOM AND SUPPORT STAND
Gopala U. Rao, 6 Stardust Ct., Baltimore County, Catonsville, Md. 21228-5462
Filed May 14, 1991, Ser. No. 699,568
Term of patent 14 years
U.S. Cl. D10—75

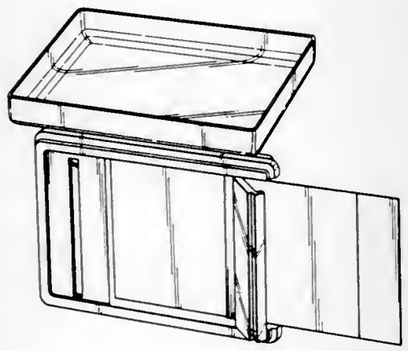


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COMBINED CRANE HOOK AND WEIGHER DEVICE
Francis D. M. Badcock, Little Court House, Hambrook, Chichester, West Sussex, England PO18 8UE
Filed Mar. 29, 1989, Ser. No. 329,509
Claims priority, application United Kingdom, Nov. 14, 1988, 1054943
The portion of the term of this patent subsequent to Dec. 22, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D10—83



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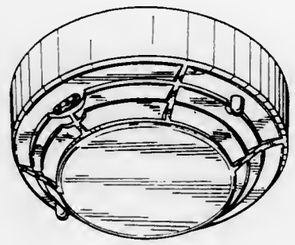
340,657
WEIGHING SCALE
Brian Stephens, Dublin, Ireland, assignor to Hanson Industries Limited, Sligo, Ireland
Filed Mar. 9, 1992, Ser. No. 849,145
Claims priority, application United Kingdom, Sep. 11, 1991, 2017366
Term of patent 14 years
U.S. Cl. D10—91



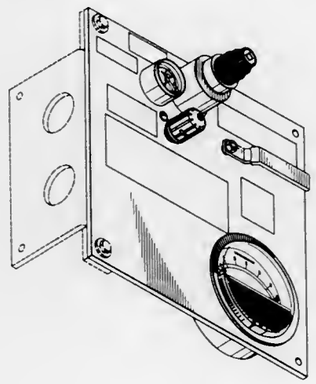
340,658
ROD SENSOR
Matti Hietaranta, Kangasala, and Simo Ollila, Tampere, both of Finland, assignors to Valmet Automation Oy, Tampere, Finland
Filed Sep. 2, 1992, Ser. No. 938,649
Claims priority, application Finland, Mar. 5, 1992, 161/92
Term of patent 14 years
U.S. Cl. D10—96



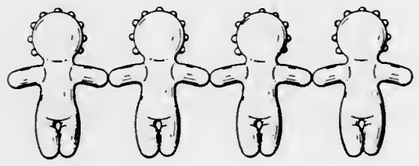
340,659
SMOKE DETECTOR
Kenneth R. Fenne, Glen Ellyn, Ill., assignor to Pittway Corporation, Chicago, Ill.
Filed Sep. 9, 1992, Ser. No. 942,759
Term of patent 14 years
U.S. Cl. D10—106



340,660
CONTROL PANEL
Larry R. Russell, 6025 Edgemoor, Ste. C, Houston, Tex. 77081
Filed Jan. 6, 1992, Ser. No. 817,412
Term of patent 14 years
U.S. Cl. D10—123



340,661
JEWELRY CHAIN
Janice L. Catlett, 711 Chateau Ter., Rogers, Ak. 72756
Filed May 28, 1991, Ser. No. 706,076
Term of patent 14 years
U.S. Cl. D11—14



340,662
ORNAMENTAL CHAIN
Steven A. Cipolla, 55 Cedar Bay Dr., Warwick, R.I. 02888
Filed Apr. 11, 1991, Ser. No. 684,341
Term of patent 14 years
U.S. Cl. D11—18



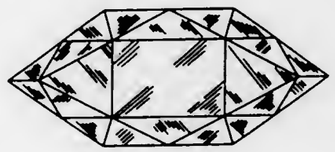
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ORNAMENTAL CHAIN
Steven A. Cipolla, 55 Cedar Bay Dr., Warwick, R.I. 02888
Filed May 6, 1991, Ser. No. 695,761
Term of patent 14 years
U.S. Cl. D11—18



340,664
EXPANSION BRACELET
George T. Butler, Warwick, R.I., assignor to Textron Inc., Providence, R.I.
Filed Jul. 13, 1992, Ser. No. 912,607
Term of patent 14 years
U.S. Cl. D11—19



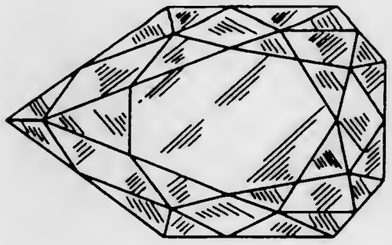
340,665
PRECIOUS STONE
Michael Z. Schachter, 45 Scott Dr., Watchung, N.J. 07060
Filed Jan. 18, 1991, Ser. No. 643,069
Term of patent 14 years
U.S. Cl. D11—90



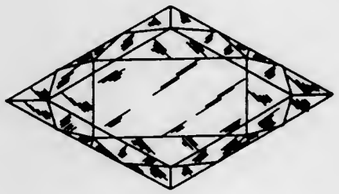
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PRECIOUS STONE
Michael Z. Schachter, 45 Scott Dr., Watchung, N.J. 07060
Filed Jan. 18, 1991, Ser. No. 643,070
Term of patent 14 years
U.S. Cl. D11—90



340,667
PRECIOUS STONE
Michael Z. Schachter, 45 Scott Dr., Watchung, N.J. 07060
Filed Jan. 18, 1991, Ser. No. 643,071
Term of patent 14 years
U.S. Cl. D11—90

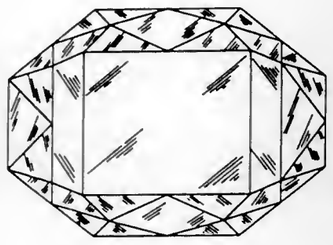


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PRECIOUS STONE
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Filed Jan. 18, 1991, Ser. No. 643,072
Term of patent 14 years
U.S. Cl. D11—90

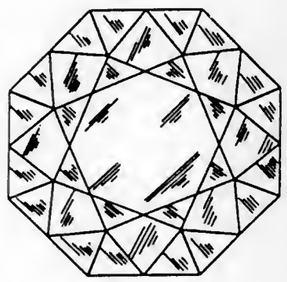


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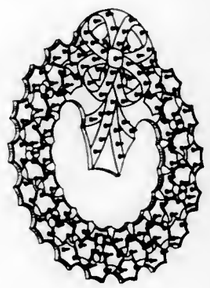
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PRECIOUS STONE
Michael Z. Schachter, 45 Scott Dr., Watchung, N.J. 07060
Filed Feb. 19, 1991, Ser. No. 656,632
Term of patent 14 years
U.S. Cl. D11—90



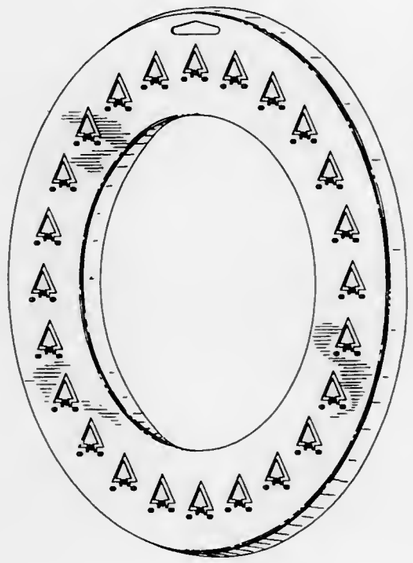
340,670
PRECIOUS STONE
Michael Z. Schachter, 45 Scott Dr., Watchung, N.J. 07060
Filed Apr. 8, 1991, Ser. No. 681,399
Term of patent 14 years
U.S. Cl. D11—90



340,671
LIGHT WREATH
Terreuce B. Clark, 26707 134th Ave. SE., Kent, Wash. 98042
Filed Jan. 29, 1992, Ser. No. 827,929
Term of patent 14 years
U.S. Cl. D11—120



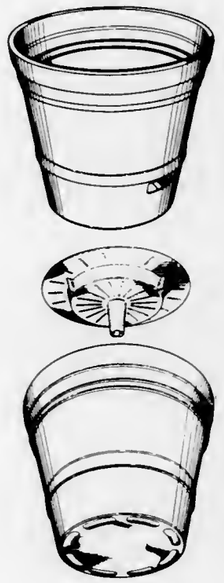
340,672
WREATH CARD HOLDER
William E. Adams, Portersville, Pa., assignor to Adams Mfg. Corp., Portersville, Pa.
Filed Mar. 9, 1992, Ser. No. 849,320
Term of patent 14 years
U.S. Cl. D11—120



340,673
ORNAMENT
Wanda G. Saputo, 1016 Gammage Point, Oviedo, Fla. 32765
Filed May 28, 1991, Ser. No. 706,062
Term of patent 14 years
U.S. Cl. D11—121



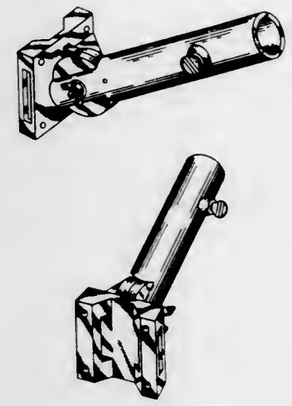
340,674
PLANTER
Arthur R. Carlson, 401A Waverley Rd., East Malvern, Victoria, Australia
Filed Mar. 15, 1991, Ser. No. 669,996
Term of patent 14 years
U.S. Cl. D11—152



340,675
FLOWER POT COVER
Donald E. Weder, Highland, Ill., assignor to Highland Supply Corporation, Highland, Ill.
Continuation-in-part of Ser. No. 341,058, Apr. 20, 1989, Pat. No. Des. 313,576. This application Oct. 11, 1990, Ser. No. 598,449
The portion of the term of this patent subsequent to Jan. 8, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D11—164



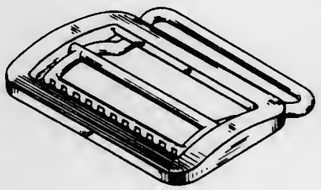
340,676
ADJUSTABLE FLAG SUPPORT
Gerald S. Gallagher, Lowell, Mass., assignor to Admiral U.S.A. Ent., Inc., Lowell, Mass.
Filed Oct. 18, 1991, Ser. No. 780,875
Term of patent 14 years
U.S. Cl. D11—182



340,677
GIFT PACKAGE BOW
Peter S. C. Cheng, 5 Ross Street, Toronto, Ontario, Canada M5T 1Z8
Filed May 1, 1992, Ser. No. 877,056
Term of patent 14 years
U.S. Cl. D11—184



340,678
BUCKLE
Masao Wakabayashi, Toyama, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan
Filed Jan. 31, 1992, Ser. No. 829,156
Claims priority, application Japan, Jul. 31, 1991, 3-22993
Term of patent 14 years
U.S. Cl. D11—218



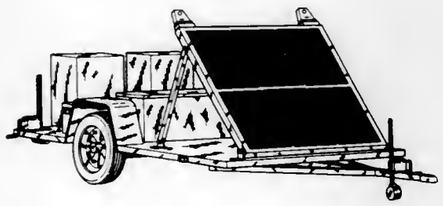
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340,679
BELT BUCKLE
Mike C. F. Chen, 17, Kung 6 Road, Linkou 2nd Industrial Park, Taipei Hsien, Taiwan
Filed Dec. 31, 1990, Ser. No. 636,362
Term of patent 14 years
U.S. Cl. D11—232

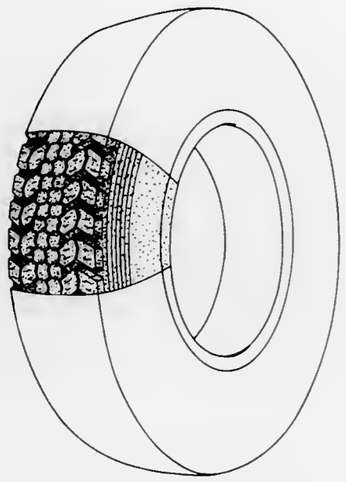


340,680
AUTOMOBILE
Bruce R. Campbell, Escondido, and Thomas H. Semple, Olivenhain, both of Calif., assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Jun. 27, 1991, Ser. No. 722,263
Term of patent 14 years
U.S. Cl. D12—91

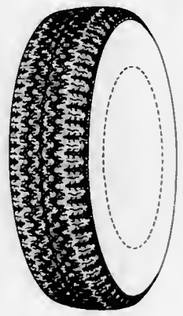
340,681
SOLAR POWERED BROADCAST TRAILER
John R. Alpiser; Joanne D. Alpiser, both of Cary; Virgil D. Duncan, Raleigh, and Tanya L. Johnson, Chapel Hill, all of N.C., assignors to Digital Recorders, Inc., Research Triangle Park, N.C.
Filed Apr. 2, 1992, Ser. No. 862,255
Term of patent 14 years
U.S. Cl. D12—101



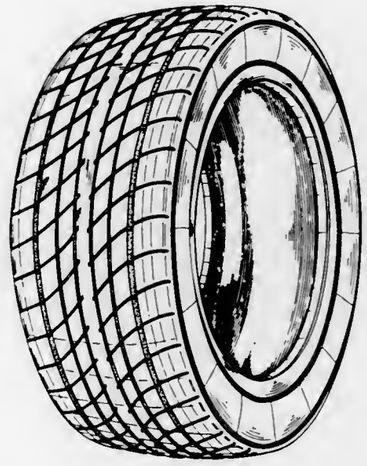
340,682
TIRE
Uwe Ramcke, Walsrode, and Hagen Trabandt, Sehnde, both of Fed. Rep. of Germany, assignors to Continental Aktiengesellschaft, Hanover, Fed. Rep. of Germany
Filed Mar. 20, 1991, Ser. No. 672,621
Term of patent 14 years
U.S. Cl. D12—143



340,683
TIRE TREAD
Leo J. Hitzky, Walferdange, Luxembourg, and Daniel Scheuren, Bastogne, Belgium, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jun. 1, 1992, Ser. No. 889,768
Term of patent 14 years
U.S. Cl. D12—143



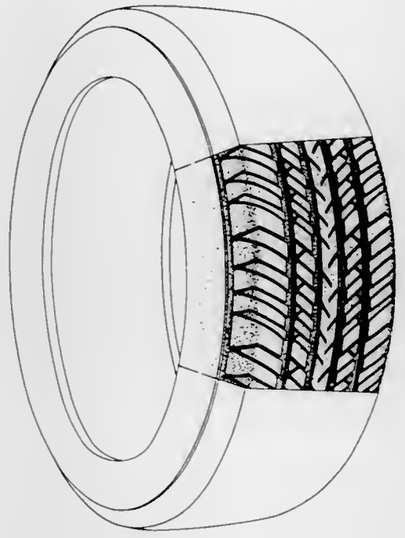
340,684
VEHICLE TIRE
James E. Houghton, West Midlands, Great Britain, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan
Filed Jun. 5, 1990, Ser. No. 533,715
Claims priority, application United Kingdom, Dec. 7, 1989, 2003215
Term of patent 14 years
U.S. Cl. D12—147



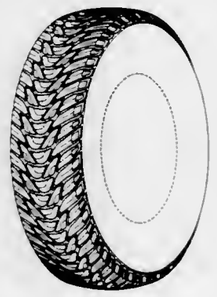
340,685
TIRE
Paul B. Maxwell, Stow, Ohio, and Darrell E. Covert, Strasen, Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jan. 13, 1992, Ser. No. 820,161
Term of patent 14 years
U.S. Cl. D12—147



340,686
TIRE
William C. Baker, Greenville, S.C., assignor to Michelin Recherche et Technique, Fribourg, Switzerland
Filed Mar. 18, 1992, Ser. No. 853,317
Term of patent 14 years
U.S. Cl. D12—147

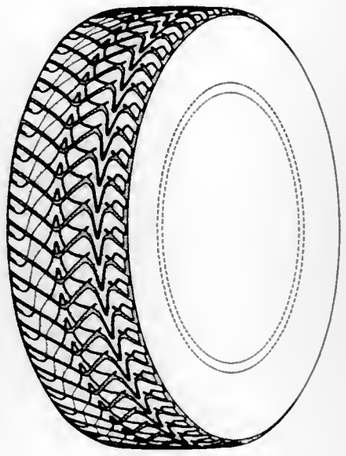


340,687
TIRE TREAD
Paul B. Maxwell, Stow, and William E. Egan, Tallmadge, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jan. 29, 1992, Ser. No. 828,584
Term of patent 14 years
U.S. Cl. D12—149

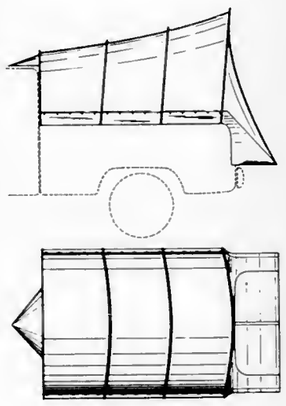


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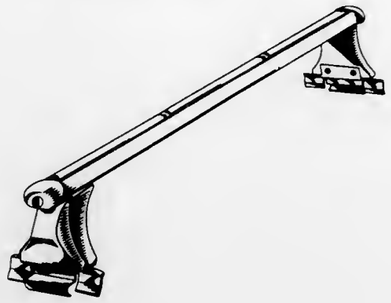
340,688
TIRE TREAD
Paul B. Maxwell, Stow, and Sean D. Montag, Cuyahoga Falls, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 9, 1992, Ser. No. 847,227
Term of patent 14 years
U.S. Cl. D12—151



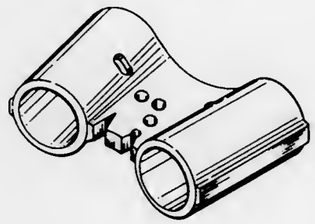
340,689
PICKUP TRUCK TENT
Herbert A. Wolcott, and Carol A. Feldman, both of 103 N. Bond, Dallas, Tex. 75211
Filed Jul. 7, 1992, Ser. No. 909,641
Term of patent 14 years
U.S. Cl. D12—156



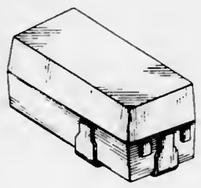
340,690
LOAD CARRIER FOR VEHICLES
Jan I. Arvidsson, Hillerstorp, Sweden, assignor to Industri AB Thule, Sweden
Filed Mar. 6, 1991, Ser. No. 665,182
Claims priority, application Sweden, Sep. 6, 1990, 901863
Term of patent 14 years
U.S. Cl. D12—157



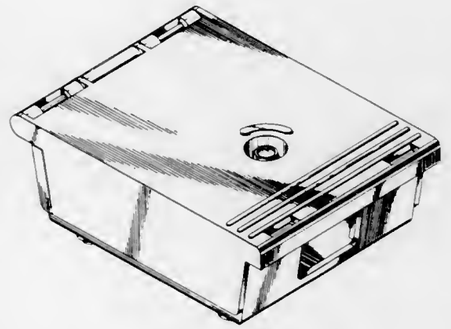
340,691
SAILBOARD BOOM CLEW
Charles D. McCormick, Corpus Christi, Tex., assignor to Gulftech, Inc., Corpus Christi, Tex.
Filed Oct. 11, 1991, Ser. No. 775,229
Term of patent 14 years
U.S. Cl. D12—317



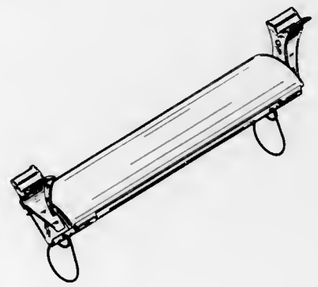
340,692
ELECTROLYTIC CAPACITOR
Keiji Iijima; Masashi Okazaki, and Takashi Kono, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
The portion of the term of this patent subsequent to Jul. 20, 2009, has been disclaimed.
Filed May 23, 1990, Ser. No. 527,786
Claims priority, application Japan, Nov. 27, 1989, 1-43240
Term of patent 14 years
U.S. Cl. D13—125



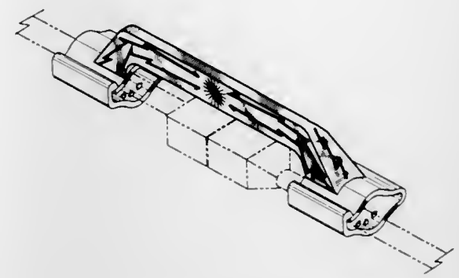
340,693
ENCLOSURE FOR TELEPHONE CABLE ELECTRICAL CONNECTORS
Alan W. Brownlie, Skaneateles, N.Y., and Scott A. Keener, Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed May 31, 1991, Ser. No. 710,310
Term of patent 14 years
U.S. Cl. D13—184



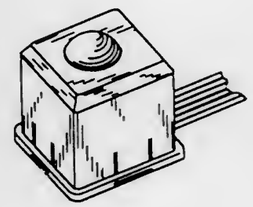
340,694
AERIAL CONNECTION HOUSING
Luis O. Puigcerver, 5209 Rivington Rd., Fuquay-Varina, N.C. 27526; Christopher A. Hastings, 1410 Old Buckhorn Rd., Garner, N.C. 27529, and Barry W. Allen, Rte. 2, Box 309, Siler City, N.C. 27344
Filed Mar. 7, 1991, Ser. No. 665,749
Term of patent 14 years
U.S. Cl. D13—154



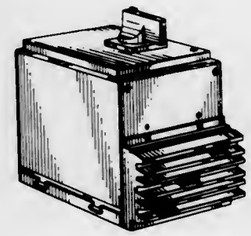
340,695
RETAINER FOR A CONNECTED ELECTRICAL EXTENSION CORD
Daniel S. Merriman, and Marianne Merriman, both of 9545 Farmington Dr., Lakeside, Calif. 92040
Filed May 11, 1992, Ser. No. 880,974
Term of patent 14 years
U.S. Cl. D13—154



340,696
BALL-OPERATED CONTROL DEVICE FOR ELECTRONIC CIRCUITS
John B. Barrett, Paso Robles, Calif., assignor to Appoint, Paso Robles, Calif.
Filed Nov. 13, 1991, Ser. No. 792,059
Term of patent 14 years
U.S. Cl. D13—158

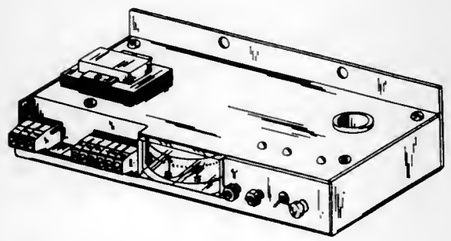


340,697
FUSED-SWITCH UNIT
Phillip J. Dingle, Oxfordshire; Raymond W. Thomas, and Kenneth Neill, botb of Swindon, all of United Kingdom, assignors to Square D Company, Palatine, Ill.
Filed Jun. 28, 1991, Ser. No. 724,327
Term of patent 14 years
U.S. Cl. D13—160

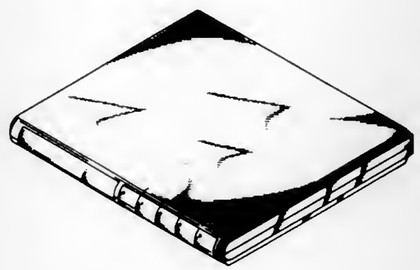


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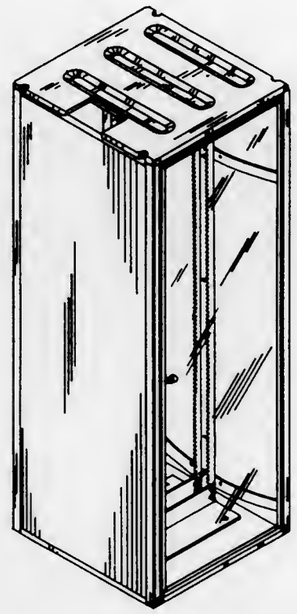
340,698
LOAD CONTROL
Robert W. Nystrom, Oxford, Mass., assignor to Load Controls, Incorporated, Sturbridge, Mass.
Filed Jul. 31, 1991, Ser. No. 738,490
Term of patent 14 years
U.S. Cl. D13—162



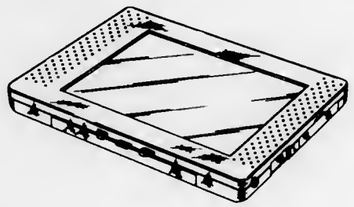
340,699
ELECTRICAL POWER CONTROLLER HOUSING FOR A COMPUTER
Ching T. Chen, No. 1, Chu Wei Lane, Erh Lin Chen, Chang Hua Hsien, Taiwan
Filed Nov. 9, 1992, Ser. No. 1,228
Term of patent 14 years
U.S. Cl. D13—164



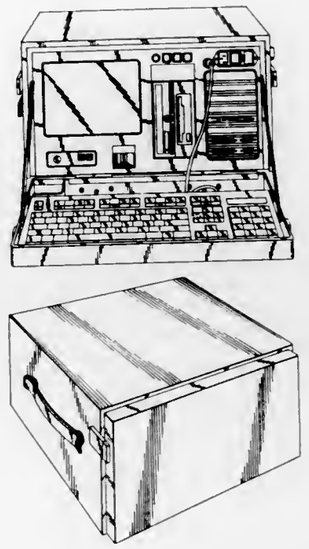
340,700
EQUIPMENT RACK ENCLOSURE
Jack Shukur, 707 N. Greenbriar, Simi Valley, Calif. 93065, and William A. Crocket, 2511 Monaco Dr., Oxnard, Calif. 93035
Filed Jun. 25, 1990, Ser. No. 543,299
Term of patent 14 years
U.S. Cl. D13—184



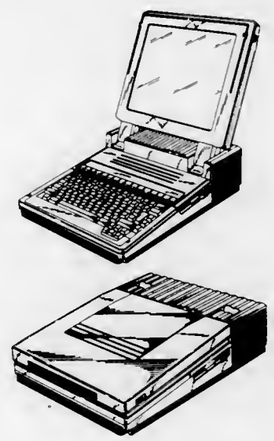
340,701
INPUT AND OUTPUT TERMINAL FOR ELECTRONIC COMPUTERS
Motoaki Takeuchi, Yokohama, Japan, assignor to Canou Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 12, 1991, Ser. No. 805,906
Claims priority, application Japan, Jul. 5, 1991, 3-20167
Term of patent 14 years
U.S. Cl. D14—100



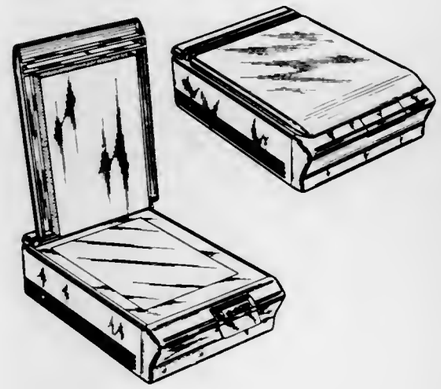
340,702
COMPUTER PROGRAMMING TERMINAL
David Hembree, 5906 Glen Echo, Howell, Mich. 48843
Filed Aug. 13, 1991, Ser. No. 744,240
Term of patent 14 years
U.S. Cl. D14—106



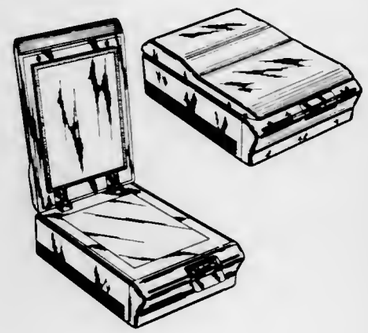
340,703
PERSONAL COMPUTER
Norimi Koiwa, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Dec. 17, 1991, Ser. No. 807,938
Claims priority, application Japan, Oct. 4, 1991, 3-29852
Term of patent 14 years
U.S. Cl. D14—106



340,704
SCANNER FOR A COMPUTER
Koji Asakura; Midori Yonezawa; Masaharu Sawatani, all of Kanagawa, and Syouitirou Hayashi, Hiroshima, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 5, 1991, Ser. No. 740,186
Claims priority, application Japan, Feb. 8, 1991, 3-3193
Term of patent 14 years
U.S. Cl. D14—107

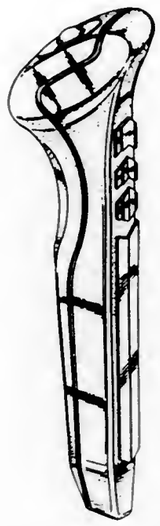


340,705
SCANNER FOR A COMPUTER
Koji Asakura; Midori Yonezawa; Masaharu Sawatani, all of Kanagawa, and Syouitirou Hayashi, Hiroshima, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 5, 1991, Ser. No. 740,189
Claims priority, application Japan, Feb. 8, 1991, 3-3194
Term of patent 14 years
U.S. Cl. D14—107

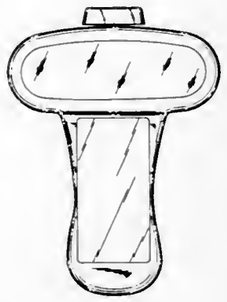


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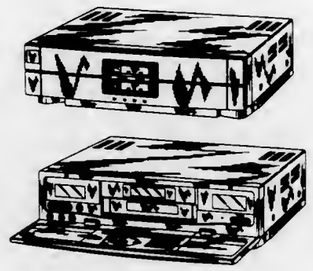
340,706
PEN MOUSE
Stephen K. P. Hu, 9F, No. 55-8, Sec. 4, Chung Hsiao E. Rd., Taipei, Taiwan
Filed Mar. 16, 1992, Ser. No. 851,367
Term of patent 14 years
U.S. Cl. D14—114



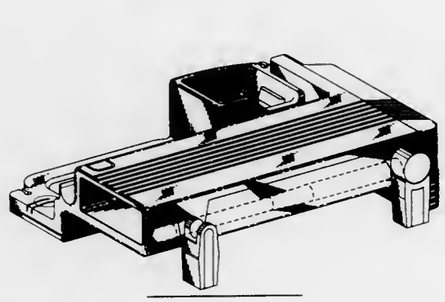
340,707
OPTICAL SCANNER
Jerome Swartz, Old Field, N.Y., assignor to Symbol Technologies, Inc., Bohemia, N.Y.
Filed Mar. 30, 1992, Ser. No. 862,232
Term of patent 14 years
U.S. Cl. D14—116



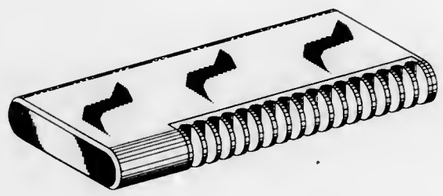
340,708
VIDEO TAPE RECORDER
Atsushi Ishibashi, Koganei; Kazuhiko Nishiyama; Makoto Fukatsu, both of Kokubunji, and Masao Horie, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jul. 30, 1991, Ser. No. 737,509
Claims priority, application Japan, Jul. 5, 1991, 3-19949
Term of patent 14 years
U.S. Cl. D14—135



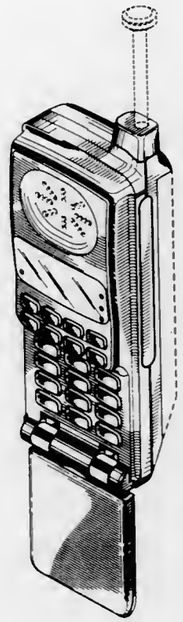
340,709
RADIO HOUSING
Albert L. Nagele, Wilmette, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 30, 1990, Ser. No. 621,557
Term of patent 14 years
U.S. Cl. D14—137



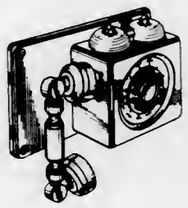
340,710
RADIO HOUSING
Russell Ansai, Chicago; Allen Wong, Streamwood; John P. Murzanski, Schaumburg; Anthony Scianna, Sr., Morton Grove, and Andrew W. Ill, Arlington Heights, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jan. 2, 1991, Ser. No. 636,976
Term of patent 14 years
U.S. Cl. D14—137



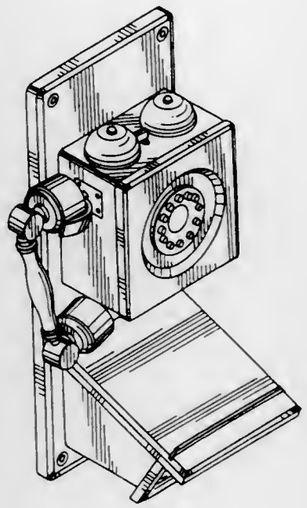
340,711
FRONT HOUSING FOR A PORTABLE RADIOTELEPHONE
Albert L. Nagele, Wilmette, and Joseph F. Pulio, Jr., South Barrington, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 1, 1991, Ser. No. 786,876
Term of patent 14 years
U.S. Cl. D14—138



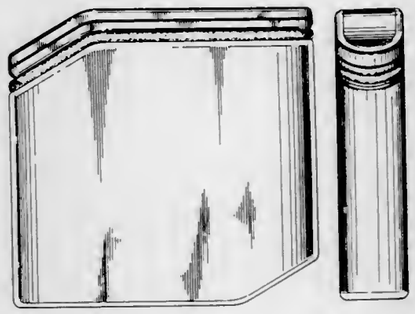
340,712
TELEPHONE SET
Shu-Wen Tung, 3F, No. 2, Alley 11, Lane 203, Fu-Der 1 Rd., Hsichih, Taipei Hsien, Taiwan
Filed Sep. 3, 1991, Ser. No. 753,695
Term of patent 14 years
U.S. Cl. D14—142



340,713
TELEPHONE SET
Ching-Feng Hwang, No. 184, Tung-An Rd., Tainan City, Taiwan
Filed Jun. 11, 1992, Ser. No. 896,344
Term of patent 14 years
U.S. Cl. D14—142



340,714
EMERGENCY TELEPHONE UNIT
Lawrence R. Hoffman, Natick, Mass., assignor to Lindsay Communications, Inc., Leominster, Mass.
Filed Dec. 18, 1991, Ser. No. 809,057
Term of patent 14 years
U.S. Cl. D14—149

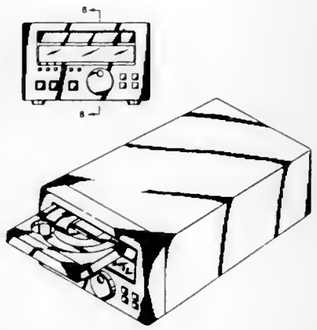


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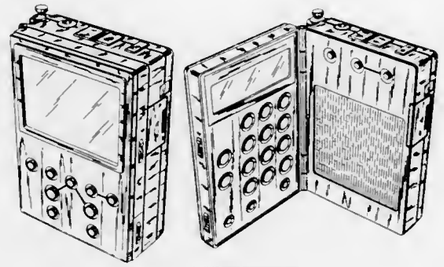
340,715
TELEPHONE BASE
Guy E. Desbarats, London, England, assignor to British Telecommunications public limited company, London, England
Filed Jan. 21, 1992, Ser. No. 823,430
Claims priority, application United Kingdom, Jul. 18, 1991, 2016071; Jul. 18, 1991, 2016072; Jul. 18, 1991, 2016073; Jul. 18, 1991, 2016074
Term of patent 14 years
U.S. Cl. D14—151



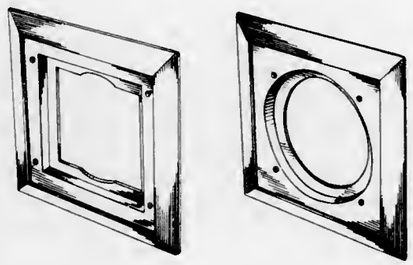
340,716
DIGITAL AUDIO DISC PLAYER
Masafumi Ito, Tokyo; Shigeru Hasegawa, Kodaira, and Keiji Tsunoda, Kokubunji, all of Japan, assignors to TEAC Corporation, Japan
Filed Nov. 7, 1991, Ser. No. 789,464
Claims priority, application Japan, May 8, 1991, 3-13200
Term of patent 14 years
U.S. Cl. D14—156



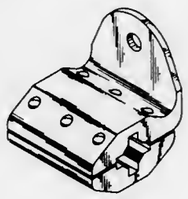
340,717
RADIO RECEIVER
Gary E. Grimes, Perchtoldsdorf, Austria, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 20, 1991, Ser. No. 672,610
Claims priority, application Hague, Sep. 21, 1990, DM/017.663
Term of patent 14 years
U.S. Cl. D14—193



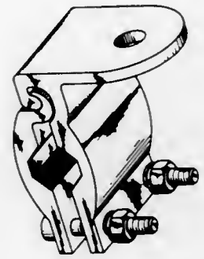
340,718
SPEAKER FRAME ASSEMBLY
Richey D. Leger, Orlando; Jeffery J. Buchanan, and Bill R. Unseld, both of Lexington, all of Ky., assignors to Square D Company, Palatine, Ill.
Filed Dec. 20, 1991, Ser. No. 812,374
Term of patent 14 years
U.S. Cl. D14—224



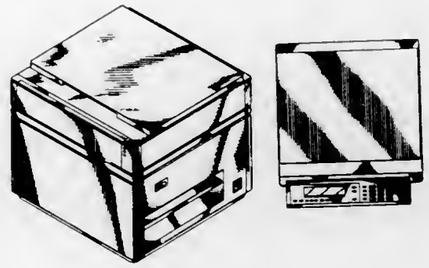
340,719
ANTENNA MOUNTING CLAMP
Ronald L. Yoder, Topeka, Ind., assignor to Universal Consolidated Methods, Inc., Topeka, Ind.
Filed Sep. 26, 1990, Ser. No. 588,957
Term of patent 14 years
U.S. Cl. D14—238



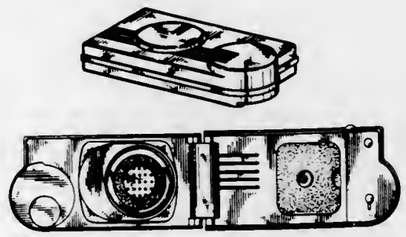
340,720
ANTENNA MOUNTING CLAMP
Ronald L. Yoder, Topeka, Ind., assignor to Universal Consolidated Methods, Inc., Topeka, Ind.
Filed Mar. 18, 1991, Ser. No. 670,601
Term of patent 14 years
U.S. Cl. D14—238



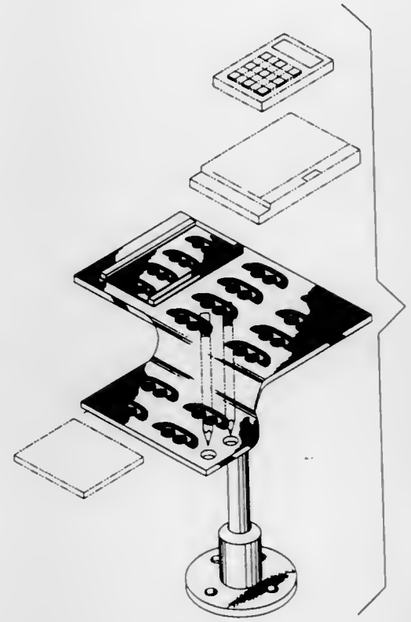
340,721
FACSIMILE
Tomoyuki Hirose, and Kouki Fukuda, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Aug. 29, 1990, Ser. No. 575,504
Claims priority, application Japan, Mar. 2, 1990, 2-6953
Term of patent 14 years
U.S. Cl. D14—118



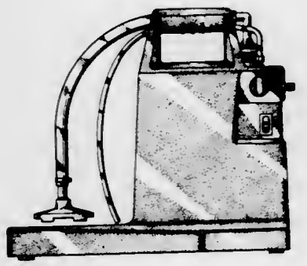
340,722
UNIVERSAL ACOUSTIC TELEPHONE HANDSET INTERFACE
Gabriele Bungardt, Santa Cruz, Calif., assignor to Plantronics, Inc., Santa Cruz, Calif.
Filed Feb. 13, 1992, Ser. No. 835,273
Term of patent 14 years
U.S. Cl. D14—242



340,723
MOBILE TELEPHONE AND OFFICE ACCESSORY STAND FOR MOUNTING IN THE INTERIOR OF A VEHICLE
Richard M. Halligan, 34 E. Essex St., Stockton, Calif. 95204
Filed Dec. 2, 1991, Ser. No. 801,076
Term of patent 14 years
U.S. Cl. D14—252

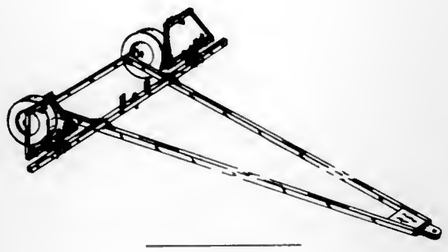


340,724
AIRLESS PAINT PUMP
James F. Mariol, Cincinnati, Ohio, assignor to Campbell Hausfeld/Scott Fetzer Company, Westlake, Ohio
Filed Aug. 5, 1991, Ser. No. 740,478
Term of patent 14 years
U.S. Cl. D15—7



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340,725
RAKE CART
Gary L. Kelderman, R.R. 1, Oskaloosa, Iowa 52577
Filed Apr. 8, 1991, Ser. No. 682,017
Term of patent 14 years
U.S. Cl. D15—27



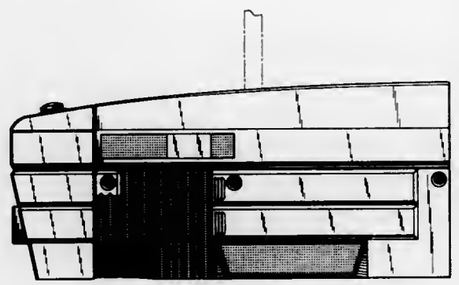
340,726
MOTOR OPERATED AUTOMOBILE AIR PUMP
Lee-Jung Wang, No. 84, Chuan Tzu Chin, Chuan Chin Li, Ma Tou Chen, Tainan Hsien, Taiwan
Filed Jul. 8, 1992, Ser. No. 909,823
Term of patent 14 years
U.S. Cl. D15—7



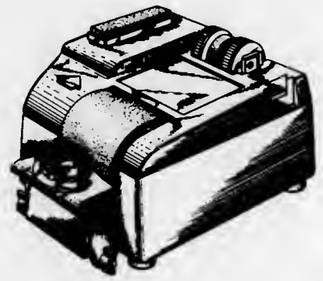
340,727
FEED PUMP FOR PAINT
Steven A. Anderson, Eden Prairie; Richard C. Jackson, Minneapolis, and Elizabeth E. Ramsey, Eden Prairie, all of Minn., assignors to Wagner Spray Tech Corporation, Minneapolis, Minn.
Filed Aug. 4, 1992, Ser. No. 921,432
Term of patent 14 years
U.S. Cl. D15—7



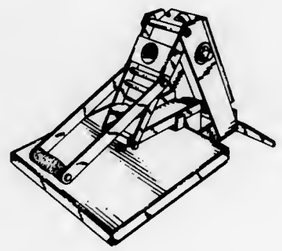
340,728
TRACTOR COWLING WITH SIDE PANELS
Wayne B. Martenas, Basildon, England; John E. Little, Lancaster, Pa.; Kenneth R. Fowler; David M. Lechkun, both of Shelby Township, Mich., and Richard J. Schierloh, Dearborn, Mich., assignors to Ford New Holland, Inc., New Holland, Pa.
Filed Oct. 4, 1991, Ser. No. 771,925
Term of patent 14 years
U.S. Cl. D15—31



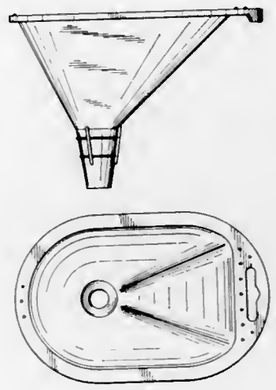
340,729
GRINDER
Karl T. Baughman, 333 E. Foster Pl., Lake Forest, Ill. 60045
Filed Aug. 21, 1992, Ser. No. 933,056
Term of patent 14 years
U.S. Cl. D15—124



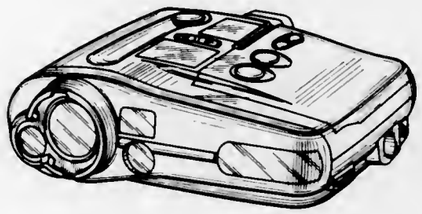
340,730
HEAT SEAL MACHINE
David A. Myers, Connellsville, Pa., assignor to Stahls' Inc., St. Clair Shores, Mich.
Filed Apr. 2, 1991, Ser. No. 679,337
Term of patent 14 years
U.S. Cl. D15—146



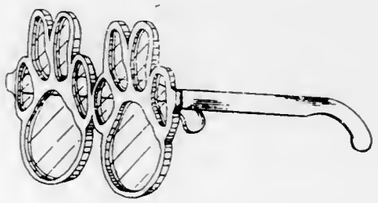
340,731
FUNNEL WITH SHORT SPOUT
Louis M. Pollak, Bridgewater, N.J., and Michael W. K. Young, Flushing, N.Y., assignors to Injectron Corporation, Plainfield, N.J.
Filed Feb. 5, 1992, Ser. No. 831,318
Term of patent 14 years
U.S. Cl. D15—150



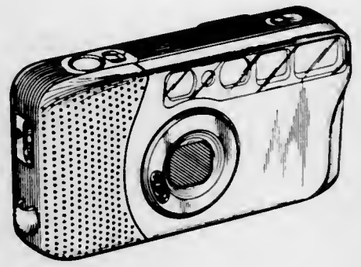
340,732
MAGNETIC DISC STILL CAMERA
Hiroshi Sano, and Kazuhiko Miyahara, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 26, 1991, Ser. No. 812,973
Claims priority, application Japan, Jul. 22, 1991, 3-21935
Term of patent 14 years
U.S. Cl. D16—202



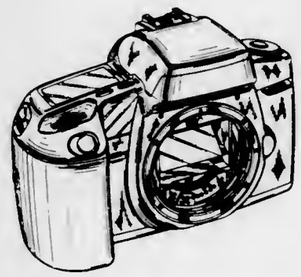
340,733
NOVELTY SPECTACLES
Ronald B. Hall, 1046 Asbill Ct., Leesville, S.C. 29070
Filed Aug. 21, 1992, Ser. No. 934,188
Term of patent 14 years
U.S. Cl. D16—102



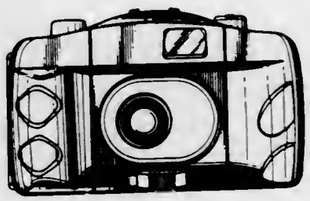
340,734
CAMERA
Hitomi Ito, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 12, 1991, Ser. No. 805,930
Claims priority, application Japan, Jun. 24, 1991, 3-18733
Term of patent 14 years
U.S. Cl. D16—209



340,735
SINGLE-LENS REFLEX CAMERA BODY
Noboru Tanaka, Yokohama, and Tsuyoshi Fukuda, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 26, 1991, Ser. No. 812,959
Claims priority, application Japan, Jul. 23, 1991, 3-22072
Term of patent 14 years
U.S. Cl. D16—217



340,736
CAMERA
Man-Ching Leung, Flat E, 21st Floor, Block 11, City One, New Territories, Hong Kong
Filed Dec. 6, 1991, Ser. No. 802,759
Term of patent 14 years
U.S. Cl. D16—218

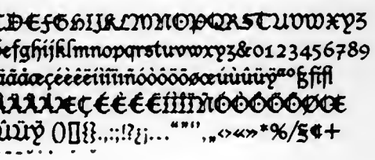


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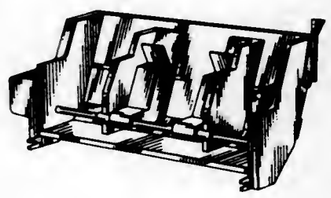
340,737
GUITAR
Glenn A. Sandberg, 2207 Nichols Rd., Arlington Heights, Ill. 60004
Filed Oct. 18, 1991, Ser. No. 779,566
Term of patent 14 years
U.S. Cl. D17—14



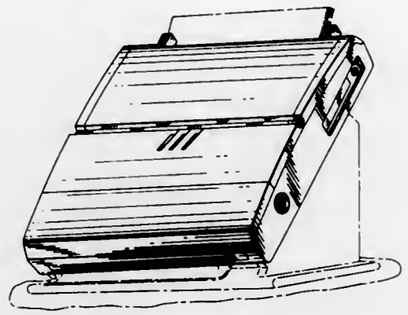
340,738
TYPEFACE
Charles A. Bigelow, and Kris A. Holmes, both of Menlo Park, Calif., assignors to Bigelow & Holmes Inc., Menlo Park, Calif.
Filed Dec. 9, 1991, Ser. No. 801,204
Term of patent 14 years
U.S. Cl. D18—24



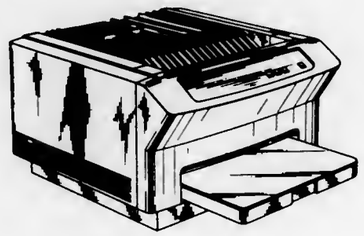
340,739
DOCUMENT FEEDER FOR COPYING MACHINE
Masahiko Kashiwabara, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Feb. 13, 1992, Ser. No. 836,208
Claims priority, application Japan, Aug. 27, 1991, 3-25466
Term of patent 14 years
U.S. Cl. D18—49



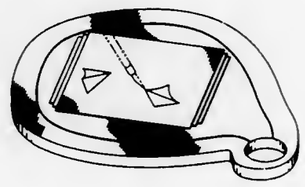
340,740
PRINTER FOR A COMPUTER
Tsunemi Kawashima, Tokyo, Japan, assignor to Seikosha Co., Ltd., Tokyo, Japan
Filed Jul. 26, 1991, Ser. No. 736,892
Term of patent 14 years
U.S. Cl. D18—50



340,741
PRINTER
Midori Yonezawa; Masaharu Sawatani, both of Kanagawa, and Hisashi Nakamura, Hiroshima, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 6, 1991, Ser. No. 756,143
Claims priority, application Japan, Mar. 8, 1991, 3-6282
Term of patent 14 years
U.S. Cl. D18—55



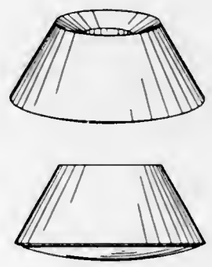
340,742
COMBINED PALLETE-TYPE HOLDER AND PAPER THEREFOR FOR CREATING COLOR ART WORK
Wakim H. Alfa, 18545 Clark St., #206, Tarzana, Calif.
Filed May 28, 1991, Ser. No. 706,081
Term of patent 14 years
U.S. Cl. D19—36



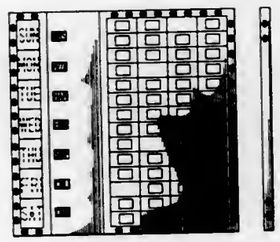
340,743
BALL-POINT PEN TIP
Por Anavil, and Julian M. H. Deeley, both of Bangkok, Thailand, assignors to D.T.C. Industries Limited, Thailand
Filed Jan. 19, 1989, Ser. No. 299,744
Term of patent 14 years
U.S. Cl. D19—55



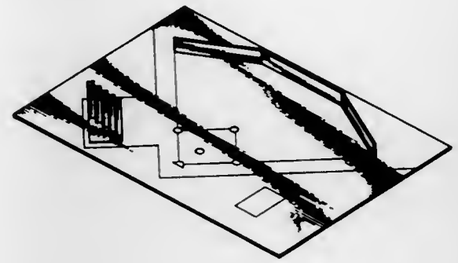
340,744
PAPERCLIP HOLDER
Bruno N. Van Eijben, Delft; Wolfram Peters, and Peter Krouwel, both of Leiden, all of Netherlands, assignors to Randstad Dienstengroep Nederland B.V., Netherlands
Filed Jul. 3, 1991, Ser. No. 725,748
Claims priority, application World Int. Prop. O., Jan. 7, 1991, DM/018523
Term of patent 14 years
U.S. Cl. D19—75



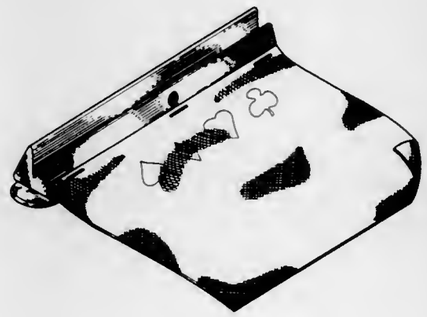
340,745
DISPLAY BOARD FOR MEAL PLANNING
Frank Susnik, Jr., 2157 N. 64th St., Wauwatosa, Wis. 53213
Filed Mar. 6, 1992, Ser. No. 845,487
Term of patent 14 years
U.S. Cl. D20—18



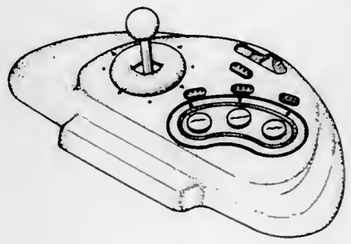
340,746
BASEBALL BOARD GAME
Dana M. Breen, and David Breen, both of 6 Campbell Rd., Kendall Park, N.J. 08824
Filed Jul. 8, 1991, Ser. No. 726,501
Term of patent 14 years
U.S. Cl. D21—28



340,747
FLEXIBLE CARDHOLDER
Ronald Ward, 5660 Vickie La., Bedford Heights, Ohio 44146
Filed Mar. 12, 1991, Ser. No. 668,446
Term of patent 14 years
U.S. Cl. D21—54

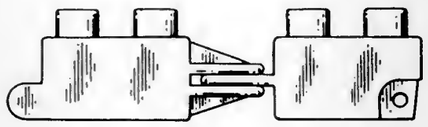


340,748
CONTROL UNIT FOR A VIDEO GAME
Wen-Fa Li, Taipei, Taiwan, assignor to Sega Electronic Co, Ltd., Taipei Hsian, Taiwan
Filed Jul. 6, 1992, Ser. No. 909,436
Term of patent 14 years
U.S. Cl. D21—48

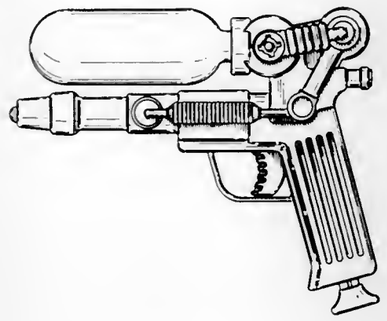


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340,749
SWIVEL INTERCONNECTING TOY BUILDING BLOCKS
Ronald L. Lyman, Folsom, Calif., assignor to Fantasy Toys, Inc., St. Helena, Calif.
Filed Jan. 27, 1992, Ser. No. 825,720
Term of patent 14 years
U.S. Cl. D21—108



340,750
TOY WATER GUN WITH PUMP AND TANK
Robert W. Salmon, 180 Woodward Ave., Rutherford, N.J. 07070, and Bruce M. D'Andrade, 3 Ten Eyck Rd., Whitehouse Sta., N.J. 08889
Filed Jun. 19, 1992, Ser. No. 901,584
Term of patent 14 years
U.S. Cl. D21—147



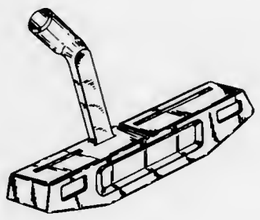
340,751
SPORTS DOLL
Donald I. Jones, Mountlake Terrace, Wash. 98043, assignor to Sports Productions Northwest, Inc., Montlake Terrace, Wash.
Filed Nov. 8, 1991, Ser. No. 792,085
Term of patent 14 years
U.S. Cl. D21—155



340,752
STICK FOR THROWING A BALL
Stephen N. Flynn, 43A Elm Road, East Sheen, London SW14 7JL, and Neville Larcombe, 12 Hill Close, Pershore, Nr. Worcester WR10 1JJ, both of England
Filed Jan. 9, 1992, Ser. No. 820,130
Claims priority, application United Kingdom, Jul. 9, 1991, 2015872
Term of patent 14 years
U.S. Cl. D21—210



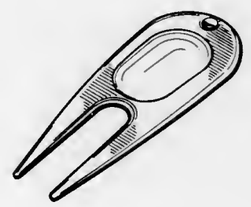
340,753
HEAD FOR GOLF PUTTER
Gary D. Miesch, Gowen, Mich., assignor to Diversified Metal Inc., Grand Rapids, Mich.
Filed Oct. 18, 1991, Ser. No. 779,409
Term of patent 14 years
U.S. Cl. D21—219



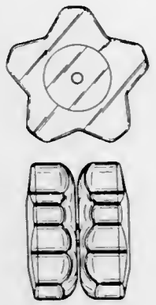
340,754
SOFT SCULPTURE BEAR
Mark D'Ambruso, Northborough, Mass., assignor to Bluewater Marketing Group Inc., Northborough, Mass.
Filed Jul. 2, 1991, Ser. No. 724,954
Term of patent 14 years
U.S. Cl. D21—159



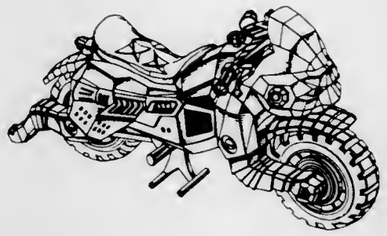
340,755
TURF REPAIR TOOL
William B. Shearer, 2905 W. Main St., Muncie, Ind. 47305
Filed Nov. 4, 1991, Ser. No. 786,963
Term of patent 14 years
U.S. Cl. D21—234



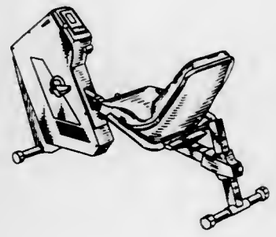
340,756
TOY YO-YO
Chak K. Ma, Blk C & D, 6/Fl., Kwai Bo Ind. Bldg., 40 Woog Chuk Hang Rd., Aberdeen, Hong Kong
Filed Mar. 9, 1992, Ser. No. 849,323
Claims priority, application United Kingdom, Oct. 23, 1991, 2018497
Term of patent 14 years
U.S. Cl. D21—99



340,757
TOY MOTORCYCLE
Fu-Tien Chen, San Chung, Taiwan, assignor to Shio Chuen Clocks Corp., Taipei, Taiwan
Filed May 28, 1992, Ser. No. 889,315
Term of patent 14 years
U.S. Cl. D21—128

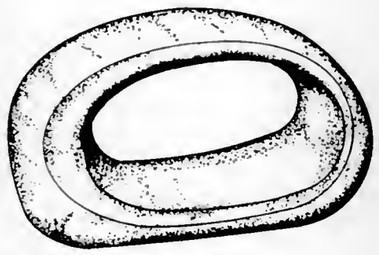


340,758
RECUMBENT EXERCISE BIKE
Takashi Ueda, Izumi, Japan, assignor to Cat Eye Co., Ltd., Osaka, Japan
Filed Nov. 27, 1991, Ser. No. 800,538
Claims priority, application Japan, Jul. 16, 1991, 3-21421
Term of patent 14 years
U.S. Cl. D21—194

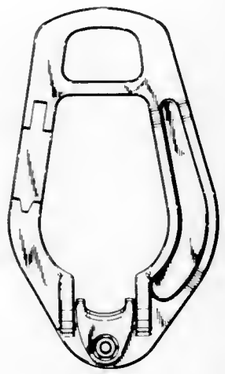


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340,759
EXERCISE WEIGHT
Joseph T. Miller, Mehlville, Mo., assignor to Mocap, Inc., St. Louis, Mo.
Filed Dec. 16, 1991, Ser. No. 807,381
Term of patent 14 years
U.S. Cl. D21—197



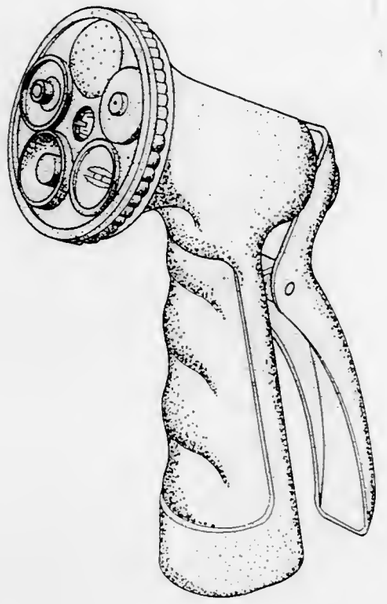
340,760
PURSE RING FOR USE IN THE FISHING INDUSTRY
Per H. Hystad, 4250 Kopervik, Norway
Filed Jul. 18, 1991, Ser. No. 732,302
Claims priority, application Norway, Mar. 13, 1991, 910191
Term of patent 14 years
U.S. Cl. D22—135



340,761
STABILIZATION BASE FOR A GASOLINE CONTAINER
Michael Long, Youngstown, Ohio, assignor to Diane L. Shardy, Sharon, Pa.
Filed Oct. 9, 1991, Ser. No. 773,281
Term of patent 14 years
U.S. Cl. D23—206



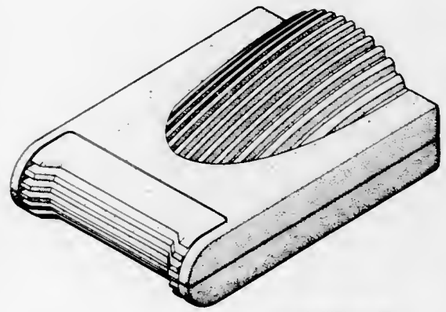
340,762
WATER SPRAY GUN
Chin-Yuan Wang, No. 1, Lane 288, Sec. 1, Lu Ho Road, Lukang Chen, Changhua, Taiwan
Filed Dec. 12, 1991, Ser. No. 806,131
Term of patent 14 years
U.S. Cl. D23—226

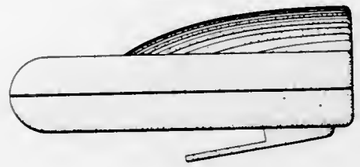


340,763
HANDLE FOR A PLUMBING FITTING
Thomas A. Bonnell, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Sep. 23, 1991, Ser. No. 764,403
Term of patent 14 years
U.S. Cl. D23—250

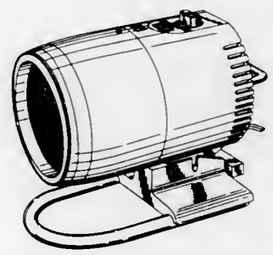


340,764
IN-CAR HEATER
Gary C. Edwards, and Ronald H. Schaefer, both of Winnipeg, Canada, assignors to Temro Division, Budd Canada Inc., Winnipeg, Canada
Filed Apr. 6, 1992, Ser. No. 864,018
Claims priority, application Canada, Jan. 24, 1992, 2401924
Term of patent 14 years
U.S. Cl. D23—324

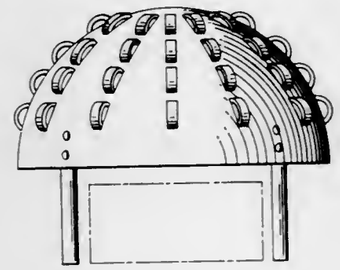




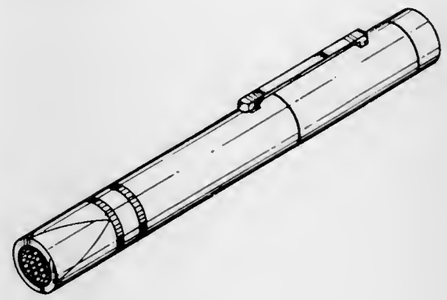
340,765
TILTABLE HEATER
Michael S. Joss, Chicago, and Stanley T. Gresens, Homewood, both of Ill., assignors to The Rival Company, Kansas City, Mo.
Filed May 26, 1992, Ser. No. 889,099
Term of patent 14 years
U.S. Cl. D23—336



340,766
SUN SHADE FOR A FREE STANDING AIR CONDITIONER
Frankie Holt, 1820 Marshall St., Columbia, S.C. 29203
Continuation-in-part of Ser. No. 531,545, Jun. 1, 1990, abandoned. This application Jan. 11, 1993, Ser. No. 3,833
Term of patent 14 years
U.S. Cl. D23—354



340,767
POCKET FAN
Keith C. Luke, 44-308 Mikiola Dr., Kaneohe, Hi. 96744
Filed Dec. 4, 1992, Ser. No. 2,237
Term of patent 14 years
U.S. Cl. D23—382

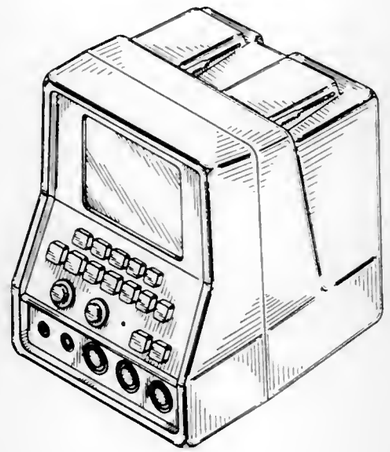


340,768
URINE SAMPLE CONTAINER
Sherry L. Jabour, 8398 E. Thoroughbred Trail, Scottsdale, Ariz. 85258
Filed Mar. 19, 1991, Ser. No. 671,310
Term of patent 14 years
U.S. Cl. D24—122

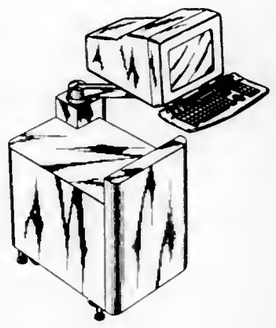


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340,769
BLOOD PRESSURE MONITOR CONSOLE
Richard M. Bloom, Palm Harbor; Daryl Bordon, Temple Terrace; Leonard C. Ducharme, Tampa; Alan R. Hails, Safety Harbor; John M. Hanke, Clearwater; Alexander Winkler, St. Petersburg; Matthew Martin, Palm Harbor, and Bruce A. Friedman, Tampa, all of Fla., assignors to Critikon, Inc., Tampa, Fla.
Filed Aug. 12, 1991, Ser. No. 745,123
Term of patent 14 years
U.S. Cl. D24—165



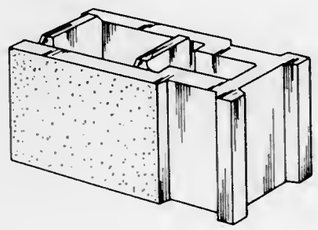
340,770
OPERATION STATION MACHINE FOR A BIOCHEMICAL ANALYSIS
Mitsuru Ohnuma, Tokyo; Kazunori Hashimoto, Tachikawa; Hiroshi Mitsumaki, Mito, and Katsuaki Takahashi, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 22, 1991, Ser. No. 659,153
Claims priority, application Japan, Jan. 25, 1991, 3-1308
Term of patent 14 years
U.S. Cl. D24—186



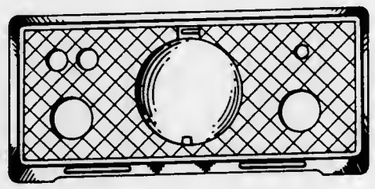
340,771
BABY BOTTLE
Richard C. Levy, P.O. Box 34828, Bethesda, Md. 20827, and Richard J. Maddocks, 302 Lexington Dr., Silver Spring, Md. 20901
Filed Jan. 13, 1992, Ser. No. 819,949
Term of patent 14 years
U.S. Cl. D24—197



340,772
RETAINING WALL BLOCK
Cloyce D. Harrison, Albuquerque, N. Mex., assignor to CSTW, Inc., Albuquerque, N. Mex.
Filed Aug. 27, 1992, Ser. No. 936,903
Term of patent 14 years
U.S. Cl. D25—118



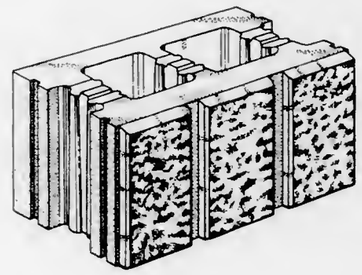
340,773
LADDER TOP
Frederick J. Bartnicki, Greenville; Harold Bernard, Transfer; Robert Beggs, Fredonia, and Donald M. Werner, Hermitage, all of Pa., assignors to R. D. Werner Co., Inc., Greenville, Pa.
Continuation-in-part of Ser. No. 100,432, Sep. 24, 1987, Pat. No. 310,884. This application Jan. 26, 1990, Ser. No. 471,129
Term of patent 14 years
U.S. Cl. D25—68



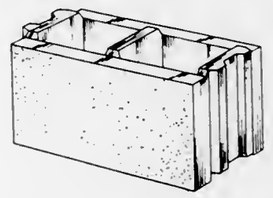
340,774
GLASSBLOCK
Franzjosef Hackelsberger, Wehr-Oeflingen, Fed. Rep. of Germany, assignor to J. Weck GmbH u. Co., Fed. Rep. of Germany
Filed Jan. 30, 1992, Ser. No. 828,592
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1991, DM/021054
Term of patent 14 years
U.S. Cl. D25—103



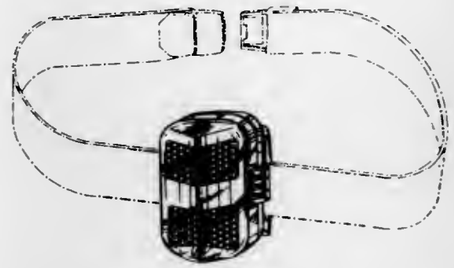
340,775
CONCRETE BLOCK
Dennis L. Sauve, Belle River, Canada, assignor to Newblock Corporation, Belle River, Canada
Filed Jan. 22, 1992, Ser. No. 824,497
Claims priority, application Canada, Jul. 24, 1991, 24079101
Term of patent 14 years
U.S. Cl. D25—118



340,776
RETAINING WALL BLOCK
Cloyce D. Harrison, Albuquerque, N. Mex., assignor to CSTW, Inc., Albuquerque, N. Mex.
Filed Aug. 27, 1992, Ser. No. 936,904
Term of patent 14 years
U.S. Cl. D25—118



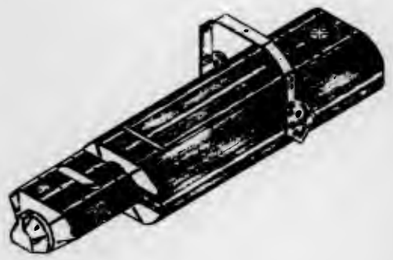
340,777
PERSONAL SAFETY LIGHT
Robert S. Choi, Landisville; Kwai C. Kong, Mount Joy; Oong Choi, Lancaster; Thomas K. Geraty, Havertown, and Philip G. Hope, Lancaster, all of Pa., assignors to Vista Lite, Inc., Lancaster, Pa.
Filed Jul. 19, 1991, Ser. No. 733,404
Term of patent 14 years
U.S. Cl. D26—38



340,778
WRIST LIGHT
Seymour Oberlander, 9226 Greenwood Ave., Munster, Ind. 46321
Filed May 2, 1991, Ser. No. 694,863
Term of patent 14 years
U.S. Cl. D26—39

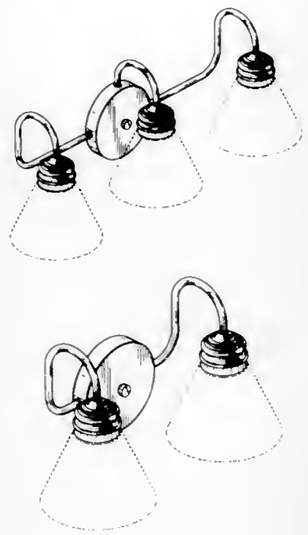


340,779
SPECIAL EFFECT LIGHT PROJECTOR
Pasquale Quadri, Albano Sant'Alessandro, Italy, assignor to Clay Paky S.r.l., Pedrengo, Italy
Filed Dec. 17, 1990, Ser. No. 629,193
Claims priority, application Italy, Jun. 22, 1990, 53 099 B/90
Term of patent 14 years
U.S. Cl. D26—63

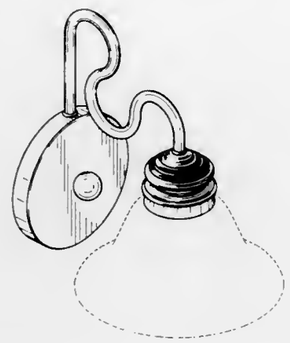


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340,780
WALL LAMP
David H. Porter, Chagrin Falls, Ohio, assignor to The L. D. Kichler Co., Cleveland, Ohio
Filed Jun. 2, 1992, Ser. No. 892,002
Term of patent 14 years
U.S. Cl. D26—80

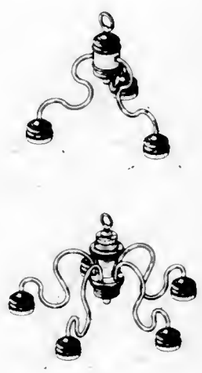


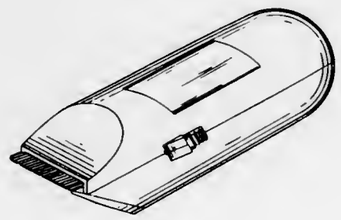
340,782
WALL LAMP
David H. Porter, Chagrin Falls, Ohio, assignor to The L. D. Kichler Co., Cleveland, Ohio
Filed Jun. 2, 1992, Ser. No. 892,349
Term of patent 14 years
U.S. Cl. D26—87



340,783
MINIATURE HAIR TRIMMER
James E. McCambridge, Polo, Ill., assignor to Wahl Clipper Corporation, Sterling, Ill.
Filed Feb. 26, 1991, Ser. No. 661,443
Term of patent 14 years
U.S. Cl. D28—53

340,781
CHANDELIER
David H. Porter, Chagrin Falls, Ohio, assignor to The L. D. Kichler Co., Cleveland, Ohio
Filed Jun. 2, 1992, Ser. No. 892,004
Term of patent 14 years
U.S. Cl. D26—81

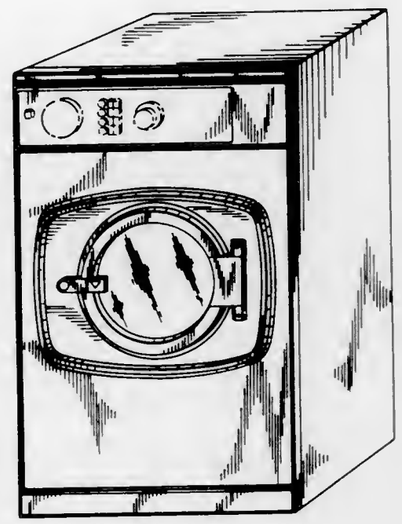




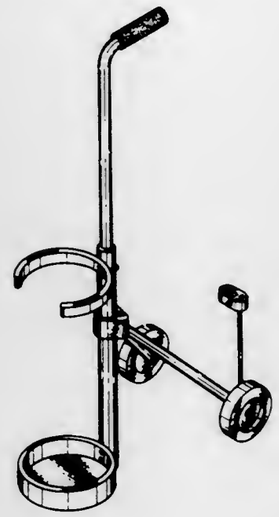
340,784
CHEST SHIELD
Douglas R. Clayton, 597½ E. Valley Ct., Grand Junction, Colo. 81504
Filed Oct. 10, 1991, Ser. No. 774,257
Term of patent 14 years
U.S. Cl. D29—11



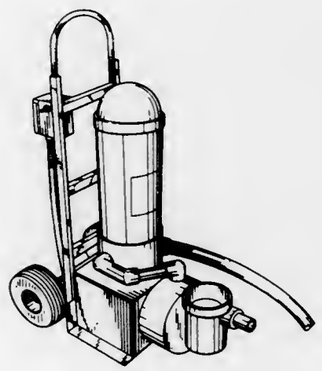
340,785
WASHING MACHINE
Antonio G. Bover, Barcelona, Spain, assignor to Girbau, S.A., Spain
Filed Oct. 5, 1990, Ser. No. 593,631
Claims priority, application Spain, Apr. 5, 1990, 121695
Term of patent 14 years
U.S. Cl. D32—6



340,787
GOLF CART WITH YARDAGE COUNTER
Doug Laursen, 5900 Yonge St., #406, North York, Ont., Canada M2M-3T8
Filed Jun. 9, 1992, Ser. No. 895,867
Term of patent 14 years
U.S. Cl. D34—15



340,786
PORTABLE POOL CLEANING DEVICE
Thomas S. Jones, 5008 White Oak Rd., Charlotte, N.C. 28210
Flled Nov. 8, 1991, Ser. No. 789,465
Term of patent 14 years
U.S. Cl. D32—21

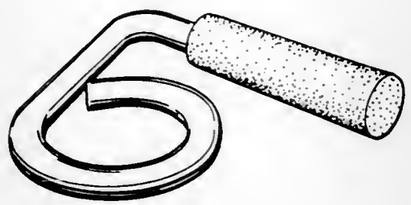


340,788
TROLLEY
Frank Lowenstein, Kowloon, Hong Kong, assignor to United System Limited, Kowloon, Hong Kong
Filed Apr. 14, 1992, Ser. No. 868,762
Claims priority, application United Kingdom, Oct. 14, 1991, 2018284
Term of patent 14 years
U.S. Cl. D34—26

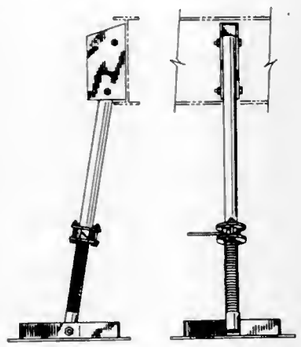


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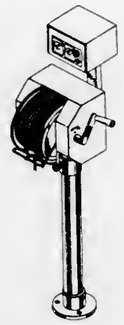
340,789
BOTTLE LIFTER
James A. Merritt, P.O. Box 206, Pleasanton, Calif. 94566
Filed Apr. 29, 1992, Ser. No. 875,847
Term of patent 14 years
U.S. Cl. D34—28



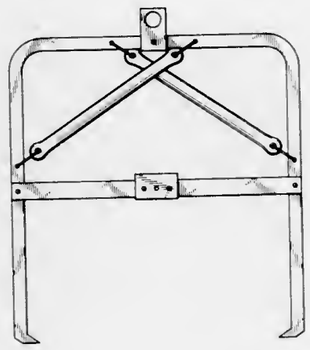
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SAFETY SUPPORT DEVICE FOR A MOBILE HOME
Donald E. Goodrich, 763 Dodge St., Delta, Colo. 81416, and Daniel L. Goodrich, 468 W. 1st St., Palisade, Colo. 81526
Filed Nov. 18, 1991, Ser. No. 794,164
Term of patent 14 years
U.S. Cl. D34—31



340,791
STATIONARY WINCH
Chung-Jang Wang, No. 3, Pei-Chuang Rd., Shen-Kang Hsiang, Taichung Hsien, Taiwan
Filed Dec. 24, 1991, Ser. No. 813,307
Term of patent 14 years
U.S. Cl. D34—33



340,792
SPRING-LOADED GRABBING AND HOISTING TONGS
William O. Lacey, 1302 E. 68th St., Savannah, Ga. 31404
Filed Aug. 19, 1991, Ser. No. 747,244
Term of patent 14 years
U.S. Cl. D34—35



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Ackerman, John F., to General Electric Company. Production of diffuse reflective coatings by atomic layer epitaxy. 5,256,244, Cl. 156-613.000.

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Adkisson, Willis B.; Rattlingourd, Glen D.; Spencer, Billie M.; and Zscheile, John W., Jr., to Unisys Corporation. High speed code sequence generator. 5,257,282, Cl. 375-1.000.

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Agrawal, Raj K.; and Thomas, John F., to Donnelly Corporation. Squeak resistant panel/window assembly for vehicles. 5,255,483, Cl. 52-397.000.

Agrawal, Rakesh; and Yee, Terrence F., to Air Products and Chemicals, Inc. Vaporization of liquid oxygen for increased argon recovery. 5,255,522, Cl. 62-22.000.

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Aiken, Martha L.; and Painter, Richard G., to Board of Regents, The University of Texas System. Detection of early platelet activation and prediagnosis of thrombotic events. 5,256,538, Cl. 435-7.900.

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Sham, Chi K.; and Rietmeijer, Frederik J., 5,256,719, Cl. 524-436.000.

Dubal, Hans-Rolf; Escher, Claus; Illian, Gerhard; Murakami, Mikio; and Ohlendorf, Dieter, to Hoechst Aktiengesellschaft. Ferroelectric liquid crystal display having gray steps or a continuous gray scale. 5,257,122, Cl. 359-75.000.

Dubensky, Ellen M.; Timm, Edward E.; McCombs, Ann M.; and Board, Julie L., to Dow Chemical Company, The. High hardness, wear resistant materials. 5,256,608, Cl. 501-94.000.

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Weiss, Jurgen; Dubs, Hans D.; and Preuss, Hans J., 5,255,805, Cl. 215-274.000.

Duchesne, Jean-Pierre; and Mulhauser, Michel, to Rhone-Poulenc Rorer S.A. Process for the preparation of (2R,3R)-cis)-β-phenylglycidic acid. 5,256,803, Cl. 549-541.000.

Duckenfield, Joan; VanMeter, Lori; Campbell, Shannon; and Nabi, Nuran, to Colgate-Palmolive Company. Antibacterial antiplaque mouthwash composition. 5,256,401, Cl. 424-49.000.

Duer, Craig C.: *See*—
Xu, Bu X.; Ward, Granville G.; DeWitt, Winfield S., III; Kobus, Gerhard S.; Duer, Craig C.; and Turner, Jimmy L., 5,255,837, Cl. 228-102.000.

Duff, James M.: *See*—
Winnik, Francoise M.; Duff, James M.; Sacripante, Guerino G.; and Davidson, Anthony R., 5,256,516, Cl. 430-110.000.

Dugan, John P., to Spectra-Physics Laserplane, Inc. Adjustable focus technique and apparatus using a moveable weak lens. 5,257,279, Cl. 372-101.000.

Dujardin, Ralf: *See*—
Grigat, Ernst; Ebert, Wolfgang; Kohler, Burkhard; Beer, Wolfgang; Dujardin, Ralf; and Horn, Klaus, 5,256,702, Cl. 521-84.100.

DuLac, Keith B.; and Weber, Bret S., to NCR Corporation. Disk controller having host interface and bus switches for selecting buffer and drive busses respectively based on configuration control signals. 5,257,391, Cl. 395-800.000.

Dulany, Margaret A.; and Ringold, Clay E., to Georgia-Pacific Resins, Inc. Resins with reduced epichlorohydrin hydrolyzates. 5,256,727, Cl. 524-608.000.

Dulany, Michael T., to Betz Laboratories, Inc. Method for the cure and removal of overspray paint from the water wash system of paint spray booths. 5,256,308, Cl. 210-712.000.

Dulyea, Kenneth W., Sr. Club organizer for golf bags. 5,255,781, Cl. 206-315.600.

Dumoulin, Charles L.: *See*—
Darrow, Robert D.; and Dumoulin, Charles L., 5,255,680, Cl. 128-653.100.

Dunlop Limited: *See*—
Raines, Kenneth W. J., 5,255,424, Cl. 29-527.300.

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Allen, Eric E.; and Olson, Richard E., 5,256,667, Cl. 514-259.000.
Gillyns, Emile M.; Stochmel, Didier R.; and Ebers, Ewald A., 5,256,224, Cl. 156-72.000.
Hahm, Diane M., 5,256,359, Cl. 264-211.120.
Lwee, Nai H.; and Dutkowsky, David J., 5,256,078, Cl. 439-326.000.
Smothers, William K., 5,256,520, Cl. 430-281.000.
Wolf, William E.; Livermore, Robert H.; Dreyfuss, David D.; Majeski, John J.; Palecki, Eugene F.; and Simpson, Thomas W., 5,256,886, Cl. 250-574.000.

Dupuy, Ronald E., to GenCorp Inc. Vehicle door glass regulator. 5,255,470, Cl. 49-227.000.

Duralock (UK) Ltd.: *See*—
von Grozny, James F. G., 5,255,899, Cl. 256-59.000.

Durham, Dana: *See*—
Spak, Mark A.; Mammato, Donald; Durham, Dana; and Jain, Sangya, 5,256,522, Cl. 430-325.000.

Durr, Reinhold R., to Koenig & Bauer Aktiengesellschaft. Pressure fluid supply valve assembly. 5,255,604, Cl. 101-389.100.

Dutcher, Robert G.; Hill, John C.; and Scott, Robert J., to Possis Medical, Inc. Cardiac lead. 5,255,693, Cl. 607-120.000.

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Lwee, Nai H.; and Dutkowsky, David J., 5,256,078, Cl. 439-326.000.

Dutton, James W.: *See*—
Farley, Ann W.; Waggoner, Clifford I.; Dutton, James W.; and Allabaugh, David C., 5,257,185, Cl. 364-419.190.

Dwinell, Davis B., to Royal Packaging Industries Van Leer B.V. Pail closure application method. 5,256,225, Cl. 156-73.100.

Dworaczek, Jean P.; and Grypczynski, Daniel, to Framatome. Process for installing a helical added thread in an internally threaded orifice for repairing the internal threads of the orifice. 5,255,423, Cl. 29-402.140.

Dyllick, Rainer: *See*—
Beamish, Thomas B.; and Dyllick, Rainer, 5,256,336, Cl. 252-543.000.

Dynamit Nobel Aktiengesellschaft: *See*—
Brede, Uwe; Kraft, Josef; and Scheiderer, Gerrit, 5,255,938, Cl. 280-736.000.

Dzierzak, Jacqueline: *See*—
Riihimaki, Roy E.; Kucla, James M.; and Dzierzak, Jacqueline, 5,256,064, Cl. 433-141.000.

E&M Lamort: *See*—
Lamort, Jean-Pierre, 5,255,791, Cl. 209-406.000.

E. R. Squibb & Sons, Inc.: *See*—
Bisacchi, Gregory S.; and Mitt, Toomas, 5,256,806, Cl. 556-419.000.
Gordon, Eric M.; and Plusecc, Jelka, 5,256,692, Cl. 514-532.000.
Grover, Gary J.; and Atwal, Karnail, 5,256,688, Cl. 514-422.000.
Poss, Michael A., 5,256,695, Cl. 514-563.000.

E-Systems, Inc.: *See*—
Przilas, Mark B., 5,255,738, Cl. 165-185.000.

Eastman, Clarke K.: *See*—
Kaplan, Martin C.; Milch, James R.; and Eastman, Clarke K., 5,256,868, Cl. 250-208.100.

Eastman Kodak Company: *See*—
Adin, Anthony, 5,256,519, Cl. 430-264.000.
Aslam, Muhammed; Demejo, Lawrence P.; and Tyagi, Dinesh, 5,256,507, Cl. 430-42.000.
Bell, Eric L., 5,256,530, Cl. 430-567.000.
Blackman, Robert J., 5,255,408, Cl. 15-308.000.
Blount, William W., Jr., 5,256,761, Cl. 528-272.000.
Bugner, Douglas E.; Mey, William; and Kamp, Dennis R., 5,256,510, Cl. 430-83.000.
Burberry, Mitchell S.; Tutt, Lee W.; and Detty, Michael R., 5,256,620, Cl. 503-227.000.
Cavanagh, James W.; and Manzo, Robert P., 5,256,328, Cl. 252-102.000.
Chari, Krishnan; and Beck, James T., 5,256,527, Cl. 430-449.000.
Chisholm, Hugh; and Stoffel, John F., 5,257,083, Cl. 355-326.000.
Chung, Jeremy K.; Kieffer, Kenneth D.; and Tschang, Pin S., 5,257,039, Cl. 346-107.00R.
DiPietro, Matthew; Kausch, Thomas J.; and Dethier, Vincent B., 5,257,057, Cl. 354-276.000.
Ferschl, Michael S.; and Zielinski, Erich, 5,257,038, Cl. 346-76.00L.

Fuss, Fred M.; and Wenschhof, David E., 5,256,232, Cl. 156-187.000.
Hayward, Jack, 5,256,357, Cl. 264-171.000.
Hediger, Edwin A., 5,257,071, Cl. 355-212.000.
Henzel, Richard P., 5,256,622, Cl. 503-227.000.
Hilden, Hugh M.; Howe, Dennis G.; and Weldon, Edward J., Jr., 5,257,270, Cl. 371-37.100.
Kaplan, Martin C.; Milch, James R.; and Eastman, Clarke K., 5,256,868, Cl. 250-208.100.
Kaplan, Martin C., 5,257,340, Cl. 385-128.000.
Kildal-Brandt, Paul A.; Weber, Thomas A.; and Heckler, Charles E., 5,257,212, Cl. 364-582.000.
Kresock, John M.; Orlicki, David M.; Chandler, Jasper S.; and Neale, Timothy E., 5,257,041, Cl. 346-109.000.
Kuo, Thauming, 5,256,756, Cl. 528-176.000.
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Losee, David L.; and Stevens, Eric G., 5,256,891, Cl. 257-233.000.
Lungershausen, Arnold W.; and Arnold, Stephen C., 5,257,118, Cl. 359-10.000.
Merkel, Paul B.; Singer, Stephen P.; Clark, Bernard Arthur; and Stanley, Paul Louis R., 5,256,528, Cl. 430-555.000.
Parsons, Michael H.; and Russel, Steven M., 5,255,903, Cl. 271-10.000.
Pineau, Richard A.; Rodgers, Timothy K.; and Allen, Mitchell S., 5,257,097, Cl. 358-500.000.
Romanet, Robert F.; Ling, Hans G.; and Hoke, David, 5,256,529, Cl. 430-558.000.
Southby, David T.; Mooberry, Jared B.; Texter, John; and Pawlak, John L., 5,256,525, Cl. 430-380.000.
Szajewski, Richard P.; and Poslusny, Jerrold N., 5,256,523, Cl. 430-362.000.
Wuerschum, Hans-Peter, 5,255,574, Cl. 81-3.200.

Eaton Corporation: *See—*
Pearson, James E.; and Zerndt, Norman E., 5,255,891, Cl. 251-129.110.
Rattmann, Hans R.; Clinch, James P.; and Laarman, James H., 5,256,018, Cl. 411-175.000.
Redgrave, Christopher A.; and White, Jay D., 5,255,763, Cl. 188-330.000.
Satula, Keith O.; Turner, Charles J.; and Groves, John P., 5,255,807, Cl. 220-3.800.
Turner, Charles J.; Camps, Frank W.; Saffari, Akbar; and Nadolski, Gregory L., 5,256,873, Cl. 250-239.000.

Ebara Corporation: *See—*
Kajiwara, Ken-ichi, 5,256,033, Cl. 415-214.100.

Ebbers, Timothy J.: *See—*
Aranda, Michael A.; Bowen, Andrew D.; Ebbers, Timothy J.; Henderson, Randall L.; Hiltebeitel, Nathan R.; and Tamlyn, Robert, 5,257,237, Cl. 365-230.050.

Eberhard, Charles E.: *See—*
Sonneville, Stephen T.; Eberhard, Charles E.; and Vaughn, Jeffery M., 5,255,603, Cl. 101-363.000.

Ebers, Ewald A.: *See—*
Gillyns, Emile M.; Stochmel, Didier R.; and Ebers, Ewald A., 5,256,224, Cl. 156-72.000.

Ebert, Richard M.: *See—*
Renk, Richard J.; and Ebert, Richard M., 5,255,815, Cl. 220-323.000.

Ebert, Wolfgang: *See—*
Grigat, Ernst; Ebert, Wolfgang; Kohler, Burkhard; Beer, Wolfgang; Dujardin, Ralf; and Horn, Klaus, 5,256,702, Cl. 521-84.100.

Ebihara, Fumihiko: *See—*
Hattori, Toshiyuki; and Ebihara, Fumihiko, 5,255,626, Cl. 114-270.000.

Echelberger, Michael G. Discharge chute for trash receptacles. 5,255,769, Cl. 193-4.000.

Echelon Corporation: *See—*
Graham, Martin H.; and Johnson, Howard W., 5,257,006, Cl. 340-310.00A.

Echeverria, Lina M.: *See—*
Crooker, David H.; and Echeverria, Lina M., 5,256,179, Cl. 65-60.200.

Echizenya, Takahiro: *See—*
Ishimura, Toshiro; Matsui, Koichi; Echizenya, Takahiro; Taniguchi, Yoshihisa; and Mizunuma, Akiko, 5,255,681, Cl. 128-660.090.

Ecimovic, Dusan: *See—*
Adair, John G.; Demers, Richard A.; Ecimovic, Dusan; Grafe, Robert J.; Jackson, Robert D.; Lindsay, Bruce G.; Murphy, Michael E.; Reinsch, Roger A.; Resch, Robert P.; Sanders, Richard R.; Selinger, Patricia G.; Sunday, Robert L.; and Zimowski, Melvin R., 5,257,366, Cl. 395-600.000.

Ecolab Inc.: *See—*
Thomas, John E., 5,255,820, Cl. 222-1.000.

Ecole Polytechnique: *See—*
Deslauriers, Antoine; Savard, Pierre; Page, Pierre; Cardinal, Rene ; and Rousseau, Josee, 5,255,678, Cl. 128-642.000.

Edelson, Richard L.: *See—*
Gasparro, Francis P.; and Edelson, Richard L., 5,256,648, Cl. 514-44.000.

Edenhofer, Albrecht: *See—*
Alig, Leo; Edenhofer, Albrecht; Muller, Marcel; Trzeciak, Arnold; and Weller, Thomas, 5,256,812, Cl. 560-35.000.

Edwards, Lawrence J., to Combustion Engineering, Inc. Method for detecting flaws in a steam generator tube using a flexible eddy current probe having coil bank switching. 5,256,966, Cl. 324-220.000.

Edwards, Michael G.: *See—*
Averbuch, Aaron J.; Brauer, Roger L.; Edwards, Michael G.; and Mikucki, William A., 5,256,908, Cl. 367-99.000.

Edwards, Ray, Jr.: *See—*
Phillips, Robert E.; Mathis, David M.; Edwards, Ray, Jr.; and Lopez, Albert, 5,256,537, Cl. 435-7.100.

EG&G Idaho, Inc.: *See—*
Rogers, Robert D.; and Wolfram, James H., 5,256,544, Cl. 435-42.000.

Eggerstedt, Paul: *See—*
Zievers, James F.; Zievers, Elizabeth C.; and Eggerstedt, Paul, 5,256,175, Cl. 55-302.000.

Egolf, Scott L.: *See—*
Blankenship, Robert M.; and Egolf, Scott L., 5,256,746, Cl. 526-233.000.

Egusa, Syuzo; and Fukuyo, Yasuo, to Katayama Chemical, Inc. Method for destroying cyst of noxious plankton. 5,256,423, Cl. 424-616.000.

Ehrlich, Rodney P., to Wabash National Corporation. Van door structure. 5,255,952, Cl. 296-146.130.

Ehsman, Patricia M. Timekeeping display. 5,257,246, Cl. 368-282.000.

Eichenberg, LaDorna E.: *See—*
Eichenberg, Robert J.; and Eichenberg, LaDorna E., 5,255,587, Cl. 83-628.000.

Eichenberg, Robert J.; and Eichenberg, LaDorna E. Sheet cutting die press. 5,255,587, Cl. 83-628.000.

Eichenberger, Hans-Ulrich; Mondini, Giancarlo; Clement, Heinz; and Ackeret, Walter, to Rieter Machine Works, Ltd. Combing machine with means for limiting movement of top nipper. 5,255,416, Cl. 19-228.000.

Eichhorn, Karsten J.: *See—*
Herber, Ralph H.; and Eichhorn, Karsten J., 5,255,836, Cl. 226-24.000.

Eichmann, Klaus; and Modolell, Manuel, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Extracts of the *Acanthospermum hispidum* plant. 5,256,416, Cl. 424-195.100.

Eilingsfeld, Heinrich J.: *See—*
Hahn, Erwin; Eilingsfeld, Heinrich J.; Reichelt, Helmut; Aumueller, Alexander; and Hupfeld, Bernd, 5,256,826, Cl. 568-33.000.

Eimer, Klaus; and Czolkoss, Wolfgang, to Taprogge GmbH. Method and device for monitoring the efficiency of a condenser. 5,255,977, Cl. 374-41.000.

Einoder, Norbert; and Knodel, Waldemar R., to Heinrich Fiedler GmbH & Co KG. Screening apparatus. 5,255,790, Cl. 209-393.000.

Eizenhofer, Thomas: *See—*
Harms, Wolfgang; and Eizenhofer, Thomas, 5,256,774, Cl. 534-612.000.

Ejiri, Eiji; and Takeda, Kazuhiro, to Nissan Motor Company, Ltd. Coreless torque converter. 5,255,516, Cl. 60-362.000.

Eka Nobel AB: *See—*
Nystrom, Mats; Herrmann, Wolgang; and Larsson, Bernt, 5,256,386, Cl. 423-338.000.

Elamin, Naman A., to Allied-Signal Inc. Compressed air system with warning mechanism for air dryer service life indication. 5,257,008, Cl. 340-540.000.

Elder, George G.: *See—*
Everett, James W.; Gunter, John B.; Woolfolk, William; Sadofsky, Frank; Nelson, Lawrence A.; Fulmer, George D.; Elder, George G.; and Keating, Robert F., 5,255,717, Cl. 138-89.000.

Elf Sanofi: *See—*
Le Fur, Gerard; and Sabadie, Michel, 5,256,649, Cl. 514-46.000.

Eli Lilly and Company: *See—*
Chou, Ta-Sen; and McCarthy, Timothy J., 5,256,797, Cl. 549-478.000.
Chou, Ta-Sen; and Jones, Charles D., 5,256,798, Cl. 549-478.000.
Weigel, Leland O., 5,256,807, Cl. 558-52.000.

Eli Plastics Industrial Co., Ltd.: *See—*
Wang, David, 5,255,486, Cl. 52-473.000.

Ellingboe, John W.; Nikaido, Madelene; and Bagli, Jehan, to American Home Products Corporation. Substituted pyrrolopyrimidines, azepinopyrimidines and pyridopyrimidines useful as angiotensin II antagonists. 5,256,654, Cl. 514-186.000.

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Cooper, William L.; Herman, Robert W.; and Elliott, Timothy J., 5,257,151, Cl. 360-98.070.

Ellis, Ernest W.; Foley, Diane M.; and Arnold, Dana R., to Graphics Technology International Inc. Ablation-transfer imaging/recording. 5,256,506, Cl. 430-20.000.

El-Rashidy, Ragab, to Pharmedic Co. Topical compositions and methods for treatment of male impotence. 5,256,652, Cl. 514-58.000.

Elscint, Ltd.: *See—*
Keren, Hanan; Shalev, Noam; and Harel, Zeev, 5,256,972, Cl. 324-318.000.

Elsner Engineering Works, Inc.: *See—*
Molison, Robert E.; and Palmer, Rodger M., 5,255,493, Cl. 53-473.000.

Elspass, Chester W.: *See—*
Manalastas, Pacifico V.; Drake, Evelyn N.; Thaler, Warren A.; Kresge, Edward N.; and Elspass, Chester W., 5,256,181, Cl. 71-28.000.

Elston, Clinton R. Apparatus for composting organic waste materials and method. 5,256,378, Cl. 422-184.000.

EmamBakhsh, Ali S.; McPherson, William G.; Olson, Mark O.; and Saberan, Al A., to TRW Vehicle Safety Systems Inc. Vehicle air bag with continuous frame retainer. 5,255,937, Cl. 280-728.000.

Emert, Jacob; Lundberg, Robert D.; and Gutierrez, Antonio, to Exxon Chemical Patents Inc. Polyanhydride modified adducts or reactants and oleaginous compositions containing same. 5,256,325, Cl. 252-51.500.

Emhart Glass Machinery Investments Inc.: *See—*
Baldwin, Leo B., 5,256,871, Cl. 250-223.00B.

Emitec Gesellschaft fuer Emissionstechnologie: *See—*
Maus, Wolfgang; Swars, Helmut; and Bruck, Rolf, 5,255,511, Cl. 60-274.000.

Emoto, Mayumi: *See—*
Yoshimoto, Hiroshi; Koboshi, Shigeharu; Ishikawa, Masao; and Emoto, Mayumi, 5,256,524, Cl. 430-372.000.

Empak, Inc.: *See—*
Wittman, Boyd C., 5,255,543, Cl. 70-57.100.

Enderlein, Robby, to RSL Logistik GmbH & Co. Conveyor for a suspension conveyor system with bearing arrangement for vertical and horizontal pivoting. 5,255,610, Cl. 105-156.000.

Endo, Fumihiro: *See—*
Ishikawa, Toshio; Endo, Fumihiro; Iwaasa, Shuzo; Utsumi, Tomoaki; Yamagiwa, Tokio; and Tagawa, Yoshinori, 5,256,976, Cl. 324-522.000.

Endo, Fuzio: *See—*
Terasawa, Masato; Shimazu, Mitsunobu; Endo, Fuzio; and Yukawa, Hideaki, 5,256,551, Cl. 435-108.000.

Endo, Yoichi: *See—*
Kumagai, Yoshiaki; Itaya, Eiji; and Endo, Yoichi, 5,257,415, Cl. 455-126.000.

EndoVascular Technologies, Inc.: *See—*
Quiachon, Dinah B.; Sterman, Wesley D.; Williams, Ronald G.; Dillow, David C.; and Baker, Steven G., 5,256,150, Cl. 604-171.000.

Endress u. Hauser GmbH u. Co.: *See—*
Schneider, Georg; and Wagner, Richard, 5,257,210, Cl. 364-553.000.

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Rindt, John R.; and Hetland, Melanie D., 5,256,278, Cl. 208-400.000.

Eng, Kai Y.; Karol, Mark J.; and Pashan, Mark A., to AT&T Bell Laboratories. Concentrator-based growable packet switch. 5,256,958, Cl. 370-56.000.

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Grecksch, Hans; Ruth, Gregor; and Englehardt, Dietmar, 5,255,776, Cl. 198-465.100.

Eniricerche S.p.A.: *See—*
Lockhart, Thomas P.; and Bonaccorsi, Fabrizio, 5,256,315, Cl. 252-8.551.

Enoki, Toshio; and Sakaguchi, Yasuo, to Kureha Kagaku Kogyo K.K. Poly(arylene thioether) resin compositions and extruded products thereof. 5,256,743, Cl. 525-537.000.

Enright, Fred M.: *See—*
Corstvet, Richard E.; and Enright, Fred M., 5,256,415, Cl. 424-92.000.

Ensminger, W. D.: *See—*
Ensminger, William D.; Andrews, James C.; and Knol, James A., 5,256,146, Cl. 604-104.000.

Ensminger, William D.; Andrews, James C.; and Knol, James A., to Ensminger, W. D.; Andrews, J. C.; and Knol, J. A. Vascular catheterization system with catheter anchoring feature. 5,256,146, Cl. 604-104.000.

Envirex Inc.: *See—*
Furstenberg, John L., 5,255,722, Cl. 141-114.000.

Enzien, Colleen R.: *See—*
Sathi, Kitty; Ippolito, Ronald A.; Enzien, Colleen R.; Comparetta, Christopher; and Menard, Lyssa E., 5,257,377, Cl. 395-700.000.

Epstein, Barry M. Protector network for A-C equipment. 5,257,157, Cl. 361-111.000.

Eranian, Armand; and Jacquinot, Eric, to Societe Francaise Hoechst. Polymerizable luminescent fluid composition and its use. 5,256,725, Cl. 524-558.000.

Ercon Development Co.: *See—*
Bailey, Bert E.; Pollock, W. Al; and Thompson, W. Les, 5,255,997, Cl. 405-16.000.

Erdman, Arthur G.: *See—*
Riley, Donald R.; Zhu, Yang; Rekow, Elizabeth D.; Ahn, Jeong-Ho; Klamecki, Barney; and Erdman, Arthur G., 5,257,203, Cl. 364-474.050.

Erich, Klauke: *See—*
Schallnor, Otto; Erich, Klauke; Stetter, Jorg; Wroblowsky, Heinz-Jurgen; Schmidt, Robert R.; Santel, Hans-Joachim; and Gehring, Reinhold, 5,256,634, Cl. 504-282.000.

Erickson, Clifford C. Trouble light. 5,257,172, Cl. 362-226.000.

Erie Manufacturing Company: *See—*
Dahlen, Theodore E.; Gagas, John M.; and Buettner, Nick W., 5,256,283, Cl. 210-190.000.

Erisman, Terrance L.: *See—*
Laymon, Alexander J.; Silfvast, William T.; and Erisman, Terrance L., 5,257,278, Cl. 372-99.000.

Erkki, Rinne, to Unicraft Oy. Adjustable fastening device. 5,255,928, Cl. 279-4.010.

ERO Industries: *See—*
Bendersky, Edward S., 5,255,834, Cl. 224-209.000.

Ervin, Paul R.; Malec, Ronald C.; and Porter, Alan J., to Ford Motor Company. Compressed gas container with shape memory alloy pressure relief member. 5,255,809, Cl. 220-89.100.

Eryaman, Can A.: *See—*
Barzegar, Farhad; Eryaman, Can A.; Russell, Jesse E.; and Schroeder, Robert E., 5,257,397, Cl. 455-33.100.

Escalator Handrail Company: *See—*
Ball, Ronald H.; and Caunce, A. Stuart, 5,255,772, Cl. 198-337.000.

Esch, Heinz: *See—*
Chjonowski, Marian; Nagel, Werner; Meier, Karl; Leonhardt, Wolfgang; and Esch, Heinz, 5,256,196, Cl. 106-482.000.

Escher, Claus: *See—*
Dubal, Hans-Rolf; Escher, Claus; Illian, Gerhard; Murakami, Mikio; and Ohlendorf, Dieter, 5,257,122, Cl. 359-75.000.

Esker, Joseph D.: *See—*
Burgess, Bradley C.; and Esker, Joseph D., 5,255,441, Cl. 33-295.000.

Esselte Pendaflex Corporation: *See—*
Aaldenberg, Eric R.; Wertheim, Andrew H.; Kachel, Theodore V.; and Rivlin, Jonathan B., 5,255,798, Cl. 211-46.000.
Kachel, Theodore V.; Rivlin, Jonathan B.; Boy, Lee A.; Hawes, Robert E., Jr.; Dellacroce-Steinberg, Cheryl; Aaldenberg, Eric; and Lynch, James J., 5,256,130, Cl. 493-210.000.

Estabrook, Tripp, to Harken, Inc. Winch handle. 5,255,573, Cl. 74-545.000.

Ethan Allen Inc.: *See—*
Sabo, Irving, 5,255,413, Cl. 16-121.000.

Etherington, Harry J. C.; Joslin, Paul C.; and Stevenson, Timothy J., to ROCC Computers Limited. Signature verification system. 5,257,320, Cl. 382-3.000.

Ethicon, Inc.: *See—*
Banik, Michael S.; and Stephens, Randy R., 5,256,149, Cl. 604-164.000.
Smith, Kevin W.; Slater, Charles R.; Scarfone, Frank A.; Murphy, Gregory J.; Bales, Thomas O., Jr.; and Bacon, Michael D., 5,256,148, Cl. 604-158.000.

Ethyl Corporation: *See—*
Hu, Patrick C., 5,256,390, Cl. 423-700.000.
Murray, William T.; Young, Robert E.; Choudhury, Azfar A.; and Patil, Deepak R., 5,256,816, Cl. 562-401.000.

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Fujii, Tateo: *See—*
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Fujii, Yohichi: *See—*
Tanaka, Eiji; Tanii, Ken; and Fujii, Yohichi, 5,256,476, Cl. 428-241.000.

Fujimaru, Takuya; Yoneda, Takehiko; Tokunaga, Hiromi; and Taki, Hiromitsu, to Matsushita Electric Industrial Co., Ltd. Dielectric ceramic composition. 5,256,639, Cl. 501-137.000.

Fujimoto, Michio: *See—*
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Fujimura, Mayumi: *See—*
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Fujioka, Tetsuya: *See—*
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Fujisawa Pharmaceutical Co., Ltd.: *See—*
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Matsuo, Masaaki; Ogino, Takashi; Igari, Norihiro; Seno, Hachiro; and Shimomura, Kyoichi, 5,256,675, Cl. 514-342.000.
Nakaguchi, Osamu, 5,256,678, Cl. 514-356.000.
Shiokawa, Youichi; Okumura, Kazuo; Take, Kazuhiko; and Tsubaki, Kazunori, 5,256,824, Cl. 564-307.000.

Fujishita, Kaneaki; and Sato, Kazuhiro, to Sony Corporation. Surround audio apparatus. 5,257,313, Cl. 381-18.000.

Fujita, Kazuaki: *See—*
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Fujita, Shuichi: *See—*
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Fujita, Takafumi: *See—*
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Fujitsu Limited: *See—*
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Kimura, Shinta, 5,257,314, Cl. 381-43.000.
Kumagai, Yoshiaki; Itaya, Eiji; and Endo, Yoichi, 5,257,415, Cl. 455-126.000.
Miyo, Tokihiro, 5,257,029, Cl. 342-352.000.
Naito, Hidetoshi; Kawai, Masaaki; Watanabe, Hisako; Takizawa, Yuji; Tajima, Kazuyuki; and Yamashita, Haruo, 5,257,311, Cl. 380-48.000.
Nakayama, Yoshiro, 5,256,915, Cl. 307-450.000.
Okada, Akihiro, 5,257,112, Cl. 358-402.000.
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Yamazaki, Satoru; Yasuda, Hiroshi; and Sakamoto, Kiichi, 5,256,881, Cl. 250-492.230.

Fujiwara, Masakatsu; Tsuchida, Yasuyuki; Nakanishi, Yuji; and Morishita, Yoshikazu, to Sanyo Electric Co., Ltd. Electric vacuum cleaner having an electric blower driven in accordance with the conditions of floor surfaces. 5,255,409, Cl. 15-319.000.

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Fukazawa, Tokuumi: *See—*
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Haneda, Satoshi; and Fukuchi, Masakazu, 5,257,047, Cl. 346-160.000.

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Fukunaga, Sadao: *See—*
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Fukunishi, Takumi: *See—*
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Ikeda Bussan Co., Ltd.: *See*—
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Kinoshiro, Hiromichi: *See*—
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Kinoshita, Toshio: *See*—
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Kirihata, Toshiaki: *See*—
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Kirkland, William L.: *See*—
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Kirkpatrick, Thomas I., to United States of America, Navy. Turn-on transient overcurrent response suppressor. 5,257,156, Cl. 361-18.000.

Kirkwood Industries: *See*—
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Kishi, Mitsuhiro, to Japanic Corporation. Accessory detachable mechanism of construction machine. 5,256,026, Cl. 414-723.000.

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Kos, Robert D., to Fluoroware, Inc. Wafer carrier with wafer retaining cushions. 5,255,797, Cl. 211-41.000.

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Lennon, Vanda A.; Lambert, Edward H.; Kryzer, Thomas; and Griesmann, Guy E., 5,256,540, Cl. 435-7.230.

Ksendzov, Alexander: *See*—
Forouhar, Siamak; Larsson, Anders G.; Ksendzov, Alexander; and Lang, Robert J., 5,257,276, Cl. 372-45.000.

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Nakamura, Norimi; Kobayashi, Mitsugu; Matsui, Akio; and Yamaguchi, Tetsuo, 5,255,752, Cl. 180-6.700.

Kubota, Tatsuya; Hijii, Kazuya; Kubota, Tetsumaru; and Ikeda, Yuichi, to Olympus Optical Co., Ltd. Ultrasonic treatment apparatus. 5,255,669, Cl. 128-24.0AA.

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Kubota, Tatsuya; Hijii, Kazuya; Kubota, Tetsumaru; and Ikeda, Yuichi, 5,255,669, Cl. 128-24.0AA.

Kubota, Toshio: *See*—
Ishibashi, Ichirou; Arai, Nobunari; and Kubota, Toshio, 5,255,856, Cl. 239-691.000.

Kudla, James M.: *See*—
Riihimaki, Roy E.; Kudla, James M.; and Dzierzak, Jacqueline, 5,256,064, Cl. 433-141.000.

Kuehne, John W.: *See*—
Moslehi, Mehrdad M.; and Kuehne, John W., 5,256,563, Cl. 437-152.000.

Kuettner GmbH & Co., K.G.: *See*—
Schott, Hans-Klaus, 5,255,900, Cl. 266-44.000.

Kugimiya, Shuzo: *See*—
Suzuki, Hitoshi; Shiotani, Shinobu; Tokunaga, Shinji; Hirai, Tokuyuki; Fukumochi, Yoji; Kugimiya, Shuzo; and Sata, Ichiko, 5,257,187, Cl. 364-419.200.

Kuhn, Peter: *See*—
Obrist, Frank; Kuhn, Peter; and Frey, Michael, 5,255,432, Cl. 29-888.300.

Kumagai, Tomoharu: *See*—
Nishikawa, Masao; Kumagai, Tomoharu; Abe, Shoei; Hirose, Masato; Hirakawa, Mitsuaki; and Gomi, Hiroshi, 5,255,753, Cl. 180-8.600.

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Kump, William H., to GNB Incorporated. Modular, multicell lead-acid batteries. 5,256,502, Cl. 429-150.000.

Kunde, Klaus; Henk, Hermann; Schundehutte, Karl-Heinz, deceased (by Schundehutte, Eva, heir); and Stohr, Frank-Michael, to Bayer Aktiengesellschaft. Copper complexes of 4-fluoro-5-chloropyrimidin-6-yl containing ractive mondazo dyes. 5,256,773, Cl. 534-627.000.

Kunh, Hermann J.: *See*—
Blass, Ernst A.; and Kunh, Hermann J., 5,255,601, Cl. 101-155.000.

Kunimoto, Toshifumi: *See*—
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Kunisada, Takao: *See*—
Tamura, Zenzo; Shoji, Kuniko; Azegami, Chieko; Kunisada, Takao; Hosoi, Kaoru; Suzuki, Kiwa; and Kitazawa, Shikifumi, 5,256,701, Cl. 514-781.000.

Kunze, Norbert; and Weber, Georg, to U.S. Philips Corporation. Magnetic tape cassette apparatus having a tiltable transport member for switching tape transport direction. 5,257,150, Cl. 360-96.300.

Kuo, Thauming, to Eastman Kodak Company. Thermosetting coating compositions. 5,256,756, Cl. 528-176.000.

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Kurabayashi, Ken: *See*—
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Kuraray Chemical Co., Ltd.: *See*—
Tanaka, Eiji; Tanii, Ken; and Fujii, Yohichi, 5,256,476, Cl. 428-241.000.

Kurata, Kazuhiro; Komatsu, Koya; and Yamamoto, Koji, to NEC Corporation. Single mode optical fiber device including a short lens optical fiber. 5,257,335, Cl. 385-78.000.

Kurata, Yukio: *See*—
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Kureha Kagaku Kogyo K.K.: *See*—
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Kurihara, Hitoshi: *See*—
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Kurihara, Kazumasa; and Yajima, Shigeru, to Zexel Corporation. System by determining if all multiple tasks were processed normally. 5,257,373, Cl. 395-650.000.

Kurihara, Yoshie; Kohno, Hiroshige; Kato, Masaaki; Ikeda, Kenji; and Miyake, Masako, to Kurihara, Yoshie; and Asahi Denka Kogyo Kabushiki Kaisha. Method for stabilizing taste-modifier. 5,256,439, Cl. 426-655.000.

Kuroda, Akira, to Canon Kabushiki Kaisha. Image heating apparatus regulating shift of endless fixing film. 5,257,078, Cl. 355-290.000.

Kuroda, Toshiaki; and Inoue, Hiroyuki, to Toa Medical Electronics Co., Ltd. Method for diluting and mixing liquid specimen. 5,256,573, Cl. 436-179.000.

Kuroi, Masato: *See*—
Masutani, Tetsuya; Maeda, Masahiko; Yanagisawa, Norio; and Kuroi, Masato, 5,256,318, Cl. 252-8.570.

Kurosaki, Masahiko; and Kitazawa, Toshiyuki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Electrically driving apparatus of mirror in single-lens reflex camera. 5,257,052, Cl. 354-153.000.

Kurtz, Helen Lou: *See*—
Renk, Richard J.; and Ebert, Richard M., 5,255,815, Cl. 220-323.000.

Kurylko, Lubomyr: *See*—
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Kusaka, Kohei; Kaneko, Kiyoshi; Kato, Yoshiaki; and Kato, Takeo, to Kabushiki Kaisha Komatsu Seisakusho. Method of automatically changing the speed stage of a construction vehicle based on vehicle loading. 5,257,193, Cl. 364-431.070.

Kutaragi, Ken, to Sony Corporation. Apparatus for controlling CD audio player to playback CD-ROM. 5,257,254, Cl. 369-50.000.

Kutschenreuter, Paul H., Jr.; and Blanton, John C., to General Electric Company. Method of operating a scramjet including integrated inlet and combustor. 5,255,513, Cl. 60-204.000.

Kutta, Helmuth; and Wiser-Halladay, Robin, to Atlantic Richfield Company. Nitrile derivative for sand control. 5,256,729, Cl. 524-700.000.

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Kuzan, Pawel: *See*—
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Kuznitz, Matthew: *See*—
Divone, Peter A., Sr.; Urbaez, Jesus A.; Faryniarz, Joseph R.; Kuznitz, Matthew; and Stone, Philip A., 5,256,013, Cl. 409-132.000.

Kvakoyszky, George; Rea, James H.; Sheehan, Michael T.; and Smith, Brad L., to Hoechst Celanese Corporation. Method for preparing a salt of 4-hydroxystyrene and for preparing 4-tertiary-butoxycarbonyloxystyrene therefrom. 5,256,809, Cl. 558-270.000.

Kwjatkowski, Marek: *See*—
Ylikoski, Jyrki; Hurskainen, Pertti; Dahlen, Patrik; Sund, Christian; Lovgren, Timo; and Kwjatkowski, Marek, 5,256,535, Cl. 435-6.000.

Kyocera Corporation: *See*—
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Kyodo Oxygen Co., Ltd.: *See*—
Takano, Hideaki; Nakata, Jitsuo; Nakahara, Yuji; Nanba, Keizoh; and Sugiyama, Yoshihiko, 5,256,856, Cl. 219-137.0WM.

Kyowa Hakko Kogyo Co., Ltd.: *See*—
Arai, Hitoshi; Kanda, Yutaka; Kono, Motomichi; Kasai, Masaji; Ashizawa, Tadashi; and Gomi, Katsushige, 5,256,685, Cl. 514-410.000.
Satoh, Tsutomu; Shimizu, Ikuo; and Ito, Yukiyoshi, 5,256,794, Cl. 548-491.000.

Kyuma, Kazuo; Tai, Shuichi; Ohta, Jun; Oita, Masaya; Ohyama, Nagaaki; and Yamaguchi, Masahiro, to Mitsubishi Denki Kabushiki Kaisha. Intelligence information processing system. 5,257,343, Cl. 395-22.000.

Laarman, James H.: *See*—
Rattmann, Hans R.; Clinch, James P.; and Laarman, James H., 5,256,018, Cl. 411-175.000.

Lacey, Walter J.: *See*—
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Ladduwahetty, Tamara; and Swain, Christopher J., to Merck Sharp & Dohme, Limited. Azabicyclic compounds, pharmaceutical compositions containing them and their use in therapy. 5,256,671, Cl. 514-305.000.

Laderman, Stephen; Scott, Martin; Kamins, Theodore I.; Hoyt, Judy L.; King, Clifford A.; Gibbons, James F.; and Noble, David B., to Hewlett-Packard Company. Fabricating a semiconductor device with strained $Si_{1-x}Ge_x$ layer. 5,256,550, Cl. 437-106.000.

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Blin, Philippe; and LaDouce, Jacques, 5,255,944, Cl. 285-149.000.

Lagadec, Roger; Sekiguchi, Keisuke; Yamauchi, Hiroyuki; Tezuka, Masaru; Tobita, Satoru; Sako, Yoichiro; and Hara, Hiroyuki, deceased (by Hara, Minoru, legal representative), to Sony Corporation. Sample data transmission apparatus. 5,257,271, Cl. 371-37.400.

Lagos, Costas C. Fluorescent lamp with improved phosphor coating and related process. 5,256,096, Cl. 445-26.000.

Lahaussois, Pierre. Multi-functional core for toilet tissue or the like. 5,255,864, Cl. 242-68.500.

Lahvic, Thomas R.: *See*—
Bushman, Thomas S.; Lahvic, Thomas R.; Meckstroth, Richard J.; Rebandt, Robert G., II; and Vaughn, Timothy T., 5,256,113, Cl. 474-135.000.

Lallement, Jacques: *See*—
Parc, Guy; Thevenin, Nicole; Born, Maurice; and Lallement, Jacques, 5,256,319, Cl. 252-32.70R.

Lamb, Joseph M., to Stratus Computer, Inc. Programmable interrupt priority encoder method and apparatus. 5,257,383, Cl. 395-725.000.

Lamb, Miles P.; and Bachmann, Herbert, to Inventio AG. Apparatus for detecting and signaling the function and status of an elevator safety brake. 5,255,760, Cl. 188-1.110.

Lambert, Edward H.: *See*—
Lennon, Vanda A.; Lambert, Edward H.; Kryzer, Thomas; and Griesmann, Guy E., 5,256,540, Cl. 435-7.230.

Lamm, Bo R.: *See*—
Pirkle, William H.; Welch, Christopher J.; and Lamm, Bo R., 5,256,293, Cl. 210-635.000.

Lamort, Jean-Pierre, to E&M Lamort. End rim of cylindrical sieve for paper pulp strainer and classifier and process, of making it. 5,255,791, Cl. 209-406.000.

Lane, Barton G.: *See*—
Bromberg, Leslie; Cohn, Daniel R.; Guss, William C.; Lane, Barton G.; and Smatlak, Donna L., 5,256,854, Cl. 219-121.520.

Lang, Georg, to Siemens Aktiengesellschaft. Initialization routine in an EEPROM. 5,257,380, Cl. 395-700.000.

Lang, Joseph H.: *See*—
Gross, Robert A.; Bailey, Raymond E.; and Lang, Joseph H., 5,257,073, Cl. 355-221.000.

Lang, Robert J.: *See*—
Forouhar, Siamak; Larsson, Anders G.; Ksendzov, Alexander; and Lang, Robert J., 5,257,276, Cl. 372-45.000.

Lange, Clark V.; Thayer, Bruce E.; Kedarnath, N.; Mordenga, Samuel P.; and Pozzanghera, Darryl L., to Xerox Corporation. Electrostatic brush cleaner with a secondary cleaner. 5,257,079, Cl. 355-303.000.

Lange, Richard M.: *See*—
Dishong, Dennis M.; and Lange, Richard M., 5,256,752, Cl. 526-329.500.

Langendorf, Brian K., to Intel Corporation. Programmable secondary clock generator. 5,256,994, Cl. 331-16.000.

Langos, Peter; and Lehmann, Manfred, to Mauser-Werke GmbH. Storage head for a blow molding machine. 5,256,049, Cl. 425-131.100.

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Langran, Philip A.: *See*—
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Langston Corporation, The: *See*—
Wilson, William J., 5,257,299, Cl. 377-6.000.

Langumier, Georges; and Montmory, Pierre, to Colas, Societe Ainonyme. Process for obtaining bitumens containing at least one elastomer and products obtained. 5,256,712, Cl. 524-71.000.

Lapen, Daniel C.: *See*—
Hurley, Anne A.; Lapen, Daniel C.; and Oud, Peter S., 5,256,571, Cl. 436-17.000.

Lardellier, Alain M. J., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A.". Thrust reverser for a high-bypass ratio turbofan engine. 5,255,510, Cl. 60-226.200.

Larsen, Bent: *See*—
Bach, Michael; Aagaard, Kjeld; Juul, Torben; Fogh, Hans E.; Thomsen, Svend E.; Plougsgaard, Helge S.; Kristensen, John; and Larsen, Bent, 5,257,177, Cl. 364-167.010.

Larsen, Douglas C.; and Vaughan, Robert A., to Standard Products Company, The. Trim lip for a weather seal. 5,255,472, Cl. 49-490.100.

Larsen, Robert E.: *See*—
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Larson, Eric G.: *See*—
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LaRussa, Joseph. Hybridized target acquisition trainer. 5,256,066, Cl. 434-21.000.

LaRussa, Joseph. Helmet mounted display system. 5,257,094, Cl. 359-13.000.

Laser Technology, Inc.: *See*—
Tyson, John, II; and Newman, John W., 5,257,088, Cl. 356-353.000.

Lashinski, Robert D.: *See*—
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Laskaras, Michael A.: *See*—
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Altmann, Rainer; Lauer, Rainer; Schmidt, Guenther; Stromski, Kasimir; Zanten, Anton V.; Sigl, Alfred; Hellmann, Harald; Veil, Karl; Fees, Hans-Joerg; Jonner, Wolf-Dieter; and Gutzeit, Reinhard, 5,255,963, Cl. 303-116.100.

Laurenz, Frank P. Fluid applicator for animals having a metering dispensing valve. 5,255,633, Cl. 119-157.000.

Lauronen, Joel, to Oy Sisu-Auto AB. Axle construction for a commercial vehicle. 5,255,754, Cl. 180-24.010.

Lauton, Alain, to Ciba-Geigy Corporation. Compositions for the treatment of leather and furs. 5,256,317, Cl. 252-8.570.

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Lawman, Michael J. P.; Ohmann, Helle B.; Attah-Poku, Samuel K.; and Heise-Qualtiere, Janette, to University of Saskatchewan. Primitive cell colony stimulating factors and lymphohematopoietic progenitor cells. 5,256,560, Cl. 435-240.200.

Lawrence, James L.: *See*—
Winter, Jeffrey J.; Holden, Homer N.; and Lawrence, James L., 5,256,233, Cl. 156-244.130.

Laymon, Alexander J.; Silfvast, William T.; and Erisman, Terrance L., to Liconix. Helium-cadmium laser for 353.6 nm line. 5,257,278, Cl. 372-99.000.

Layton, Michael R.: *See*—
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LeCroy, Walter O., Jr., to LeCroy Corporation. High-speed sampling arrangement and apparatus using same. 5,257,025, Cl. 341-100.000.

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Lee, Albert. Plastic electric fuel injection filter assembly and a welding method for the preparation thereof. 5,256,284, Cl. 210-232.000.

Lee, Charles A., to Cer-Wat, Inc. Filtration medium including substrate-supported porous membrane and method for the manufacture thereof. 5,256,288, Cl. 210-321.610.

Lee, Ga H., to SamSung Electronics Co., Ltd. Amplifier for controlling linear gain of wide band using external bias. 5,256,984, Cl. 330-254.000.

Lee, Jae-Gyun, to SamSung Electronics Co., Ltd. Printing method of color video printer. 5,257,098, Cl. 358-500.000.

Lee, Joon W.: *See*—
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Lee, Sang-Yook: *See*—
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Le Fur, Gerard; and Sabadie, Michel, to Elf Sanofi. Cosmetic composition against aging of the skin. 5,256,649, Cl. 514-46.000.

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Lennon, Vanda A.; Lambert, Edward H.; Kryzer, Thomas; and Griesmann, Guy E., to Mayo Foundation for Medical Education and Research. Immunoassay for small cell lung carcinoma. 5,256,540, Cl. 435-7.230.

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Leonard, Ronald J.; Maurer, David B.; and Lindsay, Erin J., to Minnesota Mining and Manufacturing Company. Combination mount and fluid path for heat exchanger. 5,255,734, Cl. 165-96.000.

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Martino, Gary T.; Pasapane, Joseph; and Nowak, Frank A., to National Starch and Chemical Investment Holding Corporation. Granular starch as sunscreen agent in aqueous compositions. 5,256,404, Cl. 424-59.000.

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Maruo, Shigeaki: *See—*
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Matsumoto, Takumi; Yasui, Yasuyoshi; and Togame, Tsuyoshi, to Toyota Jidosha Kabushiki Kaisha. Sliding type constant velocity universal joint having regulating device for maintaining position of roller constant. 5,256,107, Cl. 464-111.000.

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Matsuo, Masaaki; Ogino, Takashi; Igari, Norihiro; Seno, Hachiro; and Shimomura, Kyoichi, to Fujisawa Pharmaceutical Co., Ltd. Thiazole derivatives, processes for production thereof and pharmaceutical compositions comprising the same. 5,256,675, Cl. 514-342.000.

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McAllister, Rosalie. Transparent carrier. 5,255,833, Cl. 224-202.000.

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Oomura, Takuya; Kato, Hideki; Aiba, Nobuhiko; Yamamoto, Noriyuki; Hirose, Toshiro; and Ishizaki, Kenichi, to Toagosei Chemical Industry, Co., Ltd. Granular inorganic exchangers. 5,256,615, Cl. 502-62.000.

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Yoneyama, Mitsuho; Matsushita, Osami; Takahashi, Naohiko; and Fukushima, Yasuo, to Hitachi, Ltd. Magnetic bearing control method and apparatus.45,256,952, Cl. 318-629.000.
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Zanella, John H., to General Electric. Self-locking switch unit.45,256,841, Cl. 200-296.000.

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Zidovec, Davor F.; Fisher, Alexander D.; and Dreisbach, David D., to Betz PaperChem Inc. Methods for inhibiting barium sulfate deposition using a poly(amine)compound or its salts in papermaking systems.45,256,253, Cl. 162-164.600.

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Zimmer, Johannes. Apparatus for treating a web.45,255,539, Cl. 68-43.000.

Zimmer, John. Revolving recycling compactor having multiple containers.45,255,982, Cl. 383-75.000.

Zimmermann, Daniel E., to Caterpillar Inc. Actuator detection method and apparatus for an electromechanical actuator.45,257,014, Cl. 340-686.000.

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Zoromski, Maynard J.; and Klopfenstein, Kraig L., to Triangle Package Machinery Co. Flat sided forming tube for a form-fill-seal machine.45,255,497, Cl. 53-551.000.

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Baba, Masatoshi: *See—*
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Bates, Kenneth W.; and Griffiths, William A., to Injectall Limited. Apparatus and method for introducing substances into liquid metal.-4Re. 34,418, Cl. 75-414.000.

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Darling, James P. Sports racquet.4Re. 34,420, Cl. 273-73.00D.

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Griffiths, William A.: *See—*
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Injectall Limited: *See—*
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Kakuta, Takuya: *See—*
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Kuhn S.A.: *See—*
Werner, Anton; and Neuerburg, Horst, Re. 34,417, Cl. 56-255.000.

Melvin, William S.; and Graham, James F., to United States of America, Army. Method to [dimilitarize] *demilitarize*, extract, and recover ammonium perchlorate from composite propellants using liquid ammonia.4Re. 34,419, Cl. 149-109.600.

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Oya, Eiichi: *See—*
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Parker, Earl R.: *See—*
Parker, William J.; and Parker, Earl R., Re. 34,421, Cl. 378-121.000.

Parker, William J.; and Parker, Earl R. X-ray micro-tube and method of use in radiation oncology.4Re. 34,421, Cl. 378-121.000.

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Walman, Gerald B. Intraocular lens.4Re. 34,424, Cl. 623-6.000.

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Beery, Jack. Apparatus for controlling a television receiver.4B1 5,068,734, 10-26-93, Cl. 358-191.100.

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Early, Adrian B., B1 4,939,516, Cl. 341-143.000.

Dubner, Joseph: *See—*
Sims, Louis; LeFriec, Fred; Dubner, Joseph; and Peavey, Brian, B1 4,953,995, Cl. 400-121.000.

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Peavey, Brian: *See—*
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CLASS 37
94 5,255,454

CLASS 38
102.1 5,255,455

CLASS 40
124.1 5,255,456
152.1 5,255,457
159.1 5,255,458
409 5,255,460
415 5,255,461
488 5,255,462
505 5,255,463
5,255,465
591 5,255,464
603 5,255,459
5,255,466

CLASS 43
43.13 5,255,467
113 5,255,468
140 5,255,469

CLASS 44
347 5,256,165
393 5,256,166
449 5,256,167
626 5,256,169

CLASS 49
227 5,255,470
252 5,255,471
490.1 5,255,472
501 5,255,473

CLASS 51
131.1 5,255,474
206 P 5,255,475
293 5,256,170
355 5,255,476

CLASS 52
11 5,255,477
36.1 5,255,478
127.8 5,255,479
162 5,255,480
172 5,255,481
390 5,255,482
397 5,255,483
404 5,255,484
410 5,255,485
473 5,255,486
728 5,255,487
741.1 5,255,488
745.17 5,255,489

CLASS 53
136.4 5,255,490
399 5,255,491
434 5,255,492
473 5,255,493
477 5,255,494
504 5,255,495
511 5,255,496
551 5,255,497
569 5,255,498

CLASS 54
2 5,255,499

CLASS 55
302 5,256,175
528 5,256,176

CLASS 56
63 5,255,500
255 Re.34,417
341 5,255,501

CLASS 57
22 5,255,502
104 5,255,503

CLASS 60
39.02 5,255,504
39.07 5,255,505
39.12 5,255,506
5,255,507
39.32 5,255,508
203.1 5,255,509
204 5,255,513
226.2 5,255,510
274 5,255,511
5,255,512
5,255,515
362 5,255,516
431 5,255,517
527 5,255,518
528 5,255,972
605.1 5,255,514
649 5,255,519

CLASS 62
3.2 5,255,520
6 5,255,521
12 5,255,523
22 5,255,522
5,255,524
46.1 5,255,525
59 5,255,526
85 5,255,527
101 5,255,528
180 5,255,529
5,255,530
277 5,255,531
325 5,255,532
400 5,255,533
476 5,255,534
515 5,255,535
5,255,536

CLASS 65
3.11 5,256,177
5,256,178
60.2 5,256,179
142 5,256,180

CLASS 66
71 5,255,538
75.1 5,255,537

CLASS 68
43 5,255,539
181 R 5,255,540
205 R 5,255,541

CLASS 70
34 5,255,542
57.1 5,255,543
209 5,255,544
232 5,255,545
233 5,255,546
252 5,255,547

CLASS 71
28 5,256,181

CLASS 72
13 5,255,548
40 5,255,549
57 5,255,550
290 5,255,551
351 5,255,552

CLASS 73
19.1 5,255,553
23.32 5,255,554
28.01 5,255,555
31.02 5,255,556
37 5,255,557
40 5,255,558
46 5,255,559
116 5,255,560
146 5,255,561
160 5,255,562
462 5,255,563
579 5,255,565
597 5,255,564
660 5,255,566
862.333 5,255,567
863.73 5,255,568

CLASS 74
60 5,255,569
475 5,255,570
479 BW 5,255,571
522 5,255,572
545 5,255,573

CLASS 75
230 5,256,183
246 5,256,184
255 5,256,185
414 Re.34,418
695 5,256,186
717 5,256,187
722 5,256,188
744 5,256,189

CLASS 81
3.2 5,255,574
15.8 5,255,577
25 5,255,575
63 5,255,576
125 5,255,578
424 5,255,579

CLASS 82
18 5,255,580
130 5,255,581
158 5,255,582

CLASS 83
39 5,255,583
94 5,255,584
100 5,255,585
439 5,255,586
628 5,255,587
879 5,255,588

CLASS 84
330 5,255,589
625 5,256,830
627 5,256,831
636 5,256,832

CLASS 91
516 5,255,590

CLASS 92
52 5,255,591
223 5,255,592

CLASS 95
19 5,256,171
141 5,256,173

CLASS 96
116 5,256,174

CLASS 99
280 5,255,593
287 5,255,594
378 5,255,595
477 5,255,596
487 B1 4,898,092

CLASS 100
17 5,255,597

CLASS 101
118 5,255,598
119 5,255,599
127.1 5,255,600
155 5,255,601
228 5,255,602
363 5,255,603
389.1 5,255,604
409 5,255,605
425 5,255,606
463.1 5,255,607

CLASS 102
215 5,255,608

CLASS 104
111 5,255,609

CLASS 105
156 5,255,610
199.2 5,255,611

CLASS 106
2 5,256,190
19 A 5,256,191
21 A 5,256,192
5,256,193
22 K 5,256,194
277 5,256,195
482 5,256,196
708 5,256,197
5,256,198
823 5,256,199

CLASS 108
43 5,255,612
52.1 5,255,613
56.1 5,255,614

CLASS 110
234 5,255,615
346 5,255,616

CLASS 111
140 5,255,617
200 5,255,618

CLASS 112
63 5,255,619
121.12 5,255,620
5,255,621
162 5,255,622
286 5,255,623

CLASS 114
68 5,255,624
248 5,255,625
270 5,255,626

CLASS 116
174 5,255,627

CLASS 118
323 5,256,200
326 5,256,201
698 5,256,203
719 5,256,204
723 5,256,205
723 R 5,256,206

CLASS 119
14.15 5,255,628
51.5 5,255,632
52.2 5,255,631
157 5,255,633
265 5,255,811
839 5,255,629

CLASS 122
4 D 5,255,634

CLASS 123
41.2 5,255,635
41.54 5,255,636
48 R 5,255,637
52 M 5,255,638
90.11 5,255,641
90.16 5,255,639
90.67 5,255,640
179.17 5,255,643
179.3 5,255,642
179.310 5,255,644
190.17 5,255,645
192.1 5,255,646
195 C 5,255,647
308 5,255,648
5,255,649
322 5,255,650
357 5,255,651
366 5,255,652
399 5,255,653
403 5,255,654
479 5,255,655
494 5,255,656
527 5,255,657
531 5,255,658
568 5,255,659
643 5,255,660
674 5,255,661
5,255,662

CLASS 126
41 R 5,255,663
276 5,255,664
389 5,255,665
569 5,255,666

CLASS 128
4 5,255,667
5,255,668
24 AA 5,255,669
200.24 5,255,670
200.26 5,255,672
202.12 5,255,673
203.16 5,255,674
204.18 5,255,675
207.14 5,255,676
640 5,255,677
642 5,255,678
5,255,679
653.1 5,255,680
660.09 5,255,681
662.02 5,255,683
662.03 5,255,682
662.06 5,255,684
670 5,255,685
681 5,255,686
730 5,255,687
753 5,255,688
762 5,255,689
772 5,255,690

CLASS 132
228 5,255,694

CLASS 134
18 5,256,207
25.1 5,256,208
38 5,256,209
5,256,210
123 5,255,695

CLASS 135
67 5,255,696
5,255,697
103 5,255,698

CLASS 137
1 5,255,699
101 5,255,700
116.3 5,255,701
202 5,255,702
428 5,255,703
454.5 5,255,704
489 5,255,705
501 5,255,709
5,255,710
505.41 5,255,711
522 5,255,712
614.04 5,255,713
5,255,714
625.23 5,255,715
637.3 5,255,706

CLASS 138
44 5,255,716
89 5,255,717

CLASS 139
66 A 5,255,718
82 5,255,719
116.1 5,255,707

CLASS 141
67 5,255,708
86 5,255,720
5,255,721
114 5,255,722
206 5,255,723

CLASS 144
329 5,255,724
356 5,255,725
365 5,255,726

CLASS 148
33.4 B1 4,575,742
108 5,256,211
194 5,256,212
320 5,256,213
411 5,256,214
421 5,256,202
561 5,256,215
566 5,256,216
642 5,256,217
670 5,256,218
909 5,256,219

CLASS 149
88 5,256,220
109.6 Re.34,419

CLASS 150
154 5,255,727

CLASS 152
209 R 5,256,221

CLASS 156
41 5,256,222
71 5,256,223
72 5,256,224
73.1 5,256,225
95 5,256,226
157 5,256,227
5,256,228
158 5,256,229
175 5,256,230
178 5,256,231
187 5,256,232
244.13 5,256,233

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244.27 5,256,234
286 5,256,235
290 5,256,236
293 5,256,237
361 5,256,238
362 5,256,239
470 5,256,240
600 5,256,241
603 5,256,242
5,256,243
613 5,256,244
643 5,256,245
5,256,246
653 5,256,247
5,256,248
656 5,256,249

CLASS 157

1 5,255,728

CLASS 159

6.3 5,256,250
47.3 5,256,251

CLASS 162

72 5,256,252
164.6 5,256,253
199 5,256,254
237 5,256,255
274 5,256,256
360.3 5,256,257

CLASS 164

97 5,255,729
100 5,255,730
135 5,255,731
306 5,255,732

CLASS 165

39 5,255,733
96 5,255,734
111 5,255,735
128 5,255,736
159 5,255,737
185 5,255,738

CLASS 166

65.1 5,255,739
272 5,255,740
278 5,255,741
303 ,, 5,255,742
345 5,255,743
347 5,255,744
5,255,745
348 5,255,746

CLASS 169

15 5,255,747

CLASS 172

203 5,255,748

CLASS 174

35 R 5,256,833
37 5,256,834
260 5,256,836

CLASS 175

26 5,255,749
61 5,255,750
203 5,255,751

CLASS 177

145 5,256,835

CLASS 180

6.7 5,255,752
8.6 5,255,753
24.01 5,255,754
79.1 5,255,755
131 5,255,756

CLASS 181

164 5,256,837

CLASS 182

127 5,255,757
179 5,255,758

CLASS 187

94 5,255,759

CLASS 188

1.11 5,255,760
71.5 5,255,761
250 G 5,255,762
330 5,255,763
380 5,255,764

CLASS 190

26 5,255,765
36 5,255,766

CLASS 191

12.2 R 5,255,767
5,255,768

CLASS 193

4 5,255,769

CLASS 194

345 5,255,770

CLASS 198

323 5,255,771
337 5,255,772
347.3 5,255,773
365 5,255,774
395 5,255,775
465.1 5,255,776
471.1 5,255,777
803.11 5,255,778

CLASS 200

43.15 5,256,838
61.52 5,256,839
82 R 5,256,840
296 5,256,841
333 5,256,842
517 5,256,843

CLASS 203

49 5,256,258
57 5,256,259

CLASS 204

71 5,256,260
98 5,256,261
129.1 5,256,262
149 5,256,263
5,256,264
157.3 5,256,265
192.3 5,256,266
196 5,256,267
268 5,256,268
299 R 5,256,269
302 5,256,270
403 5,256,271
421 5,256,272
424 5,256,273

CLASS 205

123 5,256,274
247 5,256,275

CLASS 206

150 5,255,780
232 5,255,779
315.6 5,255,781
333 5,255,782
334 5,255,783
423 5,255,784
444 5,255,785
534.2 5,255,786

CLASS 208

48 AA 5,256,276
138 5,256,277
400 5,256,278

CLASS 209

17 5,255,787
273 5,255,788
319 5,255,789
393 5,255,790
406 5,255,791
605 5,255,792
682 5,255,793

CLASS 210

86 5,256,279
130 5,256,280
151 5,256,281
169 5,256,282
190 5,256,283
232 5,255,794
5,256,284
234 5,256,285
242.3 5,256,286
282 5,256,287
321.61 5,256,288
369 5,256,289
400 5,256,290
499 5,256,291
5,256,292
635 5,256,293
637 5,256,294
640 5,256,295
5,256,296
651 5,256,297
660 5,256,298
664 5,256,299
691 5,256,300
696 5,256,301
699 5,256,302
700 5,256,303
708 5,256,304
5,256,305
709 5,256,307
712 5,256,308
720 5,256,306
721 5,256,309
747 5,256,310
750 5,256,311
767 5,256,312
774 5,256,313
787 5,256,314

CLASS 211

13 5,255,795
5,255,796
41 5,255,797
46 5,255,798
68 5,255,799
89 5,255,800
131 5,255,801
184 5,255,802
189 5,255,803

CLASS 215

32 5,255,804
274 5,255,805

CLASS 219

10.51 5,256,844
10.53 5,256,845
10.55 E 5,256,846
74 5,256,847
121.52 5,256,854
121.59 5,256,855
121.6 5,256,848
121.68 5,256,849
121.69 5,256,850
5,256,851
121.75 5,256,853
121.83 5,256,852
137 WM 5,256,856
202 5,256,857
213 5,256,858
464 5,256,860
492 5,256,859
494 5,256,861

CLASS 220

1.5 5,255,806
3.8 5,255,807
6 5,255,808
89.1 5,255,809
243 5,255,810
277 5,255,812
278 5,255,813
323 5,255,815
352 5,255,814
529 5,255,816

CLASS 221

1 5,255,817
45 5,255,818

CLASS 222

1 5,255,819
5,255,820
39 5,255,821
63 5,255,822
153 5,255,823
179.5 5,255,824
207 5,255,825
209 5,255,826
309 5,255,827
321 5,255,828
367 5,255,829
370 5,255,830

CLASS 223

88 5,255,831

CLASS 224

42.42 5,255,832
202 5,255,833
209 5,255,834
228 5,255,835

CLASS 226

24 5,255,836

CLASS 228

102 5,255,837
135 5,255,838
180.21 5,255,839
254 5,255,840

CLASS 229

103 5,255,841
137 5,255,842

CLASS 232

35 5,255,843

CLASS 235

379 5,256,862
383 5,256,863
462 5,256,864
5,256,865
472 5,256,866
484 5,256,867

CLASS 236

12.12 5,255,844

CLASS 239

90 5,255,845
103 5,255,846
112 5,255,847
119 5,255,848
127.3 5,255,849
265.29 5,255,850
343 5,255,851
346 5,255,852
433 5,255,853
556 5,255,854
585.4 5,255,855
691 5,255,856
731 5,255,857

CLASS 241

5 5,255,858
79.1 5,255,859
101.7 5,255,867
189.1 5,255,869
280 5,255,860

CLASS 242

55.2 5,255,861
68.5 5,255,864
5,255,865
72 R 5,255,862
85.1 5,255,866
107 5,255,868
118.1 5,255,870
159 5,255,863

CLASS 244

3.24 5,255,882
17.13 5,255,871
63 5,255,873
103 R 5,255,874
121 5,255,875
129.5 5,255,876
135 A 5,255,877
164 5,255,878
171 5,255,879
197 5,255,880
199 5,255,881

CLASS 248

95 5,255,883
329 5,255,884
489 5,255,885
522 5,255,886
676 5,255,887

CLASS 249

48 5,255,888
102 5,255,889

CLASS 250

201.9 5,256,869
208.1 5,256,868
214 UT 5,256,870
223 B 5,256,871
227.17 5,256,872
239 5,256,873
282 5,256,875
288 5,256,874
306 5,256,876
310 5,256,877
370.04 5,256,878
370.06 5,256,879
461.1 5,256,880
492.23 5,256,881
551 5,256,882
559 5,256,883
561 5,256,884
5,256,885
574 5,256,886

CLASS 251

1.3 5,255,890
129.11 5,255,891
321 5,255,892
328 5,255,893

CLASS 252

8.551 5,256,315
8.57 5,256,317
8.570 5,256,318
32.007 E 5,256,320
5,256,321
32.7 R 5,256,319
33.2 5,256,322
42.7 5,256,323
49.9 5,256,324
51.5 5,256,325
62.54 5,256,326
79.1 5,256,316
90 5,256,327
102 5,256,328
194 5,256,329
299.61 5,256,330
309 5,256,331
396 5,256,332
400.24 5,256,333
478 5,256,334
500 5,256,335
543 5,256,336
584 5,256,337
628 5,256,338

CLASS 254

200 5,255,894
344 5,255,895

CLASS 256

10 5,255,896
24 5,255,897
47 5,255,898
59 5,255,899

CLASS 257

53 5,256,887
77 5,256,888
212 5,256,889
233 5,256,890
5,256,891
306 5,256,892
315 5,257,095
335 5,256,893
388 5,256,894
501 5,256,895
585 5,256,896
613 5,256,897
653 5,256,898
665 5,256,899
678 5,256,900
680 5,256,901
722 5,256,902
787 5,256,903

CLASS 261

78.2 5,256,352

CLASS 264

10 5,256,339
13 5,256,362
22 5,256,340
5,256,351
25 5,256,341
28 5,256,342
29.2 5,256,343
5,256,344
40.1 5,256,345
40.4 5,256,346
40.5 5,256,348
40.6 5,256,347
86 5,256,349
102 5,256,350
103 5,256,353
119 5,256,354
135 5,256,355
154 5,256,356
171 5,256,357
210.7 5,256,358
211.12 5,256,359
219 5,256,360
236 5,256,361
259 5,256,363
334 5,256,364
509 5,256,365
510 5,256,366
516 5,256,367

CLASS 266

44 5,255,900

CLASS 269

99 5,255,901

CLASS 270

53 5,255,902

CLASS 271

10 5,255,903
18.1 5,255,904
94 5,255,905
246 5,255,906
277 5,255,907
293 5,255,908

CLASS 273

1.5 R 5,255,909
5,255,910
26 E 5,255,911
73 D Re.34,420
73 G 5,255,912
78 5,255,913
80.2 5,255,914
85 CP 5,255,915
118 D 5,255,916
129 R 5,255,917
167 H 5,255,918
168 5,255,919
185 C 5,255,920
187 A 5,255,921
235 R 5,255,922
284 5,255,923
410 5,255,924
439 5,255,925

CLASS 277

235 B 5,255,926
5,255,927

CLASS 279

4.01 5,255,928

CLASS 280

11.18 5,255,929
33.992 5,255,930
97 5,255,931
281.1 5,255,932
414.1 5,255,933
657 5,255,934
708 5,255,935
717 5,255,936
728 5,255,937
736 5,255,938
804 5,255,939
808 5,255,940

CLASS 283

82 5,255,941

CLASS 285

21 5,255,942
5,255,943
149 5,255,944
305 5,255,945

CLASS 292

259 R 5,255,946

CLASS 294

31.2 5,255,947
86.41 5,255,948
5,255,949
103.1 5,255,950

CLASS 296

3 5,255,951
146.13 5,255,952
146.6 5,255,953

CLASS 297

184.16 5,255,954
395 5,255,955
411.26 5,255,956
423.12 5,255,957
464 5,255,958

CLASS 299

17 5,255,959
56 5,255,960

CLASS 303

6.01 5,255,961
111 5,255,962
116.1 5,255,963

CLASS 305

46 5,255,964

CLASS 307

10.1 5,256,904
34 5,256,905
39 5,256,906
82 5,256,907
116 5,256,909
125 5,256,910
201 5,256,911
269 5,256,912
311 5,256,913
443 5,256,914
450 5,256,915
451 5,256,916
455 5,256,917
465 5,256,918
557 5,256,919

CLASS 310

13 5,256,920
68 B 5,256,921
71 5,256,922
166 5,256,923
233 5,256,924
247 5,256,925
259 5,256,926
313 B 5,256,927
323 5,256,928
326 5,256,929

CLASS 312

7.1 5,255,965
107 5,255,966
193 5,255,967
234 5,255,968
236 5,255,969
297 5,255,970
351 5,255,971

CLASS 313

30 5,256,930
360.1 5,256,931
402 5,256,932
404 5,256,941
414 5,256,933
450 5,256,934
491 5,256,935
495 5,256,936
5,256,937
504 5,256,945

CLASS 315

88 5,256,946
111.81 5,256,938
5,256,947
244 5,256,939
248 5,256,940

313 5,256,948

CLASS 318

254 5,256,949
443 5,256,950
575 5,256,951
629 5,256,952
649 5,256,942
685 5,256,943
799 5,256,944

CLASS 320

2 5,256,953
5,256,954
5,256,955
15 5,256,956
20 5,256,957

CLASS 322

25 5,256,959

CLASS 324

72 5,256,960
96 5,256,968
115 5,256,961
133 5,256,962
158 R 5,256,963
5,256,964
212 5,256,965
220 5,256,966
311 5,256,967
318 5,256,969
5,256,970
5,256,971
5,256,972
418 5,256,973
458 5,256,974
519 5,256,975
522 5,256,976
546 5,256,977
601 5,256,978
713 5,256,979

CLASS 328

14 5,256,981
104 5,256,980

CLASS 330

254 5,256,983
5,256,984
260 5,256,985
293 5,256,986
295 5,256,987
5,256,988

CLASS 331

1 A 5,256,989
16 5,256,994
94.1 5,256,995

CLASS 333

20 5,256,996
28 R 5,256,997
208 5,256,990
215 5,256,991

CLASS 335

126 5,256,992
216 5,256,993
229 5,256,998

CLASS 336

136 5,256,999
200 5,257,000

CLASS 337

57 5,257,001
329 5,257,002

CLASS 338

22 R 5,257,003
188 5,257,004
325 5,257,005

CLASS 340

310 A 5,257,006
539 5,257,007
540 5,257,008
572 5,257,009
5,257,010
5,257,011
573 5,257,012
578 5,257,013
686 5,257,014
735 5,257,016
825.49 5,257,019
908.1 5,257,020
968 5,257,021
988 5,257,022
995 5,257,023

CLASS 341

16 5,257,024
100 5,257,025
118 5,257,026
143 B1 4,939,516
153 5,257,027

CLASS 342

25 5,257,028
352 5,257,029
368 5,257,030
374 5,257,031

CLASS 343

730 5,257,032
742 5,257,033
915 5,257,034

CLASS 345

13 5,257,017
26 5,257,015
30 5,257,018

CLASS 346

1.1 5,257,035
5,257,036
76 L 5,257,037
5,257,038
107 R 5,257,039
5,257,049
108 5,257,040
109 5,257,041
140 R 5,257,042
5,257,043
5,257,044
159 5,257,045
5,257,046
160 5,257,047
5,257,048

CLASS 351

86 5,257,050

CLASS 353

122 5,257,051

CLASS 354

153 5,257,052
195.1 5,257,053
203 5,257,054
222 5,257,055
234.1 5,257,056
276 5,257,057
286 5,257,058
322 5,257,059
402 5,257,060
5,257,061
408 5,257,062
416 5,257,063

CLASS 355

24 5,257,064
28 5,257,065
75 5,257,066
91 5,257,067
200 5,257,068
5,257,069
207 5,257,070
212 5,257,071
218 5,257,072
221 5,257,073
244 5,257,074
246 5,257,075
5,257,076
260 5,257,077
290 5,257,078
303 5,257,079
321 5,257,080
324 5,257,081
325 5,257,082
326 5,257,083

CLASS 356

28 5,257,084
73 5,257,085
328 5,257,086
336 5,257,087
353 5,257,088
5,257,089
358 5,257,090
5,257,091
367 5,257,092
375 5,257,093

CLASS 358

10 5,257,096
84 5,257,099
98 5,257,100
101 5,257,101
140 5,257,102
5,257,103
147 5,257,104
164 5,257,108
167 5,257,105
191.1 5,257,106
B1 5,068,734
310 5,257,107
327 5,257,109
339 5,257,110
342 5,257,111
402 5,257,112
426 5,257,113
438 5,257,119
443 5,257,120
447 5,257,121
448 5,257,114
455 5,257,115
465 5,257,116
468 5,257,117
500 5,257,097
5,257,098

CLASS 359

10 5,257,118
13 5,257,094
75 5,257,122
86 5,257,123
124 5,257,124
181 5,257,126
196 5,257,125
328 5,257,127
395 5,257,128
432 5,257,129
478 5,257,130
485 5,257,131
565 5,257,132
5,257,133
679 5,257,134
689 5,257,135
753 5,257,136
771 5,257,137
819 5,257,138
5,257,145
859 5,257,139
884 5,257,140

CLASS 360

32 5,257,141
33.1 5,257,142
48 5,257,143
51 5,257,144
67 5,257,146
73.08 5,257,147
77.06 5,257,148
78.14 5,257,149
96.3 5,257,150
98.07 5,257,151
99.08 5,257,152
133 5,257,153
135 5,257,154

CLASS 361

18 5,257,155
5,257,156
111 5,257,157
143 5,257,158
203 5,257,232
220 5,257,159
246 5,257,160
395 5,257,161
605 5,257,162
704 5,257,163
729 5,257,165
748 5,257,166
760 5,257,166

CLASS 362

27 5,257,167
32 5,257,168
92 5,257,169
226 5,257,172
235 5,257,173

CLASS 363

16 5,257,170
36 5,257,174
56 5,257,175
71 5,257,180

CLASS 364

140 5,257,181
143 5,257,171
148 5,257,176
167.01 5,257,177
191 5,257,178
410 5,257,179
413.1 5,257,182
413.19 5,257,183
413.28 5,257,184
419.1 5,257,186
419.19 5,257,185
419.2 5,257,187
424.03 5,257,190
424.05 5,257,191
424.1 5,257,188
5,257,189
426.02 5,257,192
431.07 5,257,193
436 5,257,194
449 5,257,195
464.02 5,257,196
5,257,197
474.02 5,257,198
5,257,199
474.05 5,257,203
474.24 5,257,204
5,257,205
488 5,257,200
489 5,257,201
498 5,257,202
502 5,257,206
508 5,257,207
510 5,257,208
516 5,257,209
553 5,257,210
571.04 5,257,211
582 5,257,212
725 5,257,213
736.5 5,257,214
745 5,257,215
748 5,257,216
760 5,257,217
787 5,257,218
825 5,257,219

CLASS 365

49 5,257,220
53 5,257,221
96 5,257,222
154 5,257,223
175 5,257,224
185 5,257,225
189.09 5,257,226
190 5,257,227
200 5,257,228
5,257,229
5,257,230
201 5,257,231
227 5,257,233
230.01 5,257,234
230.03 5,257,235
230.05 5,257,236
5,257,237
230.06 5,257,238
5,257,239
244 5,257,240

CLASS 366

85 5,255,973
336 5,255,974

CLASS 367

15 5,257,241
38 5,257,242
99 5,256,908
169 5,257,243

CLASS 368

41 5,257,244
70 5,257,245
282 5,257,246
290 5,257,247

CLASS 369

32 5,257,248
44.11 5,257,249
44.25 5,257,250
5,257,251
44.29 5,257,252
48 5,257,253
50 5,257,254
53 5,257,255
116 5,257,256

CLASS 370

18 5,257,257
56 5,256,958
60 5,257,258
60.1 5,257,259
84 5,257,260
5,257,261
85.5 5,257,264
100.1 5,257,265
112 5,257,262

CLASS 371

8.2 5,257,266
22.3 5,257,267
27 5,257,268
29.5 5,257,269
37.1 5,257,270
37.4 5,257,271
43 5,257,263
5,257,272

CLASS 372

6 5,257,273
20 5,257,274
23 5,257,275
45 5,257,276
75 5,257,277
99 5,257,278
101 5,257,279

CLASS 373

85 5,257,280
155 5,257,281

CLASS 374

31 5,255,976
41 5,255,977
45 5,255,978
158 5,255,979
161 5,255,980
163 5,255,981
601 5,255,975

CLASS 375

1 5,257,282
5,257,283
5,257,284
11 5,257,285
12 5,257,286
19 5,257,287
25 5,257,288
36 5,257,289
38 5,257,290
83 5,257,291
103 5,257,292
119 5,257,293
120 5,257,294

CLASS 376

302 5,257,295
310 5,257,296
5,257,297
421 5,257,298

CLASS 377

6 5,257,299
21 5,257,300
47 5,257,301

CLASS 378

45 5,257,302
85 5,257,303
101 5,257,304
121 Re.34,421
146 5,257,305
168 5,256,982

CLASS 379

53 5,257,306
57 5,257,307
100 5,257,308
283 5,257,309
433 5,257,310

CLASS 380

48 5,257,311

CLASS 381

4 5,257,312
18 5,257,313
43 5,257,314
68.6 5,257,315
71 5,257,316
119 5,257,317
187 5,257,318

CLASS 382

3 5,257,320
7 5,257,319
31 5,257,322
39 5,257,323
44 5,257,324
5,257,325
54 5,257,326
56 5,257,327
61 5,257,328

CLASS 383

75 5,255,982

CLASS 384

21 5,255,983
122 5,255,984
575 5,255,985

CLASS 385

11 5,257,329
5,257,330
25 5,257,331
59 5,257,332
64 5,257,333
65 5,257,334
78 5,257,335
93 5,257,336
99 5,257,337
125 5,257,338
128 5,257,339
5,257,340

CLASS 392

487 5,257,341

CLASS 395

22 5,257,341
23 5,257,342
110 5,257,344
119 5,257,345
125 5,257,346
129 5,257,347
142 5,257,355
144 Re.34,422
150 5,257,351
157 5,257,348
159 5,257,349
162 5,257,350
275 5,257,352
5,257,353
375 5,257,354
5,257,358
425 5,257,359
5,257,360
5,257,361
5,257,362
500 5,257,363
5,257,364
600 5,257,365
5,257,366
5,257,367
5,257,368
650 5,257,369
5,257,370
5,257,371
5,257,372
5,257,373
5,257,374
5,257,375
700 5,257,376
5,257,377
5,257,378
5,257,379
5,257,380
5,257,381
725 5,257,356
5,257,357
5,257,382
5,257,383
5,257,384
5,257,385
775 5,257,386
800 5,257,387
5,257,388
5,257,389
5,257,390
5,257,391
5,257,392
5,257,393
5,257,394
5,257,395

CLASS 400

61 5,255,986
5,255,987
121 B1 4,953,995
124 5,255,988
605 5,255,989

CLASS 401

68 5,255,990

CLASS 402

37 5,256,116
38 5,255,991
74 5,255,992

CLASS 403

95 5,255,994
328 5,255,993

CLASS 404

14 5,255,995
43 5,255,996

CLASS 405

16 5,255,997
36 5,255,998
87 5,255,999
119 5,256,000
128 5,256,001
154 5,256,002
232 5,256,003
237 5,256,004
240 5,256,005
255 5,256,006
258 5,256,007

CLASS 407

33 5,256,008
42 5,256,009

CLASS 408

11 5,256,010
72 R 5,256,012

CLASS 409

92 5,256,011
132 5,256,013

CLASS 411

1 5,256,014
4 5,256,015
32 5,256,016
43 5,256,017
175 5,256,018
187 5,256,019
368 5,256,020

CLASS 414

393 5,256,021
416 5,256,022
420 5,256,023
483 5,256,024
490 5,256,025
723 5,256,026
737 5,256,027
786 5,256,028
792.9 5,256,029
798.9 5,256,030

CLASS 415

1 5,256,031

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121.1 5,256,032
214.1 5,256,033

CLASS 416

91 5,256,034
220 R 5,256,035

CLASS 417

48 5,256,036
234 5,256,039
423.11 5,256,038
423.7 5,256,037
440 5,256,040
477 5,256,041

CLASS 418

1 5,256,042
23 5,256,043
55.5 5,256,044

CLASS 419

10 5,256,368

CLASS 420

420 5,256,369
557 5,256,370

CLASS 422

28 5,256,371
58 5,256,372
80 5,256,374
101 5,256,375
102 5,256,376
122 5,256,377
184 5,256,378
186.3 5,256,379
231 5,256,380
232 5,256,163
249 5,256,381
307 5,256,382

CLASS 423

9 5,256,383
220 5,256,384
230 5,256,172
5,256,385
338 5,256,386
392 5,256,387
457 5,256,388
592 5,256,389
700 5,256,390
706 5,256,391
717 5,256,392

CLASS 424

5 5,256,393
5,256,394
9 5,256,395
5,256,397
5,256,398
5,256,399
45 5,256,400
49 5,256,396
5,256,401
53 5,256,402
59 5,256,403
5,256,404
65 5,256,405
70 5,256,406
71 5,256,407
78.04 5,256,408
85.7 5,256,410
85.8 5,256,409
5,256,411
5,256,412
5,256,413
92 5,256,415
93 J 5,256,425
195.1 5,256,416
402 5,256,417
407 5,256,419
423 5,256,418
427 5,256,420
449 5,256,421
450 5,256,422
616 5,256,423
701 5,256,424

CLASS 425

7.24 5,256,541
28.1 5,256,045
126.1 5,256,046
130 5,256,047
5,256,048
131.1 5,256,049
131.5 5,256,050
133.1 5,256,051
133.5 5,256,052
186 5,256,053
462 5,256,054
527 5,256,055
595 5,256,056

CLASS 426

100 5,256,426
106 5,256,427
127 5,256,428
237 5,256,430
249 5,256,431
275 5,256,432
289 5,256,433
393 5,256,434
557 5,256,435
565 5,256,436
580 5,256,437
615 5,256,438
655 5,256,439

CLASS 427

3 5,256,440
8 5,256,441
96 5,256,442
125 5,256,443
136 5,256,444
155 5,256,445
163 5,256,446
207.1 5,256,447
228 5,256,448
248.1 5,256,449
295 5,256,450
374.2 5,256,451
407.1 5,256,452
415 5,256,453
498 5,256,454
576 5,256,455

CLASS 428

1 5,256,456
13 5,256,457
34.8 5,256,458
36.3 5,256,459
36.9 5,256,460
55 5,256,461
76 5,256,462
77 5,256,463
137 5,256,464
158 5,256,465
166 5,256,466
182 5,256,467
193 5,256,468
210 5,256,469
5,256,470
213 5,256,471
215 5,256,472
218 5,256,473
220 5,256,474
225 5,256,429
5,256,475
241 5,256,476
283 5,256,477
328 5,256,479
331 5,256,480
336 5,256,481
375 5,256,482
408 5,256,483
426 5,256,484
5,256,485
447 5,256,486
5,256,487
450 5,256,489
458 5,256,490
463 5,256,488
500 5,256,491
524 5,256,492
5,256,493
552 5,256,494
579 5,256,495
661 5,256,496
694 5,256,497

CLASS 429

16 5,256,498
33 5,256,499
93 5,256,500
94 5,256,501
150 5,256,502
197 5,256,504
249 5,256,503

CLASS 430

5 5,256,505
20 5,256,506
42 5,256,507
59 5,256,508
66 5,256,509
83 5,256,510
106 5,256,512
106.6 5,256,513
5,256,514
5,256,515
108 5,256,511
110 5,256,516
165 5,256,517
264 5,256,519
273 5,256,518
281 5,256,520
296 5,256,521
325 5,256,522
362 5,256,523
372 5,256,524
380 5,256,525
384 5,256,526
393 5,256,531
449 5,256,527
555 5,256,528
558 5,256,529
567 5,256,530

CLASS 431

79 5,256,057
187 5,256,058
289 5,256,059

CLASS 432

152 5,256,060
205 5,256,061

CLASS 433

9 5,256,062
74 5,256,063
141 5,256,064
228.1 5,256,065

CLASS 434

21 5,256,066
169 5,256,067
236 5,256,068
247 5,256,069
265 5,256,070
302 5,256,071

CLASS 435

5 5,256,532
5,256,534
6 5,256,535
5,256,536
7.1 5,256,537
7.21 5,256,539
7.23 5,256,540
7.24 5,256,533
5,256,542
7.9 5,256,538
7.94 5,256,543
42 5,256,544
69.1 5,256,545
69.4 5,256,546
71.1 5,256,547
71.3 5,256,548
91 5,256,549
108 5,256,551
146 5,256,552
172.2 5,256,553
183 5,256,554
195 5,256,555
201 5,256,556
222 5,256,557
240.1 5,256,558
240.2 5,256,559
5,256,560
240.27 5,256,561
252.33 5,256,568
280 5,256,569
285 5,256,570

CLASS 436

17 5,256,571
27 5,256,572
143 5,256,574
179 5,256,573
501 5,256,575

CLASS 437

4 5,256,576
8 5,256,577
5,256,578
22 5,256,579
23 5,256,580
24 5,256,581
31 5,256,582
41 5,256,583
43 5,256,584
44 5,256,585
5,256,586
52 5,256,587
5,256,588
60 5,256,589
61 5,256,590
67 5,256,591
5,256,592
70 5,256,593
86 5,256,562
89 5,256,594
104 5,256,595
106 5,256,550
129 5,256,596
152 5,256,563
189 5,256,597
195 5,256,564
220 5,256,598
225 5,256,599
228 5,256,565
233 5,256,566

CLASS 439

79 5,256,072
5,256,073
108 5,256,074
164 5,256,075
188 5,256,076
314 5,256,077
326 5,256,078
342 5,256,079
5,256,080
464 5,256,081
497 5,256,082
595 5,256,083
5,256,084
607 5,256,085
5,256,086
741 5,256,087
851 5,256,088

CLASS 440

38 5,256,089
40 5,256,090
85 5,256,091
87 5,256,092

CLASS 441

25 5,256,093
96 5,256,094

CLASS 445

6 5,256,095
26 5,256,096
28 5,256,097

CLASS 446

5,256,098
473 5,256,099
5,256,100

CLASS 452

120 5,256,101
149 5,256,102

CLASS 454

139 5,256,103
158 5,256,104
187 5,256,105

CLASS 455

2 5,257,396
33.1 5,257,397
5,257,398
5,257,399
5,257,400
33.2 5,257,401
5,257,402
45 5,257,403
51.2 5,257,404
54.1 5,257,405
56.1 5,257,406
67.1 5,257,407
67.6 5,257,408
76 5,257,409
78 5,257,410
80 5,257,411
89 5,257,412
5,257,413
90 5,257,414
126 5,257,415
166.2 5,257,416

CLASS 460

39 5,256,106

CLASS 464

111 5,256,107

CLASS 472

16 5,256,108

CLASS 474

28 5,256,109
69 5,256,110
101 5,256,111
112 5,256,112
135 5,256,113

CLASS 482

6 5,256,115
52 5,256,117
53 5,256,118
74 5,256,119
82 5,256,120
93 5,256,121
99 5,256,122
113 5,256,123
118 5,256,124
137 5,256,125
142 5,256,126
146 5,256,127

CLASS 483

1 5,256,128

CLASS 493

171 5,256,129
210 5,256,130
374 5,256,131

CLASS 501

4 5,256,600
13 5,256,601
17 5,256,602
32 5,256,603
45 5,256,604
57 5,256,605
60 5,256,606
65 5,256,607
94 5,256,608
96 5,256,609
97 5,256,610
127 5,256,611
137 5,256,639

CLASS 502

37 5,256,612
41 5,256,613
61 5,256,614
62 5,256,615
350 5,256,616
351 5,256,617

CLASS 503

216 5,256,618
226 5,256,619
227 5,256,620
5,256,621
5,256,622
5,256,623
5,256,624

CLASS 504

107 5,256,625
5,256,626
117 5,256,627
5,256,628
124 5,256,182
130 5,256,629
134 5,256,630
229 5,256,631
252 5,256,632
266 5,256,633
282 5,256,634

CLASS 505

1 5,256,635
5,256,636
5,256,637
5,256,638

CLASS 514

2 5,256,640
5,256,641
8 5,256,642
12 5,256,643
5,256,644
18 5,256,645
24 5,256,647
32 5,256,646
44 5,256,648
46 5,256,649
5,256,650
53 5,256,651
58 5,256,652
79 5,256,653
186 5,256,654
211 5,256,655
224.2 5,256,656
228.2 5,256,657
236.2 5,256,658
238.8 5,256,660
248 5,256,661
249 5,256,662
250 5,256,663
252 5,256,664
254 5,256,665
256 5,256,666
258 5,256,659
259 5,256,667
269 5,256,668
282 5,256,669
291 5,256,790
304 5,256,670
305 5,256,671
311 5,256,789
324 5,256,672
338 5,256,673
341 5,256,674
342 5,256,675
348 5,256,676
351 5,256,677
356 5,256,678
357 5,256,679
364 5,256,680
373 5,256,681
378 5,256,682
383 5,256,683
398 5,256,684
410 5,256,685
417 5,256,686
419 5,256,687
422 5,256,688
452 5,256,689
483 5,256,690
510 5,256,691
532 5,256,692
547 5,256,693
549 5,256,694
563 5,256,695
573 5,256,696
625 5,256,697
649 5,256,698
658 5,256,699
732 5,256,700
781 5,256,701

CLASS 521

84.1 5,256,702
120 5,256,703
126 5,256,704

CLASS 523

173 5,256,705
213 5,256,706
318 5,256,707
507 5,256,708
510 5,256,709

CLASS 524

16 5,256,478
47 5,256,711
59 5,256,710
71 5,256,712
99 5,256,713
120 5,256,714
188 5,256,715
279 5,256,716
293 5,256,717
411 5,256,718
436 5,256,719
492 5,256,720
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